AIR CONDITIONER

■ DESCRIPTION

1. General

The air conditioner system in the new LS430 has the following features:

- A right/left independent temperature control system, in which the temperature for the driver and the front passenger can be controlled independently, continues to be used.
- A multi-tank, super-slim structure evaporator has been newly adopted.
- On all models except for the G.C.C. Countries, the compressor has been changed from the 10PA20 type to the 7SBU16 type to improve air conditioner performance and energy-savings.
- A compact, brushless blower motor with a buit-in control circuit has been newly adopted to provide a larger footwell space for the front passenger.
- On all models except for the G.C.C. Countries, the EPR (Evaporator Pressure Regulator) has been discontinued along with the adoption of the 7SBU16 type complessor.
- A deodorizing function that eliminates the exhaust gas smell that enters the cabin from the outside has been added to the conventional clean air filter (for the front A/C). A function for the A/C (air conditioner) ECU to inform the driver of the replacement intervals of this filter through the multi-information display in the combination meter has also been added to improve serviceability.
- An automatic air conditioner system which provides enhanced air conditioner comfort according to the occupants' senses has been newly adopted.
  In the previous automatic air conditioner system, the ECU determined the required outlet air temperature and blower air volume in accordance with the calculation formula that has been obtained based on information received from the sensors.
  However, because the senses of a person are rather complex, a given temperature is sensed differently, depending on the environment in which the person is situated. For example, a given amount of solar radiation can feel comfortably warm in a cold climate, or extremely uncomfortable in a hot climate. Therefore, as a technique for effecting a higher level of control, a neural network* has been adopted in the automatic air conditioner system. With this technique, the data that has been fetched under varying environmental conditions is stored in the ECU, which effects control to provide enhanced air conditioner comfort.
  *: Neural Network = Is capable of effecting complex control by artificially simulating the information processing method of the nervous system of living organisms in order to establish a complex input/output relationship that is similar to a human brain.
- An intelligent swing register, which controls the orientation and the angle of the front center register, has been newly adopted for improved comfort.
- On all models except for the G.C.C. Countries, the conventional automatic recirculation control had a smog ventilation sensor to detect the harmful elements (such as CO and HC) that are contained in the exhaust gases, in order to switch between the FRESH and RECIRC modes. On the new LS430, a function to also detect NOx has been added to this sensor in order to improve comfort.
- On all models except for the G.C.C. Countries, the air purifier system is offered as an option.
- A rear air conditioner system with a cool box and air purifier functions is offered as an option. A solar sensor for the rear air conditioner system is provided on top of the package tray trim so that the sunlight entering from the rear can be detected.
- On all models except for the G.C.C. Countries, a clean air filter with an air purifier function for the rear air conditioner, and air quality control that effects control in unison with the automatic recirculation control have been adopted to improve air conditioner performance.
- The a multi mode, in which the airflow is output through all the outlets, is provided to improve comfort by warming up the upper part of the occupants in the winter.

▶ Performance ◀

Item			New	Previous
Heater		Heat Output W (Kcal/h)	5900 (5080)	5600 (4820)
		Air Flow Volume m^3/h	390*4	380 *2
		Power Consumption W	200	200
Air Conditioner	Front	Cooling Capacity W (Kcal/h)	6100 (5250), 6250 (5380)*5	5800 (4990), 5950 (5120)*3
		Air Flow Volume m^3/h	580	560
		Power Consumption W	290	260
	Rear*1	Cooling Capacity W (Kcal/h)	755	740 (640)
		Air Flow Volume m^3/h	70	70
		Power Consumption W	21	27
Defroster		Air Flow Volume m^3/h	370*4	320*2

*1: with Rear Air Conditioner System
*2: with Side Vent closed
*3: Models for Europe
*4: with Side Vent Opend
*5: Model for G.C.C. Countries

