ENGINEERING
TOMORROW

Application Guide

Maneurop®
Reciprocating compressors
MT and MTZ

50 – 60 Hz

www.danfoss.com

Contents

Safety and warnings

Danfoss reciprocating compressors are designed and manufactured according to the state of the art and to valid European regulations. Particular emphasis has been placed on safety and reliability. Related instructions are highlighted with the following icons:

This icon indicates instructions to avoid safety risk.

This icon indicates instructions to avoid reliability risk.

The purpose of this guideline is to help customers qualify compressors in the unit. You are strongly advise to follow these instructions. For any deviation from the guidelines, please contact Danfoss Technical Support. In any case, Danfoss accepts no liability as a result of the improper integration of the compressor into the unit by the system manufacturer.

Introduction

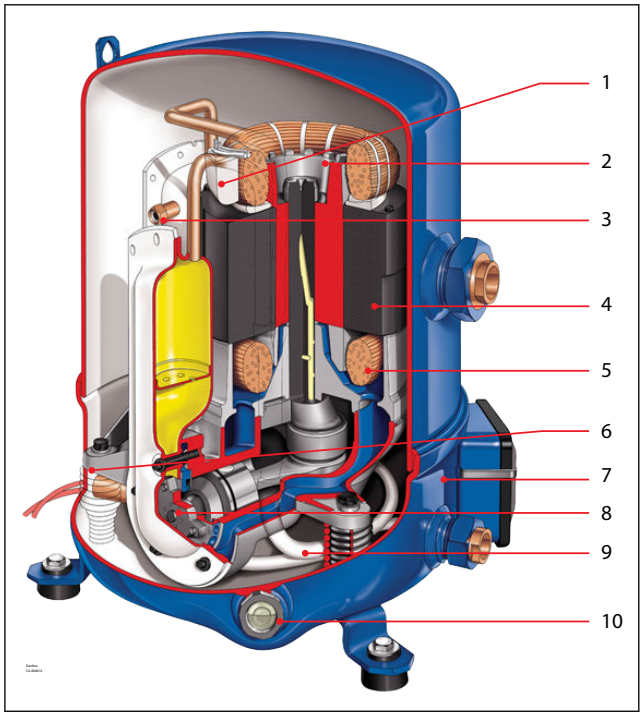
Product description

The Danfoss MT and MTZ series compressors are hermetic reciprocating compressors designed for medium and high evaporating temperature applications. These compressor ranges are compatible with a wide variety of refrigerants, including new low-GWP substances, depending on their compatibility with the oil used. The MT series is charged with mineral oil, while the MTZ series uses polyester oil.

The MT and MTZ series reciprocating compressors benefit from internal motor protection, high-torque motors, a large internal volume, and a gas flow design that, together with an internal pressure relief valve, ensures the highest efficiency and outstanding reliability over a long lifespan. The unique circular valve design, high-efficiency motors, and excellent lubrication provide the highest COP for hermetic reciprocating compressors across a wide operating range.

All compressors are available in the VE version, which includes a rotolock connection for suction and discharge, an oil equalization port, and an oil sight glass.

Cut Away MT and MTZ

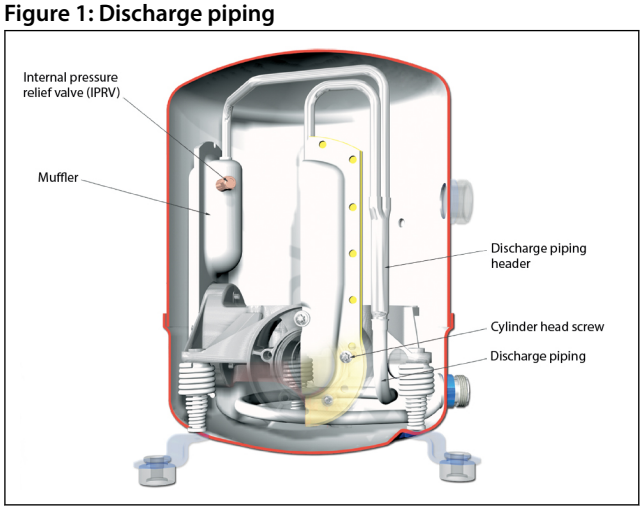


1	Internal motor protector
2	High level suction inlet
3	Internal pressure relief valve
4	100% gas cooled motor
5	Epoxy coated motor winding
6	PTC crankcase heater
7	Larger shell volume
8	Impact resistant valve
9	Discharge line sump heater
10	Oil sight glass

Features and benefits

Reliability due to shell size and gas flow

Figure 1: Discharge piping

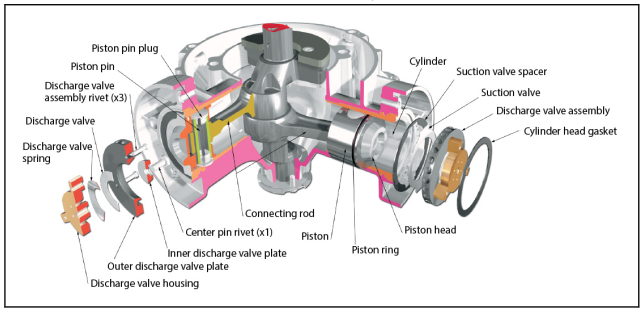


The MT and MTZ compressors feature a large internal free volume that protects against the risk of liquid hammering when liquid refrigerant enters the compressor. These compressors are fully gas-cooled, meaning that all suction gas passes through the electrical motor, ensuring complete motor cooling in all applications. This design eliminates the need for additional compressor cooling and allows the compressors to be insulated with acoustic jackets to achieve lower sound levels without the risk of overheating.

Compressed gas is directed straight to the gas muffler for pulsation and noise reduction, and then through a tube to the discharge port. Before exiting the compressor through the discharge pipe, the gas heats the oil accumulated in the bottom shell.

The unique circular valve design

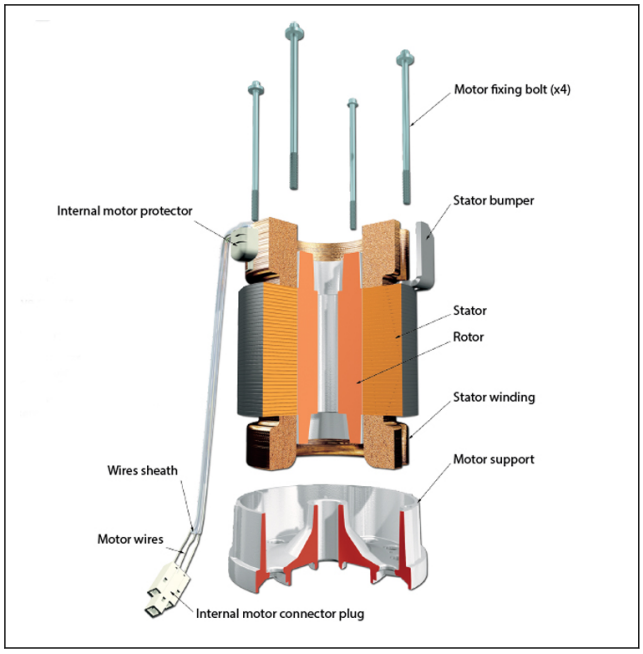
Figure 2: Compression sets assembly



The unique circular valve design benefits the compressor by improving volumetric efficiency through better gas management, reducing internal suction gas pressure losses, limiting heat transfer, reducing top cylinder dead volume, and reducing flow losses in the circular valve system.

Electrical Motor and Internal Overload Protection

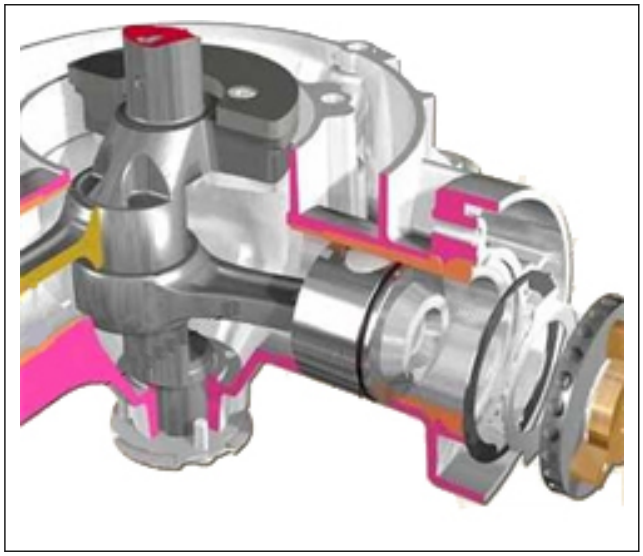
Figure 3: Motor



The MT and MTZ compressors are available in seven different motor voltage ranges and support both single-phase and three-phase power supplies at 50 and 60 Hz. The motors are designed to cover all application areas, providing high torque with high efficiency. An internal motor protector secures the electrical motor against overheating and overloading conditions.

Lighter than others

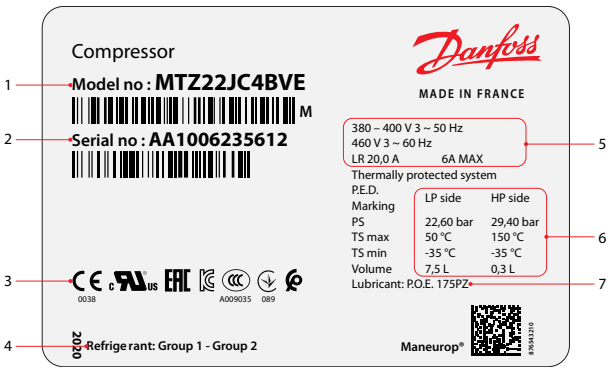
Figure 4: Bearing



The use of aluminum parts (motor support, crankcase, pistons, and connecting rods) offers benefits such as light weight, good heat dissipation, quick starts, and lower stresses on the compressor.

Product identification

Name Plate



1	Model number
2	Serial number
3	Approvals
4	Refrigerant
5	Supply voltage, Locked Rotor Amps (RLA), Maximun Continous Current (MCC)
6	Housing service pressure
7	Factory charged lubricant

Nomenclature

Code numbers (for ordering)

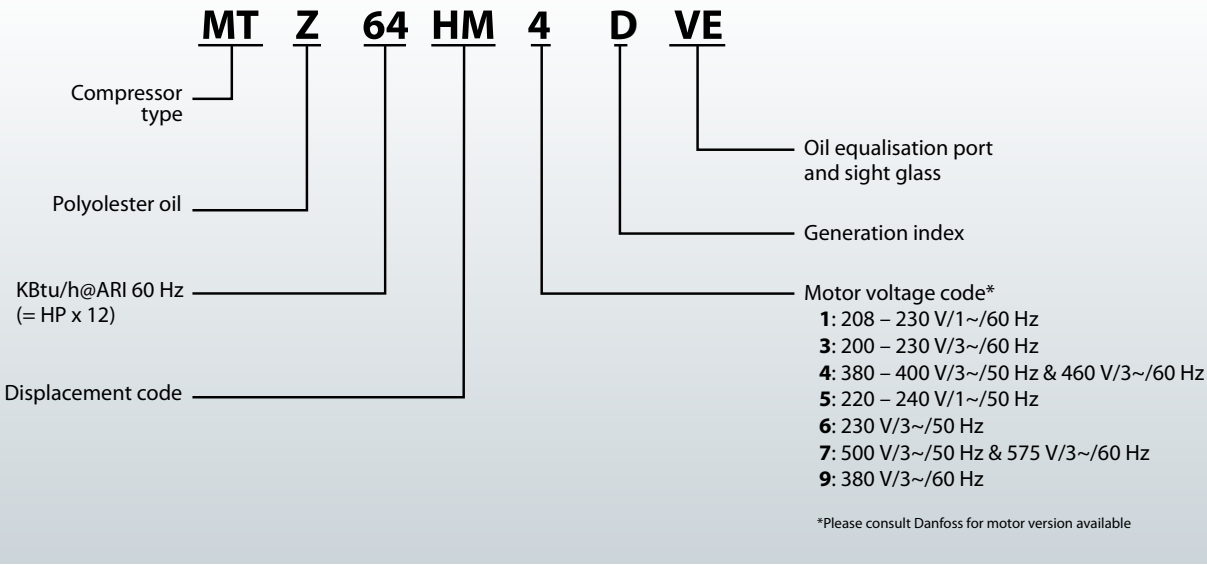
MT Z 64 - 4 V I

- **MT**: Compressor type
- **Z**: Polyolester oil
- **64**: KBtu/h@ARI 60 Hz (= HP x 12)
- **4**: Motor voltage code*
  - **1**: 208 – 230 V/1~/60 Hz
  - **3**: 200 – 230 V/3~/60 Hz
  - **4**: 380 – 400 V/3~/50 Hz & 460 V/3~/60 Hz
  - **5**: 220 – 240 V/1~/50 Hz
  - **6**: 230 V/3~/50 Hz
  - **7**: 500 V/3~/50 Hz & 575 V/3~/60 Hz
  - **9**: 380 V/3~/60 Hz
- **V**: Oil equalisation port and threaded sight glass
- **I**: Packaging type
  - **I** : single pack
  - **M** : industrial pack

(see ordering section)

*Please consult Danfoss for motor version available

Compressor reference (indicated on the compressor nameplate)



Compressors serial number

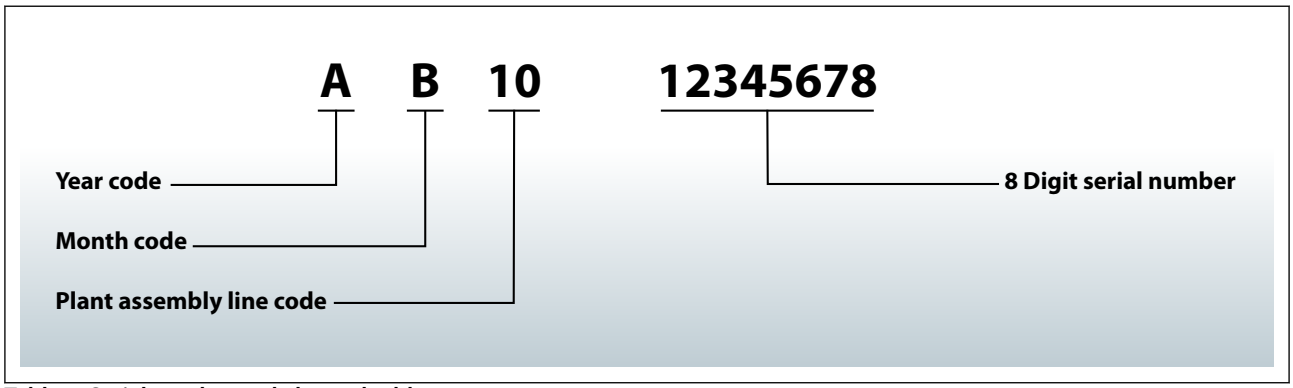


Table 1: Serial number code legend table

Year code		Month code		Plant assembly line code	
Year	Code	Month	Code	Plant	Code
1990, 2010	A	January	A	Trévoux, France	10
1991, 2011	B	February	B		
1992, 2012	C	March	C		
1993, 2013	D	April	D		
1994, 2014	E	May	E		
1995, 2015	F	June	F		
1996, 2016	G	July	G		
1997, 2017	H	August	H		
1998, 2018	J	September	J		
1999, 2019	K	October	K		
2000, 2020	L	November	L		
2001, 2021	M	December	M		
2002, 2022	N				
2003, 2023	P				
2004, 2024	Q				
2005, 2025	R				
2006, 2026	S				
2007, 2027	T				
2008, 2028	U				
2009, 2029	V				

Certificates, declarations and approvals

Approval and certificates

Maneurop® MT/MTZ compressors comply with the following approvals and certificates. Other certificates/approvals please contact Danfoss.

Approval and certificates	Certification logo	Models
CE (European Directive)	CE	All models
UL (Underwriters Laboratories)	c UL us	All 60 Hz models
CCC (China Compulsory Product Certification)	CCC	All models code 4 and 5 under CCC scope
EAC Eurasian conformity mark	EAC	All models voltage code 4 and 5

Low voltage directive 2014/35/EU

Products	MT/MTZ 018 to 040	MT/MTZ 044 to 160
Manufacturer's declaration	Contact Danfoss	Contact Danfoss

Machines directive 2006/42/EC

Products	MT/MTZ 018 to 040	MT/MTZ 044 to 160
Manufacturer's declaration	Contact Danfoss	Contact Danfoss

Pressure equipment directive 2014/68/EU

Products	MT/MTZ 018 to 040	MTZ 018 to 040[2]	MT/MTZ 044 to 160	MT/MTZ 044 to 160[3]
Refrigerant fluids [1]	Group 2	Group 1	Group 2	Group 1
PED Category	I	II	II	III
Evaluation module	D1	D1	H	H
Maximum/Minimum temperature - Ts	50 °C > Ts > -35 °C	50 °C > Ts > -35 °C	50 °C > Ts > -35 °C	50 °C > Ts > -35 °C
MT maximum allowable pressure - PS	18.4 bar(g)	18.4 bar(g)	18.4 bar(g)	18.4 bar(g)
MTZ maximum allowable pressure - PS	22.6 bar(g)	22.6 bar(g)	22.6 bar(g)	22.6 bar(g)

[1] Accordingto the PED classification Group1 contains hazardous fluids e.g. flammable, while Group 2 all other fluids
[2] MTZ018 to 040 - only motor code 1, 3, 4, 5
[3] MTZ 044 to 080 - only motor code 1, 3, 4 and MTZ 100, 125, 160 - only motor code 3, 4

Internal free volume

Products	Volume (liter)	
	Low side	High side
1 cylinder	7.5	0.4
2 cylinder	16.9	0.8
4 cylinder	33.7	1.5

Refrigerants

General information

When choosing a refrigerant, different aspects must be taken into consideration:

- Legislation (now and in the future)
- Safety
- Application envelope in relation to expected running conditions
- Compressor capacity and efficiency
- Compressor manufacturer recommendations & guidelines

Only Danfoss lubricant are allowed for Maneurop® MT & MTZ compressors.

Additional points could influence the final choice:

- Environmental considerations
- Standardisation of refrigerants and lubricants
- Refrigerant cost
- Refrigerant availability

The table below gives an overview of the different refrigerant - compressor combinations for Maneurop® MT & MTZ compressors.

Compressor	Refrigerant	Fluid Group
MT	R22 (R417A)	2
MTZ	R454A/C, R455A	1
MTZ	R134a, R404A, R407A/C/F, R448A, R449A, R452A, R507A, R513A	2

R22

R22 is a hydrochlorofluorocarbon (HCFC) refrigerant characterized by Ozone Depletion Potential (ODP). Consequently, it has been banned in most regions and will be phased out in others in the future. Please consult local legislation for guidance. Always use mineral oil 160P with R22. The MT compressor is supplied with an initial charge of mineral oil.

R407C

R407C is a hydrofluorocarbon (HFC) refrigerant with an Ozone Depletion Potential (ODP) of 0 and a GWP of 1774. As a zeotropic mixture, R407C has a temperature glide of 7.4°C and must be charged in the liquid phase.

R134a

Refrigerant R134a is an HFC with an ODP of 0 and a GWP of 1430. It is ideal for applications with high evaporating and high condensing temperatures. R134a is a pure refrigerant with zero temperature glide.

R404A

Refrigerant R404A is an HFC with zero ODP and a GWP of 3922. It is particularly suitable for low evaporating temperature applications but can also be used for medium evaporating temperature applications. R404A is a mixture with a very small temperature glide and must be charged in the liquid phase. For most other aspects, this small glide can be neglected.

R507

Refrigerant R507 is an HFC with thermodynamic properties very similar to R404A but without temperature glide.

R407A/R407F

Refrigerants R407A and R407F are HFCs with thermodynamic properties similar to R404A, with a GWP above 1800. R407A/F is a zeotropic refrigerant with a temperature glide of approximately 6.5 K.

R448A/R449A

R448A/R449A is an HFO/HFC blend with thermodynamic properties like R404A or R22. These are zeotropic refrigerants with a temperature glide of about 6.2 K and a GWP above 1300.

R452A

R452A is an HFO/HFC blend with thermodynamic properties similar to R404A or R22. It is a zeotropic refrigerant with a temperature glide of about 4 K and a GWP of 1945.

R454A/R454C/R455A

R454A/R454C/R455A is an HFO blend with a GWP below the 150 limit. These are zeotropic refrigerants with a temperature glide of about 6 to 12 K and must be charged in the liquid phase. These refrigerants are classified as A2L with low flammability properties. Please refer to European regulations and directives regarding the use of A2L safety group refrigerants (EN378, EN60335). Outside Europe, refer to local regulations.

⚠ All models approved for use with A2L refrigerants (belonging to PED classification Group 1) are marked with a flammable logo. 

R513A

R513A is an HFO/HFC blend with thermodynamic properties similar to R134a. It is an azeotropic refrigerant with negligible glide and a GWP of 573.

Hydrocarbons

Hydrocarbons such as propane, isobutane etc. are extremely flammable. Danfoss does not authorise the use of hydrocarbons with Maneurop® MT or MTZ compressors in any way, even with a reduced refrigerant charge.

Oils

The table below gives an overview of the different refrigerant - lubricant - compressor combinations for Maneurop® MT & MTZ compressors.

Refrigerant	Type	Lubricant type	Compressor type	Danfoss lubricant	Application
R22	HCFC	Mineral	MT	Mineral oil, 160P	Medium / High temperature
R417A	HFC	Polyolester	MT	Polyolester oil 175PZ	Medium / High temperature
R407A/C/F	HFC	Polyolester	MTZ	Polyolester oil 175PZ	Medium / High temperature
R134a	HFC	Polyolester	MTZ	Polyolester oil 175PZ	Medium / High temperature
R404A	HFC	Polyolester	MTZ	Polyolester oil 175PZ	Medium temperature
R507A	HFC	Polyolester	MTZ	Polyolester oil 175PZ	Medium temperature
R448A/R449A	HFC+HFO	Polyolester	MTZ	Polyolester oil 175PZ	Medium/High temperature
R454A/R454C/R455A	HFO	Polyolester	MTZ	Polyolester oil 175PZ	Medium/High temperature
R513A	HFC+HFO	Polyolester	MTZ	Polyolester oil 175PZ	Medium/High temperature
R452A	HFC+HFO	Polyolester	MTZ	Polyolester oil 175PZ	Medium/High temperature
Alternative R22 retrofit with HFC refrigerants		Polyolester	MT/MTZ	Polyolester oil 175PZ	Medium / High temperature
Hydrocarbons	Danfoss does not authorise the use of hydrocarbons in Maneurop® MT/MTZ compressors				

The MT compressor is supplied with an initial charge of mineral oil (type 160P), while MTZ with Polyol Ester Oil (POE) oil (type 175PZ). Always use MTZ compressors with Danfoss 175PZ Polyolester oil, with which MTZ compressors are charged at the factory.

Zeotropic refrigerant mixtures

Refrigerant mixtures are classified as either zeotropic or azeotropic.

- An **azeotropic mixture** (e.g. R502, R507) behaves like a pure refrigerant. During a phase transition, such as evaporation.
- In a **zeotropic mixture** (e.g., R454C), the composition of the vapor and liquid phases changes during a phase transition. When this effect is very small, the mixture is called a near-azeotropic mixture (e.g., R404A).

This change in composition in zeotropic mixtures leads to two important phenomena: compositional shift and temperature glide.

Compositional changes and handling

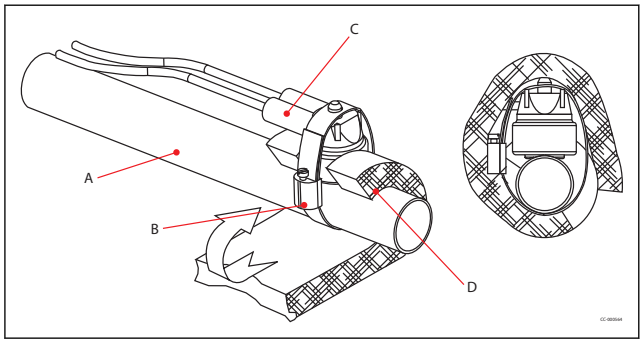
In system components where both liquid and vapor are present (like the evaporator, condenser, or liquid receiver), the liquid and vapor phases of a zeotropic refrigerant will have different compositions. This requires special attention during system servicing and design.

- **Charging**: Zeotropic and near-azeotropic refrigerants must always be charged in their liquid state to ensure the correct composition enters the system.
- **System Design**: Flooded evaporators should not be used in systems with zeotropic or near-azeotropic refrigerants.

Discharge gas temperature (DGT) protection

R Discharge Gas Temperature (DGT) protection is mandatory if the existing high and low-pressure switch settings do not adequately protect the compressor from operating outside its specific application envelope.

The compressor must be prevented from cycling on the discharge gas thermostat, as continuous operation beyond the approved range will result in severe compressor damage. For this purpose, a DGT accessory is available from Danfoss; please refer to the “Spare parts & accessories” section for details.



