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SECTION

WIPER, WASHER & HORN

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PRECAUTION

PRECAUTION

PF0:00011

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

EKS00BTT

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

WARNING:

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

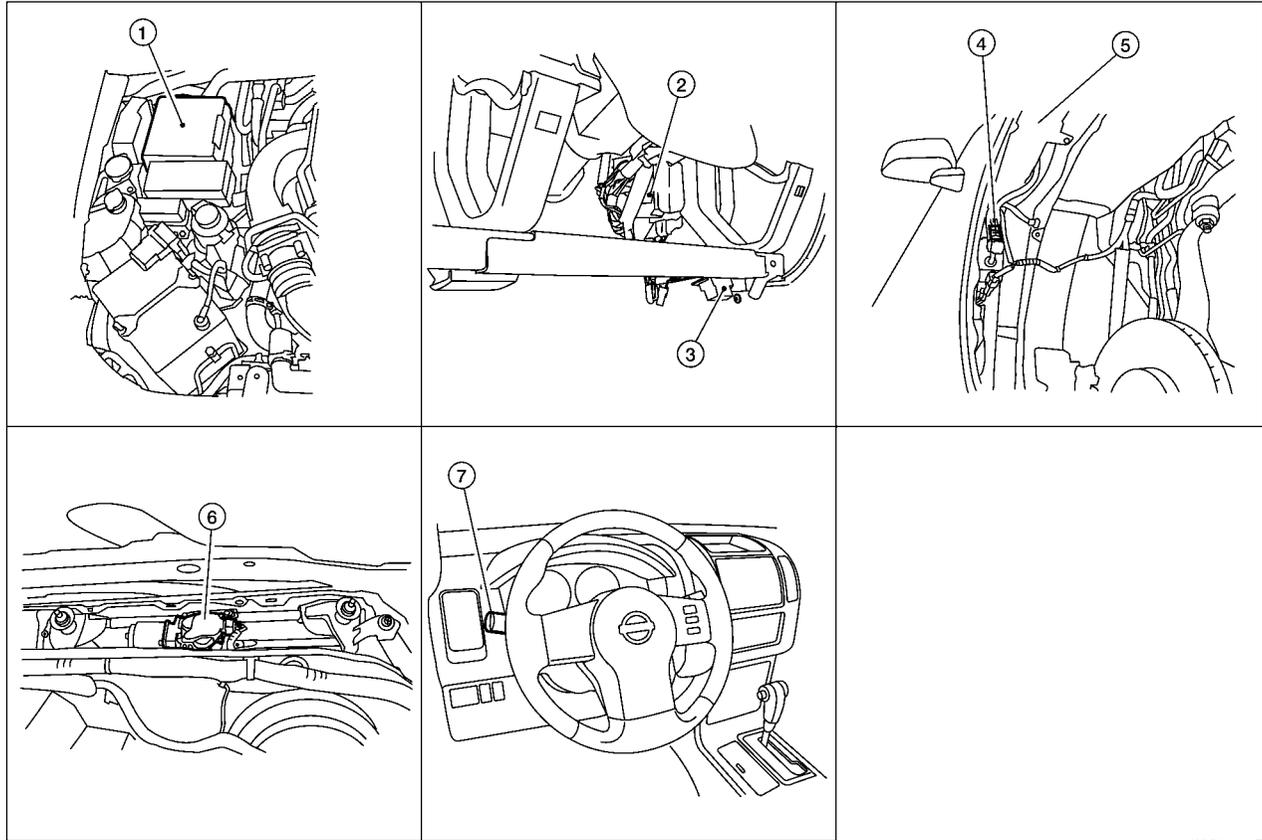
FRONT WIPER AND WASHER SYSTEM

PF2:28810

EKS00C52

FRONT WIPER AND WASHER SYSTEM

Components Parts and Harness Connector Location



- | | | |
|--|---|---|
| <p>1. IPDM E/R
E121, E122, E124</p> <p>4. Front washer motor connector
E105
(view with front fender protector RH removed)</p> <p>7. Combination switch
M28</p> | <p>2. BCM
M18, M20
(view with lower instrument panel LH removed)</p> <p>5. Washer fluid reservoir</p> | <p>3. Data Link connector</p> <p>6. Front wiper motor
E23</p> |
|--|---|---|

WKIA5015E

System Description

EKS00CNO

- Both front wiper relays are located in the IPDM E/R (intelligent power distribution module engine room).
- The wiper switch (combination switch) is composed of a combination of 5 output terminals and 5 input terminals. Terminal combination status is read by the BCM (body control module) when the wiper switch is turned ON.
- BCM controls front wiper LO, HI, and INT (intermittent) operation.
- IPDM E/R operates the wiper motor according to CAN communication signals from the BCM.

Power is supplied at all times

- to ignition relay, located in the IPDM E/R, and
- through 50A fusible link (letter **g**, located in the fuse and fusible link box)
- to BCM terminal 70, and
- through 30A fuse (No. 39, located in the IPDM E/R)
- to front wiper relay (located in the IPDM E/R).

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

- through 10A fuse [No. 15, located in the fuse block (J/B)]
- to combination switch terminal 2, and

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FRONT WIPER AND WASHER SYSTEM

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

Ground is supplied

- to BCM terminal 67 and
- to combination switch terminal 9
- through grounds M57, M61 and M79, and
- to IPDM E/R terminals 38 and 59 and
- to front wiper motor terminal 2
- through grounds E9, E15 (all) and E24 (VQ engine only).

LOW SPEED WIPER OPERATION

When the ignition switch is in the ON or START position, and the front wiper switch is turned to the low position, the BCM detects a low speed wiper ON request through the combination switch (wiper switch) reading function.

The BCM then sends a front wiper (low) request signal over CAN communication lines

- from BCM terminals 39 and 40
- to IPDM E/R terminals 39 and 40.

When IPDM E/R receives front wiper (low) request signal, it supplies ground to energize the front wiper relay. With the front wiper relay energized, power is supplied

- through front wiper relay
- to front wiper high relay
- through IPDM E/R terminal 32
- to front wiper motor terminal 1.

With power and ground supplied, the front wiper motor operates at low speed.

HI SPEED WIPER OPERATION

When the ignition switch is in the ON or START position, and the front wiper switch is turned to the high position, the BCM detects a high speed wiper ON request through the combination switch (wiper switch) reading function.

The BCM then sends a front wiper (high) request signal over CAN communication lines

- from BCM terminals 39 and 40
- to IPDM E/R terminals 39 and 40.

When the IPDM E/R receives a front wiper (high) request signal, it supplies ground to energize the front wiper and the front wiper high relays.

With the front wiper and the front wiper high relays energized, power is supplied

- through front wiper relay
- to front wiper high relay
- through IPDM E/R terminal 35
- to front wiper motor terminal 4.

With power and ground supplied, the front wiper motor operates at high speed.

INTERMITTENT OPERATION

Wiper intermittent operation delay interval is determined from the combination of the intermittent wiper dial position inputs. During each intermittent operation delay interval, the BCM sends a front wiper request signal to the IPDM E/R to operate the wipers.

When the ignition switch is in the ON or START position, and the front wiper switch is turned to an intermittent position, the BCM detects a front wiper (intermittent) ON request through the combination switch (wiper switch) reading function.

The BCM then sends a front wiper (intermittent) request signal over CAN communication lines

- from BCM terminals 39 and 40
- to IPDM E/R terminals 39 and 40.

When the BCM determines that combination switch status is front wiper intermittent ON, it performs the following operations.

- BCM detects ON/OFF status of intermittent wiper dial position.

FRONT WIPER AND WASHER SYSTEM

- BCM calculates operation interval from wiper dial position.
- BCM sends front wiper request signal (INT) to IPDM E/R at calculated operation interval.

When the IPDM E/R receives a front wiper request signal (INT), it supplies ground to energize the front wiper relay. It then sends an auto-stop signal to the BCM, and conducts intermittent front wiper motor operation.

AUTO STOP OPERATION

When the wiper arms are not located at the base of the windshield, and the wiper switch is turned OFF, the wiper motor will continue to operate until the wiper arms reach the windshield base. When the wiper arms reach the base of windshield, front wiper motor terminals 5 and 2 are connected.

Ground is supplied

- to IPDM E/R terminal 43
- through front wiper motor terminal 5
- through front wiper motor terminal 2
- through grounds E9, E15 (all) and E24 (VQ engine only).

The IPDM E/R sends an auto stop operation signal to the BCM through CAN communication lines.

When the BCM receives an auto stop operation signal, the BCM sends wiper stop signal to the IPDM E/R over CAN communication lines. The IPDM E/R then de-energizes the front wiper relay.

The wiper motor will then stop the wiper arms at the STOP position.

FRONT WASHER OPERATION

When the ignition switch is in the ON or START position, and the front washer switch is OFF, the front washer motor is supplied power

- through 10A fuse [No. 15, located in the fuse block (J/B)]
- through combination switch (wiper switch) terminal 2
- through combination switch (wiper switch) terminal 4
- to front washer motor terminal 1.

When the front wiper switch is in the front washer position, the BCM detects a front washer signal request through the combination switch (wiper switch) reading function.

Combination switch ground is supplied

- to front washer motor terminal 2
- through combination switch (wiper switch) terminal 3
- through combination switch (wiper switch) terminal 9
- through grounds M57, M61 and M79.

With ground supplied, the front washer motor is operated.

When the BCM detects that front washer motor has operated for 0.4 seconds or longer, the BCM uses CAN communication and sends a wiper request signal to the IPDM E/R for low speed operation of wipers.

When the BCM detects that the washer switch is OFF, low speed operation cycles approximately 3 times and then stops.

MIST OPERATION

When the wiper switch is temporarily placed in the mist position, wiper low speed operation cycles once and then stops.

For additional information about wiper operation under this condition, refer to [WW-4, "LOW SPEED WIPER OPERATION"](#).

If the switch is held in the mist position, low speed operation continues.

FAIL-SAFE FUNCTION

The BCM includes fail-safe function to prevent malfunction of electrical components controlled by CAN communication if a malfunction in CAN communication occurs.

The BCM uses CAN communication to stop output of electrical components it controls.

Until the ignition switch is turned OFF, the front wiper system remains in same status as just before fail-safe control was initiated. (If wiper was in low speed operation just before fail-safe, it continues low speed operation until ignition switch is turned OFF.)

When fail-safe status is initiated, the BCM remains in standby until normal signals are received.

When normal signals are received, fail-safe status is canceled.

COMBINATION SWITCH READING FUNCTION

Refer to [BCS-3, "COMBINATION SWITCH READING FUNCTION"](#).

