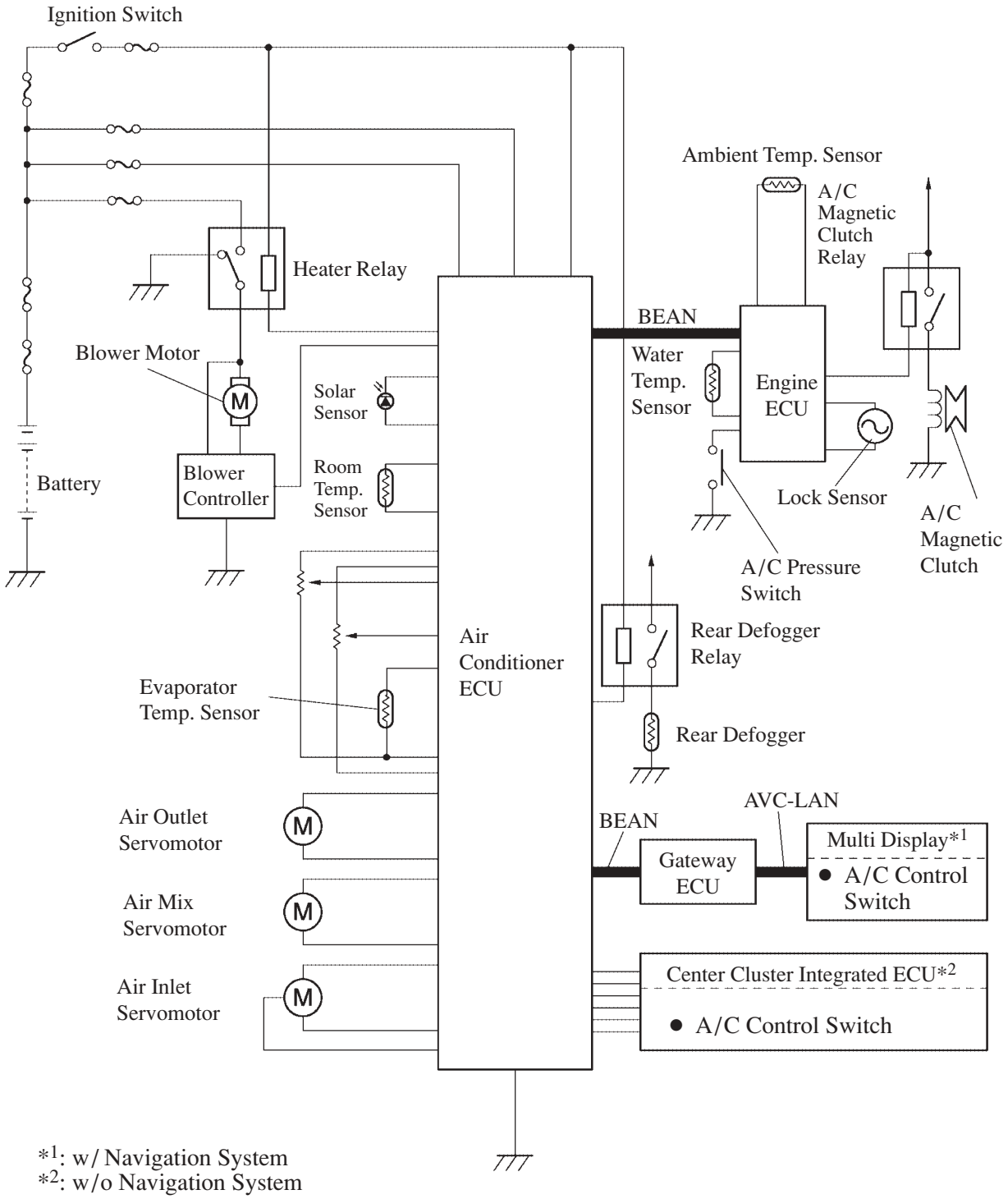
