Maneurop MTZ160HW4VE

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Maneurop MTZ160HW4VE overview

The **Maneurop MTZ160HW4VE** is a heavy-duty hermetic reciprocating compressor designed by Danfoss for medium-back-pressure commercial refrigeration with HFC refrigerants R134a, R404A, R407C, and R507A.
It targets cold rooms, process chillers, milk tanks, and larger beverage installations where robust construction, multi-refrigerant flexibility, and three-phase power supply are required.

Technical specifications and operating data

The MTZ160HW4VE belongs to the MTZ160-4VI family and combines a three-phase motor with high-efficiency pistons to reach double-digit horsepower levels.
Its nominal cooling capacity is about **20.3 kW at 50 Hz**, with operation possible on 380-415 V/3/50 Hz or 460 V/3/60 Hz networks.

Main technical data – MTZ160HW4VE

Parameter	Value	Notes
Compressor family	Maneurop MTZ160-4VI	Medium-temperature line.
Technology	Hermetic reciprocating	Piston design.
Nominal cooling capacity (50 Hz)	20.3 kW	At R404A MBP rating.
Motor power supply	380-415 V 3~ 50 Hz, 460 V 3~ 60 Hz	Wide voltage range 340–440 V @ 50 Hz.

Parameter	Value	Notes
Motor protection	Internal overload protector	Thermally protected windings.
Max. operating current	Around 36 A at 460 V 60 Hz	Label LR (locked-rotor) approx. 140 A.
Max. condensing temperature	50 °C	According to series guideline.
Minimum suction gas temp.	−35 °C	LP slide TS min.
PS design pressure	22.6 bar	PED data.
Oil type	Danfoss POE 160PZ	Factory charge of polyester oil.
Compatible refrigerants	R134a, R404A, R407C, R507A and new blends like R448A/R449A/R452A	Multi-refrigerant platform.

This table shows why the MTZ160HW4VE is positioned as a **13 hp-class** compressor for large medium-temperature duties rather than domestic or small commercial equipment.

The internal overload, POE 160PZ oil, and 22.6-bar shell rating give it the safety margin needed for high-pressure HFC blends like R404A and R507A.

Field applications and exploitation potential

Because of its capacity and three-phase motor, the MTZ160 series is frequently installed in:

- Medium-temperature cold rooms for food storage in supermarkets and restaurants.
- Process chillers, milk tanks, and air-dryer systems that need stable evaporating temperatures and long run times.

For installers, the multi-refrigerant capability is a real advantage: the same MTZ160HW4VE shell can be used with traditional R404A/R507A or retrofitted to lower-GWP blends like R448A or R449A, provided the system is re-calculated using Danfoss performance software.
The POE 160PZ oil ensures full miscibility with HFC and HFO blends, which is essential for good oil return in long piping runs and vertical risers in supermarket systems.

Value comparison with another Maneurop and Copeland models

To position this compressor on the market, it is useful to compare it with a smaller Maneurop MTZ80-4VI and with a scroll alternative such as a Copeland ZR81KCE.

Capacity comparison

Model	Technology	Refrigerants	Nominal capacity at 50 Hz	Typical applicatio

MTZ80-4VI	Hermetic reciprocating	R404A/R507A/R407C/R134a	≈10 kW at MBP.	Small cold rooms, display cases.
MTZ160HW4VE (MTZ160-4VI)	Hermetic reciprocating	R404A/R507A/R407C/R134a	**20.3 kW at MBP**.	Large cold rooms, process cooling.
Copeland ZR81KCE	Hermetic scroll	R404A/R407C etc.	≈18–19 kW at AHR MBP conditions.	Packaged condensing units, rooftop units.

The **MTZ160HW4VE** clearly delivers about double the cooling capacity of the MTZ80-4VI, which justifies its use in bigger cold rooms or multi-evaporator racks.

Against a similar-capacity Copeland scroll, the reciprocating design may be a bit noisier but offers higher displacement and strong performance at lower evaporating temperatures, making it attractive in heavy commercial refrigeration.

Operating range and refrigerant flexibility

Model	Evaporating range	Condensing limit	Refrigerant flexibility

MTZ160HW4VE	Medium-temp, down to about −25 °C with R404A.	Up to 50 °C condensing.	R404A, R507A, R407C, R134a, R407A/F, R448A, R449A, R452A.
Copeland ZR scroll	Medium-temp, usually not as deep at low evaporating.	Similar condensing limits depending model.	Some models have narrower approved refrigerant lists.

From this table, the MTZ160HW4VE stands out by its very wide refrigerant portfolio, which is a strong **value** for installers looking for future-proof solutions during HFC phase-down.
Scroll compressors remain strong competitors in efficiency and sound level, but they are not always as tolerant to liquid slugging or deep evaporating conditions as a rugged reciprocating Maneurop.

Installation, reliability and service notes

Danfoss guidelines for MT/MTZ compressors specify that these units must be installed with proper crankcase heaters, suction line filters, and accurate superheat control to avoid liquid floodback.
They also recommend limiting the number of starts to around 12 per hour and ensuring correct phase rotation and voltage balance to protect the three-phase motor.

During service, only POE 160PZ oil should be used, and charging must be done as a **liquid** from the cylinder when handling zeotropic blends such as

R407C, R448A, or R449A to prevent fractionation.

When retrofitting from R404A to a lower-GWP blend, system components such as expansion valves and line sizes must be checked against the new operating pressures and mass flow predicted by Danfoss software tools.

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