SECTION LT
LIGHTING SYSTEM

CONTENTS

PRECAUTIONS

PFP:00011

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

BKS001CE

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SRS 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.**

Maintenance Information

BKS0028K

If any of following part is replaced, always replace with new* one.
If it's not (or fail to do so), the electrical system may not be operated properly.
*: New one means a virgin control unit that has never been energized on-board.

RHD MODELS

- BCM (Models without Intelligent Key system)
- Intelligent Key unit (Models with Intelligent Key system)
- ECM
- IPDM E/R
- Combination meter
- EPS control unit

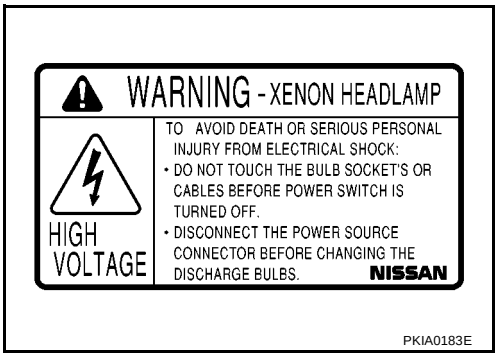
LHD MODELS

- BCM (Models without Intelligent Key system)
- Intelligent Key unit (Models with Intelligent Key system)
- ECM

General Precautions for Service Operations

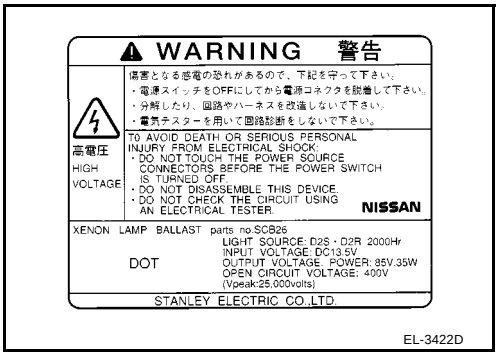
BKS001CF

- Never work with wet hands.
- Xenon headlamp includes high voltage generating part. Be sure to disconnect battery negative cable (negative terminal) or power fuse before removing, installing, or touching the xenon headlamp (including lamp bulb).
- Turn the lighting switch OFF before disconnecting and connecting the connector.
- When turning the xenon headlamp on and while it is illuminated, never touch the harness, bulb, and socket of the headlamp.
- 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.

- Install the xenon headlamp bulb socket correctly. If it is installed improperly, high-voltage leak or corona discharge may occur that can melt the bulb, connector, and housing. Do not illuminate the xenon headlamp bulb out of the headlamp housing. Doing so can cause fire and harm your eyes.
- 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.



EL-3422D

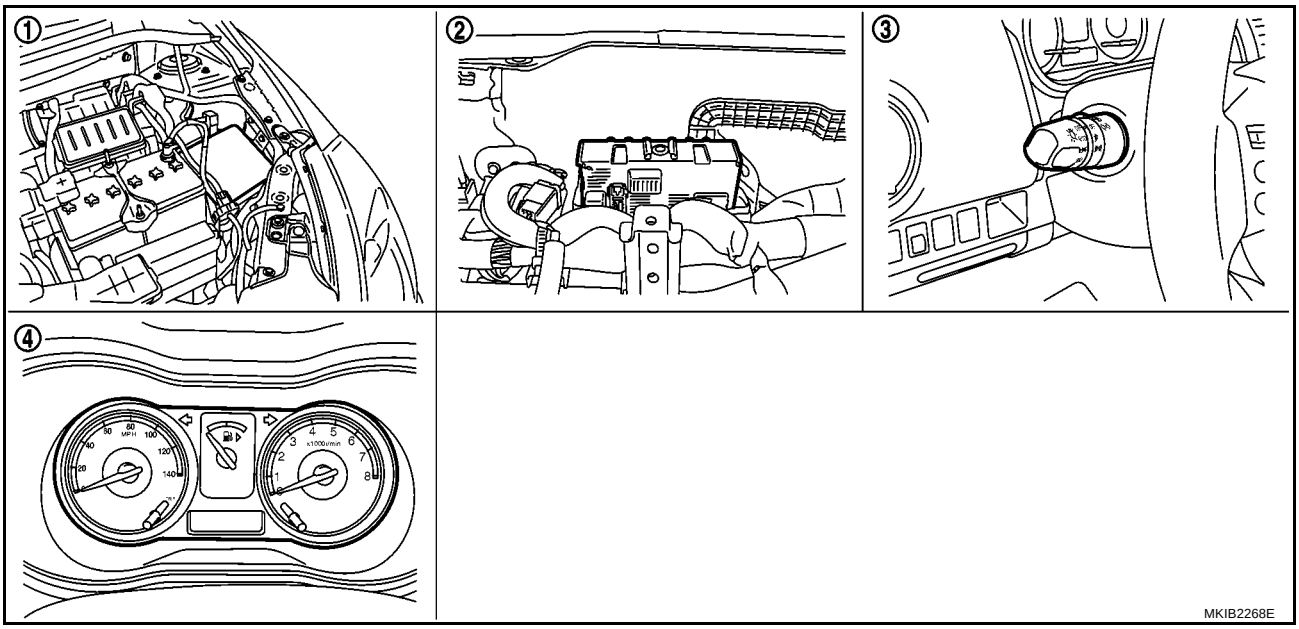
- When adjusting the headlamp aiming, turn the aiming adjustment screw only in the tightening direction. (If it is necessary to loosen the screw, first fully loosen the screw, and then turn it in the tightening direction.)
- Do not use organic solvent (paint thinner or gasoline) to clean lamps and to remove old sealant.

HEADLAMP -CONVENTIONAL TYPE-

PFP:26010

Component Parts and Harness Connector Location

BKS001CH



1. IPDM E/R E8,E11,E12
2. BCM M57,M59 (View with instrument upper panel removed)
3. Combination switch M38
4. Combination meter M27

System Description

BKS001CI

The 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 signal requesting the headlamps (and tail lamps) illuminate. This input signal is communicated to the IPDM E/R (intelligent power distribution module engine room) via the CAN communication. The CPU (central processing unit) located in the IPDM E/R controls the headlamp high and headlamp low relay coils. These relays, when energized, direct power to the respective headlamps, which then illuminate.

OUTLINE

Power is supplied at all times

- to ignition relay (located in IPDM E/R),
- to headlamp high RH and LH relay (located in IPDM E/R)
- to headlamp low relay (located in IPDM E/R) from battery directly,
- through 20A fuse (No. 61, located in IPDM E/R),
- through 20A fuse (No. 62, located in IPDM E/R),
- through 40A fusible link (letter J, located in fuse, fusible link and relay box)
- to BCM terminals 74 and 79,
- through 10A fuse [No. 7, located in fuse block (J/B)]
- to combination meter terminal 27.

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

- to ignition relay (located in IPDM E/R) from battery directly,
- through 10A fuse [No. 5, located in fuse block (J/B)]
- to BCM terminal 24,
- through 10A fuse [No. 4, located in fuse block (J/B)]
- to combination meter terminal 28.

Ground is supplied

- to BCM terminals 2 and 70
- to combination meter terminals 21, 22 and 23

- through grounds M21 and M66,
- to IPDM E/R terminals 3 and 54
- through grounds E45 (CR and HR engine models),E28 and E44.

HEADLAMP OPERATION

Low Beam Operation

With the lighting switch in 2ND position, the BCM receives input signal requesting the headlamps to illuminate. This input signal is communicated to the IPDM E/R via the CAN communication. The CPU located in the IPDM E/R controls the headlamp low relay coil, which when energized, directs power

- through 15A fuse (No. 50, located in IPDM E/R)
- through IPDM E/R terminal 48
- to headlamp RH terminal 1,
- through 15A fuse (No. 49, located in IPDM E/R)
- through IPDM E/R terminal 50
- to headlamp LH terminal 1.

Ground is supplied

- to headlamp RH and LH terminals 3
- through grounds E45 (CR and HR engine models),E28 and E44.

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 signal requesting the headlamp high beams to illuminate. This input signal is communicated to the IPDM E/R via the CAN communication. The CPU located in the IPDM E/R controls the headlamp high relay coil, which when energized, directs power

- through 10A fuse (No. 43, located in IPDM E/R)
- through IPDM E/R terminal 46
- to headlamp RH terminal 2,
- through 10A fuse (No. 44, located in IPDM E/R)
- through IPDM E/R terminal 47
- to headlamp LH terminal 2.

Ground is supplied

- to headlamp RH and LH terminals 3
- through grounds E45 (CR and HR engine models),E28 and E44.

With power and ground supplied, the high beam headlamps illuminate.
The combination meter that received the high beam request signal by BCM via the CAN communication makes a high beam indicator lamp turn ON in combination meter.

COMBINATION SWITCH READING FUNCTION

Refer to LT-114, "COMBINATION SWITCH READING FUNCTION" .

AUTO LIGHT OPERATION

Refer to LT-52, "System Description" .

FRIENDRY LIGHTING FUNCTION

Low beam headlamps will illuminate for 30 seconds when,

- ignition switch is in OFF position,
- lighting switch is placed in OFF position, and
- lighting switch is placed in PASS position.

Each activation of the switch adds 30 seconds to a maximum of 2 minutes.

EXTERIOR LAMP BATTERY SAVER CONTROL

To avoid flat battery caused by user leaving exterior lamps ON. When ignition is OFF and the driver side door is opened, all exterior lamps will be turned OFF. If the user wants some lamps to remain ON then they must switch these lamps OFF then ON again with the combination switch once the driver side door has been opened. A buzzer will sound if any exterior lamps are ON with the driver side door opened and ignition OFF.
*:This setting can be changed by CONSULT-II. Refer to LT-19, "WORK SUPPORT" .

FAIL-SAFE FUNCTION

When CAN communication with other control units is impossible, IPDM E/R performs fail-safe control. If the fail-safe system is operating, headlamps illuminate when the ignition switch is turned from OFF to ON and headlamps are turned off when the ignition switch is turn from ON to OFF. If the fail-safe system is operating, headlamps does not operate when the combination switch is in any position. After CAN communication recovers normally, it also returns to normal control. (Refer to PG-18, "Fail-safe Control" .)

CAN Communication System Description

BKS001CJ

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

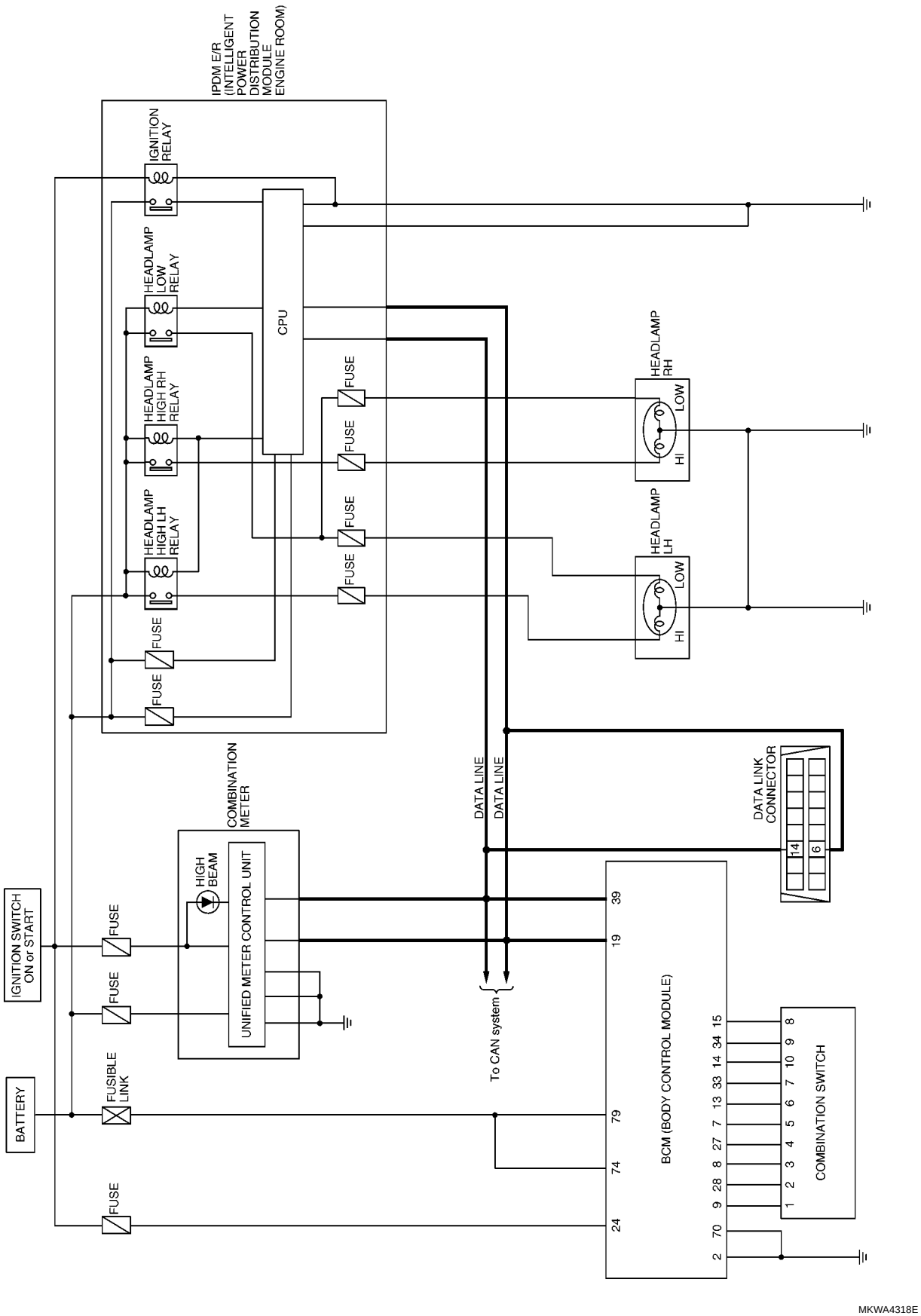
CAN Communication Unit

BKS001CK

Refer to LAN-27, "CAN Communication Unit" .

Schematic

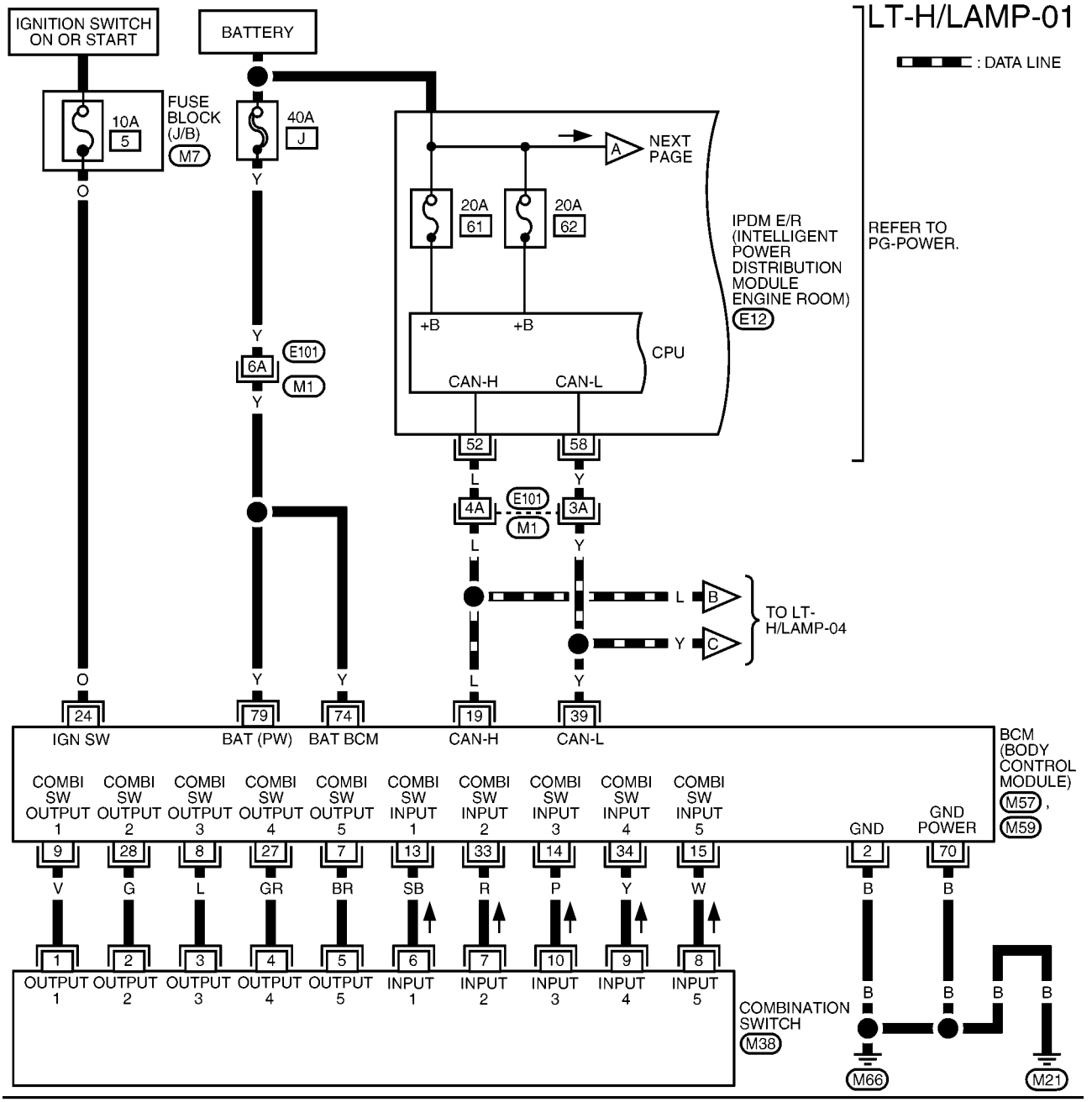
BKS001CL



MKWA4318E

Wiring Diagram — H/LAMP —

BKS001CM



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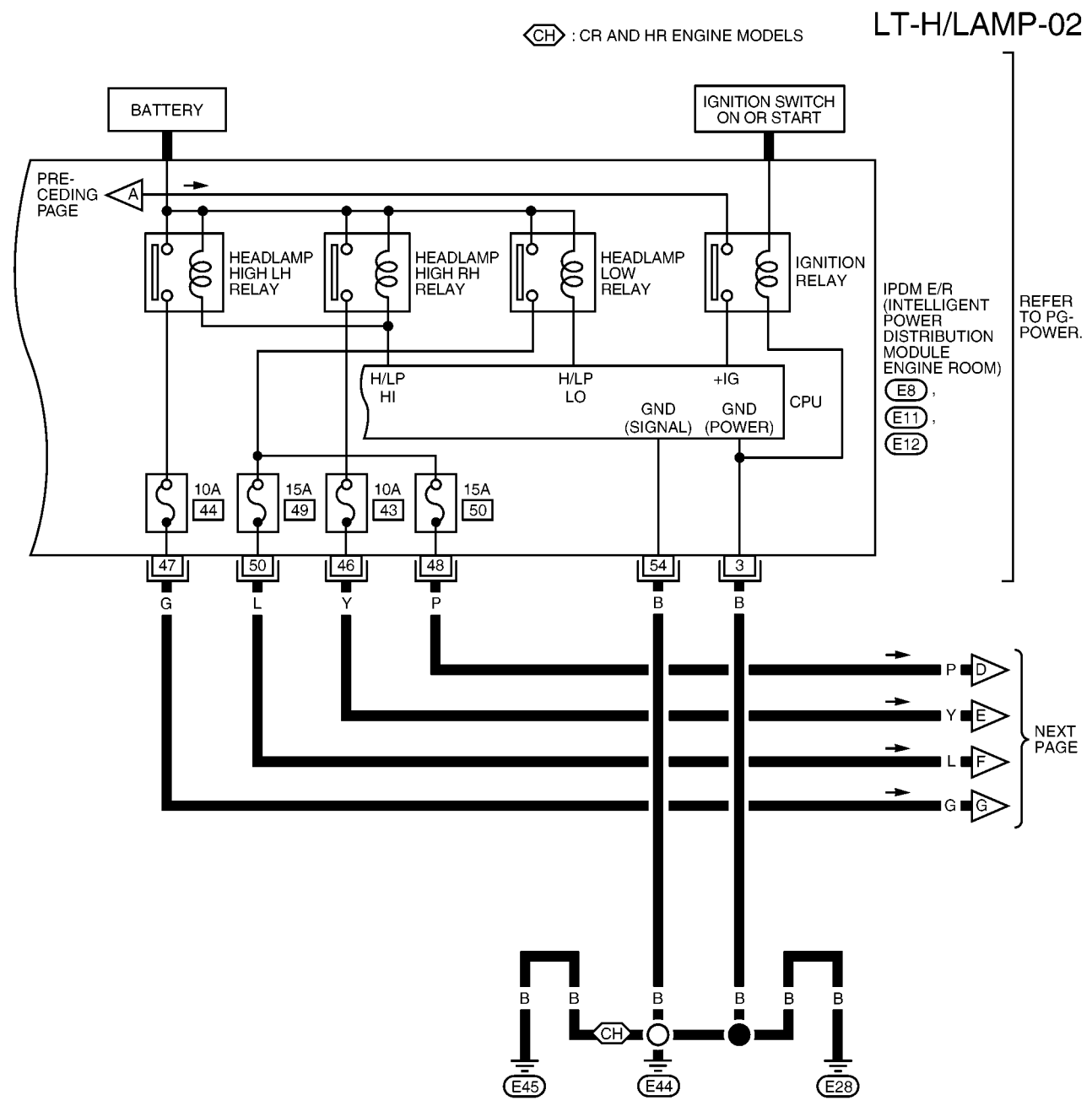
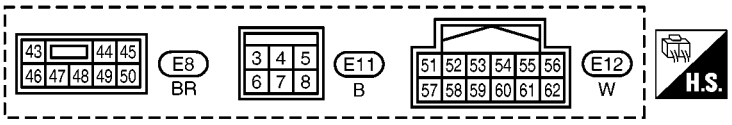
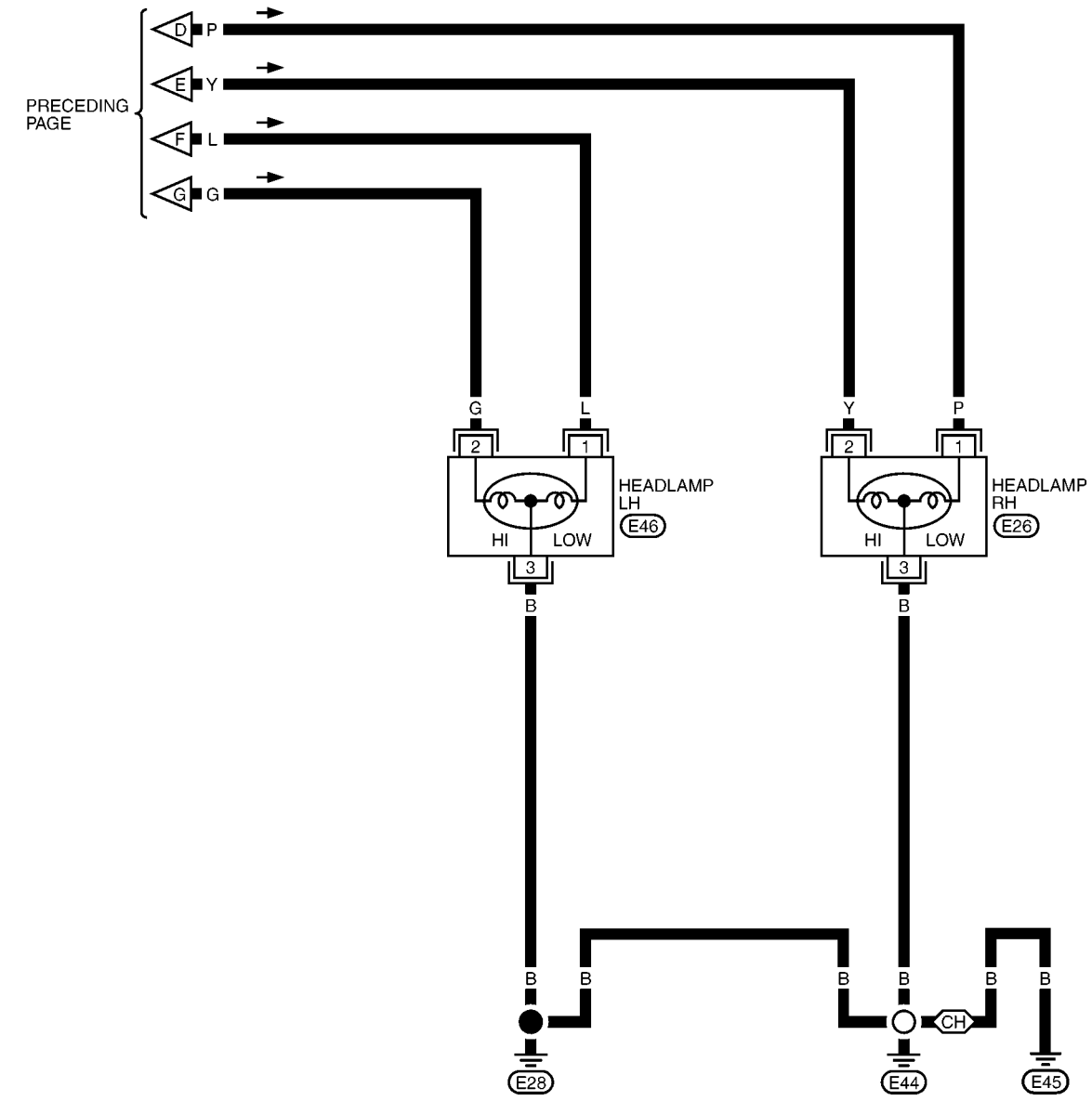

LT-H/LAMP-02
CH : CR AND HR ENGINE MODELS
BATTERY
IGNITION SWITCH ON OR START
PRE-CEDING PAGE
A
HEADLAMP HIGH LH RELAY
HEADLAMP HIGH RH RELAY
HEADLAMP LOW RELAY
IGNITION RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E8 , E11 , E12
REFER TO PG-POWER.
H/LP HI
H/LP LO
+IG
GND (SIGNAL)
GND (POWER)
CPU
10A 44
15A 49
10A 43
15A 50
47
50
46
48
54
3
G
L
Y
P
B
B
P D
Y E
L F
G G
NEXT PAGE
B B B B B B
CH
E45
E44
E28

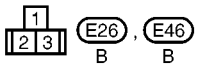

43 44 45
46 47 48 49 50
E8
BR
3 4 5
6 7 8
E11
B
51 52 53 54 55 56
57 58 59 60 61 62
E12
W
H.S.

MKWA4320E

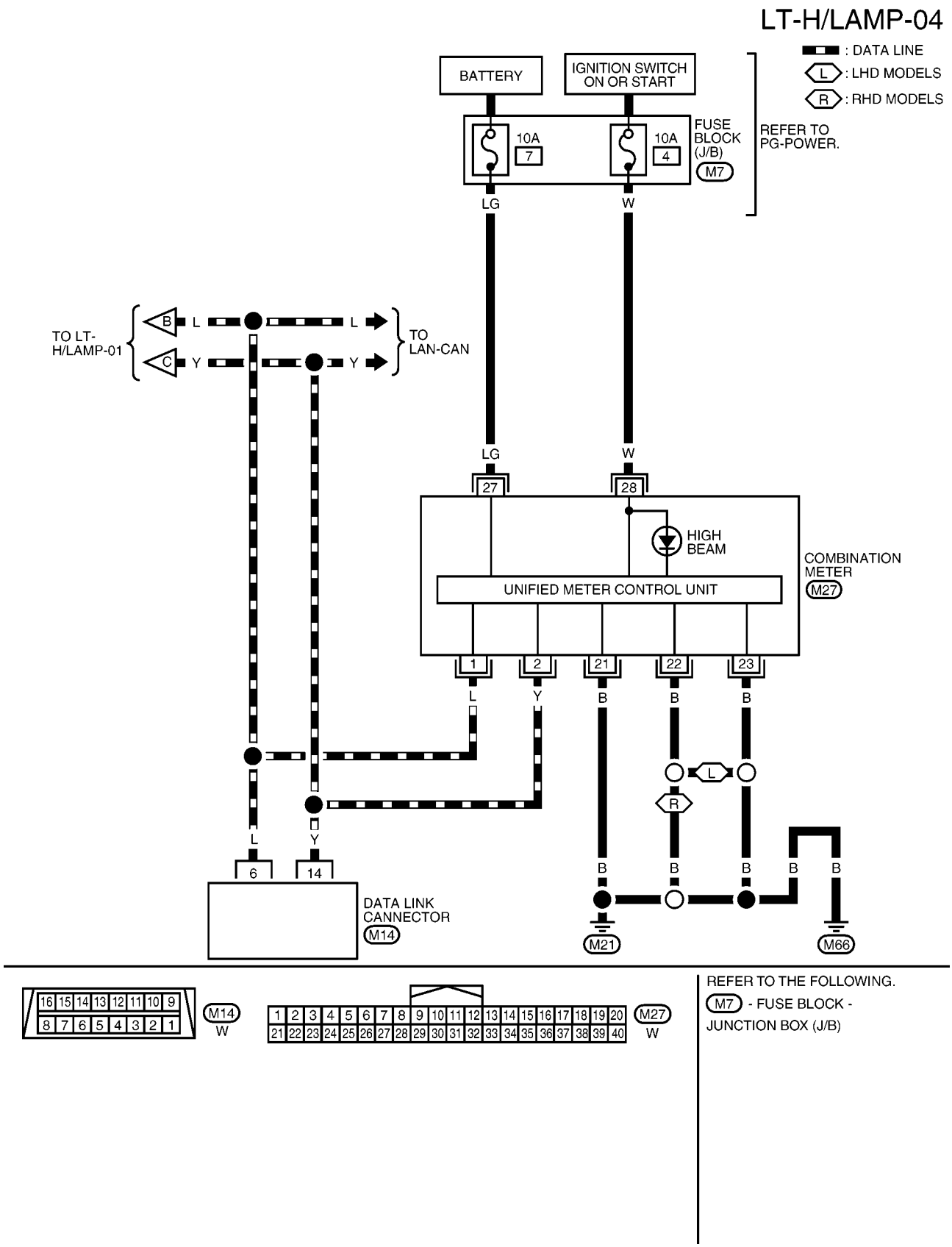
LT-H/LAMP-03

CH : CR AND HR ENGINE MODELS





MKWA4321E


LT-H/LAMP-04
: DATA LINE
L : LHD MODELS
R : RHD MODELS
BATTERY
IGNITION SWITCH ON OR START
FUSE BLOCK (J/B) M7
10A 7
10A 4
REFER TO PG-POWER.
LG
W
TO LT-H/LAMP-01
B L
C Y
TO LAN-CAN
27
28
HIGH BEAM
UNIFIED METER CONTROL UNIT
COMBINATION METER M27
1 2 21 22 23
L Y B B B
L
R
6 14
DATA LINK CANNECTOR M14
M21
M66
16 15 14 13 12 11 10 9
8 7 6 5 4 3 2 1
M14 W
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
M27 W
REFER TO THE FOLLOWING.
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

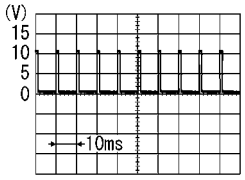
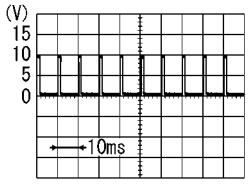
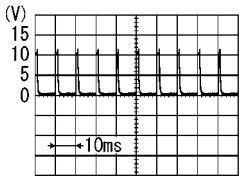
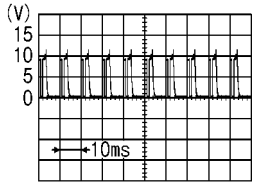
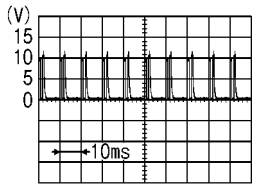
MKWA4322E

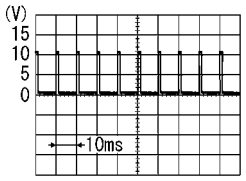
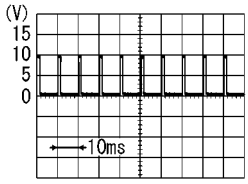
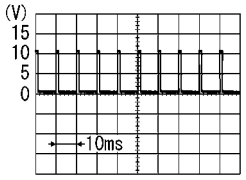
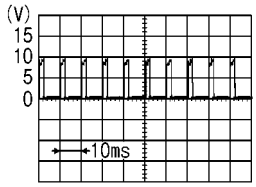
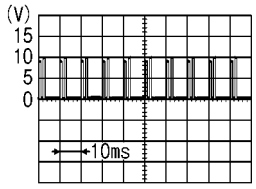
Terminals and Reference Values for BCM

BKS001CN

CAUTION:

- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to LT-19, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value
				Ignition switch	Operation or condition	
2	B	Ground	—	ON	—	Approx. 0V
8	L	Combination switch output 3	Output	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4) — OFF	 PKIB4958J Approx. 1.2V
					Lighting, turn, wiper switch (Wiper intermittent dial position 4) — Any of the conditions below ● Lighting switch 2ND ● Lighting switch HI beam (Operates only HI beam switch)	 PKIB4959J Approx. 1.0V
15	W	Combination switch input 5	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4) — OFF	 PKIB4956J Approx. 0.9V
					Lighting switch 2ND	 PKIB8639J Approx. 2.5 - 3.0V
					Lighting switch HIGH beam (Operates only HIGH beam switch)	 PKIB8644J Approx. 1.5 - 2.0V
19	L	CAN – H	Input/ Output	ON	—	Approx. 2.6V

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value
				Ignition switch	Operation or condition	
24	O	Ignition switch (ON)	Input	ON	—	Battery voltage
28	G	Combination switch output 2	Output	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4958J Approx. 1.2V
						Any of the conditions below ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch)	 PKIB4959J Approx. 1.0V
34	Y	Combination switch input 4	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4958J Approx. 1.0V
						Lighting switch 2ND	 PKIB8628J Approx. 1.5 - 2.0V
						Lighting switch PASSING (Operates only PASSING switch)	 PKIB8629J Approx. 2.0V
39	Y	CAN – L	Input/ Output	ON	—	Approx. 2.4V
70	B	Ground	—	ON	—	Approx. 0V
74 79	Y	Battery power supply	Input	OFF	—	Battery voltage

Terminals and Reference Values for IPDM E/R

BKS001CO

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value
				Igni-tion switch	Operation or condition		
3	B	Ground	—	ON	—		Approx. 0V
46	Y	Headlamp HIGH RH	Output	ON	Lighting switch HIGH beam or PASSING position	OFF	Approx. 0V
						ON	Battery voltage
47	G	Headlamp HIGH LH		ON	Lighting switch HIGH beam or PASSING position	OFF	Approx. 0V
						ON	Battery voltage
48	P	Headlamp LOW RH		ON	Lighting switch 2ND position	OFF	Approx. 0V
						ON	Battery voltage
50	L	Headlamp LOW LH		ON	Lighting switch 2ND position	OFF	Approx. 0V
						ON	Battery voltage
52	L	CAN – H	Input/ Output	—	—		—
54	B	Ground	—	ON	—		Approx. 0V
58	Y	CAN – L	Input/ Output	—	—		—

How to Perform Trouble Diagnoses

BKS001CP

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-7, "System Description" .
3. Perform the Preliminary Check. Refer to LT-18, "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

BKS001CQ

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSE

Check for blown fuses.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	J
	Ignition switch ON or START position	5
IPDM E/R	Battery	43
		44
		49
		50
		61
		62

Refer to LT-11, "Wiring Diagram — H/LAMP —" .

OK or NG

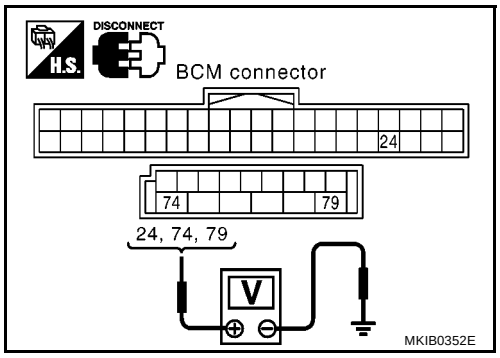
OK >> GO TO 2.

NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

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

Terminal			Ignition switch position		
(+)		(–)	OFF	ACC	ON
BCM Connector	Terminal				
M57	24	Ground	Approx. 0V	Approx. 0V	Battery voltage
M59	74		Battery voltage	Battery voltage	Battery voltage
	79		Battery voltage	Battery voltage	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

3. CHECK GROUND CIRCUIT

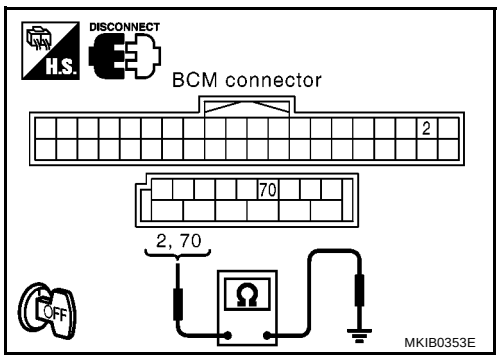
Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M57	2		Yes
M59	70		

OK or NG

OK >> INSPECTION END

NG >> Repair harness or connector.



CONSULT-II Functions (BCM)

BKS001CR

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

BCM diagnosis part	Diagnosis mode	Description
HEADLAMP	WORK SUPPORT	Changes the setting for each function.
	DATA MONITOR	Displays BCM input data in real time.
	ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
BCM	SELF-DIAG RESULTS	BCM performs self-diagnosis of CAN communication.
	CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.

CONSULT-II INSPECTION PROCEDURE

Refer to GI-36, "CONSULT-II Start Procedure" .

CONSULT-II Application Items (BCM)

BKS001LZ

WORK SUPPORT

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.
3. Touch “BATTERY SAVER SET” on “SELECT WORK ITEM” screen.
4. Touch “START”.
5. Touch “CHANGE SET”.
6. The setting will be changed and “CUSTOMIZING COMPLETED” will be displayed.
7. Touch “END”.

Display Item List

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

DATA MONITOR

Monitor item	UNIT.	Display content
IGN ON SW	[ON/OFF]	Displays status (Ignition switch ON: ON/Others OFF, ACC: OFF) as judged from the ignition switch signal.
HI BEAM SW	[ON/OFF]	Displays status (High beam switch: ON/Others: OFF) as judged from lighting switch signal.
H/L SW POS	[ON/OFF]	Displays status (Headlamp switch: ON/Others: OFF) as judged from lighting switch signal.
LIGHT SW 1ST	[ON/OFF]	Displays status (Lighting switch 1st position: ON/Others: OFF) as judged from lighting switch signal.
PASSING SW	[ON/OFF]	Displays status (Flash-to-pass switch: ON/Others: OFF) as judged from lighting switch signal.
FR FOG SW	[ON/OFF]	Displays status (Front fog lamp switch: ON/Others: OFF) as judged from lighting switch signal.
RR FOG SW	[ON/OFF]	Displays status (Rear fog lamp switch: ON/Others: OFF) as judged from lighting switch signal.
DOOR SW-DR	[ON/OFF]	Displays status (Door open: ON/door closed: OFF) as judged from the door switch DR signal.
H/L WASH SW	[ON/OFF]	Displays status (Headlamp washer switch: ON/Others: OFF) as judged from headlamp washer switch signal.
ENGINE STATUS	[STOP/ STALL/ RUN/ CRA]	Displays status (Engine stop: STOP/engine stall: STALL/engine running: RUN/engine cranking: CRA) as judged from the engine status.

ACTIVE TEST

Test item	CONSULT-II screen display	Description
Tail lamp relay output	TAIL LAMP	Tail lamp relay can be operated by any ON–OFF operation.
Headlamp relay output	HEAD LAMP	Headlamp relay can be operated by any ON–OFF operation.
Front fog lamp relay output	FR FOG LAMP	Front fog lamp relay can be operated by any ON–OFF operation.
Rear fog lamp relay output	RR FOG LAMP	Rear fog lamp relay can be operated by any ON–OFF operation.

CONSULT-II Functions (IPDM E/R)

BKS001LC

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

Diagnosis Mode	Description
SELF-DIAGNOSTIC RESULTS	Refer to PG-20, "SELF-DIAG RESULTS" .
DATA MONITOR	The input/output data of IPDM E/R is displayed in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	IPDM E/R sends a drive signal to electronic components to check their operation.

CONSULT-II INSPECTION PROCEDURE

Refer to GI-36, "CONSULT-II Start Procedure" .

CONSULT-II Application Items (IPDM E/R)

BKS001M0

DATA MONITOR

All Signals, Main Signals, Selection From Menu

Monitor item name	Display and unit	Monitor item selection			Display content
		All signals	Main signals	selection from menu	
TAIL & CLR REQ	ON/OFF	×	×	×	Signal status input from BCM
HL LO REQ	ON/OFF	×	×	×	Signal status input from BCM
HL HI REQ	ON/OFF	×	×	×	Signal status input from BCM
FR FOG REQ	ON/OFF	×	×	×	Signal status input from BCM
IGN RLY	ON/OFF	×	×	×	Status of ignition relay being monitored by IPDM E/R

ACTIVE TEST

Test item	CONSULT-II screen display	Description
Headlamp relay (HI, LO) output	HEAD LAMP	Headlamp relay (LO, HI) can be operated using random operation (OFF, HI ON, LO ON).
Front fog lamp relay output	FRONT FOG LAMP	Fog lamp relay can be operated by any ON–OFF operation.
Tail lamp relay output	TAIL LAMP	Tail lamp relay can be operated by any ON–OFF operation.

Headlamp High Beam Does Not Illuminate (Both Sides)

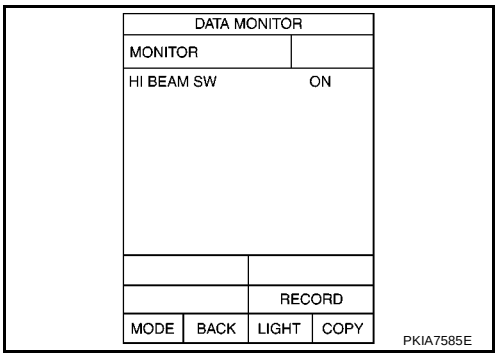
BKS001CT

1. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

1. Select “BCM” on CONSULT-II. Select “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure that “HI BEAM SW” turns ON-OFF linked with operation of lighting switch.

When lighting switch is high position : HI BEAM SW ON



Without CONSULT-II

Refer to LT-125, "Combination Switch Inspection" .

OK or NG

OK >> GO TO 2.

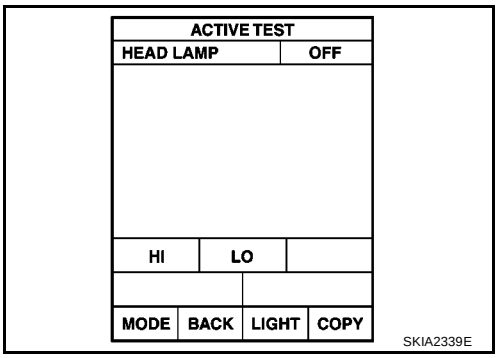
NG >> Check combination switch (lighting switch). Refer to LT-125, "Combination Switch Inspection" .

2. HEADLAMP ACTIVE TEST

With CONSULT-II

1. Select “IPDM E/R” on CONSULT-II. Select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Select “HEADLAMP” on “SELECT TEST ITEM” screen.
3. Touch “HI” screen.
4. Make sure headlamp high beam operates.

Headlamp high beam should operate



Without CONSULT-II

1. Start auto active test. Refer to PG-22, "Auto Active Test" .
2. Make sure headlamp high beam operates.

Headlamp high beam should operate.

OK or NG

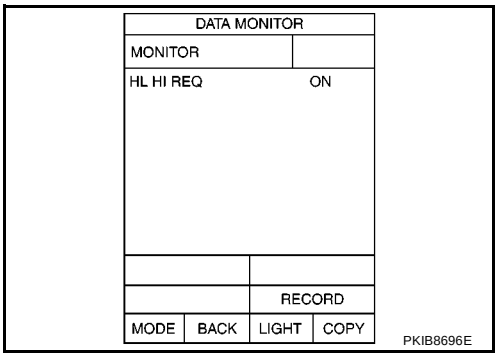
OK >> GO TO 3.

NG >> GO TO 4.

3. CHECK IPDM E/R

1. Select “IPDM E/R” on CONSULT-II. Select “DATA MONITOR” on “SELECT DIAG MODE” screen.
2. Make sure “HL HI REQ” turns ON when lighting switch is in high position.

When lighting switch is high position : HL HI REQ ON



OK or NG

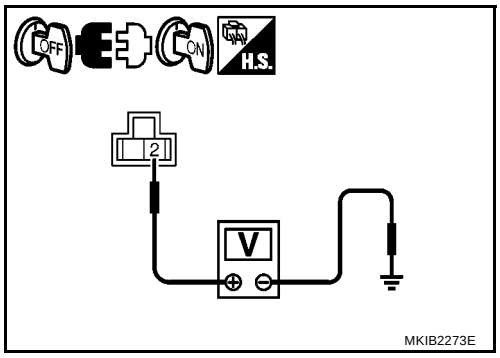
OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .

NG >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .

4. CHECK HEADLAMP INPUT SIGNAL

With CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect headlamp RH and LH connector.
3. Select “IPDM E/R” on CONSULT-II. Select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
4. Select “HEADLAMP” on “SELECT TEST ITEM” screen.
5. Touch “HI” screen.
6. When headlamp high beam is operating, check voltage between headlamp RH and LH harness connector and ground.



Terminal				Voltage
(+)			(–)	
Headlamp connector		Terminal		
RH	E26	2	Ground	Battery voltage
LH	E46			

Without CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect headlamp RH and LH connector.
3. Start auto active test. Refer to PG-22, "Auto Active Test" .
4. When headlamp high beam is operating, check voltage between headlamp RH and LH harness connector and ground.

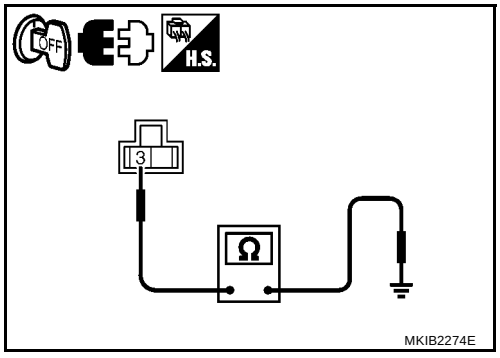
Terminal				Voltage
(+)			(–)	
Headlamp connector		Terminal		
RH	E26	2	Ground	Battery voltage
LH	E46			

OK or NG

OK >> GO TO 5.
NG >> GO TO 6.

5. CHECK HEADLAMP GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between headlamp RH and LH harness connector and ground.



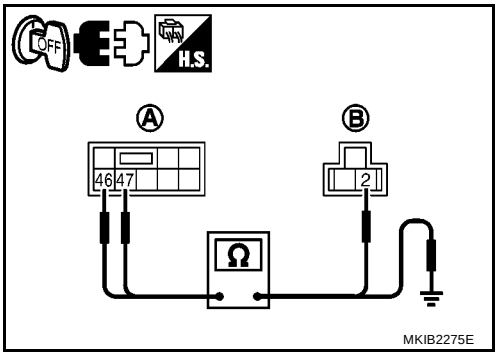
Headlamp connector		Terminal	Ground	Continuity
RH	E26	3		Yes
LH	E46			

OK or NG

OK >> Check headlamp bulb.
NG >> Repair harness or connector.

6. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector (A) and headlamp RH and LH harness connector (B).



MKIB2275E

Circuit	A		B		Continuity
	Connector	Terminal	Connector	Terminal	
RH	E8	46	E26	2	Yes
LH		47	E46		

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

Circuit	A		Ground	Continuity
	Connector	Terminal		
RH	E8	46		No
LH		47		

OK or NG

OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

Headlamp High Beam Does Not Illuminate (One Side)

BKS001CU

1. CHECK BULB

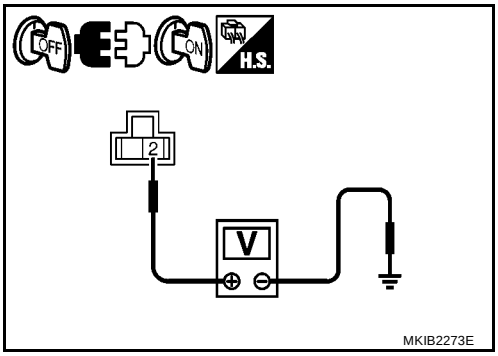
Check headlamp bulb which does not illuminate.

OK or NG

OK >> GO TO 2.
NG >> Replace bulb.

2. CHECK HEADLAMP INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect headlamp RH or LH connector.
3. Turn ignition switch ON.
4. Lighting switch is turned to HIGH position.
5. Check voltage between headlamp RH or LH harness connector and ground.



MKIB2273E

Terminal				Voltage
(+)			(–)	
Headlamp connector		Terminal		
RH	E26	2	Ground	Battery voltage
LH	E46			

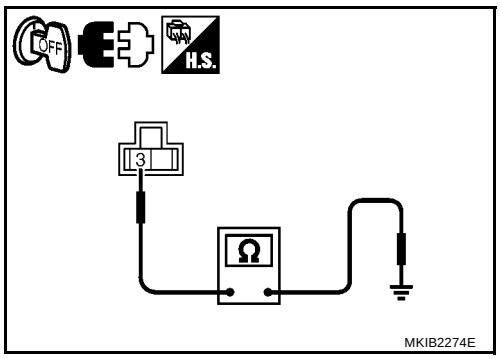
OK or NG

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

3. CHECK HEADLAMP GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between headlamp RH or LH harness connector and ground.

Headlamp connector		Terminal	Ground	Continuity
RH	E26	3		Yes
LH	E46			



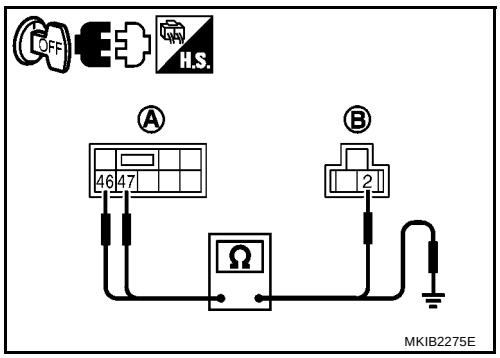
OK or NG

OK >> Check connecting condition headlamp harness connector.
NG >> Repair harness or connector.

4. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector (A) and headlamp RH or LH harness connector (B).

Circuit	A		B		Continuity
	Connector	Terminal	Connector	Terminal	
RH	E8	46	E26	2	Yes
LH		47	E46		



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

Circuit	A		Ground	Continuity
	Connector	Terminal		
RH	E8	46		No
LH		47		

OK or NG

OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

Headlamp Low Beam Does Not Illuminate (Both Sides)

BKS001CV

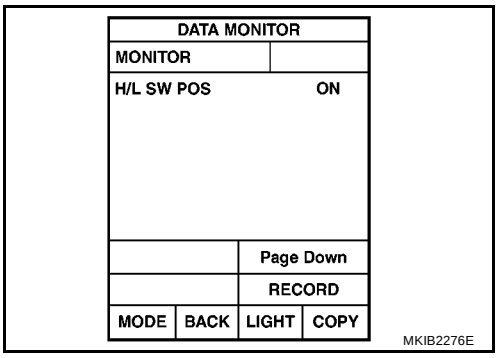
1. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

1. Select “BCM” on CONSULT-II. Select “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure that “H/L SW POS” turns ON-OFF linked with operation of lighting switch.

When lighting switch is 2nd position : H/L SW POS ON

When lighting switch is OFF position : H/L SW POS OFF



Without CONSULT-II

Refer to LT-125, "Combination Switch Inspection" .

OK or NG

OK >> GO TO 2.

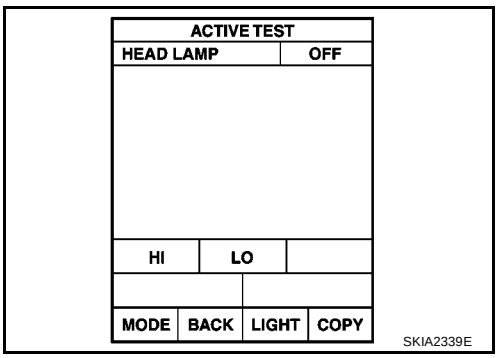
NG >> Check combination switch (lighting switch). Refer to LT-125, "Combination Switch Inspection" .

2. CHECK HEADLAMP ACTIVE TEST

With CONSULT-II

1. Select “IPDM E/R” on CONSULT-II. Select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Select “HEADLAMP” on “SELECT TEST ITEM” screen.
3. Touch “LO” screen.
4. Make sure headlamp low beam operates.

Headlamp low beam should operate.



Without CONSULT-II

1. Start auto active test. Refer to PG-22, "Auto Active Test" .
2. Make sure headlamp low beam operates.

Headlamp low beam should operate.

OK or NG

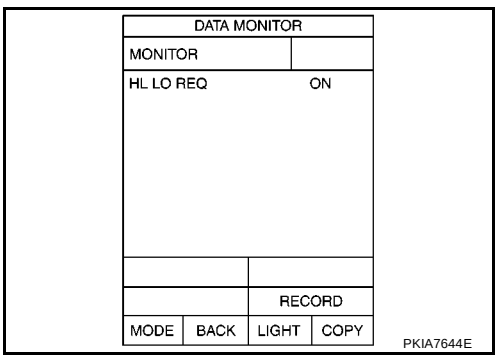
OK >> GO TO 3.

NG >> GO TO 4.

3. CHECK IPDM E/R

1. Select “IPDM E/R” on CONSULT-II. 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 2ND position : HL LO REQ ON



OK or NG

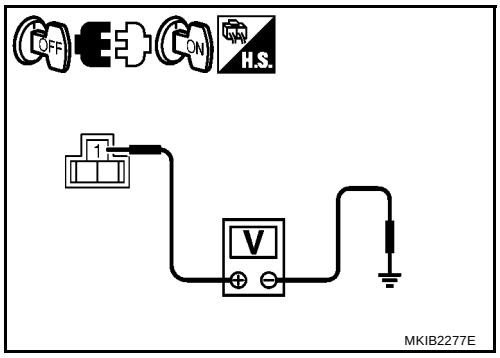
OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .

NG >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .

4. CHECK HEADLAMP INPUT SIGNAL

With CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect headlamp RH and LH connector.
3. Select “IPDM E/R” on CONSULT-II. Select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
4. Select “HEADLAMP” on “SELECT TEST ITEM” screen.
5. Touch “LO” screen.
6. When headlamp low beam is operating, check voltage between headlamp RH and LH harness connector and ground.



Terminal				Voltage
(+)			(–)	
Headlamp connector		Terminal		
RH	E26	1	Ground	Battery voltage
LH	E46			

Without CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect headlamp RH and LH connector.
3. Start auto active test. Refer to PG-22, "Auto Active Test" .
4. When headlamp low beam is operating, check voltage between headlamp RH and LH harness connector and ground.

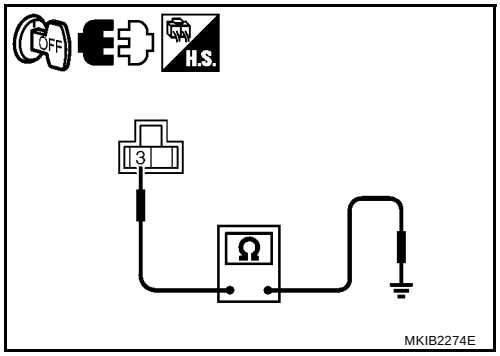
Terminal				Voltage
(+)			(–)	
Headlamp connector		Terminal		
RH	E26	1	Ground	Battery voltage
LH	E46			

OK or NG

OK >> GO TO 5.
NG >> GO TO 6.

5. CHECK HEADLAMP GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between headlamp RH and LH harness connector and ground.



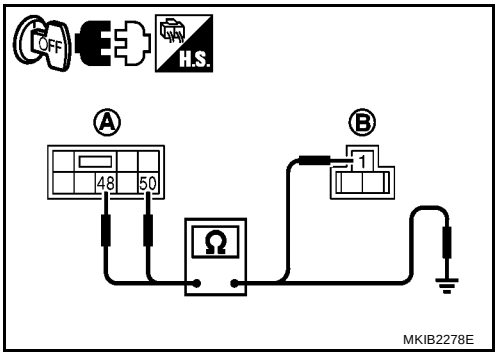
Headlamp connector		Terminal		Continuity
RH	E26	3	Ground	Yes
LH	E46			

OK or NG

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

6. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector (A) and headlamp RH or LH harness connector (B).



Circuit	A		B		Continuity
	Connector	Terminal	Connector	Terminal	
RH	E8	48	E26	1	Yes
LH		50	E46		

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

Circuit	A		Ground	Continuity
	Connector	Terminal		
RH	E8	48		No
LH		50		

OK or NG

OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

Headlamp Low Beam Does Not Illuminate (One Side)

BKS001CW

1. CHECK BULB

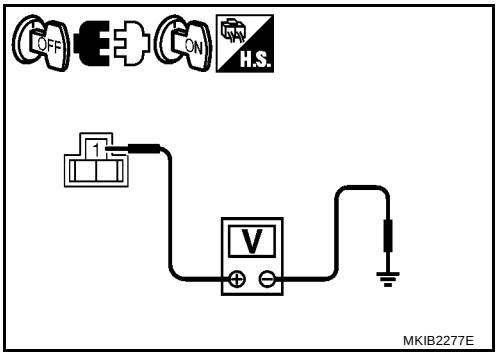
Check bulb of headlamp which does not illuminate.

OK or NG

OK >> GO TO 2.
NG >> Replace bulb.

2. CHECK HEADLAMP INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect headlamp RH or LH connector.
3. Turn ignition switch ON.
4. Lighting switch is turned to 2ND position.
5. Check voltage between headlamp RH or LH harness connector and ground.



Terminal				Voltage
(+)			(–)	
Headlamp connector		Terminal		
RH	E26	1	Ground	Battery voltage
LH	E46			

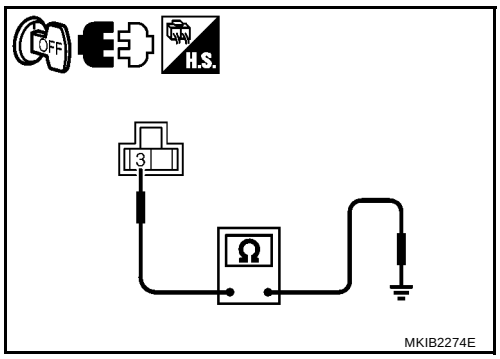
OK or NG

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

3. CHECK HEADLAMP GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between headlamp RH or LH harness connector and ground.

Headlamp connector		Terminal	Ground	Continuity
RH	E26	3		Yes
LH	E46			



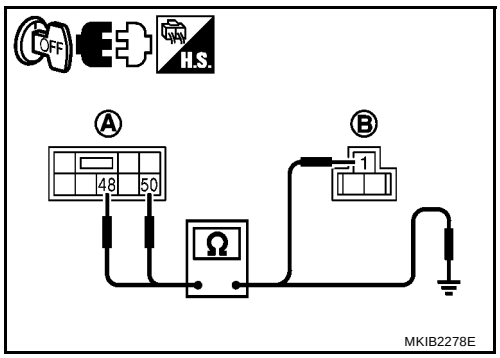
OK or NG

OK >> Check connecting condition headlamp harness connector.
NG >> Repair harness or connector.

4. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector (A) and headlamp RH or LH harness connector (B).

Circuit	A		B		Continuity
	Connector	Terminal	Connector	Terminal	
RH	E8	48	E26	1	Yes
LH		50	E46		



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

Circuit	A		Ground	Continuity
	Connector	Terminal		
RH	E8	48		No
LH		50		

OK or NG

OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

Headlamps Do Not Turn OFF

BKS001CX

1. CHECK HEADLAMP TURN OFF

Make sure that lighting switch is OFF. And make sure headlamp turns off when ignition switch is turned OFF.

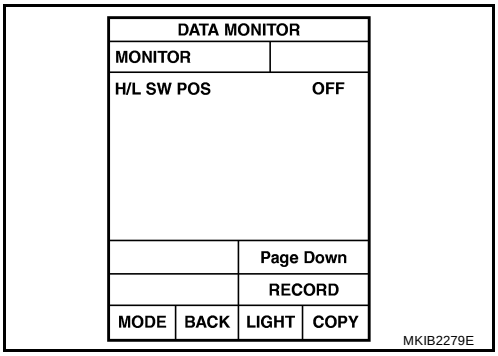
OK or NG

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

2. CHECK COMBINATION SWITCH INPUT SIGNAL

1. Select “BCM” on CONSULT-II. Select “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure that “H/L SW POS” and “HEAD LAMP SW 2” turns ON-OFF linked with operation of lighting switch.

When lighting switch is OFF position : H/L SW POS OFF



OK or NG

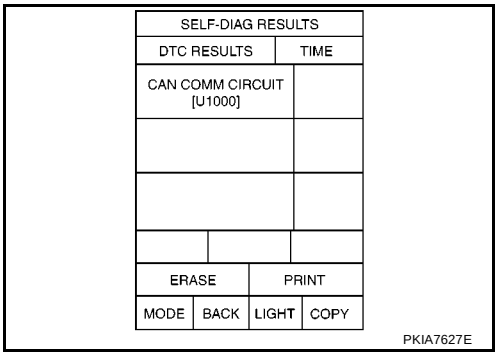
OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .
NG >> Check combination switch (lighting switch). Refer to LT-125, "Combination Switch Inspection" .

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

Select “BCM” on CONSULT-II, and perform self-diagnosis for “BCM”.

