SECTION WW

WIPER, WASHER & HORN

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PRECAUTION

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

EKS00FGF

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
PFP:28810

Components Parts and Harness Connector Location
EKS00FGH

Fuse block (J/B)

Fuse and fusible link box

IDPM E/R fuse layout

24 - 31: FUSE   f - m: FUSIBLE LINK

IPDM E/R (E118), (E119), (E120), (E121), (E122), (E123), (E124)

View with right fender protector removed

Washer fluid reservoir

Front and rear washer motor connector (E105)

Front wiper motor (E23)

View with instrument panel removed

BCM (M18), (M19) (M20)

Combination switch (wiper switch) (M28)
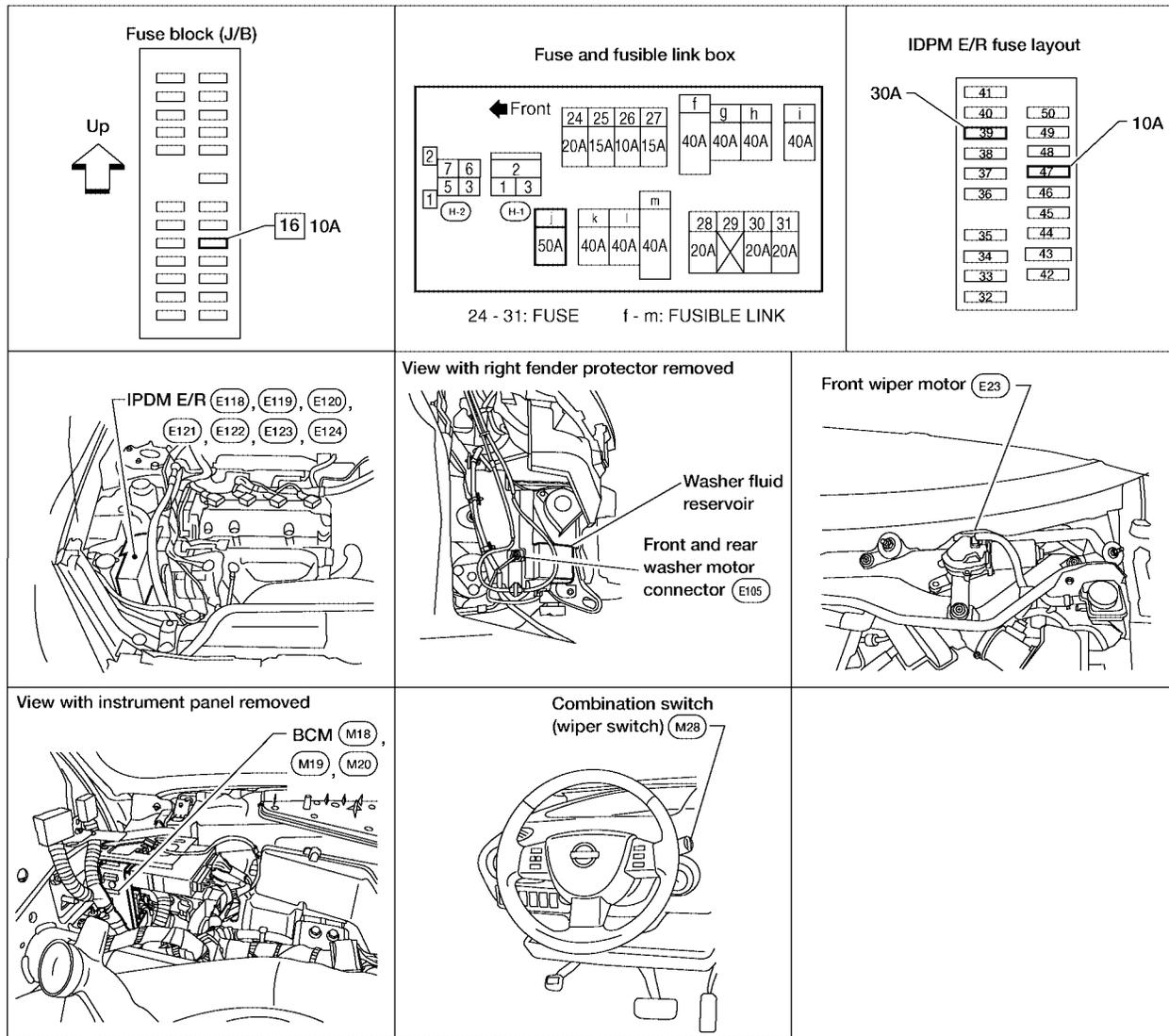
WKIA4293E

System Description
EKS00FGI

- Both front wiper relays are located in the IPDM E/R (intelligent power distribution module engine room).
- Wiper switch (combination switch) is composed of a combination of 5 output terminals and 5 input terminals. Terminal combination status is read by BCM (body control module) when 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

- through 50A fusible link (letter **j**, located in the fuse and fusible link box)
- to BCM terminal 55, and
- through 15A fuse (No. 34, located in the IPDM E/R)
- to CPU (central processing unit) of IPDM E/R, 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. 16, located in the fuse block (J/B)]
- to BCM terminal 38, and
- through 10A fuse (No. 47, located in the IPDM E/R)
- through IPDM E/R terminal 44
- to combination switch terminal 14.

Ground is supplied

- to BCM terminal 52 and
- to combination switch terminal 12
- through grounds M57, M61 and M79, and
- to IPDM E/R terminals 38 and 60 and
- to front wiper motor terminal 1
- through grounds E9, E15 and E24.

LOW SPEED WIPER OPERATION

When the ignition switch is in the ON or START position, and the front wiper switch is turned to low position, the BCM detects a low speed wiper ON signal by BCM wiper switch reading function.
BCM then sends front wiper (low) request signal over CAN communication lines

- from BCM terminals 39 and 40
- to IPDM E/R terminals 48 and 49.

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 21
- to front wiper motor terminal 3.

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 high position, the BCM detects a high speed wiper ON signal by BCM wiper switch reading function.
BCM then sends front wiper (high) request signal over CAN communication lines

- from BCM terminals 39 and 40
- to IPDM E/R terminals 48 and 49.

When IPDM E/R receives 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 31
- to front wiper motor terminal 2.

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 and vehicle speed. 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 ON or START position, and the front wiper switch is turned to intermittent position, the BCM detects a front wiper (intermittent) ON signal by BCM wiper switch reading function.
BCM then sends front wiper (intermittent) request signal over CAN communication lines

- from BCM terminals 39 and 40
- to IPDM E/R terminals 48 and 49.

When 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.

- BCM calculates operation interval from wiper dial position and vehicle speed signal received through CAN communications.
- BCM sends front wiper request signal (INT) to IPDM E/R at calculated operation interval.

When IPDM E/R receives front wiper request signal (INT), it supplies ground to energize the front wiper relay. It then sends auto-stop signal to 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 windshield base. When wiper arms reach base of windshield, front wiper motor terminals 1 and 4 are connected.

Ground is supplied

- to IPDM E/R terminal 32
- through front wiper motor terminal 4
- through front wiper motor terminal 1
- through grounds E9, E15 and E24.

The IPDM E/R sends auto stop operation signal to BCM through CAN communication lines.
When BCM receives auto stop operation signal, BCM sends wiper stop signal to IPDM E/R with CAN communication lines. The IPDM E/R then de-energizes the front wiper relay.
Wiper motor will then stop wiper arms at the STOP position.

FRONT WASHER OPERATION

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

- through 10A fuse (No. 47, located in the IPDM E/R)
- through IPDM E/R terminal 44
- through combination switch (wiper switch) terminal 14
- through combination switch (wiper switch) terminal 13
- to front and rear washer motor terminal –.

When front wiper switch is in front washer position, BCM detects front washer signal by BCM wiper switch reading function. Combination switch ground is supplied

- to front and rear washer motor terminal +
- through combination switch (wiper switch) terminal 11
- through combination switch (wiper switch) terminal 12
- through grounds M57, M61 and M79.

With ground supplied, the front and rear washer motor is operated in the front direction.
When BCM detects that front washer motor has operated for 0.4 seconds or longer, BCM uses CAN communication and sends wiper request signal to IPDM E/R for low speed operation of wipers.
When BCM detects that 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-5, "LOW SPEED WIPER OPERATION" .
If the switch is held in the mist position, low speed operation continues.

FAIL-SAFE FUNCTION

BCM includes fail-safe function to prevent malfunction of electrical components controlled by CAN communications if a malfunction in CAN communications occurs.
BCM uses CAN communications to stop output of electrical components it controls.
Until ignition switch is turned off, front wiper 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, BCM remains in standby until normal signals are received.
When normal signals are received, fail-safe status is canceled.

A

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

CAN Communication System Description
EKS00FGJ

B

Refer to LAN-24, "CAN COMMUNICATION" .

C

D

E

F

G

H

I

J

WW

L

M

Schematic
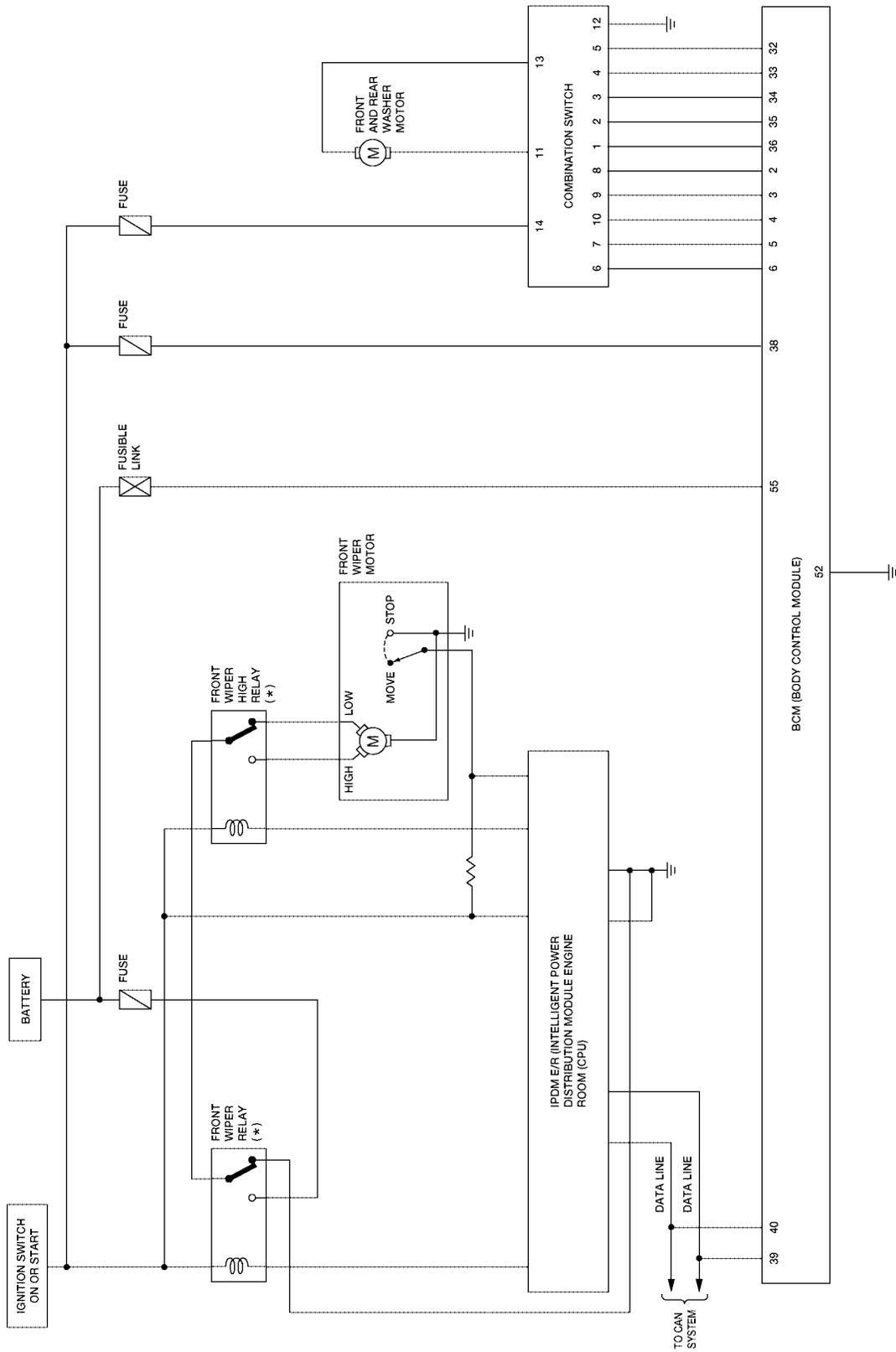
EKS00FGK

*: THIS RELAY IS BUILT INTO THE IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM).

WKWA3043E

FRONT WIPER AND WASHER SYSTEM

Wiring Diagram — WIPER —

WW-WIPER-01

■□■ : DATA LINE

BATTERY

IGNITION SWITCH ON OR START

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) (E121), (E122), (E124)

REFER TO "PG-POWER".

30A [39]

FRONT WIPER HIGH RELAY

FRONT WIPER RELAY

CPU

21   31   48   49   32   60   38
L   L/B L   P   L/Y B   B

A   B
NEXT PAGE

3   2
LOW HIGH

FRONT WIPER MOTOR (E23)

MOVE   STOP

M

1   4
B   L/Y

B   B   B   B B   B B

E15   E24   E9

45 46 47 48 49 50 51 52 (E121)   17 18 19 ☐ 20 21 22 23 (E122)   33 34 35 ☐ 36 37 (E124)   1 2 3 (E23)
53 54 55 56 57 58 59 60   W   24 25 26 27 28 29 30 31 32 GR   38 39 40 41 42 43 44 W   4   GR

WKWA3044E

FRONT WIPER AND WASHER SYSTEM

■ ■ : DATA LINE

BATTERY

IGNITION SWITCH
ON OR START

FUSE
BLOCK
(J/B)
(E30)

REFER TO "PG-POWER".

50A
j

10A
16

W/B

5Q

3 (E29)
(M10)

R

W/B

16 (E26)
(M91)

G

W/B

G

55

38

BAT

IGN

BCM
(BODY
CONTROL
MODULE)
(M18), (M19)

PRECEDING PAGE

A

B

CAN-H

CAN-L

GND

39

40

52

L

P

L

P

B/W

TO
LAN-CAN

L

P

B   B   B/W   B   B

(M57)   (M61)   (M79)

1	2	(M10)
3	4	W

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	(M18)
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	W

41	42	43	44	45	46	47	48	49	(M19)
50	51	52	53	54	55				B

H.S.

