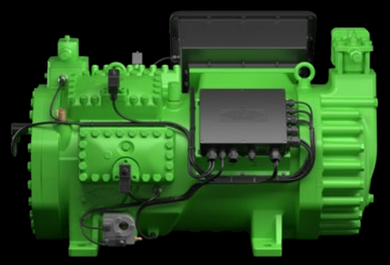
DAS HERZ DER FRISCHE

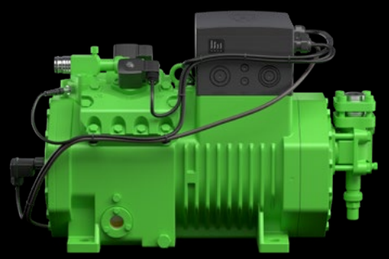
RECIPROCATING COMPRESSORS

KP-180-0 EN

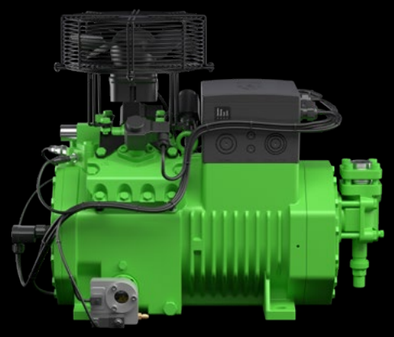
ALWAYS NEARBY.
BITZER WORLDWIDE.



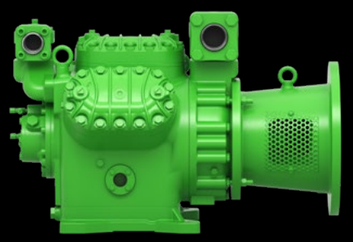
ECOLINE CO_2



ECOLINE PRO



ECOLINE



W/A SERIES

RECIPROCATING COMPRESSORS
NATURAL REFRIGERANTS
LOW GWP READY
INTELLIGENT PRODUCTS

BITZER Kühlmaschinenbau GmbH
Peter-Schaufler-Platz 1 // 71065 Sindelfingen // Germany
Tel +49 (0)70 31 932-0 // Fax +49 (0)70 31 932-147
bitzer@bitzer.de // www.bitzer.de

Subject to change // 05.2025

BITZER
EXPERTISE AND INNOVATION

We are always striving for the highest possible energy efficiency and quality at BITZER. As an independent global leader in refrigeration, air conditioning and heat pump technology for comfort air conditioning, process technology and mobile applications, we use our extensive experience to provide innovative products and intelligent solutions which create additional value for our partners and the environment all over the world. Learn more at bitzer.de

INNOVATION DRIVER SINCE
1934

EMPLOYEES
4,500

SITES
75

COUNTRIES
41

CONTENTS

FOR EVERY CUSTOMER FOR ANY REQUIREMENT

REFRIGERANT	SERIES	CAPACITY CONTROL	CAPACITY RANGES
CO_2 (R744)	TRANSCRITICAL: **ECOLINE CO_2** **ECOLINE+** SUBCRITICAL: **ECOLINE SL** **ECOLINE ME**	**MECHANICAL CAPACITY CONTROL VARISTEP** OR **FREQUENCY INVERTER VARIPACK**	TRANSCRITICAL: **REFRIGERATING CAPACITY** **3.6 .. 279 kW** **HEATING CAPACITY** **8.3 .. 552 kW** SUBCRITICAL: **REFRIGERATING CAPACITY** **1.1 .. 453.4 kW**
HYDROCARBONS (R290, R1270, R600a)	**ECOLINE PRO**	**MECHANICAL CAPACITY CONTROL VARISTEP** OR **FREQUENCY INVERTER VARIPACK**	**REFRIGERATING CAPACITY** **0.9 .. 110 kW** **HEATING CAPACITY** **2 .. 238 kW**
NH_3 (R717)	**W/A SERIES**	**MECHANICAL CAPACITY CONTROL CR** OR **FREQUENCY INVERTER VARIPACK**	**REFRIGERATING CAPACITY** **11.3 .. 188.3 kW**
HFC/HFO	**ECOLINE**	**MECHANICAL CAPACITY CONTROL VARISTEP** OR **FREQUENCY INVERTER VARIPACK**	STANDARD: **REFRIGERATING CAPACITY** **WITH: R448A/449A** **0.9 .. 96.3 kW** H SERIES: **HEATING CAPACITY** **WITH: R515B** **5.5 .. 171 kW** 2-STAGE: **REFRIGERATING CAPACITY** **WITH: R448A/449A** **2.7 .. 31.6 kW**

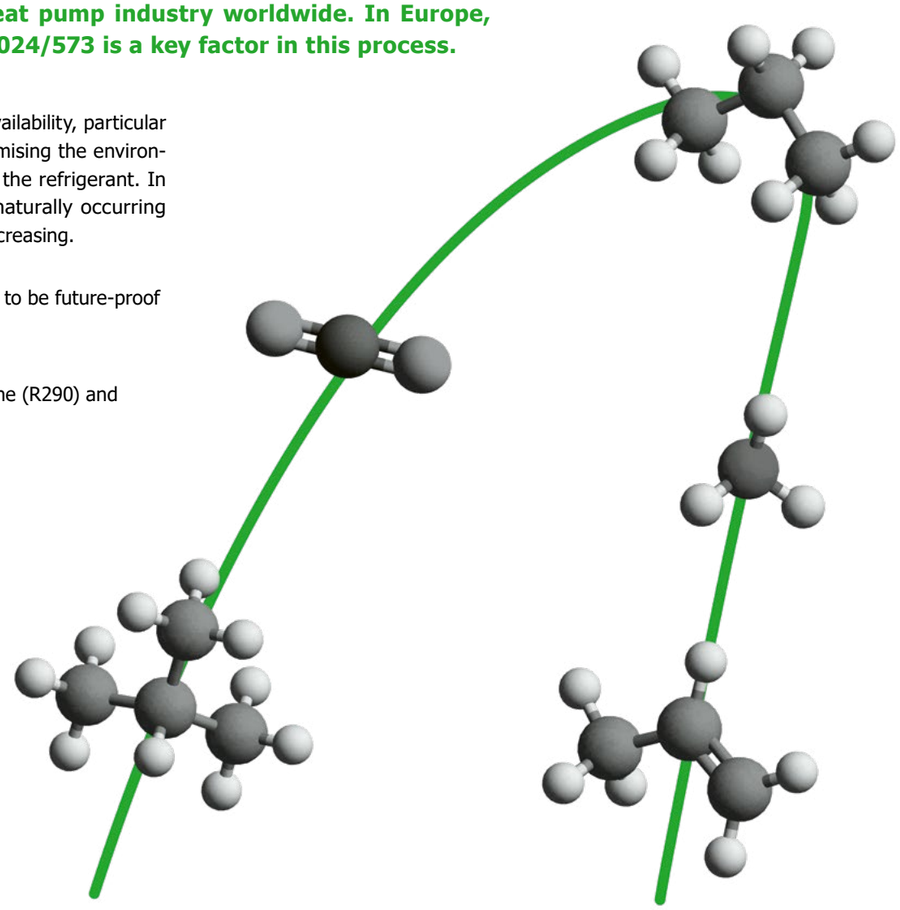
READY FOR FUTURE REFRIGERANTS

The accelerated phase down or final phase out of fluorinated refrigerants requires a new way of thinking about the refrigeration, air conditioning and heat pump industry worldwide. In Europe, the F-Gas Regulation 2024/573 is a key factor in this process.

In order to ensure long-term availability, particular attention must be paid to minimising the environmental impact when selecting the refrigerant. In particular the importance of naturally occurring substances as refrigerants is increasing.

The following are all considered to be future-proof refrigerants:

// Carbon dioxide (R744)
// Hydrocarbons such as propane (R290) and isobutane (R600a)
// Ammonia (R717)



R744 CO_2
HC HYDROCARBON
R717 NH_3

OPT FOR REFRIGERANTS WITH LONG-TERM AVAILABILITY

For new installations in the EU for all applications, it is strongly recommended to design and construct them in such a way that they can be operated with refrigerants that are available in the long term – preferably natural refrigerants. If the use of natural refrigerants is not possible – for example, for technical reasons – new systems in the EU should ideally resort to a refrigerant with a GWP <10. If refrigerants with a higher global warming potential are absolutely necessary, they should be used exclusively for the maintenance of existing systems in the future. For existing systems with high maintenance requirements or refrigerant loss, it is advisable from an economic point of view to switch to refrigerants with the lowest possible GWP value. In principle, alternative refrigerants together with suitable compressors and components can offer high energy efficiency and save costs.

EXPERTISE FOR PRACTICAL APPLICATIONS

BITZER has many years of experience in the use of natural refrigerants in its products and continues to develop its portfolio in that direction. With practical training courses at the SCHAUFLER Academy and further sources of information such as the digital Refrigerant Report, BITZER also helps its customers to use natural refrigerants safely.

RECIPROCATING COMPRESSORS FOR ANY APPLICATION

BITZER reciprocating compressors are used just about everywhere, whether for commercial refrigeration, low or medium temperature applications, high evaporation temperatures, heat pumps or special systems. The compressors are suitable for use with a variety of refrigerants, including many low GWP and natural refrigerants, and boast a tried-and-tested, robust design for reliable, efficient operation.

DIGITAL AND ALWAYS UP TO DATE: BITZER REFRIGERANT REPORT

The BITZER Refrigerant Report has served as a reliable industry reference since 1992 and contains extensive information on various refrigerants, comparisons of their substance property data, and concrete recommendations for new and existing systems. The Refrigerant Report is available exclusively online and therefore always up to date in terms of regulations and requirements.

bitzer-refrigerantreport.com

BITZER Refrigerant Report

LEARN MORE: REFRIGERANTS ONLINE

bitzer.de/gb/en/refrigerants.jsp

RECIPROCATING COMPRESSORS FOR CO_2

ECOLINE CO_2 // ECOLINE+ // SL SERIES // ME SERIES

BITZER reciprocating compressors for CO_2 (R744) are versatile and have been optimised for a wide range of applications. Compressors from different series can be combined, for example to realise booster or cascade systems. Holistic concepts can be achieved for low and medium temperature application, air conditioning and heating using heat recovery or even large heat pumps.

ECOLINE FOR TRANSCRITICAL CO_2 APPLICATIONS

BITZER reciprocating compressors for transcritical CO_2 applications have been used very successfully worldwide since 2004. The 2, 4, 6 and 8-cylinder compressors allow for a wide range of applications, along with maximum energy efficiency and operating reliability. Thanks to the flow-optimised suction and discharge gas ports in the ECOLINE housing and highly efficient motors, BITZER delivers optimal efficiency for all standard CO_2 applications and markets.

ECOLINE FOR SUBCRITICAL CO_2 APPLICATIONS

The BITZER compressors in the SL series are the result of more than 20 years of experience and continuous ongoing development in the area of subcritical CO_2 applications.

The ME series was developed from the tried-and-tested SL series for the specific requirements of high standstill pressures and condensing temperatures.

- RECIPROCATING COMPRESSORS
- CO_2
- COMMERCIAL REFRIGERATION
- INDUSTRIAL REFRIGERATION
- HEAT PUMPS

CO_2 AS A REFRIGERANT

CO_2 is used as a refrigerant in many commercial and industrial refrigeration systems and heat pumps. Its use in refrigeration is well established since more than a century. CO_2 has no ozone depletion potential and a negligible direct global warming potential (GWP = 1). It is chemically inactive, not flammable and not toxic in the classic sense.

ECOLINE CO_2

The ECOLINE CO_2 series for transcritical CO_2 applications can be used universally in the medium temperature stage and the parallel compressor stage for booster systems, as well as in heat pumps.

ECOLINE+

The ECOLINE+ series represents high eco-efficiency. The line start permanent magnet (LSPM) motor used improves the motor efficiency and increases the seasonal energy efficiency ratio. This in turn reduces the TEWI (total equivalent warming impact) and operating costs and minimises the impact of refrigeration and air conditioning on the greenhouse effect.

TRANSCRITICAL CO_2 APPLICATIONS

SUBCRITICAL CO_2 APPLICATIONS

ECOLINE SL

Used in combination with the CO_2 compressors for transcritical applications, the compressors of the SL series can be incorporated in the system design for efficient medium and low temperature applications. The universal range of applications with favourable eco-efficiency also allows for a hybrid solution in the form of a cascade with CO_2 direct evaporation in the low temperature stage.

ECOLINE ME

The ME series was specially designed to meet the market requirements for higher standstill pressures as well as higher condensing temperatures.

TRANSCRITICAL CO_2 APPLICATIONS

EASY TO OPERATE

Activation and configuration of peripheral devices via the IQ MODULE

BROAD RANGE OF DISPLACEMENTS

2, 4, 6 and 8-cylinder compressors with 3.3 .. 99.2 m³/h

WIDE SPEED RANGE

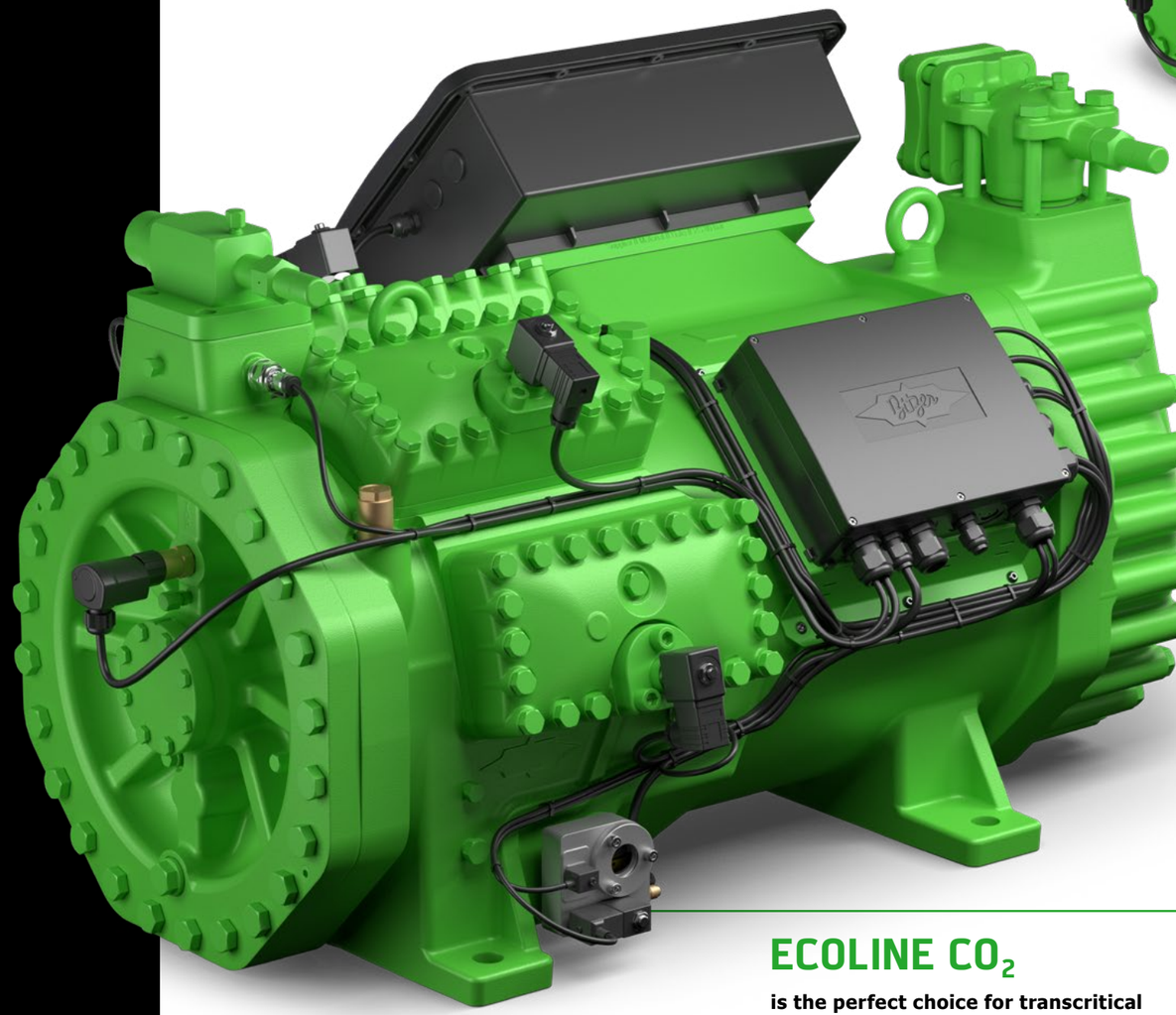
Ideal for operation with frequency inverter to increase and control capacity

OPERATING RELIABILITY

Wear-resistant drive gear with advanced multi-layer bearings

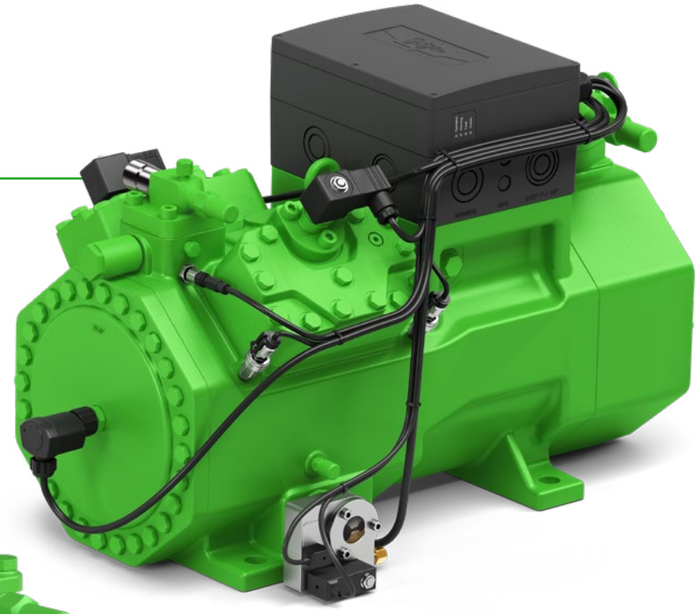
ENERGY EFFICIENCY

Highly efficient motors and flow-optimised suction and discharge gas ports



ECOLINE+

The line start permanent magnet (LSPM) motor used improves motor efficiency and increases the seasonal energy efficiency ratio.



ECOLINE CO_2

is the perfect choice for transcritical refrigeration and heat pump applications.

Whether in commercial and industrial refrigeration or transcritical heat pumps, BITZER CO_2 compressors are extremely versatile. They are characterised by their outstanding energy efficiency and operating reliability.

IQ MODULE

The IQ MODULE operates and monitors the functions installed on the compressor.

VARISTEP CAPACITY CONTROL

The VARISTEP system allows to adapt the refrigerating capacity to the demand of the system.

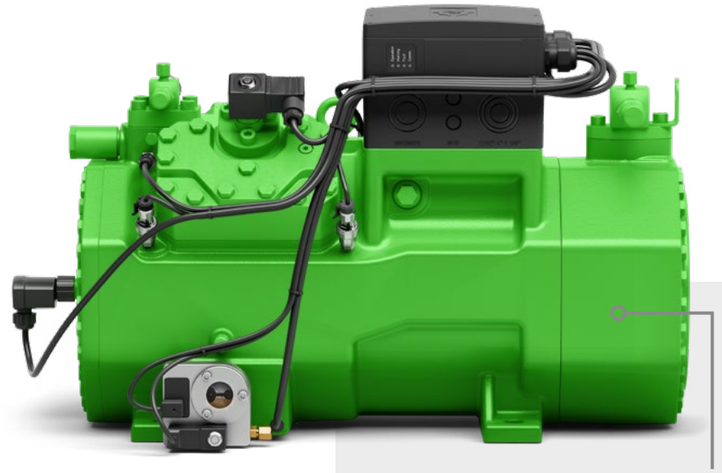
SOPHISTICATED OIL MANAGEMENT

Low oil carry over rates deliver savings when it comes to the active oil management components, such as oil separator and oil reservoir.

OPERATING AVAILABILITY

Oil management and comprehensive monitoring of motor temperature and application limits guarantee operating reliability at all times.

ECOLINE CO_2 AND ECOLINE+
SET BENCHMARKS IN ALL APPLICATIONS



ECOLINE+

LINE START PERMANENT MAGNET (LSPM) MOTOR
// High efficiency of a synchronous motor thanks to permanent magnets
// Asynchronous (AS) motor start through squirrel cage rotor
// The rotor of the line start permanent magnet motor synchronises with the rotating field, eliminating rotor losses
// The technology combines the high efficiency of a synchronous motor with the robust design and ease of use of an asynchronous motor
// Line start permanent magnet motors can be connected directly to the power supply system or operated with a frequency inverter (within the frequency range defined by BITZER)

ADVANCED MOTOR TECHNOLOGY

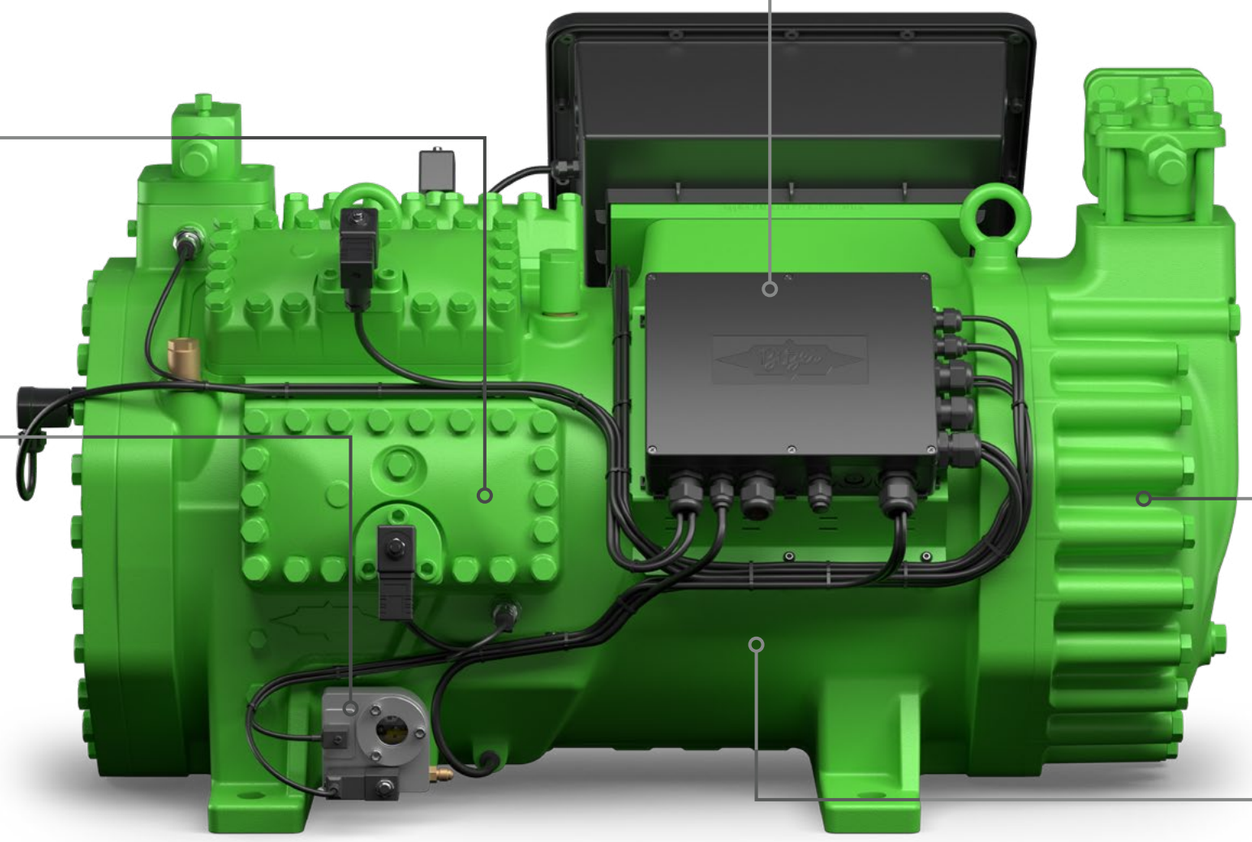
EXTENSIVE EQUIPMENT OPTIONS
// Higher efficiency through capacity control
// Optimal compressor protection through monitoring of oil and application limits
// Extensive range of motor versions to cover all conventional power supply voltages
// Flexibility with different connection sizes and shut-off valves
// Smooth operation thanks to compressor fixing with vibration dampers

IQ MODULE CM-RC-02
// Activation and configuration of peripheral devices
// Data log
// Application limit monitoring

IQ INTELLIGENT PRODUCTS

WEAR-RESISTANT AND EFFICIENT DRIVE GEAR
// Advanced multi-layer bearings
// Particularly efficient working valves
// Cylinder heads with separate, thermally insulated high and low pressure chambers
// Quiet and low in vibration

OLM-IQ OIL LEVEL CONTROLLER
// Reliable stepless measurement via float
// High precision, regardless of oil foams
// Simultaneous measurement and oil injection
// Easy configuration and operation via the IQ MODULE
// Data collection, logging and analysis via BEST SOFTWARE and BITZER Digital Network (BDN)



ECOLINE CO_2

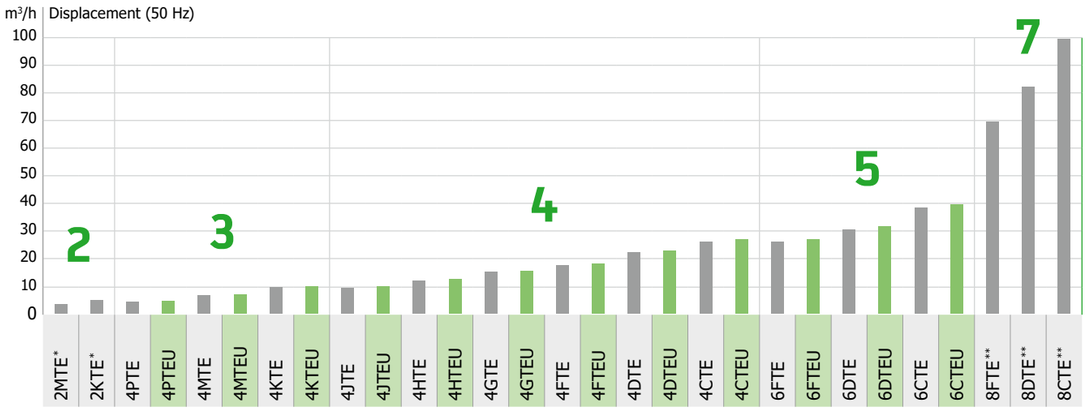
PRESSURE-RESISTANT HOUSING
// No bottom plate
// Maximum allowable pressures
2MTE..6CTE:
- High pressure side 160 bar
- Low pressure side 100 bar
8FTE..8CTE:
- High pressure side 150 bar
- Low pressure side 80 bar

HIGH ENERGY EFFICIENCY
// Suction gas cooled motor
// Ideal for speed control

Exemplary illustration

COMPRESSORS FOR **TRANSCRITICAL CO_2 APPLICATIONS**

CAPACITY RANGES



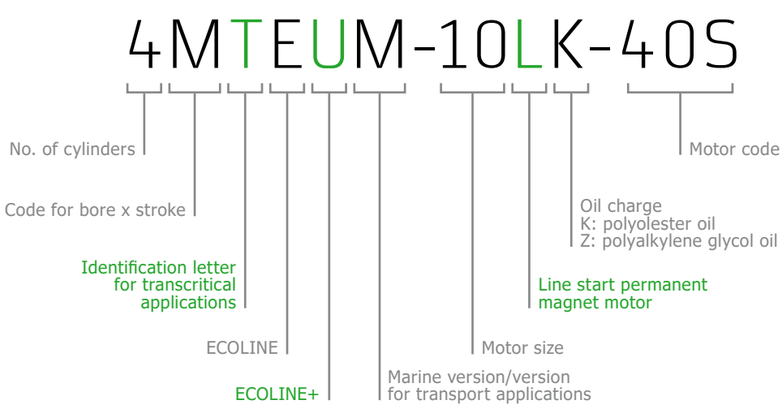
ECOLINE CO_2

ECOLINE+

* No line start permanent magnet motor available

** Highly efficient E++ motor version

EXPLANATION OF THE MODEL DESIGNATION



PERFORMANCE DATA

The BITZER SOFTWARE is available in multiple languages, directly in a browser or as a Windows download. It is always up to date and also optimised for mobile devices.

The BITZER SOFTWARE comprises:

// Performance data for all established refrigerants at freely selectable operating conditions
// All relevant technical data
// Calculation results and individually defined performance tables for the compressors
// Seasonal calculations
// Parallel compounds
// Available accessories and their selection
// All relevant technical documents

ASERCOM CERTIFICATION

The Association of European Refrigeration Component Manufacturers (ASERCOM) implemented a certification for performance data of refrigeration compressors. The high standard of this certification is guaranteed by:

// Plausibility checks on the data carried out by experts
// Regular measurements by independent institutes

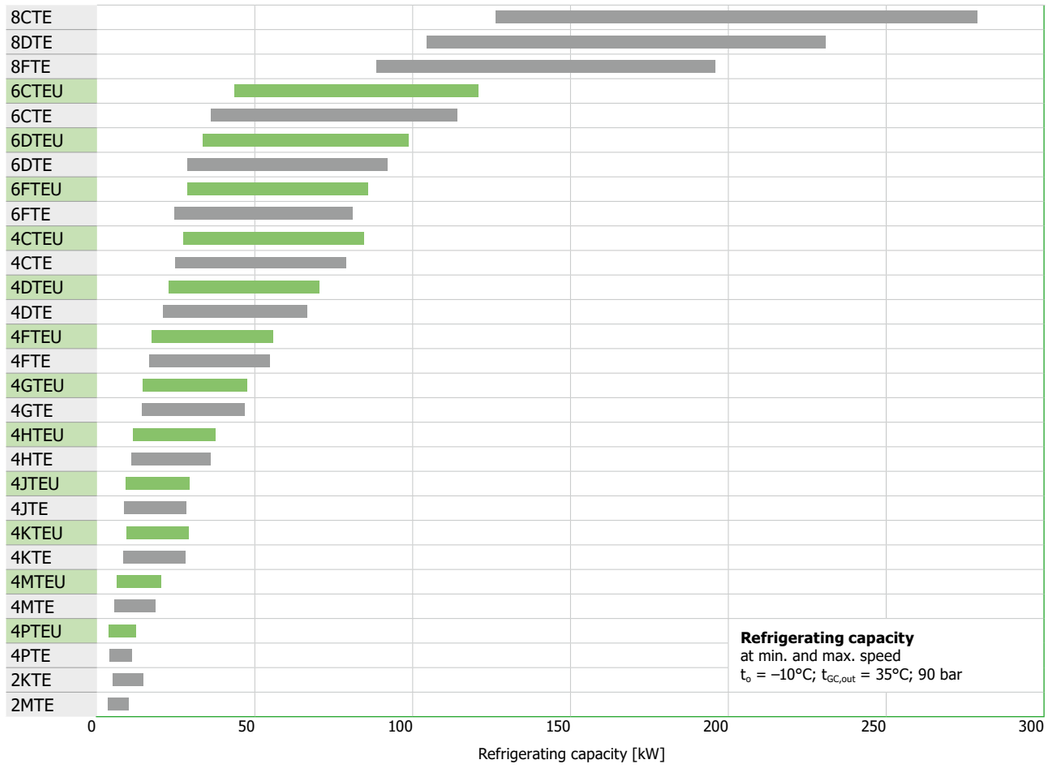
A number of BITZER compressors are already certified, and more will follow. Compressor performance data that meet these strict requirements are permitted to carry the label 'ASERCOM certified product'. All certified compressors are listed on the ASERCOM website with further information (www.asercom.org).

