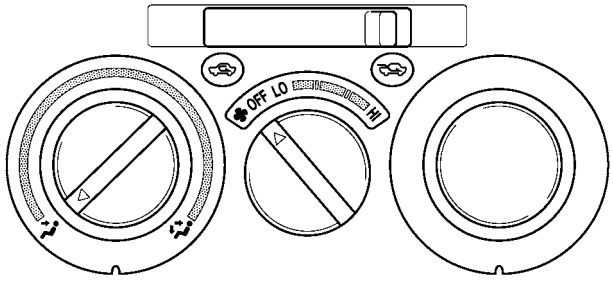
■ CONSTRUCTION

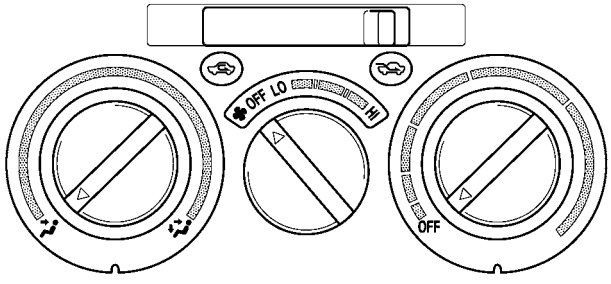
1. Heater Control Panel for Manual Control Type

General

- The rotary switch type heater control panel is used.
- Conventionally, the air outlet mode and the air inlet temperature control switches were operated with a single cable. Instead, the new model has employed a method that uses two cables on pulleys that are always operated in the pulling direction.
- Five air outlet modes are provided on the heater control panel. To enable finer mode settings, a positive feel is provided between the positions of these modes, thus enhancing the comfort level.