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FRONT WIPER AND WASHER SYSTEM

CAN Communication System Description

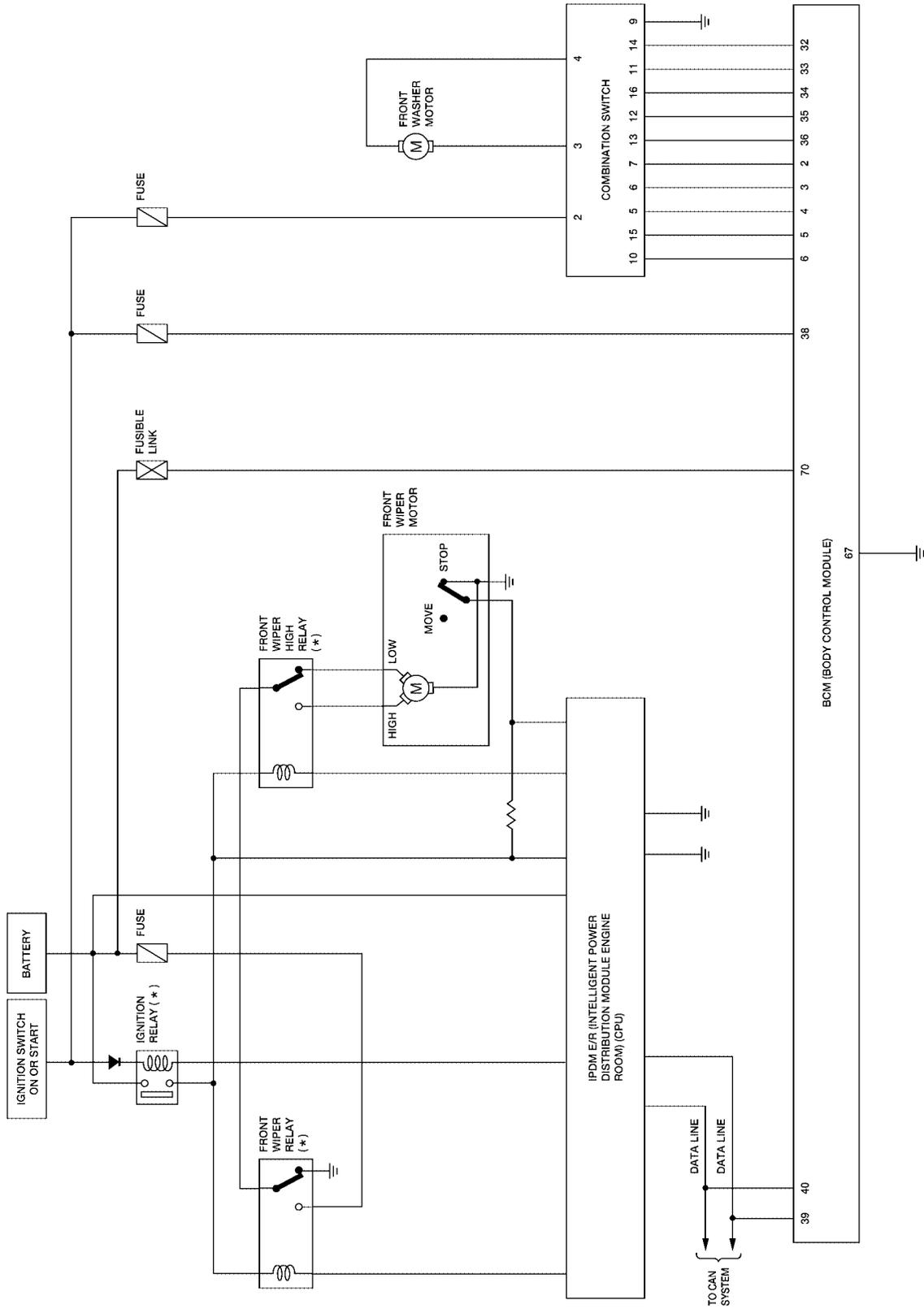
EKS00BTX

Refer to [LAN-22, "CAN COMMUNICATION"](#) .

FRONT WIPER AND WASHER SYSTEM

Schematic

EKS00BTY



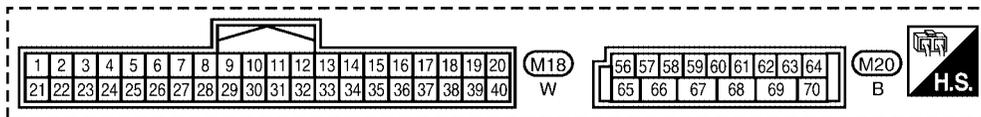
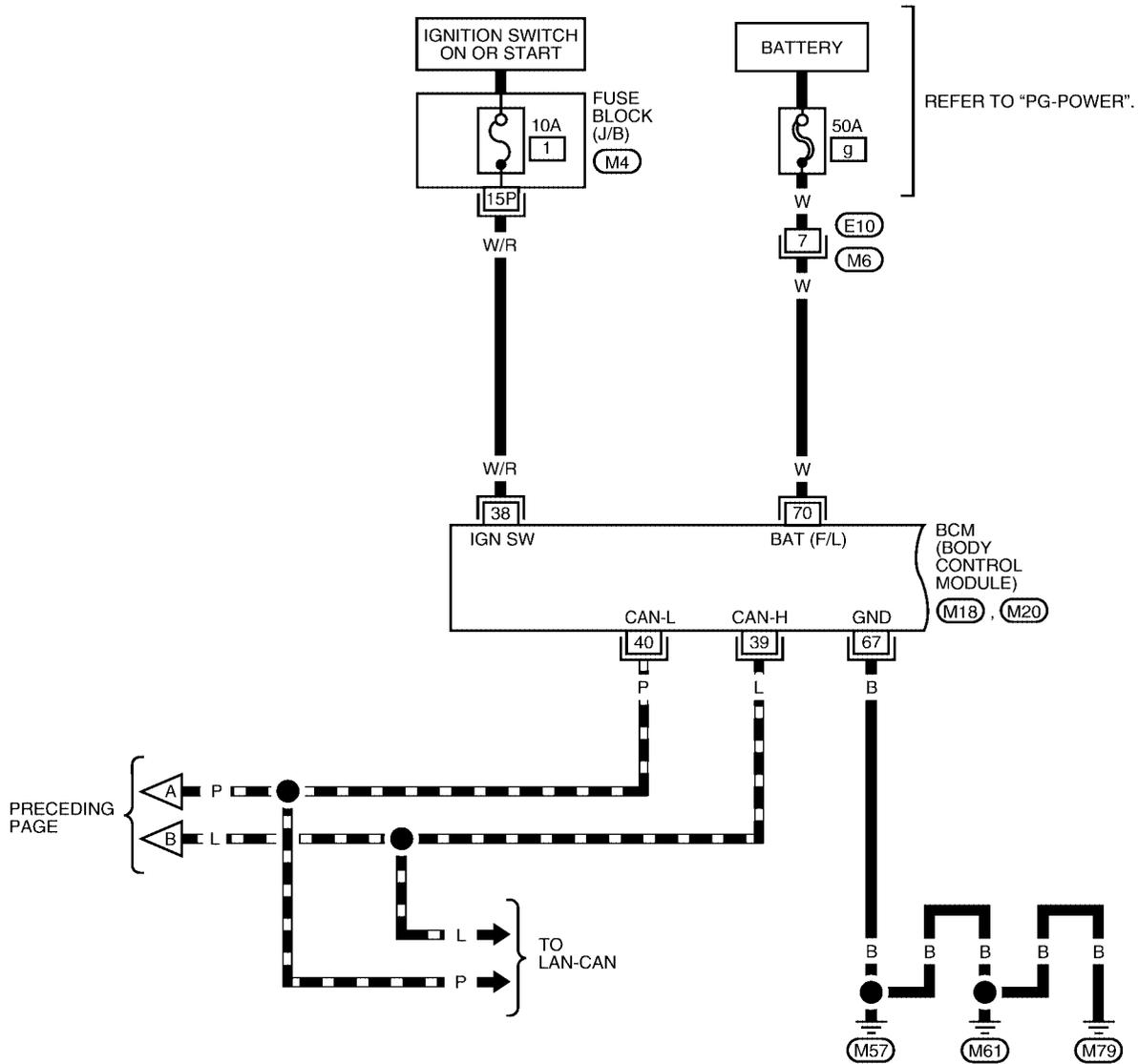
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FRONT WIPER AND WASHER SYSTEM

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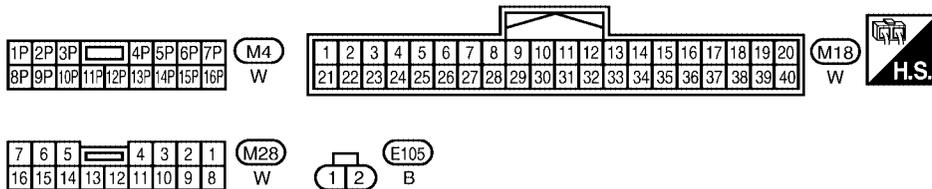
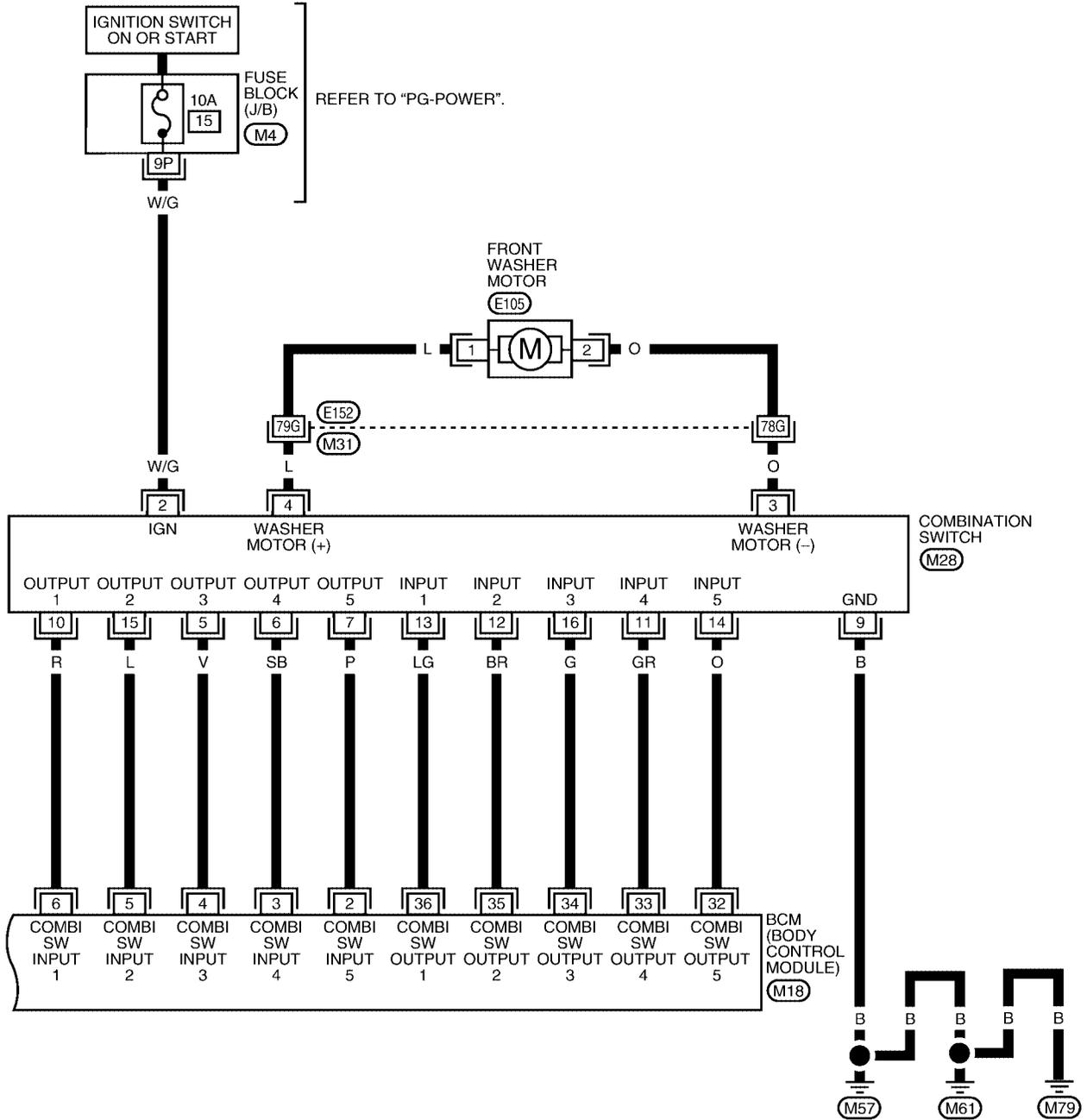
▬ : DATA LINE



WKWA4326E

FRONT WIPER AND WASHER SYSTEM

WW-WIPER-03



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

WKWA2175E

FRONT WIPER AND WASHER SYSTEM

Terminals and Reference Values for BCM

EKS00CLN

Refer to [BCS-12, "Terminals and Reference Values for BCM"](#) .

