

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

# WW

## SECTION

# WIPER, WASHER & HORN

### CONTENTS

<p><b>PRECAUTION</b> ..... 3</p> <p>Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" ..... 3</p> <p><b>FRONT WIPER AND WASHER SYSTEM</b> ..... 4</p> <p>Components Parts and Harness Connector Location ..... 4</p> <p>System Description ..... 4</p> <p>    OUT LINE ..... 4</p> <p>    LOW SPEED WIPER OPERATION ..... 5</p> <p>    HI SPEED WIPER OPERATION ..... 5</p> <p>    INTERMITTENT OPERATION ..... 5</p> <p>    AUTO STOP OPERATION ..... 6</p> <p>    WASHER OPERATION ..... 6</p> <p>    MIST OPERATION ..... 6</p> <p>    FAIL-SAFE FUNCTION ..... 7</p> <p>    COMBINATION SWITCH READING FUNCTION... 8</p> <p>CAN Communication System Description ..... 10</p> <p>CAN Communication Unit ..... 10</p> <p>Schematic ..... 11</p> <p>Wiring Diagram — WIPER — ..... 12</p> <p>Terminals and Reference Values for BCM ..... 15</p> <p>Terminals and Reference Values for IPDM E/R .... 18</p> <p>How to Proceed With Trouble Diagnosis ..... 19</p> <p>Preliminary Check ..... 19</p> <p>    CHECK POWER SUPPLY AND GROUND CIRCUIT ..... 19</p> <p>CONSULT-II Functions (BCM) ..... 20</p> <p>    CONSULT-II BASIC OPERATION ..... 20</p> <p>    WORK SUPPORT ..... 20</p> <p>    DATA MONITOR ..... 20</p> <p>    ACTIVE TEST ..... 21</p> <p>CONSULT-II Functions (IPDM E/R) ..... 22</p> <p>    CONSULT-II BASIC OPERATION ..... 22</p> <p>    DATA MONITOR ..... 22</p> <p>    ACTIVE TEST ..... 22</p> <p>Front Wiper Does Not Operate ..... 23</p> <p>Front Wiper Does Not Return to Stop Position ..... 25</p> <p>Only Front Wiper Low Does Not Operate ..... 26</p> <p>Only Front Wiper Hi Does Not Operate ..... 28</p>	<p>Only Front Wiper Intermittent Does Not Operate ... 29</p> <p>Front Wiper Interval Time Is Not Controlled by Vehicle Speed ..... 29</p> <p>Front Wiper Intermittent Operation Switch Position Cannot Be Adjusted ..... 30</p> <p>Wiper Does Not Wipe When Front Washer Operates ... 30</p> <p>After Front Wiper Operate for 10 Seconds, They Stop for 20 Seconds, and After Repeating the Operations Five Times, They Become Inoperative ..... 31</p> <p>Front Wiper Does Not Stop ..... 32</p> <p>Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location ..... 33</p> <p>    REMOVAL ..... 33</p> <p>    INSTALLATION ..... 33</p> <p>    ADJUSTMENT ..... 33</p> <p>Removal and Installation of Front Wiper Drive Assembly ..... 33</p> <p>    REMOVAL ..... 33</p> <p>    INSTALLATION ..... 33</p> <p>Disassembly and Assembly of Front Wiper Drive Assembly ..... 34</p> <p>    DISASSEMBLY ..... 34</p> <p>    ASSEMBLY ..... 34</p> <p>Washer Nozzle Adjustment ..... 34</p> <p>Washer Tube Layout ..... 36</p> <p>Removal and Installation of Front Washer Nozzle.. 36</p> <p>Removal and Installation of Front Washer Tube Joint ..... 36</p> <p>    REMOVAL ..... 36</p> <p>    INSTALLATION ..... 36</p> <p>Inspection of Washer Nozzle ..... 36</p> <p>    CHECK VALVE ..... 36</p> <p>Removal and Installation of Front Wiper and Washer Switch ..... 37</p> <p>    REMOVAL ..... 37</p> <p>    INSTALLATION ..... 37</p> <p>Removal and Installation of Washer Tank ..... 37</p> <p>    REMOVAL ..... 37</p>
--	--

INSTALLATION .....	38	INSTALLATION .....	52
Removal and Installation of Washer Pump .....	38	Removal and Installation of Rear Wiper Blade .....	52
REMOVAL .....	38	REMOVAL .....	52
INSTALLATION .....	38	INSTALLATION .....	52
<b>REAR WIPER AND WASHER SYSTEM .....</b>	<b>39</b>	Washer Nozzle Adjustment .....	53
Component Parts and Harness Connector Location..	39	Removal and Installation of Washer Nozzle .....	53
System Description .....	39	REMOVAL .....	53
REAR WIPER OPERATION .....	39	INSTALLATION .....	53
INTERMITTENT OPERATION .....	40	Washer Tube Layout .....	54
AUTO STOP OPERATION .....	40	Check Valve .....	54
WASHER OPERATION .....	40	Removal and Installation of Rear Wiper and Washer	
BCM WIPER SWITCH READING FUNCTION ...	40	Switch .....	54
Wiring Diagram — WIP/ R — .....	41	Removal and Installation of Washer Tank .....	54
Terminals and Reference Values for BCM .....	43	Removal and Installation of Washer pump .....	54
How to Proceed With Trouble Diagnosis .....	45	<b>POWER SOCKET .....</b>	<b>55</b>
Preliminary Check .....	45	Wiring Diagram — P/SCKT — .....	55
CHECK POWER SUPPLY AND GROUND CIR-		Removal and Installation of Front Power Socket – 1..	56
CUIT .....	45	REMOVAL .....	56
CONSULT-II Functions (BCM) .....	46	INSTALLATION .....	56
CONSULT-II BASIC OPERATION .....	46	Removal and Installation of Front Power Socket – 2..	56
DATA MONITOR .....	46	REMOVAL .....	56
ACTIVE TEST .....	46	INSTALLATION .....	56
Rear Wiper Does Not Operate .....	47	Removal and Installation of Rear Power Socket ....	56
Rear Wiper Does Not Return to Stop Position .....	48	REMOVAL .....	56
Only Rear Wiper ON Does Not Operate .....	49	INSTALLATION .....	56
Only Rear Wiper INT Does Not Operate .....	49	Removal and Installation of Luggage Room Power	
Wiper Does Not Wipe When Rear Washer Operates..	49	Socket .....	57
Rear Wipers Do Not Stop .....	50	REMOVAL .....	57
Removal and Installation of Rear Wiper Arm, Adjust-		INSTALLATION .....	57
ment of Wiper Arms Stop Location .....	51	<b>HORN .....</b>	<b>58</b>
REMOVAL .....	51	Wiring Diagram — HORN — .....	58
INSTALLATION .....	51	Removal and Installation .....	59
Removal and Installation of Rear Wiper Motor .....	51	REMOVAL .....	59
REMOVAL .....	52	INSTALLATION .....	59

# PRECAUTION

## PRECAUTION

PF0:00011

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

NKS00325

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.

A  
B  
C  
D  
E  
F  
G  
H  
I  
J

WW

L  
M

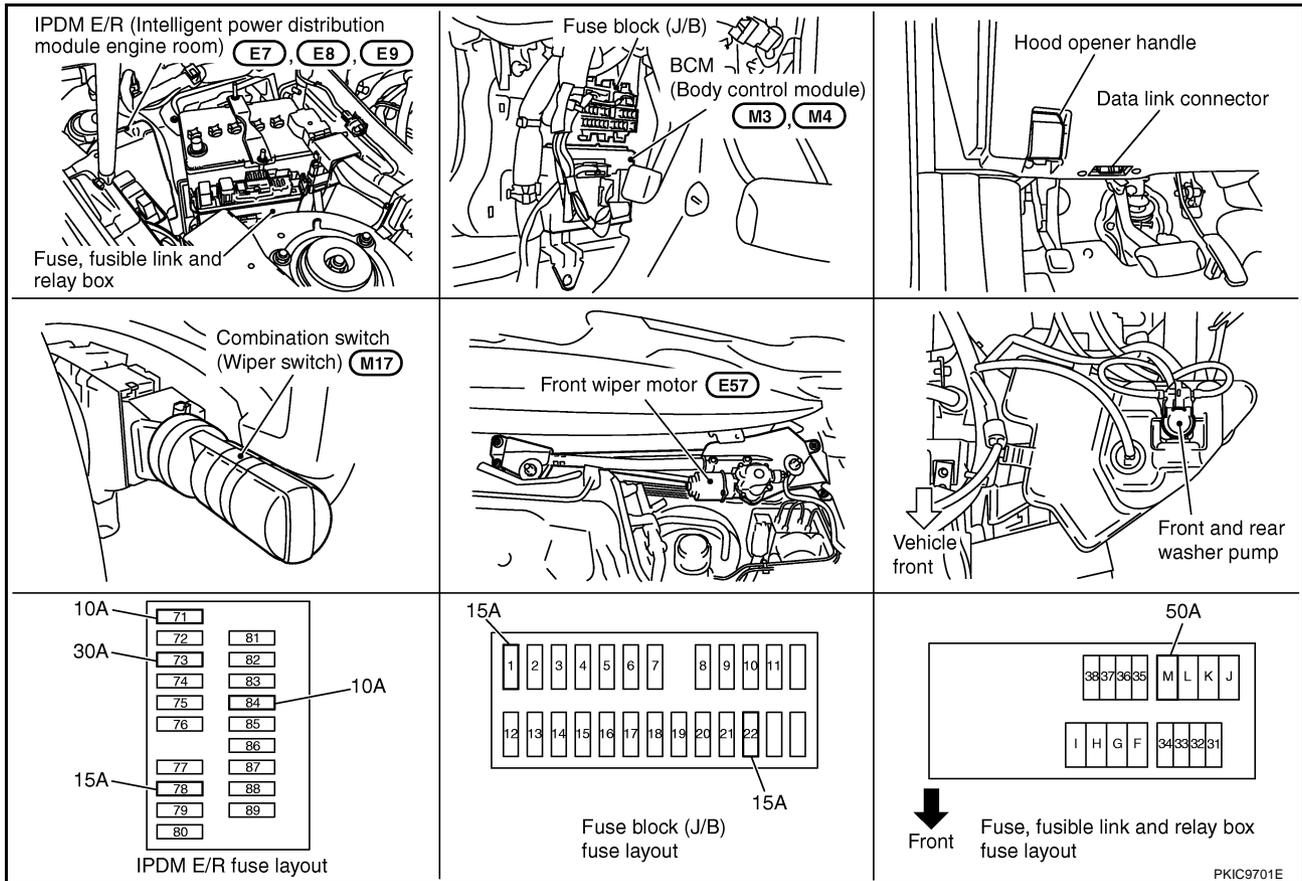
# FRONT WIPER AND WASHER SYSTEM

## FRONT WIPER AND WASHER SYSTEM

PFP:28810

### Components Parts and Harness Connector Location

NKS00326



### System Description

NKS00327

- All front wiper relays (HI, LO) are included in 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 wiper motor according to CAN communication signals from BCM.

### OUT LINE

Power is supplied at all times

- through 50 A fusible link (letter M, located in fuse, fusible link and relay box.)
- to BCM terminal 55,
- through 15 A fuse [No. 22, located in fuse block (J/B)]
- to BCM terminal 42,
- through 30 A fuse (No. 73, located in IPDM E/R)
- to front wiper relay, located in IPDM E/R,
- through 15 A fuse (No. 78, located in IPDM E/R) and
- through 10 A fuse (No. 71, located in IPDM E/R)
- to CPU located in IPDM E/R.

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

- to ignition relay located in IPDM E/R, from battery direct,
- through 15 A fuse [No. 1, located in fuse block (J/B)]
- to BCM terminal 38,
- through ignition relay, located in IPDM E/R

# FRONT WIPER AND WASHER SYSTEM

- to front wiper relay, located in IPDM E/R
- to front wiper high relay, located in IPDM E/R and
- to CPU located in IPDM E/R,
- through 10 A fuse (No. 84, located in IPDM E/R)
- through IPDM E/R terminal 44
- to combination switch terminal 14.

Ground is supplied

- to BCM terminals 49 and 52
- through grounds M35, M45 and M85,
- to IPDM E/R terminals 38 and 60
- through grounds E21, E50 and E51,
- to combination switch terminal 12
- through grounds M35, M45 and M85.

## LOW SPEED WIPER OPERATION

When wiper switch is in LOW position, BCM detects low speed wiper ON signal by BCM wiper switch reading function.

BCM sends front wiper request signal (LO) with CAN communication line

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

When IPDM E/R receives front wiper request signal (LO), it turns ON front wiper relay located in IPDM E/R, power is supplied

- to front wiper motor terminal 1
- through IPDM E/R terminal 21 and front wiper relay and front wiper high relay.

Ground is supplied

- to front wiper motor terminal 2
- through grounds E21, E50 and E51.

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

## HI SPEED WIPER OPERATION

When wiper switch is in HI position, BCM detects high speed wiper ON signal by BCM wiper switch reading function.

BCM sends front wiper request signal (HI) with CAN communication line

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

When IPDM E/R receives front wiper request signal (HI), it turns ON front wiper relay (located in IPDM E/R), power is supplied

- to front wiper motor terminal 4
- through IPDM E/R terminal 31 and front wiper relay and front wiper high relay.

Ground is supplied

- to front wiper motor terminal 2
- through grounds E21, E50 and E51.

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

## INTERMITTENT OPERATION

Front wiper intermittent operation delay interval is determined from a combination of 3 switches (intermittent operation dial position 1, 2, and 3) and vehicle speed signal.

Speed dependent wiper controlled mode can be changed by the function setting of CONSULT-II or display.

During each intermittent operation delay interval, BCM sends front wiper request signal to IPDM E/R.

A

B

C

D

E

F

G

H

I

J

WW

L

M

# FRONT WIPER AND WASHER SYSTEM

## Wiper Dial Position Setting

Wiper intermittent dial position	Intermittent operation interval	Combination switch		
		INT VOLUME 1	INT VOLUME 2	INT VOLUME 3
1	Short  ↑ ↓  Long	ON	ON	ON
2		ON	ON	OFF
3		ON	OFF	OFF
4		OFF	OFF	OFF
5		OFF	OFF	ON
6		OFF	ON	ON
7		OFF	ON	OFF

Example: For wiper intermittent dial position 1

Using combination switch reading function, BCM detects ON/OFF status of INT VOLUME 1, 2, and 3.

When combination switch status is as listed below, BCM determines that it is wiper intermittent dial position 1.

- INT VOLUME 1: ON (Continuity exists between combination switch output 3 and input 1.)
- INT VOLUME 2: ON (Continuity exists between combination switch output 5 and input 1.)
- INT VOLUME 3: ON (Continuity exists between combination switch output 4 and input 2.)

BCM determines front wiper intermittent operation delay interval from wiper intermittent dial position 1 and vehicle speed, and sends wiper request signal (INT) to IPDM E/R.

### AUTO STOP OPERATION

With wiper switch turned OFF, wiper motor will continue to operate until wiper arms reach windshield base.

When wiper arms are not located at base of windshield with wiper switch OFF, ground is provided

- from IPDM E/R terminal 21
- to front wiper motor terminal 1, in order to continue wiper motor operation at low speed.

When wiper arms reach base of windshield, front wiper motor terminals 5 and 2 are connected, and Ground is supplied

- to IPDM E/R terminal 32
- through front wiper motor terminals 5 and 2
- through grounds E21, E50 and E51.

Then the IPDM E/R sends auto stop operation signal to BCM with CAN communication line.

When the BCM receives auto-stop operation signal, BCM sends wiper stop signal to IPDM E/R with CAN communication line.

IPDM E/R stops wiper motor. Wiper motor will then stop wiper arms at the STOP position.

### WASHER OPERATION

When wiper switch is in front wiper washer position with ignition switch on, BCM detects front wiper switch is on the washer position by BCM wiper switch reading function (Refer to [WW-8, "COMBINATION SWITCH READING FUNCTION"](#) ), combination switch (wiper switch) ground is supplied

- to combination switch terminal 13
- through front and rear washer pump terminal 1
- to front and rear washer pump terminal 2
- through combination switch terminal 11
- to combination switch terminal 12
- through grounds M35, M45 and M85.

With ground supplied, front and rear washer pump is operated.

When BCM detects that front and rear washer pump has operated for 0.4 seconds or longer, BCM operates front wiper motor for low speed.

When BCM detects washer switch is OFF, low speed operation cycles approximately 2 times and stops.

### MIST OPERATION

When wiper switch is turned to 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"](#) .

# FRONT WIPER AND WASHER SYSTEM

---

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

## **FAIL-SAFE FUNCTION**

If an abnormality occurs in CAN communications, IPDM E/R holds the condition just before fail-safe status is initiated until ignition switch is turned OFF. (If wipers were operating in LO just before the initiation of fail-safe status, they continue to operate in LO until ignition switch is turned OFF.)

