

SECTION

WW

WIPER, WASHER & HORN

A

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# PRECAUTIONS

## PRECAUTIONS

PFP:00011

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

EKS003Y5

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. 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 harness connectors.

### Wiring Diagrams and Trouble Diagnosis

EKS003Y6

When you read wiring diagrams, refer to the following:

- [GI-14, "How to Read Wiring Diagrams"](#) in GI section
- [PG-3, "POWER SUPPLY ROUTING"](#) for power distribution circuit in PG section

When you perform trouble diagnosis, refer to the following:

- [GI-11, "HOW TO FOLLOW TEST GROUPS IN TROUBLE DIAGNOSES"](#) in GI section
- [GI-24, "How to Perform Efficient Diagnosis for an Electrical Incident"](#) in GI section

WW

# FRONT WIPER AND WASHER SYSTEM

## FRONT WIPER AND WASHER SYSTEM

PFP:28810

### System Description WIPER OPERATION

EKS004VU

The wiper switch is controlled by a lever built into the combination switch.  
There are three wiper switch positions:

- LO speed
- HI speed
- INT (Intermittent)

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

- through 20A fuse [No. 25, located in the fuse block (J/B)]
- to front wiper motor terminal 1.

Ground is supplied to wiper and washer switch terminal 17 through body grounds E10 and E58.

### LOW AND HIGH SPEED WIPER OPERATION

When the wiper switch is placed in the LO or MIST position, ground is supplied

- through terminal 14 of the front wiper and washer switch
- to front wiper motor terminal 5.

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

When the wiper switch is placed in the HI position, ground is supplied

- through terminal 16 of the front wiper and washer switch
- to wiper motor terminal 3.

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

### AUTO STOP OPERATION

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

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

- from terminal 14 of the front wiper and washer switch
- to front wiper motor terminal 5, in order to continue wiper motor operation at low speed.

Ground is also supplied

- through terminal 13 of the front wiper and washer switch
- to front wiper motor terminal 4
- through terminal 6 of the front wiper motor, and
- through body grounds E10 and E58.

When wiper arms reach base of windshield, front wiper motor terminals 1 and 4 are connected instead of terminals 6 and 4. Wiper motor will then stop wiper arms at the STOP position.

### INTERMITTENT OPERATION

The front wiper motor operates the wiper arms one time at low speed at a set interval of approximately 1 to 13 seconds. This feature is controlled by the wiper amplifier (INT SW) combined with front wiper and washer switch.

When the wiper switch is placed in the INT position, ground is supplied to wiper amplifier.

The desired interval time is input to wiper amplifier (INT VR) from wiper volume switch combined with front wiper and washer switch.

Then intermittent ground is supplied

- through wiper amplifier (OUTPUT) and
- through terminal 14 of front wiper and washer switch
- to front wiper motor terminal 5.

The wiper motor operates at low speed at the desired interval.

### WASHER OPERATION

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

- through 15A fuse [No. 26, located in the fuse block (J/B)]
- through front wiper and washer switch terminals 15 and 18

## FRONT WIPER AND WASHER SYSTEM

- to washer motor terminal 1.

When the lever is pulled to the MIST position, ground is supplied

- from body grounds E10 and E58
- through terminal 17 of the front wiper and washer switch, and
- through terminal 22 of the wiper switch
- to front washer motor terminal 2.

With power and ground supplied, the washer motor operates.

When the lever is pulled to the MIST position for one second or more, the wiper motor operates at low speed for approximately 3 seconds to clean windshield. This feature is controlled by the wiper amplifier in the same manner as the intermittent operation.

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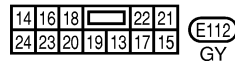
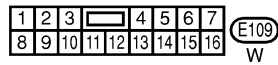
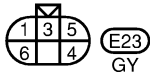
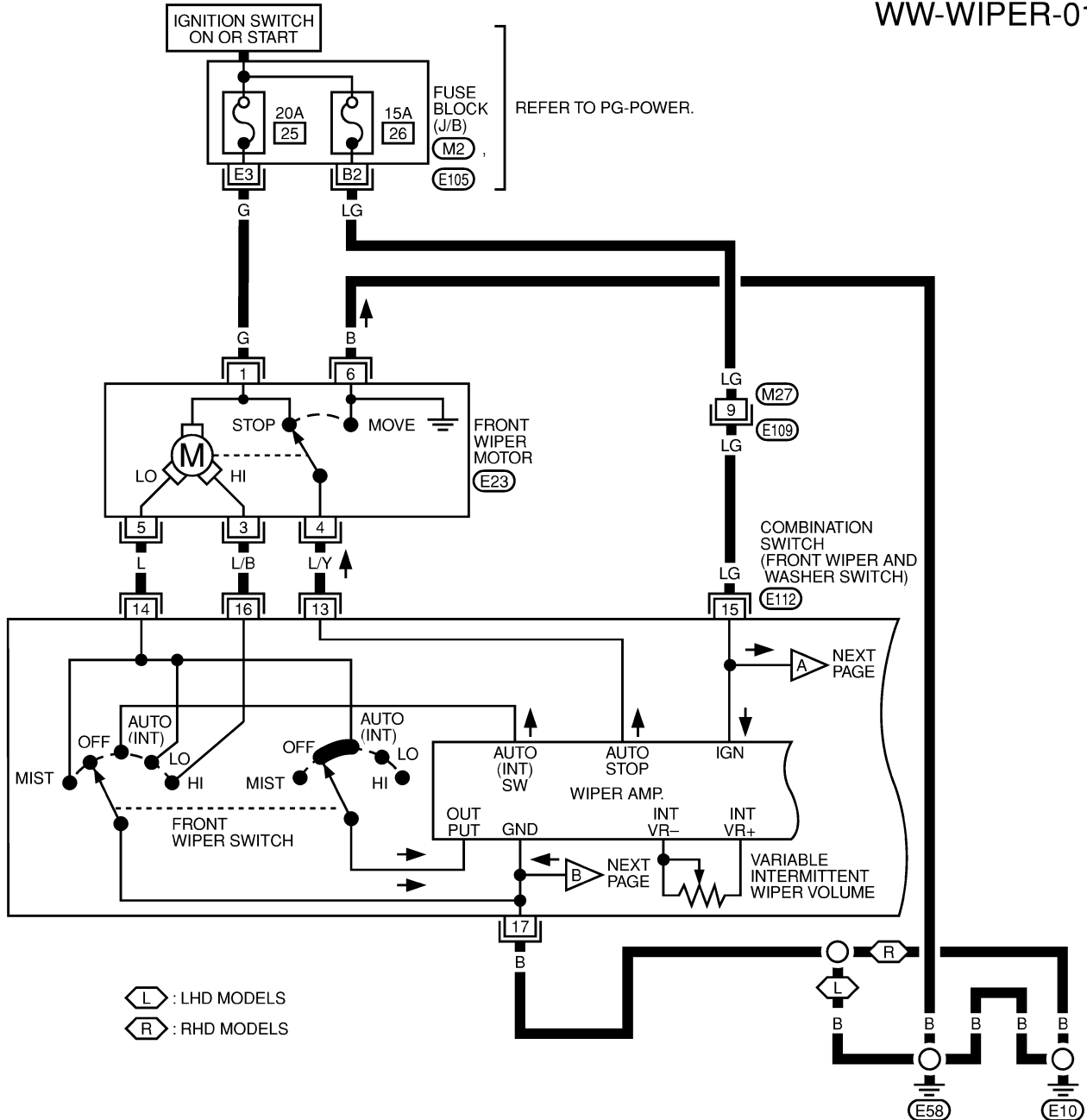
M

# FRONT WIPER AND WASHER SYSTEM

## Wiring Diagram — WIPER —

EKS004VV

WW-WIPER-01



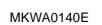
REFER TO THE FOLLOWING.  
M2, E105 - FUSE BLOCK-  
JUNCTION BOX (J/B)

MKWA0139E

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D  
E  
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G  
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KW  
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## WW

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# FRONT WIPER AND WASHER SYSTEM

## Terminal and Reference Values for Combination Switch

EKS003Y9

TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION			DATA (DC Voltage)
			IGNITION SWITCH	CONDITION OR OPERATION		
13	L/Y	Wiper auto stop signal	ON	Wiper is moving		Approx. 0
				Wiper while the vehicle is stopped		Approx. 12
14	L	Wiper motor operation signal (LO)	ON	Wiper switch	OFF	Approx. 12
					LO	Approx. 0
15	LG	Ignition ON signal	ON	—		Approx. 12
16	L/B	Wiper motor operation signal (HI)	ON	Wiper switch	OFF	Approx. 12
					HI	Approx. 0
17	B	Ground	OFF	—		—
18	P	Washer switch signal	ON	Wiper switch	WASH	Approx. 0
					OFF	Approx. 12

## Trouble Diagnosis SYMPTOM CHART

EKS004S6

Symptom	Possible cause	Repair order
Front wiper does not operate.	Power supply and ground circuit	Check power supply and ground circuit ( <a href="#">WW-9</a> ).
	Wiper motor	Replace wiper motor.
	Front wiper and washer switch	Check front wiper and washer switch ( <a href="#">WW-46</a> ).
Low speed wiper operation does not operate.	Open or short circuit	Check harness for open or short ( <a href="#">WW-9</a> ).
	Front wiper and washer switch	Check front wiper and washer switch ( <a href="#">WW-46</a> ).
High speed wiper operation does not operate.	Open or short circuit	Check harness for open or short ( <a href="#">WW-10</a> ).
	Front wiper and washer switch	Check front wiper and washer switch ( <a href="#">WW-46</a> ).
Intermittent wiper operation does not operate.	Front wiper and washer switch	Check front wiper and washer switch ( <a href="#">WW-46</a> ).
Auto stop wiper operation does not operate.	Open or short circuit	Check harness for open or short ( <a href="#">WW-10</a> ).
	Front wiper and washer switch	Check front wiper and washer switch ( <a href="#">WW-46</a> ).
Front washer does not operate.	Open or short circuit	Check harness for open or short ( <a href="#">WW-11</a> ).
	Front wiper and washer switch	Check front wiper and washer switch ( <a href="#">WW-46</a> ).
	Washer motor	Replace washer motor.



# FRONT WIPER AND WASHER SYSTEM

## POWER SUPPLY AND GROUND CIRCUIT CHECK

### 1. POWER SUPPLY CIRCUIT CHECK

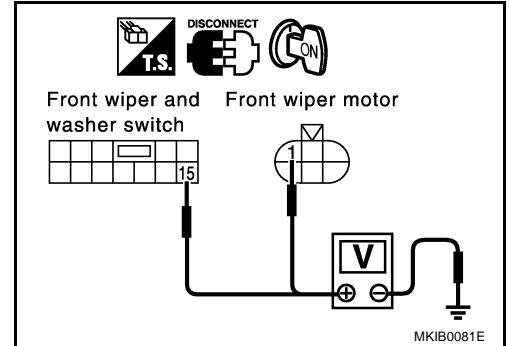
Terminals		Ignition switch position		
(+) (wire color)		(-)	OFF	ON or ATSR
Connector	Terminal			
E112	15 (LG)	Ground	0V	Battery voltage
E23	1 (G)	Ground	0V	Battery voltage

OK or NG?

Yes >> GO TO 2.

No >> Check the following.

- 20A fuse [No. 25, located in fuse block (J/B)]
- 15A fuse [No. 26, located in fuse block (J/B)]
- Harness for open or short between fuse and front wiper motor or front wiper and washer switch.



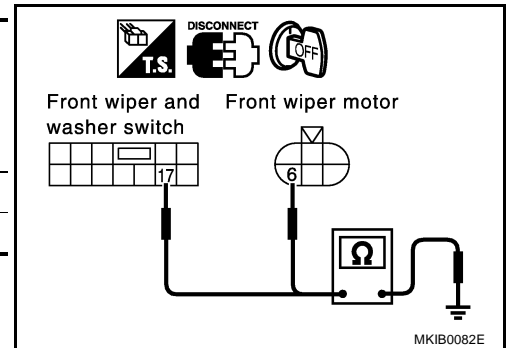
### 2. GROUND CIRCUIT CHECK

Terminals			Continuity
(+)		(-)	
Connector	Terminal (wire color)		
E112	17 (B)		
E23	6 (B)	Ground	Yes
		Ground	Yes

OK or NG?

OK >> INSPECTION END

NG >> Harness for open ground circuit



## LOW SPEED CIRCUIT CHECK

### 1. CHECK HARNESS FOR OPEN OR SHORT

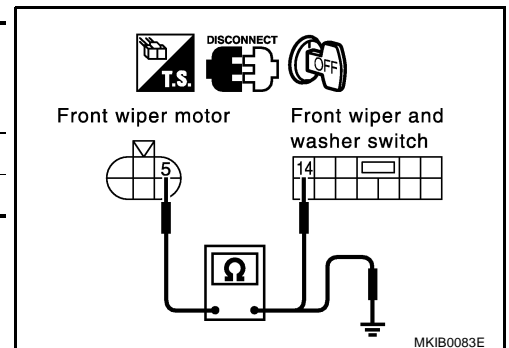
1. Turn ignition switch "OFF".
2. Disconnect front wiper motor harness connector and front wiper and washer switch harness connector.
3. Check the following.
  - Continuity between front wiper motor harness connector E23 terminal 5 (L) and front wiper and washer switch harness connector E112 terminal 14 (L).
  - Continuity between front wiper motor harness connector E23 terminal 5 (L) and body ground.

Terminal				Continuity
Connector	Terminal	Connector	Terminal	
	(wire color)		(wire color)	
E23	5 (L)	E112	14 (L)	Yes
E23	5 (L)	Ground		No

OK or NG?

OK >> INSPECTION END

NG >> Repair or replace harness.



# FRONT WIPER AND WASHER SYSTEM

## HIGH SPEED CIRCUIT CHECK

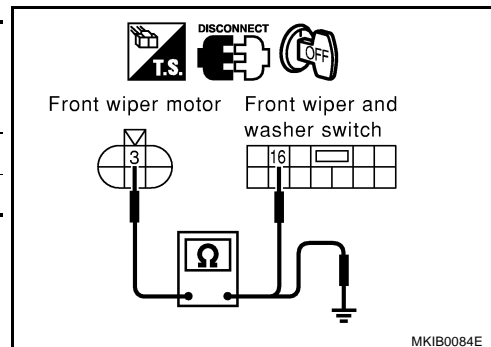
### 1. CHECK HARNESS FOR OPEN OR SHORT

1. Turn ignition switch "OFF".
2. Disconnect front wiper motor harness connector and front wiper and washer switch harness connector.
3. Check the following.
  - Continuity between front wiper motor harness connector E23 terminal 3 (L/B) and front wiper and washer switch harness connector E112 terminal 16 (L/B).
  - Continuity between front wiper motor harness connector E23 terminal 3 (L/B) and body ground.

Terminal				Continuity
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
E23	3 (L/B)	E112	16 (L/B)	Yes
E23	3 (L/B)	Ground		No

OK or NG?

- OK >> INSPECTION END  
 NG >> Repair or replace harness.



## AUTO STOP CIRCUIT CHECK

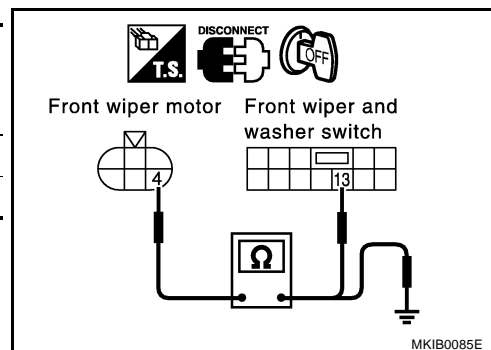
### 1. CHECK HARNESS FOR OPEN OR SHORT

1. Turn ignition switch "OFF".
2. Disconnect front wiper motor harness connector and front wiper and washer switch harness connector.
3. Check the following.
  - Continuity between front wiper motor harness connector E23 terminal 4 (L/Y) and front wiper and washer switch harness connector E112 terminal 13 (L/Y).
  - Continuity between front wiper motor harness connector E23 terminal 4 (L/Y) and body ground.

Terminal				Continuity
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
E23	4 (L/Y)	E112	13 (L/Y)	Yes
E23	4 (L/Y)	Ground		No

OK or NG?

- OK >> INSPECTION END  
 NG >> Repair or replace harness.



# FRONT WIPER AND WASHER SYSTEM

## WASHER MOTOR CIRCUIT CHECK

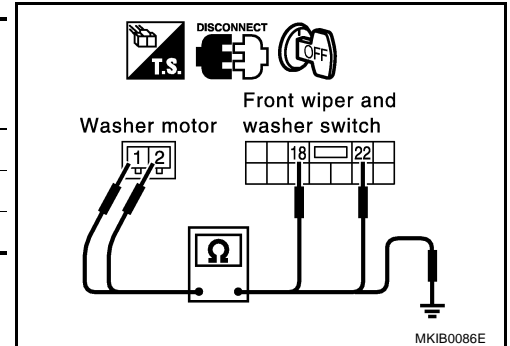
### 1. CHECK HARNESS FOR OPEN OR SHORT

1. Turn ignition switch "OFF".
2. Disconnect washer motor harness connector and front wiper and washer switch harness connector.
3. Check the following.
  - Continuity between washer motor harness connector E9 terminal 1 (P) and front wiper and washer switch harness connector E112 terminal 18 (P).
  - Continuity between washer motor harness connector E9 terminal 2 (BR) and front wiper and washer switch harness connector E112 terminal 22 (BR).
  - Continuity between washer motor harness connector E9 terminals 1 (P), 2 (BR) and body ground.

Terminal				Continuity
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
E9	1 (P)	E112	18 (P)	Yes
E9	2 (BR)	E112	22 (P)	Yes
E9	1 (P), 2 (BR)	Ground		No

OK or NG?

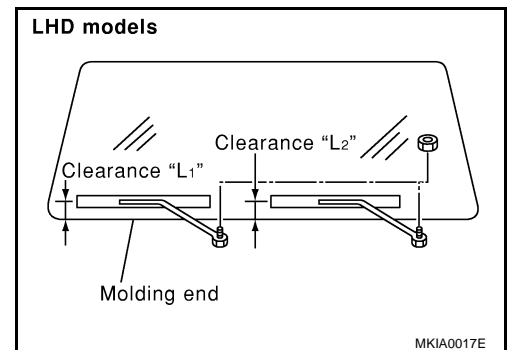
- OK >> INSPECTION END  
 NG >> Repair or replace harness.



## Removal and Installation for Front Wiper Arms, Adjustment for Wiper Arms Stop Location

EKS003YA

1. Prior to wiper arm installation, turn on wiper switch to operate wiper motor and then turn it "OFF" (Auto Stop).
2. Lift the blade up and then set it down onto glass surface to set the blade center to clearance "L1" & "L2" immediately before tightening nut.
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".



MKIA0017E

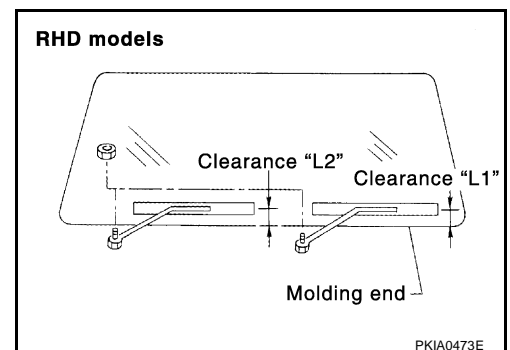
4. Ensure that wiper blades stop within clearance "L1" & "L2".

**Clearance "L1": 23.3 - 38.3 mm (0.917 - 1.508 in)**

**Clearance "L2": 21.8 - 36.8 mm (0.858 - 1.449 in)**

- Tighten wiper arm nuts to specified torque.

