

SECTION **WW**

WIPER, WASHER & HORN

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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.

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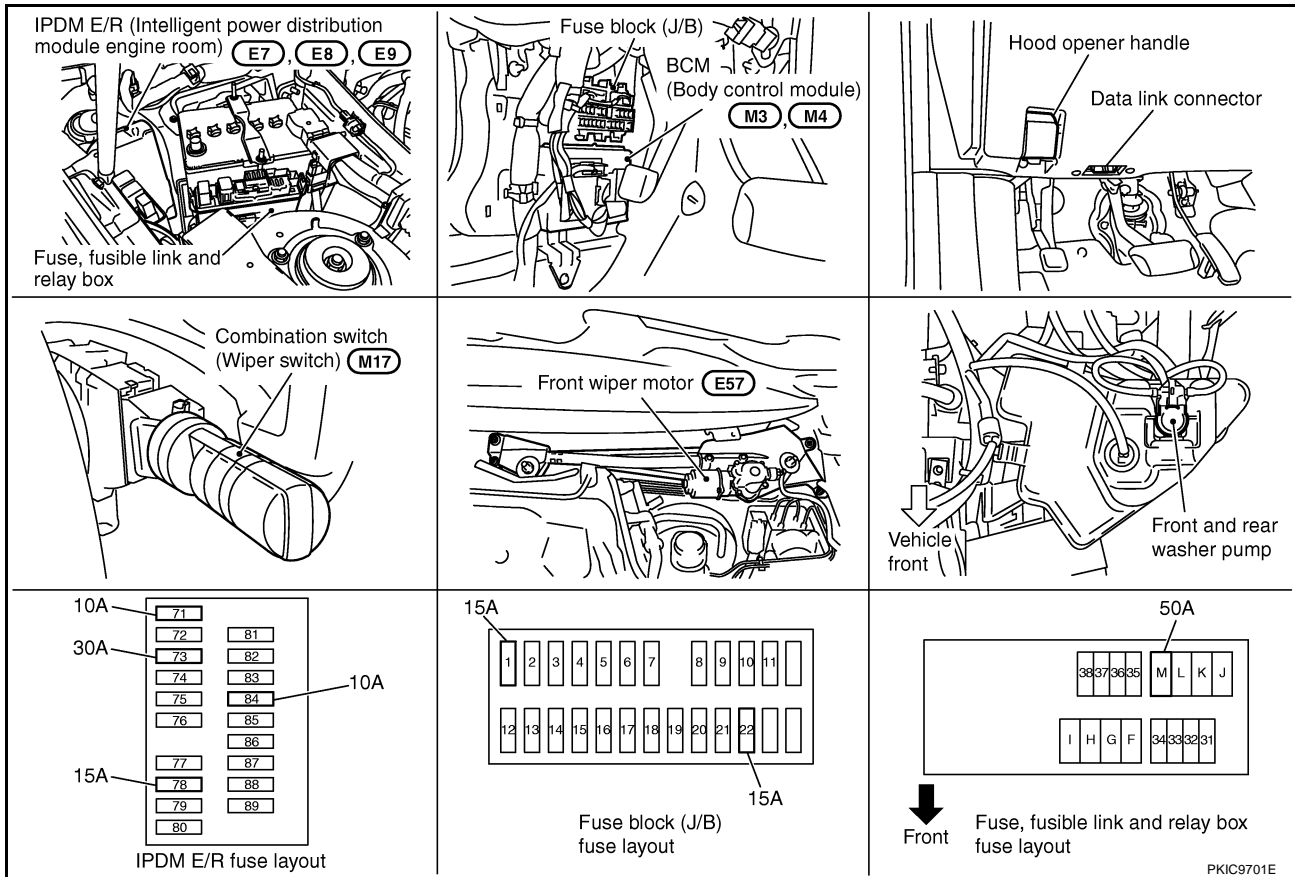
FRONT WIPER AND WASHER SYSTEM

FRONT WIPER AND WASHER SYSTEM

PFP:28810

Components Parts and Harness Connector Location

NKS00326



PKIC9701E

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) through CAN communication

- 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

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

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.

HIGH 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) through CAN communication

- 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

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

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.

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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 through CAN communication.

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

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.)

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FRONT WIPER AND WASHER SYSTEM

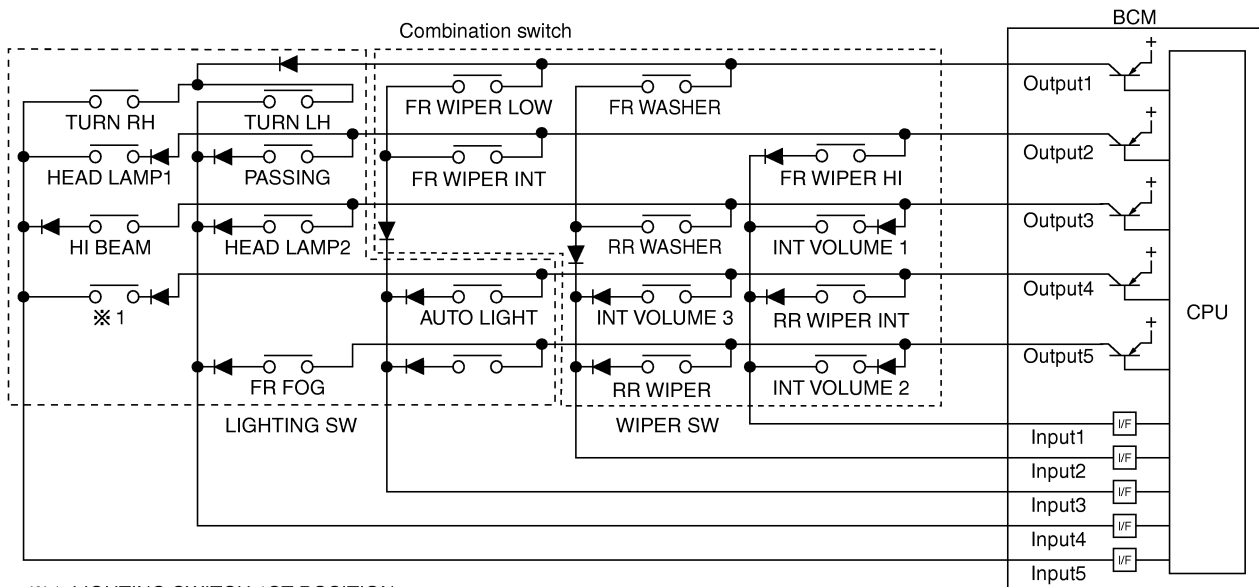
COMBINATION SWITCH READING FUNCTION

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.



PKID0853E

BCM - Operation Table of Combination Switches

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

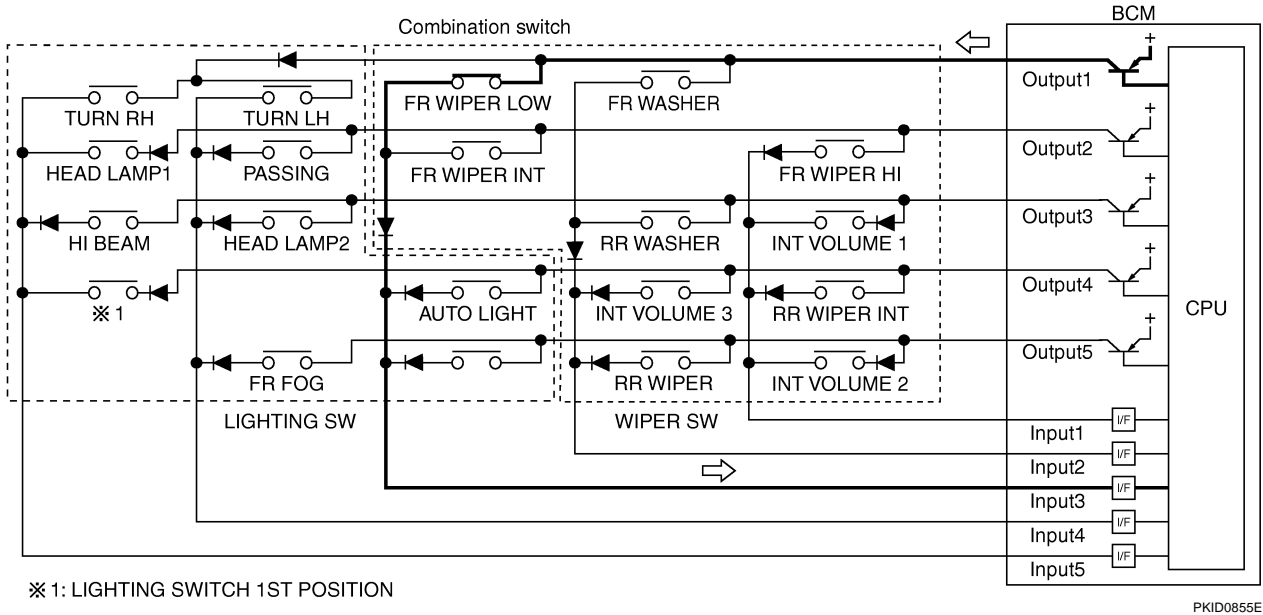
	COMB SW OUTPUT 1		COMB SW OUTPUT 2		COMB SW OUTPUT 3		COMB SW OUTPUT 4		COMB SW OUTPUT 5	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
COMB SW INPUT 1	—	—	FR WIPER HI ON	FR WIPER HI OFF	INT VOLUME 1 ON	INT VOLUME 1 OFF	RR WIPER INT ON	RR WIPER INT OFF	INT VOLUME 2 ON	INT VOLUME 2 OFF
COMB SW INPUT 2	FR WASH ON	FR WASH OFF	—	—	RR WASH ON	RR WASH 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

FRONT WIPER AND WASHER SYSTEM

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.



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.

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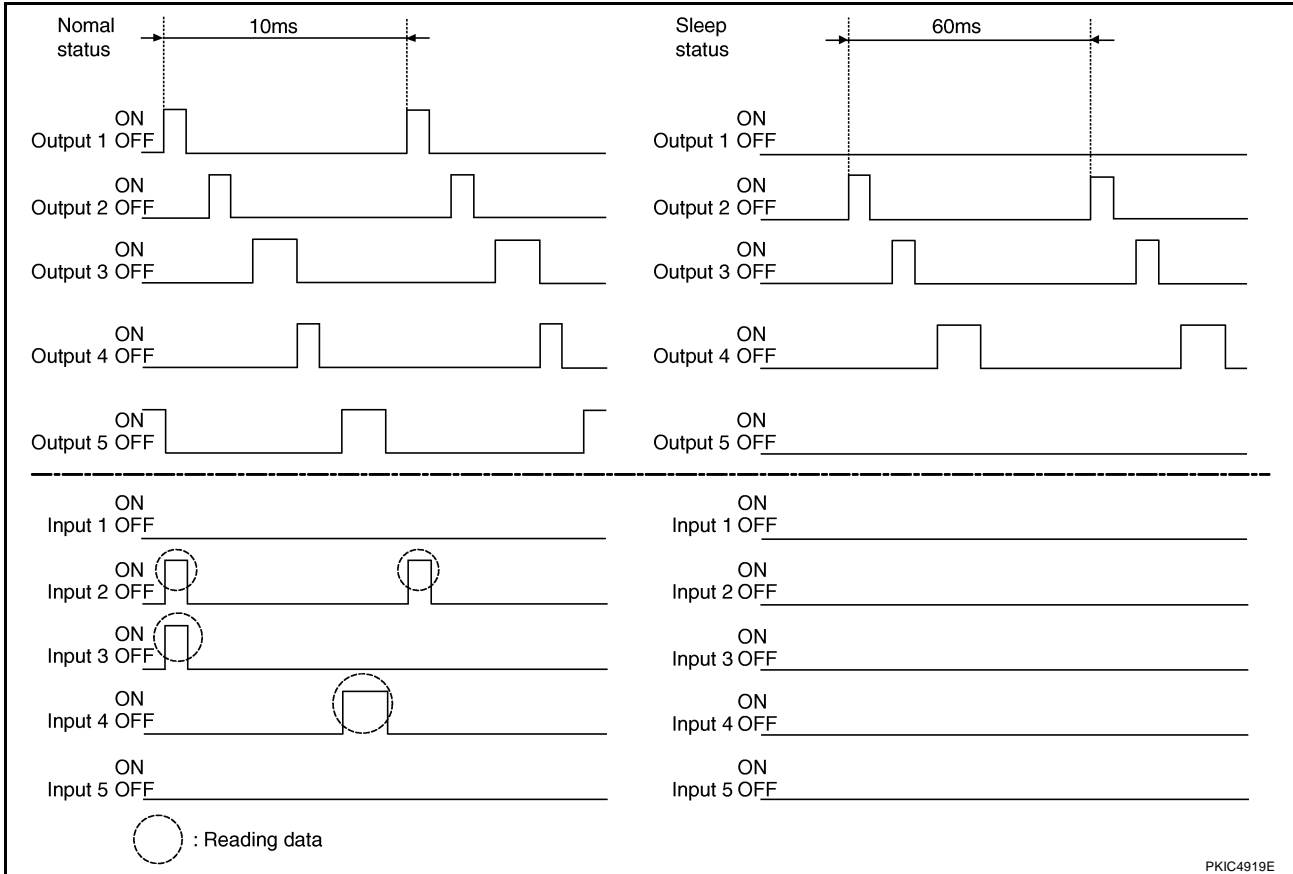
WW

FRONT WIPER AND WASHER SYSTEM

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

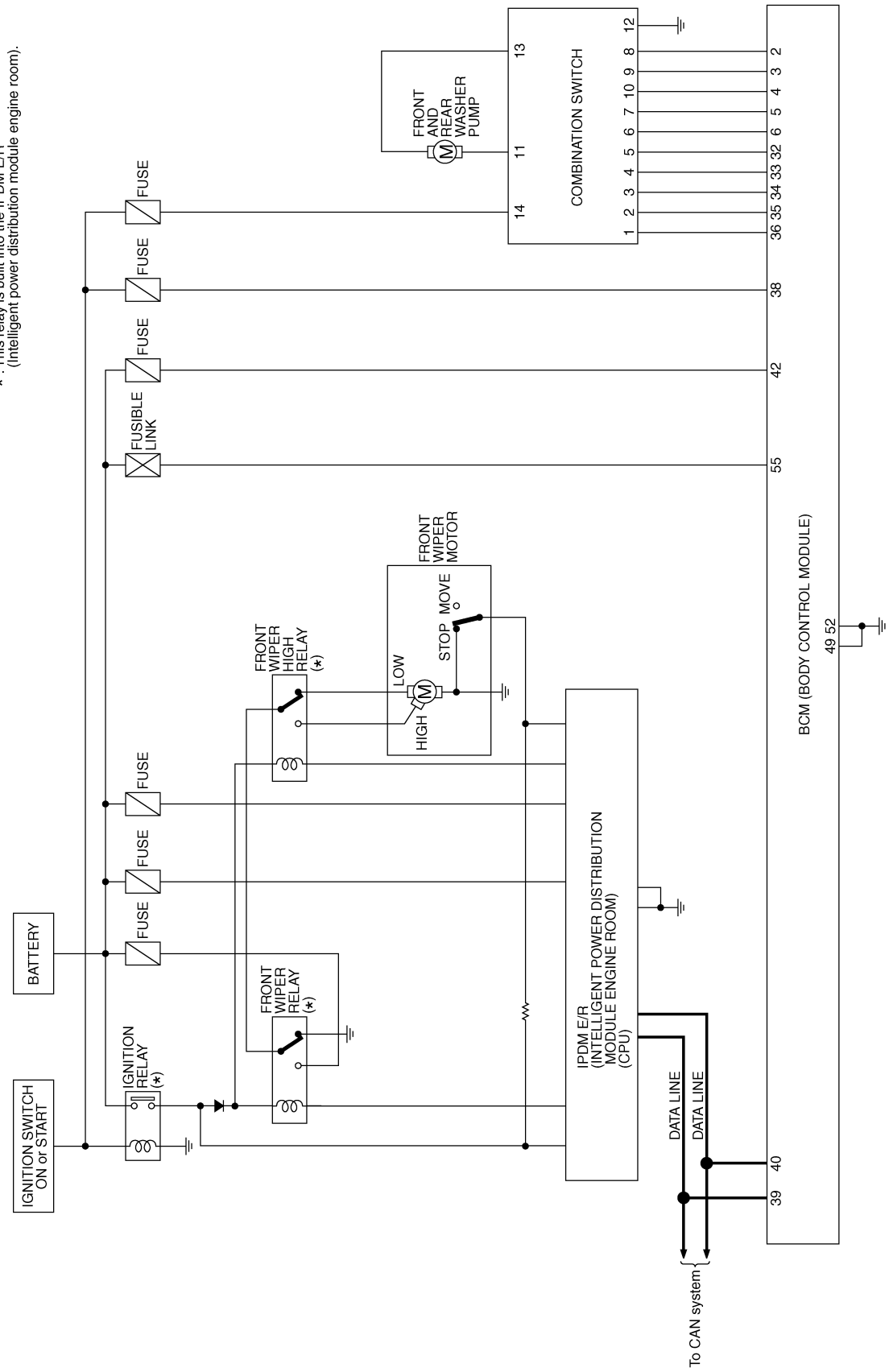
Refer to [LAN-49. "CAN System Specification Chart"](#) .