A	Discharge line
B	Bracket
C	Thermostat
D	Insulation

Phase shift

In system components where both vapour and liquid phase are present (evaporator, condenser, liquid receiver), the liquid phase and vapour phase do not have the same composition. In fact both phases form two different refrigerants.

Therefore zeotropic refrigerants need some special attention. Zeotropic refrigerants must always be charged in liquid phase. Flooded evaporators should not be applied in systems with zeotropic refrigerants. This also applies to near-azeotropic mixtures.

Temperature glide

Temperature glide is a key characteristic of zeotropic mixtures. During evaporation and condensation at a constant pressure, the refrigerant's temperature changes.

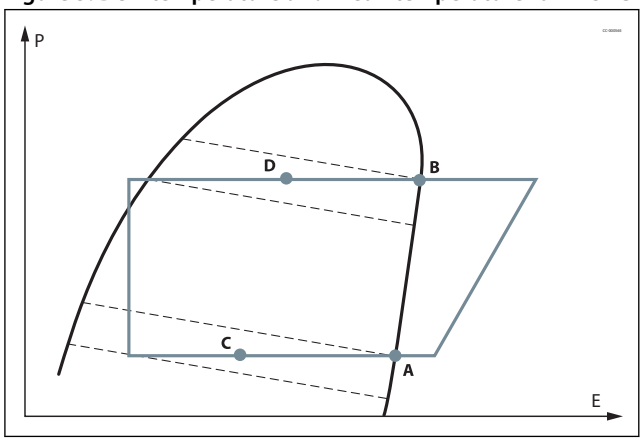
- In the **condenser**, the temperature will decrease as the refrigerant changes from vapor to liquid.
- In the **evaporator**, the temperature will rise as the refrigerant changes from liquid to vapor.

Because of this glide, it is crucial to specify which temperature is being referenced:

- **Dew Point (A, B)**: The temperature at which the last of the vapor condenses (on the saturated vapor line).
- **Bubble Point**: The temperature at which the first bubble of vapor forms (on the saturated liquid line).
- **Mean Point (C, D)**: The average of the dew point and bubble point temperatures, often used to represent the average temperature during the process.

As per ASERCOM recommendations, Danfoss Commercial Compressors uses dew point temperatures for its selection tables and application envelopes. To obtain exact capacity data using mean point temperatures, you must first convert them to dew point temperatures using the data tables provided by the refrigerant manufacturer. For an R454C cycle, mean point temperatures are typically about 2°C lower than dew point temperatures.

Figure 5: Dew temperature and Mean temperature for R454C



P	Pressure (log)
E	Enthalpy

Danfoss section software - Coolselector®2 allows selection at Mean-Temperatures or Dew-Temperatures.

Liquid migration to the compressor

To prevent liquid refrigerant from migrating to the compressor, particularly when using refrigerants with a significant temperature glide such as R454C or R455A, several measures must be implemented. First, maintain a minimum superheat setting of 8-10 K. Second, it is recommended to install a solenoid valve on the liquid line and perform a pump-down cycle. Finally, utilize a crankcase heater to prevent the refrigerant from dissolving into the lubricant.

These actions are critical for ensuring system reliability and preventing potential compressor damage.

Technical specifications

MT and MTZ technical data

Compressor model	Displacement			Cylinder Number	Oil charge dm³	Net weight kg	Available motor voltage codes						
	Code	cm³/rev	m³/h at 2900 rpm				1	3	4	5	6	7	9
MT/MTZ018	JA	30.23	5.26	1	0.95	21	●	●	●	●	-	-	-
MT/MTZ022	JC	38.12	6.63	1	0.95	21	●	●	●	●	●	-	●
MT/MTZ028	JE	48.06	8.36	1	0.95	23	●	●	●	●	●	-	○
MT/MTZ032	JF	53.86	9.37	1	0.95	24	●	●	●	●	●	○	●
MT/MTZ036	JG	60.47	10.52	1	0.95	24	●	●	●	●	●	○	○
MT/MTZ040	JH	67.89	11.81	1	0.95	24	●	●	●	-	●	-	-
MT/MTZ044	HJ	76.22	13.26	2	1.8	35	○	●	●	-	○	○	●
MT/MTZ050	HK	85.64	14.90	2	1.8	35	●	●	●	-	●	○	●
MT/MTZ056	HL	96.13	16.73	2	1.8	37	●	●	●	-	●	●	●
MT/MTZ064	HM	107.71	18.74	2	1.8	37	●	●	●	-	●	-	●
MT/MTZ072	HN	120.94	21.04	2	1.8	40	-	●	●	-	○	-	●
MT/MTZ080	HP	135.78	23.63	2	1.8	40	-	●	●	-	●	-	●
MT/MTZ100	HS	171.26	29.80	4	3.9	60	-	●	●	-	●	●	●
MT/MTZ125	HU	215.44	37.49	4	3.9	64	-	●	●	-	●	●	●
MT/MTZ144	HV	241.87	42.09	4	3.9	67	-	●	●	-	●	●	●
MT/MTZ160	HW	271.55	47.25	4	3.9	67	-	●	●	-	●	●	●

●	Available in MT and MTZ
○	Available in MTZ only

Performances data

ARI capacity and power input data are +/- 5%.
Asercom: Association of European Refrigeration Compressor and Controls Manufacturers
ARI: Air Conditioning and Refrigeration Institute

To	Evaporating temperature at dew point (saturated suction temperature).
Tc	Condensing temperature at dew point (saturated discharge temperature).
SC	Subcooling
SH	Superheat

Nominal performance data for R404

R404A	Refrigeration											
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C, SC = 0 K, SH = 10 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4(1)	1910	1.21	2.73	1.58	2070	1.31	2.86	5.39	2630	1.76	2.86	5.10
MTZ022-4(1)	2630	1.48	3.06	1.77	2830	1.62	3.24	5.96	3600	2.05	3.27	5.99
MTZ028-4(1)	3430	1.96	4.04	1.75	3690	2.14	4.30	5.88	4680	2.68	4.23	5.96
MTZ032-4(1)	3980	2.16	4.25	1.84	4260	2.37	4.56	6.13	5110	2.98	4.56	5.85
MTZ036-4(1)	4670	2.58	4.95	1.81	4990	2.83	5.33	6.02	5900	3.33	5.09	6.05
MTZ040-4(1)	5330	2.95	5.87	1.81	5680	3.24	6.29	5.98	6740	3.76	5.88	6.12
MTZ044-4(1)	5370	2.78	5.35	1.93	5780	3.02	5.67	6.53	7110	3.85	5.85	6.30
MTZ050-4(1)	6260	3.22	5.95	1.94	6700	3.50	6.33	6.53	8360	4.42	6.53	6.46
MTZ056-4(1)	6710	3.51	6.83	1.91	7250	3.85	7.25	6.43	9490	4.98	7.52	6.50
MTZ064-4(1)	7980	4.20	7.82	1.90	8590	4.60	8.35	6.37	10540	5.67	8.31	6.34
MTZ072-4(1)	8920	4.69	8.95	1.90	9570	5.11	9.50	6.39	11960	6.53	9.73	6.25
MTZ080-4(1)	10470	5.61	10.20	1.87	11180	6.14	10.94	6.21	13610	7.81	11.35	5.95
MTZ100-4(1)	12280	6.76	12.21	1.82	13170	7.35	12.94	6.12	15480	8.72	12.79	6.06
MTZ125-4(1)	15710	8.44	14.69	1.86	16800	9.22	15.82	6.22	19970	11.37	16.41	5.99
MTZ144-4(1)	18490	9.78	16.77	1.89	19690	10.66	17.99	6.30	23540	12.99	18.47	6.18
MTZ160-4(1)	20310	11.08	18.80	1.83	21660	12.09	20.22	6.11	25570	14.73	20.77	5.92

(1) 50 Hz, EN12900 data for indicated models are Asercom certified.

NOTE:
R404A data are also valid for refrigerant R507.

Nominal performance data for R22

R22	Refrigeration				Air Conditioning							
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C, SC = 0 K, SH = 10 K				To = 7.2 °C, Tc = 54.4 °C, SC = 8.3 K, SH = 11.1 K				To = 7.2 °C, Tc = 54.4 °C, SC = 8.3 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MT018-4	1690	1.00	2.27	1.69	3880	1.45	2.73	9.13	4660	1.74	2.73	9.14
MT022-4	2490	1.29	2.55	1.94	5360	1.89	3.31	9.68	6440	2.27	3.31	9.68
MT028-4	3730	1.81	3.59	2.06	7380	2.55	4.56	9.88	8850	3.06	4.56	9.87
MT032-4	3950	2.11	3.73	1.87	8060	2.98	4.97	9.23	9680	3.58	4.97	9.23
MT036-4	4810	2.35	4.30	2.04	9270	3.37	5.77	9.39	11130	4.05	5.77	9.38
MT040-4	5220	2.67	4.86	1.95	10480	3.86	6.47	9.27	12570	4.63	6.47	9.27
MT044-4	4860	2.46	5.02	1.98	10520	3.53	6.37	10.17	12890	4.32	6.42	10.18
MT050-4	5870	2.94	5.53	2.00	12230	4.19	7.20	9.96	14690	5.04	7.26	9.95
MT056-4	6450	3.18	6.39	2.03	13750	4.58	8.19	10.25	16520	5.58	8.23	10.10

R22	Refrigeration				Air Conditioning							
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C, SC = 0 K, SH = 10 K				To = 7.2 °C, Tc = 54.4 °C, SC = 8.3 K, SH = 11.1 K				To = 7.2 °C, Tc = 54.4 °C, SC = 8.3 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MT064-4	7750	3.64	7.03	2.13	15730	5.27	9.16	10.19	18850	6.32	9.33	10.18
MT072-4	8710	4.19	8.48	2.08	18200	6.12	10.98	10.15	21840	7.33	10.77	10.17
MT080-4	10360	4.89	9.52	2.12	20740	7.08	12.48	10.00	24890	8.50	12.34	9.99
MT100-4	11330	5.79	11.82	1.96	23400	7.98	14.59	10.01	28080	9.58	14.59	10.00
MT125-4	15260	7.55	12.28	2.02	30430	10.66	17.37	9.74	36520	12.80	17.37	9.74
MT144-4	17280	8.47	17.06	2.04	34340	11.96	22.75	9.80	41210	14.35	22.75	9.80
MT160-4	19190	9.49	16.81	2.02	38270	13.40	22.16	9.75	45930	16.08	22.16	9.75

Nominal performance data for R407C

R407C	Air Conditioning											
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = 5 °C, Tc = 50 °C, SC = 0 K, SH = 10 K				To = 7.2 °C, Tc = 54. 4°C, SC = 8.3 K, SH = 11.1 K				To = 7.2 °C, Tc = 54.4 °C, SC = 8.3 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4[2]	3470	1.27	2.73	2.73	3850	1.38	2.86	9.52	5050	1.73	2.82	9.96
MTZ022-4[2]	4550	1.71	3.27	2.67	5020	1.86	3.47	9.21	6280	2.26	3.45	9.48
MTZ028-4[2]	5890	2.17	4.30	2.72	6540	2.36	4.57	9.46	8220	2.82	4.41	9.95
MTZ032-4[2]	6650	2.43	4.57	2.74	7330	2.66	4.90	9.40	9000	3.20	4.80	9.60
MTZ036-4[2]	7510	2.93	5.58	2.56	8280	3.21	5.99	8.80	9990	3.90	5.78	8.74
MTZ040-4[2]	8660	3.40	6.46	2.55	9580	3.71	6.92	8.81	11720	4.46	6.69	8.97
MTZ044-4[2]	9130	3.12	5.84	2.93	10100	3.38	6.18	10.20	12730	4.25	6.34	10.22
MTZ050-4[2]	10420	3.69	6.51	2.83	11530	4.01	6.95	9.81	14110	4.87	7.06	9.89
MTZ056-4[2]	11680	4.02	7.45	2.90	13000	4.37	7.91	10.15	16050	5.40	8.03	10.14
MTZ064-4[2]	13360	4.61	8.35	2.90	14850	5.02	8.91	10.10	18090	6.14	9.01	10.06
MTZ072-4[2]	15320	5.42	9.85	2.83	17050	5.87	10.48	9.91	20780	7.30	10.61	9.72
MTZ080-4[2]	17380	6.29	11.31	2.76	19330	6.83	12.08	9.66	22870	8.24	11.99	9.47
MTZ100-4[2]	20480	7.38	13.05	2.78	22700	8.00	13.83	9.68	28230	9.86	14.22	9.77
MTZ125-4[2]	26880	9.48	16.12	2.84	29780	10.33	17.33	9.84	35620	12.83	19.24	9.48
MTZ144-4[2]	29770	10.68	18.07	2.79	33060	11.59	19.35	9.74	40900	14.42	20.40	9.68
MTZ160-4[2]	34090	12.41	20.68	2.75	37820	13.46	22.14	9.59	45220	16.64	23.13	9.27

[2] 50 Hz, EN12900 data for indicated models are Asercom certified

Nominal performance data for R134a

R134a	Refrigeration				Air Conditioning							
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C, SC = 0 K , SH = 10 K				To = 7.2 °C, Tc = 54.4 °C, SC = 8.3 K, SH = 11.1 K				To = 7.2 °C, Tc = 54.4 °C, SC = 8.3 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4	1075	0.69	1.92	1.56	2532	0.99	2.19	8.74	3038	1.19	2.29	8.74
MTZ022-4	1408	0.82	2.16	1.73	3335	1.20	2.51	9.52	4001	1.44	2.62	9.52
MTZ028-4	1823	1.02	2.83	1.79	4217	1.53	3.30	9.39	5061	1.84	3.44	9.39
MTZ032-4	2076	1.25	3.33	1.66	4907	1.87	3.94	8.94	5889	2.25	4.11	8.94
MTZ036-4	2753	1.45	3.32	1.90	6013	2.13	4.09	9.62	7216	2.56	4.26	9.62
MTZ040-4	2914	1.61	3.81	1.81	6342	2.33	4.89	9.28	7610	2.80	5.10	9.28
MTZ044-4	2926	1.49	4.05	1.96	6836	2.22	4.73	10.51	8203	2.66	4.93	10.51
MTZ050-4	3364	1.80	4.32	1.87	7956	2.63	5.20	10.31	9547	3.16	5.42	10.31
MTZ056-4	3526	1.88	5.31	1.87	8621	2.85	6.17	10.34	10346	3.41	6.44	10.34

R134a	Refrigeration											
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C, SC = 0 K , SH = 10 K				To = 7.2 °C, Tc = 54.4 °C, SC = 8.3 K, SH = 11.1 K				To = 7.2 °C, Tc = 54.4 °C, SC = 8.3 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ064-4	4192	2.17	5.71	1.94	10057	3.26	6.81	10.51	12069	3.92	7.10	10.51
MTZ072-4	4873	2.50	6.67	1.95	11543	3.78	7.99	10.41	13852	4.54	8.33	10.41
MTZ080-4	5857	2.93	7.22	2.00	13262	4.35	8.83	10.41	15915	5.23	9.21	10.41
MTZ100-4	6617	3.65	8.67	1.82	15452	5.28	10.24	10.00	18542	6.34	10.68	10.00
MTZ125-4	8306	4.17	8.89	1.99	18941	6.29	11.50	10.27	22729	7.55	11.99	10.27
MTZ144-4	10732	5.40	11.35	1.99	23536	7.83	14.19	10.27	28243	9.39	14.80	10.27
MTZ160-4	11900	5.84	11.71	2.04	25779	8.57	15.11	10.27	30935	10.29	15.76	10.27

Nominal performance data for R407A

R407A	Refrigeration											
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C, SC = 0 K, SH = 10 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4	1740	1.02	2.46	1.70	1940	1.12	2.58	5.91	2330	1.35	2.69	5.89
MTZ022-4	2390	1.26	2.75	1.90	2650	1.39	2.91	6.51	3180	1.67	3.04	6.50
MTZ028-4	3130	1.67	3.63	1.88	3470	1.85	3.87	6.40	4160	2.22	4.04	6.40
MTZ032-4	3640	1.84	3.82	1.98	4000	2.04	4.10	6.69	4800	2.53	4.28	6.48
MTZ036-4	4260	2.19	4.45	1.95	4670	2.43	4.80	6.56	5600	2.92	5.00	6.55
MTZ040-4	4890	2.51	5.28	1.94	5340	2.80	5.67	6.51	6410	3.36	5.91	6.51
MTZ044-4	4890	2.36	4.81	2.08	5410	2.60	5.11	7.10	6500	3.12	5.33	7.11
MTZ050-4	5700	2.73	5.35	2.09	6280	3.01	5.69	7.12	7530	3.61	5.94	7.12
MTZ056-4	6120	2.98	6.14	2.05	6790	3.30	6.53	7.02	8140	3.96	6.81	7.02
MTZ064-4	7270	3.57	7.04	2.04	8040	3.95	7.51	6.95	9650	4.75	7.83	6.93
MTZ072-4	8130	3.98	8.05	2.04	8960	4.40	8.55	6.95	10760	5.28	8.92	6.96
MTZ080-4	9540	4.76	9.17	2.00	10470	5.28	9.85	6.77	12570	6.33	10.27	6.78
MTZ100-4	11200	5.74	10.98	1.95	12320	6.32	11.65	6.65	14790	7.58	12.15	6.66
MTZ125-4	14330	7.17	13.21	2.00	15740	7.93	14.24	6.77	18890	9.51	14.86	6.78
MTZ144-4	16870	8.32	15.08	2.03	18460	9.18	16.19	6.86	22150	11.02	16.89	6.86
MTZ160-4	18520	9.42	16.91	1.97	20300	10.43	18.20	6.64	24360	12.51	18.99	6.65

Nominal performance data for R407F

R407F	Refrigeration											
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C, SC = 0 K, SH = 10 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4	1850	1.08	2.53	1.71	2080	1.19	2.66	5.97	2500	1.43	2.77	5.97
MTZ022-4	2540	1.33	2.83	1.91	2840	1.48	3.01	6.55	3410	1.77	3.14	6.58
MTZ028-4	3320	1.76	3.74	1.89	3710	1.96	4.00	6.46	4450	2.35	4.17	6.46
MTZ032-4	3860	1.94	3.93	1.99	4280	2.16	4.24	6.76	5130	2.59	4.42	6.76
MTZ036-4	4520	2.32	4.58	1.95	5010	2.58	4.95	6.63	6010	3.10	5.17	6.62
MTZ040-4	5170	2.65	5.43	1.95	5700	2.96	5.85	6.57	6840	3.55	6.10	6.58
MTZ044-4	5200	2.49	4.95	2.09	5810	2.76	5.28	7.18	6970	3.31	5.50	7.19
MTZ050-4	6060	2.90	5.50	2.09	6730	3.20	5.88	7.18	8080	3.85	6.13	7.16
MTZ056-4	6500	3.16	6.31	2.06	7270	3.51	6.74	7.07	8730	4.21	7.03	7.08
MTZ064-4	7730	3.78	7.23	2.05	8620	4.19	7.76	7.02	10340	5.03	8.09	7.02
MTZ072-4	8640	4.21	8.27	2.05	9610	4.66	8.84	7.04	11530	5.60	9.22	7.03
MTZ080-4	10140	5.04	9.43	2.01	11230	5.60	10.18	6.84	13470	6.72	10.61	6.84
MTZ100-4	11900	6.07	11.28	1.96	13220	6.71	12.04	6.72	15870	8.05	12.55	6.73

R407F	Refrigeration											
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C, SC = 0 K, SH = 10 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ125-4	15220	7.58	13.58	2.01	16870	8.41	14.72	6.85	20240	10.09	15.35	6.85
MTZ144-4	17910	8.78	15.50	2.04	19770	9.72	16.73	6.94	23730	11.66	17.45	6.95
MTZ160-4	19670	9.95	17.38	1.98	21740	11.03	18.81	6.73	26090	13.24	19.62	6.73

Nominal performance data R448A/R449A

R448A/R449A	Refrigeration											
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C, SC = 0 K, SH = 10 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4	1840	1.04	2.55	1.77	2030	1.14	2.66	6.08	2430	1.36	2.78	6.10
MTZ022-4	2580	1.37	2.86	1.88	2820	1.52	3.03	6.33	3380	1.82	3.16	6.34
MTZ028-4	3180	1.69	3.85	1.89	3480	1.87	4.07	6.35	4170	2.24	4.25	6.35
MTZ032-4	3660	1.87	3.68	1.96	3970	2.08	3.97	6.51	4770	2.49	4.14	6.54
MTZ036-4	4250	2.24	4.65	1.90	4650	2.48	4.97	6.40	5580	2.98	5.18	6.39
MTZ040-4	4880	2.62	5.87	1.86	5340	2.90	6.27	6.28	6410	3.48	6.54	6.29
MTZ044-4	5010	2.49	4.94	2.01	5500	2.74	5.25	6.85	6600	3.28	5.48	6.87
MTZ050-4	5700	2.87	5.41	1.98	6310	3.18	5.74	6.77	7570	3.82	5.99	6.76
MTZ056-4	6340	3.16	6.53	2.00	7010	3.50	6.93	6.84	8410	4.20	7.23	6.83
MTZ064-4	7330	3.62	7.05	2.02	8040	4.01	7.56	6.84	9650	4.81	7.89	6.85
MTZ072-4	8440	4.20	8.80	2.01	9260	4.64	9.44	6.81	11110	5.57	9.85	6.81
MTZ080-4	10010	4.97	9.66	2.02	10930	5.48	10.34	6.81	13120	6.57	10.79	6.82
MTZ100-4	11310	5.79	10.99	1.95	12430	6.37	11.66	6.66	14910	7.65	12.17	6.65
MTZ125-4	15220	7.45	13.24	2.04	16720	8.19	14.06	6.97	20060	9.88	14.67	6.93
MTZ144-4	17560	8.63	15.45	2.03	19040	9.50	16.69	6.84	22850	11.40	17.40	6.84
MTZ160-4	20140	9.87	17.11	2.04	21830	10.87	18.48	6.85	26200	13.04	19.27	6.86

Nominal performance data R452A

R452A	Refrigeration											
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C, SC = 0 K, SH = 10 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K				To = -6.7 °C, Tc = 48.9 °C, SC = 0 K, SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4	2000	1.15	2.65	1.74	2150	1.25	2.77	5.87	2580	1.49	2.88	5.91
MTZ022-4	2810	1.51	2.98	1.86	3010	1.65	3.15	6.23	3610	1.98	3.29	6.22
MTZ028-4	3250	1.86	4.00	1.75	3480	2.03	4.23	5.85	4170	2.44	4.41	5.83
MTZ032-4	3790	2.06	3.83	1.84	4060	2.27	4.13	6.10	4870	2.73	4.31	6.09
MTZ036-4	4300	2.48	4.84	1.74	4610	2.72	5.17	5.78	5530	3.26	5.39	5.79
MTZ040-4	5090	2.89	6.11	1.76	5470	3.18	6.52	5.87	6560	3.81	6.80	5.88
MTZ044-4	5370	2.73	5.24	1.96	5780	2.98	5.55	6.62	6940	3.58	5.79	6.62
MTZ050-4	6110	3.16	5.74	1.93	6630	3.47	6.07	6.52	7960	4.16	6.33	6.53
MTZ056-4	6790	3.48	6.93	1.95	7370	3.82	7.33	6.58	8850	4.58	7.64	6.59
MTZ064-4	7840	3.98	7.48	1.97	8450	4.36	8.00	6.61	10140	5.24	8.34	6.60
MTZ072-4	9020	4.61	9.34	1.96	9730	5.06	9.98	6.56	11670	6.07	10.41	6.56
MTZ080-4	9680	5.26	10.04	1.84	10390	5.75	10.72	6.17	12470	6.90	11.18	6.17
MTZ100-4	12310	6.37	11.68	1.93	13270	6.97	12.42	6.50	15930	8.37	12.96	6.50
MTZ125-4	16070	8.19	14.09	1.96	17330	8.96	14.98	6.60	20790	10.75	15.62	6.60
MTZ144-4	17830	9.58	16.44	1.86	18950	10.46	17.77	6.18	22740	12.55	18.54	6.18
MTZ160-4	19880	10.80	18.20	1.84	21130	11.80	19.68	6.11	25360	14.16	20.52	6.11