Terminals and Reference Values for IPDM E/R

EKS00CLO

Refer to [PG-29, "Terminals and Reference Values for IPDM E/R"](#) .

Work Flow

EKS00CLP

1. Confirm the symptom or customer complaint.
2. Understand the system description, refer to [WW-3, "System Description"](#) .
3. Perform preliminary inspection, refer to [WW-11, "Preliminary Check"](#) .
4. Check symptom and repair or replace the cause of malfunction.
5. Does wiper function operate normally? If it operates normally, GO TO 6. If not, GO TO 4.
6. Inspection End.

Preliminary Check

EKS00CLQ

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

Refer to [BCS-16, "BCM Power Supply and Ground Circuit Check"](#) .

CONSULT-II Function (IPDM E/R)

EKS00CLS

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

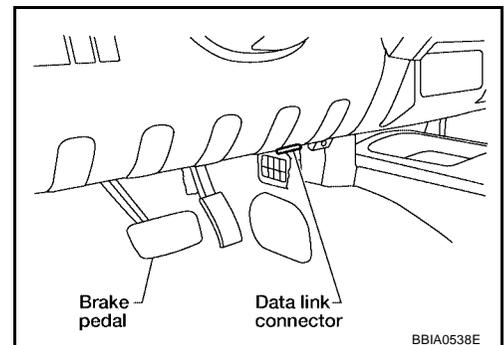
IPDM E/R diagnostic Mode	Description
SELF-DIAG RESULTS	Displays IPDM E/R self-diagnosis results.
DATA MONITOR	Displays IPDM E/R input/output data in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	Operation of electrical loads can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

CONSULT-II OPERATION

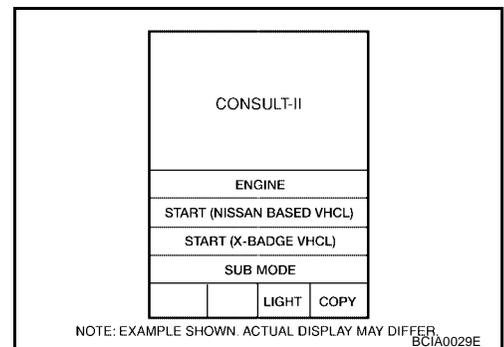
CAUTION:

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

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

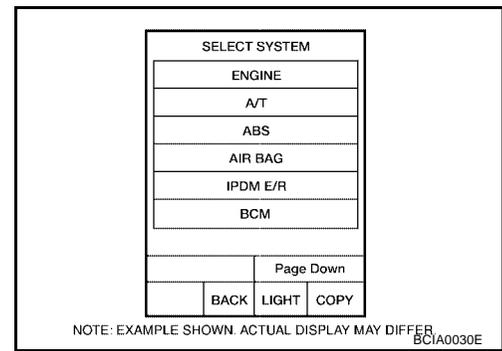


2. Touch "START (NISSAN BASED VHCL)".

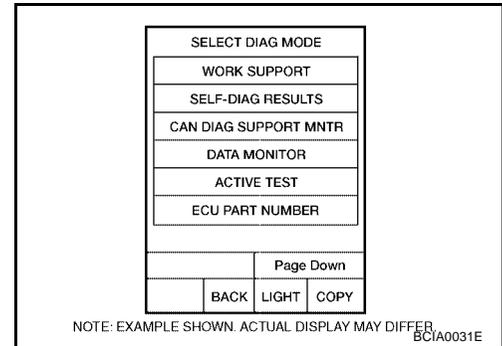


FRONT WIPER AND WASHER SYSTEM

3. Touch "IPDM E/R" on "SELECT SYSTEM" screen.
If "IPDM E/R" is not displayed, go to [GI-41, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



4. Select the desired part to be diagnosed on the "SELECT DIAG MODE" screen.



WORK SUPPORT

Operation Procedure

1. Touch "WIPER" on the "SELECT TEST ITEM" screen.
2. Touch "WORK SUPPORT" on the "SELECT DIAG MODE" screen.
3. Touch "WIPER SPEED SETTING" on the "SELECT WORK ITEM" screen.
4. Touch "START".
5. Touch "CHANGE SETT".
6. The setting will be changed and "CURRENT SETTING" will be displayed.
7. Touch "END".

Work Support Setting Item

Item	Description	CONSULT-II
WIPER SPEED SETTING	When wiper switch is at INTERMITTENT, front wiper intermittent time can be selected according to vehicle speed. ● ON (Operated)/OFF ^{NOTE} (Not operated)	ON/OFF

NOTE:

Factory setting

DATA MONITOR

Operation Procedure

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

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

3. Touch "START".
4. When "SELECTION FROM MENU" is selected, touch items to be monitored. When "ALL SIGNALS" is selected, all the items will be monitored.

FRONT WIPER AND WASHER SYSTEM

5. Touch "RECORD" while monitoring to record the status of the item being monitored. To stop recording, touch "STOP".

All Signals, Main Signals, Selection From Menu

Item name	CONSULT-II screen display	Display or unit	Monitor item selection			Description
			ALL SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
Front wiper request	FR WIP REQ	STOP/1LOW/LOW/ HI	x	x	x	Signal status input from BCM.
Wiper auto stop	WIP AUTO STOP	ACT P/STOP P	x	x	x	Output status of IPDM E/R.
Wiper protection	WIP PROT	OFF/LS/HS/BLOCK	x	x	x	Control status of IPDM E/R.

NOTE:

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

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FRONT WIPER AND WASHER SYSTEM

ACTIVE TEST

Operation Procedure

1. Touch "ACTIVE TEST" on the "SELECT DIAG MODE" screen.
2. Touch item(s) to be tested and check operation of the selected item(s).
3. During the operation check, touching "BACK" deactivates the operation.

Display Item List

Test item	CONSULT-II screen display	Description
Front wiper (HI, LO) output	FRONT WIPER	With a certain operation (OFF, HI, LO) front wiper relays can be operated.

CONSULT-II Function (BCM)

EKS00CLR

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

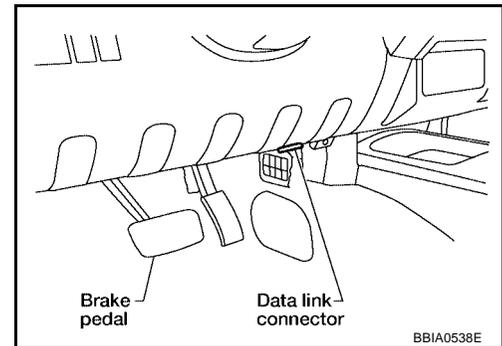
BCM diagnostic test item	Diagnostic mode	Description
Inspection by part	WORK SUPPORT	Supports inspections and adjustments. Commands are transmitted to the BCM for setting the status suitable for required operation, input/output signals are received from the BCM and received data is displayed.
	DATA MONITOR	Displays BCM input/output data in real time.
	ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
	SELF-DIAG RESULTS	Displays BCM self-diagnosis results.
	CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
	ECU PART NUMBER	BCM part number can be read.
	CONFIGURATION	Performs BCM configuration read/write functions.

CONSULT-II OPERATION

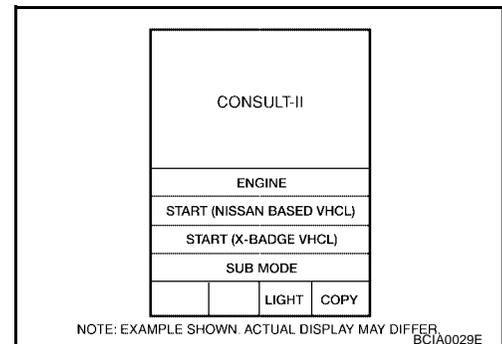
CAUTION:

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

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

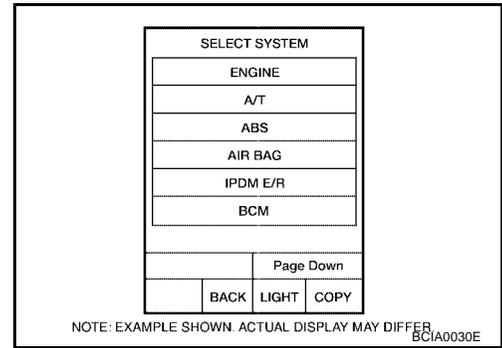


2. Touch "START (NISSAN BASED VHCL)".

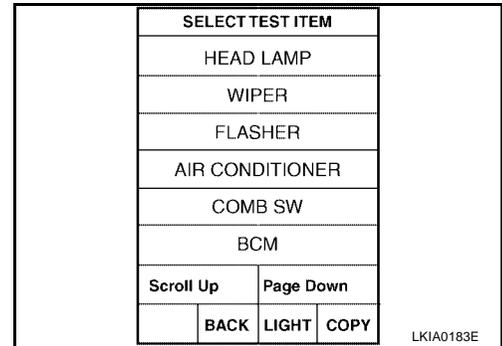


FRONT WIPER AND WASHER SYSTEM

3. Touch "BCM" on the "SELECT SYSTEM" screen.
If "BCM" is not indicated, go to [GI-41, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



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



DATA MONITOR

Operation Procedure

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

ALL SIGNALS	Monitors all the items.
SELECTION FROM MENU	Selects and monitors the individual item selected.

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 to record the status of the item being monitored. To stop recording, touch "STOP".

Display Item List

Monitor item name "OPERATION OR UNIT"	Contents
IGN ON SW "ON/OFF"	Displays "IGN Position (ON)/OFF, ACC Position (OFF)" status as judged from ignition switch signal.
IGN SW CAN "ON/OFF"	Displays "IGN switch ON (ON)/Other OFF or ACC (OFF)" status as judged from CAN communications.
FR WIPER HI "ON/OFF"	Displays "Front Wiper HI (ON)/Other (OFF)" status as judged from wiper switch signal.
FR WIPER LOW "ON/OFF"	Displays "Front Wiper LOW (ON)/Other (OFF)" status as judged from wiper switch signal.
FR WIPER INT "ON/OFF"	Displays "Front Wiper INT (ON)/Other (OFF)" status as judged from wiper switch signal.
FR WASHER SW "ON/OFF"	Displays "Front Washer Switch (ON)/Other (OFF)" status as judged from wiper switch signal.
INT VOLUME (1 - 7)	Displays intermittent operation dial position setting (1 - 7) as judged from wiper switch signal.
FR WIPER STOP "ON/OFF"	Displays "Stopped (ON)/Operating (OFF)" status as judged from the auto stop signal.
VEHICLE SPEED "0.0 km/h"	Displays vehicle speed as received from CAN communication.

FRONT WIPER AND WASHER SYSTEM

ACTIVE TEST

Operation Procedure

1. Touch "WIPER" on the "SELECT TEST ITEM" screen.
2. Touch "ACTIVE TEST" on the "SELECT DIAG MODE" screen.
3. Touch item(s) to be tested and check operation of the selected item(s).
4. During the operation check, touching "BACK" deactivates the operation.

Display Item List

Test item	Display on CONSULT-II screen	Description
Front wiper HI output	FR WIPER (HI)	Front wiper HI can be operated by any ON-OFF operation.
Front wiper LO output	FR WIPER (LO)	Front wiper LO can be operated by any ON-OFF operation.
Front wiper INT output	FR WIPER (INT)	Front wiper INT can be operated by any ON-OFF operation.

Trouble Diagnosis

EKS00CLT

FRONT WIPER DOES NOT OPERATE

CAUTION:

During IPDM E/R fail-safe control, front wipers may not operate. Refer to [PG-18, "CAN COMMUNICATION LINE CONTROL"](#) to make sure that it is not in fail-safe status.