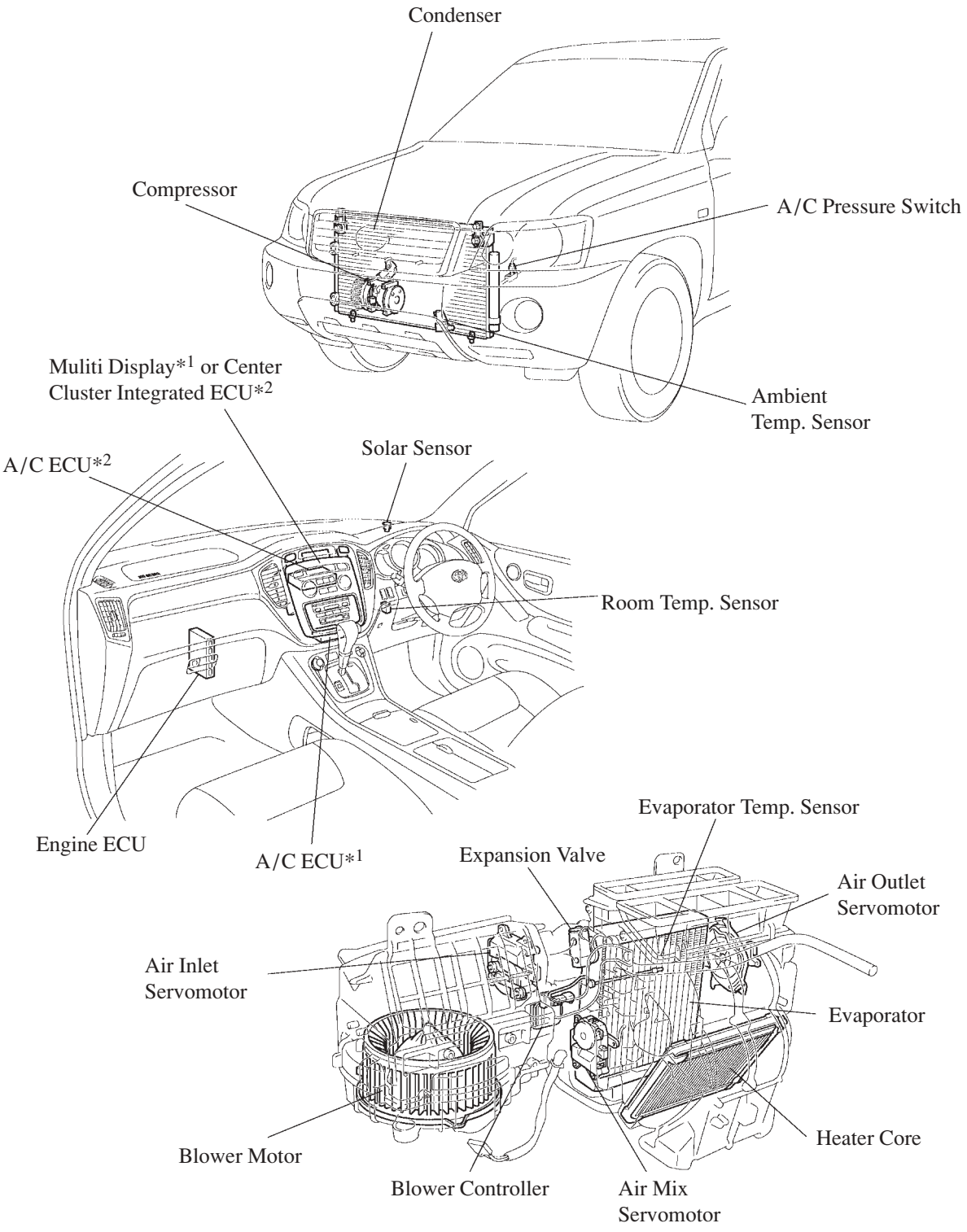
■FRONT AUTOMATIC AIR CONDITIONER

