

MAKE / MODEL:

**All**

YEAR:

**2000**

ENGINE CODE:

**All EV-Hybrid**

SUBJECT / SYMPTOM / TROUBLE CODE:

**Electric cars - A/C system, insulation fault**

SOLUTION:

The A/C compressor is also part of the high voltage system. Therefore, you must make sure that the system voltage has been cut off before working on the system.

See bulletin No. 5698 regarding safety.

You have to use a special oil, which is not conductive.

**Always check manufacturer's recommendation of oil type! This also applies to the leak detection agent!**

PAG (Sanden SP A2).

POE. Usually ND11 or POE100.

The compressor is an electric motor and can thus be fitted various places in the car.

A PAG oil is electrically conductive.

Still, it is used in a few electric compressors.

For example in this Golf E-tron, which has a double-insulated climate compressor that tolerates PAG oil.



**BULLETIN**

SOLUTION CONTINUED:

**Insulation fault:**

Often, faults in the electric climate compressor entail fault codes for this.

It can be checked as follows:

- Delete all fault codes
- Turn off the A/C system
- Turn the ignition on and off (Ready mode)
- Wait 2 minutes (an insulation test is carried out by the car itself after ignition has been turned off)
- Put the car in D and if necessary, go for a short drive (A/C system turned off)
- Check for fault codes again
- Now turn on the A/C system

The fault code for insulation fault must now appear immediately.

If you delete the fault code, it does not necessarily recur at once.

This is caused by the fact that the oil, which may have become conductive, will settle in the bottom of the compressor after it has been stationary for a while.

When the compressor is activated for the first time after a standstill, the insulation fault is triggered.

When the compressor starts to rotate the oil, it is no longer conductive.

The oil can become conductive in case of incorrect oil or if mechanical damages in the system cause shavings in the oil.

Therefore, it is particularly important to flush the system in case of insulation faults.

**Flushing:**

You have to be aware that the distribution of oil is different.

There is more oil in this type of compressor and you cannot pour out the oil when disconnecting the compressor.

If you do not know how much oil is in the compressor, you have to flush it out.

Most commonly, the compressor is flushed twice (from each direction).

We recommend to follow the manufacturer's instructions regarding flushing.

The picture is from a Toyota Prius 2018-.

Please note the quantity of refrigerant.

