SECTION WW
WIPER, WASHER & HORN

CONTENTS

PRECAUTION

PFP:00011

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

EKS0094G

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:

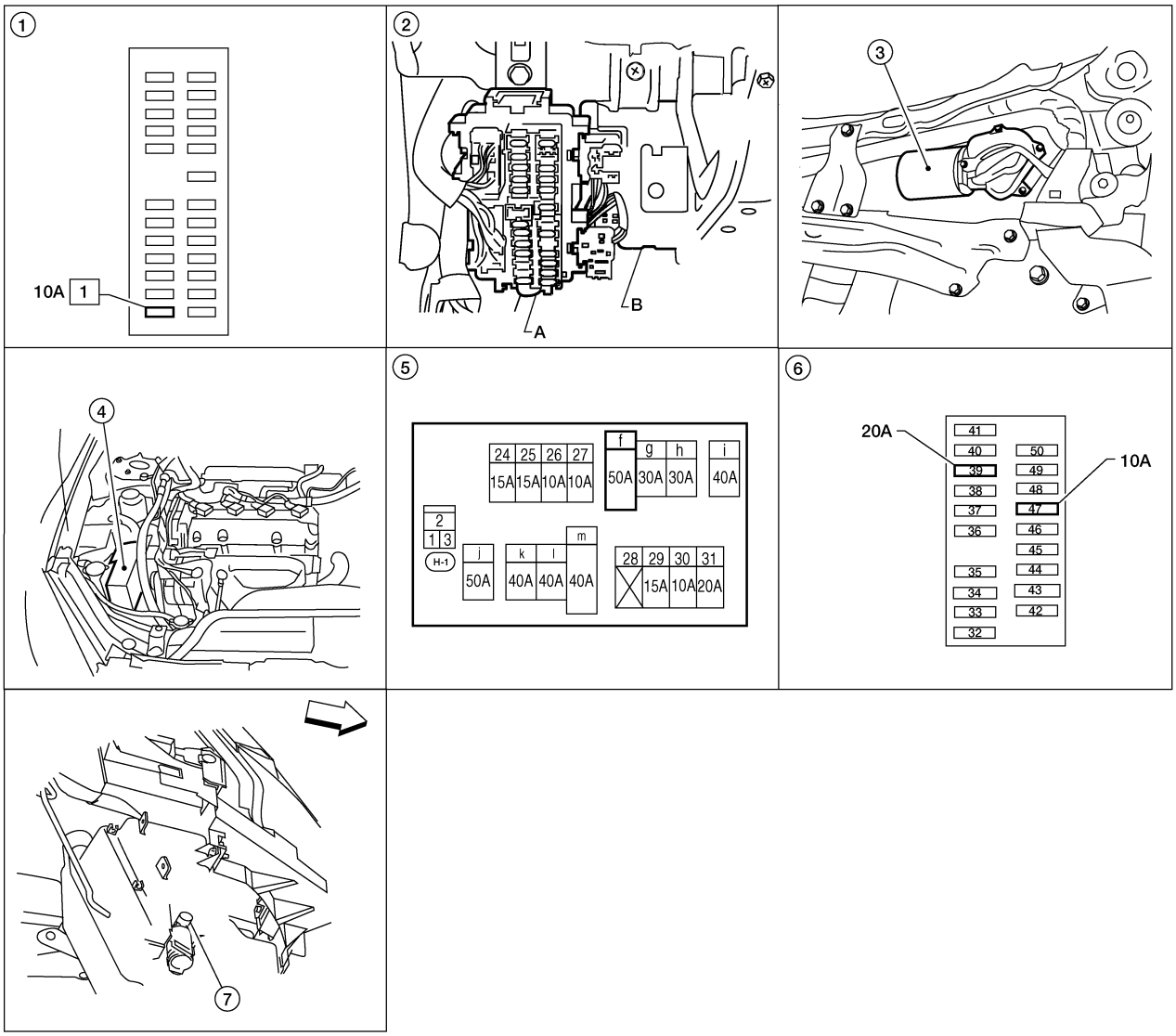
- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal 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

PFP:28810

Components Parts and Harness Connector Location

EKS0094I



WKIA4551E

⇦: 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

EKS0094J

- 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)
- 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.

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, "COMBINATION SWITCH READING FUNCTION" .
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 WW-4, "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, "COMBINATION SWITCH READING FUNCTION" .