▶ Specification ◀

Item				New	Previous
Ventilation and Heater	Heater Core		Type	Dimpled Tube Type	←
			Size W × H × L mm (in.)	143.1 × 260 × 27 (5.6 × 10.2 × 1.1)	←
			Fin Pitch mm (in.)	1.9 (0.07)	←
	Blower	Front	Fan Type	Shroud with Sirocco (without Brush)	Shroud with Sirocco (with Brush)
			Fan Size Dia. × H mm (in.)	158 × 80 (6.2 × 3.1)	←
		Rear*1	Fan Type	Shroud with Sirocco	←
			Fan Size Dia. × H mm (in.)	150 × 47 (5.9 × 1.9)	←
Air Conditioner	Condenser		Type	Multi-Flow Type (Sub-Cool Type)	Multi-Flow Type (2-Passage Flow Type)
			Size W × H × L mm (in.)	710 × 444.8 × 16 (28.0 × 17.5 × 0.6)	710 × 397.3 × 16 (28.0 × 15.6 × 0.6)
			Fin Pitch mm (in.)	3.2 (0.13)	←
	Evaporator	Front	Type	Multi-tank, Super-slim Structure	Draw Cup Type
			Size W × H × L mm (in.)	291.6 × 235 × 58 (11.5 × 9.3 × 2.3)	308 × 220 × 70 (12.1 × 8.7 × 2.8)
			Fin Pitch mm (in.)	3.5 (0.14)	3.8 (0.15)
		Rear*2	Type	Multi-tank, Super-slim Structure	Draw Cup Type
			Size W × H × L mm (in.)	165 × 126.2 × 58 (6.5 × 5.0 × 2.3)	170 × 105.5 × 116 (6.7 × 4.2 × 4.6)
			Fin Pitch mm (in.)	4.0 (0.16)	1.9 (0.1)
	Compressor		Type	7SBU16, 10PA20*3	10PA20

*1: with Rear Air Conditioner System and Air Purifier
*2: Only with Rear Air Conditioner
*3: Model for G.C.C. Countries