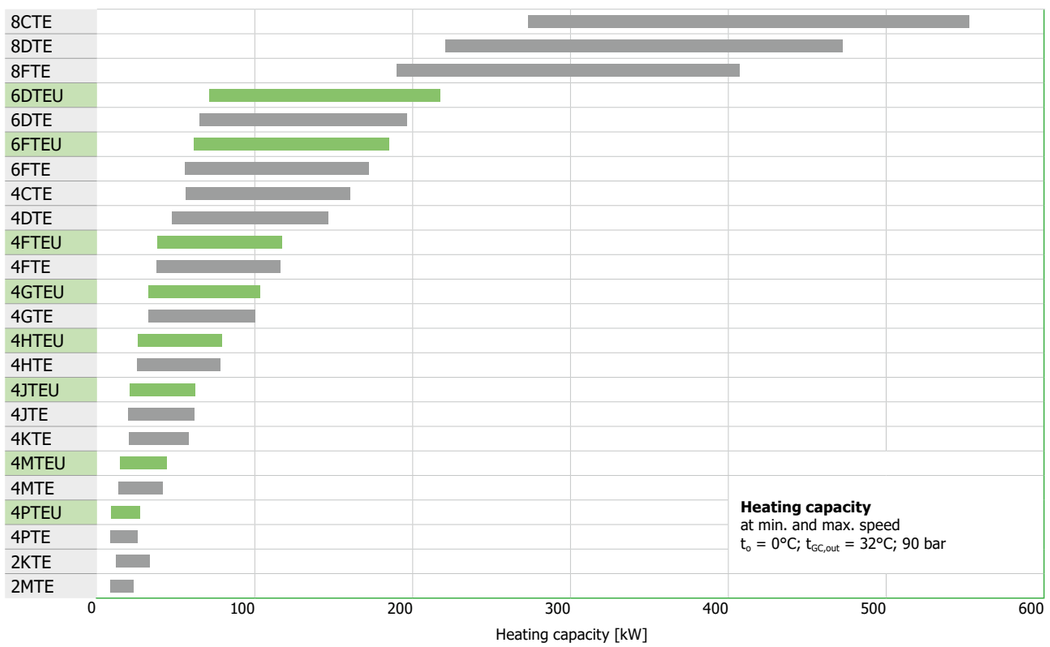
In the BITZER SOFTWARE, the corresponding compressors are marked with this label.

Further details can be found in the BITZER SOFTWARE.
Scan QR code for more information.

BITZER SOFTWARE

APPLICATION RANGES





MARINE VERSION

Most BITZER CO_2 compressors are also available in a marine version to meet the special challenges posed in applications in the offshore sector, on inland waterways and at sea. Whether they are used for refrigeration of supplies, air conditioning or even in large heat pumps, the compressors always offer high operating safety and reliability.

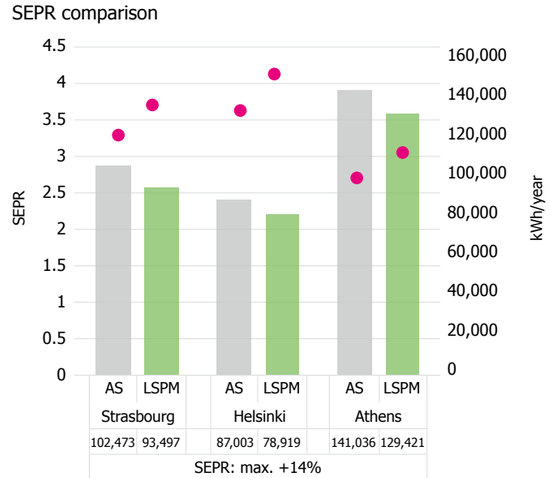
// Safe operation at high angles of inclination thanks to specially adapted oil management
// Type approvals or individual approvals according to DNV, others upon request
// Optional marine paint
// BITZER Marine Service Network

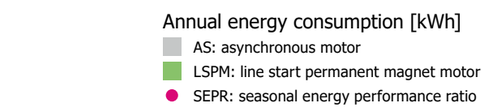
More details can be found in the marine applications brochure A-270.

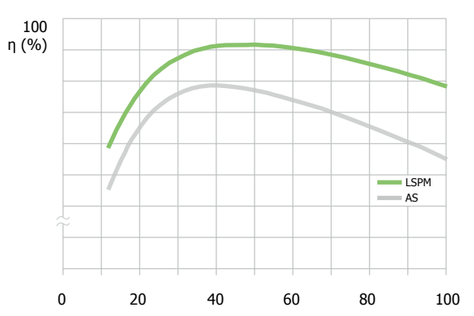
MARINE

ECOLINE+ HIGHER SEASONAL ENERGY EFFICIENCY RATIO THANKS TO LSPM MOTOR

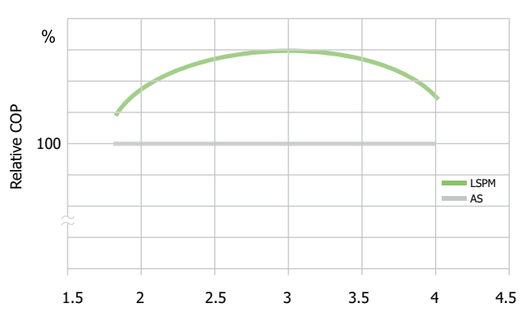
ECOLINE+ compressors offer high eco-efficiency by combining the natural refrigerant CO_2 with maximum energy efficiency. Modern electronics ensure simple application. The line start permanent magnet (LSPM) motor used improves motor efficiency and increases the seasonal energy efficiency ratio. This reduces the TEWI (total equivalent warming impact) and operating costs, which minimises the impact of refrigeration and air conditioning on the greenhouse effect.







Improved efficiency over a large working range of the motor



Increase in seasonal energy efficiency ratio by up to 14% thanks to higher coefficient of performance in the most common operating range

TECHNICAL DATA AND PERFORMANCE VALUES

Compressor model	Motor version	Displacement at 50 Hz in m³/h	Refrigerating capacity Q_o in kW t_o = −10°C	t_o = +5°C	Oil charge in dm³	Weight in kg	Motor	Electrical data Max. operating current in A ①
2MTE-4K	2	3.3	6.56		1.2	94	Δ/Y (40S)	14.2/8.2
2MTE-5K	1	3.3	6.56	11.35	1.2	95	Δ/Y (40S)	19.8/11.5
2KTE-5K	2	4.8	9.54		1.2	96	Δ/Y (40S)	19.8/11.5
2KTE-7K	1	4.8	9.54	16.50	1.2	96	Δ/Y (40S)	27.9/16.1
4PTE-6K	2	4.3	7.82		2.0	115	Δ/Y (40S)	18.7/10.8
4PTE-7K	1	4.3	7.82	13.80	2.0	118	Δ/Y (40S)	26.5/15.3
4PTEU-6LK	2	4.5	8.40		2.0	114	Δ/Y (40S)	15.8/9.1
4PTEU-7LK	1	4.5	8.40	14.67	2.0	114	Δ/Y (40S)	22.3/12.9
4MTE-7K	2	6.6	12.91		2.0	118	Δ/Y (40S)	27.7/16.0
4MTE-10K	1	6.6	12.79	22.50	2.0	120	Δ/Y (40S)	37.9/21.9
4MTEU-7LK	2	6.9	13.69		2.0	111	Δ/Y (40S)	23.7/13.7
4MTEU-10LK	1	6.9	13.68	23.50	2.0	113	Δ/Y (40S)	36.0/20.8
4KTE-10K	2	9.6	19.17		2.0	120	Δ/Y (40S)	38.8/22.4
4KTE-12K	1	9.6	19.29	34.00	2.0	121	Δ/Y (40S)	47.1/27.2
4KTEU-10LK	2	9.9	19.71		2.0	112	Δ/Y (40S)	35.9/20.7
4JTE-10K	2	9.3	19.60		2.6	179	PW (40P)	21.1
4JTE-15K	1	9.3	19.59	33.60	2.6	182	PW (40P)	30.2
4JTEU-10LK	2	9.7	21.00		2.6	179	Δ/Y (40S)	31.7/18.3
4JTEU-15LK	1	9.7	20.90	34.60	2.6	182	Δ/Y (40S)	46.4/26.8
4HTE-15K	2	12.0	25.06		2.6	182	PW (40P)	27.1
4HTE-20K	1	12,0	24.70	42.60	2.6	187	PW (40P)	39.2
4HTEU-15LK	2	12.4	27.00		2.6	182	Δ/Y (40S)	40.0/23.1
4HTEU-20LK	1	12.4	25.80	43.40	2.6	187	Δ/Y (40S)	64.3/37.1
4GTE-20K	2	15.0	31.30		2.6	187	PW (40P)	35.7
4GTE-30K	1	15.0	32.10	54.70	2.6	211	PW (40P)	51.4
4GTEU-20LK	2	15.5	32.60		2.6	187	Δ/Y (40S)	57.3/33.1
4GTEU-30LK	1	15.5	32.80	55.80	2.6	211	Δ/Y (40S)	79.7/46
4FTE-20K	2	17.5	36.60		2.6	187	PW (40P)	42.0
4FTE-30K	1	17.5	37.70	63.10	2.6	211	PW (40P)	59.6
4FTEU-20LK	2	18.1	38.10		2.6	187	Δ/Y (40S)	66.3/38.3
4FTEU-30LK	1	18,1	38.60	64.40	2.6	211	Δ/Y (40S)	93.0/53.7
4DTE-25K	2	22.0	47.00		2.6	211	PW (40P)	55.2
4DTEU-25LK	2	22.7	48.50		2.6	211	Δ/Y (40S)	84.0/48.5
4DTE-30K	1	22.0	46.80	76.80	2.6	211	PW (40P)	71.2
4CTE-30K	2	26.0	55.80		2.6	211	PW (40P)	64.5
4CTEU-30LK	2	26.9	57.60		2.6	211	Δ/Y (40S)	100.8/58.2

Tentative data

Compressor model	Motor version	Displacement at 50 Hz in m³/h	Refrigerating capacity Q_o in kW t_o = −10°C	t_o = +5°C	Oil charge in dm³	Weight in kg	Motor	Electrical data Max. operating current in A ①
6FTE-35K	2	26.0	56.00		2.8	233	PW (40P)	65.0
6FTE-50K ②	1	26.0	56.00	92.20	2.8	243	PW (40P)	95.9
6FTEU-35LK	2	26.9	60.00		2.8	235	Δ/Y (40S)	101.5/58.6
6FTEU-50LK	1	26.9	60.00	97.00	2.8	245	Δ/Y (40S)	162.1/93.6
6DTE-40K	2	30.3	65.10		2.8	238	PW (40P)	75.9
6DTE-50K ②	1	30.3	65.10	107.00	2.8	242	PW (40P)	98.0
6DTEU-40LK	2	31.4	69.70		2.8	240	Δ/Y (40S)	123.7/71.4
6DTEU-50LK	1	31.4	69.70	112.60	2.8	244	Δ/Y (40S)	176.8/102.1
6CTE-50K ②	2	38.2	81.70		2.8	241	PW (40P)	99.0
6CTEU-50LK	2	39.5	87.70		2.8	243	Δ/Y (40S)	172.3/99.5
8FTE-100K	2	69.4	160.00	264.00	5.5	725	Δ/Y (40D)	183.0
8FTE-140K	1	69.4	160.00	264.00	5.5	728	Δ/Y (40D)	212.0
8DTE-120K	2	82.0	184.60	305.00	5.5	728	Δ/Y (40D)	218.0
8DTE-140K	1	82.0	184.60	305.00	5.5	728	Δ/Y (40D)	261.0
8CTE-140K	2	99.2	230.00	372.00	5.5	726	Δ/Y (40D)	274.0

Tentative data

ECOLINE CO_2

ECOLINE+

PERFORMANCE DATA

Data based on 10 K suction gas superheat and compressor with suction and discharge gas shut-off valve.
Condenser and gas cooler conditions:

Gas cooler outlet temperature t_{GC} = 35°C
High pressure abs. p_h = 90 bar
t_o: evaporation temperature

MOTOR VOLTAGES

Tolerance (± 10%), based on mean value of the voltage range.
Other voltages upon request.

Δ/Y (40S):
220..240 V Δ-3-50 Hz
380..420 V Y-3-50 Hz
440..480 V Y-3-60 Hz

PW (40P):
380..420 V Y/YY-3-50 Hz
440..480 V Y/YY-3-60 Hz
Motor for part winding start.
Winding partition 50%/50%.
Select contactors for approx. 60% of the max. operating current.

Δ/Y (40D):
380..420 V Δ-3-50 Hz
440..480 V Δ-3-60 Hz

OIL HEATER

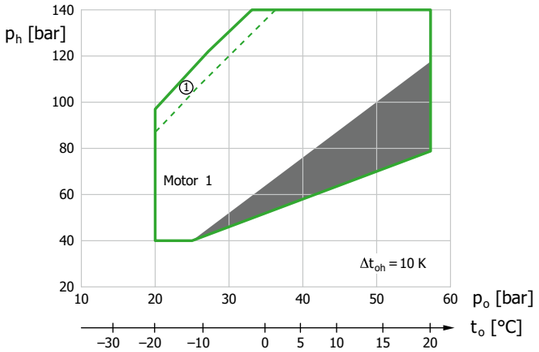
230 V PTC heater self-regulating
- 2MTE..4KTE and 4PTEU..4KTEU: 0..120 W
- 4JTE..8CTE and 6FTEU..6CTEU: 0..140 W

Absolute necessity due to high solubility of CO_2 in oil.

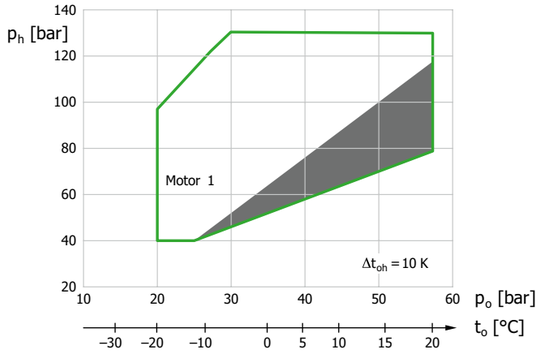
① Data for compressors with voltage range 380..420 V (220..240 V) are based on mean value 400 V (230 V).
Conversion factor:
380 V (220 V) 0.95
420 V (240 V) 1.05
Take max. operating current/max. power consumption into account when selecting contactors, cables and fuses. A fast line protection switch is required.
Contactors: operational category AC3

② Restricted voltage range:
~380..400/3/50
~440..460/3/60

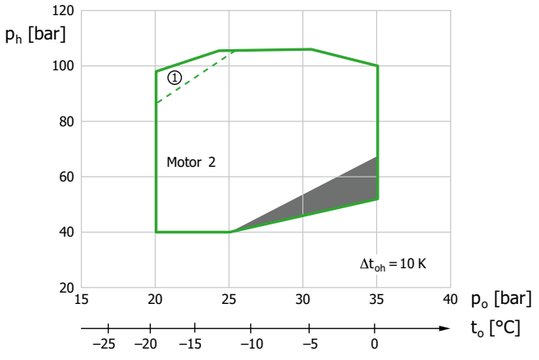
APPLICATION LIMITS



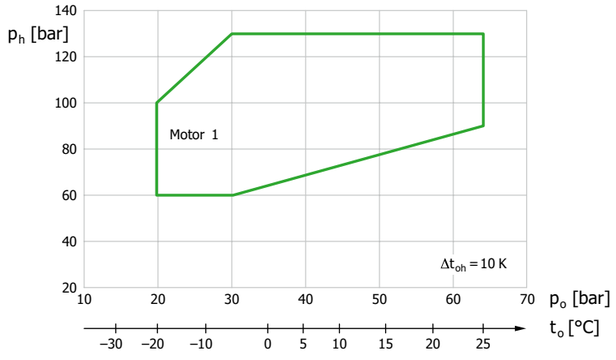
2MTE-5K, 2KTE-7K, 4PTE(U)-7(L)K, 4MTE(U)-10(L)K, 4JTE(U)-15(L)K, 4HTE(U)-20(L)K, 4GTE(U)-30(L)K, 4FTE(U)-30(L)K, 6FTE(U)-50(L)K



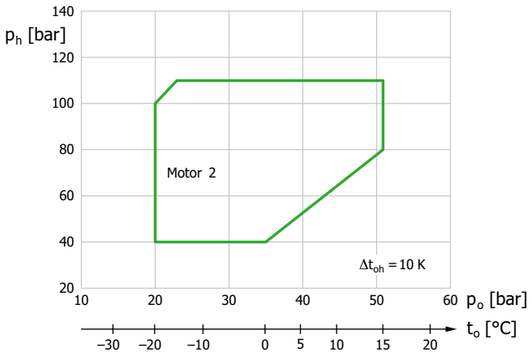
4KTE-12K, 4DTE-30K, 6DTE(U)-50(L)K



2MTE-4K, 2KTE-5K, 4PTE(U)-6(L)K, 4MTE(U)-7(L)K, 4KTE(U)-10(L)K, 4JTE(U)-10(L)K, 4HTE(U)-15(L)K, 4GTE(U)-20(L)K, 4FTE(U)-20(L)K, 4DTE(U)-25(L)K, 4CTE(U)-30(L)K, 6FTE(U)-35(L)K, 6DTE(U)-40(L)K, 6CTE(U)-50(L)K



8FTE-140K, 8DTE-140K



8FTE-100K, 8DTE-120K; 8CTE-140K

Suction gas superheat >10 K leads to a reduced application range – it may require controlled refrigerant injection into the suction gas line and thermal protection by a discharge gas temperature sensor.

Oil charge

BSE85K: standard

BSG68K: Optional oil charge, recommended for applications with suction pressure > 40 bar and/or high pressure > 120 bar (e.g. heat pumps)

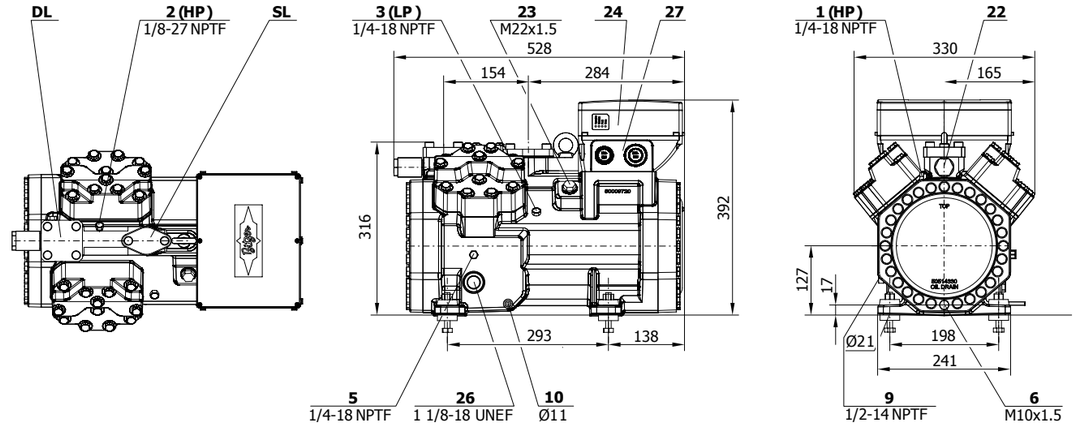
t_o Evaporation temperature (°C)
Δt_{oh} Suction gas superheat (K)
p_o Suction pressure abs. (bar)
p_h High pressure abs. (bar)
① Range with restrictions for compressors 4PTE

Observe operating parameters
- Minimise suction pressure fluctuations
- Consider maximum cycling rate

If in doubt consult with BITZER.

DIMENSIONAL DRAWINGS

Exemplary dimensional drawing, details in BITZER SOFTWARE.
Compressor model 4PTE..4KTE



CONNECTIONS

1	High pressure connection (HP)
	Connection for high pressure switch (HP)
1a	Connection for high pressure transmitter (HP)
1b	Additional high pressure connection (HP)
2	Connection for discharge gas temperature sensor (HP)
3	Low pressure connection (LP)
	Connection for low pressure switch (LP)
3a	Connection for low pressure transmitter (LP)
5	Oil fill plug
6	Oil drain
9	Connection for oil and gas equalisation (parallel operation)
10	Connection for oil heater
11	Oil pressure connection +
12	Oil pressure connection –
16	Connection for oil monitoring (oil level or oil differential pressure)
22	Pressure relief valve to the atmosphere (discharge gas side)
23	Pressure relief valve to the atmosphere (suction side)
24	Module housing (IQ MODULE included)
26	Sight glass
27	Terminal box
SL	Suction gas line
DL	Discharge gas line

Dimensions subject to the tolerances specified in EN ISO 13920-B.

Further details can be found in the BITZER SOFTWARE.
Scan QR code for more information.

BITZER SOFTWARE

SUBCRITICAL CO_2 APPLICATIONS

EASY TO OPERATE

Activation and configuration of peripheral devices via the IQ MODULE

BROAD RANGE OF DISPLACEMENTS

2, 4, 6 and 8-cylinder compressors with 1.3 .. 199.5 m³/h

OUTSTANDING ENERGY EFFICIENCY

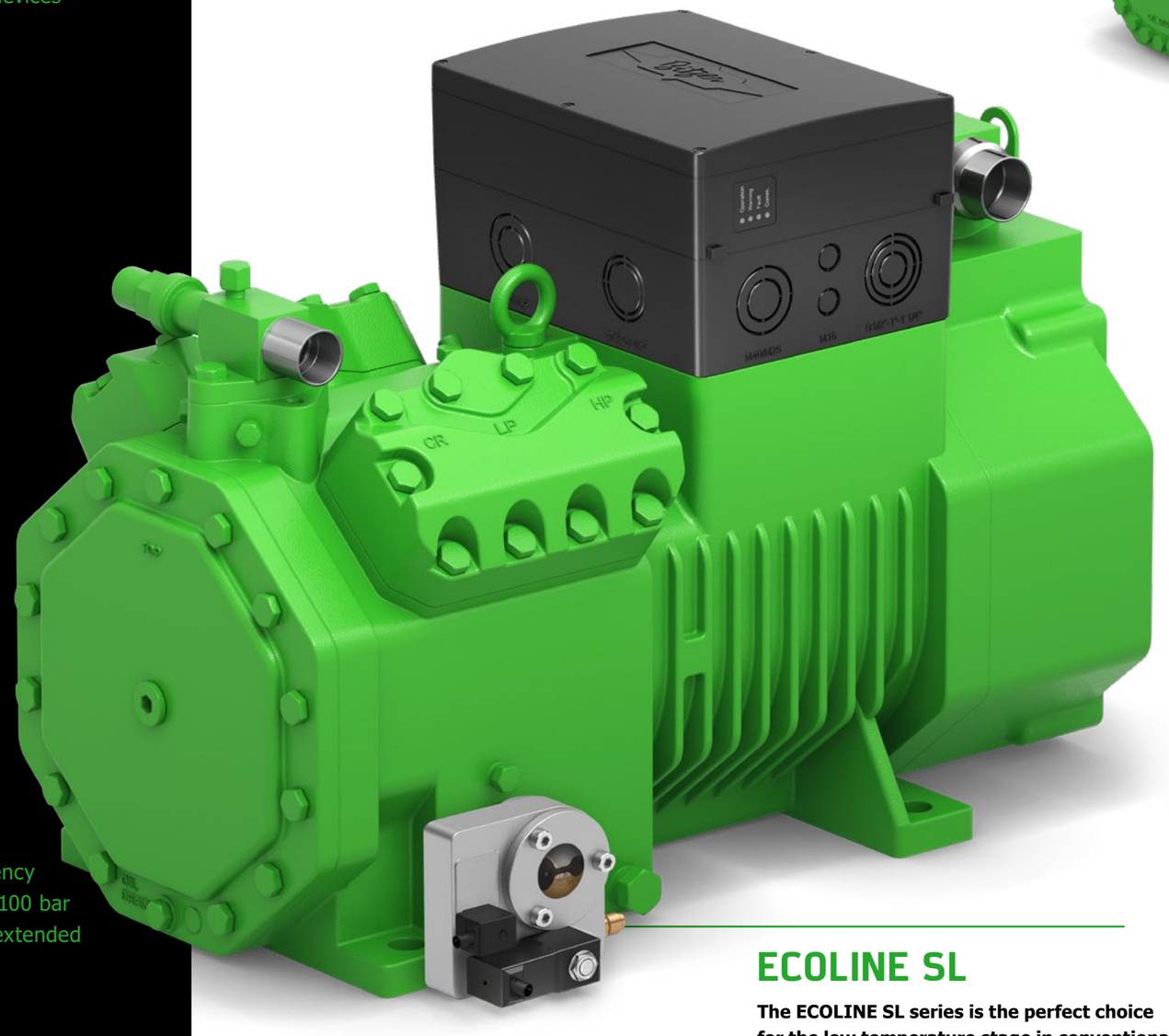
Highly efficient motors and flow-optimised suction and discharge gas ports

WIDE SPEED RANGE

Ideal for operation with frequency inverter to increase and control capacity

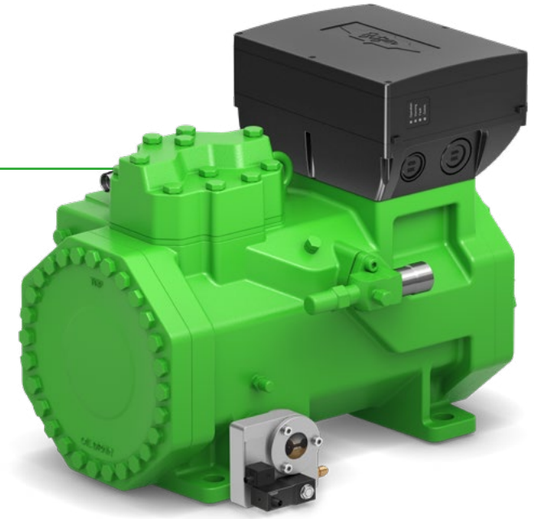
INCREASED SAFETY

The ME series combines high energy efficiency with an increased pressure rating of up to 100 bar on the high and low pressure side and an extended application range.



ECOLINE ME

The ECOLINE ME series guarantees increased system reliability thanks to high standstill pressures and provides options for condensing temperatures of up to 25°C.



ECOLINE SL

The ECOLINE SL series is the perfect choice for the low temperature stage in conventional CO_2 booster and cascade systems.

The ECOLINE compressors for subcritical applications are designed for low temperature application in cascade and booster systems. They are also suitable for combining with condensers cooled with brine or cold water.

IQ MODULE

The IQ MODULE operates and monitors the peripheral devices installed on the compressor.

VARISTEP CAPACITY CONTROL

The VARISTEP system allows to adapt the refrigerating capacity to the demand of the system.

UNIVERSAL RANGE OF APPLICATIONS

Optimised for use both in modern and efficient CO_2 booster systems as well as in hybrid solutions in the form of cascade systems with direct evaporation in the low temperature stage. The ME series also has special marine versions available with greater options concerning the angle of inclination.

FLEXIBILITY

Thanks to a stronger motor version, the ME series can be used in systems with cold water distribution networks at condensing temperatures of up to 25°C. The SL series, when combined with compressors for transcritical CO_2 applications, allows for holistic system designs, such as those with heat recovery.

