

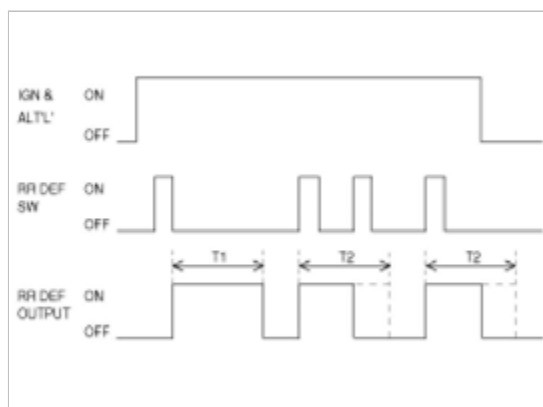
| Terminal | 2 | 3 | 1 | 4 |
|--------------|---|---|---|---|
| Power | | | | |
| Disconnected | ○ | ○ | | |
| Connected | ○ | + | ○ | ○ |

Body Electrical System > Rear Glass Defogger > Rear Glass Defogger Timer > Repair procedures

Inspection

While operating the components, check whether the operations are normal as shown in the timing chart.

1. Once ALT "L" is ON, if the defogger is switched ON, the defogger will stay ON for 20 minutes duration.
2. If defogger switch is pressed again (see Step 1), or if ignition is switched OFF, the defogger will shut OFF.

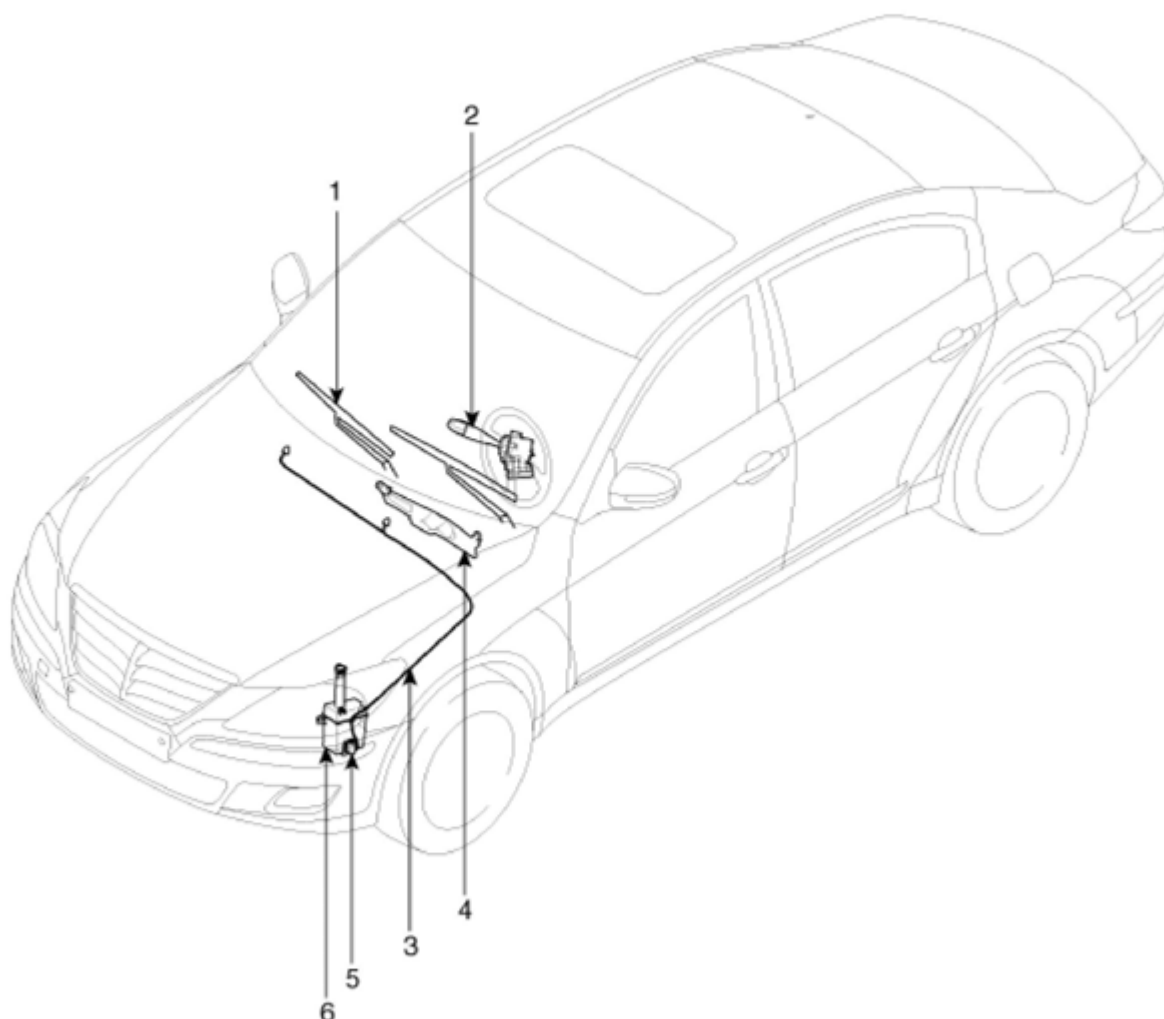


T1 : 20 ± 1 min.