Nominal performance data R454A

R454A	Refrigeration											
Compressormodel	50 Hz, EN12900 ratings				50 Hz, AHRI ratings [1]				60 Hz, AHRI ratings[1]			
	To = -10°C, Tc = 45°C , SC = 0K , SH = 10K				To = -6.7°C, Tc = 43.3°C , SC = 0K , SH = 11.1K				To = -6.7°C, Tc = 43.3°C , SC = 0K , SH = 11.1K			
	Cooling capacity	Power input	Current input	COP	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4	1899	1.06	2.81	1.79	2428	1.12	2.85	7.37	3003	1.33	2.29	7.75
MTZ022-4	2540	1.41	2.92	1.80	3144	1.48	2.98	7.27	4010	1.90	3.08	7.23
MTZ028-4	3335	1.84	4.60	1.81	4103	1.92	4.71	7.27	5409	2.45	4.48	7.54
MTZ032-4	3986	2.03	4.12	1.96	4874	2.12	4.22	7.85	6303	2.67	4.27	8.09
MTZ036-4	4410	2.41	5.44	1.83	5398	2.54	5.61	7.27	7094	3.23	5.46	7.51
MTZ040-4	5340	2.85	6.49	1.88	6532	2.94	6.61	7.57	7944	3.58	6.40	7.57
MTZ044-4	4722	2.41	5.23	1.96	5904	2.52	5.31	7.98	7617	3.21	5.41	8.12
MTZ050-4	6093	3.03	6.10	2.01	7540	3.16	6.23	8.15	9743	4.00	6.34	8.29
MTZ056-4	6704	3.28	7.40	2.04	8272	3.42	7.53	8.26	10800	4.47	7.50	8.26
MTZ064-4	7412	3.71	7.80	2.00	9131	3.90	7.99	7.98	12200	5.10	8.11	8.15
MTZ072-4	8875	4.45	10.03	2.00	10920	4.67	10.23	7.98	13880	5.89	9.88	8.02
MTZ080-4	10370	5.05	10.72	2.05	12660	5.30	10.98	8.15	15590	6.62	10.67	8.05
MTZ100-4	12680	6.46	11.54	1.96	15520	6.73	11.88	7.88	18870	7.90	11.88	8.15
MTZ125-4	16360	8.15	14.00	2.01	19990	8.52	14.57	8.02	24510	10.22	15.04	8.19
MTZ160-4	21130	10.67	17.88	1.98	25560	11.18	18.61	7.81	30750	13.73	19.39	7.64

[1] Performance given according to AHRI Standard 540 2020

Nominal performance data R454C

R454C	Refrigeration											
Compressor model	50 Hz, EN12900 ratings				50 Hz, AHRI ratings[1]				60 Hz, AHRI ratings[1]			
	To = -10°C, Tc = 45°C , SC = 0K , SH = 10K				To = -6.7°C, Tc = 43.3°C , SC = 0K , SH = 11.1K				To = -6.7°C, Tc = 43.3°C , SC = 0K , SH = 11.1K			
	Cooling capacity	Power input	Current input	COP	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4	1569	0.87	2.28	1.80	2026	0.93	2.33	7.47	2487	1.15	2.23	7.40
MTZ022-4	2108	1.16	2.39	1.82	2628	1.22	2.44	7.37	3350	1.56	2.53	7.34
MTZ028-4	2768	1.49	3.75	1.85	3422	1.57	3.86	7.44	4512	2.00	3.67	7.71
MTZ032-4	3317	1.67	3.37	1.99	4081	1.74	3.46	7.98	5289	2.19	3.50	8.26
MTZ036-4	3722	1.97	4.43	1.89	4603	2.09	4.59	7.54	5956	2.63	4.48	7.75
MTZ040-4	4479	2.33	5.30	1.92	5565	2.44	5.42	7.78	6678	2.95	5.24	7.75
MTZ044-4	3915	1.97	4.27	1.98	4934	2.07	4.35	8.12	6363	2.63	4.43	8.26
MTZ050-4	5061	2.48	4.98	2.04	6305	2.60	5.11	8.29	8157	3.29	5.20	8.46
MTZ056-4	5576	2.69	6.04	2.08	6924	2.82	6.17	8.39	9027	3.67	6.15	8.39
MTZ064-4	6169	3.04	6.36	2.03	7648	3.20	6.54	8.15	10210	4.18	6.65	8.33
MTZ072-4	7382	3.64	8.18	2.03	9142	3.84	8.38	8.12	11630	4.84	8.10	8.19
MTZ080-4	8625	4.14	8.76	2.08	10610	4.35	9.00	8.33	13070	5.44	8.75	8.19
MTZ100-4	10540	5.28	9.42	2.00	12990	5.52	9.74	8.02	15350	6.61	9.67	7.92
MTZ125-4	13600	6.66	11.45	2.04	16730	6.99	11.96	8.15	19650	8.53	12.35	7.85
MTZ160-4	17580	8.69	14.62	2.02	21410	9.15	15.27	7.98	25240	11.19	15.68	7.71

[1] Performance given according to AHRI Standard 540 2020

Nominal performance data R455A

R455A	Refrigeration											
Compressor model	50 Hz, EN12900 ratings				50 Hz, AHRI ratings[1]				60 Hz, AHRI ratings[1]			
	To = -10°C, Tc = 45°C , SC = 0K , SH = 10K				To = -6.7°C, Tc = 43.3°C , SC = 0K , SH = 11.1K				To = -6.7°C, Tc = 43.3°C , SC = 0K , SH = 11.1K			
	Cooling capacity	Power input	Current input	COP	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4	1708	1.00	2.50	1.71	2185	1.06	2.53	7.03	2660	1.28	2.40	7.06
MTZ022-4	2424	1.27	2.53	1.91	3004	1.33	2.58	7.71	3867	1.66	2.64	7.95
MTZ028-4	3115	1.60	3.77	1.95	3838	1.67	3.86	7.85	4939	2.11	3.70	8.02
MTZ032-4	3534	1.76	3.52	2.01	4334	1.84	3.61	8.05	5598	2.33	3.68	8.19
MTZ036-4	4002	2.08	4.57	1.93	4908	2.18	4.70	7.68	6242	2.71	4.58	7.85
MTZ040-4	4668	2.43	5.54	1.92	5715	2.51	5.61	7.78	6903	2.82	4.76	8.33
MTZ044-4	4254	2.12	4.59	2.01	5348	2.23	4.67	8.19	7176	3.12	5.68	7.85
MTZ050-4	5498	2.66	5.35	2.06	6835	2.79	5.48	8.36	8844	3.53	5.58	8.53
MTZ056-4	6058	2.89	6.48	2.10	7507	3.02	6.62	8.46	9786	3.94	6.60	8.46
MTZ064-4	6704	3.26	6.83	2.05	8294	3.44	7.02	8.22	11090	4.49	7.14	8.43
MTZ072-4	8019	3.91	8.79	2.05	9910	4.12	8.99	8.22	12620	5.20	8.69	8.29
MTZ080-4	9369	4.44	9.41	2.11	11500	4.68	9.66	8.39	14170	5.84	9.40	8.29
MTZ100-4	11450	5.68	10.12	2.02	14090	5.93	10.46	8.12	16640	7.09	10.38	8.02
MTZ125-4	14730	7.09	12.30	2.08	18060	7.46	12.84	8.26	21310	9.16	13.26	7.95
MTZ160-4	19110	9.38	15.71	2.04	23210	9.86	16.39	8.02	27360	12.02	16.84	7.78

[1] Performance given according to AHRI Standard 540 2020

Nominal performance data R513A

R513A	Refrigeration				Air Conditioning							
Compressor model	50 Hz, EN12900 ratings				50 Hz, ARI ratings				60 Hz, ARI ratings			
	To = -10 °C, Tc = 45 °C , SC = 0 K , SH = 10 K				To = 7.2 °C, Tc = 54.4 °C , SC = 8.3 K , SH = 11.1 K				To = 7.2 °C, Tc = 54.4 °C , SC = 8.3 K , SH = 11.1 K			
	Cooling capacity	Power input	Current input	C.O.P.	Cooling capacity	Power input	Current input	E.E.R.	Cooling capacity	Power input	Current input	E.E.R.
	W	kW	A	W/W	W	kW	A	Btu.h/W	W	kW	A	Btu.h/W
MTZ018-4	1181	0.74	2.37	1.60	2757	1.03	2.63	9.15	3395	1.23	2.40	9.45
MTZ022-4	1546	0.88	2.13	1.76	3526	1.26	2.53	9.56	4425	1.58	2.57	9.56
MTZ028-4	1949	1.14	3.32	1.71	4426	1.64	3.77	9.22	5608	2.02	3.59	9.49
MTZ032-4	2318	1.27	2.90	1.83	5107	1.84	3.60	9.45	6543	2.30	3.60	9.73
MTZ036-4	2670	1.47	3.70	1.81	6010	2.12	4.59	9.66	7145	2.59	4.51	9.42
MTZ040-4	3169	1.78	4.74	1.78	6888	2.53	5.62	9.28	8288	2.99	5.28	9.45
MTZ044-4	3183	1.68	4.13	1.89	7380	2.40	4.84	10.51	8915	2.94	4.82	10.38
MTZ050-4	3621	1.90	4.30	1.91	8085	2.73	5.27	10.10	9735	3.42	5.62	9.73
MTZ056-4	3822	2.05	5.27	1.87	8894	2.97	6.28	10.20	11241	3.80	6.19	10.10
MTZ064-4	4419	2.34	5.70	1.89	10141	3.44	6.91	10.07	12580	4.34	6.91	9.90
MTZ072-4	5037	2.70	7.05	1.87	11436	3.95	8.35	9.90	14046	4.97	8.12	9.66
MTZ080-4	5700	3.09	7.27	1.85	12963	4.54	8.86	9.73	16031	5.76	9.02	9.52
MTZ100-4	7150	3.91	8.96	1.83	15950	5.53	10.65	9.86	19397	6.72	10.54	9.86
MTZ125-4	9614	4.81	9.73	2.00	21058	7.00	12.58	10.27	25367	8.69	13.03	9.97
MTZ144-4	10999	5.60	11.70	1.96	23855	8.10	14.64	10.07	28791	9.98	15.04	9.86
MTZ160-4	12490	6.38	12.63	1.96	26641	9.26	16.28	9.83	31756	11.57	16.80	9.39

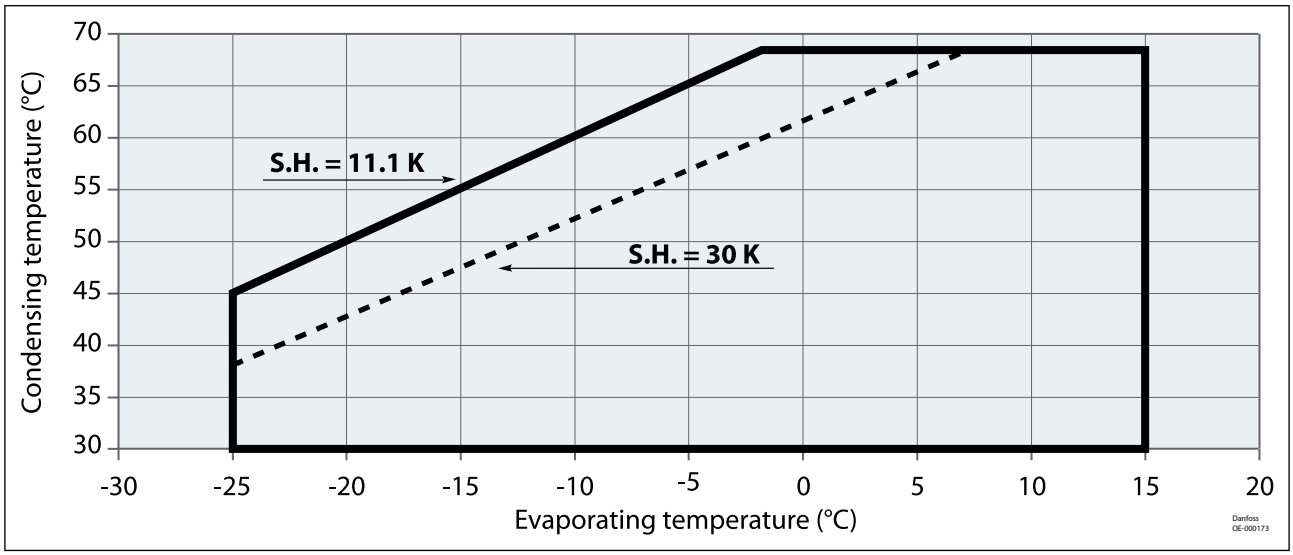
Operating envelope data

Operating envelopes

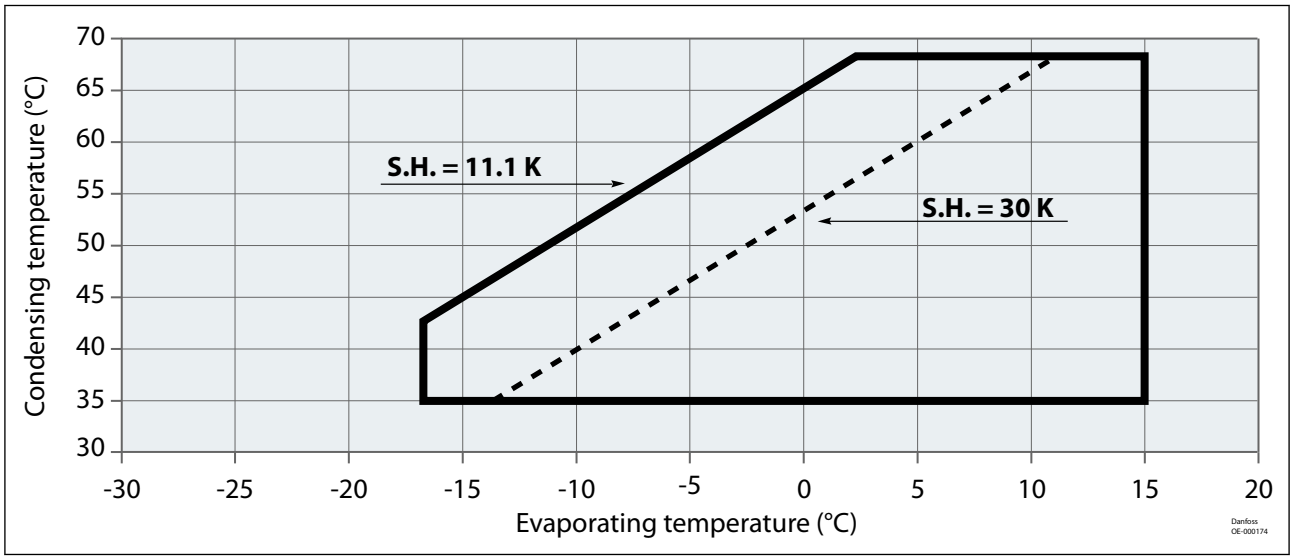
The operating envelopes for MT and MTZ compressors are given in the figures below and guarantees reliable operations of the compressor for steady-state operation. According to Asercom recommendations, Danfoss Commercial Compressors uses dew point temperatures for application envelopes for refrigerants with glide.

Danfoss selction software - Cool Selector 2 allows selection at Mean-Temperatures.