ECOLINE SL AND ME

UNIVERSAL USE IN LOW AND MEDIUM TEMPERATURE APPLICATIONS

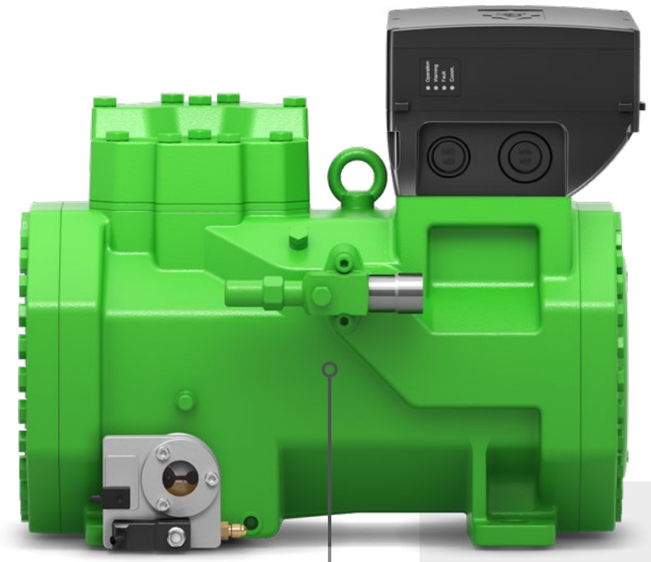
EXTENSIVE EQUIPMENT OPTIONS

// Higher efficiency through capacity control
// Optimal compressor protection through application limit and oil monitoring
// Extensive range of motor versions to cover all conventional voltage supplies
// Flexibility thanks to different connection sizes and shut-off valves
// Smooth operation thanks to compressor fixing with vibration dampers

IQ MODULE CM-RC-02

// Activation and configuration of peripheral devices
// Data log
// Application limit monitoring

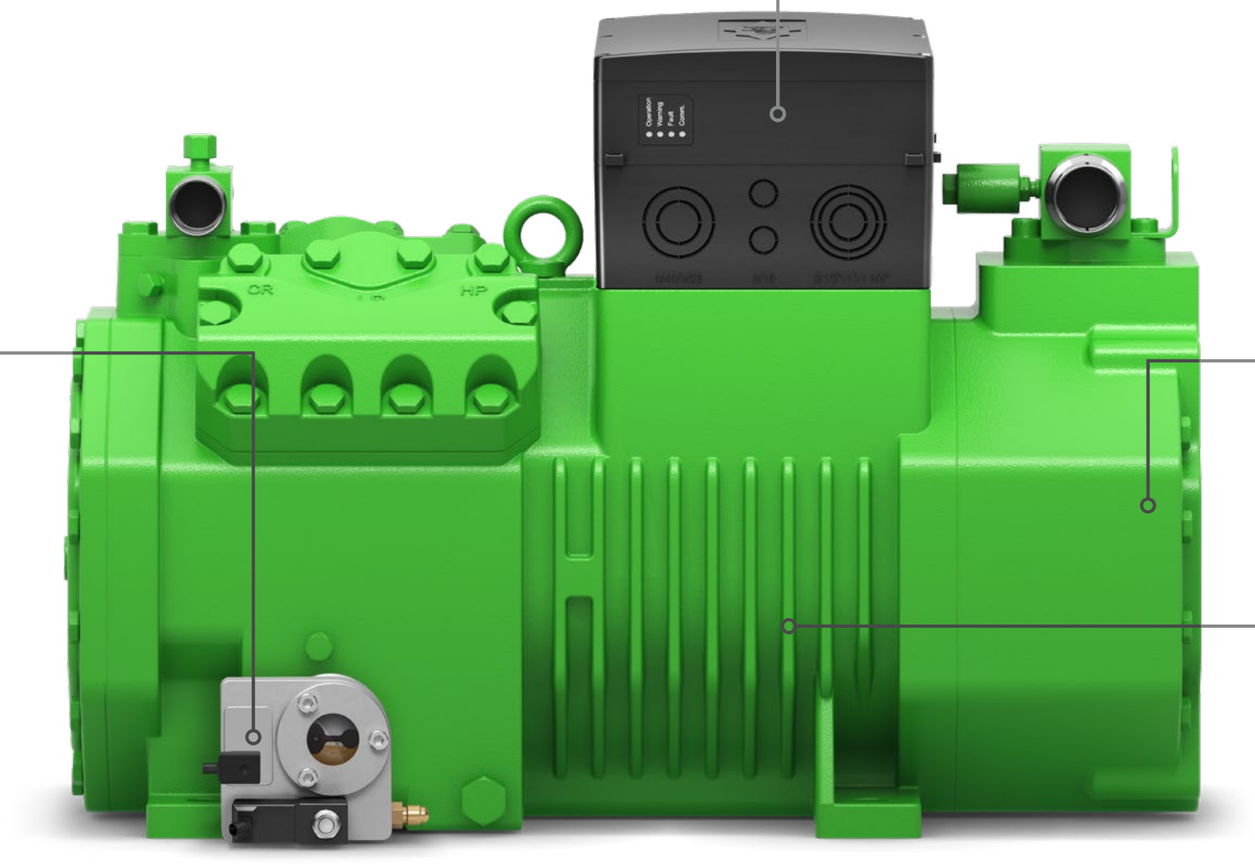
IQ INTELLIGENT PRODUCTS



ECOLINE ME

PRESSURE-RESISTANT HOUSING

// Maximum allowable pressures
2MME..6PME:
- Low pressure side 100 bar
- High pressure side 100 bar
8VME..8PME:
- Low pressure side 80 bar
- High pressure side 80 bar



OLM-IQ OIL LEVEL CONTROLLER

// Reliable stepless measurement via float
// High precision regardless of oil foams
// Simultaneous measurement and oil injection
// Easy configuration and operation via the IQ MODULE
// Data collection, logging and analysis via BEST SOFTWARE and BITZER Digital Network (BDN)

PRESSURE-RESISTANT HOUSING

// No bottom plate
// Maximum allowable pressures
2NSL..4NSL:
- High pressure side 53 bar
- Low pressure side 30 bar
// Quiet and low in vibration

HIGH ENERGY EFFICIENCY

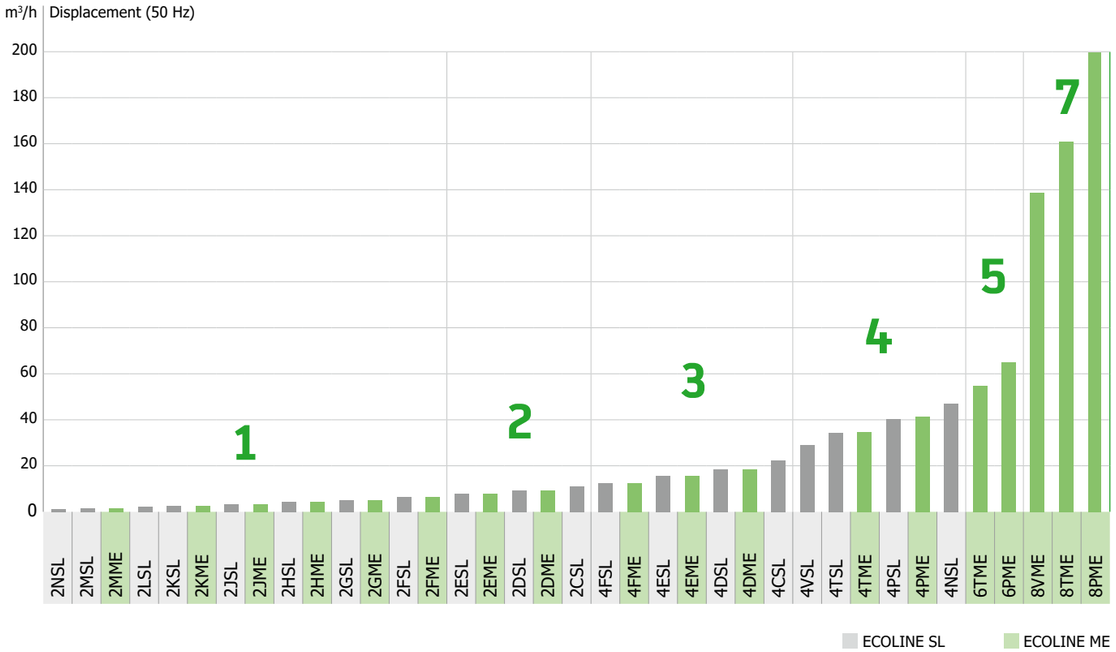
// Suction gas cooled motor
// Specially adapted for condensing temperatures up to 15°C (SL) or 25°C (ME)
// Ideal for speed control

ECOLINE SL

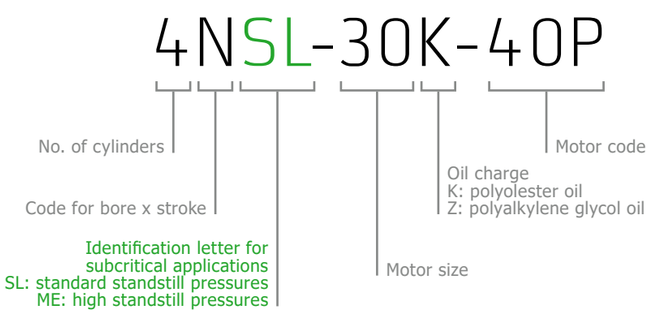
Exemplary illustration

COMPRESSORS FOR **SUBCRITICAL CO_2 APPLICATIONS**

CAPACITY RANGES



EXPLANATION OF THE MODEL DESIGNATION



BITZER SOFTWARE

Further details can be found in the BITZER SOFTWARE. Scan QR code for more information.

PERFORMANCE DATA

The BITZER SOFTWARE is available in multiple languages, directly in a browser or as a Windows download. It is always up to date and also optimised for mobile devices.

The BITZER SOFTWARE comprises:

// Performance data for all established refrigerants at freely selectable operating conditions
// All relevant technical data
// Calculation results and individually defined performance tables for the compressors
// Seasonal calculations
// Parallel compounds
// Available accessories and their selection
// All relevant technical documents

ASERCOM CERTIFICATION

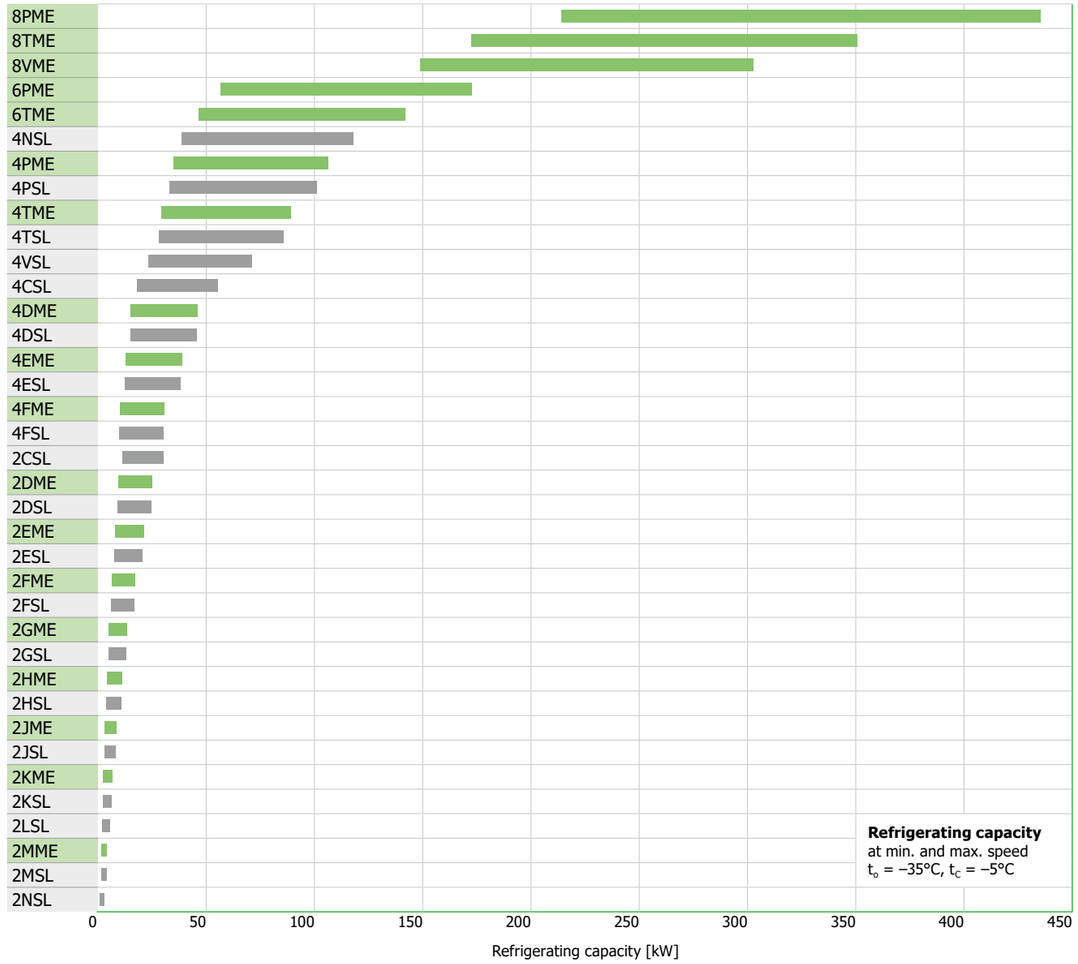
The Association of European Refrigeration Component Manufacturers (ASERCOM) implemented a certification for performance data of refrigeration compressors. The high standard of this certification is guaranteed by:

// Plausibility checks on the data carried out by experts
// Regular measurements by independent institutes

A number of BITZER compressors are already certified, and more will follow. Compressor performance data that meet these strict requirements are permitted to carry the label 'ASERCOM certified product'. All certified compressors are listed on the ASERCOM website with further information (www.asercom.org).

In the BITZER SOFTWARE, the corresponding compressors are marked with this label.

APPLICATION RANGES



TECHNICAL DATA AND PERFORMANCE VALUES

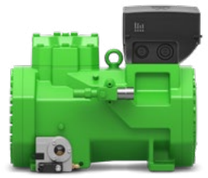
Compressor model	Motor version	Displacement at 50 Hz in m³/h	Refrigerating capacity Q_o in kW t_o/t_c = –35°C/–5°C	Refrigerating capacity Q_o in kW t_o/t_c = –10°C/20°C	Oil charge in dm³	Weight in kg	Motor	Electrical data Max. operating current in A ⓘ
2NSL-05K	1	1.33	1.92		1.0	47.0	Δ/Y (40S)	3.7/2.1
2MSL-07K	1	1.73	2.54		1.0	47.0	Δ/Y (40S)	4.5/2.5
2MME-07K	2	1.73	2.61		1.2	79.0	Δ/Y (40S)	5.1/2.9
2MME-1K	1	1.73		4.59	1.2	81.0	Δ/Y (40S)	5.6/3.2
2LSL-1K	1	2.27	3.55		1.0	47.0	Δ/Y (40S)	5.4/3.1
2KSL-1K	1	2.71	4.24		1.0	47.0	Δ/Y (40S)	6.5/3.7
2KME-1K	2	2.71	4.36		1.2	81.0	Δ/Y (40S)	6.5/3.7
2KME-2K	1	2.71		7.52	1.2	83.0	Δ/Y (40S)	8.6/5.0
2JSL-2K	1	3.48	5.57		1.0	48.0	Δ/Y (40S)	8.1/4.6
2JME-2K	2	3.48	5.61		1.2	83.0	Δ/Y (40S)	9.1/5.3
2JME-3K	1	3.48		9.76	1.2	85.0	Δ/Y (40S)	10.1/5.8
2HSL-3K	1	4.34	7.08		1.0	50.0	Δ/Y (40S)	9.5/5.5
2HME-3K	2	4.34	7.27		1.2	85.0	Δ/Y (40S)	10.7/6.2
2HME-4K	1	4.34		12.04	1.2	87.0	Δ/Y (40S)	12.7/7.3
2GSL-3K	1	5.05	8.46		1.0	52.0	Δ/Y (40S)	12.1/6.8
2GME-3K	2	5.05	8.67		1.2	87.0	Δ/Y (40S)	11.9/6.9
2GME-4K	1	5.05		14.19	1.2	89.0	Δ/Y (40S)	14.6/8.5
2FSL-4K	1	6.36	10.89		1.0	53.0	Δ/Y (40S)	15.4/8.6
2FME-4K	2	6.36	11.16		1.2	89.0	Δ/Y (40S)	14.6/8.4
2FME-5K	1	6.36		17.78	1.2	91.0	Δ/Y (40S)	17.3/10.0
2ESL-4K	1	7.81	13.54		1.5	77.5	Δ/Y (40S)	17.5/9.7
2EME-4K	2	7.81	13.86		1.2	91.0	Δ/Y (40S)	17.3/10.0
2EME-5K	1	7.81		23.00	1.2	93.0	Δ/Y (40S)	20.7/12.0
2DSL-5K	1	9.22	16.01		1.5	77.5	Δ/Y (40S)	20.1/11.3
2DME-5K	2	9.22	16.40		1.2	93.0	Δ/Y (40S)	20.0/11.6
2DME-7K	1	9.22		27.30	1.2	96.0	Δ/Y (40S)	24.7/14.3
2CSL-6K	1	11.16	19.45		1.5	77.5	Δ/Y (40S)	24.8/13.9
4FSL-7K	1	12.41	20.95		2.0	94.0	Δ/Y (40S)	28.2/15.7
4FME-7K	2	12.41	21.70		2.0	117.0	Δ/Y (40S)	25.6/14.8
4FME-9K	1	12.41		36.40	2.0	117.0	Δ/Y (40S)	32.6/18.7
4ESL-9K	1	15.62	26.55		2.0	94.5	Δ/Y (40S)	33.7/18.9
4EME-9K	2	15.62	27.45		2.0	119.0	Δ/Y (40S)	32.6/18.8
4EME-10K	1	15.62		46.10	2.0	119.0	Δ/Y (40S)	40.9/23.5
4DSL-10K	1	18.45	31.50		2.0	94.5	Δ/Y (40S)	39.3/22.0
4DME-10K	2	18.45	32.60		2.0	119.0	Δ/Y (40S)	38.8/22.3
4CSL-12K	1	22.32	38.45		2.0	100.0	Δ/Y (40S)	47.6/26.7
4VSL-15K	1	28.94	49.45		2.6	153.5	PW (40P)	33.5
4TSL-20K	1	34.44	59.20		2.6	153.5	PW (40P)	40.0
4TME-20K	2	34.73	63.10		2.6	186.0	PW (40P)	42.4
4PSL-25K	1	40.42	80.00		2.6	171.0	PW (40P)	48.3
4PME-25K	2	41.33	76.80		2.6	210.0	PW (40P)	52.9
4NSL-30K	1	46.87	81.80		2.6	171.0	PW (40P)	55.5

Tentative data

Compressor model	Motor version	Displacement at 50 Hz in m³/h	Refrigerating capacity Q_o in kW t_o/t_c = –35°C/–5°C	Refrigerating capacity Q_o in kW t_o/t_c = –10°C/20°C	Oil charge in dm³	Weight in kg	Motor	Electrical data Max. operating current in A ⓘ
6TME-35K	2	54.57	100.40		2.8	232.0	PW (40P)	67.9
6TME-50K	1	54.57			2.8	238.0	PW (40P)	88
6PME-40K	2	64.94	122.00		2.8	237.0	PW (40P)	82.8
6PME-50K	1	64.94			2.8	238.0	PW (40P)	88
8VME-100K	2	138.60	255.8		5.5	705.0	Δ/Y (40D)	168
8VME-120K	1	138.60			5.5	716.0	Δ/Y (40D)	214
8TME-100K	2	160.70	296.6		5.5	702.0	Δ/Y (40D)	201
8TME-140K	1	160.70			5.5	733.0	Δ/Y (40D)	254
8PME-140K	2	199.50	368.2		5.5	729.0	Δ/Y (40D)	253

Tentative data

ECOLINE SL



ECOLINE ME

PERFORMANCE DATA

Data based on 20 K suction gas superheat and compressor with suction and discharge gas shut-off valve without subcooling in accordance with EN 12900.

t_o: evaporation temperature
t_c: condensing temperature

MOTOR VOLTAGES

Tolerance (± 10%), based on mean value of the voltage range.
Other voltages upon request.

Δ/Y (40S):
220..240 V Δ-3-50 Hz
380..420 V Y-3-50 Hz
265..290 V Δ-3-60 Hz
440..480 V Y-3-60 Hz

PW (40P):
380..420 V Y/YY-3-50 Hz
440..480 V Y/YY-3-60 Hz
Motor for part winding start.
Winding partition 50%/50%.
Select contactors for approx. 60% of the max. operating current.

Δ/Y (40D):
380..420 V Δ-3-50 Hz
440..480 V Δ-3-60 Hz

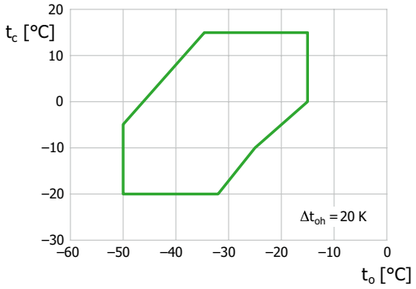
OIL HEATER

230 V PTC heater self-regulating
- 2NSL..2FSL: 0..60 W
- 2ESL..4NSL: 0..120/140 W
- 2MME..4DME: 0..120 W
- 4TME..8PME: 0..140 W

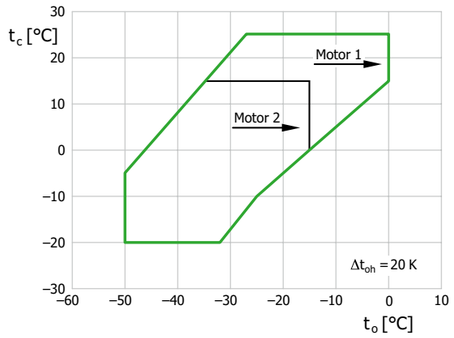
Absolute necessity due to high solubility of CO_2 in oil.

ⓘ Data for compressors with voltage range 380..420 V (220..240 V) are based on mean value 400 V (230 V).
Conversion factor:
380 V (220 V) 0.95
420 V (240 V) 1.05
Take max. operating current/max. power consumption into account when selecting contactors, cables and fuses. A fast line protection switch is required.
Contactors: operational category AC3

APPLICATION LIMITS



2NSL..4NSL



2MME..8PME

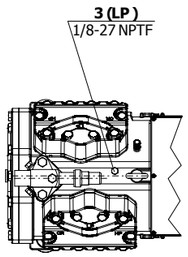
t_o Evaporation temperature (°C)
t_c Condensing temperature (°C)
Δt_{oh} Suction gas superheat (K)

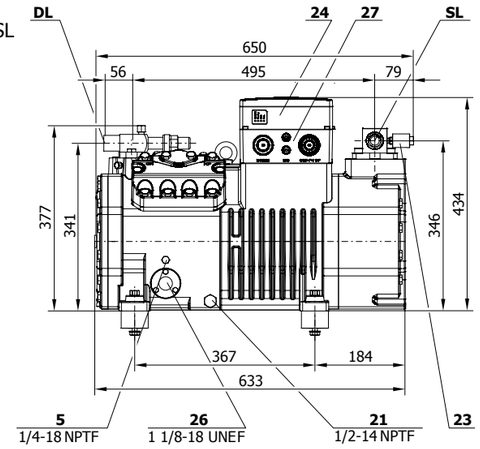
DIMENSIONAL DRAWINGS

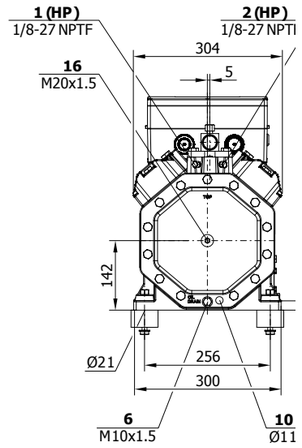
Exemplary dimensional drawings, details in the BITZER SOFTWARE.

ECOLINE SL

Compressor model 4PSL..4NSL

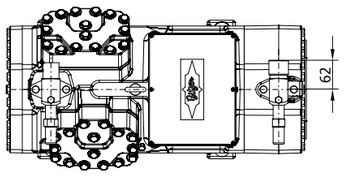


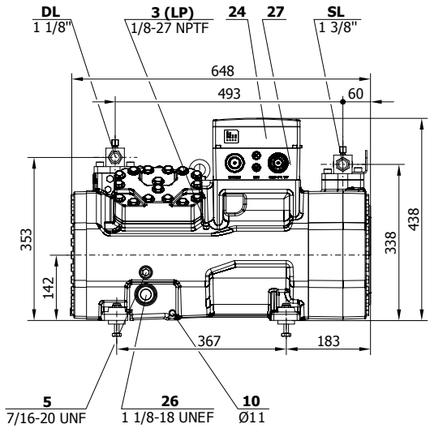


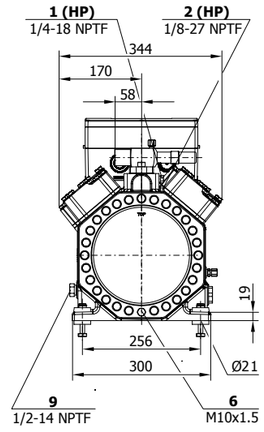


ECOLINE ME

Compressor model 4TME..4PME







CONNECTIONS

1	High pressure connection (HP)
	Connection for high pressure switch (HP)
2	Connection for discharge gas temperature sensor (HP)
3	Low pressure connection (LP)
	Connection for low pressure switch (LP)
5	Oil fill plug
6	Oil drain
9	Connection for oil and gas equalisation (parallel operation)
10	Connection for oil heater
16	Connection for oil monitoring (oil level or oil differential pressure)
21	Maintenance connection for oil valve
23	Pressure relief valve to the atmosphere (suction side)
24	Module housing (IQ MODULE included)
26	Sight glass
27	Terminal box
SL	Suction gas line
DL	Discharge gas line

Dimensions subject to the tolerances specified in EN ISO 13920-B.

Further details can be found in the BITZER SOFTWARE.
Scan QR code for more information.

BITZER SOFTWARE

ACCESSORIES

SPECIAL VOLTAGE MOTORS

Always the right solution for different applications and voltage supplies.

// Operation with frequency inverter to increase and control capacity

// Operation on ships and drilling platforms

SHUT-OFF VALVES FOR HIGH AND LOW PRESSURE SIDE

Extensive options to choose from for safe connection of the compressor to the system.

// Brazing and welding valves

// Valves with compression fitting

// Options to connect pressure switches or pressure transmitters to the valves

VIBRATION DAMPERS

Specially adapted vibration dampers for the different compressor sizes.

// For vibration-free operation

// For outstandingly smooth operation

Further accessories can be found in the BITZER SOFTWARE.

Fresh, high-quality food all year round – that's only possible if the cold chain is absolutely reliable. BITZER CO_2 compressors ensure that temperature-sensitive goods stay fresh until they reach the end customer.

RECIPROCATING COMPRESSORS FOR HYDROCARBONS

ECOLINE PRO // EX VERSION

The reciprocating compressors in the ECOLINE PRO series have been developed especially for hydrocarbon refrigerants. They guarantee efficient and safe operation in a variety of applications, from commercial refrigeration to process cooling, air conditioning and heat pumps.

SUITABLE FOR ALL APPLICATIONS

ECOLINE PRO compressors can really do just about anything: Operated with propane (R290) and propene (R1270), they are ideal for commercial refrigeration in low and medium temperature applications. For air conditioning, process cooling and heat pumps, they are operated with propane (R290) or isobutane (R600a). Broad application limits ensure high flexibility in terms of process temperatures. The VARISTEP mechanical capacity control or a frequency inverter allow for a large capacity control range.

THE RIGHT CHOICE FOR THE FUTURE

The natural refrigerants propane, propene and isobutane are halogen-free and have an extremely low global warming potential (GWP). Hydrocarbons are future-proof refrigerants with very good thermodynamic properties. The ECOLINE PRO series was optimised especially for use with these refrigerants and therefore represents a safe option for the long term, with high energy efficiency and low operating costs.

- RECIPROCATING COMPRESSORS
- HYDROCARBON
- REFRIGERATION
- AIR CONDITIONING
- HEAT PUMPS

RELIABLE AND EFFICIENT

The ECOLINE PRO series offers high efficiency and reliability. It is characterised by quiet operation and a robust design – the right choice for demanding applications.

COMMERCIAL REFRIGERATION

Ideal for commercial refrigeration: compressors in the ECOLINE PRO series are suitable for operation with R290 and R1270 in low and medium temperature applications.

HEAT PUMPS

Thanks to broad application limits, systems with very different heat sources and process temperatures can be operated. As a result, the compressors allow for a wide range of heat pump applications.

HYDROCARBONS FOR FUTURE-PROOF APPLICATIONS

PROCESS COOLING

The refrigerating capacity of the compressors can be precisely adapted to the requirements of the process, assuring optimal process temperature and stability.

AIR CONDITIONING

The compressors in the ECOLINE PRO series deliver high energy efficiency thanks to their very good coefficient of performance, which reduces operating costs.

ECOLINE PRO FOR PROPANE, ISOBUTANE AND MORE

VARIOUS REFRIGERANTS

R290 and R1270 for low and medium temperature applications; R290 and R600a for heat pumps

LOW OPERATING COSTS

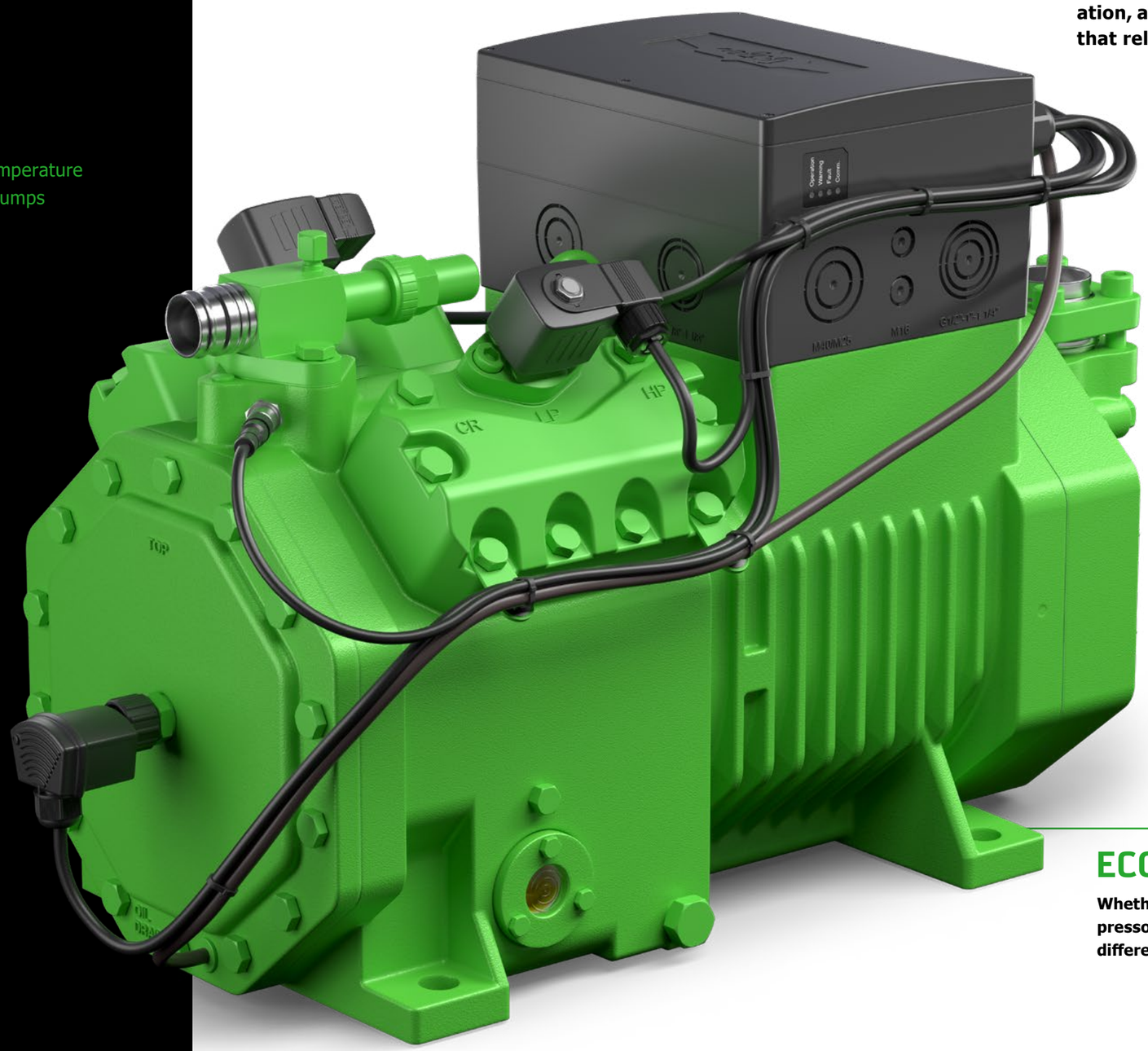
Highly efficient motors and optimised suction gas routing

USER-FRIENDLY

Activation and configuration of peripheral devices via the IQ MODULE

WIDE CAPACITY CONTROL RANGE

Can be equipped with VARISTEP and operated with a frequency inverter



The ECOLINE PRO series combines high efficiency with reliable performance for refrigeration, air conditioning and heat pump systems that rely on future-proof refrigerants.

