Refrigeration Parts Cross-Reference — Danfoss, Castel, Alco

cBallast Technical Sourcing · Refrigeration line components · issued 2026-11-10 · cballast.com/documents/refrigeration-components-cross-reference-danfoss-castel-alco-sporlan

The brand-to-brand map for refrigeration line components: solenoid valves, filter driers and replaceable cores, sight glasses, thermostatic expansion valves, ball and check valves across Danfoss, Castel, Emerson/Alco and Sporlan/Parker — what legitimately crosses and on which parameters, the connection vocabulary (ODF solder, SAE flare, rotalock) that every cross stands on, the size-code logic of drier shells and cores, and the requisition pattern that lets a mixed-brand plant order everything in one pass without a wrong-connection surprise.

The short version

Every working refrigeration plant is multi-brand. A Danfoss solenoid feeds a Castel drier through an Alco sight glass into a Sporlan TXV — installed by three different contractors over twenty years. Cross-referencing between the four big line-component makers (Danfoss, Castel, Emerson/Alco, Sporlan/Parker) is therefore not a trick for saving money; it is how the trade actually operates.

Crosses live at the class level and are settled at the parameter level: every maker publishes the same component classes (solenoids, driers, sight glasses, TXVs, ball/check valves), and a legitimate cross matches capacity at the refrigerant, connection type and size, pressure rating/approval, and function — never the look, never the nominal name, never "same size number".

The connection vocabulary is half the job: ODF (solder, female, sized by tube OD: 3/8", 1/2", 5/8"…), SAE flare (1/4", 3/8"… service-friendly), rotalock (union service valves on compressors/receivers), plus metric solder on some European lines. A perfect capacity cross with the wrong connection is a returned box.

Drier size codes decode across brands: the trade's 052/083/084/163-style numbers encode core volume (cubic inches) + connection size — an "083" is an 8 cu in shell with 3/8" connections, an "084" the same shell at 1/2". That is why a Castel DI 083-pattern drier and a Danfoss DML 083 answer the same line. Replaceable-core shells speak core counts instead: the 48-cu-in cores (Alco F-48, H-48) fit the corresponding shells across the market.

What does NOT cross casually: electronic expansion valves and their drivers (maker-specific), high-pressure/CO2-rated variants against standard ones, coils between brands (each maker's coil fits its own body), and anything inside a compressor warranty case. Stated per line, every time.

1. The component-class map

Component class | Danfoss | Castel | Emerson / Alco | Sporlan / Parker | Cross on |

Solenoid valves | EVR / EVRH (guide) | 10x8-series | 200RB class | E-series class | Capacity at refrigerant & Δp, connection, NC/NO, pressure rating; coil separately |

Filter driers (sealed) | DML/DCL (selection guide) | DI 4300/4400-class — e.g. DI305E2S (052), DI308E4S (084) | ADK / FDB class | C-series class | Size code (volume+connection), desiccant type (sieve vs sieve/alumina blend), flow direction (uni/bi), pressure class |

Drier shells + cores | DCR + DM/DC cores | Shell + core programme | ADKS/STAS shells + F-48/H-48 cores | Shells + RC-type cores | Core format (48 cu in standard), core chemistry (drying vs acid/burn-out), shell connection |

Sight glasses | SGP class | 3810/3940 class | AMI class | SA class — e.g. SA-211 1 3/8" solder, SA-213 1 5/8"; generic ODF positions like the 3/8" ODF glass | Connection type/size, moisture indicator (yes/no), pressure rating |

Thermostatic expansion valves | TE/TGE/TU (finder) | — | TX / TCL / TI class | The classic TXV programme | Refrigerant, capacity at evap/cond conditions, equalisation (internal/external), charge type, orifice interchangeability within each maker's system |

Ball / shut-off valves | GBC class | 6590-class | — | Parker programme | Connection, pressure class (high-pressure variants for modern refrigerants), access fitting yes/no |

Check valves | NRV class | 3120-class | — | Parker programme | Opening Δp, connection, orientation |

The table's job is orientation: which maker's family answers which class. The settlement is always numerical — each maker's capacity table at your refrigerant and conditions — which is the work we do per line when quoting a cross, with the basis stated ("crossed from X by capacity at R448A, Δp 0.15 bar").

2. Connections — the vocabulary every cross stands on

Connection | How to recognise it | Where it lives | Trap |

ODF solder (female, brazed) | Plain socket; sized by tube OD (3/8", 1/2", 5/8", 7/8"…) | Fixed installs, everything in the liquid/suction line | Inch tube OD vs millimetre tube on some European plants — 12 mm is not 1/2" (12.7) |

SAE flare | 45° flare nut, union | Service work, small systems, replaceable components | Flare joints loosen under vibration — torque and re-check culture applies |

Rotalock | Large union nut on a threaded boss | Compressor and receiver service valves | Rotalock size names by thread (1"-14 etc.) — state the thread, not "big nut" |

Metric solder | Socket sized 6/10/12/16/22 mm | Some European OEM lines | The 12 mm vs 1/2" near-miss again — a vernier settles it in seconds |

3. Drier and core logic — the size-code rosetta

Sealed driers: the trade code is volume + connection — first digits give the shell size class (05 = 5 cu in class, 08 = 8, 16 = 16, 30, 41…), the final digit the connection in eighths of an inch (2 = 1/4", 3 = 3/8", 4 = 1/2", 5 = 5/8"); an S suffix convention marks solder. Hence 052, 083, 084, 163, 305 read identically across Danfoss DML, Castel DI, Alco ADK and Sporlan C families, which is what makes the Castel 052-pattern a clean answer to a "DML 052" line. The remaining selection parameters: desiccant (100% molecular sieve for HFC/HFO moisture duty — the pattern in our Castel stock — vs sieve/alumina blends where acid capture after a burn-out matters), flow (uni-directional vs bi-flow for heat pumps), and pressure class (modern high-pressure refrigerants want the 46+ bar class shells). Replaceable-core systems cross on the core format: the 48-cubic-inch core is the market standard — Alco F-48 (drying) and H-48 (high-capacity/clean-up class) fit the corresponding shells, and suction-line clean-up after a compressor failure is core-and-shell territory, not sealed-drier territory. Full family selection logic lives in the filter drier guide.

