

FULL AUTO TEMPERATURE CONTROL

8511-14

GENERAL

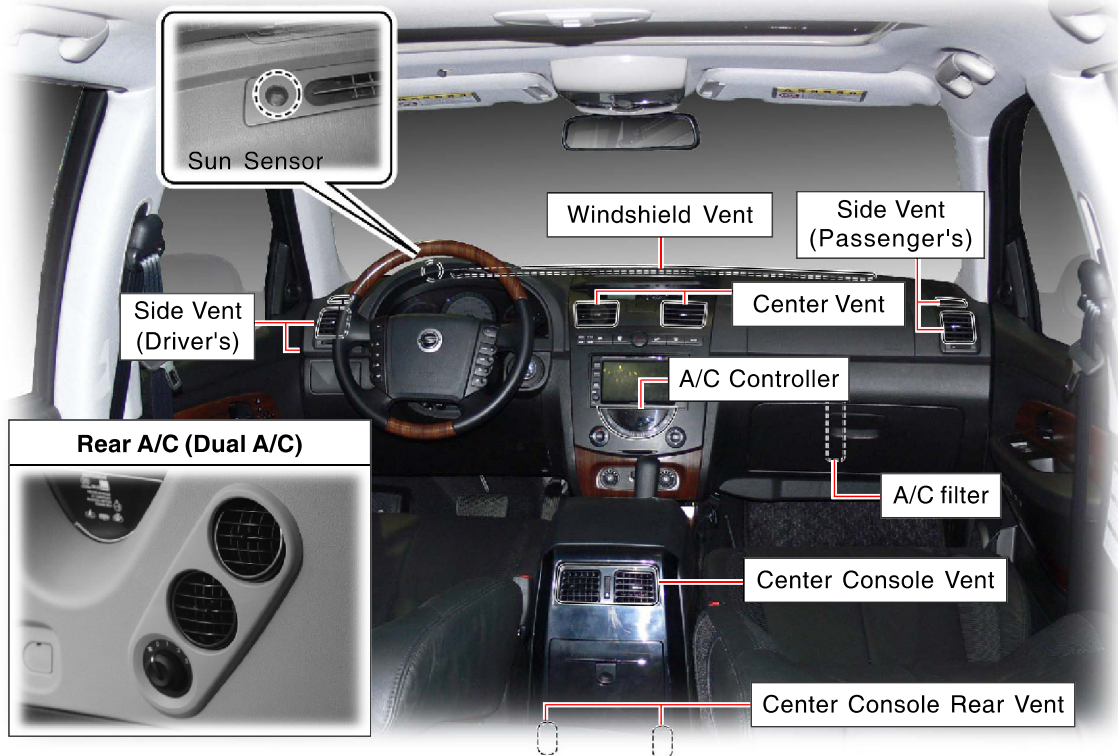
1. SPECIFICATIONS

Type		Specifications	
Compressor	Model	V - 5 (single)	KC83 (dual)
	Type	Variable displacement type	Fixed type
	Disaplcement (cc/rev)	9.8 ~ 151	175.5
	Refrigerant oil	265 ml (Composite PAG oil)	220 ml (ZXL 100PG)
Condenser	Type	MFC	
	Size	656w X 455h X 16t	
Receiver Drier	Capacity	250cc	
	Moisture absorbent	XH - 9 (35g)	
	Pressure switch	Triple pressure type, Refrigerant pressure sensor	
Front Air conditioner and Heater Unit	Type	Heater + Evaporator & Blower (2 pieces)	
	Heating capability	Min. 9040 kcal/hr (340m ³ /h)	
	Cooling capability	Min. 6300 kcal/hr (405m ³ /h)	
	Expansion valve	Block type	
	Input power	Max. 22A(at 12V)	
Refrigerant	Specification	R134a	
	Capacity	Single: 720 ± 30g / Dual: 1120 ± 30g	

