

PTC HEATER [MANUAL AIR CONDITIONER]

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Purpose

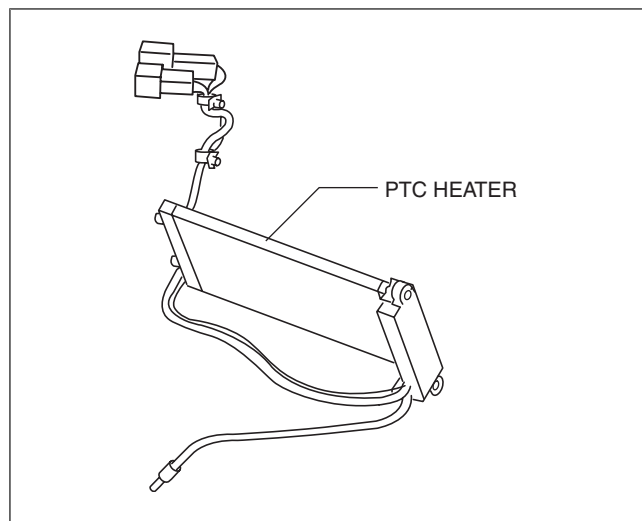
- The PTC heater is a supplementary heater to temporarily improve the A/C unit heating performance for diesel engine vehicles which have good thermal efficiency.

Function

- The PTC heater generates heat based on the operation signal from the front body control module (FBCM) and warms the air passing through the A/C unit.

Construction

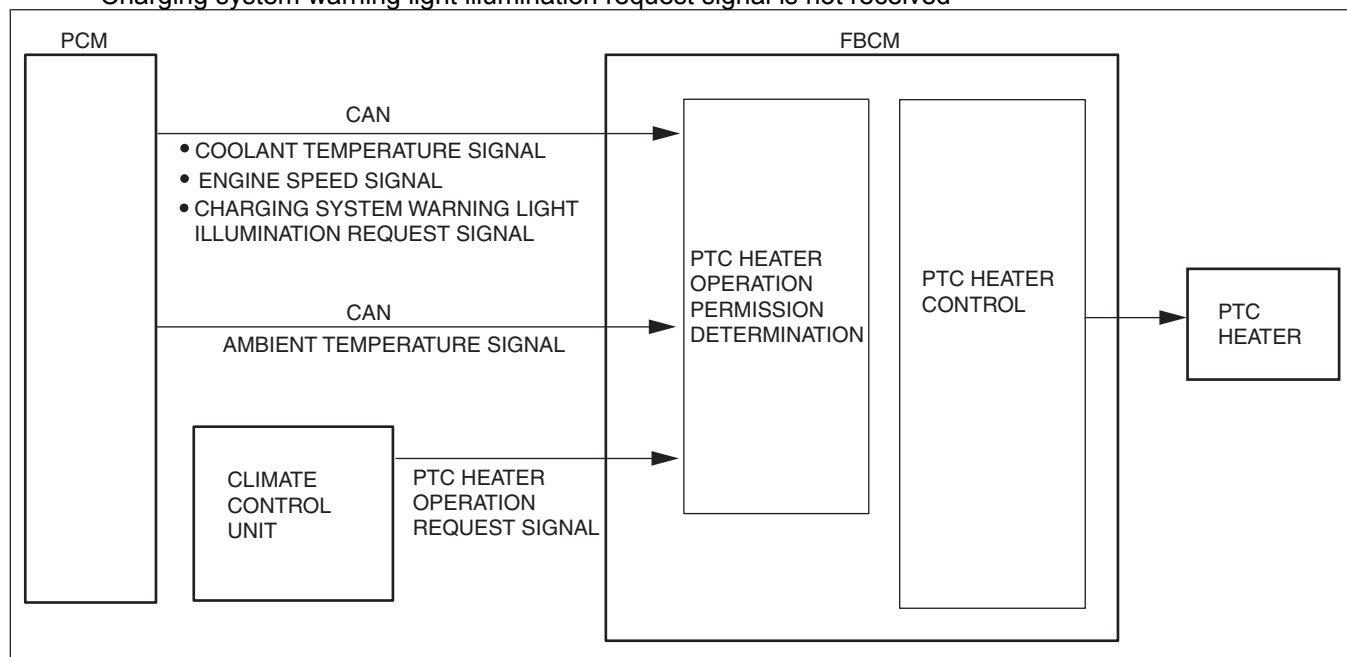
- The PTC heater consists of a film heater element, aluminum fin, and brass plate. Heat is generated by the flow of electrical current to the heater element.



