SECTION LT
LIGHTING SYSTEM

CONTENTS

PRECAUTIONS

PFP:00011

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

NKS001MS

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

WARNING:

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

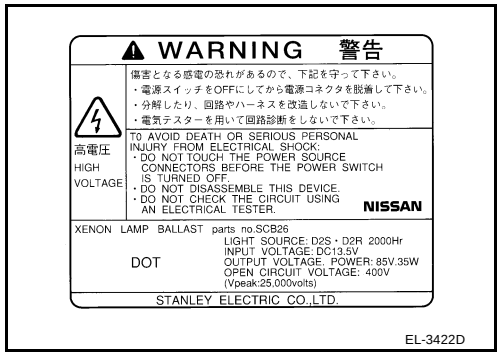
General Precautions for Service Operations

NKS001MT

- 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.

PKIB7344E

- 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

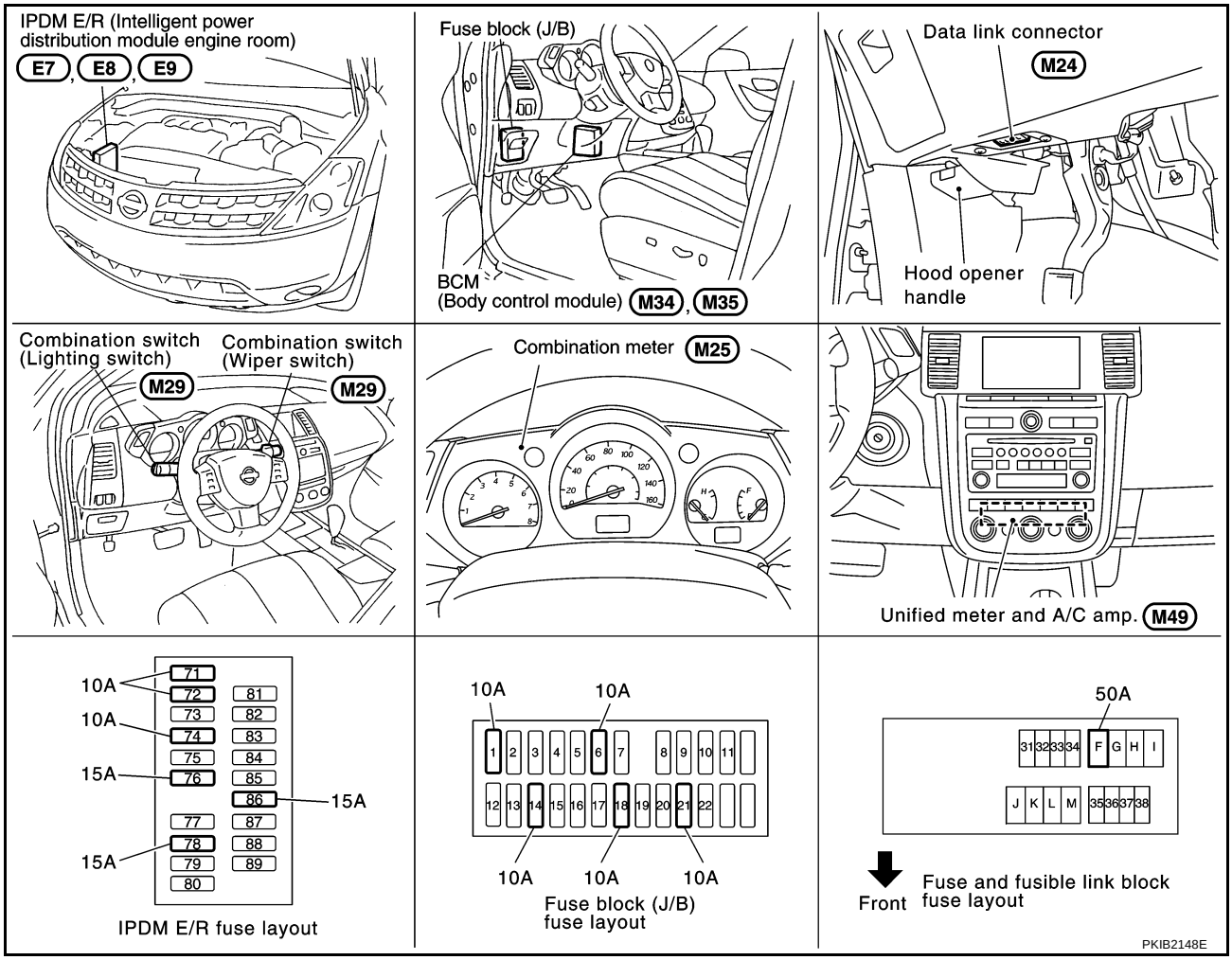
- When adjusting the headlamp aiming, turn the aiming adjustment screw only in the tightening direction. (If it is necessary to loosen the screw, first fully loosen the screw, and then turn it in the tightening direction.)
- Do not use organic solvent (paint thinner or gasoline) to clean lamps and to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

HEADLAMP - XENON TYPE -

PFP:26010

Component Parts and Harness Connector Location

NKS001MV



System Description

NKS001MW

- BCM (Body Control Module) controls headlamps low and high operation.
- IPDM E/R (Intelligent Power Distribution Module Engine Room) operates headlamp bulbs and high beam solenoids according to CAN communication signals from BCM.
- Combination meter operates high beam indicator lamp according to CAN communication signals from BCM.

OUTLINE

Power is supplied at all times

- to ignition relay located in IPDM E/R,
- to headlamp high relay located in IPDM E/R and
- to headlamp low relay located in IPDM E/R, from battery direct,
- through 50A fusible link (letter F, located in fuse and fusible link block)
- to BCM terminal 55,
- through 10A fuse [No. 18, located in fuse block (J/B)]
- to BCM terminal 42,
- through 15A fuse (No. 78, located in IPDM E/R)
- to CPU located in IPDM E/R,
- through 10A fuse (No. 71, located in IPDM E/R)
- to CPU located in IPDM E/R,
- through 10A fuse [No. 21, located in the fuse block (J/B)]

- to combination meter terminal 21.

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

- to ignition relay located in IPDM E/R, from battery direct,
- through 10A fuse [No. 1, located in fuse block (J/B)]
- to BCM terminal 38,
- through 10A fuse [No. 14 located in fuse block (J/B)]
- to combination meter terminal 20.

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

- through 10A fuse [No. 6, located in fuse block (J/B)]
- to BCM terminal 11.

Ground is supplied

- to BCM terminal 52
- through grounds M14 and M78,
- to IPDM E/R terminals 38 and 60
- through grounds E13, E26 and E28,
- to combination meter terminals 22, 23 and 24
- through grounds M14 and M78.

LOW BEAM OPERATION

When the lighting switch is in 2ND position, BCM detects the HEAD LAMP1 and 2 (ON) by BCM combination switch reading function. BCM sends low beam request signal (ON) through CAN communication.
When IPDM E/R receives low beam request signal (ON), it turns ON headlamp low relay in IPDM E/R. IPDM E/R supplies power

- through 15A fuse (No. 76, located in IPDM E/R)
- through IPDM E/R terminal 20
- to front combination lamp RH terminal 4,
- through 15A fuse (No. 86, located in IPDM E/R)
- through IPDM E/R terminal 30
- to front combination lamp LH terminal 4.

Ground is supplied

- to front combination lamp RH terminal 5
- through grounds E13, E26 and E28,
- to front combination lamp LH terminal 5
- through grounds E13, E26 and E28.

With power and ground supplied, headlamp low beams illuminate.

HIGH BEAM OPERATION

When the lighting switch is in HIGH BEAM position and then also in 2ND position, BCM detects the HEAD LAMP1, 2 (ON) and the HI BEAM (ON) by BCM combination switch reading function. BCM sends low beam request signal (ON) and high beam request signal (ON) through CAN communication.
When receiving those signals, IPDM E/R turns ON headlamp low and high relays in IPDM E/R. IPDM E/R supplies power

- through 15A fuse (No. 76, located in IPDM E/R)
- through IPDM E/R terminal 20
- to front combination lamp RH terminal 4,
- through 15A fuse (No. 86, located in IPDM E/R)
- through IPDM E/R terminal 30
- to front combination lamp LH terminal 4,
- through 10A fuse (No. 72, located in the IPDM E/R)
- through IPDM E/R terminal 27
- to front combination lamp RH terminal 1,
- through 10A fuse (No. 74, located in the IPDM E/R)

- through IPDM E/R terminal 28
- to front combination lamp LH terminal 1.

Ground is supplied

- to front combination lamp RH and LH terminals 5
- through grounds E13, E26 and E28.

With power and ground supplied, headlamp high beams illuminate.
High beam solenoids move the bulb shades in the front combination lamps, and the bulb shades change to high beam position.
Combination meter receives high beam request signal (ON) through CAN communication, and make high beam indicator lamp turn ON in combination meter.

FLASH-TO-PASS OPERATION

When the lighting switch is in PASSING position, BCM detects the PASSING (ON) by BCM combination switch reading function. BCM sends low beam request signal (ON) and high beam request signal (ON) through CAN communication.
When receiving those signals, IPDM E/R turns ON headlamp low and high relays in IPDM E/R. IPDM E/R supplies power

- through 15A fuse (No. 76, located in IPDM E/R)
- through IPDM E/R terminal 20
- to front combination lamp RH terminal 4,
- through 15A fuse (No. 86, located in IPDM E/R)
- through IPDM E/R terminal 30
- to front combination lamp LH terminal 4,
- through 10A fuse (No. 72, located in the IPDM E/R)
- through IPDM E/R terminal 27
- to front combination lamp RH terminal 1,
- through 10A fuse (No. 74, located in the IPDM E/R)
- through IPDM E/R terminal 28
- to front combination lamp LH terminal 1.

Ground is supplied

- to front combination lamp RH and LH terminals 5
- through grounds E13, E26 and E28.

With power and ground supplied, headlamp high beams illuminate.
High beam solenoids move the bulb shades in the front combination lamps to change beams from/to high and low.
Combination meter receives high beam request signal (ON) through CAN communication, and make high beam indicator lamp turn ON in combination meter.

COMBINATION SWITCH READING FUNCTION

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

EXTERIOR LAMP BATTERY SAVER CONTROL

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

AUTO LIGHT OPERATION

Refer to LT-84, "System Description" .

VEHICLE SECURITY SYSTEM

The vehicle security system will flash the high beams if the system is triggered. Refer to BL-204, "VEHICLE SECURITY (THEFT WARNING) SYSTEM" .

XENON HEADLAMP

Xenon type lamps are used for to the low beam headlamps. Xenon bulbs do not use a filament. Instead, they produce light when a high voltage current is passed between two tungsten electrodes through a mixture of xenon (an inert gas) and certain other metal halides. In addition to strong lighting power, electronic control of the power supply gives the headlamps stable quality and tone color.
Followings are some advantages of the xenon type headlamp.

- The light produced by the headlamps is white color similar to sunlight that is easy to the eyes.
- Light output is nearly double that of halogen headlamps, affording increased area of illumination.
- Counter-reflected luminance increases and the contrast enhances on the wet road in the rain. That makes visibility go up more than the increase of the light volume.
- Power consumption is approximately 25 percent less than halogen headlamps, reducing battery load.

CAN Communication System Description

NKS001MX

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.

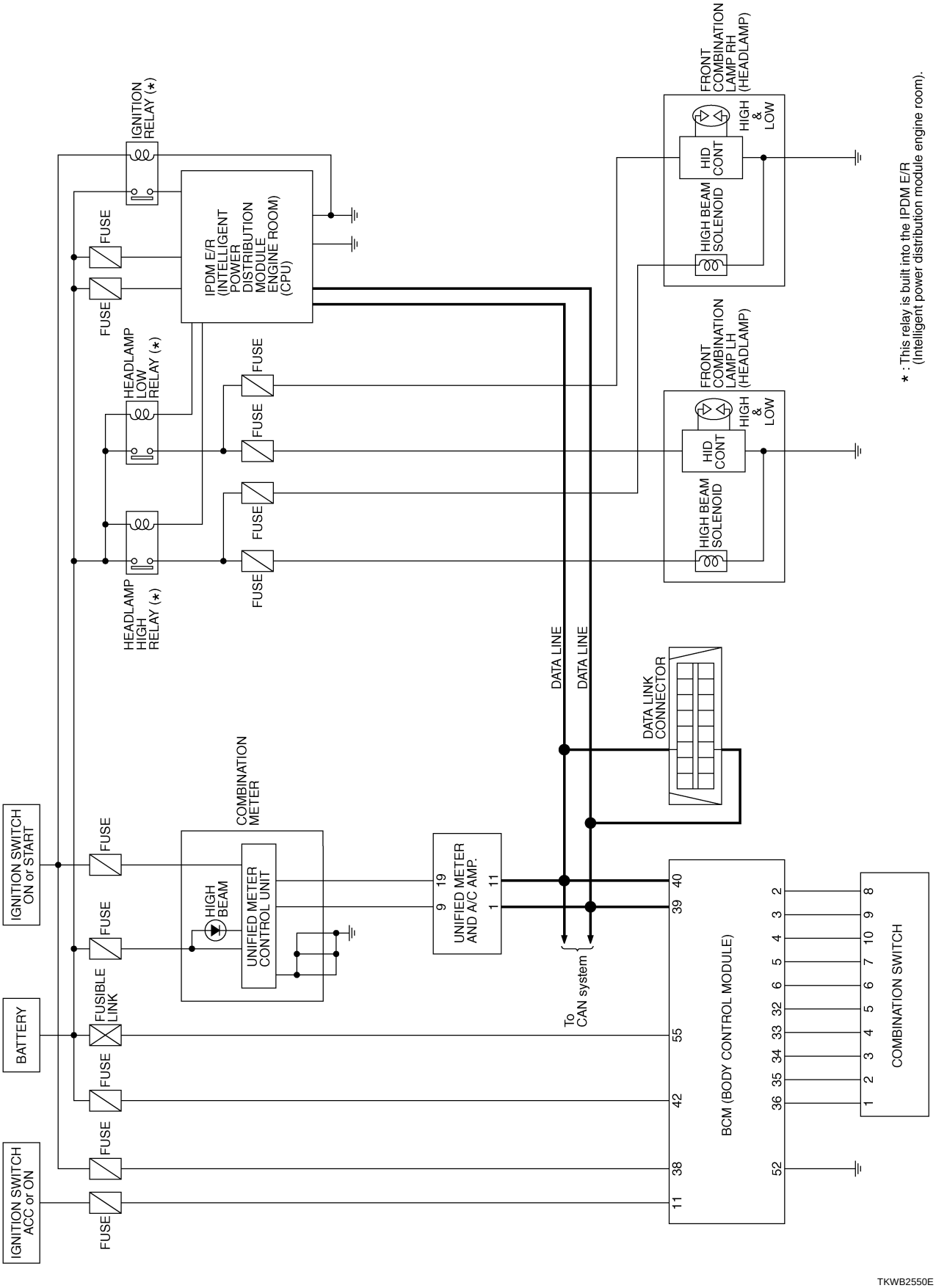
CAN Communication Unit

NKS001MY

Refer to LAN-49, "CAN System Specification Chart" .

Schematic

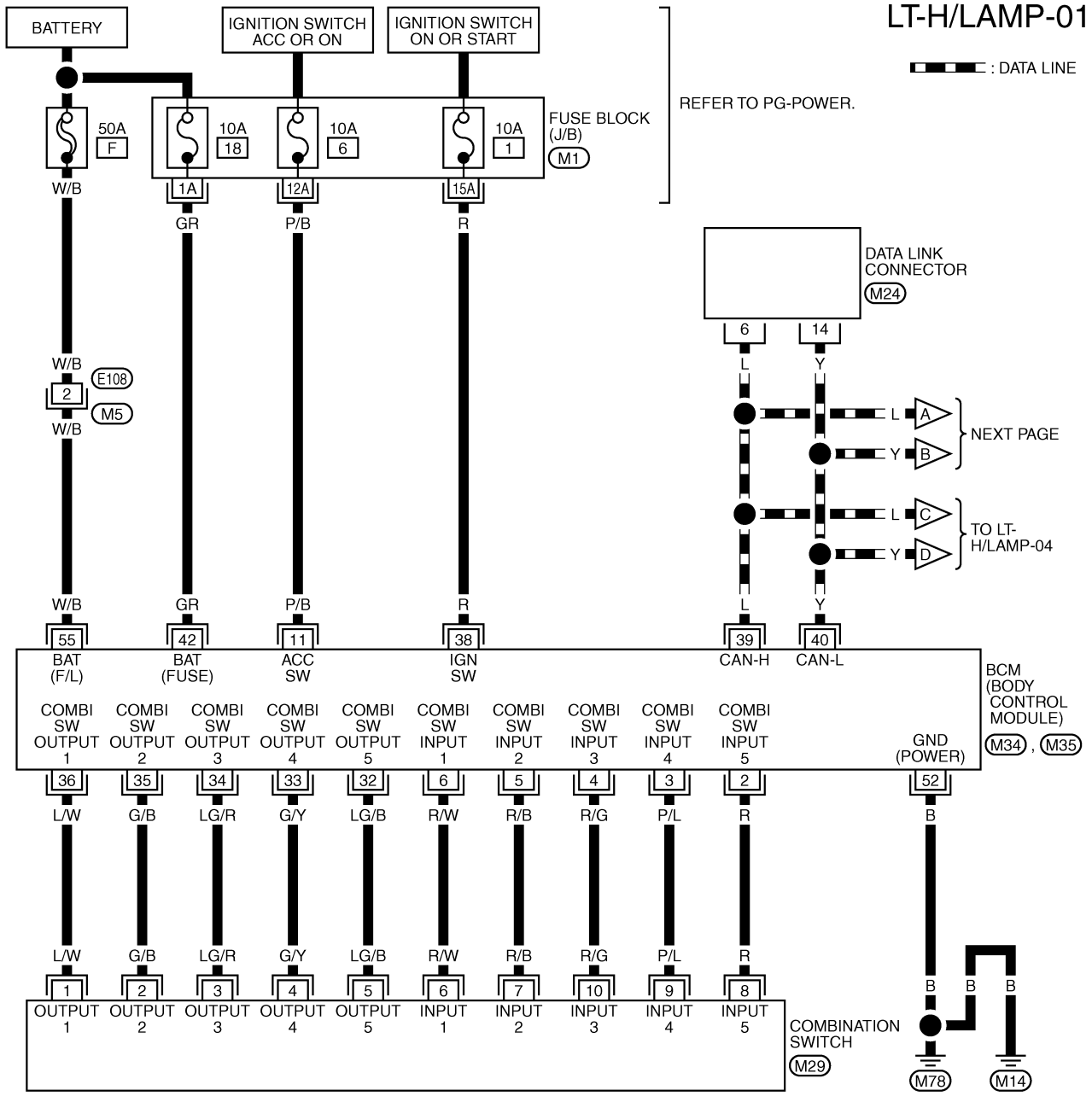
NKS001MZ

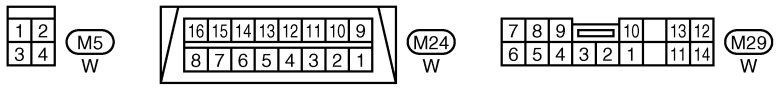


TKWB2550E

Wiring Diagram — H/LAMP —

NKS001N0

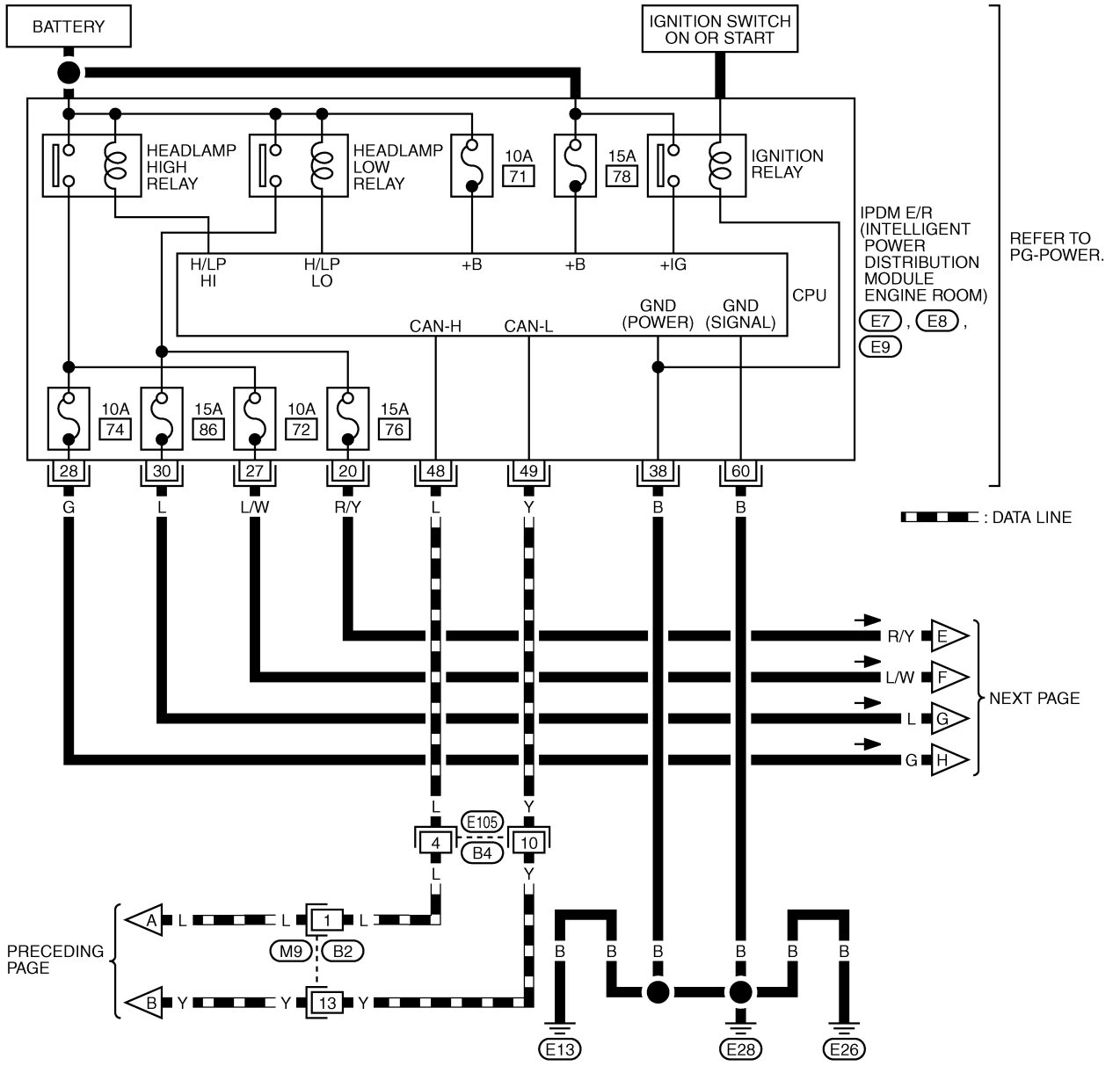


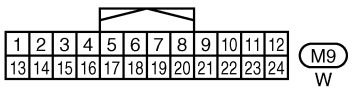


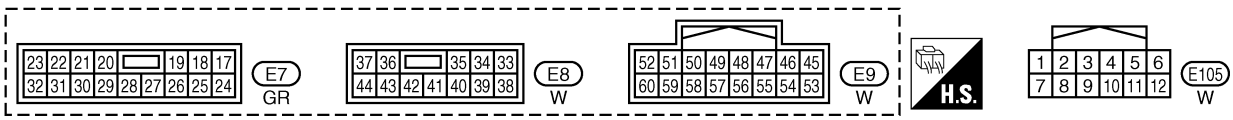
REFER TO THE FOLLOWING.
M1 -FUSE BLOCK-JUNCTION BOX (J/B)
M34, M35 -ELECTRICAL UNITS

TKWB2551E

LT-H/LAMP-02

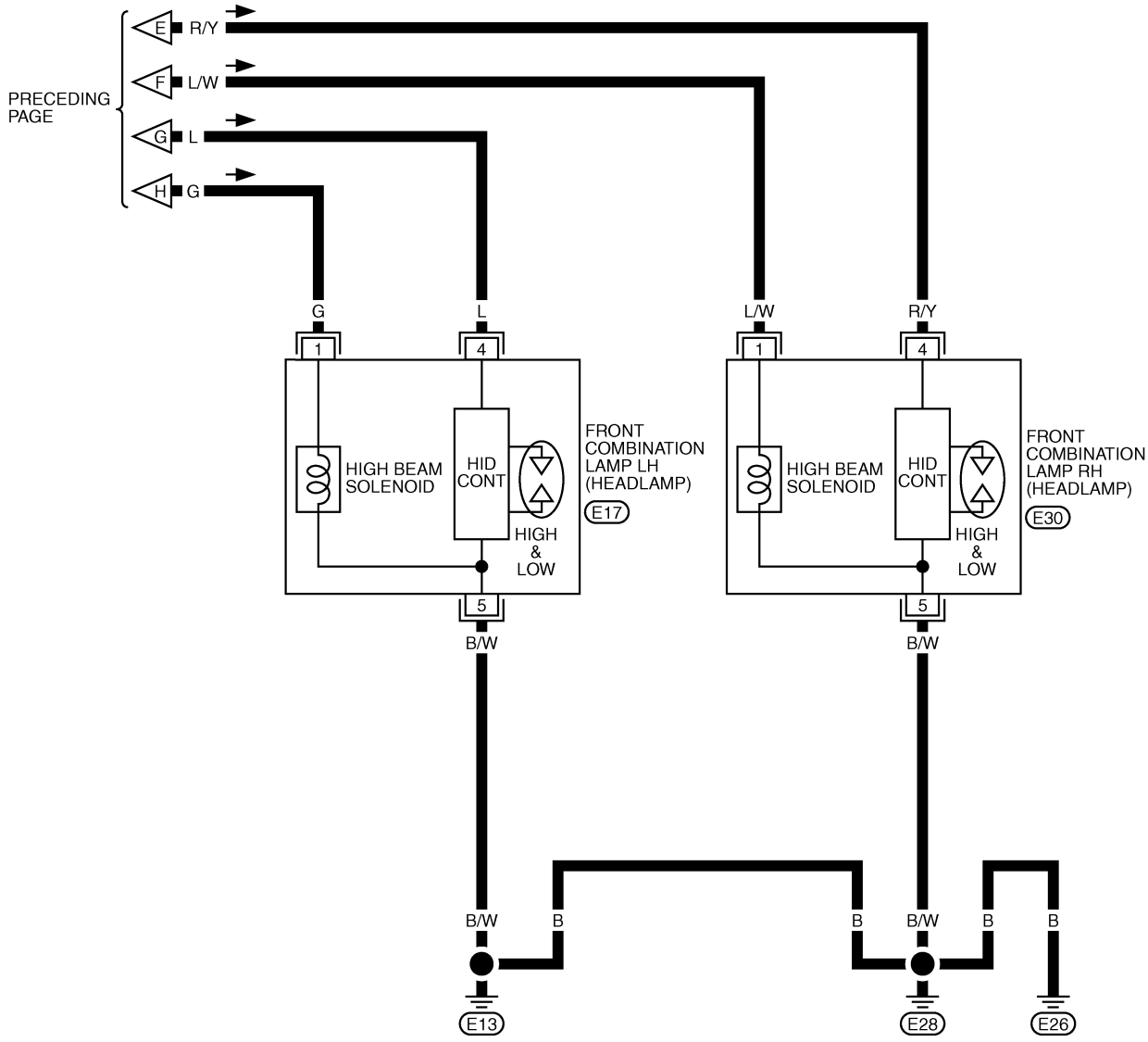






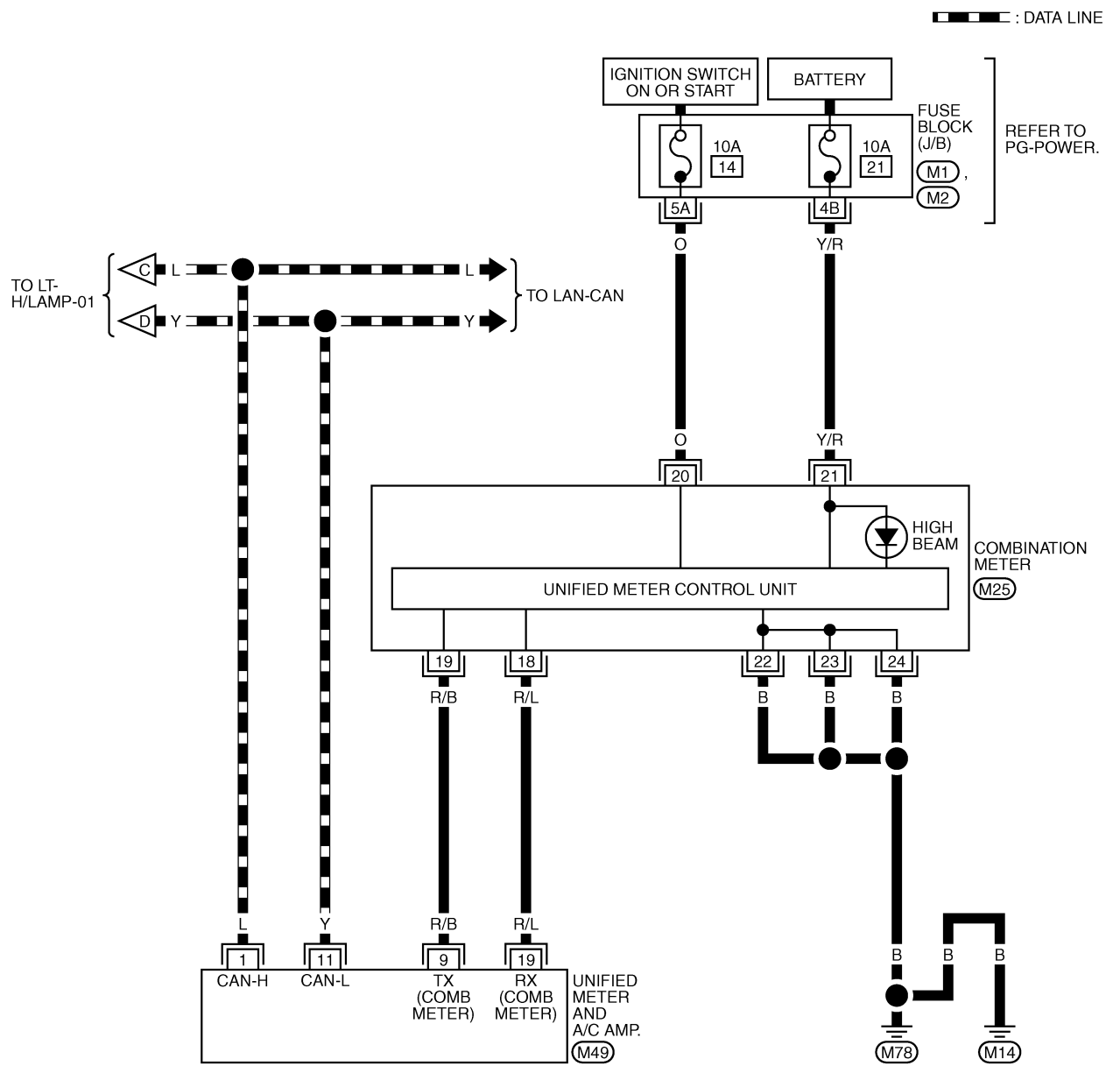
TKWB2552E

LT-H/LAMP-03

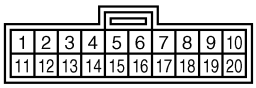


TKWA0740E

LT-H/LAMP-04



M25
W



M49
GR

H.S.

REFER TO THE FOLLOWING.
M1 , M2 -FUSE BLOCK-JUNCTION BOX (J/B)

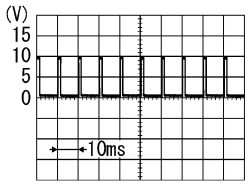
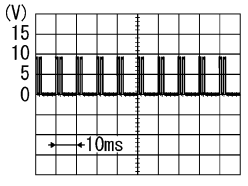
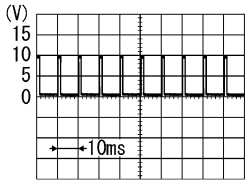
TKWB2553E

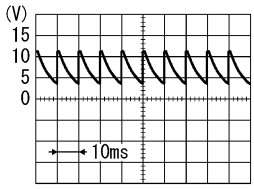
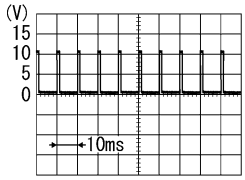
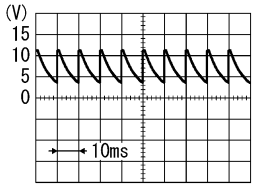
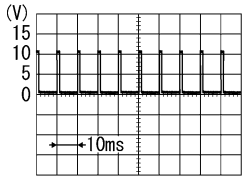
Terminals and Reference Values for BCM

NKS002T3

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 intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-II. Refer to LT-152, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
2	R	Combination switch input 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Lighting switch HIGH beam (Operates only HIGH beam switch)	 PKIB4959J Approx. 1.0 V
					Lighting switch 2ND	 PKIB4953J Approx. 2.0 V
3	P/L	Combination switch input 4	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Any of the conditions below ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch)	 PKIB4959J Approx. 1.0 V
11	P/B	Ignition switch (ACC)	ACC	—		Battery voltage

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
34	LG/R	Combination switch output 3	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Any of the conditions below ● Lighting switch 2ND ● Lighting switch HI beam (Operates only HI beam switch)	 PKIB4958J Approx. 1.2 V
35	G/B	Combination switch output 2	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Any of the conditions below ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch)	 PKIB4958J Approx. 1.2 V
38	R	Ignition switch (ON)	ON	—		Battery voltage
39	L	CAN – H	—	—		—
40	Y	CAN – L	—	—		—
42	GR	Battery power supply	OFF	—		Battery voltage
52	B	Ground	ON	—		Approx. 0 V
55	W/B	Battery power supply	OFF	—		Battery voltage

Terminals and Reference Values for IPDM E/R

NKS002T4

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
20	R/Y	Headlamp HIGH & LOW (RH)	ON	Lighting switch 2ND position	OFF	Approx. 0 V
					ON	Battery voltage
27	L/W	Headlamp high (RH)	ON	Lighting switch HIGH or PASS position	OFF	Approx. 0 V
					ON	Battery voltage
28	G	Headlamp high (LH)	ON	Lighting switch HIGH or PASS position	OFF	Approx. 0 V
					ON	Battery voltage
30	L	Headlamp HIGH & LOW (LH)	ON	Lighting switch 2ND position	OFF	Approx. 0 V
					ON	Battery voltage
38	B	Ground	ON	—		Approx. 0 V
48	L	CAN – H	—	—		—
49	Y	CAN – L	—	—		—
60	B	Ground	ON	—		Approx. 0 V

How to Proceed With Trouble Diagnosis

NKS002T5

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-6, "System Description" .
3. Perform the preliminary check. Refer to LT-17, "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

NKS002T6

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES AND FUSIBLE LINK

Check for blown fuses and fusible link.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	F
		18
	Ignition switch ON or START position	1
	Ignition switch ACC or ON position	6
IPDM E/R	Battery	72
		74
		76
		86

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

OK or NG

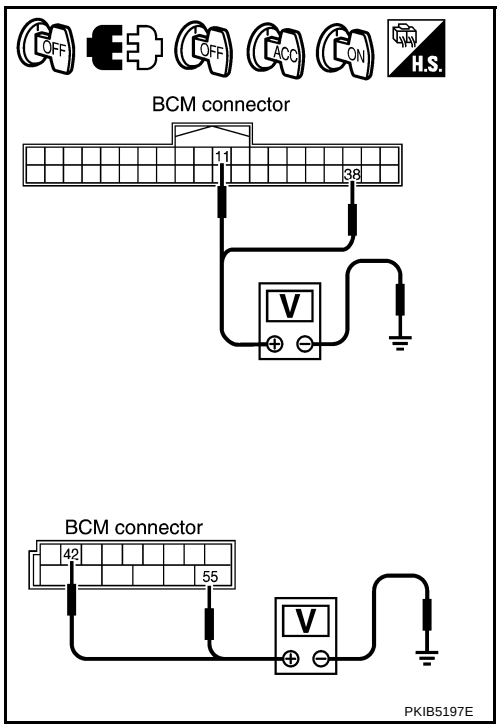
OK >> GO TO 2.

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-3, "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.

(+)		(–)	Ignition switch position		
BCM connector	Terminal		OFF	ACC	ON
M34	11	Ground	Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage
M35	42		Battery voltage	Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage	Battery voltage



OK or NG

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

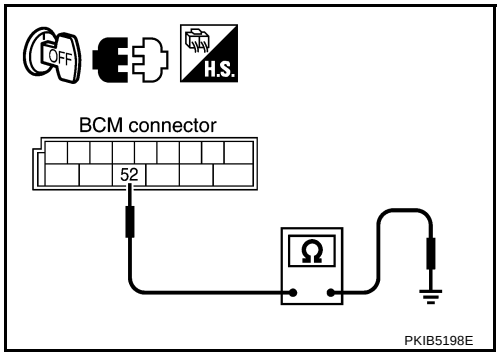
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M35	52		Yes

OK or NG

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



CONSULT-II Functions (BCM)

NKS002T7

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 BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

WORK SUPPORT

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.
3. Touch item 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. Selects exterior lamp battery saver control mode between two ON/OFF.	ON	×
		OFF	—

DATA MONITOR

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
3. Touch either “ALL SIGNALS” or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all the signals.
SELECTION FROM MENU	Selects items and monitors them.

4. When “SELECTION FROM MENU” is selected, touch individual items to be monitored. When “ALL SIGNALS” is selected, all the items will be monitored.
5. Touch “START”.
6. Touch “RECORD” while monitoring, then the status of the monitored item can be recorded. To stop recording, touch “STOP”.

Display Item List

Monitor item		Contents
IGN ON SW	“ON/OFF”	Displays “IGN position (ON)/OFF, ACC position (OFF)” judged from the ignition switch signal.
ACC ON SW	“ON/OFF”	Displays “ACC (ON)/OFF, Ignition OFF (OFF)” status judged from ignition switch signal.
HI BEAM SW	“ON/OFF”	Displays status (high beam switch: ON/Others: OFF) of high beam switch judged from lighting switch signal.
HEAD LAMP SW 1	“ON/OFF”	Displays status (headlamp switch 1: ON/Others: OFF) of headlamp switch 1 judged from lighting switch signal.
HEAD LAMP SW 2	“ON/OFF”	Displays status (headlamp switch 2: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.

Monitor item		Contents
LIGHT SW 1 ST	“ON/OFF”	Displays status (lighting switch 1ST or 2ND position: ON/Others: OFF) of lighting switch judged from lighting switch signal.
AUTO LIGHT SW	“ON/OFF”	Displays status of the lighting switch as judged from the lighting switch signal. (AUTO position: ON/Other than AUTO position: OFF)
PASSING SW	“ON/OFF”	Displays status (flash-to-pass switch: ON/Others: OFF) of flash-to-pass switch judged from lighting switch signal.
FR FOG SW	“ON/OFF”	Displays status (front fog lamp switch: ON/Others: OFF) of front fog lamp switch judged from lighting switch signal.
RR FOG SW NOTE	“OFF”	—
DOOR SW - DR	“ON/OFF”	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - AS	“ON/OFF”	Displays status of the passenger door as judged from the passenger door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RR	“ON/OFF”	Displays status of the rear door as judged from the rear door switch (RH) signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RL	“ON/OFF”	Displays status of the rear door as judged from the passenger door switch (LH) signal. (Door is open: ON/Door is closed: OFF)
BACK DOOR SW	“ON/OFF”	Displays status of the back door as judged from the back door switch signal. (Door is open: ON/Door is closed: OFF)
TURN SIGNAL R	“ON/OFF”	Displays status (Turn right: ON/Others: OFF) as judged from lighting switch signal.
TURN SIGNAL L	“ON/OFF”	Displays status (Turn left: ON/Others: OFF) as judged from lighting switch signal.
CARGO LAMP SW NOTE	“OFF”	—
OPTICAL SENSOR	“0 - 5 V”	Displays “outside brightness (close to 5 V when light/close to 0 V when dark)” judged from optical sensor signal.

NOTE:
This item is displayed, but cannot be monitored.

ACTIVE TEST

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
3. Touch item to be tested and check operation of the selected item.
4. During the operation check, touching “OFF” deactivates the operation.

Display Item List

Test item	Description
TAIL LAMP	Allows tail lamp relay to operate by switching ON–OFF.
HEAD LAMP	Allows headlamp relay to operate by switching ON–OFF.
FR FOG LAMP	Allows fog lamp relay to operate by switching ON–OFF.
CORNERING LAMP NOTE	—

NOTE:
This item is displayed, but cannot be tested.

CONSULT-II Functions (IPDM E/R)

NKS002T8

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

Diagnosis Mode	Description
SELF-DIAGNOSTIC RESULTS	Refer to PG-19, "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 BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

DATA MONITOR

Operation Procedure

1. Touch “DATA MONITOR” on “SELECT DIAG MODE ” screen.
2. Touch “ALL SIGNALS”, “MAIN SIGNALS”, or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all items.
MAIN SIGNALS	Monitor the predetermined item.
SELECTION FROM MENU	Selects items and monitors them.

3. Touch the required monitoring item on “SELECTION FROM MENU”. In “ALL SIGNALS”, all items are monitored. In “MAIN SIGNALS”, predetermined items are monitored.
4. Touch “START”.
5. Touch “RECORD” while monitoring to record the status of the item being monitored. To stop recording, touch “STOP”.

All Signals, Main Signals, Selection From Menu

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

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

ACTIVE TEST

Operation Procedure

1. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Touch item to be tested, and check operation.
3. Touch “START”.
4. Touch “OFF” while testing to stop the operation.

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

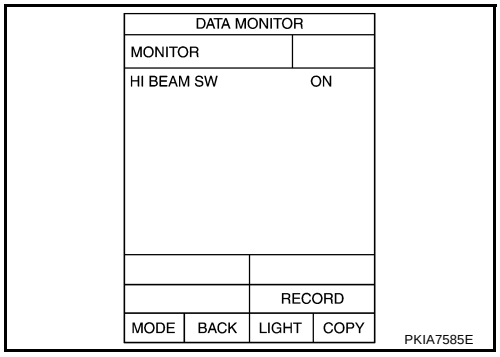
Headlamps Do Not Change To High Beam (Both Sides)

NKS002T9

1. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

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



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

Without CONSULT-II

Refer to LT-153, "Combination Switch Inspection" .

OK or NG

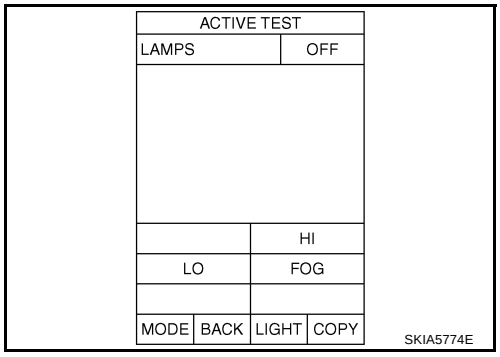
OK >> GO TO 2.

NG >> Check combination switch (lighting switch). Refer to LT-153, "Combination Switch Inspection" .

2. HEADLAMP ACTIVE TEST

With CONSULT-II

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



Headlamp high beam should operate.
(Headlamp high beam repeats ON–OFF every 1 second.)

Without CONSULT-II

1. Start auto active test. Refer to PG-21, "Auto Active Test" .
2. Make sure headlamp high beam operates.

Headlamp high beam should operate.

OK or NG

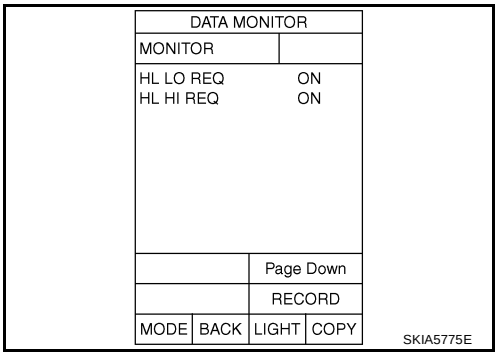
OK >> GO TO 3.

NG >> GO TO 4.

3. CHECK IPDM E/R

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

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



OK or NG

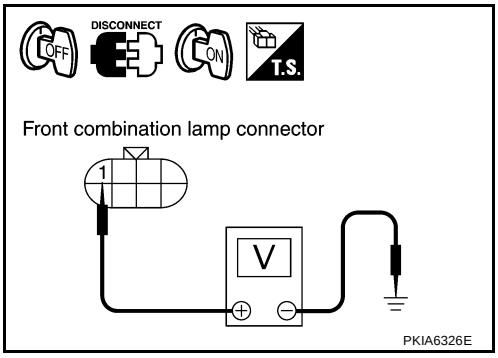
OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .

NG >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

4. CHECK HEADLAMP INPUT SIGNAL

With CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front 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 “LAMPS” on “SELECT TEST ITEM” screen.
5. Touch “HI” screen.
6. When headlamp high beam is operating, check voltage between front combination lamp (RH and LH) harness connector and ground (Headlamp high beam repeats ON–OFF every 1 second).



(+)			(–)	Voltage
Front combination lamp connector		Terminal		
RH	E30	1	Ground	Battery voltage
LH	E17	1		

Without CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH and LH connectors.
3. Start auto active test. Refer to PG-21, "Auto Active Test" .
4. When headlamp high beam is operating, check voltage between front combination lamp (RH and LH) harness connector and ground.

(+)			(–)	Voltage
Front combination lamp connector		Terminal		
RH	E30	1	Ground	Battery voltage
LH	E17	1		

OK or NG

OK >> GO TO 6.

NG >> GO TO 5.

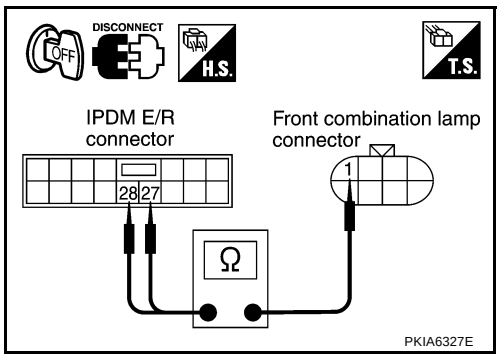
5. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 27 and front combination lamp RH harness connector E30 terminal 1.

27 – 1 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 28 and front combination lamp LH harness connector E17 terminal 1.

28 – 1 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

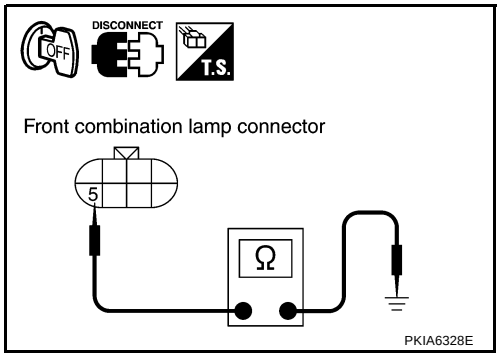
6. CHECK HEADLAMP GROUND

1. Check continuity between front combination lamp RH harness connector E30 terminal 5 and ground.

5 – Ground : Continuity should exist.

2. Check continuity between front combination lamp LH harness connector E17 terminal 5 and ground.

5 – Ground : Continuity should exist.



OK or NG

OK >> Replace front combination lamp. Refer to LT-35, "Removal and Installation" .
NG >> Repair harness or connector.

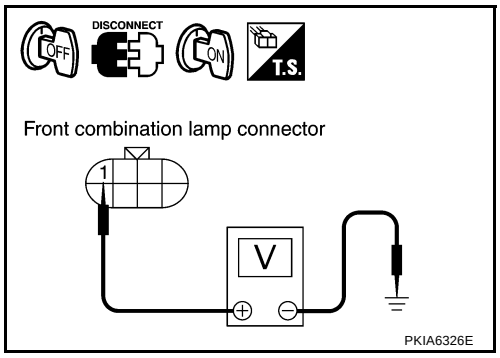
Headlamp Does Not Change To High Beam (One Side)

NKS002TA

1. CHECK HEADLAMP INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH or LH connectors.
3. Turn ignition switch ON.
4. Lighting switch is turned HIGH BEAM position.
5. Check voltage between front combination lamp RH or LH harness connectors and ground.

(+)			(–)	Voltage
Front combination lamp connector		Terminal		
RH	E30	1	Ground	Battery voltage
LH	E17	1		



OK or NG

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

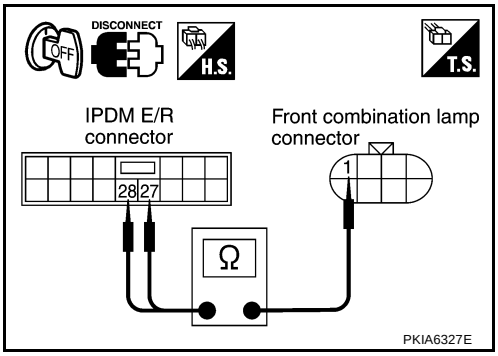
2. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 27 and front combination lamp RH harness connector E30 terminal 1.

27 – 1 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 28 and front combination lamp LH harness connector E17 terminal 1.

28 – 1 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

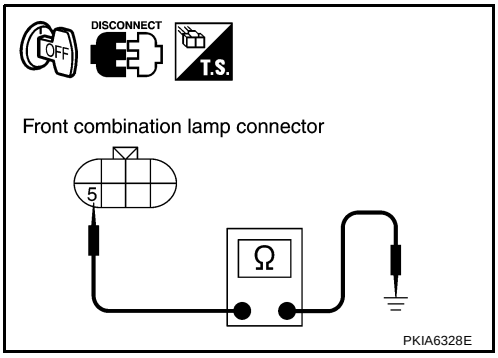
3. CHECK HEADLAMP GROUND

1. Check continuity between front combination lamp RH harness connector E30 terminal 5 and ground.

5 – Ground : Continuity should exist.

2. Check continuity between front combination lamp LH harness connector E17 terminal 5 and ground.

5 – Ground : Continuity should exist.



OK or NG

OK >> Replace front combination lamp. Refer to LT-35, "Removal and Installation" .
NG >> Repair harness or connector.

Headlamps Do Not Illuminate (Both Sides)

NKS002TC

1. CHECK COMBINATION SWITCH INPUT SIGNAL

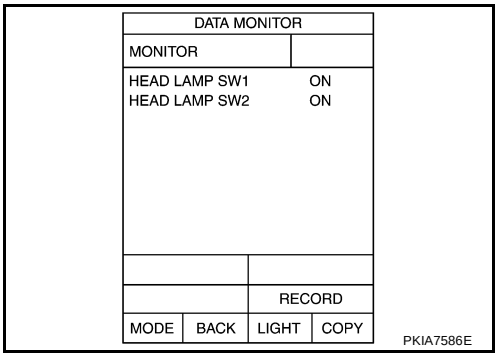
With CONSULT-II

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

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

Without CONSULT-II

Refer to LT-153, "Combination Switch Inspection" .



OK or NG

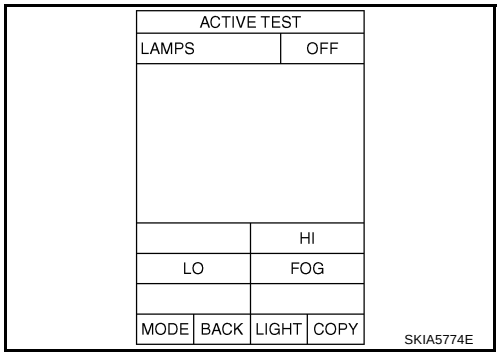
OK >> GO TO 2.
NG >> Check combination switch (lighting switch). Refer to LT-153, "Combination Switch Inspection" .

2. HEADLAMP ACTIVE TEST

With CONSULT-II

1. Select “IPDM E/R” on CONSULT-II, and select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Select “LAMPS” 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-21, "Auto Active Test" .
2. Make sure headlamp low beam operates.

Headlamp low beam should operate.

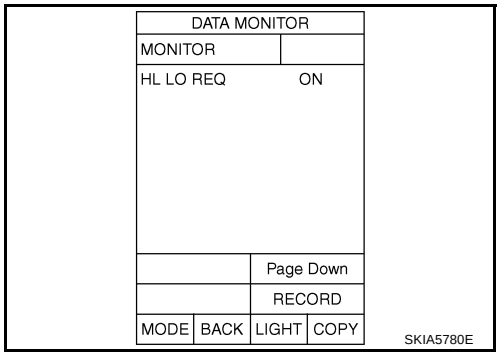
OK or NG

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

3. CHECK IPDM E/R

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

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



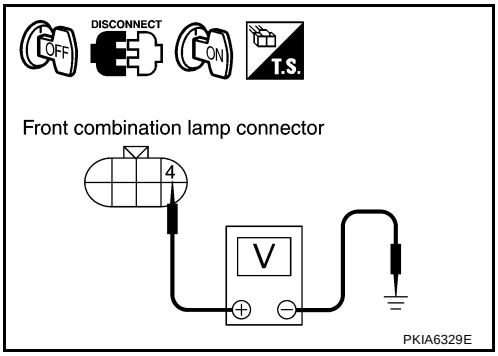
OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

4. CHECK HEADLAMP INPUT SIGNAL

With CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front 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 “LAMPS” on “SELECT TEST ITEM” screen.
5. Touch “LO” screen.
6. When headlamp low beam is operating, check voltage between front combination lamp (RH and LH) harness connector and ground.



(+)			(–)	Voltage
Front combination lamp connector		Terminal		
RH	E30	4	Ground	Battery voltage
LH	E17	4		

Without CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH and LH connectors.
3. Start auto active test. Refer to PG-21, "Auto Active Test" .
4. When headlamp low beam is operating, check voltage between front combination lamp (RH and LH) harness connector and ground.

(+)			(–)	Voltage
Front combination lamp connector		Terminal		
RH	E30	4	Ground	Battery voltage
LH	E17	4		

OK or NG

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

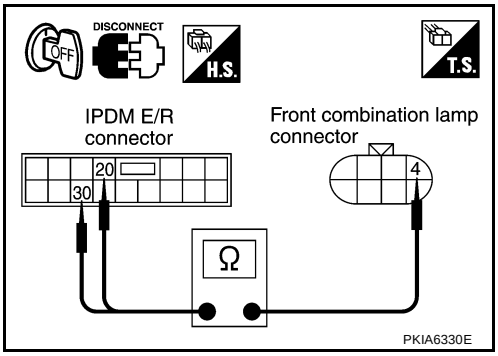
5. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 20 and front combination lamp RH harness connector E30 terminal 4.

20 – 4 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 30 and front combination lamp LH harness connector E17 terminal 4.

30 – 4 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

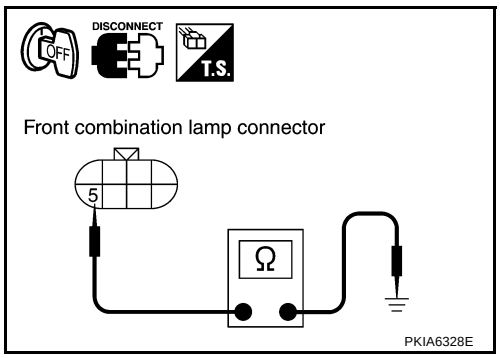
6. CHECK HEADLAMP GROUND

1. Turn ignition switch OFF.
2. Check continuity between front combination lamp RH harness connector E30 terminal 5 and ground.

5 – Ground : Continuity should exist.

3. Check continuity between front combination lamp LH harness connector E17 terminal 5 and ground.

5 – Ground : Continuity should exist.



OK or NG

OK >> Check headlamp harness and connectors, ballasts (HID control unit), and xenon bulbs. Refer to LT-31, "Xenon Headlamp Trouble Diagnosis" .

NG >> Repair harness or connector.

Headlamp Does Not Illuminate (One Side)

NKS002TD

1. CHECK BULB

Check ballast (HID control unit) and xenon bulb of lamp which does not illuminate. Refer to LT-31, "Xenon Headlamp Trouble Diagnosis" .

OK or NG

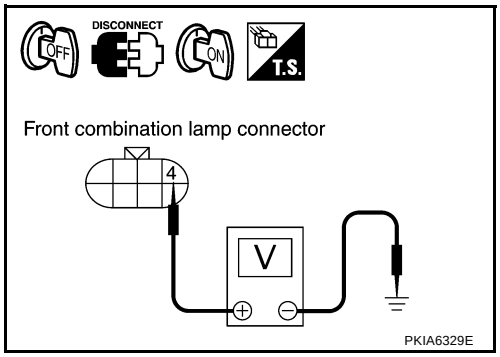
OK >> GO TO 2.

NG >> Replace malfunctioning part.

2. CHECK HEADLAMP INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH or LH connectors.
3. Turn ignition switch ON.
4. Lighting switch is turned 2ND position.
5. Check voltage between front combination lamp RH or LH harness connectors and ground.

(+)			(–)	Voltage
Front combination lamp connector		Terminal		
RH	E30	4	Ground	Battery voltage
LH	E17	4		



OK or NG

OK >> GO TO 4.

NG >> GO TO 3.

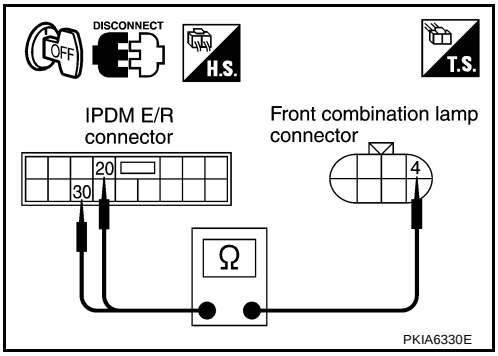
3. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 20 and front combination lamp RH harness connector E30 terminal 4.

20 – 4 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 30 and front combination lamp LH harness connector E17 terminal 4.

30 – 4 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

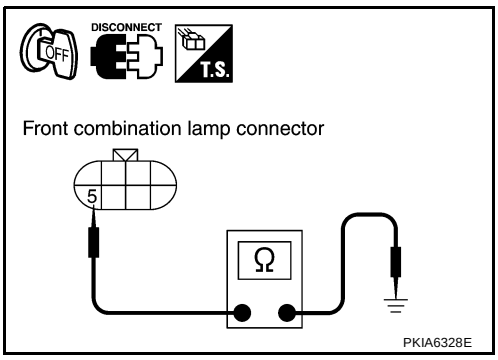
4. CHECK HEADLAMP GROUND

1. Check continuity between front combination lamp RH harness connector E30 terminal 5 and ground.

5 – Ground : Continuity should exist.

2. Check continuity between front combination lamp LH harness connector E17 terminal 5 and ground.

5 – Ground : Continuity should exist.



OK or NG

OK >> Check connector for connection, bend and loose fit and repair.
NG >> Repair harness or connector.

Headlamps Do Not Turn OFF

NKS002TG

1. CHECK HEADLAMP TURN OFF

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

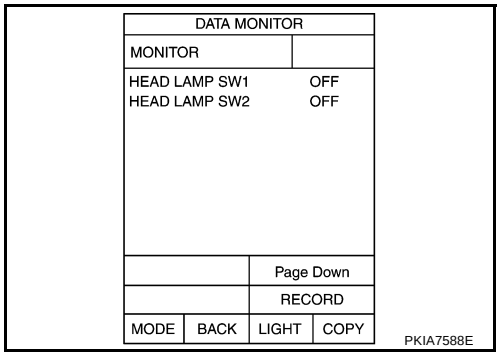
OK or NG

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

2. CHECK COMBINATION SWITCH INPUT SIGNAL

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

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



OK or NG

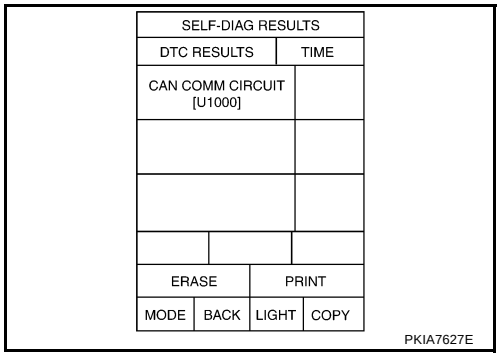
OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Check combination switch (lighting switch). Refer to LT-153, "Combination Switch Inspection" .

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-28, "Removal and Installation of IPDM E/R" .
CAN COMM CIRCUIT>> Refer to BCS-13, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .



General Information for Xenon Headlamp Trouble Diagnosis

NKS002TH

In most cases, malfunction of xenon headlamp - “does not illuminate”, “flickers” or “dark” - is caused by a malfunctioning xenon bulb. A malfunctioning HID control unit or lamp housing, however, may be a cause. Be sure to perform trouble diagnosis following the steps described below.

Caution:

NKS002TI

- Installation or removal of connector must be done with lighting switch OFF.
- Disconnect the battery cable from the negative terminal or remove power fuse.
- When the lamp is illuminated (when lighting switch is ON), never touch harness, HID control unit, inside of lamp, or lamp metal parts.
- To check illumination, temporarily install lamp in vehicle. Be sure to connect power at vehicle side connector.
- If error can be traced directly to electrical system, first check for items such as blown fuses and fusible links, broken wires or loose connectors, dislocated terminals, and improper connections.
- Never work with wet hands.
- Using a tester for HID control unit circuit trouble diagnosis is prohibited.
- Disassembling HID control unit or harnesses (bulb socket harness, ECM harness) is prohibited.
- Immediately after illumination, light intensity and color will fluctuate, but there is nothing wrong.
- When bulb has come to end of its life, brightness will drop significantly, it will flash repeatedly, or light color will turn reddish.

Xenon Headlamp Trouble Diagnosis

NKS002TJ

1. CHECK 1: XENON HEADLAMP LIGHTING

Install normal xenon bulb to corresponding xenon bulb headlamp, and check if lamp lights up.

OK or NG

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

2. CHECK 2: XENON HEADLAMP LIGHTING

Install normal HID control unit to corresponding xenon headlamp, and check if lamp lights up.

OK or NG

OK >> Replace HID control unit.
NG >> GO TO 3.

3. CHECK 3: XENON HEADLAMP LIGHTING

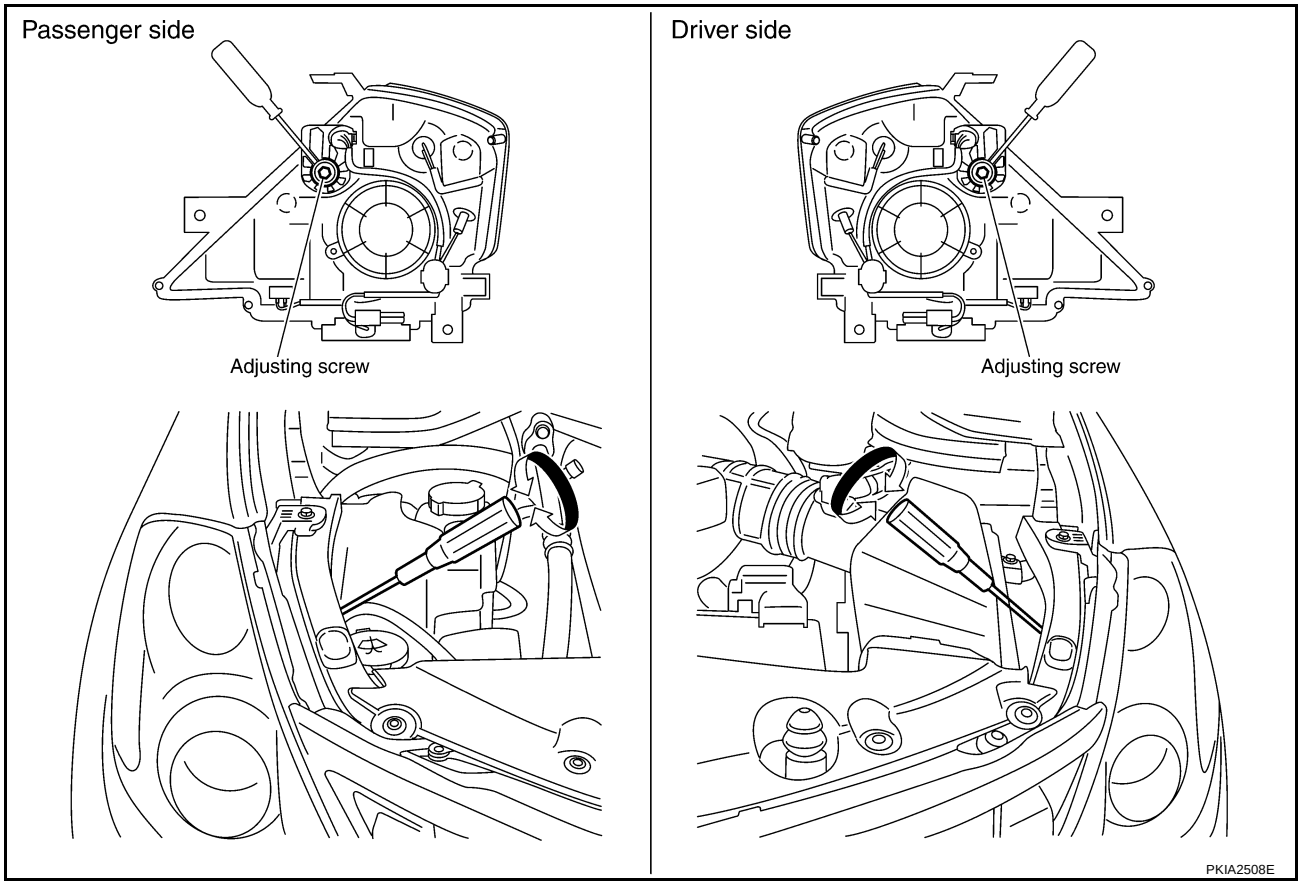
Install normal xenon lamp housing assembly to corresponding xenon headlamp, and check if lamp lights up.

OK or NG

OK >> Replace xenon headlamp housing assembly. [Malfunction in starter (boosting circuit) in xenon headlamp housing]
NG >> INSPECTION END

Aiming Adjustment

NKS002TK



PREPARATION BEFORE ADJUSTING

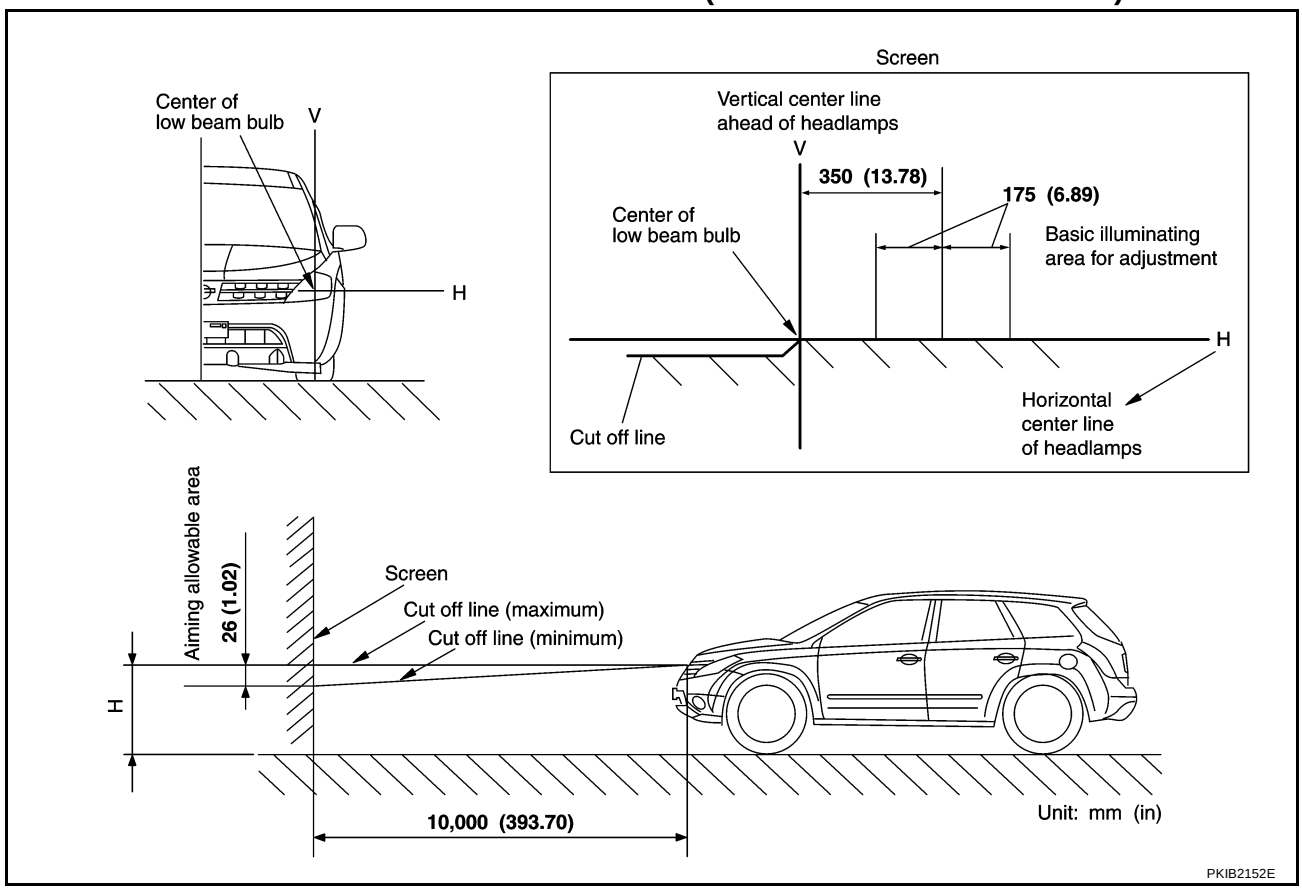
For Details, Refer To the Regulations In Your Own Country.
Before performing aiming adjustment, check the following.

1. Keep all tires inflated to correct pressures.
2. Place vehicle on level ground.
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

1. Turn headlamp low beam ON.
2. Use adjusting screws to perform aiming adjustment.

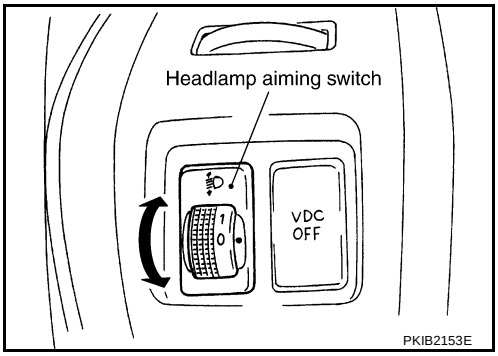
ADJUSTMENT USING AN ADJUSTMENT SCREEN (LIGHT/DARK BORDERLINE)



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.

- Basic illumination area for adjustment should be within the range shown on the aiming chart. Adjust headlamp accordingly.

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

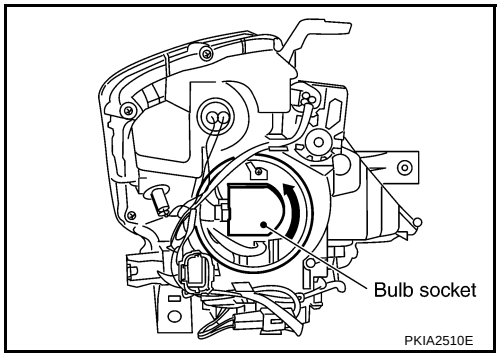


Bulb Replacement

NKS002TL

HEADLAMP HIGH/LOW BEAM

1. Turn lighting switch OFF.
2. Disconnect the battery cable from the negative terminal or remove power fuse.
3. Remove fender protector (front). Refer to EI-21, "FENDER PROTECTOR" .
4. Turn plastic cap counterclockwise and unlock it.
5. Turn bulb socket counterclockwise and unlock it.
6. Unlock retaining spring and remove bulb from headlamp.
7. Installation is the reverse order of removal.



NOTE:
After installation, perform aiming adjustment. Refer to LT-32, "Aiming Adjustment" .

Headlamp high/low beam (Xenon) : 12 V - 35 W (D2S)

PARKING LAMP

1. Turn lighting switch OFF.
2. Remove fender protector (front). Refer to EI-21, "FENDER PROTECTOR" .
3. Turn bulb socket counterclockwise and unlock it.
4. Remove bulb from its socket.
5. Installation is the reverse order of removal.

Parking lamp : 12 V - 3.8 W

FRONT TURN SIGNAL LAMP

1. Turn lighting switch OFF.
2. Remove air cleaner case (when replacing LH bulb). Refer to EM-16, "AIR CLEANER AND AIR DUCT" .
3. Remove IPDM E/R (when replacing RH bulb). Refer to PG-28, "Removal and Installation of IPDM E/R" .
4. Turn bulb socket counterclockwise and unlock it.
5. Remove bulb from its socket.
6. Installation is the reverse order of removal.

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

FRONT SIDE MARKER LAMP

1. Turn lighting switch OFF.
2. Remove fender protector (front). Refer to EI-21, "FENDER PROTECTOR" .
3. Turn bulb socket counterclockwise and unlock it.
4. Remove bulb from its socket.
5. Installation is the reverse order of removal.

Front side marker lamp : 12 V - 3.8 W

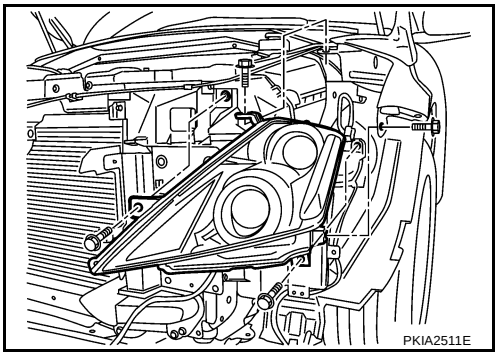
CAUTION:
After installing bulb, be sure to install plastic cap and bulb socket securely to insure watertightness.

Removal and Installation

NKS002TM

REMOVAL

1. Disconnect the battery cable from the negative terminal or remove power fuse.
2. Remove front bumper. Refer to EI-14, "FRONT BUMPER" .
3. Remove headlamp mounting bolts.
4. Remove plastics bumper bracket, then pull headlamp toward vehicle front, disconnect connector, and remove headlamp.



INSTALLATION

Installation is the reverse order of removal.

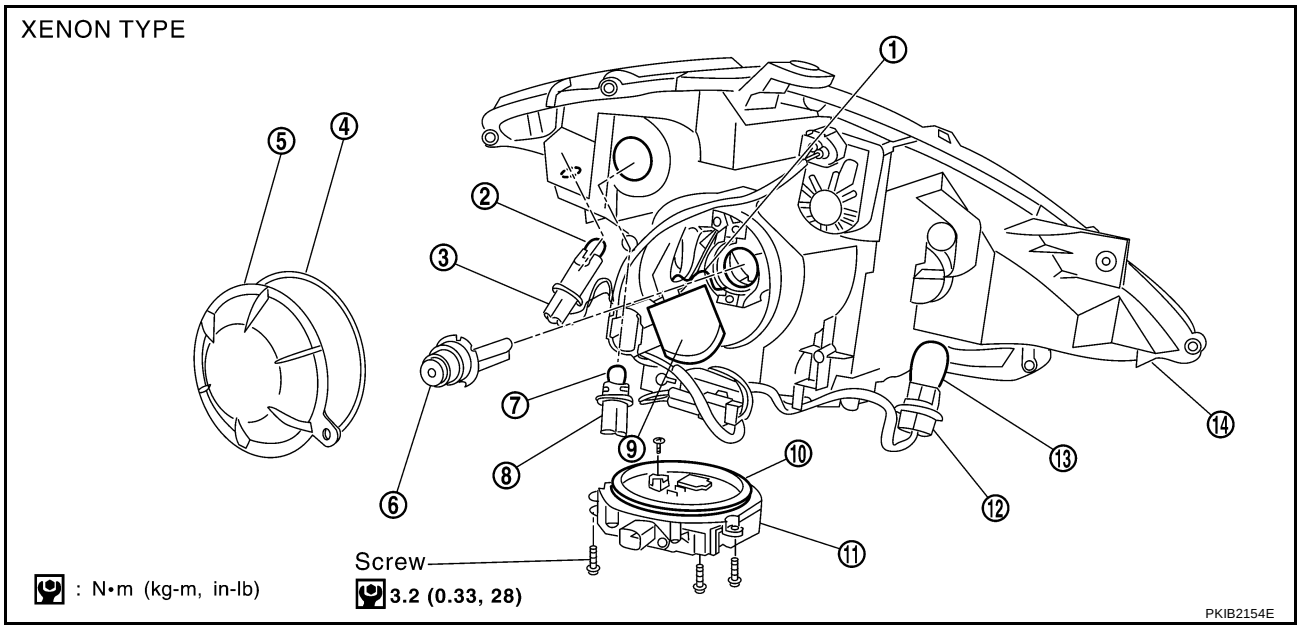
Headlamp mounting bolt : **5.1 N·m (0.52 kg-m, 45 in-lb)**

NOTE:

After installation, perform aiming adjustment. Refer to LT-32, "Aiming Adjustment" .

Disassembly and Assembly

NKS002TN



1. Retaining spring
2. Side marker lamp bulb
3. Side marker lamp bulb socket
4. Seal rubber
5. Plastic cap
6. Xenon bulb
7. Parking lamp bulb
8. Parking lamp bulb socket
9. Xenon bulb socket
10. Seal packing
11. HID control unit
12. Front turn signal lamp bulb socket
13. Front turn signal lamp bulb
14. Headlamp housing assembly

DISASSEMBLY

1. Turn plastic cap counterclockwise and unlock it.
2. Turn xenon bulb socket counterclockwise, and unlock it.
3. Unlock retaining spring, and remove xenon bulb.
4. Disconnect HID control unit connector, and remove HID control unit screws.
5. Turn parking lamp bulb socket counterclockwise and unlock it.
6. Remove parking lamp bulb from its socket.
7. Turn front turn signal lamp bulb socket counterclockwise and unlock it.
8. Remove front turn signal lamp bulb from its socket.
9. Turn front side marker lamp bulb socket counterclockwise and unlock it.
10. Remove front side marker lamp bulb from its socket.