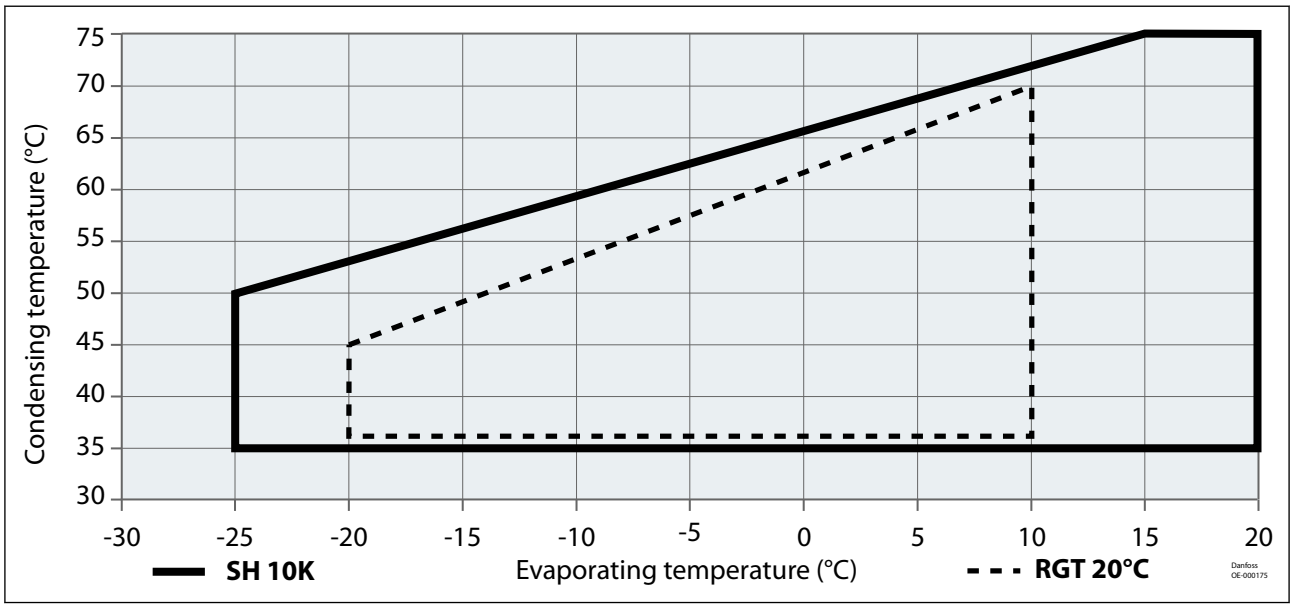
MT – R22 - R417A



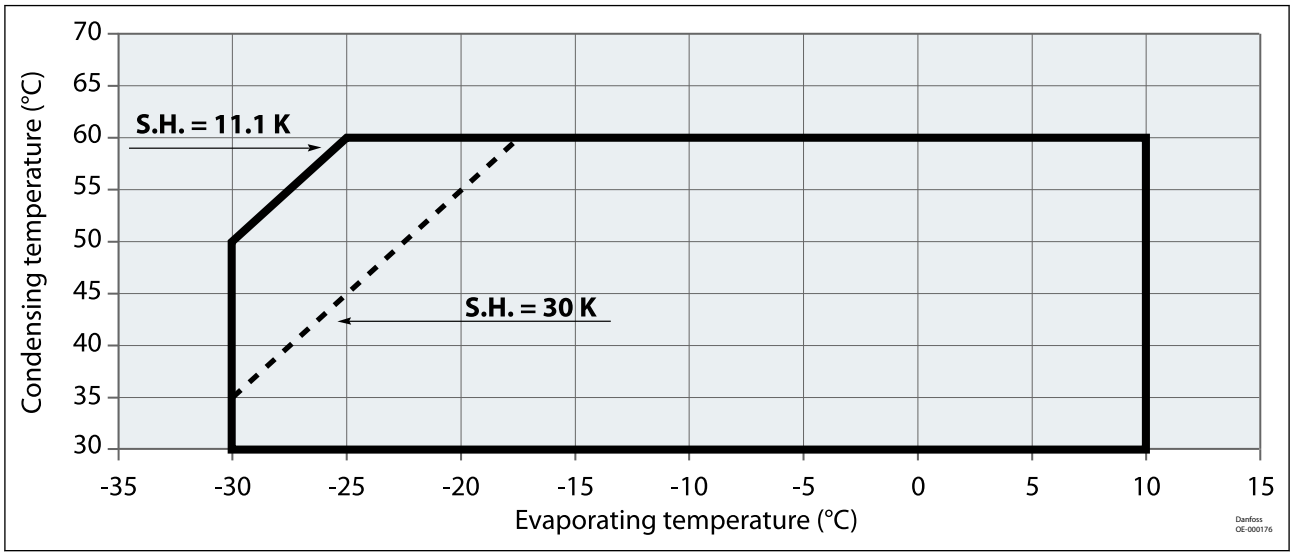
MTZ – R407C



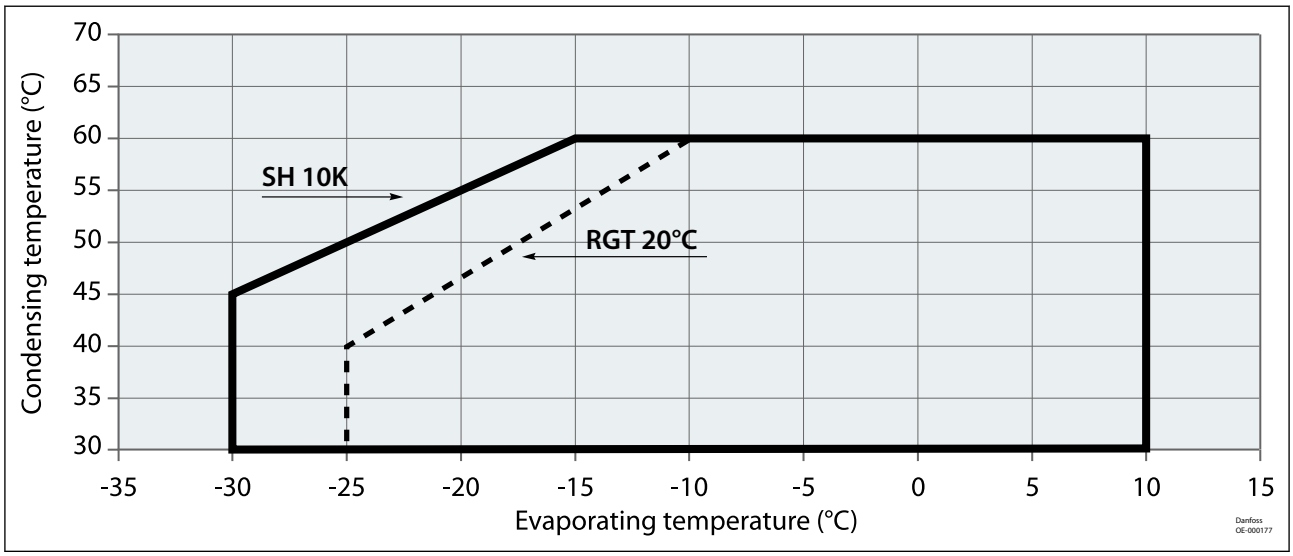
MTZ – R134a



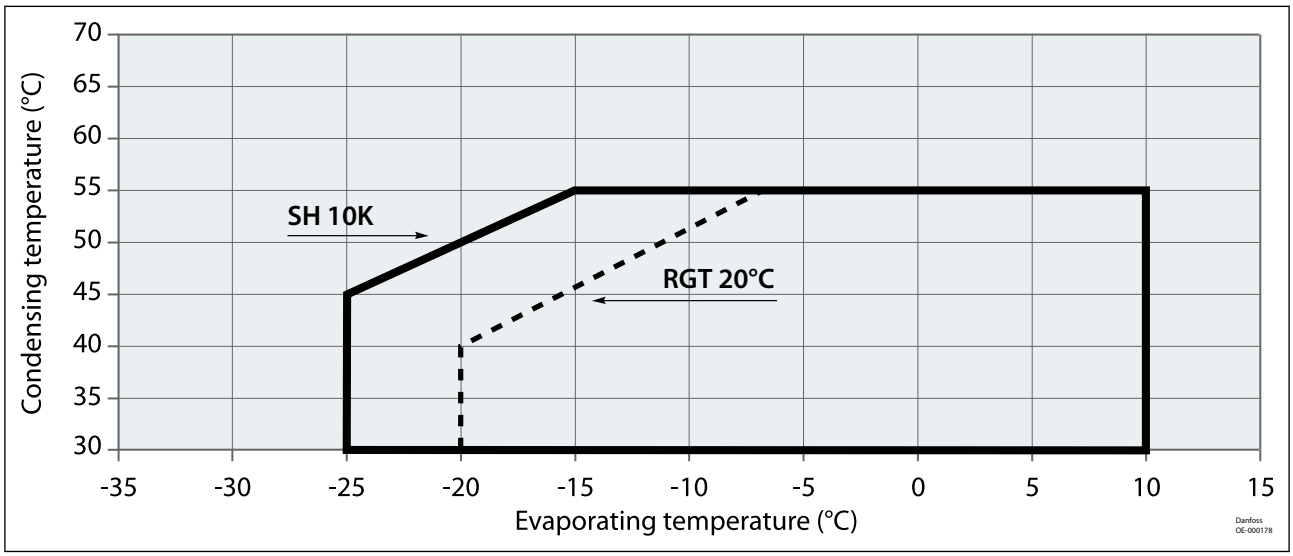
MTZ – R404A / R507A



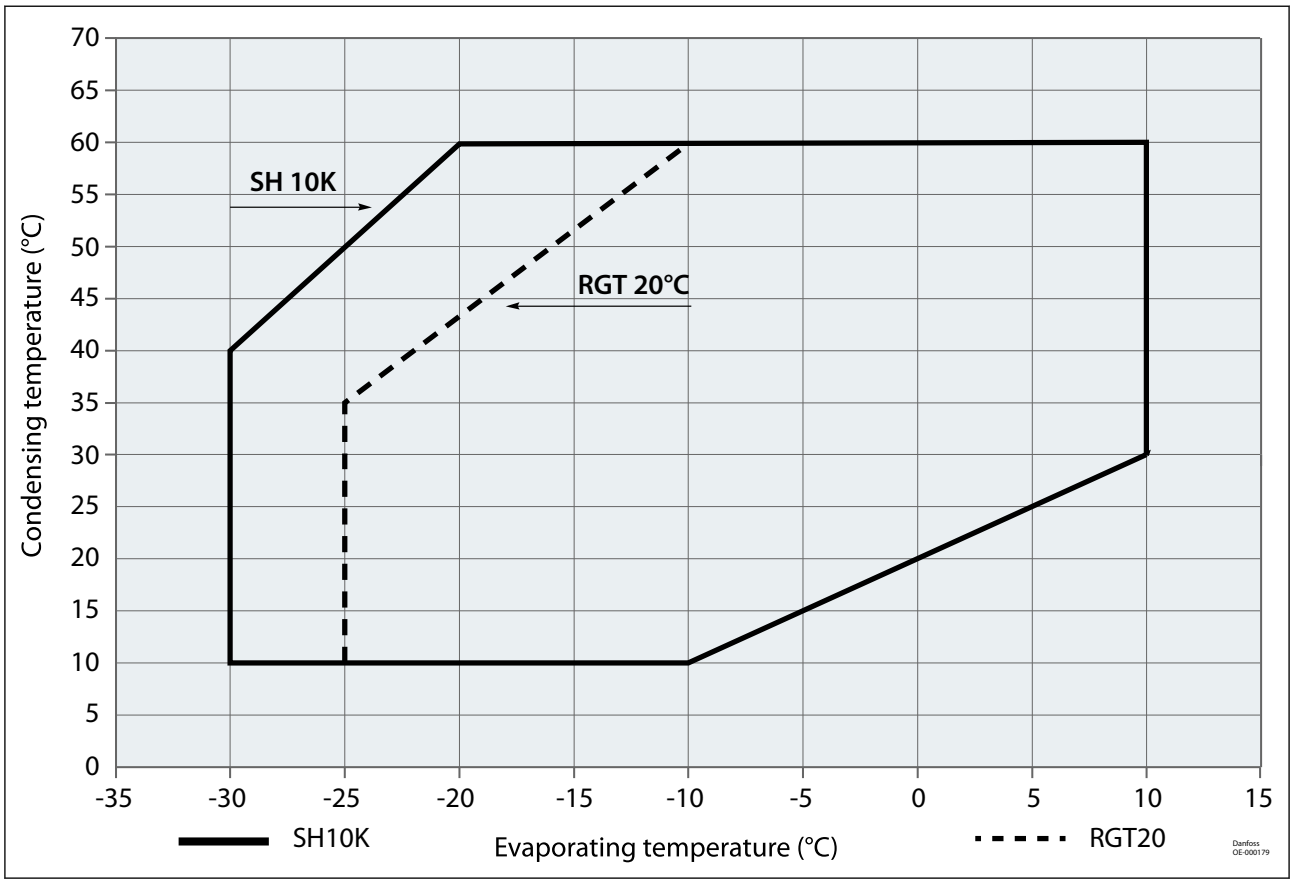
MTZ – R407A



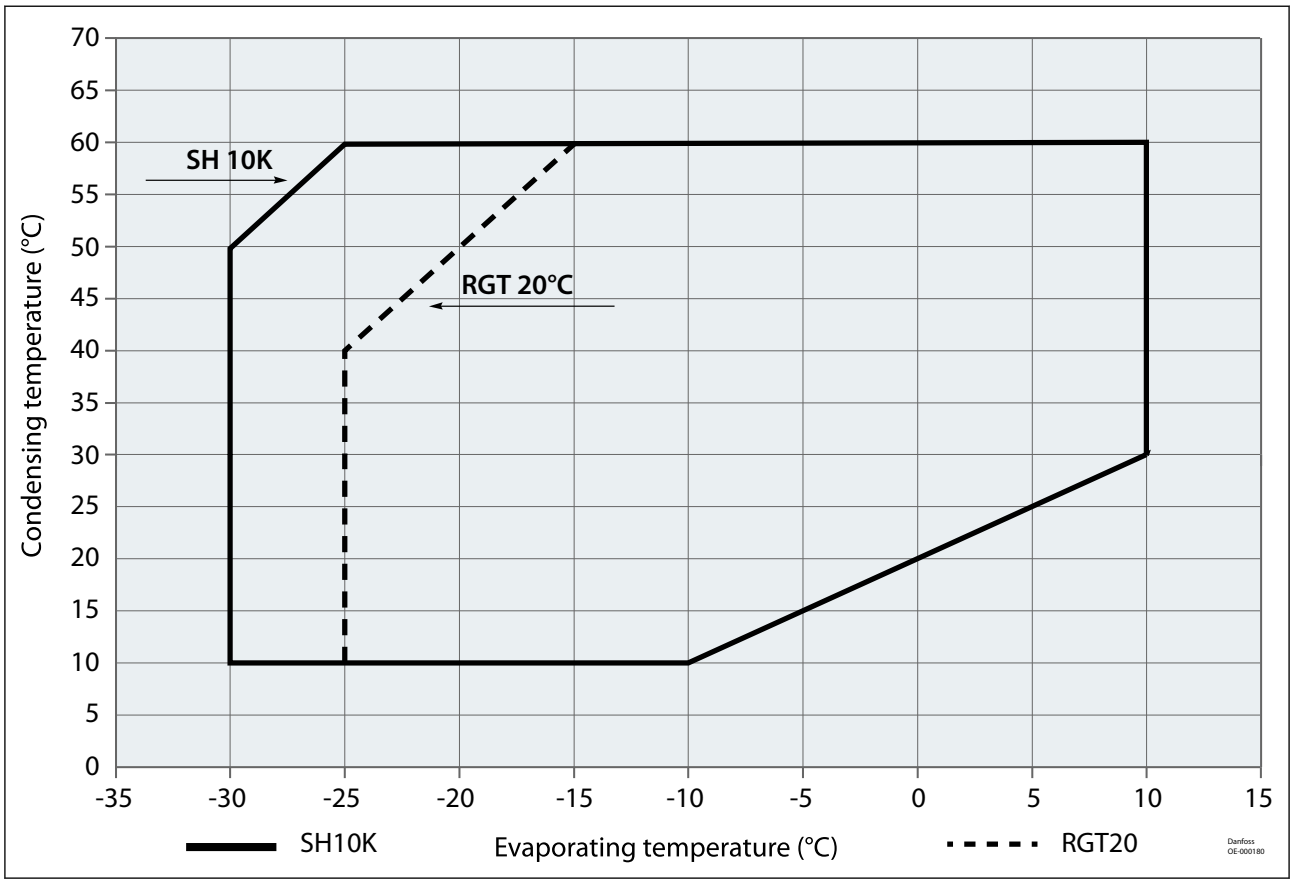
MTZ – R407F



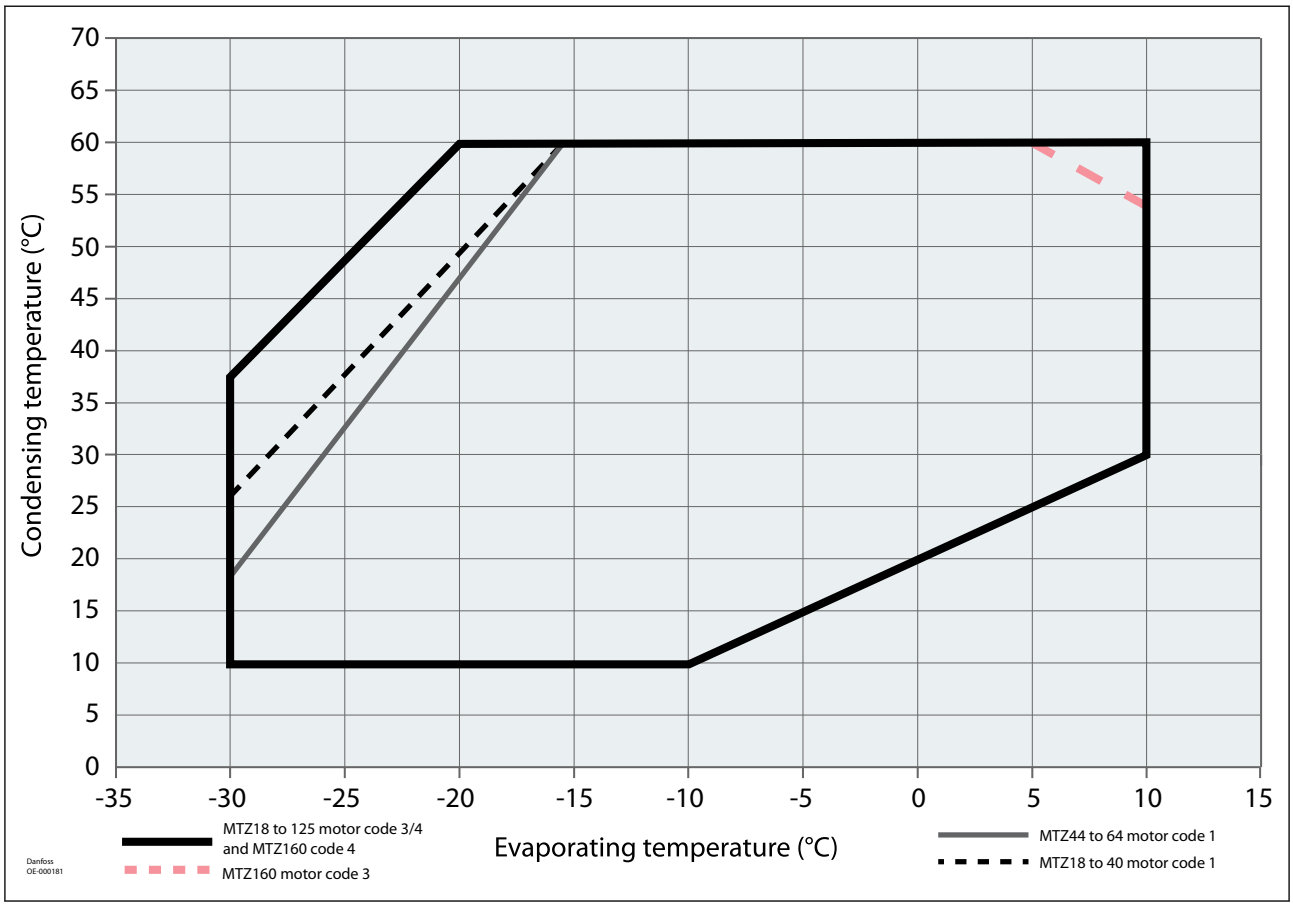
MTZ – R448A/R449A



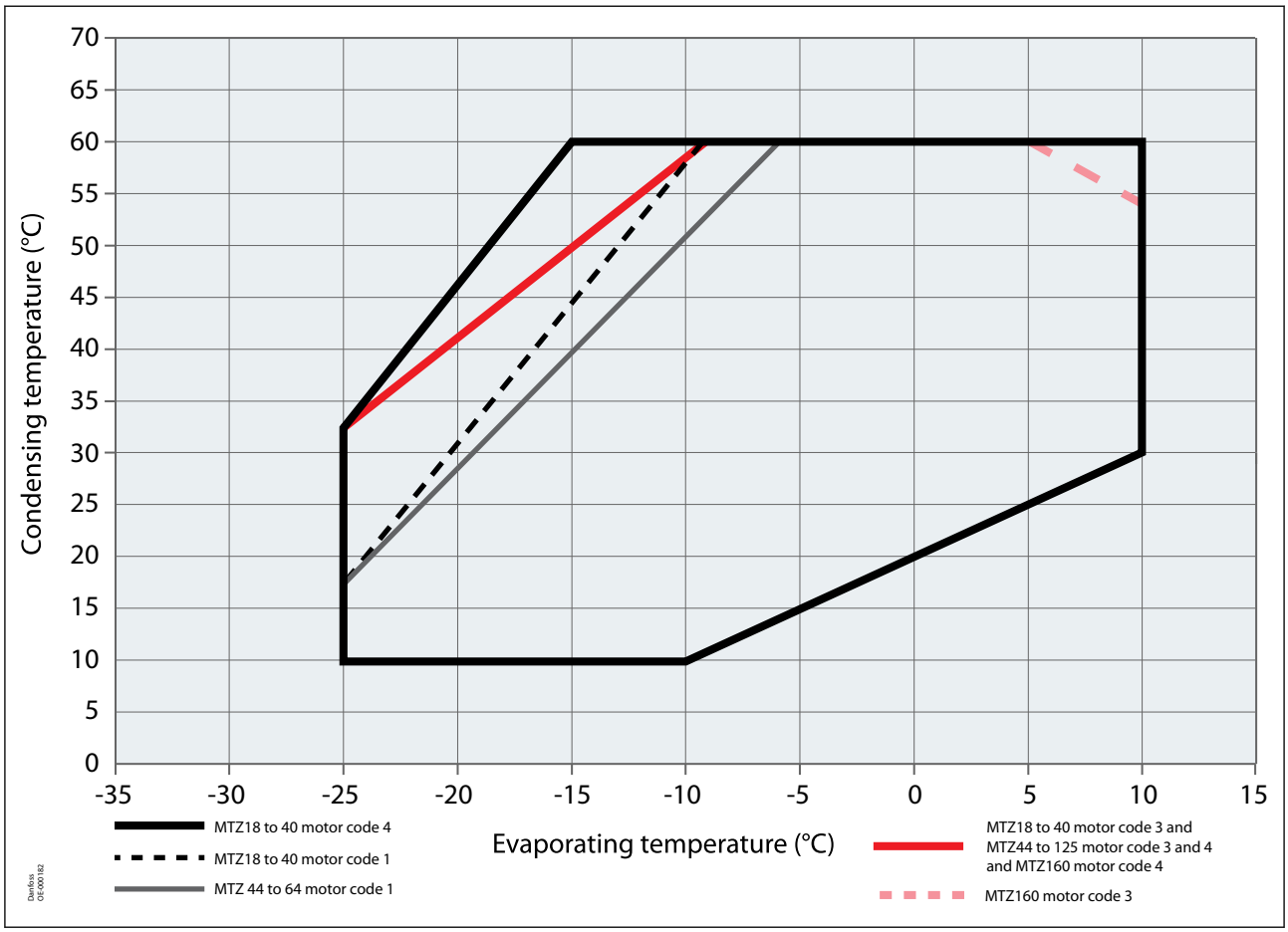
MTZ – R452A


70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Condensing temperature (°C)
SH 10K
RGT 20°C
-35
-30
-25
-20
-15
-10
-5
0
5
10
15
SH10K
Evaporating temperature (°C)
RGT20
Danfoss
OE-000180