1. System Diagram



DO12BE28

2. Layout of Main Components

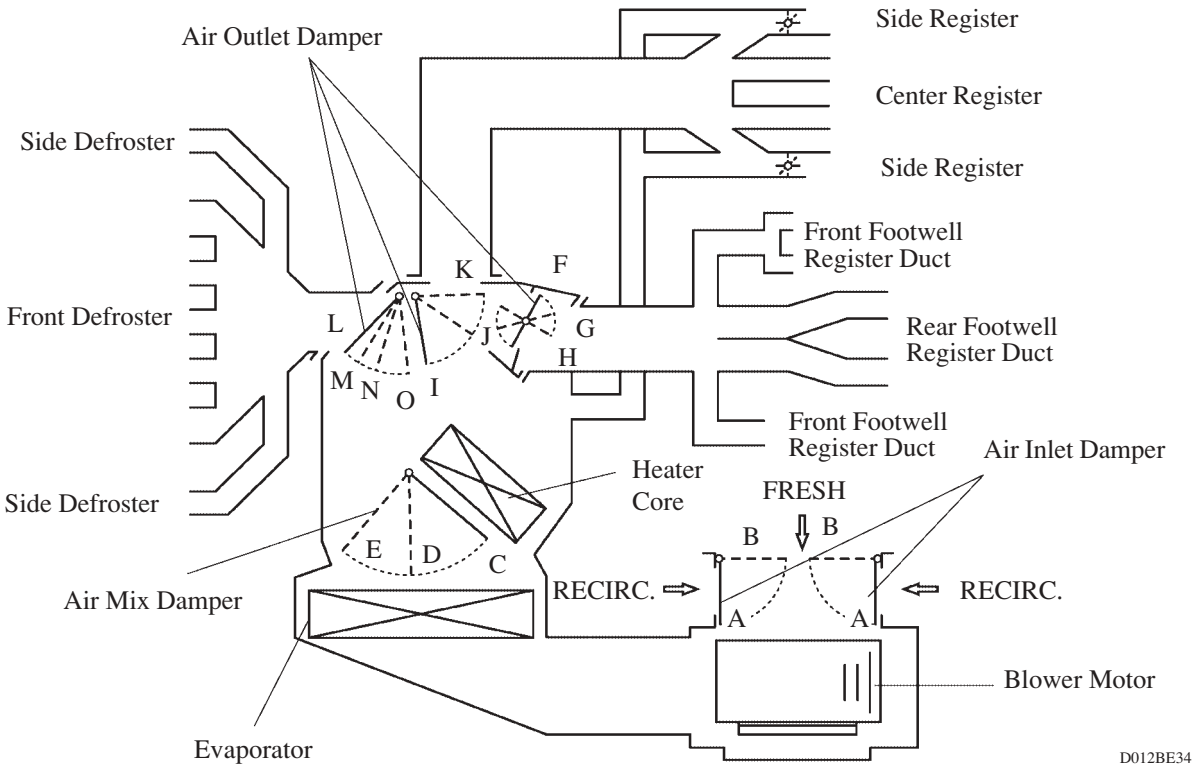


*1: w/ Navigation System
*2: w/o Navigation System

D012BE29

BE

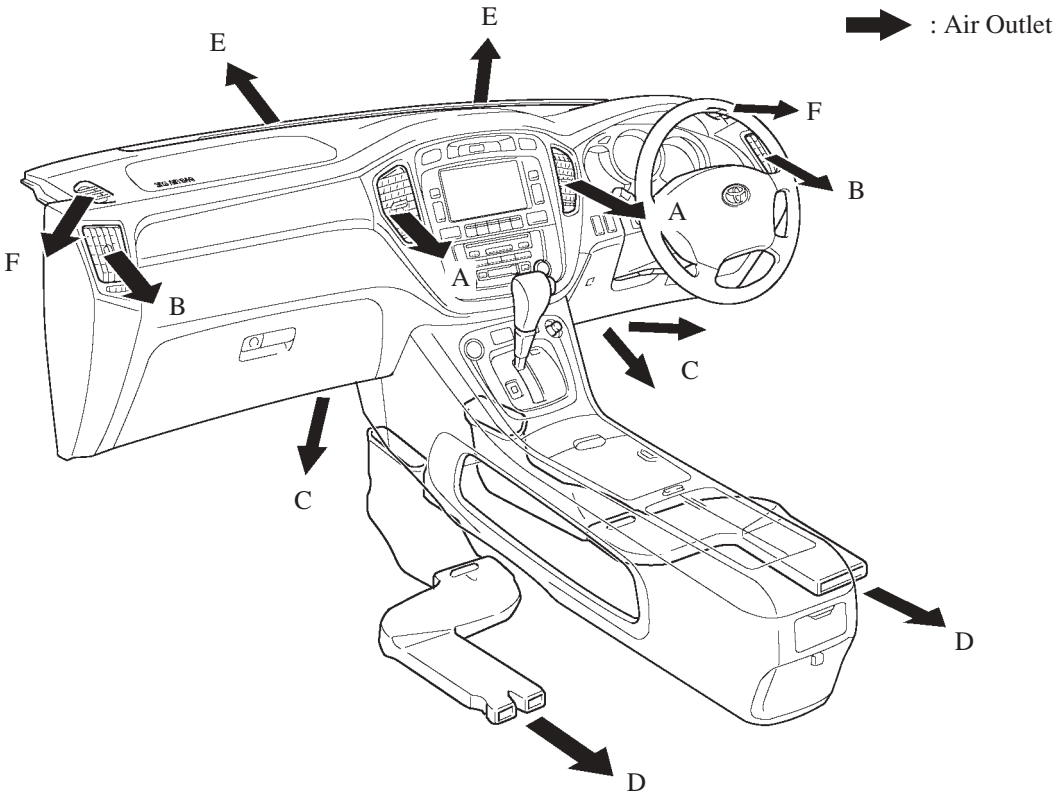
3. Model Position and Damper Operation



▶ Function of Main Damper ◀

Control Damper	Control Position	Damper Position	Operation
Air Inlet Control Damper	or FRESH 187BE23 D012BE56	A	Brings in fresh air.
	RECIRC 187BE41	B	Recirculates internal air.
Air Mix Control Damper	MAX. COLD – MAX. HOT TEMP. SETTING {18°C (65°F) – 32°C (85°F)}	C – D – E	Varies the mixture ratio of the cool air and the warm air in order to regulate the temperature continuously from HOT to COLD.
Mode Control Damper	DEF 187BE28	F, K, O	Defrosts the windshield through the front, side defroster, and side register.
	FOOT/DEF 187BE27	G, K, N	Defrosts the windshield through the front defroster, side defroster, and side register, while air is also blown out from the front and rear footwell register ducts.
	FOOT 187BE26	H, K, M	Air blows out of the front and rear footwell register ducts and side register. In addition, air blows out slightly from the front defroster and side defroster*2.
	BI-LEVEL 187BE25	G, J, L	Air blows out of the center registers and side registers. The occupant's head area can be kept cold while warming up their feet by adjusting the temperature setting knob.
	FACE 187BE24	F, I, L	Air blows out of the center registers, and side register.

