

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"

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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.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution for Work

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- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components.
 - Water soluble dirt: Dip a soft cloth into lukewarm water, and wring the water out of the cloth to wipe the dirty area.
Then rub with a soft and dry cloth.
 - Oily dirt: Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%), and wipe the dirty area.
Then dip a cloth into fresh water, and wring the water out of the cloth to wipe the detergent off. Then rub with a soft and dry cloth.
- Do not use organic solvent such as thinner, benzene, alcohol, or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

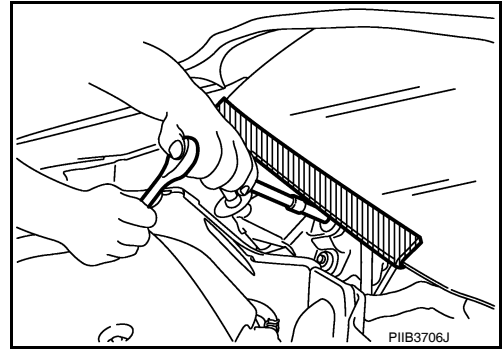
PRECAUTION

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Precaution for Procedure without Cowl Top Cover

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



Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:000000006152615

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NATS (NISSAN ANTI-THEFT SYSTEM).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NATS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

2. Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

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PREPARATION

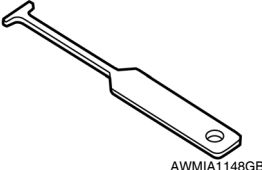
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PREPARATION

Special Service Tool

INFOID:000000006152616

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

| Tool number (Kent-Moore No.) Tool name | Description |
|---|----------------------------|
| <p>— (J-42059) Power socket removal tool</p>  <p>AWMIA1148GB</p> | For removing power sockets |

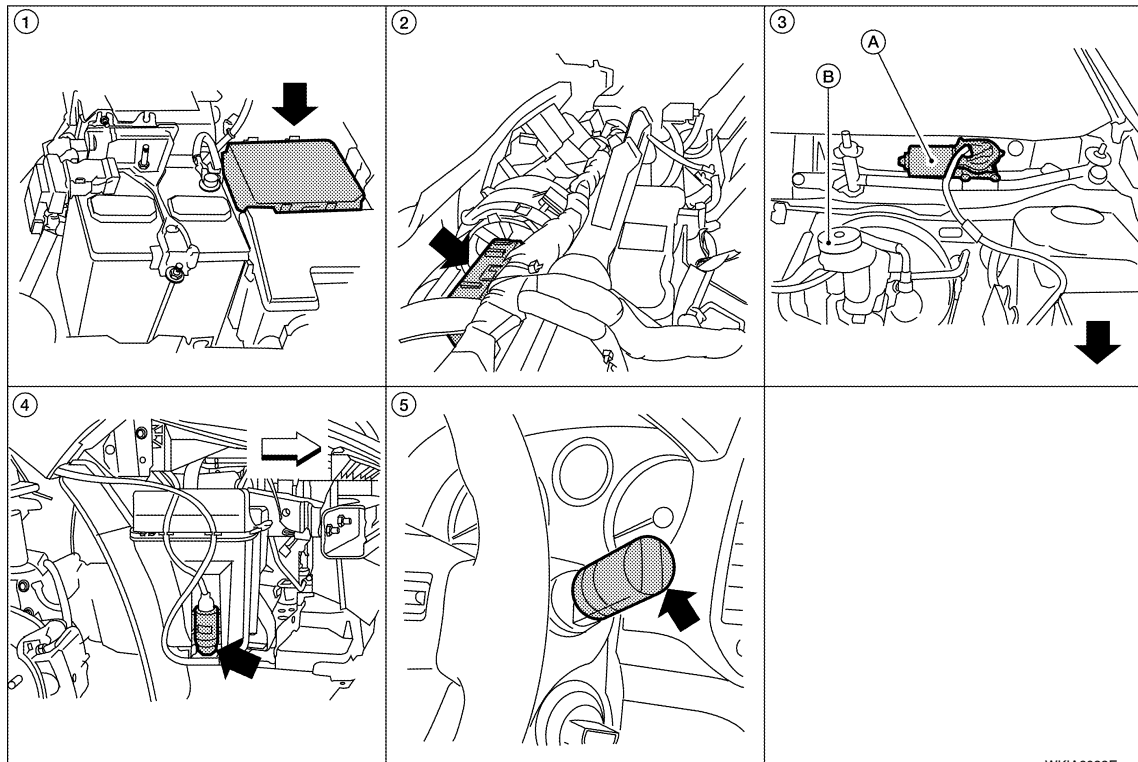
FRONT WIPER AND WASHER SYSTEM

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FRONT WIPER AND WASHER SYSTEM

Component Parts and Harness Connector Location

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WKIA6022E

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|--|---|--|
| 1. IPDM E/R E45, E46 and E48 | 2. BCM M18 and M20 (view with instrument panel removed) | 3. A. Front wiper motor E1 (view with engine cover and cowl top cover removed) B. Brake master cylinder |
| 4. Front washer motor E2 (view with front bumper fascia removed) | 5. Combination switch (wiper switch) M28 | |

System Description

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- Front wiper relays (front wiper relay, front wiper high relay) 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 BCM.

OUTLINE

Power is supplied at all times

- to ignition relay, located in IPDM E/R, from battery directly,
- through 50A fusible link (letter j, located in fuse and fusible link box)
- to BCM terminal 70
- through 30A fuse (No. 39, located in IPDM E/R)
- to front wiper relay located in IPDM E/R
- through 15A fuse (No. 52, located in IPDM E/R) and
- through 20A fuse (No. 53, located in IPDM E/R)
- to CPU located in IPDM E/R.

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

- through ignition relay (located in IPDM E/R)
- to front wiper relay (located in IPDM E/R) and

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- to front wiper high relay (located in IPDM E/R) and
- to CPU (located in IPDM E/R)
- through 10A fuse [No. 12, located in fuse block (J/B)]
- to BCM terminal 38
- through 10A fuse [No. 15, located in fuse block (J/B)]
- to combination switch terminal 14.

Ground is supplied

- to IPDM E/R terminals 39 and 59 and
- to front wiper motor terminal 2
- through grounds E9, E15 (all models) and E24 (with MR20DE)
- to BCM terminal 67
- through grounds M57 and M61.

LO SPEED WIPER OPERATION

When the front wiper switch is in LO position, the BCM detects the low speed wiper ON signal by means of the BCM wiper switch reading function.

The BCM sends a front wiper request signal (LO) through the CAN communication lines

- from BCM terminals 39 and 40
- to IPDM E/R terminals 40 and 41.

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

- through IPDM E/R terminal 33 and front wiper high relay and front wiper relay
- to front wiper motor terminal 1.

Ground is supplied

- to front wiper motor terminal 2
- through grounds E9, E15 (all models) and E24 (with MR20DE).

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

HI SPEED WIPER OPERATION

When the front wiper switch is in HI position, the BCM detects a high speed wiper ON signal by means of the BCM wiper switch reading function.

The BCM sends a front wiper request signal (HI) through the CAN communication lines

- from BCM terminals 39 and 40
- to IPDM E/R terminals 40 and 41.

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

- through IPDM E/R terminal 32
- to front wiper motor terminal 4.

Ground is supplied

- to front wiper motor terminal 2
- through grounds E9, E15 (all models) and E24 (with MR20DE).

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

INT (INTERMITTENT) OPERATION

Wiper intermittent operation delay interval is determined from the intermittent wiper dial position inputs. 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 the ON or START position, and the front wiper switch is turned to the intermittent position, the BCM detects a front wiper (intermittent) ON signal by means of the BCM wiper switch reading function.

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

- from BCM terminals 39 and 40
- to IPDM E/R terminals 40 and 41.

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.
- BCM sends a front wiper request signal (INT) to IPDM E/R at calculated operation interval.

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

AUTO STOP OPERATION

FRONT WIPER AND WASHER SYSTEM

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

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

- from IPDM E/R terminal 33
- to front wiper motor terminal 1, in order to continue wiper motor operation at low speed.

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

- to IPDM E/R terminal 38
- through front wiper motor terminals 5 and 2
- through grounds E9, E15 (all models) and E24 (with MR20DE).

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

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

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

WASHER OPERATION

When the wiper switch is in front wiper washer position, BCM detect front wiper washer signal by BCM wiper switch reading function. Refer to [BCS-4, "System Description"](#).

Combination switch power is supplied

- through combination switch terminal 14
- to washer motor terminal 1.

Ground is supplied

- to front washer motor terminal 2
- through grounds E9, E15 (all models) and E24 (with MR20DE).

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

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

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

MIST OPERATION

When the wiper switch is pushed up to the mist position, wiper LO speed operation cycles once and then stops.

For additional information about wiper operation under this condition, refer to "LO 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

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Refer to [LAN-7, "System Description"](#).