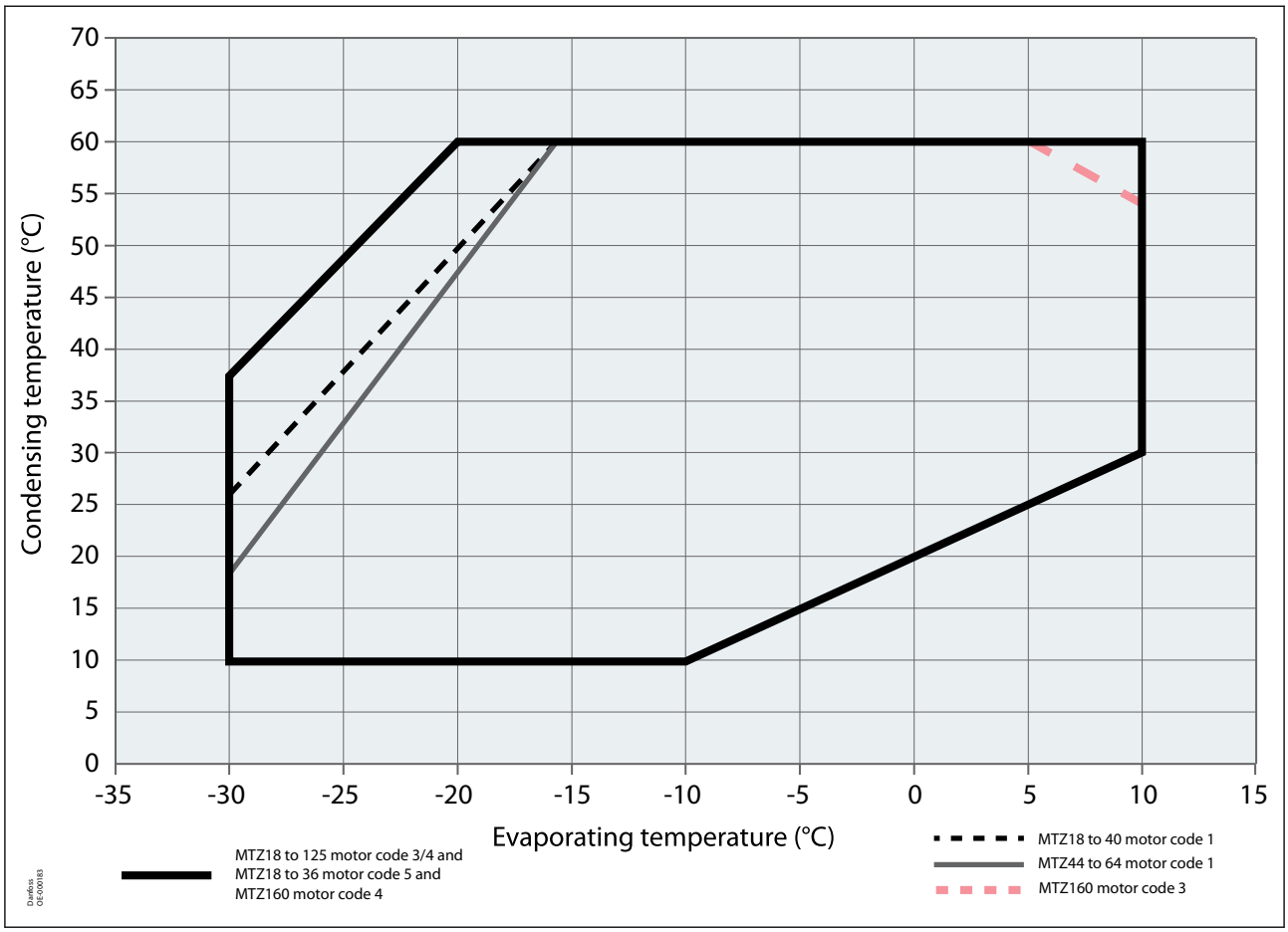
MTZ - R454A - SH10K



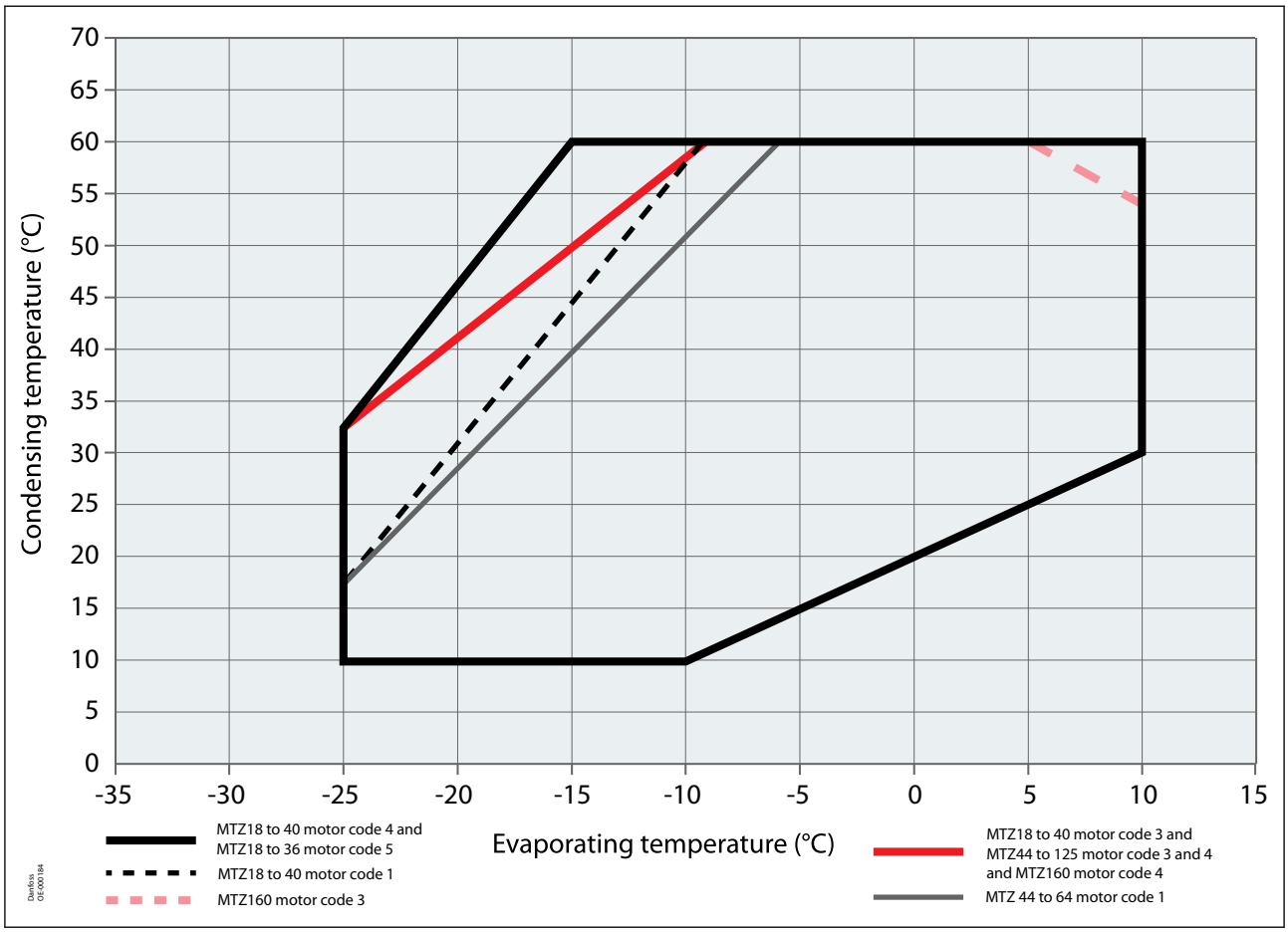
MTZ - R454A - RGT20°C



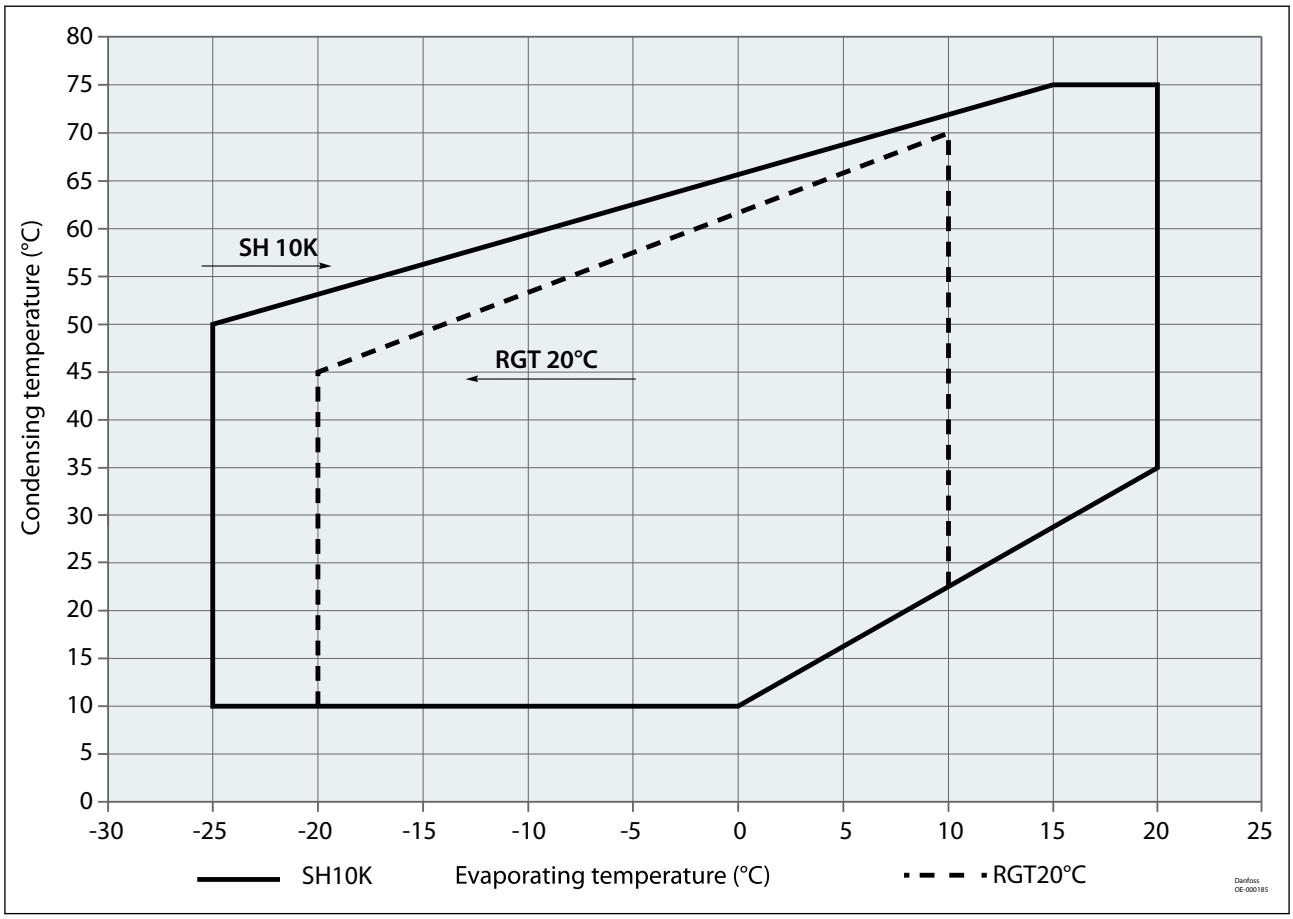
MTZ - R454C / R455A - SH10K



MTZ - R454C / R455A - RGT20°C



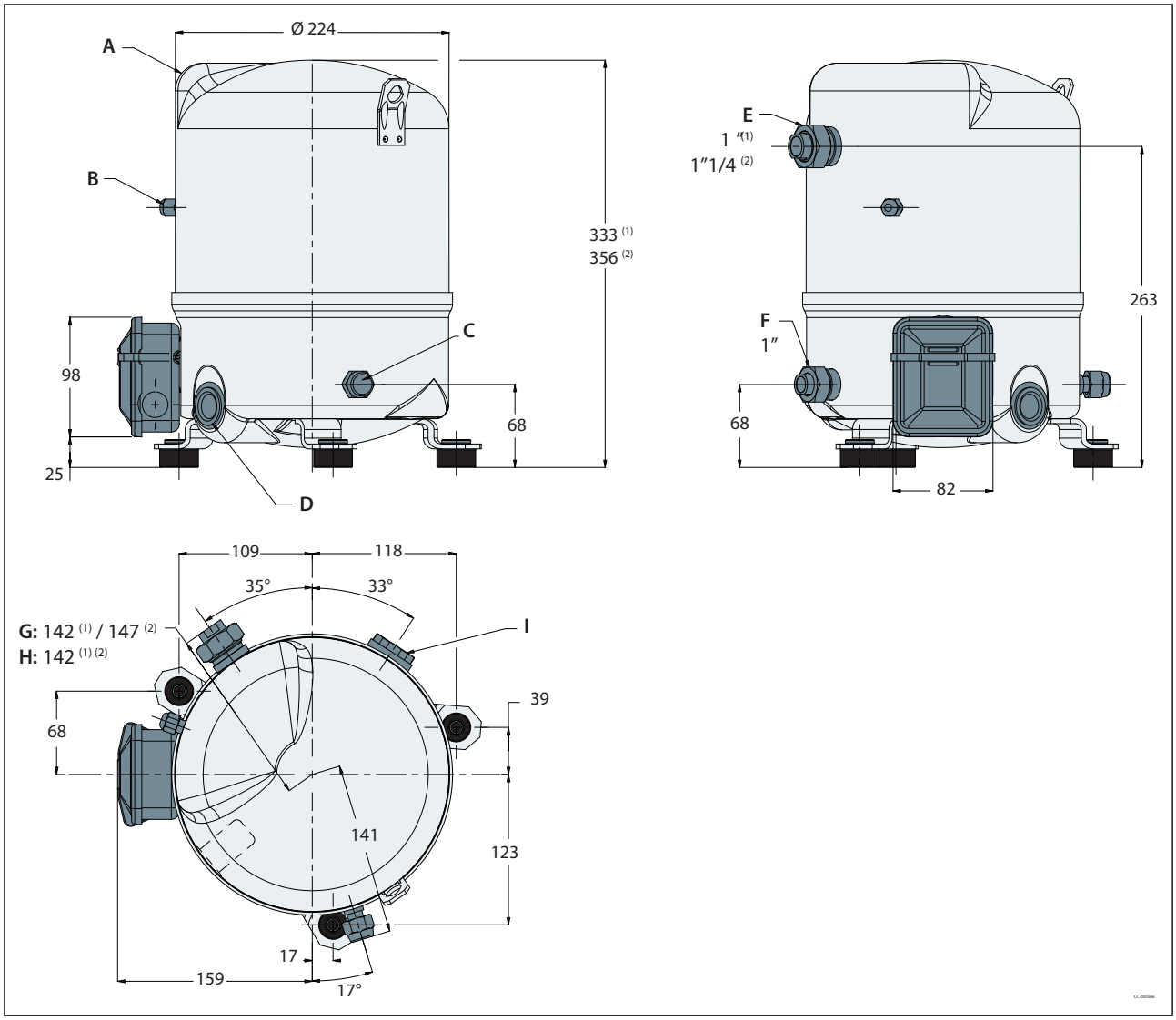
MTZ – R513A


Condensing temperature (°C)
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
SH 10K
RGT 20°C
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
SH10K
Evaporating temperature (°C)
RGT20°C

Dimensions

1 cylinder

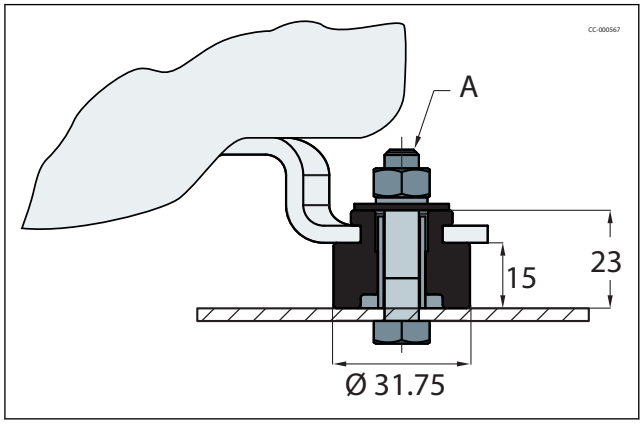
All dimensions in mm.



A	Bump on single phase
B	LP gauge port 1/4" (schrader)
C	3/8" oil equalisation
D	Mounting hole for PTC crankcase heater
E	Suction rotolock
F	Discharge rotolock
G	Suction
H	Discharge
I	Threaded oil sight glass

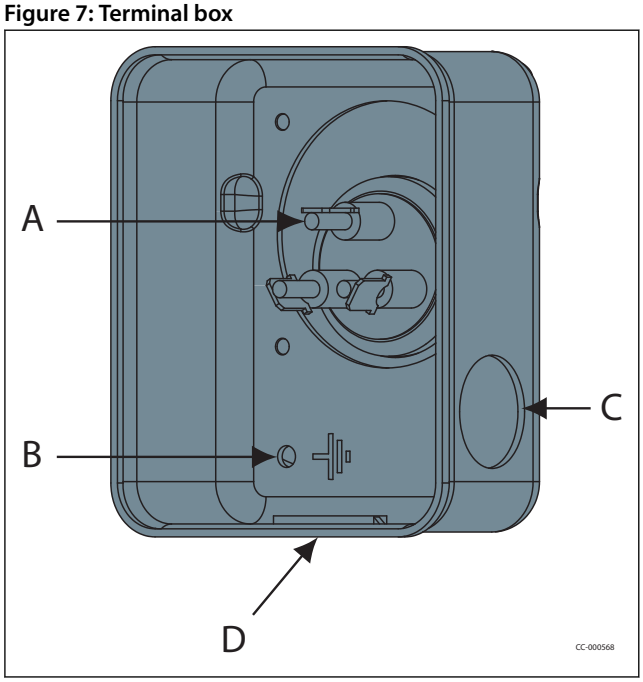
Model	Code						
	1	3	4	5	6	7	9
MT/MTZ018	(1)	(1)	(1)	(1)	-	-	-
MT/MTZ022	(2)	(1)	(1)	(1)	(1)	-	(1)
MT/MTZ028	(2)	(1)	(1)	(1)	(1)	-	(1)
MT/MTZ032	(2)	(2)	(2)	(2)	(2)	(2)	(2)
MT/MTZ036	(2)	(2)	(2)	(2)	(2)	(2)	(2)
MT/MTZ040	(2)	(2)	(2)	-	(2)	-	-

Figure 6: Silent bloc



A	Bolt HM8-40

Figure 7: Terminal box

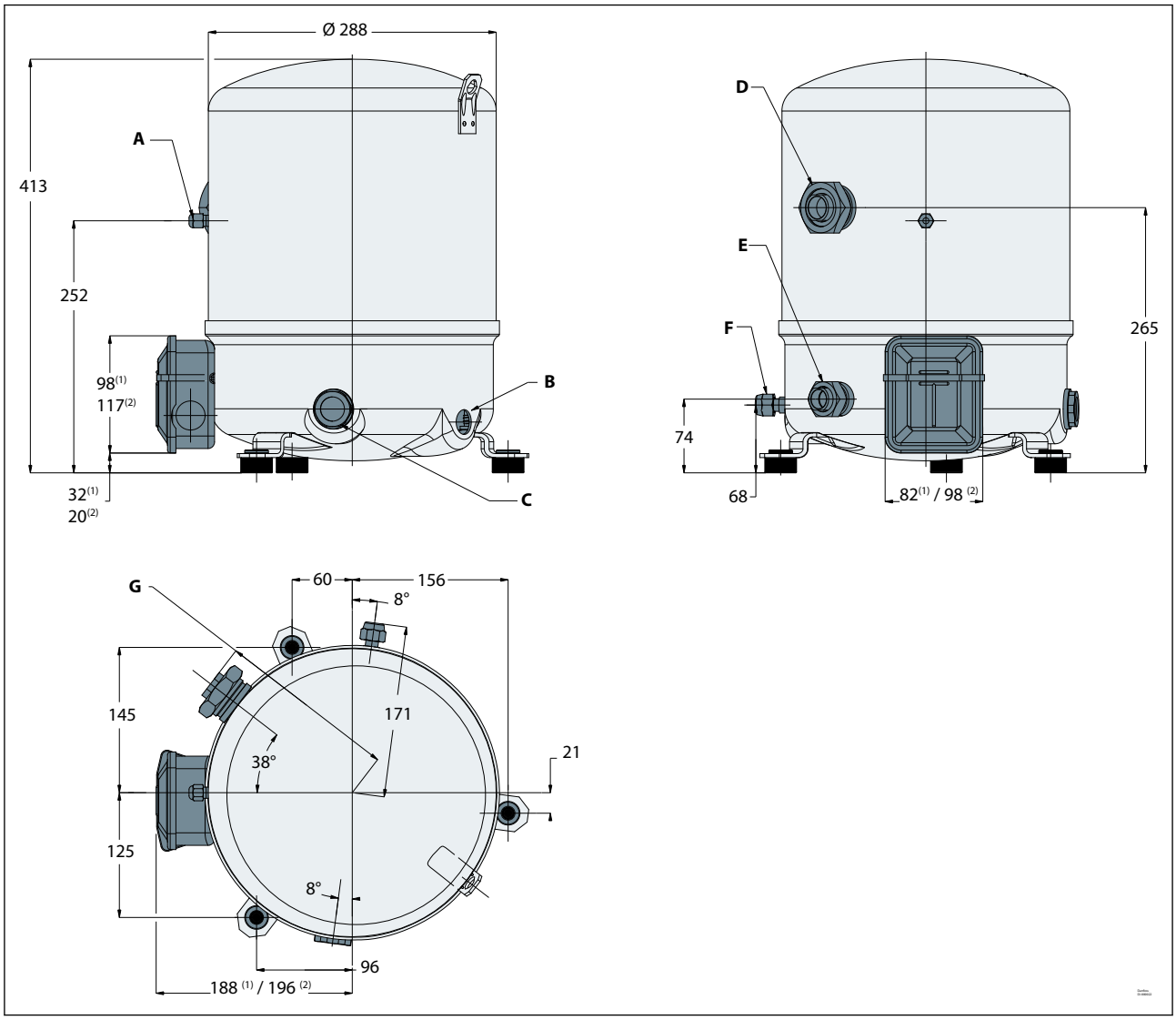


A	Spade connectors 1/4" AMP-AWE
B	Earth M4-12
C	Ø 21 mm
D	Knock-out Ø 21 mm

Type	Rotolock connections size		Pipe sizing		Rotolock valve	
	Suction	Discharge	Suction	Discharge	Suction	Discharge
MT/MTZ 018 - 022 (3/4/5/6/9) - 028 (3/4/5/6)	1"	1"	1/2"	3/8"	V06	V01
MT/MTZ022/1-028/1-032 - 036 - 040	1"1/4	1"	5/8"	1/2"	V09	V06

2 cylinders

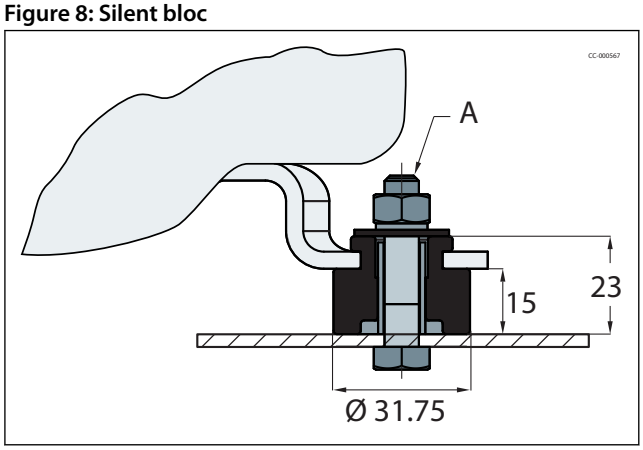
All dimensions in mm.



A	Schrader 1/4"
B	Mounting hole for PTC crankcase heater
C	Threaded oil sight glass
D	Suction rotolock 1"3/4
E	Discharge rotolock 1"1/4
F	Oil equalisation 3/8"
G	Suction 179, Discharge 176

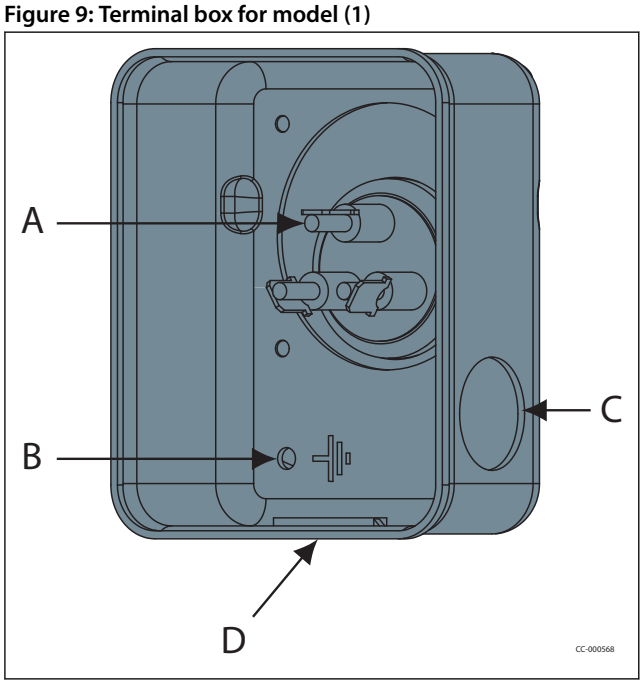
Model	Code					
	1	3	4	6	7	9
MT/MTZ044	(1)	(1)	(1)	(2)	(1)	(1)
MT/MTZ050	(2)	(1)	(1)	(2)	(1)	(1)
MT/MTZ056	(2)	(1)	(1)	(2)	(1)	(1)
MT/MTZ064	(2)	(1)	(1)	(2)	-	(1)
MT/MTZ072	-	(1)	(1)	(2)	-	(1)
MT/MTZ080	-	(2)	(1)	(2)	-	(1)

Figure 8: Silent bloc



A	Bolt HM8-40

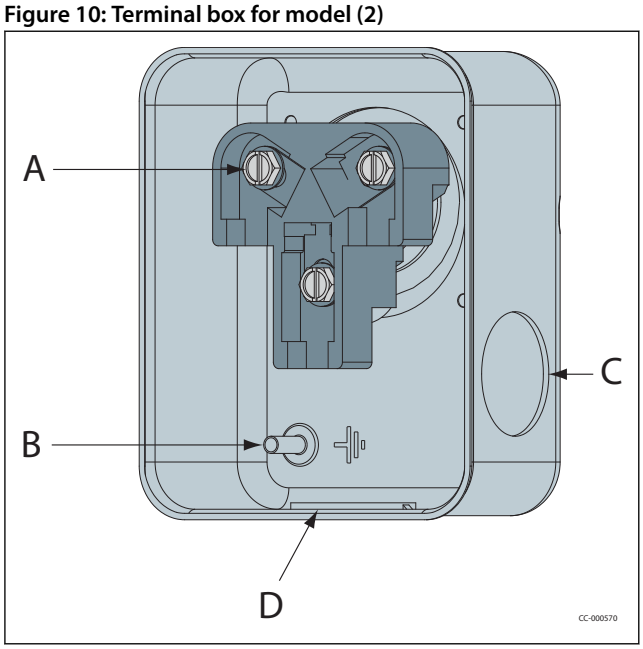
Figure 9: Terminal box for model (1)



A	Spade connectors 1/4" AMP-AWE
B	Earth M4-12
C	Ø 21 mm
D	Knock-out Ø 21 mm

IP rating: 55 (with cable gland).

Figure 10: Terminal box for model (2)



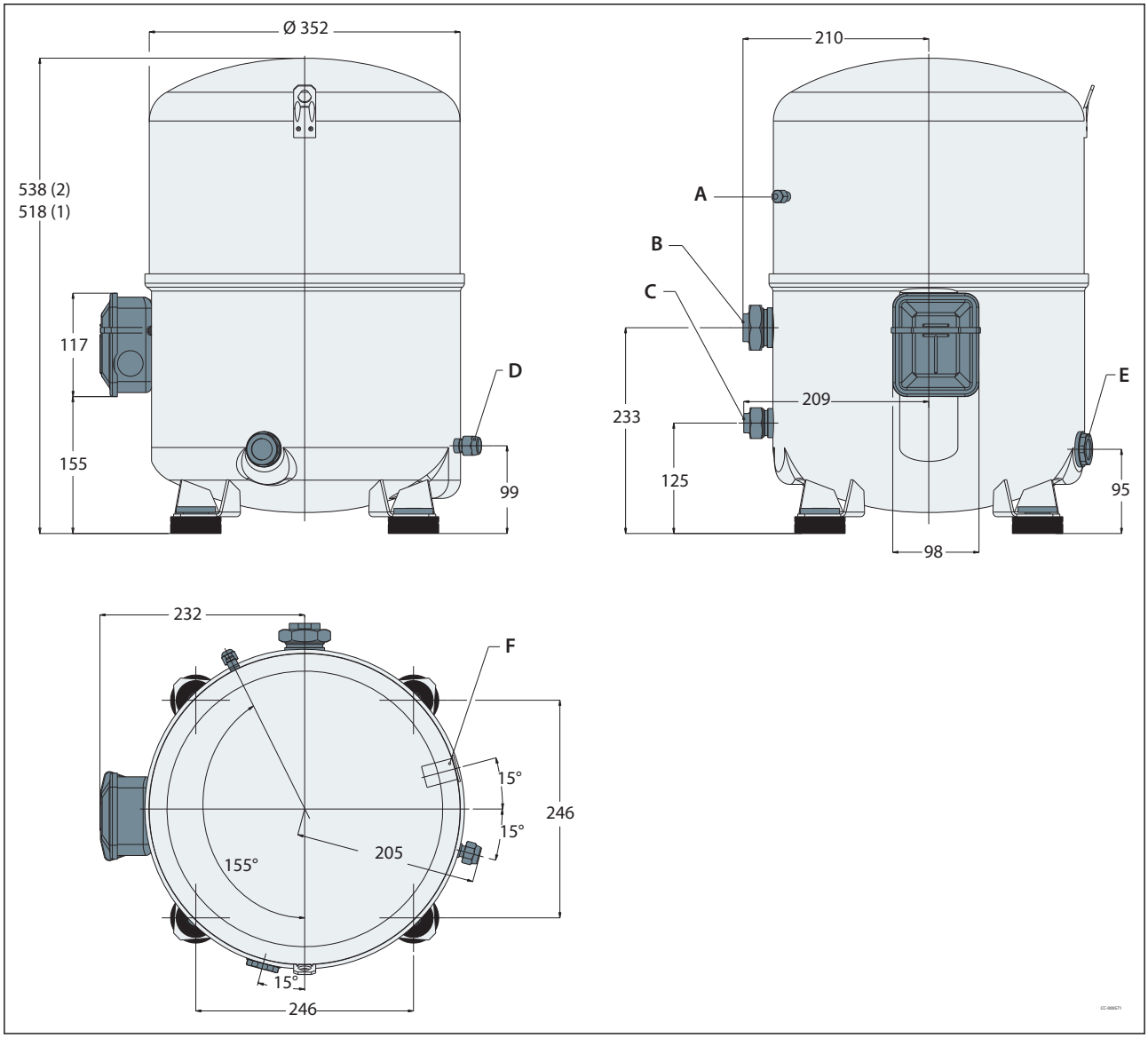
A	Screw 10-32 UNF x 9.5
B	Earth M4-12
C	Knock-out Ø 25.5 mm
D	Knock-out Ø 29 mm

IP rating: 54 (with cable gland).

Type	Rotolock connections size		Pipe sizing		Rotolock valve	
	Suction	Discharge	Suction	Discharge	Suction	Discharge
MT/MTZ 044 - 050 - 056 - 064 - 072	1"3/4	1"1/4	7/8"	3/4"	V07	V04
MT/MTZ 080	1"3/4	1"1/4	1"1/8	3/4"	V02	V04

4 cylinders

All dimensions in mm.



A	Schrader 1/4 "
B	Suction rotolock 1"3/4
C	Discharge rotolock 1"1/4
D	Oil equalisation 3/8"
E	Threaded oil sight glass
F	Mounting hole for PTC crankcase heater

Model	Code				
	3	4	6	7	9
MT/MTZ100	(1)	(1)	(1)	(1)	(1)
MT/MTZ125	(1)	(1)	(1)	(1)	(1)
MT/MTZ144	(2)	(2)	(2)	(2)	(2)
MT/MTZ160	(2)	(2)	(2)	(2)	(2)

Figure 11: Silent bloc

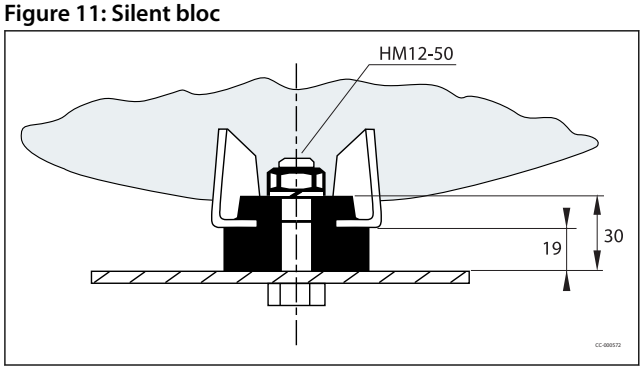
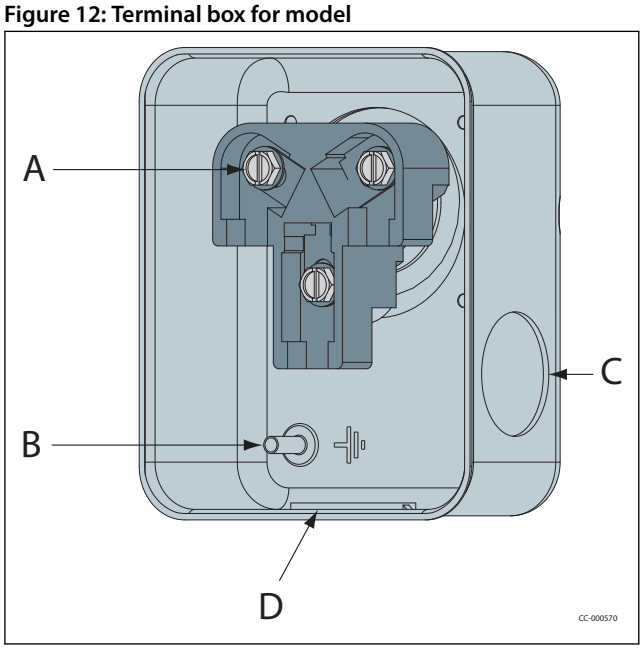


Figure 12: Terminal box for model



A	Screw 10-32 UNF x 9.5
B	Earth M4-12
C	Knock-out Ø 25.5 mm
D	Knock-out Ø 29 mm

IP rating: 54 (with cable gland).

Type	Rotolock connections size		Pipe sizing		Rotolock valve	
	Suction	Discharge	Suction	Discharge	Suction	Discharge
MT/MTZ100 - 125 - 144 - 160	1"3/4	1"1/4	1"1/8	3/4"	V02	V04

Mechanical connections

Design piping

General information

Oil in a refrigeration circuit is required to lubricate moving parts in the compressor. During normal system operation small oil quantities will continuously leave the compressor, with the discharge gas. With good system piping design this oil will return to the compressor. As long as the amount of oil circulating through the system is small it will contribute to good system operation and improved heat transfer efficiency. However, too large amounts of oil in the system will have a negative effect on condenser and evaporator efficiency. If, in a poorly designed system, the amount of oil returning to the compressor is lower than the amount of oil leaving the compressor, the compressor will become starved of oil and the condenser, evaporator and/or refrigerant lines will become filled with oil. In such situations, additional oil charge will only correct the compressor oil level for a limited period of time and increase the amount of surplus oil in the rest of the system.

