

Meat&Doria **992054**
Hoffer Products **992054**



FOCUS

Dryer Filters



Our Premium Quality

A superior quality range, guaranteed by direct control of the entire process.

Design and production are supervised by the Group's engineers, in compliance with the original equipment specifications. Subsequently, each component undergoes end-of-line validation testing by the Quality team, with the aim of offering a product that always stands out for its quality, reliability, and durability.



Design



Fleet Coverage



Testing



After-Sales Support

What are they?

Dryer filters are fundamental components of the automotive air conditioning system.

They are used to **clean and protect the A/C circuit**, removing impurities and moisture from the refrigerant.

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Dryer Filters



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What are they used for?

- Remove moisture (water) from the circuit
- Separate any vapor bubbles, ensuring that only refrigerant in liquid phase reaches the expansion valve

- Absorb acids and chemical residues
- Filter solid particles and contaminants

The purpose is to protect the compressor and ensure the correct operation of the system.

Desiccant materials

In automotive systems, the following are mainly used:

Molecular sieve

It is the most commonly used material because it offers:

- High water absorption capacity
- Compatibility with R134a and R1234yf refrigerants
- Stability at high pressures and temperatures
- Low interaction with PAG and POE oils

Activated alumina

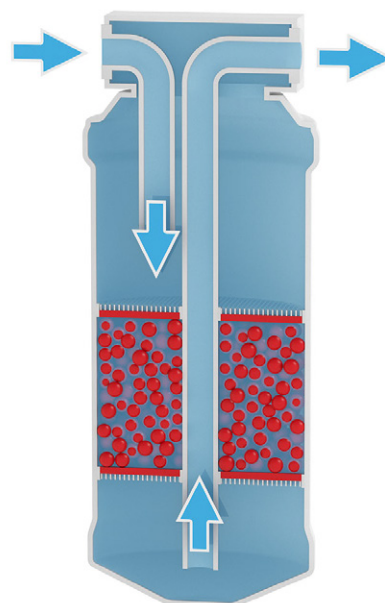
It is used in some applications to:

- Absorb acidic products
- Protect the compressor in the presence of contamination

Construction structure

A dryer filter is generally composed of:

- Steel or aluminum housing
- Inlet from the condenser
- Refrigerant accumulation chamber
- Cartridge containing desiccant material
- Mechanical or synthetic fiber filters
- Pick-up tube towards the expansion valve
- Liquid refrigerant outlet



In newer vehicles, the filter may be integrated into the condenser or manufactured as a replaceable cartridge.

Operating principle

The dryer filter mainly works on the liquid line and combines two functions:

1 Filtering action

- Blocks solid impurities (chips, dirt, oxides)
- Protects the expansion valve and compressor

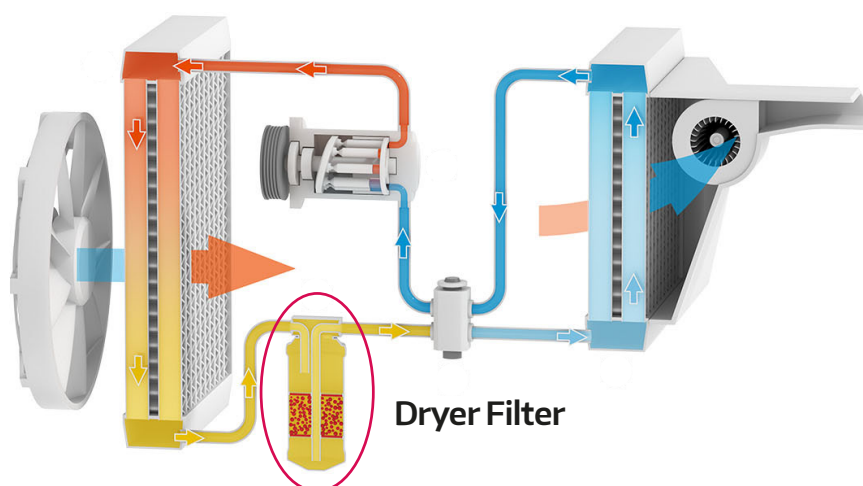
2 Dehydrating action

- Contains absorbing materials (desiccants)
- Removes moisture from the refrigerant

Main materials: molecular sieve, activated alumina.

Position in the circuit

Generally, the dryer filter is installed **on the liquid line, between the condenser and the expansion valve**. In some systems it is integrated into the condenser (for example, in code 991083).



Problems it prevents

Ice formation in the expansion valve

Acid formation

Circuit blockage

Internal corrosion

Compressor wear

Without a filter: **high risk of serious and costly failures.**



Faulty dryer filter symptoms

Insufficient cooling

Abnormal ice formation

Noise or irregular operation

Pressure drop in the circuit

Compressor under stress

Often the problem is **clogging** or **saturation**.