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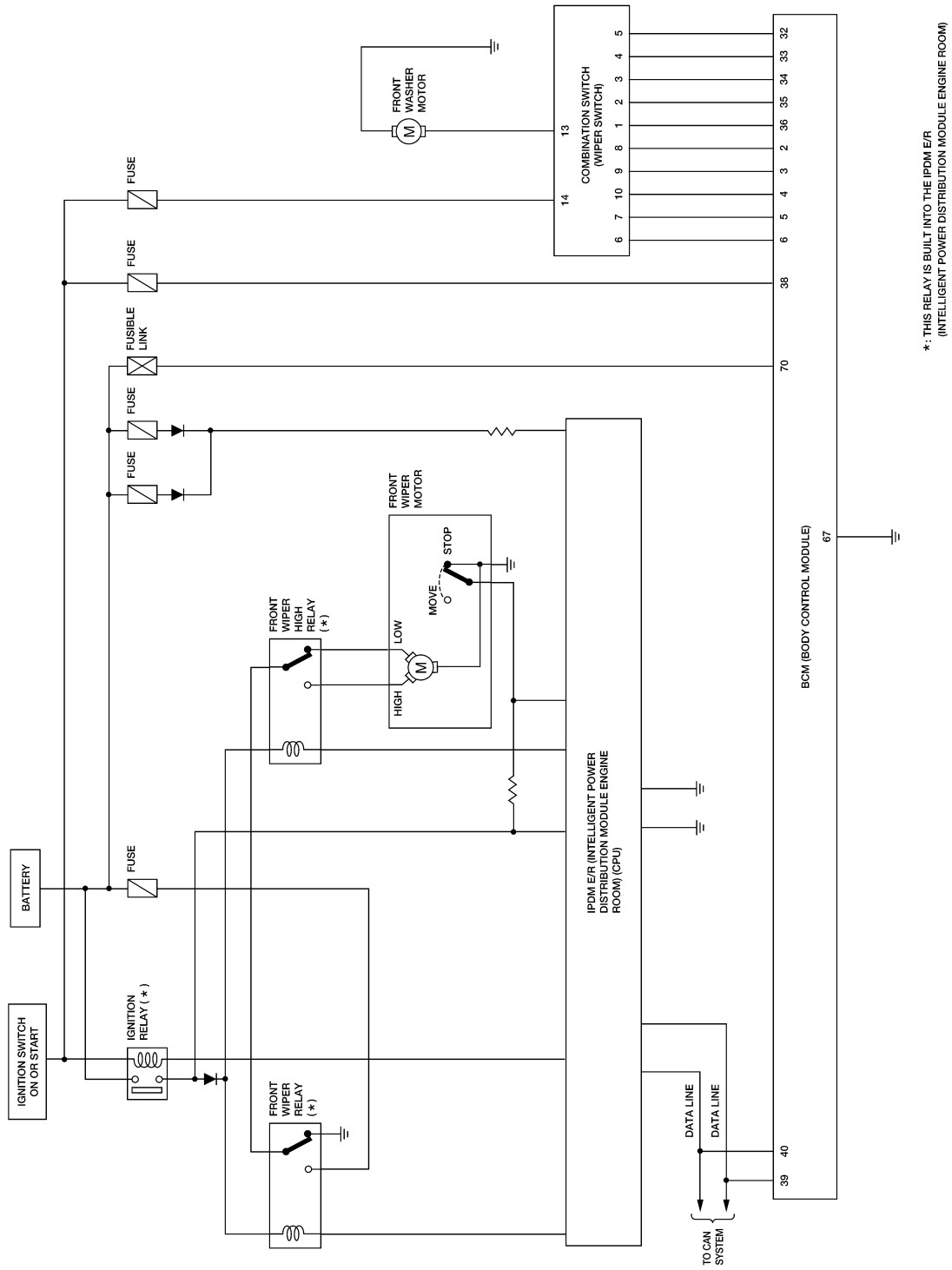
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FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

Schematic

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

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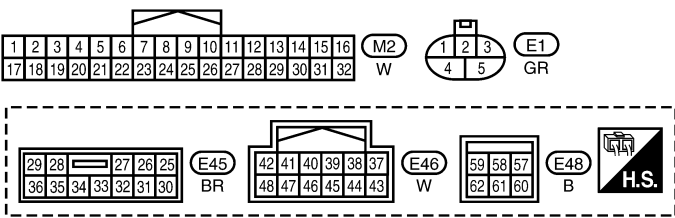
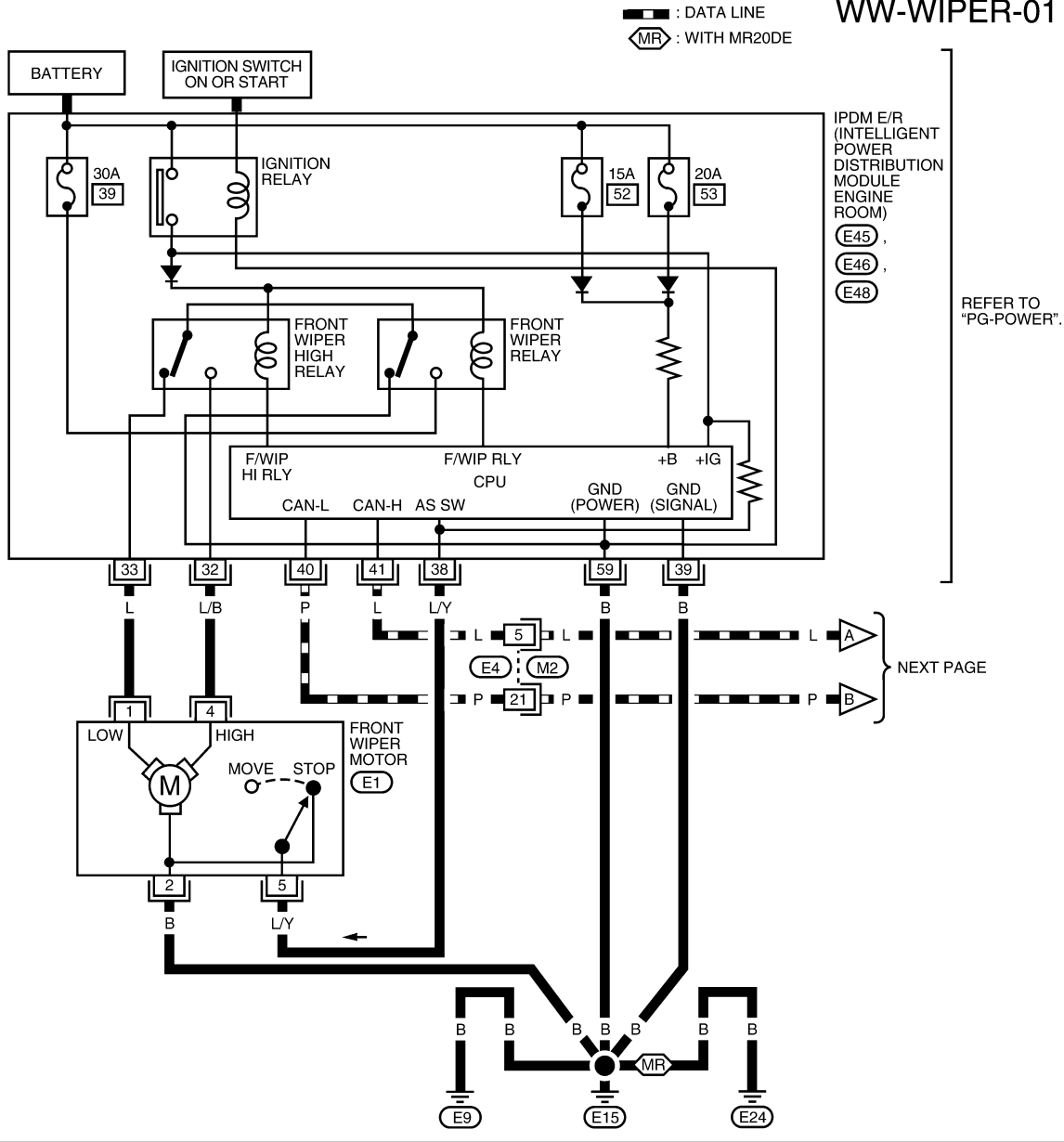
FRONT WIPER AND WASHER SYSTEM