1	2	3	4	5	6		7	8	9	10	11	(M90)
12	13	14	15	16	17	18	19	20	21	22	23	24	W

1	2	3		4	5	6	7	(M91)
8	9	10	11	12	13	14	15	16	BR

1Q	2Q		3Q	(E30)
4Q	5Q	6Q	7Q	8Q	W

WKWA3045E

WW-WIPER-03

A

B

C

D

E

F

G

H

I

J

WW

L

M

IGNITION SWITCH
ON OR START

IPDM E/R
(INTELLIGENT
POWER
DISTRIBUTION
MODULE ENGINE
ROOM)
E124

10A
47

44

REFER TO "PG-POWER".

Y/R

FRONT AND REAR
WASHER MOTOR
E105

G (+ M –) Y/B

Y/R

G

Y/B

16 E25
    M90

17

6

Y/R

G

Y/B

14

11

13

IGN

WASHER
MOTOR (FR–)

WASHER
MOTOR (FR+)

COMBINATION
SWITCH
M28

OUTPUT 1	OUTPUT 2	OUTPUT 3	OUTPUT 4	OUTPUT 5	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	GND
6	7	10	9	8	1	2	3	4	5	12
G/W	G/B	G/R	G/Y	GR/R	R/W	R/B	R	R/Y	R/G	B

G/W	G/B	G/R	G/Y	GR/R	R/W	R/B	R	R/Y	R/G
6	5	4	3	2	36	35	34	33	32
COMBI SW INPUT 1	COMBI SW INPUT 2	COMBI SW INPUT 3	COMBI SW INPUT 4	COMBI SW INPUT 5	COMBI SW OUTPUT 1	COMBI SW OUTPUT 2	COMBI SW OUTPUT 3	COMBI SW OUTPUT 4	COMBI SW OUTPUT 5

BCM
(BODY
CONTROL
MODULE)
M18

B   B   B   B   B

M57   M61   M79

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

M18
W

H.S.

7	8	9		10		13	12
6	5	4	3	2	1	11	14

M28
W

1	2	3	4	5	6		7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22	23	24

M90
W

– +   E105
GR

37	36		35	34	33
44	43	42	41	40	39	38

E124
W

WKWA3046E

Terminals and Reference Values for BCM

EKS00FGM

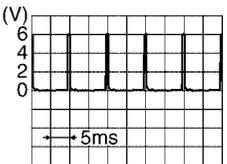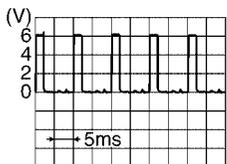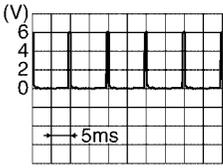| Terminal No.	Wire color	Signal name	Measuring condition		Reference Value (V) (Approx.)
			Ignition switch	Operation or condition	
2	GR/R	Combination switch input 5	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5291E
3	G/Y	Combination switch input 4	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5292E
4	G/R	Combination switch input 3	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5291E
5	G/B	Combination switch input 2			
6	G/W	Combination switch input 1	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5292E
32	R/G	Combination switch output 5	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5291E
33	R/Y	Combination switch output 4	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5292E
34	R	Combination switch output 3	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5291E

Terminal No.	Wire color	Signal name	Measuring condition		Reference Value (V) (Approx.)
			Ignition switch	Operation or condition	
35	R/B	Combination switch output 2	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	SKIA5292E
36	R/W	Combination switch output 1			
38	G	Ignition switch (ON)	ON	—	Battery voltage
39	L	CAN-H	—	—	—
40	P	CAN-L	—	—	—
52	B/W	Ground	ON	—	0V
55	W/B	Battery power	OFF	—	Battery voltage

Terminals and Reference Values for IPDM E/R

EKS00FGN

Terminal No.	Wire color	Signal name	Measuring condition		Reference value (V) (Approx.)
			Ignition switch	Operation or condition	
21	L	Low speed signal	ON	Wiper switch OFF	0V
				Wiper switch LO	Battery voltage
31	L/B	High speed signal	ON	Wiper switch OFF	0V
				Wiper switch HI	Battery voltage
32	L/Y	Wiper auto stop signal	ON	Wiper operating	Battery voltage
				Wiper stopped	0V
38	B	Ground	ON	—	0V
44	Y/R	Combination switch power	ON	—	Battery voltage
48	L	CAN-H	—	—	—
49	P	CAN-L	—	—	—
60	B	Ground	ON	—	0V

Work Flow

EKS00FGO

1. Confirm the symptom or customer complaint.
2. Understand the system description, refer to WW-4, "System Description" .
3. Perform preliminary inspection, refer to WW-13, "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

EKS00FGP

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSE

Check if wiper or washer fuse is blown.

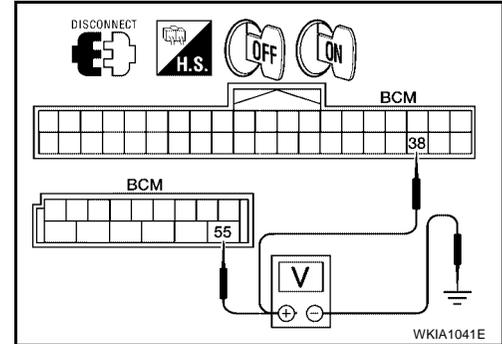| Unit	Power source	Fuse and fusible link No.
Front and rear washer motor	Ignition ON or START	47
Front wiper relay	Battery	39
BCM	Ignition ON or START	16
	Battery	j

FRONT WIPER AND WASHER SYSTEM

OK or NG

OK   >> GO TO 2.
NG   >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse
or fusible link. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect BCM connectors.
2. Check voltage between BCM harness connector terminals and ground.

BCM		(−)	Ignition switch position	
(+)			OFF	ON
Connector	Terminal			
M18	38	Ground	0V	Battery voltage
M19	55		Battery voltage	Battery voltage

WKIA1041E

OK or NG

OK   >> GO TO 3.
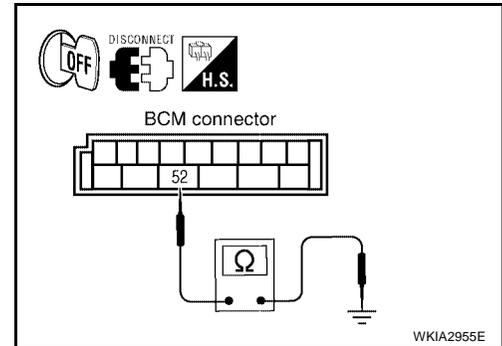NG   >> Check harness for open between BCM and fuse or fusible link.

3. GROUND CIRCUIT INSPECTION (BCM)

Check for continuity between the following terminal on BCM connector and ground.

BCM			Ignition switch condition	Continuity
Connector	Terminal			
M19	52	Ground	OFF	Yes

WKIA2955E

OK or NG

OK   >> Inspection End.
NG   >> Repair/replace BCM ground circuit.

CONSULT-II Function (BCM)

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

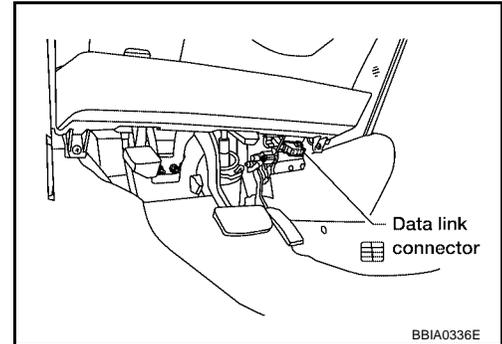| BCM diagnostic test item	Diagnostic mode	Description
Inspection by part	WORK SUPPORT	Supports inspections and adjustments. Commands are transmitted to the BCM for setting the status suitable for required operation, input/output signals are received from the BCM and received data is displayed.
	DATA 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.
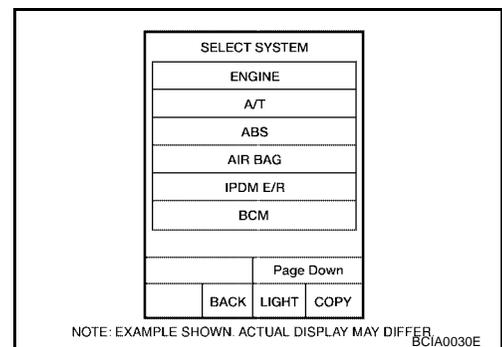
1. With the ignition switch OFF, connect CONSULT-II and CONSULT-II CONVERTER to the data link connector, then turn the ignition switch ON.

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

3. Touch "BCM" on the "SELECT SYSTEM" screen.
   If "BCM" is not indicated, go to .

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

```
SELECT TEST ITEM
HEAD LAMP
WIPER
FLASHER
AIR CONDITIONER
COMB SW
BCM
Scroll Up    Page Down
        BACK  LIGHT  COPY
```

LKIA0183E

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 "CUSTOMIZING COMPLETED" 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 "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.

Monitor item name "OPERATION OR UNIT"		Contents
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.

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.

CONSULT-II Function (IPDM E/R)   EKS00FGR

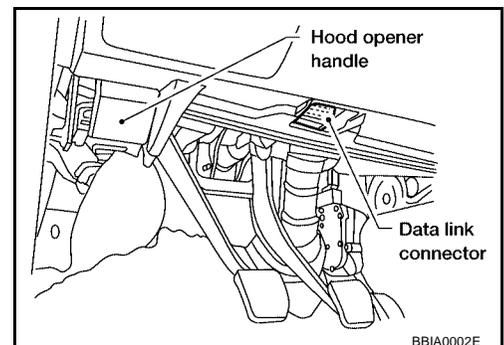CONSULT-II can display each diagnostic item using the diagnostic test modes shown following.

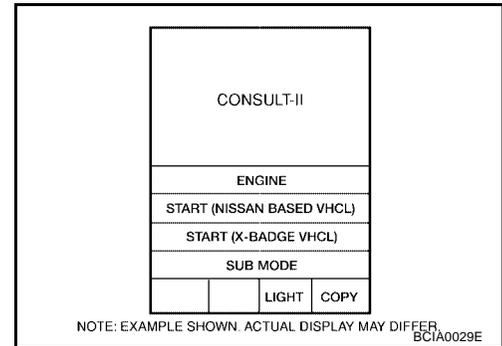| IPDM E/R diagnostic Mode	Description
SELF-DIAG RESULTS	Displays IPDM E/R self-diagnosis results.
DATA MONITOR	Displays IPDM E/R input/output data in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	Operation of electrical loads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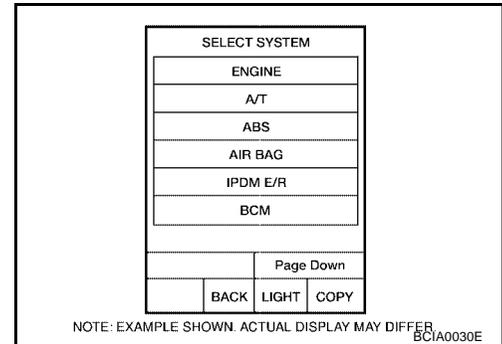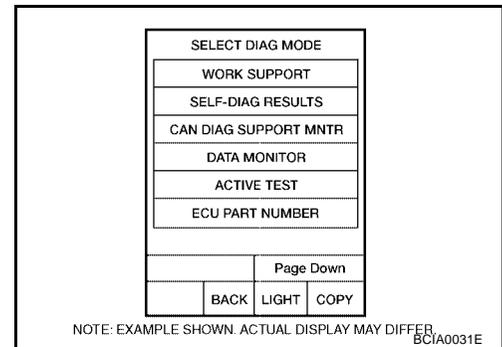

Hood opener handle

Data link connector

BBIA0002E

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

CONSULT-II

ENGINE

START (NISSAN BASED VHCL)

START (X-BADGE VHCL)

SUB MODE

LIGHT | COPY

NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0029E

3. Touch "IPDM E/R" on "SELECT SYSTEM" screen.
   If "IPDM E/R" is not displayed, go to GI-38, "CONSULT-II Data Link Connector (DLC) Circuit" .

SELECT SYSTEM

ENGINE

A/T

ABS

AIR BAG

IPDM E/R

BCM

Page Down

BACK | LIGHT | COPY

NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0030E

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

SELECT DIAG MODE

WORK SUPPORT

SELF-DIAG RESULTS

CAN DIAG SUPPORT MNTR

DATA MONITOR

ACTIVE TEST

ECU PART NUMBER

Page Down

BACK | LIGHT | COPY

NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0031E

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 "ALL SIGNALS", "MAIN SIGNALS" or "SELECTION FROM MENU" on "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.

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. When "MAIN SIGNALS" is selected, predetermined items are monitored.
6. Touch "RECORD" while monitoring to record the status of the item being monitored. To stop recording, touch "STOP".

All Items, Main Items, Select Item 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/1LO/LO/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.

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	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.

Front Wiper Does Not Operate

EKS00FGS

CAUTION:
During IPDM E/R fail-safe control, front wipers may not operate. Refer to PG-16, "CAN COMMUNICATION LINE CONTROL" to make sure that it is not in fail-safe status.
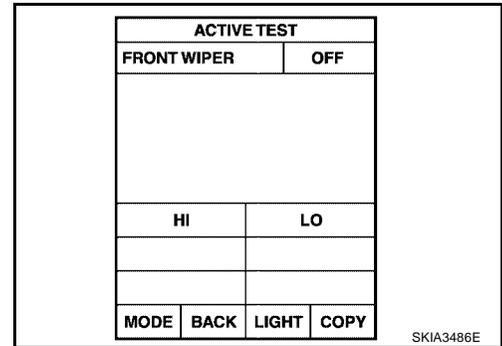
1. CHECK IPDM E/R TO FRONT WIPERS

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-22, "Auto Active Test" .
2. Confirm front wiper operation.

