

SECTION **WW**
WIPER, WASHER & HORN

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PRECAUTION

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SERVICE INFORMATION

PRECAUTION

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

INFOID:000000001721727

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

WARNING:

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

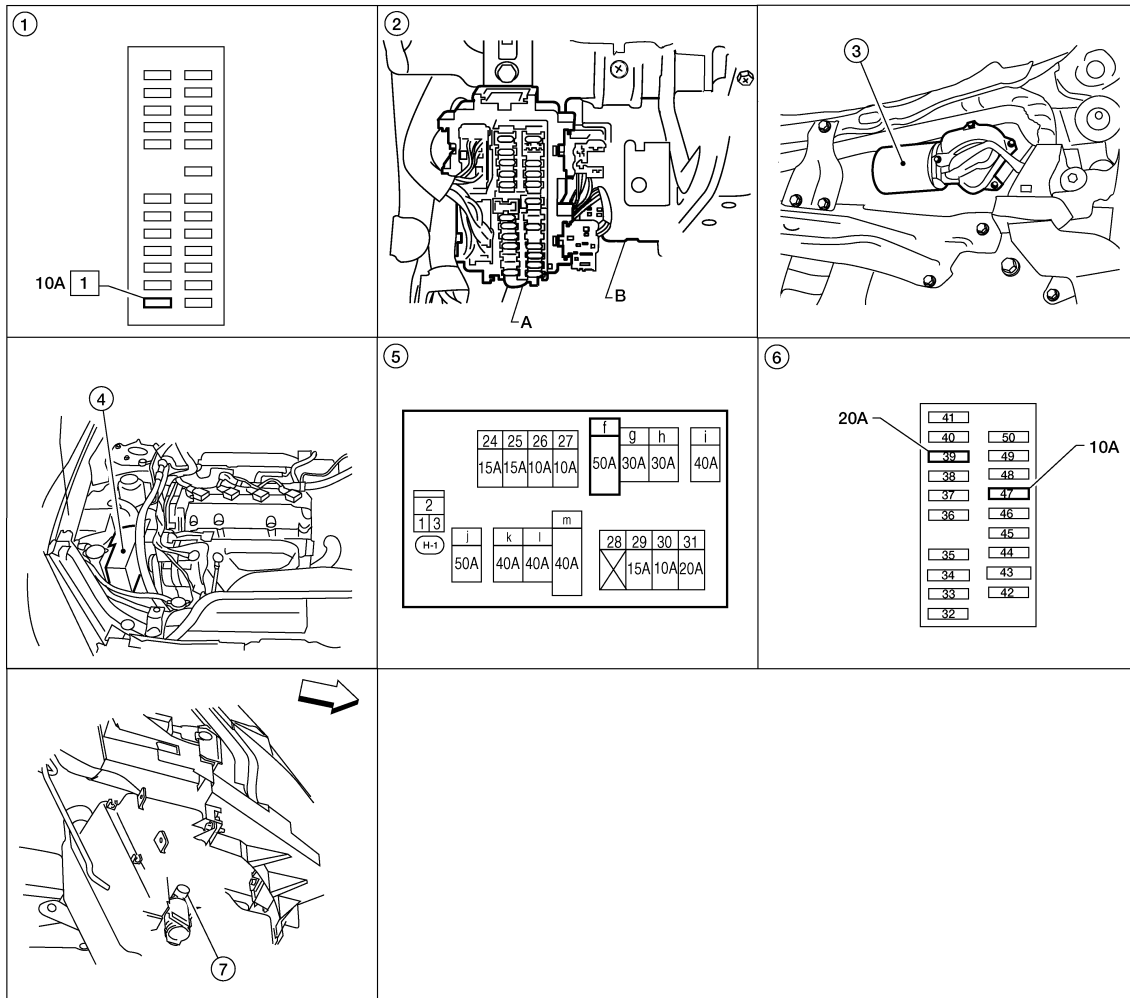
FRONT WIPER AND WASHER SYSTEM

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FRONT WIPER AND WASHER SYSTEM

Component Parts and Harness Connector Location

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↔: Front

- | | | |
|---|---|--------------------------|
| 1. Fuse block (J/B) | 2. A. Fuse block (J/B)
B. BCM M18, M20
(View with instrument panel removed) | 3. Front wiper motor E23 |
| 4. IPDM E/R E121, E122, E124
(View with RH side cover removed) | 5. Fuse and fusible link box | 6. IPDM E/R fuse layout |
| 7. Front washer motor E105 | | |

System Description

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- Both front wiper relays are located in the IPDM E/R (intelligent power distribution module engine room).
 - Wiper switch (combination switch) is composed of a combination of 5 output terminals and 5 input terminals. Terminal combination status is read by BCM (body control module) when switch is turned ON.
 - BCM controls front wiper LO, HI, and INT (intermittent) operation.
 - IPDM E/R operates wiper motor according to CAN communication signals from the BCM.
- Power is supplied at all times
- to ignition relay, located in the IPDM E/R, and
 - through 50A fusible link (letter f, located in the fuse and fusible link box)

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- to BCM terminal 70, and
- through 20A fuse (No. 39, located in the IPDM E/R)
- to front wiper relay, located in the IPDM E/R.

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

- to ignition relay, located in the IPDM E/R, and
- through 10A fuse [No. 1, located in the fuse block (J/B)]
- to BCM terminal 38, and
- through 10A fuse (No. 47, located in the IPDM E/R)
- through IPDM E/R terminal 44
- to front washer motor terminal +.

Ground is supplied

- to BCM terminal 67, and
- to combination switch terminal 12
- through grounds M57, M61 and M79, and
- to IPDM E/R terminals 38 and 60, and
- to front wiper motor terminal E
- through grounds E15 and E24.

LOW SPEED WIPER OPERATION

When the ignition switch is in the ON or START position, and the front wiper switch is turned to low position, the BCM detects a low speed wiper ON signal by BCM wiper switch reading function.

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

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

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

With the front wiper relay energized, power is supplied

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

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

HI SPEED WIPER OPERATION

When the ignition switch is in the ON or START position, and the front wiper switch is turned to high position, the BCM detects a high speed wiper ON signal by BCM wiper switch reading function.

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

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

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

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

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

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

INTERMITTENT OPERATION

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

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

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

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

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

- BCM detects ON/OFF status of intermittent wiper dial position
- BCM calculates operation interval from wiper dial position and vehicle speed signal received from unified meter and A/C amp. through CAN communications.
- BCM sends front wiper request signal (INT) to IPDM E/R at calculated operation interval.

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

AUTO STOP OPERATION

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

Ground is supplied

- to IPDM E/R terminal 32
- through front wiper motor terminal P
- through front wiper motor terminal E
- through grounds E15 and E24.

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

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

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

WASHER OPERATION

When wiper switch is in front wiper washer position, BCM detects front wiper washer signal by BCM wiper switch reading function. Refer to [BCS-3, "System Description"](#).

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

- through 10A fuse (No. 47, located in the IPDM E/R)
- through IPDM E/R terminal 44
- to front washer motor terminal +.

When front wiper switch is placed in washer position, ground is supplied

- to front washer motor terminal –
- through combination switch terminal 11
- through combination switch terminal 12
- through grounds M57, M61 and M79.