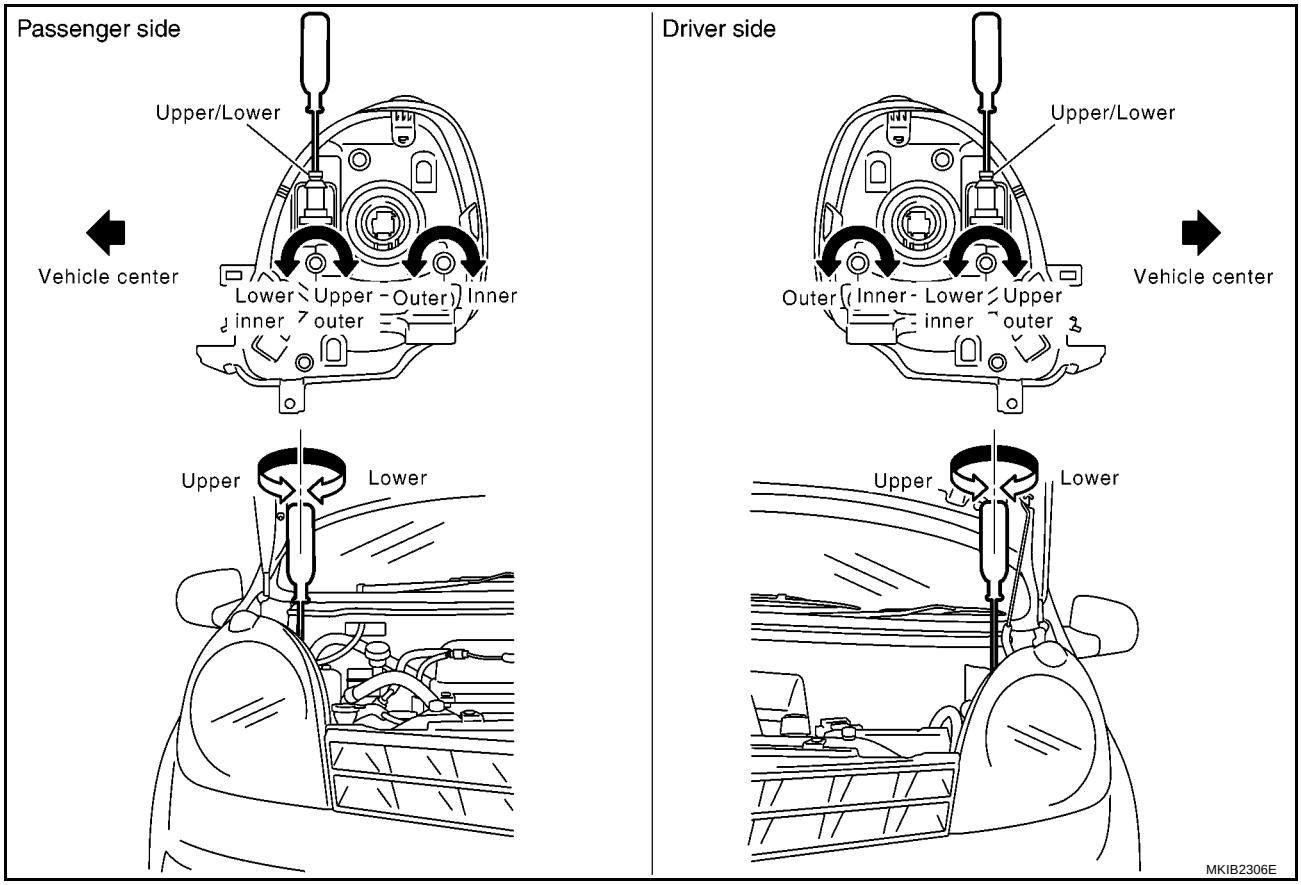
Display of self-diagnosis results

NO DTC>> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .
CAN COMM CIRCUIT>> Refer to BCS-17, "CAN Communication Inspection With CONSULT-II (Self-Diagnosis)" .



Aiming Adjustment

BKS001M7



- Turn the aiming adjusting screw to adjust.
- For positions of the adjustment screws, refer to the figures.

CAUTION:

Adjustment with the aiming adjusting screw must be done in the tightening direction. (When adjusting in the loosening direction, first loosen the screw, then tighten again.)

PREPARATION BEFORE ADJUSTING

For details, refer to the regulations in your own country.

Before performing aiming adjustment, check the following.

1. Keep all tires inflated to correct pressures.
2. Place vehicle on flat surface.
3. Set that there is no-load in vehicle other than the driver (or equivalent weight placed in driver's position). Coolant, engine oil filled up to correct level and full fuel tank.

LOW BEAM AND HIGH BEAM

NOTE:

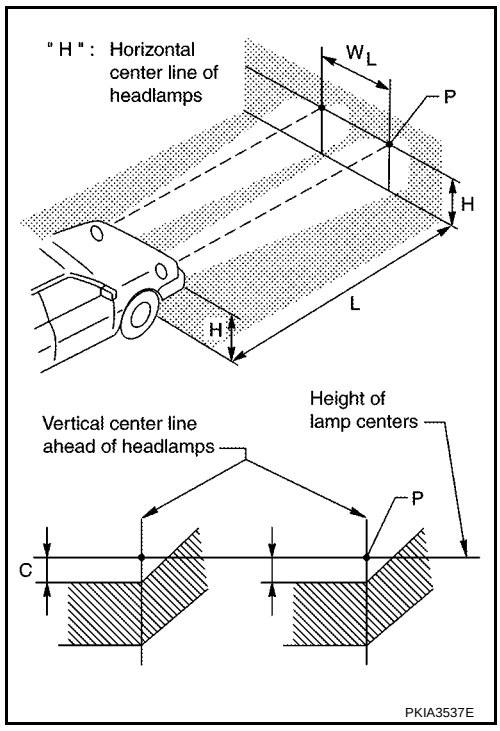
Aim each headlamp individually and ensure other headlamp beam pattern is blocked from screen.

1. Turn headlamp low beam ON.
2. Use adjusting screws to perform aiming adjustment.
   - First tighten the adjusting screw all the way and then make adjustment by loosening the screw. If the vehicle front body has been repaired and/or the headlamp assembly has been replaced, check aiming. Use the aiming chart shown in the figure.

- Adjust headlamps so that main axis of light is parallel to center line of body and is aligned with point P shown in illustration.
- Figure shows headlamp aiming pattern for driving on right side of road; for driving on left side of road, aiming pattern is reversed.
- Dotted lines to point P in illustration show center of headlamp.

“H” : Horizontal center line of headlamps
“W_L ” : Distance between each headlamp center
“L” : 25,000 mm (984.25 in)
“C” : 250 mm (9.84 in) – 310 mm (12.20 in)

- Elbow point for LHD models must be in 300 mm (11.81 in) to the right form point P.
  Elbow point for RHD models must be in 300 mm (11.81 in) to the left form point P.
- Basic illuminating area for adjustment should be within the range shown in the figure. Adjust headlamps accordingly.



CAUTION:
Be sure aiming switch is set to “0” when preforming aiming adjustment.

Bulb Replacement

BKS001CZ

CAUTION:

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

HEADLAMP (HIGH/LOW)

1. Turn lighting switch OFF.
2. Remove the socket connected to the bulb.
3. Remove back cover.
4. Unlock retaining spring and remove bulb from headlamp.

Headlamp (High/Low) : 12V - 60/55W (H4)

PARKING (CLEARANCE) LAMP

1. Turn lighting switch OFF.
2. Turn bulb socket counterclockwise and unlock it.
3. Remove bulb from its socket.

Parking (Clearance) lamp : 12V - 5W

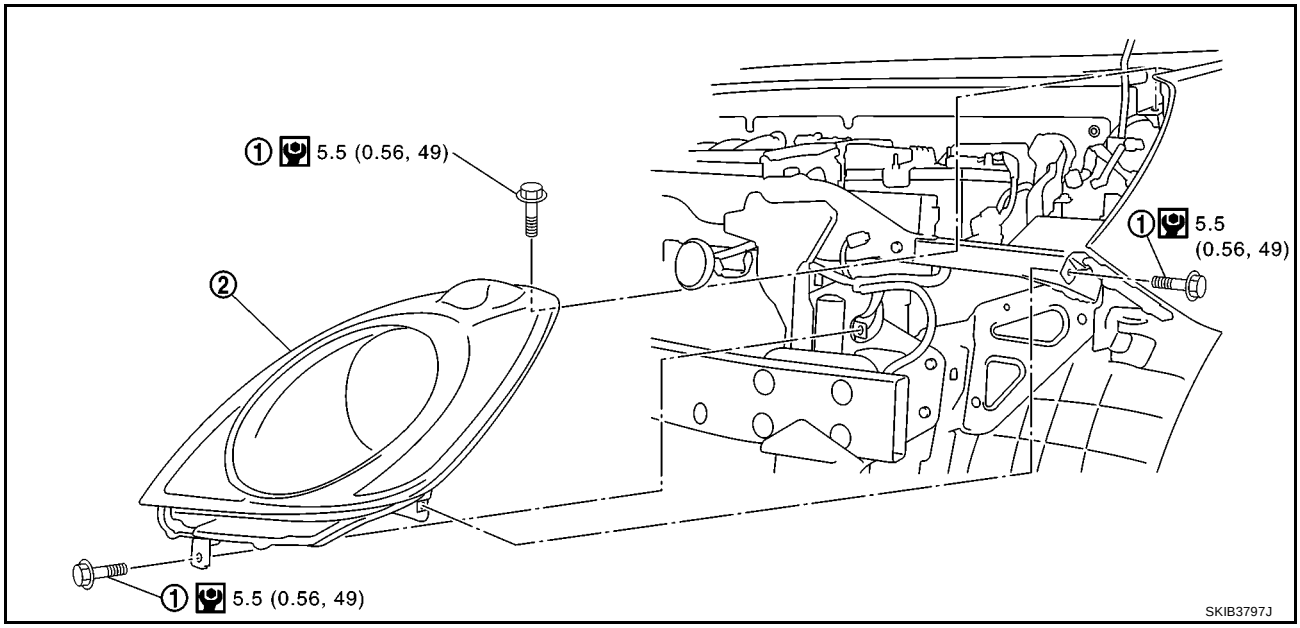
FRONT TURN SIGNAL LAMP

1. Turn lighting switch OFF.
2. Turn bulb socket counterclockwise and unlock it.
3. Remove bulb from its socket.

Front turn signal lamp : 12V - 21W (amber)

Removal and Installation

BKS001D0



1. Bolt
2. Headlamp

REMOVAL

1. Disconnect the battery cable from the negative terminal.
2. Remove front bumper. Refer to EI-4, "FRONT BUMPER" .
3. Remove headlamp mounting bolts.
4. Pull headlamp toward the vehicle front, disconnect connector, and remove headlamp.

CAUTION:

When removing headlamps, put a shop cloth or something similar between headlamps and bumper to protect bumper.

INSTALLATION

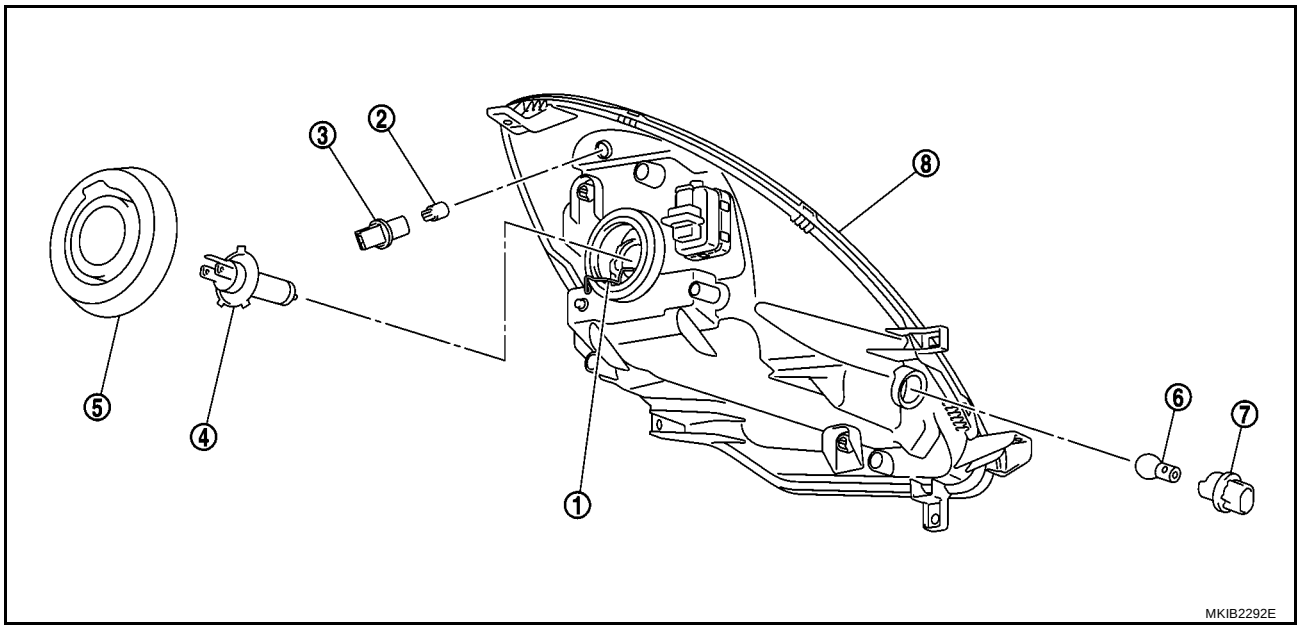
Installation is the reverse order of removal.

Headlamp mounting bolt : **5.5 N·m (0.56 kg-m, 49 in-lb)**

NOTE:
After installation, perform aiming adjustment. Refer to LT-30, "Aiming Adjustment" .

Disassembly and Assembly

BKS001D1



1. Retaining spring
2. Parking (clearance) lamp bulb
3. Parking (clearance) lamp bulb socket
4. Halogen bulb (High/Low)
5. Back cover
6. Front turn signal lamp bulb
7. Front turn signal lamp bulb socket
8. Headlamp housing assembly

DISASSEMBLY

1. Disconnect the socket connected to the bulb (High/low).
2. Remove back cover.
3. Unlock retaining spring and remove bulb (High/Low).
4. Turn parking (clearance) lamp bulb socket counterclockwise and unlock it.
5. Remove parking (clearance) lamp bulb from its socket.
6. Turn front turn signal lamp bulb socket counterclockwise and unlock it.
7. Remove front turn signal lamp bulb from its socket.

ASSEMBLY

Assembly is the reverse order of disassembly.

CAUTION:

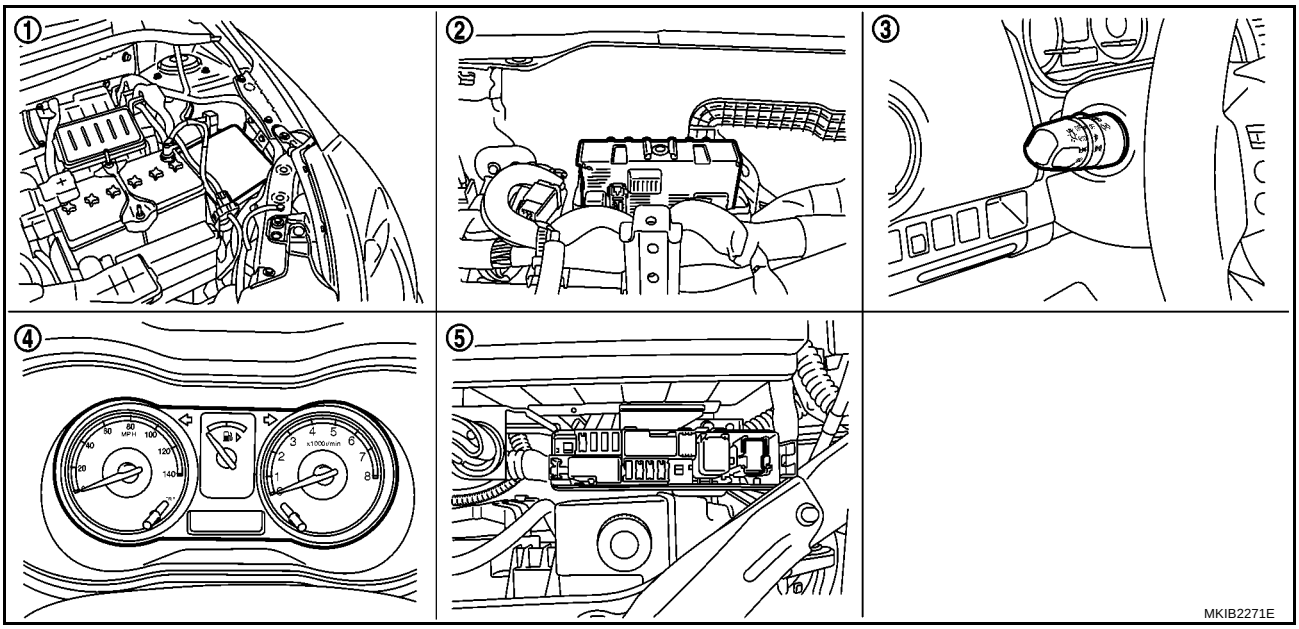
- **After installing bulb, be sure to install plastic cap and bulb socket securely to insure watertightness.**

HEADLAMP - DAYTIME LIGHT SYSTEM -

PFP:26010

Component Parts and Harness Connector Location

BKS001D2



1. IPDM E/R E8,E11,E12
2. BCM M57,M59 (View with instrument upper panel removed)
3. Combination switch M38
4. Combination meter M27
5. Daytime light relay E54

System Description

BKS001D3

DAYTIME LIGHT SYSTEM turns on daytime light lamps while engine is running.
Engine run or stop signal are sent to BCM (body control module) by CAN communication line, and control daytime light system.

OUTLINE

Power is supplied at all times

- to ignition relay (located in IPDM E/R),
- to headlamp high RH and LH relay (located in IPDM E/R)
- to headlamp low relay (located in IPDM E/R) from battery directly,
- through 20A fuse (No. 61, located in IPDM E/R),
- through 20A fuse (No. 62, located in IPDM E/R),
- through 40A fusible link (letter J, located in fuse and fusible link block)
- to BCM terminals 74 and 79,
- through 10A fuse [No. 7, located in fuse block (J/B)]
- to combination meter terminal 27,
- through 10A fuse (No. 37, located in fuse and fusible link block)
- to daytime light relay terminals 1 and 5.

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

- to ignition relay (located in IPDM E/R),
- through 10A fuse [No. 5, located in fuse block (J/B)]
- to BCM terminal 24,
- through 10A fuse [No. 4, located in fuse block (J/B)]
- to combination meter terminal 28.

Ground is supplied

- to BCM terminals 2 and 70
- to combination meter terminals 21, 22, and 23
- through grounds E21 and M66,

- to IPDM E/R terminals 3 and 54
- through grounds E45 (CR and HR engine models), E28 and E44.

HEADLAMP OPERATION

Low Beam Operation

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

- through 15A fuse (No. 50, located in IPDM E/R)
- through IPDM E/R terminal 48
- to headlamp RH terminal 1,
- through 15A fuse (No. 49, located in IPDM E/R)
- through IPDM E/R terminal 50
- to headlamp LH terminal 1.

Ground is supplied

- to headlamp RH terminals 3
- through daytime light relay terminal 3 and 4,
- to headlamp LH terminal 3
- through grounds E45 (CR and HR engine models), E28 and E44.

With power and ground supplied, low beam headlamps illuminate.

High Beam Operation (When Daytime Light Does Not Operate)/Flash-to-Pass Operation

With the lighting switch in 2ND position and placed in HIGH BEAM or PASSING position, the BCM receives input signal requesting headlamp high beams to illuminate. High beam request signal is communicated to the IPDM E/R across the CAN communication lines. The CPU located in the IPDM E/R controls headlamp high relay coil and low relay coil, which when energized, directs power

- through 10A fuse (No. 43, located in IPDM E/R)
- through IPDM E/R terminal 46
- through headlamp RH terminals 2
- through 10A fuse (No. 44, located in IPDM E/R)
- through IPDM E/R terminal 47
- to headlamp LH terminal 2,
- through 15A fuse (No. 50, located in IPDM E/R)
- through IPDM E/R terminal 48
- to headlamp RH terminal 1,
- through 15A fuse (No. 49, located in IPDM E/R)
- through IPDM E/R terminal 50
- to headlamp LH terminal 1.

Ground is supplied

- to headlamp RH terminal 3
- to daytime light relay terminals 3and 4
- to headlamp LH terminal 3
- through grounds E45 (CR and HR engine models), E28 and E44.

With the power and ground supplied, the headlamp high beam and low headlamp illuminate.
High beam indicator illuminates when combination meter receives input signal requesting high beam indicator to illuminate. This is communicated to BCM across the CAN communication lines.

DAYTIME LIGHT OPERATION

With the engine running, the lighting switch in the OFF or AUTO position (headlamp is not illuminate) and parking brake released, the IPDM E/R receives input request signal from BCM to turn on daytime light. This input is communicated across the CAN communication lines. The CPU of the IPDM E/R controls the daytime light relay coil. When energized, this relay directs power

- through 10A fuse (No. 37, located in fuse and fusible link block)
- through daytime light relay terminals 5 and 3
- through headlamp RH terminals 3 and 1
- through IPDM E/R terminal 48
- through 15A fuse (No. 50, located in IPDM E/R)
- through 15A fuse (No. 49, located in IPDM E/R)
- through IPDM E/R terminal 50
- to headlamp LH terminal 1.

Ground is supplied

- to headlamp LH terminal 3
- through grounds E45 (CR and HR engine models), E28 and E44.

Because the low beam headlamps are now wired in series, they operate at half illumination.
If the lighting switch is in the 1st and 2nd position, daytime light operation is canceled.

COMBINATION SWITCH READING FUNCTION

Refer to LT-114, "COMBINATION SWITCH READING FUNCTION" .

AUTO LIGHT OPERATION

Refer to LT-52, "System Description" .

FRIENDRY LIGHTING FUNCTION

Low beam headlamps will illuminate for 30 seconds when,

- ignition switch is in OFF position,
- lighting switch is placed in OFF position, and
- lighting switch is placed in PASS position.

Each activation of the switch adds 30 seconds to a maximum of 2 minutes.

EXTERIOR LAMP BATTERY SAVER CONTROL

To avoid flat battery caused by user leaving exterior lamps ON. When ignition is OFF and the driver side door is opened, all exterior lamps will be turned OFF. If the user wants some lamps to remain ON then they must switch these lamps OFF then ON again with the combination switch once the driver side door has been opened. A buzzer will sound if any exterior lamps are ON with the driver side door opened and ignition OFF.
*:This setting can be changed by CONSULT-II. Refer to LT-45, "WORK SUPPORT" .

FAIL-SAFE FUNCTION

When CAN communication with other control units is impossible, IPDM E/R performs fail-safe control. If the fail-safe system is operating, headlamps illuminate when the ignition switch is turned from OFF to ON and headlamps are turned off when the ignition switch is turn from ON to OFF. If the fail-safe system is operating, headlamps does not operate when the combination switch is in any position. After CAN communication recovers normally, it also returns to normal control. (Refer to PG-18, "Fail-safe Control" .)

CAN Communication System Description

BKS001M4

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

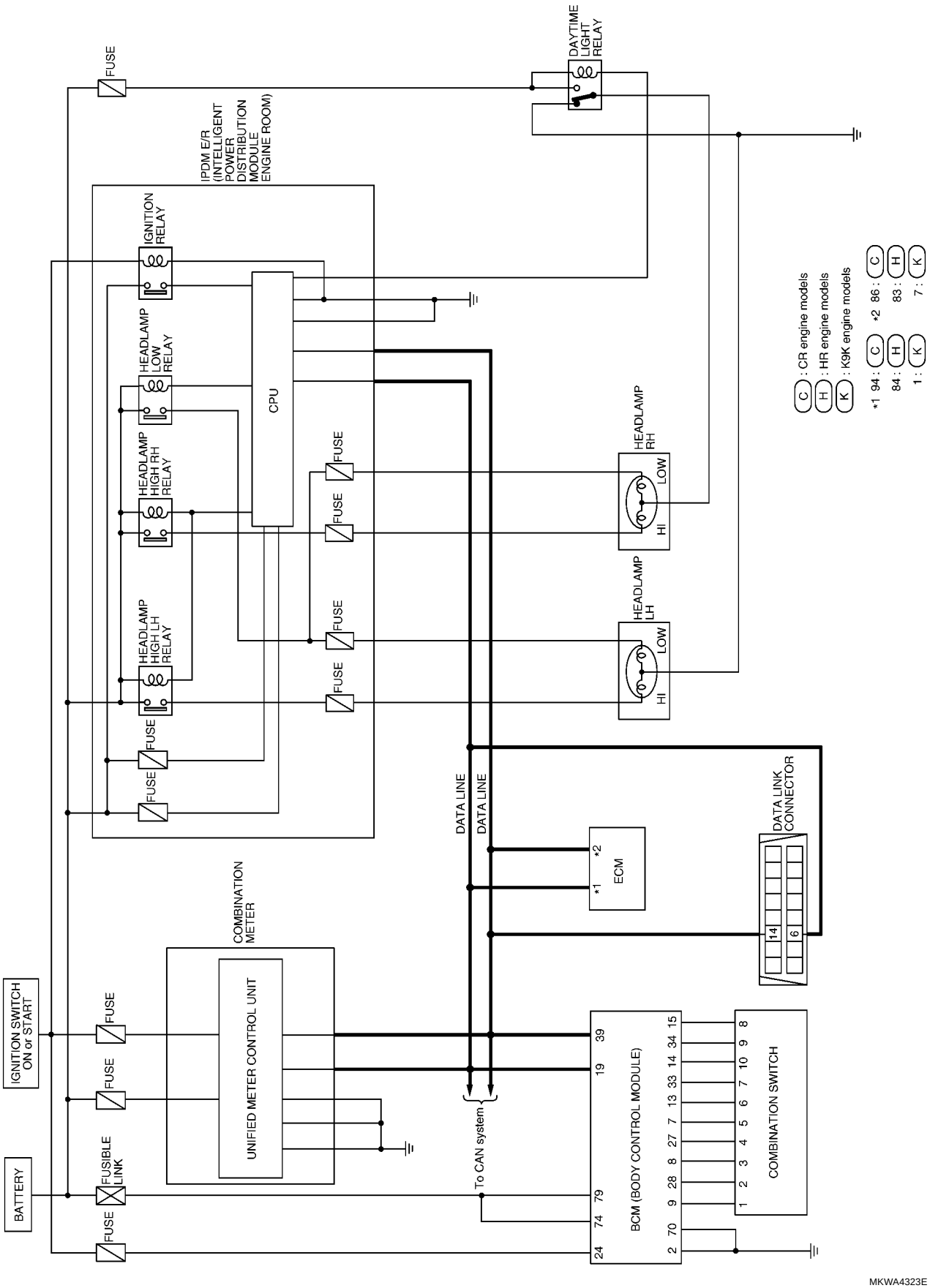
CAN Communication Unit

BKS001M5

Refer to LAN-27, "CAN Communication Unit" .

Schematic

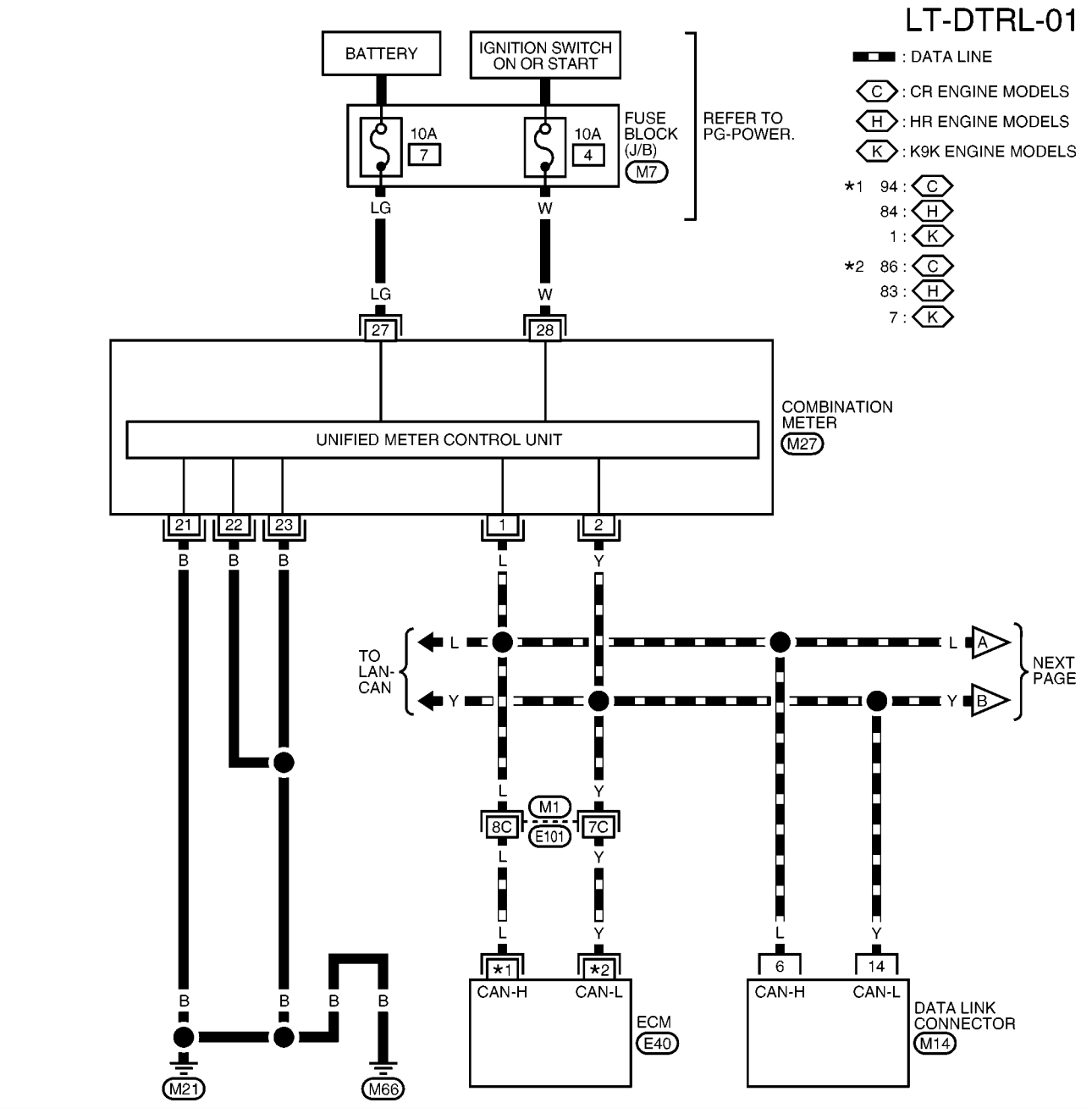
BKS001D5

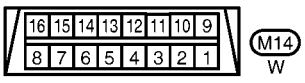


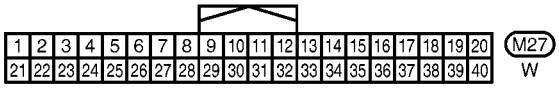
MKWA4323E

Wiring Diagram — DTRL —

BKS001D6

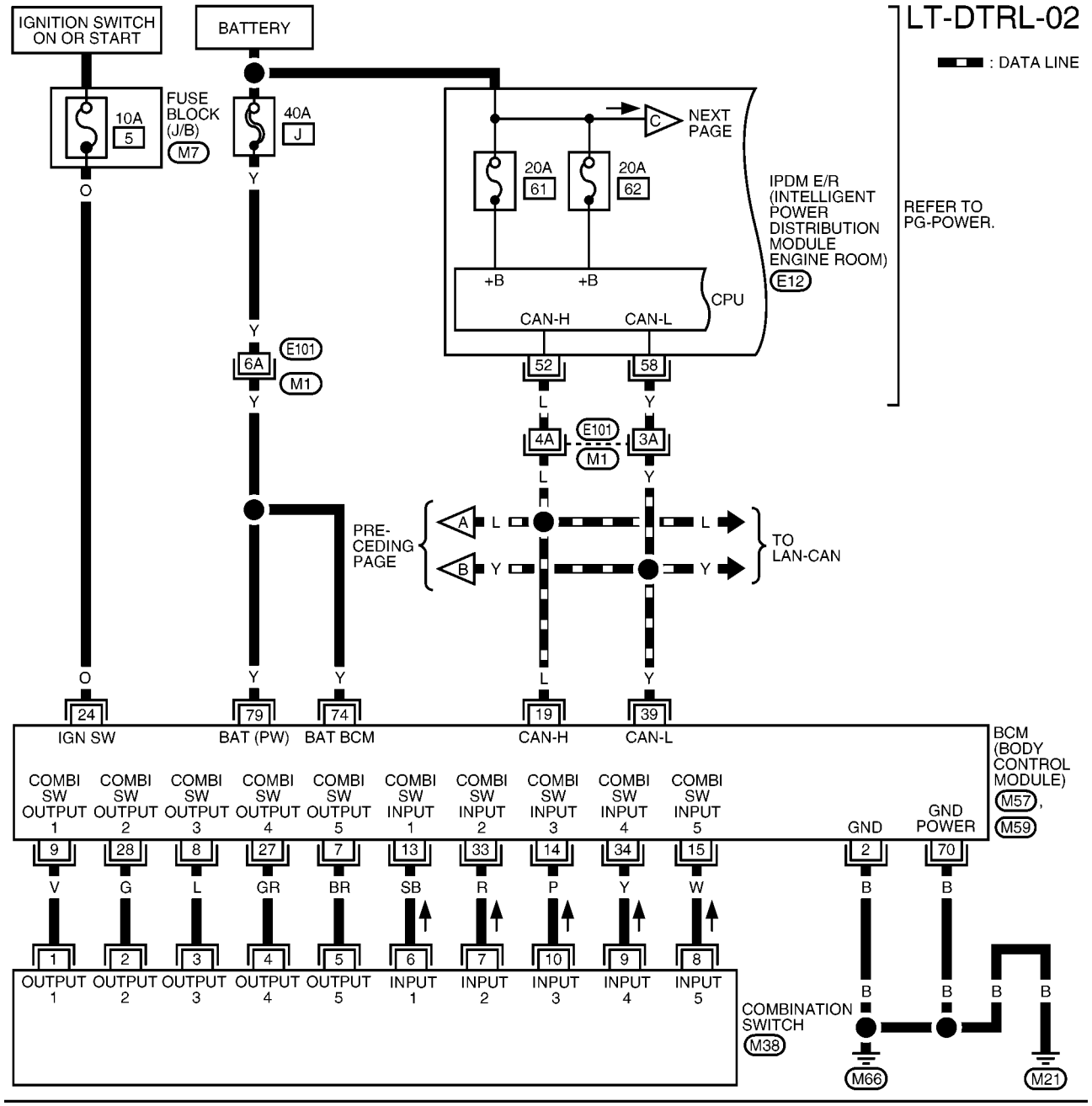


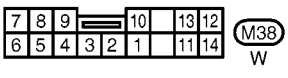


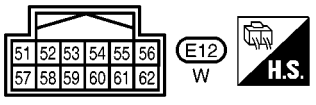


REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M7 - FUSE BLOCK - JUNCTION BOX (J/B)
E40 - ELECTRICAL UNITS

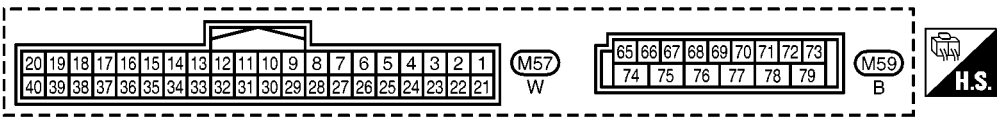
MKWA4324E



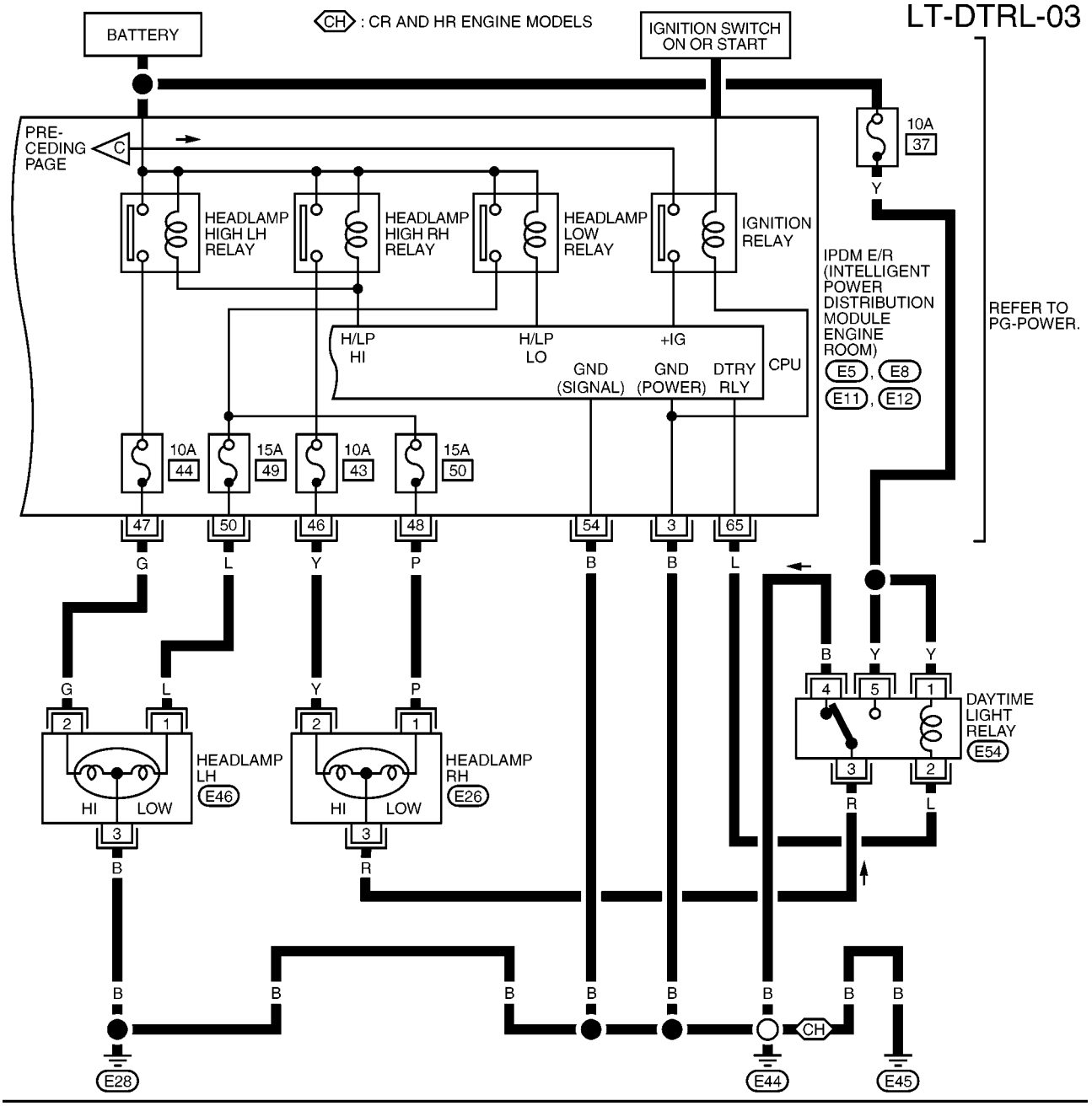


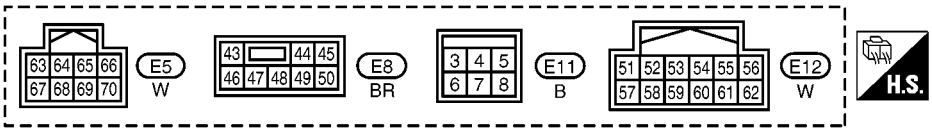


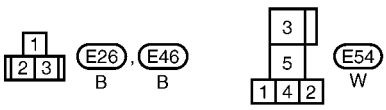
REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M7 - FUSE BLOCK - JUNCTION BOX (J/B)



MKWA4325E


LT-DTRL-03
BATTERY
CH : CR AND HR ENGINE MODELS
IGNITION SWITCH ON OR START
PRE-CEDING PAGE
C
10A 37
HEADLAMP HIGH LH RELAY
HEADLAMP HIGH RH RELAY
HEADLAMP LOW RELAY
IGNITION RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E5, E8 E11, E12
REFER TO PG-POWER.
H/LP HI
H/LP LO
+IG
GND (SIGNAL)
GND (POWER)
DTRY RLY
CPU
10A 44
15A 49
10A 43
15A 50
47
50
46
48
54
3
65
G
L
Y
P
B
B
L
B
Y
Y
DAYTIME LIGHT RELAY E54
HEADLAMP LH E46
HEADLAMP RH E26
HI
LOW
R
L
CH
E28
E44
E45


E5 W
E8 BR
E11 B
E12 W
H.S.


E26, E46 B B
E54 W

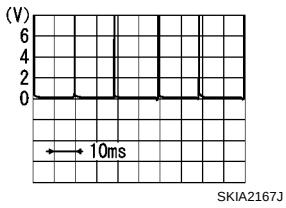
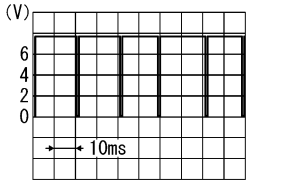
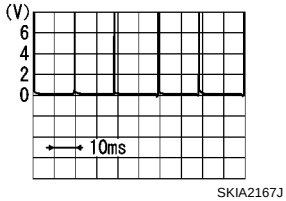
MKWA4326E

Terminals and Reference Values for BCM

BKS001D7

CAUTION:

- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to LT-45, "DATA MONITOR" .**

Terminal No.	Wire color	Signal designation	Signal input/ output	Measuring condition		Voltage [V] (Approx.)
				Ignition switch	Operation or condition	
2	B	Ground	—	ON	—	0
13	SB	Combination switch input 1	Input	ON	Headlamps, turn signal, wipers OFF	 SKIA2167J
14	P	Combination switch input 3				
15	W	Combination switch input 5				
33	R	Combination switch input 2				
34	Y	Combination switch input 4				
7	BR	Combination switch output 5	Output	ON	Headlamps, turn signal, wipers OFF (wiper volume is 1 or 7)	 SKIA2166J
8	L	Combination switch output 3				
9	V	Combination switch output 1				
27	GR	Combination switch output 4			Headlamps, turn signal, wipers OFF (wiper volume is other than 1 or 7)	 SKIA2167J
28	G	Combination switch output 2				
19	L	CAN- H	Input/ Output	ON	—	Approx. 2.6V
24	O	Ignition power supply	Input	ON	—	Battery voltage
39	Y	CAN- L	Input/ Output	ON	—	Approx. 2.4V
70	B	Ground	—	ON	—	0
74 79	Y	Battery power supply	Input	OFF	—	Battery voltage

Terminals and Reference Values for IPDM E/R

BKS001D8

Terminal No.	Wire color	Signal designation	Signal input/ output	Measuring condition			Voltage [V] (Approx.)
				Ignition switch	Operation or condition		
3	B	Ground	—	ON	—		0
46	Y	Headlamp HI (RH)	Output	ON	Lighting switch (high beam)	ON	Battery voltage
47	G	Headlamp HI (LH)		ON		OFF	0
48	P	Headlamp LO (RH)		ON	Lighting switch (low beam)	ON	Battery voltage
50	L	Headlamp LO (LH)		ON		OFF	0
52	L	CAN- H	Input/ Output	—	—		—
54	B	Ground	—	ON	—		0
58	Y	CAH- L	Input/ Output	—	—		—
65	L	Daytime light relay	Input	ON	Engine status (Lighting switch OFF)	RUNNING	0
						STOP	Battery voltage

How to Perform Trouble Diagnosis

BKS001D9

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-35, "System Description" .
3. Perform the Preliminary Check. Refer to LT-44, "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

BKS001DA

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES

Check for blown fuses or fusible link.

Unit	Power source	Fuse No.
BCM	Battery	J
	Ignition switch ON or START position	5
IPDM E/R	Battery	43
		44
		49
		50
		61
		62

Refer to LT-39, "Wiring Diagram — DTRL —" .

OK or NG

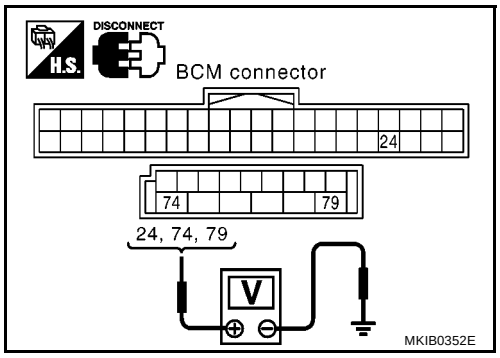
OK >> GO TO 2.

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

2. CHECK POWER SUPPLY CIRCUIT

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

Terminal			Ignition switch position		
(+)		(–)	OFF	ACC	ON
BCM Connector	Terminal				
M57	24	Ground	Approx. 0V	Approx. 0V	Battery voltage
M59	74		Battery voltage	Battery voltage	Battery voltage
	79		Battery voltage	Battery voltage	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

3. CHECK GROUND CIRCUIT

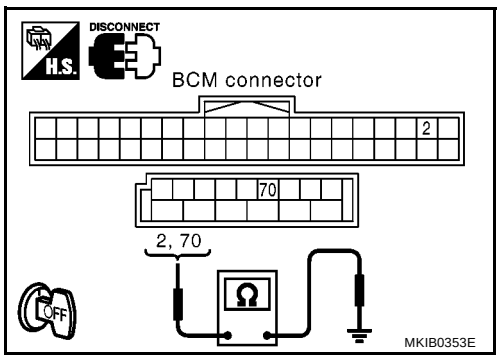
Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M57	2		Yes
M59	70		

OK or NG

OK >> INSPECTION END

NG >> Repair harness or connector.



CONSULT-II Functions (BCM)

BKS001DB

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

BCM diagnosis part	Diagnosis mode	Description
HEADLAMP	WORK SUPPORT	Changes the setting for each function.
	DATA MONITOR	Displays BCM input data in real time.
	ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
BCM	SELF-DIAG RESULTS	BCM performs self-diagnosis of CAN communication.
	CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.

CONSULT-II INSPECTION PROCEDURE

Refer toGI-36, "CONSULT-II Start Procedure" .

CONSULT-II Application Items (BCM)

BKS001M1

WORK SUPPORT

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.
3. Touch “BATTERY SAVER SET” on “SELECT WORK ITEM” screen.
4. Touch “START”.
5. Touch “CHANGE SET”.
6. The setting will be changed and “CUSTOMIZING COMPLETED” will be displayed.
7. Touch “END”.

Display Item List

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

DATA MONITOR

Monitor item	UNIT.	Display content
IGN ON SW	[ON/OFF]	Displays status (Ignition switch ON: ON/Others OFF, ACC: OFF) as judged from the ignition switch signal.
HI BEAM SW	[ON/OFF]	Displays status (High beam switch: ON/Others: OFF) as judged from lighting switch signal.
H/L SW POS	[ON/OFF]	Displays status (Headlamp switch: ON/Others: OFF) as judged from lighting switch signal.
LIGHT SW 1ST	[ON/OFF]	Displays status (Lighting switch 1st position: ON/Others: OFF) as judged from lighting switch signal.
PASSING SW	[ON/OFF]	Displays status (Flash-to-pass switch: ON/Others: OFF) as judged from lighting switch signal.
FR FOG SW	[ON/OFF]	Displays status (Front fog lamp switch: ON/Others: OFF) as judged from lighting switch signal.
RR FOG SW	[ON/OFF]	Displays status (Rear fog lamp switch: ON/Others: OFF) as judged from lighting switch signal.
DOOR SW-DR	[ON/OFF]	Displays status (Door open: ON/door closed: OFF) as judged from the door switch DR signal.
H/L WASH SW	[ON/OFF]	Displays status (Headlamp washer switch: ON/Others: OFF) as judged from headlamp washer switch signal.
ENGINE STATUS	[STOP/ STALL/ RUN/ CRA]	Displays status (Engine stop: STOP/engine stall: STALL/engine running: RUN/engine cranking: CRA) as judged from the engine status.

ACTIVE TEST

Test item	CONSULT-II screen display	Description
Tail lamp relay output	TAIL LAMP	Tail lamp relay can be operated by any ON–OFF operation.
Headlamp relay output	HEADLAMP	Headlamp relay can be operated by any ON–OFF operation.
Front fog lamp relay output	FR FOG LAMP	Front fog lamp relay can be operated by any ON–OFF operation.
Rear fog lamp relay output	RR FOG LAMP	Rear fog lamp relay can be operated by any ON–OFF operation.

CONSULT-II Functions (IPDM E/R)

BKS001DC

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

Diagnosis Mode	Description
SELF-DIAGNOSTIC RESULTS	Refer to PG-20, "SELF-DIAG RESULTS" .
DATA MONITOR	The input/output data of IPDM E/R is displayed in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	IPDM E/R sends a drive signal to electronic components to check their operation.

CONSULT-II INSPECTION PROCEDURE

Refer to GI-36, "CONSULT-II Start Procedure" .

CONSULT-II Application Items (IPDM E/R)

BKS001M2

DATA MONITOR

All Signals, Main Signals, Selection From Menu

Monitor item name	Display and unit	Monitor item selection			Display content
		All signals	Main signals	selection from menu	
TAIL & CLR REQ	ON/OFF	×	×	×	Signal status input from BCM
HL LO REQ	ON/OFF	×	×	×	Signal status input from BCM
HL HI REQ	ON/OFF	×	×	×	Signal status input from BCM
FR FOG REQ	ON/OFF	×	×	×	Signal status input from BCM
IGN RLY	ON/OFF	×	×	×	Status of ignition relay being monitored by IPDM E/R

ACTIVE TEST

Test item	CONSULT-II screen display	Description
Headlamp relay (HI, LO) output	HEAD LAMP	Headlamp relay (LO, HI) can be operated using random operation (OFF, HI ON, LO ON).
Front fog lamp relay output	FRONT FOG LAMP	Fog lamp relay can be operated by any ON–OFF operation.
Tail lamp relay output	TAIL LAMP	Tail lamp relay can be operated by any ON–OFF operation.

Daytime Light Control Does Not Operate Properly

BKS001LO

1. CHECK HEADLAMP OPERATION

Lighting switch is turned to 2nd position.

Does headlamp operate normally?

Yes >> GO TO 2.

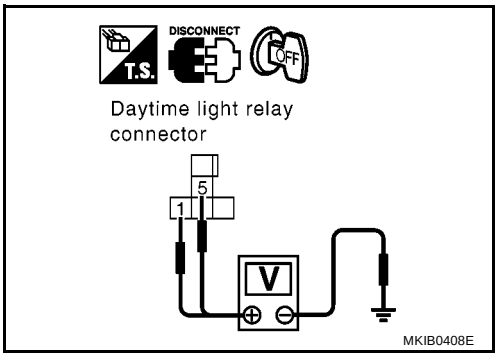
No >> Check the following.

- Headlamp does not illuminate (both sides). GO TO LT-25, "Headlamp Low Beam Does Not Illuminate (Both Sides)" .
- Headlamp does not illuminate (one side). GO TO LT-27, "Headlamp Low Beam Does Not Illuminate (One Side)" .

2. CHECK DAYTIME LIGHT RELAY

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

Terminals			Voltage [V] (Approx.)
(+)		(–)	
Connector	Terminal		
E54	1	Ground	Battery voltage
	5		



OK or NG

OK >> GO TO 3.

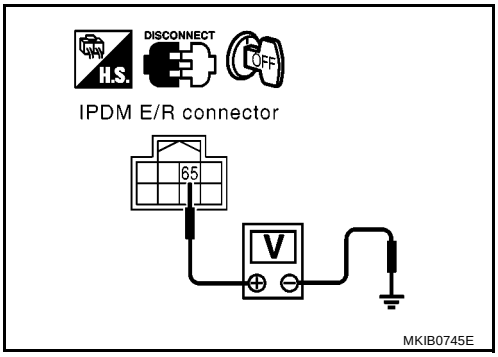
NG >> Check the following.

- 10A fuse (No. 37, located in fuse and fusible link box).
- Harness for open or short between daytime relay and fuse.

3. CHECK IPDM E/R OUTPUT SIGNAL

1. Connect daytime light relay.
2. Disconnect IPDM E/R connector.
3. Check voltage between IPDM E/R harness connector E5 terminal 65 and ground.

65 - Ground : Battery voltage



OK or NG

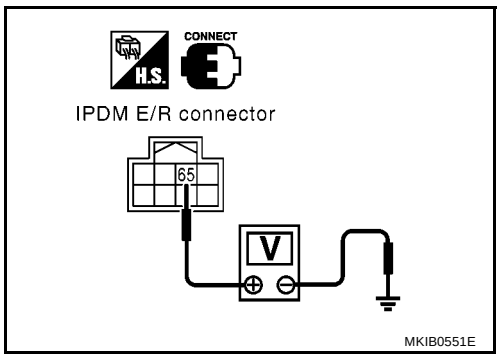
OK >> GO TO 4.

NG >> GO TO 5.

4. CHECK IPDM E/R OUTPUT SIGNAL

1. Connect IPDM E/R connector.
2. Check voltage between IPDM and ground.

Terminals			Condition	Voltage [V] (Approx.)
(+)		(–)		
Connector	Terminal			
E5	65	Ground	Engine stop	Battery voltage
			Engine running	0



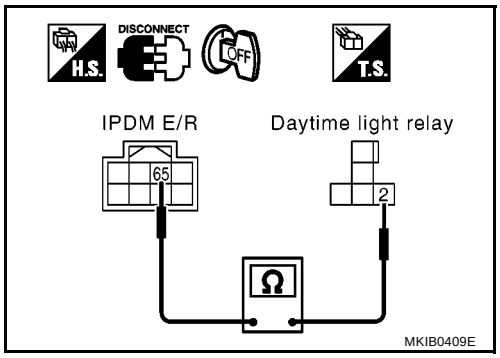
OK or NG

OK >> Replace daytime relay.
NG >> Replace IPDM E/R.

5. CHECK IPDM E/R OUTPUT SIGNAL CIRCUIT

1. Disconnect daytime light relay connector.
2. Check continuity between daytime light relay harness connector E54 terminal 2 and IPDM E/R harness connector E5 terminal 65.

2 - 65 : Continuity should exist.



OK or NG

OK >> Replace daytime light relay.
NG >> Repair or replace harness or connector.

RH High beam Does Not Illuminate

BKS001LQ

1. CHECK BULB

Check bulb of headlamp RH.

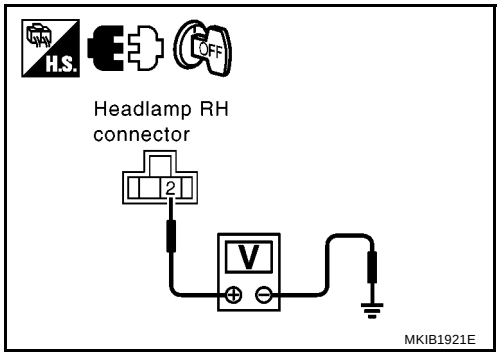
OK or NG

OK >> GO TO 2.
NG >> Replace bulb of headlamp.

2. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect headlamp RH connector.
3. Check voltage between headlamp RH harness connector E26 terminal 2 and ground.

Terminals			Condition	Voltage [V] (Approx.)
(+)		(–)		
Connector	Terminal			
E26	2	Ground	Lighting switch high beam ON	Battery voltage



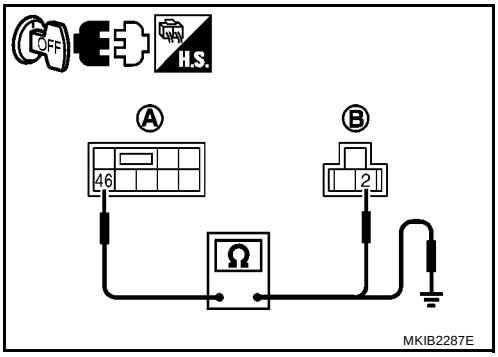
OK or NG

OK >> GO TO 5.
NG >> GO TO 3.

3. CHECK IPDM E/R CIRCUIT

1. Disconnect IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector (A) and headlamp RH harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	
E8	46	E26	2	Yes



3. Check continuity between IPDM E/R harness connector (A) and ground.

A		Ground	Continuity
Connector	Terminal		
E8	46		No

OK or NG

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

4. CHECK FUSE

Check 10A fuse [No. 43, located in IPDM E/R].

OK or NG

OK >> Replace IPDM E/R.
NG >> Replace fuse. If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse.

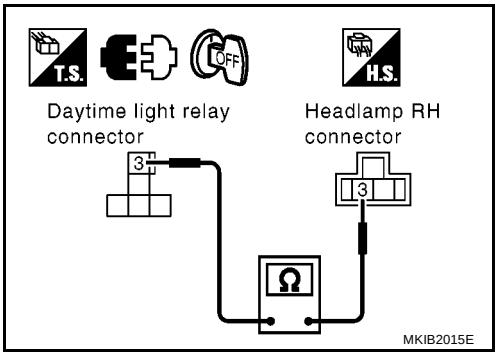
5. CHECK HEADLAMP RH GROUND CIRCUIT

Check continuity between daytime light relay harness connector E54 terminal 3 and headlamp RH harness connector E26 terminal 3.

3 - 3 : Continuity should exist.

OK or NG

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



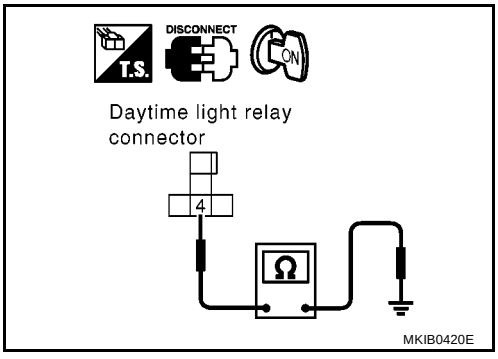
6. CHECK DAYTIME LIGHT GROUND CIRCUIT

Check continuity daytime light relay harness connector E54 terminal 4 and ground.

4 - Ground : Continuity should exist.

OK or NG

OK >> Replace daytime light relay.
NG >> Repair or replace harness or connector.



RH Low Beam Does Not Illuminate

BKS001LT

1. CHECK BULB

Check bulb of headlamp RH.

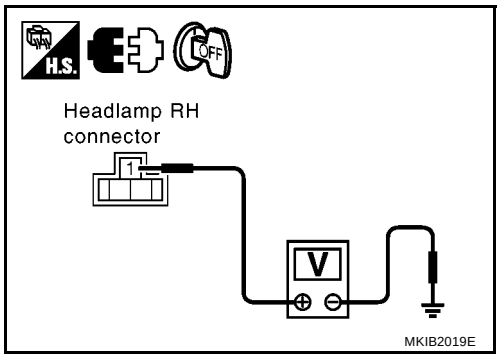
OK or NG

OK >> GO TO 2.
NG >> Replace bulb of lamp.

2. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect headlamp RH connector.
3. Check voltage between headlamp RH harness connector E26 terminal 1 and ground.

Terminals			Condition	Voltage [V] (Approx.)
(+)		(–)		
Connector	Terminal			
E26	1	Ground	Lighting switch low beam ON	Battery voltage



OK or NG

OK >> GO TO 5.
NG >> GO TO 3.

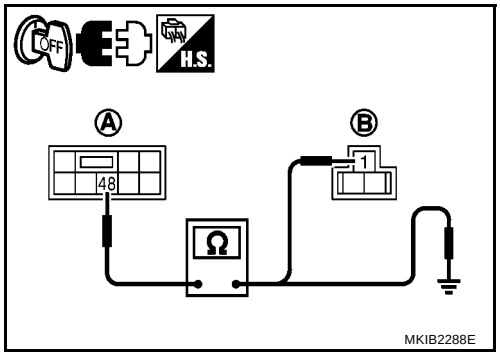
3. CHECK IPDM E/R CIRCUIT

1. Disconnect IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector (A) and headlamp RH harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	
E8	48	E26	1	Yes

3. Check continuity between IPDM E/R harness connector (A) and ground.

A		Ground	Continuity
Connector	Terminal		
E8	48		No



OK or NG

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

4. CHECK FUSE

Check 15A fuse (No. 50 located in IPDM E/R). Refer to PG-34, "IPDM E/R Terminal Inspection" .

OK or NG

OK >> Replace IPDM E/R.
NG >> Replace fuse. If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse.

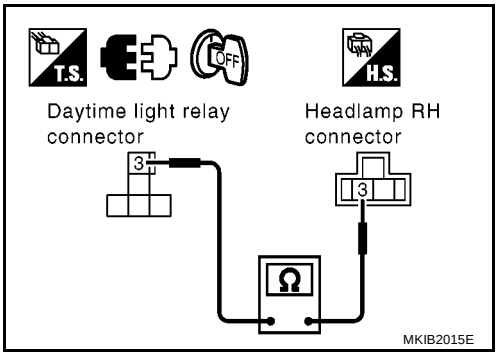
5. CHECK HEADLAMP RH GROUND CIRCUIT

Check continuity between daytime light relay harness connector E54 terminal 3 and headlamp RH harness connector E26 terminal 3.

3 - 3 : Continuity should exist.

OK or NG

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



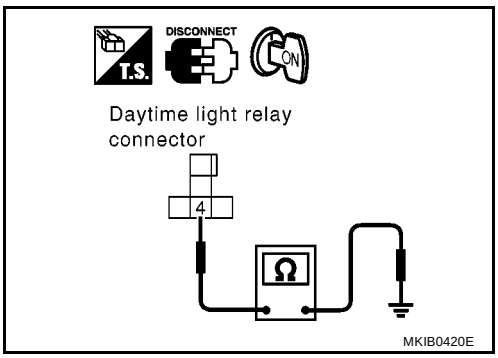
6. CHECK DAYTIME LIGHT GROUND CIRCUIT

Check continuity daytime light relay harness connector E54 terminal 4 and ground.

4 - Ground : Continuity should exist.

OK or NG

OK >> Replace daytime light relay.
NG >> Repair or replace harness connector.



Headlamp High Beam Does Not Illuminate (Both Sides)

BKS001LP

Refer to LT-21, "Headlamp High Beam Does Not Illuminate (Both Sides)" .

Headlamp Low Beam Does Not Illuminate (Both Sides)

BKS001LX

Refer to LT-25, "Headlamp Low Beam Does Not Illuminate (Both Sides)" .

Headlamp LH High Beam Does Not Illuminate

BKS001LY

Refer to LT-23, "Headlamp High Beam Does Not Illuminate (One Side)" .

Headlamp LH Low Beam Does Not Illuminate

BKS001LU

Refer toLT-27, "Headlamp Low Beam Does Not Illuminate (One Side)" .

Headlamps Do Not Turn OFF

BKS001LW

Refer toLT-29, "Headlamps Do Not Turn OFF" .

Aiming Adjustment

BKS001DN

Refer to LT-30, "Aiming Adjustment" .

Bulb Replacement

BKS001DO

Refer toLT-32, "Bulb Replacement" .

Removal and Installation

BKS001DP

Refer to LT-32, "Removal and Installation" .