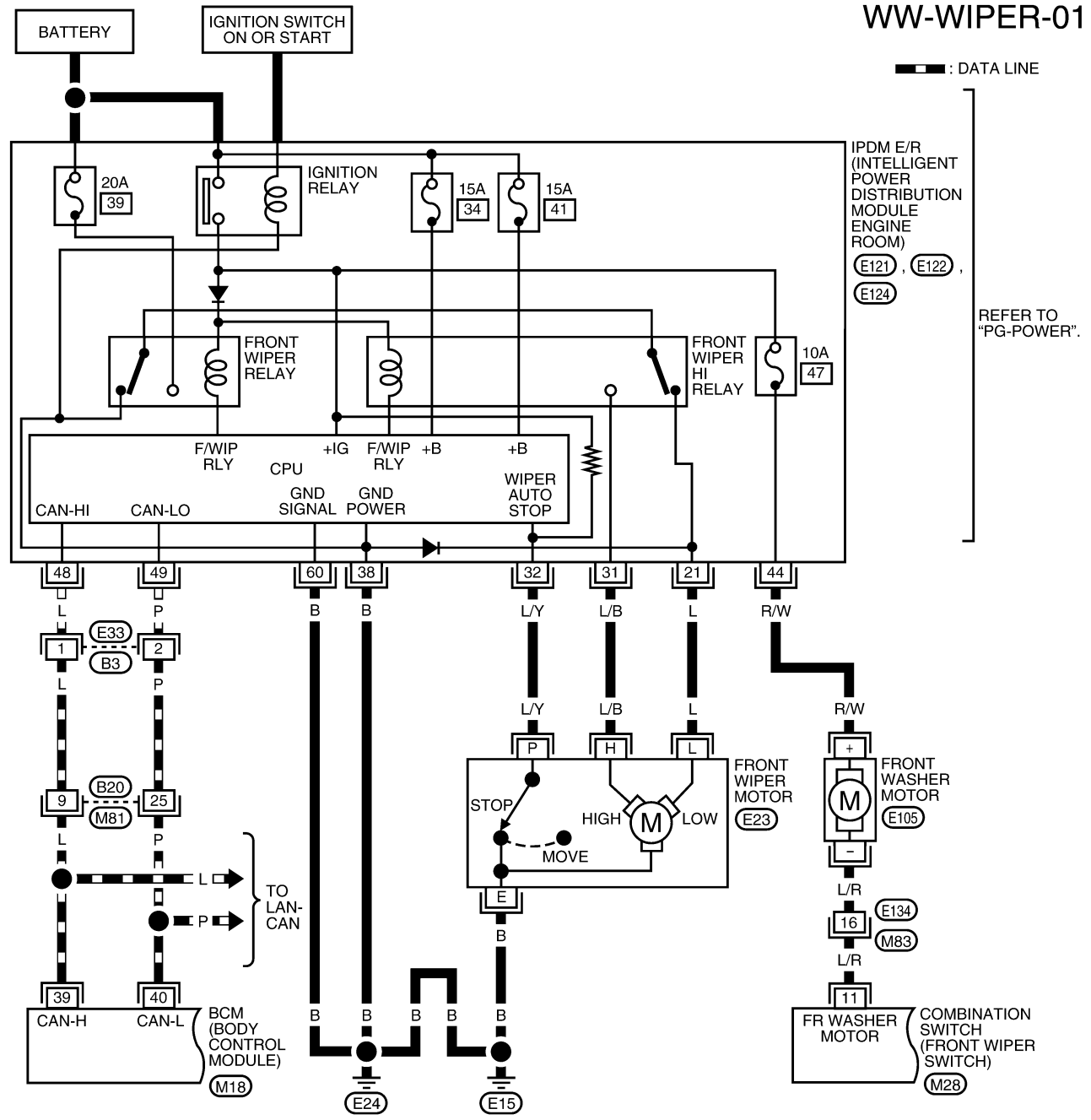
CAN Communication System Description

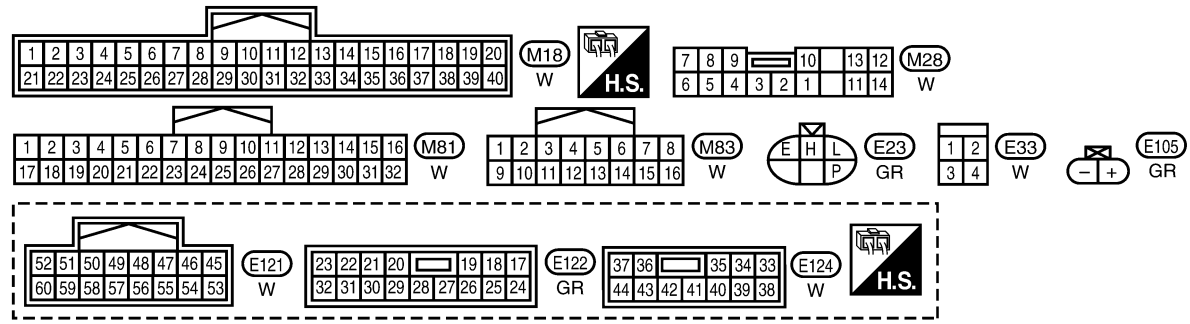
EKS0094K

Refer to LAN-4, "SYSTEM DESCRIPTION" .

Wiring Diagram — WIPER —

EKS0094L





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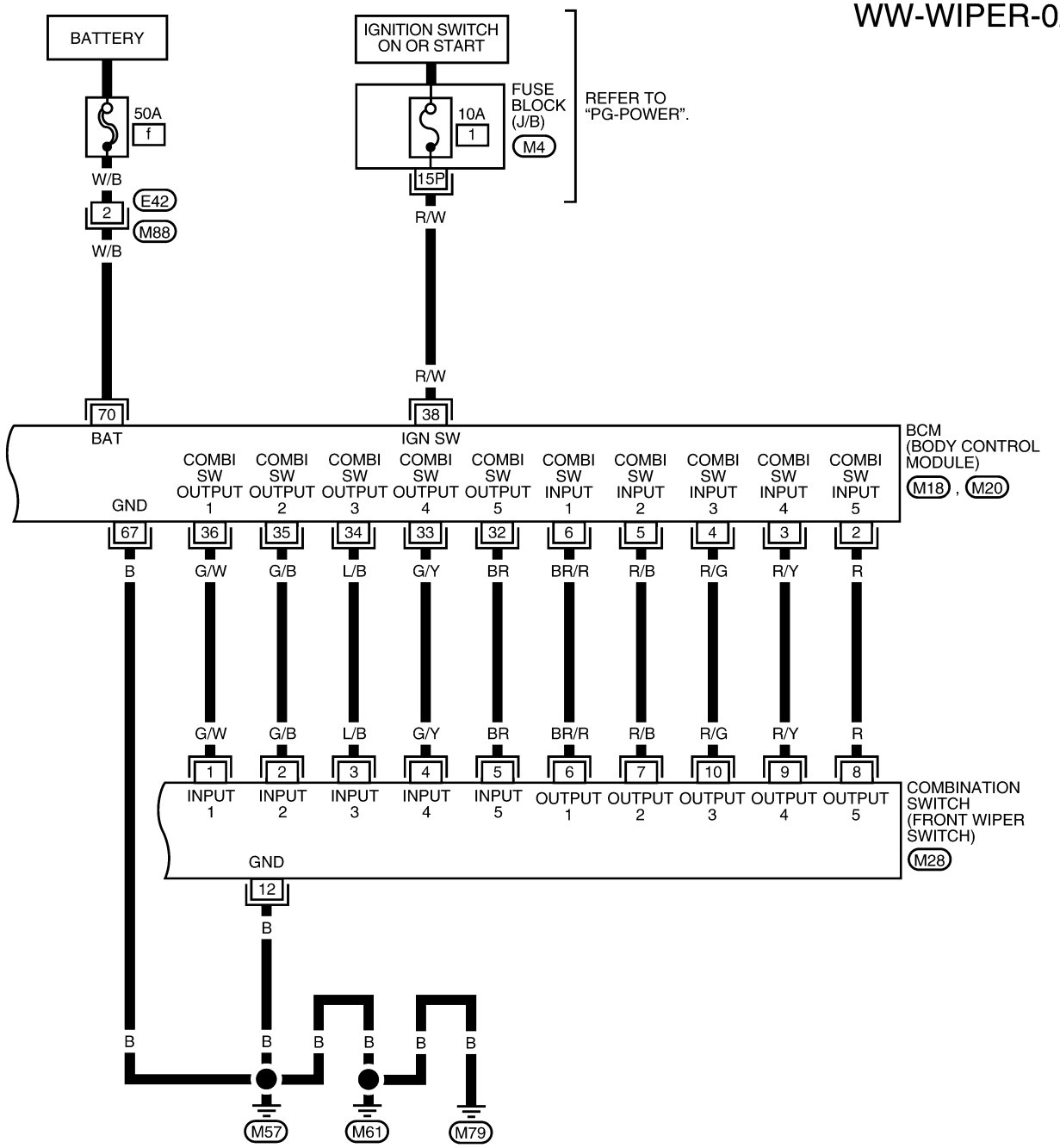
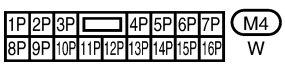
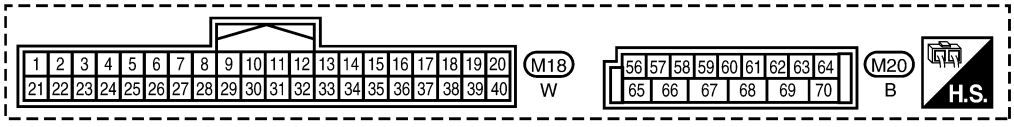
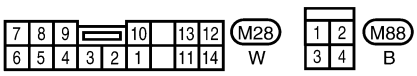
WW-WIPER-02









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Terminals and Reference Values for BCM

EKS0094M

Refer to BCS-12, "Terminals and Reference Values for BCM" .

Terminals and Reference Values for IPDM E/R

EKS0094N

Refer to PG-26, "Terminals and Reference Values for IPDM E/R" .