With power and ground supplied, the front washer motor is operated.

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

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

MIST OPERATION

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

For additional information about wiper operation under this condition, refer to "LOW SPEED WIPER OPERATION".

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

FAIL-SAFE FUNCTION

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

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

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

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

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

COMBINATION SWITCH READING FUNCTION

Refer to [BCS-3, "System Description"](#).

CAN Communication System Description

Refer to [LAN-3](#).

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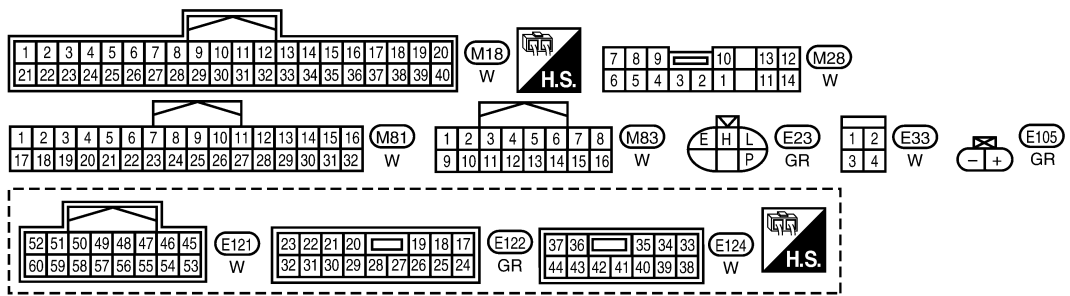
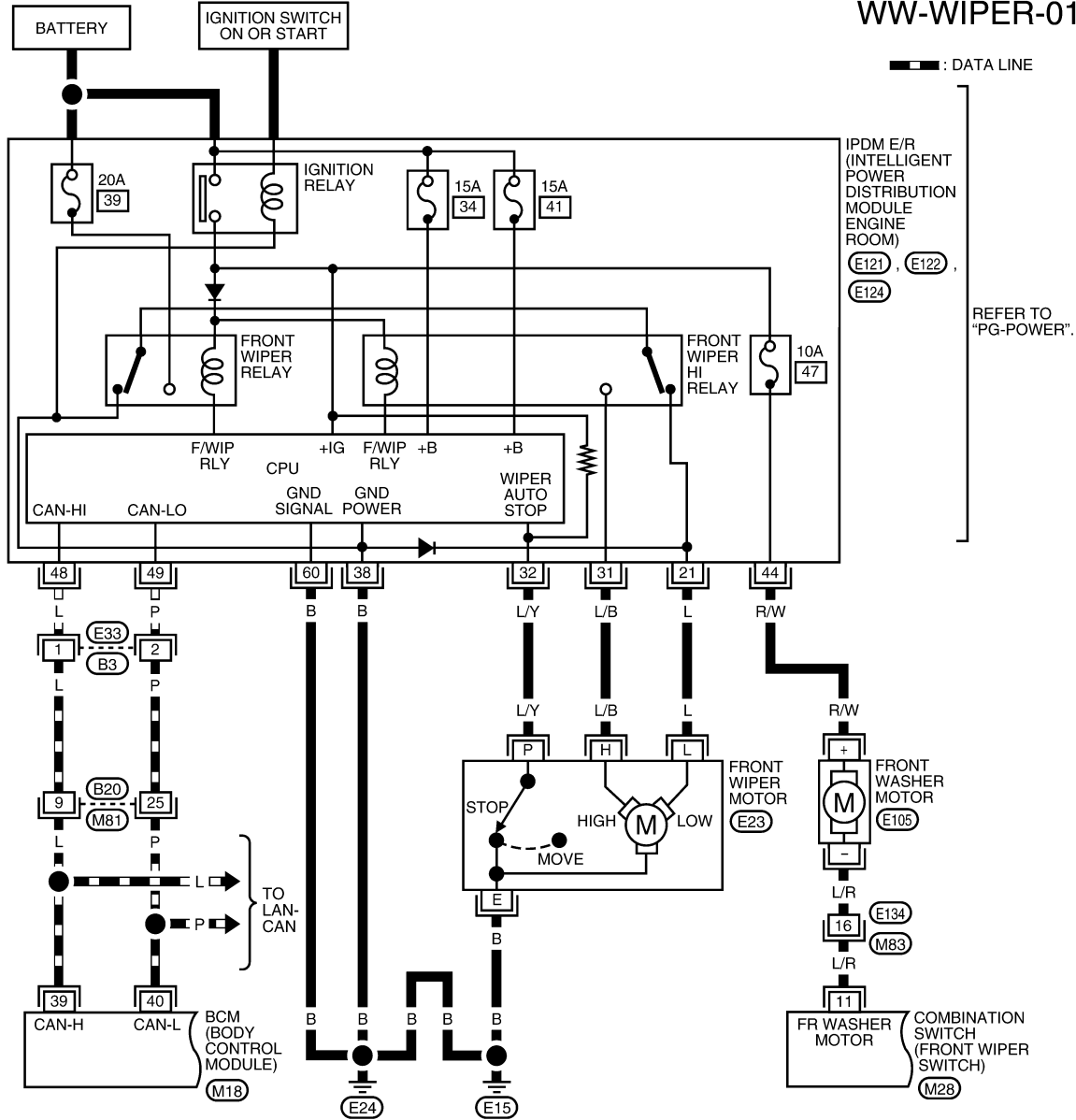
FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