Disassembly and Assembly

BKS001DQ

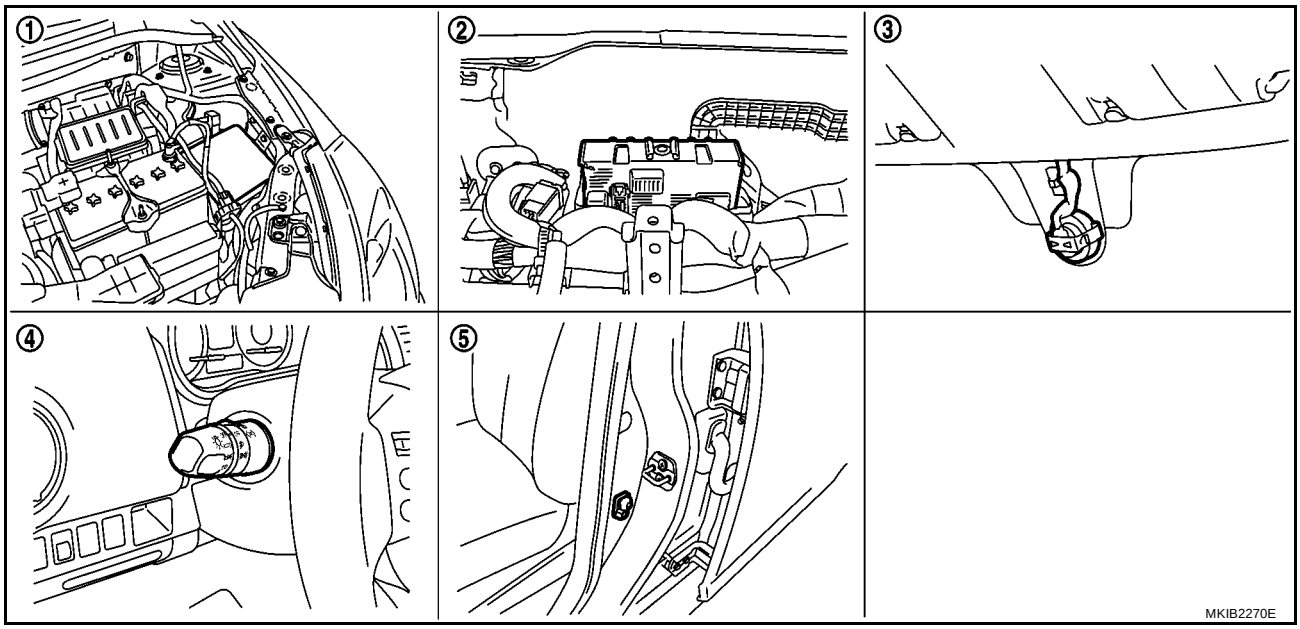
Refer to LT-34, "Disassembly and Assembly" .

AUTO LIGHT SYSTEM

PFP:28491

Component Parts and Harness Connector Location

BKS001DR



1. IPDM E/R E8,E12
2. BCM M57,M59 (View with instrument upper panel removed)
3. Light and rain sensor R2
4. Combination switch M38
5. Front door switch driver side [B14 (LHD models)] [B29 (RHD models)]

System Description

BKS001DS

Automatically turns ON/OFF the parking lamps and the headlamps in accordance with ambient light.

OUTLINE

The auto light control system has an light and rain sensor inside it 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 ambient light.
Light and rain sensor, power is supplied

- through BCM terminal 73
- to light and rain sensor terminal 1.

Light and rain sensor, ground is supplied

- to light and rain sensor terminal 3
- through grounds M21 and M66.

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

- to light and rain sensor terminal 2
- through BCM terminal 63.

The headlamps will then illuminate. For a description of headlamp operation, Refer to LT-52, "System Description" .

COMBINATION SWITCH READING FUNCTION

Refer to LT-114, "COMBINATION SWITCH READING FUNCTION" .

FRIENDRY LIGHTING FUNCTION

Low beam headlamps will illuminate for 30 seconds when,

- ignition switch is in OFF position,
- lighting switch is placed in OFF position, and
- lighting switch is placed in PASS position.

Each activation of the switch adds 30 seconds to a maximum of 2 minutes.

EXTERIOR LAMP BATTERY SAVER CONTROL

To avoid flat battery caused by user leaving exterior lamps ON. When ignition is OFF and the driver side door is opened, all exterior lamps will be turned OFF. If the user wants some lamps to remain ON then they must switch these lamps OFF then ON again with the combination switch once the driver side door has been opened. A buzzer will sound if any exterior lamps are ON with the driver side door opened and ignition OFF.
*:This setting can be changed by CONSULT-II. Refer to LT-63, "WORK SUPPORT" .

CAN Communication System Description

BKS001DT

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

CAN Communication Unit

BKS001DU

Refer to LAN-27, "CAN Communication Unit" .

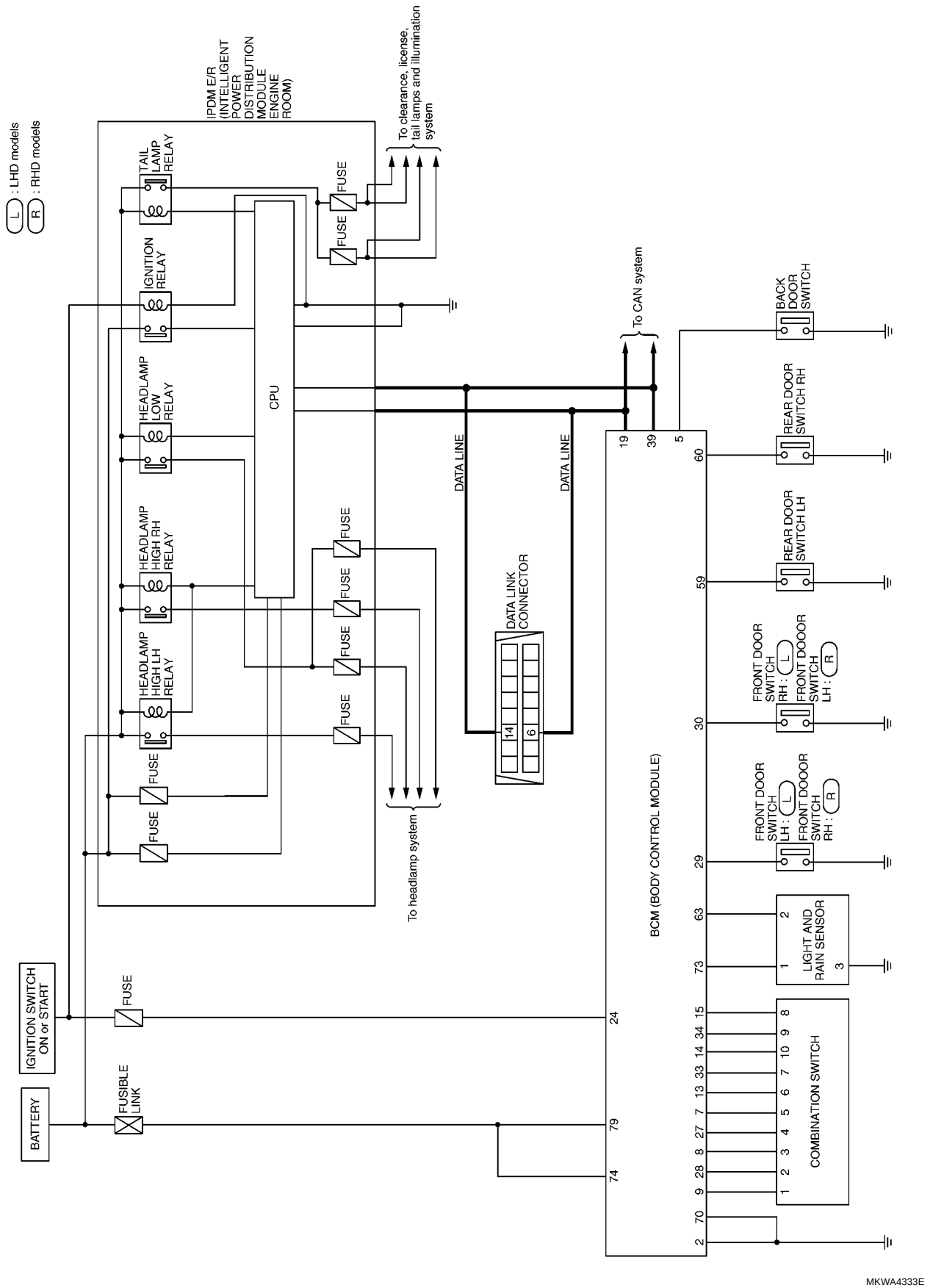
Major Components and Functions

BKS001DV

Components	Functions
BCM	● Turns ON/OFF circuits of tail light and headlamp according to signals from light sensor, lighting switch (AUTO), driver's door switch, passenger's door switch and ignition switch (ON, OFF).
Light and rain sensor	● Converts outside brightness (lux) to voltage, and sends it to BCM. (Detects brightness of 50 to 1,300 lux)

Schematic

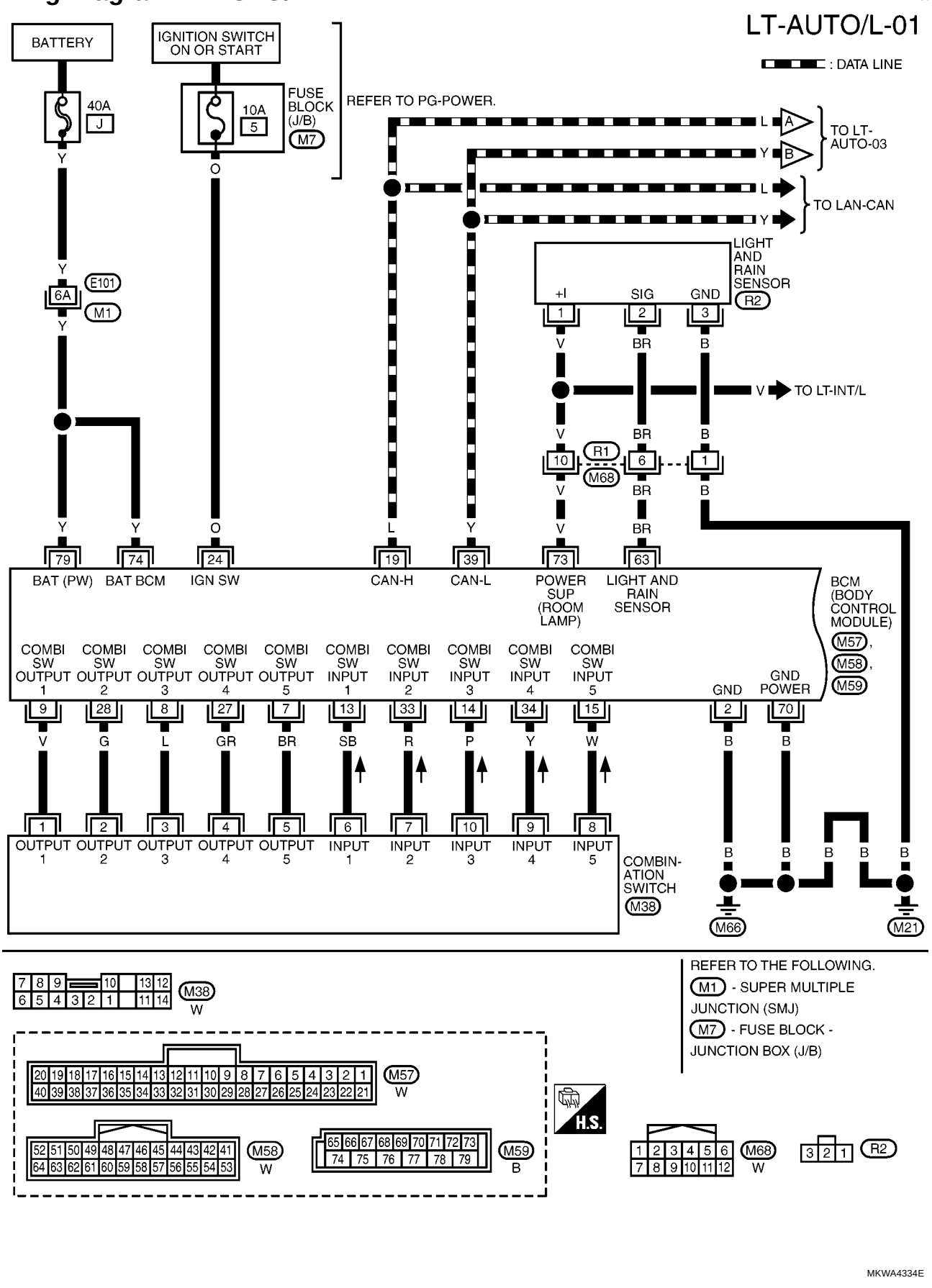
BKS001DW



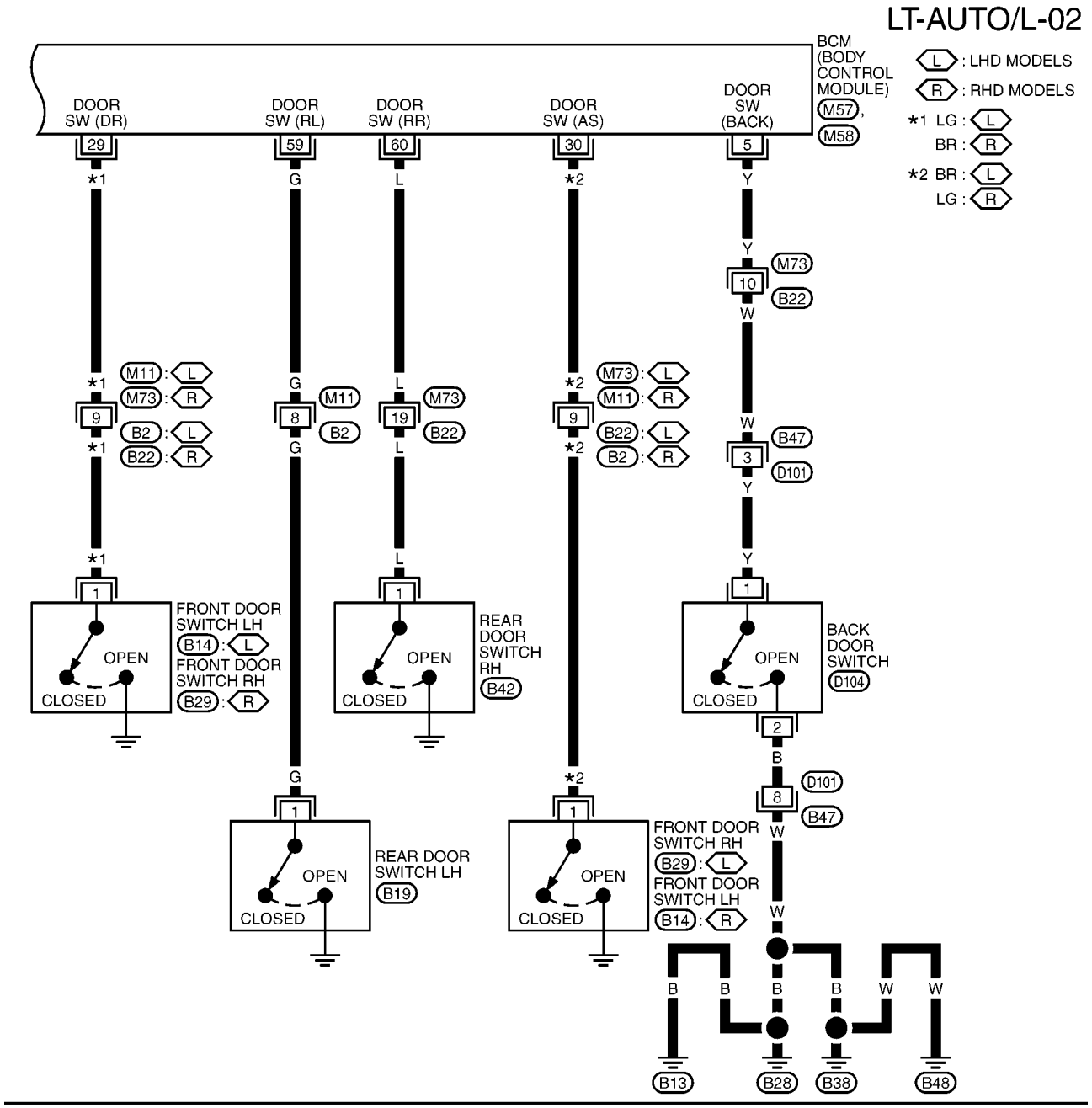
MKWA4333E

Wiring Diagram — AUTO/L —

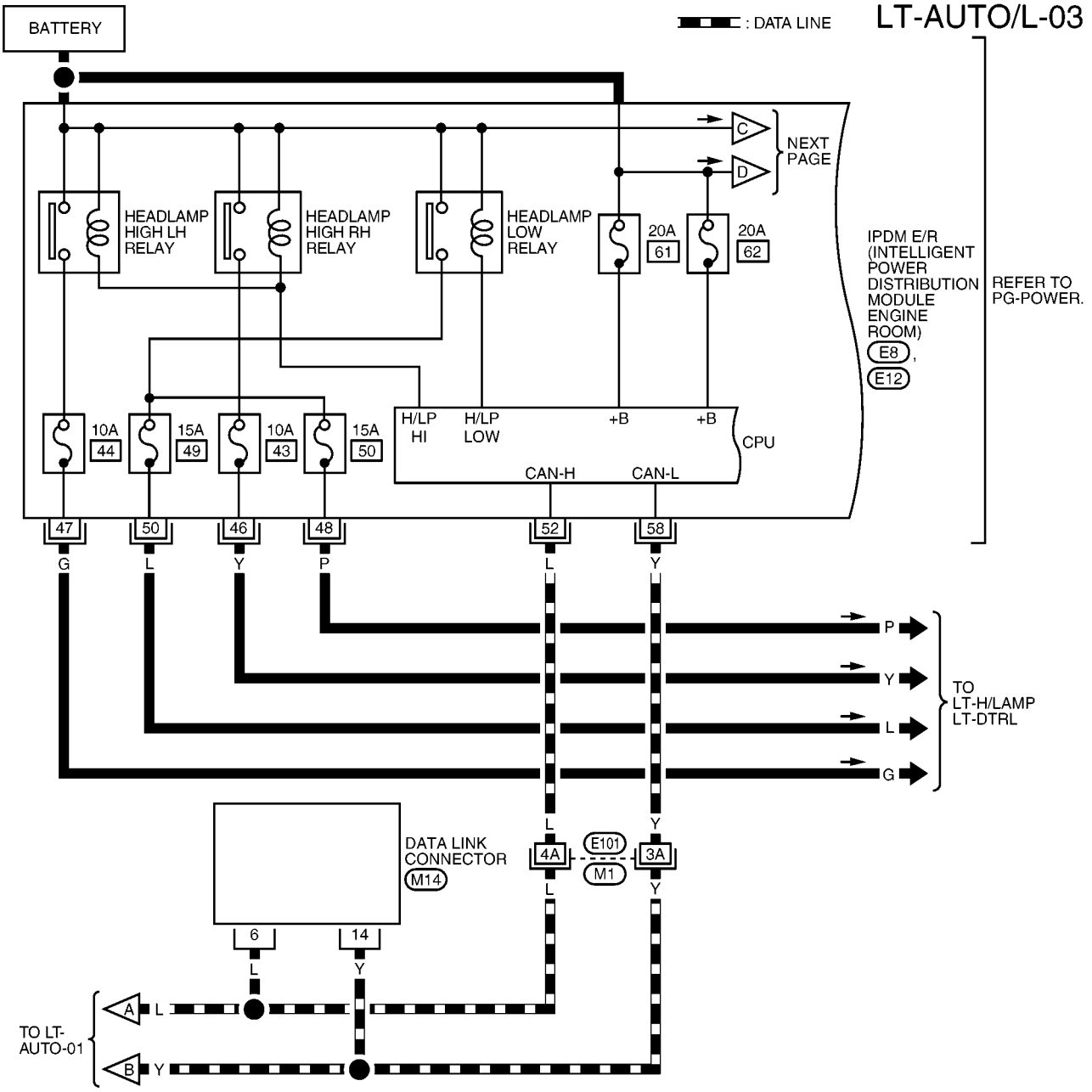
BKS001DX

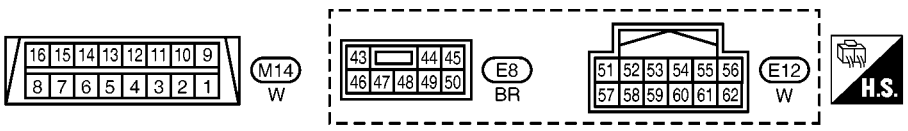


MKWA4334E


LT-AUTO/L-02
BCM (BODY CONTROL MODULE) M57, M58
L : LHD MODELS
R : RHD MODELS
*1 LG : L
BR : R
*2 BR : L
LG : R
DOOR SW (DR)
DOOR SW (RL)
DOOR SW (RR)
DOOR SW (AS)
DOOR SW (BACK)
29
59
60
30
5
M11 : L
M73 : R
B2 : L
B22 : R
M73 : L
M11 : R
B22 : L
B2 : R
M73
10
B22
B47
3
D101
FRONT DOOR SWITCH LH B14 : L
FRONT DOOR SWITCH RH B29 : R
REAR DOOR SWITCH RH B42
BACK DOOR SWITCH D104
REAR DOOR SWITCH LH B19
FRONT DOOR SWITCH RH B29 : L
FRONT DOOR SWITCH LH B14 : R
OPEN
CLOSED
B13
B28
B38
B48
M11
M57
M58
H.S.
M73
B14, B19, B29, B42
B47
D104
W
GR

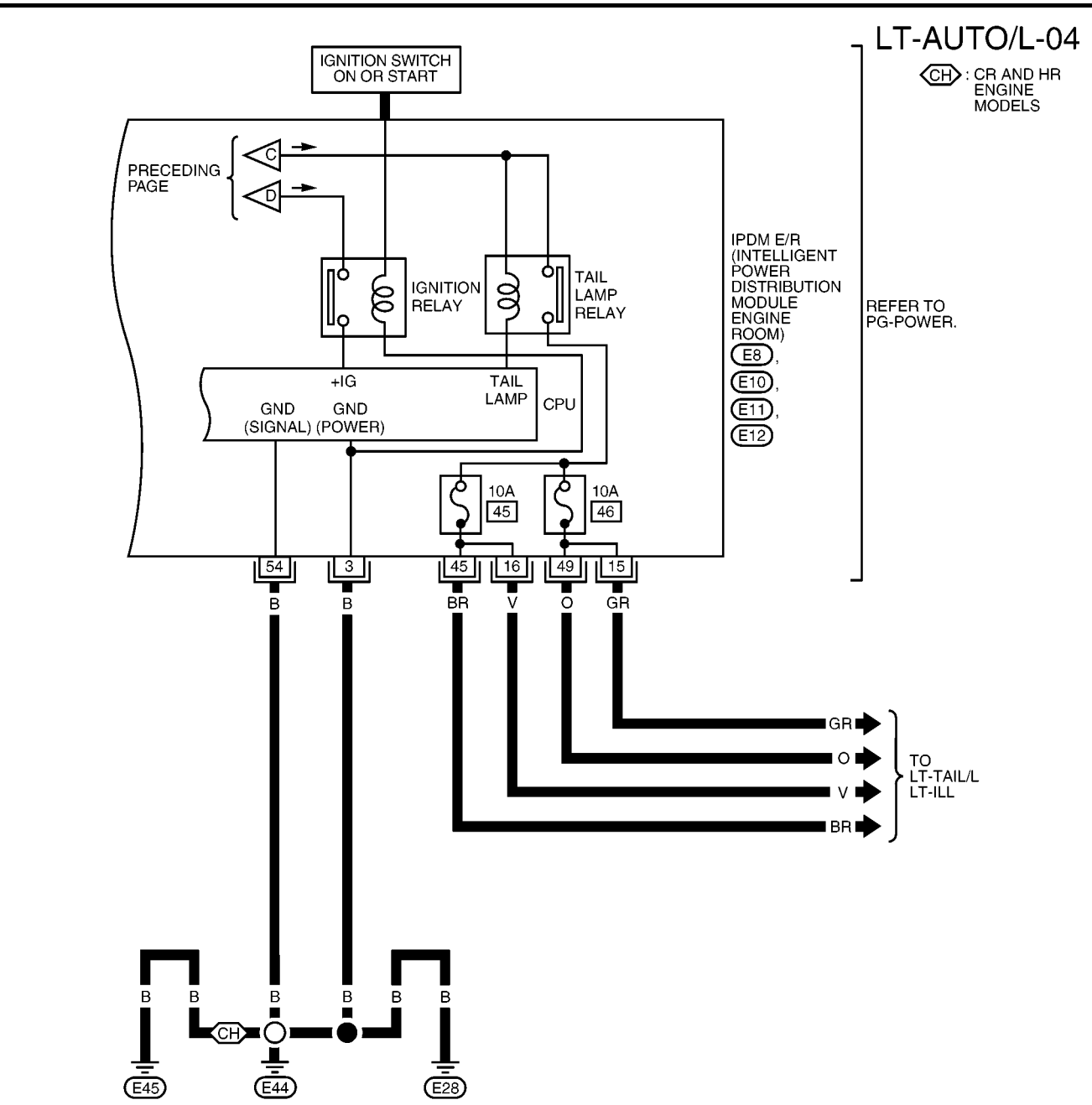
MKWA4335E

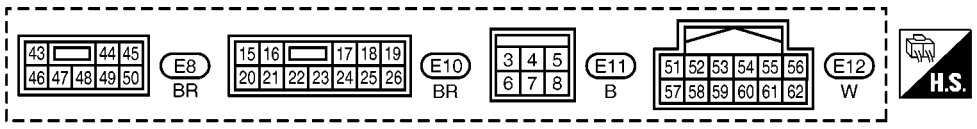




REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)

MKWA4336E


LT-AUTO/L-04
CH : CR AND HR ENGINE MODELS
IGNITION SWITCH ON OR START
PRECEDING PAGE
C
D
IGNITION RELAY
TAIL LAMP RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E8, E10, E11, E12
REFER TO PG-POWER.
+IG
GND (SIGNAL)
GND (POWER)
TAIL LAMP
CPU
10A 45
10A 46
54 3 45 16 49 15
B B BR V O GR
GR
O
V
BR
TO LT-TAIL/L LT-ILL
B B B B B B
CH
E45 E44 E28


43 44 45 46 47 48 49 50
E8 BR
15 16 17 18 19 20 21 22 23 24 25 26
E10 BR
3 4 5 6 7 8
E11 B
51 52 53 54 55 56 57 58 59 60 61 62
E12 W
H.S.

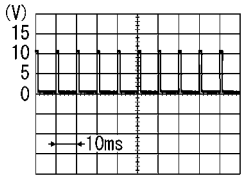
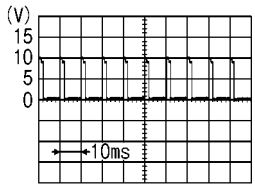
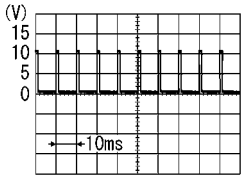
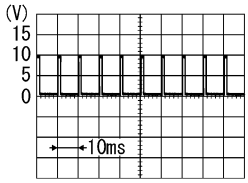
MKWA4337E

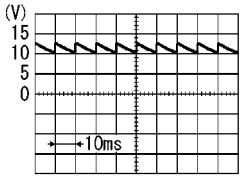
Terminals and Reference Values for BCM

BKS001DY

CAUTION:

- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to LT-64, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value
				Ignition switch	Operation or condition	
2	B	Ground	—	ON	—	Approx. 0V
14	P	Combination switch input 3	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4) — OFF	 PKIB4958J Approx. 1.0V
					Lighting, turn, wiper switch (Wiper intermittent dial position 4) — Lighting switch AUTO	 PKIB8631J Approx. 2.0V
19	L	CAN – H	Input/ Output	ON	—	Approx. 2.6V
24	O	Ignition switch (ON)	Input	ON	—	Battery voltage
27	GR	Combination switch output 4	Output	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4) — OFF	 PKIB4958J Approx. 1.2V
					Lighting, turn, wiper switch (Wiper intermittent dial position 4) — Lighting switch AUTO	 PKIB4959J Approx. 1.0V

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value
				Ignition switch	Operation or condition		
29	LG*1 BR*2	Front door switch (driver side) signal	Input	OFF	Front door switch (driver side)	ON (open)	Approx. 0V
						OFF (closed)	 PKIB4950J Approx. 11.0V
39	Y	CAN – L	Input/ Output	ON	—		Approx. 2.4V
63	BR	Light and rain sensor signal	Input	ON	When light and rain sensor is illuminated.		Approx. 8.9V[NOTE]
70	B	Ground	—	ON	—		Approx. 0V
73	V	Light and rain sensor power supply	Output	ON	—		Approx. 5V
74 79	Y	Battery power supply	Input	OFF	—		Battery voltage

*1:LHD models
*2:RHD models
NOTE:
Light and rain sensor must be securely subjected to work lamp light. If the light and rain sensor is insufficiently illuminated, the measured value may not satisfy standard.

Terminals and Reference Values for IPDM E/R

BKS001DZ

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value
				Ignition switch	Operation or condition		
3	B	Ground	—	ON	—		Approx. 0V
15	GR	Rear combination lamp LH (Tail)	Output	ON	Lighting switch 1ST position	OFF	Approx. 0V
						ON	Battery voltage
16	V	Rear combination lamp RH (Tail) and license plate lamp RH and LH		ON	Lighting switch 1ST position	OFF	Approx. 0V
						ON	Battery voltage
45	BR	Parking lamp RH		ON	Lighting switch 1ST position	OFF	Approx. 0V
						ON	Battery voltage
46	Y	Headlamp HIGH RH		ON	Lighting switch HIGH beam or PASSING position	OFF	Approx. 0V
						ON	Battery voltage
47	G	Headlamp HIGH LH		ON	Lighting switch HIGH beam or PASSING position	OFF	Approx. 0V
						ON	Battery voltage
48	P	Headlamp LOW RH		ON	Lighting switch 2ND position	OFF	Approx. 0V
						ON	Battery voltage
49	O	Parking lamp LH		ON	Lighting switch 1ST position	OFF	Approx. 0V
						ON	Battery voltage
50	L	Headlamp LOW LH		ON	Lighting switch 2ND position	OFF	Approx. 0V
						ON	Battery voltage
52	L	CAN – H	Input/ Output	—	—		—
54	B	Ground	—	ON	—		Approx. 0V
58	Y	CAN – L	Input/ Output	—	—		—

How to Proceed With Trouble Diagnosis

BKS001E0

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-52, "System Description" .
3. Perform the preliminary check. Refer to LT-62, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the auto light system operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

BKS001E1

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES

Check for blown fuses.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	J
	Ignition switch ON or START position	5
IPDM E/R	Battery	43
		44
		45
		46
		49
		50
		61
		62

Refer to LT-55, "Wiring Diagram — AUTO/L —" .

OK or NG

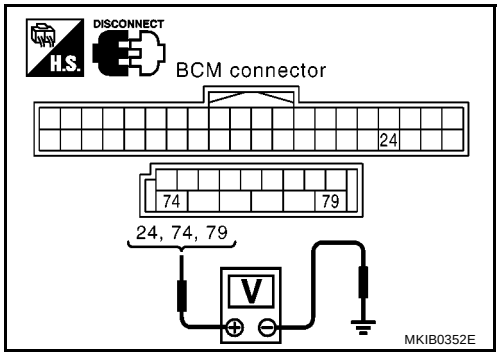
OK >> GO TO 2.

NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

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

Terminal			Ignition switch position		
(+)		(–)	OFF	ACC	ON
BCM Connector	Terminal				
M57	24	Ground	Approx. 0V	Approx. 0V	Battery voltage
M59	74		Battery voltage	Battery voltage	Battery voltage
	79		Battery voltage	Battery voltage	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

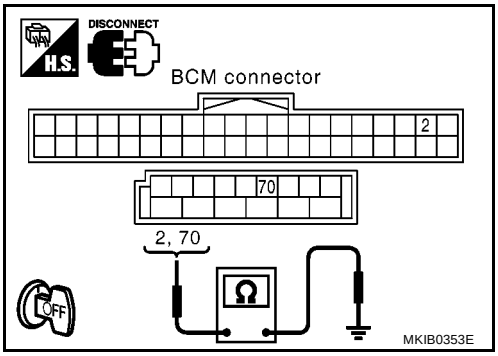
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal		Continuity
M57	2	Ground	Yes
M59	70		

OK or NG

OK >> INSPECTION END
NG >> Repair harness or connector.



CONSULT-II Functions (BCM)

BKS001E2

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

BCM diagnosis part	Diagnosis mode	Description
HEADLAMP	WORK SUPPORT	Changes the setting for each function.
	DATA MONITOR	Displays BCM input data in real time.
	ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
BCM	SELF-DIAG RESULTS	BCM performs self-diagnosis of CAN communication.
	CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.

CONSULT-II INSPECTION PROCEDURE

Refer to GI-36, "CONSULT-II Start Procedure" .

CONSULT-II Application Items

BKS001L1

WORK SUPPORT

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.
3. Touch “BATTERY SAVER SET” on “SELECT WORK ITEM” screen.
4. Touch “START”.
5. Touch “CHANGE SET”.
6. The setting will be changed and “CUSTOMIZING COMPLETED” will be displayed.
7. Touch “END”.

Display Item List

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

DATA MONITOR

Monitor item	UNIT.	Display content
IGN ON SW	[ON/OFF]	Displays status (Ignition switch ON: ON/Others OFF, ACC: OFF) as judged from the ignition switch signal.
HI BEAM SW	[ON/OFF]	Displays status (High beam switch: ON/Others: OFF) as judged from lighting switch signal.
H/L SW POS	[ON/OFF]	Displays status (Headlamp switch: ON/Others: OFF) as judged from lighting switch signal.
LIGHT SW 1ST	[ON/OFF]	Displays status (Lighting switch 1st position: ON/Others: OFF) as judged from lighting switch signal.
PASSING SW	[ON/OFF]	Displays status (Flash-to-pass switch: ON/Others: OFF) as judged from lighting switch signal.
FR FOG SW	[ON/OFF]	Displays status (Front fog lamp switch: ON/Others: OFF) as judged from lighting switch signal.
RR FOG SW	[ON/OFF]	Displays status (Rear fog lamp switch: ON/Others: OFF) as judged from lighting switch signal.
DOOR SW-DR	[ON/OFF]	Displays status (Door open: ON/door closed: OFF) as judged from the door switch DR signal.
H/L WASH SW	[ON/OFF]	Displays status (Headlamp washer switch: ON/Others: OFF) as judged from headlamp washer switch signal.
ENGINE STATUS	[STOP/ STALL/ RUN/ CRA]	Displays status (Engine stop: STOP/engine stall: STALL/engine running: RUN/engine cranking: CRA) as judged from the engine status.

ACTIVE TEST

Test item	CONSULT-II screen display	Description
Tail lamp relay output	TAIL LAMP	Tail lamp relay can be operated by any ON–OFF operation.
Headlamp relay output	HEAD LAMP	Headlamp relay can be operated by any ON–OFF operation.
Front fog lamp relay output	FR FOG LAMP	Front fog lamp relay can be operated by any ON–OFF operation.
Rear fog lamp relay output	RR FOG LAMP	Rear fog lamp relay can be operated by any ON–OFF operation.

Light and rain sensor System Inspection

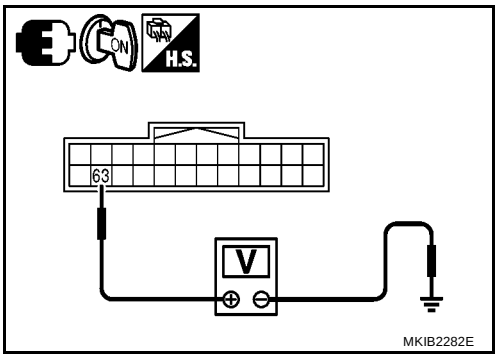
BKS001E5

1. CHECK LIGHT AND RAIN SENSOR INPUT SIGNAL

1. Turn ignition switch ON.
2. Check voltage between BCM harness connector M58 terminal 63 and ground.

Illuminated

LIGHT AND RAIN SENSOR : Approx. 8.9V



CAUTION:

Light and rain sensor must be securely subjected to work lamp light. If light and rain sensor is insufficiently illuminated, the measured value may not satisfy the standard.

OK or NG

OK >> INSPECTION END
NG >> GO TO 2.

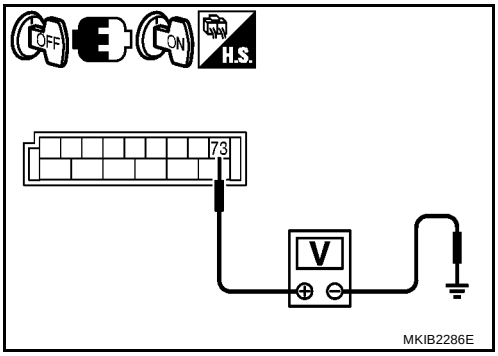
2. CHECK LIGHT AND RAIN SENSOR VOLTAGE

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

Terminals			Voltage
(+)		(–)	
Connector	Terminal		
M59	73	Ground	Approx. 5 V

OK or NG

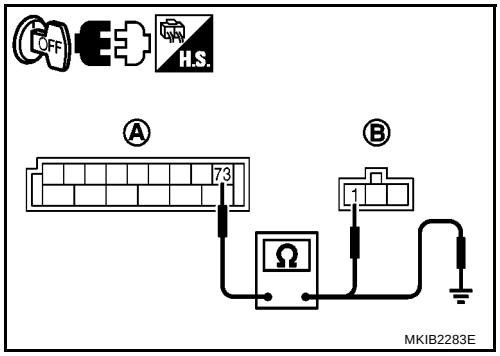
OK >> GO TO 3.
NG >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .



3. CHECK LIGHT AND RAIN SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and light and rain sensor connector.
3. Check continuity between BCM harness connector (A) and light and rain sensor harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	Yes
M59	73	R2	1	



4. Check continuity between BCM harness connector (A) and ground.

A		Ground	Continuity
Connector	Terminal		No
M59	73		

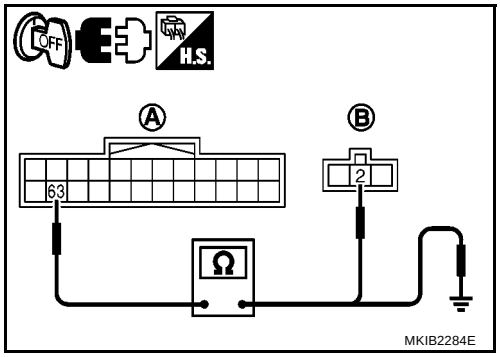
OK or NG

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

4. CHECK LIGHT AND RAIN SENSOR SIGNAL CIRCUIT

1. Check continuity between BCM harness connector (A) and light and rain sensor harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	Yes
M58	63	R2	2	



2. Check continuity between BCM harness connector (A) and ground.

A		Ground	Continuity
Connector	Terminal		No
M58	63		

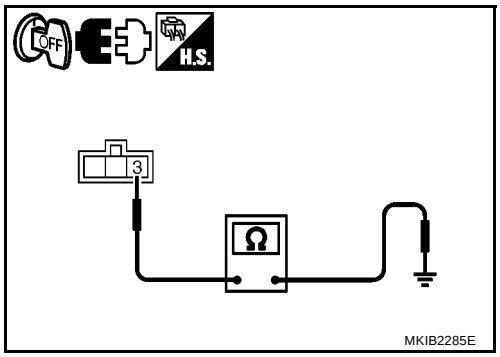
OK or NG

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

5. CHECK LIGHT AND RAIN SENSOR GROUND CIRCUIT

Check continuity between light and rain sensor harness connector R2 terminal 3 and ground.

Light and rain sensor Connector	Terminal	Ground	Continuity
R2	3		Yes



OK or NG

OK >> Replace light and rain sensor.
NG >> Repair harness or connector.

Removal and Installation of Light and Rain Sensor

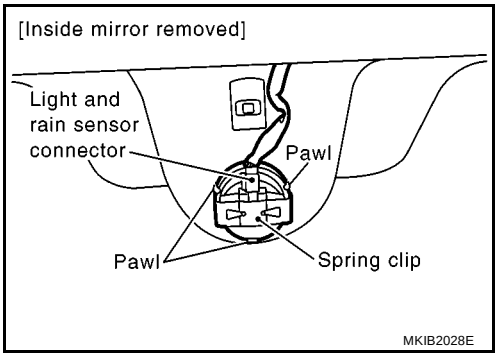
BKS001E6

REMOVAL

1. Remove inside mirror. Refer to GW-104, "INSIDE MIRROR" .
2. Remove clip and pawl.
3. Pull out the light and rain sensor.
4. Remove light and rain sensor harness connector.

CAUTION:

Do not touch the electronic circuit board on rain sensor.



INSTALLATION OF LIGHT AND RAIN SENSOR

Install in the reverse order of removal.

INSTALLATION OF LIGHT AND RAIN SENSOR HOUSING

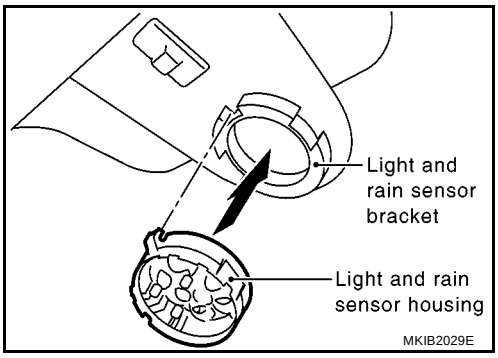
CAUTION:

When windshield is replaced, always replace rain sensor housing.

1. Clean the surface of bonded area on the windshield.
2. Fix rain sensor housing against light and rain sensor bracket from the top, then press it in a downward motion until it is completely attach together.

   CAUTION:

   Do not touch the adhesive.

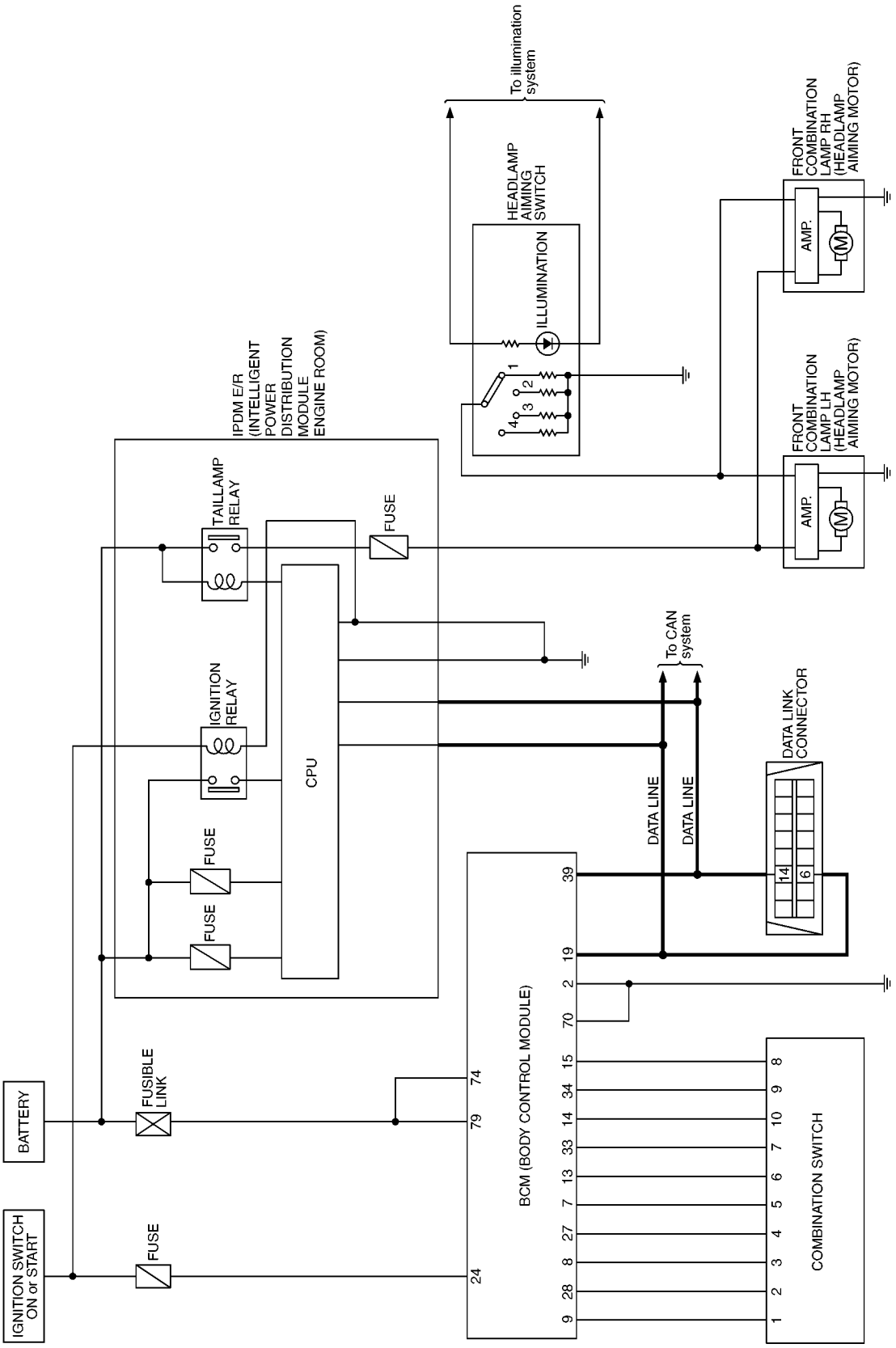


HEADLAMP AIMING CONTROL

PFP:26010

Schematic

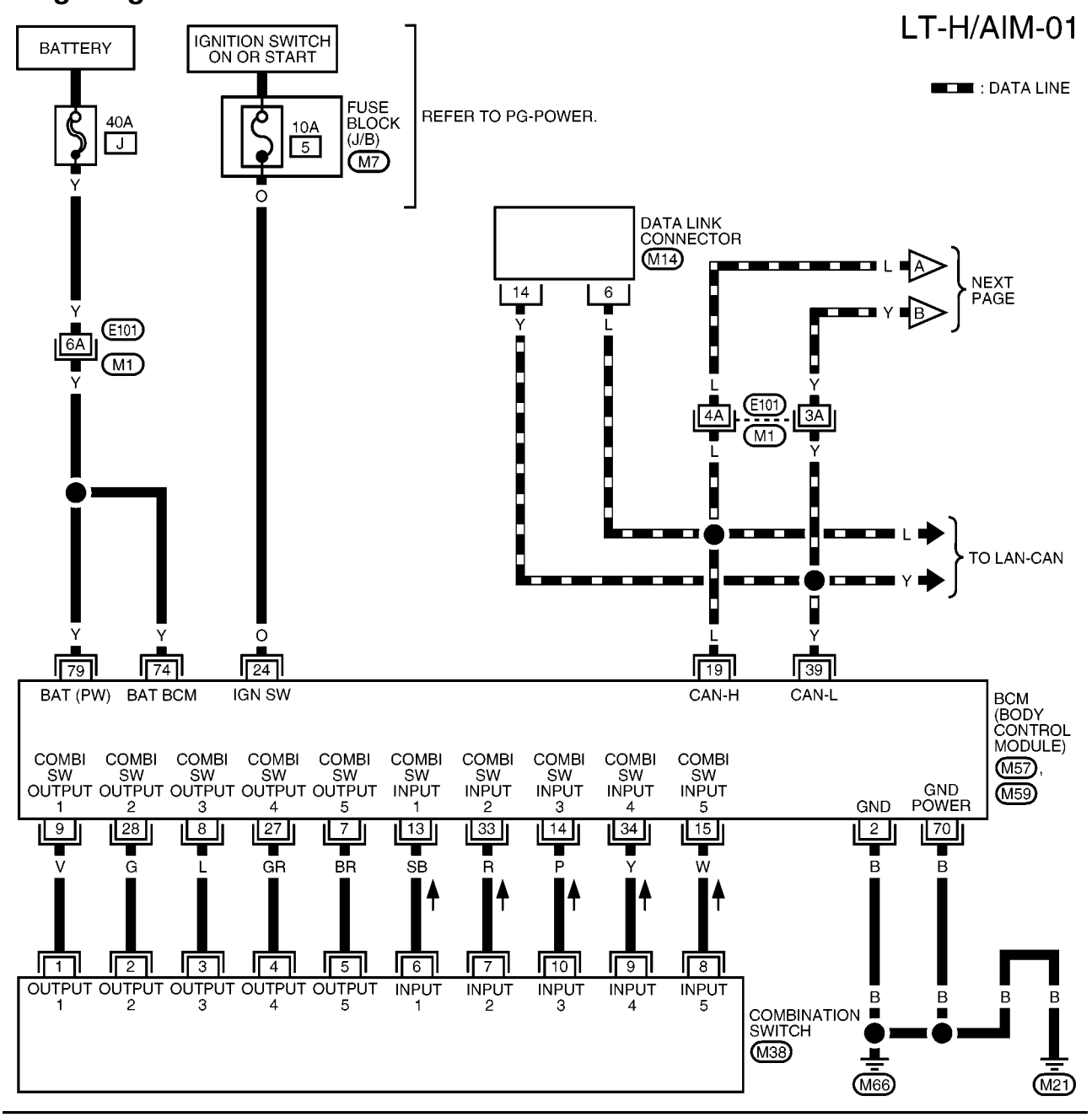
BKS001E7

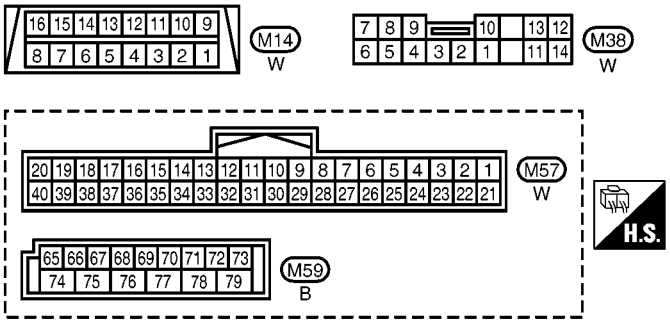


MKWA4342E

Wiring Diagram—H/AIM—

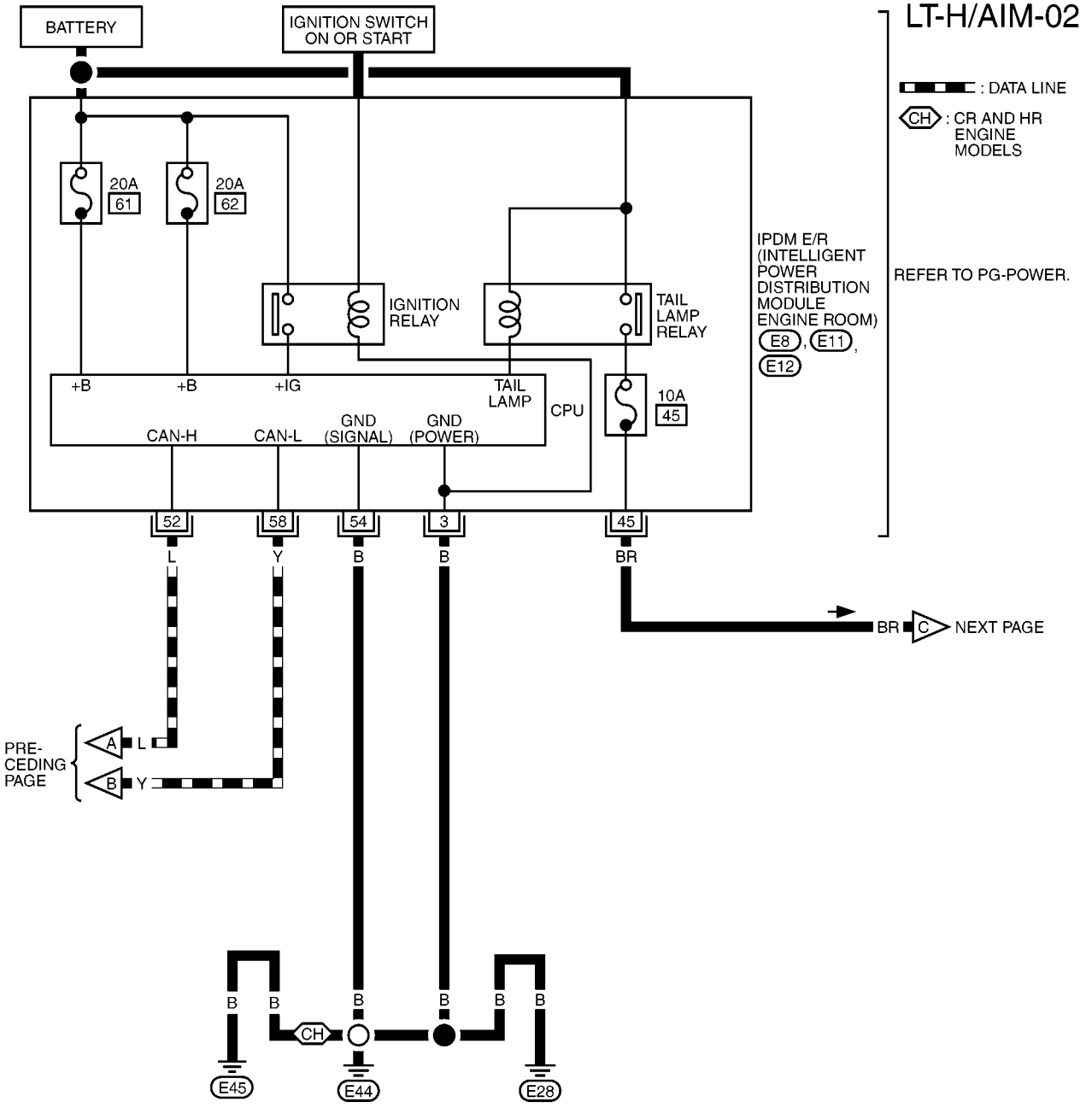
BKS001H8

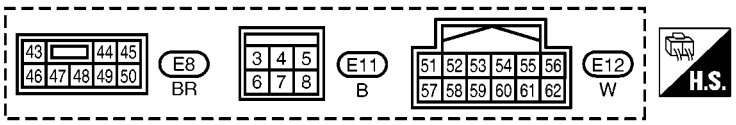




REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

MKWA4343E

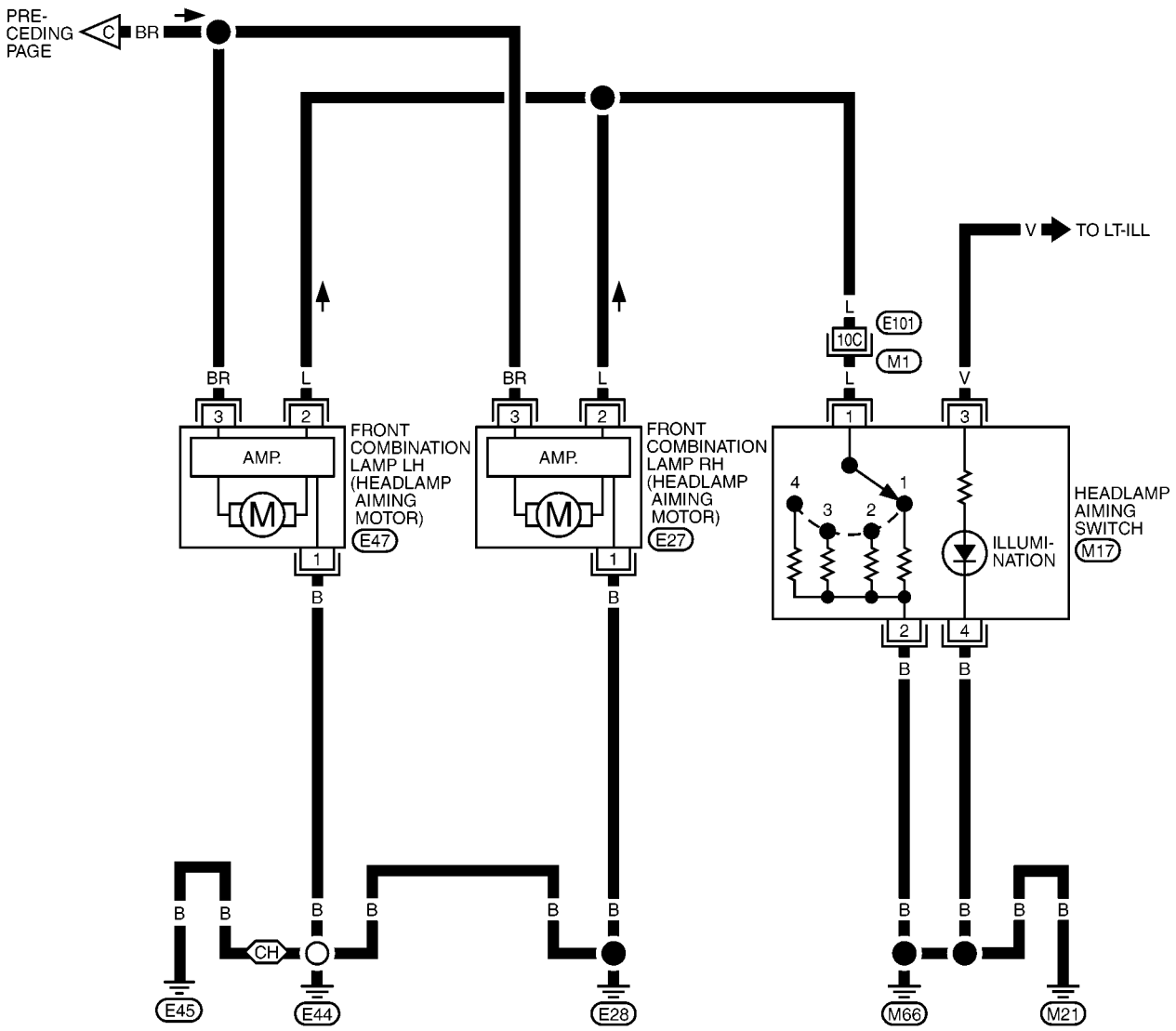

BATTERY
IGNITION SWITCH ON OR START
LT-H/AIM-02
: DATA LINE
CH : CR AND HR ENGINE MODELS
20A 61
20A 62
IGNITION RELAY
TAIL LAMP RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E8, E11, E12
REFER TO PG-POWER.
+B
+B
+IG
TAIL LAMP
CPU
10A 45
CAN-H
CAN-L
GND (SIGNAL)
GND (POWER)
52
58
54
3
45
L
Y
B
B
BR
BR C NEXT PAGE
PRE-CEDING PAGE
A L
B Y
B B B B B B
CH
E45
E44
E28

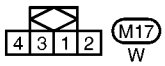

43 44 45
46 47 48 49 50
E8
BR
3 4 5
6 7 8
E11
B
51 52 53 54 55 56
57 58 59 60 61 62
E12
W
H.S.

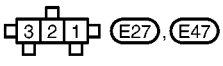
MKWA4344E

LT-H/AIM-03

CH : CR AND HR ENGINE MODELS







REFER TO THE FOLLOWING.
M1 - SUPETR ,MULTIPLE JUNCTION (SMJ)

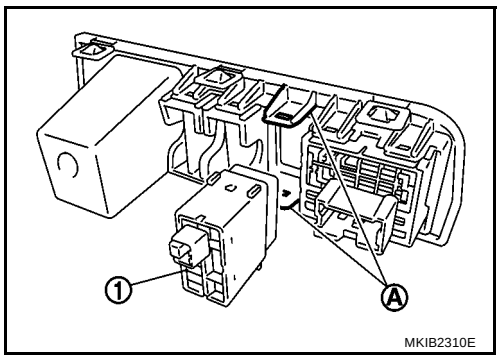
MKWA4345E

Removal and Installation

BKS001E8

REMOVAL

1. Remove the switch panel assembly. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Spread pawls (A) of switch panel assembly to remove headlamp aiming switch(1).



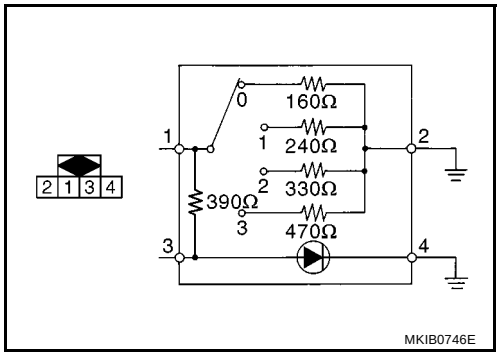
INSTALLATION

Installation is the reverse order of removal.

Switch Circuit Inspection

BKS001E9

Using a circuit tester, check resistance between the headlamp aiming switch connector terminals in each operation status of the aiming switch.

