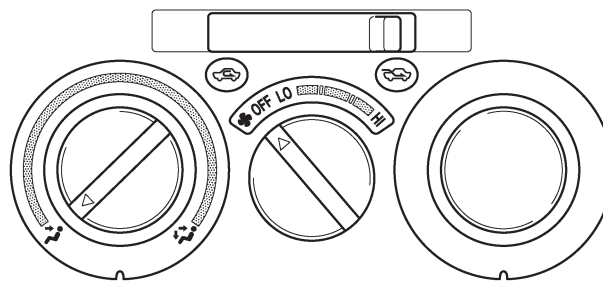


■ CONSTRUCTION AND OPERATION

1. Heater Control Panel

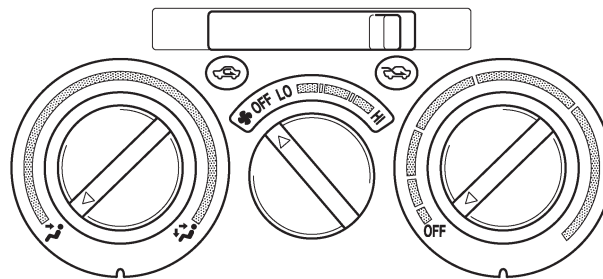
General

- 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 adopted a method that uses two cables on pulleys that are always operated in the pulling direction.
- Five air outlet modes are provided on the control panel with a heater. To enable finer mode settings, a positive feel is provided between the positions of these modes, thus enhancing the comfort level.