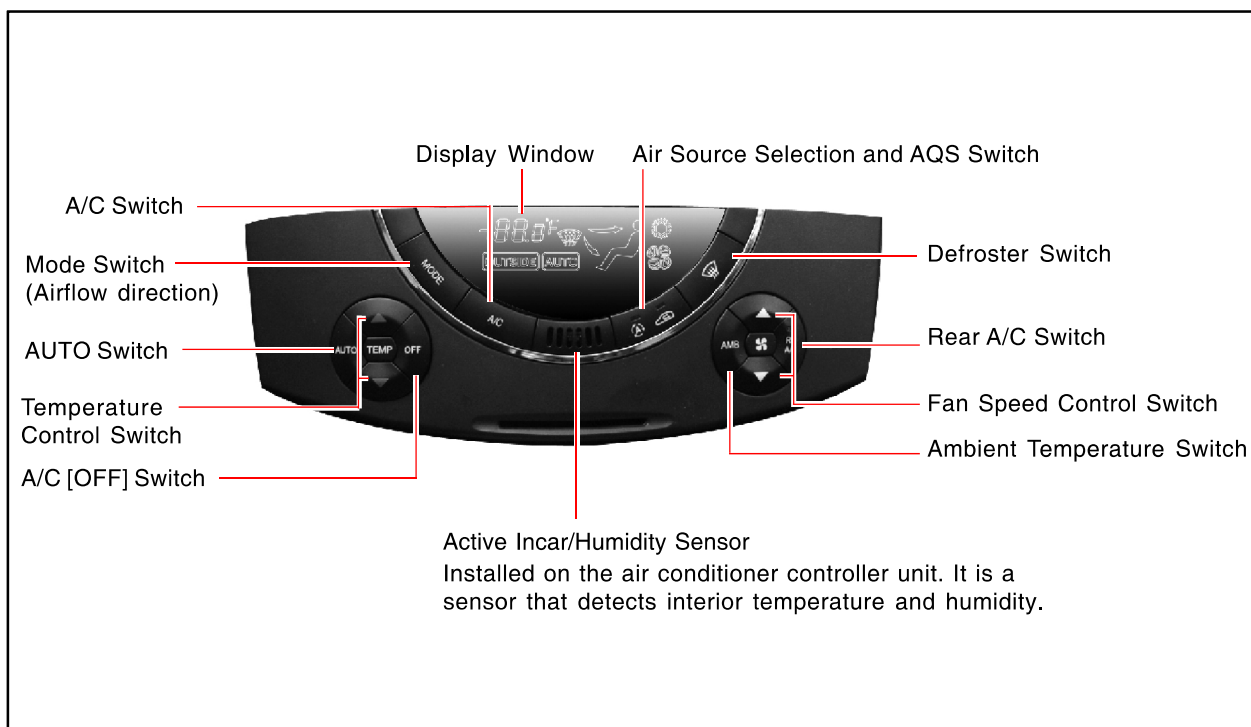
Modification basis	
Application basis	
Affected VIN	