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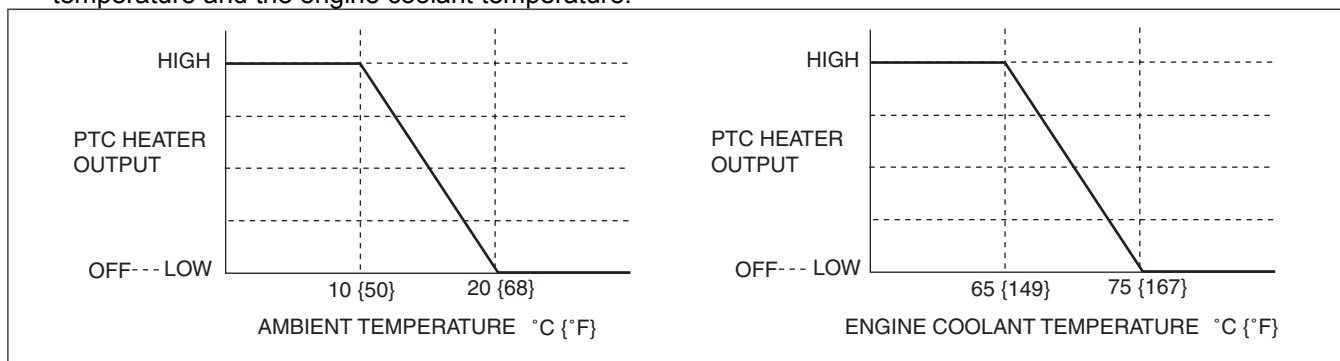
Operation

- The instrument cluster operates the PTC heater when all of the following conditions are met.
 - During engine start (engine speed is **400 rpm or more**)
 - Ambient temperature signal is less than **20 °C {68 °F}**
 - Coolant temperature signal is less than **75 °C {167 °F}**
 - PTC heater operation request signal is received (See PTC heater operation request signal.)
 - Charging system warning light illumination request signal is not received



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- The front body control module (FBCM) compares the PTC heater output values calculated from the ambient temperature and the engine coolant temperature information, and determines the lower value as the PTC heater output. As a result, the PTC heater generation amount is controlled to switch gradually according to the ambient temperature and the engine coolant temperature.

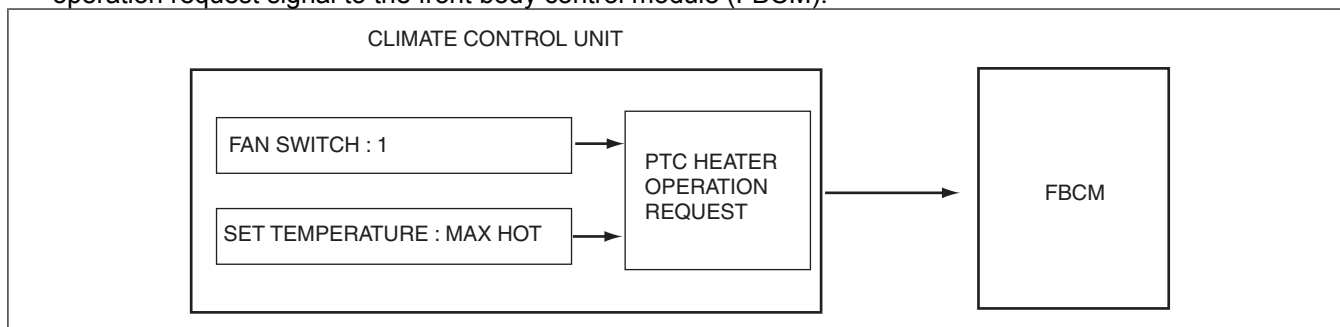


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PTC heater output for ambient temperature	PTC heater output for engine coolant temperature	PTC heater output determination
Low	High	Ambient temperature side
High	Low	Engine coolant temperature side

PTC heater operation request signal

- When the set temperature is at MAX HOT and the fan switch is at 1, the climate control unit outputs a PTC heater operation request signal to the front body control module (FBCM).



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Fail-safe

- If each signal input from the PCM cannot be received or the charging system warning light illumination request signal is received, the front body control module (FBCM) inhibits the PTC heater operation.