Work Flow

EKS0094O

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-9, "BCM Power Supply and Ground Circuit Check" .
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 Check

EKS00ILX

Refer to BCS-15, "BCM Power Supply and Ground Circuit Check" .

CONSULT-II Function (BCM)

EKS0094Q

CONSULT-II 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.

CONSULT-II START PROCEDURE

Refer to GI-37, "CONSULT-II Start Procedure" .

WORK SUPPORT

Operation Procedure

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

Work Support Setting Item

Item	Description	CONSULT-II
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

Operation Procedure

1. Touch "WIPER" on the "SELECT TEST ITEM" screen.
2. Touch "DATA MONITOR" on the "SELECT DIAG MODE" screen.
3. Touch either "ALL SIGNALS" or "SELECTION FROM MENU" on the "SELECT MONITOR ITEM" screen.

ALL SIGNALS	Monitors all the items.
SELECTION FROM MENU	Selects and monitors the individual item selected.

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

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.
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

Operation Procedure

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

Display Item List

Test item	Display on CONSULT-II 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-II Function (IPDM E/R)

EKS0094R

CONSULT-II 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.

CONSULT-II OPERATION

Refer to GI-37, "CONSULT-II Start Procedure" .

DATA MONITOR

Operation Procedure

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

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

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

All Signals, Main Signals, Selection from Menu

Item name	CONSULT-II screen display	Display or unit	Monitor item selection			Description
			ALL SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
Front wiper request	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

Operation Procedure

1. Touch "ACTIVE TEST" on the "SELECT DIAG MODE" screen.
2. Touch item(s) to be tested and check operation of the selected item(s).
3. During the operation check, touching "BACK" deactivates the operation.

Display Item List

Test item	CONSULT-II 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

EKS0094S

1. CHECK IPDM E/R TO FRONT WIPER MOTOR

With CONSULT-II

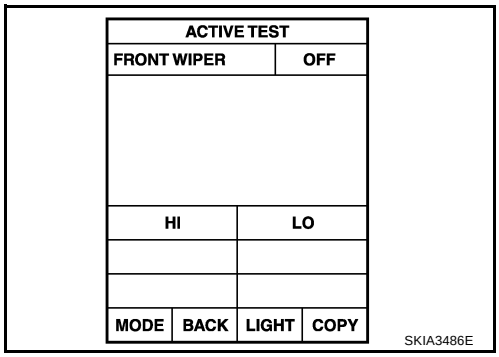
1. Select "IPDM E/R" with CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.

Without CONSULT-II

1. Turn on front wipers using auto active test. Refer to PG-22, "Auto Active Test" .
2. Confirm front wiper operation.

OK or NG

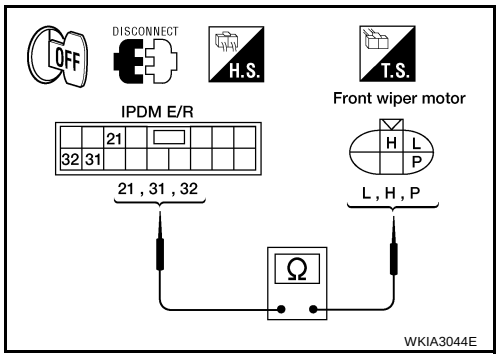
OK >> GO TO 4.
NG >> GO TO 2.



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

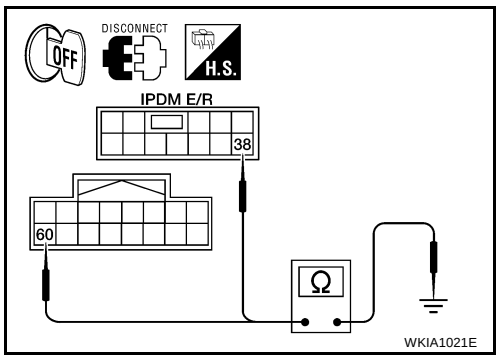
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector terminals and front wiper motor harness connector terminals.

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		

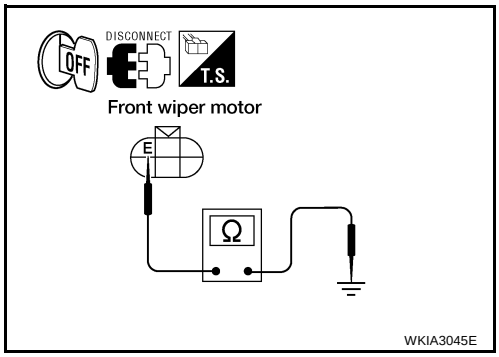


5. Check continuity between front wiper motor harness connector terminal E and ground.

Front wiper motor			Continuity
Connector	Terminal		
E23	E	Ground	Yes

OK or NG

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



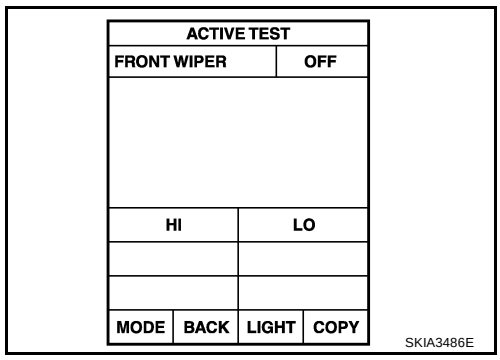
3. IPDM E/R INSPECTION

With CONSULT-II

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

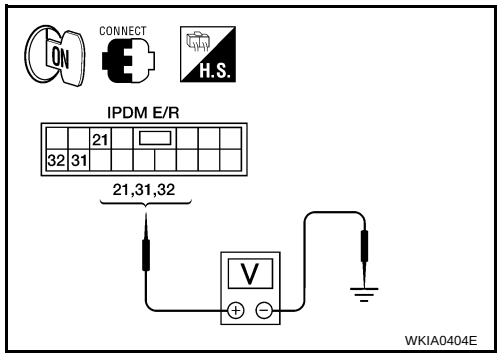
Without CONSULT-II

1. Turn on front wipers using auto active test. Refer to PG-22, "Auto Active Test" .



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

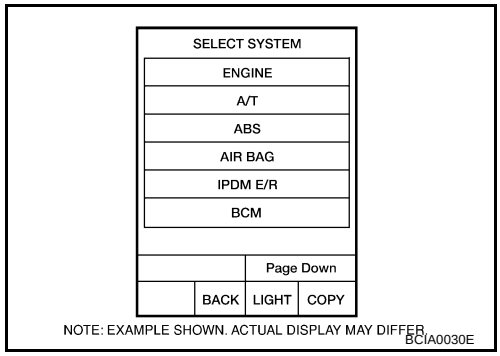
OK >> Replace wiper motor. Refer to WW-21, "Wiper Motor and Linkage" .
NG >> Replace IPDM E/R. Refer to PG-31, "Removal and Installation of IPDM E/R" .

4. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. 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-18, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .
OPEN DETECT 1 - 5>> Combination switch system malfunction. Go to BCS-3, "COMBINATION SWITCH READING FUNCTION" .