T2 : MAX 20 ± 1 min.

Body Electrical System > Windshield Wiper/Washer > Components and Components Location

Component Location



- | | |
|--|---|
| 1. Windshield wiper arm & blade 2. Wiper & washer switch 3. Windshield washer hose | 4. Windshield wiper motor & linkage 5. Washer motor 6. Washer reservoir |
|--|---|

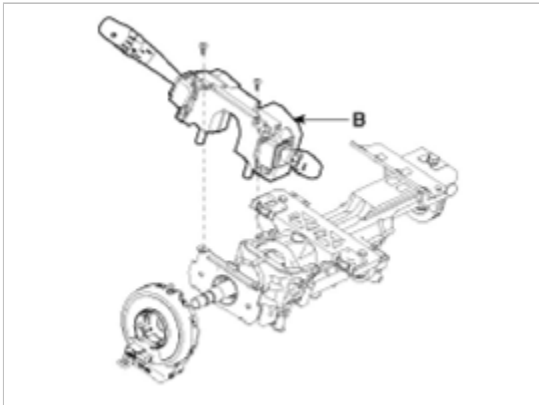
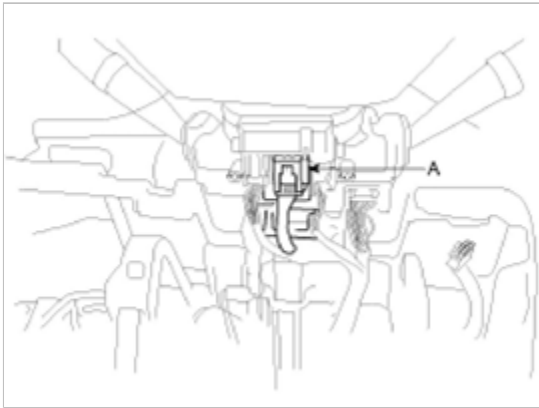
Body Electrical System > Windshield Wiper/Washer > Windshield Wiper-Washer Switch > Repair procedures

Removal

1. Remove the steering column upper and lower shrouds (A) after removing 3 screws.



2. Remove the multi function switch assembly (A) after disconnecting the connector and removing the screws (2EA).



Installation

1. Install the multi function switch assembly after connecting the connectors.
2. Install the steering column upper and lower shrouds.

Inspection

1. Check BCM input/output specification of windshield wiper/washer switch using the scan tool. If the specification is abnormal, replace the windshield deicer switch module.

| |
|--|
| 1. HYUNDAI VEHICLE DIAGNOSIS ▼ |
| MODEL : GENESIS |
| 04. SRS-AIRBAG 05. FULL AUTO AIR/COM. 06. ELEC.POWER STEERING 07. ELEC.CONTROL SUSPENSION 08. ELEC.PARKING BRAKE 09. AUTO HEAD LEVELING 10. SMART CRUISE CONTROL 11. BODY CONTROL MODULE |

| |
|--|
| 1. HYUNDAI VEHICLE DIAGNOSIS ▼ |
| MODEL : GENESIS |
| SYSTEM : BODY CONTROL MODULE |
| 01. IPM(IN PANEL MODULE) -PIC 02. IPM(IN PANEL MODULE) +PIC 03. FPM(FRONT AREA MODULE) 04. DDM(POWER WINDOW MAIN) 05. ADM(POWER WINDOW ASSIST) 06. CLU(CLUSTER) 07. MFSW(MULTIFUNCTION SW) 08. PSM(POWER SEAT) |

2. Select option "Input/output monitoring".

| |
|--|
| 1. HYUNDAI VEHICLE DIAGNOSIS |
| MODEL : GENESIS |
| SYSTEM : BODY CONTROL MODULE |
| MFSW(MULTIFUNCTION SW) |
| 01. DIAGNOSTIC TROUBLE CODES 02. INPUT/OUTPUT MONITORING 03. FLIGHT RECORD 04. SIMU-SCAN 05. IDENTIFICATION CHECK 06. DATA SETUP(UNIT COMV.) |

