



## ***Accumulator evaporator for micro hybrid and mild hybrid cars***

### **General**

Hybrid cars are in fashion, but in summer many of them have a problem. The widespread start-stop system turns off when the engine stops briefly, and with it so does the belt-driven compressor of the air-conditioning system. Without a compressor, however, the air-conditioning system does not work. The temperature in the car can rise quickly, resulting in a loss of comfort for the passengers. The solution is the use of an accumulator evaporator (Figure 1).

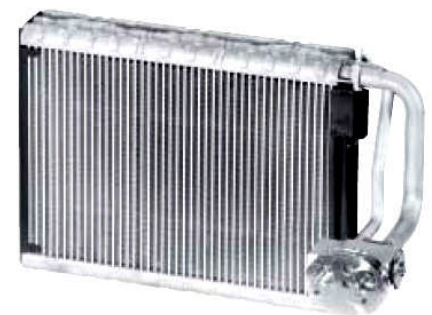


Figure 1

### **Structure/Function**

The motor stop phases can on the average save up to 8% of the fuel when driving in the city. This assumes that an accumulator evaporator has been installed. Without this cold accumulator, the engine must be turned on again long before the end of the stop phase due to the rapidly rising interior temperature in warm weather. In this way the fuel-saving potential of the start-stop is reduced to about half. The accumulator evaporator consists of two blocks: a main evaporator and an accumulator evaporator block (Figure 2). The refrigerant flows through both blocks in parallel during the cooling mode; the second medium in the accumulator block, a latent medium, is cooled so much that it freezes, thereby "accumulating cold". During the stop phases the latent medium is no longer being cooled and begins to melt. The required heat is drawn from the car's interior air that flows through the cold accumulator in the circulating air mode. When the car is moving, the accumulator is charged again and the latent medium freezes. At an evaporator entry



temperature of 25° C, the accumulator is charged up again to 70% within 30 seconds, and is completely charged after 1 minute. Thanks to the accumulator evaporator, the climate comfort in the car interior can be maintained in 95% of all start-stop phases when driving in the city.

## Effects of Failure / Causes

A faulty accumulator evaporator can lead to the following:

- Poor cooling performance
- Failure of the air-conditioning system

Possible causes:

- External soiling on the evaporator slats
- Internal soiling/ blockages (e.g. by soil or sealants)
- Leaks
- Poor efficiency of the latent medium

## Troubleshooting

Carry out following checks:

- Measure at central nozzle level the temperature of the air blown in by the ventilation
  - Measure the system pressures (high and low pressure)
  - Check evaporator and pipes for external and internal soil
  - Check correct seating of connection pipes
  - Carry out a leak test
  - Check evaporator for damage
- Measure temperature at entry and exit of the evaporator

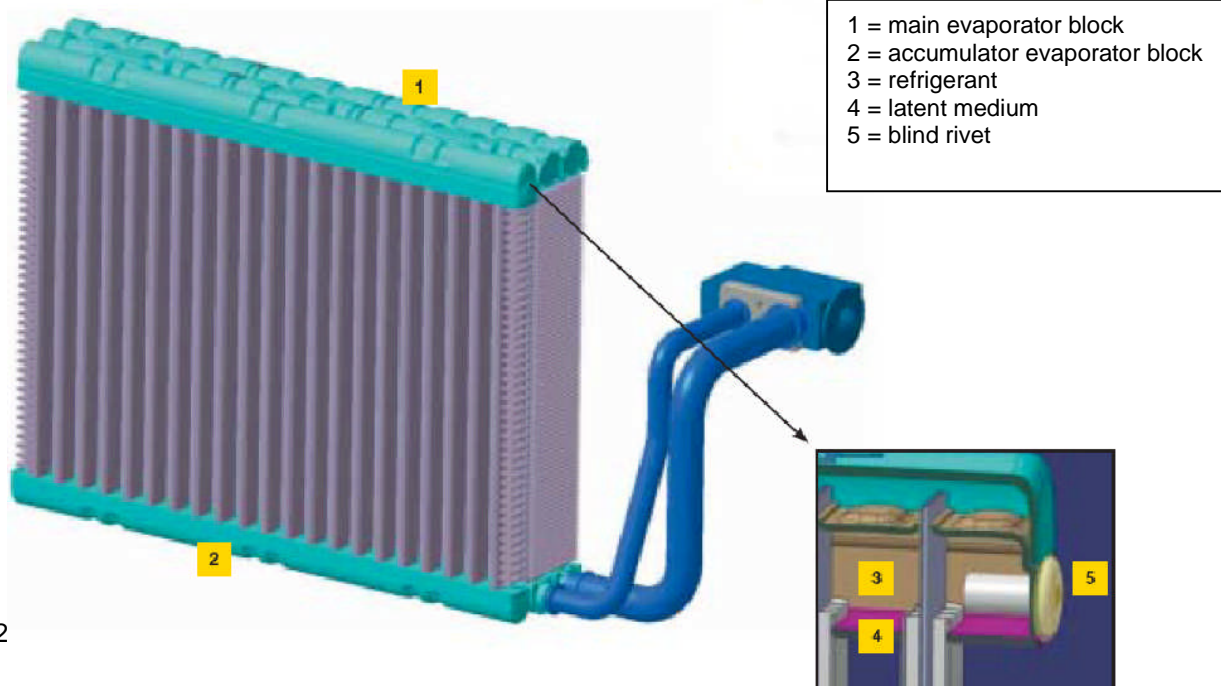


Figure 2