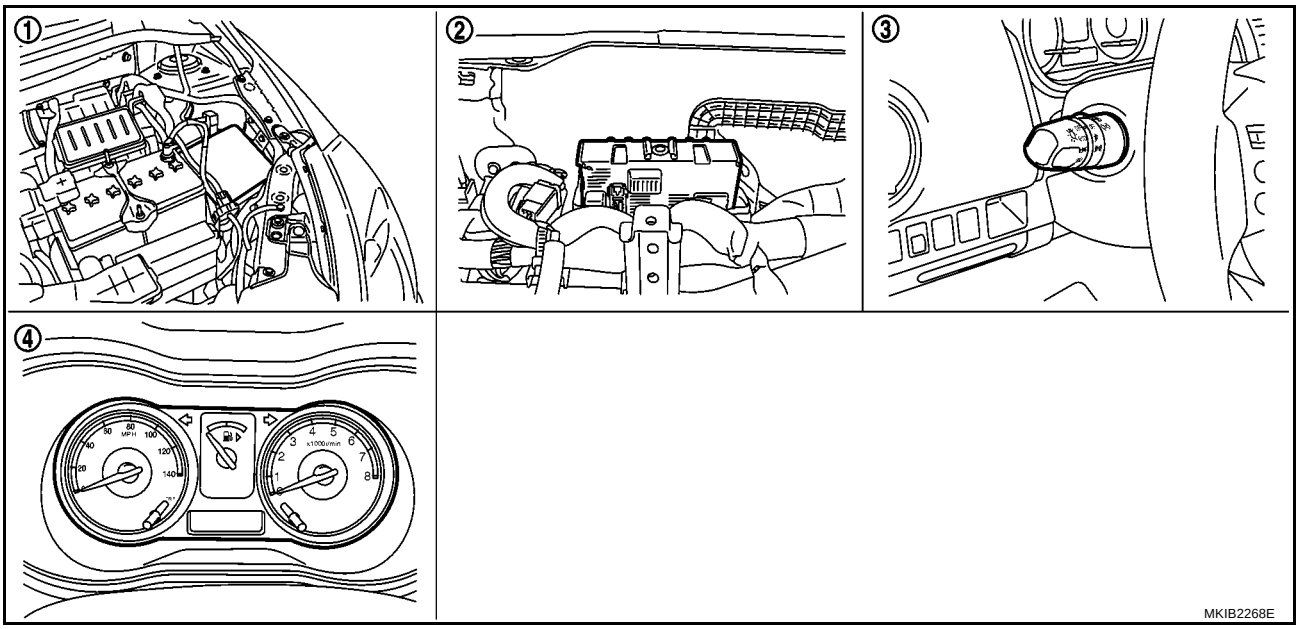


FRONT FOG LAMP

PFP:26150

Component Parts and Harness Connector Location

BKS001EA



1. IPDM E/R E8,E11,E12
2. BCM M57,M59 (View with instrument upper panel removed)
3. Combination switch M38
4. Combination meter M27

System Description

BKS001EB

The control of the front fog lamps is dependent upon the position of the lighting switch. The lighting switch must be in the 1ST/ 2ND position or AUTO position (headlamp is ON) for front fog lamp operation. When the lighting switch is placed in front fog lamp switch ON position the BCM (body control module) receives input signal requesting the front 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) via the CAN communication. The CPU (central processing unit) located in 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 IPDM E/R, and
- to ignition relay, located in IPDM E/R, from battery directly,
- through 20A fuse (No. 61, located in IPDM E/R),
- through 20A fuse (No. 62, located in IPDM E/R),
- through 40A fusible link (letter J, located in fuse, fusible link and relay box)
- to BCM terminals 74 and 79,
- through 10A fuse [No. 7, located in fuse block (J/B)]
- to combination meter terminal 27.

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

- to ignition relay, located in IPDM E/R, from battery directly,
- through 10A fuse [No. 5, located in fuse block (J/B)]
- to BCM terminal 24,
- through 10A fuse [No. 4, located in fuse block (J/B)]
- to combination meter terminal 28.

Ground is supplied

- to BCM terminal 2 and 70
- to combination meter terminals 21, 22 and 23
- through grounds M21 and M66,

- to IPDM E/R terminals 3 and 54
- through grounds E45 (CR and HR engine models),E28 and E44.

FOG LAMP OPERATION

The front fog lamp switch is built in lighting switch. The lighting switch must be in 1ST/2ND position or AUTO position (headlamp is ON) and front fog lamp switch must be ON position for front fog lamp operation.
With the front fog lamp switch in the ON position, the CPU located in the IPDM E/R grounds coil side of the front fog lamp relay. Front fog lamp relay then directs power

- through 20A fuse (No. 65, located in IPDM E/R),
- through IPDM E/R terminal 44
- to front fog lamp LH terminal 1,
- through IPDM E/R terminal 43
- to front fog lamp RH terminal 1.

Ground is supplied

- to front fog lamp LH and RH terminals 2
- through grounds E45 (CR and HR engine models),E28 and E44.

With power and grounds supplied, front fog lamps illuminate.

COMBINATION SWITCH READING FUNCTION

Refer to LT-114, "COMBINATION SWITCH READING FUNCTION" .

EXTERIOR LAMP BATTERY SAVER CONTROL

Refer to LT-9, "EXTERIOR LAMP BATTERY SAVER CONTROL" .

FAIL-SAFE FUNCTION

When CAN communication with other control units is impossible, IPDM E/R performs fail-safe control. If the fail-safe system is operating, front fog lamps does not operate when the combination switch is in any position. After CAN communication recovers normally, it also returns to normal control. (Refer to PG-18, "Fail-safe Control" .)

CAN Communication System Description

BKS001EC

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

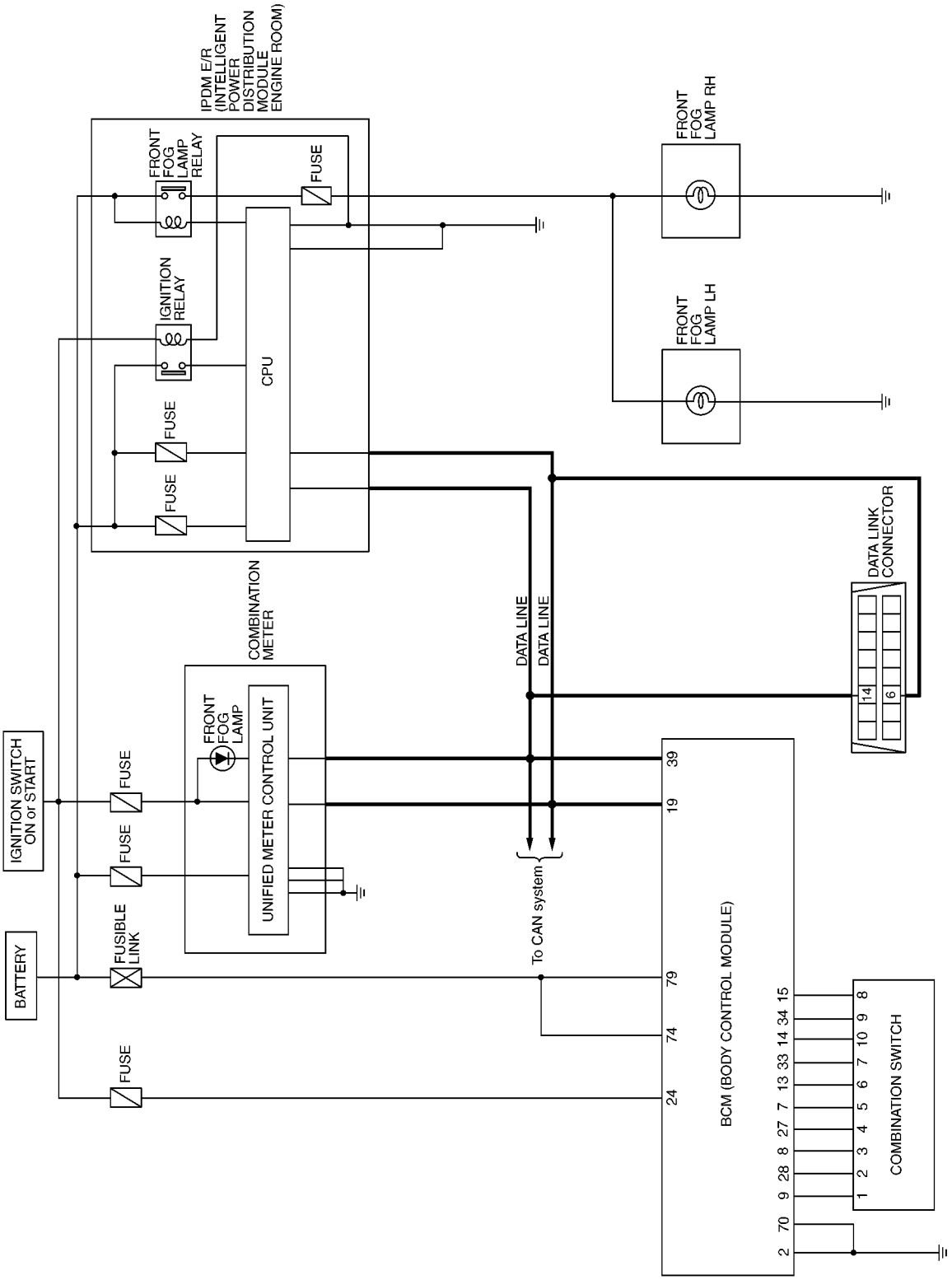
CAN Communication Unit

BKS001ED

Refer to LAN-27, "CAN Communication Unit" .

Schematic

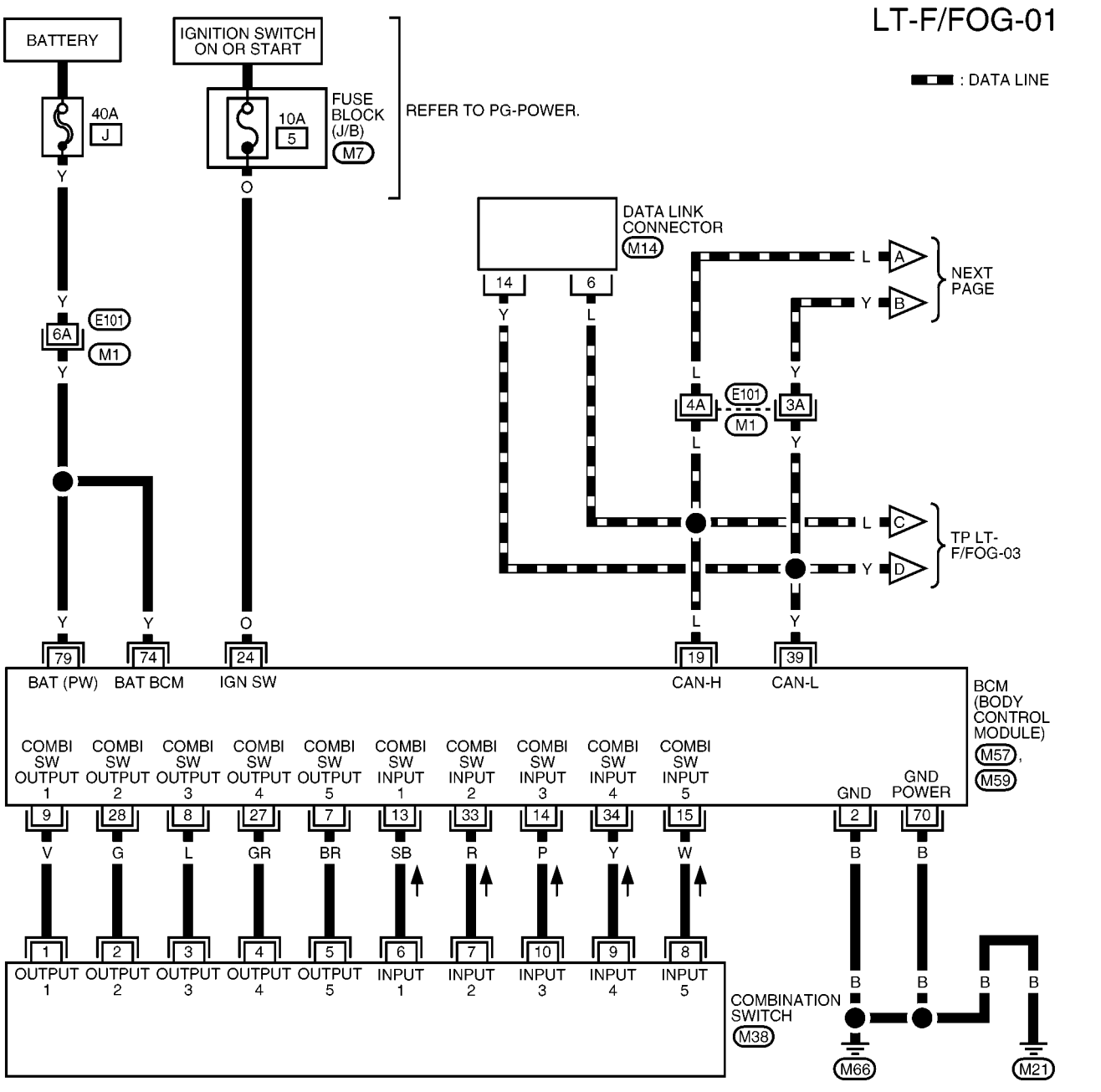
BKS001EE

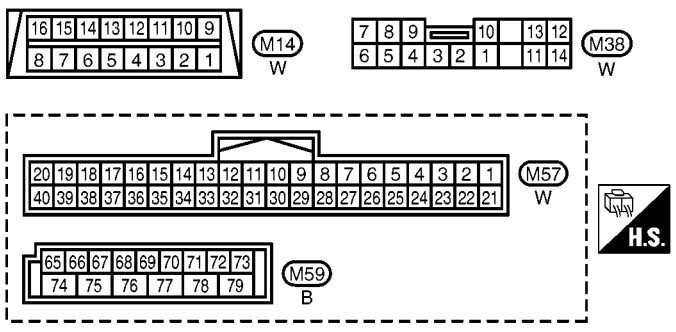


MKWA4349E

Wiring Diagram — F/FOG —

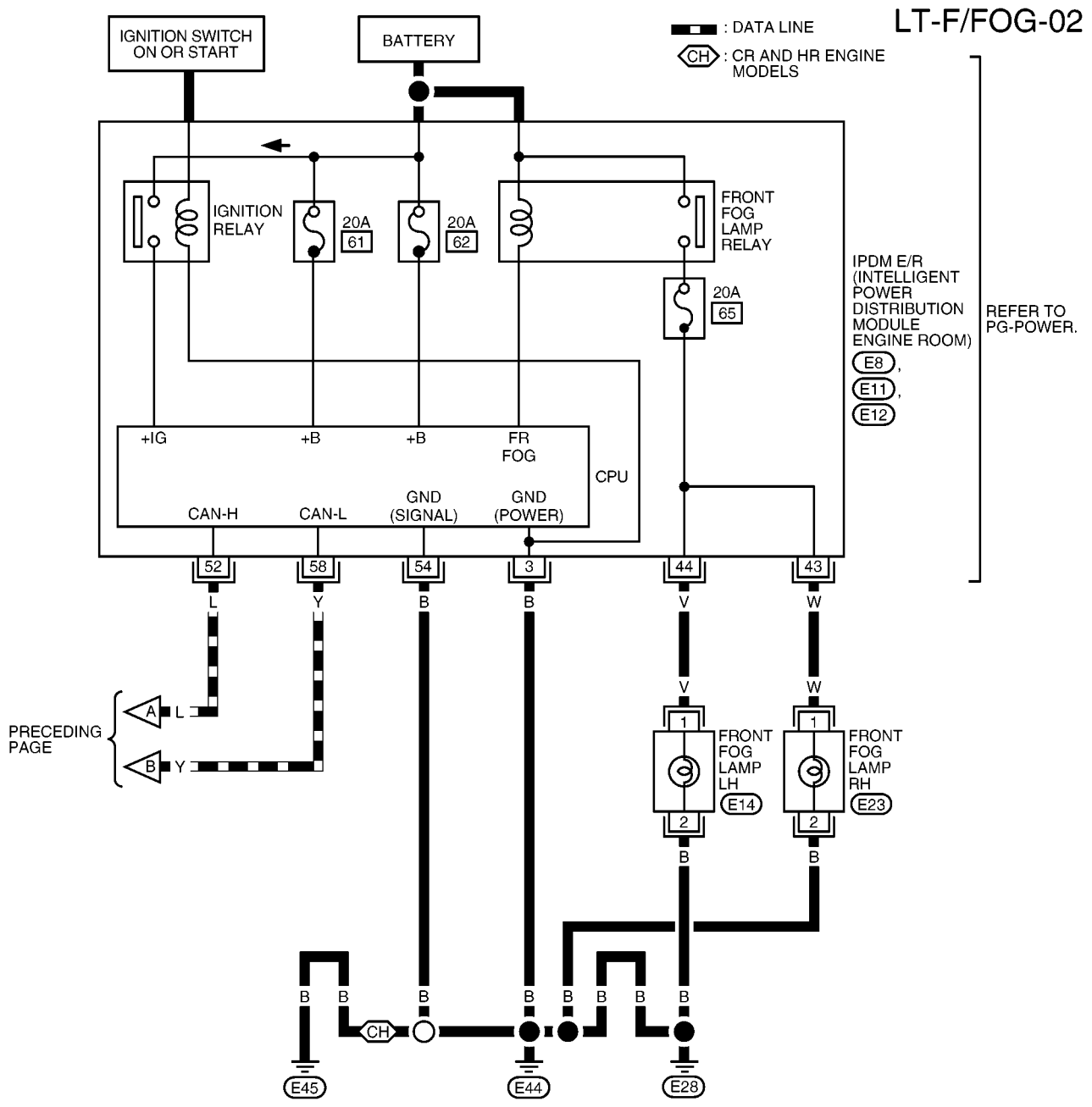
BKS001EF

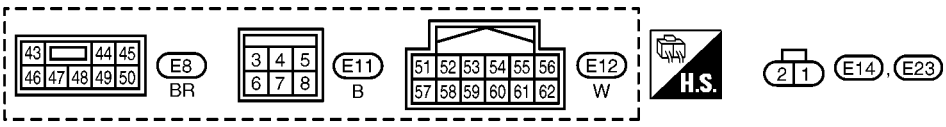




REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

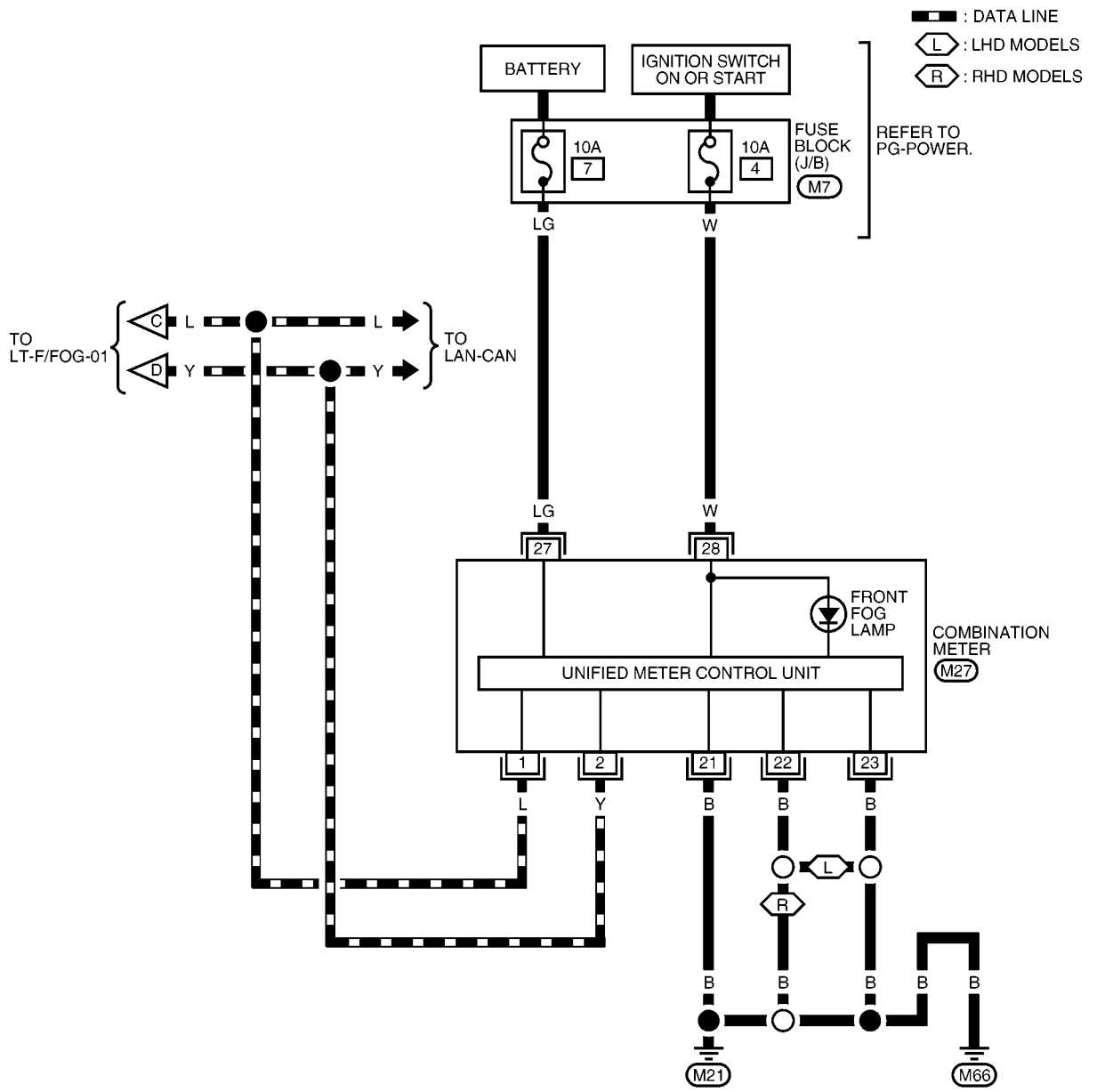
MKWA4350E

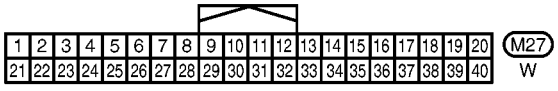

LT-F/FOG-02
: DATA LINE
CH : CR AND HR ENGINE MODELS
IGNITION SWITCH ON OR START
BATTERY
IGNITION RELAY
20A 61
20A 62
FRONT FOG LAMP RELAY
20A 65
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E8, E11, E12
REFER TO PG-POWER.
+IG
+B
+B
FR FOG
CPU
CAN-H
CAN-L
GND (SIGNAL)
GND (POWER)
52
58
54
3
44
43
L
Y
B
B
V
W
PRECEDING PAGE
A L
B Y
FRONT FOG LAMP LH E14
FRONT FOG LAMP RH E23
CH
E45
E44
E28


E8 BR
E11 B
E12 W
H.S.
E14, E23

MKWA4351E

LT-F/FOG-03





REFER TO THE FOLLOWING.
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

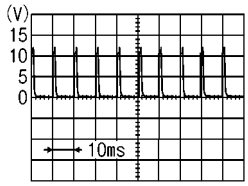
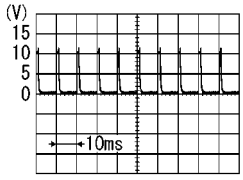
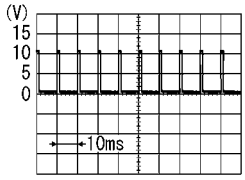
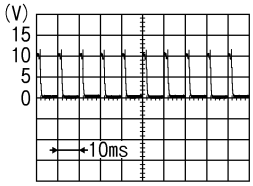
MKWA4352E

Terminals and Reference Values for BCM

BKS001EG

CAUTION:

- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to LT-19, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value
				Ignition switch	Operation or condition	
2	B	Ground	—	ON	—	Approx. 0V
7	BR	Combination switch output 5	Output	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4) OFF	 PKIB8643J Approx. 1.2V
					Lighting, turn, wiper switch (Wiper intermittent dial position 4) Front fog lamp switch ON (Operates only front fog lamp switch)	 PKIB4956J Approx. 1.0V
19	L	CAN – H	Input/ Output	ON	—	Approx. 2.6V
24	O	Ignition switch (ON)	Input	ON	—	Battery voltage
34	Y	Combination switch input 4	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4) OFF	 PKIB4958J Approx. 1.0V
					Lighting, turn, wiper switch (Wiper intermittent dial position 4) Front fog lamp switch ON (Operates only front fog lamp switch)	 PKIB8627J Approx. 1.5 - 2.0V
39	Y	CAN – L	Input/ Output	ON	—	Approx. 2.4V
70	B	Ground	—	ON	—	Approx. 0V
74 79	Y	Battery power supply	Input	OFF	—	Battery voltage

Terminals and Reference Values for IPDM E/R

BKS001EH

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value
				Ignition switch	Operation or condition		
3	B	Ground	—	ON	—		Approx. 0V
43	W	Front fog lamp RH	Output	ON	Lighting switch must be in the 2ND position or AUTO position (headlamp is ON)	Front fog lamp switch: OFF	Approx. 0V
						Front fog lamp switch: ON	Battery voltage
44	V	Front fog lamp LH	Output	ON	Lighting switch must be in the 2ND position or AUTO position (headlamp is ON)	Front fog lamp switch: OFF	Approx. 0V
						Front fog lamp switch: ON	Battery voltage
52	L	CAN – H	Input/ Output	—	—		—
54	B	Ground	—	ON	—		Approx. 0V
58	Y	CAN – L	Input/ Output	—	—		—

How to Proceed With Trouble Diagnosis

BKS001EI

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-73, "System Description" .
3. Perform the Preliminary Check. Refer to LT-81, "Preliminary Check" .
4. Check symptom and repair or replace the malfunctioning parts.
5. Does the front fog lamp operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

BKS001EJ

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES

Check for blown fuses.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	J
	Ignition switch ON or START position	5
IPDM E/R	Battery	61
		62
		65

Refer to LT-76, "Wiring Diagram — F/FOG —" .

OK or NG

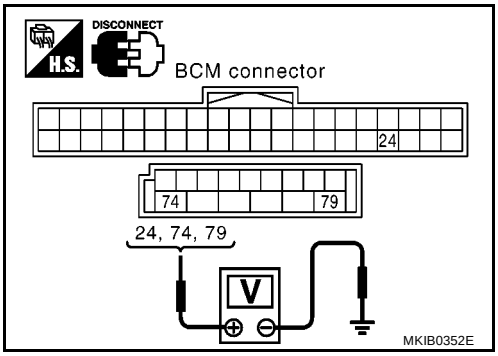
OK >> GO TO 2.

NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

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

Terminal			Ignition switch position		
(+)		(–)	OFF	ACC	ON
BCM Connector	Terminal				
M57	24	Ground	Approx. 0V	Approx. 0V	Battery voltage
M59	74		Battery voltage	Battery voltage	Battery voltage
	79		Battery voltage	Battery voltage	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

3. CHECK GROUND CIRCUIT

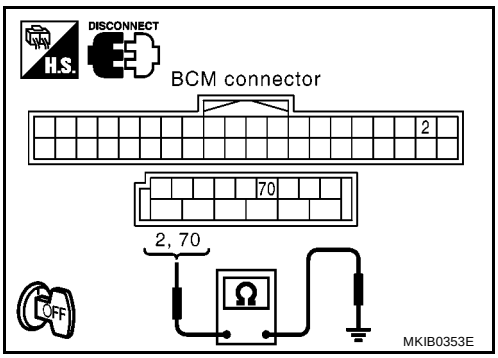
Check continuity between BCM harness connector and ground.

BCM Connector	Terminal	Ground	Continuity
M57	2		Yes
M59	70		

OK or NG

OK >> INSPECTION END

NG >> Repair harness or connector.



CONSULT-II Functions (BCM)

BKS001EK

Refer to LT-19, "CONSULT-II Functions (BCM)" in “HEADLAMP - CONVENTIONAL TYPE -”.

CONSULT-II Functions (IPDM E/R)

BKS001EL

Refer to LT-20, "CONSULT-II Functions (IPDM E/R)" in “HEADLAMP - CONVENTIONAL TYPE -”.

Front Fog lamps Do Not Illuminate (Both Sides)

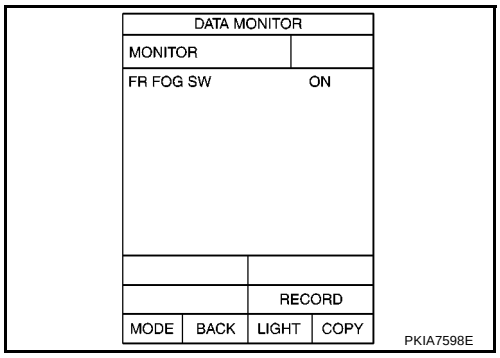
BKS001EM

1. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

1. Select “BCM” on CONSULT-II. Select “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure that “FR FOG SW” turns ON-OFF linked with operation of fog lamp switch.

When fog lamp switch is ON : FR FOG SW ON



Without CONSULT-II

Refer to LT-125, "Combination Switch Inspection" .

OK or NG

OK >> GO TO 2.

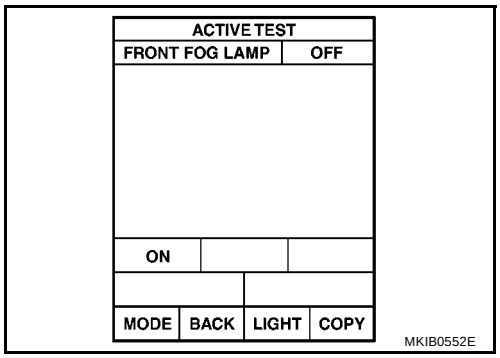
NG >> Check combination switch (lighting switch). Refer to LT-125, "Combination Switch Inspection" .

2. FOG LAMP ACTIVE TEST

With CONSULT-II

1. Select “IPDM E/R” on CONSULT-II. Select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Select “FR FOG LAMP” on “SELECT TEST ITEM” screen.
3. Touch “ON” screen.
4. Make sure front fog lamp operates.

Front fog lamp should operate.



Without CONSULT-II

1. Start auto active test. Refer to PG-22, "Auto Active Test" .
2. Make sure front fog lamp operates.

Front fog lamp should operate.

OK or NG

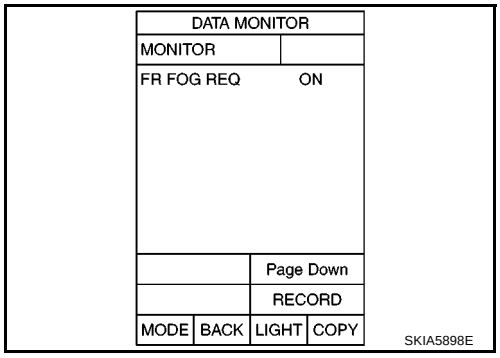
OK >> GO TO 3.

NG >> GO TO 4.

3. CHECK IPDM E/R

1. Select “IPDM E/R” on CONSULT-II. Select “DATA MONITOR” on “SELECT DIAG MODE” screen.
2. Make sure “FR FOG REQ” turns ON when front fog lamp switch is in ON position.

When front fog lamp switch is ON position : FR FOG REQ ON



OK or NG

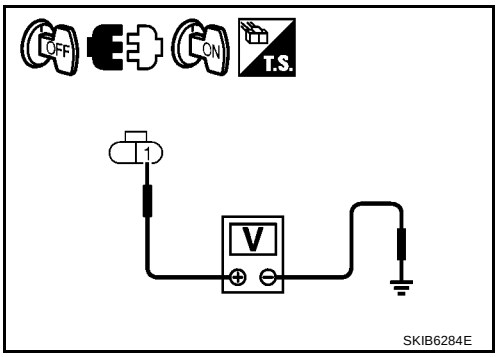
OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .

NG >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .

4. CHECK FOG LAMP INPUT SIGNAL

With CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front fog lamp RH and LH connector.
3. Select “IPDM E/R” on CONSULT-II, and select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
4. Select “FR FOG LAMP” on “SELECT TEST ITEM” screen.
5. Touch “ON” screen.
6. When front fog lamp relay is operating, check voltage between front fog lamp RH and LH harness connector and ground.



(+)			(–)	Voltage
Front fog lamp connector		Terminal		
RH	E23	1	Ground	Battery voltage
LH	E14			

Without CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front fog lamp RH and LH connector.
3. Start auto active test. Refer to PG-22, "Auto Active Test" .
4. When front fog lamp relay is operating, check voltage between front fog lamp (RH and LH) harness connector and ground.

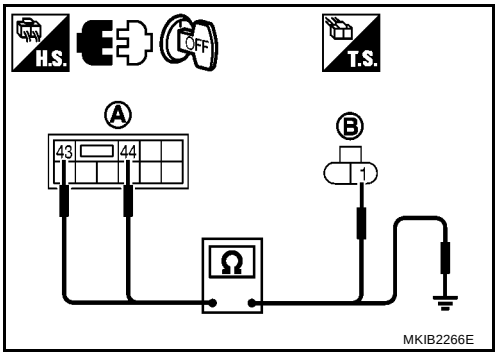
(+)			(–)	Voltage
Front fog lamp connector		Terminal		
RH	E23	1	Ground	Battery voltage
LH	E14			

OK or NG

OK >> GO TO 6.
NG >> GO TO 5.

5. CHECK FOG LAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector (A) and front fog lamp RH and LH harness connector (B).



Circuit	A		B		Continuity
	Connector	Terminal	Connector	Terminal	
RH	E8	43	E23	1	Yes
LH		44	E14		

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

Circuit	A		Ground	Continuity
	Connector	Terminal		
RH	E8	43		No
LH		44		

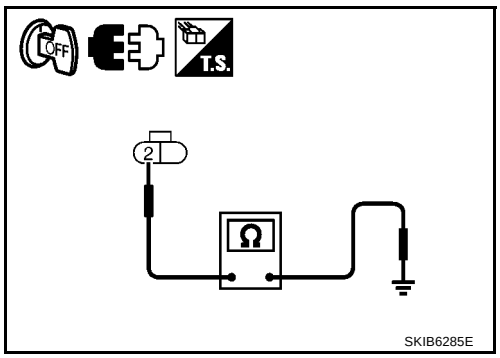
OK or NG

OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

6. CHECK FOG LAMP GROUND

1. Check continuity between front fog lamp RH and LH harness connector and ground.

Front fog lamp connector		Terminal		Continuity
RH	E23	2	Ground	Yes
LH	E14			



OK or NG

OK >> Check front fog lamp bulbs.
NG >> Repair harness or connector.

Front Fog Lamp Does Not Illuminate (One Side)

BKS001EN

1. CHECK BULB

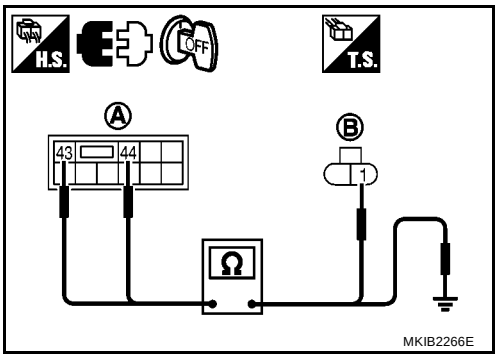
Check bulb of lamp with does not illuminate which does not illuminate.

OK or NG

OK >> GO TO 2.
NG >> Replace front fog lamp bulb.

2. CHECK FOG LAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front fog lamp RH or LH connector.
3. Check continuity between IPDM E/R harness connector (A) and front fog lamp RH or LH harness connector (B).



MKIB2266E

Circuit	A		B		Continuity
	Connector	Terminal	Connector	Terminal	
RH	E8	43	E23	1	Yes
LH		44	E14		

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

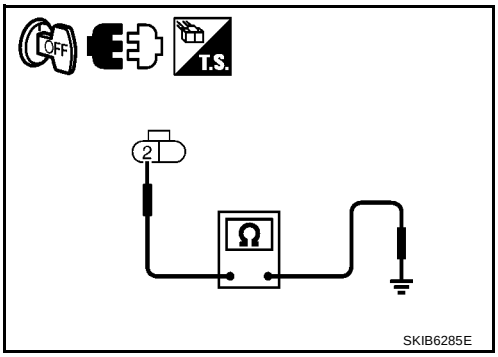
Circuit	A		Ground	Continuity
	Connector	Terminal		
RH	E8	43		No
LH		44		

OK or NG

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

3. CHECK FOG LAMP GROUND

1. Check continuity between front fog lamp RH or LH harness connector and ground.



SKIB6285E

Front fog lamp connector		Terminal	Ground	Continuity
RH	E23	2		Yes
LH	E14			

OK or NG

OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

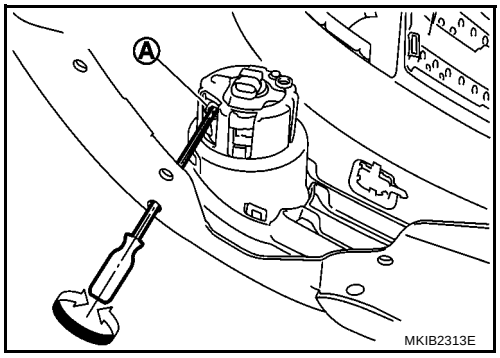
Aiming Adjustment

BKS001EO

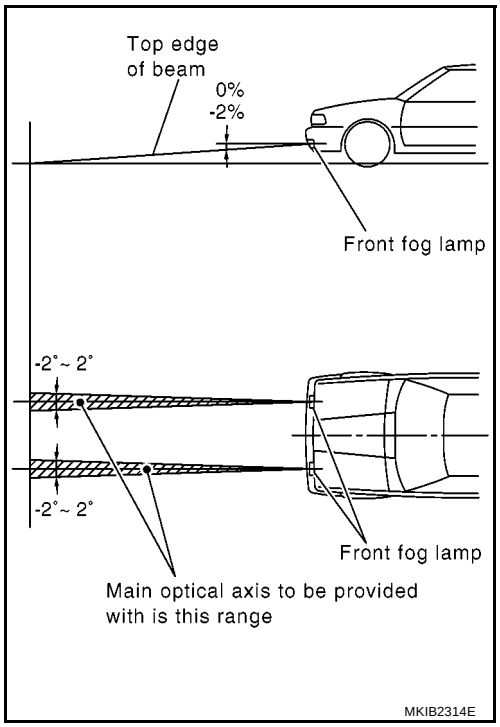
The front fog lamp is a semi-sealed beam type which uses a replaceable halogen bulb. Before performing aiming adjustment, make sure of the following.

- Keep all tires inflated to correct pressure.
- Place vehicle on level surface.
- Set that there is no-load in vehicle other than the driver (or equivalent weight placed in driver's position). Coolant, engine oil filled up to correct level and full fuel tank.

Adjust aiming in the vertical direction by turning the adjusting screw (A).



1. Set the distance between the screen and the center of front fog lamp lens as shown.
2. Turn front fog lamps ON.
3. Adjust front fog lamps using adjusting screws so that the top edge of the high intensity zone is in the figure.
   When performing adjustment, if necessary, cover the headlamps and opposite front fog lamp.

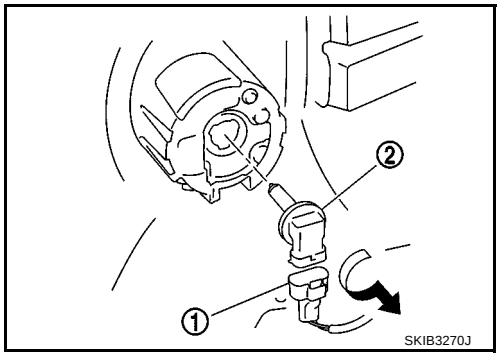


Bulb Replacement

BKS001EP

1. Turn lighting switch OFF.
2. Turn off the fender protector (front) to obtain work space between the fender protector and fender.
3. Disconnect front fog lamp connector (1).
4. Turn bulb socket (2) counterclockwise unlock and remove it.
5. Remove bulb from its socket.

Front fog lamp : 12V-35W (H8)

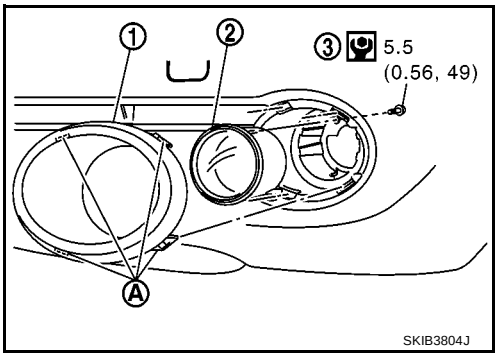


Removal and Installation

BKS001EQ

REMOVAL

1. Turn front fog lamp switch OFF.
2. Turn over the fender protector and undercover to obtain work space between the fender protector and fender.
3. Remove pawl (A), and front bumper finisher (1) from front bumper.
4. Disconnect front fog lamp connector.
5. Remove screw (3) and remove front fog lamp (2) from bracket.



INSTALLATION

- Installation is the reverse order of removal.

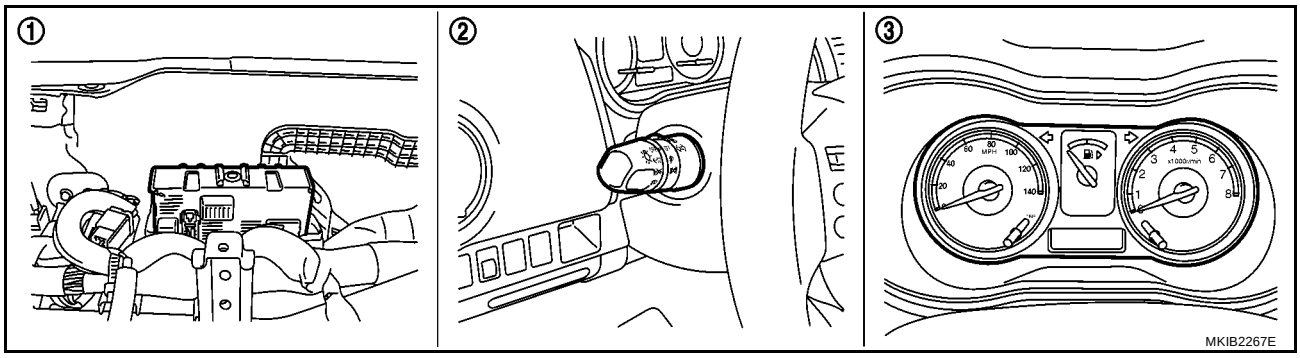
Tightening torque : **5.5 N·m (0.56 kg-m, 49 in-lb)**

REAR FOG LAMP

PFP:26550

Component Parts and Harness Connector Location

BKS001ER



1. BCM M57,M59 (View with instrument upper panel removed)
2. Combination switch M38
3. Combination meter M27

System Description

BKS001ES

The control of the rear fog lamps is dependent upon the position of the lighting switch. The lighting switch must be in the 1ST/2ND position for rear fog lamp operation. When the lighting switch is placed in the rear fog lamp position* the BCM (body control module) receives input signal requesting the rear fog lamps to illuminate.
*:Rear fog lamp switch is an auto return switch. BCM reads a change when rear fog lamp switch is operated. It switches between ON and OFF every time when rear fog lamp switch is operated.

OUTLINE

Power is also supplied at all times

- through 40A fusible link (letter J, located in the fuse and fusible link block),
- to BCM terminals 74 and79,
- through 10A fuse [No. 7, located in the fuse block (J/B)]
- to combination meter terminal 27.

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

- through 10A fuse [No. 5 located in the fuse block (J/B)]
- to BCM terminal 24,
- through 10A fuse [No. 4, located in the fuse block (J/B)]
- to combination meter terminal 28.

Ground is supplied

- to BCM terminals 2 and 70
- to combination meter terminals 21, 22 and 23
- through grounds M21 and M66.

REAR FOG LAMP OPERATION

The lighting switch must be in the 1ST or 2ND position for rear fog lamp operation.
With the rear fog lamp switch in the ON position, the BCM directs power

- through BCM terminal 69
- to rear combination lamp RH (rear fog lamp) terminal 2.

Ground is supplied

- to rear combination lamp RH (rear fog lamp) terminal 1
- through grounds B13,B28,B38 and B48.

With power and grounds supplied, the rear fog lamp illuminate.
The unified meter control unit that received the rear fog lamp request signal by BCM via the CAN communication makes a rear fog lamp indicator lamp turn on in combination meter.

COMBINATION SWITCH READING FUNCTION

Refer to LT-114, "COMBINATION SWITCH READING FUNCTION" .

CAN Communication System Description

BKS001ET

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

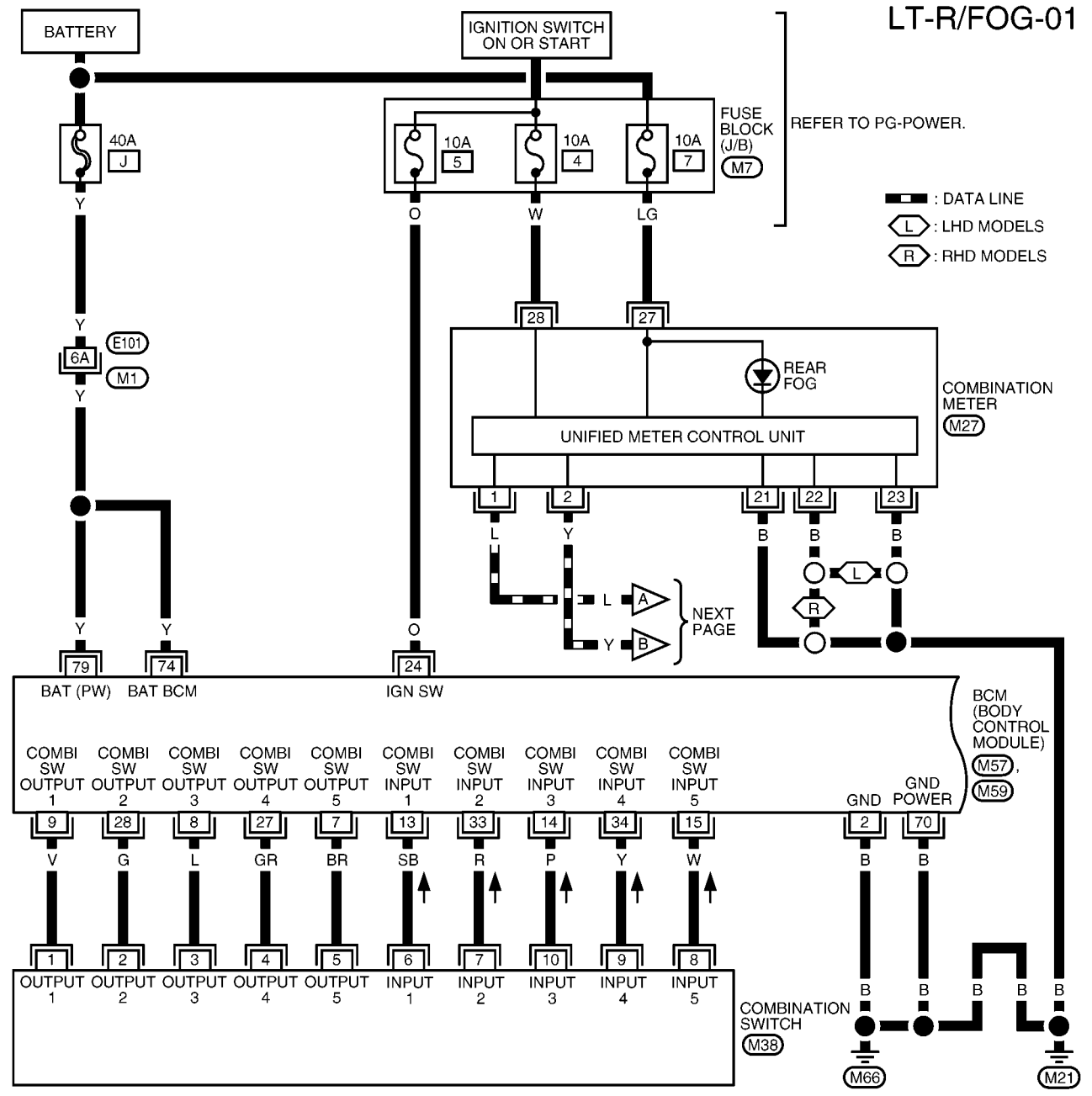
CAN Communication Unit

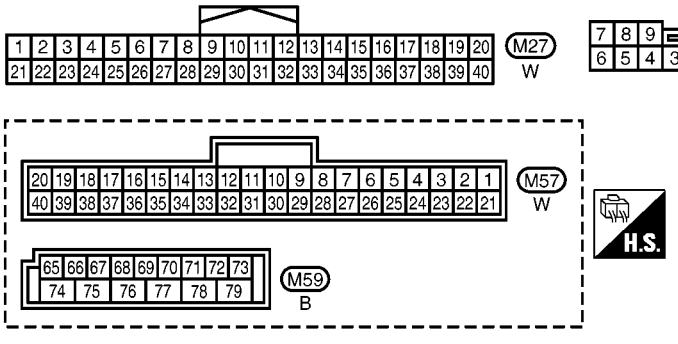
BKS001EU

Refer to LAN-27, "CAN Communication Unit" .

Wiring Diagram — R/FOG —

BKS001EW

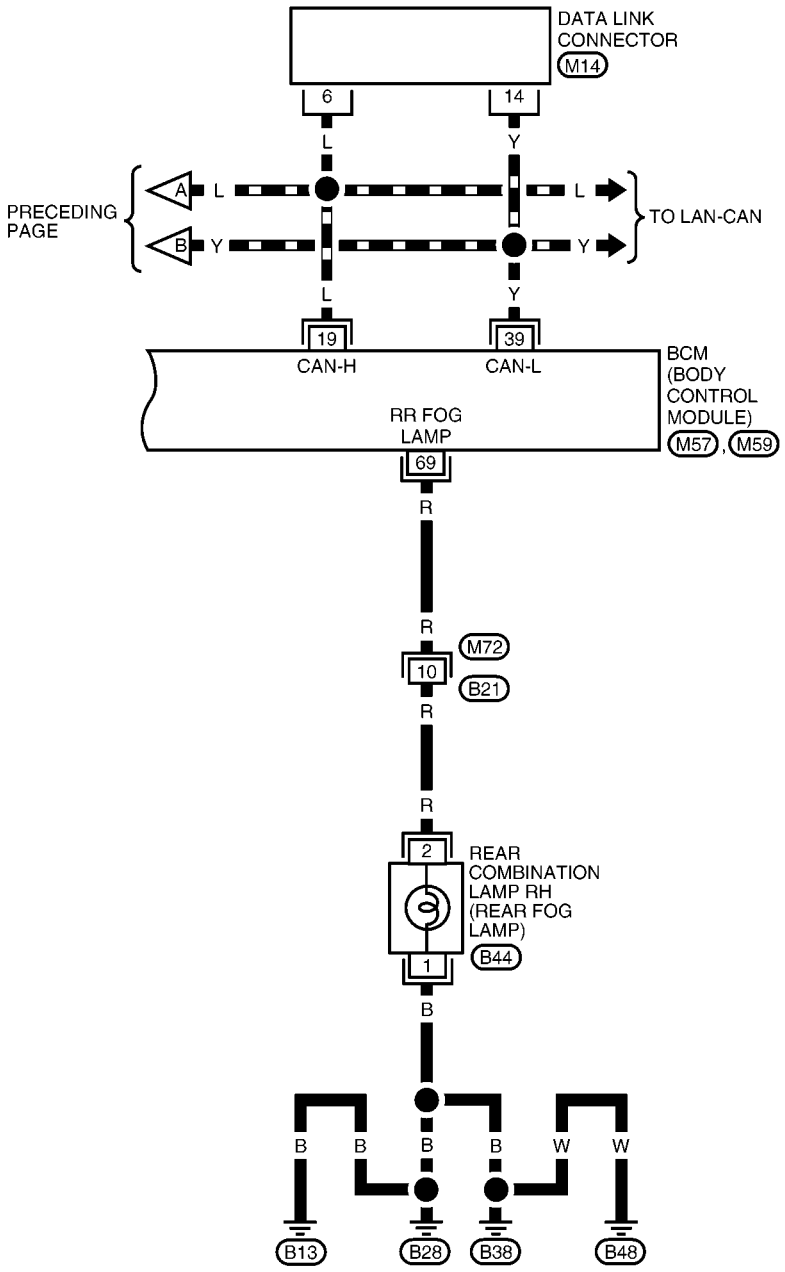


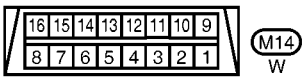


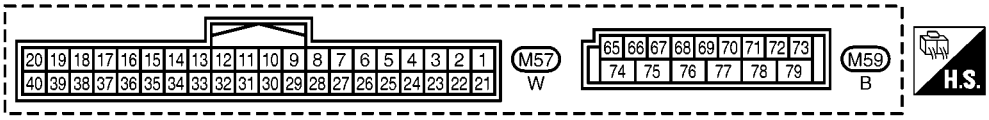
REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

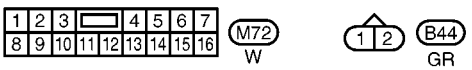
MKWA4353E

LT-R/FOG-02









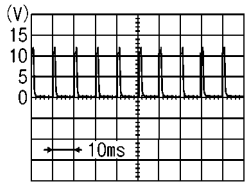
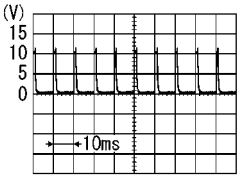
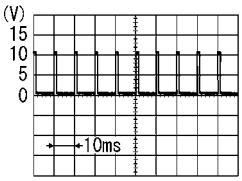
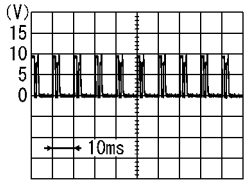
MKWA4354E

Terminals and Reference Values for BCM

BKS001EX

CAUTION:

- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to LT-19, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value
				Ignition switch	Operation or condition		
2	B	Ground	—	ON	—		Approx. 0V
7	BR	Combination switch output 5	Output	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB8643J Approx. 1.2V
						Rear fog lamp switch ON (Operates only rear fog lamp switch)	 PKIB4956J Approx. 1.0V
14	P	Combination switch input 3	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4958J Approx. 1.0V
						Rear fog lamp switch ON (Operates only rear fog lamp switch)	 PKIC1030E Approx. 1.5V
19	L	CAN – H	Input/ Output	ON	—		Approx. 2.6V
24	O	Ignition switch (ON)	Input	ON	—		Battery voltage
39	Y	CAN – L	Input/ Output	ON	—		Approx.2.4V
69	R	Rear fog lamp	Output	ON	Rear fog lamp switch	ON	Battery voltage
						OFF	Approx. 0V

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value
				Ignition switch	Operation or condition	
70	B	Ground	—	ON	—	Approx. 0V
74 79	Y	Battery power supply	Input	OFF	—	Battery voltage

How to Proceed With Trouble Diagnosis

BKS001EY

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-88, "System Description" .
3. Perform the Preliminary Check. Refer to LT-94, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the rear fog lamp operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

BKS001EZ

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES

Check for blown fuses.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	J
	Ignition switch ON or START position	5

Refer to LT-90, "Wiring Diagram — R/FOG —" .

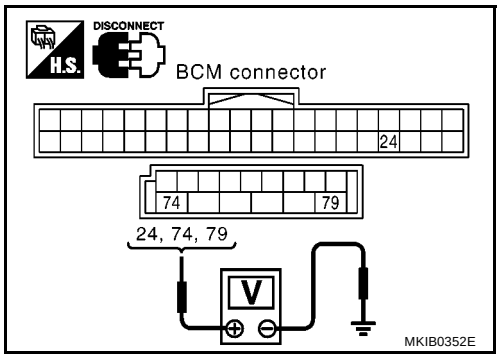
OK or NG

OK >> GO TO 2.
NO >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

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

Terminal			Ignition switch position		
(+)		(–)	OFF	ACC	ON
BCM Connector	Terminal				
M57	24	Ground	Approx. 0V	Approx. 0V	Battery voltage
M59	74		Battery voltage	Battery voltage	Battery voltage
	79		Battery voltage	Battery voltage	Battery voltage



OK or NG

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

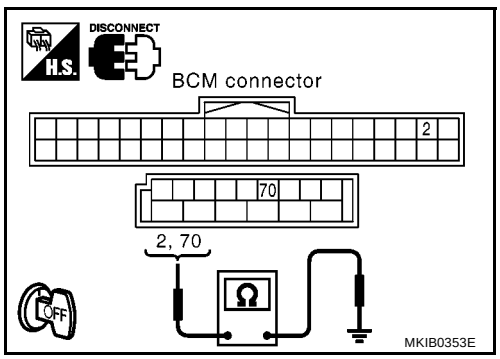
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM Connector	Terminal	Ground	Continuity
M57	2		Yes
M59	70		

OK or NG

OK >> INSPECTION END
NG >> Repair harness or connector.



CONSULT-II Functions (BCM)

BKS001F0

Refer to LT-19, "CONSULT-II Functions (BCM)" in “HEADLAMP - CONVENTIONAL TYPE -.”

Rear Fog Lamp Does Not Operate

BKS001F1

1. CHECK BULB

Check bulb of lamp which does not illuminate.

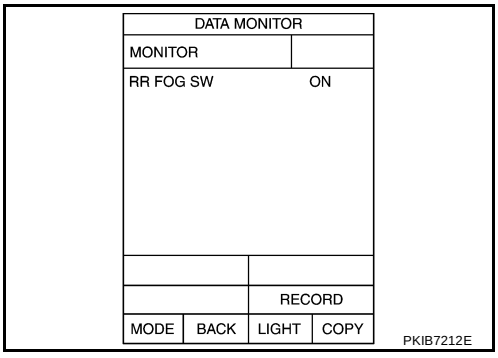
OK or NG

OK >> GO TO 2.
NG >> Replace rear fog lamp bulb.

2. CHECK COMBINATION SWITCH INPUT SIGNAL

1. Select “BCM” on CONSULT-II. Select “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure “RR FOG SW” turns ON-OFF linked with operation of rear fog lamp switch.

When lighting switch 1ST or 2ND position and rear fog lamp switch ON position : RR FOG SW ON



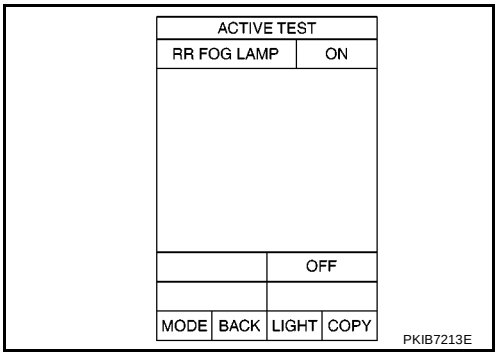
OK or NG

OK >> GO TO 3.
NG >> Replace combination switch (lighting switch).

3. ACTIVE TEST

1. Select “BCM” on CONSULT-II. Select “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
3. Touch “RR FOG LAMP” screen.
4. Make sure rear fog lamp operates.

Rear fog lamp should operate.



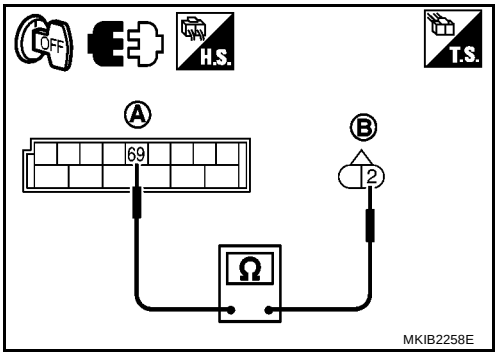
OK or NG

OK >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> GO TO 4.

4. CHECK REAR FOG LAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and rear combination lamp RH (rear fog lamp) connector.
3. Check continuity between BCM harness connector (A) and rear combination lamp RH (rear fog lamp) harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	
M59	69	B44	2	Yes



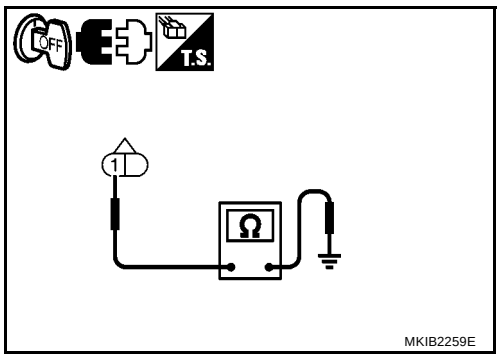
OK or NG

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

5. CHECK REAR FOG LAMP GROUND

Check continuity between rear combination lamp RH (rear fog lamp) harness connector and ground.

connector	Terminal	Ground	Continuity
B44	1		Yes



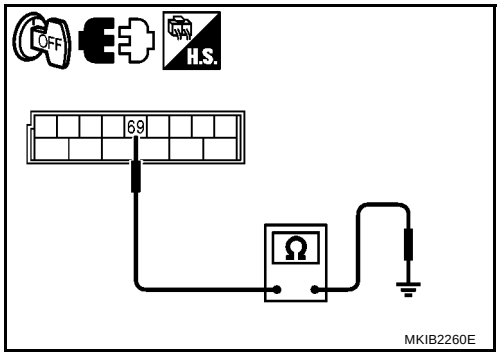
OK or NG

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

6. CHECK SHORT CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M59	69		No



OK or NG

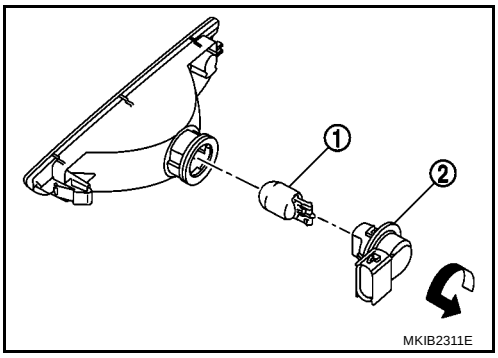
OK >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> After repairing harness be sure to disconnect battery negative cable, and then reconnect it.

Bulb Replacement

BKS001F2

1. Remove rear bumper fascia. Refer to EI-8, "REAR BUMPER" .
2. Disconnect rear fog lamp connector.
3. Turn bulb socket (2) counterclockwise and unlock it.
4. Remove bulb (1) from its socket.

Rear fog lamp : 12V - 21W

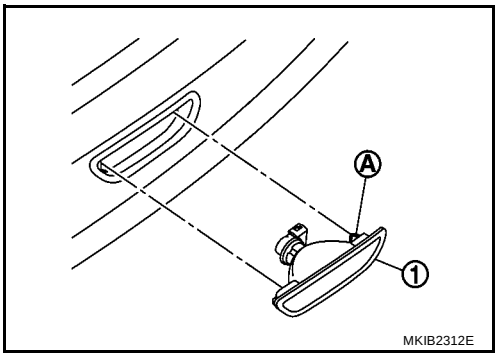


Removal and Installation

BKS001F3

REMOVAL

1. Remove rear bumper fascia. Refer to EI-8, "REAR BUMPER" .
2. Disconnect rear fog lamp connector.
3. While pressing metal clip (A) on the revers side of the bumper fascia.



