

Nissens Technical Tips

CLIMATE SYSTEM

REGULAR INSPECTION OF A/C CIRCUIT – HIGHLY IMPORTANT!

Many car owners do not consider it necessary to carry out regular services on an A/C circuit. To them a closed pipeline circuit seems to be as reliable as a home refrigerator. But seeing that the working conditions are totally different in these two cases, an automotive part requires much more maintenance.

In general, an automotive air conditioning system does not work continuously. It can only work when the car engine is running, and even then it is not in use all the time. In many countries, the A/C system is switched off during the winter season. The system is not 100% tight (due to a large number of connections in the circuit and to compressor assembly adjustments). Therefore, when the system is not in operation, the oil is not distributed over the inside of the circuit and thus will not close all the small gaps through which the gas can disappear.

As time goes by, the rubber gets more porous, and connections and compressors become less tight, and the corrosion of aluminum can easily cause perforation of tubes and heat exchangers. Car manufacturers estimate that the natural gas loss in a circuit may reach 10-15% per year of the total volume. The European Union even issued directive no. 2006/40 stating that cars manufactured after 1.1.2008 equipped with an A/C circuit are not allowed to lose more than 40 g of gas per year for cars with one evaporator and 60 g for cars with double evaporators.

In practice, for the car user these rules mean that after only one year a new car may lose up to 10-15% of the cooling gas, and during the next years the gas volume will continue to decrease and thus deteriorate the performance of the circuit. This means that every year takes the car closer to needing an A/C service.

Let us track the A/C circuit problems which occurred in an Opel Signum 2.8T, production year 2008, mileage 180,000 km, with Climatronic A/C system. The car was brought in for service due to lack of cold air in the cabin and noise in the engine chamber. According to the client, the engine worked ok when started, but after a few seconds it started to make noise. A check of engine and devices revealed that the A/C compressor was the source

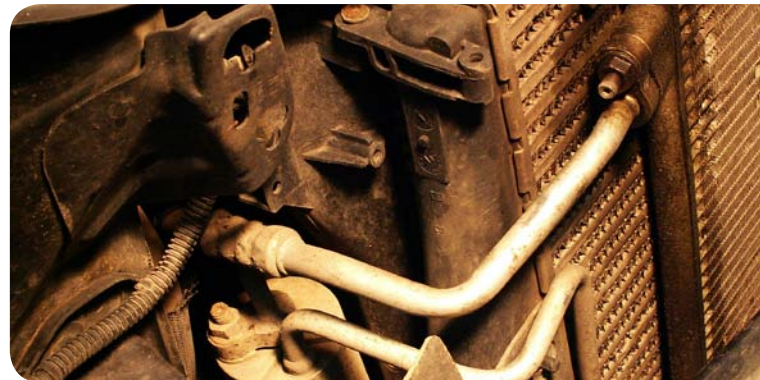


Photo 1



Photo 2

of the metallic sounds. Seeing that the compressor starts a few seconds after the engine, it is quite natural that the noise started with some delay.

When the gas was sucked out of the circuit, there was only 110 g left - it should have been about 670 g! This was unfortunately enough for the sensor to launch the compressor clutch, and as a result the performance of the circuit became very poor. As the problem occurred in early spring, the low performance of the circuit was not perceived much by the owner. But later when it grew hotter, he noticed the problem. Until then, the compressor had been able to work on a low gas volume. But due to the small gas volume, the compressor worked with very low lubrication and cooling and the resulting noise. A long operation on such conditions may result in this part ceasing to work.

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An examination of the circuit revealed a huge leakage at condenser connections (photo 1). The condenser itself also showed some leakages on the surface, but they were the result of mechanical damage to the car due to a small collision in the past (photo 2).

It was decided to install a new condenser, Nissens 94805, which is originally equipped with dryer (photos 3 and 4). At the same time, new O-rings, strengthened with steel, were installed. The compressor was filled with new oil.

Finally, the whole circuit was filled with the proper quantity of gas and examined for leakages. When the A/C circuit was started, the noise was no longer to be heard.

The above example supports the rule that an A/C circuit must be regularly serviced and that the gas must be replenished. It is suggested that the service is carried out every two or three years. Also each time the circuit is opened or after a car crash, it is recommended to exchange dryer or dryer inlet, which are hygroscopic, so in contact with water in open air, they become useless very rapidly. An active and correctly working dryer is very important because it removes moisture from the circuit and prevents creation of ice inside and aggressive acids caused by pollutions in water, oil and gas.

In connection with more comprehensive repairs, it is also very important to apply the correct, durable heat exchangers, such as Nissens condensers. For the most problematic cars, Nissens offers originally painted condensers (like Opel Astra G or H model), which are much more resistant to corrosion.

Finally, it should be pointed out that the A/C service should be carried out by specialized and experienced car service people, who can specify the problem exactly and thus repair it correctly, without any experiments, with the quality parts and right refrigerant replenishment - all in all ensuring the client low cost and rapid service.

Nissens A/S, Automotive Division,
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Photo 3

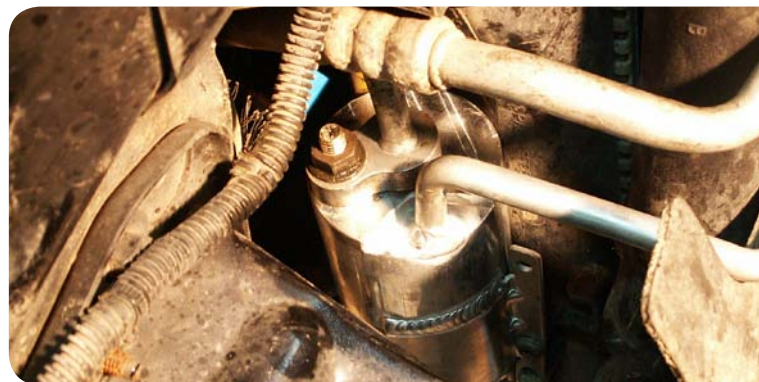


Photo 4