ASSEMBLY

Assembly is the reverse order of disassembly.

HID control unit mounting screw : 3.2 N·m (0.33 kg-m, 28 in-lb)

CAUTION:

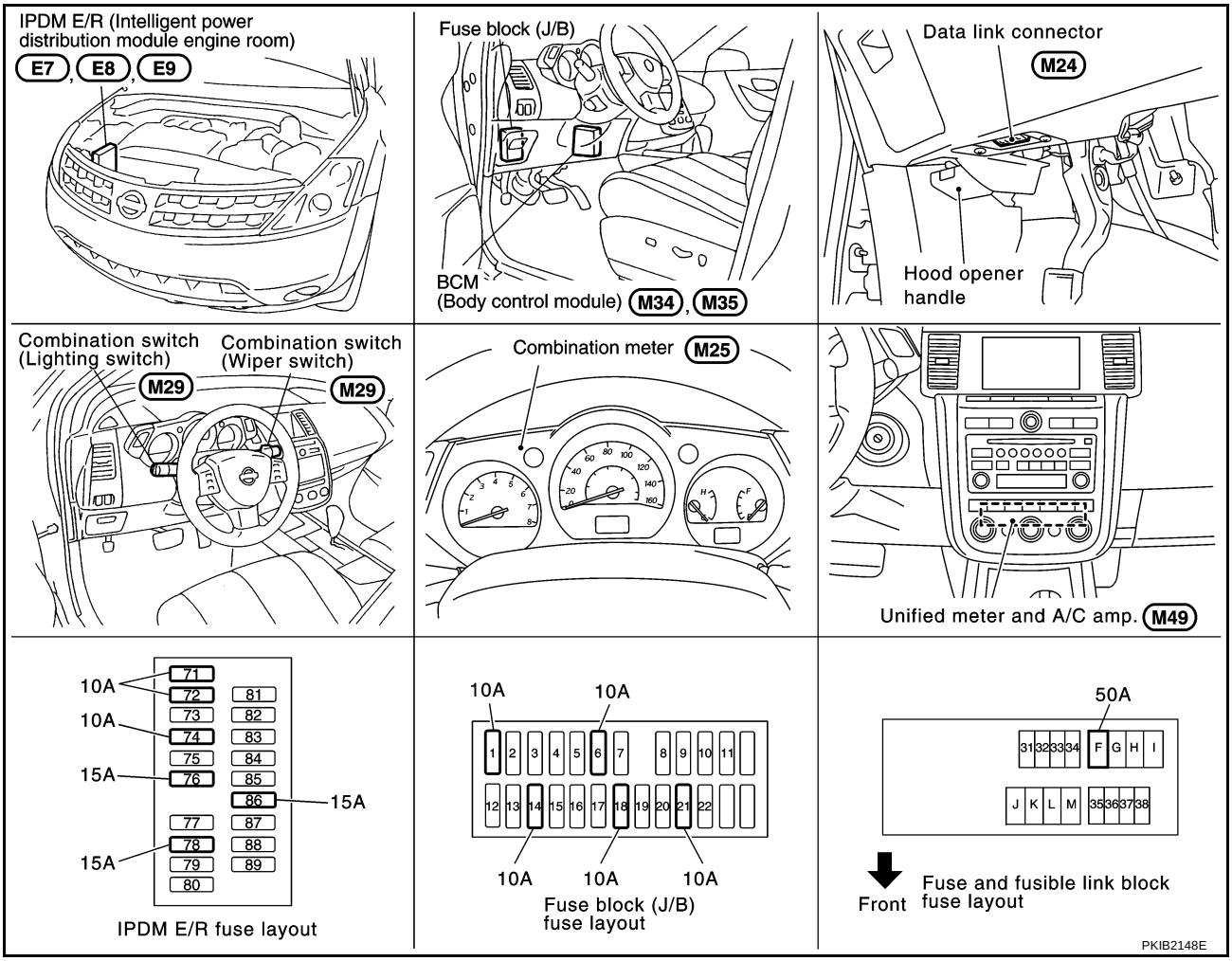
- **When HID control unit is removed, reinstall it securely and avoid any looseness.**
- **After installing bulb, be sure to install plastic cap and bulb socket securely to insure watertightness.**

HEADLAMP -CONVENTIONAL TYPE-

PFP:26010

Component Parts and Harness Connector Location

NKS001NM



System Description

NKS001NN

- BCM (Body Control Module) controls headlamps low and high operation.
- IPDM E/R (Intelligent Power Distribution Module Engine Room) operates headlamp bulbs according to CAN communication signals from BCM.
- Unified meter and A/C amp. operates high beam indicator lamp according to CAN communication signals from BCM.

OUTLINE

Power is supplied at all times

- to ignition relay located in IPDM E/R
- to headlamp high relay located in IPDM E/R and
- to headlamp low relay located in IPDM E/R, from battery direct,
- through 50A fusible link (letter F, located in fuse and fusible link block)
- to BCM terminal 55,
- through 10A fuse [No. 18, located in fuse block (J/B)]
- to BCM terminal 42,
- through 15A fuse (No. 78, located in IPDM E/R)
- to CPU located in IPDM E/R,
- through 10A fuse (No. 71, located in IPDM E/R)
- to CPU located in IPDM E/R,
- through 10A fuse [No. 21, located in fuse block (J/B)]

- to combination meter terminal 21.

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

- to ignition relay, located in IPDM E/R, from battery direct
- through 10A fuse [No. 1, located in fuse block (J/B)]
- to BCM terminal 38,
- through 10A fuse [No. 14 located in fuse block (J/B)]
- to combination meter terminal 20.

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

- through 10A fuse [No. 6, located in fuse block (J/B)]
- to BCM terminal 11.

Ground is supplied

- to BCM terminal 52
- through grounds M14 and M78,
- to IPDM E/R terminals 38 and 60
- through grounds E13, E26 and E28,
- to combination meter terminals 22, 23 and 24
- through grounds M14 and M78.

LOW BEAM OPERATION

When the lighting switch is in 2ND position, BCM detects the HEAD LAMP1 and 2 (ON) by BCM combination switch reading function. BCM sends low beam request signal (ON) through CAN communication.
When receiving low beam request signal (ON), IPDM E/R turns ON headlamp low relay in IPDM E/R. IPDM E/R supplies power

- through 15A fuse (No. 76, located in IPDM E/R)
- through IPDM E/R terminal 20
- to front combination lamp RH terminal 4,
- through 15A fuse (No. 86, located in IPDM E/R)
- through IPDM E/R terminal 30
- to front combination lamp LH terminal 4.

Ground is supplied at all times

- to front combination lamp RH and LH terminals 5
- through grounds E13, E26 and E28.

With power and ground supplied, headlamp low beams illuminate.

HIGH BEAM OPERATION

When the lighting switch is in HIGH BEAM position and then also in 2ND position, BCM detects the HEAD LAMP1, 2 (ON) and the HI BEAM (ON) by BCM combination switch reading function. BCM sends low beam request signal (OFF) and high beam request signal (ON) through CAN communication.
When receiving those signals, IPDM E/R turns OFF head lamp low relay and turns ON headlamp high relay in IPDM E/R. IPDM E/R supplies power

- through 10A fuse (No. 72, located in IPDM E/R)
- through IPDM E/R terminal 27
- to front combination lamp RH terminal 1,
- through 10A fuse (No. 74, located in IPDM E/R)
- through IPDM E/R terminal 28
- to front combination lamp LH terminal 1.

Ground is supplied

- to front combination lamp RH and LH terminals 5
- through grounds E13, E26 and E28.

With power and ground supplied, headlamp high beams illuminate.
Unified meter and A/C amp. receives high beam request signal (ON) through CAN communication, and makes high beam indicator lamp turn ON in combination meter.

FLASH-TO-PASS OPERATION

When the lighting switch is in PASSING position, BCM detects the PASSING (ON) by BCM combination switch reading function. BCM sends high beam request signal (ON) through CAN communication.
When receiving high beam request signal (ON), IPDM E/R turns ON headlamp high relay in IPDM E/R. IPDM E/R supplies power

- through 10A fuse (No. 72, located in IPDM E/R)
- through IPDM E/R terminal 27
- to front combination lamp RH terminal 1,
- through 10A fuse (No. 74, located in IPDM E/R)
- through IPDM E/R terminal 28
- to front combination lamp LH terminal 1.

Ground is supplied

- to front combination lamp RH and LH terminals 5
- through grounds E13, E26 and E28.

With power and ground supplied, headlamp high beams illuminate.
Unified meter and A/C amp. receives high beam request signal (ON) through CAN communication, and makes high beam indicator lamp turn ON in combination meter.

COMBINATION SWITCH READING FUNCTION

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

EXTERIOR LAMP BATTERY SAVER CONTROL

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

AUTO LIGHT OPERATION

Refer to LT-84, "System Description" .

VEHICLE SECURITY SYSTEM

The vehicle security system will flash the high beams if the system is triggered. Refer to BL-204, "VEHICLE SECURITY (THEFT WARNING) SYSTEM" .

CAN Communication System Description

NKS001NO

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.

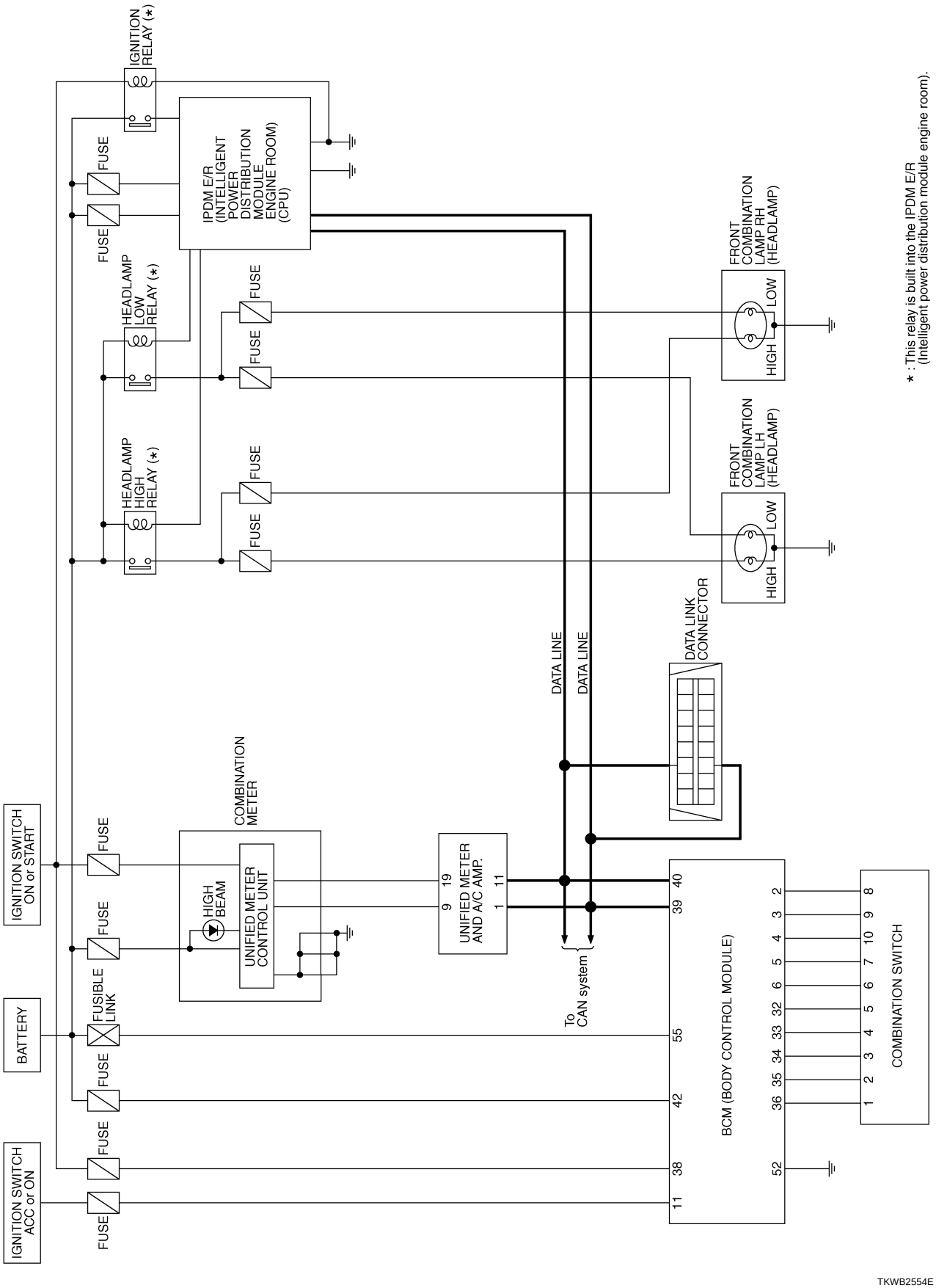
CAN Communication Unit

NKS001NP

Refer to LAN-49, "CAN System Specification Chart" .

Schematic

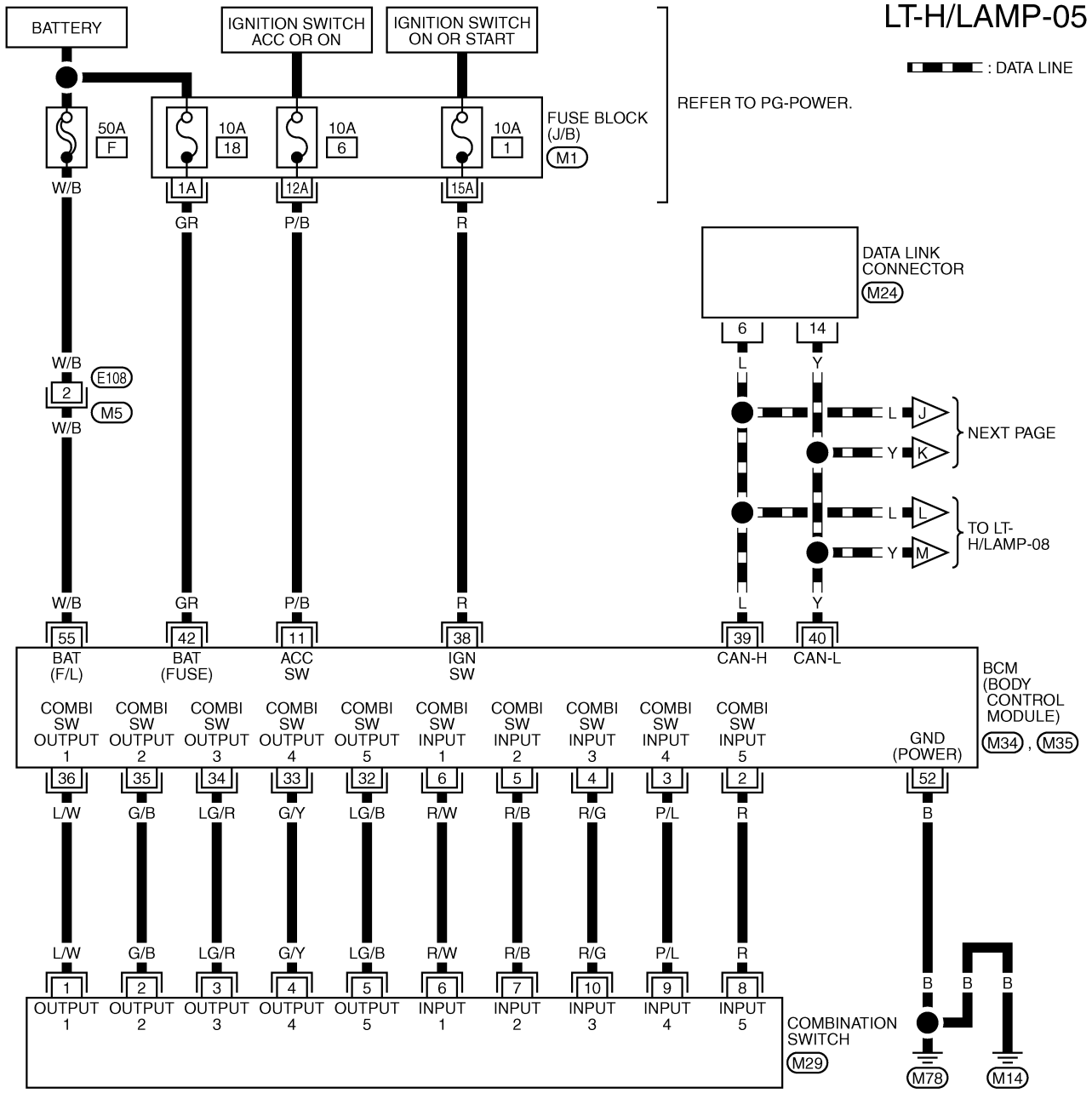
NKS001NQ

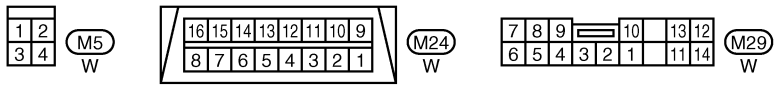


TKWB2554E

Wiring Diagram — H/LAMP —

NKS001NR





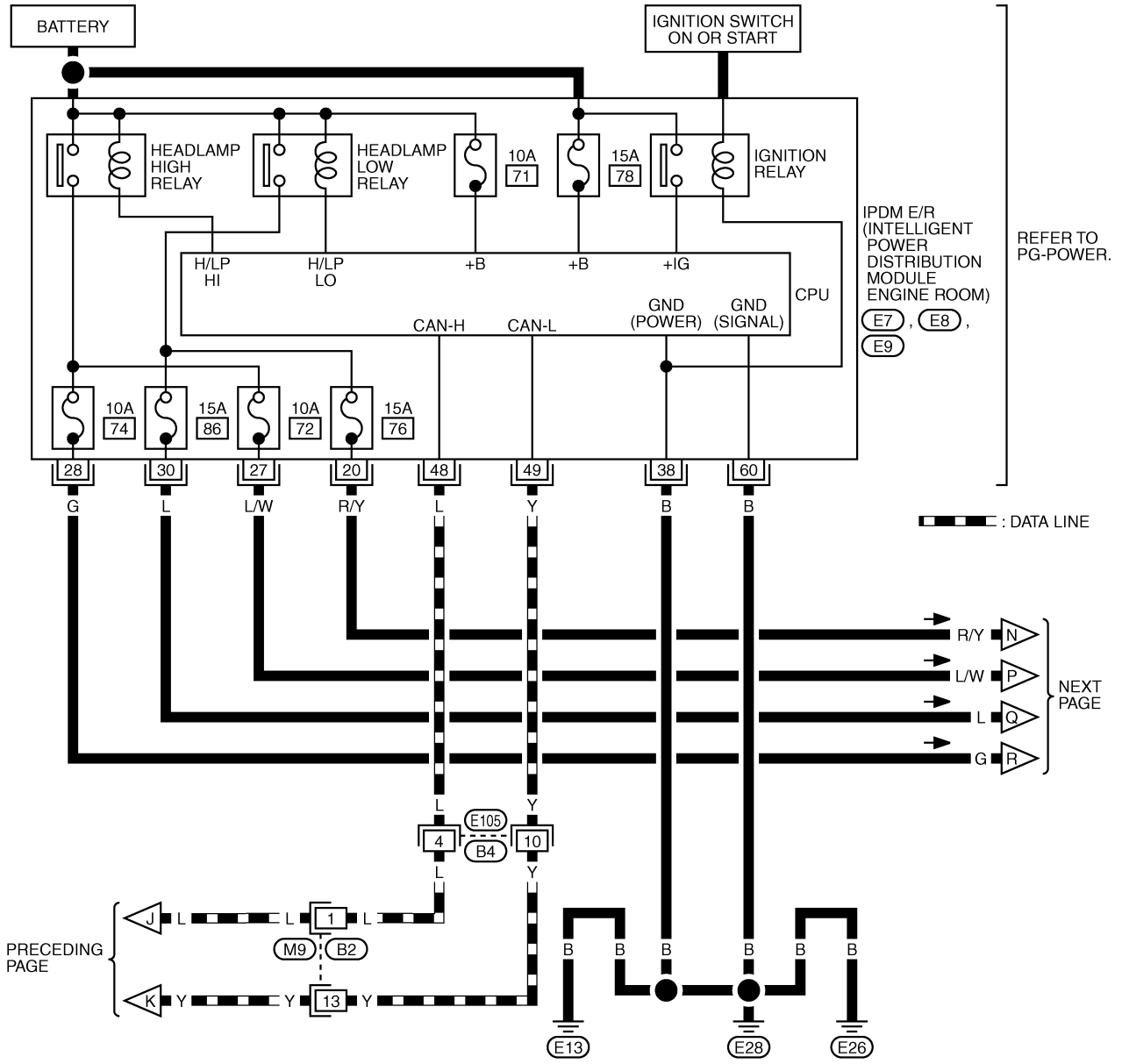
REFER TO THE FOLLOWING.

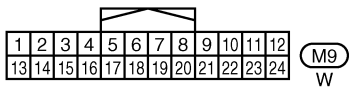
M1 -FUSE BLOCK-JUNCTION BOX (J/B)

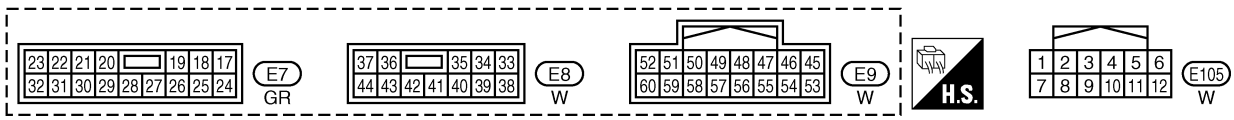
M34, M35 -ELECTRICAL UNITS

TKWB2555E

LT-H/LAMP-06

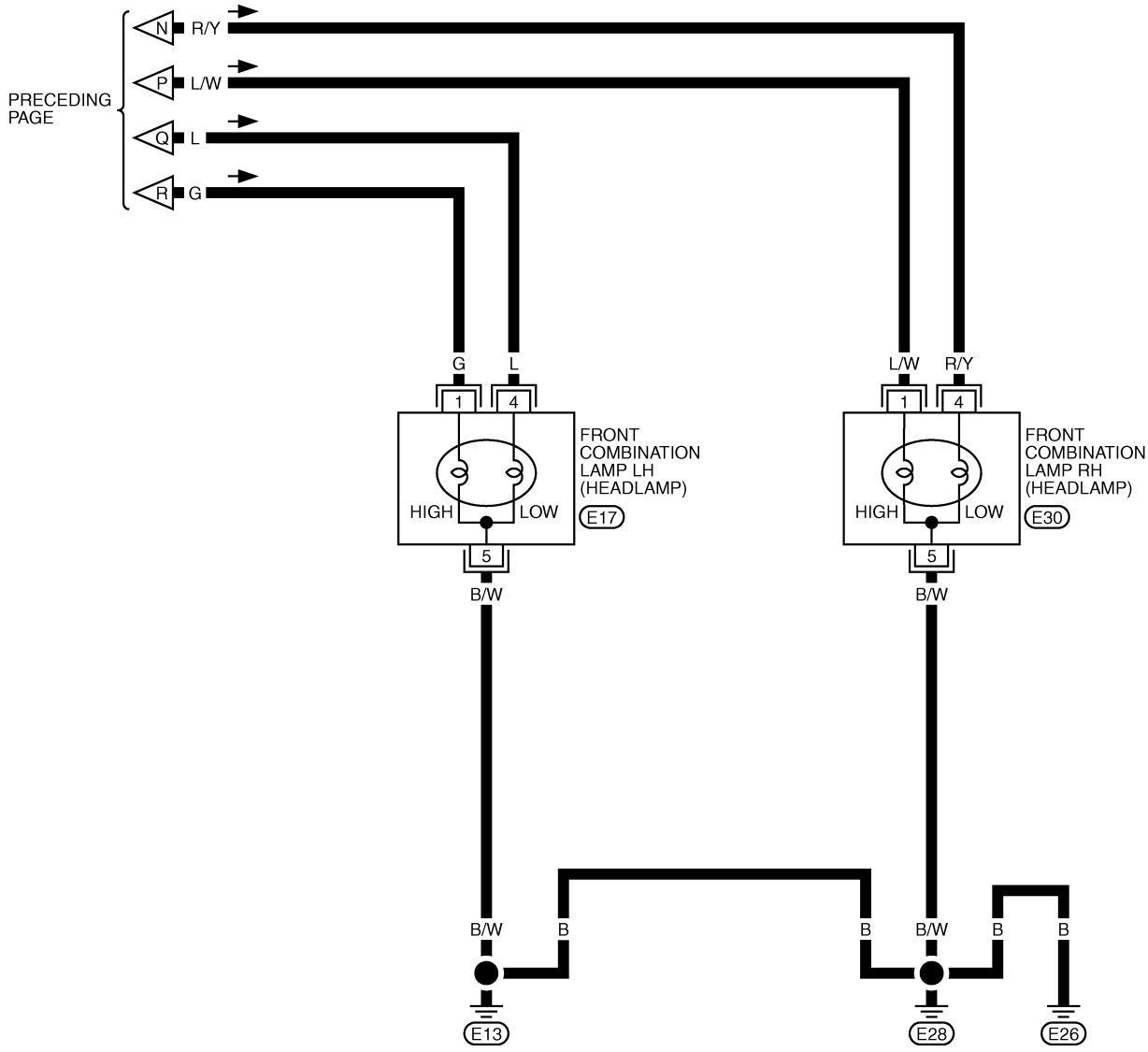


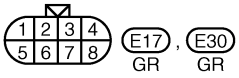




TKWB2556E

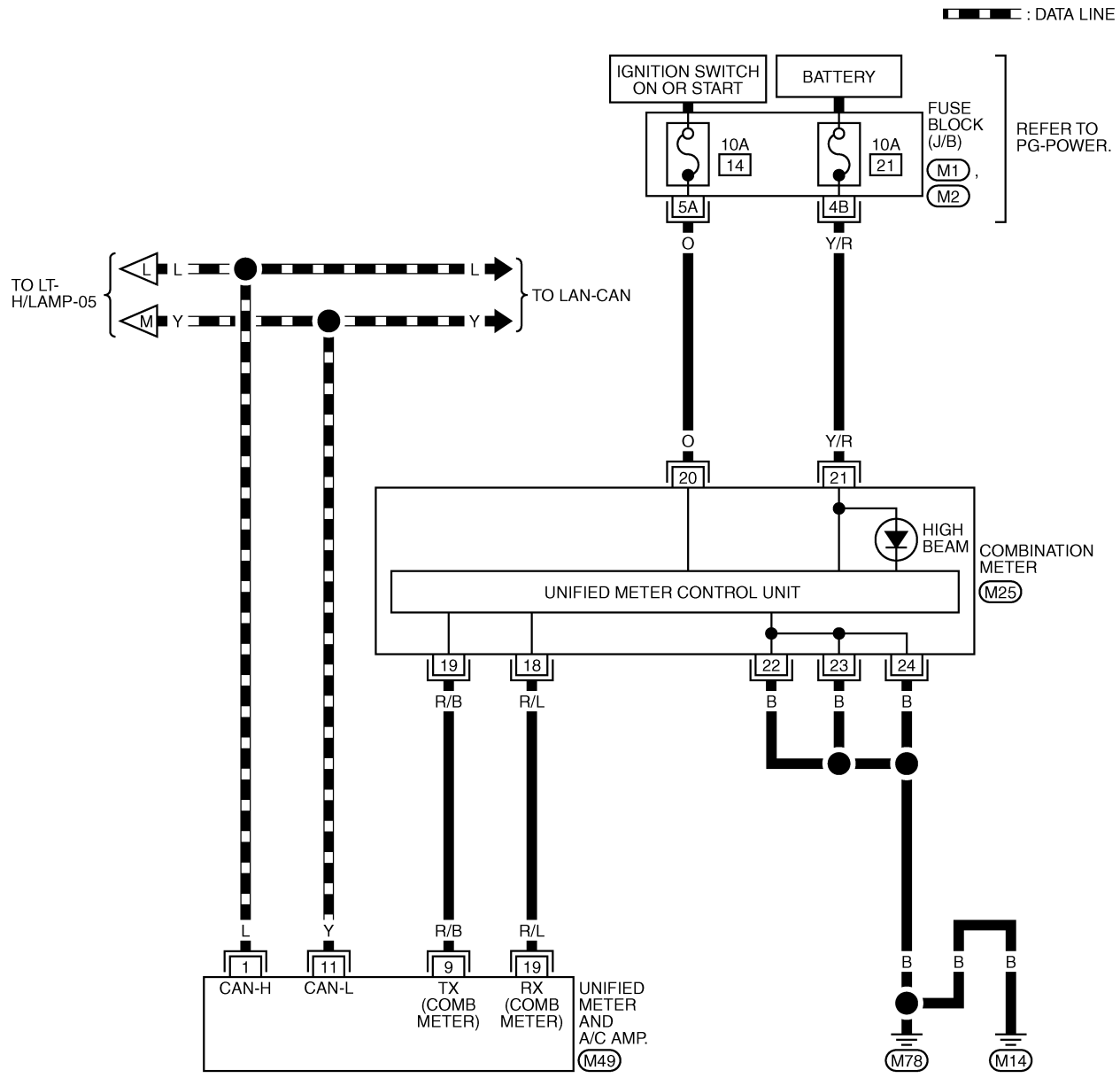
LT-H/LAMP-07

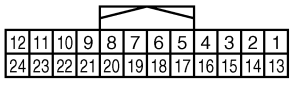




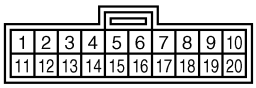
TKWA0745E

LT-H/LAMP-08





M25
W



M49
GR

H.S.

REFER TO THE FOLLOWING.
M1 , M2 -FUSE BLOCK-JUNCTION BOX (J/B)

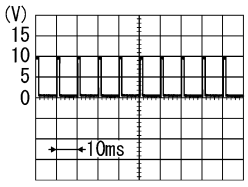
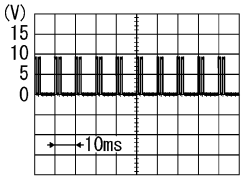
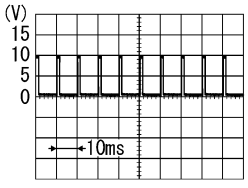
TKWB2557E

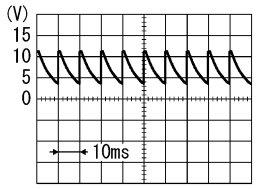
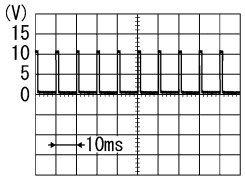
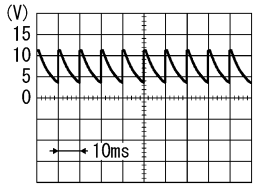
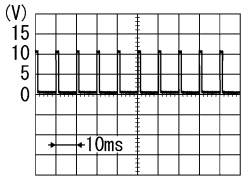
Terminals and Reference Values for BCM

NKS002TO

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 intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-II. Refer to LT-152, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
2	R	Combination switch input 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Lighting switch HIGH beam (Operates only HIGH beam switch)	 PKIB4959J Approx. 1.0 V
					Lighting switch 2ND	 PKIB4953J Approx. 2.0 V
3	P/L	Combination switch input 4	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Any of the conditions below ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch)	 PKIB4959J Approx. 1.0 V
11	P/B	Ignition switch (ACC)	ACC	—		Battery voltage

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
34	LG/R	Combination switch output 3	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Any of the conditions below ● Lighting switch 2ND ● Lighting switch HI beam (Operates only HI beam switch)	 PKIB4958J Approx. 1.2 V
35	G/B	Combination switch output 2	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Any of the conditions below ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch)	 PKIB4958J Approx. 1.2 V
38	R	Ignition switch (ON)	ON	—		Battery voltage
39	L	CAN – H	—	—		—
40	Y	CAN – L	—	—		—
42	GR	Battery power supply	OFF	—		Battery voltage
52	B	Ground	ON	—		Approx. 0 V
55	W/B	Battery power supply	OFF	—		Battery voltage

Terminals and Reference Values for IPDM E/R

NKS001NT

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
20	R/Y	Headlamp low (RH)	ON	Lighting switch 2ND position	OFF	Approx. 0 V
					ON	Battery voltage
27	L/W	Headlamp high (RH)	ON	Lighting switch HIGH or PASS position	OFF	Approx. 0 V
					ON	Battery voltage
28	G	Headlamp high (LH)	ON	Lighting switch HIGH or PASS position	OFF	Approx. 0 V
					ON	Battery voltage
30	L	Headlamp low (LH)	ON	Lighting switch 2ND position	OFF	Approx. 0 V
					ON	Battery voltage
38	B	Ground	ON	—		Approx. 0 V
48	L	CAN – H	—	—		—
49	Y	CAN – L	—	—		—
60	B	Ground	ON	—		Approx. 0 V

How to Proceed With Trouble Diagnosis

NKS001NU

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-37, "System Description" .
3. Perform the preliminary check. Refer to LT-47, "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

NKS001NV

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES AND FUSIBLE LINK

Check for blown fuses and fusible link.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	F
		18
	Ignition switch ON or START position	1
	Ignition switch ACC or ON position	6
IPDM E/R	Battery	72
		74
		76
		86

Refer to LT-41, "Wiring Diagram — H/LAMP —" .

OK or NG

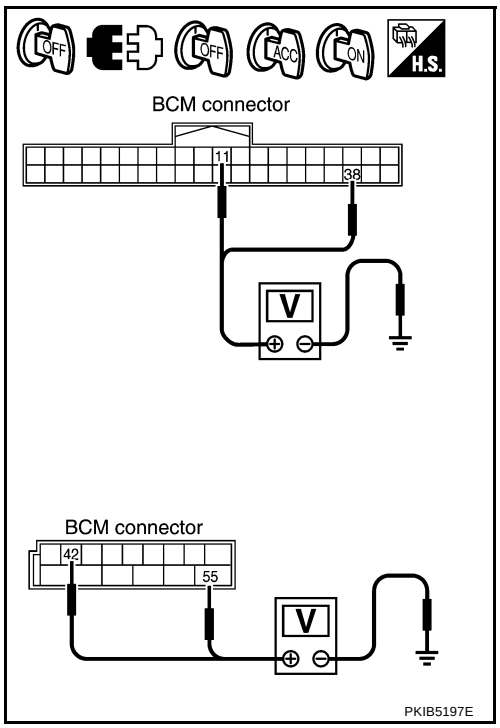
OK >> GO TO 2.

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-3, "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.

(+)		(–)	Ignition switch position		
BCM connector	Terminal		OFF	ACC	ON
M34	11	Ground	Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage
M35	42		Battery voltage	Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage	Battery voltage



OK or NG

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

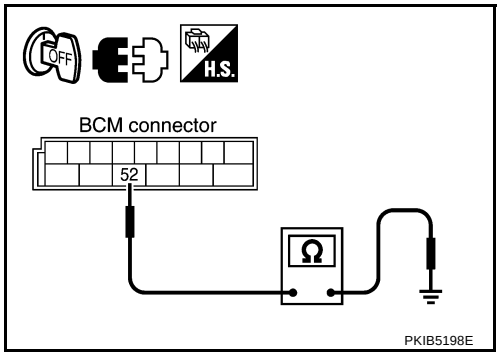
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M35	52		Yes

OK or NG

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



CONSULT-II Functions (BCM)

NKS001NW

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 BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

WORK SUPPORT

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.
3. Touch item 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. Selects exterior lamp battery saver control mode between two ON/OFF.	ON	×
		OFF	—

DATA MONITOR

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
3. Touch either “ALL SIGNALS” or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all the signals.
SELECTION FROM MENU	Selects items and monitors them.

4. When “SELECTION FROM MENU” is selected, touch individual items to be monitored. When “ALL SIGNALS” is selected, all the items will be monitored.
5. Touch “START”.
6. Touch “RECORD” while monitoring, then the status of the monitored item can be recorded. To stop recording, touch “STOP”.

Display Item List

Monitor item		Contents
IGN ON SW	“ON/OFF”	Displays “IGN position (ON)/OFF, ACC position (OFF)” judged from the ignition switch signal.
ACC ON SW	“ON/OFF”	Displays “ACC (ON)/OFF, Ignition OFF (OFF)” status judged from ignition switch signal.
HI BEAM SW	“ON/OFF”	Displays status (high beam switch: ON/Others: OFF) of high beam switch judged from lighting switch signal.
HEAD LAMP SW 1	“ON/OFF”	Displays status (headlamp switch 1: ON/Others: OFF) of headlamp switch 1 judged from lighting switch signal.
HEAD LAMP SW 2	“ON/OFF”	Displays status (headlamp switch 2: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.

Monitor item		Contents
LIGHT SW 1 ST	“ON/OFF”	Displays status (lighting switch 1ST or 2ND position: ON/Others: OFF) of lighting switch judged from lighting switch signal.
AUTO LIGHT SW	“ON/OFF”	Displays status of the lighting switch as judged from the lighting switch signal. (AUTO position: ON/Other than AUTO position: OFF)
PASSING SW	“ON/OFF”	Displays status (flash-to-pass switch: ON/Others: OFF) of flash-to-pass switch judged from lighting switch signal.
FR FOG SW	“ON/OFF”	Displays status (front fog lamp switch: ON/Others: OFF) of front fog lamp switch judged from lighting switch signal.
RR FOG SW NOTE	“OFF”	—
DOOR SW - DR	“ON/OFF”	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - AS	“ON/OFF”	Displays status of the passenger door as judged from the passenger door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RR	“ON/OFF”	Displays status of the rear door as judged from the rear door switch (RH) signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RL	“ON/OFF”	Displays status of the rear door as judged from the passenger door switch (LH) signal. (Door is open: ON/Door is closed: OFF)
BACK DOOR SW	“ON/OFF”	Displays status of the back door as judged from the back door switch signal. (Door is open: ON/Door is closed: OFF)
TURN SIGNAL R	“ON/OFF”	Displays status (Turn right: ON/Others: OFF) as judged from lighting switch signal.
TURN SIGNAL L	“ON/OFF”	Displays status (Turn left: ON/Others: OFF) as judged from lighting switch signal.
CARGO LAMP SW NOTE	“OFF”	—
OPTICAL SENSOR	“0 - 5V”	Displays “outside brightness (close to 5V when light/close to 0V when dark)” judged from optical sensor signal.

NOTE:
This item is displayed, but cannot be monitored.

ACTIVE TEST

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
3. Touch item to be tested and check operation of the selected item.
4. During the operation check, touching “OFF” deactivates the operation.

Display Item List

Test item	Description
TAIL LAMP	Allows tail lamp relay to operate by switching ON–OFF.
HEAD LAMP	Allows headlamp relay to operate by switching ON–OFF.
FR FOG LAMP	Allows fog lamp relay to operate by switching ON–OFF.
CORNERING LAMP NOTE	—

NOTE:
This item is displayed, but cannot be tested.

CONSULT-II Functions (IPDM E/R)

NKS001NX

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

Diagnosis Mode	Description
SELF-DIAGNOSTIC RESULTS	Refer to PG-19, "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 BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

DATA MONITOR

Operation Procedure

1. Touch “DATA MONITOR” on “SELECT DIAG MODE ” screen.
2. Touch “ALL SIGNALS”, “MAIN SIGNALS”, or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all items.
MAIN SIGNALS	Monitor the predetermined item.
SELECTION FROM MENU	Selects items and monitors them.

3. Touch the required monitoring item on “SELECTION FROM MENU”. In “ALL SIGNALS”, all items are monitored. In “MAIN SIGNALS”, predetermined items are monitored.
4. Touch “START”.
5. Touch “RECORD” while monitoring to record the status of the item being monitored. To stop recording, touch “STOP”.

All Signals, Main Signals, Selection From Menu

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

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

ACTIVE TEST

Operation Procedure

1. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Touch item to be tested, and check operation.
3. Touch “START”.
4. Touch “OFF” while testing to stop the operation.

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

Headlamp High Beams Do Not Illuminate (Both Side)

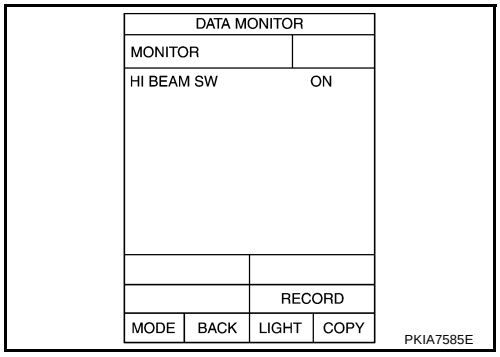
NKS001NY

1. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

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

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



Without CONSULT-II

Refer to LT-153, "Combination Switch Inspection" .

OK or NG

OK >> GO TO 2.

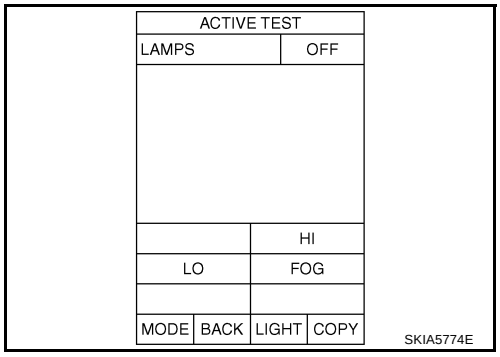
NG >> Check combination switch (lighting switch). Refer to LT-153, "Combination Switch Inspection" .

2. HEADLAMP ACTIVE TEST

With CONSULT-II

1. Select “IPDM E/R” on CONSULT-II, and select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Select “LAMPS” 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-21, "Auto Active Test" .
2. Make sure headlamp high beam operates.

Headlamp high beam should operate.

OK or NG

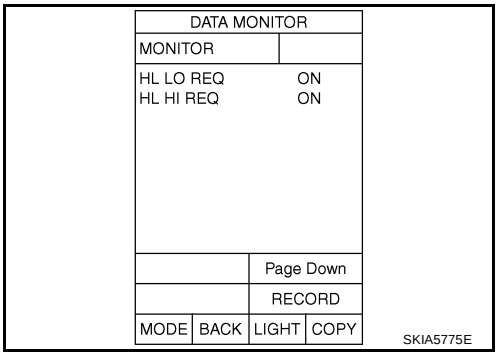
OK >> GO TO 3.

NG >> GO TO 4.

3. CHECK IPDM E/R

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

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



OK or NG

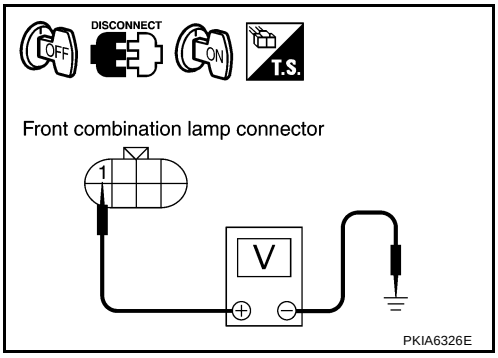
OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .

NG >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

4. CHECK HEADLAMP INPUT SIGNAL

With CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front 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 “LAMPS” on “SELECT TEST ITEM” screen.
5. Touch “HI” screen.
6. When headlamp high beam is operating, check voltage between front combination lamp (RH and LH) harness connector and ground (Headlamp high beam repeats ON–OFF every 1 second).



(+)			(–)	Voltage
Front combination lamp connector		Terminal		
RH	E30	1	Ground	Battery voltage
LH	E17	1		

Without CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH and LH connectors.
3. Start auto active test. Refer to PG-21, "Auto Active Test" .
4. When headlamp high beam is operating, check voltage between front combination lamp (RH and LH) harness connector and ground.

(+)			(–)	Voltage
Front combination lamp connector		Terminal		
RH	E30	1	Ground	Battery voltage
LH	E17	1		

OK or NG

OK >> GO TO 6.

NG >> GO TO 5.

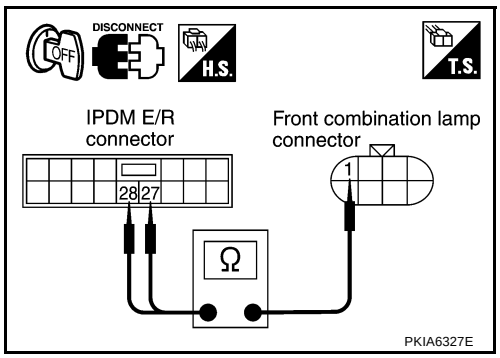
5. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 27 and front combination lamp RH harness connector E30 terminal 1.

27 – 1 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 28 and front combination lamp LH harness connector E17 terminal 1.

28 – 1 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

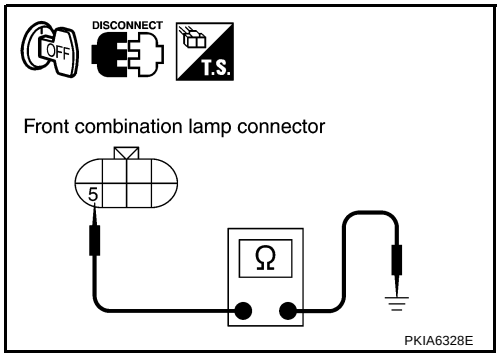
6. CHECK HEADLAMP GROUND

1. Check continuity between front combination lamp RH harness connector E30 terminal 5 and ground.

5 – Ground : Continuity should exist.

2. Check continuity between front combination lamp LH harness connector E17 terminal 5 and ground.

5 – Ground : Continuity should exist.



OK or NG

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

Headlamp High Beam Does Not Illuminate (One Side)

NKS001NZ

1. CHECK BULB

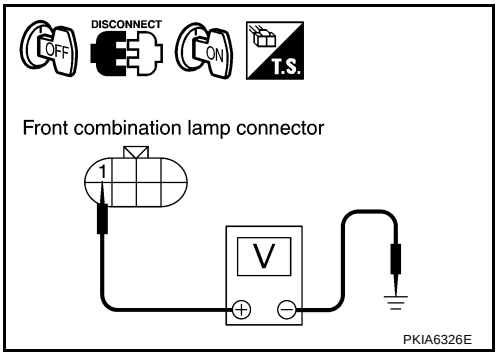
Check bulb of lamp which does not illuminate.

OK or NG

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

2. CHECK HEADLAMP INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH or LH connectors.
3. Turn ignition switch ON.
4. Lighting switch is turned HIGH BEAM position.
5. Check voltage between front combination lamp RH or LH harness connectors and ground.



(+)			(–)	Voltage
Front combination lamp connector		Terminal		
RH	E30	1	Ground	Battery voltage
LH	E17	1		

OK or NG

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

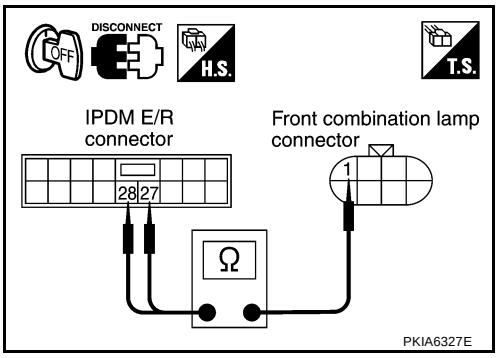
3. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 27 and front combination lamp RH harness connector E30 terminal 1.

27 – 1 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 28 and front combination lamp LH harness connector E17 terminal 1.

28 – 1 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

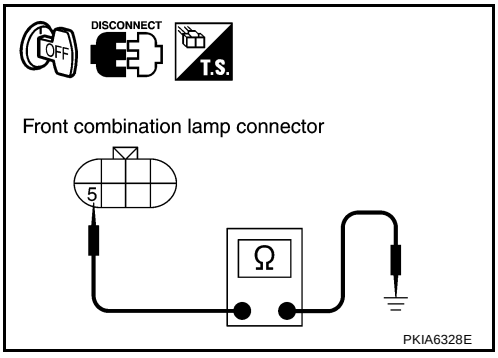
4. CHECK HEADLAMP GROUND

1. Check continuity between front combination lamp RH harness connector E30 terminal 5 and ground.

5 – Ground : Continuity should exist.

2. Check continuity between front combination lamp LH harness connector E17 terminal 5 and ground.

5 – Ground : Continuity should exist.



OK or NG

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

Headlamp Low Beams Do Not Illuminate (Both Sides)

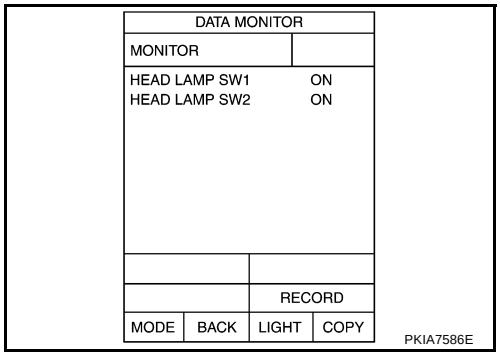
NKS001O1

1. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

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

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



Without CONSULT-II

Refer to LT-153, "Combination Switch Inspection" .

OK or NG

OK >> GO TO 2.

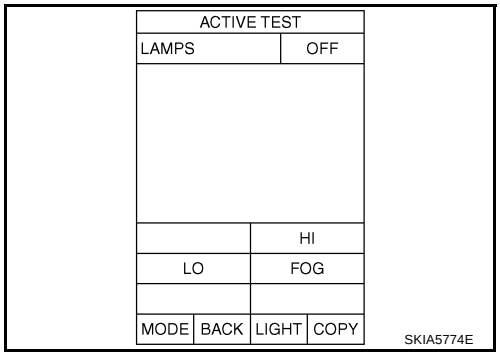
NG >> Check combination switch (lighting switch). Refer to LT-153, "Combination Switch Inspection" .

2. HEADLAMP ACTIVE TEST

With CONSULT-II

1. Select “IPDM E/R” on CONSULT-II, and select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Select “LAMPS” 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-21, "Auto Active Test" .
2. Make sure headlamp low beam operates.

Headlamp low beam should operate.

OK or NG

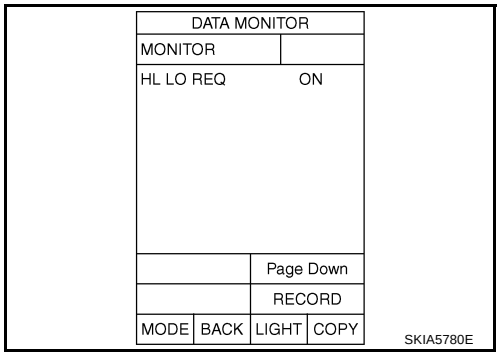
OK >> GO TO 3.

NG >> GO TO 4.

3. CHECK IPDM E/R

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

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



OK or NG

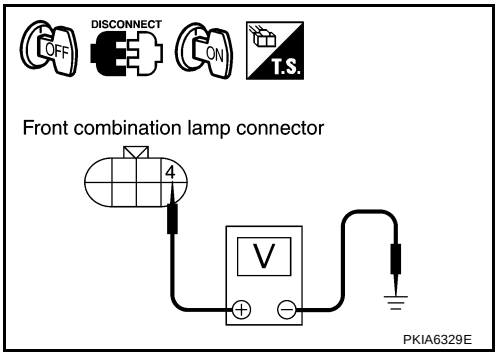
OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .

NG >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

4. CHECK HEADLAMP INPUT SIGNAL

With CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front 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 “LAMPS” on “SELECT TEST ITEM” screen.
5. Touch “LO” screen.
6. When headlamp low beam is operating, check voltage between front combination lamp (RH and LH) harness connector and ground.



(+)			(–)	Voltage
Front combintin lamp connector		Terminal		
RH	E30	4	Ground	Battery voltage
LH	E17	4		

Without CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH and LH connectors.
3. Start auto active test. Refer to PG-21, "Auto Active Test" .
4. When headlamp low beam is operating, check voltage between front combination lamp (RH and LH) harness connector and ground.

(+)			(–)	Voltage
Front combintin lamp connector		Terminal		
RH	E30	4	Ground	Battery voltage
LH	E17	4		

OK or NG

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

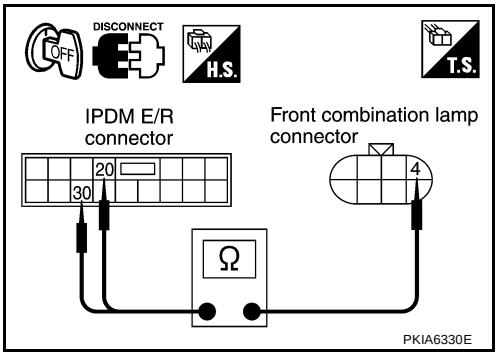
5. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 20 and front combination lamp RH harness connector E30 terminal 4.

20 – 4 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 30 and front combination lamp LH harness connector E17 terminal 4.

30 – 4 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

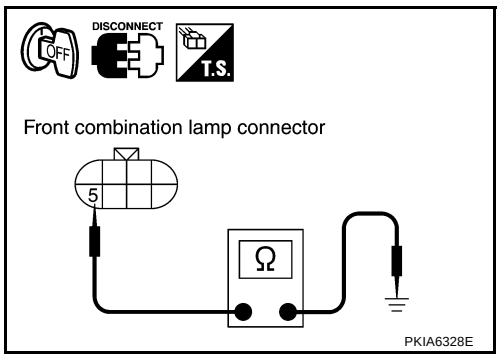
6. CHECK HEADLAMP GROUND

1. Turn ignition switch OFF.
2. Check continuity between front combination lamp RH harness connector E30 terminal 5 and ground.

5 – Ground : Continuity should exist.

3. Check continuity between front combination lamp LH harness connector E17 terminal 5 and ground.

5 – Ground : Continuity should exist.



OK or NG

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

Headlamp Low Beam Does Not Illuminate (One Side)

NKS001O2

1. CHECK BULB

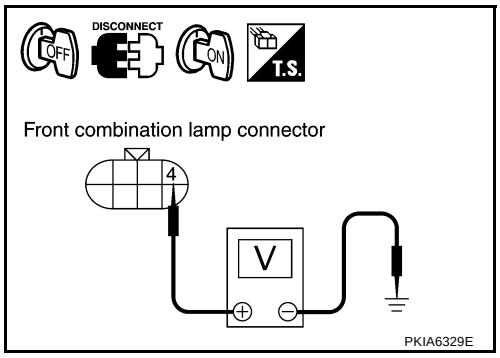
Check bulb of lamp which does not illuminate.

OK or NG

OK >> GO TO 2.
NG >> Repair malfunctioning part.

2. CHECK HEADLAMP INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH or LH connectors.
3. Turn ignition switch ON.
4. Lighting switch is turned 2ND position.
5. Check voltage between front combination lamp RH or LH harness connectors and ground.



(+)			(–)	Voltage
Front combintin lamp connector		Terminal		
RH	E30	4	Ground	Battery voltage
LH	E17	4		

OK or NG

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

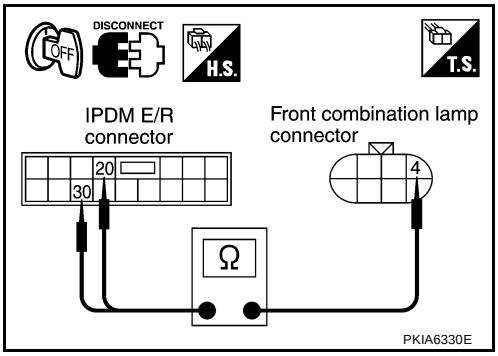
3. CHECK HEADLAMP CIRCUIT

1. Disconnect IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector E7 terminal 20 and front combination lamp RH harness connector E30 terminal 4.

20 – 4 : Continuity should exist.

3. Check continuity between IPDM E/R harness connector E7 terminal 30 and front combination lamp LH harness connector E17 terminal 4.

30 – 4 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

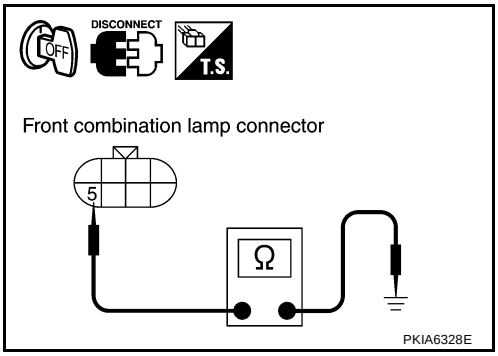
4. CHECK HEADLAMP GROUND

1. Check continuity between front combination lamp RH harness connector E30 terminal 5 and ground.

5 – Ground : Continuity should exist.

2. Check continuity between front combination lamp LH harness connector E17 terminal 5 and ground.

5 – Ground : Continuity should exist.



OK or NG

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

Headlamp RH Low Beam and High Beam Do Not Illuminate

NKS001O3

1. CHECK BULB

Check bulb of lamp which does not illuminate.

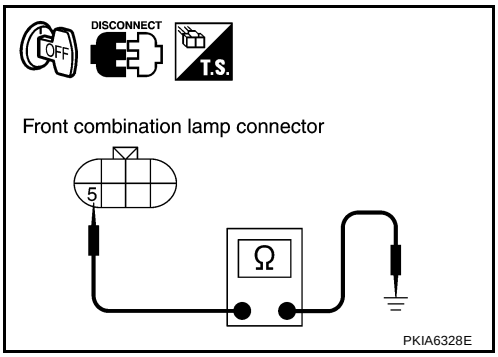
OK or NG

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

2. CHECK HEADLAMP GROUND

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH connector.
3. Check continuity between front combination lamp RH harness connector E30 terminal 5 and ground.

5 – Ground : Continuity should exist.



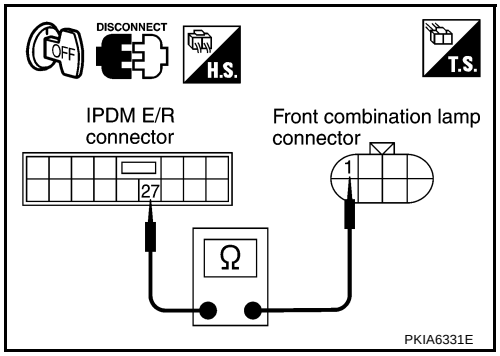
OK or NG

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

3. CHECK HEADLAMP CIRCUIT

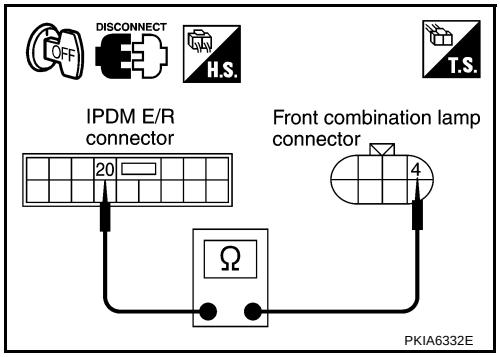
1. Disconnect IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector E7 terminal 27 and front combination lamp RH harness connector E30 terminal 1.

27 – 1 **: Continuity should exist.**



3. Check continuity between IPDM E/R harness connector E7 terminal 20 and front combination lamp RH harness connector E30 terminal 4.

20 – 4 **: Continuity should exist.**



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

Headlamp LH Low Beam and High Beam Do Not Illuminate

NKS001O4

1. CHECK BULB

Check bulb of lamp which does not illuminate.

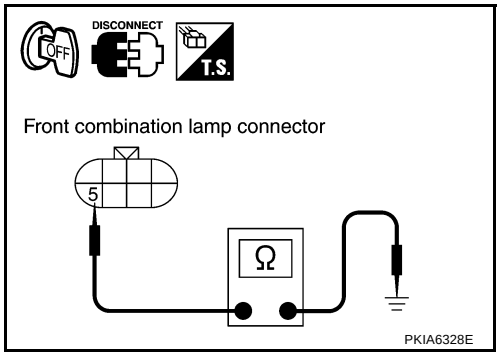
OK or NG

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

2. CHECK HEADLAMP GROUND

1. Disconnect front combination lamp LH connector.
2. Check continuity between front combination lamp LH harness connector E17 terminal 5 and ground.

5 – Ground **: Continuity should exist.**



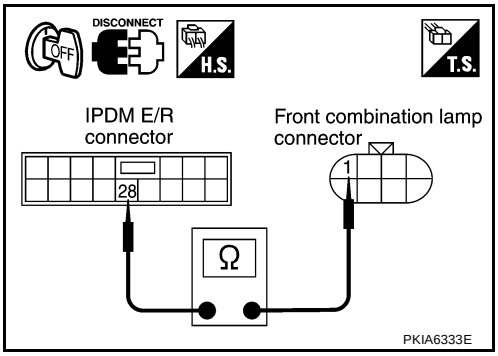
OK or NG

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

3. CHECK HEADLAMP CIRCUIT

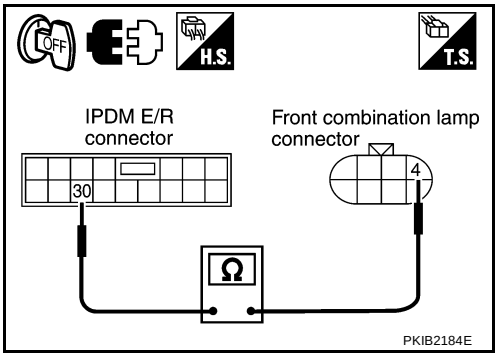
1. Disconnect IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector E7 terminal 28 and front combination lamp LH harness connector E17 terminal 1.

28 – 1 : Continuity should exist.



3. Check continuity between IPDM E/R harness connector E7 terminal 30 and front combination lamp LH harness connector E17 terminal 4.

30 – 4 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

Headlamps Do Not Turn OFF

NKS001O5

1. CHECK HEADLAMP TURN OFF

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

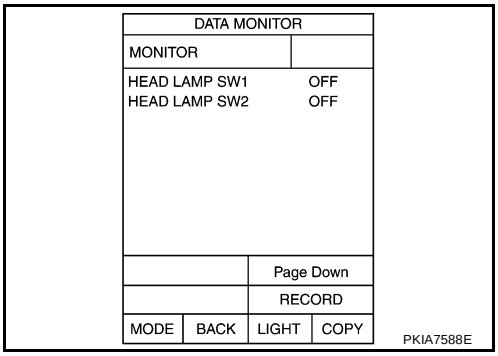
OK or NG

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

2. CHECK COMBINATION SWITCH INPUT SIGNAL

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

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



OK or NG

OK >> Replace IPDM E/R. Referto PG-28, "Removal and Installation of IPDM E/R" .
NG >> Check combination lamp (lighting switch). Refer to LT-153, "Combination Switch Inspection" .

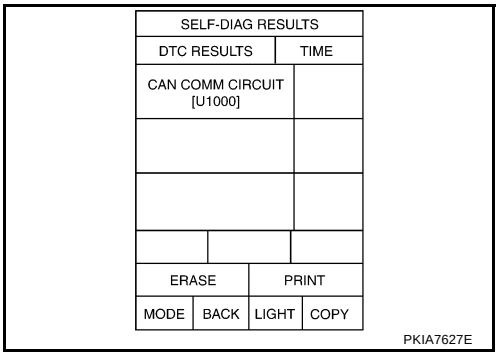
3. CHECKING CAN COMMUNICATIONS BETWEEN BCM AND IPDM E/R

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

Display of self-diagnosis results

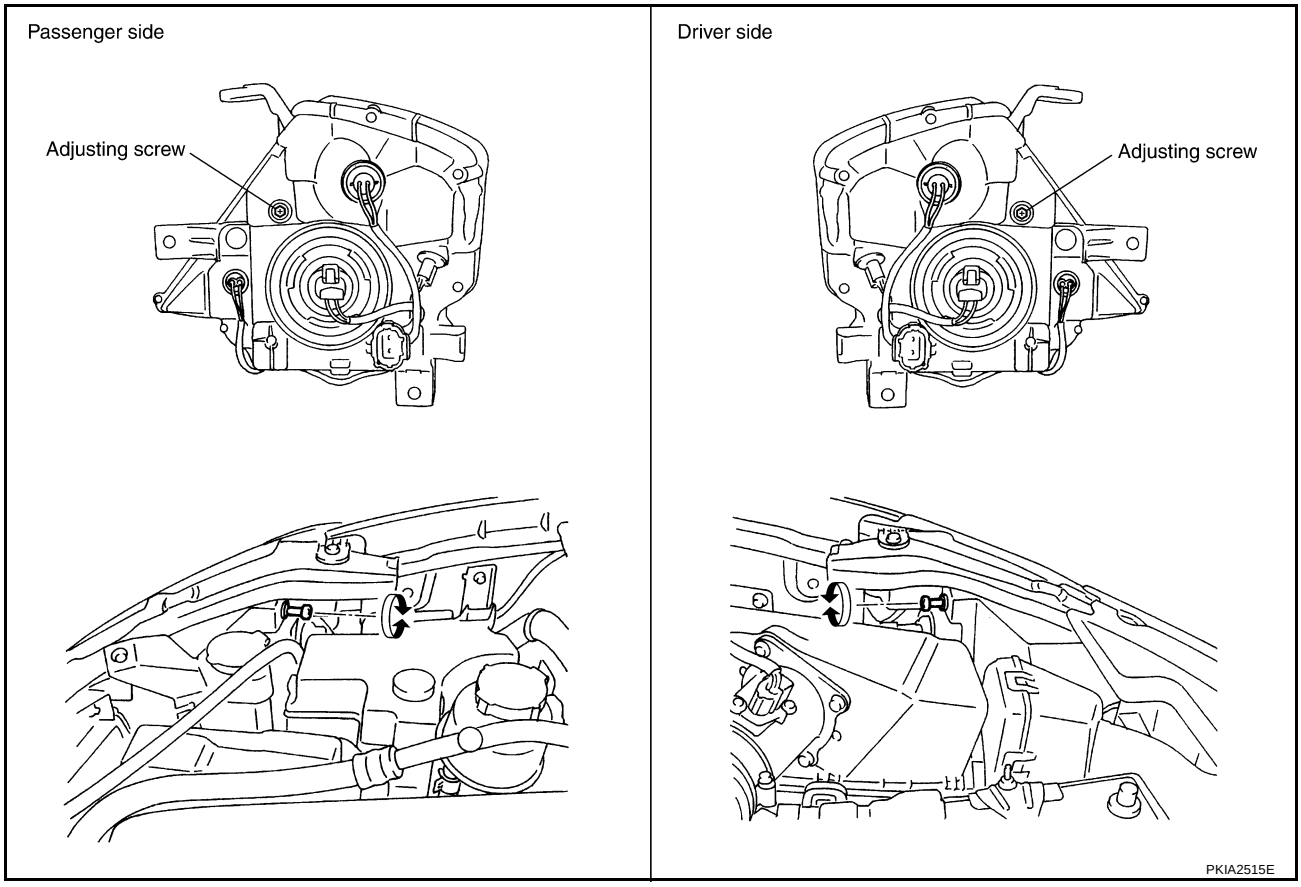
NO DTC>> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .

CAN COMM CIRCUIT>> Refer to BCS-13, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .



Aiming Adjustment

NKS001O6



PREPARATION BEFORE ADJUSTING

For Details, Refer To the Regulations In Your Own Country.

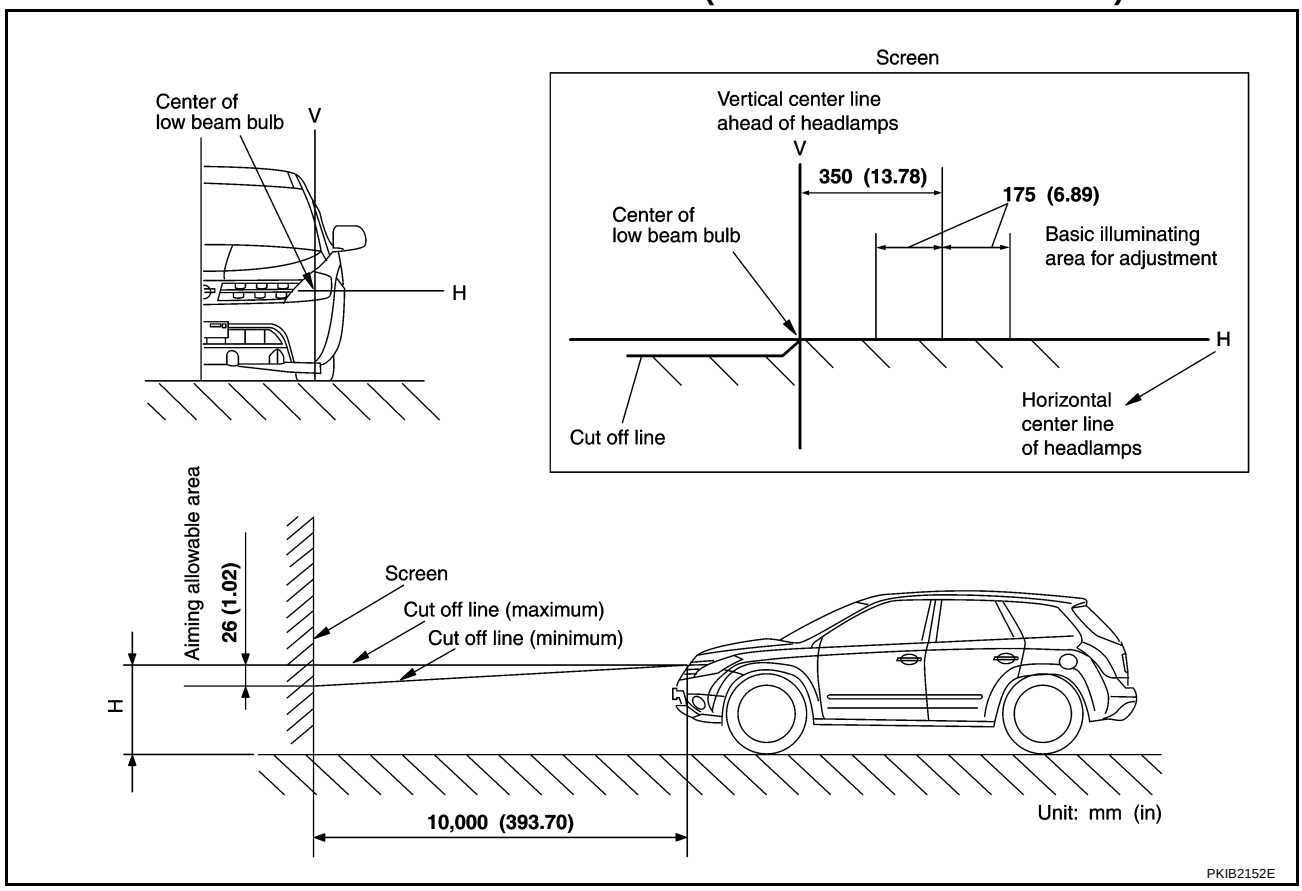
Before performing aiming adjustment, check the following.

1. Keep all tires inflated to correct pressures.
2. Place vehicle on level ground.
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

1. Turn headlamp low beam ON.
2. Use adjusting screws to perform aiming adjustment.

ADJUSTMENT USING AN ADJUSTMENT SCREEN (LIGHT/DARK BORDERLINE)



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.

- Basic illumination area for adjustment should be within the range shown on the aiming chart. Adjust headlamp accordingly.

Bulb Replacement

NKS001O7

HEADLAMP HIGH/LOW BEAM

1. Turn lighting switch OFF.
2. Remove fender protector (front). Refer to EI-21, "FENDER PROTECTOR" .
3. Turn plastic cap counterclockwise and unlock it.
4. Disconnect bulb terminal.
5. Unlock retaining spring and remove bulb from headlamp.
6. Installation is the reverse order of removal.

Headlamp high/low beam (Halogen) : 12V - 65/55W (HB5)

PARKING LAMP

1. Turn lighting switch OFF.
2. Remove air cleaner case (when replacing LH bulb). Refer to EM-16, "AIR CLEANER AND AIR DUCT" .
3. Remove IPDM E/R (when replacing RH bulb). Refer to PG-28, "Removal and Installation of IPDM E/R" .
4. Turn bulb socket counterclockwise and unlock it.
5. Remove bulb from its socket.
6. Installation is the reverse order of removal.

Parking lamp : 12V - 3.8W

FRONT TURN SIGNAL LAMP

1. Turn lighting switch OFF.
2. Remove fender protector (front). Refer to EI-21, "FENDER PROTECTOR" .
3. Turn bulb socket counterclockwise and unlock it.
4. Remove bulb from its socket.
5. Installation is the reverse order of removal.

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

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

FRONT SIDE MARKER LAMP

1. Turn lighting switch OFF.
2. Remove fender protector (front). Refer to EI-21, "FENDER PROTECTOR" .
3. Turn bulb socket counterclockwise and unlock it.
4. Remove bulb from its socket.
5. Installation is the reverse order of removal.

Front side marker lamp : 12V - 3.8W

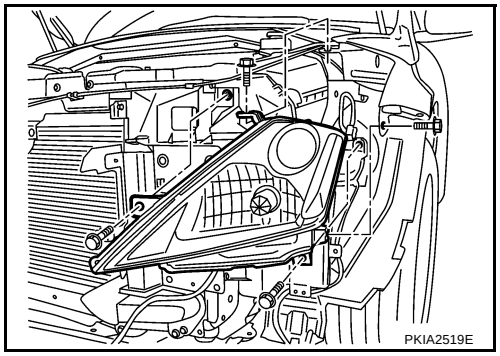
CAUTION:
After installing bulb, be sure to install plastic cap and socket securely to insure watertightness.

Removal and Installation

NKS001O8

REMOVAL

1. Remove front bumper. Refer to EI-14, "FRONT BUMPER" .
2. Remove headlamp mounting bolts.
3. Remove plastics bumper bracket, then pull headlamp toward vehicle front, disconnect connector, and remove headlamp.



INSTALLATION

Installation is the reverse order of removal.

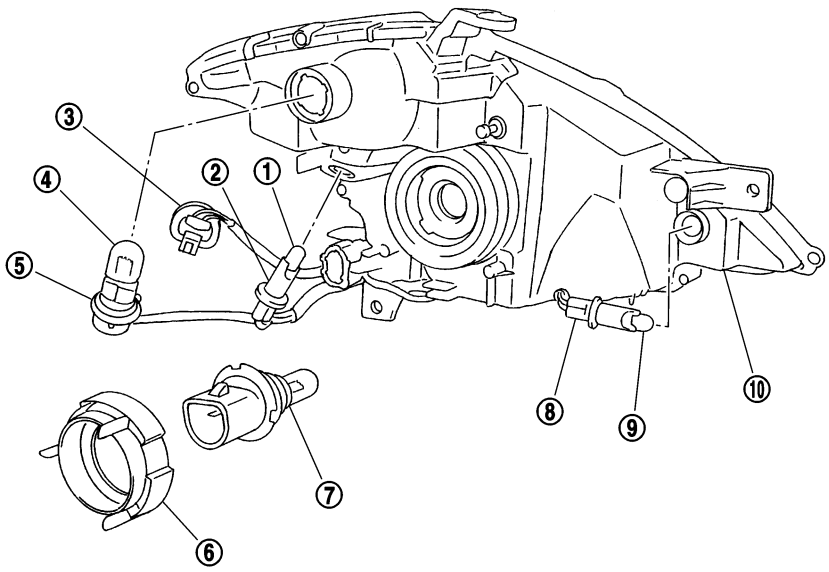
Headlamp mounting bolt : 5.1N·m (0.52 kg-m, 45 in-lb)

NOTE:
After installation, perform aiming adjustment. Refer to LT-62, "Aiming Adjustment" .

Disassembly and Assembly

NKS001O9

HALOGEN TYPE



1. Side marker lamp bulb
2. Side marker lamp bulb socket
3. Halogen bulb connector
4. Front turn signal lamp bulb
5. Front turn signal lamp bulb socket
6. Plastic holder
7. Halogen bulb
8. Parking lamp bulb socket
9. Parking lamp bulb
10. Headlamp housing assembly

DISASSEMBLY

1. Disconnect the connector to the halogen bulb (high/low).
2. Turn plastic holder counterclockwise and unlock it.
3. Disconnect bulb socket.
4. Unlock retaining spring, and remove halogen bulb (high/low).
5. Turn parking lamp bulb socket counterclockwise and unlock it.
6. Remove parking lamp bulb from its socket.
7. Turn front turn signal lamp bulb socket counterclockwise and unlock it.
8. Remove front turn signal lamp bulb from its socket.
9. Turn front side marker lamp bulb socket counterclockwise and unlock it.
10. Remove front side lamp marker lamp bulb from its socket.

ASSEMBLY

Assembly is the reverse order of disassembly.