| |
|--|
| . INPUT/OUTPUT MONITORING |
| 01. POWER 02. LAMP SWITCH 03. WIPER SWITCH 04. REMOTE CONTROL SWITCH |

| 1.11 CURRENT DATA | | 01/08 |
|-------------------|-----------|--------|
| WASHER SW | 1061OFF | ▲ ▼ |
| WIPER INT SW | 3546OFF | |
| WIPER LOW SW | 3418OFF | |
| WIPER HIGH SW | 3547OFF | |
| WIPER MIST SW | 3548OFF | |
| WIPER AUTO SW | 1870OFF | |
| WIPER SW | 3549ON | |
| WIPER INT. MODE | 0483STEP1 | |
| FIX | SCRN | FULL |
| PART | GRPH | HELP |

| 1.11 CURRENT DATA | | 07/08 |
|-------------------|-----------|--------|
| WIPER LOW SW | 3418OFF | ▲ ▼ |
| WIPER HIGH SW | 3548OFF | |
| WIPER MIST SW | 3549OFF | |
| WIPER AUTO SW | 1872OFF | |
| WIPER SW | 1874ON | |
| WIPER INT. MODE | 1896STEP1 | |
| WASHER SW | 3549OFF | |
| WIPER INT SW | 1872OFF | |
| FIX | SCRN | FULL |
| PART | GRPH | HELP |

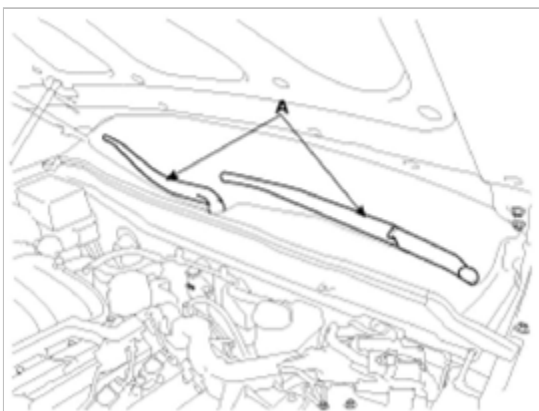
Body Electrical System > Windshield Wiper/Washer > Front Wiper Motor > Repair procedures

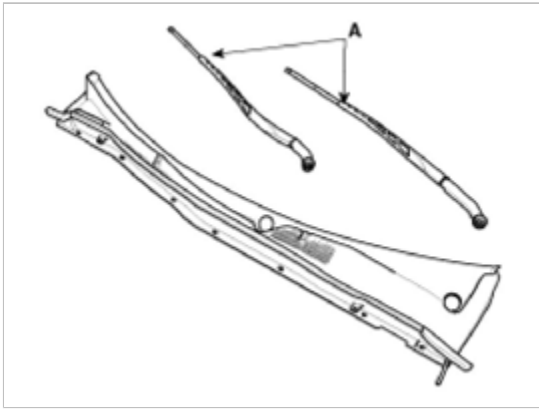
Removal

1. Remove the windshield wiper arm (A) and blade after removing a nut.

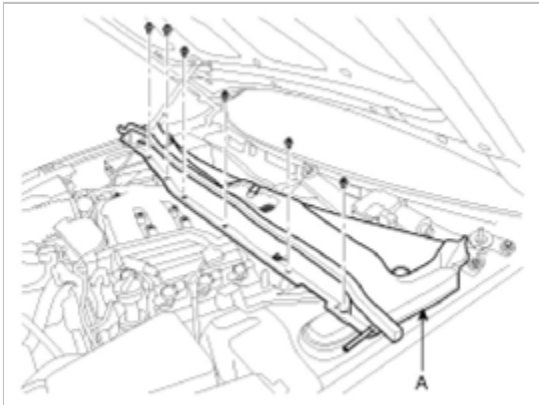
Tighting torque :

27~31 Nm (2.8~3.2 kgf.m, 20~23 lb-ft)





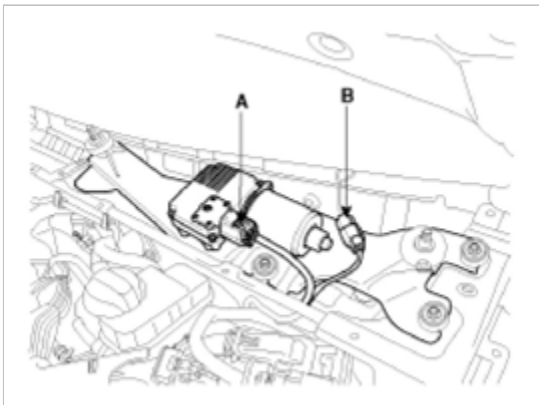
2. Remove the weather strip then remove the cowl top cover (A) after removing 6 clips.



3. Remove the windshield wiper motor and linkage assembly after removing 4 bolts. Disconnect the wiper motor connector (A) and windshield deicer connector (B) from the wiper motor & linkage assembly.

