SECTION LT
LIGHTING SYSTEM

CONTENTS

PRECAUTIONS

PFP:00011

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

EKS0040O

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

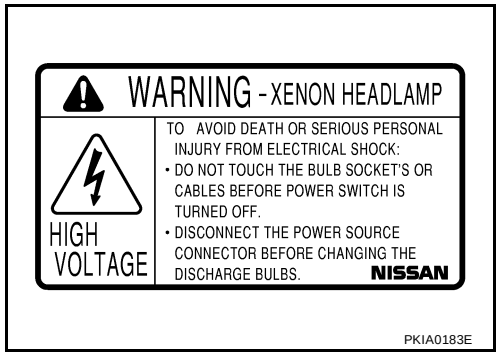
WARNING:

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

General precautions for service operations

EKS0040P

- Never work with wet hands.
- The xenon headlamp system includes a 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.



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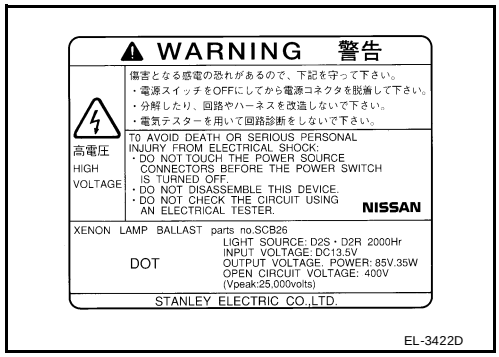
- Do not touch the headlamp bulb glass surface with bare hands or allow oil or grease to get on it. Do not touch the headlamp bulb just after the headlamp is turned off, because it is very hot.
- Install the xenon headlamp bulb socket correctly. If it is installed improperly, high-voltage leak or corona 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.

Wiring Diagrams and Trouble Diagnosis

EKS0040Q

When you read wiring diagrams, refer to the following:

- GI-12, "How to Read Wiring Diagrams"
- PG-3, "POWER SUPPLY ROUTING CIRCUIT"

When you perform trouble diagnosis, refer to the following:

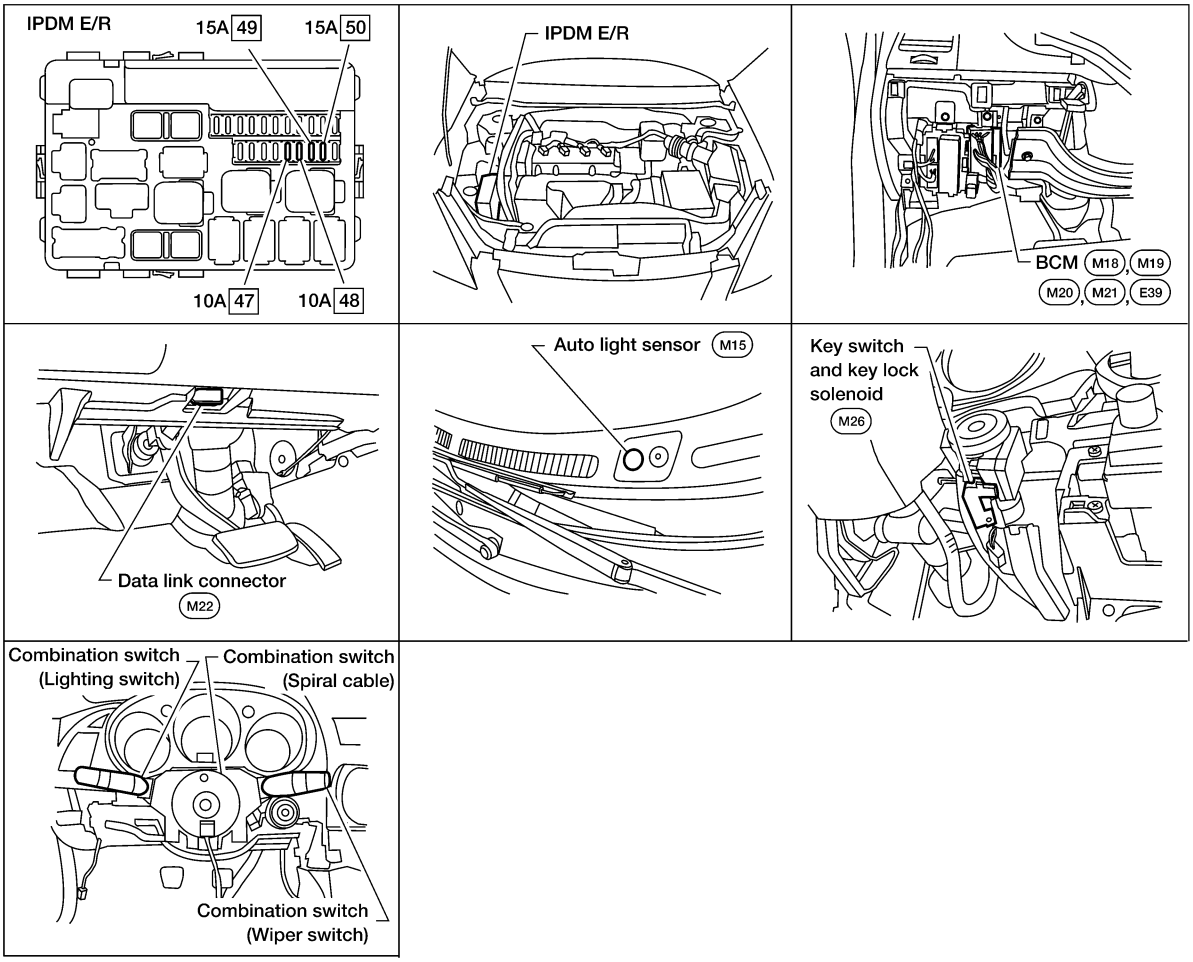
- GI-10, "HOW TO FOLLOW TEST GROUPS IN TROUBLE DIAGNOSES"
- GI-25, "How to Perform Efficient Diagnosis for an Electrical Incident"

HEADLAMP (FOR USA)

PFP:26010

Component Parts and Harness Connector Location

EKS0040R



WKIA0054E

System Description

EKS0040S

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

OUTLINE

Power is supplied at all times

- to headlamp high relay, located in the IPDM E/R (intelligent power distribution module engine room), and
- to headlamp low relay, located in the IPDM E/R (intelligent power distribution module engine room), and
- to BCM (body control module) terminal 7
- through 50A fusible link [letter **f** , located in the fuse and fusible link box].

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

- to BCM (body control module) terminal 35
- through 10A fuse [No. 12, located in the fuse block (J/B)].

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

- to BCM (body control module) terminal 36
- through 10A fuse [No. 6, located in the fuse block (J/B)].

Ground is supplied

- to BCM (body control module) terminals 8, 27, and 63
- through body grounds M57, M61, E15, and E24.

Low Beam Operation

With the lighting switch in 2ND position, the BCM (body control module) receives input requesting the headlamps to illuminate. This input is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The central processing unit of the IPDM E/R controls the headlamp low relay coil. When energized, this relay directs power

- to 15A fuse [No. 50, located in the IPDM E/R]
- through terminal 27 of the IPDM E/R
- to terminal 1 of headlamp RH, and
- to 15A fuse [No. 49, located in the IPDM E/R]
- through terminal 21 of the IPDM E/R
- to terminal 1 of headlamp LH.

Ground is supplied at all times

- to terminal 2 of headlamp RH
- through body grounds E15 and E24, and
- to terminal 2 of headlamp LH
- through body grounds E15 and E24.

With power and ground supplied, low beam headlamps illuminate.

High Beam Operation/Flash-to-Pass Operation

With the lighting switch in 2ND position and placed in HIGH or PASS position, the BCM (body control module) receives input requesting the headlamp high beams to illuminate. This input is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The central processing unit of the IPDM E/R controls the headlamp high relay coil. When energized, this relay directs power

- to 10A fuse [No. 47, located in the IPDM]
- through terminal 24 of the IPDM
- to terminal 1 of headlamp RH, and
- to 10A fuse [No. 48, located in the IPDM]
- through terminal 22 of the IPDM
- to terminal 1 of headlamp LH.

Ground is supplied

- to terminal 2 of headlamp RH
- through body grounds E15 and E24, and
- to terminal 2 of headlamp LH
- through body grounds E15 and E24.

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

BATTERY SAVER CONTROL

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

AUTO LIGHT OPERATION

Refer to LT-46, "System Description" for auto light operation.

VEHICLE SECURITY SYSTEM

The vehicle security system will flash the high beams if the system is triggered. Refer to BL-87, "VEHICLE SECURITY (THEFT WARNING) SYSTEM" .

XENON HEADLAMP (IF EQUIPPED)

The low beam headlamps may be equipped with xenon type bulbs. 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 added lighting power, electronic control of the power supply gives the headlamps stable quality and tone color.
Following are some of the advantages of the xenon type headlamp.

- The light produced by the headlamps is a white color comparable to sunlight that is easy on the eyes.
- Light output is nearly double that of halogen headlamps, affording increased area of illumination.
- The light features a high relative spectral distribution at wavelengths to which the human eye is most sensitive. This means that even in the rain, more light is reflected back from the road surface toward the vehicle, for added visibility.
- Power consumption is approximately 25 percent less than halogen headlamps, reducing battery load.

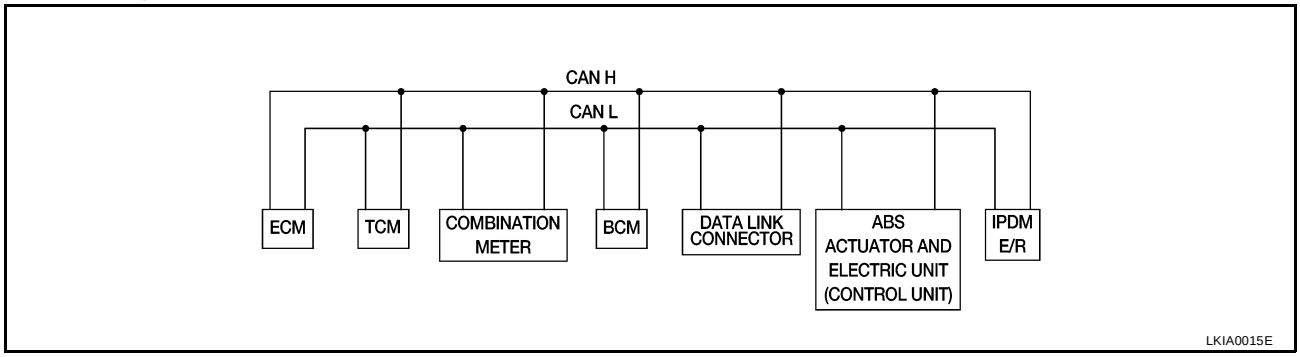
CAN Communication System Description

EKS0040T

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.

FOR TCS MODELS

System diagram



Input/output signal chart

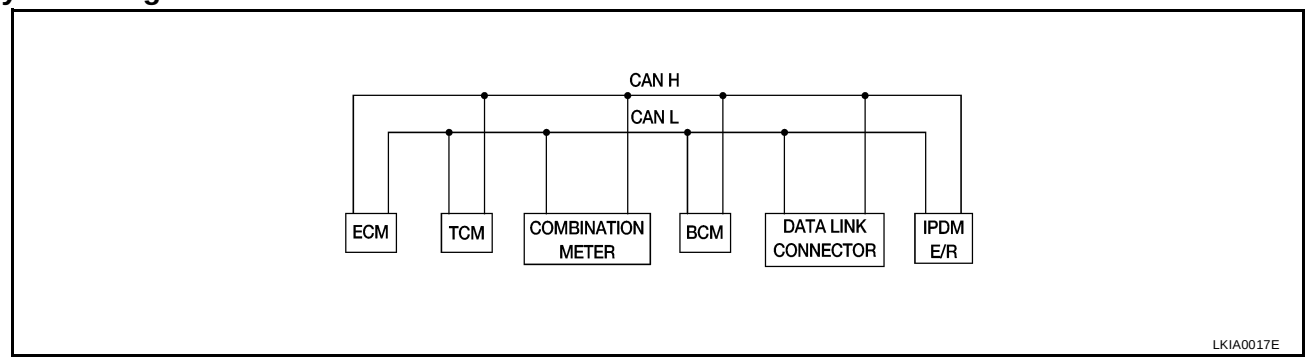
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Engine speed signal	T		R		R	
Engine coolant temperature signal	T		R			
Accelerator pedal position signal	T					
Fuel consumption monitor signal	T		R			
A/T warning lamp signal		T	R			
A/T position indicator signal	R	T	R	R(R range only)	R	
ABS operation signal	R				T	
TCS operation signal	R	R			T	
Air conditioner switch signal	R			T		
Air conditioner compressor signal	R					T
A/C compressor request signal	T					R
Cooling fan motor operation signal	R					T
Cooling fan speed request signal	T					R
Position lights request			R	T		R
Position lights status				R		T
Low beam request				T		R
Low beam status	R			R		T

Signals	ECM	TCM	COMBINA-TION METER	BCM	ABS/TCS control unit	IPDM E/R
High beam request			R	T		R
High beam status	R			R		T
Front fog lights request				T		R
Front fog light status				R		T
OD cancel switch signal		R	T			R
Brake switch signal		R	T			
Vehicle speed signal	R		T			
	R		T	R		
Oil pressure switch			R			T
Sleep request1			R	T		
Sleep request2				T		R
N range switch signal		R	T			
P range switch signal		R	T			
Seat belt buckle switch signal			T	R		
Door switch signal			R	T		R
Tail lamp request			R	T		R
Turn indicator signal			R	T		
Buzzer output signal			R	T		
Trunk switch signal			R	T		
ASCD main switch signal	T		R			
ASCD cruise signal	T		R			
Wiper operation				R		T
Wiper stop position signal				R		T
Rear window defogger switch signal				T		R
Rear window defogger control signal	R			R		T

FOR A/T MODELS

System diagram



Input/output signal chart

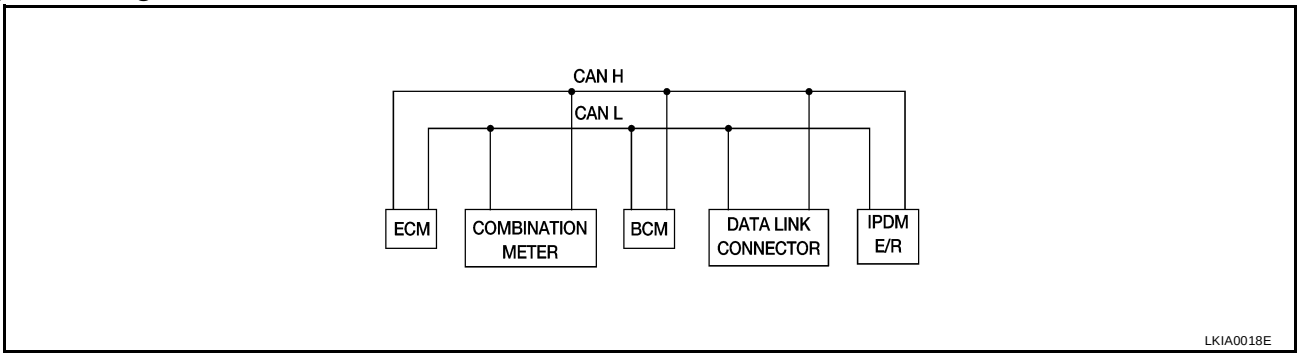
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T		R		
Engine coolant temperature signal	T		R		
Accelerator pedal position signal	T				R

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
Fuel consumption monitor signal	T		R		
A/T warning lamp signal		T	R		
A/T position indicator signal	R	T	R	R(R range only)	
Air conditioner switch signal	R			T	
Air conditioner compressor signal	R				T
A/C compressor request signal	T				R
Blower fan switch signal	R(QR25DE)			T	
Cooling fan motor operation signal	R			T	
Cooling fan speed request signal	T				R
Position lights request			R	T	R
Position lights status				R	T
Low beam request				T	R
Low beam status	R			R	T
High beam request			R	T	R
High beam status	R			R	T
Front fog lights request				T	R
Front fog light status				R	T
OD cancel switch signal		R	T		R
Brake switch signal		R	T		
Vehicle speed signal	R		T		
	R		T	R	
Oil pressure switch			R		T
Sleep request1			R	T	
Sleep request2				T	R
N range switch signal		R	T		
P range switch signal		R	T		
Seat belt buckle switch signal			T	R	
Door switch signal			R	T	R
Tail lamp request			R	T	R
Turn indicator signal			R	T	
Buzzer output signal			R	T	
Trunk switch signal			R	T	
ASCD main switch signal	T		R		
ASCD cruise signal	T		R		
Wiper operation				R	T
Wiper stop position signal				R	T
Rear window defogger switch signal				T	R
Rear window defogger control signal	R			R	T

FOR M/T MODELS

System diagram



Input/output signal chart

T: Transmit R: Receive

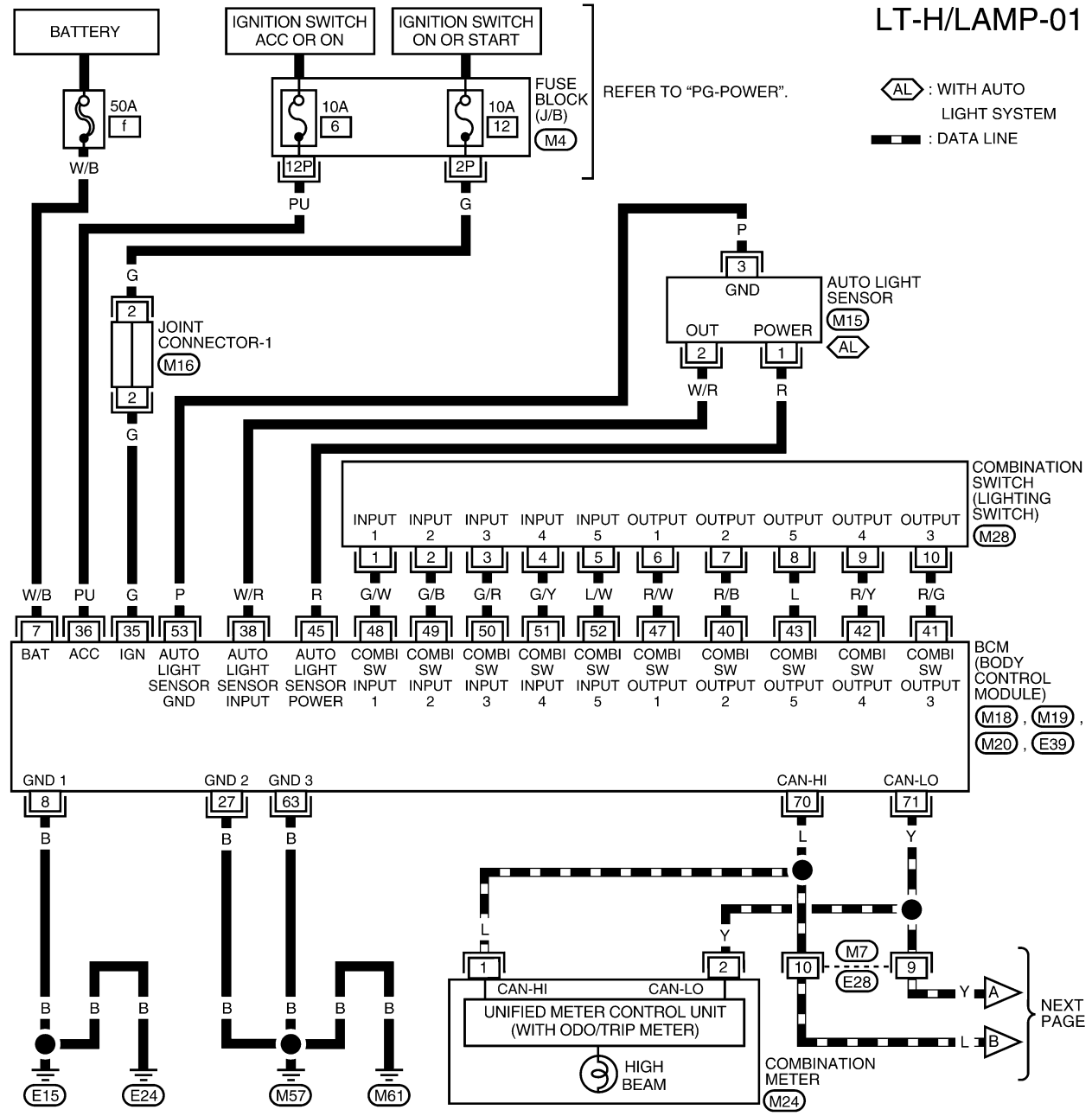
Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T			
Engine coolant temperature signal	T			
Fuel consumption monitor signal	T			
Air conditioner switch signal	R		T	
Air conditioner compressor signal	R			T
A/C compressor request signal	T			R
Blower fan switch signal	R(QR25DE)		T	
Cooling fan motor operation signal	R			T
Cooling fan speed request signal	T			R
Position lights request		R	T	R
Position lights status			R	T
Low beam request			T	R
Low beam status	R		R	T
High beam request		R	T	R
High beam status	R		R	T
Front fog lights request			T	R
Front fog light status			R	T
Vehicle speed signal	R	T		
Oil pressure switch		R		T
Sleep request1		R	T	
Sleep request2			T	R
Seat belt buckle switch signal		T	R	
Door switch signal		R	T	R
Tail lamp request		R	T	R
Turn indicator signal		R	T	
Buzzer output signal		R	T	
Trunk switch signal		R	T	
ASCD main switch signal	T	R		
ASCD cruise signal	T	R		
Wiper operation			R	T
Wiper stop position signal			R	T

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Rear window defogger switch signal			T	R
Rear window defogger control signal	R		R	T

Wiring Diagram — H/LAMP —

EKS0040U

HALOGEN



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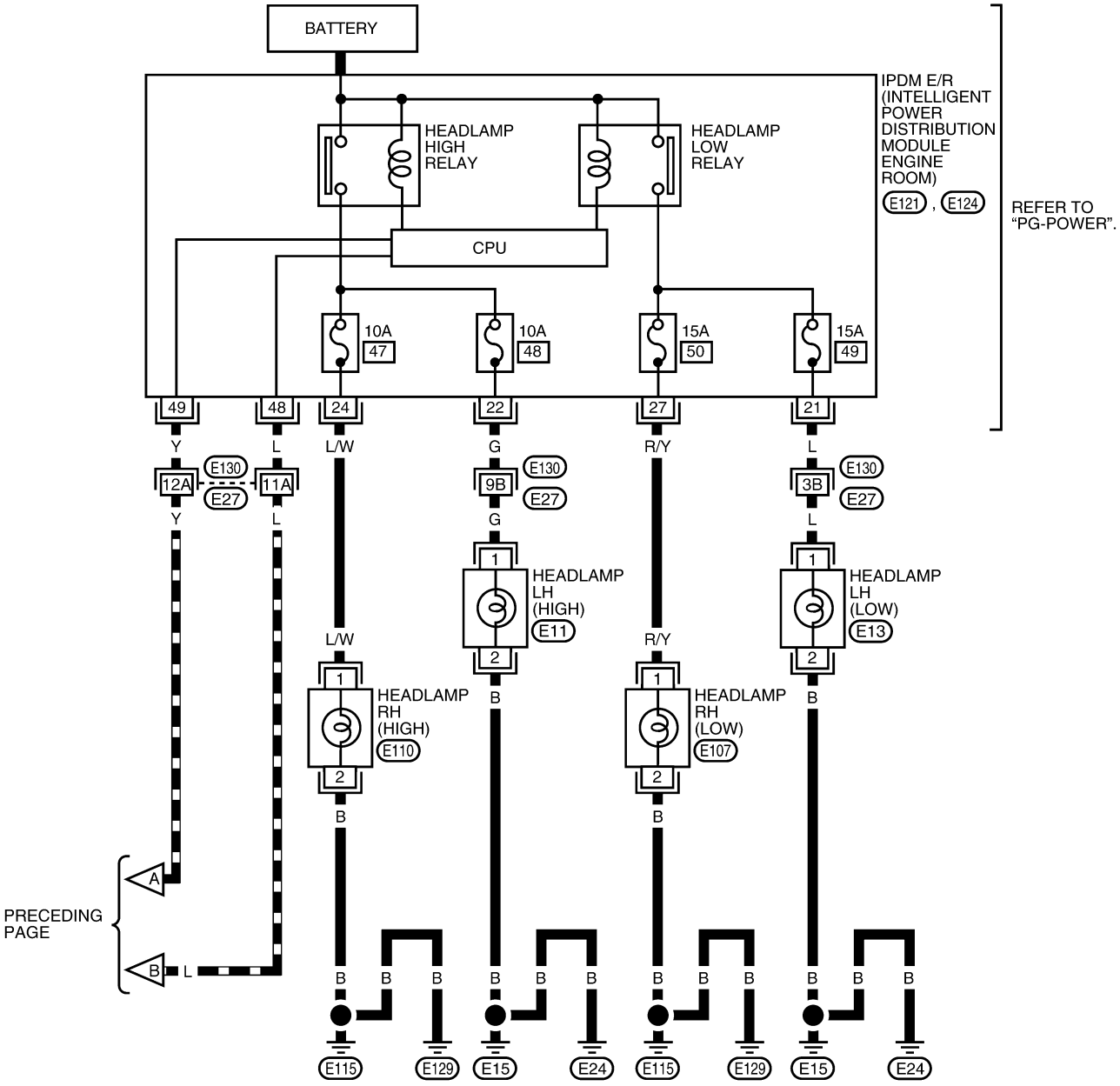
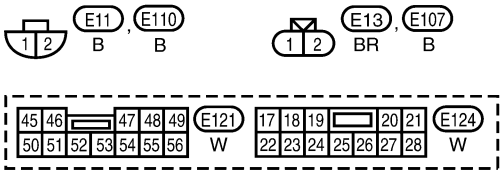
LT-H/LAMP-02

: DATA LINE

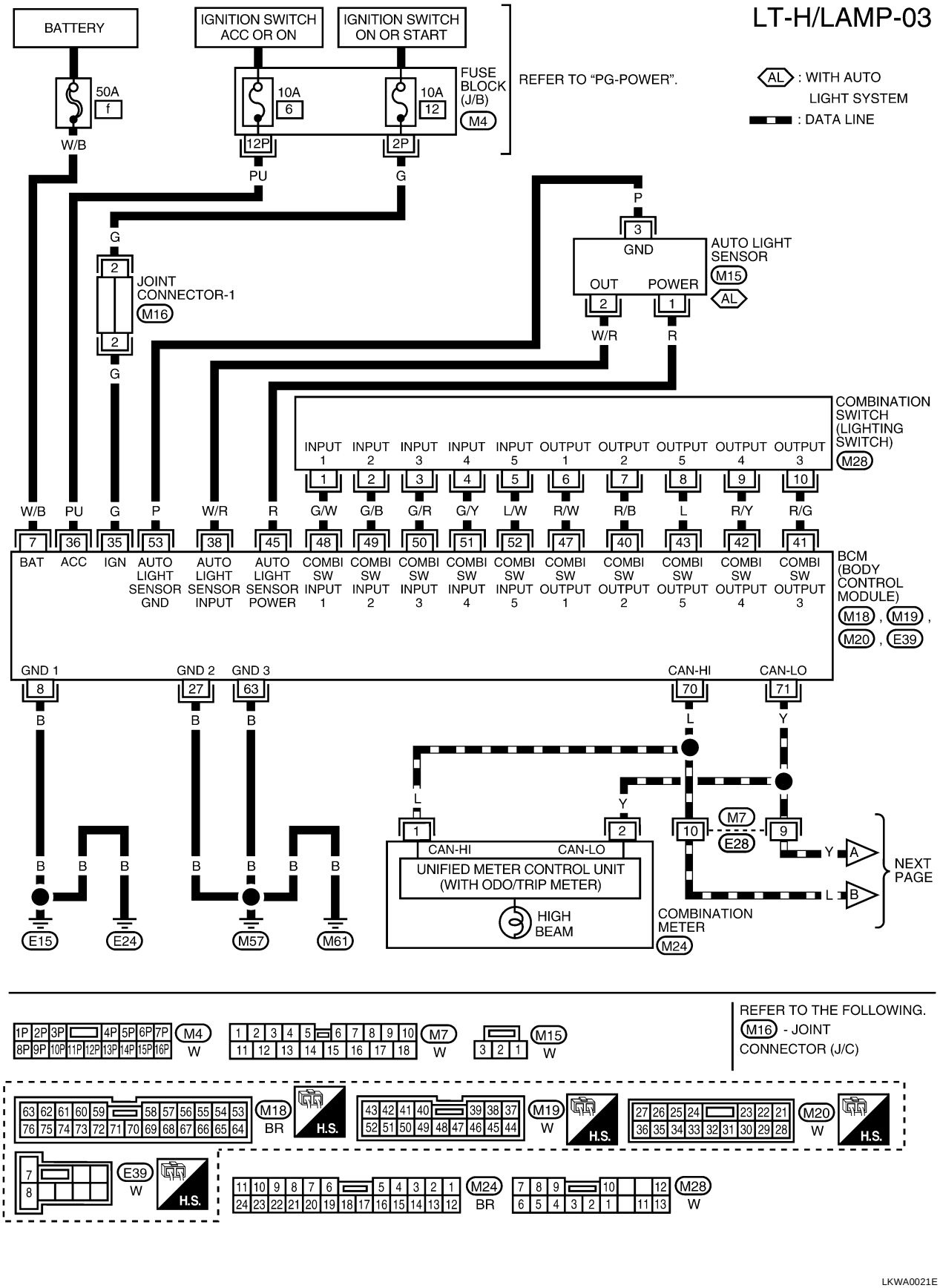




REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

LKWA0020E

XENON



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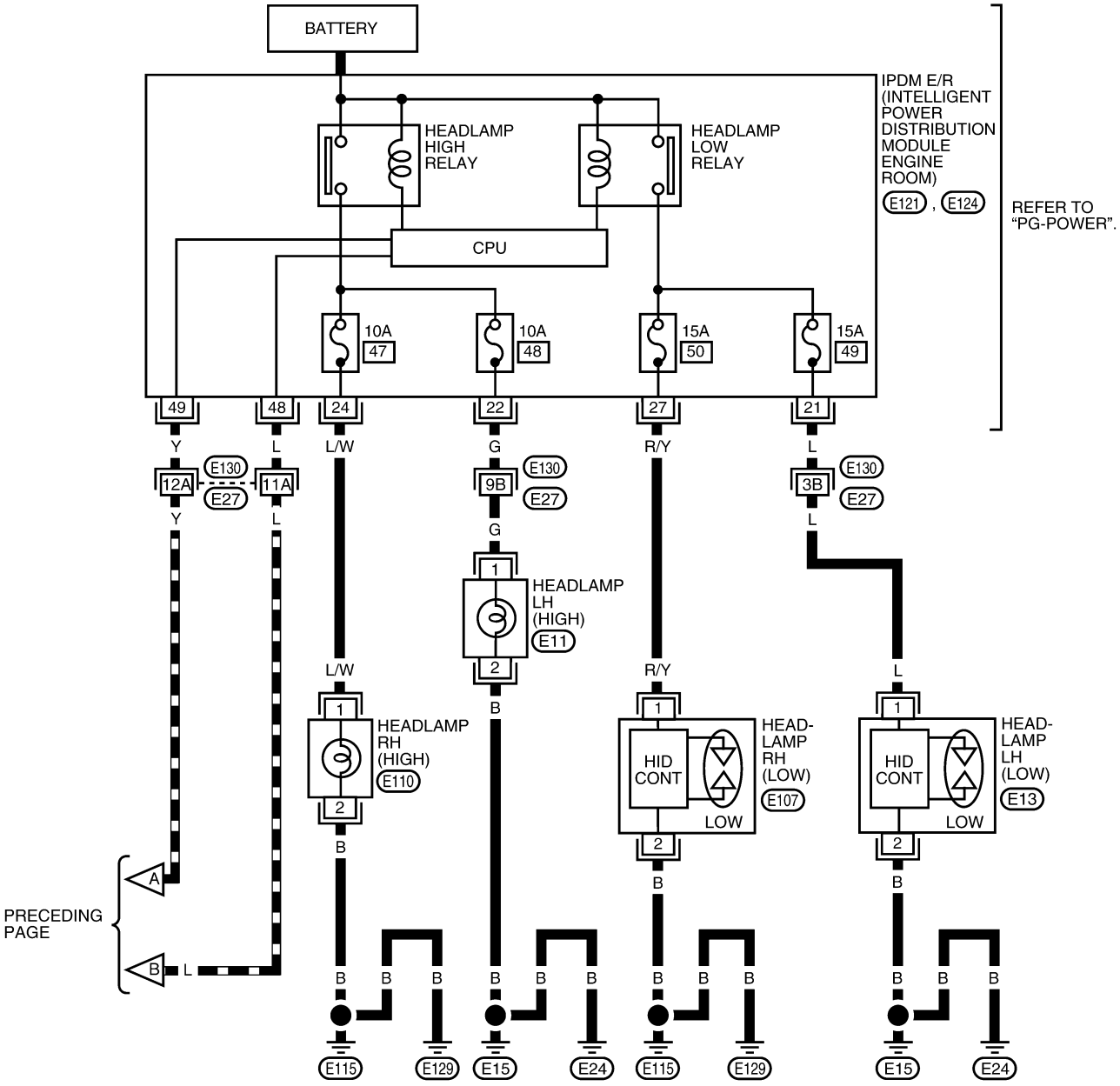
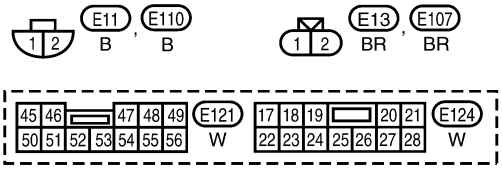
LT-H/LAMP-04

: DATA LINE





REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

LKWA0022E

Terminals and Reference Value for BCM

EKS0040V

Terminal No.	Wire color	Item	Measuring condition		Voltage (Approx.)
			Ignition switch	Operation or condition	
7	W/B	Battery power supply	OFF	—	Battery voltage
8	B	Ground	—	—	—
27	B	Ground	—	—	—
35	G	Ignition power supply	ON	—	Battery voltage
36	PU	Ignition power supply	ACC	—	Battery voltage
38	W/R	Auto light sensor input	ON	Headlamps illuminate by auto light control	0V → 3V
40	R/B	Combination switch output 2	—	—	2V → 10V
41	R/G	Combination switch output 3	—	—	2V → 10V
42	R/Y	Combination switch output 4	—	—	2V → 10V
43	L	Combination switch output 5	—	—	2V → 10V
45	R	Auto light sensor power	—	Ignition switch OFF → ON	0V → 5V
47	R/W	Combination switch output 1	—	—	2V → 10V
48	G/W	Combination switch input 1	—	—	1.5V → 10V
49	G/B	Combination switch input 2	—	—	1.5V → 10V
50	G/R	Combination switch input 3	—	—	1.5V → 10V
51	G/Y	Combination switch input 4	—	—	1.5V → 10V
52	L/W	Combination switch input 5	—	—	1.5V → 10V
53	P	Auto light sensor ground	—	—	—
63	B	Ground	—	—	—
70	L	Communication signal (CAN-H)	—	—	1V → 3V
71	Y	Communication signal (CAN-L)	—	—	1V → 3V

CONSULT-II Function

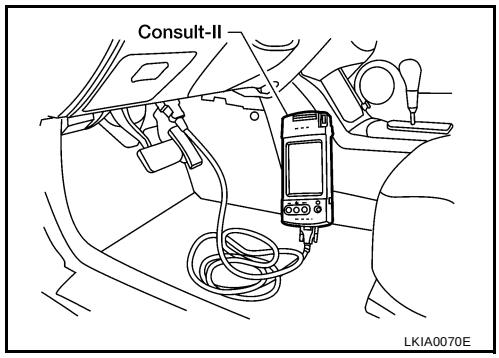
EKS0040W

CONSULT-II has a display function for work support, self-diagnosis, data monitor, and active test for each part by combining data receiving and sending via the communication line from BCM.

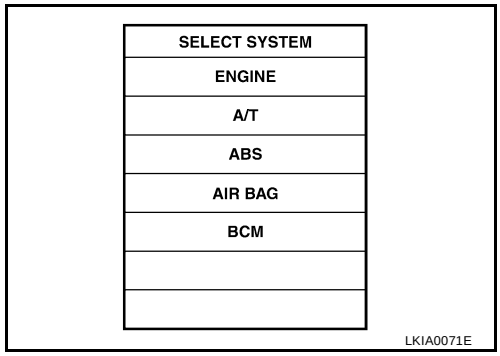
BCM diagnosis part	Check item, diagnosis mode	Description
Headlamp	Work support	Changes the setting for each function.
	Data monitor	Displays BCM input data in real time.
	Active test	Operation of electrical loads can be checked by sending driving signal to them.

CONSULT-II BASIC OPERATION

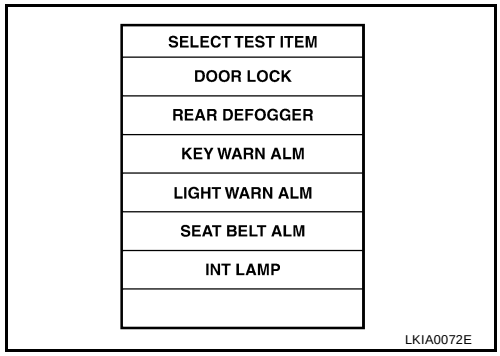
1. With the ignition switch OFF, connect CONSULT-II to the vehicle-side data link connector, then turn ignition switch ON.
2. Touch “START”.



3. Touch “BCM” on “SELECT SYSTEM” screen.



4. Select the desired part to be diagnosed on the “SELECT TEST ITEM” screen.



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 the “DATA MONITOR” screen.

All signals	Monitors all the signals.
Selection from menu	Selects and monitors individual signal.

4. Touch “START”.
5. When "SELECTION FROM MENU” is selected, touch individual items to be monitored. When “ALL SIGNALS" is selected, all the items will be monitored.
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 name “OPERATION OR UNIT”		Contents
IGN ON SW	“ON/OFF”	“IGN position (ON)/OFF, ACC position (OFF)” judged from the ignition switch signal is displayed.
ACC ON SW	“ON/OFF”	Displays “ACC (ON)/OFF, Ignition OFF (OFF)” status judged from ignition switch signal.
AUTO LIGHT SW[Note]	“ON/OFF”	Displays status of the lighting switch as judged from the lighting switch signal. (AUTO position: ON/Other than AUTO position: OFF)
TAIL LAMP SW	“ON/OFF”	Displays status (lighting switch 1st position: ON/Others: OFF) of light switch judged from lighting switch signal.
HEAD LAMP SW	“ON/OFF”	Displays status (headlamp switch: ON/Others: OFF) of headlamp switch judged 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.
PASSING SW	“ON/OFF”	Displays status (flash-to-pass switch: ON/Others: OFF) of flash-to-pass switch judged from lighting switch signal.

Monitor item name “OPERATION OR UNIT”		Contents
FR FOG SW	“ON/OFF”	Displays status (front fog switch: ON/Others: OFF) of front fog switch judged from lighting switch signal.
DOOR SW - DR	“ON/OFF”	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - AS	“ON/OFF”	Displays status of the passenger door as judged from the passenger door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RR	“ON/OFF”	Displays status of the rear doors as judged from the rear door switch signal. (Door is open: ON/Door is closed: OFF)
HEAD LAMP SW 2	“ON/OFF”	Displays status (headlamp switch 2: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.
OPTICAL SENSOR	[0 - 5V]	Displays “ambient light (close to 5V when light/close to 0V when dark)” judged from auto light sensor signal.

NOTE:
Vehicles without auto light system display this item, but cannot monitor it.

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 “BACK” deactivates the operation.

Display Item List

Test item	Display on CONSULT-II screen	Description
Tail light relay output	TAIL LAMP	Allows tail light relay to operate by switching ON–OFF at your option.
Headlamp relay output	HEAD LAMP (LOW)	Allows headlamp relay to operate by switching ON–OFF at your option.
Headlamp relay output	HEAD LAMP (HI)	Allows headlamp relay to operate by switching ON–OFF at your option.
Front fog lamp relay output	FR FOG LAMP	Allows fog lamp relay to operate by switching ON–OFF at your option.

Headlamp HI Does Not Illuminate (Both Sides)

EKS0040X

1. INSPECTION 1 BETWEEN IPDM E/R AND HEADLAMPS

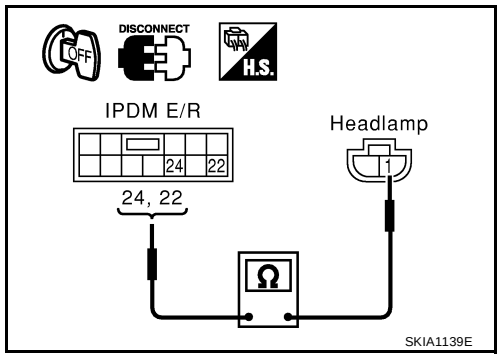
1. Start active test. Refer to LT-18, "ACTIVE TEST" .
2. Check operation of HI headlamps.

OK or NG

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

2. INSPECTION 2 BETWEEN IPDM E/R AND HEADLAMPS

1. Disconnect IPDM E/R connector and left/right headlamp connectors.
2. Check continuity between harness connector terminals of IPDM E/R and connector terminals of left/right headlamps.



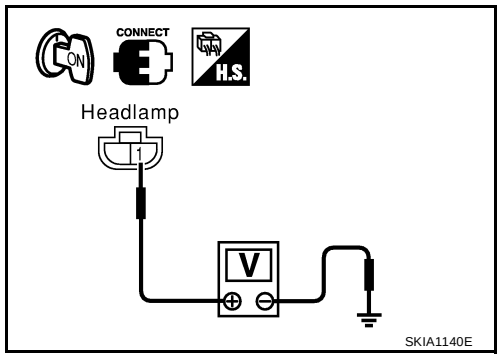
Terminals					Continuity
IPDM E/R		Headlamp			
Connector	Terminal (wire color)	Connector		Terminal (wire color)	
E124	24 (L/W)	Right	E110	1 (L/W)	Yes
	22 (G)	Left	E11	1 (G)	

OK or NG

OK >> Connect electrical connectors. GO TO 3.
NG >> Check for short circuit or open circuit in harness between IPDM E/R and right/left headlamps. Repair as necessary.

3. IPDM E/R INSPECTION

Start active test. Refer to LT-18, "ACTIVE TEST" . When headlamp HI is operating, check voltage between connector terminals left/right headlamps and body ground.



Terminals				Voltage (Approx.)
Headlamp			Body ground (–)	12
Connector		Terminal (wire color)		
Right	E110	1 (L/W)		
Left	E11	1 (G)		

OK or NG

OK >> Check headlamp bulbs and replace as necessary.
NG >> Replace IPDM E/R. Refer to PG-24, "Removal and Installation of IPDM E/R" .

4. INSPECTION 1 BETWEEN COMBINATION SWITCH AND BCM

Select BCM on CONSULT-II. Carry out “BCM C/U” self-diagnosis.

Displayed results of self-diagnosis

No malfunction detected>> GO TO 5.
CAN communications or CAN system>> Inspect the BCM CAN communications system. Refer to BCS-15, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .
OPEN DETECT 1 - 5>> Combination switch system malfunction. Refer to BCS-16, "Combination Switch Inspection According to Self-Diagnostic Results" .

SELF-DIAG RESULTS	
DTC RESULTS	TIME
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	

LKIA0073E

5. INSPECTION 2 BETWEEN COMBINATION SWITCH AND BCM

Select BCM on CONSULT-II. With “HEADLAMP” data monitor, check that “HI BEAM SW” turns ON-OFF linked with operation of lighting switch.

OK or NG

OK >> Replace BCM.
NG >> Replace lighting switch. Refer to LT-96, "Removal and Installation" .

DATA MONITOR	
MONITOR	
IGN ON SW	ON
ACC ON SW	ON
AUTO LIGHT SW	OFF
TAIL LAMP SW	OFF
HEAD LAMP SW	OFF
HI BEAM SW	OFF
PASSING SW	OFF
FR FOG SW	OFF
DOOR SW-DR	OFF

LKIA0074E

Headlamp HI Does Not Illuminate (One Side)

EKS0040Y

1. BULB INSPECTION

Inspect inoperative lamp bulb.

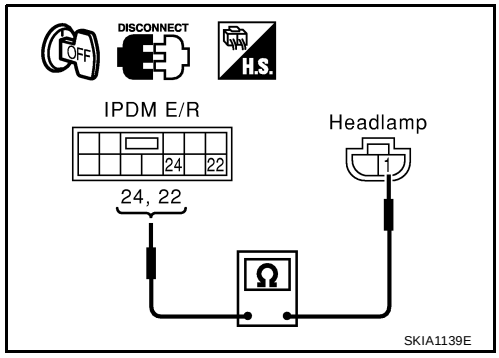
OK or NG

OK >> GO TO 2.
NG >> Replace headlamp bulb. Refer to LT-25, "HEADLAMP (INNER SIDE), FOR HIGH BEAM" .

2. INSPECTION BETWEEN IPDM E/R AND HEADLAMPS

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

Terminals					Continuity
IPDM E/R		Headlamp			
Connector	Terminal (wire color)	Connector		Terminal (wire color)	
E124	24 (L/W)	Right	E110	1 (L/W)	Yes
	22 (G)	Left	E11	1 (G)	



SKIA1139E

OK or NG

OK >> Replace IPDM E/R. Refer to PG-24, "Removal and Installation of IPDM E/R" .
NG >> Check for short circuits and open circuits in harness between IPDM E/R and headlamps. Repair as necessary.

High-Beam Indicator Lamp Does Not Illuminate

EKS0040Z

1. BULB INSPECTION

Inspect high-beam indicator lamp bulb.

OK or NG

OK >> Replace combination meter. Refer to DI-21, "Removal and Installation" .
NG >> Replace indicator bulb.

Headlamp LO Does Not Illuminate (Both Sides)

EKS00410

1. CHECK IPDM E/R OUTPUT TO HEADLAMPS

1. Start active test. Refer to LT-18, "ACTIVE TEST" .
2. Check operation of low beam headlamps.

OK or NG

OK >> GO TO 2.
NG >> Replace IPDM E/R. Refer to PG-24, "Removal and Installation of IPDM E/R" .

2. PERFORM BCM SELF-TEST

Select BCM on CONSULT-II. Carry out “BCM C/U” self-diagnosis.

Displayed results of self-diagnosis

No malfunction detected>> GO TO 3.

CAN communications or CAN system>> Inspect the BCM CAN communications system. Refer to BCS-15, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .

OPEN DETECT 1 - 5>> Combination Switch System malfunction. Refer to BCS-16, "Combination Switch Inspection According to Self-Diagnostic Results" .

HEAD LAMP 1 SW or HEAD LAMP 2 SW>> Replace lighting switch. Refer to LT-96, "Removal and Installation" .

SELF-DIAG RESULTS	
DTC RESULTS	TIME
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	

LKIA0073E

3. CHECK COMBINATION SWITCH INPUTS TO BCM

Select BCM on CONSULT-II. With “HEADLAMP” data monitor, check that “HEAD LAMP SW” and “HEAD LAMP SW 2” turn ON-OFF with operation of lighting switch.

OK or NG

OK >> Replace BCM.

NG >> Replace lighting switch. Refer to LT-96, "Removal and Installation" .

DATA MONITOR	
MONITOR	
IGN ON SW	ON
ACC ON SW	ON
AUTO LIGHT SW	OFF
TAIL LAMP SW	ON
HEAD LAMP SW	ON
HI BEAM SW	OFF
PASSING SW	OFF
FR FOG SW	OFF
DOOR SW-DR	OFF

LKIA0078E

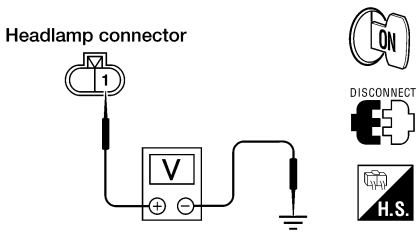
Headlamp LO Does Not Illuminate (One Side)

EKS00411

1. CHECK POWER TO HEADLAMP

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

Terminals				Voltage
(+)			(-)	
Connector		Terminal		
Right	E107	1 (R/Y)	Ground	Yes
Left	E13	1 (L)		



WKIA0285E

OK or NG

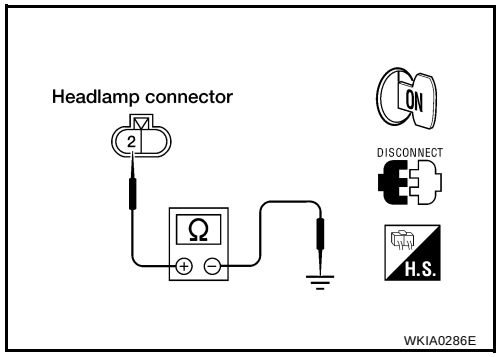
OK >> GO TO 2.

NG >> GO TO 4.

2. CHECK HEADLAMP GROUND

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

Terminals				Continuity
(+)			(-)	
Connector		Terminal		
Right	E107	2 (B)	Ground	Yes
Left	E13	2 (B)		



OK or NG

OK >> GO TO 3.
NG >> Repair open circuit in harness between inoperative headlamp and ground.

3. HEADLAMP SUBHARNESS INSPECTION

1. Check the inoperative headlamp subharness for open or short circuits.

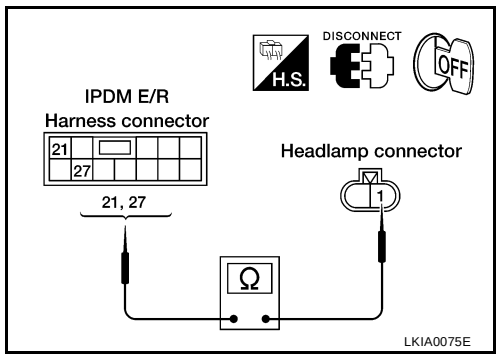
OK or NG

OK (with halogen headlamps)>> Replace headlamp bulb. Refer to LT-24, "Bulb Replacement" .
OK (with xenon headlamps)>> Replace headlamp bulb. Refer to LT-24, "Bulb Replacement" . Check operation of headlamp. If headlamp is still inoperative, replace ballast and check operation. If headlamp is still inoperative, replace igniter.
NG (with halogen headlamps)>> Repair open or short circuit in headlamp subharness.
NG (with xenon headlamps)>> Replace headlamp subharness.

4. CHECK CIRCUIT BETWEEN IPDM E/R AND INOPERATIVE HEADLAMP

1. Turn the low beam headlamps OFF.
2. Check continuity between inoperative headlamp connector terminal and IPDM E/R connector terminal.

Terminals					Continuity
Headlamp	(+)		(-)		
	Connector	Terminal	Connector	Terminal	
Right	E107	1 (R/Y)	E124	27 (R/Y)	Yes
Left	E13	1 (L)	E124	21 (L)	



OK or NG

OK >> Replace IPDM E/R. Refer to PG-24, "Removal and Installation of IPDM E/R" .
NG >> Repair open or short circuit between IPDM E/R and inoperative headlamp.