CAUTION:

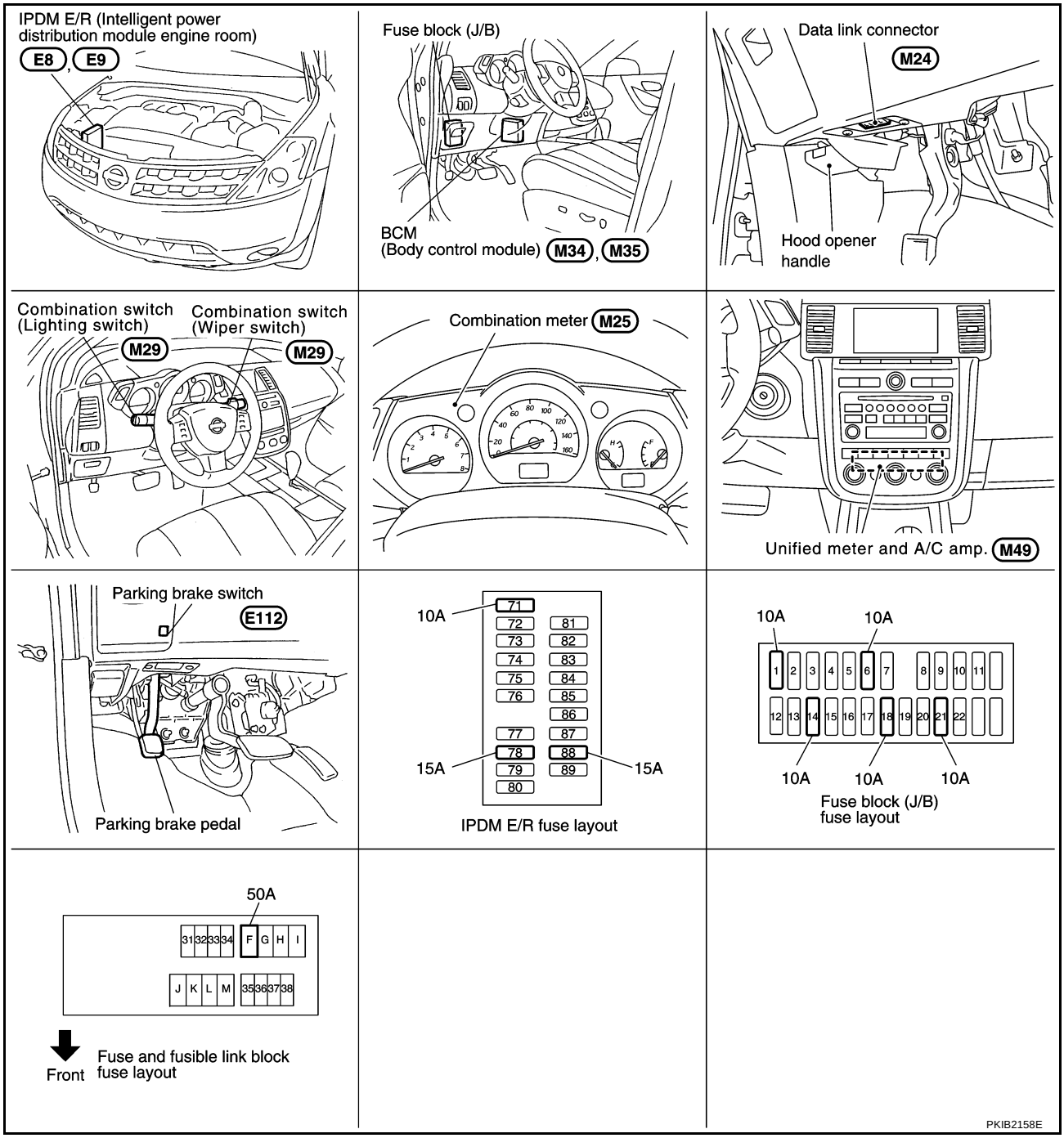
After installing bulb, be sure to install plastic cap and bulb socket securely to insure watertightness.

DAYTIME LIGHT SYSTEM

PFP:284B2

Component Parts and Harness Connector Location

NKS001OA



System Description

NKS001OB

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

OUTLINE

Power is supplied at all times

- to ignition relay located in IPDM E/R (intelligent power distribution module engine room), from battery direct,

- through 15A fuse (No. 88, located in IPDM E/R)
- to front fog lamp relay located in IPDM E/R,
- through 10A fuse (No. 71, located in IPDM E/R)
- to CPU (central processing unit) located in IPDM E/R,
- through 15A fuse (No. 78, located in IPDM E/R)
- to CPU located in IPDM E/R,
- through 50A fusible link (letter F, located in fuse and fusible link block)
- to BCM terminal 55,
- through 10A fuse [No. 18, located in fuse block (J/B)]
- to BCM terminal 42,
- through 10A fuse [No. 21, located in fuse block (J/B)]
- to combination meter terminal 21.

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

- to ignition relay located in IPDM E/R, from battery direct,
- through 10A fuse [No. 1, located in fuse block (J/B)]
- to BCM terminal 38,
- through 10A fuse [No. 14, located in fuse block (J/B)]
- to combination meter terminal 20.

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

- through 10A fuse [No. 6, located in fuse block (J/B)]
- to BCM terminal 11.

Ground is supplied

- to BCM terminal 52
- through grounds M14 and M78,
- to IPDM E/R terminals 38 and 60
- through grounds E13, E26 and E28,
- to combination meter terminals 22, 23 and 24
- through grounds M14 and M78.

DAYTIME LIGHT OPERATION

Once the parking brake is turned OFF after ignition switch ON, if the lighting switch is turned OFF while engine running, the BCM sends front fog lamp request signal (ON) through CAN communication.
When receiving front fog lamp request signal (ON), IPDM E/R turns ON front fog lamp relay in IPDM E/R. IPDM E/R supplies power

- through IPDM E/R terminal 37
- to front fog lamp LH terminal 1,
- through IPDM E/R terminal 36
- to front fog lamp RH terminal 1.

Ground is supplied

- to front fog lamp RH and LH terminals 2
- through grounds E13, E26 and E28.

With power and ground supplied, front fog lamps illuminate.

COMBINATION SWITCH READING FUNCTION

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

EXTERIOR LAMP BATTERY SAVER CONTROL

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

AUTO LIGHT OPERATION

For auto light operation, refer to LT-84, "System Description" in “AUTO LIGHT SYSTEM”.

CAN Communication System Description

NKS001OC

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.

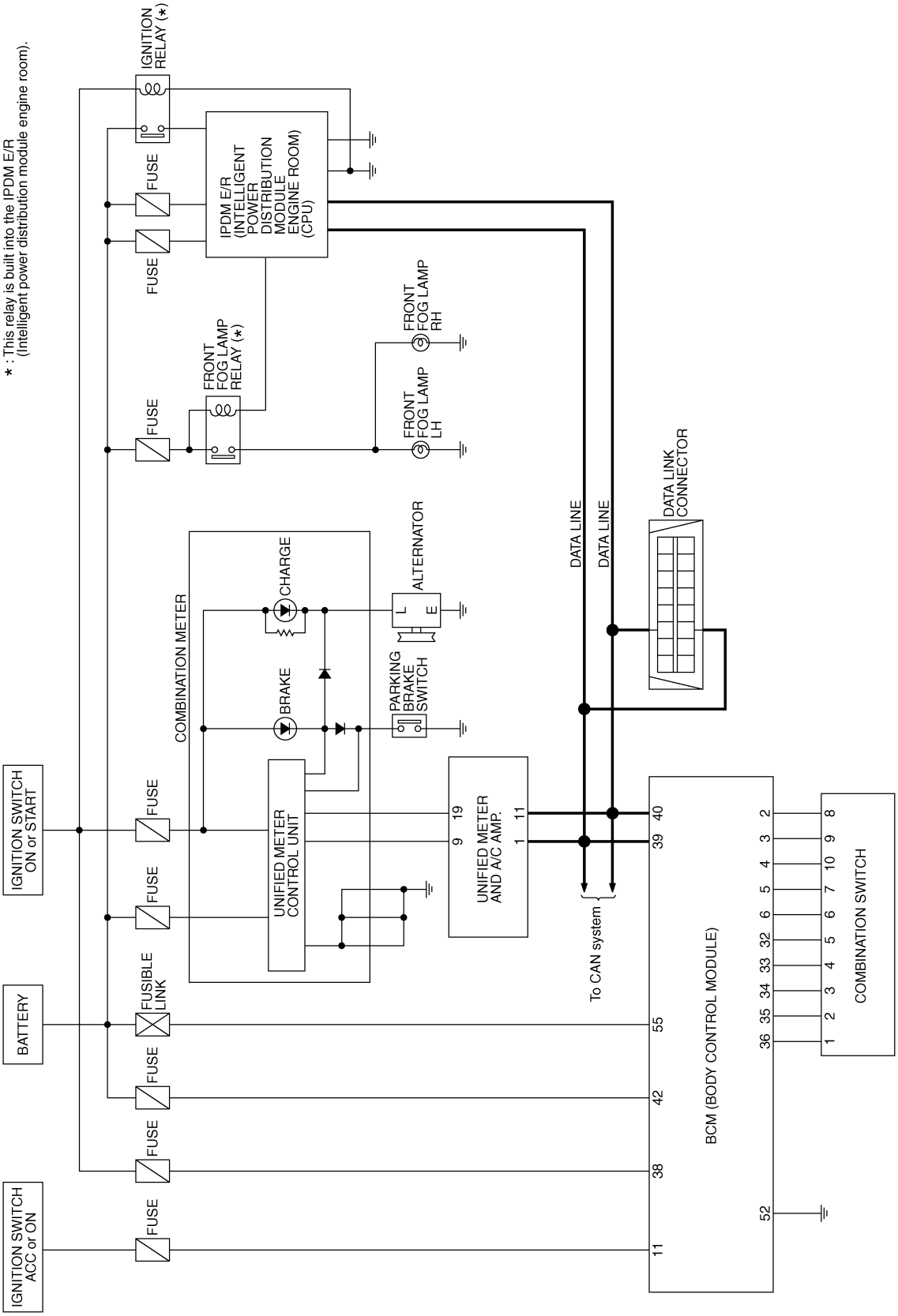
CAN Communication Unit

NKS001OD

Refer to LAN-49, "CAN System Specification Chart" .

Schematic

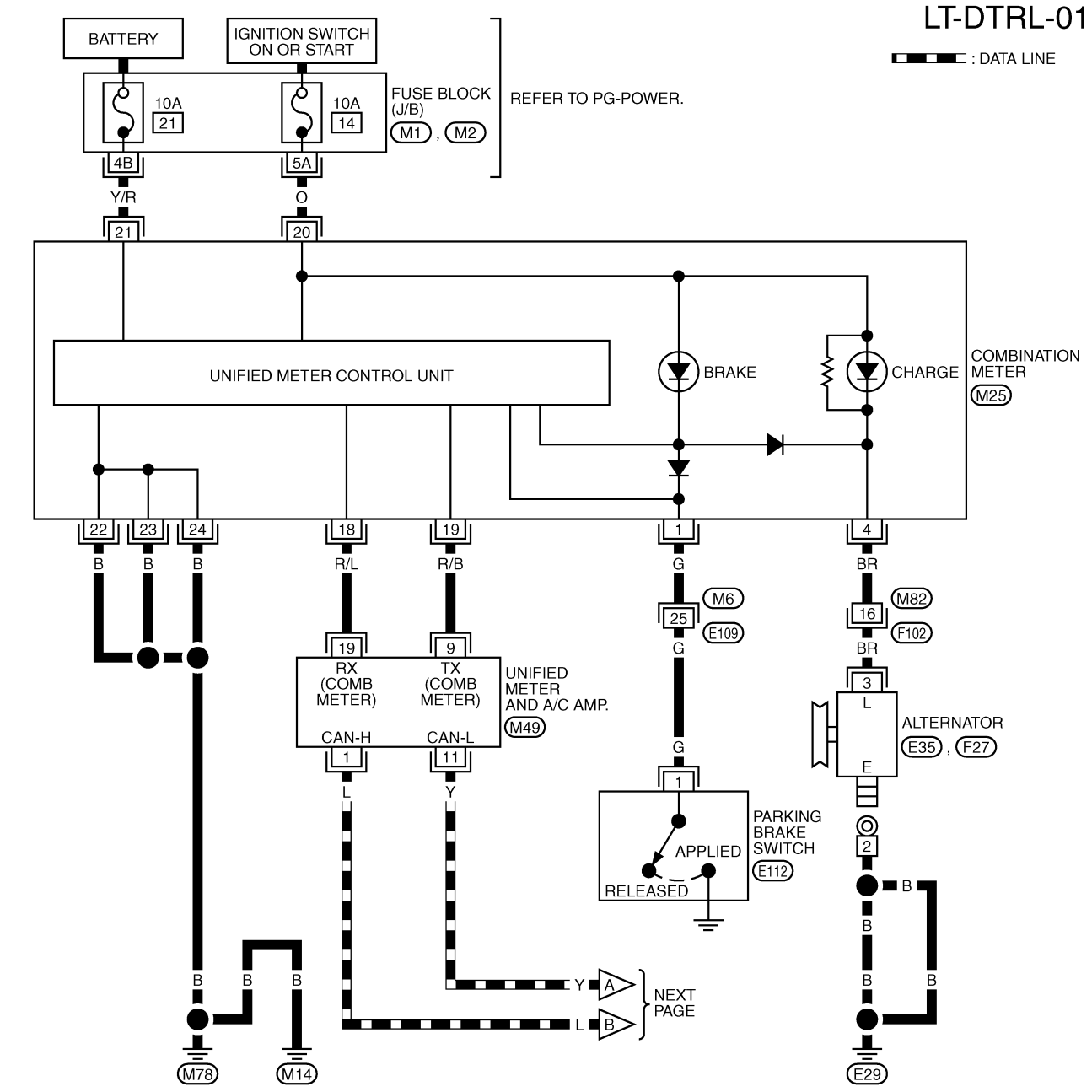
NKS001OE



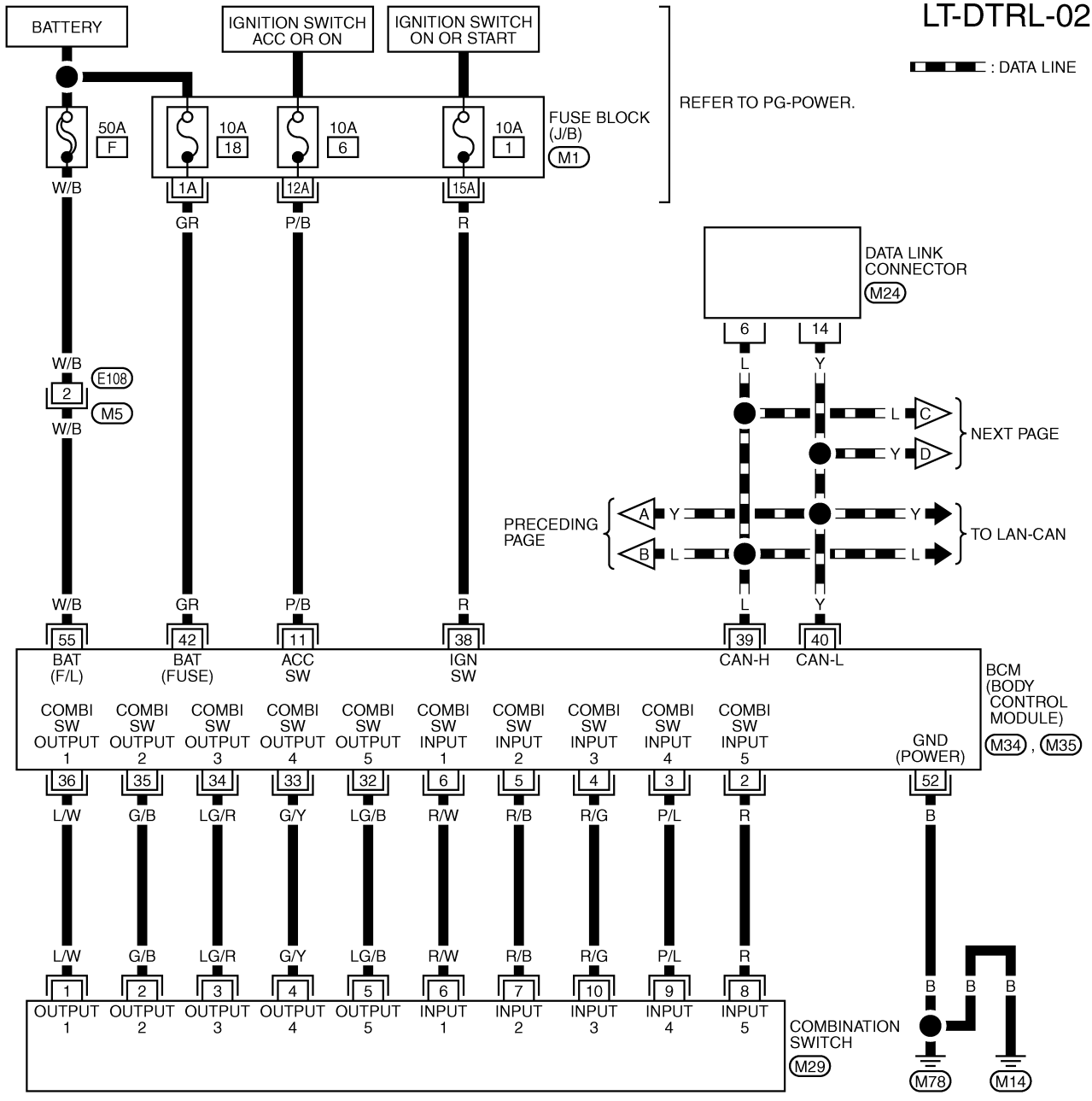
TKWB0446E

Wiring Diagram — DTRL —

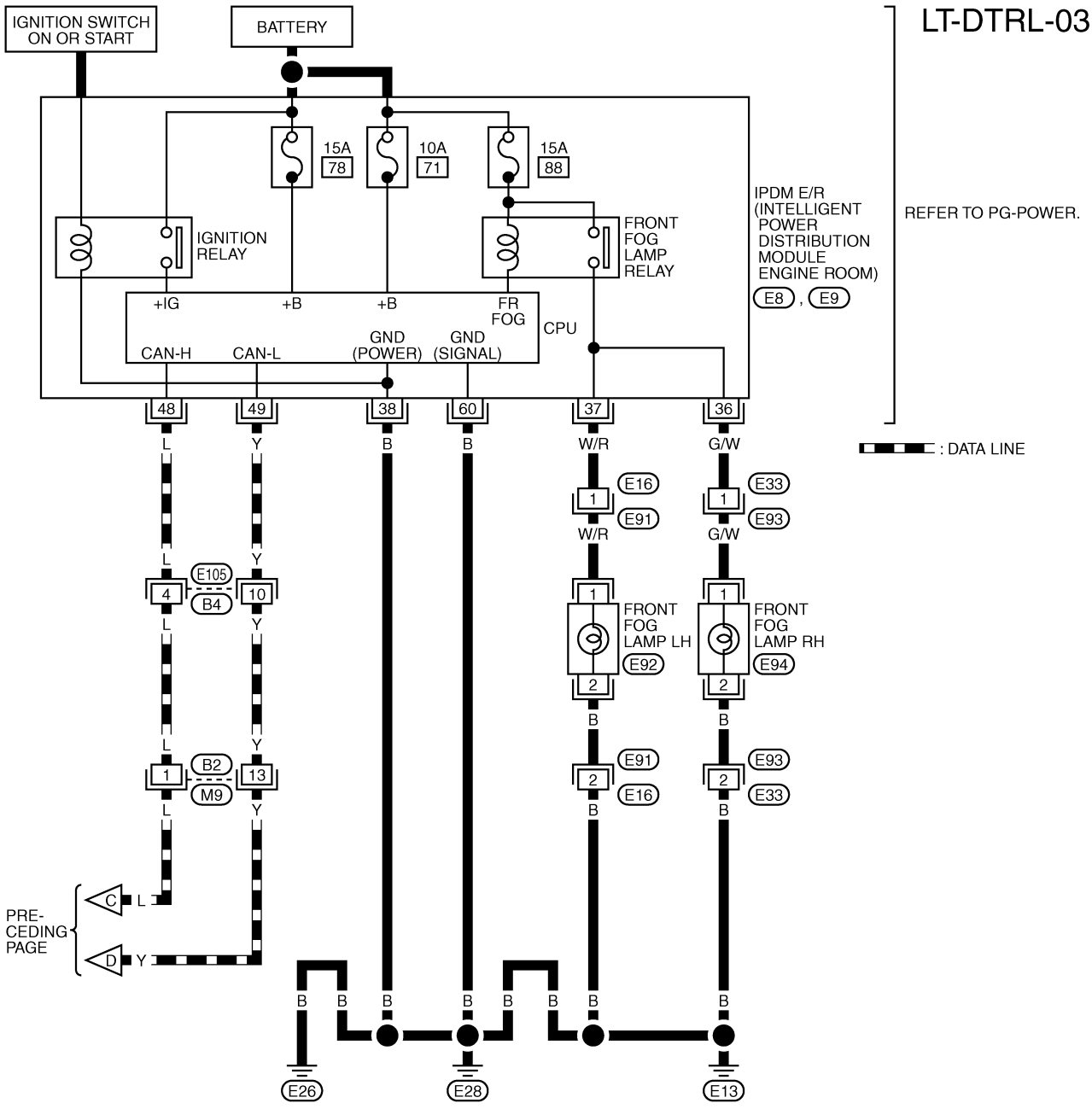
NKS001OF

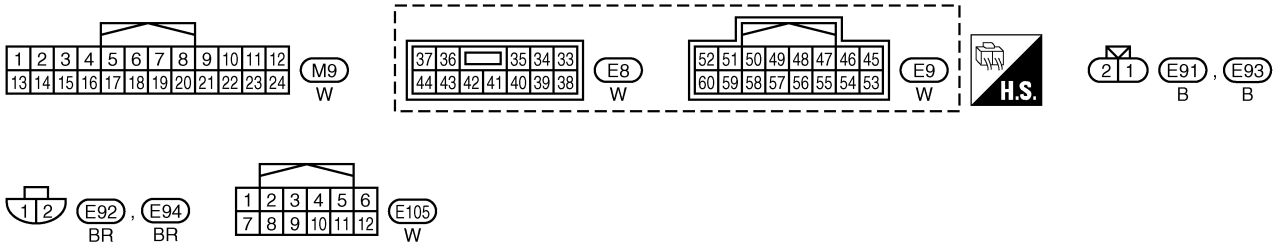


TKWM4961E


LT-DTRL-02
: DATA LINE
BATTERY
IGNITION SWITCH ACC OR ON
IGNITION SWITCH ON OR START
REFER TO PG-POWER.
50A F
10A 18
10A 6
10A 1
FUSE BLOCK (J/B) M1
1A
12A
15A
W/B
GR
P/B
R
DATA LINK CONNECTOR M24
6
14
L
Y
W/B E108 2 M5 W/B
L C
Y D
NEXT PAGE
PRECEDING PAGE
A Y
B L
Y
L
TO LAN-CAN
W/B
GR
P/B
R
L
Y
55 BAT (F/L)
42 BAT (FUSE)
11 ACC SW
38 IGN SW
39 CAN-H
40 CAN-L
BCM (BODY CONTROL MODULE) M34, M35
COMBI SW OUTPUT 1
COMBI SW OUTPUT 2
COMBI SW OUTPUT 3
COMBI SW OUTPUT 4
COMBI SW OUTPUT 5
COMBI SW INPUT 1
COMBI SW INPUT 2
COMBI SW INPUT 3
COMBI SW INPUT 4
COMBI SW INPUT 5
GND (POWER)
36 35 34 33 32 6 5 4 3 2 52
L/W G/B LG/R G/Y LG/B R/W R/B R/G P/L R B
L/W G/B LG/R G/Y LG/B R/W R/B R/G P/L R
1 2 3 4 5 6 7 10 9 8
OUTPUT 1 OUTPUT 2 OUTPUT 3 OUTPUT 4 OUTPUT 5 INPUT 1 INPUT 2 INPUT 3 INPUT 4 INPUT 5
COMBINATION SWITCH M29
B B B
M78 M14
1 2 3 4 M5 W
16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 M24 W
7 8 9 10 13 12 6 5 4 3 2 1 11 14 M29 W
REFER TO THE FOLLOWING.
M1 -FUSE BLOCK-JUNCTION BOX (J/B)
M34, M35 -ELECTRICAL UNITS

TKWB2558E


LT-DTRL-03
IGNITION SWITCH ON OR START
BATTERY
15A 78
10A 71
15A 88
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E8 , E9
REFER TO PG-POWER.
IGNITION RELAY
FRONT FOG LAMP RELAY
+IG
+B
+B
FR FOG
CPU
CAN-H
CAN-L
GND (POWER)
GND (SIGNAL)
48
49
38
60
37
36
L
Y
B
B
W/R
G/W
: DATA LINE
E16
E91
E33
E93
E105
4
B4
10
FRONT FOG LAMP LH
E92
FRONT FOG LAMP RH
E94
B2
M9
1
13
2
PRE-CEDING PAGE
C
D
E26
E28
E13


M9
W
E8
W
E9
W
H.S.
E91 , E93
B
B
E92 , E94
BR
BR
E105
W

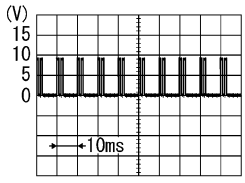
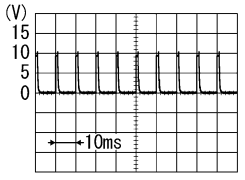
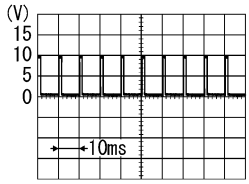
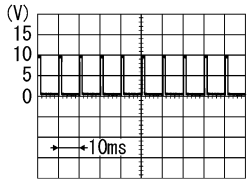
TKWB2559E

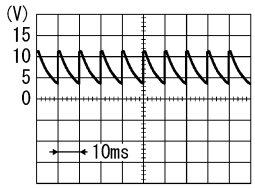
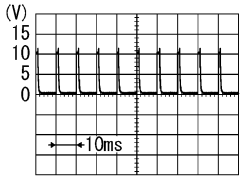
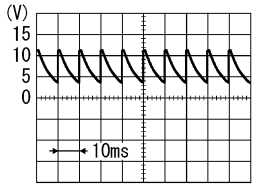
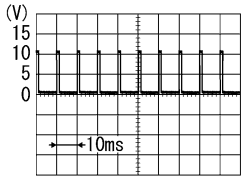
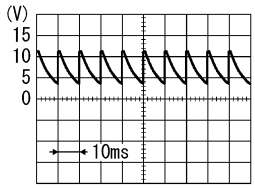
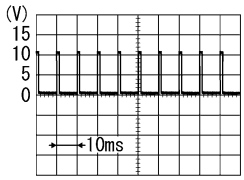
Terminals and Reference Values for BCM

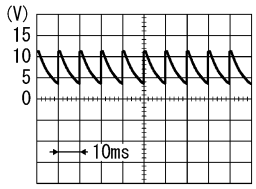
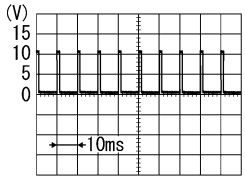
NKS001OG

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 intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-II. Refer to LT-152, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
2	R	Combination switch input 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Lighting switch 2ND	 PKIB4953J Approx. 2.0 V
3	P/L	Combination switch input 4	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Front fog lamp switch (Operate only front fog lamp switch)	 PKIB4955J Approx. 0.8 V
					Any of the conditions below ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch)	 PKIB4959J Approx. 1.0 V
4	R/G	Combination switch input 3	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Any of the conditions below ● Lighting switch AUTO	 PKIB4959J Approx. 1.0 V
11	P/B	Ignition switch (ACC)	ACC	—		Battery voltage

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
32	LG/B	Combination switch output 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Front fog lamp switch (Operates only front fog lamp switch)	 PKIB4956J Approx. 1.0 V
33	G/Y	Combination switch output 4	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Lighting switch AUTO	 PKIB4958J Approx. 1.2 V
34	LG/R	Combination switch output 3	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Lighting switch 2ND	 PKIB4958J Approx. 1.2 V

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
35	G/B	Combination switch output 2	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Any of the conditions below ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch)	 PKIB4958J Approx. 1.2 V
38	R	Ignition switch (ON)	ON	—		Battery voltage
39	L	CAN – H	—	—		—
40	Y	CAN – L	—	—		—
42	GR	Battery power supply	OFF	—		Battery voltage
52	B	Ground	ON	—		Approx. 0 V
55	W/B	Battery power supply	OFF	—		Battery voltage

Terminals and Reference Values for IPDM E/R

NKS001OH

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
36	G/W	Front fog lamp (RH)	ON	Lighting switch must be in the 2ND position or AUTO position (LOW beam is ON) and the front fog lamp switch must be ON.	OFF	Approx. 0 V
					ON	Battery voltage
37	W/R	Front fog lamp (LH)	ON		OFF	Approx. 0 V
					ON	Battery voltage
38	B	Ground	ON	—		Approx. 0 V
48	L	CAN – H	—	—		—
49	Y	CAN – L	—	—		—
60	B	Ground	ON	—		Approx. 0 V

How to Proceed with Trouble Diagnosis

NKS001OI

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-66, "System Description" .
3. Perform the Preliminary Check. Refer to LT-76, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the front fog lamp operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

NKS001OJ

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES AND FUSIBLE LINK

Check for blown fuses and fusible link.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	F
		18
	Ignition switch ON or START position	1
	Ignition switch ACC or ON position	6
IPDM E/R	Battery	88

Refer to LT-70, "Wiring Diagram — DTRL —" .

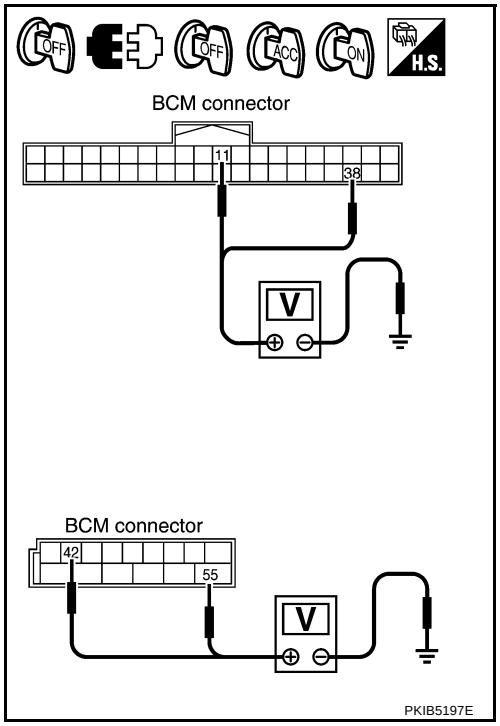
OK or NG

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-3, "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.

(+)		(–)	Ignition switch position		
BCM connector	Terminal		OFF	ACC	ON
M34	11	Ground	Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage
M35	42		Battery voltage	Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage	Battery voltage



OK or NG

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

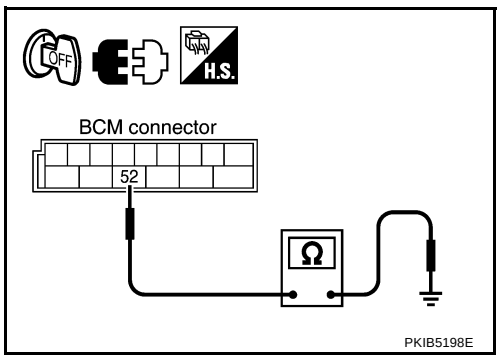
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M35	52		Yes

OK or NG

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



CHECK PARKING BRAKE SWITCH CIRCUIT

1. CHECK BRAKE INDICATOR

1. Turn ignition switch ON.
2. When parking brake is made ON/OFF, it checks whether the brake indicator lamp of combination meter lights up/puts out the light.

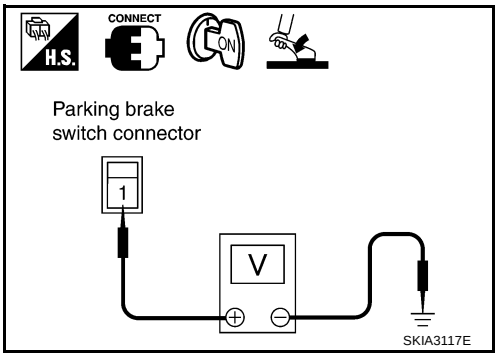
OK or NG

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

2. CHECK PARKING BRAKE SWITCH SIGNAL

1. Turn ignition switch ON.
2. Check voltage between parking brake switch harness connector and ground, when parking brake is released.

(+)		(–)	Condition	Voltage
Parking brake switch Connector	Terminal			
E112	1	Ground	Not released	Approx. 0 V
			Released	Battery voltage



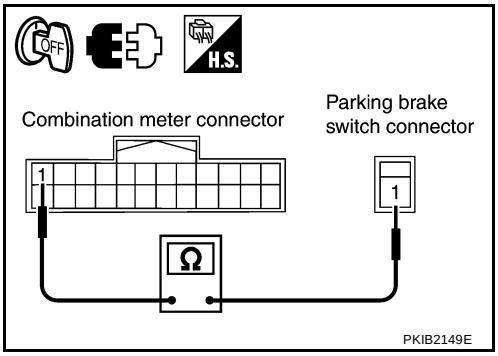
OK or NG

OK >> GO TO 3
NG >> Replace parking brake switch.

3. CHECK PARKING BRAKE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect parking brake switch connector and combination meter connector.
3. Check continuity between combination meter harness connector M25 terminal 1 and parking brake switch harness connector E112 terminal 1.

1 – 1 : Continuity should exist.



OK or NG

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

CONSULT-II Functions (BCM)

NKS001OK

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 BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

WORK SUPPORT

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.
3. Touch item 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. Selects exterior lamp battery saver control mode between two ON/OFF.	ON	×
		OFF	—

DATA MONITOR

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
3. Touch either “ALL SIGNALS” or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all the signals.
SELECTION FROM MENU	Selects items and monitors them.

4. When “SELECTION FROM MENU” is selected, touch individual items to be monitored. When “ALL SIGNALS” is selected, all the items will be monitored.
5. Touch “START”.
6. Touch “RECORD” while monitoring, then the status of the monitored item can be recorded. To stop recording, touch “STOP”.

Display Item List

Monitor item		Contents
IGN ON SW	“ON/OFF”	Displays “IGN position (ON)/OFF, ACC position (OFF)” judged from the ignition switch signal.
ACC ON SW	“ON/OFF”	Displays “ACC (ON)/OFF, Ignition OFF (OFF)” status judged from ignition switch signal.
HI BEAM SW	“ON/OFF”	Displays status (high beam switch: ON/Others: OFF) of high beam switch judged from lighting switch signal.
HEAD LAMP SW 1	“ON/OFF”	Displays status (headlamp switch 1: ON/Others: OFF) of headlamp switch 1 judged from lighting switch signal.
HEAD LAMP SW 2	“ON/OFF”	Displays status (headlamp switch 2: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.

Monitor item		Contents
LIGHT SW 1 ST	“ON/OFF”	Displays status (lighting switch 1ST or 2ND position: ON/Others: OFF) of lighting switch judged from lighting switch signal.
AUTO LIGHT SW	“ON/OFF”	Displays status of the lighting switch as judged from the lighting switch signal. (AUTO position: ON/Other than AUTO position: OFF)
PASSING SW	“ON/OFF”	Displays status (flash-to-pass switch: ON/Others: OFF) of flash-to-pass switch judged from lighting switch signal.
FR FOG SW	“ON/OFF”	Displays status (front fog lamp switch: ON/Others: OFF) of front fog lamp switch judged from lighting switch signal.
RR FOG SW NOTE	“OFF”	—
DOOR SW - DR	“ON/OFF”	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - AS	“ON/OFF”	Displays status of the passenger door as judged from the passenger door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RR	“ON/OFF”	Displays status of the rear door as judged from the rear door switch (RH) signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RL	“ON/OFF”	Displays status of the rear door as judged from the passenger door switch (LH) signal. (Door is open: ON/Door is closed: OFF)
BACK DOOR SW	“ON/OFF”	Displays status of the back door as judged from the back door switch signal. (Door is open: ON/Door is closed: OFF)
TURN SIGNAL R	“ON/OFF”	Displays status (Turn right: ON/Others: OFF) as judged from lighting switch signal.
TURN SIGNAL L	“ON/OFF”	Displays status (Turn left: ON/Others: OFF) as judged from lighting switch signal.
CARGO LAMP SW NOTE	“OFF”	—
OPTICAL SENSOR	“0 - 5V”	Displays “outside brightness (close to 5V when light/close to 0V when dark)” judged from optical sensor signal.

NOTE:
This item is displayed, but cannot be monitored.

ACTIVE TEST

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
3. Touch item to be tested and check operation of the selected item.
4. During the operation check, touching “OFF” deactivates the operation.

Display Item List

Test item	Description
TAIL LAMP	Allows tail lamp relay to operate by switching ON–OFF.
HEAD LAMP	Allows headlamp relay to operate by switching ON–OFF.
FR FOG LAMP	Allows fog lamp relay to operate by switching ON–OFF.
CORNERING LAMP NOTE	—

NOTE:
This item is displayed, but cannot be tested.

CONSULT-II Functions (IPDM E/R)

NKS001OL

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

Diagnosis Mode	Description
SELF-DIAGNOSTIC RESULTS	Refer to PG-19, "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 BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

DATA MONITOR

Operation Procedure

1. Touch “DATA MONITOR” on “SELECT DIAG MODE ” screen.
2. Touch “ALL SIGNALS”, “MAIN SIGNALS”, or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all items.
MAIN SIGNALS	Monitor the predetermined item.
SELECTION FROM MENU	Selects items and monitors them.

3. Touch the required monitoring item on “SELECTION FROM MENU”. In “ALL SIGNALS”, all items are monitored. In “MAIN SIGNALS”, predetermined items are monitored.
4. Touch “START”.
5. Touch “RECORD” while monitoring to record the status of the item being monitored. To stop recording, touch “STOP”.

All Signals, Main Signals, Selection From Menu

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

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

ACTIVE TEST

Operation Procedure

1. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Touch item to be tested, and check operation.
3. Touch “START”.
4. Touch “OFF” while testing to stop the operation.

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

Daytime Light Control Does Not Operate Properly

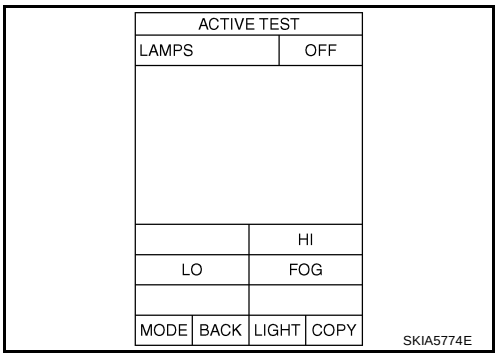
NKS001OM

1. FRONT FOG LAMP ACTIVE TEST

With CONSULT-II

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

Front fog lamps should operate.



Without CONSULT-II

1. Start auto active test. Refer to PG-21, "Auto Active Test" .
2. Make sure front fog lamps operates.

Front fog lamps should operate.

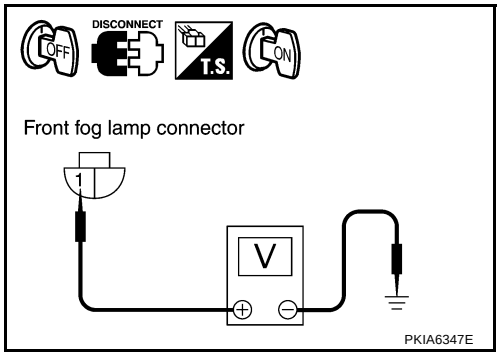
OK or NG

OK >> GO TO 5.
NG >> GO TO 2.

2. CHECK FRONT FOG LAMP INPUT SIGNAL

With CONSULT-II

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



(+)			(–)	Voltage
Front fog lamp connector		Terminal		
RH	E94	1	Ground	Battery voltage
LH	E92	1		

Without CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front fog lamp RH and LH connectors.
3. Start auto active test. Refer to PG-21, "Auto Active Test" .
4. When front fog lamps are operating, check voltage between front fog lamp (RH and LH) harness connector and ground.

(+)			(–)	Voltage
Front fog lamp connector		Terminal		
RH	E94	1	Ground	Battery voltage
LH	E92	1		

OK or NG

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

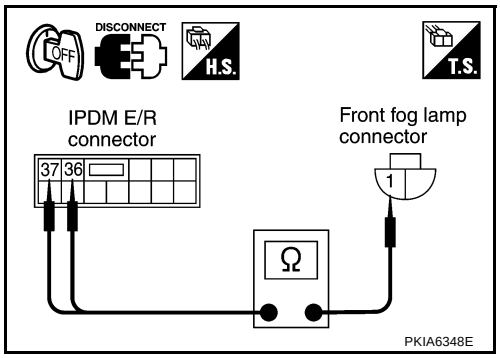
3. CHECK FRONT FOG LAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E8 terminal 36 and front fog lamp RH harness connector E94 terminal 1.

36 – 1 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E8 terminal 37 and front fog lamp LH harness connector E92 terminal 1.

37 – 1 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

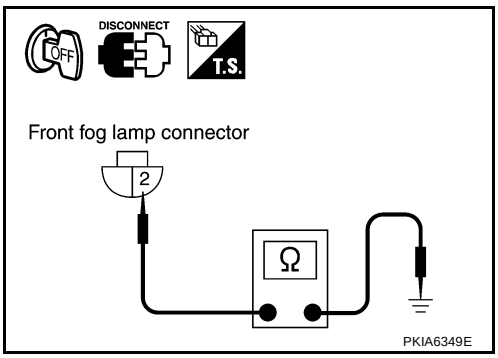
4. CHECK FRONT FOG LAMP GROUND

1. Check continuity between front fog lamp RH harness connector E94 terminal 2 and ground.

   2 – Ground : Continuity should exist.

2. Check continuity between front fog lamp LH harness connector E92 terminal 2 and ground.

   2 – Ground : Continuity should exist.



OK or NG

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

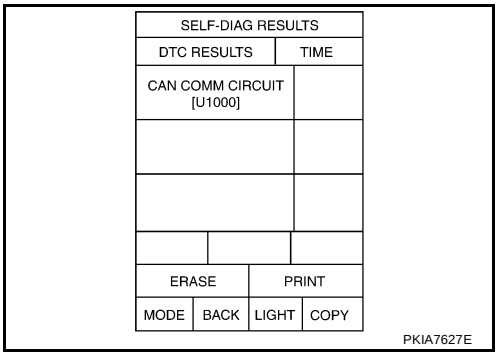
5. CHECK SELF-DIAGNOSIS

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

Displayed results of self-diagnosis

No malfunction detected>> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

CAN communications or CAN system>> Check BCM CAN communication system. Refer to BCS-13, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .

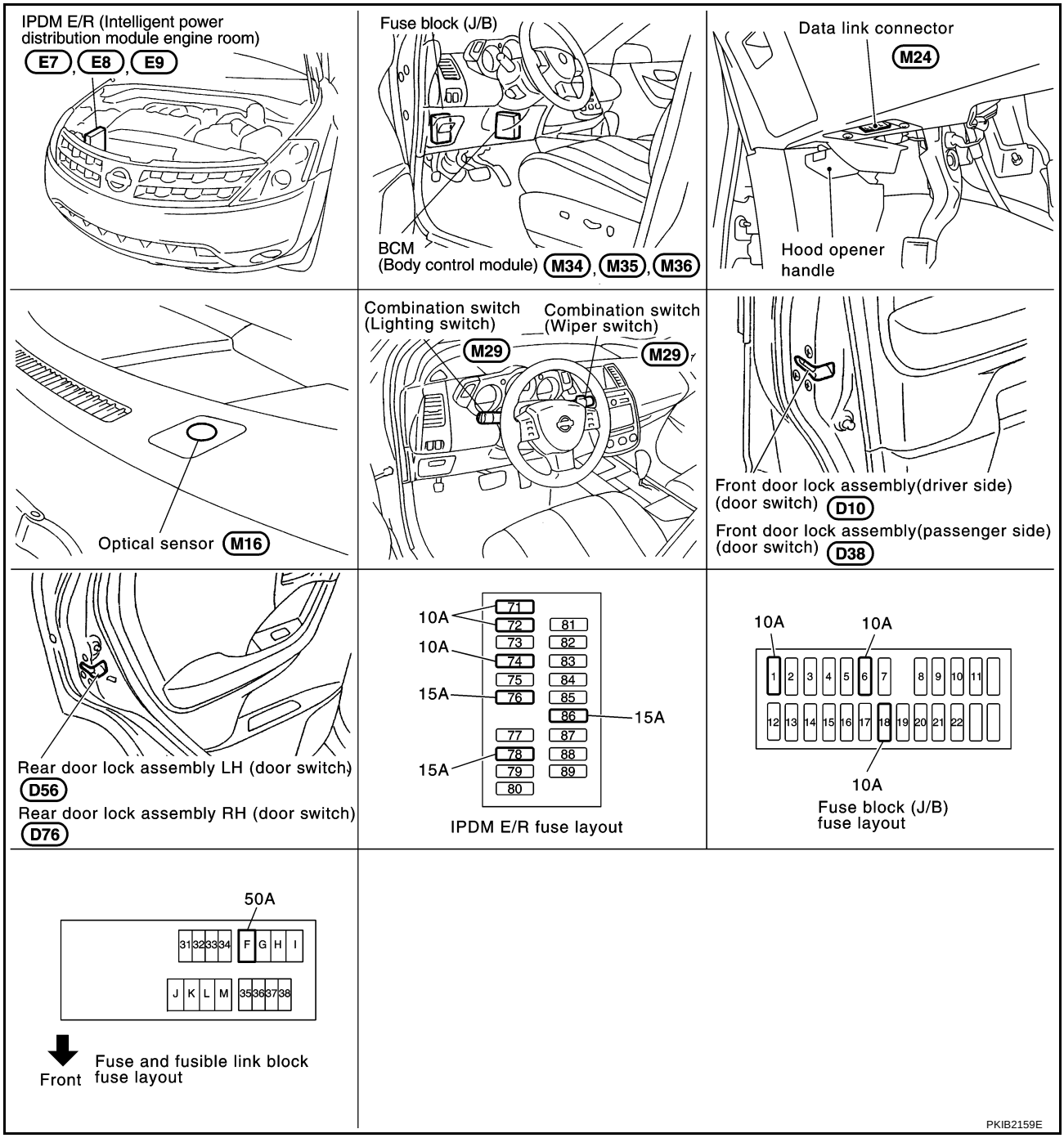


AUTO LIGHT SYSTEM

PFP:28491

Component Parts and Harness Connector Location

NKS001OR



System Description

NKS001OS

- BCM (Body Control Module) controls auto light operation according to signals from optical sensor, lighting switch, driver door switch, passenger door switch and ignition switch.
- Optical sensor detects ambient brightness of 800 to 2,500 lux. And optical sensor converts light (lux) to voltage, then sends the optical sensor signal to BCM.
- IPDM E/R (Intelligent Power Distribution Module Engine Room) operates parking, license plate, tail lamps and headlamps low according to CAN communication signals from BCM.
- For a description of headlamp low operation, refer to LT-6, "System Description" .
- For a description of parking, license plate, side marker and tail lamp operation, refer to LT-166, "System Description" .

OUTLINE

The auto light control system has an optical 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 the ambient light. Sensitivity can be adjusted in four steps. For the details of the setting, Refer to LT-92, "SETTING CHANGE FUNCTIONS" .
Optical sensor, power is supplied

- from BCM (body control module) terminal 17
- to optical sensor terminal 1.

Optical sensor, ground is supplied

- to optical sensor terminal 3
- through BCM terminal 18.

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

- from optical sensor terminal 2
- to BCM terminal 14.

The headlamps will then illuminate. For a description of headlamp operation, Refer to LT-84, "System Description" .

COMBINATION SWITCH READING FUNCTION

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

DELAY TIMER FUNCTION

Delay timer function carries out a function that BCM activates the timer and controls lights out of headlamps by door switch signal and lightning switch signal when turning the Ignition switch OFF while it is ON and headlamps are ON by the auto light function.
Timer types are a 5-minute timer and a 45-second timer

- When opening any door (door switch is ON), the 5-minute timer starts and then headlamps go out five minutes later
- When all the doors are closed (from door switch ON to OFF), the 45-second timer starts and then headlamps go out forty-five seconds later. If any door is opened (door switch ON) while the 45-second timer is in operation, the 5-minute timer starts again
- The timer stops when turning on the ignition switch or turning off the auto light switch under the above conditions.

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

CAN Communication System Description

NKS001OT

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.

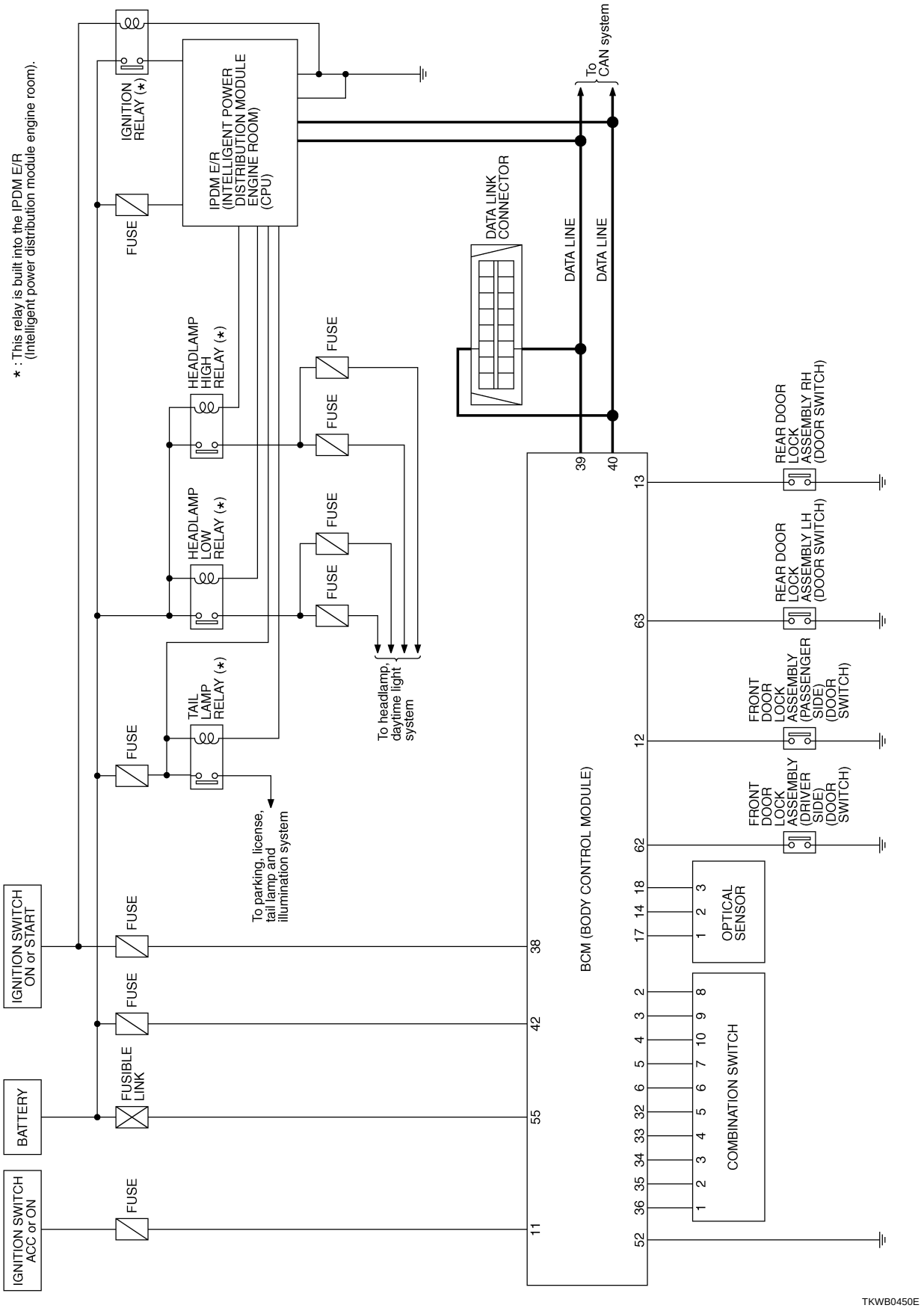
CAN Communication Unit

NKS001OU

Refer to LAN-49, "CAN System Specification Chart" .

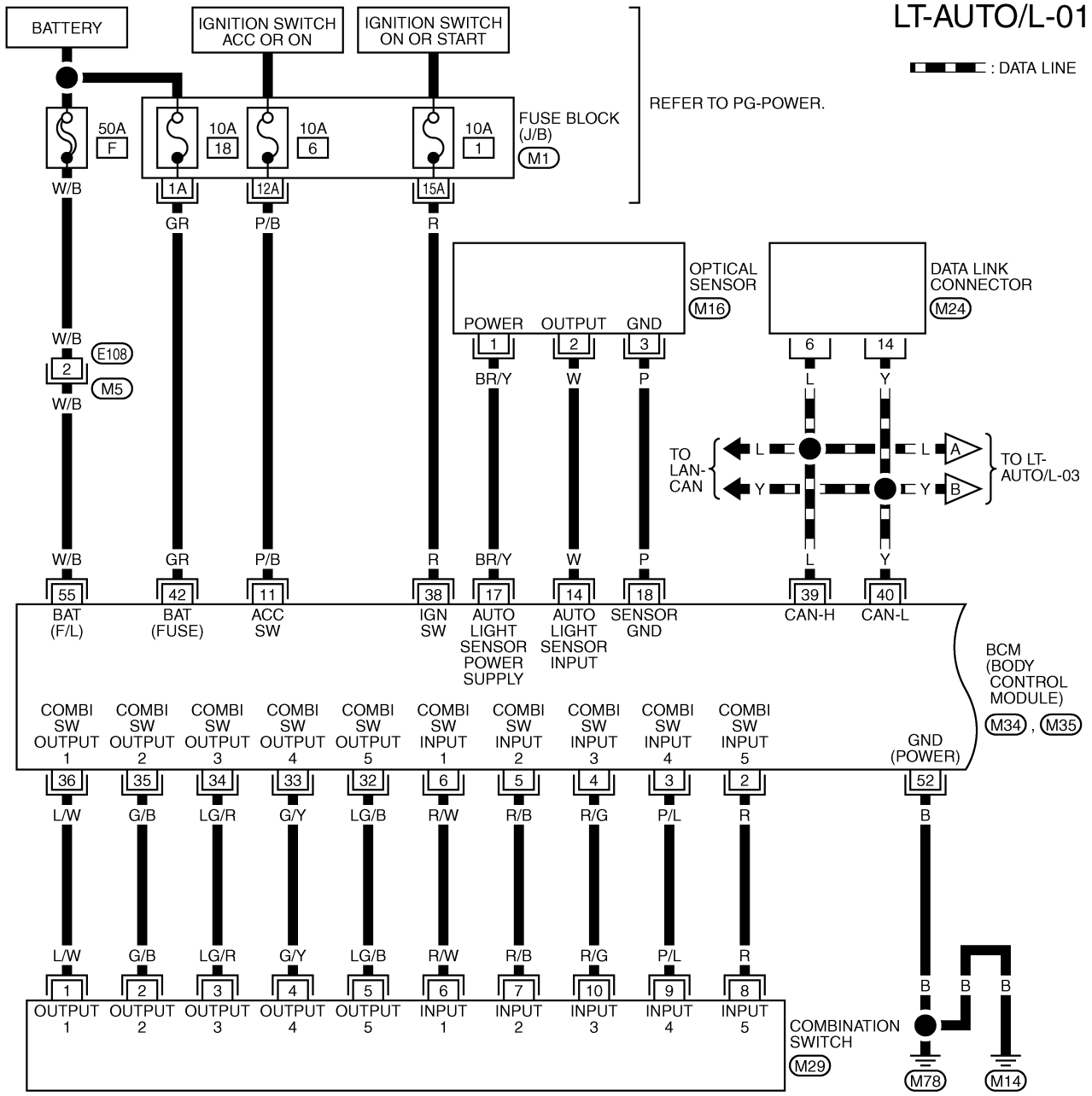
Schematic

NKS001OW



Wiring Diagram — AUTO/L —

NKS001OX



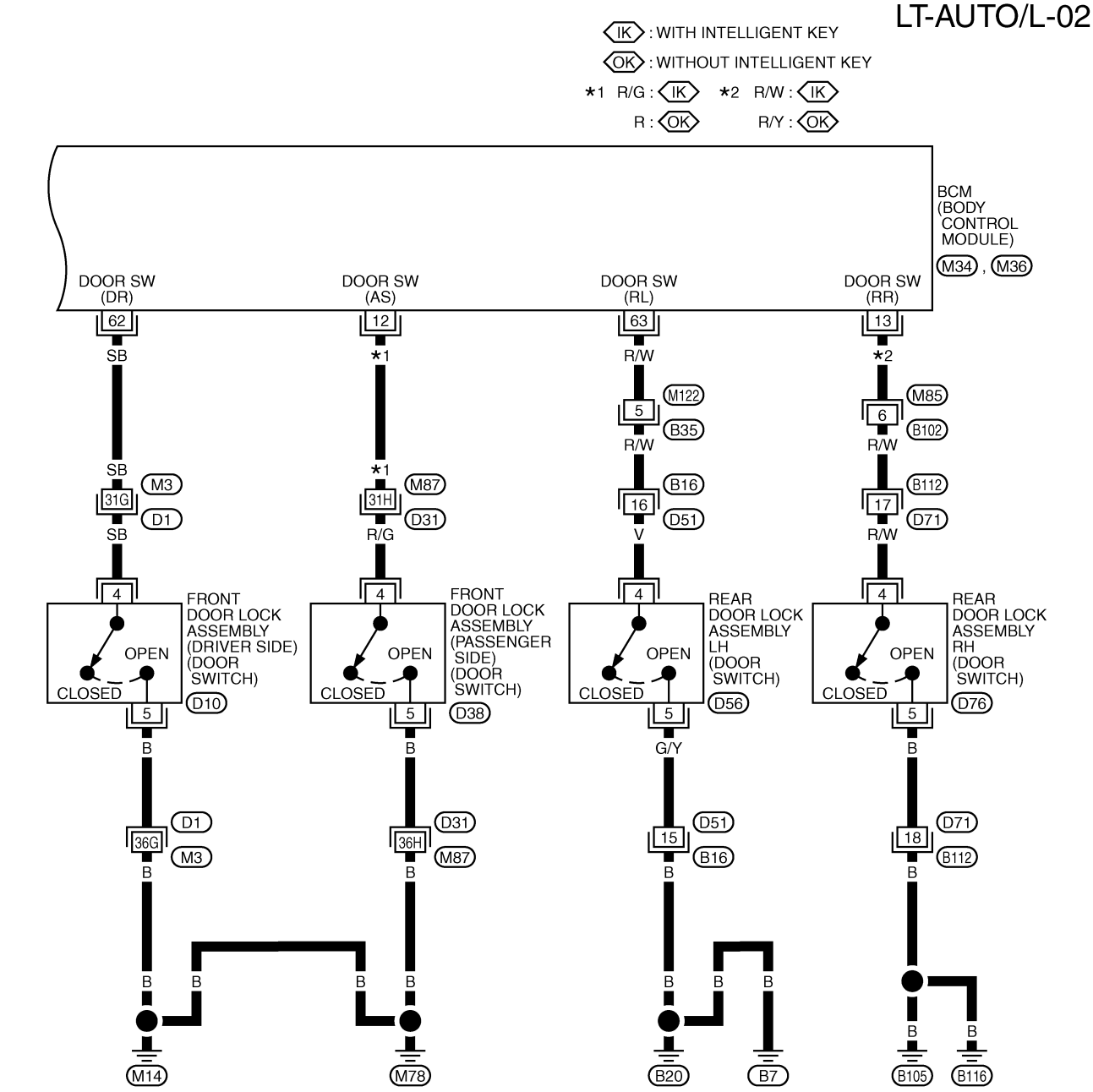
REFER TO THE FOLLOWING.

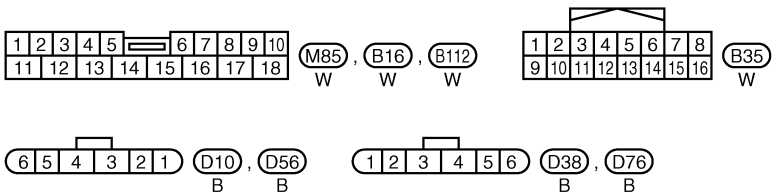
M1 -FUSE BLOCK-JUNCTION BOX (J/B)

M34, M35 -ELECTRICAL UNITS

TKWB2560E

LT-AUTO/L-02





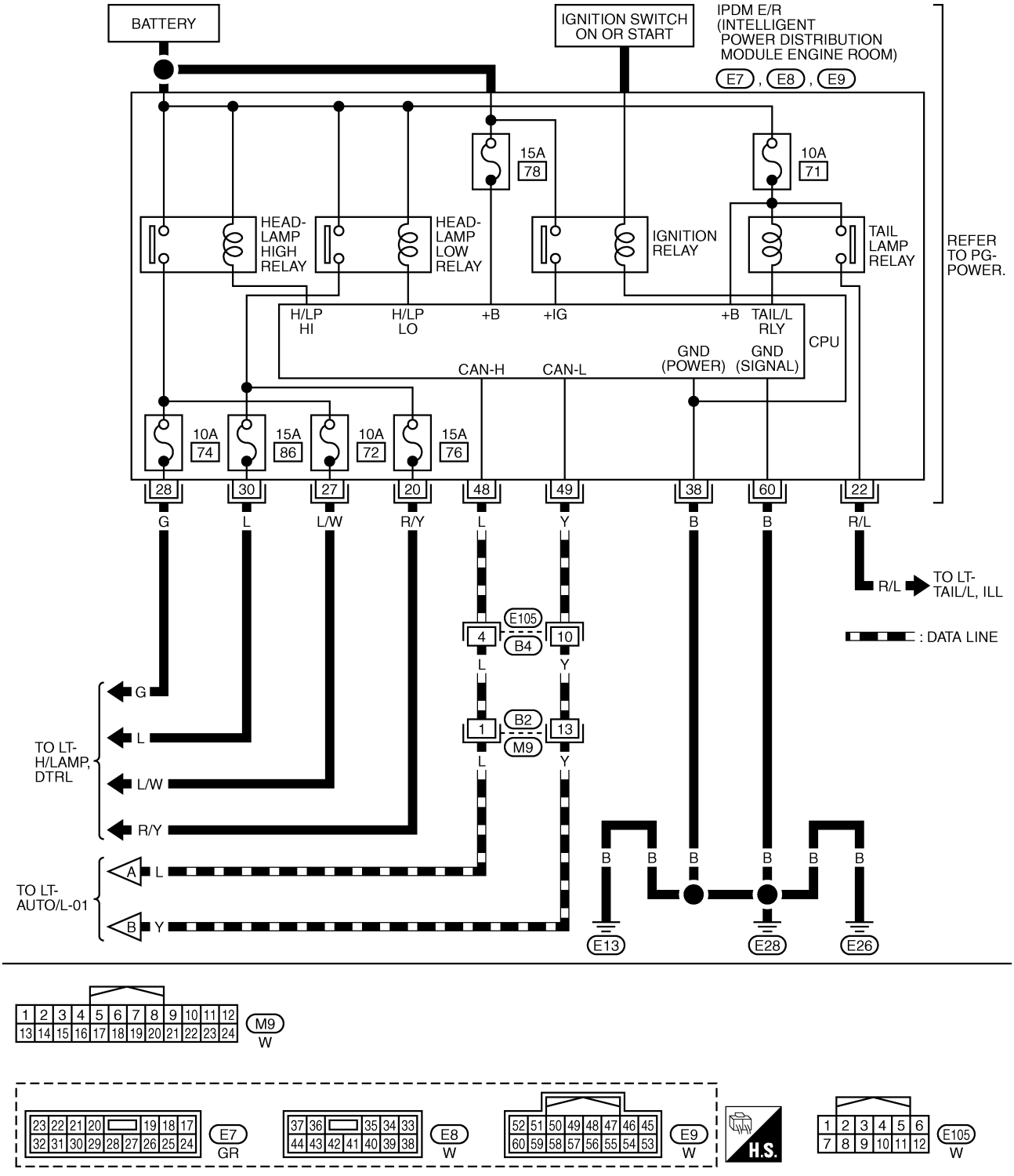
REFER TO THE FOLLOWING.

D1 , D31 -SUPER MULTIPLE JUNCTION (SMJ)

M34 , M36 -ELECTRICAL UNITS

TKWB2561E

LT-AUTO/L-03



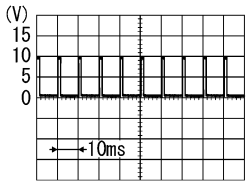
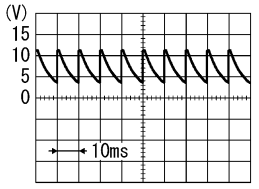
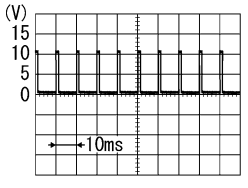
TKWB2562E

Terminals and Reference Values for BCM

NKS001OY

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 intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-II. Refer to LT-152, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
4	R/G	Combination switch input 3	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Lighting switch AUTO	 PKIB4959J Approx. 1.0 V
11	P/B	Ignition switch (ACC)	ACC	—		Battery voltage
12	R/G*1 R*2	Front door switch AS signal	OFF	Front door switch AS	ON (open)	Approx. 0 V
					OFF (closed)	Battery voltage
13	R/W *1 R/Y*2	Rear door switch RH signal	OFF	Rear door switch RH	ON (open)	Approx. 0 V
					OFF (closed)	Battery voltage
14	W	Optical sensor signal	ON	When optical sensor is illuminated		3.1 V or more NOTE
				When optical sensor is not illuminated		0.6 V or less
17	BR/Y	Optical sensor power supply	ON	—		Approx. 5 V
18	P	Keyless and auto light sensor ground	ON	—		Approx. 0 V
33	G/Y	Combination switch output 4	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Lighting switch AUTO	 PKIB4958J Approx. 1.2 V
38	R	Ignition switch (ON)	ON	—		Battery voltage
39	L	CAN – H	—	—		—

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
40	Y	CAN – L	—	—		—
42	GR	Battery power supply	OFF	—		Battery voltage
52	B	Ground	ON	—		Approx. 0 V
55	W/B	Battery power supply	OFF	—		Battery voltage
62	SB	Front door switch DR signal	OFF	Front door switch DR	ON (open)	Approx. 0 V
					OFF (closed)	Battery voltage
63	R/W	Rear door switch LH signal	OFF	Rear door switch LH	ON (open)	Approx. 0 V
					OFF (closed)	Battery voltage

*1: With intelligent key, *2: Without intelligent key

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

Terminals and Reference Values for IPDM E/R

NKS001OZ

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
20	R/Y	Headlamp HIGH & LOW (RH)	ON	Lighting switch 2ND position	OFF	Approx. 0 V
					ON	Battery voltage
22	R/L	Parking, license, and tail lamp	ON	Lighting switch 1ST position	OFF	Approx. 0 V
					ON	Battery voltage
27	L/W	Headlamp high (RH)	ON	Lighting switch HIGH or PASS position	OFF	Approx. 0 V
					ON	Battery voltage
28	G	Headlamp high (LH)	ON	Lighting switch HIGH or PASS position	OFF	Approx. 0 V
					ON	Battery voltage
30	L	Headlamp HIGH & LOW (LH)	ON	Lighting switch 2ND position	OFF	Approx. 0 V
					ON	Battery voltage
38	B	Ground	ON	—		Approx. 0 V
48	L	CAN – H	—	—		—
49	Y	CAN – L	—	—		—
60	B	Ground	ON	—		Approx. 0 V

How to Proceed with Trouble Diagnosis

NKS001P0

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-84, "System Description" .
3. Perform the preliminary check. Refer to LT-92, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction. Refer to LT-96, "Symptom Chart" .
5. Does the auto light system operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

NKS001P1

SETTING CHANGE FUNCTIONS

Sensitivity of auto light system can be adjusted using CONSULT-II. Refer to LT-93, "WORK SUPPORT" .

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES AND FUSIBLE LINK

Check for blown fuses and fusible link.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	F
		18
	Ignition switch ON or START position	1
	Ignition switch ACC or ON position	6
IPDM E/R	Battery	71
		72
		74
		76
		86

Refer to LT-87, "Wiring Diagram — AUTO/L —" .

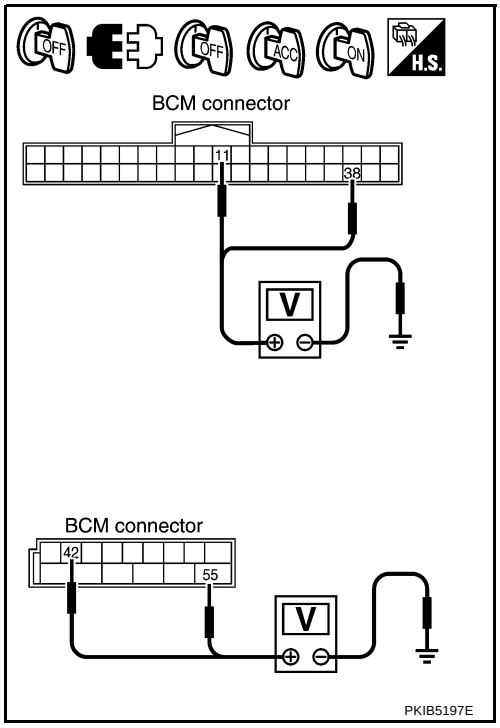
OK or NG

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-3, "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.

(+)		(–)	Ignition switch position		
BCM connector	Terminal		OFF	ACC	ON
M34	11	Ground	Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage
M35	42		Battery voltage	Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage	Battery voltage



OK or NG

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

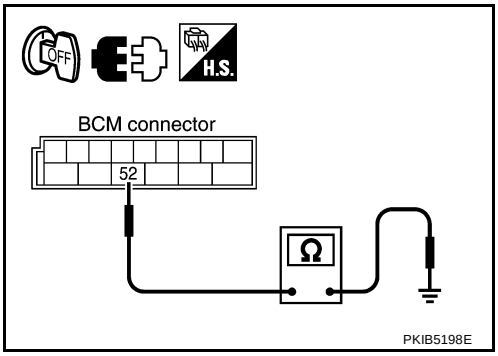
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M35	52		Yes

OK or NG

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



CONSULT-II Functions (BCM)

NKS001P2

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 BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

WORK SUPPORT

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.
3. Touch “CUSTOM A/LIGHT SETTING” or “ILL DELAY SET” on “SELECT WORK ITEM” screen.
4. Touch “START”.
5. Touch “NORMAL” or “MODE 2 - 4” of setting to be changed (CUSTOM A/LIGHT SETTING) or touch “MODE1–8” of setting to be changed (ILL DELAY SET).
6. Touch “SETTING CHANGE”.
7. The setting will be changed and “CUSTOMIZING COMPLETED” will be displayed.
8. Touch “END”.

Work Support Setting Item

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

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

DATA MONITOR

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
3. Touch either “ALL SIGNALS” or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all the signals.
SELECTION FROM MENU	Selects items and monitors them.

4. When “SELECTION FROM MENU” is selected, touch individual items to be monitored. When “ALL SIGNALS” is selected, all the items will be monitored.
5. Touch “START”.
6. Touch “RECORD” while monitoring, then the status of the monitored item can be recorded. To stop recording, touch “STOP”.

Display Item List

Monitor item		Contents
IGN ON SW	“ON/OFF”	Displays “IGN position (ON)/OFF, ACC position (OFF)” judged from the ignition switch signal.
ACC ON SW	“ON/OFF”	Displays “ACC (ON)/OFF, Ignition OFF (OFF)” status judged from ignition switch signal.
HI BEAM SW	“ON/OFF”	Displays status (high beam switch: ON/Others: OFF) of high beam switch judged from lighting switch signal.
HEAD LAMP SW 1	“ON/OFF”	Displays status (headlamp switch 1: ON/Others: OFF) of headlamp switch 1 judged from lighting switch signal.
HEAD LAMP SW 2	“ON/OFF”	Displays status (headlamp switch 2: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.
LIGHT SW 1 ST	“ON/OFF”	Displays status (lighting switch 1ST or 2ND position: ON/Others: OFF) of lighting switch judged from lighting switch signal.
AUTO LIGHT SW	“ON/OFF”	Displays status of the lighting switch as judged from the lighting switch signal. (AUTO position: ON/Other than AUTO position: OFF)
PASSING SW	“ON/OFF”	Displays status (flash-to-pass switch: ON/Others: OFF) of flash-to-pass switch judged from lighting switch signal.
FR FOG SW	“ON/OFF”	Displays status (front fog lamp switch: ON/Others: OFF) of front fog lamp switch judged from lighting switch signal.
RR FOG SW NOTE	“OFF”	—
DOOR SW - DR	“ON/OFF”	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - AS	“ON/OFF”	Displays status of the passenger door as judged from the passenger door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RR	“ON/OFF”	Displays status of the rear door as judged from the rear door switch (RH) signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RL	“ON/OFF”	Displays status of the rear door as judged from the passenger door switch (LH) signal. (Door is open: ON/Door is closed: OFF)
BACK DOOR SW	“ON/OFF”	Displays status of the back door as judged from the back door switch signal. (Door is open: ON/Door is closed: OFF)
TURN SIGNAL R	“ON/OFF”	Displays status (Turn right: ON/Others: OFF) as judged from lighting switch signal.
TURN SIGNAL L	“ON/OFF”	Displays status (Turn left: ON/Others: OFF) as judged from lighting switch signal.
CARGO LAMP SW NOTE	“OFF”	—
OPTICAL SENSOR	“0 - 5V”	Displays “outside brightness (close to 5V when light/close to 0V when dark)” judged from optical sensor signal.

NOTE:
This item is displayed, but cannot be monitored.

ACTIVE TEST

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
3. Touch item to be tested and check operation of the selected item.
4. During the operation check, touching “OFF” deactivates the operation.

Display Item List

Test item	Description
TAIL LAMP	Allows tail lamp relay to operate by switching ON–OFF.
HEAD LAMP	Allows headlamp relay to operate by switching ON–OFF.
FR FOG LAMP	Allows fog lamp relay to operate by switching ON–OFF.
CORNERING LAMP NOTE	—

NOTE:
This item is displayed, but cannot be tested.

CONSULT-II Functions (IPDM E/R)

NKS001P3

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

Diagnosis Mode	Description
SELF-DIAGNOSTIC RESULTS	Refer to PG-19, "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 BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

DATA MONITOR

Operation Procedure

1. Touch “DATA MONITOR” on “SELECT DIAG MODE ” screen.
2. Touch “ALL SIGNALS”, “MAIN SIGNALS”, or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all items.
MAIN SIGNALS	Monitor the predetermined item.
SELECTION FROM MENU	Selects items and monitors them.

3. Touch the required monitoring item on “SELECTION FROM MENU”. In “ALL SIGNALS”, all items are monitored. In “MAIN SIGNALS”, predetermined items are monitored.
4. Touch “START”.
5. Touch “RECORD” while monitoring to record the status of the item being monitored. To stop recording, touch “STOP”.

All Signals, Main Signals, Selection From Menu

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

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

ACTIVE TEST

Operation Procedure

1. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Touch item to be tested, and check operation.
3. Touch “START”.
4. Touch “OFF” while testing to stop the operation.

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

Symptom Chart

NKS001P4

Phenomenon	Malfunction system and reference
● Parking, license plate, side marker and tail lamps and headlamps will not illuminate when outside of the vehicle becomes dark. (Lighting switch 1ST position and 2ND position operate normally.) ● Parking, license plate, side marker and tail lamps and headlamp will not go out when outside of the vehicle becomes light. (Lighting switch 1ST position and 2nd position operate normally.) ● Headlamps go out when outside of the vehicle becomes light, but parking lamps stay on.	● Refer to LT-93, "WORK SUPPORT" . ● Refer to LT-97, "Lighting Switch Inspection" . ● Refer to LT-97, "Optical Sensor System Inspection" . If above systems are normal, replace BCM.
Auto light adjustment system will not operate. (Lighting switch AUTO, 1ST position and 2ND position operate normally.)	● Refer to LT-97, "Optical Sensor System Inspection" . If above system is normal, replace BCM.
Shut off delay feature will not operate.	● CAN communication line inspection between BCM and combination meter. Refer to BCS-13, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" . ● Refer to BL-43, "Check Door Switch" . If above system is normal, replace BCM.

Lighting Switch Inspection

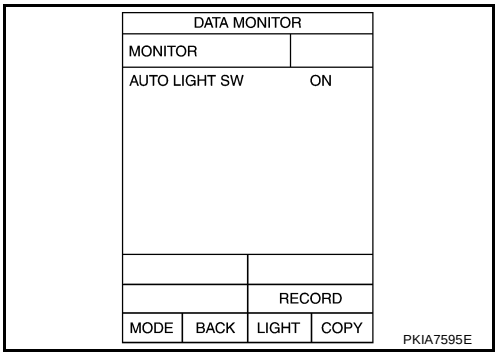
NKS001P5

1. CHECK LIGHTING SWITCH INPUT SIGNAL

With CONSULT-II

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

When lighting switch is AUTO position : AUTO LIGHT SW ON



Without CONSULT-II

Refer to LT-153, "Combination Switch Inspection" .

OK or NG

OK >> INSPECTION END

NG >> Check combination switch (lighting switch). Refer to LT-153, "Combination Switch Inspection" .

Optical Sensor System Inspection

NKS001P6

1. CHECK OPTICAL SENSOR INPUT SIGNAL

With CONSULT-II

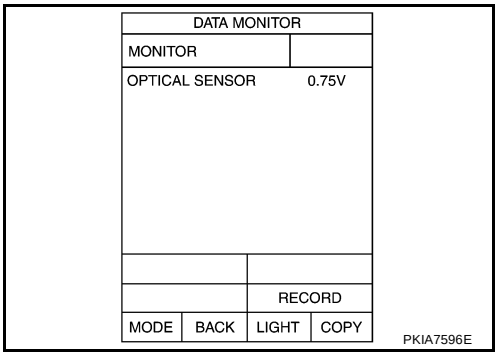
Select “BCM” on CONSULT-II. With “HEAD LAMP” data monitor, make sure “OPTICAL SENSOR”, check difference in voltage when the optical sensor is illuminated and not illuminated.