4. Air Outlets and Air Volume Rations



Air Outlet Position Symbol		A	B	C	D	E	F
Air Outlet Mode	Air Mix Position	Center Face	Side Face	Front Foot	Rear Foot	Center Defroster	Side Defroster
FACE 187BE24	Max. Cool	○	○	—	—	—	—
BI-LEVEL 187BE25	Center	○	○	○	○	—	—
FOOT 187BE26	Max. Hot	—	○	○	○	○	○
FOOT/DEF 187BE27	Max. Hot	—	○	○	○	○	○
DEF 187BE28	Max. Hot	—	○	—	—	○	○

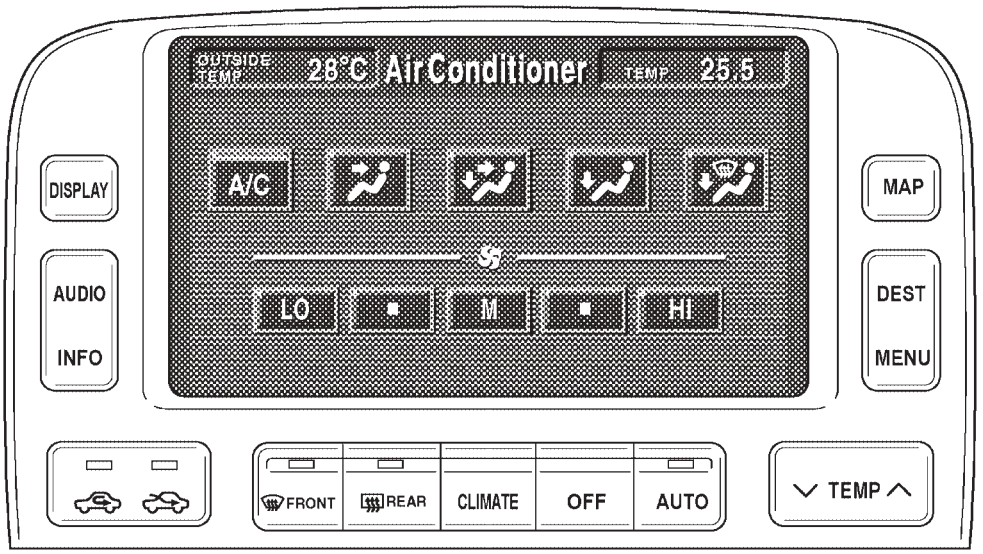
The size of the circle ○ indicates the proportion of airflow volume.

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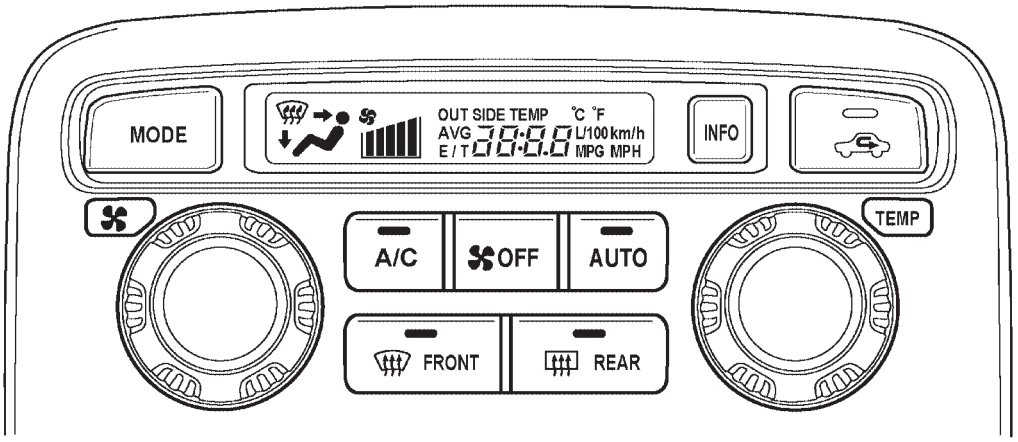
5. Construction and Operation

Air Conditioner Control Panel

- As in the new Kluger, an easy-to-use, push-button type center cluster panel is used. There are two types of control panels, depending on the setting of the multi-display.
- On the models without a multi display, the air conditioner status is displayed on an LCD (Liquid Crystal Display) panel. For details, see the Multi Information Display on page BE-43.
- On the models with a multi display, the air conditioner status is displayed on the multi display. For details, see the Multi Display on page BE-38.