Headlamps Do Not Turn OFF

EKS00412

1. CHECK CAN COMMUNICATIONS BETWEEN BCM AND IPDM E/R

- IPDM E/R detects CAN communication malfunction and activates fail-safe operation. Refer to BCS-15, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" and inspect CAN system.

OK or NG

OK >> Replace IPDM E/R. Refer to PG-24, "Removal and Installation of IPDM E/R" .
NG >> Repair or replace malfunctioning part.

One Xenon Headlamp Does Not Illuminate At Full Brightness

EKS00413

1. COMPONENT INSPECTION

1. Check the inoperative headlamp subharness for open or short circuits.

OK or NG

OK >> Replace headlamp bulb. Refer to LT-24, "Bulb Replacement" . Check operation of headlamp. If headlamp still does not illuminate at full brightness, replace ballast and check operation. If headlamp still does not illuminate at full brightness, replace igniter.

NG >> Replace headlamp subharness.

One Xenon Headlamp Flickers

EKS00414

1. CHECK SYSTEM OPERATION

1. Turn the low beam headlamps ON and check operation.

NOTE:
Xenon headlamps may flicker momentarily when the headlamps are turned ON. This is normal and does not indicate a fault. Diagnosis of flickering headlamps should only be performed if the headlamps continue to flicker for more than 3 seconds after turning headlamps ON.

OK or NG

OK >> System is operating correctly.

NG >> GO TO 2.

2. COMPONENT INSPECTION

1. Check the inoperative headlamp subharness for open or short circuits.

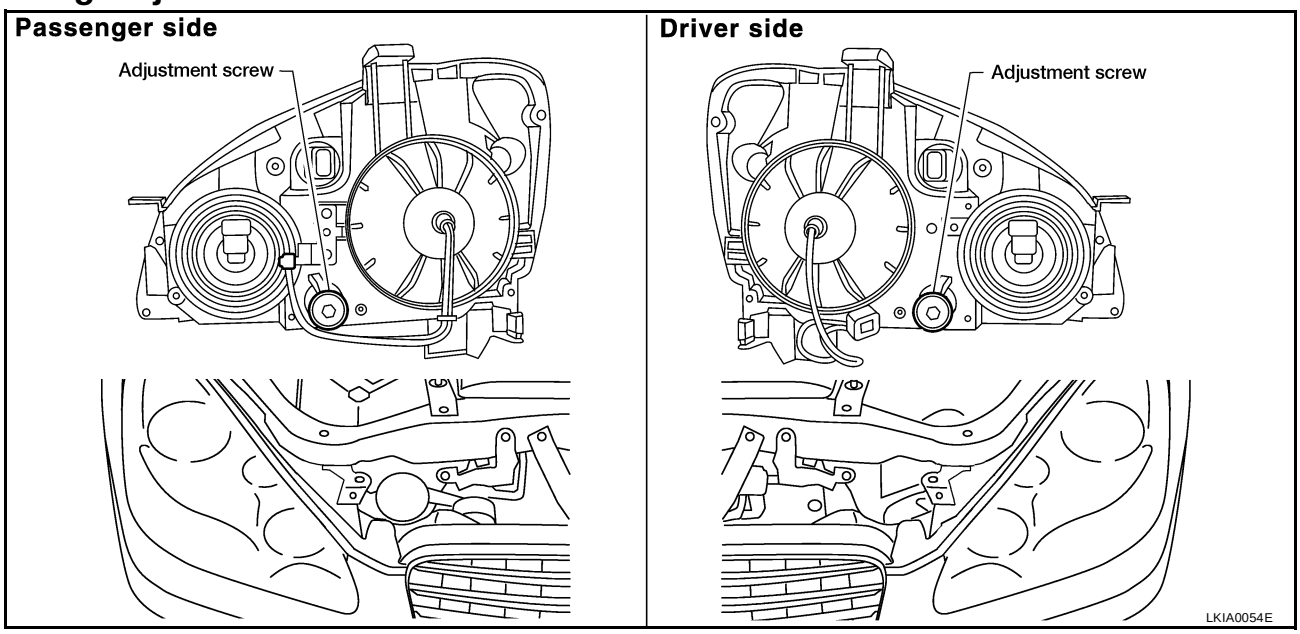
OK or NG

OK >> Replace ballast. Check operation of headlamp. If headlamp still flickers, replace igniter and check operation. If headlamp still flickers, replace headlamp bulb. Refer to LT-24, "Bulb Replacement" .

NG >> Replace headlamp subharness.

Aiming Adjustment

EKS00415



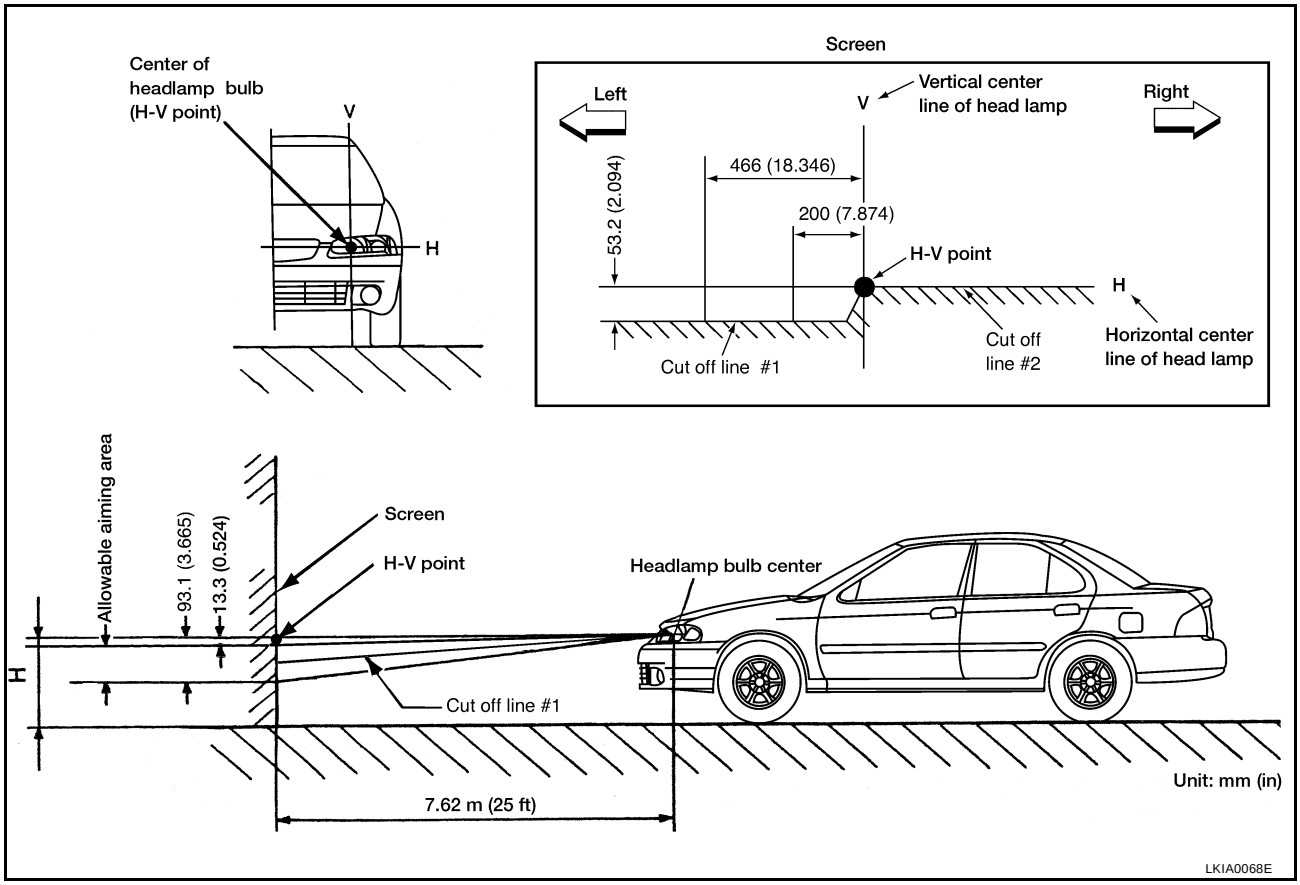
For details, refer to the regulations in your state.
Before performing aiming adjustment, check the following.

1. Ensure all tires are inflated to correct pressure.
2. Place vehicle on flat surface.

3. Ensure there is no load in vehicle other than the driver (or equivalent weight placed in driver's position). Coolant and engine oil filled to correct level, and fuel tank full.

LOW BEAM AND HIGH BEAM

1. Turn headlamp low beam on.
2. Use adjusting screws to perform aiming adjustment.
   - **First loosen the adjusting screw all the way and then make adjustment by tightening the screw.**



If the vehicle front body has been repaired and/or the headlamp assembly has been replaced, check aiming. Use the aiming chart shown in the figure.

- **Basic illuminating area for adjustment should be within the range shown on the aiming chart. Adjust headlamps accordingly.**

Bulb Replacement

EKS00416

HEADLAMP (OUTER SIDE), FOR LOW BEAM (XENON)

1. Disconnect negative battery cable.
2. Turn the plastic cap counterclockwise to unlock it from the headlamp.
3. Turn the bulb socket counterclockwise to unlock it.
4. Unlock the retaining spring and remove the bulb from the headlamp.
5. Install in reverse order of removal.

CAUTION:

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

HEADLAMP (OUTER SIDE), FOR LOW BEAM (HALOGEN)

1. Disconnect negative battery cable.
2. Turn the plastic cap counterclockwise to unlock it from the headlamp.
3. Disconnect the electrical connectors from the bulb terminals.
4. Unlock the retaining spring and remove the bulb from the headlamp.
5. Install in reverse order of removal.

CAUTION:
After installing the bulb, be sure to install the plastic cap securely to ensure watertightness.

HEADLAMP (INNER SIDE), FOR HIGH BEAM

1. Turn the bulb counterclockwise to remove it.
2. Installation is reverse order of removal.

FRONT TURN SIGNAL LAMP

1. Remove the headlamp. Refer to LT-25, "Removal and Installation" .
2. Turn the bulb socket counterclockwise to unlock it.
3. Push and turn the bulb counterclockwise to remove it.
4. Installation is reverse order of removal.

Headlamp (outer side), for low beam (Halogen)	**: 12V 55W (H1)**
Headlamp (outer side), for low beam (Xenon)	**: 12V 35W (D2R)**
Headlamp (inner side), for high beam	**: 12V 60W (HB3)**
Front turn signal lamp	**: 12V 27W/8W (amber)**

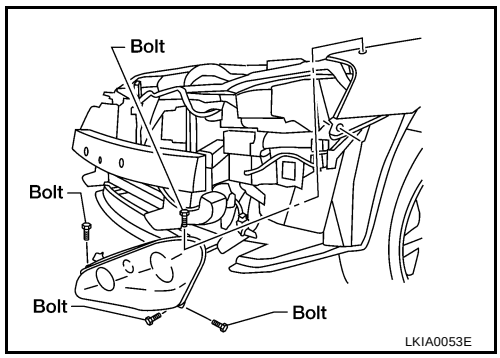
CAUTION:
After installing the bulb, be sure to install the bulb socket securely to ensure watertightness.

Removal and Installation

EKS00417

REMOVAL

1. Remove the front fascia. Refer to EI-13, "Removal and Installation" .
2. Ensure lighting switch is OFF.
3. Disconnect the negative battery cable.
4. Remove the headlamp mounting bolts.
5. Pull the headlamp toward the front of the vehicle, disconnect connectors, and remove from vehicle.



INSTALLATION

Install in the reverse order of removal.

Headlamp mounting bolts:

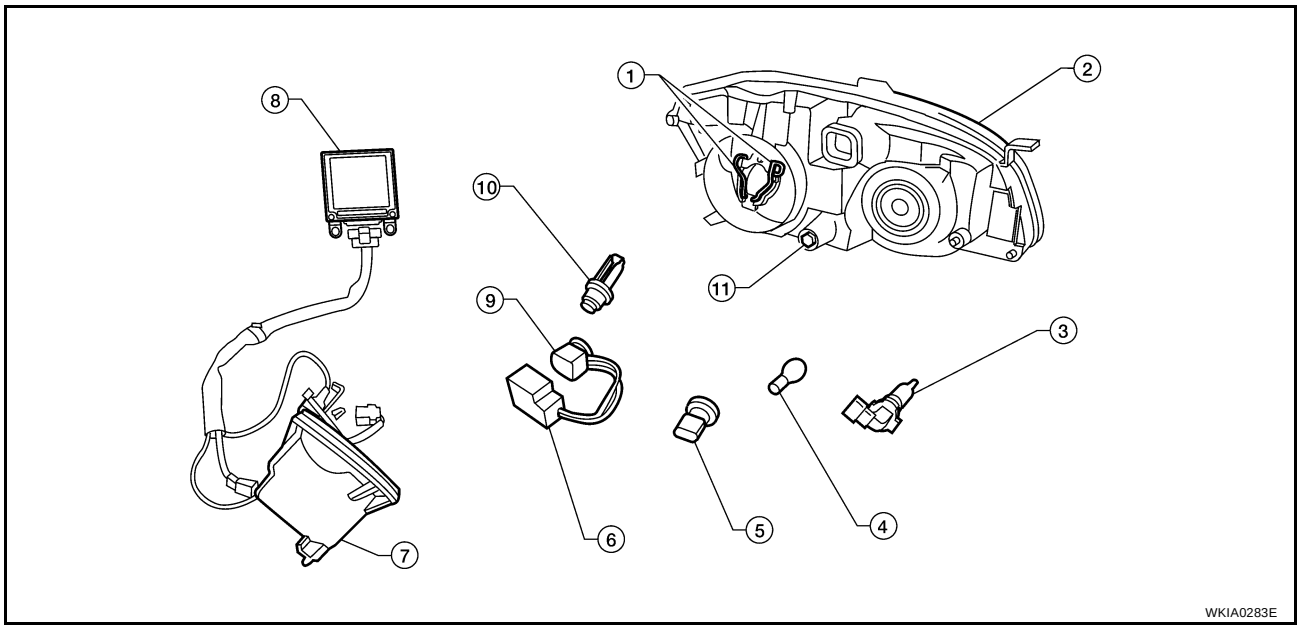
: 4.4 - 6.4 N·m (0.45 - 0.65 kg-m, 39 - 56 in-lb)

Disassembly and Assembly

EKS00418

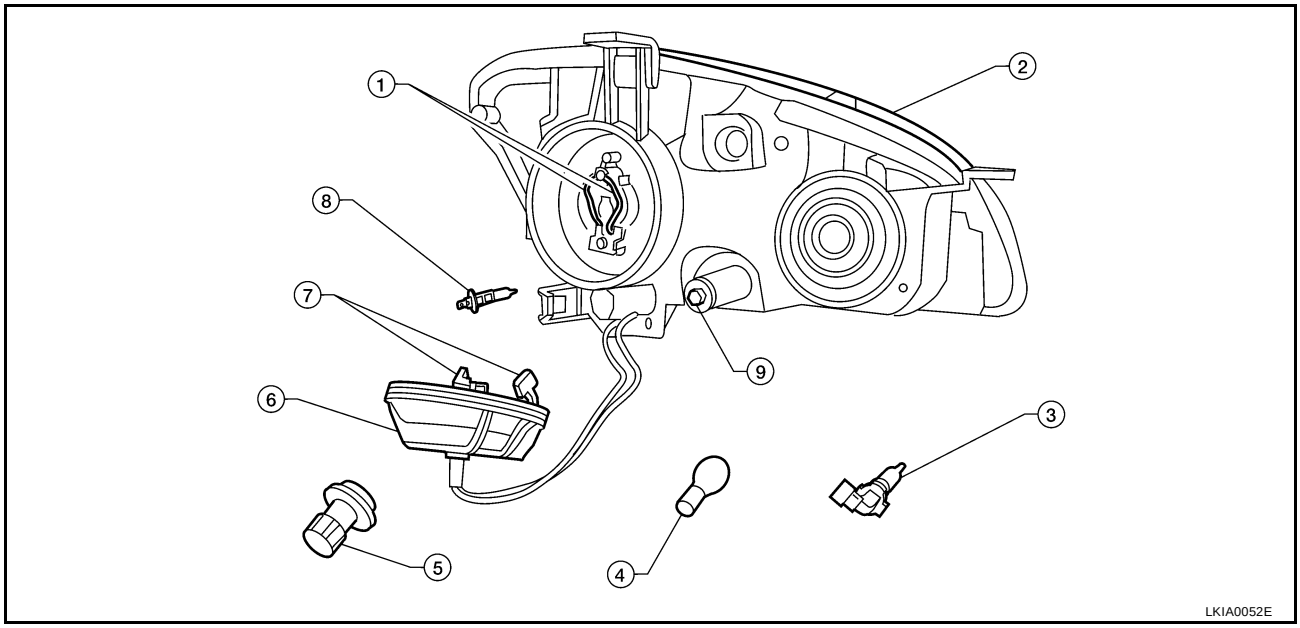
DISASSEMBLY

Xenon



1. Retaining springs
2. Headlamp assembly
3. Halogen bulb (high beam)
4. Front turn signal lamp bulb
5. Front turn signal bulb socket
6. Ignitor
7. Plastic cap
8. Ballast
9. Xenon bulb socket
10. Xenon bulb (low beam)
11. Aiming adjustment screw

Halogen



1. Retaining springs
2. Headlamp assembly
3. Halogen bulb (high beam)
4. Front turn signal lamp bulb
5. Front turn signal bulb socket
6. Plastic cap
7. Bulb terminal electrical connectors
8. Halogen bulb (low beam)
9. Aiming adjustment screw

1. Turn the low beam plastic cap counterclockwise to unlock and remove it.
2. Turn the bulb socket counterclockwise to unlock and remove it (xenon).
3. Disconnect the electrical connectors from the bulb terminals (halogen).
4. Unlock the retaining springs and remove the low beam bulb.
5. Release the ignitor and remove from the plastic cap (xenon).

6. Turn the high beam lamp socket counterclockwise to unlock and remove it.
7. Turn the front turn signal lamp bulb socket counterclockwise and unlock it.
8. Remove the front turn signal lamp bulb from its socket.

ASSEMBLY

Assemble in the reverse order of disassembly.

CAUTION:

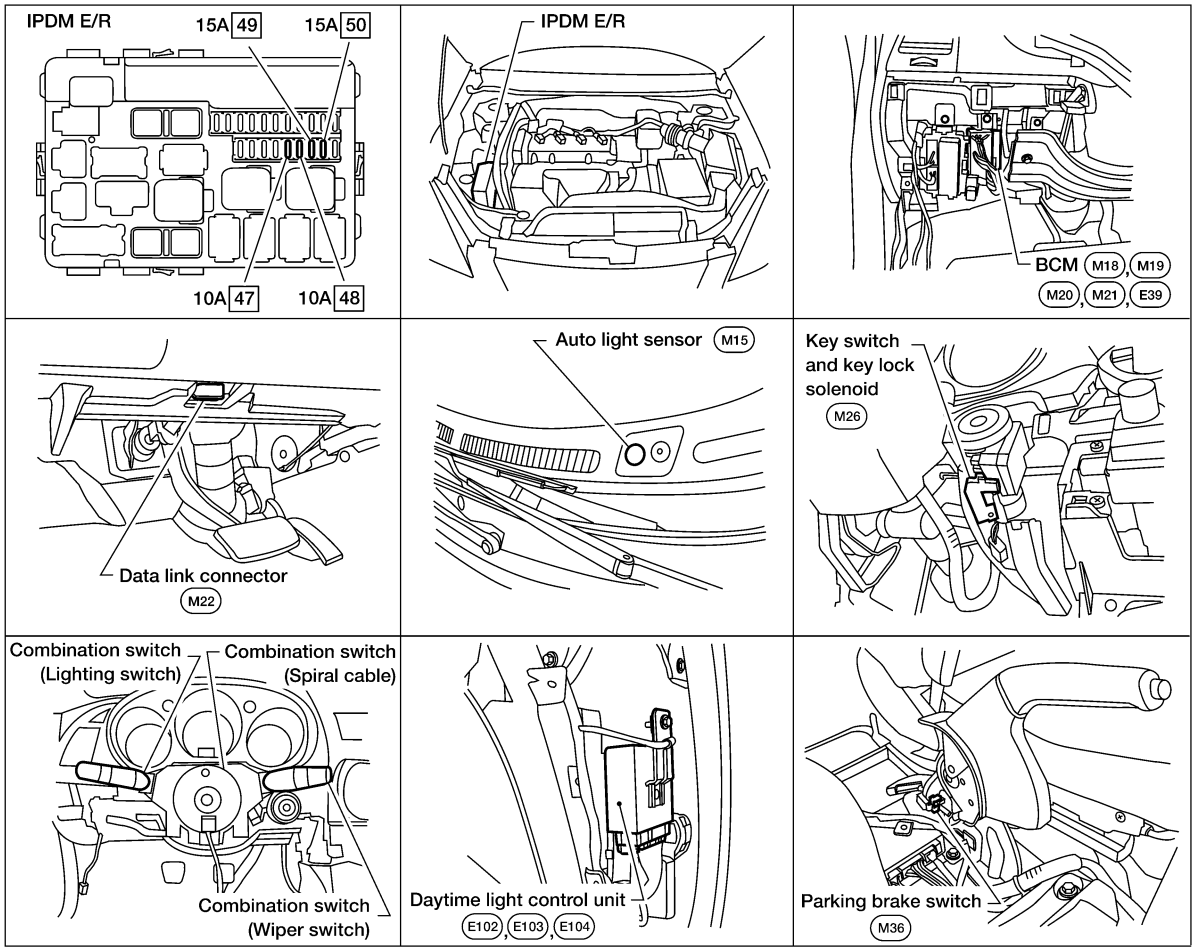
- **After installing the xenon bulb, be sure to install the bulb socket and plastic cap securely to ensure watertightness.**

HEADLAMP (FOR CANADA) - DAYTIME LIGHT SYSTEM -

PFP:26010

Component Parts and Harness Connector Location

EKS00419



WKIA0079E

System Description

EKS0041A

The headlamp system for Canada vehicles is equipped with a daytime light control unit that activates the high beam headlamps at approximately half illumination whenever the engine is running. If the parking brake is applied before the engine is started the daytime lights will not be illuminated. The daytime lights will illuminate once the parking brake is released. Thereafter, the daytime lights will continue to operate when the parking brake is applied.

Battery saver system is controlled by the BCM.

Power is supplied at all times

- to headlamp high relay located in the IPDM E/R (intelligent power distribution module engine room).

Power is also supplied at all times

- to BCM (body control module) terminal 7
- through 50A fusible link [letter **f** , located in the fuse and fusible link box].

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

- to daytime light control unit terminal 3
- through 10A fuse [No. 12, located in the fuse block (J/B)], and
- to BCM (body control module) terminal 35
- through 10A fuse [No. 12, located in the fuse block (J/B)].

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

- to BCM (body control module) terminal 36
- through 10A fuse [No. 6, located in the fuse block (J/B)].

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

- to daytime light control unit terminal 2
- through 10A fuse [No. 9, located in the fuse block (J/B)].

Ground is supplied

- to daytime light control unit terminals 13, 14, and 16
- through body grounds E15 and E24, and
- to BCM (body control module) terminals 8, 27, and 63
- through body grounds M57, M61, E15, and E24.

HEADLAMP OPERATION

Low Beam Operation

With the lighting switch in 2ND position, the BCM (body control module) receives input requesting the headlamps to illuminate. This input is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The central processing unit of the IPDM E/R controls the headlamp low relay coil. When energized, this relay directs power

- to 15A fuse [No. 50, located in the IPDM E/R]
- through terminal 27 of the IPDM E/R
- to terminal 1 of headlamp RH, and
- to 15A fuse [No. 49, located in the IPDM E/R]
- through terminal 21 of the IPDM E/R
- to terminal 1 of headlamp LH.

Ground is supplied at all times

- to terminal 2 of headlamp RH
- through body grounds E15 and E24, and
- to terminal 2 of headlamp LH
- through body grounds E15 and E24.

With power and ground supplied, low beam headlamps illuminate.

High Beam Operation/Flash-to-Pass Operation

With the lighting switch in 2ND position and placed in HIGH or PASS position, the BCM (body control module) receives input requesting the headlamp high beams to illuminate. This input is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The central processing unit of the IPDM E/R controls the headlamp high relay coil. When energized, this relay directs power

- to 10A fuse [No. 47, located in the IPDM E/R]
- through terminal 24 of the IPDM E/R
- to terminal 4 of the daytime light control unit
- through terminal 7 of the daytime light control unit
- to terminal 1 of headlamp RH, and
- to 10A fuse [No. 48, located in the IPDM E/R]
- through terminal 22 of the IPDM E/R
- to terminal 5 of the daytime light control unit
- through terminal 6 of the daytime light control unit
- to terminal 1 of headlamp LH.

Ground is supplied

- to terminal 2 of headlamp RH
- to terminal 9 of the daytime light control unit
- through terminal 14 of the daytime light control unit
- through body grounds E15 and E24, and
- to terminal 2 of headlamp LH
- to terminal 10 of the daytime light control unit
- through terminals 13 of the daytime light control unit
- through body grounds E15 and E24.

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

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 feature is activated.
Under this condition, the headlamps remain illuminated for 5 minutes, unless the combination switch (lighting switch) position is changed. If the combination switch (lighting switch) position is changed, then the headlamps are turned off.

AUTO LIGHT OPERATION

For auto light operation, refer to LT-46, "System Description" .

DAYTIME LIGHT OPERATION

With the engine running, the lighting switch in the OFF or 1ST position and parking brake released, power is supplied

- through daytime light control unit terminal 7
- to terminal 1 of RH headlamp
- through terminal 2 of RH headlamp
- to daytime light control unit terminal 9
- through daytime light control unit terminal 6
- to terminal 1 of LH headlamp
- through terminal 2 of LH headlamp
- to daytime light control unit terminal 10.

Ground is supplied

- to daytime light control unit terminals 13, 14, and 16
- through body grounds E15 and E24.

Because the high beam headlamps are now wired in series, they operate at half illumination.

XENON HEADLAMP (IF EQUIPPED)

The low beam headlamps may be equipped with xenon type bulbs. 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 added lighting power, electronic control of the power supply gives the headlamps stable quality and tone color.
Following are some of the advantages of the xenon type headlamp.

- The light produced by the headlamps is a white color comparable to sunlight that is easy on the eyes.
- Light output is nearly double that of halogen headlamps, affording increased area of illumination.
- The light features a high relative spectral distribution at wavelengths to which the human eye is most sensitive. This means that even in the rain, more light is reflected back from the road surface toward the vehicle, for added visibility.
- Power consumption is approximately 25 percent less than halogen headlamps, reducing battery load.

OPERATION

After starting the engine with the lighting switch in the “OFF” or 1ST position, the headlamp high beam automatically turns on. Lighting switch operations other than the above are the same as conventional light systems.

Engine		With engine stopped									With engine running								
Lighting switch		OFF			1ST			2ND			OFF			1ST			2ND		
		Hi	Lo	P	Hi	Lo	P	Hi	Lo	P	Hi	Lo	P	Hi	Lo	P	Hi	Lo	P
Headlamp	High beam	–	–	–	–	–	×	×	–	×	●*	●*	×	●*	●*	×	×	–	×
	Low beam	–	–	–	–	–	×	×	×	×	–	–	×	–	–	×	×	×	×
Tail lamp		–	–	–	×	×	×	×	×	×	–	–	–	×	×	×	×	×	×
License and instrument illumination lamp		–	–	–	×	×	×	×	×	×	–	–	–	×	×	×	×	×	×

- Hi: “HIGH BEAM” position
- Lo: “LOW BEAM” position

- P: “FLASH TO PASS” position
- ×: Lamp “ON”
- –: Lamp “OFF”
- ●: Lamp dims. (Added functions)
- *: When starting the engine with the parking brake released, the daytime lights will operate.
  When starting the engine with the parking brake pulled, the daytime lights will not operate.

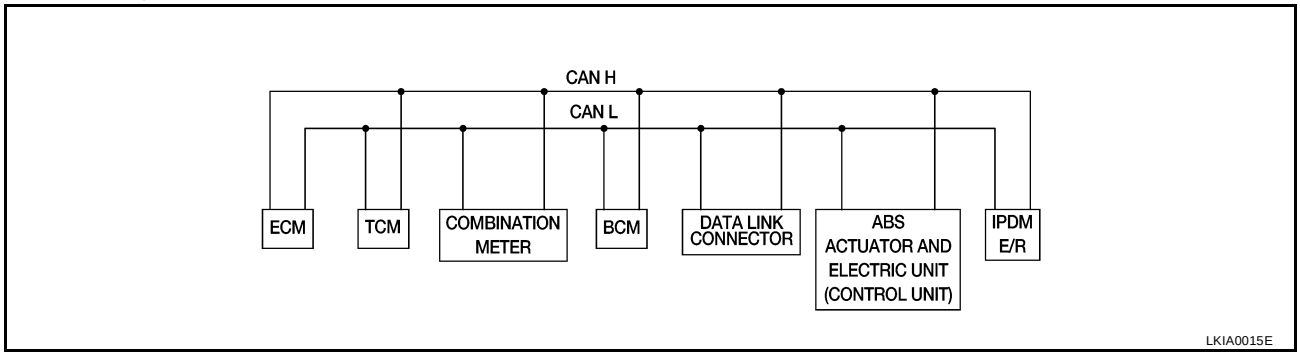
CAN Communication System Description

EKS0041B

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.

FOR TCS MODELS

System diagram



Input/output signal chart

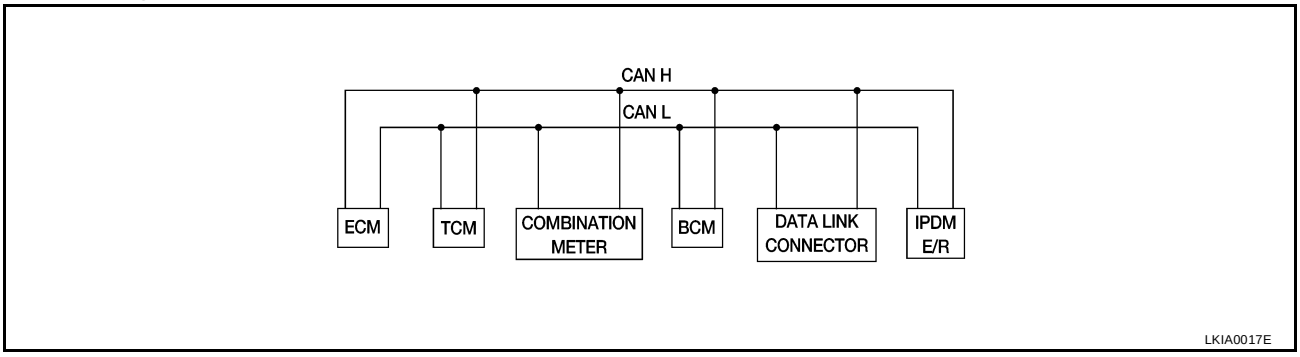
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Engine speed signal	T		R		R	
Engine coolant temperature signal	T		R			
Accelerator pedal position signal	T					
Fuel consumption monitor signal	T		R			
A/T warning lamp signal		T	R			
A/T position indicator signal	R	T	R	R(R range only)	R	
ABS operation signal	R				T	
TCS operation signal	R	R			T	
Air conditioner switch signal	R			T		
Air conditioner compressor signal	R					T
A/C compressor request signal	T					R
Cooling fan motor operation signal	R					T
Cooling fan speed request signal	T					R
Position lights request			R	T		R
Position lights status				R		T
Low beam request				T		R
Low beam status	R			R		T
High beam request			R	T		R
High beam status	R			R		T

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Front fog lights request				T		R
Front fog light status				R		T
OD cancel switch signal		R	T			R
Brake switch signal		R	T			
Vehicle speed signal	R		T			
	R		T	R		
Oil pressure switch			R			T
Sleep request1			R	T		
Sleep request2				T		R
N range switch signal		R	T			
P range switch signal		R	T			
Seat belt buckle switch signal			T	R		
Door switch signal			R	T		R
Tail lamp request			R	T		R
Turn indicator signal			R	T		
Buzzer output signal			R	T		
Trunk switch signal			R	T		
ASCD main switch signal	T		R			
ASCD cruise signal	T		R			
Wiper operation				R		T
Wiper stop position signal				R		T
Rear window defogger switch signal				T		R
Rear window defogger control signal	R			R		T

FOR A/T MODELS

System diagram



Input/output signal chart

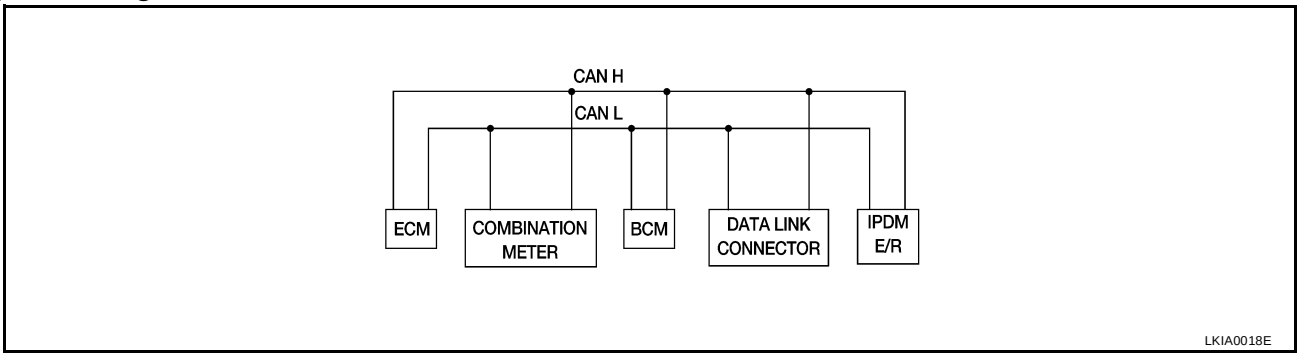
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T		R		
Engine coolant temperature signal	T		R		
Accelerator pedal position signal	T				R
Fuel consumption monitor signal	T		R		
A/T warning lamp signal		T	R		

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
A/T position indicator signal	R	T	R	R(R range only)	
Air conditioner switch signal	R			T	
Air conditioner compressor signal	R				T
A/C compressor request signal	T				R
Blower fan switch signal	R(QR25DE)			T	
Cooling fan motor operation signal	R			T	
Cooling fan speed request signal	T				R
Position lights request			R	T	R
Position lights status				R	T
Low beam request				T	R
Low beam status	R			R	T
High beam request			R	T	R
High beam status	R			R	T
Front fog lights request				T	R
Front fog light status				R	T
OD cancel switch signal		R	T		R
Brake switch signal		R	T		
Vehicle speed signal	R		T		
	R		T	R	
Oil pressure switch			R		T
Sleep request1			R	T	
Sleep request2				T	R
N range switch signal		R	T		
P range switch signal		R	T		
Seat belt buckle switch signal			T	R	
Door switch signal			R	T	R
Tail lamp request			R	T	R
Turn indicator signal			R	T	
Buzzer output signal			R	T	
Trunk switch signal			R	T	
ASCD main switch signal	T		R		
ASCD cruise signal	T		R		
Wiper operation				R	T
Wiper stop position signal				R	T
Rear window defogger switch signal				T	R
Rear window defogger control signal	R			R	T

FOR M/T MODELS

System diagram



Input/output signal chart

T: Transmit R: Receive

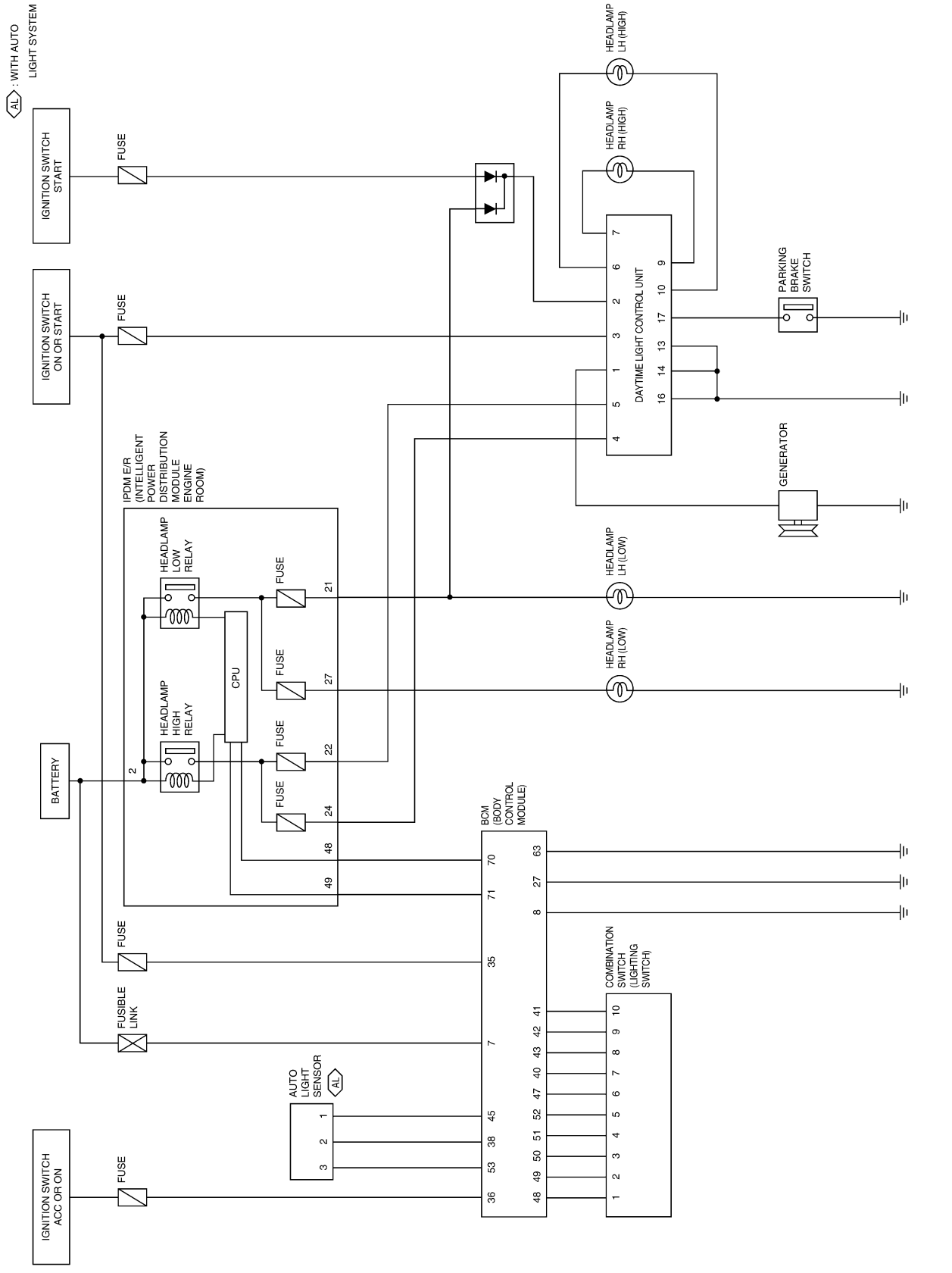
Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T			
Engine coolant temperature signal	T			
Fuel consumption monitor signal	T			
Air conditioner switch signal	R		T	
Air conditioner compressor signal	R			T
A/C compressor request signal	T			R
Blower fan switch signal	R(QR25DE)		T	
Cooling fan motor operation signal	R			T
Cooling fan speed request signal	T			R
Position lights request		R	T	R
Position lights status			R	T
Low beam request			T	R
Low beam status	R		R	T
High beam request		R	T	R
High beam status	R		R	T
Front fog lights request			T	R
Front fog light status			R	T
Vehicle speed signal	R	T		
Oil pressure switch		R		T
Sleep request1		R	T	
Sleep request2			T	R
Seat belt buckle switch signal		T	R	
Door switch signal		R	T	R
Tail lamp request		R	T	R
Turn indicator signal		R	T	
Buzzer output signal		R	T	
Trunk switch signal		R	T	
ASCD main switch signal	T	R		
ASCD cruise signal	T	R		
Wiper operation			R	T
Wiper stop position signal			R	T

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Rear window defogger switch signal			T	R
Rear window defogger control signal	R		R	T