FRONT WIPER AND WASHER SYSTEM

Schematic

NKS0032A

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



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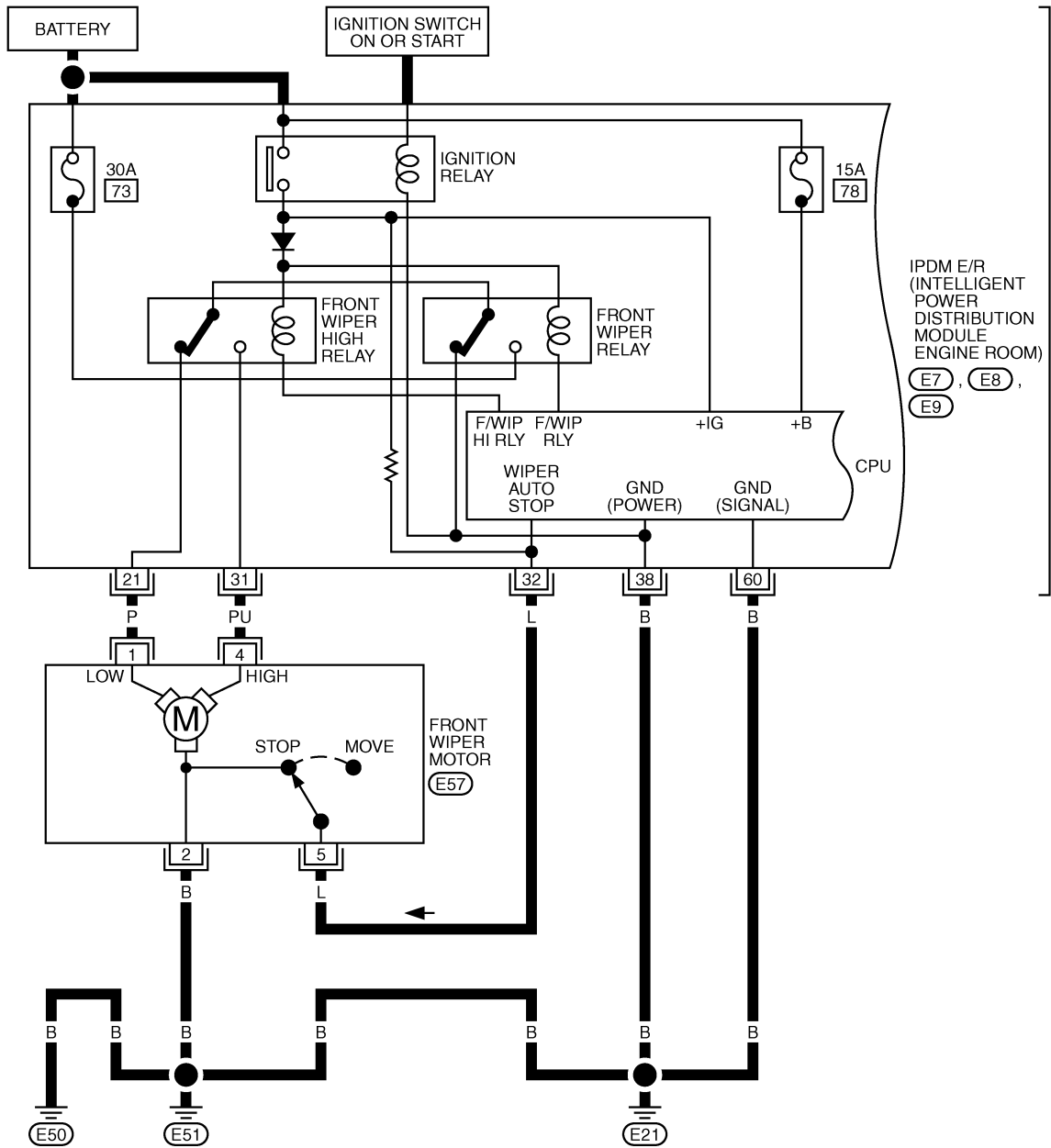
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FRONT WIPER AND WASHER SYSTEM

Wiring Diagram — WIPER —

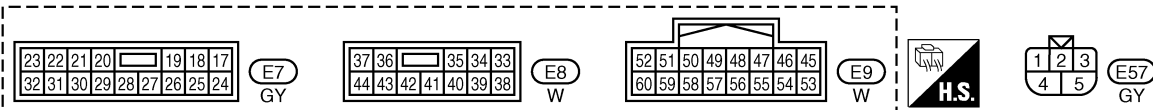
NKS0032B

WW-WIPER-01



IPDM E/R
(INTELLIGENT
POWER
DISTRIBUTION
MODULE
ENGINE ROOM)
E7, E8,
E9

REFER TO
PG-POWER.



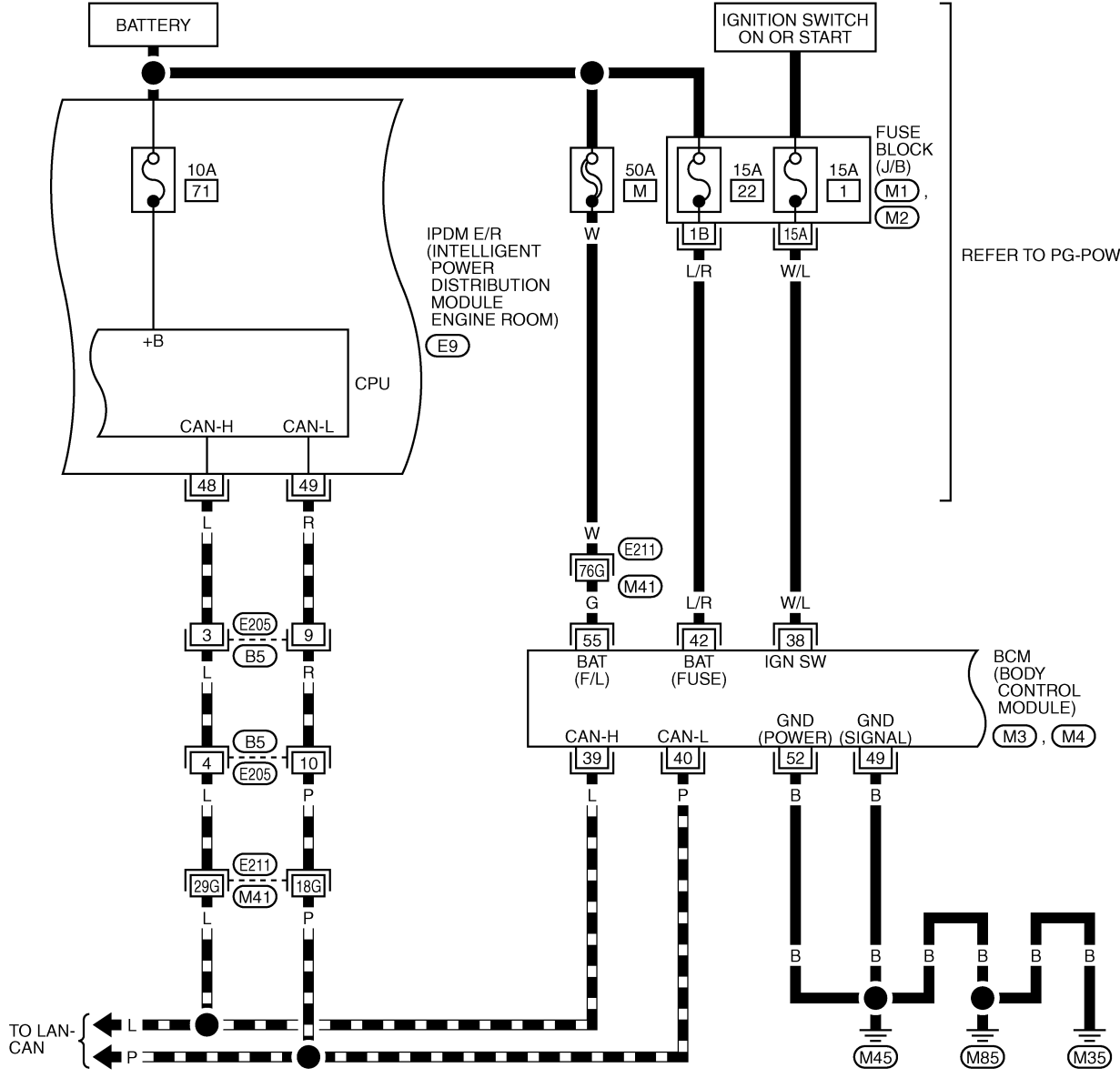
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FRONT WIPER AND WASHER SYSTEM

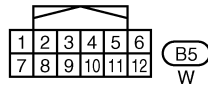
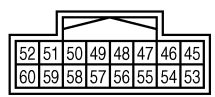
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▬ : DATA LINE



REFER TO PG-POWER.

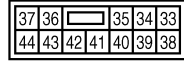
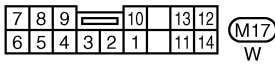
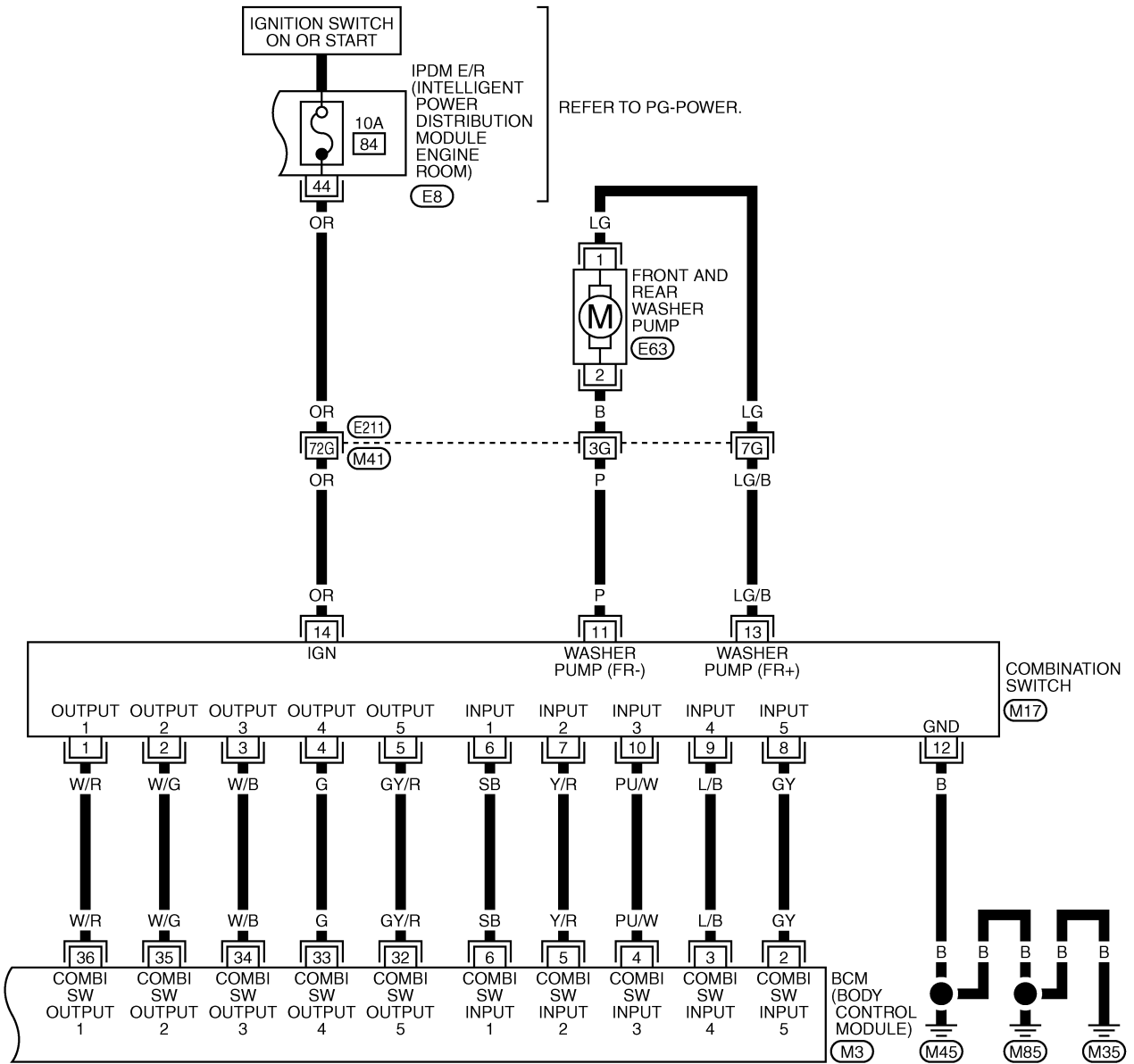


REFER TO THE FOLLOWING.
 (E211) -SUPER MULTIPLE JUNCTION (SMJ)
 (M1) , (M2) -FUSE BLOCK-JUNCTION BOX (J/B)
 (M3) , (M4) -ELECTRICAL UNITS

