SECTION WW
WIPER, WASHER & HORN

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SERVICE INFORMATION

PRECAUTION

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

INFOID:0000000001612916

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 “SUPPLEMENTAL RESTRAINT SYSTEM” and “SEAT BELTS” of this Service Manual.

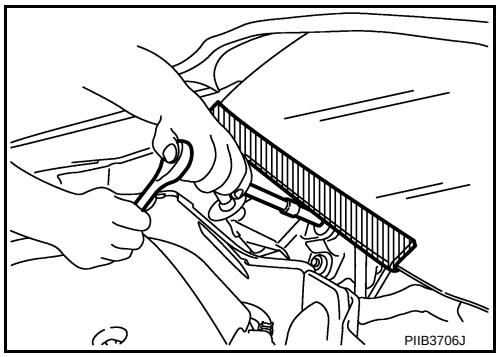
WARNING:

- **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 “SUPPLEMENTAL RESTRAINT SYSTEM”.**
- **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.**

Precaution for Procedure without Cowl Top Cover

INFOID:0000000001612917

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



FRONT WIPER AND WASHER SYSTEM

Component Parts and Harness Connector Location

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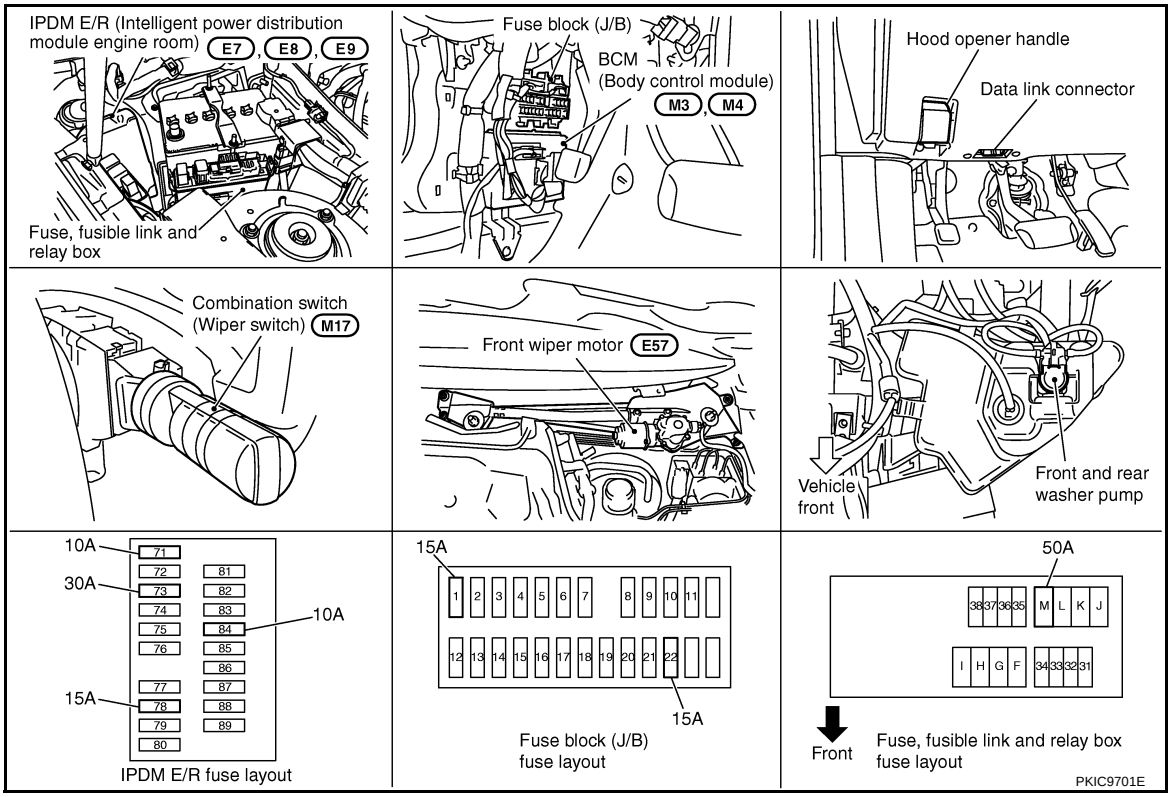


System Description

INFOID:0000000001328543

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

Wiper Dial Position Setting

Wiper intermittent dial position	Intermittent operation interval	Combination switch		
		INT VOLUME 1	INT VOLUME 2	INT VOLUME 3
1	Short	ON	ON	ON
2		ON	ON	OFF
3		ON	OFF	OFF
4	↑ ↓	OFF	OFF	OFF
5		OFF	OFF	ON
6		OFF	ON	ON
7	Long	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 "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 linger, 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 "LOW SPEED WIPER OPERATION".
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.)

COMBINATION SWITCH READING FUNCTION

Refer to BCS-4, "System Description".

CAN Communication System Description

INFOID:0000000001328544

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.

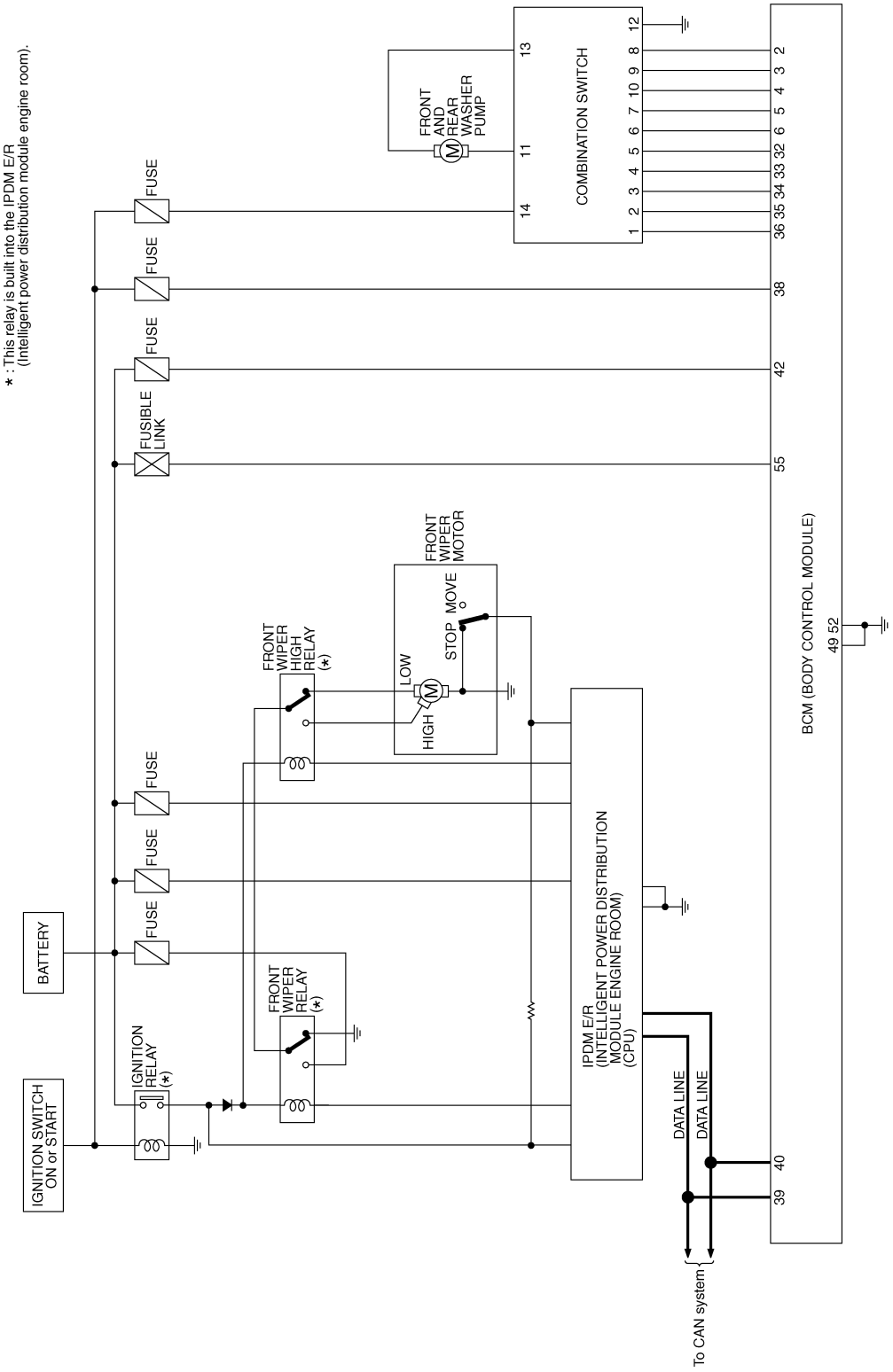
CAN Communication Unit

INFOID:0000000001328545

Refer to LAN-43, "CAN System Specification Chart".

Schematic

INFOID:0000000001328546



TKWM4373E

Wiring Diagram - WIPER -

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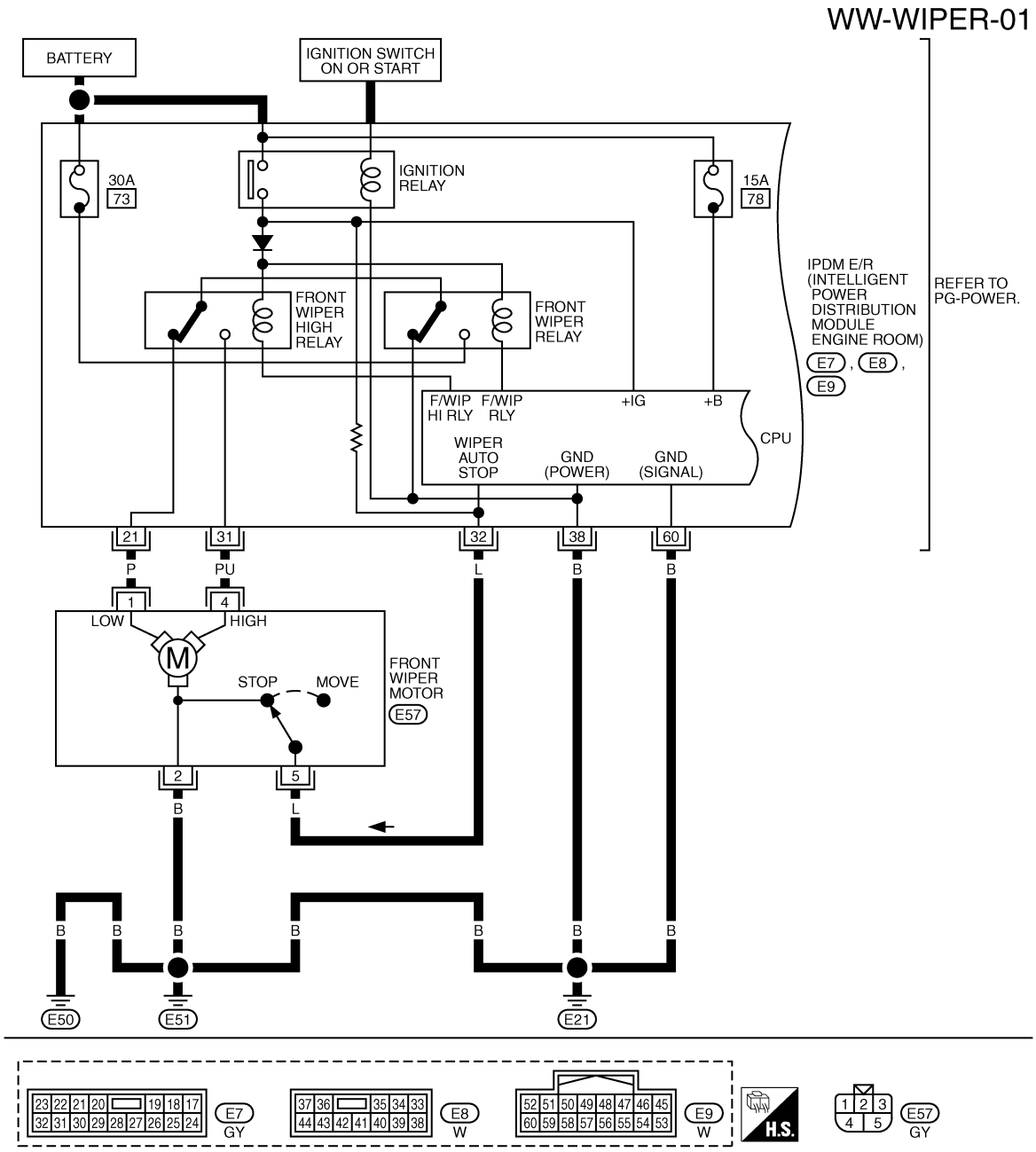
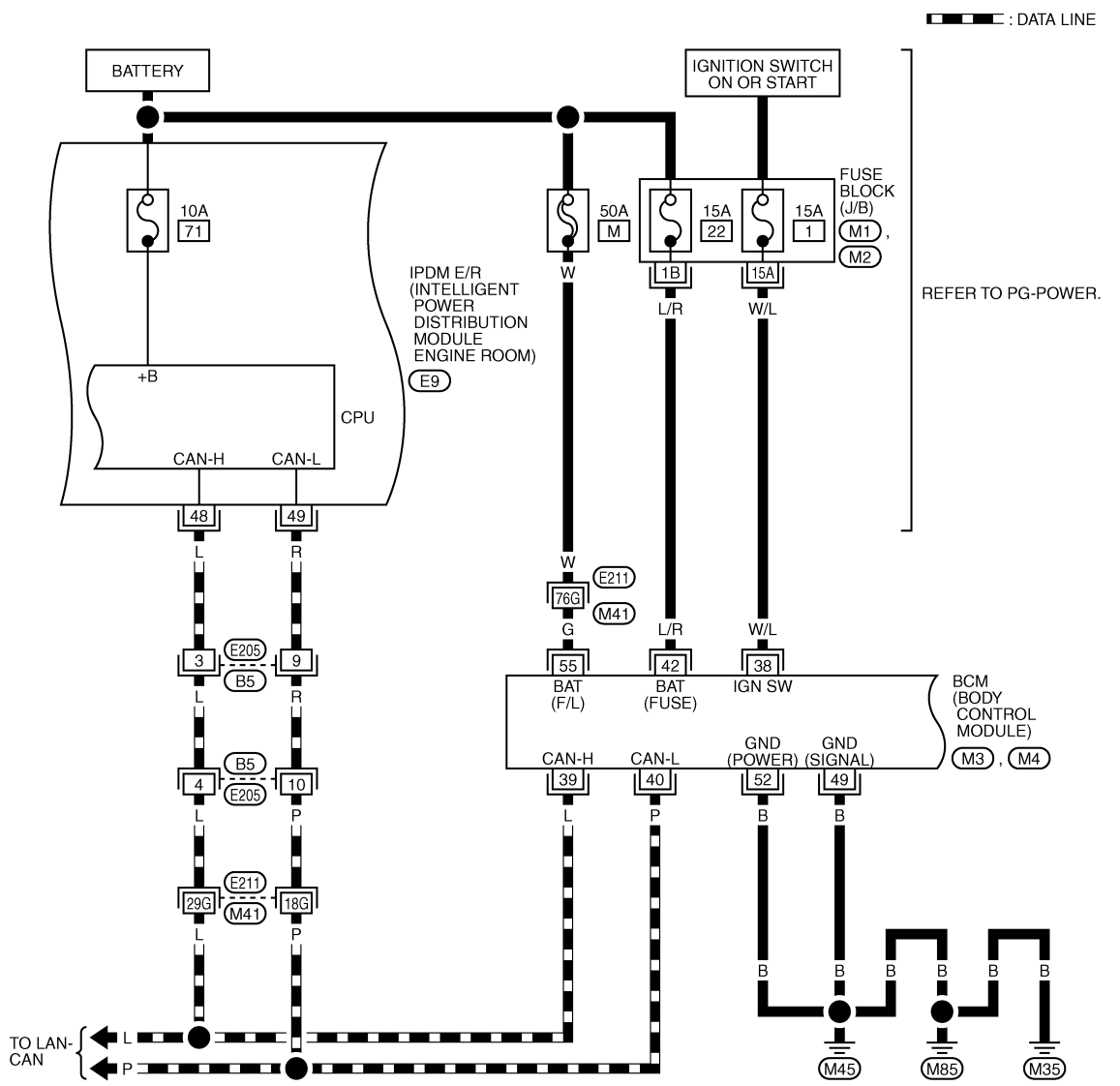