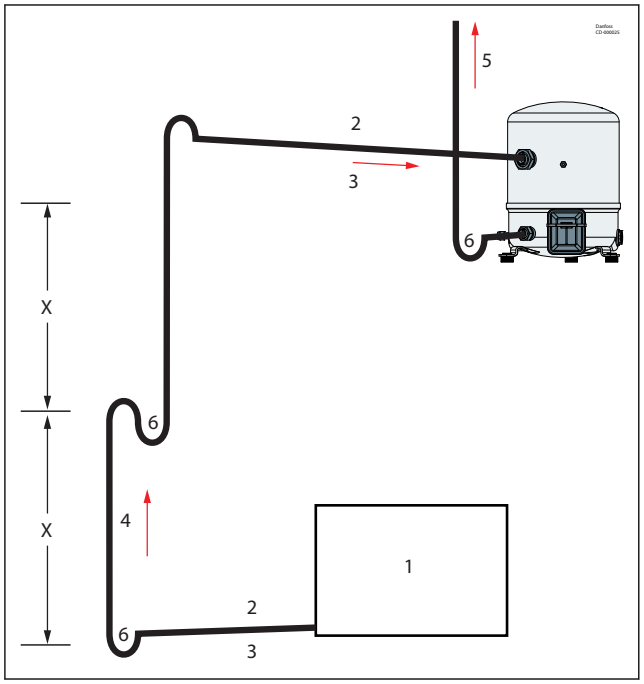
Only correct piping design can ensure a good oil balance in the system.

Suction lines

Horizontal suction line sections shall have a slope of 0.5% in the direction of refrigerant flow (5 mm per meter). The cross-section of horizontal suction lines shall be such that the resulting gas velocity is at least 4 m/s. In vertical risers, a gas velocity of 8 to 12 m/s is required to ensure proper oil return. A U-trap is required at the foot of each vertical riser. If the riser is higher than 4 m, additional U-traps are required for each additional 4 meters. The length of each U-trap must be as short as possible to avoid the accumulation of excessive quantities of oil (see figure below).

For compressors mounted in parallel, the common suction riser should be designed as a double riser. Also refer to the News bulletin "Mounting instructions for installation of Maneurop® compressors in parallel " and "Parallel application guidelines".

Gas velocities higher than 12 m/s will not contribute to significantly better oil return. However they will cause higher noise levels and result in higher suction line pressure drops which will have a negative effect on the system capacity.



1	Evaporator
2	0.5% slope
3	4 m/s (13 ft/s) or more
4	8 – 12 m/s (26 – 40 ft/s)
5	To condenser
6	U-trap, as short as possible
X	Max. 4 m (13 ft)

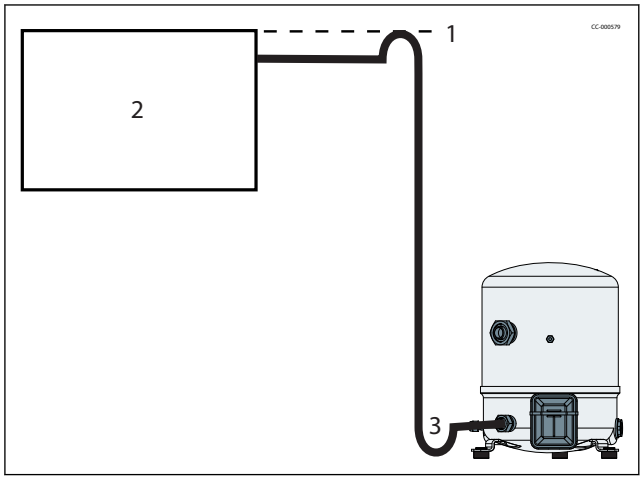
NOTE:
The suction rotolock valves, which can be ordered from Danfoss as accessories, are designed for average pipe sizes, selected for systems running at nominal conditions.

The pipe sizes selected for specific systems may differ from these recommended sizes.

It is recommended that the suction lines are insulated to limit suction gas superheat.

Discharge line

When the condenser is mounted above the compressor, a loop above the condenser and a U-trap close to the compressor are required to prevent liquid draining from the condenser into the discharge line during standstill.



1	Loop, as high as top of condenser
2	Condenser
3	U-trap

Oil charge and oil separator

In most installations the initial compressor oil charge will be sufficient. In installations with line runs exceeding 20 m, or with many oil traps or an oil separator, additional oil may be required. In installations with the risk of slow oil return such as in multiple evaporator or multiple condenser installations, an oil separator is recommended.

Filter driers

For new installations with MTZ compressors Danfoss recommends using the Danfoss DML 100%-molecular sieve, solid core filter drier. Molecular sieve filter driers with loose beads from third party suppliers shall be avoided.

For servicing of existing installations where acid formation is present the Danfoss DCL solid core filter driers containing activated alumina are recommended.

The drier is to be oversized rather than undersized. When selecting a drier, always take into account its capacity (water content capacity), the system refrigerating capacity and the system refrigerant charge.

Electrical connections

LRA (Locked Rotor Amp)

Locked Rotor Amp value is the higher average current as measured on mechanically blocked compressors tested under nominal voltage. The LRA value can be used as a rough estimation for the starting current. However, in most cases, the real starting current will be lower.

MCC (Maximum Continuous Current)

The MCC is the current at which the motor protection trips under largest load and low voltage conditions. This MCC value is the maximum at which the compressor can be operated in transient conditions and out of the application envelope. Above this value, the internal protector will cut-out the compressor to protect the motor.

MOC (Max Operating Current)

The max. operating current is the current when the compressors run at maximum load of operating envelope within voltages printed on the nameplate. MOC can be used to select cables and contactors. In normal operation, the compressor current consumption is always less than the Max Oper. A value. When using the Max Operating Current to dene cables and contactors, a tolerance of +5% need to be considered.

Single phase electrical characteristics

	LRA - Locked Rotor Current (A)		MCC - Maximum Continous Current		MOC - Maximum Operating Current		Winding resistance (Ω) (± 7 % at 25° C)			
Motor code	1	5	1	5	1	5	1		5	
Winding							run	start	run	start
MT/MTZ018	51	40	13	10	11.0	9.3	1.35	4.25	1.35	3.83
MT/MTZ022	49.3	41	17	15	13.2	11.1	1.20	2.31	1.35	3.83
MT/MTZ028	81	51	25	20	17.6	16.3	0.68	1.84	1.07	3.26
MT/MTZ032	84	70	26.5	20	19.6	18.4	0.63	2.90	0.80	4.23
MT/MTZ036	84	60	30	22	23.6	23.8	0.63	2.90	0.80	4.23
MT/MTZ040	99	-	34	-	28.5	-	0.54	1.87	-	-
MT/MTZ044	97	-	31	-	23.7	-	0.46	1.94	-	-
MT/MTZ050	114	-	36	-	28.6	-	0.38	1.83	-	-
MT/MTZ056	136	-	42.5	-	33.1	-	0.33	1.64	-	-
MT/MTZ064	143	-	46	-	38.2	-	0.33	2.14	-	-

Nominal capacitor values and relays

	Models	PSC/CSR		CSR only	
		Run capacitors[1]		Start capacitors[2]	Start relay
		(A) µF	(C) µF	(B) µF	
50 Hz	MT/MTZ018 JA-5	20	10	100	3ARR3J4A4 /RVA6AMKL
	MT/MTZ022 JC-5	20	10	100	
	MT/MTZ028 JE-5	20	10	100	
	MT/MTZ032 JF-5	25	10	135	
	MT/MTZ036 JG-5	25	10	135	
60 Hz	MT/MTZ018 JA-1	15	10	100	3ARR3J4A4 /RVA6AMKL
	MT/MTZ022 JC-1	30	15	100	
	MT/MTZ028 JE-1	25	25	135	
	MT/MTZ032 JF-1	25	20	100	
	MT/MTZ036 JG-1	25	20	100	
	MT/MTZ040 JH-1	35	20	100	
	MT/MTZ044 HJ-1	30	15	135	
	MT/MTZ050 HK-1	30	15	135	
	MT/MTZ056 HL-1	35	20	200	
	MT/MTZ064 HM-1	30	25	235	

[1] Run capacitors: 440 volts
[2] Start capacitors: 330 Volts

PSC	Permanent Split Capacitor
CSR	Capacitor Start Run

NOTE:
Single-phase MT and MTZ compressors require electrical accessories for proper operation, such as relays and capacitors. These electrical components are not included under the compressor code and must be ordered separately (see the list in section

Trickle circuit

The trickle circuit provides the facility of heating the compressor crankcase by feeding a small current to the auxiliary winding and the run capacitor (See the drawings in section Wiring diagram).

By using PSC or CSR starting systems, compressor models MT / MTZ 018 - 022 can be operated without crankcase heaters as the heater function is provided by the trickle circuit.

For the larger single phase compressor models MT / MTZ 028 - 064, the use of the PTC crankcase heater is recommended.

PSC wiring

PSC wiring may be used for refrigerant circuits with capillary tubes or expansion valves with bleed ports. Pressure equalisation must be ensured before start-up because of the low starting torque characteristics of this system.

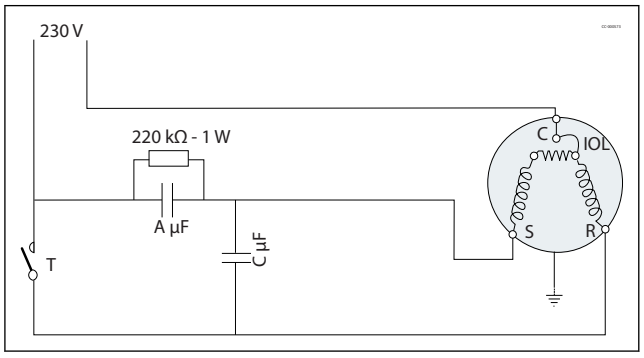
CSR wiring

CSR wiring provides additional motor torque at start-up, by the use of a start capacitor in combination with the run capacitor. This system can be used for refrigerant circuits with capillary tubes or expansion valves. The start capacitor is only connected during the starting operation, a potential relay is used to disconnect it after the start sequence.

Some applications with high differential pressure can require a very high starting torque. For such cases the CSR starting kit can be converted to a very high starting torque kit by an additional start capcitor of 100 µF parallel to the start capacitor of the CSR kit. This configuration can also be used to reduce erratic starting at unfavourable conditions such as very low ambient temperature or weak voltage.

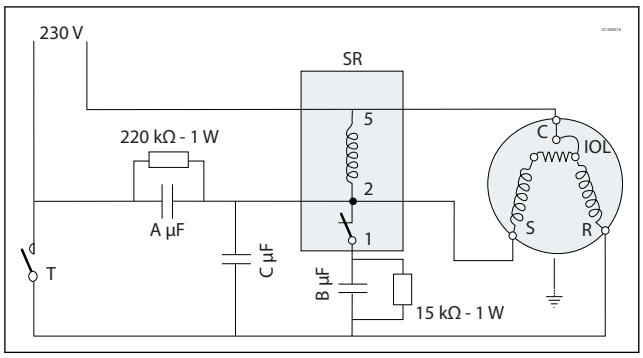
Wiring diagram

Single phase – PSC wiring with trickle circuit



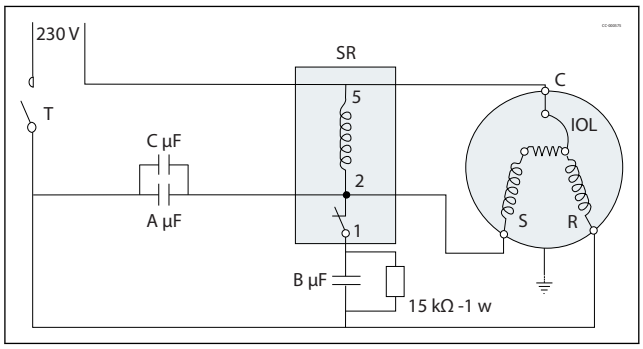
T	Thermostat
IOL	Motor protector
A & C	Run capacitors
C	Common
S	Start winding (auxiliary)
R	Run winding (main)

Single phase – CSR wiring with trickle circuit



T	Thermostat
SR	Start relay
IOL	Motor protector
A & C	Run capacitors
B	Start capacitor
C	Common
S	Start winding (auxiliary)
R	Run winding (main)

Single phase – CSR wiring without trickle circuit



T	Thermostat
SR	Start relay
IOL	Motor protector
A+C	Run capacitors
B	Start capacitor
C	Common
S	Start winding (auxiliary)
R	Run winding (main)

Capacitors A and C can be replaced by a single capacitor of size A+C.
B capacitor delivered in two parts for MT(Z)56 & 64-1.

Three phase electrical characteristics

	LRA - Locked Rotor Current (A)					MCC - Maximum Continuous Current (A)					MOC - Maximum Operating Current (A)					Winding resistance (Ω) (± 7 % at 77°F)				
Motor Code	**3**	**4**	**6**	**7**	**9**	**3**	**4**	**6**	**7**	**9**	**3**	**4**	**6**	**7**	**9**	**3**	**4**	**6**	**7**	**9**
MT/MTZ018	41	20	-	-	-	10.5	5	-	-	-	7.6	3.6		-	-	2.58	9.34	3.41	-	-
MT/MTZ022	41	20	30	-	22.5	11	6	8.5	-	6.5	9.4	4.4	8.5	-	5.4	2.58	11.84	3.41	-	7.3
MT/MTZ028	57	23	41	-	32	16	7.5	11.5	-	8.5	12.7	6.3	11.9	-	7.4	1.41	6.3	1.2	-	4.72
MT/MTZ032	60	25	44	22	35	18	8	13	5.5	9	13.9	6.6	12.3	5.3	8.5	1.32	6.28	2.01	10.11	3.4
MT/MTZ036	74	38	74	26	35	17	9	17	7	9.5	15.9	7.7	17.9	6.3	9.6	1.1	5.92	1.1	9.39	-
MT/MTZ040	98	38	74	-	-	22	10	18	-	-	19.2	9.2	18.6	-	-	0.89	4.05	1.1	-	-
MT/MTZ044	115	58	77	44	78	26	9.5	16	8.5	13	18.7	8.1	14.1	6.1	12.0	0.76	3.82	1.15	5.95	1.72
MT/MTZ050	115	58	77	44	78	27	11.5	19	10	13.5	21.1	9.4	19.0	6.7	10.4	0.74	3.82	1.42	5.95	1.72
MT/MTZ056	130	64	105	50	72	26	14	23	11	15	23.9	10.3	18.5	7.6	13.0	0.56	2.44	0.78	3.94	1.67
MT/MTZ064	137	64	124	-	72	34	15	25	-	17.5	26.3	11.7	23.2	-	14.5	0.58	2.44	0.78	-	1.67
MT/MTZ072	135	85	143	-	100	35	19	27	-	18.5	31.8	14.0	24.4	-	18.1	0.56	1.85	0.57	-	1.35
MT/MTZ080	140	85	132	-	102	41	19	29	-	22.5	35.8	16.0	30.3	-	20.9	0.49	1.85	0.57	-	1.33
MT/MTZ100	157	90	126	62	110	43	22	35	17	28	36.3	18.6	30.1	14.6	22.2	0.51	2.12	0.68	3.17	1.36
MT/MTZ 125	210	105	170	75	150	57	27	43	22	39	52.4	26.2	40.6	20.0	31.8	0.37	1.45	0.44	2.56	0.88
MT/MTZ 144	259	130	208	90	165	75	36	51	25	46	54.5	30.5	45.6	22.3	32.6	0.29	1.15	0.38	2.04	0.82
MT/MTZ 160	259	130	208	99	165	79	36	51	29	46	61.8	30.1	51.4	25.2	35.6	0.29	1.15	0.38	1.8	0.82

Winding resistance

Winding resistance is the resistance between indicated terminal pins at 20 °C (resistance value +/- 7%).

Winding resistance is generally low and it requires adapted tools for precise measurement.

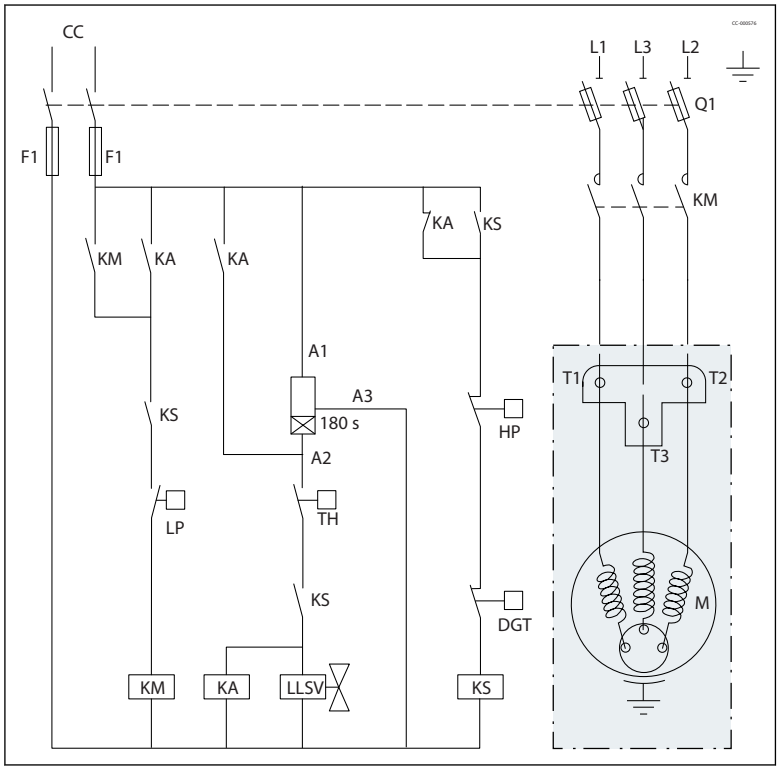
Motor protection and suggested wiring diagrams

The 3-phase compressors are protected by an internal motor protector, connected to the neutral point of the star connected stator windings, the protector cuts out all 3-phases simultaneously.

NOTE:
Once the overload protector has tripped it may take up to 3 hours to reset and restart the compressor.

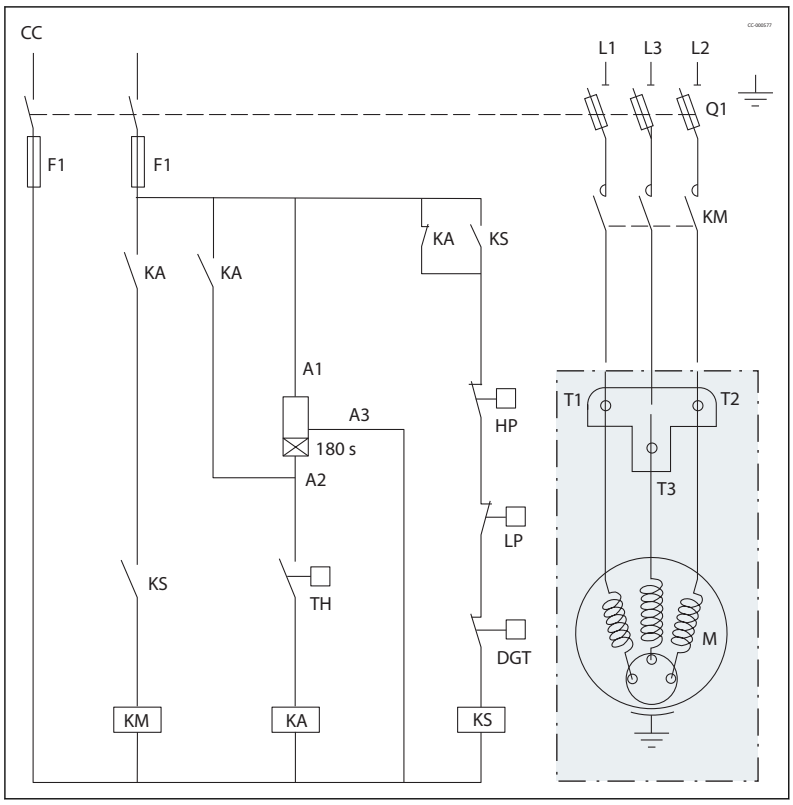
For all 3-phase compressors, a PTC crankcase heater is required.

Suggested wiring diagram with “one shot” pump-down cycle and safety lock-out relay



CC	Control circuit
TH	Control device
180s	Optional short cycle timer (3 min)
KA	Control relay
LLSV	Liquid Solenoid valve
KM	Compressor contactor
KS	Safety lock out relay
LP	Pump-down control & LP switch
HP	H.P. switch
Q1	Fused disconnect
F1	Fuses
M	Compressor motor
DGT	Discharge gas thermostat

Wiring diagram without pump-down cycle



CC	Control circuit
TH	Control device
180s	Optional short cycle timer (3 min)
KA	Control relay
KM	Compressor contactor
KS	Safety lock out relay
HP	High pressure switch
LP	Low pressure switch
Q1	Fused disconnect
F1	Fuses
M	Compressor motor
DGT	Discharge gas thermostat

Soft starters

Softstarters are designed to reduce the starting current of 3-phase AC motors. Softstarters can be used on MTZ and MT compressor but, in order to ensure proper lubrication of compressor parts, the settings must ensure that the compressor start-up time is always less than 0.5 seconds. In case of use with R454A/C or R455A make sure that the softstarter selected is compatible with A2L refrigerants.

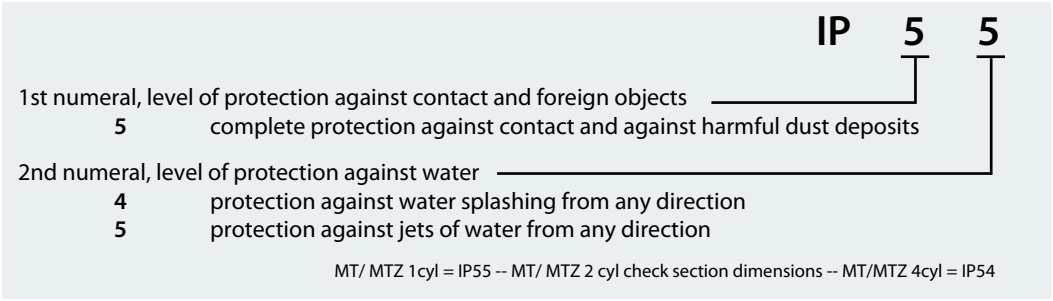
Voltage application range

Motor Code	Nominal voltage	Voltage application range
1	208 – 230 V / 1 ph / 60 Hz	187 – 253 V
3	200 – 230 V / 3 ph / 60 Hz	180 – 253 V
4	380 – 400 V / 3 ph / 50 Hz	340 – 440 V
	460 V / 3 ph / 60 Hz	414 – 506 V
5	220 – 240 V / 1 ph / 50 Hz	198 – 264 V
6	230 V / 3 ph / 50 Hz	207 – 253 V
7	500 V / 3 ph / 50 Hz	450 – 550 V
	575 V / 3 ph / 60 Hz	517 – 632 V
9	380 V / 3 ph / 60 Hz[1]	342 – 418 V

[1] Some models are approved for 380 – 400 V / 3 ph / 60 Hz. Please check datasheet.

IP rating

The compressor terminal boxes IP rating according to CEI 529 are shown on the section Dimensions. The IP ratings are only valid when correctly sized cable glands of the same IP rating are applied.



Application

Operating limits

High pressure

A high pressure safety switch is required to stop the compressor, should the discharge pressure exceed the values shown in the table below. The high pressure switch can be set to lower values depending on the application and ambient conditions.

R The HP switch must either be in a lockout circuit, or be a manual reset device to prevent compressor cycling around the high pressure limit. When a discharge valve is used, the HP switch must be connected to the service valve gauge port, which cannot be isolated.

Low pressure

R A low pressure safety switch is recommended to avoid compressor operation at too lower suction pressures.

		MT		MTZ											
Pressure range	Uni	R22 / 160P	R417A / 175PZ	R407A / 175PZ	R407C / 175PZ	R407F / 175PZ	R134a / 175PZ	R404A/ R507A / 175PZ	R452A / 175PZ	R448A / 175PZ	R449A / 175PZ	R513A / 175PZ	R454A / 175PZ	R454C / 175PZ	R455A / 175PZ
Test pressure low side	bar (g)	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Working pressure range high side	bar (g)	10.9 -27.7	9.3 - 25.3	11.5 -25.8	12.4 -29.3	12.1 - 24	7.8 - 22.6	7.2 - 27.7	6.7 - 27.2	6.1 - 26.1	6.1 - 26	3.5 - 23.2	6.5 - 26.9	5.2 - 22.7	5.7 - 24.3
Working pressure range low side	bar (g)	1 - 6.9	0.5 - 5.6	0.5 - 5.9	1.4 - 6.5	1 - 6.2	0 - 4.7	1 - 7.2	0.8 - 6.7	0.6 - 6.1	0.6 - 6.1	0.2 - 5.1	0.7 - 6.5	0.4 - 5.2	0.5 - 5.7
Relief valve opening pressure difference[1]	bar (g)	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Relief valve closing pressure difference[1]	bar (g)	8	8	8	8	8	8	8	8	8	8	8	8	8	8

[1] Relief valve fitted on 2 and 4 cyl.