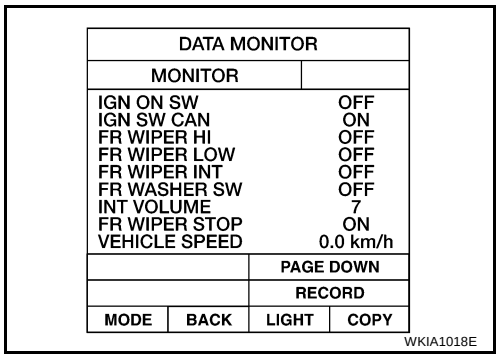
5. BCM INSPECTION

Select "BCM" on CONSULT-II. 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-25, "BCM" .

NG >> Replace wiper switch. Refer to WW-22, "Wiper and Washer Switch" .



Front Wiper Stop Position Is Incorrect

EKS00FQ6

1. CHECK IPDM E/R TO FRONT WIPER MOTOR

With CONSULT-II

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

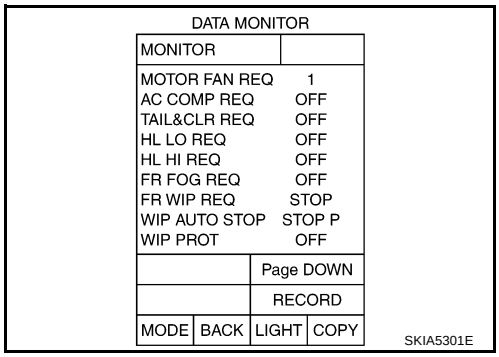
Without CONSULT-II

GO TO 2.

OK or NG

OK >> Replace IPDM E/R. Refer to PG-31, "Removal and Installation of IPDM E/R" .

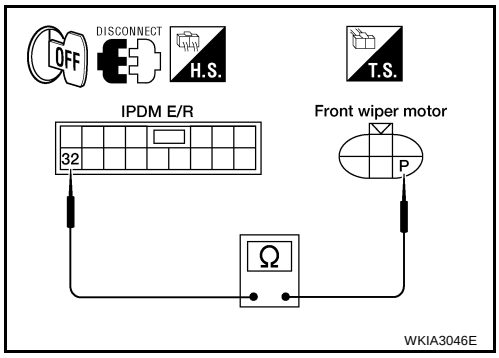
NG >> GO TO 2.



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.
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



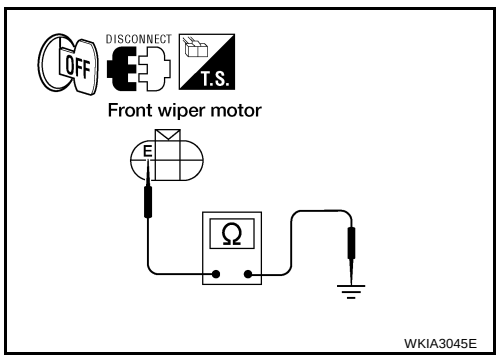
4. Check continuity between front wiper motor harness connector terminal E and ground.

Front wiper motor			Continuity
Connector	Terminal		
E23	E	Ground	Yes

OK or NG

OK >> Connect connectors. GO TO 3.

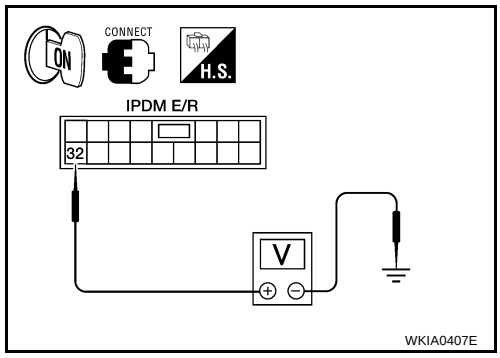
NG >>
- Check for short circuit or open circuit in harness between IPDM E/R and front wiper motor.
- Check for open circuit in harness between front wiper motor and ground.



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

1. Turn ignition switch ON.
2. Select "LO" on "ACTIVE TEST" screen.
3. 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	Ground	Wiper operating	Battery voltage
E122	32		Wiper stopped	0V



OK or NG

OK >> Replace IPDM E/R. Refer to PG-31, "Removal and Installation of IPDM E/R" .

NG >> Replace front wiper motor. Refer to WW-21, "Wiper Motor and Linkage" .

Only Front Wiper Low Does Not Operate

EKS00FQ7

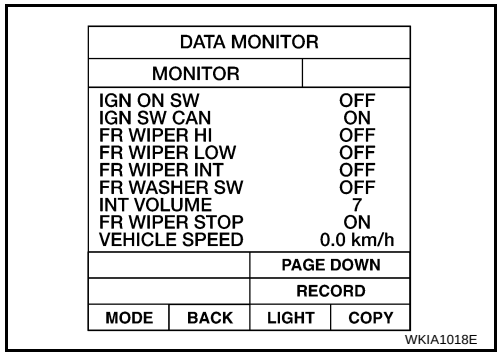
1. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. 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-25, "BCM" .

NG >> Replace wiper switch. Refer to WW-22, "Wiper and Washer Switch" .



Only Front Wiper High Does Not Operate

EKS00FQ8

1. CHECK IPDM E/R TO FRONT WIPER MOTOR

With CONSULT-II

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

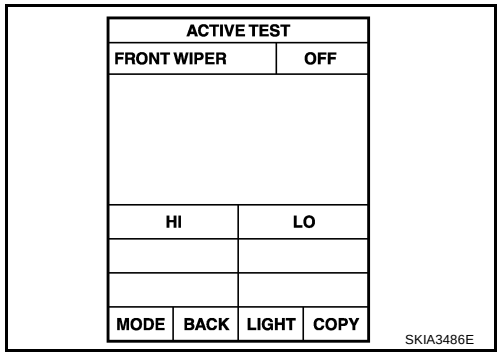
Without CONSULT-II

1. Turn on front wipers using auto active test. Refer to PG-22, "Auto Active Test" .
2. Confirm front wiper operation.

OK or NG

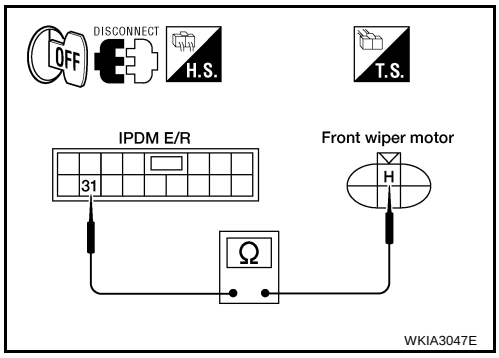
OK >> GO TO 4.

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.

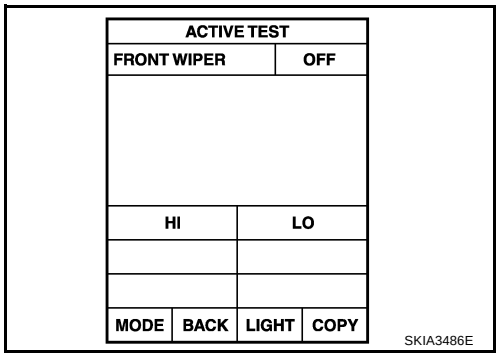
3. IPDM E/R INSPECTION

With CONSULT-II

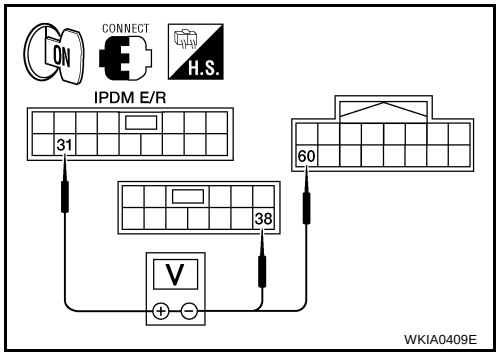
1. Select "IPDM E/R" with CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
3. Select "HI" on "ACTIVE TEST" screen.