Diagnosis and error codes

As with the TXV, the dryer filter also does not have sensors (therefore **no direct code**).

Most common indirect codes

Refrigerant pressure

- **P0532**: Low pressure
- **P0533**: High pressure

Typical in case of clogged filter (pressure drop) or flow problem.

Compressor

- Overload or irregular operation

Climate performance

- **P0534**: Low refrigerant (may be an indirect effect)
- **Generic climate codes** (low efficiency)

Practical examples

Clogged filter

When the filter is blocked by impurities or residues, the refrigerant passage is limited and a reduction in flow rate in the circuit is created. This causes low pressure on the evaporator side, resulting in a **decrease in cooling capacity** and **poor system performance**. Furthermore, the compressor may be subjected to more severe operating conditions, increasing the risk of wear.

Moisture-saturated filter

A filter that has exhausted its moisture absorption capacity can no longer retain the water present in the circuit. Moisture can freeze inside the system, causing the **formation of ice and possible obstructions** in the refrigerant passage. This leads to unstable system operation, with performance variations and difficulty in maintaining a constant temperature.



Replacement (standard process)

Premise: The refrigerant **cannot be released into the environment**, therefore the use of an A/C service station is mandatory.

1 Gas recovery

- Complete refrigerant recovery
- Circuit at zero pressure

2 Disassembly

- Identify the filter (liquid line or integrated)
- Disconnect the pipes and remove the component

Note: Pay attention to contamination!

3 Installation of the new filter

- Install in the correct direction (flow arrow)
- Replace the O-Rings
- Lubricate with A/C oil

4 System vacuum

- Perform the operation for 20-30 minutes to remove air and moisture from the system (a fundamental step to prevent damage to the system).

5 Gas recharge

- Recharge the system with the amount of refrigerant prescribed by the manufacturer. If necessary, the correct amount of compressor oil is also added.

6 Final test

- Pressure check
- Temperature check
- Leak verification

Types of dryer filters

Standard (liquid line)

Suitable for normal use, it guarantees continuous protection.

Integrated into the condenser

Compact solution, typical of modern cars.

Replaceable cartridge

Mostly used in industrial applications.

Suction filter (temporary)

Used after a compressor failure has occurred.

Production tests

Dimensional checks

Checks are carried out on the component dimensions to verify compliance with the tolerances specified by the design. In particular, the connections and fittings are checked to ensure correct installation inside the circuit.

Leak tests

The component is subjected to leak tests using control gases such as nitrogen or helium. The objective is to identify any leaks or welding defects that could compromise system operation.

Filtration tests

The filter's ability to retain particles and impurities present in the circuit is verified, ensuring an adequate level of refrigerant cleanliness and the protection of the most sensitive components.

Moisture absorption tests

The efficiency of the desiccant material in capturing moisture present in the circuit is evaluated. This test is essential to ensure system protection against acid formation and corrosion phenomena.

Contamination tests

The component is subjected to simulated contamination conditions, introducing elements such as dirt and water, to verify the filter's ability to maintain its performance even under critical conditions.

Pressure and flow rate tests

The behavior of the component at different operating pressures and the correct circulation of the fluid inside the circuit are checked. The test allows verification that there are no obstacles or efficiency losses.

Durability tests

The filter is subjected to prolonged operating cycles to evaluate its resistance over time. The objective is to ensure that the component maintains constant performance throughout the entire life of the system.

Chemical compatibility

The compatibility of the filter materials with the main refrigerants used, such as R134a and R1234yf, and with circuit oils, such as PAG and POE, is verified to avoid deterioration or unwanted reactions.



It is recommended to replace the dryer filter **every time the compressor is replaced**, even if a complete system cleaning has been carried out.

The main reasons are:

Protection of the new compressor

The dryer filter retains moisture, acidity and contaminating particles.

After a compressor failure, microscopic residues may be present that cleaning may not have completely removed.

Exposure to moisture

Once the air conditioning circuit is opened, the hygroscopic material contained in the filter begins to absorb moisture from the air, reducing its protection capacity.

Not replacing the dryer filter **can compromise the reliability of the intervention carried out by the mechanic.**

Related products

Compressor



M K11400A

H K11400A

Condenser



M 991034

H 991034

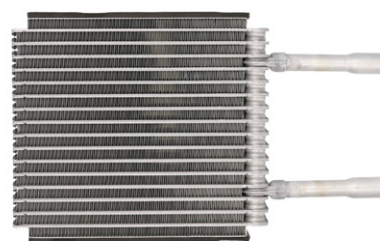
Expansion valve



M 993010

H 993010

Evaporator



M 997001

H 997001



O-Ring kit



M K79311

H K79311

Injector, expansion valves



M 993175

H 993175

Key message



The dryer filter is a "hidden but fundamental" component: without it, **contamination and moisture quickly lead to failures of the entire A/C system.**