Low ambient temperature operation

At low ambient temperatures, the condensing temperature and condensing pressure in air cooled condensers will decrease.

This low pressure may be insufficient to supply enough liquid refrigerant to the evaporator. As a result the evaporator temperature will strongly decrease with the risk of frosting. At compressor start-up, the compressor can pull a deep vacuum and it can be switched off by the low pressure protection. Depending on the low pressure switch setting and delay timer short cycling can occur. To avoid these problems, several solutions are possible, based on reducing condenser capacity:

- Indoor location of condensers
- Liquid flooding of condensers (note: this solution requires extra refrigerant charge, which can introduce other problems. A non-return valve in the discharge line is required and special care should be taken when designing the discharge line.)
- Reduce air flow to condensers.

Other problems can also occur when the compressor is operating at low ambient temperature. During shut down periods, liquid refrigerant can migrate to a cold compressor.

For such conditions a belt-type crankcase heater is strongly recommended.

Note that with 100% suction gas cooled motors, Maneurop® compressors can be externally insulated.

Refer to section Liquid refrigerant control and charge limit for more details.

Operating voltage and cycle rate

Operating voltage range

The operating voltage limits are shown in the table from section "Compressor model designation". The voltage applied to the motor terminals must always be within these table limits. The maximum allowable voltage unbalance for 3-phase compressors is 2%. Voltage unbalance causes high current draw on one or more phases, which in turn leads to overheating and possible motor damage. Voltage unbalance is given by the formula:

$$\% \text{ voltage imbalance} = \frac{|\ Vavg - V1{-}2\ | + |\ Vavg - V1{-}3\ | + |\ Vavg - V2{-}3\ |}{2 \times Vavg} \times 100$$

Vavg	Mean voltage of phases 1, 2, 3.
V1-2	Voltage between phases 1 and 2.
V1-3	Voltage between phases 1 and 3.
V2-3	Voltage between phases 2 and 3.

Cycle rate limit

R There may be no more than 12 starts per hour (6 when a soft start accessory is used). A higher number reduces the service life of the motor-compressor unit. If necessary, use an anti-short-cycle timer in the control circuit. A time-out of six minutes is recommended.

The system design must ensure a minimum compressor runtime to guarantee adequate oil return and sufficient motor cooling following startup. For most compact circuits, a five-minute runtime is generally sufficient. It should be noted that the oil return rate is dependent on the specific system design.

Liquid refrigerant control and charge limit

Refrigeration compressors are basically designed as gas compressors. Depending on the compressor design and operating conditions, most compressors can also handle a limited amount of liquid refrigerant. Maneurop® MT and MTZ compressors have a large internal volume and can therefore handle relatively large amounts of liquid refrigerant without major problems. However even when a compressor can handle liquid refrigerant, this will not be favourable to its service life.

Liquid refrigerant can dilute the oil, wash oil out of bearings and result in high oil carry over, resulting in loss of oil from the sump. Good system design can limit the amount of liquid refrigerant in the compressor, which will have a positive effect on the compressor service life. Liquid refrigerant can enter a compressor in different ways, with different effects on the compressor.

Off-cycle migration

During system standstill and after pressure equalisation, refrigerant will condense in the coldest part of the system. The compressor can easily be the coldest spot, for example when it is placed outside in low ambient temperatures. After a while, the full system refrigerant charge can condense in the compressor crankcase. A large amount will dissolve in the compressor oil until the oil is completely saturated with refrigerant. If other system components are located at a higher level, this process can be even faster because gravity will assist the liquid refrigerant to flow back to the compressor. When the compressor is started, the pressure in the crankcase decreases rapidly.

At lower pressures the oil holds less refrigerant, and as a result part of the refrigerant will violently evaporate from the oil, causing the oil to foam. This process is often called "boiling".

The negative effects from migration on the compressor are:

- oil dilution by liquid refrigerant
- oil foam, transported by refrigerant gas and discharged into the system, causing loss of oil and in extreme situations risk for oil slugging
- in extreme situations with high system refrigerant charge, liquid slugging could occur (liquid entering the compressor cylinders).

Liquid floodback during operation

During normal and stable system operation, refrigerant will leave the evaporator in a superheated condition and enter the compressor as a superheated vapour.

Normal superheat values at compressor suction are 5 – 30 K. However the refrigerant leaving the evaporator can contain an amount of liquid refrigerant due to different reasons:

- wrong dimensioning, wrong setting or malfunction of expansion device
- evaporator fan failure or blocked air filters.

In these situations, liquid refrigerant will continuously enter the compressor.

The negative effects from continuous liquid floodback are:

- permanent oil dilution
- in extreme situations with high system refrigerant charge and large amounts of floodback, liquid slugging could occur.

Liquid floodback at change over cycles in reversible heat pumps

In heat pumps, change over from cooling to heating cycles, defrost and low load short cycles may lead to liquid refrigerant floodback or saturated refrigerant return conditions.

The negative effects are:

- oil dilution
- in extreme situations with high system refrigerant charge and large amounts of floodback, liquid slugging could appear.

Liquid floodback and zeotropic refrigerants

Liquid floodback in systems working with a zeotropic refrigerant such as R407C introduces additional negative effects. A part of the refrigerant leaves the evaporator in liquid phase and this liquid has a different composition than the vapour.

This new refrigerant composition may result in different compressor operating pressures and temperatures.

Crankcase heater

A crankcase heater protects against the off-cycle migration of refrigerant and proves effective if oil temperature is maintained 10 K above the saturated LP temperature of the refrigerant. Tests must thereby be conducted to ensure that the appro-priate oil temperature is maintained under all ambient conditions. A PTC crankcase heater is recommended on all stand-alone compressors and split systems. PTC crankcase heaters are self-regulating.

Under extreme conditions such as very low ambient temperature a belt type crankcase heater could be used in addition to the PTC heater, although this is not a preferred solution for 1 and 2 cylinder compressors. The belt crankcase heater must be positioned on the compressor shell as close as possible to the oil sump to ensure good heat transfer to the oil.

Belt crankcase heaters are not self-regulating. Control must be applied to energise the belt heater once the compressor has been stopped and then to de-energise it while the compressor is running. The belt heater must be energised 12 hours before restarting the compressor following an extended down period.

If the crankcase heater is not able to maintain the oil temperature at 10 K above the saturated LP temperature of the refrigerant during off cycles or if repetitive floodback is present a the Liquid Line Solenoid Valve (LLSV) + pump-down cycle is required, eventually in conjunction with a suction accumulator.

Crankcase heater or PTC crankcase heater has to be use with refrigerant R513A.

Liquid line solenoid valve & pump-down

In refrigeration applications, the Liquid Line Solenoid Valve (LLSV) is highly recommended. During the off-cycle, the LLSV isolates the liquid charge in the condenser side, thus preventing against refrigerant transfer or excessive migration of refrigerant into the compressor. Furthermore, when using a LLSV in conjunction with a pump-down cycle, the quantity of refrigerant in the low-pressure side of the system will be reduced.

A pump-down cycle design is required when evaporators are fitted with electric defrost heaters.

Liquid line solenoid valve and pump down have to be use with refrigierant R513A.

Suction accumulator

A suction accumulator offers considerable protection against refrigerant floodback at start-up, during operation or after the defrost operation. This device also helps to protect against off-cycle migration by means of providing additional internal free volume to the low pressure side of the system.

The suction accumulator must be selected in accordance with the accumulator manufacturer recommendations. As a general rule, Danfoss recommends to size the accumulator for at least 50% of the total system charge. Tests however must be conducted to determine the optimal size.

Sound and vibration management

Sound

Running compressors cause sound and vibration. Both phenomena are closely related.

Sound produced by a compressor is transmitted in every direction by the ambient air, the mounting feet, the pipework and the refrigerant in the pipework.

The easiest way to reduce the sound transmitted through ambient air is to fit a Danfoss acoustic hood accessory.

Because Maneurop® compressors are 100% suction gas cooled, and require no body cooling, they can be insulated. Values for the sound reduction achieved with acoustic hoods are shown also in the table on the right. For inside mounted compressors, sound insulation of the plantroom is an alternative to sound insulation of the compressor.

Sound transmitted by mounting feet, pipework and refrigerant should be treated the same way as for vibration. Please refer to the next section.

Sound power in dB(A)

Table 2: Sound power in dB(A) at 50Hz

50Hz	Te=-10°C / TC=45°C / SH=10						
	R404A	R448A	R449A	R452A	R454A/ R454C/ R455A[1]	R513A[1]	Acoustic hood accessory[2]
MTZ018-4	73	74	73	76	75	71	120Z0575
MTZ022-4	74	74	74	74	75	69	
MTZ028-4	75	72	73	73	75	68	
MTZ032-4	73	73	73	73	72	68	
MTZ036-4	72	72	72	72	73	67	
MTZ040-4	72	74	75	72	73	67	
MTZ044-4	80	80	80	80	80	76	120Z0576
MTZ050-4	83	83	83	83	83	79	
MTZ056-4	81	81	80	79	81	75	
MTZ064-4	80	80	80	80	80	76	
MTZ072-4	79	79	79	79	79	75	
MTZ080-4	80	80	79	80	80	76	
MTZ100-4	85	84	84	82	84	79	120Z0577
MTZ125-4	84	84	84	84	84	81	
MTZ144-4	83	83	83	83	-	80	
MTZ160-4	83	84	83	81	84	78	

(1) Provisary data. Sound power level for MTZ. As first approach, use these figures with -3 dB(A) reduction on the R404A sound power for MT models applied with R22.
(2) Acoustic hood accessory can reduce noise level by 6 to 10 dBA (depending on the operating conditions and models).

Table 3: Sound power in dB(A) at 60Hz

60Hz	Te=-10°C / TC=45°C / SH=10						
	R404A	R448A	R449A	R452A	R454A/ R454C/ R455A(1)	R513A(1)	Acoustic hood accessory(2)
MTZ018-4	76	75	73	76	72	71	120Z0575
MTZ022-4	77	77	77	77	77	72	
MTZ028-4	74	73	74	73	76	68	
MTZ032-4	74	74	74	74	73	69	
MTZ036-4	73	73	73	73	76	68	
MTZ040-4	75	76	74	74	74	69	
MTZ044-4	83	81	82	81	81	77	120Z0576
MTZ050-4	86	86	86	86	86	82	
MTZ056-4	84	84	84	84	84	76	
MTZ064-4	83	83	83	83	83	78	
MTZ072-4	82	82	82	82	82	77	
MTZ080-4	82	81	80	82	81	77	
MTZ100-4	88	86	86	85	86	81	120Z0577
MTZ125-4	87	87	87	87	87	83	
MTZ144-4	86	86	86	86	-	82	
MTZ160-4	86	85	84	84	85	80	

Vibration

The mounting grommets delivered with the compressor should always be used. They reduce the vibration transmitted by the compressor mounting feet to the base frame.

The base on which the compressor is mounted should be sufficiently rigid and of adequate mass to ensure the full effectiveness of the mounting grommets.

The compressor should never be directly mounted to the base frame without the grommets, otherwise high vibration transmission would occur and the compressor service life reduced. Suction and discharge lines must have adequate flexibility in 3 planes. Eventually vibration absorbers may be required.

Care must be taken to avoid tubing having resonant frequencies close to those of the compressor frequency.

Vibration is also transmitted by the refrigerant gas. Maneurop® compressors have built in mufflers to reduce this vibration.

To further reduce vibration an extra muffler can be installed.

Danfoss doesn't warrant these compressors for use in mobile applications, such as trucks, railways, subways, etc...

NOTE:
Maneurop® MT & MTZ compressors have been designed and qualified for stationary equipment used in A/C and Refrigeration applications.

Installation and service

System cleanliness

System contamination is one of the main factors affecting equipment reliability and compressor service life.

Therefore it is important to ensure system cleanliness when manufacturing a refrigeration system. During the manufacturing process, system contamination can be caused by:

- Brazing and welding oxides
- Filings and particles from removing burrs from pipe-work
- Brazing flux
- Moisture and air.

Only use clean and dehydrated refrigeration grade copper tubes and silver alloy brazing material. Clean all parts before brazing and always purge nitrogen or CO2 through the pipes during brazing to prevent oxidation. If flux is used, take every precaution to prevent leakage into the piping. Do not drill holes (e.g. for schräder valves) in parts of the installation that are already completed, when filings and burrs can not be removed. Carefully follow the instructions below regarding brazing, mounting, leak detection, pressure test and moisture removal. All installation and service work shall only be done by qualified personnel respecting all procedures and using tools (charging systems, tubes, vacuum pump, etc.) dedicated for the refrigerant that will be used.

Compressor handling, mounting and connection to the system

Compressor handling

Maneurop® MT and MTZ compressors are provided with a lifting lug. This lug should always be used to lift the compressor. Once the compressor is installed, the compressor lifting lug should never be used to lift the complete installation.

Keep the compressor in an upright position during handling.

Compressor mounting

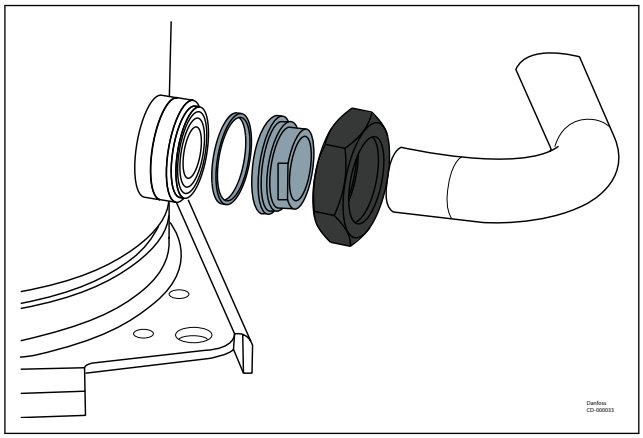
Mount the compressor on a horizontal plane with a maximum slope of 3 degrees. All compressors are supplied with three or four rubber mounting grommets, each complete with metal sleeves and nuts and bolts. Refer to the section Dimensions.

These grommets largely attenuate the compressor vibration transmitted to the base frame. The compressor must always be mounted with these grommets. Refer to the table below for torque values.

Designation		Recommended torque (Nm)
Cable screw of T connector in electrical box	screw 10/32 - UNF x 3	3
Rotolock valves and solder sleeves	1"	80
	1"1/4	90
	1"3/4	110
Mounting grommet bolts	1-2 / 4 cylinder	15 / 50
Oil sight glass	-	50
Oil equalisation connection	1-2 / 4 cylinder	30 / 45

Compressor connection to the system

Compressor suction and discharge ports are equipped with rotolock connectors, which can be used for direct mounting of rotolock valves or through attached solder sleeves to the piping. The gasket and solder adapter provided in the mounting kit, together with the compressor, must be used.



	Mounted on the compressor
	Supplied together with compressor in mounting kit

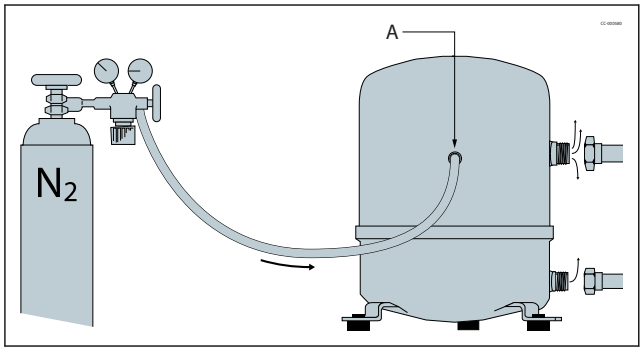
New compressors have a protective nitrogen holding charge. The suction and discharge caps should only be removed just before connecting the compressor to the installation to avoid air and moisture entering the compressor.

Whenever possible the compressor must be the last component to be integrated in the system. It is advisable to braze the solder sleeves or service valves to the pipework before the compressor is mounted. When all brazing is finished and when the total system is ready, the compressor caps can be removed and the compressor can be connected to the system with a minimum exposure to ambient air.

If this procedure is not possible, the sleeves or valves may be brazed to the pipes when mounted on the compressor.

In this situation nitrogen or CO_2 must be purged through the compressor via the schrader valve to prevent air and moisture ingress. Purging must start when the caps are removed and proceeded during the brazing process. When rotolock valves are used on the compressor, they shall be closed immediately after mounting, thus keeping the compressor isolated from atmosphere or from a not yet dehydrated system.

NOTE:
When the compressor is built into a "pack" or "rack" configuration which is not installed immediately on its final location, a vacuum pull-down and moisture removal must be performed to this pack (rack) as if it were a complete system (see below). The pack must be charged with nitrogen or CO_2 and open tubes must be blocked with caps or plugs.



A	Schrader

System pressure test

It is recommended that an inert gas such as nitrogen be used for pressure testing. Dry air may also be used but care should be taken since it can form an inflammable mixture with the compressor oil. When performing a system pressure test, the maximum allowed pressure for the different components should not be exceeded.

For MT/MTZ compressors the maximum test pressures are shown in the table beside.

Pressure level	1-2-4 cylinder compressors
Maximum compressor test pressure, low side	25 bar(g)
Maximum compressor test pressure, high side	30 bar(g)

Do not exceed 30 bar pressure difference between high pressure side and low pressure side of the compressor because this will open the internal compressor relief valve.

Leak detection

Whenever possible (if valves are present) the compressor must be kept isolated from the system. Perform a leak detection using the final refrigerant. Pressurise with nitrogen or another neutral gas and use a leak detector for the applied refrigerant. Any spectrometric detection system using helium can also be applied.

Eventual leaks shall be repaired respecting the instructions written above. It is not recommended to use other gasses such as oxygen, dry air or acetylene as these gasses can form an inflammable mixture. Never use CFC or HCFC refrigerants for leak detection of HFC systems.

NOTE:
Leak detection with refrigerant may not be allowed in some countries. Check local regulations.

NOTE:
Leak detecting additives shall not be used as they may affect the lubricant properties.

Warranty may be voided if leak detecting additives have been used.

Vacuum pull-down moisture removal

Moisture obstructs the proper functioning of the compressor and the refrigeration system.

Air and moisture reduce service life and increase condensing pressure, and cause excessively high discharge temperatures, which can destroy the lubricating properties of the oil. Air and moisture also increase the risk of acid formation, giving rise to copper platting. All these phenomena can cause mechanical and electrical compressor failure.

To eliminate these factors, a vacuum pull-down according to the following procedure is recommended:

Step 1: Whenever possible (if valves are present) the compressor must be kept isolated from the system.

Step 2: After the leak detection, the system must be pulled-down under a vacuum of 500 microns (0.67 mbar). A two stage vacuum pump shall be used with a capacity appropriate to the system volume. It is recommended to use connection lines with a large diameter and to connect these to the service valves and not to the schrader connection to avoid too high pressure losses.

Step 3: When the vacuum level of 500 micron is reached, the system must be isolated from the vacuum pump. Wait 30 minutes during which the system pressure should not rise. When the pressure rapidly increases, the system is not leak tight.

A new leak detection must be performed and the vacuum pull-down procedure should be restarted from step 1. When the pressure slowly increases, this indicates the presence of moisture. In this case step 2 and 3 should be repeated.

Step 4: Connect the compressor to the system by opening the valves. Repeat step 2 and 3.

Step 5: Break the vacuum with nitrogen or the final refrigerant.

Step 6: Repeat step 2 and 3 on the total system. At commissioning, system moisture content may be up to 100 ppm. During operation the filter drier must reduce this to a level < 20 ppm.

WARNING:
- Do not use a megohmmeter or apply power to the compressor while it is under vacuum, as this may cause motor winding damage.
- Never run the compressor under vacuum as it may cause compressor motor burn-out.

Start-up

Before initial start-up or after a prolonged shut down period, energise the crankcase heater (if fitted) 12 hours prior to start-up, or turn on power for single phase compressors with trickle circuit.

Refrigerant charging

Zeotropic and «near-azeotropic» refrigerant mixtures such as R407C and R404A must always be charged in the liquid phase. For the initial charge, the compressor must not run and service valves must be closed. Charge refrigerant as close as possible to the nominal system charge before starting the compressor. Then slowly add refrigerant in the liquid phase, on the low pressure side as far away as possible from the running compressor.

The refrigerant charge quantity must be suitable for both winter and summer operation. Refer also to section “Protection against flooded starts and liquid floodback” for information about refrigerant charge limits.

⚠ WARNING:
When a liquid line solenoid valve is used, the vacuum in the low pressure side must be broken before applying power to the system.

Oil charge and oil level

The oil charge must be checked before commissioning (1/4 to 3/4 of the oil sight glass). Check the oil level again after a minimum of 2 hours operation at nominal conditions. In most installations the initial compressor oil charge will be sufficient. In installations with line runs exceeding 20 m or with many oil traps or an oil separator, additional oil may be required. Normally the quantity of oil added should be no more than 2% of the total refrigerant charge (this percentage does not take into account oil contained in accessories such as oil separators or oil traps). If this amount has already been added and the oil level in the compressor keeps decreasing, the oil return in the installation is insufficient. Refer also to section Design piping.

In installations where slow oil return is likely such as in multiple evaporator or multiple condenser installations, an oil separator is recommended. Refer to the table section Refrigerants to select the correct oil.

Suction gas superheat

The optimum suction gas superheat is 10 K. A lower superheat value will contribute to better system performance (higher mass flow and more efficient use of evaporator surface). Low superheat values however increase the riskof unwanted liquid floodback to the compressor.

For very low superheat values an electronically controlled expansion valve is recommended.

The maximum allowable superheat is about 30 K. Higher values can be accepted but in these cases, tests have to be performed to check that the maximum discharge temperature of 130 °C will not be exceeded. Note that high superheat values decrease the compressor application envelope and system performance.

Packaging

Single pack

Table 4: Single pack

Model code 4		Dimensions (mm)			Gross weight (kg)
		Length	Width	Height	
1 cylinder	MT/MTZ 018	330	295	385	23
	MT/MTZ 022	330	295	385	23
	MT/MTZ 028	330	295	385	25
	MT/MTZ 032	330	295	385	26
	MT/MTZ 036	330	295	385	27
	MT/MTZ 040	330	295	385	27
2 cylinders	MT/MTZ 044-050	395	365	455	39
	MT/MTZ 056-064	395	365	455	41
	MT/MTZ 072-080	395	365	455	43
4 cylinders	MT/MTZ 100	470	400	650	70
	MT/MTZ 125	470	400	650	73
	MT/MTZ 144	470	400	650	76
	MT/MTZ 160	470	400	650	76

One compressor in a cardboard box.

In some publications this packaging may be indicated as individual packaging.

All single pack of 4 cylinder are shipped with a small 1/4 euro pallet (570 x 400 x 117 mm) under the individual box.

Multipack

Table 5: Multipack

Model code 4		Dimensions (mm)			Gross weight (kg)	Number of compressor	Static stacking
		Length	Width	Height			
1 cylinder	MT/MTZ 018	1150	800	510	197	8	4
	MT/MTZ 022	1150	800	510	197		
	MT/MTZ 028	1150	800	510	213		
	MT/MTZ 032	1150	800	510	221		
	MT/MTZ 036	1150	800	510	229		
	MT/MTZ 040	1150	800	510	229		
2 cylinders	MT/MTZ 044-050	1150	800	600	244	6	4
	MT/MTZ 056-064	1150	800	600	256		
	MT/MTZ 072-080	1150	800	600	268		

Model code 4		Dimensions (mm)			Gross weight (kg)	Number of compressor	Static stacking
		Length	Width	Height			
4 cylinders	MT/MTZ 100	1150	800	800	291	4	4
	MT/MTZ 125	1150	800	800	303		
	MT/MTZ 144	1150	800	800	315		
	MT/MTZ 160	1150	800	800	315		

A full pallet of compressors, each individually packed in a cardboard box. Mainly dedicated to wholesalers and Danfoss distribution centres.

Industrial pack

Table 6: Industrial pack

Model code 4		Dimensions (mm)			Gross weight (kg)	Number of compressor	Static stacking
		Length	Width	Height			
1 cylinder	MT/MTZ 018	1150	800	500	278	12	4
	MT/MTZ 022	1150	800	500	278		
	MT/MTZ 028	1150	800	500	302		
	MT/MTZ 032	1150	800	500	314		
	MT/MTZ 036	1150	800	500	326		
	MT/MTZ 040	1150	800	500	326		
2 cylinders	MT/MTZ 044-050	1150	800	600	236	6	4
	MT/MTZ 056-064	1150	800	600	248		
	MT/MTZ 072-080	1150	800	600	260		
4 cylinders	MT/MTZ 100	1150	800	710	381	6	4
	MT/MTZ 125	1150	800	710	399		
	MT/MTZ 144	1150	800	710	417		
	MT/MTZ 160	1150	800	710	417		

A full pallet of unpacked compressors. Mainly dedicated to OEM customers.

In some publications this packaging may be indicated as ‘Multiple packaging.