OVERVIEW AND OPERATION PROCESS

1. FATC SYSTEM LAYOUT

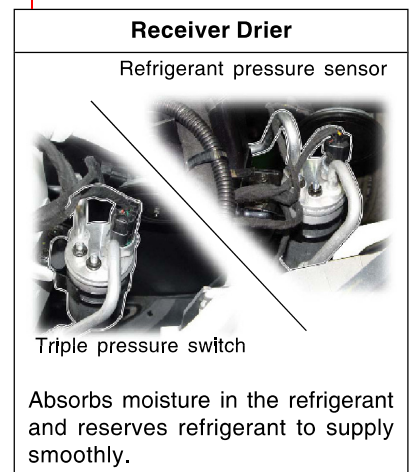
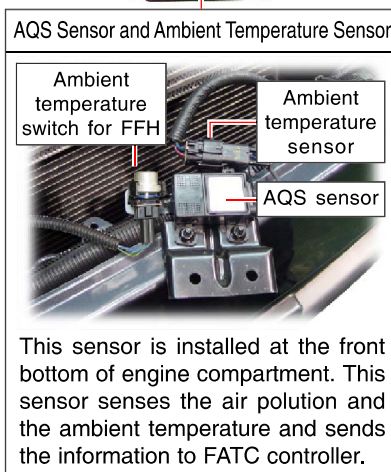
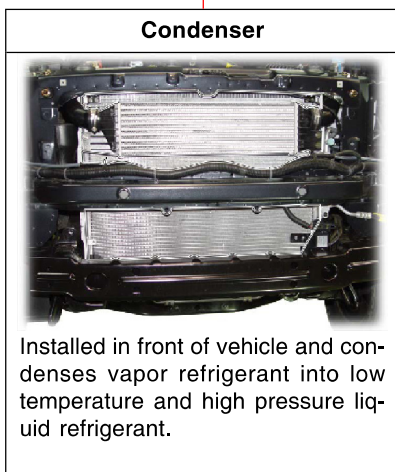
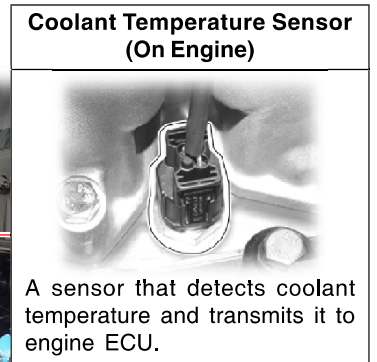
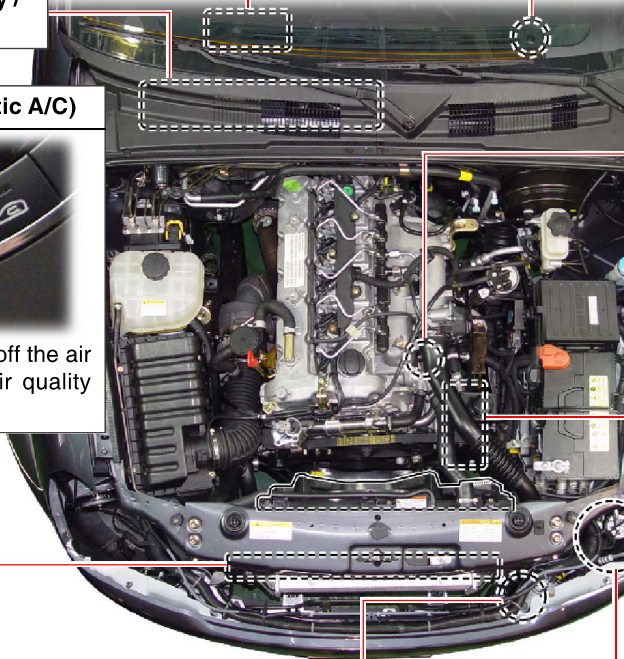
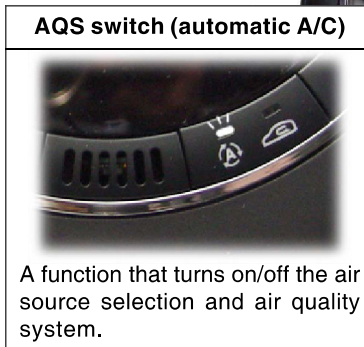
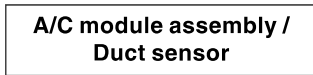
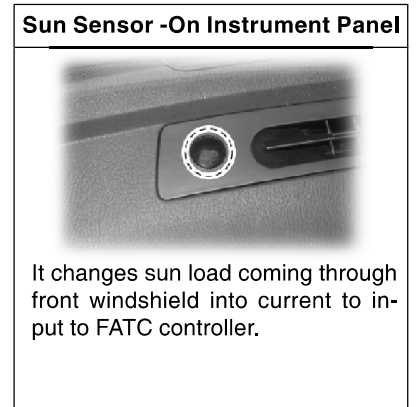
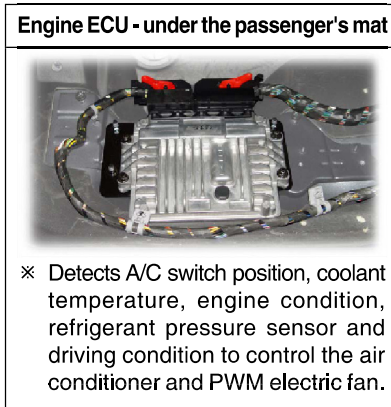


► Configuration and Characteristic of A/C Controller



Modification basis	
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► A/C System Related Devices



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2. FATC SYSTEM BASIC FUNCTION

1) Temperature Control

When you set the setting temperature using the temperature control switch, the FATC receives the various input signals from sensors including the information of inside air temperature, ambient temperature, coolant temperature and sun loads etc.. The FATC uses this signals to control automatically the A/C compressor, the mode door, the Incar/Ambient door, air mix door and blower motor etc.

1. Ambient Temperature Display

The ambient temperature is displayed using the ambient temperature switch in increment of 0.5°C. When pressing the AMB button, the display shows the ambient temperature and returns to the adjusted temperature. The ambient temperature switch can be affected by the heat in the engine compartment since it is installed in front of the radiator. Therefore, the display can show the correct temperature when the vehicle is driven at over a certain speed (approx. 40 km/h).

2) Blower Motor Speed Control

For setting at Full AUTO, it is possible to control the blower motor operation both manually and automatically in order to adjust the airflow according to the set temperature.