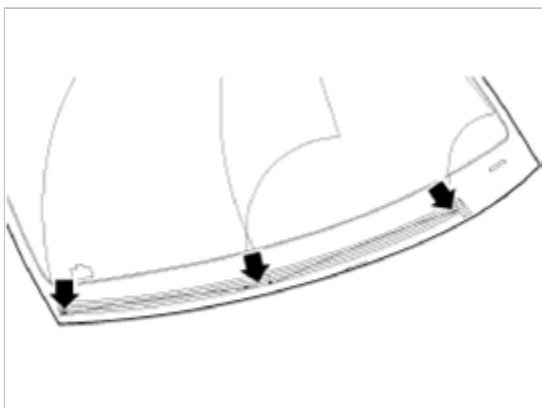
Tighting torque :

7-11Nm (0.7-1.1, kgf.m, 5.0-7.9 lb-ft)



Installation

1. Install the wiper arm and blade to the specified position.



NOTE

For your convenience, move the windshield wiper blades to the service position as follows;

1. Remove the key from the ignition switch.
2. Move the wiper switch to the single wiping position and hold the switch until the wiper arm is in the fully up position.
3. Raise the wiper arm.
4. Replace the blade assembly.
5. Return the wiper arm on the windshield.
6. Turn the ignition switch to the ON position.
7. Move the wiper switch to any position and then to the OFF position.

CAUTION

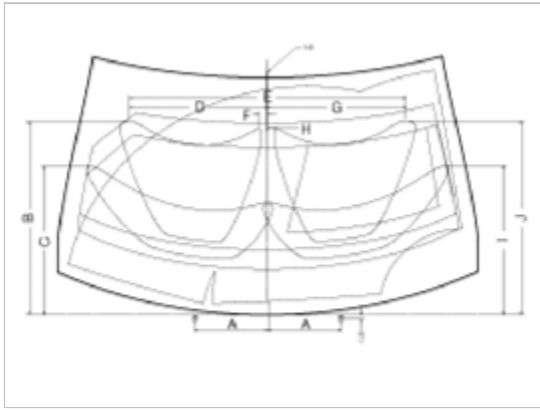
Do not allow the wiper arm to fall against the windshield, since it may chip or crack the windshield.

CAUTION

Common sources of contamination are insects, tree sap, and hot wax treatments used by some commercial car washes. If the blades are not wiping properly, clean both the window and the blades with a good cleaner or mild detergent, and rinse thoroughly with clean water.

2. Set the washer nozzle on the specified spray position.

| Specified position | Distance [in (mm)] |
|--------------------|--------------------|
| A | 10.2 (260) |
| B | 27.1 (689) |
| C | 20.8 (530) |
| D | 19.3 (492) |
| E | 38.7 (984) |
| F | 1.25 (32) |
| G | 19.3 (492) |
| H | 1.25 (32) |
| I | 20.8 (530) |
| J | 27.1 (690) |



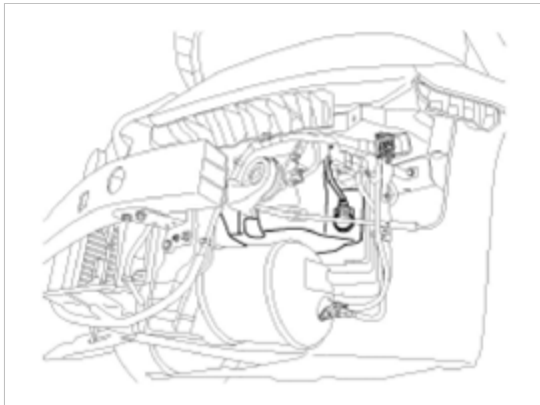
Body Electrical System > Windshield Wiper/Washer > Front Washer Motor > Repair procedures

Removal

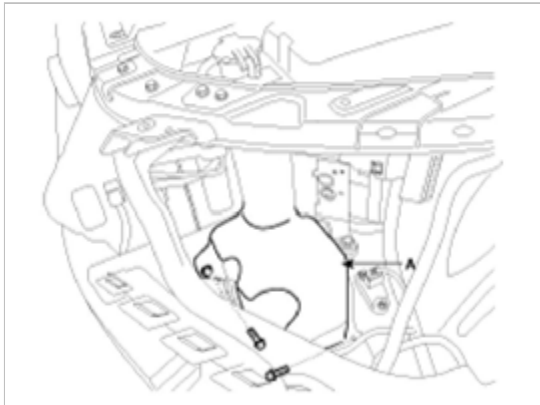
CAUTION

- 1) When servicing the washer pump, be careful not to damage the washer pump seal.
- 2) Do not operate the washer pump before filling the washer reservoir.
Failure to do so could result in premature pump failure.

1. Disconnect the negative (-) battery terminal.
2. Remove the front bumper cover. (Refer to Body group - Front bumper)
3. Remove the washer hose and the washer motor connector.
4. Disconnect the washer fluid level sensor switch connector.



