



## Semi-hermetic GEA Bock Compressors

Single-stage and Two-stage Reciprocating Compressors HG (HA)

In touch with our customers

## GEA Refrigeration Technologies: Your partner for low temperatures

GEA Refrigeration Technologies, part of the internationally active GEA Group, is a synonym for industrial refrigeration technology. Since the end of the 19th century, it has been our business to cool processes and products, and to control the temperature of goods in transport. You will find our solutions in the food and beverage sector; in the petrochemical, chemical, and pharmaceutical industries; on fishing ships; in natural gas liquefaction; in infrastructure facilities; and in ice factories. We are also at the top with know-how when it comes to refrigeration at leisure facilities. After all, we have been excited about refrigeration for decades now. As a result, our staff enthusiastically goes about its development and production projects – to include preventive and remedial maintenance of your refrigeration systems.

This enthusiasm is highly apparent in the daily work of all companies in our Segment. Whether it's complete systems or individual valves: we have the experience in every section of our company to optimally design, manufacture, and install refrigeration systems. And to take full advantage of this experience, we not only carry out development in our own company: we also manufacture, assemble, and test the core components. A chain is, after all, only as strong as its weakest link: and this also applies equally well to refrigeration technology, cooling processes, and cooling chains.

This makes it all the more important that you have a partner – in GEA Refrigeration Technologies – that has learned to master refrigeration from A to Z. And all of this since 1896, when Willem Grasso founded his refrigeration division. From this history of GEA Refrigeration Technologies, you will profit in the form of technical expertise and top sector know-how.

But we all live in the present and think about the future. We ponder a future in which more and more processes need energy around the world, and fewer natural resources are available. As a result, we have taken it as our goal to create solutions that are not only long-life and cost-effective, but also energy-saving and environment-protecting. We feel obligated to sustainability in many respects. Our objective is to produce longlife and material-saving products over the long run – as well as products that use environmentally benign refrigerants. And we aim to produce efficiently. But our responsibility does not end at the factory gate. As a result, we take great pains to ensure that our systems are energy-efficient and that they protect the climate. With GEA Refrigeration Technologies, you can also count on optimal economy: saving energy indeed means reducing money spent for energy. At the same time, you protect the environment. Thanks to our refrigeration technology, your processes will run more economically and more ecologically. To maintain our standard of living and to assure quality of life for future generations as well.

Our claim of combining economy with saving natural resources is reflected in all components of our company, such as the following: compressors, chillers, heat pumps, ice machines, fittings and valves, control systems, and many, many more. You can find proof of the above throughout the world. Our international corporate network – and above all our reference projects – are spread all over the globe.



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Disclaimer

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## GEA Bock - More than a compressor

Over 75 years ago, when the refrigeration and air-conditioning industry was still in its infancy, our company's founder, Wilhelm Bock, had a vision: he wanted to build first-class and reliable refrigeration machines. In the following decades Bock developed into one of the world's leading manufacturers of refrigeration and air-conditioning compressors.

Today, GEA Bock offers as part of GEA Refrigeration Technologies the right compressor for all fields of commercial-, industrial-, rail-, bus- and transport refrigeration.

That GEA Bock places the highest demands on compressors for energy efficiency shows our EFC system. For many years we offer with the EFC system a solution to reduce the energy consumption by 25 %.

In this brochure we present you our current program of single-stage and two-stage semi-hermetic GEA Bock compressors.

Be inspired. By our new products, our established product series and the entire passion that goes into each of our products.



## Semi-hermetic compressors HG (HA)

The GEA Bock HG (Hermetic Gas-cooled) range of semi-hermetic compressors offers traditional suction gas-cooled compressor state of the art technology. These compressors of the highest quality standard excel in their running comfort, easy maintenance, efficiency and reliability. Suitable as standard for conventional or chlorine-free HFC refrigerants.

The HA (Hermetic Air-cooled) range, specially engineered by GEA Bock, is available for deep-freezing applications, in particular for use with the refrigerants R22 and R404A.

- Single-stage
- ATEX compressors
- Two-stage compressors
- CO<sub>2</sub> compressors subcritical
- HC compressors
- Duplex compressors
- CO<sub>2</sub> compressors transcritical
- Aluminium compressors
- Compressor units with receiver
- R134a compressors
- 2-pole compressors
- Condenser units air-cooled
- R407C compressors



## Vehicle compressors FK

GEA Bock vehicle compressors of the FK range are the result of many years of experience in the domain of mobile cooling systems.

The unsurpassed light, compact, robust design and wide r.p.m. range are only some of the outstanding features of this unique product range of two, four and six cylinder compressors. A wide variety of designs can be tailored to suit individual requirements.

The so-called K version is a special innovation with a unique valve plate system for maximum requirements in bus and coach air-conditioning systems.

- Compressors for bus and train air-conditioning
- Compressors for transport refrigeration and other applications



## Open type compressors F

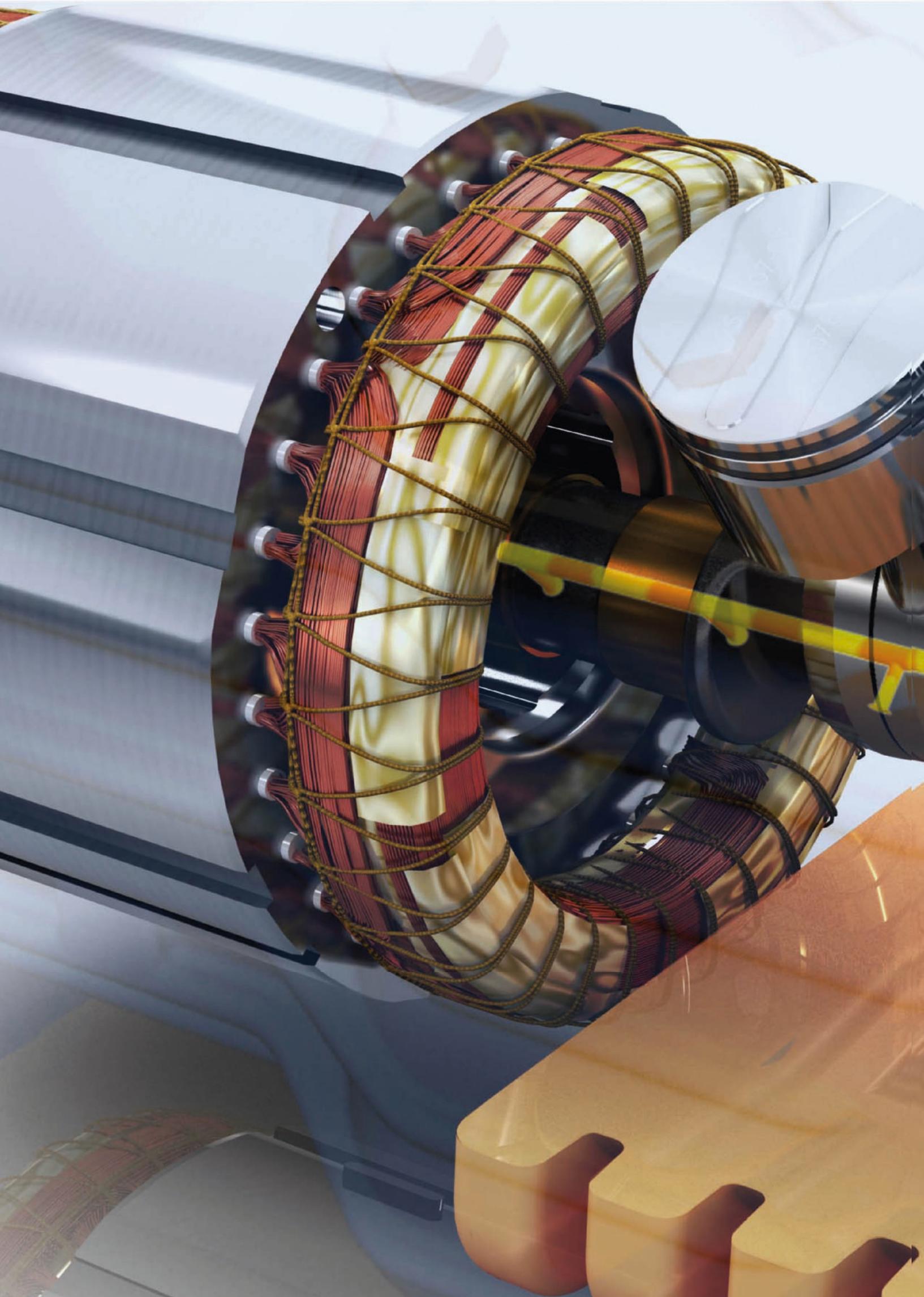
The F model series provides modern open type compressors for separate drive systems (using V belts or direct couplings). Load transfer through a V pair.

Virtually all drive capacity requirements can be met.

Very compact compressor design, robust and easy to handle. Oil pump lubrication as standard.

- Single-stage compressors
- NH<sub>3</sub> compressors
- Compressor units for direct drive
- NH<sub>3</sub> Compressor units for direct drive







## The difference is in the detail - Characteristics of semi-hermetic GEA Bock compressors

Special features

8

Forward looking compressor models

20

### Universal

- e.g. R134a, R404A, R507, R407C, R22

One compressor design for all standard refrigerants.

For air-conditioning applications, normal refrigeration and deep-freezing

- Maximum allowed operating pressure: 28 bar

### High refrigeration capacity combined with minimum power requirement

- Optimized gas flow
- Efficient service valves
- Minimum clearance volume
- Powerful economic drive motors

### Wide range of applications without additional cooling

Deep-freezing range with R404A, R507 also available with suction gas cooling (HG version)

### Stable valve plate design

- Universally proven valve design with intake and discharge finger reed valves clamped on one side
- Valves made of high quality impact-resistant spring steel

### Replaceable motors

The compressors can be repaired in the field as the drive motor can be exchanged.

### Economic capacity control

- Cylinder cover incorporating a connection for capacity control
- Possible control stages:
  - 4 cylinder: 50 %
  - 6 cylinder: 33 % / 66 %
  - 8 cylinder: 25 % / 50 % / 75 %
- Continuously variable speed control (25 - 70 Hz) using a frequency converter.

### Minimum space requirement

Particularly low installation height and width

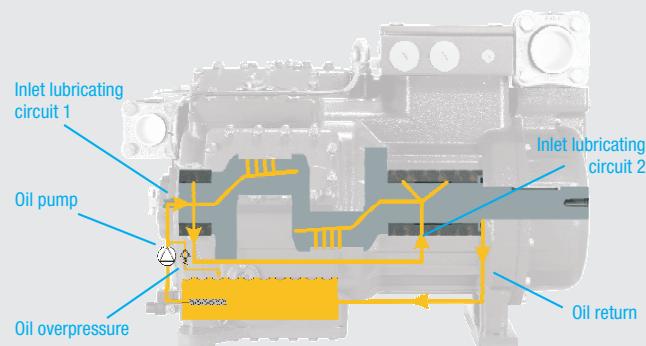
### Quiet and low vibration

- Generously dimensioned crank mechanism
- Optimized mass balance
- Large volume pressure section for pulsation absorption
- 4 cylinder design from as little as 19 m<sup>3</sup>/h

### Safe, reliable oil supply



- 4 and 6 cylinder with a conventional single circuit lubricating system
- Lubricating system incorporating an oil pump
- Large volume oil sump



- 8 cylinder compressor with a dual circuit lubricating system (two oil circuits), each of the two main bearings supplied as the first lubrication point
- Oil pump lubrication independent of direction of rotation
- Connection possibility for oil pressure monitoring via Δp-oil differential pressure sensor
- Large volume oil sump
- Coupling option for oil level regulator as standard

## Wear-resistant durable driving gear



- 2 and 4 cylinder compressor HG(HA)12 to HG(HA)34
- Solid construction and design
- Low friction sleeve bearings
- Aluminium pistons with two ring assembly



- 4 and 6 and 8 cylinder compressor HG(HA)4 to HG8
- Solid construction and design
- Surface-hardened crankshaft
- Low friction sleeve bearings
- Aluminium pistons with triple ring assembly, hard-chromium plated sealing ring, HG(HA)4 with double ring assembly
- Aluminium connecting rod with high resistance piston bolt bearings starting from HG(HA)5

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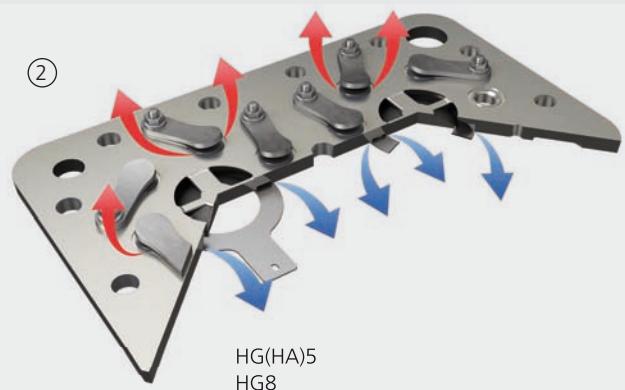
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## Solid construction and design



- Valves made of high quality impact-resistant spring steel
- Concentric reed valves on the suction side (2) finger reed valves (1)



### Variable suction line valve position (HG)

4 cylinder

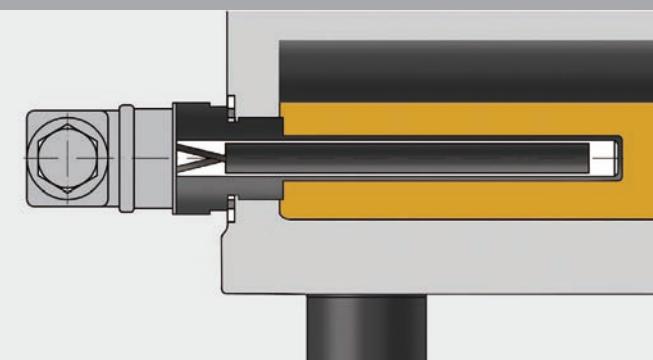
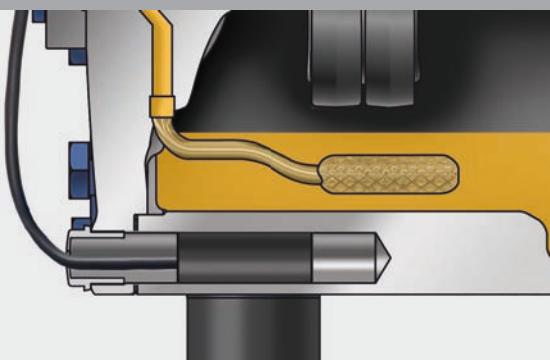


8 cylinder



- Shut-off valve rotates through 90° (2 and 4 cylinder) suction cover rotates through 90° (8 cylinder)
- Flexible location for suction line connection

### Oil sump heater



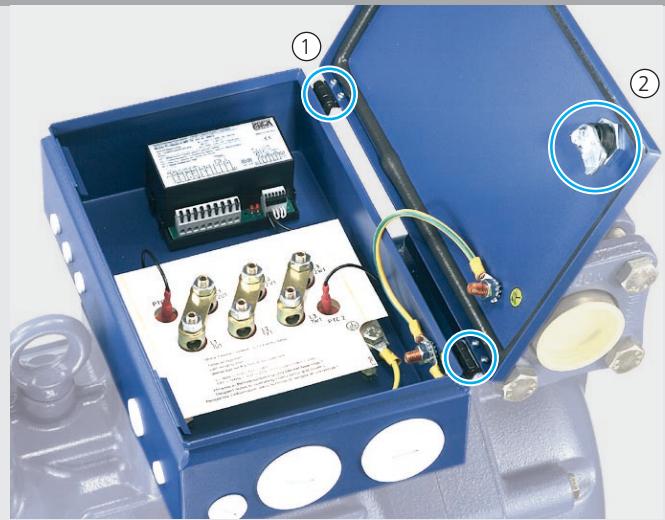
- Optional in 2 and 4 cylinder compressors HG(HA)12 up to HG(HA)34
- PTC heater, self-regulating
- Replacement without opening the refrigeration circuit

- Optional in 4- and 6-and 8-cylinder compressors HG(HA)4 up to HG8
- Immersion case design
- Replacement without opening the refrigerating circuit

## Electric switch box



- Robust aluminium construction
- Easy electrical installation due to large internal volume
- Terminal block with cables in glass seal model
- Hinged and removable lifting cover (1)  
with a single quick fastener (2)
- Terminal strip for add-on components
- Protection system: IP66



- Easy electrical installation due to large internal volume
- Terminal block with cables in glass seal model
- Hinged lifting cover with a single quick fastener (6 cylinder), (1)
- Cover with simple snap closure (8 cylinder) (2)
- Insulation between terminal studs
- Inspection window for compressor monitoring (8 cylinder)
- Protection system: 4 cylinder IP65; 6 and 8 cylinder IP54

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## EFC System Electronic Frequency Control

Continuously variable speed control using frequency converter technology.

With the EFC system GEA Bock offers the most efficient means of adapting the capacity of the compressor to current refrigeration plant requirements: "Continuously variable speed control using frequency converter technology".

**25 % or more energy saving potential!**

The **EFC system** is optionally available for the compressors HG(HA)12P, HG22e, HA22P, HG34e and HA34P.

**EFC systems** are compactly mounted on the compressor, wired and connected ready for use.

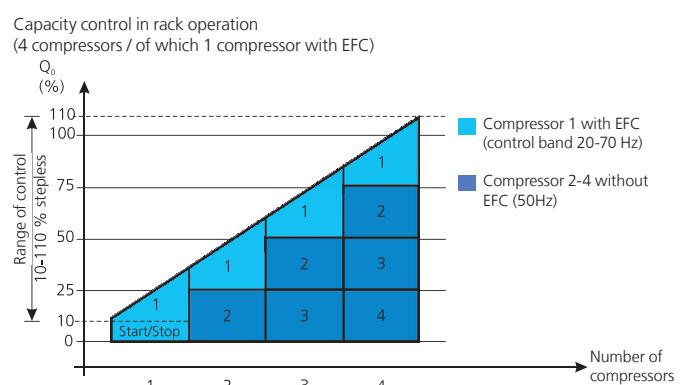
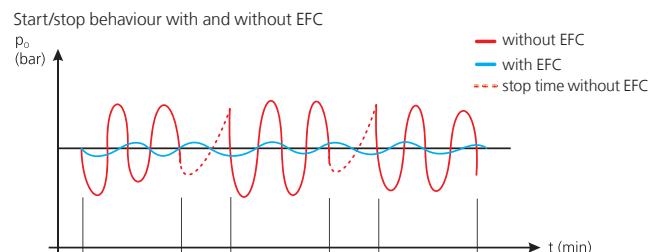
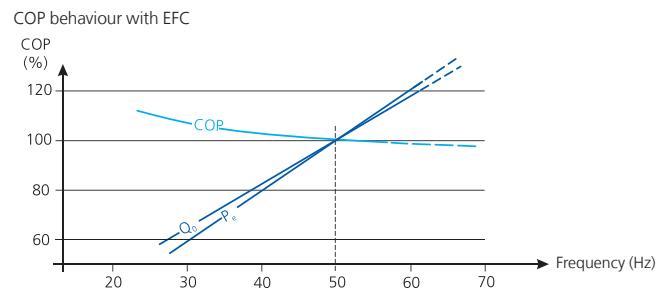
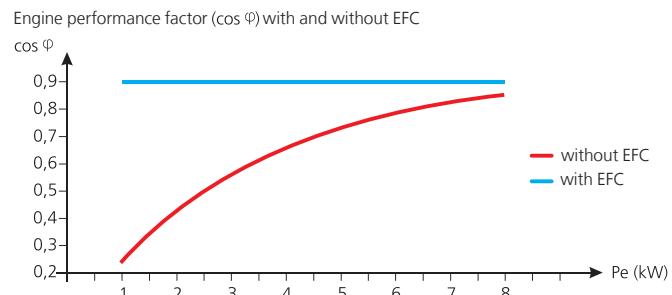
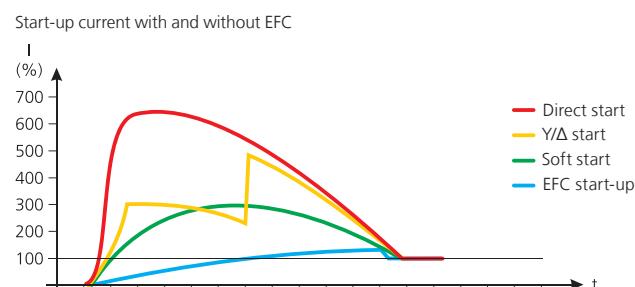
It is activated by a pressure transducer mounted on the suction side. The adjustment range can be set individually.

In December 2009, the Bock EFC system received the BMU (German Environment Ministry) Climate Protection Innovation Award in Refrigeration Technology from the German Minister for Environment.