Inspection Procedure

1. CHECK IPDM E/R TO FRONT WIPERS

Ⓟ With CONSULT-II

1. Select "IPDM E/R" with CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.

ⓧ Without CONSULT-II

1. Turn on front wipers using auto active test. Refer to [PG-24, "Auto Active Test"](#).
2. Confirm front wiper operation.

OK or NG

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

ACTIVE TEST			
FRONT WIPER		OFF	
HI		LO	
MODE	BACK	LIGHT	COPY

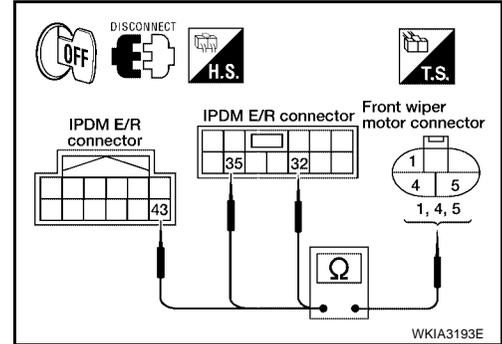
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FRONT WIPER AND WASHER SYSTEM

2. IPDM E/R TO FRONT WIPERS CIRCUIT INSPECTION

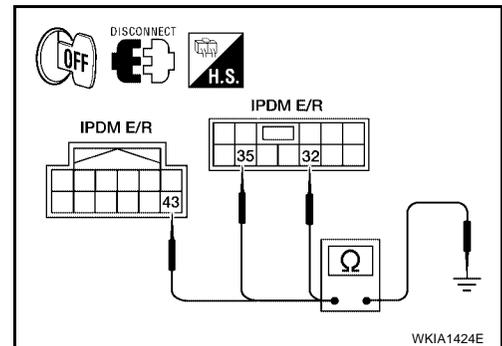
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connectors and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector terminals and front wiper motor harness connector terminals.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E121	32	E23	1	Yes
	35		4	
E122	43		5	



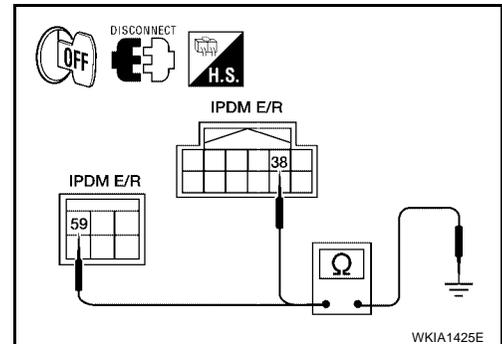
4. Check continuity between IPDM E/R harness connector terminals and ground.

IPDM E/R		Continuity	
Connector	Terminal		
E121	32	Ground	No
	35		
E122	43		



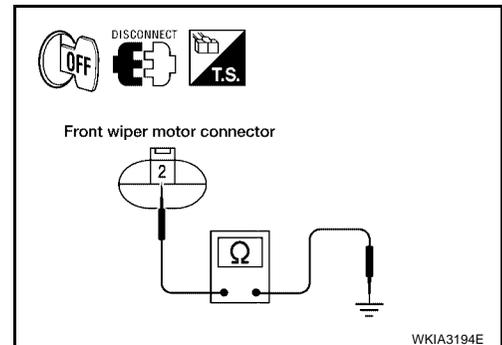
5. Check continuity between IPDM E/R harness connector terminals and ground.

IPDM E/R		Continuity	
Connector	Terminal		
E122	38	Ground	Yes
E124	59		



6. Check continuity between front wiper motor harness connector terminal 2 and ground.

Front wiper motor		Continuity	
Connector	Terminal		
E23	2	Ground	Yes



OK or NG

- OK >> Connect connectors. GO TO 3.
 NG >> Repair harness or connector.

FRONT WIPER AND WASHER SYSTEM

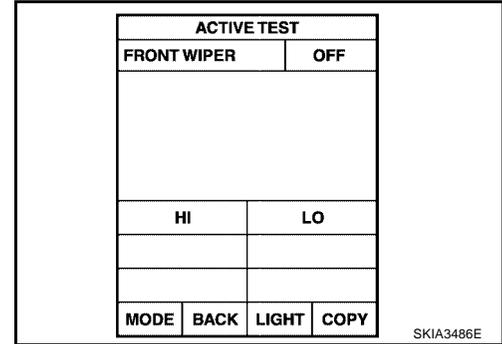
3. IPDM E/R INSPECTION

Ⓟ With CONSULT-II

1. Turn ignition switch ON.
2. Select "IPDM E/R" with CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.

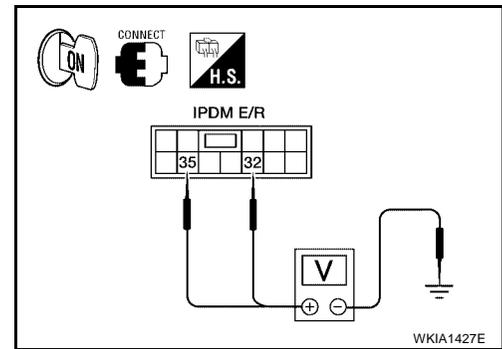
ⓧ Without CONSULT-II

1. Turn on front wipers using the auto active test. Refer to [PG-24, "Auto Active Test"](#).



When front wiper relay, and front wiper high relay are operating, check voltage between IPDM E/R terminals and ground.

IPDM E/R		(-)	Condition	Voltage (Approx.)
Connector	Terminal (+)			
E121	32	Ground	Stopped	0
			LO operation	Battery voltage
	35		Stopped	0
			HI operation	Battery voltage



OK or NG

- OK >> Replace the front wiper motor. Refer to [WW-28, "WIPER MOTOR AND LINKAGE"](#).
- NG >> Replace IPDM E/R. Refer to [PG-33, "Removal and Installation of IPDM E/R"](#).

4. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. With "WIPER" data monitor, check that "FR WIPER INT", "FR WIPER LOW" and "FR WIPER HI" turn ON-OFF according to operation of wiper switch.

OK or NG

- OK >> GO TO 5.
- NG >> Check wiper switch. Refer to [BCS-3, "COMBINATION SWITCH READING FUNCTION"](#).

DATA MONITOR	
MONITOR	
IGN ON SW	OFF
IGN SW CAN	ON
FR WIPER HI	OFF
FR WIPER LOW	OFF
FR WIPER INT	OFF
FR WASHER SW	OFF
INT VOLUME	7
FR WIPER STOP	ON
VEHICLE SPEED	0.0 km/h
PAGE DOWN	
RECORD	
MODE	BACK
LIGHT	COPY

FRONT WIPER AND WASHER SYSTEM

5. BCM INSPECTION

Select "BCM" on CONSULT-II. Select "BCM" from the "SELECT TEST ITEM" menu. Carry out self-diagnosis of BCM.

Displayed self-diagnosis results

NO DTC>> Replace the BCM. Refer to [BCS-26, "Removal and Installation"](#) .

CAN COMM CIRCUIT>> Check CAN communication line of BCM. GO TO [BCS-19, "CAN Communication Inspection Using CONSULT-II \(Self-Diagnosis\)"](#) .

SELF-DIAG RESULTS			
DTC RESULTS		TIME	
CAN COMM CIRCUIT [U1000]		PAST	
ERASE		PRINT	
MODE	BACK	LIGHT	COPY

SKIA1039E

FRONT WIPER STOP POSITION IS INCORRECT

Inspection Procedure

1. CHECK IPDM E/R TO FRONT WIPER MOTOR

Ⓜ With CONSULT-II

Select "IPDM E/R" with CONSULT-II. With data monitor, confirm that "WIP AUTO STOP" changes from "ACT P" to "STOP P" according to wiper operation.

ⓧ Without CONSULT-II

GO TO 2.

OK or NG

OK >> Replace IPDM E/R. Refer to [PG-33, "Removal and Installation of IPDM E/R"](#) .

NG >> GO TO 2.

DATA MONITOR	
MONITOR	
MOTOR FAN REQ	1
AC COMP REQ	OFF
TAIL&CLR REQ	OFF
HL LO REQ	OFF
HL HI REQ	OFF
FR FOG REQ	OFF
FR WIP REQ	STOP
WIP AUTO STOP	STOP P
WIP PROT	OFF
Page DOWN	
RECORD	
MODE	BACK
LIGHT	COPY

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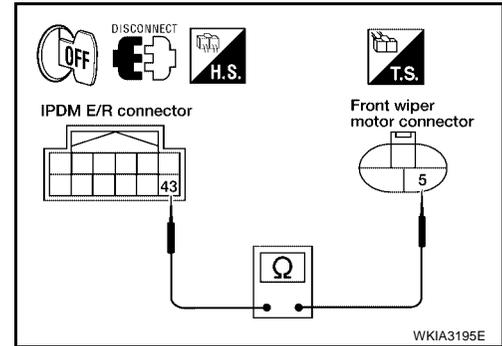
WW

FRONT WIPER AND WASHER SYSTEM

2. IPDM E/R TO FRONT WIPER MOTOR CIRCUIT INSPECTION

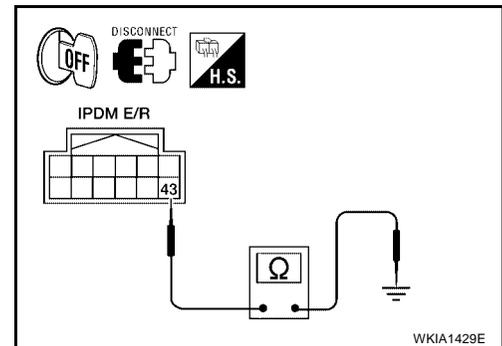
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector and front wiper motor harness connector.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E122	43	E23	5	Yes



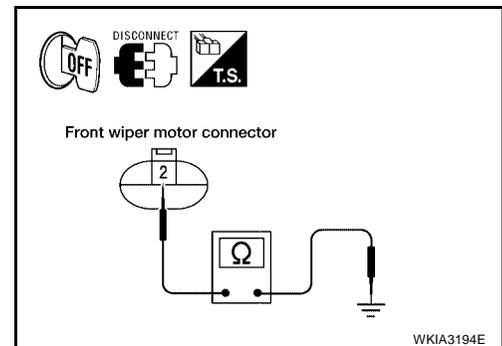
4. Check continuity between IPDM E/R harness connector terminal and ground.

IPDM E/R		Continuity
Connector	Terminal	
E122	43	No



5. Check continuity between front wiper motor harness connector terminal 2 and ground.

Front wiper motor		Continuity
Connector	Terminal	
E23	2	Yes



OK or NG

- OK >> GO TO 3.
- NG >> ● Check for short circuit or open circuit in harness between IPDM E/R and front wiper motor.
- Check for open circuit in harness between front wiper motor and ground.

FRONT WIPER AND WASHER SYSTEM

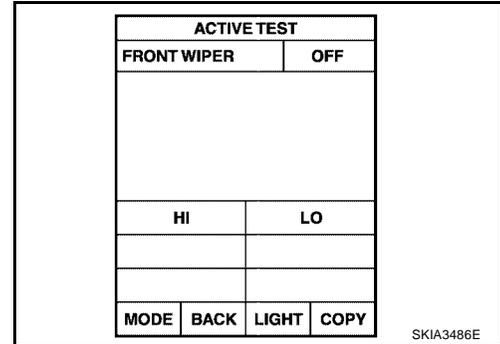
3. IPDM E/R INSPECTION

☑ With CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Turn ignition switch ON.
3. Select "LO" on "ACTIVE TEST" screen.