A

B

C

D

E

F

G

H

I

J

WW

L

M

# FRONT WIPER AND WASHER SYSTEM

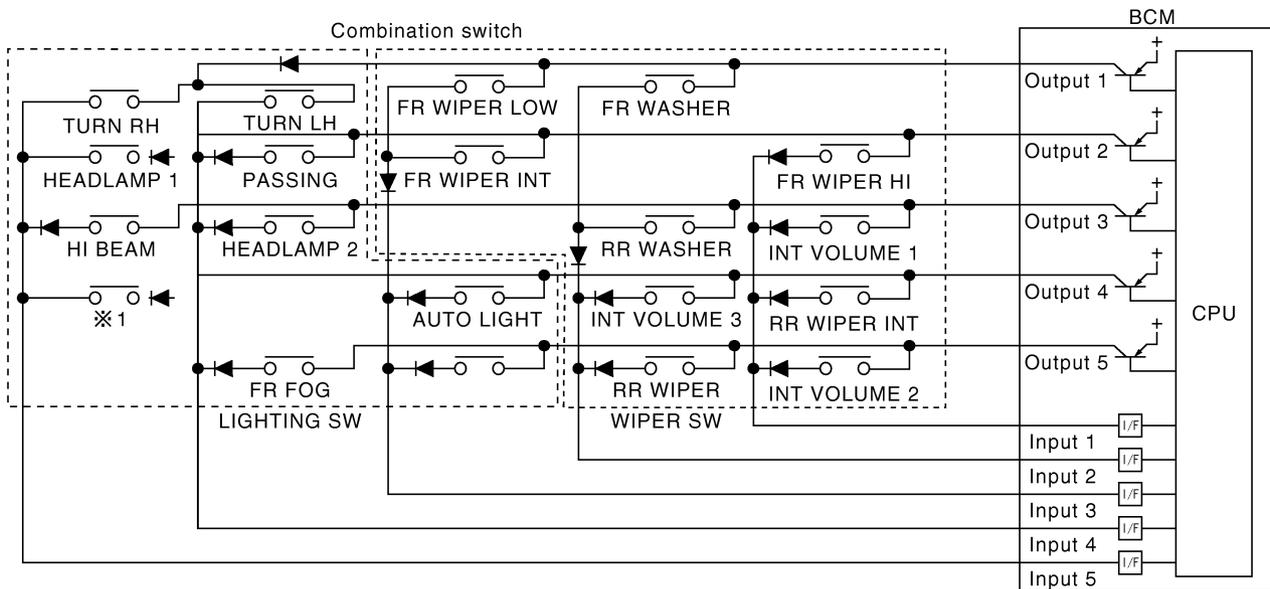
## COMBINATION SWITCH READING FUNCTION

### Description

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

### Operation Description

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



※ 1 : LIGHTING SWITCH 1ST POSITION

PKIC9702E

# FRONT WIPER AND WASHER SYSTEM

## BCM - Operation Table of Combination Switches

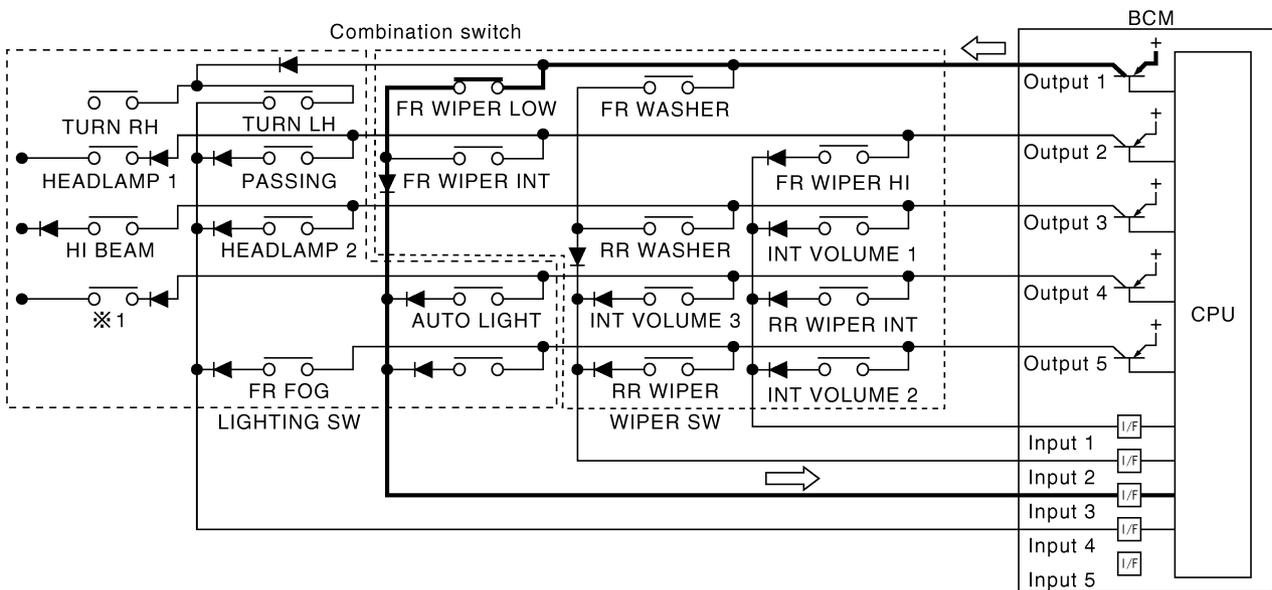
BCM reads operation status of combination switch using combinations shown in table below.

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

SKIA4959E

### Sample Operation: (When Wiper Switch Turned to LOW Position)

- When wiper switch is turned to LOW position, front wiper LOW contact in combination switch turns ON. At this time if OUTPUT 1 transistor is activated, BCM detects that voltage changes in INPUT 3.
- When BCM detects that voltage changes in INPUT 3 while OUTPUT 1 transistor is ON, it judges that front wiper switch is in LOW position. Then BCM sends front wiper request signal (LO) to IPDM E/R using CAN communication.
- If BCM detects that voltage changes in INPUT 3 when OUTPUT 1 transistor is activated again, it recognizes that wiper switch is still in LOW position.



※1 : LIGHTING SWITCH 1ST POSITION

PKIC9703E

# FRONT WIPER AND WASHER SYSTEM

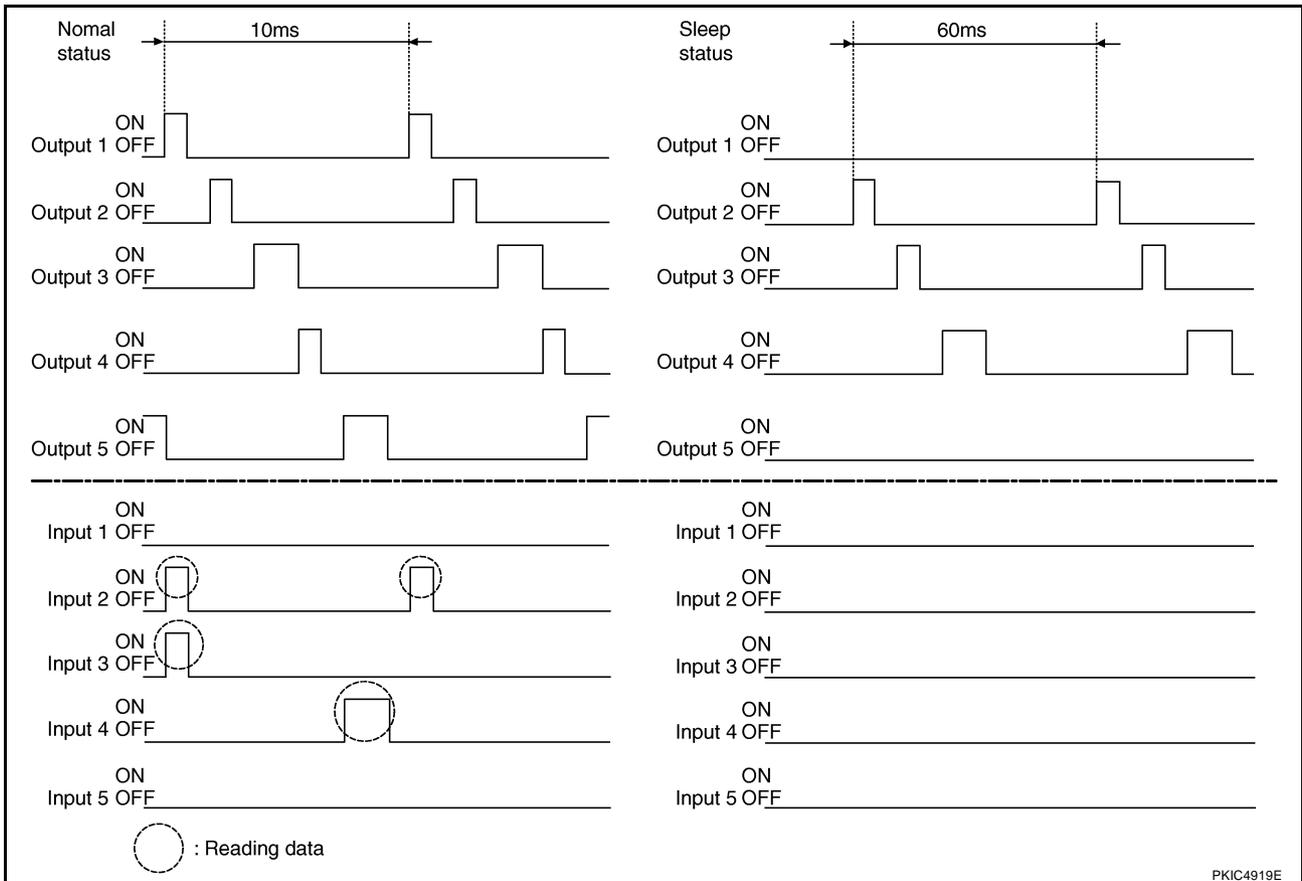
## NOTE:

Each OUTPUT terminal transistor is activated at 10 ms intervals. Therefore after switch is turned ON, electrical loads are activated with time delay. But this time delay is so short that it cannot be detected by human senses.

## Operation Mode

Combination switch reading function has operation modes shown below.

1. Normal status
  - When BCM is not in sleep status, OUTPUT terminals (1-5) each turn ON-OFF every 10 ms.
2. Sleep status
  - When BCM is in sleep status, transistors of OUTPUT 1 and 5 stop the output, and BCM enters low power mode. Mean while OUTPUT 2, 3, and 4 send out ON signal every 60 ms, and accept input from lighting switch system.



## CAN Communication System Description

NKS00328

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

## CAN Communication Unit

NKS00329

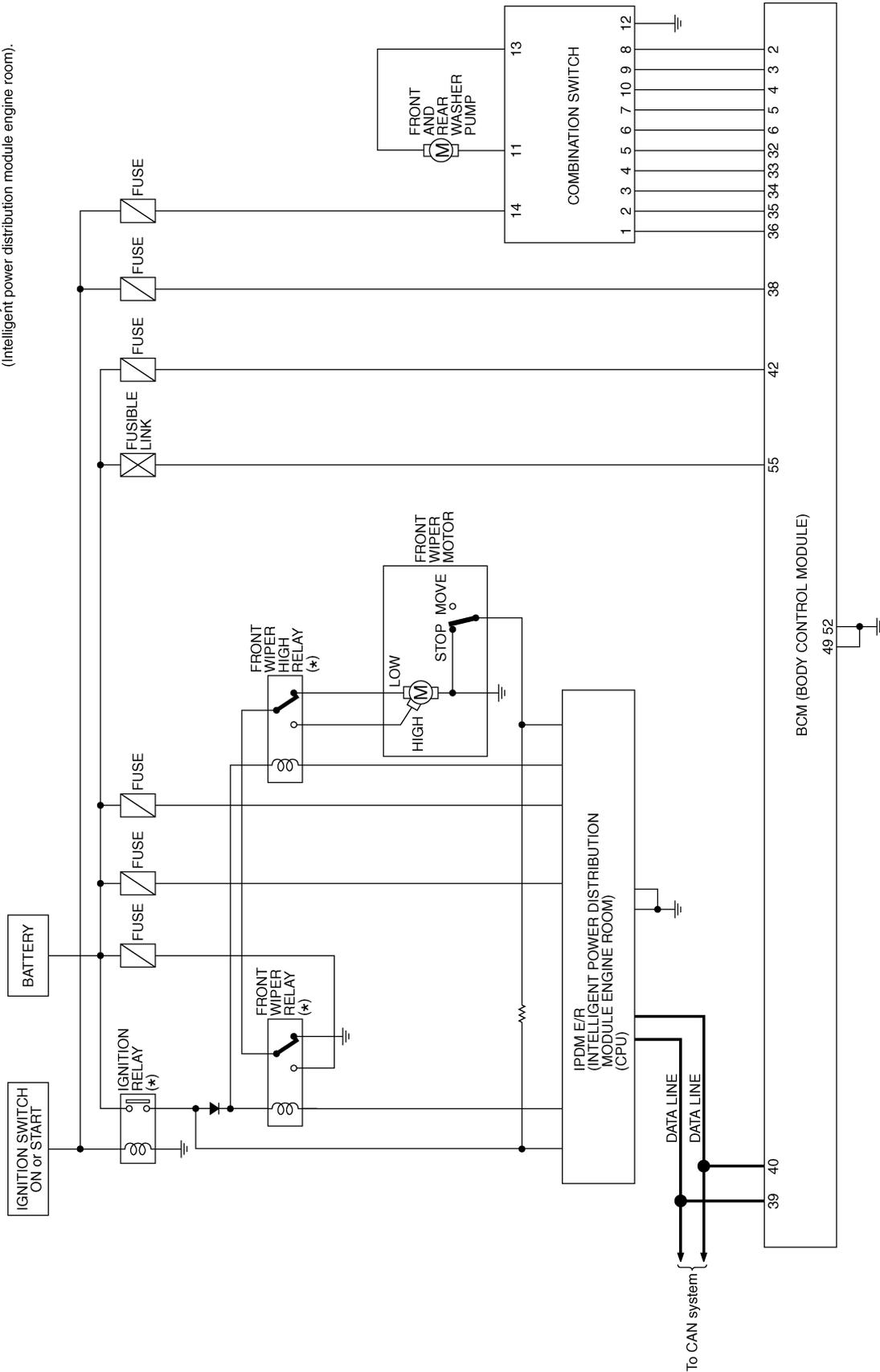
Refer to [LAN-32, "CAN Communication Unit"](#) .

# FRONT WIPER AND WASHER SYSTEM

## Schematic

NKS0032A

\* : This relay is built into the IPDM E/R  
(Intelligent power distribution module engine room).



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

WW

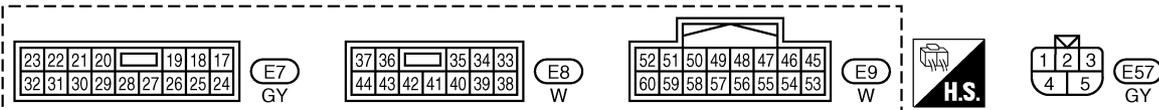
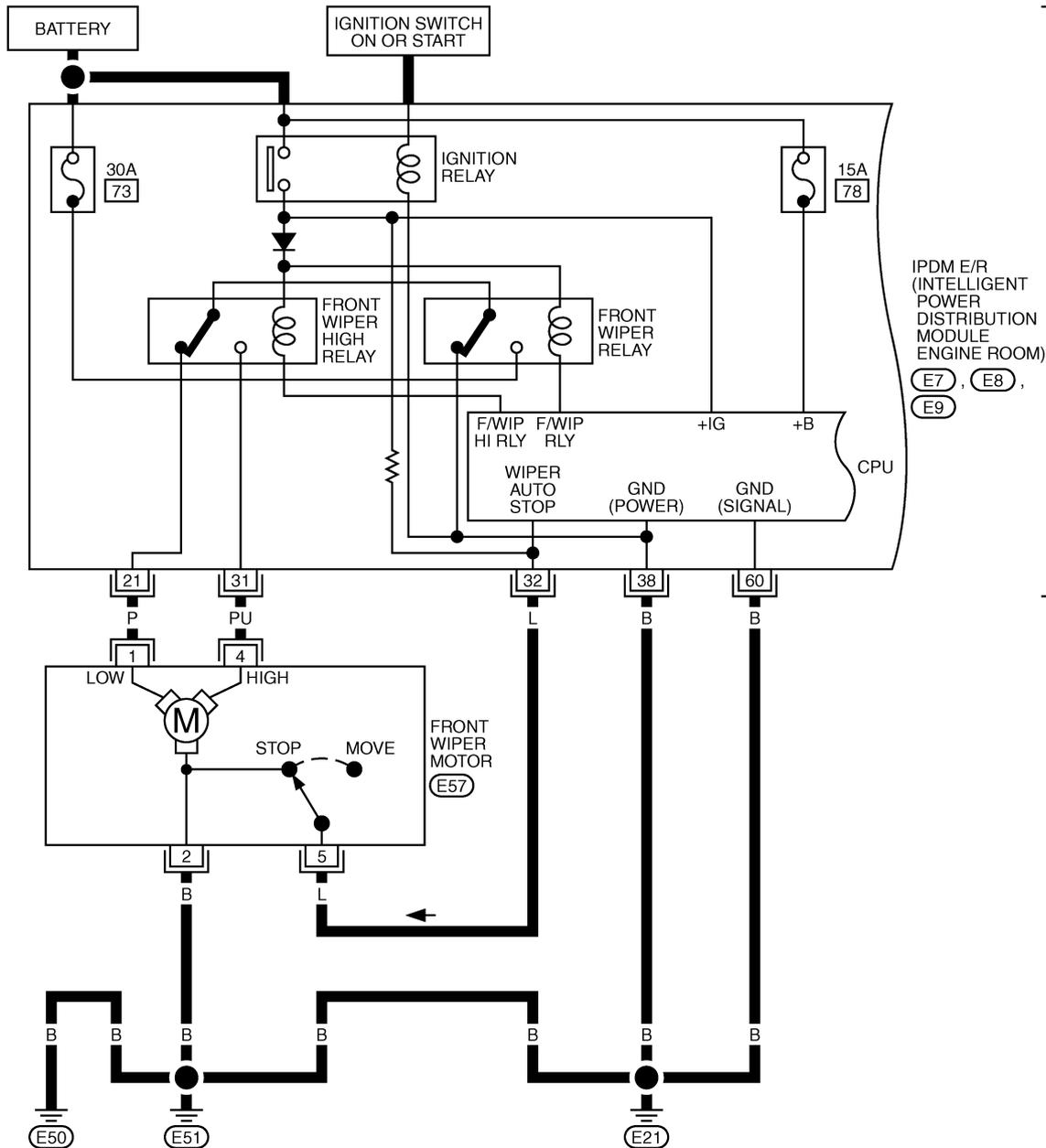
TKWM4373E

# FRONT WIPER AND WASHER SYSTEM

## Wiring Diagram — WIPER —

NKS0032B

WW-WIPER-01



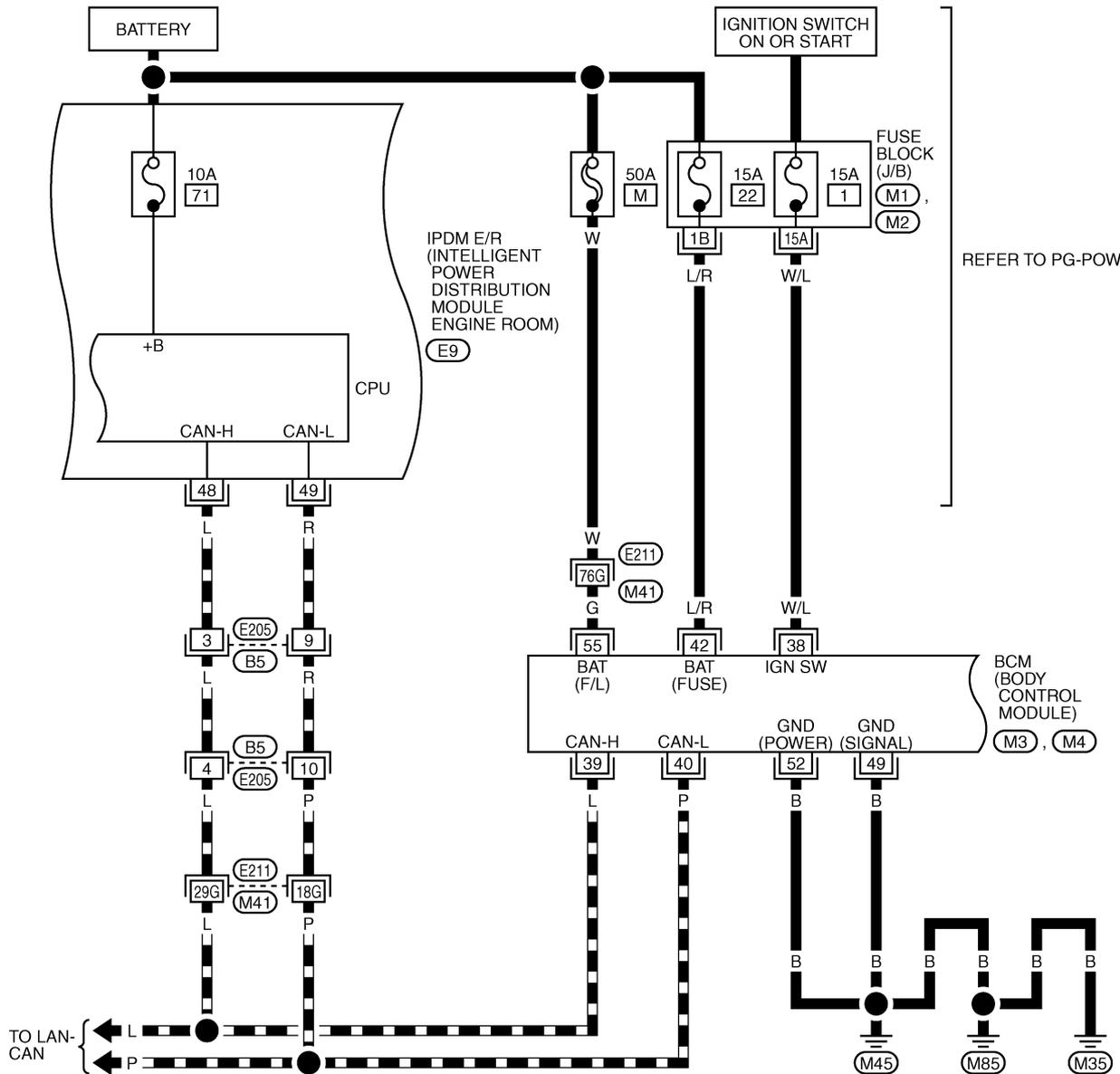
TKWM0663E

# FRONT WIPER AND WASHER SYSTEM

## WW-WIPER-02

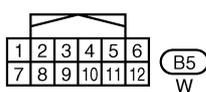
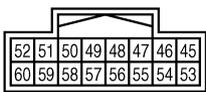
A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M

▬ : DATA LINE



REFER TO PG-POWER.