Schematic

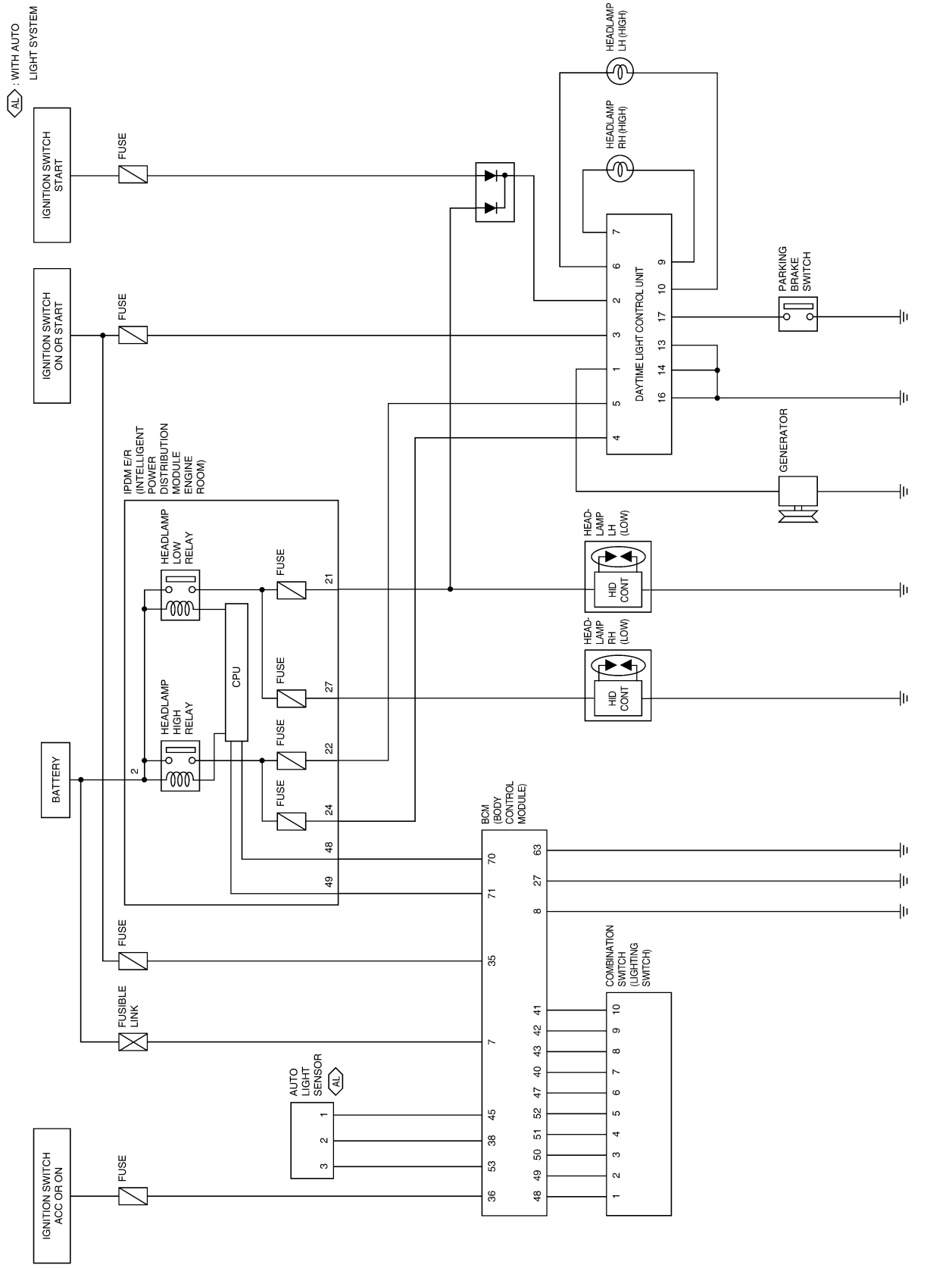
EKS0041C

HALOGEN



LKWA0023E

XENON

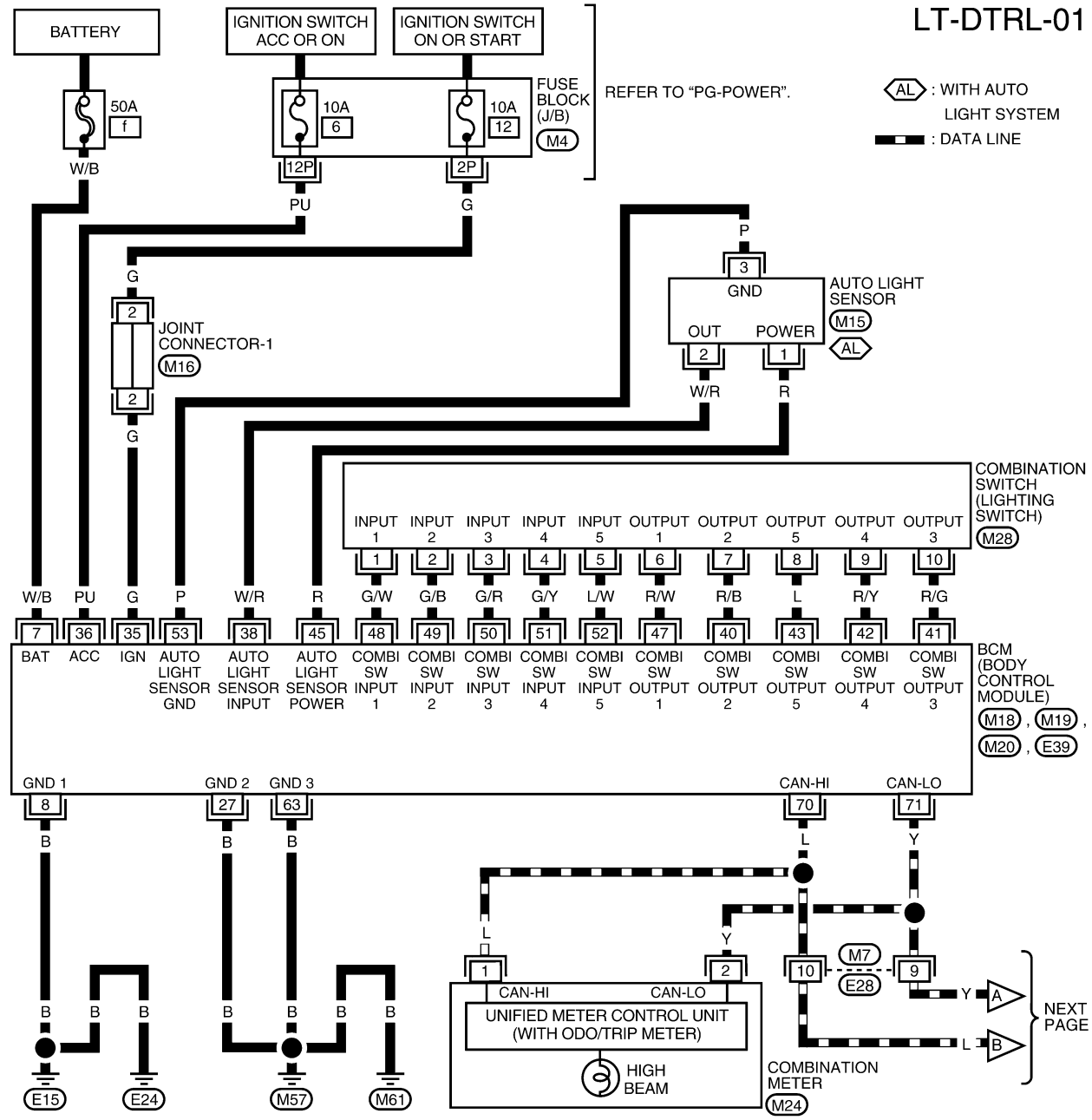


LKWA0024E

Wiring Diagram — DTRL —

EKS0041D

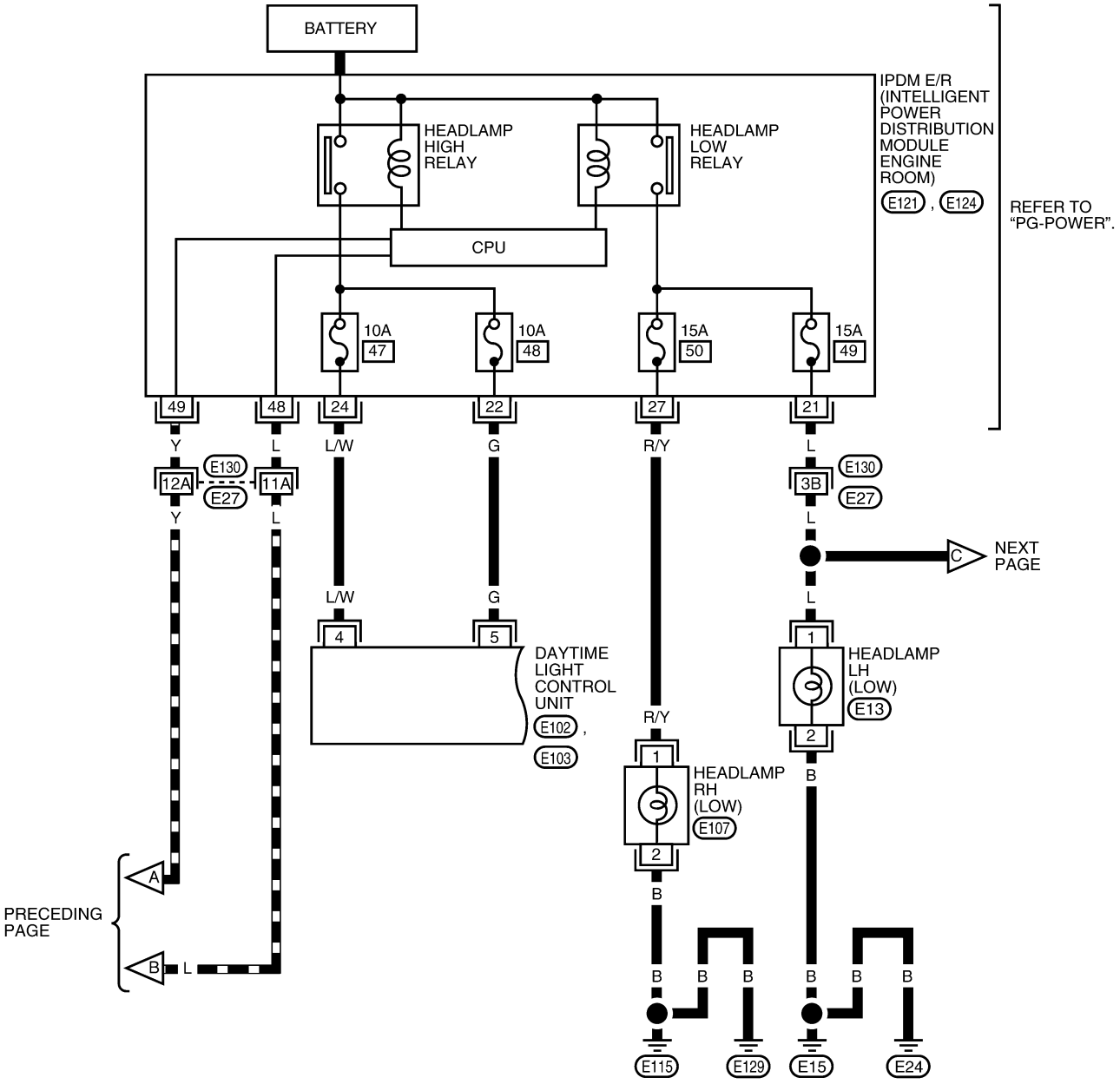
HALOGEN

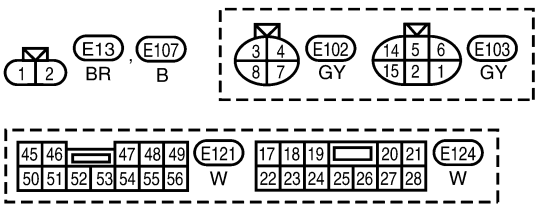


LKWA0025E

LT-DTRL-02

: DATA LINE

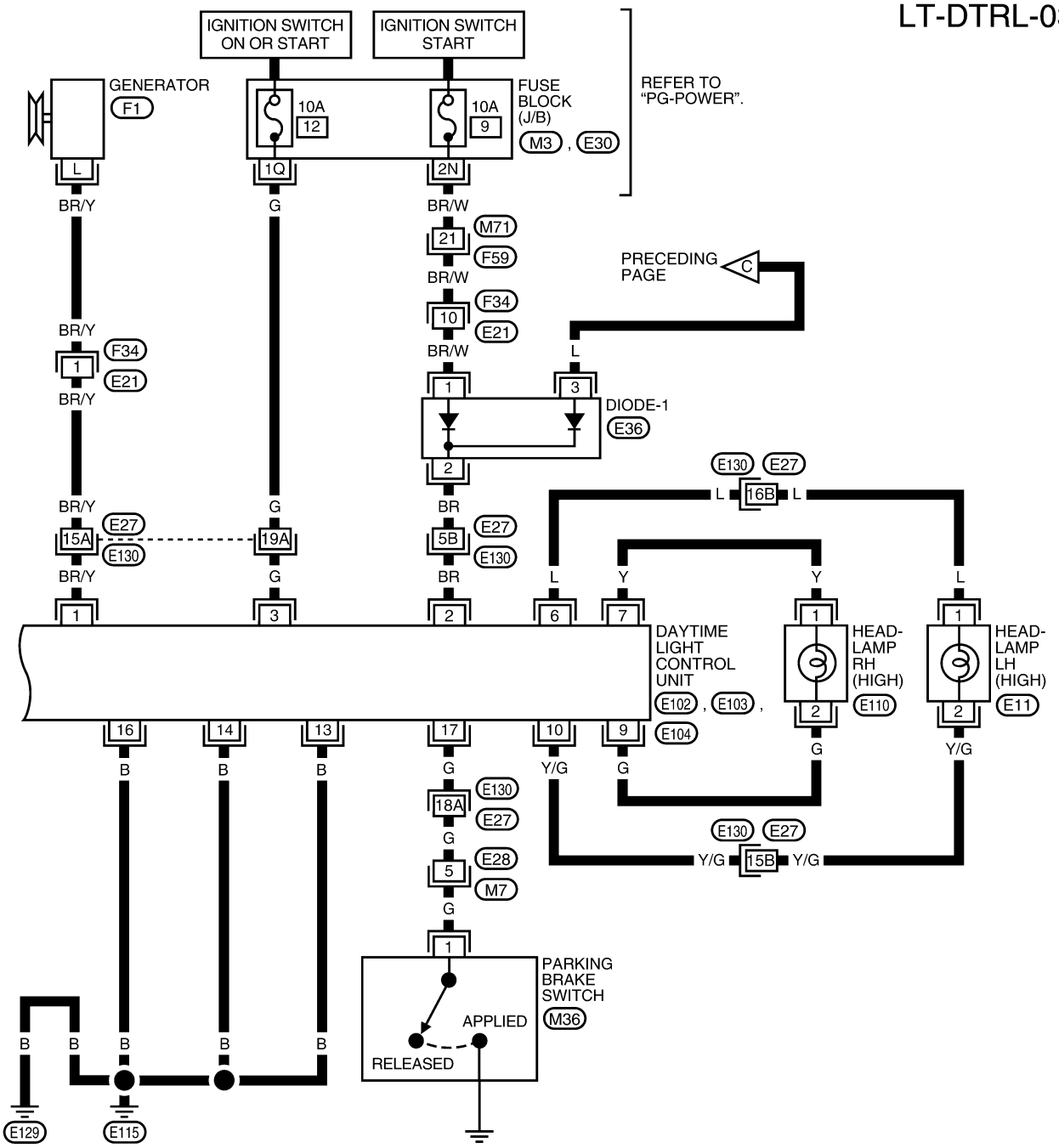


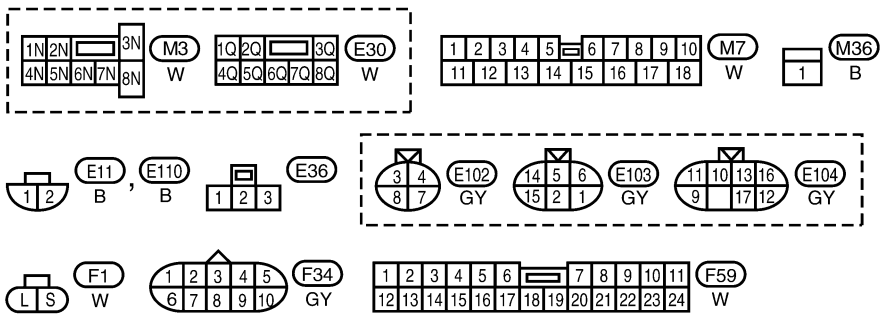


REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

LKWA0026E

LT-DTRL-03

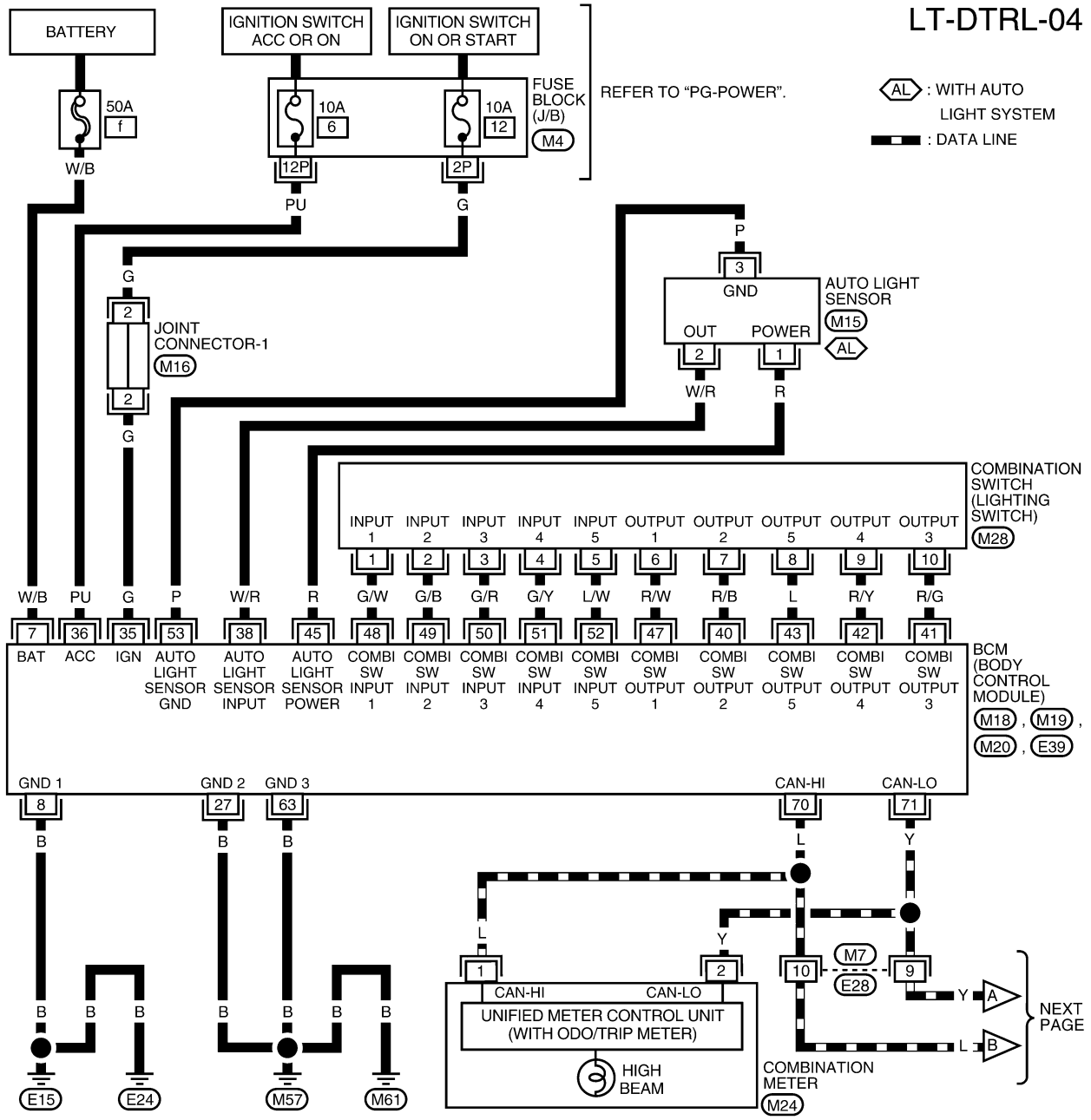




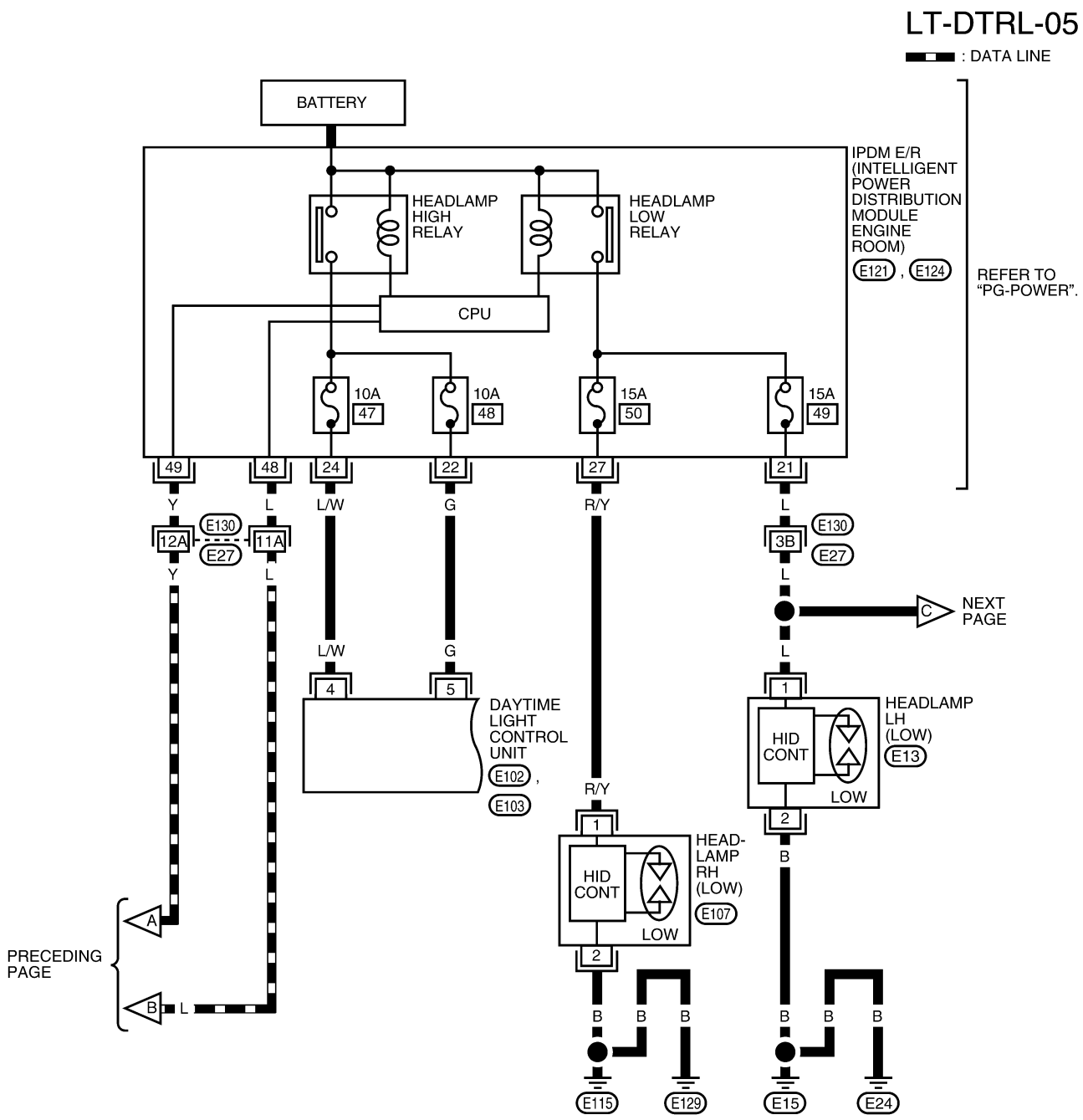
REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

LKWA0027E

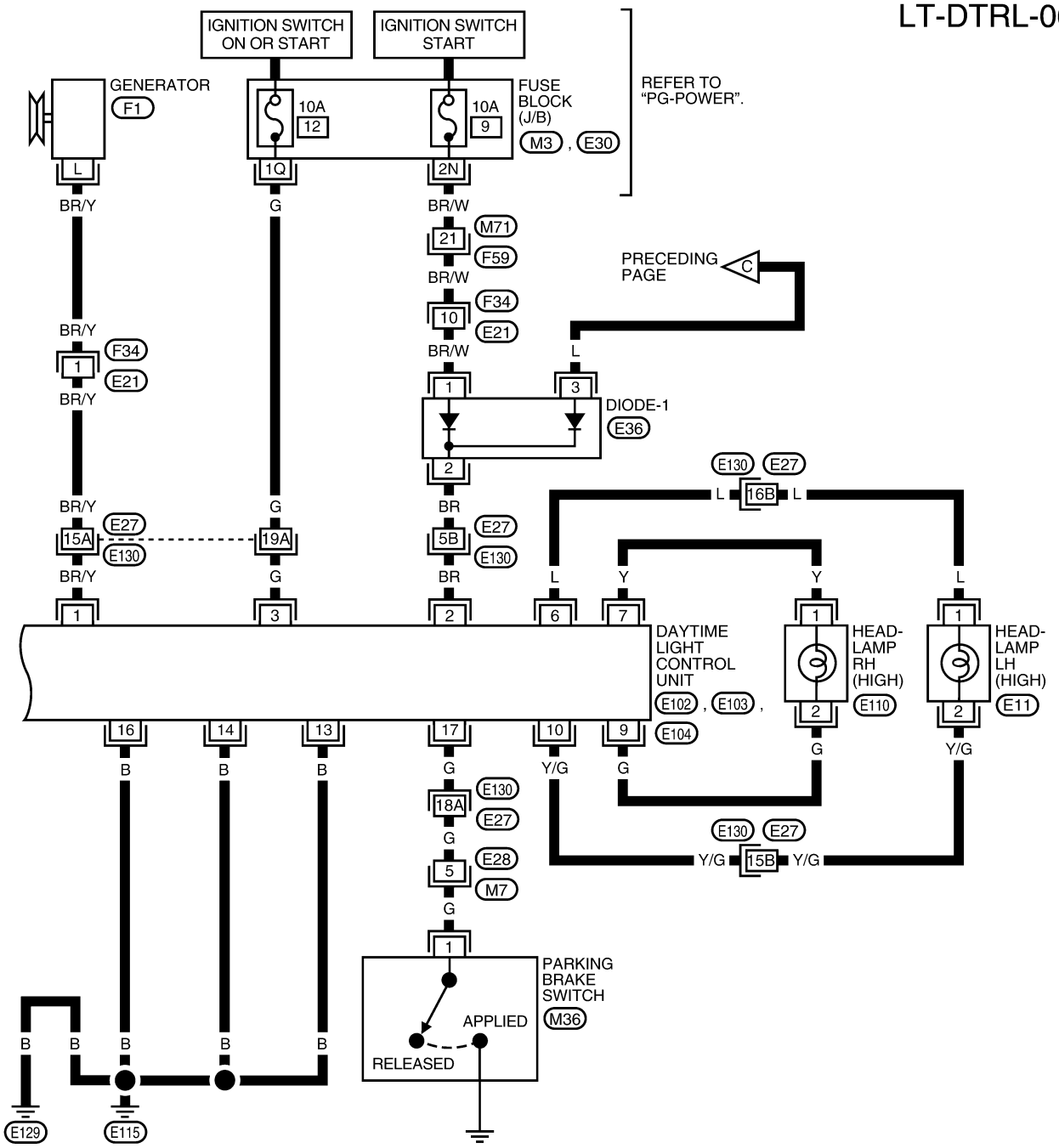
XENON

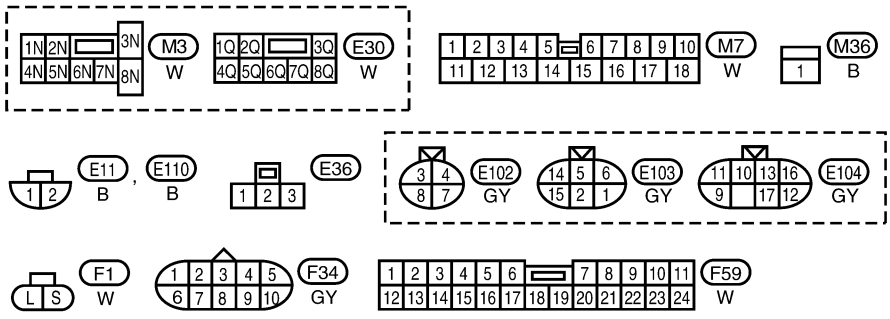


LKWA0028E


LT-DTRL-05
: DATA LINE
BATTERY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E121 , E124
REFER TO "PG-POWER".
HEADLAMP HIGH RELAY
HEADLAMP LOW RELAY
CPU
10A 47
10A 48
15A 50
15A 49
49 48 24 22 27 21
Y L L/W G R/Y L
12A E130 E27 11A
3B E130 E27
C NEXT PAGE
4 5
DAYTIME LIGHT CONTROL UNIT
E102 , E103
1 HID CONT 2 LOW
HEADLAMP LH (LOW) E13
HEAD-LAMP RH (LOW) E107
A PRECEDING PAGE
B L
B B B
E115 E129 E15 E24
E13 BR , E107 BR
E102 GY
E103 GY
E121 W
E124 W
REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)
LKWA0029E

LT-DTRL-06





REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

LKWA0030E

Terminals and Reference Value for Daytime Light Control Unit

EKS0041E

Terminal No.	Wire color	Item	Condition	Voltage (Approx.)
1	BR/Y	Generator	When turning ignition switch to “ON”	Less than 1V
			When engine is running	Battery voltage
			When turning ignition switch to “OFF”	Less than 1V
2	BR	Start signal	When turning ignition switch to “START”	Battery voltage
			When turning ignition switch to “ON” from “START”	Less than 1V
			When turning ignition switch to “OFF”	Less than 1V
3	G	Power source	When turning ignition switch to “ON”	Battery voltage
			When turning ignition switch to “START”	Battery voltage
			When turning ignition switch to “OFF”	Less than 1V
4	L/W	LH light fuse	When lighting switch is turned to the 2ND position with “HI BEAM” or “FLASH TO PASS” position	Battery voltage
			When lighting switch is turned to “FLASH TO PASS” position with ignition switch “ON” position	Battery voltage
5	G	RH light fuse	When lighting switch is turned to the 2ND position with “HI BEAM” or “FLASH TO PASS” position	Battery voltage
			When lighting switch is turned to “FLASH TO PASS” position with ignition switch “ON” position	Battery voltage
6	L	LH HI beam	When lighting switch is turned to the 2ND position with “HI BEAM” or “FLASH TO PASS” position	Battery voltage
			When releasing parking brake with engine running and turning lighting switch to “OFF” (daytime light operation) **CAUTION:** **Block wheels and ensure selector lever is in N or P position.**	Half battery voltage
7	Y	RH HI beam	When lighting switch is turned to the 2ND position with “HI BEAM” or “FLASH TO PASS” position	Battery voltage
			When releasing parking brake with engine running and turning lighting switch to “OFF” (daytime light operation) **CAUTION:** **Block wheels and ensure selector lever is in N or P position.**	Battery voltage
9	G	RH HI beam (ground)	When turning lighting switch to the 2ND position with “HI BEAM“ or “FLASH TO PASS” position	Less than 1V
			When releasing parking brake with engine running and turning lighting switch to “OFF” (daytime light operation) **CAUTION:** **Block wheels and ensure selector lever is in N or P position.**	Half battery voltage
10	Y/G	LH HI beam (ground)	When turning lighting switch to the 2ND position with “HI BEAM” or “FLASH TO PASS” position	Less than 1V
			When releasing parking brake with engine running and turning lighting switch to “OFF” (daytime light operation) **CAUTION:** **Block wheels and ensure selector lever is in N or P position.**	Less than 1V
13	B	Ground	—	—
14	B	Ground	—	—
16	B	Ground	—	—

Terminal No.	Wire color	Item	Condition	Voltage (Approx.)
17	G	Parking brake switch	When parking brake is released	Battery voltage
			When parking brake is set	Less than 1.7V

Aiming Adjustment

EKS0041F

Refer to LT-23, "Aiming Adjustment" .

Bulb Replacement

EKS0041G

Refer to LT-24, "Bulb Replacement" .

Removal and Installation

EKS0041H

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

Disassembly and Assembly

EKS0041I

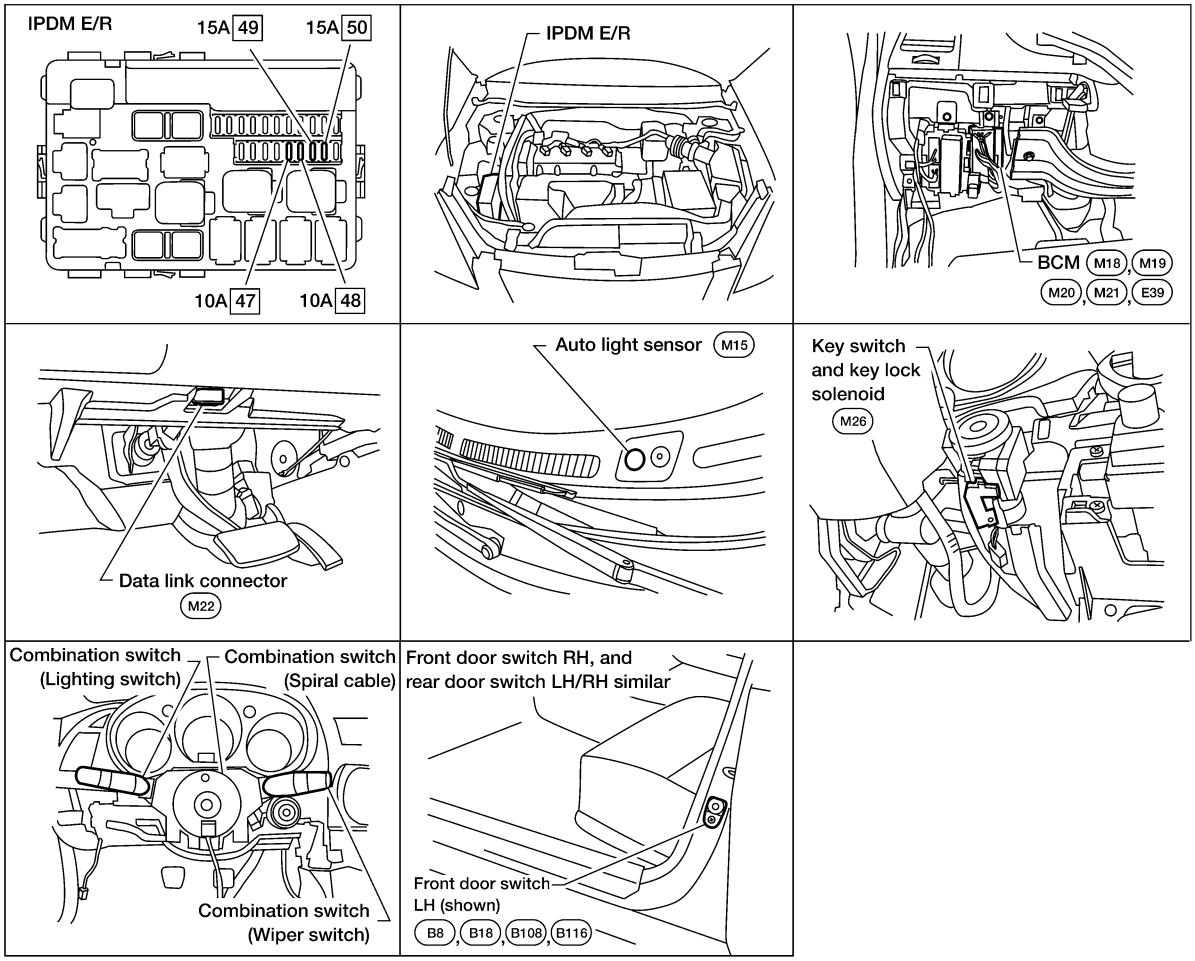
Refer to LT-26, "Disassembly and Assembly" .

AUTO LIGHT SYSTEM

PFP:28491

Component Parts and Harness Connector Location

EKS0041J



WKIA0147E

System Description

EKS0041K

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

OUTLINE

The auto light control system uses an optical sensor that detects the brightness of outside light.
When the lighting switch is in AUTO position, it automatically turns on/off the parking lamps and the headlamps (and fog lamps, if equipped) in accordance with the ambient light. Sensitivity can be adjusted in four steps. For the details of the setting, refer to LT-64, "SETTING CHANGE FUNCTIONS" .
When the lighting switch is in "AUTO" position, power is supplied

- from BCM (body control module) terminal 45
- to auto light sensor terminal 1.

When lighting switch is in “AUTO” position, ground is supplied

- from BCM (body control module) terminal 53
- to auto light sensor terminal 3.

When ignition switch is turn to "ON” or ”START” position, and
when outside brightness is darker than prescribed level, input is supplied

- to BCM (body control module) terminal 38
- from auto light sensor terminal 2.

The headlamps will then illuminate. For a description of headlamp operation, refer to LT-5, "System Description" (USA), or LT-28, "System Description" (Canada).

BATTERY SAVER CONTROL

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

SHUT OFF DELAY

When the ignition switch is turned from ON to OFF while the auto light system is activated and the headlamps are illuminated, the shut off delay feature is activated. Under this condition, the BCM no longer receives a voltage signal at terminal 35, and this starts the auto light shut off delay timer. The shut off delay timer is active until one of the doors is opened, or the combination switch (lighting switch) position is changed. If one of the doors is opened, the shut off delay feature is deactivated, and the battery saver control feature is activated. If the combinations switch (lighting switch) position is changed, the headlamps are turned off.

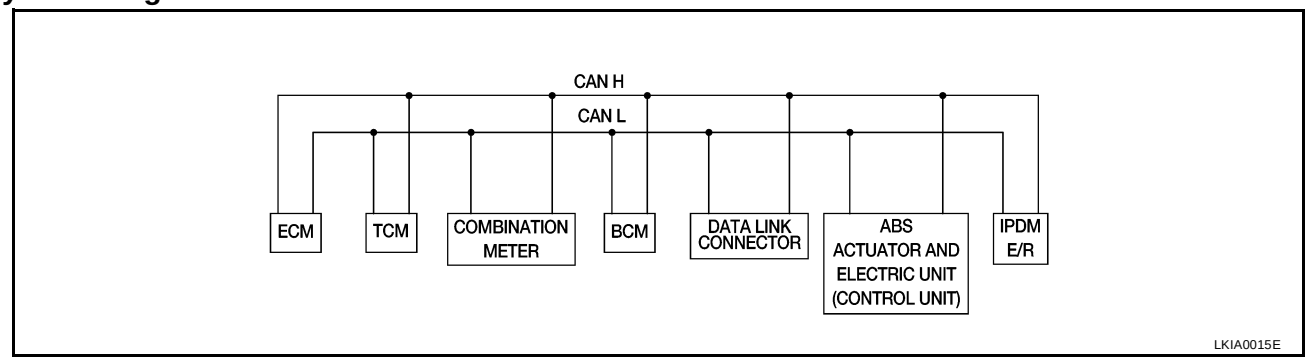
CAN Communication System Description

EKS0041L

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.

FOR TCS MODELS

System diagram



Input/output signal chart

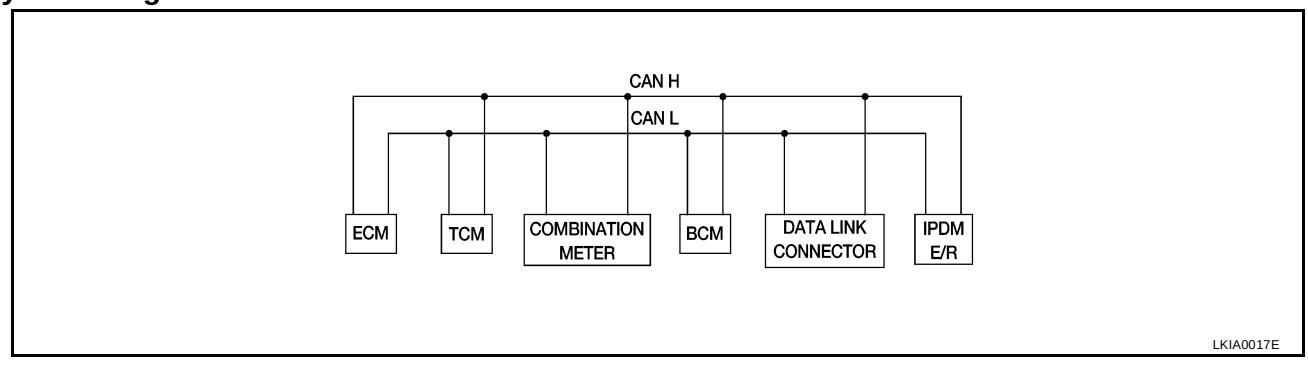
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Engine speed signal	T		R		R	
Engine coolant temperature signal	T		R			
Accelerator pedal position signal	T					
Fuel consumption monitor signal	T		R			
A/T warning lamp signal		T	R			
A/T position indicator signal	R	T	R	R(R range only)	R	
ABS operation signal	R				T	
TCS operation signal	R	R			T	
Air conditioner switch signal	R			T		
Air conditioner compressor signal	R					T
A/C compressor request signal	T					R
Cooling fan motor operation signal	R					T
Cooling fan speed request signal	T					R
Position lights request			R	T		R

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Position lights status				R		T
Low beam request				T		R
Low beam status	R			R		T
High beam request			R	T		R
High beam status	R			R		T
Front fog lights request				T		R
Front fog light status				R		T
OD cancel switch signal		R	T			R
Brake switch signal		R	T			
Vehicle speed signal	R		T			
	R		T	R		
Oil pressure switch			R			T
Sleep request1			R	T		
Sleep request2				T		R
N range switch signal		R	T			
P range switch signal		R	T			
Seat belt buckle switch signal			T	R		
Door switch signal			R	T		R
Tail lamp request			R	T		R
Turn indicator signal			R	T		
Buzzer output signal			R	T		
Trunk switch signal			R	T		
ASCD main switch signal	T		R			
ASCD cruise signal	T		R			
Wiper operation				R		T
Wiper stop position signal				R		T
Rear window defogger switch signal				T		R
Rear window defogger control signal	R			R		T

FOR A/T MODELS

System diagram



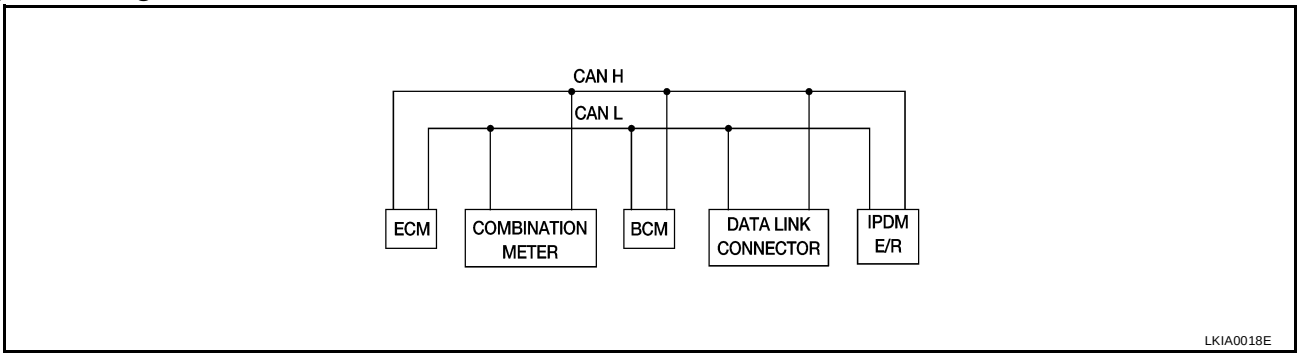
Input/output signal chart

T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T		R		
Engine coolant temperature signal	T		R		
Accelerator pedal position signal	T				R
Fuel consumption monitor signal	T		R		
A/T warning lamp signal		T	R		
A/T position indicator signal	R	T	R	R(R range only)	
Air conditioner switch signal	R			T	
Air conditioner compressor signal	R				T
A/C compressor request signal	T				R
Blower fan switch signal	R(QR25DE)			T	
Cooling fan motor operation signal	R			T	
Cooling fan speed request signal	T				R
Position lights request			R	T	R
Position lights status				R	T
Low beam request				T	R
Low beam status	R			R	T
High beam request			R	T	R
High beam status	R			R	T
Front fog lights request				T	R
Front fog light status				R	T
OD cancel switch signal		R	T		R
Brake switch signal		R	T		
Vehicle speed signal	R		T		
	R		T	R	
Oil pressure switch			R		T
Sleep request1			R	T	
Sleep request2				T	R
N range switch signal		R	T		
P range switch signal		R	T		
Seat belt buckle switch signal			T	R	
Door switch signal			R	T	R
Tail lamp request			R	T	R
Turn indicator signal			R	T	
Buzzer output signal			R	T	
Trunk switch signal			R	T	
ASCD main switch signal	T		R		
ASCD cruise signal	T		R		
Wiper operation				R	T
Wiper stop position signal				R	T
Rear window defogger switch signal				T	R
Rear window defogger control signal	R			R	T

FOR M/T MODELS

System diagram



Input/output signal chart

T: Transmit R: Receive

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T			
Engine coolant temperature signal	T			
Fuel consumption monitor signal	T			
Air conditioner switch signal	R		T	
Air conditioner compressor signal	R			T
A/C compressor request signal	T			R
Blower fan switch signal	R(QR25DE)		T	
Cooling fan motor operation signal	R			T
Cooling fan speed request signal	T			R
Position lights request		R	T	R
Position lights status			R	T
Low beam request			T	R
Low beam status	R		R	T
High beam request		R	T	R
High beam status	R		R	T
Front fog lights request			T	R
Front fog light status			R	T
Vehicle speed signal	R	T		
Oil pressure switch		R		T
Sleep request1		R	T	
Sleep request2			T	R
Seat belt buckle switch signal		T	R	
Door switch signal		R	T	R
Tail lamp request		R	T	R
Turn indicator signal		R	T	
Buzzer output signal		R	T	
Trunk switch signal		R	T	
ASCD main switch signal	T	R		
ASCD cruise signal	T	R		
Wiper operation			R	T
Wiper stop position signal			R	T

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Rear window defogger switch signal			T	R
Rear window defogger control signal	R		R	T

Major Components and Functions

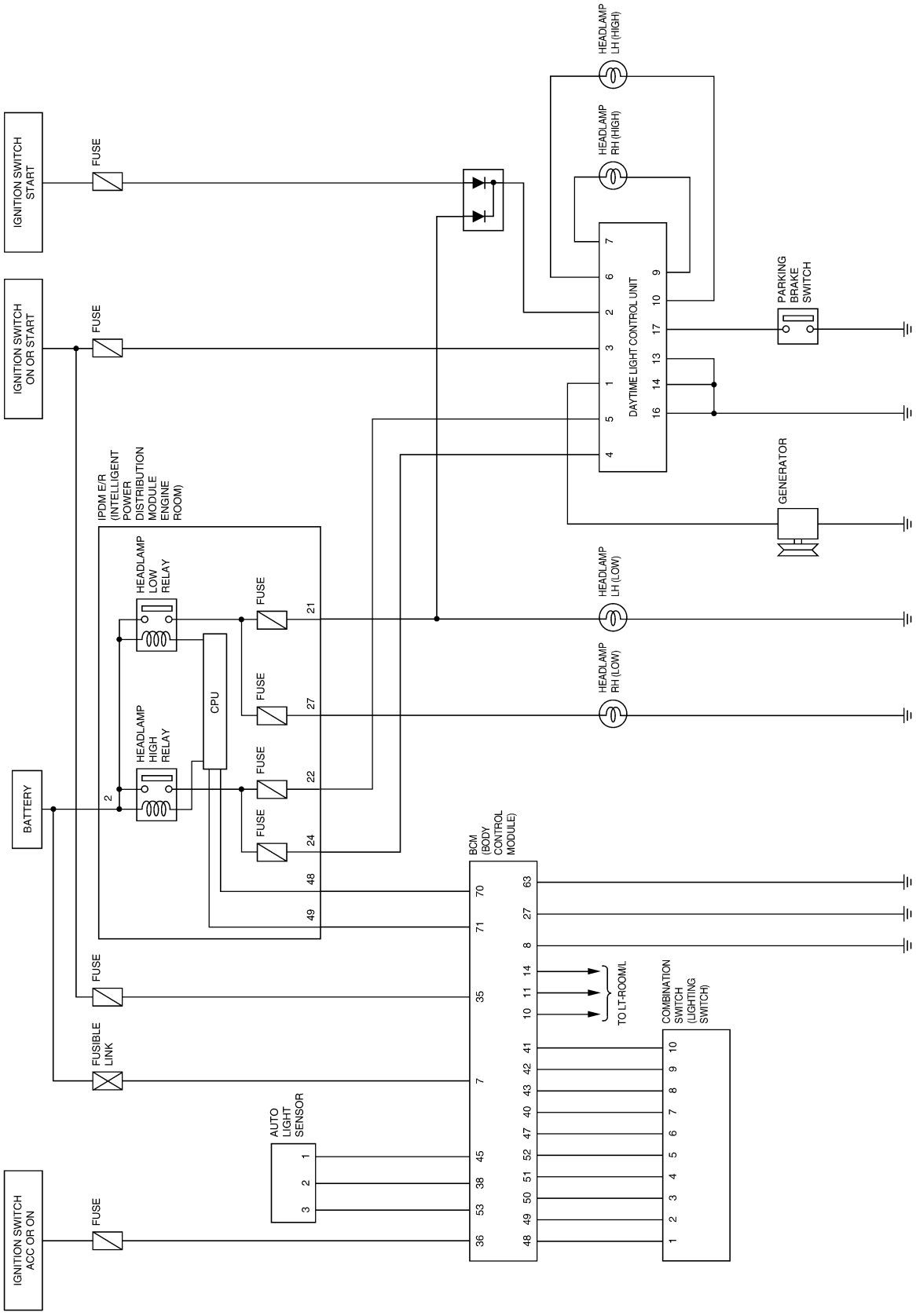
EKS0041M

Components	Functions
BCM	● Turns on/off circuits of tail light and headlamp according to signals from light sensor, lighting switch (AUTO), driver door switch, and ignition switch (ON, OFF), and vehicle signal from combination meter.
Auto light sensor	● Converts ambient light (lux) to voltage, and sends it to BCM. (Detects light from 50 to 1,300 lux)
Combination meter	● Sends vehicle signal to BCM via CAN communication line.

Schematic

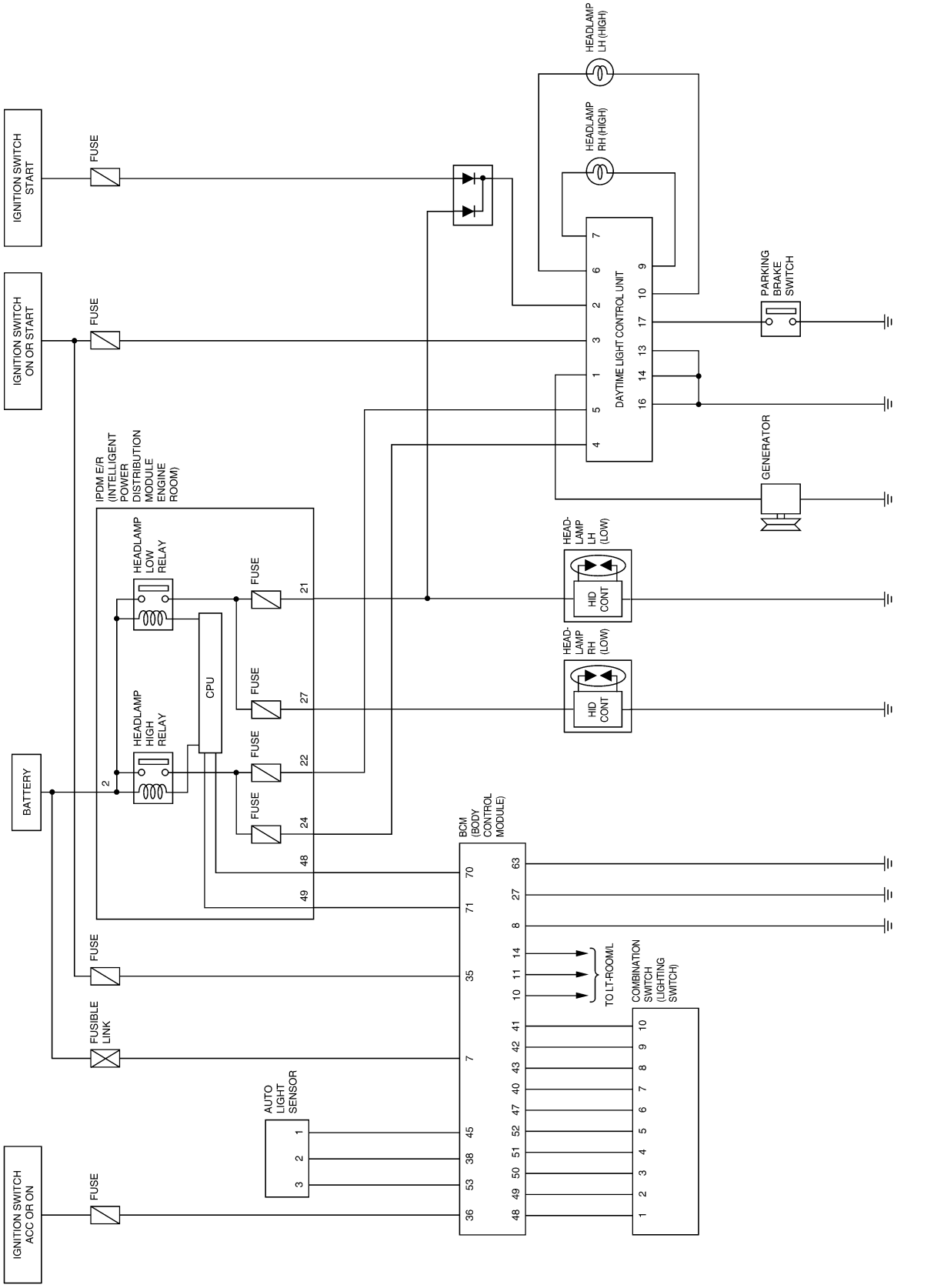
EKS0041N

HALOGEN (WITH DAYTIME LIGHT SYSTEM)



WKWA0098E

XENON (WITH DAYTIME LIGHT SYSTEM)

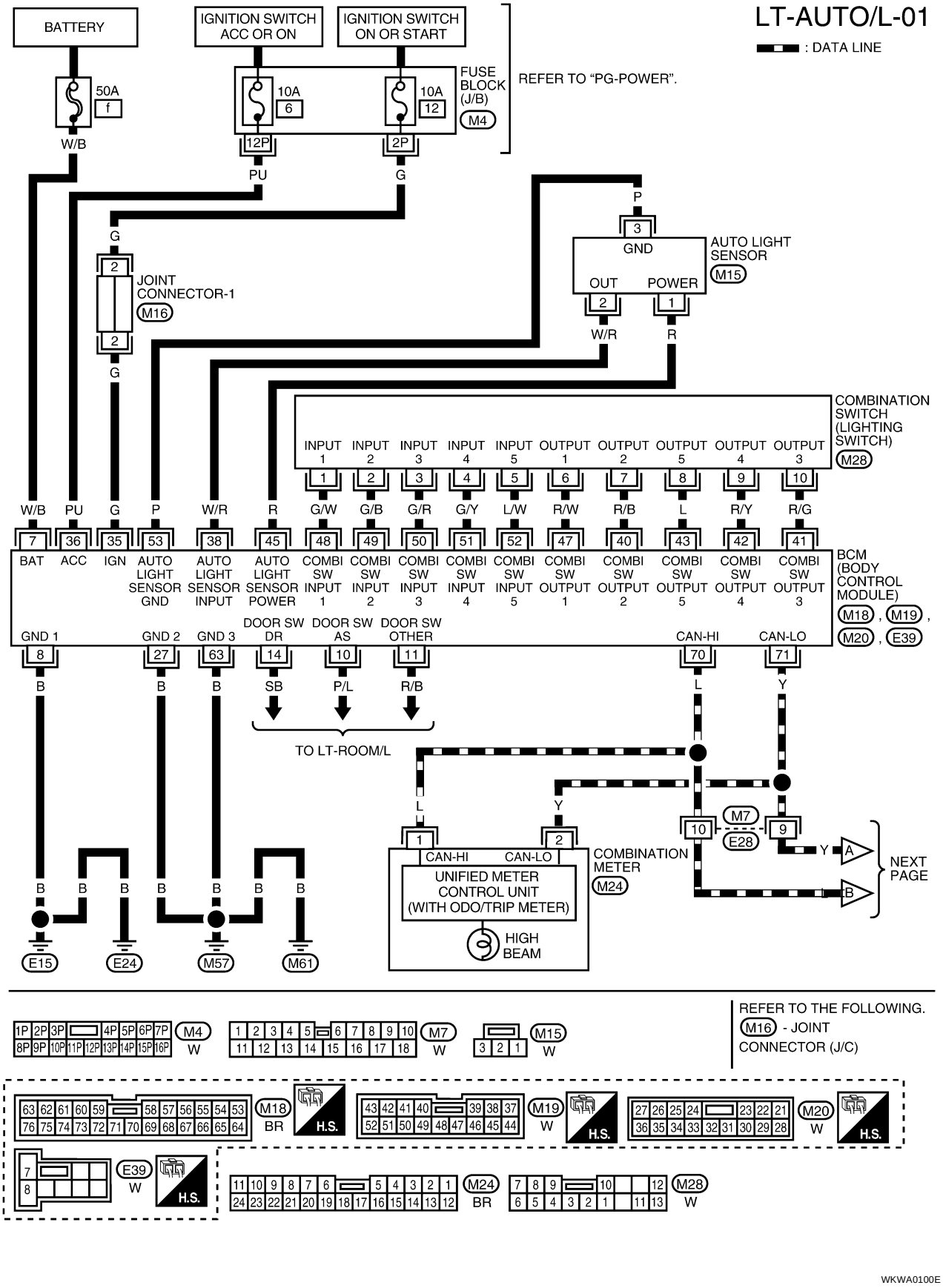


WKWA0099E

Wiring Diagram — AUTO/L —

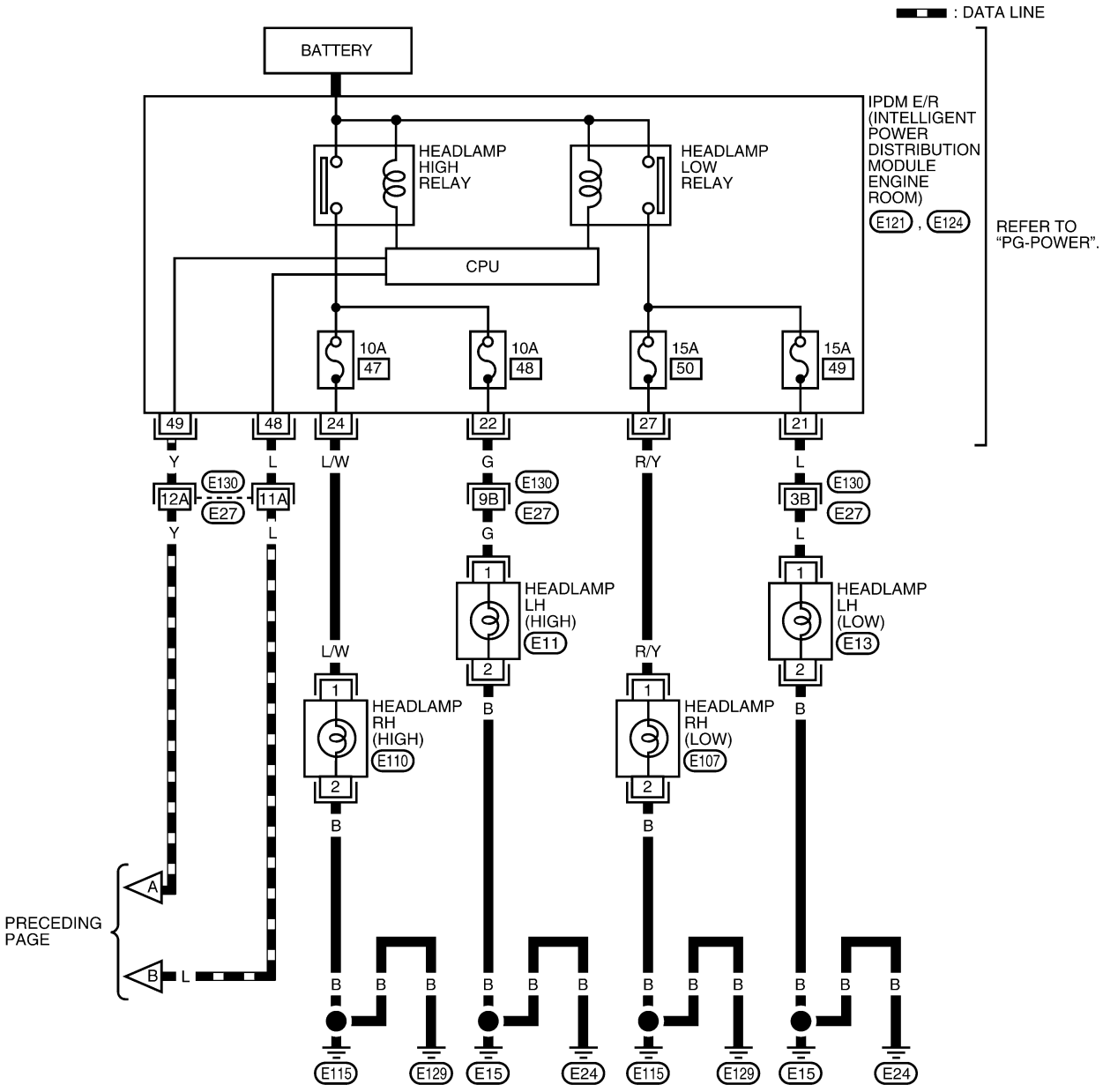
EKS0041O

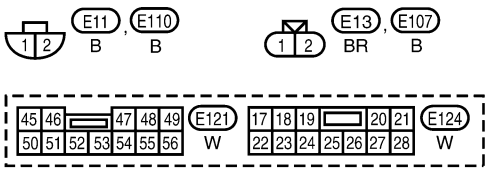
HALOGEN (USA)