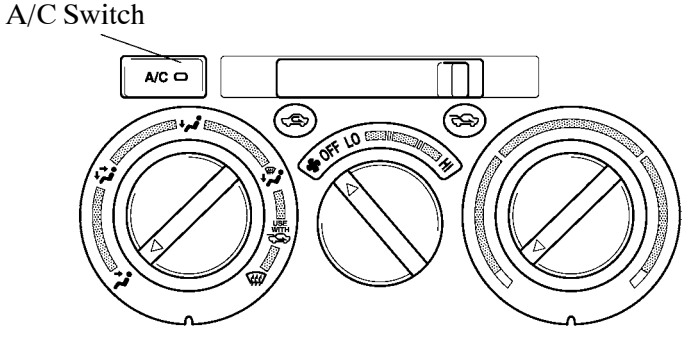


Models with Boost Vent 271BE17



Models with Cooler

271BE18

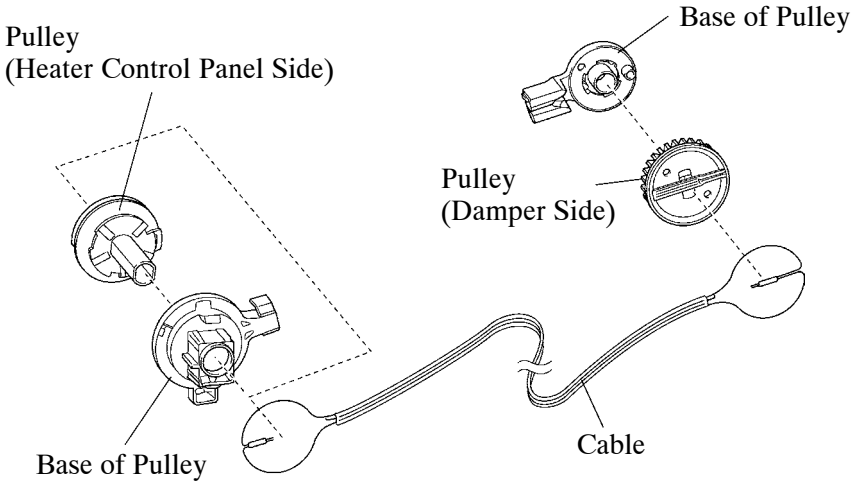


Models with Air Conditioning or Heater

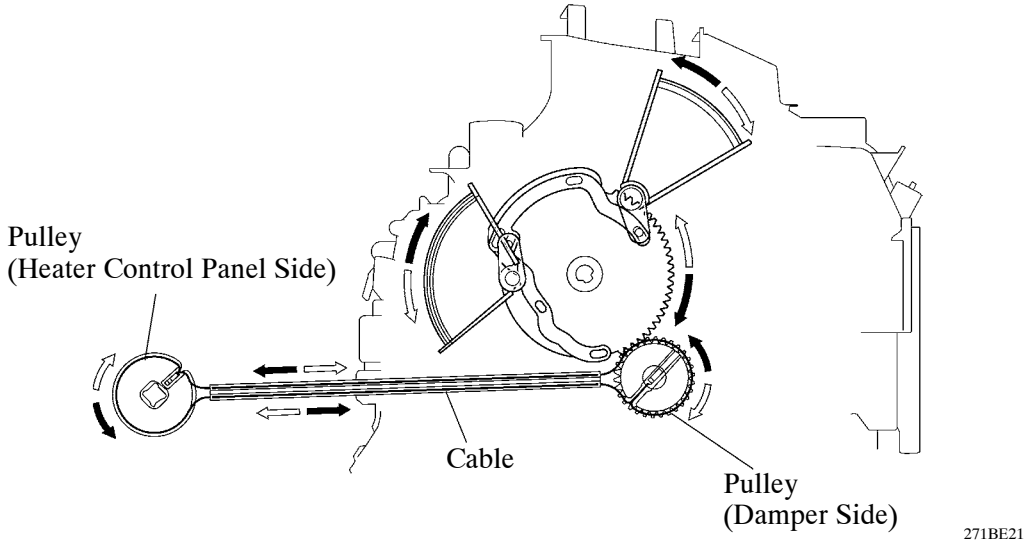
271BE19

Heater Control Cable

- Conventionally, the air outlet mode and the air inlet temperature control switches were operated with a single cable. Instead, the new model has employed a method that uses two cables on pulleys that are always operated in the pulling direction.
- This cable is circular, and is placed around the cable pulleys that are provided at the heater control panel and the damper.
- The operation of the heater control panel is transmitted to the damper via the control cable, which always moves in the pulling direction. Due to the consistent action point of the pulleys, the fluctuation of the operating effort has been minimized through the use of the pulleys. These measures have improved the ease of use and reduced the operating effort.



280BE44

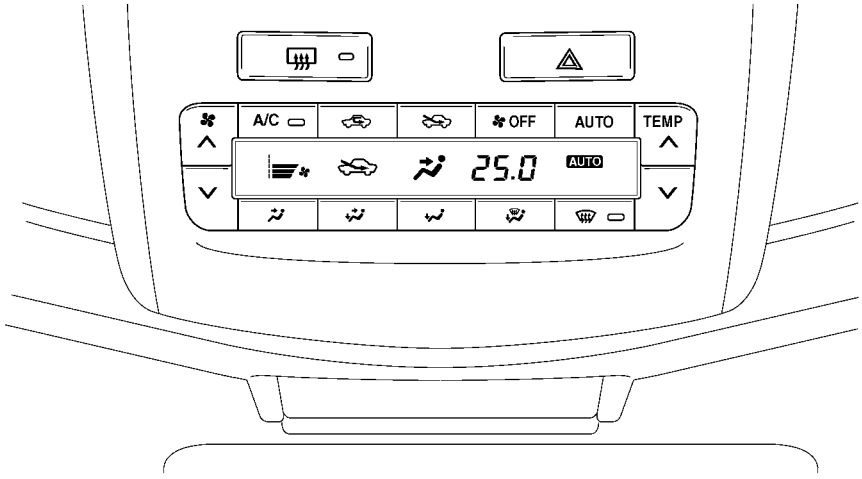


271BE21

BE

2. Heater Control Panel for Automatic Control Type

- The heater control panel of the automatic control type uses a push-button control and an LCD (Liquid Crystal Display) to display the set temperature, air outlet mode, and blower speed.
- The rear defogger switch and the hazard switch have been placed on the heater control panel. Furthermore, the air conditioning amplifier has been integrated into the heater control panel.