TKWM4374E

FRONT WIPER AND WASHER SYSTEM

WW-WIPER-03



REFER TO THE FOLLOWING.
 (E211) -SUPER MULTIPLE JUNCTION (SMJ)
 (M3) -ELECTRICAL UNITS

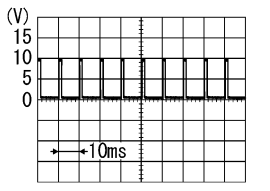
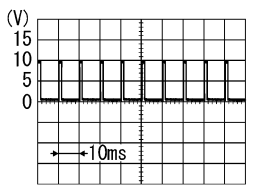
FRONT WIPER AND WASHER SYSTEM

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 intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-II. Refer to [LT-117, "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>

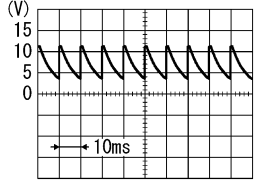
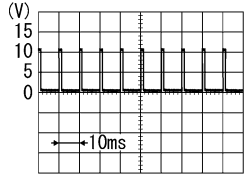
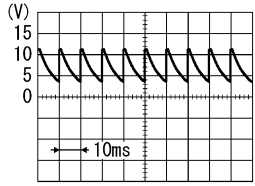
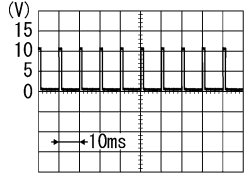
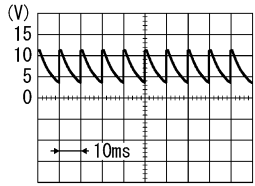
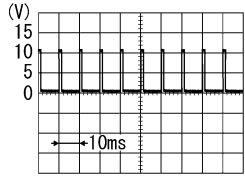
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FRONT WIPER AND WASHER SYSTEM

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"> ● Front wiper switch HI (Wiper intermittent dial position 4) ● Wiper intermittent dial position 3 PKIB4959J Approx. 1.0 V
					Any of the conditions below <ul style="list-style-type: none"> ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2 PKIB4952J Approx. 1.7 V
					Any of the conditions below <ul style="list-style-type: none"> ● Wiper intermittent dial position 6 ● Wiper intermittent dial position 7 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"> ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2 ● Wiper intermittent dial position 6 ● Wiper intermittent dial position 7 PKIB4956J Approx. 1.0 V

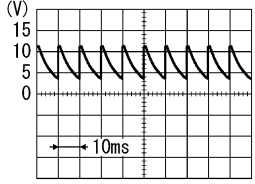
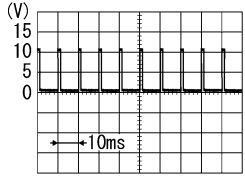
FRONT WIPER AND WASHER SYSTEM

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"> ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 5 ● Wiper intermittent dial position 6  <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"> ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2 ● Wiper intermittent dial position 3  <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"> ● Front wiper switch INT ● Front wiper switch HI  <p style="text-align: right;">PKIB4958J</p> <p style="text-align: center;">Approx. 1.2 V</p>

A
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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"> ● Front wiper switch MIST ● Front wiper switch LO ● Front washer switch  <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	Front and rear washer pump 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 and Rear 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
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

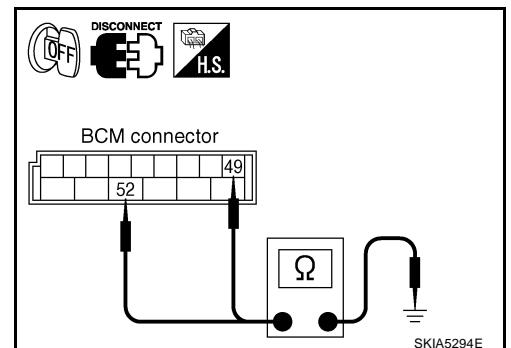
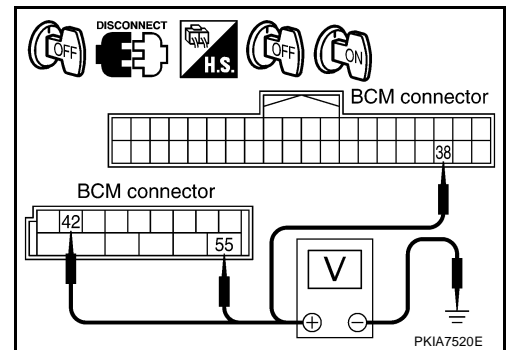
Check continuity between BCM harness connector and ground.

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 status (ignition switch IGN position: ON/other: OFF) of ignition switch judged from the ignition switch signal.
IGN SW CAN "ON/OFF"	Displays status (ignition switch IGN position: ON/other: OFF) of ignition switch judged from the ignition switch signal (CAN communication lines).
FR WIPER HI "ON/OFF"	Displays status (front wiper switch high position: ON/other: OFF) of front wiper high switch judged from the front wiper switch signal.
FR WIPER LOW "ON/OFF"	Displays status (front wiper switch low position: ON/other: OFF) of front wiper low switch judged from the front wiper switch signal.

FRONT WIPER AND WASHER SYSTEM

Monitor item	Contents
FR WIPER INT	"ON/OFF" Displays status (front wiper switch intermittent position: ON/other: OFF) of front wiper intermittent switch judged from the front wiper switch signal.
FR WASHER SW	"ON/OFF" Displays status (front washer switch ON position: ON/other: OFF) of front washer switch judged from the front wiper switch signal.
INT VOLUME	"1 - 7" Displays status (wiper intermittent dial position setting 1- 7) of intermittent volume switch judged from the front wiper switch signal.
FR WIPER STOP	"ON/OFF" Displays status (front wiper stop position: ON/move: OFF) of front wiper motor stop judged from the front wiper auto stop signal.
VEHICLE SPEED	"km/h" Displays status vehicle speed as judged from vehicle speed signal.
RR WIPER ON	"OFF" Displays status (rear wiper switch ON position: ON/other: OFF) of rear wiper switch judged from the rear wiper switch signal.
RR WIPER INT	"OFF" Displays status (rear wiper switch intermittent position: ON/other: OFF) of rear wiper intermittent switch judged from the rear wiper switch signal.
RR WASHER SW	"OFF" Displays status (rear washer switch ON position: ON/other: OFF) of rear washer switch judged from the rear wiper switch signal.
RR WIPER STOP	"OFF" Displays status (rear wiper stop position: OFF/move: ON) of rear wiper motor stop judged from the rear wiper auto stop signal.
H/L WASH SW	"ON/OFF" Displays status (headlamp washer switch ON position: ON/other: OFF) of headlamp washer switch judged from headlamp washer switch signal.

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

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

CONSULT-II BASIC OPERATION

Refer to [GI-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.

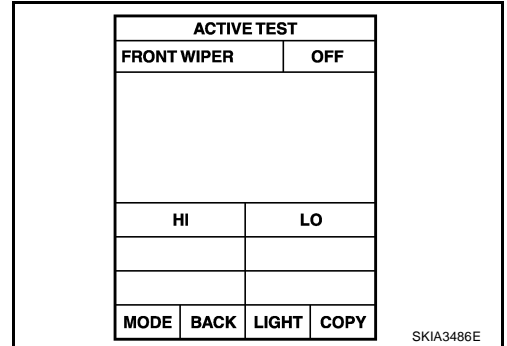
ⓧ Without CONSULT-II

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

Does front wiper operate normally?

YES >> GO TO 5.

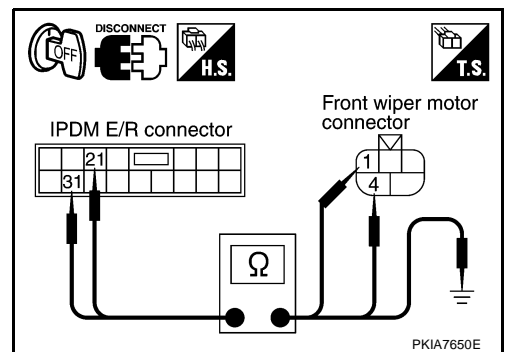
NO >> GO TO 2.



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		No
	31		

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

3. CHECK GROUND CIRCUIT

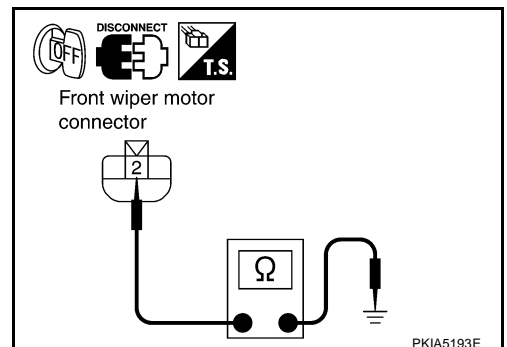
Check continuity between front wiper motor harness connector E57 terminal 2 and ground.

2 – Ground : Continuity should exist.

OK or NG

OK >> GO TO 4.

NG >> Repair harness or connector.

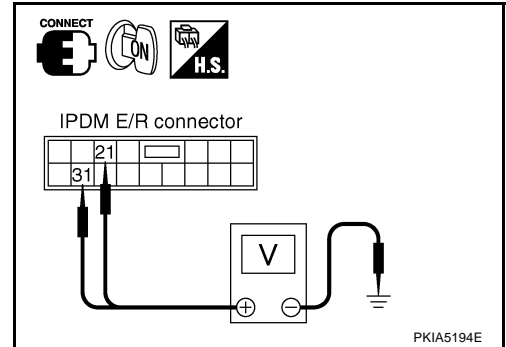


FRONT WIPER AND WASHER SYSTEM

4. CHECK IPDM E/R

Ⓜ 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

Ⓜ 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-118, "Combination Switch Inspection"](#).

OK or NG

- OK >> GO TO 6.
 NG >> Check combination switch (wiper switch). Refer to [LT-118, "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-14, "Removal and Installation of BCM"](#).

CAN COMM CIRCUIT>>Check CAN communication line of BCM. Refer to [BCS-13, "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

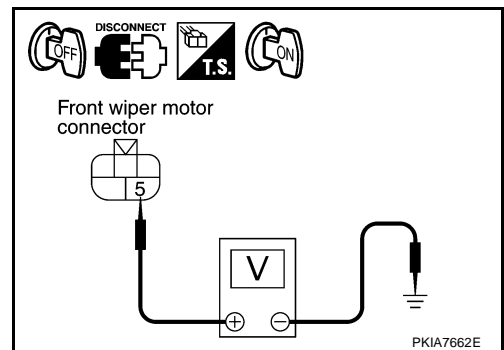
1. Turn ignition switch OFF.
2. Disconnect front wiper motor connector.
3. Turn ignition switch ON.
4. Check voltage between front wiper harness connector E57 terminal 5 and ground.

5 – Ground : Battery voltage.

OK or NG

OK >> GO TO 4.

NG >> GO TO 3.



FRONT WIPER AND WASHER SYSTEM

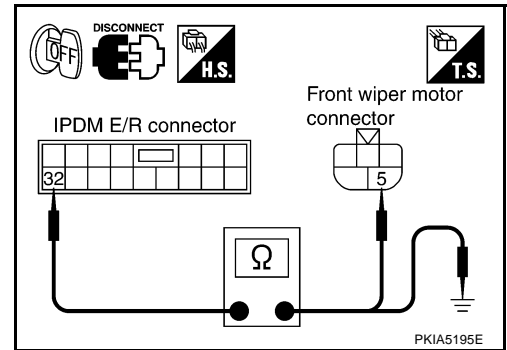
3. CHECK FRONT WIPER AUTO STOP CIRCUIT

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.



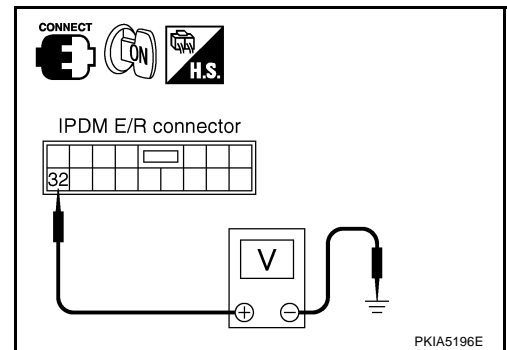
OK or NG

- 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.

(+)		(-)	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.

Only Front Wiper Low Does Not Operate

NKS0032K

1. ACTIVE TEST

☑ With CONSULT-II

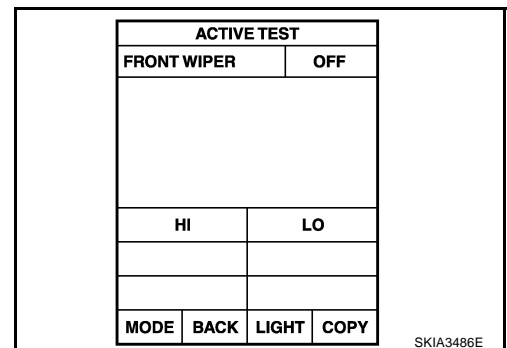
1. Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
3. Touch "LO" screen.

☒ 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-118, "Combination Switch Inspection"](#).
- NO >> GO TO 2.



SKIA3486E

FRONT WIPER AND WASHER SYSTEM

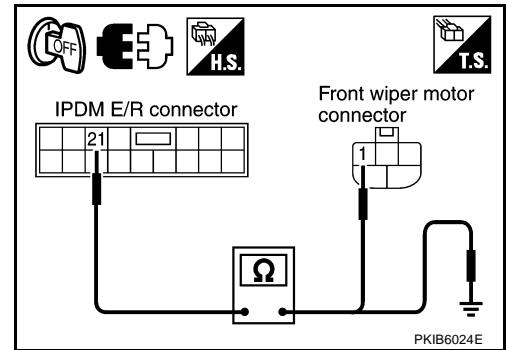
2. CHECK FRONT WIPER MOTOR CIRCUIT

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

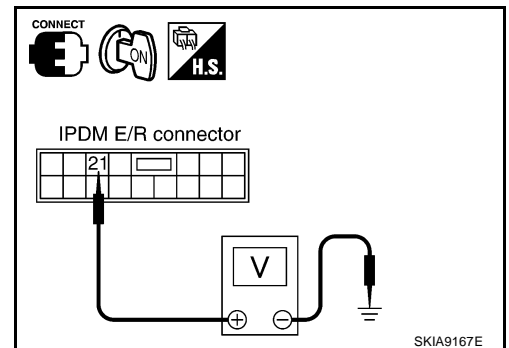
1. Connect IPDM E/R connector and front wiper motor connector.
2. Start up auto active test. Refer to [PG-21, "Auto Active Test"](#).
3. Check voltage between IPDM E/R harness connector E7 terminal 21 and ground while front wiper LO is operating.

21 – Ground : Battery voltage.

OK or NG

OK >> Replace front wiper motor.

NG >> Replace IPDM E/R.



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M

WW

FRONT WIPER AND WASHER SYSTEM

NKS0032L

Only Front Wiper Hi Does Not Operate

1. ACTIVE TEST

① 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.

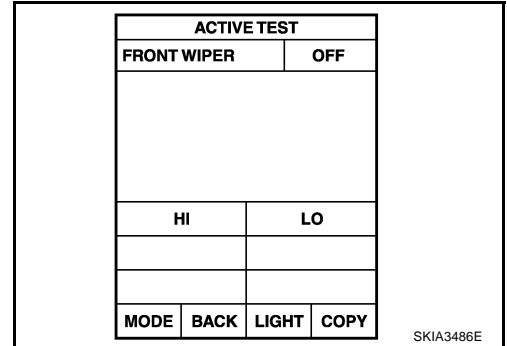
② Without CONSULT-II

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-118, "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.