Ordering

MT compressors

Single pack

Table 7: R22

Compressor model	Code no.						
	1[1]	3	4	5[1]	6	7	9
	208-230/1/60	200-230/3/60	460/3/60 400/3/50	230/1/50	230/3/50	575/3/60 500/3/50	380/3/60
MT018	MT18-1VI	MT18-3VI	MT18-4VI	MT18-5VI	-	-	-
MT022	MT22-1VI	MT22-3VI	MT22-4VI	MT22-5VI	MT22-6VI	-	MT22-9VI
MT028	MT28-1VI	MT28-3VI	MT28-4VI	MT28-5VI	MT28-6VI	-	MT28-9VI
MT032	MT32-1VI	MT32-3VI	MT32-4VI	MT32-5VI	MT32-6VI	-	-
MT036	MT36-1VI	MT36-3VI	MT36-4VI	MT36-5VI	MT36-6VI	-	MT36-9VI
MT040	MT40-1VI	MT40-3VI	MT40-4VI	-	MT40-6VI	-	-
MT044	-	MT44-3VI	MT44-4VI	-	-	-	MT44-9VI
MT050	MT50-1VI	MT50-3VI	MT50-4VI	-	MT50-6VI	-	MT50-9VI
MT056	MT56-1VI	MT56-3VI	MT56-4VI	-	MT56-6VI	MT56-7VI	MT56-9VI
MT064	MT64-1VI	MT64-3VI	MT64-4VI	-	MT64-6VI	-	MT64-9VI
MT072	-	MT72-3VI	MT72-4VI	-	-	-	MT72-9VI
MT080	-	MT80-3VI	MT80-4VI	-	MT80-6VI	-	MT80-9VI
MT100	-	MT100-3VI	MT100-4VI	-	MT100-6VI	MT100-7VI	MT100-9VI
MT125	-	MT125-3VI	MT125-4VI	-	MT125-6VI	MT125-7VI	MT125-9VI
MT144	-	MT144-3VI	MT144-4VI	-	-	MT144-7VI	MT144-9VI
MT160	-	MT160-3VI	MT160-4VI	-	MT160-6VI	MT160-7VI	MT160-9VI

[1] For single phase compressors electrical components need to be ordered separately

VI	Single compressor, threaded oil sight glass, 3/8" oil equalisation connection.

Industrial pack

Table 8: R22

Compressor model	Code no.				
	1[1]	3	4	5[1]	9
	208-230/1/60	200-230/3/60	460/3/60 400/3/50	230/1/50	380/3/60
MT018	MT18-1VM	MT18-3VM	MT18-4VM	MT18-5VM	-
MT022	MT22-1VM	MT22-3VM	MT22-4VM	MT22-5VM	MT22-9VM
MT028	MT28-1VM	MT28-3VM	MT28-4VM	MT28-5VM	MT28-9VM
MT032	MT32-1VM	MT32-3VM	MT32-4VM	MT32-5VM	MT32-9VM
MT036	MT36-1VM	MT36-3VM	MT36-4VM	MT36-5VM	MT36-9VM
MT040	MT40-1VM	MT40-3VM	MT40-4VM	-	-
MT044	MT44-1VM	MT44-3VM	MT44-4VM	-	MT44-9VM
MT050	MT50-1VM	MT50-3VM	MT50-4VM	-	MT50-9VM
MT056	MT56-1VM	MT56-3VM	MT56-4VM	-	MT56-9VM
MT064	MT64-1VM	MT64-3VM	MT64-4VM	-	MT64-9VM
MT072	-	MT72-3VM	MT72-4VM	-	MT72-9VM
MT080	-	MT80-3VM	MT80-4VM	-	MT80-9VM
MT100	-	MT100-3VM	MT100-4VM	-	MT100-9VM
MT125	-	MT125-3VM	MT125-4VM	-	MT125-9VM
MT144	-	MT144-3VM	MT144-4VM	-	MT144-9VM
MT160	-	MT160-3VM	MT160-4VM	-	MT160-9VM

[1] For single phase compressors electrical components need to be ordered separately

VM	Compressor in industrial pack, threaded oil sight glass, 3/8" oil equalisation connection.

MTZ compressors

Single pack

Table 9: R404A/R507/R134a /R407A/C/F/R448A/R449A/R452A/R454A/C/ R455A/R513A

Compressor model	Code no.						
	1(*)	3	4	5(*)	6	7	9
	208-230/1/60	200-230/3/60	460/3/60 400/3/50	230/1/50	230/3/50	575/3/60 500/3/50	380/3/60
MTZ018	MTZ18-1VI(2)	MTZ18-3VI(2)	MTZ18-4VI(2)	MTZ18-5VI(1)	-	-	-
MTZ022	MTZ22-1VI(2)	MTZ22-3VI(2)	MTZ22-4VI(2)	MTZ22-5VI(1)	MTZ22-6VI	-	MTZ22-9VI
MTZ028	MTZ28-1VI(2)	MTZ28-3VI(2)	MTZ28-4VI(2)	MTZ28-5VI(1)	MTZ28-6VI	-	MTZ28-9VI
MTZ032	MTZ32-1VI(2)	MTZ32-3VI(2)	MTZ32-4VI(2)	MTZ32-5VI(1)	MTZ32-6VI	MTZ32-7VI	MTZ32-9VI
MTZ036	MTZ36-1VI(2)	MTZ36-3VI(2)	MTZ36-4VI(2)	MTZ36-5VI(1)	MTZ36-6VI	MTZ36-7VI	MTZ36-9VI
MTZ040	MTZ40-1VI(2)	MTZ40-3VI(2)	MTZ40-4VI(2)	-	MTZ40-6VI	-	-
MTZ044	MTZ44-1VI(2)	MTZ44-3VI(2)	MTZ44-4VI(2)	-	MTZ44-6VI	MTZ44-7VI	MTZ44-9VI
MTZ050	MTZ50-1VI(2)	MTZ50-3VI(2)	MTZ50-4VI(2)	-	MTZ50-6VI	MTZ50-7VI	MTZ50-9VI
MTZ056	MTZ56-1VI(2)	MTZ56-3VI(2)	MTZ56-4VI(2)	-	MTZ56-6VI	MTZ56-7VI	MTZ56-9VI
MTZ064	MTZ64-1VI(2)	MTZ64-3VI(2)	MTZ64-4VI(2)	-	MTZ64-6VI	-	MTZ64-9VI
MTZ072	-	MTZ72-3VI(2)	MTZ72-4VI(2)	-	MTZ72-6VI	-	MTZ72-9VI
MTZ080	-	MTZ80-3VI(2)	MTZ80-4VI(2)	-	MTZ80-6VI	-	MTZ80-9VI
MTZ100	-	MTZ100-3VI(2)	MTZ100-4VI(2)	-	MTZ100-6VI	MTZ100-7VI	MTZ100-9VI
MTZ125	-	MTZ125-3VI(2)	MTZ125-4VI(2)	-	MTZ125-6VI	MTZ125-7VI	MTZ125-9VI
MTZ144	-	MTZ144-3VI	MTZ144-4VI	-	-	MTZ144-7VI	MTZ144-9VI
MTZ160	-	MTZ160-3VI(2)	MTZ160-4VI(2)	-	MTZ160-6VI	MTZ160-7VI	MTZ160-9VI

(*) For single phase compressors electrical components need to be ordered separately
(1) Qualified with R454C / R455A
(2) Qualified with R454A / R454C / R455A

VI	Single compressor, threaded oil sight glass, 3/8" oil equalisation connection.

NOTE:
For the availability, please contact Danfoss.

Industrial pack

Table 10: R404A/ R507/ R134a/ R407A/C/F/ R448A/ R449A/ R452A/ R454A/C/ R455A/ R513A

Compressor model	Code no.				
	1(*)	3	4	5(*)	9
	208-230/1/60	200-230/3/60	460/3/60 400/3/50	230/1/50	380/3/60
MTZ018	MTZ18-1VM(2)	MTZ18-3VM(2)	MTZ18-4VM(2)	MTZ18-5VM(1)	-
MTZ022	MTZ22-1VM(2)	MTZ22-3VM(2)	MTZ22-4VM(2)	MTZ22-5VM(1)	MTZ22-9VM
MTZ028	MTZ28-1VM(2)	MTZ28-3VM(2)	MTZ28-4VM(2)	MTZ28-5VM(1)	MTZ28-9VM
MTZ032	MTZ32-1VM(2)	MTZ32-3VM(2)	MTZ32-4VM(2)	MTZ32-5VM(1)	MTZ32-9VM
MTZ036	MTZ36-1VM(2)	MTZ36-3VM(2)	MTZ36-4VM(2)	MTZ36-5VM(1)	MTZ36-9VM
MTZ040	MTZ40-1VM(2)	MTZ40-3VM(2)	MTZ40-4VM(2)	-	-
MTZ044	MTZ44-1VM(2)	MTZ44-3VM(2)	MTZ44-4VM(2)	-	MTZ44-9VM
MTZ050	MTZ50-1VM(2)	MTZ50-3VM(2)	MTZ50-4VM(2)	-	MTZ50-9VM
MTZ056	MTZ56-1VM(2)	MTZ56-3VM(2)	MTZ56-4VM(2)	-	MTZ56-9VM
MTZ064	MTZ64-1VM(2)	MTZ64-3VM(2)	MTZ64-4VM(2)	-	MTZ64-9VM
MTZ072	-	MTZ72-3VM(2)	MTZ72-4VM(2)	-	MTZ72-9VM
MTZ080	-	MTZ80-3VM(2)	MTZ80-4VM(2)	-	MTZ80-9VM
MTZ100	-	MTZ100-3VM(2)	MTZ100-4VM(2)	-	MTZ100-9VM
MTZ125	-	MTZ125-3VM(2)	MTZ125-4VM(2)	-	MTZ125-9VM
MTZ144	-	MTZ144-3VM	MTZ144-4VM	-	MTZ144-9VM
MTZ160	-	MTZ160-3VM(2)	MTZ160-4VM(2)	-	MTZ160-9VM

(*) For single phase compressors electrical components need to be ordered separately
(1) Qualified with R454C / R455A
(2) Qualified with R454A / R454C / R455A

VM	Compressor in industrial pack, threaded oil sight glass, 3/8" oil equalisation connection

NOTE:
For the availability, please contact Danfoss.

Accessories and Spare parts

Rotolock service valves and valve sets (without gasket)

Table 11: Rotolock service valves and valve sets (without gasket)

Code no.	Description	Application	Packaging	Pack size
8168027	Rotolock valve,V01, (1" Rotolock, 3/8" ODF)	Discharge: MT/MTZ 018-028 (3/4/6/9)	Multipack	6
8168028	Rotolock valve,V02, (1"3/4 Rotolock, 1"1/8 ODF)	Suction: MT/MTZ 080-160	Multipack	6
7968009	Rotolock valve,V02, (1"3/4 Rotolock, 1"1/8 ODF) IP	Suction: MT/MTZ 080-160	Industry pack	24
8168029	Rotolock valve,V04, (1"1/4 Rotolock, 3/4" ODF)	Discharge: MT/MTZ 044-160	Multipack	6
7968006	Rotolock valve,V04, (1"1/4 Rotolock, 3/4" ODF) IP	Discharge: MT/MTZ 044-160	Industry pack	42
8168031	Rotolock valve,V06, (1" Rotolock, 1/2" ODF)	Suction: MT/MTZ 018-028 (3/4/6/9); Discharge: MT/MTZ 018-022 (1); 032-040	Multipack	6
7968004	Rotolock valve,V06, (1" Rotolock, 1/2" ODF) IP	Suction: MT/MTZ 018-028 (3/4/6/9); Discharge: MT/MTZ 018-022 (1); 032-040	Industry pack	50
8168032	Rotolock valve,V07, (1"3/4 Rotolock, 7/8" ODF)	Suction: MT/MTZ 044-072	Multipack	6
7968008	Rotolock valve,V07, (1"3/4 Rotolock, 7/8" ODF) IP	Suction: MT/MTZ 044-072	Industry pack	36
8168033	Rotolock valve,V09, (1"1/4 Rotolock, 5/8" ODF)	Suction: MT/MTZ 018-022 (1); 032-040	Multipack	6
7968005	Rotolock valve,V09, (1"1/4 Rotolock, 5/8" ODF) IP	Suction: MT/MTZ 018-022 (1); 032-040	Industry pack	50
7703004	Set of valves V01-V06	Suction: MT/MTZ 018-028 (3/4/6/9)	Multipack	4
7703005	Set of valves V06-V09	Suction: MT/MTZ 018-022 (1); 032-040	Multipack	4
7703006	Set of valves V04-V07	Suction: MT/MTZ 044-072	Multipack	6
7703009	Set of valves V04-V02	Suction: MT/MTZ 080-160	Multipack	6

Gaskets and gasket sets

Table 12: Gaskets and gasket sets

Code no.	Description	Application	Packaging	Pack size
8156130	Gasket, G01, I"	Models with 1" rotolock connection	Multipack	10
7956001	Gasket, G01, I" IP	Models with 1" rotolock connection	Industry pack	50
8156131	Gasket, G09, I" 1/4	Models with 1"1/4 rotolock connection	Multipack	10
7956002	Gasket, G09, I" 1/4 IP	Models with 1"1/4 rotolock connection	Industry pack	50
8156132	Gasket, G07, I" 3/4	Models with 1"3/4 rotolock connection	Multipack	10
7956003	Gasket, G07, I" 3/4 IP	Models with 1"3/4 rotolock connection	Industry pack	50
8156009	Gasket set, 1", 1"1/4, 1"3/4, OSG gaskets black & white	All 1-2-4 cylinder models	Multipack	10

Rotolock nuts

Table 13: Rotolock nuts

Code no.	Description	Application	Packaging	Pack size
8153122	Rotolock nut, 1"	Models with 1" rotolock connection	Multipack	10
8153123	Rotolock nut, 1" 1/4	Models with 1"1/4 rotolock connection	Multipack	10
8153124	Rotolock nut, 1" 3/4	Models with 1"3/4 rotolock connection	Multipack	10

Solder sleeves

Table 14: Solder sleeves

Code no.	Description	Application	Packaging	Pack size
8153010	Solder sleeve P01, (1" Rotolock, 3/8" ODF)	Models with 1" rotolock connection	Multipack	10
8153004	Solder sleeve P02, (1"3/4 Rotolock, 1"1/8 ODF)	Models with 1"3/4 rotolock connection	Multipack	10
8153008	Solder sleeve P04, (1"1/4 Rotolock, 3/4" ODF)	Models with 1"1/4 rotolock connection	Multipack	10
8153007	Solder sleeve P06, (1" Rotolock, 1/2" ODF)	Models with 1" rotolock connection	Multipack	10
8153013	Solder sleeve P07, (1"3/4 Rotolock, 7/8' ODF)	Models with 1"3/4 rotolock connection	Multipack	10
8153011	Solder sleeve P09, (1"1/4 Rotolock, 5/8" ODF)	Models with 1"1/4 rotolock connection	Multipack	10

Crankcase heaters

Table 15: Crankcase heaters

Code no.	Description	Application	Packaging	Pack size
7773106	Belt type crankcase heater, 54W, 230V, CE mark, UL	MT/MTZ 018 -040	Multipack	4
7773013[(1)]	Belt type crankcase heater, 54W, 400V, UL	MT/MTZ 018 -040	Multipack	4
120Z0891	Belt type crankcase heater, 65W, 400V, CE mark, UL	MT/MTZ 018 -040	Multipack	4
7773109	Belt type crankcase heater, 65W, 110V, CE mark, UL	MT/MTZ 044 -080	Multipack	6
7773107	Belt type crankcase heater, 65W, 230V, CE mark, UL	MT/MTZ 044 -080	Multipack	6
7973002	Belt type crankcase heater, 65W, 230V, CE mark, UL - IP	MT/MTZ 044 -080	Industry pack	50
120Z0466	Belt type crankcase heater, 65W, 460V, CE mark, UL	MT/MTZ 044 -080	Multipack	6
120Z0467	Belt type crankcase heater, 65W, 575V, CE mark, UL	MT/MTZ 044 -080	Multipack	6
7773110	Belt type crankcase heater, 75W, 110V, CE mark, UL	MT/MTZ 100 - 160	Multipack	8
120Z0870	Belt type crankcase heater, 75W, 24V, CE mark, UL	MT/MTZ 100 - 160	Multipack	6
7773108	Belt type crankcase heater, 75W, 230V, CE mark, UL	MT/MTZ 100 - 160	Multipack	6
7973005	Belt type crankcase heater, 75W, 230V, CE mark, UL - IP	MT/MTZ 100 - 160	Industry pack	50
7773118	Belt type crankcase heater, 75W, 400V, CE mark, UL	MT/MTZ 100 - 160	Multipack	6
120Z0464	Belt type crankcase heater, 75W, 460V, CE mark, UL	MT/MTZ 100 - 160	Multipack	6
120Z0465	Belt type crankcase heater, 75W, 575V, CE mark, UL	MT/MTZ 100 - 160	Multipack	6

[(1)] Codes available for NAM and LAM only (distribution form USA)

PTC heaters

Table 16: PTC heaters

Code no.	Description	Application	Packaging	Pack size
120Z0459	PTC heater 27W	All 1-2-4 cylinder models	Multipack	10
120Z0460	PTC heater 27W IP	All 1-2-4 cylinder models	Industry pack	50

Discharge temperature protection

Table 17: Discharge temperature protection

Code no.	Description	Application	Packaging	Pack size
7750009	Discharge thermostat kit	All 1-2-4 cylinder models	Multipack	10
7973008	Discharge thermostat kit IP	All 1-2-4 cylinder models	Industry pack	50

Mounting kits

Table 18: Grommets, sleeves, bolts, washers, Ebox cover, T-block, Solder sleeves, gaskets and T-block

Code no.	Description	Application	Packaging	Pack size
8156001	Mounting kit 1 cyl high	MT(Z) 22-28(1), 32-40	Single pack	1
120Z0760	Mounting kit 1 cyl low	MT(Z) 18, 22-28 (except code 1)	Single pack	1
120Z0964[(1)]	Mounting kit 2 cyl hp	MT(Z) 80(3, 6)	Single pack	1
120Z0965[(1)]	Mounting kit 2 cyl except HP	MT(Z) 50-64(1), 44-72(6)	Single pack	1
120Z0763	Mounting kit 2 cyl	MT(Z) 44(1), 44-72(3, 4, 6, 7, 9)	Single pack	1
120Z0764	Mounting kit 2 cyl HP	MT(Z) 80(4,9)	Single pack	1
120Z0968[(1)]	Mounting kit 4 cyl	MT/MTZ100-160	Single pack	1

[(1)] Mounting kits with T-block

Lubricants / oils

Table 19: Lubricants / oils

Code no.	Description	Application	Packaging	Pack size
7754001	Mineral oil, 160P, 2 litre can	All MT compressor models	Multipack	8
7754002	Mineral oil, 160P, 5 litre can	All MT compressor models	Multipack	4
120Z0638	POE lubricant, 175PZ, 1 litre can	All MTZ compressor models	Multipack	12
120Z0639	POE lubricant, 175PZ, 2.5 litre can	All MTZ compressor models	Multipack	4

Single phase PSC starting kits

Table 20: Single phase PSC starting kits

Code no	Description	Application	Packaging	Pack size
7701026	Permanentcapacitors 440V, 20 µF, 10 µF	MT(Z)18-5,22-5, 28-5 & NTZ 048-5, 068-5	Multipack	4
7701035	Permanentcapacitors 440V, 30 µF, 15 µF	MT(Z)22-1, 44-1, 45-1, 50-1, 51-1, 50-5 & NTZ096-1, 108-1, 136-1	Multipack	4

Single phase CSR starting kits

Table 21: Single phase CSR starting kits

Code no	Description	Application	Packaging	Pack size
7701021	Relay + Capacitors: run (15 + 10 µF), start (98 µF)	MT(Z)18-1 & NTZ 048-1	Multipack	4
7701022	Relay + Capacitors: run (20 + 10 µF), start (98 µF)	MT(Z)18-5, 22-5, 28-5 & NTZ 048-5, 068-5	Multipack	4
7701038	Relay + Capacitors: run (30 + 15 µF), start (98 µF)	MT(Z)22-1	Multipack	4
7701154	Relay + Capacitors: run (25 + 25 µF), start (140 µF)	MT(Z)28-1 & NTZ 068-1	Multipack	4
7701155	Relay + Capacitors: run (25 + 20 µF), start (98 µF)	MT(Z)32-1, 36-1	Multipack	4
7701023	Relay + Capacitors: run (25 + 10 µF), start (140 µF)	MT(Z)32-5, 36-5	Multipack	4
7701156	Relay + Capacitors: run (35 + 20 µF), start (98 µF)	MT(Z)40-1	Multipack	4
7701042	Relay + Capacitors: run (30 + 15 µF), start (140 µF)	MT(Z)44-1, 45-1, 50-1, 51-1 & NTZ096-1, 108-1, 136-1	Multipack	6
7701043	Relay + Capacitors: run (30 + 20 µF), start (98 + 98 µF)	MT(Z)56-1, 57-1	Multipack	6
7701044	Relay + Capacitors: run (30 + 25 µF), start (98 + 140 µF)	MT(Z)64-1, 65-1	Multipack	6

Single phase CSR starting kits, prewired box

Table 22: Single phase CSR starting kits, prewired box

Code no	Description	Application	Packaging	Pack size
7701028	Relay + Capacitors: run (20 + 10 µF), start (98 µF)	MT(Z)18-5, 22-5, 28-5 & NTZ 048-5, 068-5	Single pack	1
7701147	Relay + Capacitors: run (30 + 15 µF), start (98 µF)	MT(Z)22-1	Single pack	1
7701029	Relay + Capacitors: run (25 + 10 µF), start (140 µF)	MT(Z)32-5, 36-5	Single pack	1

Relays and capacitors

Table 23: Relays and capacitors

Code no	Description	Application	Packaging	Pack size
8173022	Starting relay type RVA6AMKL	All Single pack phase models (code 1 & 5)	Single pack	1
8173001	Start capacitor 330V, 88-108 µF (98 µF)	CSR starting kits	Multipack	10
8173002	Start capacitor 330V, 140 µF	CSR starting kits	Multipack	10

Acoustic hoods

Table 24: Acoustic hoods

Code no	Description	Application	Packaging	Pack size
120Z0575	Slim acoustic hood for 1 cyl	MT(Z)18-40 & NTZ048-068	Single pack	1
120Z0576	Slim acoustic hood for 2 cyl	MT(Z)44-81 & NTZ096-136	Single pack	1
120Z0577	Slim acoustic hood for 2 cyl	MT(Z)100-160 & NTZ215-271	Single pack	1

Terminal boxes, covers & T-block connectors

Table 25: Terminal boxes, covers & T-block connectors

Code no	Description	Application	Packaging	Pack size
8156134	Cover 80 x 96 mm ; clamp	MT/MTZ18-44(1),18-73(3), 18-81(4), 18-50(5), 18-40(6), 32-56(7), 22-80(9) & NTZ048-136 (except 136-1)	Industry pack	10
8173230	T-block connector 52 x 57 mm, 3 screws H10-32 UNF9.5	MT/MTZ50-64(1), 80-160(3), 100-160(4), 44-160(6), 100-160(7), 100-160(9) & NTZ136-1, NTZ215-271	Multipack	10
8156135	Service kit for terminal box 96 x 115 mm, including 1 cover, 1 clamp	MT/MTZ50-64(1), 80-160(3), 100-160(4), 44-160(6), 100-160(7), 100-160(9) & NTZ136-1, NTZ215-271	Industry pack	10

Tandem kits

Table 26: Tandem kits

Code no	Description	Application	Packaging	Pack size
7702004	Tandem kit	MTM/MTZ200-250 & NTZ430-542	Single pack	1
7702005	Tandem kit	MTM/MTZ288-320	Single pack	1

Miscellaneous

Table 27: Miscellaneous

Code no.	Description	Application	Packaging	Pack size
8154001	Danfoss CC blue spray paint	All 1-2-4 cylinder models	Single pack	1
8156019	Oil sight glass with gaskets (black & white)	All 1-2-4 cylinder models	Multipack	4
8156129	Gasket for oil sight glass (white te\u001Fon)	All 1-2-4 cylinder models	Multipack	10
8156145	Gasket for oil sight glass (black chloroprene)	All 1-2-4 cylinder models, produced since 2002	Multipack	10

Updates

Release date (Year/Month)	Guideline literature number	List of changes
25/07	AB196386425654en-001801	Page 8: Features and Benefit section is added Page 13: Pressure Equipment Directive information is updated Page 23-24: Nominal performance data for R454C/A and R455A are updated Page 43: MOC values for single phase electrical characteristics are added Page 45: MOC values for three phase electrical characteristics are added Page 52-53: Sound data is updated Page 63-67 Accessories and Spare parts chapter is added
26/02	AB196386425654en-001802	Page 30-33: Operating envelopes for R454A/C and R455A updated with MTZ160 motor code 3 Page 61: MTZ motor code 3 qualified with A2L refrigerants

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