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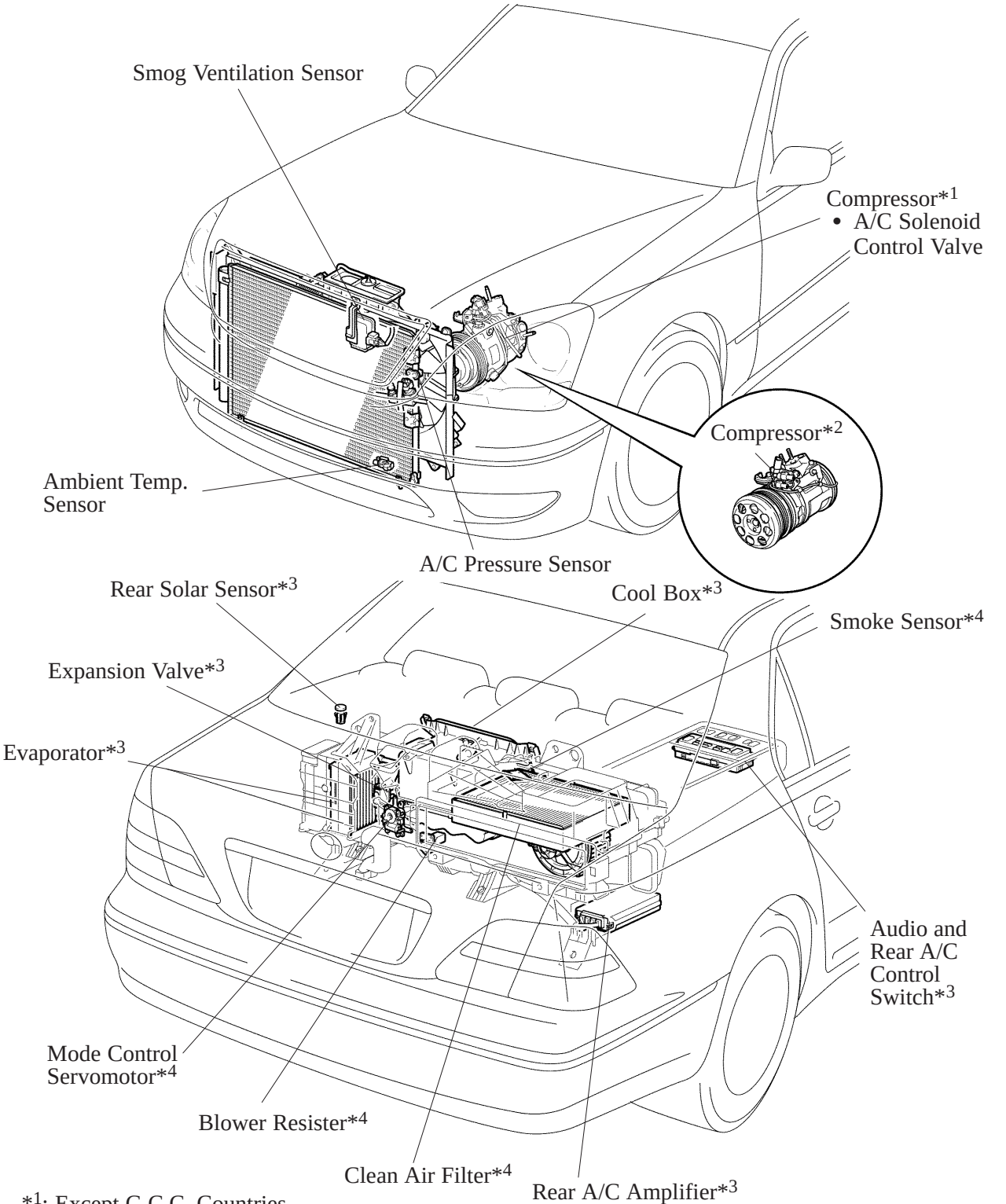
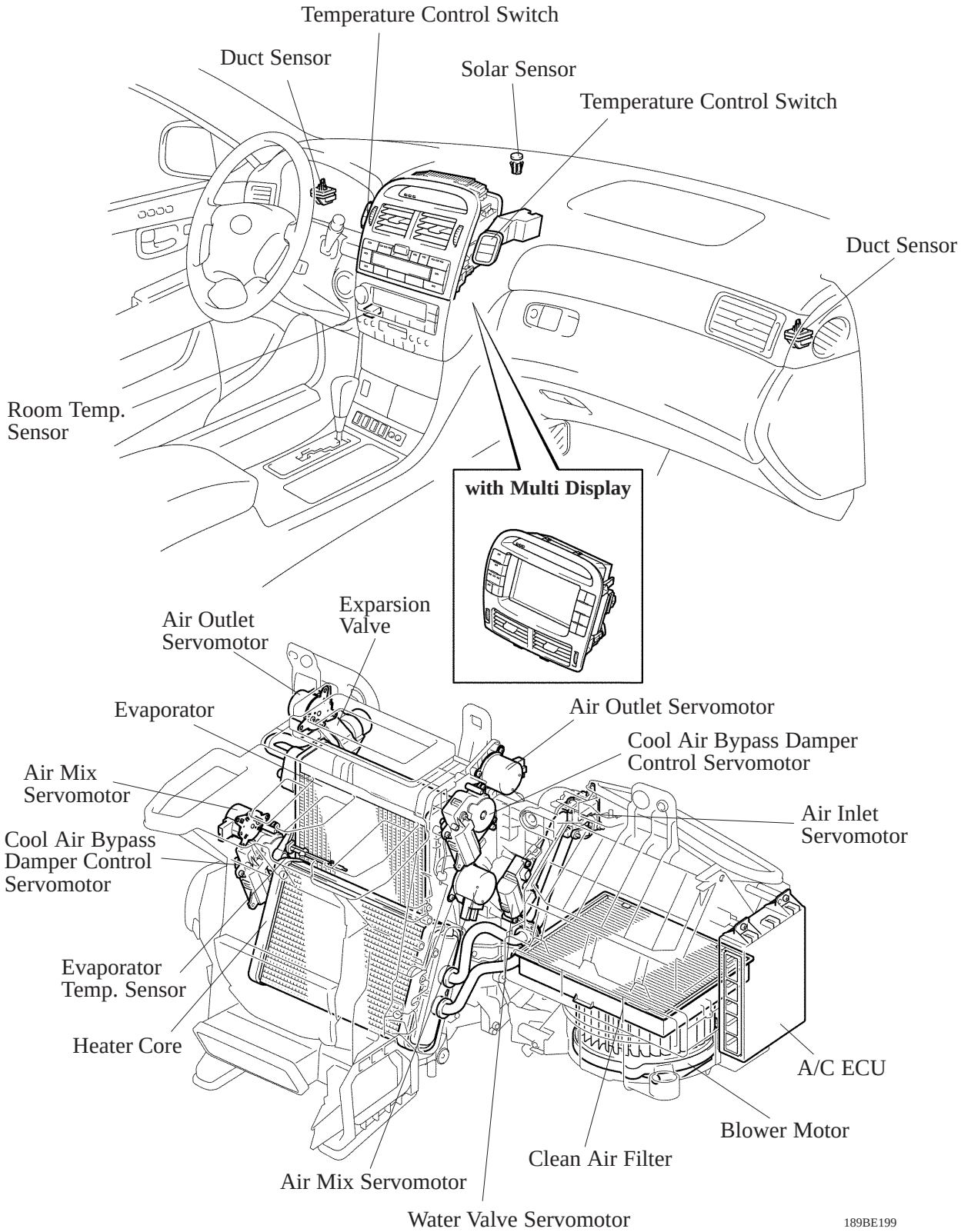
2. Layout of Component