Only for Boost/Vent

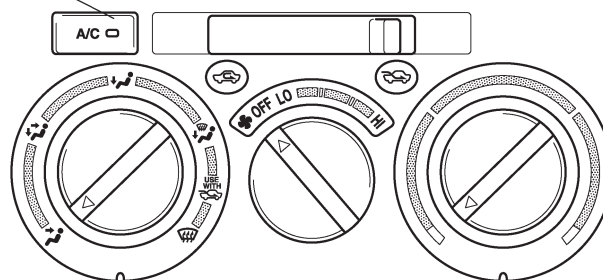
271BE17



Only for Boost/Vent with Cooler

271BE18

Only for Models with Air Conditioner

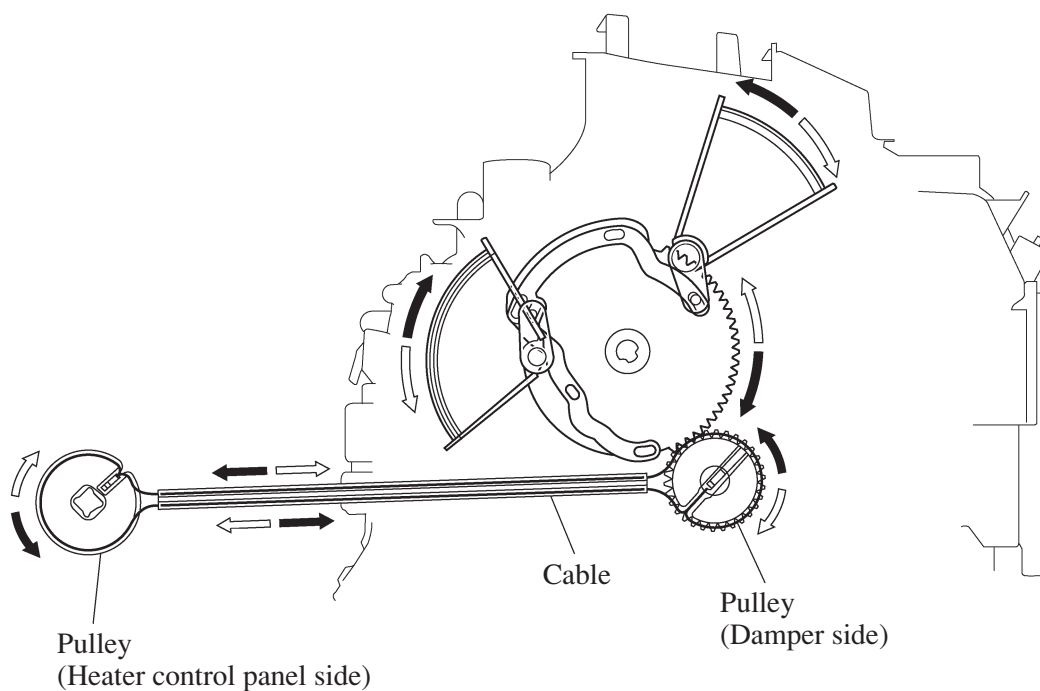
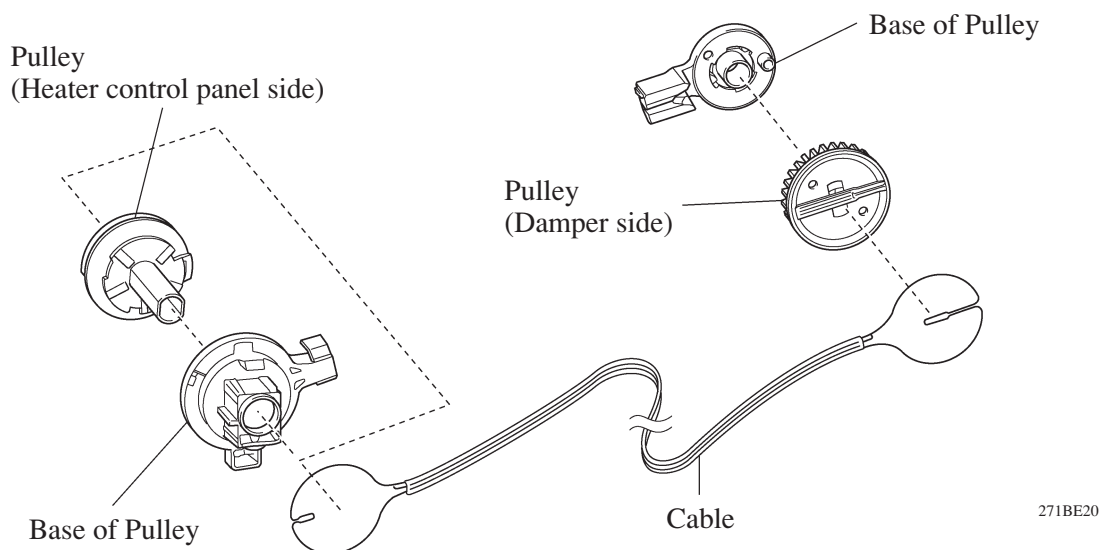


Air Conditioner or Heater Model

271BE19

Heater Control Cable

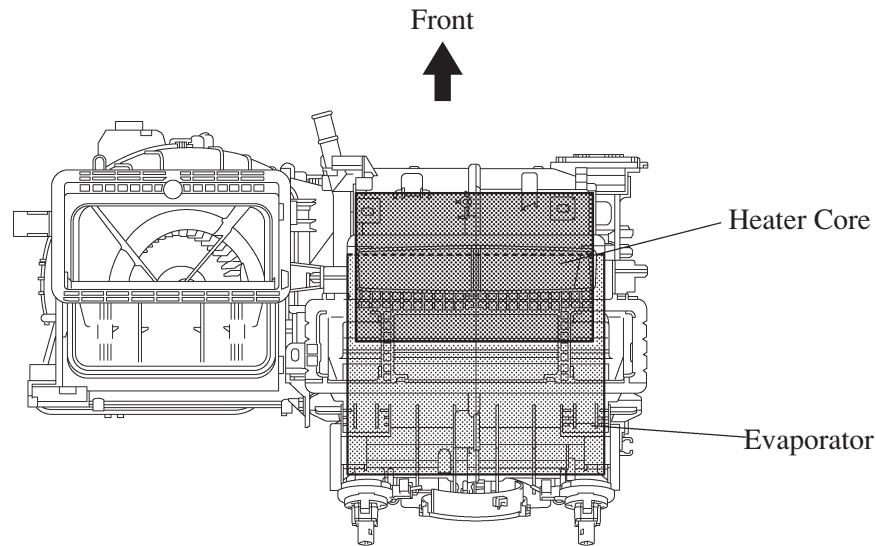
- Conventionally, the air outlet mode and the air inlet temperature control switches were operated with a single cable. Instead, the new model has adopted a method that uses two cables on pulleys that are always operated in the pulling direction.
- This cable is circular, and is placed around the cable 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.