WW



REFER TO THE FOLLOWING.

- (E21) -SUPER MULTIPLE JUNCTION (SMJ)
- (M1) , (M2) -FUSE BLOCK-JUNCTION BOX (J/B)
- (M3) , (M4) -ELECTRICAL UNITS

TKWM4374E



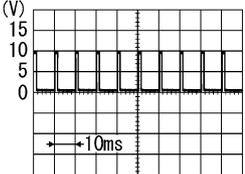
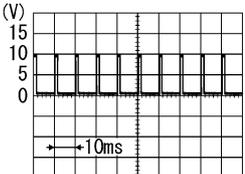
# FRONT WIPER AND WASHER SYSTEM

## Terminals and Reference Values for BCM

NKS0032C

**CAUTION:**

- Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.
- Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to [LT-119, "DATA MONITOR"](#) .

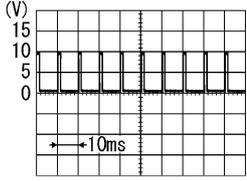
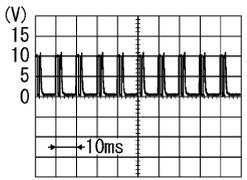
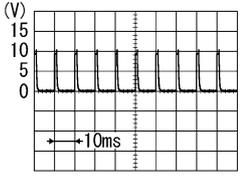
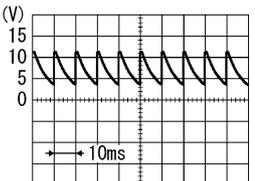
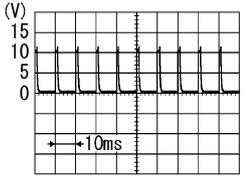
Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
4	PU/W	Combination switch input 3	ON	OFF	Approx. 0 V
				Lighting, turn, wiper switch (Wiper intermittent dial position 4) Any of the conditions below ● Front wiper switch MIST ● Front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

A  
B  
C  
D  
E  
F  
G  
H  
I  
J

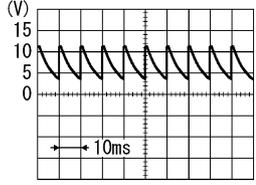
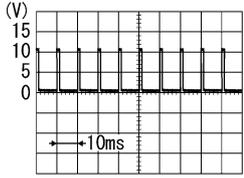
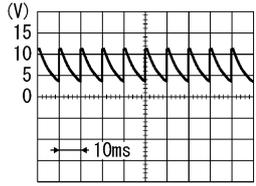
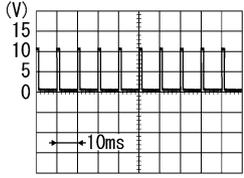
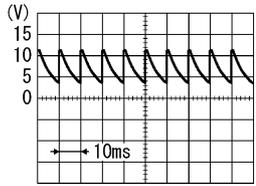
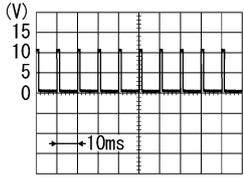
WW

L  
M

# FRONT WIPER AND WASHER SYSTEM

Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
6	SB	Combination switch input 1	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)  Approx. 0 V
					Any of the conditions below <ul style="list-style-type: none"> <li>● Front wiper switch HI (Wiper intermittent dial position 4)</li> <li>● Wiper intermittent dial position 3</li> </ul>  PKIB4959J Approx. 1.0 V
					Any of the conditions below <ul style="list-style-type: none"> <li>● Wiper intermittent dial position 1</li> <li>● Wiper intermittent dial position 2</li> </ul>  PKIB4952J Approx. 1.7 V
					Any of the conditions below <ul style="list-style-type: none"> <li>● Wiper intermittent dial position 6</li> <li>● Wiper intermittent dial position 7</li> </ul>  PKIB4955J Approx. 0.8 V
32	GY/R	Combination switch output 5	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)   PKIB4960J Approx. 7.2 V
					Any of the conditions below <ul style="list-style-type: none"> <li>● Wiper intermittent dial position 1</li> <li>● Wiper intermittent dial position 2</li> <li>● Wiper intermittent dial position 6</li> <li>● Wiper intermittent dial position 7</li> </ul>  PKIB4956J Approx. 1.0 V

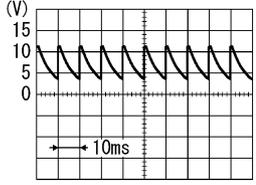
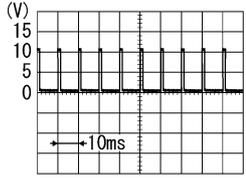
# FRONT WIPER AND WASHER SYSTEM

Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
33	G	Combination switch output 4	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)  <p style="text-align: right;">PKIB4960J</p> <p style="text-align: center;">Approx. 7.2 V</p>
					Any of the conditions below <ul style="list-style-type: none"> <li>● Wiper intermittent dial position 1</li> <li>● Wiper intermittent dial position 5</li> <li>● Wiper intermittent dial position 6</li> </ul>  <p style="text-align: right;">PKIB4958J</p> <p style="text-align: center;">Approx. 1.2 V</p>
34	W/B	Combination switch output 3	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)  <p style="text-align: right;">PKIB4960J</p> <p style="text-align: center;">Approx. 7.2 V</p>
					Any of the conditions below <ul style="list-style-type: none"> <li>● Wiper intermittent dial position 1</li> <li>● Wiper intermittent dial position 2</li> <li>● Wiper intermittent dial position 3</li> </ul>  <p style="text-align: right;">PKIB4958J</p> <p style="text-align: center;">Approx. 1.2 V</p>
35	W/G	Combination switch output 2	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF  <p style="text-align: right;">PKIB4960J</p> <p style="text-align: center;">Approx. 7.2 V</p>
					Any of the conditions below <ul style="list-style-type: none"> <li>● Front wiper switch INT</li> <li>● Front wiper switch HI</li> </ul>  <p style="text-align: right;">PKIB4958J</p> <p style="text-align: center;">Approx. 1.2 V</p>

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M



# FRONT WIPER AND WASHER SYSTEM

Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
36	W/R	Combination switch output 1	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	 <p style="text-align: right;">PKIB4960J</p> <p style="text-align: center;">Approx. 7.2 V</p>
				OFF	<p>Any of the conditions below</p> <ul style="list-style-type: none"> <li>● Front wiper switch MIST</li> <li>● Front wiper switch LO</li> <li>● Front washer switch</li> </ul>  <p style="text-align: right;">PKIB4958J</p> <p style="text-align: center;">Approx. 1.2 V</p>
38	W/L	Ignition switch (ON)	ON	—	Battery voltage
39	L	CAN - H	—	—	—
40	P	CAN - L	—	—	—
42	L/R	Battery power supply	OFF	—	Battery voltage
49	B	Ground	ON	—	Approx. 0 V
52	B	Ground	ON	—	Approx. 0 V
55	G	Battery power supply	OFF	—	Battery voltage

## Terminals and Reference Values for IPDM E/R

NKS0032D

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

# FRONT WIPER AND WASHER SYSTEM

## How to Proceed With Trouble Diagnosis

NKS0032E

1. Confirm the symptoms and customer complaint.
2. Understand operation description and function description. Refer to [WW-4, "System Description"](#) .
3. Perform the Preliminary Check. Refer to [WW-19, "Preliminary Check"](#) .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the front wiper and washer operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

## Preliminary Check

NKS0032F

### CHECK POWER SUPPLY AND GROUND CIRCUIT

#### 1. CHECK FUSE

Check for blown fuses.

Unit	Power source	Fuse and fusible link No.
Front washer pump	Ignition switch ON or START	84
Front wiper motor, front wiper relay, front wiper HI relay	Battery	73
BCM	Battery	M
		22
	Ignition switch ON or START	1

Refer to [WW-12, "Wiring Diagram — WIPER —"](#) .

OK or NG

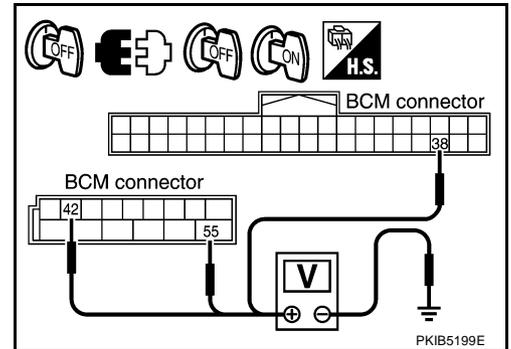
OK >> GO TO 2

NG >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse, Refer to [PG-3, "POWER SUPPLY ROUTING CIRCUIT"](#) .

#### 2. CHECK POWER SUPPLY CIRCUIT

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

(+)		(-)	Ignition switch position	
BCM connector	Terminal		OFF	ON
M3	38	Ground	Approx. 0 V	Battery voltage
			Battery voltage	Battery voltage
M4	42		Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

#### 3. CHECK GROUND CIRCUIT

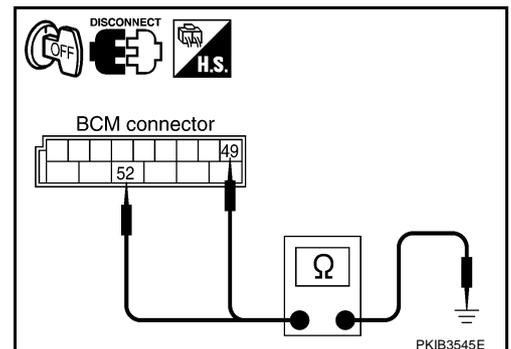
Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M4	49		Ground
	52		

OK or NG

OK >> INSPECTION END

NG >> Repair harness or connector.



# FRONT WIPER AND WASHER SYSTEM

## CONSULT-II Functions (BCM)

NKS0032G

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

BCM diagnosis position	Diagnosis mode	Description
WIPER	WORK SUPPORT	Changes the setting for each function.
	DATA MONITOR	Displays BCM input data in real time.
	ACTIVE TEST	Device operation can be checked by applying a drive signal to device.
BCM	SELF-DIAG RESULTS	BCM performs self-diagnosis of CAN communication.
	CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.

## CONSULT-II BASIC OPERATION

Refer to [GI-38, "CONSULT-II Start Procedure"](#) .

### WORK SUPPORT

#### Operation Procedure

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

#### Display Item List

Item	Description	CONSULT-II	Factory setting
WIPER SPEED SETTING	Vehicle speed sousing type wiper control mode can be changed in this mode. Vehicle speed sousing type wiper control mode between two ON/OFF.	ON	×
		OFF	—

## 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 signals.
SELECTION FROM MENU	Selects items and monitors them.

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

#### Display Item List

Monitor item	Contents
IGN ON SW "ON/OFF"	Displays "ignition switch ON (ON)/Other OFF or ACC (OFF)" status as judged from ignition switch signal.
IGN SW CAN "ON/OFF"	Displays "ignition switch ON (ON)/Other OFF or ACC (OFF)" status as judged from CAN communication signal.
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.

# FRONT WIPER AND WASHER SYSTEM

Monitor item	Contents
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 auto-stop signal.
VEHICLE SPEED "km/h"	Displays vehicle speed status as judged from vehicle speed signal.
RR WIPER ON "ON/OFF"	Displays "Rear Wiper ON (ON)/Other (OFF)" status as judged from wiper switch signal.
RR WIPER INT "ON/OFF"	Displays "Rear Wiper INT (ON)/Other (OFF)" status as judged from wiper switch signal.
RR WASHER SW "ON/OFF"	Displays "Rear Washer Switch (ON)/Other (OFF)" status as judged from wiper switch signal.
RR WIPER STOP "ON/OFF"	Displays "Rear Wiper Stop (ON)/Other (OFF)" status, as judged from wiper switch signal.
RR WIPER STP2 <sup>NOTE</sup> "OFF"	—
H/L WASH SW <sup>NOTE</sup> "OFF"	—

**NOTE:**

This item is displayed, but cannot be monitored.

## ACTIVE TEST

### Operation Procedure

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

### Display Item List

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

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M



# FRONT WIPER AND WASHER SYSTEM

## CONSULT-II Functions (IPDM E/R)

NKS0032H

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

Diagnosis Mode	Description
SELF-DIAG RESULTS	Refer to <a href="#">PG-19. "SELF-DIAG RESULTS"</a> .
DATA MONITOR	The input/output data of IPDM E/R is displayed in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	IPDM E/R sends a drive signal to electronic components to check their operation.

## CONSULT-II BASIC OPERATION

Refer to [GI-38. "CONSULT-II Start Procedure"](#) .

### DATA MONITOR

#### Operation Procedure

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

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

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

### All Signals, Main Signals, Selection From Menu

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

#### NOTE:

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

### ACTIVE TEST

#### Operation Procedure

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

Test item	CONSULT-II screen display	Description
Front wiper (HI, LO) output	FR WIPER	With a certain operation (OFF, HI ON, LO ON), front wiper relay (Lo, Hi) can be operated.

# FRONT WIPER AND WASHER SYSTEM

NKS00321

## Front Wiper Does Not Operate

### CAUTION:

- During IPDM E/R fail-safe control, front wipers may not operate. Refer to [PG-17, "CAN COMMUNICATION LINE CONTROL"](#) in "PG IPDM E/R" to make sure that it is not in fail-safe status.

### 1. ACTIVE TEST

Ⓜ With CONSULT-II

- Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
- Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
- Touch "LO" or "HI" screen.

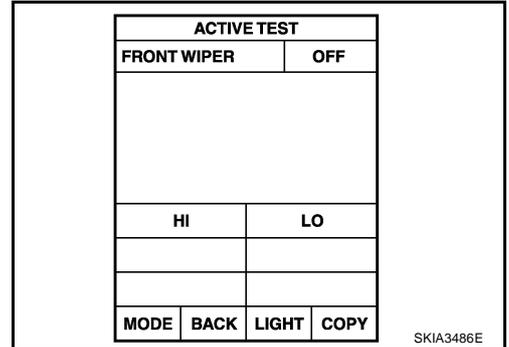
ⓧ Without CONSULT-II

Start up auto active test. Refer to [PG-21, "Auto Active Test"](#).

Does front wiper operate normally?

YES >> GO TO 5.

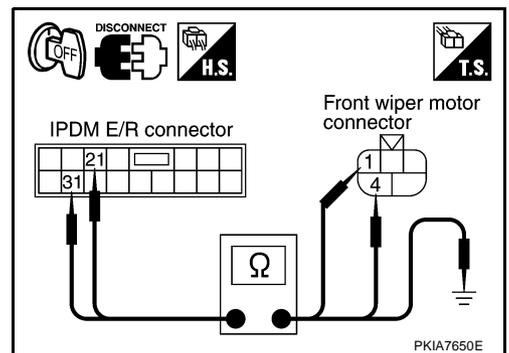
NO >> GO TO 2.



### 2. CHECK FRONT WIPER CIRCUIT

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

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E7	21	E57	1	Yes
	31		4	



- Check continuity between IPDM E/R harness connector terminal and Ground.

IPDM E/R connector	Terminal	Ground	Continuity
E7	21		Ground
	31		

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

### 3. CHECK GROUND CIRCUIT

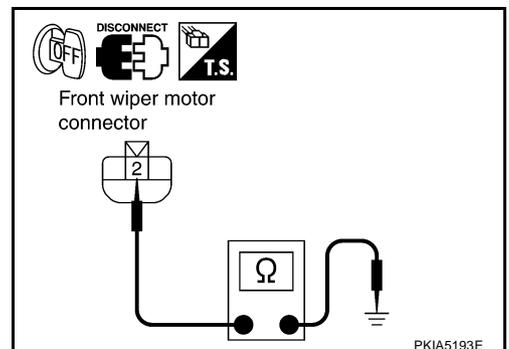
Check continuity between front wiper motor harness connector E57 terminal 2 and ground.

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

OK or NG

OK >> GO TO 4.

NG >> Repair harness or connector.

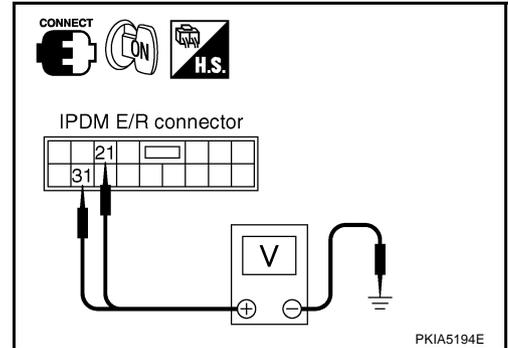


# FRONT WIPER AND WASHER SYSTEM

## 4. CHECK IPDM E/R

④ With CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
4. Touch "LO" or "HI" screen.
5. Check voltage between IPDM E/R harness connector and ground while front wiper (HI, LO) is operating.



(+)		(-)	Condition	Voltage
IPDM E/R connector	Terminal			
E7	21	Ground	Stopped	Approx. 0 V
			LO operation	Battery voltage
	31		Stopped	Approx. 0 V
			HI operation	Battery voltage

⊗ Without CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Start up auto active test. Refer to [PG-21, "Auto Active Test"](#).
3. Check voltage between IPDM E/R harness connector and ground while front wiper (HI, LO) is operating.

(+)		(-)	Condition	Voltage
IPDM E/R connector	Terminal			
E7	21	Ground	Stopped	Approx. 0 V
			LO operation	Battery voltage
	31		Stopped	Approx. 0 V
			HI operation	Battery voltage

OK or NG

- OK >> Replace front wiper motor.  
 NG >> Replace IPDM E/R.

## 5. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

④ With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "FR WIPER INT", "FR WIPER LOW", and "FR WIPER HI" turn ON-OFF according to wiper switch operation.

⊗ Without CONSULT-II

Refer to [LT-120, "Combination Switch Inspection"](#).

OK or NG

- OK >> GO TO 6.  
 NG >> Check combination switch (wiper switch). Refer to [LT-120, "Combination Switch Inspection"](#).

DATA MONITOR			
MONITOR			
IGN ON SW	ON		
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	COPE

# FRONT WIPER AND WASHER SYSTEM

## 6. CHECK CIRCUIT BETWEEN IPDM E/R AND BCM

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

### Displayed self-diagnosis results

NO DTC>>Replace BCM. Refer to [BCS-15, "Removal and Installation of BCM"](#) .