IQ MODULE

The IQ MODULE operates and monitors the peripheral devices installed on the compressor.

VARISTEP CAPACITY CONTROL

The VARISTEP system allows to adapt the refrigerating capacity to the demand of the system.

OPTIMISED OIL MANAGEMENT

In addition to the standard polyalkylene glycol oil BSG68K, poly-alpha-olefin oil SHC226E is optionally available.

OPERATING RELIABILITY

Oil management and comprehensive monitoring of motor temperature and application limits guarantee operating reliability at all times.

ENHANCED TIGHTNESS

If the product contains flammable gases, the enhanced tightness as per EN 1127-1 means that no potentially explosive atmosphere has to be assumed around the component.

ECOLINE PRO

Whether propane, propene or isobutane, the compressors in the ECOLINE PRO series are suitable for different hydrocarbons depending on the application.

ECOLINE PRO
EFFICIENCY MEETS SUSTAINABILITY

EXTENSIVE EQUIPMENT OPTIONS

// VARISTEP stepless or stepped capacity control

// Discharge gas temperature monitoring and logging

For retrofitting:

// Application limit monitoring

// OLM-IQ oil level controller

WEAR-RESISTANT AND EFFICIENT DRIVE GEAR

// Advanced multi-layer bearings

// Particularly efficient working valves

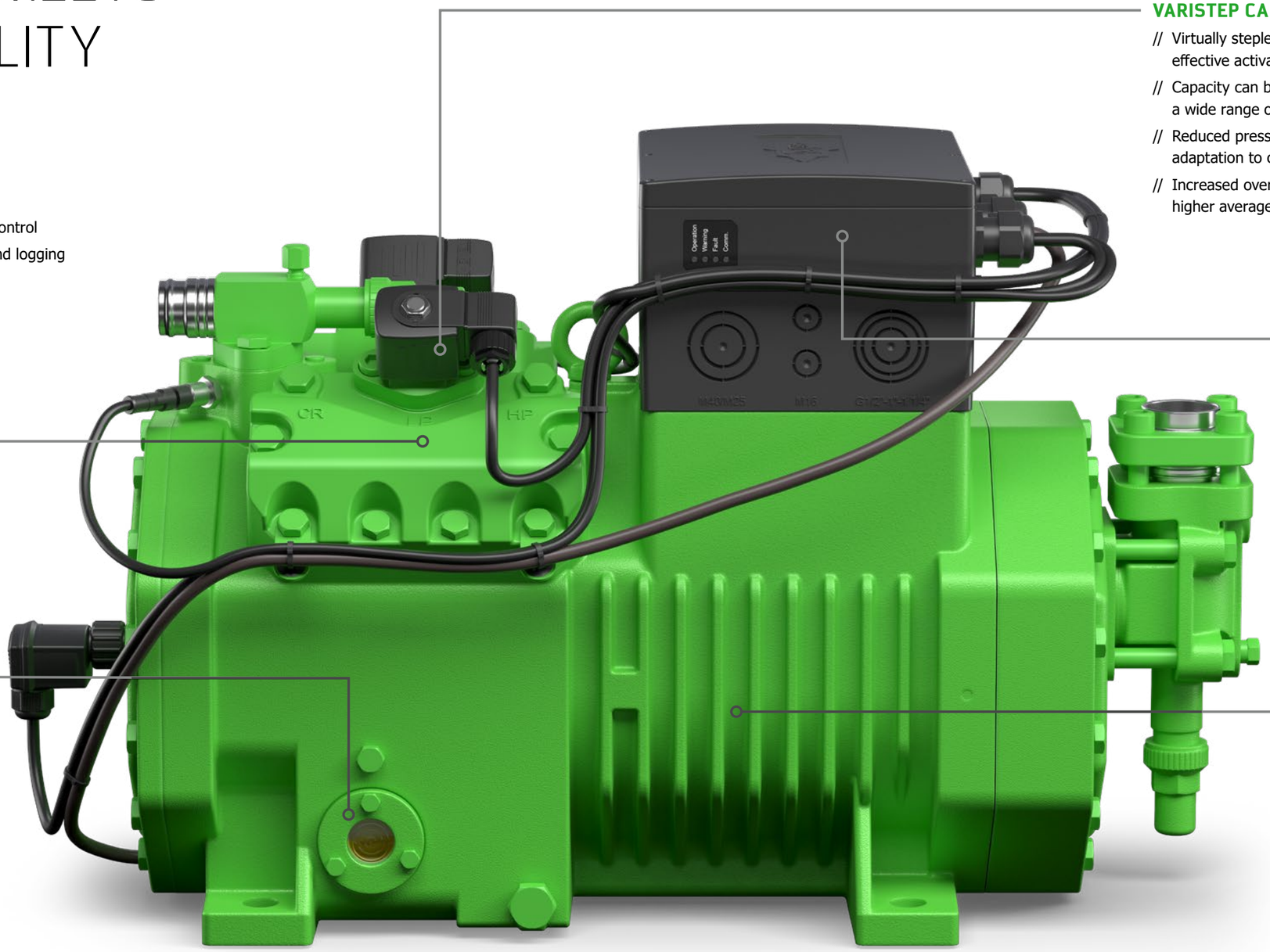
// Quiet and low in vibration

OPTIMISED LUBRICATION

// Polyalkylene glycol oil BSG68K as standard, poly-alpha-olefin oil SHC226E as option

// Oil monitoring and protection with OLC (oil level monitoring) or DP (differential oil pressure switch)

// For systems with active oil management, an OLM-IQ kit can be provided as a retrofit kit.



VARISTEP CAPACITY CONTROL

// Virtually stepless capacity control with easy and effective activation via the IQ MODULE

// Capacity can be adapted as needed within a wide range of 10 .. 100%

// Reduced pressure fluctuations thanks to quick adaptation to changed system conditions

// Increased overall efficiency thanks to more stable, higher average suction pressure

IQ MODULE CM-RC-02

// Activation and configuration of peripheral devices

// Data log

// Application limit monitoring

IQ INTELLIGENT PRODUCTS

DIFFERENT MOTOR VERSIONS

// Motor 0 for R290 heat pumps with high process temperatures

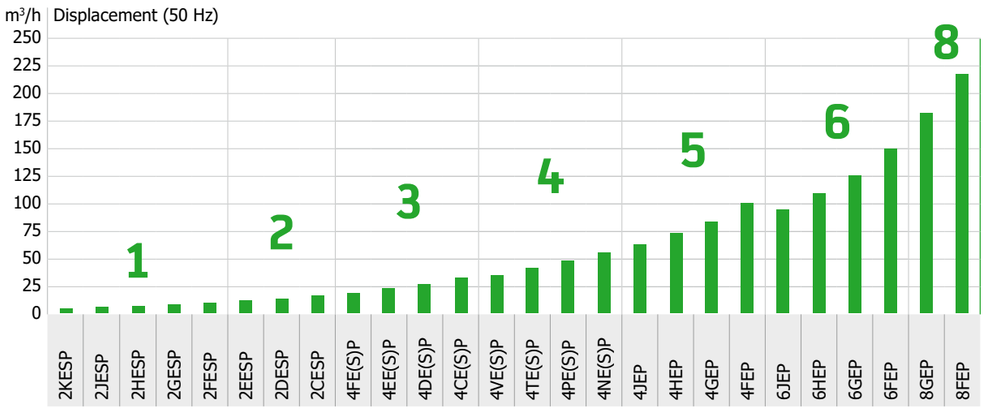
// Motor 1 with extended R290 application limits for air/water and water/water heat pumps

// Motors 1 and 2 for all standard low and medium temperature applications with R290 and R1270

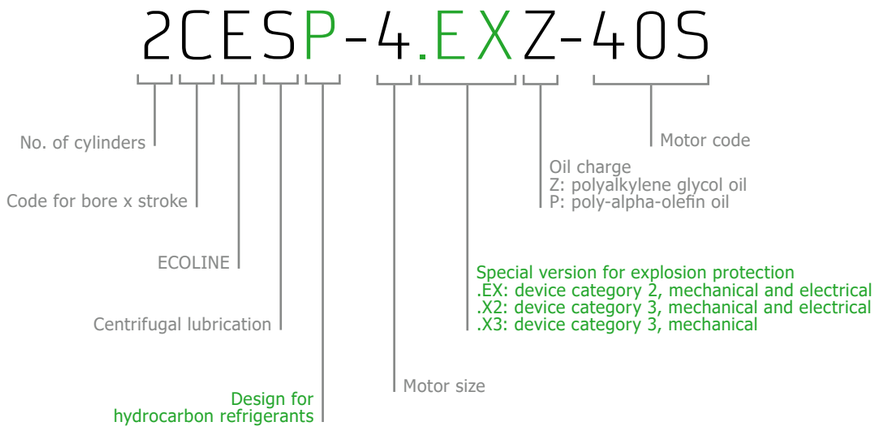
Exemplary illustration

COMPRESSORS FOR **HYDROCARBONS**

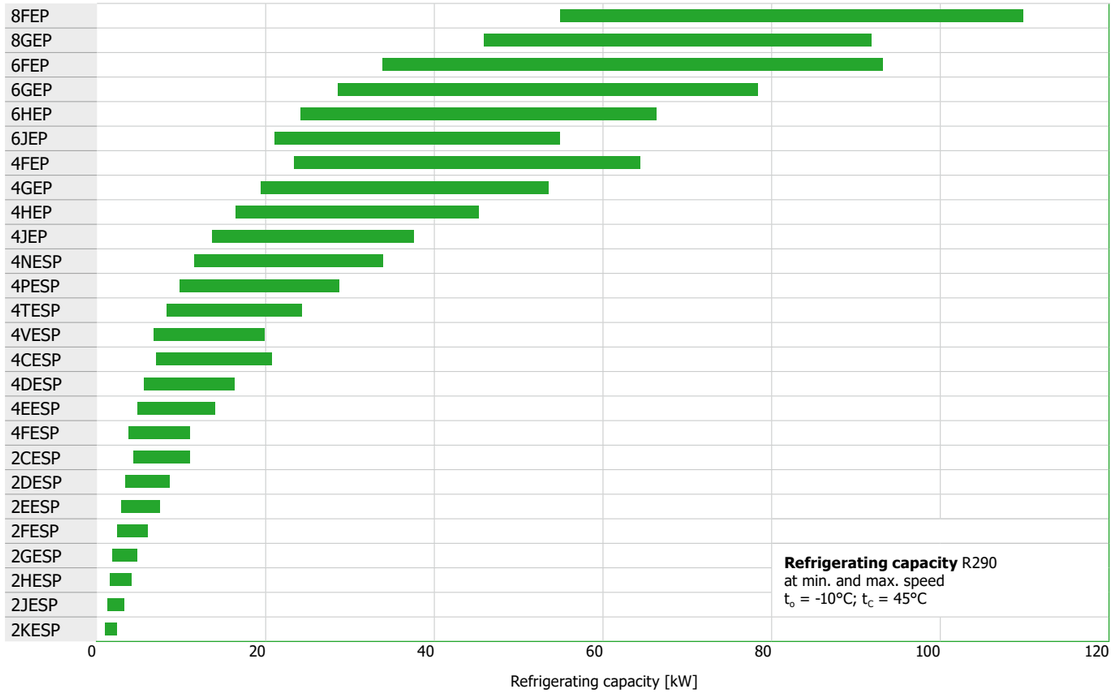
CAPACITY RANGES

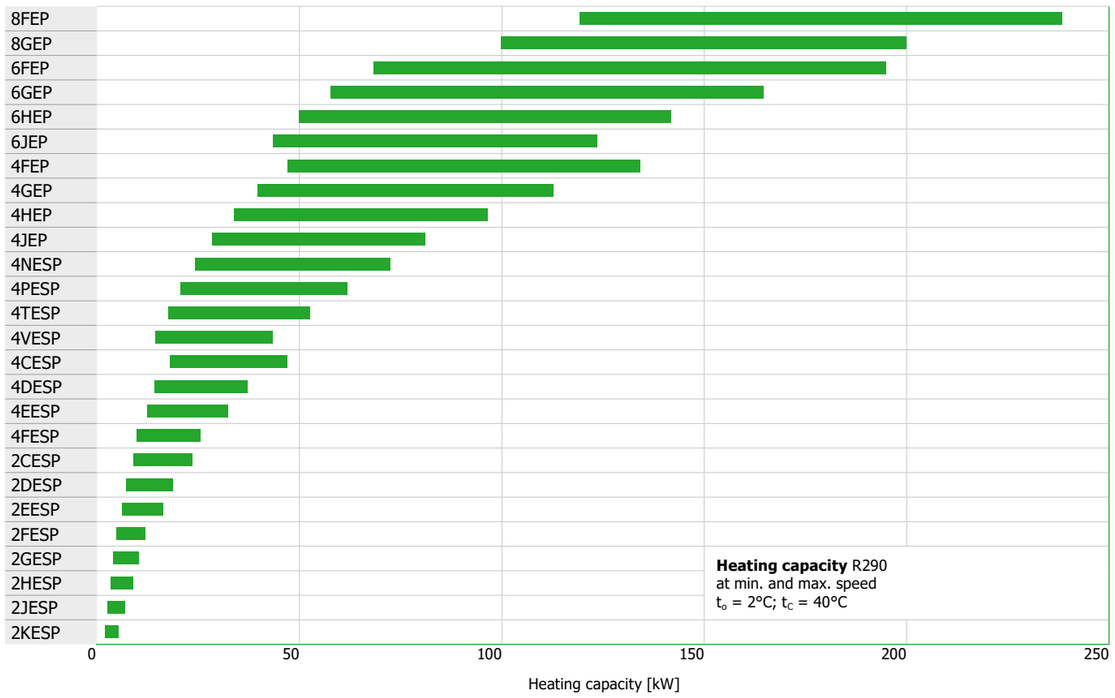


EXPLANATION OF THE MODEL DESIGNATION



APPLICATION RANGES





TECHNICAL DATA AND PERFORMANCE VALUES

Compressor model	Motor version	Displacement at 50 Hz in m³/h	Refrigerating capacity R290 Q_o in kW		Oil charge in dm³	Weight in kg	Electrical data
			t_o/t_c = –10/45°C	t_o/t_c = 5°C/50°C			Max. operating current in A ⓘ
							Δ/Y Motor
2KESP-05Z	1	4.06	1.62	2.71	1.0	46	4.9/2.8
2JESP-07Z	1	5.21	2.19	3.55	1.0	47	6.4/3.7
2HESP-1Z	2	6.51	2.77		1.0	47	6.6/3.8
2HESP-2Z	1	6.51	2.81	4.50	1.0	49	7.8/4.5
2GESP-2Z	1	7.58	3.26	5.21	1.0	49	8.7/5.0
2FESP-2Z	2	9.54	4.09		1.0	49	9.2/5.3
2FESP-3Z	1	9.54	4.10	6.54	1.0	50	10.6/6.1
2EESP-2Z	2	11.4	5.03		1.5	74	10.4/6.0
2EESP-3Z	1	11.4	5.03	8.26	1.5	77	13.0/7.5
2DESP-2Z	2	13.4	5.84		1.5	73	13.0/7.5
2DESP-3Z	1	13.4	5.84	9.56	1.5	77	15.0/8.6
2CESP-3Z	2	16.2	7.44		1.5	76	15.8/9.1
2CESP-4Z	1	16.2	7.44	12.10	1.5	76	17.4/10.0
4FESP-3Z	2	18.1	7.90		2.0	90	16.5/9.5
4FESP-5Z	1	18.1	7.90	13.03	2.0	95	18.0/10.8
4EESP-4Z	2	22.7	10.07		2.0	93	21.1/12.2
4EESP-6Z	1	22.7	10.07	16.54	2.0	95	23.7/13.6
4DESP-5Z	2	26.8	11.69		2.0	94	25.5/14.5
4DESP-7Z	1	26.8	11.69	19.14	2.0	100	28.7/16.5
4CESP-6Z	2	32.5	14.90		2.0	99	30.8/17.7
4CESP-9Z	1	32.5	14.90	24.20	2.0	99	35.1/20.2

Tentative data

Compressor model	Motor version	Displacement at 50 Hz in m³/h	Refrigerating capacity R290 Q_o in kW		Oil charge in dm³	Weight in kg	Electrical data
			t_o/t_c = –10/45°C	t_o/t_c = 5°C/50°C			Max. operating current in A ⓘ
							PW Motor
4VESP-7Z	2	34.7	14.29		2.6	139	14.1
4VESP-10Z	1	34.7	14.29	24.25	2.6	146	18.5
4VESP-11Z	0	34.7	14.28	24.20	2.6	146	20.5
4TESP-9Z	2	41.3	17.50		2.6	143	17.2
4TESP-12Z	1	41.3	17.50	29.40	2.6	147	22.3
4TESP-14Z	0	41.3	17.50	29.40	2.6	147	24.9
4PESP-12Z	2	48.5	20.30		2.6	145	19.4
4PESP-15Z	1	48.5	20.65	34.55	2.6	153	26.2
4PESP-18Z	0	48.5	20.70	34.65	2.6	153	29.7
4NESP-14Z	2	56.2	24.30		2.6	146	23.3
4NESP-20Z	1	56.2	24.40	40.55	2.6	157	29.7
4NESP-22Z	0	56.2	24.45	40.75	2.6	157	34.1
4JEP-15Z	2	63.5	28.30		4.0	192	26.5
4JEP-22Z	1	63.5	27.75	46.10	4.0	192	34.2
4JEP-25Z	0	63.5	27.90	46.35	4.0	208	39.0
4HEP-18Z	2	73.7	33.95		4.0	191	31.3
4HEP-25Z	1	73.7	33.40	54.90	4.0	207	41.1
4HEP-28Z	0	73.7	32.70	54.20	4.0	207	45.7
4GEP-23Z	2	84.6	40.05		4.5	196	36.0
4GEP-30Z	1	84.6	39.50	64.40	4.5	209	48.4
4GEP-32Z	0	84.6	39.55	64.60	4.5	209	54.4
4FEP-28Z	2	101.8	47.90		4.5	207	44.7
4FEP-35Z	1	101.8	47.50	75.80	4.5	207	58.4
6JEP-25Z	2	95.3	43.75		4.75	234	40.8
6JEP-33Z	1	95.3	42.70	70.10	4.75	244	53.5
6JEP-35Z	0	95.3	42.70	70.10	4.75	244	60.7
6HEP-28Z	2	110.5	50.00		4.75	233	46.8
6HEP-35Z	1	110.5	49.00	80.20	4.75	241	62.1
6HEP-40Z	0	110.5	49.00	80.20	4.75	244	70.5
6GEP-34Z	2	126.8	58.10		4.75	230	55.4
6GEP-40Z	1	126.8	57.80	93.30	4.75	240	73.8
6GEP-45Z	0	126.8	57.80	93.30	4.75	250	89.3
6FEP-44Z	2	151.6	69.30		4.75	244	68.7
6FEP-50Z	1	151.6	68.70	109.90	4.75	246	94.1
8GEP-50Z	2	185.0	76.10		5	342	87.9
8GEP-60Z	1	185.0	76.50	124.20	5	352	112.1
8FEP-60Z	2	221.0	89.20		5	361	103.5
8FEP-70Z	1	221.0	91.50	148.40	5	363	131.7

Tentative data

ECOLINE PRO

PERFORMANCE DATA

Data based on refrigerant R290 (propane) with 10 K superheat

t_o: evaporation temperature

t_c: condensing temperature

TOLERANCES

Refrigerating capacity as per EN 12900, weight ± 5%, maximum operating current ± 5%, maximum power consumption ± 5%

ⓘ Data for star or delta direct-on-line start motor are based on 400 V/3/50 Hz with direct mains operation, as are the data for the part winding motor at 50 Hz.
Take max. operating current/max. power consumption into account when selecting contactors, cables and fuses.
Contactors: operational category AC3. Use thermal overload relay to protect the max. operating current.

These data also apply to the corresponding ECOLINE PRO ATEX versions.

PERFORMANCE DATA

The BITZER SOFTWARE is available in multiple languages, directly in a browser or as a Windows download. It is always up to date and also optimised for mobile devices.

The BITZER SOFTWARE comprises:

// Performance data for all established refrigerants at freely selectable operating conditions
// All relevant technical data
// Calculation results and individually defined performance tables for the compressors
// Seasonal calculations
// Parallel compounds
// Available accessories and their selection
// All relevant technical documents

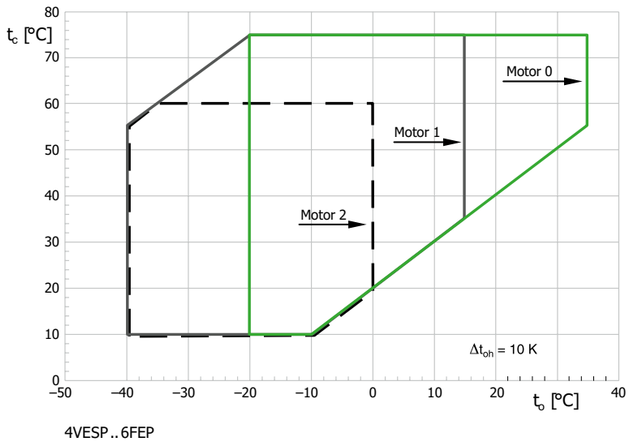
BITZER SOFTWARE

Further details can be found in the BITZER SOFTWARE.
Scan QR code for more information.

APPLICATION LIMITS

Based on 10 K suction gas superheat

R290



4VESP .. 6FEP

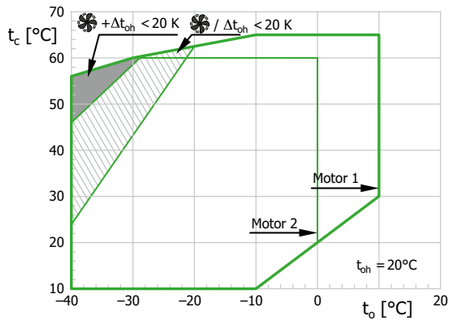
t_o Evaporation temperature (°C)
t_{oh} Suction gas temperature (°C)
Δt_{oh} Suction gas superheat (K)
t_c Condensing temperature (°C)

Additional cooling and restricted suction gas superheat required
Suction gas superheat less than 20 K
Additional cooling or restricted suction gas superheat required

Other refrigerants upon request.

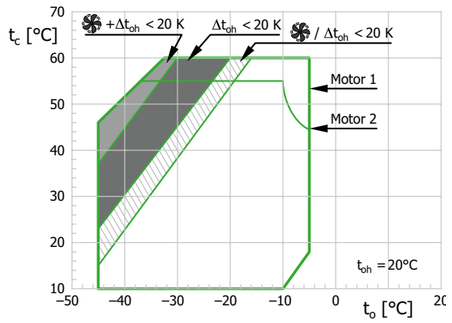
Based on 20°C suction gas temperature

R290



2KESP .. 4CESP, 8GEP .. 8FEP

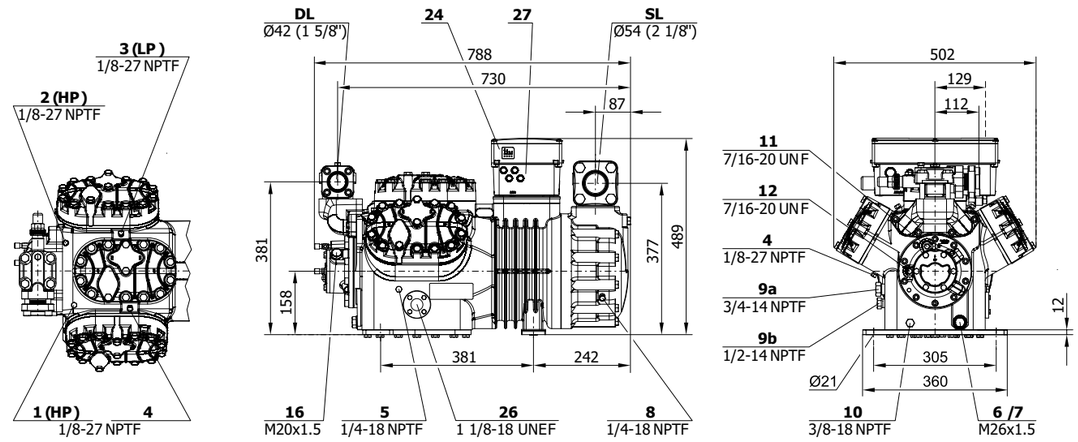
R1270



2KESP .. 8FEP

DIMENSIONAL DRAWINGS

Exemplary dimensional drawing, details in the BITZER SOFTWARE.
Compressor model 6FEP



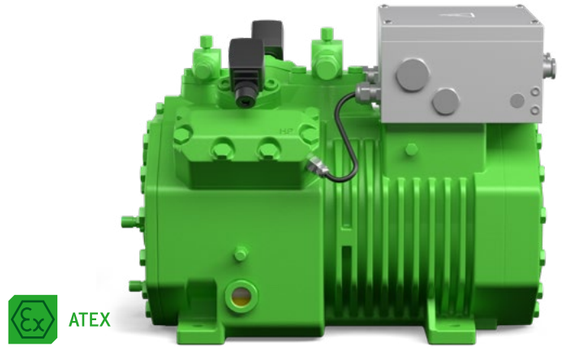
CONNECTIONS

1	High pressure connection (HP) Connection for high pressure switch (HP)	11	Oil pressure connection +
2	Connection for discharge gas temperature sensor (HP)	12	Oil pressure connection –
3	Low pressure connection (LP) Connection for low pressure switch (LP)	16	Connection for oil monitoring (oil level or oil differential pressure)
4	Connection for RI/CIC injection nozzle (LP)	24	Module housing (IQ MODULE included)
5	Oil fill plug	26	Sight glass
6	Oil drain	27	Terminal box
7	Oil filter (magnetic screw)	SL	Suction gas line
8	Oil return (from oil separator)	DL	Discharge gas line
9a	Connection for gas equalisation (parallel operation)		
9b	Connection for oil equalisation (parallel operation)		Dimensions subject to the tolerances
10	Connection for oil heater		specified in EN ISO 13920-B.

Further details can be found in the BITZER SOFTWARE.
Scan QR code for more information.

BITZER SOFTWARE

ECOLINE PRO
FOR EXPLOSION-PROOF AREAS



Explosion protection equipment for zones 1 and 2

// Device category 2, mechanical and electrical
// Certified in accordance with the EU Explosion Protection Directive 2014/34/EU
// ATEX markings:
- Ex II-/2G Ex h db eb ib mb IIC T3 Gb
- Ex II-/2G Ex h db eb ib mb IIB T3 Gb
// Terminal box and terminal plate
// Discharge gas temperature sensor in every cylinder head
// Oil monitoring
// Optional: oil heater and, depending on the model, capacity regulator CR
// Optional: solenoid valves suitable for potentially explosive atmospheres, for CR
// Optional: ESD coating for gas group IIC and painting as per DIN EN 12944 (C5 or CX) or NORSOK M501
// For application limits and further information, see Operating Instructions KB-109.
// The performance data correspond to that of the respective ECOLINE PRO models listed above.

SPECIAL EXPLOSION-PROOF DESIGNS FOR X2 AND X3

X2

X2 ATEX SPECIAL DESIGN DEVICE CATEGORY 3, MECHANICAL AND ELECTRICAL

// No mechanical or electrical sources of ignition when in normal operation without faults
// Enhanced tightness as per EN 1127-1 and therefore technically tight in the long term
// ATEX marking EX II - 3G Ex h ec ic mc IIA T2 Gc
// For further information, see Operating Instructions KB-108

X3

X3 ATEX SPECIAL DESIGN DEVICE CATEGORY 3, MECHANICAL

// No mechanical sources of ignition when in normal operation without faults
// Enhanced tightness as per EN 1127-1 and therefore technically tight in the long term
// ATEX marking EX II - 3G Ex h IIA T2 Gc X
- The label refers to the compressor without terminal box
- Electrics can be certified for potentially explosive atmospheres by the user

// For further information, see Operating Instructions KB-108

RECIPROCATING COMPRESSORS FOR NH_3

W/A SERIES

The W/A series is designed and optimised for applications with the refrigerant ammonia (NH_3). The open drive compressors – whether with direct or belt drive – ensure efficient and reliable operation both on land and at sea.

NH_3 AS A REFRIGERANT

Ammonia has been used as refrigerant R717 in industrial and large refrigeration systems for over a century. It has no ozone depletion potential and no direct global warming potential (GWP 0), while also delivering high efficiency thanks to excellent heat transfer rates. Especially in industrial refrigeration systems with their large refrigerant charge, the significant price advantage is another argument in favour of its use. Its intense odour makes it easily perceptible even at harmless concentrations. Thanks to these properties, it is an ideal alternative to synthetic refrigerants, but its use does mean that the system technology needs to be adapted: The compressor usually is of open design, with the motor as a separate component. The system is designed with steel pipes, a flooded evaporator and insoluble refrigeration compressor oils.