OK or NG

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

SKIA3486E

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	
E122	31	E23	2	Yes
	21		3	
	32		4	
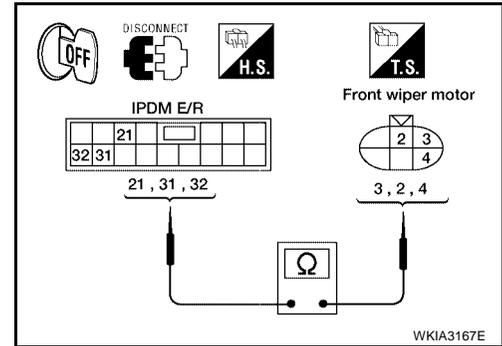
WKIA3167E

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

IPDM E/R			Continuity
Connector	Terminal		
E122	31	Ground	No
	21		
	32		
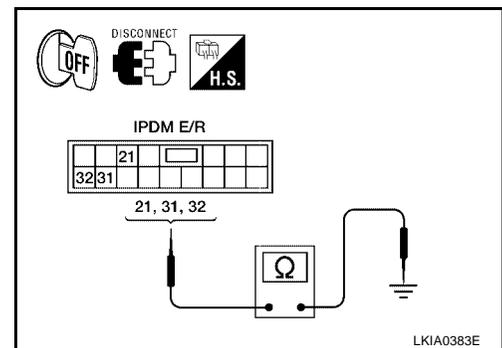
LKIA0383E

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

IPDM E/R			Continuity
Connector	Terminal		
E121	60	Ground	Yes
E124	38		

WKIA1021E

6. Check continuity between front wiper motor harness connector terminal 1 and ground.

Front wiper motor			Continuity
Connector	Terminal		
E23	1	Ground	Yes

OK or NG

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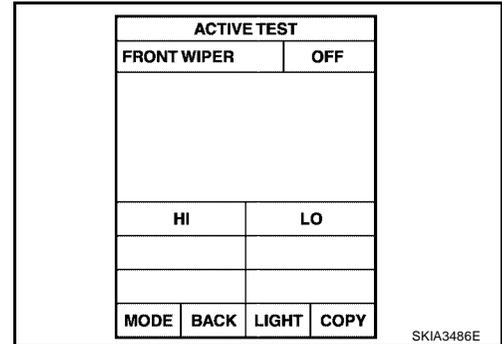NG   >> Repair harness or connector.

WKIA3168E
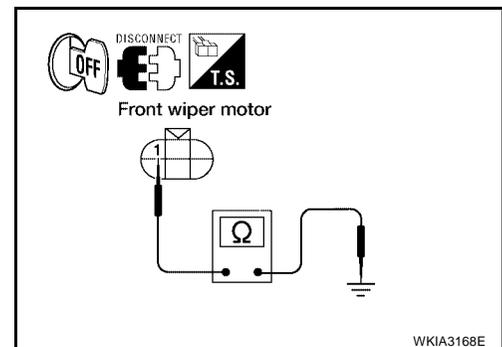
3. IPDM E/R INSPECTION

🔲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 the auto active test. Refer to PG-22, "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			
E122	21	Ground	Stopped	0V
			LO operation	Battery voltage
	31		Stopped	0V
			HI operation	Battery voltage
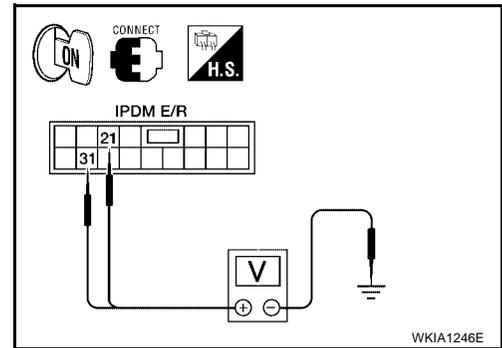
OK or NG

OK   >> Replace the front wiper motor. Refer to WW-28, "Wiper Motor and Linkage" .
NG   >> Replace IPDM E/R. Refer to PG-29, "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" .
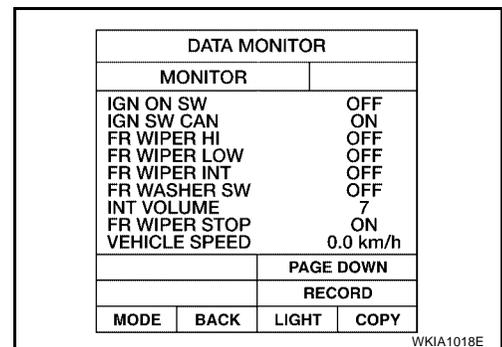
5. BCM INSPECTION

Select "BCM" on CONSULT-II. Carry out self-diagnosis of BCM.

Displayed self-diagnosis results

NO DTC>> Replace the BCM. Refer to BCS-20, "Removal and Installation of BCM" .
CAN COMM CIRCUIT>> Check CAN communication line of BCM. GO TO BCS-13, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .
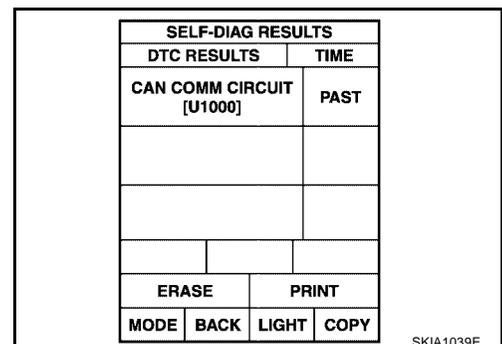
Front Wiper Stop Position Is Incorrect
EKS00G9T

1. CHECK IPDM E/R TO FRONT WIPER MOTOR

Ⓗ With CONSULT-II
Select "IPDM E/R" with CONSULT-II. With "DATA MONITOR", con-
firm 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-29, "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
```
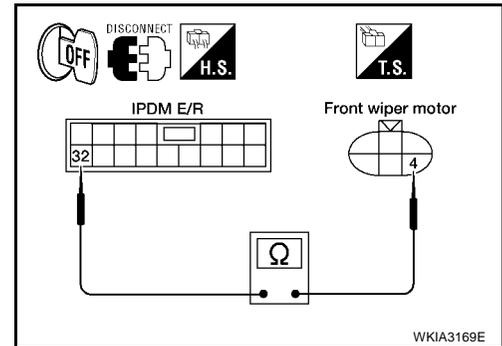
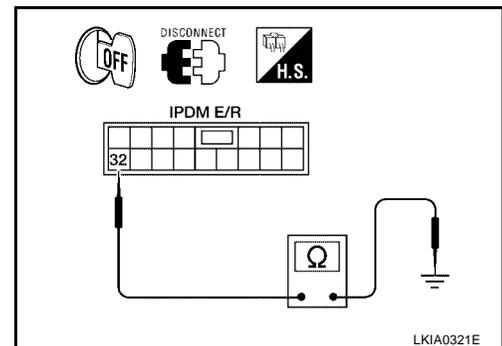## 2. IPDM E/R TO FRONT WIPER MOTOR CIRCUIT INSPECTION

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	32	E23	4	Yes

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

IPDM E/R			Continuity
Connector	Terminal		
E122	32	Ground	No

5. Check continuity between front wiper motor harness connector
   terminal 1 and ground.

Front wiper motor			Continuity
Connector	Terminal		
E23	1	Ground	Yes

OK or NG

OK   >> Connect connectors. 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
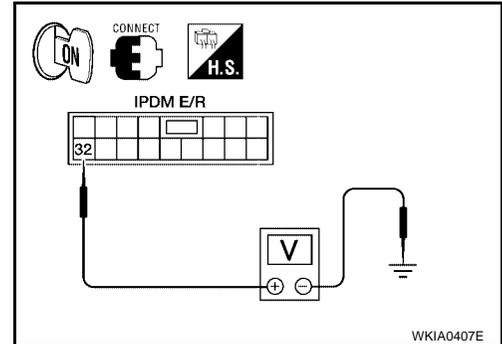   motor and ground.

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

1. Turn ignition switch ON.
2. While front wiper motor is stopped and while operating, measure voltage between IPDM E/R terminal 32 and ground.

IPDM E/R		(−)	Condition	Voltage (Approx.)
(+)				
Connector	Terminal			
E122	32	Ground	Wiper operating	Battery voltage
			Wiper stopped	0V

WKIA0407E

OK or NG

OK >> Replace IPDM E/R. Refer to PG-29, "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

EKS00G9U

Inspection Procedure

1. COMBINATION SWITCH TO BCM INSPECTION

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

OK or NG

OK >> Replace BCM. Refer to BCS-20, "Removal and Installation of BCM" .
NG >> Replace wiper switch. Refer to WW-29, "Wiper and Washer" .

WKIA1018E

Only Front Wiper High Does Not Operate

EKS00G9V

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-22, "Auto Active Test" .
2. Confirm front wiper operation.

OK or NG

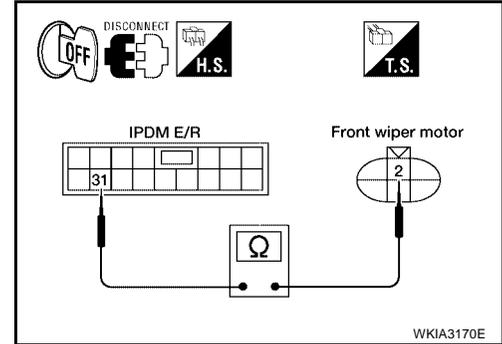OK >> GO TO 4.
NG >> GO TO 2.

SKIA3486E

2. 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	
E122	31	E23	2	Yes

WKIA3170E

OK or NG

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

3. IPDM E/R INSPECTION

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.

Without CONSULT-II

1. Turn on front wipers using the auto active test. Refer to PG-22, "Auto Active Test" .

SKIA3486E
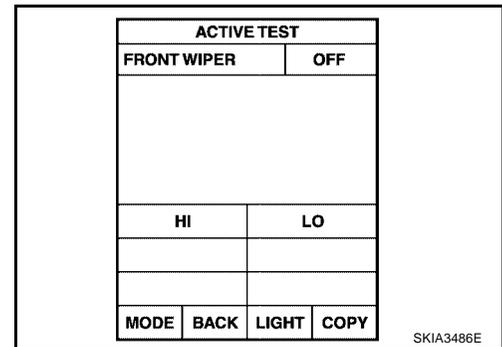
When front wiper high relay is operating, check voltage between IPDM E/R terminals.

IPDM E/R				Voltage (Approx.)
(+)		(−)		
Connector	Terminal	Connector	Terminal	
E122	31	E124	38	Battery voltage
		E121	60	

WKIA0409E

OK or NG

OK   >> Replace the wiper motor. Refer to WW-28, "Wiper Motor and Linkage" .
NG   >> Replace IPDM E/R. Refer to PG-29, "Removal and Installation of IPDM E/R" .
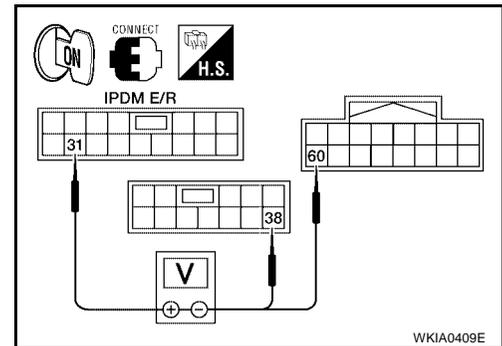
4. COMBINATION SWITCH TO BCM INSPECTION

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

OK or NG

OK   >> Replace BCM. Refer to BCS-20, "Removal and Installation of BCM" .
NG   >> Replace wiper switch. Refer to WW-29, "Wiper and Washer" .

WKIA1018E

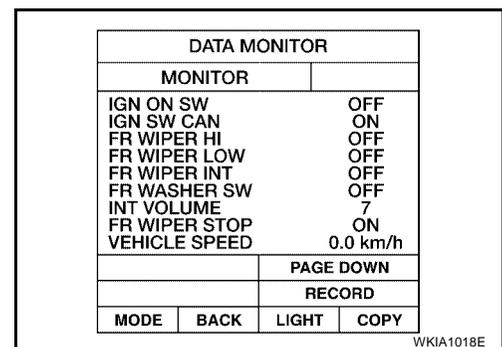## Only Front Wiper Intermittent Does Not Operate

EKS00G9W

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-20, "Removal and Installation of BCM" .

NG >> Replace wiper switch. Refer to WW-29, "Wiper and Washer" .

```
            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 Intermittent Operation Switch Position Cannot Be Adjusted

EKS00G9X

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-20, "Removal and Installation of BCM" .

NG >> Replace wiper switch. Refer to WW-29, "Wiper and Washer" .

```
            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

EKS00G9Y

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-20, "Removal and Installation of BCM" .

NG >> Replace wiper switch. Refer to WW-29, "Wiper and Washer" .

```
            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

EKS00G9Z

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".**

FRONT WIPER AND WASHER SYSTEM

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

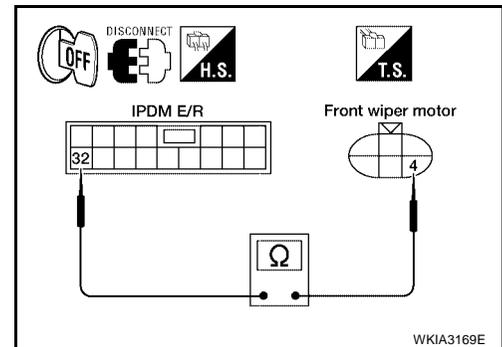OK   >> Replace IPDM E/R. Refer to PG-29, "Removal and Installation of IPDM E/R" .
NG   >> GO TO 2.

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

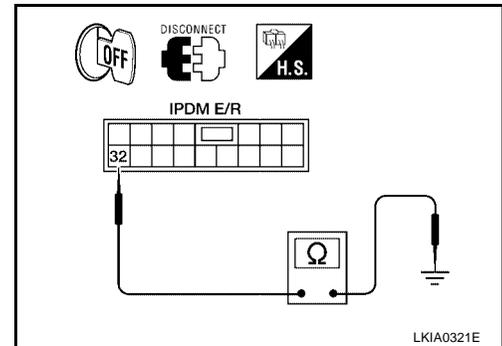## 2. IPDM E/R TO FRONT WIPER MOTOR AUTO STOP CIRCUIT INSPECTION

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	32	E23	4	Yes

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

IPDM E/R			Continuity
Connector	Terminal		
E122	32	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 VOLTAGE

1. Turn ignition switch ON.
2. While front wiper motor is stopped and while operating, measure voltage between IPDM E/R terminal 32 and ground.

IPDM E/R		(−)	Condition	Voltage (Approx.)
(+)				
Connector	Terminal			
E122	32	Ground	Wiper operating	Battery voltage
			Wiper stopped	0V

OK or NG

OK   >> Replace IPDM E/R. Refer to PG-29, "Removal and Installation of IPDM E/R" .
NG   >> Replace front wiper motor. Refer to WW-28, "Wiper Motor and Linkage" .
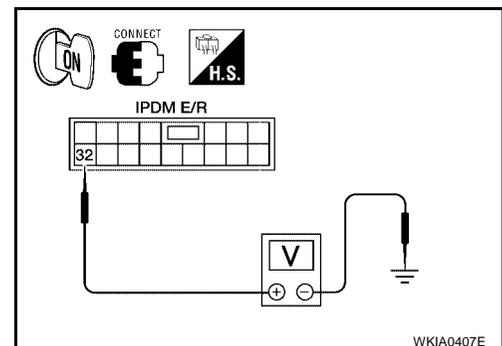
Front Wiper Arms

EKS00FGT

REMOVAL AND INSTALLATION

Removal

1. Operate front wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Remove wiper arm covers and wiper arm nuts.
3. Remove wiper arms.