CAN COMM CIRCUIT>>Check CAN communication line of BCM. Refer to [BCS-14, "CAN Communication Inspection Using CONSULT-II \(Self-Diagnosis\)"](#) .

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

PKIA7627E

## Front Wiper Does Not Return to Stop Position

### 1. CHECK FRONT WIPER STOP SIGNAL

Ⓟ With CONSULT-II

Select "IPDM E/R" on CONSULT-II. With "DATA MONITOR", make sure that "WIP AUTO STOP" turns "ACT P" - "STOP P" linked with wiper operation.

ⓧ Without CONSULT-II

GO TO 2.

OK or NG

OK >> Replace IPDM E/R.

NG >> GO TO 2.

DATA MONITOR			
MONITOR			
WIP AUTO STOP	STOP P		
		RECORD	
MODE	BACK	LIGHT	COPY

PKIA7614E

### 2. CHECK IPDM E/R

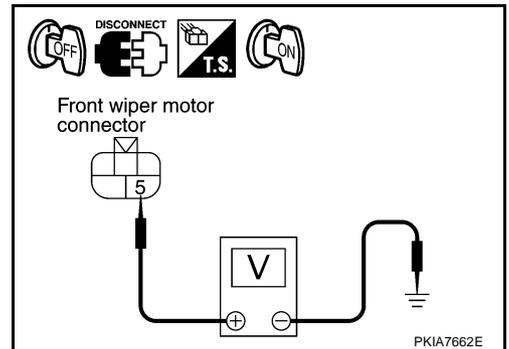
1. Turn ignition switch OFF.
2. Disconnect front wiper motor connector.
3. Turn ignition switch ON.
4. Check voltage between front wiper harness connector E57 terminal 5 and Ground.

**5 – Ground : Battery voltage.**

OK or NG

OK >> GO TO 4.

NG >> GO TO 3.



# FRONT WIPER AND WASHER SYSTEM

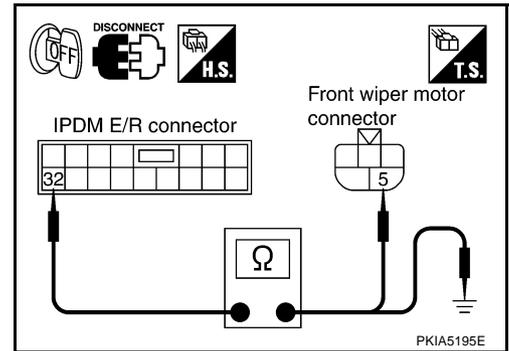
## 3. CHECK FRONT WIPER AUTO STOP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 32 and front wiper motor harness connector E57 terminal 5.

**32 – 5 : Continuity should exist.**

4. Check continuity between IPDM E/R harness connector E7 terminal 32 and Ground.

**32 – Ground : Continuity should not exist.**



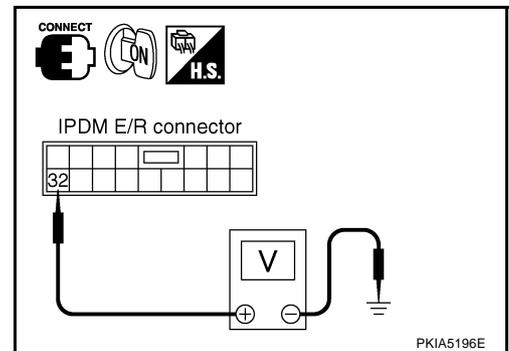
OK or NG

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

## 4. CHECK IPDM E/R

1. Connect IPDM E/R connector and front wiper motor connector.
2. Turn ignition switch ON.
3. Check voltage between IPDM E/R harness connector and ground while front wiper motor is stopped and while it is operating.

(+) IPDM E/R connector		Terminal	(-)	Condition	Voltage
E7	32				
		Ground	Wiper stopped	Approx. 0 V	
			Wiper operating	Battery voltage	



OK or NG

- OK >> Replace IPDM E/R.  
 NG >> Replace front wiper motor.

## Only Front Wiper Low Does Not Operate

NKS0032K

### 1. ACTIVE TEST

☑ With CONSULT-II

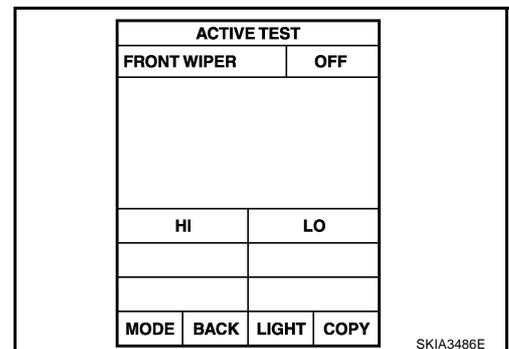
1. Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
3. Touch "LO" screen.

☒ Without CONSULT-II

Start up auto active test. Refer to [PG-21, "Auto Active Test"](#)

Does front wiper operate normally?

- YES >> Check combination switch (wiper switch). Refer to [LT-120, "Combination Switch Inspection"](#) .  
 NO >> GO TO 2.



SKIA3486E

# FRONT WIPER AND WASHER SYSTEM

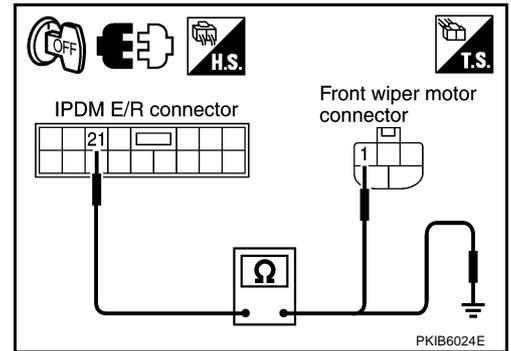
## 2. CHECK FRONT WIPER MOTOR CIRCUIT

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 E7 terminal 21 and front wiper motor harness E57 connector terminal 1.

**21 – 1 : Continuity should exist.**

4. Check continuity between IPDM E/R harness connector E7 terminal 21 and ground.

**21 – Ground : Continuity should not exist.**



OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

## 3. CHECK IPDM E/R

Ⓜ With CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
4. Touch "LO" screen.
5. Check voltage between IPDM E/R harness connector E7 terminal 21 and ground while front wiper LO is operating.

**21 – Ground : Battery voltage.**

ⓧ Without CONSULT-II

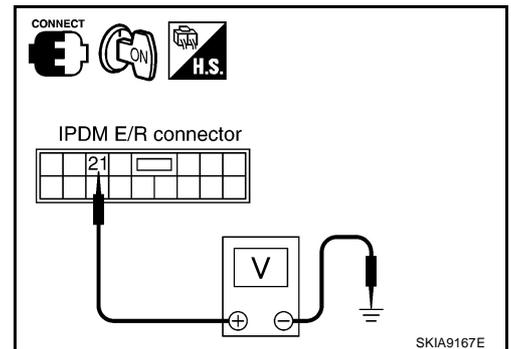
1. Connect IPDM E/R connector and front wiper motor connector.
2. Start up auto active test. Refer to [PG-21, "Auto Active Test"](#).
3. Check voltage between IPDM E/R harness connector E7 terminal 21 and ground while front wiper LO is operating.

**21 – Ground : Battery voltage.**

OK or NG

OK >> Replace front wiper motor.

NG >> Replace IPDM E/R.



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

WW

# FRONT WIPER AND WASHER SYSTEM

NKS0032L

## Only Front Wiper Hi Does Not Operate

### 1. ACTIVE TEST

☑ With CONSULT-II

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

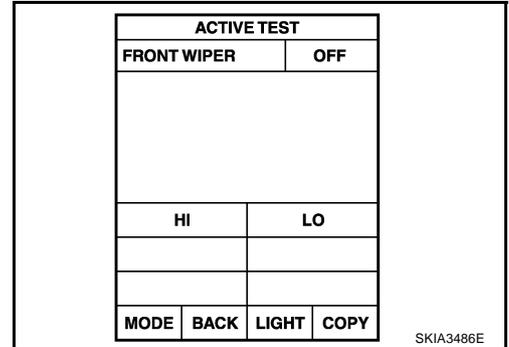
☒ Without CONSULT-II

Start up auto active test. Refer to [PG-21, "Auto Active Test"](#) .

Does front wiper operate normally?

YES >> Check combination switch (wiper switch). Refer to [LT-120, "Combination Switch Inspection"](#) .

NO >> GO TO 2.



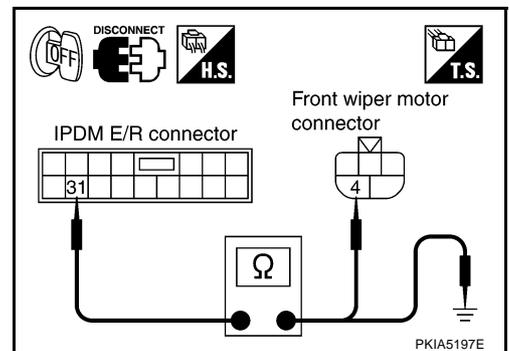
### 2. CHECK FRONT WIPER MOTOR CIRCUIT

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 E7 terminal 31 and front wiper motor harness E57 connector terminal 4.

**31 – 4 : Continuity should exist.**

4. Check continuity between IPDM E/R harness connector E7 terminal 31 and ground.

**31 – Ground : Continuity should not exist.**



OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

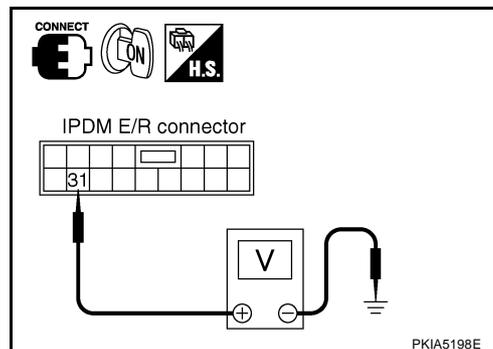
# FRONT WIPER AND WASHER SYSTEM

## 3. CHECK IPDM E/R

With CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
4. Touch "HI" screen.
5. Check voltage between IPDM E/R harness connector E7 terminal 31 and ground while front wiper HI is operating.

**31 – Ground : Battery voltage.**



Without CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Start up auto active test. Refer to [PG-21, "Auto Active Test"](#).
3. Check voltage between IPDM E/R harness connector E7 terminal 31 and ground while front wiper HI is operating.

**31 – Ground : Battery voltage.**

OK or NG

- OK >> Replace front wiper motor.  
 NG >> Replace IPDM E/R.

### Only Front Wiper Intermittent Does Not Operate

NKS0032M

#### 1. CHECK COMBINATION SWITCH

With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "FR WIPER INT", turn ON-OFF according to wiper switch operation.

DATA MONITOR	
MONITOR	
IGN ON SW	ON
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	COPE

PKIB0110E

Without CONSULT-II

Refer to [LT-120, "Combination Switch Inspection"](#).

OK or NG

- OK >> Replace BCM. Refer to [BCS-15, "Removal and Installation of BCM"](#).
- NG >> Check combination switch (wiper switch) Refer to [LT-120, "Combination Switch Inspection"](#).

### Front Wiper Interval Time Is Not Controlled by Vehicle Speed

NKS0032N

#### 1. CHECK FUNCTION OF COMBINATION METER

Confirm that speedometer operates normally.

Does front wiper operate normally?

- YES >> GO TO 2.  
 NO >> Combination meter vehicle speed system malfunction. Refer to [DI-19, "Vehicle Speed Signal Inspection"](#).

# FRONT WIPER AND WASHER SYSTEM

## 2. CHECK CAN COMMUNICATION BETWEEN BCM AND COMBINATION METER

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

### Displayed self-diagnosis results

NO DTC>>Replace BCM. Refer to [BCS-15, "Removal and Installation of BCM"](#) .

CAN COMM CIRCUIT>>Check CAN communication line of BCM. Refer to [BCS-14, "CAN Communication Inspection Using CONSULT-II \(Self-Diagnosis\)"](#) .

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

PKIA7627E

## Front Wiper Intermittent Operation Switch Position Cannot Be Adjusted

NKS00320

### 1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "INT VOLUME", changes in order form 1 to 7 according to wiper switch operation.

Without CONSULT-II

Refer to [LT-120, "Combination Switch Inspection"](#) .

#### OK or NG

OK >> Replace BCM. Refer to [BCS-15, "Removal and Installation of BCM"](#) .

NG >> Check combination switch (wiper switch). Refer to [LT-120, "Combination Switch Inspection"](#) .

DATA MONITOR			
MONITOR			
IGN ON SW	ON		
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	COPE

PKIB0110E

## Wiper Does Not Wipe When Front Washer Operates

NKS0032P

### 1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "FR WASHER SW" turn ON-OFF according to front wiper switch operation.

Without CONSULT-II

Refer to [LT-120, "Combination Switch Inspection"](#) .

#### OK or NG

OK >> Replace BCM Refer to [BCS-15, "Removal and Installation of BCM"](#) .

NG >> Check combination switch (wiper switch). Refer to [LT-120, "Combination Switch Inspection"](#) .

DATA MONITOR			
MONITOR			
IGN ON SW	ON		
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	COPE

PKIB0110E

# FRONT WIPER AND WASHER SYSTEM

## After Front Wiper Operate for 10 Seconds, They Stop for 20 Seconds, and After Repeating the Operations Five Times, They Become Inoperative

NKS0032Q

### 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 that front wipers are locked, and stops wiper output. That causes this symptom.
- This status can be checked by “DATA MONITOR” of “IPDM E/R” on which “WIPER PROTECTION” item shows “BLOCK”.

### 1. CHECK WIPER MOTOR SIGNAL

☑ With CONSULT-II

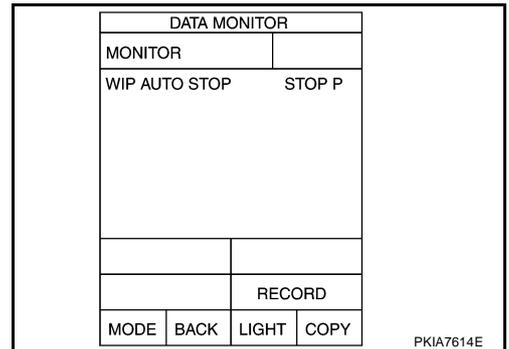
Select “IPDM E/R” by CONSULT-II. With “DATA MONITOR”, make sure that “WIP AUTO STOP” turns “ACT P” - “STOP P” linked with wiper operation.

☒ Without CONSULT-II

GO TO 2.

OK or NG

- OK >> Replace IPDM E/R.  
NG >> GO TO 2.



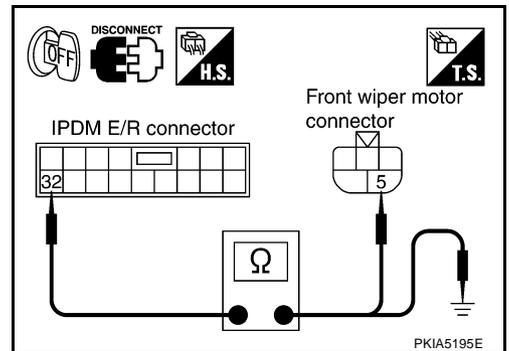
### 2. CHECK WIPER AUTO STOP CIRCUIT

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 E7 terminal 32 and front wiper motor harness connector E57 terminal 5.

**32 – 5 : Continuity should exist.**

4. Check continuity between IPDM E/R harness connector E7 terminal 32 and ground.

**32 – Ground : Continuity should not exist.**



OK or NG

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

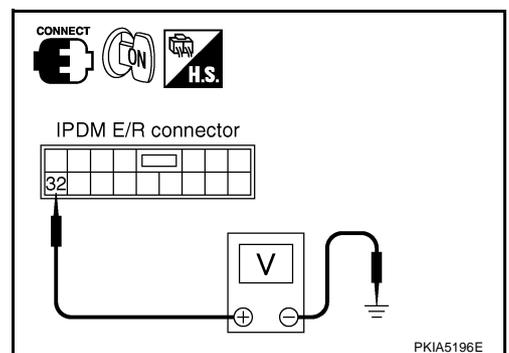
### 3. CHECK FRONT WIPER MOTOR

1. Connect IPDM E/R connector and front wiper connector.
2. Turn ignition switch ON.
3. Check voltage between IPDM E/R harness connector E7 terminal 32 and ground while front wiper motor is stopped and while it is operating.

(+)		(-)	Condition	Voltage
IPDM E/R connector	Terminal			
E7	32	Ground	Wiper stopped	Approx. 0 V
			Wiper operating	Battery voltage

OK or NG

- OK >> Replace IPDM E/R.  
NG >> Replace front wiper motor.



# FRONT WIPER AND WASHER SYSTEM

## Front Wiper Does Not Stop

NKS0032R

### 1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

① With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "FR WIPER INT", "FR WIPER LOW", "FR WIPER HI", and "FR WASHER SW" turn ON-OFF according to front wiper switch operation.

② Without CONSULT-II

Refer to [LT-120, "Combination Switch Inspection"](#).

OK or NG

OK >> Replace IPDM E/R.

NG >> Check combination switch (wiper switch). Refer to [LT-120, "Combination Switch Inspection"](#).

DATA MONITOR			
MONITOR			
IGN ON SW	ON		
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	COPE

PKIB0110E

# FRONT WIPER AND WASHER SYSTEM

## Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location

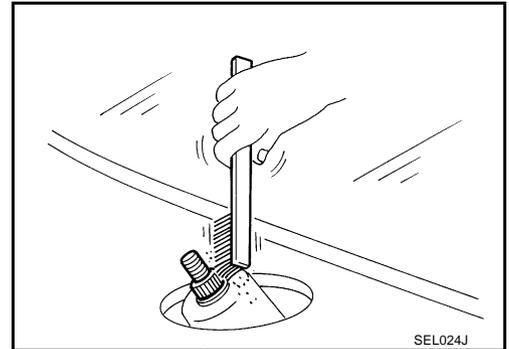
NKS0032S

### REMOVAL

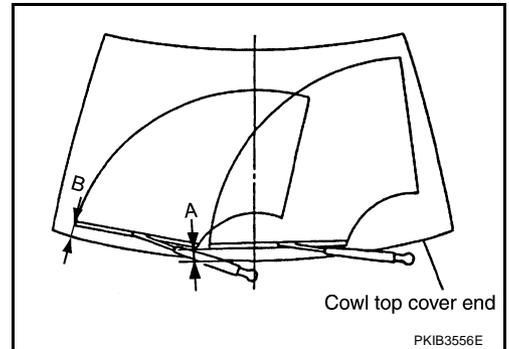
1. Operate wiper motor, and stop it at the auto stop position.
2. Remove washer tube from washer tube joint.
3. Remove wiper arm mounting nuts and wiper arm from vehicle.

### INSTALLATION

1. Clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.



2. Prior to wiper arm installation, turn on wiper switch to operate wiper motor and then turn it "OFF" (auto stop).
3. Push wiper arm onto pivot shaft, paying attention to blind spline.
4. Attach washer tube to washer tube joint.
5. Lift the blade up and then set it down onto glass surface to set the blade center to clearance "A" & "B" immediately before tightening nut.
6. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".
7. Ensure that wiper blades stop within clearance "A" & "B".