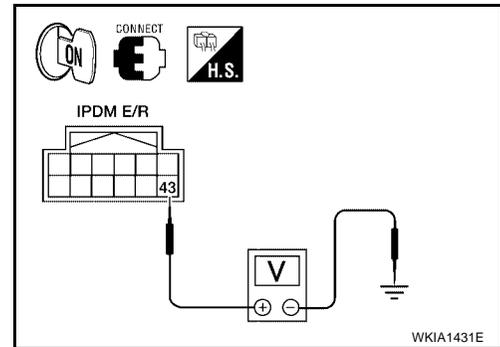
☒ Without CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Turn on front wipers using the auto active test. Refer to [PG-24, "Auto Active Test"](#).



When front wipers are operating and when stopped, measure voltage between IPDM E/R terminal 43 and ground.

IPDM E/R		(-)	Condition	Voltage (Approx.)
(+)				
Connector	Terminal			
E122	43	Ground	Wiper operating	Battery voltage
			Wiper stopped	0V



OK or NG

- OK >> Replace IPDM E/R. Refer to [PG-33, "Removal and Installation of IPDM E/R"](#).
- NG >> Replace front wiper motor. Refer to [WW-28, "WIPER MOTOR AND LINKAGE"](#).

ONLY FRONT WIPER LOW DOES NOT OPERATE

Inspection Procedure

1. CHECK IPDM E/R TO FRONT WIPERS

☑ With CONSULT-II

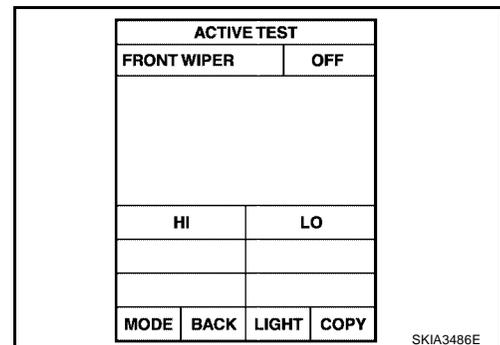
1. Select "IPDM E/R" with CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
3. Select "LO" on "ACTIVE TEST" screen.
4. Confirm front wiper low operation.

☒ Without CONSULT-II

1. Turn on front wipers using auto active test. Refer to [PG-24, "Auto Active Test"](#).
2. Confirm front wiper low operation.

OK or NG

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



FRONT WIPER AND WASHER SYSTEM

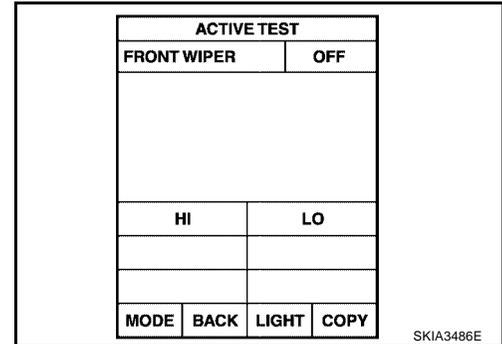
2. IPDM E/R INSPECTION

Ⓜ With CONSULT-II

1. Select "LO" on "ACTIVE TEST" screen.

ⓧ Without CONSULT-II

1. Turn on front wipers using the auto active test. Refer to [PG-24, "Auto Active Test"](#).



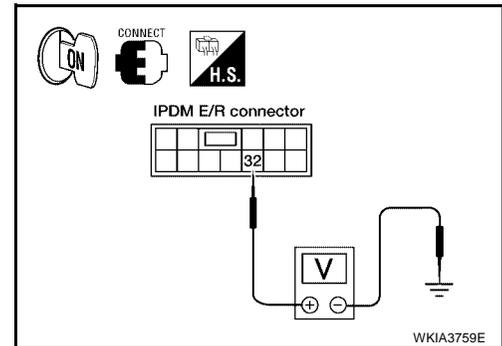
When front wiper relay is operating, check voltage between IPDM E/R terminal and ground.

IPDM E/R		(-)	Condition	Voltage (Approx.)
(+) Connector				
E121	32	Ground	Wiper operating	Battery voltage

OK or NG

OK >> GO TO 3.

NG >> Replace IPDM E/R. Refer to [PG-33, "Removal and Installation of IPDM E/R"](#).



3. IPDM E/R TO FRONT WIPERS CIRCUIT INSPECTION

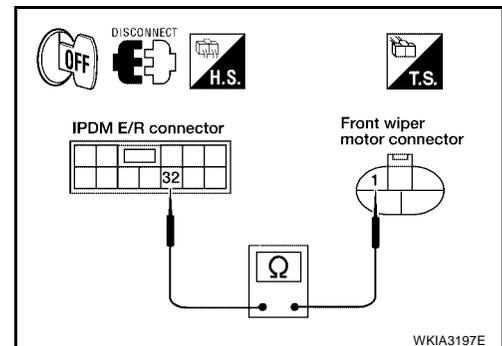
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector terminal and front wiper motor harness connector terminal.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E121	32	E23	1	Yes

OK or NG

OK >> Replace the wiper motor. Refer to [WW-28, "WIPER MOTOR AND LINKAGE"](#).

NG >> Repair harness or connector.



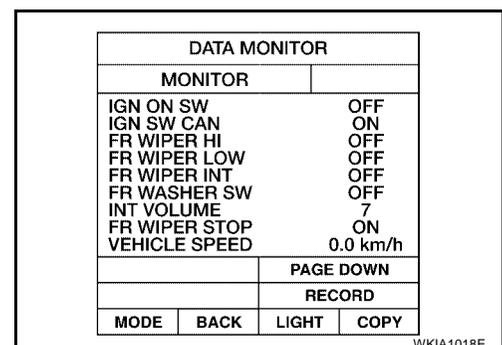
4. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. With "WIPER" data monitor, check that "FR WIPER LO" turns ON-OFF according to operation of wiper switch.

OK or NG

OK >> Replace BCM. Refer to [BCS-26, "Removal and Installation"](#).

NG >> Replace wiper switch. Refer to [WW-29, "WIPER AND WASHER SWITCH"](#).



FRONT WIPER AND WASHER SYSTEM

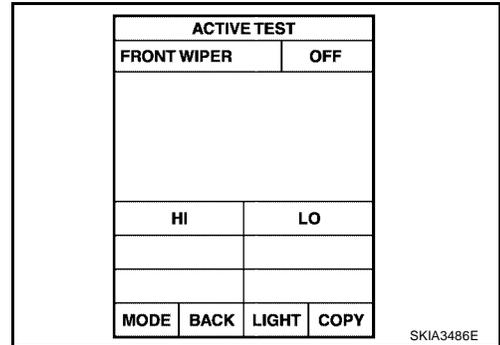
ONLY FRONT WIPER HI DOES NOT OPERATE

Inspection Procedure

1. CHECK IPDM E/R TO FRONT WIPERS

☑ With CONSULT-II

1. Select "IPDM E/R" with CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
3. Select "HI" on "ACTIVE TEST" screen.
4. Confirm front wiper high operation.



☒ Without CONSULT-II

1. Turn on front wipers using auto active test. Refer to [PG-24, "Auto Active Test"](#).
2. Confirm front wiper operation.

OK or NG

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

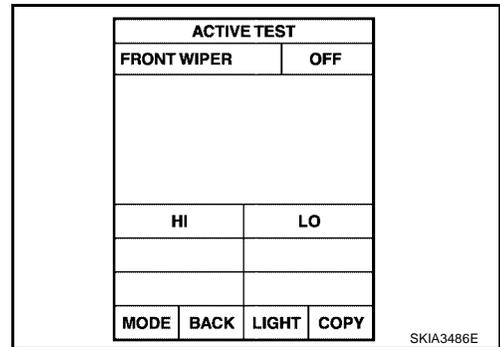
2. IPDM E/R INSPECTION

☑ With CONSULT-II

1. Select "HI" on "ACTIVE TEST" screen.

☒ Without CONSULT-II

1. Turn on front wipers using the auto active test. Refer to [PG-24, "Auto Active Test"](#).

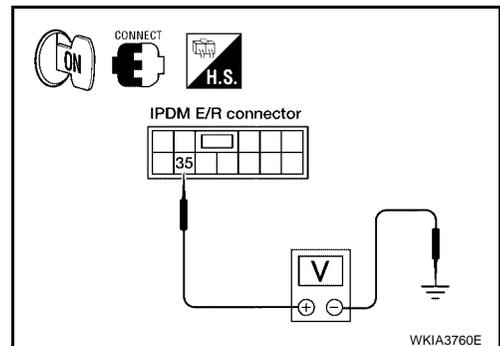


When front wiper relay high is operating, check voltage between IPDM E/R terminal and ground.

IPDM E/R		(-)	Condition	Voltage (Approx.)
(+)				
Connector	Terminal			
E121	35	Ground	Wiper operating	Battery voltage

OK or NG

- OK >> GO TO 3.
- NG >> Replace IPDM E/R. Refer to [PG-33, "Removal and Installation of IPDM E/R"](#).



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FRONT WIPER AND WASHER SYSTEM

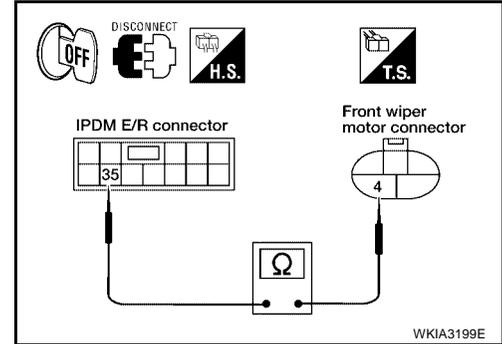
3. IPDM E/R TO FRONT WIPERS CIRCUIT INSPECTION

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector terminal and front wiper motor harness connector terminal.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E121	35	E23	4	Yes

OK or NG

- OK >> Replace the wiper motor. Refer to [WW-28, "WIPER MOTOR AND LINKAGE"](#) .
- NG >> Repair harness or connector.



4. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. With "WIPER" data monitor, check that "FR WIPER HI" turns ON-OFF according to operation of wiper switch.

OK or NG

- OK >> Replace BCM. Refer to [BCS-26, "Removal and Installation"](#) .
- NG >> Replace wiper switch. Refer to [WW-29, "WIPER AND WASHER SWITCH"](#) .

DATA MONITOR	
MONITOR	
IGN ON SW	OFF
IGN SW CAN	ON
FR WIPER HI	OFF
FR WIPER LOW	OFF
FR WIPER INT	OFF
FR WASHER SW	OFF
INT VOLUME	7
FR WIPER STOP	ON
VEHICLE SPEED	0.0 km/h
PAGE DOWN	
RECORD	
MODE	BACK
LIGHT	COPY

WKIA1018E

ONLY FRONT WIPER INT DOES NOT OPERATE

Inspection Procedure

1. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. With "WIPER" data monitor, check that "FR WIPER INT" turns ON-OFF according to operation of wiper switch.

OK or NG

- OK >> Replace BCM. Refer to [BCS-26, "Removal and Installation"](#) .
- NG >> Replace wiper switch. Refer to [WW-29, "WIPER AND WASHER SWITCH"](#) .

DATA MONITOR	
MONITOR	
IGN ON SW	OFF
IGN SW CAN	ON
FR WIPER HI	OFF
FR WIPER LOW	OFF
FR WIPER INT	OFF
FR WASHER SW	OFF
INT VOLUME	7
FR WIPER STOP	ON
VEHICLE SPEED	0.0 km/h
PAGE DOWN	
RECORD	
MODE	BACK
LIGHT	COPY

WKIA1018E

FRONT WIPER AND WASHER SYSTEM

FRONT WIPER INTERMITTENT OPERATION SWITCH POSITION CANNOT BE ADJUSTED

Inspection Procedure

1. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. With "WIPER" data monitor, check that "INT VOLUME" changes in order from 1 to 7 according to operation of the intermittent switch dial position.

OK or NG

- OK >> Replace BCM. Refer to [BCS-26, "Removal and Installation"](#).
- NG >> Replace wiper switch. Refer to [WW-29, "WIPER AND WASHER SWITCH"](#).