- RECIPROCATING COMPRESSORS
- NH_3
- INDUSTRIAL REFRIGERATION
- COMPRESSOR PACKS

PROVEN TECHNOLOGY

The compressors in the W/A series boast impressive durability and smooth operation. They are the ideal solution for NH_3 applications at lower capacity ranges of industrial refrigeration.

AMMONIA FOR RELIABLE COOLING

COMMERCIAL REFRIGERATION

Reliable and efficient operation in conventional medium temperature applications with air and water cooled condensers.

MARINE APPLICATIONS

The optional marine kit makes the compressors ideal for marine applications, both for refrigeration of supplies and for air conditioning.

PROCESS COOLING

The wide speed range allows to adapt the refrigerating capacity perfectly to the required demand of the system.

AIR CONDITIONING

Highly efficient operation in liquid chillers for the range up to 250 kW refrigerating capacity per compressor.

OPEN DRIVE COMPRESSORS FOR NH_3

FLEXIBLE DRIVE

Suitable for direct and belt drives

ROBUST AND RELIABLE

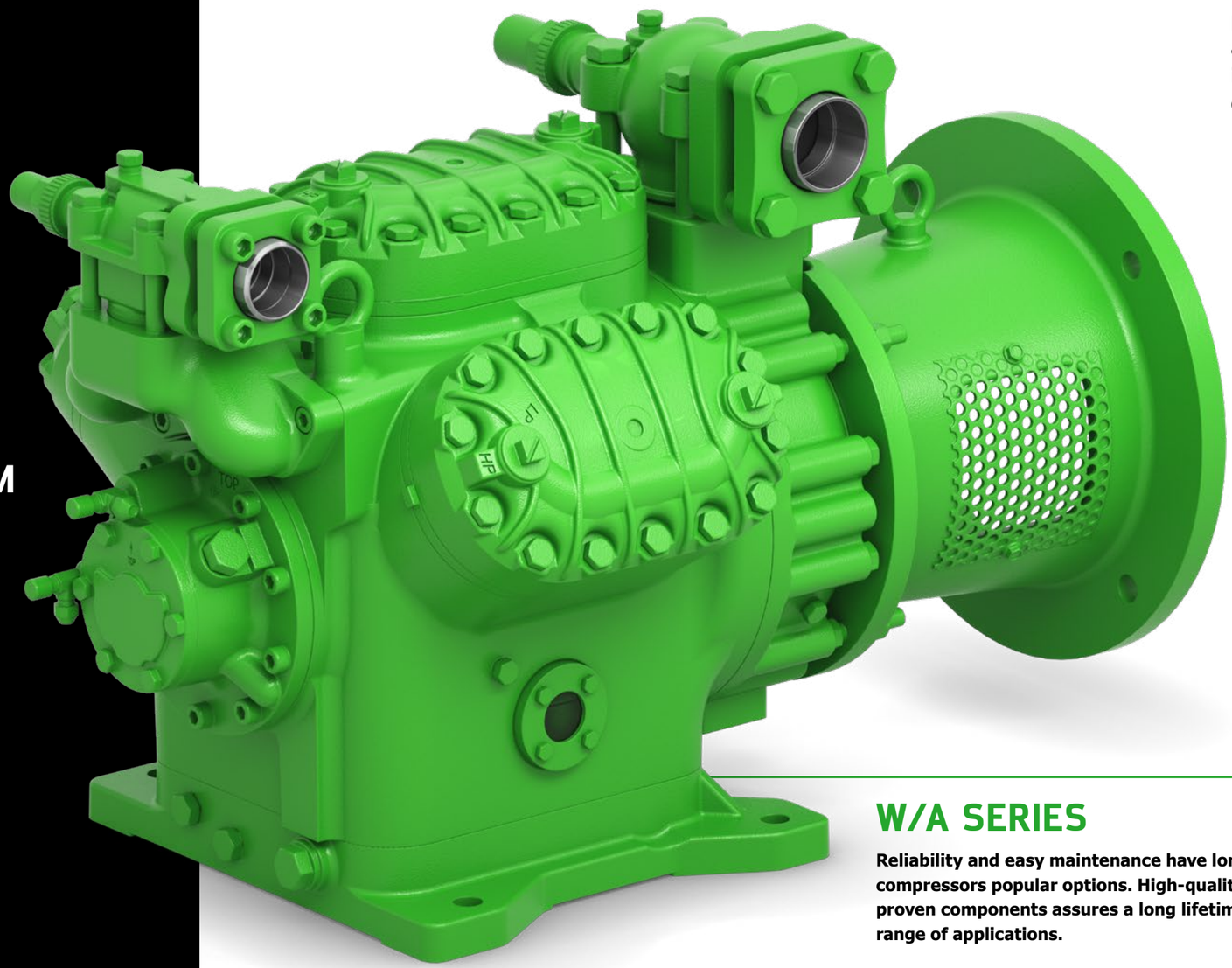
Long service life guaranteed

SAFE AT SEA

Convincing in marine applications

PROVEN LUBRICATION SYSTEM

Optimal lubrication with oil pump



The open drive reciprocating compressors in the W/A series for NH_3 applications can be used universally in industrial refrigeration and air conditioning as well as process cooling.

DIRECT DRIVE WITH COUPLING

Different coupling sizes available for all standard motor shafts

CAPACITY CONTROL

Capacity regulators available for all 4 and 6-cylinder compressors

OPERATING RELIABILITY AND EXTRA SMOOTH OPERATION

Specially adapted components and careful balancing of the moving mechanical parts

RELIABLE TIGHTNESS

The shaft seal is optimised for operation with NH_3 and is reliably cooled by refrigeration compressor oil and suction gas.

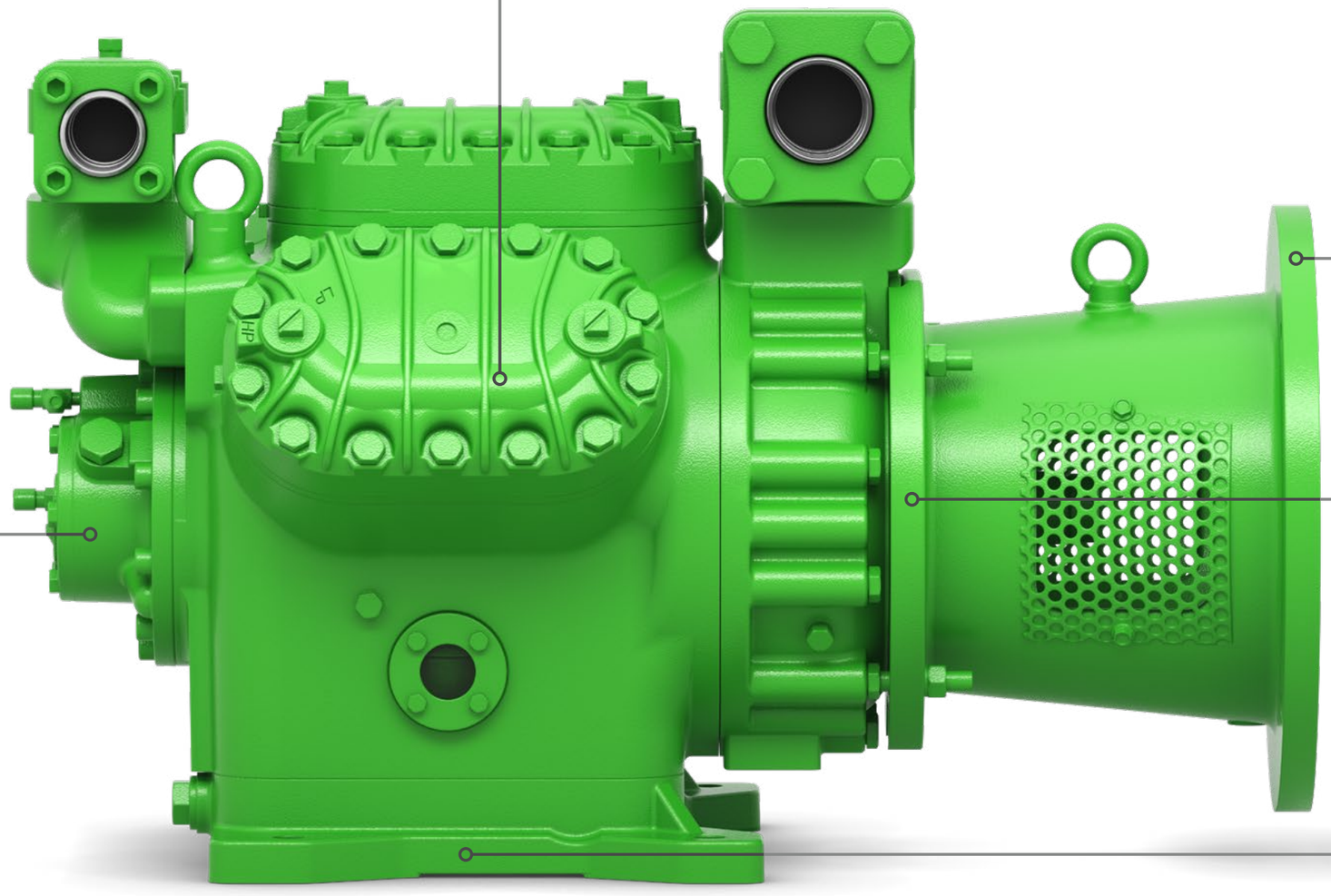
W/A SERIES

Reliability and easy maintenance have long made open drive compressors popular options. High-quality craftsmanship of proven components assures a long lifetime and a versatile range of applications.

W/A SERIES
FOR HIGHEST DEMANDS IN COOLING

EXTENSIVE EQUIPMENT OPTIONS
// Designs with 2, 4 and 6 cylinders for displacements of 19.7 .. 151.6 m^3/h
// Water cooled cylinder heads for fresh water and seawater
// Capacity control CR
// Coupling and coupling housing
// Differential oil pressure switch and discharge gas temperature sensor

RELIABLE LUBRICATION
// Pressure oil lubrication by means of a reversible gear pump
// Optional: oil valve for maintenance



OPTIMISED DRIVE GEAR
// Surface-hardened crankshaft design
// Optimised piston form and chromium-plated compression rings for minimal frictional losses
// Highly efficient, extremely sturdy valve plate design

DIFFERENT DRIVE OPTIONS
// Couplings available in all standard shaft diameters
// Coupling housing for IEC motors
// Pulleys in different diameters

SPECIAL SHAFT SEAL
// Special seal materials for operation with NH_3
// Shaft seal is optimally cooled by refrigeration compressor oil and suction gas
// Easy to change

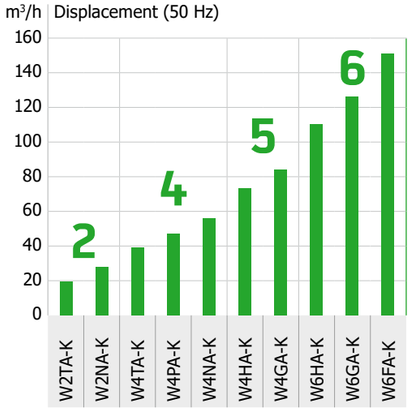
PRESSURE-RESISTANT HOUSING
// Maximum allowable pressures
- High pressure side 28 bar
- Low pressure side 19 bar

// Bolted bottom plate ideal for optional marine conversion kit

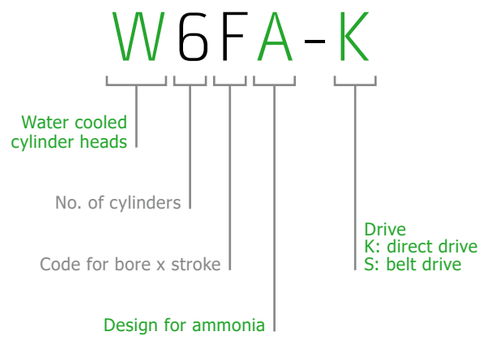
Exemplary illustration

COMPRESSORS FOR NH_3

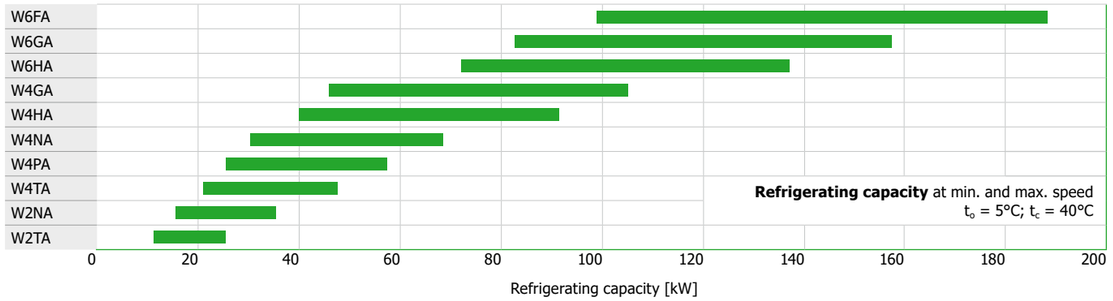
CAPACITY RANGES



EXPLANATION OF THE MODEL DESIGNATION



APPLICATION RANGES



MARINE VERSION

Most BITZER NH_3 compressors are also available in a marine version to meet the special challenges posed in applications in the offshore sector, on inland waterways and at sea. Whether they are used for refrigeration of supplies or air conditioning, the compressors always offer high operational safety and reliability.

// Safe operation at high angles of inclination thanks to specially adapted oil management
// Type approvals or individual approvals according to DNV, others upon request
// Optional marine paint
// BITZER Marine Service Network

More details can be found in the marine applications brochure A-270.

MARINE

PERFORMANCE DATA

The BITZER SOFTWARE is available in multiple languages, directly in a browser or as a Windows download. It is always up to date and also optimised for mobile devices.

The BITZER SOFTWARE comprises:

// Performance data for all established refrigerants at freely selectable operating conditions
// All relevant technical data
// Calculation results and individually defined performance tables for the compressors
// Seasonal calculations
// Parallel compounds
// Available accessories and their selection
// All relevant technical documents

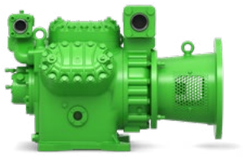
BITZER SOFTWARE

Further details can be found in the BITZER SOFTWARE. Scan QR code for more information.

TECHNICAL DATA AND PERFORMANCE VALUES

Compressor model	Displacement		Refrigerating capacity Q_o in kW	Oil charge in dm³	Weight in kg ②	Coupling		Cooling water connection
	at 1450 RPM in m³/h ①	at 1750 RPM in m³/h ①	t_o/t_c = 5°C/50°C			Low temperature application	Medium temperature application/air conditioning	Water cooled cylinder head
W2TA-K	19.6	23.7	21.6	1.75	51	KK215, max. 7.5 kW	KK211, max. 11 kW	G½
W2NA-K	28.0	33.8	30.3	1.75	52			G½
W4TA-K	39.3	47.4	40.5	4.0	77	KK415, max. 7.5 kW KK425, max. 22 kW	KK411, max. 11 kW KK420, max. 22 kW	G½
W4PA-K	47.1	56.8	49.1	4.0	77			G½
W4NA-K	56.1	67.7	58.5	4.0	77			G½
W4HA-K	73.6	88.8	76.8	4.7	129	KK625, max. 22 kW KK630, max. 45 kW	KK625, max. 22 kW KK630, max. 45 kW	G¾
W4GA-K	84.5	102.0	88.2	4.7	129			G¾
W6HA-K	110.5	133.4	115.2	5.0	153			G¾
W6GA-K	126.8	153.0	132.2	5.0	153			G¾
W6FA-K	151.6	183.0	158.0	5.0	161			G¾

Tentative data



W/A SERIEs

PERFORMANCE DATA

t_o: evaporation temperature
t_c: condensing temperature

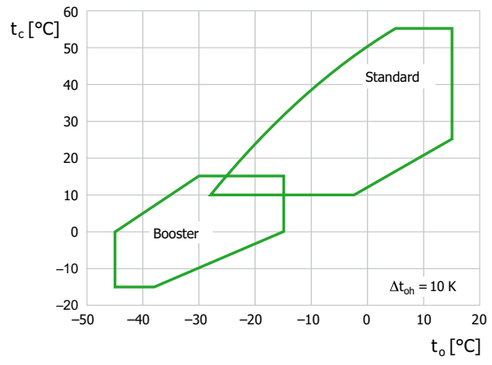
TOLERANCES

Refrigerating capacity as per EN 12900, weight ± 5%

① Minimum speed:
W2TA..W4GA: 750 RPM
W6HA..W6FA: 900 RPM
Maximum speed: 1750 RPM

② Weight specified without coupling.
Individual weight of the couplings:
KK211, KK215: 5.3 kg
KK411, KK415, KK425: 5.4 kg
KK420, KK620: 7.5 kg
KK625: 6,0 kg
KK630: 12.0 kg

APPLICATION LIMITS

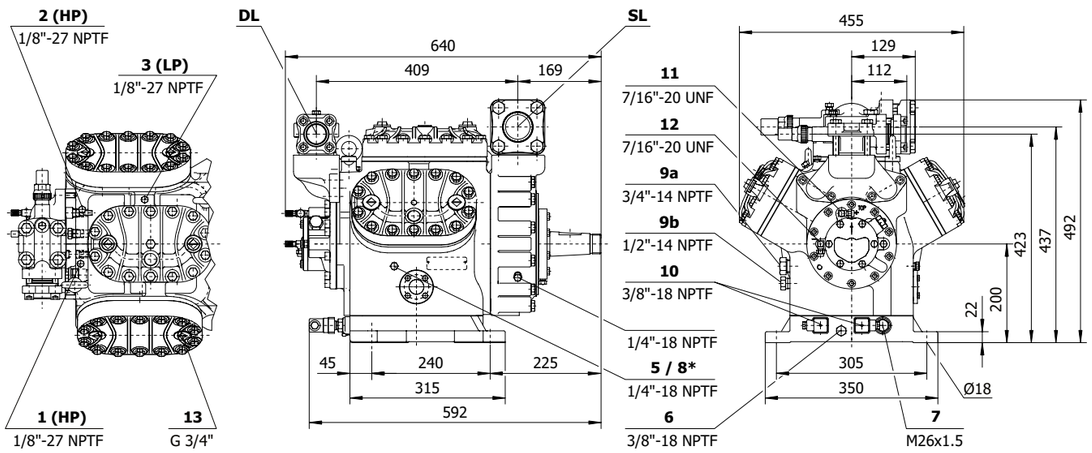


W2TA..W6FA

t_o Evaporation temperature (°C)
Δt_{oh} Suction gas superheat (K)
t_c Condensing temperature (°C)

DIMENSIONAL DRAWINGS

Exemplary dimensional drawing, details in the BITZER SOFTWARE.
Compressor model W6FA



CONNECTIONS

1	High pressure connection (HP)
2	Connection for discharge gas temperature sensor (HP)
3	Low pressure connection (LP)
5	Oil fill plug
6	Oil drain
7	Oil filter (magnetic screw)
8*	Oil return with insoluble oil for R717 applications
9a	Connection for gas equalisation (parallel operation)
9b	Connection for oil equalisation (parallel operation)
10	Connection for oil heater
11	Oil pressure connection +
12	Oil pressure connection –
13	Cooling water connection
SL	Suction gas line
DL	Discharge gas line

Dimensions subject to the tolerances specified in EN ISO 13920-B.

Further details can be found in the BITZER SOFTWARE.
Scan QR code for more information.

BITZER SOFTWARE

ACCESSORIES

WATER COOLED CYLINDER HEADS

// Expansion of application limits
// Seawater resistant design available
// Standard connection sizes for easy integration

MARINE KIT

// Deep bottom plate for optimal oil supply
// Conversion kit containing frame, seals, screws, plugs, etc.
// Easy to order as spare part

COUPLING AND COUPLING HOUSING

// Alternative to V-belt drive
// Direct mounting of the motor
// Housing protected from moving parts
// Types can be selected to match the motor

Further accessories can be found in the BITZER SOFTWARE.

Whether top or bottom fermented: precise temperature control in the brewery is crucial for a good beer. Ammonia as a refrigerant has a long tradition here – it offers high cooling capacity at affordable prices. Exactly what you want for a good draught beer.

RECIPROCATING COMPRESSORS FOR HFC/HFO

ECOLINE // H SERIES // 2-STAGE // EX VERSION

ECOLINE compressors for HFC and HFO refrigerants are the benchmark for any applications using synthetic refrigerants: in commercial refrigeration, low and medium temperature application and high evaporation temperatures, in heat pumps and special applications. Customers will find a suitable combination of compressor, motor and refrigerant for every application.

APPROVED FOR LOW GWP REFRIGERANTS

All ECOLINE compressors can be operated with refrigerants with low global warming potential (GWP), which is important for reducing emissions in line with international requirements. HFO refrigerants R1234yf and R1234ze(E) play a central role here, used as single substances or as part of a mixture.

UNIQUE OPERATING CHARACTERISTICS

ECOLINE compressors deliver a successful synthesis of balanced drive gear mechanics, motors with high efficiency across a broad operating range and an optimised charge cycle in the suction and compression process. Flow losses have been minimised and heat transmission from the hot gas to the suction gas side reduced.

RECIPROCATING COMPRESSORS

HFC

HFO

LOW GWP READY

INTELLIGENT PRODUCTS

RETROFIT IS SIMPLE

A system originally designed for R134a can be converted to R513A, for example, at any time (A1 drop-in). R1234yf is also possible, depending on the system and taking flammability into account. Compressors already operated with R448A or R449A can be converted to R454C, for example (A2L retrofit); see Technical Information AT-540 and following.

CHOICE OF REFRIGERANTS FOR FLEXIBLE APPLICATIONS

COMMERCIAL REFRIGERATION

ECOLINE compressors ensure reliable and efficient refrigeration and deep freezing in supermarkets, retail and restaurants.

HEAT PUMPS

ECOLINE compressors with motor version 1 are the right choice for applications with high condensing temperatures. A separate series – ECOLINE H – is available for high temperature heat pumps.

PROCESS COOLING AND AIR CONDITIONING

The highly efficient compressors work reliably with low operating costs – even when operated in tandem or in a compound system. Precise capacity control allows for tight temperature control with perfectly adapted refrigerating capacity.

MARINE APPLICATIONS

With the optional marine kit, ECOLINE compressors are also ideal for use on ships and drilling platforms.

PROVEN CHOICE FOR SYNTHETIC REFRIGERANTS

DIVERSE SELECTION OF REFRIGERANTS

Suitable for all standard refrigerants in safety classes A1 and A2L, depending on the design

INTUITIVE INTERFACE

Activation and configuration of peripheral devices via the IQ MODULE

VARIOUS SIZES AND CAPACITIES

2. 4. 6 and 8-cylinder compressors with displacements of 4 .. 221 m^3/h. Tandems up to 303 m^3/h

LONG LIFETIME, LOW COSTS

Wear-resistant drive gear with multi-layer bearings. Highly efficient motors and optimised suction gas routing

PRECISE CAPACITY CONTROL

Can be equipped with VARISTEP and operated with frequency inverter up to 70 Hz. Also ideal in compound systems

ECOLINE compressors are design know-how cast in metal, representing over 80 years of development experience by the market leader in reciprocating compressor technology. In addition to single and tandem compressors, there are special designs for different applications:

ECOLINE H SERIES

These specialists for high temperature heat pumps and transport applications are equipped with a reinforced drive gear and lubrication system.

ECOLINE 2-STAGE

The extremely compact 2-stage compressors raise the bar in terms of technology and capacity for expanded low temperature application.

ECOLINE FOR EXPLOSION-PROOF AREAS

The compressors are equipped for zones 1 and 2 and certified in accordance with EU Explosion Protection Directive 2014/34/EU.

ECOLINE SINGLE PHASE

Compressors with single phase motor can be operated on the public low voltage network or with a generator. They are equipped with a starting device.

ECOLINE VARISPEED

The integrated suction gas cooled frequency inverter is completely pre-configured and allows for a large control range. VARISPEED compressors are therefore suitable for systems with extreme load fluctuations and as lead compressors in compound systems.

ECOLINE

Compressors optimised from start to finish with robust components and excellent energy efficiency at full and part load.

ECOLINE FOR HFC/HFO

LARGEST VARIETY OF REFRIGERANTS AND APPLICATIONS

EXTENSIVE EQUIPMENT OPTIONS

// VARISTEP stepless or stepped capacity control on one, multiple or all cylinder banks
// Oil monitoring and application limit monitoring
// Discharge gas temperature sensor and oil heater
// Different connection sizes and shut-off valves
// Water cooled cylinder heads and additional fan

MECHATRONIC CAPACITY CONTROL

IQ MODULE CM-RC-02

// Activation and configuration of peripheral devices
// Data log
// Application limit monitoring

IQ INTELLIGENT PRODUCTS

PRESSURE-RESISTANT HOUSING

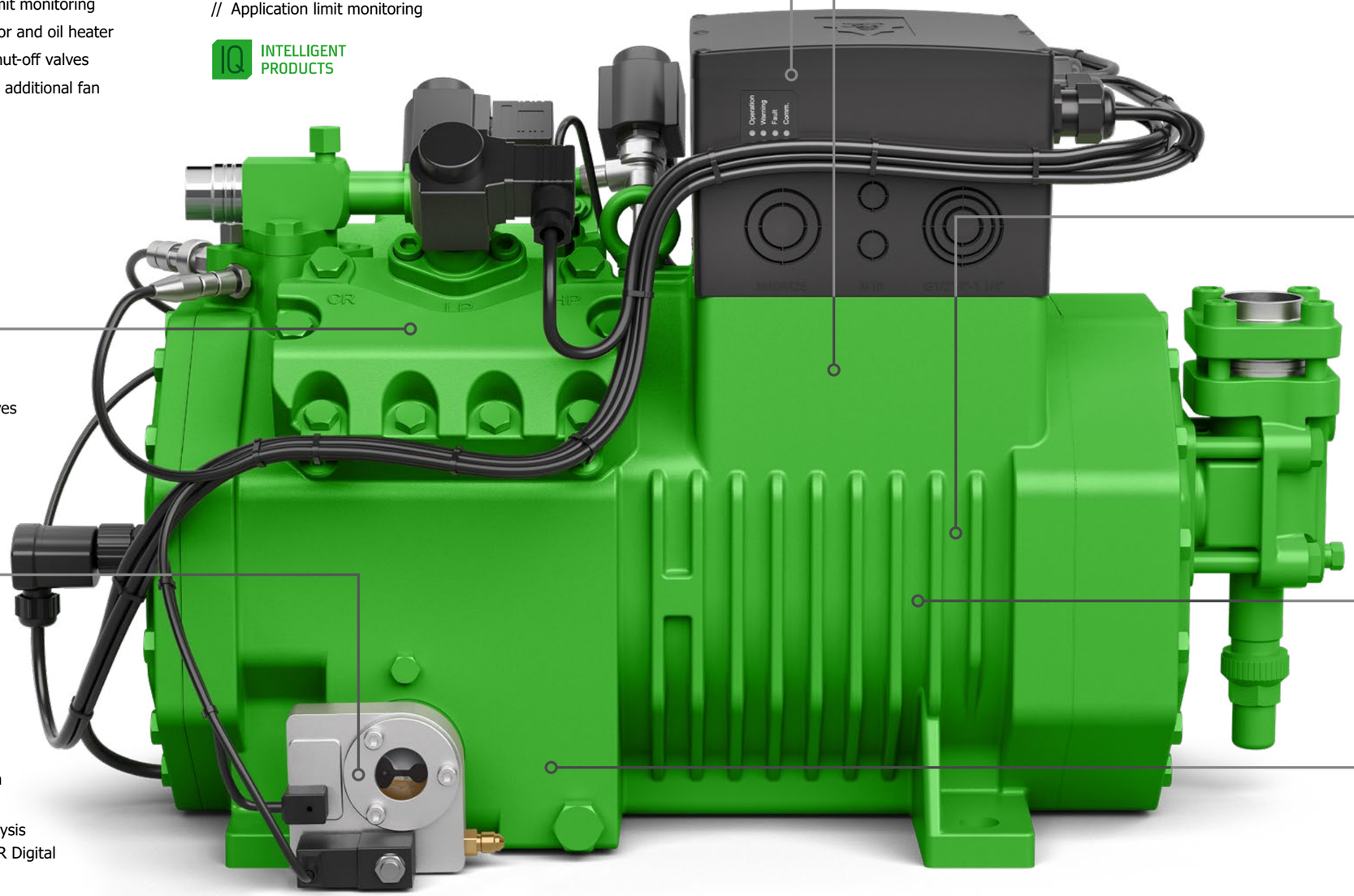
// Maximum allowable pressures

ECOLINE compressors:
- High pressure side 32 bar
- Low pressure side 19 bar

ECOLINE 2-stage:
- High pressure side 28 bar
- Low pressure side 19 bar each

TANDEMS

Tandem compressors deliver double the capacity for the same range of applications. Their capacity can be controlled virtually stepless between 5 and 100%.



WEAR-RESISTANT AND EFFICIENT DRIVE GEAR

// Advanced multi-layer bearings
// Particularly efficient working valves
// Minimal clearance volume
// Reduced flow losses at low condensing temperatures

OLM-IQ OIL LEVEL CONTROLLER

// Reliable stepless measurement via float
// High precision, regardless of oil foams
// Simultaneous measurement and oil injection
// Easy configuration and operation via IQ MODULE
// Data collection, logging and analysis via BEST SOFTWARE and BITZER Digital Network (BDN)

DIFFERENT MOTOR VERSIONS

// Motor 1 for demanding pressure levels
// Motor 2 for conventional medium and low temperature application
// Motor 3 for moderate operating pressures, such as for supermarket applications with R134a or refrigerants with the same pressure level and for operation with frequency inverter up to 70 Hz
// Special voltage motors

HIGH ENERGY EFFICIENCY

// Large suction gas cooled motor
// Ideal for speed control

QUIET AND LOW IN VIBRATION

// Optimised mass compensation
// Low discharge gas pulsations thanks to special cylinder head design
// Compressor mounting with vibration dampers

Exemplary illustration

COMPRESSORS FOR **HFC / HFO**

PERFORMANCE DATA

The BITZER SOFTWARE is available in multiple languages, directly in a browser or as a Windows download. It is always up to date and also optimised for mobile devices.