The advantages of frequency-converter operation:

- Set for immediate connection and optimally programmed with data for the relevant compressor
- Fully variable adjustment of the refrigerating capacity on demand
- No high-energy, high-wear start/stop operation
- **25 % or more energy saving potential!**
- Reduced mechanical compressor load for longer service life
- Always optimum machine pressures and operating conditions
- Lower pressure losses in the heat exchangers
- Lower cooling down and heating up losses throughout the system
- Reduced start-up current at full torque
- Part windings and star-delta circuits no longer required
- Including motor monitoring
- Wired for immediate connection and compactly mounted on the compressor
- No additional wiring required
- Takes up no space in the switchboard
- Needs no screened supply lines to the compressor
- Control module also included for simple adjustment of the EFC system



## EFC System Electronic Frequency Control

### EFC versions

Single compressors



HG12P, HA12P, HG22e, HA22P, HG34e, HA34P

Duplex compressors



DHG12P, DHA12P, DHG22e, DHA22P, DHG34e, DHA34P

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### Type key - EFC System

EFC 7,5 / A1

Software version 2)  
Capacity 1)  
Electronic Frequency Control

<sup>1)</sup> Capacity - Product selection

Compressor	2,2 kW	EFC 4,0 kw	7,5 kW
HG12P, HA12P	●		
HG22e, HA22P		●	
HG34e, HA34P			●

### Scope of supply EFC

- Basic equipment with intermediate adapter mounted on compressor terminal box, programmed and assembled ready for operation
- Pressure transducer for suction pressure based speed control <sup>1)</sup> mounted on the compressor
- Programming and readout hand-held terminal with connecting cable

### <sup>2)</sup> Software version

- A1 Control signal 4-20 mA with pressure transducer  
 A2 Control signal 4-20 mA external (without pressure transducer)  
 A3 Control signal 0-10 V external (without pressure transducer)  
 A4 for duplex compressors, control signal 4-20 mA with pressure transducer  
 A5 for duplex compressors, control signal 4-20 mA external (without pressure transducer)  
 A6 for duplex compressors, control signal 1-10 V external (without pressure transducer)

## EFC System – Electronic Frequency Control

### Calculations

Calculating the maximum possible frequency of the compressor under specific operating conditions:

The following calculation is used to obtain the maximum possible frequency at the selected operating point:

$$f_{\max} = \frac{P_{\max} \times 50 \text{ Hz}}{P_e}$$

$f_{\max}$  = Maximum permissible frequency [Hz]

$P_{\max}$  = Maximum power consumption [kW] (see technical data)

$P_e$  = Power consumption at the operating point at 50 Hz [kW] (see performance data, compressors)

Calculating the corresponding refrigerating capacity:

Refrigeration capacity can be determined as a function of frequency from the following calculation:

$$\dot{Q}_0 \text{ operation} = \frac{f_{\text{operation}} \times \dot{Q}_{0 \text{ 50 Hz}}}{50 \text{ Hz}}$$

$\dot{Q}_0 \text{ operation}$  = Refrigerating capacity at the chosen operating point [W]

$f_{\text{operation}}$  = Frequency at the chosen operating point [Hz]

$\dot{Q}_{0 \text{ 50 Hz}}$  = Refrigerating capacity at the operating point at Hz [W] (see performance data, compressors)

**i** As a rule, the maximum permissible power consumption of the compressor  $P_{\max}$  must not be exceeded. The maximum permissible frequency is always restricted in case of high evaporation temperatures associated with high condensing pressures with refrigerants R404A, R507, R407C, R22, ...

For the compressors HG12P/110-4 S, HG22e/190-4 S and HG34e/380-4 S you have to reduce the performance by about 5 Hz.

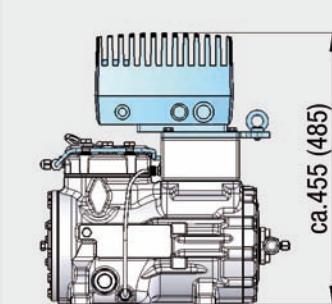
### Technical data, EFC

Unit designation	EFC 2,2	EFC 4,0	EFC 7,5
Protection	IP 65	IP 54	IP 54
Max. output current under continuous load	6 A	9,5 A	19 A
Max. output power	2,2 kW	4 kW	7,5 kW
Input		AC 400/500 V -3- PE 50/60 Hz	
	5,5/4,5 A	12,3/9,8 A	21,5/17,3 A
Output		AC 400/500 V -3- PE 0/650 Hz	
Permissible control range <sup>1)</sup>	30 - 70 Hz	30 - 70 Hz	25 - 70 Hz

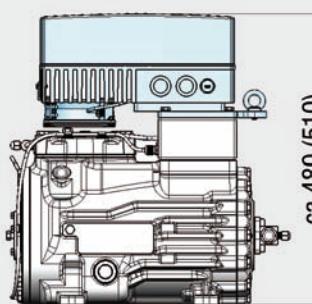
<sup>1)</sup> The specified control ranges may vary depending on the operating condition and system structure.

### Dimensional variations with the EFC system

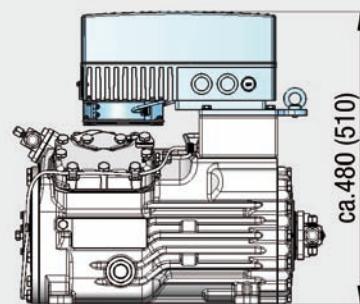
HG(HA)12P



HG22e, HA22P



HG34e, HA34P

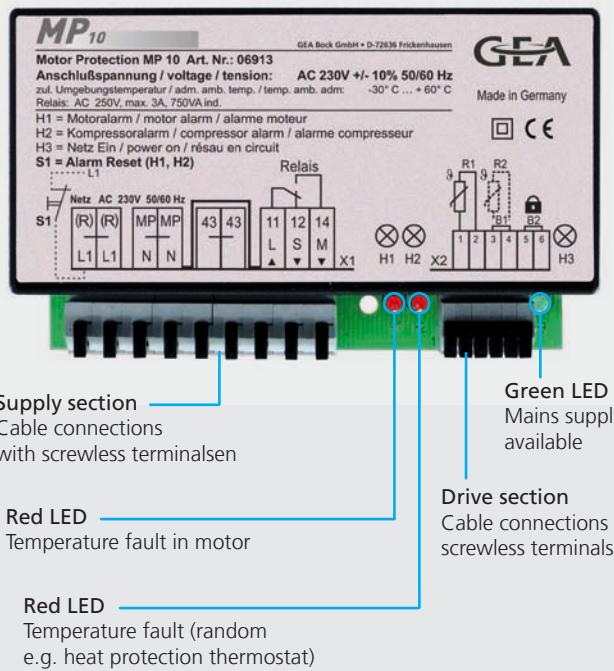


Dimensions in ( ) = HA version

# MP10

## Motor Protection

### Bock MP10 Electronic Motor Protection



Temperature safety drive for the drive motor

Standard in all compressors

The exceptional feature is that the monitoring function and mains availability are shown by coloured LED's.

There are no complicated or time-consuming defect locating processes.

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The MP10 also provides the usual functions as standard, e.g. a reconnection preventing device, a reset, free terminals for PTC temperature sensors (e.g. heat protection thermostat) and other useful items.

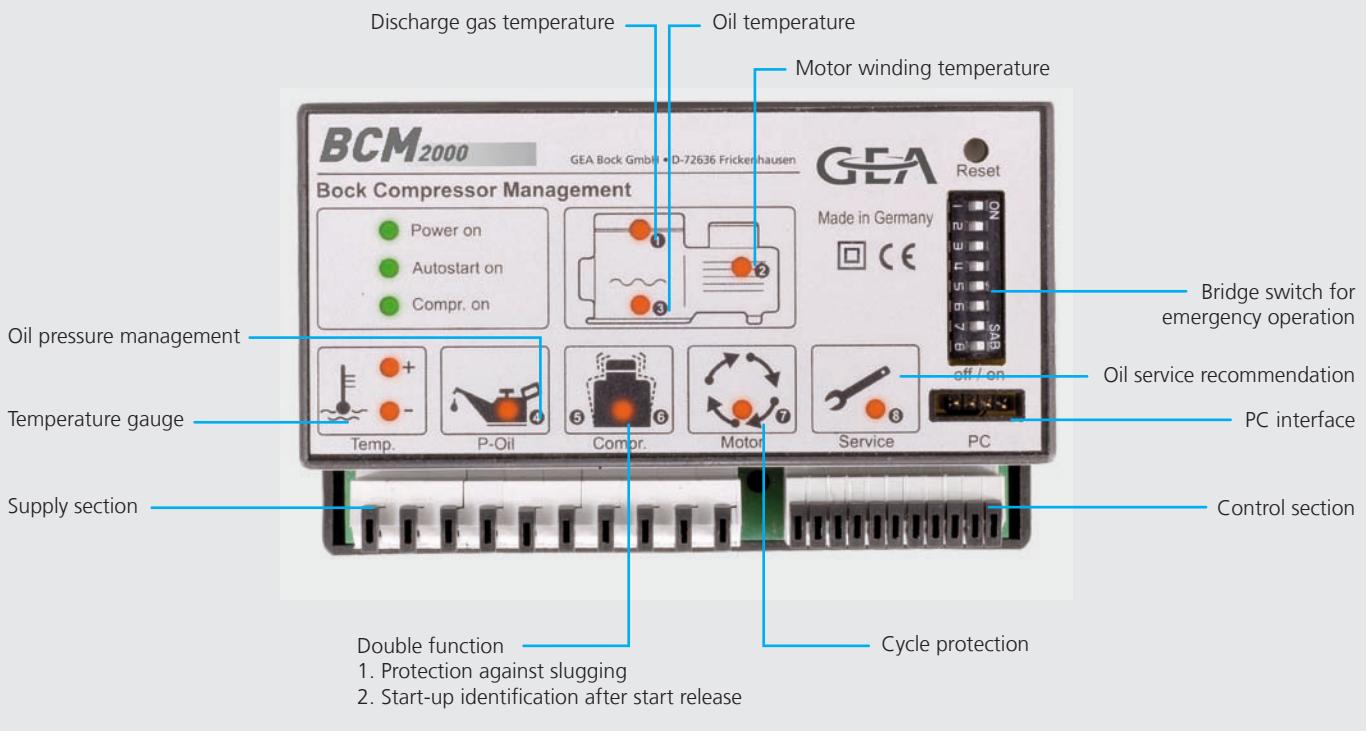
### Technical data, MP10

Unit designation	MP10
Connection voltage	AC 230 V - 1 - 50/60 Hz
Relay	AC 250 V, 3 A, 750 VA ind.
Dimensions L/W/H	100 x 60 x 52 mm

# BCM2000

## Bock Compressor Management

### Bock Compressor Management BCM2000



### Technical data, BCM2000

Unit designation	BCM2000
Connection voltage	AC 230 V - 1 - 50/60 Hz
Relay	AC 250 V, 3 A, 750 VA ind.
Dimensions L/W/H	100 x 60 x 52 mm

# BCM2000

## Bock Compressor Management

### Multifunctional management system

Available as an option for HG(HA)4, 5, 6, HG7 and HG8.

With the BCM2000, GEA Bock ist the first compressor manufacturer who offers a complete management system providing all the main functions for safe compressor operation in a practical compact assembly, user-friendly and economical.

#### Two central functions

- Protection against liquid slugging during start-up through the start-up identification system
- Oil service recommendations (calculation is based on operating data)

#### Other important functions

Monitoring of discharge gas temperature, motor winding temperature, oil temperature as well as oil pressure and cycle protection.

#### Simple and logical operation

- Self-explanatory symbols
- Status is indicated by LED's
- Clearly designed control unit

#### Simple electrical connection

- All monitoring functions are wired ready for operation
- Simple integration of the BCM2000 into the control circuit
- All cable connections have screwless terminals

#### Practical and easily accessible

##### positioning in the compressor connection box

- Installed in place of the usual motor protection unit MP10 (same dimensions)
- Optimal visibility by inspection window in the cover of the connection box, only possible ex-works.

#### Reliable and economical

- Eight monitoring functions in one central unit
- Intelligent monitoring of the various functions including operating hour metering
- Simple recognition of the current status using an optical display
- Each function can be short cut for emergency operation
- Read facility for stored messages for fast and safe error analysis in the event of a fault or breakdown
- Loss-proof error memory even after power failure
- Self-monitoring sensor technology
- Connection facility for external error messages

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## ESS System Electronic Soft Start

### Start unloader with the Bock ESS (option)



ESS (Electronic Soft Start)

- Unit programmed ready to operate
- Compressor allotment can be set by the potentiometer
- Continuous compressor start-up to nominal speed
- Unit suitable for fitting into a switch cabinet (supplied loose)
- No need for conventional start unloaders
- Voltage AC 400 V - 3 - 50/60 Hz
- Control voltage AC 230V - 1 - 50/60 Hz

### Electronic compressor starter unit

Available as option for:

HG22e, HA22P, HG34e, HA34P

HG(HA)4, 5, 6

HG7

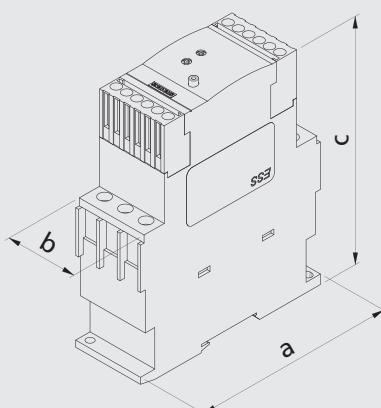
The start process uses an electronic soft start unit, instead of the conventional start unloader through the bypass solenoid valve, non-return valve and star-delta protector combination. This means that the compressor gets up to its nominal speed in a set time and therefore produces much lower power peaks than the classical star-delta start.

The unit is designed to fit into a switch cabinet.

### The advantages:

- Soft compressor start from zero to nominal speed, time controlled and monitored.
- Up to 40 % lower start-up power consumption than when using star-delta start
- No star-delta protection combination needed, no bypass between pressure and suction side needed. No solenoid valve or non-return valve needed.
- No compressor damage resulting from malfunction of the start unloader.

### Dimensions



Dimensions view technical data

## ESS System Electronic Soft Start

### Product selection

Compressor	ESS 25	ESS 38	ESS 63	ESS 72	ESS 106
HG22e, HA22P	●				
HG34e, HA34P	●				
HG4/465-4, HA4/465-4 HG4/465-4 S		● ●			
HG4/555-4 HG4/555-4 S, HA4/555-4		●	●		
HG4/650-4 HG4/650-4 S, HA4/650-4		●	●		
HG5/725-4 HG5/725-4 S, HA5/725-4		●	●		
HG5/830-4 HG5/830-4 S, HA5/830-4		●	●		
HG5/945-4, HA5/945-4 HG5/945-4 S			● ●		
HG6/1080-4 HG6/1080-4 S, HA6/1080-4			●	●	
HG6/1240-4, HA6/1240-4 HG6/1240-4 S				●	●
HG6/1410-4, HA6/1410-4 HG6/1410-4 S				●	●
HG7/1620-4 HG7/1620-4 S					● ●
HG7/1860-4 HG7/1860-4 S <sup>1)</sup>					● ●
HG7/2110-4 <sup>1)</sup>					●

<sup>1)</sup> up to +40 °C ambient temperature

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### Technical data, ESS

Unit designation	Protection	Max. output current <sup>1)</sup>	Input	Lost heat	Dimensions a / b / c
ESS 25		25 A		8 W	125 x 45 x 150
ESS 38	IP 20 Connectors IP00	38 A		19 W	125 x 45 x 150
ESS 63		63 A	AC 400 V -3- 50/60 Hz	12 W	160 x 55 x 170
ESS 72		72 A		15 W	160 x 55 x 170
ESS 106		106 A		21 W	170 x 70 x 190

<sup>1)</sup> at +50 °C ambient temperature

GEA Bock offers a choice of interesting compressor versions in the established semi-hermetic range for current market trends such as alternative refrigerants, deep-freezing or EX protection.



### Semi-hermetic compressors for all applications

#### HA Compressors (Hermetic Air-cooled)

air cooled semi-hermetic compressors for deep-freezing applications (R22/R404A), see page 33

#### Compressors for Special Refrigerants

**CO<sub>2</sub>** Compressors subcritical  
for subcritical cascade systems

**CO<sub>2</sub>** Compressors transcritical  
for transcritical applications

**HC** Compressors  
for hydrocarbons

**R134a** Compressors  
for the refrigerant R134a

#### ATEX Compressors

for explosion-risk environments

#### Compressors for Mobile Applications

**2-pole** Compressors

aluminium compressor  
cast iron compressor

**4-pole** Compressors  
aluminium compressor

**R407C** Compressors  
for the refrigerant R407C

Available versions	HG12	HG22	HG34	HG4	HG5	HG6	HG7	HG8
HA compressors	●	●	●	●	●	●		
CO <sub>2</sub> compressors subcritical	●	●	●	●				
CO <sub>2</sub> compressors transcritical			●					
HC compressors	●	●	●	●	●	●	●	●
R134a compressors				●	●	●	●	
ATEX compressors	●	●	●	●	●	●	●	
2-pole compressors aluminium			●					
2-pole compressors cast iron			●					
4-pole compressors aluminium	●		●					
R407C compressors			●					

## HA System Hermetic Air-cooled

Semi-hermetic air-cooled compressors for deep-freezing (R22/R404A)

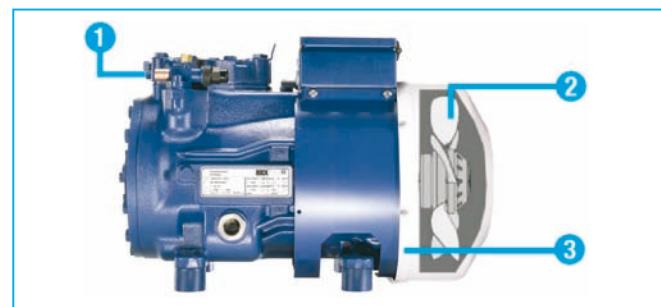
Available for all 2 and 4 cylinder versions.

Increasingly high specifications are being set for all suction gas-cooled semi-hermetic compressors for deep-freezing applications.

Compressors rapidly reach their temperature limits due to the rise in temperature of the suction gas caused by the drive motor. The refrigeration capacity also diminishes. But this does not apply for GEA Bock HA compressors.

The unique "Bock HA principle" prevents this. The drive motor is air-cooled and compressor suction is direct. The suction gas is not heated by the motor, but is fed directly to the compressor without being diverted through the motor. The motor is cooled by a compact integrated ventilation unit. Its precise airflow cools not only the motor but also the compressor and especially the cylinder heads.

A semi-hermetic compressor with the advantages of an open type.

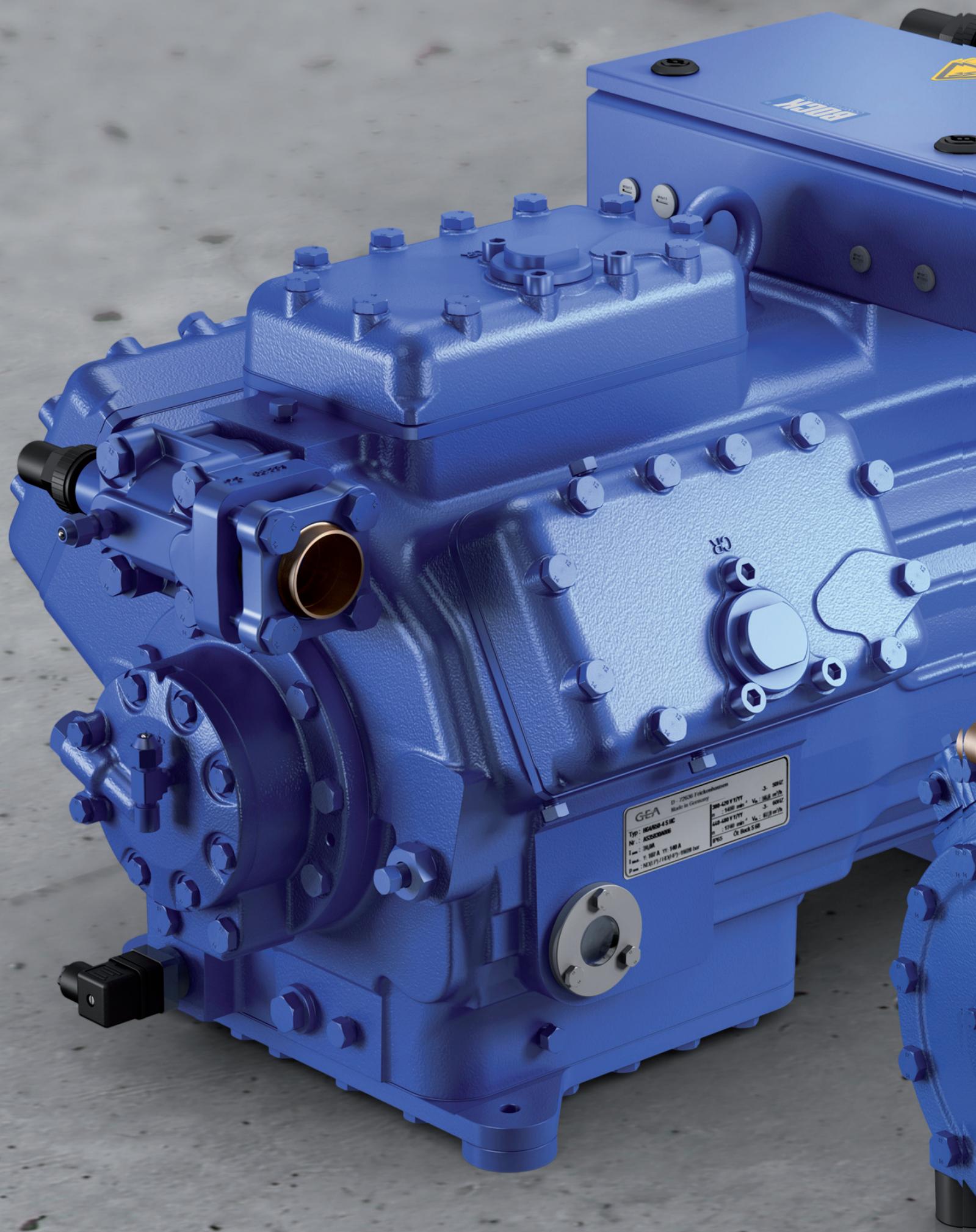


- ① Suction gas is fed directly into the compressor
- ② The motor is cooled by an integrated ventilation unit
- ③ Cool air is directed over the motor through an air duct hood

This results in a reduced discharge gas temperature and therefore an extended range of applications combined with improved capacity (deep-freezing - e.g. R22, R404A). In addition, the compressor is separate from the motor, which is a particular advantage in the event of a motor burn-out.

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## Single-stage semi-hermetic GEA Bock compressors

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The GEA Bock semi-hermetic compressor program provides a full performance range of innovative and modern compressor designs in 2, 4, 6 and 8 cylinder constructions.