2. Air conditioner Unit

General

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

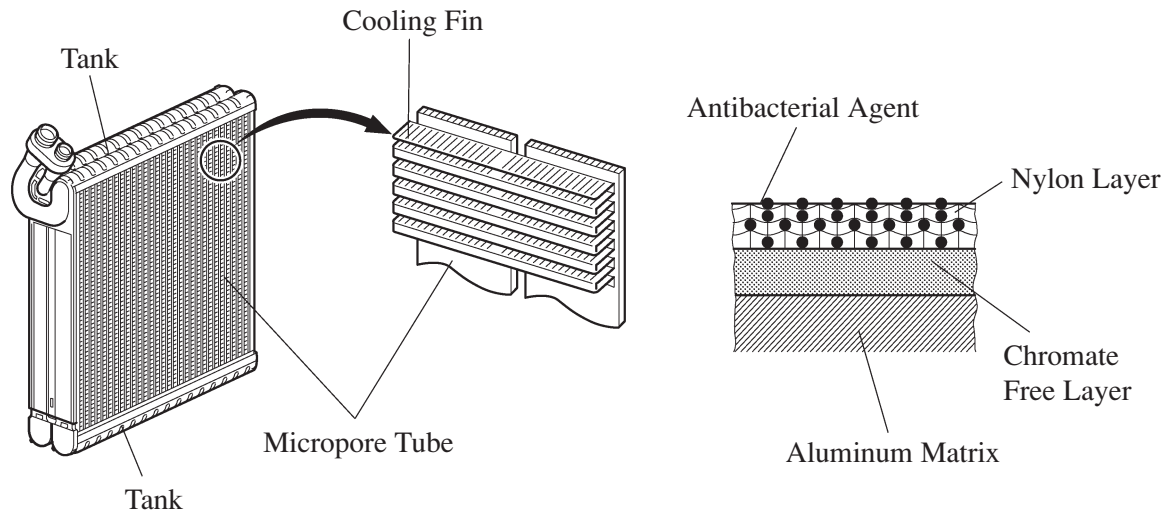


RHD Model

271BE22

Evaporator

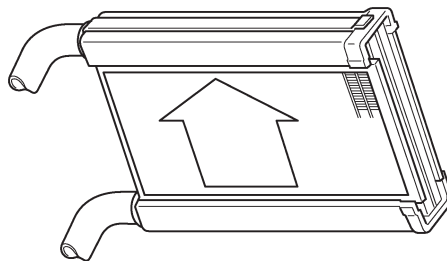
- A revolutionary-slim structure evaporator has been adopted for except Central and South American model.
- By placing the tanks at the top and the bottom of the evaporator unit and adopting a micropore tube construction, the following effects have been realized:
 - a) The heat exchanging efficiency 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.



271BE66

Heater Core

A compact, lightweight, and highly efficient straight flow (full-path flow) aluminum heater core has been adopted.