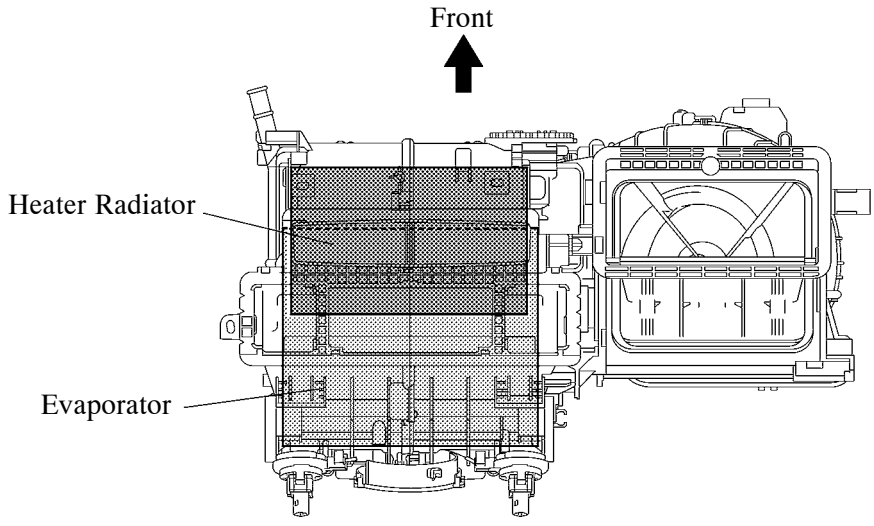


00MBE23Y

3. Air Conditioning Unit

General

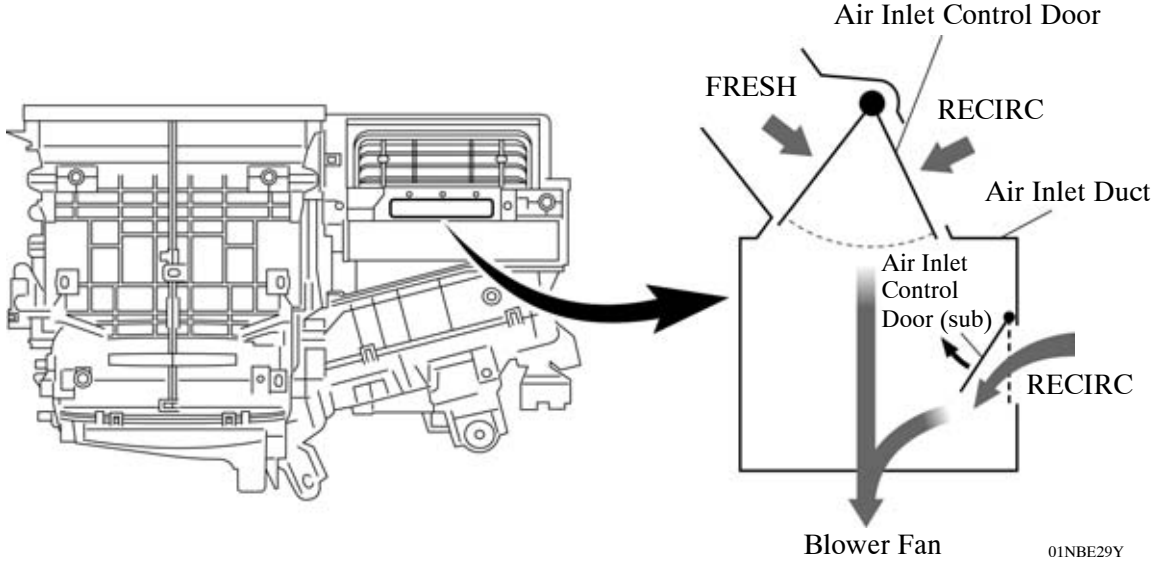
A semi-center location air conditioning unit is used, in which the evaporator and heater radiator are placed in the vehicle's longitudinal direction. As a result, the air conditioning unit has been made compact and lightweight.