WKWA0100E

LT-AUTO/L-02

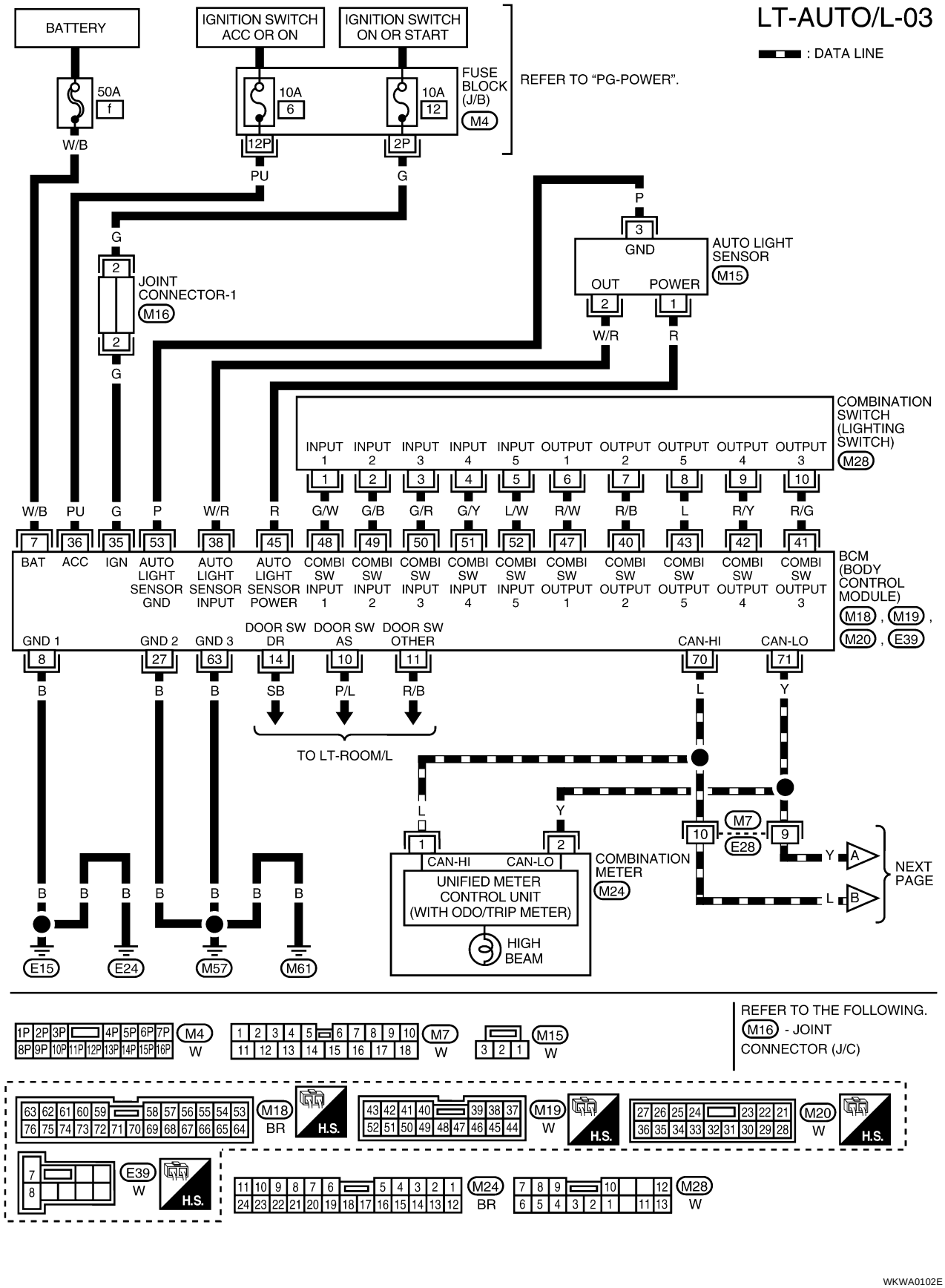




REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA0101E

XENON (USA)



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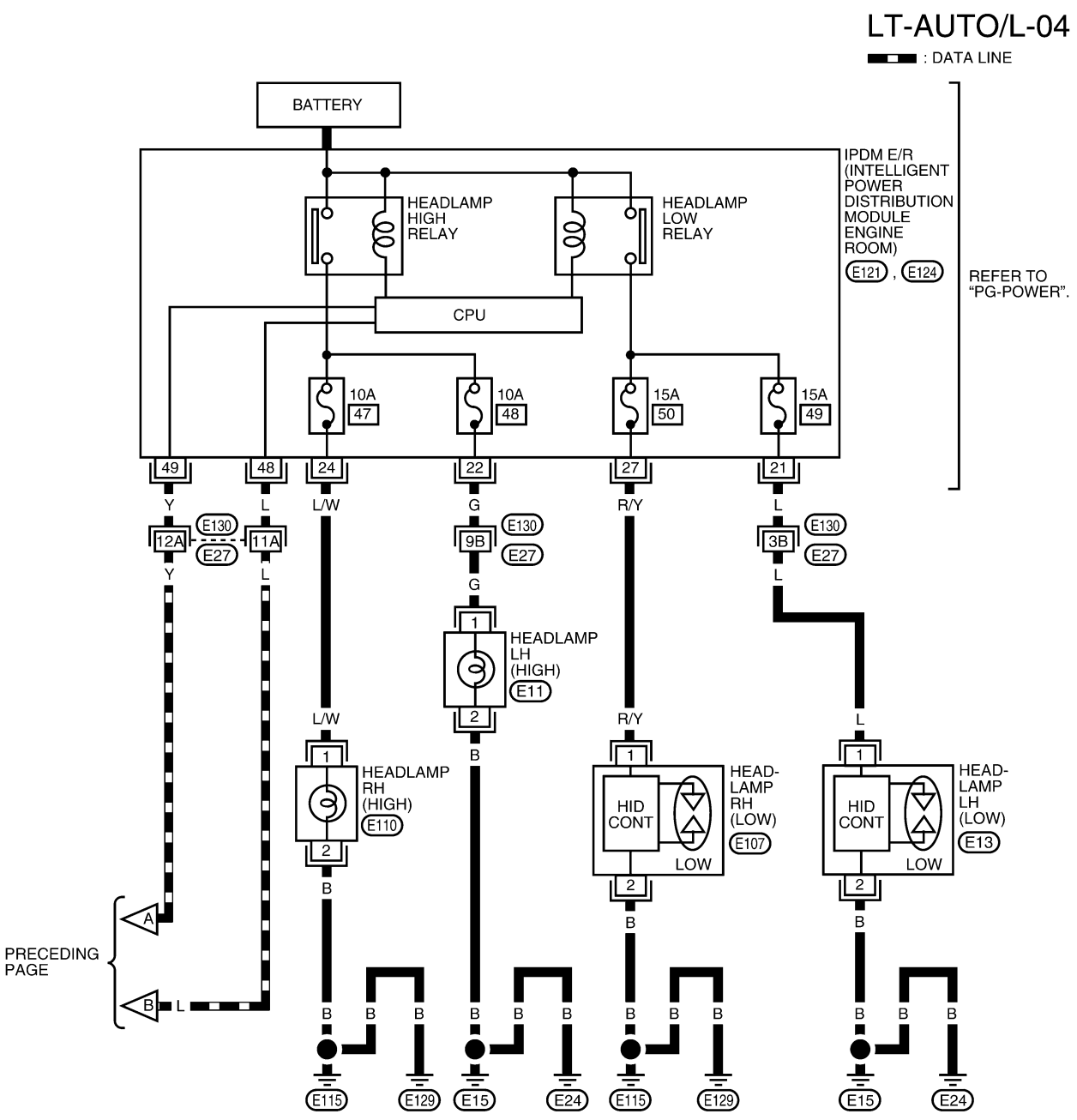

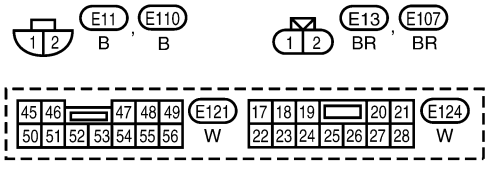

REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA0103E

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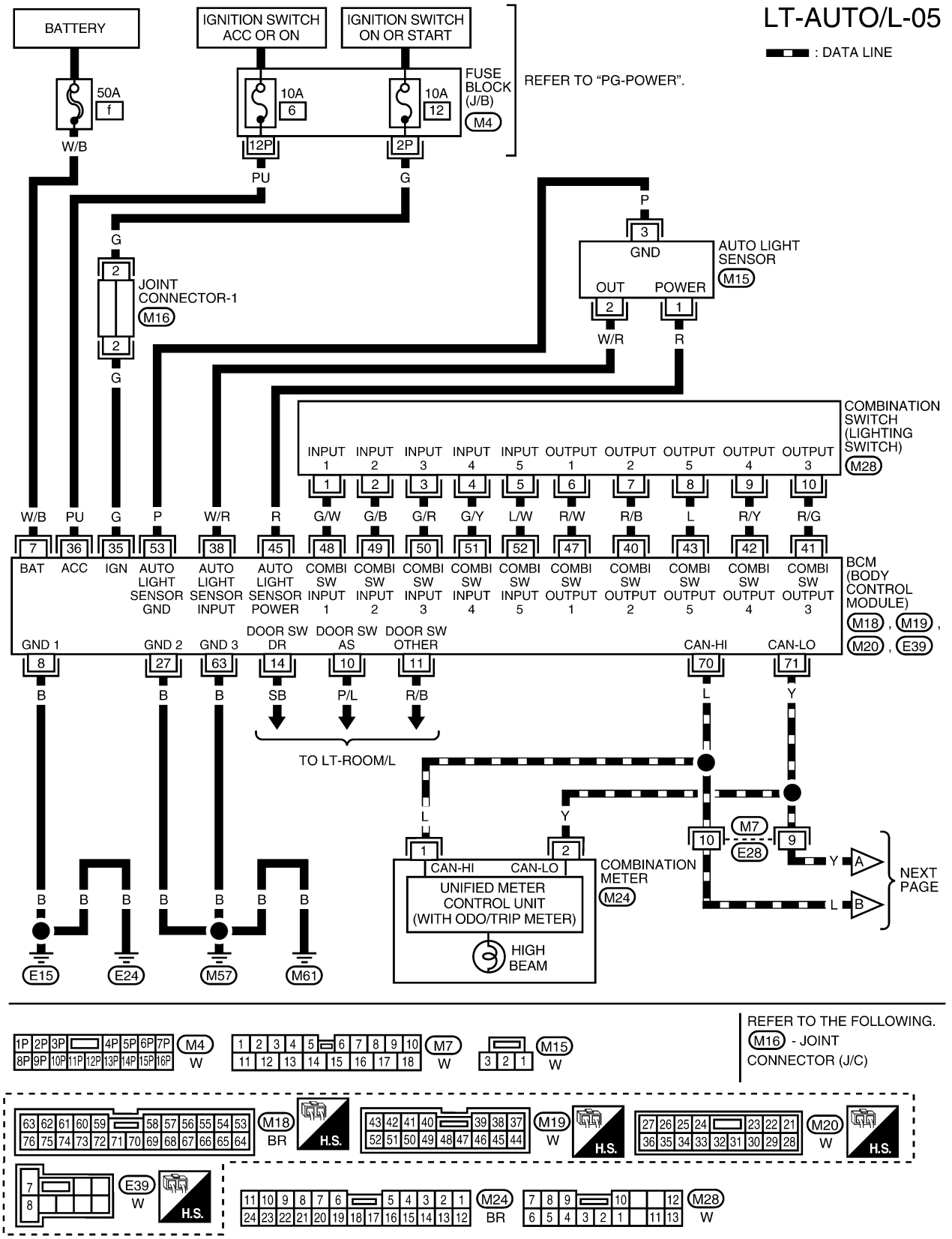

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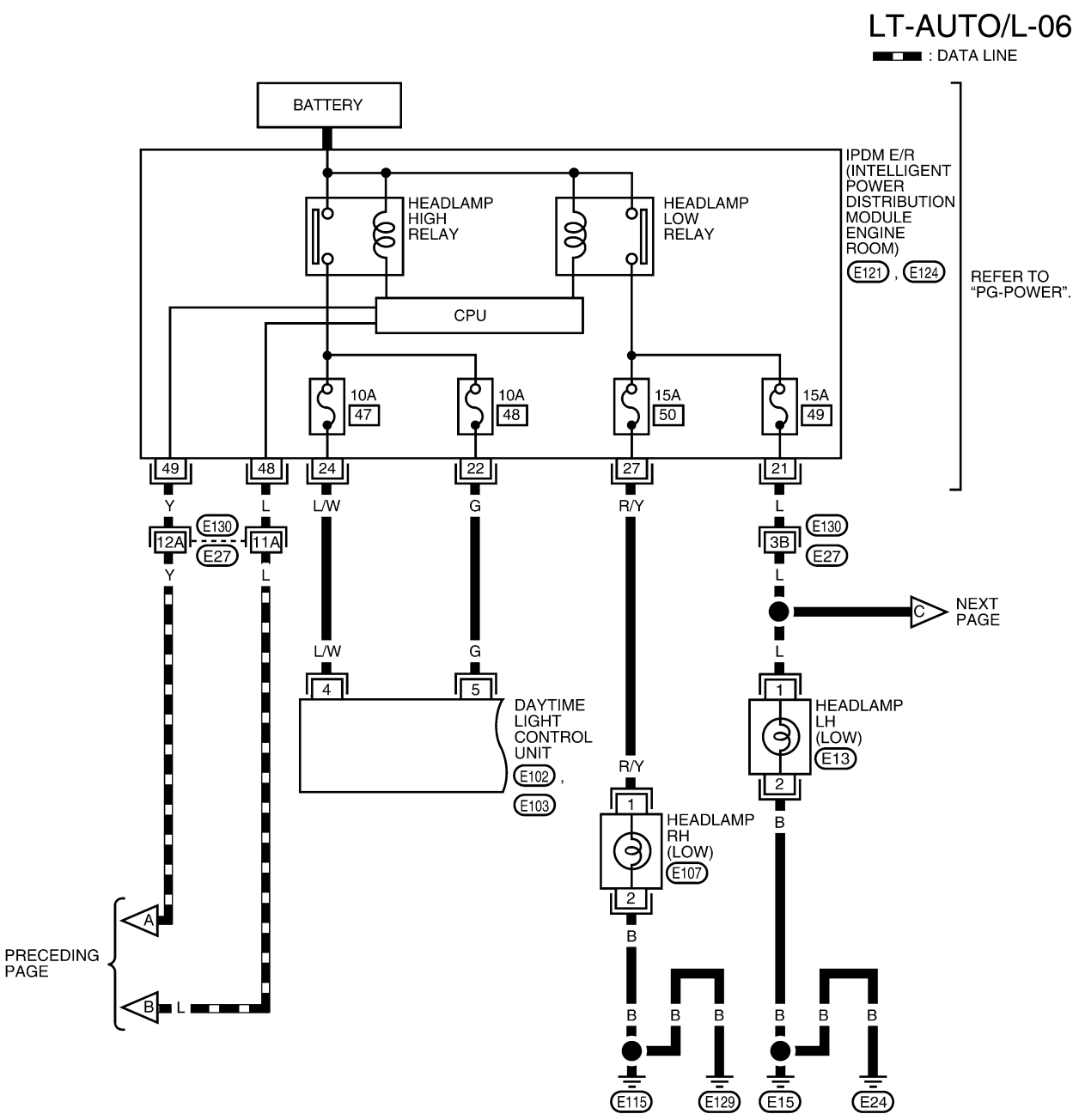
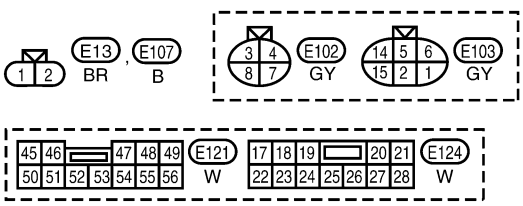
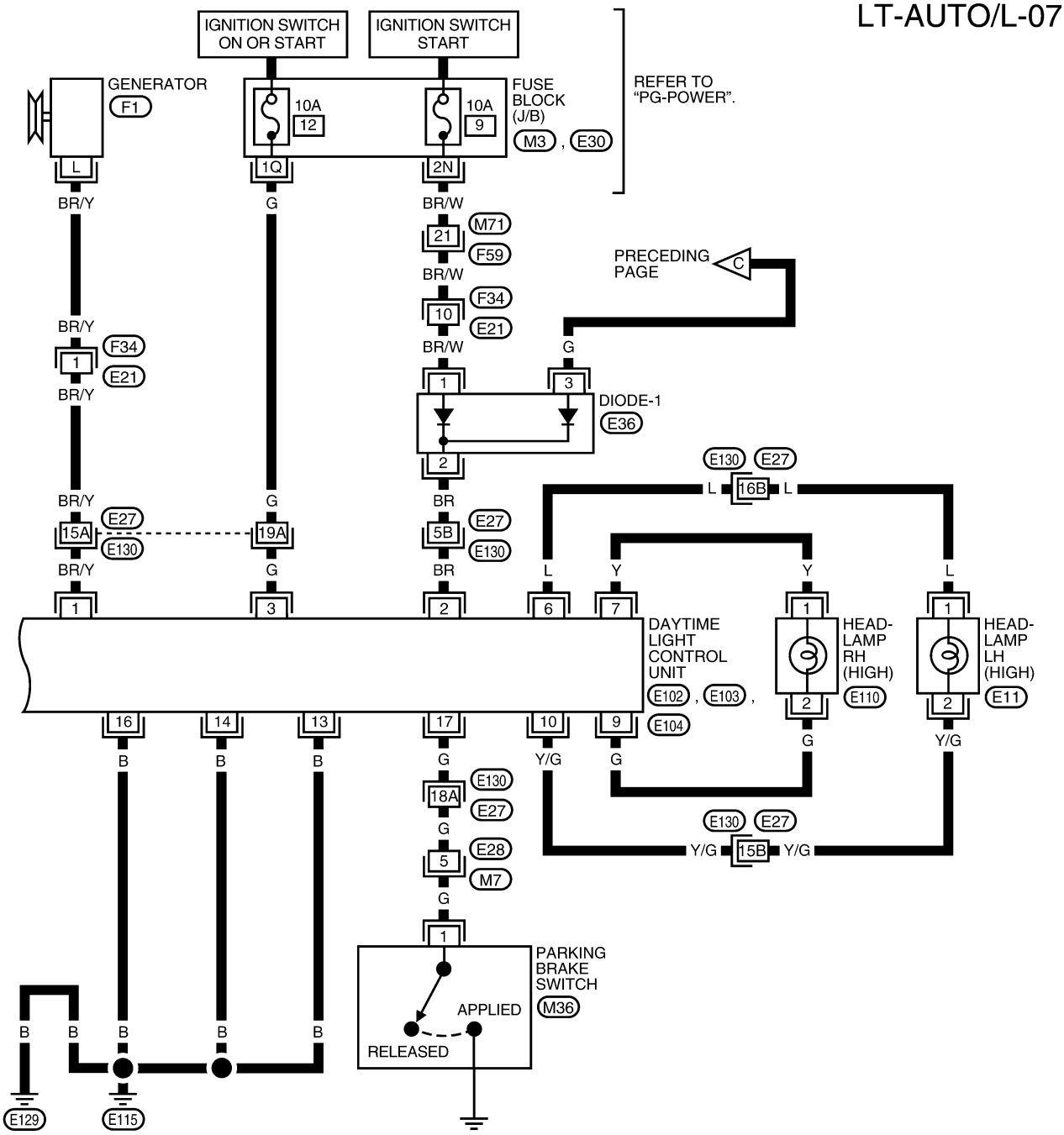


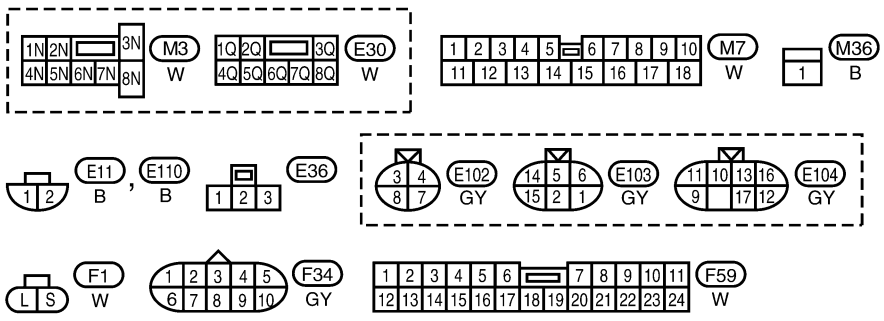


REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA0105E

LT-AUTO/L-07

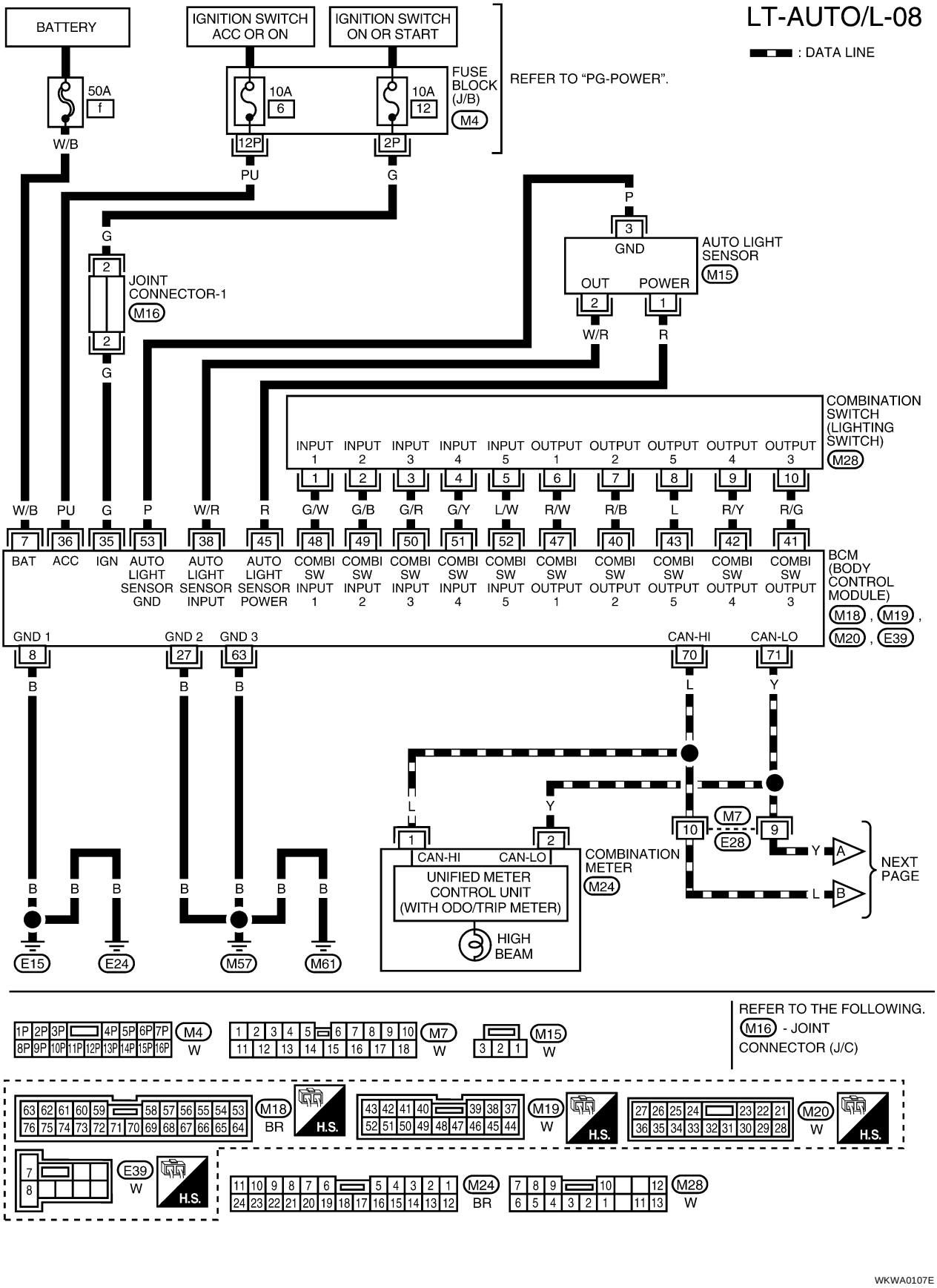




REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA0106E

XENON (CANADA)



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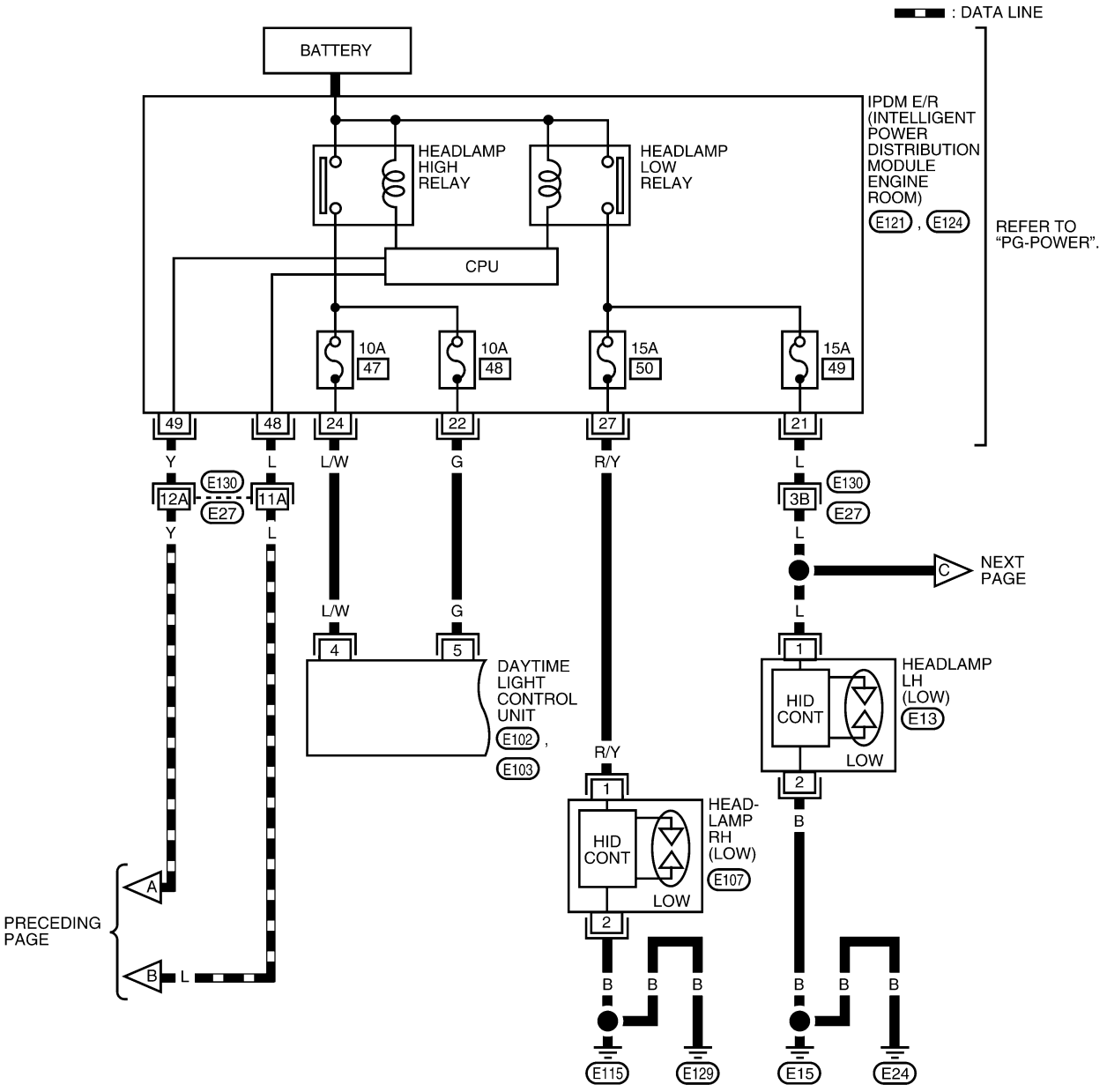
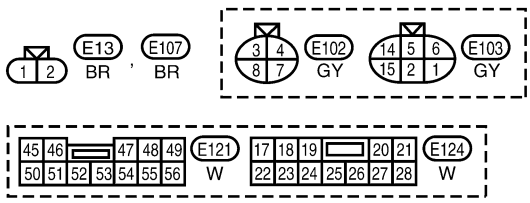
LT-AUTO/L-09





REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA0108E

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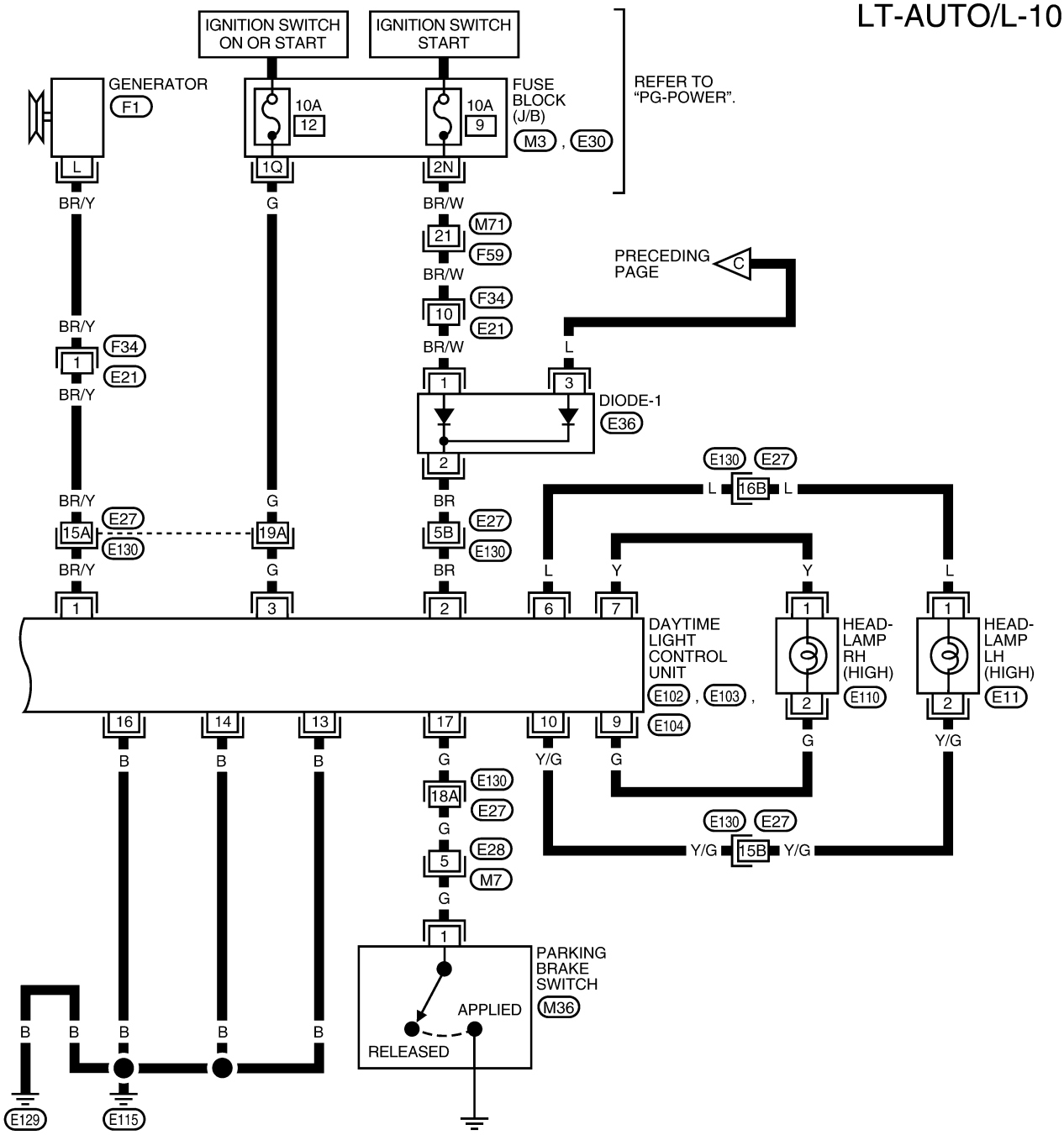
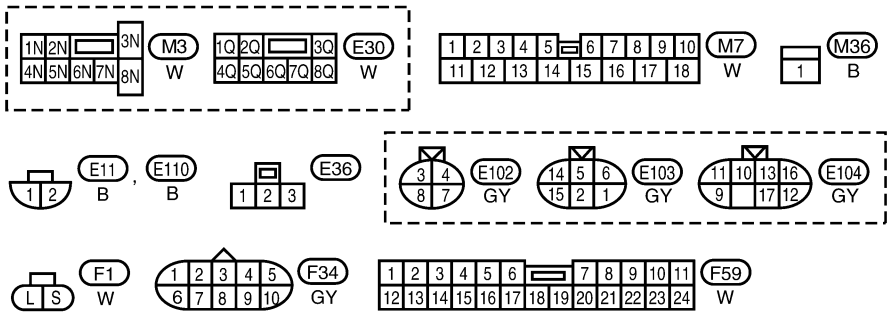




REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA0109E

Terminals and Reference Value for BCM

EKS0041P

Terminal No.	Wire color	Signal name	Measuring condition			Standard (V) (Approx.)
			Ignition switch	Operation or condition		
7	W/B	Battery power supply	OFF	—		12V
8	B	Ground	ON	—		0
14	SB	Driver door switch signal	OFF	Driver door switch	ON (open)	0
					OFF (closed)	12V
27	B	Ground	ON	—		0
35	G	IGN power	ON	—		12V
36	PU	ACC power	ACC	—		12V
38	W/R	Auto light sensor signal	ON	When auto light sensor is illuminated		3.1V or more[Note] (Reference value)
				When auto light sensor is not illuminated		0.6 or less (Reference value)
45	R	Auto light sensor power source	ON	—		5
53	P	Sensor ground	ON	—		0
63	B	Ground	ON	—		0

NOTE:
If the auto light sensor is insufficiently illuminated, the measured value may not satisfy the standard.

How to Proceed With Trouble Diagnosis

EKS0041Q

1. Confirm the malfunction symptom or customer complaint.
2. Understand system description. Refer to LT-46, "System Description" .
3. Conduct pre-inspection. Refer to LT-64, "Inspection Before Diagnosis" .
4. Find cause of malfunction by following the symptoms in the trouble diagnosis chart and repair or replace as necessary. Refer to LT-68, "Trouble Diagnosis Chart by Symptom" .
5. Does automatic light system operate normally? If it operates normally, go to 6. If it does not operate normally, go to 4.
6. End.

Inspection Before Diagnosis

EKS0041R

SETTING CHANGE FUNCTIONS

- Sensitivity of automatic light system can be adjusted using CONSULT-II. Refer to LT-66, "WORK SUPPORT" .

BCM POWER/GROUND CIRCUIT INSPECTION

1. FUSE/FUSIBLE LINK INSPECTION

- Check the following BCM fuses and fusible links.

Terminal	Ignition switch position	Fuse/fusible link
7	Battery power	f
35	ON or START	12
36	ACC or ON	6

OK or NG

OK >> GO TO 2.
NG >> Replace fuse or fusible link.

2. POWER SUPPLY CIRCUIT INSPECTION

Disconnect BCM connector and measure voltage between each terminal in table below and ground.

Terminal No.	Signal name	Ignition switch	Standard voltage (V) (Approx.)
7	Battery power	OFF	12V
35	IGN power	ON	12V
36	ACC power	ACC	12V

OK or NG

OK >> GO TO 3.
NG >> Repair or replace BCM power circuit harness.

3. GROUND CIRCUIT INSPECTION

Check continuity between the following vehicle-side connector terminals and body ground.

Terminal No.	Signal name	Ignition switch	Continuity
8	Ground	OFF	Yes
27		OFF	Yes
63		OFF	Yes

OK or NG

OK >> Power and ground are OK.
NG >> Repair or replace BCM ground circuit harness.

CONSULT-II Function

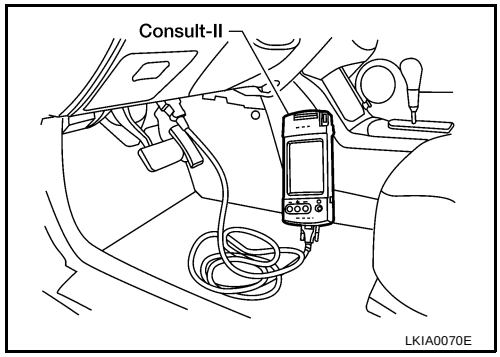
EKS0041S

CONSULT-II has a display function for work support, self-diagnosis, data monitor, and active test for each part by combining data receiving and sending via the communication line from BCM.

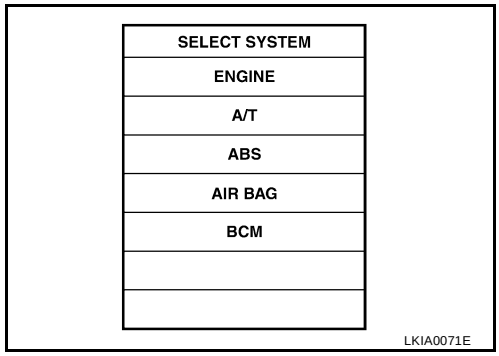
BCM diagnosis part	Check item, diagnosis mode	Description
Headlamp	Work support	Changes the setting for each function.
	Data monitor	Displays BCM input data in real time.
	Active test	Operation of electrical loads can be checked by sending driving signal to them.

CONSULT-II BASIC OPERATION

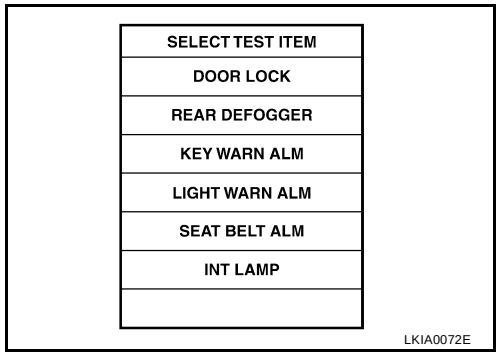
1. With the ignition switch OFF, connect CONSULT-II to the vehicle-side data link connector, then turn ignition switch ON.
2. Touch “START”.



3. Touch “BCM” on “SELECT SYSTEM” screen.



4. Select the desired part to be diagnosed on the “SELECT TEST ITEM” screen.



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 setting to be changed on “SELECT WORK ITEM” screen.
4. Touch “START”.
5. Touch the item setting desired.
6. Touch “SETTING CHANGE”.
7. The setting will be changed and “CUSTOMIZING COMPLETED” will be displayed.
8. Touch “END”.

Work Support Setting Item

Work Support item	Description	Mode	Setting status
AUTO LIGHT SET	Sensitivity of auto light can be selected and set from four modes.	Normal	Factory setting
		Mode 2	More sensitive setting compared to factory setting (The time required for lamp light-up is shorter than “Normal”.)
		Mode 3	Less sensitive setting compared to factory setting (The time required for lamp light-up is longer than “Normal”.)
		Mode 4	Less sensitive setting compared to Mode 3 (The time required for lamp light-up is longer than Mode 3.)
BATTERY SAVER SET	Function is not enabled, battery saver operation cannot be changed.	On	Function is not enabled, battery saver operation cannot be changed.
		Off	

Work Support item	Description	Mode	Setting status
ILL DELAY SET	The timer that turns off the headlamps (and fog lamps, if turned on) after the last door is closed can be selected and set from 8 modes.	Mode 1	45 seconds (Factory setting)
		Mode 2	0 seconds (immediate shutoff)
		Mode 3	30 seconds
		Mode 4	60 seconds
		Mode 5	90 seconds
		Mode 6	120 seconds
		Mode 7	150 seconds
		Mode 8	180 seconds

DATA MONITOR

Operation Procedure

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

All signals	Monitors all the signals.
Selection from menu	Selects and monitors individual signal.

4. Touch “START”.
5. When “SELECTION FROM MENU” is selected, touch items to be monitored. When “ALL SIGNALS” is selected, all the signals will be monitored.
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 name “OPERATION OR UNIT”		Contents
IGN ON SW	“ON/OFF”	“IGN position (ON)/OFF, ACC position (OFF)” judged from the ignition switch signal is displayed.
ACC ON SW	“ON/OFF”	Displays “ACC (ON)/OFF, Ignition OFF (OFF)” status judged from ignition 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)
TAIL LAMP SW	“ON/OFF”	Displays status (lighting switch 1st position: ON/Others: OFF) of light switch judged from lighting switch signal.
HEAD LAMP SW	“ON/OFF”	Displays status (headlamp switch: ON/Others: OFF) of headlamp switch judged 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.
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 switch: ON/Others: OFF) of front fog switch judged from lighting switch signal.
DOOR SW - DR	“ON/OFF”	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - AS	“ON/OFF”	Displays status of the passenger door as judged from the passenger door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - RR	“ON/OFF”	Displays status of the rear doors as judged from the rear door switch signal. (Door is open: ON/Door is closed: OFF)
HEAD LAMP SW 2	“ON/OFF”	Displays status (headlamp switch 2: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.
OPTICAL SENSOR	[0 - 5V]	Displays “ambient light (close to 5V when light/close to 0V when dark)” judged from auto light sensor signal.

ACTIVE TEST

Operation Procedure

1. Touch “HEADLAMP” 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 “BACK” deactivates the operation.

Display Item List

Test item	Display on CONSULT-II screen	Description
Tail light relay output	TAIL LAMP	Allows tail light relay to operate by switching ON–OFF at your option.
Headlamp relay output	HEAD LAMP (LOW)	Allows headlamp relay to operate by switching ON–OFF at your option.
Headlamp relay output	HEAD LAMP (HI)	Allows headlamp relay to operate by switching ON–OFF at your option.
Front fog lamp relay output	FR FOG LAMP	Allows fog lamp relay to operate by switching ON–OFF at your option.

Trouble Diagnosis Chart by Symptom

EKS0041T

Trouble phenomenon	Malfunction system and reference
● Parking lamps and headlamps will not illuminate when outside of the vehicle becomes dark. (Lighting switch 1st position and 2nd position operate normally.) ● Parking lamps and headlamp will not go out when outside of the vehicle becomes light. (Lighting switch 1st position and 2nd position operate normally.) ● Headlamps go out when outside of the vehicle becomes light, but parking lamps stay on.	● Refer to LT-66, "WORK SUPPORT" . ● Refer to LT-68, "Light Switch Inspection" . ● Refer to LT-69, "Auto Light Sensor System Inspection" . If above systems are normal, replace BCM.
Parking lamps illuminate when outside of the vehicle becomes dark, but headlamps stay off. (Lighting switch 1st position and 2nd position operate normally.)	● Refer to LT-66, "WORK SUPPORT" . ● Refer to LT-69, "Auto Light 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-69, "Auto Light Sensor System Inspection" . If above system is normal, replace BCM.
Auto light adjustment system of combination meter will not operate.	● CAN communication line inspection between BCM and combination meter. Refer to BCS-15, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .

Light Switch Inspection

EKS0041U

1. LIGHT SWITCH INSPECTION

Select “BCM” in CONSULT-II. Operate lighting switch via “AUTO LIGHT SW” on data monitor screen, and check that light turns on and off as commanded.

Lighting switch AUTO : ON

Lighting switch OFF : OFF

OK or NG

OK >> Normal.

NG >> Replace lighting switch. Refer to LT-96, "Removal and Installation" .

DATA MONITOR	
MONITOR	
IGN ON SW	ON
ACC ON SW	ON
AUTO LIGHT SW	ON
TAIL LAMP SW	OFF
HEAD LAMP SW	OFF
HI BEAM SW	OFF
PASSING SW	OFF
FR FOG SW	OFF
DOOR SW-DR	OFF

LKIA0077E

Auto Light Sensor System Inspection

EKS0041V

1. OUTPUT SIGNAL INSPECTION

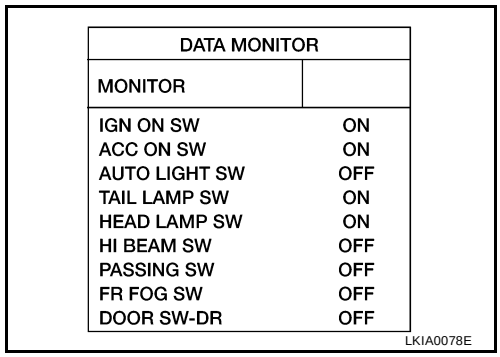
Select “BCM” in CONSULT-II. Using “OPTICAL SENSOR” data from "DATA MONITOR", check difference in the voltage when the auto light sensor is illuminated and not illuminated.

Illuminated

Light sensor : 3.1V or more

Not illuminated

Light sensor : 0.6V or less



NOTE:
If the auto light sensor is insufficiently illuminated, the measured value may not satisfy the standard.

OK or NG

OK >> Normal.
NG >> GO TO 2.

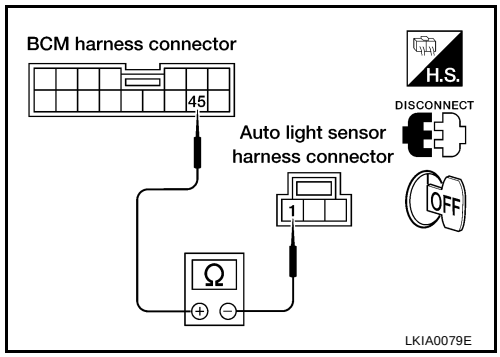
2. POWER SUPPLY CIRUIT CONTINUITY INSPECTION

1. Disconnect connectors of BCM and auto light sensor.
2. Check harness continuity between BCM vehicle-side connector terminal 45 (R) and vehicle-side connector terminal 1 (R) of auto light sensor.

   Continuity should exist.

3. Check continuity between BCM vehicle-side connector terminal 45 (R) and body ground.

   Continuity should not exist.



OK or NG

OK >> GO TO 3.
NG >> Malfunction in harness between BCM and auto light sensor. Repair or replace as required.

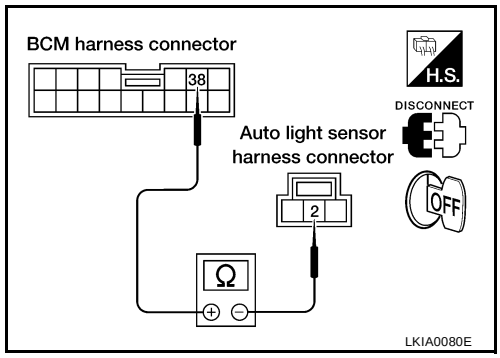
3. OUTPUT CIRCUIT CONTINUITY INSPECTION

1. Check harness continuity between BCM vehicle-side connector terminal 38 (W/R) and vehicle-side connector terminal 2 (W/R) of auto light sensor.

   Continuity should exist.

2. Check continuity between BCM vehicle-side connector terminal 38 (W/R) and body ground.

   Continuity should not exist.



OK or NG

OK >> GO TO 4.
NG >> Malfunction in harness between BCM and auto light sensor. Repair or replace as required.

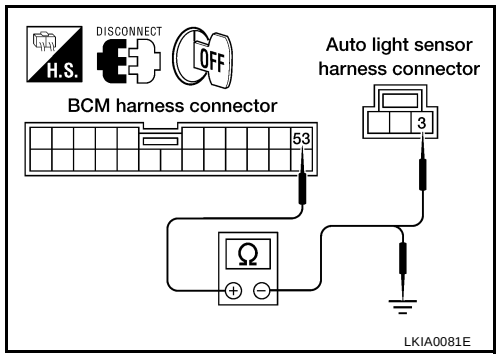
4. GROUND CIRCUIT CONTINUITY INSPECTION

1. Check harness continuity between BCM vehicle-side connector terminal 53 (P) and vehicle-side connector terminal 3 (P) of auto light sensor.

   Continuity should not exist.

2. Check continuity between BCM vehicle-side connector terminal 53 (P) and body ground.

   Continuity should not exist.



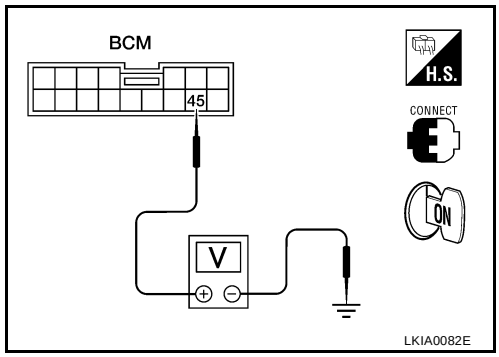
OK or NG

OK >> GO TO 5.
NG >> Malfunction in harness between BCM and auto light sensor. Repair or replace as required.

5. SENSOR VOLTAGE INSPECTION

1. Connect BCM connector.
2. Check voltage between BCM terminal 45 (R) and body ground.

   Approx. 5V



OK or NG

OK >> Replace the auto light sensor.
NG >> Replace BCM.

FRONT FOG LAMP

PFP:26150

System Description

EKS0041W

Control of the fog lamps is dependent upon the position of the combination switch (lighting switch). When the lighting switch is placed in the fog lamp position, the BCM receives input requesting the fog lamps to illuminate. This input is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The central processing unit of the IPDM E/R controls the front fog lamp relay coil. When energized, this relay directs power to the front fog lamps.