The ideal solution for any kind of application.

#### HG (Hermetic Gas-cooled)

Conventional suction gas-cooled compressor design

#### HA (Hermetic Air-cooled)

Special Bock design for deep-freezing (R22/R404A) with an air-cooled motor and direct suction at the cylinder.

**All the compressors display the same particularly remarkable features:**

- Outstanding running comfort
- High efficiency and reliability to the highest quality standard
- Easy maintenance, e.g. interchangeable motors
- Oil pump lubrication
- Bock MP10 electronic motor protection, especially easy to operate with LED status indicators
- Suitable for conventional and chlorine-free HFC refrigerants

#### Available versions:

The GEA Bock semi-hermetic program provides the following product variants:

- Single-stage HG (HA) compressors
- Two-stage HGZ compressors
- Duplex DHG (DHA) compressors
- SHG (SHA) compressor units with receiver
- SHG (SHA) condenser units air-cooled

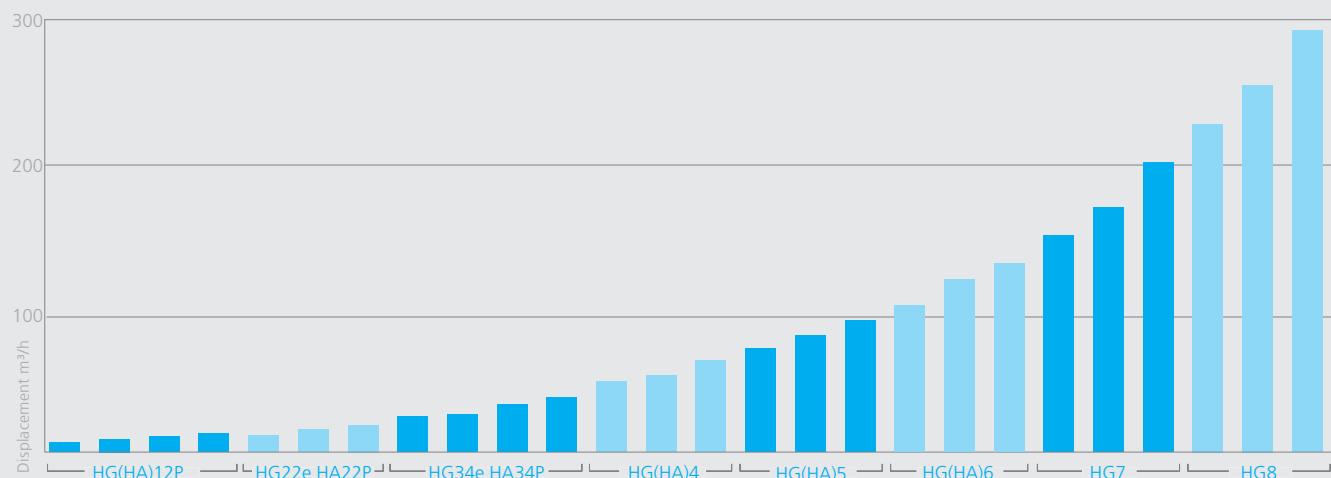
#### Forward looking compressor models

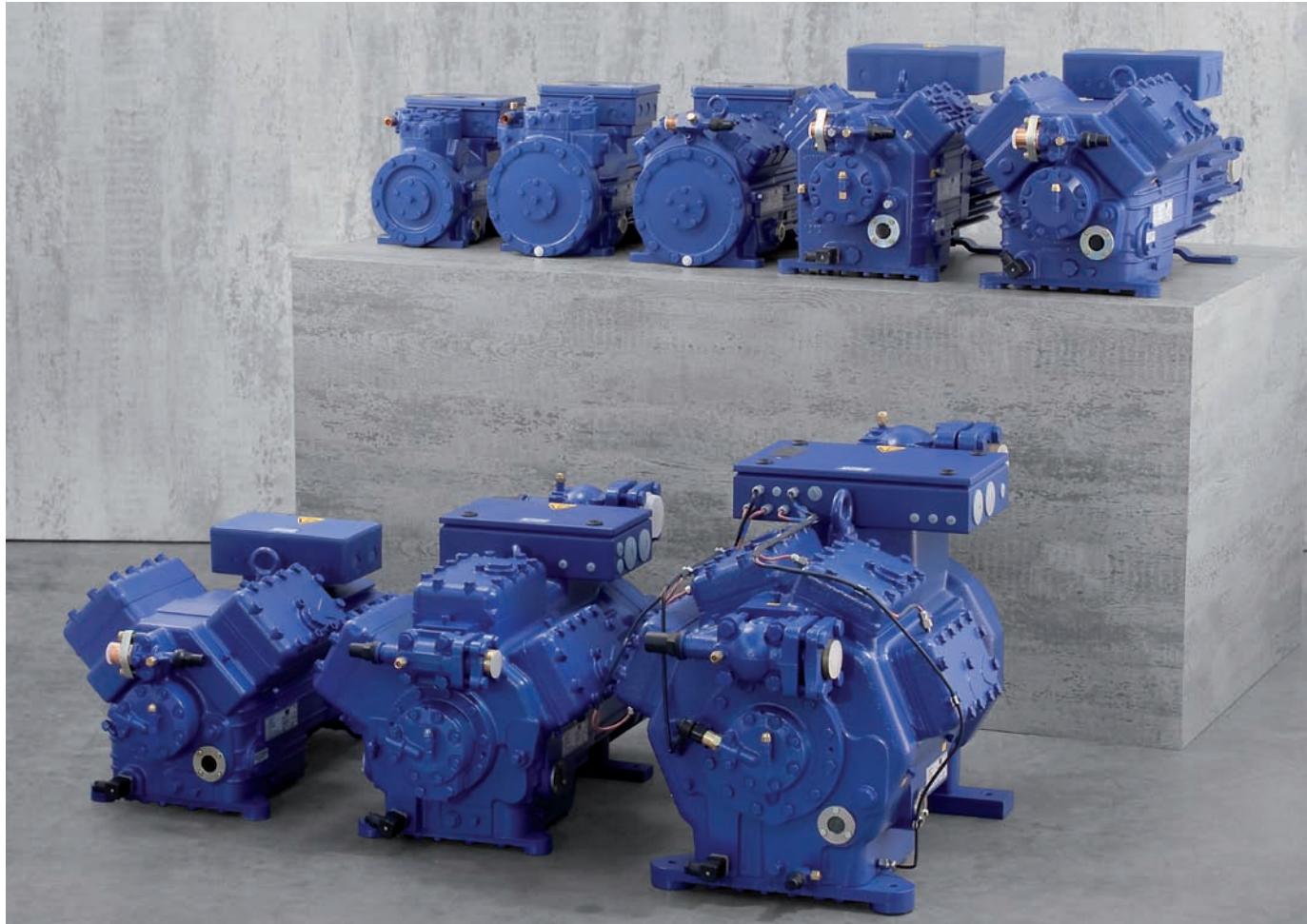
GEA Bock offers a choice of interesting compressor versions in the established semi-hermetic range for current market trends such as alternative refrigerants, deep-freezing or EX protection.

- HA (Hermetic Air-cooled),  
air-cooled compressors for deep-freezing applications
- CO<sub>2</sub> Compressors (subcritical), for subcritical cascade systems
- CO<sub>2</sub> Compressors (transcritical), for transcritical CO<sub>2</sub> applications
- ATEX (ATmospheres EXplosibles),  
for explosion-risk environments

#### The current program

...8 model sizes with 26 capacity stages from 5,4 to 279,8 m<sup>3</sup>/h (50 Hz)





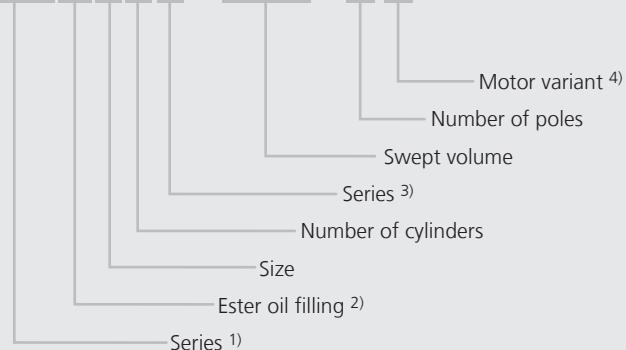
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## Type key

**HGX|34e / 215 - 4S**

1) HG = Hermetic Gas-Cooled (suction gas-cooled)

HA = Hermetic Air-Cooled (for deep-freezing)

2) X = Ester oil filling

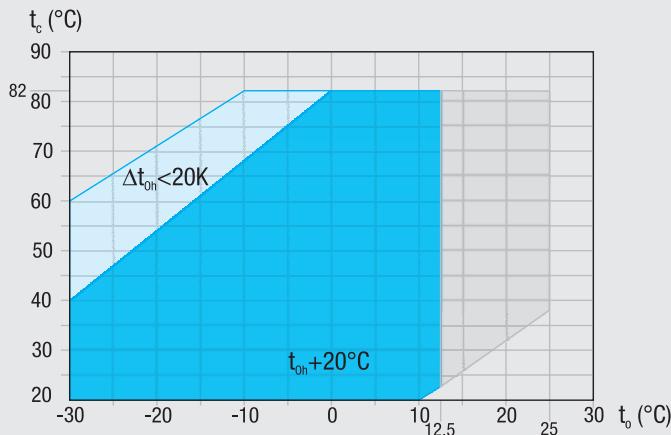
(HFC refrigerants e.g. R134a, R404A, R507, R407C)

3) e = Additional declaration for e-series compressors

P = Additional declaration for Pluscom compressors

4) S = More powerful motor e.g. air-conditioning applications

## R134a Operating limits

HGX12P / HGX22e / HGX34e  
HGX4 / HGX5 / HGX6 / HGX7 / HGX8

Unlimited application range

Supplementary cooling or  
reduced suction gas temperatureMotor version -S-  
(more powerful motor) $t_o$  Evaporating temperature (°C) $t_c$  Condensing temperature (°C) $\Delta t_{oh}$  Suction gas superheat (K) $t_{oh}$  Suction gas temperature (°C)Max. permissible operating pressure (LP/HP)<sup>1)</sup>: 19/28 bar<sup>1)</sup> LP = low pressure HP = high pressure

## R134a Notes

## Operating limits

Compressor operation is possible within the limits shown on the application diagrams. Please note the coloured areas. Compressor application limits should not be chosen for design purposes or continuous operation.

Restrictions to the operating limits may occur when using the Bock EFC (Electronic Frequency Control).

Further explanation see [www.bock.de](http://www.bock.de)

## Performance data

The performance data for R134a are based on ISO-DIS 9309 (DIN 8928) with a **50 Hz power supply frequency**. This signifies:

**25 °C suction gas temperature without liquid subcooling.**

For Pluscom compressors and HGX8/2470-4 operating at 50 Hz already comply with EN 12900. This signifies **20 °C suction gas temperature without liquid subcooling**.

This results in significant differences compared to specifications with liquid undercooling and/or suction-gas temperatures.

A comprehensive modification to 20 °C suction gas temperature will follow at a later date.

Conversion factor for 60 Hz = 1,2

Performance data for other operating points, see GEA Bock software.

## ASERCOM certified performance data



For compressors with this label, the performance data are certified according to the strict requirements of ASERCOM.

ASERCOM is the Association of European Refrigeration Compressors and Controls Manufacturers.

Information about the Association and the constantly updated overview of certified Bock compressors can be found at [www.asercom.org](http://www.asercom.org) and [www.bock.de](http://www.bock.de).

R134a		Performance data										50 Hz						
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]										Power consumption	$P_e$ [kW]					
		Evaporating temperature °C																
HGX12P/60-4 S	30	Q P	4920 0,70	4486 0,71	4078 0,71	3697 0,68	3009 0,65	2415 0,60	1908 0,54	1480 0,49	1125 0,44	836 0,40						
	40	Q P	4254 0,85	3874 0,84	3518 0,83	3185 0,81	2585 0,77	2066 0,71	1622 0,65	1246 0,59	931 0,54	670 0,49	455 0,45					
	50	Q P	3620 0,99	3292 0,97	2985 0,94	2698 0,91	2181 0,85	1734 0,77	1349 0,70	1021 0,63	742 0,57	504 0,52	302 0,49					
	60	Q P	3018 1,12	2740 1,08	2480 1,04	2237 1,00	1799 0,91	1419 0,82	1090 0,74	806 0,66	558 0,59	340 0,55	145 0,52					
	70	Q P	2450 1,23	2220 1,18	2004 1,12	1804 1,07	1441 0,96	1124 0,85	846 0,75	601 0,66	381 0,60							
	HGX12P/75-4	30	Q P	6147 0,88	5604 0,89	5095 0,88	4619 0,85	3760 0,81	3017 0,75	2383 0,68	1849 0,61	1405 0,55	756 0,50					
			Q P	5315 1,06	4840 1,05	4395 1,04	3979 1,02	3229 0,96	2581 0,89	2027 0,82	1557 0,74	1163 0,67	837 0,61	569 0,57				
		50	Q P	4523 1,24	4113 1,21	3729 1,18	3371 1,14	2725 1,06	2166 0,97	1686 0,88	1276 0,79	927 0,71	630 0,65	377 0,62				
		60	Q P	3770 1,40	3423 1,35	3098 1,30	2795 1,25	2248 1,14	1773 1,03	1362 0,92	1006 0,82	697 0,74	425 0,68	182 0,65				
		70	Q P	3060 1,53	2773 1,47	2504 1,40	2253 1,33	1800 1,19	1404 1,06	1058 0,94	751 0,83	476 0,74						
		HGX12P/90-4	30	Q P	7295 1,09	6663 1,11	6069 1,12	5511 1,13	4501 1,11	3623 1,06	2869 1,00	2229 0,92	1696 0,83	1259 0,74	911 0,65			
				Q P	6377 1,34	5811 1,34	5280 1,32	4782 1,30	3883 1,24	3104 1,16	2437 1,06	1872 0,96	1402 0,85	1016 0,74	707 0,65			
			50	Q P	5481 1,60	4981 1,57	4513 1,53	4075 1,49	3286 1,39	2606 1,27	2025 1,14	1535 1,01	1127 0,89	792 0,77	521 0,67			
			60	Q P	4611 1,83	4176 1,78	3771 1,72	3393 1,65	2714 1,51	2132 1,36	1637 1,21	1222 1,06	876 0,91	591 0,79	358 0,69			
			70	Q P	3771 2,01	3402 1,93	3059 1,85	2740 1,76	2172 1,59	1687 1,40	1279 1,23	937 1,06	652 0,90					
		HGX12P/110-4	30	Q P	8619 1,23	7858 1,24	7145 1,25	6477 1,24	5272 1,20	4231 1,13	3342 1,05	2593 0,95	1971 0,86	1464 0,78	1060 0,71			
			40	Q P	7453 1,49	6787 1,48	6163 1,45	5580 1,42	4528 1,35	3619 1,25	2842 1,14	2183 1,04	1631 0,94	1173 0,85	797 0,79			
			50	Q P	6342 1,74	5767 1,70	5229 1,65	4726 1,60	3820 1,48	3037 1,36	2364 1,23	1789 1,11	1299 1,00	883 0,92	528 0,87			
			60	Q P	5287 1,96	4800 1,89	4344 1,82	3919 1,75	3152 1,60	2486 1,44	1910 1,29	1411 1,15	977 1,04	596 0,96	255 0,91			
			70	Q P	4291 2,15	3888 2,06	3511 1,96	3159 1,87	2524 1,68	1969 1,49	1483 1,31	1053 1,16	667 1,04					
			HGX22e/125-4	30	Q P	10200 1,30	9270 1,35	8440 1,38	7660 1,39	6220 1,39	4960 1,34	3860 1,25	2930 1,14	2160 1,02	1550 0,9891	1090 0,765		
				40	Q P	8990 1,69	8200 1,70	7450 1,69	6740 1,67	5440 1,59	4300 1,48	3310 1,35	2480 1,20	1790 1,05	1260 0,903	860 0,769		
				50	Q P	7800 2,02	7090 1,98	6420 1,94	5780 1,88	4630 1,75	3620 1,59	2750 1,41	2020 1,24	1440 1,06	978 0,908	657 0,773		
				60	Q P	6570 2,27	5950 2,21	5360 2,13	4810 2,04	3810 1,86	2940 1,66	2200 1,45	1590 1,25	1110 1,07	744 0,909	504 0,783		
				70	Q P	5330 2,48	4800 2,38	4310 2,27	3840 2,16	3000 1,93	2280 1,70	1690 1,47	1200 1,25	829 1,06				
				HGX22e/160-4	30	Q P	12800 1,63	11600 1,65	10600 1,66	9560 1,65	7780 1,63	6240 1,59	4920 1,51	3810 1,41	2870 1,29	2110 1,15	1490 0,983	
					40	Q P	11200 2,07	10200 2,05	9200 2,03	8330 2,00	6750 1,92	5390 1,81	4230 1,68	3240 1,53	2410 1,36	1730 1,17	1160 0,962	
					50	Q P	9640 2,46	8760 2,41	7930 2,36	7170 2,29	5780 2,15	4580 1,99	3560 1,80	2680 1,60	1940 1,38	1310 1,14	783 0,884	
					60	Q P	8230 2,80	7460 2,72	6730 2,63	6060 2,54	4840 2,33	3790 2,11	2880 1,87	2100 1,61	1430 1,34	844 1,04	335 0,744	
					70	Q P	6880 3,09	6210 2,97	5580 2,85	4990 2,72	3930 2,45	3000 2,17	2190 1,87	1490 1,56	862 1,23			
					HGX22e/190-4	30	Q P	15300 2,04	14000 2,06	12900 2,06	11700 2,05	9630 2,00	7800 1,92	6180 1,80	4790 1,65	3610 1,48	2640 1,29	1870 1,09
						40	Q P	13600 2,59	12500 2,55	11400 2,51	10400 2,46	8460 2,33	6810 2,17	5360 1,98	4110 1,78	3060 1,57	2200 1,34	1530 1,11
						50	Q P	11900 3,09	10800 3,01	9840 2,92	8940 2,83	7270 2,62	5800 2,39	4520 2,14	3430 1,89	2520 1,63	1790 1,37	1220 1,12
						60	Q P	10100 3,54	9160 3,41	8320 3,28	7520 3,14	6070 2,86	4800 2,56	3700 2,26	2770 1,96	2010 1,66	1410 1,37	959 1,10
						70	Q P	8280 3,91	7510 3,74	6790 3,57	6110 3,39	4880 3,03	3810 2,68	2900 2,32	2150 1,97	1540 1,64		

Relating to 20 °C suction gas temperature,  
without liquid subcooling

Supplementary cooling or  
reduced suction gas temp.