Wiring Diagram - WIPER -

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WW-WIPER-01

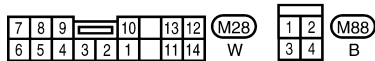
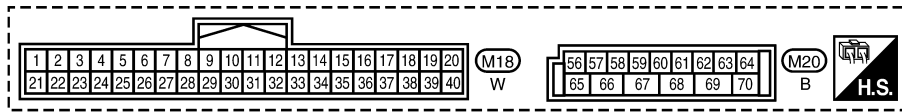
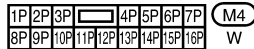
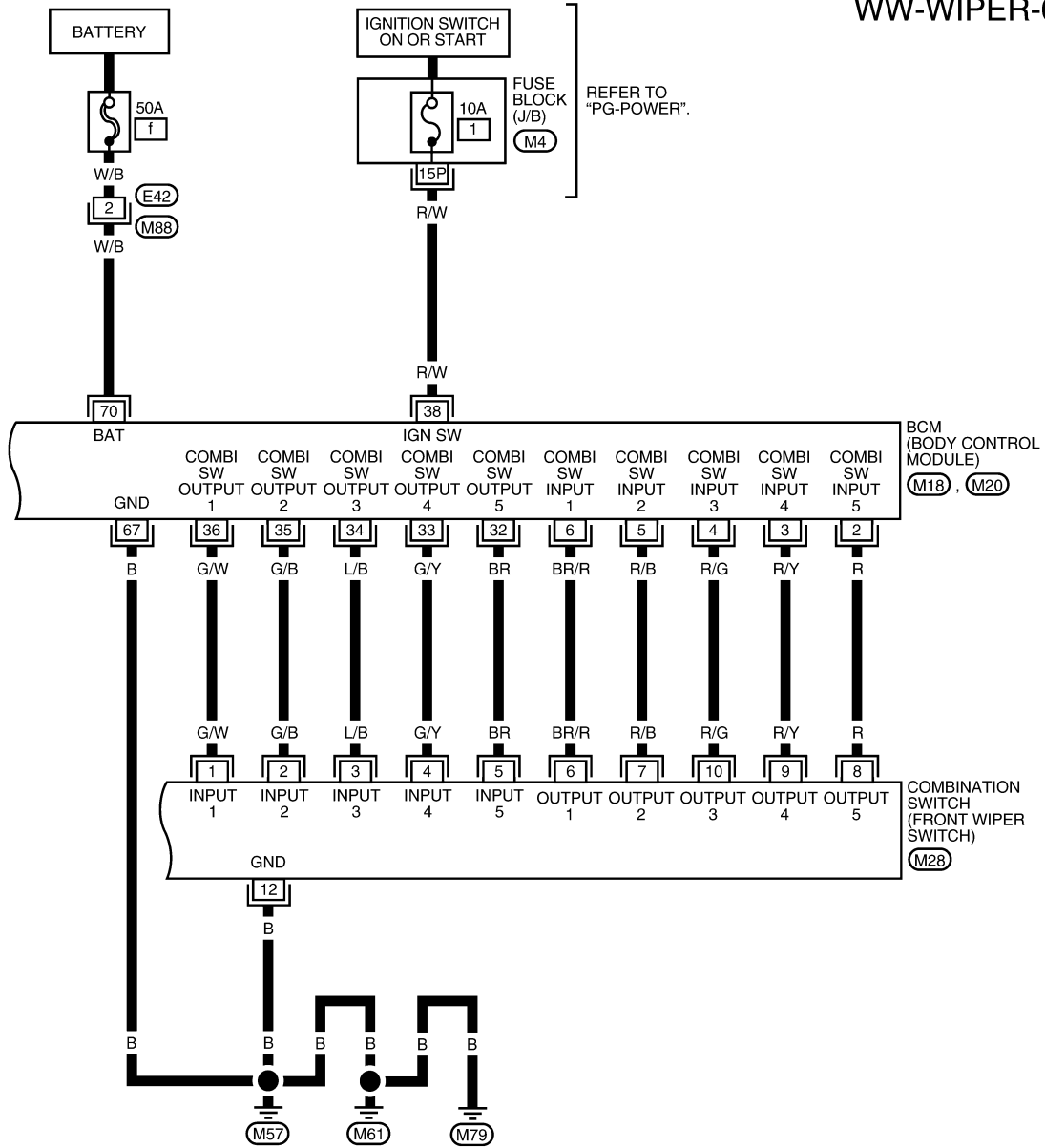


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WW-WIPER-02



Terminal and Reference Value for BCM

Refer to [BCS-11, "Terminal and Reference Value for BCM"](#).

Terminal and Reference Value for IPDM E/R

Refer to [PG-25, "Terminal and Reference Value for IPDM E/R"](#).

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Work Flow

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1. Confirm the symptom or customer complaint.
2. Understand the system description, refer to [WW-3, "System Description"](#).
3. Perform preliminary inspection, refer to [WW-8, "BCM Power Supply and Ground Circuit Inspection"](#).
4. Check symptom and repair or replace the cause of malfunction.
5. Does wiper function operate normally? If it operates normally, GO TO 6. If not, GO TO 4.
6. Inspection End.

BCM Power Supply and Ground Circuit Inspection

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Refer to [BCS-15, "BCM Power Supply and Ground Circuit Inspection"](#) .

CONSULT-III Function (BCM)

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

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

WORK SUPPORT

Work Support Setting Item

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

NOTE:

Factory setting

DATA MONITOR

Display Item List

Monitor item name "OPERATION OR UNIT"	Contents
IGN ON SW "ON/OFF"	Displays "IGN Position (ON)/OFF, ACC Position (OFF)" status as judged from ignition switch signal.
IGN SW CAN "ON/OFF"	Displays "IGN switch ON (ON)/Other OFF or ACC (OFF)" status as judged from CAN communications.
FR WIPER HI "ON/OFF"	Displays "Front Wiper HI (ON)/Other (OFF)" status as judged from wiper switch signal.
FR WIPER LOW "ON/OFF"	Displays "Front Wiper LOW (ON)/Other (OFF)" status as judged from wiper switch signal.
FR WIPER INT "ON/OFF"	Displays "Front Wiper INT (ON)/Other (OFF)" status as judged from wiper switch signal.
FR WASHER SW "ON/OFF"	Displays "Front Washer Switch (ON)/Other (OFF)" status as judged from wiper switch signal.
INT VOLUME (1 - 7)	Displays intermittent operation dial position setting (1 - 7) as judged from wiper switch signal.

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Monitor item name "OPERATION OR UNIT"	Contents
FR WIPER STOP "ON/OFF"	Displays "Stopped (ON)/Operating (OFF)" status as judged from the auto stop signal.
VEHICLE SPEED "ON/OFF"	Displays "Driving (ON)/Stopped (OFF)" status as judged from vehicle speed signal.

ACTIVE TEST

Display Item List

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

CONSULT-III Function (IPDM E/R)

INFOID:000000001721737

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

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

DATA MONITOR

Display Item List

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

NOTE:

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

ACTIVE TEST

Display Item List

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

Front Wiper Does Not Operate

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1. CHECK IPDM E/R TO FRONT WIPER MOTOR

④ With CONSULT-III

1. Select "IPDM E/R" with CONSULT-III, and select "ACTIVE TEST".
2. Select "FRONT WIPER".

⊗ Without CONSULT-III

FRONT WIPER AND WASHER SYSTEM

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1. Turn on front wipers using auto active test. Refer to [PG-21. "Auto Active Test"](#).
2. Confirm front wiper operation.

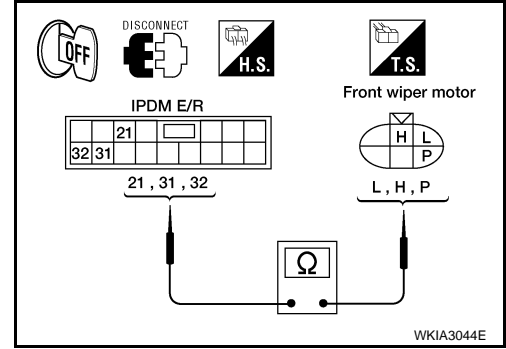
OK or NG

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

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

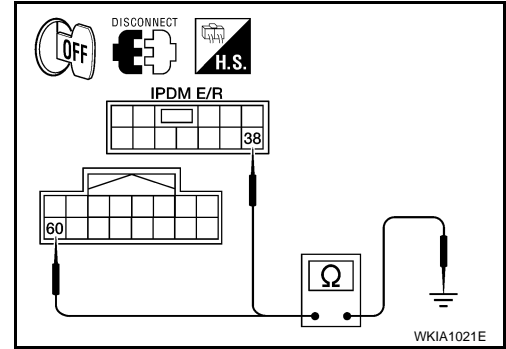
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector terminals and front wiper motor harness connector terminals.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E122	31	E23	H	Yes
	21		L	
	32		P	



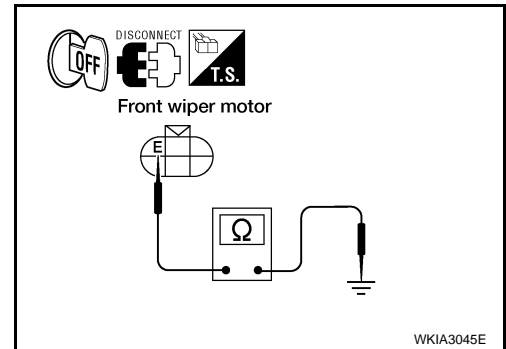
4. Check continuity between IPDM E/R harness connector terminal and ground.