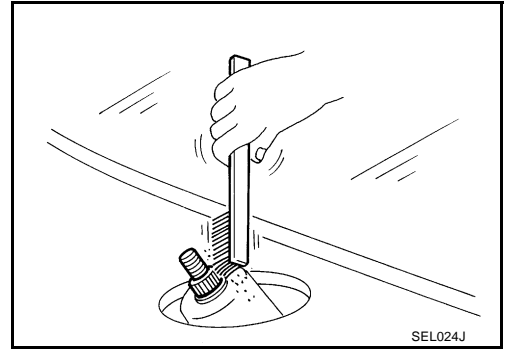
**Front wiper: 21.6 - 26.5 N-m (2.2 - 2.7 kg-m, 16 - 19 ft-lb)**



PKIA0473E

## FRONT WIPER AND WASHER SYSTEM

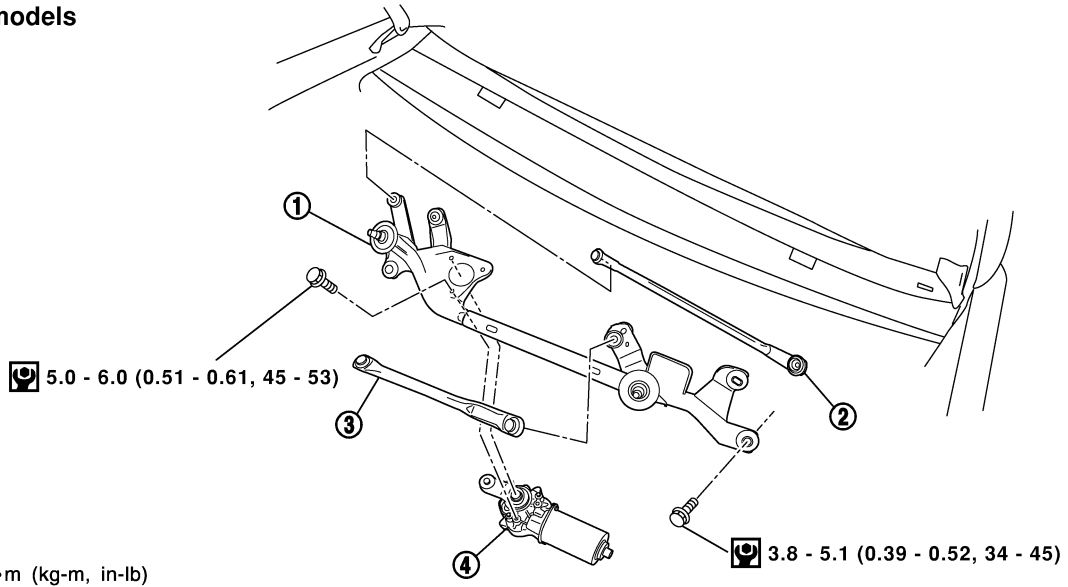
- Before reinstalling wiper arm, clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.



### Removal and Installation for Wiper Motor and Linkage

EKS003YB

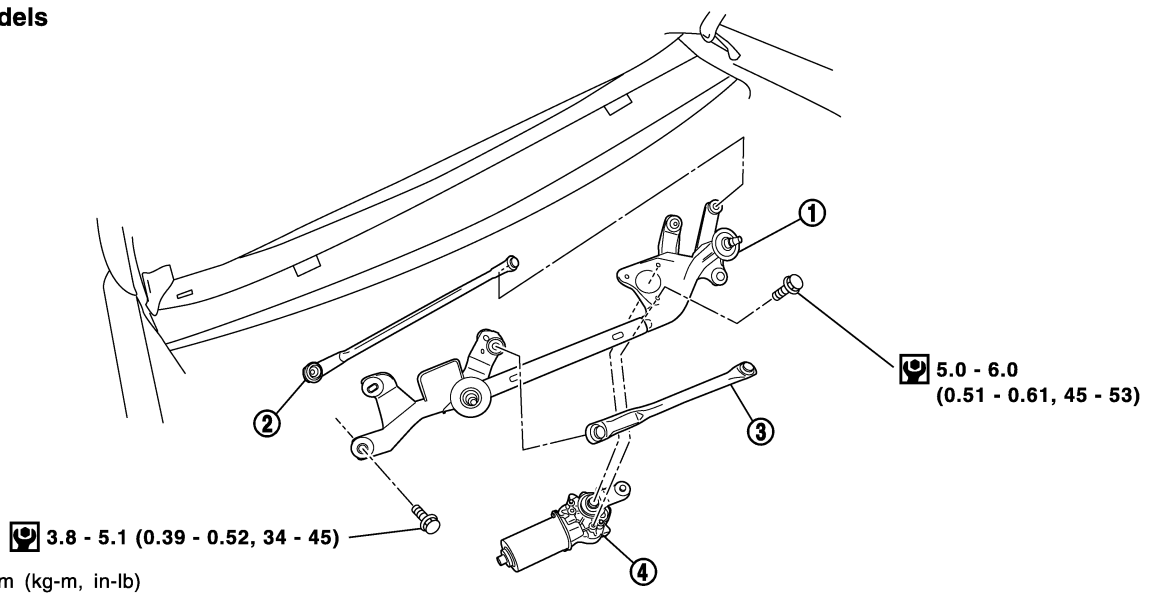
#### RHD models



SKIA0261E

- Wiper frame
- Wiper link
- Wiper link
- Wiper motor

#### LHD models



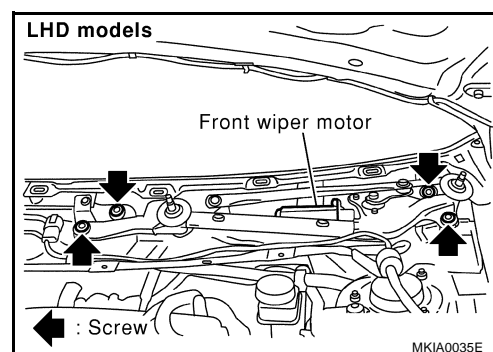
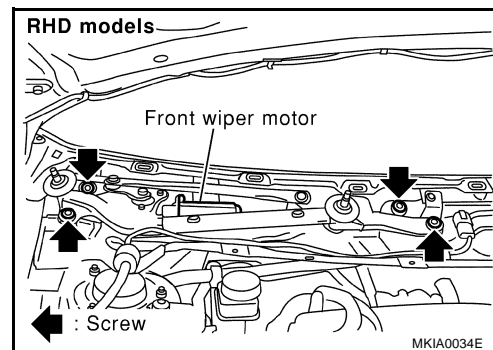
MKIA0019E

- Wiper frame
- Wiper link
- Wiper link
- Wiper motor

# FRONT WIPER AND WASHER SYSTEM

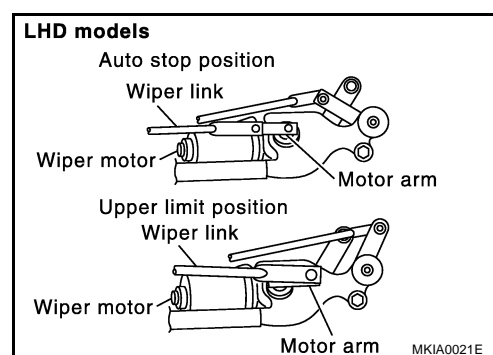
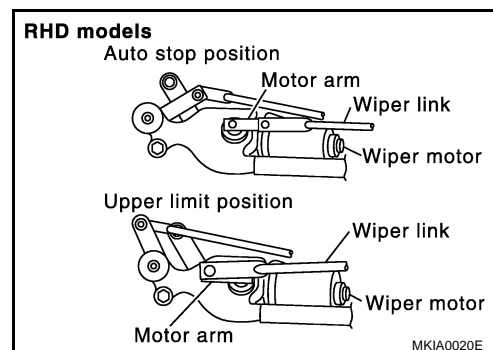
## REMOVAL

1. Operate the wiper motor, and stop it at the auto stop position.
  2. Remove wiper arm from the vehicle.
  3. Remove the cowl top cover. Refer to [EI-13, "COWL TOP"](#).
  4. Remove 4 screws and remove wiper motor assembly from the vehicle.
  5. Disconnect wiper motor connector.
  6. Remove wiper link from wiper frame.
- 
7. Remove wiper motor from wiper frame.



## INSTALLATION

1. Connect wiper motor to connector. Turn the wiper switch ON to operate wiper motor, then turn the wiper switch OFF (auto stop).
  2. Disconnect wiper motor connector.
  3. Install wiper motor to the wiper frame.
  4. Install wiper motor assembly to the vehicle.
  5. Install wiper link to the wiper motor arm.
  6. Connect wiper motor connector. Turn the wiper switch ON to operate the wiper motor, then turn wiper switch OFF (auto stop).
  7. Rotate motor arm to the upper limit position.
- 
8. Install wiper motor assembly to the vehicle.
  9. Turn the wiper switch ON to operate the wiper motor, then turn wiper switch OFF (auto stop).
  10. Install cowl top cover. Refer to [EI-13, "COWL TOP"](#).
  11. Install wiper arm to the vehicle.



### CAUTION:

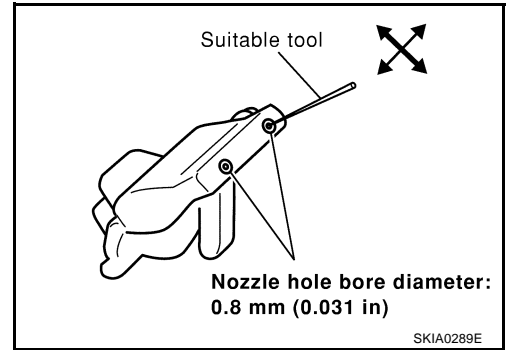
- Do not drop the wiper motor or cause it to contact other parts.
- Check the grease conditions of the motor arm and wiper link joint (at retainer). Apply grease if necessary.

# FRONT WIPER AND WASHER SYSTEM

## Washer Nozzle Adjustment

EKS003YC

Adjust washer nozzle with suitable tool as shown in the figure at right.

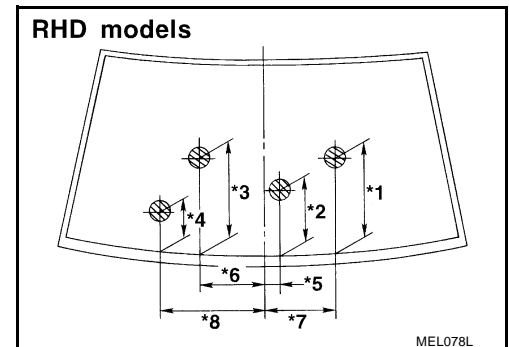
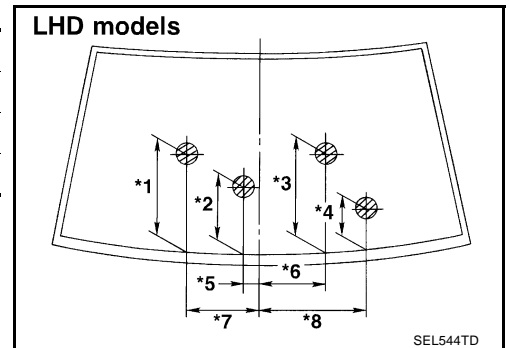


Unit: mm (in)

*1	385 (15.16)	*5	120 (4.72)
*2	245 (9.65)	*6	207 (8.15)
*3	314 (12.36)	*7	295 (11.61)
*4	212 (8.35)	*8	454 (17.87)

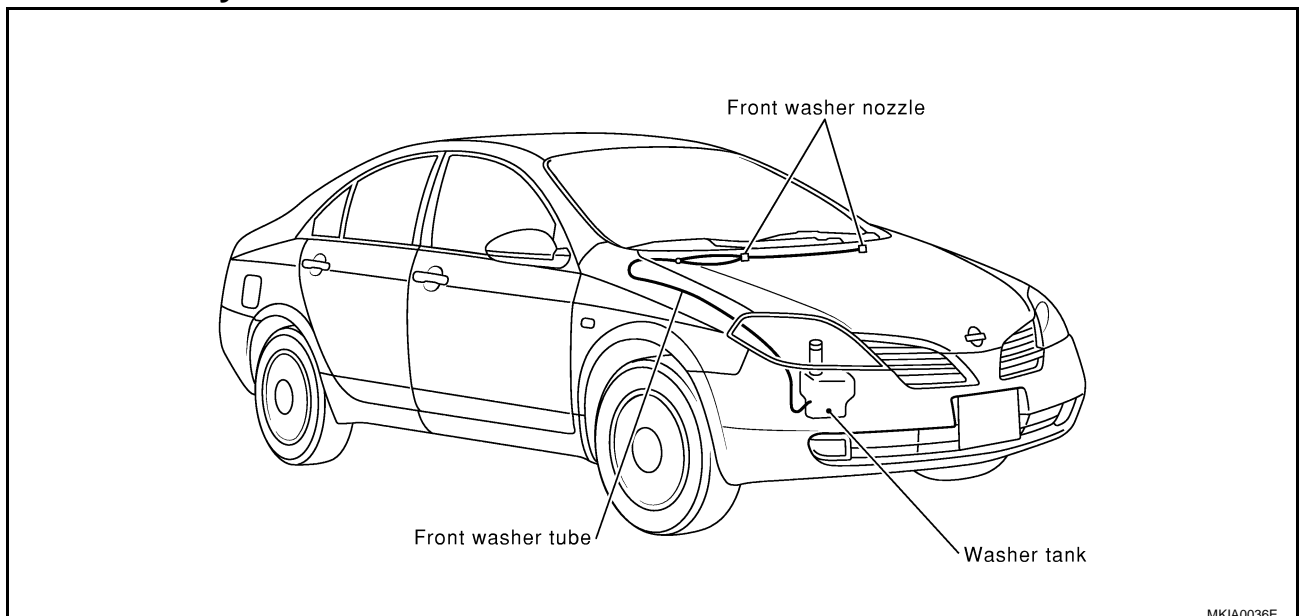
### NOTE:

- \*: The diameters of these circles are less than 80 mm (3.15 in).



## Washer Tube Layout

EKS003YD



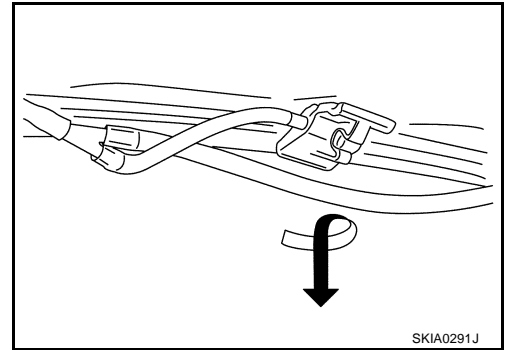
# FRONT WIPER AND WASHER SYSTEM

## Removal and Installation for Washer Nozzle

EKS003YE

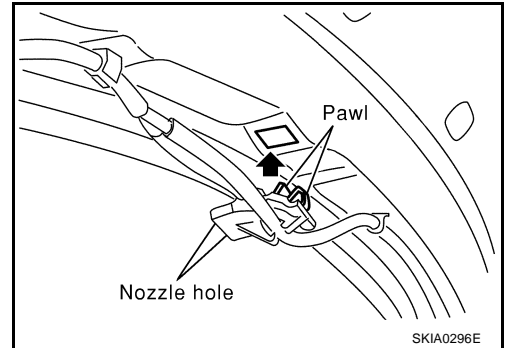
### REMOVAL

1. Push and turn washer nozzle pawl toward engine hood to pull out.



### INSTALLATION

1. After connecting washer hose, press hit nozzle at engine hood.
2. Adjust nozzle injection position.

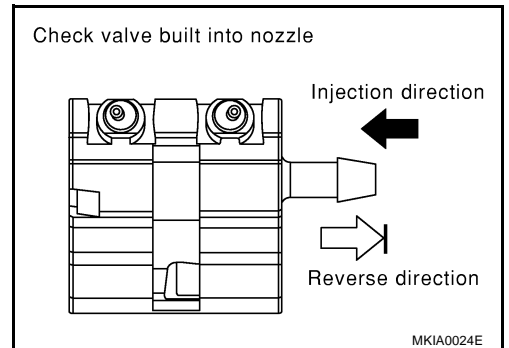


## Inspection for Washer Nozzle

### CHECK VALVE

EKS003YF

- Blow air in the injection direction, and check that air flows only one way. Make sure that the reverse direction (inhale) is not possible.

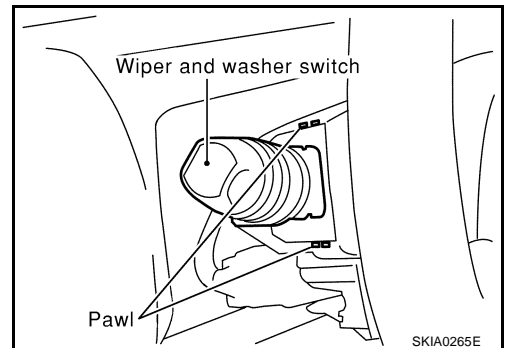


## Removal and Installation for Wiper and Washer Switch

EKS003YG

### REMOVAL

1. Remove steering column cover. Refer to [PS-10, "STEERING COLUMN"](#).
2. Remove wiper washer switch connector.
3. Push two pawl then remove wiper washer switch from the base.



### INSTALLATION

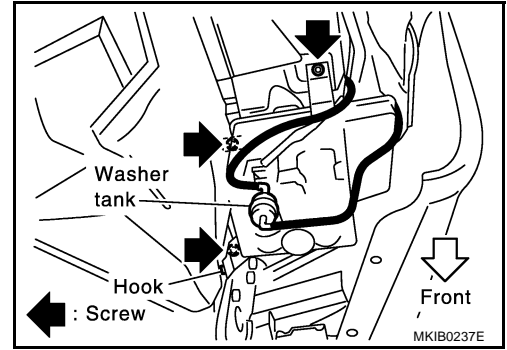
Installation is in the reverse order of removal.

# FRONT WIPER AND WASHER SYSTEM

## Removal and Installation for Washer Tank

EKS003YH

1. Pull out washer tank inlet.
2. Remove fender protector. Refer to [EI-14, "FENDER PROTECTOR"](#).
3. Remove washer pump connector.
4. Remove washer tank installation screw and pawl.




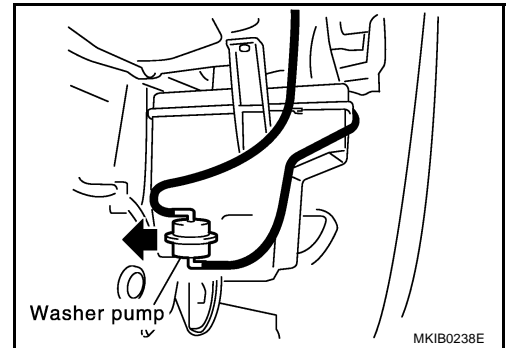
5. Remove washer hose, and remove the washer tank from the vehicle.

### CAUTION:

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

Washer tank installation screw

 : 3.8 - 5.1 N-m (0.39 - 0.52 kg-m, 34 - 45 in-lb)



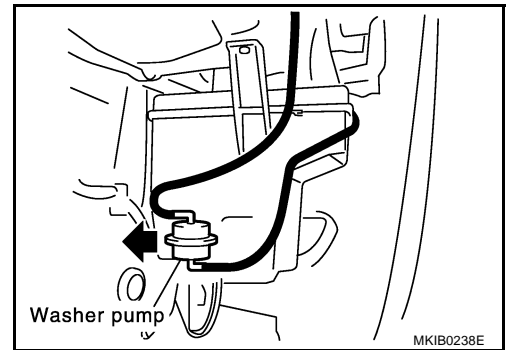
## Removal and Installation for Washer Pump

EKS003YI

1. Remove fender protector. Refer to [EI-14, "FENDER PROTECTOR"](#).
2. Remove washer pump connector and hose.
3. Pull out washer pump in the direction of the arrow in the figure, and remove the washer pump from the washer tank.

### CAUTION:

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





# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

## FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

PFP:28536

### System Description

EKS00528

#### WIPER OPERATION

The wiper switch is controlled by a lever built into the combination switch.  
There are three wiper switch positions:

- LO (MIST) speed
- HI speed
- AUTO (INT)

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

- through 20A fuse [No. 25, located in the fuse block (J/B)]
- to front wiper motor terminal 1.
- through 10A fuse [No. 10, located in the fuse block (J/B)]
- to rain sensor terminal 4.

Ground is supplied to wiper and washer switch terminal 17 through body grounds E10 and E58.  
Ground is supplied to rain sensor terminal 3 through body grounds M16, M50, M70 and F115.

#### LOW AND HIGH SPEED WIPER OPERATION

When the wiper switch is placed in the LO or MIST position, ground is supplied

- through terminal 14 of the front wiper and washer switch
- to front wiper motor terminal 5.

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

When the wiper switch is placed in the HI position, ground is supplied

- through terminal 16 of the front wiper and washer switch
- to wiper motor terminal 3.

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

#### AUTO STOP OPERATION

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

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

- from terminal 14 of the front wiper and washer switch
- to front wiper motor terminal 5, in order to continue wiper motor operation at low speed.

Ground is also supplied

- through terminal 13 of the front wiper and washer switch
- to front wiper motor terminal 4
- through terminal 6 of the front wiper motor, and
- through body grounds E10 and E58.

When wiper arms reach base of windshield, front wiper motor terminals 1 and 4 are connected instead of terminals 6 and 4. Wiper motor will then stop wiper arms at the STOP position.

#### AUTO WIPER OPERATION

When the wiper switch is placed in the AUTO (INT) position, then the rain sensor detection of rain drop.

Rain sensor send wiper request signal

- from rain sensor terminal 1
- to combination switch terminal 20.

Change the wiper speed by rainfall

The rain sensor sensitivity is controlled by the wiper volume switch combined with front wiper and washer switch.

#### WASHER OPERATION

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

- through 15A fuse [No. 26, located in the fuse block (J/B)]
- through front wiper and washer switch terminals 15 and 18
- to washer motor terminal 1.