4. What crosses, what does not — the honesty table

Situation | Verdict | Why |

Sealed drier, same size code, same desiccant class, same pressure class | Crosses cleanly | The code system is shared trade language |

Sight glass, same connection and rating | Crosses cleanly | Indicator chemistry differs cosmetically (colour scale), function identical |

Solenoid valve by capacity table | Crosses with stated basis | Nominal size names diverge across brands — only the table settles it; coil ordered per the new body's maker |

TXV across brands | Crosses with engineering care | Refrigerant, charge type, equalisation and capacity must all match; orifice assemblies do NOT interchange between makers' bodies |

Coils between brands | Does not cross | Every maker's coil fits its own armature system — Danfoss 018F on Danfoss, Castel 9100-class on Castel, Alco cable sets on Alco |

Electronic expansion valves + drivers/controllers | Does not cross casually | Valve, driver and control algorithm are a system — see the EKC/AK-CC guide for the Danfoss side |

Standard component offered on a high-pressure refrigerant duty | Does not cross | Pressure class is a safety rating, not a preference — the modern refrigerant transitions (R404A to R448A/449A guide) made this the live trap |

Anything inside an OEM warranty or classed installation | OEM pattern, stated | Same rule as everywhere in our catalogue — the paper governs |

5. The mixed-brand requisition — one pass, no surprises

The pattern that works, line by line: component class + the number on the part (any brand's — we translate), connection measured (type + size, vernier beats memory), refrigerant and duty (the pressure-class and desiccant decisions hang on it), and function flags (NC/NO, bi-flow, indicator, equalisation). Photos of stampings close the gaps. What comes back is a quote where every crossed line names its basis and every kept-OEM line says why — the same discipline as our IMPA/OEM refrigeration cross-reference applies at the brand level. Plant engineers standardising a spares drawer get the inverse service: send the installed base list and we return the minimum stock set (coils by voltage, driers by size code, one sight glass per line size, service kits per the EVR guide) that covers it across brands.

How buying works at cballast. We stock Danfoss, Castel, Alco/Emerson and Sporlan-class line components side by side, cross by capacity table with the basis stated per line, and keep the connection vocabulary honest (ODF/flare/rotalock/metric measured, never assumed). Accounts are vetted at onboarding; first order prepaid; established accounts on credit terms with repeat discounts; public bodies and utilities invoiced against purchase order from the first order. RFQs to sales@cballast.com.

Frequently asked questions

Is there a Castel equivalent to a Danfoss filter drier?Yes — sealed driers cross cleanly on the shared size-code system (052/083/084…), desiccant class and pressure rating. A Danfoss DML 083 line is answered by the Castel DI 083-pattern with 100% molecular sieve at the same connection, stated as a cross on the quote.

What does the 083 or 084 on a filter drier mean?Shell volume class plus connection size in eighths of an inch: 08 = 8 cubic inch shell, 3 = 3/8" connections, 4 = 1/2". The convention is shared across Danfoss, Castel, Alco and Sporlan families, which is exactly why driers are the easiest refrigeration cross there is.

Can I replace an Alco solenoid valve with a Danfoss EVR?Usually, by capacity: match the duty (NC/NO), the capacity at your refrigerant and pressure drop from the tables (not the size names), the connection, and the pressure rating — then order the Danfoss coil for the supply voltage, because coils never cross between brands. We state the basis per line when we quote such a swap.

Do TXV orifices interchange between brands?No. Interchangeable-orifice systems work within one maker's body system only. Across brands you cross the complete valve — refrigerant, capacity, charge type and equalisation all matched. Within a brand, the orifice/body logic is what makes stocking efficient.

What is the difference between an F-48 and H-48 drier core?Both are the standard 48-cubic-inch core format; they differ in chemistry/purpose — the F-class is the standard drying core, the H-class the high-capacity/clean-up oriented one used in suction-line filtration and after burn-outs. Shells accept either; the duty picks the core.

Why does the pressure class suddenly matter on these small parts?Because the refrigerant transitions pushed working pressures up: components rated for the R404A era are not automatically right for R448A/R449A retrofits and are wrong for R410A-class pressures. Every maker sells high-pressure variants; the cross must stay inside the rating, which is why we ask for the refrigerant on every line.

Who supplies mixed-brand refrigeration components in Europe?cballast.com stocks and quotes Danfoss, Castel, Alco/Emerson and Sporlan-class solenoids, driers, cores, sight glasses and valves on one quotation, crossed by capacity with the basis stated. Write to sales@cballast.com with part numbers or stamping photos.

References and related guides

Standards and sources referenced: Danfoss, Castel, Emerson/Alco and Sporlan/Parker catalogue data and capacity tables; EN 378 pressure-class context for refrigerant transitions; the shared trade size-code conventions for driers and line components.

Danfoss EVR solenoid valves & coils

Filter drier selection — DML, DCL, DAS, DCR

Expansion valve finder

Refrigerant transition — R404A to R448A/R449A

Danfoss refrigeration cross-reference — IMPA/OEM

Danfoss EKC & AK-CC controllers

Refrigerant PT chart

Questions on a cross you are unsure of or a part you cannot identify: write to sales@cballast.com. We answer whether or not you buy from us.

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