Illuminated

OPTICAL SENSOR : 3.1 V or more

Not illuminated

OPTICAL SENSOR : 0.6 V or less



CAUTION:

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

Without CONSULT-II

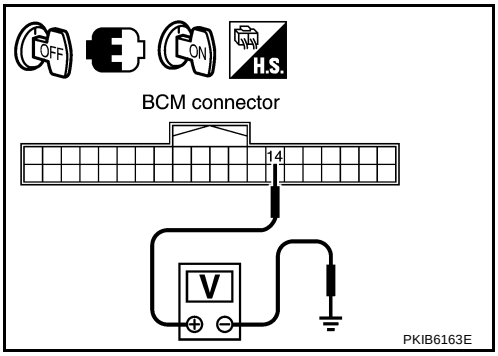
1. Turn ignition switch ON.
2. Check voltage between BCM harness connector M34 terminal 14 and ground.

Illuminated

OPTICAL SENSOR : 3.1 V or more

Not illuminated

OPTICAL SENSOR : 0.6 V or less



CAUTION:

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

OK or NG

OK >> INSPECTION END

NG >> GO TO 2.

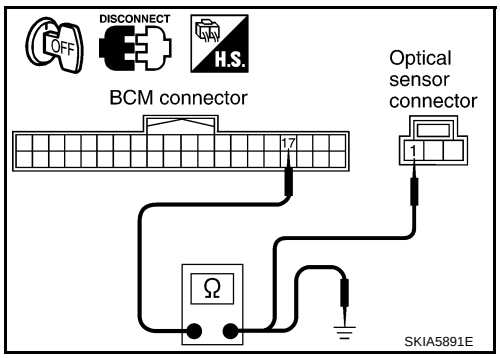
2. CHECK OPTICAL SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and optical sensor connector.
3. Check continuity (open circuit) between BCM harness connector M34 terminal 17 and optical sensor harness connector M16 terminal 1.

17 – 1 : Continuity should exist.

4. Check continuity (short circuit) between BCM harness connector M34 terminal 17 and ground.

17 – Ground : Continuity should not exist.



OK or NG

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

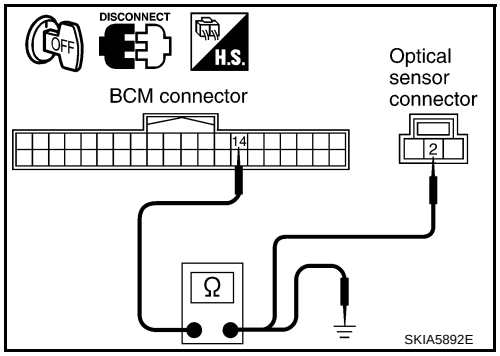
3. CHECK OPTICAL SENSOR SIGNAL CIRCUIT

1. Check continuity (open circuit) between BCM harness connector M34 terminal 14 and optical sensor harness connector M16 terminal 2.

14 – 2 : Continuity should exist.

2. Check continuity (short circuit) between BCM harness connector M34 terminal 14 and ground.

14 – Ground : Continuity should not exist.



OK or NG

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

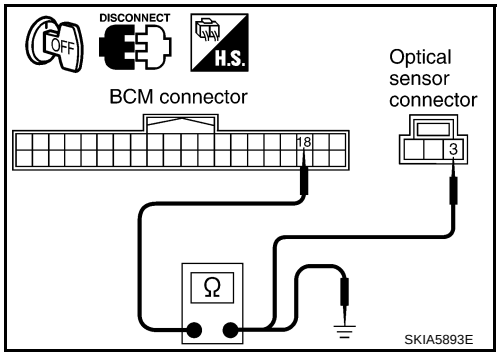
4. CHECK OPTICAL SENSOR GROUND CIRCUIT

1. Check continuity (open circuit) between BCM harness connector M34 terminal 18 and optical sensor harness connector M16 terminal 3.

18 – 3 : Continuity should exist.

2. Check continuity (short circuit) between BCM harness connector M34 terminal 18 and ground.

18 – Ground : Continuity should not exist.



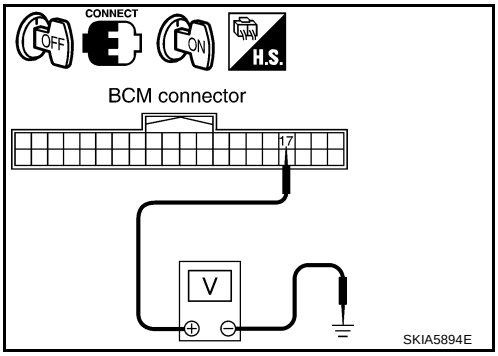
OK or NG

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

5. CHECK OPTICAL SENSOR VOLTAGE

1. Connect BCM connector.
2. Turn ignition switch ON.
3. Check voltage between BCM harness connector M34 terminal 17 and ground.

17 – Ground : Approx. 5 V



OK or NG

OK >> Replace optical sensor. Refer to LT-100, "Removal and Installation of Optical Sensor" .

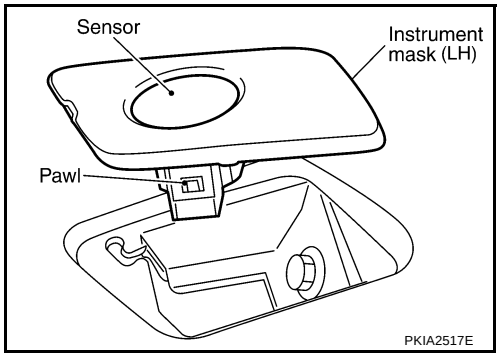
NG >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

Removal and Installation of Optical Sensor

NKS001P7

REMOVAL

1. Remove instrument mask (LH) assembly. Refer to IP-11, "Removal and Installation" .
2. While pressing pawl in direction as shown in the figure, remove the sensor unit from instrument mask.



INSTALLATION

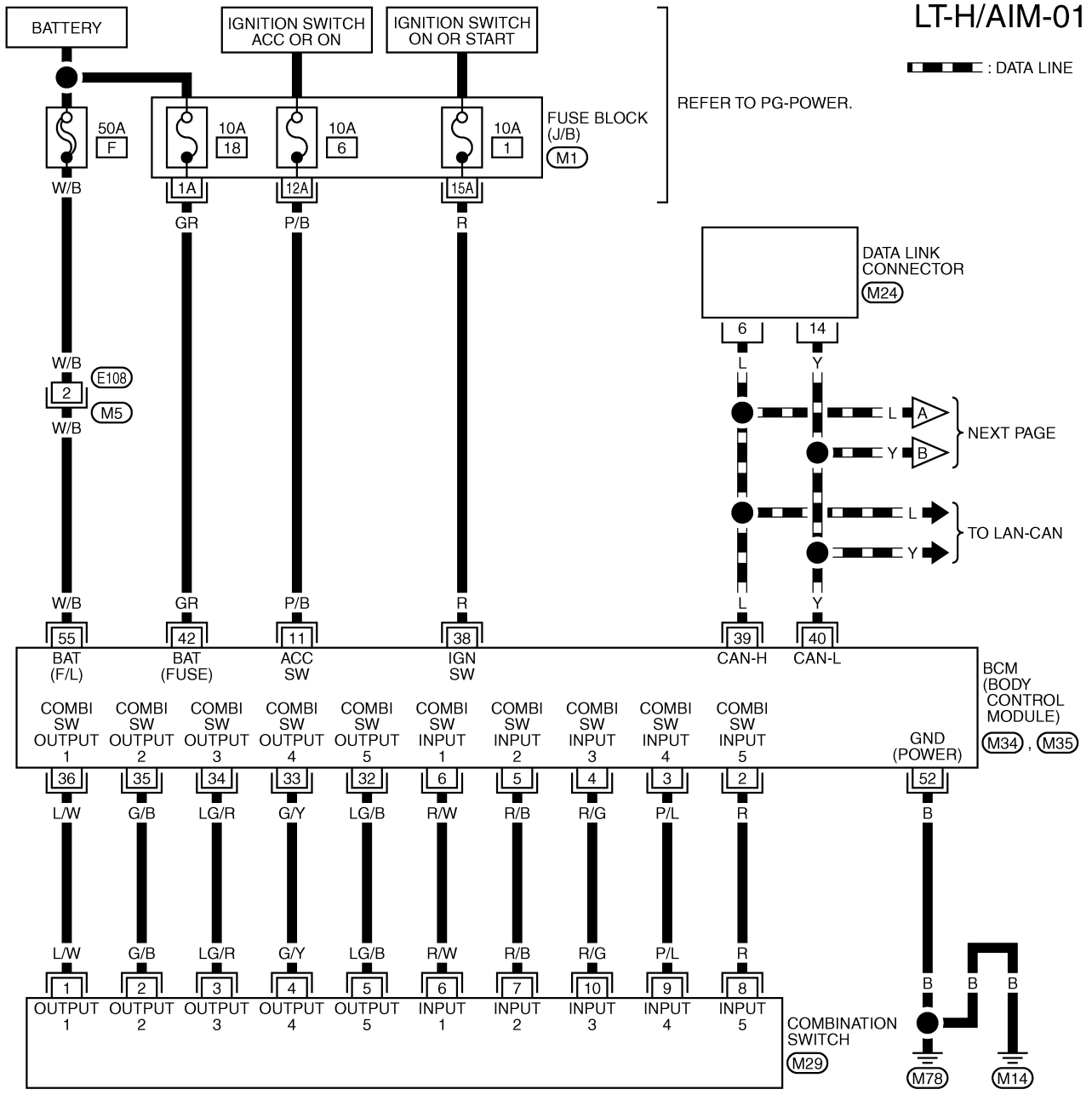
Installation is the reverse order of removal.

HEADLAMP AIMING CONTROL

PFP:26010

Wiring Diagram — H/AIM —

NKS001P8



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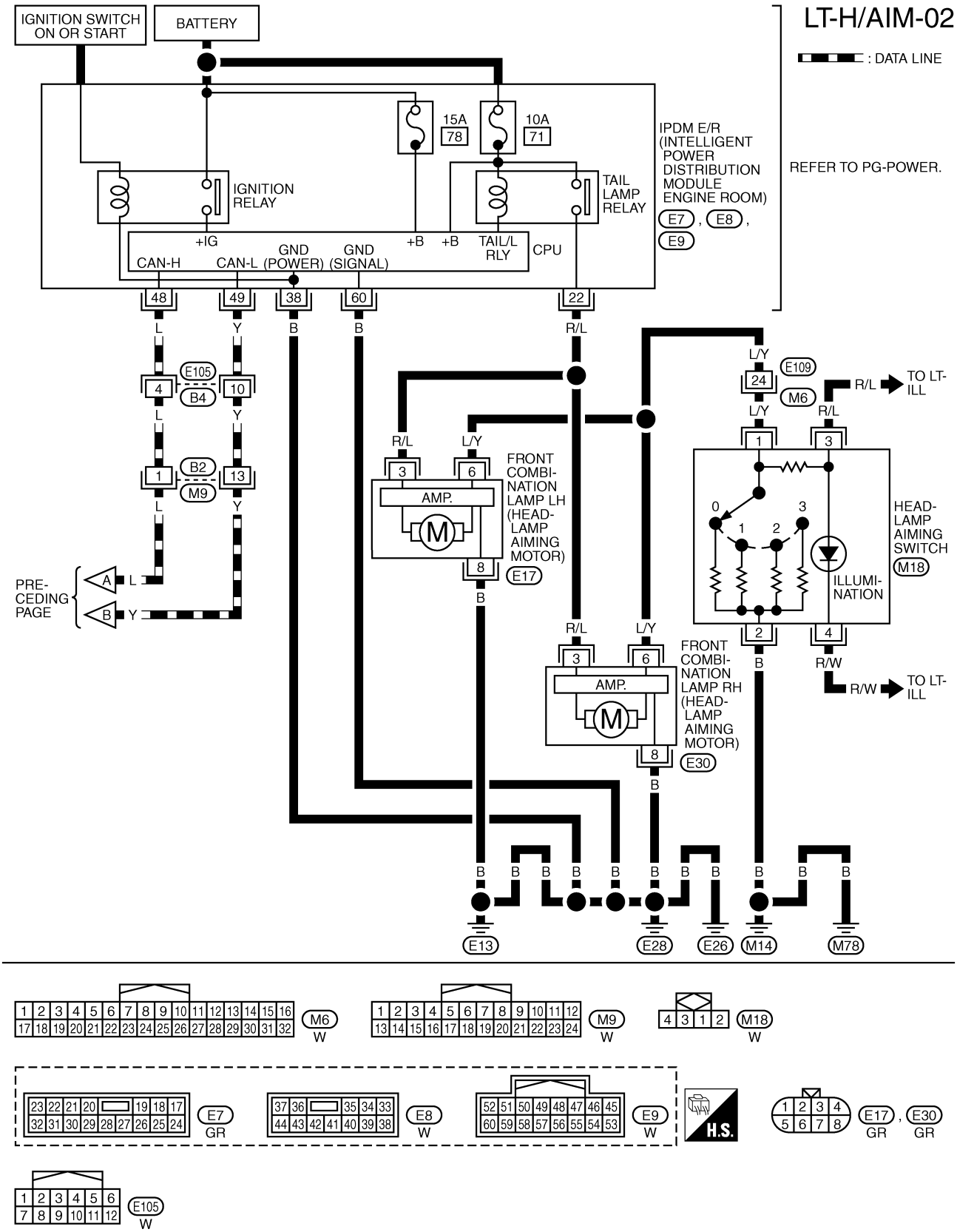

LT-H/AIM-02
: DATA LINE
REFER TO PG-POWER.
IGNITION SWITCH ON OR START
BATTERY
15A 78
10A 71
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E7, E8, E9
IGNITION RELAY
TAIL LAMP RELAY
+IG
+B
+B
TAIL/L RLY
CPU
CAN-H
CAN-L
GND (POWER)
GND (SIGNAL)
48
49
38
60
22
L
Y
B
B
R/L
E105
4
B4
10
B2
1
M9
13
PRE-CEDING PAGE
A
B
FRONT COMBI-NATION LAMP LH (HEAD-LAMP AIMING MOTOR) E17
AMP.
M
3
6
8
FRONT COMBI-NATION LAMP RH (HEAD-LAMP AIMING MOTOR) E30
L/Y
E109
24
M6
TO LT-ILL
HEAD-LAMP AIMING SWITCH M18
ILLUMI-NATION
0
1
2
3
2
4
R/W
E13
E28
E26
M14
M78

M6 W
M9 W
M18 W
E7 GR
E8 W
E9 W
H.S.
E17, E30 GR
E105 W

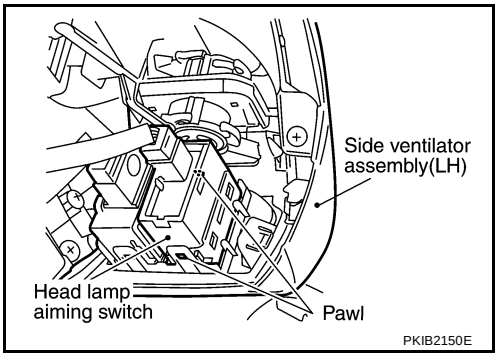
TKWB2564E

Removal and Installation

NKS001P9

REMOVAL

1. Remove the side ventilator assembly (LH). Refer to IP-11, "Removal and Installation" .
2. Press the headlamp aiming switch fixing pawls and remove the unit from the side ventilator assembly (LH).



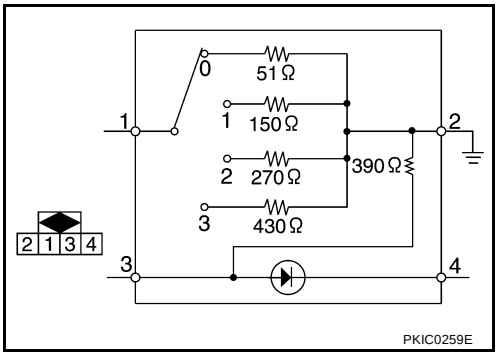
INSTALLATION

Installation is the reverse order of removal.

Switch Circuit Inspection (Xenon type)

NKS001PA

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

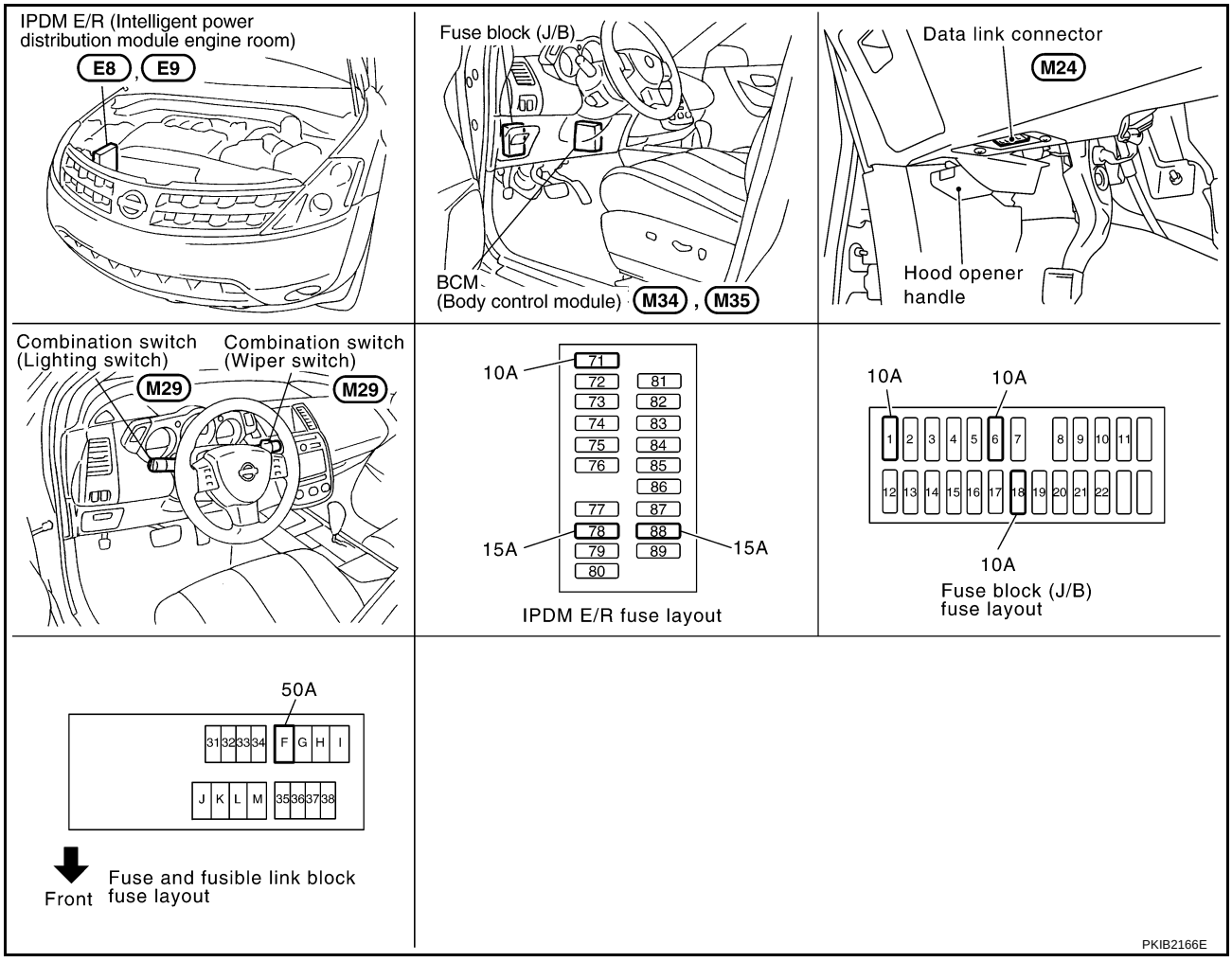


FRONT FOG LAMP

PFP:26150

Component Parts and Harness Connector Location

NKS001PB



System Description

NKS001PC

- BCM (Body Control Module) controls front fog lamp operation.
- IPDM E/R (Intelligent Power Distribution Module Engine Room) operates front fog lamps according to CAN communication signals from BCM.

OUTLINE

Power is supplied at all times

- to ignition relay located in IPDM E/R, from battery direct,
- through 15A fuse (No. 88, located in IPDM E/R)
- to front fog lamp relay, located in IPDM E/R,
- through 10A fuse (No. 71, located in IPDM E/R)
- to CPU located in IPDM E/R,
- through 15A fuse (No. 78, located in IPDM E/R)
- to CPU located in IPDM E/R,
- through 50A fusible link (letter F, located in fuse and fusible link block)
- to BCM terminal 55,
- through 10A fuse [No. 18, located in fuse block (J/B)]
- to BCM terminal 42.

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

- to ignition relay located in IPDM E/R, from battery direct,

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

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

- through 10A fuse [No. 6, located in fuse block (J/B)]
- to BCM terminal 11.

Ground is supplied

- to BCM terminal 52
- through grounds E13, E26 and E28,
- to IPDM E/R terminals 38 and 60
- through grounds E13, E26 and E28.

FRONT FOG LAMP OPERATION

When the lighting switch is in front fog lamp ON position and also in 2ND position or AUTO position (LOW beam is ON*), BCM detects FR FOG (ON) and the HEAD LAMP1, 2 (ON) or the AUTO LIGHT (ON) by BCM combination switch reading function. BCM sends front fog lamp request signal (ON) through CAN communication.
When receiving front fog lamp request signal (ON), IPDM E/R turns ON front fog lamp relay in IPDM E/R. IPDM E/R supplies power

- through IPDM E/R terminal 37
- to front fog lamp LH terminal 1,
- through IPDM E/R terminal 36
- to front fog lamp RH terminal 1.

Ground is supplied

- to front fog lamp RH and LH terminals 2
- through grounds E13, E26 and E28.

With power and ground supplied, front fog lamp illuminate.
*: For a description of auto light operation, refer to LT-84, "System Description" .

COMBINATION SWITCH READING FUNCTION

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

EXTERIOR LAMP BATTERY SAVER CONTROL

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

CAN Communication System Description

NKS001PD

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.

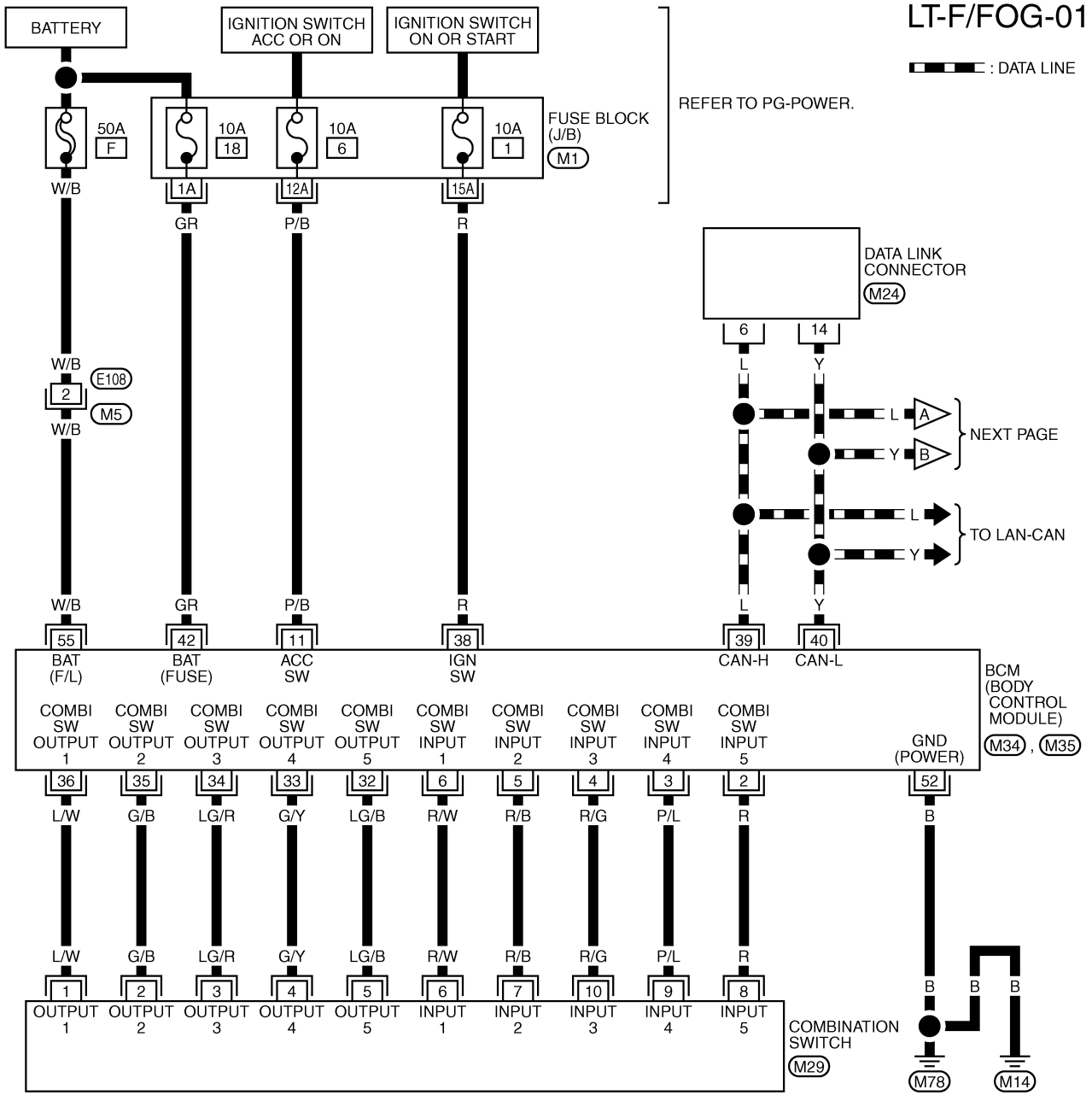
CAN Communication Unit

NKS001PE

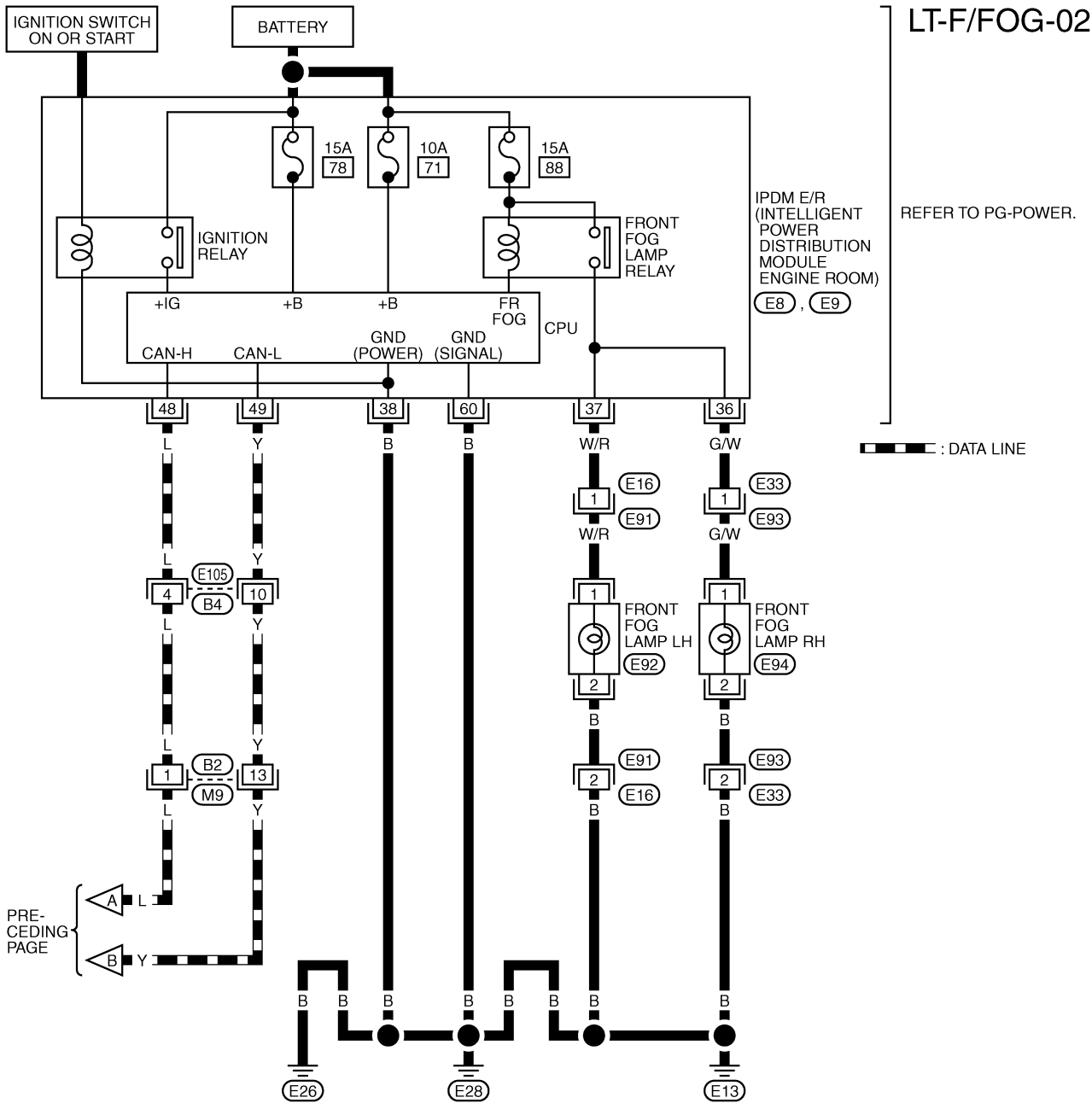
Refer to LAN-49, "CAN System Specification Chart" .

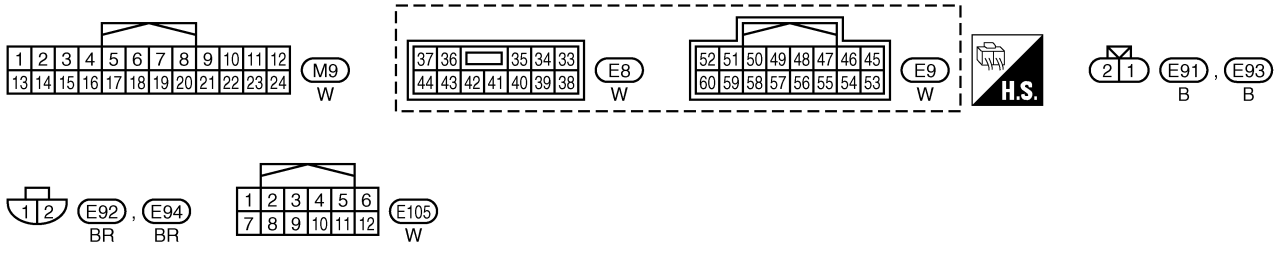
Wiring Diagram — F/FOG —

NKS001PF



TKWB2565E


LT-F/FOG-02
IGNITION SWITCH ON OR START
BATTERY
15A 78
10A 71
15A 88
IGNITION RELAY
FRONT FOG LAMP RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E8 , E9
REFER TO PG-POWER.
+IG
+B
+B
FR FOG
CPU
CAN-H
CAN-L
GND (POWER)
GND (SIGNAL)
48
49
38
60
37
36
L
Y
B
B
W/R
G/W
: DATA LINE
E16
E91
E33
E93
E105
B4
B2
M9
13
10
FRONT FOG LAMP LH
E92
FRONT FOG LAMP RH
E94
PRE-CEDING PAGE
A
B
E26
E28
E13


M9 W
E8 W
E9 W
H.S.
E91 , E93 B B
E92 , E94 BR BR
E105 W

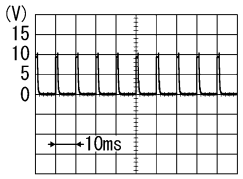
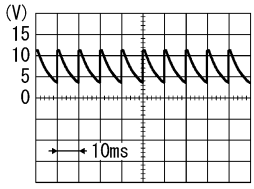
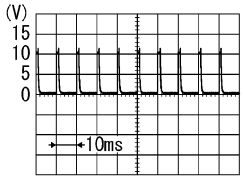
TKWB2566E

Terminals and Reference Values for BCM

NKS001PG

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 intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-II. Refer to LT-152, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
3	P/L	Combination switch input 4	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Front fog lamp switch (Operates only front fog lamp switch)	 PKIB4955J Approx. 0.8 V
11	P/B	Ignition switch (ACC)	ACC	—		Battery voltage
32	LG/B	Combination switch output 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Front fog lamp switch (Operates only front fog lamp switch)	 PKIB4956J Approx. 1.0 V
38	R	Ignition switch (ON)	ON	—		Battery voltage
39	L	CAN – H	—	—		—
40	Y	CAN – L	—	—		—
42	GR	Battery power supply	OFF	—		Battery voltage
52	B	Ground	ON	—		Approx. 0 V
55	W/B	Battery power supply	OFF	—		Battery voltage

Terminals and Reference Values for IPDM E/R

NKS001PH

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
36	G/W	Front fog lamp (RH)	ON	Lighting switch must be in the 2ND position or AUTO position (headlamp is ON) and the front fog lamp switch must be ON.	OFF	Approx. 0 V
					ON	Battery voltage
37	W/R	Front fog lamp (LH)	ON		OFF	Approx. 0 V
					ON	Battery voltage
38	B	Ground	ON	—		Approx. 0 V
48	L	CAN – H	—	—		—
49	Y	CAN – L	—	—		—
60	B	Ground	ON	—		Approx. 0 V

How to Proceed with Trouble Diagnosis

NKS001PI

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-104, "System Description" .
3. Perform the preliminary check. Refer to LT-109, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the front fog lamp operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

NKS001PJ

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES AND FUSIBLE LINK

Check for blown fuses and fusible link.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	F
		18
	Ignition switch ON or START position	1
	Ignition switch ACC or ON position	6
IPDM E/R	Battery	88

Refer to LT-106, "Wiring Diagram — F/FOG —" .

OK or NG

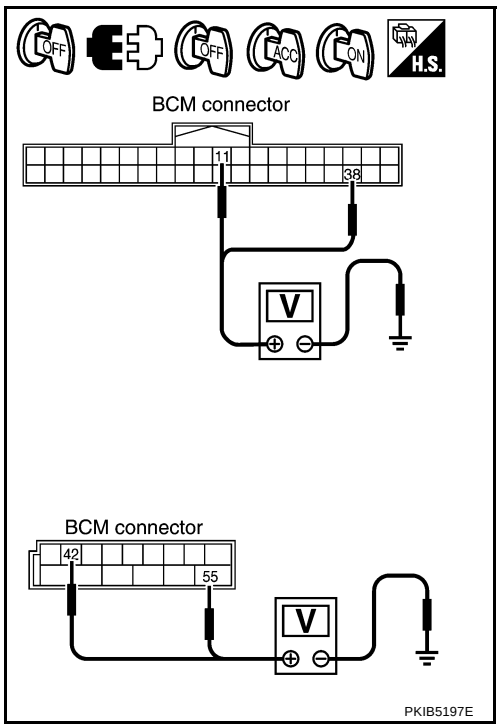
OK >> GO TO 2.

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-3, "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.

(+)		(–)	Ignition switch position		
BCM connector	Terminal		OFF	ACC	ON
M34	11	Ground	Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage
M35	42		Battery voltage	Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage	Battery voltage



OK or NG

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

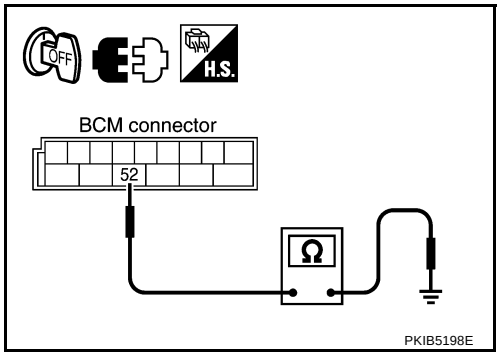
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M35	52		Yes

OK or NG

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



CONSULT-II Functions (BCM)

NKS001PK

Refer to LT-19, "CONSULT-II Functions (BCM)" in HEADLAMP -XENON TYPE-.
Refer to LT-49, "CONSULT-II Functions (BCM)" in HEADLAMP -CONVENTIONAL TYPE-.

CONSULT-II Functions (IPDM E/R)

NKS001PL

Refer to LT-21, "CONSULT-II Functions (IPDM E/R)" in HEADLAMP -XENON TYPE-.
Refer to LT-51, "CONSULT-II Functions (IPDM E/R)" in HEADLAMP -CONVENTIONAL TYPE-.

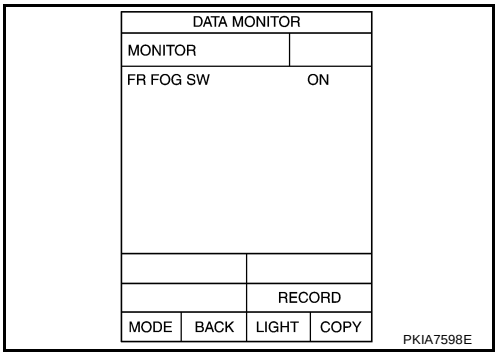
Front Fog Lamps Do Not Illuminate (Both Sides)

NKS001PM

1. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

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



When lighting switch is FOG position : FR FOG SW ON

Without CONSULT-II

Refer to LT-153, "Combination Switch Inspection" .

OK or NG

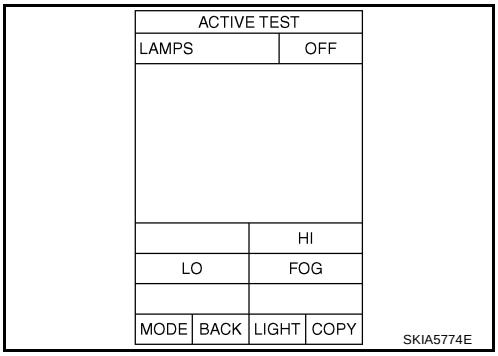
OK >> GO TO 2.

NG >> Check combination switch (lighting switch). Refer to LT-153, "Combination Switch Inspection" .

2. FRONT FOG LAMP ACTIVE TEST

With CONSULT-II

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



Front fog lamps should operate.

Without CONSULT-II

1. Start auto active test. Refer to PG-21, "Auto Active Test" .
2. Make sure front fog lamps operate.

Front fog lamps should operate.

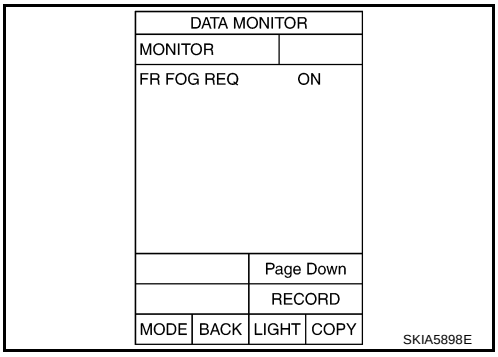
OK or NG

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 “FR FOG REQ” turns ON when lighting switch is in FOG position.



When lighting switch is FOG position : FR FOG REQ ON

OK or NG

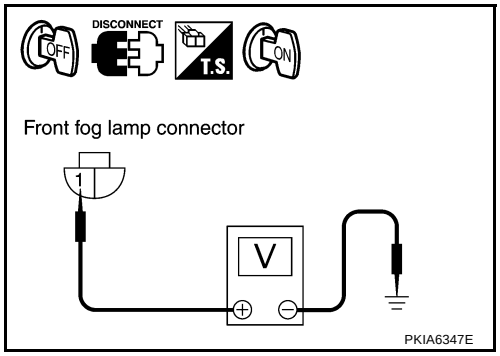
OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .

NG >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

4. CHECK FRONT FOG LAMP INPUT SIGNAL

With CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front 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 “LAMPS” on “SELECT TEST ITEM” screen.
5. Touch “FOG” screen.
6. When front fog lamps are operating, check voltage between front fog lamp (RH and LH) harness connector and ground.



(+)			(–)	Voltage
Front fog lamp connector		Terminal		
RH	E94	1	Ground	Battery voltage
LH	E92	1		

Without CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front fog lamp RH and LH connectors.
3. Start auto active test. Refer to PG-21, "Auto Active Test" .
4. When front fog lamps are operating, check voltage between front fog lamp (RH and LH) harness connector and ground.

(+)			(–)	Voltage
Front fog lamp connector		Terminal		
RH	E94	1	Ground	Battery voltage
LH	E92	1		

OK or NG

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

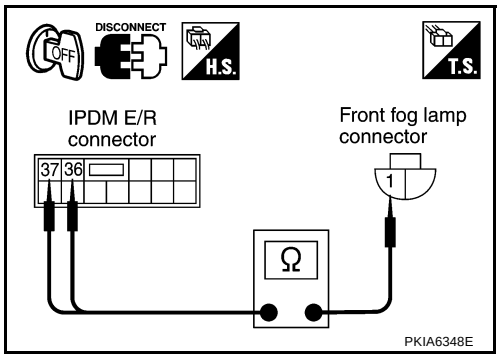
5. CHECK FRONT FOG LAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E8 terminal 36 and front fog lamp RH harness connector E94 terminal 1.

36 – 1 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E8 terminal 37 and front fog lamp LH harness connector E92 terminal 1.

37 – 1 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

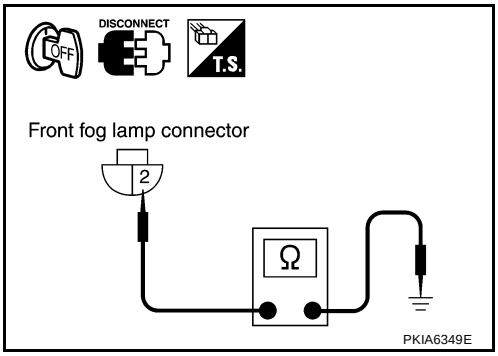
6. CHECK FRONT FOG LAMP GROUND

1. Check continuity between front fog lamp RH harness connector E94 terminal 2 and ground.

2 – Ground : Continuity should exist.

2. Check continuity between front fog lamp LH harness connector E92 terminal 2 and ground.

2 – Ground : Continuity should exist.



OK or NG

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

Front Fog Lamp Does Not Illuminate (One Side)

NKS001PN

1. CHECK BULB

Check bulb of lamp which does not illuminate.

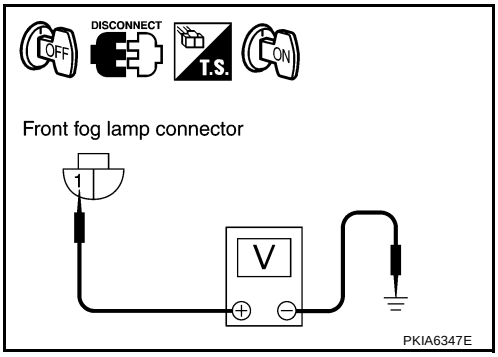
OK or NG

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

2. CHECK FRONT FOG LAMP INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect front fog lamp RH or LH connector.
3. Check voltage between front fog lamp RH or LH harness connector and ground.

(+)			(–)	Voltage
Front fog lamp Connector		Terminal		
RH	E94	1	Ground	Battery voltage
LH	E92	1		



OK or NG

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

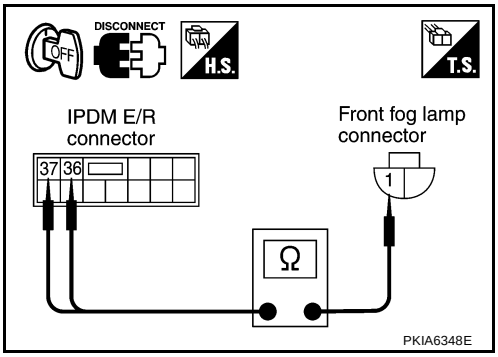
3. CHECK FRONT FOG LAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E8 terminal 36 and front fog lamp RH harness connector E94 terminal 1.

36 - 1 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E8 terminal 37 and front fog lamp LH harness connector E92 terminal 1.

37 - 1 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R.
NG >> Repair harness or connector.

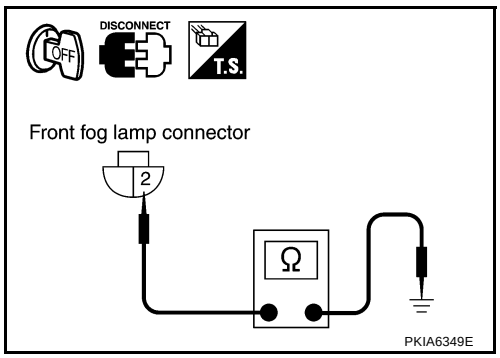
4. CHECK FRONT FOG LAMP GROUND

1. Check continuity between front fog lamp RH harness connector E94 terminal 2 and ground.

2 – Ground : Continuity should exist.

2. Check continuity between front fog lamp LH harness connector E92 terminal 2 and ground.

2 – Ground : Continuity should exist.



OK or NG

OK >> Check connector for connection, bend and loose fit and repair.

NG >> Repair harness or connector.

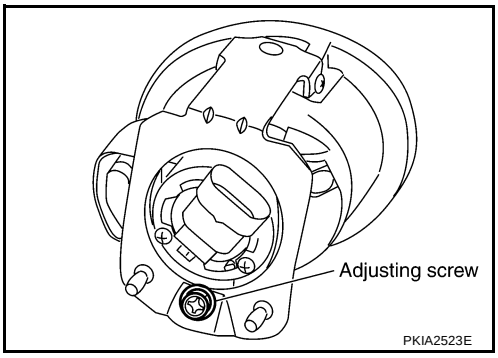
Aiming Adjustment

NKS001PO

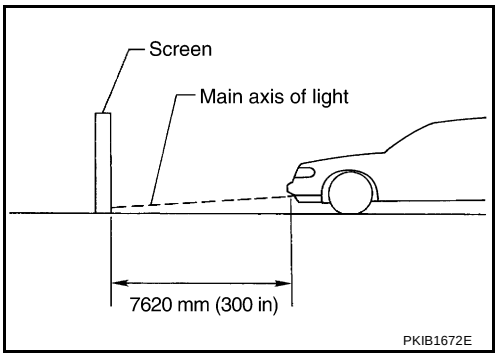
The front fog lamp is a semi-sealed beam type which uses a replaceable halogen bulb. Before performing aiming adjustment, make sure of the following.

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

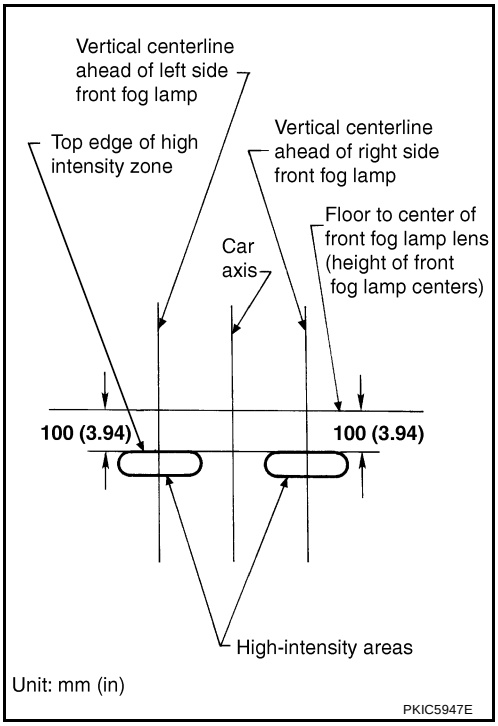
Adjust aiming in the vertical direction by turning the adjusting screw.



1. Set the distance between the screen and the center of the front fog lamp lens as shown at left.
2. Turn front fog lamps ON.



3. Adjust front fog lamps using adjusting screw so that the top edge of the high intensity zone is in the hatched area as shown in the figure.
   - When performing this adjustment, cover the headlamps and the opposite front fog lamp, if necessary.



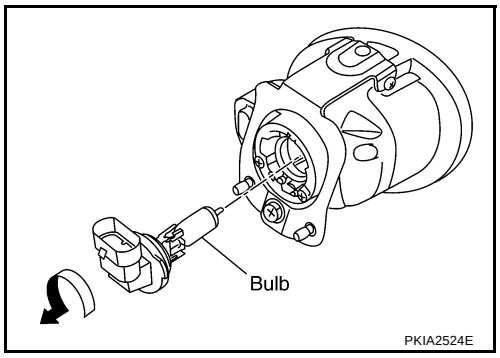
Bulb Replacement

NKS001PP

1. Remove fender protector front. Refer to EI-21, "FENDER PROTECTOR" .
2. Remove the one side of front bumper where a front fog lamp bulb to be changed.
3. Disconnect connector.
4. Turn bulb socket counterclockwise and unlock it.

Front fog lamp **:12 V - 51 W (HB4 halogen)**

5. Installation is the reverse order of removal.



CAUTION:

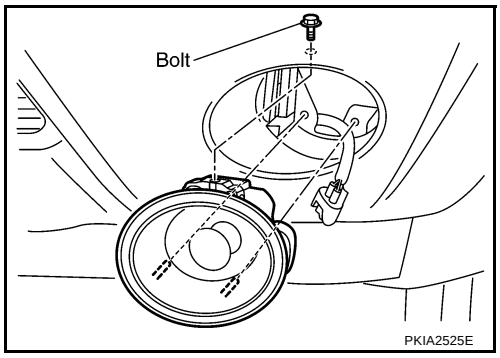
- **Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it. Never touch bulb by hand while it is lit or right after being turned off. Burning may result.**
- **Never leave bulb out of front fog lamp reflector for a long time because dust, moisture smoke, etc. May affect the performance of front fog lamp. When replacing bulb, be sure to replace it with new one.**

Removal and Installation

NKS001PQ

REMOVAL

1. Remove fender protector front. Refer to EI-21, "FENDER PROTECTOR" .
2. Remove the one side of front bumper where a front fog lamp needs to be changed. Refer to EI-14, "FRONT BUMPER" .
3. Remove bumper finisher. Refer to EI-14, "FRONT BUMPER" .
4. Remove front fog lamp mounting bolt.
5. Pull out front fog lamp from vehicle and disconnect connector.



INSTALLATION

Installation is the reverse order of removal.

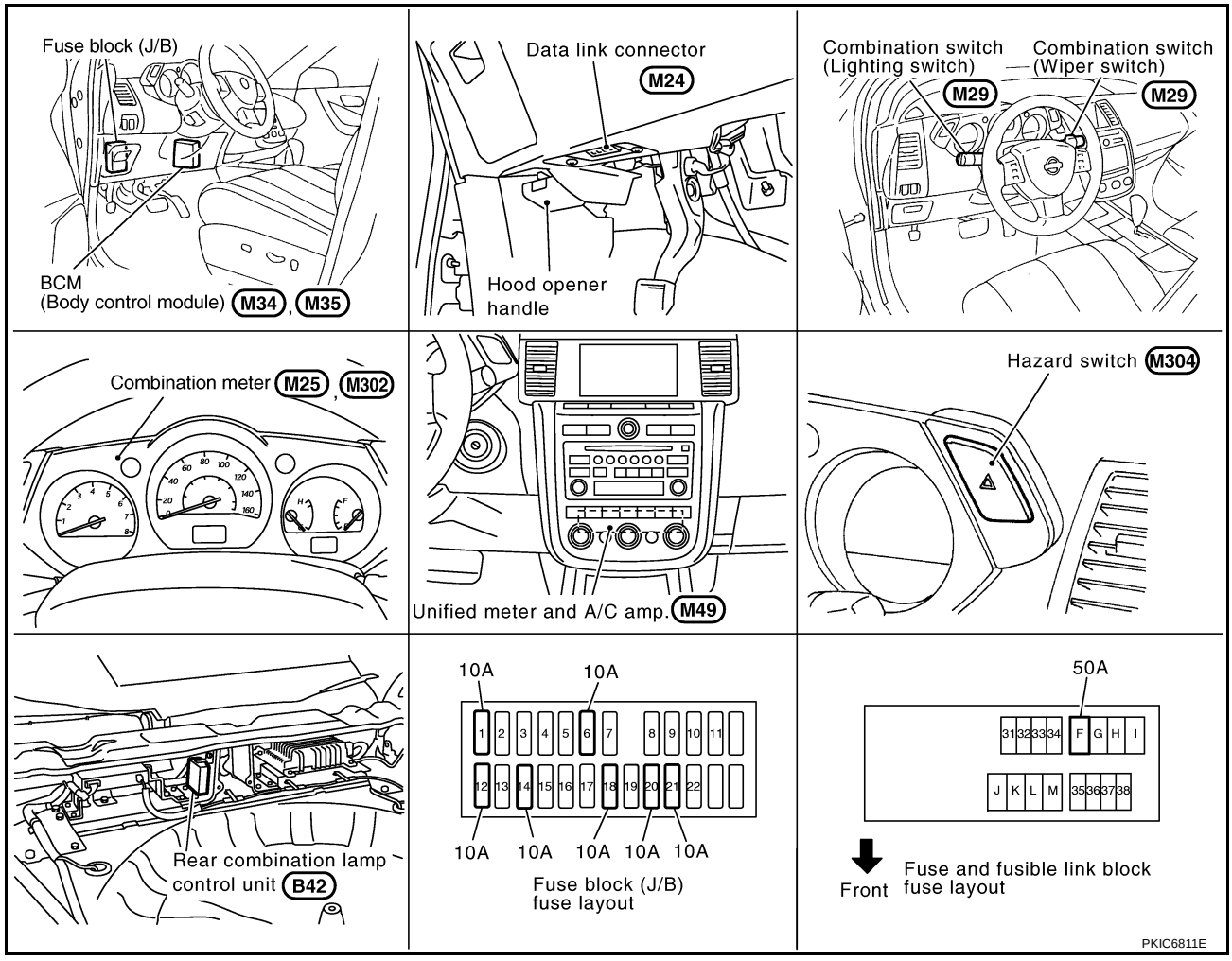
Front fog lamp mounting bolt **: 5.5 N·m (0.56 kg-m, 49 in-lb)**

TURN SIGNAL AND HAZARD WARNING LAMPS

PFP:26120

Component Parts and Harness Connector Location

NKS001PR



System Description

NKS001PS

OUTLINE

Power is supplied at all times

- through 50A fusible link (letter F, located in fuse and fusible link block)
- to BCM (body control module) terminal 55,
- through 10A fuse [No. 18, located in fuse block (J/B)]
- to BCM terminal 42,
- through 10A fuse [No. 20, located in fuse block (J/B)]
- to rear combination lamp control unit terminal 9,
- through 10A fuse [No. 21, located in fuse block (J/B)]
- to combination meter terminal 21.

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

- through 10A fuse [No. 1, located in fuse block (J/B)]
- to BCM terminal 38,
- through 10A fuse [No. 12, located in fuse block (J/B)]
- to rear combination lamp control unit terminal 16,
- through 10A fuse [No. 14, located in fuse block (J/B)]
- to combination meter terminal 20.

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

- through 10A fuse [No. 6, located in fuse block (J/B)]

- to BCM terminal 11.

Ground is supplied

- to BCM terminal 52
- through grounds M14 and M78,
- to rear combination lamp control unit terminals 12
- through grounds B7 and B20,
- to combination meter terminals 22, 23 and 24
- through grounds M14 and M78.

TURN SIGNAL OPERATION

LH Turn Signal Lamp

When the turn signal switch (combination switch) is in left position with the ignition switch in ON position, BCM detects the TURN LH (ON) by combination switch reading function. BCM outputs the turn signal (LH) intermittently, and BCM also sends the turn indicator signal (LH) intermittently through CAN communication. BCM supplies power

- through BCM terminal 45
- to front combination lamp LH terminal 2, and
- to rear combination lamp control unit terminal 3.

When receiving the turn signal (LH), rear combination lamp control unit detects the turn signal (LH) ON, then rear combination lamp control unit outputs the rear combination lamp drive signal LH intermittently (turn signal output). Rear combination lamp control unit supplies power

- through rear combination lamp control unit terminal 5
- to rear combination lamp LH terminal 1.

Ground is supplied

- to front combination lamp LH terminal 8
- through grounds E13, E26 and E28,
- to rear combination lamp LH terminal 4
- through rear combination lamp control unit terminal 13.

Unified meter and A/C amp. receives the turn indicator signal (LH) through CAN communication, then makes turn signal indicator (LH) start flashing operation interlocked with the buzzer sounds in combination meter. With power and ground supplied, BCM controls the flashing of the LH turn signal lamps.

RH Turn Signal Lamp

When the turn signal switch (combination switch) is in right position with the ignition switch in ON position, BCM detects the TURN RH (ON) by combination switch reading function. BCM outputs the turn signal (RH) intermittently, and BCM also sends the turn indicator signal (RH) intermittently through CAN communication. BCM supplies power

- through BCM terminal 46
- to front combination lamp RH terminal 2, and
- to rear combination lamp control unit terminal 4.

When receiving the turn signal (RH), rear combination lamp control unit detects the turn signal (RH) ON, then rear combination lamp control unit outputs the rear combination lamp drive signal RH intermittently (turn signal output). Rear combination lamp control unit supplies power

- through rear combination lamp control unit terminal 7
- to rear combination lamp RH terminal 1.

Ground is supplied

- to front combination lamp RH terminal 8
- through grounds E13, E26 and E28,
- to rear combination lamp RH terminal 4
- through rear combination lamp control unit terminal 14.

Unified meter and A/C amp. receives the turn indicator signal (RH) through CAN communication, then makes turn signal indicator (RH) start flashing operation interlocked with the buzzer sounds in combination meter. With power and ground supplied, BCM controls the flashing of the RH turn signal lamps.

LED Cut Detect Function

LED circuit has 9 rows of parallel circuits with 3 LEDs* to 1 row and diagnosis circuit built in rear combination lamp. Diagnosis circuit detects the state of rear combination lamp circuits and transmits the LED cut detect signal to rear combination lamp control unit. Rear combination lamp control unit monitors the rear combination lamp circuits via the LED cut detect signal during turn signal LH/RH operation. Then rear combination lamp control unit judges the normality of rear combination lamp circuits and transmits the warning output signal (OK/NG) to unified meter and A/C amp. Unified meter and A/C amp. transmits the LED burnout status signal (OK/NG) to BCM through CAN communication depending on the warning output signal.
If BCM receives the LED burnout status signal (NG), BCM controls the high speed flashing during turn signal LH/RH operation.
*: One of 9 circuits looks to have only 2 LEDs.

Operation	LED circuit malfunction	Warning output signal/ LED burnout signal	Flashing
Left/right turn signal lamp	1 row or less	OK	Normal speed
	2 rows or more	NG	High speed
Hazard lamp	1 row or less (both sides)	OK	Normal speed
	2 rows or more (one side or both sides)	NG	Normal speed
No operation	—	NG	—

HAZARD LAMP OPERATION

When the hazard switch is in ON position, combination meter detects hazard switch ON. Then combination meter supplies ground

- to BCM terminal 29
- through combination meter terminal 9

When receiving the hazard switch signal, BCM detects the hazard switch signal ON. BCM outputs the turn signal (LH and RH) intermittently, and BCM also sends the turn indicator signal (LH and RH) intermittently through CAN communication. BCM supplies power

- through BCM terminal 45
- to front combination lamp LH terminal 2
- to rear combination lamp control unit terminal 3,
- through BCM terminal 46
- to front combination lamp RH terminal 2
- to rear combination lamp control unit terminal 4.

When receiving the turn signal (LH and RH), rear combination lamp control unit detects the turn signal (LH and RH) ON, then rear combination lamp control unit outputs the rear combination lamp drive signal LH and RH intermittently (hazard output). Rear combination lamp control unit supplies power

- through rear combination lamp control unit terminal 5
- to rear combination lamp LH terminal 1,
- through rear combination lamp control unit terminal 7
- to rear combination lamp RH terminal 1.

Ground is supplied

- to front combination lamp RH and LH terminals 8
- through grounds E13, E26 and E28,
- to rear combination lamp LH terminal 4
- through rear combination lamp control unit terminal 13,
- to rear combination lamp RH terminal 4
- through rear combination lamp control unit terminal 14.

Unified meter and A/C amp. receives the turn indicator signal (LH and RH) through CAN communication, then makes turn signal indicator (LH and RH) start flashing operation interlocked with the buzzer sounds in combination meter.
With power and ground supplied, BCM controls the flashing of the hazard lamps.

INTERLOCKED HAZARD LAMP OPERATION WITH REMOTE KEYLESS ENTRY SYSTEM

BCM receives the keyfob signal (door lock/unlock signal) from remote keyless entry receiver, then BCM controls hazard lamps.
Refer to BL-57, "REMOTE KEYLESS ENTRY SYSTEM" .

INTERLOCKED HAZARD LAMP OPERATION WITH INTELLIGENT KEY SYSTEM

BCM receives the door lock/unlock signal from Intelligent Key unit through CAN communication, then BCM controls hazard lamps.
Refer to BL-87, "INTELLIGENT KEY SYSTEM" .

COMBINATION SWITCH READING FUNCTION

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

CAN Communication System Description

NKS001PT

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.

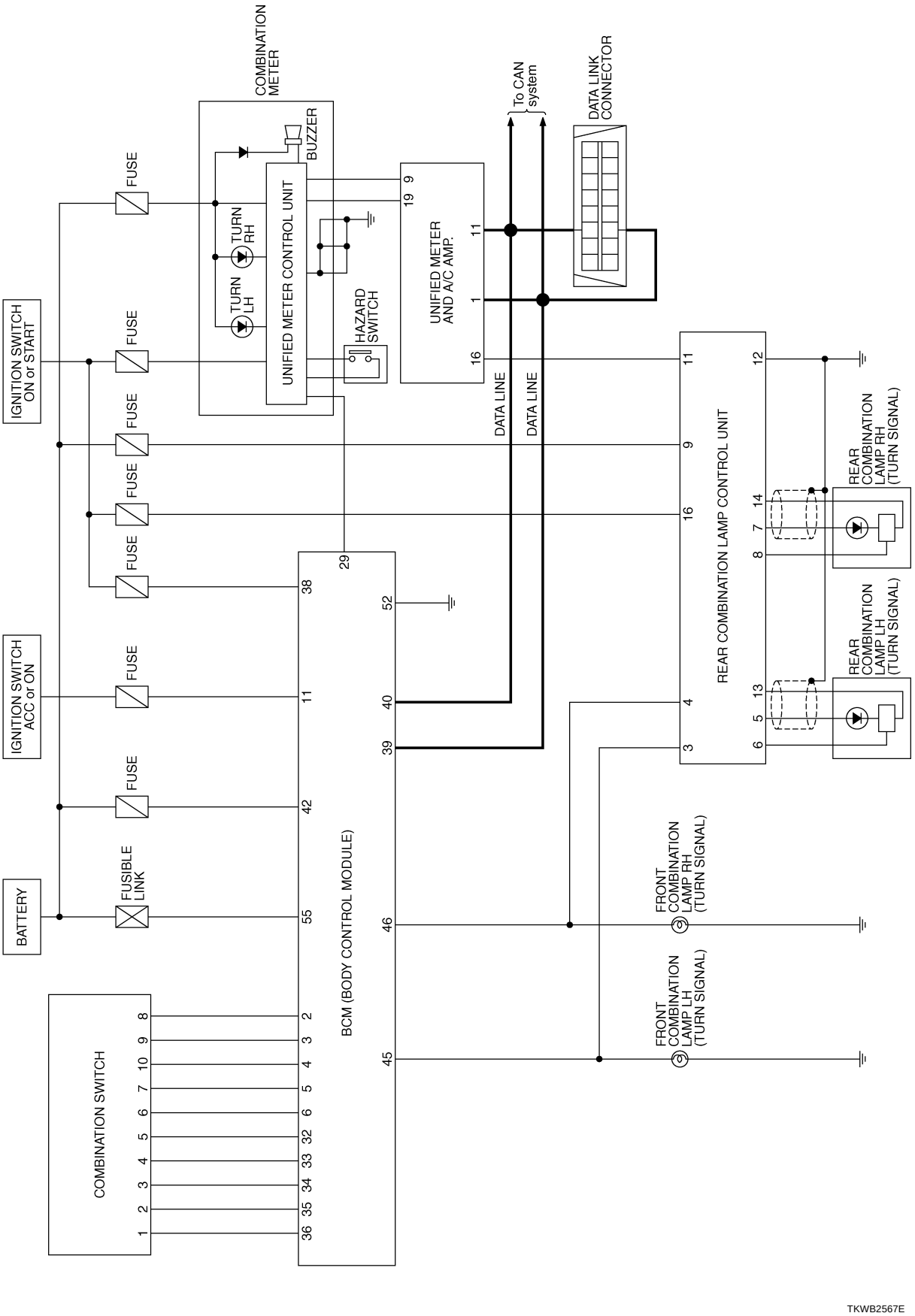
CAN Communication Unit

NKS001PU

Refer to LAN-49, "CAN System Specification Chart" .

Schematic

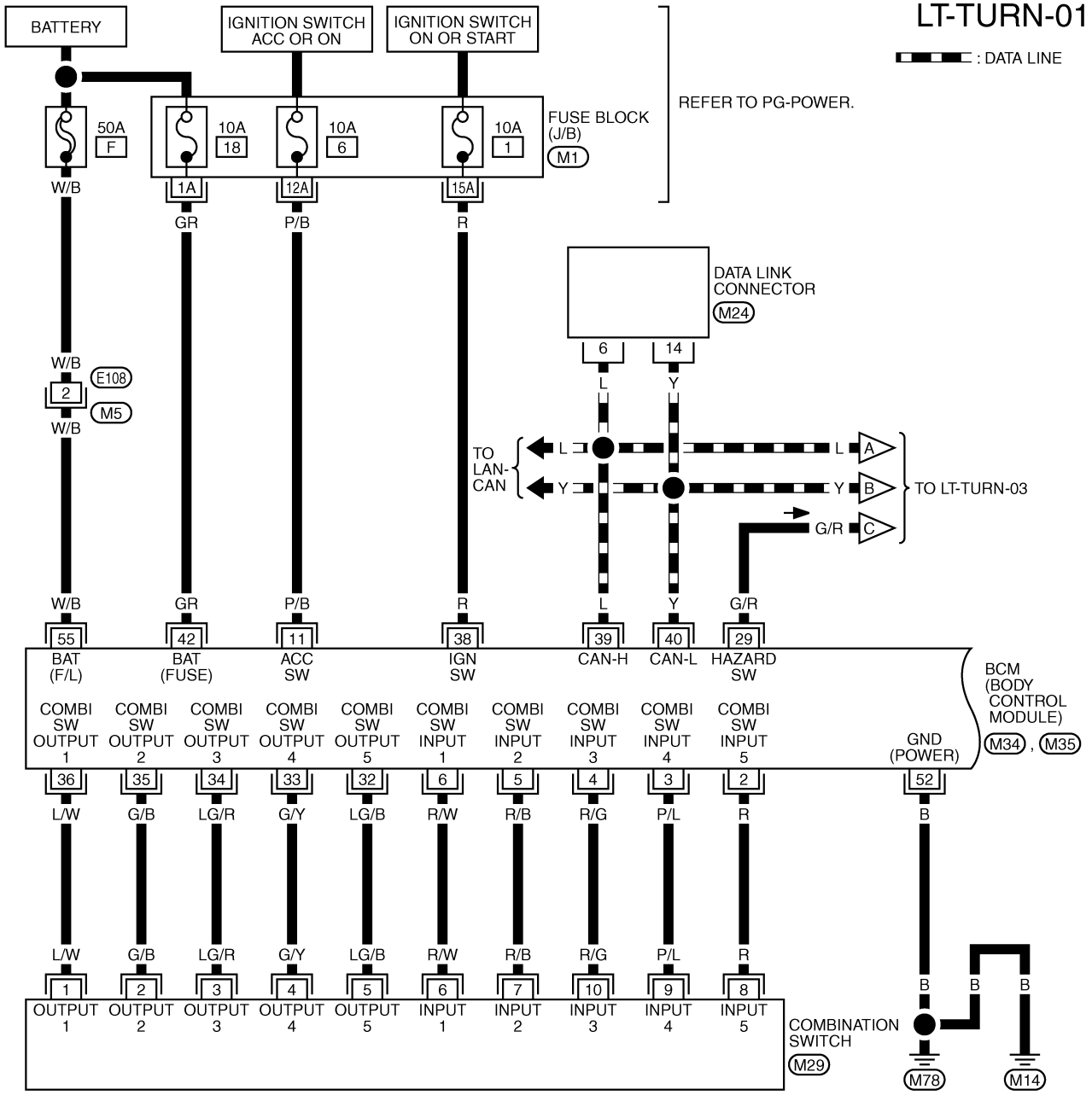
NKS001PV

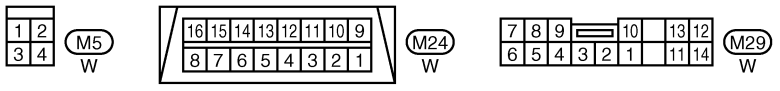


TKWB2567E

Wiring Diagram — TURN —

NKS001PW



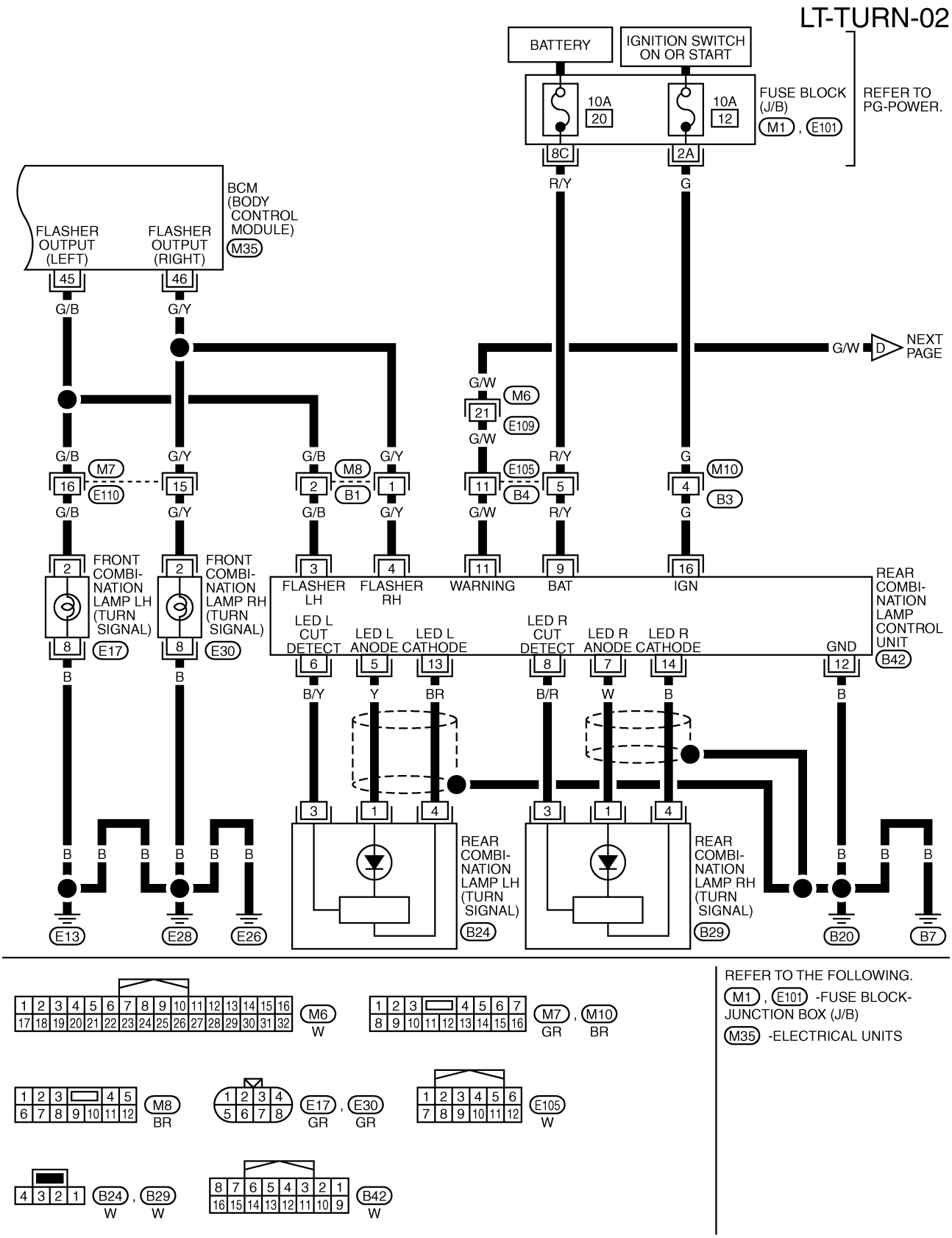


REFER TO THE FOLLOWING.