A

B

C

D

E

F

G

H

I

J

WW

L

M

## FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

---

When the lever is pulled to the MIST position, ground is supplied

- from body grounds E10 and E58
- through terminal 17 of the front wiper and washer switch, and
- through terminal 22 of the wiper switch
- to front washer motor terminal 2.

With power and ground supplied, the washer motor operates.

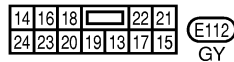
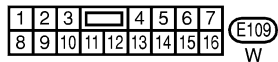
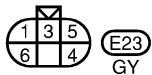
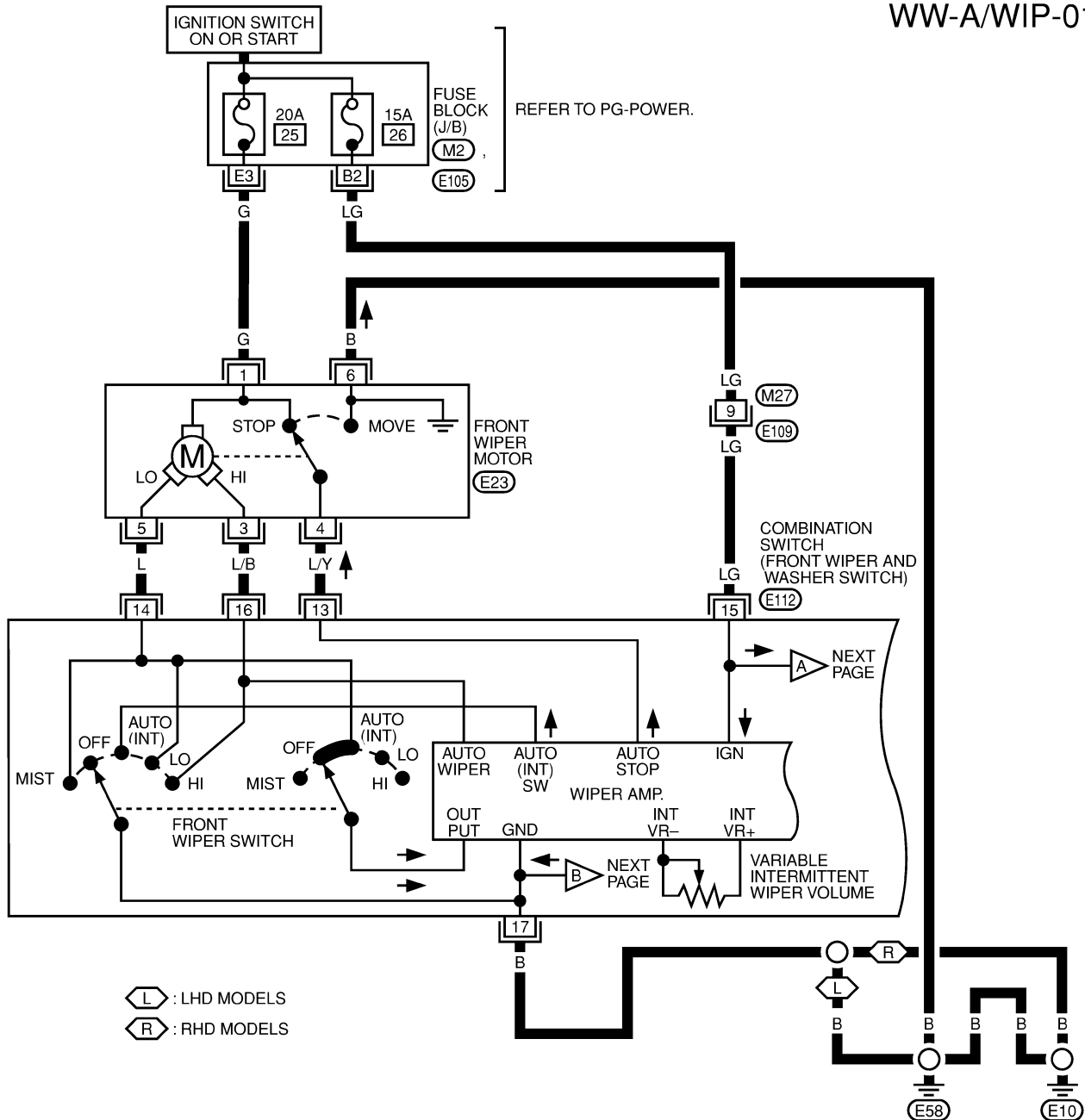
When the lever is pulled to the MIST position for one second or more, the wiper motor operates at low speed for approximately 3 seconds to clean windshield. This feature is controlled by the wiper amplifier in the same manner as the intermittent operation.

# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

## Wiring Diagram — WIPER —

EKS00529

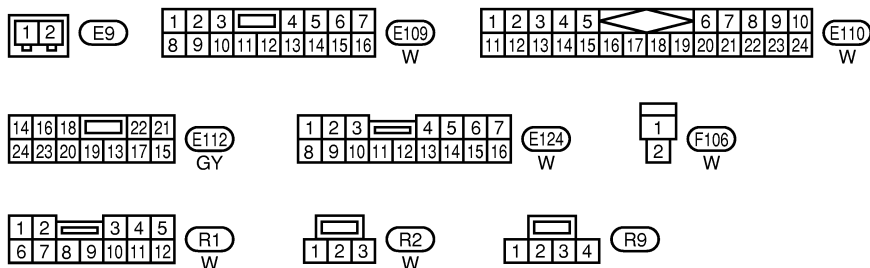
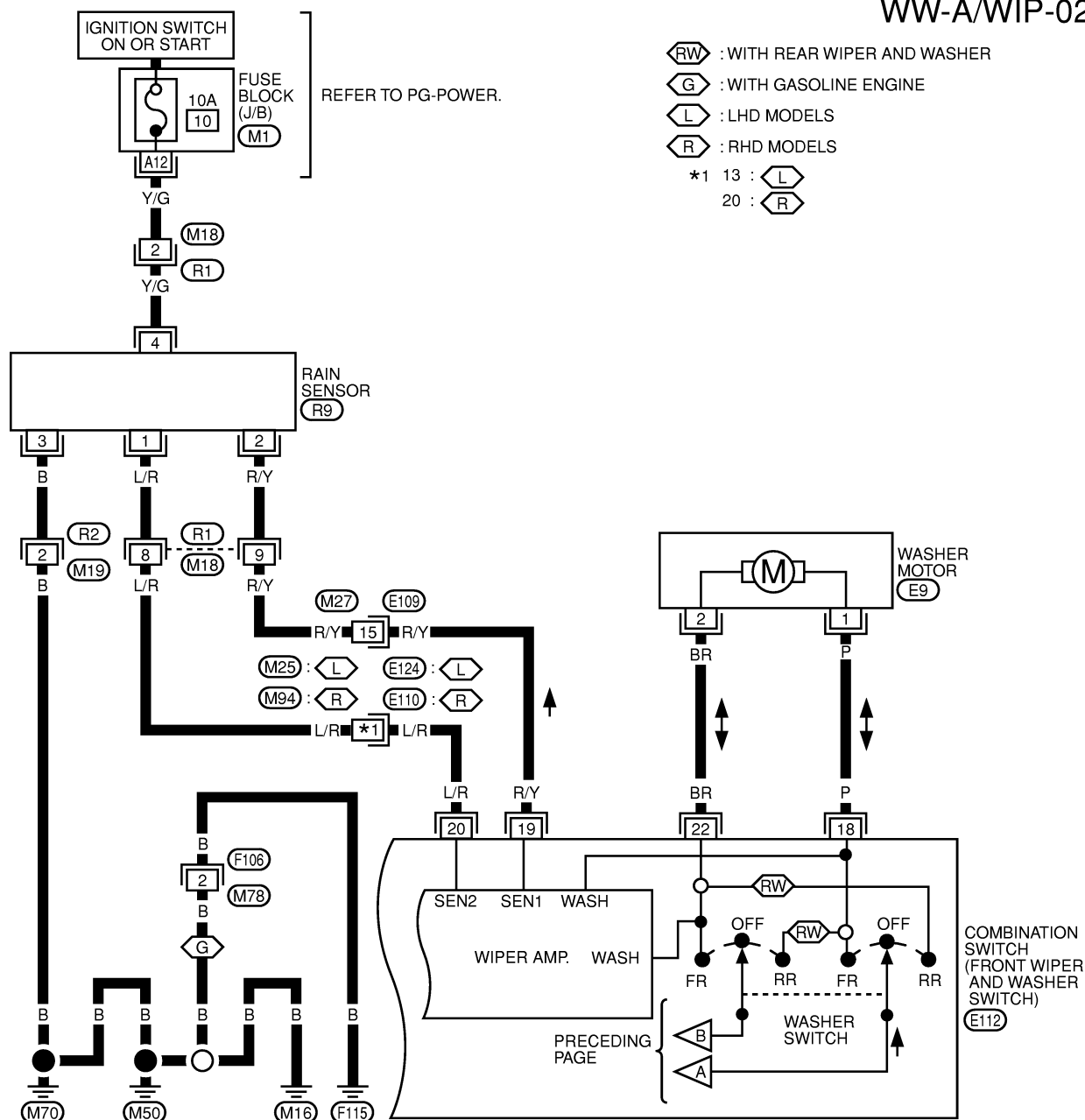
WW-A/WIP-01



REFER TO THE FOLLOWING.  
(M2), (E105) - FUSE BLOCK-JUNCTION BOX (J/B)

# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

WW-A/WIP-02



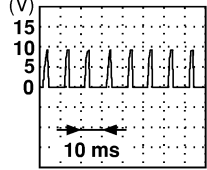
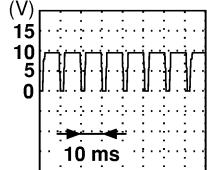
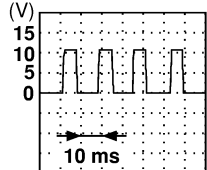
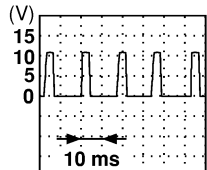
REFER TO THE FOLLOWING.

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

# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

## Terminal and Reference Values for Combination Switch

EKS0052A

TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION		DATA (DC Voltage)
			IGNI-TION SWITCH	CONDITION OR OPERATION	
13	L/Y	Wiper auto stop signal	ON	Wiper is moving	Approx. 0
				Wiper while the vehicle is stopped	Approx. 12
14	L	Wiper motor operation signal (LO)	ON	Wiper switch	OFF Approx. 12
					LO Approx. 0
15	LG	Ignition ON signal	ON	—	Approx. 12
16	L/B	Wiper motor operation signal (HI)	ON	Wiper switch	OFF Approx. 12
					HI Approx. 0
17	B	Ground	OFF	—	—
18	P	Washer switch signal	ON	Wiper switch	WASH Approx. 0
					OFF Approx. 12
19	R/Y	Rain sensor signal (INPUT)	ON	Wiper switch AUTO (INT) position	Wiper is stopped  MKIB0171E
					Wiper is moving (Apply a few drops of water to detection attachment)  MKIB0172E
20	L/R	Rain sensor signal (OUTPUT)	ON	Wiper switch AUTO (INT) position	Wiper is stopped  MKIB0173E
					Wiper is moving (Apply a few drops of water to detection attachment)  MKIB0174E

## Trouble Diagnosis SYMPTOM CHART

EKS0052B

Symptom	Possible cause	Repair order
Front wiper does not operate.	Power supply and ground circuit	Check power supply and ground circuit( <a href="#">WW-22</a> ).
	Wiper motor	Replace wiper motor.
	Front wiper and washer switch	Check front wiper and washer switch ( <a href="#">WW-46</a> ).

# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

Symptom	Possible cause	Repair order
Low speed wiper operation does not operate.	Open or short circuit	Check harness for open or short (WW-24 ).
	Front wiper and washer switch	Check front wiper and washer switch (WW-46 ).
High speed wiper operation does not operate.	Open or short circuit	Check harness for open or short (WW-24 ).
	Front wiper and washer switch	Check front wiper and washer switch (WW-46 ).
Auto stop wiper operation does not operate.	Open or short circuit	Check harness for open or short (WW-25 ).
	Front wiper and washer switch	Check front wiper and washer switch (WW-46 ).
Front washer does not operate.	Open or short circuit	Check harness for open or short (WW-26 ).
	Front wiper and washer switch	Check front wiper and washer switch (WW-46 ).
	Washer motor	Replace washer motor.
Auto wiper does not operate in wet weather.	Power supply and ground circuit	Check power supply and ground circuit for rain sensor (WW-23 ).
	Open or short circuit	Check harness for open or short (WW-25 ).
	Front wiper and washer switch	Check front wiper and washer switch (WW-46 ).
	Rain sensor	Check the rain sensor 1 (WW-26 ).
Auto wiper operate in the fair weather	Rain sensor	Check the rain sensor 2 (WW-27 ).
	Front wiper and washer switch	Check front wiper and washer switch (WW-46 ).

## POWER SUPPLY AND GROUND CIRCUIT CHECK

### 1. POWER SUPPLY CIRCUIT CHECK

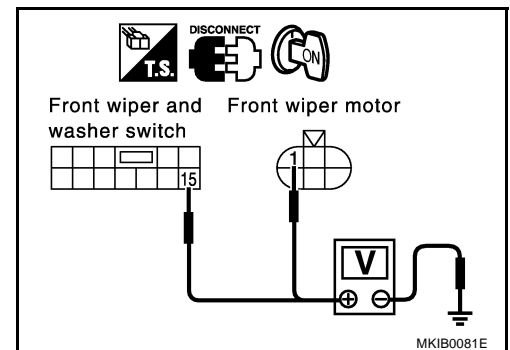
Terminals			Ignition switch position	
( + )		( - )	OFF	ON or ATSRT
Connector	Terminal (wire color)			
E112	15 (LG)	Ground	0V	Battery voltage
E23	1 (G)	Ground	0V	Battery voltage

OK or NG?

Yes >> GO TO 2.

No >> Check the following.

- 20A fuse [No. 25, located in fuse block (J/B)]
- 15A fuse [No. 26, located in fuse block (J/B)]
- Harness for open or short between fuse and front wiper motor or front wiper and washer switch.



# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

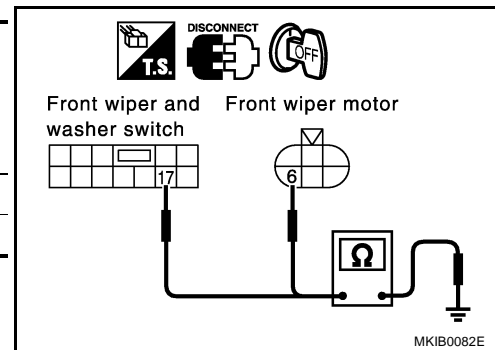
## 2. GROUND CIRCUIT CHECK

Terminals			Continuity
(+)		(-)	
Connector	Terminal (wire color)		
E112	17 (B)	Ground	Yes
E23	6 (B)	Ground	Yes

OK or NG?

OK >> INSPECTION END

NG >> Harness for open ground circuit



## CHECK POWER SUPPLY AND GROUND CIRCUIT RAIN SENSOR

### 1. POWER SUPPLY CIRCUIT CHECK

Rain sensor power supply check

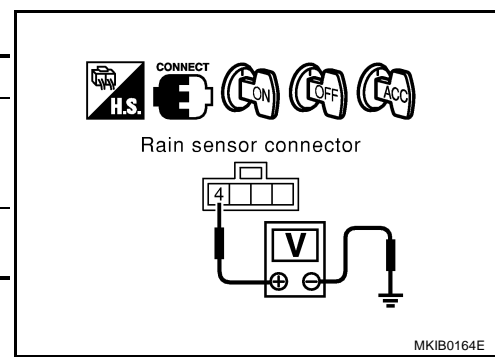
Terminals		Ignition switch position		
(+) (–)		OFF	ACC	ON
Connector	Terminal (wire color)			
R9	4 (Y/G)	Ground	0V	0V
				Battery voltage

OK or NG?

OK >> GO TO 2.

NG >> Check the following.

- 10A fuse [No. 10, located in fuse block (J/B)]
- Harness for open and short between rain sensor and fuse



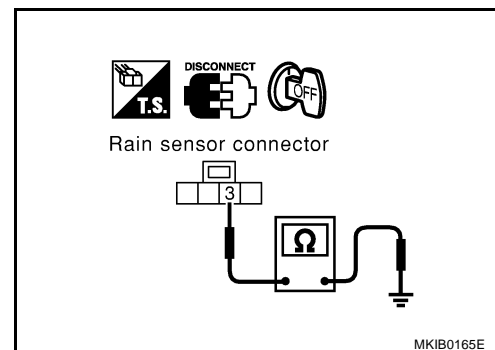
## 2. GROUND CIRCUIT CHECK

1. Turn ignition switch "OFF".
2. Disconnect rain sensor harness connector.
3. Check continuity between rain sensor harness connector R9 terminal 3 (B) and ground.

OK or NG?

OK >> INSPECTION END

NG >> Repair or replace harness.



# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

## LOW SPEED CIRCUIT CHECK

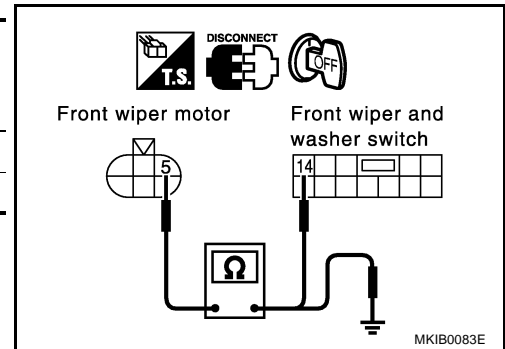
### 1. CHECK HARNESS FOR OPEN OR SHORT

1. Turn ignition switch "OFF".
2. Disconnect front wiper motor harness connector and front wiper and washer switch harness connector.
3. Check the following.
  - Continuity between front wiper motor harness connector E23 terminal 5 (L) and front wiper and washer switch harness connector E112 terminal 14 (L).
  - Continuity between front wiper motor harness connector E23 terminal 5 (L) and body ground.

Terminal				Continuity
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
E23	5 (L)	E112	14 (L)	Yes
E23	5 (L)	Ground		No

OK or NG?

- OK >> INSPECTION END  
NG >> Repair or replace harness.



## HIGH SPEED CIRCUIT CHECK

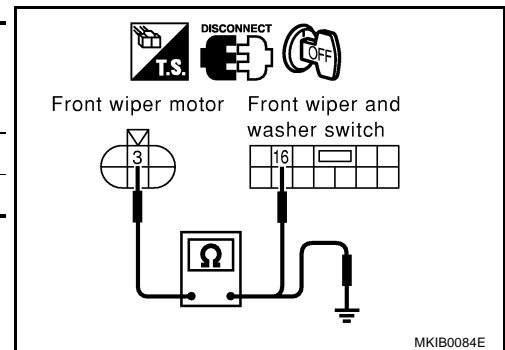
### 1. CHECK HARNESS FOR OPEN OR SHORT

1. Turn ignition switch "OFF".
2. Disconnect front wiper motor harness connector and front wiper and washer switch harness connector.
3. Check the following.
  - Continuity between front wiper motor harness connector E23 terminal 3 (L/B) and front wiper and washer switch harness connector E112 terminal 16 (L/B).
  - Continuity between front wiper motor harness connector E23 terminal 3 (L/B) and body ground.

Terminal				Continuity
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
E23	3 (L/B)	E112	16 (L/B)	Yes
E23	3 (L/B)	Ground		No

OK or NG?

- OK >> INSPECTION END  
NG >> Repair or replace harness.





# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

## AUTO STOP CIRCUIT CHECK

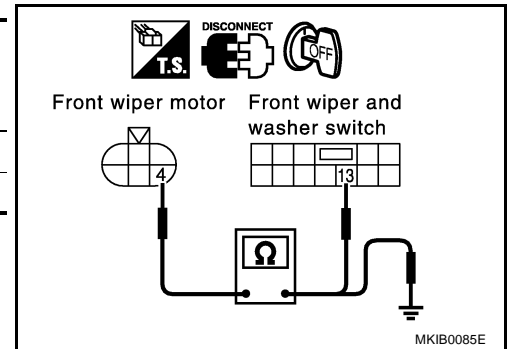
### 1. CHECK HARNESS FOR OPEN OR SHORT

1. Turn ignition switch "OFF".
2. Disconnect front wiper motor harness connector and front wiper and washer switch harness connector.
3. Check the following.
  - Continuity between front wiper motor harness connector E23 terminal 4 (L/Y) and front wiper and washer switch harness connector E112 terminal 13 (L/Y).
  - Continuity between front wiper motor harness connector E23 terminal 4 (L/Y) and body ground.

Terminal				Continuity
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
E23	4 (L/Y)	E112	13 (L/Y)	Yes
E23	4 (L/Y)	Ground		No

OK or NG?