Models with Multi Display D012BE37

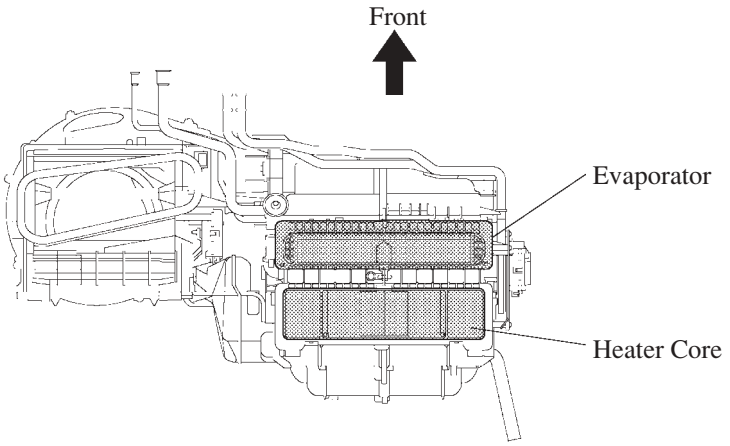


Models without Multi Display D012BE38

Air Conditioner Unit

1) General

A semi-center location air conditioner unit, in which the multi-tank, super-slim structure type evaporator and straight flow (full-path flow) heater core are placed in the vehicle's longitudinal direction, has been adopted.

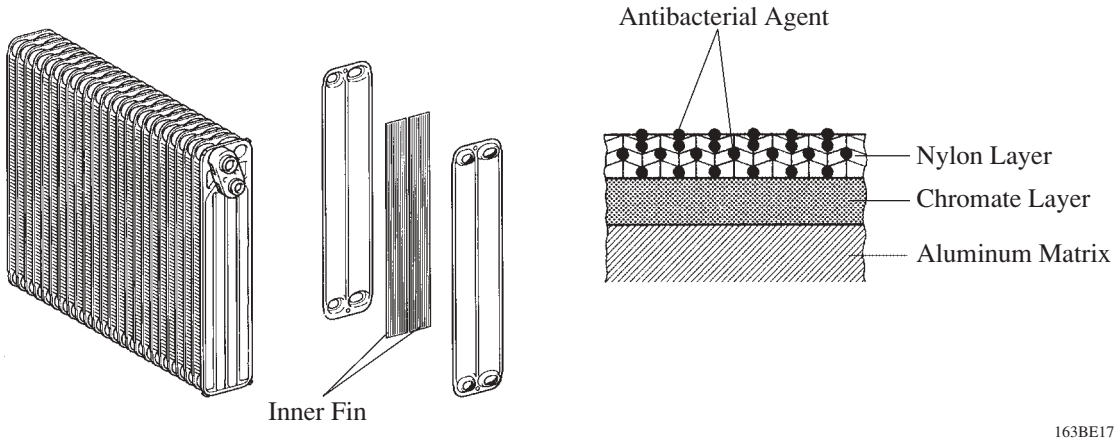


D012BE40

2) Evaporator

By placing the tanks at the top and the bottom of the evaporator unit and by adopting an inner fin construction, the heat exchanging efficiency has been improved and the evaporator unit's temperature distribution has been made more uniform. As a result, it has become possible to realize a thinner evaporator construction.

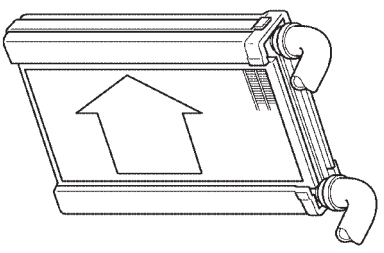
Furthermore, the evaporator body has been coated with a type of resin that contains an antibacterial agent in order to minimize the source of foul odor and the propagation of bacteria.



163BE17

3) Heater Core

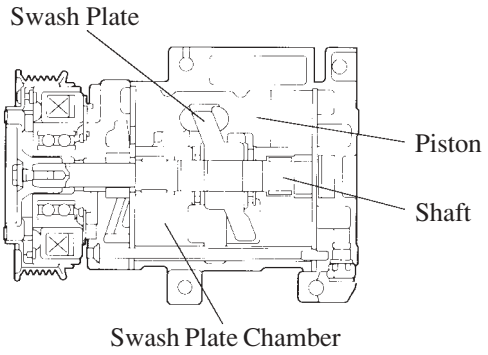
A compact, lightweight, and highly efficient straight flow (full-path flow) aluminum heater core is used.



152BE21

Compressor

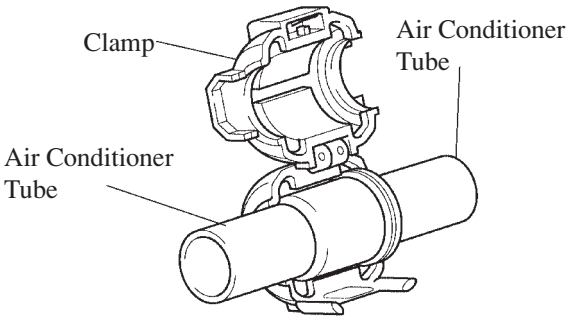
A compact, lightweight, and low-noise 10-cylinder swash plate type compressor (10S17) is used.



