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Flushing air conditioning systems properly

Flushing the air conditioning system is the most reliable and effective way to avoid consequential damage.

Flushing the system is essential when:

- The compressor has suffered mechanical damage (e.g., where the oil contains metallic abrasion particles or swarf)
- There are foreign substances in the system (e.g., sealant, desiccant granules, or rubber particles)
- The quantity or type of compressor oil in the system is unknown (risk of overfilling or incompatibility)
- The amount of UV dye is too high (risk of malfunctions, e.g., clogging of the valve plate)
- There's moisture in the system (saturated filter-drier)
- The new compressor doesn't have an oil drain plug to adjust the oil quantity, so the air conditioning system must be completely emptied of oil before installation (risk of overfilling)

The correct procedure

Most vehicle manufacturers prescribe flushing the system using an A/C service unit, a separate flushing kit with interchangeable prefilter, and refrigerant. Always flush against the normal direction of the refrigerant flow. Some components cannot be flushed, so they need to be bypassed or replaced with adapters. Examples include filter-driers/accumulators, compressors, expansion valves, and fixed restrictors. Also, most modern condensers can't be

flushed because of their design (parallel flow) and combination with the filter-drier. Only older types (so-called serpentine condensers) can be reliably flushed. In vehicles with a second evaporator in the cabin, this must be flushed separately.

Each flushing cycle should be completed three times, and the prefilter on the flushing unit should be replaced after each vehicle (flushing process). Once all the removed or replaced parts have been refitted, a leaktightness test must be carried out, followed by evacuation of the system for at least 20 minutes.



Figure 1: Air conditioning service device with flushing unit



Figure 2: Filter-driers/accumulators should be bypassed and replaced before flushing.

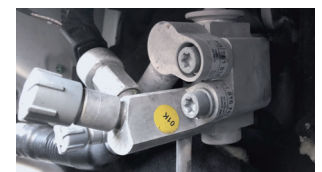


Figure 3: Expansion or throttle valves must be removed and replaced with flushing adapters.

Important!

Air conditioning systems with two evaporators contain larger quantities of refrigerant and oil. During filling, and before the system is operated for the first time, the shut-off valve on the second evaporator must be open so that compressor oil can reach the second evaporator via the high-pressure side. If not, there's a risk of the compressor suffering an oil pressure surge due to the increased amount of oil in the front part of the circuit.