Danfoss EVR Solenoid Valves & Coils — Selection Guide

cBallast Technical Sourcing · Refrigerant solenoid valves · issued 2026-11-10 · cballast.com/documents/danfoss-evr-solenoid-valves-coils-selection-cross-reference

The refrigeration solenoid workhorse decoded: EVR sizes 2 to 40 and what the number means, direct against servo operation and the minimum pressure differential that explains most "valve will not open" calls, NC against NO versions, EVRH for high-pressure duty, the clip-on coil system (coil families, voltage codes, AC against DC, cable plugs) that lets a dead coil be changed without opening the line, seal and service kits by size group, the cross-reference logic to Castel and Emerson-Alco solenoids, and the RFQ lines that identify a valve exactly from what is stamped on it.

The short version

EVR is Danfoss's solenoid valve family for fluorinated refrigerants — liquid lines, suction lines, hot-gas lines — in sizes EVR 2, 3, 6, 10, 15, 18, 20, 22, 25, 32, 40, where the number tracks nominal capacity/connection class. Normally closed (NC) is the default; NO variants exist for hot-gas and special duties; EVRH extends the family to higher working pressures for modern high-pressure refrigerants.
The small sizes are direct-operated, the larger ones servo-operated — and that single fact answers the most common service call: a servo-operated valve needs a minimum pressure differential across it to open fully. A correctly wired EVR that "hums but will not open" on a pressure-equalised line is doing exactly what its datasheet says.
The coil is a separate article, and that is the buying superpower: clip-on coils change in seconds without opening the refrigerant circuit. Coil families carry the voltage and power in the code — e.g. the BB230AS 230 V AC clip-on, BB 24 V 50 Hz 10 W (018F7358), BN024DS 24 V DC 20 W — plus cable plugs 230 V and 24 V for the 018F/018Z/042N coil types.
Bodies are maintained with kits, not replaced: seal kit 032F8196 (EVR 2/3/10/15/18/20/22), service kit 032F8167 (EVR 6/8), EVRH 6/8 seal kit 032F8165, and spare orifices such as the EVRB ø3 mm.
Cross-brand logic: Castel (10x8-series) and Emerson/Alco (200RB class) solenoids interchange at the duty level when capacity, connection, refrigerant approval and NC/NO function all match — the method in section 5 and the wider refrigeration cross-reference guide.

1. Reading an EVR — what the markings mean

Marking element | Example | Meaning |

Family + size | EVR 6 | Capacity/connection class — e.g. the EVR 6 3/8" solder valve (032F1212) |

Code number | 032F1212 | The exact orderable variant: size + connection type/size + NC/NO + options. The 032F prefix is the solenoid-valve program; quote this number and the identification is finished |

Connection | 3/8" ODF solder, or SAE flare | Solder (LD suffix habits in wholesale listings) dominates fixed installs; flare survives in service work |

NC / NO | NC default; NO marked | NC opens when energised (liquid-line standard); NO closes when energised (hot gas, defrost schemes) |

EVRH | EVRH 6 | High-pressure variant for modern refrigerant duties — kits differ (032F8165), do not mix with standard EVR kits |

Manual stem | Spindle under a cap | Lets the plant run with a dead coil — and tells you at service why a "closed" valve is passing: the stem was left open |

If the plate is unreadable: measure the connection (type and size), note NC/NO from the schematic, read the coil's own label for voltage, and send photos of body and stamping — that identifies the 032F code in one pass. The Danfoss code decoder guide covers the neighbouring number families (060, 018F, 032F, 084).

2. Direct or servo — and the minimum pressure differential

Construction | Sizes (typical) | Opens at | Consequence |

Direct-operated | The small end of the family (EVR 2/3 class) | Zero pressure differential — the coil lifts the plunger directly | Works on equalised lines, bypasses, small capacities |

Servo-operated (pilot + diaphragm/piston) | EVR 6 and up | Needs a minimum differential (of the order of a few hundredths of a bar) to use line pressure as the muscle | On an equalised or dead line it opens a pilot path only — the classic "energised but not flowing" call |

Three field consequences worth a technician's tattoo: a servo EVR cannot be used as a vacuum-breaking or zero-Δp bypass valve — select a direct-operated size or a different family; an oversized solenoid on a lightly loaded liquid line may never see its minimum differential and will chatter or hunt — size by capacity, not by pipe; and MOPD (maximum opening pressure differential) is a coil-power property — a 10 W coil opens against less differential than a 20 W DC coil, so coil substitutions change the valve's capability, not just its voltage.

3. The coil system — voltages, families, plugs

Coil family (letters) | Character | Typical codes | Catalogue anchors |

BB class — AC clip-on, 10 W | The standard AC coil for EVR bodies | BB230AS (230 V), BB024AS-class (24 V 50 Hz) | BB230AS DIN-spade; 018F7358 24 V 10 W |

BN class — DC, 20 W | DC supply duty (marine, mobile, control systems) | BN024DS (24 V DC) | BN024DS; see also the BN024AS 24 V AC 24 W step-up |

BE class and siblings | Variants by terminal style and power | BE230AS class | Quoted by code |

Code logic | Letters = family/power class; digits = voltage; A/D = AC/DC; final S-class letters = terminal type (DIN spade, cable, terminal box). The 018F prefix on the code number is the coil programme itself |

Cable plugs | DIN-spade plugs with or without indicator lamp | By coil voltage | 230 V plug, 24 V plug — fits 018F/018Z/042N type-B coils |

Replacement rules that prevent returns: match voltage AND frequency AND AC/DC exactly (a 230 V AC coil on 24 V does nothing; a 24 V AC coil on 24 V DC burns); never energise a clip-on coil off the valve (it overheats within minutes without the core); and when a coil has burned once, check why — overvoltage, moisture in the plug, or a stuck armature — before fitting its twin. A spare coil per voltage class belongs in every plant's drawer: it is the single highest-frequency refrigeration RFQ line we see, precisely because the body stays in the line.