- OK >> INSPECTION END  
 NG >> Repair or replace harness.



## AUTO WIPER CIRCUIT CHECK

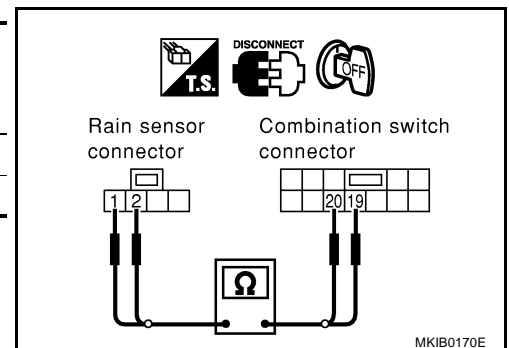
### 1. CHECK HARNESS OPEN OR SHORT

1. Turn ignition switch "OFF".
2. Disconnect rain sensor harness connector and front wiper and washer switch harness connector.
3. Check the following.
  - Continuity between rain sensor harness connector R9 terminal 1 (L/R) and front wiper and washer switch harness connector E112 terminal 20 (L/R)
  - Continuity between rain sensor harness connector R9 terminal 2 (R/Y) and front wiper and washer switch harness connector E112 terminal 19 (R/Y)

Terminal				Continuity
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
R9	1 (L/R)	E112	20 (L/R)	Yes
R9	2 (R/Y)	E112	19 (R/Y)	Yes

OK or NG?

- OK >> INSPECTION END  
 NG >> Repair or replace harness.



# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

## WASHER MOTOR CIRCUIT CHECK

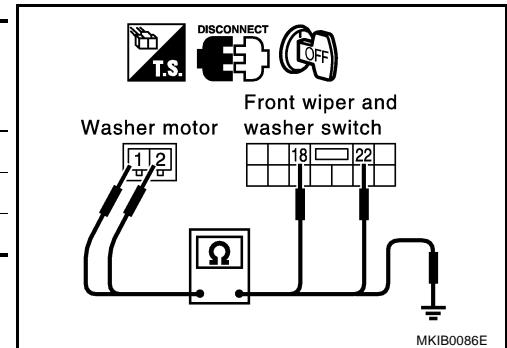
### 1. CHECK HARNESS FOR OPEN OR SHORT

1. Turn ignition switch "OFF".
2. Disconnect washer motor harness connector and front wiper and washer switch harness connector.
3. Check the following.
  - Continuity between washer motor harness connector E9 terminal 1 (P) and front wiper and washer switch harness connector E112 terminal 18 (P).
  - Continuity between washer motor harness connector E9 terminal 2 (BR) and front wiper and washer switch harness connector E112 terminal 22 (BR).
  - Continuity between washer motor harness connector E9 terminals 1 (P), 2 (BR) and body ground.

Terminal				Continuity
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
E9	1 (P)	E112	18 (P)	Yes
E9	2 (BR)	E112	22 (P)	Yes
E9	1 (P), 2 (BR)	Ground		No

OK or NG?

- OK >> INSPECTION END  
NG >> Repair or replace harness.



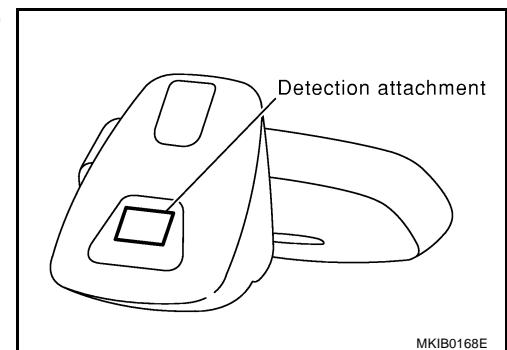
## CHECK THE RAIN SENSOR 1

### 1. CHECK RAIN SENSOR CONDITION

Check temperature the detection attachment within rain sensor, into the windshield.

**Condition: More than 70°C**

- Yes >> Wait to cool off windshield condition.  
No >> GO TO 2.

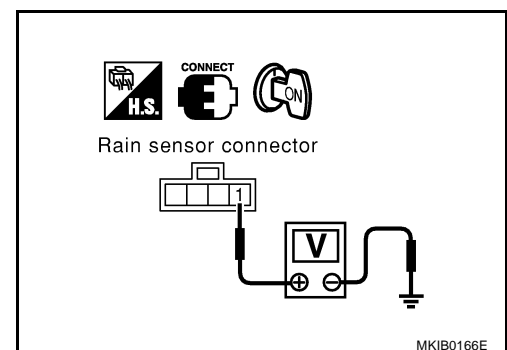


### 2. CHECK THE RAIN SENSOR OUTPUT SIGNAL

1. Turn ignition switch "ON".
2. Turn the AUTO (INT) position with wiper and washer switch.
3. Check output signal of rain sensor harness connector R9 terminal 1 (L/R).

OK or NG?

- OK >> GO TO 3.  
NG >> Replace rain sensor.



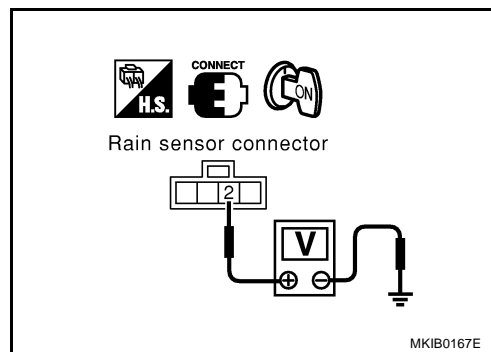
# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

## 3. CHECK THE RAIN SENSOR INPUT SIGNAL

Check input signal rain sensor harness connector R9 terminal 2 (R/Y).

OK or NG?

- OK >> INSPECTION END
- NG >> Replace combination switch.



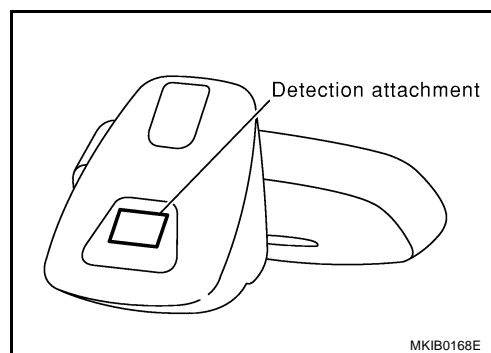
## CHECK THE RAIN SENSOR 2

### 1. CHECK THE RAIN SENSOR CONDITION

Check clean condition the detection attachment within rain sensor, into the windshield.

**Condition: Adhesion of dirt?**

- Yes >> Clean up the windshield.
- No >> GO TO 2.

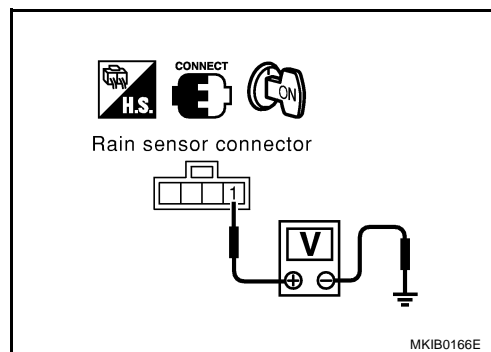


### 2. CHECK THE RAIN SENSOR INPUT SIGNAL

1. Turn ignition switch "ON".
2. Turn the AUTO (INT) position with wiper and washer switch.
3. Check output signal of rain sensor harness connector R9 terminal 1 (L/R).

OK or NG?

- OK >> GO TO 3.
- NG >> Replace rain sensor.

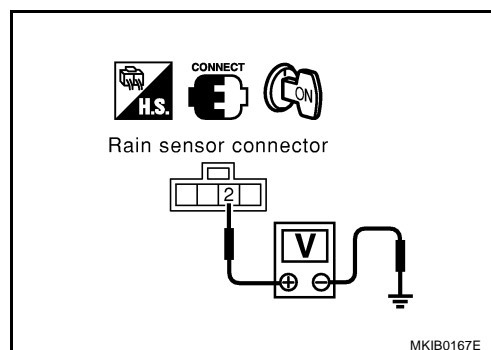


### 3. CHECK THE RAIN SENSOR INPUT SIGNAL

Check input signal rain sensor harness connector R9 terminal 2 (R/Y).

OK or NG?

- OK >> INSPECTION END
- NG >> Replace combination switch.

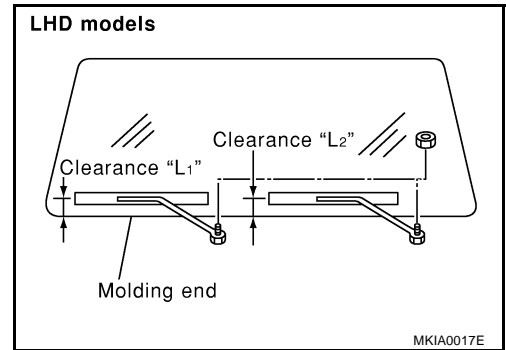


# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

## Removal and Installation for Front Wiper Arms, Adjustment for Wiper Arms Stop Location

EKS0052C

1. Prior to wiper arm installation, turn on wiper switch to operate wiper motor and then turn it "OFF" (auto stop).
2. Lift the blade up and then set it down onto glass surface to set the blade center to clearance "L1" & "L2" immediately before tightening nut.
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".



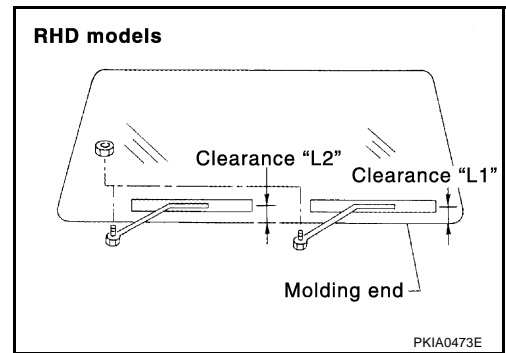
4. Ensure that wiper blades stop within clearance "L1" & "L2".

**Clearance "L1": 23.3 - 38.3 mm (0.917 - 1.508 in)**

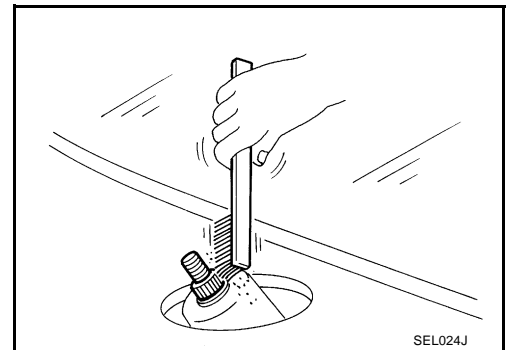
**Clearance "L2": 21.8 - 36.8 mm (0.858 - 1.449 in)**

- Tighten wiper arm nuts to specified torque.

**Front wiper: 21.6 - 26.5 N·m (2.2 - 2.7 kg·m, 16 - 19 ft·lb)**

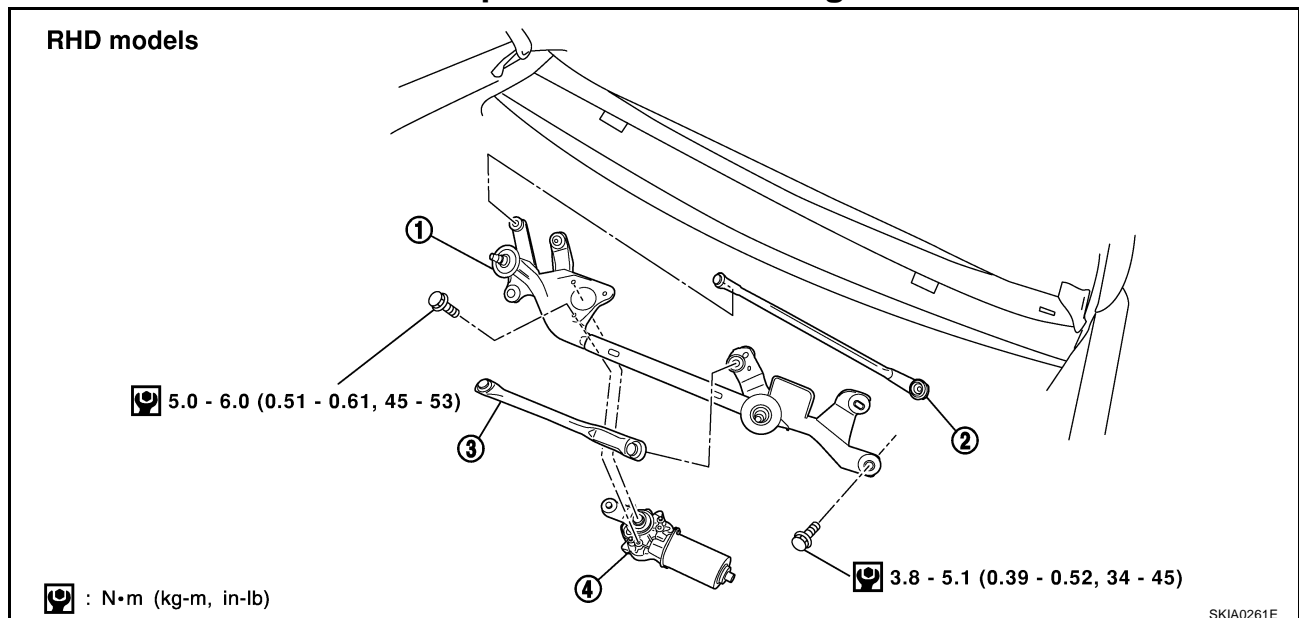


- Before reinstalling wiper arm, clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.



## Removal and Installation for Wiper Motor and Linkage

EKS0052D

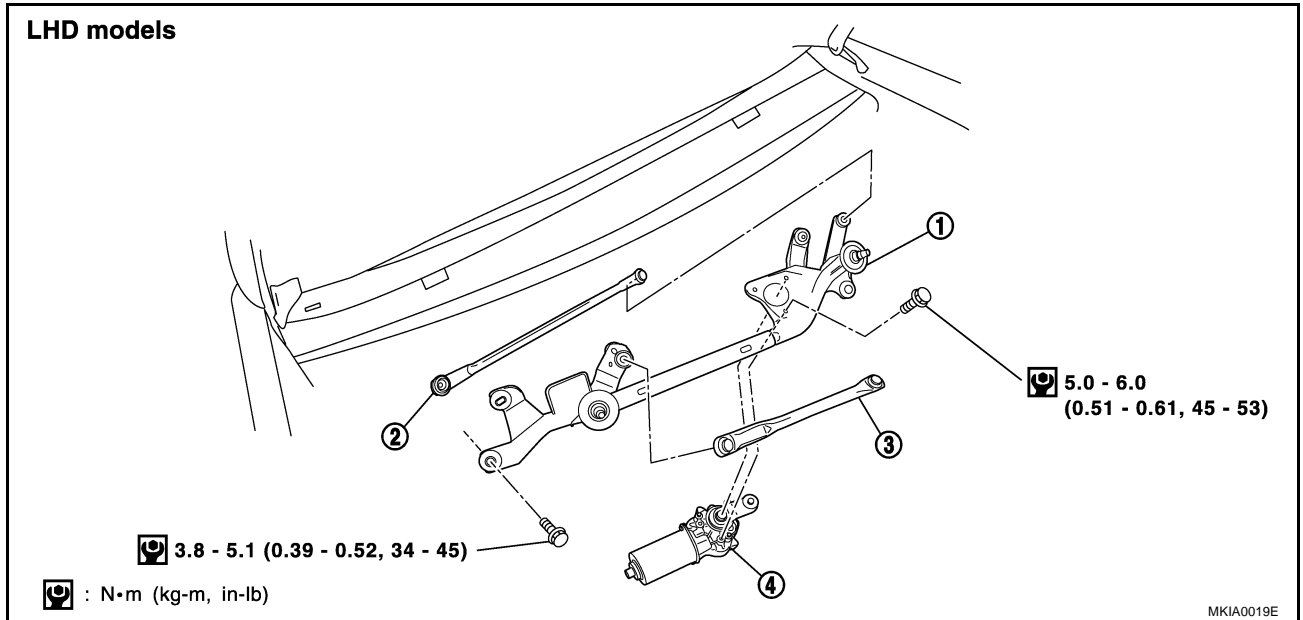


# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

1. Wiper frame
4. Wiper motor

2. Wiper link

3. Wiper link



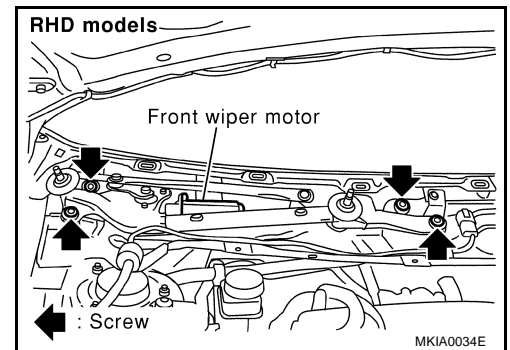
1. Wiper frame
4. Wiper motor

2. Wiper link

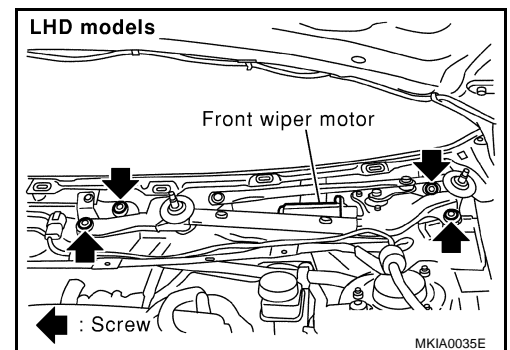
3. Wiper link

## REMOVAL

1. Operate the wiper motor, and stop it at the auto stop position.
2. Remove wiper arm from the vehicle.
3. Remove the cowl top cover. Refer to [EI-13, "COWL TOP"](#).
4. Remove 4 screws and remove wiper motor assembly from the vehicle.
5. Disconnect wiper motor connector.
6. Remove wiper link from wiper frame.



7. Remove wiper motor from wiper frame.



# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

## INSTALLATION

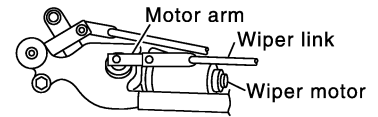
1. Connect wiper motor to connector. Turn the wiper switch ON to operate wiper motor, then turn the wiper switch OFF (auto stop).
2. Disconnect wiper motor connector.
3. Install wiper motor to the wiper frame.
4. Install wiper motor assembly to the vehicle.
5. Install wiper link to the wiper motor arm.
6. Connect wiper motor connector. Turn the wiper switch ON to operate the wiper motor, then turn wiper switch OFF (auto stop).
7. Rotate motor arm to the upper limit position.
8. Install wiper motor assembly to the vehicle.
9. Turn the wiper switch ON to operate the wiper motor, then turn wiper switch OFF (auto stop)
10. Install cowl top cover. Refer to [EI-13, "COWL TOP"](#) .
11. Install wiper arm to the vehicle.

### CAUTION:

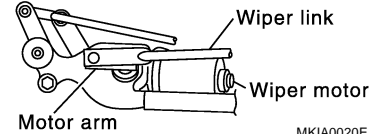
- Do not drop the wiper motor or cause it to contact other parts.
- Check the grease conditions of the motor arm and wiper link joint (at retainer). Apply grease if necessary.

### RHD models

Auto stop position



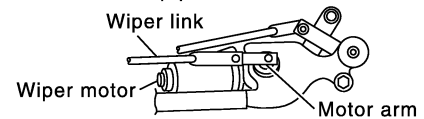
Upper limit position



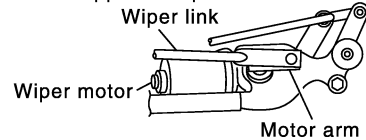
MKIA0020E

### LHD models

Auto stop position



Upper limit position

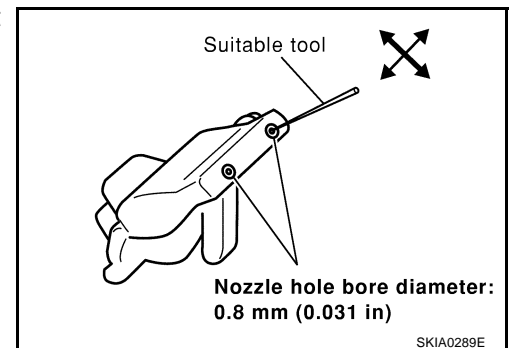


MKIA0021E

## Washer Nozzle Adjustment

Adjust washer nozzle with suitable tool as shown in the figure at right.