221BE34

Quick Joint

A clamp type quick joint has been adopted to connect the high pressure and low pressure tubes of the air conditioner unit. As a result, the ease of operation and service has been improved.



160CM04

Service Tip

Use the appropriate SST to remove the quick joint (for high pressure tube: 09870-00025, for low pressure tube: 09870-00015). For details, see the Kluger Repair Manual (Pub No. RM1087E).

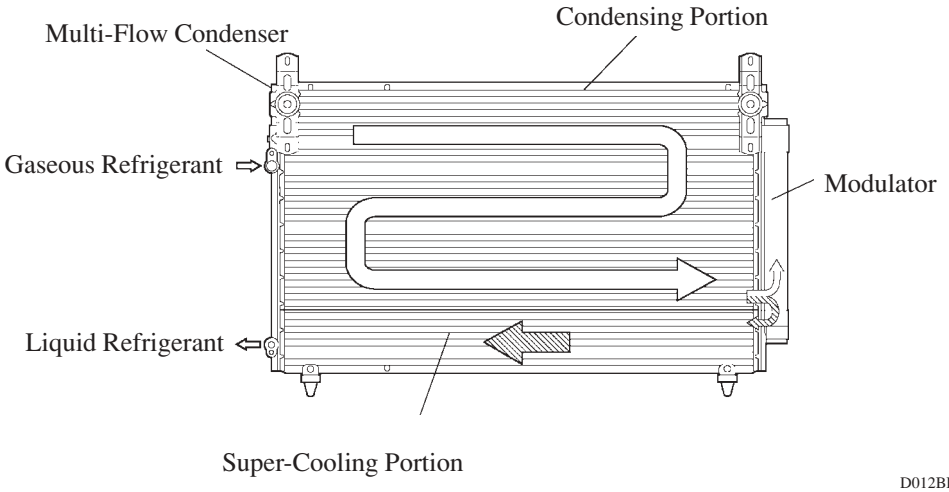
Condenser

1) General

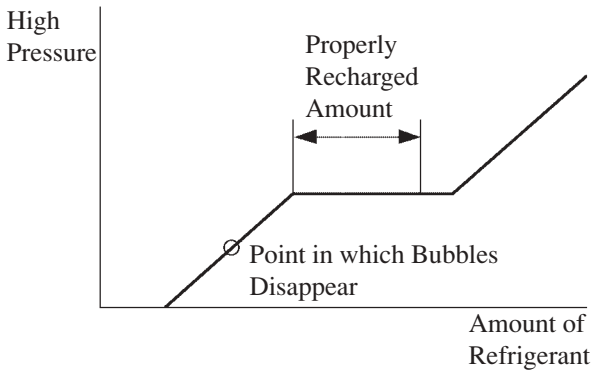
The new Kluger has adopted sub-cool condenser in which a multi-flow condenser (consisting of two cooling portions: a condensing portion and a super-cooling portion) and a gas-liquid separator (modulator) have been integrated. This condenser has adopted a sub-cool cycle for its cooling cycle system to improve heat-exchanging efficiency.

2) Sub-Cool Cycle

In the sub-cool cycle, after the refrigerant passes through the condensing portion of the condenser, both the liquid refrigerant and the gaseous refrigerant that could not be liquefied are cooled again in the super-cooling portion. Thus, the refrigerant is sent to the evaporator in an almost completely liquefied state.



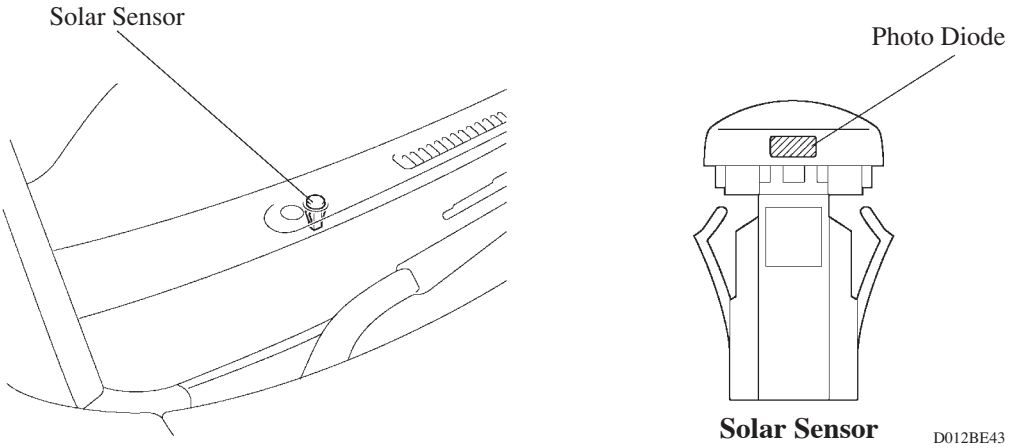
NOTE:
The point at which the air bubbles disappear in the refrigerant of the sub-cool cycle is lower than the proper amount of refrigerant with which the system must be filled. Therefore, if the system is recharged with refrigerant based on the point at which the air bubbles disappear, the amount of refrigerant would be insufficient. As a result, the cooling performance of the system will be affected. If the system is overcharged with refrigerant, this will also lead to a reduced performance. For the proper method of verifying the amount of the refrigerant and to recharge the system with refrigerant, see the Kluger Repair Manual (Pub. No. RM1087E).