Installation

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

SEL024J
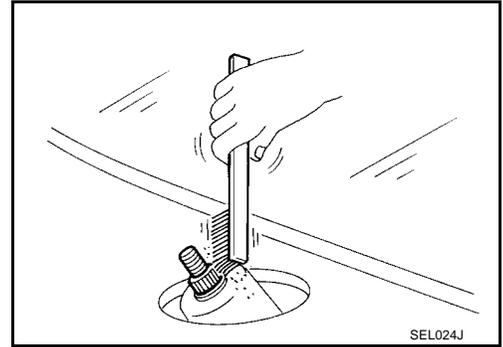
3. Install wiper arms and wiper arm nuts and tighten to specified torque.

   Front wiper arm nut   23.6 N·m (2.4 kg-m, 17 ft-lb)

4. Install wiper arm covers, check and adjust clearance L1" and "L2" as necessary to ensure proper blade overlap.

WIPER ARM ADJUSTMENT AFTER INSTALLATION

1. Operate front wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Lift the wiper blade up, then rest it onto glass surface to set clearance "L1" and "L2" as illustrated.

   Clearance "L1"   : 41.5 - 56.5 mm (1.634 - 2.224 in)
   Clearance "L2"   : 52.5 - 67.5 mm (2.067 - 2.657 in)

SEL543TA
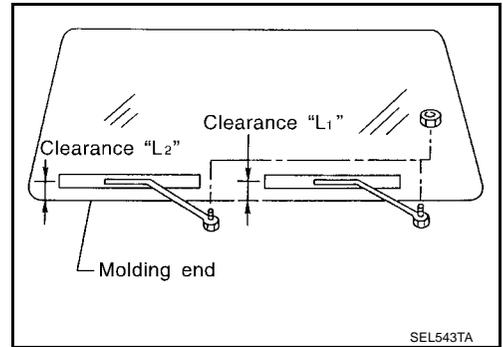
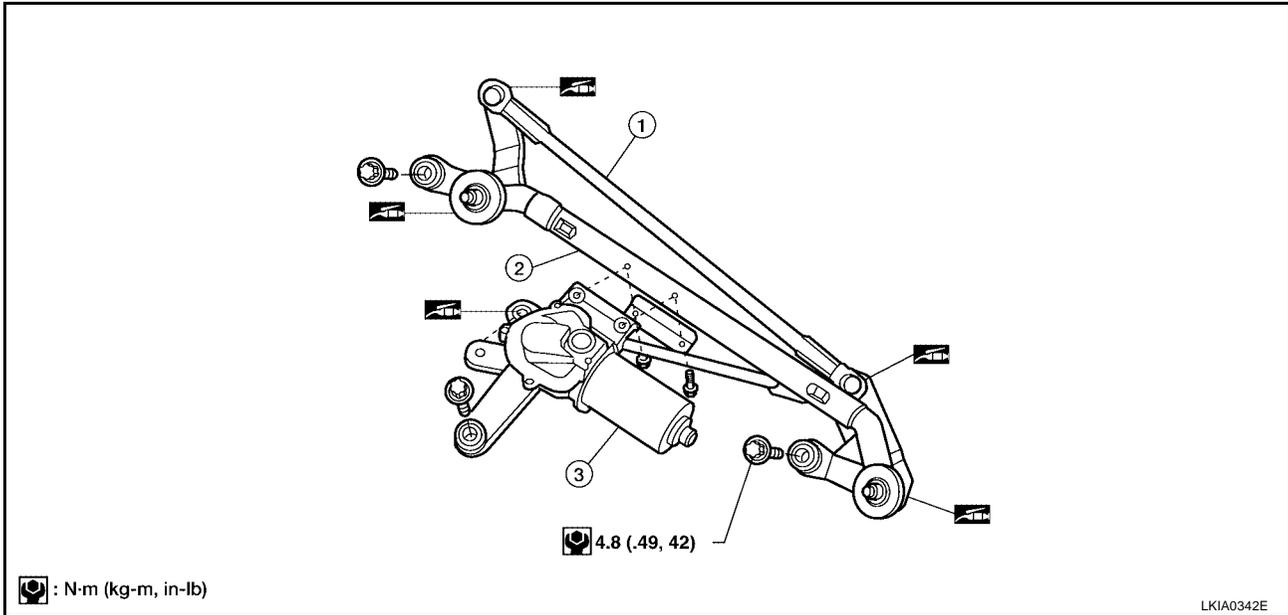3. Eject washer fluid and operate front wiper motor several cycles, then turn "OFF" (Auto Stop).

Wiper Motor and Linkage
EKS00FGU
REMOVAL AND INSTALLATION


4.8 (.49, 42)

: N·m (kg-m, in-lb)

LKIA0342E

1. Wiper link
2. Wiper frame
3. Front wiper motor

Removal
1. Operate the wiper motor, and stop it at the auto stop position.
2. Remove wiper arms from the vehicle. Refer to WW-27, "Front Wiper Arms" .
3. Remove the cowl top extension. Refer to EI-19, "Removal and Installation" .
4. Disconnect wiper motor electrical connector.
5. Remove wiper frame assembly bolts, and remove wiper frame assembly.

WKIA1032E
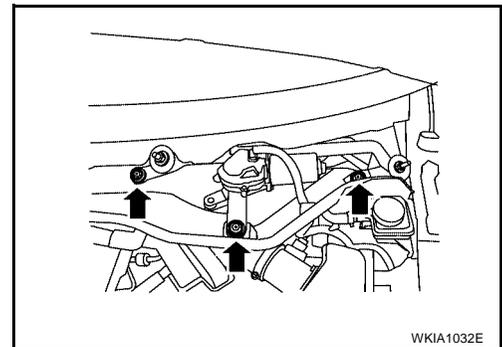
6. Remove wiper motor from wiper frame assembly.
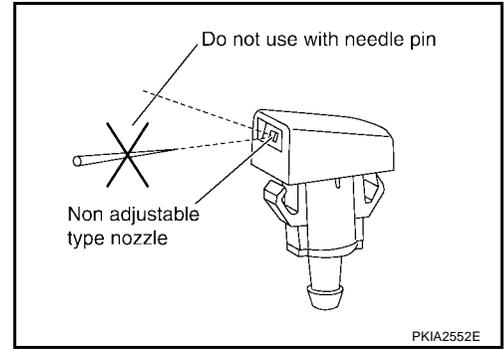
Installation
CAUTION:
- **Do not drop the wiper motor or cause it to contact other parts.**
- **Check the grease conditions of the motor arm and wiper link joint(s). Apply grease if necessary.**
1. Connect wiper motor to electrical connector. Turn the wiper switch ON to operate wiper motor, then turn the wiper switch OFF (auto stop).
2. Disconnect wiper motor electrical connector.
3. Install wiper motor to wiper frame assembly, and install assembly into the vehicle.
4. Connect wiper motor electrical connector. Turn the wiper switch ON to operate the wiper motor, then turn wiper switch OFF (auto stop).
5. Install cowl top extension. Refer to EI-19, "Removal and Installation" .

Install wiper arms. Refer to WW-27, "Front Wiper Arms" .

FRONT WIPER AND WASHER SYSTEM

Washer Nozzle Adjustment

- This vehicle is equipped with non-adjustable washer nozzles.
- If not satisfied with washer fluid spray coverage, confirm that the washer nozzle is installed correctly.
- If the washer nozzle is installed correctly, and the washer fluid spray coverage is not satisfactory, replace washer nozzle.

Do not use with needle pin

Non adjustable type nozzle

PKIA2552E

Washer Tube Layout

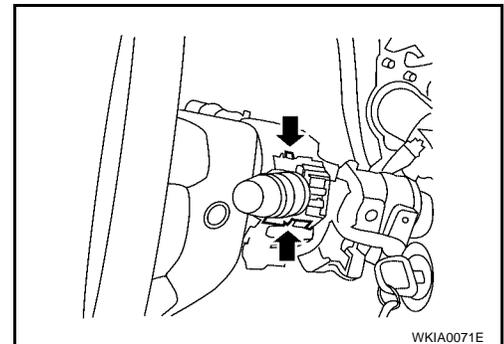WIIA0726E
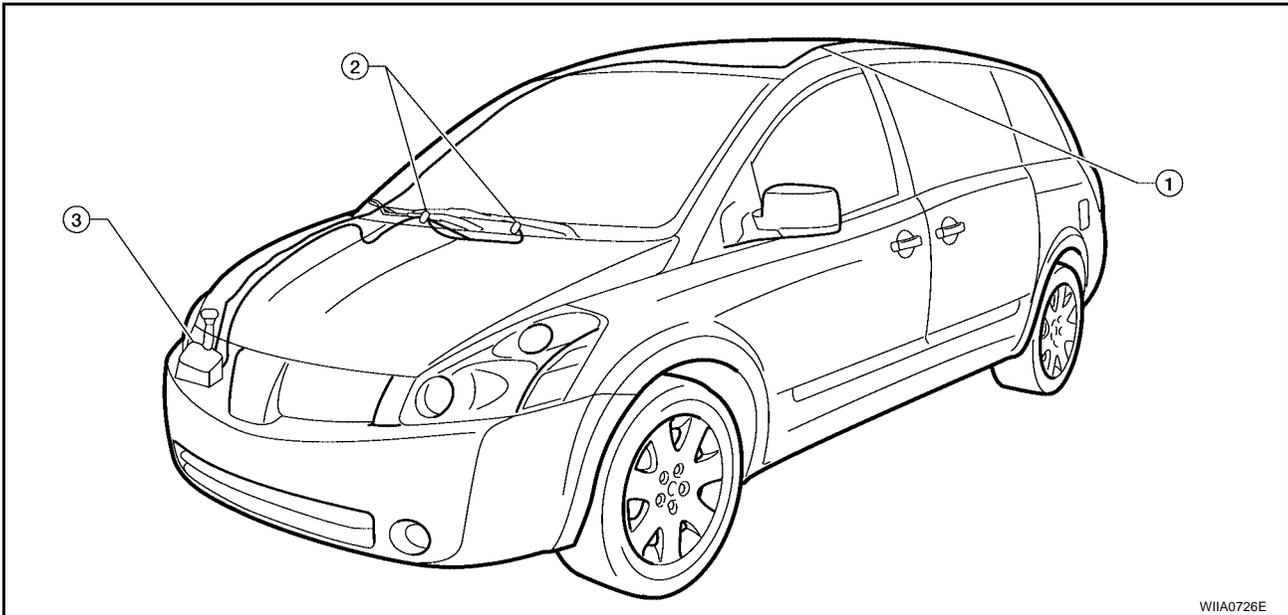
1. Washer fluid hose to back door
2. Washer nozzles
3. Washer fluid reservoir

Wiper and Washer

REMOVAL AND INSTALLATION

Removal

1. Remove steering column covers.
2. Remove wiper washer switch electrical connector.
3. Pinch tabs at wiper and washer switch base and slide switch away from steering column to remove.

WKIA0071E

Installation
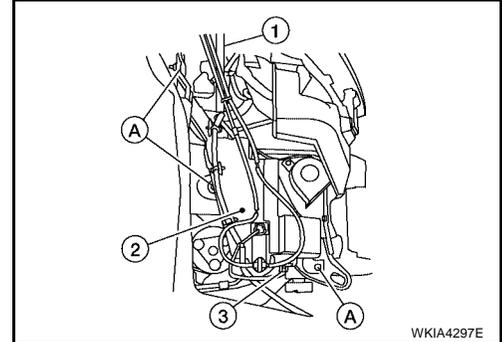
Installation is in the reverse order of removal.

Washer Fluid Reservoir
REMOVAL AND INSTALLATION
Removal

1. Twist and pull out washer fluid reservoir inlet (1).
2. Remove fender protector. Refer to EI-22, "Removal and Installation" .
3. Remove front and rear washer motor electrical connector (3) and washer fluid level sensor electrical connector.
4. Remove washer fluid reservoir screws (A).
5. Remove front and rear washer hoses, and remove the washer fluid reservoir (2) from the vehicle.

WKIA4297E

Installation
CAUTION:
After installation, add water up to the upper level of the washer fluid reservoir inlet, and check for water leaks.
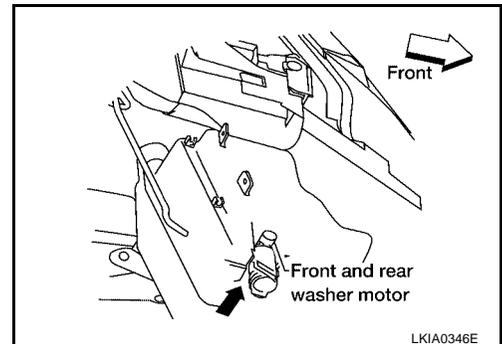Installation is in the reverse order of removal.

Washer fluid reservoir screws   5.5 N·m (0.56 kg-m, 49 in-lb)

Washer Motor
REMOVAL AND INSTALLATION
Removal

1. Remove fender protector. Refer to EI-22, "Removal and Installation" .
2. Remove front and rear washer motor electrical connector and front and rear washer hoses.
3. Pull out front and rear washer motor in the direction of the arrow as shown, and remove the front and rear washer motor from the washer fluid reservoir.