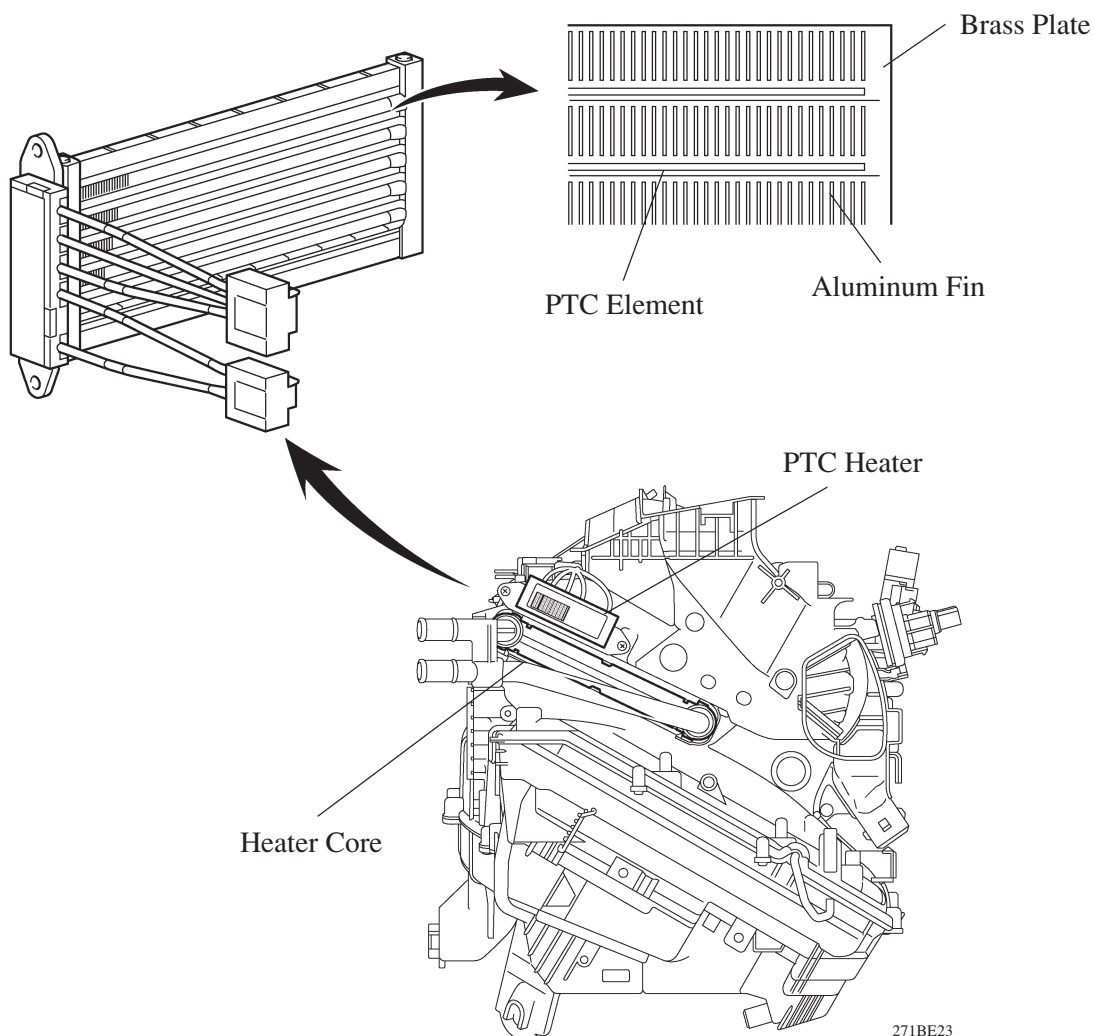


271BE65

PTC Heater

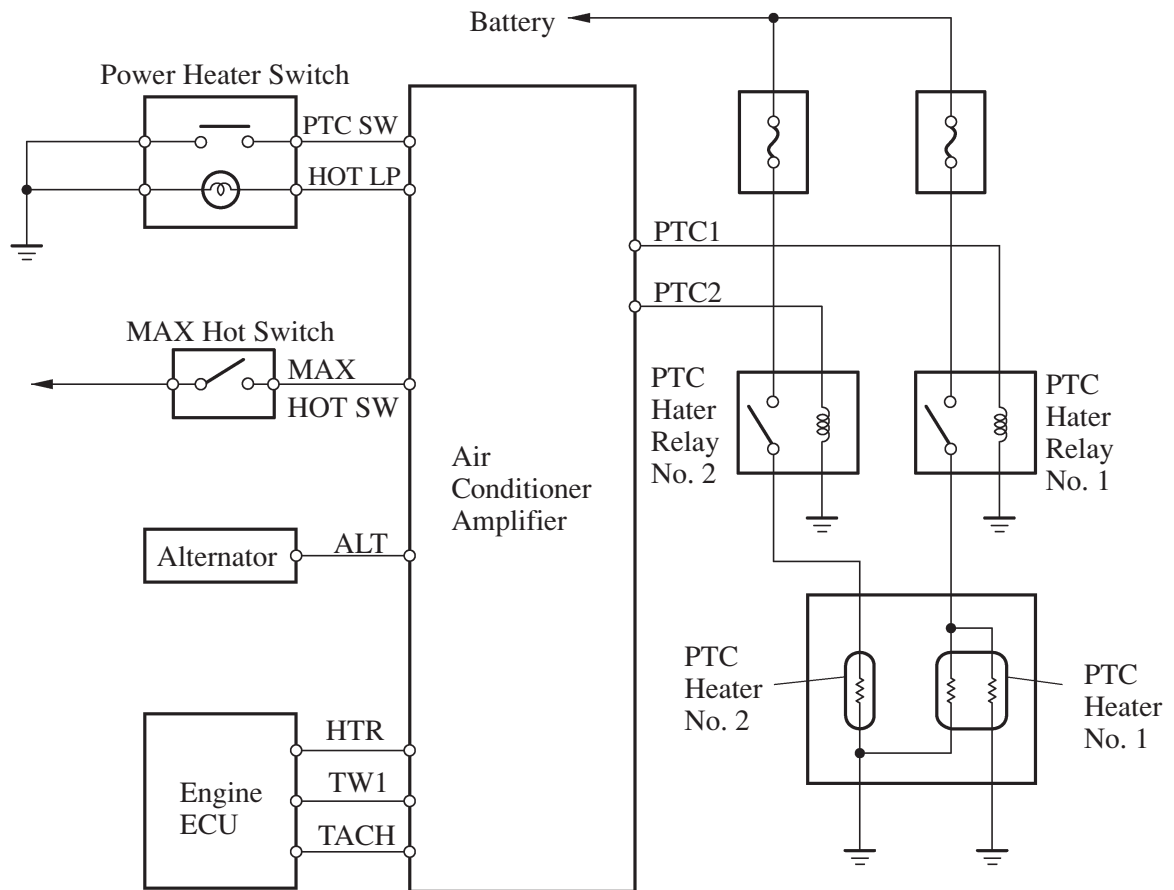
1) General

- The PTC (Positive Temperature Coefficient) heater has been adopted as standard equipment on the double cab model with the 1KD-FTV engine for Australia.
- The PTC heater is located above the heater core in the air conditioner unit.
- The PTC heater consists of a PTC element, aluminum fin, and brass plate. When current is applied to the PTC element, it generates heat to warm the air that passes through the unit.



271BE23

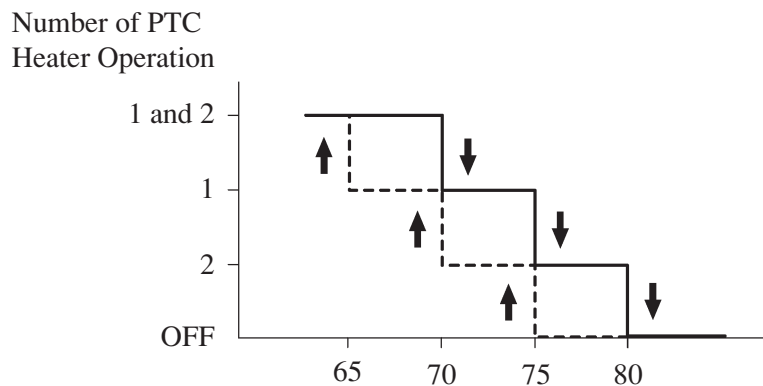
2) Wiring Diagram



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3) PTC Heater Operating Conditions