EKS0052E



SKIA0289E

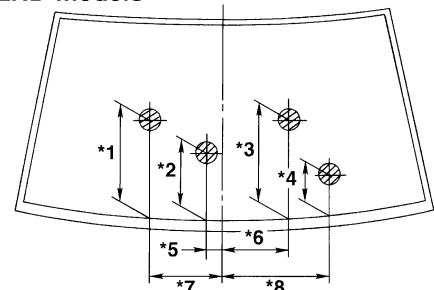
Unit: mm (in)

*1	385 (15.16)	*5	120 (4.72)
*2	245 (9.65)	*6	207 (8.15)
*3	314 (12.36)	*7	295 (11.61)
*4	212 (8.35)	*8	454 (17.87)

### NOTE:

- \*: The diameters of these circles are less than 80 mm (3.15 in).

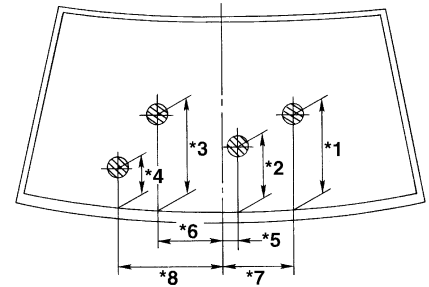
### LHD models



SEL544TD

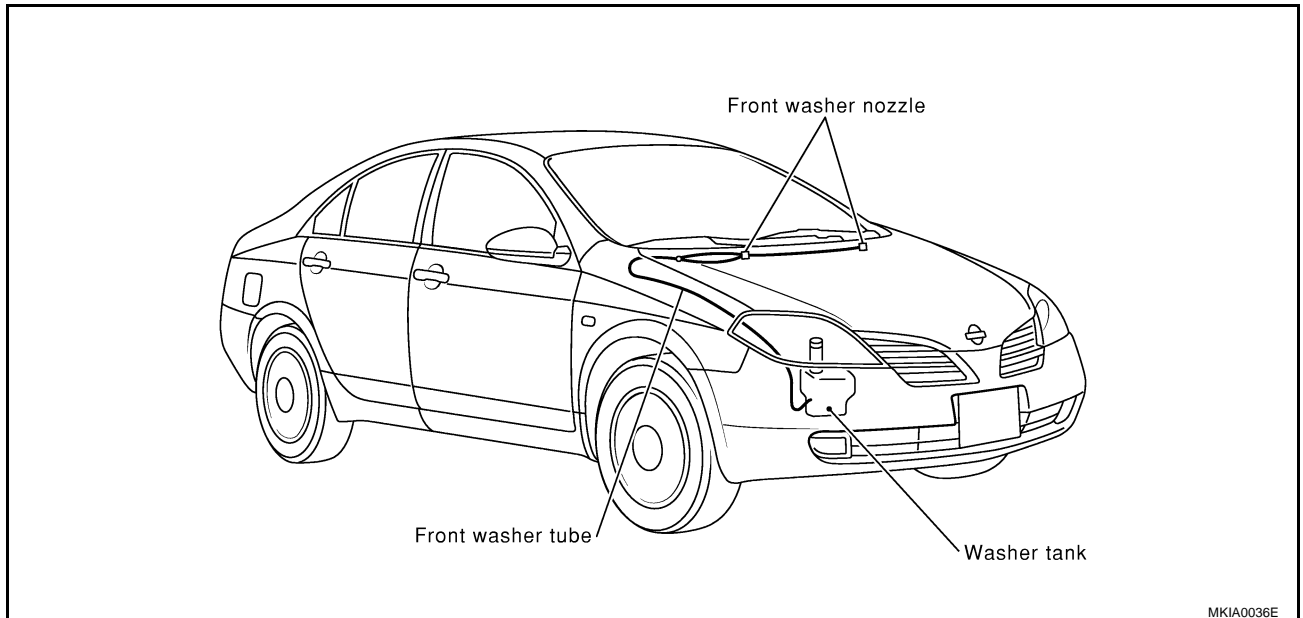
# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

RHD models



## Washer Tube Layout

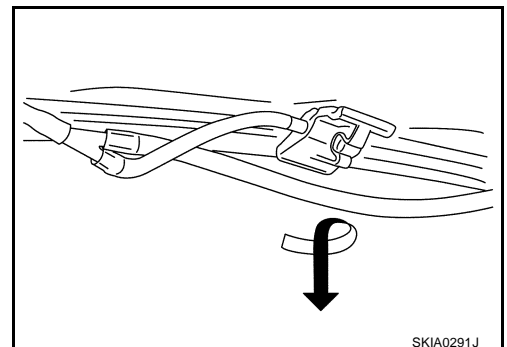
EKS0052F



## Removal and Installation for Washer Nozzle

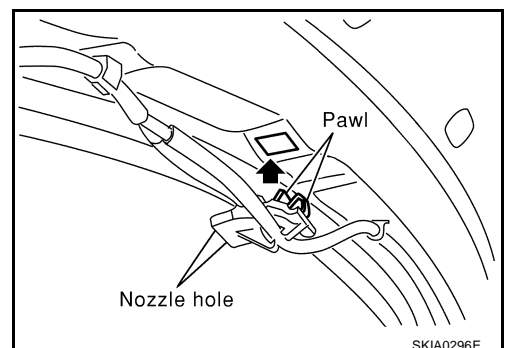
EKS0052G

- REMOVAL**
1. Push and turn washer nozzle pawl toward engine hood to pull out.



## INSTALLATION

1. After connecting washer hose, press hit nozzle at engine hood.
2. Adjust nozzle injection position.



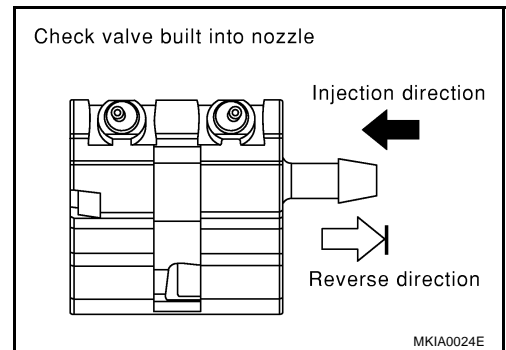
# FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

## Inspection for Washer Nozzle

### CHECK VALVE

EKS0052H

- Blow air in the injection direction, and check that air flows only one way. Make sure that the reverse direction (inhale) is not possible.

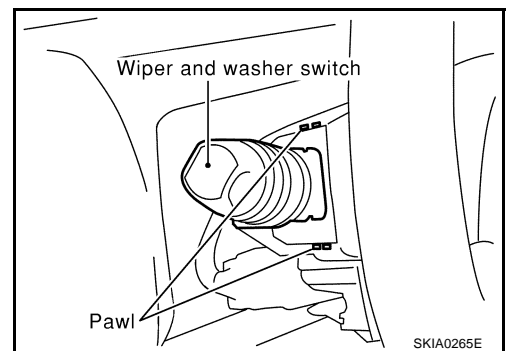


## Removal and Installation for Wiper and Washer Switch

### REMOVAL

EKS0052I

1. Remove steering column cover. Refer to [PS-10, "STEERING COLUMN"](#).
2. Remove wiper washer switch connector.
3. Push two pawl then remove wiper washer switch from the base.



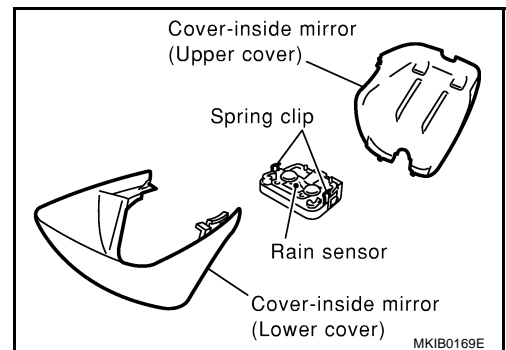
### INSTALLATION

Installation is in the reverse order of removal.

## Removal and Installation for Rain Sensor

EKS0052J

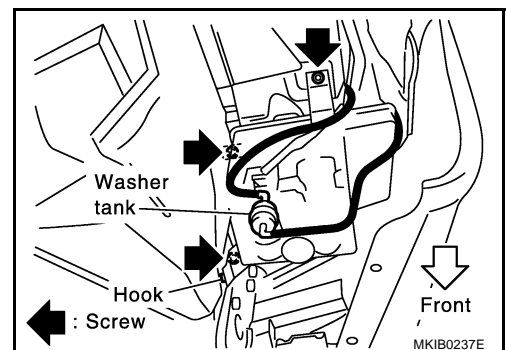
1. Remove the cover inside mirror.
2. Pull and remove spring clip of the rain sensor.
3. Remove the rain sensor and disconnect rain sensor connector.



## Removal and Installation for Washer Tank

EKS0052K

1. Pull out washer tank inlet.
2. Remove fender protector. Refer to [EI-14, "FENDER PROTECTOR"](#).
3. Remove washer pump connector.
4. Remove washer tank installation screw and pawl.






## FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

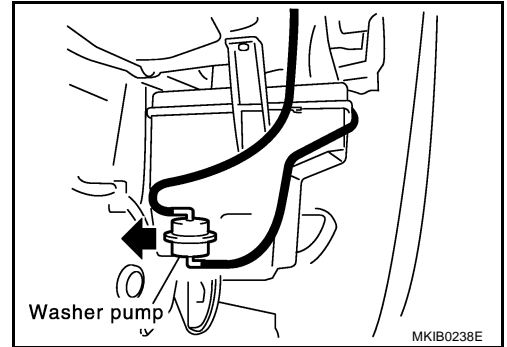
5. Remove washer hose, and remove the washer tank from the vehicle.

### CAUTION:

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

Washer tank installation screw

 : 3.8 - 5.1 N-m (0.39 - 0.52 kg-m, 34 - 45 in-lb)



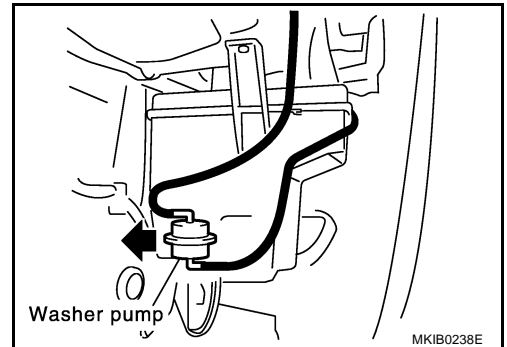
EKS0052L

### Removal and Installation for Washer Pump

1. Remove fender protector. Refer to [EI-14, "FENDER PROTECTOR"](#).
2. Remove washer pump connector and hose.
3. Pull out washer pump in the direction of the arrow in the figure, and remove the washer pump from the washer tank.

### CAUTION:

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



A  
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M

WW

## REAR WIPER AND WASHER SYSTEM

PFP:28710

### System Description

EKS004RU

#### WIPER OPERATION

The wiper switch is controlled by a lever built into the combination switch. There are two wiper switch positions:

- ON
- INT (Intermittent)

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

- through 10A fuse [No. 28, located in the fuse block (J/B)]
- to rear wiper motor terminal 2 and
- to rear wiper and washer switch terminal 23.

Ground is supplied to wiper and washer switch terminals 17 and 24 through body grounds E10 and E58.

#### WIPER OPERATION

When the wiper switch is placed in the ON position, ground is supplied

- through rear wiper and washer switch terminals 23 and 21
- to rear wiper motor terminal 3.

With power and ground supplied, the wiper motor operates.

#### AUTO STOP OPERATION

When the front wiper switch is turned OFF, the front wiper motor will continue to operate at low speed until wiper blades reach windshield base.

When wiper blades are not located at base of windshield with front wiper switch OFF and ignition switch "ON", power is supplied

- through 10A fuse [No. 28, located in the fuse block (J/B)]
- to wiper motor terminal 2.

Ground is also supplied

- through terminal 1 of the rear wiper and washer motor, and
- through body grounds B17, B24, B55 and D94.

When wiper arms reach base of windshield, rear motor terminals 3 and 1 are connected instead of terminals 2 and 1. Wiper motor will then stop wiper arms at STOP position.

#### INTERMITTENT OPERATION

The rear wiper motor operates the wiper arms one time at a set interval of approximately 25 seconds. This feature is controlled by the wiper amplifier (INT SW) combined with rear wiper and washer switch.

When the wiper switch is placed in the INT position, ground is supplied to wiper amplifier.

Then intermittent ground is supplied

- through wiper amplifier (GND and INT) and
- through terminal 21 of rear wiper and washer switch
- to rear wiper motor terminal 3.

The wiper motor operates at the set interval.

#### WASHER OPERATION

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

- through 15A fuse [No. 26, located in the fuse block (J/B)]
- to washer motor terminal 2.

When the lever is pulled to the WASH position, ground is supplied

- from body grounds E10 and E58
- through terminal 17 of the rear wiper and washer switch, and
- through terminal 18 of the wiper switch
- to front washer motor terminal 1.

With power and ground supplied, the washer motor operates.

REAR WIPER AND WASHER SYSTEM

When the lever is pulled to the WASH position for one second or more, the wiper motor operates at low speed for approximately 3 seconds to clean windshield. This feature is controlled by the wiper amplifier in the same manner as the intermittent operation.

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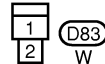
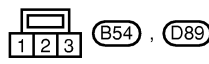
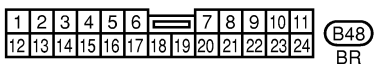
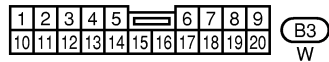
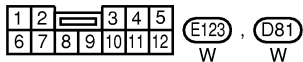
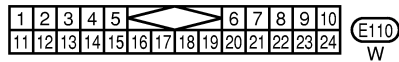
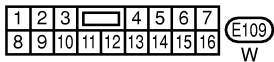
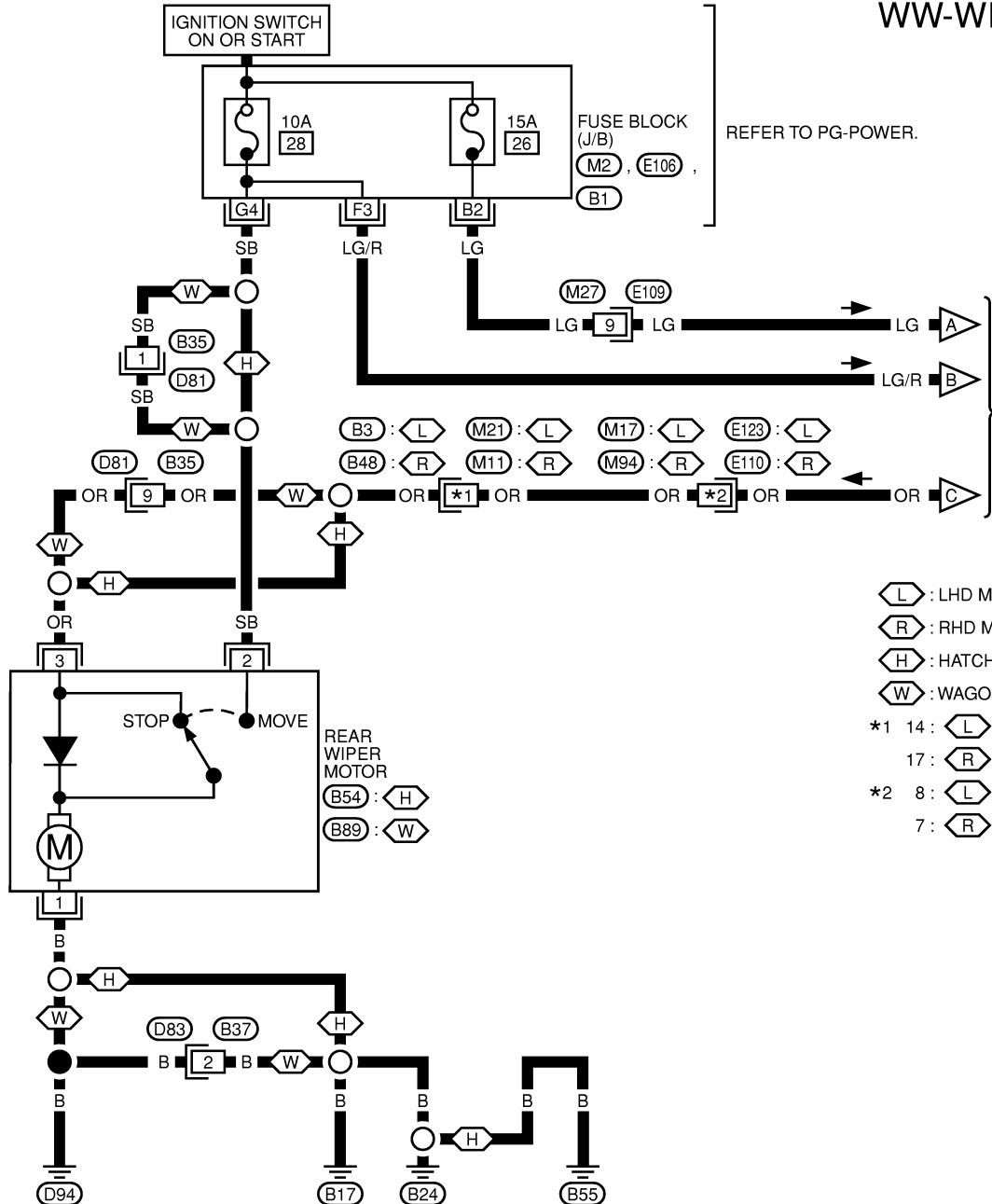
M

# REAR WIPER AND WASHER SYSTEM

## Wiring Diagram — WIP/R —

EKS003ZE

WW-WIP/R-01

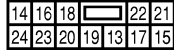
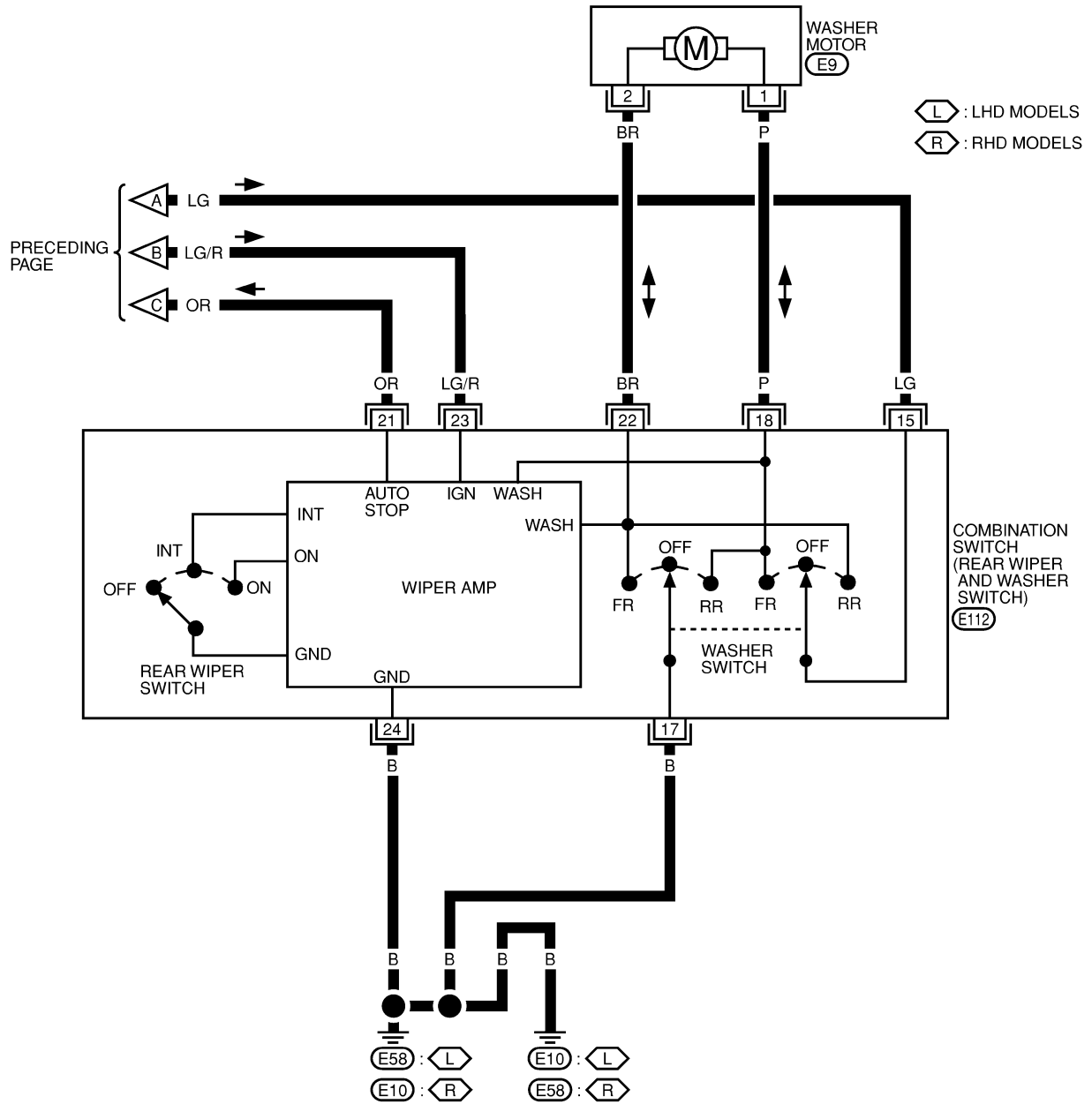


REFER TO THE FOLLOWING.