4. Where EVRs sit in the system — and selection by duty

Duty | Selection logic | Partner components |

Liquid line (pump-down control, tight shut-off at stop) | NC, sized to liquid capacity at the design Δp — the standard case | Filter drier upstream, sight glass downstream, TEV per the expansion valve finder |

Suction line | Larger body for the vapour volume at low Δp — size from capacity tables, never by pipe diameter | Check valve logic per system design |

Hot gas (defrost, bypass) | NO versions and high-temperature coils by scheme; EVRH territory at higher pressures | Defrost control per the EKC / AK-CC controller guide |

Zero-Δp or equalised lines | Direct-operated small sizes only | — |

Installation discipline the datasheet assumes: flow arrow respected, coil removable upward with service clearance, body protected from solder heat (wrap it wet or disassemble per instructions — overheated PTFE seats are the hidden cause of "new valve leaks"), and a strainer or drier upstream because servo pilots and scale do not coexist. Industrial-refrigeration positions (ammonia, large CO2) belong to the ICF/SVA programme instead — see the SVA/ICF guide; water and neutral-fluid duty belongs to the EV2xx family in the solenoid valve finder.

5. Cross-reference and the RFQ line

Cross-brand method (full tables in the cross-reference guide): match (1) duty and NC/NO function, (2) capacity at the actual refrigerant and Δp — not nominal size names across brands, (3) connection type and size, (4) refrigerant/pressure approval (standard vs high-pressure variants), (5) coil voltage and power separately, because every maker sells coil and body apart. Castel's 10x8-series and Emerson/Alco's 200RB class map onto EVR duties cleanly at the class level; the exact pairing is by capacity table, which we run per line. A complete RFQ line reads: code number if known (032F…), else family+size, connection, NC/NO, refrigerant, and the coil as its own line (voltage/frequency/AC-DC, plug wanted or not). ASCO-pattern general solenoids on air/water live in their own world — the 8210 cross-reference — do not cross refrigerant valves against them.

How buying works at cballast. We stock and quote EVR bodies, the full coil programme, plugs and service kits, cross Castel and Alco positions by capacity table with the basis stated per line, and flag the servo/minimum-Δp trap when an inquiry smells like a zero-differential application. 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

Why does my Danfoss EVR valve hum but not open?If it is EVR 6 or larger it is servo-operated and needs a minimum pressure differential across the valve to open fully. On an equalised or dead line the coil is fine and the valve is behaving per design. Check system pressures first, the manual stem position second, and only then suspect the coil or the pilot orifice (dirt).
Can I replace just the coil on an EVR solenoid valve?Yes — that is the design's point. Clip the old coil off and the new one on without opening the refrigerant circuit, matching voltage, frequency and AC/DC exactly. If a coil failed, find out why (overvoltage, moisture, stuck armature) before the replacement repeats the funeral.
What is the difference between EVR NC and NO?NC (normally closed) opens when energised — the standard for liquid-line and pump-down duty. NO (normally open) closes when energised — used in hot-gas, defrost and fail-open schemes. They are different valves, not a wiring choice; the code number differs.
What does the number in EVR 6, EVR 10, EVR 20 mean?It tracks the capacity/connection class of the body — bigger number, bigger orifice and connections. Selection is by capacity at your refrigerant and pressure drop from the Danfoss tables, not by matching the number to pipe size; an oversized servo valve that never sees its minimum differential is a worse problem than a correctly sized smaller one.
What is EVRH?The high-pressure variant of the family for modern high-pressure refrigerant duties. Bodies and kits are specific — the EVRH 6/8 seal kit (032F8165) is not the standard EVR kit — so quote the H when the plate shows it.
Is there a Castel or Alco equivalent to a Danfoss EVR?At class level, yes — Castel 10x8-series and Emerson/Alco 200RB-class solenoids serve the same duties. A legitimate cross matches capacity at the refrigerant, connection, NC/NO and pressure rating, with the coil specified separately. We state the basis on every crossed line; the method lives in our refrigeration cross-reference guide.
Which coil do I need for an EVR valve?Read the supply first: 230 V AC and 24 V AC take the standard 10 W class clip-on coils (BB230AS and siblings); 24 V DC takes the 20 W DC class (BN024DS). Add the matching DIN-spade cable plug — with indicator lamp where fault-finding matters. Send the valve code and supply voltage and the coil line writes itself.
Who supplies Danfoss EVR valves and coils?cballast.com stocks EVR bodies, coils, plugs and service kits and quotes Castel/Alco crosses with the basis stated. Write to sales@cballast.com with the 032F code or a photo of the stamping.

References and related guides

Standards and sources referenced: Danfoss EVR/EVRH datasheets and capacity tables, Danfoss coil programme documentation (018F series), EN 60730-class coil practice; peer data from Castel and Emerson/Alco catalogues for the cross-reference method.

Refrigeration parts cross-reference — Danfoss, Castel, Alco

Solenoid valve finder — EV210/EV220/EV250

Expansion valve finder

Filter drier selection — DML, DCL, DAS, DCR

Danfoss EKC & AK-CC controllers

Danfoss product code decoder

ASCO 8210 solenoid valve cross-reference

Questions on a valve you cannot identify or a zero-differential application: write to sales@cballast.com. We answer whether or not you buy from us.

Part numbers and designations are those of the original manufacturers and are given for identification. cBallast is an independent supplier. © cBallast 2026 · cballast.com