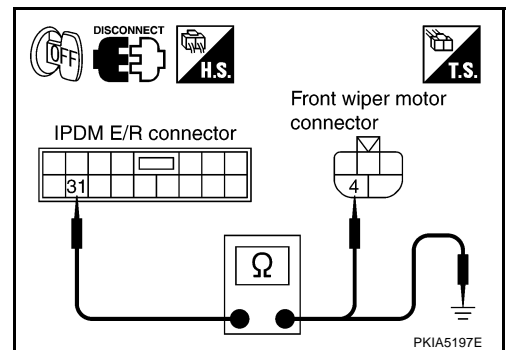
4. Check continuity between IPDM E/R harness connector E7 terminal 31 and ground.

31 – Ground : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.



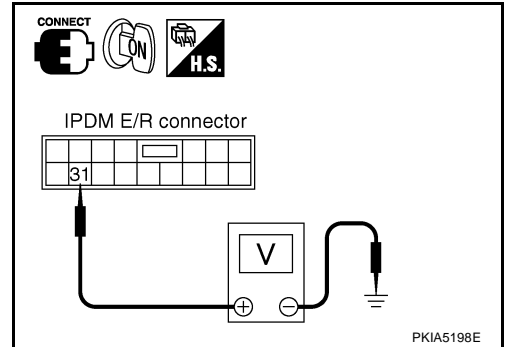
FRONT WIPER AND WASHER SYSTEM

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-118, "Combination Switch Inspection"](#).

OK or NG

- OK >> Replace BCM. Refer to [BCS-14, "Removal and Installation of BCM"](#).
- NG >> Check combination switch (wiper switch) Refer to [LT-118, "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-14, "Removal and Installation of BCM"](#) .

CAN COMM CIRCUIT>>Check CAN communication line of BCM. Refer to [BCS-13, "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-118, "Combination Switch Inspection"](#) .

OK or NG

OK >> Replace BCM. Refer to [BCS-14, "Removal and Installation of BCM"](#) .

NG >> Check combination switch (wiper switch). Refer to [LT-118, "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-118, "Combination Switch Inspection"](#) .

OK or NG

OK >> Replace BCM Refer to [BCS-14, "Removal and Installation of BCM"](#) .

NG >> Check combination switch (wiper switch). Refer to [LT-118, "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

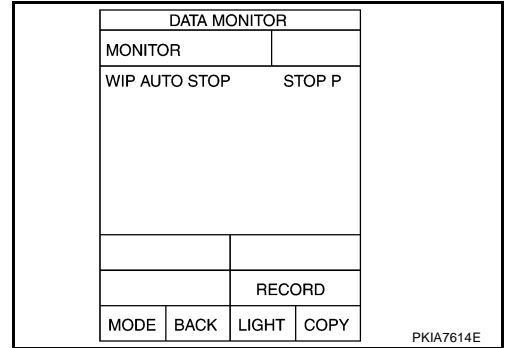
Select “IPDM E/R” by CONSULT-II. With “DATA MONITOR”, make sure that “WIP AUTO STOP” turns “ACT P” - “STOP P” linked with wiper operation.

☒ 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.

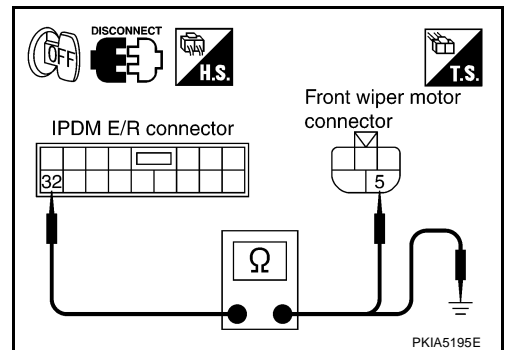
32 – 5 : Continuity should exist.

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.



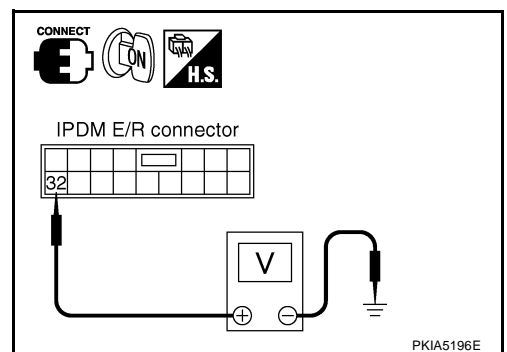
3. CHECK FRONT WIPER MOTOR

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

NKS0032R

Front Wiper Does 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 "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-118, "Combination Switch Inspection"](#).

OK or NG

OK >> Replace IPDM E/R.

NG >> Check combination switch (wiper switch). Refer to [LT-118, "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

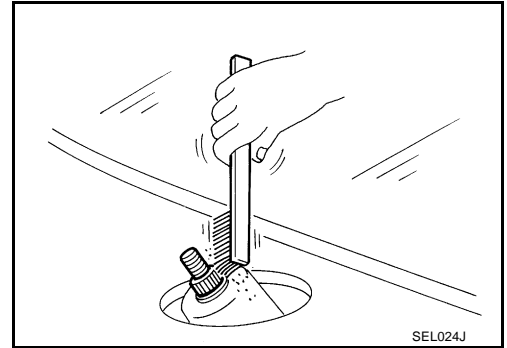
NKS0040X

REMOVAL

1. Turn front wiper switch ON to operate wiper motor, and then turn front wiper switch OFF (auto stop).
2. Open hood, remove front wiper arm caps, and remove washer tube from washer tube joint.
3. Remove front wiper arm nuts.
4. Raise front wiper arms, and remove front wiper arms from the vehicle.

INSTALLATION

1. Clean up the pivot area as shown in the figure. This will reduce possibility of front wiper arm nuts looseness.
2. Prior to front wiper arms installation, turn front wiper switch ON to operate wiper motor, and then turn front wiper switch OFF (auto stop).
3. Install washer tube to washer tube joint.



4. Lift the blade up and then set it down onto windshield glass surface to set the blade center to clearance "L1" & "L2" immediately.
5. Tighten front wiper arm nuts to specified torque.

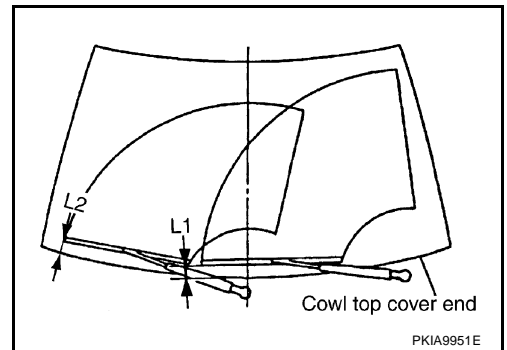
Front wiper arm nuts  : 23.6 N·m (2.4 kg·m, 17 ft·lb)

6. Spray washer fluid. Turn on wiper switch ON to operate wiper motor, and then turn front wiper switch OFF (auto stop).
7. Make sure that wiper blades stop within clearance "L1" & "L2".

Clearance "L1" : 49.4 ± 5.0 mm (1.945 ± 0.2 in)

Clearance "L2" : 43.0 ± 5.0 mm (1.693 ± 0.2 in)

8. Install front wiper arm caps.

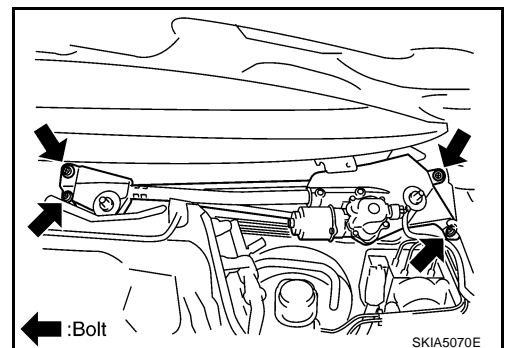


Removal and Installation of Front Wiper Drive Assembly

NKS0040Y

REMOVAL

1. Remove front wiper arms. Refer to [WW-33, "REMOVAL"](#).
2. Remove cowl top cover. Refer to [EI-23, "COWL TOP"](#).
3. Remove washer tube.
4. Disconnect wiper motor connector.
5. Remove front wiper drive assembly mounting bolts, and remove front wiper drive assembly from the vehicle.



FRONT WIPER AND WASHER SYSTEM

INSTALLATION

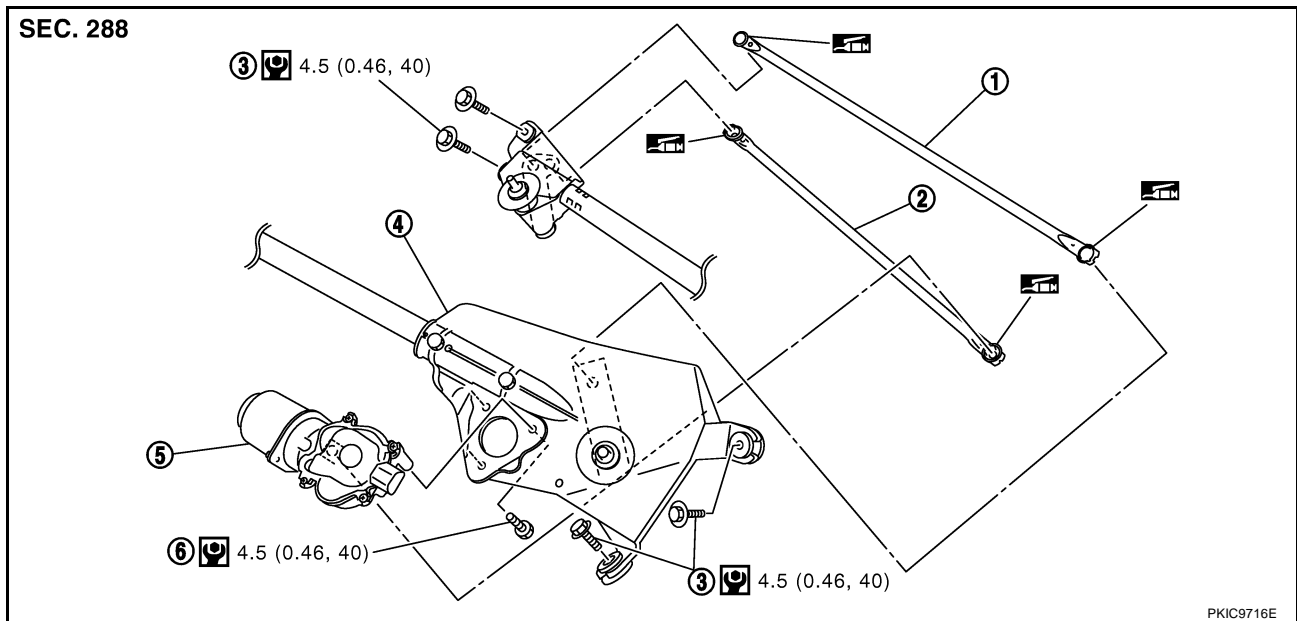
1. Install front wiper drive assembly to the vehicle.

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


2. Connect wiper motor connector. Turn front wiper switch ON to operate wiper motor, and then turn front wiper switch OFF (auto stop).
3. Install washer tube to washer tube joint.
4. Install cowl top cover. Refer to [EI-23, "COWL TOP"](#) .
5. Install front wiper arms and arm caps. Refer to [WW-33, "INSTALLATION"](#) .
6. Install front wiper arm washer tube.


Disassembly and Assembly of Front Wiper Drive Assembly

NKS0040Z



- | | | |
|-------------------------------|--------------------|------------------------------------|
| 1. Wiper linkage 2 | 2. Wiper linkage 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)

 : Should be lubricated with grease.

DISASSEMBLY

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

CAUTION:

Be careful not to bend wiper linkages and not to damage the resin part of ball joint when removing wiper linkages.

ASSEMBLY

1. Connect wiper motor connector. Turn front wiper switch ON to operate wiper motor, and then turn front wiper switch OFF (auto stop).
2. Disconnect wiper motor connector.
3. Install wiper motor to wiper motor mounting frame.

Wiper motor mounting bolts  :4.5 N·m (0.46 kg·m, 40 in·lb)

4. Install wiper linkages to wiper frame and wiper motor.

CAUTION:

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

FRONT WIPER AND WASHER SYSTEM

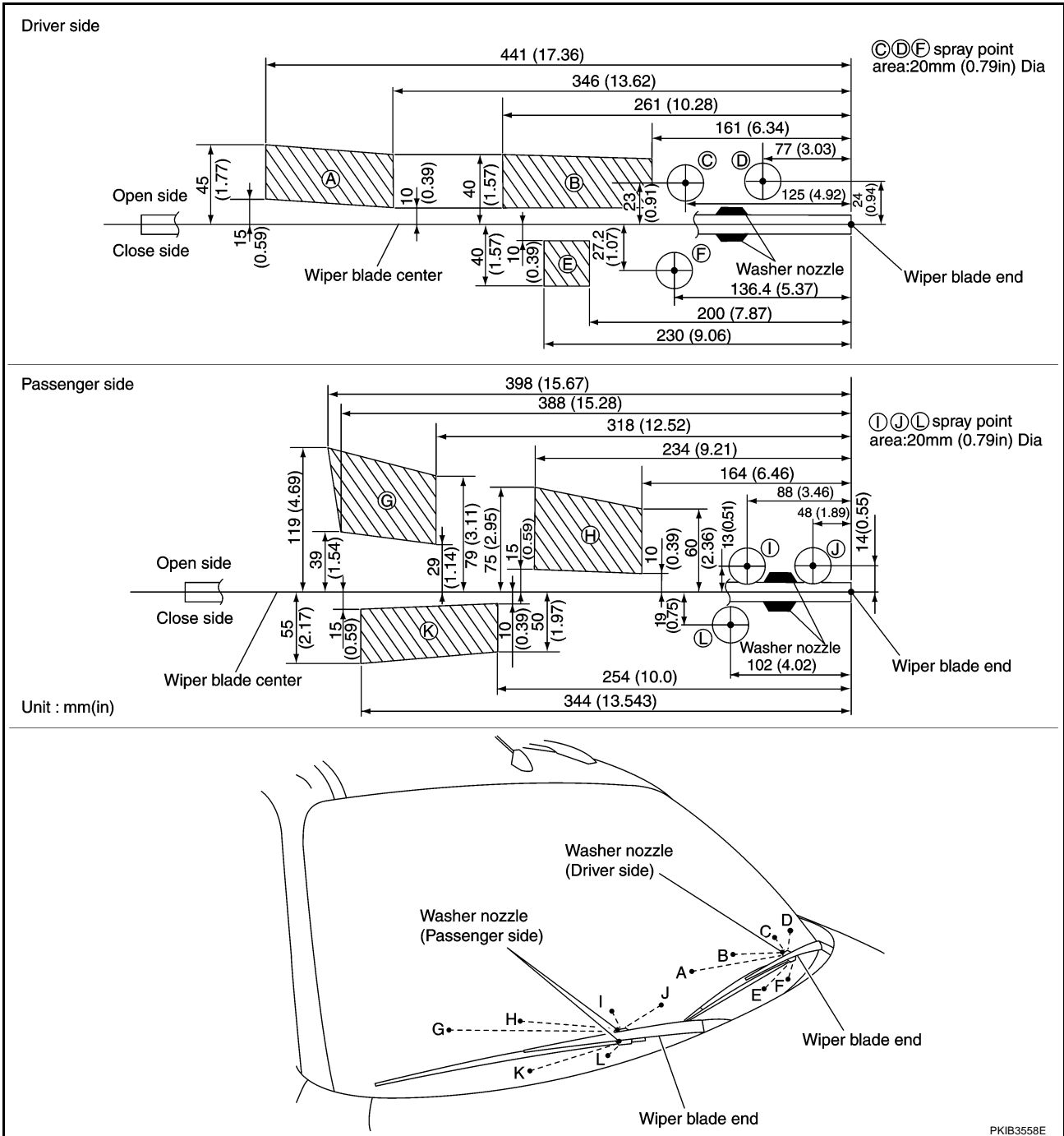
NKS0032V

Washer Nozzle Adjustment

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:

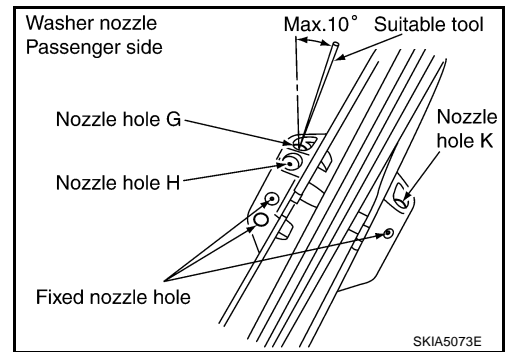
Only washer nozzles (A, B, E, G, H, and K) can be adjusted. Washer nozzles (C, D, F, I, J, and L) cannot be adjusted because of fixed nozzles.