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R134a		Performance data											50 Hz	
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]											Power consumption $P_e$ [kW]	
		Evaporating temperature °C												
		12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30		
HGX34e/215-4	30 Q	17200 2,27	15700 2,30	14400 2,32	13000 2,31	10600 2,25	8450 2,14	6590 1,98	5000 1,80	3670 1,59	2610 1,38	1800 1,18		
	40 Q	15200 2,87	13800 2,84	12600 2,78	11400 2,72	9120 2,55	7190 2,34	5530 2,11	4120 1,87	2970 1,64	2060 1,42	1400 1,22		
	50 Q	13000 3,38	11800 3,27	10700 3,16	9540 3,03	7590 2,76	5890 2,47	4440 2,18	3240 1,90	2270 1,64	1540 1,42	1040 1,24		
	60 Q	10800 3,79	9690 3,62	8690 3,45	7750 3,27	6070 2,90	4620 2,54	3400 2,20	2420 1,89	1660 1,61	1120 1,39	784 1,24		
	70 Q	8590 4,12	7680 3,89	6830 3,66	6040 3,43	4630 2,99	3440 2,56	2480 2,17	1730 1,84	1190 1,56				
HGX34e/255-4 <sup>1)</sup>	30 Q	20600 2,61	18800 2,67	17200 2,71	15600 2,66	12700 2,53	10100 2,34	7800 2,12	5890 1,88	4320 1,63	3080 1,41	2190 1,41		
	40 Q	18100 3,36	16500 3,35	15000 3,31	13600 3,25	11000 3,08	8660 2,84	6660 2,57	4960 2,27	3570 1,97	2490 1,68	1710 1,43		
	50 Q	15600 4,02	14200 3,93	12900 3,83	11600 3,71	9310 3,42	7280 3,08	5540 2,73	4070 2,36	2880 2,01	1960 1,68	1330 1,41		
	60 Q	13100 4,56	11900 4,41	10700 4,24	9610 4,06	7640 3,66	5920 3,23	4450 2,80	3220 2,37	2240 1,96	1510 1,61	1030 1,32		
	70 Q	10500 4,98	9430 4,77	8480 4,54	7590 4,30	5970 3,79	4570 3,28	3380 2,76	2410 2,28	1660 1,83				
HGX34e/315-4 <sup>1)</sup>	30 Q	25500 3,40	23300 3,43	21100 3,43	19200 3,40	15500 3,29	12400 3,11	9660 2,88	7390 2,61	5520 2,32	4040 2,02	2920 1,72		
	40 Q	22300 4,22	20300 4,17	18500 4,10	16700 4,01	13500 3,78	10700 3,49	8260 3,16	6260 2,80	4620 2,43	3320 2,07	2330 1,73		
	50 Q	19200 4,97	17400 4,85	15800 4,71	14200 4,55	11400 4,19	8950 3,79	6880 3,36	5140 2,91	3720 2,47	2600 2,04	1740 1,65		
	60 Q	16100 5,63	14600 5,44	13100 5,22	11800 5,00	9350 4,51	7280 4,00	5520 3,46	4050 2,93	2850 2,41	1900 1,92	1170 1,47		
	70 Q	13100 6,18	11800 5,91	10600 5,62	9390 5,33	7380 4,71	5660 4,08	4200 3,44	3000 3,44	2010 2,82				
HGX34e/380-4 <sup>1)</sup>	30 Q	30700 4,27	28100 4,28	25600 4,26	23200 4,22	19000 4,06	15300 3,83	12100 3,53	9310 3,20	7060 2,83	5250 2,46	3860 2,09		
	40 Q	27000 5,26	24600 5,19	22400 5,09	20300 4,97	16600 4,67	13300 4,30	10400 3,89	8000 3,46	6020 3,00	4420 2,56	3180 2,13		
	50 Q	23200 6,17	21200 6,01	19300 5,83	17400 5,63	14100 5,18	11300 4,69	8760 4,16	6670 3,62	4940 3,07	3540 2,55	2450 2,06		
	60 Q	19600 6,97	17800 6,73	16100 6,46	14600 6,18	11700 5,59	9240 4,96	7130 4,31	5350 3,66	3860 3,02	2650 2,42	1690 1,86		
	70 Q	16000 7,65	14500 7,31	13100 6,97	11800 6,60	9340 5,86	7290 5,09	5530 4,32	4040 3,56	2800 2,83				
HGX4/465-4	30 Q	36844 6,44	33673 6,21	30698 5,98	27910 5,77	22866 5,37	18484 4,98	14705 4,62	11472 4,26	8725 3,89	6406 3,50	4458 3,10		
	40 Q	33160 7,25	30273 6,97	27568 6,70	25038 6,44	20475 5,94	16524 5,46	13128 4,98	10228 4,52	7765 4,04	5682 3,54	3920 3,02		
	50 Q	28823 8,09	26257 7,75	23862 7,42	21629 7,10	17623 6,48	14181 5,87	11244 5,28	8754 4,68	6653 4,07	4882 3,44	3383 2,78		
	60 Q	23760 8,96	21555 8,55	19507 8,15	17610 7,76	14239 6,99	11382 6,24	8981 5,50	6979 4,75	5316 3,98	3934 3,19	2775 2,37		
	70 Q	17901 9,85	16094 9,37	14433 8,89	12910 8,42	10249 7,49	8055 6,57	6268 5,65	4829 4,73	3682 3,79				
HGX4/555-4	30 Q	43847 7,66	40074 7,39	36533 7,12	33215 6,87	27212 6,38	21997 5,93	17501 5,50	13652 5,06	10383 4,63	7624 4,17	5305 3,69		
	40 Q	39463 8,63	36027 8,30	32808 7,98	29798 7,66	24367 7,07	19665 6,49	15624 5,93	12172 5,37	9241 4,80	6762 4,21	4665 3,59		
	50 Q	34302 9,63	31248 9,23	28398 8,83	25741 8,45	20973 7,71	16876 6,99	13381 6,28	10418 5,57	7917 4,84	5810 4,09	4026 3,30		
	60 Q	28277 10,66	25652 10,17	23215 9,70	20958 9,23	16945 8,32	13545 7,43	10688 6,54	8305 5,65	6326 4,74	4682 3,80	3302 2,82		
	70 Q	21303 11,73	19153 11,15	17176 10,58	15363 10,02	12198 8,91	9586 7,82	7459 6,72	5747 5,63	4382 4,51				
HGX4/650-4	30 Q	51459 8,99	47031 8,67	42875 8,36	38981 8,06	31937 7,49	25816 6,96	20539 6,45	16023 5,94	12186 5,43	8948 4,90	6226 4,33		
	40 Q	46314 10,13	42282 9,74	38504 9,36	34971 8,99	28597 8,29	23079 7,62	18336 6,96	14285 6,31	10846 5,64	7936 4,95	5474 4,22		
	50 Q	40257 11,30	36673 10,83	33328 10,37	30209 9,92	24614 9,05	19806 8,20	15704 7,37	12227 6,53	9292 5,68	6818 4,80	4724 3,88		
	60 Q	33186 12,51	30106 11,94	27246 11,38	24596 10,84	19887 9,77	15897 8,72	12544 7,68	9747 6,63	7424 5,56	5494 4,46	3876 3,31		
	70 Q	25002 13,76	22478 13,08	20158 12,41	18031 11,75	14315 10,45	11250 9,17	8754 7,89	6745 6,60	5142 5,29				

Relating to 25 °C suction gas temperature  
(HGX34e to 20 °C suction gas temperature)  
without liquid subcooling

<sup>1)</sup> Compressors are  
ASERCOM certified



Supplementary cooling or  
reduced suction gas temp.

R134a			Performance data										50 Hz	
Type	Cond. temp. °C	Cooling capacity Q̄_o [W]	Evaporating temperature °C										Power consumption P_e [kW]	
			12,5	10	7,5	5	0	-5	-10	-15	-20	-25		
HGX5/725-4	30	Q 57279 P 10,01	52351 9,65	47725 9,30	43390 8,97	35549 8,34	28736 7,75	22862 7,18	17835 6,62	13564 6,04	9960 5,45	6930 4,81	1	
	40	Q 51552 P 11,27	47064 10,84	42859 10,42	38926 10,01	31832 9,23	25690 8,48	20410 7,75	15901 7,02	12072 6,28	8834 5,51	6094 4,69		
	50	Q 44810 P 12,58	40821 12,05	37097 11,54	33626 11,04	27398 10,07	22047 9,13	17481 8,20	13610 7,27	10343 6,32	7589 5,34	5259 4,31		
	60	Q 36939 P 13,92	33511 13,29	30327 12,67	27378 12,06	22136 10,87	17695 9,71	13963 8,55	10849 7,38	8264 6,19	6116 4,97	4314 3,69		
	70	Q 27829 P 15,32	25020 14,56	22438 13,82	20070 13,08	15934 11,64	12523 10,21	9744 8,78	7508 7,35	5724 5,89				
HGX5/830-4	30	Q 65754 P 11,49	60097 11,08	54786 10,68	49810 10,30	40808 9,58	32988 8,90	26244 8,24	20474 7,59	15571 6,94	11433 6,25	7956 5,53	2	
	40	Q 59180 P 12,94	54028 12,44	49200 11,96	44686 11,49	36541 10,60	29491 9,74	23430 8,90	18254 8,06	13859 7,21	10141 6,32	6995 5,39		
	50	Q 51440 P 14,44	46861 13,83	42586 13,25	38601 12,67	31452 11,56	25309 10,48	20067 9,42	15623 8,35	11873 7,26	8712 6,13	6037 4,95		
	60	Q 42405 P 15,98	38469 15,26	34814 14,55	31429 13,85	25412 12,48	20313 11,14	16029 9,81	12455 8,47	9487 7,11	7021 5,70	4952 4,24		
	70	Q 31947 P 17,59	28722 16,72	25758 15,86	23040 15,02	18292 13,36	14376 11,72	11186 10,08	8619 8,44	6571 6,76				
HGX5/945-4	30	Q 74814 P 13,08	68376 12,60	62334 12,15	56673 11,71	46431 10,89	37533 10,12	29860 9,38	23294 8,64	17717 7,89	13009 7,12	9052 6,29	3	
	40	Q 67334 P 14,73	61471 14,16	55979 13,61	50842 13,08	41576 12,06	33554 11,08	26658 10,12	20768 9,17	15768 8,20	11538 7,19	7959 6,13		
	50	Q 58527 P 16,43	53317 15,74	48453 15,07	43920 14,42	35785 13,16	28796 11,93	22832 10,71	17776 9,50	13509 8,26	9913 6,98	6869 5,64		
	60	Q 48247 P 18,19	43769 17,36	39611 16,55	35759 15,76	28913 14,20	23112 12,68	18237 11,16	14171 9,64	10794 8,09	7988 6,49	5635 4,82		
	70	Q 36349 P 20,01	32680 19,02	29306 18,05	26214 17,09	20812 15,20	16356 13,33	12727 11,47	9807 9,60	7476 7,69				
HGX6/1080-4	30	Q 85736 P 14,90	78334 14,37	71386 13,87	64875 13,39	53098 12,46	42867 11,59	34049 10,74	26509 9,90	20114 9,04	14729 8,14	10219 7,19	4	
	40	Q 77231 P 16,80	70507 16,16	64206 15,53	58310 14,93	47666 13,77	38441 12,65	30501 11,56	23712 10,47	17939 9,36	13049 8,22	8906 7,01		
	50	Q 67028 P 18,77	61090 17,98	55541 17,21	50366 16,46	41068 15,01	33062 13,59	26213 12,20	20387 10,82	15449 9,41	11267 7,96	7704 6,46		
	60	Q 54908 P 20,84	49861 19,87	45172 18,93	40824 18,01	33086 16,20	26510 14,44	20965 12,70	16315 10,96	12425 9,20	9163 7,40	6393 5,54		
	70	Q 40651 P 23,02	36602 21,85	32879 20,71	29464 19,59	23497 17,38	18566 15,22	14537 13,08	11275 10,93	8647 8,77				
HGX6/1240-4	30	Q 98422 P 17,10	89924 16,50	81948 15,92	74474 15,37	60954 14,31	49209 13,31	39087 12,33	30432 11,36	23090 10,38	16908 9,35	11731 8,25	3	
	40	Q 88658 P 19,29	80940 18,55	73706 17,83	66937 17,14	54718 15,81	44128 14,52	35014 13,27	27220 12,02	20593 10,75	14979 9,43	10224 8,05		
	50	Q 76946 P 21,55	70129 20,64	63759 19,76	57818 18,90	47145 17,23	37954 15,61	30091 14,01	23403 12,42	17735 10,80	12934 9,14	8844 7,41		
	60	Q 63033 P 23,92	57239 22,81	51856 21,73	46865 20,67	37981 18,60	30433 16,58	24067 14,58	18729 12,58	14264 10,56	10519 8,50	7339 6,36		
	70	Q 46666 P 26,42	42017 25,09	37743 23,77	33824 22,48	26974 19,95	21313 17,47	16688 15,01	12944 12,55	9926 10,06				
HGX6/1410-4	30	Q 111982 P 19,46	102314 18,77	93239 18,11	84735 17,48	69352 16,28	55989 15,14	44472 14,03	34624 12,93	26271 11,81	19237 10,63	13347 9,39	4	
	40	Q 100873 P 21,95	92091 21,10	83861 20,29	76160 19,50	62257 17,98	50208 16,53	39838 15,10	30970 13,68	23431 12,23	17043 10,73	11632 9,16		
	50	Q 87547 P 24,52	79791 23,49	72544 22,48	65784 21,50	53640 19,60	43183 17,76	34237 15,94	26628 14,13	20179 12,29	14716 10,40	10062 8,43		
	60	Q 71717 P 27,22	65125 25,96	59000 24,73	53322 23,52	43214 21,16	34626 18,86	27383 16,59	21309 14,32	16229 12,02	11968 9,67	8350 7,23		
	70	Q 53096 P 30,06	47807 28,54	42943 27,05	38484 25,58	30690 22,70	24250 19,88	18987 17,08	14727 14,28	11294 11,45				
HGX7/1620-4	30	Q 121493 P 16,46	110976 16,72	101143 16,84	91966 16,83	75469 16,46	61262 15,69	49126 14,61	38837 13,32	30174 11,90	22916 10,44	16842 9,03	3	
	40	Q 108919 P 21,03	99297 20,91	90317 20,66	81950 20,30	66947 19,29	54067 17,97	43088 16,41	33788 14,72	25945 12,99	19339 11,29	13748 9,73		
	50	Q 95988 P 25,19	87281 24,70	79173 24,11	71637 23,42	58168 21,82	46654 19,98	36872 17,99	28600 15,95	21618 13,94	15703 12,05	10634 10,37		
	60	Q 82743 P 28,86	74970 28,03	67755 27,11	61069 26,12	49175 23,97	39066 21,65	30521 19,28	23318 16,92	17235 14,68	12052 12,64	7545 10,89		
	70	Q 69228 P 31,98	62411 30,82	56108 29,60	50292 28,32	40012 25,66	31348 22,92	24080 20,19	17985 17,56	12842 15,13				

Relating to 25 °C suction gas temperature,  
without liquid subcooling

Supplementary cooling or  
reduced suction gas temp.

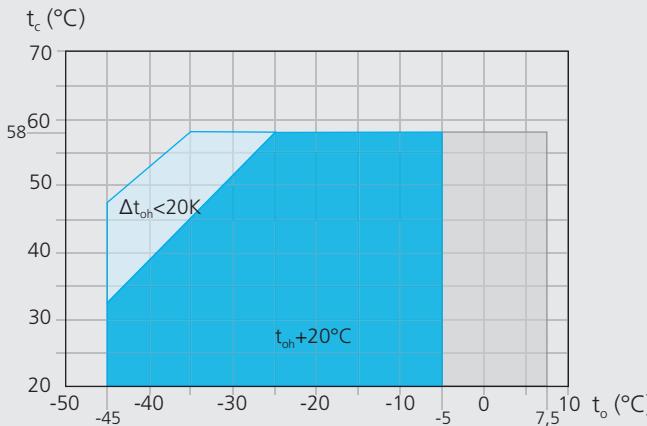
R134a		Performance data											50 Hz	
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]											Power consumption $P_e$ [kW]	
		Evaporating temperature °C												
		12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30		
HGX7/1860-4	30 Q	139469	127396	116108	105573	86635	70327	56394	44583	34639	26307	19334		
	30 P	18,89	19,20	19,34	19,32	18,90	18,01	16,78	15,29	13,66	11,98	10,37		
	40 Q	125034	113989	103680	94075	76853	62067	49463	38787	29784	22201	15782		
	40 P	24,14	24,00	23,72	23,31	22,15	20,62	18,84	16,90	14,91	12,96	11,17		
	50 Q	110190	100194	90887	82236	66775	53557	42327	32832	24817	18027	12208		
	50 P	28,92	28,36	27,68	26,89	25,05	22,94	20,65	18,31	16,00	13,83	11,91		
HGX7/2110-4	60 Q	94985	86063	77780	70105	56451	44847	35037	26768	19786	13835	8662		
	60 P	33,13	32,18	31,12	29,99	27,51	24,86	22,13	19,42	16,85	14,51	12,50		
	70 Q	79471	71645	64409	57733	45932	35987	27643	20646	14742				
	70 P	36,71	35,38	33,98	32,51	29,45	26,31	23,18	20,16	17,37				
	30 Q	158685	144949	132106	120119	98571	80016	64164	50725	39411	29932	21997		
HGX8/2470-4	30 P	21,49	21,84	22,00	21,99	21,50	20,49	19,09	17,40	15,54	13,64	11,80		
	40 Q	142261	129694	117965	107037	87442	70618	56278	44131	33888	25259	17956		
	40 P	27,47	27,31	26,99	26,52	25,20	23,47	21,44	19,23	16,96	14,75	12,71		
	50 Q	125371	113999	103409	93566	75975	60936	48159	37356	28236	20510	13890		
	50 P	32,90	32,26	31,49	30,59	28,50	26,10	23,50	20,83	18,20	15,74	13,55		
HGX8/2470-4	60 Q	108072	97921	88497	79764	64229	51026	39864	30456	22512	15741	9855		
	60 P	37,70	36,61	35,41	34,12	31,30	28,28	25,18	22,10	19,17	16,50	14,22		
	70 Q	90421	81516	73284	65688	52260	40945	31451	23490	16773				
	70 P	41,77	40,25	38,66	36,99	33,51	29,93	26,37	22,94	19,77				
	30 Q	180980	165373	150688	136898	111894	90139	71410	55486	42145	31167	22328		
HGX8/2830-4	30 P	28,60	28,57	28,38	28,02	26,89	25,25	23,21	20,85	18,25	15,51	12,72		
	40 Q	162981	148715	135302	122715	99905	80064	62970	48402	36137	25955	17633		
	40 P	36,03	35,34	34,51	33,54	31,25	28,57	25,58	22,37	19,02	15,64	12,30		
	50 Q	143344	130506	118452	107152	86709	68954	53667	40626	29610	20396	12762		
	50 P	42,17	40,85	39,41	37,87	34,51	30,85	26,99	23,01	18,99	15,03	11,22		
HGX8/2830-4	60 Q	122458	111134	100523	90598	72692	57197	43889	32547	22950	14877	8104		
	60 P	47,04	45,14	43,14	41,06	36,70	32,14	27,48	22,80	18,19	13,73	9,53		
	70 Q	100710	90986	81905	73439	58244	45179	34022	24552	16547				
	70 P	50,70	48,24	45,72	43,14	37,86	32,48	27,09	21,79	16,65				
	30 Q	210768	192307	174998	158801	129576	104304	82654	64297	48905	36146	25692		
HGX8/3220-4	30 P	35,60	35,08	34,39	33,54	31,42	28,87	26,05	23,09	20,14	17,35	14,88		
	40 Q	189115	172156	156289	141473	114827	91890	72331	55821	42031	30631	21293		
	40 P	41,56	40,50	39,29	37,95	34,95	31,67	28,23	24,80	21,51	18,52	15,96		
	50 Q	166558	151192	136858	123512	99626	79203	61916	47433	35427	25566	17523		
	50 P	47,26	45,66	43,95	42,14	38,31	34,32	30,32	26,45	22,86	19,69	17,10		
HGX8/3220-4	60 Q	143108	129426	116713	104929	83982	66256	51419	39145	29102	20961	14394		
	60 P	52,79	50,68	48,49	46,23	41,61	36,96	32,42	28,16	24,30	21,00	18,41		
	70 Q	118776	106867	95867	85734	67907	53056	40852	30965	23067				
	70 P	58,28	55,68	53,02	50,34	44,96	39,69	34,66	30,03	25,95				
	30 Q	239807	218802	199109	180680	147429	118675	94042	73156	55642	41126	29232		
HGX8/3220-4	30 P	40,50	39,92	39,13	38,16	35,75	32,85	29,63	26,27	22,92	19,75	16,93		
	40 Q	215170	195875	177822	160965	130648	104550	82296	63512	47822	34852	24226		
	40 P	47,29	46,08	44,70	43,17	39,77	36,03	32,12	28,22	24,47	21,07	18,16		
	50 Q	189506	172023	155713	140530	113352	90116	70446	53969	40308	29089	19937		
	50 P	53,77	51,95	50,00	47,94	43,59	39,05	34,50	30,09	26,01	22,41	19,46		
HGX8/3220-4	60 Q	162825	147258	132794	119386	95553	75384	58504	44538	33111	23849	16377		
	60 P	60,06	57,66	55,17	52,60	47,34	42,05	36,89	32,04	27,65	23,90	20,95		
	70 Q	135141	121591	109075	97546	77263	60366	46481	35232	26245				
	70 P	66,32	63,35	60,33	57,28	51,16	45,15	39,44	34,17	29,53				

Relating to 25 °C suction gas temperature  
(HGX8/2470-4 to 20 °C suction gas temperature)  
without liquid subcooling

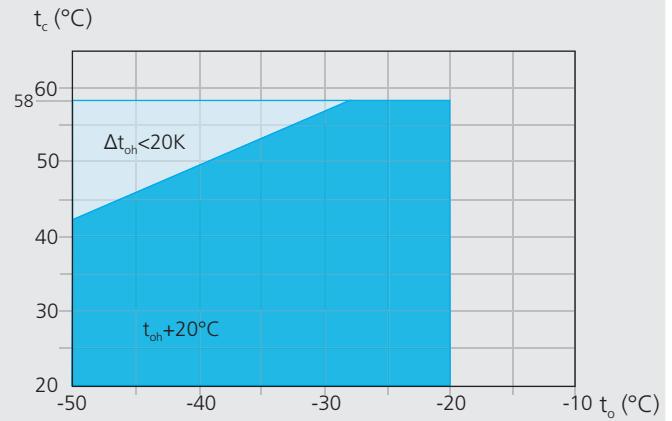
Supplementary cooling or  
reduced suction gas temp.

## R404A/R507 Operating limits

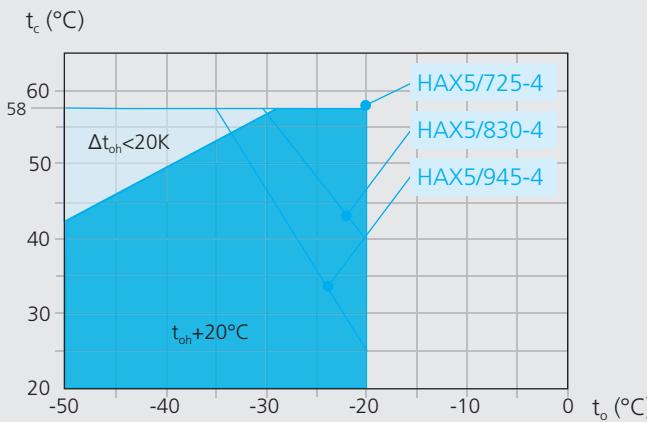
HGX12P / HGX22e / HGX34e /  
HGX4 / HGX5 / HGX6<sup>①</sup> / HGX7 / HGX8<sup>②</sup>



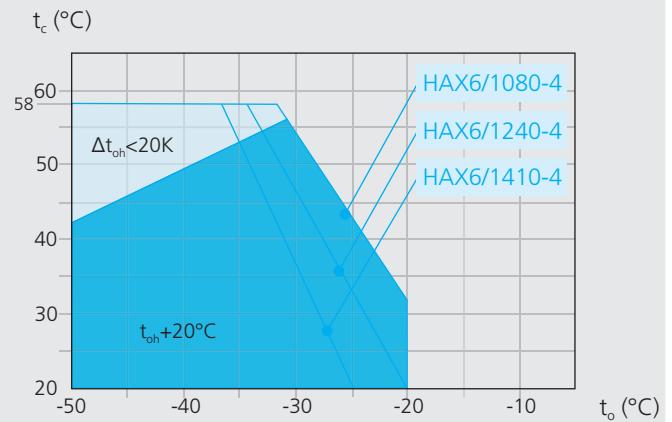
HAX12P / HAX22P / HAX34P / HAX4



## HAX5



## HAX6

Max. permissible operating pressure (LP/HP)<sup>①</sup>: 19/28 bar<sup>①</sup> LP = low pressure HP = high pressure

## ① HGX6/1410-4S

Max. evaporating temperature  
 $t_o = 2^\circ\text{C}$

## HGX6/1410-4

Max. evaporating temperature  
 $t_o = -7^\circ\text{C}$

## ② HGX8/2830-4

Max. evaporating temperature  
 $t_o = 0^\circ\text{C}$

Unlimited application range

 -HG Supplementary cooling or reduced suction gas temperature  
 -HA reduced suction gas temperature

 Motor version -S-  
(more powerful motor)
 $t_o$  Evaporating temperature ( $^\circ\text{C}$ ) $t_c$  Condensing temperature ( $^\circ\text{C}$ ) $\Delta t_{oh}$  Suction gas superheat (K) $t_{oh}$  Suction gas temperature ( $^\circ\text{C}$ )

## R404A/R507 Notes

### Operating limits

Compressor operation is possible within the limits shown on the application diagrams. Please note the coloured areas. Compressor application limits should not be chosen for design purposes or continuous operation.