The BITZER SOFTWARE comprises:

// Performance data for all established refrigerants at freely selectable operating conditions
// All relevant technical data
// Calculation results and individually defined performance tables for the compressors
// Seasonal calculations
// Parallel compounds
// Available accessories and their selection
// All relevant technical documents

ASERCOM CERTIFICATION

The Association of European Refrigeration Component Manufacturers (ASERCOM) implemented a certification for performance data of refrigeration compressors. The high standard of this certification is guaranteed by:

// Plausibility checks on the data carried out by experts
// Regular measurements by independent institutes

A number of BITZER compressors are already certified, and more will follow. Compressor performance data that meet these strict requirements are permitted to carry the label 'ASERCOM certified product'. All certified compressors are listed on the ASERCOM website with further information (www.asercom.org).

In the BITZER SOFTWARE, the corresponding compressors are marked with this label.

BITZER SOFTWARE

Further details can be found in the BITZER SOFTWARE. Scan QR code for more information.

LUBRICATION SYSTEM

Compressors in housing sizes 1 and 2 are always equipped with centrifugal lubrication; compressors in housing sizes 3 and 4 are fitted with centrifugal lubrication or an oil pump, depending on the series. Housing sizes 5..8 always have an oil pump. The housing size is assigned specified in the capacity range charts on the following pages.

Housing size	1	2	3	4	5	6	8
ECOLINE single compressor				[1]			
ECOLINE tandem				[1]			
ECOLINE single phase							
ECOLINE H							
ECOLINE 2-stage							
ECOLINE explosion protection							

Centrifugal lubrication
Design with oil pump
[1] Special version with oil pump possible

MARINE VERSION

Most BITZER HFC/HFO compressors are also available in a marine version to meet the special challenges posed in applications in the offshore sector, on inland waterways and at sea. Whether they are used for refrigeration of supplies, air conditioning or even in large heat pumps, the compressors always offer high operating safety and reliability.

// Safe operation at high angles of inclination thanks to specially adapted oil management
// Type approvals or individual approvals according to DNV, others upon request
// Optional marine paint
// BITZER Marine Service Network

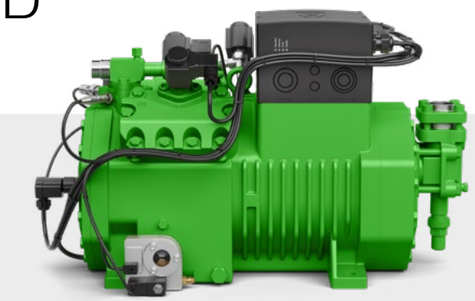
More details can be found in the marine applications brochure A-270.

MARINE

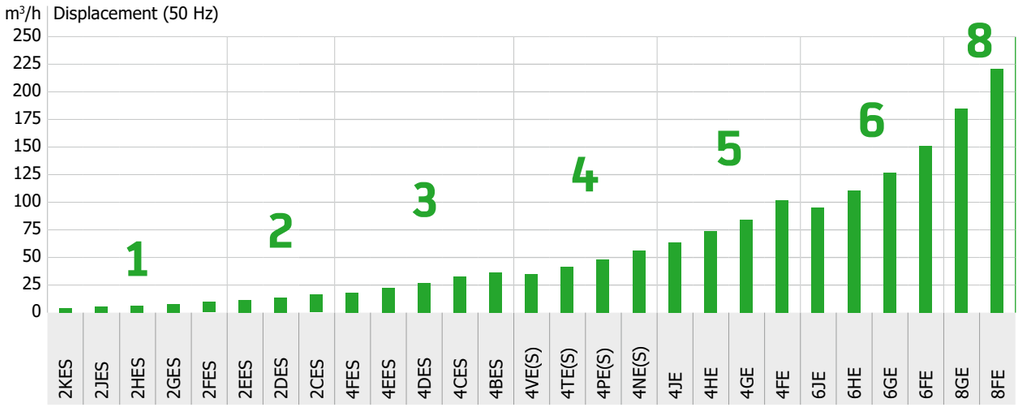
ECOLINE STANDARD

2KES .. 8FE

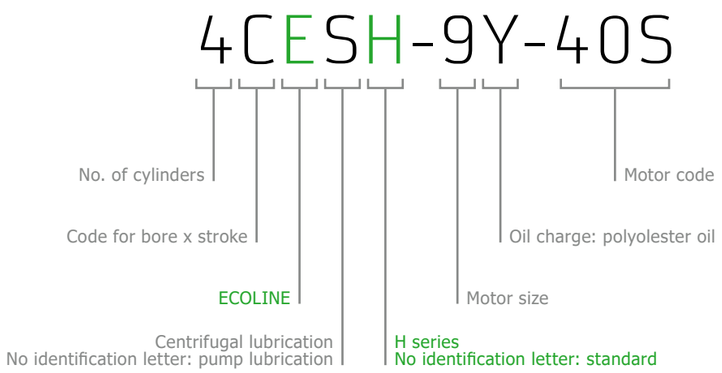
The highly efficient compressors in the ECOLINE series can be used universally and meet the demanding requirements of modern refrigeration systems, such as those for part load efficiency and the seasonal energy efficiency ratio SEER. Every ECOLINE compressor is compatible with its predecessor and can be replaced without modifying the system.



CAPACITY RANGES

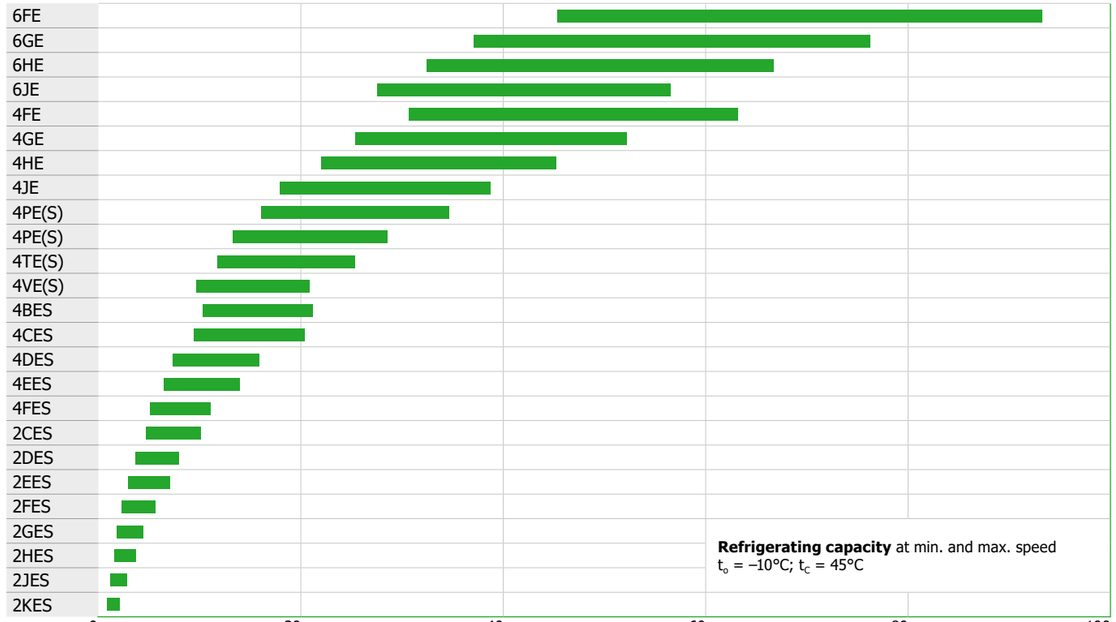


EXPLANATION OF THE MODEL DESIGNATION

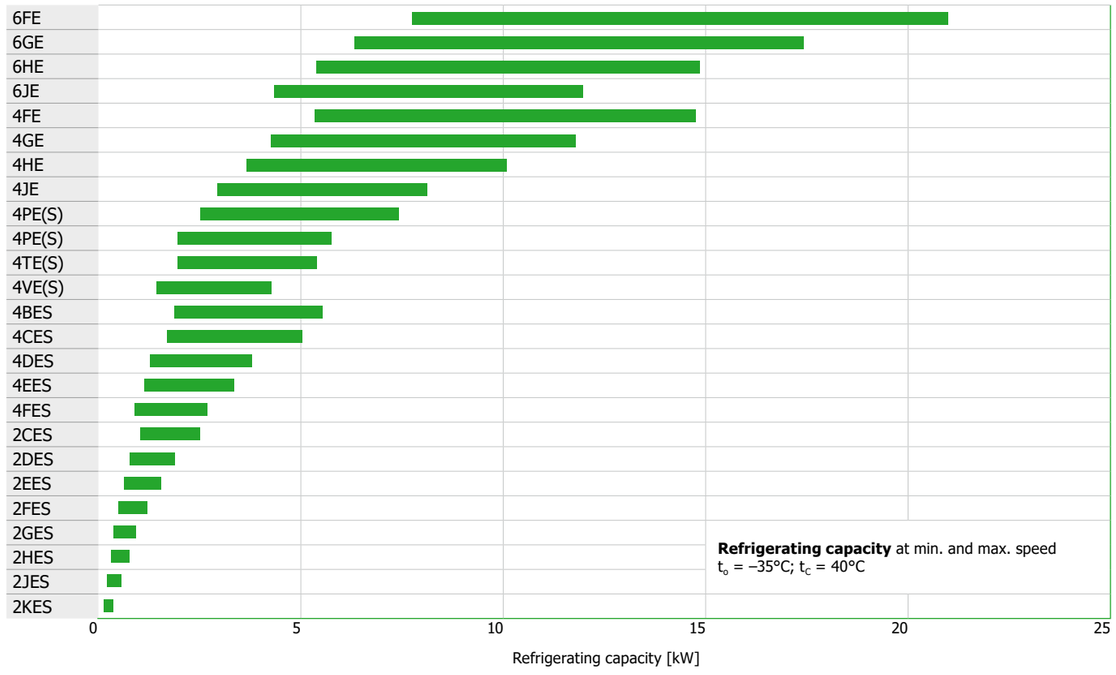


APPLICATION RANGES

Medium temperature application with R448A/R449A



Low temperature application with R454C



TECHNICAL DATA AND PERFORMANCE VALUES

Compressor model	Motor version	Displacement at 50 Hz in m³/h	Refrigerating capacity Q_o in kW			Oil charge in dm³	Weight in kg ①	Electrical data
			R1234yf t_o/t_c = –10°C/45°C	R448A/449A t_o/t_c = –10/45°C	R454C t_o/t_c = –35/40°C			Max. operating current in A ②
								Δ/Y Motor
2KES-05Y	1	4.06	1.03	1.65	0.31	1.0	46	4.9 / 2.8
2JES-07Y	1	5.21	1.32	2.23	0.48	1.0	47	6.4 / 3.7
2HES-1Y	2	6.51	1.84	2.86	0.64	1.0	47	6.6 / 3.8
2HES-2Y	1	6.51	1.83	2.86	0.64	1.0	49	7.8 / 4.5
2GES-2Y	1	7.58	2.17	3.38	0.78	1.0	49	8.7 / 5.0
2FES-2Y	2	9.54	2.59	4.27	1.00	1.0	49	9.2 / 5.3
2FES-3Y	1	9.54	2.69	4.27	1.00	1.0	50	10.6 / 6.1
2EES-2Y	2	11.4	3.34	5.38	1.29	1.5	74	10.4 / 6.0
2EES-3Y	1	11.4	3.34	5.38	1.29	1.5	77	13.0 / 7.5
2DES-2Y	2	13.4	3.89	6.25	1.55	1.5	73	13.0 / 7.5
2DES-3Y	1	13.4	3.89	6.25	1.55	1.5	77	15.0 / 8.6
2CES-3Y	2	16.2	4.98	7.98	2.07	1.5	76	15.8 / 9.1
2CES-4Y	1	16.2	4.98	7.98	2.07	1.5	76	17.4 / 10.0
4FES-3Y	2	18.1	5.14	8.74	2.23	2.0	90	16.5 / 9.5
4FES-5Y	1	18.1	5.14	8.74	2.23	2.0	95	18.0 / 10.8
4EES-4Y	2	22.7	6.80	10.95	2.77	2.0	93	21.1 / 12.2
4EES-6Y	1	22.7	6.80	10.95	2.77	2.0	95	23.7 / 13.6
4DES-5Y	2	26.8	7.65	12.48	3.13	2.0	94	25.5 / 14.5
4DES-7Y	1	26.8	7.65	12.48	3.13	2.0	100	28.7 / 16.5
4CES-6Y	2	32.5	9.79	15.94	4.16	2.0	99	30.8 / 17.7
4CES-9Y	1	32.5	9.79	15.94	4.16	2.0	99	35.1 / 20.2
4BES-9Y	2	36.1	10.76	17.52	4.55	2.0	99	31.3 / 18.0
								PW Motor
4VE(S)-7Y	2	34.7	10.24	16.31	3.58	2.6	142 (139)	16.6
4VE(S)-10Y	1	34.7	10.01	16.32	3.52	2.6	149 (146)	19.9
4TE(S)-9Y	2	41.3	12.47	19.94	4.56	2.6	144 (143)	19.9
4TE(S)-12Y	1	41.3	12.18	19.89	4.45	2.6	148 (147)	25.1
4PE(S)-12Y	2	48.5	14.08	22.60	4.91	2.6	147 (145)	22.7
4PE(S)-15Y	1	48.5	13.77	22.40	4.74	2.6	156 (153)	28.2
4NE(S)-14Y	2	56.2	16.77	27.10	6.21	2.6	155 (146)	26.6
4NE(S)-20Y	1	56.2	16.63	27.10	6.10	2.6	159 (157)	33.2
4JE-15Y	2	63.5	19.42	31.60	7.52	4.0	192	30.8
4JE-22Y	1	63.5	18.97	30.60	6.85	4.0	192	37.2
4HE-18Y	2	73.7	23.10	37.10	9.07	4.0	191	36.7
4HE-25Y	1	73.7	22.70	36.30	8.49	4.0	207	44.0
4GE-23Y	2	84.6	25.90	43.10	10.85	4.5	196	43.9
4GE-30Y	1	84.6	26.50	41.80	9.94	4.5	209	51.2
4FE-28Y	2	101.8	31.90	51.20	13.04	4.5	207	52.8
4FE-35Y	1	101.8	31.10	50.60	12.44	4.5	207	62.1
6JE-25Y	2	95.3	28.40	47.00	11.24	4.75	234	46.4
6JE-33Y	1	95.3	28.60	45.30	10.10	4.75	244	53.2
6HE-28Y	2	110.5	33.80	54.50	13.40	4.75	233	53.2
6HE-35Y	1	110.5	33.10	53.40	12.53	4.75	241	64.4
6GE-34Y	2	126.8	38.90	64.10	16.61	4.75	230	65.5
6GE-40Y	1	126.8	38.90	61.10	14.68	4.75	240	73.9
6FE-44Y	2	151.6	47.10	76.60	19.54	4.75	244	83.2
6FE-50Y	1	151.6	45.90	74.70	18.00	4.75	246	96.2
8GE-50Y	2	185.0	upon request			5.0	342	92
8GE-60Y	1	185.0	upon request			5.0	352	113
8FE-60Y	2	221.0	upon request			5.0	361	113
8FE-70Y	1	221.0	upon request			5.0	363	139

PERFORMANCE DATA

Data based on 20°C suction gas temperature
t_o: evaporation temperature
t_c: condensing temperature

TOLERANCES

Refrigerating capacity as per EN 12900, weight ± 5%,
maximum operating current ± 5%,
maximum power consumption ± 5%

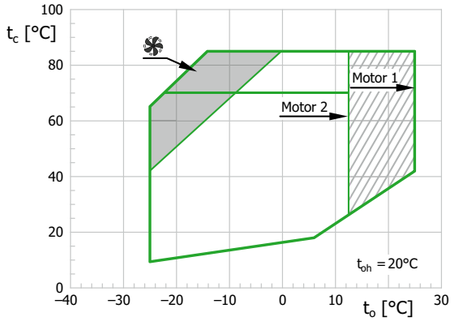
① Rows with two weights specified: the first value is the weight of the compressor with oil pump, the value in brackets is the weight of the compressor with centrifugal lubrication.

② Data for star or delta direct-on-line start motor are based on 400 V/3/50 Hz with direct mains operation, as are the data for the part winding motor at 50 Hz.
Take max. operating current/max. power consumption into account when selecting contactors, cables and fuses.
Contactors: operational category AC3. Use thermal overload relay to protect the max. operating current.

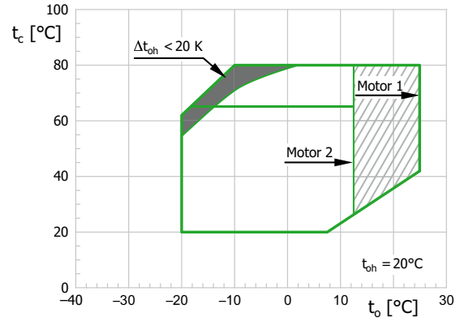
These data also apply to the corresponding ECOLINE compressors for explosion-proof areas. Displacement and capacity are doubled for tandem compressors.

APPLICATION LIMITS

R1234yf, R513A, R450A, R134a
(R450A: minimum evaporation temperature: –22°C)

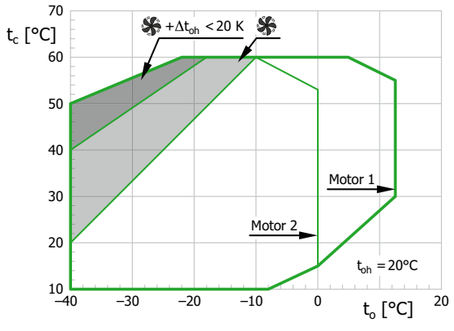


2KES..6FE and 22EES..66FE

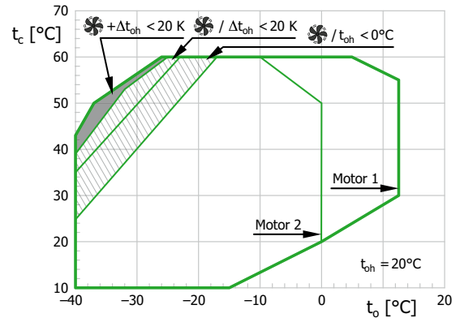


8GE..8FE

R454C, R448A, R449A



2KES..4BES and 22EES..44CES



4VES..6FE and 44VES..66FE

t_o Evaporation temperature (°C)
t_{oh} Suction gas temperature (°C)
Δt_{oh} Suction gas superheat (K)
t_c Condensing temperature (°C)

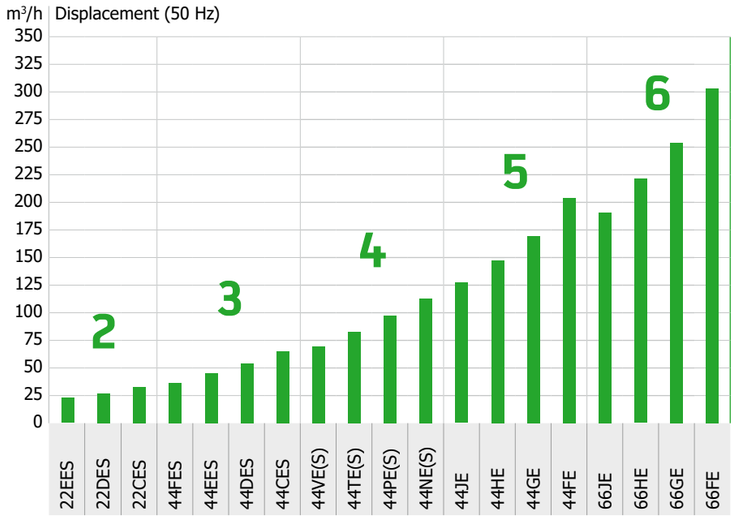
Additional cooling required
Additional cooling or restricted suction gas superheat required
Additional cooling and restricted suction gas superheat required
Suction gas superheat less than 20 K
Suction gas superheat at least 10 K

Additional compressors and refrigerants upon request.

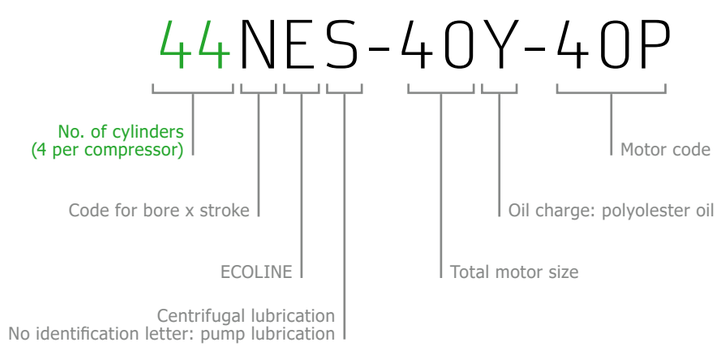
ECOLINE TANDEM 22EES..66FE

Tandem compressors are the easiest and safest form of a parallel compound with two compressors. The crankcases are connected by a large suction gas chamber, which enables oil and gas equalisation to be achieved automatically. Refrigerants, application limits and oils are the same as for the single compressor, while displacement and capacity are doubled. With the IQ MODULE and VARISTEP, virtually stepless capacity control from 100% to around 5% is possible for 4 and 6-cylinder models. An oil level control system must be installed between the two sides when operating with a frequency inverter.

CAPACITY RANGES



EXPLANATION OF THE MODEL DESIGNATION



ECOLINE SINGLE PHASE 2KES-05.E..2FES-2.E

These compressors with single phase motor can be operated on the public low voltage network or with a generator. They are equipped with a starting device. The 2-cylinder compressors are available for displacements of 4..9.5 m³/h and can be operated with many HFC and HFO refrigerants, such as R1234yf or R454C. The standard oil charge is polyolester oil BSE32, while polyolester oil BSE55 is optionally available and required for condensing temperatures above 70°C.

Optimal temperatures are a requirement for global trade in goods and for many industrial processes. BITZER compressors set standards worldwide when it comes to efficiency and reliability. A wide range of systems can be implemented, using single compressors or combining them in a compound system.

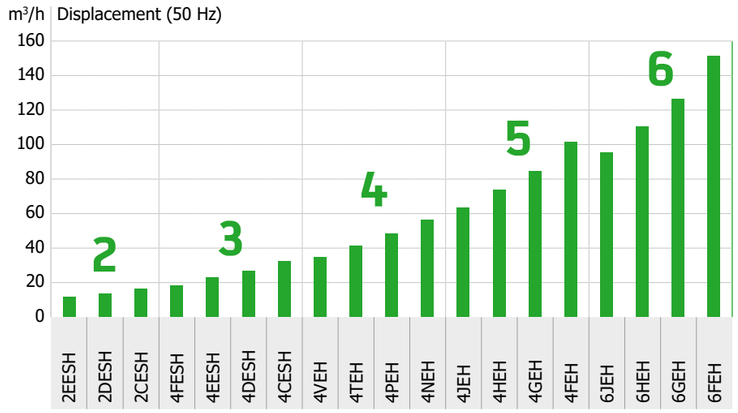
ECOLINE H SERIES

2EESH..6FEH

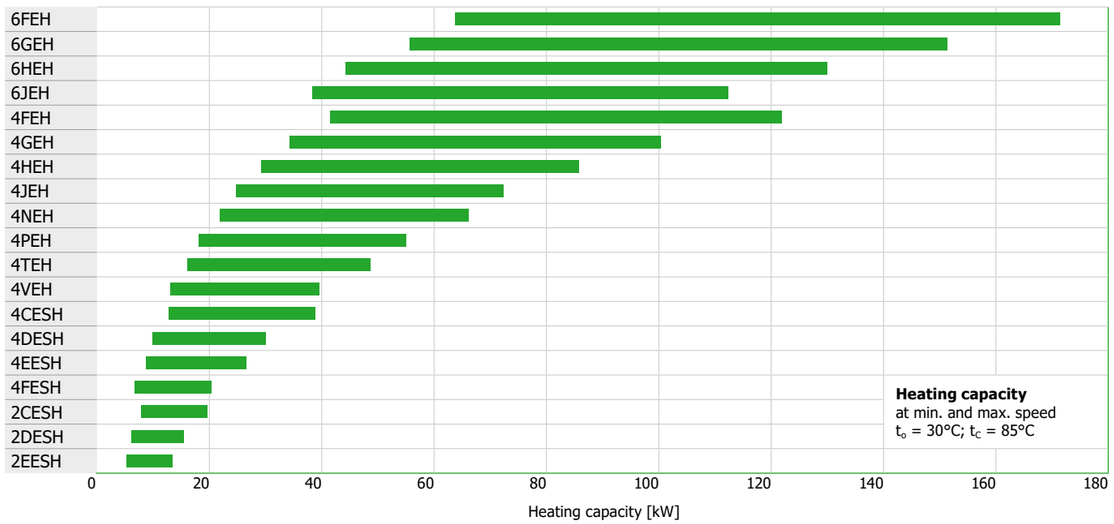
Compressors in the H series are equipped with a reinforced drive gear and optimised lubrication. This makes them suitable for the demanding conditions in high temperature heat pumps, railway air conditioning and transport cooling.

HEAT PUMPS

CAPACITY RANGES



APPLICATION RANGES



TECHNICAL DATA AND PERFORMANCE VALUES

Compressor model	Displacement at 50 Hz in m³/h	Heating capacity Q_h in kW R515B t_o/t_c = 30°C/85°C	Oil charge in dm³	Weight in kg	Electrical data Max. operating current in A ①
					Δ/Y Motor
2EESH-3Y	11.4	9.49	1.5	77	13.0 / 7.5
2DESH-3Y	13.4	11.07	1.5	77	15.0 / 8.6
2CESH-4Y	16.2	14.07	1.5	76	17.4 / 10.0
4FESH-5Y	18.1	14.55	2.0	95	18.0 / 10.8
4EESH-6Y	22.7	18.98	2.0	95	23.7 / 13.6
4DESH-7Y	26.8	21.50	2.0	100	28.7 / 16.5
4CESH-9Y	32.5	27.60	2.0	99	35.1 / 20.2
					PW Motor
4VEH-10Y	34.7	28.30	2.6	149	19.9
4TEH-12Y	41.3	34.70	2.6	148	25.1
4PEH-15Y	48.5	39.20	2.6	156	28.2
4NEH-20Y	56.2	47.10	2.6	159	33.2
4JEH-22Y	63.5	51.70	4.0	192	37.2
4HEH-25Y	73.7	61.30	4.0	207	44.0
4GEH-30Y	84.6	71.50	4.5	209	51.2
4FEH-35Y	101.8	86.80	4.5	207	62.1
6JEH-33Y	95.3	79.90	4.75	244	53.2
6HEH-35Y	110.5	92.50	4.75	241	64.4
6GEH-40Y	126.8	107.60	4.75	240	73.9
6FEH-50Y	151.6	121.90	4.75	246	96.2

PERFORMANCE DATA

Data based on 10 K suction gas superheat
t_o: evaporation temperature
t_c: condensing temperature
All compressors with motor version 1.
The values are very similar for R1234ze(E).

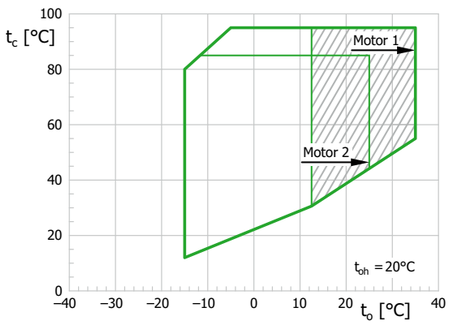
TOLERANCES

Heating capacity as per EN 12900, weight ± 5%,
maximum operating current ± 5%,
maximum power consumption ± 5%

① Data for star or delta direct-on-line start motor are based on 400 V/3/50 Hz with direct mains operation, as are the data for the part winding motor at 50 Hz.
Take max. operating current/max. power consumption into account when selecting contactors, cables and fuses.
Contactors: operational category AC3. Use thermal overload relay to protect the max. operating current.

APPLICATION LIMITS

R515B, R1234ze(E)



2EESH..6FEH

t_o Evaporation temperature (°C)
t_{oh} Suction gas temperature (°C)
t_c Condensing temperature (°C)

Suction gas superheat at least 10 K

Other refrigerants upon request.

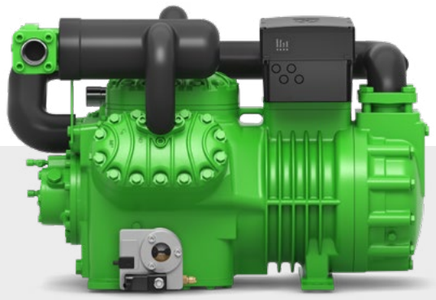
Further details can be found in the BITZER SOFTWARE.
Scan QR code for more information.

BITZER SOFTWARE

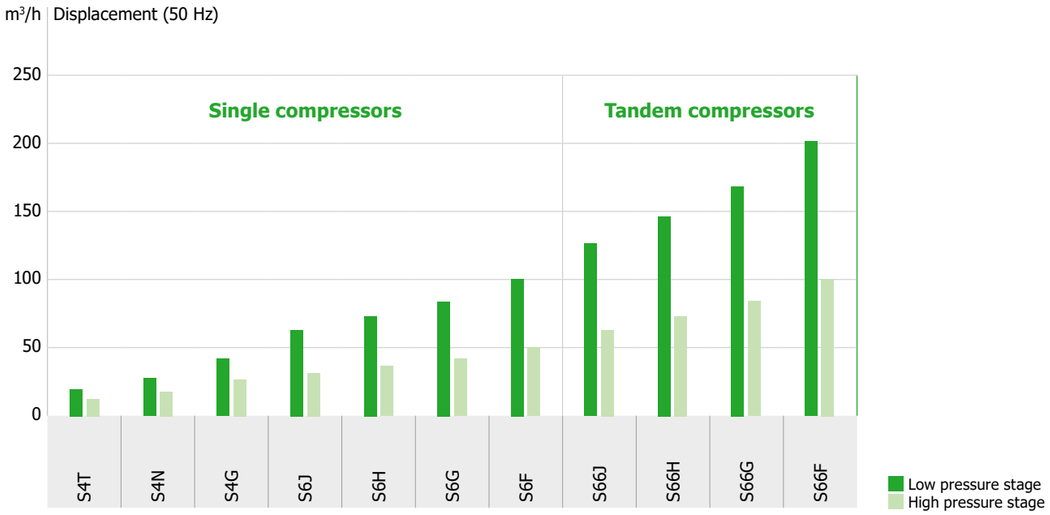
ECOLINE 2-STAGE

S4T..S6F // S66J..S66F

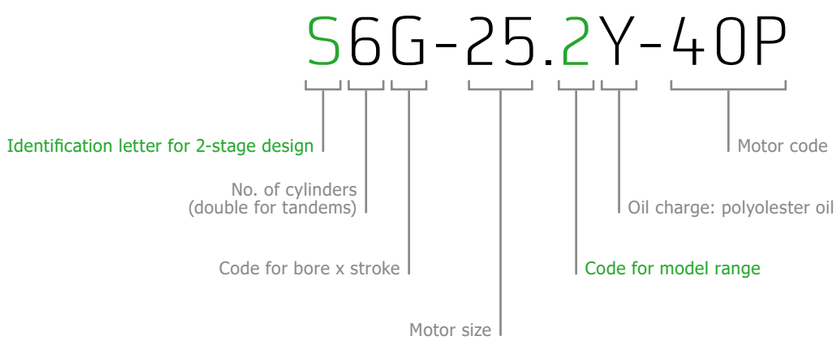
The 2-stage compressors are the best choice for extremely low temperature applications with different refrigerants. They are designed for an extensive application range and boast an optimised drive gear and efficient motor. The series is durable and reliable, and also available as tandem compressors.