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Wiring Diagram - WIPER -

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WW-WIPER-01



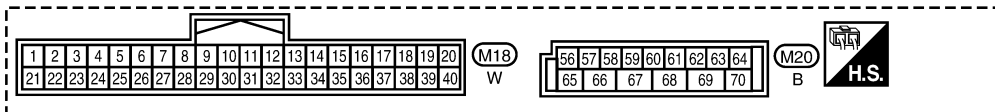
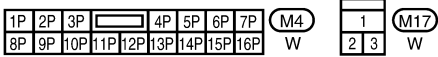
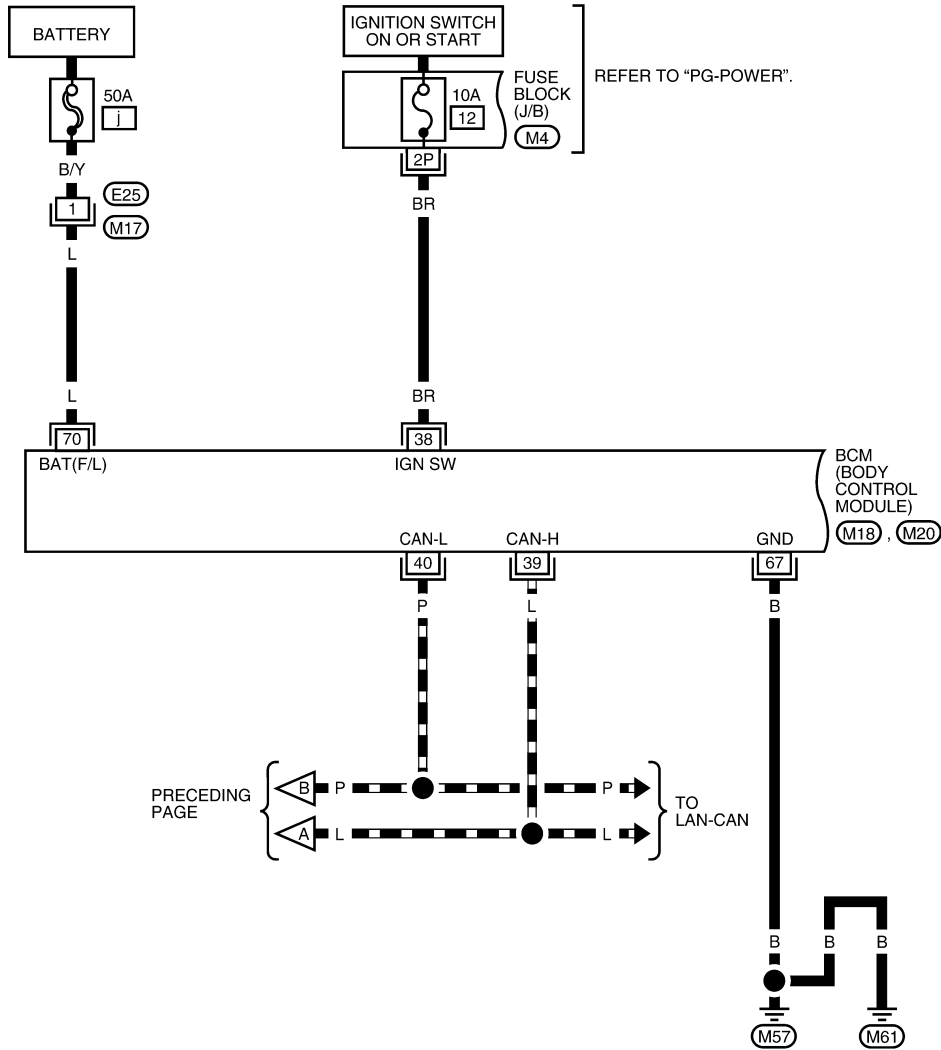
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FRONT WIPER AND WASHER SYSTEM

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WW-WIPER-02

▬ : DATA LINE



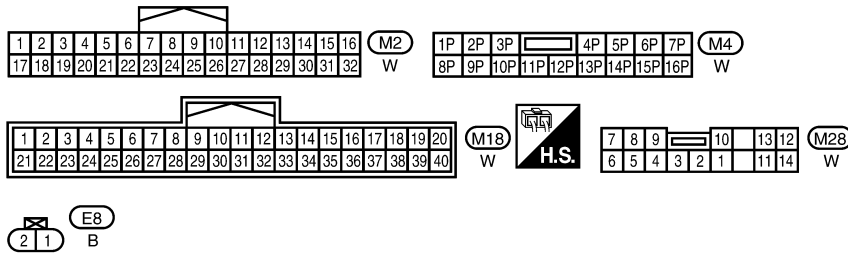
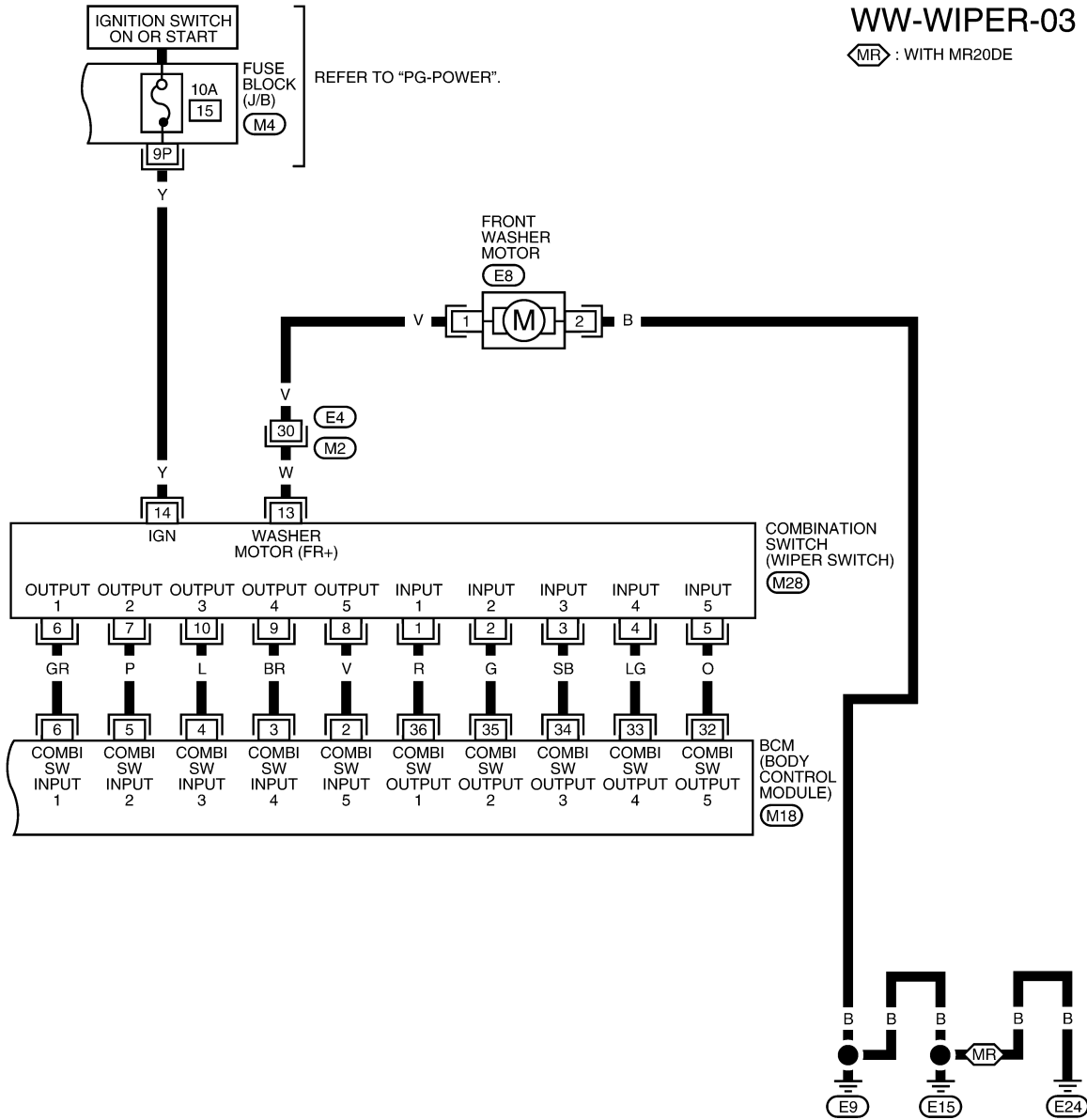
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FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

WW-WIPER-03

MR : WITH MR20DE



Terminal and Reference Value for BCM

Refer to [BCS-12, "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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FRONT WIPER AND WASHER SYSTEM

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Work Flow

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1. Confirm symptoms and customer complaint.
2. Understand operation description and function description. Refer to [WW-5. "System Description"](#).
3. Check symptom and repair or replace malfunctioning parts.
4. Does front wiper and washer operate normally? If YES, GO TO 6. If NO, GO TO 4.
5. Inspection End.