Without CONSULT-II

1. Turn on front wipers using auto active test. Refer to PG-22, "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.)
(+)		(–)		
Connector	Terminal	Connector	Terminal	
E122	31	E124	38	Battery voltage
		E121	60	

OK or NG

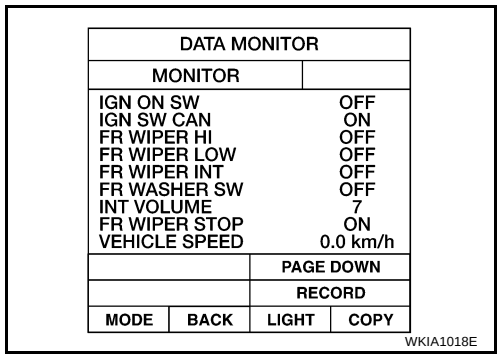
OK >> Replace wiper motor. Refer to WW-21, "Wiper Motor and Linkage" .
NG >> Replace IPDM E/R. Refer to PG-31, "Removal and Installation of IPDM E/R" .

4. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. 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-25, "BCM" .
NG >> Replace wiper switch. Refer to WW-22, "Wiper and Washer Switch" .



Only Front Wiper INT Does Not Operate

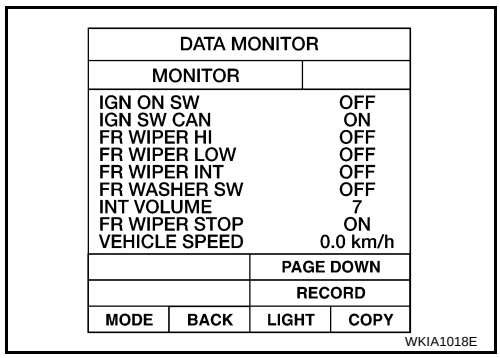
EKS00FQ9

1. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. 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-25, "BCM" .
NG >> Replace wiper switch. Refer to WW-22, "Wiper and Washer Switch" .



Front Wiper INT Operation Switch Position Cannot Be Adjusted

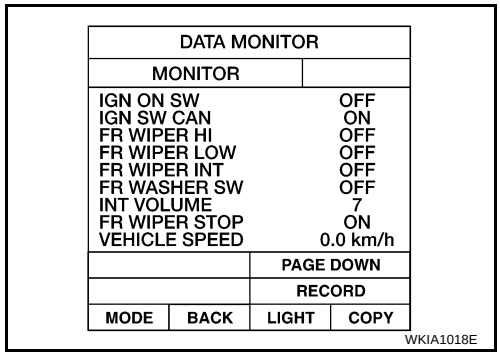
EKS00FQA

1. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. 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-25, "BCM" .
NG >> Replace wiper switch. Refer to WW-22, "Wiper and Washer Switch" .



Wipers Do Not Wipe When Front Washer Operates

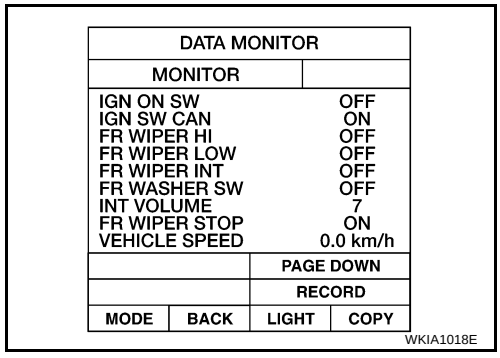
EKS00FQB

1. COMBINATION SWITCH TO BCM INSPECTION

Select "BCM" on CONSULT-II. 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-25, "BCM" .
NG >> Replace wiper switch. Refer to WW-22, "Wiper and Washer Switch" .



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

EKS00FQC

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-II

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

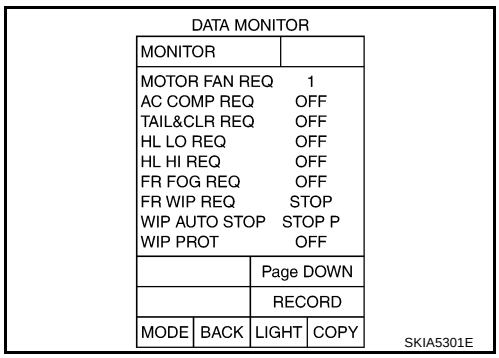
Without CONSULT-II

GO TO 2.

OK or NG

OK >> Replace IPDM E/R. Refer to PG-31, "Removal and Installation of IPDM E/R" .

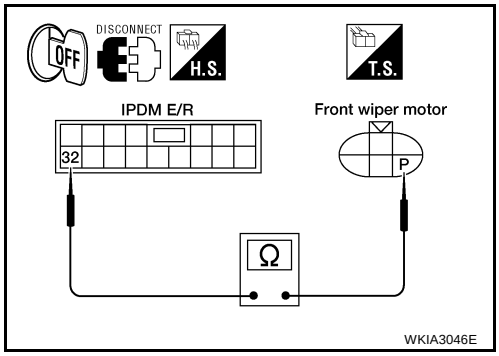
NG >> GO TO 2.



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



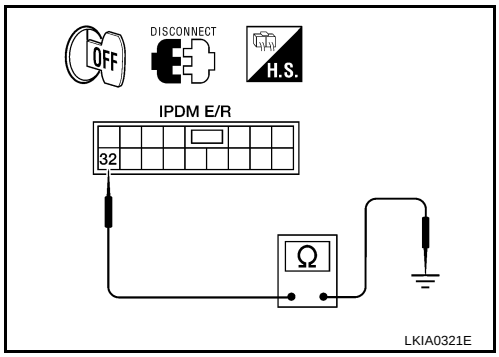
4. Check continuity between IPDM E/R harness connector terminal and ground.

IPDM E/R			Continuity
Connector	Terminal		
E122	32	Ground	No

OK or NG

OK >> Connect connectors. GO TO 3.

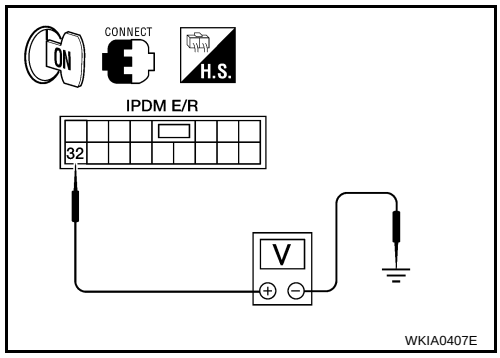
NG >> Repair harness or connector.



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

1. Turn ignition switch ON.
2. Select "LO" on "ACTIVE TEST" screen.
3. 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-31, "Removal and Installation of IPDM E/R" .

NG >> Replace front wiper motor. Refer to WW-21, "Wiper Motor and Linkage" .