TKWM0663E

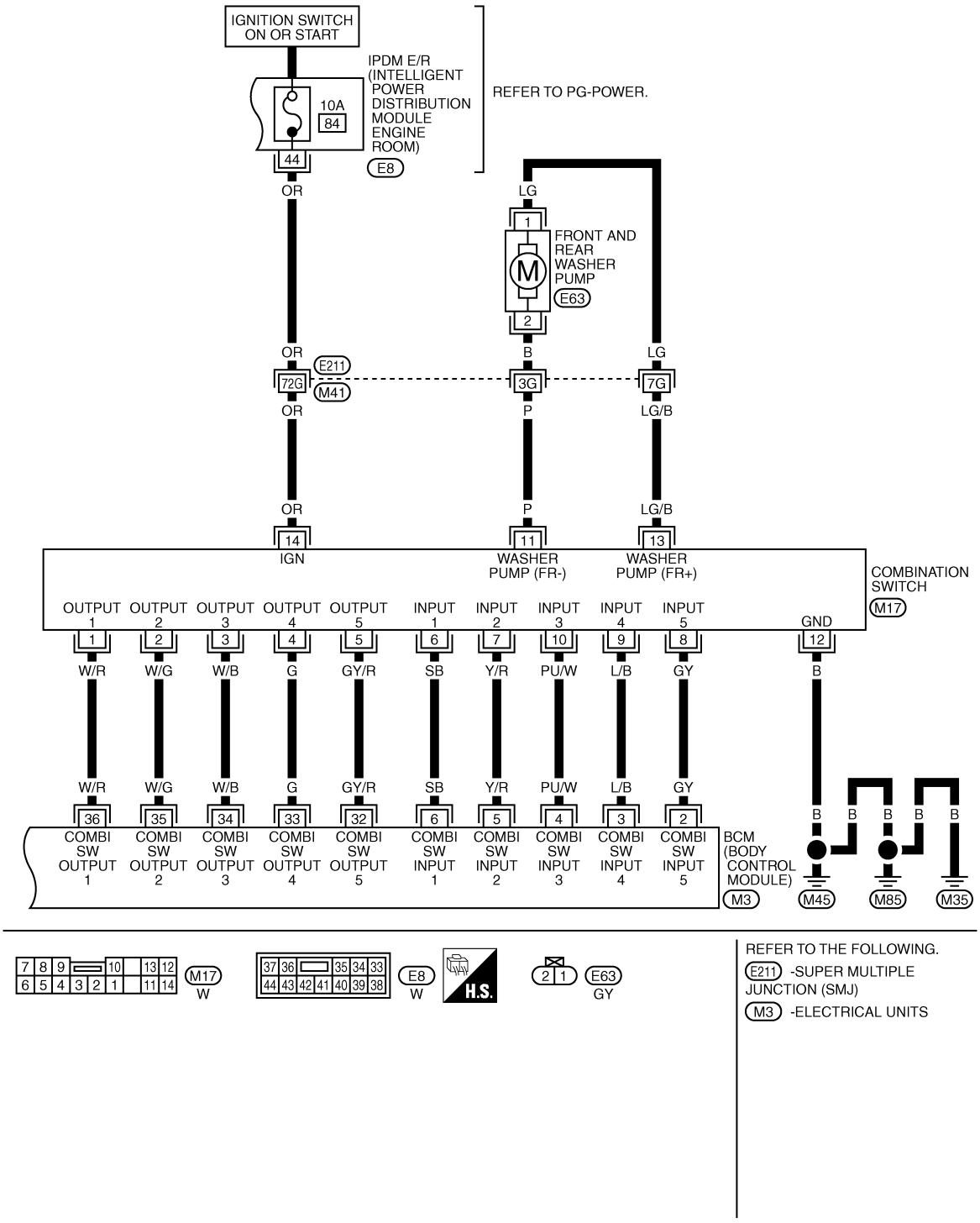
WW-WIPER-02



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

TKWM4374E

WW-WIPER-03



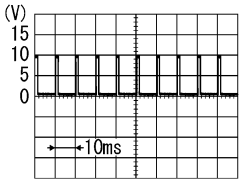
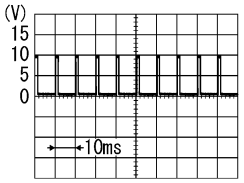
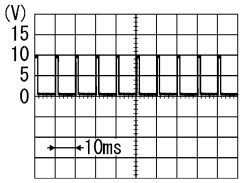
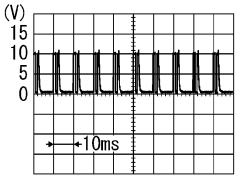
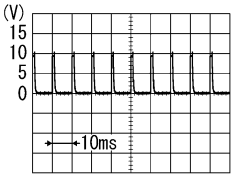
TKWM4375E

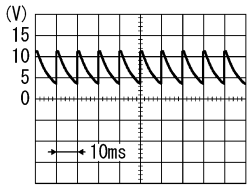
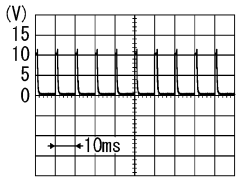
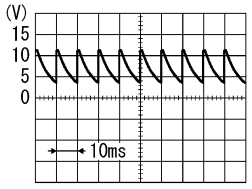
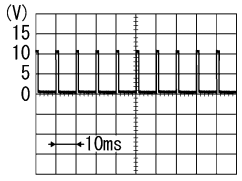
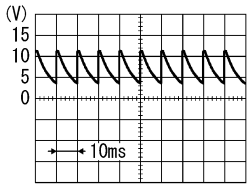
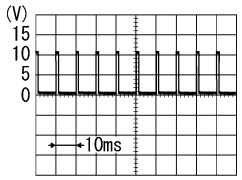
Terminal and Reference Value for BCM

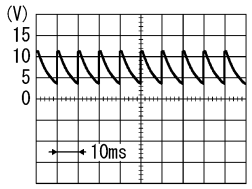
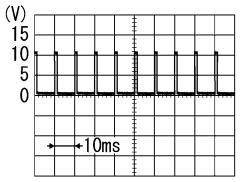
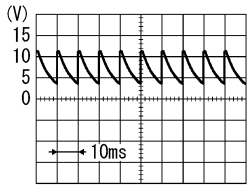
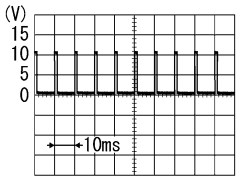
INFOID:0000000001328548

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-III. Refer to WW-15, "CONSULT-III Functions (BCM)".**

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
4	PU/W	Combination switch input 3	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Any of the conditions below • Front wiper switch MIST • Front wiper switch INT • Front wiper switch LO	 PKIB4959J Approx. 1.0 V
5	Y/R	Combination switch input 2	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)	Approx. 0 V
					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	 PKIB4959J Approx. 1.0 V
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 • Front wiper switch HI (Wiper intermittent dial position 4) • Wiper intermittent dial position 3	 PKIB4959J Approx. 1.0 V
					Any of the conditions below • Wiper intermittent dial position 1 • Wiper intermittent dial position 2	 PKIB4952J Approx. 1.7 V
					Any of the conditions below • Wiper intermittent dial position 6 • Wiper intermittent dial position 7	 PKIB4955J Approx. 0.8 V

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
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 • 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
33	G	Combination switch output 4	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)	 PKIB4960J Approx. 7.2 V
					Any of the conditions below • Wiper intermittent dial position 1 • Wiper intermittent dial position 5 • Wiper intermittent dial position 6	 PKIB4958J Approx. 1.2 V
34	W/B	Combination switch output 3	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)	 PKIB4960J Approx. 7.2 V
					Any of the conditions below • Wiper intermittent dial position 1 • Wiper intermittent dial position 2 • Wiper intermittent dial position 3	 PKIB4958J Approx. 1.2 V

Terminal No.	Wire color	Signal name	Measuring condition			Reference value
			Ignition switch	Operation or condition		
35	W/G	Combination switch output 2	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Any of the conditions below • Front wiper switch INT • Front wiper switch HI	 PKIB4958J Approx. 1.2 V
36	W/R	Combination switch output 1	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.2 V
					Any of the conditions below • Front wiper switch MIST • Front wiper switch LO • Front 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

Terminal and Reference Value for IPDM E/R

INFOID:0000000001328549

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

How to Proceed with Trouble Diagnosis

INFOID:0000000001328550

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-14, "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

INFOID:0000000001328551

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-8, "Wiring Diagram - WIPER -".

OK or NG

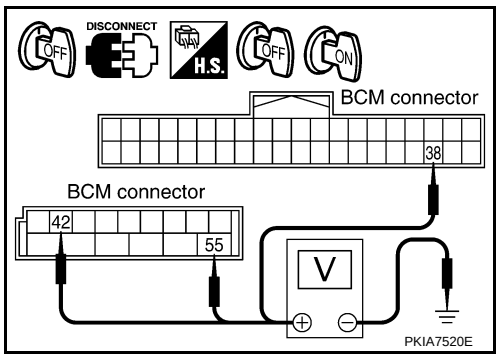
OK >> GO TO 2
NG >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse, Refer to PG-3, "Schematic".

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



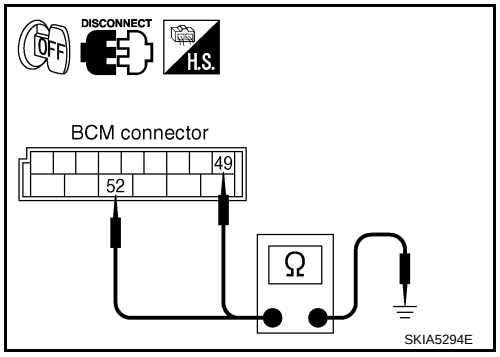
OK or NG

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

3.CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal		Continuity
M4	49	Ground	Yes
	52		



OK or NG

OK >> INSPECTION END
NG >> Repair harness or connector.

CONSULT-III Functions (BCM)

INFOID:0000000001328552

CONSULT-III 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.

WORK SUPPORT

Display Item List

Item	Description	CONSULT-III	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

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.

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 NOTE	“ON/OFF”	—

NOTE:

This item is displayed, but cannot be monitored.