CONSULT-III Function (BCM)

INFOID:000000006152625

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

| Diagnosis mode | Description |
|------------------------|--|
| 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 data in real time. |
| ACTIVE TEST | Device operation can be checked by applying a drive signal to device. |
| SELF DIAGNOSTIC RESULT | 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 |
|---------------------|--|-------------|
| WIPER SPEED SETTING | Vehicle speed sensing type wiper control mode can be changed in this mode. | ON/OFF |

DATA MONITOR

| | |
|---------------------|---------------------------------|
| ALL SIGNALS | Monitors all the signals. |
| SELECTION FROM MENU | Selects items and monitor them. |

Display Item List

| Monitor item | Contents |
|------------------------|---|
| IGN ON SW "ON/OFF" | Displays "ignition switch ON (ON)/Other OFF or ACC (OFF)" status as judged from ignition switch signal. |
| IGN SW CAN "ON/OFF" | Displays "ignition switch ON (ON)/Other OFF or ACC (OFF)" status as judged from CAN communication signal. |
| FR WIPER HI "ON/OFF" | Displays "FRONT WIPER HI (ON)/Other (OFF)" status as judged from wiper switch signal. |
| FR WIPER LOW "ON/OFF" | Displays "FRONT WIPER LOW (ON)/Other (OFF)" status as judged from wiper switch signal. |
| FR WIPER INT "ON/OFF" | Displays "FRONT WIPER INT (ON)/Other (OFF)" status as judged from wiper switch signal. |
| FR WASHER SW "ON/OFF" | Displays "FRONT WASHER Switch (ON)/Other (OFF)" status as judged from wiper switch signal. |
| INT VOLUME "1-7" | Displays intermittent operation dial position setting (1-7) as judged from wiper switch signal. |
| FR WIPER STOP "ON/OFF" | Displays "Stopped (ON)/Operating (OFF)" status as judged from auto-stop signal. |
| VEHICLE SPEED "km/h" | Displays vehicle speed status as judged from vehicle speed signal. |

ACTIVE TEST

Display Item List

| Test item | Description |
|-----------|---|
| FR WIPER | Front LO, HI and INT wiper can be operated by any ON-OFF operation. |

FRONT WIPER AND WASHER SYSTEM

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CONSULT-III Function (IPDM E/R)

INFOID:000000006152626

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

| IPDM E/R diagnostic Mode | Description |
|--------------------------|---|
| SELF DIAGNOSTIC RESULT | 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

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

All Signals, Main Signals, Selection From Menu

| Item name | Display or unit | Monitor item selection | | | Description |
|---------------|------------------|------------------------|--------------|---------------------|------------------------------|
| | | ALL SIGNALS | MAIN SIGNALS | SELECTION FROM MENU | |
| FR WIP REQ | STOP/1LOW/LOW/HI | × | × | × | Signal status input from BCM |
| WIP AUTO STOP | ACT P/STOP P | × | × | × | Output status of IPDM E/R |
| 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 | Description |
|-----------------------------|---|
| FRONT WIPER (HI, LO) output | With a certain operation (OFF, HI ON, LO ON), front wiper relay (Lo, Hi) can be operated. |

BCM Power and Ground Circuit Inspection

INFOID:000000006152627

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

IPDM E/R Power/Ground Circuit Inspection

INFOID:000000006152628

Refer to [PG-27, "IPDM E/R Power/Ground Circuit Inspection"](#).

Front Wiper Does Not Operate

INFOID:000000006152629

CAUTION:

- During IPDM E/R fail-safe control, front wipers may not operate. Refer to [PG-18, "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 "IPDM E/R" on CONSULT-III, and select "ACTIVE TEST".
2. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
3. Touch "LO" or "HI" screen.

Without CONSULT-III

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

Does front wiper operate normally?

YES >> GO TO 2.

FRONT WIPER AND WASHER SYSTEM

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NO >> GO TO 4.

2. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-III

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

Without CONSULT-III

Refer to [LT-61, "Combination Switch Inspection"](#).

OK or NG

OK >> GO TO 3.

NG >> Check combination switch (wiper switch). Refer to [LT-61, "Combination Switch Inspection"](#).

3. 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-18, "Removal and Installation of BCM"](#).

CAN COMM CIRCUIT>>Check CAN communication line of BCM. Refer to [LAN-16, "Trouble Diagnosis Flow Chart"](#).

4. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect front wiper motor.
3. Check continuity between front wiper motor connector and ground.

| Connector | Terminal | Ground | Continuity |
|-----------|----------|--------|------------|
| E1 | 2 | | Yes |

OK or NG

OK >> GO TO 5.

NG >> Repair or replace harness.

5. CHECK FRONT WIPER CIRCUIT

1. Disconnect IPDM E/R.
2. Check continuity between IPDM E/R connector (A) and front wiper motor connector (B).

| Connector | Terminal | Connector | Terminal | Continuity |
|-----------|----------|-----------|----------|------------|
| A | | B | | |
| E45 | 32 | E1 | 4 | Yes |
| | 33 | | 1 | |

3. Check continuity between IPDM E/R connector (A) and ground.

| Connector | Terminal | Ground | Continuity |
|-----------|----------|--------|------------|
| A | | | |
| E45 | 32 | | No |
| | 33 | | |

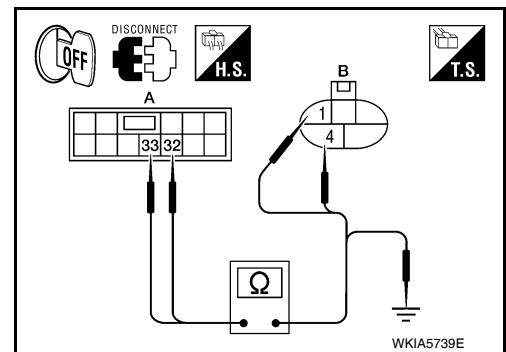
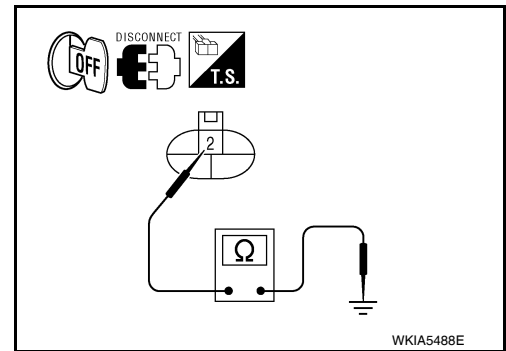
OK or NG

OK >> GO TO 6.

NG >> Repair or replace harness.

6. CHECK IPDM E/R

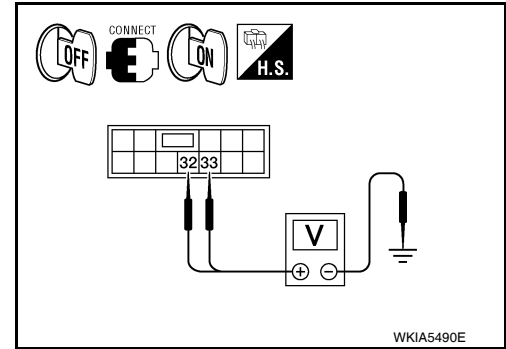
With CONSULT-III



FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

1. Connect IPDM E/R connector E45.
2. Connect front wiper motor connector.
3. Turn ignition switch ON.
4. Select "IPDM E/R" by CONSULT-III, and select "ACTIVE TEST".
5. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
6. Touch "LO" or "HI" screen.
7. Check voltage between IPDM E/R connector and ground while front wiper (HI, LO) is operating.



| Connector | Terminals | | Condition | Voltage (V) Approx. |
|-----------|-----------|--------|--------------|------------------------|
| | (+) | (-) | | |
| E45 | 32 | Ground | Stopped | 0V |
| | | | HI operation | Battery voltage |
| | 33 | | Stopped | 0V |
| | | | LO operation | Battery voltage |

⊗ Without CONSULT-III

1. Connect IPDM E/R connector E45.
2. Turn ignition switch ON.
3. Start auto active test. Refer to [PG-21. "Auto Active Test"](#).
4. Check voltage between IPDM E/R connector and ground while front wiper (HI, LO) is operating.

| Connector | Terminals | | Condition | Voltage (V) Approx. |
|-----------|-----------|--------|--------------|------------------------|
| | (+) | (-) | | |
| E45 | 32 | Ground | Stopped | 0V |
| | | | HI operation | Battery voltage |
| | 33 | | Stopped | 0V |
| | | | LO operation | Battery voltage |

OK or NG

- OK >> Replace front wiper motor. Refer to [WW-21. "Removal and Installation of Front Wiper Drive Assembly"](#).
- NG >> Replace IPDM E/R. Refer to [PG-28. "Removal and Installation of IPDM E/R"](#).

Front Wiper Does Not Return to Stop Position (After Front Wiper Operates for 10 Seconds, They Stop for 20 Seconds, and After Repeating the Operation Five Times, They Become Inoperative)

INFOID:000000006152630

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 PROT" item shows "BLOCK".

1. CHECK FRONT WIPER STOP SIGNAL

Ⓜ With CONSULT-III

Select "IPDM E/R" on CONSULT-III. With "DATA MONITOR", make sure 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. Refer to [PG-28. "Removal and Installation of IPDM E/R"](#).
- NG >> GO TO 2.

2. CHECK IPDM E/R

FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

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

| Connector | Terminals | | Condition | Voltage (V) Approx. |
|-----------|-----------|--------|-----------------|---------------------|
| | (+) | (-) | | |
| E46 | 38 | Ground | Wiper stopped | 0V |
| | | | Wiper operating | Battery voltage |

OK or NG

OK >> Replace IPDM E/R. Refer to [PG-28, "Removal and Installation of IPDM E/R"](#).

NG >> GO TO 3.

3. CHECK FRONT WIPER AUTO STOP CIRCUIT

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

| Connector | Terminal | Connector | Terminal | Continuity |
|-----------|----------|-----------|----------|------------|
| A | | B | | |
| E46 | 38 | E1 | 5 | Yes |

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

| Connector | Terminal | Ground | Continuity |
|-----------|----------|--------|------------|
| A | | | |
| E46 | 38 | | No |

OK or NG

OK >> Replace front wiper motor. Refer to [WW-21, "Removal and Installation of Front Wiper Drive Assembly"](#).