LHD Model

Partial Recirculation System

The partial recirculation system is used.
This system has an air inlet control door (sub) in the cabin side of the air inlet duct. Thus, it is able to cycle a small volume of recirculated air even in the FRESH mode, thus enhancing heating performance. When the blower switch is on, the suction force of the blower fan opens this air inlet control door (sub).



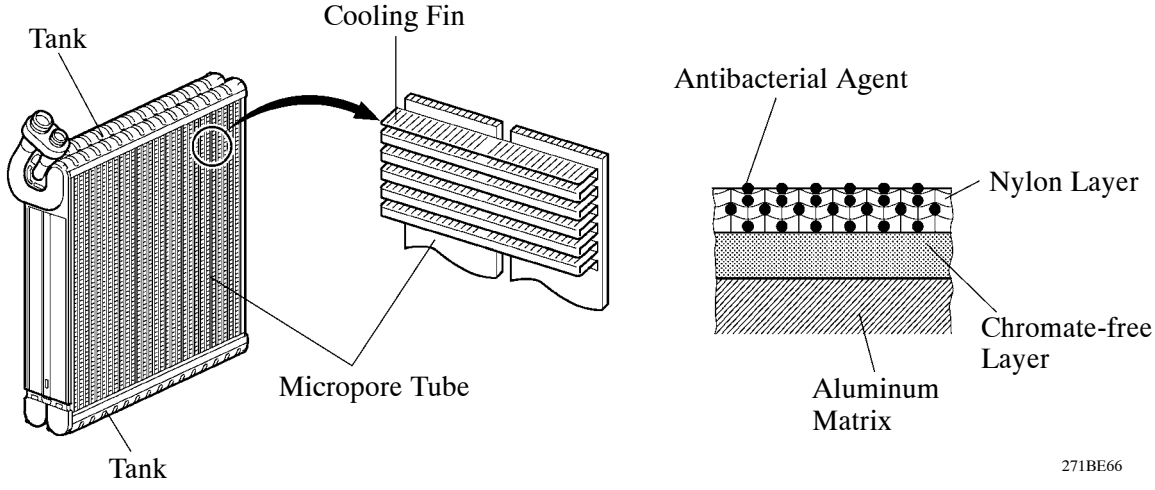
Evaporator

- An RS (Revolutionary super-slim Structure) structure evaporator is used.
- By placing the tanks at the top and the bottom of the evaporator unit and using a micropore tube construction, the following effects have been achieved:

  a) The heat exchange efficiency has been improved.

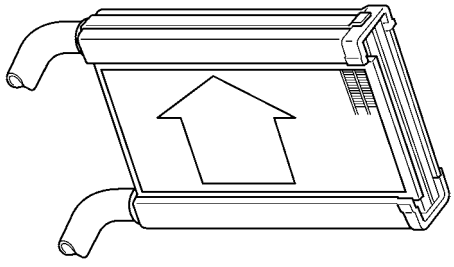
  b) The temperature distribution has been made more uniform.

  c) The evaporator has been made thinner.
- 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. The substrate below this coating consists of a chromate-free layer to help protect the environment.