ACTIVE TEST

Display Item List

Test item	Display on CONSULT-III 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

CONSULT-III Functions (IPDM E/R)

INFOID:0000000001328553

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

Diagnosis Mode	Description
SELF-DIAG RESULTS	Refer to PG-18, "CONSULT-III Function (IPDM E/R)".
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.

DATA MONITOR

All Signals, Main Signals, Selection From Menu

Item name	CONSULT-III 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

Test item	CONSULT-III 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 Does Not Operate

INFOID:0000000001328554

CAUTION:
During IPDM E/R fail-safe control, front wipers may not operate. Refer to PG-17, "System Description" in "PG IPDM E/R" to make sure that it is not in fail-safe status.

1.ACTIVE TEST

With CONSULT-III
1. Select "FRONT WIPER" of IPDM E/R active test item.
2. With operating the test item, check that front wiper "LO" and "HI" operation.

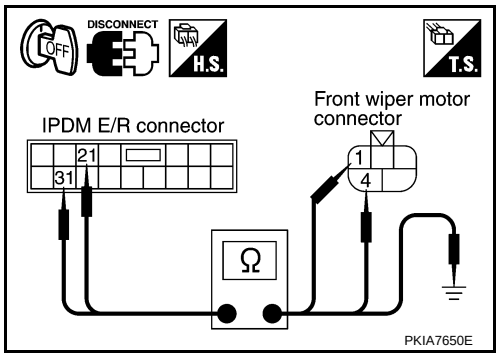
Without CONSULT-III
Start up auto active test. Refer to PG-20, "Auto Active Test".

Does front wiper operate normally?

YES >> GO TO 5.
NO >> GO TO 2.

2.CHECK FRONT WIPER 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 and front wiper motor harness connector.



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

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

IPDM E/R connector	Terminal		Continuity
E7	21	Ground	No
	31		

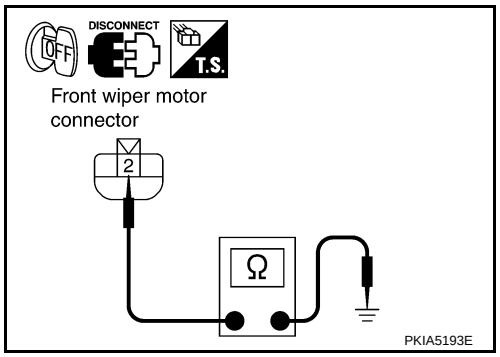
OK or NG

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

3.CHECK GROUND CIRCUIT

Check continuity between front wiper motor harness connector and ground.

2 – Ground : Continuity should exist.

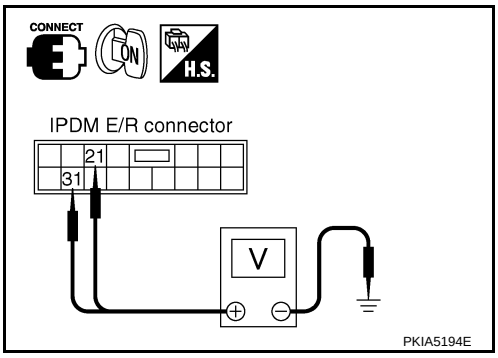


OK or NG

OK >> GO TO 4.
NG >> Repair harness or connector.

4.CHECK IPDM E/R

With CONSULT-III
1. Connect IPDM E/R connector and front wiper motor connector.
2. Select “FRONT WIPER” of IPDM E/R active test item.
3. With operating the test item, check voltage between IPDM E/R harness connector and ground.



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

Without CONSULT-III
1. Connect IPDM E/R connector and front wiper motor connector.
2. Start up auto active test. Refer to PG-20, "Auto Active Test".
3. Check voltage between IPDM E/R harness connector and ground.

(+)		(-)	Condition	Voltage (Approx.)
IPDM E/R connector	Terminal			
E7	21	Ground	Stopped	0 V
			LO operation	Battery voltage
	31		Stopped	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-III
1. Select “FR WIPER INT”, “FR WIPER LOW”, and “FR WIPER HI” of BCM data monitor item.
2. With operating the wiper switch, check the monitor status.

Without CONSULT-III
Refer to LT-104, "Combination Switch Inspection".

OK or NG

OK >> GO TO 6.
NG >> Check combination switch (wiper switch). Refer to LT-104, "Combination Switch Inspection".

6. CHECK CIRCUIT BETWEEN IPDM E/R AND BCM

Select “BCM” on CONSULT-III, and perform self-diagnosis for “BCM”.

Displayed self-diagnosis results

NO DTC>>Replace BCM. Refer to BCS-13, "Removal and Installation of BCM".
CAN COMM CIRCUIT>>Check CAN communication line of BCM. Refer to LAN-43, "CAN System Specification Chart".

Front Wiper Does Not Return to Stop Position

INFOID:0000000001328555

1. CHECK FRONT WIPER STOP SIGNAL

With CONSULT-III
1. Select “WIP AUTO STOP” of IPDM E/R data monitor item.
2. Check that “WIP AUTO STOP” turns “ACT P” - “STOP P” linked with wiper operation.

Without CONSULT-III
GO TO 2.

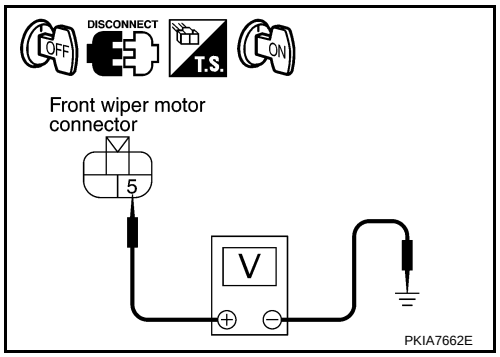
OK or NG

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

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 and ground.

5 – Ground : Battery voltage.



OK or NG

OK >> GO TO 4.
NG >> GO TO 3.

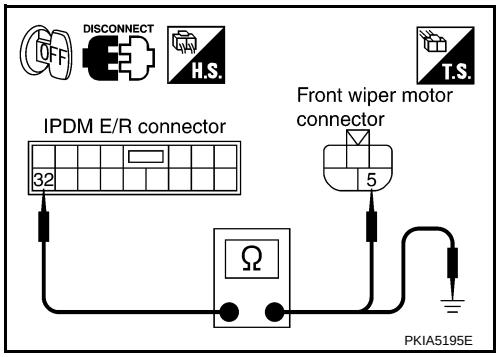
3.CHECK FRONT WIPER AUTO STOP CIRCUIT

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

32 – 5 : Continuity should exist.

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

32 – Ground : Continuity should not exist.



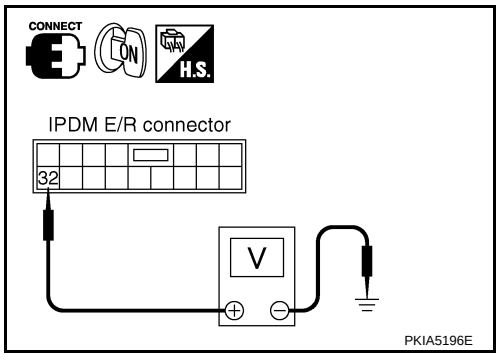
OK or NG

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

4.CHECK IPDM E/R

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

(+)		(-)	Condition	Voltage (Approx.)
IPDM E/R connector	Terminal			
E7	32	Ground	Wiper stopped	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

INFOID:0000000001328556

1.ACTIVE TEST

With CONSULT-III

1. Select “FRONT WIPER” of IPDM E/R active test item.

2. With operating the test item, check that front wiper “LO” operation.

Without CONSULT-III

Start up auto active test. Refer to PG-20, "Auto Active Test"

Does front wiper operate normally?

YES >> Check combination switch (wiper switch). Refer to LT-104, "Combination Switch Inspection".
NO >> GO TO 2.

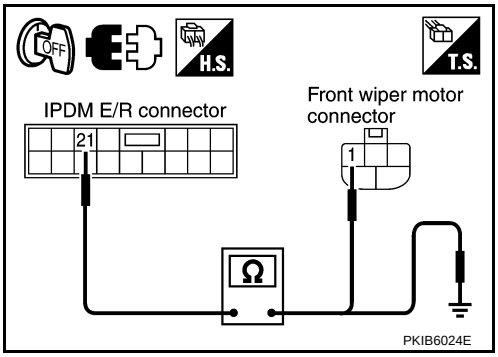
2.CHECK FRONT WIPER MOTOR CIRCUIT

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 and front wiper motor harness connector.

21 – 1 : Continuity should exist.

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

21 – Ground : Continuity should not exist.



OK or NG

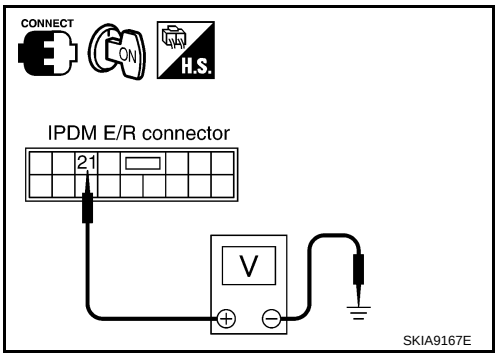
OK >> GO TO 3.
NG >> Repair harness or connector.

3.CHECK IPDM E/R

With CONSULT-III

1. Connect IPDM E/R connector and front wiper motor connector.
2. Select “FRONT WIPER” of IPDM E/R active test item.
3. With operating the test item, check voltage between IPDM E/R harness connector and ground.

21 – Ground : Battery voltage.



Without CONSULT-III

1. Connect IPDM E/R connector and front wiper motor connector.
2. Start up auto active test. Refer to PG-20, "Auto Active Test".
3. Check voltage between IPDM E/R harness connector and ground.

21 – Ground : Battery voltage.

OK or NG

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

Only Front Wiper High Does Not Operate

INFOID:0000000001328557

1.ACTIVE TEST

With CONSULT-III

1. Select “FRONT WIPER” of IPDM E/R active test item.
2. With operating the test item, check that front wiper “HI” operation.

Without CONSULT-III

Start up auto active test. Refer to PG-20, "Auto Active Test".

Does front wiper operate normally?

YES >> Check combination switch (wiper switch). Refer to LT-104, "Combination Switch Inspection".
NO >> GO TO 2.

2.CHECK FRONT WIPER MOTOR CIRCUIT

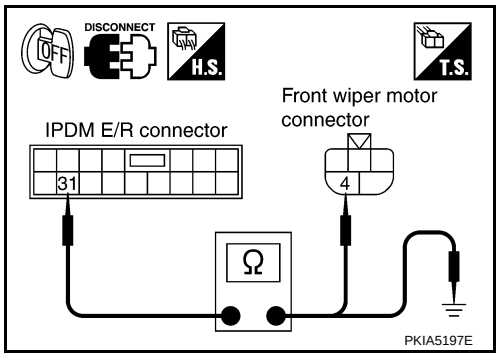
1. Turn ignition switch OFF.

2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector and front wiper motor harness connector.

31 – 4 : Continuity should exist.

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

31 – Ground : Continuity should not exist.



OK or NG

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

3.CHECK IPDM E/R

With CONSULT-III

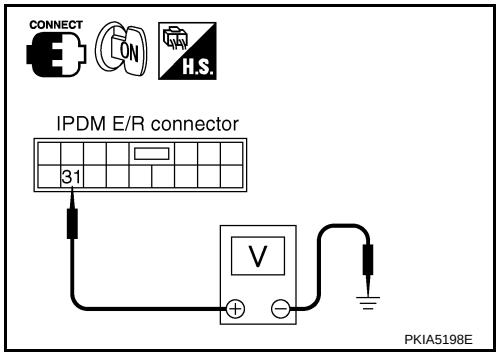
1. Connect IPDM E/R connector and front wiper motor connector.
2. Select “FRONT WIPER” of IPDM E/R active test item.
3. With operating the test item, check voltage between IPDM E/R harness connector and ground.

31 – Ground : Battery voltage.

Without CONSULT-III

1. Connect IPDM E/R connector and front wiper motor connector.
2. Start up auto active test. Refer to PG-20, "Auto Active Test".
3. Check voltage between IPDM E/R harness connector and ground.

31 – Ground : Battery voltage.



OK or NG

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

Only Front Wiper Intermittent Does Not Operate

INFOID:0000000001328558

1.CHECK COMBINATION SWITCH

With CONSULT-III

1. Select “FR WIPER INT” of BCM data monitor item.
2. With operating the front wiper switch, check the monitor status.

Without CONSULT-III

Refer to LT-104, "Combination Switch Inspection".

OK or NG

OK >> Replace BCM. Refer to BCS-13, "Removal and Installation of BCM".
NG >> Check combination switch (wiper switch) Refer to LT-104, "Combination Switch Inspection".

Front Wiper Interval Time Is Not Controlled by Vehicle Speed

INFOID:0000000001328559

1.CHECK FUNCTION OF COMBINATION METER

Confirm that speedometer operates normally.

Does speedometer operate normally?

YES >> GO TO 2.
NO >> Combination meter vehicle speed system malfunction. Refer to DI-17, "Vehicle Speed Signal Inspection".

2.CHECK CAN COMMUNICATION BETWEEN BCM AND COMBINATION METER

Select “BCM” on CONSULT-III, and perform self-diagnosis for “BCM”.

Displayed self-diagnosis results

NO DTC>>Replace BCM. Refer to BCS-13, "Removal and Installation of BCM".
CAN COMM CIRCUIT>>Check CAN communication line of BCM. Refer to LAN-43, "CAN System Specification Chart".