INSTALLATION

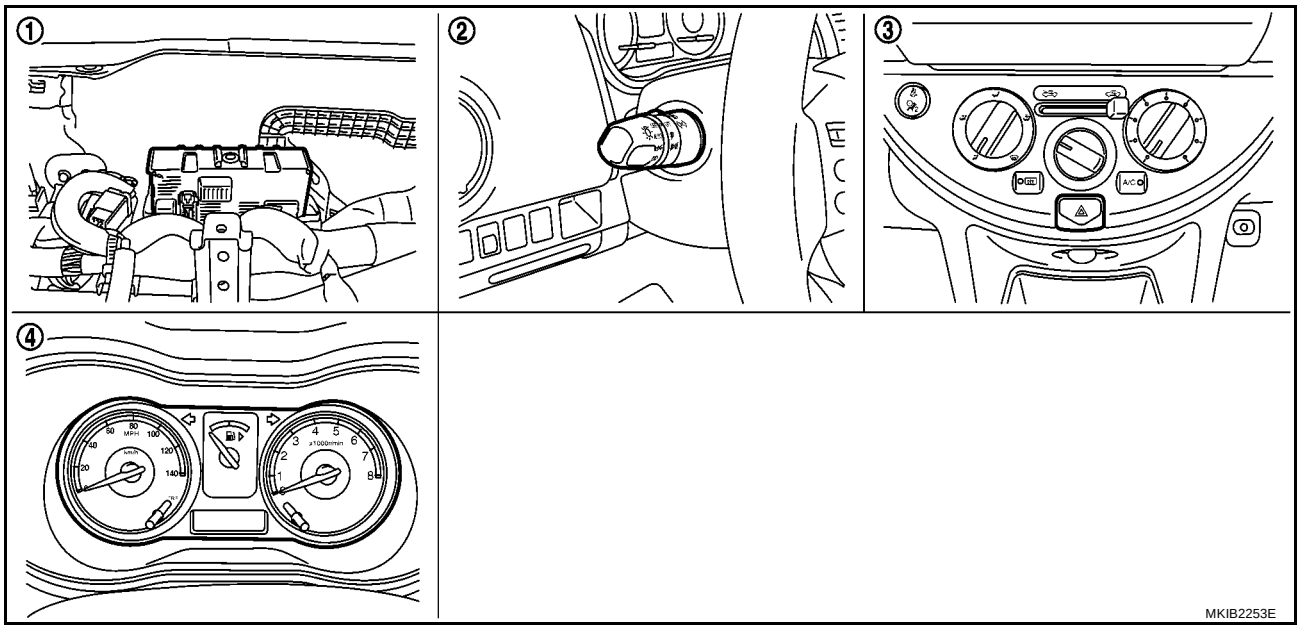
Installation is the reverse order of removal.

TURN SIGNAL AND HAZARD WARNING LAMPS

PFP:26120

Component Parts and Harness Connector Location

BKS001F4



1. BCM M57,M59 (View with instrument upper panel removed)
2. Combination switch M38
3. Hazard switch M63
4. Combination meter M27

System Description

BKS001F5

TURN SIGNAL OPERATION

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

- through 10A fuse [No. 5, located in fuse block (J/B)]
- to BCM terminal 24,
- through 10A fuse [No. 4, located in fuse block (J/B)]
- to combination meter terminal 28.

Ground is supplied

- to BCM terminals 2 and 70
- to combination meter terminals 21, 22 and 23
- through grounds M21 and M66.

LH Turn Signal Lamp

When turn signal switch is moved to left position, BCM receives input signal requesting left turn signals to flash. BCM then supplies power

- through BCM terminal 65
- to front combination lamp LH (turn signal) terminal 1
- to side turn signal lamp LH terminal 1
- to rear combination lamp LH (turn signal) terminal 3.

Ground is supplied

- to front combination lamp LH (turn signal) terminal 2
- to side turn signal lamp LH terminal 2
- through grounds E45 (CR and HR engine models),E28 and E44,
- to rear combination lamp LH (turn signal) terminal 2
- through grounds B13,B28,B38 and B48.

The BCM also supplies input to combination meter terminals 1 and 2 via the CAN communication. This input is processed by unified meter control unit in combination meter, which in turn supplies ground to the left turn signal indicator lamp.

With power and input supplied, BCM controls flashing of LH turn signal lamps.

RH Turn Signal Lamp

When turn signal switch is moved to right position, BCM receives input signal requesting right turn signals to flash. BCM then supplies power

- through BCM terminal 66
- to front combination lamp RH (turn signal) terminal 1
- to side turn signal lamp RH terminal 1
- to rear combination lamp RH (turn signal) terminal 3.

Ground is supplied

- to front combination lamp RH (turn signal) terminal 2
- to side turn signal lamp RH terminal 2
- through grounds E45 (CR and HR engine models),E28 and E44,
- to rear combination lamp RH (turn signal) terminal 2
- through grounds B13,B28,B38 and B48.

The BCM also supplies input to combination meter terminals 1 and 2 via the CAN communication. This input is processed by unified meter control unit in combination meter, which in turn supplies ground to the right turn signal indicator lamp.
With power and input supplied, BCM controls flashing of RH turn signal lamps.

HAZARD LAMP OPERATION

Power is supplied at all times

- through 40A fusible link (letter J, located in fuse, fusible link and relay box)
- to BCM terminals 74 and 79,
- through 10A fuse [No. 7, located in fuse block (J/B)]
- to BCM terminal 27.

Ground is supplied

- to hazard switch terminal 1
- to BCM terminals 2 and 70
- to combination meter terminals 21, 22 and 23
- through grounds M21 and M66.

When hazard switch is depressed, ground is supplied

- to BCM terminal 26
- through hazard switch terminal 2.

BCM then supplies power

- through BCM terminal 65
- to front combination lamp LH (turn signal) terminal 1
- to side turn signal lamp LH terminal 1
- to rear combination lamp LH (turn signal) terminal 3,
- through BCM terminal 66
- to front combination lamp RH (turn signal) terminal 1
- to side turn signal lamp RH terminal 1
- to rear combination lamp RH (turn signal) terminal 3.

Ground is supplied

- to front combination lamp LH and RH (turn signal) terminal 2
- to side turn signal lamp LH and RH terminals 2
- through grounds E45 (CR and HR engine models),E28 and E44,
- to rear combination lamp LH and RH (turn signal) terminal 2
- through grounds B13,B28,B38 and B48.

The BCM also supplies input to combination meter terminals 1 and 2 across CAN communication lines. This input is processed by unified meter control unit in combination meter, which in turn supplies ground to the left and right turn signal indicator lamps.
With power and input supplied, BCM controls flashing of hazard warning lamps.

COMBINATION SWITCH READING FUNCTION

Refer to LT-114, "COMBINATION SWITCH READING FUNCTION" .

CAN Communication System Description

BKS001F6

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

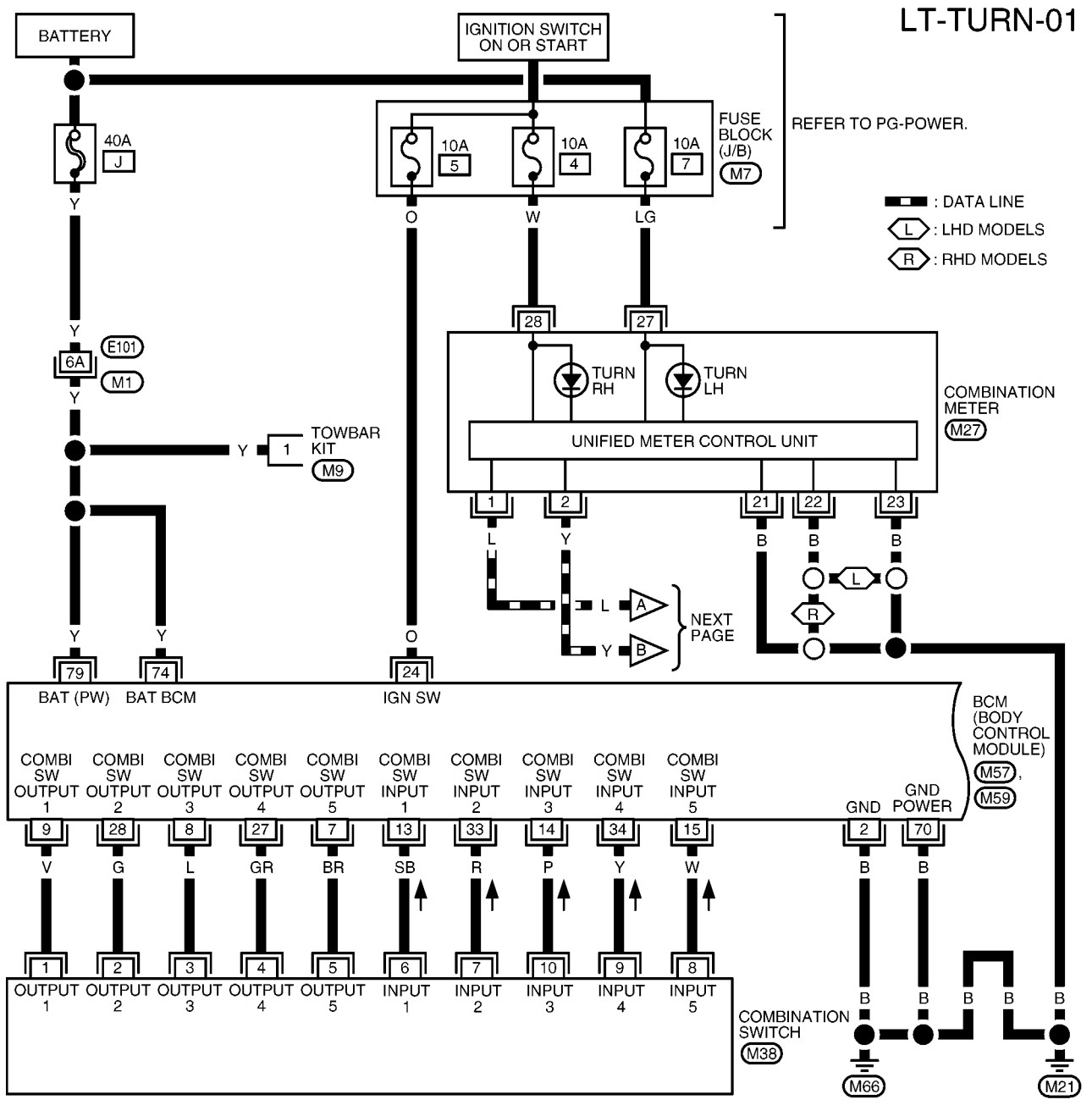
CAN Communication Unit

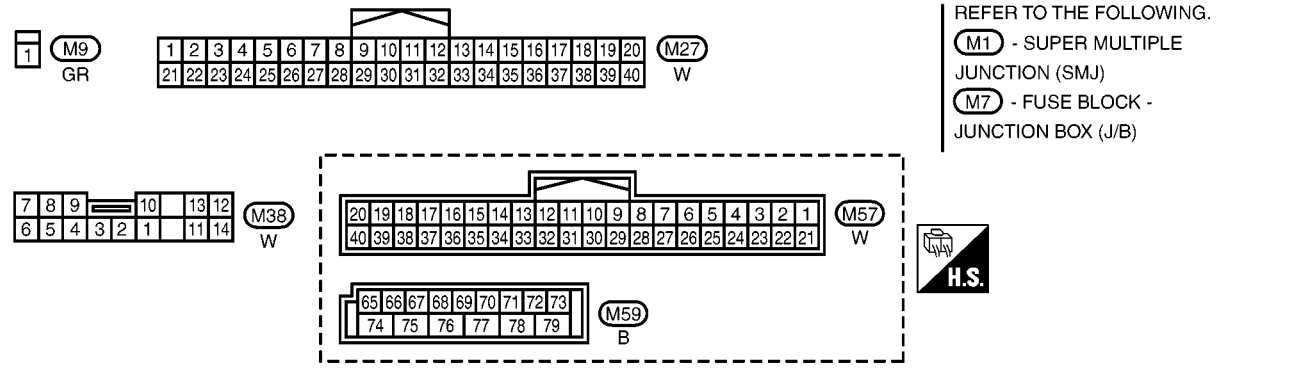
BKS001F7

Refer to LAN-27, "CAN Communication Unit" .

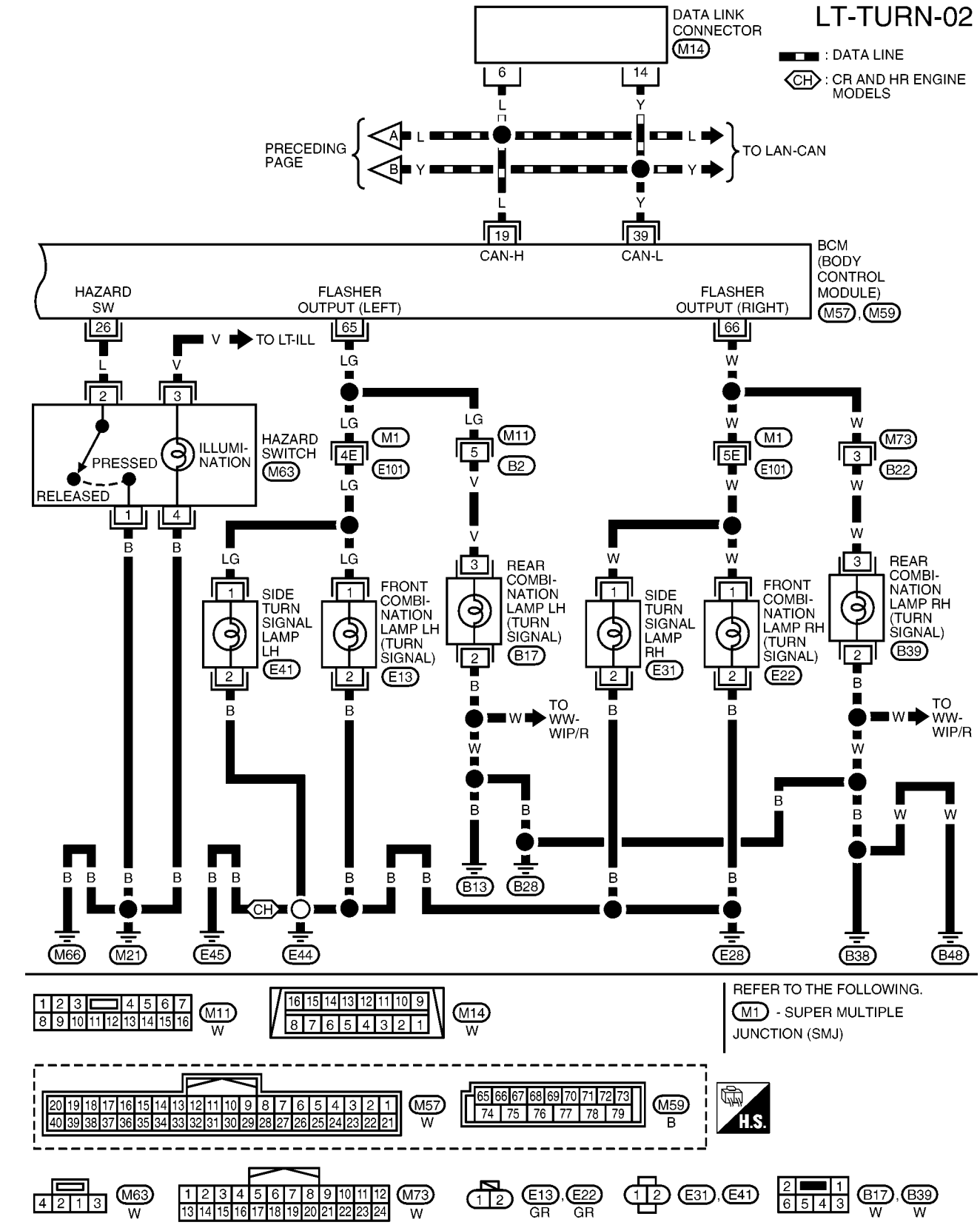
Wiring Diagram — TURN —

BKS001F9





MKWA4355E


LT-TURN-02
DATA LINK CONNECTOR
M14
: DATA LINE
CH : CR AND HR ENGINE MODELS
PRECEDING PAGE
TO LAN-CAN
CAN-H
CAN-L
BCM (BODY CONTROL MODULE)
M57, M59
HAZARD SW
FLASHER OUTPUT (LEFT)
FLASHER OUTPUT (RIGHT)
TO LT-ILL
HAZARD SWITCH
M63
PRESSED
RELEASED
ILLUMI-NATION
SIDE TURN SIGNAL LAMP LH
E41
FRONT COMBI-NATION LAMP LH (TURN SIGNAL)
E13
REAR COMBI-NATION LAMP LH (TURN SIGNAL)
B17
SIDE TURN SIGNAL LAMP RH
E31
FRONT COMBI-NATION LAMP RH (TURN SIGNAL)
E22
REAR COMBI-NATION LAMP RH (TURN SIGNAL)
B39
TO WW-WIP/R
M66
M21
E45
E44
B13
B28
E28
B38
B48
REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M11
M14
M57
M59
H.S.
M63
M73
E13, E22
E31, E41
B17, B39

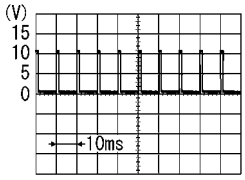
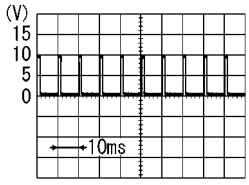
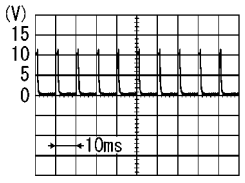
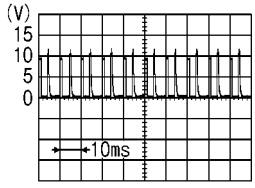
MKWA4356E

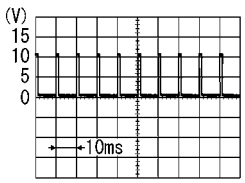
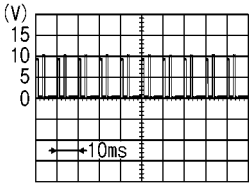
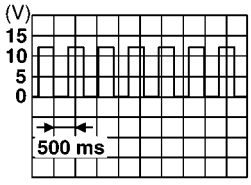
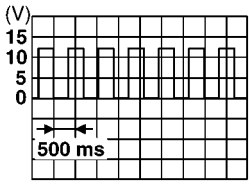
Terminals and Reference Values for BCM

BKS001FA

CAUTION:

- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to LT-106, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value
				Ignition switch	Operation or condition		
2	B	Ground	—	ON	—		Approx. 0V
9	V	Combination switch output 1	Output	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4958J Approx. 1.2V
						Any of the conditions below ● Turn signal switch to right ● Turn signal switch to left	 PKIB4959J Approx. 1.0V
15	W	Combination switch input 5	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4956J Approx. 0.9V
						Turn signal switch to right	 PKIB8625J Approx. 1.5 - 2.0V
19	L	CAN – H	Input/ Output	ON	—		Approx. 2.6V
24	O	Ignition switch (ON)	Input	ON	—		Battery voltage
26	L	Hazard switch signal	Input	OFF	Hazard switch	ON	Approx. 0V
						OFF	Battery voltage

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value
				Ignition switch	Operation or condition	
34	Y	Combination switch input 4	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4) — OFF	 PKIB4958J Approx. 1.0V
					Turn signal switch to left	 PKIB8630J Approx. 2.0V
39	Y	CAN – L	Input/ Output	ON	—	Approx. 2.4V
65	LG	Flasher output (Left)	Output	ON	Turn signal switch — OFF	Approx. 0V
					To left	 SKIA3009J
66	W	Flasher output (Right)	Output	ON	Turn signal switch — OFF	Approx. 0V
					To right	 SKIA3009J
70	B	Ground	—	ON	—	Approx. 0V
74 79	Y	Battery power supply	Input	OFF	—	Battery voltage

How to Proceed With Trouble Diagnosis

BKS001FB

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-98, "System Description" .
3. Perform the preliminary check. Refer to LT-105, "Preliminary Check" .
4. Check symptom and repair or replace the malfunctioning parts.
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

BKS001FC

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES

Check for blown fuses.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	J
	Ignition switch ON or START position	5

Refer to LT-101, "Wiring Diagram — TURN —" .

OK or NG

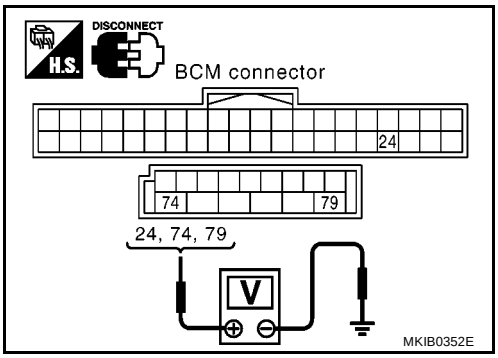
OK >> GO TO 2.

NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

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

Terminal			Ignition switch position		
(+)		(–)	OFF	ACC	ON
BCM Connector	Terminal				
M57	24	Ground	Approx. 0V	Approx. 0V	Battery voltage
M59	74		Battery voltage	Battery voltage	Battery voltage
	79		Battery voltage	Battery voltage	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

3. CHECK GROUND CIRCUIT

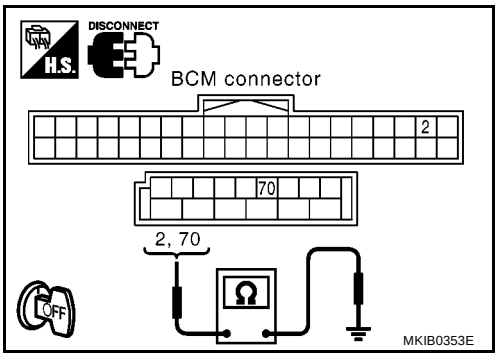
Check continuity between BCM harness connector and ground.

BCM Connector	Terminal	Ground	Continuity
M57	2		Yes
M59	70		

OK or NG

OK >> INSPECTION END

NG >> Repair harness or connector.



CONSULT-II Functions (BCM)

BKS001FD

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

BCM diagnosis part	Diagnosis mode	Description
FLASHER	Work Support	Changes the setting for each function.
	DATA MONITOR	Displays BCM input data in real time.
	ACTIVE TEST	Operation of electrical loads can be checked by sending driving signal to them.

CONSULT-II INSPECTION PROCEDURE

Refer to GI-36, "CONSULT-II Start Procedure" .

CONSULT-II Application Items

BKS001KZ

WORK SUPPORT

Supported Item	All items will be monitored.
HAZARD LAMP SET	hazard reminder function mode can be changed in this mode.

Hazard Lamp Set

	MODE1		MODE2		MODE3		MODE4	
Remote controller operation	Lock	Unlock	Lock	Unlock	Lock	Unlock	Lock	Unlock
Hazard warning lamp flash	-	-	-	Twice	Once	-	Once	Twice

DATA MONITOR

Monitor item		Contents
IGN ON SW	“ON/OFF”	Displays status (ignition switch IGN position: ON/other: OFF) of ignition switch judged from the ignition switch signal.
HAZARD SW	“ON/OFF”	Displays status (hazard switch ON position: ON/other: OFF) of hazard switch judged from the hazard switch signal.
TURN SIGNAL R	“ON/OFF”	Displays status (turn signal switch right position: ON/other: OFF) of turn RH switch judged from the turn signal switch signal.
TURN SIGNAL L	“ON/OFF”	Displays status (turn signal switch left position: ON/other: OFF) of turn LH switch judged from the turn signal switch signal.
TURN/L MNTR	“ON/OFF”	Displays status (One bulb blown: ON/Others: OFF) as judged from bulb signal.

ACTIVE TEST

Test Item	Description
FLASHER	This test is able to check left or right turn signal lamp operation. The turn signal lamp turned ON when “LH” or “RH” on CONSULT-II screen is touched.

Turn Signal Lamp Does Not Operate

BKS001FE

1. CHECK BULB

Check bulb standard of each turn signal lamp is correct.

OK or NG

OK >> GO TO 2.
NG >> Replace turn signal lamp bulb.

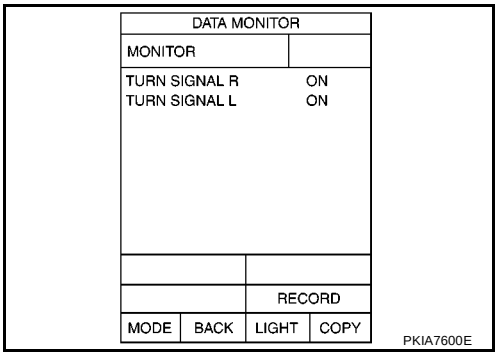
2. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

1. Select “BCM” on CONSULT-II. Select “FLASHER” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure that “TURN SIGNAL R” and “TURN SIGNAL L” turns ON-OFF linked with operation of lighting switch.

When turn signal switch is right position : TURN SIGNAL R ON

When turn signal switch is left position : TURN SIGNAL L ON



Without CONSULT-II

Refer to LT-125, "Combination Switch Inspection" .

OK or NG

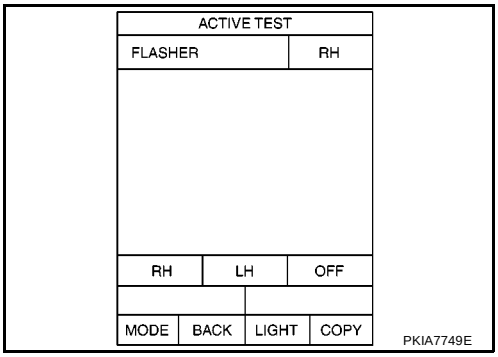
OK >> GO TO 3.
NG >> Check combination switch. Refer to LT-125, "Combination Switch Inspection" .

3. ACTIVE TEST

With CONSULT-II

1. Select “BCM” on CONSULT-II. Select “FLASHER” on “SELECT TEST ITEM” screen.
2. Select “ACTIVE TEST” on “SELECT DIAG MODE” screen. Select “FLASHER” on “SELECT TEST ITEM” screen.
3. Make sure turn signal lamp operates.

Turn signal lamp should operate.



Without CONSULT-II

GO TO 4.

OK or NG

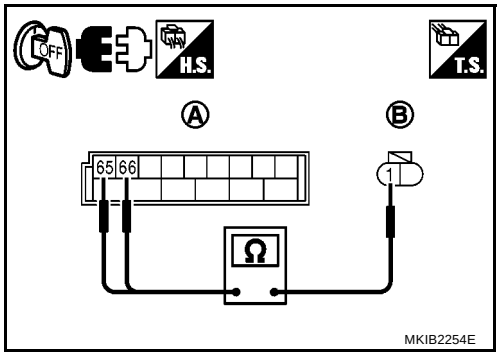
OK >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> GO TO 4.

4. CHECK TURN SIGNAL LAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and all turn signal lamp connectors.

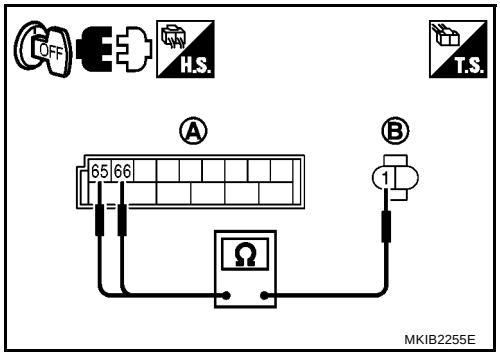
3. Check continuity between BCM harness connector (A) and front combination lamp LH and RH (turn signal) harness connector (B).

Circuit	A		B		Continuity
	connector	Terminal	connector	Terminal	
LH	M59	65	E13	1	Yes
RH		66	E22		



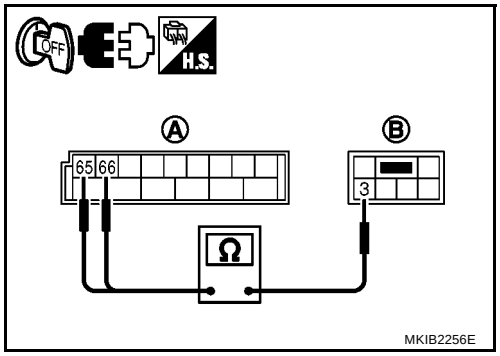
4. Check continuity between BCM harness connector (A) and side turn signal lamp LH and RH harness connector (B).

Circuit	A		B		Continuity
	connector	Terminal	connector	Terminal	
LH	M59	65	E41	1	Yes
RH		66	E31		



5. Check continuity between BCM harness connector (A) and rear combination lamp LH and RH (turn signal) harness connector (B).

Circuit	A		B		Continuity
	connector	Terminal	connector	Terminal	
LH	M59	65	B17	3	Yes
RH		66	B39		

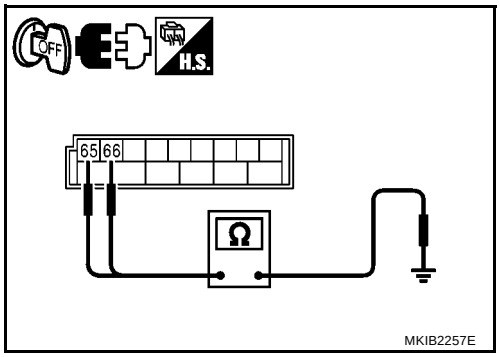


OK >> GO TO 5.
NG >> Repair harness or connector.

5. CHECK SIGNAL LAMP CIRCUIT (SHORT CIRCUIT)

Check continuity between BCM harness connector and ground.

BCM connector		Terminal	Ground	Continuity
LH	M59	65		No
RH		66		



OK or NG

OK >> Replace BCM if turn signal lamps does not work after setting the connector again. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> Repair harness or connector.

Hazard Warning Lamp Does Not Operate But Turn Signal Lamp Operates

BKS001FF

1. CHECK BULB

Make sure bulb standard of each turn signal lamp is correct.

OK or NG

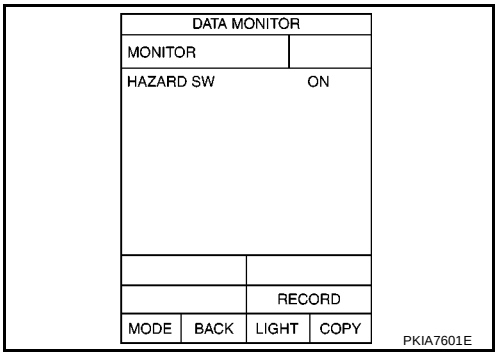
OK >> GO TO 2.
NG >> Replace bulb.

2. CHECK HAZARD SWITCH INPUT SIGNAL

With CONSULT-II

1. Select “BCM” on CONSULT-II. Select “FLASHER” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure that “HAZARD SW” turns ON-OFF linked with operation of malfunction switch (hazard switch).

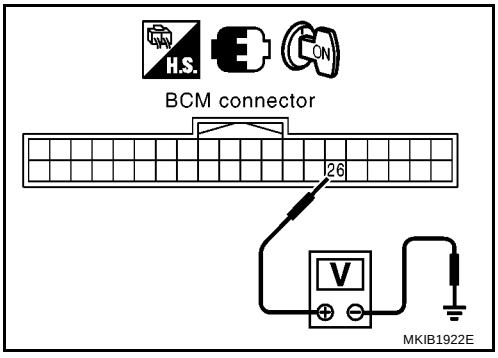
When hazard switch is ON position : HAZARD SW ON



Without CONSULT-II

Check voltage between BCM harness connector and ground.

Terminal			Condition	Voltage
(+)		(–)		
BCM connector	Terminal			
M57	26	Ground	Hazard switch is ON	Approx. 0V
			Hazard switch is OFF	Battery voltage



OK or NG

OK >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> GO TO 3.

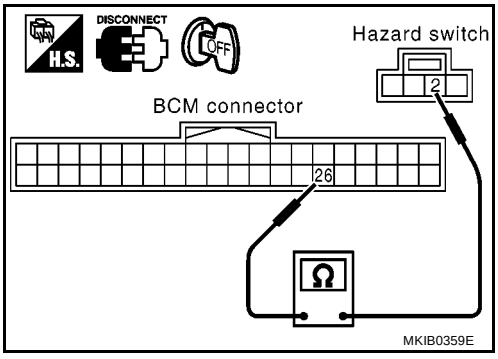
3. CHECK HAZARD SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and hazard switch connector.
3. Check continuity between BCM harness connector M57 terminal 26 and hazard switch harness connector M63 terminal 2.

26 - 2 : Continuity should exist.

OK or NG

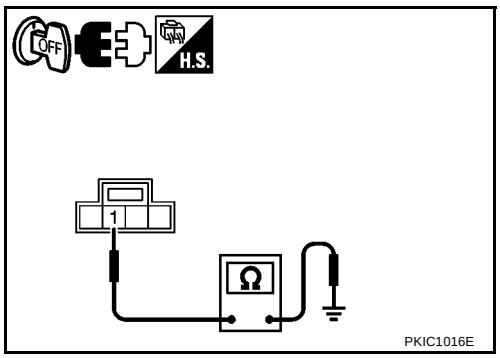
OK >> GO TO 4.
NG >> Repair or replace harness or connector.



4. CHECK GROUND

Check continuity hazard switch harness connector M63 terminal 1 and ground.

1 – Ground : Continuity should exist.



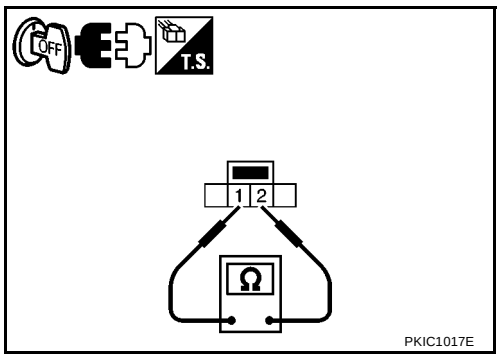
OK or NG

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

5. CHECK HAZARD SWITCH

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

Terminal		Condition	Continuity
Hazard switch			
1	2	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-17, "Removal and Installation of BCM" .
NG >> Replace hazard switch.

Bulb Replacement (Front Turn Signal Lamp)

BKS001FG

Refer to LT-32, "Bulb Replacement" in “HEADLAMP - CONVENTIONAL TYPE -”.

Bulb Replacement (Rear Turn Signal Lamp)

BKS001FH

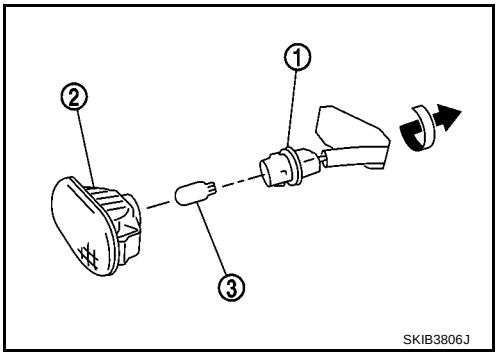
Refer to LT-149, "Bulb Replacement" .

Bulb Replacement (Side Turn Signal Lamp)

BKS001FI

1. Remove side turn signal lamp (2). Refer to LT-111, "Removal and Installation of Side Turn Signal Lamp" .
2. Turn bulb socket (1) counterclockwise and unlock it.
3. Remove the bulb (3) from the socket.

Side turn signal lamp : 12V - 5W



Removal and Installation of Front Turn Signal Lamp

BKS001FJ

Refer to LT-32, "Removal and Installation" in “HEADLAMP - CONVENTIONAL TYPE -”.

Removal and Installation of Rear Turn Signal Lamp

BKS001FK

Refer to LT-149, "Removal and Installation" .

Removal and Installation of Side Turn Signal Lamp

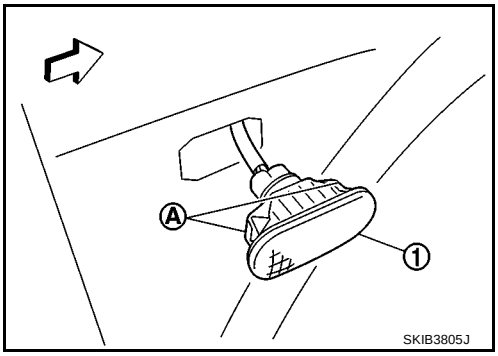
BKS001FL

REMOVAL

1. Insert a spatula or the similar tool under the side turn signal lamp (1). While pushing the pawl (A) of the lamp, pull off the lamp from the vehicle.
2. Disconnect side turn signal lamp.

NOTE:
Support side turn signal lamp harness with tape so that it won't fall into the front fender.

CAUTION:
Install the lamp housing with the bead facing up.



INSTALLATION

Installation is the reverse order of removal.

LIGHTING AND TURN SIGNAL SWITCH

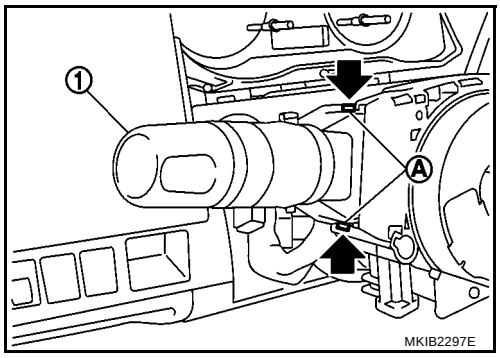
PFP:25540

Removal and Installation

BKS001FM

REMOVAL

1. Remove steering column cover. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. While pressing pawls (A) in direction as shown in the figure, pull lighting and turn signal switch (1) toward driver door and disconnect from the base.



INSTALLATION

Installation is the reverse order of removal.

HAZARD SWITCH

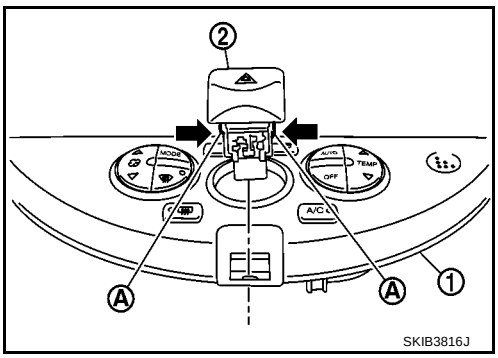
PFP:25290

Removal and Installation

BKS001FN

REMOVAL

1. Remove controller (1). Refer to ATC-112, "CONTROLLER" .
2. Disconnect hazard switch connector.
3. Press pawl (A) on reverse side and remove the hazard switch (2).



INSTALLATION

Installation is the reverse order of removal.

COMBINATION SWITCH

PFP:25567

System Description

BKS0027I

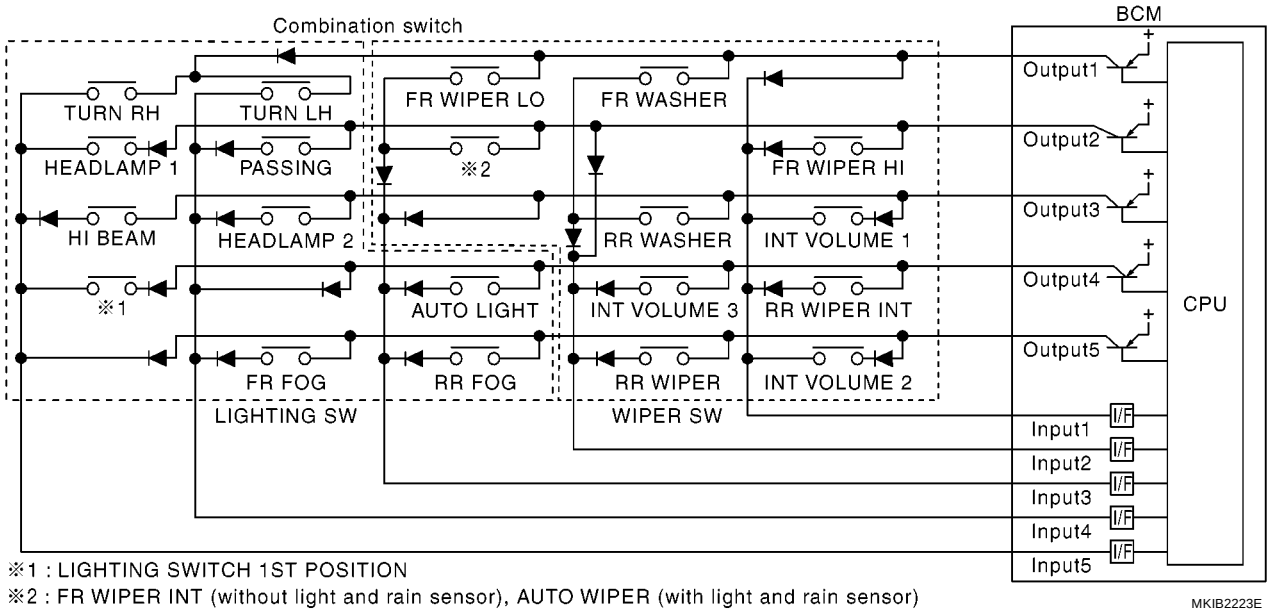
COMBINATION SWITCH READING FUNCTION

Description

- BCM reads combination switch (wiper) status, and controls related systems such as headlamps and wipers, according to the results.
- BCM reads information for a maximum of 20 switches by combining 5 output terminals (OUTPUT 1-5) and 5 input terminals (INPUT 1-5).

Operation Description

- BCM activates transistors of output terminals (OUTPUT 1-5) periodically, and allows current to flow in turn.
- If any (1 or more) switches are turned ON, the circuit of output terminals (OUTPUT 1-5) and input terminals (INPUT 1-5) becomes active.
- At this time, transistors of output terminals (OUTPUT 1-5) are activated to allow current to flow. When voltage of the input terminal (INPUT 1-5) corresponding to that switch changes, the interface in the BCM detects a voltage change, and the BCM determines that the switch is ON.



BCM - Operation Table of Combination Switches

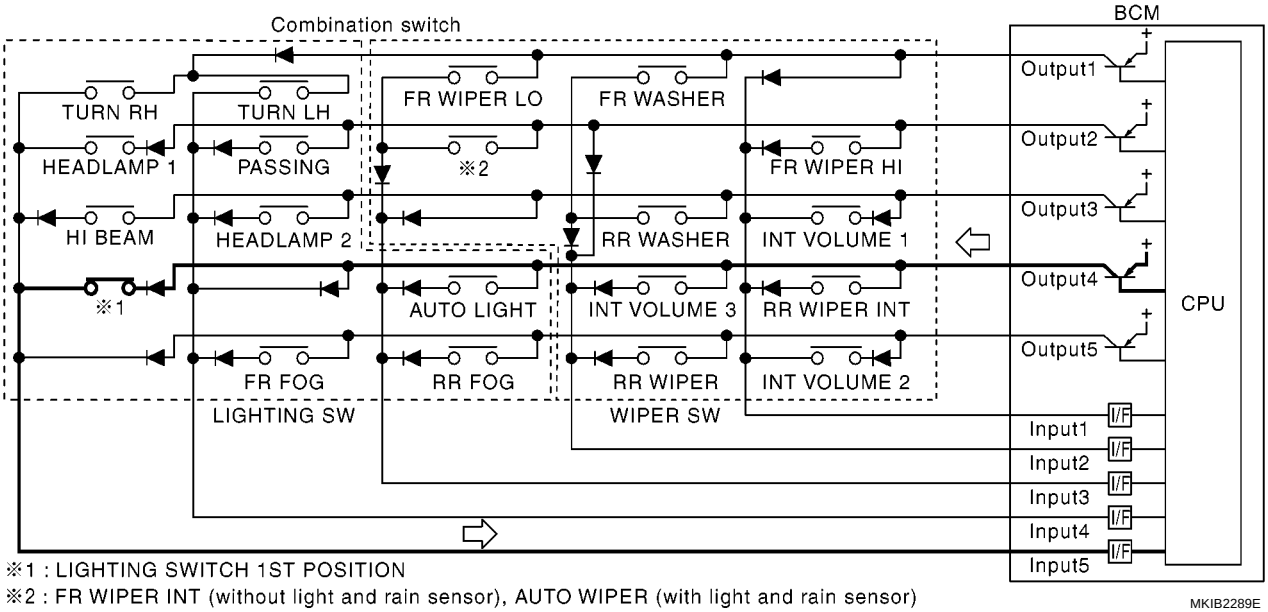
- BCM reads operation status of the combination switch using combinations shown in the table below.

	COMB SW OUTPUT 1		COMB SW OUTPUT 2		COMB SW OUTPUT 3		COMB SW OUTPUT 4		COMB SW OUTPUT 5	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
COMB SW INPUT 1	–	–	FR WIPER HI ON	FR WIPER HI OFF	INT VOLUME 1 ON	INT VOLUME 1 OFF	RR WIPER INT ON	RR WIPER INT OFF	INT VOLUME 2 ON	INT VOLUME 2 OFF
COMB SW INPUT 2	FR WASHER ON	FR WASHER OFF	–	–	RR WASHER ON	RR WASHER OFF	INT VOLUME 3 ON	INT VOLUME 3 OFF	RR WIPER ON	RR WIPER OFF
COMB SW INPUT 3	FR WIPER LO ON	FR WIPER LO OFF	FR WIPER INT ON	FR WIPER INT OFF	–	–	AUTO LIGHT ON	AUTO LIGHT OFF	RR FOG ON	RR FOG OFF
COMB SW INPUT 4	TURN LH ON	TURN LH OFF	PASSING ON	PASSING OFF	HEAD-LAMP 2 ON	HEAD-LAMP 2 OFF	–	–	FR FOG ON	FR FOG OFF
COMB SW INPUT 5	TURN RH ON	TURN RH OFF	HEAD-LAMP 1 ON	HEAD-LAMP 1 OFF	HI BEAM ON	HI BEAM OFF	LIGHTING SW (1ST) ON	LIGHTING SW (1ST) OFF	–	–

PKIC0420E

Sample Operation: (When Lighting Switch 1st Position Turned ON)

- When lighting switch 1st position is turned ON, contact in combination switch turns ON. At this time if OUTPUT 4 transistor is activated, BCM detects that voltage changes in INPUT 5.
- When OUTPUT 4 transistor is ON, BCM detects that voltage changes in INPUT 5, and judges lighting switch 1st position is ON. Then BCM sends tail lamp ON signal to IPDM E/R using CAN communication.
- When OUTPUT 4 transistor is activated again, BCM detects that voltage changes in INPUT 5 and recognizes that lighting switch 1st position is continuously ON.



※1 : LIGHTING SWITCH 1ST POSITION
※2 : FR WIPER INT (without light and rain sensor), AUTO WIPER (with light and rain sensor)

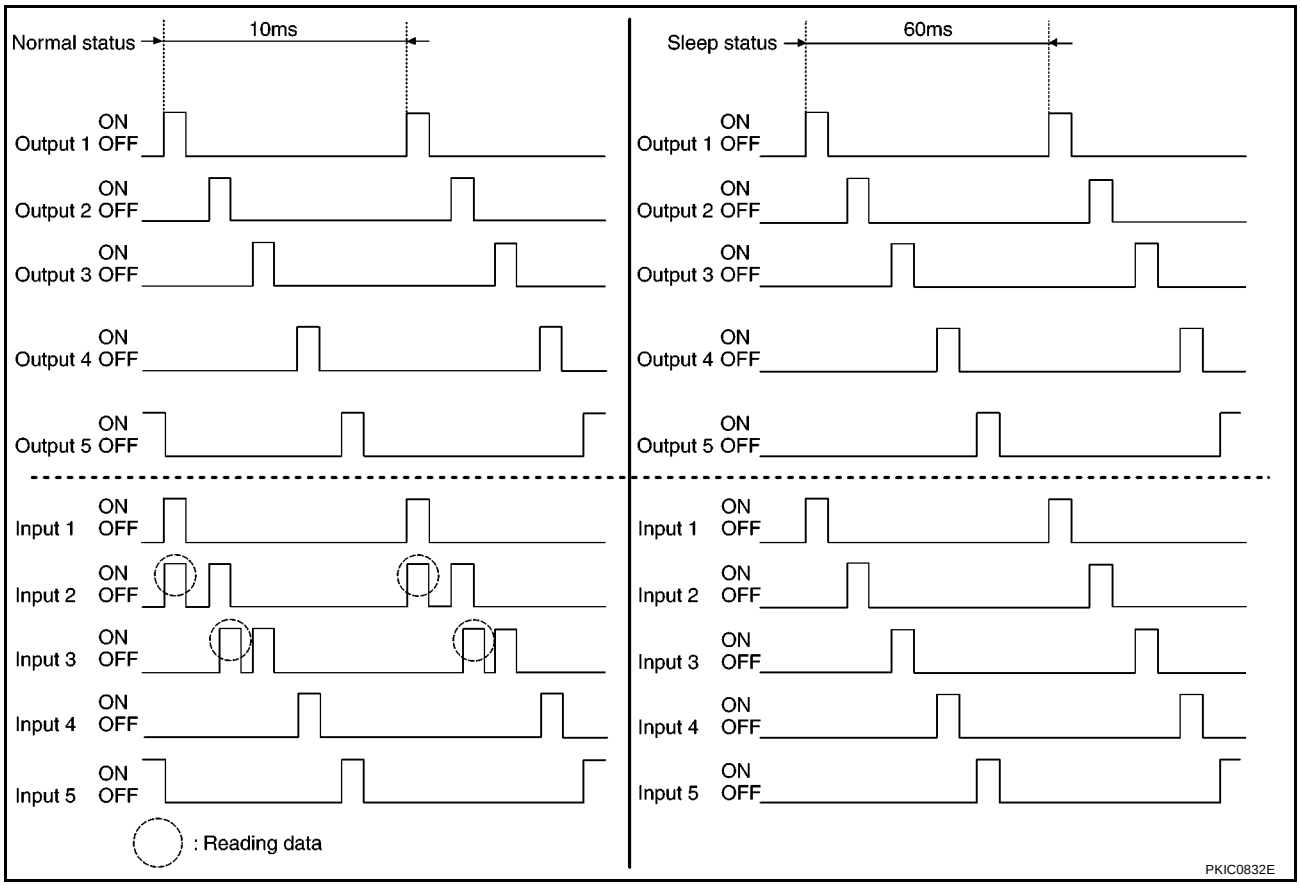
MKIB2289E

NOTE:
Each output terminal transistor operates at 20 ms intervals. Therefore, after a switch is turned ON, the electrical loads are activate with a time delay, However, this delay is too small to be detected.

Operation Mode

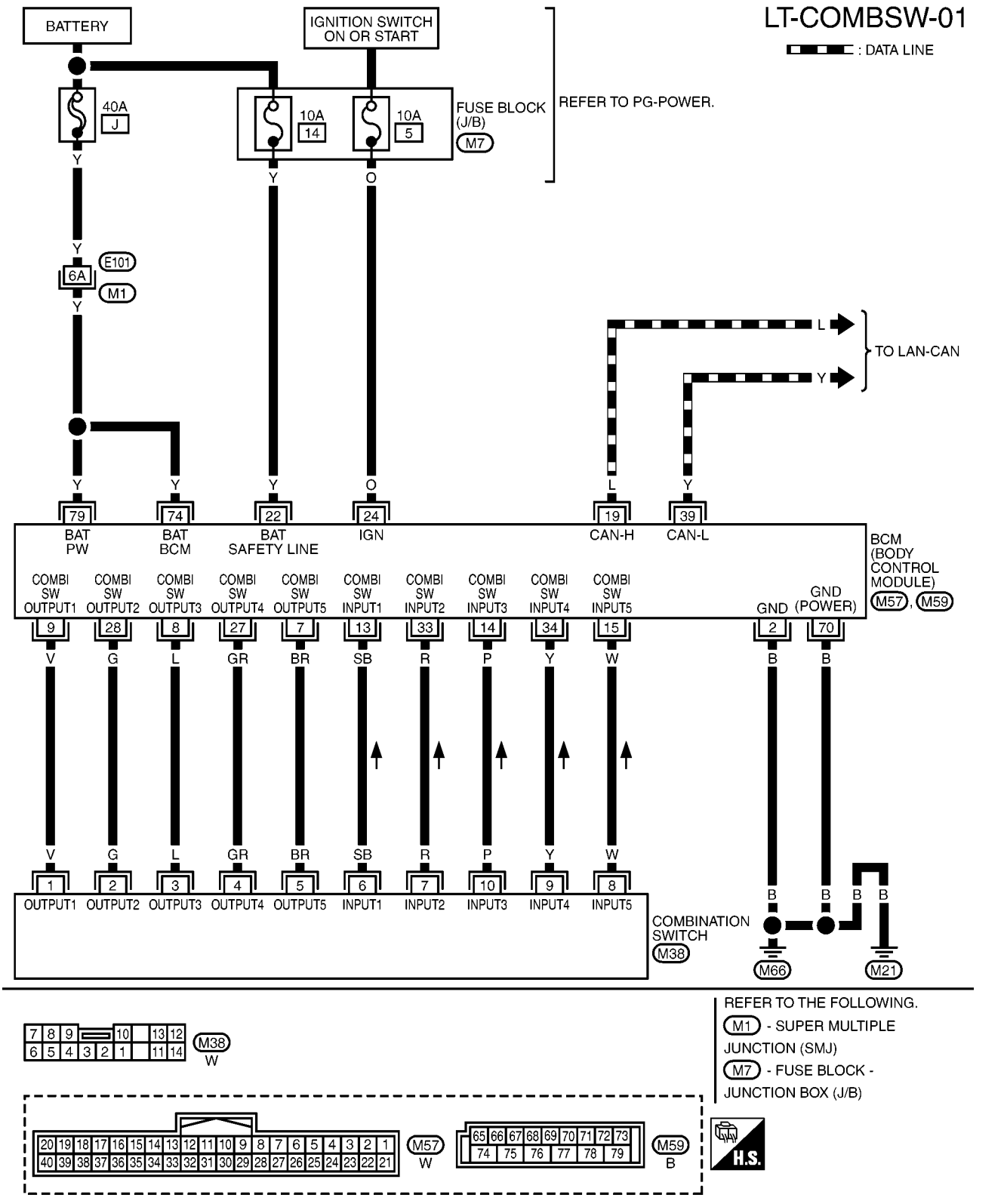
Combination switch reading function has operation modes shown below.

1. Normal status
   - When BCM is not in sleep status, output terminals (OUTPUT 1-5) send out ON signal every 10 ms.
2. Sleep status
   - When BCM is in sleep status, BCM enters low power mode. Mean while out put terminals (OUTPUT 1-5) send out ON signal every 60ms, and accept only input from light switch system.



Wiring Diagram — COMBSW —

BKS001FO



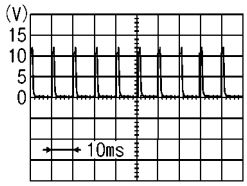
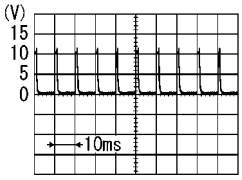
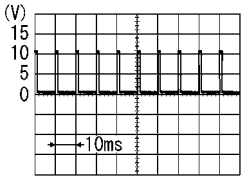
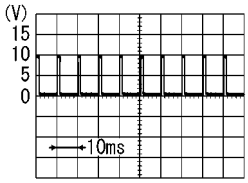
MKWA4364E

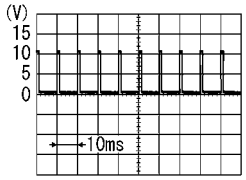
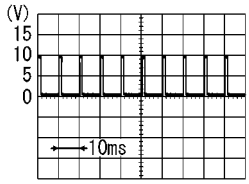
Terminals and Reference Values for BCM

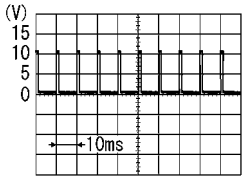
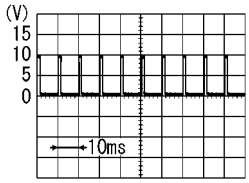
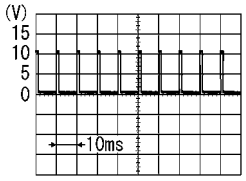
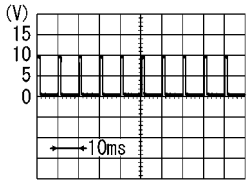
BKS001FQ

CAUTION:

- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to LT-124, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value
				Ignition switch	Operation or condition	
2	B	Ground	—	ON	—	Approx. 0V
7	BR	Combination switch output 5	Output	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)
						 PKIB8643J Approx. 1.2V
						Any of several conditions below ● Front fog lamp switch (Operates only front fog lamp switch) (Wiper intermittent dial position 4) ● Rear fog lamp switch (Wiper intermittent dial position 4) ● Rear wiper ON (Wiper intermittent dial position 4) ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2 ● Wiper intermittent dial position 6 ● Wiper intermittent dial position 7
						 PKIB4956J Approx. 1.0V
8	L	Combination switch output 3	Output	ON	Lighting, turn, wiper switch	OFF (Wiper dial position 4)
						 PKIB4958J Approx. 1.2V
						Any of several conditions below ● Lighting switch 2ND (Wiper intermittent dial position 4) ● Lighting switch HI beam (Operates only HI beam switch) (Wiper intermittent dial position 4) ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2 ● Wiper intermittent dial position 3
						 PKIB4959J Approx. 1.0V

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value
				Ignition switch	Operation or condition		
9	V	Combination switch output 1	Output	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4958J Approx. 1.2V
						Any of several conditions below ● Turn signal switch to right ● Turn signal switch to left ● Front wiper switch MIST ● Front wiper switch LO ● Front washer switch	 PKIB4959J Approx. 1.0V
13	SB	Combination switch input 1	Input	ON	Lighting, turn, wiper switch	● OFF ● Front wiper switch HI (Wiper intermittent dial position 4) ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2 ● Wiper intermittent dial position 3 ● Wiper intermittent dial position 6 ● Wiper intermittent dial position 7	Refer to LT-121, "Reference Values for BCM (Input)" .
14	P	Combination switch input 3	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	● OFF ● Lighting switch AUTO ● Rear fog lamp switch ● Front wiper switch MIST ● Front wiper switch INT ● Front wiper switch LO	Refer to LT-121, "Reference Values for BCM (Input)" .
15	W	Combination switch input 5	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	● OFF ● Lighting switch 1ST ● Lighting switch 2ND ● Lighting switch HIGH beam (Operates only HIGH beam switch) ● Turn signal switch to right	Refer to LT-121, "Reference Values for BCM (Input)" .
19	L	CAN – H	Input/ Output	ON	—		Approx. 2.6V
22	Y	Battery safety line	Input	OFF	—		—
24	O	Ignition switch (ON)	Input	ON	—		Battery voltage

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value
				Ignition switch	Operation or condition		
27	GR	Combination switch output 4	Output	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)	 PKIB4958J Approx. 1.2V
						Any of several conditions below ● Lighting switch AUTO (Wiper intermittent dial position 4) ● Lighting switch 1ST (The same result with lighting switch 2ND) (Wiper intermittent dial position 4) ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 5 ● Wiper intermittent dial position 6	 PKIB4959J Approx. 1.0V
28	G	Combination switch output 2	Output	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4958J Approx. 1.2V
						Any of several conditions below ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch) ● Front wiper switch INT ● Front wiper switch HI	 PKIB4959J Approx. 1.0V
33	R	Combination switch input 2	Input	ON	Lighting, turn, wiper switch	● OFF ● Front washer switch (Wiper intermittent dial position 4) ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 5 ● Wiper intermittent dial position 6	Refer to LT-121, "Reference Values for BCM (Input)" .
34	Y	Combination switch input 4	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	● OFF ● Front fog lamp switch ON ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch) ● Turn signal switch to left	Refer to LT-121, "Reference Values for BCM (Input)" .
39	Y	CAN – L	Input/ Output	ON	—		Approx. 2.4V

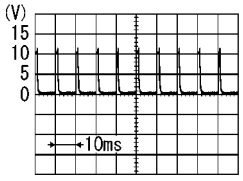
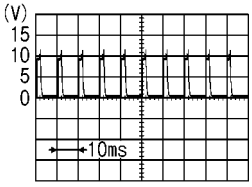
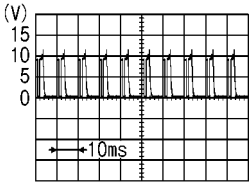
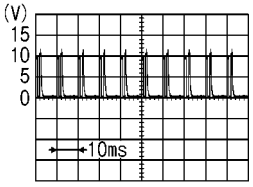
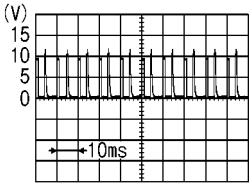
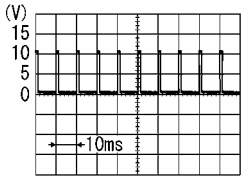
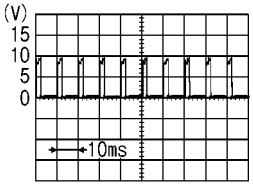
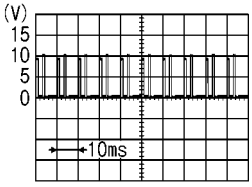
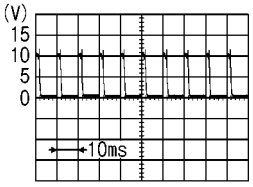
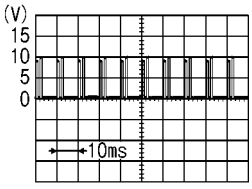
Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value
				Ignition switch	Operation or condition	
70	B	Ground	—	ON	—	Approx. 0V
74 79	Y	Battery power supply	Input	OFF	—	Battery voltage

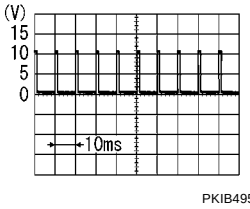
Reference Values for BCM (Input)

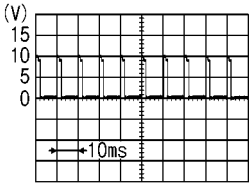
BKS001FR

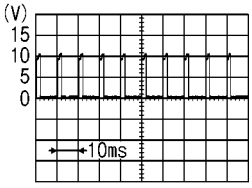
CAUTION:

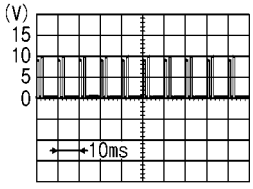
- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to LT-124, "DATA MONITOR" .**

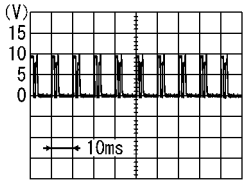
INPUT	Condition and reference value		
INPUT 5 (Wiper intermittent dial position 4)	OFF  PKIB4956J Approx. 0.9V	Lighting switch 1ST  PKIB8624J Approx. 1.5 - 2.0V	Lighting switch 2ND  PKIB8639J Approx. 2.5 - 3.0V
	Lighting switch HI beam (Operates only HI beam switch)  PKIB8644J Approx. 1.5 - 2.0V	Turn signal switch to right  PKIB8625J Approx. 1.5 - 2.0V	—
INPUT 4 (Wiper intermittent dial position 4)	OFF  PKIB4958J Approx. 1.0V	Lighting switch 2ND  PKIB8628J Approx. 1.5 - 2.0V	Turn signal switch to left  PKIB8630J Approx. 2.0V
	Front fog lamp switch (Operates only front fog lamp switch)  PKIB8627J Approx. 1.5 - 2.0V	Lighting switch PASSING (Operates only PASSING switch)  PKIB8629J Approx. 2.0V	—

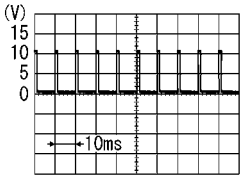
<table>
<tr><th>INPUT</th><th colspan="3">Condition and reference value</th></tr>
<tr><td rowspan="2">INPUT 3
(Wiper intermittent dial position 4)</td><td>OFF
 

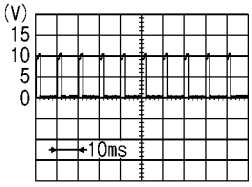
PKIB4958J
Approx. 1.0V</td><td>Lighting switch AUTO
 

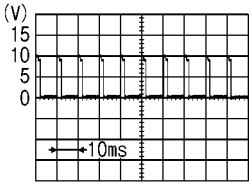
PKIB8631J
Approx. 2.0V</td><td>Front wiper switch INT
 

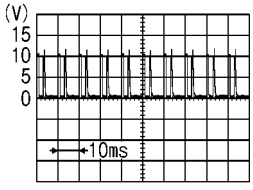
PKIB8632J
Approx. 2.0V</td></tr>
<tr><td>Any of several conditions below
●Front wiper switch LO
●Front wiper switch MIST
 

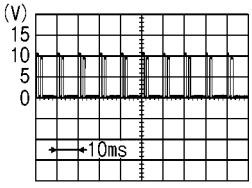
PKIB8629J
Approx. 2.0V</td><td>Rear fog lamp switch
 

PKIC1030E
Approx. 1.5V</td><td>—</td></tr>
<tr><td rowspan="2">INPUT 2</td><td>OFF
(Wiper intermittent dial position 4)
 

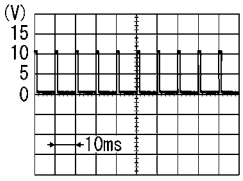
PKIB4958J
Approx. 1.0V</td><td>Front washer switch
(Wiper intermittent dial position 4)
 

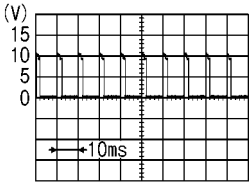
PKIB8632J
Approx. 2.0V</td><td>Rear washer switch
(Wiper intermittent dial position 4)
 

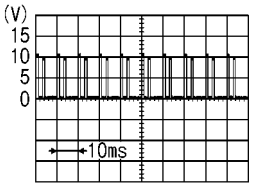
PKIB8631J
Approx. 2.0V</td></tr>
<tr><td>Rear wiper switch ON
(Wiper intermittent dial position 4)
 

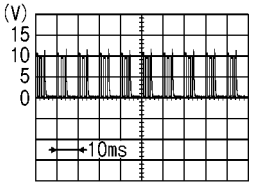
PKIB8634J
Approx. 1.5 - 2.0V</td><td>Any of the conditions below
●Wiper intermittent dial position 1
●Wiper intermittent dial position 5
●Wiper intermittent dial position 6
 

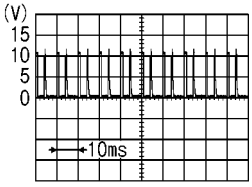
PKIB8633J
Approx. 2.0V</td><td>—</td></tr>
</table>

<table>
<tr><th>INPUT</th><th colspan="3">Condition and reference value</th></tr>
<tr><td rowspan="2">INPUT 1</td><td>OFF
(Wiper intermittent dial position 4)
 

PKIB4958J
Approx. 1.0V</td><td>Front wiper switch HI
(Wiper intermittent dial position 4)
 

PKIB8635J
Approx. 2.0V</td><td>Any of the conditions below
●Rear wiper switch INT
(Wiper intermittent dial position 4)
●Wiper intermittent dial position 3
 

PKIB8636J
Approx. 2.0V</td></tr>
<tr><td>Any of the conditions below
●Wiper intermittent dial position 1
●Wiper intermittent dial position 2
 

PKIB8637J
Approx. 2.5 - 3.0V</td><td>Any of the conditions below
●Wiper intermittent dial position 6
●Wiper intermittent dial position 7
 

PKIB8638J
Approx. 2.0V</td><td>—</td></tr>
</table>

CONSULT-II Function (BCM)

BKS001FS

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

BCM diagnosis part	Diagnosis mode	Description
COMB SW	DATA MONITOR	Displays BCM input data in real time.