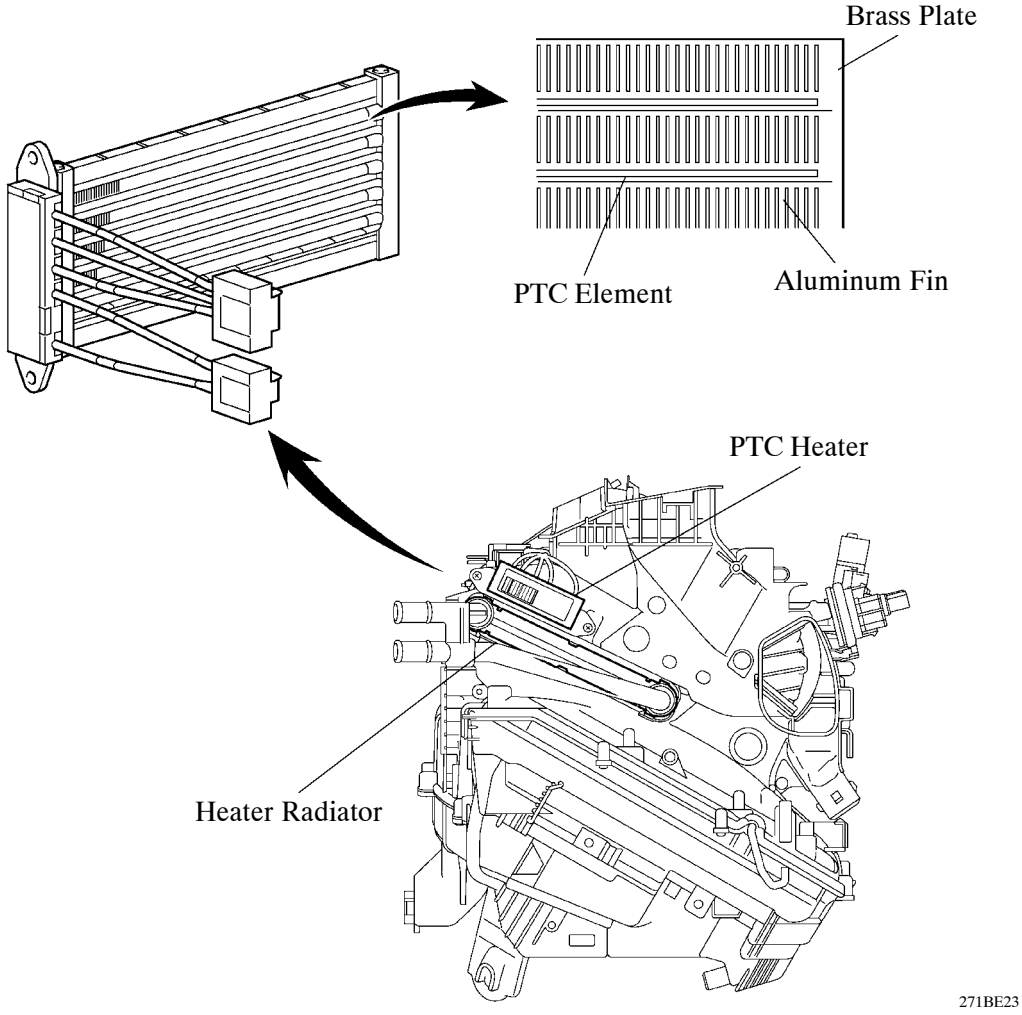
Heater Radiator

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



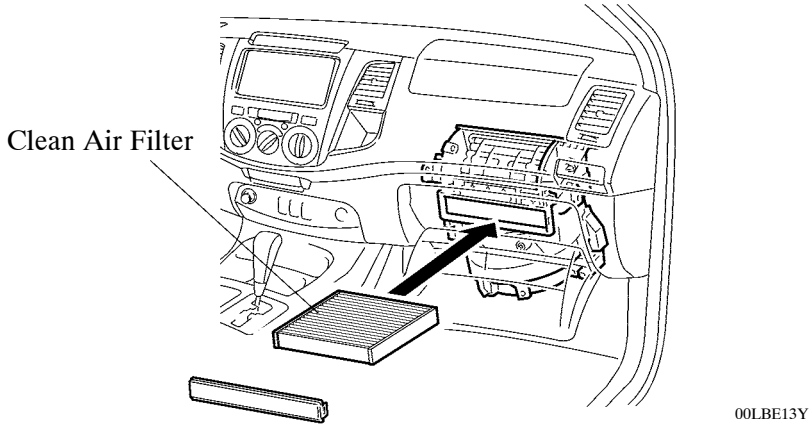
PTC Heater

- The PTC (Positive Temperature Coefficient) heater is used.
- The PTC heater is located above the heater radiator in the air conditioning unit.
- The PTC heater consists of a PTC element, an aluminum fin, and a brass plate. When current is applied to the PTC element, it generates heat to warm the air that passes through the unit.



