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Oil quantity distribution in air conditioning circuits

Finding out the correct oil quantity is absolutely key to avoiding consequential damage when replacing an air conditioning compressor.

Always flush the refrigerant circuit

As a general rule, the refrigerant circuit must always be flushed if an air conditioning compressor has been damaged. This is the only way to prevent consequential damage caused by foreign objects, for example. Flushing completely removes the old compressor oil. When refilling afterward, the new compressor is filled with the entire quantity of oil. Check out Technical Messenger Issue no. 03/2020 for more on how to fill an A/C compressor with oil correctly.

Replacement without flushing: always adjust the oil quantity

When replacing an air conditioning compressor, the flushing step can only be skipped in very exceptional cases, such as an electrical defect. However, it's still essential to ensure that the system is clean, leaktight, and filled with the right quantity and specification of compressor oil. If replacing an air conditioning compressor without flushing, it's especially important to reduce the quantity of oil in the new compressor to avoid overfilling and potentially causing serious damage. About 50% of the compressor oil is found in the compressor, while the rest is distributed among the system's other components. If further components are replaced, their percentage share of the total quantity of oil (see chart) must be taken into account during filling.

All MAHLE air conditioning compressors are filled with oil in the factory. To avoid overfilling the system, the oil from the new com-

pressor must first be drained off into a clean container. The oil from the defective compressor should be drained off into a second container and the quantity gauged using a measuring jug. The quantity of used oil indicates the quantity of fresh oil to be added to the new compressor. The oil from the old compressor should not be reused and must be disposed of in an environmentally friendly manner. Example: If the new compressor was filled with 110 ml of oil, but the defective one was filled with just 70 ml, then the new compressor should also only be filled with 70 ml of oil.

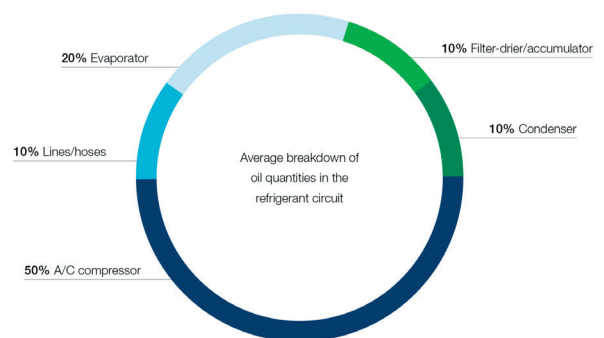


Figure 1: Percentage distribution of the compressor oil in an air conditioning system



Figure 2: 1. Drain all of the oil from the new compressor. 2. Drain the oil from the old compressor and measure the quantity. 3. Refill the new compressor with a reduced quantity of fresh oil.

Important!

If the old compressor contained more than 50% of the system's entire quantity of oil, it's safe to assume that the system had been overfilled. In this case, flushing the refrigerant circuit to remove the surplus oil is vital. If less than 30% of the entire oil quantity is found in the compressor, there's probably a leak somewhere. The quantity of oil drawn off when using an air conditioning service unit to evacuate the A/C system also needs to be added.