

Danfoss Maneurop MTZ Reciprocating Compressors — Model Range, Voltage Codes and Replacement Guide

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How to read a Danfoss Maneurop MTZ compressor designation, which model sizes the range covers, what the voltage code means, and what to check (oil, refrigerant, rotalock connections, crankcase heater) when replacing an MTZ in a commercial refrigeration or marine provision plant.

The MTZ range at a glance

Danfoss Maneurop MTZ compressors are hermetic reciprocating compressors designed for medium- and low-temperature commercial refrigeration. They are a long-standing workhorse in cold rooms, marine provision plants, process chillers and condensing units, valued for a wide operating envelope and tolerance of the liquid slugging and flooded starts that occur in real installations. The MTZ family is the HFC successor to the earlier MT (R22) series: the same platform concept with POE oil and valve plates matched to HFC refrigerants such as R404A, R507A, R134a, R407C and R452A (always confirm the refrigerant against the data plate and the Danfoss selection software for the specific code number).

The model number encodes the size: the figures after "MTZ" approximate the displacement class in thousand BTU/h at 60 Hz, so an MTZ32 is a small single-phase-capable machine while an MTZ160 is a large 4-cylinder unit. The catalogue carries the common three-phase sizes:

Model | Typical duty | Catalogue listing |

MTZ32 | Small cold rooms, cabinets | MTZ32-6VI |

MTZ36 | Small cold rooms | MTZ36-6VI |

MTZ40 | Cold rooms, small chillers | MTZ40-6VI |

MTZ50 | Medium cold stores | MTZ50-6VI |

MTZ64 | Medium cold stores, process cooling | MTZ64-6VI |

MTZ80 | Larger cold stores | MTZ80-6VI |

MTZ100 | Large plants, marine provision | MTZ100-6VI |

MTZ160 | Largest frame, parallel racks | MTZ160-6VI |

Reading the designation

A full designation such as MTZ100-6VI breaks down as: MTZ = Maneurop hermetic reciprocating, HFC/POE platform; 100 = size class; -6 = motor voltage code (code 6 is the 380–400 V 3-phase 50 Hz / 460 V 3-phase 60 Hz winding used across Europe and on most ships); VI = the connection/equipment variant (rotalock service valves or brazed connections and the packaging variant). Other common voltage codes in the Maneurop system are 1 (220–240 V single-phase 50 Hz), 3 (200–230 V 3-phase 60 Hz) and 9 (380 V 3-phase 60 Hz); if the nameplate code differs from -6, the replacement must match it — the mechanical compressor is the same, the motor is not.

Replacement checklist

When an MTZ fails in service, the following points decide whether the swap is drop-in or needs attention:

Exact model and voltage code. Match the full designation from the data plate, not just the size class.

Oil. MTZ ships with polyolester (POE) oil. After a motor burn-out, fit a burn-out (suction line) filter drier such as the Danfoss DAS series — see DAS 164s 1/2" or DAS 305s 5/8" — and change it after 72 hours of operation.

Liquid-line drier. Replace the liquid-line filter drier on every compressor change; the Danfoss DML solid-core family (DML 164s, DML 305s) is the standard 100 % molecular-sieve choice for HFCs.

Rotalock gaskets and adapters. VI-variant machines connect via rotalock; fit new PTFE gaskets (1 3/4", 1") and use rotalock adapters or valves of the correct size — see the rotalock size reference.

Start equipment and protection. Check the contactor AC-3 rating and the overload setting against the new compressor's nameplate current; on Danfoss hermetics a matching start relay (e.g. the FR-series small hermetics use dedicated relays) or the original protection module must be retained.

Crankcase heater. Refit or renew it; a cold crankcase full of migrated refrigerant is the most common cause of a second failure.

Vibration. Renew the rubber mounting grommets and check discharge-line mufflers (ITE M-10 7/8") and vibration eliminators on long pipe runs.

Commissioning notes

Evacuate to below 500 microns from both sides, break vacuum with the service refrigerant, and charge liquid into the receiver or liquid line — never liquid into the suction of a reciprocating hermetic. Verify rotation is irrelevant for reciprocating MTZ (unlike scrolls, they pump in either phase sequence), but correct phase sequence still matters for any associated fans and pumps. Record suction and discharge pressures, superheat (target 5–10 K at the compressor under stable load for most MTZ applications) and the oil sight-glass level if an oil management system is fitted. On marine installations, class surveyors will expect the pressure-relief arrangement on the receiver side to be documented — see the relief valve guide.

For adjacent needs the catalogue carries the full support range: Fuchs Reniso SE 55 POE oil, suction accumulators, receivers, and the Danfoss ERC electronic controllers (ERC 211).