DATA MONITOR			
MONITOR			
IGN ON SW		OFF	
IGN SW CAN		ON	
FR WIPER HI		OFF	
FR WIPER LOW		OFF	
FR WIPER INT		OFF	
FR WASHER SW		OFF	
INT VOLUME		7	
FR WIPER STOP		ON	
VEHICLE SPEED		0.0 km/h	
		PAGE DOWN	
		RECORD	
MODE	BACK	LIGHT	COPY

WKIA1018E

WIPERS DO NOT WIPE WHEN FRONT WASHER OPERATES

Inspection Procedure

1. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. With "WIPER" data monitor, check that "FR WASHER SW" turns ON-OFF according to operation of front washer switch.

OK or NG

- OK >> Replace BCM. Refer to [BCS-26, "Removal and Installation"](#).
- NG >> Replace wiper switch. Refer to [WW-29, "WIPER AND WASHER SWITCH"](#).

DATA MONITOR			
MONITOR			
IGN ON SW		OFF	
IGN SW CAN		ON	
FR WIPER HI		OFF	
FR WIPER LOW		OFF	
FR WIPER INT		OFF	
FR WASHER SW		OFF	
INT VOLUME		7	
FR WIPER STOP		ON	
VEHICLE SPEED		0.0 km/h	
		PAGE DOWN	
		RECORD	
MODE	BACK	LIGHT	COPY

WKIA1018E

FRONT WIPERS OPERATE FOR 10 SECONDS, STOP FOR 20 SECONDS, AND AFTER REPEATING THIS OPERATION FIVE TIMES, THEY BECOME INOPERATIVE

CAUTION:

- When auto stop signal has not varied for 10 seconds or longer while IPDM E/R is operating front wipers, IPDM E/R considers front wipers locked and stops wiper output, which causes this symptom.
- This status can be checked by using IPDM E/R "DATA MONITOR". Under this condition, "WIP PROT" reads "BLOCK".

Inspection Procedure

1. CHECK IPDM E/R TO FRONT WIPER MOTOR

☑ With CONSULT-II

Select "IPDM E/R" with CONSULT-II. With data monitor, confirm that "WIP AUTO STOP" changes from "ACT P" to "STOP P" according to wiper operation.

☒ Without CONSULT-II
GO TO 2.

OK or NG

- OK >> Replace IPDM E/R. Refer to [PG-33, "Removal and Installation of IPDM E/R"](#).
- NG >> GO TO 2.

DATA MONITOR			
MONITOR			
MOTOR FAN REQ		1	
AC COMP REQ		OFF	
TAIL&CLR REQ		OFF	
HL LO REQ		OFF	
HL HI REQ		OFF	
FR FOG REQ		OFF	
FR WIP REQ		STOP	
WIP AUTO STOP		STOP P	
WIP PROT		OFF	
		Page DOWN	
		RECORD	
MODE	BACK	LIGHT	COPY

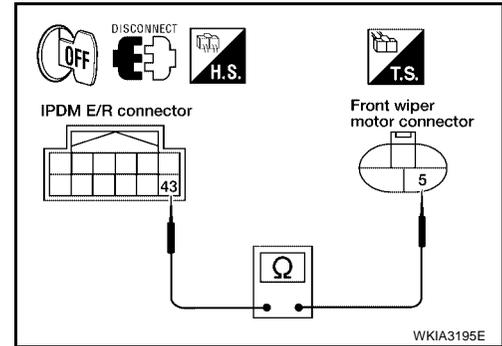
SKIA5301E

FRONT WIPER AND WASHER SYSTEM

2. IPDM E/R TO FRONT WIPER MOTOR CIRCUIT INSPECTION

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector terminal and front wiper motor harness connector terminal.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E122	43	E23	5	Yes

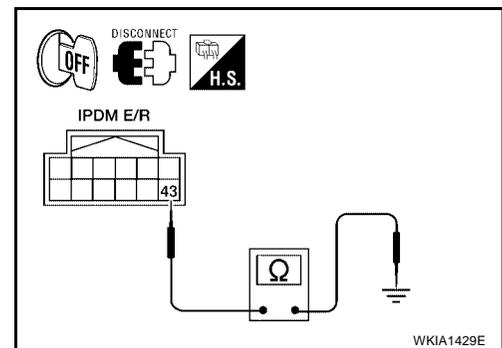


4. Check continuity between IPDM E/R harness connector terminal and ground.

IPDM E/R			Continuity
Connector	Terminal		
E122	43	Ground	No

OK or NG

- OK >> Connect connectors. GO TO 3.
- NG >> Repair harness or connector.



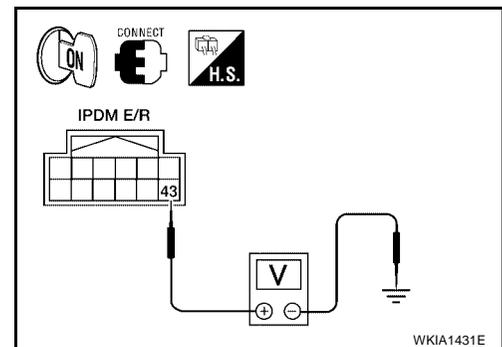
3. IPDM E/R TO FRONT WIPER MOTOR AUTO STOP CIRCUIT INSPECTION

While front wiper motor is stopped and while operating, measure voltage between IPDM E/R terminal 43 and ground.

IPDM E/R		(-)	Condition	Voltage (Approx.)
(+)				
Connector	Terminal			
E122	43	Ground	Wiper operating	Battery voltage
			Wiper stopped	0V

OK or NG

- OK >> Replace IPDM E/R. Refer to [PG-33, "Removal and Installation of IPDM E/R"](#) .
- NG >> Replace front wiper motor. Refer to [WW-28, "WIPER MOTOR AND LINKAGE"](#) .



FRONT WIPER AND WASHER SYSTEM

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Removal and Installation

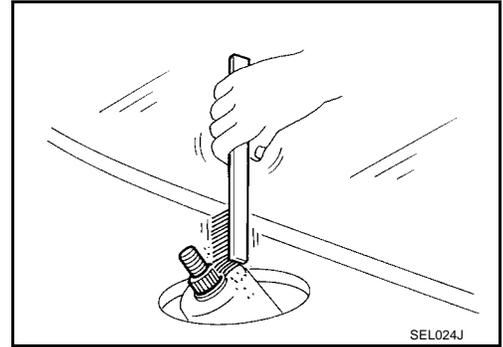
FRONT WIPER ARMS

Removal

1. Remove wiper arm covers and wiper arm nuts.
2. Remove front RH wiper arm and front LH wiper arm.
3. Remove front RH blade assembly and front LH blade assembly.

Installation

1. Operate wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Clean up the pivot area as shown. This will reduce possibility of wiper arm looseness.



3. Install front RH blade assembly and front LH blade assembly.
4. Install front RH wiper arm and front LH wiper arm.
5. Ensure that wiper blades stop within proper clearance. Refer to [WW-27, "FRONT WIPER ARM ADJUSTMENT"](#).
6. Tighten wiper arm nuts to specified torque, and install wiper arm covers.

Front wiper arm nuts : 23.6 N-m (2.4 kg-m, 17 ft-lb)

FRONT WIPER ARM ADJUSTMENT

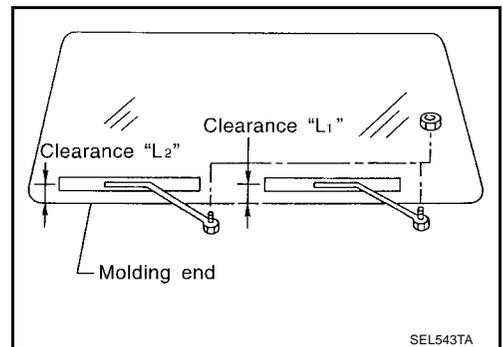
1. Operate windshield washer and wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Lift the wiper blade up and then rest it onto glass surface, check the blade clearance "L1" and "L2".

Clearance "L1" : 24.5 - 39.5 mm (0.965 - 1.555 in)

Clearance "L2" : 23.5 - 38.5 mm (0.925 - 1.516 in)

3. Remove wiper arm covers and wiper arm nuts.
4. Adjust front wiper arms on wiper motor pivot shafts to obtain above specified blade clearances.
5. Tighten wiper arm nuts to specified torque, and install wiper arm covers.

Front wiper arm nuts : 23.6 N-m (2.4 kg-m, 17 ft-lb)



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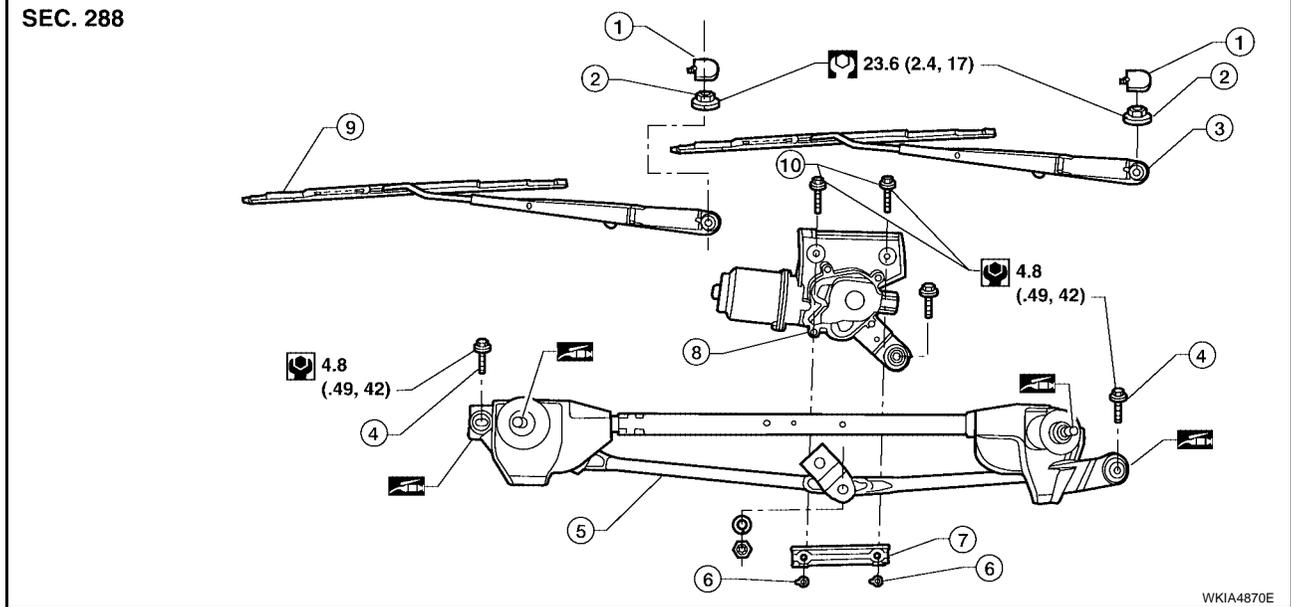
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FRONT WIPER AND WASHER SYSTEM

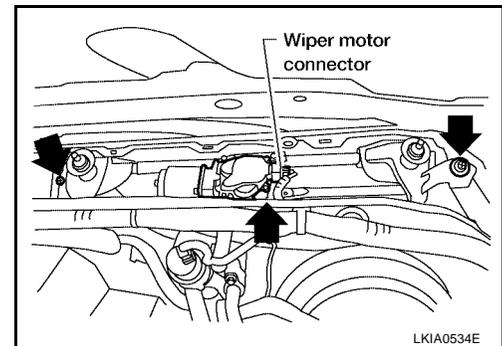
WIPER MOTOR AND LINKAGE



- | | | |
|--------------------------------|-------------------------|--|
| 1. Wiper arm covers | 2. Wiper arm nuts | 3. Front LH wiper arm and blade assembly |
| 4. Wiper frame bolts | 5. Wiper frame assembly | 6. Wiper motor to frame nuts |
| 7. Wiper motor spacer | 8. Wiper motor | 9. Front RH wiper arm and blade assembly |
| 10. Wiper motor to frame bolts | | |