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

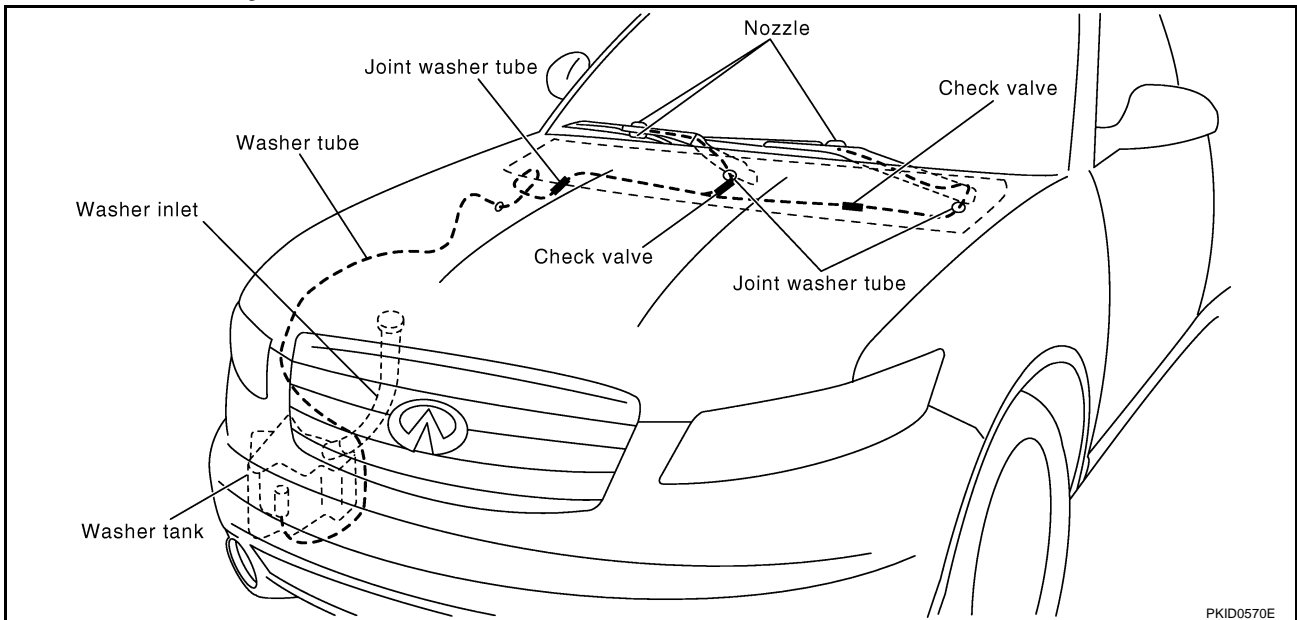


FRONT WIPER AND WASHER SYSTEM



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:

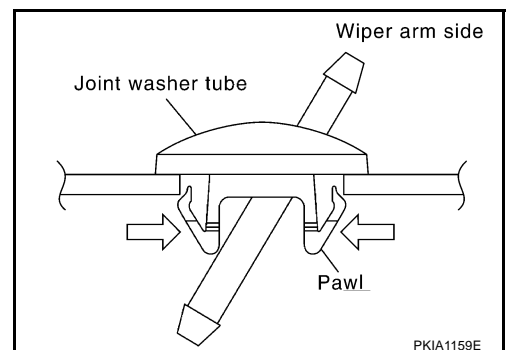
Removal/installation of the washer nozzle as a unit must not be done.

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

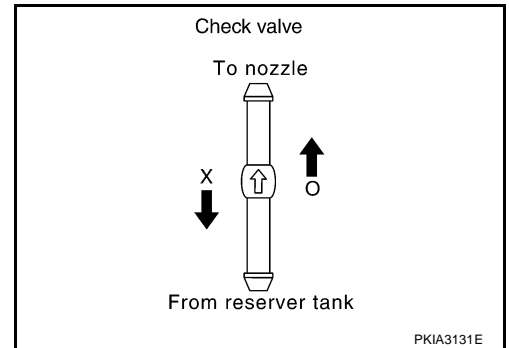
Installation is the reverse order of removal.

FRONT WIPER AND WASHER SYSTEM

Inspection of Washer Nozzle CHECK VALVE

NKS004P0

Blow check valve. Confirm that the air ventilates. Also confirm that inhalation is impossible.



Inspection of Front Wiper and Washer Switch Circuit

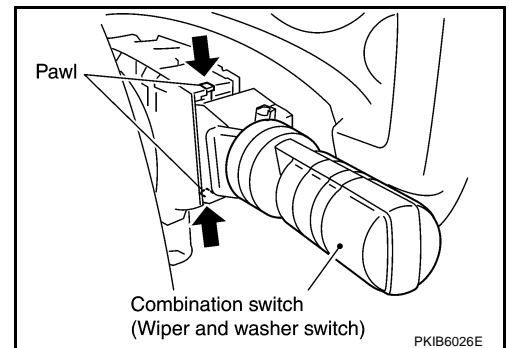
NKS004P8

Refer to [LT-118, "Combination Switch Inspection"](#).

Removal and Installation of Front Wiper and Washer Switch REMOVAL

NKS00330

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.



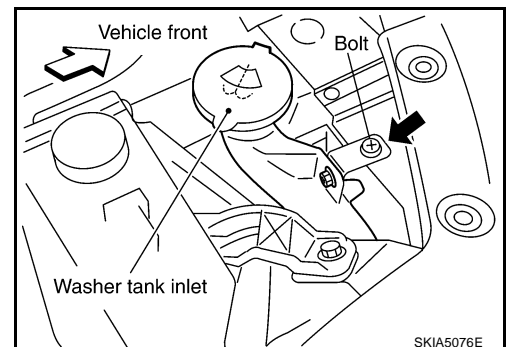
INSTALLATION

Installation is the reverse order of removal.

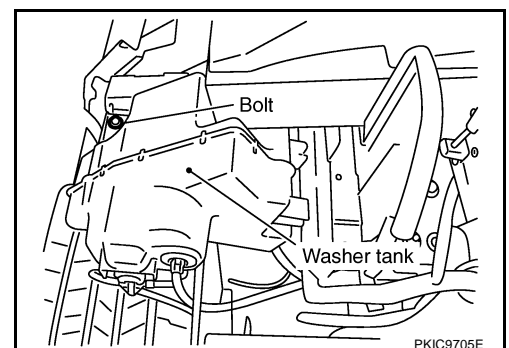
Removal and Installation of Washer Tank REMOVAL

NKS00331

1. Remove bolt and pull out washer tank inlet out of washer tank.



2. Remove front fillet molding (RH). Refer to [EI-14, "FRONT BUMPER"](#).
3. Remove fender protector front (RH). Refer to [EI-24, "FENDER PROTECTOR"](#).
4. Remove front 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.



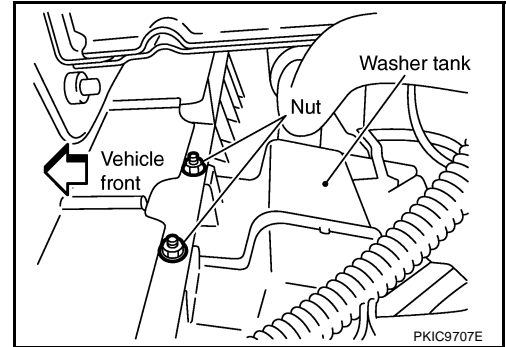
A
B
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F
G
H
I
J

WW

L
M

FRONT WIPER AND WASHER SYSTEM

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



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)

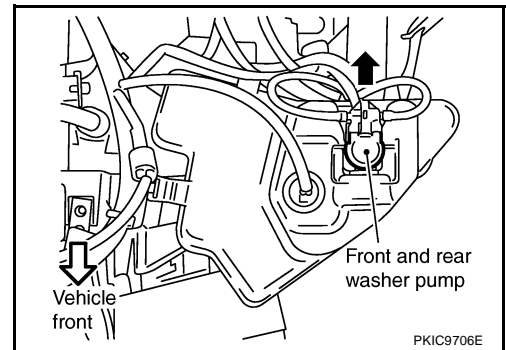
Washer tank inlet mounting bolt  : 6.8 N·m (0.69 kg-m, 60 in-lb)

Removal and Installation of Front and Rear 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 front and rear washer pump in direction shown by the arrow in the figure. Remove front and rear washer pump from washer tank.



INSTALLATION

Installation is the reverse order of removal.

NOTE:

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

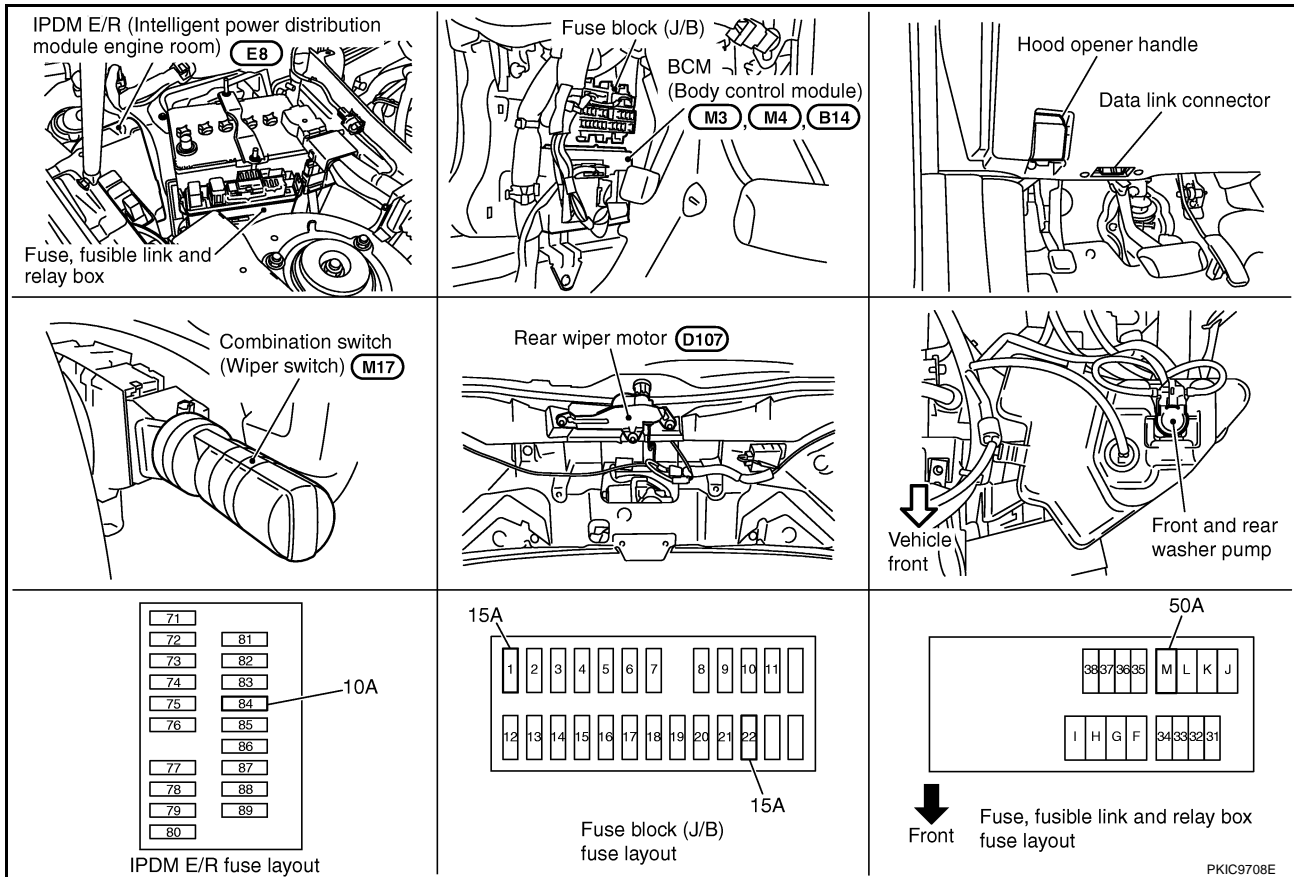
REAR WIPER AND WASHER SYSTEM

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

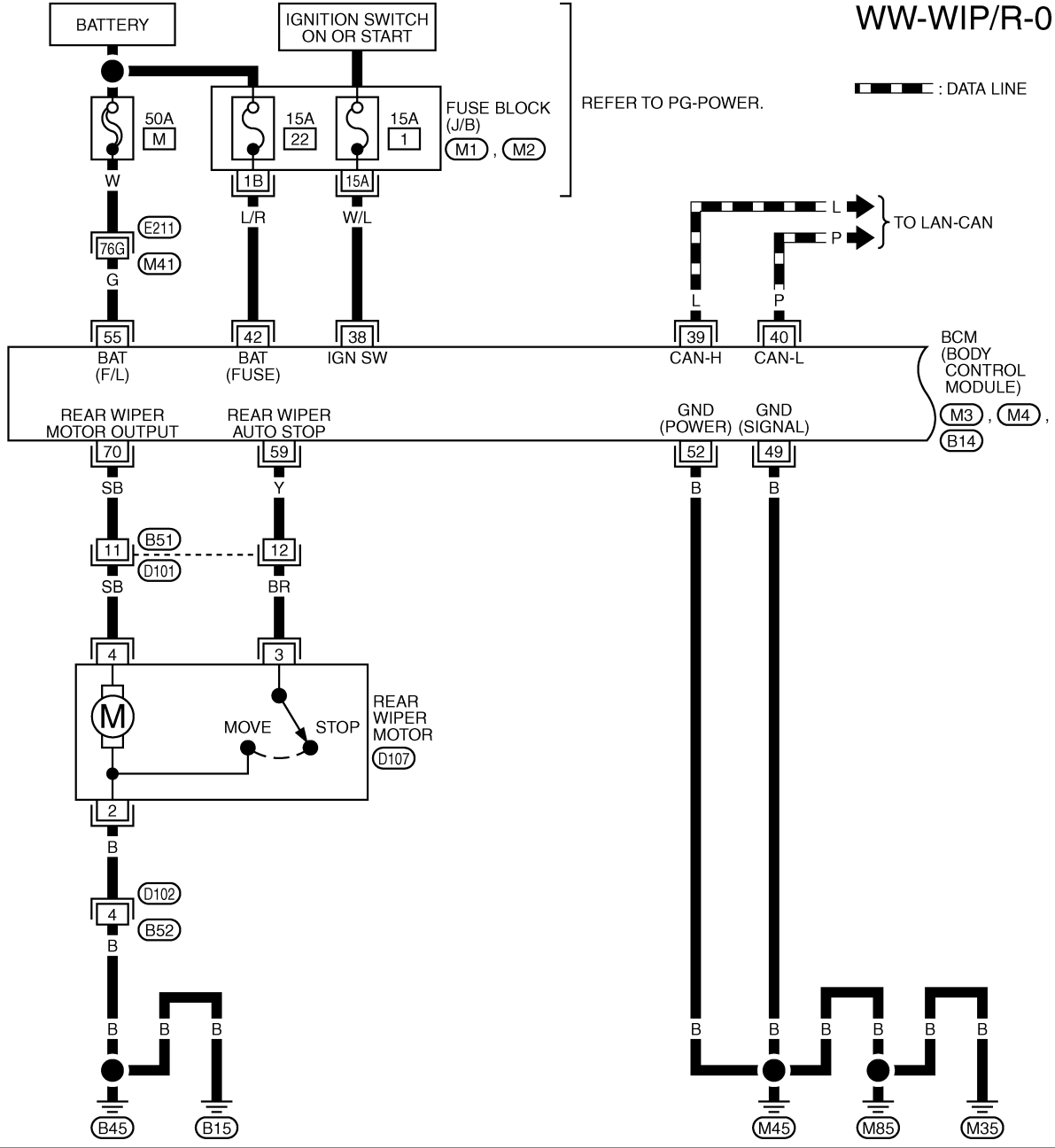
Refer to [BCS-3, "COMBINATION SWITCH READING FUNCTION"](#) .

REAR WIPER AND WASHER SYSTEM

Wiring Diagram — WIP/ R —

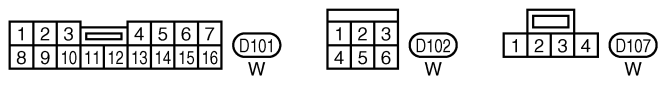
NKS00335

WW-WIP/R-01



A
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M

WW



REFER TO THE FOLLOWING.

(E211) -SUPER MULTIPLE JUNCTION (SMJ)

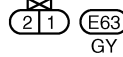
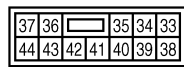
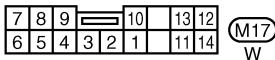
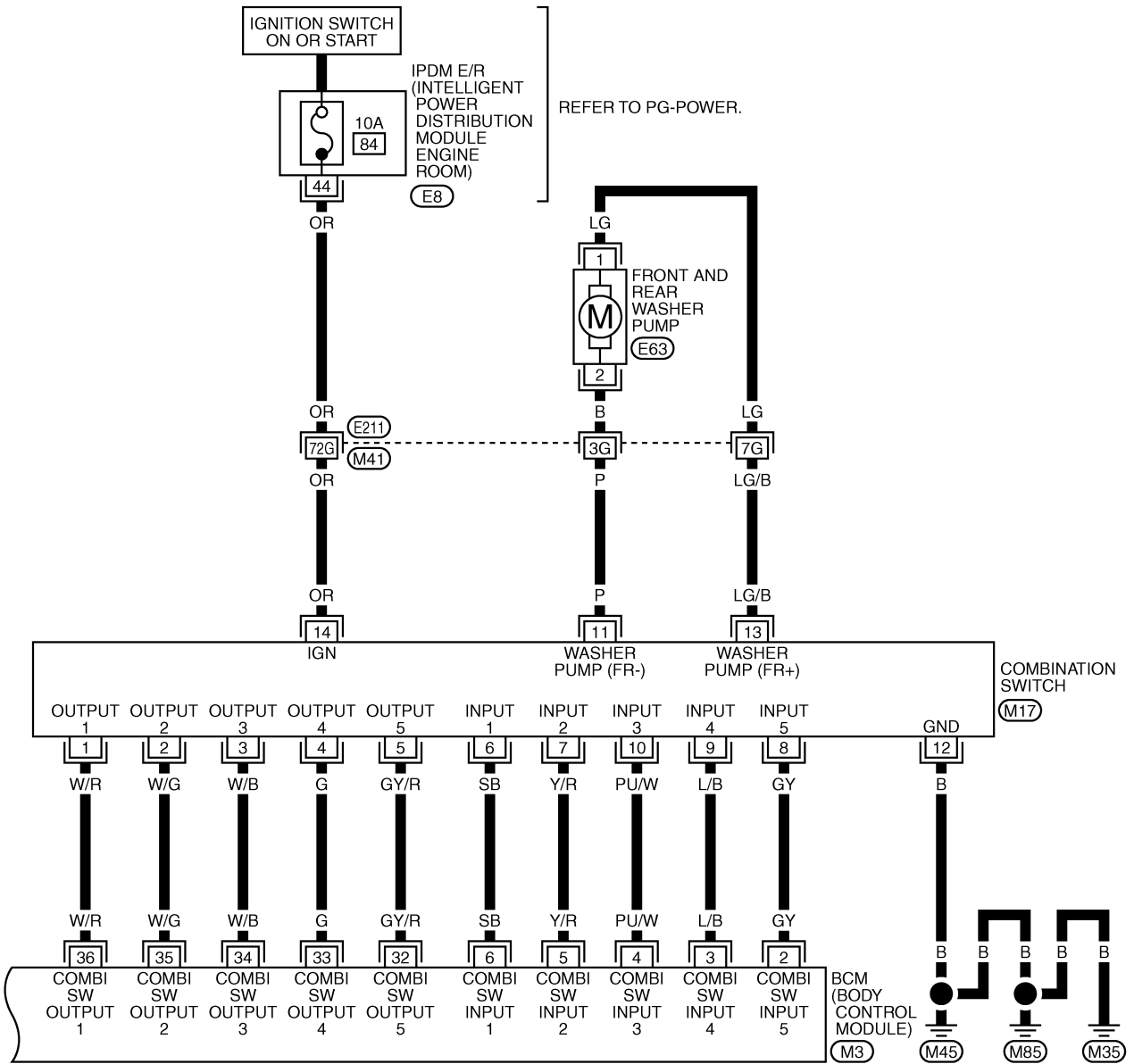
(M1), (M2) -FUSE BLOCK-JUNCTION BOX (J/B)

(M3), (M4), (B14) -ELECTRICAL UNITS

TKWM4376E

REAR WIPER AND WASHER SYSTEM

WW-WIP/R-02



REFER TO THE FOLLOWING.

(E211) -SUPER MULTIPLE JUNCTION (SMJ)

(M3) -ELECTRICAL UNITS

TKWM4377E

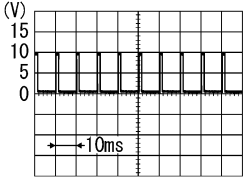
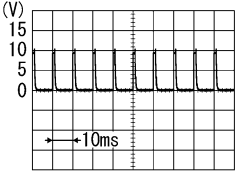
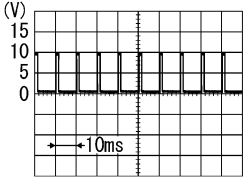
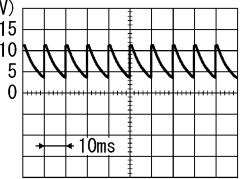
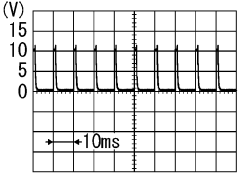
REAR WIPER AND WASHER SYSTEM

Terminals and Reference Values for BCM

NKS00336

CAUTION:

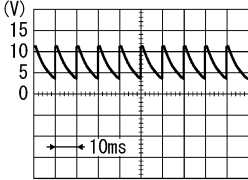
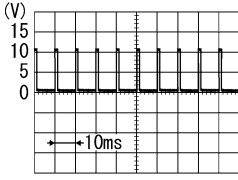
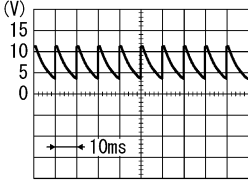
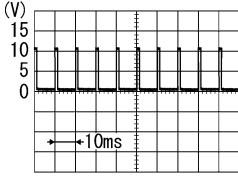
- Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF not to be fluctuated by overloaded.
- Turn wiper intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-II. Refer to [LT-117, "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 style="text-align: right; font-size: small;">PKIB4959J</p>	Approx. 1.0 V
6	SB	Combination switch input 1	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	Rear wiper switch ON	 <p style="text-align: right; font-size: small;">PKIB4955J</p>	Approx. 0.8 v
					Rear wiper INT	 <p style="text-align: right; font-size: small;">PKIB4959J</p>	Approx. 1.0 V
32	GY/R	Combination switch output 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 <p style="text-align: right; font-size: small;">PKIB4960J</p>	Approx. 7.0 - 7.5 V
					Rear wiper ON	 <p style="text-align: right; font-size: small;">PKIB4956J</p>	Approx. 1.0 V

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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 FUSES

Check for blown fuses.

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

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

OK or NG

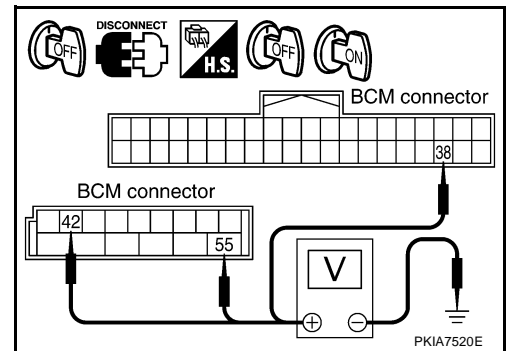
OK >> GO TO 2.

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
			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

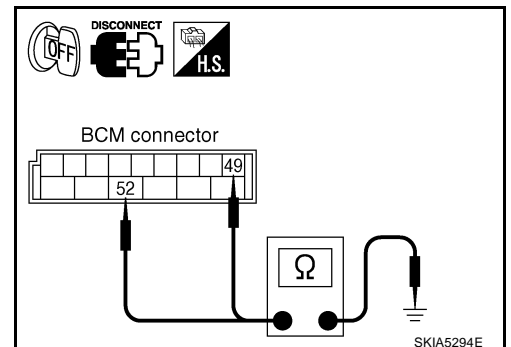
Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M4	49		Ground
	52		

OK or NG

OK >> INSPECTION END

NG >> Repair harness or connector.



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 status (ignition switch IGN position: ON/other: OFF) of ignition switch judged from the ignition switch signal.
IGN SW CAN "ON/OFF"	Displays status (ignition switch IGN position: ON/other: OFF) of ignition switch judged from the ignition switch signal (CAN communication lines).
FR WIPER HI "ON/OFF"	Displays status (front wiper switch high position: ON/other: OFF) of front wiper high switch judged from the front wiper switch signal.
FR WIPER LOW "ON/OFF"	Displays status (front wiper switch low position: ON/other: OFF) of front wiper low switch judged from the front wiper switch signal.
FR WIPER INT "ON/OFF"	Displays status (front wiper switch intermittent position: ON/other: OFF) of front wiper intermittent switch judged from the front wiper switch signal.
FR WASHER SW "ON/OFF"	Displays status (front washer switch ON position: ON/other: OFF) of front washer switch judged from the front wiper switch signal.
INT VOLUME "1 - 7"	Displays status (wiper intermittent dial position setting 1- 7) of intermittent volume switch judged from the front wiper switch signal.
FR WIPER STOP "ON/OFF"	Displays status (front wiper stop position: ON/move: OFF) of front wiper motor stop judged from the front wiper auto stop signal.
VEHICLE SPEED "km/h"	Displays status vehicle speed as judged from vehicle speed signal.
RR WIPER ON "OFF"	Displays status (rear wiper switch ON position: ON/other: OFF) of rear wiper switch judged from the rear wiper switch signal.
RR WIPER INT "OFF"	Displays status (rear wiper switch intermittent position: ON/other: OFF) of rear wiper intermittent switch judged from the rear wiper switch signal.
RR WASHER SW "OFF"	Displays status (rear washer switch ON position: ON/other: OFF) of rear washer switch judged from the rear wiper switch signal.
RR WIPER STOP "OFF"	Displays status (rear wiper stop position: OFF/move: ON) of rear wiper motor stop judged from the rear wiper auto stop signal.
H/L WASH SW ^{NOTE} "ON/OFF"	—

NOTE:

This item is displayed, but cannot be monitored.

REAR WIPER AND WASHER SYSTEM

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

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-118, "Combination Switch Inspection"](#).

OK or NG

OK >> GO TO 2.

NG >> Check combination switch (wiper switch). Refer to [LT-118, "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.

Without CONSULT-II

GO TO 3.

Does rear wiper operate normally?

YES >> Replace BCM. Refer to [BCS-14, "Removal and Installation of BCM"](#).

NO >> GO TO 3.

ACTIVE TEST			
RR WIPER	OFF		
ON			
MODE	BACK	LIGHT	COPY

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REAR WIPER AND WASHER SYSTEM

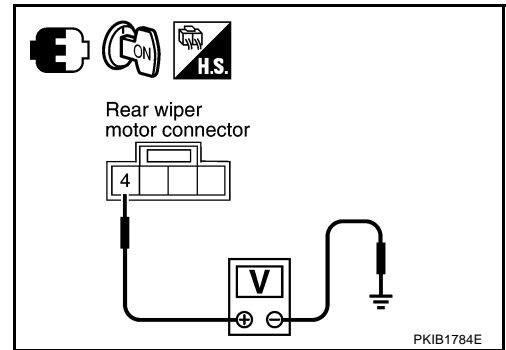
3. CHECK BCM

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.



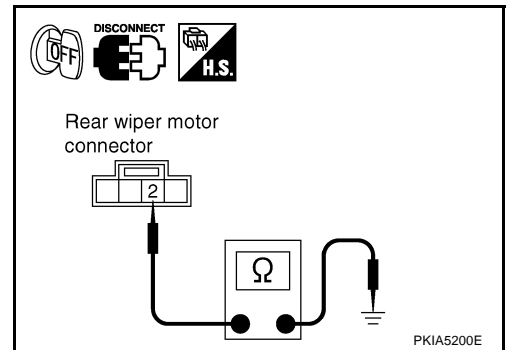
4. CHECK GROUND CIRCUIT

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 terminal 70 and rear wiper motor harness connector D107 terminal 4.