**Clearance "A" : 44.4 – 54.4 mm (1.75 – 2.14 in)**

**Clearance "B" : 38 – 48 mm (1.50 – 1.89 in)**

- Tighten wiper arm nuts to specified torque.

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

### ADJUSTMENT

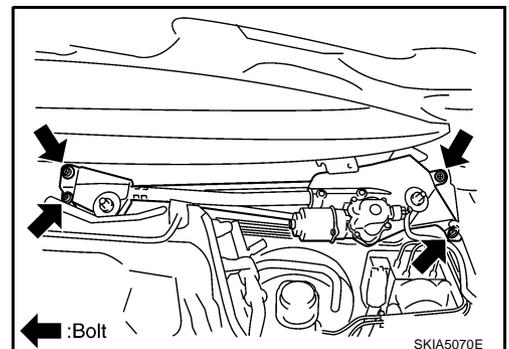
Refer to [WW-33, "INSTALLATION"](#) .

## Removal and Installation of Front Wiper Drive Assembly

NKS0032T

### REMOVAL

1. Prior to front wiper drive assembly removal, turn ON wiper switch to operate wiper motor and then turn it "OFF" (auto stop).
2. Remove wiper arm. Refer to [WW-33, "REMOVAL"](#) .
3. Remove cowl top cover. Refer to [EI-23, "COWL TOP"](#) .
4. Remove washer tube.
5. Disconnect wiper motor connector.
6. Remove front wiper drive assembly mounting bolts, and remove front wiper drive assembly.



### INSTALLATION

1. Install front wiper drive assembly to the vehicle.

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

WW

# FRONT WIPER AND WASHER SYSTEM

**Front wiper drive assembly mounting bolt**  : 4.5 N·m (0.46 kg-m, 40 in-lb)

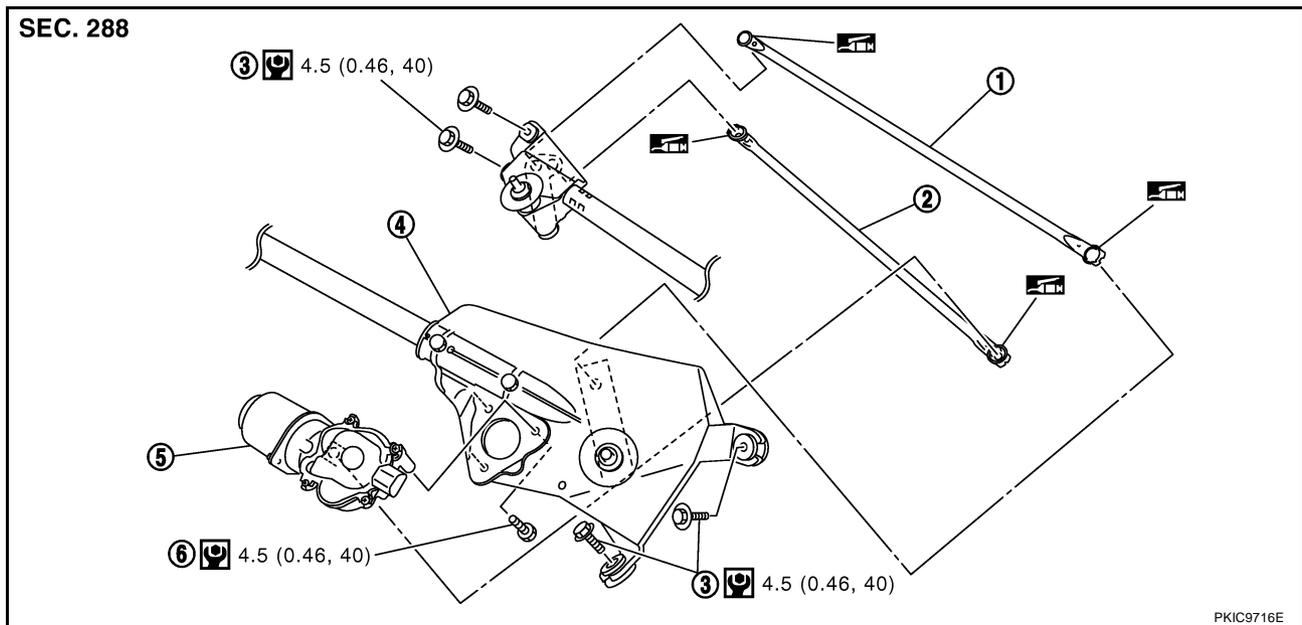
2. Connect wiper motor assembly to the connector. Turn wiper switch ON to operate wiper motor, then turn wiper switch OFF (auto stop).
3. Attach washer tube to washer tube joint.
4. Install cowl top cover. Refer to [EI-23, "COWL TOP"](#) .
5. Install wiper arms. Refer to [WW-33, "Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location"](#) .
6. Attach wiper arm washer tube.

## CAUTION:

- Never drop the wiper motor or cause it to contact other parts.
- Check grease conditions of the motor arm and wiper link joint (at retainer). Apply grease if necessary.

## Disassembly and Assembly of Front Wiper Drive Assembly

NKS0032U



- |                               |                 |                                    |
|-------------------------------|-----------------|------------------------------------|
| 1. Wiper link 2               | 2. Wiper link 1 | 3. Wiper motor frame mounting bolt |
| 4. Wiper motor mounting frame | 5. Wiper motor  | 6. Wiper motor mounting bolt       |

 N·m (kg-m, in-lb)

## DISASSEMBLY

1. Remove wiper link 1 and 2 from wiper motor mounting frame and wiper motor arm.
2. Remove wiper motor mounting bolts, and remove wiper motor from wiper motor mounting frame.

## ASSEMBLY

Assembly is the reverse order of disassembly.

## Washer Nozzle Adjustment

NKS0032V

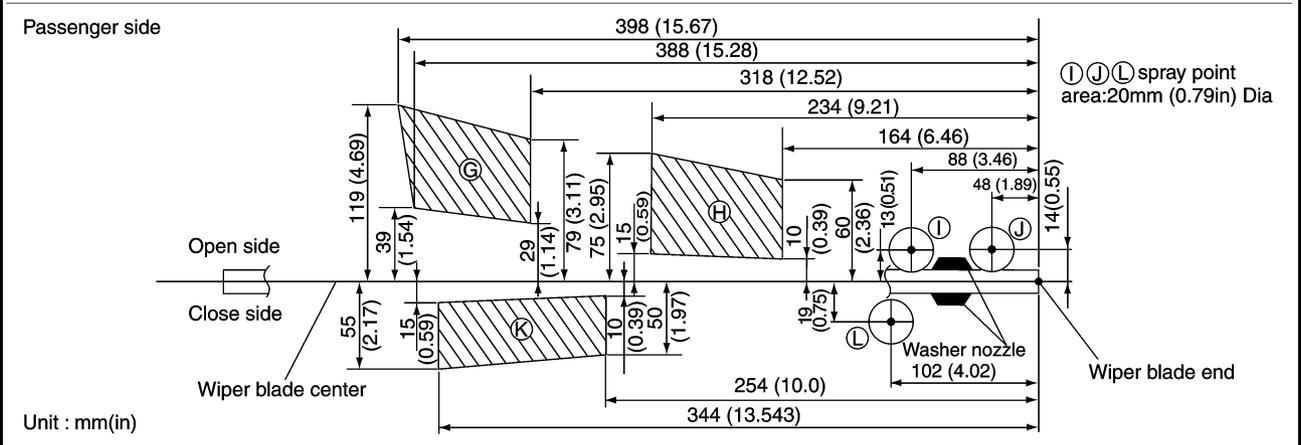
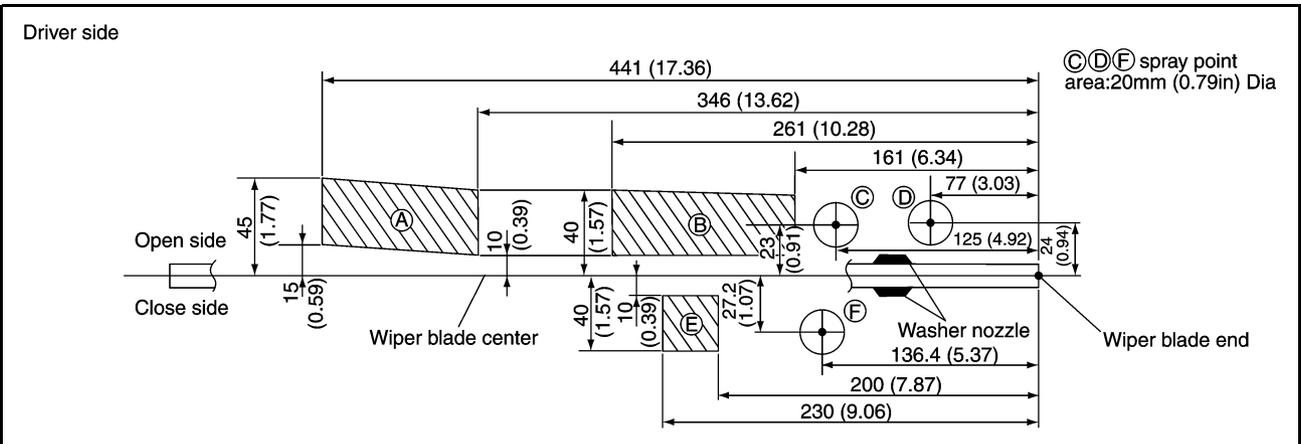
1. When wiper blade position is in auto stop condition, remove wiper motor connector to ensure wiper arms do not move.
2. Adjust each nozzle position (A, B, E, G, H, and K) so that spray positions are in the range of shaded parts.

## CAUTION:

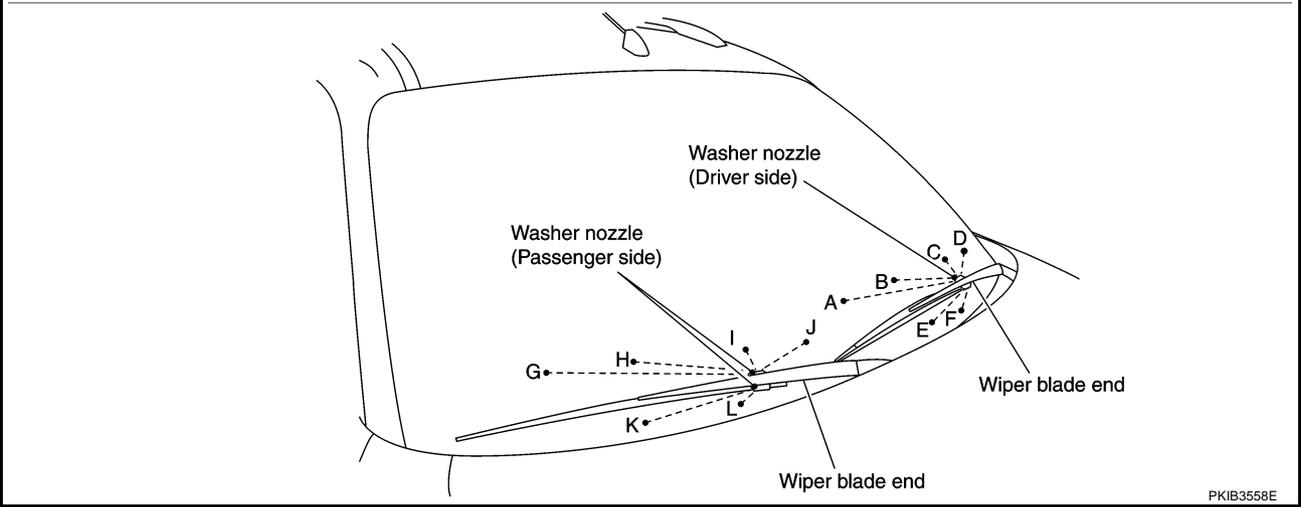
**Only washer nozzles (A, B, E, G, H, and K) can be adjusted. Washer nozzles (C, D, F, I, J, and L) cannot be adjusted because of fixed nozzles.**

# FRONT WIPER AND WASHER SYSTEM

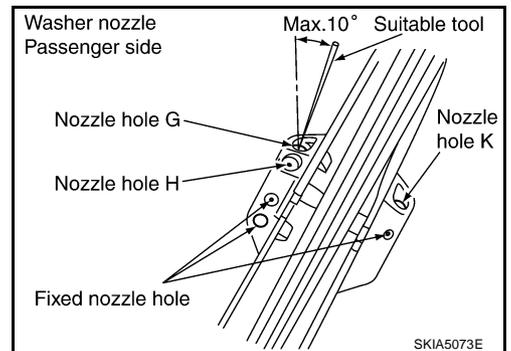
A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M



Unit : mm(in)



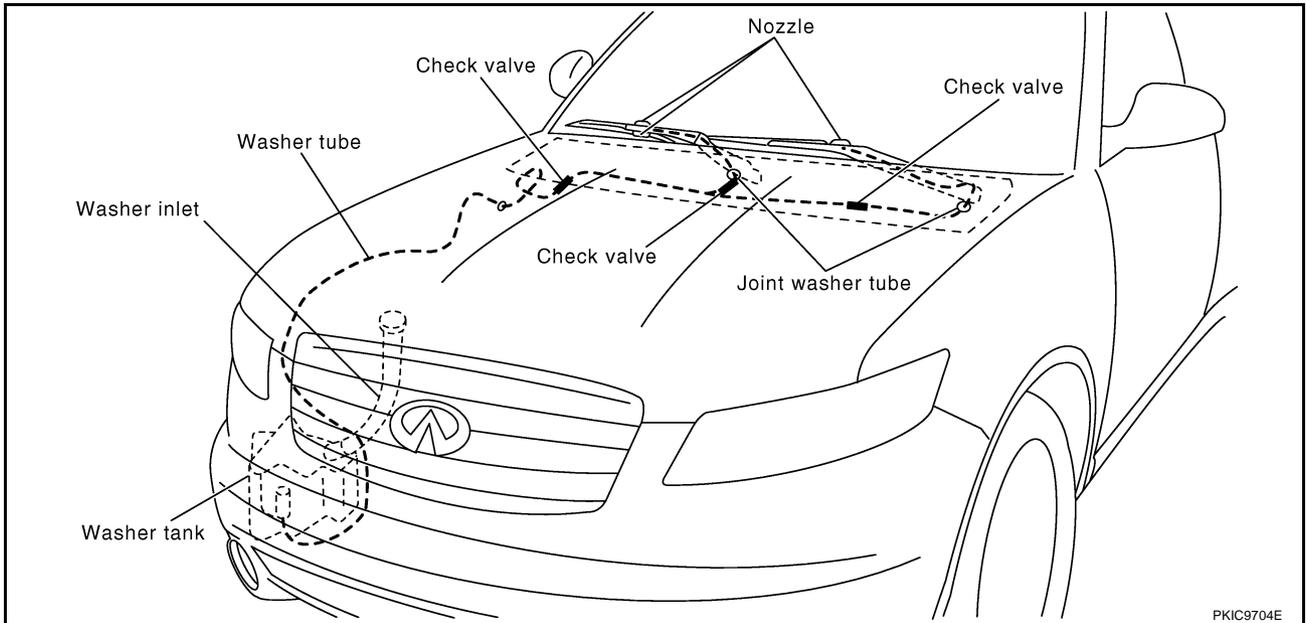
WW



# FRONT WIPER AND WASHER SYSTEM

## Washer Tube Layout

NKS0032W



## Removal and Installation of Front Washer Nozzle

NKS0032X

Replace wiper arm assembly. Refer to [WW-33, "Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location"](#) .

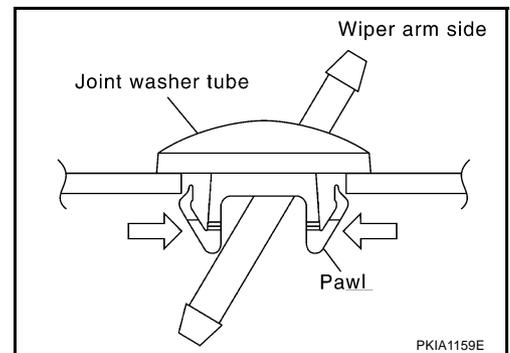
### CAUTION:

Removal/installation of the washer nozzle as a unit must not be done.

## Removal and Installation of Front Washer Tube Joint

NKS0032Y

- REMOVAL**
1. Remove upwards while pressing the pawls on reverse side.
  2. Remove washer tube.



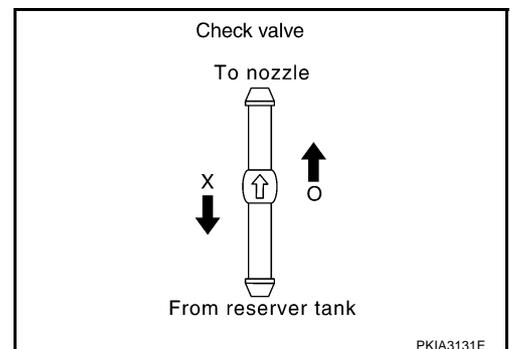
## INSTALLATION

Installation is the reverse order of removal.

## Inspection of Washer Nozzle

NKS0032Z

**CHECK VALVE**  
Blow air in the injection direction, and make sure air flows only one way. Make sure that the reverse direction (inhale) is not possible.



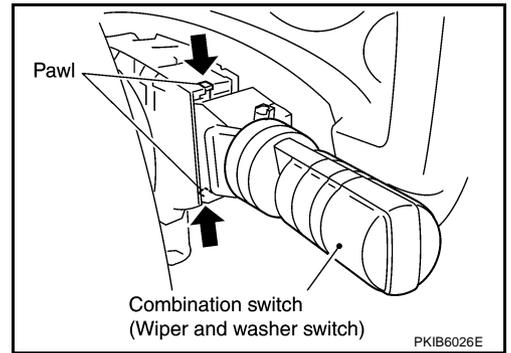
# FRONT WIPER AND WASHER SYSTEM

## Removal and Installation of Front Wiper and Washer Switch

NKS00330

### REMOVAL

1. Remove steering column upper cover. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Disconnect wiper and washer switch connector.
3. Pull wiper and washer switch toward the passenger door while pressing pawls in direction shown by the arrow in the figure, and remove it from the base.



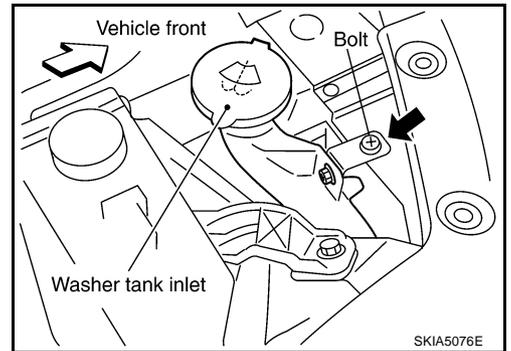
### INSTALLATION

Installation is the reverse order of removal.