NG >> Repair or replace harness.

Only Front Wiper Low Does Not Operate

INFOID:000000006152631

1. ACTIVE TEST

With CONSULT-III

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

Without CONSULT-III

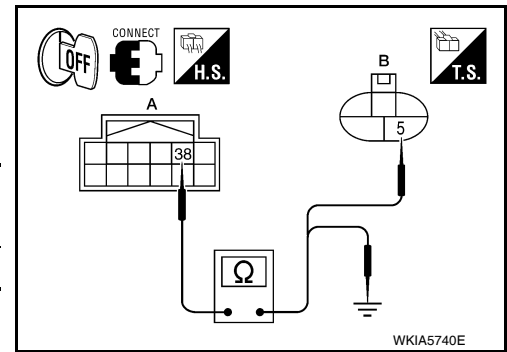
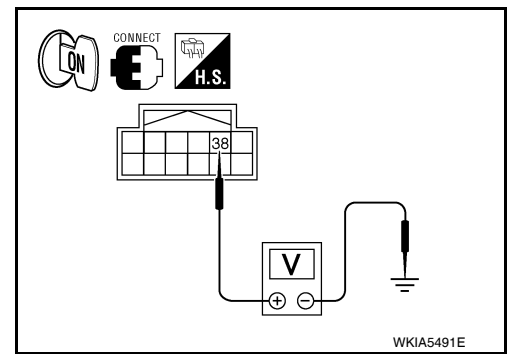
Start auto active test. Refer to [PG-21, "Auto Active Test"](#).

Does front wiper operate normally?

YES >> Refer to [LT-61, "Combination Switch Inspection"](#).

NO >> GO TO 2.

2. CHECK FRONT WIPER MOTOR CIRCUIT



FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

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

| Connector | Terminal | Connector | Terminal | Continuity |
|-----------|----------|-----------|----------|------------|
| A | | B | | |
| E45 | 33 | E1 | 1 | Yes |

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

| Connector | Terminal | Ground | Continuity |
|-----------|----------|--------|------------|
| A | | | |
| E45 | 33 | | No |

OK or NG

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

3. CHECK IPDM E/R

With CONSULT-III

1. Connect IPDM E/R.
2. Turn ignition ON.
3. Select "IPDM E/R" on CONSULT-III, and select "ACTIVE TEST".
4. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
5. Touch "LO" screen.
6. Check voltage between IPDM E/R connector and ground while front wiper LO is operating.

| Connector | Terminals | | Voltage (V) Approx. |
|-----------|-----------|--------|------------------------|
| | (+) | (-) | |
| E45 | 33 | Ground | Battery voltage |

Without CONSULT-III

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

| Connector | Terminals | | Voltage (V) Approx. |
|-----------|-----------|--------|------------------------|
| | (+) | (-) | |
| E45 | 33 | Ground | Battery voltage |

OK or NG

- OK >> Replace front wiper motor. Refer to [WW-21. "Removal and Installation of Front Wiper Drive Assembly"](#).
 NG >> Replace IPDM E/R. Refer to [PG-28. "Removal and Installation of IPDM E/R"](#).

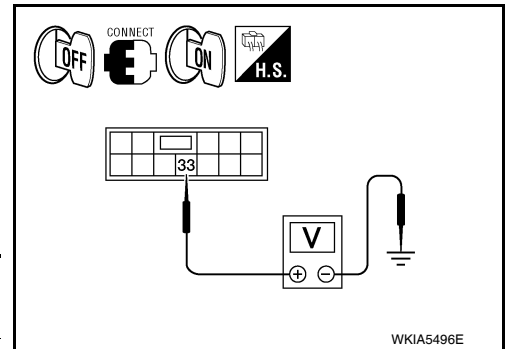
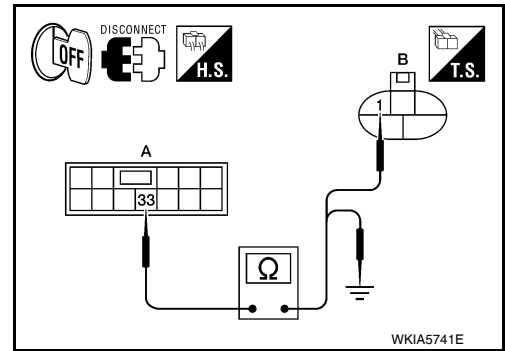
Only Front Wiper HI Does Not Operate

INFOID:000000006152632

1. ACTIVE TEST

With CONSULT-III

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



FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

⊗ Without CONSULT-III

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

Does front wiper operate normally?

- YES >> Refer to [LT-61, "Combination Switch Inspection"](#).
- NO >> GO TO 2.

2. CHECK FRONT WIPER MOTOR CIRCUIT

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

| Connector | Terminal | Connector | Terminal | Continuity |
|-----------|----------|-----------|----------|------------|
| A | | B | | |
| E45 | 32 | E1 | 4 | Yes |

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

| Connector | Terminal | Ground | Continuity |
|-----------|----------|--------|------------|
| A | | | |
| E45 | 32 | | No |

OK or NG

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

3. CHECK IPDM E/R

Ⓟ With CONSULT-III

1. Connect IPDM E/R.
2. Turn ignition switch ON.
3. Select "IPDM E/R" on CONSULT-III, and select "ACTIVE TEST".
4. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
5. Touch "HI" screen.
6. Check voltage between IPDM E/R connector and ground while front wiper HI is operating.

| Connector | Terminals | | Voltage (V) Approx. |
|-----------|-----------|--------|------------------------|
| | (+) | (-) | |
| E45 | 32 | Ground | Battery voltage |

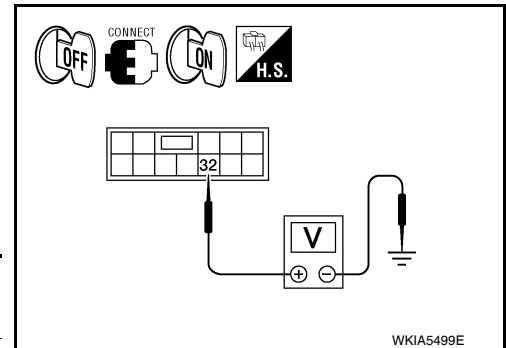
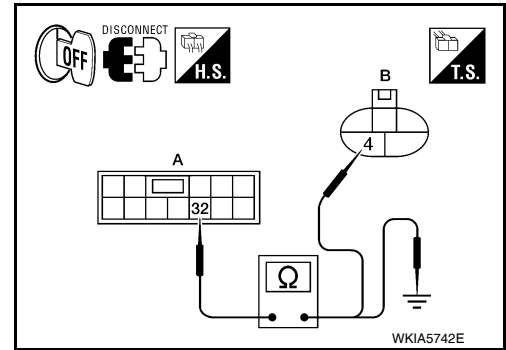
⊗ Without CONSULT-III

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

| Connector | Terminals | | Voltage (V) Approx. |
|-----------|-----------|--------|------------------------|
| | (+) | (-) | |
| E45 | 32 | Ground | Battery voltage |

OK or NG

- OK >> Replace front wiper motor. Refer to [WW-21, "Removal and Installation of Front Wiper Drive Assembly"](#).
- NG >> Replace IPDM E/R. Refer to [PG-28, "Removal and Installation of IPDM E/R"](#).



FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

Only Front Wiper Intermittent Does Not Operate

INFOID:000000006152633

1. CHECK COMBINATION SWITCH

With CONSULT-III

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

Without CONSULT-III

Refer to [LT-61, "Combination Switch Inspection"](#).

OK or NG

- OK >> Replace BCM. Refer to [BCS-18, "Removal and Installation of BCM"](#).
NG >> Check combination switch (wiper switch). Refer to [LT-61, "Combination Switch Inspection"](#).

Front Wiper Intermittent Operation Switch Position Cannot Be Adjusted

INFOID:000000006152634

1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-III

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

Without CONSULT-III

Refer to [LT-61, "Combination Switch Inspection"](#).

OK or NG

- OK >> Replace BCM. Refer to [BCS-18, "Removal and Installation of BCM"](#).
NG >> Check combination switch (wiper switch). Refer to [LT-61, "Combination Switch Inspection"](#).

Wiper Does Not Wipe When Front Washer Operates

INFOID:000000006152635

1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-III

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

Without CONSULT-III

Refer to [LT-61, "Combination Switch Inspection"](#).

OK or NG

- OK >> Replace BCM. Refer to [BCS-18, "Removal and Installation of BCM"](#).
NG >> Check combination switch (wiper switch). Refer to [LT-61, "Combination Switch Inspection"](#).

Front Wiper Does Not Stop

INFOID:000000006152636

1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-III

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

Without CONSULT-III

Refer to [LT-61, "Combination Switch Inspection"](#).

OK or NG

- OK >> Replace IPDM E/R. Refer to [PG-28, "Removal and Installation of IPDM E/R"](#).
NG >> Check combination switch (wiper switch). Refer to [LT-61, "Combination Switch Inspection"](#).