CONSULT-II INSPECTION PROCEDURE

Refer to GI-36, "CONSULT-II Start Procedure" .

CONSULT-II Application Items

BKS001KX

DATA MONITOR

Monitor item “UNIT”		Display content
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.
HI BEAM SW	[ON/OFF]	Displays status (High beam switch: ON/Others: OFF) as judged from lighting switch signal.
H/L SW POS	[ON/OFF]	Displays status (Headlamp switch 1: ON/Others: OFF) as judged from lighting switch signal.
LIGHT SW 1ST	[ON/OFF]	Displays status (Lighting switch 1st position: ON/Others: OFF) as judged from lighting switch signal.
PASSING SW	[ON/OFF]	Displays status (Flash-to-pass switch: ON/Others: OFF) as judged from lighting switch signal.
FR FOG SW	[ON/OFF]	Displays status (Front fog lamp switch: ON/Others: OFF) as judged from lighting switch signal. (ON is also displayed when rear fog lamp switch is on.)
RR FOG SW	[ON/OFF]	Displays status (Rear fog lamp switch: ON/Others: OFF) as judged from lighting switch signal.
FR WIPER HI	[ON/OFF]	Displays status (Front Wiper HI: ON/Others: OFF) as judged from wiper switch signal.
FR WIPER LOW	[ON/OFF]	Displays status (Front Wiper LOW: ON/Others: OFF) as judged from wiper switch signal.
FR WIPER INT	[ON/OFF]	Displays status (Front Wiper INT: ON/Others: OFF) as judged from wiper switch signal.
FR WASHER SW	[ON/OFF]	Displays status (Front Washer Switch: ON/Others: OFF) as judged from wiper switch signal.
INT VOLUME	[1 - 7]	Displays intermittent operation dial position setting (1 - 7) as judged from wiper switch signal.
RR WIPER ON	[ON/OFF]	Displays status (Rear Wiper ON: ON/Others: OFF) as judged from wiper switch signal.
RR WIPER INT	[ON/OFF]	Displays status (Rear Wiper INT: ON/Others: OFF) as judged from wiper switch signal.
RR WASHER SW	[ON/OFF]	Displays status (Rear Washer Switch: ON/Others: OFF) as judged from wiper switch signal.

Combination Switch Inspection

BKS001FT

1. SYSTEM CHECK 1

Check which systems (INPUT and OUTPUT) the malfunctioning switch belongs to. Refer to the table below.

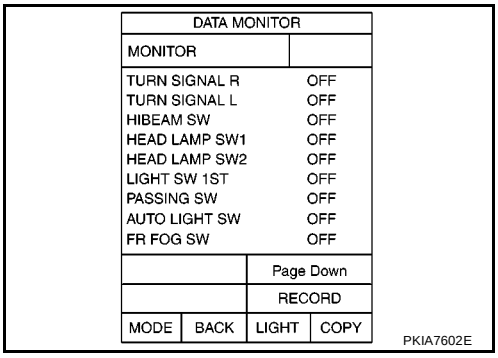
	INPUT1	INPUT2	INPUT3	INPUT4	INPUT5
OUTPUT1	—	FRONT WASHER	FRONT WIPER LO	TURN LH	TURN RH
OUTPUT2	FRONT WIPER HI	—	*1	PASSING	HEAD LAMP 1
OUTPUT3	INT VOLUME 1	RR WASHER	—	HEAD LAMP 2	HI BEAM
OUTPUT4	REAR WIPER INT	INT VOLUME 3	AUTO LIGHT	—	LIGHT SW 1ST
OUTPUT5	INT VOLUME 2	RR WIPER	REAR FOG	FRONT FOG	—

*1: FRONT WIPER INT (without light and rain sensor), AUTO WIPER (with light and rain sensor)

>> GO TO 2.

2. SYSTEM CHECK 2

1. Connect CONSULT-II and select “COMB SW” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR”.
3. Select “START”.



4. Confirm that other switches in malfunctioning system operate normally.

Example: When “TURN RH” is malfunctioning, confirm other switches in malfunctioning system operate properly as described below.

- INPUT5
  Confirm that “HEAD LAMP1”, “HI BEAM” and “LIGHT SW 1ST” can be turned ON and OFF properly.
- OUTPUT1
  Confirm that “TURN LH”, “FRONT WIPER LO” and “FRONT WASHER” can be turned ON and OFF properly.

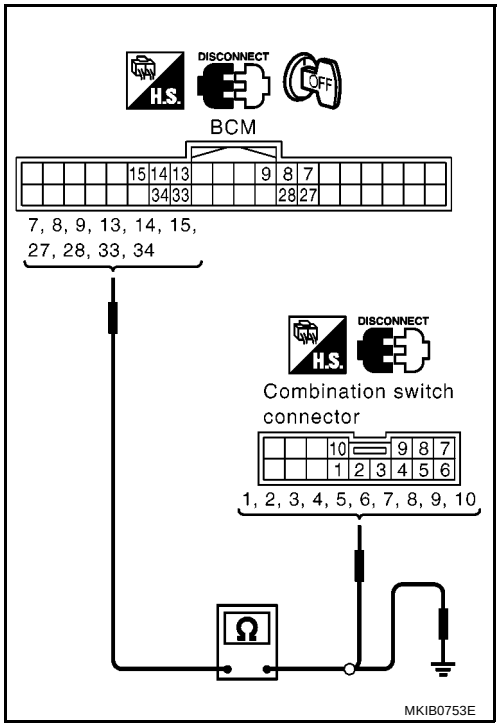
OK or NG

OK >> Replace malfunctioning lighting switch or wiper switch. Refer to LT-112, "LIGHTING AND TURN SIGNAL SWITCH" or WW-46, "Removal and Installation of Front Wiper and Washer Switch" .

NG >> GO TO 3.

3. HARNESS INSPECTION

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



BCM			Combination switch		Continuity
Connector	Terminal		Connector	Terminal	
M57	INPUT1	13	M38	6	Yes
	INPUT2	33		7	
	INPUT3	14		10	
	INPUT4	34		9	
	INPUT5	15		8	
	OUTPUT1	9		1	
	OUTPUT2	28		2	
	OUTPUT3	8		3	
	OUTPUT4	27		4	
	OUTPUT5	7		5	

4. Check for continuity between BCM harness connector of the suspected system and ground.

BCM				Continuity
Connector	Terminal			
M57	INPUT1	13	Ground	No
	INPUT2	33		
	INPUT3	14		
	INPUT4	34		
	INPUT5	15		
	OUTPUT1	9		
	OUTPUT2	28		
	OUTPUT3	8		
	OUTPUT4	27		
	OUTPUT5	7		

OK or NG

OK >> GO TO4.
NG >> Repair or replace harness connector.

4. SELECTION MALFUNCTION SYSTEM

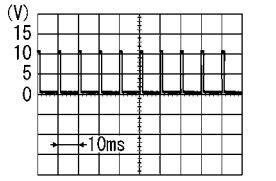
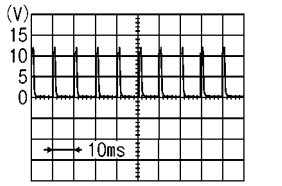
Which system does malfunction system belong to?

INPUT or OUTPUT

INPUT >> GO TO 5.
OUTPUT >>GO TO 6.

5. CHECK BCM INPUT TERMINAL

1. Connect BCM and combination switch connectors.
2. Turn ignition switch ON.
3. Turn “lighting”, “wiper” and “turn” switch OFF.
4. Set wiper intermittent dial to position 4.
5. Check BCM input terminal voltage waveform of the suspected malfunctioning system.

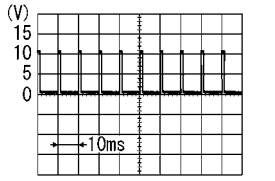
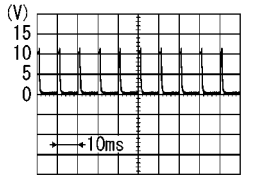
INPUT	BCM			Voltage
	Connector	Terminal		
1	M57	13	Ground	 PKIB4958J Approx. 1.2V
2		33		
3		14		
4		34		
5		15		 PKIB8643J Approx. 1.2V

OK or NG

OK >> Replace BCM.Refer to BCS-17, "Removal and Installation of BCM" .
NG (0V) >>GO TO 7.
NG (Other than 0V) >>Replace BCM.Refer to BCS-17, "Removal and Installation of BCM" .

6. CHECK BCM OUTPUT TERMINAL

1. Connect BCM and combination switch connectors.
2. Turn ignition switch ON.
3. Turn “lighting”, “wiper” and “turn” switch OFF.
4. Set wiper intermittent dial to position 4.
5. Check BCM input terminal voltage waveform of the suspected malfunctioning system.

OUTPUT	BCM			Voltage
	Connector	Terminal		
1	M57	9	Ground	 PKIB4958J Approx. 1.0V
2		28		
3		8		
4		27		
5		7		 PKIB4956J Approx. 0.9V

OK or NG

OK >> GO TO 7.
NG >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .

7. COMBINATION SWITCH INSPECTION

Perform combination switch inspection. Refer to the table below.

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

BKS001FU

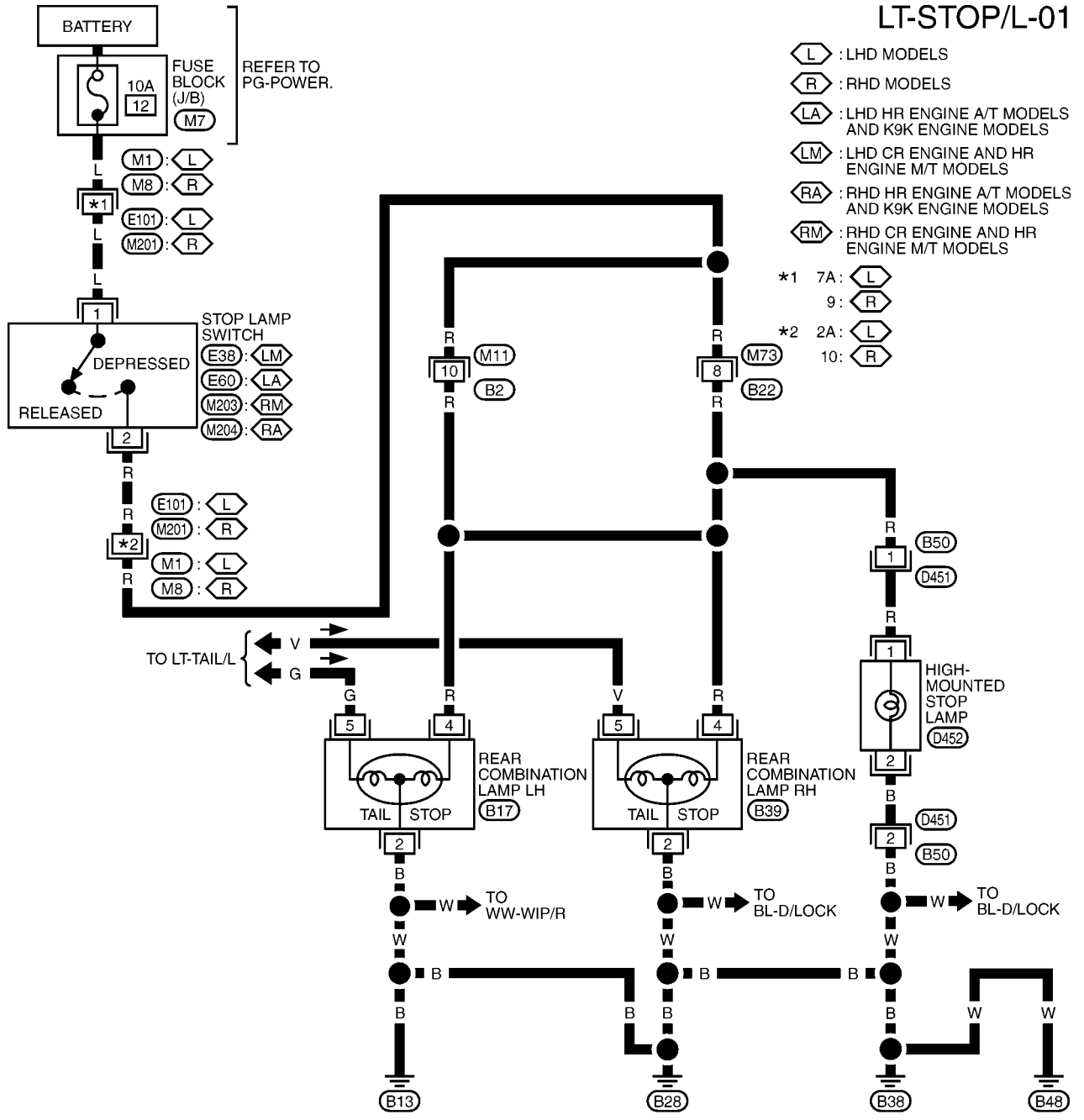
Refer to LT-112, "LIGHTING AND TURN SIGNAL SWITCH" .

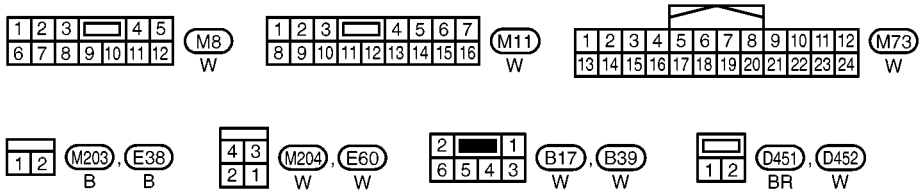
STOP LAMP

PFP:26550

Wiring Diagram — STOP/L —

BKS001FV





REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

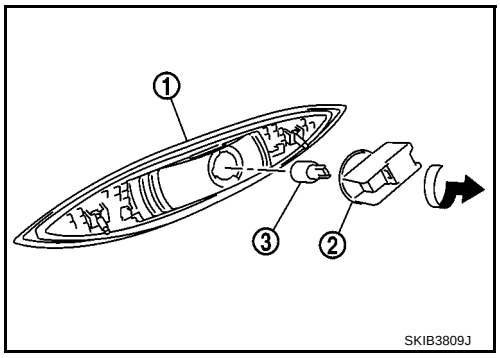
MKWA4361E

Bulb Replacement of High-Mounted Stop Lamp

BKS001FW

1. Remove high-mounted stop lamp (1). Refer to LT-130, "Removal and Installation of High-Mounted Stop Lamp" .
2. Turn bulb socket (2) counter clock and unlock it.
3. Remove the bulb (3) from the socket.

High-mounted stop lamp : 12V - 16W



Bulb Replacement of Rear Combination Lamp (Stop Lamp)

BKS001FX

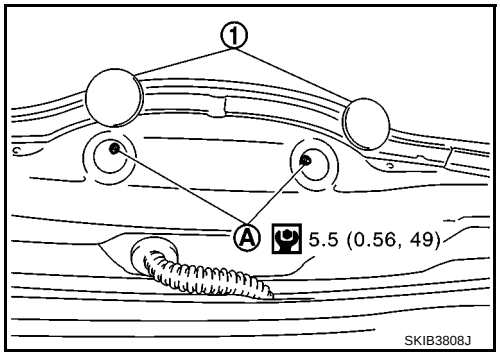
Refer to LT-149, "Bulb Replacement" .

Removal and Installation of High-Mounted Stop Lamp

BKS001FY

REMOVAL

1. Open the back door and remove seal cover (1).
2. Remove nuts (A).



3. Pull the high-mounted stop lamp toward rear of the vehicle and remove from the back door.
4. Disconnect high-mounted stop lamp connector.

INSTALLATION

Installation is the reverse order of removal.

Removal and Installation of Rear Combination Lamp (Stop Lamp)

BKS001FZ

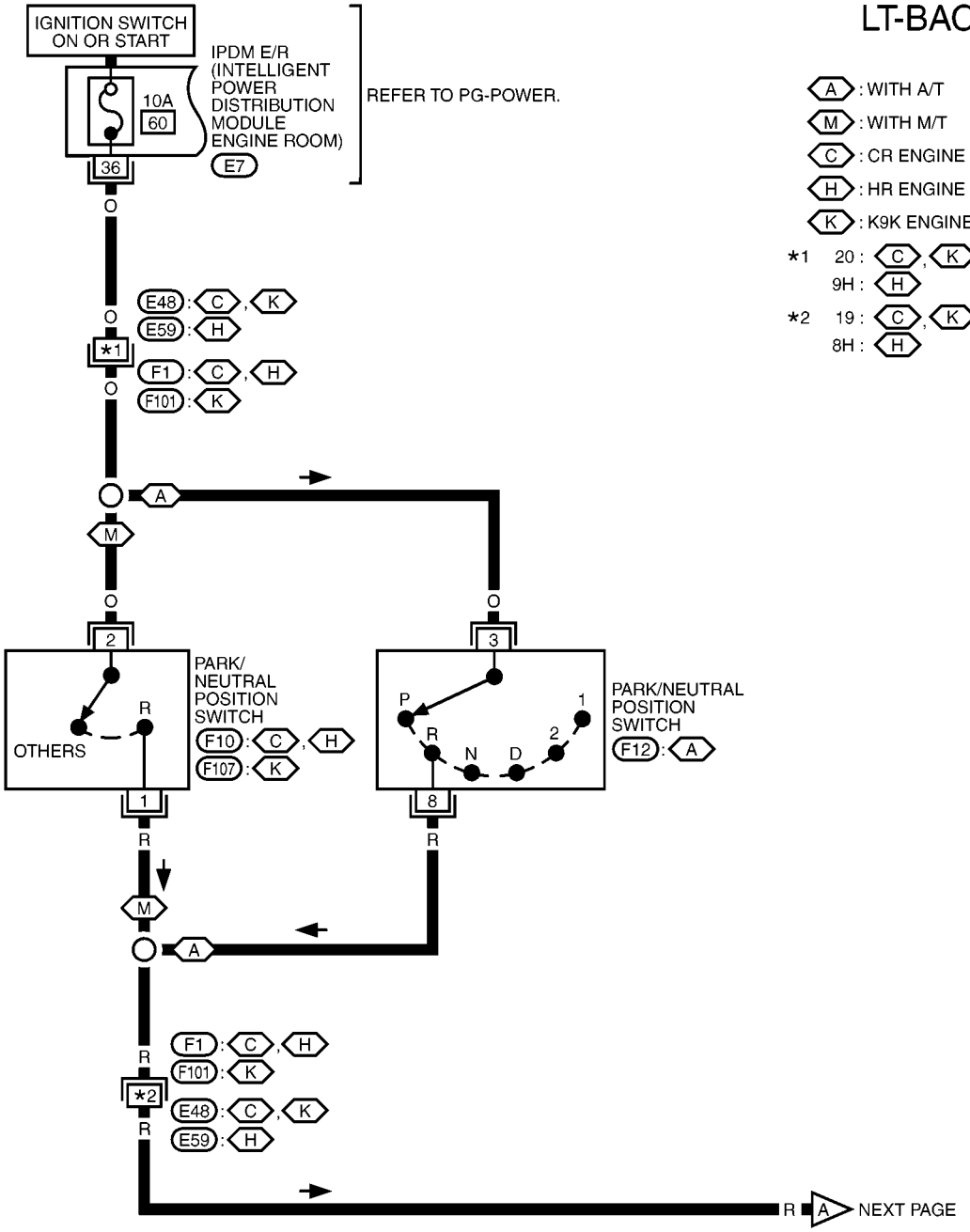
Refer to LT-149, "Removal and Installation" .

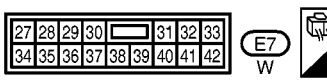
BACK-UP LAMP

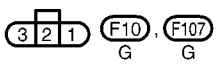
PFP:26550

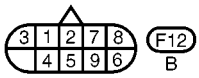
Wiring Diagram — BACK/L —

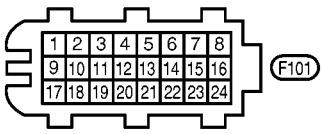
BKS001G0





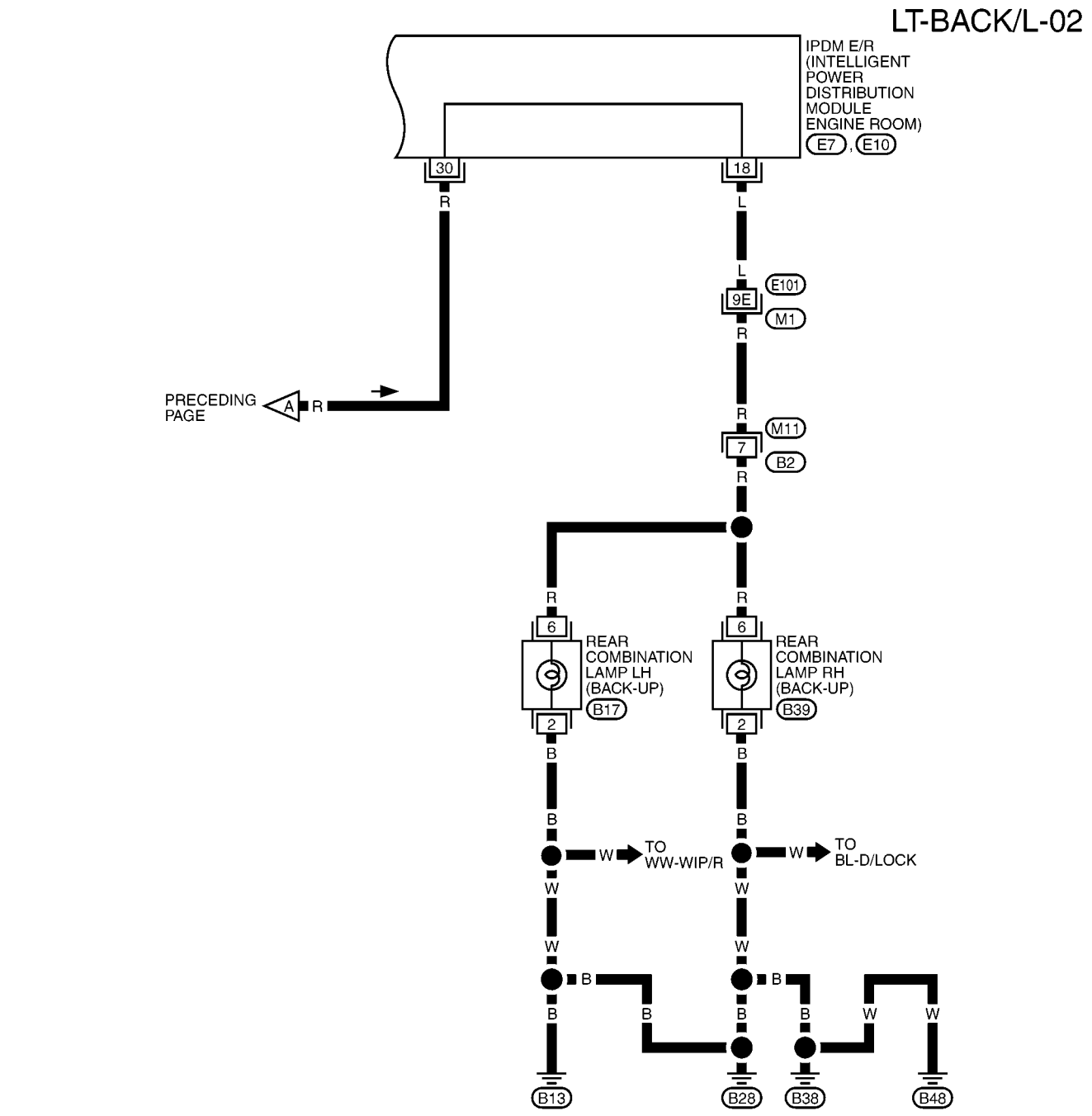


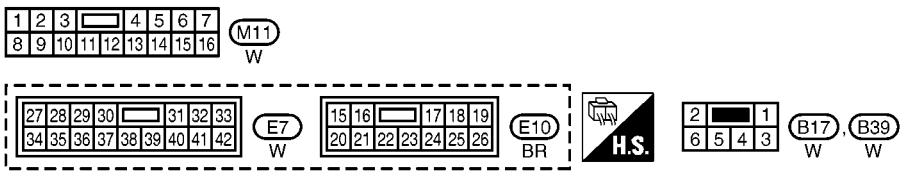




REFER TO THE FOLLOWING.
F1 - SUPER MULTIPLE JUNCTION (SMJ)

MKWA4362E





REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)

MKWA4363E

Bulb Replacement

BKS001G1

Refer to LT-149, "Bulb Replacement" .

Removal and Installation

BKS001G2

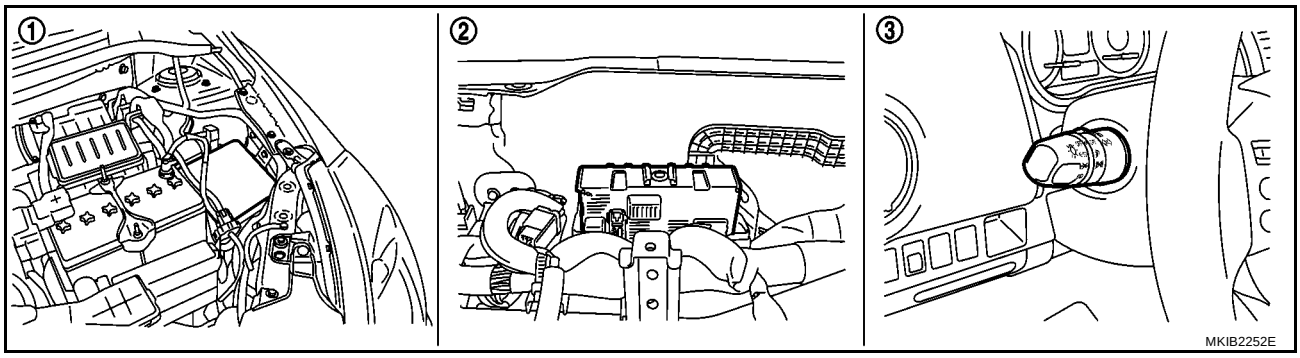
Refer to LT-149, "Removal and Installation" .

PARKING, LICENSE PLATE AND TAIL LAMPS

PFP:26550

Component Parts and Harness Connector Location

BKS001G3



1. IPDM E/R E8,E10,E11,E12
2. BCM M57,M59 (View with instrument upper panel removed)
3. Combination switch M38

System Description

BKS001G4

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

- to ignition relay located in IPDM E/R and
- to tail lamp relay located in IPDM E/R from battery directly,
- through 20A fuse (No. 61, located in IPDM E/R),
- through 20A fuse (No. 62, located in IPDM E/R),
- through 40A fusible link (letter J, located in fuse, fusible link and relay box)
- to BCM terminals 74 and 79.

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

- to ignition relay located in IPDM E/R, from battery directly and
- through 10A fuse [No. 5, located in fuse block (J/B)]
- to BCM terminal 24.

Ground is supplied

- to BCM terminals 2 and 70,
- through grounds M21 and M66,
- to IPDM E/R terminals 3 and 54
- through grounds E45 (CR and HR engine models), E28 and E44.

OPERATION BY LIGHTING SWITCH

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

- through 10A fuse (No. 45, located in IPDM E/R),
- through IPDM E/R terminal 45
- to parking lamp RH terminal 1,
- through IPDM E/R terminal 16
- to rear combination lamp RH (tail) terminal 5 and
- to license plate lamp LH and RH terminals 1,
- through 10A fuse (No. 46, located in IPDM E/R),
- through IPDM E/R terminal 49

- to parking lamp LH terminal 1 and
- through IPDM E/R terminal 15
- to rear combination lamp LH (tail) terminal 5.

Ground is supplied

- to parking lamp LH and RH terminals 2
- through grounds E45 (CR and HR engine models), E28 and E44,
- to rear combination lamp LH (tail) and RH (tail) terminal 2,
- to license plate lamp LH and RH terminals 2
- through grounds B13,B28,B38 and B48.

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

COMBINATION SWITCH READING FUNCTION

Refer to LT-114, "COMBINATION SWITCH READING FUNCTION" .

EXTERIOR LAMP BATTERY SAVER CONTROL

Refer to LT-135, "EXTERIOR LAMP BATTERY SAVER CONTROL" .

FAIL-SAFE FUNCTION

When CAN communication with other control units is impossible, IPDM E/R performs fail-safe control. If the fail-safe system is operating, parking, license plate and tail lamps illuminate when the ignition switch is turned from OFF to ON and parking, license plate and tail lamps are turned off when the ignition switch is turn from ON to OFF. If the fail-safe system is operating, parking, license plate and tail lamps does not operate when the combination switch is in any position. After CAN communication recovers normally, it also returns to normal control. (Refer to PG-18, "Fail-safe Control" .)

CAN Communication System Description

BKS001G5

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

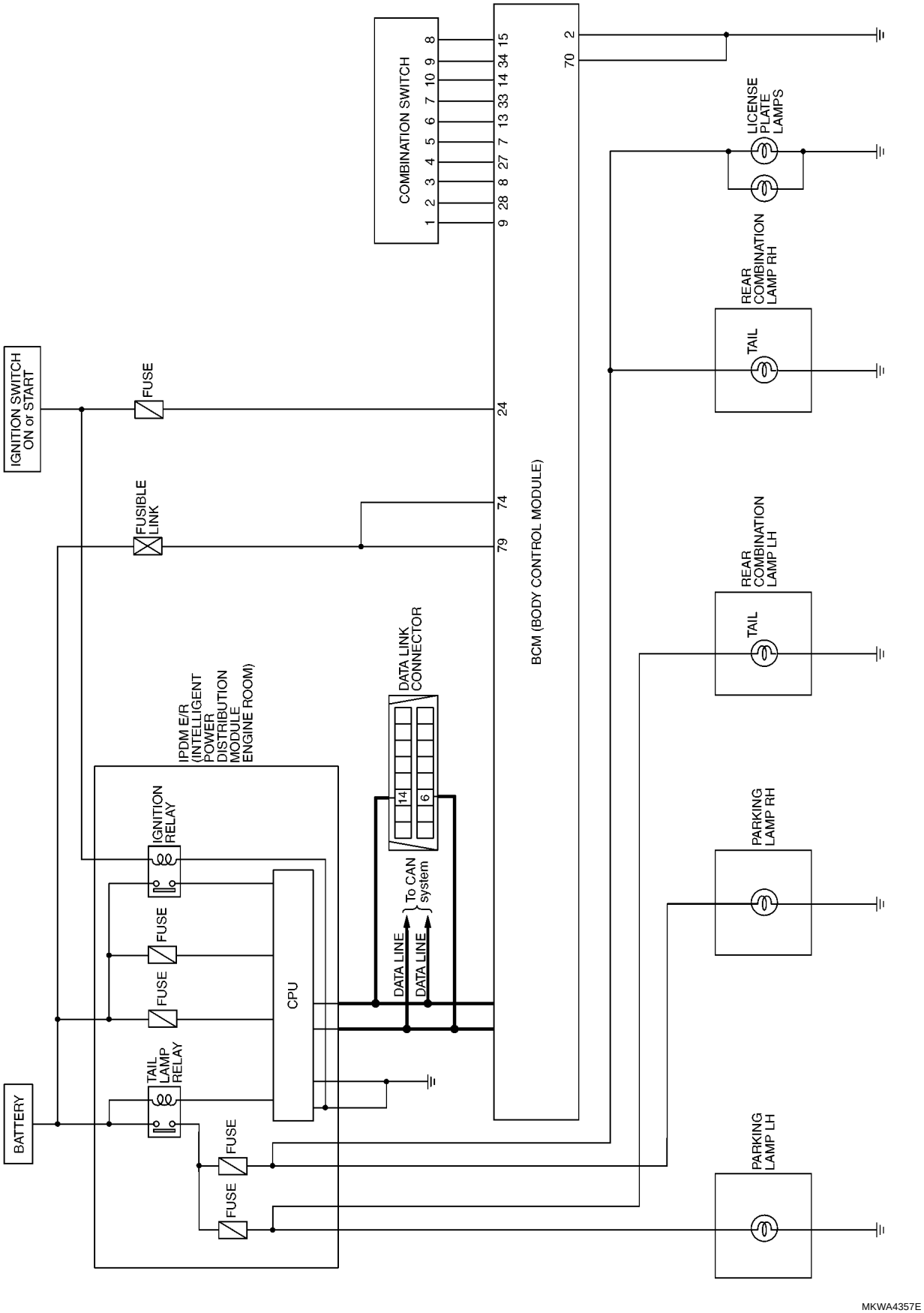
CAN Communication Unit

BKS001G6

Refer to LAN-27, "CAN Communication Unit" .

Schematic

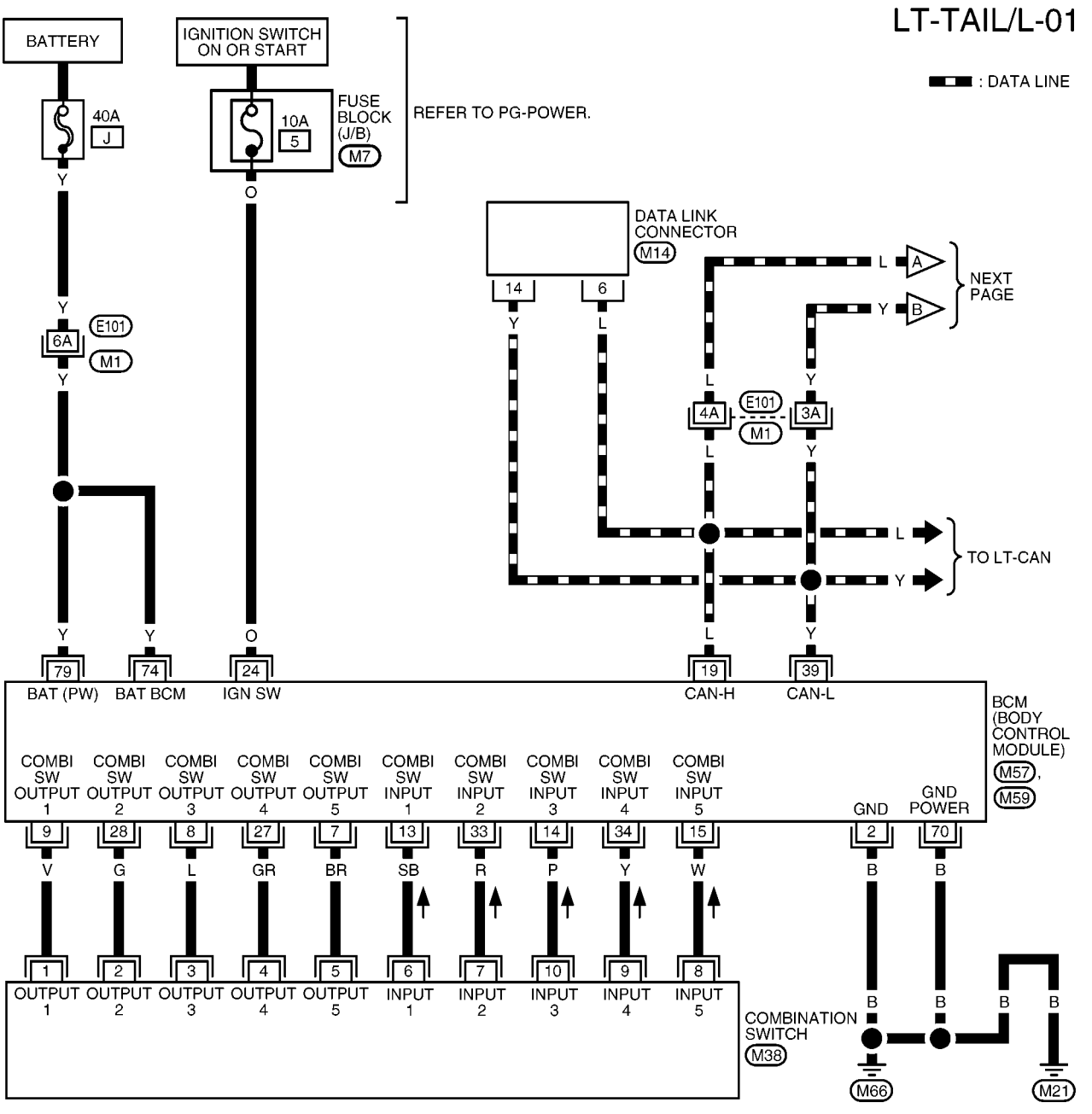
BKS001G7

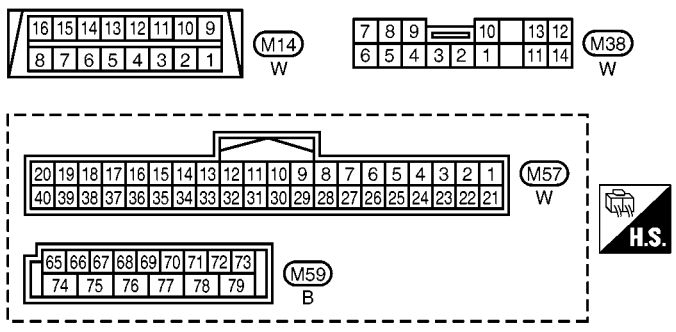


MKWA4357E

Wiring Diagram — TAIL/L —

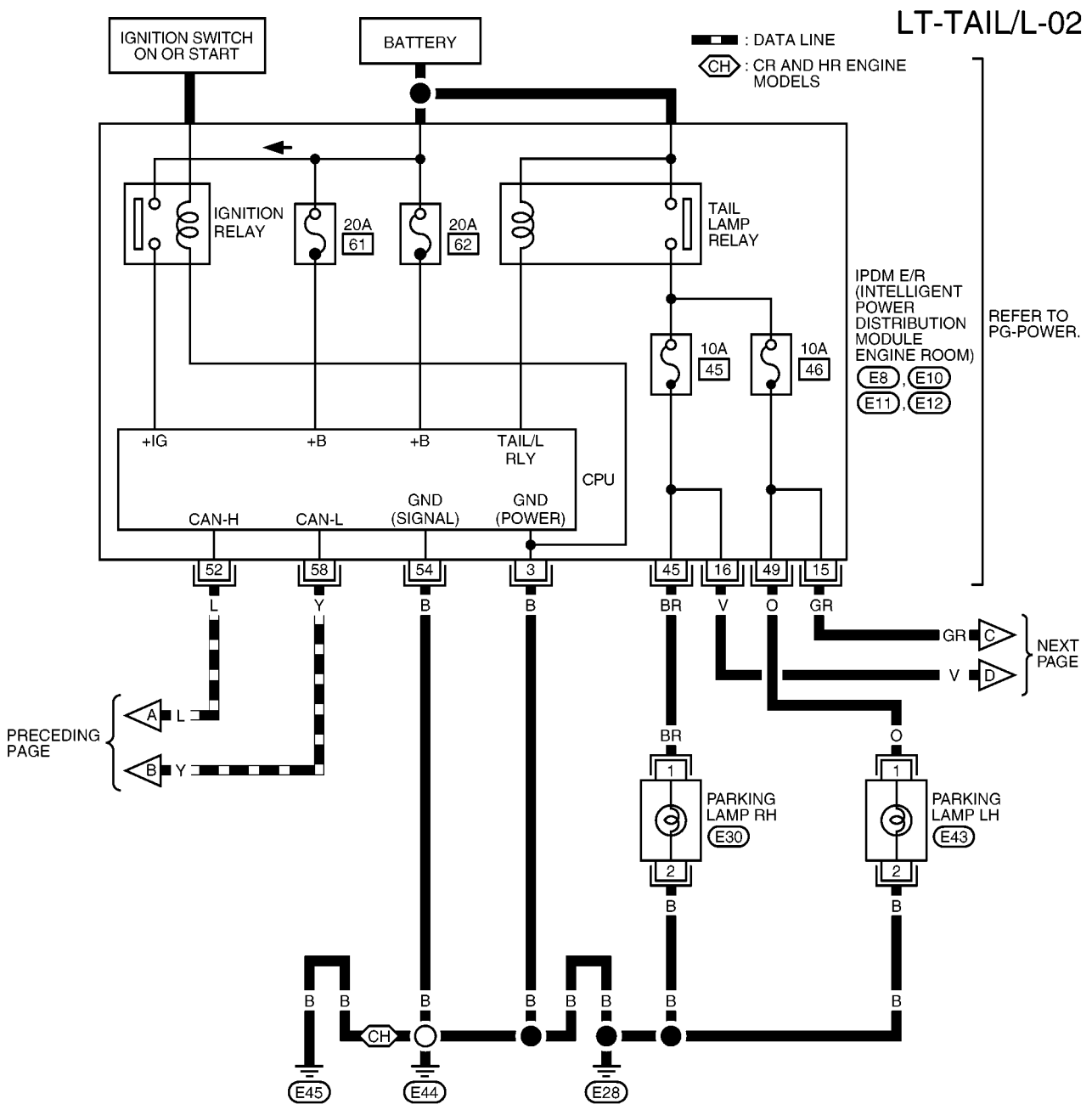
BKS001G8

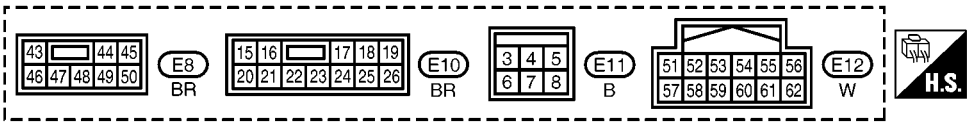


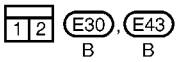


REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

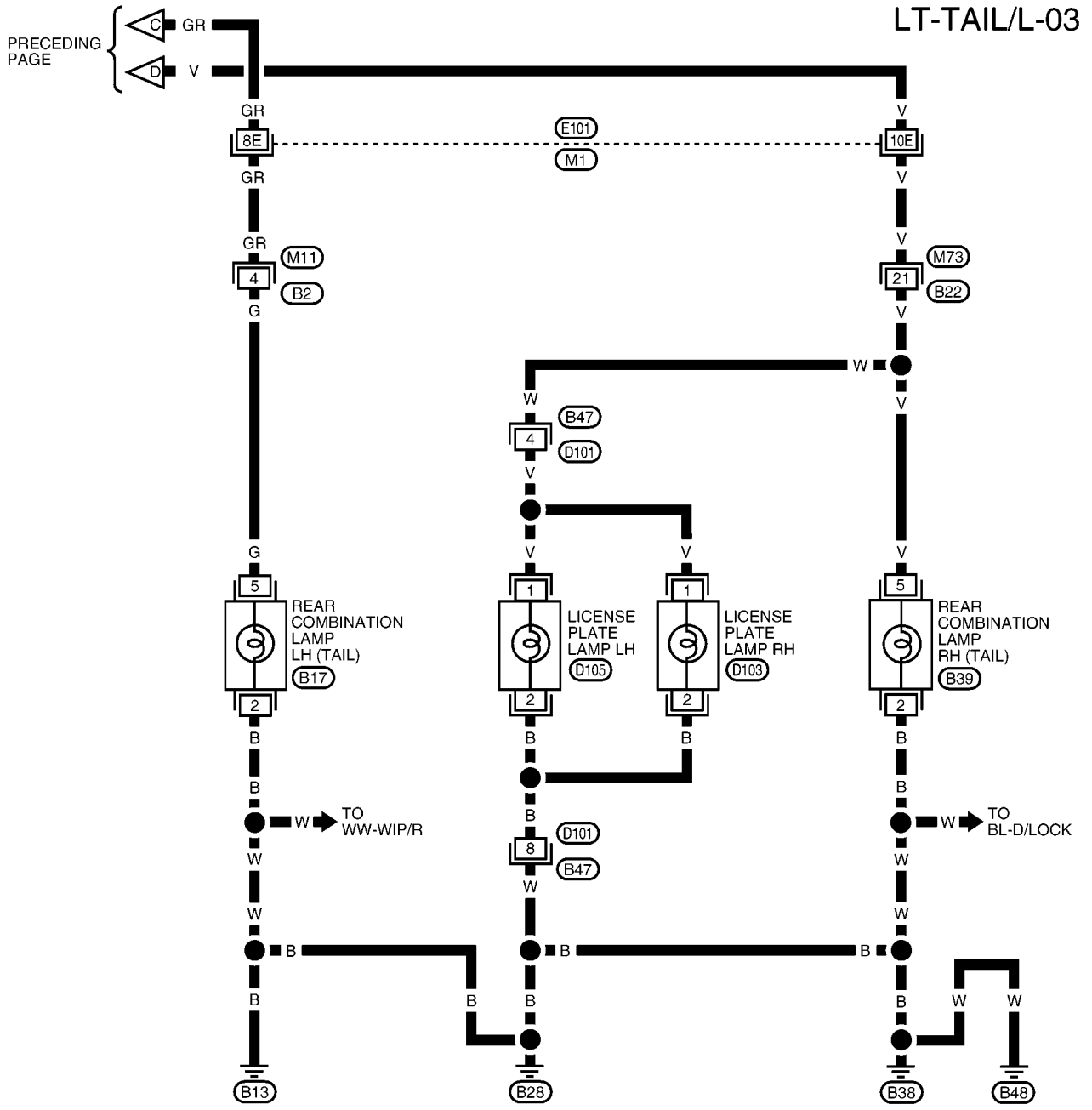
MKWA4358E

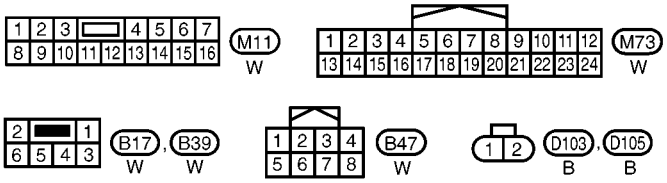

LT-TAIL/L-02
IGNITION SWITCH ON OR START
BATTERY
: DATA LINE
CH : CR AND HR ENGINE MODELS
IGNITION RELAY
20A 61
20A 62
TAIL LAMP RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E8, E10
E11, E12
REFER TO PG-POWER.
10A 45
10A 46
+IG
+B
+B
TAIL/L RLY
CPU
CAN-H
CAN-L
GND (SIGNAL)
GND (POWER)
52
58
54
3
45
16
49
15
L
Y
B
B
BR
V
O
GR
GR C
V D
NEXT PAGE
PRECEDING PAGE
A L
B Y
BR
O
1
2
PARKING LAMP RH
E30
PARKING LAMP LH
E43
B
CH
E45
E44
E28


43 44 45 46 47 48 49 50
E8
BR
15 16 17 18 19 20 21 22 23 24 25 26
E10
BR
3 4 5 6 7 8
E11
B
51 52 53 54 55 56 57 58 59 60 61 62
E12
W
H.S.


1 2
E30, E43
B B

MKWA4359E





REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)

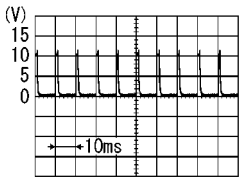
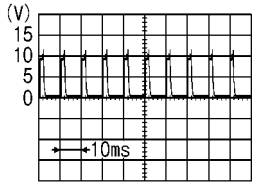
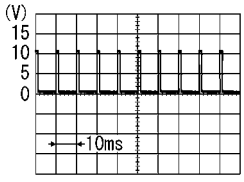
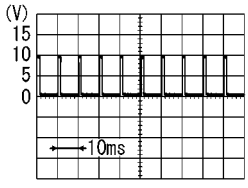
MKWA4360E

Terminals and Reference Values for BCM

BKS001G9

CAUTION:

- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to LT-19, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value
				Ignition switch	Operation or condition		
2	B	Ground	—	ON	—		Approx. 0V
15	W	Combination switch input 5	Input	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4956J Approx. 0.9V
						Lighting switch 1ST	 PKIB8624J Approx. 1.5 - 2.0V
19	L	CAN – H	Input/ Output	—	—		—
24	O	Ignition switch (ON)	Input	ON	—		Battery voltage
27	GR	Combination switch output 4	Output	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4958J Approx. 1.2V
						Lighting switch 1ST (The same result with lighting switch 2ND)	 PKIB4959J Approx. 1.0V
39	Y	CAN – L	Input/ Output	—	—		—
70	B	Ground	—	ON	—		Approx. 0V
74 79	Y	Battery power supply	Input	OFF	—		Battery voltage

Terminals and Reference Values for IPDM E/R

BKS001GA

Terminal No.	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value
				Ignition switch	Operation or condition		
3	B	Ground	—	ON	—		Approx. 0V
15	GR	Rear combination lamp LH	Output		Lighting switch 1ST position	OFF	Approx. 0V
						ON	Battery voltage
16	V	Rear combination lamp RH, license plate lamp RH and LH	Output			OFF	Approx. 0V
						ON	Battery voltage
45	BR	Parking lamp RH	Output			OFF	Approx. 0V
						ON	Battery voltage
49	O	Parking lamp LH	Output			OFF	Approx. 0V
						ON	Battery voltage
52	L	CAN – H	Input/ Output	—	—		—
54	B	Ground	—	ON	—		Approx. 0V
58	Y	CAN – L	Input/ Output	—	—		—

How to Proceed With Trouble Diagnosis

BKS001GB

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-134, "System Description" .
3. Perform the preliminary check. Refer to LT-142, "Preliminary Check" .
4. Check symptom and repair or replace the malfunctioning parts.
5. Do the parking, license plate and tail lamps operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

BKS001GC

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES

Check for blown fuses.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	J
	Ignition switch ON or START position	5
IPDM E/R	Battery	45
		46
		61
		62

Refer to LT-137, "Wiring Diagram — TAIL/L —" .

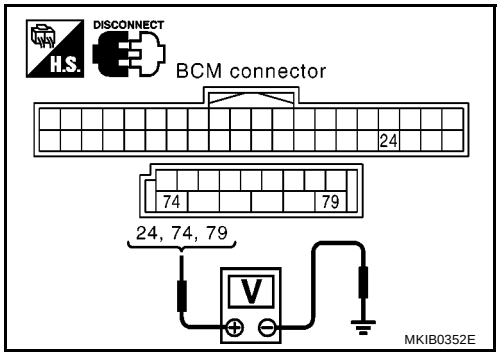
OK or NG

OK >> GO TO 2.

NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

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



Terminal			Ignition switch position		
(+)		(–)	OFF	ACC	ON
BCM Connector	Terminal				
M57	24	Ground	Approx. 0V	Approx. 0V	Battery voltage
M59	74		Battery voltage	Battery voltage	Battery voltage
	79		Battery voltage	Battery voltage	Battery voltage

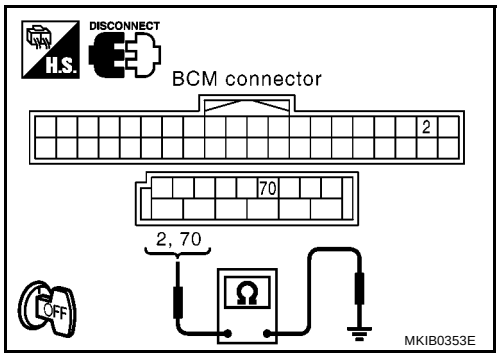
OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.



BCM Connector	Terminal	Ground	Continuity
M57	2		Yes
M59	70		

OK or NG

OK >> INSPECTION END

NG >> Repair harness or connector.

CONSULT-II Functions (BCM)

BKS001GD

Refer to LT-19, "CONSULT-II Functions (BCM)" in “HEADLAMP - CONVENTIONAL TYPE -”.

CONSULT-II Functions (IPDM E/R)

BKS001GE

Refer to LT-20, "CONSULT-II Functions (IPDM E/R)" in “HEADLAMP - CONVENTIONAL TYPE -”.

Parking, License Plate and Tail Lamps Do Not Illuminate

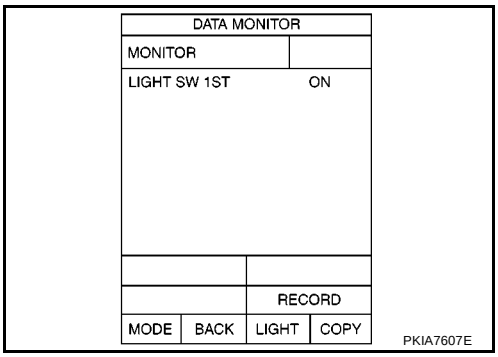
BKS001GF

1. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

1. Select “BCM” on CONSULT-II. Select “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure “LIGHT SW 1ST” turns ON-OFF linked with operation of lighting switch.

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



Without CONSULT-II

Refer to LT-125, "Combination Switch Inspection" .

OK or NG

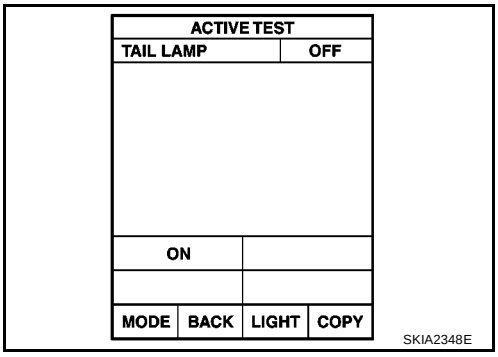
OK >> GO TO 2.
NG >> Check combination switch (lighting switch). Refer to LT-125, "Combination Switch Inspection" .

2. ACTIVE TEST

With CONSULT-II

1. Select “IPDM E/R” on CONSULT-II, and select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Select “TAIL LAMP” on “SELECT TEST ITEM” screen.
3. Touch “ON” screen.
4. Make sure parking, license plate and tail lamp operates.

Parking, license plate and tail lamp should operate.



Without CONSULT-II

1. Start auto active test. Refer to PG-22, "Auto Active Test" .
2. Make sure parking, license plate and tail lamp operates.

Parking, license plate and tail lamp should operate.

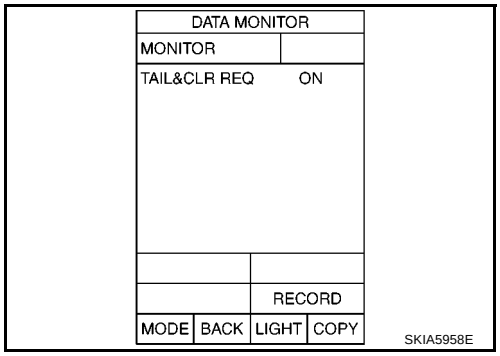
OK or NG

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 “TAIL&CLR REQ” turns ON when lighting switch is in 1ST position.

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



OK or NG

OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .

NG >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .

4. CHECK INPUT SIGNAL

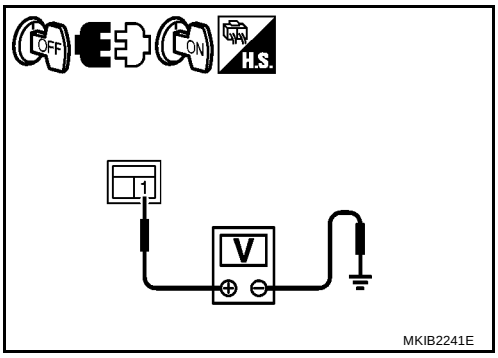
With CONSULT-II

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

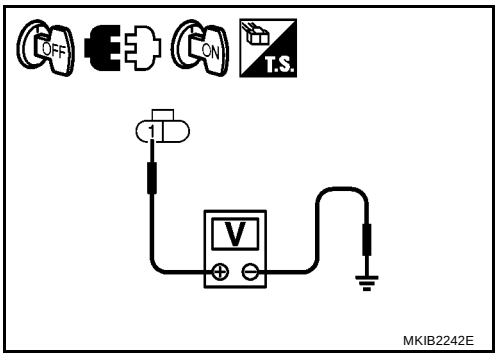
Without CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect parking lamp RH and LH, license plate lamp RH and LH, and rear combination lamp RH and LH connectors.
3. Start auto active test. Refer to PG-22, "Auto Active Test" .
4. When tail lamp relay is operating, check voltage between parking lamp, license plate lamp and rear combination lamp harness connector and ground.

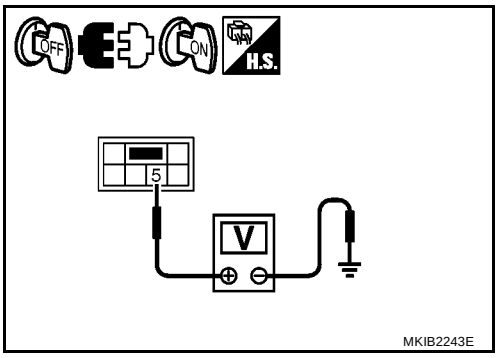
Terminal				Voltage
(+)			(–)	
Parking lamp connector		Terminal		
RH	E30	1	Ground	Battery voltage
LH	E43			



Terminal				Voltage
(+)			(–)	
License plate lamp connector		Terminal		
RH	D103	1	Ground	Battery voltage
LH	D105			



Terminal				Voltage
(+)			(–)	
Rear combination lamp connector (tail)		Terminal		
RH	B39	5	Ground	Battery voltage
LH	B17			



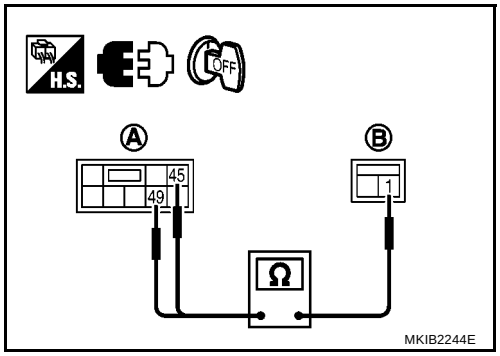
OK or NG

OK >> GO TO 6.
NG >> GO TO 5.

5. CHECK PARKING, LICENSE PLATE AND TAIL LAMP CIRCUIT

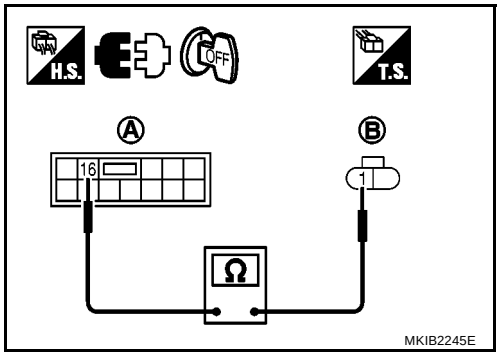
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector (A) and parking lamp harness connector (B).

Circuit	A		B		Continuity
	Connector	Terminal	Connector	Terminal	
RH	E8	45	E30	1	Yes
LH		49	E43		



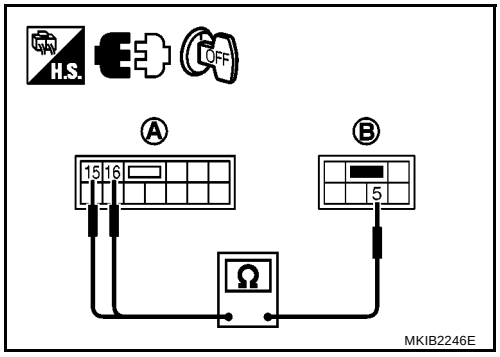
4. Check continuity between IPDM E/R harness connector (A) and license plate lamp harness connector (B).