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



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

Front wiper motor			Continuity
Connector	Terminal		
E23	E	Ground	Yes



OK or NG

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

3. IPDM E/R INSPECTION

Ⓟ With CONSULT-III

1. Select "IPDM E/R" with CONSULT-III, and select "ACTIVE TEST".
2. Select "FRONT WIPER".

ⓧ Without CONSULT-III

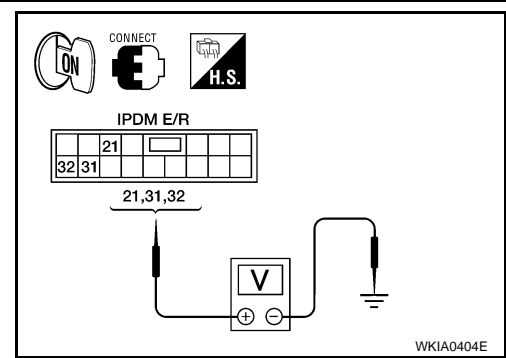
1. Turn on front wipers using auto active test. Refer to [PG-21. "Auto Active Test"](#).

FRONT WIPER AND WASHER SYSTEM

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

IPDM E/R (+)		(-)	Condition	Voltage (Approx.)
Connector	Terminal			
E122	21	Ground	Stopped	0V
			LO operation	Battery voltage
	31		Stopped	0V
			HI operation	Battery voltage
	32		LO operation	Battery voltage
			Stopped	0V



OK or NG

- OK >> Replace wiper motor. Refer to [WW-16, "Wiper Motor and Linkage"](#).
- NG >> Replace IPDM E/R. Refer to [PG-29, "Removal and Installation of IPDM E/R"](#).

4.COMBINATION SWITCH TO BCM INSPECTION

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

Displayed self-diagnosis results

- No malfunction detected>>GO TO 5.
- CAN communications or CAN system>> Inspect the BCM CAN communication system. Go to [BCS-17, "CAN Communication Inspection Using CONSULT-III \(Self-Diagnosis\)"](#).
- OPEN DETECT 1 - 5>> Combination switch system malfunction. Go to [BCS-3, "System Description"](#).

5.BCM INSPECTION

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

OK or NG

- OK >> Replace BCM. Refer to [BCS-18, "BCM"](#).
- NG >> Replace wiper switch. Refer to [WW-18, "Wiper and Washer Switch"](#).

Front Wiper Stop Position Is Incorrect

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1.CHECK IPDM E/R TO FRONT WIPER MOTOR

Ⓟ With CONSULT-III

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

ⓧ Without CONSULT-III

GO TO 2.

OK or NG

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

2.CHECK IPDM E/R AND FRONT WIPER MOTOR STOP CIRCUITS

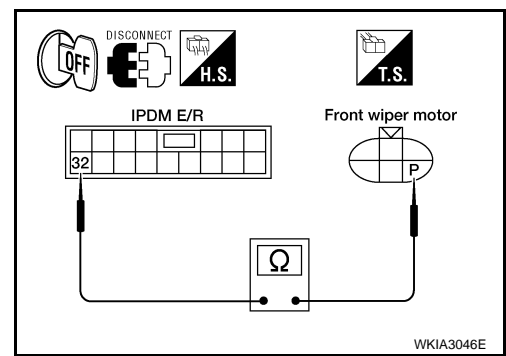
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.

FRONT WIPER AND WASHER SYSTEM

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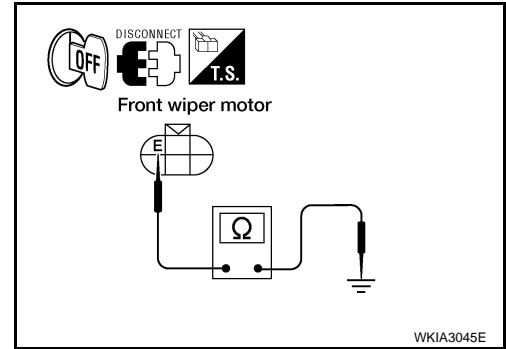
- Check continuity between IPDM E/R harness connector terminal and front wiper motor harness connector terminal.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E122	32	E23	P	Yes



- Check continuity between front wiper motor harness connector terminal E and ground.

Front wiper motor		Continuity
Connector	Terminal	
E23	E	Ground
		Yes



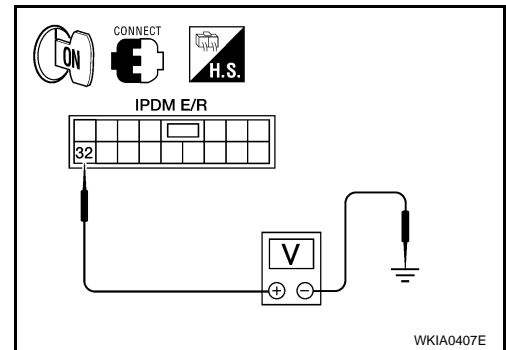
OK or NG

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

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

- Turn ignition switch ON.
- Select "LO" on "ACTIVE TEST" screen.
- While front wiper motor is stopped and while operating, measure voltage between IPDM E/R terminal 32 and ground.

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



OK or NG

- OK >> Replace IPDM E/R. Refer to [PG-29. "Removal and Installation of IPDM E/R"](#).
- NG >> Replace front wiper motor. Refer to [WW-16. "Wiper Motor and Linkage"](#).

Only Front Wiper Low Does Not Operate

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1.COMBINATION SWITCH TO BCM INSPECTION

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

OK or NG

- OK >> Replace BCM. Refer to [BCS-18. "BCM"](#).
- NG >> Replace wiper switch. Refer to [WW-18. "Wiper and Washer Switch"](#).

Only Front Wiper High Does Not Operate

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1.CHECK IPDM E/R TO FRONT WIPER MOTOR

Ⓛ With CONSULT-III

- Select "IPDM E/R" with CONSULT-III, and select "ACTIVE TEST".
- Select "FRONT WIPER".

FRONT WIPER AND WASHER SYSTEM

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

⊗ Without CONSULT-III

1. Turn on front wipers using auto active test. Refer to [PG-21, "Auto Active Test"](#).
2. Confirm front wiper operation.