Removal and Installation of Front Wiper Arms

INFOID:000000006152637

REMOVAL

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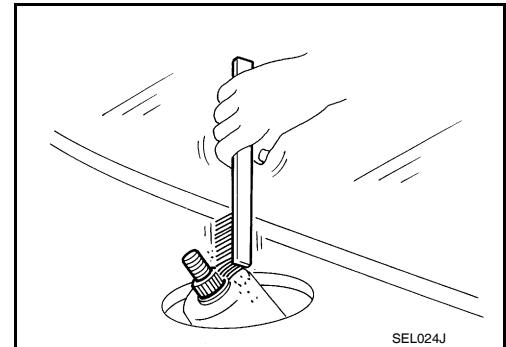
FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

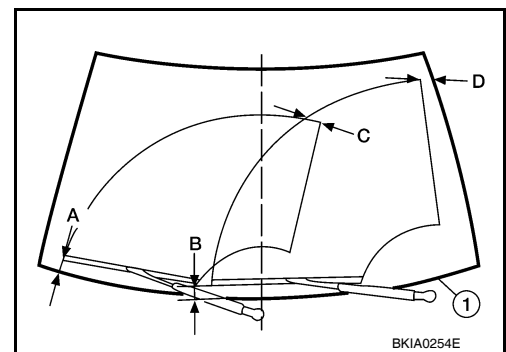
1. Turn wiper switch on to operate wiper motor, and then turn wiper switch off (auto stop).
2. Open hood, remove wiper arm caps, and remove wiper arm nuts.
3. Raise wiper arm, and remove wiper arm from the vehicle.

INSTALLATION

1. Clean up the pivot area as shown. This will reduce possibility of wiper arm looseness.
2. Prior to wiper arm installation, turn on wiper switch to operate wiper motor and then turn it off (auto stop).
3. Push wiper arm onto pivot shaft, paying attention to blind spline.



4. Lift the blade up and then set it down onto glass surface to set the blade center to clearance "A", "B", "C" and "D" immediately before temporarily tightening the wiper arm nuts.
5. Spray washer fluid. Turn on wiper switch to operate wiper motor and then turn it off.
6. Make sure that wiper blades stop within clearance "A", "B", "C", and "D" and reposition as necessary.
 - Cowl top cover edge (1)



- Clearance "A" : 30.5 mm (1.201 in)**
Clearance "B" : 27.5 ± 6.5 mm (1.083 ±±in)
Clearance "C" : 20.1 mm (1.791 in)
Clearance "D" : 50 mm (1.969 in)

7. Tighten wiper arm nuts to specification. Refer to [WW-21, "Removal and Installation of Front Wiper Drive Assembly"](#).
8. Attach wiper arm caps.

Adjustment of Wiper Arm Stop Location

INFOID:000000006152638

ADJUSTMENT

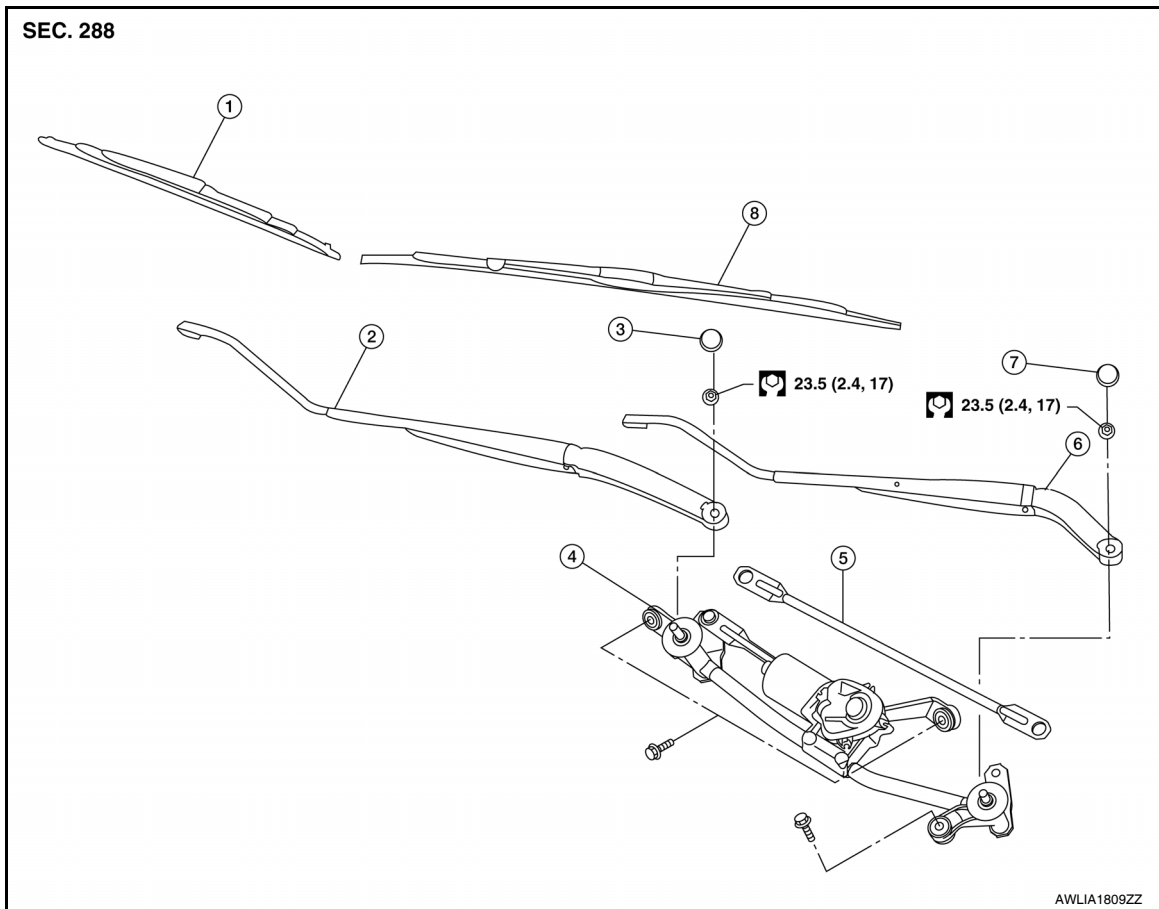
To adjust the wiper arm stop location, the wiper arm must be removed and installed. Refer to [WW-19, "Removal and Installation of Front Wiper Arms"](#).

FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

Removal and Installation of Front Wiper Drive Assembly

INFOID:000000006152639



- | | | |
|-------------------------------|-------------------------|-----------------------|
| 1. Front RH wiper blade | 2. Front RH wiper arm | 3. Wiper arm cap |
| 4. Front wiper drive assembly | 5. Wiper link assembly | 6. Front LH wiper arm |
| 7. Wiper arm cap | 8. Front LH wiper blade | |

REMOVAL

1. Turn wiper switch on to operate wiper motor, then turn wiper switch off (auto stop).
2. Remove wiper arms. Refer to [WW-19, "Removal and Installation of Front Wiper Arms"](#).
3. Remove cowl top cover. Refer to [EI-21](#).
4. Remove cowl extension. Refer to [EI-21](#).
5. Disconnect wiper motor connector.
6. Remove front wiper drive assembly bolts, and remove front wiper drive assembly.

INSTALLATION

1. Install front wiper drive assembly.
2. Connect wiper motor connector. Turn wiper switch on to operate wiper motor, then turn wiper switch off (auto stop).
3. Install cowl extension. Refer to [EI-21](#).
4. Install cowl top cover. Refer to [EI-21](#).
5. Install the wiper arms. Refer to [WW-19, "Removal and Installation of Front Wiper Arms"](#).

Removal and Installation of Front Washer Nozzle

INFOID:000000006152640

REMOVAL

1. Remove cowl top cover. Refer to [EI-21, "Removal and Installation"](#).

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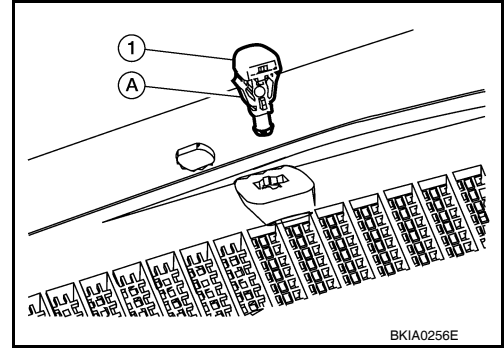
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FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

2. Remove washer tube.
3. While pressing pawl (A) on the reverse side of front washer nozzle (1), remove front washer nozzle (1) from cowl top cover.