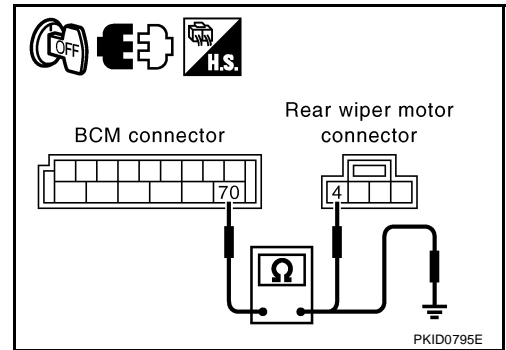
70 – 4 : Continuity should exist.

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-14, "Removal and Installation of BCM"](#) .
- NG >> Repair harness or connector.



REAR WIPER AND WASHER SYSTEM

Rear Wiper Does Not Return to Stop Position

NKS0033B

1. CHECK REAR WIPER MOTOR CIRCUIT

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 STOP", turn ON-OFF linked with rear 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

GO TO 2.

OK or NG

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

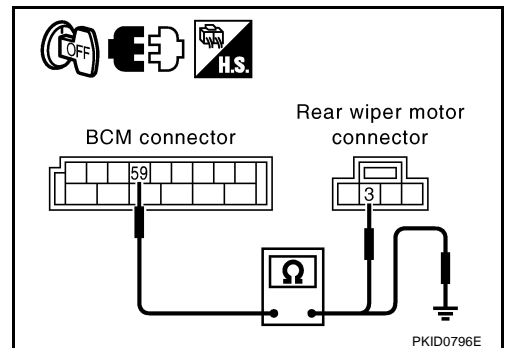
2. CHECK REAR WIPER AUTO STOP CIRCUIT

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.

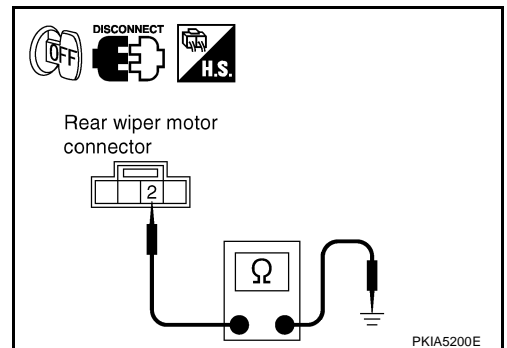


5. Check continuity between rear wiper motor harness connector D107 terminal 2 and ground.

2 – Ground : Continuity should exist.

OK or NG

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



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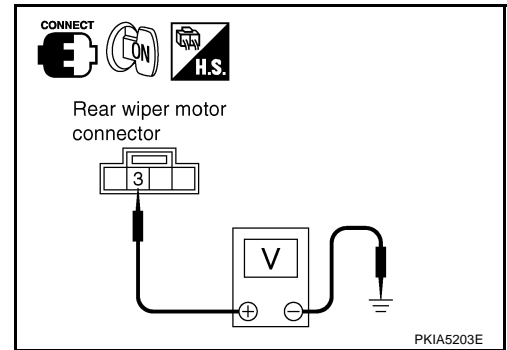
WW

REAR WIPER AND WASHER SYSTEM

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-14, "Removal and Installation of BCM"](#) .
 NG >> Replace rear wiper motor.

Only Rear Wiper ON Does Not Operate

NKS0033C

Refer to [LT-118, "Combination Switch Inspection"](#) .

Only Rear Wiper INT Does Not Operate

NKS0033D

Refer to [LT-118, "Combination Switch Inspection"](#) .

Wiper Does Not Wipe When Rear Washer Operates

NKS0033E

Refer to [LT-118, "Combination Switch Inspection"](#) .

Rear Wipers Do Not Stop

NKS0033F

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 INT", "RR WIPER ON", and "RR WASHER SW" turn ON-OFF according to wiper switch operation.

ⓧ Without CONSULT-II

Refer to [LT-118, "Combination Switch Inspection"](#) .

OK or NG

- OK >> Replace BCM. Refer to [BCS-14, "Removal and Installation of BCM"](#) .
 NG >> Check combination switch (wiper switch). Refer to [LT-118, "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		
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PKIA7660E

REAR WIPER AND WASHER SYSTEM

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

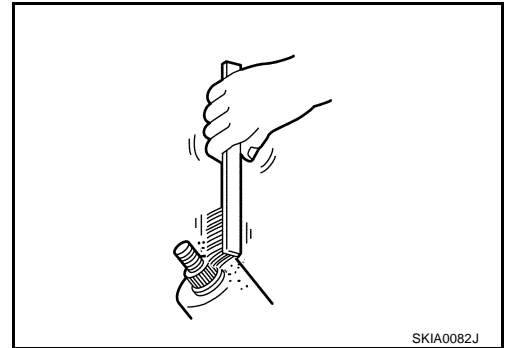
NKS004P1

REMOVAL

1. Turn rear wiper switch ON to operate wiper motor, then turn rear wiper switch OFF (auto stop).
2. Remove rear wiper arm cap, and remove rear wiper arm nut.
3. Remove rear wiper arm from the vehicle.

INSTALLATION

1. Clean up the pivot area as shown in the figure. This will reduce possibility of rear wiper arm nuts looseness.
2. Prior to rear wiper arms installation, turn rear wiper switch ON to operate wiper motor, and then turn rear wiper switch OFF (auto stop).



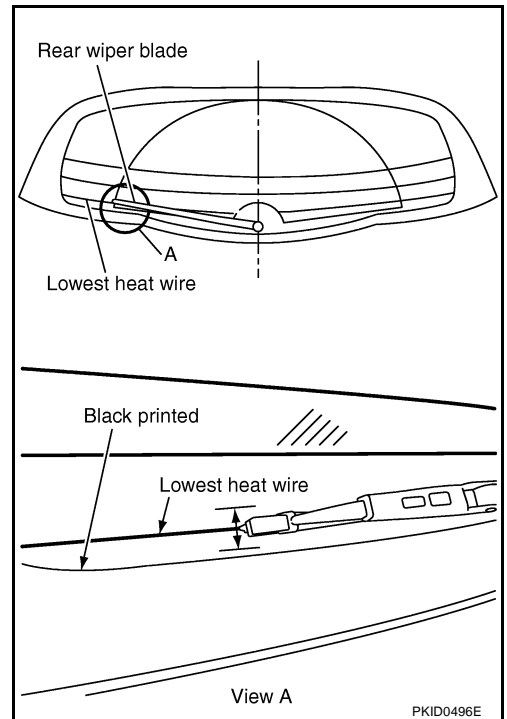
3. Lift the blade up and then set it down onto back door window glass surface to set the blade center to lowest heat wire immediately.
4. Tighten rear wiper arm nuts to specified torque.

Rear wiper arm nut  : 8.8 N·m (0.90 kg·m, 78 in·lb)

5. Spray washer fluid. Turn on rear wiper switch ON to operate wiper motor, and then turn rear wiper switch OFF (auto stop).
6. Ensure that wiper blade stop within the following range.

Lowest heat wire : $\pm 3.75 \text{ mm}$ ($\pm 0.148 \text{ in}$)

7. Install rear wiper arm cap.



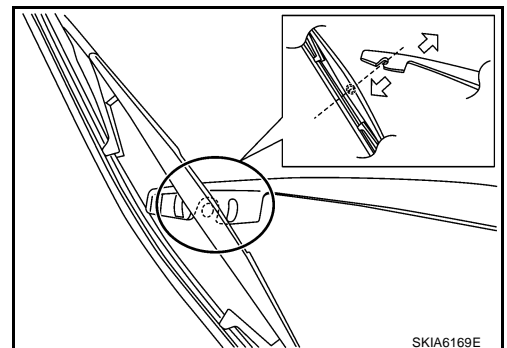
Removal and Installation of Rear Wiper Blade

REMOVAL

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

CAUTION:

Replace rear wiper blade as rear wiper blade assembly.



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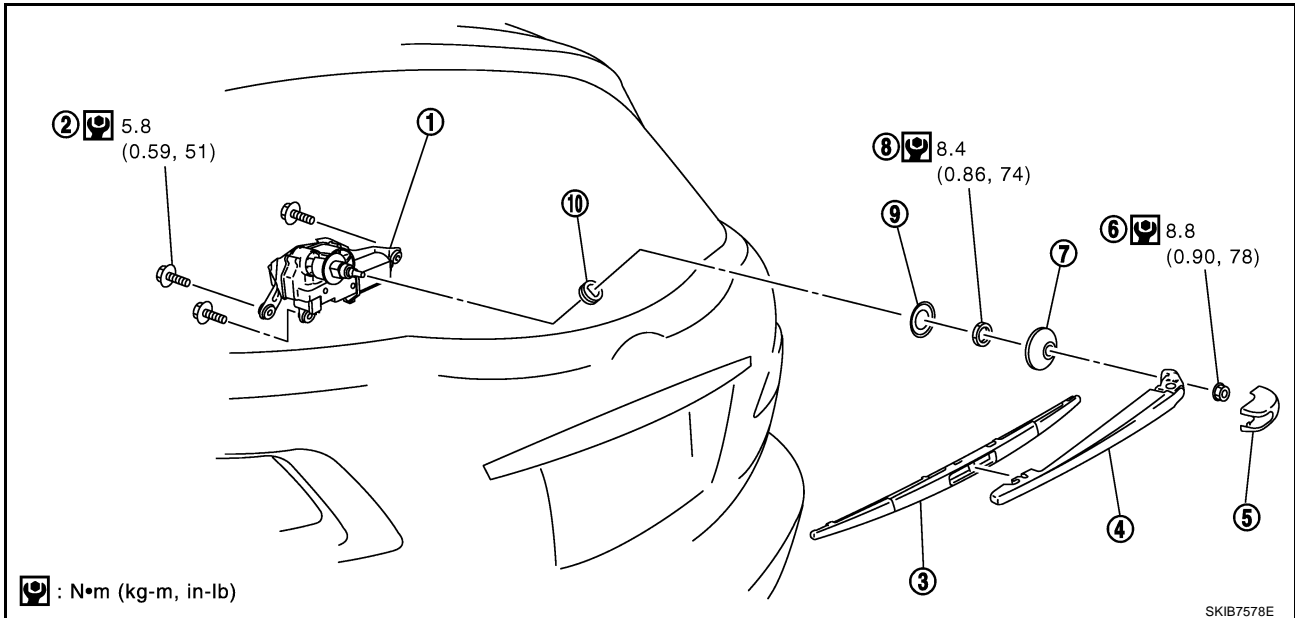
REAR WIPER AND WASHER SYSTEM

INSTALLATION

Installation is the reverse order of removal.

Removal and Installation of Rear Wiper Motor

NKS004P3

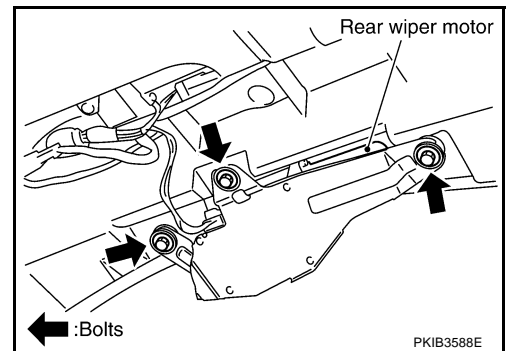


- | | | |
|---------------------|------------------------------|-----------------------|
| 1. Rear wiper motor | 2. Rear wiper mounting bolts | 3. Rear wiper blade |
| 4. Rear wiper arm | 5. Rear wiper arm cap | 6. Rear wiper arm nut |
| 7. Pivot cap | 8. Nut | 9. Washer |
| 10. Cushion rubber | | |

REMOVAL

1. Remove rear wiper arm. Refer to [WW-51, "REMOVAL"](#).
2. Remove pivot cap, and remove nut from vehicle.
3. Remove back door finisher. Refer to [EI-47, "BACK DOOR TRIM"](#).
4. Disconnect rear wiper motor connector.
5. Remove rear wiper motor mounting bolts and remove rear wiper motor from vehicle.

CAUTION:
Never remove cushion rubber.



INSTALLATION

1. Install rear wiper motor to the vehicle.

Rear wiper motor mounting bolts : 5.8 N-m (0.59 kg-m, 51 in-lb)

2. Connect rear wiper motor connector. Turn rear wiper switch ON to operate rear wiper motor, and then turn rear wiper switch OFF (auto stop).
3. Install back door finisher. Refer to [EI-47, "BACK DOOR TRIM"](#).
4. Install pivot cap, and nut.
5. Install rear wiper arm and rear wiper arm caps. Refer to [WW-51, "INSTALLATION"](#).

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

REAR WIPER AND WASHER SYSTEM

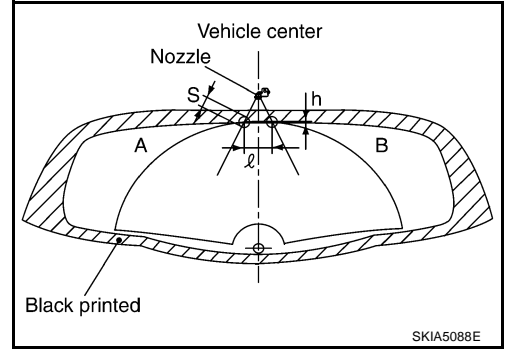
Washer Nozzle Adjustment

NKS004P4

- Adjust spray positions as shown in the figure.

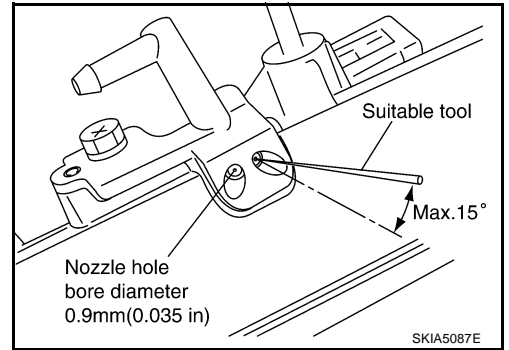
Unit: mm (in)

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



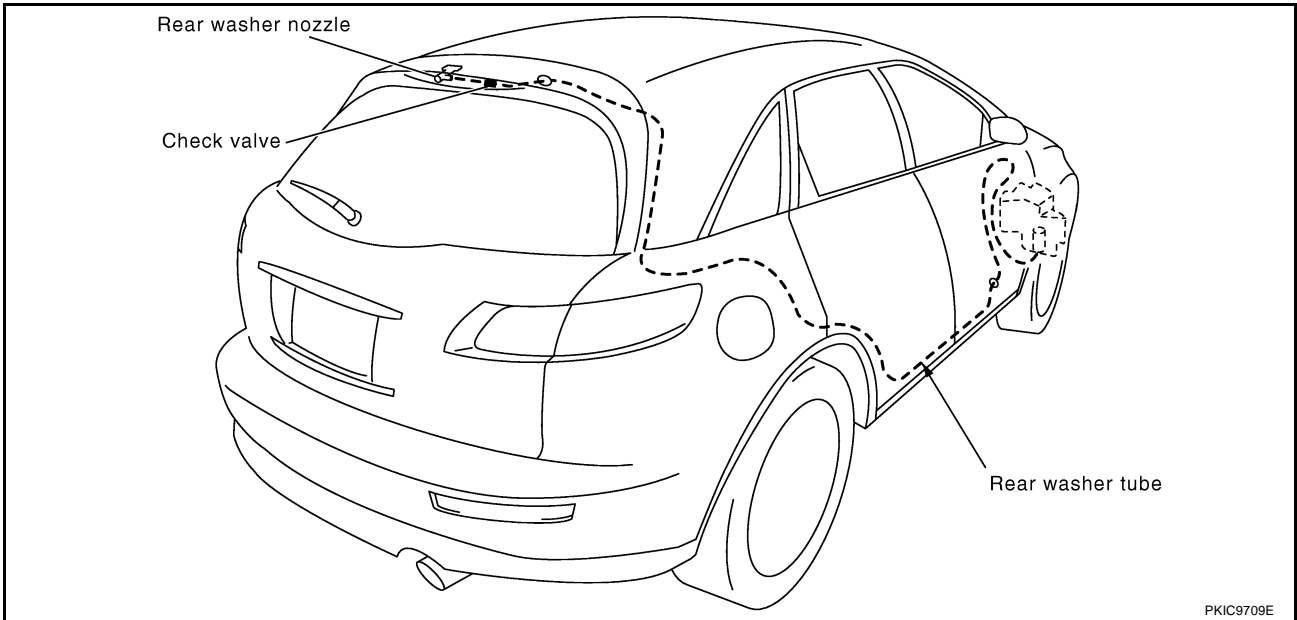
- Insert a needle or suitable tool into the nozzle hole and move it to adjust the spray position.