Removal

1. Remove the cowl top. Refer to [EI-20, "COWL TOP"](#).
2. Remove wiper frame bolts, and remove wiper frame assembly.



3. Remove wiper motor from wiper frame assembly.

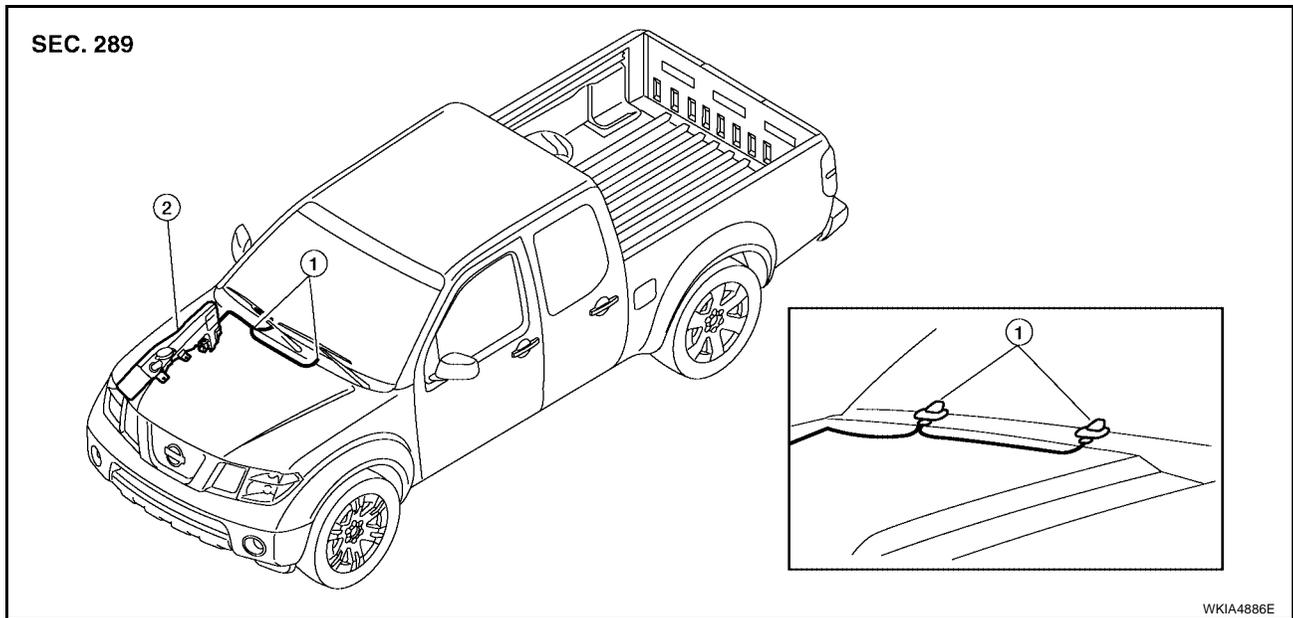
Installation

CAUTION:

- Do not drop the wiper motor or cause it to contact other parts.
 - Check the grease conditions of the motor arm and wiper link joint(s). Apply grease if necessary.
1. Connect wiper motor to connector. Turn the wiper switch ON to operate wiper motor, then turn the wiper switch OFF (auto stop).
 2. Disconnect wiper motor electrical connector.
 3. Install wiper motor to wiper frame assembly, and install wiper frame assembly.
 4. Connect wiper motor electrical connector.
 5. Install cowl top. Refer to [EI-20, "COWL TOP"](#).
 6. Ensure that wiper blades stop within proper clearance. Refer to [WW-27, "FRONT WIPER ARM ADJUSTMENT"](#).

FRONT WIPER AND WASHER SYSTEM

WASHER HOSE LAYOUT



1. Washer nozzles

2. Washer nozzles

3. Washer fluid reservoir

WASHER NOZZLES

Removal

1. Remove the cowl top. Refer to [EI-20, "COWL TOP"](#).
2. Remove washer nozzles.

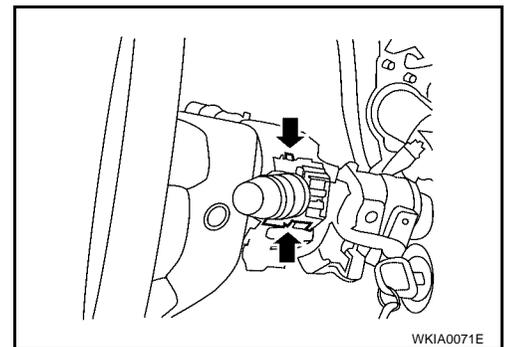
Installation

Installation is in the reverse order of removal.

WIPER AND WASHER SWITCH

Removal

1. Remove instrument lower cover LH. Refer to [IP-12, "LOWER INSTRUMENT PANEL LH"](#).
2. Remove column cover lower and column cover upper.
3. Disconnect wiper washer switch connector.
4. Pinch tabs at wiper and washer switch base and slide switch away from steering column.



Installation

Installation is in the reverse order of removal.

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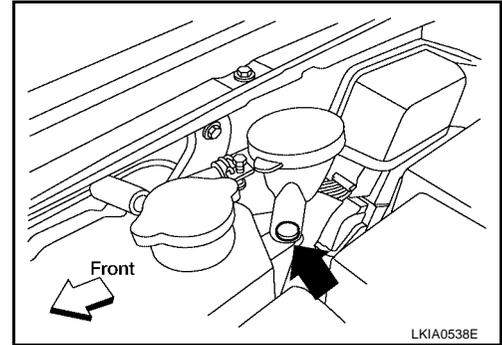
WW

FRONT WIPER AND WASHER SYSTEM

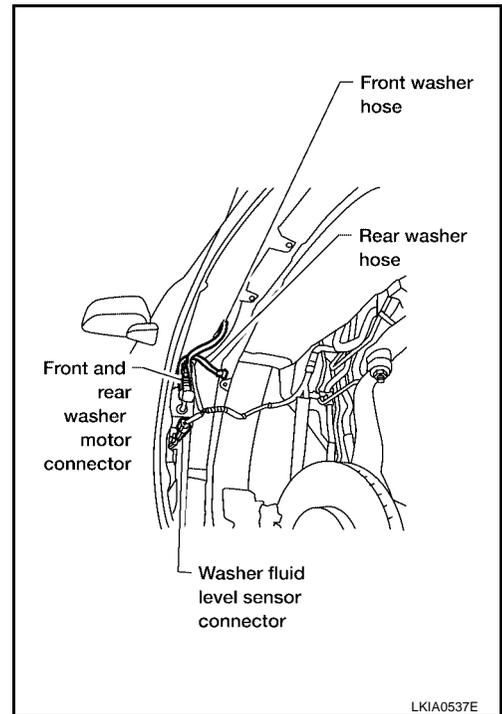
WASHER FLUID RESERVOIR

Removal

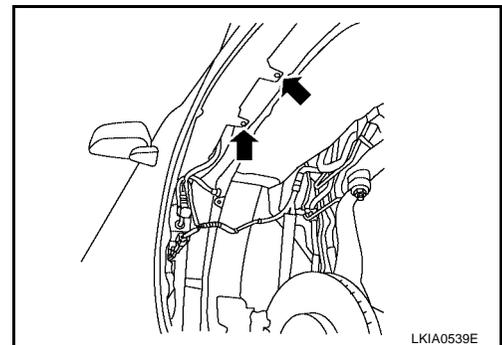
1. Remove passenger front fender protector. Refer to [EI-22, "FENDER PROTECTOR"](#).
2. Remove clip, then remove washer fluid reservoir filler neck from washer fluid reservoir.



3. Disconnect washer hose.
4. Disconnect washer motor connector.
5. Disconnect washer fluid level sensor connector.



6. Remove washer fluid reservoir screws and remove washer fluid reservoir.



Installation

CAUTION:

After installation, add water up to the upper level of the washer fluid reservoir inlet and check for water leaks.

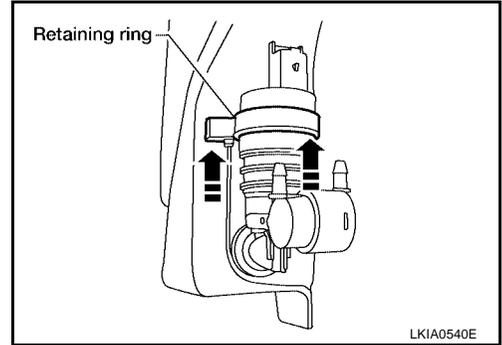
Installation is in the reverse order of removal.

FRONT WIPER AND WASHER SYSTEM

WASHER MOTOR

Removal

1. Remove washer fluid reservoir. Refer to [WW-30, "WASHER FLUID RESERVOIR"](#).
2. Slide retaining ring upward to release washer motor.



3. Remove washer motor from washer fluid reservoir.

Installation

CAUTION:

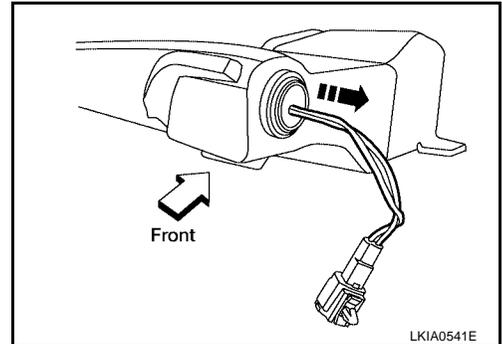
When installing washer motor, there should be no packing twists, etc.

Installation is in the reverse order of removal.

WASHER FLUID LEVEL SENSOR

Removal

1. Remove washer fluid reservoir. Refer to [WW-30, "WASHER FLUID RESERVOIR"](#).
2. Lift level sensor out of washer fluid reservoir in the direction of the arrow as shown.

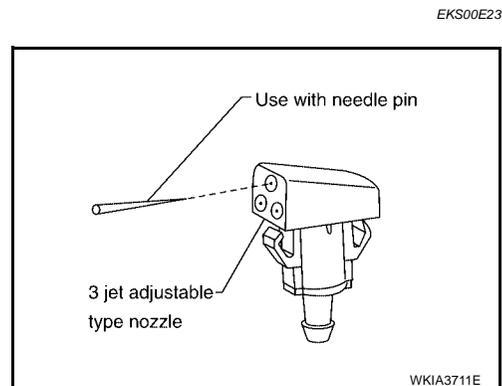


Installation

Installation is in the reverse order of removal.

Washer Nozzle Adjustment

- This vehicle is equipped with adjustable washer nozzles which may be aimed with a needle pin or suitable tool as shown.
- If not satisfied with washer fluid spray coverage, confirm that the washer nozzle is installed correctly.