Front

Front and rear washer motor

LKIA0346E

Installation
CAUTION:
When installing front and rear washer motor, there should be no packing twists, etc.
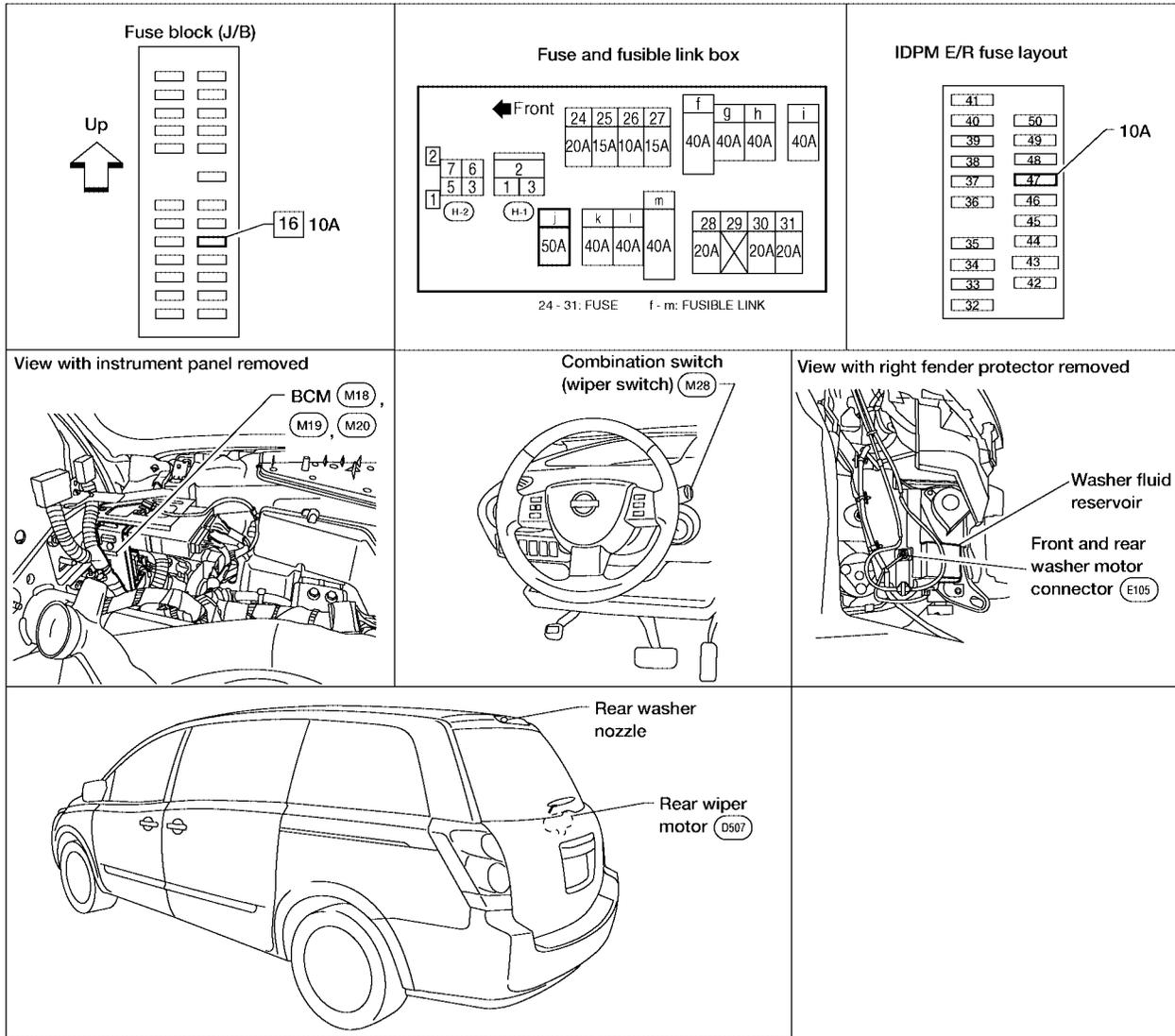Installation is in the reverse order of removal.

REAR WIPER AND WASHER SYSTEM
PFP:28710

Components Parts and Harness Connector Location
EKS00FH0

WKIA4096E

System Description
EKS00FH1

- Wiper switch (combination switch) is composed of a combination of 5 output terminals and 5 input terminals. Terminal combination status is read by BCM (body control module) when switch is turned ON.
- BCM controls rear wiper ON and INT (intermittent) operation.

Power is supplied at all times
- through 50A fusible link (letter **j** , located in fuse and fusible link box)
- to BCM terminal 55.

With the ignition switch in ON or START position, power is supplied
- through 10A fuse [No. 16, located in fuse block (J/B)]
- to BCM terminal 38, and
- through 10A fuse (No. 47, located in IPDM E/R)
- through IPDM E/R terminal 44
- to combination switch terminal 14.

Ground is supplied

- to BCM terminal 52 and
- to combination switch terminal 12
- through grounds M57, M61 and M79.

REAR WIPER OPERATION

When the ignition switch is in the ON or START position, and the rear wiper switch is in the ON position, the BCM detects a rear wiper ON signal by BCM wiper switch reading function.
When the BCM operates the rear wiper motor, power is supplied

- through BCM terminal 70
- to rear wiper motor terminal B.

Ground is supplied

- to rear wiper motor terminals E and G
- through grounds D403 and D404.

With power and ground supplied, the rear wiper operates.

INTERMITTENT OPERATION

The rear wiper motor operates the wiper arm at low speed approximately every 7 seconds.
When the wiper switch is in the rear wiper INT position, the BCM detects a rear wiper INT signal by BCM wiper switch reading function.
When BCM operates rear wiper motor, power supplied

- through BCM terminal 70
- to rear wiper motor terminal B.

Ground is supplied

- to rear wiper motor terminals E and G
- through grounds D403 and D404.

With power and ground supplied, the rear wiper operates in intermittent mode.

AUTO STOP OPERATION

When the rear wiper arm is not located at the base of the rear window, and the rear wiper switch is turned OFF, the rear wiper motor will continue to operate until the rear wiper arm is at the base of the rear window.
When the rear wiper arm reaches the base, rear wiper motor terminals P and E are connected.
Ground is supplied

- to BCM terminal 59
- through rear wiper motor terminal P
- through rear wiper motor terminal E
- through grounds D403 and D404.

REAR WASHER OPERATION

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

- through 10A fuse (No. 47, located in the IPDM E/R)
- through IPDM E/R terminal 44
- through combination switch (wiper switch) terminal 14
- through combination switch (wiper switch) terminal 11
- to front and rear washer motor terminal +.

When the rear wiper switch is in rear washer position, the BCM detects a rear washer signal by BCM wiper switch reading function. Combination switch ground is supplied

- to front and rear washer motor terminal –
- through combination switch (wiper switch) terminal 13
- through combination switch (wiper switch) terminal 12
- through grounds M57, M61 and M79.

With ground supplied, the front and rear washer motor is operated in the rear direction.
When the BCM detects that the rear washer motor has operated for 0.4 seconds or longer, BCM operates the rear wiper motor.

When the BCM detects that the rear washer switch is in OFF, the rear wiper motor cycles approximately 3 times and then stops.

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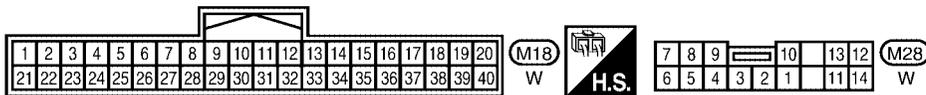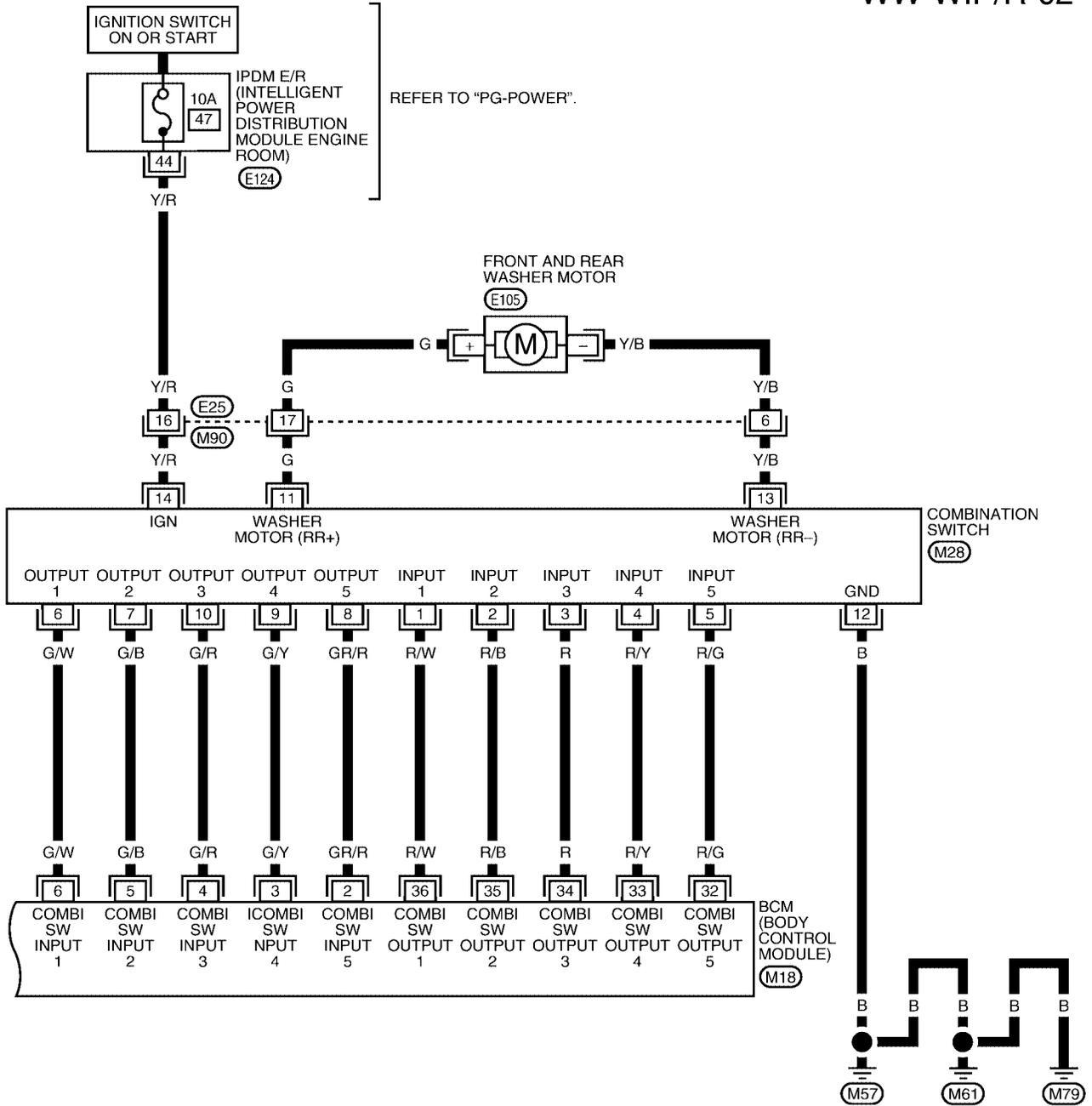Refer to BCS-3, "COMBINATION SWITCH READING FUNCTION" .

Wiring Diagram — WIP/R —

EKS00FH2

WW-WIP/R-01

WKWA3047E

WW-WIP/R-02

IGNITION SWITCH
ON OR START

IPDM E/R
(INTELLIGENT
POWER
DISTRIBUTION
MODULE ENGINE
ROOM)
E124

10A
47

44

REFER TO "PG-POWER".

Y/R

FRONT AND REAR
WASHER MOTOR
E105

G | + (M) − | Y/B

Y/R
16
E25
M90

G
17

Y/B
6

Y/R
14
IGN

G
11
WASHER
MOTOR (RR+)

Y/B
13
WASHER
MOTOR (RR−)

COMBINATION
SWITCH
M28

OUTPUT 1	OUTPUT 2	OUTPUT 3	OUTPUT 4	OUTPUT 5	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5		GND
6	7	10	9	8	1	2	3	4	5		12
G/W	G/B	G/R	G/Y	GR/R	R/W	R/B	R	R/Y	R/G		B

G/W	G/B	G/R	G/Y	GR/R	R/W	R/B	R	R/Y	R/G
6	5	4	3	2	36	35	34	33	32
COMBI SW INPUT 1	COMBI SW INPUT 2	COMBI SW INPUT 3	ICOMBI SW NPUT 4	COMBI SW INPUT 5	COMBI SW OUTPUT 1	COMBI SW OUTPUT 2	COMBI SW OUTPUT 3	COMBI SW OUTPUT 4	COMBI SW OUTPUT 5

BCM
(BODY
CONTROL
MODULE)
M18

B   B   B   B   B

M57   M61   M79

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

M18
W

H.S.

7	8	9		10		13	12
6	5	4	3	2	1	11	14

M28
W

1	2	3	4	5	6		7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22	23	24

M90
W

− +
E105
GR

37	36		35	34	33
44	43	42	41	40	39	38

E124
W
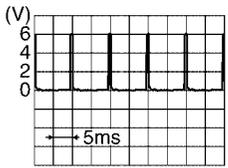
WKWA3048E

Terminals and Reference Values for BCM

EKS00FH3

Terminal No.	Wire color	Signal name	Measuring condition		Reference Value (V) (Approx.)
			Ignition switch	Operation or condition	
2	GR/R	Combination switch input 5	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	(V) 6 4 2 0 ←→5ms SKIA5291E
3	G/Y	Combination switch input 4	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	(V) 6 4 2 0 ←→5ms SKIA5292E
4	G/R	Combination switch input 3	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	(V) 6 4 2 0 ←→5ms SKIA5291E
5	G/B	Combination switch input 2			
6	G/W	Combination switch input 1	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	(V) 6 4 2 0 ←→5ms SKIA5292E
32	R/G	Combination switch output 5	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	(V) 6 4 2 0 ←→5ms SKIA5291E
33	R/Y	Combination switch output 4	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	(V) 6 4 2 0 ←→5ms SKIA5292E
34	R	Combination switch output 3	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	(V) 6 4 2 0 ←→5ms SKIA5291E

Terminal No.	Wire color	Signal name	Measuring condition		Reference Value (V) (Approx.)
			Ignition switch	Operation or condition	
35	R/B	Combination switch output 2	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	SKIA5292E
36	R/W	Combination switch output 1			
38	G	Ignition switch (ON)	ON	—	Battery voltage
52	B/W	Ground	ON	—	0V
55	W/B	Battery power	OFF	—	Battery voltage
59	BR	Rear wiper auto stop signal	ON	Rear wiper operating	0V
				Rear wiper stopped	Battery voltage
70	SB	Rear wiper motor output signal	ON	Rear wiper switch — OFF	0V
				Rear wiper switch — ON	Battery voltage

Terminals and Reference Values for IPDM E/R
EKS00FH4

Terminal No.	Wire color	Signal name	Measuring condition		Reference Value (V) (Approx.)
			Ignition switch	Operation or condition	
44	Y/R	Front and rear washer motor power supply	ON	—	Battery voltage

How to Proceed With Trouble Diagnosis
EKS00FH5

1. Confirm the symptoms and customer complaint.
2. Understand operation description and function description. Refer to WW-31, "System Description" .
3. Perform the Preliminary Check. Refer to WW-37, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the rear wiper operate normally? If YES: GO TO 6. If NO: GO TO 4.
6. Inspection End.

Preliminary Check
EKS00FH6
INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT
Inspection procedure
1. CHECK FUSE

Check if wiper or washer fuse is blown.