OK or NG

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

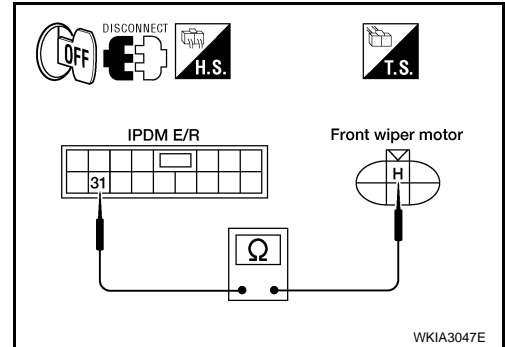
2. IPDM E/R TO FRONT WIPER CIRCUIT INSPECTION

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector E122 terminal 31 and front wiper motor harness connector E23 terminal H.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E122	31	E23	H	Yes

OK or NG

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



3. IPDM E/R INSPECTION

Ⓜ With CONSULT-III

1. Select "IPDM E/R" with CONSULT-III, and select "ACTIVE TEST".
2. Select "FRONT WIPER".
3. Select "HI" on "ACTIVE TEST" screen.

⊗ Without CONSULT-III

1. Turn on front wipers using auto active test. Refer to [PG-21, "Auto Active Test"](#).

When front wiper high relay is operating, check voltage between IPDM E/R terminal 31 and terminals 38, 60.

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

OK or NG

- OK >> Replace wiper motor. Refer to [WW-16, "Wiper Motor and Linkage"](#).
- NG >> Replace IPDM E/R. Refer to [PG-29, "Removal and Installation of IPDM E/R"](#).

4. COMBINATION SWITCH TO BCM INSPECTION

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

OK or NG

- OK >> Replace BCM. Refer to [BCS-18, "BCM"](#).
- NG >> Replace wiper switch. Refer to [WW-18, "Wiper and Washer Switch"](#).

Only Front Wiper INT Does Not Operate

INFOID:000000001721742

1. COMBINATION SWITCH TO BCM INSPECTION

FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

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

OK or NG

- OK >> Replace BCM. Refer to [BCS-18. "BCM"](#).
- NG >> Replace wiper switch. Refer to [WW-18. "Wiper and Washer Switch"](#).

Front Wiper INT Operation Switch Position Cannot Be Adjusted

INFOID:000000001721743

1.COMBINATION SWITCH TO BCM INSPECTION

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

OK or NG

- OK >> Replace BCM. Refer to [BCS-18. "BCM"](#).
- NG >> Replace wiper switch. Refer to [WW-18. "Wiper and Washer Switch"](#).

Wipers Do Not Wipe When Front Washer Operates

INFOID:000000001721744

1.COMBINATION SWITCH TO BCM INSPECTION

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

OK or NG

- OK >> Replace BCM. Refer to [BCS-18. "BCM"](#).
- NG >> Replace wiper switch. Refer to [WW-18. "Wiper and Washer Switch"](#).

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

INFOID:000000001721745

CAUTION:

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

1.CHECK IPDM E/R TO FRONT WIPER MOTOR

With CONSULT-III

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

Without CONSULT-III

GO TO 2.

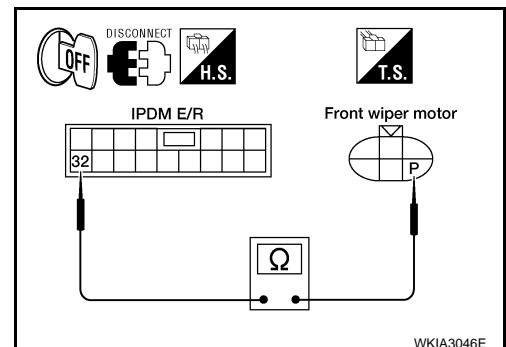
OK or NG

- OK >> Replace IPDM E/R. Refer to [PG-29. "Removal and Installation of IPDM E/R"](#).
- NG >> GO TO 2.

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

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

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E122	32	E23	P	Yes



WKIA3046E

FRONT WIPER AND WASHER SYSTEM

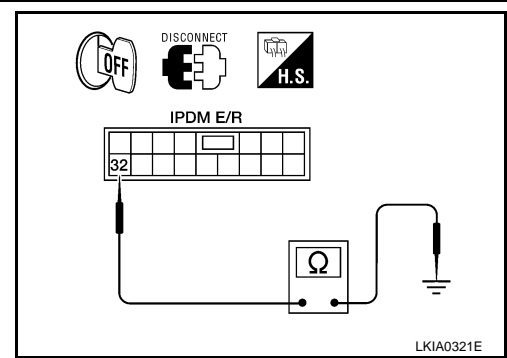
< SERVICE INFORMATION >

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

IPDM E/R			Continuity
Connector	Terminal		
E122	32	Ground	No

OK or NG

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



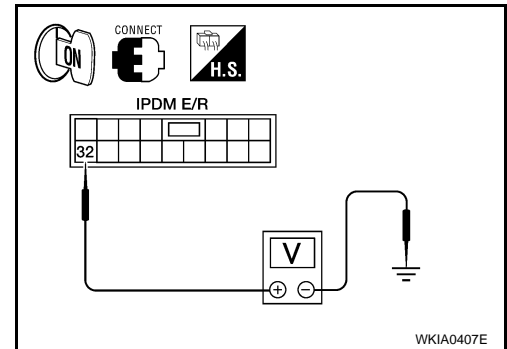
3. IPDM E/R TO FRONT WIPER MOTOR AUTO STOP CIRCUIT VOLTAGE

- Turn ignition switch ON.
- Select "LO" on "ACTIVE TEST" screen.
- While front wiper motor is stopped and while operating, measure voltage between IPDM E/R terminal 32 and ground.

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

OK or NG

- OK >> Replace IPDM E/R. Refer to [PG-29. "Removal and Installation of IPDM E/R"](#).
- NG >> Replace front wiper motor. Refer to [WW-16. "Wiper Motor and Linkage"](#).



Front Wiper Arms

INFOID:000000001721746

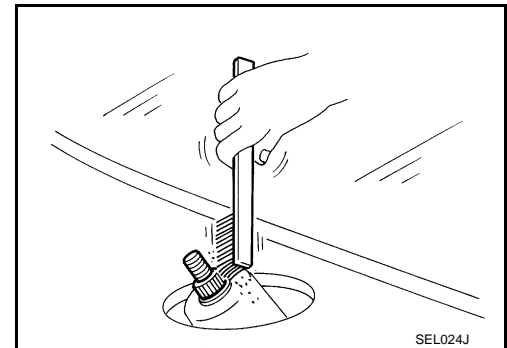
REMOVAL AND INSTALLATION

Removal

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

Installation

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



- Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".
- Ensure that wiper blades stop within proper clearance. Refer to wiper arm adjustment.
- Tighten wiper arm nuts to specified torque, and install wiper arm covers.