OUTLINE

Power is supplied at all times

- through 15A fuse [No. 41, located in the IPDM E/R (intelligent power distribution module engine/room)]
- to front fog lamp relay, located in the IPDM E/R, and

Power is also supplied at all times

- to terminal 7 of the BCM (body control module).

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

- to terminal 35 of the BCM.

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

- to terminal 36 of the BCM.

Ground is supplied

- to BCM terminals 8, 27, and 63
- through body grounds M57, M61, E15, and E24.

FOG LAMP OPERATION

The fog lamp switch is built into the combination switch. The lighting switch can be in any position (except pass or high beam) and the fog lamp switch must be ON for fog lamp operation.
With the fog lamp switch in the ON position, the central processing unit of the IPDM E/R (intelligent power distribution module engine room) grounds the coil side of the fog lamp relay. The fog lamp relay then directs power

- to front fog lamp LH terminal 1
- through IPDM E/R terminal 32, and
- to front fog lamp RH terminal 1
- through IPDM E/R terminal 29.

Ground is supplied

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

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

BATTERY SAVER CONTROL

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

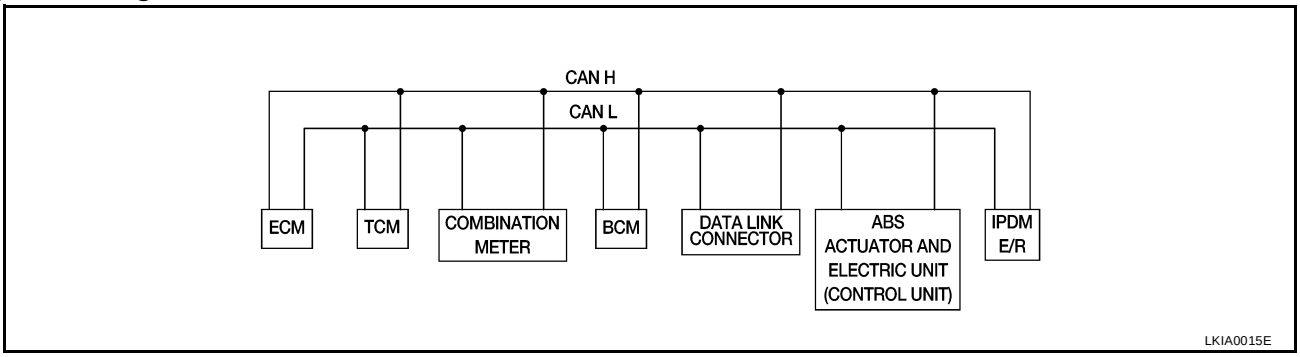
CAN Communication System Description

EKS0041X

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.

FOR TCS MODELS

System diagram



Input/output signal chart

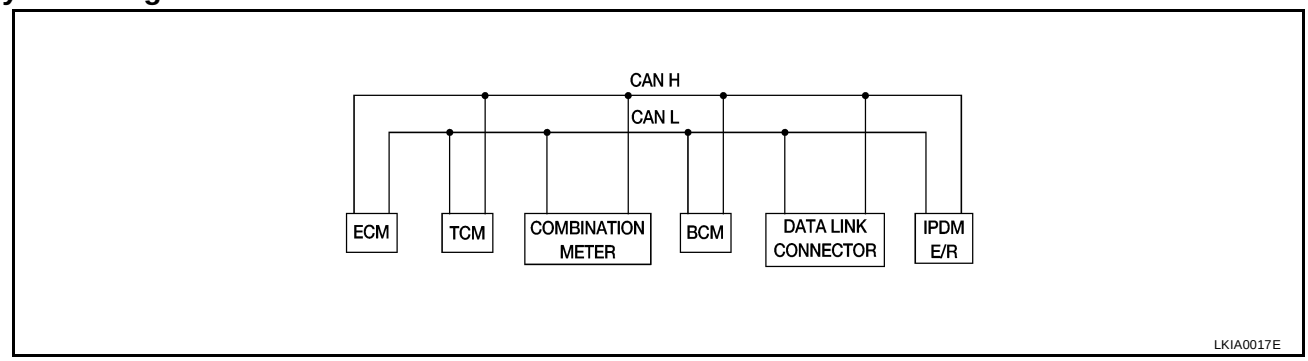
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Engine speed signal	T		R		R	
Engine coolant temperature signal	T		R			
Accelerator pedal position signal	T					
Fuel consumption monitor signal	T		R			
A/T warning lamp signal		T	R			
A/T position indicator signal	R	T	R	R(R range only)	R	
ABS operation signal	R				T	
TCS operation signal	R	R			T	
Air conditioner switch signal	R			T		
Air conditioner compressor signal	R					T
A/C compressor request signal	T					R
Cooling fan motor operation signal	R					T
Cooling fan speed request signal	T					R
Position lights request			R	T		R
Position lights status				R		T
Low beam request				T		R
Low beam status	R			R		T
High beam request			R	T		R
High beam status	R			R		T
Front fog lights request				T		R
Front fog light status				R		T
OD cancel switch signal		R	T			R
Brake switch signal		R	T			
Vehicle speed signal	R		T			
	R		T	R		
Oil pressure switch			R			T
Sleep request1			R	T		
Sleep request2				T		R
N range switch signal		R	T			
P range switch signal		R	T			
Seat belt buckle switch signal			T	R		

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Door switch signal			R	T		R
Tail lamp request			R	T		R
Turn indicator signal			R	T		
Buzzer output signal			R	T		
Trunk switch signal			R	T		
ASCD main switch signal	T		R			
ASCD cruise signal	T		R			
Wiper operation				R		T
Wiper stop position signal				R		T
Rear window defogger switch signal				T		R
Rear window defogger control signal	R			R		T

FOR A/T MODELS

System diagram



Input/output signal chart

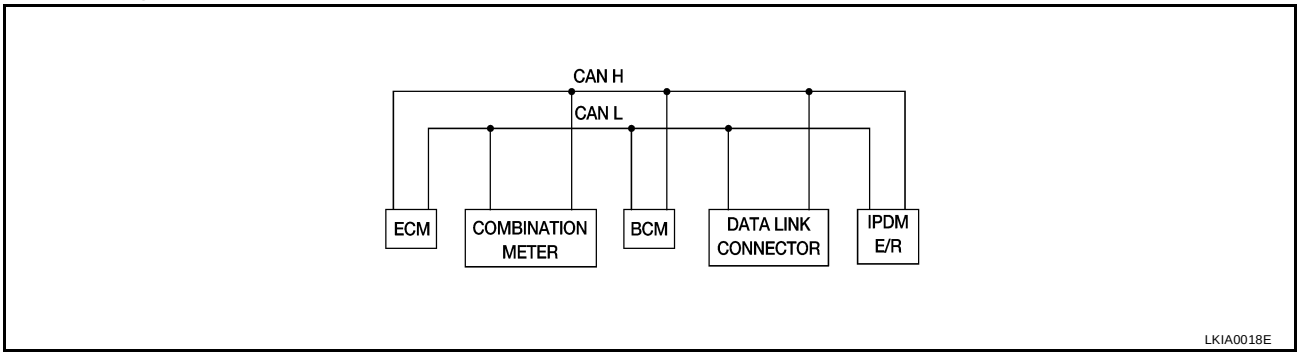
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T		R		
Engine coolant temperature signal	T		R		
Accelerator pedal position signal	T				R
Fuel consumption monitor signal	T		R		
A/T warning lamp signal		T	R		
A/T position indicator signal	R	T	R	R(R range only)	
Air conditioner switch signal	R			T	
Air conditioner compressor signal	R				T
A/C compressor request signal	T				R
Blower fan switch signal	R(QR25DE)			T	
Cooling fan motor operation signal	R			T	
Cooling fan speed request signal	T				R
Position lights request			R	T	R
Position lights status				R	T
Low beam request				T	R
Low beam status	R			R	T
High beam request			R	T	R

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
High beam status	R			R	T
Front fog lights request				T	R
Front fog light status				R	T
OD cancel switch signal		R	T		R
Brake switch signal		R	T		
Vehicle speed signal	R		T		
	R		T	R	
Oil pressure switch			R		T
Sleep request1			R	T	
Sleep request2				T	R
N range switch signal		R	T		
P range switch signal		R	T		
Seat belt buckle switch signal			T	R	
Door switch signal			R	T	R
Tail lamp request			R	T	R
Turn indicator signal			R	T	
Buzzer output signal			R	T	
Trunk switch signal			R	T	
ASCD main switch signal	T		R		
ASCD cruise signal	T		R		
Wiper operation				R	T
Wiper stop position signal				R	T
Rear window defogger switch signal				T	R
Rear window defogger control signal	R			R	T

FOR M/T MODELS

System diagram



Input/output signal chart

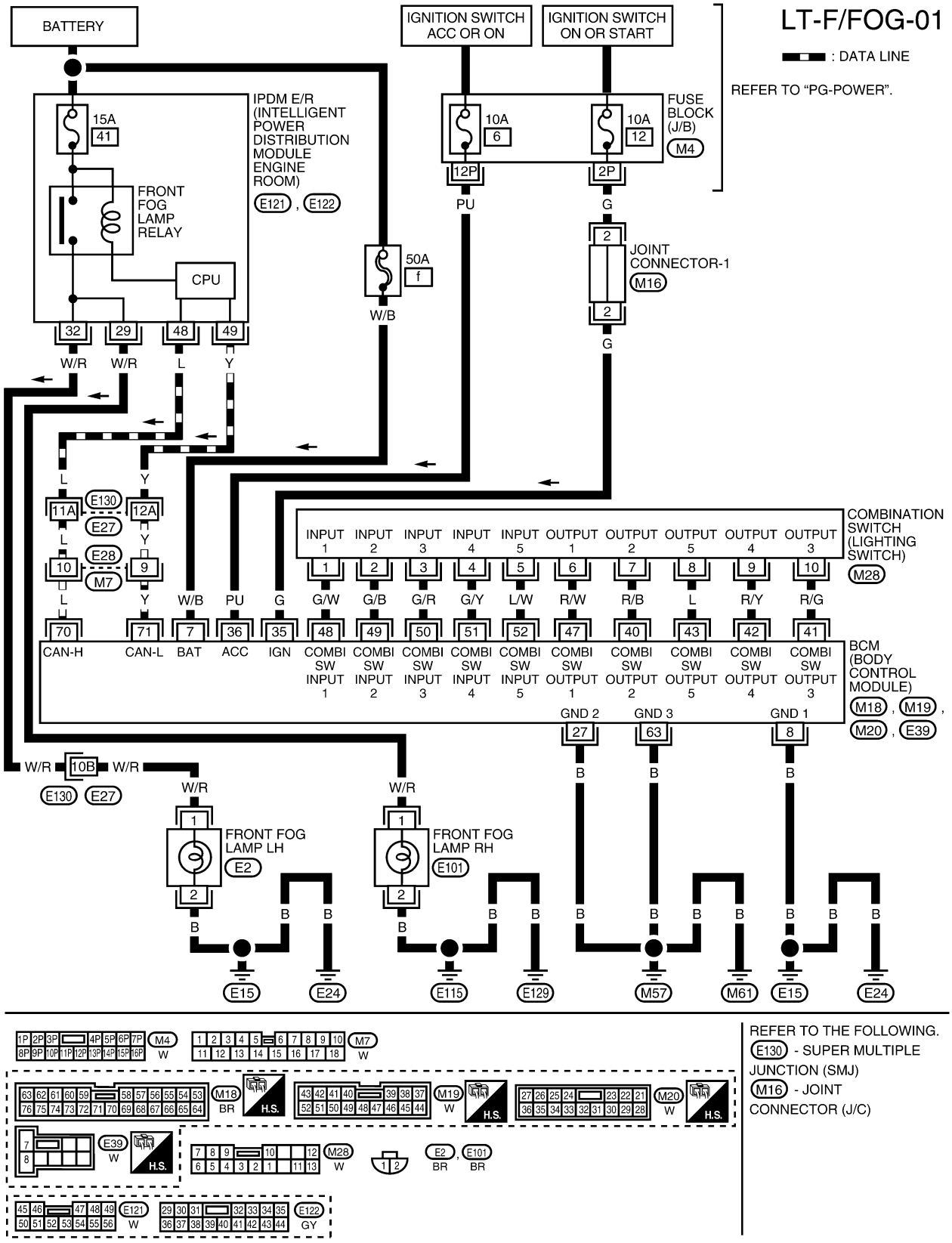
T: Transmit R: Receive

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T			
Engine coolant temperature signal	T			
Fuel consumption monitor signal	T			
Air conditioner switch signal	R		T	
Air conditioner compressor signal	R			T
A/C compressor request signal	T			R

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Blower fan switch signal	R(QR25DE)		T	
Cooling fan motor operation signal	R			T
Cooling fan speed request signal	T			R
Position lights request		R	T	R
Position lights status			R	T
Low beam request			T	R
Low beam status	R		R	T
High beam request		R	T	R
High beam status	R		R	T
Front fog lights request			T	R
Front fog light status			R	T
Vehicle speed signal	R	T		
Oil pressure switch		R		T
Sleep request1		R	T	
Sleep request2			T	R
Seat belt buckle switch signal		T	R	
Door switch signal		R	T	R
Tail lamp request		R	T	R
Turn indicator signal		R	T	
Buzzer output signal		R	T	
Trunk switch signal		R	T	
ASCD main switch signal	T	R		
ASCD cruise signal	T	R		
Wiper operation			R	T
Wiper stop position signal			R	T
Rear window defogger switch signal			T	R
Rear window defogger control signal	R		R	T

Wiring Diagram — F/FOG —

EKS0041Y



LKWA0047E

Front Fog Lamps Do Not Illuminate (Both Sides)

EKS0041Z

1. INSPECTION 1 BETWEEN IPDM E/R AND FRONT FOG LAMPS

1. Start active test. Refer to LT-18, "ACTIVE TEST" .
2. Check operation of the front fog lamps.

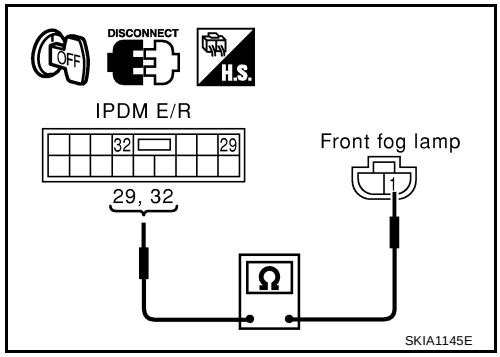
OK or NG

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

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

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

Terminals					Continuity
IPDM E/R		Front fog lamp			
Connector	Terminal (wire color)	Connector		Terminal (wire color)	
E122	29 (W/R)	Right	E101	1 (W/R)	Yes
	32 (W/R)	Left	E2	1 (W/R)	



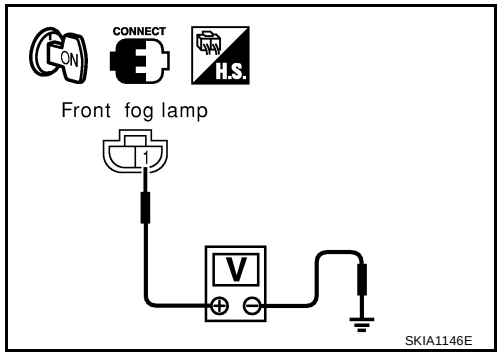
OK or NG

OK >> Connect electrical connectors. GO TO 3.
NG >> Check for short circuits and open circuits in harness between IPDM E/R and headlamps and repair as necessary.

3. IPDM E/R INSPECTION

Start active test. Refer to LT-18, "ACTIVE TEST" . When front fog lamp relay is operating, check voltage between left/right front fog lamp connector terminals and body ground.

Terminals				Voltage (Approx.)
Front fog lamp				
Connector		Terminal (wire color)	Body ground (–)	12
Right	E101	1 (W/R)		
Left	E2	1 (W/R)		



OK or NG

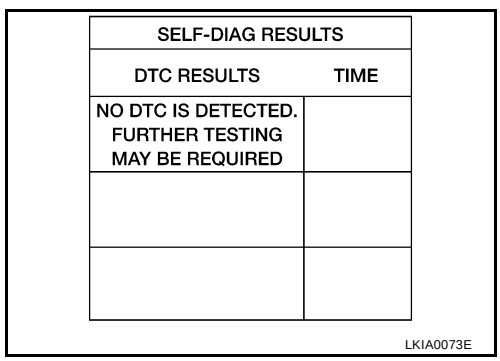
OK >> Check front fog lamp bulbs and replace as necessary.
NG >> Replace IPDM E/R. Refer to PG-24, "Removal and Installation of IPDM E/R" .

4. INSPECTION 1 BETWEEN COMBINATION SWITCH AND BCM

Select BCM on CONSULT-II. Carry out “BCM C/U” self-diagnosis.

Displayed results of self-diagnosis

No malfunction detected>> GO TO 5.
CAN communications or CAN system>> Inspect the BCM CAN communications system. Refer to BCS-15, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .
OPEN DETECT 1 - 5>> Combination switch system malfunction. Refer to BCS-16, "Combination Switch Inspection According to Self-Diagnostic Results" .



5. INSPECTION 2 BETWEEN COMBINATION SWITCH AND BCM

Select “BCM” on CONSULT-II. Use “HEADLAMP” data monitor to check that “FR FOG SW” turns ON-OFF linked with operation of fog lamp switch.

DATA MONITOR	
MONITOR	
IGN ON SW	ON
ACC ON SW	ON
AUTO LIGHT SW	OFF
TAIL LAMP SW	OFF
HEAD LAMP SW	OFF
HI BEAM SW	OFF
PASSING SW	OFF
FR FOG SW	ON
DOOR SW-DR	OFF

LKIA0094E

OK or NG

OK >> Replace BCM.
NG >> Replace lighting switch. Refer to LT-96, "Removal and Installation" .

Front Fog Lamp Does Not Illuminate (One Side)

EKS00420

1. BULB INSPECTION

Inspect bulbs of lamps which do not illuminate.

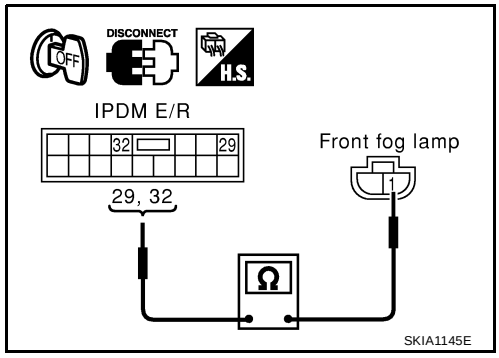
OK or NG

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

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

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

Terminals					Continuity
IPDM E/R		Front fog lamp			
Connector	Terminal (wire color)	Connector		Terminal (wire color)	
E122	29 (W/R)	Right	E101	1 (W/R)	Yes
	32 (W/R)	Left	E2	1 (W/R)	



SKIA1145E

OK or NG

OK >> Replace IPDM E/R. Refer to PG-24, "Removal and Installation of IPDM E/R" .
NG >> Check for short circuits and open circuits in harness between IPDM E/R and front fog lamps.

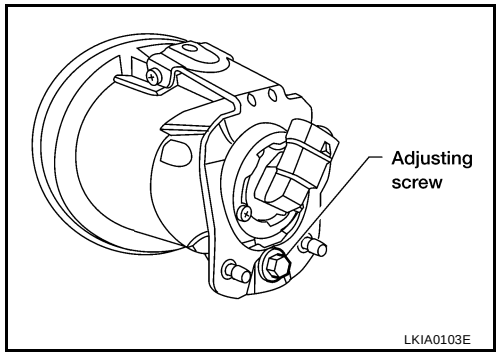
Aiming Adjustment

EKS00421

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

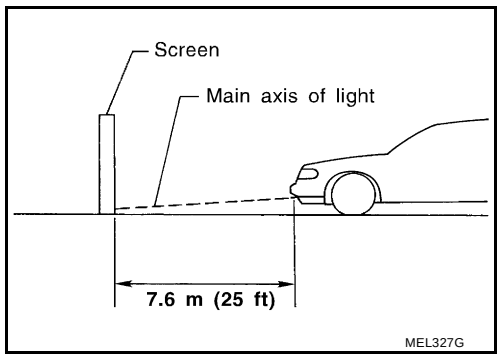
- Keep all tires inflated to correct pressure.
- Place vehicle on level ground.
- See that vehicle is unloaded (except for full levels of coolant, engine oil and fuel, and spare tire, jack, and tools). Have the driver or equivalent weight placed in driver seat.

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



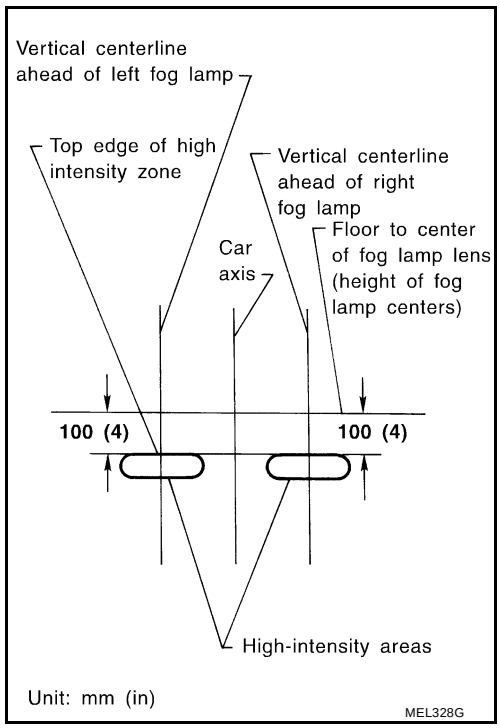
LKIA0103E

1. Set the distance between the screen and the center of the fog lamp lens as shown.
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 100 mm (4 in) below the height of the fog lamp centers as shown.

- When performing adjustment, if necessary, cover the headlamps and opposite fog lamp.



Removal and Installation

EKS00422

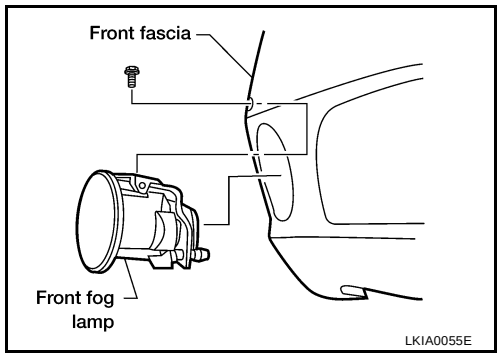
The fog lamp is a semi-sealed beam type which uses a replaceable halogen bulb.

CAUTION:

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

1. Remove the fender protector. Refer to EI-20, "Removal and Installation" .
2. Disconnect electrical connector.
3. Remove bolt, and slide fog lamp out of front fascia.

Install in the reverse order of removal.



TURN SIGNAL AND HAZARD WARNING LAMPS

PFP:26120

System Description

EKS00423

TURN SIGNAL OPERATION

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

- through 10A fuse [No. 12, located in the fuse block (J/B)]
- to BCM (body control module) terminal 35, and
- through 10A fuse [No. 14, located in the fuse block (J/B)]
- to terminals 17 and 18 of the combination meter.

Ground is supplied

- to BCM (body control module) terminals 8, 27, and 63
- through body grounds M57, E15, and E24, and
- to combination meter terminals 6 and 39
- through body grounds M57 and M61.

LH Turn

When the turn signal switch (combination switch) is moved to the L position, the BCM (body control module) receives input requesting the left turn signals to flash. The BCM then supplies power

- to front turn signal lamp LH terminal 3
- to rear turn signal lamp LH (part of the rear combination lamp LH) terminal 3.

Ground is supplied to the front turn signal lamp LH terminal 2 through body grounds E15 and E24.
Ground is supplied to the rear turn signal lamp LH (part of the rear combination lamp) terminal 5 through body grounds B7and B19.
The BCM also supplies ground to combination meter terminals 1 and 2 across the CAN communication lines. This input is processed by the central processing unit of the combination meter, which in turn supplies ground to the left turn signal indicator lamp.
With power and ground supplied, the BCM controls the flashing of the LH turn signal lamps.

RH Turn

When the turn signal switch (combination switch) is moved to the R position, the BCM (body control module) receives input requesting the right turn signals to flash. The BCM then supplies power

- to front turn signal lamp RH terminal 3
- to rear turn signal lamp RH (part of the rear combination lamp RH) terminal 3.

Ground is supplied to the front turn signal lamp RH terminal 2 through body grounds E15 and E24.
Ground is supplied to the rear turn signal lamp RH (part of the rear combination lamp RH) terminal 5 through body grounds B7and B19.
The BCM also supplies ground to combination meter terminals 1 and 2 across the CAN communication lines. This input is processed by the central processing unit of the combination meter, which in turn supplies ground to the right turn signal indicator lamp.
With power and ground supplied, the BCM controls the flashing of the RH turn signal lamps.

HAZARD LAMP OPERATION

Power is supplied at all times

- to BCM (body control module) terminal 7
- through 50A fusible link [letter **f** , located in the fuse and fusible link box], and
- to combination meter terminal 5
- through 10A fuse [No. 19, located in the fuse block (J/B)].

Ground is supplied

- to hazard switch terminal 3
- through body grounds M57 and M61,
- to BCM terminals 8, 27, and 63,
- through body grounds M57, M61, E15, and E24, and
- to combination meter terminals 6 and 39
- through body grounds M57 and M61.

When the hazard switch is depressed, ground is supplied

- to BCM terminal 61
- through hazard lamp switch terminal 1.

The BCM then supplies power

- to front turn signal lamp LH terminal 3
- to front turn signal lamp RH terminal 3
- to rear turn signal lamp LH (part of the rear combination lamp LH) terminal 3
- to rear turn signal lamp RH (part of the rear combination lamp RH) terminal 5.

Ground is supplied

- to the front turn signal lamp LH terminal 2 through body grounds E15 and E24
- to the front turn signal lamp RH terminal 2 through body grounds E15 and E24
- to the rear turn signal lamp LH (part of the rear combination lamp) terminal 5 through body grounds B7 and B19
- to the rear turn signal lamp RH (part of the rear combination lamp RH) terminal 5 through body grounds B7 and B19.

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

REMOTE KEYLESS ENTRY SYSTEM OPERATION

Power is supplied at all times

- to BCM (body control module) terminal 7
- through 50A fusible link [letter **f** , located in the fuse and fusible link box], and
- to combination meter terminal 5
- through 10A fuse [No. 19, located in the fuse block (J/B)].

Ground is supplied

- to BCM terminals 8, 27, and 63,
- through body grounds M57, M61, E15, and E24, and
- to combination meter terminals 6 and 39
- through body grounds M57 and M61.

When the remote keyless entry system is triggered by input from the keyfob, the BCM supplies power

- to front turn signal lamp LH terminal 3
- to front turn signal lamp RH terminal 3
- to rear turn signal lamp LH (part of the rear combination lamp LH) terminal 3
- to rear turn signal lamp RH (part of the rear combination lamp RH) terminal 3.

Ground is supplied

- to the front turn signal lamp LH terminal 2 through body grounds E15 and E24
- to the front turn signal lamp RH terminal 2 through body grounds E15 and E24
- to the rear turn signal lamp LH (part of the rear combination lamp) terminal 5 through body grounds B7 and B19
- to the rear turn signal lamp RH (part of the rear combination lamp RH) terminal 5 through body grounds B7 and B19.

The BCM also supplies input to combination meter terminals 1 and 2 across the CAN communication lines. This input is processed by the central processing unit of the combination meter, which in turn supplies ground to the left and right turn signal indicator lamps.
With power and ground supplied, the BCM controls the flashing of the hazard warning lamps when keyfob is used to activate the remote keyless entry system.

CAN Communication System Description

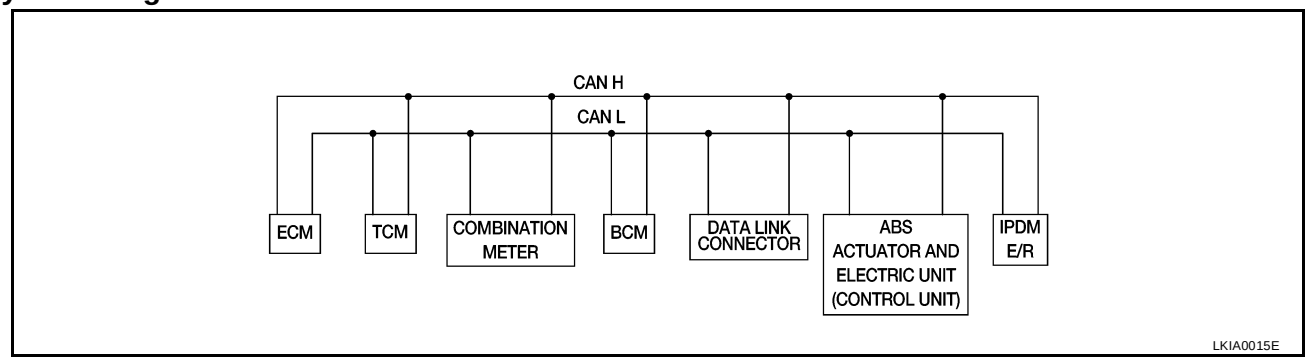
EKS00424

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.

FOR TCS MODELS

System diagram



Input/output signal chart

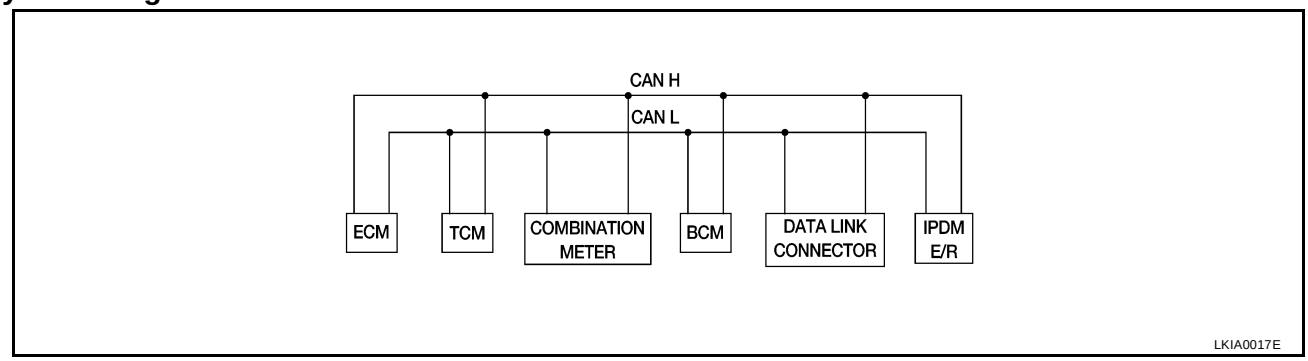
T: Transmit R: Receive

Signals	ECM	TCM	COMBINA-TION METER	BCM	ABS/TCS control unit	IPDM E/R
Engine speed signal	T		R		R	
Engine coolant temperature signal	T		R			
Accelerator pedal position signal	T					
Fuel consumption monitor signal	T		R			
A/T warning lamp signal		T	R			
A/T position indicator signal	R	T	R	R(R range only)	R	
ABS operation signal	R				T	
TCS operation signal	R	R			T	
Air conditioner switch signal	R			T		
Air conditioner compressor signal	R					T
A/C compressor request signal	T					R
Cooling fan motor operation signal	R					T
Cooling fan speed request signal	T					R
Position lights request			R	T		R
Position lights status				R		T
Low beam request				T		R
Low beam status	R			R		T
High beam request			R	T		R
High beam status	R			R		T
Front fog lights request				T		R
Front fog light status				R		T
OD cancel switch signal		R	T			R
Brake switch signal		R	T			
Vehicle speed signal	R		T			
	R		T	R		
Oil pressure switch			R			T
Sleep request1			R	T		
Sleep request2				T		R
N range switch signal		R	T			

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
P range switch signal		R	T			
Seat belt buckle switch signal			T	R		
Door switch signal			R	T		R
Tail lamp request			R	T		R
Turn indicator signal			R	T		
Buzzer output signal			R	T		
Trunk switch signal			R	T		
ASCD main switch signal	T		R			
ASCD cruise signal	T		R			
Wiper operation				R		T
Wiper stop position signal				R		T
Rear window defogger switch signal				T		R
Rear window defogger control signal	R			R		T

FOR A/T MODELS

System diagram



Input/output signal chart

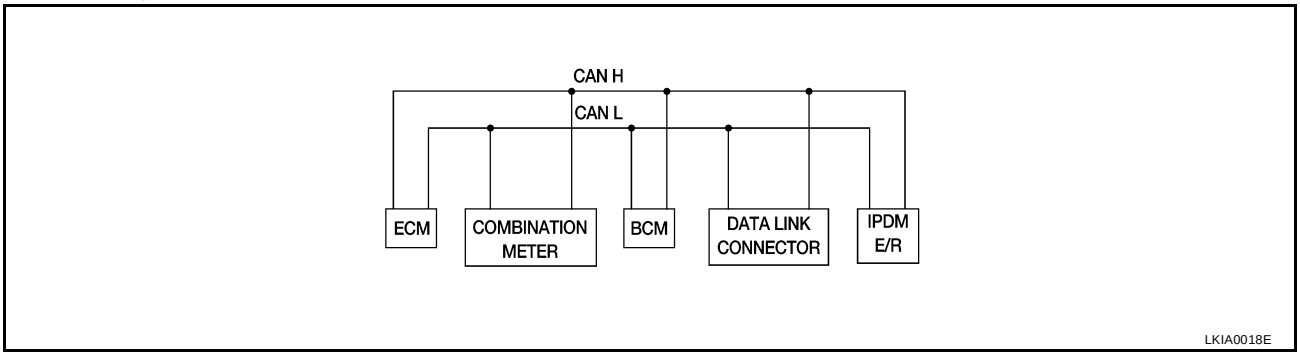
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T		R		
Engine coolant temperature signal	T		R		
Accelerator pedal position signal	T				R
Fuel consumption monitor signal	T		R		
A/T warning lamp signal		T	R		
A/T position indicator signal	R	T	R	R(R range only)	
Air conditioner switch signal	R			T	
Air conditioner compressor signal	R				T
A/C compressor request signal	T				R
Blower fan switch signal	R(QR25DE)			T	
Cooling fan motor operation signal	R			T	
Cooling fan speed request signal	T				R
Position lights request			R	T	R
Position lights status				R	T
Low beam request				T	R

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
Low beam status	R			R	T
High beam request			R	T	R
High beam status	R			R	T
Front fog lights request				T	R
Front fog light status				R	T
OD cancel switch signal		R	T		R
Brake switch signal		R	T		
Vehicle speed signal	R		T		
	R		T	R	
Oil pressure switch			R		T
Sleep request1			R	T	
Sleep request2				T	R
N range switch signal		R	T		
P range switch signal		R	T		
Seat belt buckle switch signal			T	R	
Door switch signal			R	T	R
Tail lamp request			R	T	R
Turn indicator signal			R	T	
Buzzer output signal			R	T	
Trunk switch signal			R	T	
ASCD main switch signal	T		R		
ASCD cruise signal	T		R		
Wiper operation				R	T
Wiper stop position signal				R	T
Rear window defogger switch signal				T	R
Rear window defogger control signal	R			R	T

FOR M/T MODELS

System diagram



Input/output signal chart

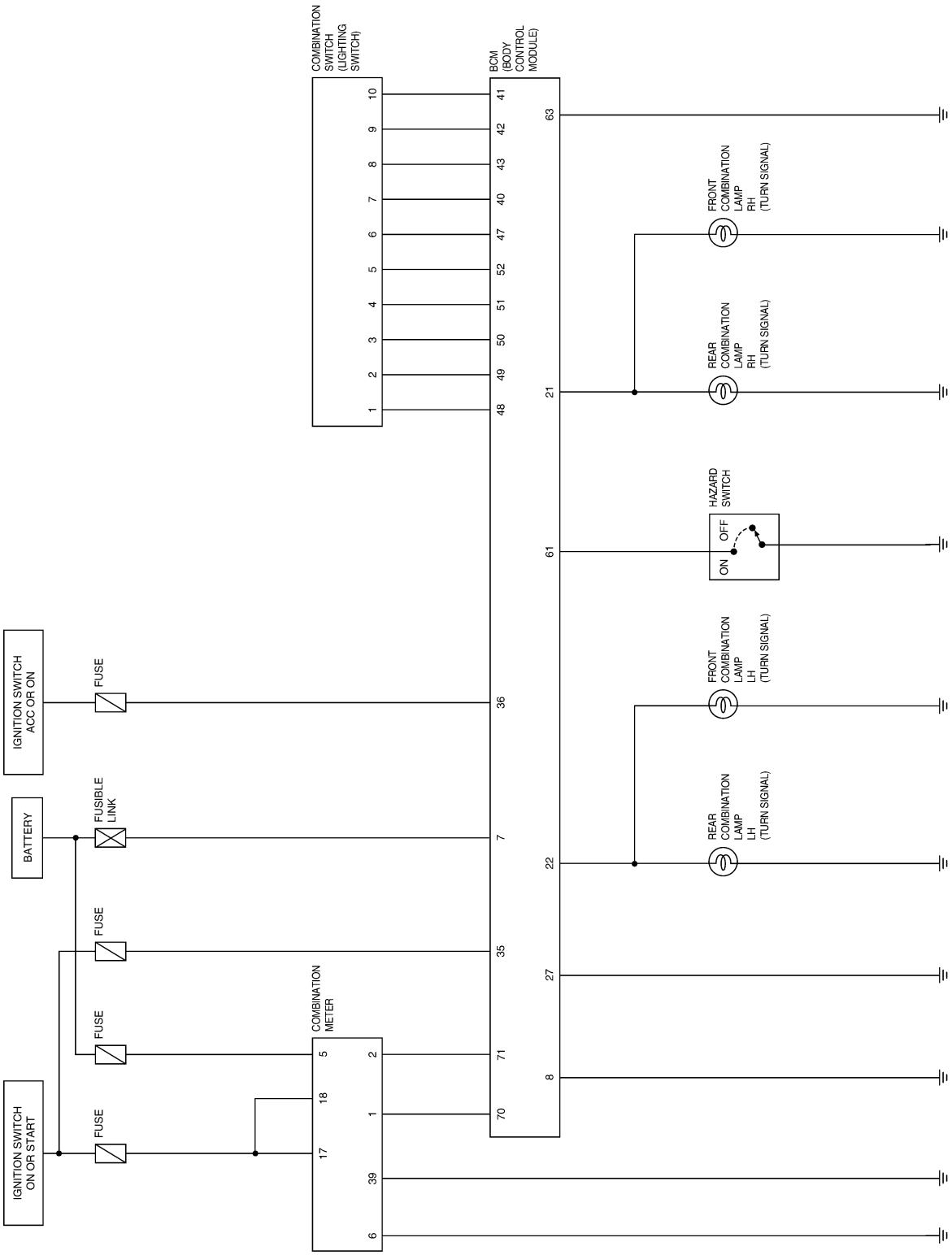
T: Transmit R: Receive

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T			
Engine coolant temperature signal	T			
Fuel consumption monitor signal	T			
Air conditioner switch signal	R		T	

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Air conditioner compressor signal	R			T
A/C compressor request signal	T			R
Blower fan switch signal	R(QR25DE)		T	
Cooling fan motor operation signal	R			T
Cooling fan speed request signal	T			R
Position lights request		R	T	R
Position lights status			R	T
Low beam request			T	R
Low beam status	R		R	T
High beam request		R	T	R
High beam status	R		R	T
Front fog lights request			T	R
Front fog light status			R	T
Vehicle speed signal	R	T		
Oil pressure switch		R		T
Sleep request1		R	T	
Sleep request2			T	R
Seat belt buckle switch signal		T	R	
Door switch signal		R	T	R
Tail lamp request		R	T	R
Turn indicator signal		R	T	
Buzzer output signal		R	T	
Trunk switch signal		R	T	
ASCD main switch signal	T	R		
ASCD cruise signal	T	R		
Wiper operation			R	T
Wiper stop position signal			R	T
Rear window defogger switch signal			T	R
Rear window defogger control signal	R		R	T

Schematic

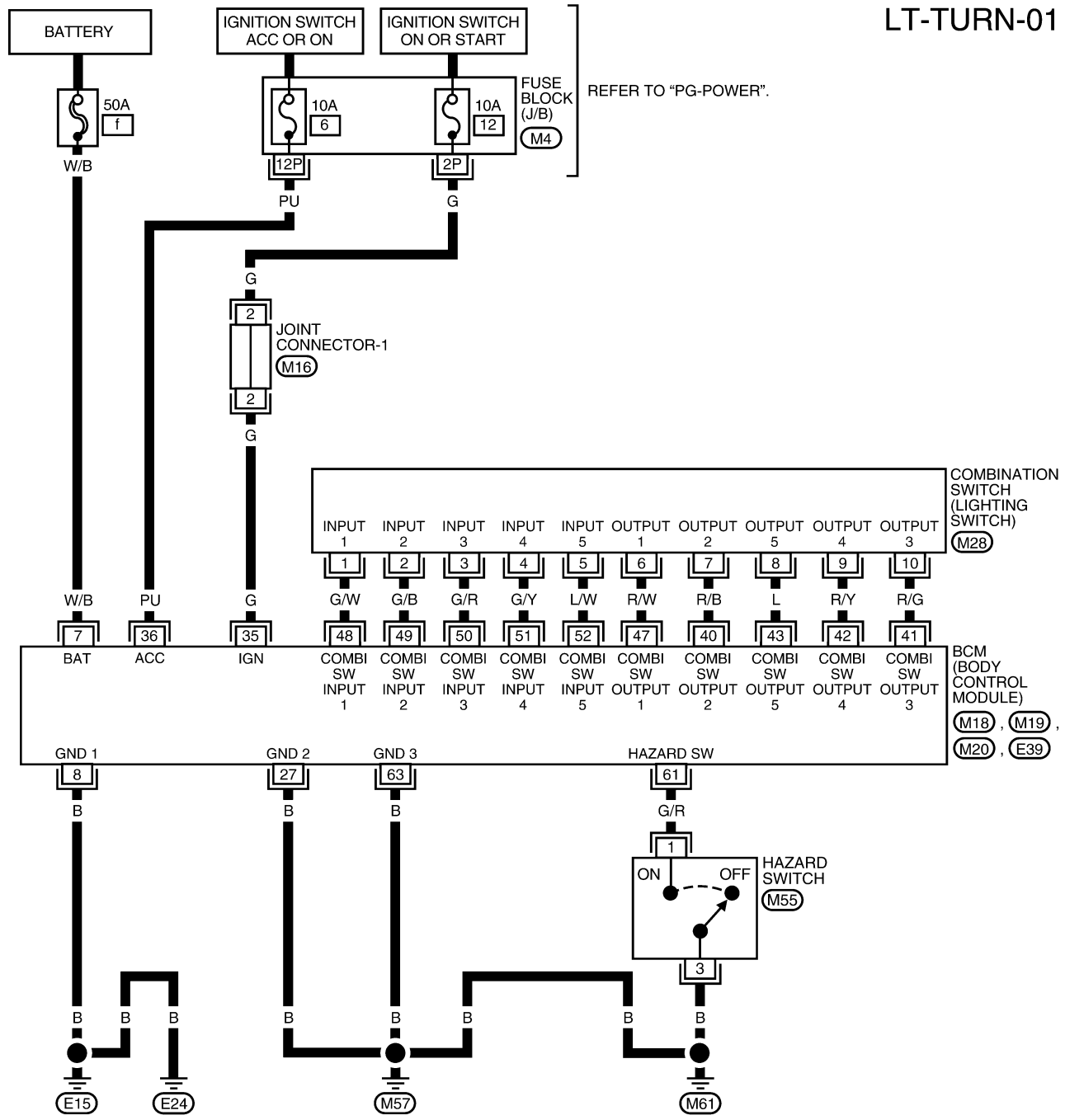
EKS00425

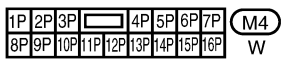


WKWA0399E

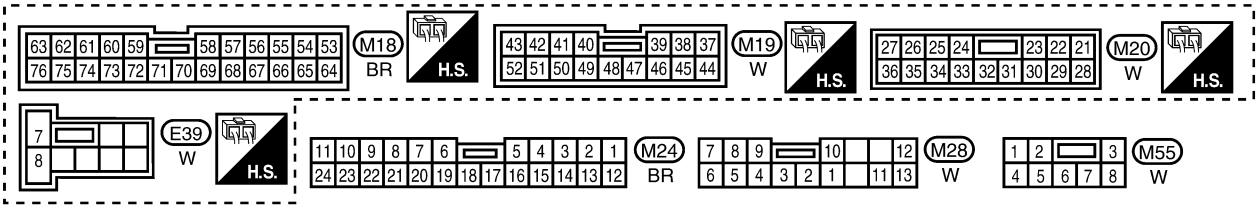
Wiring Diagram — TURN —

EKS00426



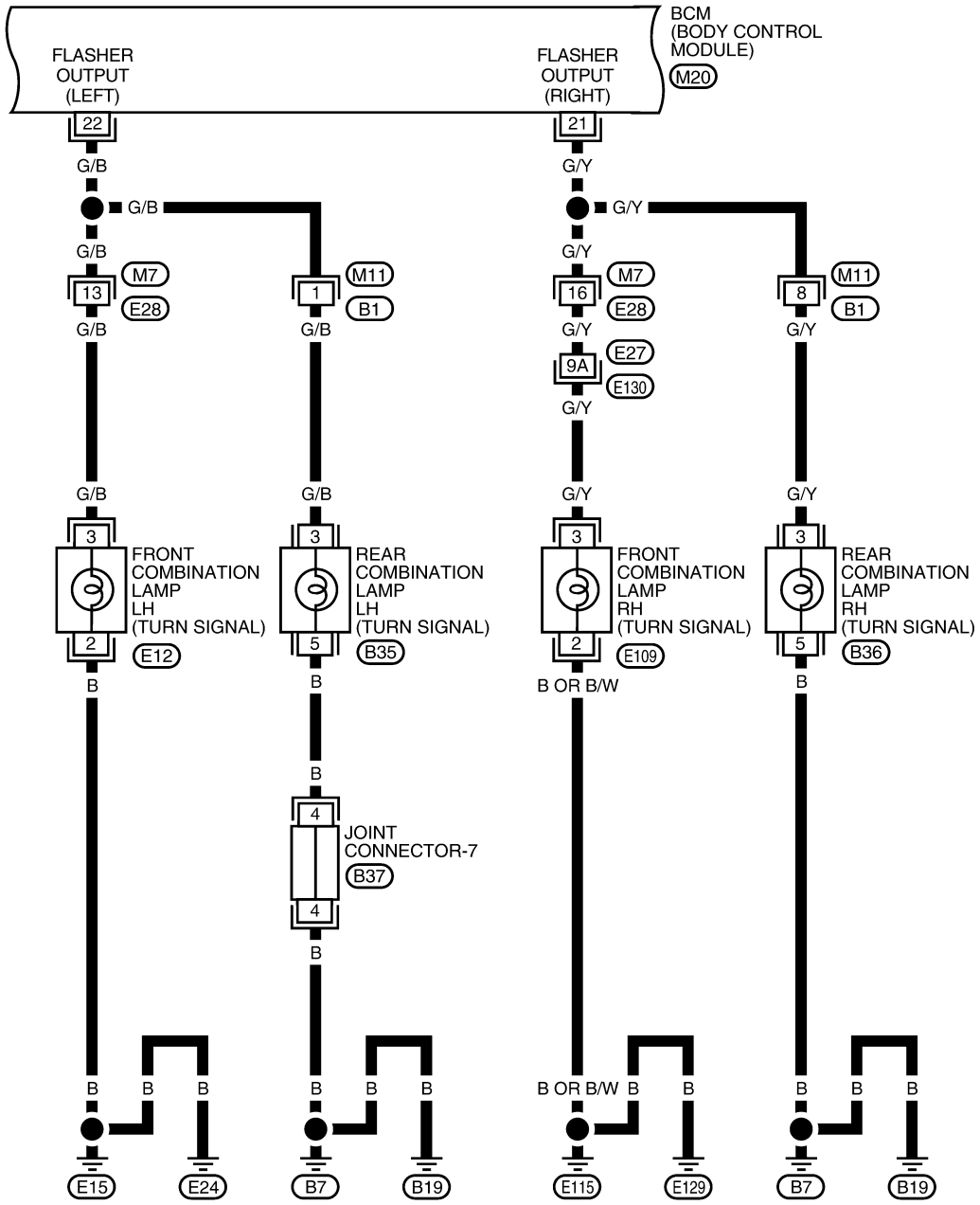


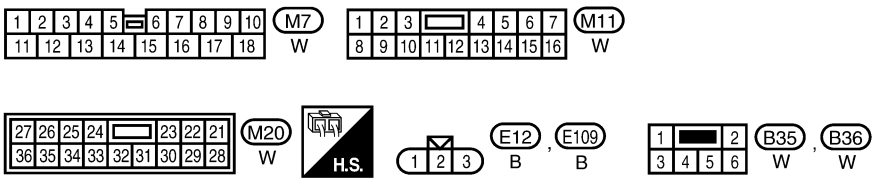
REFER TO THE FOLLOWING.
M16 - JOINT CONNECTOR-1 (J/C)



LKWA0031E

LT-TURN-02

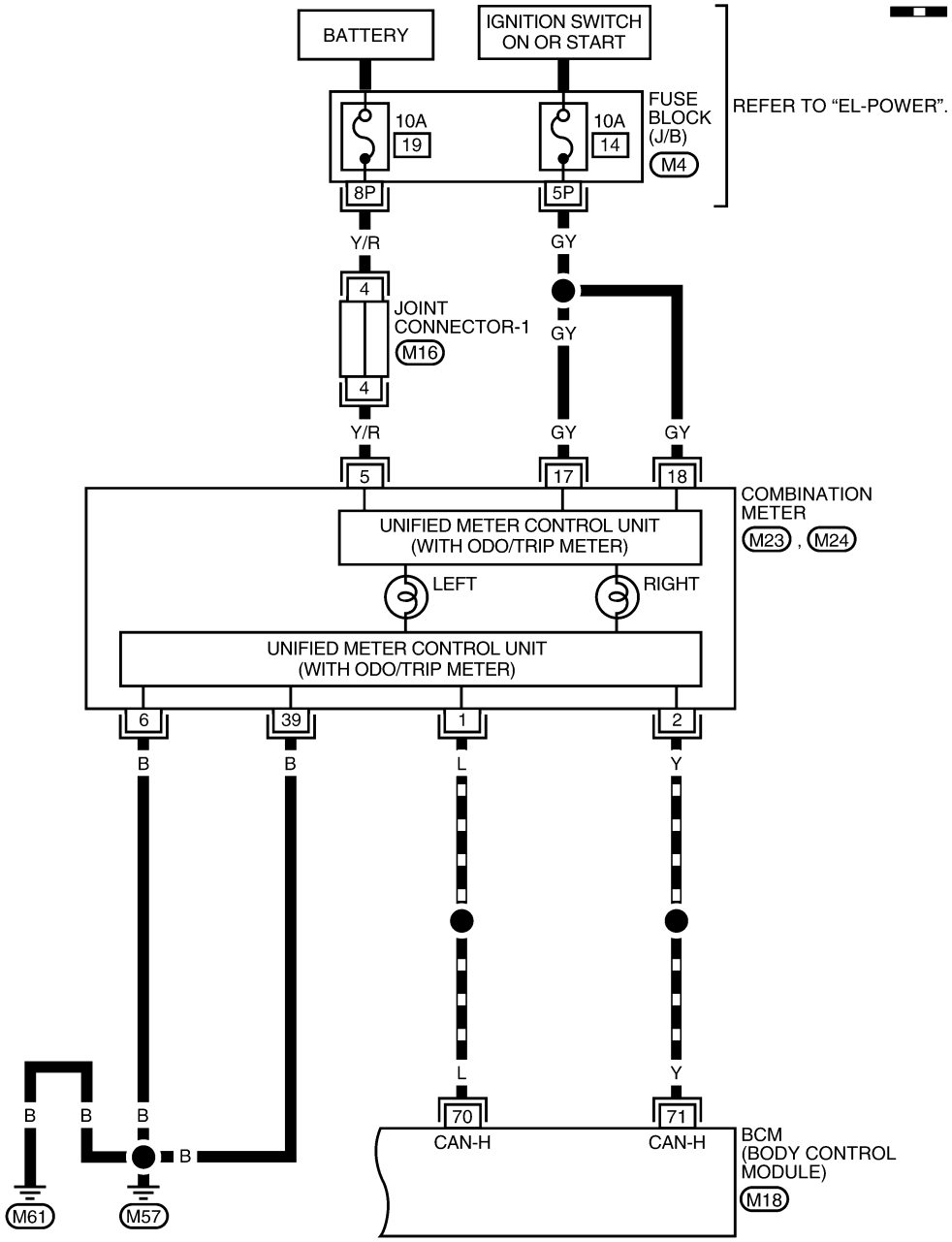


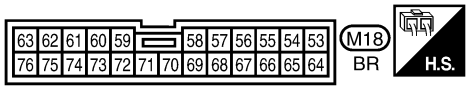


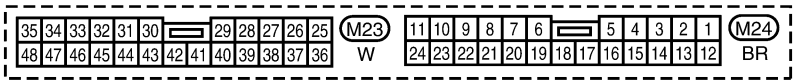
REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)
B37 - JOINT CONNECTOR (J/C)

WKWA0400E

LT-TURN-03





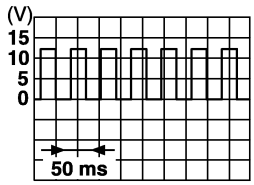
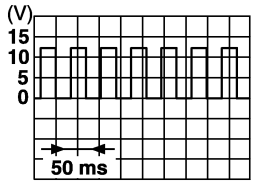
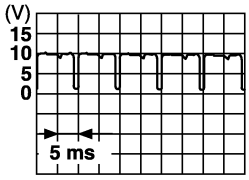
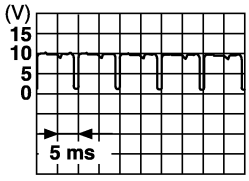


REFER TO THE FOLLOWING.
M4 - FUSE BLOCK - JUNCTION BOX (J/B)
M16 - JOINT CONNECTOR (J/C)

LKWA0033E

Terminals and Reference Value for BCM

EKS00427

Terminal No.	Wire color	Signal name	Measuring condition			Reference value (V) or waveform
			Ignition switch	Operation or condition		
7	W/B	Battery power supply	OFF	—		Approx. 12V
8	B	Ground	ON	—		Approx. 0V
21	G/Y	Turn signal (right)	ON	Combination switch	Turn right ON	 SKIA1120J
22	G/B	Turn signal (left)	ON	Combination switch	Turn left ON	 SKIA1120J
35	G	IGN power	ON	—		Approx. 12V
42	R/Y	Combination switch OUTPUT 4	ON	Lighting, turn, wiper OFF		 SKIA1119J
43	L	Combination switch OUTPUT 5	ON	Lighting, turn, wiper OFF		 SKIA1119J
48	G/W	Combination switch INPUT 1	ON	Lighting, turn, wiper OFF		Approx. 0V
61	G/R	Hazard	OFF	Hazard switch	ON	Approx. 0V
					OFF	Approx. 5V

CONSULT-II Function

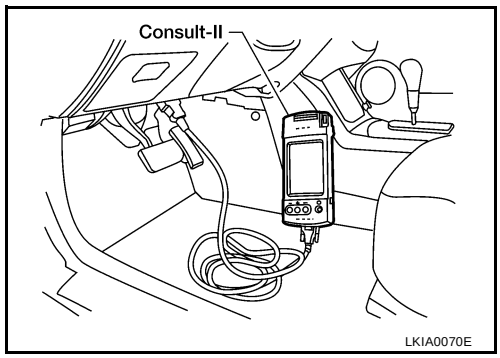
EKS00428

CONSULT-II has a display function for work support, self-diagnosis, data monitor, and active test for each part by combining data receiving and sending via the communication line from BCM.