Circuit	A		B		Continuity
	Connector	Terminal	Connector	Terminal	
RH	E10	16	D103	1	Yes
LH			D105		



5. Check continuity between IPDM E/R harness connector (A) and rear combination lamp harness connector (B).

Circuit	A		B		Continuity
	Connector	Terminal	Connector	Terminal	
RH	E10	16	B39	5	Yes
LH		15	B17		



OK or NG

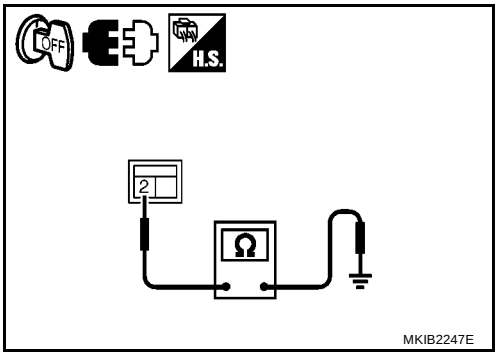
OK >> Replace IPDM E/R. Refer to PG-37, "Removal and Installation of IPDM E/R" .

NG >> Repair harness or connector.

6. CHECK PARKING, LICENSE PLATE AND TAIL LAMPS GROUND CIRCUIT

1. Check continuity between parking harness connector and ground.

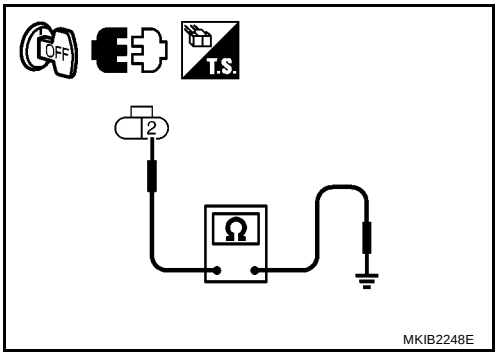
Parking lamp connector		Terminal	Ground	Continuity
RH	E30	2		Yes
LH	E43			



MKIB2247E

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

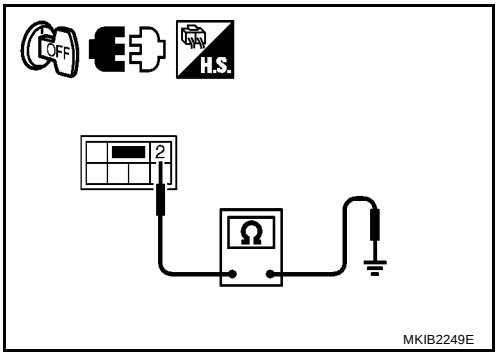
License plate lamp connector		Terminal	Ground	Continuity
RH	D103	2		Yes
LH	D105			



MKIB2248E

3. Check continuity between rear combination lamp harness connector and ground.

Rear combination lamp connector		Terminal	Ground	Continuity
RH	B39	2		Yes
LH	B17			



MKIB2249E

OK or NG

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

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

BKS001GG

- This symptom indicates the malfunction of ignition relay in IPDM E/R. Refer to PG-19, "Function of Detecting Ignition Relay Malfunction" .
- Select “BCM” on CONSULT-II. Select “HEADLAMP” on “SELECT TEST ITEM” screen and select “DATA MONITOR” on “SELECT DIAG MODE” screen. If “LIGHT SW 1ST” is OFF when lighting switch is OFF, replace IPDM E/R.

Bulb Replacement

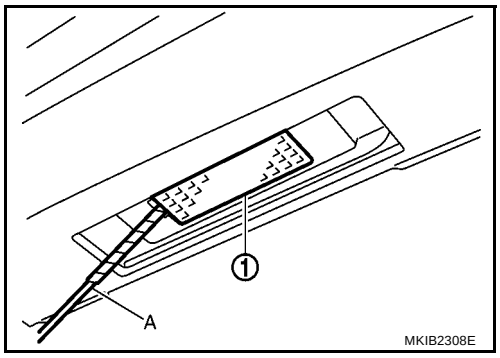
BKS001GH

PARKING LAMP

Refer to LT-149, "Bulb Replacement" .

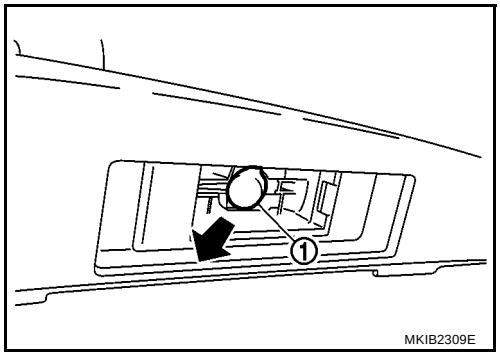
LICENSE PLATE LAMP

1. Insert a screwdriver A or the like wrapped in a cloth into the lens (1) notch.



2. Remove bulb (1) from license plate lamp bulb socket.

License plate lamp : 12V - 5W



TAIL LAMP

Refer to LT-149, "Bulb Replacement" .

Removal and Installation

BKS001GI

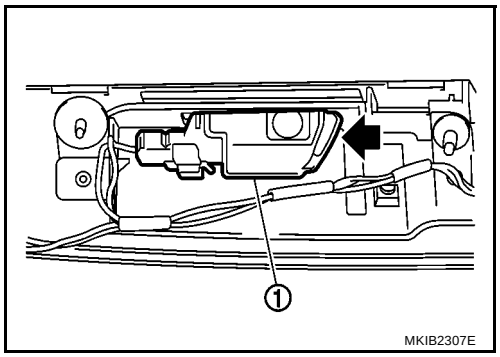
PARKING LAMP

Refer to LT-149, "Removal and Installation" .

LICENSE PLATE LAMP

Removal

1. Remove license plate finisher. Refer to EI-24, "Removal and Installation" .
2. Disconnect the license plate lamp connector.
3. While pressing pawl on the reverse side of the back door finisher.



Installation

Installation is the reverse order of removal.

TAIL LAMP

Removal

Refer to LT-149, "Removal and Installation" .

REAR COMBINATION LAMP

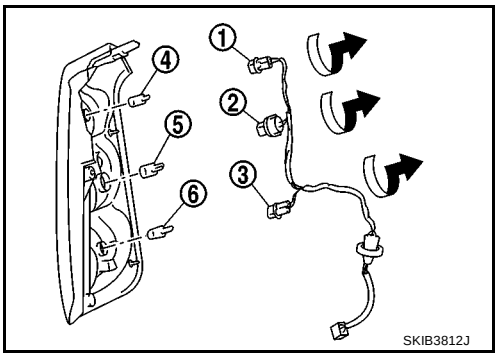
PFP:26554

Bulb Replacement

BKS001GJ

1. Remove rear combination lamp. Refer to LT-149, "Removal and Installation" .
2. Turn bulb socket (1), (2), (3) counterclockwise and unlock it.
3. Remove bulb (4), (5), (6).

Stop/tail lamp (5)	**: 12V - 21/5W**
Rear turn signal lamp (4)	**: 12V - 16W (amber)**
Back-up lamp (6)	**: 12V - 16W**

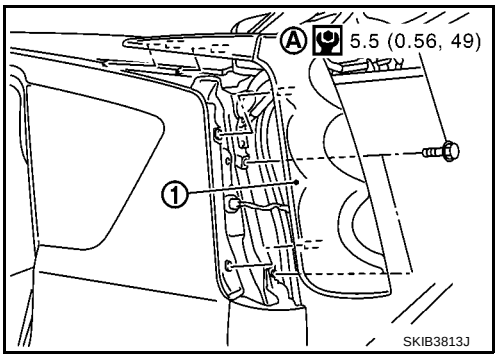


Removal and Installation

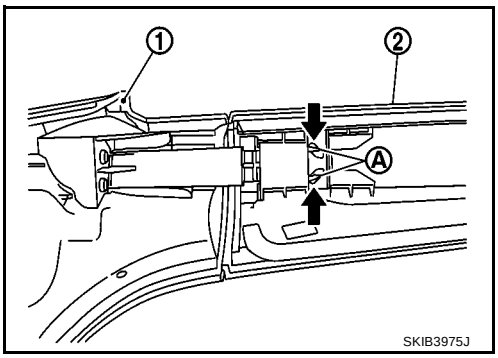
BKS001GK

REMOVAL

1. Remove rear pillar garnish. Refer to EI-26, "BODY SIDE TRIM" .
2. Disconnect rear combination lamp connector.
3. Remove rear combination lamp mounting bolts (A).
4. Pull the rear combination lamp (1) toward rear of the vehicle and remove from the vehicle.



5. While pressing pawls (A) in direction as shown in the figure, remove the rear combination lamp finisher (2) from the rear combination lamp body (1).



INSTALLATION

Installation is the reverse order of removal.

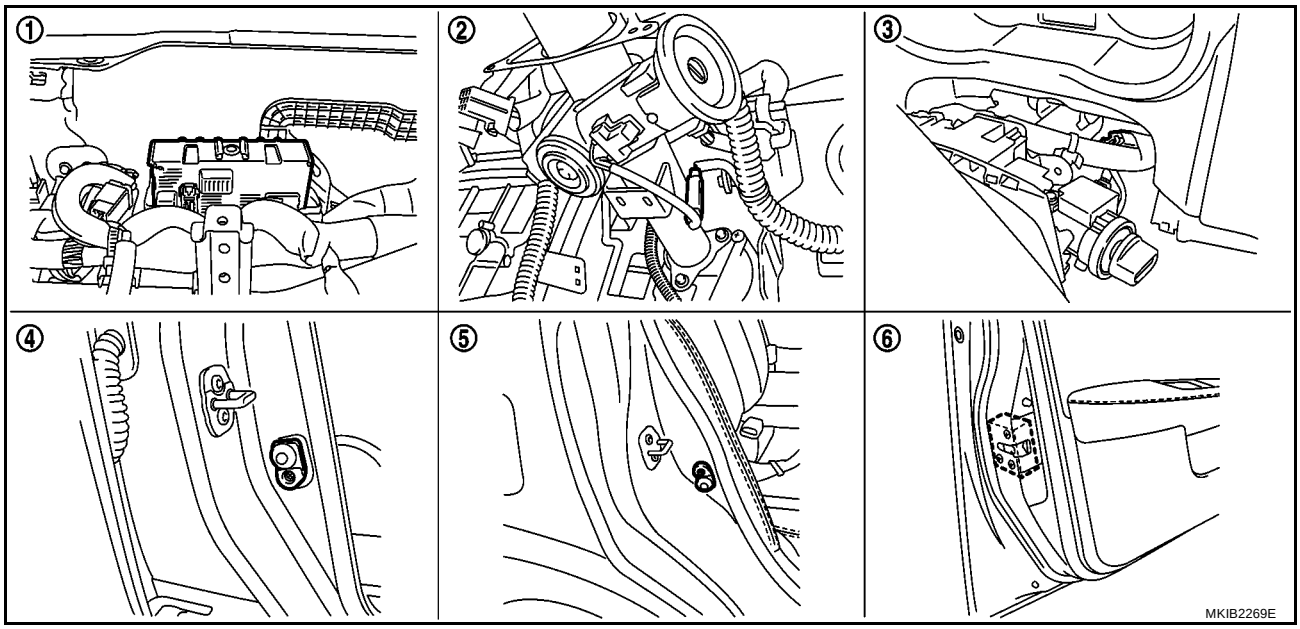
Rear combination lamp mounting nut : 5.5 N·m (0.56 kg-m, 49 in-lb)

INTERIOR ROOM LAMP

PFP:26410

Component Parts and Harness Connector Location

BKS001GO



1. BCM M57,M59 (View with instrument upper panel removed)
2. Key switch M33 (without Intelligent Key system)
3. Key switch and ignition knob switch M34 (with Intelligent Key system)
4. Front door switch driver side [B14 (LHD models)] [B29 (RHD models)] Front door switch passenger side [B29 (LHD models)] [B14 (RHD models)]
5. Rear door switch LH B19 Rear door switch RH B42
6. Door lock/unlock switch M54

System Description

BKS001GP

When interior room lamp switch is in DOOR position, interior room lamp ON/OFF is controlled by timer according to signals from switches including key switch, front door switch driver side, unlock signal from key fob, door lock and unlock switch, key cylinder lock and unlock switch, ignition switch.
When interior room lamp turns ON, there is a gradual brightening over 1 second.
When interior room lamp turns OFF, there is a gradual dimming over 1 second.
Interior room lamp timer is controlled by BCM.

POWER SUPPLY AND GROUND

Power is supplied at all times:

- through 40A fusible link (letter J, located in the fuse and fusible link box)
- to BCM terminals 74 and 79,
- through 10A fuse [No. 9, located in the fuse block (J/B)]
- to luggage room lamp terminal 1,
- to BCM terminal 72,
- to key switch terminal 2 (without Intelligent Key system) or
- through 10A fuse [No. 13, located in the fuse block (J/B)]
- to key switch and ignition knob switch terminal 2 and 4 (with Intelligent Key system).

When the key is removed from ignition key cylinder, power is interrupted

- through key switch terminal 1 (without Intelligent Key system) or
- through key switch and ignition knob switch terminal 1 (with Intelligent Key system)
- to BCM terminal 3.

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

- through 10A fuse [No. 5, located in the fuse block (J/B)]
- to BCM terminal 24.

Ground is supplied:

- to BCM terminals 2 and 70.
- through grounds M21 and M66.

When any door is opened, ground is supplied:

- to BCM terminal 29
- to front door switch (driver side) terminal 1
- through case ground of front door switch (driver side),
- to BCM terminal 30
- to front door switch (passenger side) terminal 1
- through case ground of front door switch (passenger side),
- to BCM terminal 59
- to rear door switch LH terminal 1
- through case ground of rear door switch LH,
- to BCM terminal 60
- to rear door switch RH terminal 1
- through case ground of rear door switch RH,
- to BCM terminal 10
- to back door switch terminal 2
- to back door switch terminal 1
- through grounds B13,B28,B38 and B48.

SWITCH OPERATION

When map lamp switch is ON, power is supplied:

- through BCM terminal 73
- to map lamp terminal 4.

Ground is supplied:

- to map lamp terminal 3
- through grounds M21 and M66.

With power and ground are supplied, the map lamp illuminates.
When map lamp switch is DOOR, power is supplied:

- through BCM terminal 73
- to map lamp terminal 4.

Ground is supplied:

- through map lamp terminal 2
- to BCM terminal 21.

With power and ground are supplied, the map lamp illuminates.
When back door is opened, ground supplied:

- to luggage room lamp terminal 2
- through back door switch terminals 2 and 1
- through grounds B13,B28,B38 and B48.

With power and ground are supplied, the luggage room lamp illuminates.

Models With Personal Lamp

When personal lamp switch is ON, power is supplied:

- through BCM terminal 73
- to personal lamp terminal 4.

Ground is supplied:

- to personal lamp terminal 3
- through grounds M21 and M66.

With power and ground are supplied, the personal lamp illuminates.
When personal lamp switch is DOOR, power is supplied:

- through BCM terminal 73
- to personal lamp terminal 4.

Ground is supplied:

- through personal lamp terminal 2
- to BCM terminal 21.

With power and ground are supplied, the personal lamp illuminates.

INTERIOR ROOM LAMP TIMER OPERATION

When interior room lamp switch is in the “DOOR” position, the BCM keeps the interior room lamp illuminated for Approx. 28 seconds when:

- unlock signal is received from Intelligent Key, while all doors are closed and key is out of the ignition key cylinder (with Intelligent Key system).
- unlock signal is received from key fob while all doors are closed and key is out of the ignition key cylinder (without Intelligent Key system).
- key is removed from ignition key cylinder while all doors are closed (without Intelligent Key system)
- any door is opened and then closed while key is out of the ignition key cylinder.

The timer is canceled when:

- ignition switch is turned ON.
- lock signal is received from Intelligent Key, while all doors are closed and key is out of the ignition key cylinder (with Intelligent Key system).
- lock signal is received from remote controller while all doors are closed and key is out of the ignition key cylinder (without Intelligent Key system).

INTERIOR ROOM LAMP BATTERY SAVER CONTROL

If interior room lamp is left ON, it will not be turned off even when door is closed.
BCM turns off interior room lamp automatically to save battery 15 minutes after ignition switch is turned off.
BCM controls interior room lamps listed below:

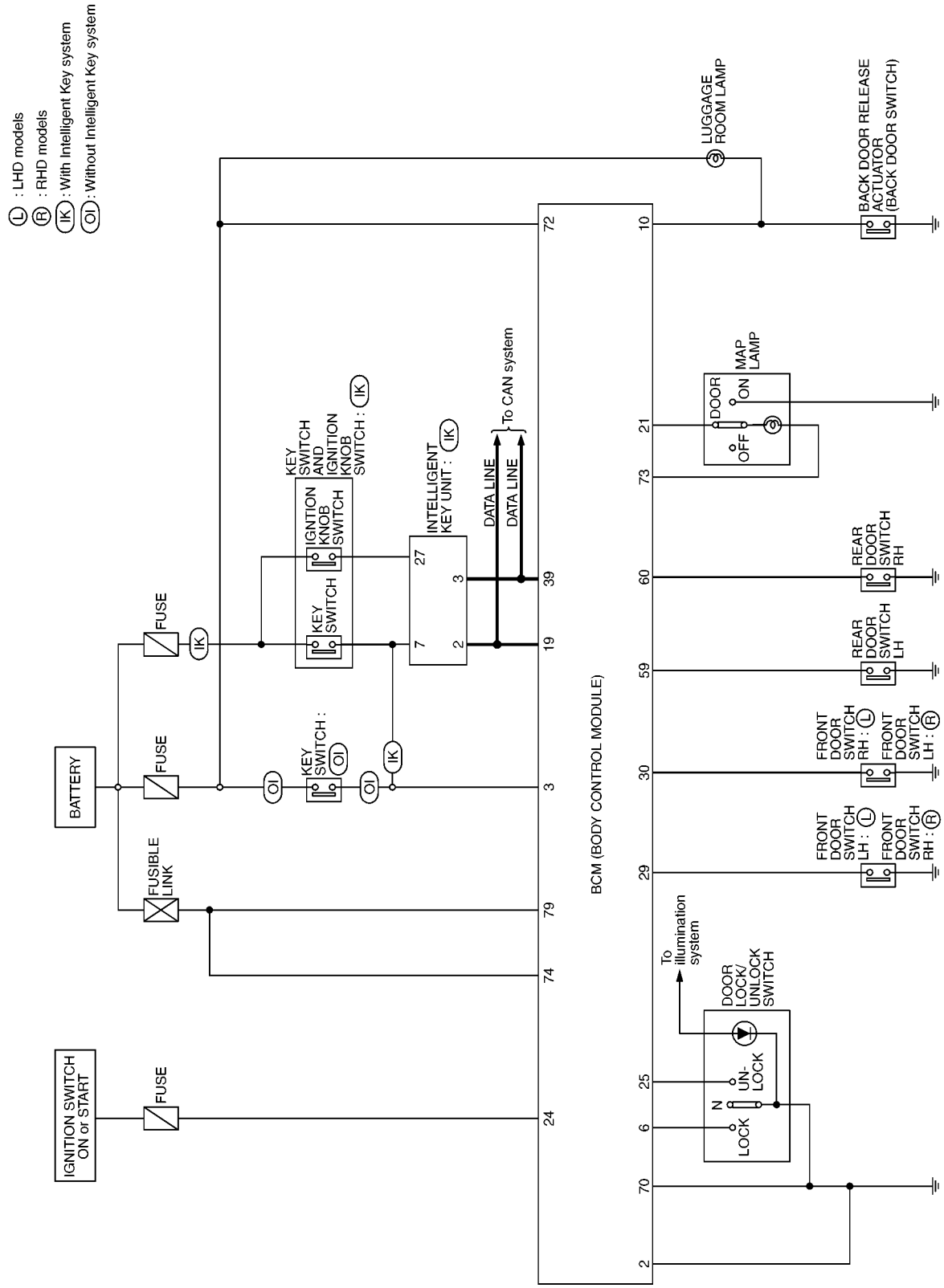
- Interior room lamp

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

- door lock switch is operated,
- Intelligent Key lock or unlock,
- door is opened,
- key is removed from ignition key cylinder.

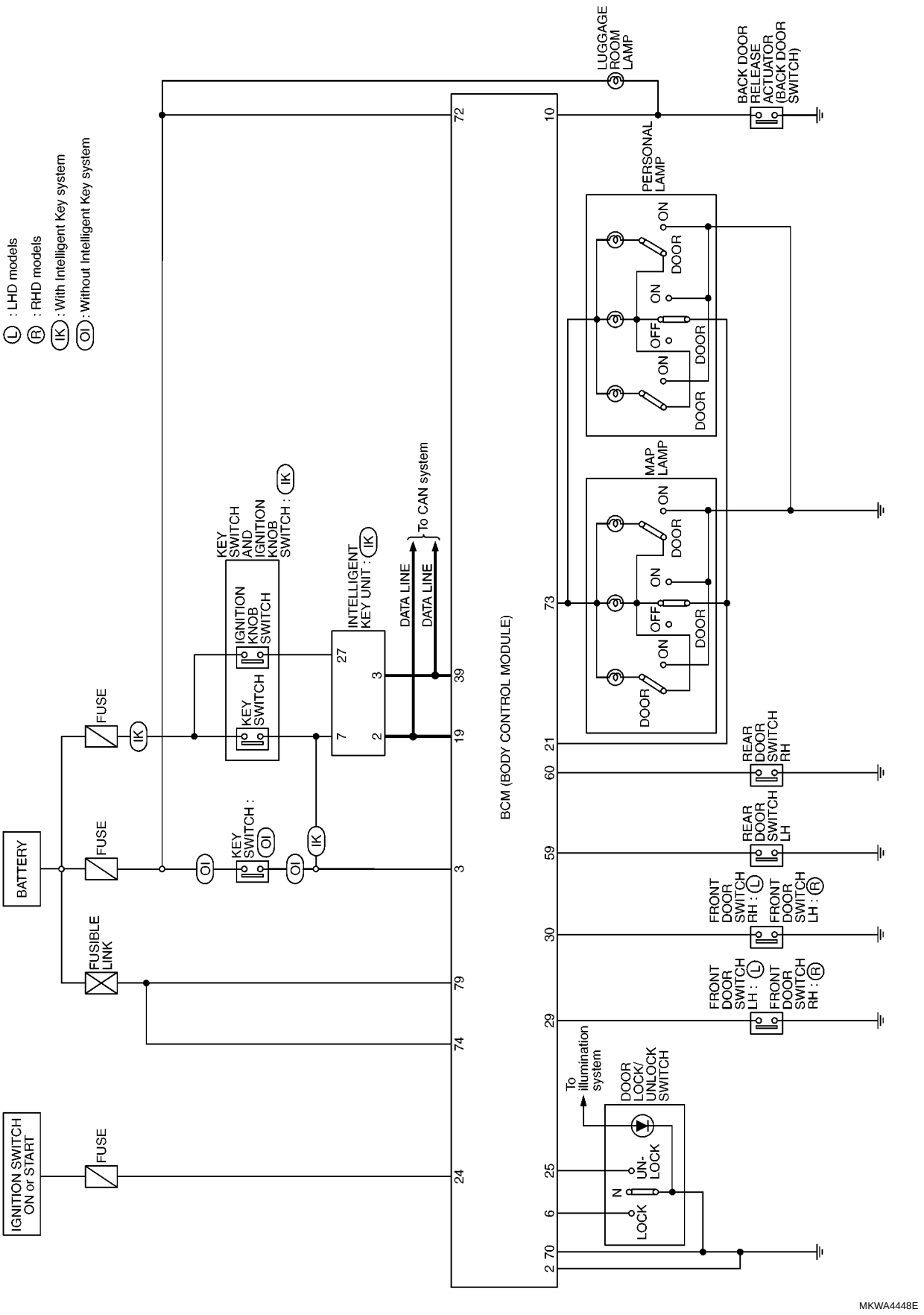
Schematic
—MODELS WITHOUT PERSONAL LAMP—

BKS001GQ



MKWA4365E

—MODELS WITH PERSONAL LAMP—

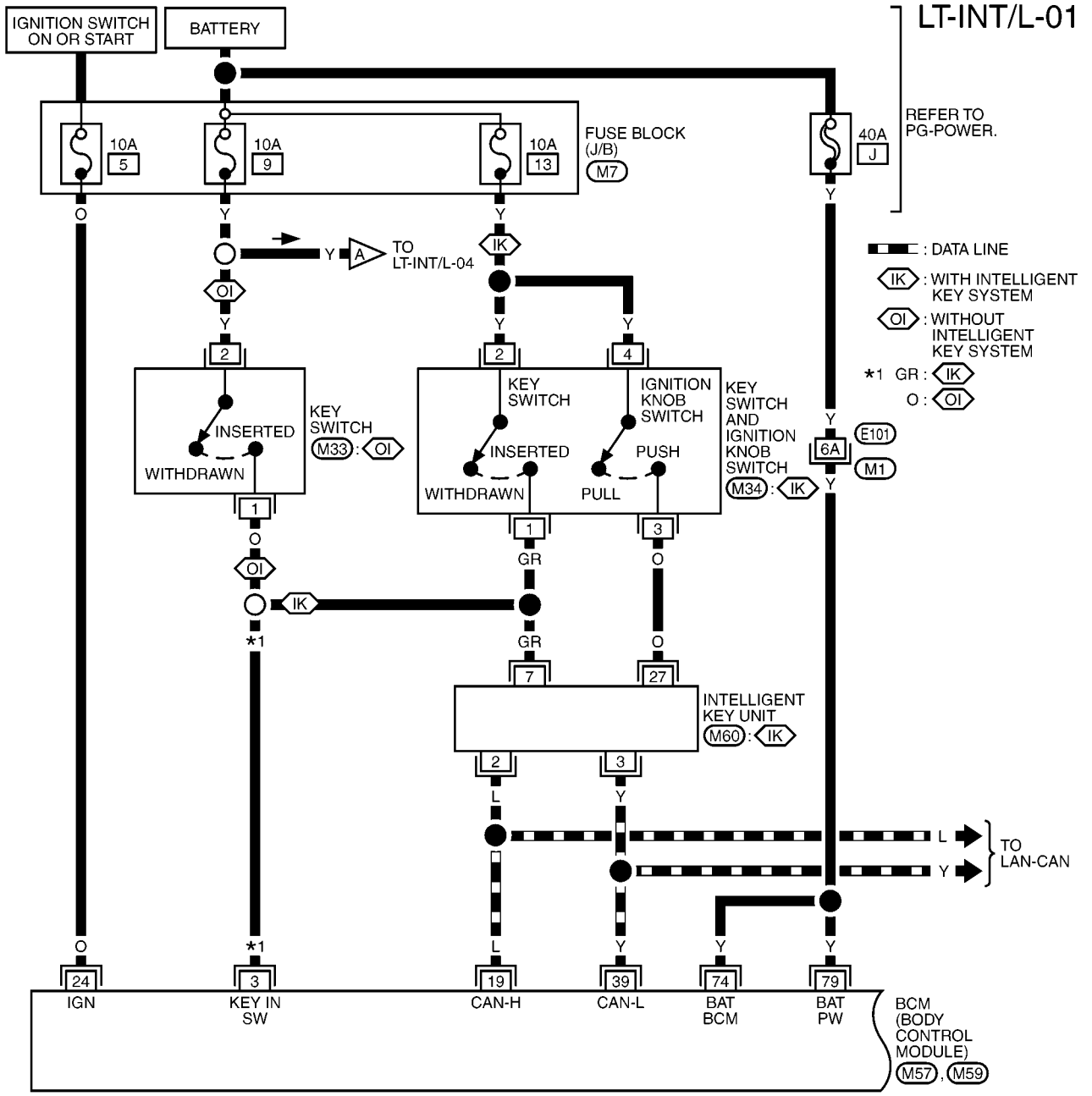


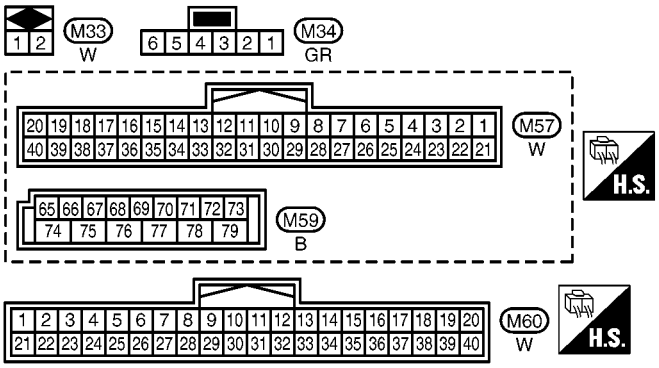
MKWA4448E

Wiring Diagram — ROOM/L —

BKS001GR

—MODELS WITHOUT PERSONAL LAMP—

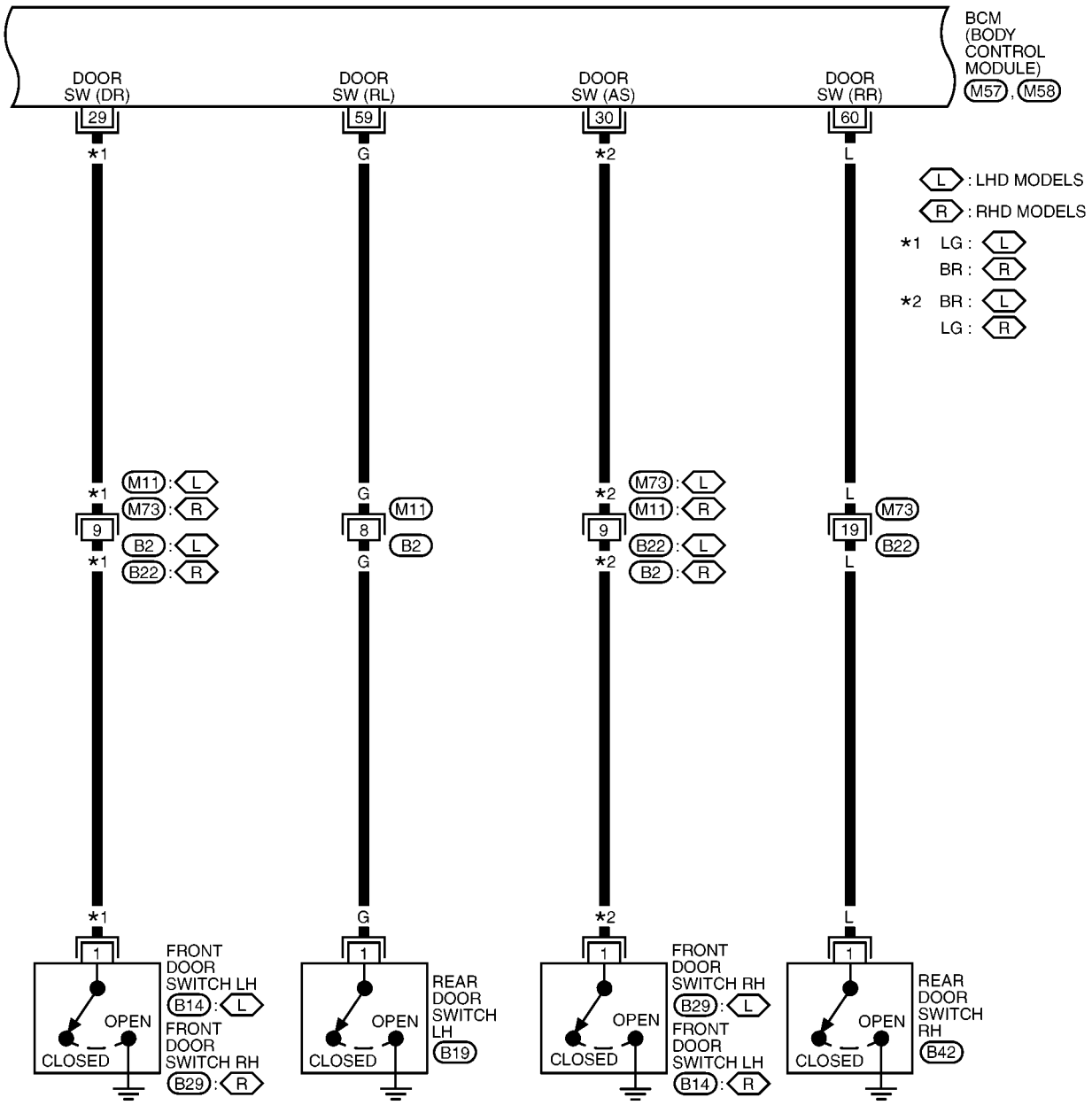


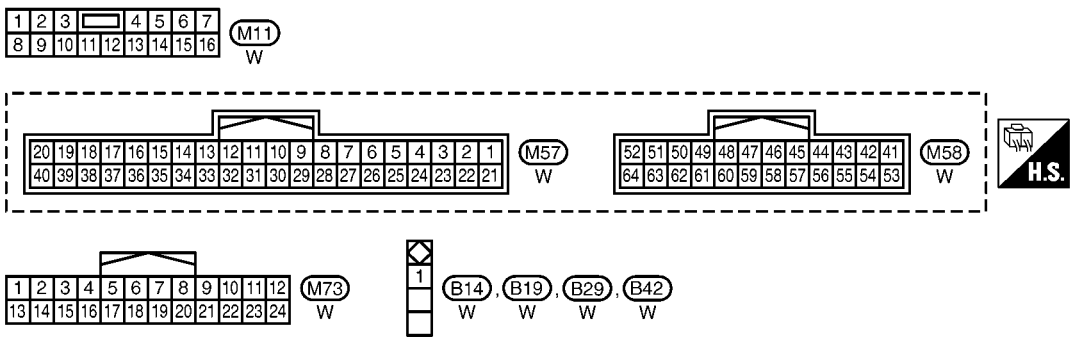


REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

MKWA4366E

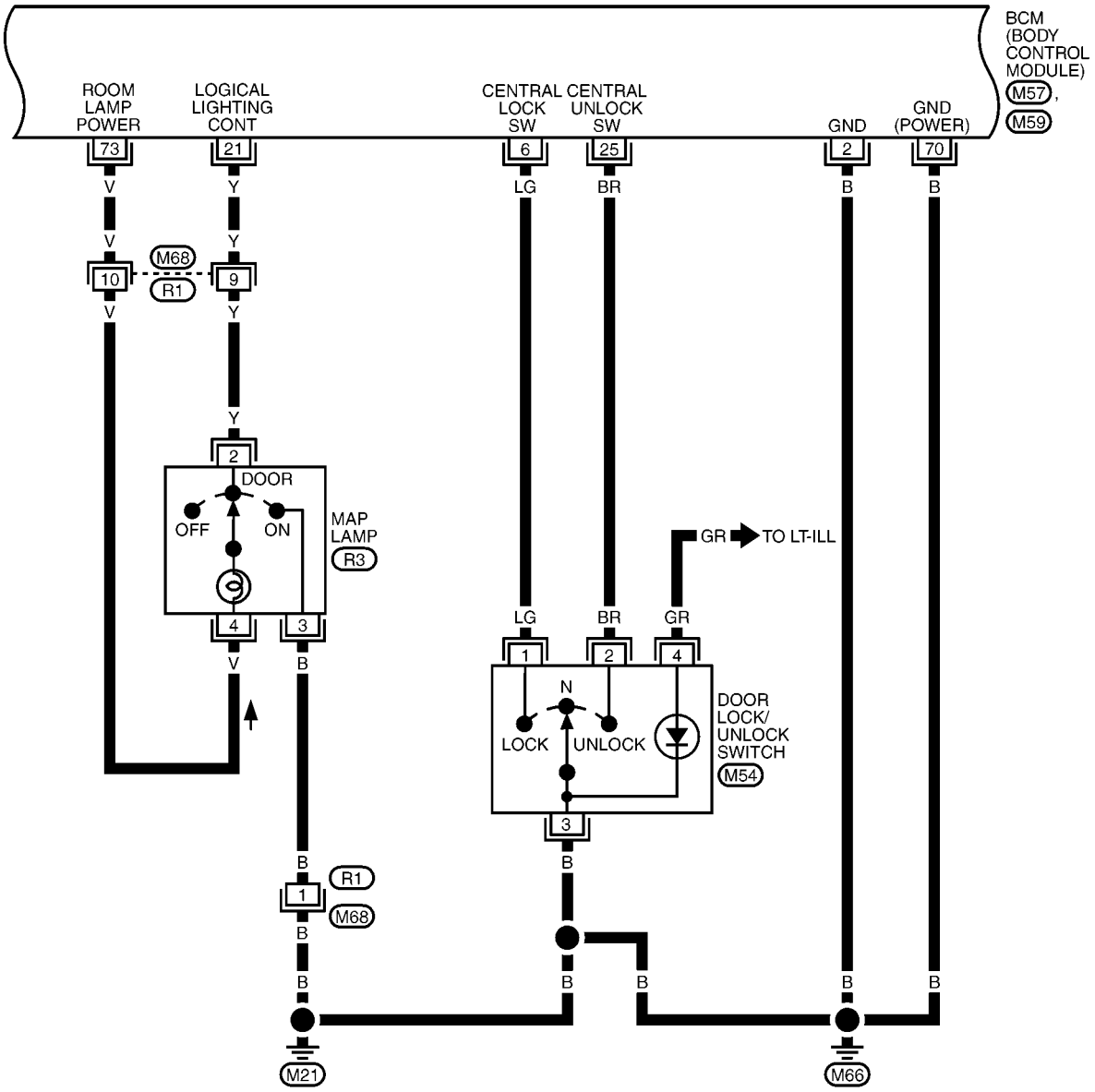
LT-INT/L-02

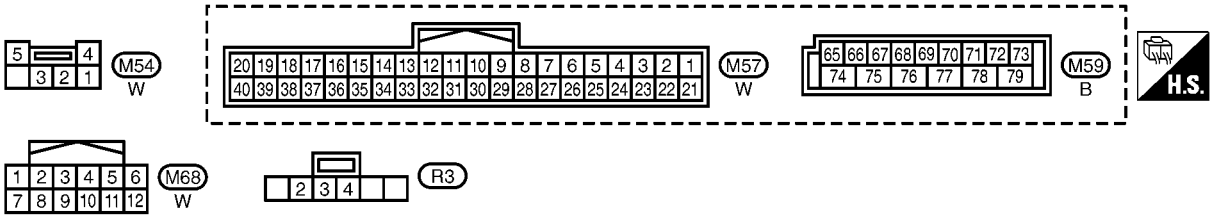




MKWA4367E

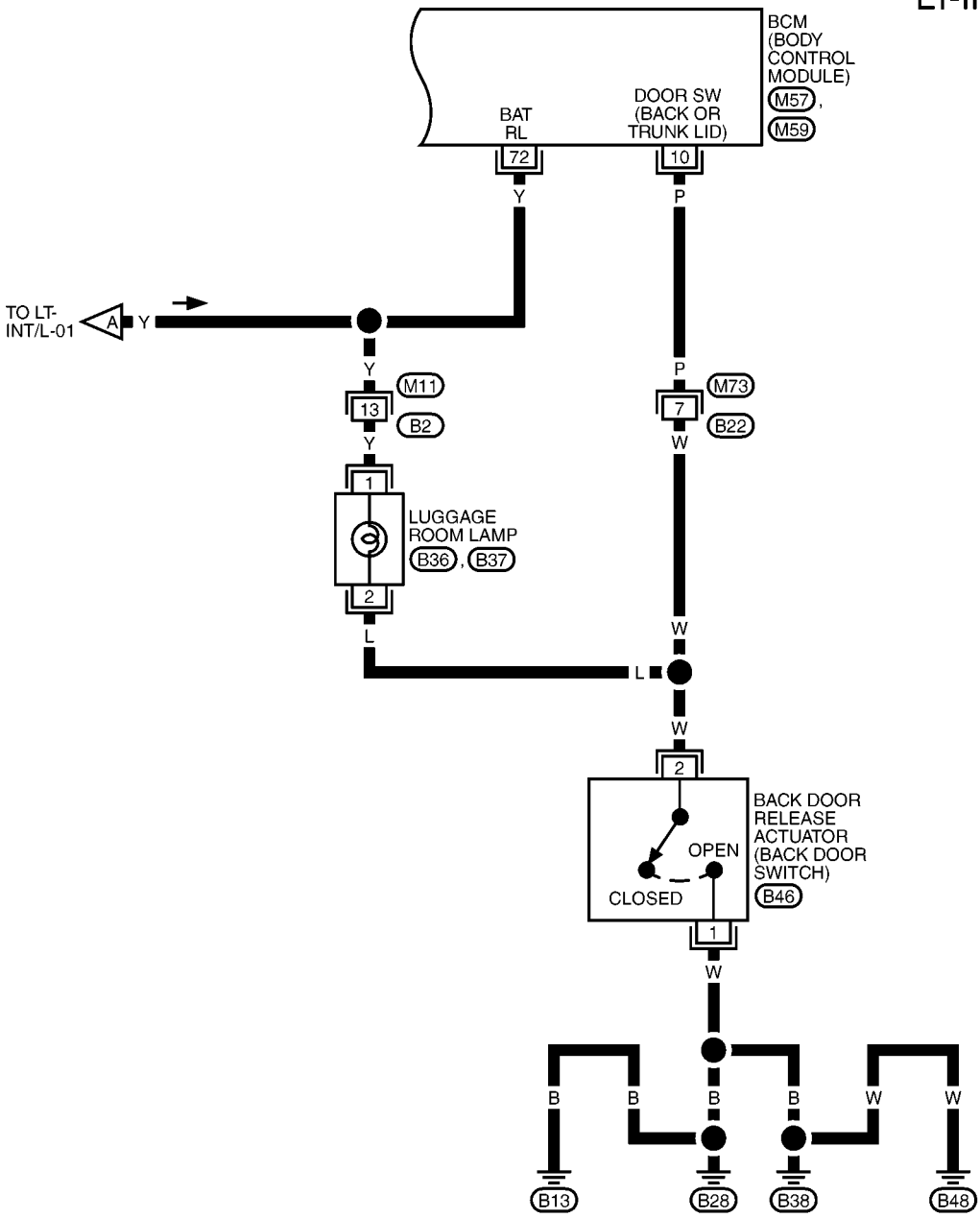
LT-INT/L-03

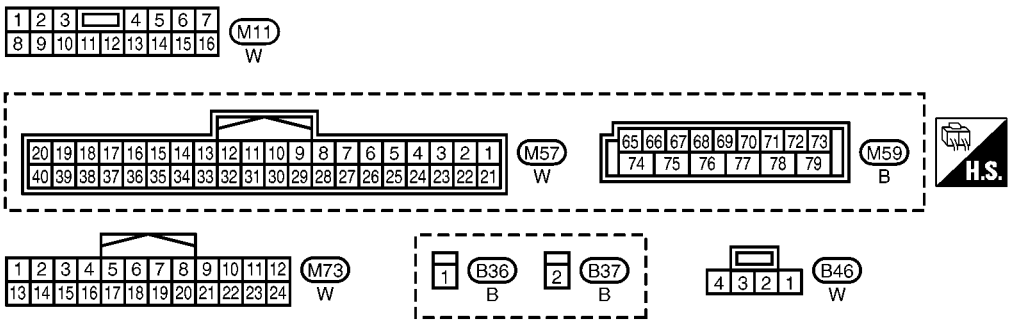




MKWA4368E

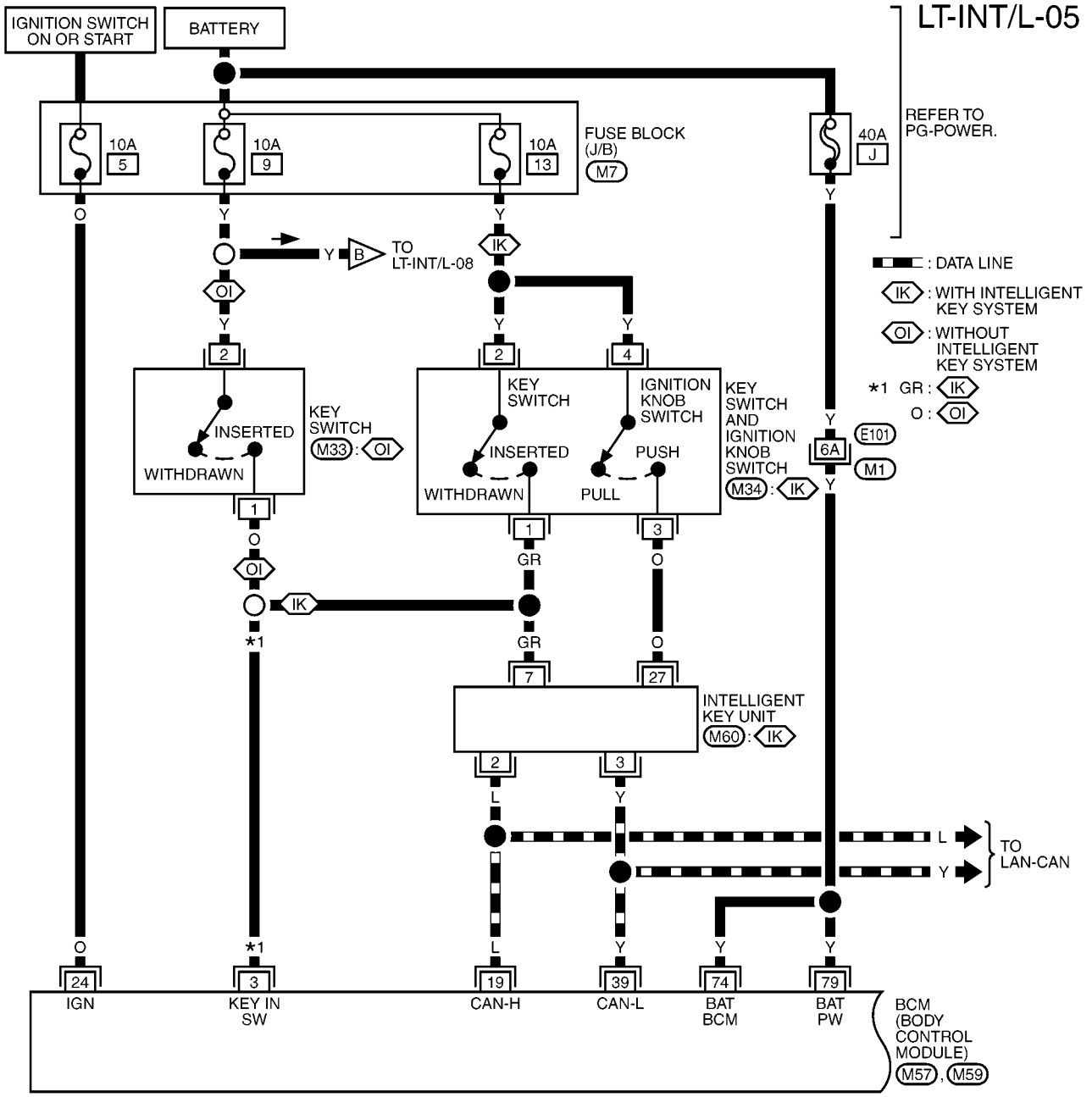
LT-INT/L-04

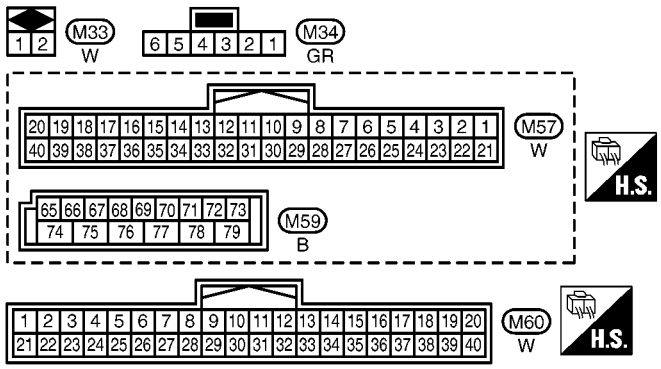




MKWA4369E

—MODELS WITH PERSONAL LAMP—

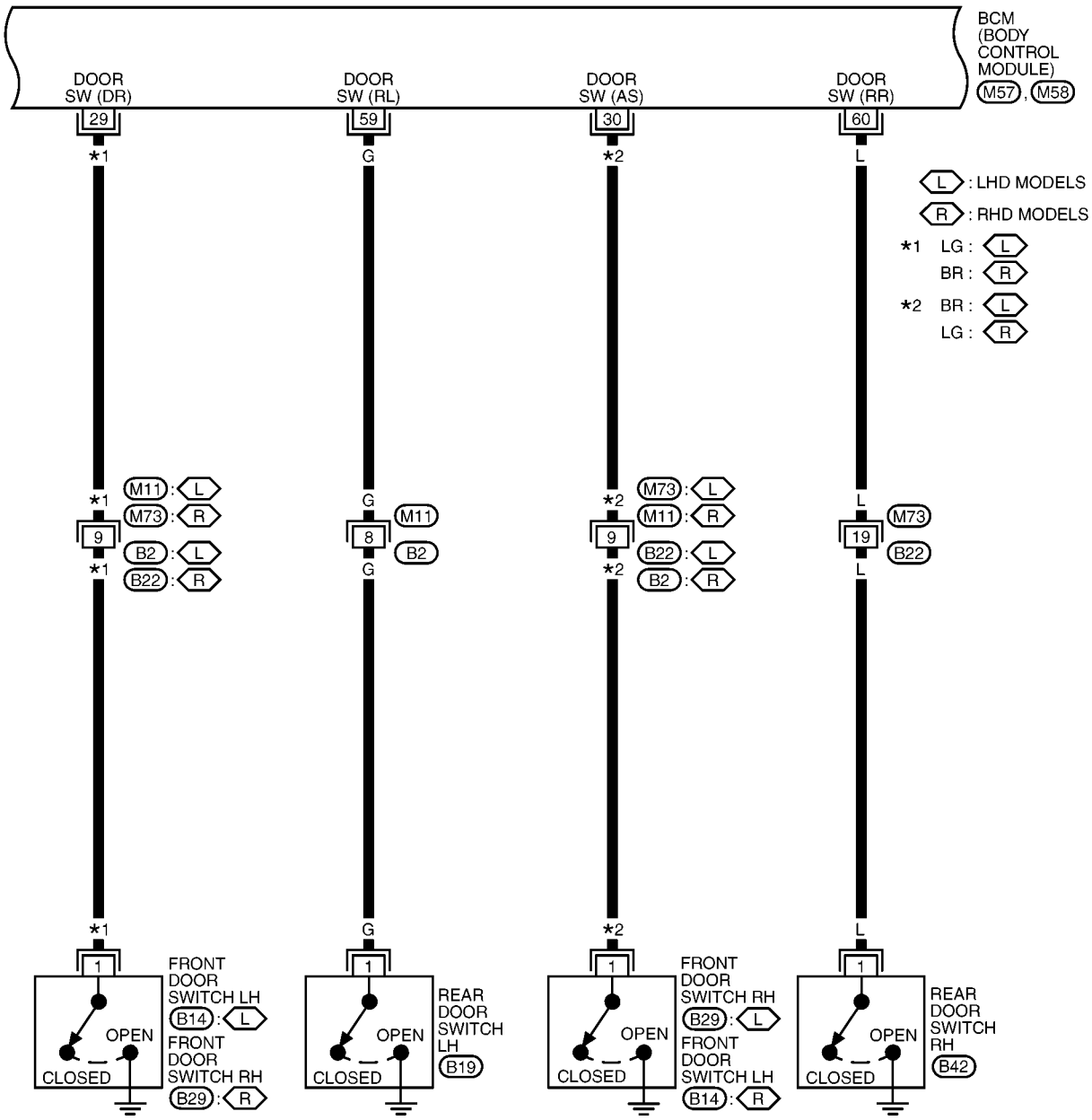


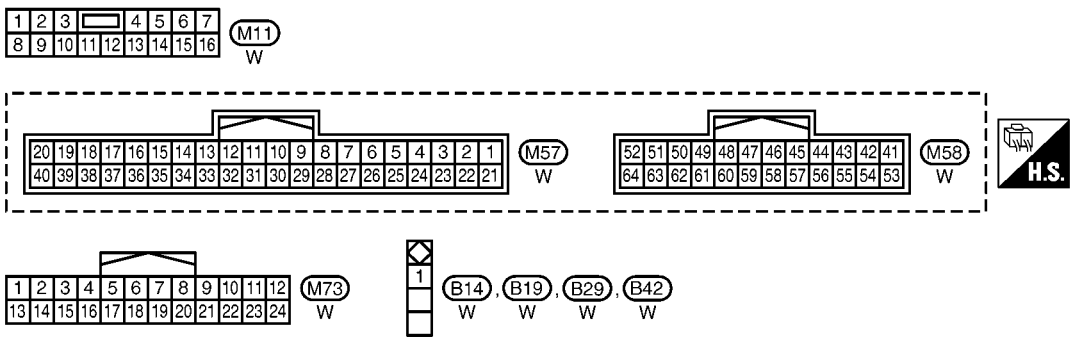


REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

MKWA4449E

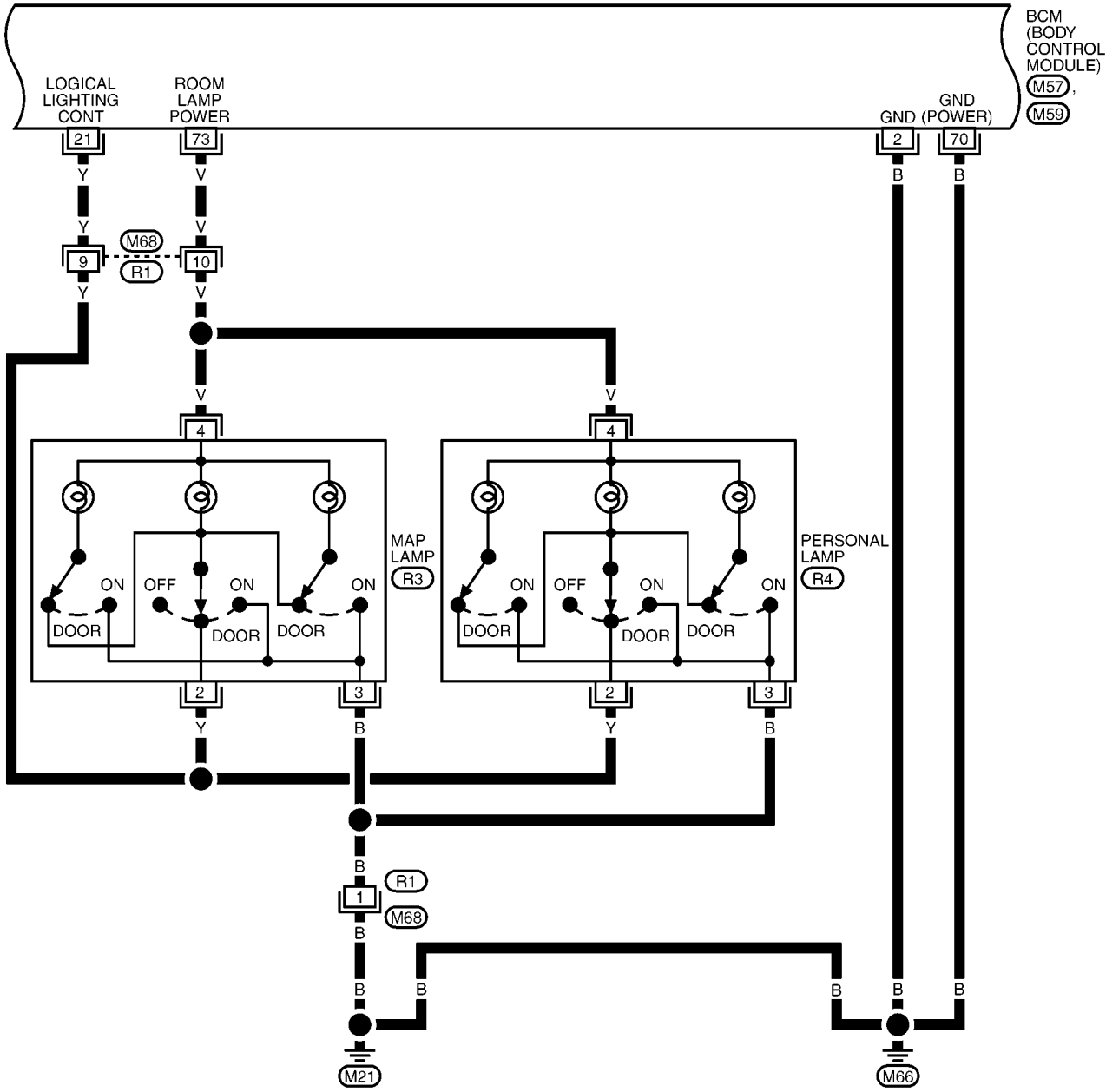
LT-INT/L-06

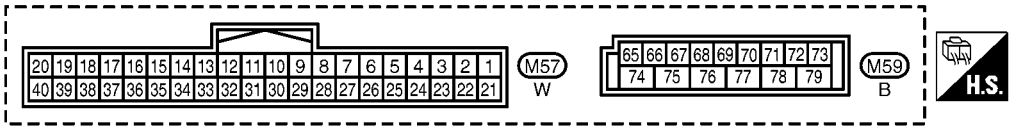


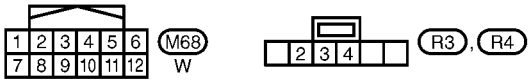


MKWA4450E

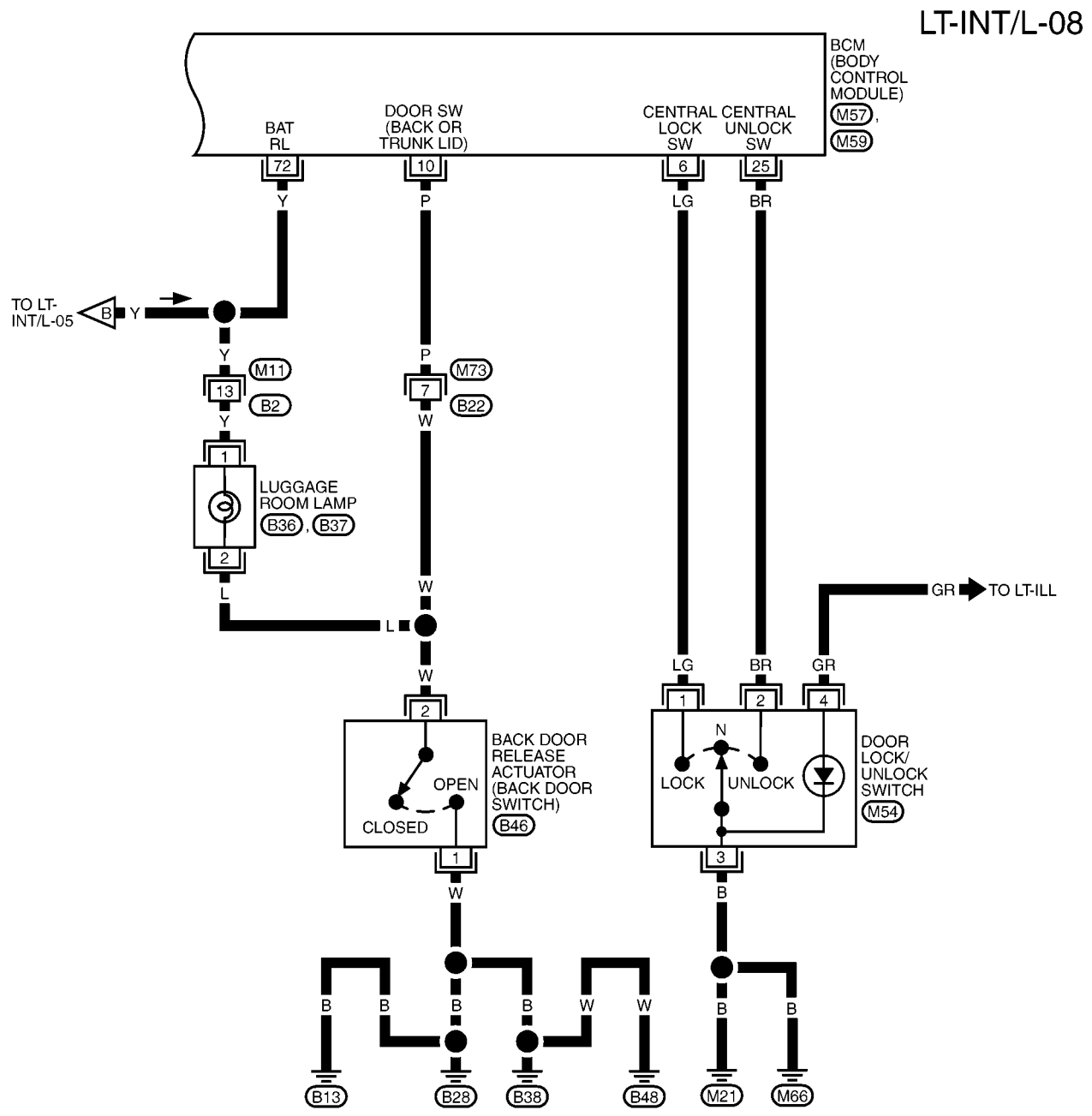
LT-INT/L-07

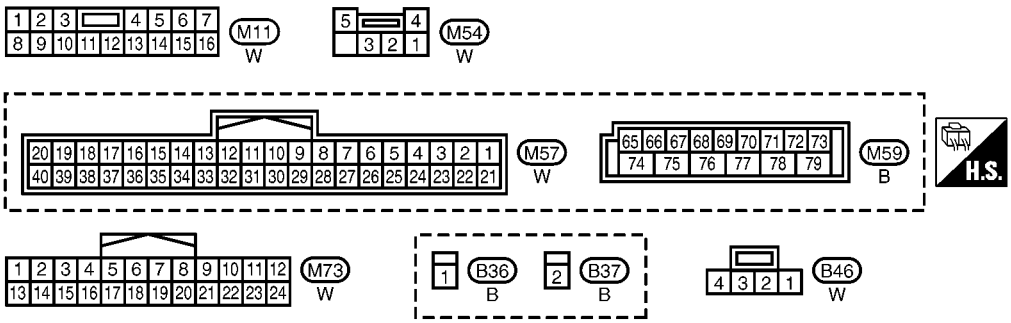






MKWA4451E


LT-INT/L-08
BCM (BODY CONTROL MODULE) M57, M59
BAT RL
DOOR SW (BACK OR TRUNK LID)
CENTRAL LOCK SW
CENTRAL UNLOCK SW
72
10
6
25
Y
P
LG
BR
TO LT-INT/L-05
B
Y
M11
13
B2
M73
7
B22
W
LUGGAGE ROOM LAMP B36, B37
L
GR
TO LT-ILL
2
BACK DOOR RELEASE ACTUATOR (BACK DOOR SWITCH) B46
OPEN
CLOSED
1
3
4
N
LOCK
UNLOCK
DOOR LOCK/ UNLOCK SWITCH M54
B
B13
B28
B38
B48
M21
M66


M11
W
M54
W
M57
W
M59
B
H.S.
M73
W
B36
B
B37
B
B46
W

MKWA4452E

Terminals and Reference Values for BCM

BKS001GS

Terminal No.	Wire color	Signal designation	Signal input/ output	Measuring condition					Voltage [V] (Approx.)
				Ignition switch	Operation or condition				
2	B	Ground	—	ON	—				0
3	GR*1	Key switch signal	Input	OFF	Remove key.				0
	O*2				Key is inserted.				Battery voltage
6	LG	Door lock / unlock switch (Lock signal)	Input	OFF	Lock operation (ON)				0
					Other than above (OFF)				5
10	P	Back door switch signal	Input	OFF	Back door switch signal		ON (open)		0
							OFF (close)		Battery voltage
19	L	CAN- H	Input/ Output	—	—				—
21	Y	Logical lighting control	Input	OFF	Interior room lamp switch: DOOR position	Key is inserted	Any door switch	ON (Open)	0
								OFF (Close)	Battery voltage
						Close all doors	Key is removed from key cylinder		0
							Turn ignition switch ON		Battery voltage
						Key is removed			0
						Interior room lamp timer		OFF	Battery voltage
								ON	0
24	O	Ignition power supply	Input	ON	—				Battery voltage
25	BR	Door lock/unlock switch (Unlock signal)	Input	OFF	Unlock operation (ON)				0
					Other than above (OFF)				5
29	LG*3	Driver door switch signal	Input	OFF	Driver door switch signal		ON (open)		0
	BR*4						OFF (closed)		Battery voltage
30	BR*3	Passenger door switch signal	Input	OFF	Passenger door switch signal		ON (open)		0
	LG*4						OFF (close)		Battery voltage
39	Y	CAN- L	Input/ Output	—	—				—
59	G	Rear door switch LH signal	Input	OFF	Rear door switch LH signal		ON (open)		0
							OFF (close)		Battery voltage
60	L	Rear door switch RH signal	Input	OFF	Rear door switch RH signal		ON (open)		0
							OFF (close)		Battery voltage
70	B	Ground	—	ON	—				0
72	Y	Power source (Fuse)	Input	OFF	—				Battery voltage

Terminal No.	Wire color	Signal designation	Signal input/ output	Measuring condition					Voltage [V] (Approx.)
				Ignition switch	Operation or condition				
73	V	Interior room lamp signal	Output	OFF	Interior room lamp switch: DOOR position	Key is inserted.	Any door switch	ON (open)	0
								OFF (closed)	Battery voltage
				—		Close all doors.	Key is removed after being fully inserted.		0
							Turn ignition switch ON.		Battery voltage
74 79	Y	Power supply (Fusible link)	Input	OFF	—				Battery voltage

*1: With Intelligent Key system
*2: Without Intelligent Key system
*3: LHD models
*4: RHD models

How to Proceed With Trouble Diagnosis

BKS001GT

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-150, "System Description" .
3. Perform the preliminary check. Refer to LT-165, "Preliminary Check" .
4. Check symptom and repair or replace the malfunctioning parts.
5. Does the interior room lamp operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

BKS001GU

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES

Check for blown fuses.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	J
	Ignition switch ON or START position	5

Refer to LT-155, "Wiring Diagram — ROOM/L —" .