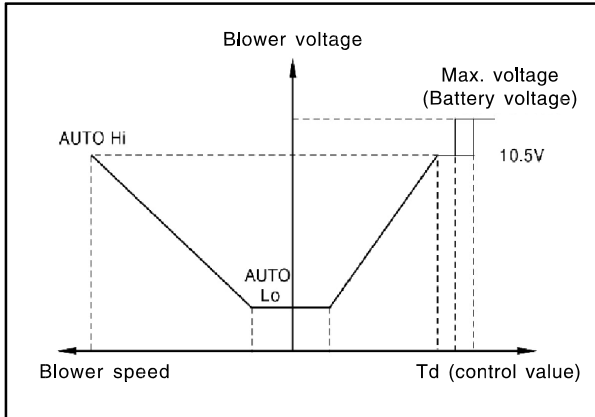
1. Manual Control

When you push the blower switch, you can control the blower motor manually and it increases or decreases each step by moving the switch to HI/LO.
(with the ignition ON)

Step	Blower Voltage
1	4.5 V
2	5.5 V
3	6.5 V
4	7.5 V
5	8.5 V
6	9.5 V
7	10.5 V
8	MAX HI

2. Automatic Control

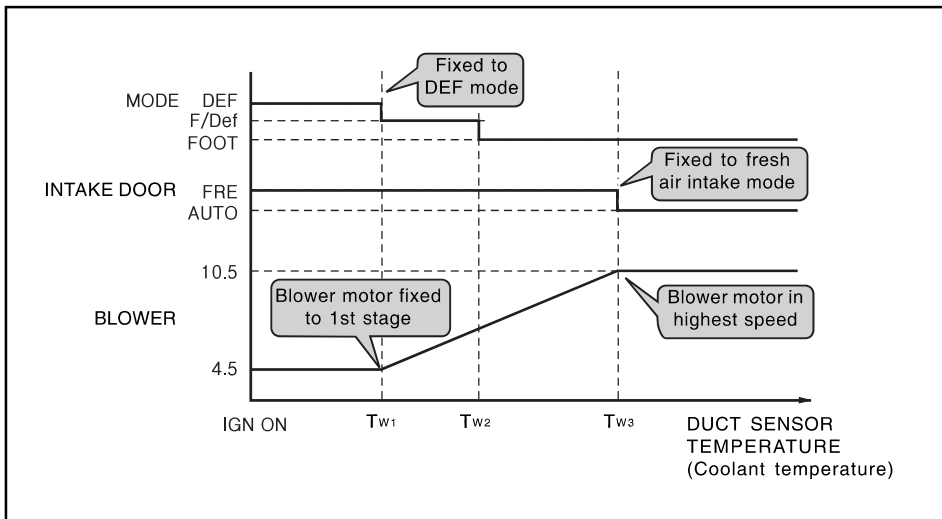
Td value can be determined by the set temperature value and Td value is set to the target voltage of the blower motor simultaneously. The blower motor can shift without step.



Blower Step	Blower Motor Voltage
1	4.0 ~ 5.0 V
2	5.0 ~ 6.0 V
3	6.0 ~ 7.0 V
4	7.0 ~ 8.0 V
5	8.0 ~ 9.0 V
6	9.0 ~ 10.0 V
7	10.0 ~ 11.0 V
8	11.0 ~ 13.5 V

3. Vent Rate Control By Heating Operation

When the temperature of the engine coolant is low or it's difficult to obtain the desired hot air in winter, the system controls to prevent the cold airflow from the outlet due to the cold air give a negative effect to the heating performance.



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4. Vent Rate Control By Cooling Operation

When the air inside the resonance duct is hot in summer, after the system keeps the low vent rate (1st) operating for several time and discharges the hot air to the windshield side (Def Mode), the system starts to control normally in order to avoid for the passengers contacting the hot air.

