

Suction Accumulators and Liquid Receivers — What They Do and How to Size Them

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Why a suction-line accumulator protects the compressor on heat-pump, low-temperature and hot-gas-defrost plants, how receiver volume relates to system charge and pump-down, and the catalogue's vessel sizes from 1.5 to 22 litres (accumulators) and 10 to 50 litres (vertical receivers).

The accumulator's job

A suction-line accumulator is a vertical trap ahead of the compressor: refrigerant vapour enters at the top, any entrained liquid falls out, and the outlet dip tube draws vapour plus a controlled trickle of oil and liquid through a metering orifice back to the compressor. It exists because some systems periodically send liquid down the suction line by design — reversing heat pumps at the moment of cycle reversal, hot-gas defrost plants at defrost termination, low-temperature cabinets with floodback at pull-down, and any plant whose evaporator superheat control is marginal. The accumulator converts a slug that would break valve reeds into a few minutes of harmless boil-off.

Sizing an accumulator

Two numbers matter: holding volume — the industry rule is at least 50 % of the total system charge should fit in the vessel (because at the worst moment, most of the charge can arrive at once); and connection size — matched to the suction line so vapour velocity neither drops oil nor adds pressure loss. The catalogue sizes map to small and medium plants:

Connection | Volume | Listing |

1/2" | 1.5 L | BORSL1000215A |

5/8" | 1.5 L | SL2C16102210 |

3/4" | 3 L | SL1C18130250 |

7/8" | 4.5 L | BORSL1540265A |

1 1/8" | 5 L | SL2C28154270 |

2 1/8" | 22 L | SL1C54285420 |

Install vertically, as close to the compressor as practical, insulated on low-temperature duty so the trapped liquid actually boils off from suction gas heat rather than ambient.

The receiver's job

A liquid receiver after the condenser stores the charge difference between operating modes: it feeds a solid liquid column to the expansion device while condenser inventory swings with load and ambient, and it must swallow the whole charge during pump-down for service. Size so that the full operating charge occupies at most ~80–90 % of receiver volume at 40 °C liquid (thermal expansion headroom — the EN 378 / PED documentation for the vessel states the limit that governs). The catalogue's vertical receivers: 10 L, 14 L, 18 L, 40 L and 50 L.

Protection and fittings

Receivers above the EN 378 thresholds carry a pressure-relief valve; the Henry relief range and the twin SDK changeover assemblies that allow valve replacement without pump-down are covered in the relief valve guide. Rotalock connections dominate on both vessel types: match adapters and service valves from the rotalock reference, and renew PTFE gaskets on every disturbance. A liquid-line sight glass downstream (SGP 6S) confirms a sealed liquid feed.

Symptoms worth knowing

Accumulator frosting solid to the top continuously — persistent floodback; fix superheat control, don't rely on the vessel.

Receiver level hunting with condenser fan cycling — normal within limits; excessive hunting points to head-pressure control, not the vessel.

Pump-down cannot complete — receiver undersized for the actual charge, or excess charge; weigh the charge rather than forcing it.

Oil level falls while plant runs long low-load periods — the accumulator's oil-return orifice may be blocked; it is a serviceable part on larger vessels.

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