Clean Air Filter

- Either a semi-standard type clean air filter or a high efficiency type clean air filter is used. The clean air filter is installed in the upper section of the blower fan for easy replacement of the clean air filter without the need for removing the one-touch clip in the glove box.
- The high efficiency type clean air filter is used to remove dust, pollen, and other micron particles from air entering from the outside of the vehicle to provide a comfortable cabin with clean air.



Service Tip

- The replacement intervals are shown in the chart to below:

	Destination				
	Thailand	Indonesia	Philippines	Malaysia	Australia*
Semi-standard Type	30000 km or 18500 miles				

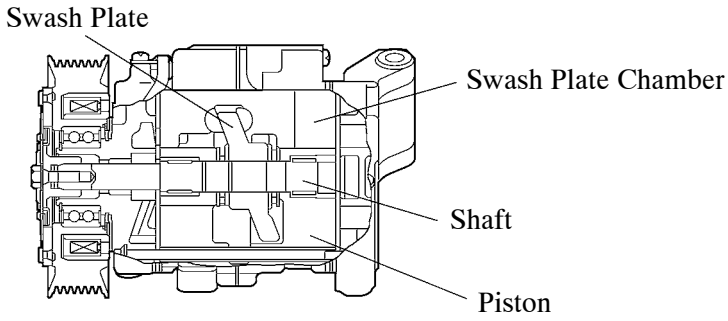
		Destination	
		Europe and Australia	Except Europe and Australia
High Efficiency Type	Normal Condition	30000 km or 18500 miles	20000 km or 12000 miles
	Dusty Condition	15000 km or 9000 miles	15000 km or 9000 miles

*: Optional equipment for 2WD complete models with 1KD-FTV engine

- Replace the clean air filter after the ignition switch is turned off.

4. Compressor

A compact, lightweight, and quiet 10-cylinder swash plate type compressor is used.