Front wiper arm nuts : 20.6 - 26.5 N·m (2.1 - 2.7 kg·m, 16 - 19 ft·lb)

FRONT WIPER AND WASHER SYSTEM

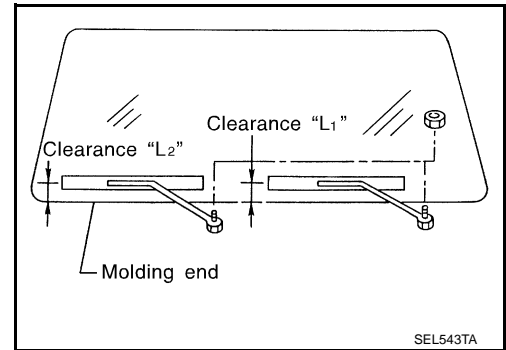
< SERVICE INFORMATION >

WIPER ARM ADJUSTMENT

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

Clearance "L1" : 30.5 - 45.5 mm (1.201 - 1.791 in)

Clearance "L2" : 32.5 - 47.5 mm (1.280 - 1.870 in)

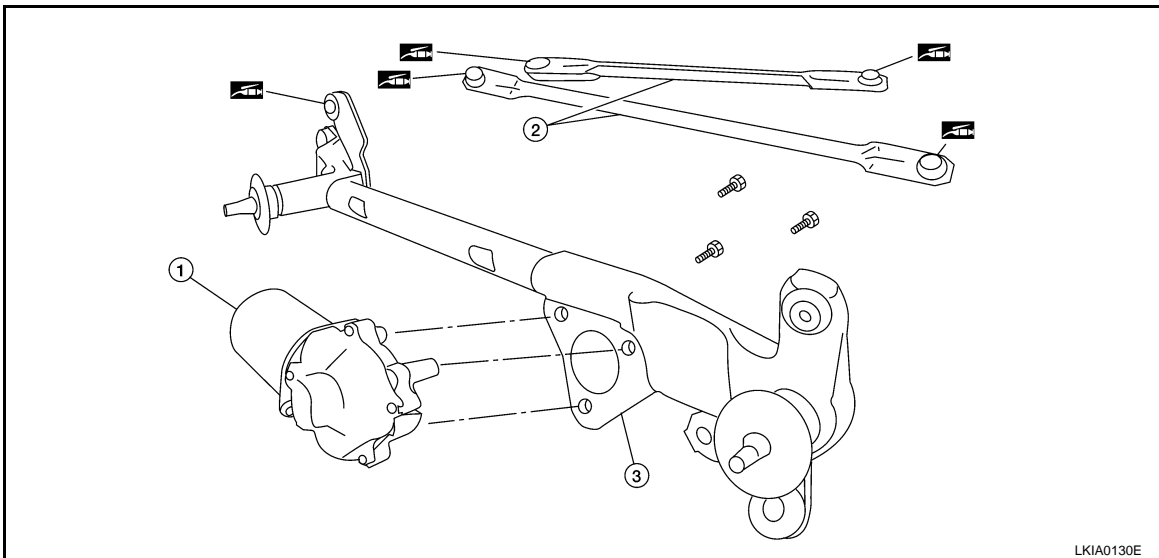


3. If adjustment is necessary, reposition wiper arm on wiper motor pivot shaft to above specified blade clearance.
4. Tighten wiper arm nut to specified torque, and install wiper arm covers. Refer to wiper arm installation.

Wiper Motor and Linkage

INFOID:000000001721747

REMOVAL AND INSTALLATION



1. Front wiper motor

2. Wiper link

3. Wiper frame

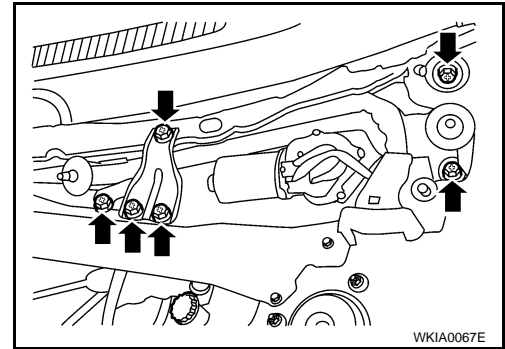
Removal

1. Operate front wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Remove wiper arms from the vehicle. Refer to [WW-15, "Front Wiper Arms"](#).
3. Remove the cowl top cover. Refer to [EI-18, "Removal and Installation"](#).
4. Disconnect wiper motor connector.

FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

5. Remove bracket and wiper motor assembly.



6. Remove wiper link from wiper frame.
7. Remove wiper motor from wiper frame.

Installation

CAUTION:

- Do not drop the wiper motor or cause it to contact other parts.
 - Check the grease conditions of the motor arm and wiper link joint(s). Apply grease if necessary.
1. Operate front wiper motor one full cycle, then turn "OFF" (Auto Stop).
 2. Disconnect wiper motor connector. Operate front wiper motor one full cycle, then turn "OFF" (Auto Stop).
 3. Install wiper motor to bracket and wiper link, and install assembly to the vehicle.

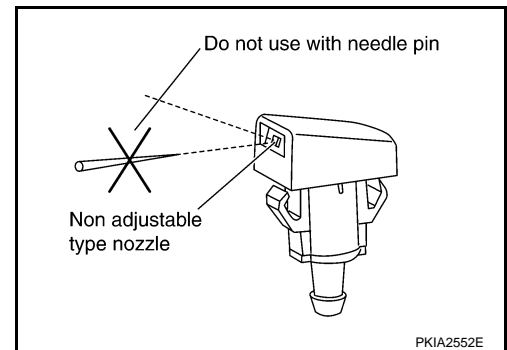
Wiper motor assembly bolts : 3.8 - 5.1 N·m (0.39 - 0.52 kg·m, 33.9 - 45.1 in·lb)

4. Connect wiper motor connector. Turn the wiper switch ON to operate the wiper motor, then turn wiper switch OFF (auto stop).
5. Install cowl top cover. Refer to [EI-18, "Removal and Installation"](#).
6. Install wiper arms. Refer to [WW-15, "Front Wiper Arms"](#).