(M2), (E106), (B1) - FUSE BLOCK- JUNCTION BOX (J/B)

# REAR WIPER AND WASHER SYSTEM

WW-WIP/R-02



GY

# REAR WIPER AND WASHER SYSTEM

## Terminal and Reference Values for Combination Switch

EKS003ZF

TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION			DATA (DC Voltage)
			IGNI-TION SWITCH	CONDITION OR OPERATION		
21	OR	Wiper motor operation signal (ON)	ON	Wiper switch	OFF	Approx. 12
					ON	Approx. 0
22	BR	Washer switch signal	ON	Wiper switch	WASH	Approx. 0
					OFF	Approx. 12
23	LG/R	Wiper motor operation signal	ON	Wiper switch: INT		<div><div><div>(V)</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div>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## Trouble Diagnosis SYMPTOM CHART

EKS004S7

Symptom	Possible cause	Repair order
Rear wiper does not operate.	Power supply and ground circuit	Check power supply and ground circuit ( <a href="#">WW-38</a> ).
	Open or short circuit	Check harness for open or short ( <a href="#">WW-39</a> ).
	Wiper motor	Replace wiper motor.
	Front wiper and washer switch	Check front wiper and washer switch ( <a href="#">WW-46</a> ).
Auto stop wiper operation does not operate.	Rear wiper and washer switch	Check front wiper and washer switch ( <a href="#">WW-46</a> ).
Rear washer does not operate.	Open or short circuit	Check harness for open or short ( <a href="#">WW-40</a> ).
	Rear wiper and washer switch	Check front wiper and washer switch ( <a href="#">WW-46</a> ).
	Washer motor	Replace washer motor.

## POWER SUPPLY AND GROUND CIRCUIT CHECK

### 1. POWER SUPPLY CIRCUIT CHECK

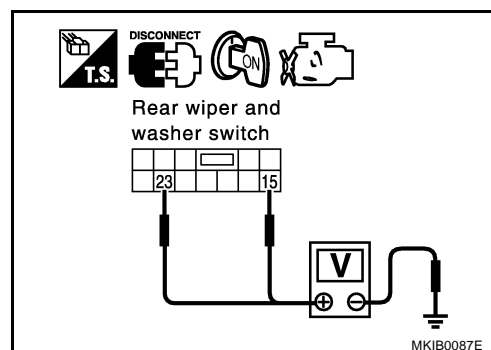
Terminals			Ignition switch position	
(+)			OFF	ON or ATSRT
Connector	Terminal (wire color)	(-)		
E112	15 (LG)	Ground	0V	Battery voltage
E112	23 (LG/R)	Ground	0V	Battery voltage

OK or NG?

OK >> GO TO 2.

NG >> Check the following.

- 10A fuse [No. 28, located in fuse block (J/B)]
- 15A fuse [No. 26, located in fuse block (J/B)]
- Harness for open or short between fuse and rear wiper motor or rear wiper and washer switch.



# REAR WIPER AND WASHER SYSTEM

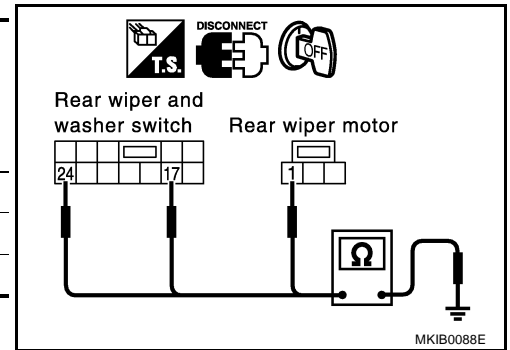
## 2. GROUND CIRCUIT CHECK

Terminals			Continuity
(+)		(-)	
Connector	Terminal (wire color)		
D89	1 (B)	Ground	Yes
E112	17 (B)	Ground	Yes
E112	24 (B)	Ground	Yes

OK or NG?

OK >> INSPECTION END

NG >> Harness for open ground circuit



## CHECK REAR WIPER CIRCUIT CHECK

### 1. CHECK HARNESS FOR OPEN OR SHORT

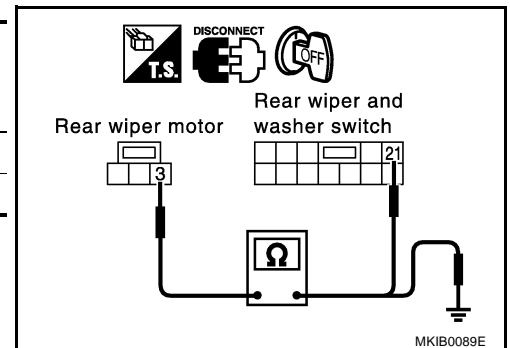
1. Turn ignition switch "OFF".
2. Disconnect rear wiper motor harness connector and rear wiper and washer switch harness connector.
3. Check the following.
  - Continuity between rear wiper motor harness connector D89 (Wagon) or B54 (Hatch back) terminal 3 (OR) and rear wiper and washer switch harness connector E112 terminal 21 (OR).
  - Continuity between front wiper motor harness connector D89 (Wagon) or B54 (Hatch back) terminal 3 (OR) and body ground.

Terminal				Continuity
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
D89	3 (OR)	E112	21 (OR)	Yes
D89	3 (OR)	Ground		No

OK or NG?

OK >> INSPECTION END

NG >> Repair or replace harness.



# REAR WIPER AND WASHER SYSTEM

## WASHER MOTOR CIRCUIT CHECK

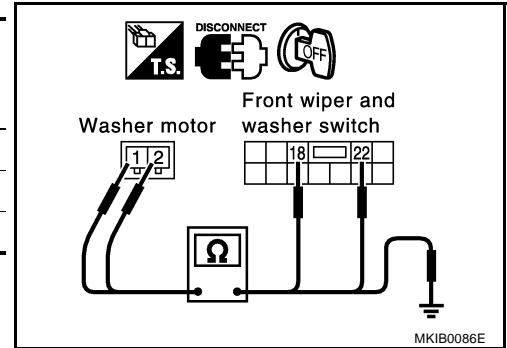
### 1. CHECK HARNESS FOR OPEN OR SHORT

1. Turn ignition switch "OFF".
2. Disconnect washer motor harness connector and rear wiper and washer switch harness connector.
3. Check the following.
  - Continuity between washer motor harness connector E9 terminal 1 (P) and front wiper and washer switch harness connector E112 terminal 18 (P).
  - Continuity between washer motor harness connector E9 terminal 2 (BR) and rear wiper and washer switch harness connector E112 terminal 22 (BR).
  - Continuity between washer motor harness connector E9 terminals 1 (P), 2 (BR) and body ground.

Terminal				Continuity
Connector	Terminal (wire color)	Connector	Terminal (wire color)	
E9	1 (P)	E112	18 (P)	Yes
E9	2 (BR)	E112	22 (P)	Yes
E9	1 (P), 2 (BR)	Ground		No

OK or NG?

- OK >> INSPECTION END  
NG >> Repair or replace harness.



## Removal and Installation for Rear Wiper Arms WIPER ARMS

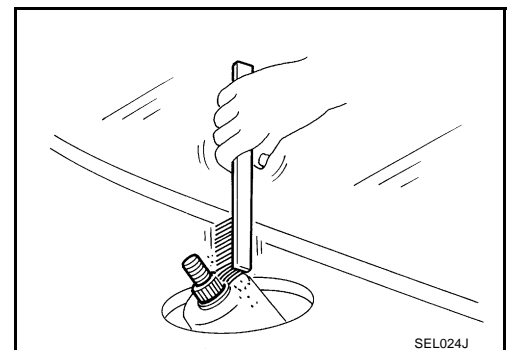
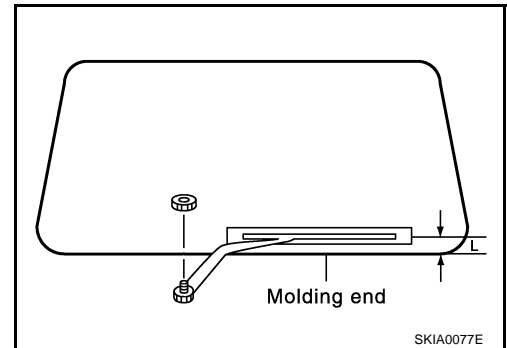
1. Turn on wiper switch to operate wiper motor and then turn it "OFF" (auto stop).
2. Lift the blade up and then set it down onto glass surface. Set the black center to clearance "L" immediately before tightening the nut.
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".
4. Ensure that wiper blades stop on the lowest heat wire.
  - **Center to clearance "L".**

**"L" : 48.5 - 63.5 mm (1.909 - 2.5 in)**

- **Tighten windshield wiper arm nuts to specified torque.**

 **: 12.7 - 17.6 N-m (1.3 - 1.8 kg-m, 10 - 13 ft-lb)**

- **Before reinstalling wiper arm, clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.**

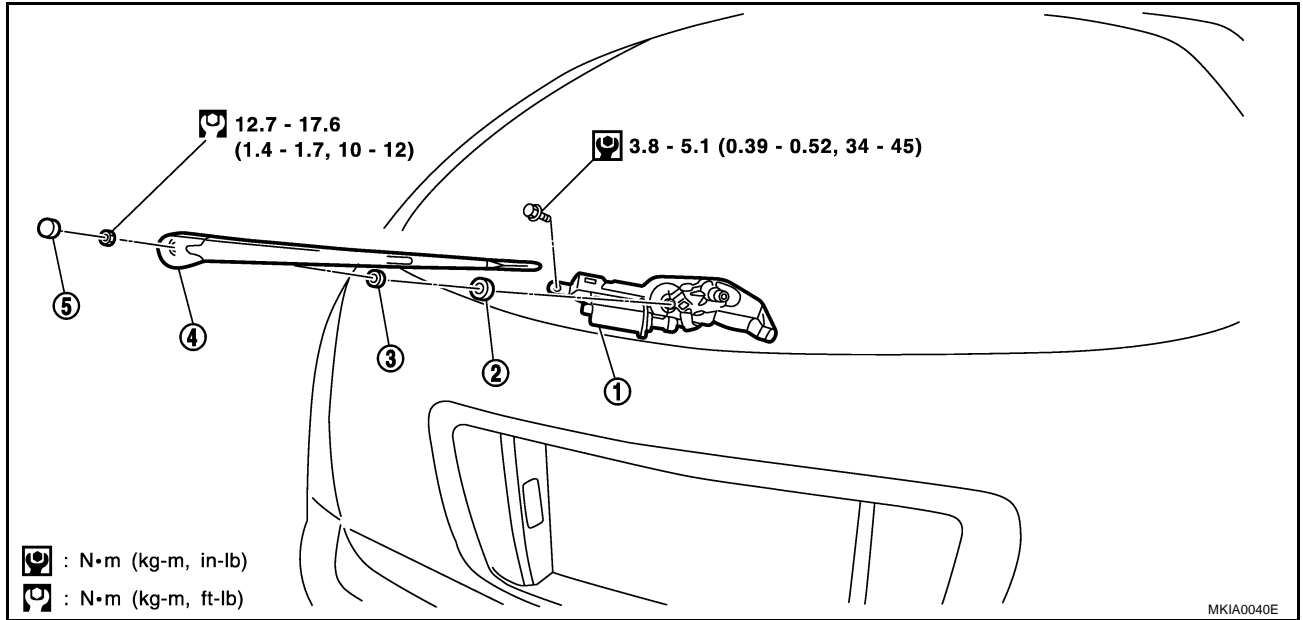




# REAR WIPER AND WASHER SYSTEM

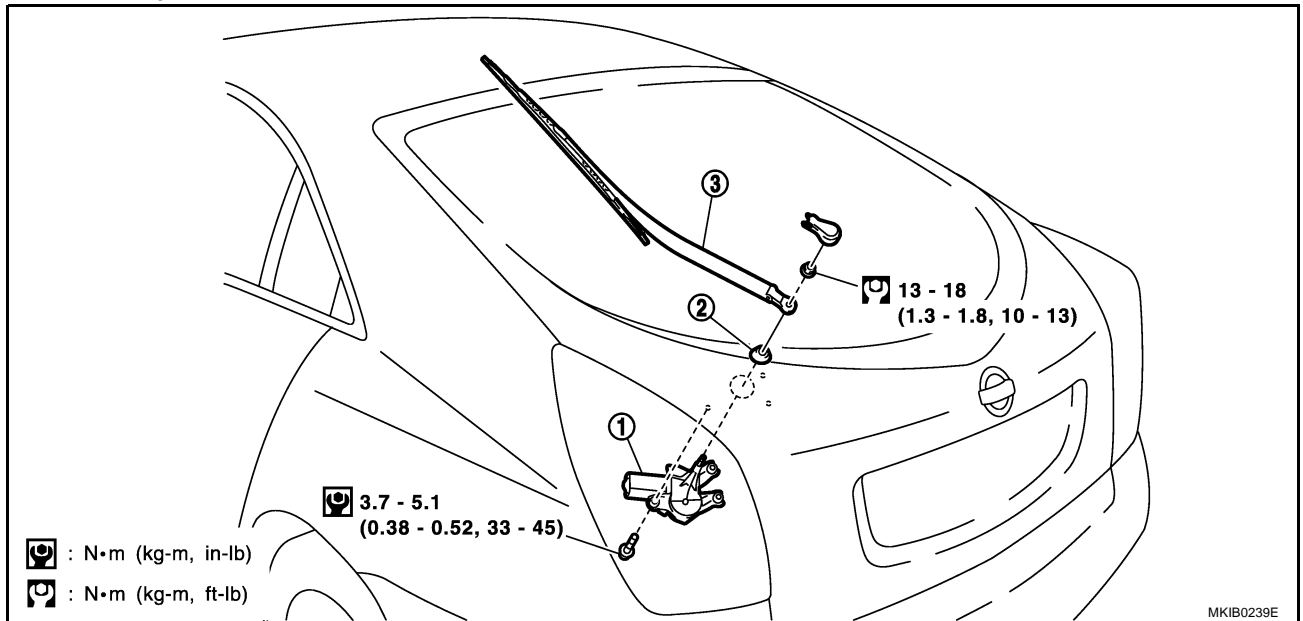
## Removal and Installation for Wiper Motor and Linkage (WAGON)

EKS004RW



1. Wiper motor
2. Rubber
3. Nut cover
4. Wiper arm
5. Wiper blade

## (HATCH BACK)

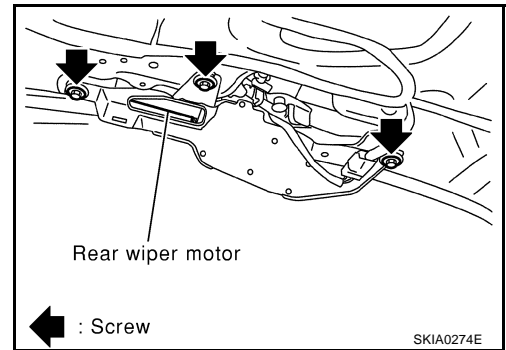


1. Wiper motor
2. Rubber
3. Wiper arm

# REAR WIPER AND WASHER SYSTEM

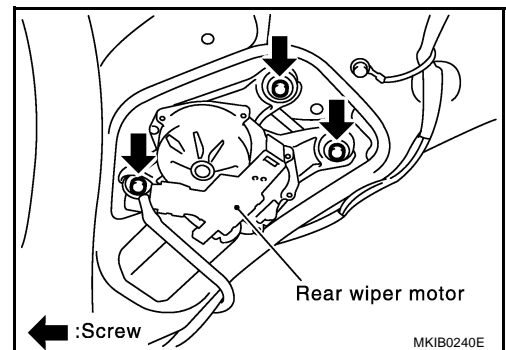
## REMOVAL (WAGON)

1. Remove the back door finisher. Refer to [EI-24, "BACK DOOR TRIM"](#) .
2. Operate the wiper motor, and stop it at the auto stop position.
3. Disconnect wiper motor connector.
4. Remove wiper arm from the vehicle.
5. Remove wiper motor from the vehicle.
6. Remove rubber from the vehicle.



## REMOVAL (HATCH BACK)

1. Remove the back door finisher. Refer to [EI-24, "BACK DOOR TRIM"](#) .
2. Operate the wiper motor, and stop it at the auto stop position.
3. Disconnect wiper motor connector.
4. Remove wiper arm from the vehicle.
5. Remove wiper motor from the vehicle.
6. Remove rubber from the vehicle.




## INSTALLATION

1. Install rubber to the vehicle.
  2. Install wiper motor to the vehicle.
  3. Connect wiper motor to connector. Turn the wiper switch ON to operate wiper motor, then turn the wiper switch OFF (auto stop).
  4. Install wiper arm to the vehicle.
  5. Install back door finisher. Refer to [EI-24, "BACK DOOR TRIM"](#) .
- Tighten windshield wiper arm nuts to specified torque.

 : 12.7 - 17.6 N-m (1.3 - 1.8 kg-m, 10 - 13 ft-lb)

- Tighten windshield wiper motor nuts to specified torque.

 : 3.8 - 5.1 N-m (0.39 - 0.52 kg-m, 34 - 45 in-lb)

## 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 (at retainer). Apply grease if necessary.

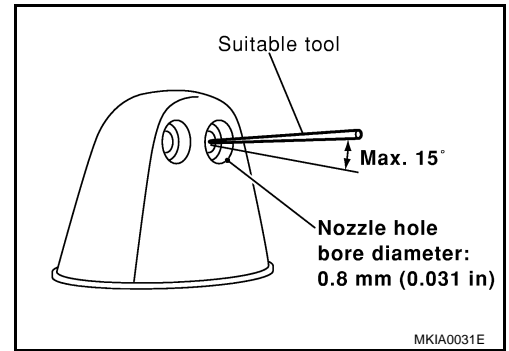
# REAR WIPER AND WASHER SYSTEM

## Washer Nozzle Adjustment

EKS004RX

- Adjust washer nozzle with suitable tool as shown in the figure at right.

**Adjustable range :  $\pm 15^\circ$  (In any direction)**

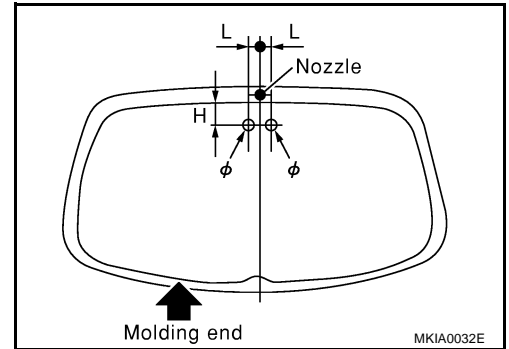


## (WAGON)

Unit: mm (in)

*H	113 (4.45)
*L	22.7 (0.894)

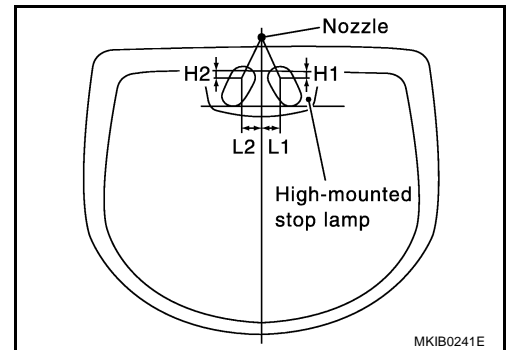
\*: The diameter of this circle is less than 30 mm (1.18 in).



## (HATCH BACK)

Unit: mm (in)

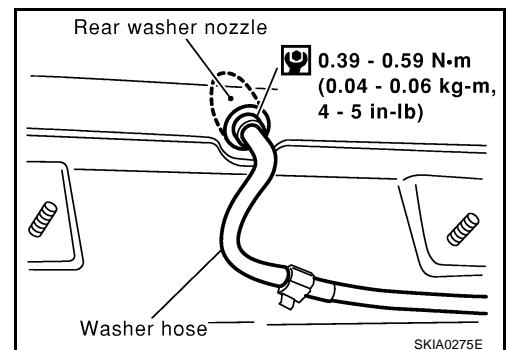
H1	16 (0.63)
H2	20 (0.79)
L1	65 (2.56)
L2	69 (2.72)



## Removal and Installation for Rear Washer Nozzle

EKS004RY

- Remove washer hose from washer nozzle.
- Remove washer nozzle installation nut and remove washer nozzle.