Front Wiper Arms

EKS0094T

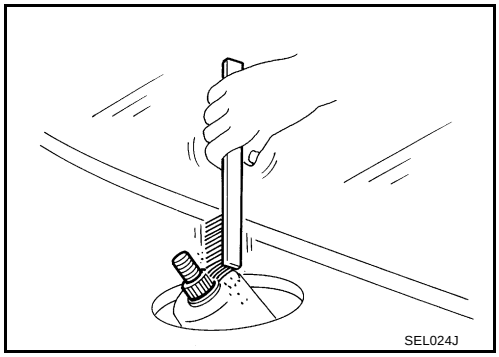
REMOVAL AND INSTALLATION

Removal

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

Installation

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



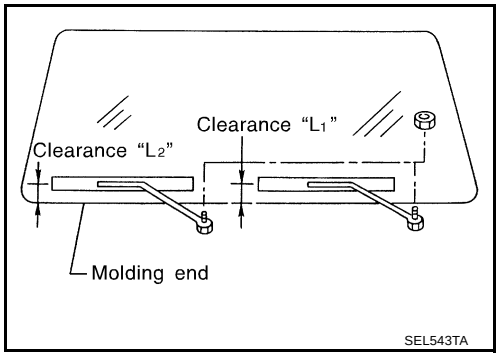
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".
4. Ensure that wiper blades stop within proper clearance. Refer to wiper arm adjustment.
5. Tighten wiper arm nuts to specified torque, and install wiper arm covers.

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

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)

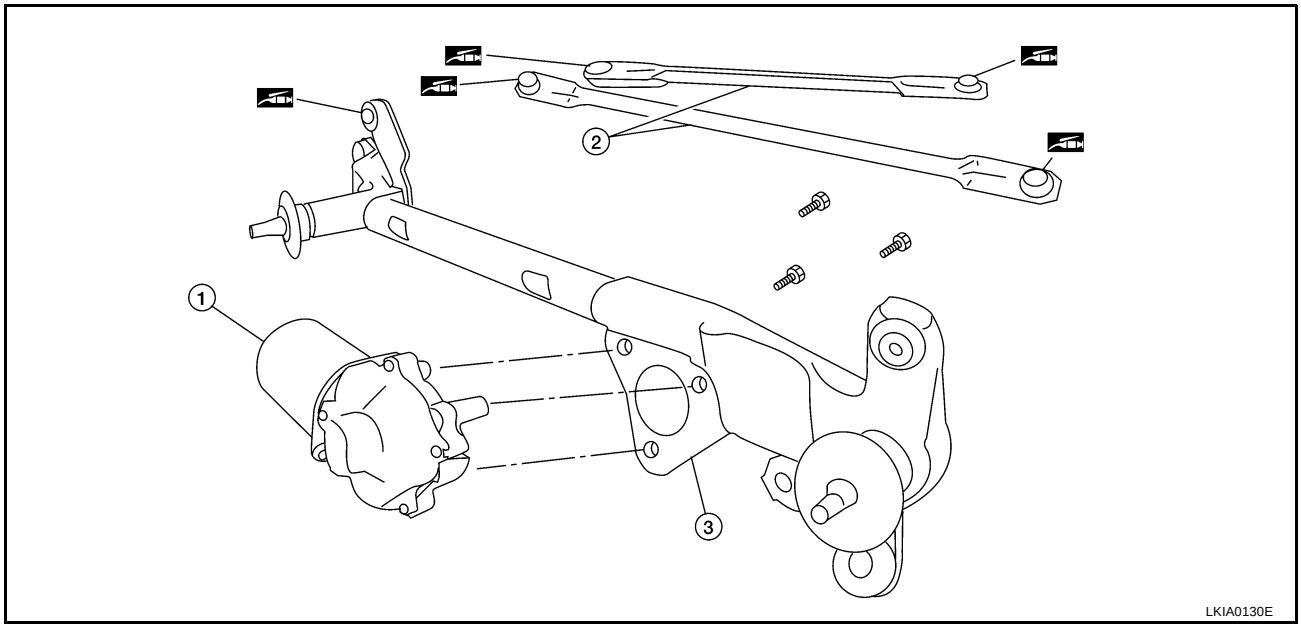


3. If adjustment is necessary, reposition wiper arm on wiper motor pivot shaft to above specified blade clearance.
4. Tighten wiper arm nut to specified torque, and install wiper arm covers. Refer to wiper arm installation.

Wiper Motor and Linkage

EKS0094U

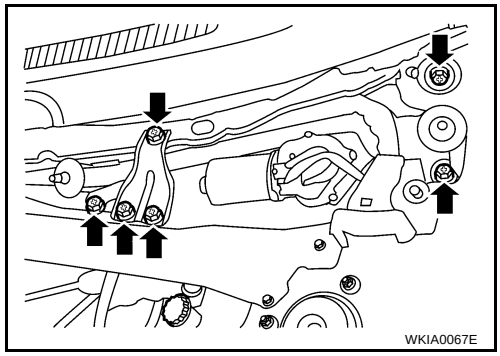
REMOVAL AND INSTALLATION



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-20, "Front Wiper Arms" .
3. Remove the cowl top cover. Refer to EI-19, "Removal and Installation" .
4. Disconnect wiper motor connector.
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.

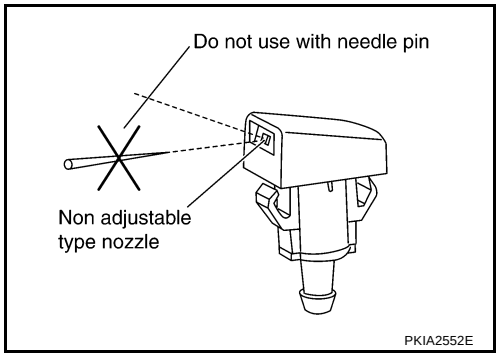
Wiper motor assembly bolts : 3.8 - 5.1 N·m (0.39 - 0.52 kg-m, 33.9 - 45.1 in-lb)

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-19, "Removal and Installation" .
6. Install wiper arms. Refer to WW-20, "Front Wiper Arms" .

Washer Nozzle Adjustment

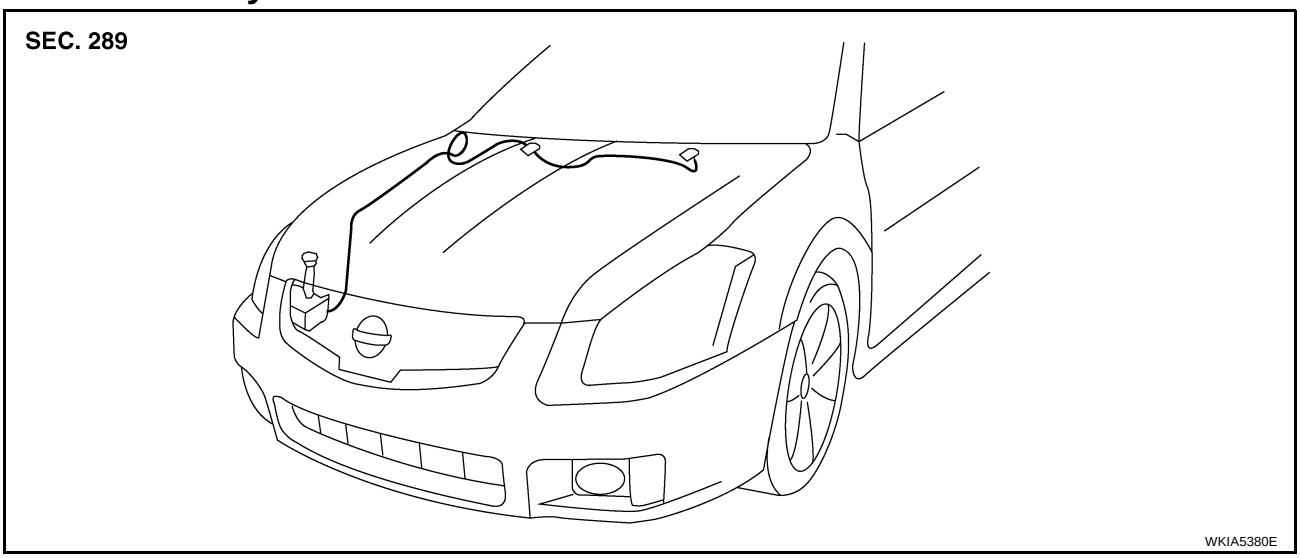
EKS0094V

- 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.