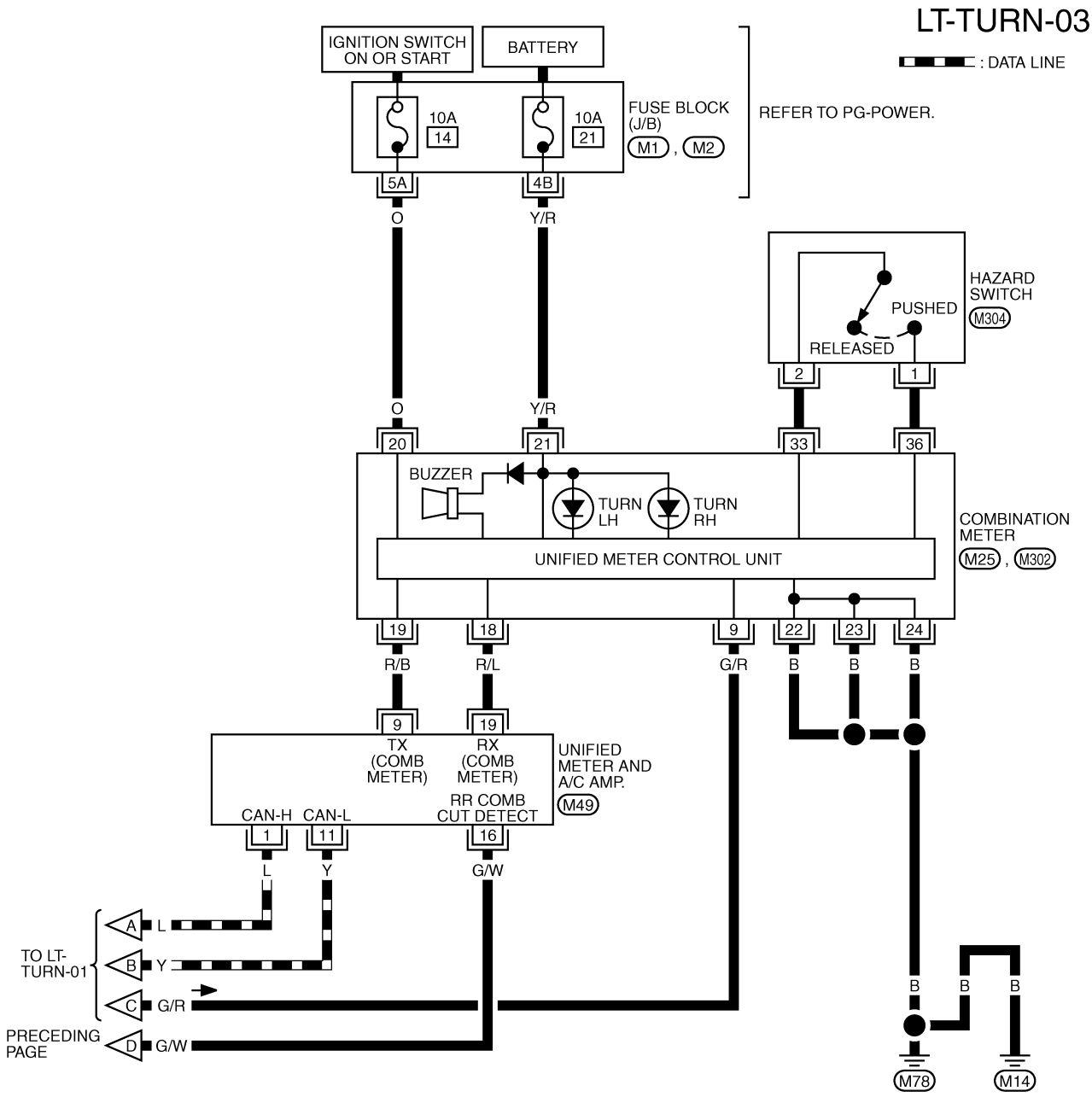
M1 -FUSE BLOCK-JUNCTION BOX (J/B)

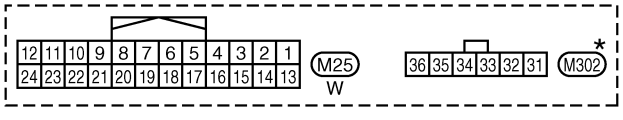
M34, M35 -ELECTRICAL UNITS

TKWB2568E


LT-TURN-02
BATTERY
IGNITION SWITCH ON OR START
10A 20
10A 12
FUSE BLOCK (J/B) M1, E101
REFER TO PG-POWER.
8C
2A
R/Y
G
BCM (BODY CONTROL MODULE) M35
FLASHER OUTPUT (LEFT)
FLASHER OUTPUT (RIGHT)
45
46
G/B
G/Y
G/W
NEXT PAGE
M6
21
E109
M7
16
E110
15
M8
2
B1
1
E105
11
B4
5
M10
4
B3
FRONT COMBI-NATION LAMP LH (TURN SIGNAL)
FRONT COMBI-NATION LAMP RH (TURN SIGNAL)
E17
E30
3
FLASHER LH
4
FLASHER RH
11
WARNING
9
BAT
16
IGN
REAR COMBI-NATION LAMP CONTROL UNIT B42
LED L CUT DETECT
LED L ANODE
LED L CATHODE
LED R CUT DETECT
LED R ANODE
LED R CATHODE
GND
12
B/Y
Y
BR
B/R
W
REAR COMBI-NATION LAMP LH (TURN SIGNAL) B24
REAR COMBI-NATION LAMP RH (TURN SIGNAL) B29
E13
E28
E26
B20
B7
M6 W
M7 GR, M10 BR
M8 BR
E17 GR, E30 GR
E105 W
B24 W, B29 W
B42 W
REFER TO THE FOLLOWING.
M1, E101 -FUSE BLOCK-JUNCTION BOX (J/B)
M35 -ELECTRICAL UNITS

TKWB2569E





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

REFER TO THE FOLLOWING.
M1 , M2 -FUSE BLOCK-JUNCTION BOX (J/B)

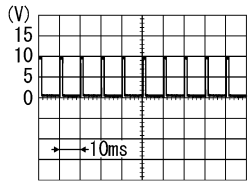
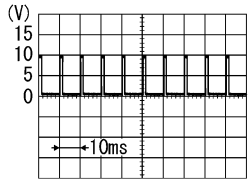
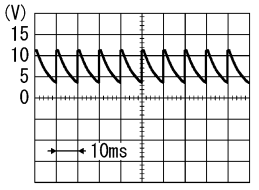
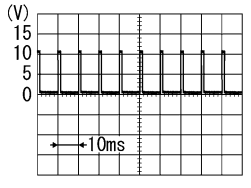
TKWB2570E

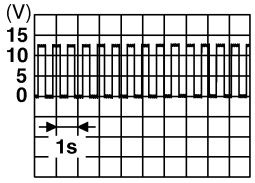
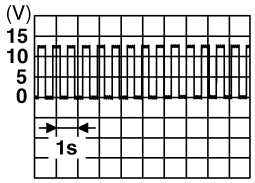
Terminals and Reference Value for BCM

NKS001PX

CAUTION:

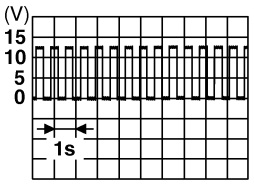
- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-II. Refer to LT-152, "DATA MONITOR" .**

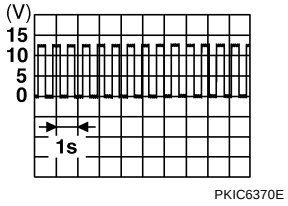
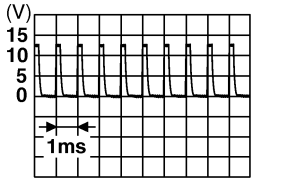
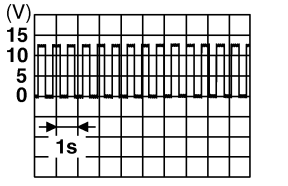
Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
2	R	Combination switch input 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Turn signal switch to right	 PKIB4959J Approx. 1.0 V
3	P/L	Combination switch input 4	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Turn signal switch to left	 PKIB4959J Approx. 1.0 V
11	P/B	Ignition switch (ACC)	ACC	—		Battery voltage
29	G/R	Hazard switch signal	OFF	Hazard switch	ON	Approx. 0 V
					OFF	Battery voltage
36	L/W	Combination switch output 1	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Any of the conditions below ● Turn signal switch to right ● Turn signal switch to left	 PKIB4958J Approx. 1.2 V
38	R	Ignition switch (ON)	ON	—		Battery voltage
39	L	CAN – H	—	—		—
40	Y	CAN – L	—	—		—

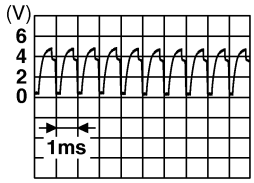
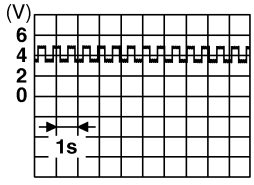
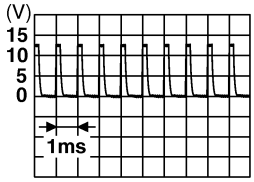
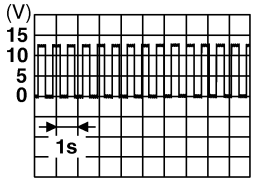
Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
42	GR	Battery power supply	OFF	—		Battery voltage
45	G/B	Turn signal (left)	ON	Combination switch	Turn left ON	 PKIC6370E Approx. 6.0 V
46	G/Y	Turn signal (right)	ON	Combination switch	Turn right ON	 PKIC6370E Approx. 6.0 V
52	B	Ground	ON	—		Approx. 0 V
55	W/B	Battery power supply	OFF	—		Battery voltage

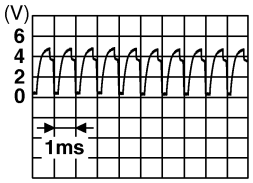
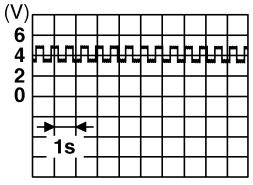
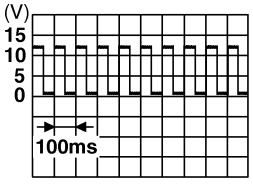
Terminals and Reference Value for Rear Combination Lamp Control Unit

NKS002SV

Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
1	R/L	Tail lamp signal	—	Lighting switch OFF	Approx. 0 V
				Lighting switch 1ST	Battery voltage
2	R/G	Stop lamp signal	—	Brake pedal released (stop lamp switch OFF)	Approx. 0 V
				Brake pedal depressed (stop lamp switch ON)	Battery voltage
3	G/B	Turn signal lamp LH signal	ON	Turn signal switch OFF, hazard switch OFF	Approx. 0 V
			ON	Turn signal switch LH	 PKIC6370E Approx. 6.0 V
			—	Hazard switch ON	

Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
4	G/Y	Turn signal lamp RH signal	ON	Turn signal switch OFF, hazard switch OFF	Approx. 0 V
			ON	Turn signal switch RH	 PKIC6370E Approx. 6.0 V
			—	Hazard switch ON	
5	Y	Rear combination lamp drive signal (LH)	—	Lighting switch OFF, brake pedal released (stop lamp switch OFF), turn signal switch OFF, hazard switch OFF	Approx. 0 V
				Lighting switch 1ST	 PKIC6371E Approx. 3.0 V
				Brake pedal depressed (stop lamp switch ON)	Battery voltage
			ON	Turn signal switch LH	 PKIC6370E Approx. 6.0 V
			—	Hazard switch ON	

Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
6	B/Y	LED cut detect signal (LH)	—	Lighting switch OFF, brake pedal released (stop lamp switch OFF), turn signal switch OFF, hazard switch OFF	Approx. 5 V
				Lighting switch 1ST	 PKIC6372E Approx. 3.2 V
				Brake pedal depressed (stop lamp switch ON)	Approx. 3.6 V
			ON	Turn signal switch RH	 PKIC6373E Approx. 4.2 V
			—	Hazard switch ON	
7	W	Rear combination lamp drive signal (RH)	—	Lighting switch OFF, brake pedal released (stop lamp switch OFF), turn signal switch OFF, hazard switch OFF	Approx. 0 V
				Lighting switch 1ST	 PKIC6371E Approx. 3.0 V
				Brake pedal depressed (stop lamp switch ON)	Battery voltage
			ON	Turn signal switch RH	 PKIC6370E Approx. 6.0 V
			—	Hazard switch ON	

Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
8	B/R	LED cut detect signal (RH)	—	Lighting switch OFF, brake pedal released (stop lamp switch OFF), turn signal switch OFF, hazard switch OFF	Approx. 5 V
				Lighting switch 1ST	 PKIC6372E Approx. 3.2 V
				Brake pedal depressed (stop lamp switch ON)	Approx. 3.6 V
			ON	Turn signal switch RH	 PKIC6373E Approx. 4.2 V
			—	Hazard switch ON	
9	G/W	Battery power supply	OFF	—	Battery voltage
11	G/W	Warning output signal	ON	When turn signal lamp operates normally	 PKIC6374E Approx. 6.3 V
				Except when turn signal lamp operates normally	Approx. 12 V
12	B	Ground	ON	—	Approx. 0 V
13	BR	Rear combination lamp LH ground	ON	—	Approx. 0 V
14	B	Rear combination lamp LH ground	ON	—	Approx. 0 V
16	G	Ignition switch (ON)	ON	—	Battery voltage

How to Proceed with Trouble Diagnosis

NKS001PY

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-117, "System Description" .
3. Perform preliminary check. Refer to LT-130, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Do turn signal and hazard warning lamps operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

NKS001PZ

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES AND FUSIBLE LINK

Check for blown fuses and fusible link.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	F
		18
	Ignition switch ON or START position	1
	Ignition switch ACC or ON position	6

Refer to LT-122, "Wiring Diagram — TURN —" .

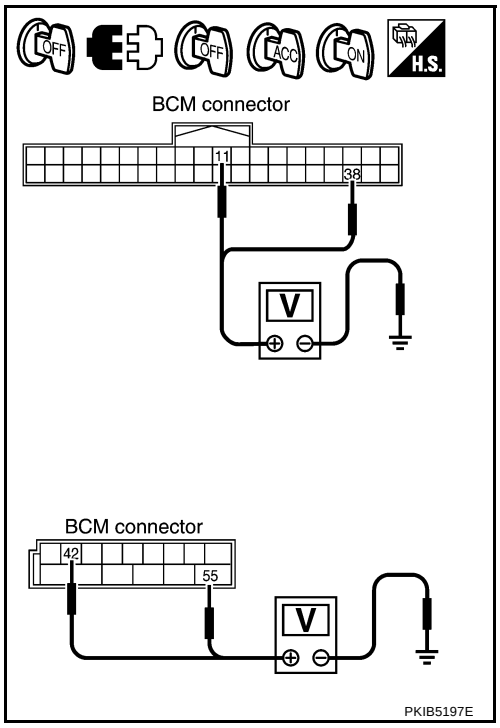
OK or NG

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-3, "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.

(+)		(–)	Ignition switch position		
BCM connector	Terminal		OFF	ACC	ON
M34	11	Ground	Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage
M35	42		Battery voltage	Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage	Battery voltage



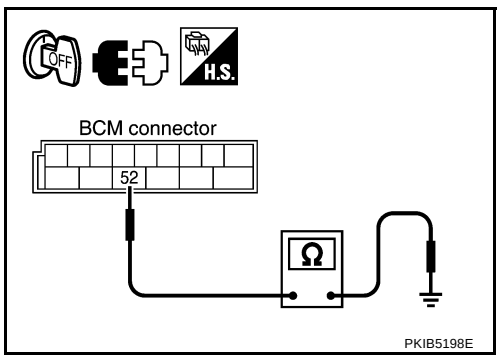
OK or NG

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
M35	52		Yes



OK or NG

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

CONSULT-II Functions (BCM)

NKS001Q0

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

BCM diagnosis part	Diagnosis mode	Description
FLASHER	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 BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

DATA MONITOR

Operation Procedure

1. Touch “FLASHER” on “SELECT TEST ITEM” screen.
2. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
3. Touch either “ALL SIGNALS” or “SELECTION FROM MENU” on the “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all the signals.
SELECTION FROM MENU	Selects items and monitors them.

4. When “SELECTION FROM MENU” is selected, touch items to be monitored. When “ALL SIGNALS” is selected, all the items will be monitored.
5. Touch “START”.
6. Touch “RECORD” while monitoring, then the status of the monitored item can be recorded. To stop recording, touch “STOP”.

Display Item List

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

NOTE:
This item is displayed, but cannot be monitored

ACTIVE TEST

Operation Procedure

1. Touch “FLASHER” on “SELECT TEST ITEM” screen.
2. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
3. Touch item to be tested and check operation of the selected item.
4. During the operation check, touching “OFF” deactivates the operation.

Display Item List

Test item	Description
FLASHER	With a certain operation (OFF, RH, LH), turn signal lamp can be operated.

Turn Signal Lamps Do Not Operate

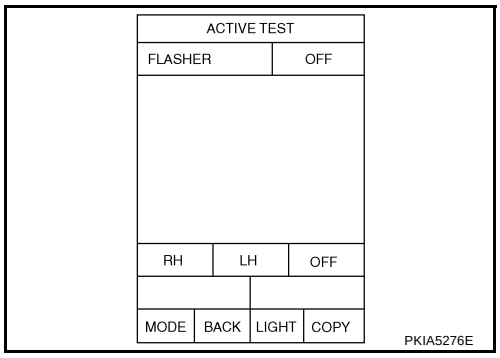
NKS001Q1

1. ACTIVE TEST

With CONSULT-II

1. Select “FLASHER” during active test. Refer to LT-131, "ACTIVE TEST" .
2. Make sure “FLASHER RIGHT” and “FLASHER LEFT” operates.

Turn signal lamps should operate.



Without CONSULT-II

GO TO 2.

OK or NG

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

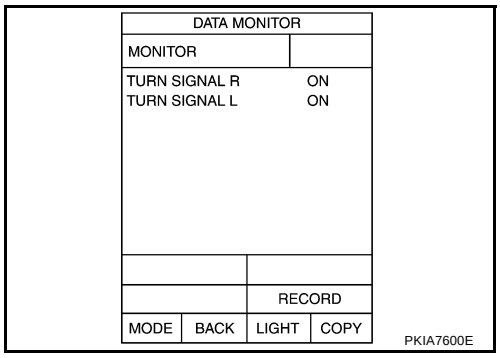
2. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

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

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

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



Without CONSULT-II

Refer to LT-153, "Combination Switch Inspection" .

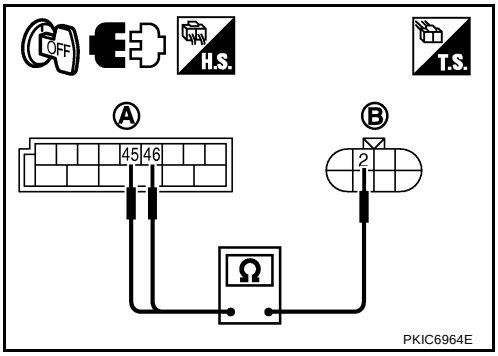
OK or NG

OK >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .
NG >> Check combination switch (lighting switch). Refer to LT-153, "Combination Switch Inspection" .

3. CHECK TURN SIGNAL CIRCUIT

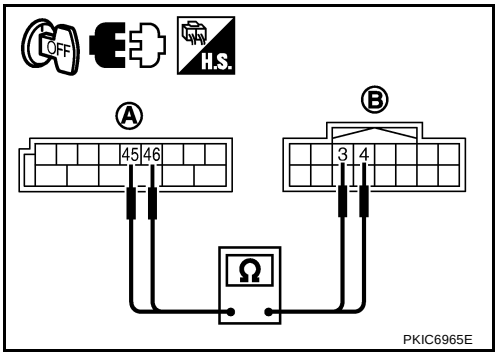
1. Turn ignition switch OFF.
2. Disconnect BCM connector, front combination lamp RH and LH connectors, and rear combination lamp control unit connector.
3. Check continuity between BCM harness connector (A) and front combination lamp harness connector (B).

A			B			Continuity
Connector		Terminal	Connector		Terminal	
RH	M35	46	RH	E30	2	Yes
LH		45	LH	E17		



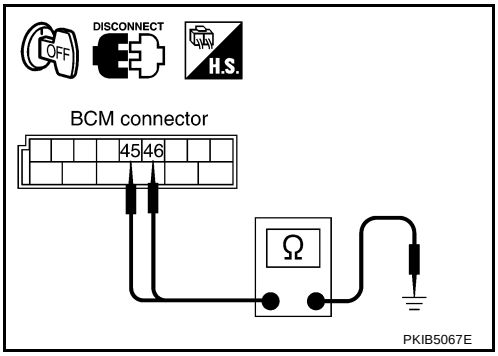
4. Check continuity between BCM harness connector (A) and rear combination lamp control unit harness connector (B).

A			B		Continuity
Connector		Terminal	Connector	Terminal	
RH	M35	46	B42	4	Yes
LH		45		3	



5. Check continuity (short circuit) between BCM harness connector and ground.

BCM connector		Terminal	Ground	Continuity
RH	M35	46		No
LH		45		



OK or NG

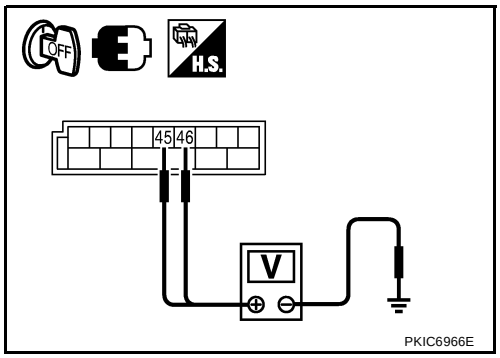
OK >> GO TO 4.
NG >> Repair harness or connector.

4. CHECK TURN SIGNAL OUTPUT VOLTAGE

With CONSULT-II

1. Connect BCM connector, front combination lamp RH and LH connectors, and rear combination lamp control unit connector.
2. Select “FLASHER” during active test. Refer to LT-131, "ACTIVE TEST" .
3. When turn signal lamp is operating, check voltage between BCM harness connector and ground.

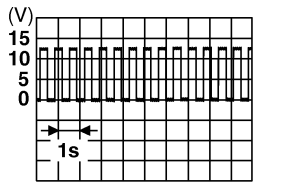
(+)			(-)	Voltage
BCM connector		Terminal		
RH	M35	46	Ground	Battery voltage
LH		45		



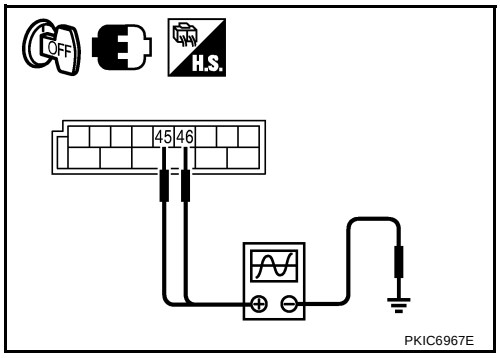
PKIC6966E

Without CONSULT-II

1. Connect BCM connector, front combination lamp RH and LH connector, and rear combination lamp control unit connector.
2. Turn signal switch is turned RH or LH position.
3. When turn signal lamp is operating, check voltage between BCM harness connector and ground.

(+)			(-)	Voltage
BCM connector		Terminal		
RH	M35	46	Ground	
LH		45		

PKIC6370E



PKIC6967E

OK or NG

OK >> Check connector connection bend and loose fit.
NG >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

Turn Signal Lamps Go ON, But Flash at High Speed (Both Sides)

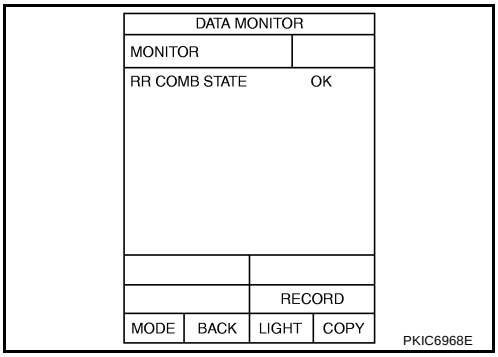
NKS002SX

NOTE:
Check if LED circuit is normally. Refer to LT-119, "LED Cut Detect Function" .

1. CHECK WARNING OUTPUT SIGNAL

Select “METER A/C AMP” on CONSULT-II. With data monitor to make sure “RR COMB STATE” turns OK-NG linked with operation of turn signal switch.

When turn signal switch is RH or LH position : RR COMB STATE OK



OK or NG

OK >> Check CAN communication. Refer to BCS-13, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .
NG >> GO TO 2.

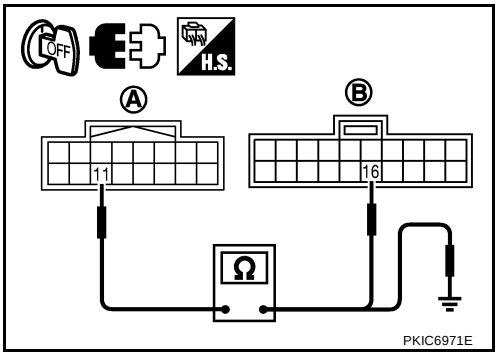
2. CHECK WARNING OUTPUT SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect rear combination lamp control unit connector and unified meter and A/C amp. connector.
3. Check continuity rear combination lampcontrol unit harness connector (A) B42 terminal 11 and unified meter and A/C amp. harness connector (B) M49 terminal 16.

   11 – 16 : Continuity should exist.

4. Check continuity (short circuit) between rear combination lamp control unit harness connector (A) B42 terminal 11 and ground.

   11 – Ground : Continuity should not exist.



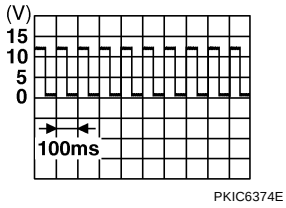
OK or NG

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

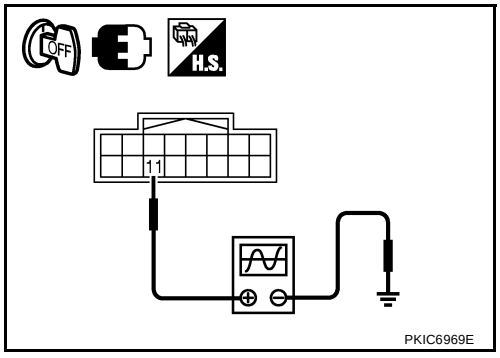
3. CHECK WARNING OUTPUT SIGNAL

1. Connect rear combination lamp control unit connector and unified meter and A/C amp. connector.
2. Hazard switch is ON.
3. Check voltage between rear combination lamp control unit harness connector B42 terminal 11 and ground.

**11 – Ground : **



PKIC6374E



PKIC6969E

OK or NG

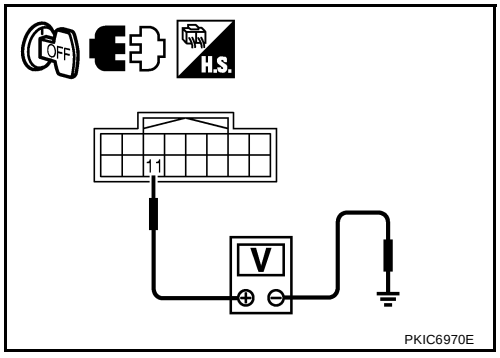
OK >> Replace unified meter and A/C amp.. Refer to DI-36, "Removal and Installation of Unified Meter and A/C Amp." .

NG >>
- If voltage is approx. 0 V, GO TO 4.
- If voltage is approx. 12 V, replace rear combination lamp control unit.

4. CHECK UNIFIED METER AND A/C AMP. WARNIG OUTPUT SIGNAL POWER SUPPLY

1. Discnnect rear combination lamp control unit connector.
2. Check voltage between rear combination lamp control unit harness connector B42 terminal 11 and ground.

11 – Ground : Battery voltage.



PKIC6970E

OK or NG

OK >> Replace rear combination lamp control unit. Refer to LT-184, "REAR COMBINATION LAMP CONTROL UNIT" .

NG >> Replace unified meter and A/C amp.. Refer to DI-36, "Removal and Installation of Unified Meter and A/C Amp." .

Turn Signal Lamps Go ON, But Flash at High Speed (One Side)

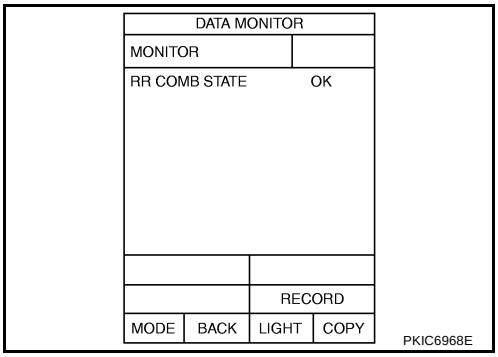
NKS002SZ

NOTE:
Check if LED circuit is normally. Refer to LT-119, "LED Cut Detect Function" .

1. CHECK WARNING OUTPUT SIGNAL

Select “METER A/C AMP” on CONSULT-II. With data monitor to make sure “RR COMB STATE” turns OK-NG linked with operation of turn signal switch.

When turn signal switch is RH or LH position : RR COMB STATE OK



OK or NG

OK >> GO TO 2.
NG >> GO TO 4.

2. CHECK FRONT TURN SIGNAL LAMP BULB

Check front turn signal lamp bulb standard of front turn signal lamp RH or LH is correct.

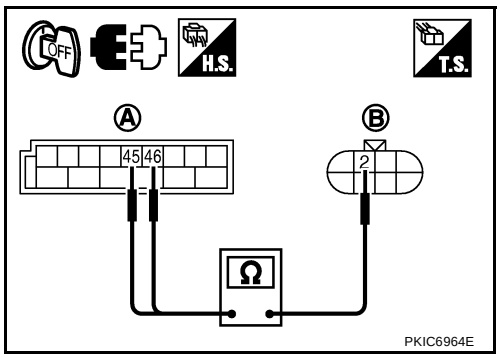
OK or NG

OK >> GO TO 3.
NG >> Replace turn signal lamp bulb.

3. CHECK TURN SIGNAL CIRCUIT

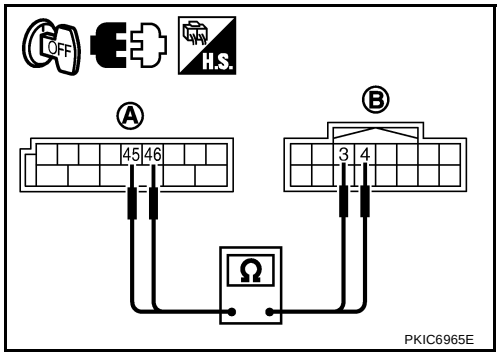
1. Turn ignition switch OFF.
2. Disconnect BCM connector, front combination lamp RH or LH connectors, and rear conbination lamp control unit connector.
3. Check continuity between BCM harness connector (A) and front combination lamp harness connector (B).

A			B			Continuity
Connector		Terminal	Connector		Terminal	
RH	M35	46	RH	E30	2	Yes
LH		45	LH	E17		



4. Check continuity between BCM harness connector (A) and rear combination lamp control unit harness connector (B).

A			B		Continuity
Connector		Terminal	Connector	Terminal	
RH	M35	46	B42	4	Yes
LH		45		3	



OK or NG

OK >> Check connector connection bend and loose fit.
NG >> Repair harness or connector.

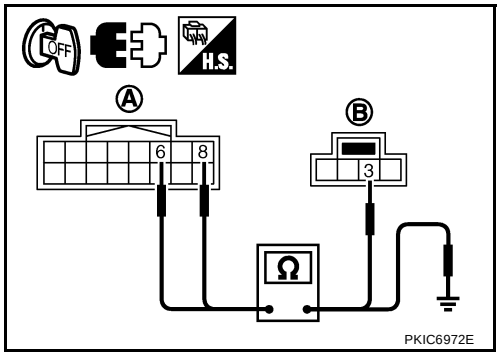
4. CHECK LED CUT DETECT SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect rear combination lamp control unit connector and rear combination lamp RH or LH connectors.
3. Check continuity rear combination lamp control unit harness connector (A) and rear combination lamp harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	
B42	8	RH B29	3	Yes
	6	LH B24		

4. Check continuity (short circuit) between rear combination lamp control unit (A) harness connector and ground.

A		Ground	Continuity
Connector		Terminal		
RH	B42	8		No
LH		6		

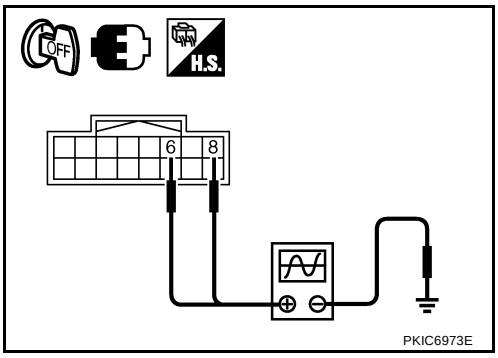


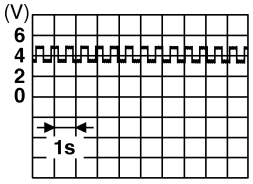
OK or NG

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

5. CHECK LED CUT DETECT SIGNAL

1. Turn ignition switch OFF.
2. Connect rear conbination lamp control unit connector and rear combination lamp RH or LH connectors.
3. Hazard switch is ON.
4. Check voltage between rear combination lamp control unit harness connector and ground.



(+)			(-)	Voltage
Rear combination lamp control unit connector		Terminal		
B42	RH	8	Ground	
	LH	6		

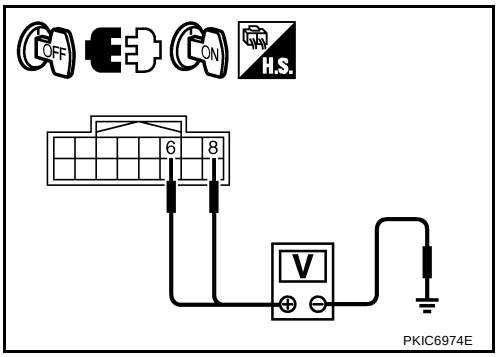
OK or NG

OK >> Replace rear combination lamp control unit. Refer to LT-184, "REAR COMBINATION LAMP CONTROL UNIT" .

NG >> GO TO 6.

6. CHECK REAR COMBINATION LAMP CONTROL UNIT LED CUT DETECT SIGNAL POWER SUPPLY

1. Disconnect rear combination lamp connector.
2. Turn ignition switch ON.
3. Check voltage between rear combination lamp control unit harness connector and ground.



(+)			(-)	Voltage
Rear combination lamp control unit connector		Terminal		
RH	B42	8	Ground	Approx. 5 V
LH		6		

OK or NG

OK >> Replace rear combination lamp. Refer to LT-184, "REAR COMBINATION LAMP" .

NG >> Replace rear combination lamp comtrol unit. Refer to LT-184, "REAR COMBINATION LAMP CONTROL UNIT" .

Hazard Warning Lamps Do Not Operate But Turn Signal Lamps Operate

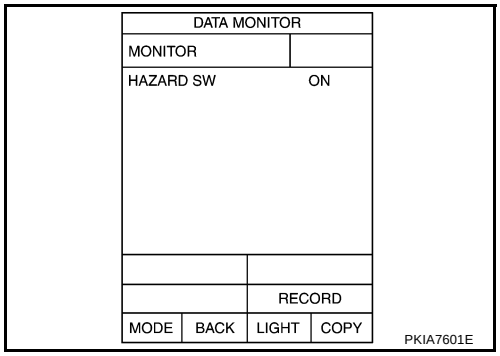
NKS001Q2

1. CHECK HAZARD SWITCH INPUT SIGNAL

With CONSULT-II

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

When hazard switch is ON : HAZARD SW ON
position



Without CONSULT-II

GO TO 2.

OK or NG

OK >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .
NG >> GO TO 2.

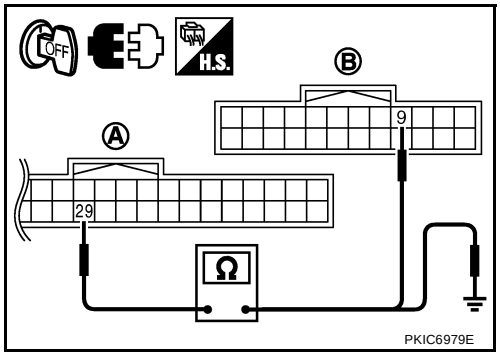
2. CHECK HAZARD SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and combination meter connector.
3. Check continuity BCM harness connector M34 terminal 29 and combination meter harness connector M25 terminal 9.

29 – 9 : Continuity should exist.

4. Check continuity (short circuit) BCM harness connector M34 terminal 29 and ground.

29 – Ground : Continuity should not exist.



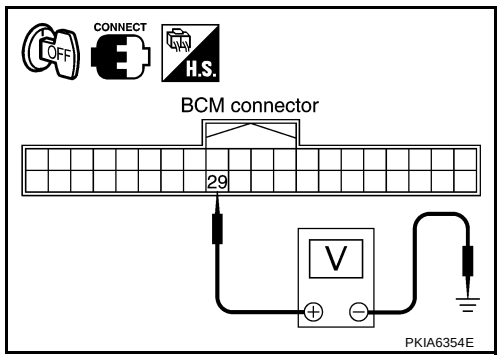
OK or NG

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

3. CHECK HAZARD SWITCH INPUT SIGNAL

1. Connect BCM connector and combination meter connector.
2. Check voltage between BCM harness connector M34 terminal 29 and ground.

(+)		(–)	Condition	Voltage
BCM connector	Terminal			
M34	29	Ground	Hazard switch is ON	Approx. 0 V
			Hazard switch is OFF	Approx. 12 V



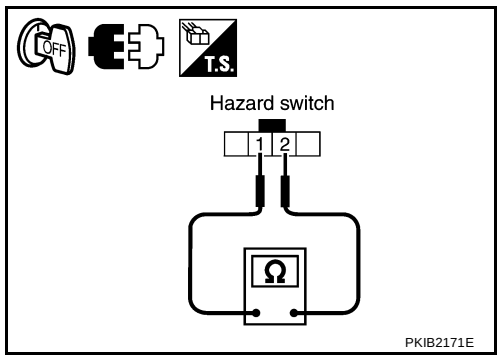
OK or NG

OK >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .
NG >> ● If voltage is approx. 0 V , replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .
● If voltage is approx. 12 V , GO TO 4.

4. CHECK HAZARD SWITCH

1. Turn ignition switch OFF.
2. Remove hazard switch. Refer to LT-145, "Removal and Installation" .
3. Check continuity hazard switch terminals.

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



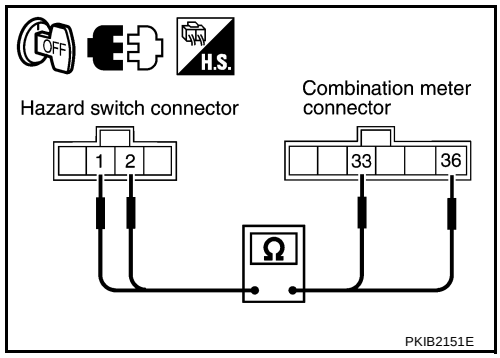
OK or NG

OK >> GO TO 5.
NG >> Replace hazard switch. Refer to LT-145, "Removal and Installation" .

5. CHECK HAZARD SWITH CIRCUIT

1. Disconnect combination meter connector and hazard switch connector.
2. Check continuity between hazard switch harness connector and combination meter harness connector.

Hazard switch		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	
M304	1	M302	36	Yes
	2		33	



OK or NG

OK >> Replace combination meter. Refer to DI-24, "Removal and Installation of Combination Meter" .
NG >> Repair harness or connector.

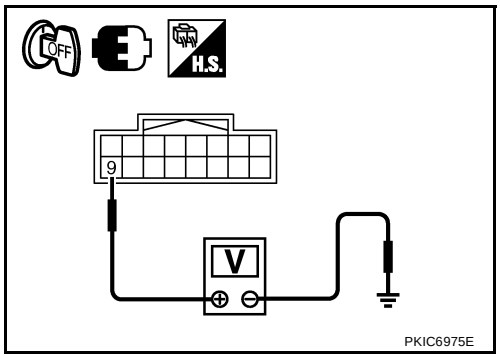
Any Function of Rear Combination Lamps Does Not Work (Both sides)

NKS002SW

1. CHECK REAR COMBINATION LAMP CONTROL UNIT POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Check voltage between rear combination lamp control unit harness connector B42 terminal 9 and ground.

9 – Ground : Battery voltage.



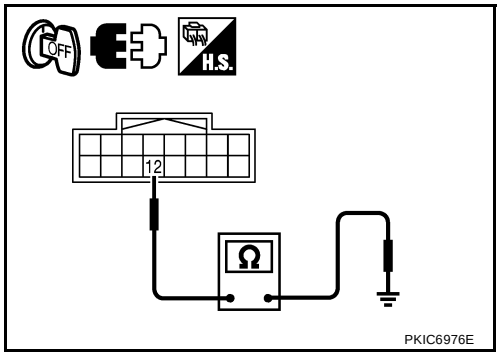
OK or NG

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

2. CHECK REAR COMBINATION LAMP CONTROL UNIT GROUND CIRCUIT

1. Disconnect rear combination lamp control unit connector.
2. Check continuity rear combination lamp control unit harness connector B42 terminal 12 and ground.

12 – Ground : Continuity should exist.



OK or NG

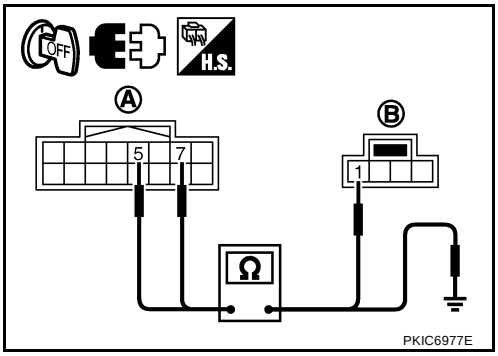
OK >> Replace rear combination lamp control unit. Refer to LT-184, "REAR COMBINATION LAMP CONTROL UNIT" .
NG >> Repair harness or connector.

Any Function of Rear Combination Lamps Does Not Work (One side)

NKS002SY

1. CHECK REAR COMBINATION LAMP DRIVE SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect rear conbination lamp control unit connector and rear combination lamp RH or LH connectors.
3. Check continuity rear combination lamp control unit harness connector (A) and rear combination lamp harness connector (B).



A		B		Continuity
Connector	Terminal	Connector	Terminal	
B42	7	RH B29	1	Yes
	5	LH B24		

4. Check continuity (short circuit) between rear combination lamp control unit harness connector (A) and ground.

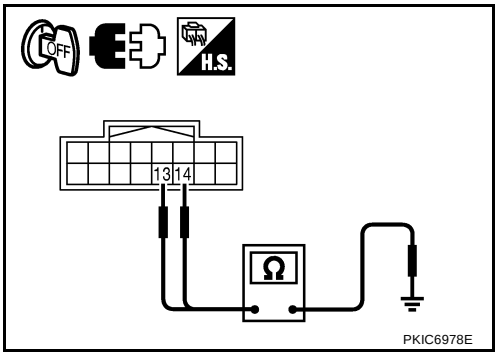
A			Ground	Continuity
Connector		Terminal		
RH	B42	7		No
LH		5		

OK or NG

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

2. CHECK REAR COMBINATION LAMP CONTROL UNIT GROUND CIRCUIT

Check continuity between rear combination lamp control unit harness connector and ground.



Rear combination lamp contorol unit connector		Terminal	Ground	Continuity
RH	B42	14		No
LH		13		

OK or NG

OK >> Replace rear combination lamp control unit. Refer to LT-184, "REAR COMBINATION LAMP CONTROL UNIT" .
NG >> Repair harness or connector.

Bulb Replacement

NKS001Q4

FRONT TURN SIGNAL LAMP

Refer to LT-34, "Bulb Replacement" (xenon type headlamp).
Refer to LT-63, "Bulb Replacement" (conventional type headlamp).

REAR TURN SIGNAL LAMP

Refer to LT-184, "Bulb Replacement" .

Removal and Installation

NKS001Q6

FRONT TURN SIGNAL LAMP

Refer to LT-35, "Removal and Installation" (xenon type headlamp).
Refer to LT-64, "Removal and Installation" (conventional type headlamp).

REAR TURN SIGNAL LAMP

Refer to LT-184, "Removal and Installation" .

LIGHTING AND TURN SIGNAL SWITCH

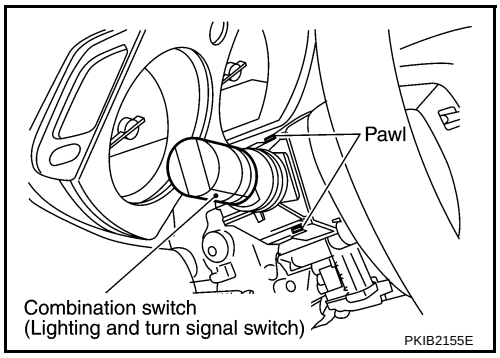
PFP:25540

Removal and Installation

NKS001Q8

REMOVAL

1. Remove instrument driver lower panel and steering column cover. Refer to IP-10, "INSTRUMENT PANEL ASSEMBLY" .
2. While pressing pawls in direction as shown in the figure, pull lighting and turn signal switch toward driver door and disconnect from the base.



INSTALLATION

Installation is the reverse order of removal.

HAZARD SWITCH

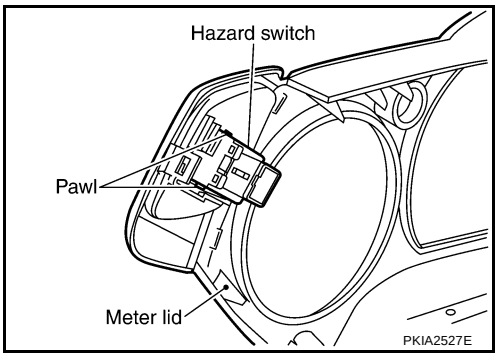
PFP:25290

Removal and Installation

NKS001Q9

REMOVAL

1. Remove meter lid. Refer to DI-24, "Disassembly and Assembly of Combination Meter" .
2. Disconnect hazard switch connector.
3. Press pawl on reverse side and remove the hazard switch.



INSTALLATION

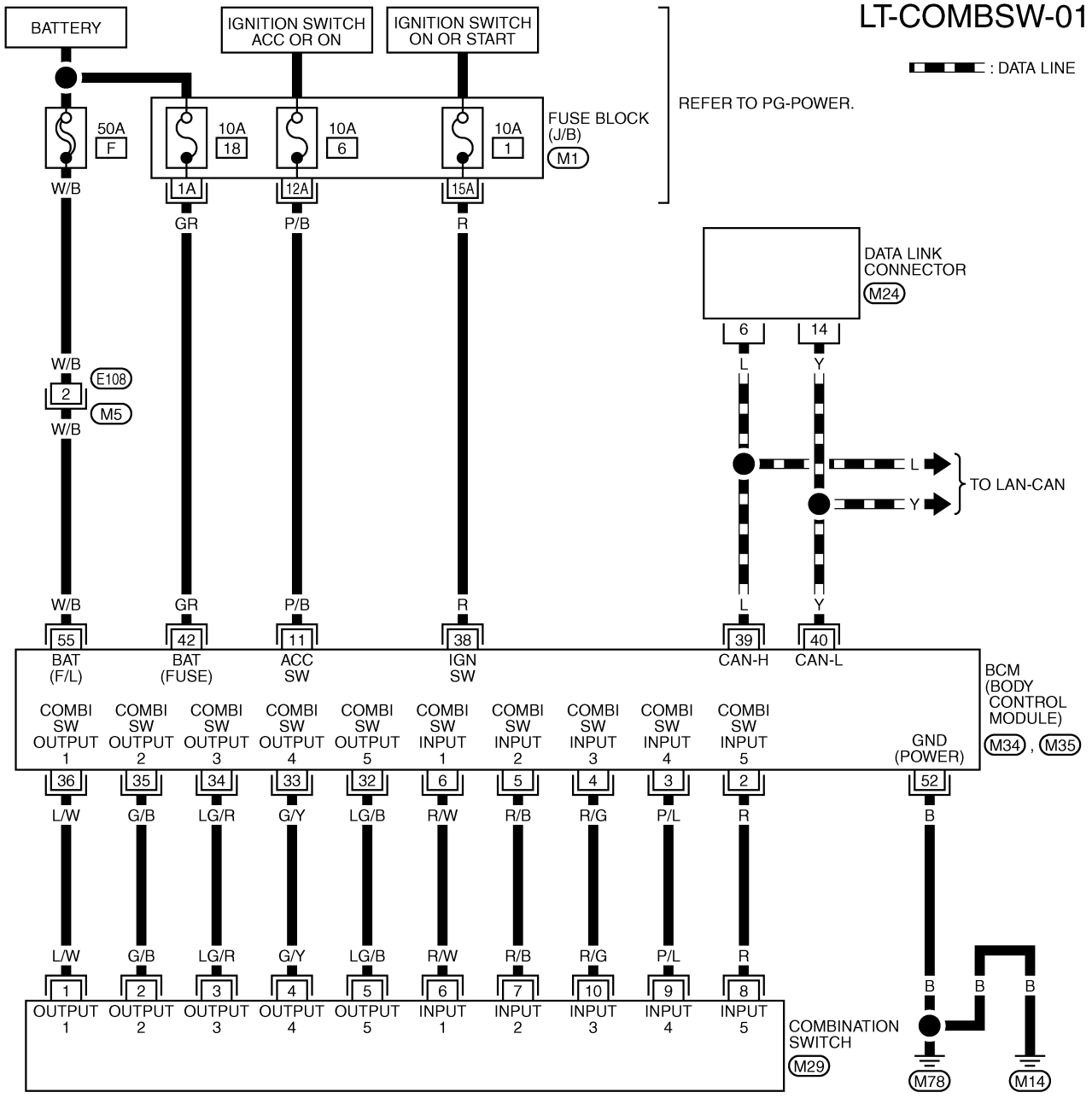
Installation is the reverse order of removal.

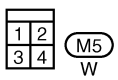
COMBINATION SWITCH

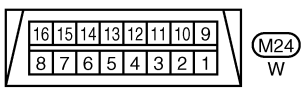
PFP:25567

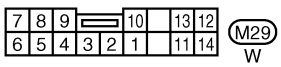
Wiring Diagram — COMBSW —

NKS001QA









REFER TO THE FOLLOWING.

M1 -FUSE BLOCK-JUNCTION BOX (J/B)

M34, M35 -ELECTRICAL UNITS

TKWB2571E

Combination Switch Reading Function

NKS001QB

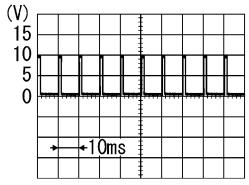
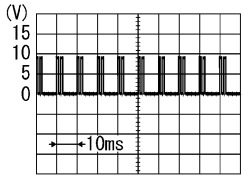
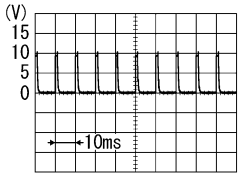
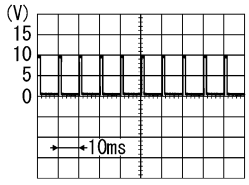
For details, refer to BCS-3, "COMBINATION SWITCH READING FUNCTION" .

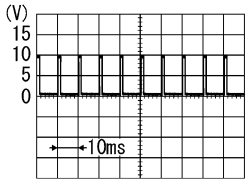
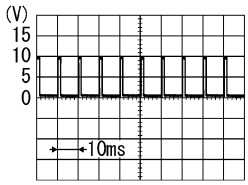
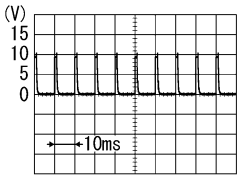
Terminals and Reference Values for BCM

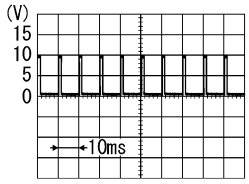
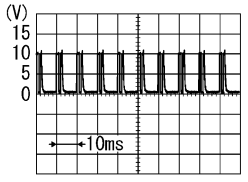
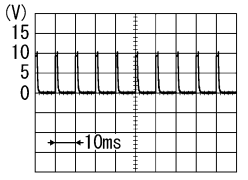
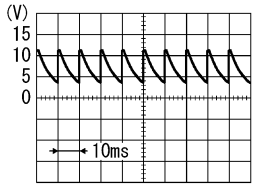
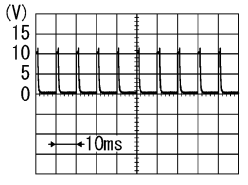
NKS002TT

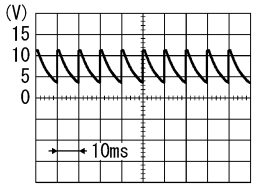
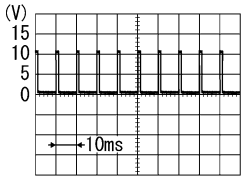
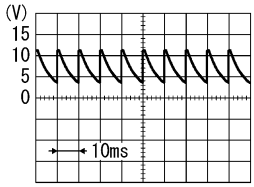
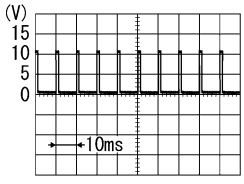
CAUTION:

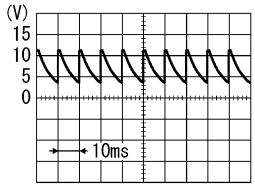
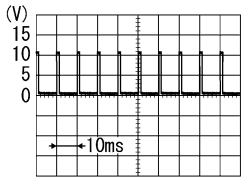
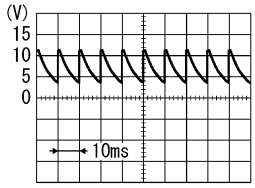
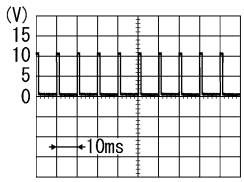
- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal and wiper switch OFF not to be fluctuated by overloaded.**
- **Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to LT-152, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
2	R	Combination switch input 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Any of the conditions below ● Lighting switch 1ST ● Lighting switch HIGH beam (Operates only HIGH beam switch) ● Turn signal switch to right	 PKIB4959J Approx. 1.0 V
					Lighting switch 2ND	 PKIB4953J Approx. 2.0 V
3	P/L	Combination switch input 4	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Front fog lamp switch (Operates only front fog lamp switch)	 PKIB4955J Approx. 0.8 V
					Any of the conditions below ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch) ● Turn signal switch to left	 PKIB4959J Approx. 1.0 V

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
4	R/G	Combination switch input 3	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Any of the conditions below ● Lighting switch AUTO ● Front wiper switch MIST ● Front wiper switch INT ● Front wiper switch LO	 PKIB4959J Approx. 1.0 V
5	R/B	Combination switch input 2	ON	Lighting, turn, wiper switch	OFF	Approx. 0 V
					Any of the conditions below ● Front washer switch (Wiper intermittent dial position 4) ● Rear washer switch (Wiper intermittent dial position 4) ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 5 ● Wiper intermittent dial position 6	 PKIB4959J Approx. 1.0 V
					Rear wiper switch ON (Wiper intermittent dial position 4)	 PKIB4955J Approx. 0.8 V

Terminal No.	Wire color	Signal name	Measuring condition: Ignition switch	Measuring condition: Operation or condition		Reference value
6	R/W	Combination switch input 1	ON	Lighting, turn, wiper switch	OFF	Approx. 0 V
					Any of the conditions below ● Front wiper switch HI (Wiper intermittent dial position 4) ● Rear wiper switch INT (Wiper intermittent dial position 4) ● Wiper intermittent dial position 3	 PKIB4959J Approx. 1.0 V
					Any of the conditions below ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2	 PKIB4952J Approx. 1.7 V
					Any of the conditions below ● Wiper intermittent dial position 6 ● Wiper intermittent dial position 7	 PKIB4955J Approx. 0.8 V
11	P/B	Ignition switch (ACC)	ACC	—		Battery voltage
32	LG/B	Combination switch output 5	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)	 PKIB4960J Approx. 7.2 V
					Any of the conditions below ● Front fog lamp switch (Operates only front fog lamp switch) (Wiper intermittent dial position 4) ● Rear wiper switch 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. 1.0 V

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
33	G/Y	Combination switch output 4	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)	 PKIB4960J Approx. 7.2 V
					Any of the 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) ● Rear wiper switch INT (Wiper intermittent dial position 4) ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 5 ● Wiper intermittent dial position 6	 PKIB4958J Approx. 1.2 V
34	LG/R	Combination switch output 3	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)	 PKIB4960J Approx. 7.2 V
					Any of the conditions below ● Lighting switch 2ND (Wiper intermittent dial position 4) ● Lighting switch HI beam (Operates only HI beam switch) (Wiper intermittent dial position 4) ● Rear washer switch (Wiper intermittent dial position 4) ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2 ● Wiper intermittent dial position 3	 PKIB4958J Approx. 1.2 V

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
35	G/B	Combination switch output 2	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Any of the conditions below ● Lighting switch 2ND ● Lighting switch PASSING (Operates only PASSING switch) ● Front wiper switch INT ● Front wiper switch HI	 PKIB4958J Approx. 1.2 V
36	L/W	Combination switch output 1	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Any of the conditions below ● Turn signal switch to right ● Turn signal switch to left ● Front wiper switch MIST ● Front wiper switch LO ● Front washer switch	 PKIB4958J Approx. 1.2 V
38	R	Ignition switch (ON)	ON	—		Battery voltage
39	L	CAN – H	—	—		—
40	Y	CAN – L	—	—		—
42	GR	Battery power supply	OFF	—		Battery voltage
52	B	Ground	ON	—		Approx. 0 V
55	W/B	Battery power supply	OFF	—		Battery voltage

CONSULT-II Functions (BCM)

NKS001QC

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

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

CONSULT-II BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

DATA MONITOR

Operation Procedure

1. Touch “COMB SW” on “SELECT TEST ITEM” screen.
2. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
3. Touch either “ALL SIGNALS” or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all the signals.
SELECTION FROM MENU	Selects items and monitors them.

4. When “SELECTION FROM MENU” is selected, touch items to be monitored. When “ALL SIGNALS” is selected, all the signals will be monitored.
5. Touch “START”.
6. Touch “RECORD” while monitoring, then the status of the monitored item can be recorded. To stop recording, touch “STOP”.

Display Item List

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

Combination Switch Inspection

NKS002TU

1. SYSTEM CHECK

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

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

>> Check the system to which malfunctioning switch belongs, and GO TO 2.

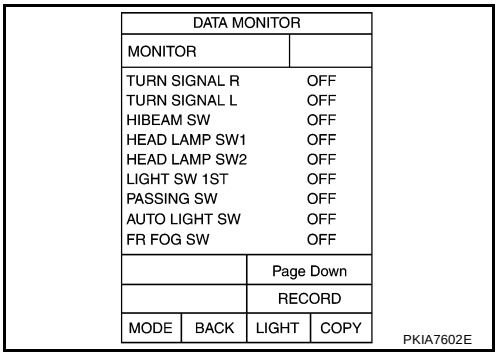
2. SYSTEM CHECK

With CONSULT-II

CAUTION:

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

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



Without CONSULT-II

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

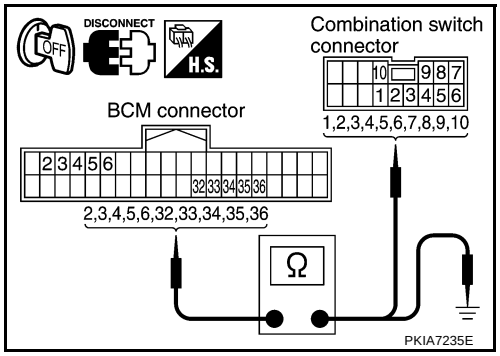
Check results

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

3. CHECK HARNESS

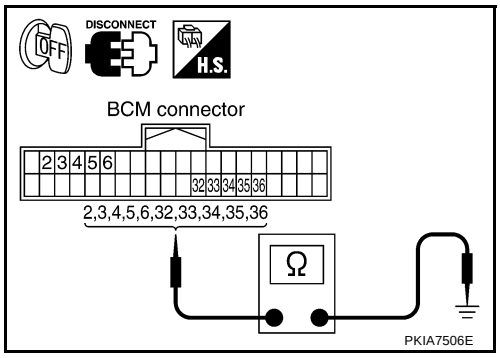
1. Turn ignition switch OFF.
2. Disconnect BCM connector and combination switch connector.
3. Check for continuity between BCM harness connector of the suspect system and the corresponding combination switch harness connector.

Suspect system	BCM			Combination switch		Continuity
	Connector	Terminal		Connector	Terminal	
1	M1	Input 1	6	M29	6	Yes
		Output 1	36		1	
2		Input 2	5		7	
		Output 2	35		2	
3		Input 3	4		10	
		Output 3	34		3	
4		Input 4	3		9	
		Output 4	33		4	
5		Input 5	2		8	
		Output 5	32		5	



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

Suspect system	BCM connector	Terminal			Continuity
1	M1	Input 1	6	Ground	No
		Output 1	36		
2		Input 2	5		
		Output 2	35		
3		Input 3	4		
		Output 3	34		
4		Input 4	3		
		Output 4	33		
5		Input 5	2		
		Output 5	32		

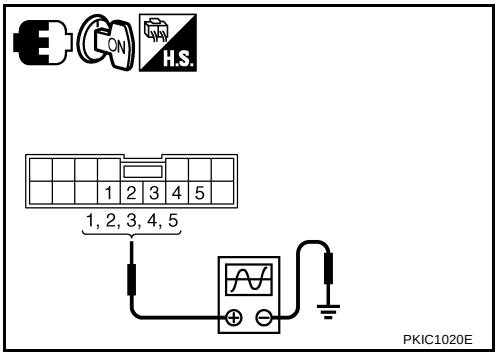


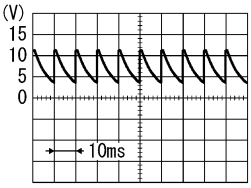
OK or NG

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

4. CHECK BCM OUTPUT TERMINAL

1. Turn lighting switch and wiper switch OFF position.
2. Set wiper dial position 4.
3. Connect BCM connector and combination switch connector.
4. Turn ignition switch ON.
5. Check BCM output terminal voltage waveform of suspect malfunctioning system.



Suspect system	(+) Combination switch connector	(+) Terminal	(–)	Reference value
1	M29	1	Ground	
2		2		
3		3		
4		4		
5		5		

OK or NG

OK >> Open circuit in combination switch, GO TO 5.
NG >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

5. CHECK COMBINATION SWITCH

Referring to table below, perform combination switch inspection.

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

>> INSPECTION END

Removal and Installation

NKS001QE

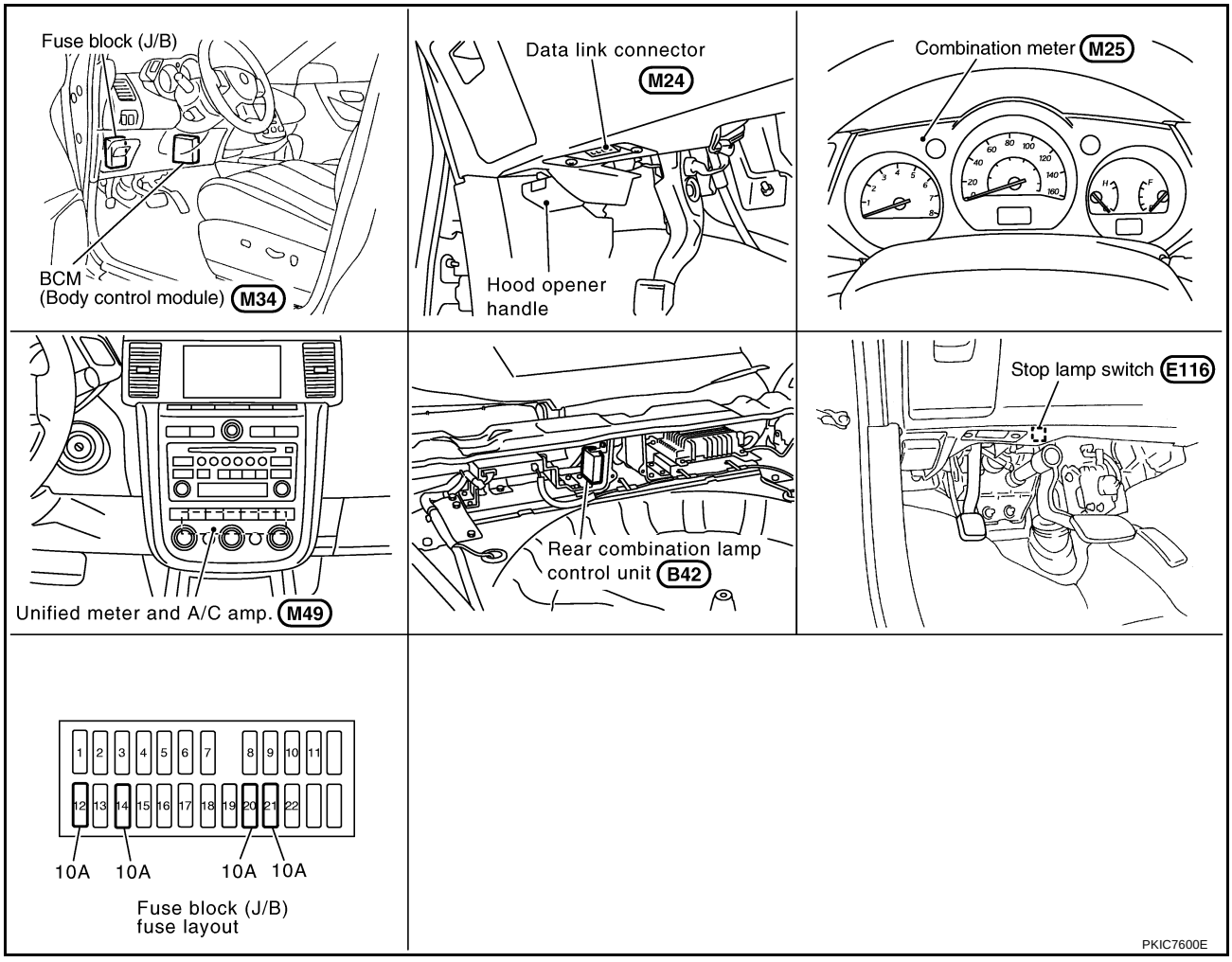
For details, refer to LT-144, "LIGHTING AND TURN SIGNAL SWITCH" .

STOP LAMP

PFP:26550

Component Parts and Harness Connector Location

NKS002T0



System Description

NKS002T2

OUTLINE

Power is supplied at all times

- through 10A fuse [No. 20, located in fuse block (J/B)]
- to rear combination lamp control unit terminal 9 and
- to stop lamp switch terminal 3,
- through 10A fuse [No. 21, located in fuse block (J/B)]
- to combination meter terminal 21.

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

- through 10A fuse [No. 12, located in fuse block (J/B)]
- to rear combination lamp control unit terminal 16,
- through 10A fuse [No. 14, located in fuse block (J/B)]
- to combination meter terminal 20.

Ground is supplied

- to rear combination lamp control unit terminals 12
- through grounds B7 and B20,
- to combination meter terminals 22, 23 and 24
- through grounds M14 and M78.

STOP LAMP OPERATION

When the stop lamp switch is depressed supplies power

- through stop lamp switch terminal 3
- to rear combination lamp control unit terminal 2
- to high-mounted stop lamp terminal 1 and
- to unified meter and A/C amp..

When receiving the stop lamp signal, rear combination lamp control unit detects the stop lamp ON, then rear combination lamp control unit outputs the rear combination lamp drive signal RH and LH (stop lamp output). Rear combination lamp control unit supplies power

- through rear combination lamp control unit terminal 7
- to rear combination lamp RH terminal 1,
- through rear combination lamp control unit terminal 5
- to rear combination lamp LH terminal 1.

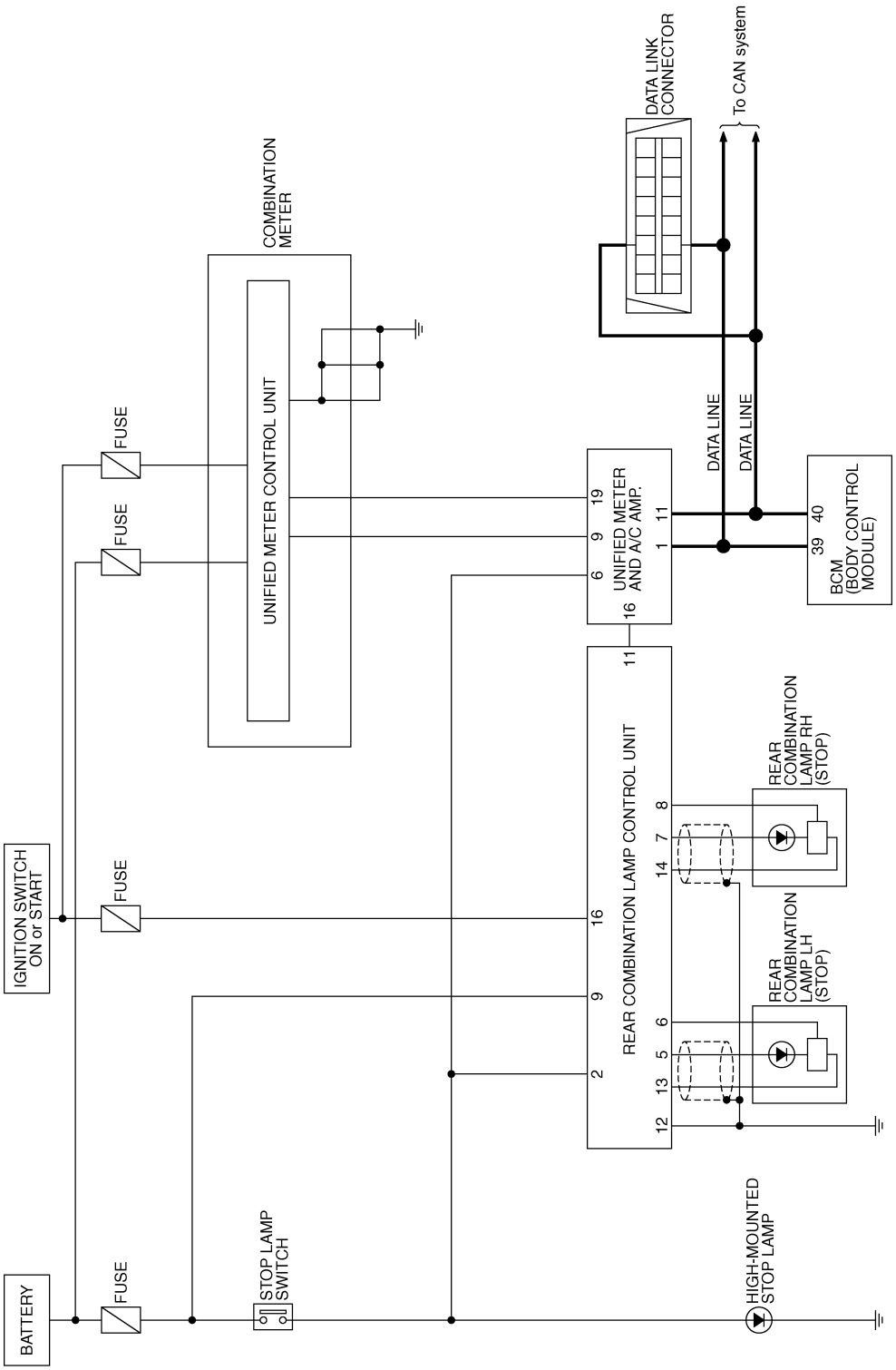
Ground is supplied

- to high-mounted stop lamp terminal 2
- through grounds B7 and B20,
- to rear combination lamp RH terminal 4
- through rear combination lamp control unit terminal 14,
- to rear combination lamp LH terminal 4
- through rear combination lamp control unit terminal 13.

With power and ground supplied, stop lamp and high-mounted stop lamp illuminate.

Schematic

NKS002Q7

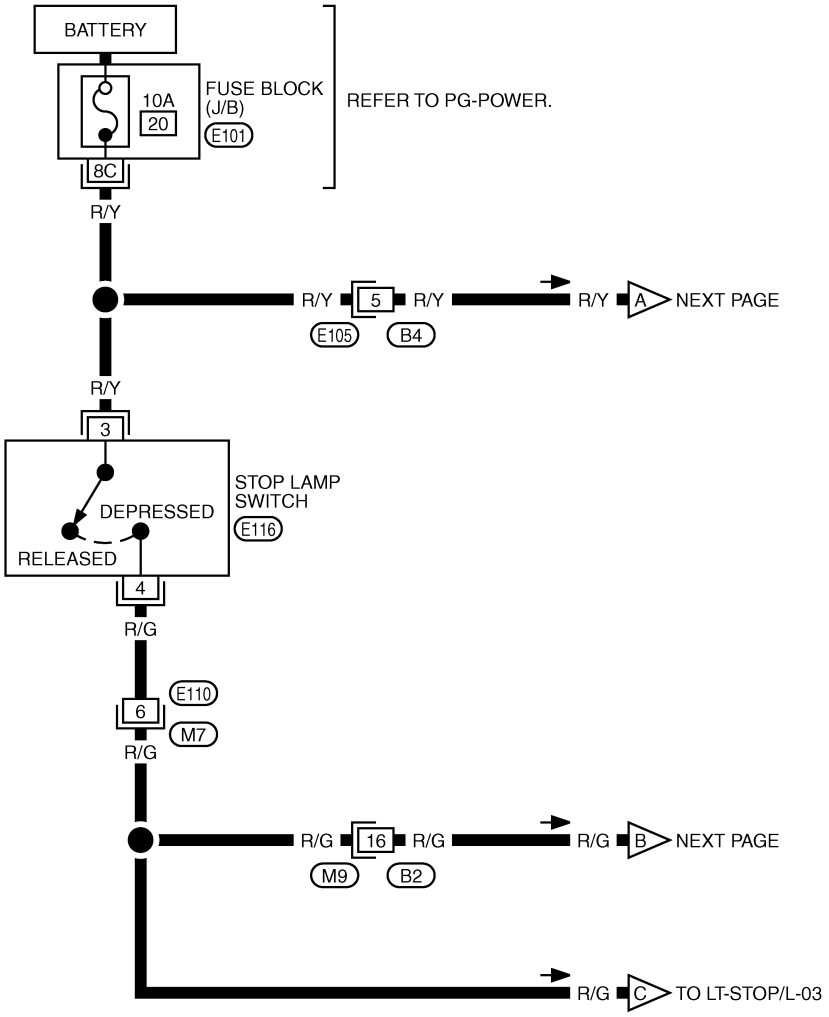


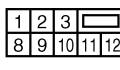
TKWB2572E

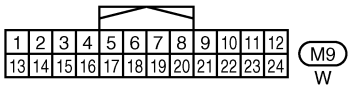
Wiring Diagram — STOP/L —

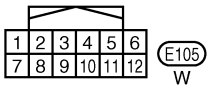
NKS001QF

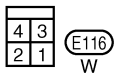
LT-STOP/L-01





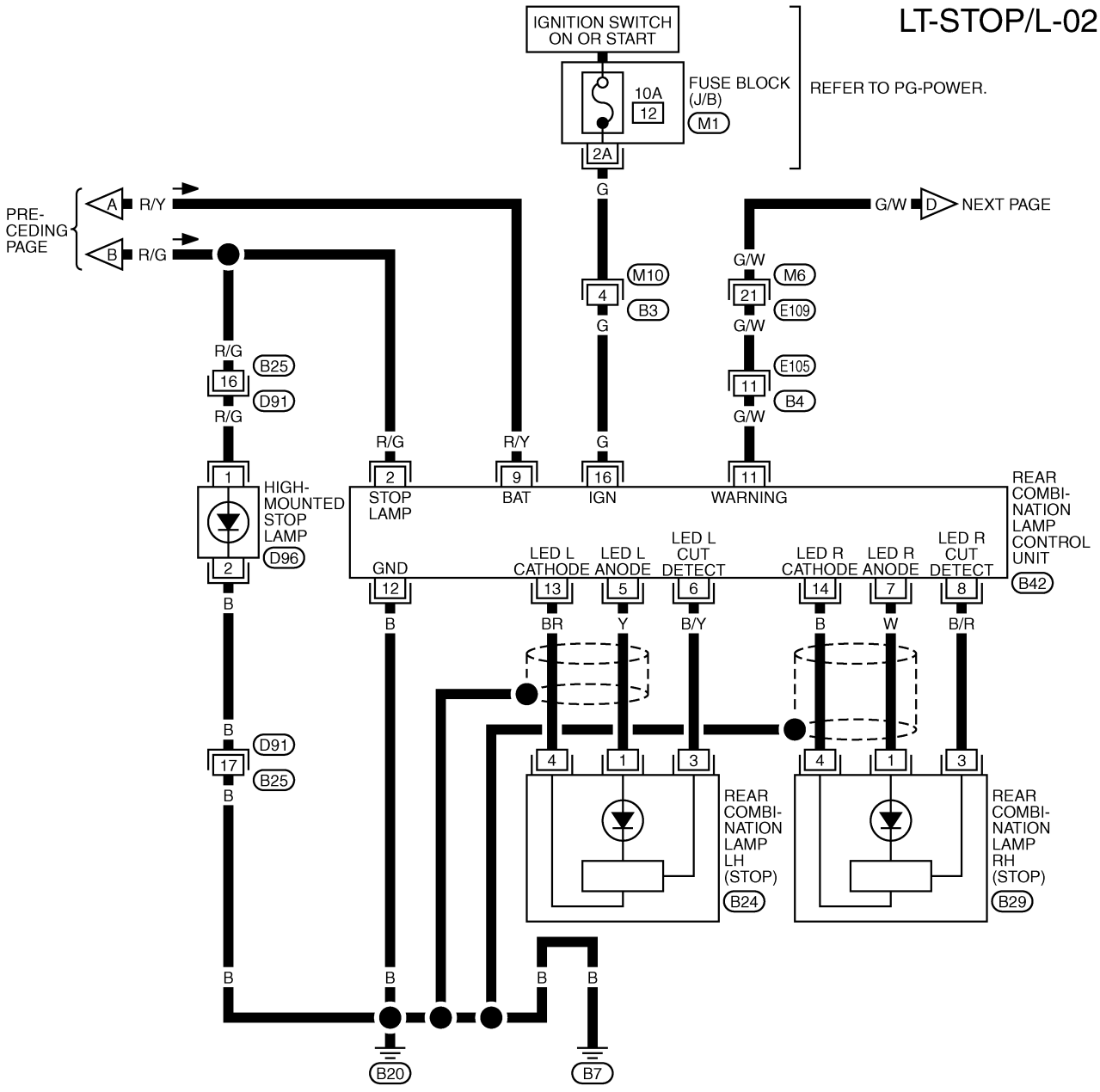


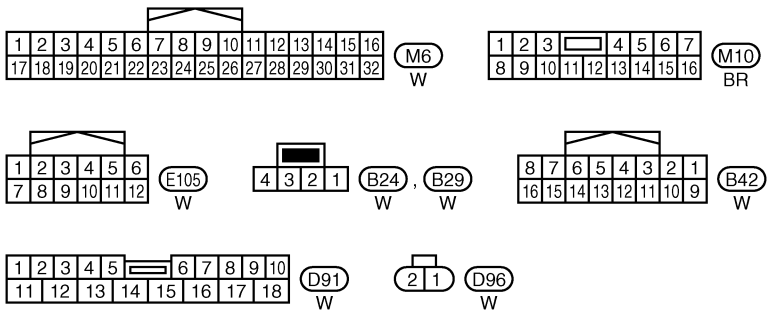




REFER TO THE FOLLOWING.
E101 -FUSE BLOCK-JUNCTION BOX (J/B)

TKWB2573E



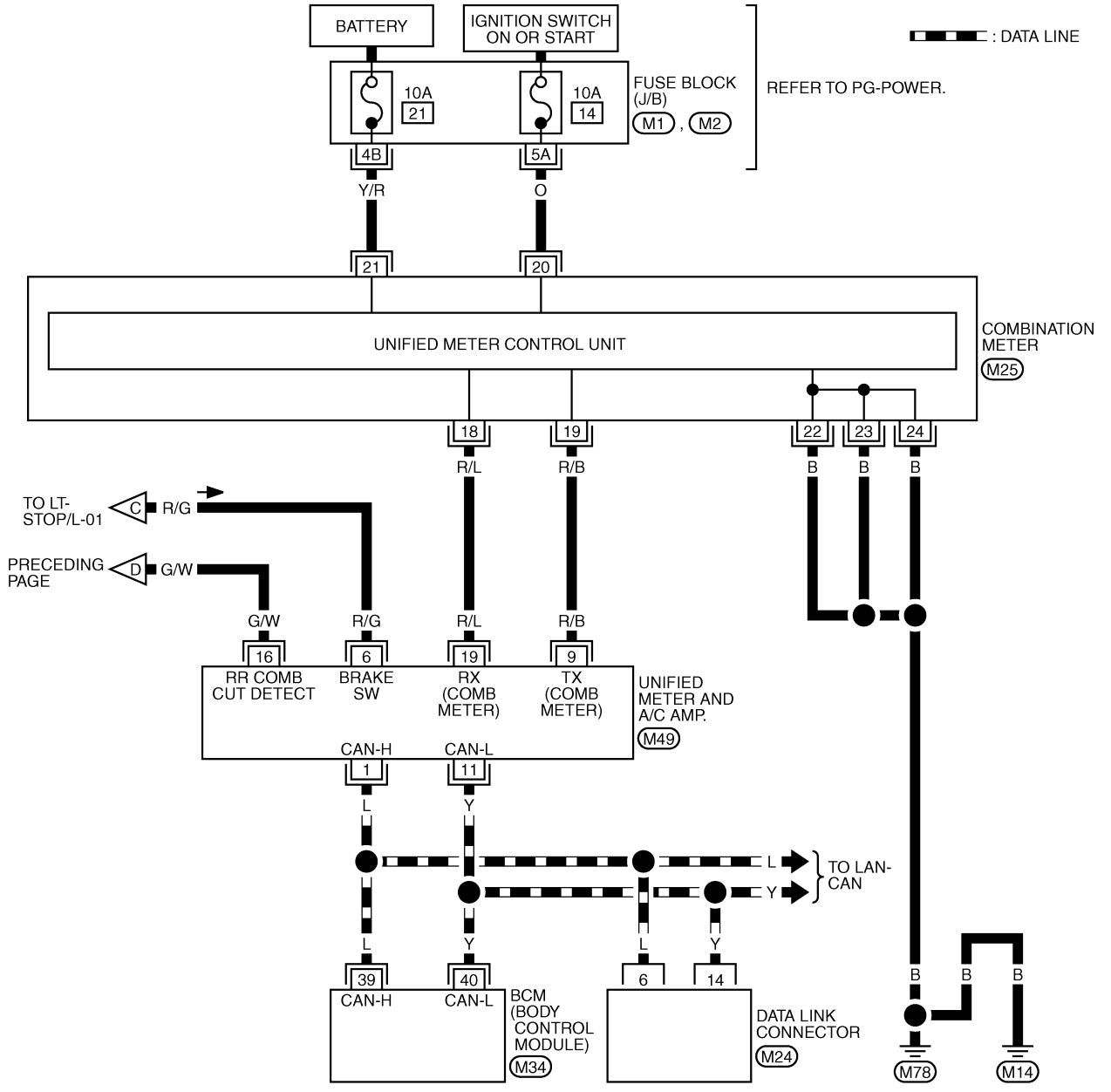


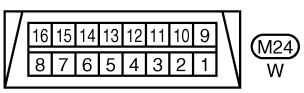
REFER TO THE FOLLOWING.