## REAR WIPER AND WASHER SYSTEM

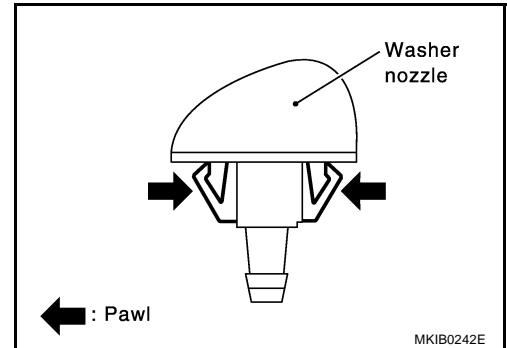
### REMOVAL (HATCH BACK)

1. Push washer nozzle pawl toward to pullout.

#### NOTE:

When removing or installing the washer nozzle, carerully handle it to keep avoid damage.

2. Remove washer hose from washer nozzle.



### INSTALLATION

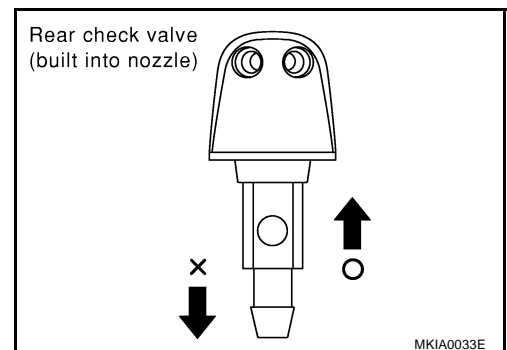
1. Installation is in the reverse order of removal.
2. Adjust nozzle injection position.

### Inspection for Washer Nozzle

#### CHECK VALVE

- Blow air in the injection direction, and check that air flows only one way. Make sure that the reverse direction (inhale) is not possible.

EKS004RZ



### Removal and Installation for Wiper and Washer Switch

EKS004S0

Refer to [WW-15, "Removal and Installation for Wiper and Washer Switch"](#) .

### Removal and Installation for Washer Tank

EKS004S1

Refer to [WW-16, "Removal and Installation for Washer Tank"](#) .

### Removal and Installation for Washer Pump

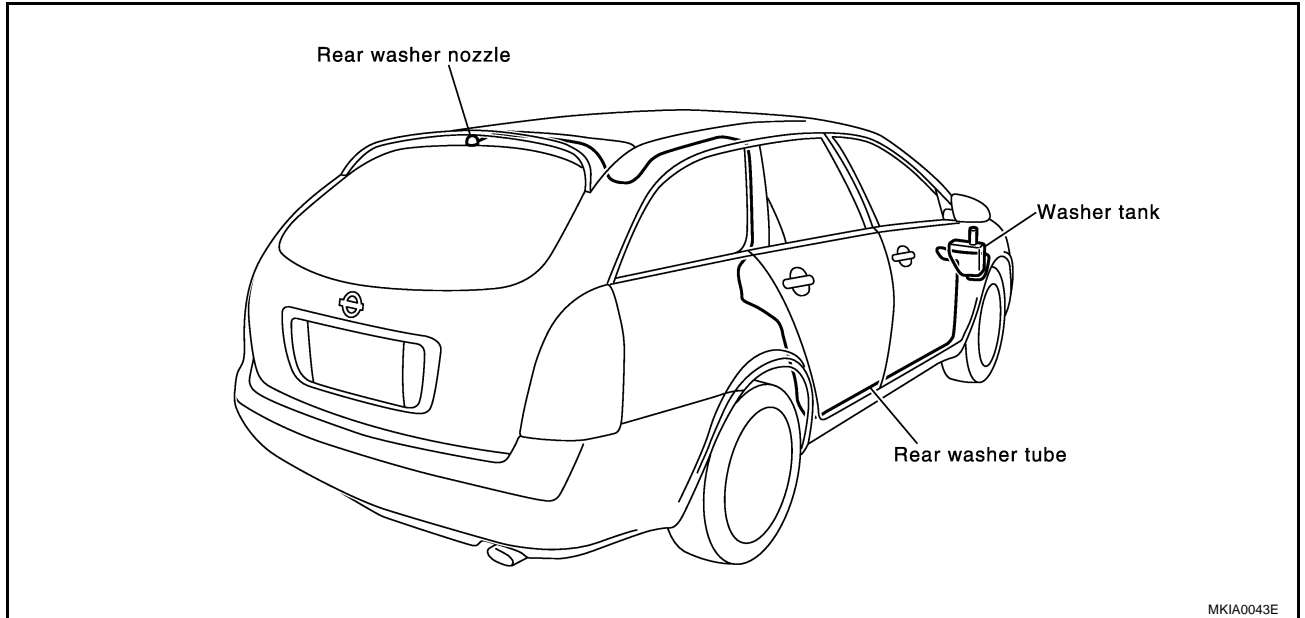
EKS004S2

Refer to [WW-16, "Removal and Installation for Washer Pump"](#) .

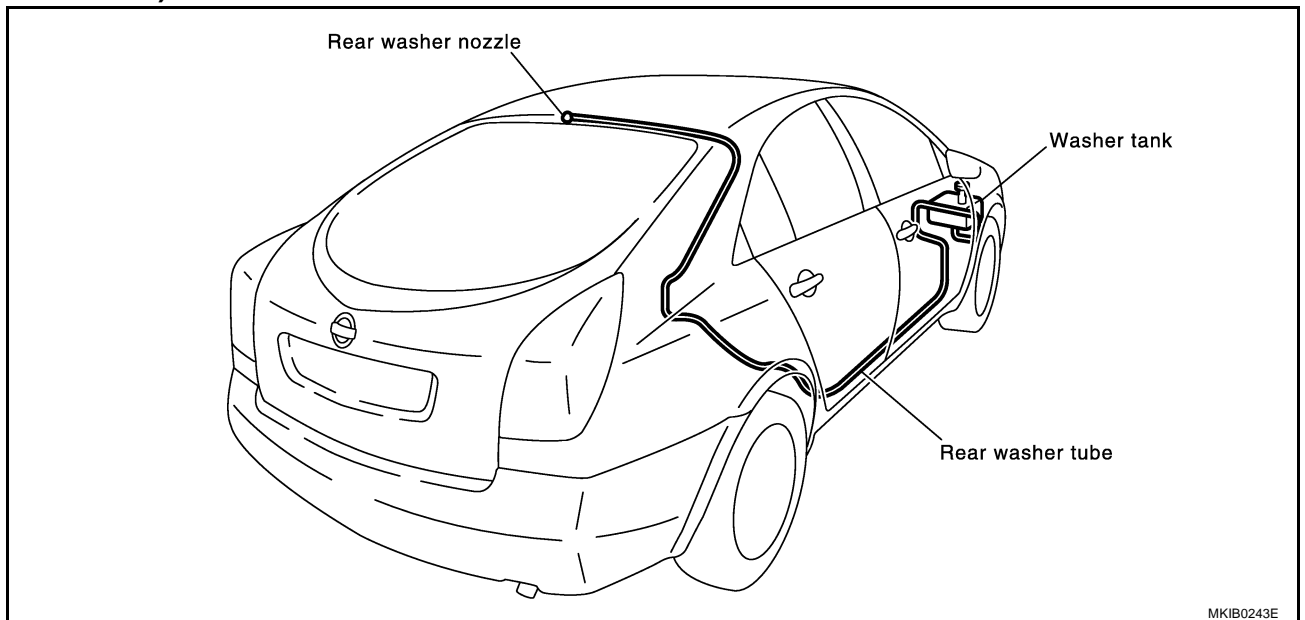
# REAR WIPER AND WASHER SYSTEM

## Washer Tube Layout (WAGON)

EKS004S3



## (HATCH BACK)



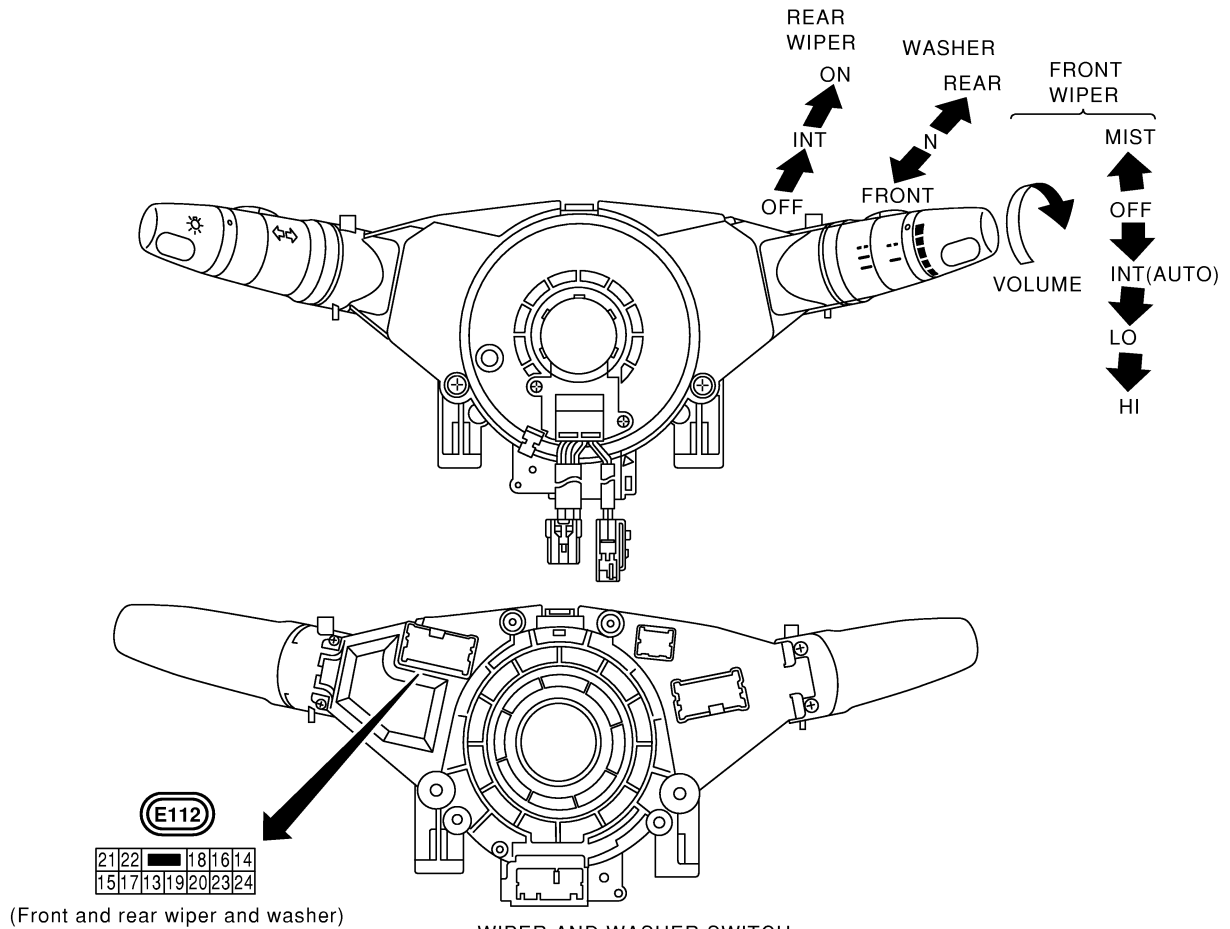
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# COMBINATION SWITCH

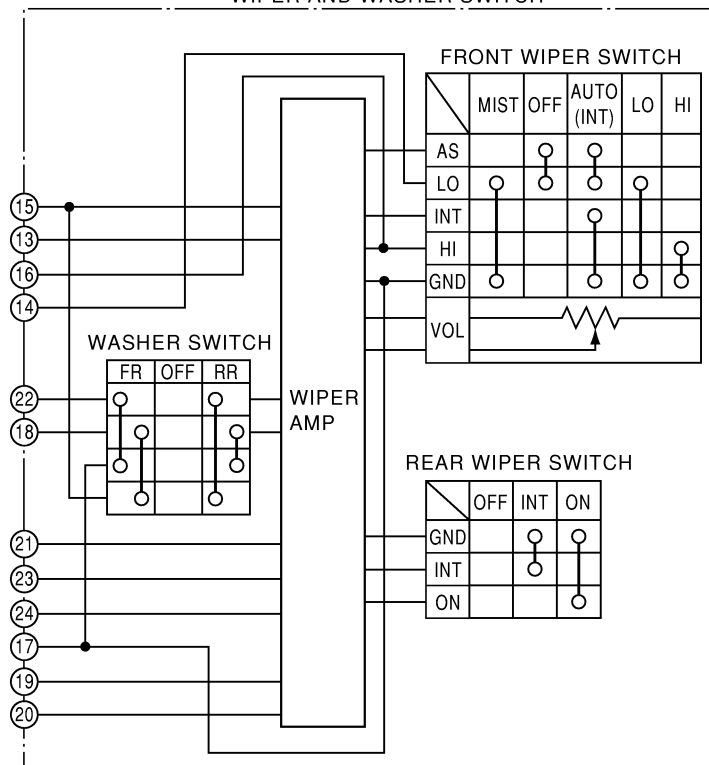
## COMBINATION SWITCH Switch Circuit Inspection

PFP:25567

EKS00540



WIPER AND WASHER SWITCH



MKWA0358E

HEADLAMP WASHER

PFP:28620

System Description

EKS003ZP

The headlamp washer is controlled by the smart entrance control unit and ground supplied, the headlamp washer motor operates.

Power is supplied at all times.

- through 30A fusible link (letter **E** , located in fuse and fusible link box)
- to headlamp washer motor terminal 2, and
- through 10A fuse (No. 32, located in fuse and fusible link box)
- to lighting switch terminal 11 (without daytime light control system)
- to daytime light control unit terminal 1 (with daytime light control system)
- through 10A fuse [No. 10, located in fuse block (J/B)]
- to smart entrance control unit terminal 29.

Ground is supplied to smart entrance control unit terminal 53 through body grounds M16, M50, M70 and F115. When headlamp washer switch is pushed during lighting switch is in 1ST or 2ND position, ground is supplied

- to smart entrance control unit terminal 24
- through headlamp washer switch and body grounds E10 and E58, and
- to headlamp washer motor terminal 1
- through smart entrance control unit terminal 62.

With ignition switch in the ON or START position and lighting switch is in 1ST or 2ND position, power is supplied, the headlamp washer motor operates.

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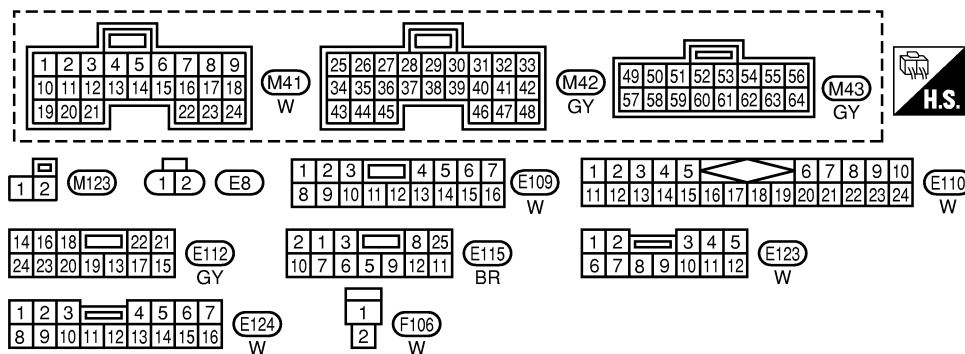
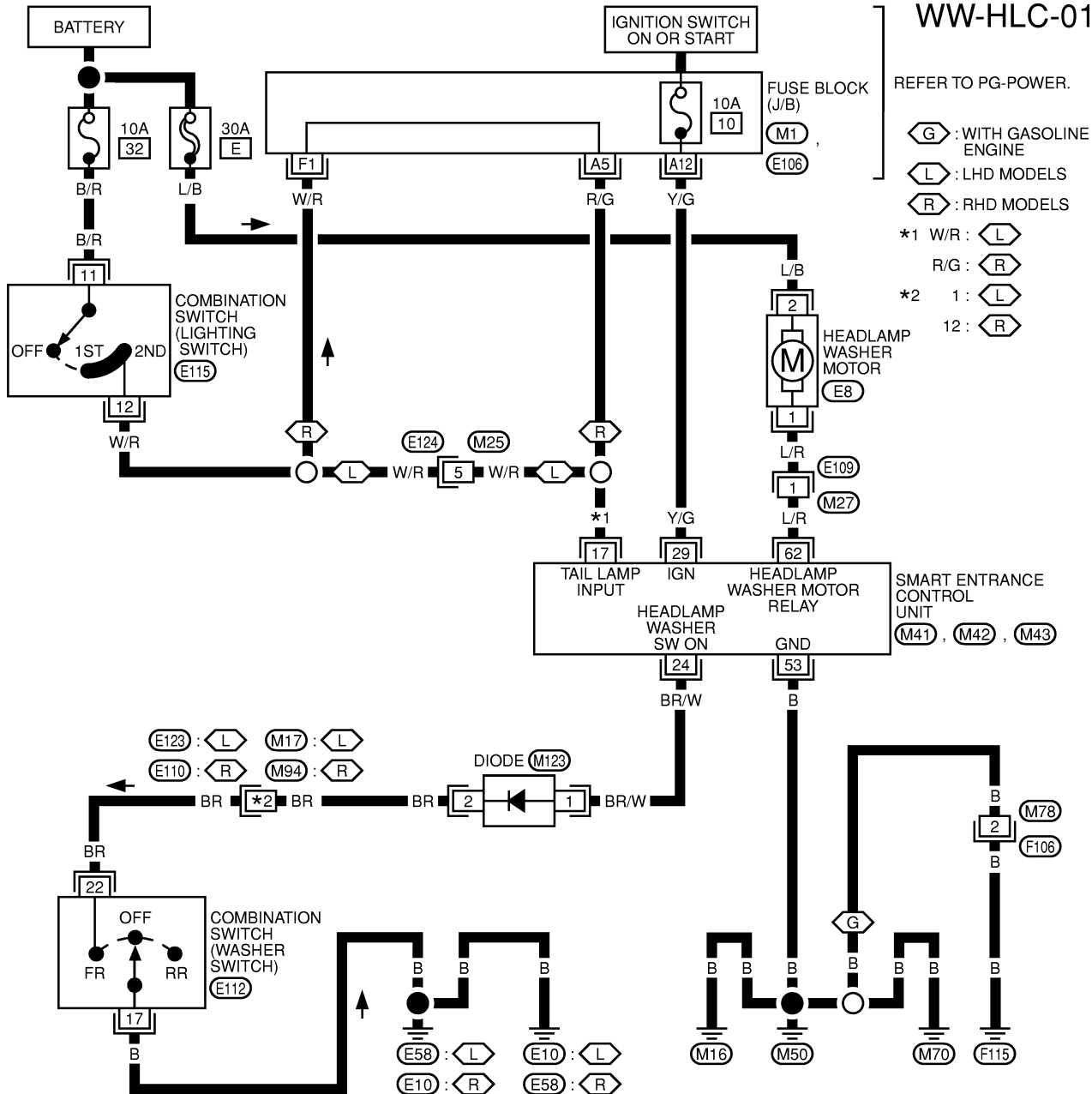
M

# HEADLAMP WASHER

## Wiring Diagram —HLC—

EKS003ZQ

WW-HLC-01



REFER TO THE FOLLOWING.  
 (M1, E106) - FUSE BLOCK-JUNCTION BOX (J/B)



MKWA0517E

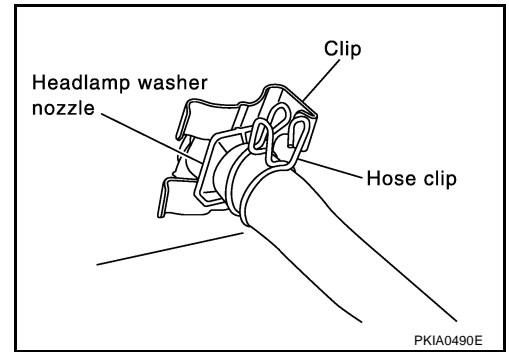


# HEADLAMP WASHER

## Removal and Installation for Washer Nozzle REMOVAL

EKS003ZR

1. Remove front bumper. Refer to [EI-7, "FRONT BUMPER"](#)
2. Remove hose clip and washer nozzle metal clip.
3. Remove washer nozzle from front bumper.



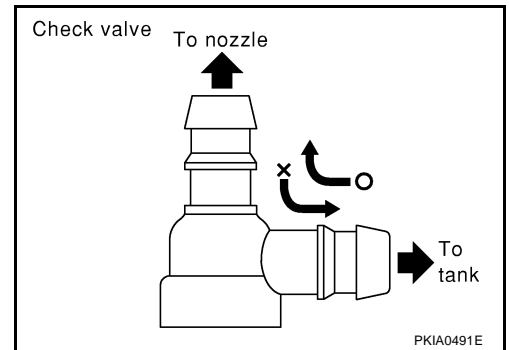
## INSTALLATION

Installation is in the reverse order of removal.