5. Defroster Calibration

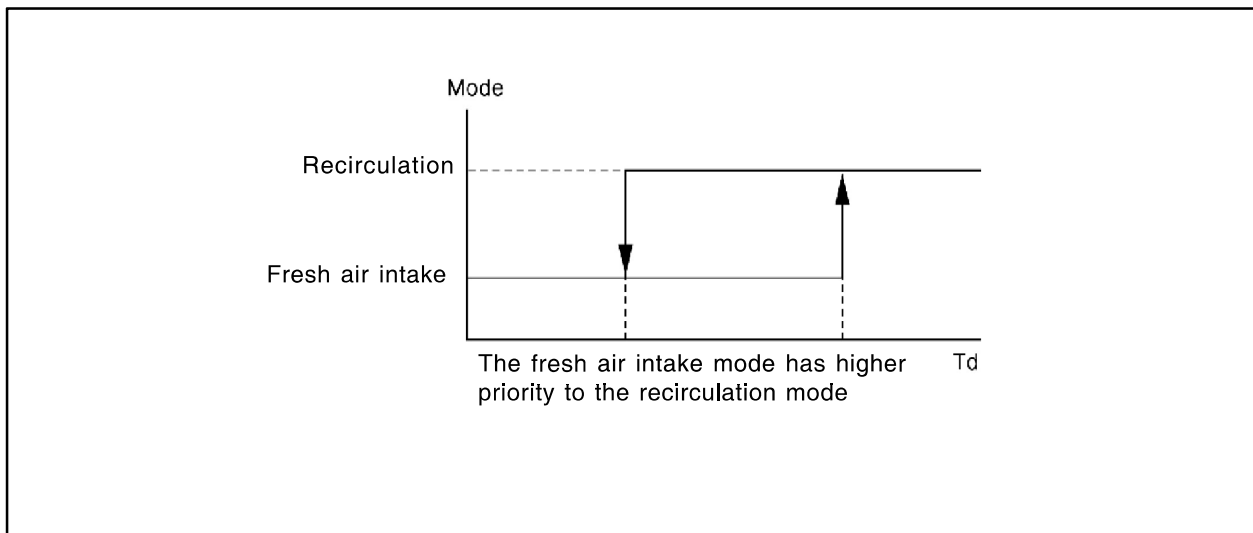
On the blower AUTO step, when the passenger sets to Defroster (Def), the system increases the blower voltage by 2 V for some intervals comparing AUTO voltage. But it is excluded the condition when the blower voltage is above 10.5 V. Also, the voltage increasing by defroster calibration is limited up to 10.5 V.

3) Vent Inlet Control

1. Manual control

When you push the I/A control switch, you can control the I/A door manually and the I/A door changes between the recirculation air and the fresh air flow alternately by the control switch.

2. AUTO control



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3. AQS (Air Quality System) Sensor and Vehicle Speed Control

a. Basic function

The air source selection is automatically changed between the recirculation mode and the fresh air mode according to the signal from the AQS sensor (air pollution).

When selecting AUTO while the AQS is in operation, the AQS is turned off.

b. Recirculation mode for 20 seconds when pressing AQS switch

When the AQS switch is pressed in, the recirculation mode is maintained for 20 seconds regardless of the AQS sensor's input.

Then, the AQS controls the intake mode according to the air pollution.