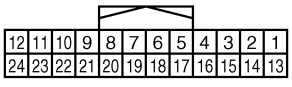
M1 -FUSE BLOCK-JUNCTION BOX (J/B)

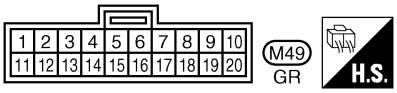
TKWB2574E

LT-STOP/L-03









REFER TO THE FOLLOWING.
M1, M2 -FUSE BLOCK-JUNCTION BOX (J/B)
M34 -ELECTRICAL UNITS

TKWB2575E

Terminals and Reference Value for Rear Combination Lamp Control Unit

NKS002TP

Refer to LT-126, "Terminals and Reference Value for Rear Combination Lamp Control Unit" .

How to Proceed with Trouble Diagnosis

NKS002TQ

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-156, "System Description" .
3. Check symptom and repair or replace the cause of malfunction.
4. Do turn signal and hazard warning lamps operate normally? If YES, GO TO 6. If NO, GO TO 4.
5. INSPECTION END

Stop Lamp of Rear Combination Lamp Does Not Operate But High-Mounted Stop Lamp Operate

NKS002TR

1. CHECK REAR COMBINATION LAMP OPERATION

Check if turn signal lamp and tail lamp operation is normally.

OK or NG

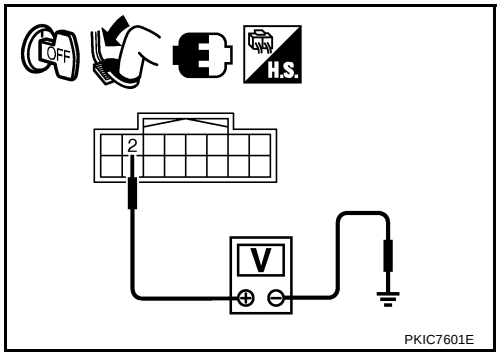
OK >> GO TO 2.

NG >>
- Both sides do not operate: Refer to LT-142, "Any Function of Rear Combination Lamps Does Not Work (Both sides)" .
- One side does not operate: Refer to LT-143, "Any Function of Rear Combination Lamps Does Not Work (One side)" .

2. CHECK STOP LAMP SIGNAL

1. Turn ignition switch OFF.
2. Stop lamp switch is depressed.
3. Check voltage between rear combination lamp control unit harness connector B42 terminal 2 and ground.

2 - Ground : Battery voltage



OK or NG

OK >> Replace rear combination lamp control unit. Refer to LT-184, "REAR COMBINATION LAMP CONTROL UNIT" .

NG >> Repair harness or connector between stop lamp switch and rear combination lamp control unit.

High-Mounted Stop Lamp

NKS001QG

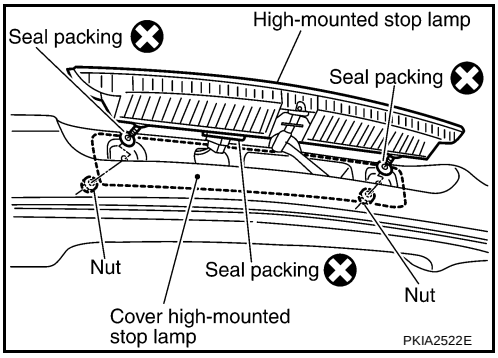
BULB REPLACEMENT, REMOVAL AND INSTALLATION

1. Remove cover high-mounted stop lamp on back door inner panel. Refer to EI-39, "BACK DOOR TRIM" .
2. Disconnect high-mounted stop lamp connector.
3. Remove washer tube from high-mounted stop lamp.
4. Remove nuts and remove high-mounted stop lamp from back door.

High-mounted stop lamp : LED

5. Installation is the reverse order of removal.
   - Install a new seal packing to the high-mounted stop lamp.

CAUTION:
Seal packing cannot be reused.



Stop Lamp

NKS001QH

BULB REPLACEMENT

Refer to LT-184, "Bulb Replacement" .

REMOVAL AND INSTALLATION

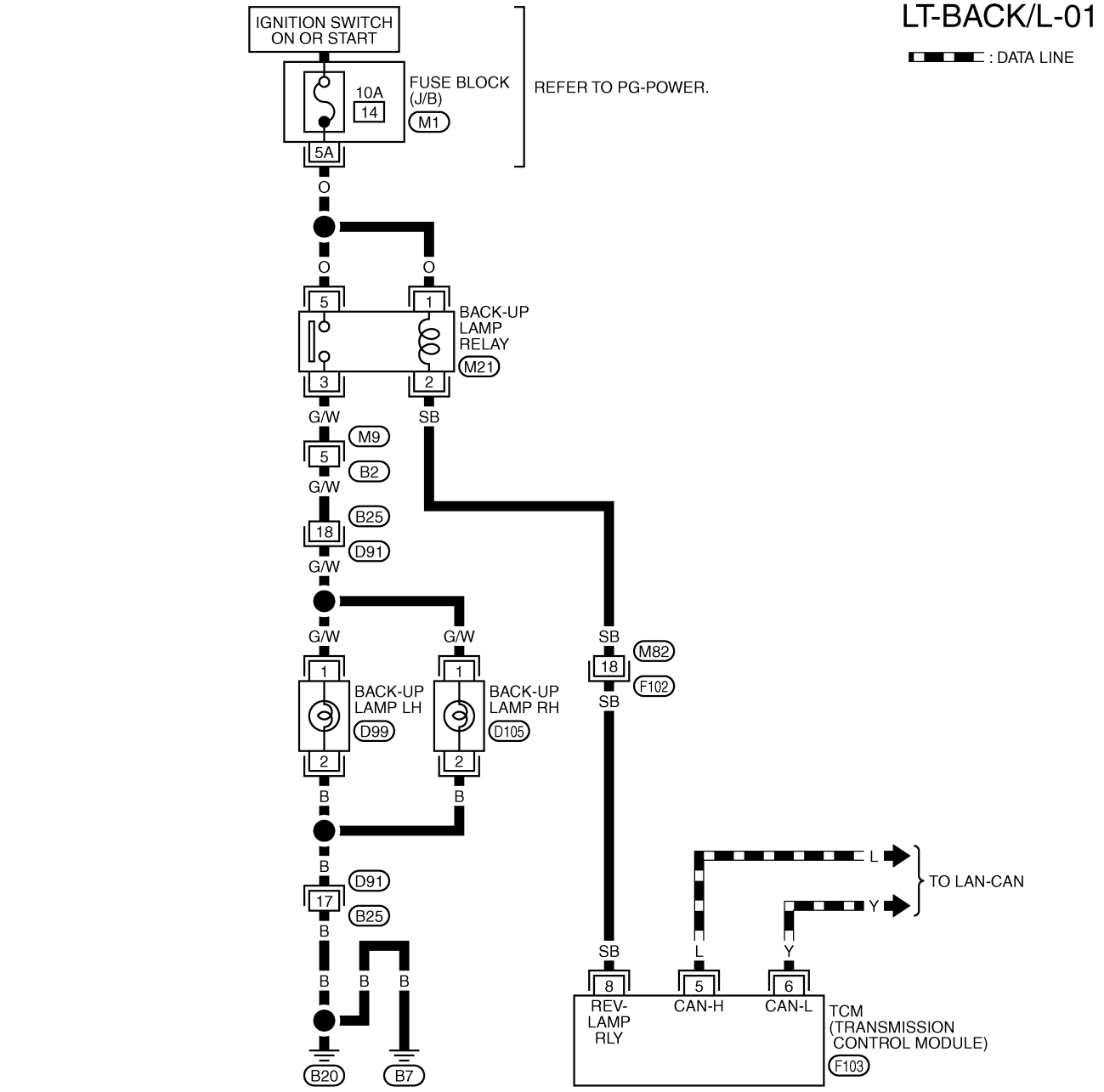
Refer to LT-184, "Removal and Installation" .

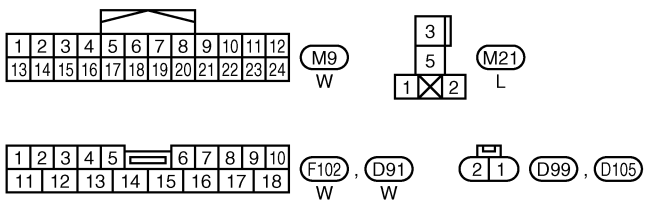
BACK-UP LAMP

PFP:26550

Wiring Diagram — BACK/L —

NKS001QK





REFER TO THE FOLLOWING.

M1 -FUSE BLOCK-JUNCTION BOX (J/B)

F103 -ELECTRICAL UNITS

TKWM4962E

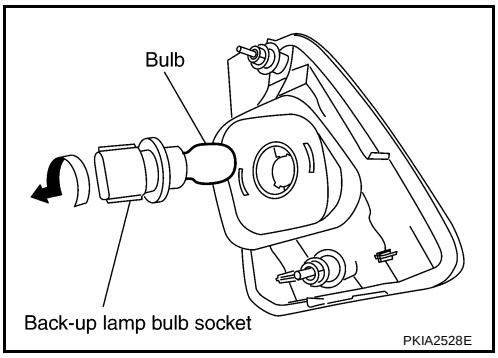
Bulb Replacement

NKS001QL

1. Remove back door finisher. Refer to EI-39, "BACK DOOR TRIM" .
2. Disconnect the back-up lamp connector.
3. Turn bulb socket counterclockwise and unlock it.
4. Remove bulb from its socket.

Back-up lamp : 12V - 16W

5. Installation is the reverse order of removal.

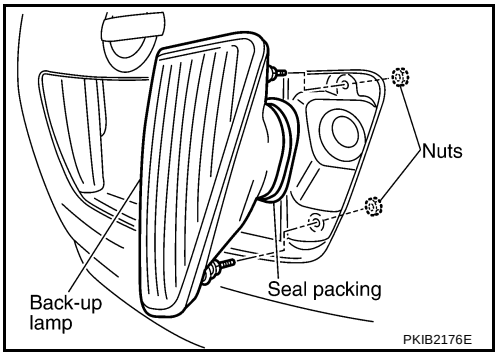


Removal and Installation

NKS001QM

REMOVAL

1. Remove back door finisher. Refer to EI-39, "BACK DOOR TRIM" .
2. Remove the back-up lamp mounting nuts and remove it.
3. Disconnect the back-up lamp connector.



INSTALLATION

Installation is the reverse order of removal.

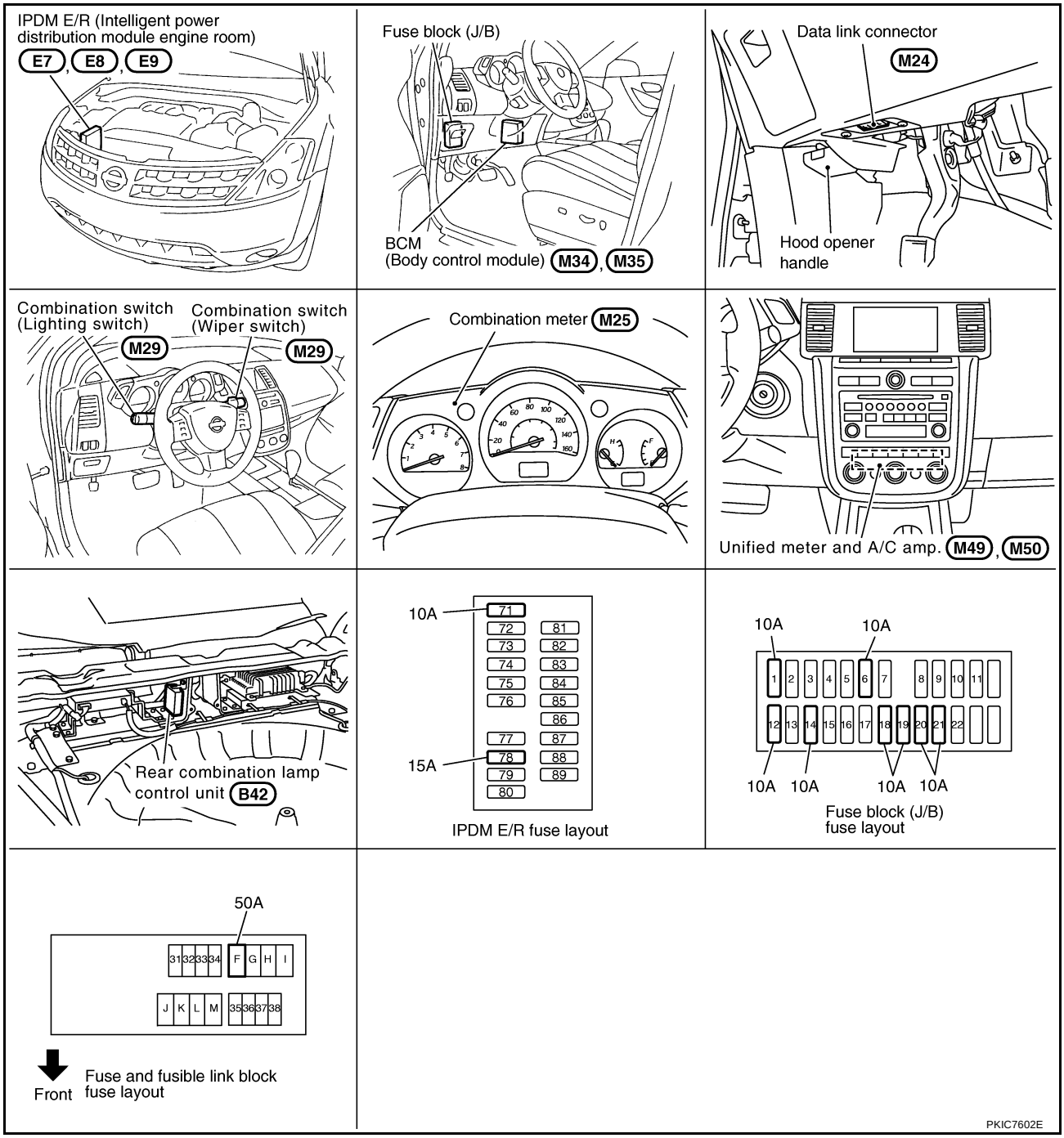
Back-up lamp mounting nuts : 5.5 N·m (0.56 kg-m, 49 in-lb)

PARKING, LICENSE PLATE AND TAIL LAMPS

PFP:26550

Component Parts and Harness Connector Location

NKS001QN



System Description

NKS001QO

- BCM (Body Control Module) controls parking, license plate, side marker and tail lamps operation.
- IPDM E/R (Intelligent Power Distribution Module Engine Room) operates parking, license plate and side marker lamps and sends tail lamp signal to rear combination lamp control unit, according to CAN communication signals from BCM.
- Rear combination lamp control unit operate tail lamp according to tail lamp signal from IPDM E/R.

OUTLINE

Power is supplied at all times

- to ignition relay located in IPDM E/R, from battery direct,
- through 10A fuse (No. 71, located in IPDM E/R)

- to tail lamp relay located in IPDM E/R and
- to CPU located in IPDM E/R,
- through 15A fuse (No. 78 located in IPDM E/R)
- to CPU located in IPDM E/R,
- through 50A fusible link (letter F, located in fuse and fusible link block)
- to BCM terminal 55,
- through 10A fuse [No. 18, located in fuse block (J/B)]
- to BCM terminal 42,
- through 10A fuse [No. 21, located in fuse block (J/B)]
- to combination meter terminal 21,
- through 10A fuse [No. 19, located in fuse block (J/B)]
- to unified meter and A/C amp. terminal 21,
- through 10A fuse [No. 20, located in fuse block (J/B)]
- to rear combination lamp control unit terminal 9.

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

- to ignition relay located in IPDM E/R, from battery direct,
- through 10A fuse [No. 1, located in fuse block (J/B)]
- to BCM terminal 38.
- through 10A fuse [No. 14, located in fuse block (J/B)]
- to combination meter terminal 20,
- through 10A fuse [No. 12, located in fuse block (J/B)]
- to unified meter and A/C amp. terminal 22 and
- to rear combination lamp control unit terminal 16.

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

- through 10A fuse [No. 6, located in fuse block (J/B)]
- to BCM terminal 11.

Ground is supplied

- to BCM terminal 52
- through grounds M14 and M78,
- to IPDM E/R terminals 38 and 60
- through grounds E13, E26 and E28.
- to combination meter terminals 22, 23 and 24, and
- to unified meter and A/C amp. terminals 29 and 30
- through grounds M14 and M78,
- to rear combination lamp control unit terminal 12
- through grounds B7 and B20.

PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS OPERATION

When the lighting switch is in 1ST position, BCM detects the LIGHTING SWITCH 1ST POSITION (ON) by BCM combination switch reading function. BCM sends position light request signal (ON) through CAN communication.

When receiving position light request signal (ON), IPDM E/R turns ON tail lamp relay in IPDM E/R. IPDM E/R supplies power

- through IPDM E/R terminal 22
- to front combination lamp RH and LH terminals 7
- to license plate lamp RH and LH terminals 1
- to rear combination lamp RH and LH terminals 2 and
- to rear combination lamp control unit terminal 1.

When receiving the tail lamp signal, rear combination lamp control unit detects the tail lamp ON, then rear combination lamp control unit outputs the rear combination lamp drive signal RH and LH (tail lamp output). Rear combination lamp control unit supplies power

- through rear combination lamp control unit terminal 7
- to rear combination lamp RH terminal 1,
- through rear combination lamp control unit terminal 5
- to rear combination lamp LH terminal 1.

Ground is supplied at all times

- to front combination lamp RH and LH terminals 5
- through grounds E13, E26 and E28,
- to rear combination lamp RH and LH terminals 2 and
- to license plate lamp RH and LH terminals 2
- through grounds B7 and B20,
- to rear combination lamp RH terminal 4
- through rear combination lamp control unit terminal 14,
- to rear combination lamp LH terminal 4
- through rear combination lamp control unit terminal 13.

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

COMBINATION SWITCH READING FUNCTION

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

EXTERIOR LAMP BATTERY SAVER CONTROL

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

CAN Communication System Description

NKS001QP

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.

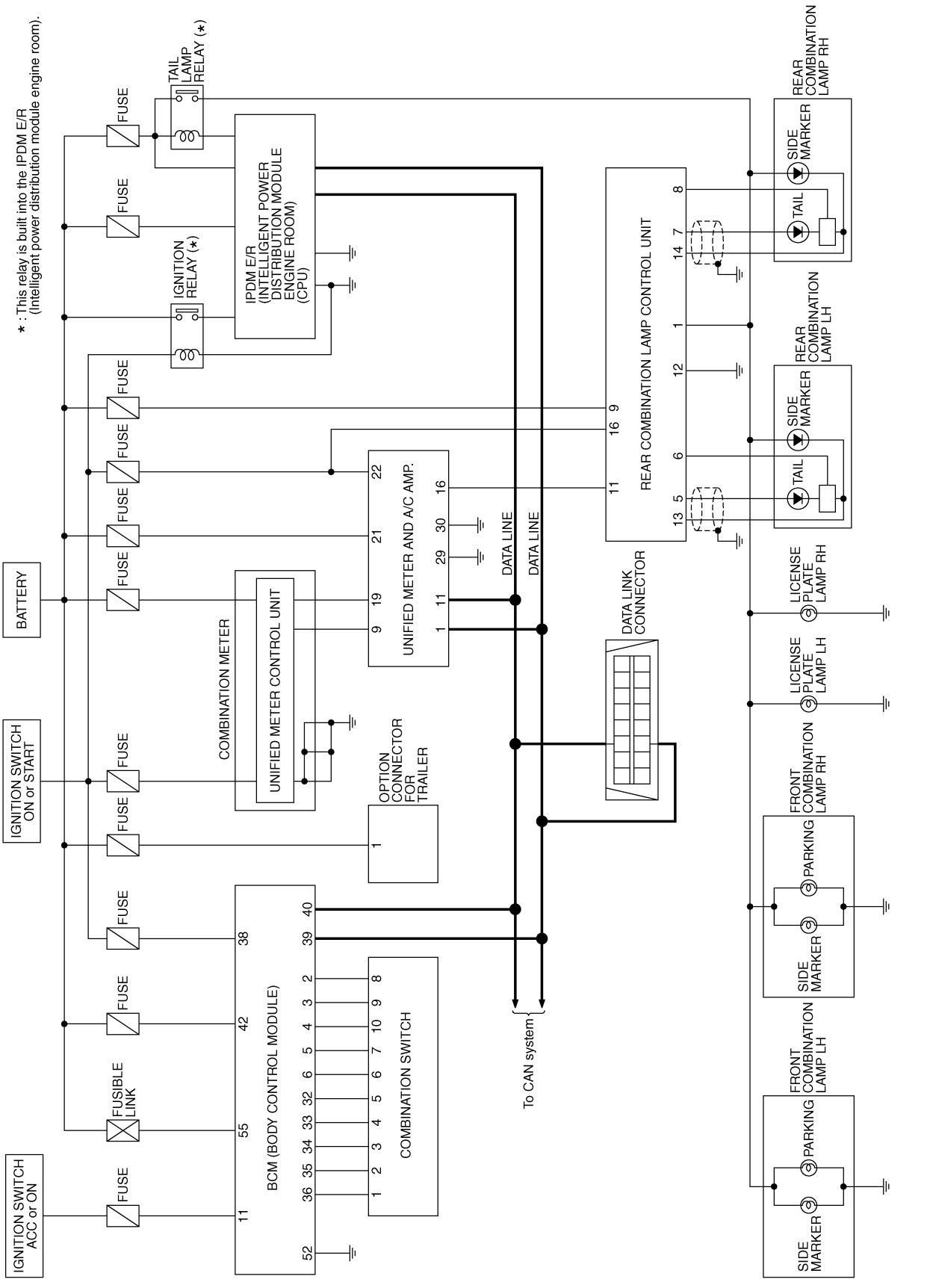
CAN Communication Unit

NKS001QQ

Refer to LAN-49, "CAN System Specification Chart" .

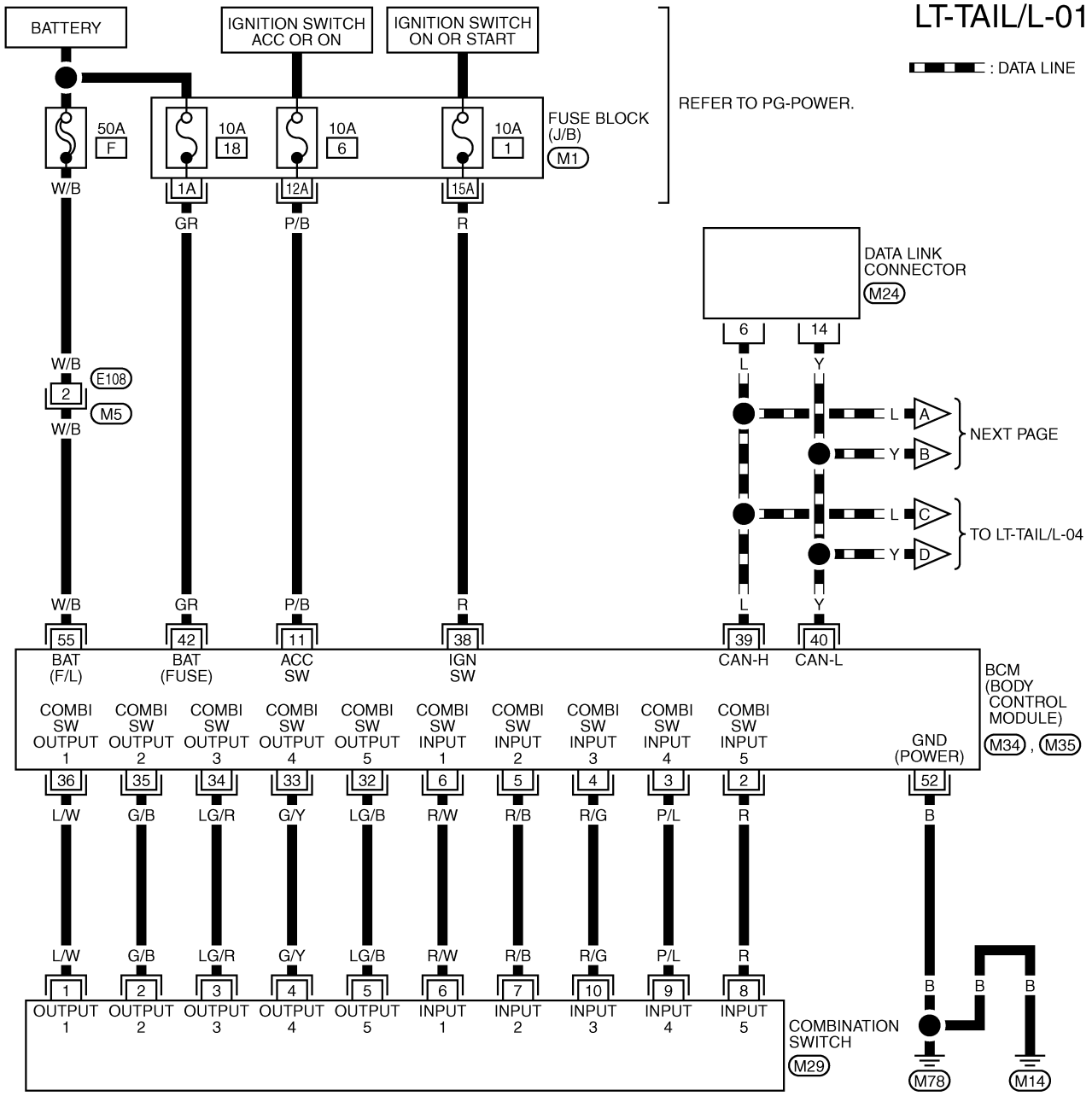
Schematic

NKS001QR

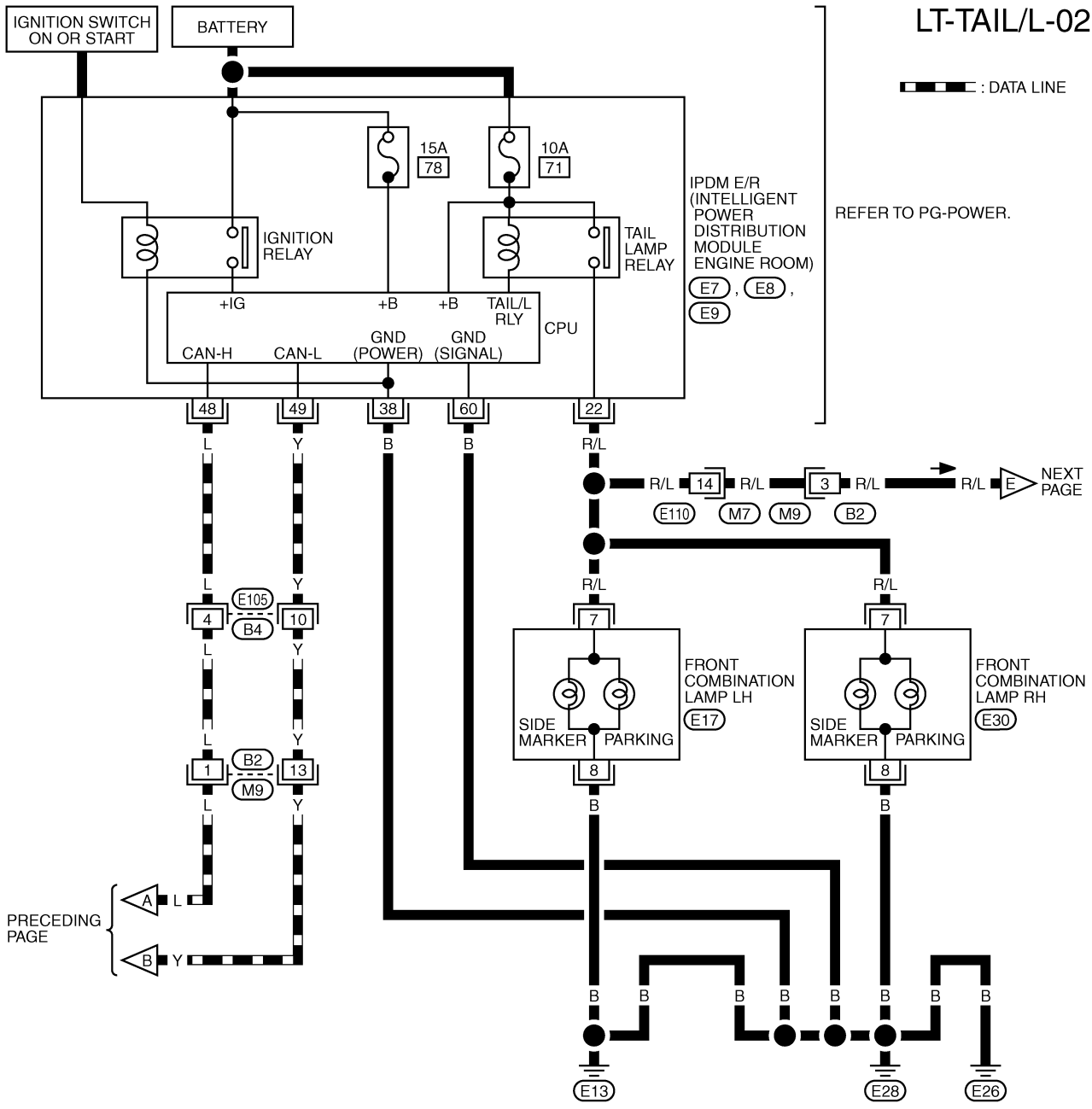


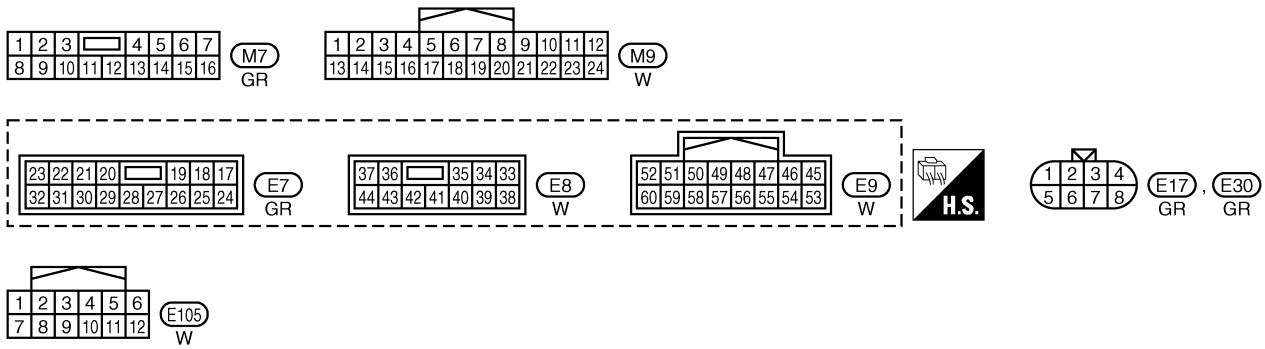
Wiring Diagram — TAIL/L —

NKS001QS

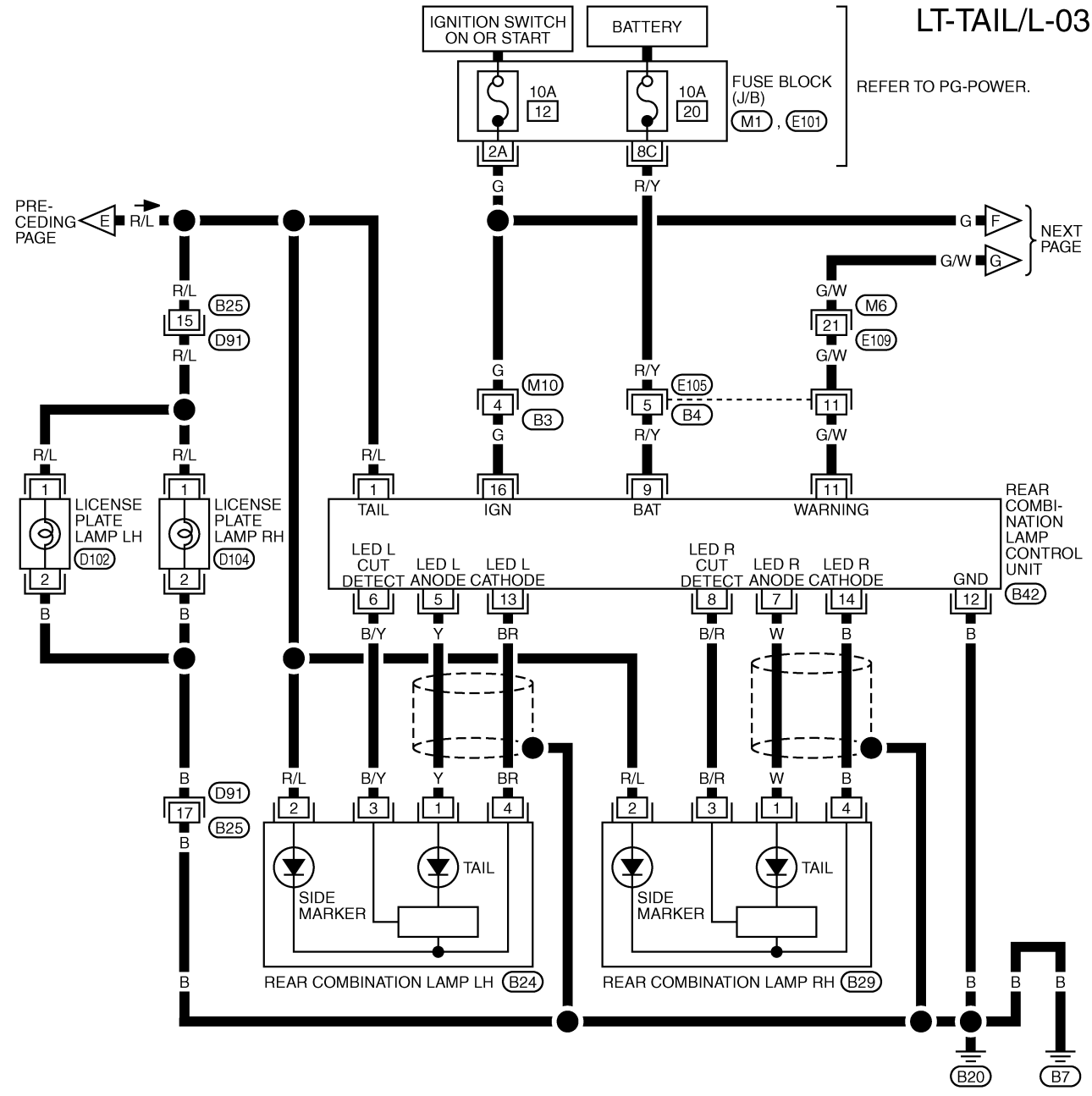


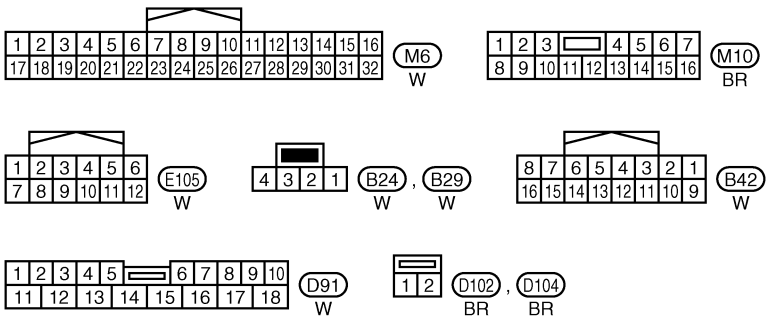
TKWB2578E


LT-TAIL/L-02
: DATA LINE
IGNITION SWITCH ON OR START
BATTERY
15A 78
10A 71
IGNITION RELAY
TAIL LAMP RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E7, E8, E9
REFER TO PG-POWER.
+IG
+B
+B
TAIL/L RLY
CPU
CAN-H
CAN-L
GND (POWER)
GND (SIGNAL)
48
49
38
60
22
L
Y
B
B
R/L
R/L 14 R/L 3 R/L E NEXT PAGE
E110 M7 M9 B2
E105
4 B4 10
1 B2 M9 13
PRECEDING PAGE
A L
B Y
7
FRONT COMBINATION LAMP LH
E17
FRONT COMBINATION LAMP RH
E30
SIDE MARKER
PARKING
8
E13
E28
E26


M7 GR
M9 W
E7 GR
E8 W
E9 W
H.S.
E17, E30 GR GR
E105 W

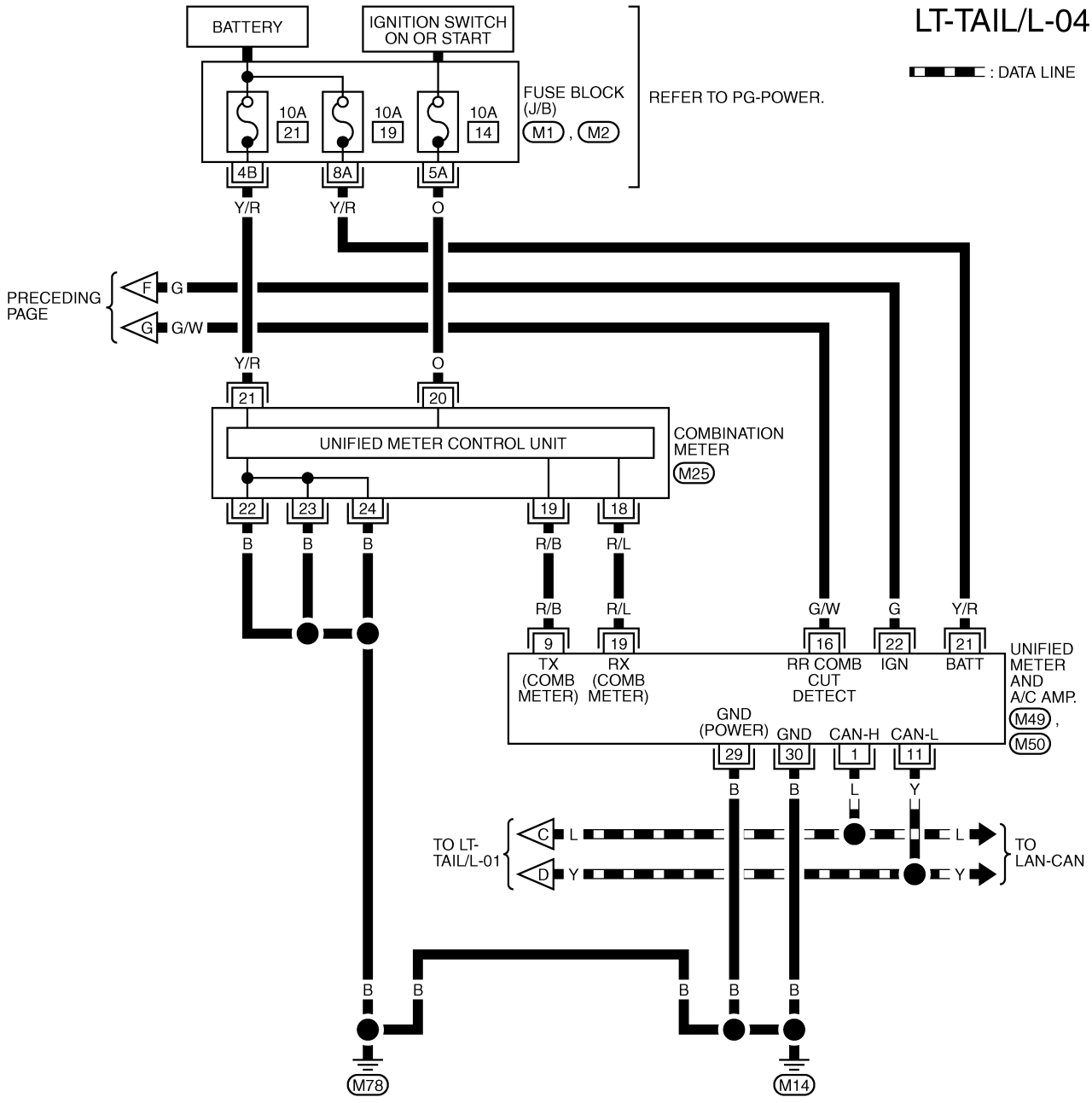
TKWB2579E

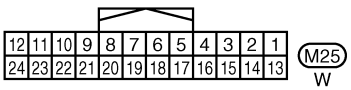


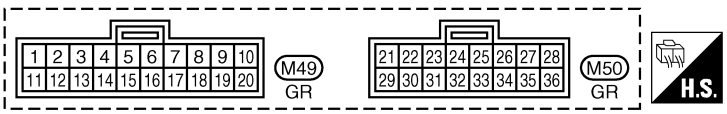


REFER TO THE FOLLOWING.
M1, E101 -FUSE BLOCK-JUNCTION BOX (J/B)

TKWB2580E



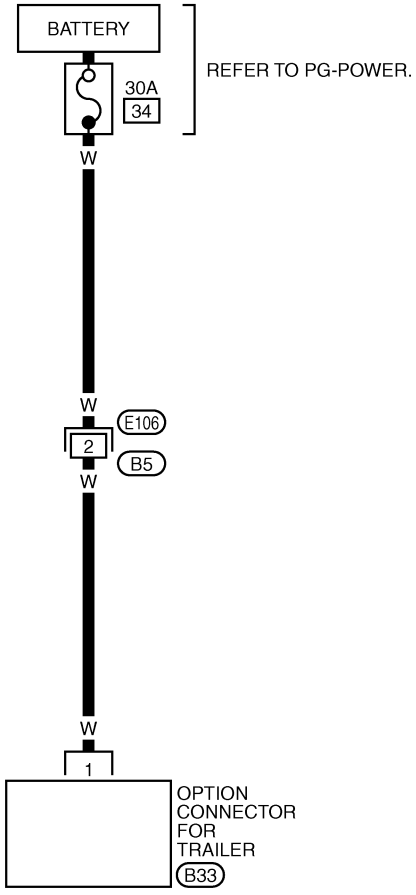


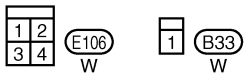


REFER TO THE FOLLOWING.
M1 , M2 -FUSE BLOCK-JUNCTION BOX (J/B)

TKWB2581E

LT-TAIL/L-05





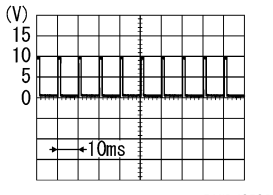
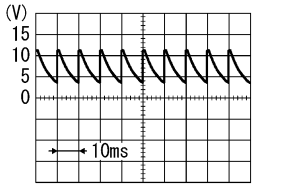
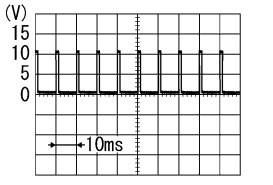
TKWB2582E

Terminals and Reference Values for BCM

NKS001QT

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 intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-II. Refer to LT-152, "DATA MONITOR" .**

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
2	R	Combination switch input 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Lighting switch 1ST	 PKIB4959J Approx. 1.0 V
11	P/B	Ignition switch (ACC)	ACC	—		Battery voltage
33	G/Y	Combination switch output 4	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Lighting switch 1ST (The same result with lighting switch 2ND)	 PKIB4958J Approx. 1.2 V
38	R	Ignition switch (ON)	ON	—		Battery voltage
39	L	CAN – H	—	—		—
40	Y	CAN – L	—	—		—
42	GR	Battery power supply	OFF	—		Battery voltage
52	B	Ground	ON	—		Approx. 0 V
55	W/B	Battery power supply	OFF	—		Battery voltage

Terminals and Reference Values for IPDM E/R

NKS001QU

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
22	R/L	Parking, license plate, side marker and tail lamp	ON	Lighting switch 1ST position	OFF	Approx. 0 V
					ON	Battery voltage
38	B	Ground	ON	—		Approx. 0 V
48	L	CAN – H	—	—		—
49	Y	CAN – L	—	—		—
60	B	Ground	ON	—		Approx. 0 V

Terminals and Reference Value for Rear Combination Lamp Control Unit

NKS002TV

Refer to LT-126, "Terminals and Reference Value for Rear Combination Lamp Control Unit" .

How to Proceed with Trouble Diagnosis

NKS001QV

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-166, "System Description" .
3. Perform the preliminary check. Refer to LT-176, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Do the parking, license plate, side marker and tail lamps operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

NKS001QW

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES AND FUSIBLE LINK

Check for blown fuses and fusible link.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	F
		18
	Ignition switch ON or START position	1
	Ignition switch ACC or ON position	6
IPDM E/R	Battery	71

Refer to LT-170, "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-3, "POWER SUPPLY ROUTING CIRCUIT" .

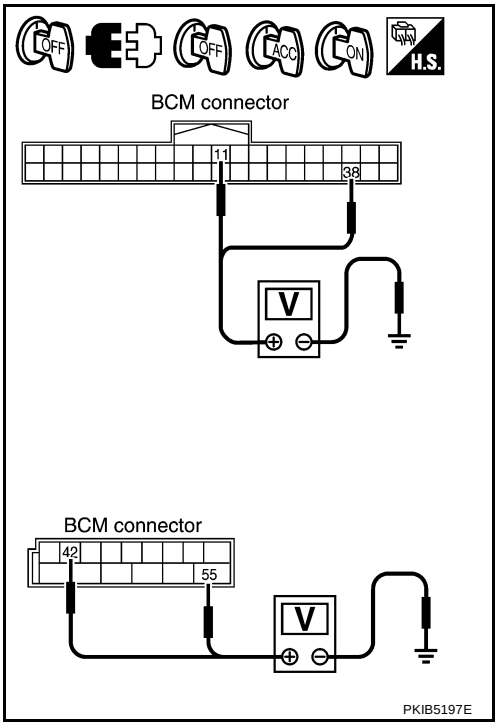
2. CHECK POWER SUPPLY CIRCUIT

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

(+)		(–)	Ignition switch position		
BCM connector	Terminal		OFF	ACC	ON
M34	11	Ground	Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage
M35	42		Battery voltage	Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage	Battery voltage

OK or NG

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



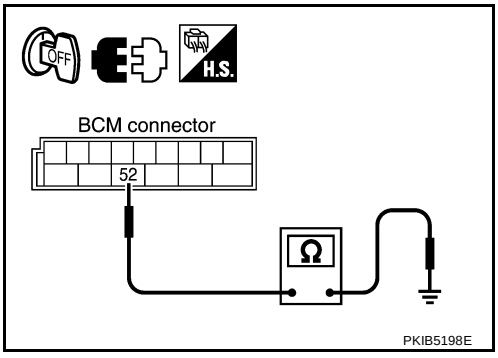
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M35	52		Yes

OK or NG

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



CONSULT-II Functions (BCM)

NKS004S6

Refer to LT-19, "CONSULT-II Functions (BCM)" in HEADLAMP -XENON TYPE-.
Refer to LT-49, "CONSULT-II Functions (BCM)" in HEADLAMP -CONVENTIONAL TYPE-.

CONSULT-II Functions (IPDM E/R)

NKS004S7

Refer to LT-21, "CONSULT-II Functions (IPDM E/R)" in HEADLAMP -XENON TYPE-.
Refer to LT-51, "CONSULT-II Functions (IPDM E/R)" in HEADLAMP -CONVENTIONAL TYPE-.

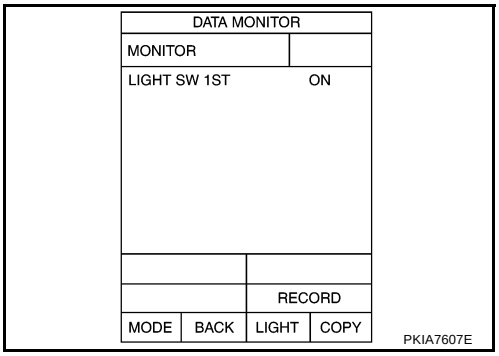
Parking, License Plate, Side Marker and Tail Lamps Do Not Illuminate

NKS001QZ

1. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

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



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

Without CONSULT-II

Refer to LT-153, "Combination Switch Inspection" .

OK or NG

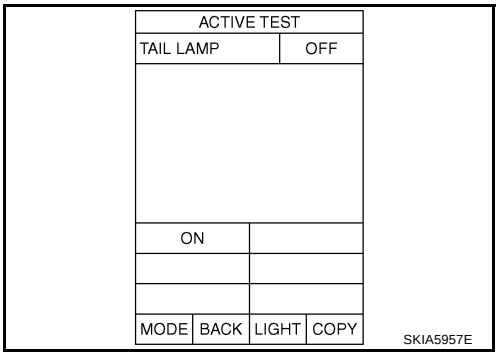
OK >> GO TO 2.

NG >> Check combination switch (lighting switch). Refer to LT-153, "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, side marker and tail lamps operate.



Parking, license plate, side marker and tail lamps should operate.

Without CONSULT-II

1. Start auto active test. Refer to PG-21, "Auto Active Test" .
2. Make sure parking, license plate, side marker and tail lamps operate.

Parking, license plate, side marker and tail lamps should operate.

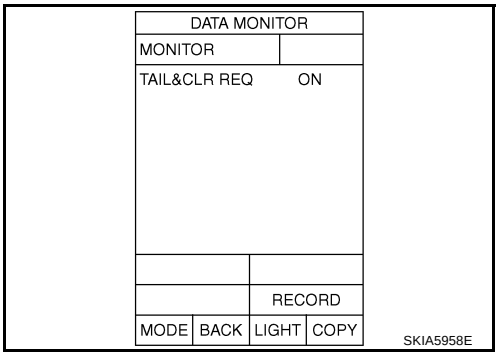
OK or NG

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 : TAIL & CLR REQ ON position

OK or NG

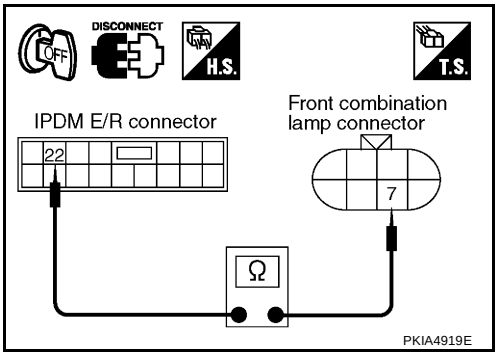
OK >> Replace IPDM E/R. Refer to PG-28, "Removal and Installation of IPDM E/R" .

NG >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

4. CHECK PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS CIRCUIT

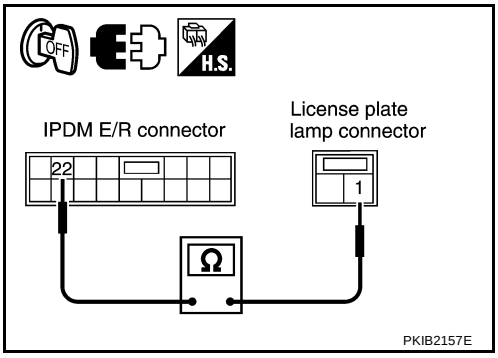
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector, front combination lamp RH and LH connectors, license plate lamp RH and LH connectors, rear combination lamp RH and LH connectors, and rear combination lamp control unit connector.
3. Check continuity between IPDM E/R harness connector and front combination lamp harness connector.

IPDM E/R		Front combination lamp (Parking and side marker)			Continuity
Connector	Terminal	Connector		Terminal	
E7	22	RH	E30	7	Yes
		LH	E17	7	



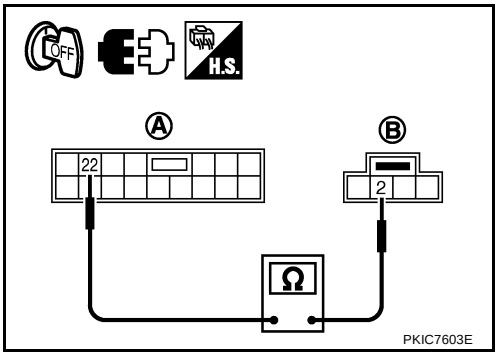
4. Check continuity between IPDM E/R harness connector and license plate lamp harness connector.

IPDM E/R		License plate lamp			Continuity
Connector	Terminal	Connector		Terminal	
E7	22	RH	D104	1	Yes
		LH	D102		



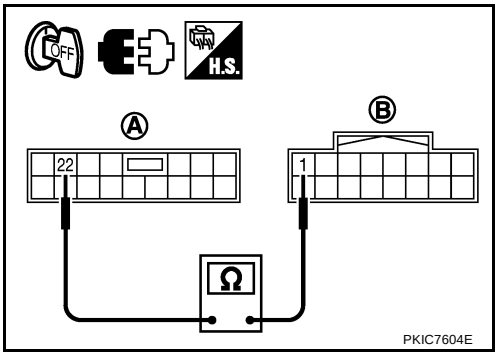
5. Check continuity between IPDM E/R harness connector (A) and rear combination lamp harness connector (B).

A		B			Continuity
Connector	Terminal	Connector		Terminal	
E7	22	RH	B29	2	Yes
		LH	B24		



6. Check continuity between IPDM E/R harness connector (A) E7 terminal 22 and rear combination lamp control unit harness connector (B) B42 terminal 1.

22 – 1 : Continuity should exist.



OK or NG

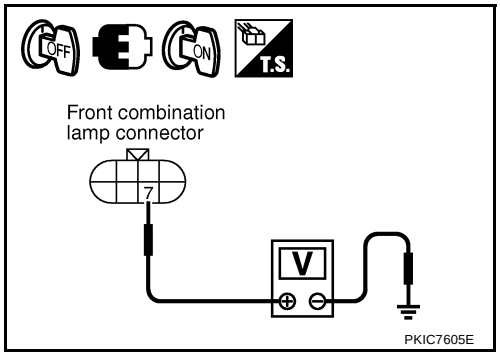
OK >> GO TO 5.
NG >> Repair harness or connector.

5. CHECK PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS OUTPUT VOLTAGE

With CONSULT-II

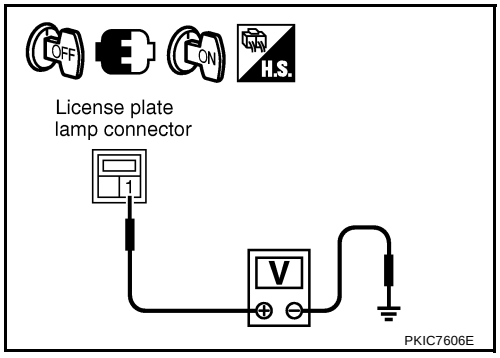
1. Turn ignition switch OFF.
2. Connect IPDM E/R connector, front combination lamp RH and LH connectors, license plate lamp RH and LH connectors, rear combination lamp RH and LH connectors, and rear combination lamp control unit connector.
3. Select “IPDM E/R” on CONSULT-II, and select “ACTIVE TEST” on “SELECT DIAG MODE” screen.
4. Select “TAIL LAMP” on “SELECT TEST ITEM” screen.
5. Touch “ON” screen.
6. Check voltage between front combination lamp harness connector and ground.

(+)			(–)	Voltage
Front combination lamp (Parking and side marker) connector		Terminal		
RH	E30	7	Ground	Battery voltage
LH	E17	7		



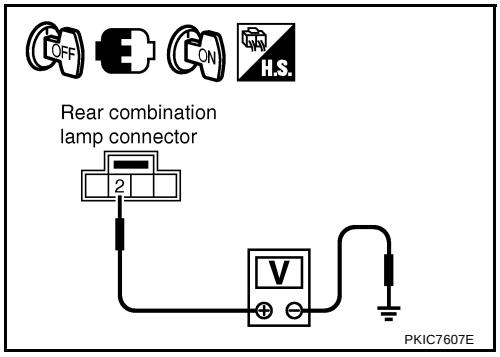
7. Check voltage between license plate lamp harness connector and ground.

(+)			(–)	Voltage
License plate lamp connector		Terminal		
RH	D104	1	Ground	Battery voltage
LH	D102			



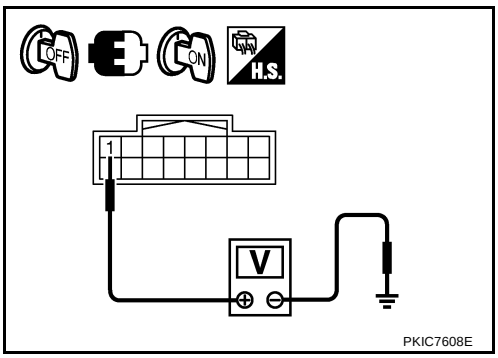
8. Check voltage between rear combination lamp harness connector and ground.

(+)			(–)	Voltage
Rear combination lamp (Side marker) connector		Terminal		
RH	B29	2	Ground	Battery voltage
LH	B24			



9. Check voltage between rear combination lamp harness connector B42 terminal 1 and ground.

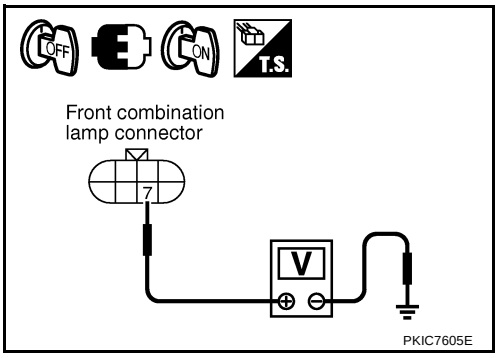
1 - Ground : Battery voltage



Without CONSULT-II

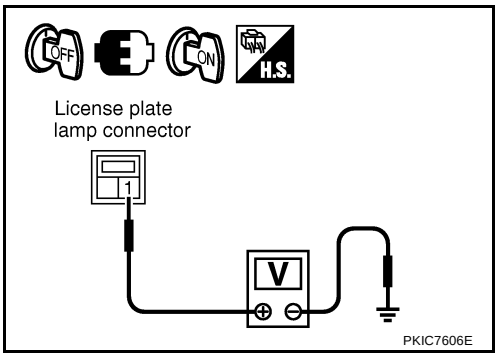
1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH and LH, license plate lamp RH and LH, rear combination lamp RH and LH, and rear combination lamp control unit connectors.
3. Start auto active test. Refer to PG-21, "Auto Active Test" .
4. Check voltage between front combination lamp harness connector and ground.

(+)			(–)	Voltage
Front combination lamp (Parking and side marker) connector		Terminal		
RH	E30	7	Ground	Battery voltage
LH	E17	7		



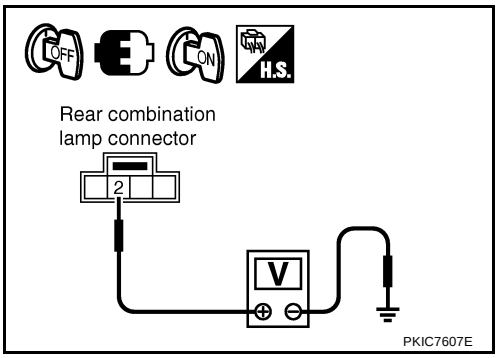
5. Check voltage between license plate lamp harness connector and ground.

(+)			(–)	Voltage
License plate lamp connector		Terminal		
RH	D104	1	Ground	Battery voltage
LH	D102			



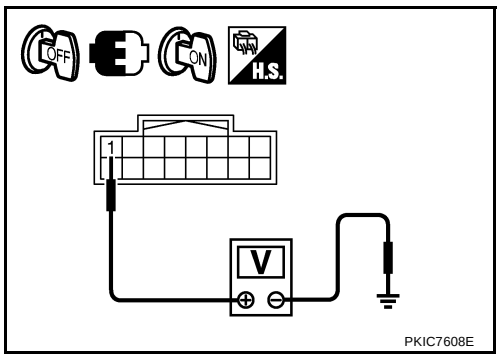
6. Check voltage between rear combination lamp harness connector and ground.

(+)			(–)	Voltage
Rear combination lamp (Side marker) connector		Terminal		
RH	B29	2	Ground	Battery voltage
LH	B24			



7. Check voltage between rear combination lamp harness connector B42 terminal 1 and ground.

1 - Ground : Battery voltage



OK or NG

OK >> Check connector connection bend and loose fit.
NG >> Replace IPDM E/R.

Tail Lamp Does Not Operate But Parking, License Plate and Side Marker Lamps Operate

NKS002TS

1. CHECK REAR COMBINATION LAMP OPERATION

Check if turn signal lamp and stop lamp operation is normally.

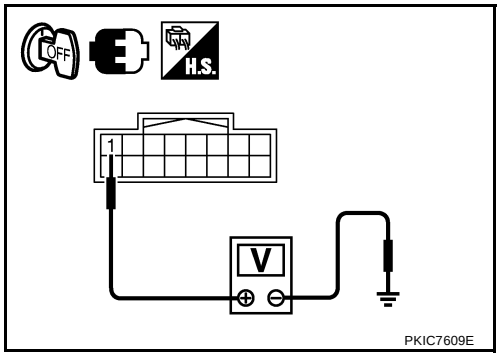
OK or NG

OK >> GO TO 2.
NG >>
- Both sides do not operate: Refer to LT-142, "Any Function of Rear Combination Lamps Does Not Work (Both sides)" .
- One side does not operate: Refer to LT-143, "Any Function of Rear Combination Lamps Does Not Work (One side)" .

2. CHECK TAIL LAMP SIGNAL

1. Turn ignition switch OFF.
2. Lighting switch is 1ST position.
3. Check voltage between rear combination lamp control unit harness connector B42 terminal 1 and ground.

1 - Ground : Battery voltage



OK or NG

OK >> Replace rear combination lamp control unit.
NG >> Repair harness or connector between IPDM E/R and rear combination lamp control unit.

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

NKS001R0

1. CHECK IPDM E/R

1. Turn the ignition switch ON. Place the combination switch (lighting switch) in the ON position. Turn the ignition switch OFF.
2. Make sure the parking, license plate, and tail lamps turn OFF after approximately 10 minutes.

OK or NG

OK >> INSPECTION END
NG >> Ignition relay malfunction. Refer to PG-18, "Function of Detecting Ignition Relay Malfunction" .

Bulb Replacement

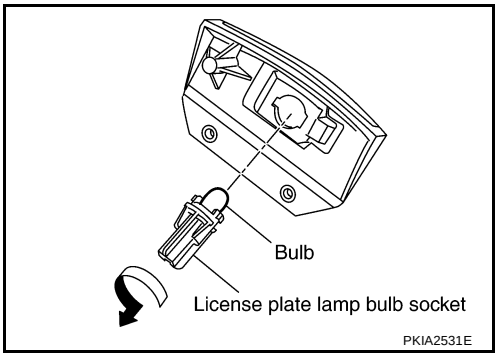
NKS001R1

LICENSE PLATE LAMP

1. Remove back door inner finisher. Refer to EI-39, "BACK DOOR TRIM" .
2. Disconnect license plate lamp connector.
3. Turn bulb socket counterclockwise and unlock it.
4. Remove bulb from its socket.

License plate lamp : 12V - 5W

5. Installation is the reverse order of removal.



PARKING LAMP

Refer to LT-34, "Bulb Replacement" in HEADLAMP -XENON TYPE-.
Refer to LT-63, "Bulb Replacement" in HEADLAMP -CONVENTIONAL TYPE-.

TAIL LAMP

Refer to LT-184, "Bulb Replacement" .

FRONT SIDE MARKER LAMP

Refer to LT-34, "Bulb Replacement" in HEADLAMP -XENON TYPE-.
Refer to LT-63, "Bulb Replacement" in HEADLAMP -CONVENTIONAL TYPE-.

REAR SIDE MARKER LAMP

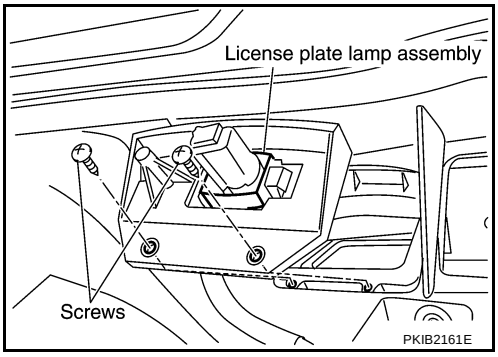
Refer to LT-184, "Bulb Replacement" .

Removal and Installation

NKS001R2

LICENSE PLATE LAMP

1. Remove back door inner finisher. Refer to EI-39, "BACK DOOR TRIM" .
2. Remove rear wiper motor. Refer to WW-52, "Removal and Installation of Rear Wiper Motor" .
3. Remove license plate lamp mounting screws and remove it.
4. Installation is the reverse order of removal.



PARKING LAMP

Refer to LT-35, "Removal and Installation" in HEADLAMP -XENON TYPE-.
Refer to LT-64, "Removal and Installation" in HEADLAMP -CONVENTIONAL TYPE-.

TAIL LAMP

Refer to LT-184, "Removal and Installation" .

FRONT SIDE MARKER LAMP

Refer to LT-35, "Removal and Installation" in HEADLAMP -XENON TYPE-.
Refer to LT-64, "Removal and Installation" in HEADLAMP -CONVENTIONAL TYPE-.

REAR SIDE MARKER LAMP

Refer to LT-184, "Removal and Installation" .

REAR COMBINATION LAMP

PFP:26554

Bulb Replacement

NKS001R3

STOP, TAIL & REAR TURN SIGNAL LAMP BULB, REAR SIDE MARKER LAMP BULB

1. Remove rear combination lamp. Refer to LT-184, "Removal and Installation" .
2. Replacement integral with rear combination lamp.

Stop/tail/rear turn signal lamp : LED

Rear side marker lamp : LED

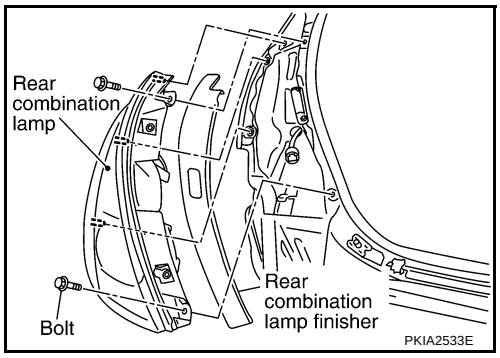
Removal and Installation

NKS001R4

REAR COMBINATION LAMP

Removal

1. Remove rear combination lamp finisher.
2. Remove rear combination lamp mounting bolts.
3. Pull the rear combination lamp toward side of the vehicle and remove from the vehicle.
4. Disconnect rear combination lamp connector.



Installation

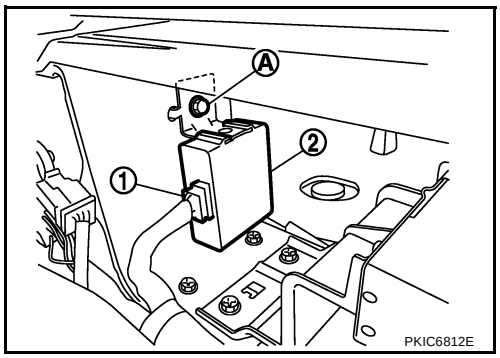
Installation is the reverse order of removal.

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

REAR COMBINATION LAMP CONTROL UNIT

Removal

1. Remove luggage floor finisher (front) and luggage floor finisher (center). Refer to EI-37, "LUGGAGE FLOOR TRIM" .
2. Disconnect rear combination lamp control unit connector (1).
3. Remove rear combination lamp control unit mounting bolt (A).
4. Remove rear combination lamp control unit (2).



Installation

Installation is the reverse order of removal.

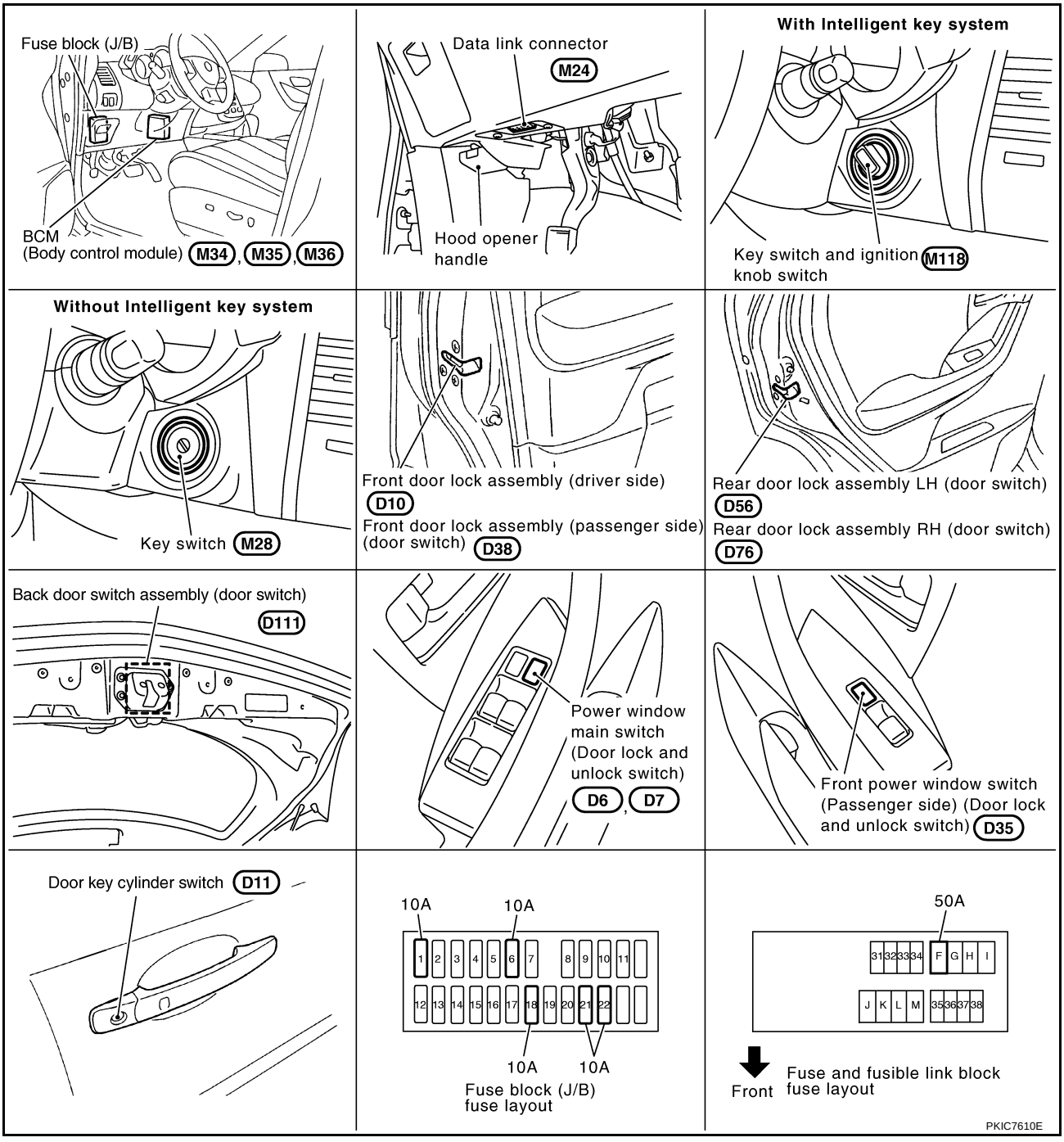
Rear combination lamp control unit mounting bolt : 5.5 N·m (0.56 kg-m, 49 in-lb)

INTERIOR ROOM LAMP

PFP:26410

Component Parts and Harness Connector Location

NKS001RA



System Description

NKS001RB

When the room lamp and personal lamp switch is in DOOR position, room lamp and personal 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 the room lamp and personal lamp turns ON, there is a gradual brightening over 1 second. When room lamp and personal lamp turns OFF, there is a gradual dimming over 1 second.
The room lamp and personal lamp timer is controlled by the BCM (body control module).
Room lamp and personal lamp timer control settings can be changed with CONSULT-II.
Ignition key hole illumination turns ON at time when driver door is opened (door switch ON) or removed key fob from key cylinder. Illumination turns OFF when driver door is closed (door switch OFF).
Step lamp turns ON at time when driver door or passenger door is opened (door switch ON). Lamp turns OFF when driver, passenger doors are closed (all door switches OFF).

POWER SUPPLY AND GROUND

Power is supplied at all times (without Intelligent Key system)

- through 10A fuse [No. 21, located in fuse block (J/B)]
- to key switch terminal 3,
- through 50A fusible link (letter F, located in fuse and fusible link block)
- to BCM terminal 55.

Power is supplied at all times (with Intelligent Key system)

- through 10A fuse [No.22, located in fuse block (J/B)]
- to key switch and ignition knob switch terminals 1 and 3,
- through 10A fuse [No. 18, located in fuse block (J/B)]
- to BCM terminal 42,
- through 50A fusible link (letter F, located in fuse and fusible link block)
- to BCM terminal 55.

When the key is inserted to ignition key cylinder, power is interrupted (without Intelligent Key system)

- through key switch terminal 4
- to BCM terminal 37.

When inserted key plate to key switch and ignition knob switch, power is supplied (with Intelligent Key system)

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

When pushed key switch and ignition knob switch, power is supplied (with Intelligent Key system)

- through key switch and ignition knob switch terminal 2
- to intelligent key unit terminal 27.

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

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

Ground is supplied

- to BCM terminal 52
- through grounds M14 and M78.

When the driver side door is opened, ground is supplied

- to BCM terminal 62
- through front door lock assembly (driver side) (door switch) terminal 4
- through front door lock assembly (driver side) (door switch) terminal 5
- through grounds M14 and M78.

When the passenger side door is opened, ground is supplied

- to BCM terminal 12
- through front door lock assembly (passenger side) (door switch) terminal 4
- through front door lock assembly (passenger side) (door switch) terminal 5
- through grounds M14 and M78.

When the rear door LH is opened, ground is supplied

- to BCM terminal 63
- through rear door lock assembly LH (door switch) terminal 4
- through rear door lock assembly LH (door switch) terminal 5
- through grounds B7 and B20.

When the rear door RH is opened, ground is supplied

- to BCM terminal 13
- through rear door lock assembly RH (door switch) terminal 4
- through rear door lock assembly RH (door switch) terminal 5
- through grounds B105 and B116.

When the driver side door is unlocked by the door lock and unlock switch, BCM receives a ground signal

- through grounds M14 and M78
- to power window main switch (door lock and unlock switch) terminal 17 or front power window switch (passenger side) (door lock and unlock switch) terminal 11
- from power window main switch (door lock and unlock switch) terminal 14 or front power window switch (passenger side) (door lock and unlock switch) terminal 16
- to BCM terminal 22.

When the front driver side door is unlocked by the driver side door lock assembly (door key cylinder switch), BCM receives a ground signal

- through grounds M14 and M78
- to front door lock assembly (driver side) (door key cylinder switch) terminal 5 (without Intelligent Key system)
- to door key cylinder switch terminal 2 (with Intelligent Key system)
- from front door lock assembly (driver side) (door key cylinder switch) terminal 6 (without Intelligent Key system)
- from door key cylinder switch terminal 3 (with Intelligent Key system)
- to power window main switch (door lock and unlock switch) terminal 6
- from power window main switch (door lock and unlock switch) terminal 14
- to BCM terminal 22.

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

- to room lamp terminal 1 and
- to personal lamp LH and RH terminals 3
- through BCM terminal 48.

With power and supplied, the interior lamp illuminates.

SWITCH OPERATION

When driver door switch is ON (door is opened), ground is supplied

- to ignition key hole illumination terminal 2
- through BCM terminal 1.

And power is supplied

- from BCM terminal 41
- to ignition key hole illumination terminal 1.

When any door switch is ON (door is opened), ground is supplied

- through BCM terminal 47
- to step lamp (driver side and passenger side) terminal 2.

And power is supplied

- from BCM terminal 41
- to step lamp (driver side and passenger side) terminal 1.

When map lamp switch is ON, ground is supplied

- to map lamp terminal 2
- through grounds M14 and M78.

And power is supplied

- from BCM terminal 41
- to map lamp terminal 1.

When vanity mirror lamp (driver side and passenger side) is ON, ground is supplied

- to vanity mirror lamp (driver side and passenger side) terminal 2
- through grounds M14 and M78.