Washer Nozzle Adjustment

INFOID:000000001721748

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

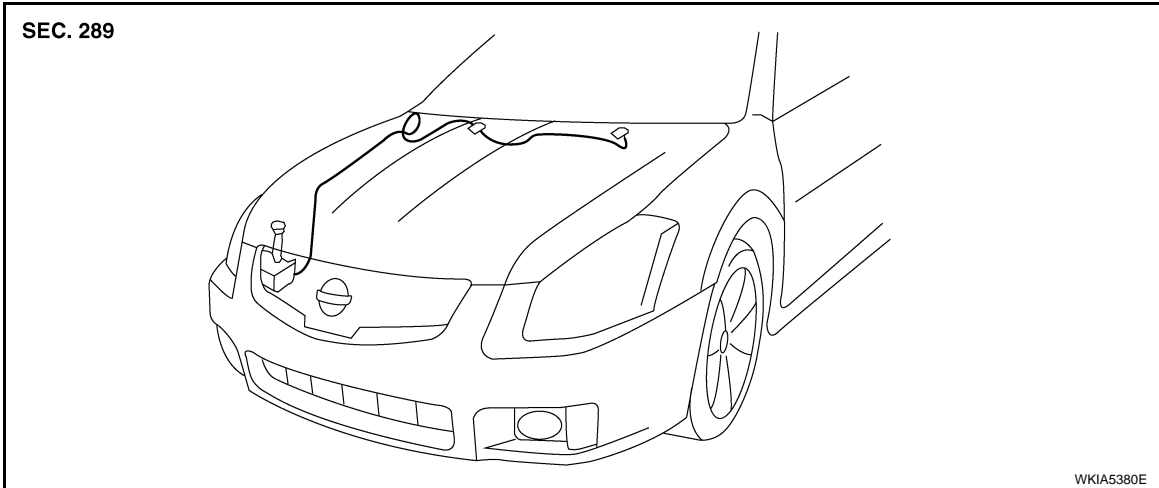


FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

Washer Tube Layout

INFOID:000000001721749



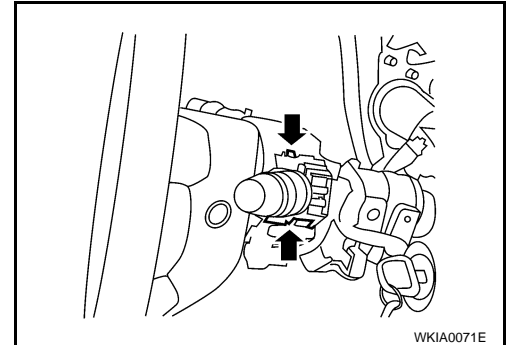
Wiper and Washer Switch

INFOID:000000001721750

REMOVAL AND INSTALLATION

Removal

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



Installation

Installation is in the reverse order of removal.

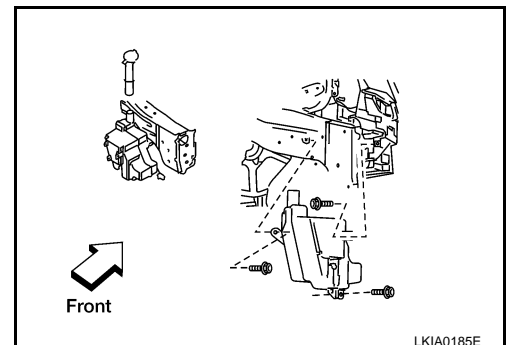
Washer Fluid Reservoir

INFOID:000000001721751

REMOVAL AND INSTALLATION

Removal

1. Pull out washer fluid reservoir inlet.
2. Remove fender protector. Refer to [EI-21. "Removal and Installation"](#).
3. Remove front washer motor connector and washer fluid level switch connector.
4. Remove washer fluid reservoir screws.
5. Remove washer hose and remove the washer fluid reservoir from the vehicle.



Installation

CAUTION:

FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

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

Installation is in the reverse order of removal.

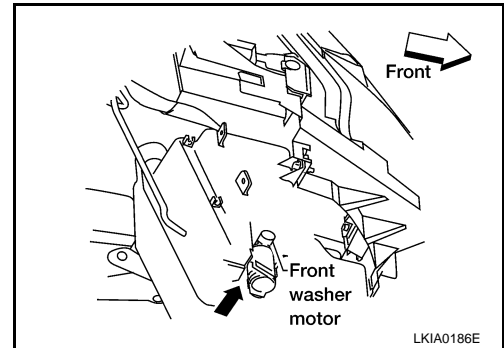
Washer Motor

INFOID:000000001721752

REMOVAL AND INSTALLATION

Removal

1. Remove fender protector. Refer to [EI-21, "Removal and Installation"](#).
2. Remove front washer motor connector and hose.
3. Pull out front washer motor in the direction of the arrow as shown and remove the washer pump from the washer fluid reservoir.



Installation

CAUTION:

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

Installation is in the reverse order of removal.

A
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C
D
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L
M
N
O
P

WW

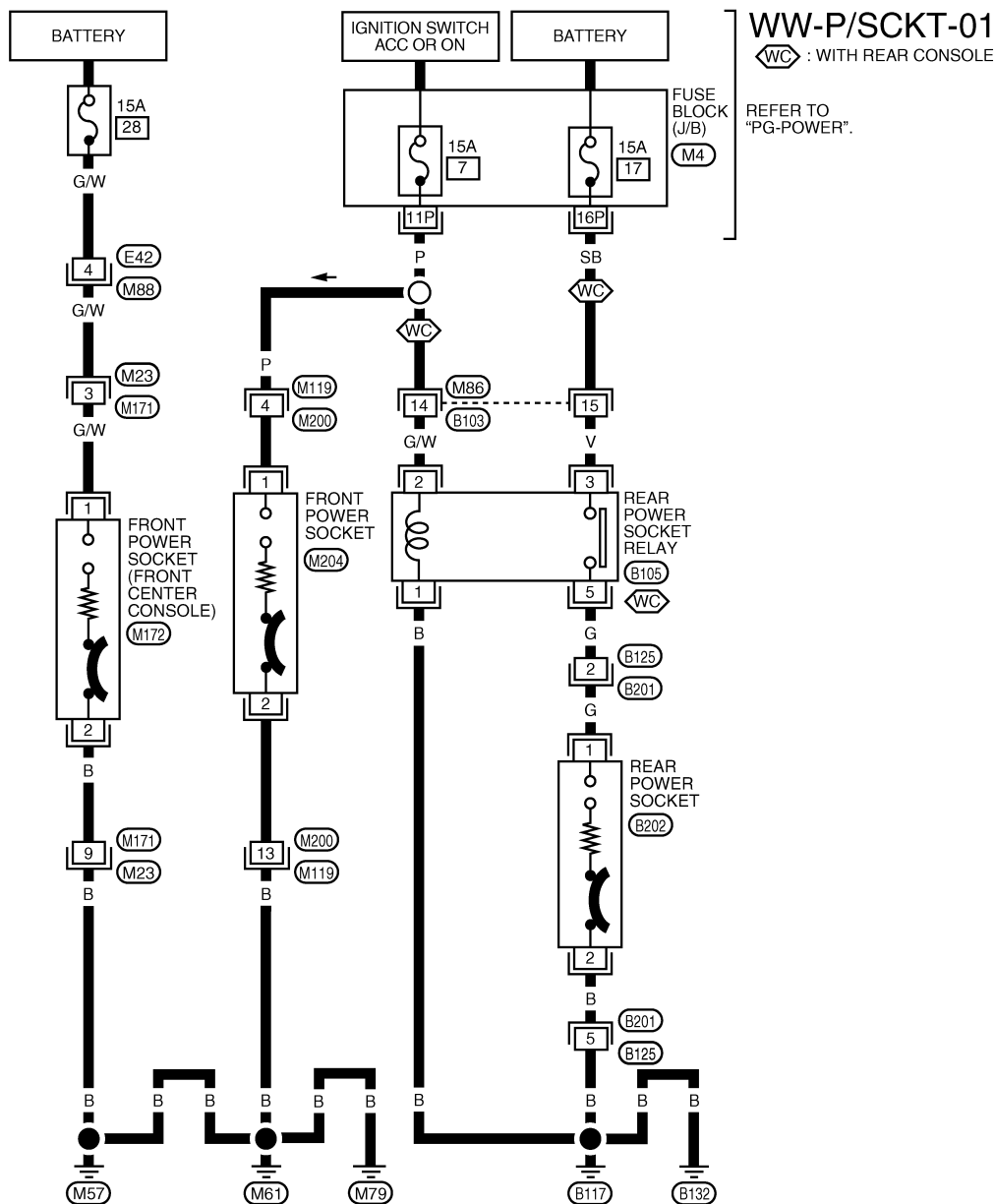
POWER SOCKET

< SERVICE INFORMATION >

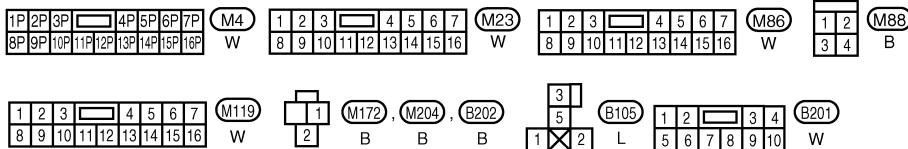
POWER SOCKET

Wiring Diagram - P/SCKT -

INFOID:000000001721753



WW-P/SCKT-01
 WC : WITH REAR CONSOLE
 REFER TO "PG-POWER".