Washer Tube Layout

EKS0094W



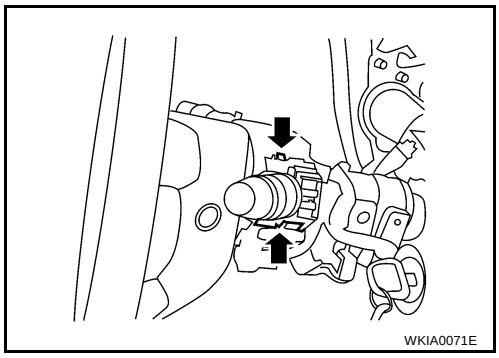
Wiper and Washer Switch

EKS0094X

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.

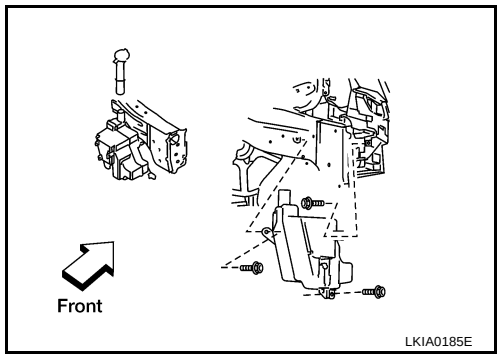
Washer Fluid Reservoir

EKS0094Y

REMOVAL AND INSTALLATION

Removal

1. Pull out washer fluid reservoir inlet.
2. Remove fender protector. Refer to EI-22, "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:

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.

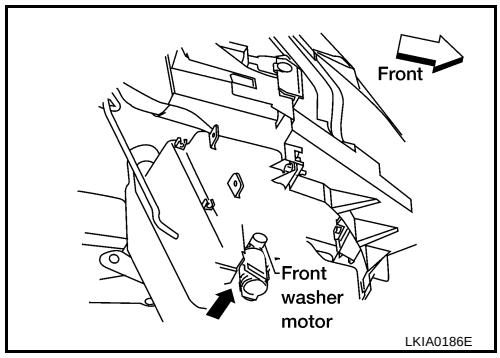
Washer Motor

EKS0094Z

REMOVAL AND INSTALLATION

Removal

1. Remove fender protector. Refer to EI-22, "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.

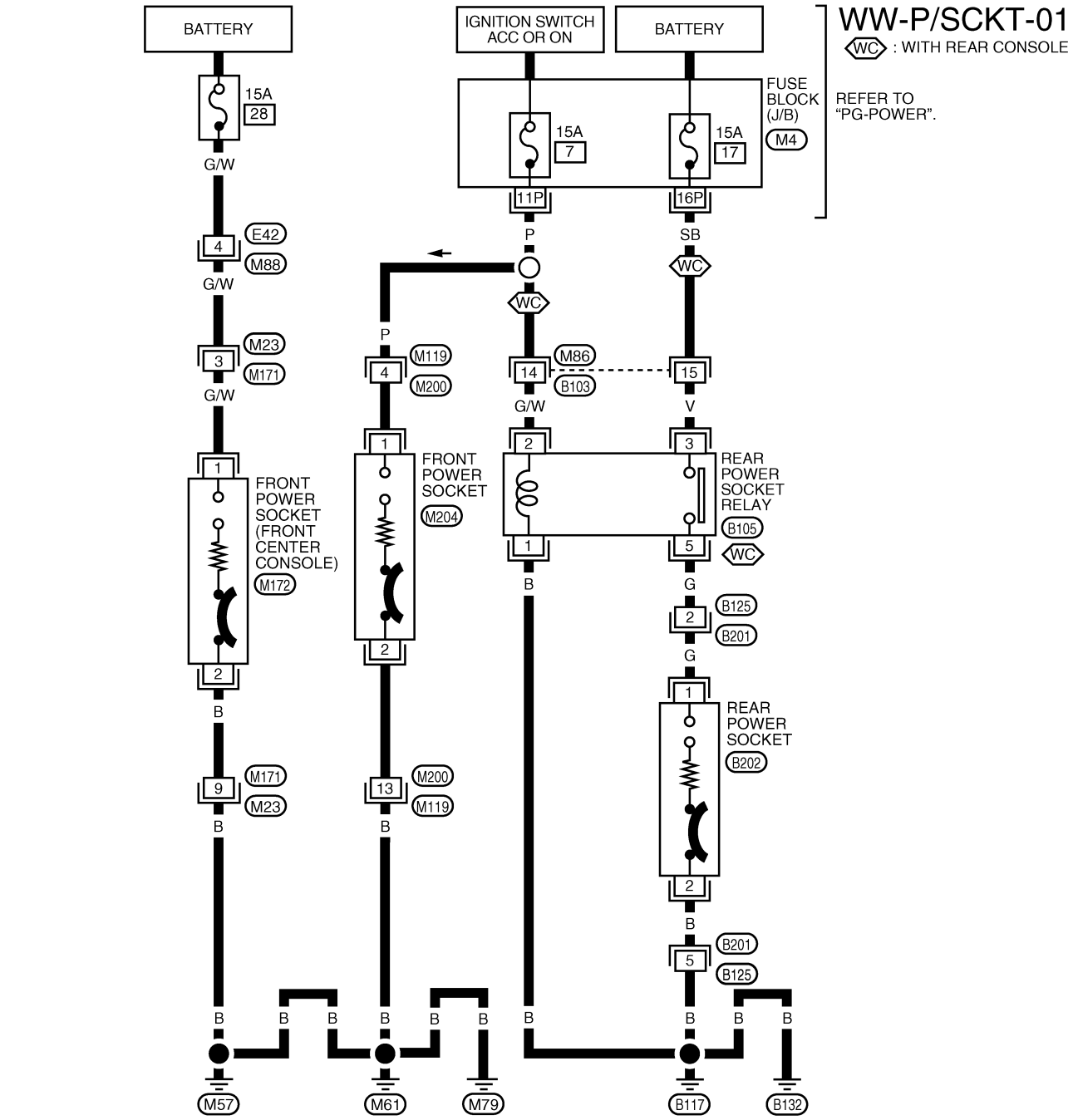
Installation is in the reverse order of removal.