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Solar Sensor

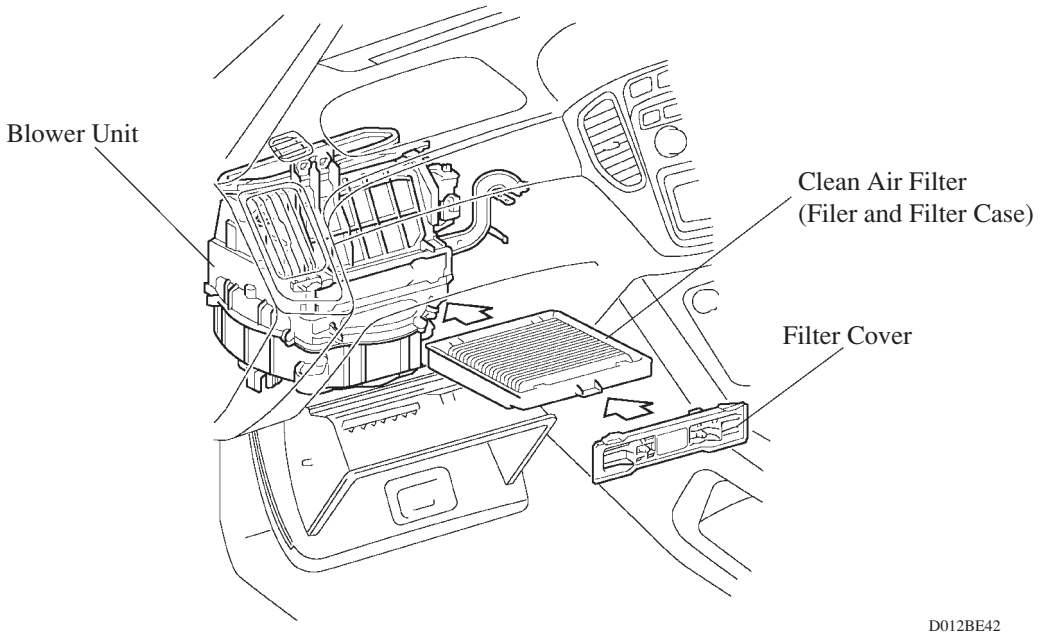
- Detects (in the form of changes in the current that flows through the built-in photo diode) the changes in the amount of sunlight and outputs them to the air conditioner ECU.
- This sensor is located in the driver side above the instrument panel.



Solar Sensor D012BE43

Clean Air Filter

A clean air filter (Standard type Particle Filter) that excels in removing dust is standard equipment.
This filter, which cleans the air in the cabin, is made of polyester. Thus, it can be disposed easily as a combustible material, a feature that is provided in consideration of the environment.
To facilitate the replacement of the filter, a one-touch clip is used in the filter cover which is unified with filter case. Thus, a construction that excels in serviceability has been realized.



D012BE42

Service Tip

Be sure to change the clean air filter every 30,000 km in the normal condition, or every 15,000 km in the dusty road condition.

Air Conditioner ECU

1) General

The air conditioner ECU has the following controls.

Control	Outline
Outlet Air Temp. Control	In response to the temperature control switch setting, the required outlet air temperature, evaporator temperature sensor, and engine coolant temperature sensor compensations are used by the air mix control damper control to calculate a tentative damper opening angle, through an arithmetic circuit in the air mix damper, to arrive at a target damper opening angle.
Blower Control	This function controls the operation of the blower motor in accordance with the signals from the engine coolant temperature sensor, evaporator temperature sensor, and the solar sensor. In addition, it protects the blower motor controller from the sudden drive current that occurs when the blower motor is activated.
Air Outlet Control	When the AUTO switch has been turned ON, automatic control causes the servomotor (for air mix control) to rotate to a desired position in accordance with the target damper opening, which is based on the calculation of the required outlet air temperature. Furthermore, under automatic control, the potentiometer in the servomotor (for air mix control) is used to detect the actual damper opening, as opposed to the calculated target damper opening, so that control can be effected to match the actual damper opening to the calculated target damper opening.
Air Inlet Control	Drives the servomotor (for air inlet) according to the operation of the air inlet control switch and fixes the dampers in the FRESH or RECIRC position.
Compressor Control	This control turns OFF the magnetic clutch of the compressor when the blower motor is turned OFF at the time the engine coolant temperature is below a predetermined value, an abnormal refrigerant pressure has been input, or the discharge temperature of the evaporator is below a predetermined value.
Rear Window Defogger Control	Switches the rear defogger on for 15 minutes when the rear defogger switch is switched on. Switches it off if the switch is pressed while it is operating.
Outer Temperature Indication Control	Based on the signals from the ambient temperature sensor, this control calculates the outside temperature, which is then corrected in the air conditioner ECU, and shown in the multi information display*1/multi display*2.
Self-Diagnosis	Checks the sensor in accordance with the operation of the air conditioner switches, then heater control panel display portion a DTC (Diagnosis Trouble Code) to indicate if there is a malfunction or not (sensor check function).
	Drives the actuators through a predetermined sequence in accordance with the operation of the air conditioner switches (actuator check function).