Restrictions to the operating limits may occur when using the Bock EFC (Electronic Frequency Control).

Further explanation see [www.bock.de](http://www.bock.de).

### Performance data

The performance data for R404A/R507 are based on European Standard EN 12900 with a **50 Hz power supply frequency**.

This signifies: **20 °C suction gas temperature without liquid subcooling**.

This leads to significant differences compared to systems with liquid subcooling and/or other suction gas temperatures.

Performance data were compiled for R404A and R507.

The base values are the data for R404A.

Conversion factor for 60 Hz = 1,2

Performance data for other operating points, see GEA Bock software.

### ASERCOM certified performance data



For compressors with this label, the performance data are certified according to the strict requirements of ASERCOM.

ASERCOM is the Association of European Refrigeration Compressors and Controls Manufacturers.

Information about the Association and the constantly updated overview of certified Bock compressors can be found at [www.asercom.org](http://www.asercom.org) and [www.bock.de](http://www.bock.de).

R404A/R507			Performance data											50 Hz	
Type	Cond. temp. °C	Cooling capacity Q_o [W]	Evaporating temperature °C											Power consumption P_e [kW]	
			7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40		
HGX12P/60-4 S <sup>1)</sup>	30	Q P 1,20	6535 5989 1,22	4990 4191 1,23	4108 3428 1,20	3336 2764 1,15	2667 2193 1,08	2094 1706 1,00	1610 1297 0,91	1207 959 0,81	878 684 0,71	616 684 0,62	414 465 0,53		
	40	Q P 1,49	5537 5060 1,48	5060 4191 1,43	3428 3248 1,37	2764 2193 1,28	2193 1706 1,18	1706 1297 1,06	1297 959 0,95	959 684 0,83	684 465 0,71	465 435 0,61	296 435 0,52		
	50	Q P 1,72	4535 4128 1,69	3390 3245 1,60	2748 2195 1,49	2195 1723 1,37	1723 1324 1,24	1324 993 1,10	993 722 0,96	722 503 0,83	503 329 0,70	329 301 0,59			
HAX12P/60-4	30	Q P									2327 1,04	1851 0,95	1442 0,86	1097 0,75	
	40	Q P									1956 1,12	1538 1,00	1182 0,88	883 0,76	
	50	Q P									1582 1,18	1223 1,04	921 0,89	670 0,75	
HGX12P/75-4 <sup>1)</sup>	30	Q P 1,52	8160 7498 1,54	6284 5304 1,55	5227 4419 1,50	4288 3606 1,45	3469 2902 1,37	2764 2299 1,26	2164 1789 1,15	1661 1364 1,03	1246 1015 0,91	911 734 0,79	648 513 0,68		
	40	Q P 1,91	6934 6357 1,89	5304 4419 1,83	4419 3606 1,73	3606 2902 1,63	2902 2299 1,50	2299 1789 1,37	1789 1364 1,23	1364 1015 1,08	1015 734 0,94	734 513 0,81	513 435 0,69		
	50	Q P 2,21	5729 5238 2,17	4345 2,05	3632 1,92	2945 1,78	2355 1,62	1855 1,45	1435 1,29	1087 804 1,12	804 577 0,96	577 301 0,82			
HAX12P/75-4	30	Q P									2888 1,29	2296 1,18	1789 1,06	1361 0,94	
	40	Q P									2427 1,39	1908 1,25	1466 1,10	1095 0,95	
	50	Q P									1962 1,46	1517 1,29	1143 1,11	831 0,93	
HGX12P/90-4 <sup>1)</sup>	30	Q P 1,85	9738 8948 1,86	7500 6344 1,86	6085 5145 1,78	5000 4202 1,69	4052 3381 1,58	3231 2676 1,46	2529 2075 1,32	1937 1571 1,18	1446 1155 1,03	1047 817 0,89	730 549 0,75		
	40	Q P 2,27	8288 7600 2,25	6344 5145 2,17	5145 4202 2,02	4202 3381 1,88	3381 2676 1,72	2676 2075 1,56	2075 1571 1,39	1571 1155 1,21	1155 817 1,04	817 549 0,88			
	50	Q P 2,66	6863 6276 2,60	5212 4219 2,46	4219 3418 2,25	3418 2727 2,06	2727 2137 1,85	2137 1640 1,65	1640 1226 1,44	1226 886 1,24	886 611 1,04	611 399 0,86			
HAX12P/90-4	30	Q P									3407 1,56	2698 1,43	2089 1,29	1574 1,15	
	40	Q P									2853 1,67	2229 1,50	1699 1,33	1254 1,15	
	50	Q P									2287 1,75	1752 1,54	1303 1,33	932 1,13	
HGX12P/110-4 <sup>1)</sup>	30	Q P 2,17	11247 10345 2,18	8691 7361 2,16	7218 6125 2,15	5966 5039 2,05	4868 4091 1,92	3914 3270 1,76	3094 2567 1,59	2397 1972 1,41	1814 1473 1,23	1334 1062 1,05	946 728 0,88		
	40	Q P 2,65	9581 8796 2,62	7361 6125 2,53	6125 5039 2,47	5039 4091 2,30	4091 3270 2,10	3270 2567 1,89	2567 1972 1,68	1972 1473 1,46	1473 1062 1,25	1062 728 1,05			
	50	Q P 3,12	7877 7211 3,05	6000 5010 2,89	5010 4095 2,74	4095 3301 2,50	3301 2619 2,50	2619 2039 2,25	2039 1549 1,99	1549 1141 1,73	1141 803 1,49	803 611 1,26			
HAX12P/110-4	30	Q P									4092 1,78	3265 1,63	2558 1,46	1960 1,28	
	40	Q P									3451 1,94	2726 1,74	2109 1,52	1590 1,30	
	50	Q P									2809 2,05	2189 1,80	1664 1,55	1227 1,30	
HGX22e/125-4	30	Q P 2,19	13400 12400 2,23	10500 8970 2,26	8790 7460 2,24	7250 6090 2,16	5870 4880 2,03	4650 3820 1,88	3590 2900 1,69	2680 2120 1,49	1920 1490 1,28	1320 992 1,07	857 640 0,878		
	40	Q P 2,77	11600 10700 2,75	8970 7460 2,68	7460 6090 2,58	6090 4880 2,41	4880 3820 2,22	3820 2900 2,00	2900 2120 1,76	2120 1490 1,52	1490 1159 1,28	1159 806 1,06			
	50	Q P 3,26	9650 8860 3,19	7390 6080 3,03	6080 4910 2,84	4910 3880 2,60	3880 2990 2,34	2990 2230 2,07	2230 1610 1,80	1610 1110 1,53	1110 749 1,27	749 572 1,03			
HAX22P/125-4	30	Q P									4728 1,92	3791 1,71	2981 1,51	2291 1,32	
	40	Q P									3959 2,09	3158 1,84	2466 1,60	1876 1,37	
	50	Q P									3211 2,22	2538 1,92	1956 1,64	1458 1,37	
HGX22e/160-4	30	Q P 2,71	16900 15600 2,75	13200 11200 2,78	10900 9170 2,73	8980 7540 2,62	7320 6090 2,47	5850 4810 2,29	4560 3700 2,07	3450 2750 1,84	2510 1960 1,59	1750 1330 1,34	1170 851 1,08		
	40	Q P 3,42	14500 13400 3,40	11200 9150 3,30	9170 7480 3,17	7540 6090 2,96	6090 4860 2,72	4810 3790 2,47	3700 2860 2,19	2750 2090 1,91	1960 1460 1,62	1330 1071 1,34			
	50	Q P 4,02	12100 11100 3,94	9150 7480 3,73	7480 6090 3,51	6090 4860 3,22	4860 3790 2,90	3790 2860 2,58	2860 2090 2,25	2090 1460 1,92	1460 971 1,60	1071 851 1,30			
HAX22P/160-4	30	Q P									5837 2,37	4680 2,11	3680 1,87	2828 1,63	
	40	Q P									4888 2,58	3899 2,27	3044 1,98	2316 1,69	
	50	Q P									3964 2,74	3134 2,38	2414 2,03	1799 1,69	

Relating to 20 °C suction gas temp.  
without liquid subcooling<sup>1)</sup> Compressors (R404A)  
are ASERCOM certifiedMotor version -S-  
(more powerful motor)Supplementary cooling or  
reduced suction gas temp.1  
2  
3  
4

R404A/R507			Performance data												50 Hz	
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]	Evaporating temperature °C												Power consumption $P_e$ [kW]	
			7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45		
HGX22e/190-4	30	Q P 3,46	20800 3,46	19200 3,48	16100 3,46	13300 3,41	11000 3,26	8920 3,07	7140 2,84	5620 2,57	4330 2,29	3240 2,00	2350 1,70	1620 1,41		
	40	Q P 4,28	17800 4,28	16400 4,23	13700 4,09	11300 3,93	9200 3,68	7450 3,39	5940 3,08	4640 2,74	3540 2,39	2620 2,03	1860 1,68	1230 1,35		
	50	Q P 5,04	14800 5,04	13600 4,93	11300 4,66	9150 4,40	7460 4,06	6000 3,68	4750 3,27	3680 2,85	2780 2,43	2020 2,01	1390 1,61			
HAX22P/190-4	30	Q P									7063 2,87	5663 2,55	4453 2,26	3422 1,97	2562 1,69	1863 1,41
	40	Q P									5915 3,12	4718 2,75	3684 2,39	2802 2,05	2064 1,71	1460 1,37
	50	Q P									4797 3,31	3792 2,88	2922 2,45	2177 2,04	1550 1,64	1030 1,25
HGX34e/215-4 <sup>1)</sup>	30	Q P 3,83	23900 3,83	21900 3,85	18200 3,84	14600 3,70	11900 3,52	9470 3,26	7390 2,94	5610 2,58	4120 2,21	2900 1,84	1940 1,49	1220 1,18		
	40	Q P 4,72	20200 4,72	18500 4,65	15300 4,48	12200 4,26	9840 3,94	7770 3,56	5990 3,14	4480 2,70	3230 2,27	2220 1,85	1430 1,47	851 1,15		
	50	Q P 5,48	16500 5,48	15000 5,33	12200 4,99	9770 4,67	7800 4,23	6090 3,75	4630 3,25	3420 2,74	2420 2,26	1630 1,81	1040 1,42			
HAX34P/215-4	30	Q P									8042 3,26	6449 2,91	5071 2,57	3897 2,24	2918 1,92	2122 1,61
	40	Q P									6735 3,56	5372 3,13	4194 2,73	3190 2,33	2350 1,95	1662 1,57
	50	Q P									5462 3,77	4317 3,27	3327 2,79	2479 2,33	1765 1,87	1172 1,42
HGX34e/255-4 <sup>1)</sup>	30	Q P 4,57	28000 4,57	25700 4,61	21500 4,59	17200 4,44	14200 4,23	11500 3,95	9120 3,61	7080 3,22	5350 2,81	3900 2,39	2730 1,97	1820 1,58		
	40	Q P 5,64	23800 5,64	21800 5,58	18100 5,38	14500 5,14	11800 4,76	9460 4,33	7430 3,86	5680 3,37	4210 2,87	3010 2,38	2050 1,92	1320 1,50		
	50	Q P 6,55	19500 6,55	17700 6,40	14600 6,02	11700 5,68	9410 5,15	7450 4,58	5760 4,00	4330 3,41	3150 2,84	2200 2,30	1480 1,80			
HAX34P/255-4	30	Q P									9456 3,84	7582 3,42	5962 3,02	4582 2,64	3430 2,26	2495 1,89
	40	Q P									7919 4,18	6317 3,68	4932 3,20	3751 2,74	2763 2,29	1955 1,84
	50	Q P									6422 4,44	5076 3,85	3911 3,28	2915 2,73	2075 2,20	1379 1,67
HGX34e/315-4 <sup>1)</sup>	30	Q P 5,86	33800 5,86	31000 5,82	26000 5,67	21300 5,47	17600 5,20	14300 4,85	11400 4,43	8840 3,98	6700 3,49	4930 2,99	3490 2,49	2370 2,01		
	40	Q P 7,05	28700 7,05	26300 6,92	22000 6,59	17900 6,29	14700 5,83	11900 5,32	9350 4,76	7220 4,18	5400 3,58	3880 2,98	2650 2,40	1690 1,86		
	50	Q P 8,13	23500 8,13	21500 7,90	17800 7,39	14500 6,97	11800 6,34	9430 5,67	7370 5,67	5600 4,00	4100 3,41	2840 3,54	1820 2,85			
HAX34P/315-4	30	Q P									11674 4,74	9361 4,22	7360 3,73	5657 3,26	4235 2,79	3080 2,33
	40	Q P									9776 5,16	7798 4,55	6088 3,96	4631 3,38	3411 2,82	2413 2,27
	50	Q P									7929 5,48	6267 4,75	4829 4,05	3599 3,38	2562 2,71	1702 2,06
HGX34e/380-4 <sup>1)</sup>	30	Q P 7,20	40900 7,20	37600 7,15	31700 6,98	25800 6,84	21200 6,45	17300 5,98	13800 5,46	10900 4,88	8300 4,28	6200 3,67	4490 3,05	3120 2,45		
	40	Q P 8,75	34600 8,75	31800 8,59	26700 8,18	21600 7,84	17700 7,25	14300 6,59	11400 5,90	8850 5,18	6730 4,45	4960 3,72	3510 3,00	2340 2,33		
	50	Q P 10,10	28400 10,10	26000 9,86	21800 9,23	17600 8,73	14300 7,92	11500 7,08	9030 6,22	6960 5,34	5210 4,47	3760 3,62	2550 2,81			
HAX34P/380-4	30	Q P									14125 5,73	11327 5,11	8906 4,51	6845 3,94	5125 3,38	3726 2,82
	40	Q P									11829 6,25	9436 5,50	7367 4,79	5604 4,09	4128 3,42	2920 2,75
	50	Q P									9594 6,63	7583 5,75	5843 4,91	4355 4,09	3100 3,28	2059 2,49
HGX4/465-4 <sup>1)</sup>	30	Q P 9,55	49311 9,55	45325 9,44	38018 9,13	31142 8,81	25587 8,32	20747 7,71	16575 7,01	13020 6,24	10035 5,45	7569 4,66	5576 3,91	4005 3,21		
	40	Q P 11,33	42248 11,33	38764 11,08	32400 10,52	26283 10,08	21490 9,31	17340 8,45	13783 7,53	10770 6,58	8253 5,64	6183 4,73	4511 3,88	3187 3,13		
	50	Q P 12,97	34849 12,97	31886 12,59	26502 11,76	21559 11,12	17526 10,09	14061 9,00	11117 7,89	8643 6,78	6592 5,71	4913 4,70	3560 3,79			
HAX4/465-4	30	Q P									18696 7,76	15000 6,86	11814 6,00	9094 5,17	6798 4,35	4884 3,56
	40	Q P									15696 8,32	12501 7,27	9756 6,26	7420 5,29	5449 4,36	3802 3,46
	50	Q P									12819 8,76	10124 7,56	7822 6,42	5870 5,33	4225 4,29	2845 3,30

Relating to 20 °C suction gas temp.  
without liquid subcooling

<sup>1)</sup> Compressors (R404A)  
are ASERCOM certified



Motor version -S-  
(more powerful motor)

Supplementary cooling or  
reduced suction gas temp.

R404A/R507			Performance data											50 Hz	
Type	Cond. temp. °C		Cooling capacity $\dot{Q}_o$ [W]											Power consumption $P_e$ [kW]	
			Evaporating temperature °C												
			7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
HGX4/555-4 <sup>1)</sup>	30	Q	59014 11,52	54222 11,34	45450 10,89	37853 10,34	31129 9,72	25259 8,99	20184 8,19	15848 7,34	12194 6,47	9164 5,59	6702 4,73	4751 3,93	
	40	Q	50452 13,64	46260 13,29	38616 12,51	32112 11,84	26279 10,88	21212 9,86	16857 8,81	13155 7,74	10050 6,69	7484 5,67	5401 4,72	3743 3,85	
	50	Q	41937 15,53	38348 15,01	31838 13,93	26484 13,14	21544 11,87	17286 10,58	13653 9,30	10589 8,04	8036 6,83	5938 5,70	4236 4,66		
HAX4/555-4	30	Q									21842 8,84	17569 7,84	13875 6,87	10713 5,93	8037 5,01
	40	Q									18374 9,46	14675 8,27	11488 7,14	8766 6,04	6461 4,99
	50	Q									15013 9,95	11894 8,60	9220 7,31	6944 6,08	5018 4,90
HGX4/650-4 <sup>1)</sup>	30	Q	70903 14,57	65224 14,19	54821 13,41	44444 12,51	36811 11,70	30119 10,80	24302 9,84	19297 8,84	15039 7,82	11465 6,80	8510 5,80	6110 4,85	
	40	Q	60855 16,80	55879 16,29	46795 15,22	37928 14,30	31232 13,15	25384 11,94	20322 10,70	15982 9,45	12298 8,21	9208 7,01	6647 5,86	4550 4,79	
	50	Q	50791 19,05	46523 18,38	38768 17,02	31303 15,79	25565 14,31	20586 12,81	16302 11,31	12650 9,83	9564 8,39	6980 7,02	4835 5,73		
HAX4/650-4	30	Q									24978 9,71	20136 8,62	15945 7,57	12352 6,54	9304 5,55
	40	Q									21012 10,39	16819 9,10	13202 7,86	10107 6,67	7480 5,53
	50	Q									17167 10,93	13632 9,46	10596 8,05	8006 6,71	5809 5,43
HGX5/725-4 <sup>1)</sup>	30	Q	76254 13,31	70105 13,28	58815 13,03	48024 12,99	39230 12,20	31558 11,23	24934 10,13	19288 8,94	14546 7,70	10636 6,47	7486 5,28	5024 4,19	
	40	Q	64689 16,28	59328 16,01	49517 15,29	40164 14,87	32541 13,61	25933 12,22	20266 10,76	15468 9,25	11467 7,76	8191 6,32	5568 4,98	3525 3,78	
	50	Q	53354 19,02	48782 18,49	40450 17,29	32498 16,31	26053 14,61	20515 12,84	15811 11,04	11869 9,26	8617 7,55	5982 5,94	3892 4,48		
HAX5/725-4	30	Q									26886 10,67	21437 9,42	16746 8,19	12756 7,01	9409 5,86
	40	Q									22619 11,41	17905 9,93	13864 8,51	10437 7,15	7565 5,84
	50	Q									18487 12,01	14513 10,33	11125 8,72	8265 7,19	5874 5,74
HGX5/830-4 <sup>1)</sup>	30	Q	86623 15,69	79925 15,61	67508 15,23	54430 14,69	44830 13,90	36400 12,93	29056 11,80	22717 10,55	17300 9,21	12722 7,82	8900 6,41	5752 5,01	
	40	Q	74069 19,30	68151 18,89	57216 17,91	45580 16,93	37311 15,69	30078 14,28	23798 12,75	18389 11,13	13769 9,45	9854 7,74	6561 6,04	3809 4,38	
	50	Q	61445 22,39	56332 21,68	46927 20,13	37034 18,88	30091 17,17	24051 15,33	18831 13,38	14348 11,38	10520 9,34	7263 7,30	4496 5,29		
HAX5/830-4	30	Q									30392 12,06	24266 10,65	19003 9,29	14530 7,96	10772 6,67
	40	Q									25602 12,90	20281 11,24	15733 9,65	11882 8,12	8654 6,65
	50	Q									12641 9,88	9414 8,16	6718 6,53	4480 4,99	
HGX5/945-4 <sup>1)</sup>	30	Q	99975 18,52	91955 18,31	72727 17,73	63293 17,40	52168 16,27	42473 15,04	34090 13,74	26900 12,35	20783 10,90	15620 9,38	11291 7,80	7678 6,18	
	40	Q	84751 22,17	77834 21,71	65213 20,66	52881 19,84	43552 18,30	35430 16,69	28395 14,99	22327 13,23	17107 11,40	12617 9,52	8737 7,59	5347 5,61	
	50	Q	69440 25,81	63623 25,08	53056 23,50	42757 22,12	35145 20,15	28515 18,09	22748 15,97	17723 13,78	13321 11,54	9424 9,25	5912 6,91		
HAX5/945-4	30	Q									27994 12,27	21989 10,72	16866 9,21	12548 7,74	8959 6,32
	40	Q									18205 11,13	13799 9,39	10088 7,71	6997 6,11	
	50	Q									10929 9,44	7834 7,57	5248 5,81		
HGX5/1080-4 <sup>1)</sup>	30	Q	113675 22,05	104548 21,89	87811 21,27	72501 20,82	59869 19,21	48801 17,56	39180 15,88	30889 14,16	23810 12,40	17826 10,60	12819 8,76	8672 6,86	
	40	Q	96893 26,74	88944 26,17	74420 24,80	61734 23,74	50695 21,61	41062 19,46	32716 17,30	25541 15,13	19419 12,94	14233 10,72	9866 8,49	6200 6,22	
	50	Q	80355 30,79	73583 29,85	61270 27,79	51086 26,12	41654 23,48	33468 20,85	26411 18,23	20366 15,62	15214 13,01	10840 10,40	7125 7,78		
HAX5/1080-4	30	Q									41973 16,66	33574 14,73	26360 12,86	20224 11,05	15061 9,29
	40	Q									28072 15,55	21828 13,36	16539 11,27	12098 9,26	8401 7,33
	50	Q									17547 13,68	13107 11,32	9392 9,09	6297 6,97	