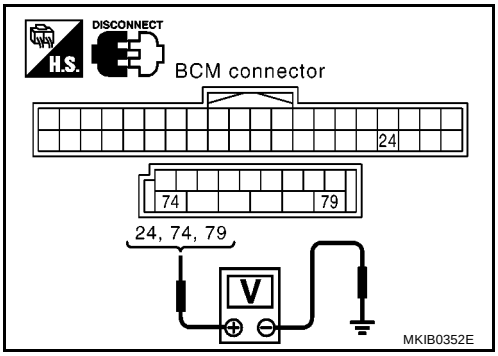
OK or NG

OK >> GO TO 2.

NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

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



Terminal			Ignition switch position		
(+)		(–)	OFF	ACC	ON
BCM Connector	Terminal				
M57	24	Ground	Approx. 0V	Approx. 0V	Battery voltage
M59	74		Battery voltage	Battery voltage	Battery voltage
	79		Battery voltage	Battery voltage	Battery voltage

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

3. CHECK GROUND CIRCUIT

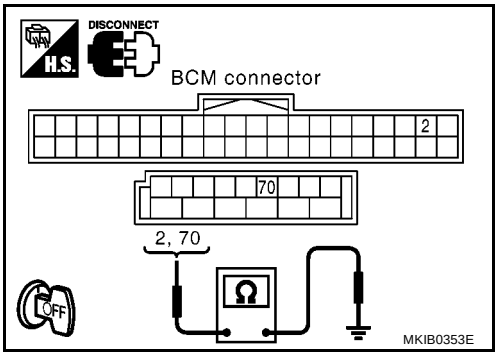
Check continuity between BCM harness connector and ground.

BCM Connector	Terminal	Ground	Continuity
M57	2		Yes
M59	70		

OK or NG

OK >> INSPECTION END

NG >> Repair harness or connector.



CONSULT-II Functions (BCM)

BKS001GV

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

BCM diagnosis part	Diagnosis mode	Description
INT LAMP	DATA MONITOR	Displays BCM input data in real time.
	ACTIVE TEST	Operation of electrical loads can be checked by sending driving signal to them.
BCM	SELFDIAG RESULTS	BCM performs self-diagnosis of CAN communication.
	CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.

CONSULT-II INSPECTION PROCEDURE

Refer to GI-36, "CONSULT-II Start Procedure" .

CONSULT-II Application Items

BKS001KV

DATA MONITOR

Monitor item “UNIT”		Display content
IGN ON SW	[ON/OFF]	Displays status (Ignition switch ON: ON/Others OFF, ACC: OFF) as judged from the ignition switch signal.
PUSH SW (*1)	[ON/OFF]	Displays status (Ignition knob is pushed: ON/ released: OFF) as judged from the ignition knob switch signal.
KEY IN SW (*2)	[ON/OFF]	Displays status (Key inserted: ON/Key removed: OFF) as judged from the key switch signal.
DOOR SW-DR	[ON/OFF]	Displays status (Door open: ON/door closed: OFF) as judged from the front door switch RH signal.
DOOR SW-AS	[ON/OFF]	Displays status (Door open: ON/Door closed: OFF) as judged from the front door switch LH signal.
DOOR SW-RR	[ON/OFF]	Displays status (Door open: ON/door closed: OFF) as judged from the rear door switch RH signal.
DOOR SW-RL	[ON/OFF]	Displays status (Door open: ON/Door closed: OFF) as judged from the rear door switch LH signal.
BACK DOOR SW	[ON/OFF]	Displays status (Door open: ON/Door closed: OFF) as judged from the back door switch signal.
CDL LOCK SW	[ON/OFF]	Displays status (Locked: ON/Others: OFF) as judged from lock signal.
CDL UNLOCK SW	[ON/OFF]	Displays status (Unlocked: ON/Others: OFF) as judged from unlock signal.
KEYLESS LOCK (*2)	[ON/OFF]	Displays status (Locked: ON/Others: OFF) as judged from lock signal. (Locked by Multi-Remote control system)
KEYLESS UNLOCK(*2)	[ON/OFF]	Displays status (Unlocked: ON/Others: OFF) as judged from unlock signal. (Unlocked by Multi-Remote control system)
I-KEY LOCK (*1)	[ON/OFF]	Displays status (Locked: ON/Others: OFF) as judged from lock signal. (Locked by Intelligent Key system)
I-KEY UNLOCK (*1)	[ON/OFF]	Displays status (Unlocked: ON/Others: OFF) as judged from unlock signal. (Unlocked by Intelligent Key system)
I-KEY ALL UNL (*1)	[ON/OFF]	Displays status (Unlocked: ON/Others: OFF) as judged from unlock signal. (Unlocked by Intelligent Key system)

*1: Displayed for models with Intelligent Key system.
*2: Displayed for models without Intelligent Key system.

ACTIVE TEST

Test item	Description
INT LAMP	Interior room lamp can be operated by any ON-OFF operations.

Map Lamp Control Does Not Operate

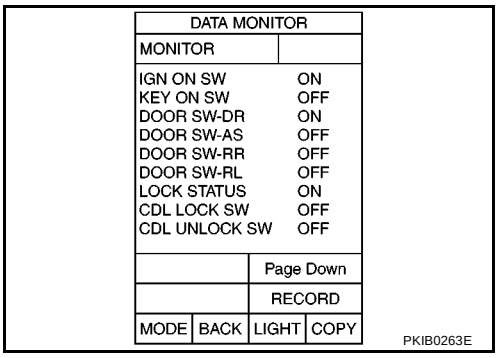
BKS001GW

1. CHECK EACH SWITCH

1. Select “BCM” on CONSULT-II. Select “INT LAMP” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure switches listed in display item list turn ON-OFF linked with switch operation.

OK or NG

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



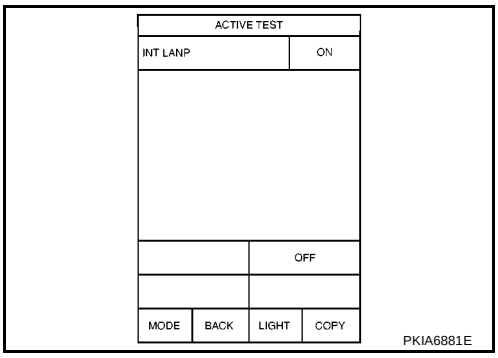
2. ACTIVE TEST

1. Select “BCM” on CONSULT-II. Select “INT LAMP” on “SELECT TEST ITEM” screen.
2. Select “ACTIVE TEST” on “SELECT DIAG MODE” screen. Select “INT LAMP” on “SELECT TEST ITEM” screen.
3. When map lamp switch is in DOOR position, make sure map lamp operates.

Map lamp should operate.

OK or NG

OK >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> GO TO 3.



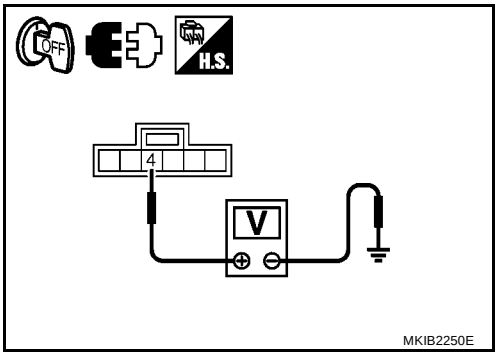
3. CHECK MAP LAMP INPUT VOLTAGE

1. Turn ignition switch OFF.
2. Disconnect map lamp connector.
3. Check voltage between map lamp harness connector R3 terminal 4 and ground.

4 - Ground : Battery voltage.

OK or NG

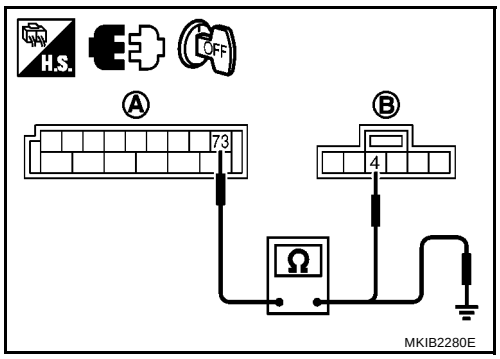
OK >> GO TO 5.
NG >> GO TO 4.



4. CHECK MAP LAMP INPUT CIRCUIT

1. Disconnect BCM connector.
2. Check continuity between BCM harness connector (A) terminal and map lamp harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	
M59	73	R3	4	Yes



3. Check continuity between BCM harness connector (A) and ground.

A		Ground	Continuity
Connector	Terminal		
M59	73		No

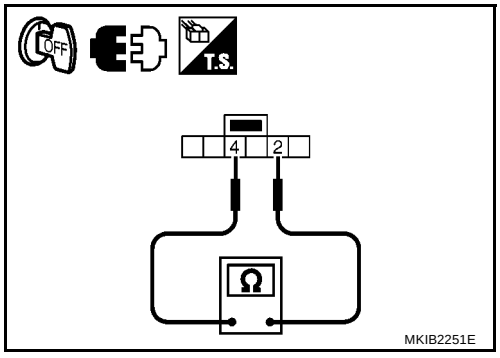
OK or NG

OK >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> Repair harness or connector.

5. CHECK MAP LAMP

1. Check continuity between map lamp terminals.

Terminal		Condition	Continuity
Map lamp			
2	4	Map lamp switch is DOOR	Yes
		Other than above	No



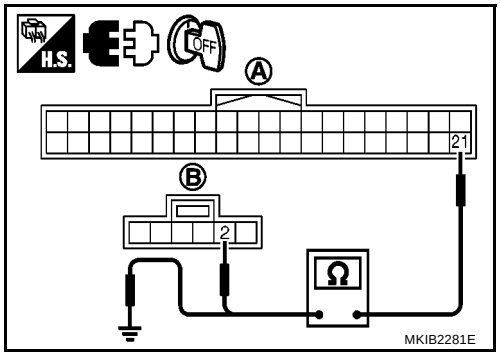
OK or NG

OK >> GO TO 6.
NG >> Replace map lamp or check bulb.

6. CHECK CIRCUIT BETWEEN MAP LAMP AND BCM

1. Disconnect BCM connector.
2. Check continuity between BCM harness connector (A) and map lamp harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	
M57	21	R3	2	Yes



3. Check continuity between BCM harness connector (A) and ground.

A		Ground	Continuity
Connector	Terminal		
M57	21		No

OK or NG

OK >> Replace BCM if map lamp does not work after setting the connector again. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> Repair harness or connector.

Personal Lamp Control Does Not Operate (Models With Personal Lamp)

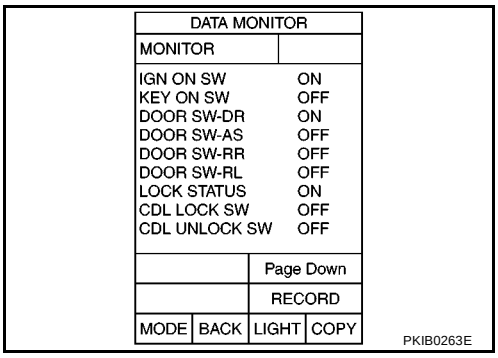
BKS0026H

1. CHECK EACH SWITCH

1. Select “BCM” on CONSULT-II. Select “INT LAMP” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure switches listed in display item list turn ON-OFF linked with switch operation.

OK or NG

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



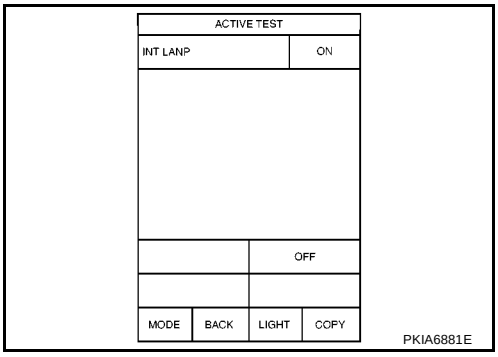
2. ACTIVE TEST

1. Select “BCM” on CONSULT-II. Select “INT LAMP” on “SELECT TEST ITEM” screen.
2. Select “ACTIVE TEST” on “SELECT DIAG MODE” screen. Select “INT LAMP” on “SELECT TEST ITEM” screen.
3. When personal lamp switch is in DOOR position, make sure personal lamp operates.

Personal lamp should operate.

OK or NG

OK >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> GO TO 3.



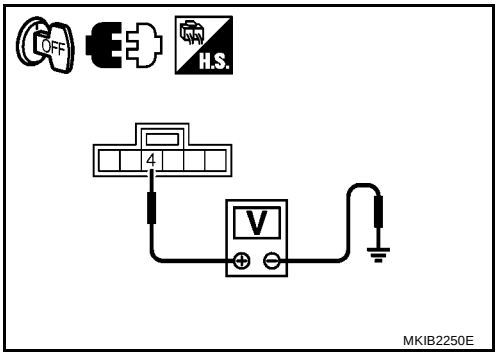
3. CHECK PERSONAL LAMP INPUT VOLTAGE

1. Turn ignition switch OFF.
2. Disconnect personal lamp connector.
3. Check voltage between personal lamp harness connector R4 terminal 4 and ground.

4 - Ground : Battery voltage.

OK or NG

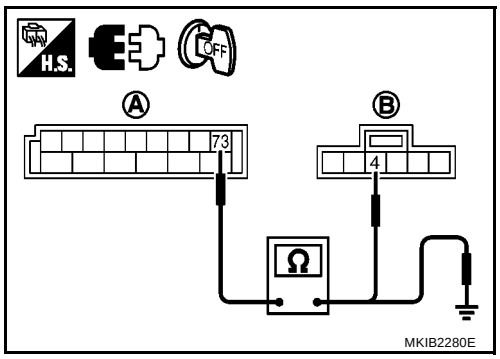
OK >> GO TO 5.
NG >> GO TO 4.



4. CHECK PERSONAL LAMP INPUT CIRCUIT

1. Disconnect BCM connector.
2. Check continuity between BCM harness connector (A) terminal and personal lamp harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	
M59	73	R4	4	Yes



3. Check continuity between BCM harness connector (A) and ground.

A		Ground	Continuity
Connector	Terminal		
M59	73		No

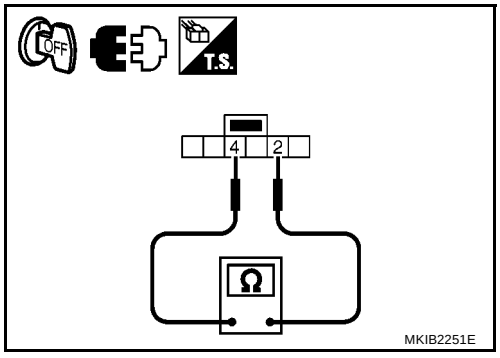
OK or NG

OK >> Replace BCM. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> Repair harness or connector.

5. CHECK PERSONAL LAMP

1. Check continuity between personal lamp terminals.

Terminal		Condition	Continuity
Personal lamp			
2	4	Personal lamp switch is DOOR	Yes
		Other than above	No



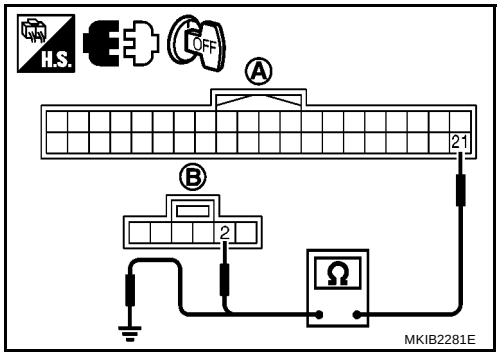
OK or NG

OK >> GO TO 6.
NG >> Replace personal lamp or check bulb.

6. CHECK CIRCUIT BETWEEN PERSONAL LAMP AND BCM

1. Disconnect BCM connector.
2. Check continuity between BCM harness connector (A) and personal lamp harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	
M57	21	R4	2	Yes



3. Check continuity between BCM harness connector (A) and ground.

A		Ground	Continuity
Connector	Terminal		
M57	21		No

OK or NG

OK >> Replace BCM if personal lamp does not work after setting the connector again. Refer to BCS-17, "Removal and Installation of BCM" .
NG >> Repair harness or connector.

Bulb Replacement

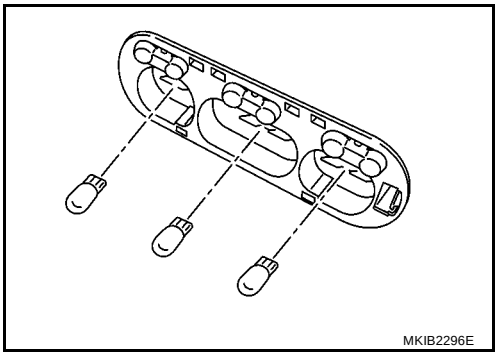
BKS001GX

MAP LAMP, PERSONAL LAMP

1. Remove lamp lens. Refer to LT-171, "MAP LAMP, PERSONAL LAMP" .
2. Remove bulb.

Map lamp : 12V - 5W

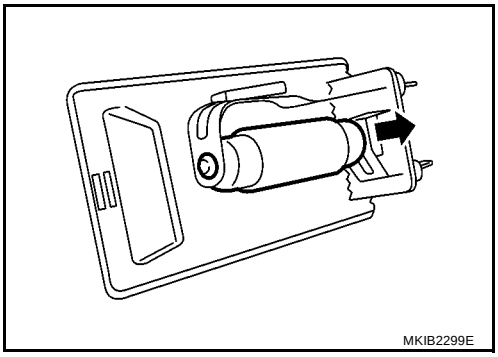
Personal lamp : 12V - 5W



LUGGAGE LOOM LAMP

1. Remove luggage room lamp lens. Refer to LT-172, "LUGGAGE ROOM LAMP" .
2. Remove bulb.

Luggage room lamp : 12V - 10W



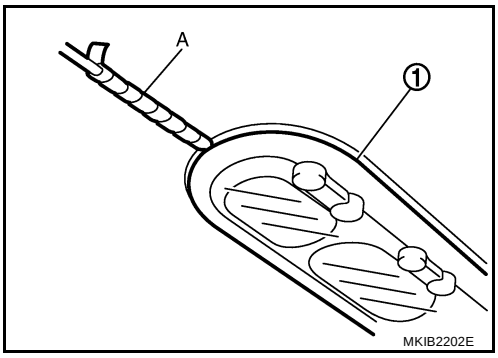
Removal and Installation

BKS001GY

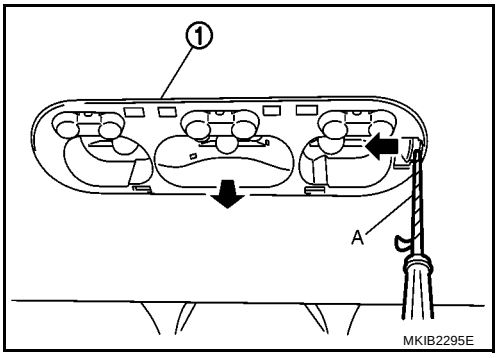
MAP LAMP, PERSONAL LAMP

Removal

1. Insert a screwdriver A or the like wrapped in a cloth into the lens notch and remove lamp lens (1).



2. Pull the lamp (1) out forward while shifting the tabs with a screwdriver A or similar tool.
3. Disconnect lamp connector.



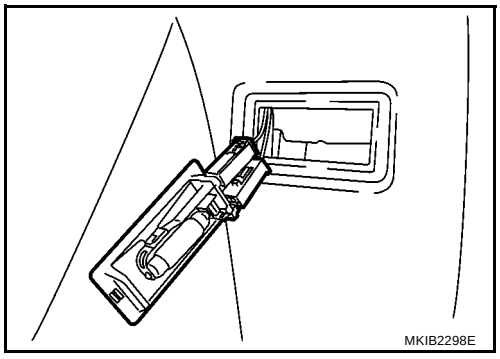
Installation

Installation is the reverse order of removal.

LUGGAGE ROOM LAMP

Removal

1. Pull the luggage room lamp.
2. Disconnect luggage room lamp connector.



Installation

Installation is the reverse order of removal.

ILLUMINATION

PFP:27545

System Description

BKS001GZ

The control of the illumination lamps operation is dependent upon the position of the lighting switch. When the lighting switch is placed in the 1ST or 2ND position (or if the auto light system is activated) BCM (body control module) receives input signal requesting the illumination lamps to illuminate. This input signal is communicated to IPDM E/R (intelligent power distribution module engine room) across CAN communication lines. CPU (central processing unit) located in 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 IPDM E/R and
- to tail lamp relay, located in IPDM E/R, from battery directly,
- through 20A fuse (No. 61, located in IPDM E/R),
- through 20A fuse (No. 62, located in IPDM E/R),
- through 40A fusible link (letter J, located in fuse, fusible link and relay box)
- to BCM terminals 74 and 79
- to power window main switch (illumination) terminal
  5 [with front power window (LHD models)],
  6 [with front power window (RHD models)] or
  19 (with front & rear power window),
- through 10A fuse [No. 9, located in fuse block (J/B)]
- to BCM terminal 72,
- through 10A fuse [No. 7, located in fuse block (J/B)]
- to combination meter terminal 27.

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

- to ignition relay, located in IPDM E/R,
- through 10A fuse [No. 5, located in fuse block (J/B)]
- to BCM terminal 24 and
- through 10A fuse [No. 4, located in fuse block (J/B)]
- to combination meter terminal 28.

Ground is supplied

- to BCM terminals 2 and 70
- to combination meter terminals 21, 22 and 23
- to power window main switch (illumination) terminal
  12 (with front power window) or
  17 (with front & rear power window)
- through grounds M21 and M66,
- to IPDM E/R terminals 3 and 54
- through grounds E45 (CR and HR engine models), E28 and E44.

ILLUMINATION OPERATION BY LIGHTING SWITCH

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

- through 10A fuse (No. 46, located in IPDM E/R),
- through IPDM E/R terminal 15
- to door lock/unlock switch (illumination) terminal 4
- to heated seat switch RH and LH (illumination) terminal 5 (with heated seat)
- through 10A fuse (No. 45, located in IPDM E/R),
- through IPDM E/R terminal 16
- to audio unit (illumination) terminal 36 (with audio)
- to heater control panel (illumination) terminal 5 (without auto A/C)

- to A/C auto amplifier (illumination) terminal 16 (with auto A/C)
- to mirror control switch (illumination) terminal 10 (with retract)
- to hazard switch (illumination) terminal 3
- to power socket for cigarette lighter (illumination) terminal 3
- to headlamp aiming switch (illumination) terminal 3
- to A/T device (illumination) terminal 3 (with A/T)
- to ESP OFF switch (illumination) terminal 3 (with ESP)
- to headlamp washer switch (illumination) terminal 3 (with headlamp washer).

Ground is supplied

- to door lock/unlock switch (illumination) terminal 3
- to audio unit (illumination) terminal 4 (with audio)
- to heater control panel (illumination) terminal 6 (without auto A/C)
- to A/C auto amplifier (illumination) terminal 5 (with auto A/C)
- to mirror control switch (illumination) terminal 3 (with retract)
- to hazard switch (illumination) terminal 4
- to power socket for cigarette lighter (illumination) terminal 2
- to headlamp aiming switch (illumination) terminal 4
- to A/T device (illumination) terminal 4 (with AT)
- to ESP OFF switch (illumination) terminal 4 (with ESP)
- to headlamp washer switch (illumination) terminal 4 (with headlamp washer)
- through grounds M21and M66,
- to heated seat switch RH and LH (illumination) terminal 6 (with heated seat)
- through grounds B13,B28,B38 and B48

With power and ground supplied, illumination lamps illuminate.

EXTERIOR LAMP BATTERY SAVER CONTROL

Refer to LT-9, "EXTERIOR LAMP BATTERY SAVER CONTROL" .

CAN Communication System Description

BKS001H0

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

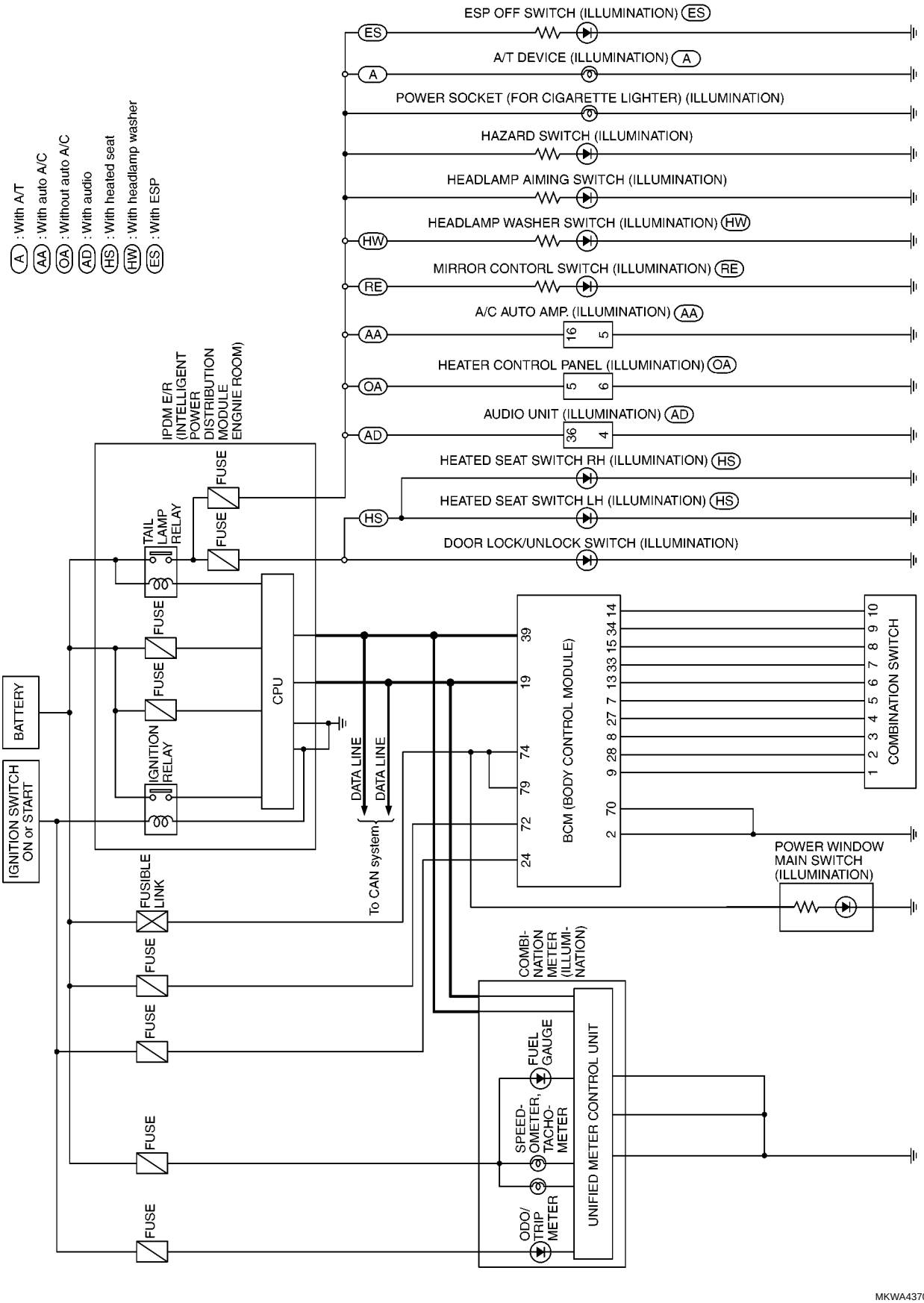
CAN Communication Unit

BKS001H1

Refer to LAN-27, "CAN Communication Unit" .

Schematic

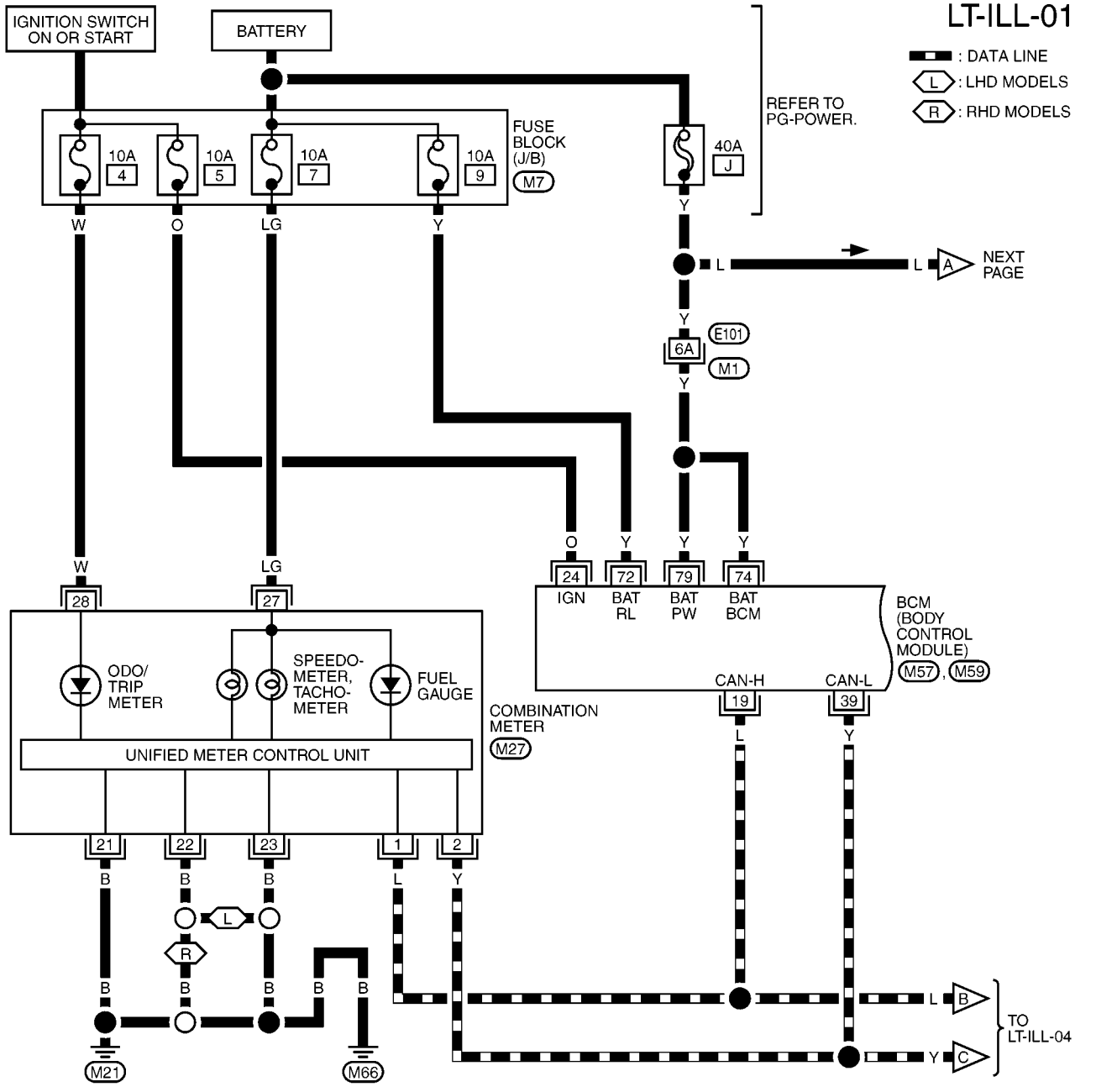
BKS001H2

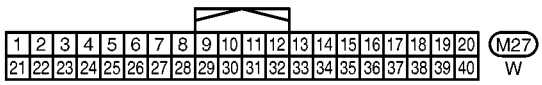


MKWA4370E

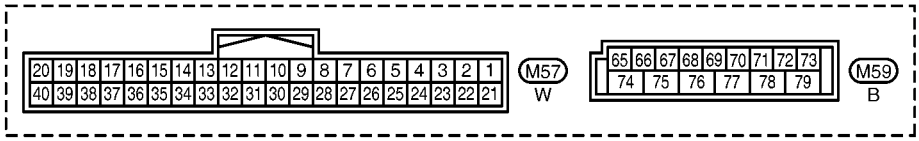
Wiring Diagram — ILL —

BKS001H3





REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M7 - FUSE BLOCK - JUNCTION BOX (J/B)



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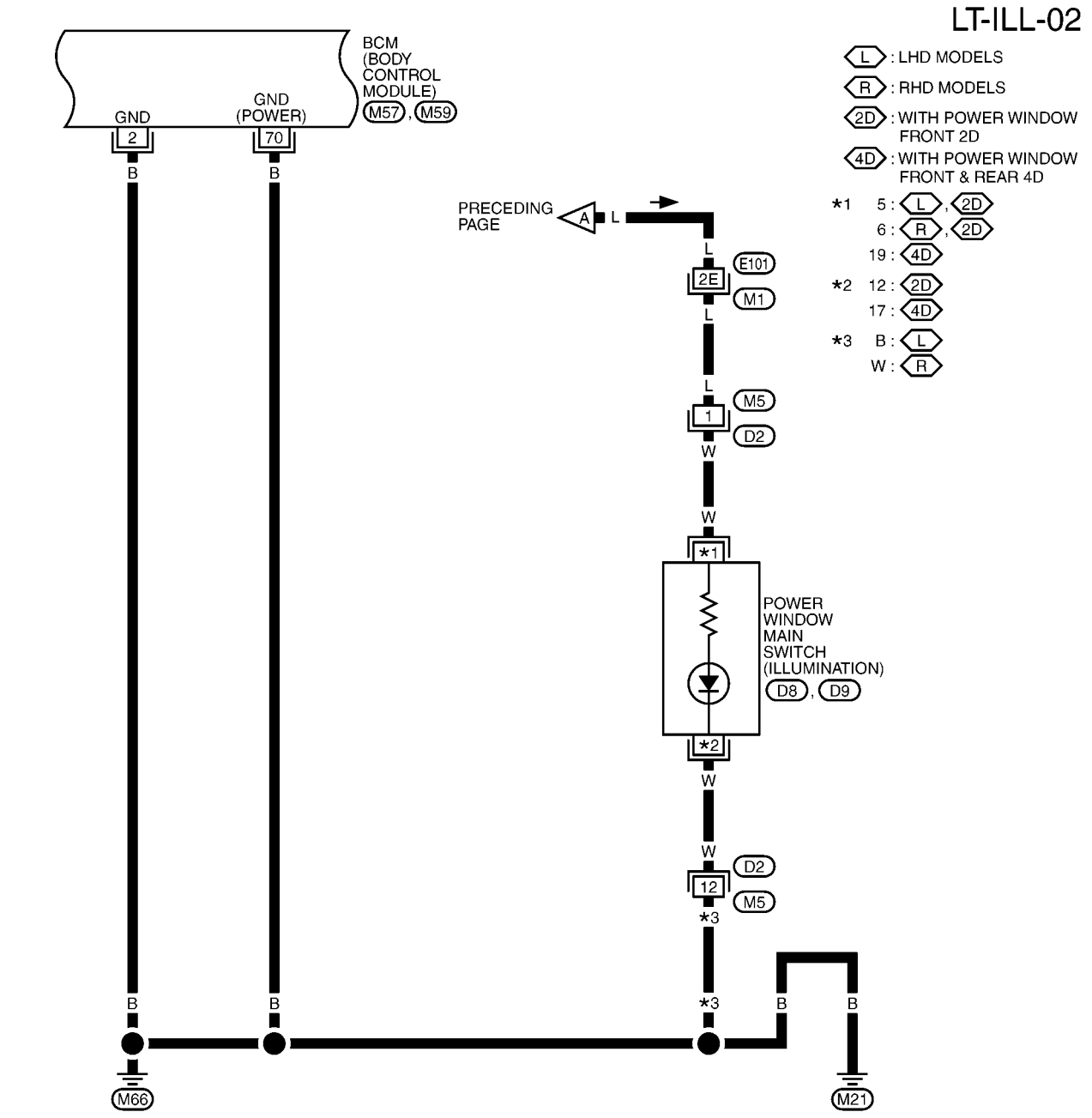
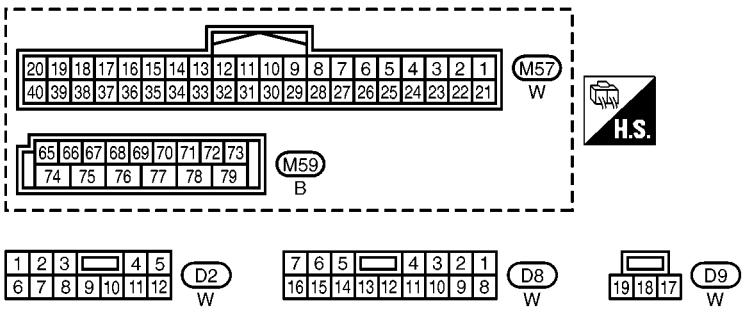
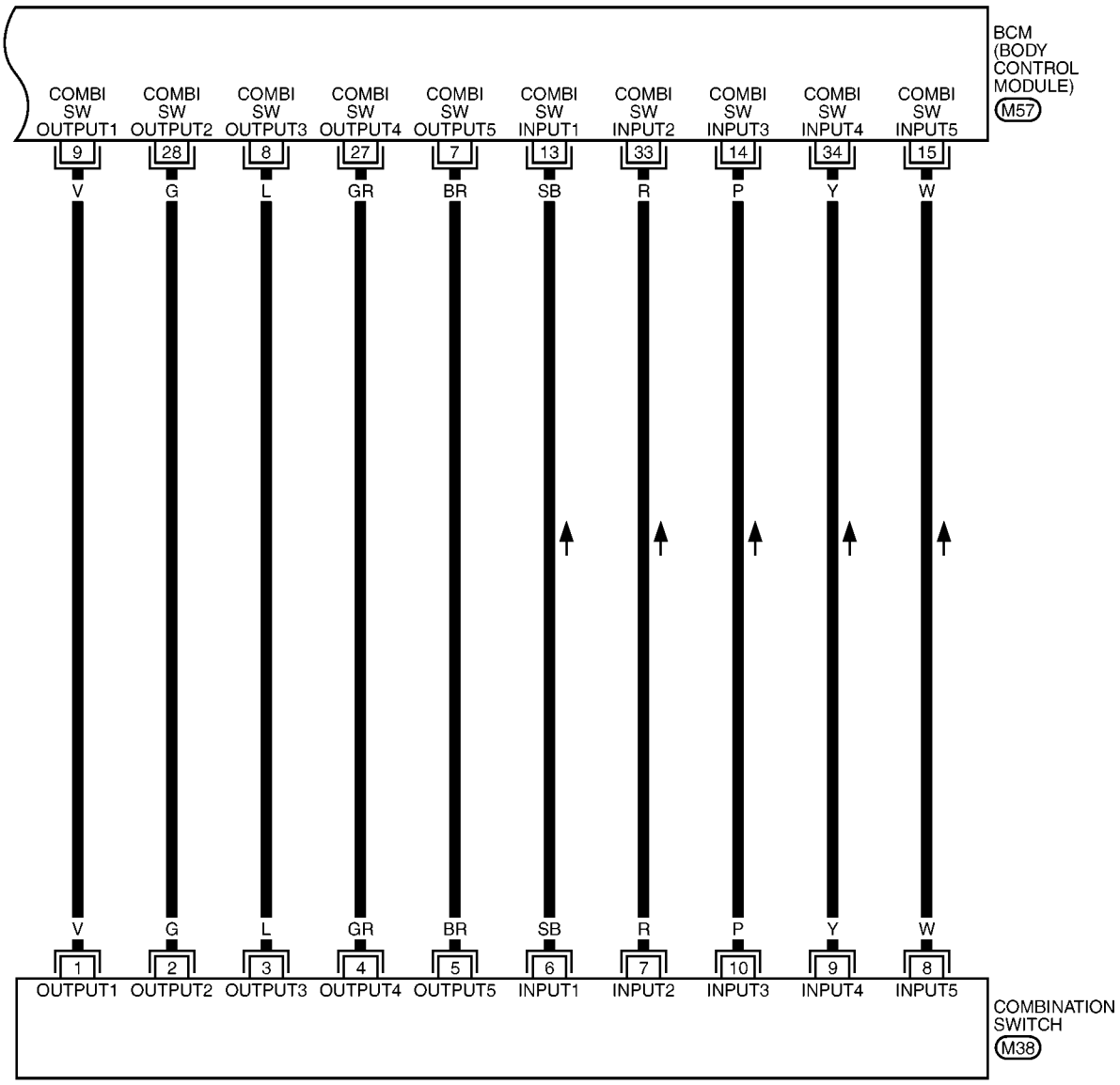


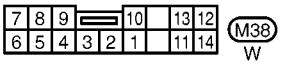


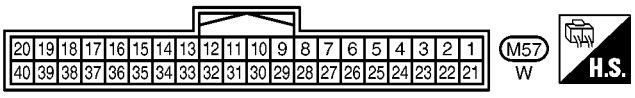
REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)

MKWA4372E

LT-ILL-03







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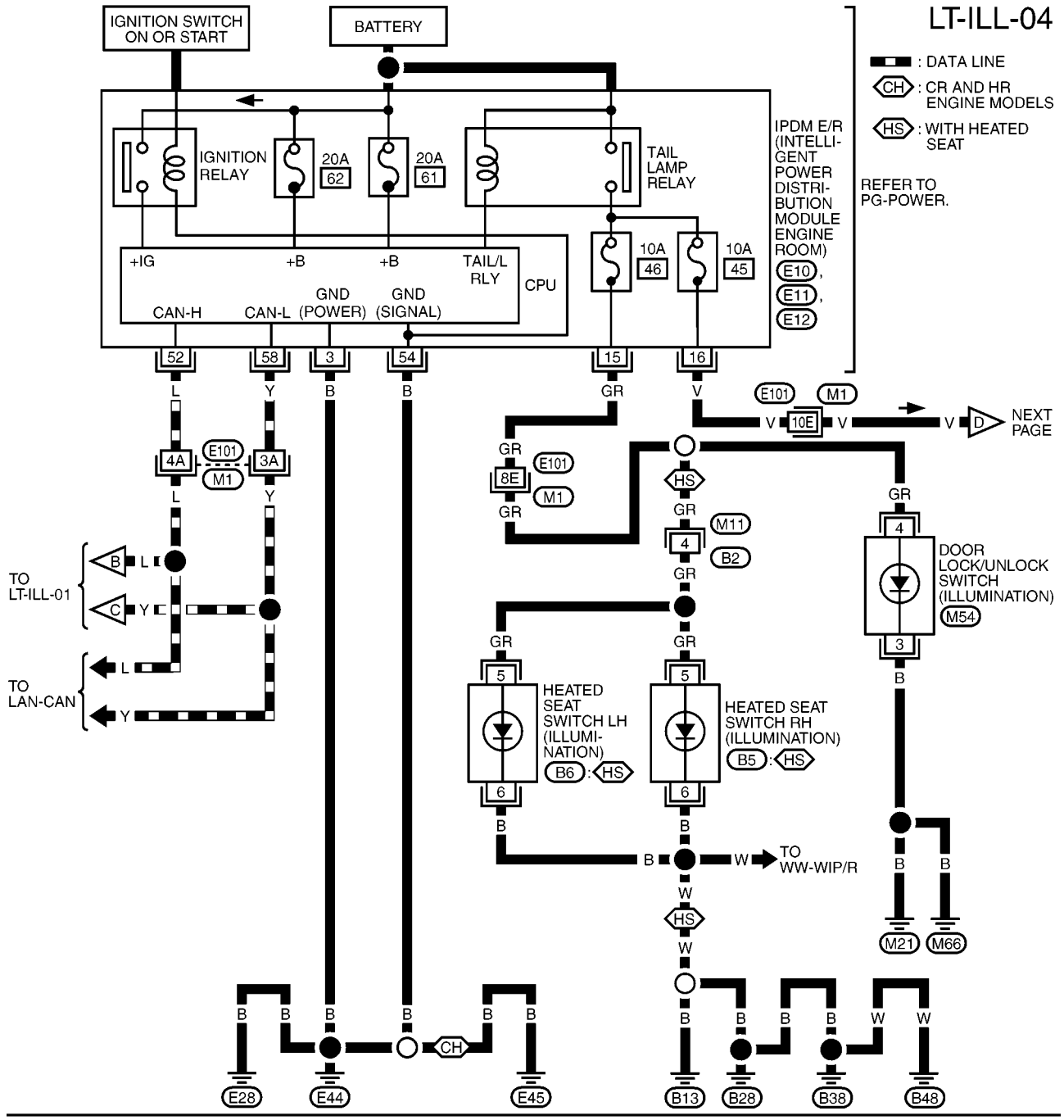
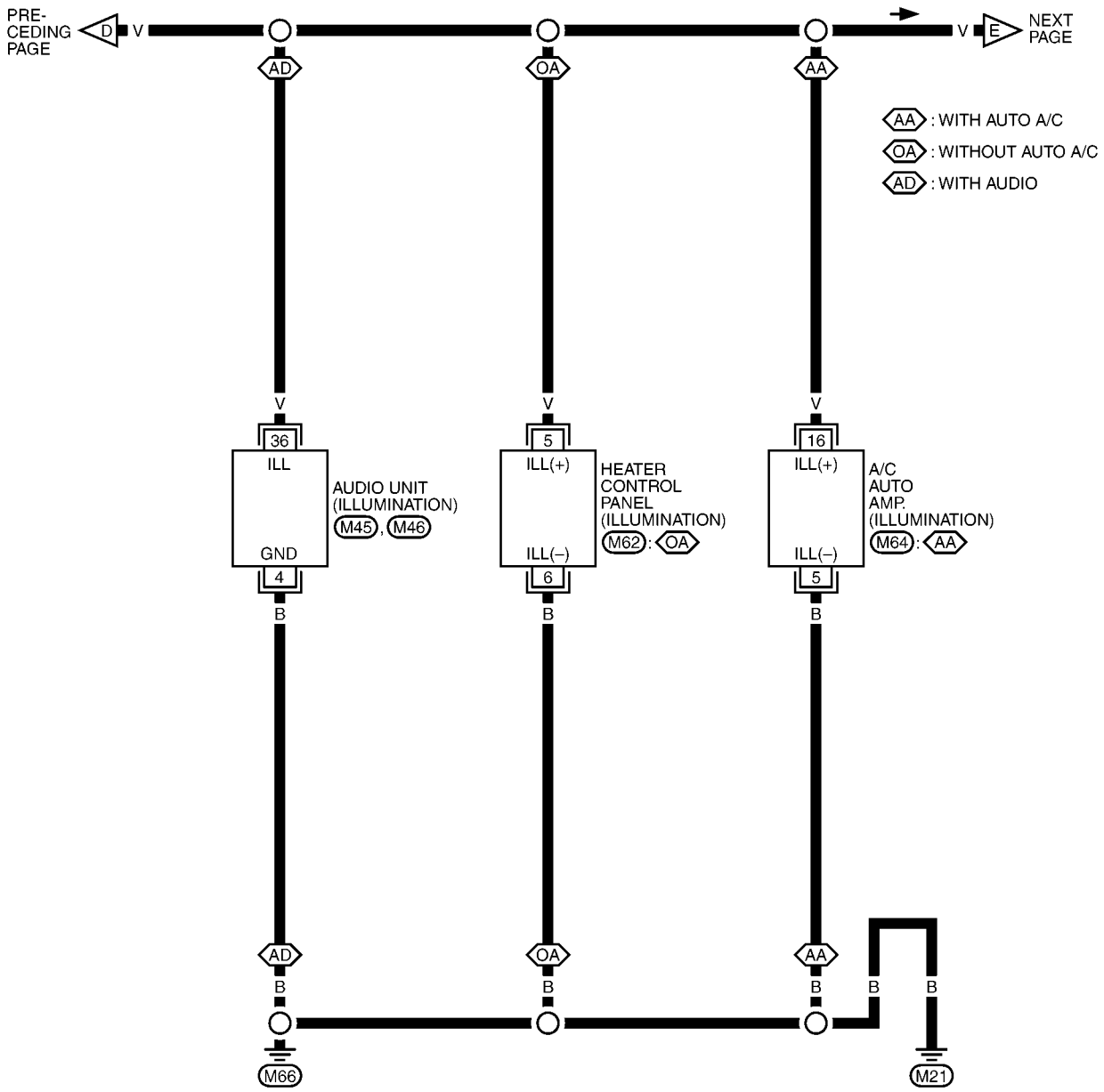
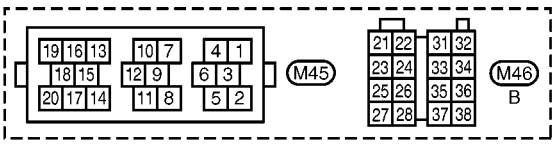
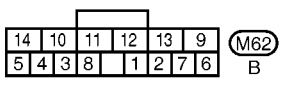

LT-ILL-04
: DATA LINE
CH : CR AND HR ENGINE MODELS
HS : WITH HEATED SEAT
REFER TO PG-POWER.
IGNITION SWITCH ON OR START
BATTERY
IGNITION RELAY
20A 62
20A 61
TAIL LAMP RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E10, E11, E12
+IG
+B
+B
TAIL/L RLY
CPU
10A 46
10A 45
CAN-H
CAN-L
GND (POWER)
GND (SIGNAL)
52
58
3
54
15
16
L
Y
B
B
GR
V
E101
M1
10E
NEXT PAGE
4A
3A
8E
HS
M11
4
B2
TO LT-ILL-01
TO LAN-CAN
DOOR LOCK/UNLOCK SWITCH (ILLUMINATION) M54
HEATED SEAT SWITCH LH (ILLUMINATION) B6 : HS
HEATED SEAT SWITCH RH (ILLUMINATION) B5 : HS
TO WW-WIP/R
M21
M66
E28
E44
E45
B13
B28
B38
B48
CH
W
REFER TO THE FOLLOWING.
M1 - SUPER MULTIPLE JUNCTION (SMJ)
M11
M54
E10
E11
E12
BR
B
W
H.S.
B5
B6

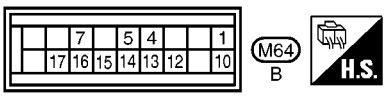
MKWA4374E

LT-ILL-05

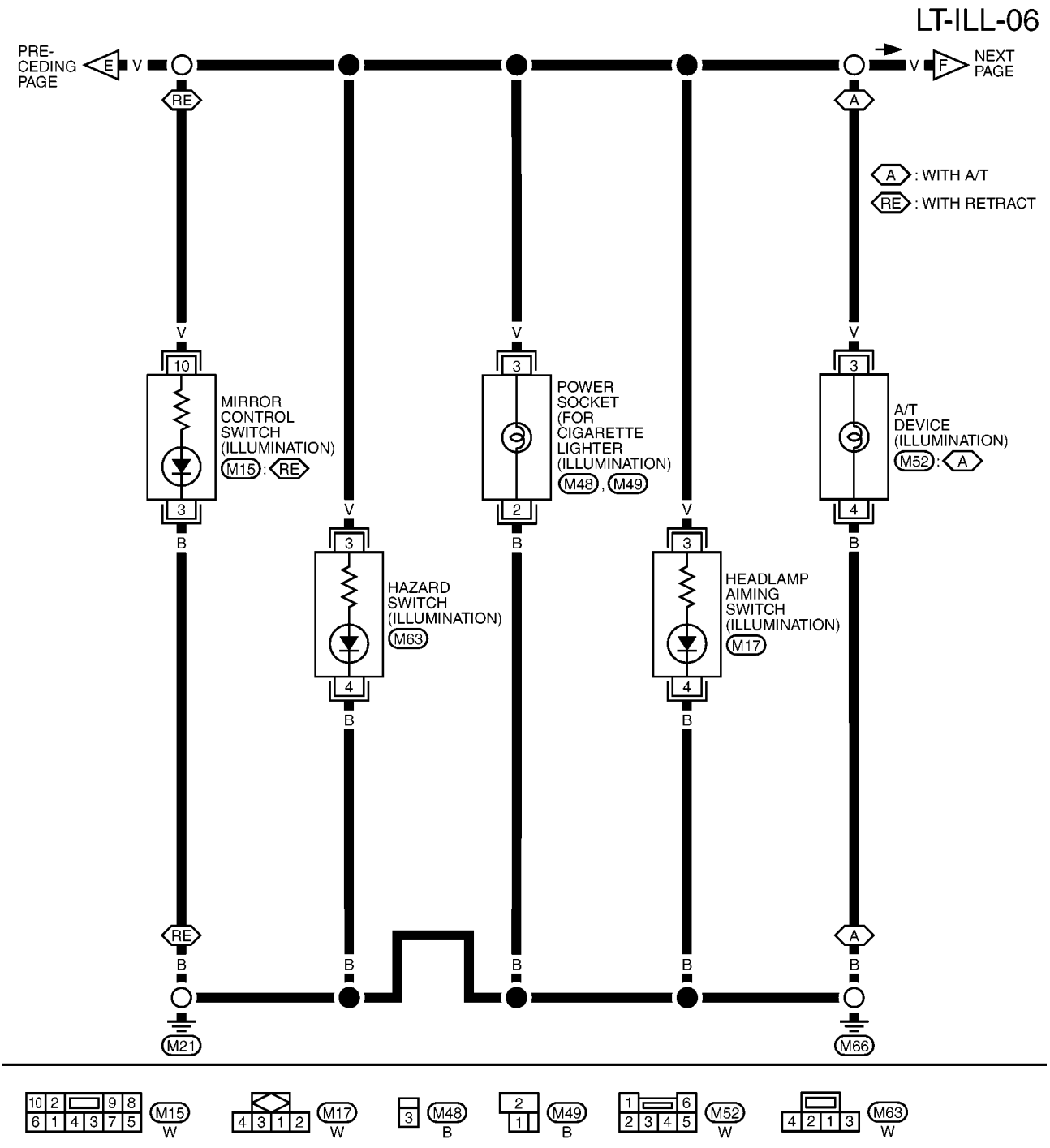






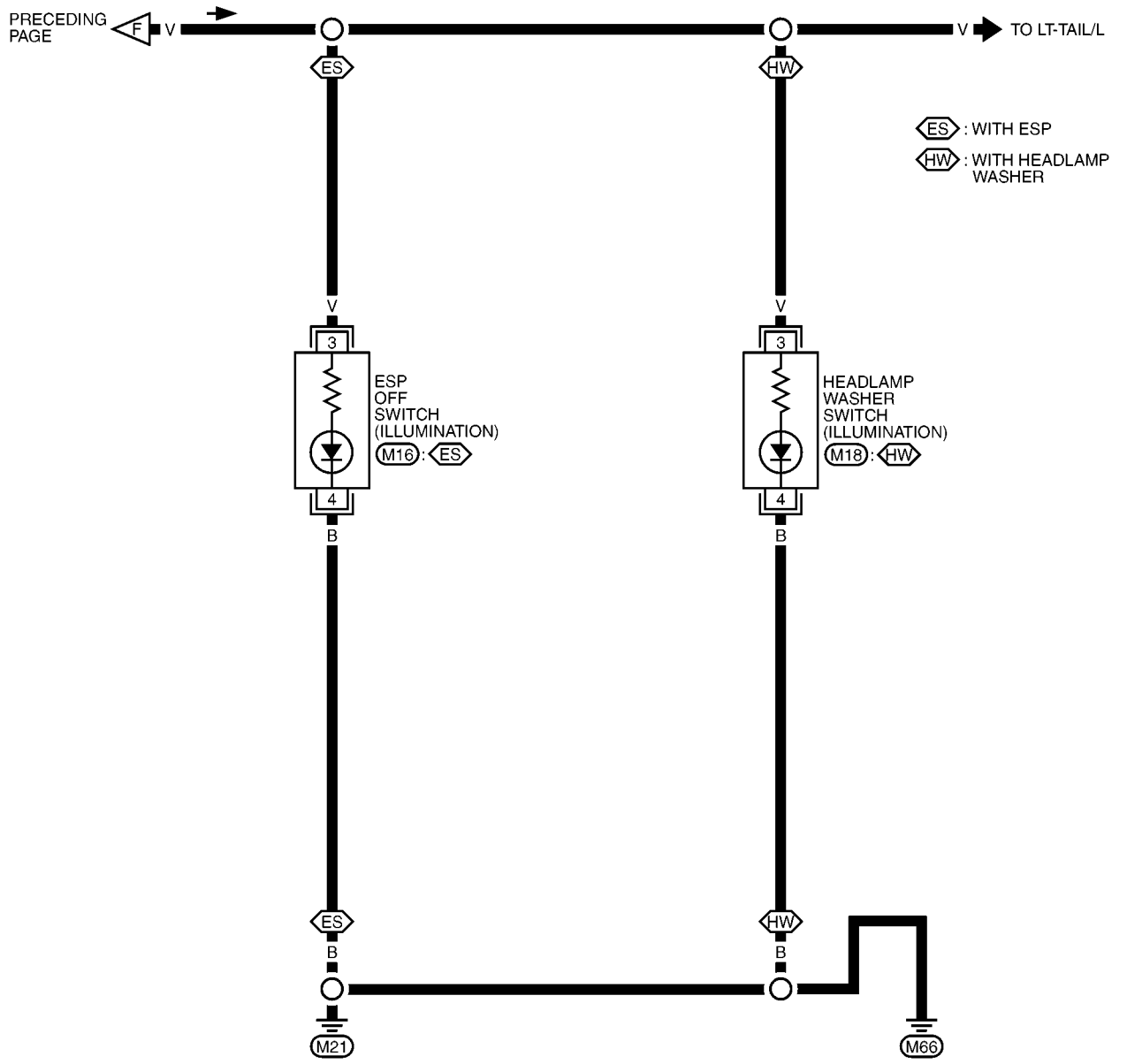


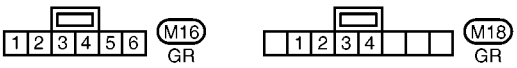
MKWA4375E


LT-ILL-06
PRE-CEDING PAGE
E
V
RE
A
V
F
NEXT PAGE
A : WITH A/T
RE : WITH RETRACT
10
MIRROR CONTROL SWITCH (ILLUMINATION)
M15 : RE
3
B
3
HAZARD SWITCH (ILLUMINATION)
M63
4
B
3
POWER SOCKET (FOR CIGARETTE LIGHTER (ILLUMINATION)
M48 , M49
2
B
3
HEADLAMP AIMING SWITCH (ILLUMINATION)
M17
4
B
3
A/T DEVICE (ILLUMINATION)
M52 : A
4
B
RE
A
B
M21
M66
M15 W
M17 W
M48 B
M49 B
M52 W
M63 W

MKWA4376E

LT-ILL-07





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BULB SPECIFICATIONS

PFP:26297

Headlamp

BKS001H5

Item	Wattage (W)
High/Low (Halogen type)	60/55 (H4)

Exterior Lamp

BKS001H6

Item		Wattage (W)
Front combination lamp	Turn signal lamp	21 (amber)
	Parking lamp	5
Rear combination lamp	Stop/Tail lamp	21/5
	Turn signal lamp	16 (amber)
	Back-up lamp	16
Front fog lamp		35 (H8)
Side turn signal lamp		5
Rear fog lamp		21
License plate lamp		5
High-mounted stop lamp		16

Interior Lamp/Illumination

BKS001H7

Item	Wattage (W)
Map lamp	5
Personal lamp	5
Luggage room lamp	10