

# AC Servicing - system flushing

To perform properly, the AC system must be clinically clean inside the loop. Refrigerant and lubricant working in high temperatures and pressures, as well as components with precise mechanisms (compressor, expansion devices), require cleanliness for optimal operation. Flushing is considered one of the most basic and important service procedures, and is highly recommended by AC experts, as well as the major manufacturers of compressors. Furthermore, flushing is the only way to determine the proper level of lubricant recommended for the given compressor/vehicle model.

## Problem

Impurities, refrigerant and oil contaminants, or improper use of additives can quickly cause clogs in the thin system channels, e.g. receiver dryer, condenser tubes, expansion devices, and compressors' ECV/MCV valves. System stoppages will lead to a decrease in the system's performance and cause serious pressure increases, and thus an abnormal temperature load on the compressor.

Furthermore, contaminants and moisture affect lubricating characteristics of the oil. Improper lubrication has an instant negative effect on a compressor's mechanical parts, exposing it to seize. In the same way, missing, diluted or improper oil will lead to irreversible compressor damage and possible failure.

## Recommended Solution

To avoid system performance-related problems and expensive repeat repairs, flush the system whenever it has been diagnosed with clogs, stoppages, receiver dryer failures, or excessive or improper use of additives such as UV dye or stop leaks agents.

Furthermore, always flush the system before installing a new compressor. Carbonized oil particles, metal chips and other impurities that caused the previous compressor to fail can quickly kill the new unit if the system is not flushed.

Besides that, the only reliable way to determine the proper volume of the lubricant in the system during a service cycle is flushing and filling an empty system, with the right type and volume of oil. An appropriate lubrication guarantees vitality and a long lifespan for the compressor, thus ensuring the system's proper performance.

Keep in mind that the following components should not be flushed: compressor (replace/bypass), expansion devices (bypass), receiver dryer/desiccant (replace). In case of any suspicion of stubborn



**A glass inspection tool can help to easily see contaminants and impurities in the refrigerant**

contamination inside the condenser/evaporator after flushing, the components should always be replaced.

## Recommended Flushing Methods

Listed here are three recommended methods for getting the air conditioning system thoroughly clean on its interior.

### 1 - Flushing detergent

The process is performed by means of a special flushing detergent. The detergent is circulated throughout the loop by use of a dedicated flushing machine, or can be injected directly from a pressure container.

This flushing method offers excellent cleaning properties. Dissolves all sorts of particles, sludge, stubborn soil and residues.

**Caution!** The cleaning agent residues must be thoroughly removed after flushing. The circuit must be dried by vacuum.

### 2 - Refrigerant & filling station

System is flushed by means of the R134a refrigerant circulated by the filling station. The station must be equipped with a flushing function, specially designed filters and a container to collect contaminants.

This flushing method effectively cleans loose particles; however it could work ineffectively for rinsing of serious sludge and soils.

**Caution!** A vacuum must be pulled to dry the system after flushing.

### 3 - Refrigerant directly from bottle

System is flushed by means of the R134a/R1234yf refrigerant circulated in the loop by heating up the bottle. An additional bottle for contaminated gas is needed, as well as an adapter and hose set ensuring proper system connection.

This flushing method effectively cleans loose particles, however could work ineffectively for rinsing of serious sludge and soils.

**Caution!** A vacuum must be pulled to dry the system after flushing.

**TIP:** Use a supplementary glass inspection tool to spot possible contaminants circulating in the loop. This low-cost, useful tool is highly recommended for an effective system contamination diagnostic, performed in various situations: before, during and after flushing.