Relating to 20 °C suction gas temp.  
without liquid subcooling<sup>1)</sup> Compressors (R404A)  
are ASERCOM certifiedMotor version -S-  
(more powerful motor)Supplementary cooling or  
reduced suction gas temp.1  
2  
3  
4

R404A/R507			Performance data												50 Hz		
Type	Cond. temp. °C		Cooling capacity $\dot{Q}_o$ [W]										Power consumption $P_e$ [kW]				
			Evaporating temperature °C														
			7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45			
HGX6/1240-4 <sup>1)</sup>	30	Q P	133368 27,78	122554 27,28	102765 26,04	83399 23,70	68935 22,26	56229 20,54	45169 18,62	35643 16,56	27538 14,43	20744 12,29	15146 10,21	10634 8,25			
	40	Q P	113720 33,36	104299 32,38	87122 30,24	71042 27,42	58440 25,14	47422 22,68	37874 20,13	29684 17,53	22741 14,97	16931 12,49	12143 10,17	8265 8,08			
	50	Q P	94323 38,27	86295 36,83	71734 33,86	58323 30,45	47668 27,41	38420 24,30	30468 21,19	23698 18,14	17998 15,22	13257 12,49	9362 10,02				
HAX6/1240-4	30	Q P									38742 17,00	30407 14,83	23329 12,74	17378 10,72	12423 8,75		
	40	Q P									25193 15,43	19081 13,01	13958 10,69	9695 8,48			
	50	Q P									15126 13,08	10835 10,49	7265 8,05				
HGX6/1410-4 <sup>1)</sup>	30	Q P		112574 28,95	94071 27,60	76961 26,50	63138 24,11	51088 21,69	40671 19,26	31748 16,84	24176 14,43	17817 12,06	12528 9,73				
	40	Q P		96228 33,76	80122 31,54	65316 30,24	53413 26,98	43056 23,78	34104 20,67	26417 17,65	19854 14,74	14276 11,96	9540 9,32				
	50	Q P		79925 37,91	66235 34,88	53148 33,29	43254 29,21	34677 25,29	27278 21,54	20915 17,98	15450 14,63	10739 11,49					
HAX6/1410-4	30	Q P									33768 16,48	25918 14,13	19311 11,86	13807 9,68			
	40	Q P									21163 14,43	15482 11,83	10756 9,36				
	50	Q P									16757 14,53	12003 11,62	8054 8,90				
HGX7/1620-4 <sup>1)</sup>	30	Q P	163130 32,39	150297 32,05	126636 30,98	106031 30,00	87518 28,31	71107 26,22	56728 23,83	44306 21,24	33770 18,56	25047 15,88	18065 13,30	12751 10,93			
	40	Q P	139724 38,16	128531 37,38	107945 35,48	89756 34,27	73736 31,69	59585 28,79	47232 25,68	36603 22,46	27628 19,22	20232 16,08	14343 13,12	9890 10,45			
	50	Q P	115792 43,47	106272 42,23	88826 39,46	73671 37,57	60144 34,13	48254 30,47	37928 26,68	29093 22,85	21678 19,10	15609 15,52	10816 12,22				
HGX7/1860-4 <sup>1)</sup>	30	Q P	184191 37,41	169853 37,14	143432 36,15	119116 35,68	98208 32,91	79858 32,91	63906 30,00	50195 27,00	38563 23,95	28854 20,89	20907 17,88	14563 14,95	12,15		
	40	Q P	157436 45,37	144933 44,40	121960 42,11	100333 39,79	82508 36,14	66907 32,43	53368 28,71	41734 25,02	31846 21,40	23543 17,91	16668 14,59	11061 11,48			
	50	Q P	130989 51,97	120333 50,38	100832 46,93	82100 43,28	67304 38,81	54394 34,37	43213 29,99	33601 25,73	25399 21,63	18448 17,73	12589 14,08				
HGX7/2110-4 <sup>1)</sup>	30	Q P	201969 46,49	186202 45,47	157288 43,22	130628 40,64	108549 37,84	89073 34,82	72027 31,63	57236 28,33	44527 24,95	33724 21,53	24655 18,14	17144 14,81			
	40	Q P	173523 54,03	159904 52,52	134971 49,31	112651 45,59	93282 41,96	76227 38,14	61312 34,18	48362 30,13	37205 26,03	27665 21,92	19568 17,87	12741 13,90			
	50	Q P	144329 60,77	132872 58,78	111953 54,63	93475 49,93	77007 45,43	62564 40,76	49972 35,99	39055 31,14	29641 26,28	21555 21,44	14623 16,68				
HGX7/2470-4 <sup>1)</sup>	30	Q P	254335 53,08	233623 52,10	195759 49,73	157695 47,03	130257 43,16	106132 39,21	85092 35,21	66910 31,15	51360 27,05	38215 22,90	27249 18,73	18235 14,53			
	40	Q P	216832 62,30	198811 60,54	165981 56,70	135212 52,81	111218 47,88	90157 42,92	71803 37,94	55931 32,95	42312 27,94	30721 22,94	20931 17,95	12715 12,98			
	50	Q P	179905 70,32	164564 67,83	136749 62,61	111576 57,36	91145 51,37	73270 45,38	57724 39,41	44281 33,47	32715 27,56	22799 21,69	14305 15,87				
HGX8/2830-4 <sup>1)</sup>	30	Q P	280334 58,49	258363 57,89	218657 57,29	182105 54,05	149962 50,41	121929 46,43	97702 42,19	76982 37,75	59466 33,17	44852 28,54	32841 23,91	23130 19,37			
	40	Q P	240502 70,92	221237 69,19	187179 66,01	155251 61,11	127305 55,95	103039 50,60	82152 45,12	64342 39,59	49308 34,06	36749 30,46	26363 28,62	17849 23,33			
	50	Q P	200747 81,06	184227 78,33	155772 73,50	128523 67,07	104826 60,51	84382 53,90	66888 47,31	52043 40,80	39545 34,45	29094 28,32	20387 22,48				
HGX8/3220-4 <sup>1)</sup>	30	Q P	299972 66,91	277577 66,12	236052 63,90	199764 63,87	165297 59,10	135207 54,07	109154 48,87	86797 43,59	67796 38,29	51812 33,07	38503 28,00	27530 23,17			
	40	Q P	260037 81,79	240407 79,73	204062 75,15	170917 71,84	141015 65,49	114985 59,02	92486 52,53	73180 46,09	56724 39,78	42781 33,68	31008 27,88	21066 22,45			
	50	Q P	217197 93,49	200466 90,33	169563 83,69	141839 78,71	116555 70,87	94639 63,06	75750 55,36	59548 47,84	45693 40,60	33845 33,72	23663 27,26				

Relating to 20 °C suction gas temp.  
without liquid subcooling

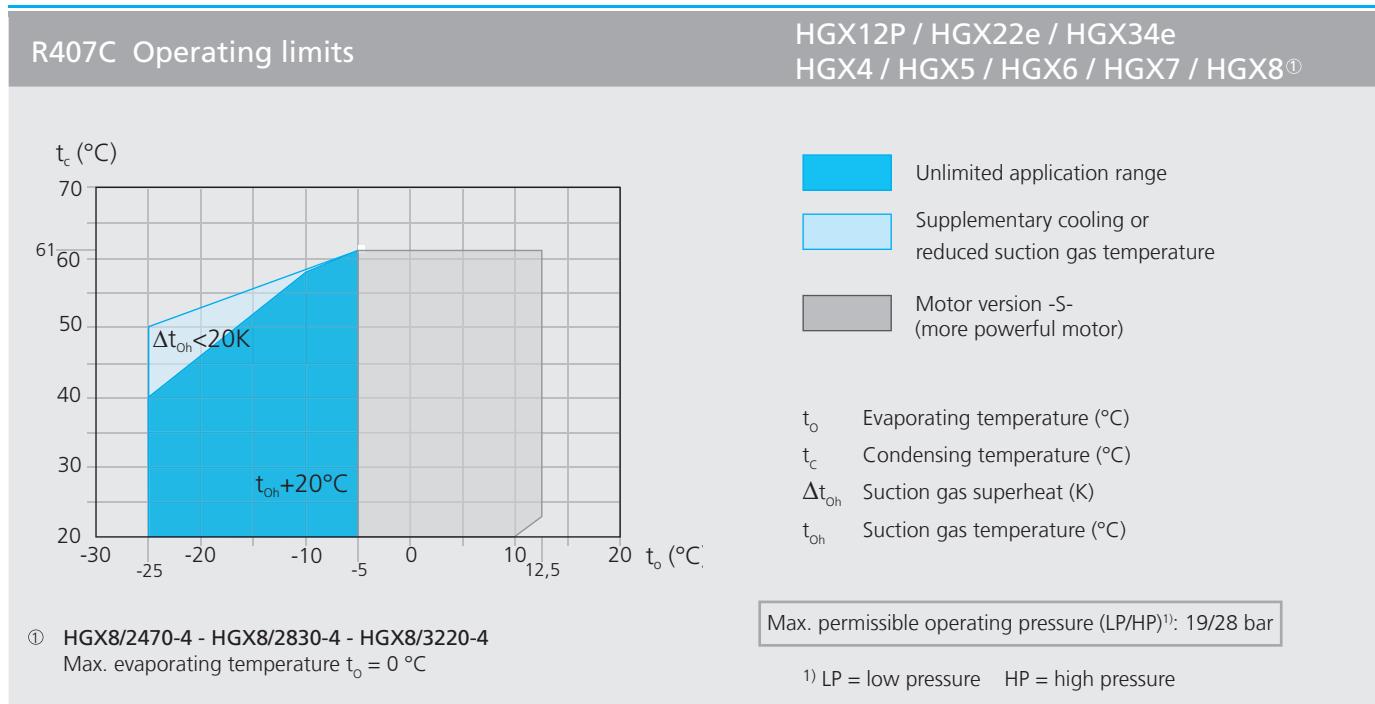
<sup>1)</sup> Compressors (R404A)  
are ASERCOM certified



Motor version -S-  
(more powerful motor)



Supplementary cooling or  
reduced suction gas temp.



<b>R407C Notes</b>	
<b>Operating limits</b>	<b>Performance data</b>
Compressor operation is possible within the limits shown on the application diagrams. Please note the coloured areas. Compressor application limits should not be chosen for design purposes or continuous operation.	The performance data for R407C are based on ISO-DIS 9309 (DIN 8928) with a <b>50 Hz power supply frequency</b> . This signifies: <b>25 °C suction gas temperature without liquid subcooling</b> . EN 12900 is already valid for Pluscom compressors, HGXA and HGX8/2470-4 <b>operating at 50 Hz</b> . <b>20 °C suction gas temperature without liquid subcooling</b> . Evaporation and condensing temperatures are based on the dew point values (saturated vapour conditions). A comprehensive modification to 20 °C suction gas temperature will follow at a later date. This results in significant differences compared to specifications with liquid undercooling and/or suction-gas temperatures.
Restrictions to the operating limits may occur when using the Bock EFC (Electronic Frequency Control). Further explanation see <a href="http://www.bock.de">www.bock.de</a> .	Conversion factor for 60 Hz = 1,2
	Performance data for other operating points, see GEA Bock software.

R407C			Performance data										50 Hz	
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]	Evaporating temperature °C										Power consumption $P_e$ [kW]	
			12,5	10	7,5	5	0	-5	-10	-15	-20	-25		
HGX12P/60-4 S	30	Q P 0,88	6778 6172 0,90	5606 4837 0,92	5079 4377 0,91	4136 3556 0,88	3330 2856 0,82	2648 2265 0,82	2078 1770 0,76	1608 1359 0,69	1225 1018 0,62			
	40	Q P 1,16	5863 5332 1,16	4837 4377 1,15	4377 3556 1,14	3556 2856 1,08	2856 2265 1,01	2265 1770 0,92	1770 1359 0,83	1359 1018 0,74	1018 826 0,66			
	50	Q P 1,42	5001 4542 1,39	4115 3720 1,36	3720 3016 1,32	3016 2417 1,23	2417 1911 1,12	1911 1486 1,01	1486 1129 0,90	1129 826 0,79	826 626 0,69			
HGX12P/75-4	30	Q P 1,13	8736 7954 1,16	7225 6546 1,18	6546 5330 1,18	5330 4291 1,18	4291 3413 1,13	3413 2679 1,06	2679 2072 0,98	2072 1578 0,89	1578 1018 0,79			
	40	Q P 1,50	7557 6872 1,50	6234 5641 1,49	5641 4583 1,46	4583 3681 1,39	3681 2919 1,30	2919 2281 1,19	2281 1751 1,07	1751 1312 0,96	1312 826 0,84			
	50	Q P 1,83	6446 5854 1,79	5304 4794 1,75	4794 3887 1,70	3887 3115 1,58	3115 2463 1,44	2463 1915 1,30	1915 1455 1,15	1455 1065 1,01	1065 826 0,89			
HGX12P/90-4	30	Q P 1,35	10419 9487 1,38	8617 7807 1,41	7807 6357 1,42	6357 5118 1,40	5118 4071 1,35	4071 3195 1,27	3195 2472 1,17	2472 1882 1,06	1882 1018 0,95			
	40	Q P 1,79	9013 8196 1,79	7435 6728 1,77	6728 5466 1,75	5466 4390 1,66	4390 3482 1,55	3482 2721 1,42	2721 2088 1,28	2088 1565 1,14	1565 826 1,01			
	50	Q P 2,18	7688 6982 2,14	6326 5718 2,09	5718 4636 2,03	4636 3715 1,89	3715 2938 1,72	2938 2284 1,55	2284 1735 1,38	1735 1270 1,21	1270 826 1,06			
HGX12P/110-4	30	Q P 1,58	12250 11154 1,63	10131 9179 1,65	9179 7474 1,67	7474 6017 1,65	6017 4786 1,59	4786 3756 1,49	3756 2906 1,37	2906 2213 1,24	2213 1,11			
	40	Q P 2,11	10596 9635 2,10	8741 7910 2,08	7910 6426 2,05	6426 5161 1,96	5161 4093 1,83	4093 3199 1,67	3199 2455 1,51	2455 1840 1,34	1840 826 1,18			
	50	Q P 2,56	9038 8208 2,51	7437 6723 2,45	6723 5450 2,38	5450 4368 2,22	4368 3454 2,03	3454 2686 1,82	2686 2040 1,62	2040 1493 1,42	1493 826 1,25			
HGX22e/125-4	30	Q P 1,78	14400 13100 1,82	11900 10800 1,85	10800 8790 1,87	8790 7070 1,85	7070 5630 1,78	5630 4420 1,67	4420 3420 1,53	3420 2600 1,39	2600 1,25			
	40	Q P 2,36	12500 11400 2,35	10300 9300 2,33	9300 7560 2,30	7560 6060 2,19	6060 4800 2,04	4800 3760 1,87	3760 2890 1,68	2890 2160 1,5	2160 1493 1,32			
	50	Q P 2,87	10700 9640 2,81	8740 7910 2,75	7910 6410 2,67	6410 5120 2,48	5120 4050 2,27	4050 3150 2,04	3150 2400 1,81	2400 1760 1,59	1760 826 1,40			
HGX22e/160-4	30	Q P 2,18	17600 16000 2,24	14500 13200 2,28	13200 10700 2,30	10700 8730 2,27	8730 6950 2,30	6950 5470 2,16	5470 4240 1,99	4240 3230 1,79	3230 1,61			
	40	Q P 2,90	15200 14400 2,90	13800 12500 2,87	12500 11300 2,83	11300 9180 2,69	9180 7500 2,64	7500 5950 2,42	5950 4650 2,18	4650 3580 1,94	3580 2680 1,72			
	50	Q P 3,53	12900 11700 3,46	10700 9590 3,38	9590 7780 3,28	7780 6350 3,05	6350 5020 2,93	5020 3900 2,64	3900 2970 2,34	2970 2180 2,06	2180 826 1,81			
HGX22e/190-4	30	Q P 2,67	21800 19900 2,74	18100 16400 2,79	16400 13300 2,81	13300 10800 2,78	10800 8550 2,83	8550 6700 2,65	6700 5180 2,44	5180 3960 2,20	3960 1,98			
	40	Q P 3,54	18900 17200 3,54	15600 14100 3,51	14100 11500 3,46	11500 9220 3,29	9220 7310 3,25	7310 5710 2,97	5710 4390 2,68	4390 3290 2,38	3290 2680 2,10			
	50	Q P 4,31	16100 14600 4,23	13300 12000 4,13	12000 9700 4,01	9700 7790 3,73	7790 6170 3,60	6170 4810 3,24	4810 3650 2,87	3650 2670 2,53	2670 826 2,22			
HGX34e/215-4	30	Q P 3,45	25600 23300 3,49	21100 19100 3,50	19100 15600 3,48	15600 12200 3,39	12200 9720 3,16	9720 7650 2,94	7650 5910 2,67	5910 4480 2,38	4480 2,09			
	40	Q P 4,38	22400 20300 4,33	18400 16600 4,26	16600 13400 4,17	13400 10400 3,94	10400 8190 3,60	8190 6410 3,25	6410 4920 2,89	4920 3700 2,52	3700 2,17			
	50	Q P 5,19	19100 17300 5,06	15600 14100 4,91	14100 11300 4,75	11300 8590 4,39	8590 6820 3,98	6820 5330 3,54	5330 4100 3,09	4100 3100 2,66	3100 826 2,27			
HGX34e/255-4	30	Q P 4,30	29600 27000 4,30	24600 22300 4,28	22300 18300 4,23	18300 14500 4,08	14500 11500 3,84	11500 9040 3,54	9040 7030 3,20	7030 5300 2,85	5300 2,48			
	40	Q P 5,33	26000 23600 5,24	21500 19500 5,13	19500 15800 5,00	15800 12300 4,71	12300 9730 4,38	9730 7660 3,94	7660 5940 3,50	5940 4430 3,06	4430 826 2,63			
	50	Q P 6,25	22200 20200 6,08	18300 16500 5,89	16500 13400 5,69	13400 10200 5,25	10200 8080 4,83	8080 6420 4,29	6420 5050 3,76	5050 3820 3,26	3820 826 2,79			
HGX34e/315-4	30	Q P 4,95	35900 32700 5,00	29800 27000 5,01	27000 22100 4,99	22100 17600 4,86	17600 14100 4,69	14100 11100 4,34	11100 8590 3,96	8590 6550 3,55	6550 3,11			
	40	Q P 6,32	31300 28500 6,25	25900 23500 6,16	23500 19200 6,04	19200 15100 5,72	15100 12000 5,33	12000 9420 4,85	9420 7260 4,33	7260 5500 3,80	5500 3,27			
	50	Q P 7,63	26800 24300 7,45	22100 20000 7,24	20000 16200 7,02	16200 12800 6,50	12800 10200 5,87	10200 7910 5,25	7910 6060 4,63	6060 4550 3,99	4550 3,37			
HGX34e/380-4	30	Q P 6,40	43500 39600 6,35	36000 32700 6,27	32700 26700 6,17	26700 21600 5,93	21600 17500 5,84	17500 13900 5,38	13900 10900 4,91	10900 8310 4,42	8310 3,90			
	40	Q P 7,95	38000 34600 7,78	31400 28400 7,59	28400 23200 7,39	23200 18700 6,94	18700 15100 6,71	15100 12000 6,08	12000 9320 5,45	9320 7140 4,82	7140 4,18			
	50	Q P 9,52	32200 29300 9,23	26500 24000 8,92	24000 19600 8,60	19600 15800 7,93	15800 12800 7,49	12800 10100 6,69	10100 7900 5,91	7900 6070 5,13	6070 4,36			

Relating to 20 °C suction gas temperature,  
without liquid subcooling

 Motor version -S-  
(more powerful motor)

 Supplementary cooling or  
reduced suction gas temp.