*1: Except G.C.C. Countries
*2: Only for G.C.C. Countries
*3: Only for Rear A/C
*4: with Rear A/C and Air Purifier


Temperature Control Switch
Duct Sensor
Solar Sensor
Temperature Control Switch
Duct Sensor
Room Temp. Sensor
with Multi Display
Air Outlet Servomotor
Exparsion Valve
Evaporator
Air Outlet Servomotor
Cool Air Bypass Damper Control Servomotor
Air Mix Servomotor
Air Inlet Servomotor
Cool Air Bypass Damper Control Servomotor
Evaporator Temp. Sensor
Heater Core
A/C ECU
Blower Motor
Clean Air Filter
Air Mix Servomotor
Water Valve Servomotor
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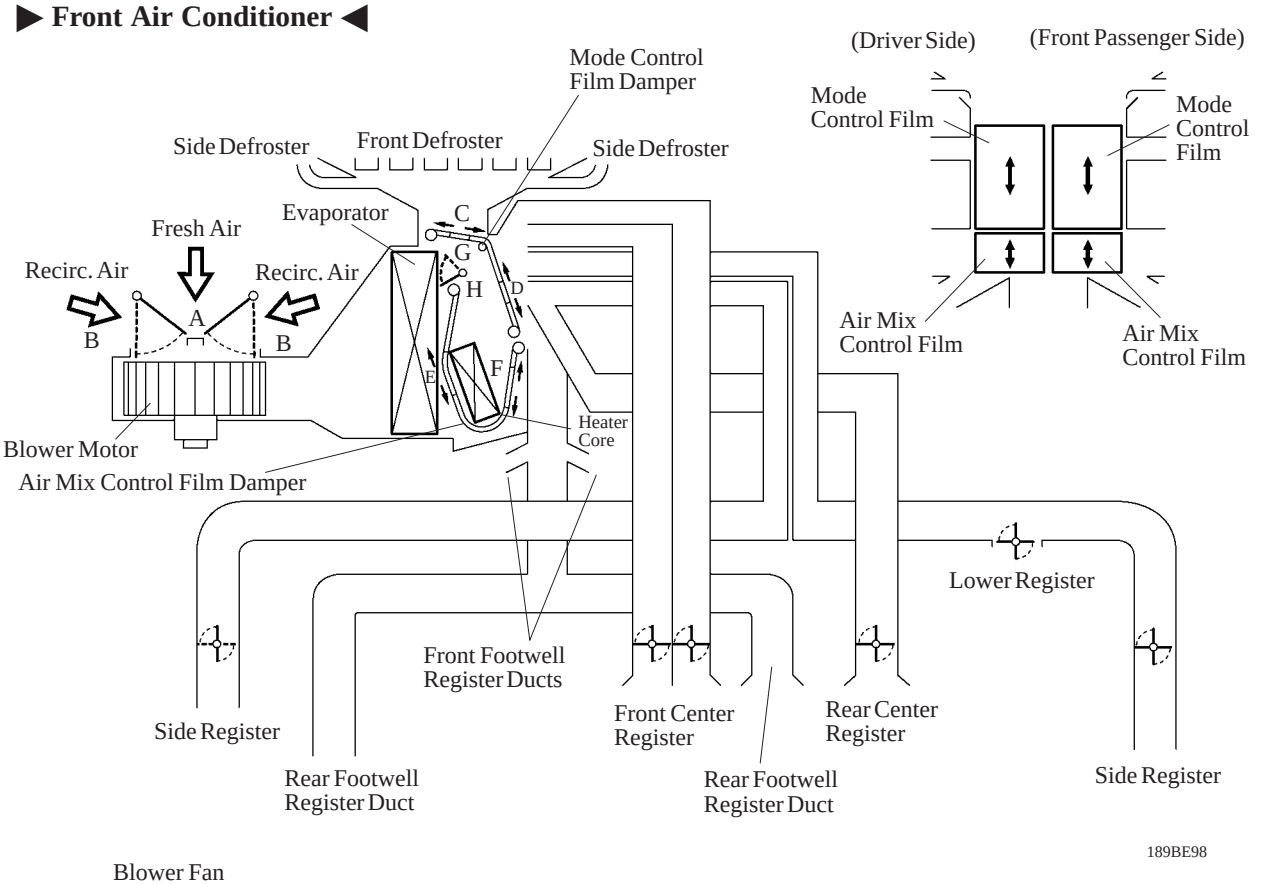
3. Mode Position and Damper Operation