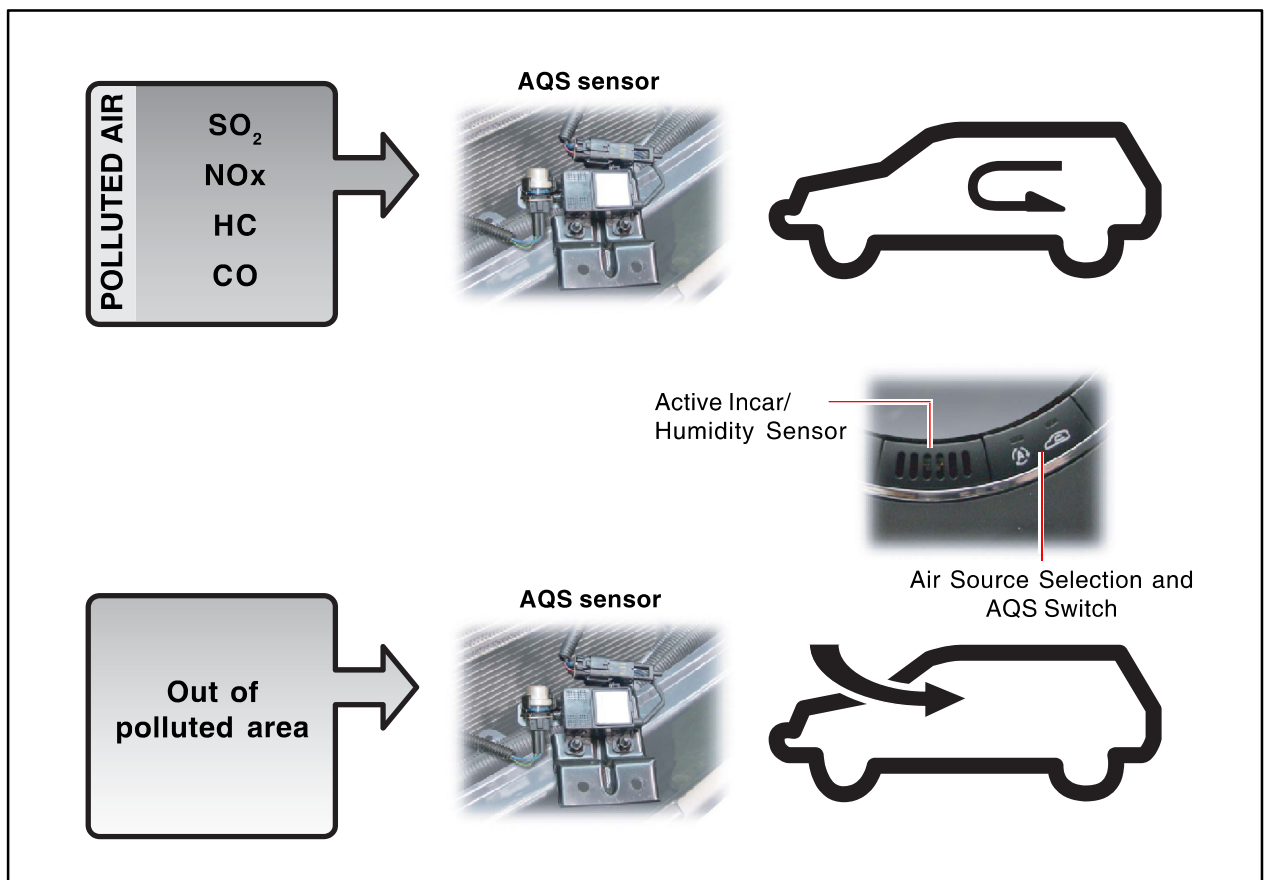
However, the signal of the AQS is overridden if the heater is controlling the fan.

c. Preheating of AQS when starting the engine

For stabilization of the AQS sensor, the signal from the AQS sensor is overridden and the recirculation mode is maintained for 1 minute after turning the ignition ON.

d. Gas detected

- Exhaust gas for diesel engine: NO, NOx, SO₂...
- Exhaust gas for gasoline and LPG engine: CxHY, CO...