5. Remove the washer reservoir after removing 2 bolts.



Inspection

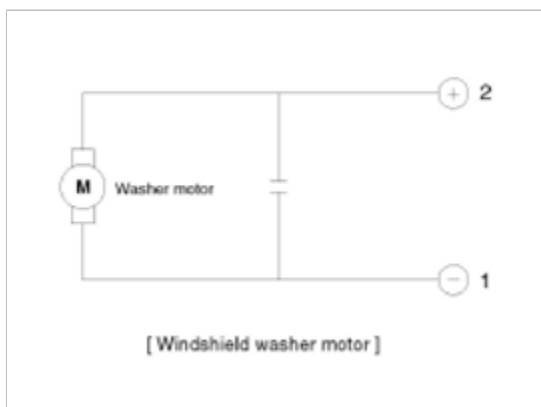
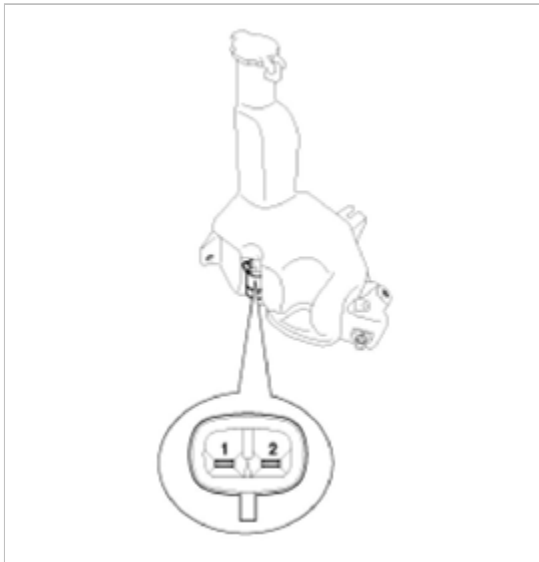
Front Washer Motor

1. With the washer motor connected to the reservoir tank, fill the reservoir tank with water.

NOTE

Before filling the reservoir tank with water, check the filter for foreign material or contamination. if necessary, clean the filter.

2. Connect positive (+) battery cables to terminal 2 and negative (-) battery cables to terminal 1 respectively.
3. Check that the motor operates normally and the washer motor runs and water sprays from the front nozzles.
4. If they are abnormal, replace the washer motor.



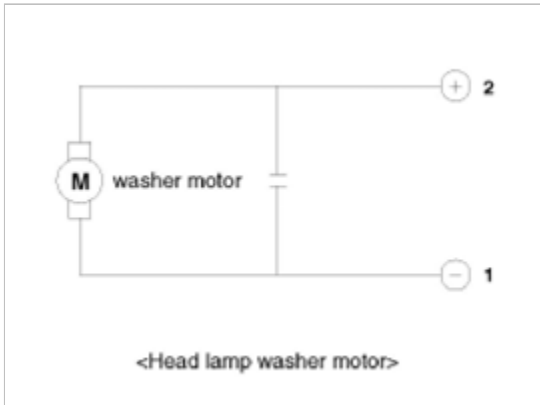
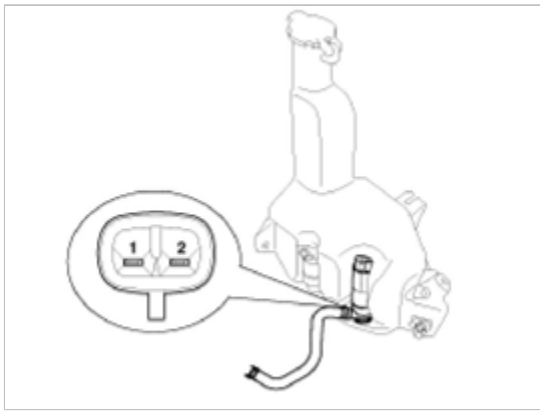
Head Lamp Washer Motor

1. With the washer motor connected to the reservoir tank, fill the reservoir tank with water.

NOTE

Before filling the reservoir tank with water, check the filter for foreign material or contamination. if necessary, clean the filter.

2. Connect positive (+) battery cables to terminal 2 and negative (-) battery cables to terminal 1 respectively.
3. Check that the motor operates normally and the washer motor runs and water sprays from the head lamp nozzles.
4. If they are abnormal, replace the washer motor.