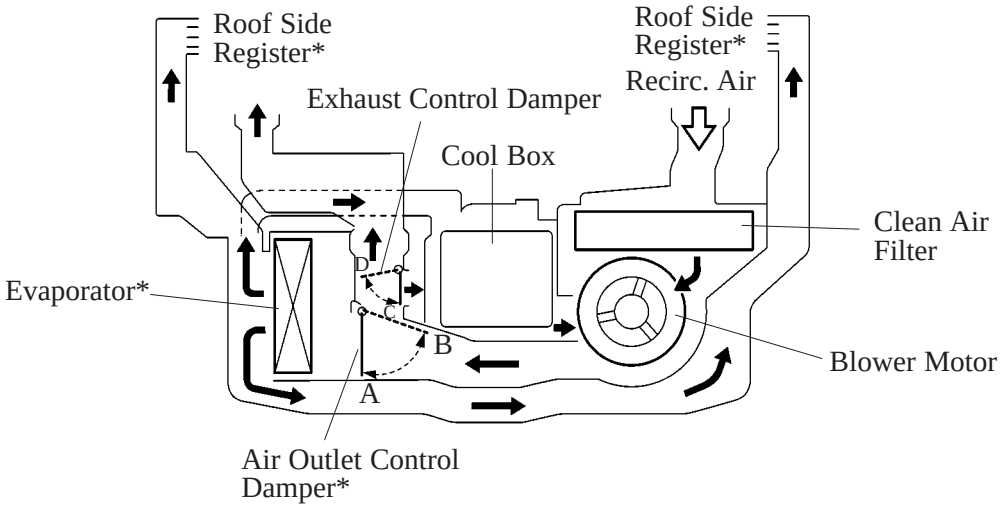
▶ Front Air Conditioner ◀



Control Damper		Control Position	Damper Position	Operation
Air Inlet Control Damper		FRESH	B	Brings in fresh air.
		RECIRC	A	Recirculates internal air.
Air Mix Control Film Damper	Driver & Front Passenger Side	MAX COOL ~ MAX HOT (TEMP. SETTING 18 ~ 32°C)	E, F	Varies the mixture ratio of the fresh air and the recirculation air in order to regulate the temperature continuously from HOT to COOL.
Cool-air Bypass Damper	Driver & Front Passenger Side	MAX COOL ~ MAX HOT (TEMP. SETTING 18 ~ 32°C)	G, H	Cool air blows out of the front center register, rear center register, and side registers, in order to adjust the temperature around the heads of the occupants during cooling or warming.
Mode Control Film Damper	Driver & Front Passenger Side	FACE	D	Air blows out of the front and rear center registers, and side register.
		BI-LEVEL	D	Air blows out of the front and rear center registers, side register, and front and rear footwell register ducts.
		Multi Mode	—	In the multi mode, air blows out of all the air outlets.
		FOOT	D	Air blows out of the front and rear footwell register ducts. In addition, air blows out slightly from the front and side defrosters, and the side register.
		FOOT/DEF*	C, D	Air blows out of the front and side defrosters to defrost the windshield; air also blows out from the front and rear footwell register ducts, and the side register.
		DEF*	C	Air blows out of the front and side defrosters and side registers to defrost the windshield.