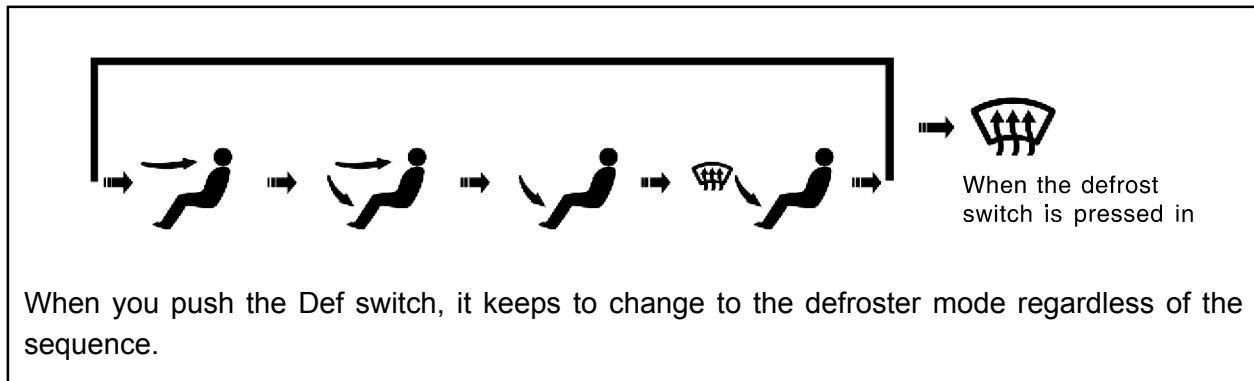


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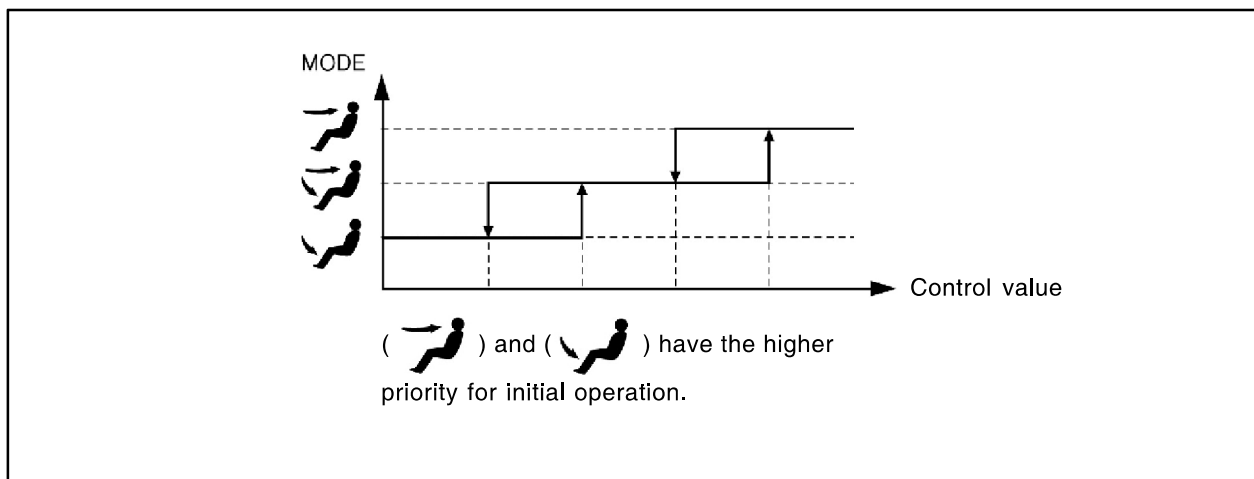
4) Vent outlet Control

1. Manual control

For pushing the mode switch of AUTO temperature control, you can select four type of the vent outlets.



2. AUTO Control



5) A/C Control

1. Manual control

When you pushed the A/C switch "ON" or the Def switch "ON", A/C starts to operate.

2. AUTO control

Basic Control: A/C "ON" has the priority for the initial operation.

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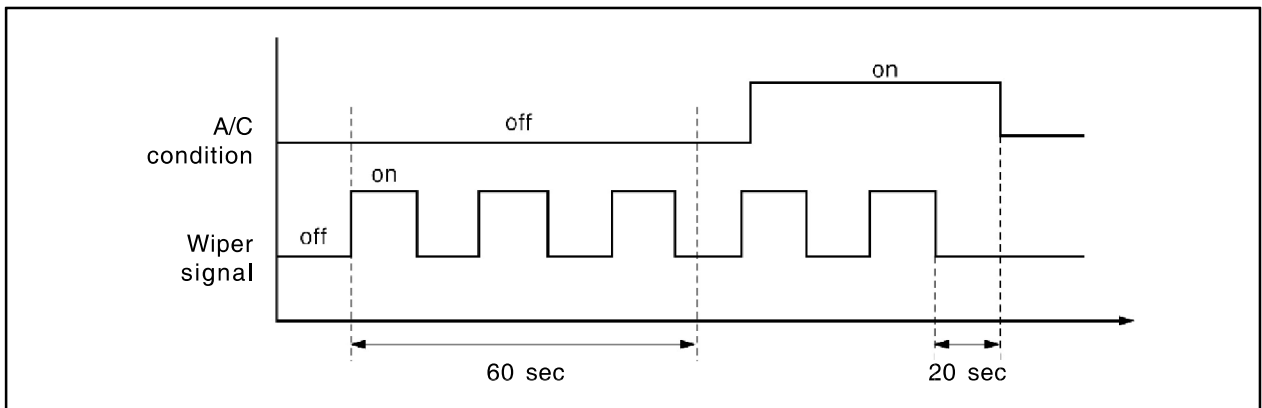
6) Full Cold/Hot Control

When you sets the set temperature to full cold (LO) or full hot (HI), the system controls the temperature to full cold or full hot regardless of sensor's detection. For LO, it becomes A/C "ON", front vent mode, recirculation air, max blower speed, air mix door close and for HI, A/C "OFF", floor vent mode, ambient mode, air mix door open.

7) Wiper Calibration Control

It is possible to generate the frost on the windshield in the rainy days. At this time, FATC controller allows the mode to change the AUTO defroster mode.