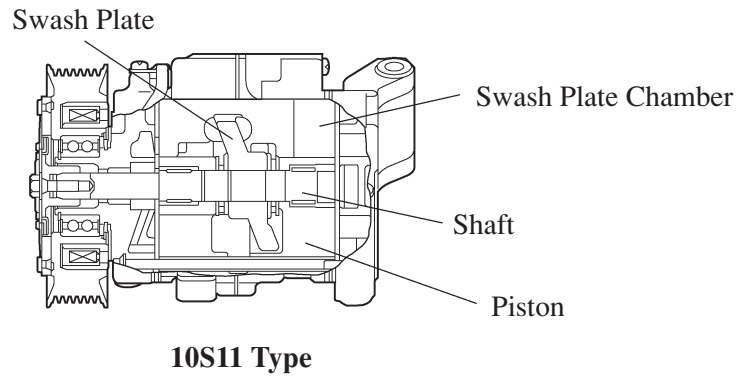
The ON/OFF function of the PTC heater is controlled by the air conditioner amplifier in accordance with the water temperature, engine speed, air mix setting, and electrical load (alternator power ratio). For example, with water temperature, the number of PTC heater operation varies as shown in the graph below.



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3. Compressor

A compact, lightweight, and low-noise 10-cylinder swash plate type compressor has been adopted.



271BE25

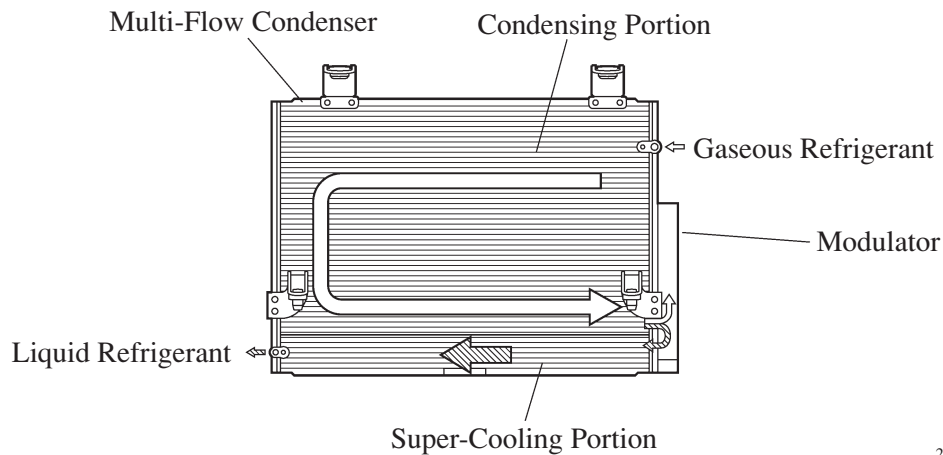
4. Condenser

General

The new Hilux has adopted a sub-cool condenser. This is a multi-flow condenser consisting of two cooling portions: a condensing portion and a super-cooling portion, and a gas-liquid separator (modulator) all integrated together. This condenser has adopted a sub-cool cycle for its cooling cycle system to improve heat-exchanging efficiency.

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.

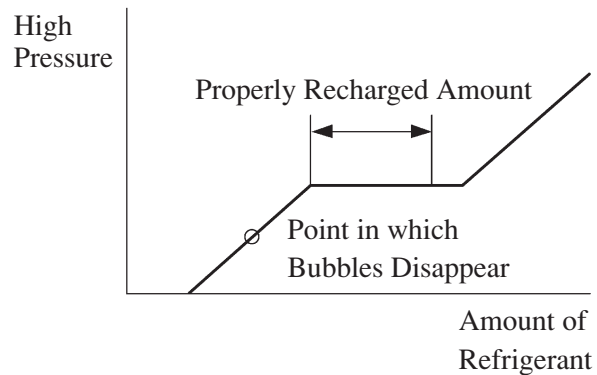


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NOTE (Except Central and South American Models):

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 Hilux Repair Manual.



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Service Tip**Central and South American Models:**

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.