

High and Low Pressure Relationship in the Automotive A/C System

In an automotive A/C system, the compressor is driven by a pulley on the engine's crankshaft. The A/C system is designed to create pressure changes between the evaporator (where heat is absorbed) and condenser (where heat is released) to cool the interior of the vehicle. When refrigerant travels to the evaporator, it absorbs hot air from the cabin's interior. At the condenser, the refrigerant (now a vapor) is compressed and forced through the condenser, turning into a liquid, and releasing the heat previously absorbed from the evaporator.

High Side: This refers to the side of the system in red. The high side starts at the discharge side of the compressor and travels through the condenser (heat transfer to condensation) and then to the receiver drier and finishes at the expansion valve. The compressor creates high pressure by compressing the low pressure vapor from the evaporator so that the high pressure vapor can release heat at the condenser. This pressure change happens again at the expansion valve where the refrigerant is slowed down and changes pressure.

Low Side: This refers to the side of the system in blue. Starting at the expansion valve (creates low pressure), refrigerant travels to the evaporator where it transfers the heat from inside the vehicle and travels to the compressor where it is turned into high pressure and the whole process repeats again.