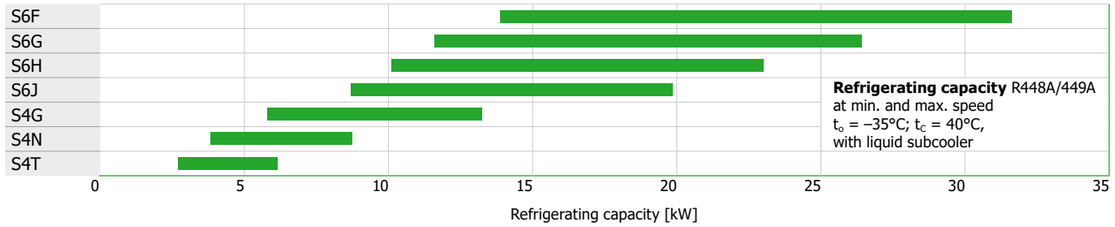
CAPACITY RANGES



EXPLANATION OF THE MODEL DESIGNATION



APPLICATION RANGES



TECHNICAL DATA AND PERFORMANCE VALUES

Compressor model	Displacement at 50 Hz in m³/h		Refrigerating capacity Q_o in kW	Oil charge in dm³	Weight in kg	Electrical data
	Low pressure stage	High pressure stage	R448A/449A t_o/t_C = –35°C/40°C			Max. operating current in A ⓘ
S4T	19.7	12.6	4.56	3.0	136	14
S4N	28.0	17.9	6.48	3.0	141	17
S4G	42.3	27.0	9.78	4.5	180	24
S6J	63.5	31.8	14.69	4.75	209	31
S6H	73.6	36.9	17.02	4.75	220	37
S6G	84.5	42.3	19.54	4.75	233	43
S6F	101.1	50.5	23.40	4.75	234	51
S66J	2 x 63.5	2 x 31.8	29.4	9.5	411	2 x 31
S66H	2 x 73.6	2 x 36.9	34.0	9.5	433	2 x 37
S66G	2 x 84.5	2 x 42.3	39.1	9.5	459	2 x 45
S66F	2 x 101.1	2 x 50.5	46.8	9.5	461	2 x 53

PERFORMANCE DATA

Data based on 10 K suction gas superheat with liquid subcooler
t_o: evaporation temperature
t_c: condensing temperature

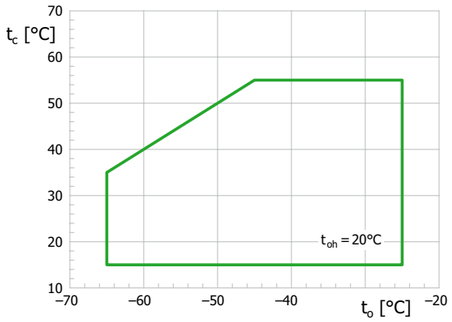
TOLERANCES

Weight ± 5%,
maximum operating current ± 5%,
maximum power consumption ± 5%

ⓘ Data based on 400 V/3/50 Hz with direct mains operation.
Take max. operating current/max. power consumption into account when selecting contactors, cables and fuses.
Contactors: operational category AC3. Select both contactors for approx. 60% of the maximum operating current.

APPLICATION LIMITS

R448A, R449A



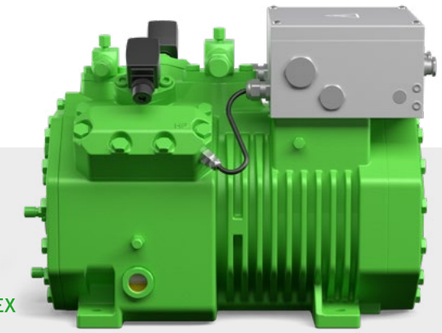
S4T..S66F

t_o Evaporation temperature (°C)
t_{oh} Suction gas temperature (°C)
t_c Condensing temperature (°C)

Additional compressors and refrigerants upon request.

ECOLINE FOR EXPLOSION-PROOF AREAS

2KES-05.EX .. 8FE-70.EX



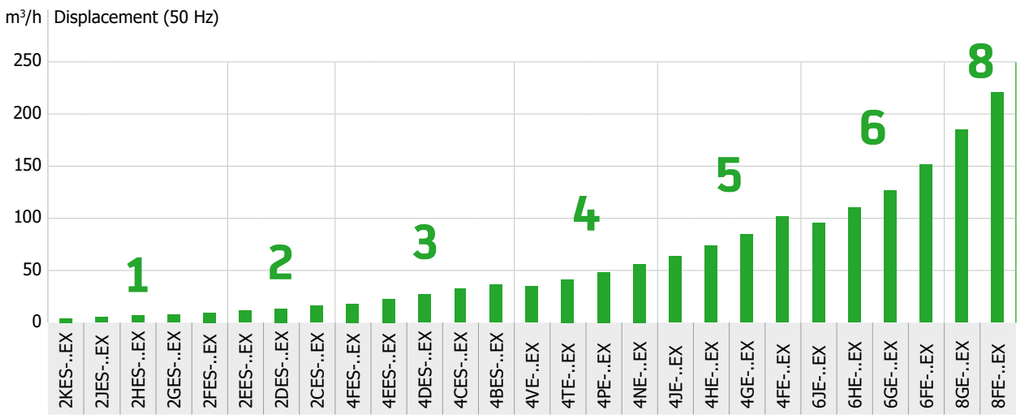
Special versions are available for use in potentially explosive atmospheres (zones 1 and 2). They are certified in accordance with the EU Explosion Protection Directive 2014/34/EU and equipped with

// Special terminal box
// Discharge gas temperature sensor in every cylinder head
// Oil monitoring
// Optional: oil heater and, depending on the model, capacity regulator and/or start unloading

ATEX

The performance data correspond to that of the standard ECOLINE compressors listed above. For further information, see Operating Instructions KB-109.

CAPACITY RANGES



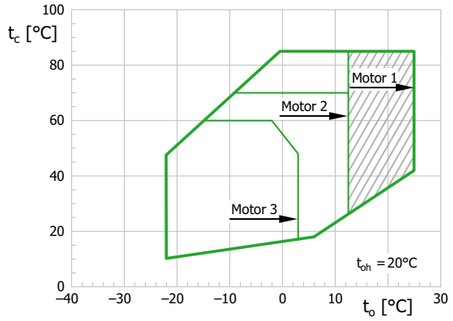
EXPLANATION OF THE MODEL DESIGNATION

2CES-4.EXY-40S

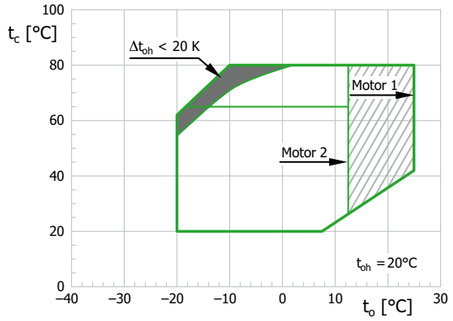
Special version for explosion-proof areas
.EX: device category 2, mechanical and electrical

APPLICATION LIMITS

R1234yf, R513A, R450A, R134a
With R134a at t_c > 70°C, BSE55 oil must be used.

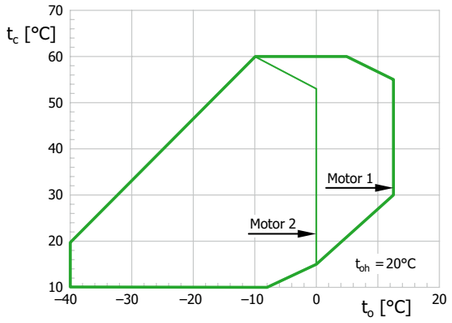


2KES-05EX .. 6FE-50EX

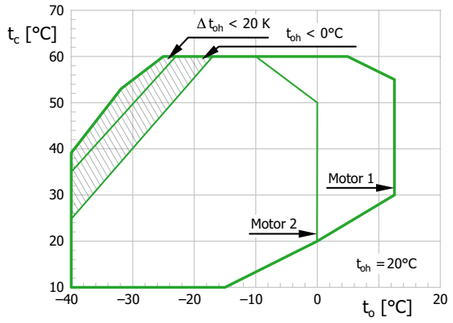


8GE-50EX .. 8FE-50EX

R448A, R449A



2KES-05EX .. 4CES-9EX



4VES-7EX .. 6FE-50EX

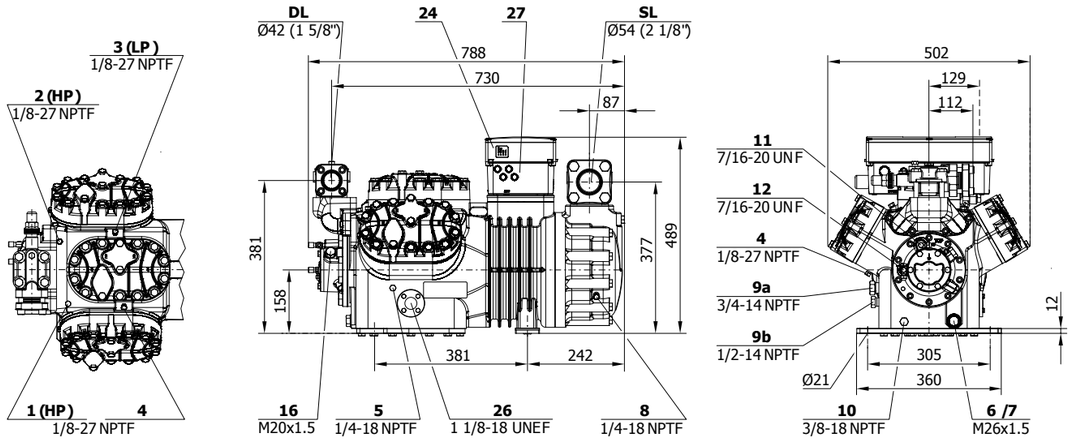
t_o Evaporation temperature (°C)
t_{oh} Suction gas temperature (°C)
Δt_{oh} Suction gas superheat (K)
t_c Condensing temperature (°C)

Suction gas superheat at least 10 K
Suction gas superheat less than 20 K

For additional compressors and refrigerants, see Operating Instructions KB-109.

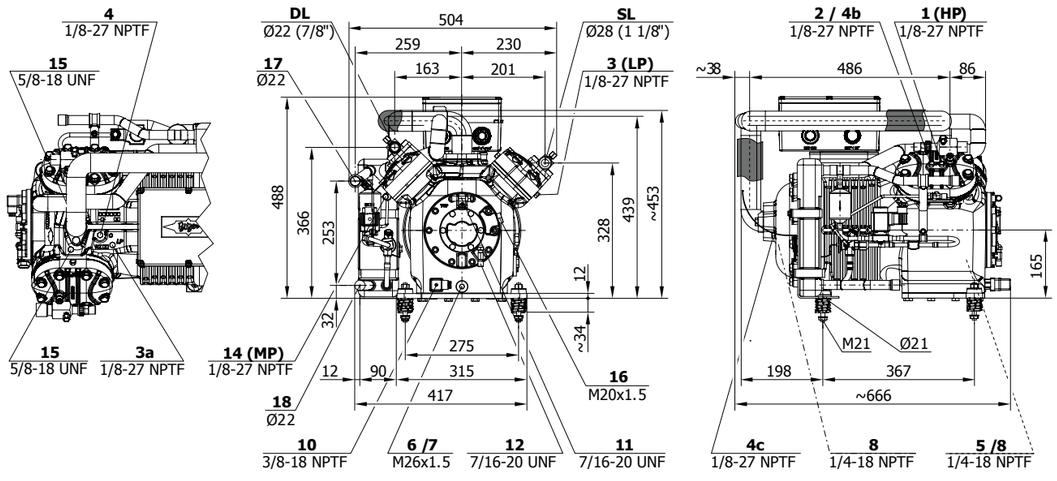
DIMENSIONAL DRAWINGS FOR ECOLINE STANDARD, H SERIES

Exemplary dimensional drawing, details in the BITZER SOFTWARE.
Compressor model 6FE, 6FEH



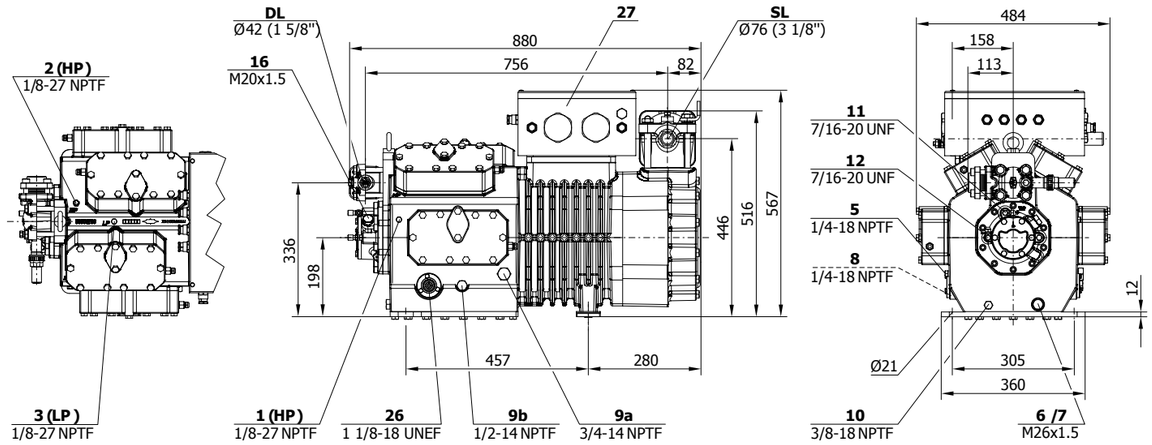
DIMENSIONAL DRAWINGS FOR ECOLINE 2-STAGE

Exemplary dimensional drawing, details in the BITZER SOFTWARE.
Compressor model S4T..S4N



DIMENSIONAL DRAWINGS FOR EXPLOSION-PROOF AREAS

Exemplary dimensional drawing, details in the BITZER SOFTWARE.
Compressor model 8GE-.EX



CONNECTIONS

1	High pressure connection (HP) Connection for high pressure switch (HP)	11	Oil pressure connection +
2	Connection for discharge gas temperature sensor (HP)	12	Oil pressure connection –
3	Low pressure connection (LP) Connection for low pressure switch (LP)	14	Medium pressure connection (MP)
4	Connection for RI/CIC injection nozzle (LP)	15	Refrigerant injection (operation without liquid subcooler and with thermostatic expansion valve)
4b	Connection for RI/CIC sensor	16	Connection for oil monitoring (oil level or oil differential pressure)
4c	Connection for RI/CIC sensor (MP/operation with liquid subcooler)	17	Refrigerant inlet at liquid subcooler
5	Oil fill plug	18	Refrigerant outlet at liquid subcooler
6	Oil drain	24	Module housing (IQ MODULE included)
7	Oil filter (magnetic screw)	26	Sight glass
8	Oil return (from oil separator)	27	Terminal box
9	Connection for oil and gas equalisation (parallel operation)	SL	Suction gas line
9a	Connection for gas equalisation (parallel operation)	DL	Discharge gas line
9b	Connection for oil equalisation (parallel operation)		Dimensions subject to the tolerances specified in EN ISO 13920-B.
10	Connection for oil heater		

Further details can be found in the BITZER SOFTWARE.
Scan QR code for more information.

BITZER SOFTWARE

ACCESSORIES

SPECIAL VOLTAGE MOTORS

Always the right solution for different applications and voltage supplies.

// Operation with frequency inverter to increase efficiency and control capacity
// Operation on ships and drilling platforms

ADDITIONAL FAN

// Expansion of application limits
// Can be mounted without intervention in the refrigerant circuit
// Easy to operate via IQ MODULE

MARINE KIT

// Deep bottom plate for optimal oil supply
// Conversion kit containing frame, seals, screws, plugs, etc.
// Complete kit can be ordered as spare part

RI SYSTEM FOR REFRIGERANT INJECTION

// Efficient additional cooling
// Reliable operation in low temperature application
// Easy to operate via IQ MODULE

Further accessories can be found in the BITZER SOFTWARE.

In heat pumps, BITZER compressors demonstrate their strengths masterfully. Whether in floor heating, sanitary facilities and swimming pools, or in industrial processes – with high energy efficiency and low costs, customers will find the optimum compressor for every application.

ELECTRONIC COMPONENTS FOR PRECISION AND EFFICIENCY

IQ MODULE // VARIPACK

Electronic components are essential in refrigeration, air conditioning and heat pump systems. They simplify installation, optimise operation and enable preventive measures to be taken. This not only saves time and money, but also helps systems to comply with safety and efficiency requirements.

SMART DEVICES FOR OPTIMAL INTEGRATION

For many years, BITZER has demonstrated a spirit of innovation in electronics for refrigeration, air conditioning and heat pump technology and is constantly developing its portfolio. The components are optimised for BITZER compressors and speak 'refrigeration language'. Contractors and end users benefit from simple integration into the system and intuitive operation. These features increase efficiency and performance, and reduce downtime and operating costs.

IQ INTELLIGENT PRODUCTS

FREQUENCY INVERTER

RECIPROCATING COMPRESSORS

BEST SOFTWARE

IQ MODULE CM-RC-02

The IQ MODULE sets new standards for intelligent operation of all compressor functions – with user-friendly operation via the BEST SOFTWARE. All important parameters are logged and saved in real time, so the system can be continuously monitored, even remotely. Unfavourable operating conditions are reported promptly, preventing faults and failures. The module can be retrofitted at any time, and new features are easy to add.

VARIPACK FREQUENCY INVERTERS

Frequency inverters in the VARIPACK series are optimised for BITZER compressors and allow easy and reliable capacity control. The intelligent frequency inverters adapt the compressor capacity precisely to the actual refrigeration or heating demand. This smart adaptation means efficient operation, reduced energy consumption and operating costs – especially in part load.

INTELLIGENT CAPACITY CONTROL

The IQ MODULE controls the mechanical capacity regulation VARISTEP virtually steplessly and down to 10%. The logic is integrated in the IQ MODULE and all operating data is logged. Interfaces to the system controller are possible: digital via Modbus or analogue via a 0 .. 10 V signal.

PRECISE SPEED CONTROL

The VARIPACK enables capacity control with absolute precision, even beyond the supply frequency. Mechanical and electronic components are optimally harmonised to allow for constant operating conditions. The VARIPACK is easy to select in the BITZER SOFTWARE.

INTELLIGENT SOLUTIONS FOR EASY OPERATION

OPTIMAL ALSO IN COMPOUND SYSTEMS

The IQ MODULE and VARIPACK can demonstrate their full potential in compound systems: since they come from a single source, they make it much easier to control and monitor the compound system. It is often enough to equip one of the installed compressors with VARIPACK to achieve fine gradation across the entire capacity range of the system.

ADDED VALUE FOR CONDENSING UNITS

The IQ MODULE turns a simple condensing unit into a mini-system: the intelligent electronics provide clear added value, harmonising and controlling all components. The constant monitoring and data log open up new business opportunities for maintenance and service.

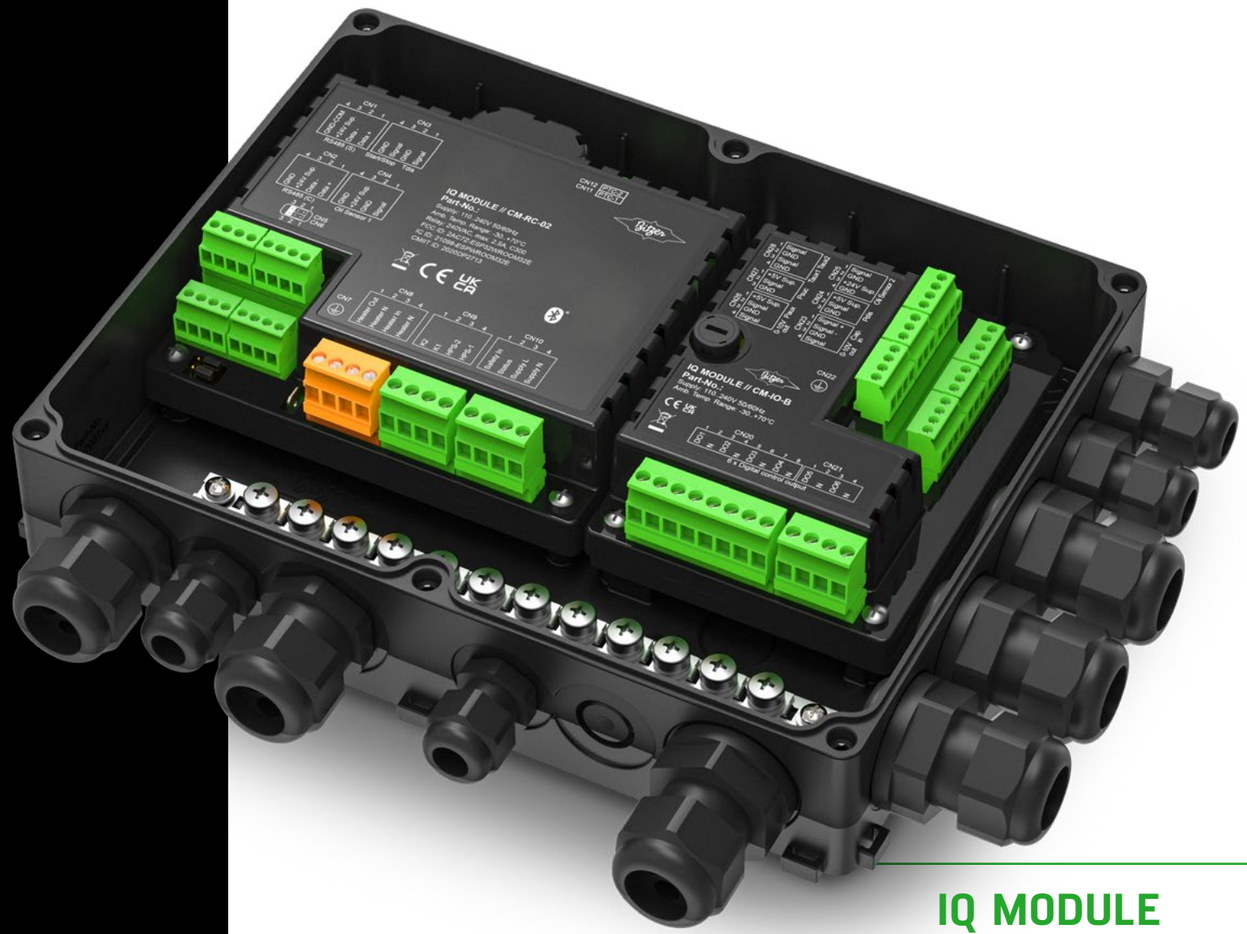
BOOST YOUR SYSTEM'S VALUE

SIMPLICITY
Intuitive operation, wired and preconfigured accessories

EFFICIENCY
Intelligent protective and operating functions for compressors

FLEXIBILITY
Modular concept with extension boards, including for retrofit

DIGITAL SERVICES
Configuration and troubleshooting with the BEST SOFTWARE, access to the BITZER Digital Network (BDN)



The module takes care of essential protective and operating functions for the compressor, simplifies control and saves time and money.

REDUCED WORKLOAD
The IQ MODULE comes wired, preconfigured and tested ex works. This simplifies the arrangement of the wiring in the switch cabinet, and planning the operation is less complex. Hardware and function logic are directly connected to the compressor, making compressor installation, commissioning and integration into the system faster and easier.

OPTIMISED COMPRESSOR OPERATION
The IQ MODULE monitors all essential operating parameters of the compressor, such as motor and discharge gas temperature and oil supply, ensuring reliable and efficient operation without failures. Additional optional features such as VARISTEP mechanical capacity control or OLM-IQ oil level controller can be added with extension boards.

FLEXIBILITY AT ALL TIMES
The modular concept combines simplicity with flexibility. The extension boards allow for the direct electrical connection of additional compressor features – with minimal effort concerning arrangement of the wiring and documentation. The boards can either be ordered together with the compressor or retrofitted later.

DIGITAL ADDED VALUE
The IQ MODULE adds helpful digital applications to the compressor. With the BEST SOFTWARE and app, compressor and accessories can be configured and operating data displayed via Bluetooth. The visualisation of the data helps in case of maintenance and troubleshooting. Contractors also have access to tutorials and documentation on their smartphones at all times.

IQ MODULE

Whether as a flexible standard for new systems or retrofitted to existing ones, the IQ MODULE turns every reciprocating compressor intelligent.

IQ MODULE

INTELLIGENT FEATURES FOR MORE EFFICIENCY

INTELLIGENT ACTIVATION TO IMPROVE SYSTEM EFFICIENCY

// Oil heater
// VARISTEP capacity control (CRII)
// Oil level monitoring with OLM-IQ: selecting this option eliminates the need for OLC (oil level monitoring) or DP (differential oil pressure switch).
// Additional fan
// RI system for refrigerant injection

MONITORING OF COMPRESSOR PARAMETERS

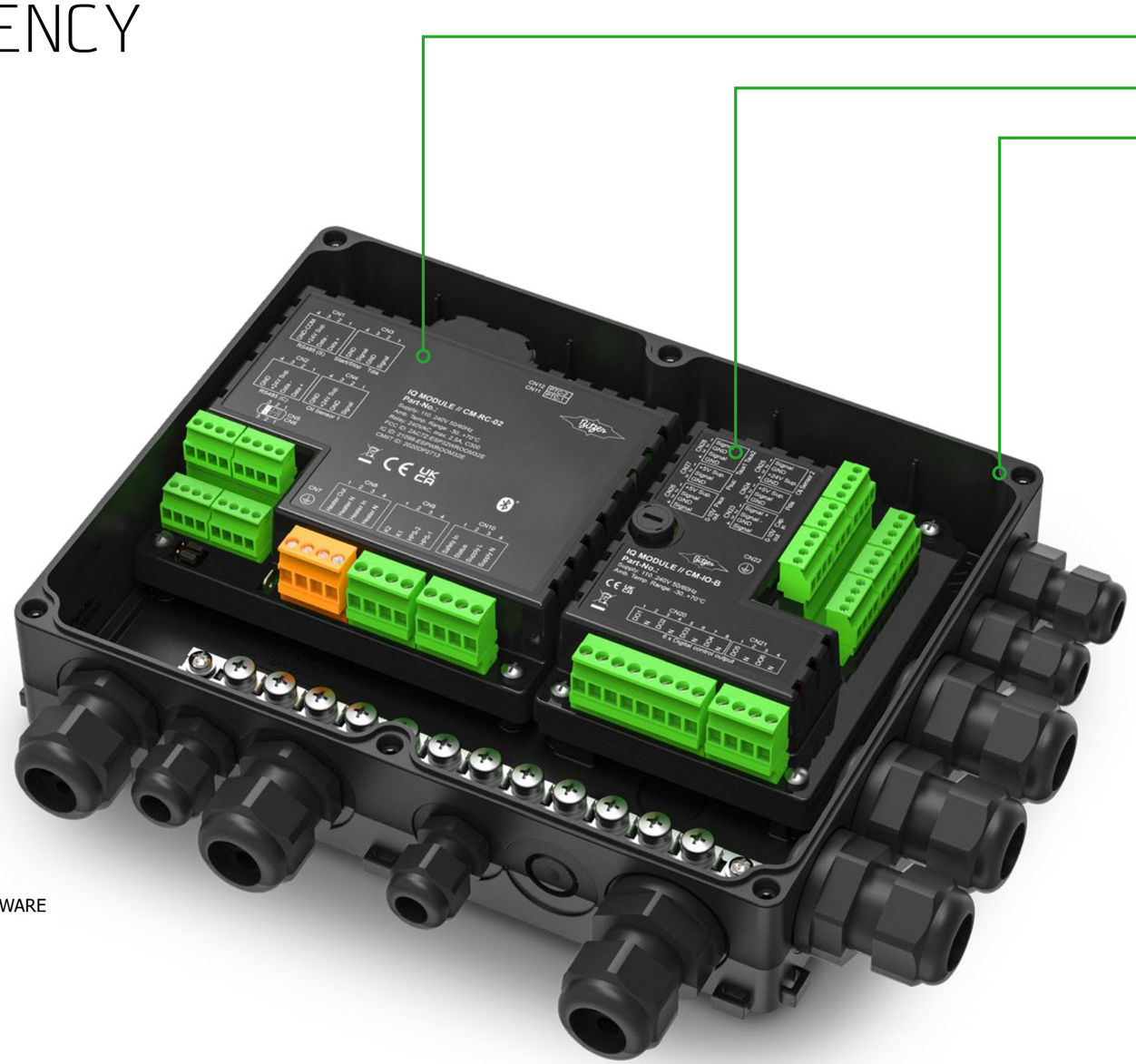
// Motor and discharge gas temperature
// Oil supply with OLC or DP
// Optional high pressure and low pressure
// Integration of the high pressure switch
// Application limit monitoring

ANALYSIS

// Overview of critical operating conditions
// Data log of all switch processes and measured values
// Alarm and warning history
// Operating time and load statistics

COMMUNICATION

// Via Modbus RTU (standardised interface)
// Via Bluetooth
// Configuration and operation monitoring via the BEST SOFTWARE
// Status LEDs for quick initial analysis
// Prepared for data analysis via the BITZER Digital Network



OPERATING MODES

The IQ MODULE can be configured and operated in two different operating modes and comes in compressor operation mode as standard. The operating mode can be changed at any time using the BEST SOFTWARE.