*1: Models without multi display
*2: Models with multi display

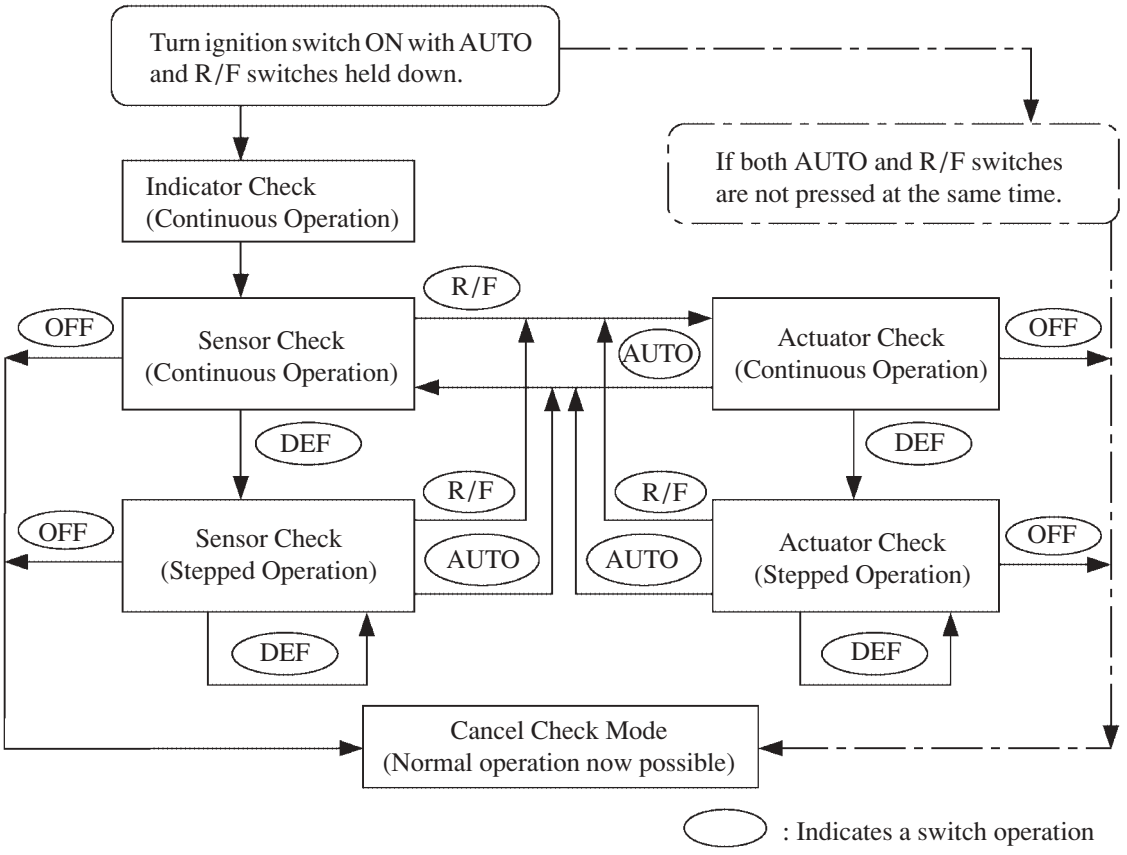
2) Self-Diagnosis

- The air conditioner ECU has a self-diagnosis function. It stores any operation failures in the air conditioner system memory in the form of a malfunction code. By operating the air conditioner control switches, the stored malfunction codes are displayed on the multi display on models with the multi display, and displayed on the air conditioner control panel LCD for models without multi display. Since diagnostic results are stored directly by electric power from the battery, they are not cleared even when the ignition switch is turned off.

▶ Functions ◀

Function	Outline
Indicator Check	Checks mode and temperature setting display.
Sensor Check	Checks the past and present malfunctions of the sensors, and clearing the past malfunction data.
Actuator Check	Checks against actuator check pattern if blower motor, servomotors and magnetic clutch are operating correctly according to signals from ECU.

- The check function can be started by the following procedure shown below.



- For details on the indicator check, sensor check, actuator check function, and clearing DTCs of this system, refer to the Kluger Repair Manual (Pub. No. RM1087E).