Front Wiper Intermittent Operation Switch Position Cannot Be Adjusted

INFOID:0000000001328560

1.CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-III
1. Select “INT VOLUME” of BCM data monitor item.
2. Check that “INT VOLUME”, changes in order form 1 to 7 according to wiper switch operation.

Without CONSULT-III
Refer to LT-104, "Combination Switch Inspection".

OK or NG

OK >> Replace BCM. Refer to BCS-13, "Removal and Installation of BCM".
NG >> Check combination switch (wiper switch). Refer to LT-104, "Combination Switch Inspection".

Wiper Does Not Wipe When Front Washer Operates

INFOID:0000000001328561

1.CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-III
1. Select “FR WASHER SW” of BCM data monitor item.
2. Check that “FR WASHER SW” turn ON-OFF according to front wiper switch operation.

Without CONSULT-III
Refer to LT-104, "Combination Switch Inspection".

OK or NG

OK >> Replace BCM Refer to BCS-13, "Removal and Installation of BCM".
NG >> Check combination switch (wiper switch). Refer to LT-104, "Combination Switch Inspection".

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

INFOID:0000000001328562

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-III
1. Select “WIP AUTO STOP” of BCM data monitor item.
2. Check that “WIP AUTO STOP” turns “ACT P” - “STOP P” linked with wiper operation.

Without CONSULT-III
GO TO 2.

OK or NG

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

2.CHECK WIPER AUTO STOP CIRCUIT

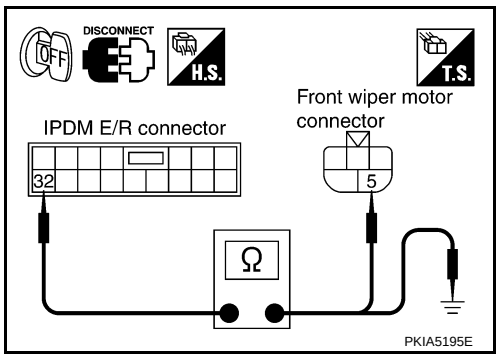
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.

3. Check continuity between IPDM E/R harness connector and front wiper motor harness connector.

32 – 5 : Continuity should exist.

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

32 – Ground : Continuity should not exist.



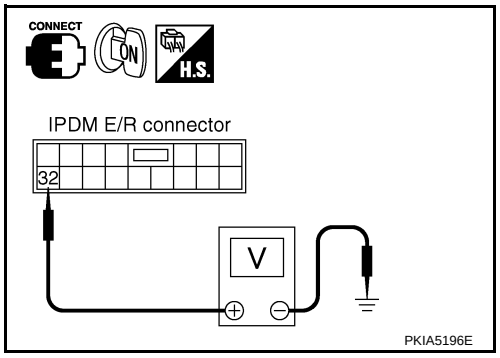
OK or NG

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 and ground while front wiper motor is stopped and while it is operating.

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



OK or NG

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

Front Wiper Does Not Stop

INFOID:0000000001328563

1.CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-III

1. Select “FR WIPER INT”, “FR WIPER LOW”, “FR WIPER HI”, and “FR WASHER SW” of BCM data monitor item.
2. With operating the wiper switch, check the monitor status.

Without CONSULT-III

Refer to LT-104, "Combination Switch Inspection".

OK or NG

OK >> Replace IPDM E/R.
NG >> Check combination switch (wiper switch). Refer to LT-104, "Combination Switch Inspection".

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

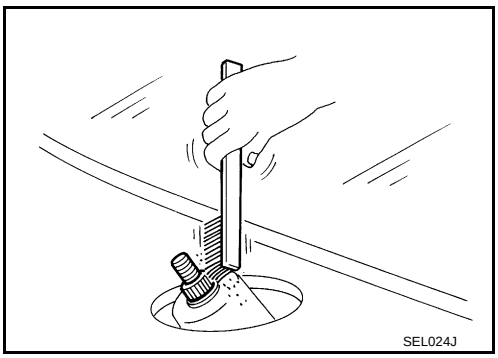
INFOID:0000000001328564

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

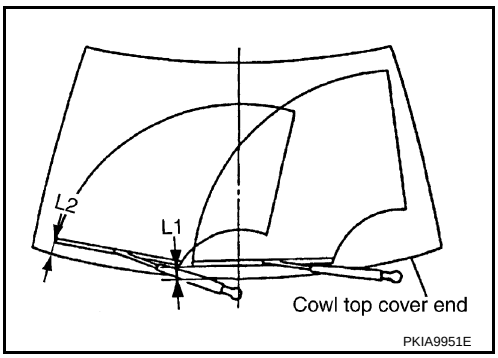
1. Clean up the pivot area as shown in the figure. This will reduce possibility of front wiper arm nuts looseness.
2. Prior to front wiper arms installation, turn front wiper switch ON to operate wiper motor, and then turn front wiper switch OFF (auto stop).
3. Install washer tube to washer tube joint.



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)

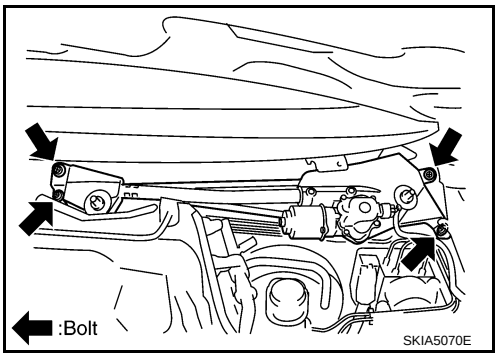
8. Install front wiper arm caps.

Removal and Installation of Front Wiper Drive Assembly

INFOID:0000000001328565

REMOVAL

1. Remove front wiper arms. Refer to WW-23, "Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location".
2. Remove cowl top cover. Refer to EI-23, "Component Parts Location".
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.



INSTALLATION

1. Install front wiper drive assembly to the vehicle.

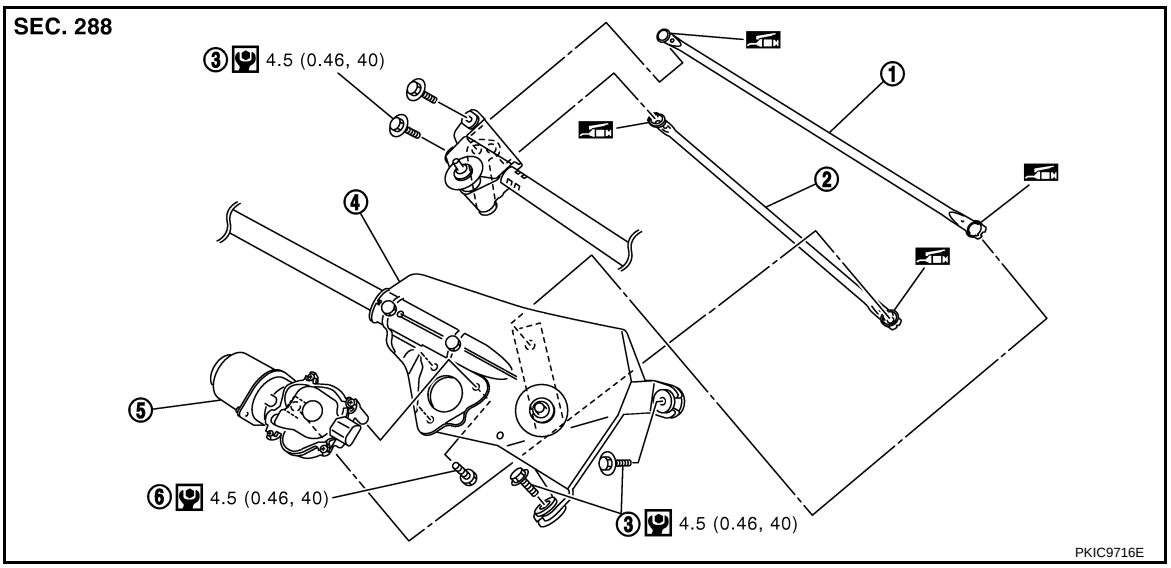
Front wiper drive assembly mounting bolt : 4.5 N·m (0.46 kg-m, 40 in-lb)

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, "Component Parts Location".

5. Install front wiper arms and arm caps. Refer to WW-23, "Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location".
6. Install front wiper arm washer tube.

Disassembly and Assembly of Front Wiper Drive Assembly

INFOID:0000000001328566



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.

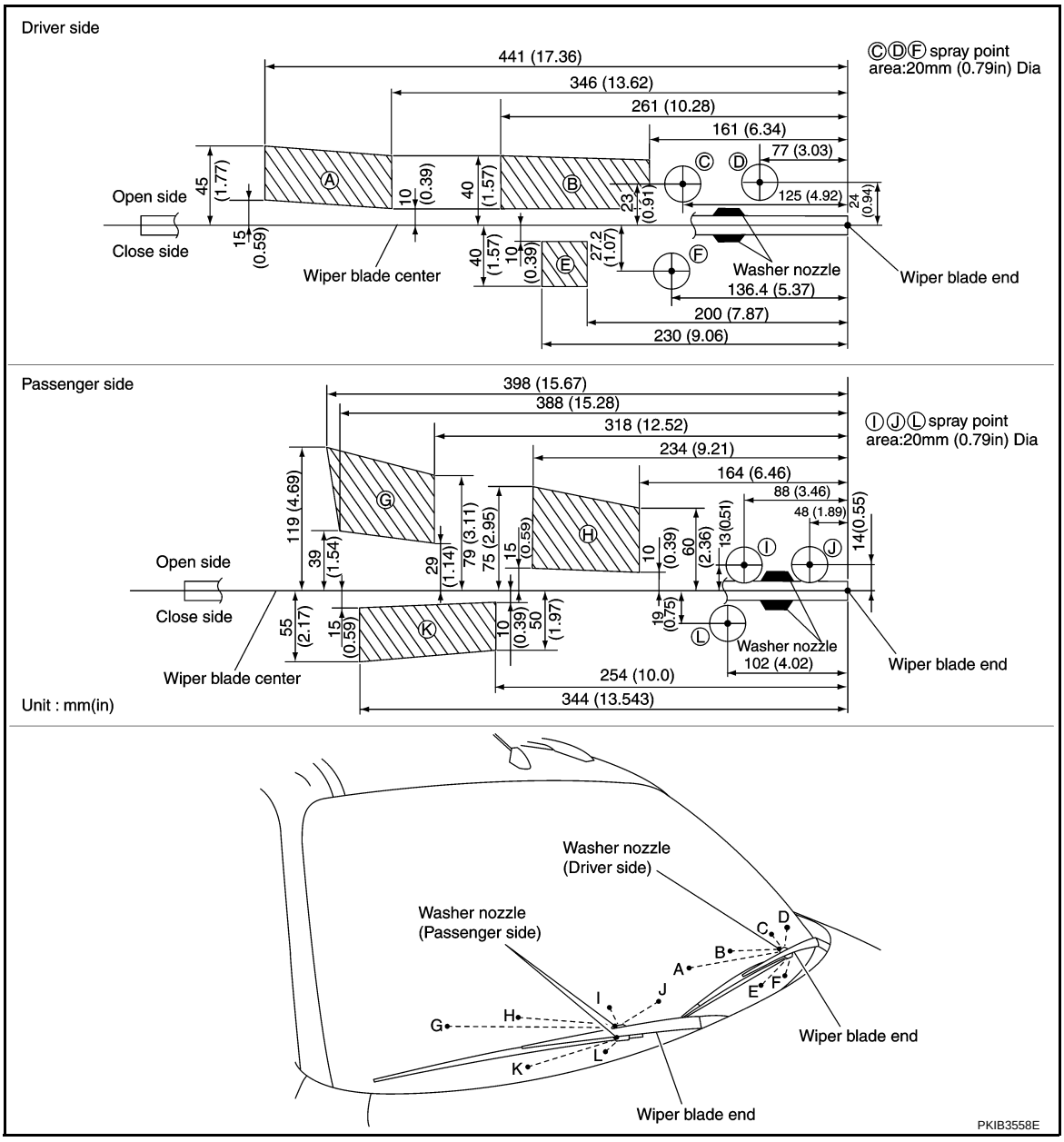
CAUTION:
- **Never drop the wiper motor or cause it to interfere with other parts.**
- **Check joint of motor arm and wiper linkages (at retainer) for grease conditions. Apply grease if necessary.**

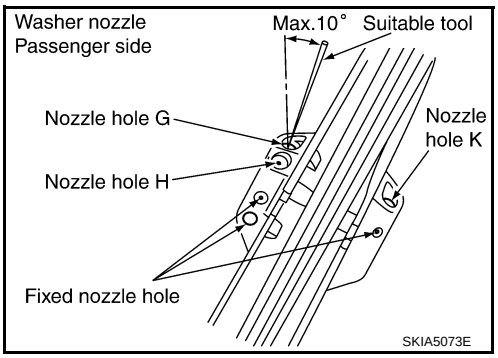
Washer Nozzle Adjustment

INFOID:0000000001328567

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:

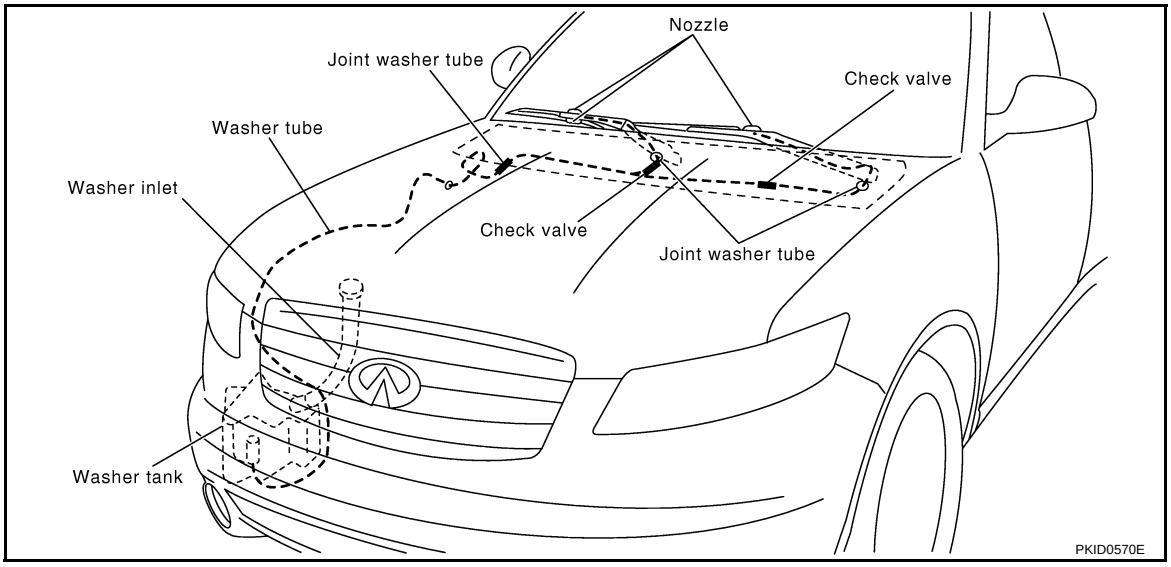
Only washer nozzles (A, B, E, G, H, and K) can be adjusted. Washer nozzles (C, D, F, I, J, and L) cannot be adjusted because of fixed nozzles.