And power is supplied

- from BCM terminal 41
- to vanity mirror lamp (driver side and passenger side) terminal 1.

When personal lamp LH and RH switches are ON, ground is supplied

- to personal lamp LH and RH terminals 2
- through grounds M14 and M78.

And power is supplied

- from BCM terminal 41
- to personal lamp LH and RH terminals 1.

When room lamp switch is ON, ground is supplied

- to room lamp terminal 3
- through grounds M14 and M78.

And power is supplied

- from BCM terminal 41
- to room lamp terminal 2.

When luggage room lamp RH and LH are ON, and then back door switch is ON, ground is supplied

- to luggage room lamp RH and LH terminals 2
- through back door switch terminal 3
- through back door switch terminal 4
- through grounds B7 and B20.

And power is supplied

- from BCM terminal 41
- to luggage room lamp RH and LH terminals 1.

ROOM LAMP TIMER OPERATION

Without Intelligent Key System

When room lamp and personal lamp switch is in DOOR position, and when all conditions below are met, BCM performs timer control (maximum 30 seconds) for room lamp and personal lamp ON/OFF.
In addition, when spot turns ON or OFF there is gradual brightening or dimming over 1 second.
Power is supplied

- through 10A fuse [No. 21, located in the fuse block (J/B)]
- to key switch terminal 3.

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

- from BCM terminal 22
- to power window main switch (door lock and unlock switch) terminal 14.

At this time, BCM detects that driver door is unlocked. It determines that room lamp and personal lamp timer operation conditions are met, and turns the room lamp and personal lamp ON for 30 seconds.
Key is in ignition key cylinder (key switch ON),
Power is supplied

- through key switch terminal 4
- to BCM terminal 37.

When key is removed from key switch (key switch OFF), power supply to BCM terminal 37 is terminated. BCM detects that key has been removed, determines that room lamp and personal lamp timer conditions are met, and turns the room lamp and personal lamp ON for 30 seconds.
When driver door opens $\rightarrow$ closes, and the key is not inserted in the key switch and key lock solenoid (key switch OFF), BCM terminal 62 changes between 0V (door open) $\rightarrow$ 12V (door closed). The BCM determines that conditions for room lamp and personal lamp operation are met and turns the interior lamp ON for 30 seconds.
Timer control is canceled under the following conditions.

- Driver door is locked [when locked key fob or power window main switch (door lock and unlock switch), door key cylinder switch]
- Driver door is opened (driver door switch turns ON)
- Ignition switch ON.

With Intelligent Key System

When the room lamp and personal lamp switch is in DOOR position, and when all conditions below are met, BCM performs timer control (maximum 30 second) for room lamp and personal lamp ON/OFF.
In addition, when spot turns ON or OFF there is gradual brightening or dimming over 1 second.
Power is supplied

- to 10A fuse [No. 22, located in fuse and fuse block (J/B)]
- through key switch and ignition knob switch terminals 1 and 3.

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

- from BCM terminal 22
- to power window main switch (door lock and unlock switch) terminal 14.

At the time that driver door are opened, BCM detects that driver door is unlocked. It determines that room lamp and personal lamp timer operation conditions are met, and turns room lamp and personal lamp ON for 30 seconds.
Key is in ignition key cylinder (key switch ON), or turned ignition knob switch,
Power is supplied

- through key switch terminal 4
- to BCM terminal 37,
- through key switch terminal 2
- to intelligent key unit terminal 27.

When the key is removed from key switch (key switch OFF), power supply to BCM terminal 37 is terminated. And turned ignition knob switch, power supply to Intelligent Key unit is terminated. BCM detects that key has been removed, determines that room lamp and personal lamp timer conditions are met, and turns room lamp and personal lamp ON for 30 seconds.
When driver door opens → closes, and key is not inserted in key switch (or not turned ignition knob switch), BCM terminal 62 changes between 0V (door open) → 12V (door closed). BCM determines that conditions for room lamp and personal lamp operation are met and turns the room lamp ON for 30 seconds.
Timer control is canceled under the following conditions.

- Driver door is locked [when locked key fob, power window main switch (door lock and unlock switch) or door key cylinder switch].
- Driver door is opened (driver door switch terns ON).
- Ignition switch ON.

INTERIOR LAMP BATTERY SAVER CONTROL

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

- Ignition keyhole illumination
- Step lamp (driver side)
- Step lamp (passenger side)
- Vanity mirror lamp (driver side)
- Vanity mirror lamp (passenger side)
- Map lamp
- Luggage room lamp
- Room lamp
- Personal lamp RH
- Personal lamp LH

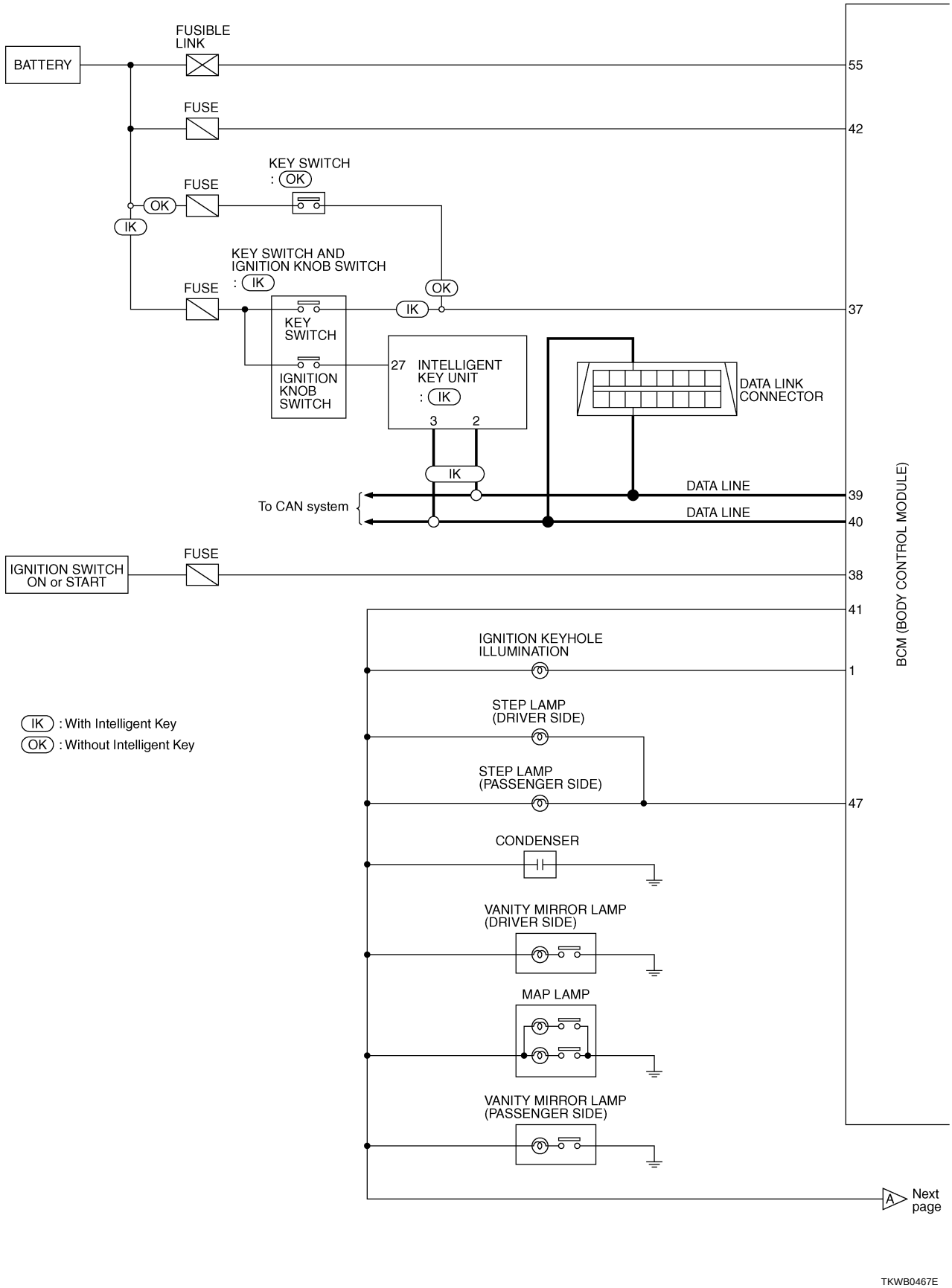
After lamps turn OFF by battery saver system, lamps illuminate again when

- signal from key fob, or power window main switch (door lock and unlock switch) or key cylinder is locked or unlocked,
- door is opened or closed,
- key is removed from ignition key cylinder or inserted in ignition key cylinder, or turned ignition knob switch.

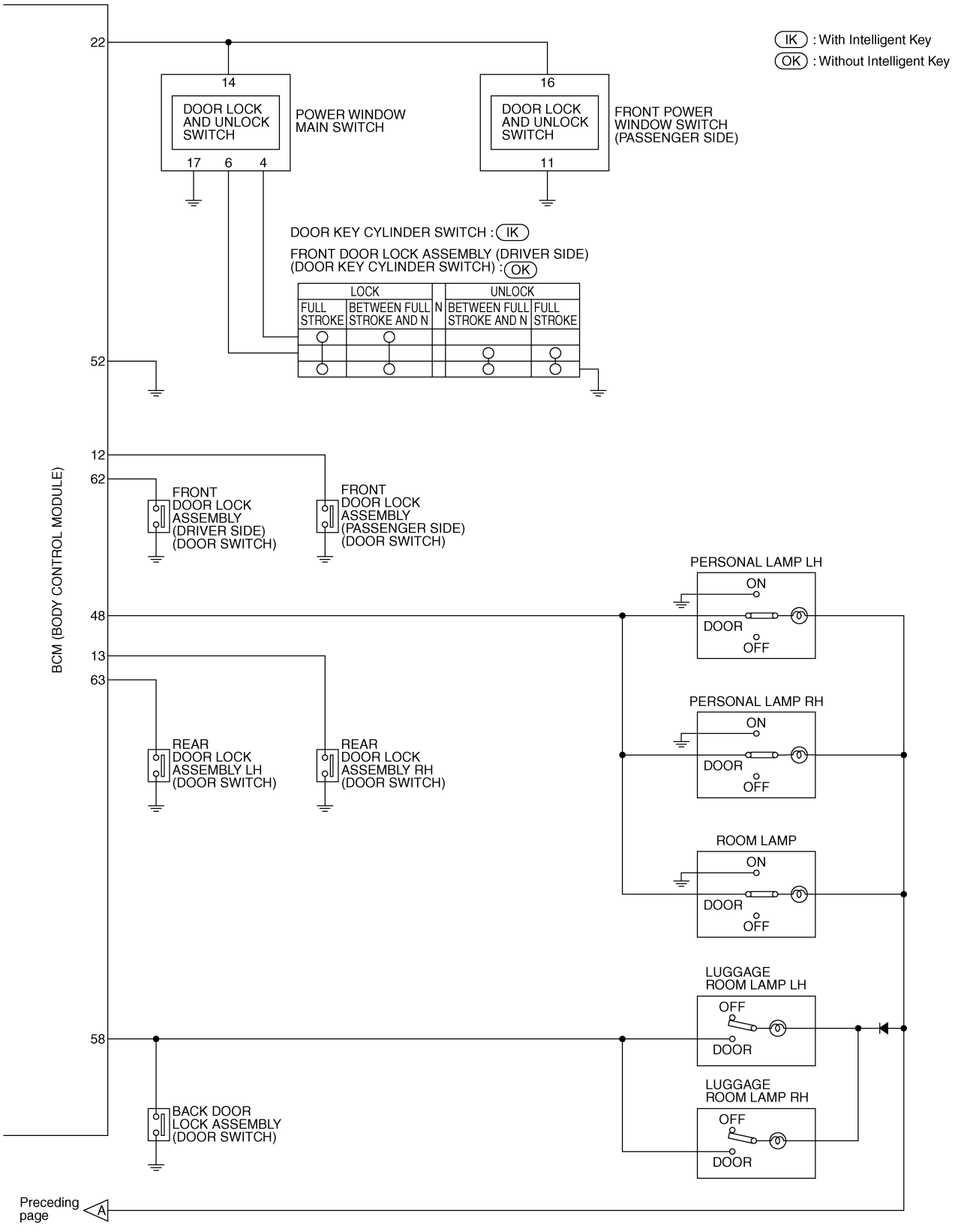
Interior lamp battery saver control period can be changed by the function setting of CONSULT-II.

Schematic

NKS001RC



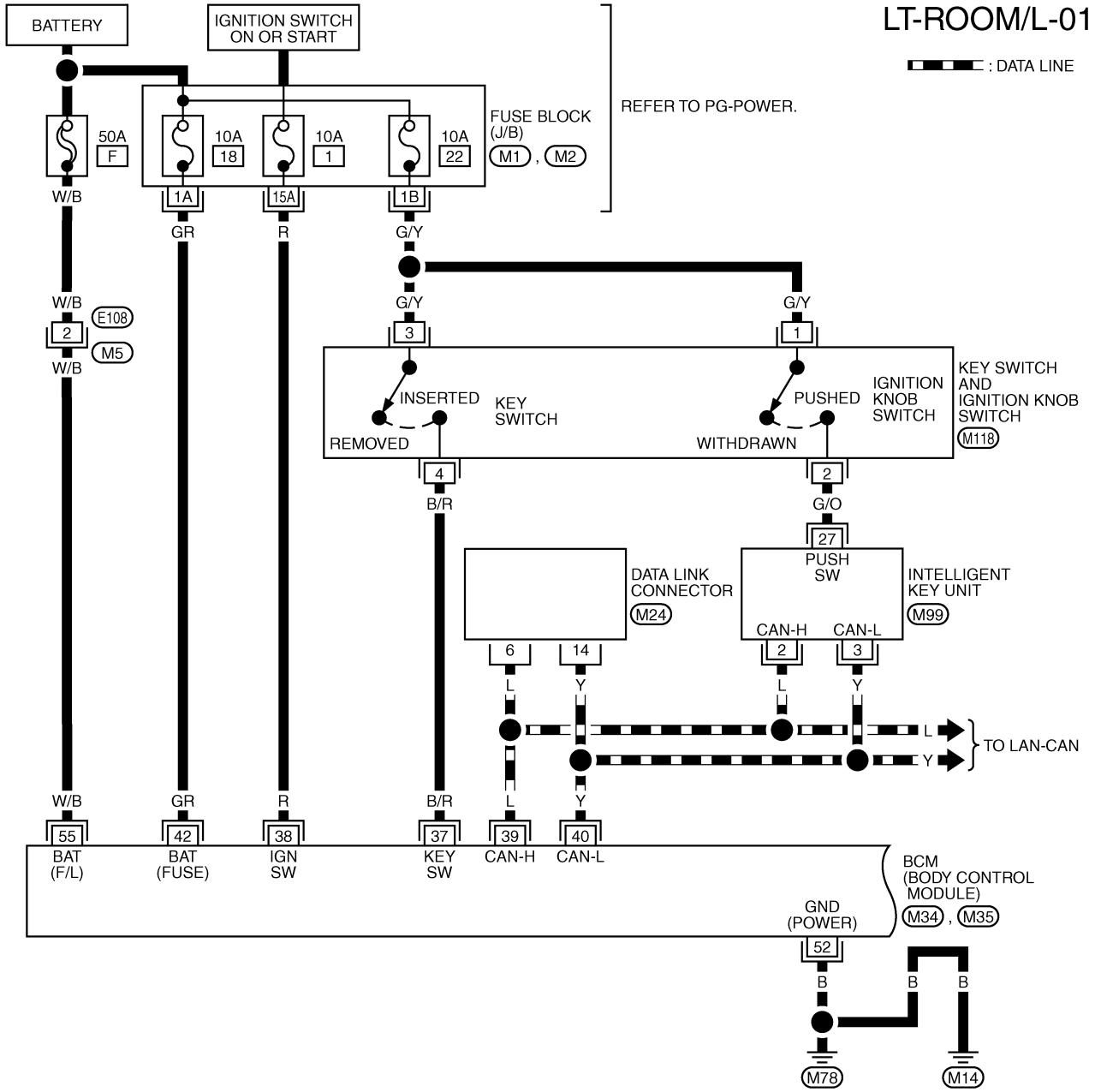
TKWB0467E

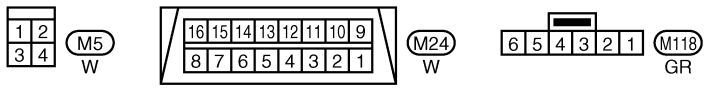

IK : With Intelligent Key
OK : Without Intelligent Key
22
14
DOOR LOCK AND UNLOCK SWITCH
17 6 4
POWER WINDOW MAIN SWITCH
16
DOOR LOCK AND UNLOCK SWITCH
11
FRONT POWER WINDOW SWITCH (PASSENGER SIDE)
DOOR KEY CYLINDER SWITCH : IK
FRONT DOOR LOCK ASSEMBLY (DRIVER SIDE) (DOOR KEY CYLINDER SWITCH) : OK
LOCK
UNLOCK
FULL STROKE
BETWEEN FULL STROKE AND N
N
BETWEEN FULL STROKE AND N
FULL STROKE
52
12
62
BCM (BODY CONTROL MODULE)
FRONT DOOR LOCK ASSEMBLY (DRIVER SIDE) (DOOR SWITCH)
FRONT DOOR LOCK ASSEMBLY (PASSENGER SIDE) (DOOR SWITCH)
PERSONAL LAMP LH
ON
DOOR
OFF
48
13
63
REAR DOOR LOCK ASSEMBLY LH (DOOR SWITCH)
REAR DOOR LOCK ASSEMBLY RH (DOOR SWITCH)
PERSONAL LAMP RH
ON
DOOR
OFF
ROOM LAMP
ON
DOOR
OFF
LUGGAGE ROOM LAMP LH
OFF
DOOR
58
LUGGAGE ROOM LAMP RH
OFF
DOOR
BACK DOOR LOCK ASSEMBLY (DOOR SWITCH)
Preceding page
A

TKWB0468E

Wiring Diagram — ROOM/L —
WITH INTELLIGENT KEY

NKS001RD

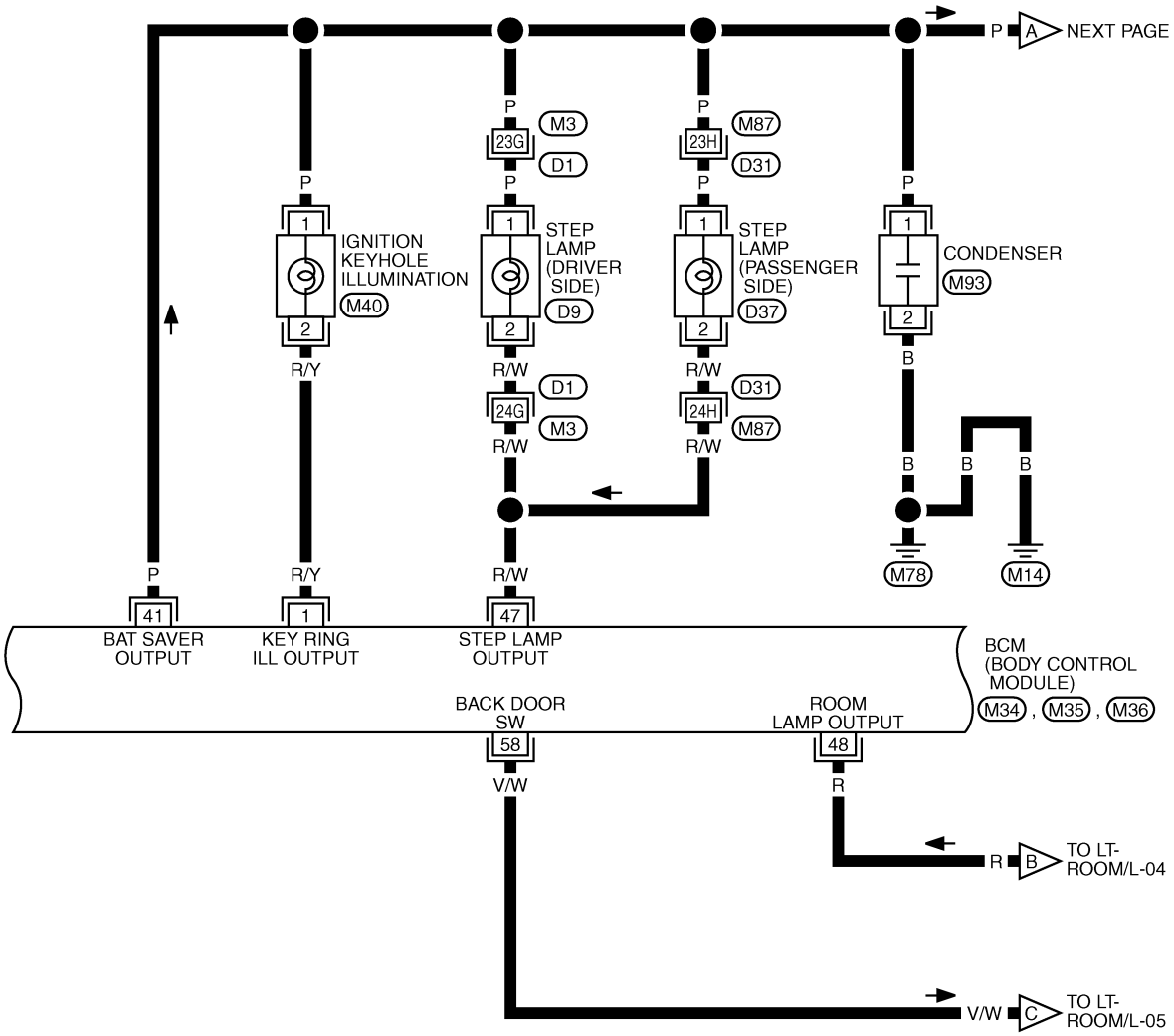




REFER TO THE FOLLOWING.
M1, M2 -FUSE BLOCK-JUNCTION BOX (J/B)
M34, M35, M99 -ELECTRICAL UNITS

TKWB2583E

LT-ROOM/L-02



M40 W

M93 W

D9 W , D37 W

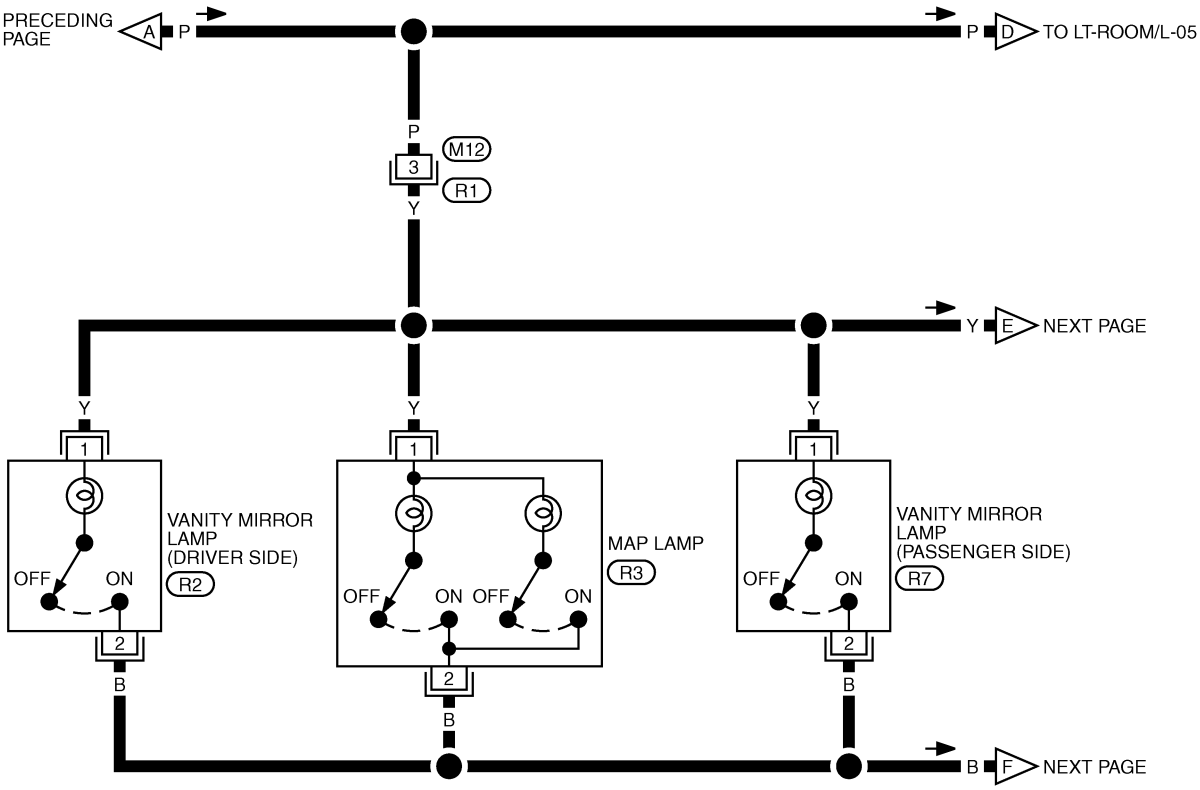
REFER TO THE FOLLOWING.

D1 , D31 -SUPER MULTIPLE JUNCTION (SMJ)

M34 , M35 , M36 -ELECTRICAL UNITS

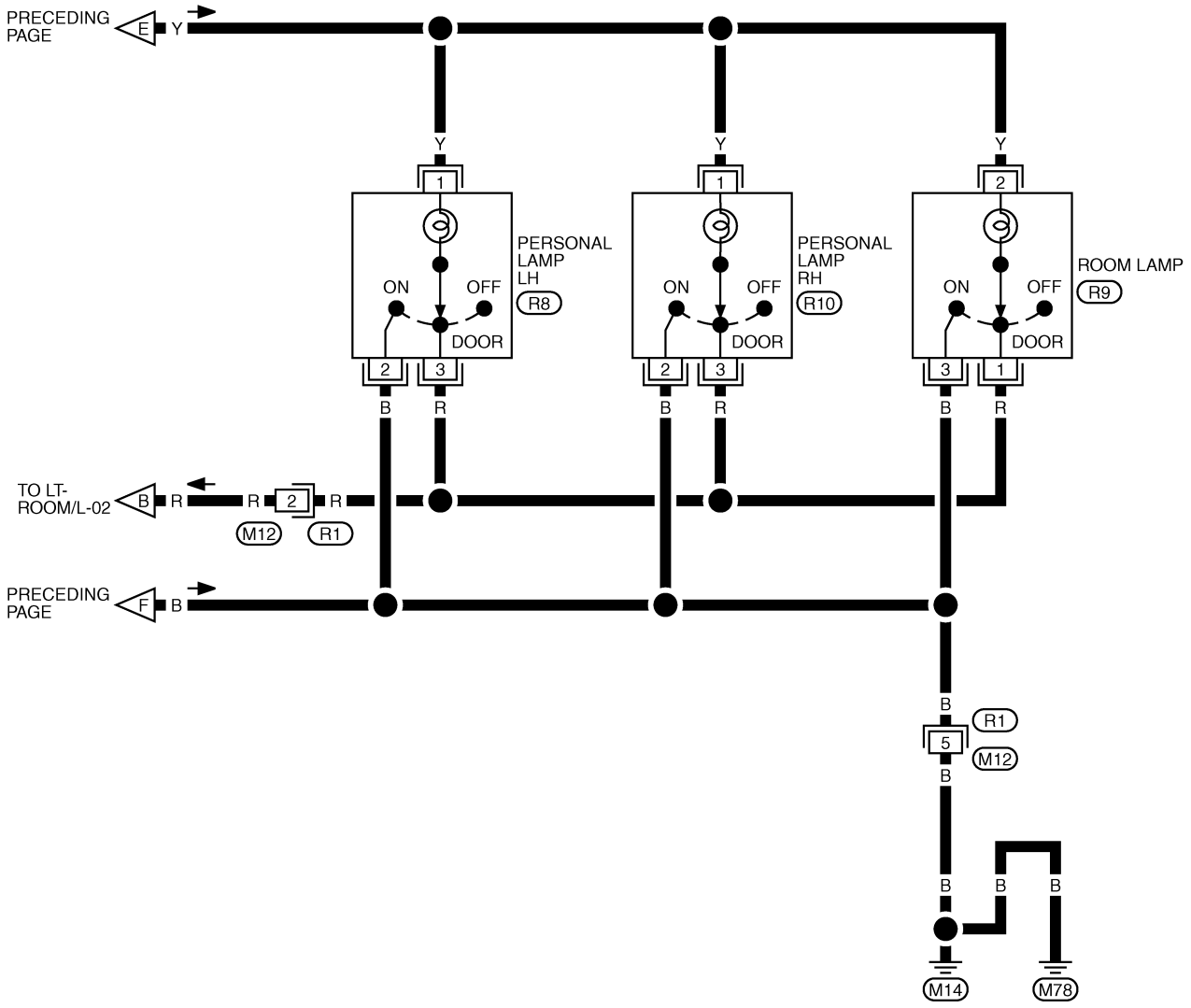
TKWB2584E

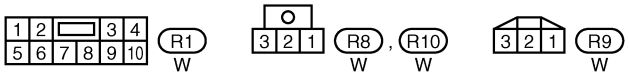
LT-ROOM/L-03



TKWB2585E

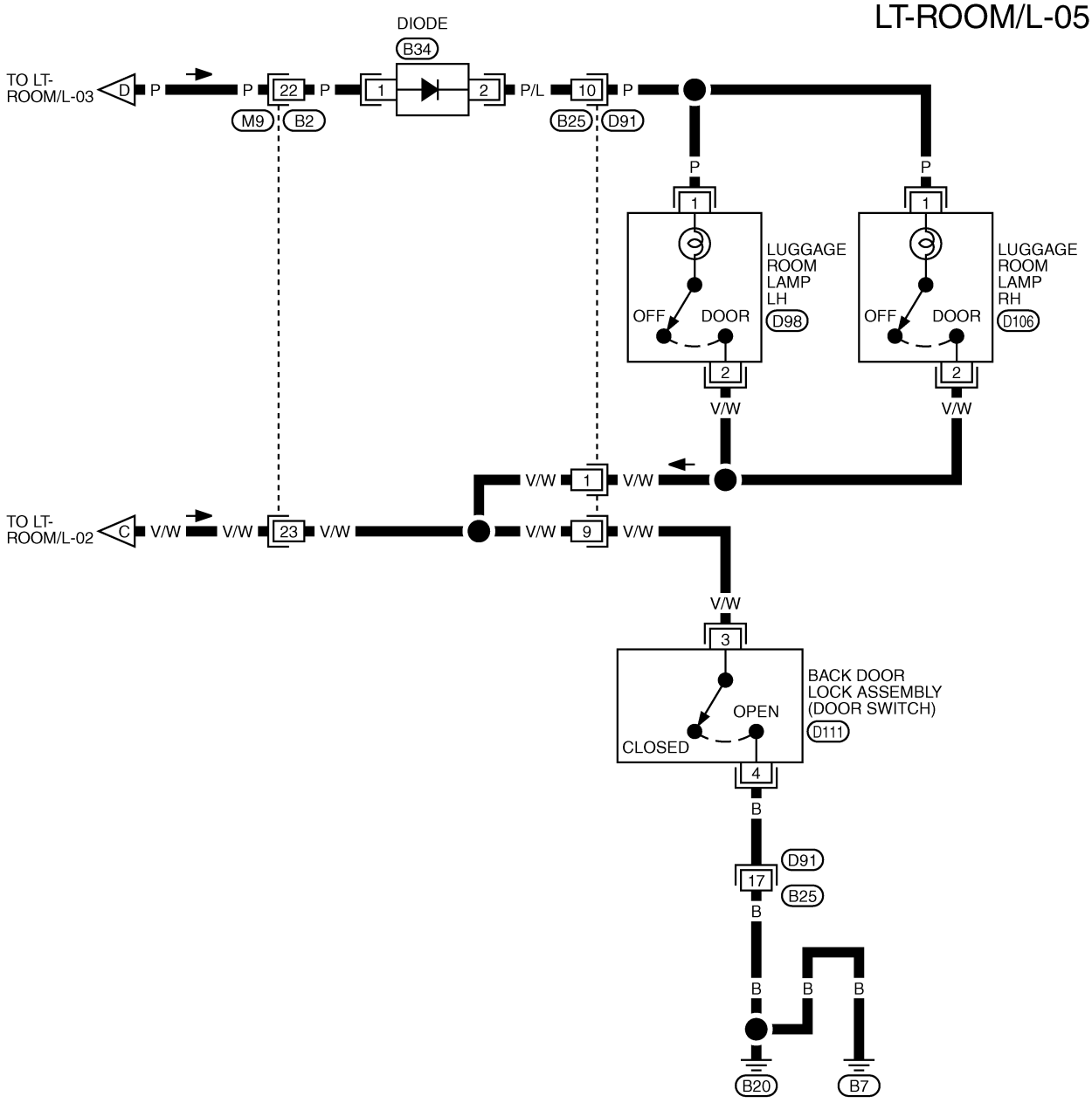
LT-ROOM/L-04

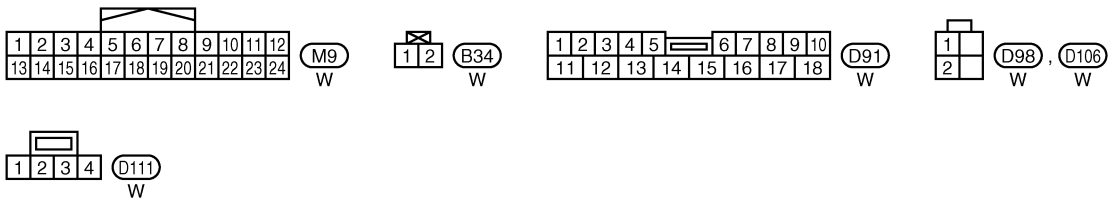




TKWB2586E

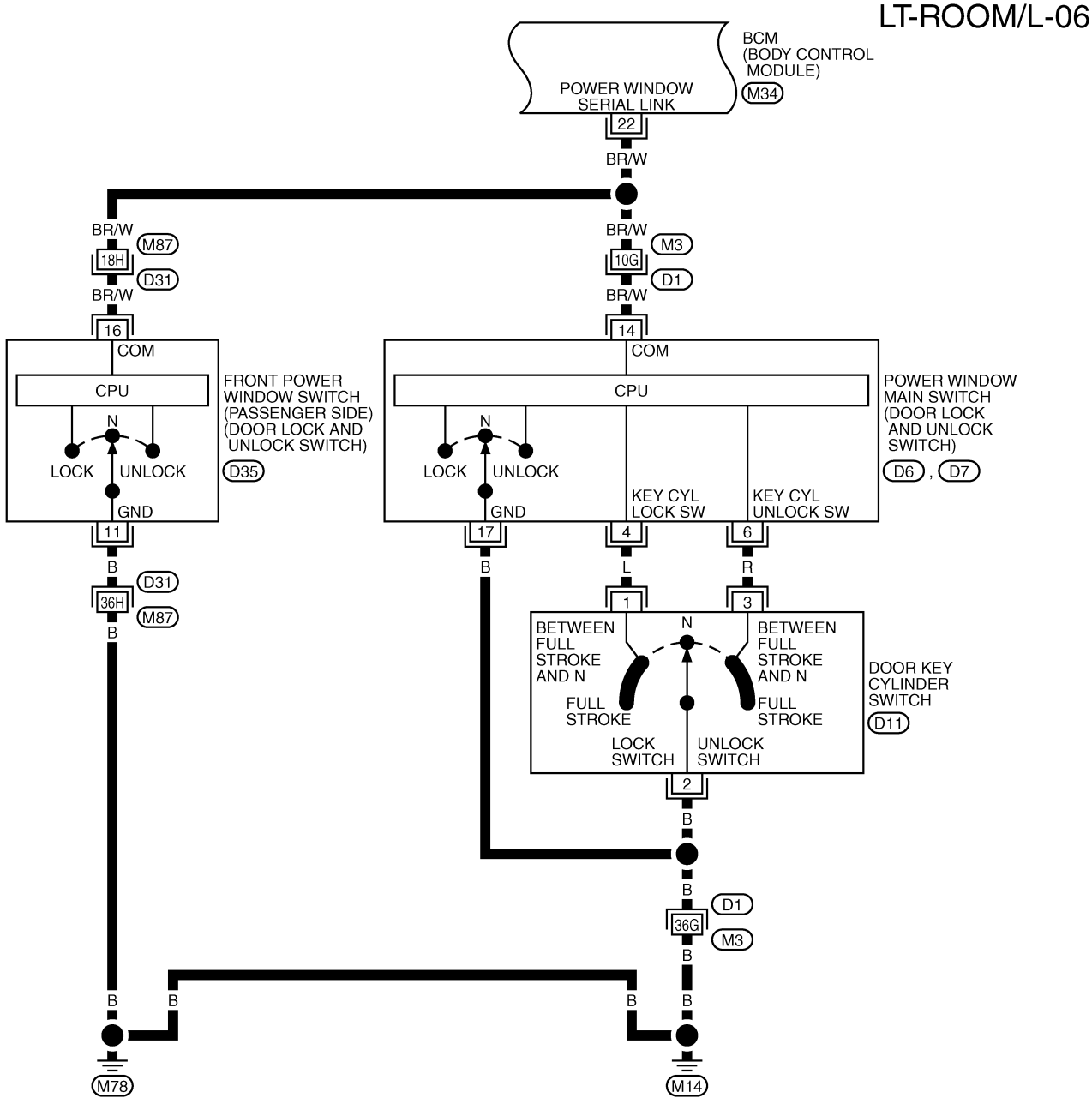
LT-ROOM/L-05

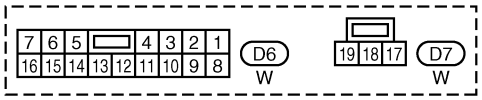


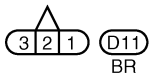


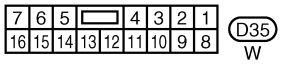
TKWB0473E

LT-ROOM/L-06









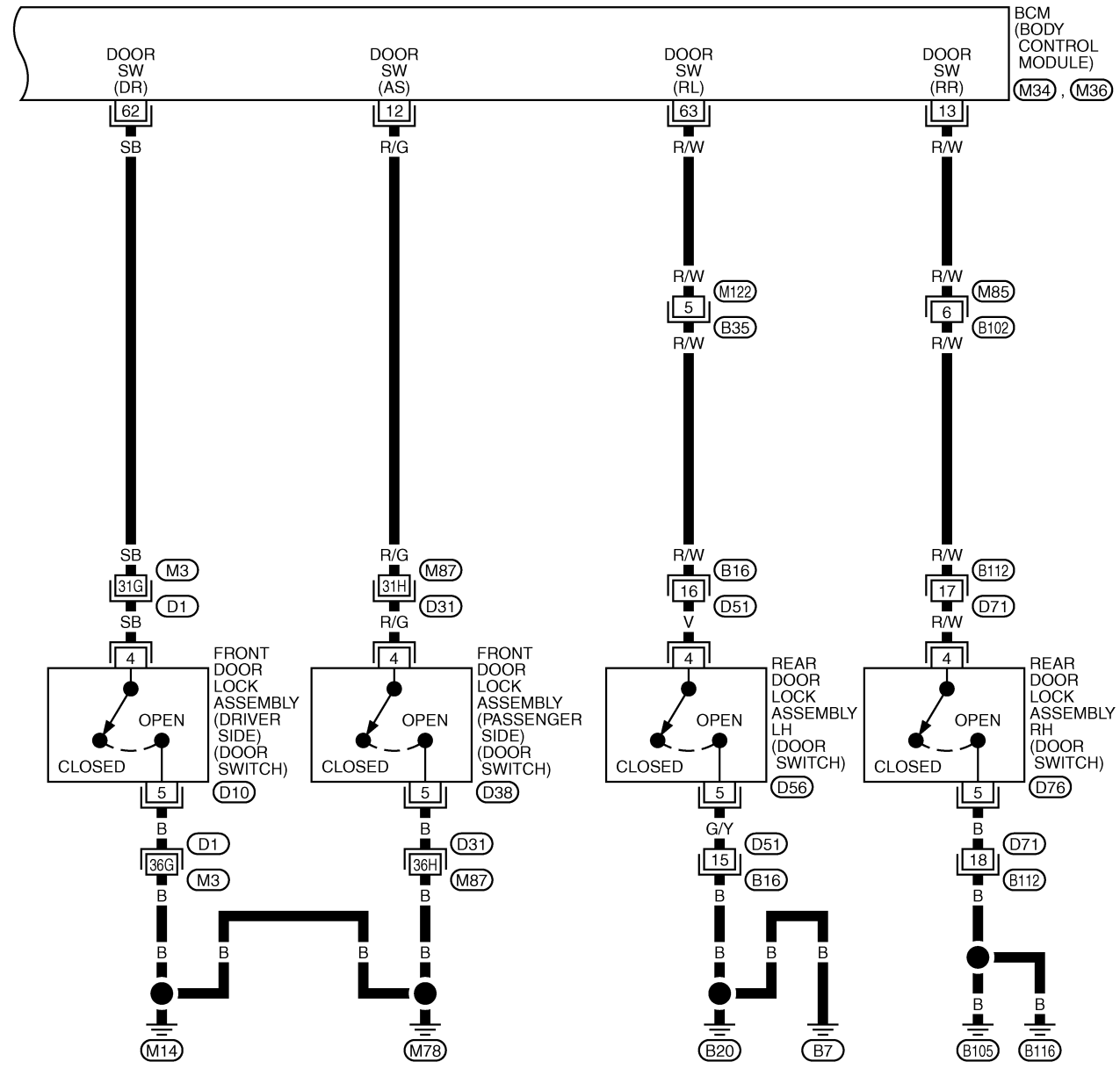
REFER TO THE FOLLOWING.

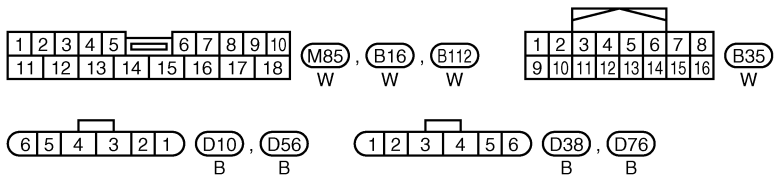
D1 , D31 -SUPER MULTIPLE JUNCTION (SMJ)

M34 -ELECTRICAL UNITS

TKWB0474E

LT-ROOM/L-07





REFER TO THE FOLLOWING.

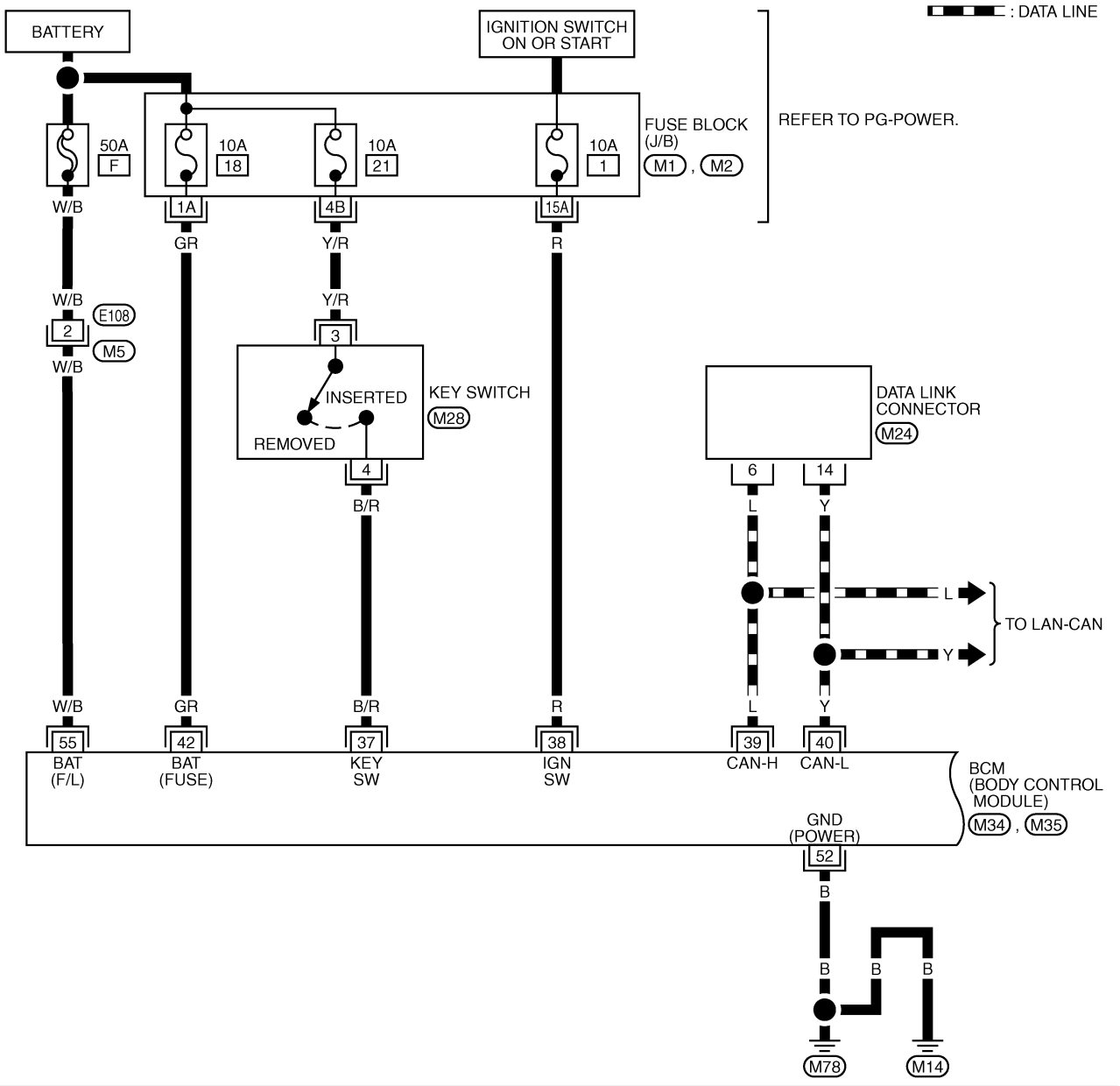
D1 , D31 -SUPER MULTIPLE JUNCTION (SMJ)

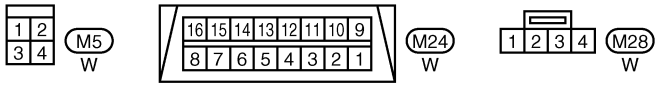
M34 , M36 -ELECTRICAL UNITS

TKWB0475E

WITHOUT INTELLIGENT KEY

LT-ROOM/L-08

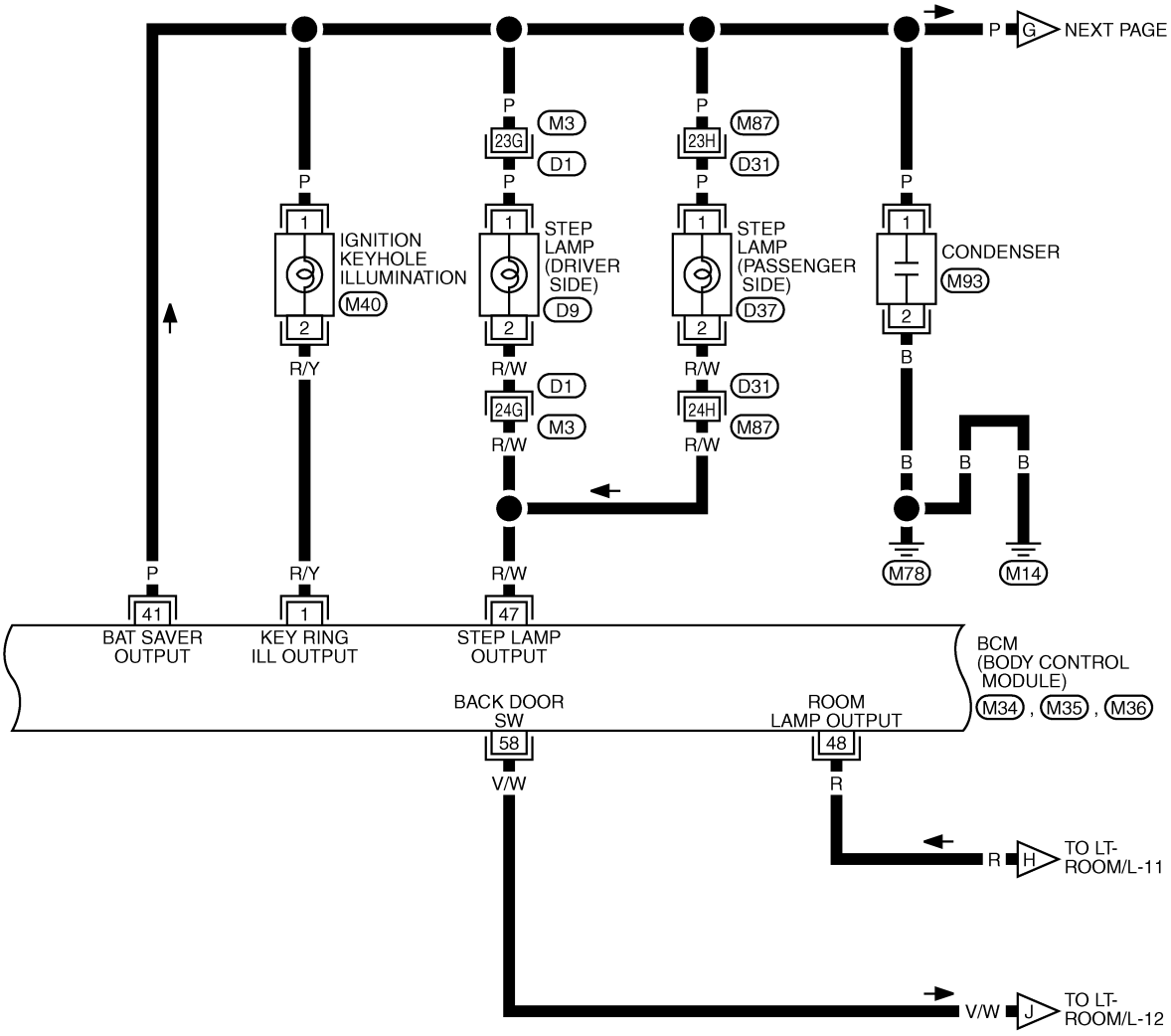


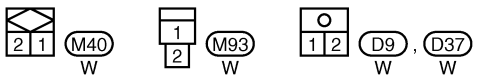


REFER TO THE FOLLOWING.
M1 , M2 -FUSE BLOCK-JUNCTION BOX (J/B)
M34 , M35 -ELECTRICAL UNITS

TKWB2587E

LT-ROOM/L-09

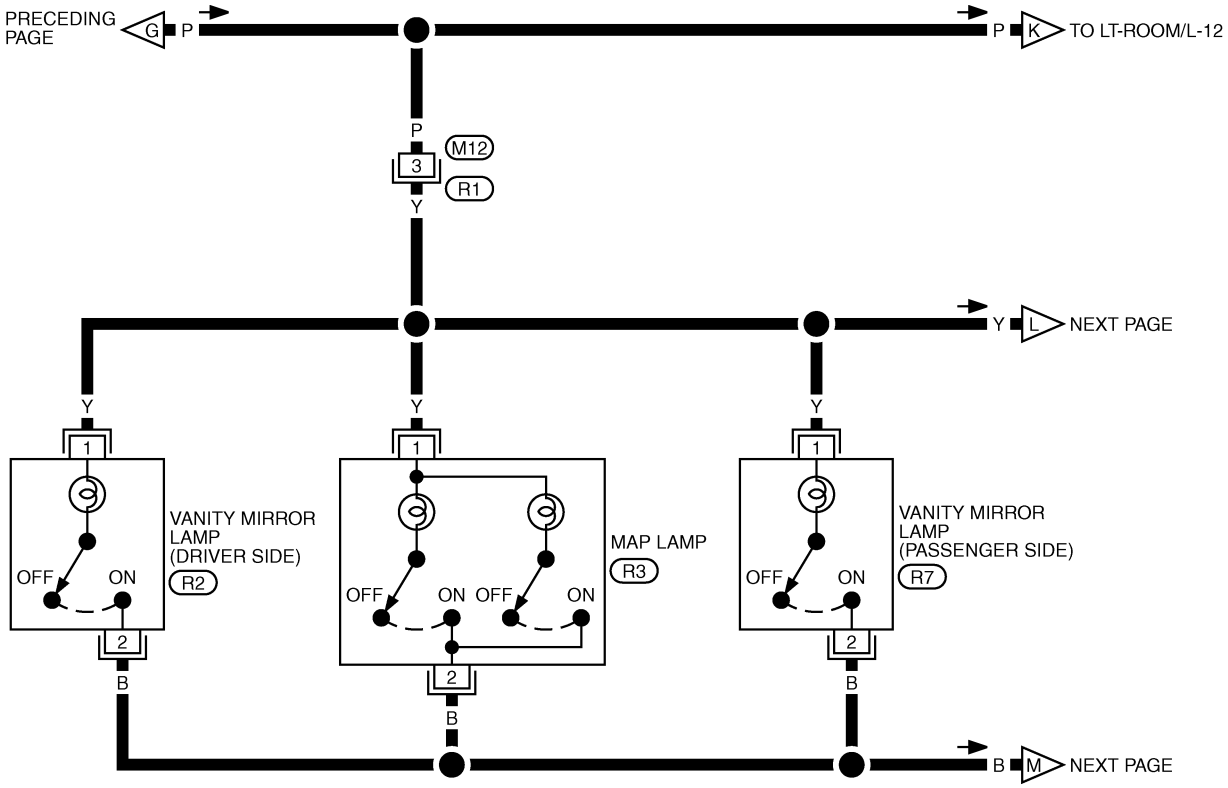


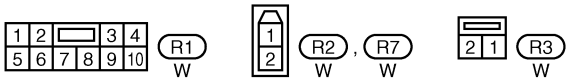


REFER TO THE FOLLOWING.
D1 , D31 -SUPER MULTIPLE JUNCTION (SMJ)
M34 , M35 , M36 -ELECTRICAL UNITS

TKWB2588E

LT-ROOM/L-10





TKWB2589E

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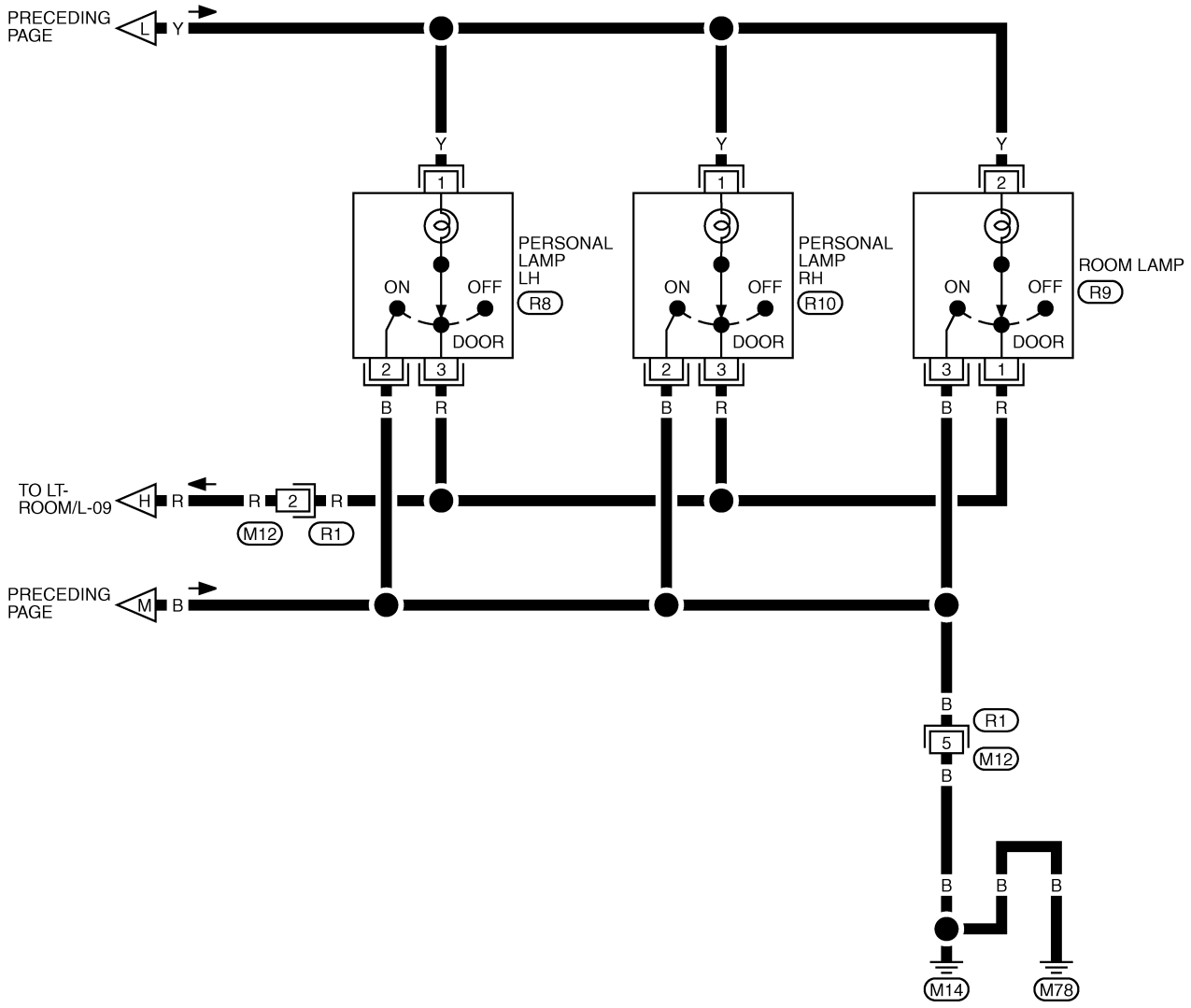

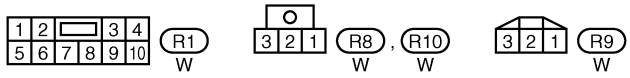

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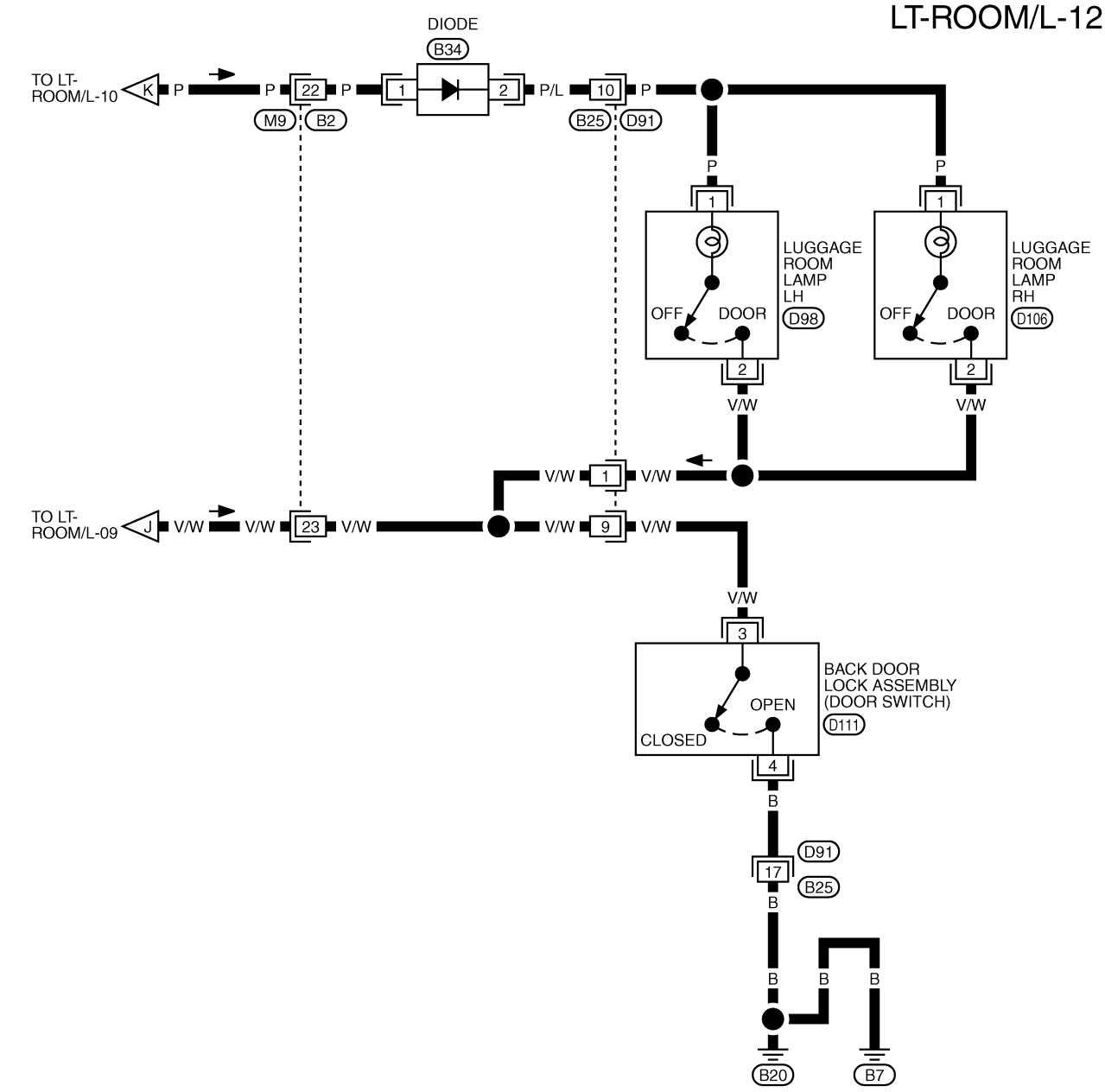
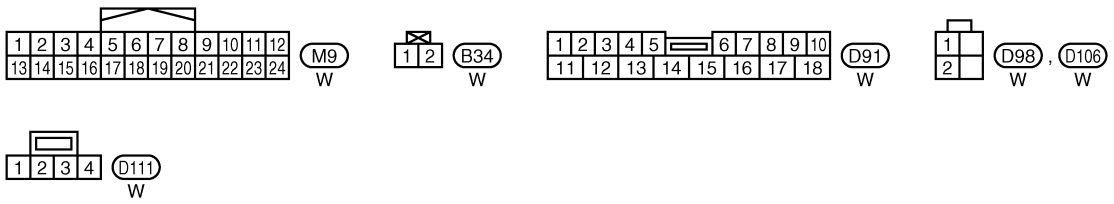
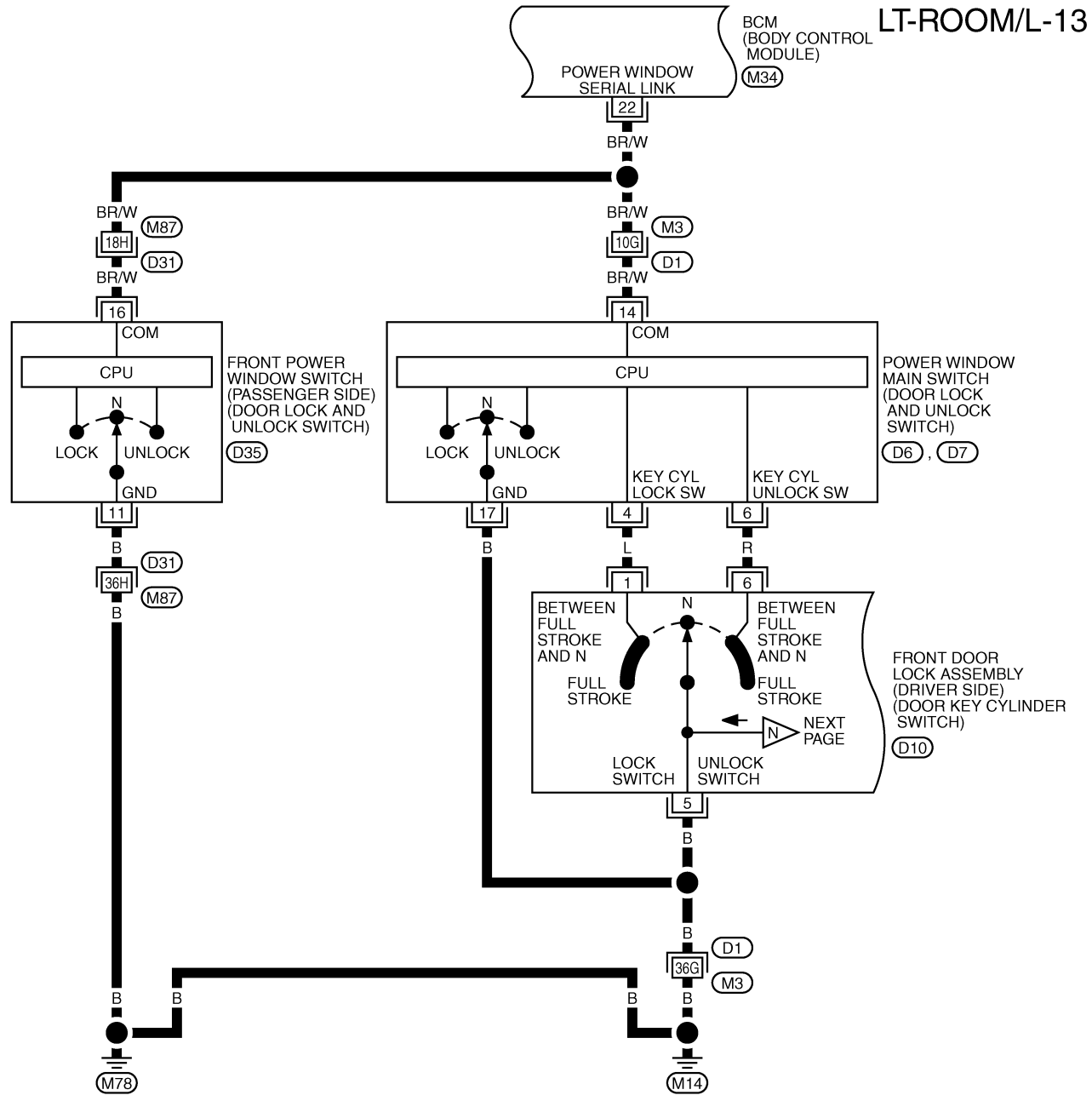
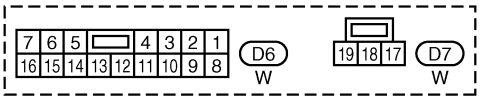
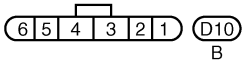

LT-ROOM/L-12
DIODE
B34
TO LT-ROOM/L-10
K
P
22
M9
B2
1
2
P/L
10
B25
D91
LUGGAGE ROOM LAMP LH
D98
LUGGAGE ROOM LAMP RH
D106
OFF
DOOR
V/W
TO LT-ROOM/L-09
J
23
9
BACK DOOR LOCK ASSEMBLY (DOOR SWITCH)
D111
OPEN
CLOSED
3
4
B
17
B20
B7

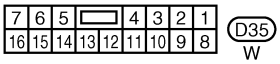

M9
W
B34
W
D91
W
D98
D106
W
W
D111
W

TKWB2591E









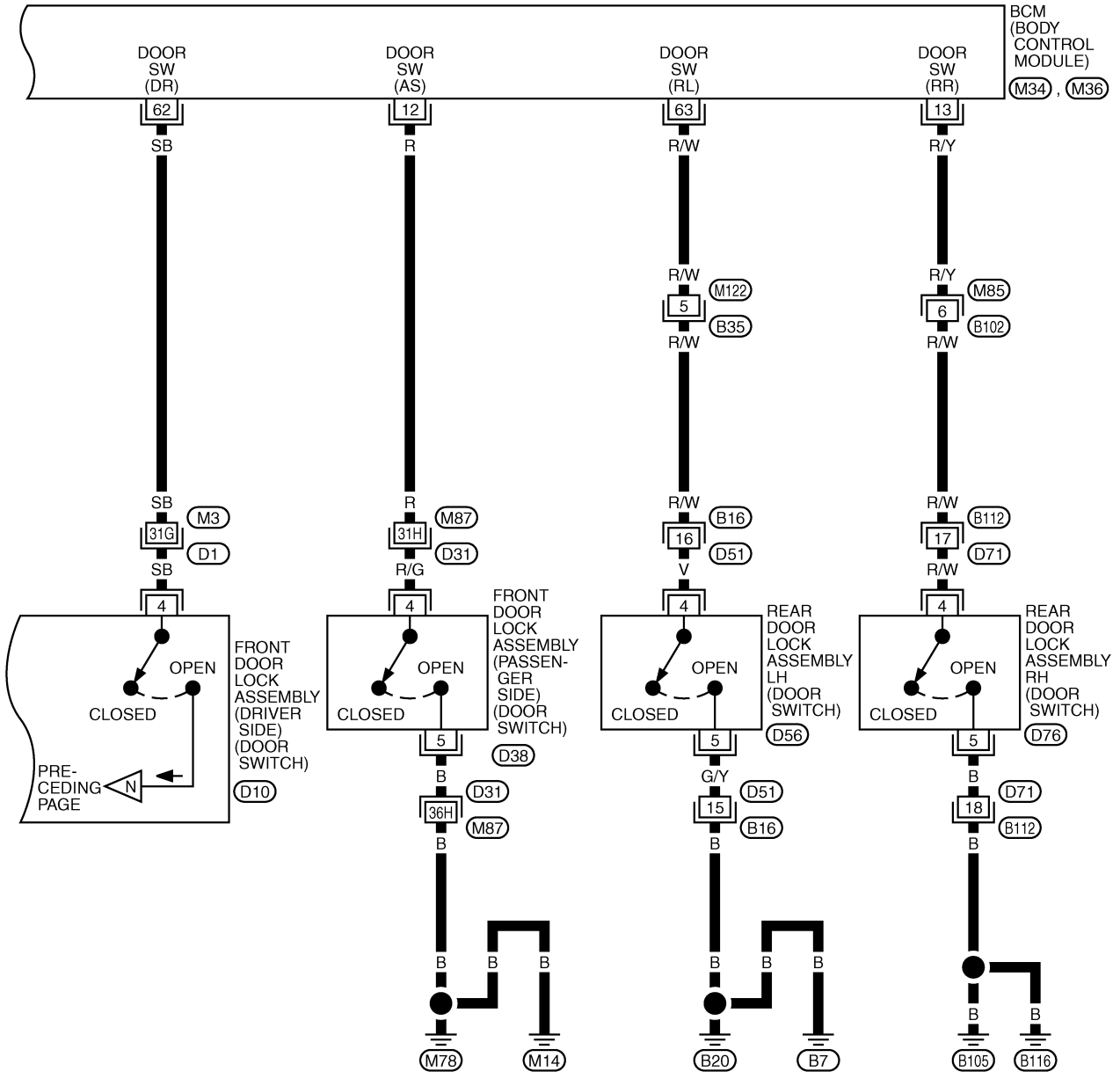
REFER TO THE FOLLOWING.

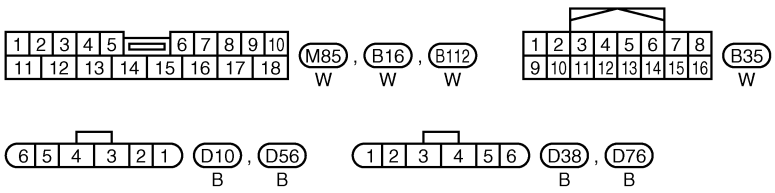
D1 , D31 -SUPER MULTIPLE JUNCTION (SMJ)

M34 -ELECTRICAL UNITS

TKWB2592E

LT-ROOM/L-14





REFER TO THE FOLLOWING.

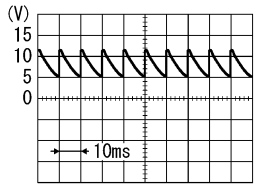
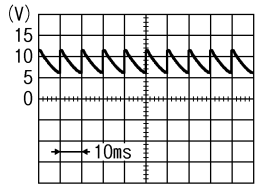
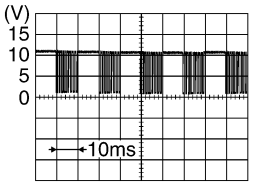
D1 , D31 -SUPER MULTIPLE JUNCTION (SMJ)

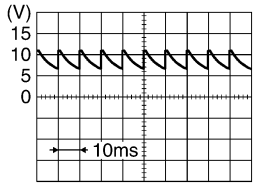
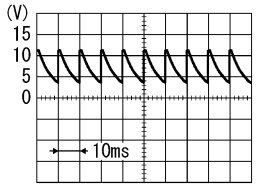
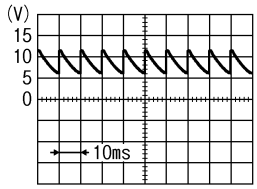
M34 , M36 -ELECTRICAL UNITS

TKWB2593E

Terminals and Reference Values for BCM

NKS001RE

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
1	R/Y	Ignition key hole illumination signal	OFF	Ignition keyhole illumination	Illuminated	Battery voltage
					Not illuminated	Approx. 0 V
12	R/G*1, R*2	Front door switch AS signal	OFF	Front door switch AS	ON (open)	Approx. 0 V
					OFF (closed)	 SKIB3419J Approx. 7.5 - 8.0 V
13	R/W*1, R/Y*2	Rear door switch RH signal	OFF	Rear door switch RH	ON (open)	Approx. 0 V
					OFF (closed)	 PKIC4868J Approx. 8.5 - 9.0 V
22	BR/W	Power window switch serial link	—	Power window main switch (door lock and unlock switch) and power window sub-switch (front passenger side) (door lock and unlock switch)	Lock or unlock switch ON **NOTE:** Approx. 10 seconds after door lock and unlock switch (driver side and passenger side) is turned “LOCK” or “UNLOCK”.	 PKIC0930E Approx. 9.0 - 9.5 V
					OFF	Battery voltage
37	B/R	Key-in detection switch signal	OFF	Vehicle key is removed.		Approx. 0 V
				Vehicle key is inserted.		Battery voltage
38	R	Ignition power supply	ON	—		Battery voltage
39	L	CAN – H	—	—		—
40	Y	CAN – L	—	—		—
41	P	Battery saver output signal	OFF	30 minutes after ignition switch is turned to OFF.		Approx. 0 V
			ON	—		Battery voltage
42	GR	Battery power supply	OFF	—		Battery voltage
47	R/W	Step lamp signal	OFF	Any door is open. (ON)		Approx. 0 V
				All doors are closed. (OFF)		Battery voltage
48	R	Personal lamp LH and RH, and room lamp illumination output signal	OFF	Interior lamps switch: DOOR position	Any door switch: ON (open)	Approx. 0 V
					Any door switch: OFF (closed)	Battery voltage
52	B	Ground	ON	—		Approx. 0 V

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
55	W/B	Battery power supply	OFF	—		Battery voltage
58	V/W	Back door switch signal	OFF	Back door switch	ON (open)	Approx. 0 V
					OFF (closed)	 SKIB4865E Approx. 9.0 - 9.5 V
62	SB	Front door switch DR signal	OFF	Front door switch DR	ON (open)	Approx. 0 V
					OFF (closed)	 PKIB4960J Approx. 7.0 - 7.5 V
63	R/W	Rear door switch LH signal	OFF	Rear door switch LH	ON (open)	Approx. 0 V
					OFF (closed)	 PKIC4868J Approx. 8.5 - 9.0 V

*1: With intelligent key, *2: Without intelligent key

How to Proceed with Trouble Diagnosis

NKS001RF

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-185, "System Description" .
3. Carry out the Preliminary Check. Refer to LT-209, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the interior room lamp operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

NKS001RG

CHECK FOR POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES AND FUSIBLE LINK

Check for blown fuses and fusible link.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	F
		18
		21
		22
	Ignition switch ON or START position	1

Refer to LT-193, "Wiring Diagram — ROOM/L —" .

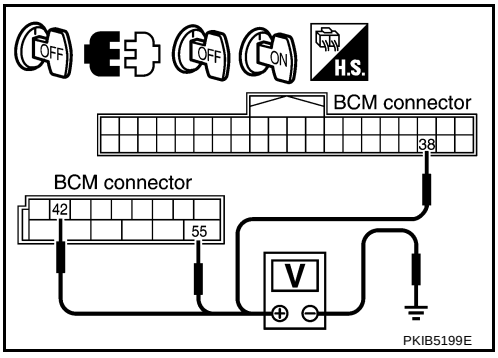
OK or NG

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-3, "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.

(+)		(−)	Ignition switch position	
BCM connector	Terminal		OFF	ON
M34	38	Ground	Approx. 0 V	Battery voltage
M35	42		Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage



OK or NG

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

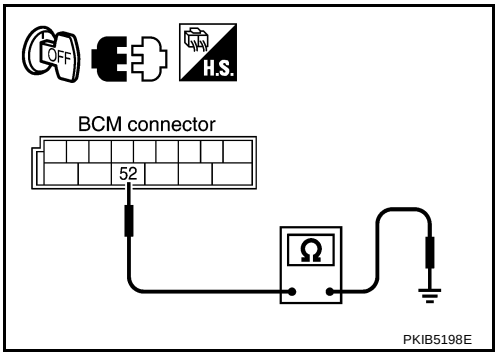
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M35	52		Yes

OK or NG

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



CONSULT-II Functions (BCM)

NKS002TW

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

BCM diagnosis part	Diagnosis mode	Description
INT LAMP	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.
BATTERY SAVER	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 BASIC OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

WORK SUPPORT (INT LAMP)

Operation Procedure

1. Touch “INT LAMP” on “SELECT TEST ITEM” screen.
2. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.
3. Touch “SET I/L D– UNLCK INTCON” on “SELECT WORK ITEM” screen.
4. Touch “START”.
5. Touch “CHANGE SETT”.
6. The setting will be changed and “CUSTOMIZING COMPLETED ” will be displayed.
7. Touch “END”.