- Operation Condition: When the passenger operates the wiper on AUTO mode, the system controls the wiper on the A/C AUTO mode after sending the wiper signal and controlling the delay for 1 minutes



8) Dehumidifying Control

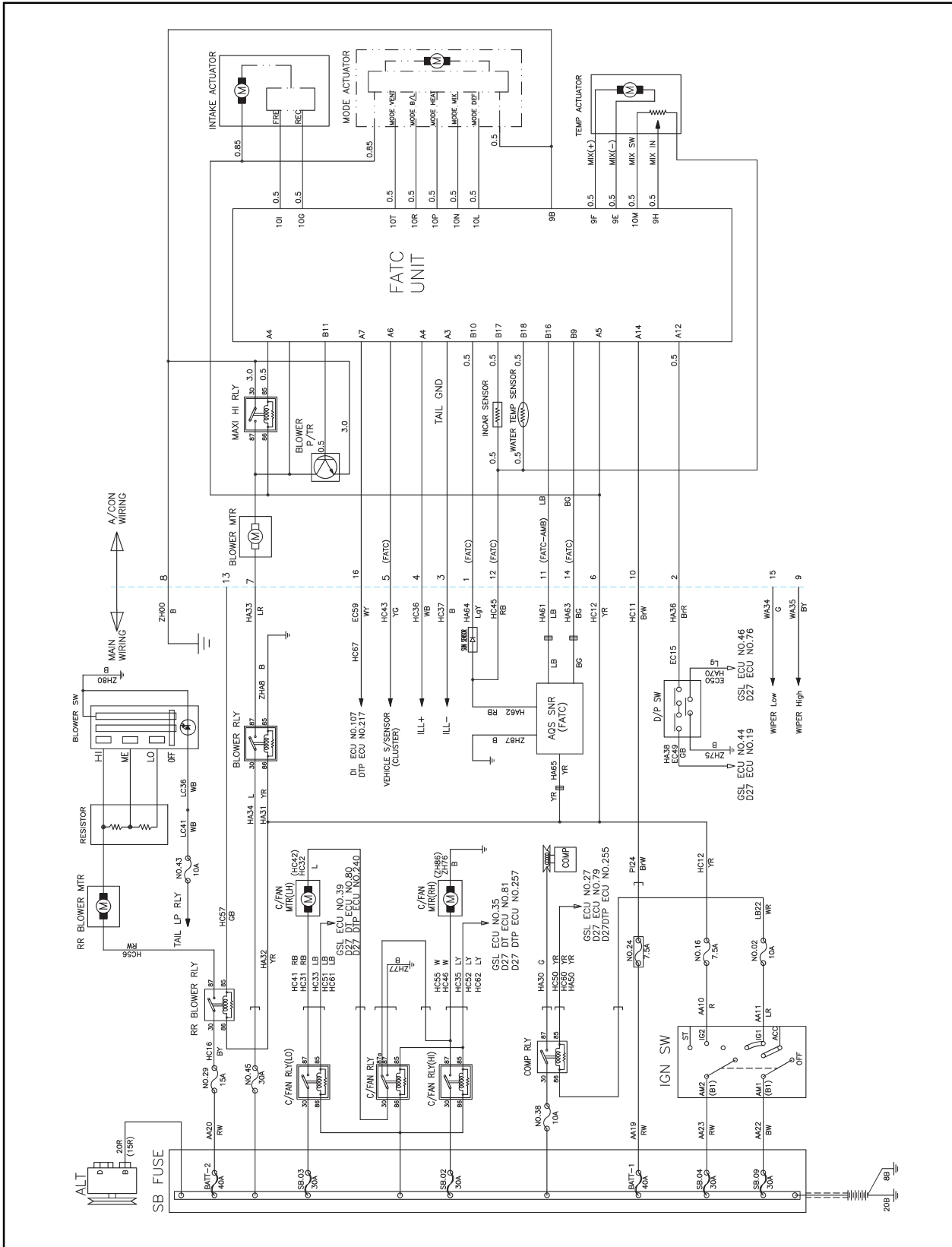
1. Basic functions

- To dehumidify the window glass before it will be fogged, the defrost timing is assumed by the ambient sensor and incar sensor and by detecting the relative humidity inside the vehicle using the humidity sensor.
- However, if it is in the auto foot mode, it is changed to the Front defrost mode.
- ? Then, if the A/C is turned off after switched to the front defrost mode, it is changed to the foot mode automatically.

Modification basis	
Application basis	
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3. CIRCUIT DIAGRAM

► FATC (Full Auto Temperature Control)



Modification basis	
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