Washer Tube Layout

INFOID:0000000001328568



Removal and Installation of Front Washer Nozzle

INFOID:0000000001328569

Replace wiper arm assembly. Refer to WW-23, "Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location".

CAUTION:

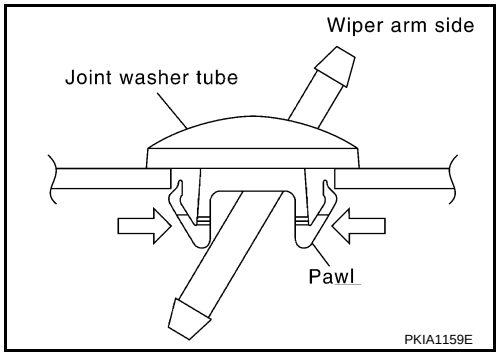
Removal/installation of the washer nozzle as a unit must not be done.

Removal and Installation of Front Washer Tube Joint

INFOID:0000000001328570

REMOVAL

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



INSTALLATION

Installation is the reverse order of removal.

Inspection of Washer Nozzle

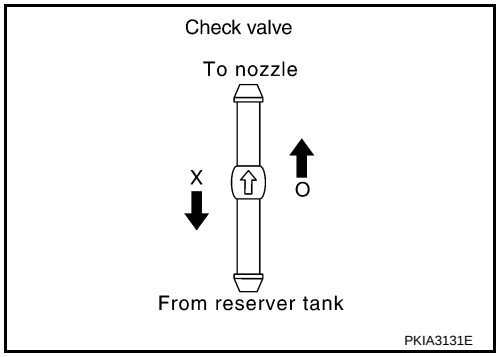
INFOID:0000000001328571

CHECK VALVE

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

INFOID:0000000001328572

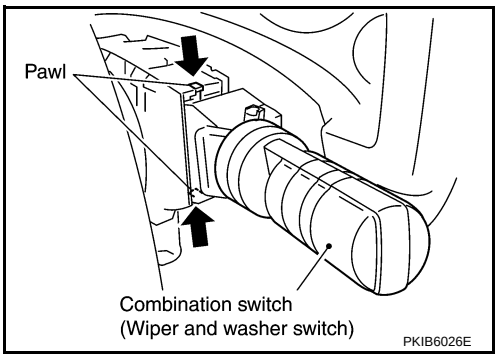
Refer to LT-104, "Combination Switch Inspection".

Removal and Installation of Front Wiper and Washer Switch

INFOID:0000000001328573

REMOVAL

1. Remove steering column upper cover. Refer to IP-10, "Component Parts Location".
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

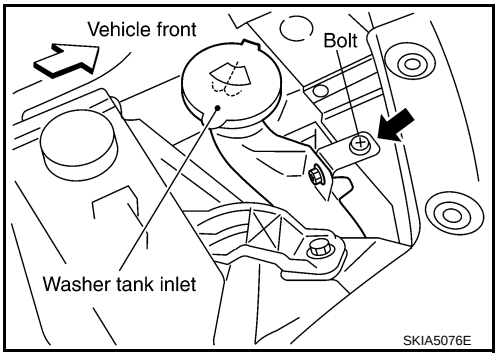
Installation is the reverse order of removal.

Removal and Installation of Washer Tank

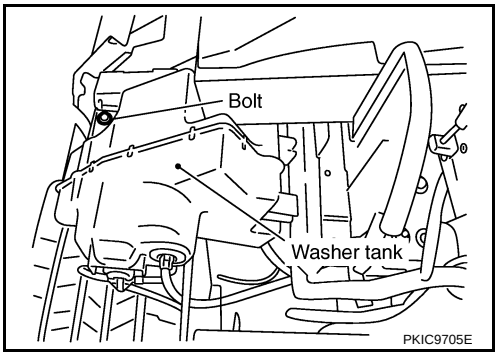
INFOID:0000000001328574

REMOVAL

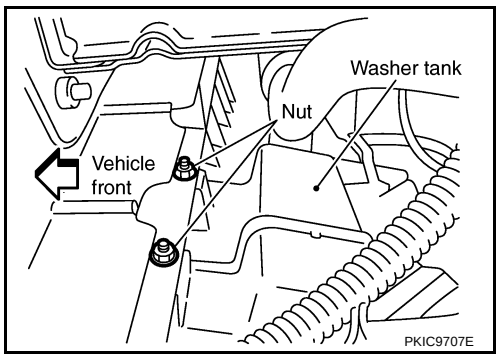
1. Remove bolt and pull out washer tank inlet out of washer tank.



2. Remove front fillet molding (RH). Refer to EI-14, "Component Parts Location".
3. Remove fender protector front (RH). Refer to EI-24, "Component Parts Location".
4. Remove front bumper fascia assembly. Refer to EI-14, "Component Parts Location".
5. Disconnect washer pump connector and wash fluid level sensor connector.
6. Remove washer tank mounting bolt and nuts.



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



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.

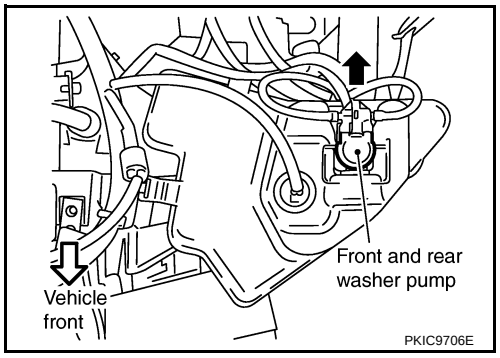
Washer tank mounting bolt		**: 5.7 N·m (0.58 kg-m, 50 in-lb)**
Washer tank mounting nut		**: 5.7 N·m (0.58 kg-m, 50 in-lb)**
Washer tank inlet mounting bolt		**: 6.8 N·m (0.69 kg-m, 60 in-lb)**

Removal and Installation of Front and Rear Washer Pump

INFOID:0000000001328575

REMOVAL

1. Remove fillet molding (RH). Refer to EI-14, "Component Parts Location".
2. Remove fender protector (RH). Refer to EI-24, "Component Parts Location".
3. Remove bumper fascia assembly. Refer to EI-14, "Component Parts Location".
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.

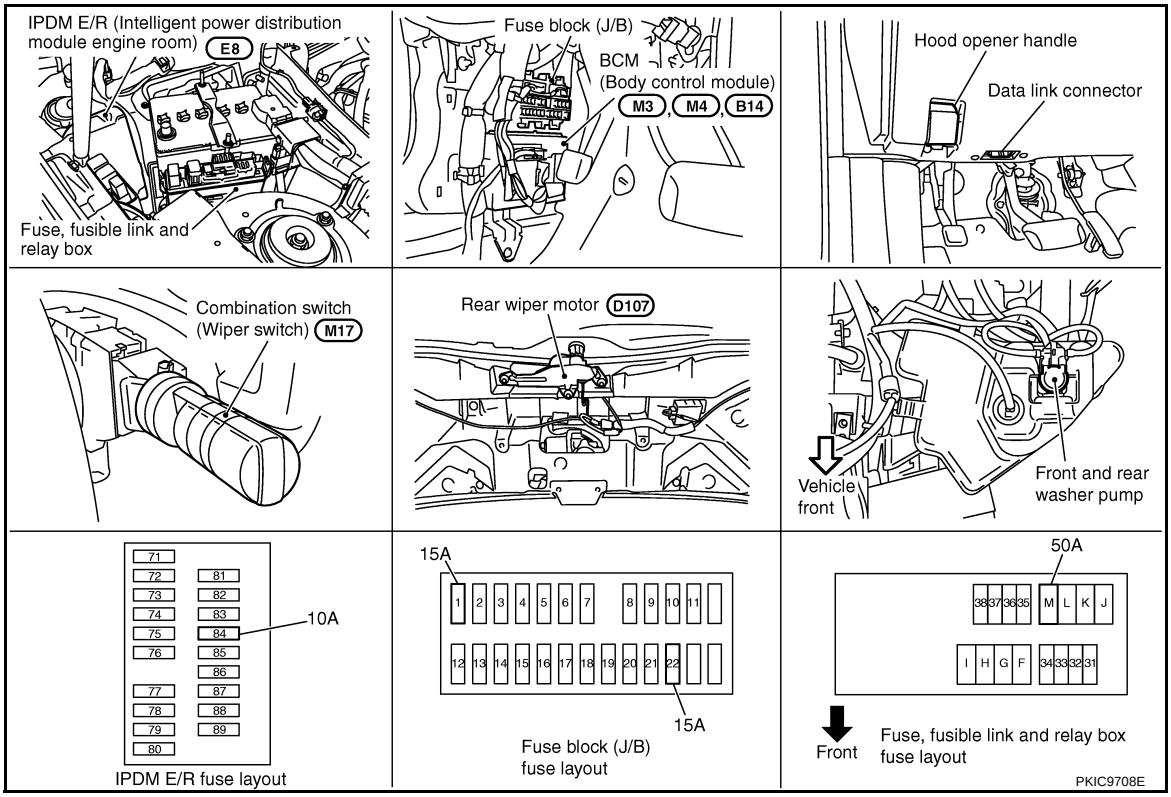
NOTE:

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

REAR WIPER AND WASHER SYSTEM

Component Parts and Harness Connector Location

INFOID:0000000001328576



System Description

INFOID:0000000001328577

- 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
- 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-4, "System Description").
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-4, "System Description"), 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.

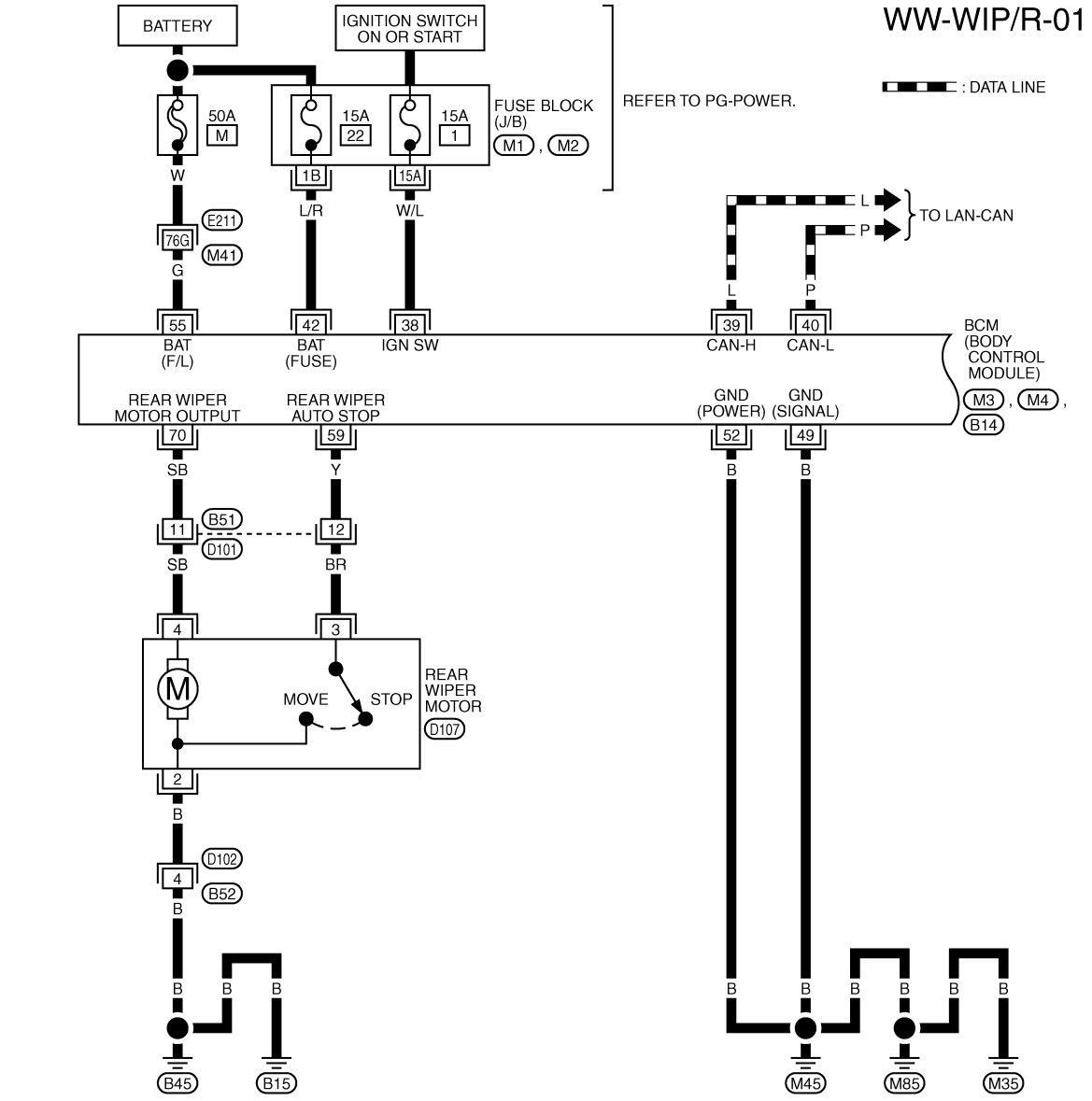
With ground supplied, front and rear washer pump is operated.
When the BCM detects that washer pump has operated for. 0.4 seconds or linger, BCM operates rear wiper pump low speed.
When the BCM detects washer switch is OFF, low speed operation cycles approximately 3 times and then stops.