Unit	Power source	Fuse and fusible link No.
Front and rear washer motor	Ignition ON or START	47
BCM	Ignition ON or START	16
	Battery	**j**

OK or NG

OK >> GO TO 2.
NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

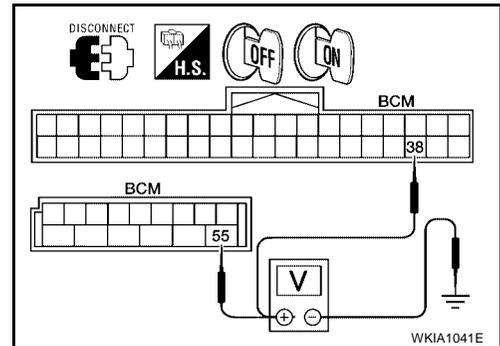# REAR WIPER AND WASHER SYSTEM

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect BCM connectors.
2. Check voltage between BCM harness connector terminals and ground.

BCM		(−)	Ignition switch position	
(+)			OFF	ON
Connector	Terminal			
M18	38	Ground	0V	Battery voltage
M19	55		Battery voltage	Battery voltage

WKIA1041E

OK or NG

OK >> GO TO 3.
NG >> Check harness for open between BCM and fuse or fusible link.

3. GROUND CIRCUIT INSPECTION (BCM)

Check for continuity between the following terminal on BCM connector and ground.

BCM			Ignition switch condition	Continuity
Connector	Terminal			
M19	52	Ground	OFF	Yes

WKIA2955E

OK or NG

OK >> Inspection End.
NG >> Repair/replace BCM ground circuit.

CONSULT-II Function (BCM)

EKS00FH7

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 CON-SULT-II CONVERTER to the data link connector, then turn the ignition switch ON.

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

3. Touch "BCM" on the "SELECT SYSTEM" screen.
   If "BCM" is not indicated, go to GI-38, "CONSULT-II Data Link Connector (DLC) Circuit" .
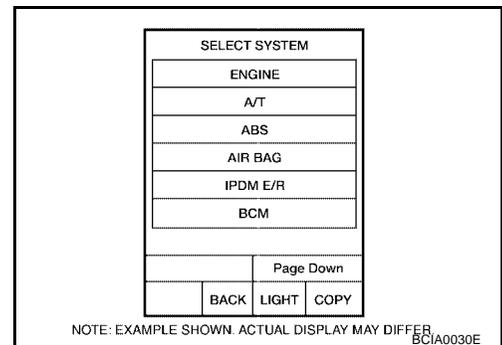
4. Select the desired part to be diagnosed on the "SELECT TEST ITEM" screen.

```
          SELECT TEST ITEM
             HEAD LAMP
               WIPER
              FLASHER
          AIR CONDITIONER
              COMB SW
                BCM
      Scroll Up    Page Down
              BACK  LIGHT  COPY
```
LKIA0183E

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

ALL SIGNALS	Monitors all the 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, 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"	Displays "IGN Position (ON)/OFF, ACC Position (OFF)" status as judged from ignition switch signal.
IGN SW CAN	"ON/OFF"	Displays "IGN Position (ON)/OFF, ACC Position (OFF)" status as judged from ignition switch signal.
FR WIPER INT	"ON/OFF"	Displays "Front Wiper INT (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 HI	"ON/OFF"	Displays "Front Wiper HI (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.
VEHICLE SPEED	"0.0 km/h"	Displays vehicle speed as received over CAN communication.
FR WIPER STOP	"ON/OFF"	Displays "Stopped (ON)/Operating (OFF)" status as judged from the auto stop signal.
RR WIPER INT	"ON/OFF"	Displays "Rear Wiper INT (ON)/Other (OFF)" status as judged from wiper switch signal.
RR WIPER ON	"ON/OFF"	Displays "Rear Wiper (ON)/Other (OFF)" status as judged from wiper switch signal.
RR WASHER SW	"ON/OFF"	Displays "Rear Washer Switch (ON)/Other (OFF)" status as judged from wiper switch signal.
RR WIPER STOP	"ON/OFF"	Displays "Stopped (OFF)/Operating (ON)" status as judged from the auto stop signal.

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 to be tested and check operation of the selected item.
4. During the operation check, touching "BACK" deactivates the operation.

REAR WIPER AND WASHER SYSTEM

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.
Rear wiper output	RR WIPER	Rear wiper can be operated by any ON-OFF operation.

Rear Wiper Does Not Operate

EKS00FH8

1. REAR WIPER ACTIVE TEST

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Select "RR WIPER" on "SELECT TEST ITEM" screen.
4. Make sure rear wiper operates.

Wiper should operate.

OK or NG

OK >> GO TO 6.
NG >> GO TO 2.
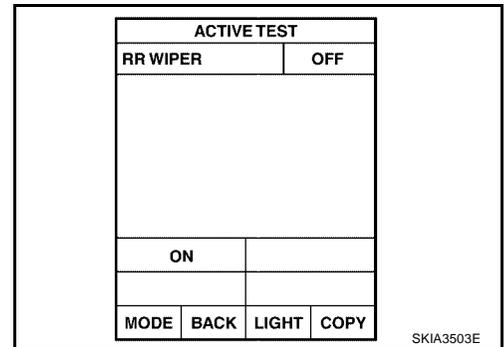
2. CHECK REAR WIPER MOTOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and rear wiper motor connector.
3. Check continuity between BCM harness connector M20 terminal 70 and rear wiper motor harness connector D507 terminal B.

70 - B : Continuity should exist.

OK or NO

OK >> GO TO 3.
NO >> Repair harness or connector.
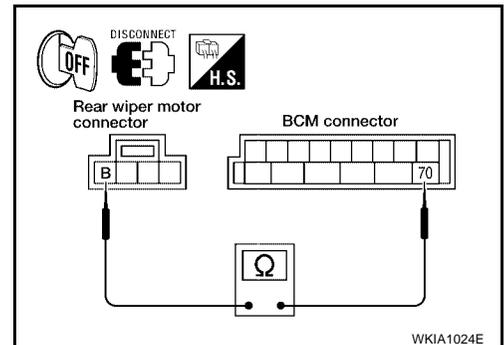
3. CHECK REAR WIPER MOTOR SHORT CIRCUIT

Check continuity between rear wiper motor harness connector D507 terminal B and ground.

B - Ground : Continuity should not exist.

OK or NG

OK >> GO TO 4.
NG >> After repairing harness, be sure to disconnect battery negative cable, and then reconnect it.
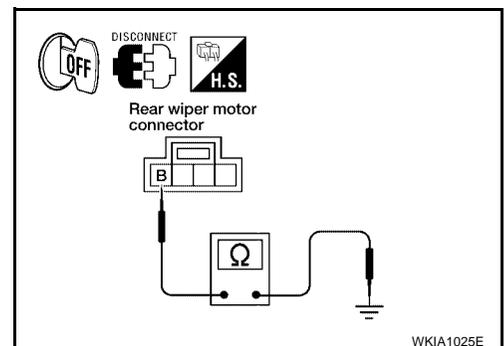
4. CHECK GROUND CIRCUIT

Check continuity between rear wiper motor harness connector D507 terminal E and ground.

      E - Ground   **: Continuity should exist.**

<u>OK or NG</u>

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


Rear wiper motor connector

WKIA1026E
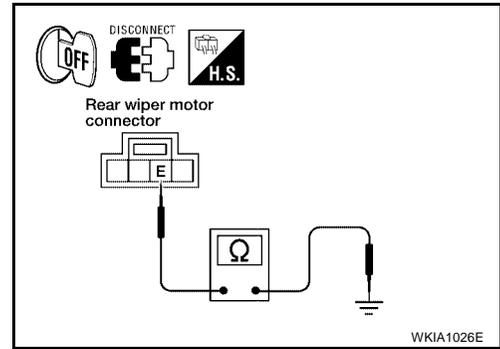
5. CHECK REAR WIPER OPERATING

1. Connect BCM connector and rear wiper motor connector.
2. Select "RR WIPER" during "ACTIVE TEST". Refer to WW-40, "ACTIVE TEST" . When rear wiper is operating, check voltage between BCM harness connector terminal and ground.

BCM		(−)	Condition	Voltage (Approx.)
(+)				
Connector	Terminal			
M20	70	Ground	Stopped	0V
			ON operation	Battery voltage

BCM connector

WKIA3906E

<u>OK or NG</u>

OK   >> Replace rear wiper motor. Refer to WW-45, "Rear Wiper Motor" .
NG   >> Replace BCM. Refer to BCS-20, "Removal and Installation of BCM" .
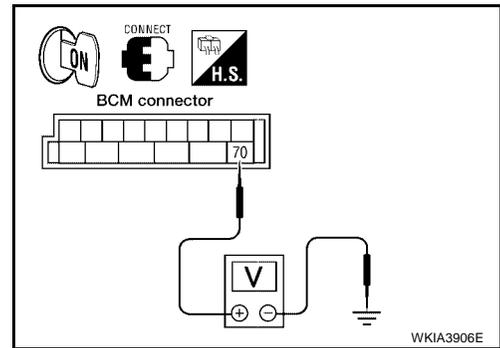
6. CHECK COMBINATION SWITCH INPUT SIGNAL

Select "BCM" on CONSULT-II. With "WIPER" data monitor, make sure "RR WIPER INT", "RR WIPER ON" turn ON-OFF according to operation of wiper switch.

      When wiper switch is in INT position   **: RR WIPER INT ON**

      When wiper switch is in ON position   **: RR WIPER ON**

<u>OK or NG</u>

OK   >> Replace BCM. Refer to BCS-20, "Removal and Installation of BCM" .
NG   >> Check the wiper switch. Refer to BCS-3, "COMBINATION SWITCH READING FUNCTION" .

DATA MONITOR

MONITOR

RR WIPER INT   ON
RR WIPER ON   ON

SKIA4243E
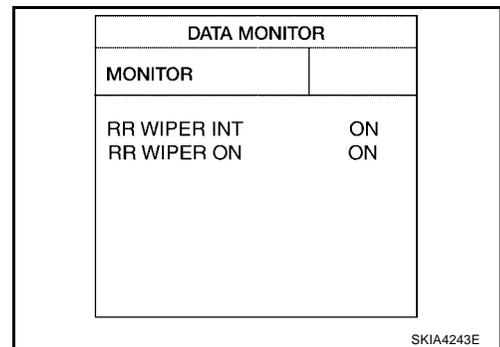
REAR WIPER AND WASHER SYSTEM

Rear Wiper Stop Position Is Incorrect

EKS00FH9

1. CHECK COMBINATION SWITCH INPUT SIGNAL

Select "BCM" on CONSULT-II. With "WIPER" data monitor, make sure "RR WIPER STOP" turns ON-OFF according to wiper operation.

When wiper switch is in OFF position   **: RR WIPER STOP OFF**

OK or NG

OK   >> Replace BCM. Refer to <u>BCS-20, "Removal and Installation of BCM"</u> .
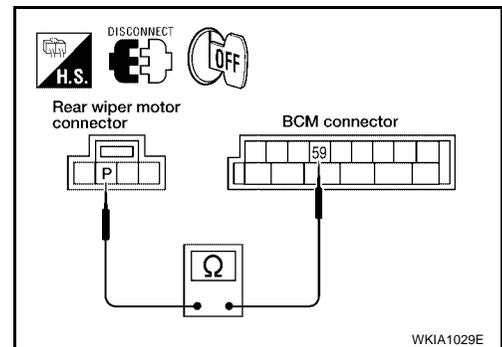
NG   >> GO TO 2.
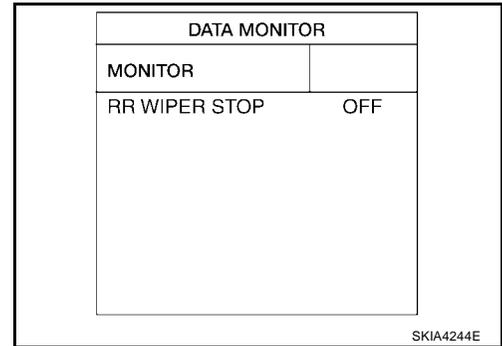
SKIA4244E

2. CHECK REAR WIPER MOTOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and rear wiper motor connector.
3. Check continuity between BCM harness connector M20 terminal 59 and rear wiper motor harness connector D507 terminal P.

59 - P   **: Continuity should exist.**

OK or NG

OK   >> GO TO 3.

NG   >> Repair harness or connector.

WKIA1029E

3. CHECK REAR WIPER MOTOR SHORT CIRCUIT

Check continuity between rear wiper motor harness connector D507 terminal P and ground.

P - Ground   **: Continuity should not exist.**

OK or NG

OK   >> GO TO 4.

NG   >> Repair harness or connector.
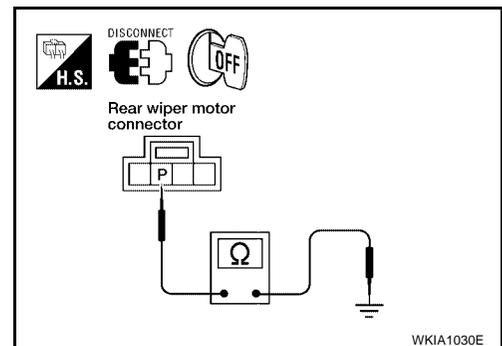
WKIA1030E

4. CHECK GROUND CIRCUIT

Check continuity between rear wiper motor harness connector D507 terminal E and ground.

E - Ground   **: Continuity should exist.**

OK or NG

OK   >> GO TO 5.

NG   >> Repair harness or connector.

WKIA1026E
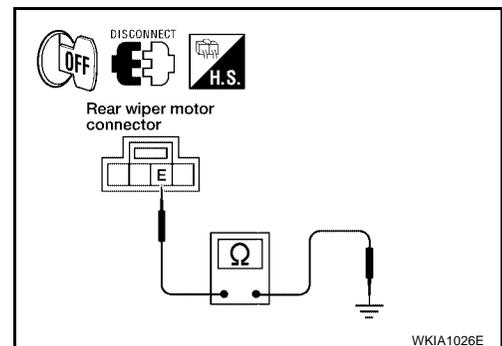
5. CHECK AUTO STOP SIGNAL

1. Connect BCM connector.
2. Turn ignition switch ON.
3. Check voltage between rear wiper motor harness connector D507 terminal P and ground.

P - Ground   **: Battery voltage should exist.**

OK or NG

  OK   >> Replace BCM. Refer to <u>BCS-20, "Removal and Installation of BCM"</u> .

  NG   >> Replace rear wiper motor. Refer to <u>WW-45, "Rear Wiper Motor"</u> .