COMPRESSOR OPERATION MODE

// Motor temperature monitoring PTC
- Alarm message
// Integration of high pressure switch CN9:3 and CN9:4
- Alarm message
// Oil monitoring
- Alarm message
// Discharge gas temperature monitoring PT1000
- Alarm message
- Temperature measurement and log
// Oil heater
- Operation ON/OFF
- Warning message for missing voltage supply
// Compressor start/stop
- Compressor operation hours
- Cycle start/stop

COMPRESSOR PROTECTION MODE (SE-B)

// Motor temperature monitoring PTC
- Alarm message
// PTC 140 can be integrated into the safety chain similarly to protection device SE-B3
// Cable bridge set to CN9:3 and CN9:4 as standard

RECIPROCATING COMPRESSORS
INTELLIGENT PRODUCTS
DATALOG
BEST SOFTWARE

OPTIMISED INTEGRATION
OF ADDITIONAL COMPRESSOR FEATURES

PERIPHERAL DEVICES

In combination with the optional extension boards, the IQ MODULE can operate and control various peripheral devices installed on the compressor as well as analyse the data – depending on the equipment in use.

VARISTEP

// Stepless capacity control from 100 .. 10% possible
// Logic integrated into the IQ MODULE
// IQ VARISTEP also uses integrated logic to provide additional cooling with the fan and RI
// Simple interfaces with the superior system controller
- Digital via Modbus
- Analogue via 0 .. 10 V signal

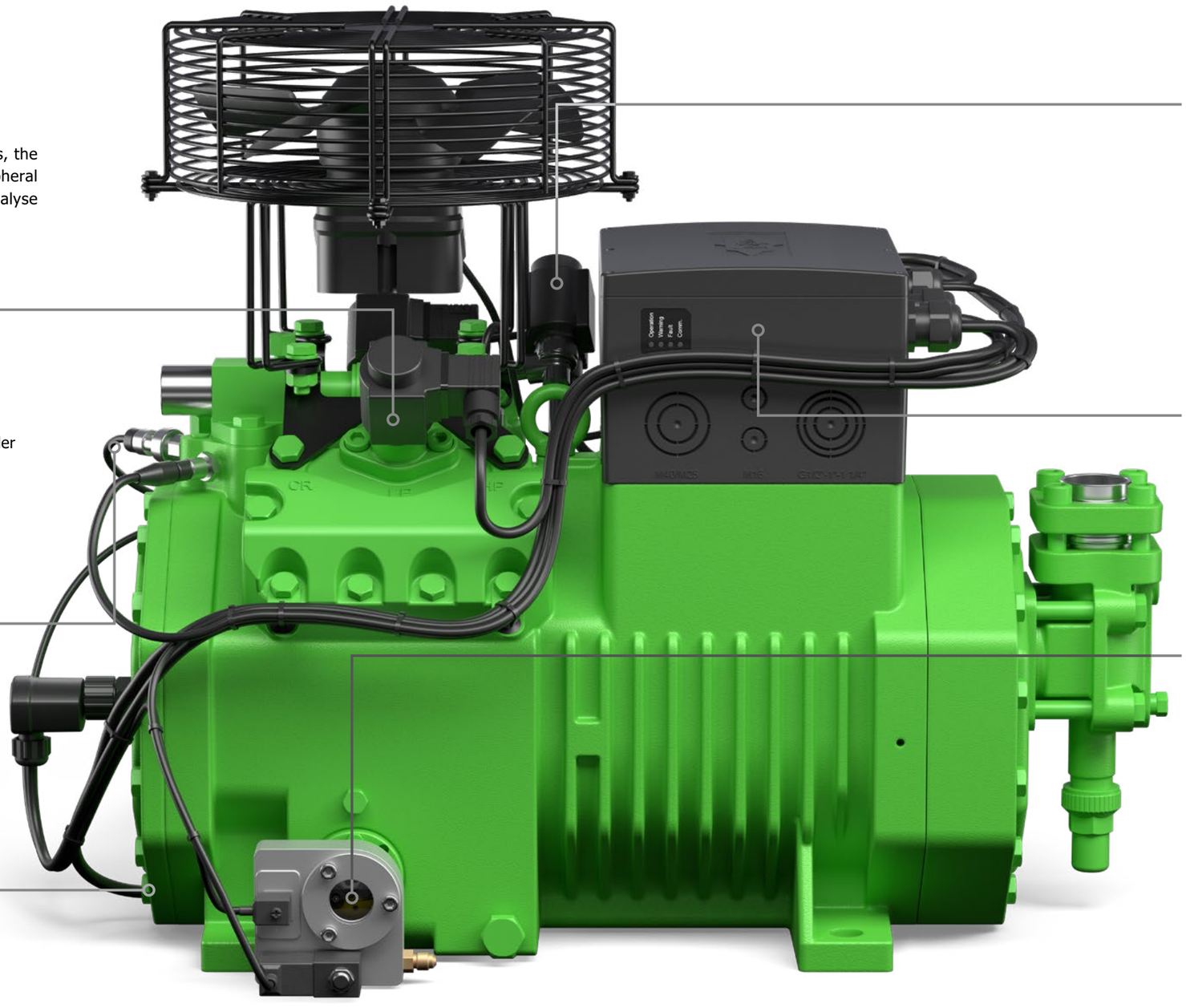
// Also available as an option ex works for many BITZER CO_2 compressors

APPLICATION LIMIT MONITORING

// Optimal compressor protection
// High and low pressure transmitters are connected directly to the IQ MODULE.
// Data analysis in real time and in the data log
// Additional connection of a temperature sensor for measuring medium or suction gas temperature with PREMIUM extension board

OIL HEATER

// The IQ MODULE controls and regulates oil heater operation.
// Operation only during compressor standstill
// Optimised energy efficiency
// Separate voltage input at the IQ MODULE
- Omission of the control transformer



THE RI SYSTEM

// Continuous control and dosing of refrigerant injection
// Cools the cylinder section
// Maintains a sufficiently low discharge gas temperature
// Ensures thermal application limits for low temperature applications – for example, with the refrigerants R454C, R407A, R407F, R448A and R449A

DATA ANALYSIS

// Analysis via Modbus, Bluetooth with PC and BEST SOFTWARE or the BEST app
// Graphic display of compressor operating conditions in real time
// Alarm log

OLM-IQ

// OLM-IQ actuator sensor unit on the compressor
// Logic fully integrated into the IQ MODULE
- Trend assessment
- Simple communication to superior system controller

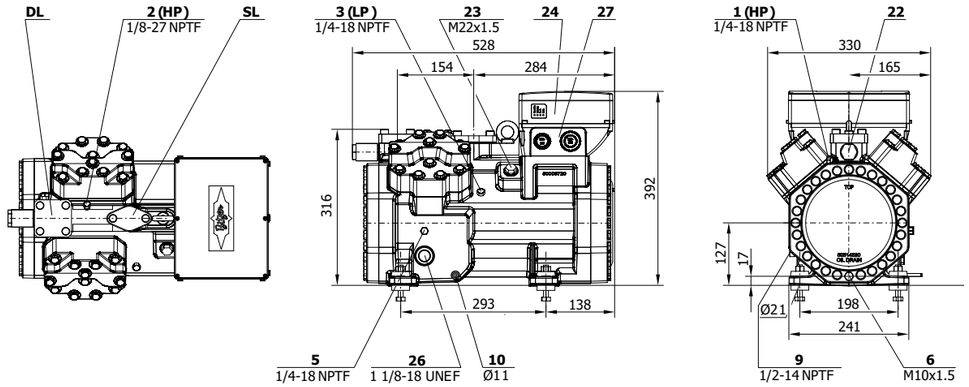
// Continuously operating oil level sensor
// Precise dosing of the oil return
- Stable oil level

// Automatic adjustment to oil supply pressure
// Available for HFC and HFO refrigerants as well as CO_2

Exemplary illustration

DIMENSIONAL DRAWINGS

Exemplary dimensional drawing, details in the BITZER SOFTWARE.
Compressor model 4PTE with IQ MODULE



CONNECTIONS

1 High pressure connection (HP)
Connection for high pressure switch (HP)
2 Connection for discharge gas temperature sensor (HP)
3 Low pressure connection (LP)
Connection for low pressure switch (LP)
5 Oil fill plug
6 Oil drain
9 Connection for oil and gas equalisation (parallel operation)
10 Connection for oil heater
22 Pressure relief valve to the atmosphere (discharge gas side)
23 Pressure relief valve to the atmosphere (suction side)
24 Module housing (IQ MODULE included)
26 Sight glass
27 Terminal box
SL Suction gas line
DL Discharge gas line

Dimensions subject to the tolerances specified in EN ISO 13920-B.

BITZER SOFTWARE **Further details can be found in the BITZER SOFTWARE. Scan QR code for more information.**

EXTENSION BOARDS

ADVANCED (CM-IO-A)

// Number of switching outputs: 3
// Options for switching outputs, version 01
- OLM-IQ oil management
- Additional fan
- Refrigerant injection
// Options for switching outputs, version 02
- OLM-IQ oil management
- VARISTEP 1 capacity regulator
- VARISTEP 2 capacity regulator

PREMIUM (CM-IO-B)

// Number of switching outputs: 6
// Options for switching outputs
- VARISTEP capacity regulator
- OLM-IQ oil management
- Refrigerant injection
- Start unloading
- Additional fan
// Monitoring functions
- Application limit monitoring
- Taux temperature sensor

CONDENSING UNIT (CM-IO-C)

// Number of switching outputs: 4
// Options for switching outputs
- VARISTEP capacity regulator
- Refrigerant injection
- Start unloading
// Monitoring functions
- Application limit monitoring
- Taux temperature sensor
// Operation of external functions such as the condenser fan or a solenoid valve
// Direct control mode is possible via suction pressure or a temperature such as room temperature

SCOPE OF DELIVERY AND OPTIONS

Choose the available IQ MODULE combination that's suitable for your application and compressor configuration.

IQ MODULE CM-RC-02		**Compressor module**		**Compressor module** with extension board **ADVANCED CM-IO-A**		**Compressor module** with extension board **PREMIUM CM-IO-B**	**Compressor module** with extension board **Condensing Unit CM-IO-C**
		For compressor series					
		Housing size 1..2	Housing size 3..8	Optional version 01 OLM-IQ and additional cooling	Option version 02 OLM-IQ and capacity control	Each of the available switching outputs can be assigned a peripheral device	
		Option	**Standard scope of delivery**	**Periphery** mounted and wired			
Periphery	**Description**	**Configuration selectable** Compressor operation mode or compressor protection mode		**Configuration** Compressor operation mode			
Motor temperature monitoring	PTC	S		S	S	S	S
Opto-electronic oil level monitoring	OLC OLS	•		•	•	•	•
Differential oil pressure switch	DP	•		•	•	•	•
Oil level controller	OLM-IQ			•	•	•	
Discharge gas temperature sensor	Pt1000	•		•	•	•	•
Oil heater	For ECOLINE	•		•	•	•	•
Pressure transmitter for application limit monitoring	HP and LP					•	•
CRII VARISTEP capacity regulator Cylinder head and solenoid valve - Discharge gas temperature sensor Pt1000 mandatory	For ECOLINE				•	•	•
Start unloading Cylinder head and solenoid valve - Discharge gas temperature sensor Pt1000 mandatory	For ECOLINE					•	•
RI system injection valve - Discharge gas temperature sensor Pt1000 mandatory	For ECOLINE			•		•	•
Additional fan - Discharge gas temperature sensor Pt1000 mandatory	For ECOLINE			•		•	
Input for Taux Pt1000 temperature sensor	Sensor not in BITZER scope of delivery					•	•
Activation of external switching devices such as condenser fan or solenoid valve	Not in BITZER scope of delivery						•

Tentative data

S = scope of delivery • = option available

IQ INTELLIGENT PRODUCTS

For helpful information on installation and commissioning with the IQ MODULE, scan the QR code.

// Quick-start guides
// Tutorials
// Answers to frequently asked questions
// Technical documentation and operating instructions
// Information on the BEST SOFTWARE and BEST app

Further details can be found in the BITZER SOFTWARE. Scan QR code for more information.

BITZER SOFTWARE

SIMPLE AND SAFE CAPACITY CONTROL

INTELLIGENT INTERPLAY

Individual parameters for BITZER compressors and all common refrigerants

EASE OF USE

Intuitive commissioning, handles control functions of the system

EFFICIENCY

High efficiency, optimised adaptation to capacity demand

FLEXIBILITY

Control via external set point signal or evaporation temperature

The frequency inverters in the VARIPACK series offer a wide range of capacities. The optimised adaptation to the current refrigeration or heating demand of a system is effective at reducing energy consumption.

SIMPLE SELECTION AND CONFIGURATION

Select the optimal frequency inverter for your individual system in the BITZER SOFTWARE. The BEST SOFTWARE offers intuitive and full configuration, operation and monitoring functions. The optional extension kit enables control of evaporation and condensing temperature.

SAFER OPERATION

VARIPACK and BITZER compressors are matched to each other, tested and optimised. Selection of pre-configured data sets prevents incorrect configuration. A high starting current reserve and a special starting mode ensure a safe compressor start. When operating in field-weakening mode, the maximum frequency is automatically limited depending on the load.

FOR EVERY CAPACITY AND ENCLOSURE CLASS

VARIPACK frequency inverters can be used for rated output currents from 6 .. 480 A or capacities from 2.2 .. 250 kW. Many models are dust and water-proof in accordance with enclosure class IP55 or IP66.

SELECTABLE OPERATING MODE

The compressor capacity control can be set with an external set point signal or via Modbus – or based on the evaporation temperature.

VARIPACK

VARIPACK frequency inverters are specially designed for refrigeration, air conditioning and heat pump systems. Their outstanding efficiency and optimised alignment with the compressors allow for double savings.

KP-180-0 EN

VARIPACK
CAPACITY CONTROL FOR EVERY COMPRESSOR

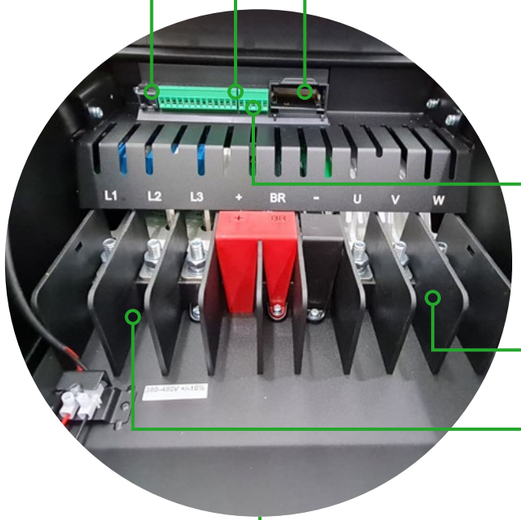
USER-FRIENDLY FEATURES

// Communication via Modbus RTU
// Design and calculations in the BITZER SOFTWARE
// Configuration via BEST SOFTWARE and BEST interface converter
// Regular firmware updates free of charge
// Extensive documentation online

WIDE PRODUCT RANGE IN THREE ENCLOSURE CLASSES

// FMU .. FSU with enclosure class IP20: protected against ingress of solid foreign objects ≥ 12.5 mm and fingers
// FPW .. FSW with enclosure class IP55: protected against harmful quantities of dust, complete touch protection, protection against water jets
// FMY .. FOY with enclosure class IP66: dust-tight, complete touch protection, protection against powerful water jets

FREQUENCY INVERTER
INTELLIGENT PRODUCTS
BITZER SOFTWARE
BEST SOFTWARE



BEST INTERFACE CONVERTER OR MODBUS RTU
TERMINALS FOR CONTROL SIGNALS
SLOT FOR EXTENSION KIT
RELAY CONTACTS 'COMPRESSOR READY TO OPERATE' 'COMPRESSOR IN OPERATION'
MOTOR CONNECTION
POWER CONNECTION

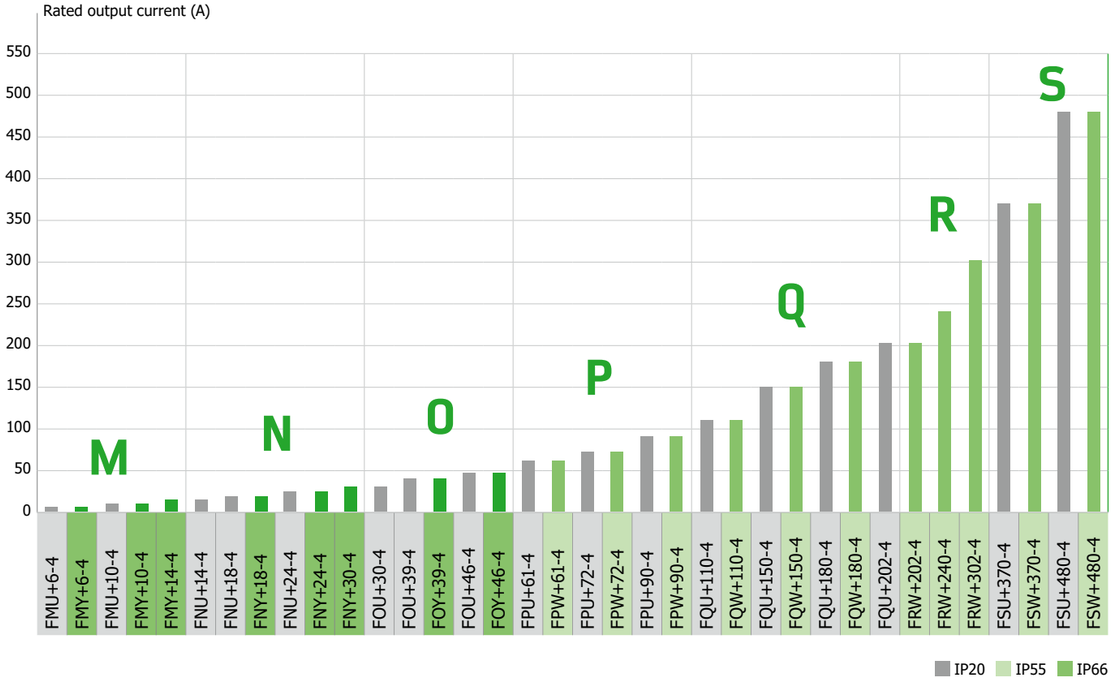
EXTENSION KIT FOR PRESSURE CONTROL

The optional extension kit with pressure transmitters enables control of evaporation and condensing temperature.

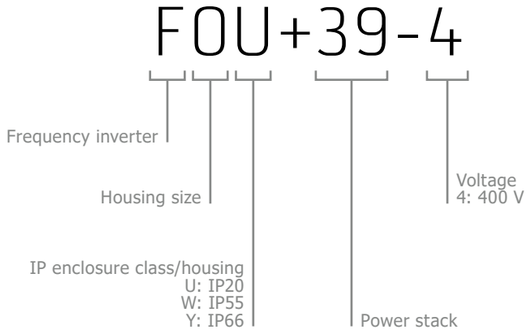
// Direct control of evaporation temperature via compressor speed
// Control of condensing temperature via activation of condenser fans with 0 .. 10 V signal
// Switching of a second compressor via relay

Compact, high-precision low and high pressure transmitters are included in the scope of delivery.

CAPACITY RANGES



EXPLANATION OF THE MODEL DESIGNATION



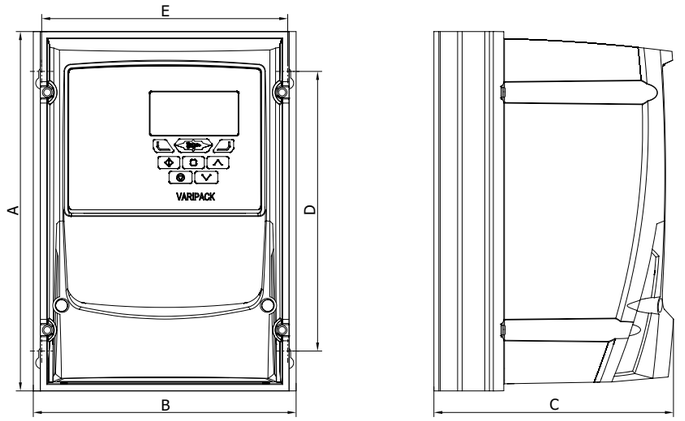
BITZER SOFTWARE

Further details can be found in the BITZER SOFTWARE.
Scan QR code for more information.

DIMENSIONAL DRAWINGS

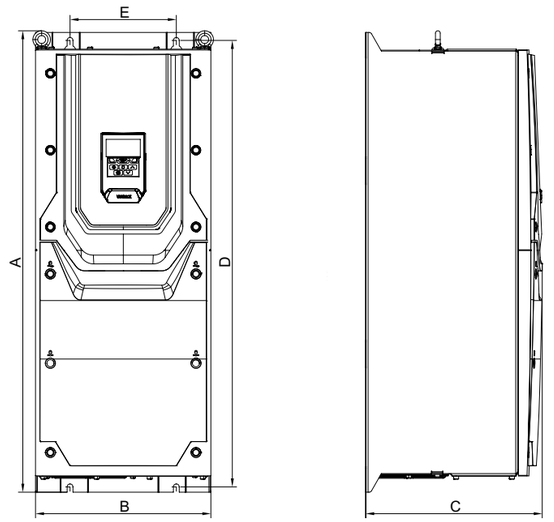
Exemplary dimensional drawings, details in the BITZER SOFTWARE.

VARIPACK IP66



Frequency inverter model	A mm	B mm	C mm	D mm	E mm
FMY+6-4, FMY+10-4	257	188	172	1200	176
FMY+14-4	257	188	196	200	176
FNY+18-4, FNY+24-4, FNY+30-4	310	211	225	252	198
FOY+39-4, FOY+46-4	360	240	260	300	227

VARIPACK IP55

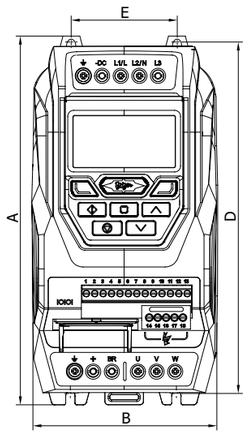


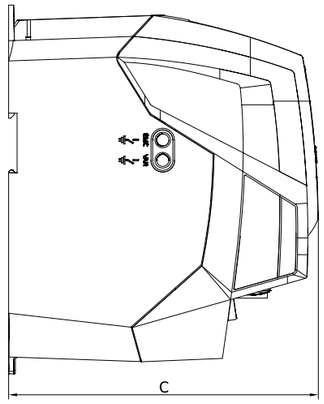
Frequency inverter model	A mm	B mm	C mm	D mm	E mm
FPW+61-4, FPW+72-4, FPW+90-4	540	235	270	520	175
FQW+110-4, FQW+150-4, FQW+180-4	865	330	330	840	200
FRW+202-4, FRW+240-4, FRW+302-4	1280	330	360	1255	200
FSW+370-4, FSW+480-4	1334	444	423	924	320

DIMENSIONAL DRAWINGS

Exemplary dimensional drawing, details in the BITZER SOFTWARE.

VARIPACK IP20





Frequency inverter model	A mm	B mm	C mm	D mm	E mm
FMU+6-4, FMU+10-4	221	110	185	209	63
FNU+14-4, FNU+18-4, FNU+24-4	261	131	205	247	80
FOU+30-4, FOU+39-4, FOU+46-4	418	172	240	400	125
FPU+61-4, FPU+72-4, FPU+90-4	486	233	260	460	175
FQU+110-4, FQU+150-4	614	286	320	578	200
FQU+180-4, FQU+202-4	726	330	320	680	225
FSU+370-4, FSU+480-4	974	444	423	924	320

BITZER SOFTWARE

Further details can be found in the BITZER SOFTWARE.
Scan QR code for more information.

Industrial process refrigeration requires maintaining the target temperatures precisely and constantly. BITZER electronic components allow systems to be controlled with precision and monitored in real time – essential for preventive maintenance and energy optimisation.

GREEN COMPETENCE

BITZER expertise goes beyond just the products: we focus on our customers and their challenges. We aim to pass on our knowledge and provide guidance and instruction – to secure investments and equip our customers and partners in industry for the future. In addition to various digital solutions, we also offer in-person consultations and training.

LOCAL ROOTS – GLOBAL PRESENCE

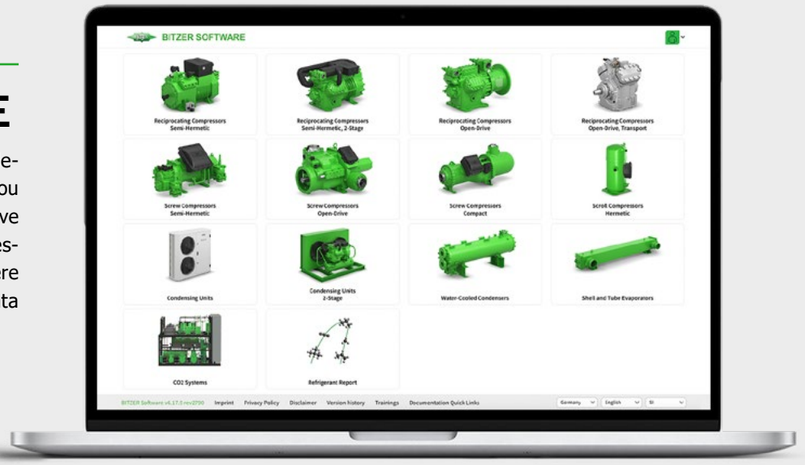
Find your nearest BITZER location and get in touch.

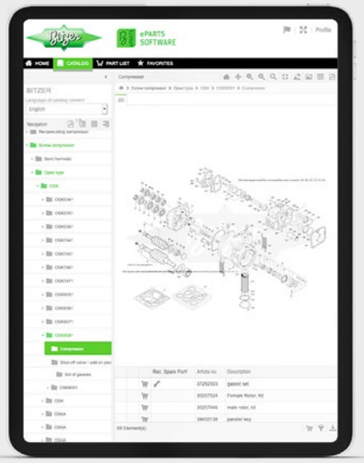
The BITZER Group is represented across the globe with distribution companies and production facilities at 75 locations in 41 countries. Find your dedicated contact partner and nearest BITZER location by scanning the QR code and then clicking on the map or using the search feature on our website. You can reach out to your contact partner at any time.

BITZER TOOLS

BITZER SOFTWARE

Wherever you are and no matter what device you use, BITZER SOFTWARE helps you make the right selection from our extensive and flexible range of products and accessories. You can also find technical data here and quickly calculate the performance data for compressors and components.





ePARTS SOFTWARE

Our free tool makes finding the appropriate spare parts for our products fast and easy. They are listed by series and displayed as simple, enlargeable exploded drawings.

BEST APP AND BEST SOFTWARE

BEST provides complete access to all operating data and parameters. Its intuitive user interface shows a complete overview of the operating status, including a data log for easy commissioning and maintenance.

FIND ADDED VALUE:

- BEST APP
- BEST SOFTWARE
- BITZER SPOT APP
- BITZER SOFTWARE
- REFRIGERANT RULER APP
- ePARTS SOFTWARE

BITZER APPS

BITZER SOFTWARE TOOLS

BITZER DIGITAL NETWORK

The BITZER Digital Network (BDN) provides you with easy access to valuable digital services for BITZER products in refrigeration, air conditioning and heat pump technology. You will thus get important product and application information on all BITZER products you use, such as data analyses and compressor operating reports, which you can use to optimise the most important aspects of the system.

BITZER DIGITAL NETWORK

// Complete product information
// Maintenance tracking
// Operation report
// Real-time data
// Notifications
// Flexible access rights

BITZER SERVICE ON-SITE

B-SAFE

// Warranty extension of up to five years
// Free one-year warranty extension for BITZER IQ products
// Support with commissioning for outstanding results

B-READY

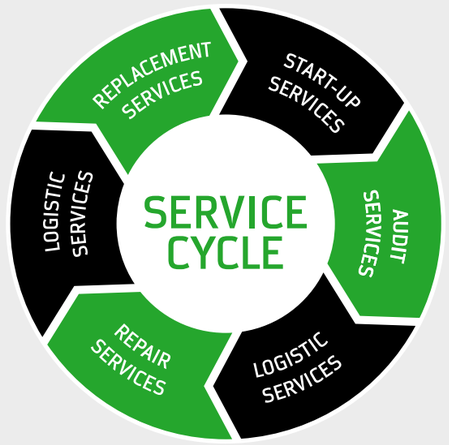
// Inspection service for an extended lifetime
// Retrofitting solutions for secure investments
// Refrigerant conformity and strategy advice

Green Point®

A SERVICE BY BITZER GROUP

The global service network boasts more than 50 locations, with specialists available to maintain, overhaul and repair BITZER compressors. The exclusive Green Point Quality Kit offers unlimited replacement of all wear parts and safety components. Green Points maintain a stock of BITZER ORIGINAL SPARE PARTS and refrigeration compressor oils. The highly skilled technicians ensure a precise and perfect maintenance cycle at all times.

bitzergreenpoint.com



SCHAUFLER ACADEMY

The SCHAUFLER Academy, the international seminar and training centre of BITZER, provides seminars and training on topics such as heat pumps, refrigeration, air conditioning and natural refrigerants. Our training courses are intended for project engineers and specialist planners as well as maintenance and installation specialists.

At the SCHAUFLER Academy, small groups study theoretical scenarios and carry out practical exercises on realistic systems. Through it all, experienced trainers from our Application Engineering team are on hand to answer any questions you might have. We look forward to seeing you there!

TRAINING AND SEMINARS

Training and knowledge exchange take centre stage here, and it is our mission to supply you with information about the applications and our products, as well as provide useful tools and basic knowledge. In situations where we cannot offer in-person training, we bring some of our content to your home or office in the form of webinars.

weB LEARNING

VISIT US ONLINE
AND BOOK YOUR TRAINING.

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