BCM WIPER SWITCH READING FUNCTION

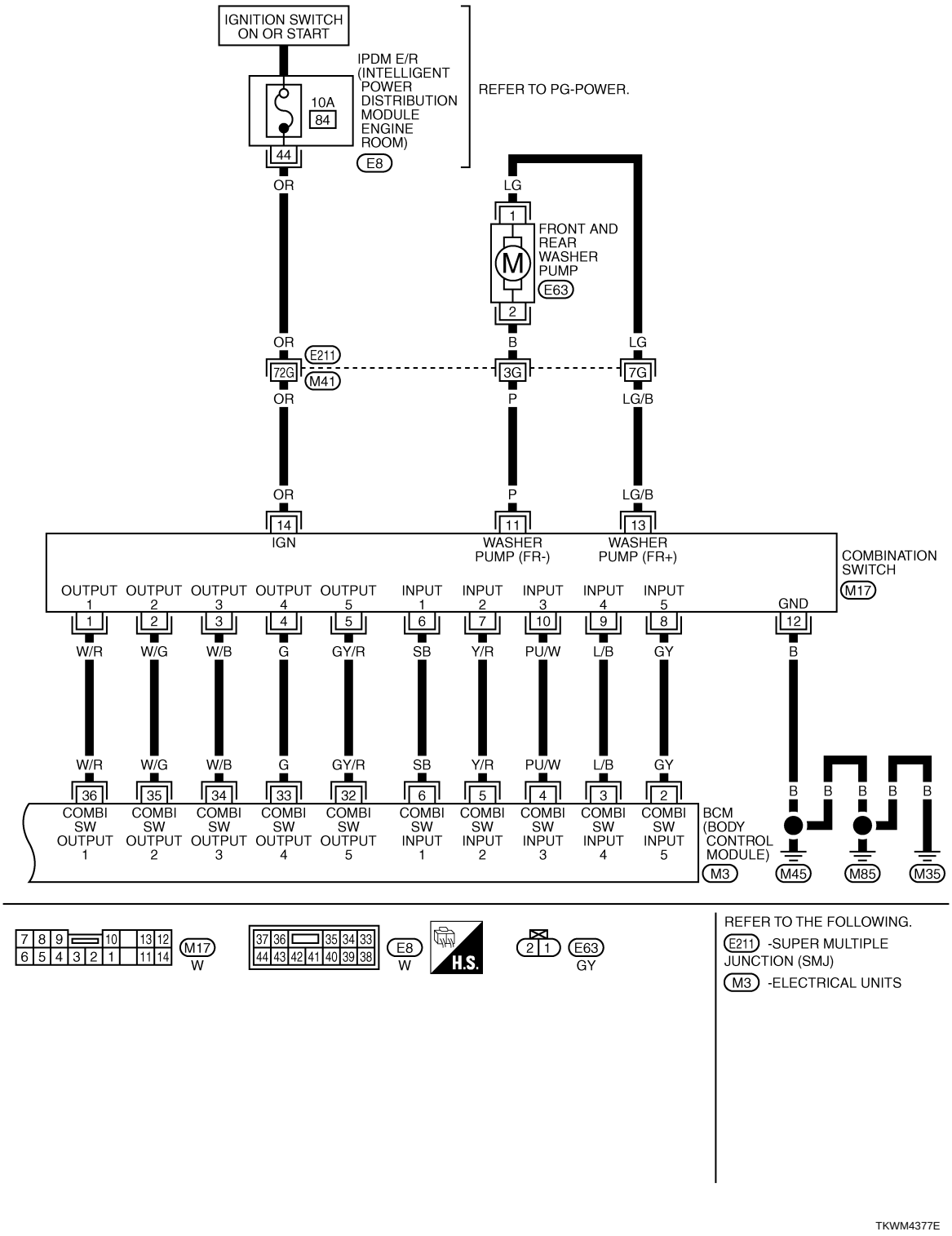
Refer to BCS-4, "System Description".

Wiring Diagram - WIP/ R -

INFOID:0000000001328578



TKWM4376E



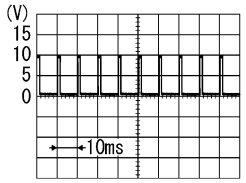
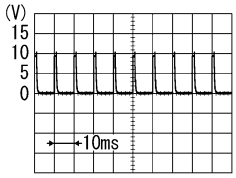
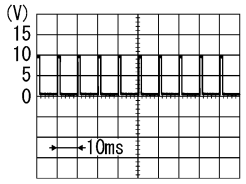
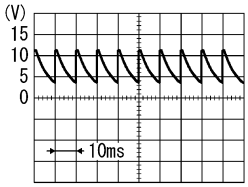
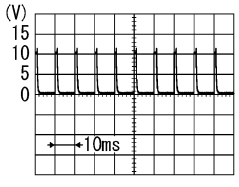
TKWM4377E

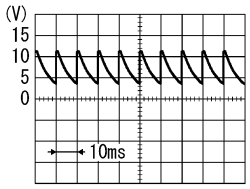
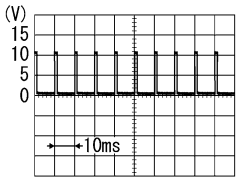
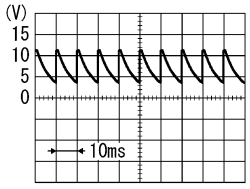
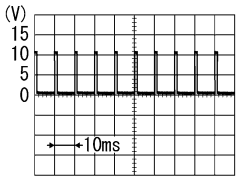
Terminal and Reference Value for BCM

INFOID:0000000001328579

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-III. Refer to WW-15, "CONSULT-III Functions (BCM)".**

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	 PKIB4959J Approx. 1.0 V
					Rear wiper switch ON	 PKIB4955J Approx. 0.8 v
6	SB	Combination switch input 1	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Rear wiper INT	 PKIB4959J Approx. 1.0 V
32	GY/R	Combination switch output 5	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	 PKIB4960J Approx. 7.0 - 7.5 V
					Rear wiper ON	 PKIB4956J Approx. 1.0 V

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

How to Proceed with Trouble Diagnosis

INFOID:0000000001328580

1. Confirm the symptoms and customer complaint.

2. Understand operation description and function description. Refer to WW-30, "System Description".
3. Perform the Preliminary Check. Refer to WW-36, "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

INFOID:0000000001328581

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-32, "Wiring Diagram - WIP/ R -".

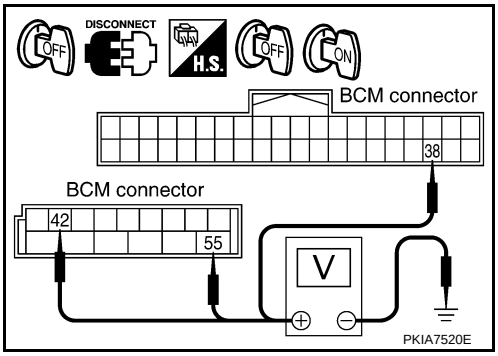
OK or NG

OK >> GO TO 2.
NG >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse, Refer to PG-3, "Schematic".

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



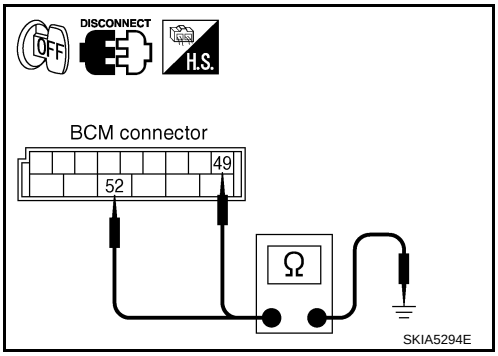
OK or NG

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

3.CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal		Continuity
M4	49	Ground	Yes
	52		



OK or NG

OK >> INSPECTION END
NG >> Repair harness or connector.

CONSULT-III Functions (BCM)

INFOID:0000000001328582

CONSULT-III 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.

DATA MONITOR

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.

ACTIVE TEST

Display Item List

Test item	Display on CONSULT-III 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

INFOID:0000000001328583

1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-III
1. Select “RR WIPER ON” of BCM data monitor item.
2. With operating the wiper switch, check the monitor status.

Without CONSULT-III
Refer to LT-104, "Combination Switch Inspection".

OK or NG

OK >> GO TO 2.
NG >> Check combination switch (wiper switch). Refer to LT-104, "Combination Switch Inspection".

2.ACTIVE TEST

With CONSULT-III
1. Select “REAR WIPER” of BCM active test item.
2. With operating the test item, check the rear wiper operation.

Without CONSULT-III
GO TO 3.

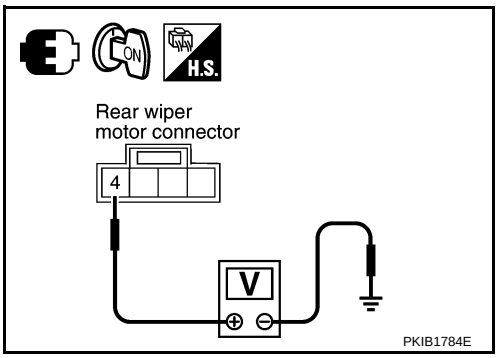
Does rear wiper operate normally?

YES >> Replace BCM. Refer to BCS-13, "Removal and Installation of BCM".
NO >> GO TO 3.

3.CHECK BCM

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

4 – Ground : Battery voltage.



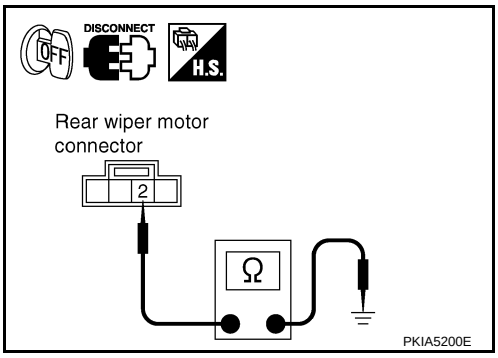
OK or NG

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 and ground.

2 – Ground : Continuity should exist.



OK or NG

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

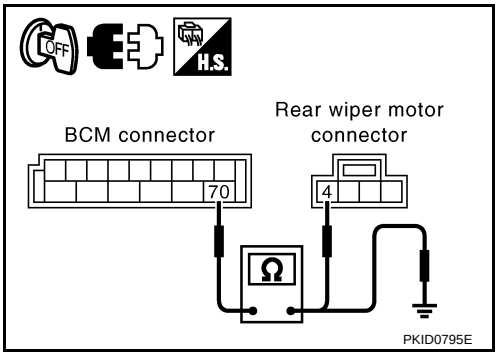
5.CHECK REAR WIPER CIRCUIT

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

70 – 4 : Continuity should exist.

4. Check continuity between BCM harness connector and ground.

70 – Ground : Continuity should not exist.



OK or NG

OK >> Replace BCM. Refer to BCS-13, "Removal and Installation of BCM".
NG >> Repair harness or connector.

Rear Wiper Does Not Return to Stop Position

INFOID:0000000001328584

1. CHECK REAR WIPER MOTOR CIRCUIT

With CONSULT-III
1. Select “RR WIPER STOP” of BCM data monitor item.
2. Check that “RR WIPER STOP”, turn ON-OFF linked with rear wiper switch operation.

Without CONSULT-III
GO TO 2.

OK or NG

OK >> Replace BCM. Refer to BCS-13, "Removal and Installation of BCM".
NG >> GO TO 2.