WKIA4295E
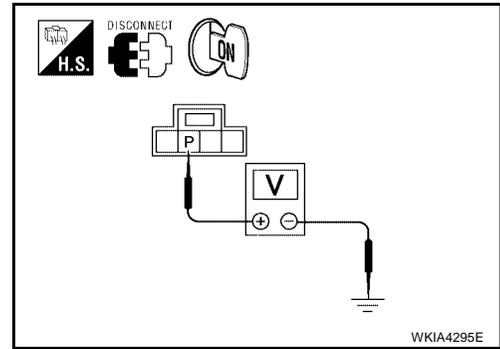
Only Rear Wiper Does Not Operate

EKS00FHA

1. CHECK COMBINATION SWITCH INPUT SIGNAL

Select "BCM" on CONSULT-II. With "WIPER" data monitor, make sure "RR WIPER ON" turns ON-OFF according to operation of wiper switch.

When rear wiper switch is in ON position   **: RR WIPER ON**

OK or NG

  OK   >> Replace BCM. Refer to <u>BCS-20, "Removal and Installation of BCM"</u> .

  NG   >> Check the wiper switch. Refer to <u>BCS-3, "COMBINATION SWITCH READING FUNCTION"</u> .

DATA MONITOR	
MONITOR	
RR WIPER ON	ON

SKIA4248E
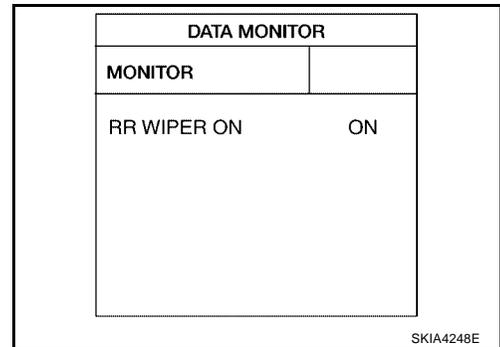
Only Rear Wiper Intermittent Does Not Operate

EKS00FHB

1. CHECK COMBINATION SWITCH INPUT SIGNAL

Select "BCM" on CONSULT-II. With "WIPER" data monitor, make sure "RR WIPER INT" turns ON-OFF according to operation of wiper switch.

When rear wiper switch is in INT position   **: RR WIPER INT ON**

OK or NG

  OK   >> Replace BCM. Refer to <u>BCS-20, "Removal and Installation of BCM"</u> .

  NG   >> Check the wiper switch. Refer to <u>BCS-3, "COMBINATION SWITCH READING FUNCTION"</u> .

DATA MONITOR	
MONITOR	
RR WIPER INT	ON

SKIA4249E
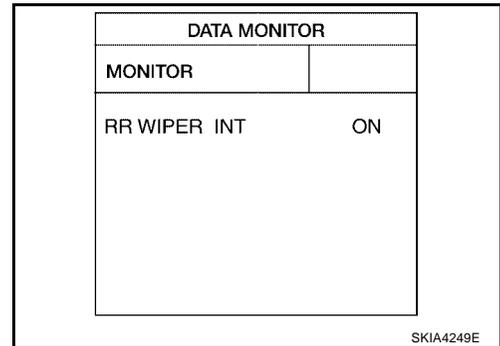
Wiper Does Not Wipe When Rear Washer Operates

EKS00FHC

1. CHECK COMBINATION SWITCH INPUT SIGNAL

Select "BCM" on CONSULT-II. With "WIPER" data monitor, make sure "RR WASHER SW" turns ON-OFF according to operation of rear washer switch.

When rear wiper switch is in WASHER position   **: RR WASHER SW ON**

OK or NG

  OK   >> Replace BCM. Refer to <u>BCS-20, "Removal and Installation of BCM"</u> .

  NG   >> Check the wiper switch. Refer to <u>BCS-3, "COMBINATION SWITCH READING FUNCTION"</u> .

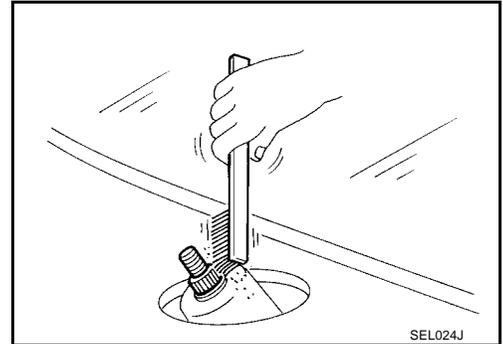| DATA MONITOR	
MONITOR	
RR WASHER SW	ON

SKIA4250E
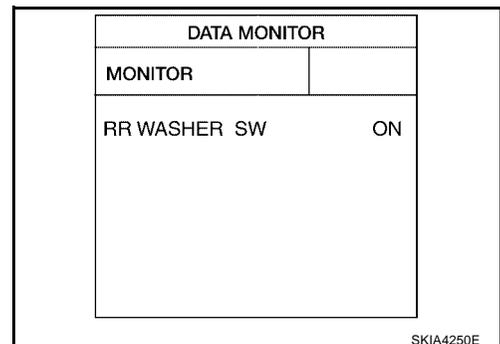
Rear Wiper Arm

EKS00FHD

REMOVAL

1. Operate rear wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Remove wiper arm cover, remove wiper arm nut, then remove the wiper arm.

INSTALLATION

1. Prior to rear wiper arm installation, perform the following:
   - Operate wiper motor one full cycle, then turn "OFF" (Auto Stop).
   - Using a suitable brush, clean pivot area as illustrated. This will reduce the possibility of wiper arm looseness.
2. Install rear wiper arm onto pivot and ensure wiper blade is parallel to the ground.
3. Tighten wiper arm nut to specification, install wiper arm cover.

   Wiper arm nut   : 15.5 N·m (1.6 kg-m, 11 ft-lb)

SEL024J

Rear Wiper Motor

EKS00FHE

REMOVAL AND INSTALLATION

15.5 N·m (1.6 kg-m, 11 ft-lb)

6.7 N·m (0.68 kg-m, 59 in-lb)

LKIA0350E
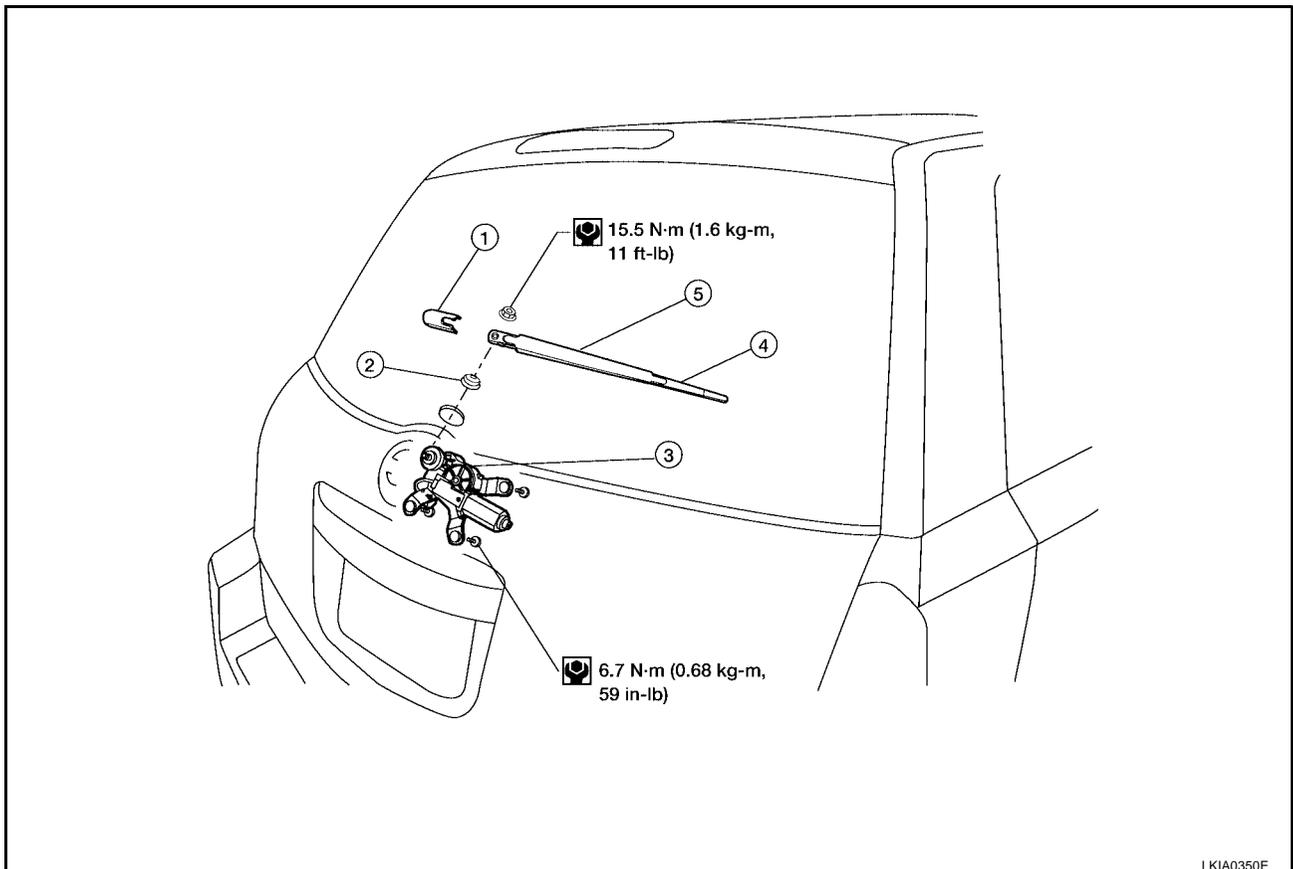
1.	Wiper arm cover	2.	Pivot cap	3.	Rear wiper motor
4.	Wiper blade	5.	Wiper arm		

Removal

1. Remove rear wiper arm. Refer to <u>WW-45, "Rear Wiper Arm"</u> .
2. Remove pivot cap.
3. Remove back door finisher lower. Refer to <u>EI-36, "Removal"</u> .
4. Disconnect rear wiper motor electrical connector.
5. Remove rear wiper motor bolts, and remove rear wiper motor.

LKIA0344E
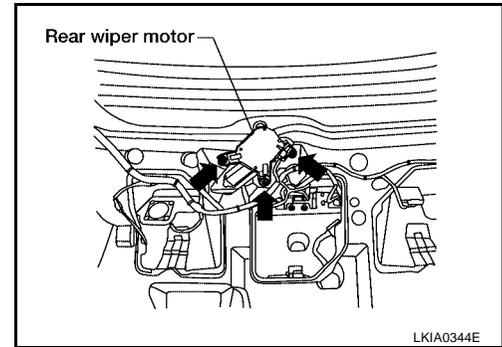
Installation

CAUTION:
● **Do not drop the wiper motor or cause it to contact other parts.**

1. Clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.
2. Install rear wiper motor to the vehicle.
3. Attach pivot cap.
4. Connect rear wiper motor electrical connector.
5. Install back door finisher lower. Refer to <u>EI-36, "Removal"</u> .
6. Attach wiper arm. Refer to <u>WW-45, "Rear Wiper Arm"</u> .

SEL024J
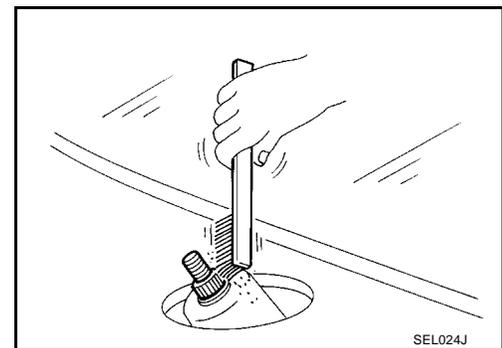
Rear Washer Nozzle Adjustment

EKS00FHF

● Adjust washer nozzle with suitable tool as shown in the figure.
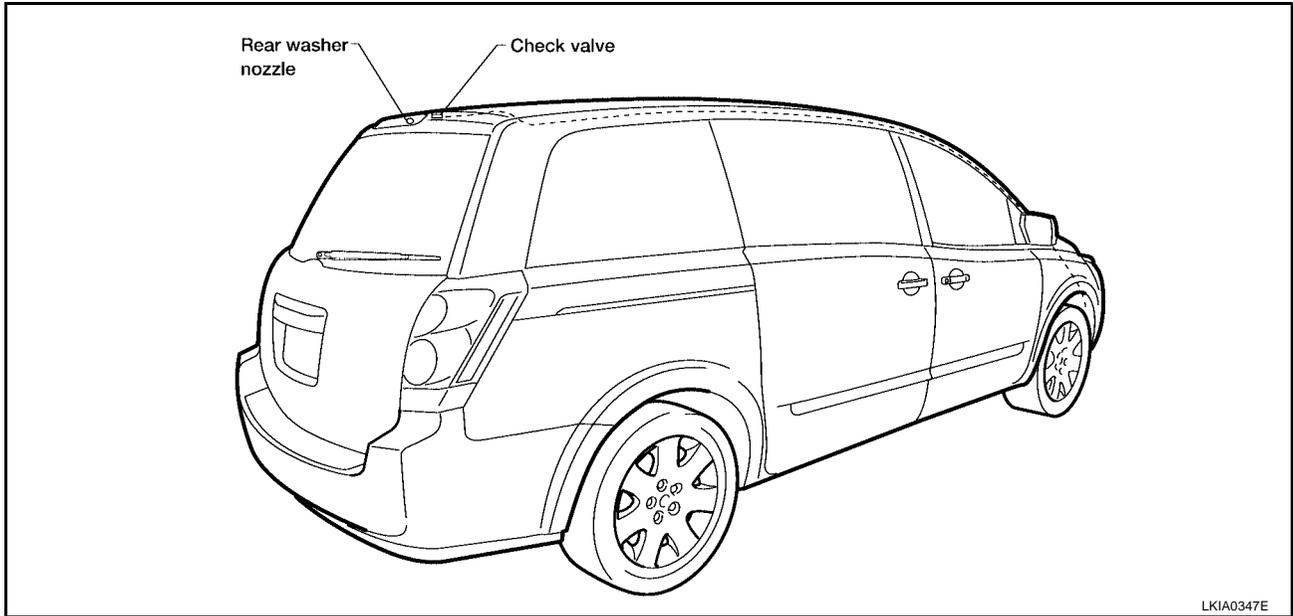
Adjustable range   : ±15° (In any direction)

LKIA0349E

WEL912A
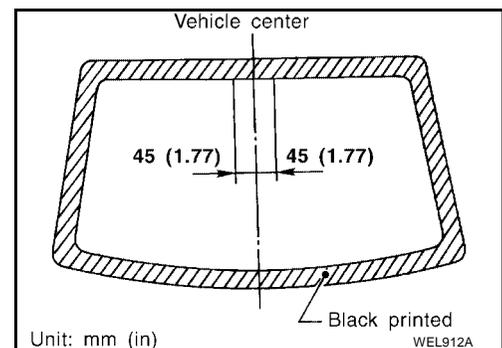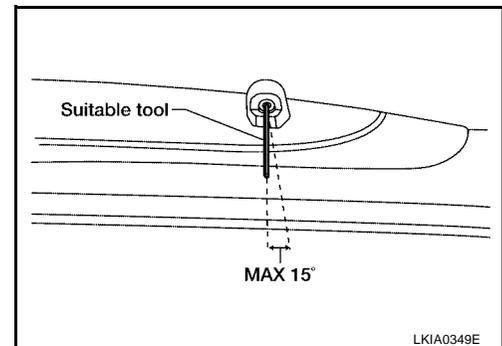
Rear Washer Tube Layout
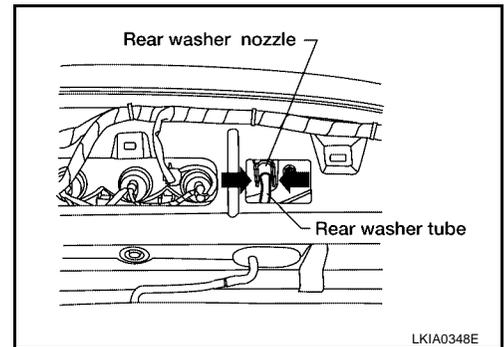
LKIA0347E

Rear Washer Nozzle

REMOVAL AND INSTALLATION

Removal

1. Remove back door finisher upper. Refer to EI-36, "Removal" .
2. Remove rear washer tube from nozzle.
3. Release retaining clips and remove washer nozzle.