Adjustable range : ± 15° (In any direction)



Washer Tube Layout

NKS0033L



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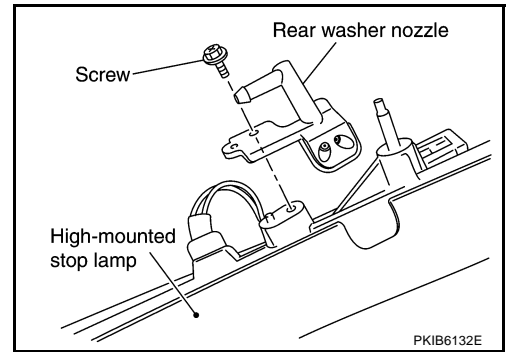
REAR WIPER AND WASHER SYSTEM

Removal and Installation of Washer Nozzle

NKS004P5

REMOVAL

1. Remove high-mounted stop lamp. Refer to [LT-128, "High-Mounted Stop Lamp"](#) .
2. Remove screw and remove washer nozzle from high-mounted stop lamp.



INSTALLATION

Installation is the reverse order of removal. Adjust nozzle spray location. Refer to [WW-53, "Washer Nozzle Adjustment"](#) .

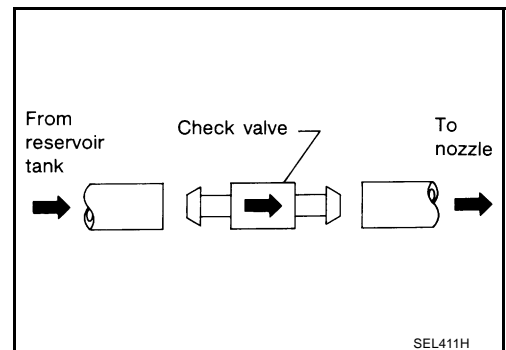
Check Valve

NKS004P6

Blow check valve. Confirm that the air ventilates. Also confirm that inhalation is impossible.

CAUTION:

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



Inspection of Front Wiper and Washer Switch Circuit

NKS004P7

Refer to [LT-118, "Combination Switch Inspection"](#) .

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 Front and Rear Washer pump

NKS0033P

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

POWER SOCKET

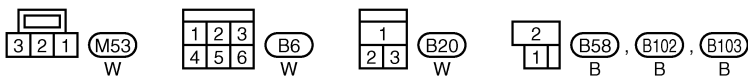
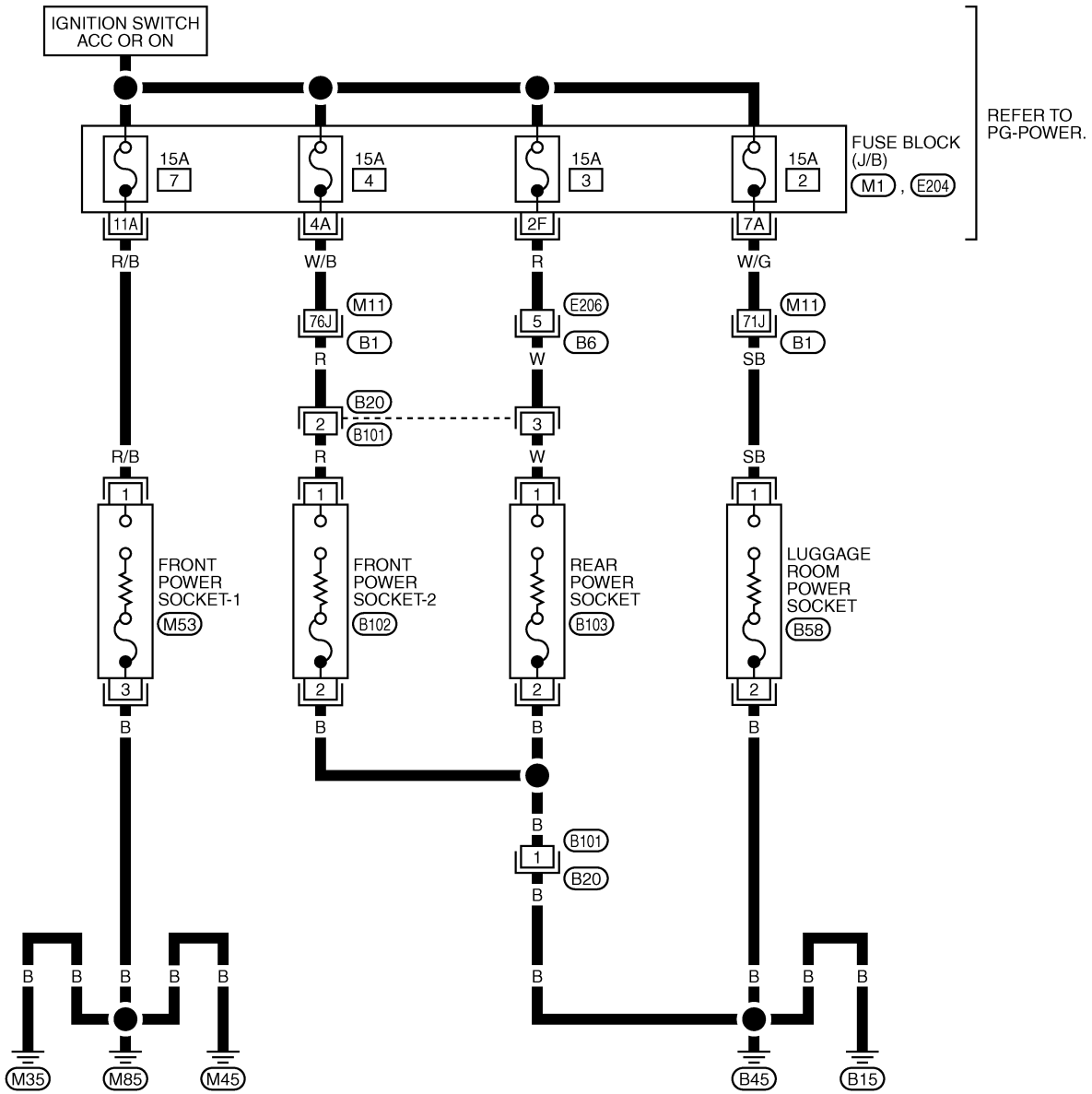
PFP:253A2

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

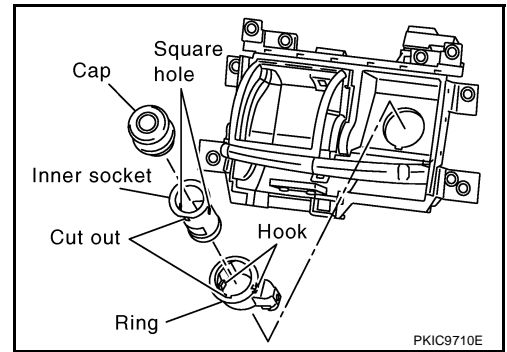
POWER SOCKET

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 ashtray while pressing pawls.



INSTALLATION

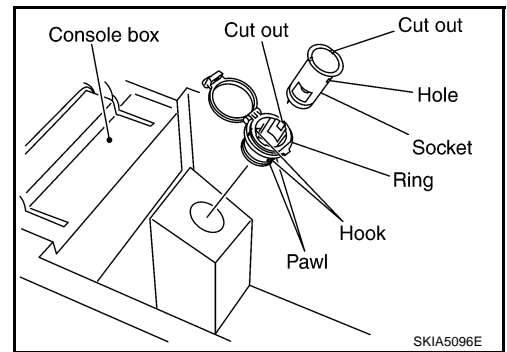
Installation is the reverse order of removal.

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

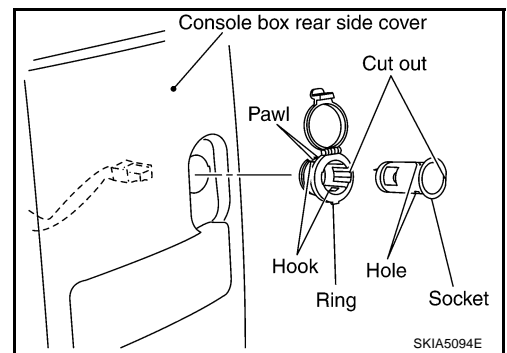
Installation is the reverse order of removal.

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.

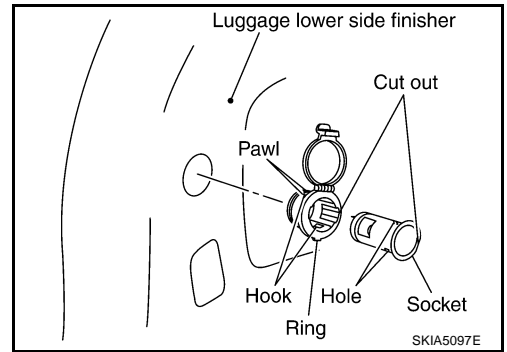
POWER SOCKET

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

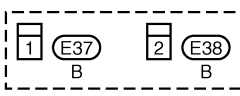
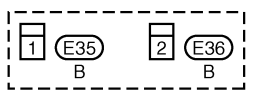
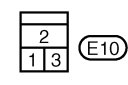
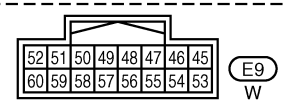
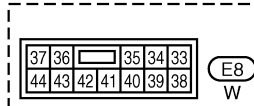
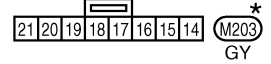
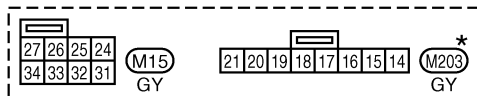
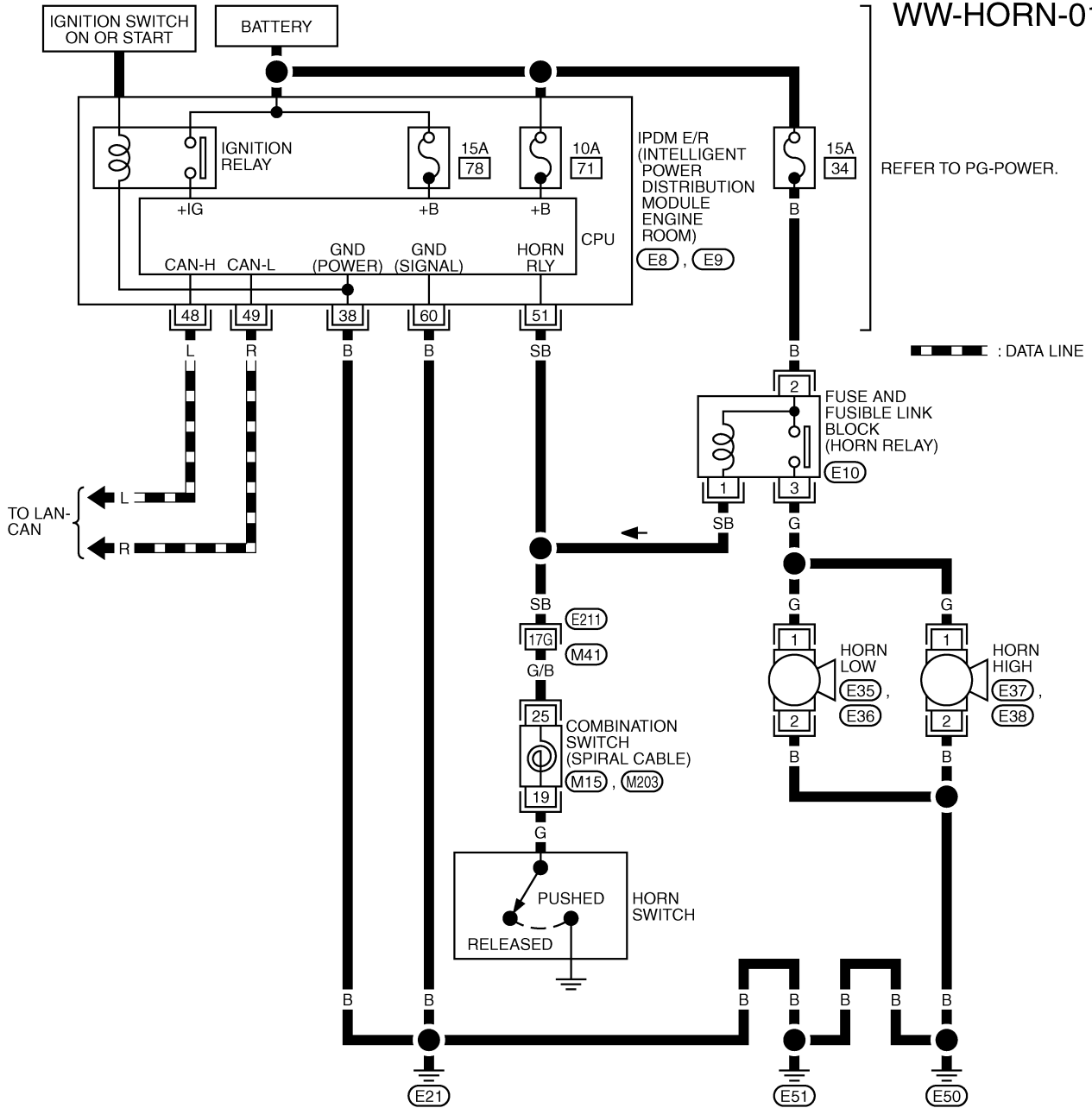
NKS0033W

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)

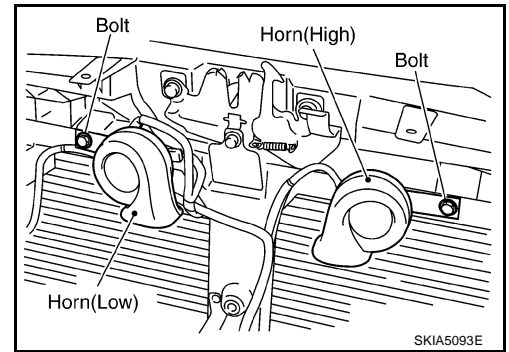
TKWM4378E

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)**

NKS0033X

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

WW

HORN