POWER SOCKET

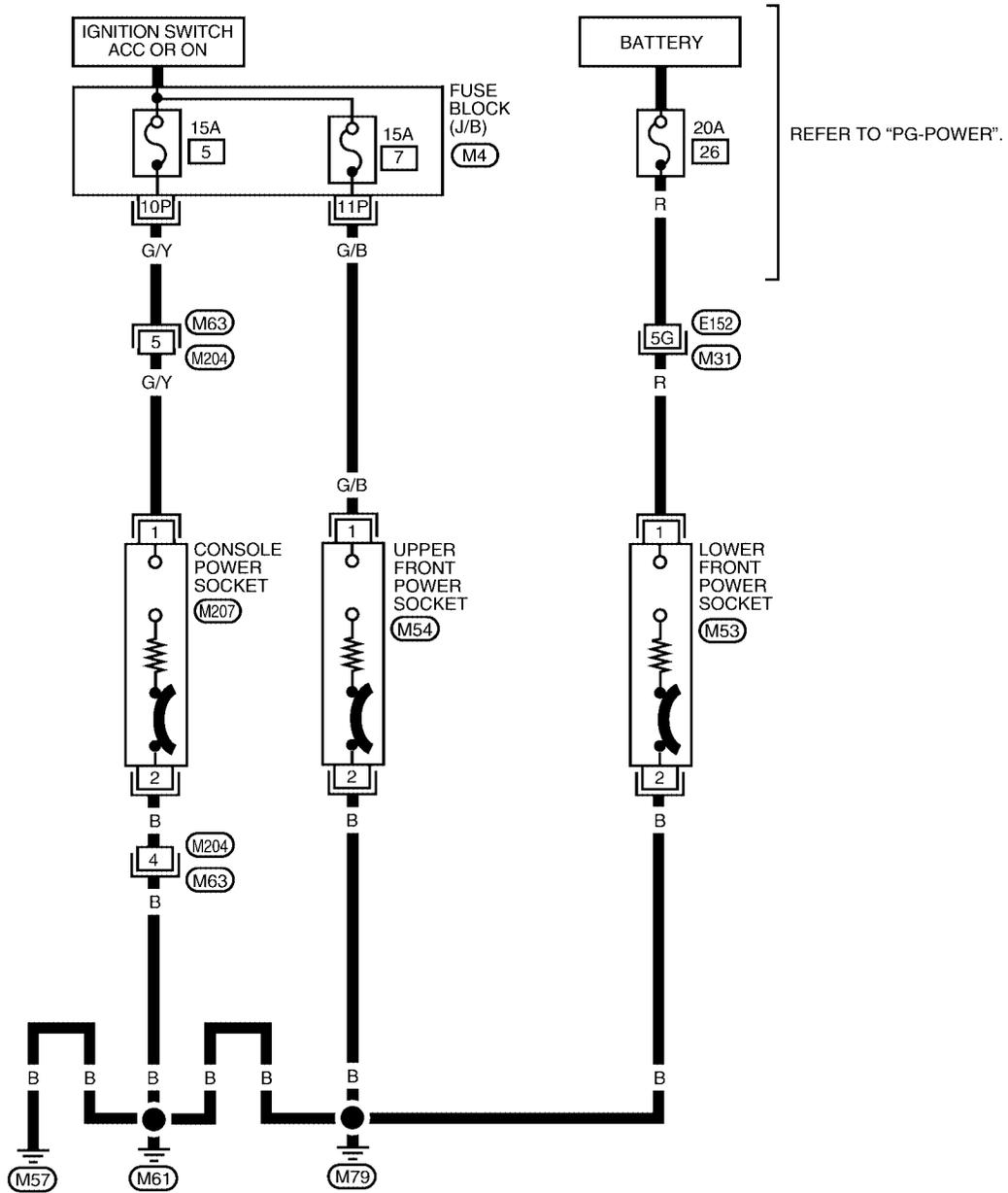
PPF:253A2

EKS00BV0

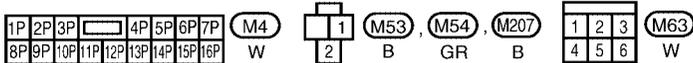
POWER SOCKET

Wiring Diagram — P/SCKT —

WW-P/SCKT-01



REFER TO "PG-POWER".



REFER TO THE FOLLOWING.

(M31) - SUPER MULTIPLE JUNCTION (SMJ)

WKWA2176E

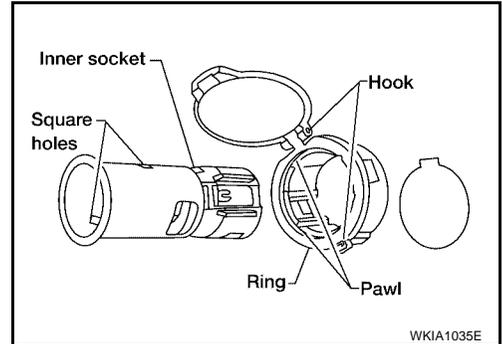
POWER SOCKET

EKS00HJX

Removal and Installation LOWER FRONT POWER SOCKET

Removal

1. Disconnect battery negative terminal.
2. Remove inner socket from the ring, while pressing the hook on the ring out from square hole.
3. Disconnect power socket connector.
4. Remove ring from power socket finisher while pressing pawls.



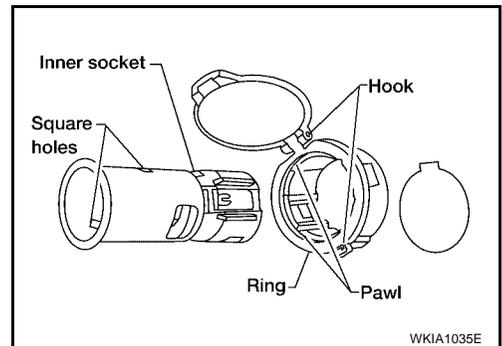
Installation

Installation is in the reverse order of removal.

UPPER FRONT POWER SOCKET AND CONSOLE POWER SOCKET

Removal

1. Remove inner socket from the ring, while pressing the hook on the ring out from square hole.
2. Disconnect power socket connector.
3. Remove ring from power socket finisher while pressing pawls.



Installation

Installation is in the reverse order of removal.

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WW

HORN

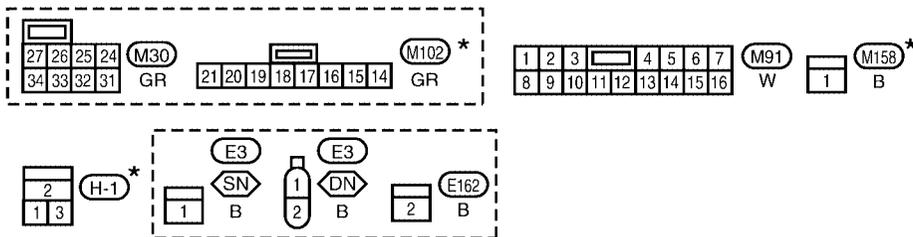
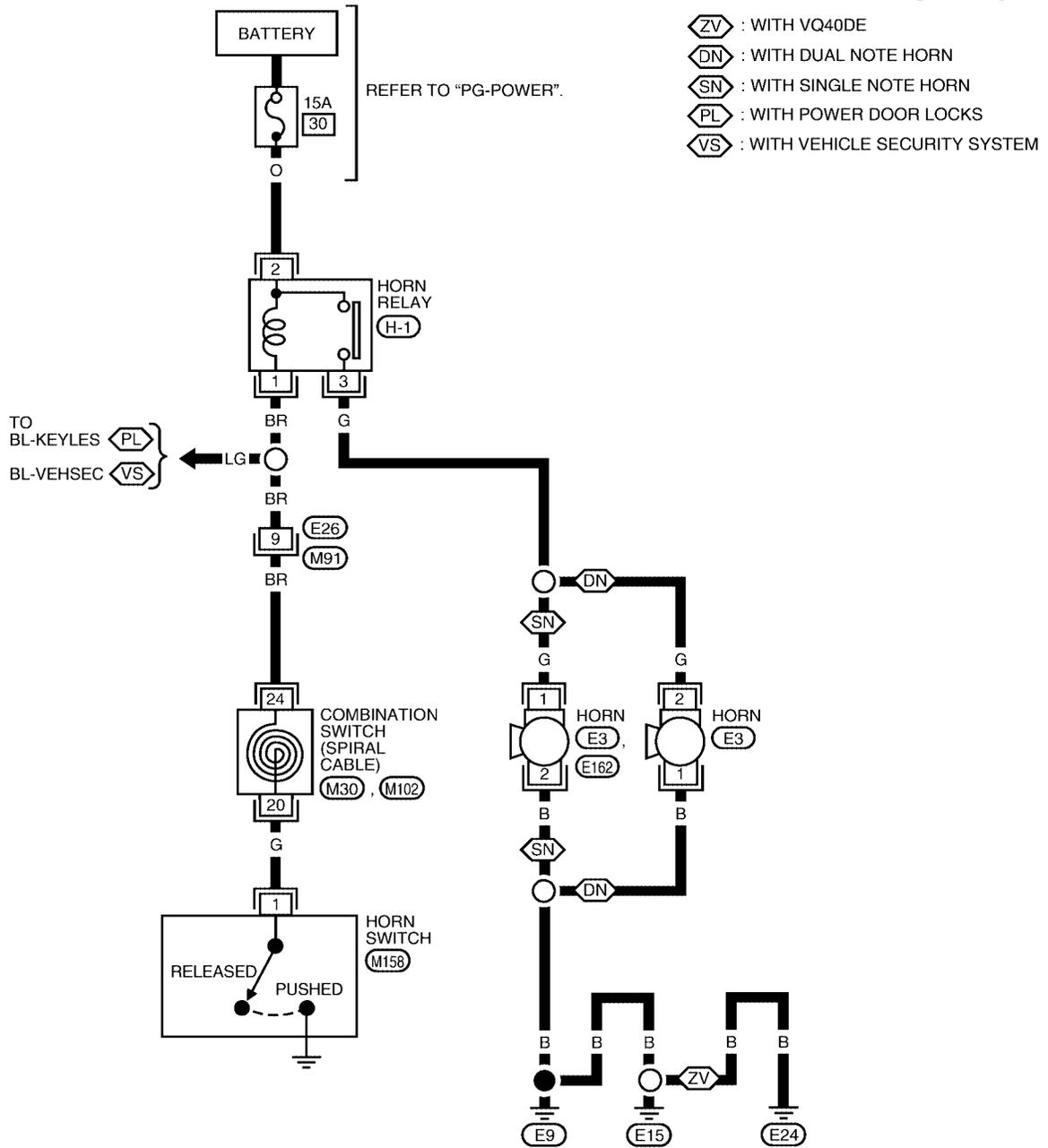
PF:25610

HORN

Wiring Diagram — HORN —

EKS00BV2

WW-HORN-01



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

WKWA4284E

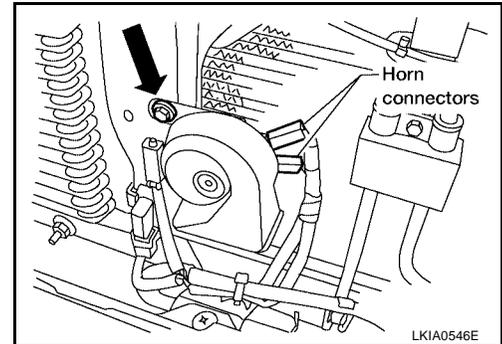
HORN

EKS00BV3

Removal and Installation HORN (SINGLE)

Removal

1. Remove the front grille. Refer to [EI-19, "Removal and Installation"](#).
2. Disconnect horn connectors.
3. Remove horn bolt and remove horn from vehicle.



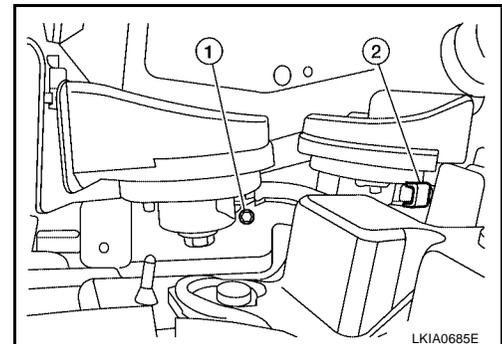
Installation

Installation is in the reverse order of removal.

HORN (DUAL)

Removal

1. Disconnect horn connector (2).
2. Remove horn bolt (1).
3. Remove horn.



Installation

Installation is in the reverse order of removal.

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HORN