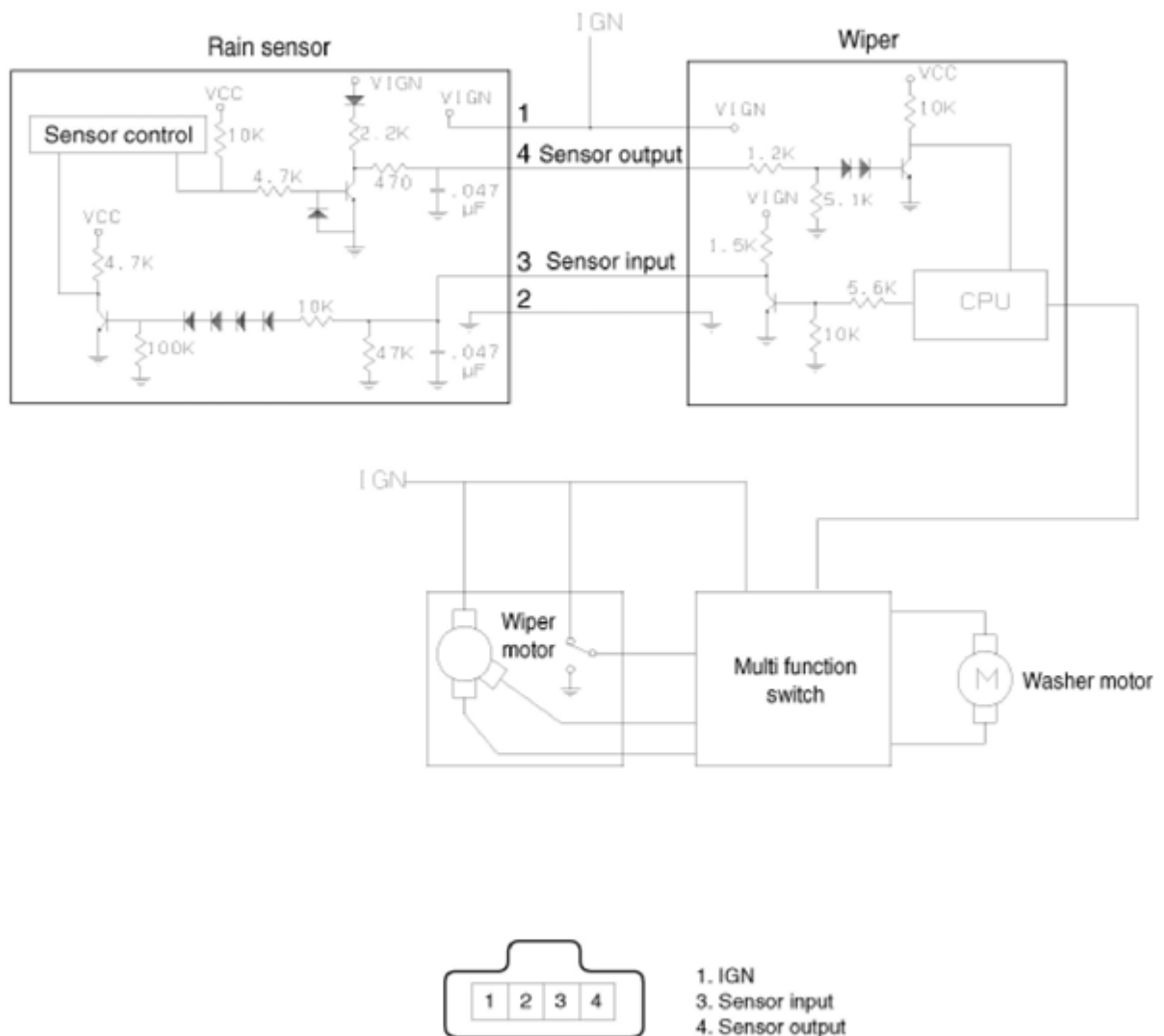


Installation

1. Install the washer reservoir.
2. Install the washer motor hose and connectors.
3. Install the front bumper cover.

Body Electrical System > Windshield Wiper/Washer > Rain Sensor > Schematic Diagrams

Circuit Diagram

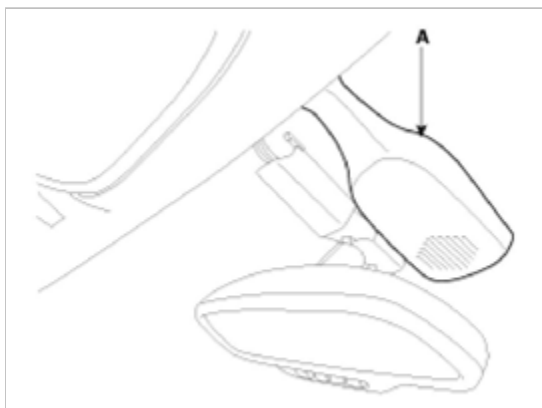


Body Electrical System > Windshield Wiper/Washer > Rain Sensor > Description and Operation

Description

The Rain sensing windshield wiper system is a wiper system that, in addition to providing normal wiper functions off, mist, manual low speed, manual high speed, and wash, provides automatic control of automatic intermittent automatic low, and automatic high speeds.

