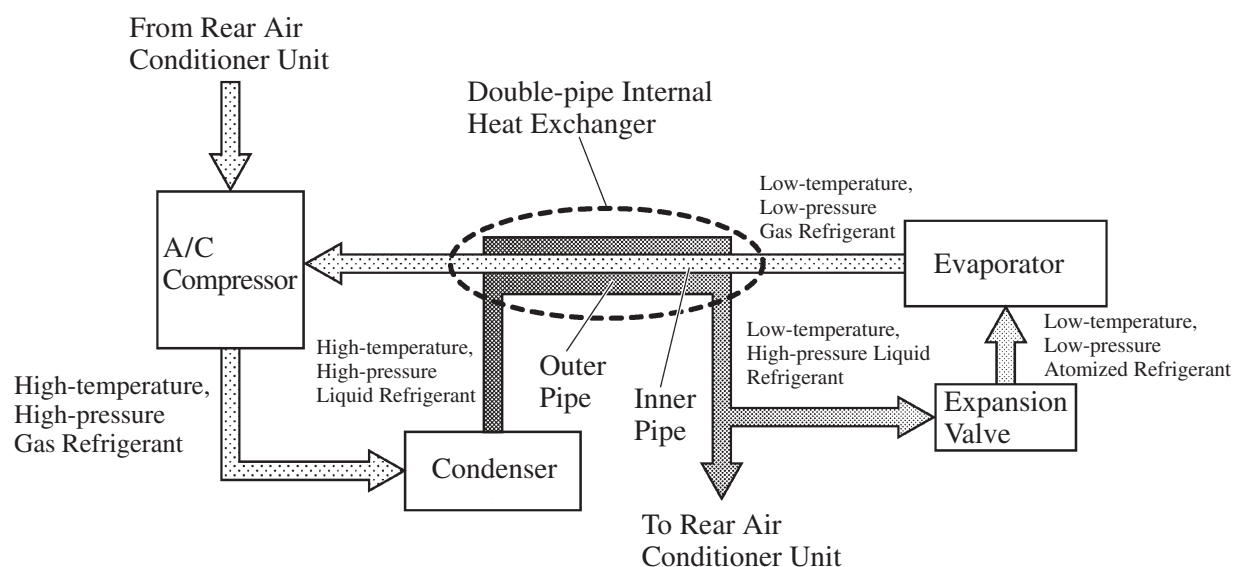


## ■ AIR CONDITIONER

### Double-pipe Internal Heat Exchanger

#### General

- A double-pipe internal heat exchanger is used in the dual-control air conditioner system on the 1GR-FE engine models for G.C.C. countries.
- In contrast to the two refrigerant pipes for high and low pressures used previously, the double-pipe internal heat exchanger is a single, double-pipe consisting of an inner (low-temperature) pipe and an outer (high-temperature) pipe. This pipe cools the liquid refrigerant before the expansion valve, thus enhancing the cooling performance of the system.

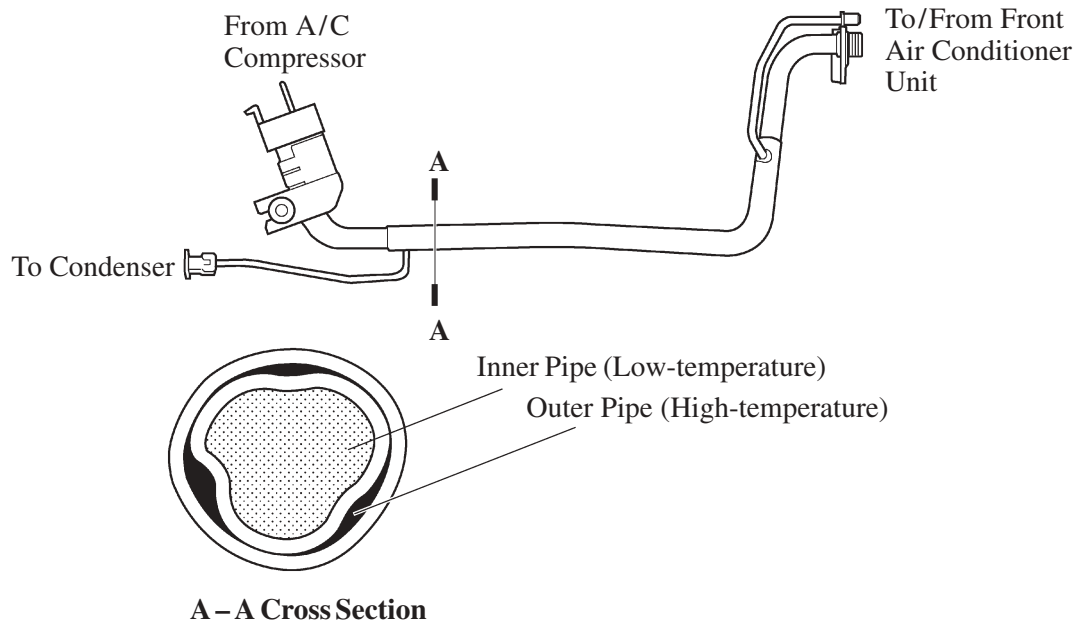


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## Construction and Operation

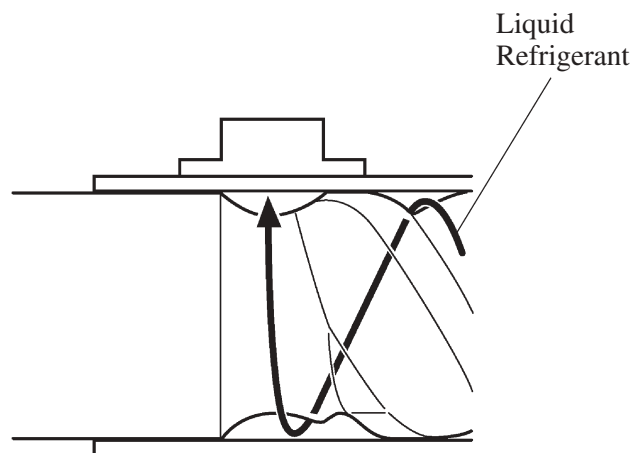
- The inner pipe wall of the double-pipe internal heat exchanger has a spiral shape.
- The spiral shape increases the contact surface area between the high-temperature, high-pressure liquid refrigerant and the inner pipe. This allows the low-temperature, low-pressure gas refrigerant flowing in the inner pipe to efficiently cool the high-temperature, high-pressure liquid refrigerant flowing through the area between the inner and outer pipes. As a result, the required heat exchange can be accomplished inside a short pipe.

### ► Double-pipe Construction ◀



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### ► Inner Pipe Spiral Groove Construction ◀



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