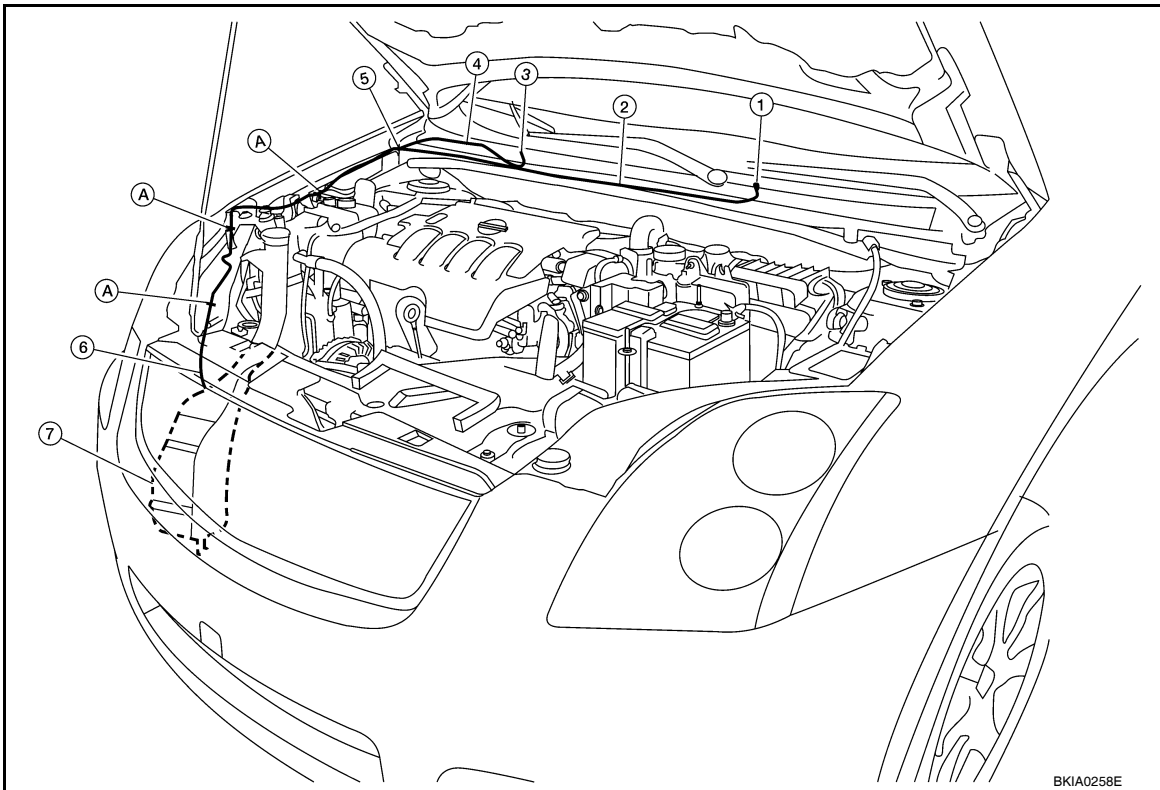


INSTALLATION

Installation is in the reverse order of removal.

Washer Tube Layout

INFOID:000000006152641



- | | | |
|---------------------------|--------------------------|--------------------------------|
| 1. Washer nozzle LH | 2. Washer nozzle hose LH | 3. Washer nozzle RH |
| 4. Washer nozzle hose RH | 5. Joint washer tube | 6. Washer fluid reservoir hose |
| 7. Washer fluid reservoir | A. Clips | |

Removal and Installation of Front Wiper and Washer Switch

INFOID:000000006152642

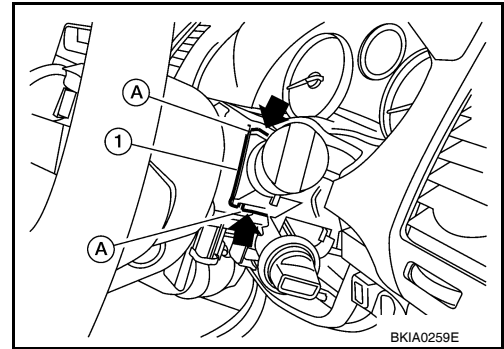
REMOVAL

1. Remove the steering column cover. Refer to [IP-11](#).
2. Disconnect the wiper and washer switch connector.

FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

3. Pull wiper and washer switch (1) toward the passenger door while pressing pawls (A) in direction shown by the arrow, and remove it from the base.



INSTALLATION

Installation is in the reverse order of removal.

Inspection of Front Wiper and Washer Switch Circuit

INFOID:000000006152643

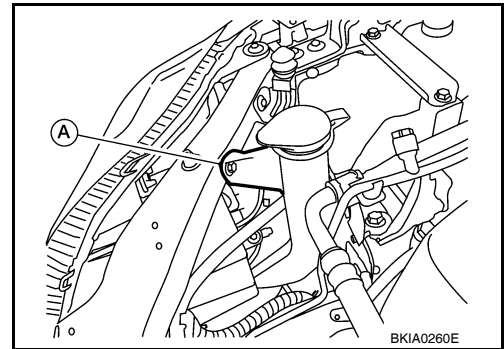
Refer to [LT-61, "Combination Switch Inspection"](#).

Removal and Installation of Washer Fluid Reservoir

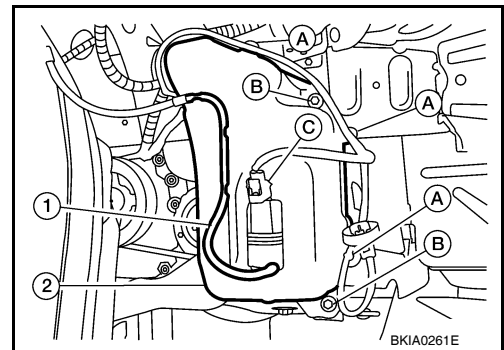
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REMOVAL

1. Remove the washer fluid reservoir screw (A).



2. Position aside the front fender protector RH. Refer to [EI-23](#).
3. Detach the fog lamp harness clips (A) and remove the washer tube (1).
4. Disconnect the washer motor connector (C).
5. Remove the washer fluid reservoir screws (B), and remove washer reservoir (2).



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

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

Removal and Installation of Front Washer Motor

INFOID:000000006152645

REMOVAL

1. Position aside the front fender protector RH. Refer to [EI-23](#).

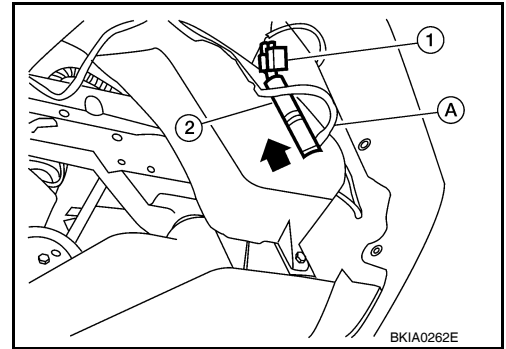
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FRONT WIPER AND WASHER SYSTEM

< SERVICE INFORMATION >

2. Disconnect washer motor connector (1) and detach the washer tube (A).
3. Pull out washer motor (2) in the direction shown. Remove the washer motor (2) from washer fluid reservoir.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

When installing washer motor, there should be no hose twists.

POWER SOCKET

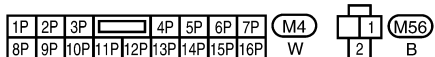
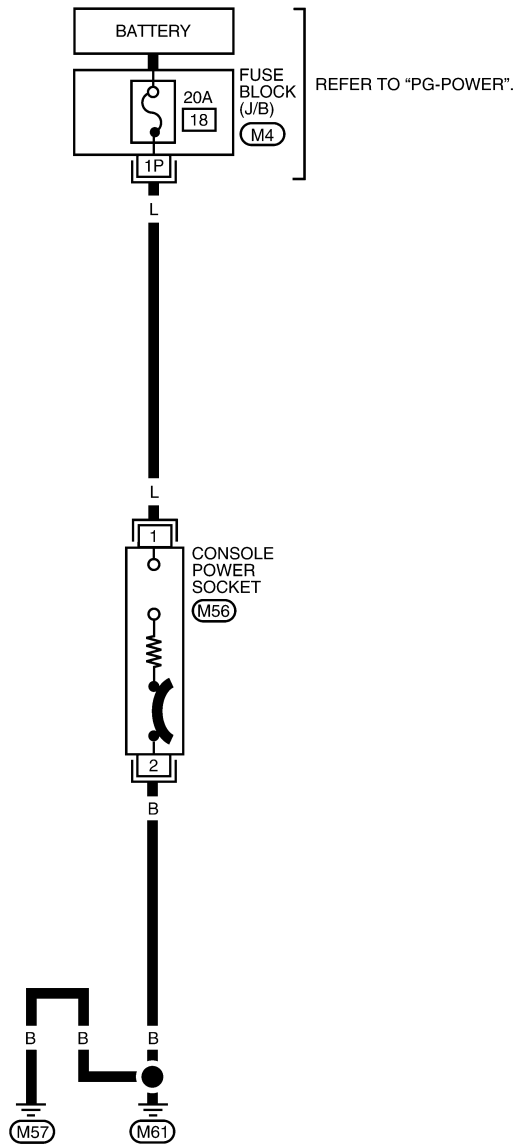
< SERVICE INFORMATION >