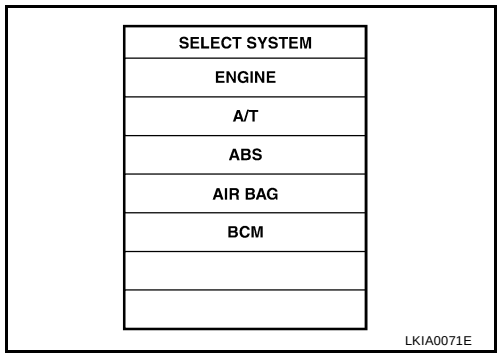
BCM diagnosis part	Check item, diagnosis mode	Description
Flasher	Data monitor	Displays BCM input data in real time.
	Active test	Operation of electrical loads can be checked by sending driving signal to them.

CONSULT-II BASIC OPERATION

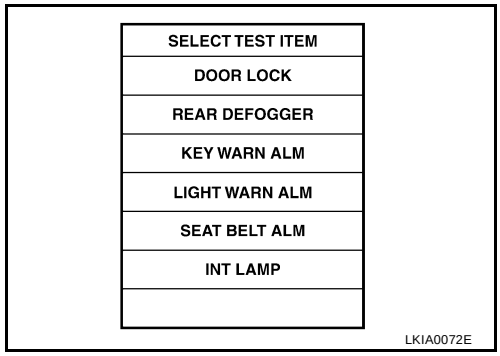
1. With the ignition switch OFF, connect CONSULT-II to the vehicle-side data link connector, then turn ignition switch ON.
2. Touch “START”.



3. Touch “BCM” on “SELECT SYSTEM” screen.



4. Select the desired part to be diagnosed on the “SELECT TEST ITEM” screen.



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 “DATA MONITOR” screen.

All signals	Monitors all the signals.
Selection from menu	Selects and monitors the individual signal.

4. Touch “START”.
5. When “SELECTION FROM MENU” is selected, touch items to be monitored. When “ALL SIGNALS” is selected, all the items will be monitored.
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 name “OPERATION OR UNIT”		Contents
IGN ON SW	“ON/OFF”	“IGN position (ON)/OFF, ACC position (OFF)” judged from the ignition switch signal is displayed.
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.

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 “BACK” deactivates the operation.

Display Item List

Test item	Display on CONSULT-II screen	Description
Turn signal lamp (right) output	FLASHER (RIGHT)	Turn signal lamp (right) can be operated by any ON-OFF operations.
Turn signal lamp (left) output	FLASHER (LEFT)	Turn signal lamp (left) can be operated by any ON-OFF operations.
Turn signal lamp (right) indicator signal output	FLASHER (RIGHT) (CAN)	Turn signal lamp (right) indicator signal can be output by CAN communication line to gauges by any ON-OFF operations.
Turn signal lamp (left) indicator signal output	FLASHER (LEFT) (CAN)	Turn signal lamp (left) indicator signal can be output by CAN communication line to gauges by any ON-OFF operations.

Turn Signal Lamp Does Not Operate

EKS00429

1. BULB INSPECTION

Check each turn signal lamp bulb to make sure correct bulbs are installed.

OK or NG

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

2. INSPECTION 1 BETWEEN COMBINATION SWITCH AND BCM

Select BCM on CONSULT-II. Carry out “BCM C/U” self-diagnosis.

Displayed results of self-diagnosis

Diagnosis system 1 - 5>> Combination switch system malfunction. Refer to BCS-16, "Combination Switch Inspection According to Self-Diagnostic Results" .

No malfunction detected>> GO TO 3.

SELF-DIAG RESULTS	
DTC RESULTS	TIME
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	

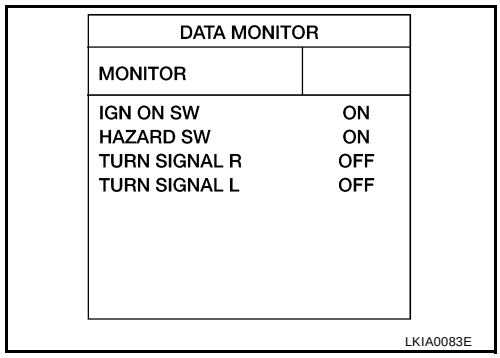
LKIA0073E

3. INSPECTION 2 BETWEEN COMBINATION SWITCH AND BCM

Select “BCM” on CONSULT-II. With “FLASHER” data monitor, check that “TURN SIGNAL R” and “TURN SIGNAL L” turn ON-OFF according to operation of turn signal switch.

OK or NG

OK >> GO TO 4.
NG >> Replace lighting switch. Refer to LT-96, "Removal and Installation" .

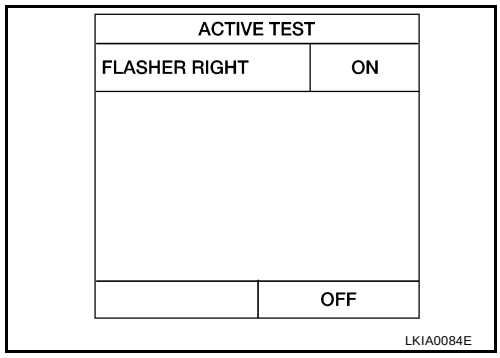


4. INSPECTION 1 BETWEEN BCM AND TURN SIGNAL LAMPS

1. Select “BCM” on CONSULT-II. Select “FLASHER” active test.
2. Check that “FLASHER RIGHT” and “FLASHER LEFT” operate.

OK or NG

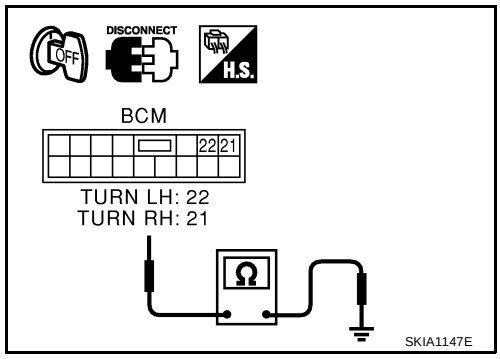
OK >> Replace BCM.
NG >> GO TO 5.



5. INSPECTION 2 BETWEEN BCM AND TURN SIGNAL LAMPS

1. Disconnect BCM connector and all turn signal lamp connectors.
2. Check continuity between harness connectors of BCM and body ground.

Terminals				Continuity
BCM				
Connector		Terminal (wire color)		
Right	M20	21 (G/Y)	Body ground	No
Left	M20	22 (G/B)		



OK or NG

OK >> Replace BCM.
NG >> Check for short circuit in harnesses between BCM and each turn signal and repair as necessary.

Hazard Lamp Does Not Operate

EKS0042A

1. BULB INSPECTION

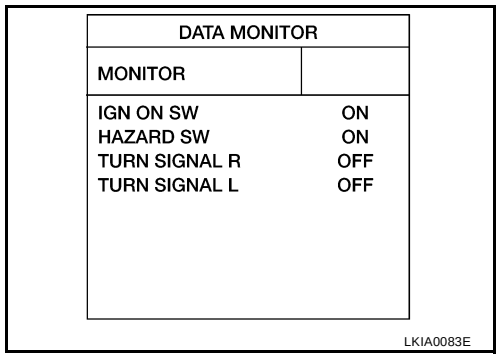
Check each turn signal lamp bulb to make sure correct bulbs are installed.

OK or NG

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

2. INSPECTION 1 BETWEEN HAZARD SWITCH AND BCM

Select “BCM” on CONSULT-II. Use “FLASHER” data monitor to verify that “HAZARD SW” turns ON-OFF according to operation of hazard switch.



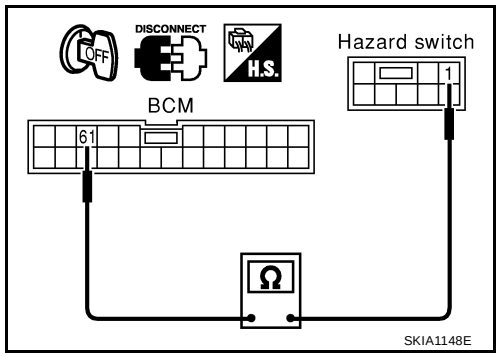
OK or NG

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

3. INSPECTION 2 BETWEEN HAZARD SWITCH AND BCM

1. Disconnect BCM connector and hazard switch connector.
2. Check continuity between harness connector terminal of BCM and harness connector terminal of hazard switch.

Terminals				Continuity
BCM		Hazard switch		
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
M18	61 (G/R)	M55	1 (G/R)	Yes



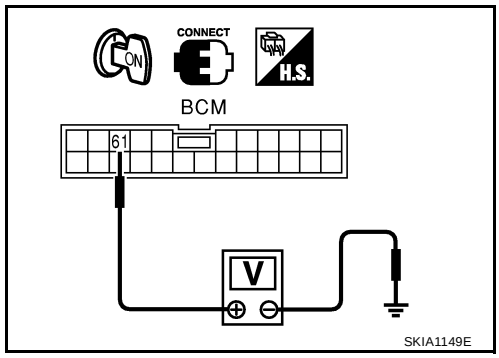
OK or NG

OK >> Connect connectors. GO TO 4.
NG >> Check for short circuit or open circuit in harness between BCM and hazard switch. Repair as necessary.

4. INSPECTION BCM

Check voltage between BCM terminal and body ground.

Terminals			Voltage
BCM (+)		Body ground (–)	1.6V or more
Connector	Terminal (wire color)		
M18	61 (G/R)		

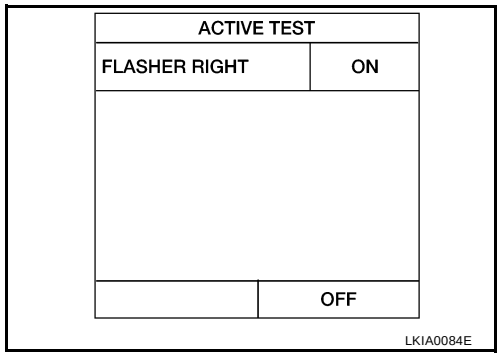


OK or NG

OK >> Replace hazard switch. Refer to LT-97, "Removal and Installation" .
NG >> Replace BCM.

5. INSPECTION 1 BETWEEN BCM AND TURN SIGNAL LAMPS

1. Select “BCM” on CONSULT-II. Select “FLASHER” active test.
2. Check that “FLASHER RIGHT” and “FLASHER LEFT” operate.



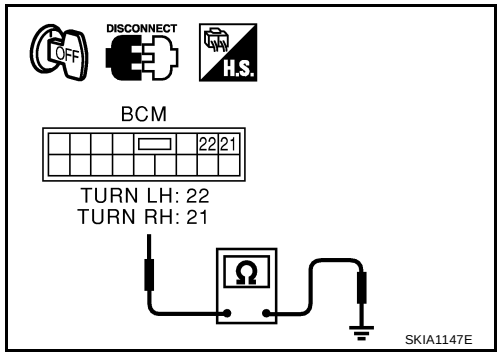
OK or NG

OK >> Replace BCM.
NG >> GO TO 6.

6. INSPECTION 2 BETWEEN BCM AND TURN SIGNAL LAMPS

1. Disconnect BCM connector and all turn signal lamp connectors.
2. Check continuity between harness connectors of BCM and body ground.

Terminals				Continuity
BCM				
Connector		Terminal (wire color)		
Right	M20	21 (G/Y)	Body ground	No
Left	M20	22 (G/B)		



OK or NG

OK >> Replace BCM.
NG >> Check for short circuit in harnesses between BCM and each turn signal. Repair as necessary.

Turn Signal Indicator Lamp Does Not Operate

EKS0042B

1. BULB INSPECTION

Inspect turn signal indicator lamp bulb.

OK or NG

OK >> Replace combination meter. Refer to DI-21, "Removal and Installation" .
NG >> Replace indicator bulb.

Bulb Replacement

EKS0042C

FRONT TURN SIGNAL LAMP

Refer to LT-24, "Bulb Replacement" .

REAR TURN SIGNAL LAMP

Refer to LT-121, "TAIL LAMP" .

Removal and Installation

EKS0042D

FRONT TURN SIGNAL LAMP

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

REAR TURN SIGNAL LAMP

Refer to LT-122, "REAR COMBINATION LAMP" .

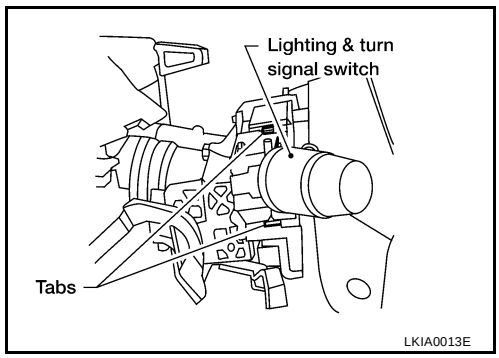
LIGHTING AND TURN SIGNAL SWITCH

PFP:25540

Removal and Installation

EKS0042E

1. Remove the steering column cover. Refer to PS-10, "Removal and installation" .
2. Pinch tabs and slide out lighting and turn signal switch (combination switch).



Switch Circuit Inspection

EKS0042F

Refer to BCS-16, "Combination Switch Inspection According to Self-Diagnostic Results" .

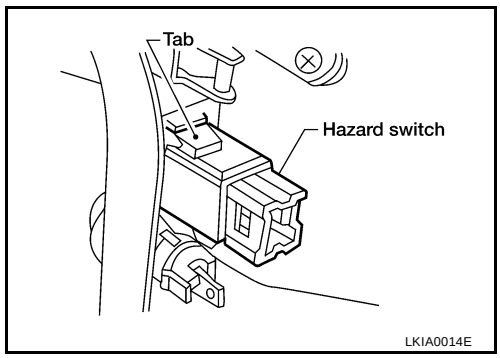
HAZARD SWITCH

PFP:25290

Removal and Installation

EKS0042G

1. Remove center console storage compartment. Refer to IP-12, "Removal and Installation" .
2. Depress hazard switch tab, and remove hazard switch.



COMBINATION SWITCH

PFP:25567

Combination Switch Reading Function

EKS0042H

Refer to BCS-3, "Combination Switch Reading Function" .

CONSULT-II Function

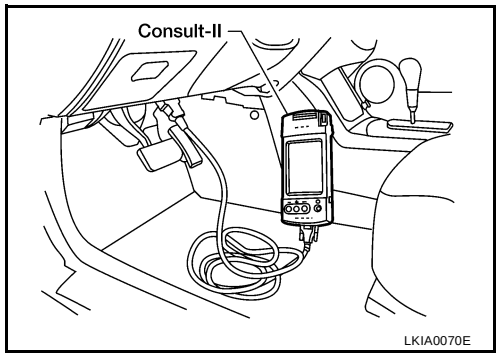
EKS0042I

CONSULT-II has a display function for work support, self-diagnosis, data monitor, and active test for each part by combining data receiving and sending via the communication line from BCM.

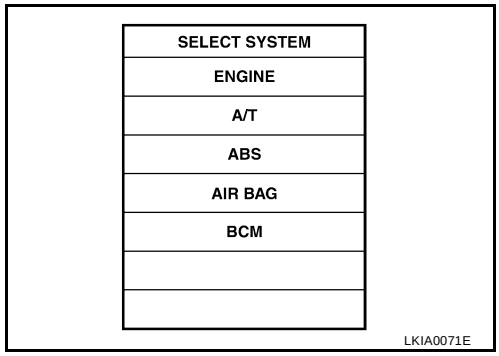
BCM diagnosis part	Check item, diagnosis mode	Description
Combination switch	Data monitor	Displays BCM input data in real time.

CONSULT-II BASIC OPERATION

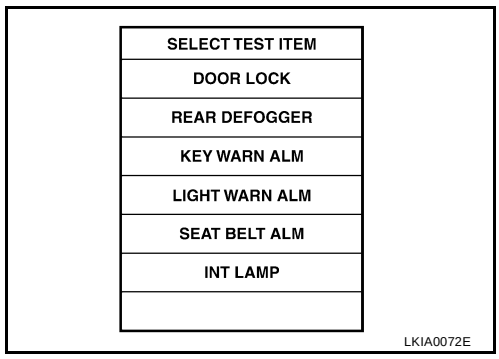
1. With the ignition switch OFF, connect CONSULT-II to the vehicle-side data link connector, then turn ignition switch ON.
2. Touch “START”.



3. Touch “BCM” on “SELECT SYSTEM” screen.



4. Select the desired part to be diagnosed on the “SELECT TEST ITEM” screen.



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 “DATA MONITOR” screen.

All signals	Monitors all the signals.
Selection from menu	Selects and monitors individual signal.

4. Touch “START”.
5. When “SELECTION FROM MENU” is selected, touch items to be monitored. When “ALL SIGNALS” is selected, all the signals will be monitored.
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 name “OPERATION OR UNIT”		Contents
TAIL LAMP SW	“ON/OFF”	Displays status (lighting switch 1st position: ON/Others: OFF) of lighting switch judged from lighting switch signal.
HEAD LAMP SW 1	“ON/OFF”	Displays “Headlamp Switch 1 (ON)/Other (OFF)” status, determined from lighting switch signal.
HEAD LAMP SW 2	“ON/OFF”	Displays status (headlamp switch 2: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.
HI BEAM SW	“ON/OFF”	Displays status (high beam switch: ON/Others: OFF) of high beam 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[Note]	“ON/OFF”	Displays status of the lighting switch as judged from the lighting switch signal. (AUTO position: ON/Other than AUTO position: OFF)
FR FOG SW	“ON/OFF”	Displays status (front fog switch: ON/Others: OFF) of front fog switch judged from lighting switch signal.
FR WIPER HI	“ON/OFF”	Displays “Front Wiper HI (ON)/Other (OFF)” status, determined from wiper switch signal.
FR WIPER LO	“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.
INT VOLUME	[1 - 7]	Displays intermittent operation knob setting (1 - 7), determined from wiper switch signal.
FR WASHER SW	“ON/OFF”	Displays “Front Washer Switch (ON)/Other (OFF)” status, determined from wiper 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.

NOTE:
For vehicles without auto light, item will be displayed but monitoring is not possible.

Removal and Installation

EKS0042J

For details, refer to LT-96, "Removal and Installation" .

Switch Circuit Inspection

EKS0042K

For details, refer to BCS-16, "Combination Switch Inspection According to Self-Diagnostic Results" .

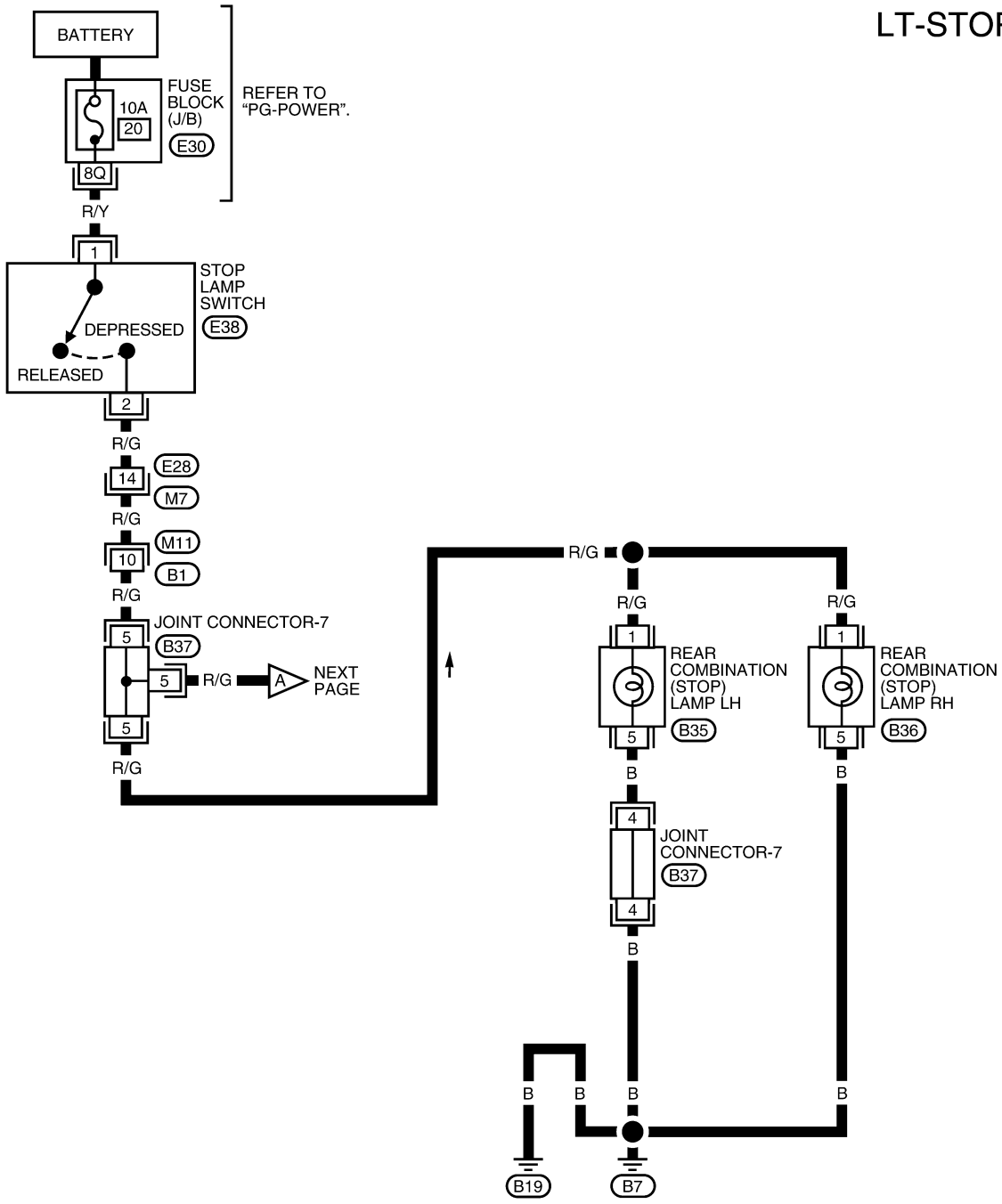
STOP LAMP

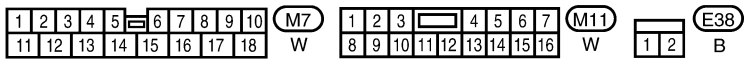
PFP:26550

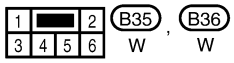
Wiring Diagram — STOP/L —

EKS0042L

LT-STOP/L-01



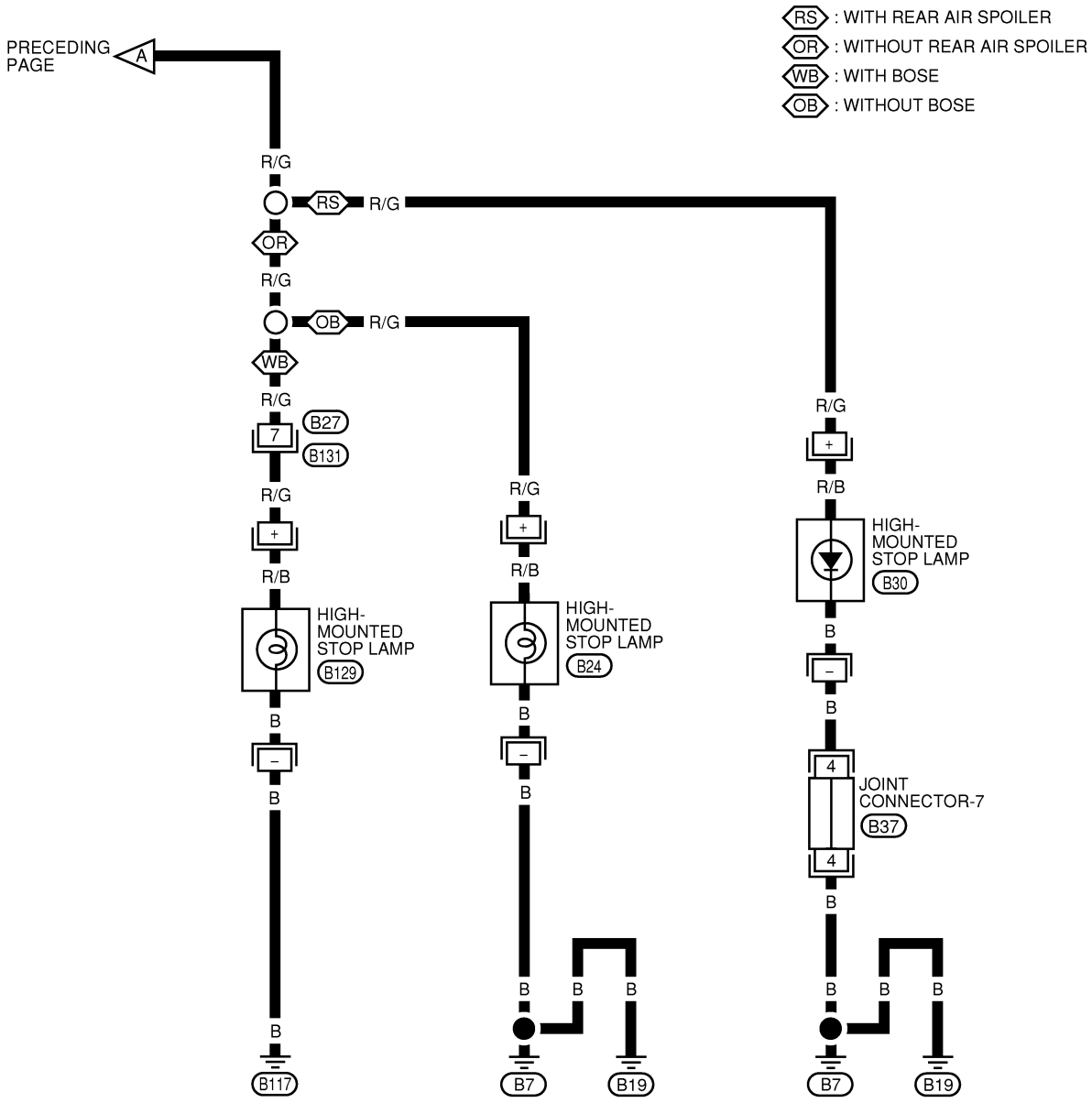




REFER TO THE FOLLOWING.
E30 - FUSE BLOCK-JUNCTION BOX (J/B)
B37 - JOINT CONNECTOR (J/C)

LKWA0034E

LT-STOP/L-02



B24, B129 W W

B30 BR

1 2 3 4 5 6 7 8 B131 W

REFER TO THE FOLLOWING.
B37 - JOINT CONNECTOR (J/C)

LKWA0035E

Bulb Replacement for High-mounted Stop Lamp

EKS0042M

WITH REAR SPOILER

When this vehicle is equipped with a rear spoiler, the high-mounted stop lamp uses an LED circuit board instead of a bulb. The LED circuit board is not serviceable, and must be replaced as an assembly.

WITHOUT REAR SPOILER

1. Remove high-mounted stop lamp assembly. Refer to LT-102, "Removal and Installation for High-mounted Stop Lamp" .
2. Turn bulb socket counterclockwise to unlock and remove from lamp assembly.
3. Turn bulb counterclockwise to remove from socket.

Installation is the reverse order of removal.

Bulb Replacement for Rear Combination Lamp

EKS0042N

1. Remove rear combination lamp. Refer to LT-102, "Removal and Installation for Rear Combination Lamp" .
2. Turn bulb socket counterclockwise to unlock, and remove from combination lamp assembly.
3. Turn bulb counterclockwise to remove from bulb socket.

Installation is the reverse order of removal.

Removal and Installation for High-mounted Stop Lamp

EKS0042O

WITH REAR SPOILER

When this vehicle is equipped with a rear spoiler, the high-mounted stop lamp uses an LED circuit board instead of a bulb. The LED circuit board is not serviceable, and must be replaced as an assembly.

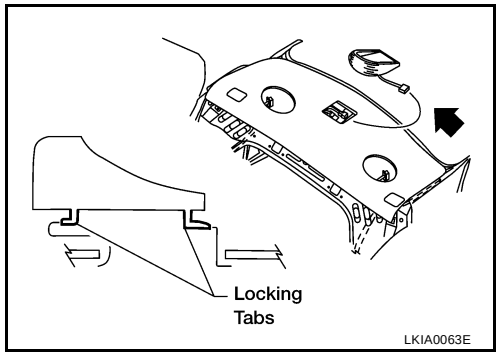
1. From trunk, disconnect electrical connector.
2. Remove screws, and high-mounted stop lamp assembly.

Installation is the reverse order of removal.

WITHOUT SPOILER

1. Slide high-mounted stop lamp assembly rearward on parcel shelf to give clearance to front tabs.
2. Lift front of lamp assembly up and bring forward to give clearance to rear tabs.
3. Disconnect connector, and remove from vehicle.

Installation is the reverse order of removal.



Removal and Installation for Rear Combination Lamp

EKS0042P

1. Displace trunk room trim as needed. Refer to EI-35, "Removal and Installation" .
2. From trunk, remove nuts securing rear combination lamp assembly.
3. Disconnect connectors and remove assembly.

Installation is reverse order of removal.

Rear combination lamp mounting nut:

: 2.5 - 3.7 N·m (0.25 - 0.38 kg-m, 22 - 33 in-lb)

STEP LAMP

PFP:26420

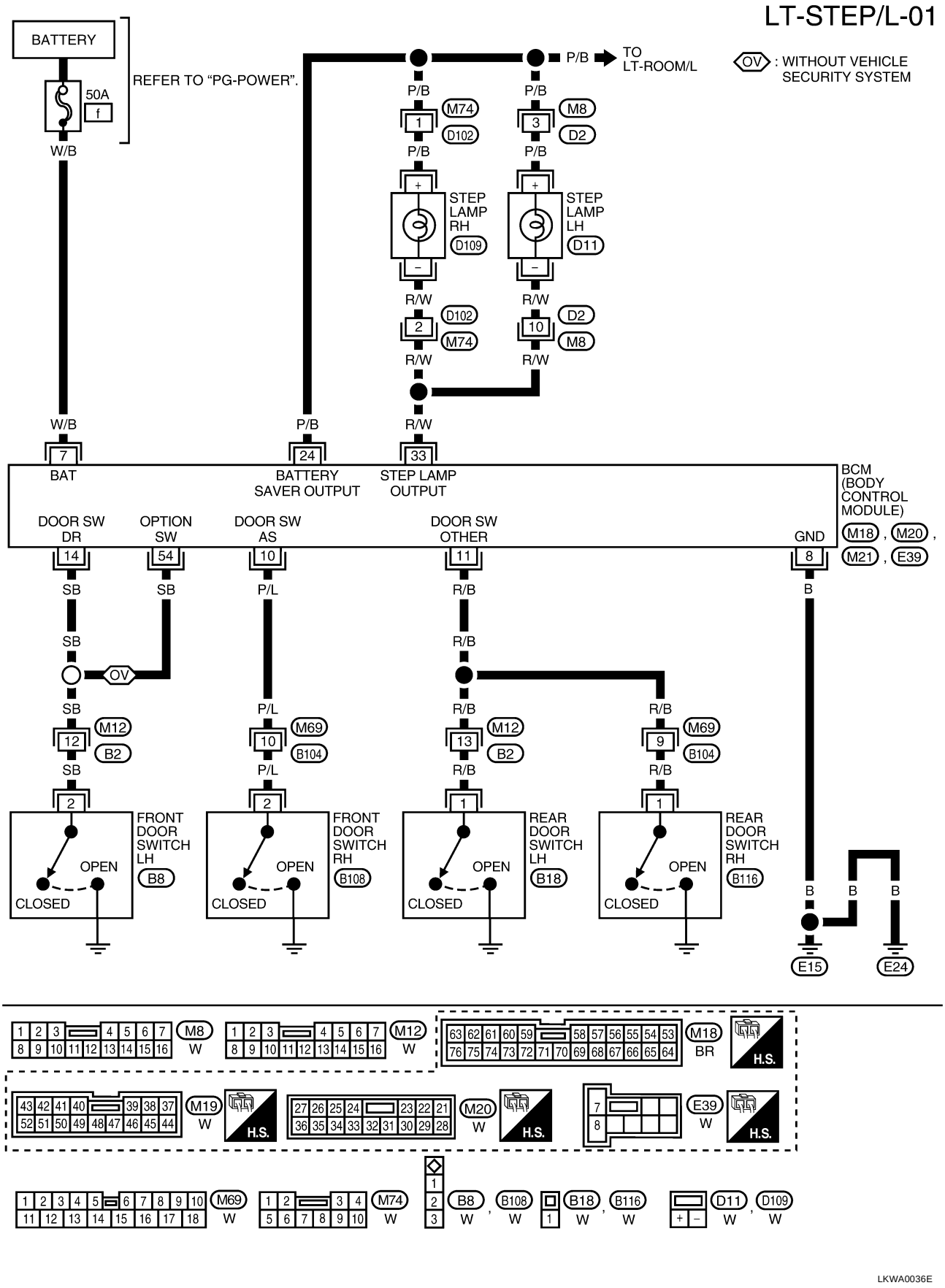
System Description

EKS0042Q

Step lamp turns ON at time when driver door, passenger door, RH rear door, or LH rear door is opened (door switch ON). Lamp turns OFF when all doors are closed (all door switches OFF).

Wiring Diagram — STEP/L —

EKS0042R



LKWA0036E

Terminals and Reference Value for BCM

EKS0042S

Terminal No.	Wire color	Signal name	Measuring condition			Standard (V) (Approx.)
			Ignition switch	Operation or condition		
7	W/B	Battery power supply	OFF	—		12
8	B	Ground	ON	—		0
10	P/L	Front door switch RH signal	OFF	Front door switch RH	ON (open)	0
					OFF (closed)	12
11	R/B	Rear door switch (LH and RH) signal	OFF	Rear door switch (LH and RH)	ON (open)	0
					OFF (closed)	12
14	SB	Front door switch LH signal	OFF	Front door switch LH	ON (open)	0
					OFF (closed)	12V
24	P/B	Battery saver output signal	OFF	Any door switch	ON (open)	0Note
					OFF (closed)	12V
33	R/W	Step lamp signal	OFF	Any door is open (ON)		0
				All doors are closed (OFF)		12

Note: Becomes battery voltage approximately 30 seconds after any door is opened.

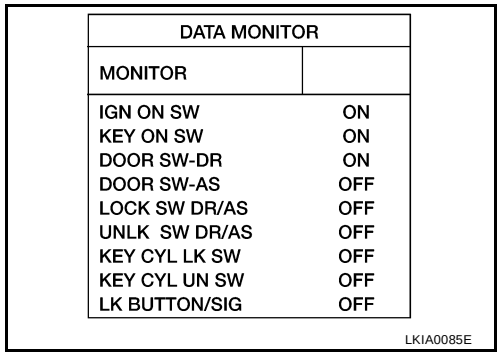
Step Lamp Does Not Operate

EKS0042T

1. INSPECTION 1 BETWEEN EACH DOOR SWITCH AND BCM

Select BCM on CONSULT-II. Use “INT LAMP” data monitor to check that switches listed below turn ON-OFF according to switch operation.

Switch name	CONSULT screen
Driver door switch	DOOR SW - DR
Each door switch	DOOR SW - AS



OK or NG

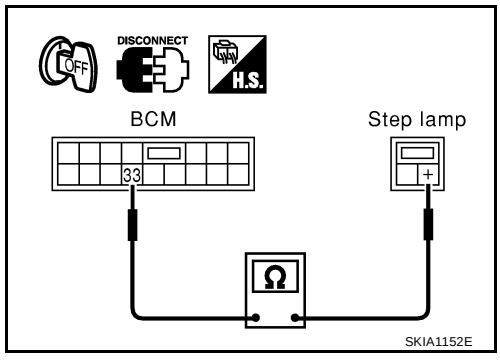
OK >> GO TO 2.

NG >> Inspect malfunctioning switch system. Repair as necessary.

2. INSPECTION 1 BETWEEN BCM AND STEP LAMP

1. Disconnect BCM connector and left/right step lamp connectors.
2. Check continuity between harness connector terminal of BCM and harness connector terminal of left/right step lamps.

Terminals				Continuity
BCM		Step lamp		
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
M20	33 (R/W)	D109	– (R/W)	Yes
M20	33 (R/W)	D11	– (R/W)	Yes



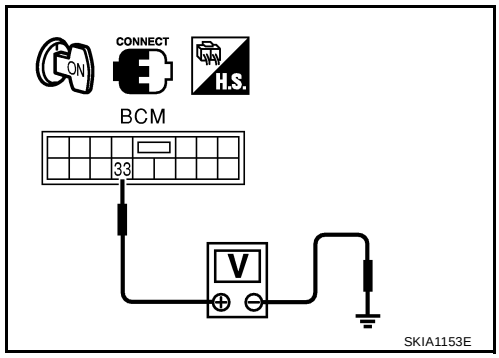
OK or NG

OK >> Connect step lamp electrical connector. GO TO 4.

NG >> Check for short circuit or open circuit in harness between BCM and interior lamp. Repair as necessary.

3. INSPECTION 2 BETWEEN BCM AND STEP LAMP

Check voltage between harness connector terminal of BCM and body ground.



Terminals			Voltage (Approx.)
BCM (+)		Body ground (–)	12
Connector	Terminal (wire color)		
M20	33 (R/W)		

OK or NG

OK >> Replace BCM.
NG >> Replace step lamp.

Bulb Replacement

EKS0042U

1. Pry lens cover from lamp assembly.
2. Push and turn bulb to remove.

Installation is reverse order of removal.

Removal and Installation

EKS0042V

1. Carefully pry lens from door finisher.
2. Disconnect electrical connector.

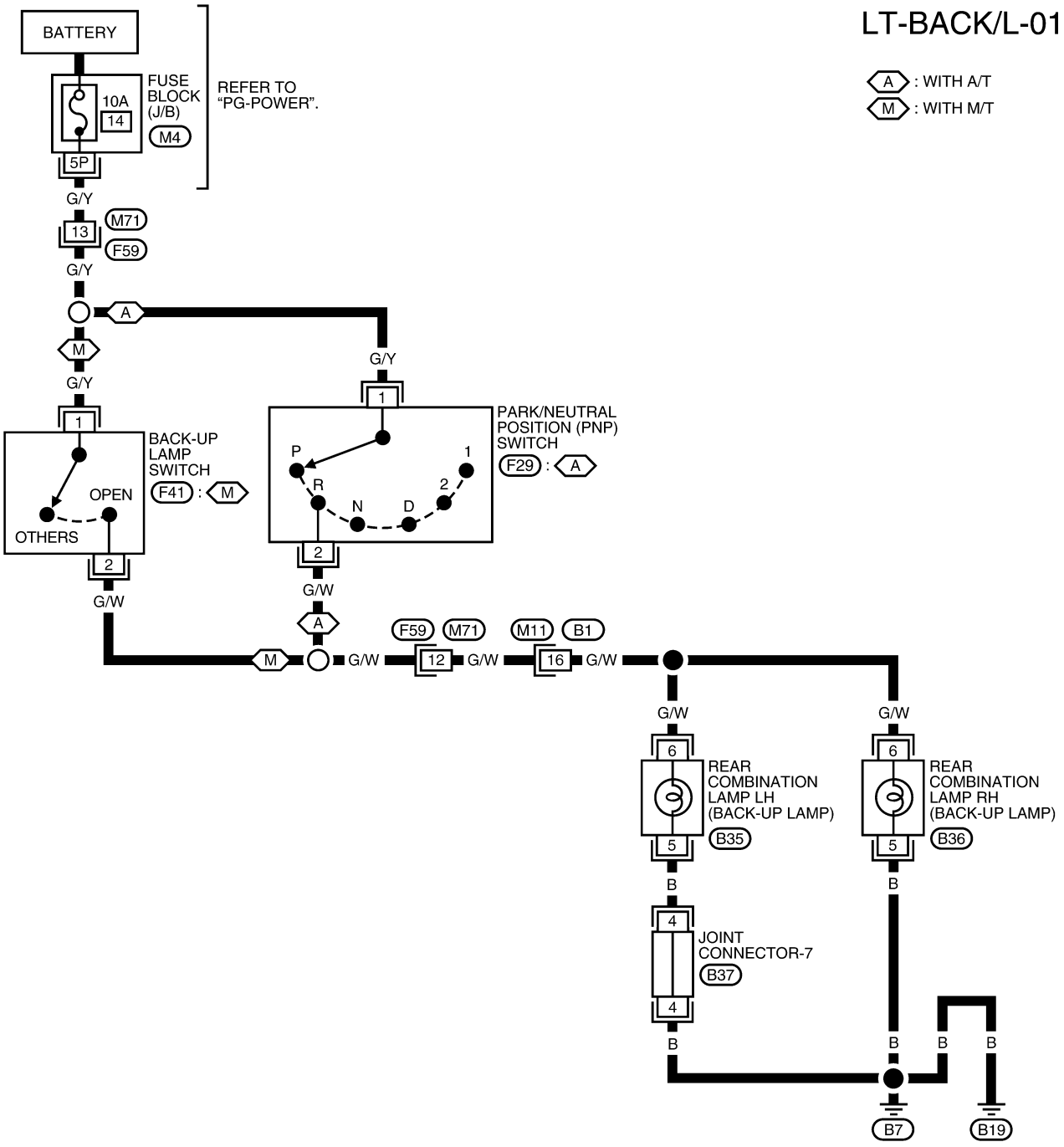
Installation is reverse order of removal.

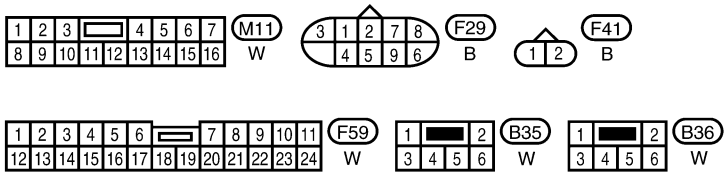
BACK-UP LAMP

PFP:26550

Wiring Diagram — BACK/L —

EKS0042W





REFER TO THE FOLLOWING.
M4 - FUSE BLOCK - JUNCTION BOX (J/B)
B37 - JOINT CONNECTOR (J/C)

LKWA0037E

Bulb Replacement

EKS0042X

1. Remove rear combination lamp. Refer to LT-102, "Removal and Installation for Rear Combination Lamp" .
2. Turn bulb socket counterclockwise to unlock and remove.
3. Pull bulb from socket to remove.

Installation is reverse order of removal.

Removal and Installation

EKS0042Y

The back-up lamp is part of the rear combination lamp assembly. For removal and installation, refer to LT-102, "Removal and Installation for Rear Combination Lamp" .

PARKING, LICENSE PLATE AND TAIL LAMPS

PFP:26550

System Description

EKS0042Z

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

Power is supplied at all times

- to tail lamp relay, located in the IPDM E/R (intelligent power distribution module engine room)
- through 10A fuse [No. 38, located in the IPDM E/R (intelligent power distribution module engine room)].

Power is also supplied at all times

- to BCM (body control module) terminal 7
- through 50A fusible link (letter **f** , located in the fuse and fusible link box).

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

- to BCM (body control module) terminal 35
- through 10A fuse [No. 12, located in the fuse block (J/B)].

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

- to BCM (body control module) terminal 36
- through 10A fuse [No. 6, located in the fuse block (J/B)].

Ground is supplied

- to BCM (body control module) terminals 8, 27, and 63
- through body grounds M57, M61, E15, and E24.

OPERATION BY LIGHTING SWITCH

With the lighting switch in the 1st or 2nd position (or if the auto light system is activated), the BCM (body control module) receives input requesting the parking, license plate, and tail lamps to illuminate. This input is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The central processing unit of the IPDM E/R controls the tail lamp relay coil. When energized, this relay directs power

- through terminal 37 of the IPDM E/R
- to front turn signal lamp LH terminal 1,
- to front turn signal lamp RH terminal 1,
- to rear combination lamp LH terminal 2,
- to rear combination lamp RH terminal 2,
- to license lamp LH terminal +, and
- to license lamp RH terminal +.

Ground is supplied at all times

- to front turn signal lamp LH terminal 2,
- through body grounds E15 and E24, and
- to front turn signal lamp RH terminal 2,
- through body grounds E15 and E24, and
- to rear combination lamp LH terminal 5
- through body grounds B7 and B19, and
- to rear combination lamp RH terminal 5
- through body grounds B7 and B19, and
- to license lamp LH terminal –,
- through body grounds B7 and B19, and
- to license lamp RH terminal –
- through body grounds B7 and B19.

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

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, and tail lamps remain illuminated for 5 minutes, unless the combination switch (lighting switch) position is changed. If the combination switch (lighting switch) position is changed, then the parking, license plate, and tail lamps are turned off.

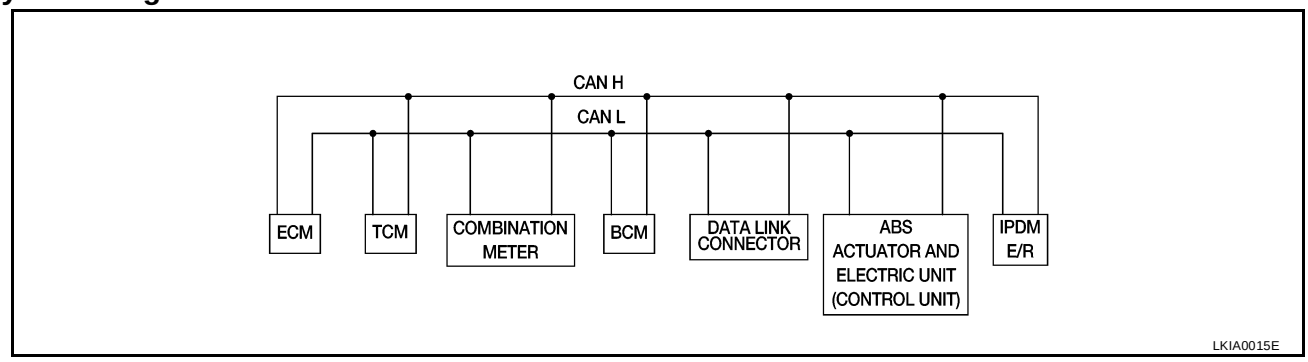
CAN Communication System Description

EKS00430

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.