LKIA0348E

Installation

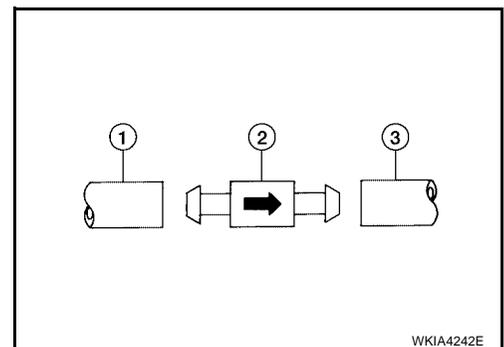Installation is in the reverse order of removal.

Check Valve

Connect the check valve (2) to the washer fluid reservoir tube (1) so that the directional arrow on the check valve (2) points towards the washer nozzle tube (3).

CAUTION:
Directional arrow on the check valve (2) must point in the direction of the washer fluid flow.

WKIA4242E

Rear Wiper and Washer Switch

EKS00FHJ

Refer to WW-29, "Wiper and Washer" .

Washer Fluid Reservoir

EKS00GAN

Refer to WW-30, "Washer Fluid Reservoir" .

Washer Motor
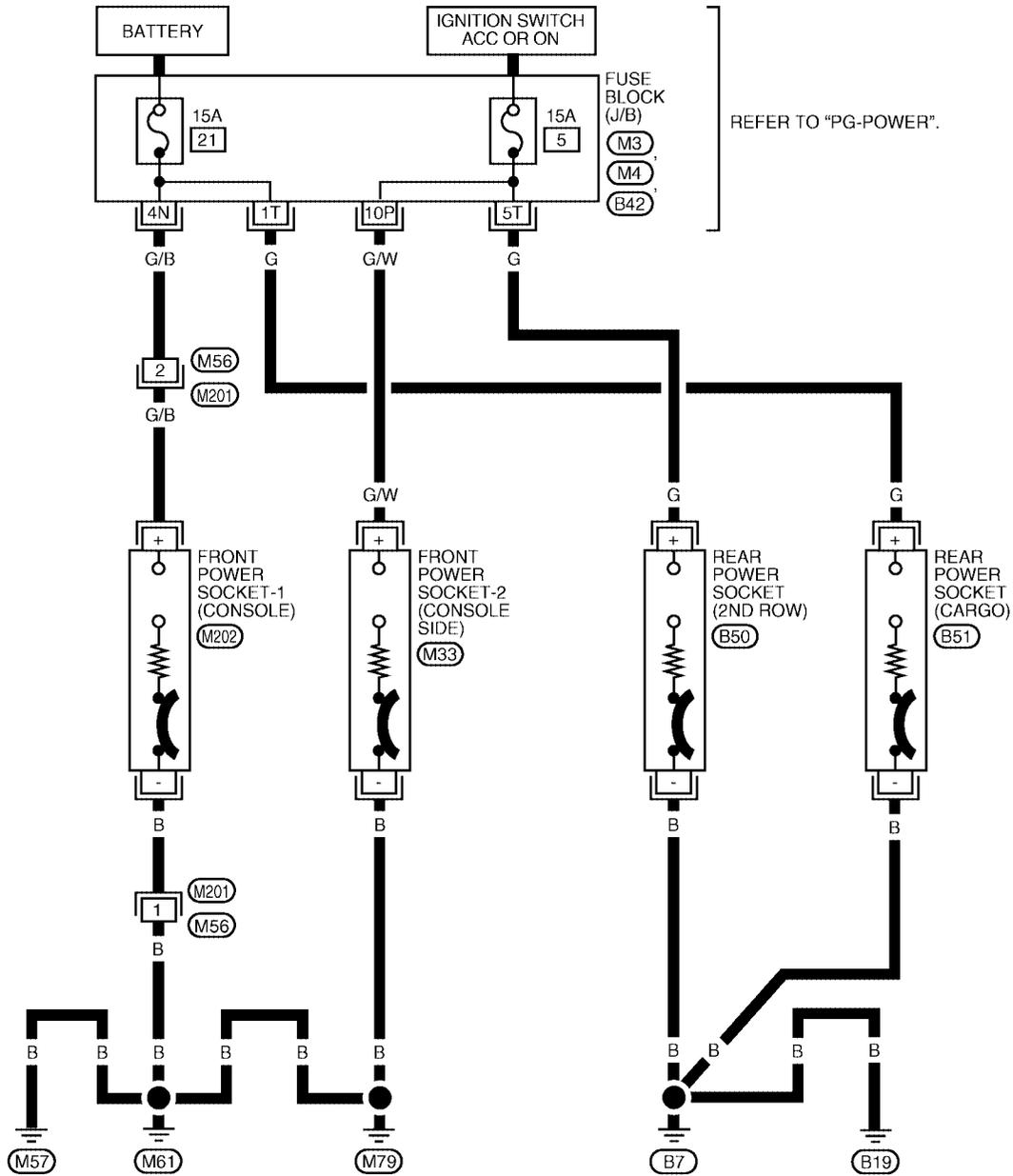
EKS00GAO

Refer to WW-30, "Washer Motor" .

POWER SOCKET

Wiring Diagram — P/SCKT —

PFP:253A2

EKS00FHM

WW-P/SCKT-01
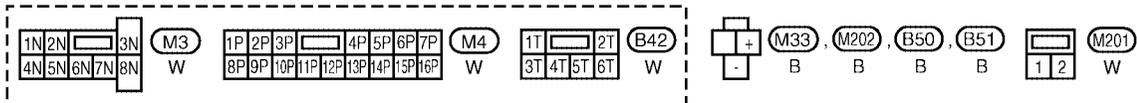
WKWA3049E

POWER SOCKET

Front Power Socket - 1 (Console) and Rear Power Socket (Cargo)

REMOVAL AND INSTALLATION

Removal

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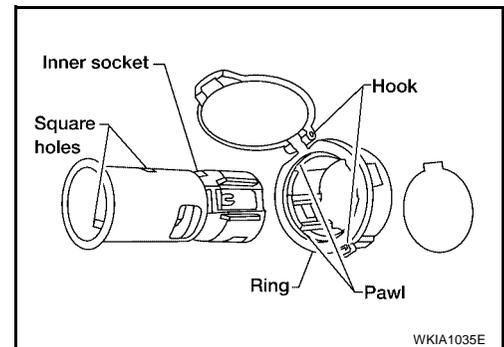

WKIA1035E
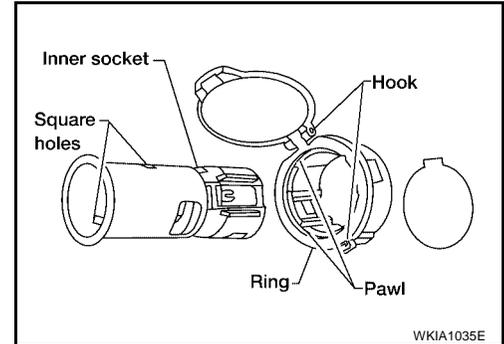
Installation

Installation is in the reverse order of removal.

Front Power Socket - 2 (Console Side) and Rear Power Socket (2nd Row)

REMOVAL AND INSTALLATION

Removal

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

WKIA1035E

INSTALLATION

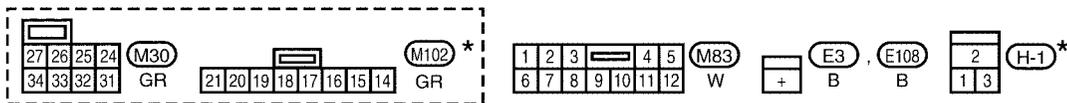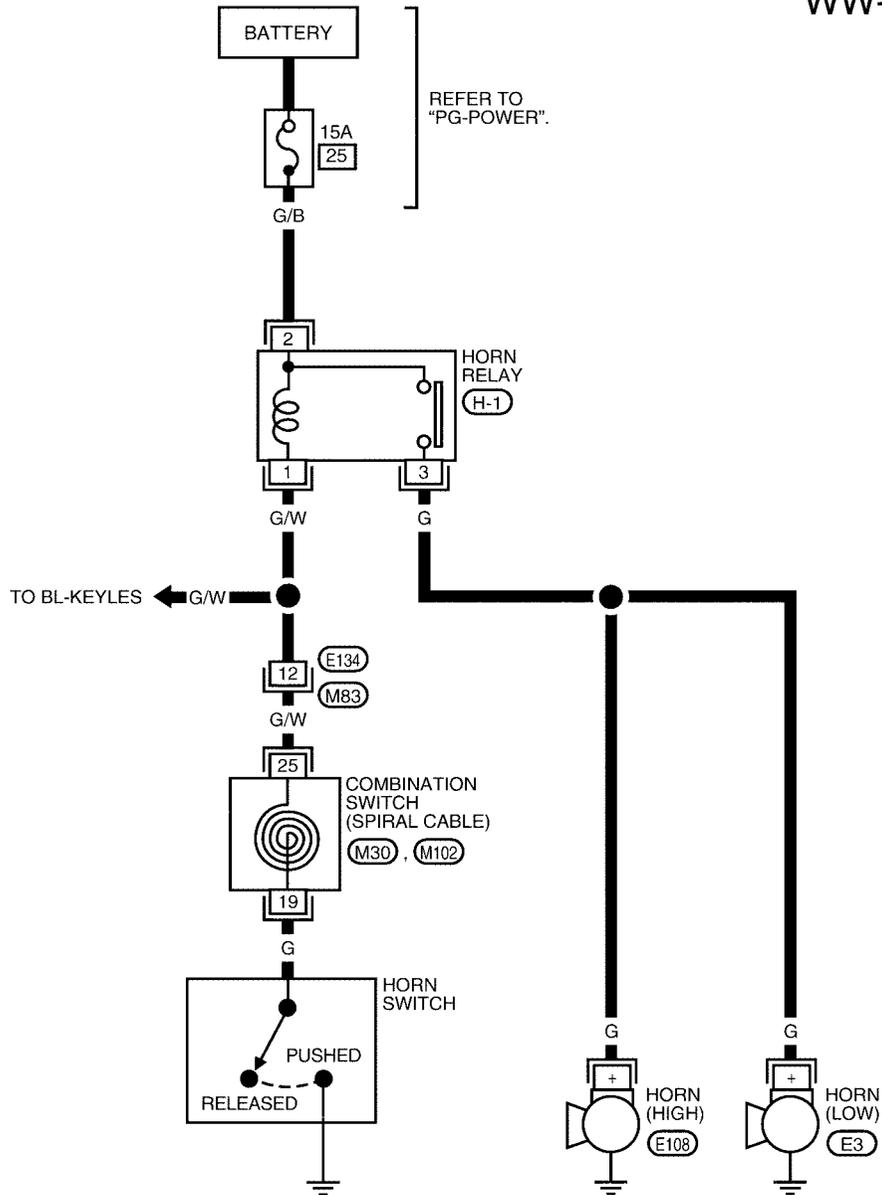Installation is in the reverse order of removal.

HORN

Wiring Diagram — HORN —

PFP:25610

EKS00FHO

WW-HORN-01

BATTERY

REFER TO "PG-POWER".

15A
25

G/B

2

HORN RELAY

H-1

1   3

G/W   G

TO BL-KEYLES ← G/W

12   E134
      M83

G/W

25

COMBINATION SWITCH (SPIRAL CABLE)

M30 , M102

19

G

HORN SWITCH

PUSHED

RELEASED

G   G

HORN (HIGH)   HORN (LOW)

E108   E3

27 26 25 24 M30   21 20 19 18 17 16 15 14 M102 *
34 33 32 31 GR   GR

1 2 3 4 5 M83   E3 , E108   2 H-1 *
6 7 8 9 10 11 12 W   +   B B   1 3

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

WKWA3050E

Horn
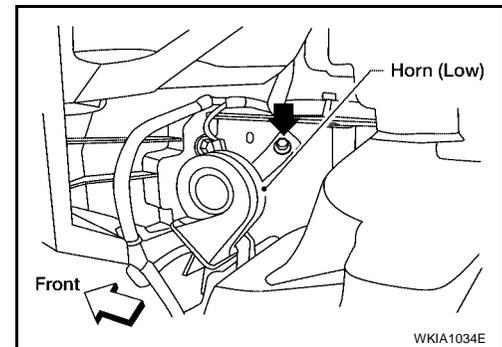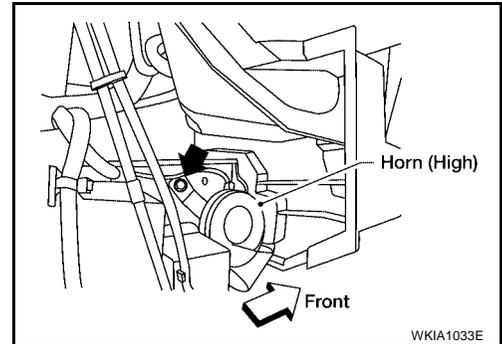
EKS00FHP

REMOVAL AND INSTALLATION

Removal

1. Remove the front bumper. Refer to EI-14, "Removal and Installation" .
2. Disconnect horn electrical connector.
3. Remove horn bolt and remove horn from vehicle.

Horn (High)

Front

WKIA1033E

Horn (Low)

Front

WKIA1034E

INSTALLATION

Installation is in the reverse order of removal.