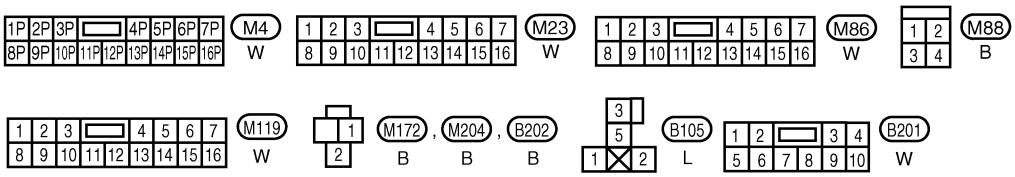
POWER SOCKET

PFP:253A2

Wiring Diagram — P/SCKT —

EKS00952





WKWA4823E

Power Sockets

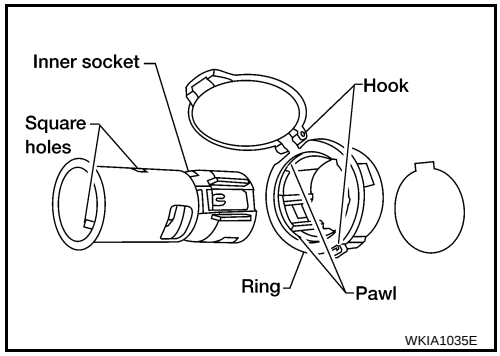
EKS00951

REMOVAL AND INSTALLATION

Removal

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.

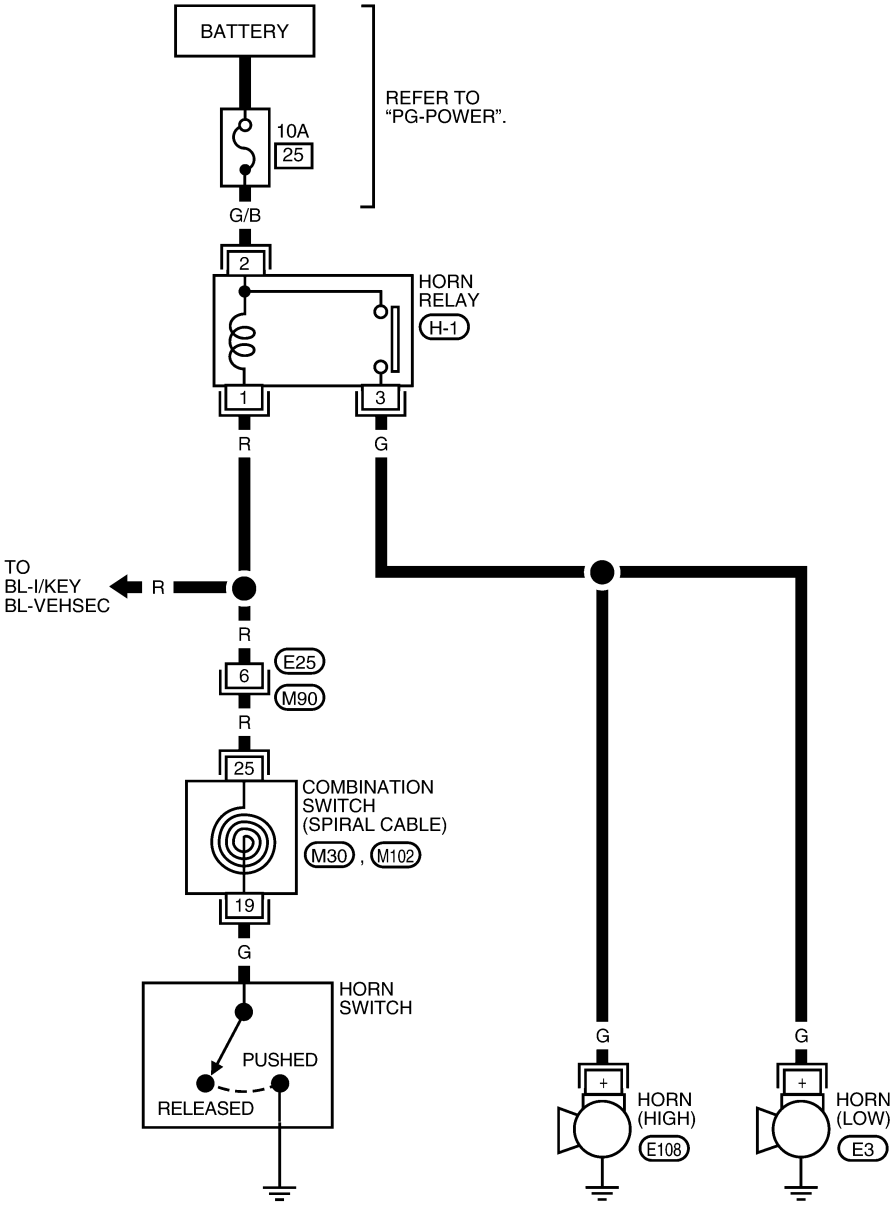
HORN

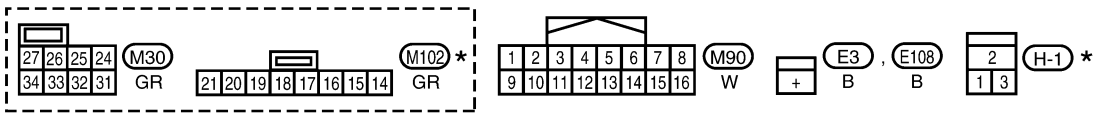
PFP:25610

Wiring Diagram — HORN —

EKS00954

WW-HORN-01





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

WKWA4824E

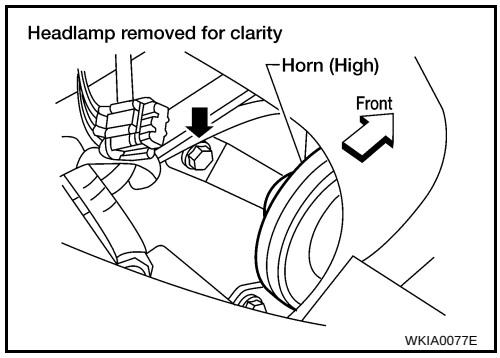
Horn (High)

EKS00955

REMOVAL AND INSTALLATION

Removal

1. Remove right headlamp. Refer to LT-36, "Removal and Installation" .
2. Disconnect horn electrical connector.
3. Remove horn bolt and remove horn.



Installation

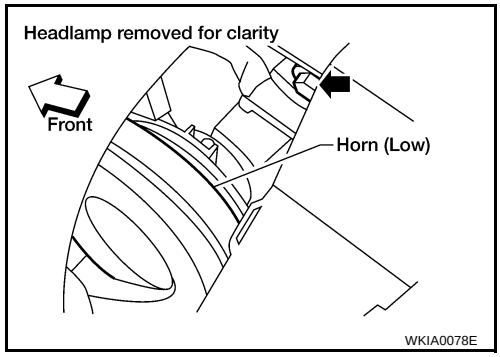
Installation is in the reverse order of removal.

Horn (Low)

EKS00GKK

REMOVAL

1. Remove left headlamp. Refer to LT-36, "Removal and Installation" .
2. Disconnect horn electrical connector.
3. Remove horn bolt and remove horn.



INSTALLATION

Installation is in the reverse order of removal.