FOR TCS MODELS

System diagram



Input/output signal chart

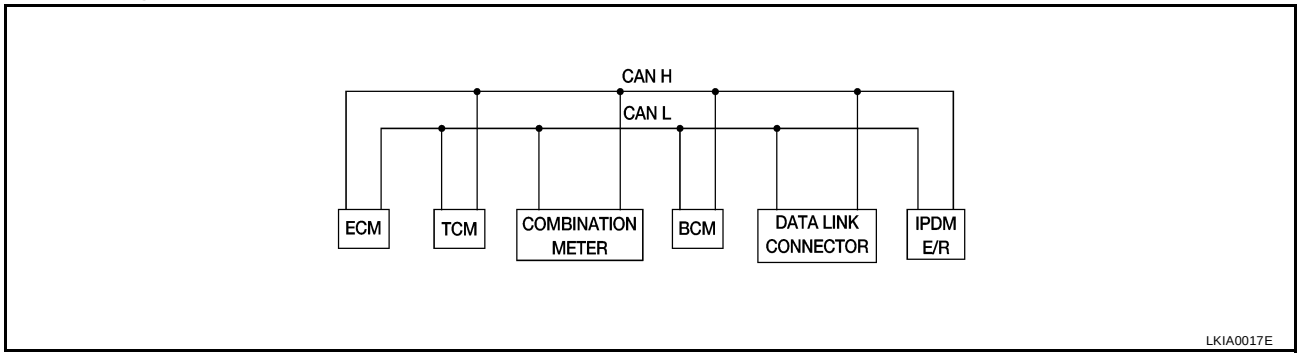
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Engine speed signal	T		R		R	
Engine coolant temperature signal	T		R			
Accelerator pedal position signal	T					
Fuel consumption monitor signal	T		R			
A/T warning lamp signal		T	R			
A/T position indicator signal	R	T	R	R(R range only)	R	
ABS operation signal	R				T	
TCS operation signal	R	R			T	
Air conditioner switch signal	R			T		
Air conditioner compressor signal	R					T
A/C compressor request signal	T					R
Cooling fan motor operation signal	R					T
Cooling fan speed request signal	T					R
Position lights request			R	T		R
Position lights status				R		T
Low beam request				T		R
Low beam status	R			R		T
High beam request			R	T		R
High beam status	R			R		T
Front fog lights request				T		R

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Front fog light status				R		T
OD cancel switch signal		R	T			R
Brake switch signal		R	T			
Vehicle speed signal	R		T			
	R		T	R		
Oil pressure switch			R			T
Sleep request1			R	T		
Sleep request2				T		R
N range switch signal		R	T			
P range switch signal		R	T			
Seat belt buckle switch signal			T	R		
Door switch signal			R	T		R
Tail lamp request			R	T		R
Turn indicator signal			R	T		
Buzzer output signal			R	T		
Trunk switch signal			R	T		
ASCD main switch signal	T		R			
ASCD cruise signal	T		R			
Wiper operation				R		T
Wiper stop position signal				R		T
Rear window defogger switch signal				T		R
Rear window defogger control signal	R			R		T

FOR A/T MODELS

System diagram



Input/output signal chart

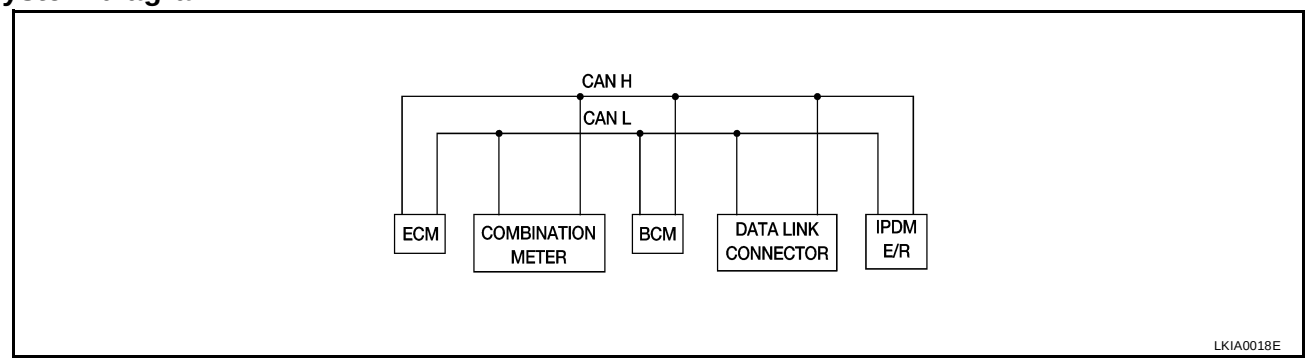
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T		R		
Engine coolant temperature signal	T		R		
Accelerator pedal position signal	T				R
Fuel consumption monitor signal	T		R		
A/T warning lamp signal		T	R		
A/T position indicator signal	R	T	R	R(R range only)	

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
Air conditioner switch signal	R			T	
Air conditioner compressor signal	R				T
A/C compressor request signal	T				R
Blower fan switch signal	R(QR25DE)			T	
Cooling fan motor operation signal	R			T	
Cooling fan speed request signal	T				R
Position lights request			R	T	R
Position lights status				R	T
Low beam request				T	R
Low beam status	R			R	T
High beam request			R	T	R
High beam status	R			R	T
Front fog lights request				T	R
Front fog light status				R	T
OD cancel switch signal		R	T		R
Brake switch signal		R	T		
Vehicle speed signal	R		T		
	R		T	R	
Oil pressure switch			R		T
Sleep request1			R	T	
Sleep request2				T	R
N range switch signal		R	T		
P range switch signal		R	T		
Seat belt buckle switch signal			T	R	
Door switch signal			R	T	R
Tail lamp request			R	T	R
Turn indicator signal			R	T	
Buzzer output signal			R	T	
Trunk switch signal			R	T	
ASCD main switch signal	T		R		
ASCD cruise signal	T		R		
Wiper operation				R	T
Wiper stop position signal				R	T
Rear window defogger switch signal				T	R
Rear window defogger control signal	R			R	T

FOR M/T MODELS

System diagram



Input/output signal chart

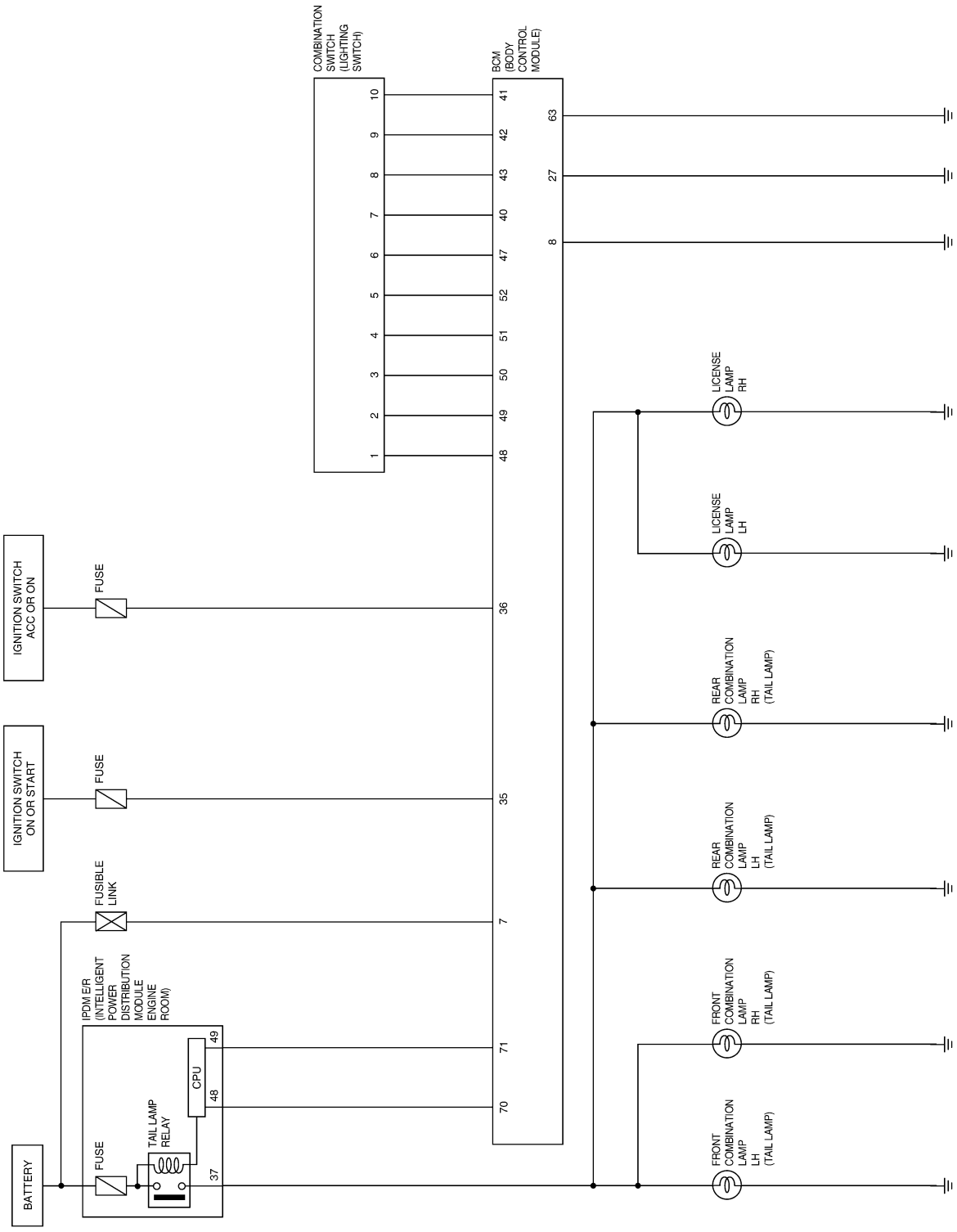
T: Transmit R: Receive

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T			
Engine coolant temperature signal	T			
Fuel consumption monitor signal	T			
Air conditioner switch signal	R		T	
Air conditioner compressor signal	R			T
A/C compressor request signal	T			R
Blower fan switch signal	R(QR25DE)		T	
Cooling fan motor operation signal	R			T
Cooling fan speed request signal	T			R
Position lights request		R	T	R
Position lights status			R	T
Low beam request			T	R
Low beam status	R		R	T
High beam request		R	T	R
High beam status	R		R	T
Front fog lights request			T	R
Front fog light status			R	T
Vehicle speed signal	R	T		
Oil pressure switch		R		T
Sleep request1		R	T	
Sleep request2			T	R
Seat belt buckle switch signal		T	R	
Door switch signal		R	T	R
Tail lamp request		R	T	R
Turn indicator signal		R	T	
Buzzer output signal		R	T	
Trunk switch signal		R	T	
ASCD main switch signal	T	R		
ASCD cruise signal	T	R		
Wiper operation			R	T
Wiper stop position signal			R	T

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Rear window defogger switch signal			T	R
Rear window defogger control signal	R		R	T

Schematic

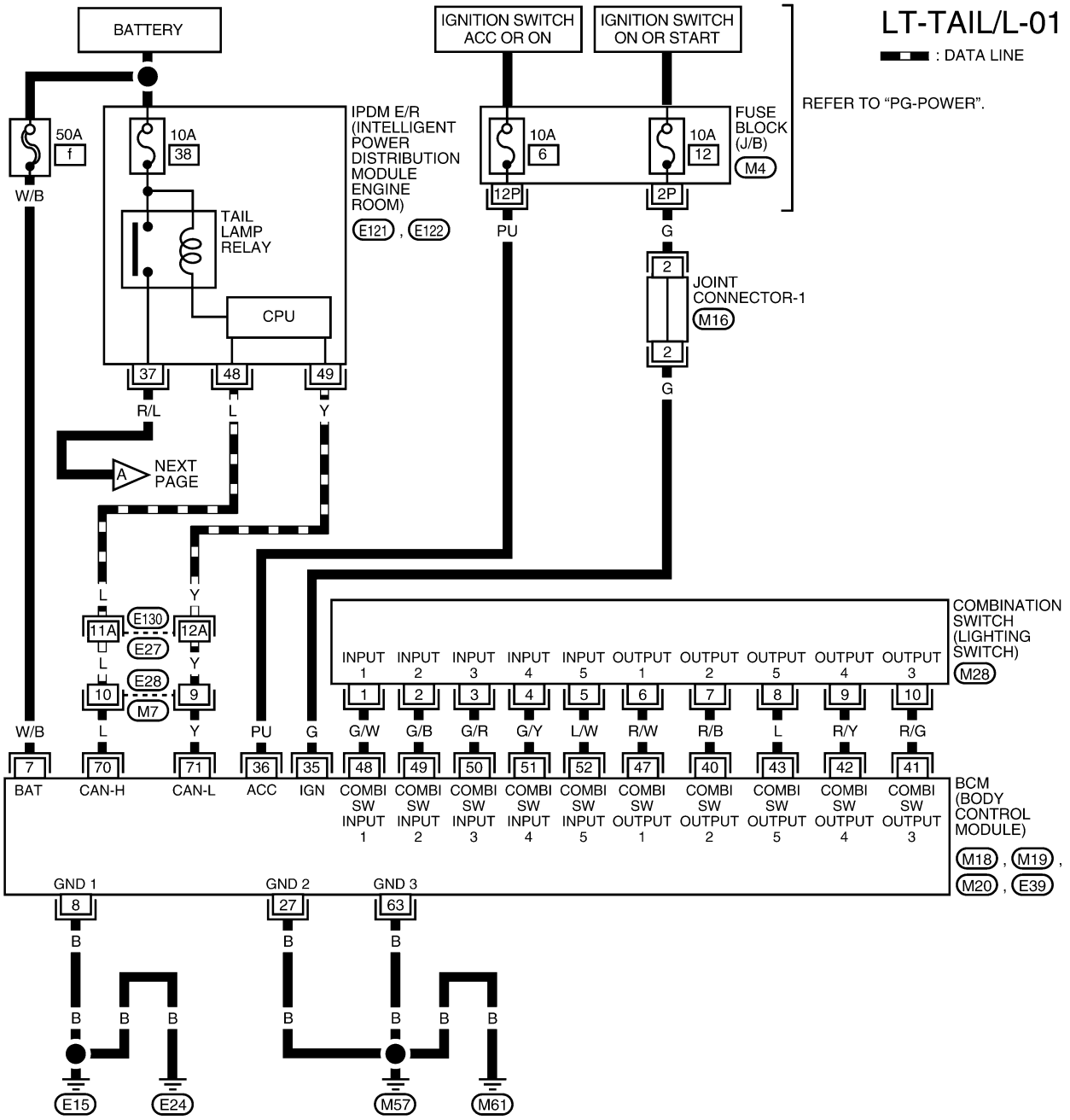
EKS00431



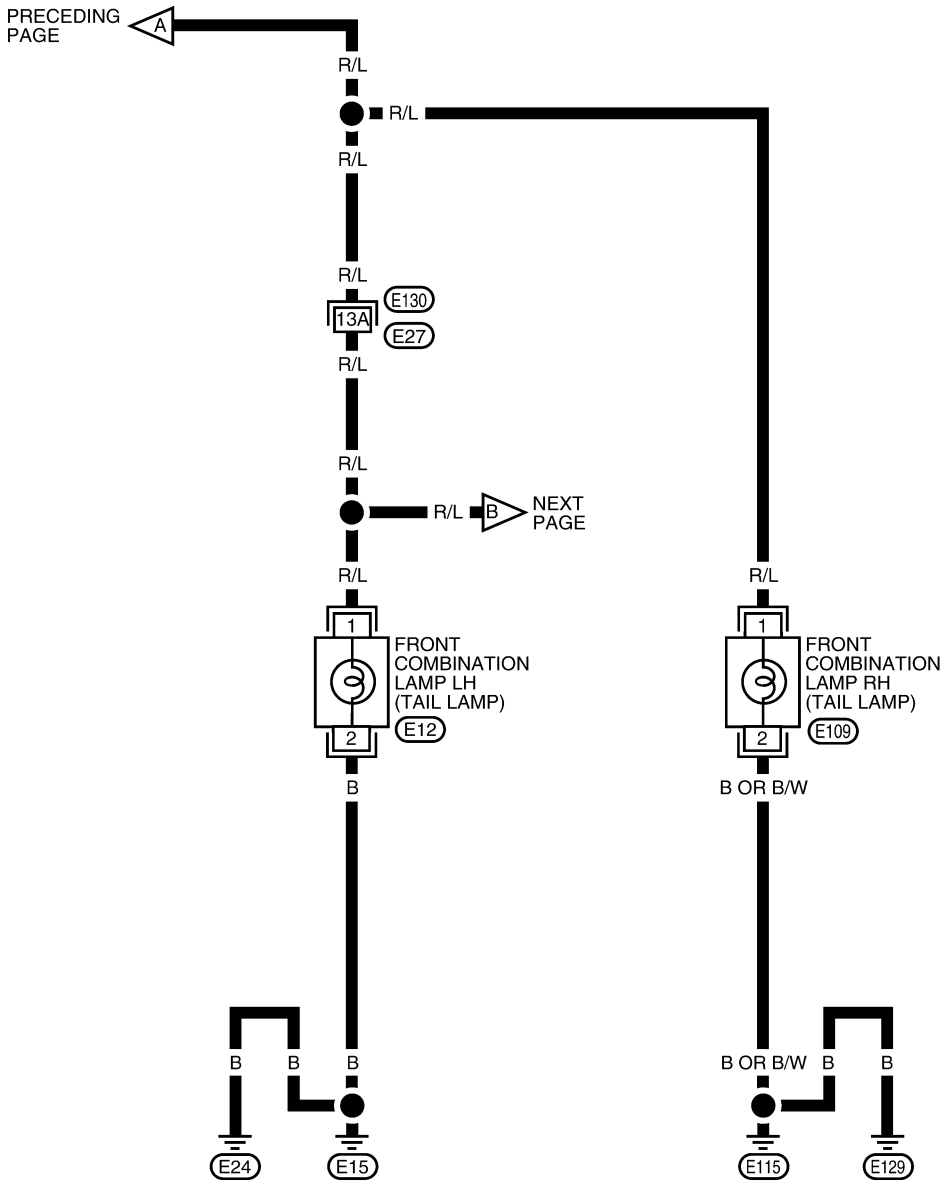
WKWA0411E

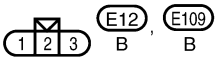
Wiring Diagram — TAIL/L —

EKS00432



LT-TAIL/L-02

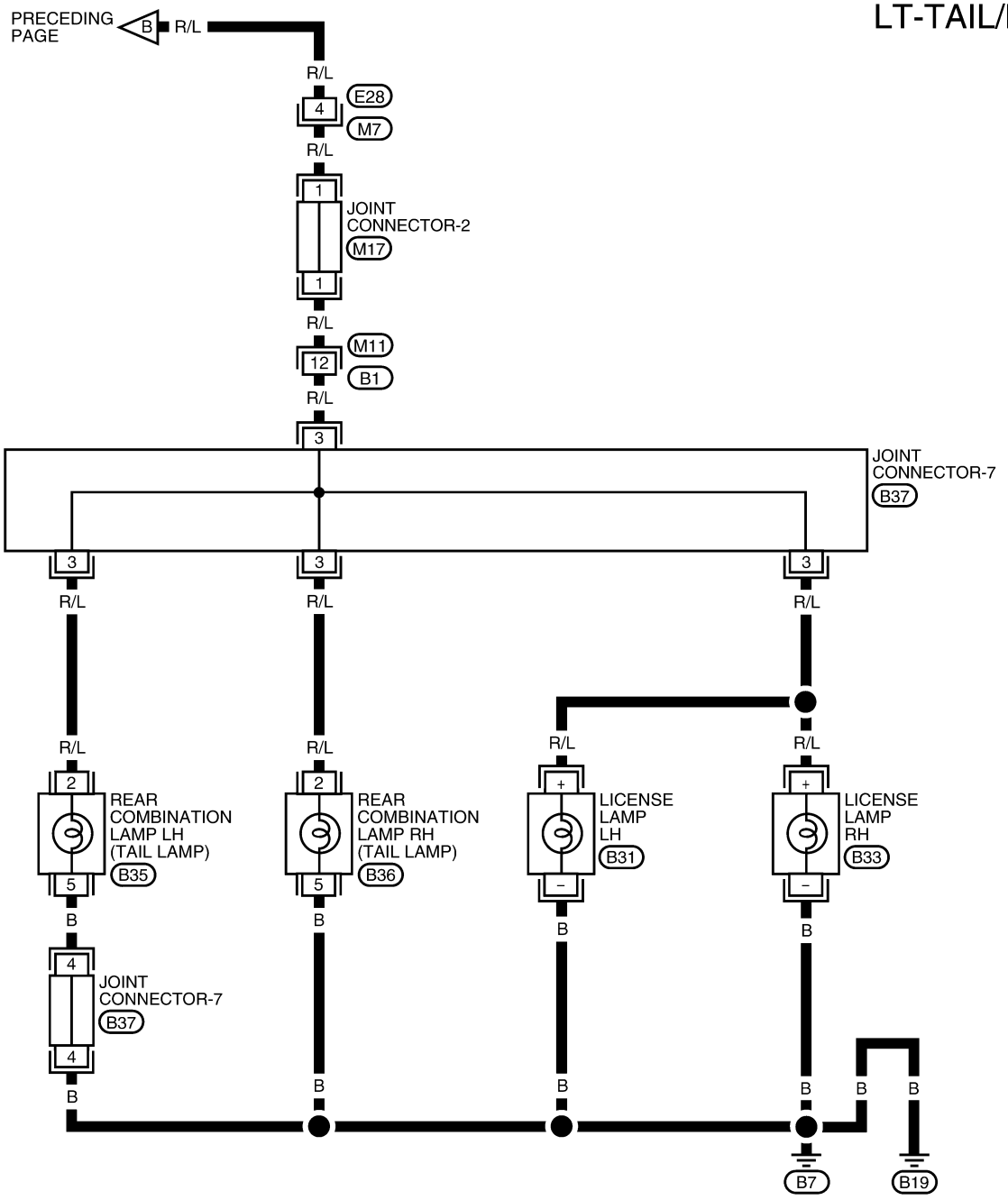


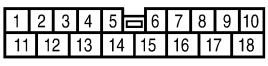


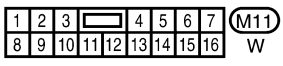
REFER TO THE FOLLOWING.
E130 - SUPER MULTIPLE JUNCTION (SMJ)

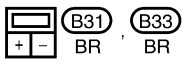
WKWA0412E

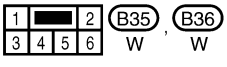
LT-TAIL/L-03











REFER TO THE FOLLOWING.
M17 , B37 - JOINT CONNECTOR (J/C)

WKWA0413E

Parking, License Plate and Tail Lamps Do Not Illuminate

EKS00433

1. INSPECTION 1 BETWEEN IPDM E/R AND PARKING, LICENSE PLATE AND TAIL LAMPS

1. Start active test. Refer to LT-18, "ACTIVE TEST" .
2. Check operation of the parking lamps, license plate lamps and tail lamps.

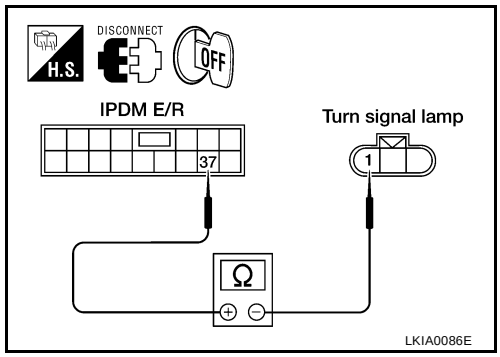
OK or NG

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

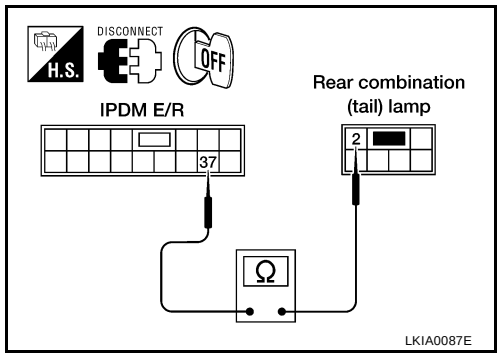
2. INSPECTION 2 BETWEEN IPDM E/R AND PARKING, LICENSE PLATE AND TAIL LAMP

1. Disconnect IPDM E/R connector, turn signal lamp connector, license plate lamp connector and combination lamp connectors.
2. Check continuity between harness connector terminal of IPDM E/R and harness connector terminals of turn signal lamp, license plate lamp and combination lamp.

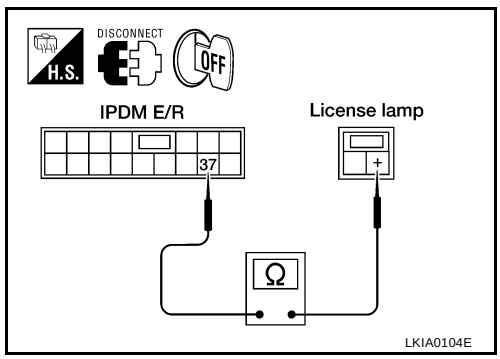
Terminals					Continuity
IPDM E/R		Turn signal lamp			
Connector	Terminal (wire color)	Connector		Terminal (wire color)	
E122	37 (R/L)	Right	E109	1 (R/L)	Yes
		Left	E12	1 (R/L)	



Terminals					Continuity
IPDM E/R		Rear combination lamp			
Connector	Terminal (wire color)	Connector		Terminal (wire color)	
E122	37 (R/L)	Right	B36	2 (R/L)	Yes
		Left	B35	2 (R/L)	



Terminals					Continuity
IPDM E/R		License lamp			
Connector	Terminal (wire color)	Connector		Terminal (wire color)	
E122	37 (R/L)	Right	B33	+ (R/L)	Yes
		Left	B31	+ (R/L)	



OK or NG

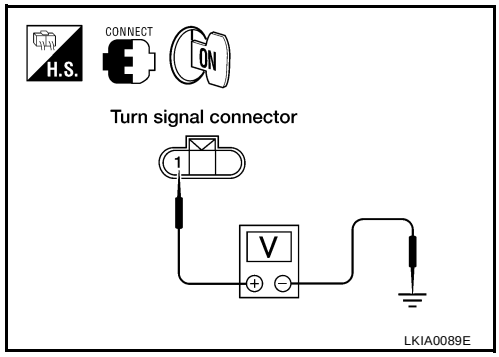
OK >> Connect electrical connectors. GO TO 3.
NG >> Check for short circuit or open circuit in harnesses between IPDM E/R and turn signal lamp, between IPDM E/R and rear combination (tail and side marker) lamp, and between IPDM E/R and license lamp.

3. IPDM E/R INSPECTION

Start active test. Refer to LT-18, "ACTIVE TEST" .

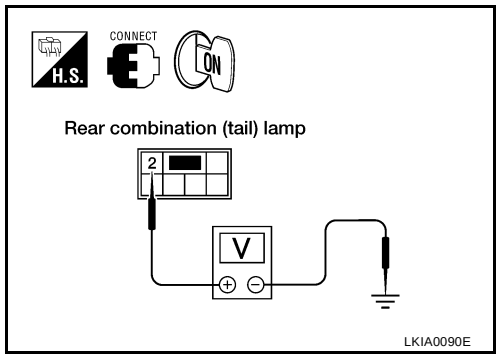
1. When tail lamp relay is operating, check voltage between turn signal connector terminal 1 and ground.

Terminals				Voltage (Approx.)
(+)			(–)	12
Connector		Terminal (wire color)	Ground	
Right	E109	1 (R/L)		
Left	E12			



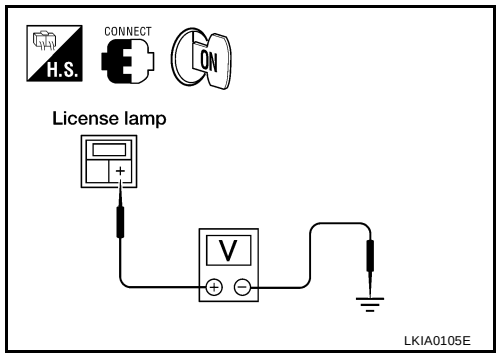
2. When tail lamp relay is operating, check voltage between rear combination (tail) lamp terminal 2 and ground.

Terminals				Voltage (Approx.)
(+)			(–)	12
Connector		Terminal (wire color)	Ground	
Right	B36	2 (R/L)		
Left	B35			



3. When tail lamp relay is operating, check voltage between license lamp terminal + and ground.

Terminals				Voltage (Approx.)
(+)			(–)	12
Connector		Terminal (wire color)	Ground	
Right	B33	+ (R/L)		
Left	B31			



OK or NG

OK >> Inspect turn signal harness, connectors, and rear combination lamp sub-harness.
NG >> Replace IPDM E/R. Refer to PG-24, "Removal and Installation of IPDM E/R" .

4. INSPECTION 1 BETWEEN COMBINATION SWITCH AND BCM

Select BCM on CONSULT-II. Carry out “BCM C/U” self-diagnosis.

Displayed results of self-diagnosis

No malfunction detected>> GO TO 5.
CAN communications or CAN system>> Inspect the BCM CAN communications system. Refer to BCS-15, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .
OPEN DETECT 1 - 5>> Combination switch system malfunction. Refer to BCS-16, "Combination Switch Inspection According to Self-Diagnostic Results" .

SELF-DIAG RESULTS	
DTC RESULTS	TIME
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED	

LKIA0073E

5. INSPECTION 2 BETWEEN COMBINATION SWITCH AND BCM

Select BCM on CONSULT-II. With “HEADLAMP” data monitor, check that “TAIL LAMP SW” turns ON-OFF linked with operation of lighting switch.

OK or NG

OK >> Replace BCM.
NG >> Replace lighting switch.

DATA MONITOR	
MONITOR	
IGN ON SW	ON
ACC ON SW	ON
AUTO LIGHT SW	ON
TAIL LAMP SW	OFF
HEAD LAMP SW	OFF
HI BEAM SW	OFF
PASSING SW	OFF
FR FOG SW	OFF
DOOR SW-DR	OFF

LKIA0077E

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

EKS00434

1. IPDM E/R INSPECTION

1. Turn the ignition switch ON. Place the combination switch (lighting switch) in the ON position. Turn the ignition switch OFF.
2. Verify that the parking, license plate, and tail lamps turn OFF after approximately 10 minutes.

OK or NG

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

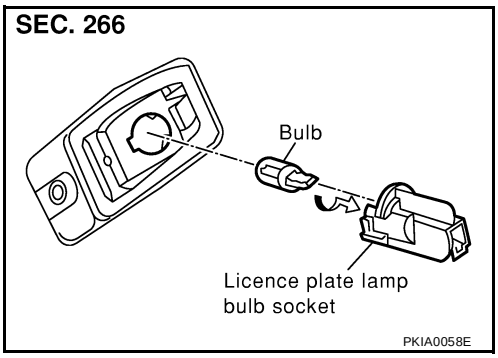
Bulb Replacement

EKS00435

LICENSE PLATE LAMP

1. From trunk, turn bulb socket counterclockwise to unlock and remove.
2. Pull bulb to remove from socket.

License plate lamp : 12V 5W



FRONT TURN SIGNAL (PARKING) LAMP

For bulb replacement, refer to LT-25, "FRONT TURN SIGNAL LAMP" .

TAIL LAMP

1. Remove rear combination lamp. Refer to LT-102, "Removal and Installation for Rear Combination Lamp" .
2. Turn bulb socket counterclockwise to unlock and remove.
3. Pull bulb to remove from socket.

Tail lamp : 12V 8W

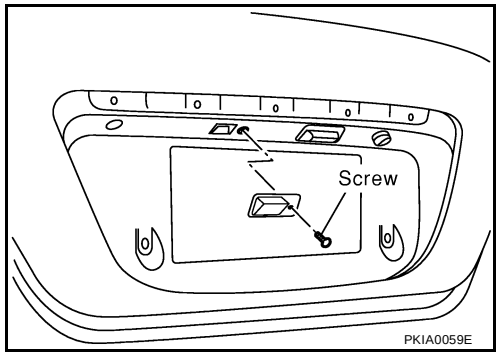
Removal and Installation

EKS00436

LICENSE PLATE LAMP

Removal

1. Remove the license lamp finisher. Refer to EI-22, "Removal and Installation" .
2. Disconnect the license plate lamp connector.
3. Remove the license plate lamp mounting screw and remove the license plate lamp from the vehicle.



Installation

Install in the reverse order of removal.

License plate lamp mounting screw:

: 1.3 - 1.8 N·m (0.13 - 0.18 kg-m, 11 - 16 in-lb)

FRONT TURN SIGNAL (PARKING) LAMP

For front turn signal (parking) lamp removal and installation procedures, refer to LT-25, "Removal and Installation" .

REAR COMBINATION LAMP

Removal

For rear combination lamp removal and installation procedures, refer to LT-102, "Removal and Installation for Rear Combination Lamp" .

INTERIOR ROOM LAMP

PFP:26410

System Description

EKS00437

When room lamp switch is in DOOR position, room lamp ON/OFF is controlled by timer according to signals from switches including key detection switch, driver door switch, driver door lock switch.
When room lamp turns ON, there is a gradual brightening over 1 second. When room lamp turns OFF, there is a gradual dimming over 1 second
The interior room lamp timer is controlled by the BCM.
Interior room lamp timer control settings can be changed with CONSULT-II.

INTERIOR LAMP TIMER OPERATION

When room lamp switch is in DOOR position, and when all conditions below are met, BCM performs timer control (maximum 30 seconds) for interior lamp ON/OFF.
In addition, when lamp turns ON or OFF there is gradual brightening or dimming over 1 second.
Power is supplied

- to 10A fuse [No. 19 (located in the fuse block (J/B)]
- through joint connector -1 terminal 4
- to key switch and key lock solenoid terminal 3.

When all doors are closed (all door switches OFF) and key is removed from key cylinder (key detection switch OFF), power will not be supplied to BCM terminal 62.
When driver door lock switch is turned ON (unlocked),
Ground is supplied

- from BCM terminal 30
- to front door lock actuator LH terminal 1.

At this time, BCM detects that driver door is unlocked. It determines that interior lamp timer operation conditions are met, and turns the interior lamp ON for 30 seconds.
When all doors are closed (all door switches OFF) and key is in key cylinder (key detection switch ON),
Power is supplied

- through key switch and key lock solenoid terminal 4
- to BCM terminal 62.

When key is removed from key switch and key lock solenoid (key detection switch OFF), power supply to BCM terminal 62 is terminated. BCM detects that key has been removed, determines that interior lamp timer conditions are met, and turns the interior lamp ON for 30 seconds.
When driver door closes, and the key is not inserted in the key switch and key lock solenoid (key detection switch OFF), BCM terminal 14 or 54 changes from 0V (door open) to 12V (door closed). The BCM determines that conditions for interior lamp operation are met and turns the interior lamp ON for 30 seconds.
Timer control is canceled under the following conditions.

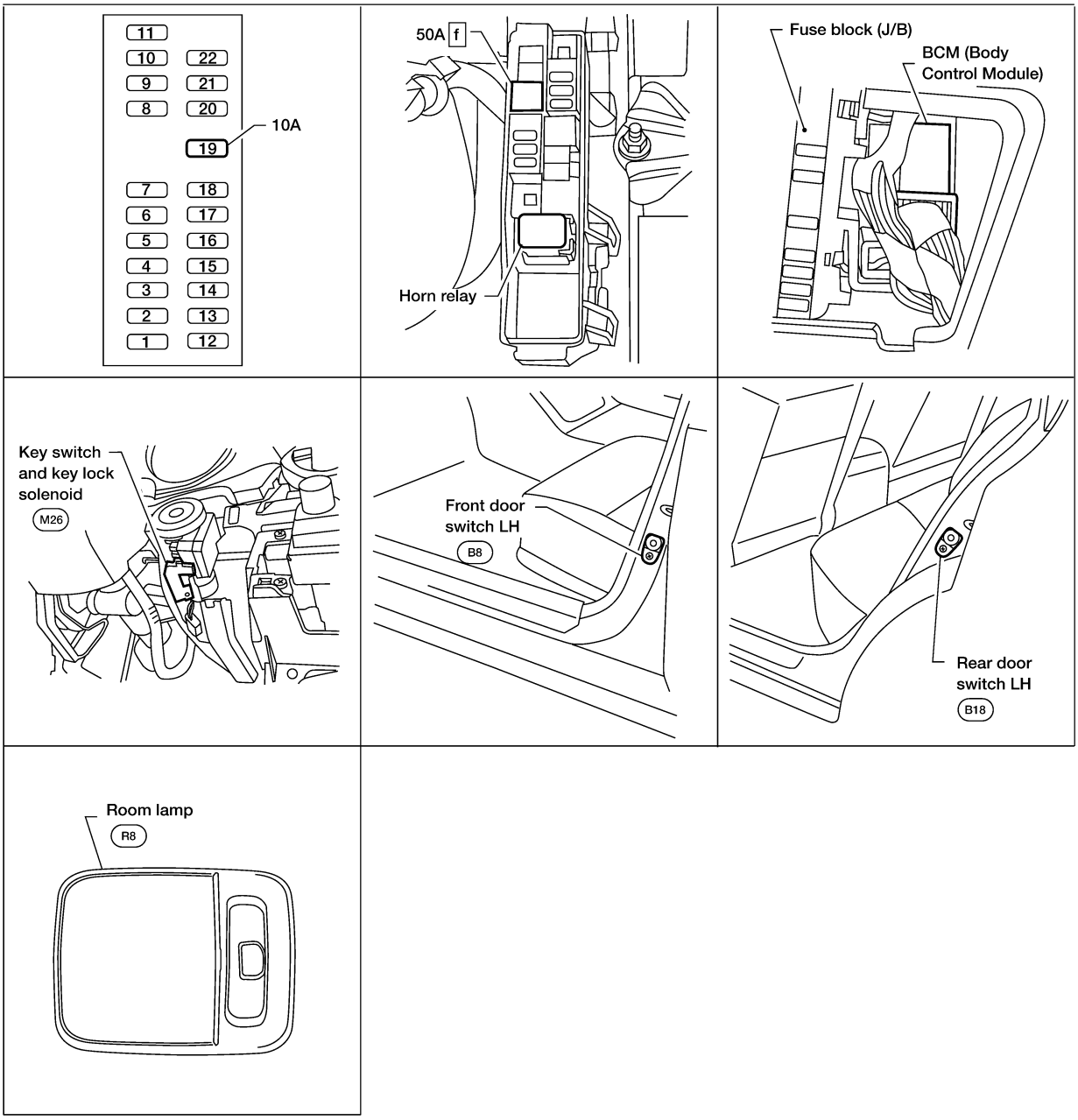
- Driver door is locked (driver door lock switch turns OFF)
- Driver door is opened (driver door switch turns ON)
- Ignition switch ON.

BATTERY SAVER

If the interior room lamp remains illuminated by the door switch open signal, or if the room lamp switch is in the ON position for more than 30 minutes after the ignition switch is turned to the OFF position, the BCM will automatically turn off the interior room lamp(s).

Component Parts and Harness Connector Location

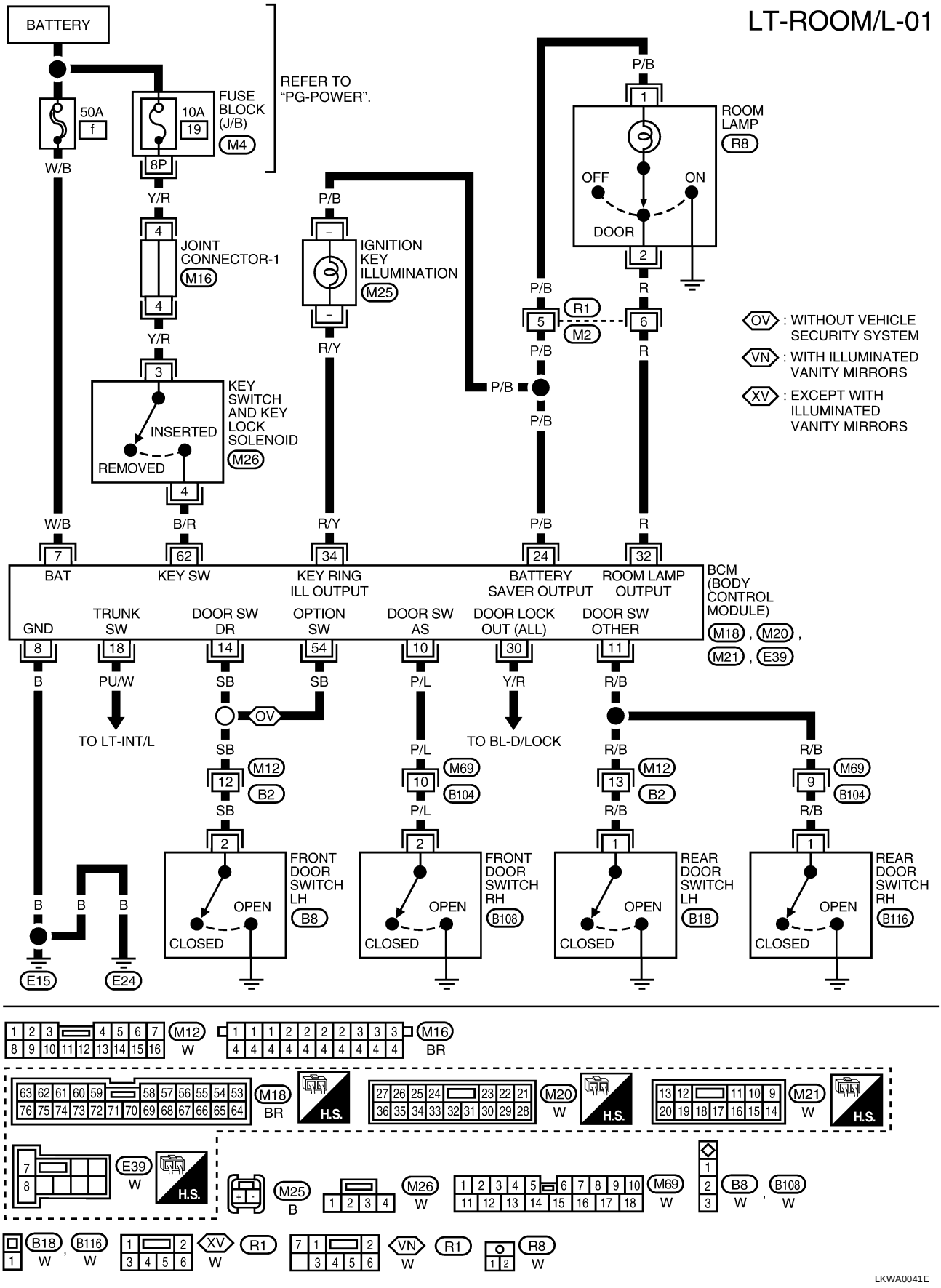
EKS00438



WKIA0288E

Wiring Diagram — ROOM/L —

EKS00439



LKWA0041E

Terminals and Reference Value for BCM

EKS0043A

Terminal No.	Wire color	Signal name	Measuring condition					Standard (V) (Approx.)
			Ignition switch	Operation or condition				
7	W/B	Battery power supply	OFF	—				12
8	B	Ground	ON	—				0
10	P/L	Front door switch RH signal	OFF	Front door switch RH		ON (open)		0
						OFF (closed)		12
11	R/B	Rear door switch (LH and RH) signal	OFF	Rear door switch (LH and RH)		ON (open)		0
						OFF (closed)		12
14	SB	Front door switch LH signal	OFF	Front door switch LH		ON (open)		0
						OFF (closed)		12
32	R	Interior lamp signal	OFF	Interior lamp switch: DOOR position	Key is inserted.	Any door switch	ON (open)	0
							OFF (closed)	12
			—	Interior lamp switch: DOOR position	All doors are closed.	Vehicle key is removed after being fully inserted.		0 Note
						Turn ignition switch to ON.		12
30	Y/R	Driver door lock signal	OFF	Door is unlocked. (SW ON)				0
				Door is locked. (SW OFF)				5
62	B/R	Key detection switch signal	OFF	Vehicle key is removed.				0
				Vehicle key is inserted.				12

Note: Becomes approximately 12V approximately 30 seconds after key is removed.

CONSULT-II Function

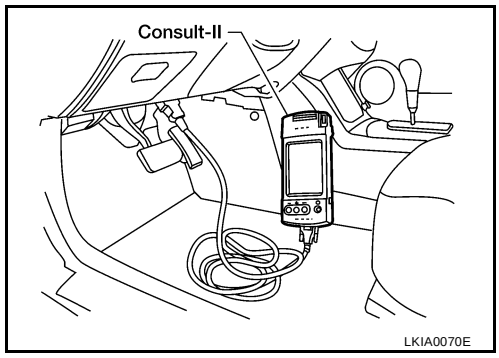
EKS0043B

CONSULT-II has a display function for work support, self-diagnosis, data monitor, and active test for each part by combining data receiving and sending via the communication line from BCM.

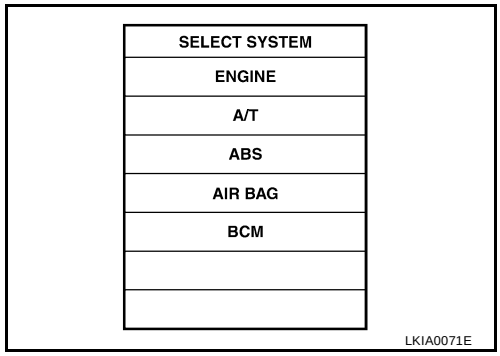
BCM diagnosis part	Check item, diagnosis mode	Description
INTERIOR LAMP	Work support	Changes the setting for each function.
	Data monitor	Displays BCM input data in real time.
	Active test	Operation of electrical loads can be checked by sending driving signal to them.

CONSULT-II BASIC OPERATION

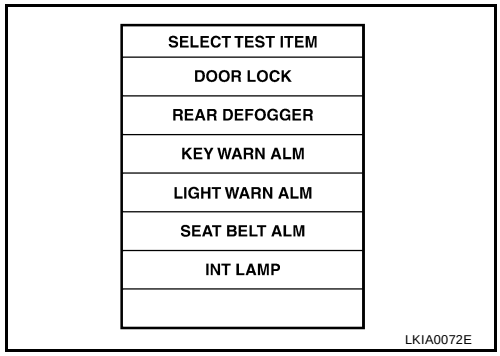
1. With the ignition switch OFF, connect CONSULT-II to the vehicle-side data link connector, then turn ignition switch ON.
2. Touch “START”.



3. Touch “BCM” on “SELECT SYSTEM” screen.



4. Select the desired part to be diagnosed on “SELECT TEST ITEM” screen.



WORK SUPPORT

Operation Procedure

1. Touch “INT LAMP” on “SELECT TEST ITEM” screen.
2. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.
3. Touch “ROOM LAMP TIMER 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	Factory setting
Room lamp timer setting	Interior lamp ON/OFF can be selected for when driver door lock is released (unlocked).	ON	❍
		OFF	—

DATA MONITOR

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 “DATA MONITOR” screen.

All signals	Monitors all the signals.
Selection from menu	Selects and monitors the individual signal.

4. Touch “START”.
5. When “SELECTION FROM MENU” is selected, touch items to be monitored. When “ALL SIGNALS” is selected, all the items will be monitored.
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 name “OPERATION OR UNIT”		Contents
IG ON SW	“ON/OFF”	“IGN position (ON)/OFF, ACC position (OFF)” judged from the ignition switch signal is displayed.
KEY ON SW	“ON/OFF”	Displays “Key inserted (ON)/key removed (OFF)” status judged from the key reminder detection switch signal.
DOOR SW - DR	“ON/OFF”	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW - AS	“ON/OFF”	Displays “Door open (ON)/Door closed (OFF)” status, determined from passenger door switch signal.
LOCK SW DR/AS	“ON/OFF”	Displays “Door locked (ON)/Door unlocked (OFF) status, determined from locking detection switch in driver door.
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.
LK BUTTON/SIG	“ON/OFF”	Displays “Locked (ON)/Other (OFF)” status, determined from lock signal.
UN BUTTON/SIG	“ON/OFF”	Displays “Unlocked (ON)/Other (OFF)” status, determined from unlock signal.
DOOR SW - RR	“ON/OFF”	Displays “Door open (ON)/Door closed (OFF)” status, determined from rear door switch signals.

ACTIVE TEST

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 “BACK” deactivates the operation.

Display Item List

Test item	Display on CONSULT-II screen	Description
Interior lamp output	INT LAMP	Interior lamp can be operated by any ON-OFF operations.

Interior Lamp Control Does Not Operate

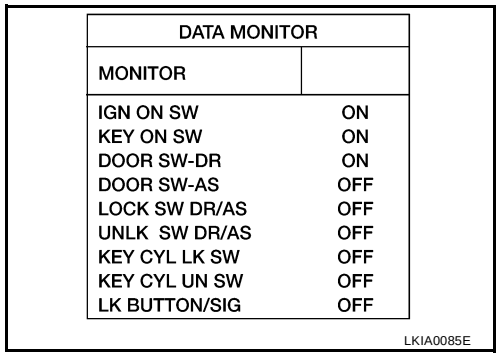
EKS0043C

1. INSPECTION 1 BETWEEN EACH SWITCH AND BCM

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

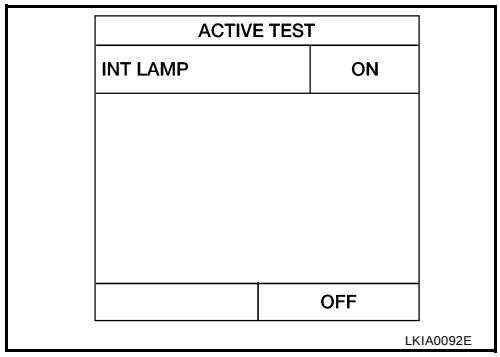
OK or NG

OK >> GO TO 2.
NG >> Inspect malfunctioning switch system and repair as necessary.



2. INSPECTION 1 BETWEEN BCM AND ROOM LAMP

1. Select “BCM” on CONSULT-II. Select “INT LAMP” active test.
2. When room lamp switch is in DOOR position, use active test to verify that room lamp operates.



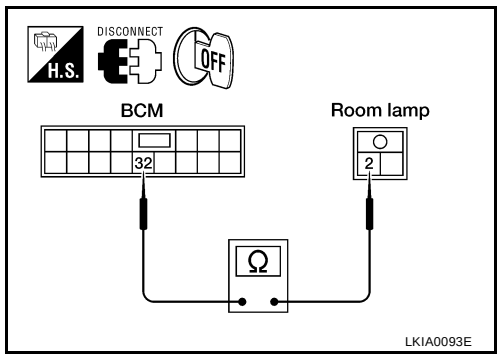
OK or NG

OK >> Replace BCM.
NG >> GO TO 3.