## Inspection for Washer Nozzle CHECK VALVE

EKS003ZS

- Blow air in the injection direction, and check that air flows only one way. Make sure that the reverse direction is not possible.



## Removal and Installation for Washer Tank

Refer to [WW-16, "Removal and Installation for Washer Tank"](#) ,

## Removal and Installation for Washer Pump

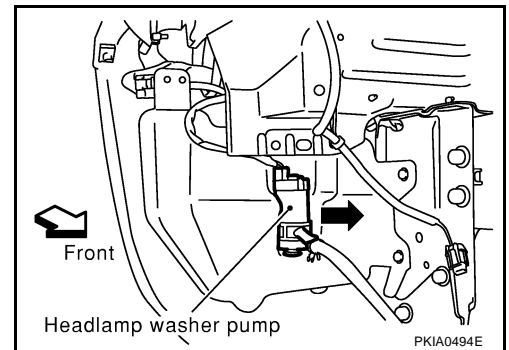
EKS003ZT

1. Remove front bumper. Refer to [EI-7, "FRONT BUMPER"](#)
2. Remove washer pump connector and hose.
3. Pull out washer pump in the direction of the arrow in the figure, and remove the washer pump from the washer tank.

### CAUTION:

When installing washer pump, there should be no packing twist, etc.

EKS003ZU



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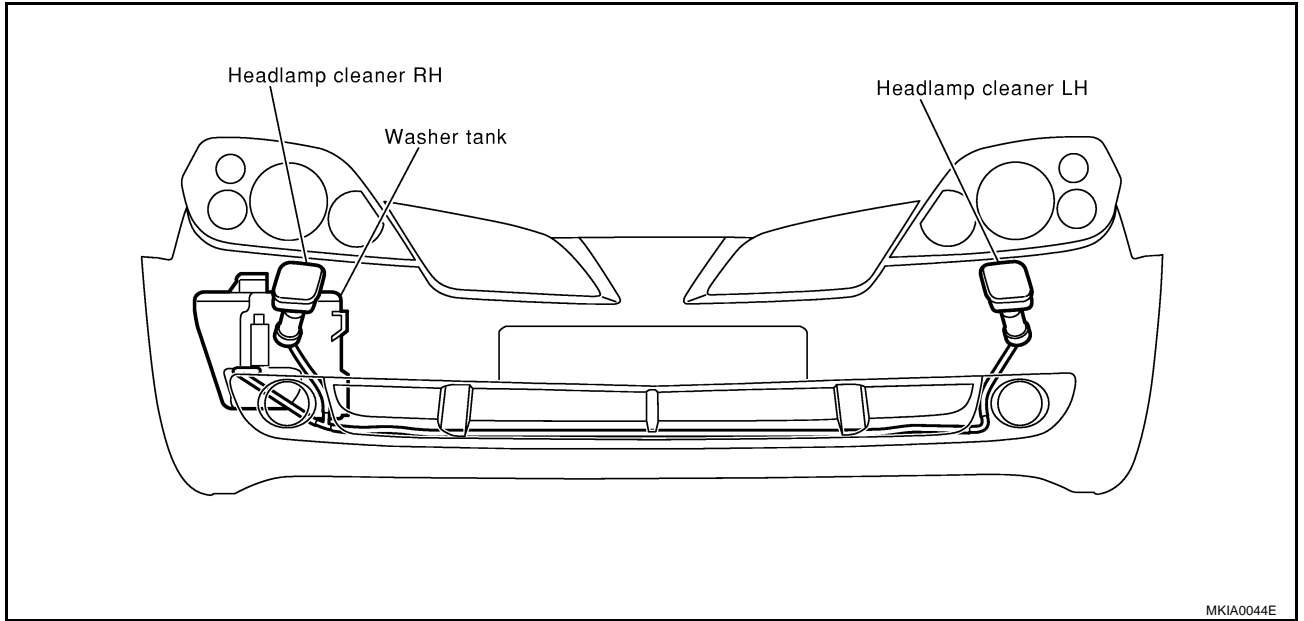
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M

# HEADLAMP WASHER

## Washer Tube Layout

EKS003ZV



HORN

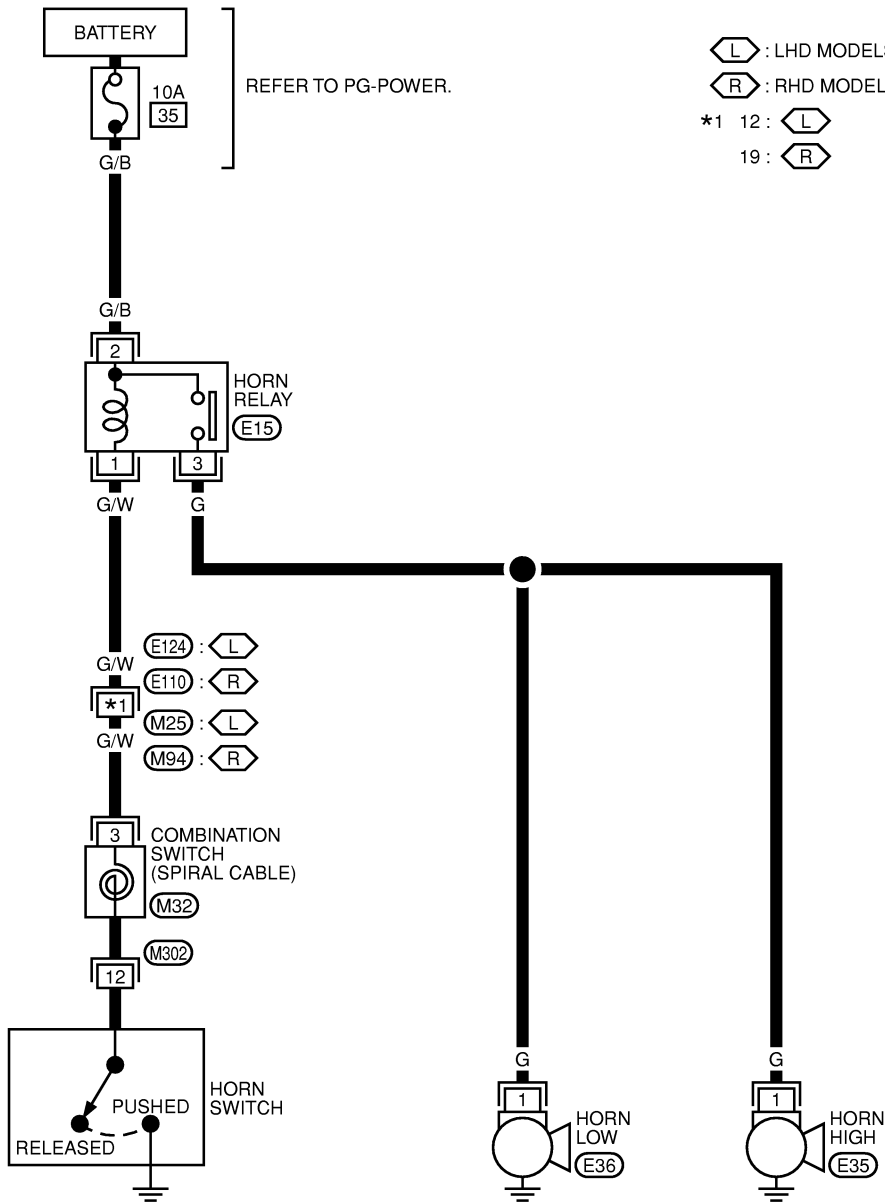
HORN

PFP:25610

Wiring Diagram — HORN —

EKS003ZW

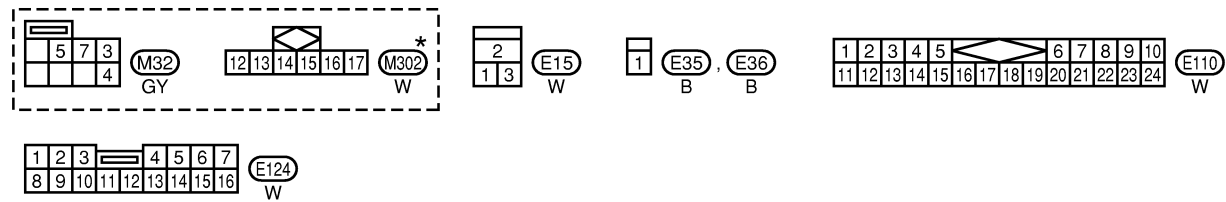
WW-HORN-01



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∗: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

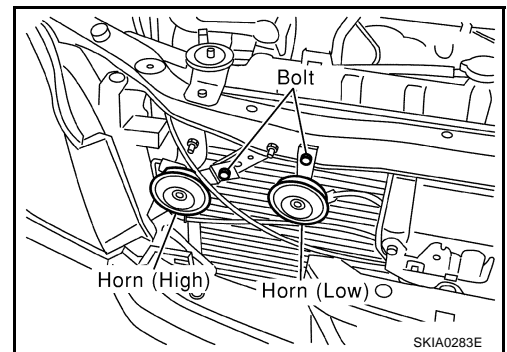
# HORN

## Removal and Installation

### REMOVAL

1. Remove the front grille. Refer to [EI-12, "FRONT GRILL"](#) .
2. Disconnect horn connector.
3. Remove horn.

EKS003ZX



### INSTALLATION

Tighten horn bolt to specified torque.

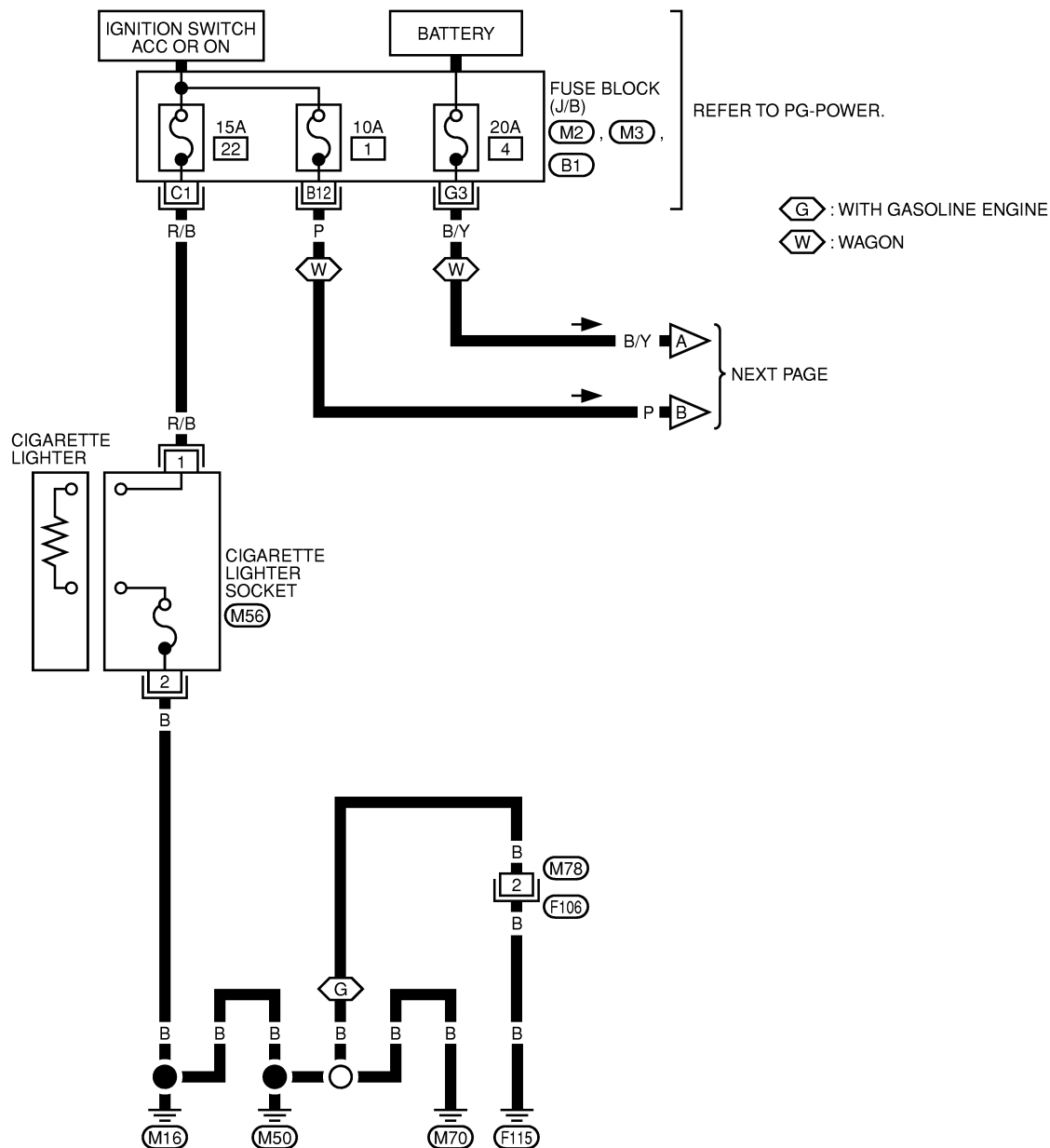
**Horn bolt : 16 - 18 N·m (1.6 - 1.8 kg-m, 12 - 13 ft-lb)**

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## PFP:35330

## EKS003ZY

WW



REFER TO THE FOLLOWING.

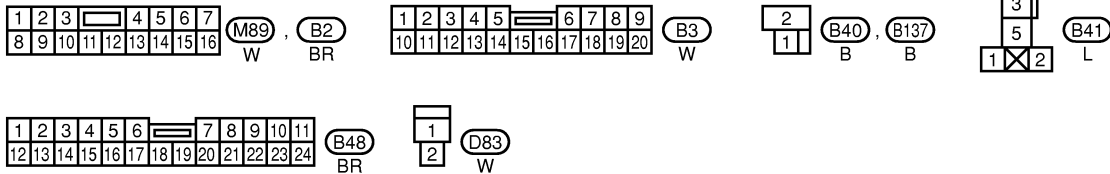
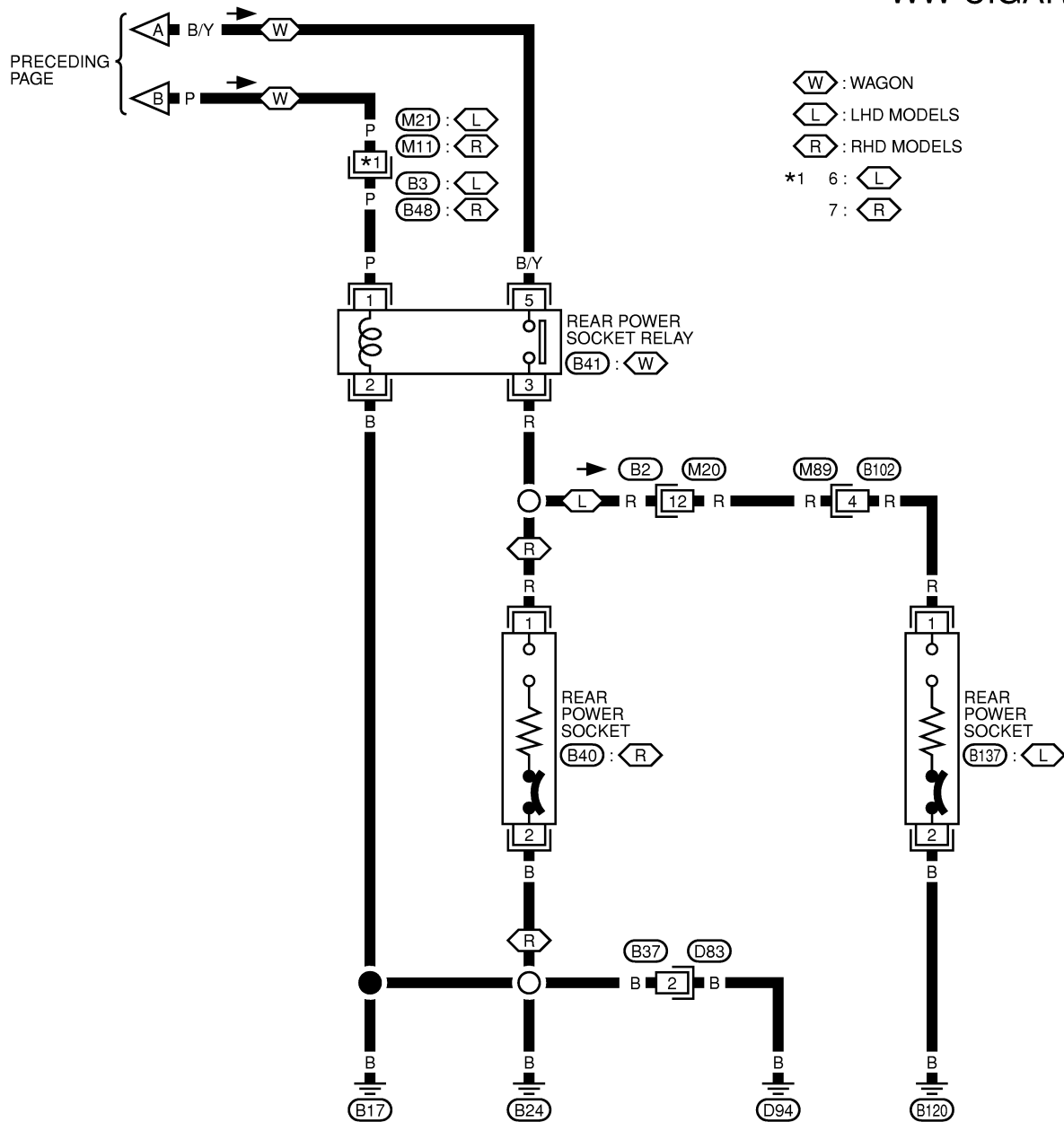
(M2), (M3), (B1) - FUSE BLOCK-JUNCTION BOX (J/B)

# CIGARETTE LIGHTER

## Wiring Diagram —POWER SOCKET—

EKS005LM

WW-CIGAR-02



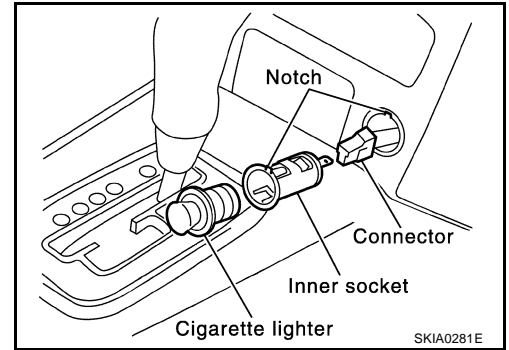
MKWA0520E

# CIGARETTE LIGHTER

## Removal and Installation for Cigarette lighter

### REMOVAL

1. Remove ashtray from instrument lower center panel. Refer to [AV-45, "Removal and Installation of Audio Unit"](#) .
2. Remove the cigarette lighter assembly.



3. Disconnect cigarette lighter connector, and remove cigarette lighter ring and socket.

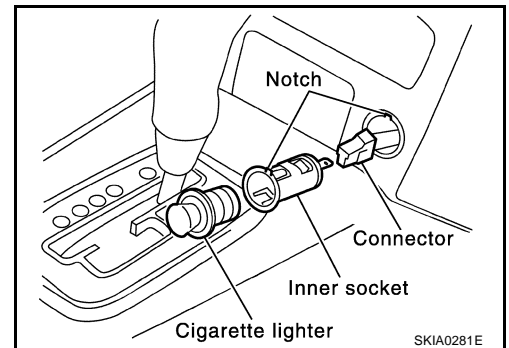
### INSTALLATION

Install in the reverse order of removal aligning notches of cigarette lighter ring and instrument lower center panel.

## Removal and Installation for Front Power Socket

### REMOVAL

1. Remove the Pocket. Refer to [IP-5, "INSTRUMENT LOWER COVER"](#) .
2. Disconnect power socket connector.
3. Pull out inner socket from inner case.



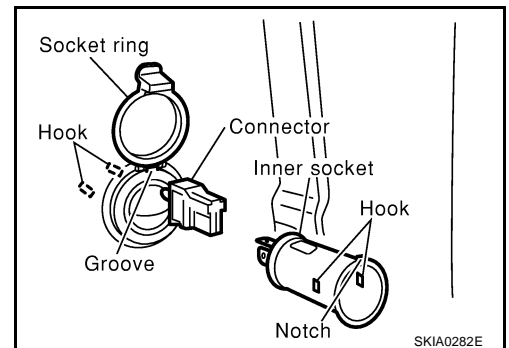
### INSTALLATION

Install in the reverse order of removal aligning notches of power socket and inner case.

## Removal and Installation for Rear Power Socket

### REMOVAL

1. Remove luggage side lower finisher. Refer to [IP-6, "INSTRUMENT LOWER PANEL"](#) .
2. Disconnect power socket connector.
3. Pull out inner socket from luggage side lower finisher.



### INSTALLATION

Install in the reverse order of removal aligning notches of power socket and installation hole.

## CIGARETTE LIGHTER

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