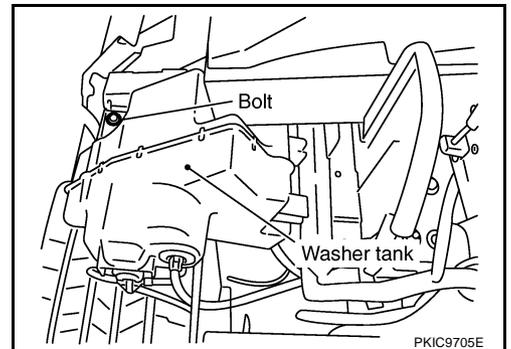
## Removal and Installation of Washer Tank

### REMOVAL

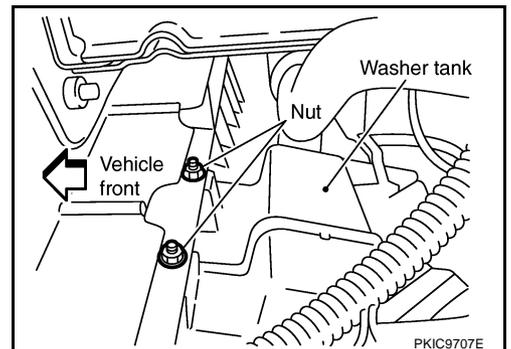
1. Remove bolt and pull out washer tank inlet.



2. Remove fillet molding (RH). Refer to [EI-14, "FRONT BUMPER"](#).
3. Remove fender protector (RH). Refer to [EI-24, "FENDER PROTECTOR"](#).
4. Remove bumper fascia assembly. Refer to [EI-14, "FRONT BUMPER"](#).
5. Disconnect washer pump connector and wash fluid level sensor connector.
6. Remove washer tank mounting bolt and nuts.



7. Remove washer tube, and remove washer tank from the vehicle.



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

WW

# FRONT WIPER AND WASHER SYSTEM

## INSTALLATION

Installation is the reverse order of removal.

### NOTE:

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

**Washer tank mounting bolt**  : 5.7 N·m (0.58 kg-m, 50 in-lb)

**Washer tank mounting nut**  : 5.7 N·m (0.58 kg-m, 50 in-lb)

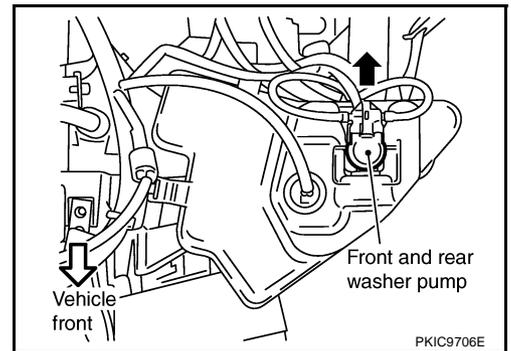
**Washer tank inlet mounting bolt**  : 6.8 N·m (0.69 kg-m, 60 in-lb)

## Removal and Installation of Washer Pump

NKS00332

### REMOVAL

1. Remove fillet molding (RH). Refer to [EI-14, "FRONT BUMPER"](#) .
2. Remove fender protector (RH). Refer to [EI-24, "FENDER PROTECTOR"](#) .
3. Remove bumper fascia assembly. Refer to [EI-14, "FRONT BUMPER"](#) .
4. Disconnect washer pump connector and tube.
5. Pull out washer pump in direction shown by the arrow in the figure. Remove washer pump from washer tank.



## INSTALLATION

Installation is the reverse order of removal.

### NOTE:

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

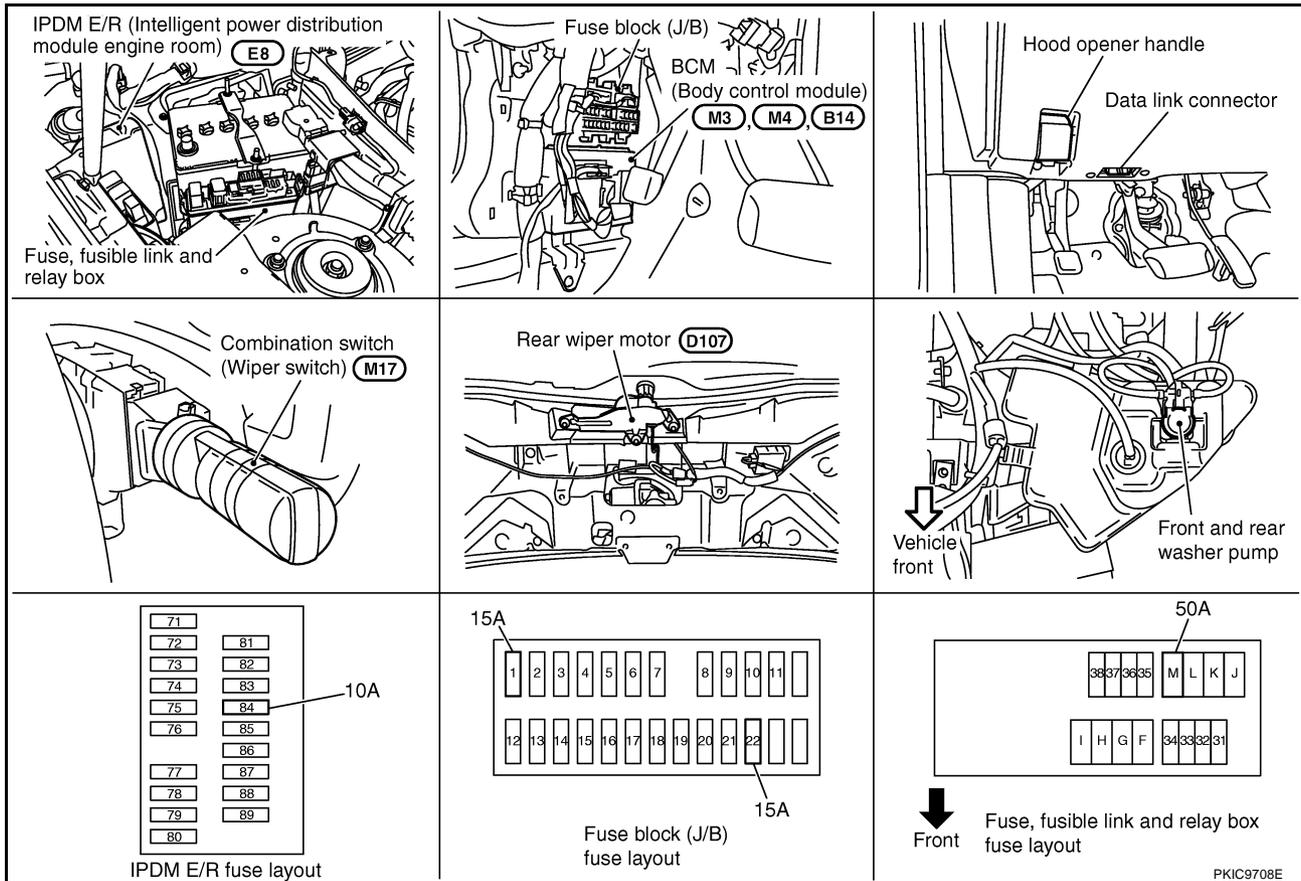
# REAR WIPER AND WASHER SYSTEM

## REAR WIPER AND WASHER SYSTEM

PPF:28710

### Component Parts and Harness Connector Location

NKS00333



### System Description

NKS00334

- 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 supplied at all times

- through 50 A fusible link (letter M, located in fuse, fusible link and relay box)
- to BCM terminal 55,
- through 15 A fuse [No. 22, located in fuse block (J/B)]
- to BCM terminal 42.

When ignition switch ON or START position, power is supplied

- through 15 A fuse [No.1, located in fuse block (J/B)]
- to BCM terminal 38,
- through 10 A fuse [No. 84, located in IPDM E/R (intelligent power distribution module engine room)]
- to combination switch terminal 14.

Ground is supplied

- to BCM terminals 49 and 52
- through grounds M35, M45 and M85,
- to combination switch terminal 12
- through grounds M35, M45 and M85.

### REAR WIPER OPERATION

When the wiper switch is in rear wiper ON position, BCM detects rear wiper ON signal by BCM wiper switch reading function.

BCM operates rear wiper motor, power is supplied

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M



## REAR WIPER AND WASHER SYSTEM

---

- through BCM terminal 70
- to rear wiper motor 4.

Ground is supplied

- to rear wiper motor terminal 2
- through grounds B15 and B45.

With power and ground supplied, the rear wiper operates.

### INTERMITTENT OPERATION

The rear wiper motor operates the wiper arms at low speed approximately every 7 seconds.

When the wiper switch is in rear wiper INT position, BCM detects rear wiper INT signal by BCM wiper switch reading function (Refer to [BCS-3, "COMBINATION SWITCH READING FUNCTION"](#) ).

BCM operates rear wiper motor, power supplied

- through BCM terminal 70
- to rear wiper motor terminal 4.

Ground is supplied

- to rear wiper motor terminal 2
- through grounds B15 and B45.

With power and ground supplied, rear wiper operates at intermittent.

### AUTO STOP OPERATION

With rear wiper switch turned OFF, rear wiper motor will continue to operate until wiper arm reaches rear wiper stopper.

Then wiper motor turns the other way and wiper arm moves once until wiper arm reaches stopper.

### WASHER OPERATION

When the wiper switch is in rear wiper washer position, BCM detects rear wiper washer signal by BCM wiper switch reading function (Refer to [BCS-3, "COMBINATION SWITCH READING FUNCTION"](#) ), and combination switch (wiper switch) ground is supplied

- to combination switch terminal 11
- through front and rear washer pump terminal 2
- to front and rear washer pump terminal 1
- through combination switch terminal 13
- through combination switch terminal 12
- through grounds M35, M45 and M85.

With ground supplied, front and rear washer pump is operated.

When the BCM detects that washer pump has operated for. 0.4 seconds or longer, BCM operates rear wiper pump low speed.

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

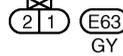
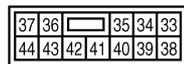
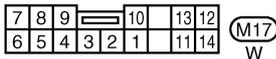
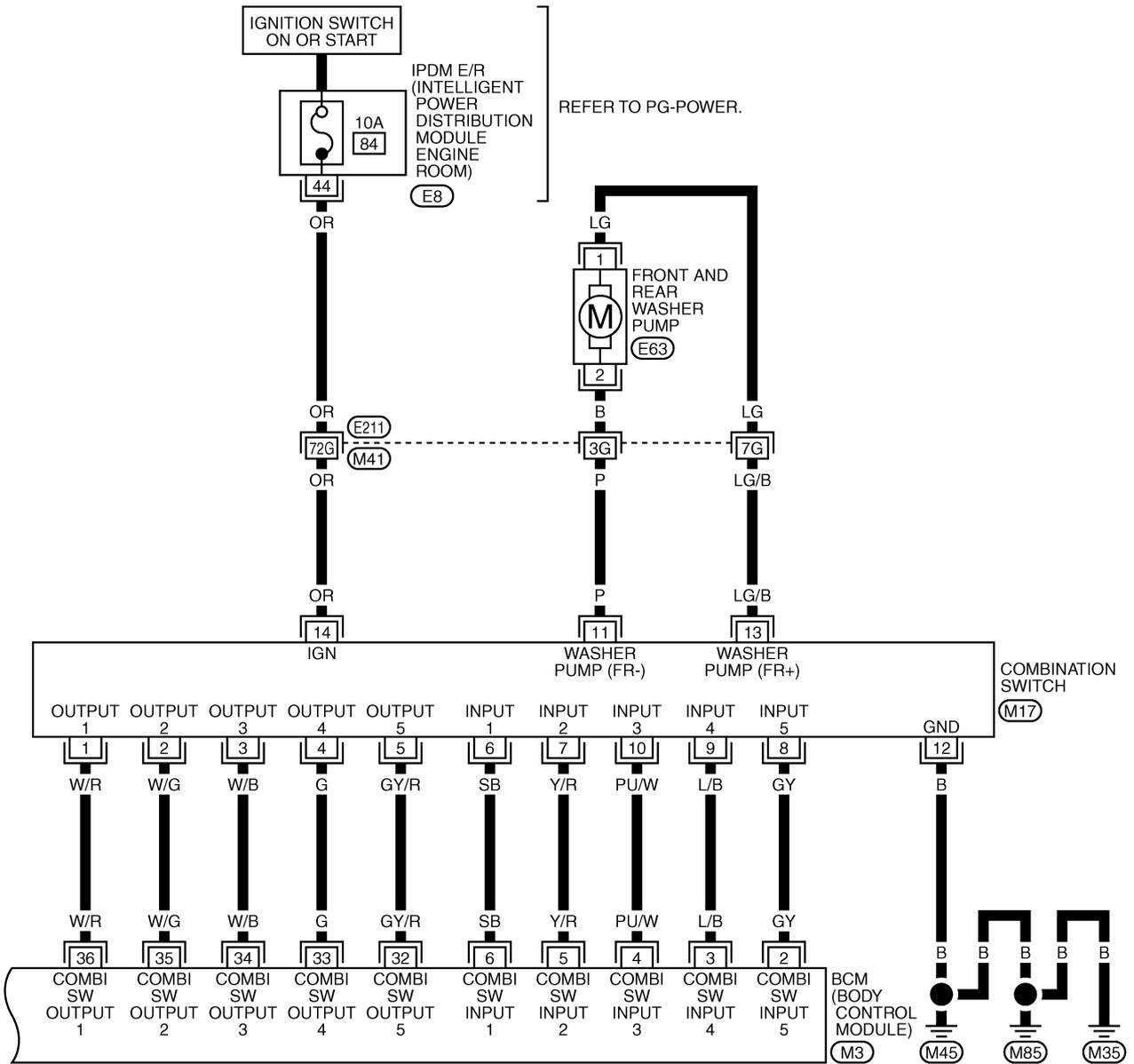
### BCM WIPER SWITCH READING FUNCTION

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



# REAR WIPER AND WASHER SYSTEM

WW-WIP/R-02



REFER TO THE FOLLOWING.

(E21) -SUPER MULTIPLE JUNCTION (SMJ)

(M3) -ELECTRICAL UNITS

TKWM4377E

# REAR WIPER AND WASHER SYSTEM

## Terminals and Reference Values for BCM

NKS00336

### CAUTION:

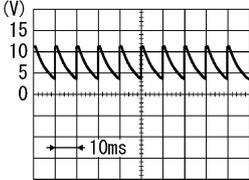
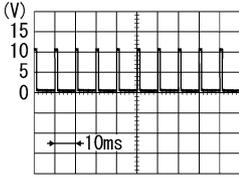
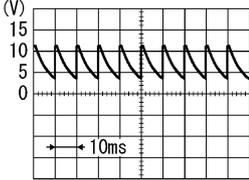
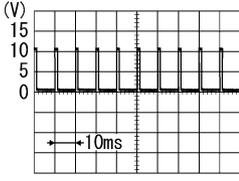
- Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.
- Turn wiper dial position to 4 except when checking waveform or voltage of wiper dial position. Wiper dial position can be confirmed on CONSULT-II. Refer to [LT-119, "DATA MONITOR"](#).

Terminal No.	Wire color	Signal name	Measuring condition		Reference value	
			Ignition switch	Operation or condition		
5	Y/R	Combination switch input 2	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Rear washer switch	<p>PKIB4959J</p>
6	SB	Combination switch input 1	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	Rear wiper switch ON	<p>PKIB4955J</p>
					Rear wiper INT	<p>PKIB4959J</p>
32	GY/R	Combination switch output 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 7.0 - 7.5 V
					Rear wiper ON	<p>PKIB4956J</p>

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

WW

# REAR WIPER AND WASHER SYSTEM

Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
33	G	Combination switch output 4	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF  PKIB4960J Approx. 7.2 V
					Rear wiper switch INT  PKIB4958J Approx. 1.2 V
34	W/B	Combination switch output 3	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF  PKIB4960J Approx. 7.2 V
					Rear washer switch  PKIB4958J Approx. 1.2 V
38	W/L	Ignition switch (ON)	ON	—	Battery voltage
39	L	CAN - H	—	—	—
40	P	CAN - L	—	—	—
42	L/R	Battery power supply	OFF	—	Battery voltage
49	B	Ground	ON	—	Approx. 0 V
52	B	Ground	ON	—	Approx. 0 V
55	G	Battery power supply	OFF	—	Battery voltage
59	Y	Rear wiper auto stop signal	ON	Wiper operating	Approx. 0 V
				Wiper stopped	Battery voltage
70	SB	Rear wiper motor output signal	ON	Wiper switch	OFF Approx. 0 V
				ON	Battery voltage

# REAR WIPER AND WASHER SYSTEM

## How to Proceed With Trouble Diagnosis

NKS00337

1. Confirm the symptoms and customer complaint.
2. Understand operation description and function description. Refer to [WW-39, "System Description"](#) .
3. Perform the Preliminary Check. Refer to [WW-45, "Preliminary Check"](#) .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the rear wiper and washer operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

## Preliminary Check

NKS00338

### CHECK POWER SUPPLY AND GROUND CIRCUIT

#### 1. CHECK FUSE

Check for blown fuses.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	M
		22
	Ignition ON or START	1
Rear washer pump	Ignition ON or START	84

Refer to [WW-41, "Wiring Diagram — WIP/ R —"](#) .

OK or NG

OK >> GO TO 2.

NG >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse, Refer to [PG-3, "POWER SUPPLY ROUTING CIRCUIT"](#) .

#### 2. CHECK POWER SUPPLY CIRCUIT

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

(+)		(-)	Ignition switch position	
BCM connector	Terminal		OFF	ON
M3	38	Ground	Approx. 0 V	Battery voltage
M4	42		Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

#### 3. CHECK GROUND CIRCUIT

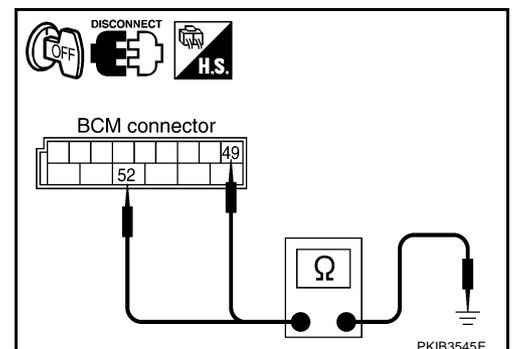
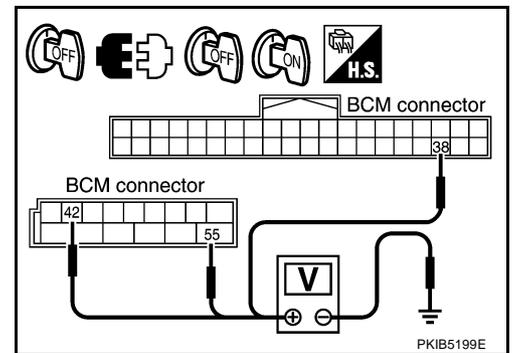
Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M4	49		Ground
	52		

OK or NG

OK >> INSPECTION END

NG >> Repair harness or connector.



# REAR WIPER AND WASHER SYSTEM

## CONSULT-II Functions (BCM)

NKS00339

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

BCM diagnosis position	Diagnosis mode	Description
WIPER	DATA MONITOR	Displays BCM input data in real time.
	ACTIVE TEST	Device operation can be checked by applying a drive signal to device.

## CONSULT-II BASIC OPERATION

Refer to [GI-38, "CONSULT-II Start Procedure"](#) .