10S11 Type

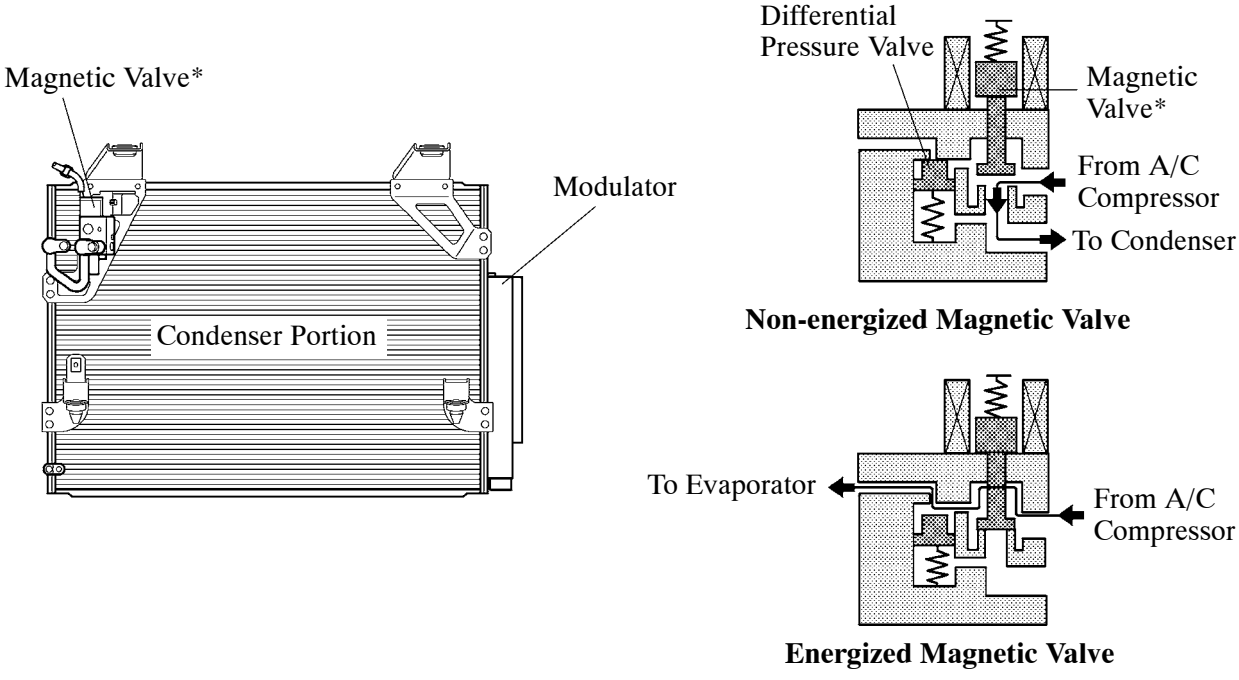
271BE25

5. Condenser

General

- The new Hilux uses a sub-cool condenser. This is a multi-flow condenser consisting of three portions: a condensing portion, a super-cooling portion, and a gas-liquid separator (modulator) all integrated together. A sub-cool cycle is used for the cooling cycle system of this condenser to improve heat-exchanging efficiency.
- The condenser of the hot-gas type power heater model consists of a condensing portion and a magnetic valve. The condensing portion is the same sub-cool condenser as that used in models without the hot-gas type power heater.
- The magnetic valve switches the refrigerant circuits in accordance with the signals from the air conditioning amplifier.

BE

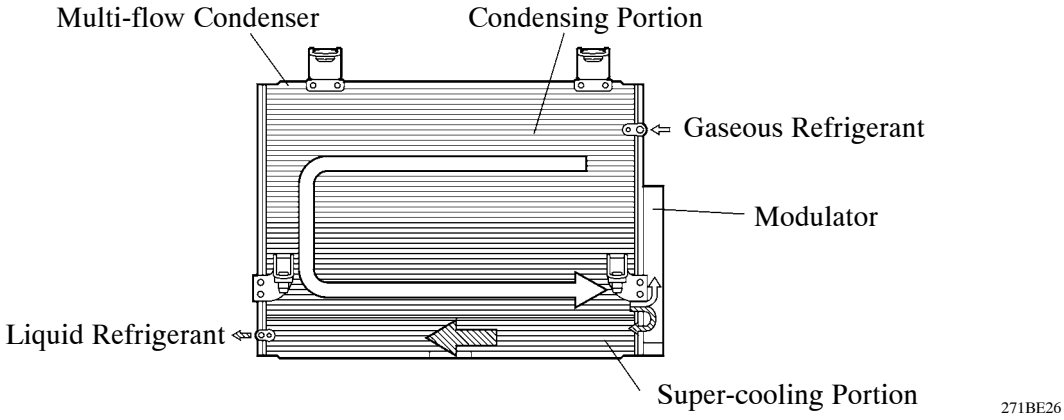


291BE26

*: Models with hot-gas type power heater

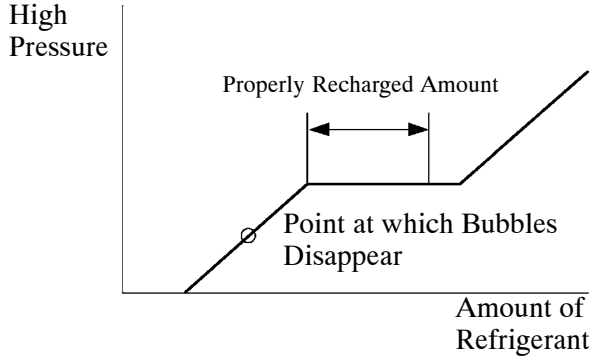
Sub-cool Cycle

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 (Except Models for Central and South America):

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 in accordance with the point at which the air bubbles disappear, the amount of refrigerant will 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 refrigerant and recharging the system with refrigerant, see the Hilux Repair Manual.



Service Tip

Models for Central and South America:
Because the sight glass for checking the condition of the refrigerant has been discontinued, inspect the refrigerant volume by measuring the refrigerant pressure with a refrigerant charging gauge. For details, refer to the Hilux Repair Manual.

6. Check Valve (Hot-gas Type Power Heater)

The check valve is located on the tip of the high pressure pipe (the evaporator side) between the condenser and evaporator on models with the air conditioning and the hot-gas type power heater. This valve is provided in order to prevent the differential pressure valve malfunction that is caused by the reverse flow of the refrigerant when the air conditioning and the hot-gas heater are in operation.