*: Only during manual operation.

▶ Rear Air Conditioner & Air Purifier ◀



*: Only for Rear A/C

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Control Damper	Control Position	Damper Position	Operation
Air Outlet Control Damper & Exhaust Control Damper	Air Purifier ON (FRESH Mode)	A, D	Cleaned air is discharged from the air vent in the luggage compartment.
	Air Purifier ON (RECIRC. Mode)	A, C	Cleaned air blows out of the dissipation grille.
	Rear Air Conditioner ON	B	Air blows out of roof side register.

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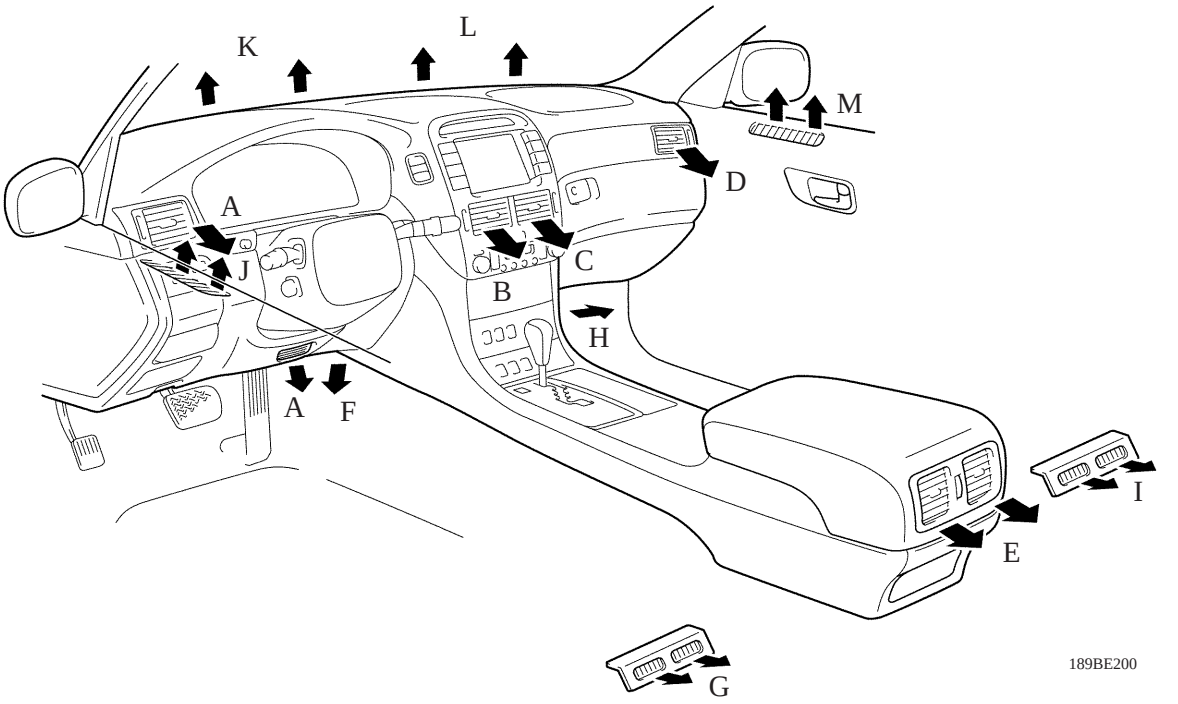
4. Air Outlets and Air Volume Rations



Air Outlet Mode	Selectable Mode		Register					Footwell				Defroster			
			Driver		Front Passenger		Rear	Driver		Front Passenger		Driver		Front Passenger	
	Automatic	Manual	Center	Side	Center	Side	Center	Front	Rear	Front	Rear	Front	Side	Front	Side
FACE	●	●	◯	◯	◯	◯	◯								
BI-LEVEL	●	●	○	○	○	○	○	○	○	○	○				
Multi	●	—	○	○	○	○	○	○	○	○	○	○	○	○	○
FOOT	●	●		○		○		◯	◯	◯	◯	○	○	○	○
FOOT /DEF	—	●		○		○		○	○	○	○	○	○	○	○
DEF	—	●		○		○						◯	◯	◯	◯
Air Outlet Position Symbol			B	A	C	D	E	F	G	H	I	K	J	L	M