R407C			Performance data										50 Hz	
Type	Cond. temp. °C	Q P	Cooling capacity $\dot{Q}_o$ [W]										Power consumption	$P_e$ [kW]
			Evaporating temperature °C											
HGX4/465-4	30	Q P	52241 7,84	47689 7,76	43438 7,67	39475 7,56	32358 7,31	27293 7,08	21900 6,58	17313 6,02	13459 5,42	10267 4,78	1	1
	40	Q P	45881 9,73	41827 9,55	38049 9,36	34532 9,16	28226 8,69	23704 8,14	18952 7,40	14925 6,63	11550 5,84	8752 5,03		
	50	Q P	39635 11,44	36073 11,16	32759 10,86	29681 10,55	24173 9,85	20139 9,12	16049 8,14	12600 7,16	9721 6,17	7338 5,19		
HGX4/555-4	30	Q P	62010 9,36	56703 9,30	51739 9,22	47101 9,12	38751 8,84	31207 8,53	25091 7,92	19907 7,29	15531 6,62	11833 5,87	2	2
	40	Q P	54852 11,45	50089 11,27	45636 11,07	41481 10,84	34003 10,31	27316 9,88	21859 9,02	17204 8,13	13225 7,19	9795 6,18		
	50	Q P	47717 13,51	43491 13,20	39547 12,86	35869 12,49	29256 11,67	23377 11,13	18539 9,97	14373 8,78	10752 7,52	7550 6,17		
HGX4/650-4	30	Q P	73505 11,85	67118 11,66	61158 11,45	55607 11,22	45658 10,68	36887 10,03	29718 9,28	23650 8,56	18538 7,80	14235 6,95	3	3
	40	Q P	64535 14,25	58930 13,95	53705 13,62	48840 13,26	40118 12,48	32465 11,59	26041 10,60	20581 9,60	15939 8,54	11970 7,35		
	50	Q P	55792 16,75	50933 16,31	46405 15,84	42188 15,34	34616 14,26	27833 13,13	22140 11,79	17274 10,42	13090 8,96	9442 7,34		
HGX5/725-4	30	Q P	82066 12,72	75111 12,43	68581 12,13	62458 11,81	51370 11,13	41718 10,38	33371 9,57	26199 8,68	20072 7,72	14859 6,69	4	4
	40	Q P	73653 15,09	67297 14,67	61341 14,23	55769 13,79	45715 12,86	37005 11,88	29506 10,85	23091 9,75	17627 8,60	12986 7,39		
	50	Q P	64721 17,35	58974 16,80	53605 16,24	48597 15,67	39600 14,50	31854 13,30	25228 12,06	19592 10,77	14817 9,44	10770 8,06		
HGX5/830-4	30	Q P	94208 14,60	86225 14,27	78728 13,92	71699 13,56	58971 12,78	47891 11,92	38309 10,99	30076 9,97	23042 8,87	17057 7,68	5	5
	40	Q P	84551 17,32	77254 16,84	70417 16,34	64021 15,83	52480 14,76	42480 13,64	33872 12,45	26507 11,20	20235 9,88	14907 8,48		
	50	Q P	74298 19,92	67700 19,28	61536 18,64	55787 17,99	45459 16,65	36567 15,27	28961 13,84	22491 12,37	17009 10,84	12364 9,25		
HGX5/945-4	30	Q P	107188 16,61	98104 16,23	89575 15,84	81578 15,43	67096 14,54	54489 13,56	43587 12,50	34219 11,34	26216 10,09	19407 8,74	6	6
	40	Q P	96200 19,71	87898 19,16	80118 18,59	72842 18,01	59710 16,80	48332 15,52	38539 14,17	30159 12,74	23023 11,24	16961 9,65		
	50	Q P	84534 22,66	77027 21,94	70014 21,21	63473 20,46	51722 18,94	41605 17,37	32951 15,75	25590 14,07	19352 12,33	14068 10,53		
HGX6/1080-4	30	Q P	122447 18,97	112071 18,55	102327 18,10	93191 17,62	76648 16,61	62246 15,49	49792 14,28	39091 12,96	29948 11,53	22170 9,98	7	7
	40	Q P	109895 22,51	100411 21,88	91524 21,24	83211 20,57	68210 19,19	55213 17,72	44025 16,18	34453 14,55	26301 12,84	19376 11,02		
	50	Q P	96568 25,89	87993 25,06	79981 24,23	72509 23,38	59085 21,64	47528 19,85	37642 17,99	29233 16,08	22107 14,09	16070 12,03		
HGX6/1240-4	30	Q P	140564 21,78	128652 21,29	117467 20,77	106980 20,23	87989 19,06	71456 17,79	57159 16,39	44875 14,88	34379 13,23	25450 11,46	8	8
	40	Q P	25450 11,46	115267 25,12	105066 24,38	95523 23,61	78303 22,02	63382 20,35	50539 18,58	39550 16,71	30193 14,74	22243 12,65		
	50	Q P	110857 29,72	101013 28,77	91815 27,81	83238 26,84	67828 24,84	54560 22,78	43211 20,66	33558 18,45	2538 16,17	18448 13,81		
HGX6/1410-4	30	Q P	159931 24,78	146378 24,22	133651 23,64	121719 23,02	100112 21,69	81301 20,24	65035 18,65	51058 16,92	39116 15,05	28957 13,03	9	9
	40	Q P	143537 29,40	131149 28,58	119452 27,74	108684 26,87	89091 25,06	72115 23,15	57503 21,14	45000 19,01	34352 16,77	25307 14,4		
	50	Q P	126130 33,81	114930 32,73	104466 31,64	94706 30,53	77173 28,26	62077 25,92	49165 23,50	38182 21,00	28875 18,40	20990 15,71		
HGX7/1620-4	30	Q P	176654 28,74	161203 28,45	146809 28,06	133424 27,56	109484 26,30	88991 24,73	71553 22,92	56778 20,92	44276 18,79	33654 16,61	10	10
	40	Q P	156630 35,77	142783 34,91	129901 33,96	117934 32,93	96552 30,69	78246 28,23	62623 25,62	49292 22,93	37862 20,21	27940 17,53		
	50	Q P	136448 42,12	124231 40,70	112886 39,22	102364 37,69	83592 34,51	67524 31,21	53768 27,86	41933 24,53	31626 21,26	22457 18,13		
HGX7/1860-4	30	Q P	202792 32,99	185054 32,66	168531 32,21	153166 31,64	125683 30,19	102158 28,39	82139 26,31	65179 24,01	50827 21,57	38633 19,07	11	11
	40	Q P	179805 41,07	163909 40,07	149121 38,98	135384 37,81	110838 35,23	89823 32,40	71888 29,41	56585 26,32	43464 23,20	32074 20,13		
	50	Q P	156636 48,35	142612 46,72	129589 45,03	117510 43,27	95960 39,61	77515 35,83	61724 31,99	48137 28,15	36305 24,41	25779 20,82		

Relating to 25 °C suction gas temperature  
(HGX4 to 20 °C suction gas temperature)  
without liquid subcooling

Motor version -S-  
(more powerful motor)

Supplementary cooling or  
reduced suction gas temp.

R407C			Performance data										50 Hz	
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]	Evaporating temperature °C										Power consumption $P_e$ [kW]	
			12,5	10	7,5	5	0	-5	-10	-15	-20	-25		
HGX7/2110-4	30	Q P 37,54	230732 210551 37,16	191751 36,65	174268 36,00	143000 34,35	116233 32,30	93456 29,93	74159 27,32	57829 24,55	43956 21,70			
	40	Q P 46,72	204578 186492 45,59	169666 44,35	154036 43,01	126109 40,08	102198 36,87	81793 33,47	64381 29,95	49452 26,40	36493 22,90			
	50	Q P 55,02	178217 162261 53,16	147443 51,23	133700 49,23	109182 45,07	88195 40,77	70228 36,39	54769 32,03	41308 27,77	29331 23,68			
	30	Q P 43,67	281120 256346 43,36	233240 42,85	211728 42,16	175261 39,54	141490 37,85	112409 35,09	87616 31,54	66706 27,51	49275 23,29			
	40	Q P 54,20	244845 223034 52,96	202726 51,56	183847 50,03	151167 46,56	121619 42,94	96256 38,60	74674 33,81	56469 28,88	41236 24,12			
	50	Q P 63,42	210247 191369 61,32	173829 59,12	157552 56,81	128012 51,78	102759 46,66	81184 41,16	62885 35,56	47456 30,17	34493 25,27			
HGX8/2470-4	30	Q P 50,13	322714 294275 49,77	267750 49,19	243056 48,40	198814 46,25	160865 43,45	128526 40,11	101113 36,36	77942 32,32	58329 28,11			
	40	Q P 62,22	281072 256034 60,80	232721 59,19	211049 57,43	172284 53,48	139053 49,08	110674 44,34	86463 39,38	65736 34,33	47808 29,31			
	50	Q P 72,80	241355 219683 70,39	199548 67,86	180864 65,22	147505 59,66	118923 53,84	94435 47,87	73356 41,89	55002 36,02	38691 30,37			
	30	Q P 57,03	367177 334819 56,63	304640 55,97	276543 55,07	226206 52,62	183029 49,43	146234 45,64	115044 41,37	88680 36,77	66365 31,99			
	40	Q P 70,80	319797 291310 69,17	264785 67,35	240127 65,34	196021 60,85	158212 55,84	125923 50,45	98376 44,81	74793 39,06	54395 33,35			
	50	Q P 82,83	274608 249951 80,09	227041 77,21	205783 74,20	167828 67,88	135308 61,25	107446 54,47	83462 47,67	62580 40,98	44022 34,55			

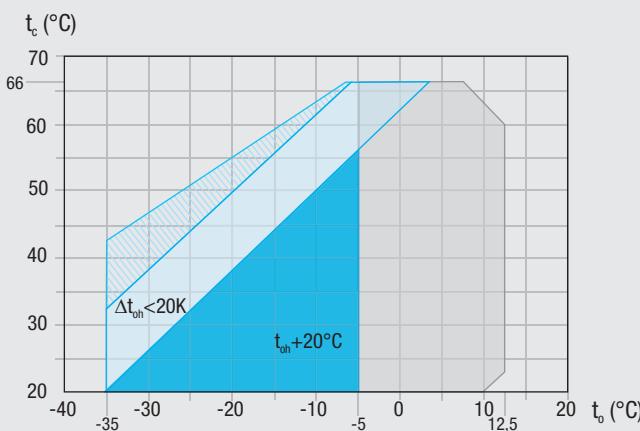
Relating to 25 °C suction gas temperature  
(HGX8/2470-4 to 20 °C suction gas temperature)  
without liquid subcooling

Motor version -S-  
(more powerful motor)

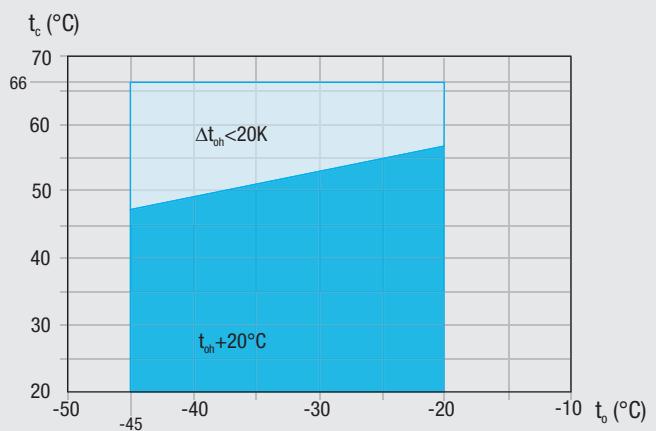
Supplementary cooling or  
reduced suction gas temp.

## R22 Operating limits

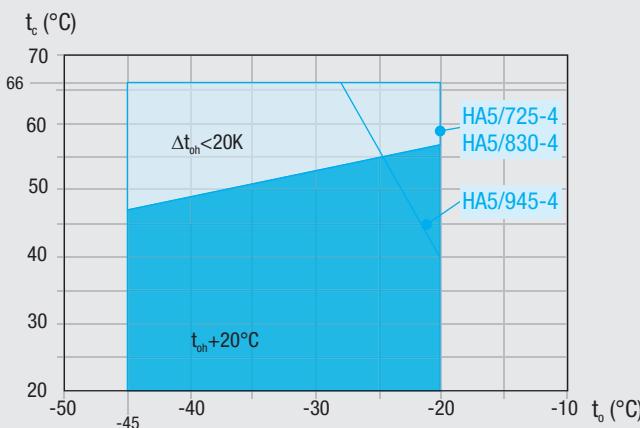
HG12P / HG22e / HG34e /  
HG4 / HG5 / HG6<sup>①</sup> / HG7 / HG8<sup>②</sup>



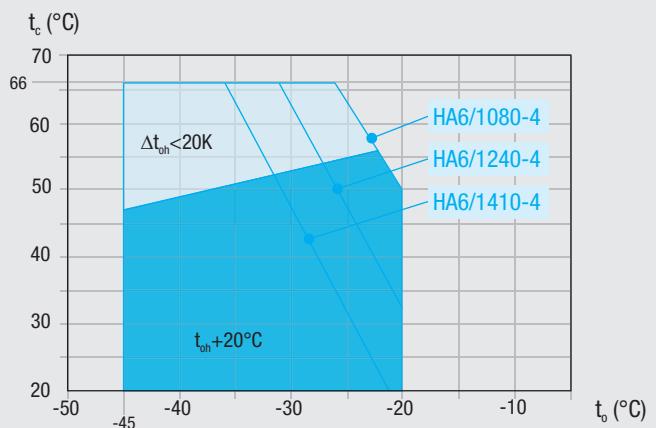
HA12P / HA22P / HA34P / HA4



## HA5



## HA6

Max. permissible operating pressure (LP/HP)<sup>①</sup>: 19/28 bar<sup>①</sup> LP = low pressure HP = high pressure

- ① HG7 „Motor version -S-“  
in the evaporation range of  $t_o = 5 \text{ °C}$  bis  $12,5 \text{ °C}$   
limited condensing temperature up to  $t_c = 50 \text{ °C}$

- ② HG8/2830-4  
max. evaporating temperature  $t_o = 0 \text{ °C}$   
HG8/2470-4 S  
in the evaporation range of  $t_o = 7 \text{ °C}$  bis  $12,5 \text{ °C}$   
limited condensing temperature up to  $t_c = 55 \text{ °C}$

- HG8/3220-4 S  
max. evaporating temperature  $t_o = 5 \text{ °C}$

- Unlimited application range
- HG Supplementary cooling or red. suction gas temp.
- HA reduced suction gas temperature

- Supplementary cooling and  
reduced suction gas temperature

- Motor version -S-  
(more powerful motor)

- $t_o$  Evaporating temperature ( $^{\circ}\text{C}$ )
- $t_c$  Condensing temperature ( $^{\circ}\text{C}$ )
- $\Delta t_{\text{oh}}$  Suction gas superheat (K)
- $t_{\text{oh}}$  Suction gas temperature ( $^{\circ}\text{C}$ )

## R22 Notes

### Operating limits

Compressor operation is possible within the limits shown on the application diagrams. Please note the coloured areas. Compressor application limits should not be chosen for design purposes or continuous operation.

Restrictions to the operating limits may occur when using the Bock EFC (Electronic Frequency Control).

Further explanation see [www.bock.de](http://www.bock.de).

### Performance data

The performance data for R22 are based on ISO-DIS 9309 (DIN 8928) with a 50 Hz power supply frequency.

This signifies: 25 °C suction gas temperature without liquid subcooling. EN 12900 is already valid for Pluscom compressors and HG8/2470-4 operating at 50 Hz. This signifies 20 °C suction gas temperature without liquid subcooling.

This results in significant differences compared to specifications with liquid undercooling and/or suction-gas temperatures.

A comprehensive modification to 20 °C suction gas temperature will follow at a later date.

Conversion factor for 60 Hz = 1,2

Performance data for other operating points, see GEA Bock software.

R22		Performance data												50 Hz	
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]												Power consumption $P_e$ [kW]	
		Evaporating temperature °C													
		12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-45	
HG12P/60-4 S	30	Q P 0,89	7110 6523 0,91	5971 5263 0,93	5454 4799 0,94	4518 3958 0,94	3703 3227 0,92	2997 2593 0,89	2390 2044 0,84	1868 1570 0,78	1422 1158 0,71	1039 798 0,63	708 477 0,55		
	40	Q P 1,20	6288 5759 1,19	5263 4799 1,19	4799 4168 1,18	3958 3422 1,14	3227 2772 1,08	2593 2207 1,01	2044 1716 0,94	1570 1287 0,85	1158 909 0,76	798 630 0,66	477 356 0,57		
	50	Q P 1,47	5494 5023 1,44	4581 4168 1,42	4168 3422 1,38	3422 2772 1,31	2772 2207 1,22	2207 1716 1,12	1716 1287 1,02	1287 909 0,91	909 630 0,80	630 477 0,73	477 356 0,62		
HA12P/60-4	30	Q P										1824 0,72	1407 0,63	1054 0,53	758 0,43
	40	Q P										1599 0,79	1237 0,68	930 0,57	672 0,46
	50	Q P										1437 0,84	1127 0,73	865 0,62	643 0,51
HG12P/75-4	30	Q P 1,11	8883 8149 1,14	7460 6814 1,16	6814 5645 1,17	5645 4626 1,17	4626 3745 1,15	3745 2985 1,11	2985 2334 1,05	2334 1776 0,97	1776 1298 0,88	1298 884 0,79	884 637 0,69		
	40	Q P 1,49	7856 7195 1,49	6575 5995 1,48	5995 4945 1,47	4945 4031 1,42	4031 3239 1,35	3239 2554 1,27	2554 1961 1,17	1961 1447 1,06	1447 997 0,95	997 596 0,83	596 456 0,71		
	50	Q P 1,83	6864 6275 1,80	5723 5207 1,77	5207 4275 1,73	4275 3463 1,63	3463 2758 1,52	2758 2144 1,40	2144 1608 1,27	1608 1135 1,13	1135 999 0,99	999 455 0,40	455 356 0,31		
HA12P/75-4	30	Q P										2265 0,90	1748 0,78	1310 0,66	942 0,53
	40	Q P										1986 0,99	1536 0,85	1156 0,72	836 0,58
	50	Q P										1785 1,05	1400 0,91	1075 0,78	800 0,64
HG12P/90-4	30	Q P 1,32	10595 9719 1,36	8897 8127 1,38	8127 6732 1,40	6732 5518 1,40	5518 4466 1,37	4466 3561 1,32	3561 2784 1,25	2784 2119 1,16	2119 1548 1,05	1548 1054 0,94	1054 637 0,83		
	40	Q P 1,78	9370 8582 1,78	7842 7150 1,77	7150 5898 1,75	5898 4808 1,69	4808 3863 1,61	3863 3046 1,51	3046 2339 1,39	2339 1726 1,27	1726 1189 1,13	1189 711 0,99	711 568 0,85		
	50	Q P 2,19	8186 7484 2,15	6826 6211 2,11	6211 5098 2,06	5098 4130 1,95	4130 3289 1,82	3289 2557 1,67	2557 1918 1,51	1918 1354 1,35	1354 1192 1,19	1192 999 1,09	999 674 0,74		
HA12P/90-4	30	Q P										2702 1,06	2084 0,92	1562 0,77	1123 0,62
	40	Q P										2369 1,16	1832 1,00	1378 0,84	996 0,67
	50	Q P										2129 1,22	1669 1,06	1281 0,90	953 0,74
HG12P/110-4	30	Q P 1,56	12456 11427 1,60	10460 9719 1,62	9555 8920 1,64	7915 7150 1,65	6487 5898 1,61	5251 4808 1,55	4186 3863 1,47	3273 2750 1,36	2491 2029 1,24	1820 1398 1,11	1240 836 0,97		
	40	Q P 2,10	11016 10089 2,09	9220 8406 2,08	8406 6934 2,06	6934 5653 1,99	5653 4542 1,90	4542 3581 1,78	3581 2750 1,64	2750 2299 1,49	2299 1726 1,33	1726 1398 1,16	1398 836 1,00		
	50	Q P 2,57	9625 8799 2,53	8025 7302 2,48	7302 5994 2,42	5994 4856 2,29	4856 3867 2,14	3867 3007 1,96	3007 2255 1,78	2255 1592 1,59	1592 1192 1,39	1192 999 1,09	999 674 0,74		
HA12P/110-4	30	Q P										3175 1,25	2449 1,09	1835 0,92	1320 0,74
	40	Q P										2783 1,38	2153 1,19	1619 1,00	1170 0,81
	50	Q P										2501 1,46	1961 1,27	1505 1,08	1119 0,89
HG22e/125-4	30	Q P 1,94	15700 14400 1,97	13200 12000 1,99	12000 9930 2,00	9930 8150 1,98	8150 6630 1,91	6630 5340 1,82	5340 4250 1,69	4250 3340 1,55	3340 2580 1,40	2580 1960 1,25	1960 1460 1,09		
	40	Q P 2,54	13800 12700 2,53	11600 10600 2,50	10600 8740 2,47	8740 7170 2,37	7170 5840 2,24	5840 4700 2,08	4700 3730 1,90	3730 2900 1,72	2900 2200 1,52	2200 1600 1,33	1600 1100 1,09		
	50	Q P 3,11	12000 11000 3,06	10000 9120 2,99	9120 7540 2,91	7540 6170 2,73	6170 5010 2,53	5010 4010 2,31	4010 3150 2,07	3150 2400 1,83	2400 1960 1,59	1960 1460 1,09	1460 965 0,86		
HA22P/125-4	30	Q P										3866 1,53	2983 1,33	2235 1,12	1607 0,91
	40	Q P										3390 1,68	2621 1,45	1972 1,22	1425 0,98
	50	Q P										3046 1,78	2389 1,55	1833 1,32	1363 0,99
HG22e/160-4	30	Q P 2,40	19400 17800 2,44	16300 14900 2,46	14900 12300 2,47	12300 10100 2,44	10100 8190 2,36	8190 6590 2,24	6590 5240 2,09	5240 4120 1,92	4120 3190 1,73	3190 2420 1,54	2420 1085 1,35		
	40	Q P 3,13	17100 15600 3,12	14300 13100 3,09	13100 10800 3,05	10800 8860 2,93	8860 7200 2,77	7200 5790 2,57	5790 4590 2,35	4590 3580 2,11	3580 2720 1,88	2720 1980 1,64	1980 965 1,42		
	50	Q P 3,84	14800 13500 3,77	12400 11300 3,69	11300 9300 3,60	9300 7620 3,38	7620 6180 3,13	6180 4940 2,85	4940 3880 2,55	3880 2960 2,26	2960 1960 1,96	1960 1460 1,09	1460 965 0,86		

HG Supplementary cooling or red. suction gas temp.  
 HA reduced suction gas temp.

Relating to 20 °C suction gas temperature,  
without liquid subcooling

Motor version -S-  
(more powerful motor)

Supplementary cooling and  
red. suction gas temp.

