

Embraco Hermetic Compressors — NEK, NEU, NT, NJ and SE Families, Starting Methods and R290 Variants

cBallast Technical Sourcing · Hermetic compressors for commercial refrigeration · issued 2026-10-03 · cballast.com/documents/embraco-hermetic-compressor-families-and-starting

Orientation in the Embraco hermetic compressor families stocked for commercial refrigeration — NEK, NEU, NT, NJ and SE — with an explanation of CSIR, CSCR and RSIR starting, the role of the electrical start box, and what changes on R290 (propane) versions.

The families

Embraco (Nidec Global Appliance) builds hermetic reciprocating compressors for light-commercial refrigeration: bottle coolers, display cabinets, under-counter units, ice machines and small cold rooms. The catalogue stocks the common European 50 Hz families. As a practical orientation: NEK and NEU are compact fractional-horsepower machines for cabinets and coolers; NT and NJ are the larger light-commercial frames; NTU/NEU "U" types in the catalogue are the R290 (propane) versions; the SE machines listed are larger hermetics used in Bioma-style condensing units. The definitive application envelope (LBP/MBP/HBP, refrigerant, displacement) for a given code is the Embraco datasheet for that exact model — the families below are matched to what the designation on the shell tells you.

Family | Catalogue examples | Notes |

NEK | NEK2125GK, CSIR, 230 V | Compact, widely used in bottle coolers |

NEU (R290) | NEU2155U, NEU2178U CSCR | "U" = R290; CSIR and CSCR versions |

NT | NT6217Z, NT6224GK CSCR | Larger cabinets, small cold rooms |

NJ | NJ2212GK CSR | Largest single-phase frames |

SE | SE6015GK, SE6026GS | Used in UP/Bioma condensing units |

Starting methods: RSIR, CSIR, CSR/CSCR

Single-phase hermetics need a starting arrangement for the auxiliary winding, and the designation letters state which one the machine ships with:

RSIR (resistance start, induction run): the start winding is cut out by a current relay or PTC; no capacitors. Low starting torque — only for self-equalising capillary systems.

CSIR (capacitor start, induction run): a start capacitor plus relay gives high starting torque for expansion-valve systems that start against a pressure difference. Most catalogue NEK/NEU/NT units are CSIR — e.g. NEU6212Z.

CSR / CSCR (capacitor start, capacitor run): adds a run capacitor for better efficiency and smoother running on the larger frames — e.g. NTU6238GKV and NT2192GK with CSR box.

The relay, capacitors and overload protector are packaged in the start box (electrical box) on the compressor housing. The box is compressor-specific: coil pick-up current, capacitor values and overload rating are matched to the winding. Replace it with the box listed for the exact model — the catalogue carries them as separate spares, e.g. for NJ9226GK, for NT2212GK and for NT6224U. A failed start relay typically shows as a compressor that hums, trips the overload after a few seconds, and restarts after cooling.

R290 versions — what changes

The R290 (propane) variants (model letter U, as in NEU6210U) are mechanically similar but matched to the refrigerant: different valve plate and oil charge, and the electrical equipment is designed so it is not an ignition source. R290 is an A3 flammable refrigerant: the EN 378 charge limits for the location apply, all electrical components near the circuit should be the versions specified for the appliance, and a hydrocarbon-rated leak detector must be used for service — see the leak-detection guide. Never replace an R290 compressor with an HFC model or vice versa: oil, valve plate, protector and approval all differ.

Condensing units built on these compressors

The same families power the catalogue's packaged units: the UNEK/UNJ/UNT air-cooled condensing units (UNEK6213GK-C30, UNJ9232GK-C30) and the Bioma UP series (UP-SE6015GK). Condenser fans for the Bioma units are listed by type (type 1, type 2) with the unit models each fan fits.

Replacement practice

Record the full model and the code number from the shell label before ordering; two machines with the same family and size can carry different windings. On burn-out, flush or replace the capillary/expansion device, fit a suction burn-out drier for the first 72 hours, renew the liquid-line drier, and megger the new machine before first start. Keep the original grommets and discharge loop geometry — small hermetics transmit noise into cabinets through rigid lines. For oil-related diagnostics, acid test kits for POE and mineral oils are in the catalogue (ETK ester-oil kit, TKO universal kit).

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