

BULLETIN

MAKE / MODEL:

All

YEAR:

1992

ENGINE CODE:

All

SUBJECT / SYMPTOM / TROUBLE CODE:

A/C system - Service and repair, flushing, leak sealant

SOLUTION:

At service on an A/C system, the following should be performed:**Leak tight test.**

Use an UV indicator to check for any signs of leaks in the system.

If no leak detection agent is filled in the system (look for mark for this), you should fill the agent at the first service check.

The leak detection agent binds to oil, so you only have to fill once. If a leak detection agent has been filled, you should check for leaks using UV glasses and light.

A small refrigerant leak of 50-100g per year is allowed.

As refrigerant moves the oil around in the system, it is important to check the level at service.

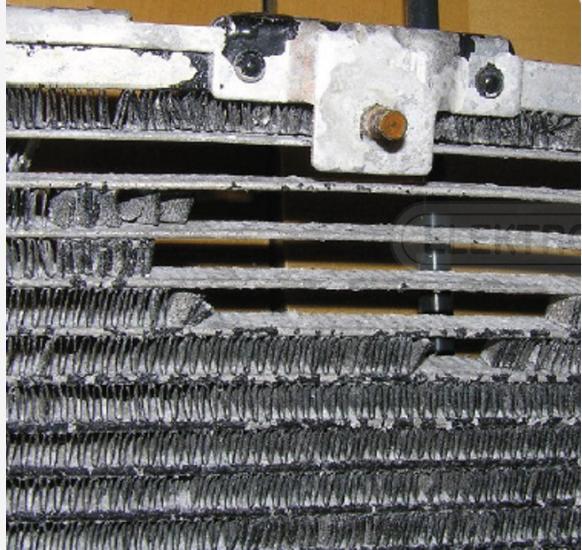
Most automatic service stations do this by draining and then filling the required refrigerant quantity.

Screw tightening of the filler necks.**Control of performance/air temperature and system pressure (bulletin No. 5748).****Control/replacement of pollen filter.****Control of condenser. This is crucial to the durability of the compressor!**

Measure the temperature at input and output of the condenser. The temperature should decrease approx. 30%.

Perform a visual check to see whether the condenser is damaged or very clogged.

As the condenser is located in front of the radiator, a lot of dirt will accumulate on it. If the temperature exceeds 100°C in the condenser, it can damage the oil in the system.

You should not wash condensers in more recent systems, because there is a risk of damaging the vanes and thus the condenser ability to deflect heat.

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SOLUTION CONTINUED:

Clean the drain to the evaporator, if necessary combined with an anti-mould cleaning spray.
If the drain to the evaporator is clogged, the condensation cannot flow out of the car, but instead it will flow to the bottom of the car in the passenger side.

Check the colour/texture of the oil via an inspection glass.
Doing so, many faults can be detected at an early stage.
This is the fastest way to check wear/state of health in the A/C system.
See examples of oil colours in bulletin No. 5759.



Oil

Please note that when replacing components in an A/C system, oil replenishing is required.

This applies to all components!

See the procedure in bulletin No. 5761.



Please note that hybrid/electric cars use a special non-conductive oil as well as leak detection agent.
See data for the car in question. If necessary, see bulletin No. 5758.

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SOLUTION CONTINUED:

Flushing:

Various agents can flush the system:

- Acetone
- Refrigerant
- Special agent (as the example in the picture)
- Flushing machine (which may be fitted in the service station)

We recommend to use a special agent for this.

The flushing is used for cleaning pipes/hoses and can also be used as an attempt to clean an evaporator, if the evaporator is difficult to replace.

Only rarely, impurities end up in the evaporator as they are often sorted out in either the condenser or the drier filter.

In case of compressor failure where the oil has been black, we recommend to replace pipes/hoses between the compressor and the condenser.

This, because the thermal stress may cause a porous hose. After flushing, you can check the inner side of the pipe or hose using a cotton bud. It must be clinically clean.

You may not flush the expansion valve and the drier filter.



Subsequently, you should flush the system with minimum 5 litres of nitrogen and then evacuate the system for at least 1/2 hour at 20°C.

This is to remove the moisture from the cleaning agent.

Please remember to apply the same oil quantity as the quantity that is removed when flushing the components.

If you doubt whether there are impurities in the evaporator after a cleaning, you can fit a pre-filter (compressor guard) in the low-pressure side of the compressor.

When flushing, you should also note whether a neutralisation additive must be added to the system.