### 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 signals.
SELECTION FROM MENU	Selects items and monitors them.

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

#### Display Item List

Monitor item	Contents
IGN ON SW "ON/OFF"	Displays "ignition switch ON (ON)/Other OFF or ACC (OFF)" status as judged from ignition switch signal.
IGN SW CAN "ON/OFF"	Displays "ignition switch ON (ON)/Other OFF or ACC (OFF)" status as judged from CAN communication signal.
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 auto-stop signal.
VEHICLE SPEED "km/h"	Displays vehicle speed status as judged from vehicle speed signal.
RR WIPER ON "ON/OFF"	Displays "Rear Wiper ON (ON)/Other (OFF)" status as judged from wiper switch signal.
RR WIPER INT "ON/OFF"	Displays "Rear Wiper INT (ON)/Other (OFF)" status as judged from wiper switch signal.
RR WASHER SW "ON/OFF"	Displays "Rear Washer Switch (ON)/Other (OFF)" status as judged from wiper switch signal.
RR WIPER STOP "ON/OFF"	Displays "Rear Wiper Stop (ON)/Other (OFF)" status, as judged from wiper switch signal.
RR WIPER STP2 <sup>NOTE</sup> "OFF"	—
H/L WASH SW <sup>NOTE</sup> "OFF"	—

#### NOTE:

This item is displayed, but cannot be monitored.

### ACTIVE TEST

#### Operation Procedure

1. Touch "WIPER" on "SELECT TEST ITEM" screen.
2. Touch "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Touch item to be tested and check operation of the selected item.

# REAR WIPER AND WASHER SYSTEM

4. During the operation check, touching "OFF" deactivates the operation.

## Display Item List

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

## Rear Wiper Does Not Operate

NKS0033A

### 1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "RR WIPER ON", turn ON-OFF according to front wiper switch operation.

DATA MONITOR			
MONITOR			
FR WIPER INT	OFF		
FR WASHER SW	OFF		
INT VOLUME	7		
FR WIPER STOP	ON		
VEHICLE SPEED	0.0km/h		
RR WIPER ON	OFF		
RR WIPER INT	OFF		
RR WASHER SW	OFF		
RR WIPER STOP	OFF		
Page Up			
		RECORD	
MODE	BACK	LIGHT	COPY

PKIA7660E

Without CONSULT-II

Refer to [LT-120, "Combination Switch Inspection"](#).

OK or NG

OK >> GO TO 2.

NG >> Check combination switch (wiper switch). Refer to [LT-120, "Combination Switch Inspection"](#).

### 2. ACTIVE TEST

With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT SYSTEM" screen.
2. Select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Select "REAR WIPER" on "SELECT TEST ITEM" screen.
4. Confirm that rear wiper operates normally.

ACTIVE TEST			
RR WIPER	OFF		
ON			
MODE	BACK	LIGHT	COPY

SKIA3503E

Without CONSULT-II

GO TO 3.

Does rear wiper operate normally?

YES >> Replace BCM. Refer to [BCS-15, "Removal and Installation of BCM"](#).

NO >> GO TO 3.

### 3. CHECK BCM

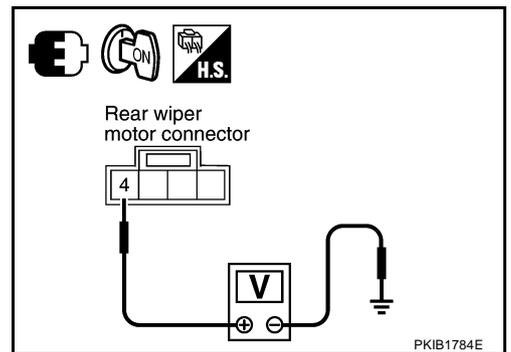
With rear wiper switch ON, check voltage between rear wiper motor harness connector D107 terminal 4 and ground.

**4 – Ground : Battery voltage.**

OK or NG

OK >> GO TO 4.

NG >> GO TO 5.



# REAR WIPER AND WASHER SYSTEM

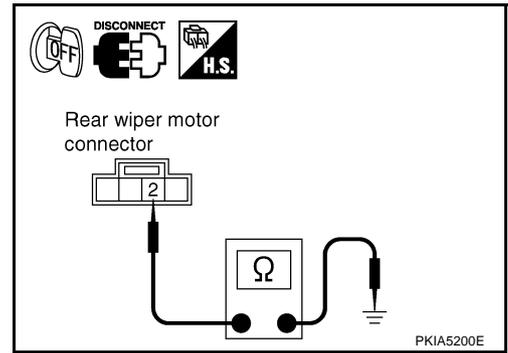
## 4. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect rear wiper motor connector.
3. Check continuity between rear wiper motor harness connector D107 terminal 2 and ground.

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

OK or NG

- OK >> Replace rear wiper motor.  
 NG >> Repair harness or connector.



## 5. CHECK REAR WIPER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and rear wiper motor connector.
3. Check continuity between BCM harness connector B14 terminals 70 and rear wiper motor harness connector D107 terminals 4.

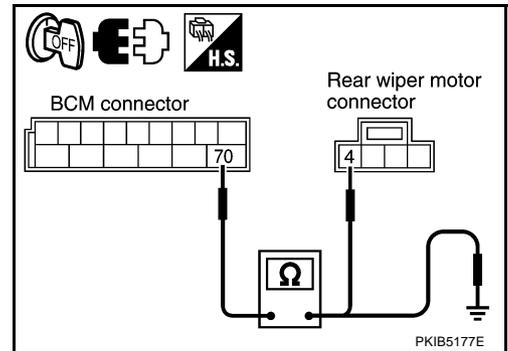
**70 – 4 : Continuity should exist.**

4. Check continuity between BCM harness connector B14 terminals 70 and ground.

**70 – Ground : Continuity should not exist.**

OK or NG

- OK >> Replace BCM. Refer to [BCS-15, "Removal and Installation of BCM"](#) .  
 NG >> Repair harness or connector.



## Rear Wiper Does Not Return to Stop Position

NKS0033B

### 1. CHECK REAR WIPER MOTOR CIRCUIT

Ⓜ With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "RR WIPER STOP", turn ON-OFF linked with rear wiper switch operation.

ⓧ Without CONSULT-II

GO TO 2.

OK or NG

- OK >> Replace BCM. Refer to [BCS-15, "Removal and Installation of BCM"](#) .  
 NG >> GO TO 2.

DATA MONITOR	
MONITOR	
FR WIPER INT	OFF
FR WASHER SW	OFF
INT VOLUME	7
FR WIPER STOP	ON
VEHICLE SPEED	0.0km/h
RR WIPER ON	OFF
RR WIPER INT	OFF
RR WASHER SW	OFF
RR WIPER STOP	OFF
Page Up	
RECORD	
MODE	BACK
LIGHT	COPY

PKIA7660E

# REAR WIPER AND WASHER SYSTEM

## 2. CHECK REAR WIPER AUTO STOP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and rear wiper motor connector.
3. Check continuity between BCM harness connector B14 terminal 59 and rear wiper motor harness connector D107 terminal 3.

**59 – 3 : Continuity should exist.**

4. Check continuity between BCM harness connector B14 terminal 59 and ground.

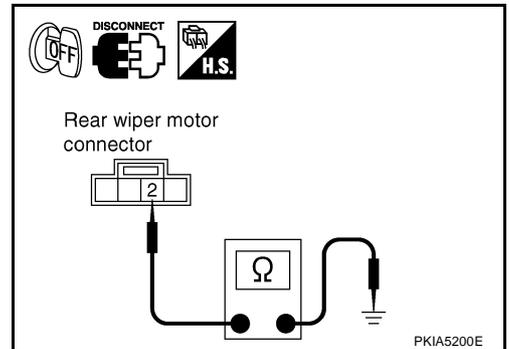
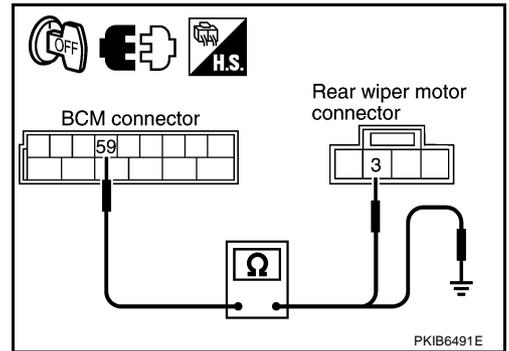
**59 – Ground : Continuity should not exist.**

5. Check continuity between rear wiper motor harness connector D107 terminal 2 and ground.

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

### OK or NG

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



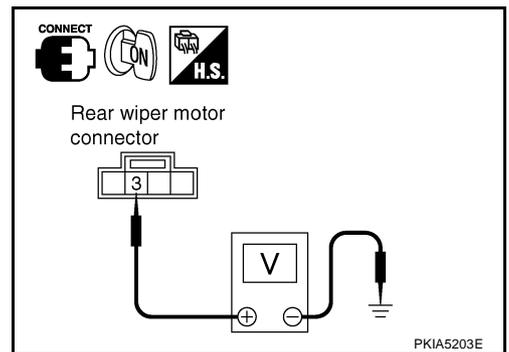
## 3. CHECK REAR WIPER MOTOR SIGNAL

1. Connect BCM connector and rear wiper motor connector.
2. Turn ignition switch ON.
3. Check voltage between rear wiper motor harness connector terminal and ground while rear wiper motor is stopped and while it is operating.

(+)		(-)	Condition	Voltage
Rear wiper motor Connector	Terminal			
D107	3	Ground	Wiper stopped	Battery voltage
			Wiper operating	Approx. 0 V

### OK or NG

- OK >> Replace BCM. Refer to [BCS-15, "Removal and Installation of BCM"](#) .
- NG >> Replace rear wiper motor.



### Only Rear Wiper ON Does Not Operate

NKS0033C

Refer to [LT-120, "Combination Switch Inspection"](#) , and inspect it.

### Only Rear Wiper INT Does Not Operate

NKS0033D

Refer to [LT-120, "Combination Switch Inspection"](#) , and inspect it.

### Wiper Does Not Wipe When Rear Washer Operates

NKS0033E

Refer to [LT-120, "Combination Switch Inspection"](#) , and inspect it.

# REAR WIPER AND WASHER SYSTEM

NKS0033F

## Rear Wipers Do Not Stop

### 1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

① With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "RR WIPER INT", "RR WIPER ON", and "RR WASHER SW" turn ON-OFF according to wiper switch operation.

② Without CONSULT-II

Refer to [LT-120, "Combination Switch Inspection"](#).

OK or NG

OK >> Replace BCM. Refer to [BCS-15, "Removal and Installation of BCM"](#).

NG >> Check combination switch (wiper switch). Refer to [LT-120, "Combination Switch Inspection"](#).

DATA MONITOR			
MONITOR			
FR WIPER INT	OFF		
FR WASHER SW	OFF		
INT VOLUME	7		
FR WIPER STOP	ON		
VEHICLE SPEED	0.0km/h		
RR WIPER ON	OFF		
RR WIPER INT	OFF		
RR WASHER SW	OFF		
RR WIPER STOP	OFF		
Page Up			
RECORD			
MODE	BACK	LIGHT	COPY

PKIA7660E

# REAR WIPER AND WASHER SYSTEM

## Removal and Installation of Rear Wiper Arm, Adjustment of Wiper Arms Stop Location

NKS0033G

### REMOVAL

1. Operate wiper motor, and stop it at the auto stop position.
2. Remove cover wiper arm.
3. Remove wiper arm nut, and remove wiper arm from vehicle.

### INSTALLATION

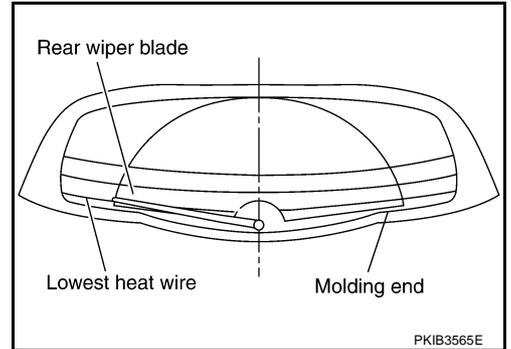
1. Prior to wiper arm installation, turn on wiper switch to operate wiper motor and then turn it "OFF" (auto stop).
2. Lift the blade up and then set it down onto glass surface to set the blade center to clearance "L" immediately before tightening nut.
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".
4. Ensure that wiper blades stop within clearance "L".

**Clearance "L" : 45 – 60 mm (1.77 - 2.36 in)**

- Tighten wiper arm nuts to specified torque.

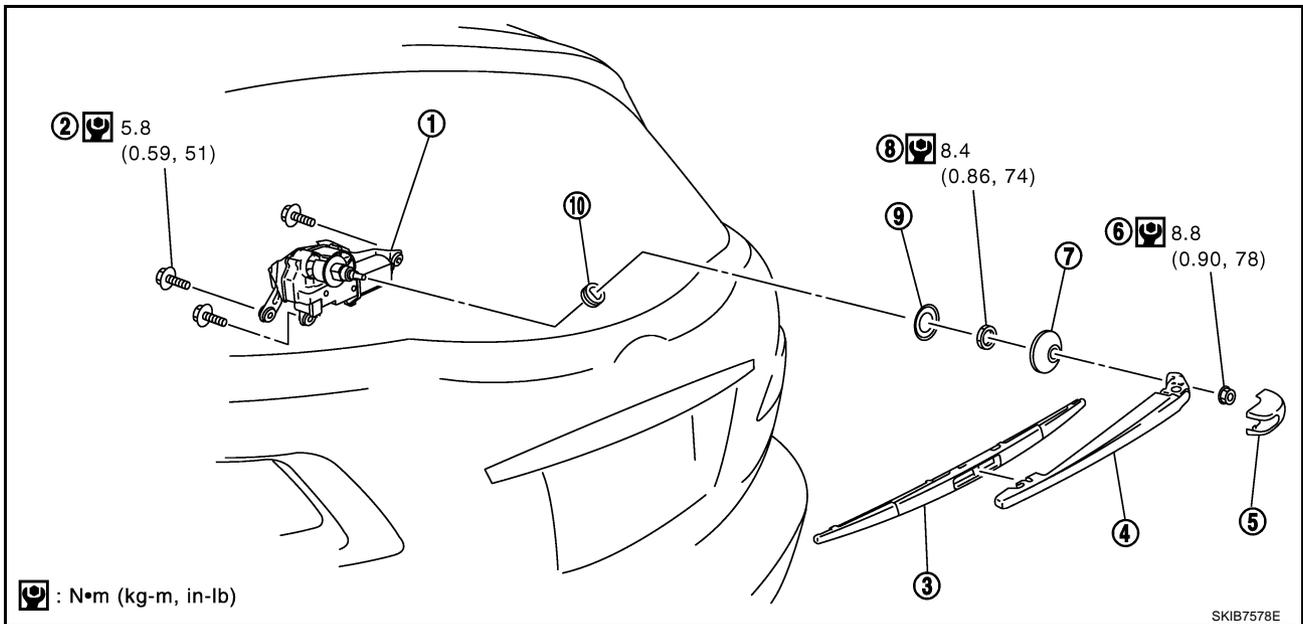
**Rear wiper arm nut  : 5.0 N·m (0.51 kg-m, 44 in-lb)**

5. Installation is the reverse order of removal.



## Removal and Installation of Rear Wiper Motor

NKS0033H



- |                     |                    |                |
|---------------------|--------------------|----------------|
| 1. Rear wiper motor | 2. Screw           | 3. Wiper blade |
| 4. Wiper arm        | 5. Cover wiper arm | 6. Nut         |
| 7. Pivot cap        | 8. Nut             | 9. Washer      |
| 10. Cushion rubber  |                    |                |

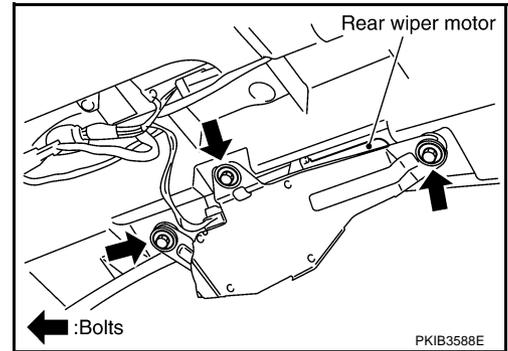
# REAR WIPER AND WASHER SYSTEM

## REMOVAL

1. Remove wiper arm. Refer to [WW-51, "REMOVAL"](#).
2. Remove pivot cap, and remove nut and nozzle or tube from vehicle.
3. Remove back door finisher. Refer to [EI-46, "BACK DOOR TRIM"](#).
4. Disconnect rear wiper motor connector.
5. Remove rear wiper motor mounting bolts and remove rear wiper motor.

### CAUTION:

Never remove cushion rubber.

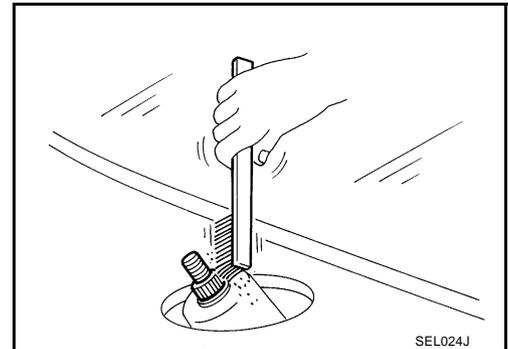


## INSTALLATION

1. Clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.
2. Attach pivot cap.
3. Install rear wiper motor to the vehicle.

**Rear wiper motor mounting bolt**  : 5.9 N-m (0.59 kg-m, 51 in-lb)

4. Connect rear wiper motor connector. Turn rear wiper switch ON to operate rear wiper motor, then turn wiper switch OFF (auto stop).
5. Install back door finisher. Refer to [EI-46, "BACK DOOR TRIM"](#).
6. Attach wiper arm.



### CAUTION:

Never drop the wiper motor or cause it to contact other parts.

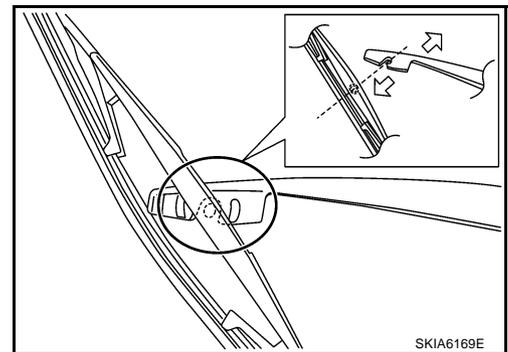
## Removal and Installation of Rear Wiper Blade

### REMOVAL

1. Remove wiper arm. Refer to [WW-51, "REMOVAL"](#).
2. Turn wiper blade 90 degrees against wiper arm, and pull it out downward for removal.

### CAUTION:

Replace wiper blade as wiper blade assembly.



## INSTALLATION

Installation is the reverse order of removal.

# REAR WIPER AND WASHER SYSTEM

## Washer Nozzle Adjustment

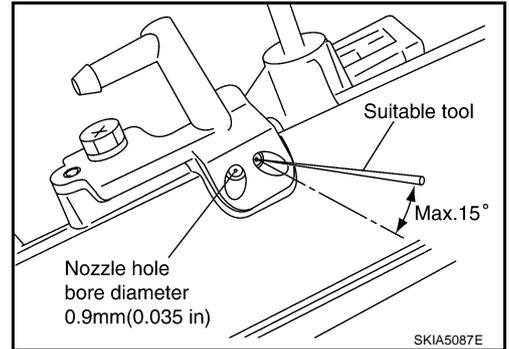
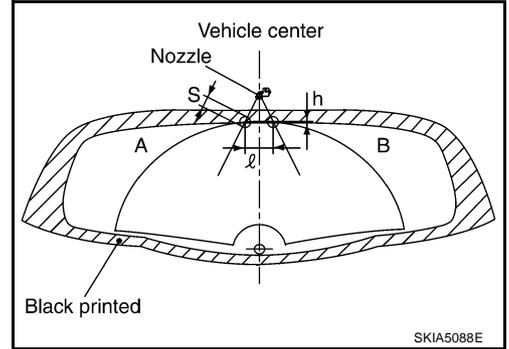
NKS0033J

Adjust washer nozzle with suitable tool as shown in the figure.