POWER SOCKET

Wiring Diagram - P/SCKT -

INFOID:000000006152646

WW-P/SCKT-01



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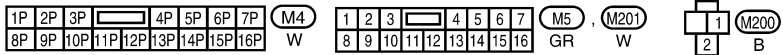
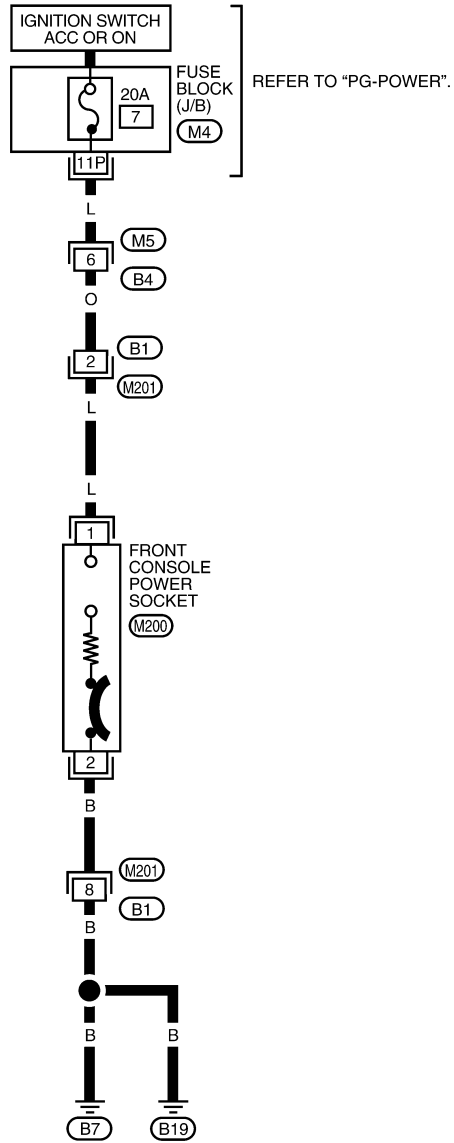
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POWER SOCKET

< SERVICE INFORMATION >

WW-P/SCKT-02



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POWER SOCKET

< SERVICE INFORMATION >

Removal and Installation

INFOID:000000006152647

FRONT CONSOLE POWER SOCKET AND CONSOLE POWER SOCKET

Removal

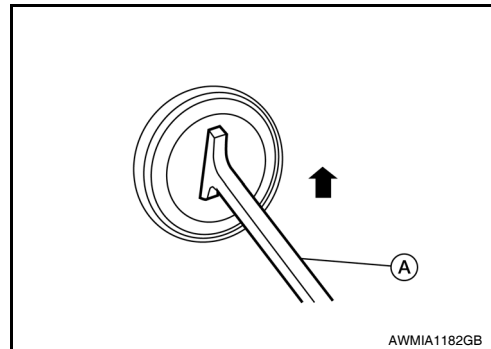
NOTE:

If the tool does not fit because of the location of the power socket, further disassembly of interior components may be required. Refer to [IP-12, "Removal and Installation"](#)

1. Remove the fuse for the power socket.
2. Insert one end of the Tool (A) into one of the square holes inside the power socket.

Tool number: — (J-42059)

3. Lift up the handle of the Tool until the other end of the Tool is inside the socket and snaps into the other square hole in the power socket.
4. Pull the power socket straight out with the Tool.
5. Disconnect power socket connector.

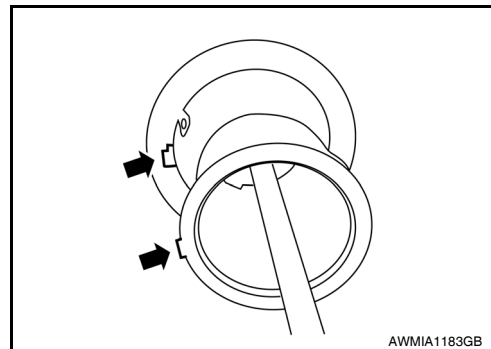


Installation

Installation is in the reverse order of removal.

NOTE:

Make sure to align the tab with the square notched area during installation.



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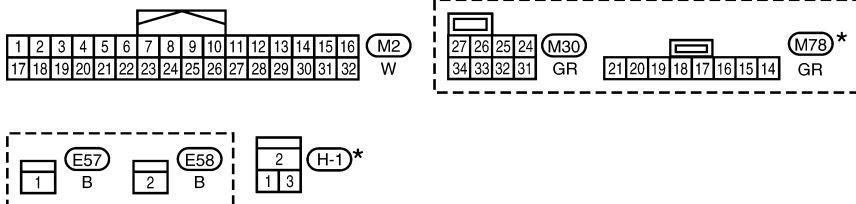
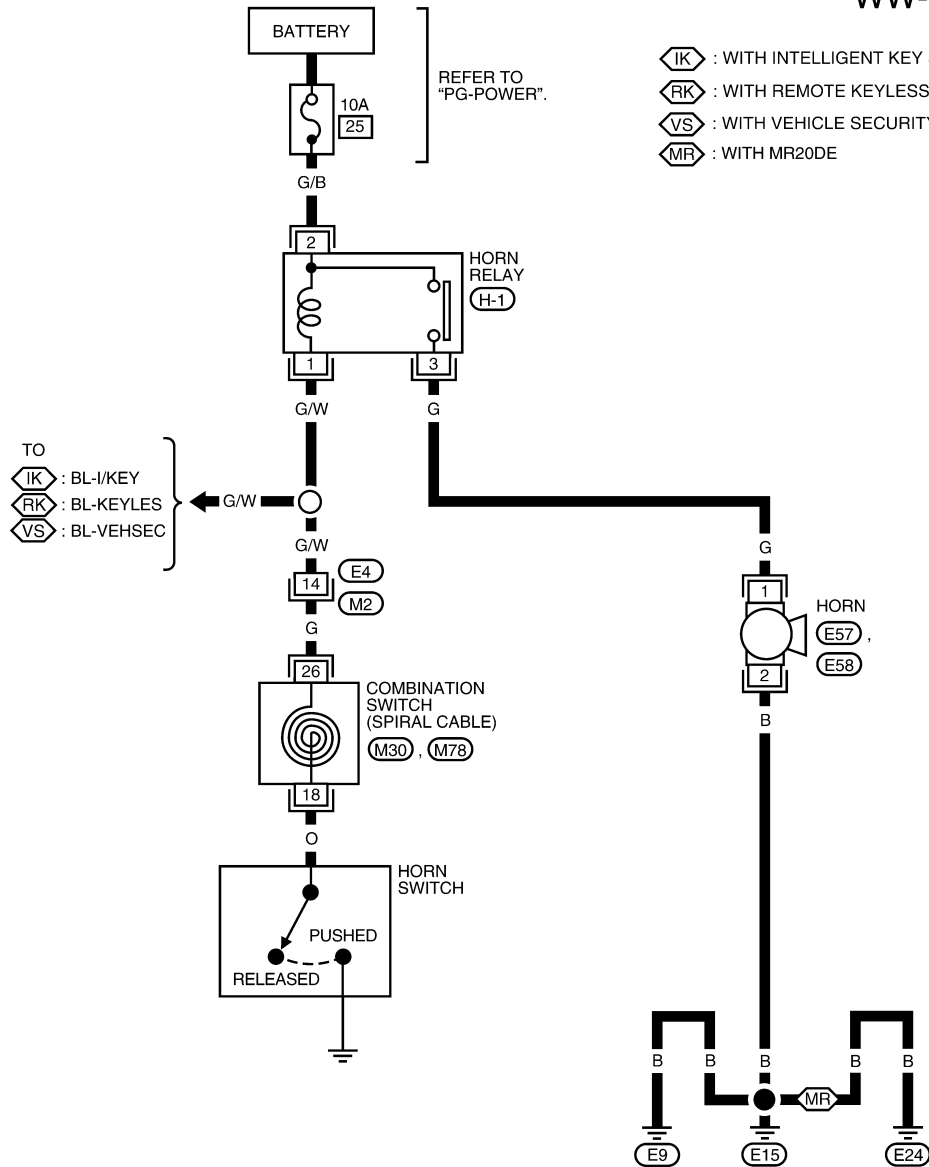
< SERVICE INFORMATION >

HORN

Wiring Diagram - HORN -

INFOID:000000006152648

WW-HORN-01



ABLWA1070GB

Removal and Installation

INFOID:000000006152649

REMOVAL

1. Remove the front bumper fascia. Refer to [EI-15](#).

Revision: July 2010

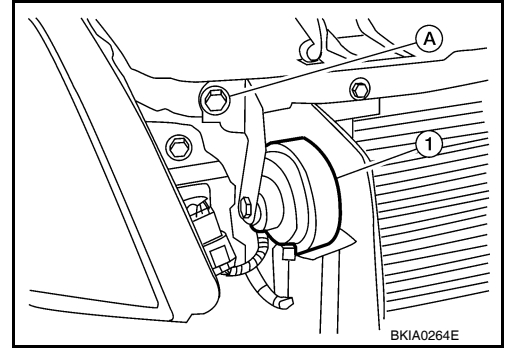
WW-28

2011 Sentra

HORN

< SERVICE INFORMATION >

2. Disconnect the horn connectors.
3. Remove the horn bolt (A) and remove the horn (1).



INSTALLATION

Installation is in the reverse order of removal.

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

WW