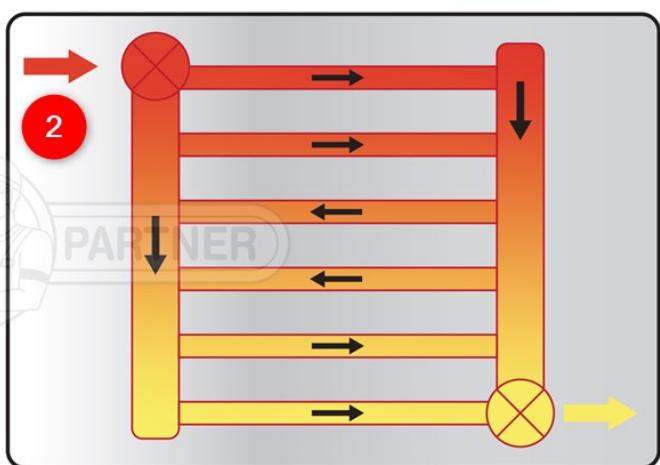
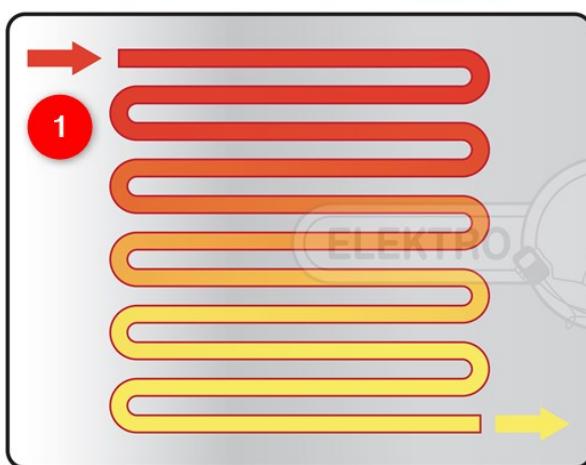
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SOLUTION CONTINUED:

In cars with parallel connected condenser, you should not flush the condenser but replace it instead.
This is due to the construction used to connect the channels.
Parallel connected condensers are used from 1996-.
Evaporators may have the same construction.

If one of the parallel connected channels is clogged, the fluid from a flushing will only flow through the next parallel channel, and therefore have no effect on the clogging.

1. Series
2. Parallel (2 channels)



A different reason may be the size of the passage in the vanes.
This picture shows the size of the inner channels compared to a match.
The particles cannot be flushed through a passage as small as this.
In case of a compressor failure, the large particles will accumulate in the low-pressure side of the condenser and this now works as a kind of filter before the drier filter.

1. Condensers after 2009 (micro pipes)
2. Before 2009



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SOLUTION CONTINUED:

Pipes/gaskets:

You should always replace the O-ring when disassembling the system.

Remember to lubricate the O-ring with the same type of oil as used in the compressor.



At component replacement, it is important that you remember to seal the system so that no oxygen/moisture can enter the system and damage the oil in the compressor.

As the compressor oil is often hygroscopic, it may be damaged if exposed to atmospheric oxygen/moisture over a period of time.

It is particularly important in systems with refrigerant R1234yf.

Drier filter/accumulator:

These should be replaced each time a system is opened. Especially if the system has been leaking for a period of time and thus been exposed to moisture/oxygen.

It should also be replaced in case of compressor failure.



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SOLUTION CONTINUED:

Leak stop/refrigerant sealer:

You have to be very cautious when choosing this solution.
In case of incorrect use of poor products, the A/C system of the car and the service station may both sustain damage.

There are mainly 3 kinds of leak stop products:

1. One that extends the O-rings
2. One that reacts to moisture, solidifies (in case of moisture in the oil, the product also solidifies)
3. Leak stop that reacts when both refrigerant, drop of pressure and moisture are present (e.g. Errecom Extreme Ultra)



We recommend a product like e.g. No. 3.

This is particularly useful for pipes, which are difficult to replace or e.g. an evaporator.

Do not use leak stop in case of a leaky condenser!

If a condenser is leaking, it should be replaced as otherwise a compressor overheating will occur.

OBS.

All products from Errecom can be injected while the system is running, via the service connector to low-pressure.

Evacuation:

It is important to evacuate the system if it has been open, so that atmospheric air can enter the system.

The moisture that atmospheric air contains, may ice up in ice crystal in the evaporator and thus cause clogging in the system.

In systems with R134A, the evacuation time should be 30 minutes, if the room temperature is 20°C. Evacuation should not be carried out at temperatures below 15°C, as here the moisture in the system cannot be sufficiently evaporated due to lack of heat.

Important!

In systems with refrigerant R1234yf, you have to take specific care when evacuating the system.
You should evacuate for 60 minutes at an ambient temperature of 20°C.

If necessary, flush the system with nitrogen before assembly in order to eliminate moisture.

If air is in this type of system, the pressure gauge will vibrate when the system is running.