When the ignition key is in the ON position, the rain sensor (A) will be activated.



Operating Modes - Rainsensing Windshield Wiper System

| Multifunction Switch Position | Rainsensor Operating Mode | Sensor Action |
|---|---------------------------|--|
| MIST | MIST | Mist is controlled by the column switch. The sensor has no affect on this function |
| OFF | OFF | If not already parked, wiper motor runs in low speed until blades are in the depressed park position. |
| AUTOMATIC Automatic mode has 5 SENSITIVITY settings. | AUTOMATIC | AUTOMATIC Automatic INT/speed control. The sensitivity to raindrop accumulation on the windshield is set by the MULTIFUNCTION SWITCH sensitivity adjustment. |
| LOW SPEED | MANUAL | Wiper motor runs continuously in low speed, for example 45 wipes/minute. The sensor has no affect on this function |
| HI SPEED | MANUAL | Wiper motor runs continuously in high speed, for example 60 wipes/minute. The sensor has no affect on this function |
| WASH - DEMAND WASHER SW \geq 0.6 SEC | WASH | If washer sw on after 0.6 sec then wipes during 2.5 to 3.8 sec. The rain sensor enables the wipers and controls the after wipes. |
| WASH - DEMAND WASHER SW $<$ 0.6 SEC | WASH | If washer sw on less than 0.2 to 0.6 sec then once wipes |

OFF Mode

With the wipe switch in the OFF position and the ignition switch in the ON positions, the Rainsensor is considered to be in "OFF" mode. In this mode, the sensor commands the wiper to be off.

The Rainsensor monitors the state of the windshield during OFF mode so that knowledge of the state of the windshield is present when the MULTIFUNCTION SWITCH is moved to any SENSITIVITY setting. This optimizes the performance of the sensor when moving from the OFF condition to an AUTOMATIC mode. The algorithm assumes the nominal sensitivity setting when in the OFF mode.

Automatic Mode

When the MULTIFUNCTION SWITCH is moved to AUTO position and the ignition switch is in the RUN or ACCESSORY positions, the Rainsensor is considered to be in "AUTOMATIC" mode. Once a single "Instant wipe" has occurred, the wipers remain at "Innerwiper/park" until the Rainsensor determines that the dwell time at that position is appropriate for the amount of precipitation on the windshield, considering the driver input from the switch SENSITIVITY setting. After the dwell time the Rainsensor provides input to the wiper motor to activate the wipers to clear the precipitation from the windshield.

Automatic Int

For all AUTOMATIC INT operations the Rainsensor commands the wipers to operate in LOW SPEED for one wipe, followed by a variable dwell period in the inner wipe position.

Automatic Low

AUTOMATIC LOW SPEED operation is utilized when the amount of precipitation imping on the windshield exceeds the AUTOMATIC INT TO AUTOMATIC LOW threshold. This threshold includes sufficient hysteresis to prevent cycling between AUTOMATIC INT and AUTOMATIC LOW SPEED operation with a steady amount of precipitation accumulation on the windshield.

Automatic High

AUTOMATIC HIGH SPEED operation is utilized when the amount of precipitation imping on the windshield exceeds the AUTOMATIC LOW to AUTOMATIC HIGH threshold. This threshold includes sufficient hysteresis to prevent cycling between AUTOMATIC LOW to AUTOMATIC HIGH operation with a steady amount of precipitation accumulation on the windshield.

Wash Mode

The Rainsensor monitors the MULTIFUNCTION SWITCH to determine if the wash function is selected.

Rainsensor enables the wiper motor to run in low speed during the wash mode and performs follow up wipes during 2.5 to 3.8 sec.

Manual Mode

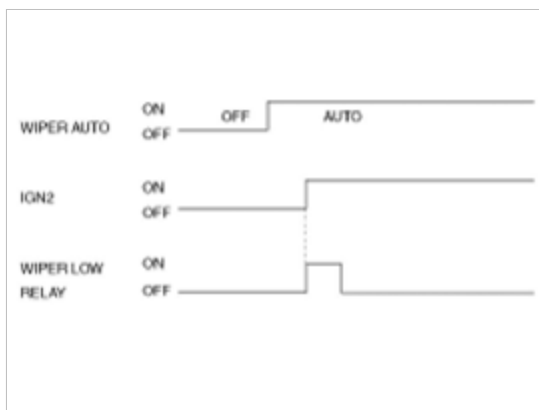
The Rainsensor determines when a manual mode such as manual low, Mist, Off or manual high is selected. The column switch performs these modes and the rain sensor has no affect.