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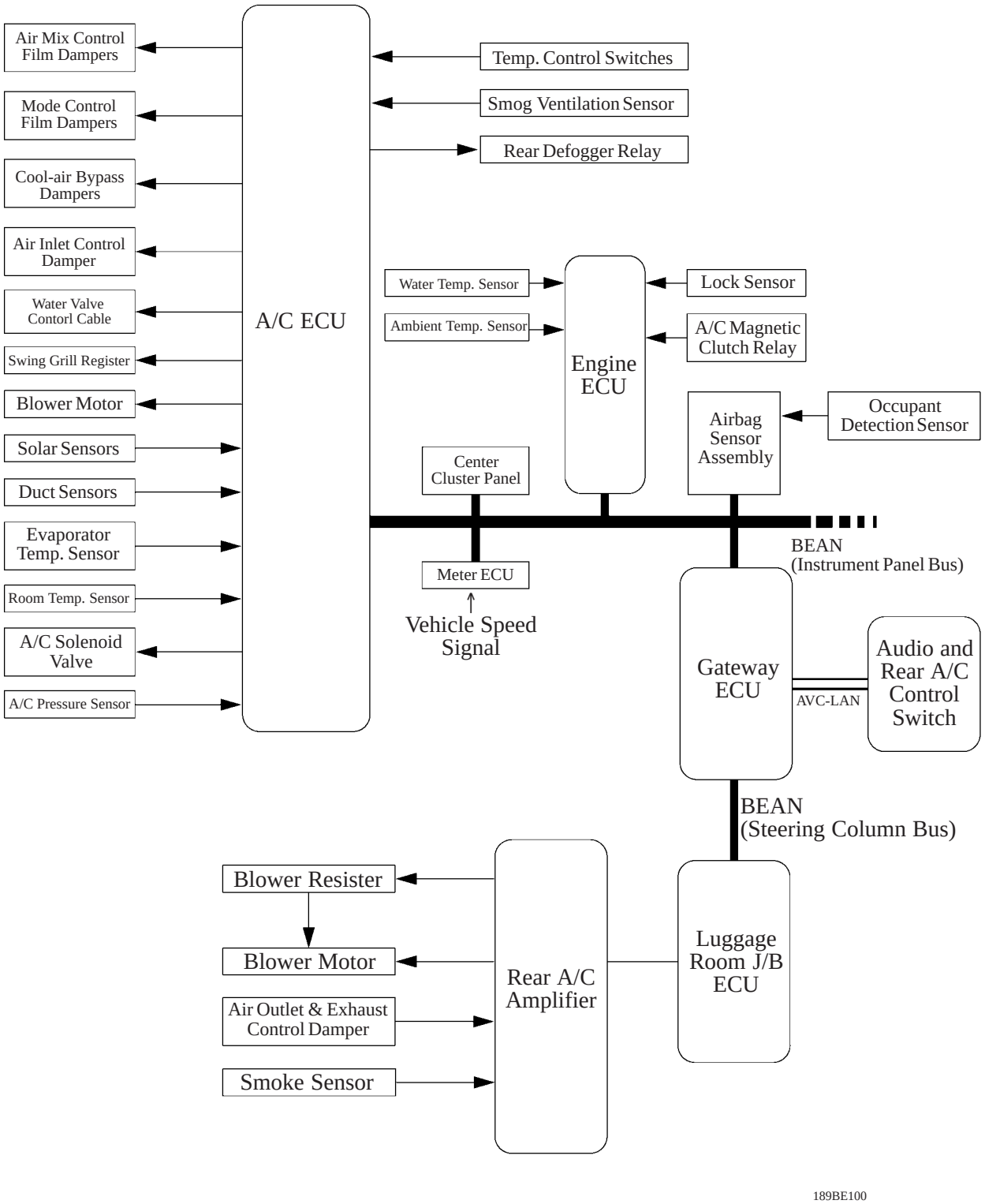
The size of the circle ○ indicates the proportion of air flow volume.

5. System Diagram



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