

Pressure Relief on Refrigeration Plant — Henry 5230/5231/5232/5240 Valves and SDK Dual Changeover Assemblies

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Where EN 378 requires relief valves on refrigeration vessels, how a set pressure is chosen against the design pressure, why dual relief valves on a three-way changeover (Henry SDK type) are fitted on plants that cannot be pumped down, and the catalogue's stocked set pressures from 16.2 to 27.6 bar plus CO₂-class devices.

Why and where relief is fitted

EN 378 (and the PED behind it) requires that any refrigerant-containing vessel that can be isolated full of liquid — receivers, suction accumulators above threshold sizes, oil separators, heat-exchanger shells — is protected against overpressure, normally by a spring-loaded relief valve discharging to a safe location. The classic trigger scenario is a liquid-full receiver isolated by service valves and warmed: liquid expansion raises pressure far faster than any compressor could. Relief valves are the last line after the high-pressure cut-out, and their presence, set pressure and discharge routing are items a class surveyor or AKV inspector checks against the plant documentation.

Choosing the set pressure

The set pressure equals the protected vessel's design pressure (PS); the valve must be sized so that flow capacity at 110 % of set pressure exceeds the worst-case vapour generation (fire case per EN 378-2 sizing). The catalogue's Henry Technologies stocked points cover the common HFC vessel classes:

Set pressure | Valve |

16.2 bar | 5230A, 5231A, 5232A |

20.7 bar | 5231A 3/8" MPT × 1/2" flare |

24.8 bar | 5231B 1/2" MPT × 5/8" flare, 5240 1/2" × 3/4" FPT |

27.6 bar | 5231B |

All are CE-marked against the PED category for their size. A relief valve that has lifted must be replaced — the seat is no longer certifiable tight — which is exactly why changeover assemblies exist.

Dual relief on a changeover: the SDK assemblies

On plants whose receivers cannot be taken out of service (supermarket racks, marine plants at sea), EN 378 anticipates a dual relief valve arrangement on a three-way changeover valve: two full-capacity valves share one vessel connection, the changeover isolates one at a time, and a lifted or leaking valve is replaced with the vessel live. The catalogue stocks these as complete assemblies — SDK2 at 16.2 bar, 20.7 bar, 24.1 bar, 24.8 bar and 27.6 bar, plus the single-valve SDK1 27.6 bar — with 1/2" NPT vessel connections and gauge ports for lift indication.

Installation rules

Mount upright, directly on the vessel connection; no isolating valve between vessel and relief except a certified changeover.

Discharge piping: full bore, falling, to a safe outdoor location (or per the machinery-space rules on ships); support it so reaction force at lift does not load the valve body.

Never paint, cap or plug a relief outlet; a painted spring bonnet is a failed survey.

Record set pressure, serial and installation date; EN 378 maintenance expects periodic replacement or verification per the manufacturer's interval.

On CO₂ plants, use the high-pressure class components throughout — see the K65 pipework guide; relief discharge on CO₂ must also consider dry-ice formation at the outlet.

Companion safety devices

Relief valves protect vessels; pressure switches protect the running plant first. High-pressure cut-outs with manual reset (e.g. Penn P77BEB 3–30 bar) and dual-pressure controls act long before a relief lifts. Burst discs in series with relief valves (with a gauge between) appear on CO₂ and ammonia plants; the gauge indicating pressure between disc and valve is the tell-tale of a pinholed disc. Keep the whole chain documented in the plant log: cut-out settings, relief set pressures, last change dates.

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