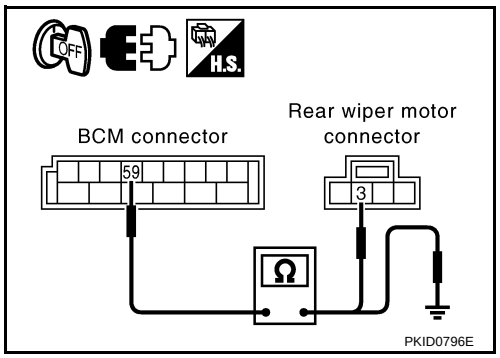
2. CHECK REAR WIPER AUTO STOP CIRCUIT

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

59 – 3 : Continuity should exist.

4. Check continuity between BCM harness connector and ground.

59 – Ground : Continuity should not exist.

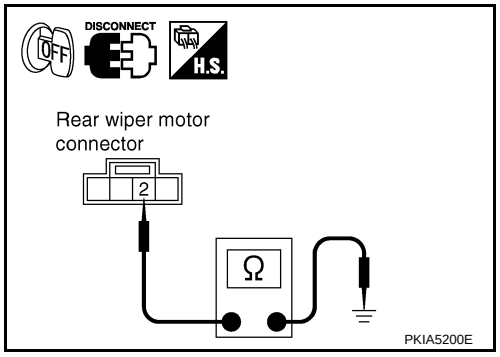


5. Check continuity between rear wiper motor harness connector and ground.

2 – Ground : Continuity should exist.

OK or NG

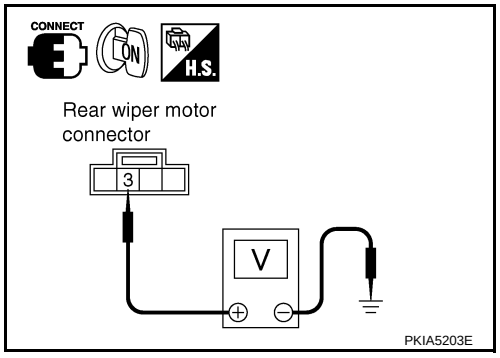
OK >> GO TO 3.
NG >> Repair harness or connector.



3. CHECK REAR WIPER MOTOR SIGNAL

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

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



OK or NG

OK >> Replace BCM. Refer to BCS-13, "Removal and Installation of BCM".
NG >> Replace rear wiper motor.

Only Rear Wiper ON Does Not Operate

INFOID:0000000001328585

Refer to LT-104, "Combination Switch Inspection".

Only Rear Wiper INT Does Not Operate

INFOID:0000000001328586

Refer to LT-104, "Combination Switch Inspection".

Wiper Does Not Wipe When Rear Washer Operates

INFOID:0000000001328587

Refer to LT-104, "Combination Switch Inspection".

Rear Wipers Do Not Stop

INFOID:0000000001328588

1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-III

1. Select “RR WIPER INT”, “RR WIPER ON”, and “RR WASHER SW” of BCM data monitor item.
2. With operating the wiper switch, check the monitor status.

Without CONSULT-III

Refer to LT-104, "Combination Switch Inspection".

OK or NG

OK >> Replace BCM. Refer to BCS-13, "Removal and Installation of BCM".
NG >> Check combination switch (wiper switch). Refer to LT-104, "Combination Switch Inspection".

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

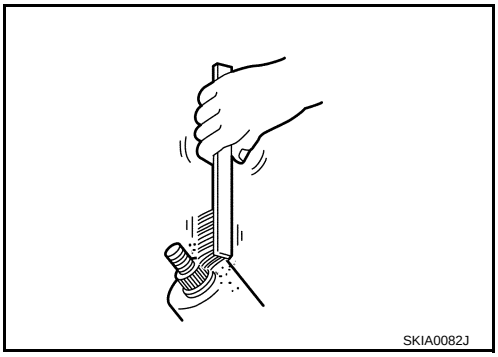
INFOID:0000000001328589

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).



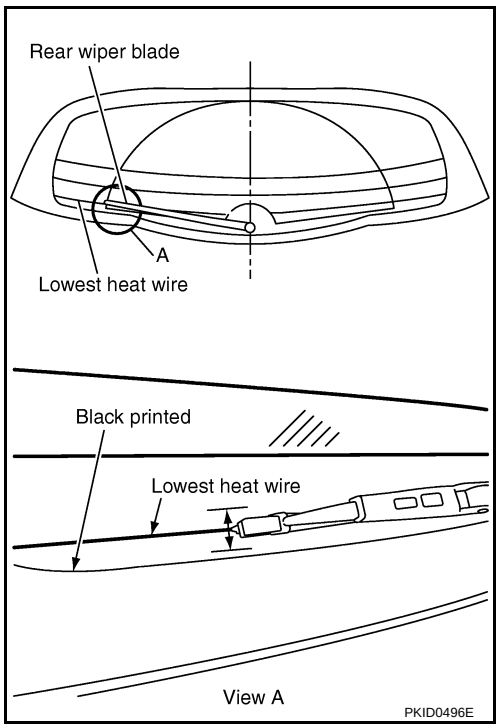
3. Lift the blade up and then set it down onto back door window glass surface to set the blade center to lowest heat wire immediately.
4. Tighten rear wiper arm nuts to specified torque.

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 : ± 3.75 mm (± 0.148 in)

7. Install rear wiper arm cap.



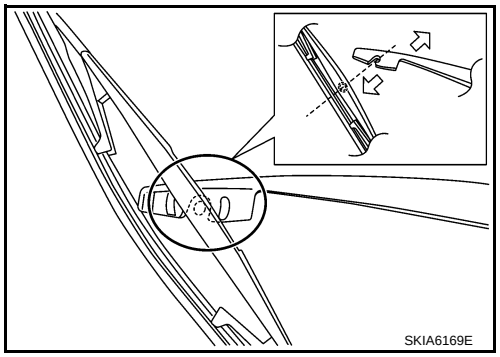
Removal and Installation of Rear Wiper Blade

INFOID:0000000001328590

REMOVAL

1. Remove rear wiper arm. Refer to WW-40, "Removal and Installation of Rear Wiper Arm, Adjustment of Wiper Arms Stop Location".
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.

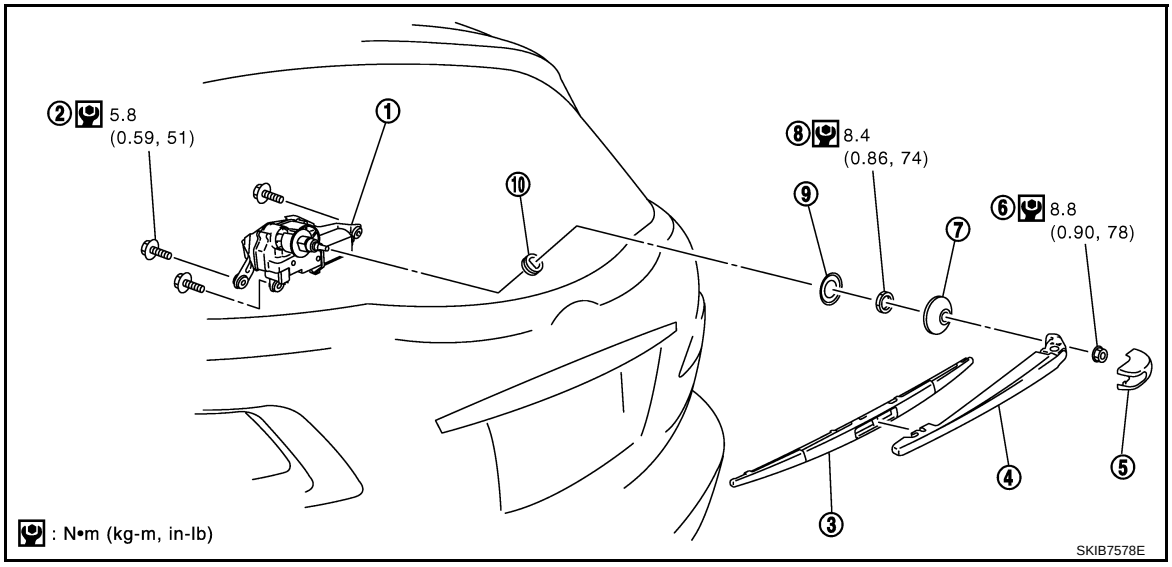


INSTALLATION

Installation is the reverse order of removal.

Removal and Installation of Rear Wiper Motor

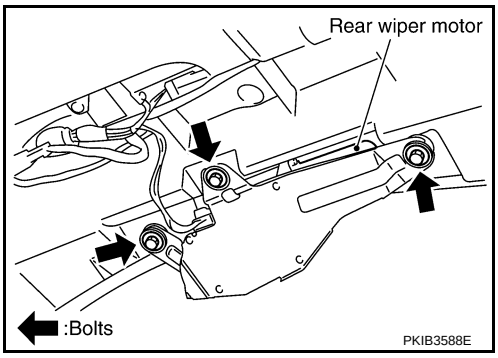
INFOID:0000000001328591



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-40, "Removal and Installation of Rear Wiper Arm, Adjustment of Wiper Arms Stop Location".
2. Remove pivot cap, and remove nut from vehicle.
3. Remove back door finisher. Refer to EI-47, "Component Parts Location".
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, "Component Parts Location".
4. Install pivot cap, and nut.
5. Install rear wiper arm and rear wiper arm caps. Refer to WW-40, "Removal and Installation of Rear Wiper Arm, Adjustment of Wiper Arms Stop Location".

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

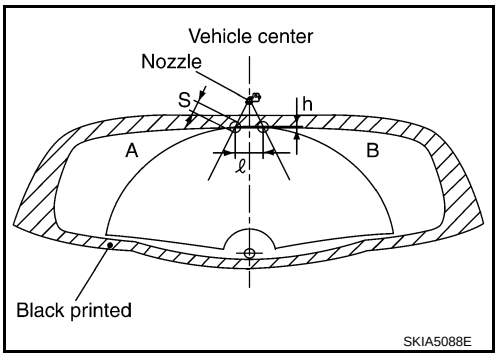
Washer Nozzle Adjustment

INFOID:0000000001328592

- Adjust spray positions as shown in the figure.

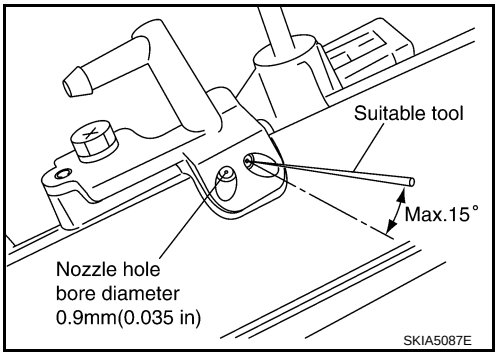
Unit: mm (in)

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



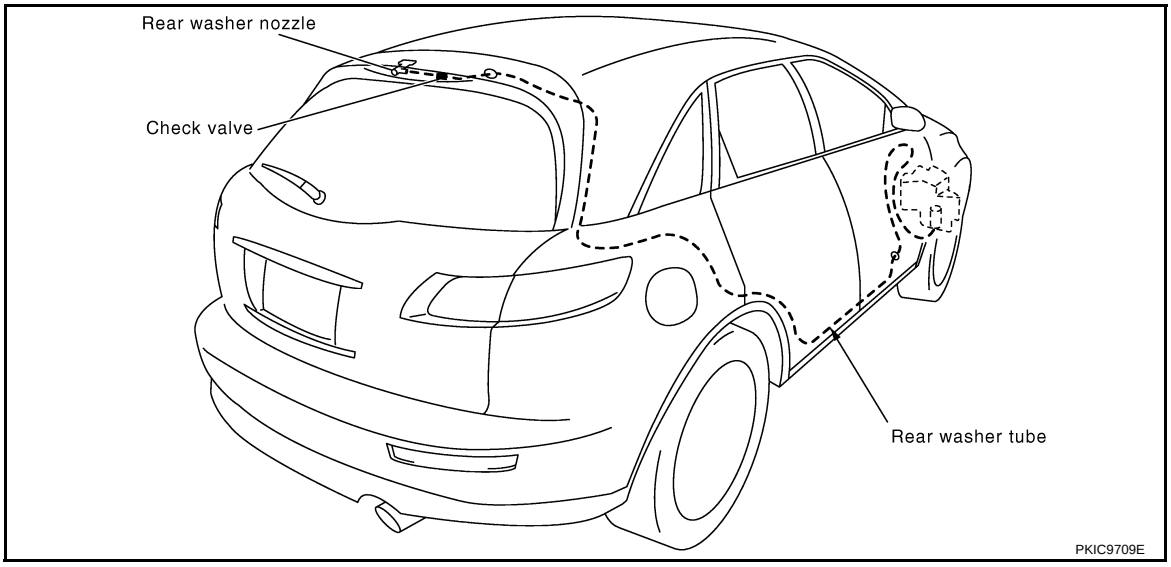
- Insert a needle or suitable tool into the nozzle hole and move it to adjust the spray position.