3. INSPECTION 2 BETWEEN BCM AND ROOM LAMP

1. Disconnect BCM connector and room lamp connector.
2. Check for continuity in wiring harness between BCM and room lamp.

Terminals				Continuity
(+)		(–)		
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
M20	32 (R)	R8	2 (R)	Yes



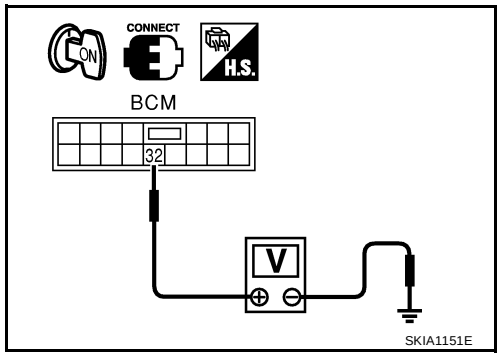
OK or NG

OK >> Connect room lamp connector. GO TO 4.
NG >> Check for short circuit or open circuit in harness between BCM and room lamp. Repair as necessary.

4. INSPECTION 3 BETWEEN BCM AND ROOM LAMP

When room lamp switch is in “DOOR” position, check voltage between BCM harness connector and body ground.

Terminals			Voltage (Approx.)
(+)		(–)	
Connector	Terminal (wire color)	Body ground	12
M20	32 (R)		



OK or NG

OK >> Replace BCM.
NG >> Replace room lamp. Refer to LT-130, "ROOM LAMP" .

Bulb Replacement

EKS0043D

MAP LAMP AND CONSOLE LAMP

Map Lamp

1. Insert a thin screwdriver in the notch and remove the lens.
2. Remove the screw and remove the shade.
3. Remove the bulb.

Map lamp : 12V 10W

PERSONAL LAMP

1. Insert a thin screwdriver in the notch and remove the lens.

2. Remove the screw and cover plate.
3. Push and turn bulb counterclockwise to remove.

Personal lamp : 12V 8W

Removal and Installation

EKS0043E

ROOM LAMP

1. Open the front interior lamp box and remove the screw.
2. Insert a clip driver or a suitable tool and disengage the metal clip fittings of the front interior lamp.
3. Disconnect the connector and remove the front interior lamp.

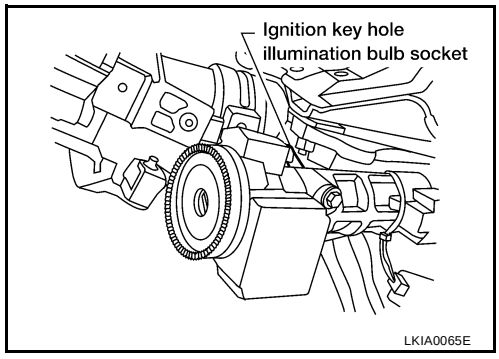
Room lamp mounting screw:

: 2.5 - 3.4 N·m (0.25 - 0.35 kg-m, 22 - 30 in-lb)

IGNITION KEY HOLE ILLUMINATION LAMP

1. Remove the lower instrument panel (driver side). Refer to IP-13, "Driver Lower Instrument Panel" .
2. Turn the bulb socket counterclockwise and unlock it.

Ignition key hole illumination lamp : 12V 1.4W



ILLUMINATION

PFP:27545

System Description

EKS0043F

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

Power is supplied at all times

- to tail lamp relay, located in the IPDM E/R (intelligent power distribution module engine room)
- through 10A fuse [No. 38, located in the IPDM E/R (intelligent power distribution module engine room)].

Power is also supplied at all times

- to BCM (body control module) terminal 7
- through 50A fusible link (letter **f** , located in the fuse and fusible link box).

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

- to BCM (body control module) terminal 35
- through 10A fuse [No. 12, located in the fuse block (J/B)].

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

- to BCM (body control module) terminal 36
- through 10A fuse [No. 6, located in the fuse block (J/B)].

Ground is supplied

- to BCM (body control module) terminals 8, 27, and 63
- through body grounds M57, M61, E15, and E24.

ILLUMINATION OPERATION BY LIGHTING SWITCH

With the lighting switch in the 1ST or 2ND position (or if the auto light system is activated), the BCM (body control module) receives input requesting the illumination lamps to illuminate. This input is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The central processing unit of the IPDM E/R controls the tail lamp relay coil, which when energized, directs power

- through terminal 37 of the IPDM E/R
- to illumination control switch terminal 1,
- to A/T device terminal 3,
- to TCS switch terminal 3,
- to audio unit terminal 8,
- to CD player terminal 23,
- to hazard switch terminal 5,
- to rear window defogger switch terminal 5,
- to heated seat switch LH terminal 2,
- to heated seat switch RH terminal 2,
- to A/C control unit terminal 7,
- to A/C auto amplifier terminal 24,
- to combination meter terminal 48, and
- to glove box lamp terminal +.

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

- to auto anti-dazzling inside mirror terminal +,
- through 10A fuse [No. 14, located in the fuse block (J/B)], and
- to BCM (body control module) terminal 35,
- through 10A fuse [No. 12, located in the fuse block (J/B)].

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

- to main power window and door lock/unlock switch terminal 12 (with left front only power window anti-pinch system) or terminal 17 (with left and right front power window anti-pinch system),

- to front power window switch RH terminal 5 (with left front only power window anti-pinch system) or terminal 13 (with left and right front power window anti-pinch system),
- to rear power window switch RH terminal 5,
- to rear power window switch LH terminal 5,
- through BCM terminal 29.

Ground is supplied at all times

- to illumination control switch terminal 3,
- to glove box lamp terminal –, and
- to auto anti-dazzling inside mirror terminal –
- through body grounds M57 and M61, and
- to rear power window switch RH terminal 8,
- through body ground B117, and,
- to rear power window switch LH terminal 8,
- through body grounds B7 and B19.

The main power window and door lock/unlock switch and the front power window switch RH illumination circuits are case grounded.
Controlled ground is supplied

- to A/T device terminal 4,
- to TCS switch terminal 4,
- to audio unit terminal 7,
- to CD player terminal 25,
- to hazard switch terminal 4,
- to rear window defogger switch terminal 6,
- to heated seat switch LH terminal 1,
- to heated seat switch RH terminal 1,
- to A/C control unit terminal 8,
- to A/C auto amplifier terminal 25, and
- to combination meter terminal 47
- from illumination control switch terminal 2.

With power and ground supplied, illumination lamps illuminate.

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 feature is activated. Under this condition, the illumination lamps remain illuminated for 30 minutes, unless the combination switch (lighting switch) position is changed. If the combination switch (lighting switch) position is changed, then the illumination lamps are turned off after a 30 second delay.
When the lighting switch is turned from OFF to 1ST or 2ND position (or if auto light system is activated) after illumination lamps have been turned off by the battery saver control, the illumination lamps illuminate again.

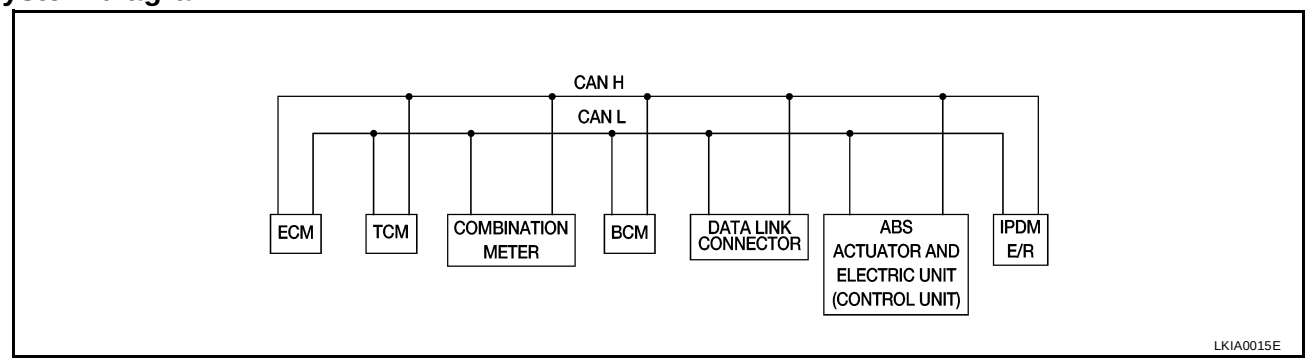
CAN Communication System Description

EKS0043G

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.

FOR TCS MODELS

System diagram



Input/output signal chart

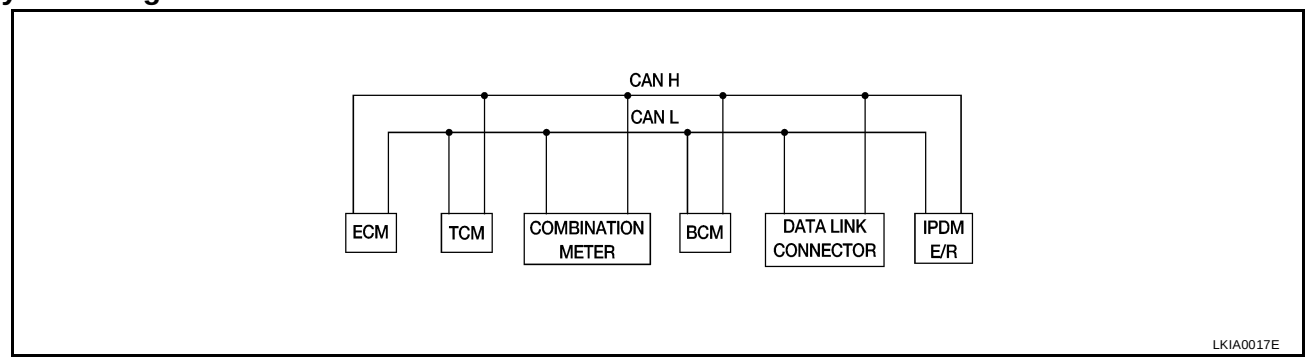
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Engine speed signal	T		R		R	
Engine coolant temperature signal	T		R			
Accelerator pedal position signal	T					
Fuel consumption monitor signal	T		R			
A/T warning lamp signal		T	R			
A/T position indicator signal	R	T	R	R(R range only)	R	
ABS operation signal	R				T	
TCS operation signal	R	R			T	
Air conditioner switch signal	R			T		
Air conditioner compressor signal	R					T
A/C compressor request signal	T					R
Cooling fan motor operation signal	R					T
Cooling fan speed request signal	T					R
Position lights request			R	T		R
Position lights status				R		T
Low beam request				T		R
Low beam status	R			R		T
High beam request			R	T		R
High beam status	R			R		T
Front fog lights request				T		R
Front fog light status				R		T
OD cancel switch signal		R	T			R
Brake switch signal		R	T			
Vehicle speed signal	R		T			
	R		T	R		
Oil pressure switch			R			T
Sleep request1			R	T		
Sleep request2				T		R
N range switch signal		R	T			
P range switch signal		R	T			
Seat belt buckle switch signal			T	R		

Signals	ECM	TCM	COMBINATION METER	BCM	ABS/TCS control unit	IPDM E/R
Door switch signal			R	T		R
Tail lamp request			R	T		R
Turn indicator signal			R	T		
Buzzer output signal			R	T		
Trunk switch signal			R	T		
ASCD main switch signal	T		R			
ASCD cruise signal	T		R			
Wiper operation				R		T
Wiper stop position signal				R		T
Rear window defogger switch signal				T		R
Rear window defogger control signal	R			R		T

FOR A/T MODELS

System diagram



Input/output signal chart

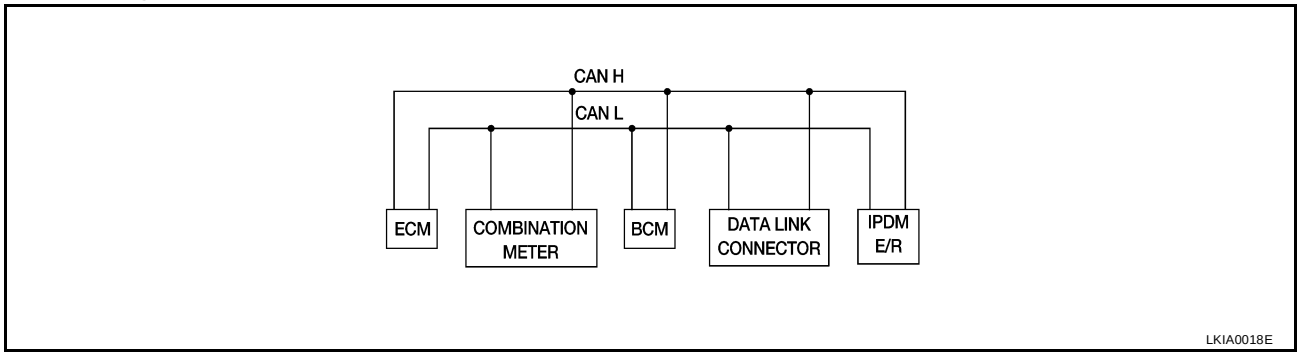
T: Transmit R: Receive

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T		R		
Engine coolant temperature signal	T		R		
Accelerator pedal position signal	T				R
Fuel consumption monitor signal	T		R		
A/T warning lamp signal		T	R		
A/T position indicator signal	R	T	R	R(R range only)	
Air conditioner switch signal	R			T	
Air conditioner compressor signal	R				T
A/C compressor request signal	T				R
Blower fan switch signal	R(QR25DE)			T	
Cooling fan motor operation signal	R			T	
Cooling fan speed request signal	T				R
Position lights request			R	T	R
Position lights status				R	T
Low beam request				T	R
Low beam status	R			R	T
High beam request			R	T	R

Signals	ECM	TCM	COMBINATION METER	BCM	IPDM E/R
High beam status	R			R	T
Front fog lights request				T	R
Front fog light status				R	T
OD cancel switch signal		R	T		R
Brake switch signal		R	T		
Vehicle speed signal	R		T		
	R		T	R	
Oil pressure switch			R		T
Sleep request1			R	T	
Sleep request2				T	R
N range switch signal		R	T		
P range switch signal		R	T		
Seat belt buckle switch signal			T	R	
Door switch signal			R	T	R
Tail lamp request			R	T	R
Turn indicator signal			R	T	
Buzzer output signal			R	T	
Trunk switch signal			R	T	
ASCD main switch signal	T		R		
ASCD cruise signal	T		R		
Wiper operation				R	T
Wiper stop position signal				R	T
Rear window defogger switch signal				T	R
Rear window defogger control signal	R			R	T

FOR M/T MODELS

System diagram



Input/output signal chart

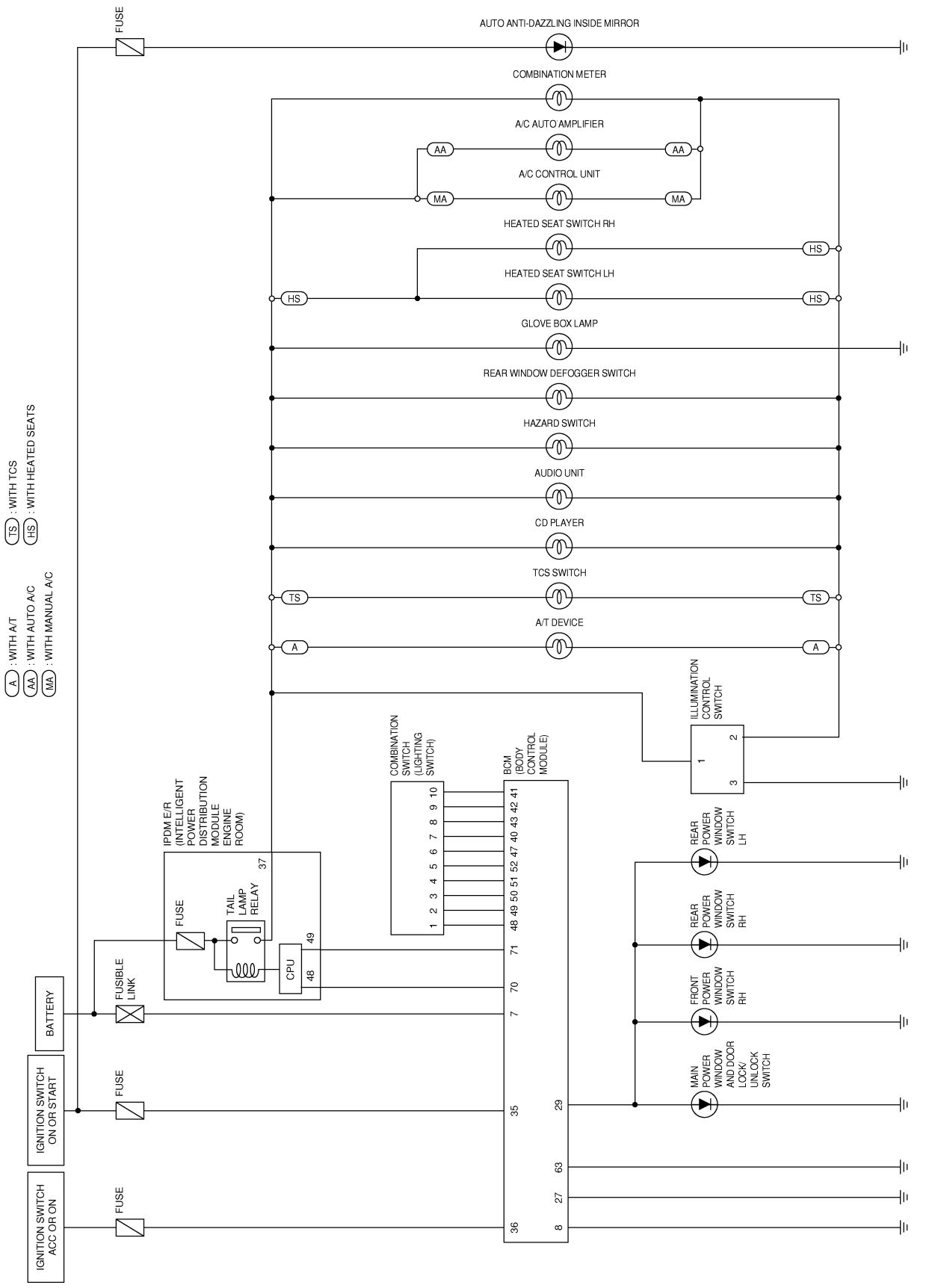
T: Transmit R: Receive

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Engine speed signal	T			
Engine coolant temperature signal	T			
Fuel consumption monitor signal	T			
Air conditioner switch signal	R		T	
Air conditioner compressor signal	R			T
A/C compressor request signal	T			R

Signals	ECM	COMBINATION METER	BCM	IPDM E/R
Blower fan switch signal	R(QR25DE)		T	
Cooling fan motor operation signal	R			T
Cooling fan speed request signal	T			R
Position lights request		R	T	R
Position lights status			R	T
Low beam request			T	R
Low beam status	R		R	T
High beam request		R	T	R
High beam status	R		R	T
Front fog lights request			T	R
Front fog light status			R	T
Vehicle speed signal	R	T		
Oil pressure switch		R		T
Sleep request1		R	T	
Sleep request2			T	R
Seat belt buckle switch signal		T	R	
Door switch signal		R	T	R
Tail lamp request		R	T	R
Turn indicator signal		R	T	
Buzzer output signal		R	T	
Trunk switch signal		R	T	
ASCD main switch signal	T	R		
ASCD cruise signal	T	R		
Wiper operation			R	T
Wiper stop position signal			R	T
Rear window defogger switch signal			T	R
Rear window defogger control signal	R		R	T

Schematic

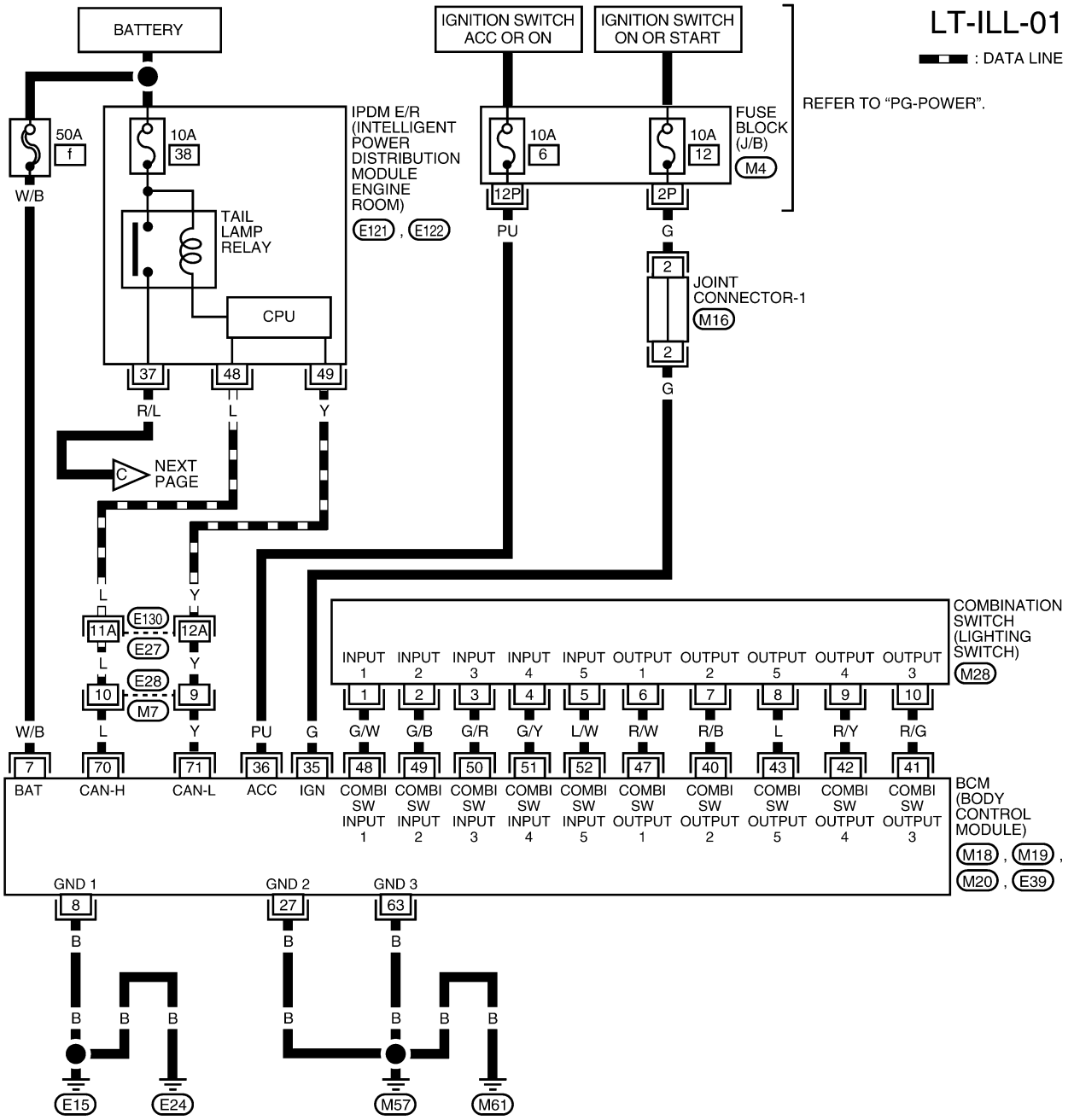
EKS0043H



LKWA0063E

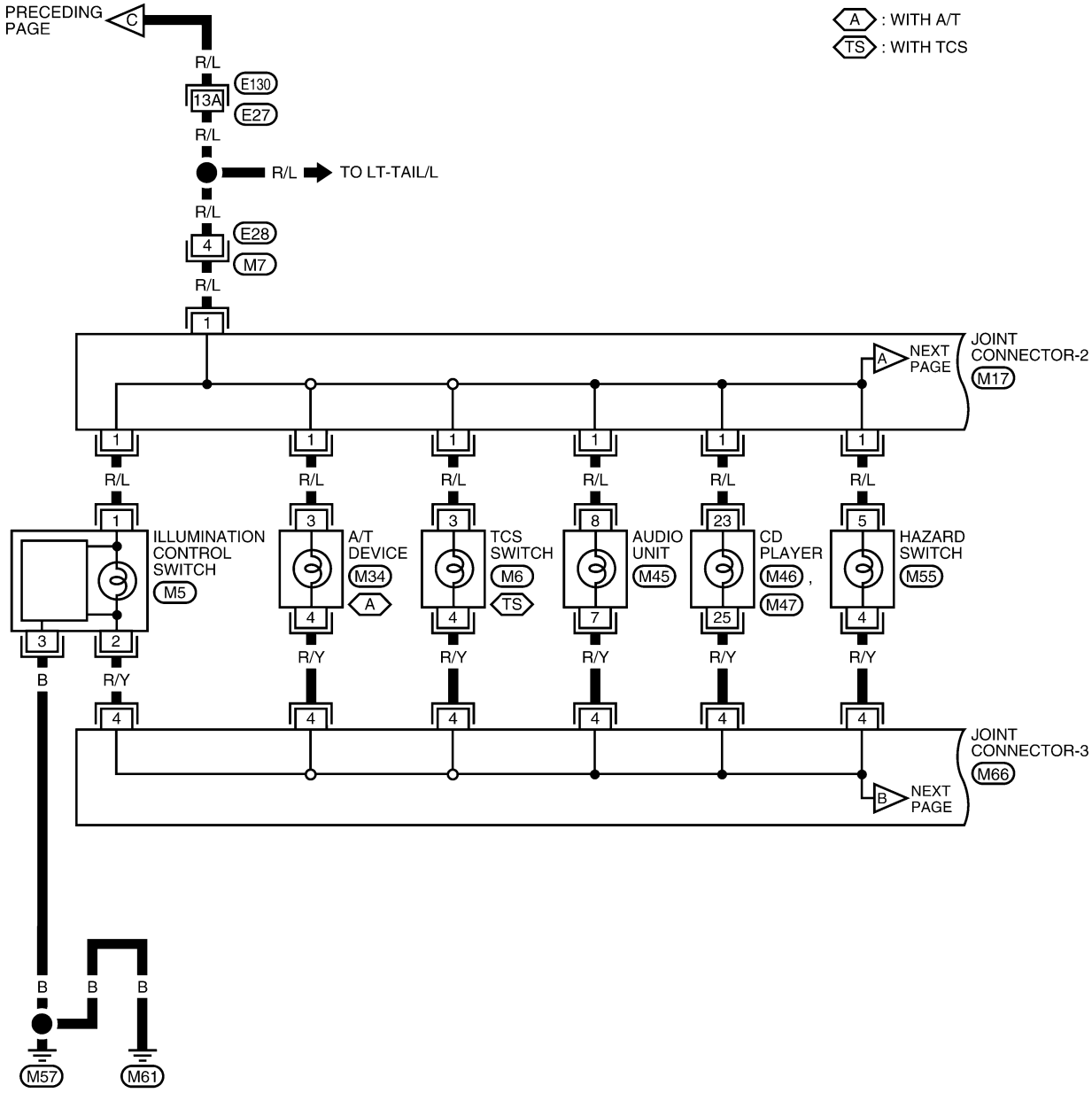
Wiring Diagram — ILL —

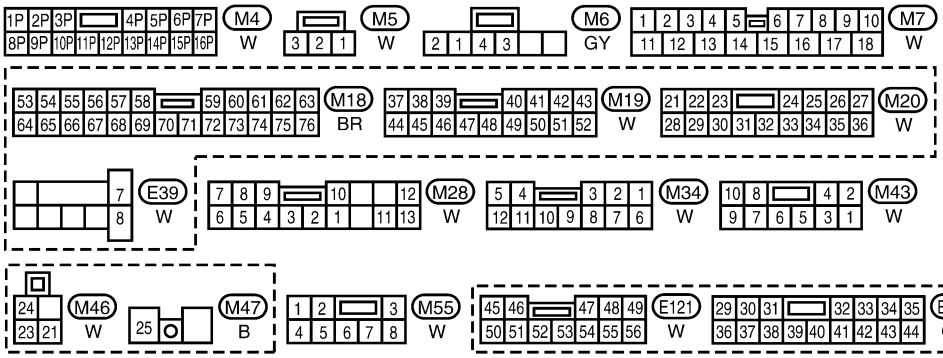
EKS0043I



LKWA0042E

LT-ILL-02



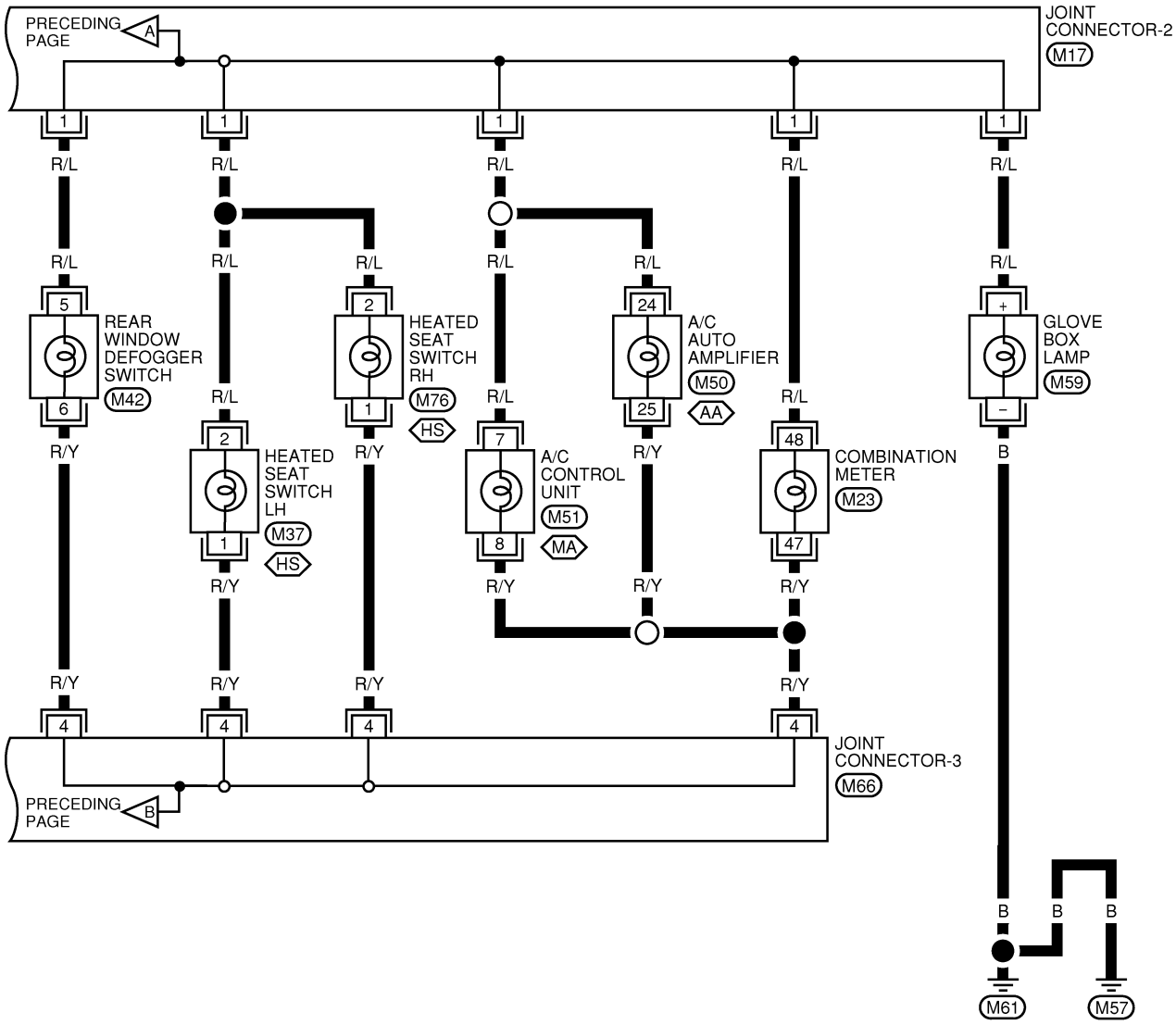


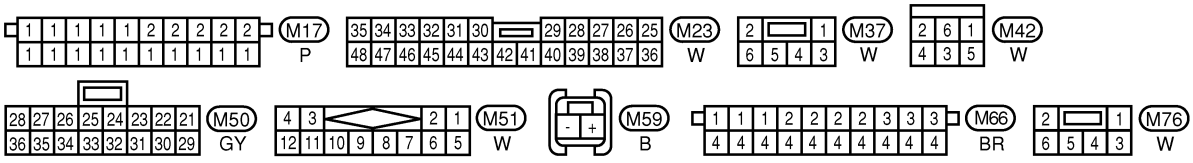
REFER TO THE FOLLOWING.
M130 - SUPER MULTIPLE JUNCTION (SMJ)
M17 , M66 - JOINT CONNECTOR (J/C)

LKWA0075E

LT-ILL-03

MA : WITH MANUAL A/C
AA : WITH AUTO A/C
HS : WITH HEATED SEATS





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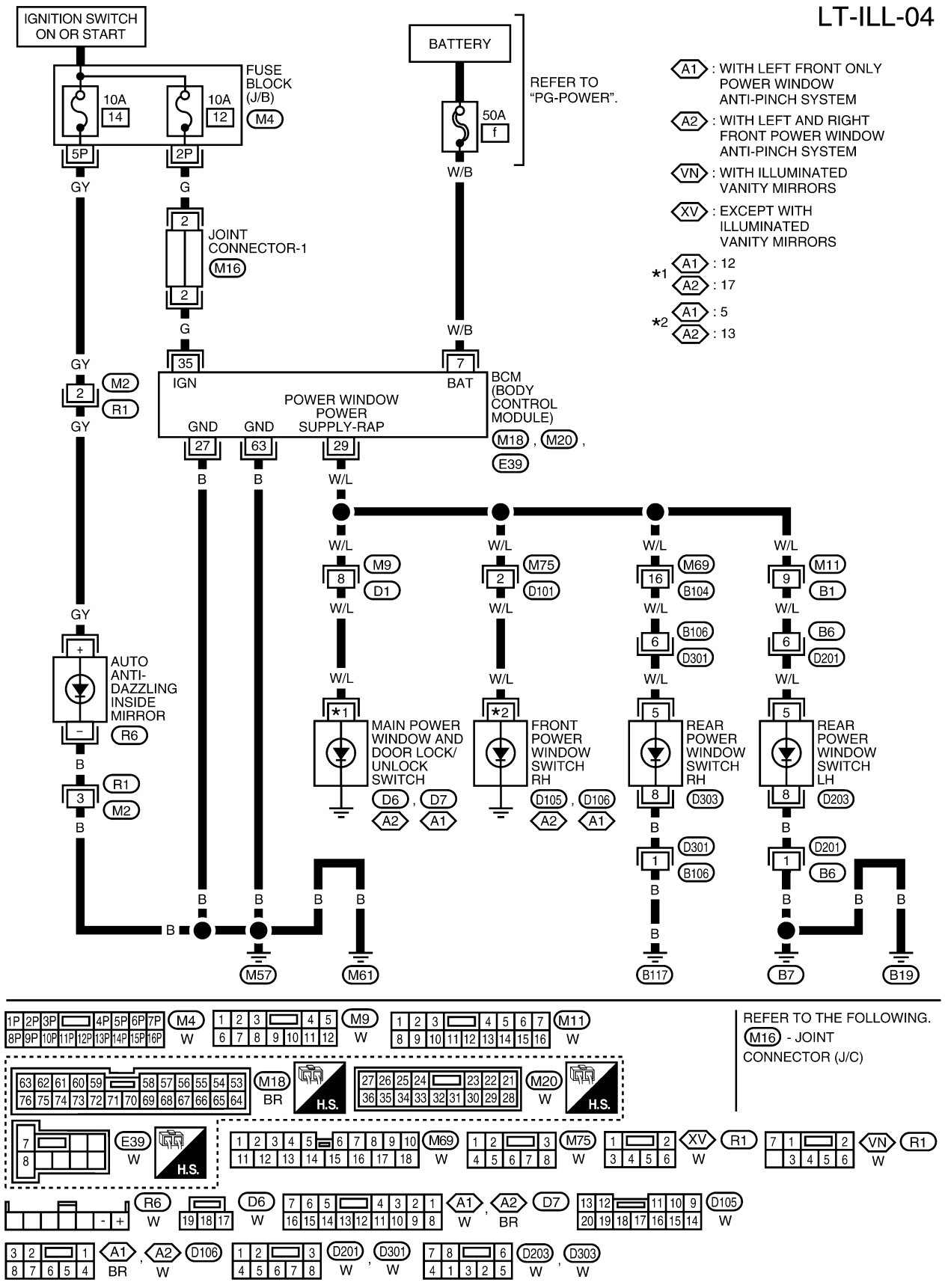
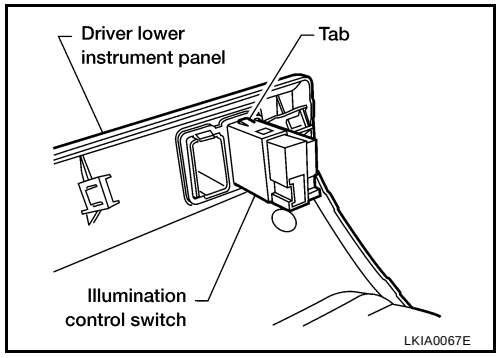

LT-ILL-04
IGNITION SWITCH ON OR START
FUSE BLOCK (J/B)
M4
10A 14
10A 12
5P
2P
BATTERY
50A f
REFER TO "PG-POWER".
W/B
A1 : WITH LEFT FRONT ONLY POWER WINDOW ANTI-PINCH SYSTEM
A2 : WITH LEFT AND RIGHT FRONT POWER WINDOW ANTI-PINCH SYSTEM
VN : WITH ILLUMINATED VANITY MIRRORS
XV : EXCEPT WITH ILLUMINATED VANITY MIRRORS
*1 A1 : 12
A2 : 17
*2 A1 : 5
A2 : 13
JOINT CONNECTOR-1
M16
BCM (BODY CONTROL MODULE)
M18 , M20 , E39
IGN
BAT
GND
GND
POWER WINDOW POWER SUPPLY-RAP
35
7
27
63
29
M2
R1
M9
D1
M75
D101
M69
B104
M11
B1
B106
D301
B6
D201
AUTO ANTI-DAZZLING INSIDE MIRROR
R6
MAIN POWER WINDOW AND DOOR LOCK/ UNLOCK SWITCH
D6 , D7
FRONT POWER WINDOW SWITCH RH
D105 , D106
REAR POWER WINDOW SWITCH RH
D303
REAR POWER WINDOW SWITCH LH
D203
B117
B7
B19
M57
M61
REFER TO THE FOLLOWING.
M16 - JOINT CONNECTOR (J/C)
LKWA0044E

Removal and Installation

EKS0043J

ILLUMINATION CONTROL SWITCH

1. Remove driver lower instrument panel. Refer to IP-13, "Driver Lower Instrument Panel" .
2. Press the illumination control switch retaining tabs and remove the unit from the driver lower instrument panel.



GLOVE BOX LAMP

1. Through the passenger air bag connector access in the top of the glove box, remove bulb socket by turning counterclockwise.
2. Pull the bulb from the socket to remove.

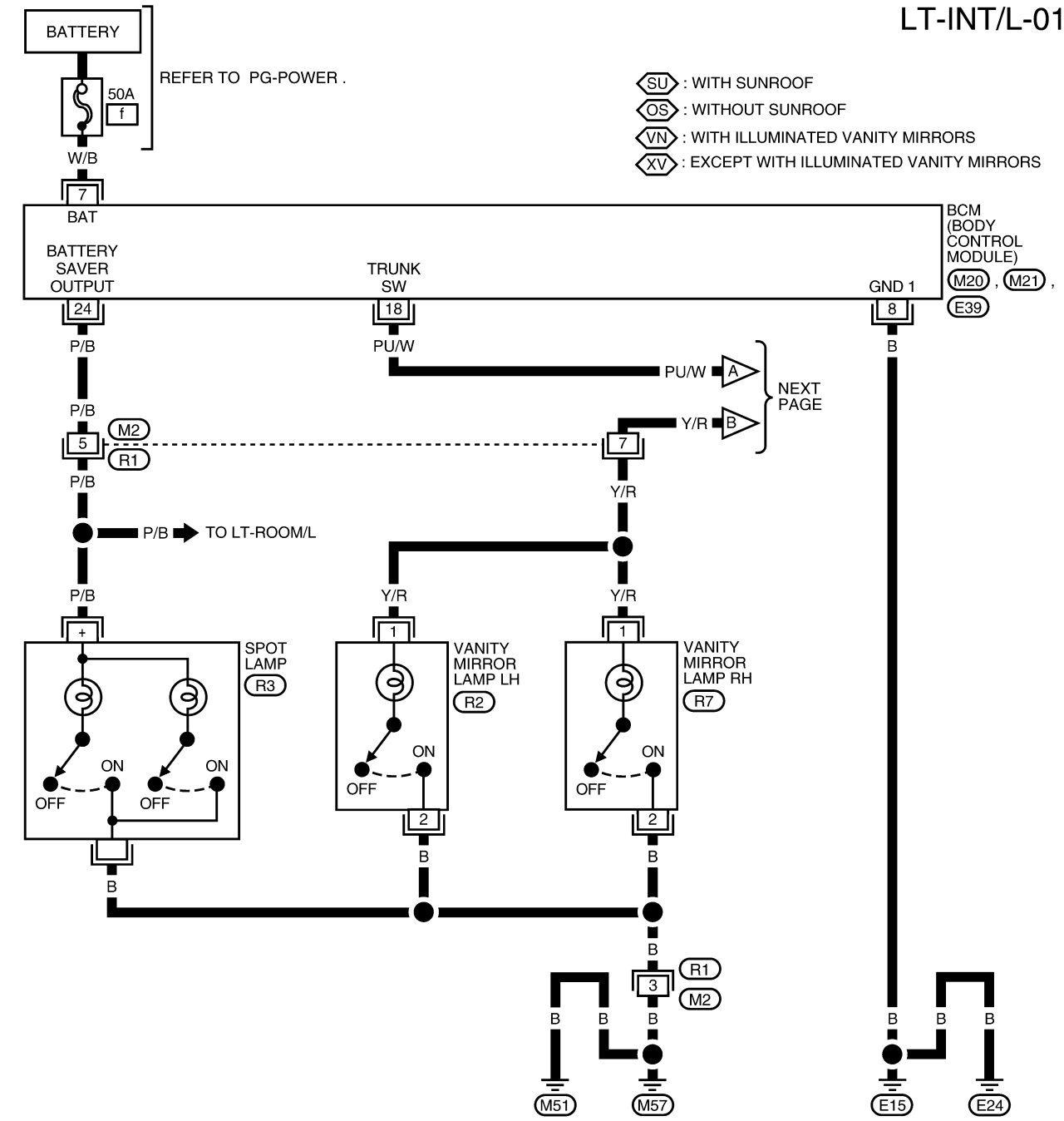
Glove box lamp : 12V 3.4W

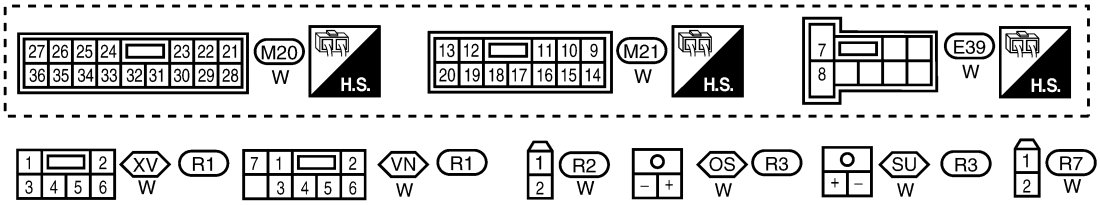
VANITY MIRROR AND TRUNK ROOM LAMPS

PFP:26470

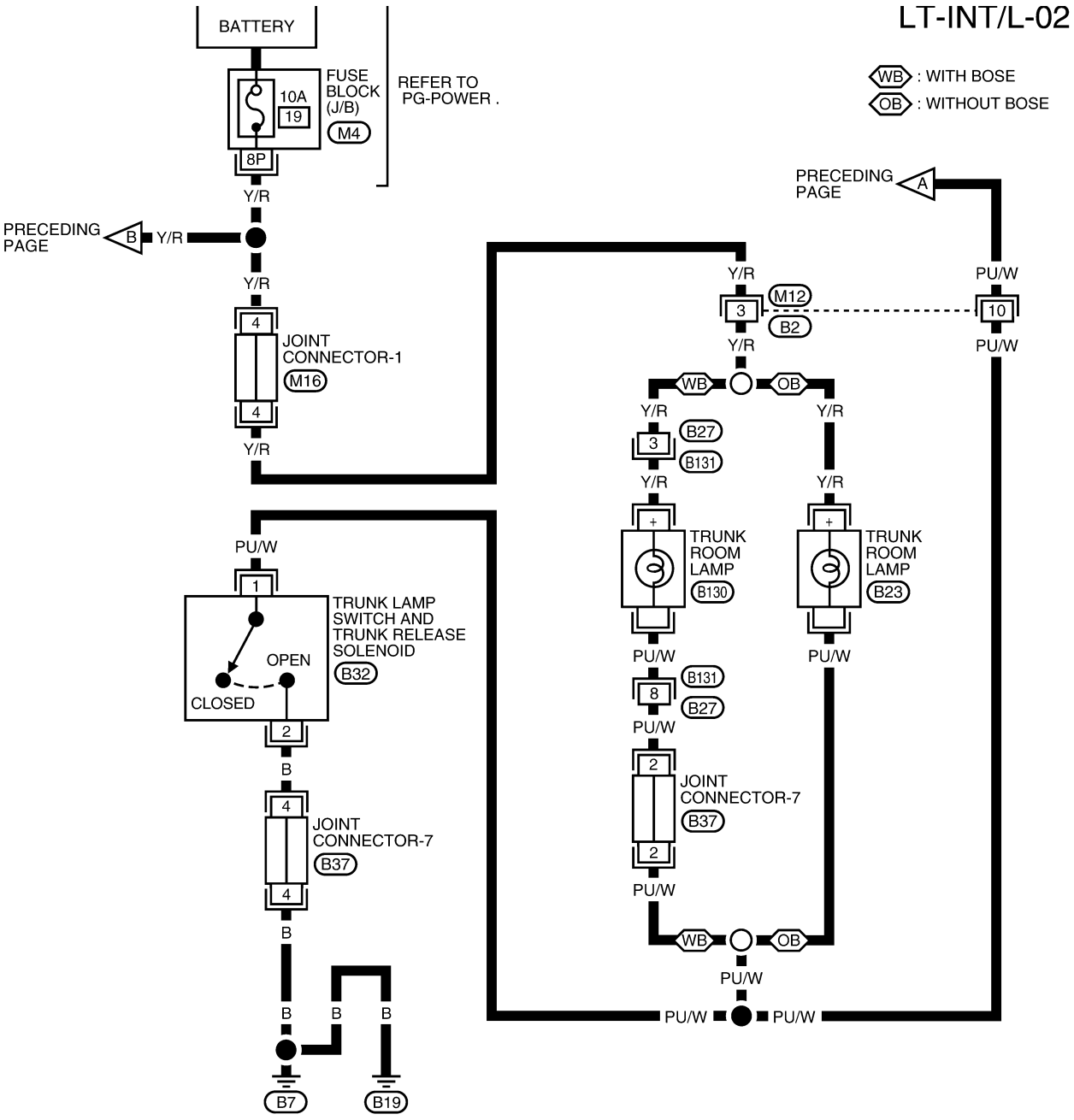
Wiring Diagram — INT/L —

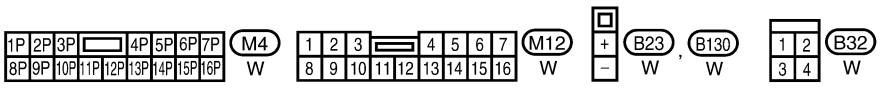
EKS0043K

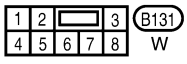




WKWA0198E







REFER TO THE FOLLOWING.
M16 , B37 - JOINT CONNECTOR (J/C)

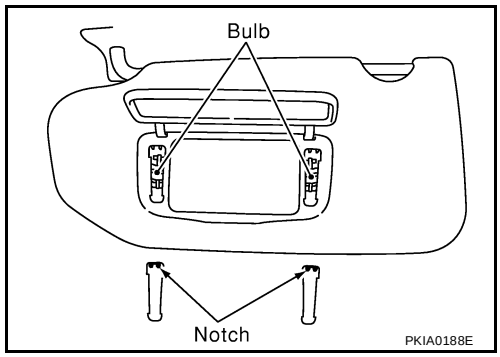
WKWA0199E

Bulb Replacement for Vanity Mirror Lamp

EKS0043L

1. Insert a thin screwdriver in the notch and remove the lens.
2. Remove the bulb.

Vanity mirror lamp : 14V 1.8W

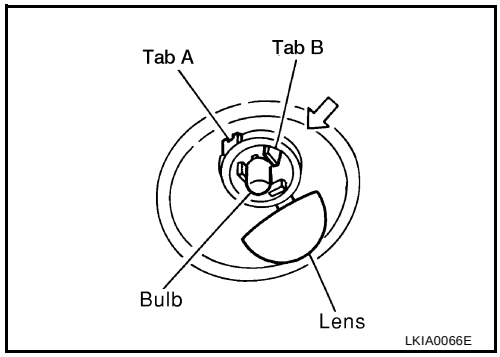


Bulb Replacement, Removal and Installation for Trunk Room Lamp

EKS0043M

1. Unfold tab A and remove the lens.
2. Remove the trunk room lamp while pressing tab B in the direction of the arrow.
3. Disconnect the trunk room lamp connector.
4. Pull bulb from socket to remove.

Trunk room lamp : 12V 3.4W



BULB SPECIFICATIONS

PFP:26297

Headlamp

EKS0043N

Item	Wattage (W)
Low (halogen)	55 (H1)
Low (xenon)	35 (D2R)
High	60W (HB3)

Exterior Lamp

EKS0043O

Item		Wattage (W)
Front combination lamp	Turn signal lamp/parking lamp	27/8 (amber)
Rear combination lamp	Stop/Tail lamp	27/8
	Turn signal lamp	27
	Back-up lamp	13
	Side marker lamp	5
Fog lamp		51
License plate lamp		5
High-mounted stop lamp (parcel shelf mount)		18

Interior Lamp/Illumination

EKS0043P

Item	Wattage (W)
Glove box lamp	3.4
Ignition key hole illumination lamp	0.74
Map lamp	10
Room lamp	8
Spot lamp	8
Step lamp	3.4
Trunk room lamp	3.4
Vanity mirror lamp	1.4

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