WKWA4823E

Power Sockets

INFOID:000000001721754

REMOVAL AND INSTALLATION

Removal

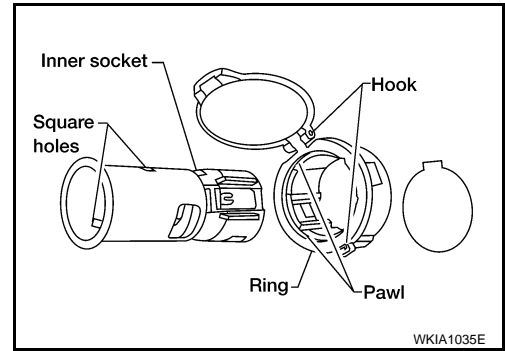
POWER SOCKET

< SERVICE INFORMATION >

NOTE:

Removal and Installation is common for all power sockets.

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



Installation

Installation is in the reverse order of removal.

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P

WW

HORN

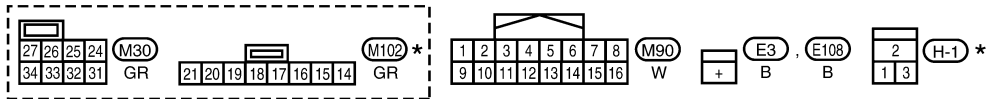
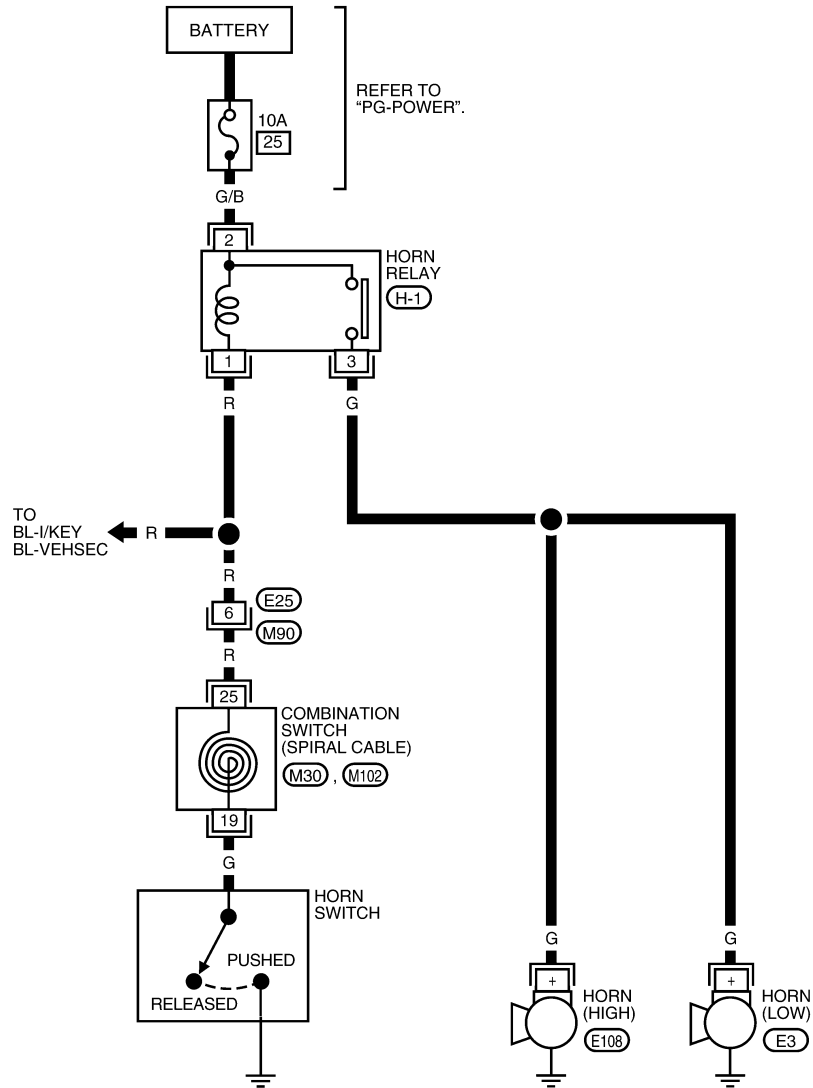
< SERVICE INFORMATION >

HORN

Wiring Diagram - HORN -

INFOID:000000001721755

WW-HORN-01



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

WKWA4824E

Horn (High)

INFOID:000000001721756

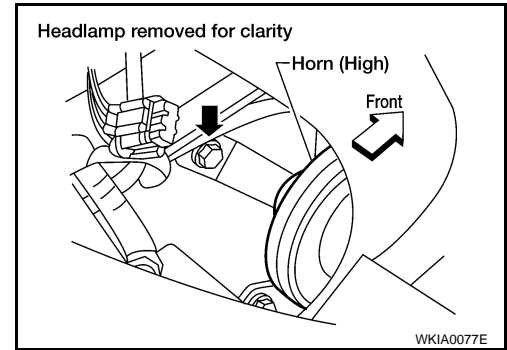
REMOVAL AND INSTALLATION

Removal

HORN

< SERVICE INFORMATION >

1. Remove right headlamp. Refer to [LT-32, "Removal and Installation"](#).
2. Disconnect horn electrical connector.
3. Remove horn bolt and remove horn.



Installation

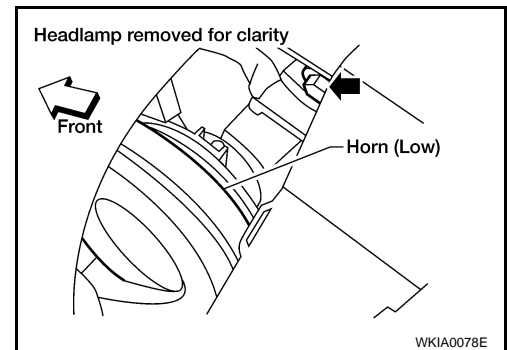
Installation is in the reverse order of removal.

Horn (Low)

INFOID:000000001721757

Removal

1. Remove left headlamp. Refer to [LT-32, "Removal and Installation"](#).
2. Disconnect horn electrical connector.
3. Remove horn bolt and remove horn.



Installation

Installation is in the reverse order of removal.

A
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G
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I
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WW
L
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P