Display Item List

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

Reference between “MODE” and “TIME” for “TURN ON/OFF”

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

DATA MONITOR (INT LAMP)

Operation Procedure

1. Touch “INT LAMP” on “SELECT TEST ITEM” screen.
2. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
3. Touch either “ALL SIGNALS” or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all the signals.
SELECTION FROM MENU	Selects items and monitor them.

4. When “SELECTION FROM MENU” is selected, touch items to be monitored. When “ALL SIGNALS” is selected, all items will be monitored.
5. Touch “START”.
6. Touch “RECORD” while monitoring, then the status of monitored item can be recorded. To stop recording, touch “STOP”.

Display Item List

Monitor item		Contents
IGN ON SW	“ON/OFF”	Displays “IGN position (ON)/OFF, ACC position (OFF)” judged from the ignition switch signal.
KEY ON SW	“ON/OFF”	Displays “Key inserted (ON)/key removed (OFF)” status judged from the key switch signal.
DOOR SW - DR	“ON/OFF”	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - AS	“ON/OFF”	Displays status of the passenger door as judged from passenger door switch signal. (Door open (ON)/Door closed (OFF))
DOOR SW - RR	“ON/OFF”	Displays status of rear door as judged from the rear door switch (RH) signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RL	“ON/OFF”	Displays status of rear door as judged from the rear door switch (LH) signal. (Door is open: ON/Door is closed: OFF)
BACK DOOR SW	“ON/OFF”	Displays status of the back door as judged from back door switch signal. (Door open (ON)/Door closed (OFF))
KEY CYL LK - SW	“ON/OFF”	Displays “Door locked (ON) status, determined from key cylinder lock switch in driver door.
KEY CYL UN - SW	“ON/OFF”	Displays “Door unlocked (OFF) status, determined from key cylinder lock switch in driver door.
CDL LOCK SW	“ON/OFF”	Displays “Door locked (ON)/Door unlocked (OFF) status, determined from locking detection switch in driver door.
CDL UNLOCK SW	“ON/OFF”	Displays “Door unlocked (OFF)” status, determined from locking detection switch in passenger door.
I – KEY LOCK NOTE 1	“ON/OFF”	Displays “Locked (ON)/Other (OFF)” status, determined from lock signal.
I – KEY UNLOCK NOTE 1	“ON/OFF”	Displays “Unlocked (ON)/Other (OFF)” status, determined from unlock signal.
KEYLESS LOCK NOTE 2	“ON/OFF”	Displays status (door is locked: ON/other: OFF) of remote keyless entry system lock signal from the remote key less entry receiver signal.
KEYLESS UNLOCK NOTE 2	“ON/OFF”	Displays status (door is unlocked: ON/other: OFF) of remote keyless entry system unlock signal from the remote key less entry receiver signal.

NOTE:

- 1: Vehicle with Intelligent Key system display this item.
- 2: Vehicle with remote keyless entry system display this item.

ACTIVE TEST (INT LAMP)

Operation Procedure

1. Touch “INT LAMP” on “SELECT TEST ITEM” screen.
2. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
3. Touch item to be tested and check operation of the selected item.
4. During the operation check, touching “OFF” deactivates the operation.

Display Item List

Test item	Description
INT LAMP	Interior room lamp can be operated by any ON–OFF operations.
IGN ILLUM	Ignition key hole illumination can be operated by ON–OFF operation.
STEP LAMP TEST	All step lamp can be operated by ON–OFF operation.
LUGGAGE LAMP TEST NOTE	—

NOTE:

This item is displayed, but cannot be tested.

WORK SUPPORT (BATTERY SAVER)

Operation Procedure

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

Display Item List

Item	Description	CONSULT-II
ROOM LAMP TIME SET	Interior room lamp battery saver timer setting can be changed.	MODE 1: 30min MODE 2: 60min

DATA MONITOR (BATTERY SAVER)

Operation Procedure

1. Touch “BATTERY SAVER” on “SELECT TEST ITEM” screen.
2. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
3. Touch either “ALL SIGNALS” or “SELECTION FROM MENU” on “SELECT MONITOR ITEM” screen.

ALL SIGNALS	Monitors all the signals.
SELECTION FROM MENU	Selects items and monitor them.

4. When “SELECTION FROM MENU” is selected, touch items to be monitored. When “ALL SIGNALS” is selected, all items will be monitored.
5. Touch “START”.
6. Touch “RECORD” while monitoring, then the status of monitored item can be recorded. To stop recording, touch “STOP”.

Display Item List

Monitor item		Contents
IGN ON SW	“ON/OFF”	Displays “IGN position (ON)/OFF, ACC position (OFF)” judged from the ignition switch signal.
KEY ON SW	“ON/OFF”	Displays “Key inserted (ON)/key removed (OFF)” status judged from the key switch signal.
DOOR SW - DR	“ON/OFF”	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - AS	“ON/OFF”	Displays status of the passenger door as judged from passenger door switch signal. (Door open (ON)/Door closed (OFF))
DOOR SW - RR	“ON/OFF”	Displays status of rear door as judged from the rear door switch (RH) signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RL	“ON/OFF”	Displays status of rear door as judged from the rear door switch (LH) signal. (Door is open: ON/Door is closed: OFF)
BACK DOOR SW	“ON/OFF”	Displays status of the back door as judged from back door switch signal. (Door open (ON)/ Door closed (OFF))
KEY CYL LK - SW	“ON/OFF”	Displays “Door locked (ON) status, determined from key cylinder lock switch in driver door.
KEY CYL UN - SW	“ON/OFF”	Displays “Door unlocked (OFF) status, determined from key cylinder lock switch in driver door.
CDL LOCK SW	“ON/OFF”	Displays “Door locked (ON)/Door unlocked (OFF) status, determined from locking detection switch in driver door.
CDL UNLOCK SW	“ON/OFF”	Displays “Door unlocked (OFF)” status, determined from locking detection switch in passenger door.
I – KEY LOCK NOTE 1	“ON/OFF”	Displays “Locked (ON)/Other (OFF)” status, determined from lock signal.

Monitor item		Contents
I – KEY UNLOCK NOTE 1	“ON/OFF”	Displays “Unlocked (ON)/Other (OFF)” status, determined from unlock signal.
KEYLESS LOCK NOTE 2	“ON/OFF”	Displays status (door is locked: ON/other: OFF) of remote keyless entry system lock signal from the remote key less entry receiver signal.
KEYLESS UNLOCK NOTE 2	“ON/OFF”	Displays status (door is unlocked: ON/other: OFF) of remote keyless entry system unlock signal from the remote key less entry receiver signal.

NOTE:

- 1: Vehicle with Intelligent Key system display this item.
- 2: Vehicle with remote keyless entry system display this item.

ACTIVE TEST (BATTERY SAVER)

Operation Procedure

1. Touch “BATTERY SAVER” on “SELECT TEST ITEM” screen.
2. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
3. Touch item to be tested and check operation of the selected item.
4. During the operation check, touching “OFF” deactivates the operation.

Display Item List

Test item	Description
BATTERY SAVER	Interior room lamp can be operated by ON–OFF operations.

Room Lamp Does Not Illuminate

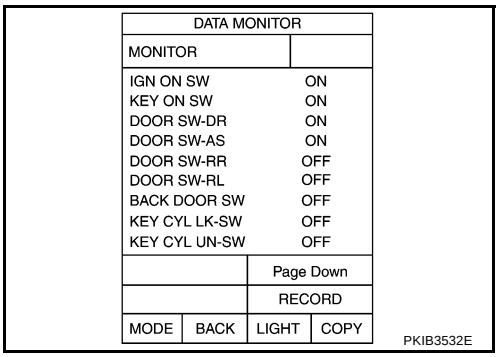
NKS001RI

1. CHECK EACH SWITCH

Select “BCM” on CONSULT-II. With “INT LAMP” data monitor to make sure switches listed in display item list turn ON-OFF linked with switch operation. Refer to LT-211, "Display Item List" for switches and their functions.

OK or NG

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

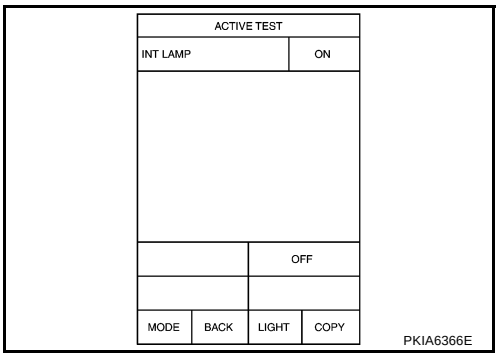


2. CHECK WITH ACTIVE TEST

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

OK or NG

OK >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .
NG >> GO TO 3.



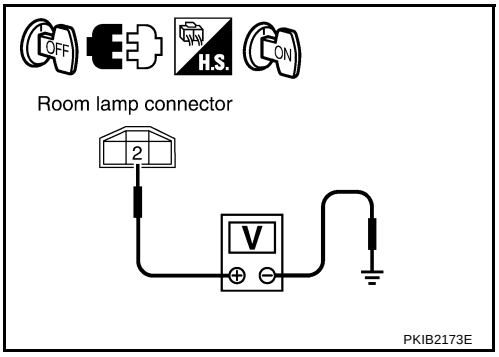
3. CHECK POWER SUPPLY TO ROOM LAMP

1. Turn ignition switch OFF.
2. Disconnect room lamp connector.
3. Turn ignition switch ON.
4. Check voltage between room lamp harness connector R9 terminal 2 and ground.

2 - Ground : Battery voltage.

OK or NG

OK >> GO TO 4.
NG >> GO TO 6.



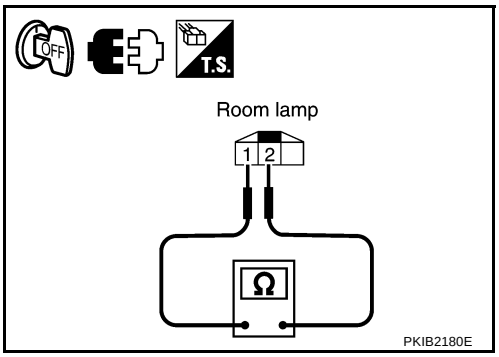
4. CHECK ROOM LAMP

Check continuity between room lamp terminals.

Terminal		Condition	Continuity
Room lamp			
1	2	Room lamp switch is DOOR	Yes
		Room lamp switch is OFF	No

OK or NG

OK >> GO TO 5.
NG >> Check bulb or replace room lamp.



5. CHECK POWER SUPPLY CIRCUIT FOR ROOM LAMP

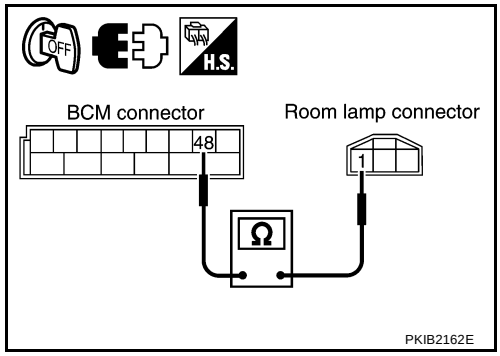
1. Disconnect BCM connector.
2. Check continuity between BCM harness connector M35 terminal 48 and room lamp harness connector R9 terminal 1.

48 - 1 : Continuity should exist.

OK or NG

OK >> Replace BCM if room lamp does not work after setting the connector again. Refer to BCS-14, "Removal and Installation of BCM" .

NG >> Repair harness or connector.



6. CHECK GROUND CIRCUIT FOR ROOM LAMP

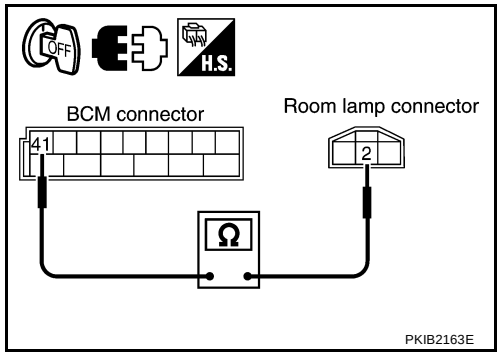
1. Disconnect BCM connector.
2. Check continuity between BCM harness connector M35 terminal 41 and room lamp harness connector R9 terminal 2.

41 - 2 : Continuity should exist.

OK or NG

OK >> Replace BCM if room lamp does not work after setting the connector again. Refer to BCS-14, "Removal and Installation of BCM" .

NG >> Repair harness or connector.



Personal Lamp Does Not Illuminate

NKS001RJ

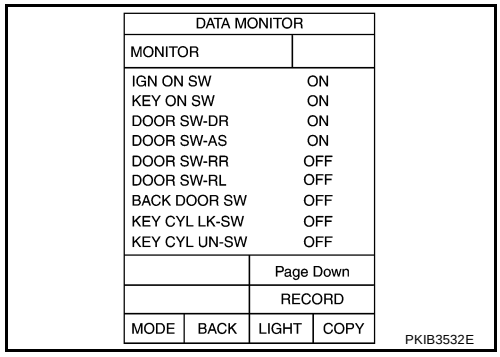
1. CHECK EACH SWITCH

Select “BCM” on CONSULT-II. With “INT LAMP” data monitor to make sure switches listed in display item list turn ON-OFF linked with switch operation. Refer to LT-211, "Display Item List" for switches and their functions.

OK or NG

OK >> GO TO 2.

NG >> Inspect malfunctioning switch system.



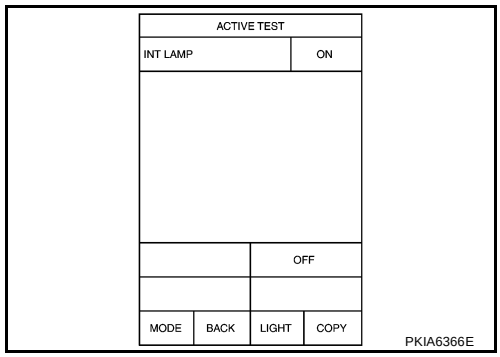
2. CHECK WITH ACTIVE TEST

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

OK or NG

OK >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

NG >> GO TO 3.



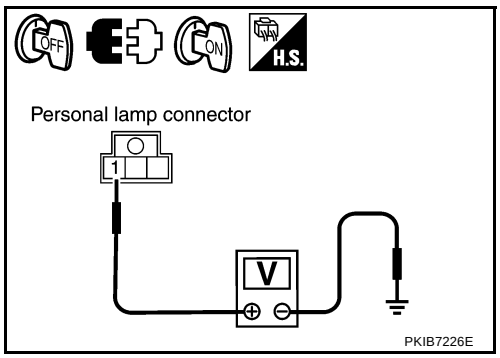
3. CHECK PERSONAL LAMP INPUT

1. Turn ignition switch OFF.
2. Disconnect personal lamp connectors.
3. Turn ignition switch ON.
4. Check voltage between personal lamp RH harness connector R10 terminal 1 and ground.

1 - Ground : Battery voltage.

5. Check voltage between personal lamp LH harness connector R8 terminal 1 and ground.

1 - Ground : Battery voltage.



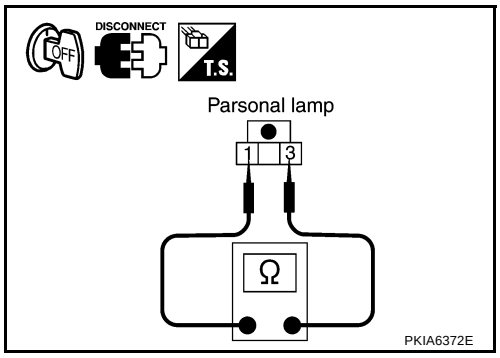
OK or NG

OK >> GO TO 4.
NG >> GO TO 6.

4. CHECK PERSONAL LAMP

1. Disconnect personal lamp connector.
2. Check continuity between personal lamp terminals.

Terminal		Condition	Continuity
Personal lamp			
1	3	Personal lamp switch is DOOR	Yes
		Personal lamp switch is OFF	No



OK or NG

OK >> GO TO 5.
NG >> Check bulb or replace personal lamp.

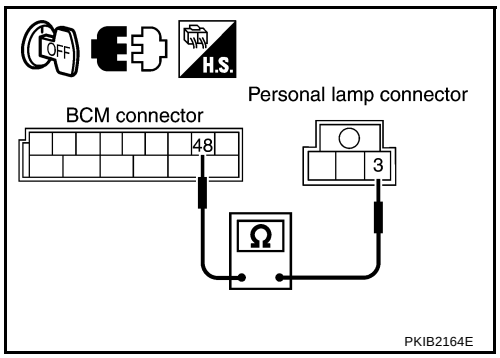
5. CHECK PERSONAL LAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between BCM harness connector M35 terminal 48 and personal lamp RH harness connector R10 terminal 3.

48 - 3 : Continuity should exist.

4. Check continuity between BCM harness connector M35 terminal 48 and personal lamp LH harness connector R8 terminal 3.

48 - 3 : Continuity should exist.



OK or NG

OK >> Replace BCM if personal amp does not work after setting the connector again. Refer to BCS-14, "Removal and Installation of BCM" .
NG >> Repair harness or connector.

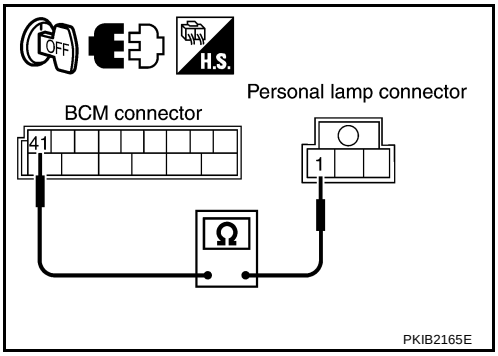
6. CHECK PERSONAL LAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between BCM harness connector M35 terminal 41 and personal lamp RH harness connector R10 terminal 1.

41 - 1 : Continuity should exist.

4. Check continuity between BCM harness connector M35 terminal 41 and personal lamp LH harness connector R8 terminal 1.

41 - 1 : Continuity should exist.



OK or NG

OK >> Replace BCM if personal lamp does not work after setting the connector again. Refer to BCS-14, "Removal and Installation of BCM" .
NG >> Repair harness or connector.

Ignition Key Hole Illumination Does Not Illuminate

NKS001RK

1. CHECK BULB

Check bulb of lamp which does not operate.

OK or NG

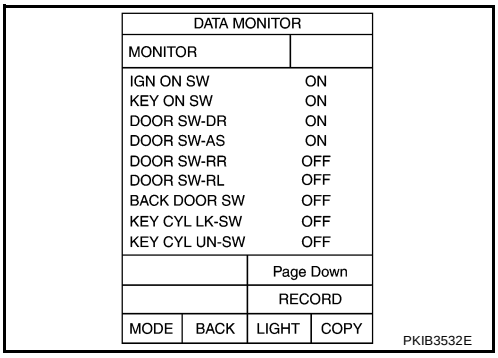
OK >> GO TO 2.
NG >> Replace bulb.

2. CHECK EACH SWITCH

Select “BCM” on CONSULT-II. With “INT LAMP” data monitor to make sure switches listed in display item list turn ON-OFF linked with switch operation. Refer to LT-211, "Display Item List" for switches and their functions.

OK or NG

OK >> GO TO 3.
NG >> Inspect malfunctioning switch system.

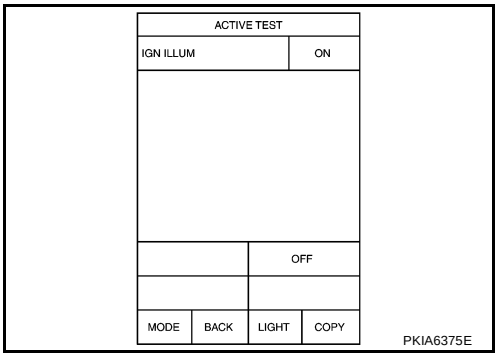


3. CHECK WITH ACTIVE TEST

1. Select “BCM” on CONSULT-II. Select “INT LAMP” active test.
2. Select “IGN ILLUM” active test to make sure lamp operates.

OK or NG

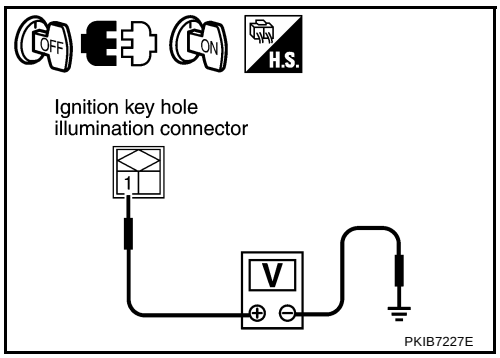
OK >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .
NG >> GO TO 4.



4. CHECK POWER SUPPLY TO IGNITION KEY HOLE ILLUMINATION

1. Turn ignition switch OFF.
2. Disconnect ignition key hole illumination connector.
3. Turn ignition switch ON.
4. Check voltage between ignition key hole illumination harness connector M40 terminal 1 and ground.

1 - Ground : Battery voltage.



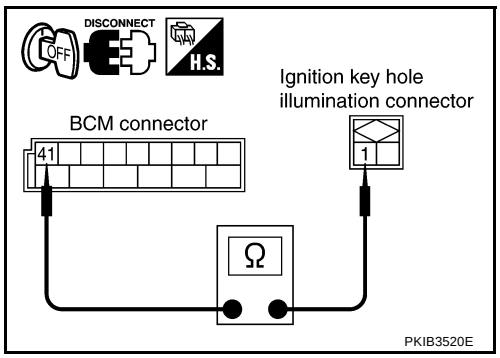
OK or NG

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

5. CHECK POWER SUPPLY CIRCUIT FOR IGNITION KEY HOLE ILLUMINATION

1. Turn ignition switch OFF.
2. Disconnect BCM connector and key hole illumination connector.
3. Check continuity between BCM harness connector M35 terminal 41 and key hole illumination harness connector M40 terminal 1.

41 - 1 : Continuity should exist.



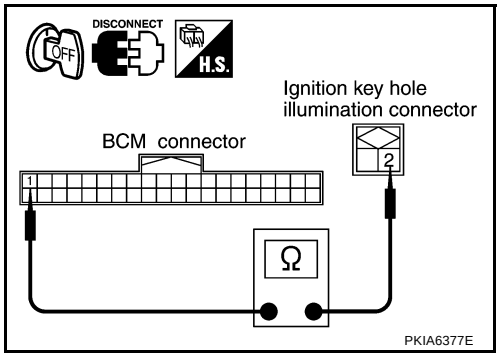
OK or NG

OK >> Replace BCM if ignition key hole illumination does not work after setting the connector again. Refer to BCS-14, "Removal and Installation of BCM" .
NG >> Repair harness or connector.

6. CHECK GROUND CIRCUIT FOR IGNITION KEY HOLE ILLUMINATION

1. Turn ignition switch OFF.
2. Disconnect BCM connector and key hole illumination connector.
3. Check continuity between BCM harness connector M34 terminal 1 and key hole illumination harness connector M40 terminal 2.

1 (R/Y) - 2 (R/Y) : Continuity should exist.



OK or NG

OK >> Replace BCM if ignition key hole illumination does not work after setting the connector again. Refer to BCS-14, "Removal and Installation of BCM" .
NG >> Repair harness or connector.

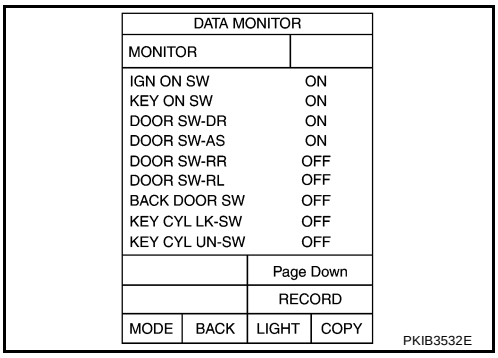
Step Lamp Does Not Illuminate

NKS001RL

1. CHECK EACH DOOR SWITCH

Select “BCM” on CONSULT-II. With “INT LAMP” data monitor to make sure switches listed below turn ON-OFF linked with switch operation.

Switch name	CONSULT screen
Driver side door switch	DOOR SW - DR
Passenger side door switch	DOOR SW - AS



OK or NG

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

2. CHECK BULB

Check bulb of lamp which does not illuminate.

OK or NG

OK >> GO TO 3.
NG >> Replace bulb.

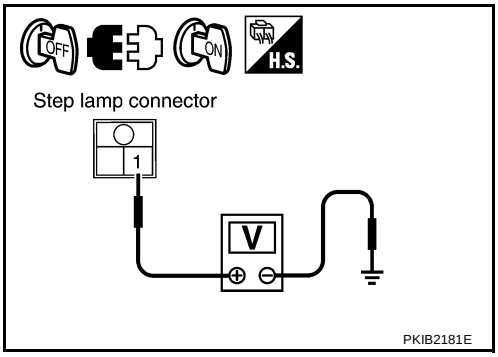
3. CHECK STEP LAMP INPUT

1. Turn ignition switch OFF.
2. Disconnect step lamp (driver side and passenger side) connectors.
3. Turn ignition switch ON.
4. Check voltage between step lamp (driver side) harness connector D9 terminal 1 and ground.

1 - Ground : Battery voltage.

5. Check voltage between step lamp (passenger side) harness connector D37 terminal 1 and ground.

1 - Ground : Battery voltage.



OK or NG

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

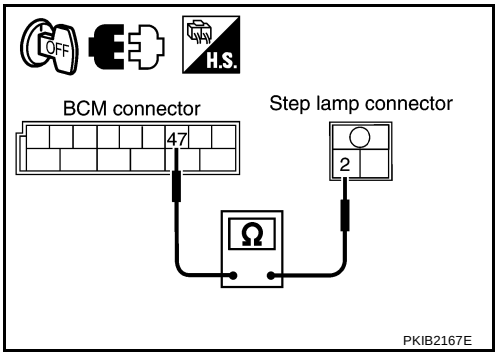
4. CHECK GROUND CIRCUIT FOR STEP LAMP

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between BCM harness connector M35 terminal 47 and step lamp (driver side) harness connector D9 terminal 2.

47 - 2 : Continuity should exist.

4. Check continuity between BCM harness connector M35 terminal 47 and step lamp (passenger side) harness connector D37 terminal 2.

47 - 2 : Continuity should exist.



OK or NG

OK >> Replace BCM if step lamp does not work after setting the connector again. Refer to BCS-14, "Removal and Installation of BCM" .
NG >> Repair harness or connector.

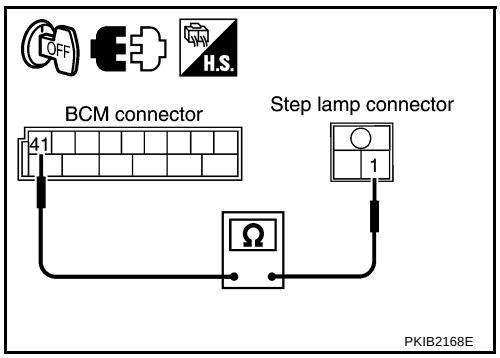
5. CHECK STEP LAMP CIRCUIT

1. Disconnect BCM connector and step lamp connector.
2. Check continuity between BCM harness connector M35 terminal 41 and step lamp (driver side) harness connector D9 terminal 1.

41 - 1 : Continuity should exist.

3. Check continuity between BCM harness connector M35 terminal 41 and step lamp (passenger side) harness connector D37 terminal 1.

41 - 1 : Continuity should exist.



OK or NG

OK >> Replace BCM if step lamp does not work after setting the connector again. Refer to BCS-14, "Removal and Installation of BCM" .

NG >> Repair harness or connector.

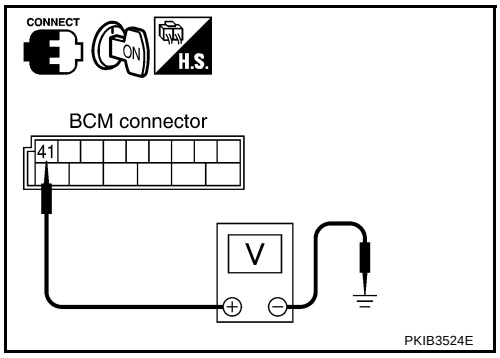
All Interior Room Lamp Does Not Operate

NKS001RM

1. CHECK POWER SUPPLY CIRCUIT

1. All interior room lamps switch are OFF.
2. Turn ignition switch ON.
3. Check voltage between BCM harness connector M35 terminal 41 and ground.

41 - Ground : Battery voltage



OK or NG

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

NG >> Replace BCM. Refer to BCS-14, "Removal and Installation of BCM" .

Bulb Replacement

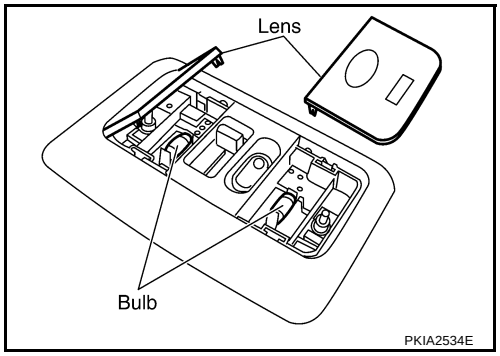
NKS001RN

MAP LAMP

1. Disconnect the battery negative cable.
2. Remove the lens using clip driver or suitable tool.
3. Remove the bulb.

Map lamp : 12V - 8 W

4. Installation is the reverse order of removal.



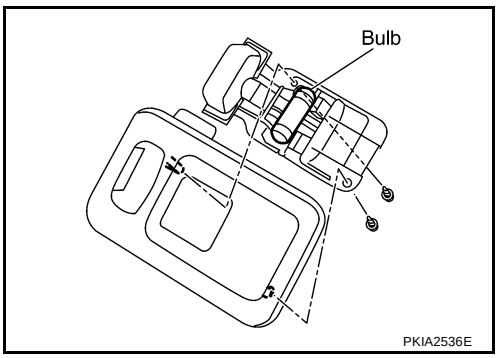
PERSONAL LAMP

1. Remove the personal lamp. Refer to LT-223, "PERSONAL LAMP" .

2. Remove the housing mounting screws, and separate it.
3. Remove bulb from the base.

Personal lamp : 12V - 8W

4. Installation is the reverse order of removal.

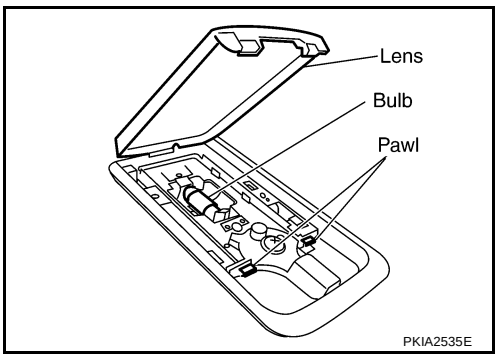


ROOM LAMP

1. Disconnect the battery negative cable.
2. Remove the lens using clip driver or suitable tool.
3. Remove the bulb.

Room lamp : 12V - 8W

4. Installation is the reverse order of removal.

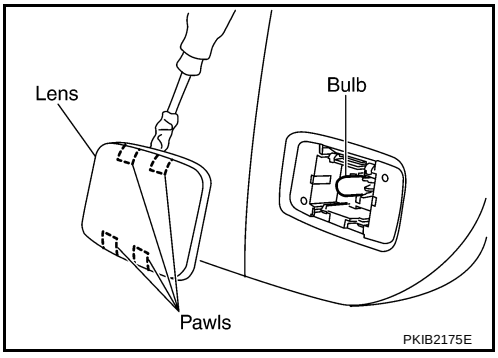


STEP LAMP

1. Disconnect the battery cable from the negative terminal or remove power fuse.
2. Insert a screwdriver in the chink between lens and door trim, and remove the lens.
3. Remove the bulb.

Step lamp : 12V - 2.7W

4. Installation is the reverse order of removal.

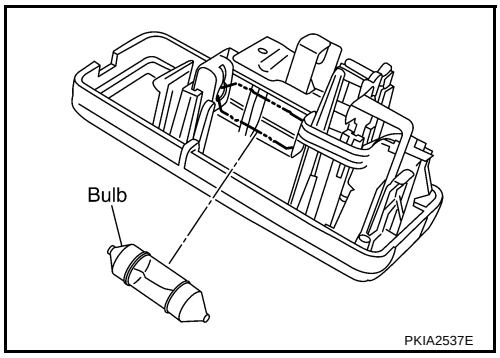


LUGGAGE ROOM LAMP

1. Remove luggage room lamp. Refer to LT-224, "LUGGAGE ROOM LAMP" .
2. Remove the bulb.

Luggage room lamp : 12V - 8W

3. Installation is the reverse order of removal.

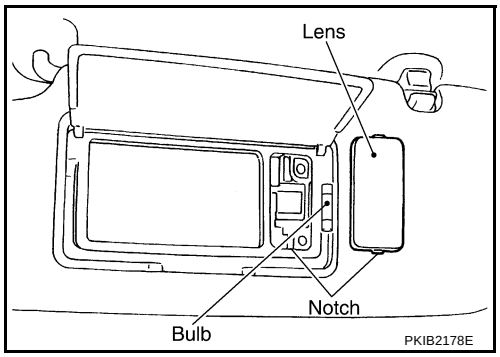


VANITY MIRROR LAMP

1. Insert a thin screwdriver in the notch and remove lens.
2. Remove bulb.

Vanity mirror lamp : 12V - 2W

3. Installation is the reverse order of removal.

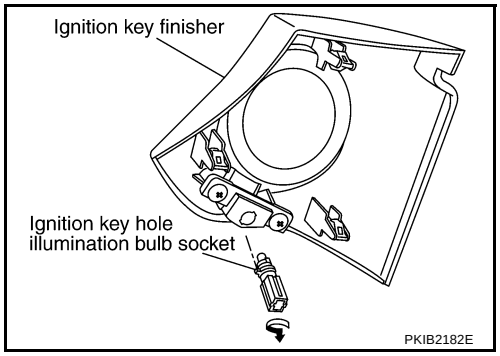


IGNITION KEY HOLE ILLUMINATION

Without intelligent key system

1. Remove the ignition key finisher. Refer to IP-11, "Removal and Installation" .
2. Turn the bulb socket counterclockwise and unlock it.

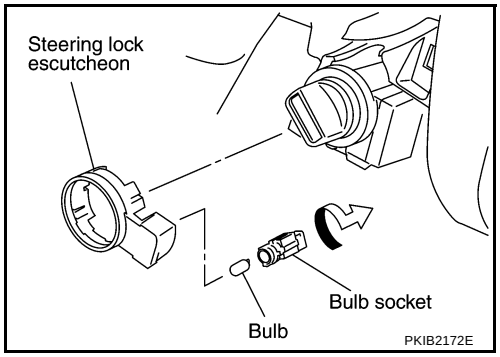
Ignition key hole illumination : 12V - 0.8W



With intelligent key system

1. Remove the ignition key finisher. Refer to IP-11, "Removal and Installation" .
2. Remove the steering look escutcheon.
3. Turn the bulb socket counterclockwise and unlock it.

Ignition key hole illumination : 12V - 0.8W



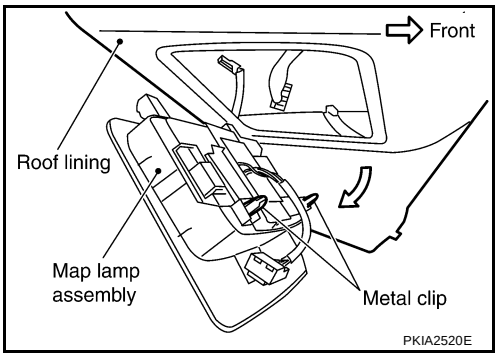
Removal and Installation

NKS001RO

MAP LAMP

Removal

1. Pull wider part of thin plate of the map lamp to disengage the metal clip.
2. Pull map lamp in direction shown by the arrow in the figure.
3. Disconnect map lamp connector and remove the map lamp.



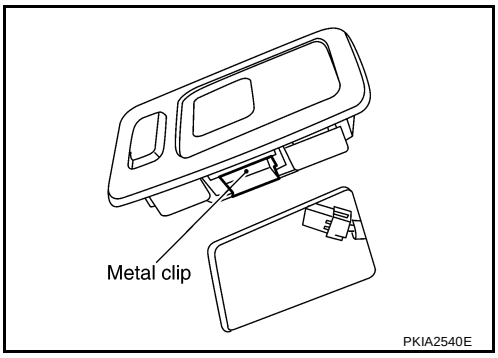
Installation

Installation is the reverse order of removal.

PERSONAL LAMP

Removal

1. Insert a clip driver or suitable tool and disengage the metal clip fittings of the personal lamp.
2. Disconnect personal lamp connector and remove the personal lamp.



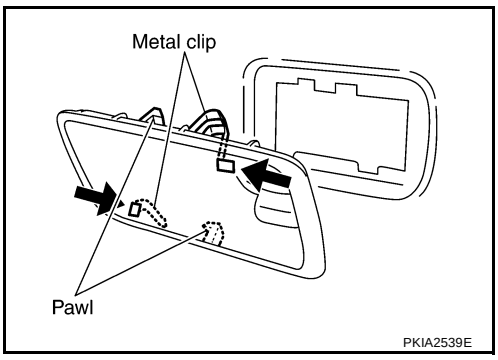
Installation

installation is the reverse order of removal.

ROOM LAMP

Removal

1. Remove the lens using clip driver or suitable tool.
2. Using a clip driver or suitable tool and disengage the metal clip fittings of the room lamp.
3. Disconnect room lamp connector and remove the room lamp.



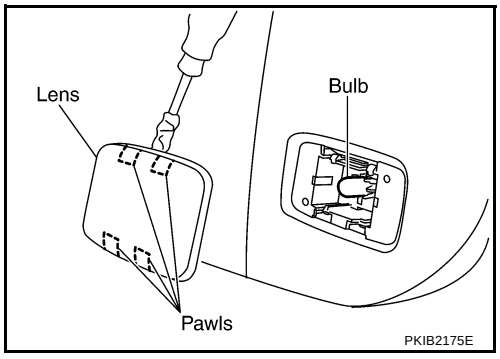
Installation

Installation is the reverse order of removal.

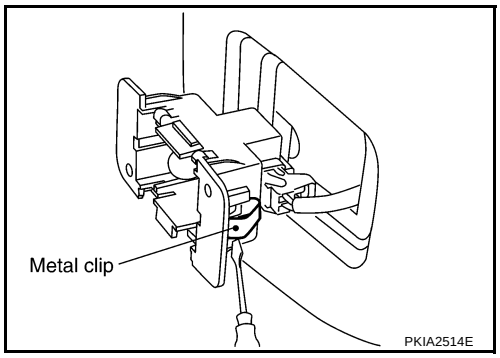
STEP LAMP

Removal

1. Insert a screwdriver in the chink between lens and door trim, and remove the lens.



2. Using a clip driver or a suitable tool, press and disengage the metal clip fittings of the step lamp.
3. Disconnect the step lamp connector and remove the step lamp.



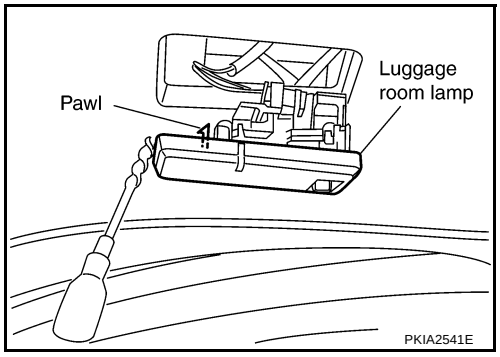
Installation

Installation is the reverse order of removal.

LUGGAGE ROOM LAMP

Removal

1. Insert a screwdriver as shown in the figure and pull out the luggage room lamp.
2. Disconnect the luggage room lamp connector and remove luggage room lamp.



Installation

Installation is the reverse order of removal.

ILLUMINATION

PFP:27545

System Description

NKS001RP

- BCM (Body Control Module) controls illumination lamp operation.
- IPDM E/R (Intelligent Power Distribution Module Engine Room) operates illumination lamps according to CAN communication signals from BCM.

OUTLINE

Power is supplied at all times

- to ignition relay located in IPDM E/R, from battery direct,
- through 10A fuse (No. 71, located in IPDM E/R)
- to tail lamp relay located in IPDM E/R and
- to CPU located in IPDM E/R,
- through 15A fuse (No. 78, located in IPDM E/R)
- to CPU located in IPDM E/R,
- through 50A fusible link (letter F, located in fuse and fusible link block)
- to BCM terminal 55,
- through 10A fuse [No. 18, located in fuse block (J/B)]
- to BCM terminal 42,
- through 10A fuse [No. 21, located in fuse block (J/B)]
- to combination meter terminal 21.

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

- to ignition relay, located in IPDM E/R, from battery direct,
- through 10A fuse [No. 1, located in fuse block (J/B)]
- to BCM terminal 38,
- through 10A fuse [No. 14, located in fuse block (J/B)]
- to combination meter terminal 20.

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

- through 10A fuse [No. 6, located in fuse block (J/B)]
- to BCM terminal 11.

Ground is supplied

- to BCM terminal and 52
- through grounds M14 and M78,
- to IPDM E/R terminals 38 and 60
- through grounds E13, E26 and E28,
- to combination meter 22, 23 and 24
- through grounds M14 and M78.

ILLUMINATION LAMP OPERATION

When the lighting switch is in 1ST position, BCM detects the LIGHTING SWITCH 1ST POSITION (ON) by BCM combination switch reading function. And then, BCM sends position light request signal (ON) through CAN communication.

When receiving position light request signal (ON), IPDM E/R turns ON tail lamp relay in IPDM E/R. And then supplies power

- through IPDM E/R terminal 22
- to CVT illumination terminal 1
- to VDC off switch (illumination) terminal 3 (with VDC)
- to headlamp aiming switch (illumination) terminal 3 (with headlamp aiming)
- to AWD lock switch (illumination) terminal 4 (AWD models)
- to heated seat switch (driver side) (illumination) terminal 5 (with heater seat)
- to heated seat switch (passenger side) (illumination) terminal 5 (with heater seat)
- to door mirror remote control switch (illumination) terminal 16

- to combination switch (spiral cable) terminal 26
- to A/C and AV switch terminal 3
- NAVI control unit (illumination) terminal 61 (with NAVI)
- to coin box illumination terminal 1 and
- to glove box lamp terminal 1,
- through combination switch (spiral cable) terminal 28
- to audio steering switch (illumination) and
- to ASCD steering switch (illumination).

Ground is supplied

- to audio steering switch (illumination) and
- to ASCD steering switch (illumination)
- through combination switch (spiral cable) terminal 27,
- to CVT illumination terminal 2
- to VDC off switch (illumination) terminal 4 (with VDC)
- to headlamp aiming switch (illumination) terminal 4 (with headlamp aiming)
- to AWD lock switch (illumination) terminal 2 (AWD models)
- to heated seat switch (driver side) (illumination) terminal 6 (with heater seat)
- to heated seat switch (passenger side) (illumination) terminal 6 (with heater seat)
- to door mirror remote control switch (illumination) terminal 15
- to combination switch (spiral cable) terminal 30 and
- to A/C and AV switch terminal 4
- through combination meter terminal 15,
- to NAVI control unit (illumination) terminal 1
- to coin box illumination terminal 2 and
- to glove box lamp terminal 2
- through grounds M14 and M78.

EXTERIOR LAMP BATTERY SAVER CONTROL

When the combination switch (lighting switch) is in the 1ST or 2ND position (or if auto light system is activated), and the ignition switch is turned from ON or ACC to OFF, the battery saver control function is activated. Under this condition, the illumination lamps remain illuminated for 5 minutes, and then the illumination lamps are turned off.
When the lighting switch is turned from OFF to 1ST or 2ND position (or if auto light system is activated) after illumination lamps are turned off by the battery saver control, and illumination lamps illuminate again.
Exterior lamp battery saver control mode can be changed by the function setting of CONSULT-II.

CAN Communication System Description

NKS001RQ

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.

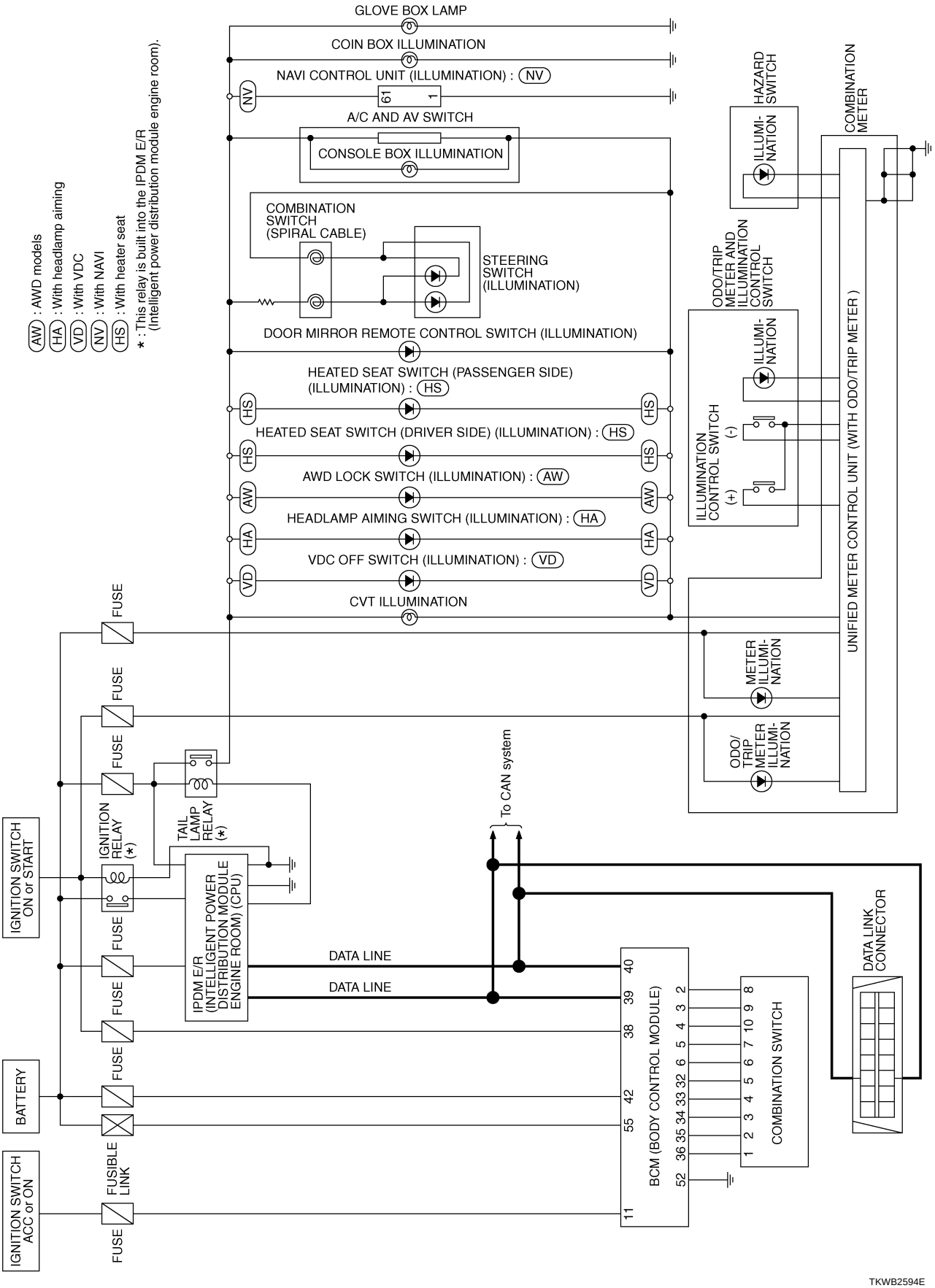
CAN Communication Unit

NKS001RR

Refer to LAN-49, "CAN System Specification Chart" .

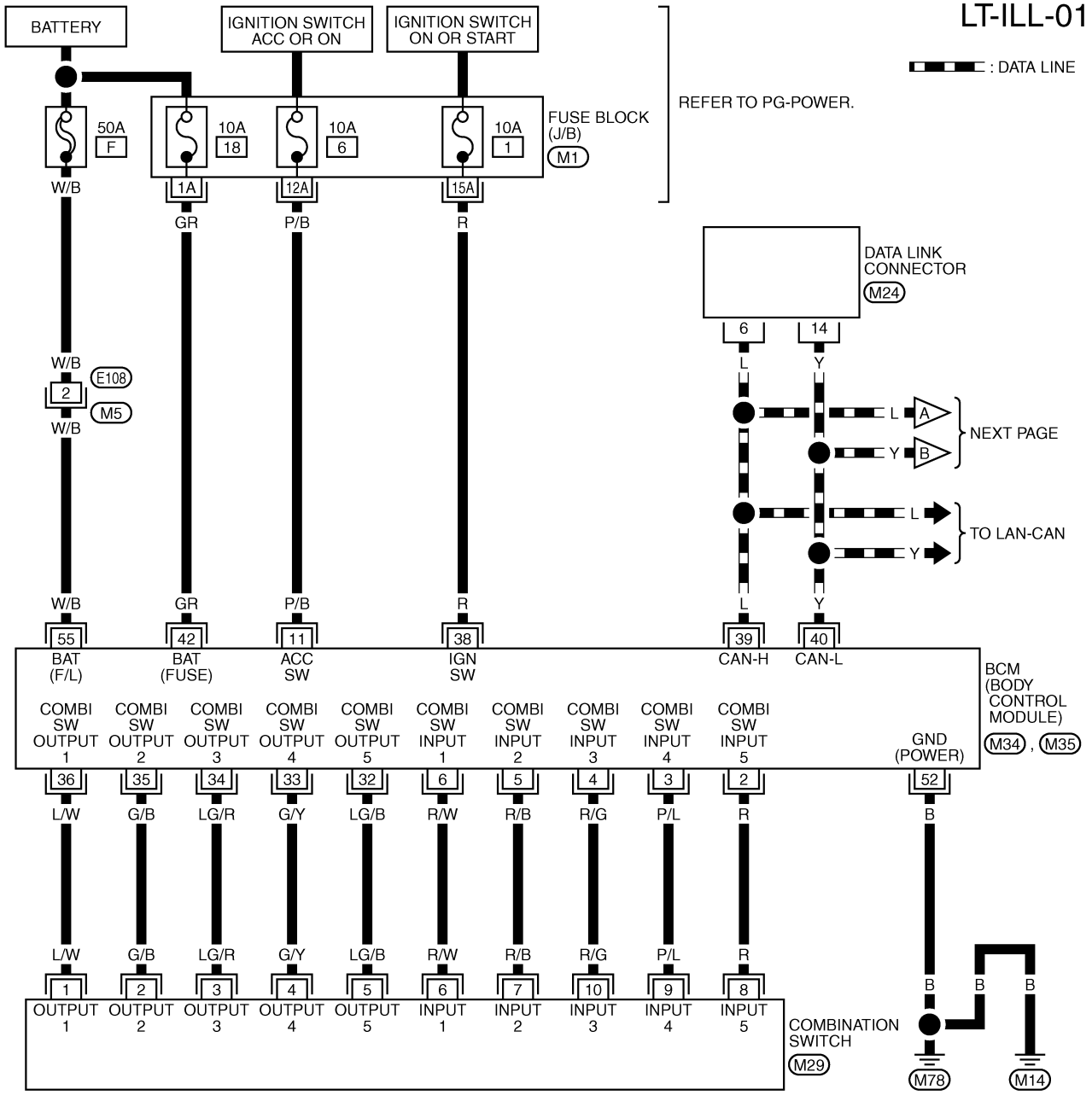
Schematic

NKS001RS



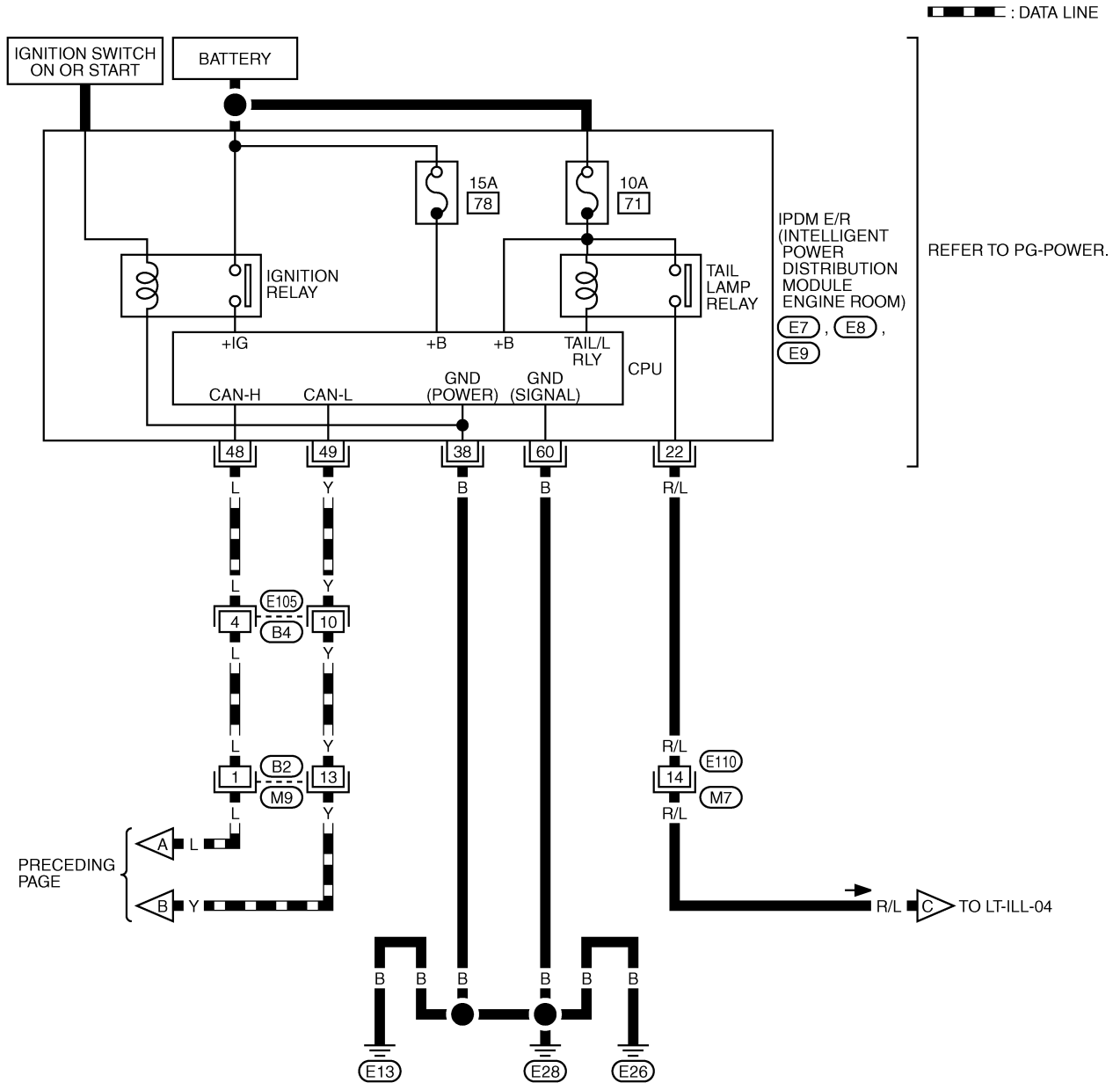
Wiring Diagram — ILL —

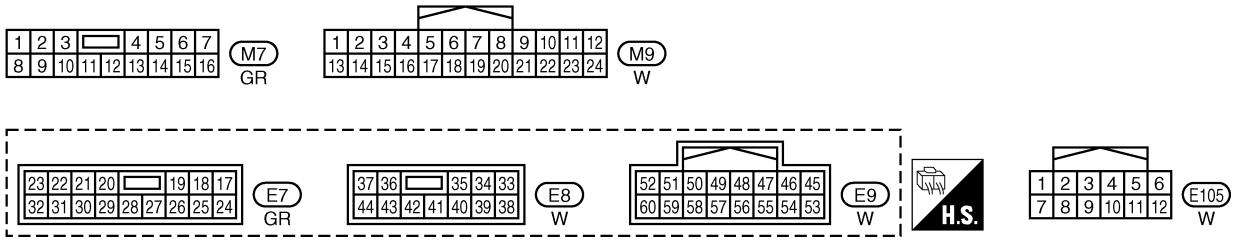
NKS001RT



TKWB2595E

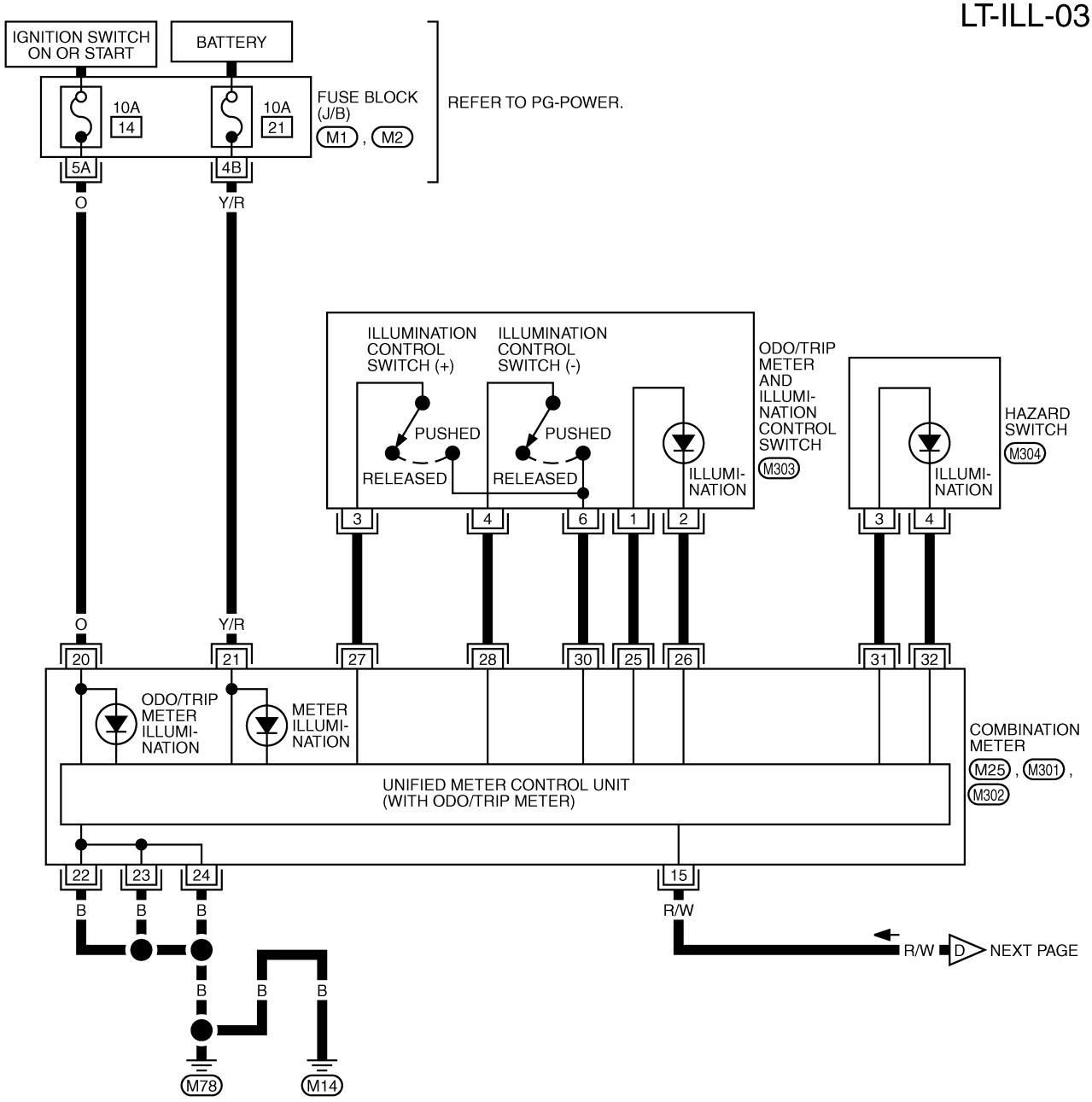
LT-ILL-02

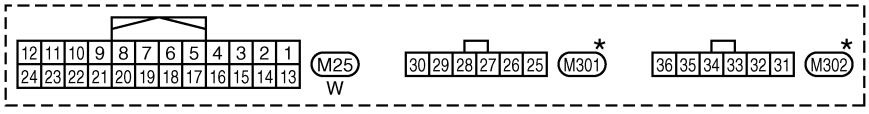




TKWB2596E

LT-ILL-03



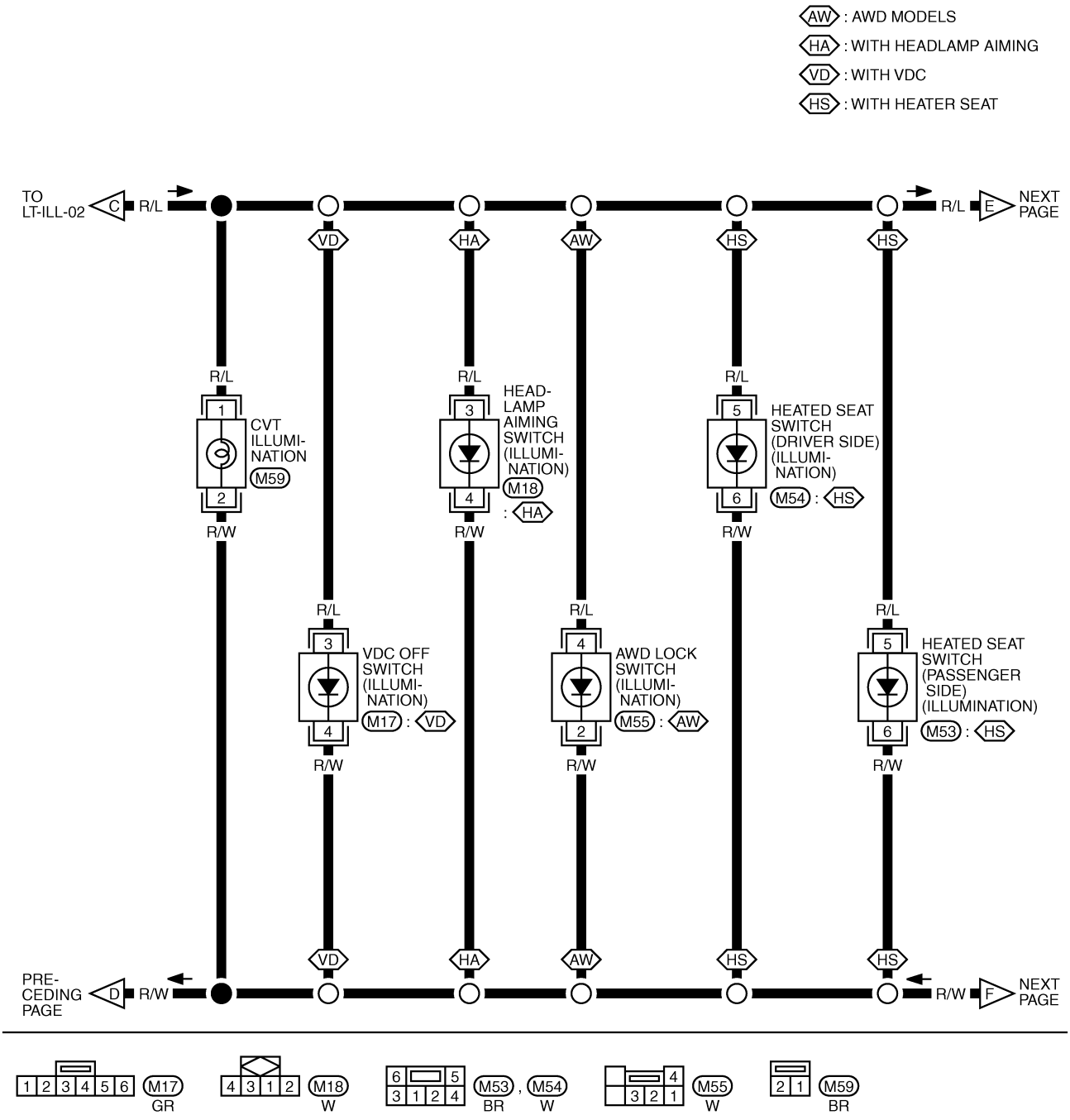


*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

REFER TO THE FOLLOWING.
M1 , M2 -FUSE BLOCK-JUNCTION BOX (J/B)

TKWB2597E

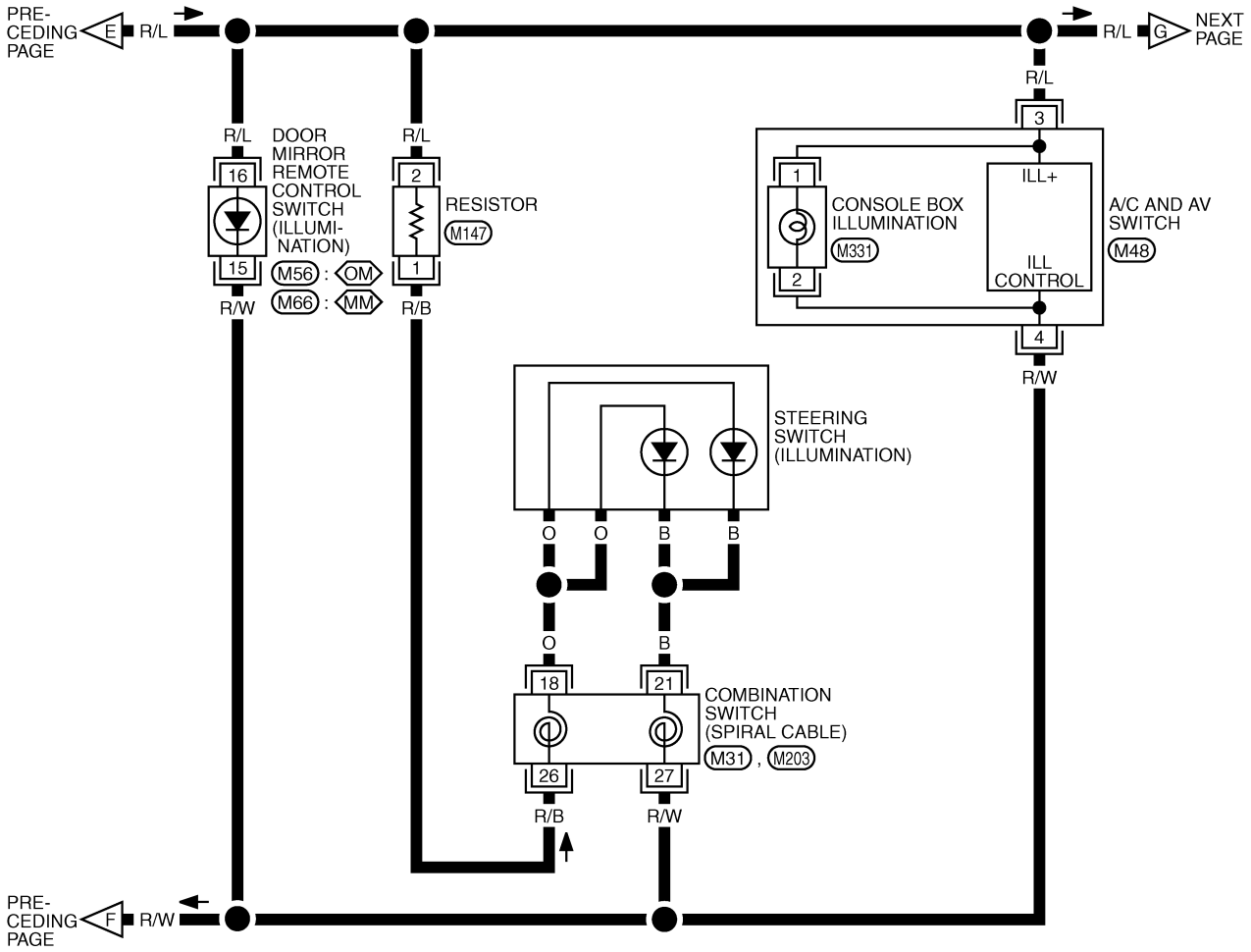
LT-ILL-04

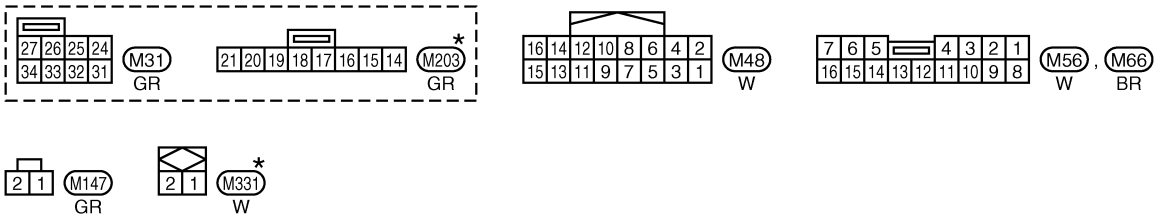


TKWB2808E

LT-ILL-05

MM : WITH MEMORY MIRROR
OM : WITHOUT MEMORY MIRROR



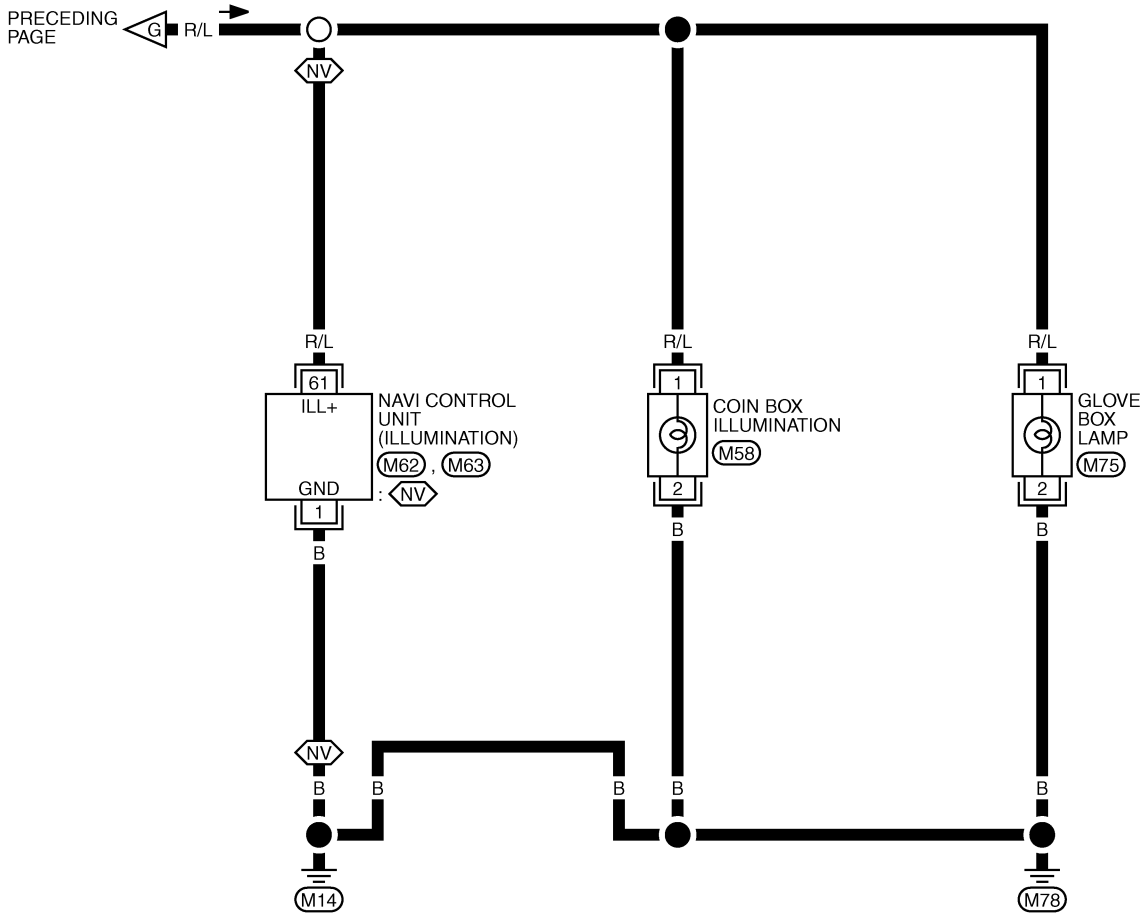


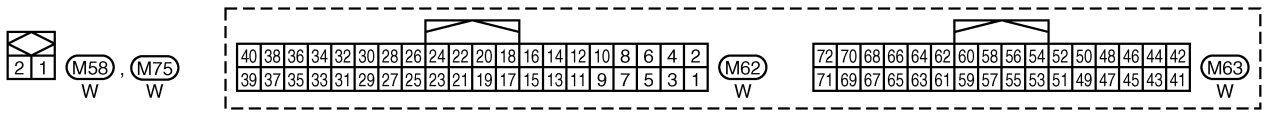
*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TKWB2598E

LT-ILL-06

NV : WITH NAVI





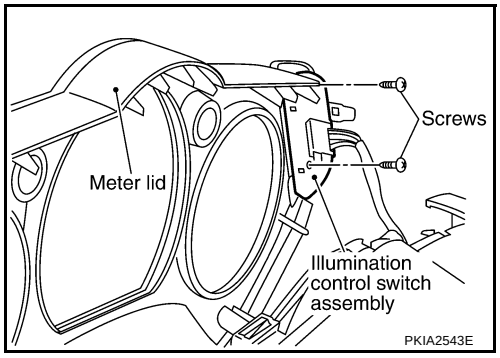
TKWB2599E

Removal and Installation

NKS001RU

ILLUMINATION CONTROL SWITCH

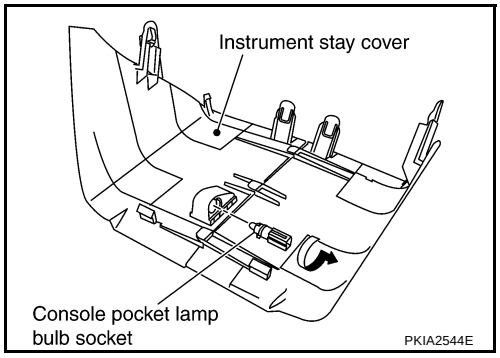
1. Remove meter lid. Refer to DI-24, "Disassembly and Assembly of Combination Meter" .
2. Remove illumination control switch fixing screws and remove the unit from the meter lid.



CONSOLE POCKET LAMP

1. Remove instrument stay cover. Refer to IP-11, "Removal and Installation" .
2. Turn bulb socket counterclockwise and unlock it.

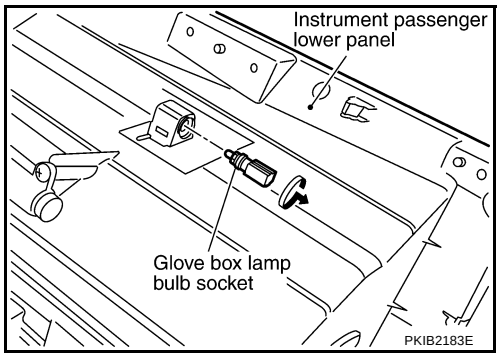
Console pocket lamp : 12V - 1.4W



GLOVE BOX LAMP

1. Remove instrument passenger lower panel. Refer to IP-11, "Removal and Installation" .
2. Turn bulb socket counterclockwise and unlock it.

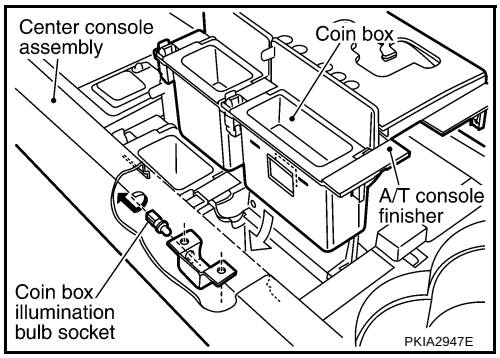
Glove box lamp : 12V - 1.4W



COIN BOX ILLUMINATION

1. Remove A/T console finisher. Refer to IP-17, "CENTER CONSOLE ASSEMBLY" .
2. Turn bulb socket counterclockwise and unlock it.

Coin box illumination : 12V - 1.4W



BULB SPECIFICATIONS

PFP:26297

Headlamp

NKS001RV

Item	Wattage (W)
High/Low (Halogen type)	65/55 (HB5)
High/Low (Xenon type)	35 (D2S)

Exterior Lamp

NKS001RW

Item		Wattage (W)
Front combination lamp	Front turn signal lamp	21 (amber)
	Parking lamp	3.8
	Front side marker lamp	3.8
Rear combination lamp	Stop/Tail/Rear turn signal lamp	LED
	Rear side marker lamp	LED
Front fog lamp		51 (HB4)
Back-up lamp		16
License plate lamp		5
High-mounted stop lamp (back door mount)		LED

Interior Lamp/Illumination

NKS001RX

Item	Wattage (W)
Map lamp	8
Room lamp	8
Personal lamp	8
Luggage room lamp	8
Step lamp	2.7
Glove box lamp	1.4
Vanity mirror lamp	2
Ignition key hole illumination	0.8
Console pocket lamp	1.4
Coin box illumination	1.4