Adjustable range : ± 15° (In any direction)



Washer Tube Layout

INFOID:0000000001328593

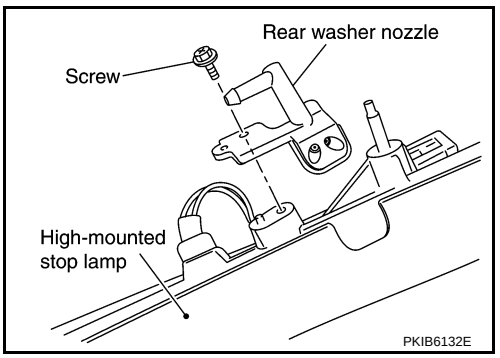


Removal and Installation of Washer Nozzle

INFOID:0000000001328594

REMOVAL

1. Remove high-mounted stop lamp. Refer to LT-114, "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-43, "Washer Nozzle Adjustment".

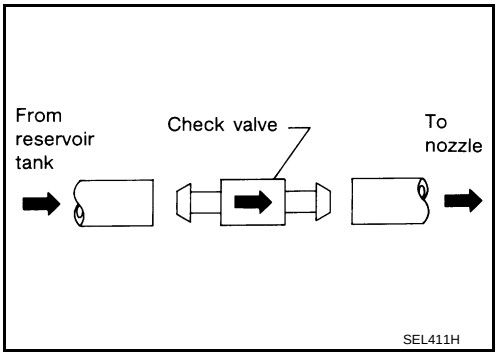
Check Valve

INFOID:0000000001328595

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

INFOID:0000000001328596

Refer to LT-104, "Combination Switch Inspection".

Removal and Installation of Rear Wiper and Washer Switch

INFOID:0000000001328597

Refer to WW-28, "Removal and Installation of Front Wiper and Washer Switch".

Removal and Installation of Washer Tank

INFOID:0000000001328598

Refer to WW-28, "Removal and Installation of Washer Tank".

Removal and Installation of Front and Rear Washer pump

INFOID:0000000001328599

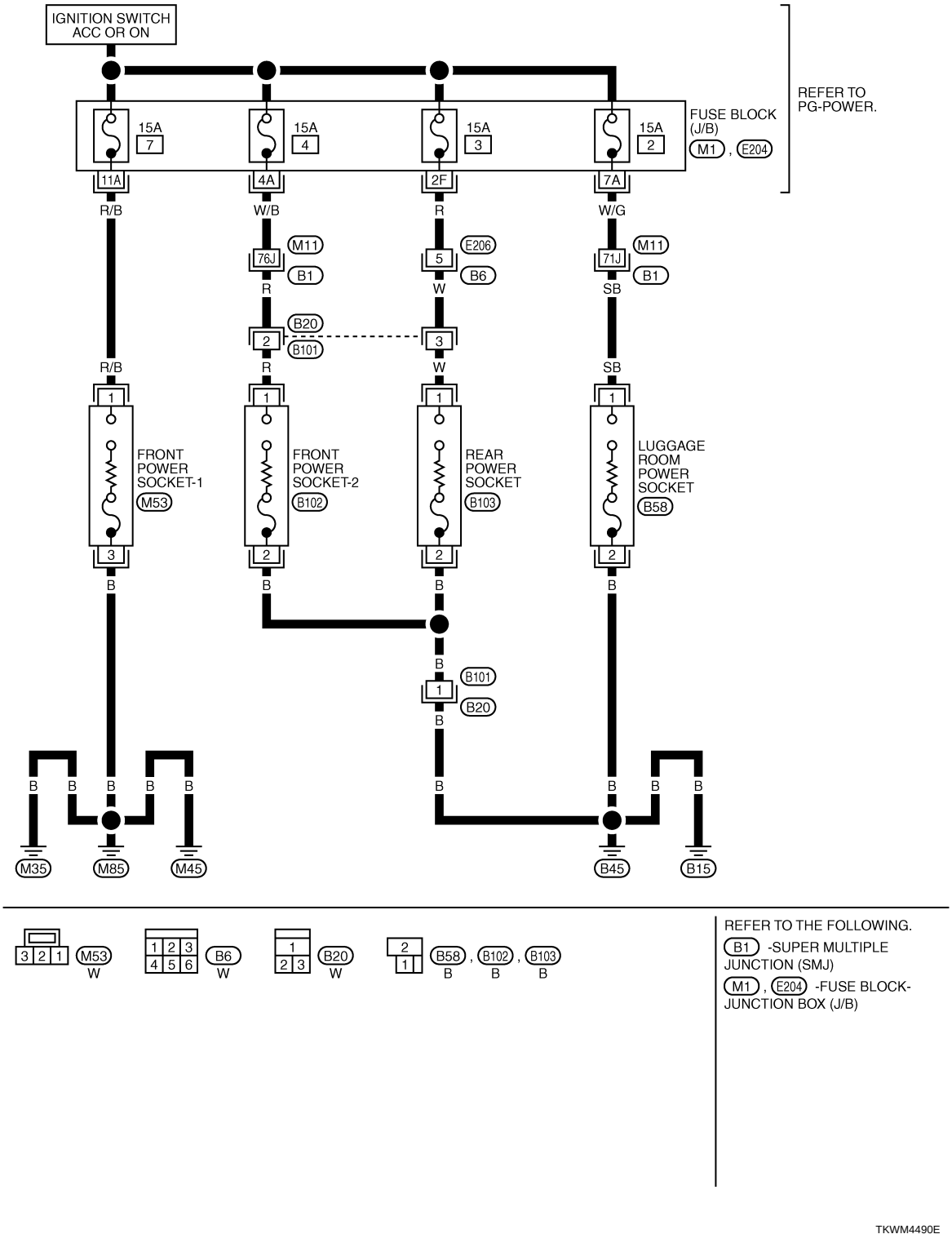
Refer to WW-29, "Removal and Installation of Front and Rear Washer Pump".

POWER SOCKET

Wiring Diagram - P/SCKT -

INFOID:0000000001328600

WW-P/SCKT-01



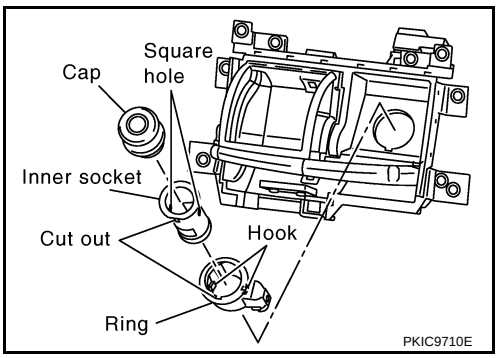
TKWM4490E

Removal and Installation of Front Power Socket - 1

INFOID:0000000001328601

REMOVAL

1. Remove A/T console finisher. Refer to IP-10, "Component Parts Location".
2. Remove instrument clock finisher. Refer to IP-10, "Component Parts Location".
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.



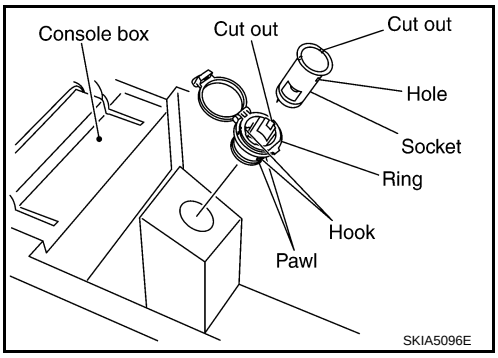
INSTALLATION
Installation is the reverse order of removal.

Removal and Installation of Front Power Socket - 2

INFOID:0000000001328602

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.



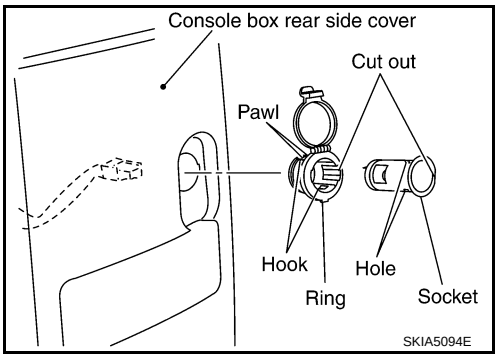
INSTALLATION
Installation is the reverse order of removal.

Removal and Installation of Rear Power Socket

INFOID:0000000001328603

REMOVAL

1. Remove console rear finisher. Refer to IP-16, "Disassembly and Assembly".
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.



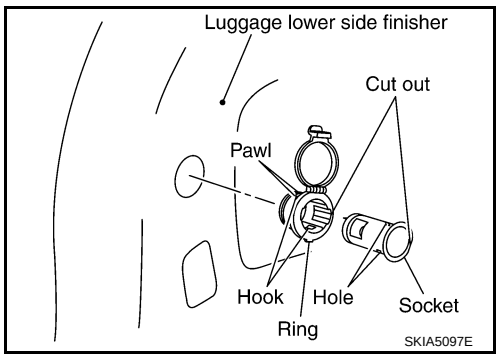
INSTALLATION
Installation is the reverse order of removal.

Removal and Installation of Luggage Room Power Socket

INFOID:0000000001328604

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.



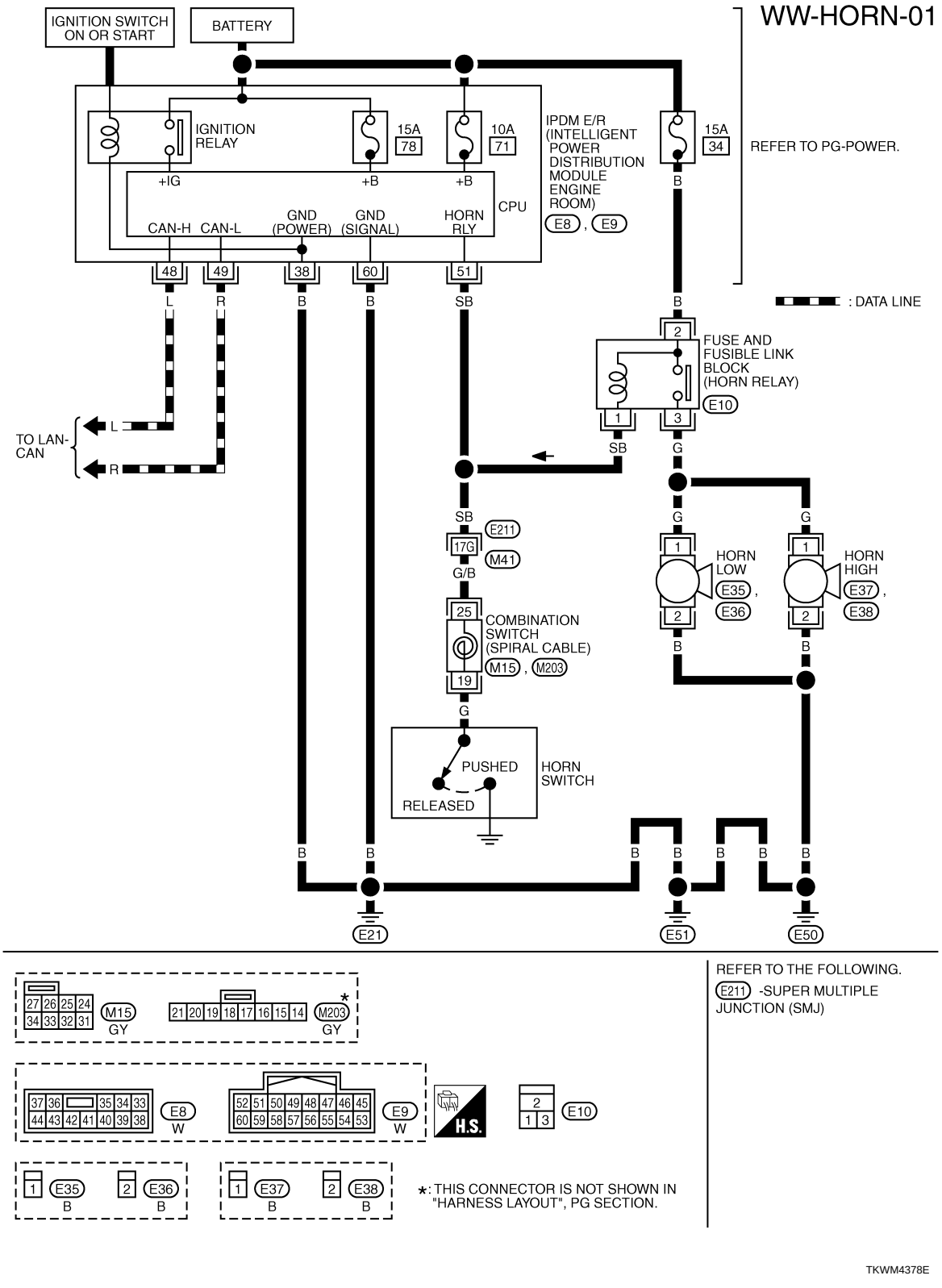
INSTALLATION

Installation is the reverse order of removal.

HORN

Wiring Diagram - HORN -

INFOID:0000000001328605



TKWM4378E

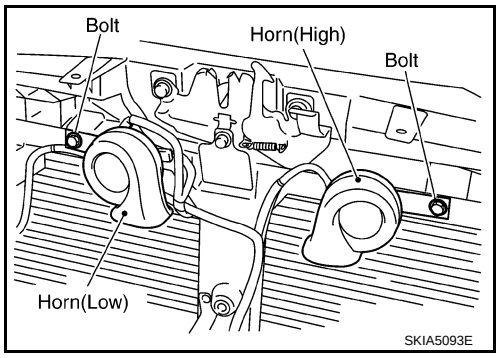
Removal and Installation

INFOID:0000000001328606

REMOVAL

1. Remove front grille. Refer to EI-22, "Component Parts Location".

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)**