Body Electrical System > Windshield Wiper/Washer > Rain Sensor > Repair procedures

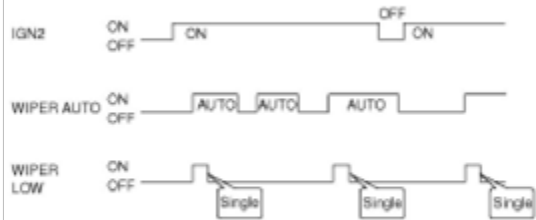
Inspection

Rain Sensing Wiper

1. In IGN2 ON state, if auto switch input (LIN communication) is ON then both wiper low relay and wiper high relay outputs are controlled by the rain sensor input signal.
2. If the wiper switch has been left in automatic mode with the vehicle ignition OFF, and then the vehicle ignition switch is turned on, a single wipe will be performed.

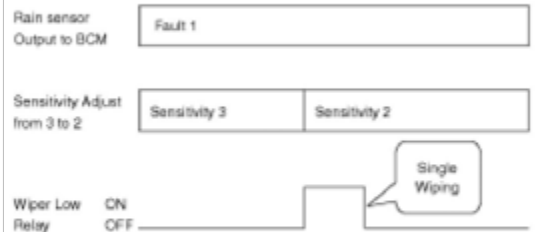


3. A single wipe will be performed whenever rain has been detected (Rain Detected signal from Rain sensor) and the wiper switch is moved to the AUTO position. But a single wipe will not be performed when the wiper switch is moved to the AUTO position and OFF signal is being received from Rain sensor. But if the wiper switch is moved to AUTO position for the first time since vehicle ignition switch is turned on then a single wipe will be performed regardless of Rain Detected or OFF signal.

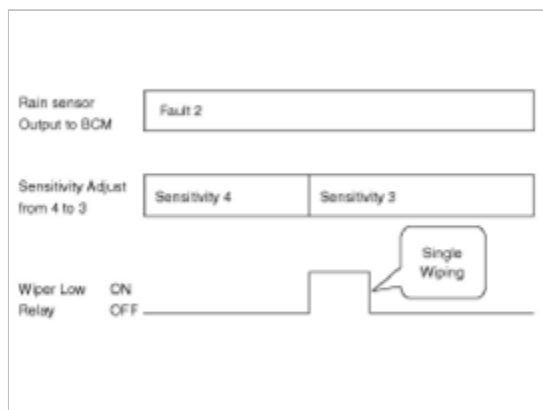


-
- WIPER AUTO
- ON
- OFF
- AUTO
- Step 4
- SENSITIVITY ADJUSTED UP
- Step 1
- Step 2
- Step 3
- Step 5
- LESS THEN 2SEC RAIN SENSOR
- Rain Detected
- OFF
- Rain Detected
- WIPER LOW RELAY
- ON
- OFF

- When this failure is detected, the wiper outputs are OFF and the wiper will also do a wipe in slow speed on the transition from sensitivity 3 to sensitivity 2 (Step 2 to 3) in order to signal the presence of this fault. If another sensitivity is set, the wiper won't make any additional wipe.



- When this failure is detected, the wiper outputs are OFF and the wiper will also do a wipe on the transition from sensitivity 4 to sensitivity 3 (Step 1 to 2) in order to signal the presence of this fault. If another sensitivity is set, the wiper won't make any additional wipe.



Rain Sensor Fault 3 - No Input Signal Present

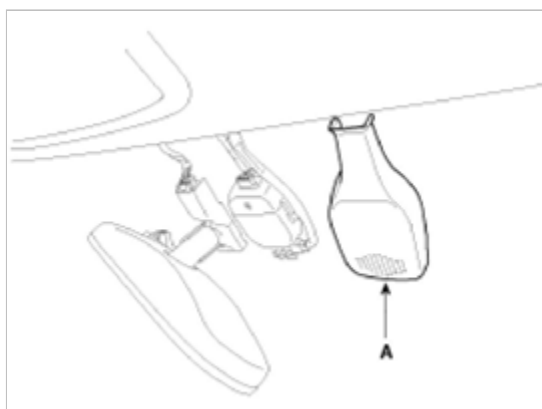
This failure is detected when the wiper is in automatic mode and the input faulty rain sensor from the rain sensor has a duty cycle corresponding to Fault 3 or in case the duty cycle of the input faulty rain sensor is 0% or 100%. The confirmation delay for the failure is of 1 s. When this failure is detected, the wiper outputs are OFF.

Removal

CAUTION

The dust or foreign substance on the rain sensor have a bad effect upon the rain sensor capability, so protect the sensor surface with protection cover until installing the rain sensor to bracket for accurate function. The coupling pad on the rain sensor surface has adhesive strength, so the coupling pad could stick to the windshield by environment condition during the using time. If separate it by force, it could be damaged. So make sure to separate the rain sensor from the windshield carefully.

1. Remove the rain sensor cover (A) first.



2. Be careful not to damage the cover latch by applying excessive force. To remove the latch, pull aside the latch using the cover hole (B) with a small flat - blade screwdriver (A).