Unit: mm (in)

Spray position	h (height)	ℓ (width)	φS
A, B	2.5 (0.098)	80 (3.15)	30 (1.18)

**Adjustable range : ±15° (In any direction)**

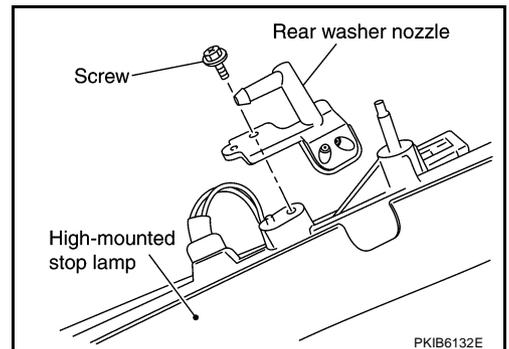


## Removal and Installation of Washer Nozzle

### REMOVAL

NKS0033K

1. Remove high-mounted stop lamp. Refer to [LT-130, "High-Mounted Stop Lamp"](#).
2. Remove screw and remove washer nozzle from high-mounted stop lamp.



### INSTALLATION

Installation is the reverse order of removal.

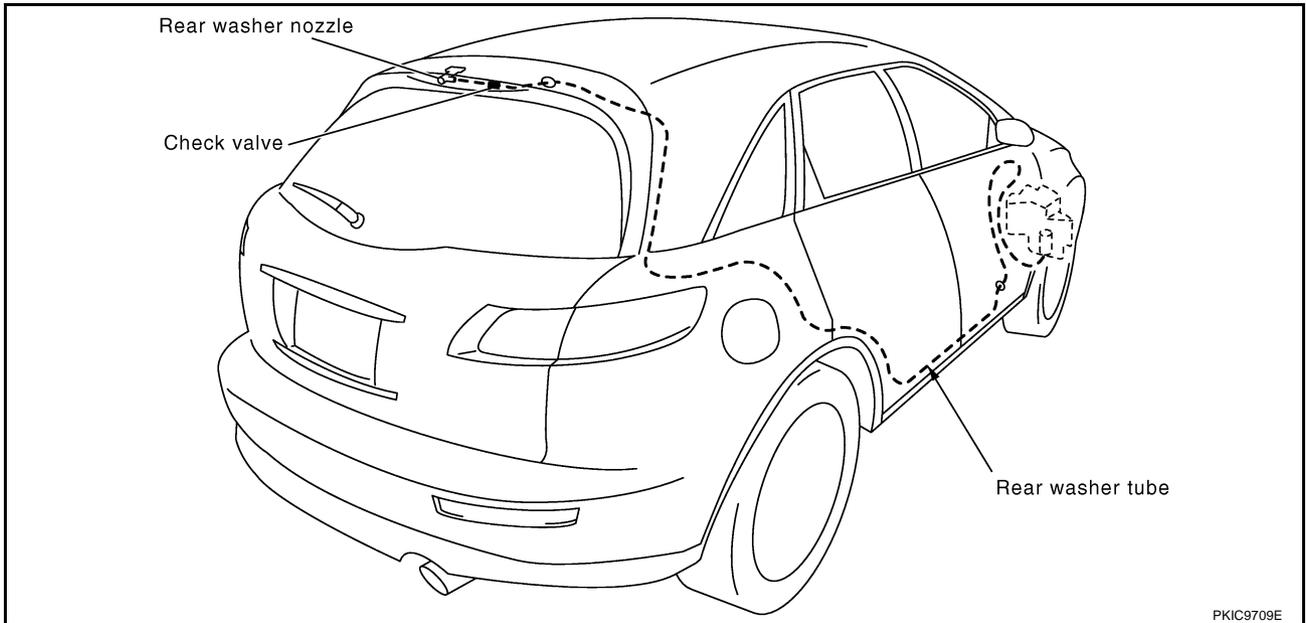
A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

WW

# REAR WIPER AND WASHER SYSTEM

## Washer Tube Layout

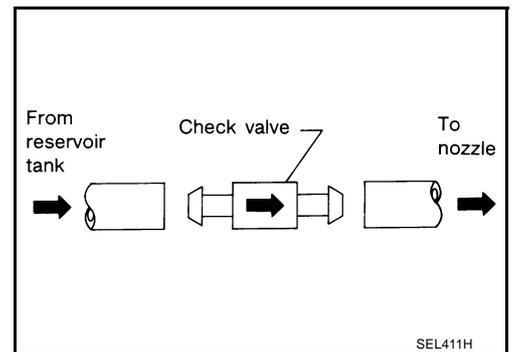
NKS0033L



## Check Valve

NKS0033M

A check valve is provided in the washer fluid line. Be careful not to connect check valve to washer tube in the wrong direction.



## Removal and Installation of Rear Wiper and Washer Switch

NKS0033N

Refer to [WW-37, "Removal and Installation of Front Wiper and Washer Switch"](#) .

## Removal and Installation of Washer Tank

NKS0033O

Refer to [WW-37, "Removal and Installation of Washer Tank"](#) .

## Removal and Installation of Washer pump

NKS0033P

Refer to [WW-38, "Removal and Installation of Washer Pump"](#) .

# POWER SOCKET

PFP:253A2

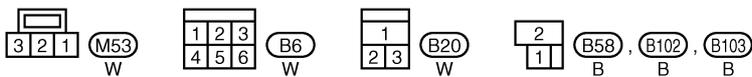
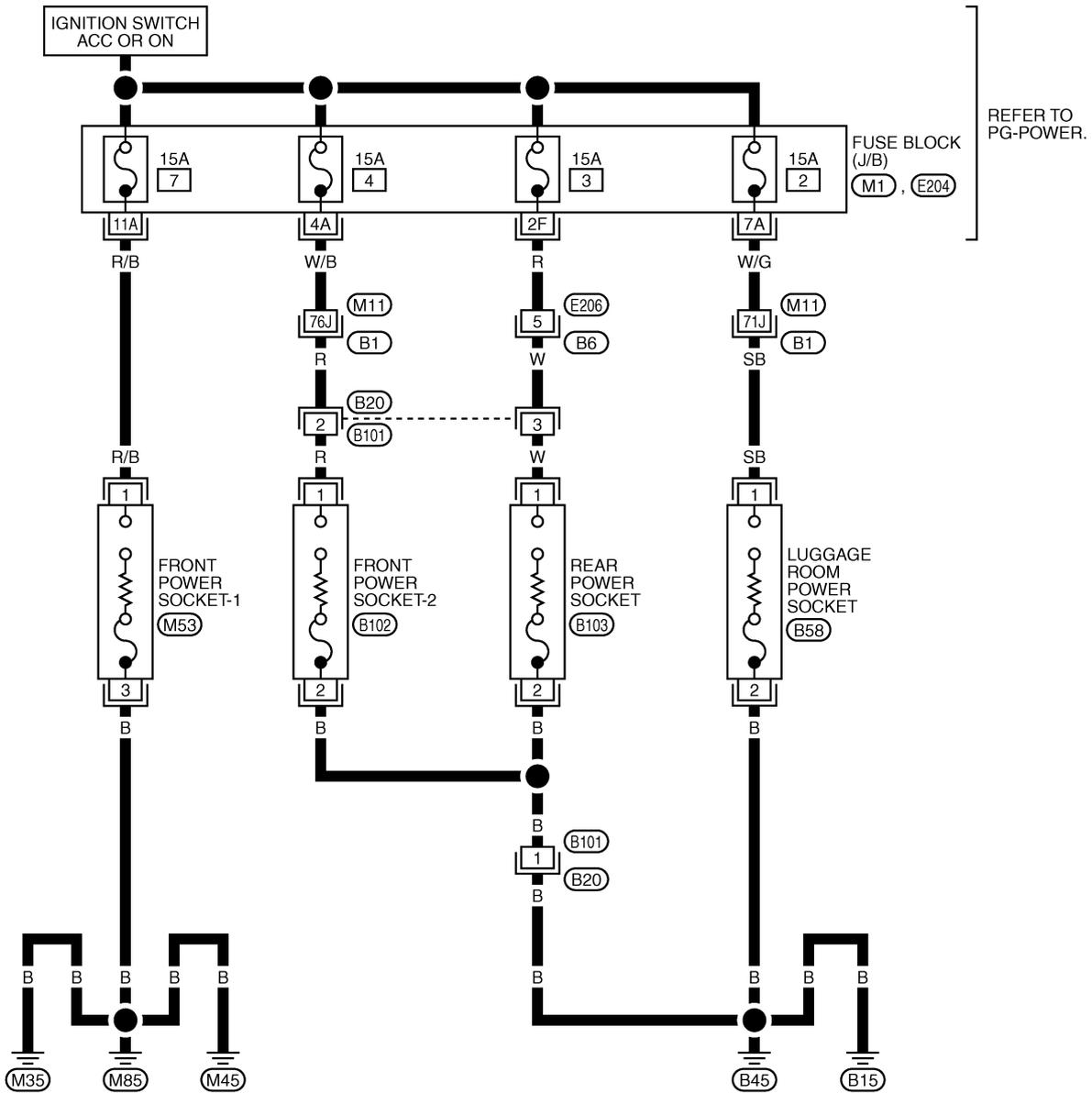
A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

## POWER SOCKET

### Wiring Diagram — P/SCKT —

NKS0033S

## WW-P/SCKT-01



REFER TO THE FOLLOWING.  
 (B1) -SUPER MULTIPLE JUNCTION (SMJ)  
 (M1), (E204) -FUSE BLOCK-JUNCTION BOX (J/B)

TKWM4490E

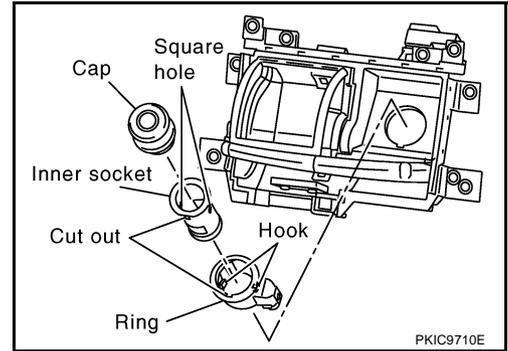
# POWER SOCKET

## Removal and Installation of Front Power Socket – 1

NKS003NB

### REMOVAL

1. Remove A/T console finisher. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
2. Remove instrument clock finisher. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
3. Disconnect power socket connector.
4. Remove inner socket from the ring. While pressing the hook on the ring out from square hole.
5. Remove ring from ashtry while pressing pawls.



### INSTALLATION

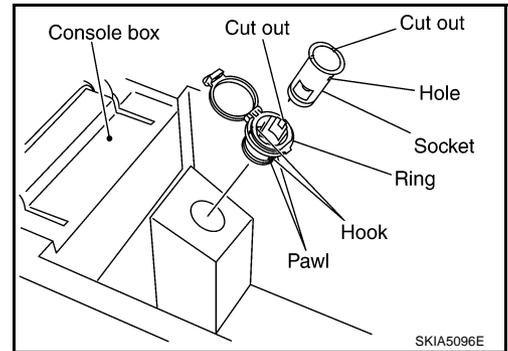
Installation is the reverse order of removal.

## Removal and Installation of Front Power Socket – 2

NKS0033U

### REMOVAL

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



### INSTALLATION

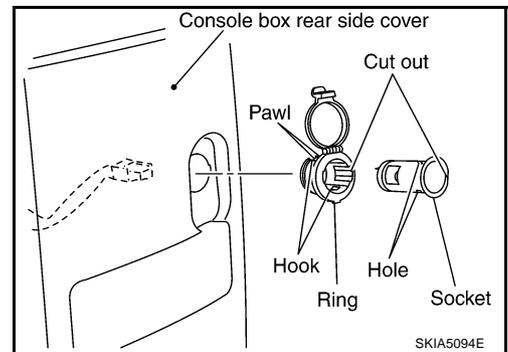
Installation is the reverse order of removal.

## Removal and Installation of Rear Power Socket

NKS004F1

### REMOVAL

1. Remove console rear finisher. Refer to [IP-17, "CENTER CONSOLE"](#) .
2. Disconnect power socket connector.
3. Remove inner socket from the ring. While pressing the hook on the ring out from square hole.
4. Remove ring from power socket finisher while pressing pawls.



### INSTALLATION

Installation is the reverse order of removal.

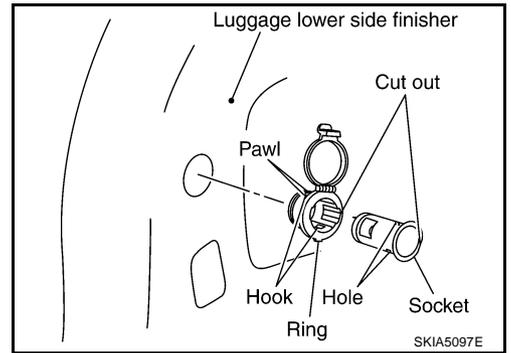
# POWER SOCKET

## Removal and Installation of Luggage Room Power Socket

NKS0033V

### REMOVAL

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



### INSTALLATION

Installation is the reverse order of removal.

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

WW

# HORN

PFP:25610

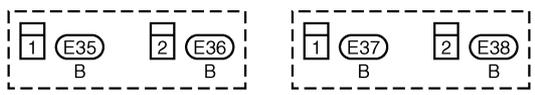
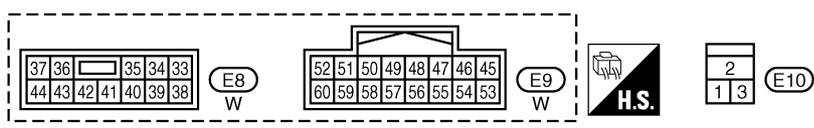
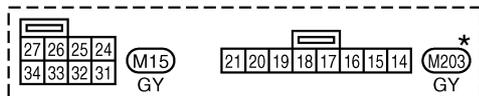
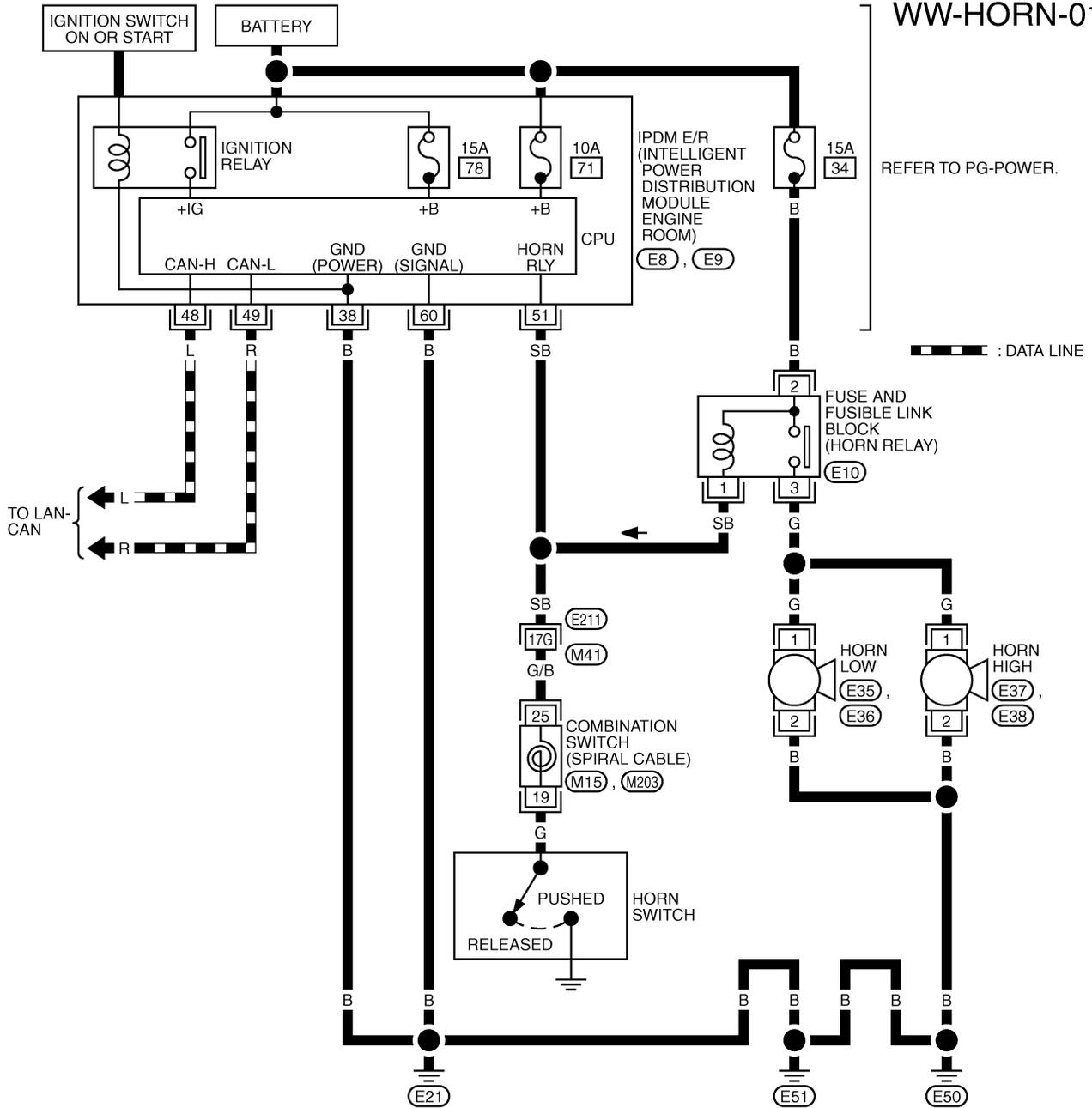
NKS0033W

## HORN

### Wiring Diagram — HORN —

#### WW-HORN-01

REFER TO PG-POWER.



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

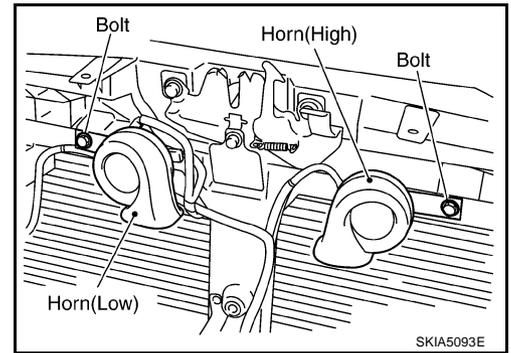
REFER TO THE FOLLOWING.  
 (E21) -SUPER MULTIPLE JUNCTION (SMJ)

# HORN

## Removal and Installation

### REMOVAL

1. Remove front grille. Refer to [EI-22. "FRONT GRILLE"](#) .
2. Disconnect all horn connectors.
3. Remove horn mounting bolt and remove horn from vehicle.



### INSTALLATION

Installation is the reverse order of removal.

- Tighten horn bolt to specified torque.

**Horn mounting bolt**  : **5.8 N-m (0.59 kg-m, 51 in-lb)**

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
WW  
L  
M

# HORN

---