1  
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3  
4

R22		Performance data											50 Hz	
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]										Power consumption $P_e$ [kW]		
		Evaporating temperature °C												
		12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-45
HA22P/160-4	30 Q													4773 1,89
	40 Q													3236 2,07
	50 Q													2434 1,79
HG22e/190-4	30 Q	23400 2,90	21400 2,94	19600 2,97	17900 2,98	14800 2,84	12200 2,70	9850 2,52	7920 2,31	6300 2,09	4950 1,86	3840 1,63	2759 1,38	1984 1,12
	40 Q	20600 3,78	18900 3,76	17200 3,72	15700 3,67	13000 3,52	10700 3,32	8680 3,09	6980 2,83	5540 2,55	4320 2,27	3280 1,99	2434 1,79	1760 1,21
	50 Q	17800 4,63	16300 4,54	14900 4,44	13600 4,33	11200 4,06	9200 3,76	7450 3,43	5960 3,08	4670 2,72	3560 2,37		1683 1,63	1191 1,06
HG22e/190-4 S	30 Q													2910 1,63
	40 Q													3280 1,72
	50 Q													
HA22P/190-4	30 Q													5775 2,28
	40 Q													4456 1,98
	50 Q													3338 1,67
HG34e/215-4	30 Q	26500 3,30	24300 3,35	22200 3,38	20300 3,39	16800 3,35	13900 3,25	11300 3,08	9010 2,88	7160 2,64	5620 2,38	4360 2,12	3310 1,86	
	40 Q	23300 4,31	21400 4,29	19600 4,25	17900 4,19	14800 4,02	12200 3,80	9870 3,53	7930 3,23	6290 2,91	4910 2,58	3730 2,26	2710 1,96	
	50 Q	20200 5,29	18500 5,19	17000 5,07	15500 4,94	12800 4,64	10500 4,29	8480 3,91	6780 3,51	5330 3,11	4060 2,71			
HG34e/215-4 S	30 Q													1621 1,04
	40 Q													1445 1,12
	50 Q													2129 1,62
HA34P/215-4	30 Q													1441 1,28
	40 Q													
	50 Q													
HG34e/255-4	30 Q	31200 3,87	28600 3,94	26200 3,98	23900 3,99	19800 3,94	16300 3,82	13200 3,62	10600 3,37	8440 2,88	6630 2,80	5130 2,49	3890 2,19	
	40 Q	27400 5,06	25100 5,04	23000 4,99	21000 4,92	17400 4,72	14300 4,46	11600 4,14	9330 3,79	7410 3,42	5780 3,03	4390 2,66	3200 2,29	
	50 Q	23700 6,21	21800 6,09	19900 5,96	18200 5,80	15000 5,45	12300 5,04	9970 4,59	7970 4,12	6260 3,64	4770 3,17			
HG34e/255-4 S	30 Q													1846 1,18
	40 Q													1646 1,28
	50 Q													2425 1,62
HA34P/255-4	30 Q													1846 1,18
	40 Q													1646 1,28
	50 Q													2734 1,54
HG34e/315-4	30 Q	31200 4,79	28600 4,87	26200 4,92	23900 4,93	19800 4,87	16300 4,71	13200 4,49	10600 4,19	8440 3,83	6630 3,45	5130 3,07	3890 2,70	
	40 Q	27400 6,26	25100 6,23	23000 6,17	21000 6,09	17400 5,84	14300 5,51	11600 5,13	9330 4,69	7410 4,22	5780 3,74	4390 3,27	3200 2,84	
	50 Q	23700 7,67	21800 7,53	19900 7,37	18200 7,18	15000 6,74	12300 6,23	9970 5,69	7970 5,10	6260 4,50	4770 3,91			
HG34e/315-4 S	30 Q													1641 1,46
	40 Q													2425 1,62
	50 Q													2734 1,54
HA34P/315-4	30 Q													1641 1,46
	40 Q													2425 1,62
	50 Q													2734 1,54
HG34e/380-4	30 Q	46700 5,82	42800 5,92	39100 5,97	35700 5,99	29600 5,91	24300 5,72	19800 5,43	16000 5,06	12700 4,64	9950 4,19	7690 3,73	5830 3,29	
	40 Q	41000 7,60	37600 7,56	34400 7,49	31400 7,39	26100 7,08	21400 6,68	17400 6,21	14000 5,68	11200 5,12	8650 4,54	6560 3,98	4780 3,45	
	50 Q	35500 9,31	32500 9,14	29800 8,93	27200 8,70	22500 8,16	18500 7,56	15000 6,89	12000 6,18	9360 5,46	7120 4,75			
HG34e/380-4 S	30 Q													2425 1,62
	40 Q													2425 1,62
	50 Q													2734 1,54
HA34P/380-4	30 Q													2425 1,62
	40 Q													2425 1,62
	50 Q													2734 1,54

HG Supplementary cooling or red. suction gas temp.  
 HA reduced suction gas temp.

Relating to 20 °C suction gas temperature,  
without liquid subcooling

Motor version -S-  
(more powerful motor)

Supplementary cooling and  
red. suction gas temp.

R22		Performance data												50 Hz			
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]												Power consumption $P_e$ [kW]			
		Evaporating temperature °C															
		12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-45			
HG4/465-4	30	Q P	56368 6,99	52042 6,93	47946 6,86	44073 6,80	36965 6,64	30657 6,46	25090 6,24	20203 5,98	15935 5,66	12226 5,28	9016 4,83	6244 4,29			
	40	Q P	51425 8,92	47427 8,77	43647 8,61	40077 8,45	33537 8,11	27748 7,74	22649 7,33	18178 6,88	14277 6,37	10884 5,80	7939 5,15	5382 4,42			
	50	Q P	45657 10,92	42026 10,66	38601 10,39	35374 10,11	29481 9,55	24288 8,96	19734 8,33	15759 7,66	12303 6,92	9304 6,13					
HG4/465-4 S	30	Q P											16459 5,74	12893 5,32	9840 4,83	7251 4,26	5074 3,58
	40	Q P											14621 6,58	11365 5,98	8586 5,29	6234 4,51	4256 3,61
	50	Q P											12490 7,24	9599 6,42	7148 5,50	5086 4,48	3362 3,32
HG4/555-4	30	Q P	67083 8,32	61934 8,25	57059 8,17	52450 8,09	43991 7,90	36485 7,69	29859 7,43	24043 7,11	18964 6,74	14550 6,28	10730 5,74	7431 5,11			
	40	Q P	61200 10,62	56442 10,43	51943 10,25	47695 10,05	39912 9,65	33023 9,21	26954 8,72	21634 8,18	16991 7,58	12953 6,90	9449 6,13	6405 5,27			
	50	Q P	54335 13,00	50015 12,68	45939 12,36	42098 12,04	35085 11,37	28905 10,67	23485 9,92	18755 9,11	14641 8,24	11072 7,29					
HG4/555-4 S	30	Q P											19587 6,83	15343 6,33	11711 5,75	8630 5,07	6039 4,26
	40	Q P											17400 7,83	13525 7,12	10218 6,30	7419 5,36	5065 4,29
	50	Q P											14864 8,61	11423 7,64	8507 6,55	6053 5,33	4001 3,95
HA4/555-4	30	Q P											19587 6,83	15343 6,33	11711 5,75	8630 5,07	6039 4,26
	40	Q P											17400 7,83	13525 7,12	10218 6,30	7419 5,36	5065 4,29
	50	Q P											14864 8,61	11423 7,64	8507 6,55	6053 5,33	4001 3,95
HG4/650-4	30	Q P	78729 9,77	72686 9,68	66965 9,59	61556 9,49	51628 9,28	42819 9,02	35043 8,72	28217 8,35	22256 7,90	17076 7,37	12593 6,74	8721 6,00			
	40	Q P	71825 12,46	66241 12,25	60961 12,03	55975 11,80	46842 11,32	38756 10,81	31633 10,24	25390 9,60	19941 8,89	15202 8,09	11089 7,19	7518 6,18			
	50	Q P	63768 15,25	58698 14,88	53914 14,51	49406 14,13	41176 13,34	33923 12,52	27562 11,64	22011 10,69	17183 9,67	12995 8,56					
HG4/650-4 S	30	Q P											22988 8,01	18007 7,43	13744 6,75	10128 5,95	7087 5,00
	40	Q P											20421 9,19	15873 8,35	11993 7,39	8707 6,30	5944 5,04
	50	Q P											17445 10,11	13407 8,97	9984 7,69	7104 6,25	4696 4,63
HA4/650-4	30	Q P											22988 8,01	18007 7,43	13744 6,75	10128 5,95	7087 5,00
	40	Q P											20421 9,19	15873 8,35	11993 7,39	8707 6,30	5944 5,04
	50	Q P											17445 10,11	13407 8,97	9984 7,69	7104 6,25	4696 4,63
HG5/725-4	30	Q P	87633 10,87	80907 10,77	74539 10,67	68518 10,56	57467 10,33	47662 10,04	39007 9,70	31409 9,29	24774 8,80	19008 8,21	14017 7,50	9708 6,68			
	40	Q P	79948 13,87	73733 13,63	67856 13,39	62306 13,13	52139 12,60	43139 12,03	35211 11,39	28261 10,69	22196 9,90	16921 9,01	12343 8,01	8368 6,88			
	50	Q P	70981 16,98	65337 16,57	60012 16,15	54994 15,72	45833 14,85	37759 13,93	30680 12,95	24500 11,90	19126 10,76	14464 9,52					
HG5/725-4 S	30	Q P											25631 8,94	20086 8,29	15342 7,52	11316 6,62	7926 5,56
	40	Q P											22752 10,25	17689 9,31	13371 8,24	9718 7,01	6646 5,61
	50	Q P											19423 11,27	14921 9,99	11112 8,57	7912 6,97	5239 5,18
HG5/830-4	30	Q P	100599 12,48	92878 12,37	85568 12,25	78656 12,13	65970 11,85	54713 11,53	44778 11,14	36056 10,67	28439 10,10	21820 9,42	16091 8,61	11144 7,66			
	40	Q P	91777 15,93	84642 15,65	77896 15,37	71525 15,08	59854 14,47	49522 13,81	40421 13,08	32443 12,27	25480 11,36	19425 10,34	14169 9,19	9606 7,90			
	50	Q P	81483 19,49	75004 19,02	68891 18,54	63131 18,05	52614 17,05	43346 15,99	35219 14,87	28125 13,66	21956 12,36	16605 10,93					
HG5/830-4 S	30	Q P											29343 10,24	22994 9,49	17562 8,61	12953 7,58	9072 6,37
	40	Q P											26046 11,73	20248 10,66	15306 9,43	11124 8,03	7609 6,42
	50	Q P											22234 12,90	17080 11,44	12720 9,81	9059 7,98	6003 5,92
HG5/945-4	30	Q P	114460 14,20	105675 14,07	97357 13,94	89493 13,80	75059 13,49	62252 13,12	50947 12,67	41024 12,14	32358 11,49	24827 10,72	18308 9,80	12679 8,72			
	40	Q P	104422 18,12	96304 17,80	88628 17,48	81379 17,15	68100 16,46	56345 15,71	45990 14,88	36912 13,96	28991 12,93	22101 11,77	16122 10,46	10929 8,98			
	50	Q P	92709 22,17	85338 21,64	78383 21,09	71829 20,54	59863 19,40	49318 18,20	40072 16,92	32000 15,55	24981 14,06	18892 12,44					

HG Supplementary cooling or red. suction gas temp.  
 HA reduced suction gas temp.

Relating to 25 °C suction gas temperature,  
without liquid subcooling

Motor version -S-  
(more powerful motor)

Supplementary cooling and  
red. suction gas temp.

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R22		Performance data												50 Hz		
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]												Power consumption $P_e$ [kW]		
Evaporating temperature °C																
		12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-45		
HA5/945-4	30	Q													33374	26174
	40	Q													29594	22995
	50	Q													13,35	17376
HG6/1080-4	30	Q	129363	119434	110034	101145	84833	70357	57581	46365	36571	28059	20692	14330	10374	
	40	Q	18,28	18,00	17,72	17,43	16,80	16,10	15,29	14,33	13,22	11,91	10,38	8,61	7,24	
	50	Q													13,04	14394
HG6/1080-4 S	30	Q	118019	108844	100169	91976	76968	63681	51978	41719	32765	24979	18221	12352	6786	
	40	Q	22,56	22,15	21,72	21,28	20,33	19,27	18,07	16,71	15,16	13,38	11,36	9,06	6,77	
	50	Q	104781	96450	88589	81182	67658	55740	45289	36167	28234	21352				
HA6/1080-4	30	Q													37747	29595
	40	Q													12,65	22620
	50	Q													11,26	16702
HG6/1240-4	30	Q													9,89	11720
	40	Q													8,49	7,05
	50	Q														
HG6/1240-4 S	30	Q	148504	137106	126315	116111	97384	80768	66101	53225	41982	32211	23754	16451	11720	
	40	Q	20,98	20,66	20,34	20,01	19,29	18,48	17,55	16,45	15,17	13,67	11,92	9,88		
	50	Q	135481	124948	114989	105584	88356	73103	59668	47891	37613	28675	20917	14180		
HA6/1240-4	30	Q													14,58	26012
	40	Q													12,95	19664
	50	Q													11,30	14306
HG6/1410-4	30	Q	120284	110720	101696	93193	77669	63987	51990	41518	32411	24511	16301	11605	9816	
	40	Q	30,61	29,93	29,23	28,51	26,96	25,26	23,36	21,25	18,88	16,22	12,36	10,34	7,86	
	50	Q														
HG6/1410-4 S	30	Q													14,52	25970
	40	Q													12,92	19174
	50	Q													11,35	13463
HA6/1410-4	30	Q													16,74	22551
	40	Q													14,87	29848
	50	Q													12,98	16399
HG6/1410-4 S	30	Q	168964	155996	143718	132108	110802	91895	75208	60559	47766	36644	27026	18717	13463	
	40	Q	23,87	23,51	23,14	22,77	21,95	21,03	19,96	18,72	17,26	15,56	13,56	11,24		
	50	Q	154147	142163	130832	120131	100529	83176	67889	54490	42796	32626	23799	16134		
HA6/1410-4	30	Q													16,74	32848
	40	Q													14,87	25165
	50	Q													12,98	18685
HG6/1620-4	30	Q													11,08	13281
	40	Q													9,20	8824
	50	Q													10,34	9,46
HG6/1620-4 S	30	Q													14,69	38625
	40	Q													12,90	29529
	50	Q													11,08	21803
HA6/1620-4	30	Q													14,77	32345
	40	Q													12,57	24570
	50	Q													10,78	12767
HG7/1620-4	30	Q													14,77	15015
	40	Q													12,57	9929
	50	Q													10,78	10,78
HG7/1620-4 S	30	Q	178802	164852	151711	139349	116850	97132	79968	65133	52401	41547	32345	24570	15324	
	40	Q	23,29	24,07	24,65	25,03	25,25	24,85	23,94	22,64	21,04	19,26	17,42	15,60		
	50	Q	148020	136086	124873	114354	95282	78644	64215	51770	41082	31926	28261	20963		
HG7/1860-4	30	Q													14,77	25605
	40	Q													12,57	18595
	50	Q													10,78	12767
HG7/1860-4 S	30	Q	205257	189244	174158	159966	134139	111504	91800	74770	60154	47694	37131	28205		
	40	Q	26,74	27,64	28,29	28,73	28,98	28,53	27,49	25,99	24,16	22,11	19,99	17,91		
	50	Q	187901	173029	159035	145887	121996	101099	82935	67247	53775	42259	32442	24065		
HG7/2110-4	30	Q													14,77	25605
	40	Q													12,57	18595
	50	Q													10,78	12767
HG7/2110-4 S	30	Q	233537	215317	198153	182006	152621	126866	104448	85072	68442	54266	42247	32091		
	40	Q	30,42	31,44	32,19	32,69	32,98	32,46	31,27	29,57	27,48	25,16	22,75	20,38		
	50	Q	213789	196869	180947	165987	138805	115028	94362	76512	61184	48082	36912	27380		
HG7/2110-4 S	30	Q	193332	177745	163100	149360	124450	102719	83873	67618	53658	41699	36912	27380		
	40	Q	50,62	50,22	49,61	48,81	46,72	44,07	41,02	37,70	34,27	30,85	25,31	22,64		
	50	Q														



HG Supplementary cooling or red. suction gas temp.



HA reduced suction gas temp.

Supplementary cooling and  
red. suction gas temp.Relating to 25 °C suction gas temperature,  
without liquid subcoolingMotor version -S-  
(more powerful motor)

R22			Performance data												50 Hz	
Type	Cond. temp. °C		Cooling capacity $\dot{Q}_o$ [W]												Power consumption $P_e$ [kW]	
			Evaporating temperature °C													
			12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-45	
HG8/2470-4	30	Q	267888	247010	227287	208683	174692	149961	120514	95716	75087	58148	44418	33420		
		P	43,56	44,15	44,42	44,40	43,54	39,66	37,55	34,65	31,16	27,25	23,10	18,90		
HG8/2470-4 S	40	Q	243384	224002	205721	188504	157123	130966	105250	83688	65798	51101	39119	29370		
		P	58,85	58,09	57,09	55,85	52,76	45,79	42,21	38,05	33,48	28,69	23,85	19,15		
HG8/2830-4	50	Q	217933	200057	183226	167405	138654	113466	91260	72709	57336	44660				
		P	72,17	70,15	67,95	65,58	60,43	50,69	45,82	40,56	35,09	29,58				
HG8/2830-4 S	30	Q	307524	283557	260916	239559	200540	166175	136141	110115	87775	68795	52854	39628		
		P	50,00	50,68	51,00	50,97	49,99	47,94	45,03	41,45	37,41	33,11	28,75	24,54		
HG8/3220-4	40	Q	279395	257146	236159	216394	180371	148752	121215	97435	77090	59855	45409	33426		
		P	67,55	66,69	65,53	64,11	60,56	56,25	51,37	46,13	40,73	35,37	30,24	25,55		
HG8/3220-4 S	50	Q	250178	229657	210336	192175	159170	130319	105299	83786	65458	49990				
		P	82,84	80,53	78,00	75,28	69,37	62,99	56,34	49,63	43,05	36,81				

 HG Supplementary cooling or red. suction gas temp.  
 HA reduced suction gas temp.

Relating to 25 °C suction gas temperature  
(HGX8/2470-4 to 20 °C suction gas temperature)  
without liquid subcooling

 Motor version -S-  
(more powerful motor)

 Supplementary cooling and  
red. suction gas temp.

1

2

3

4

HG Type	Number of cylinders	Displacement 50 / 60 Hz (1450/1740 rpm)	Electrical data				Weight	Connections ⑥		Oil charge
			Voltage ①	Max. working current ②	Max. power consump- tion ②	Starting current (rotor locked)		Discharge line DV	Suction line SV	
			m³/h	A	kW	A	kg	mm l inch	mm l inch	Ltr.
				Δ / Y		Δ / Y				
HG12P/60-4 S	2	5,40 / 6,40	③	6,8 / 3,9	2,2	40 / 23	48,0	12 l 1/2	16 l 5/8	0,8
HG12P/75-4	2	6,70 / 8,10	③	7,1 / 4,1	2,3	40 / 23	48,0	12 l 1/2	16 l 5/8	0,8
HG12P/75-4 S	2	6,70 / 8,10	③	8,0 / 4,6	2,6	43 / 25	49,0	12 l 1/2	16 l 5/8	0,8
HG12P/90-4	2	8,00 / 9,60	③	8,5 / 4,9	2,8	43 / 25	49,0	12 l 1/2	16 l 5/8	0,8
HG12P/90-4 S	2	8,00 / 9,60	③	9,1 / 5,3	3,0	45 / 26	49,0	12 l 1/2	16 l 5/8	0,8
HG12P/110-4	2	9,40 / 11,30	③	9,2 / 5,3	3,1	43 / 25	49,0	12 l 1/2	16 l 5/8	0,8
HG12P/110-4 S	2	9,40 / 11,30	③	10,6 / 6,1	3,6	45 / 26	49,0	12 l 1/2	16 l 5/8	0,8
HG22e/125-4	2	11,10 / 13,30	③	9,3 / 5,4	3,0	69 / 40	74,0	16 l 5/8	22 l 7/8	1,0
HG22e/125-4 S	2	11,10 / 13,30	③	10,8 / 6,2	3,6	69 / 40	74,0	16 l 5/8	22 l 7/8	1,0
HG22e/160-4	2	13,70 / 16,40	③	11,1 / 6,4	3,7	69 / 40	74,0	16 l 5/8	22 l 7/8	1,0
HG22e/160-4 S	2	13,70 / 16,40	③	13,1 / 7,6	4,4	87 / 50	76,0	16 l 5/8	22 l 7/8	1,0
HG22e/190-4	2	16,50 / 19,80	③	13,8 / 8,0	4,8	69 / 40	74,0	16 l 5/8	22 l 7/8	1,0
HG22e/190-4 S	2	16,50 / 19,80	③	16,2 / 9,4	5,6	87 / 50	75,0	16 l 5/8	22 l 7/8	1,0
HG34e/215-4	4	18,80 / 22,60	③	14,0 / 8,1	4,8	87 / 50	92,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/215-4 S	4	18,80 / 22,60	③	18,3 / 10,5	6,0	132 / 76	97,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/255-4	4	22,10 / 26,60	③	17,0 / 9,8	6,0	87 / 50	91,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/255-4 S	4	22,10 / 26,60	③	21,1 / 12,2	7,2	132 / 76	96,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/315-4	4	27,30 / 32,80	③	21,1 / 12,2	7,4	111 / 64	94,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/315-4 S	4	27,30 / 32,80	③	25,5 / 14,7	8,9	132 / 76	97,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/380-4	4	33,10 / 39,70	③	26,1 / 15,1	9,3	111 / 64	93,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/380-4 S	4	33,10 / 39,70	③	31,2 / 18,0	11,1	132 / 76	96,0	22 l 7/8	28 l 1 1/8	1,3
				*PW 1+2		*PW1 / PW 1+2				
HG4/465-4	4	40,50 / 48,60	④	20	11,8	57 / 75	148	28 / 11/8	35 / 13/8	2,7
HG4/465-4 S	4	40,50 / 48,60	④	25	14,2	82 / 107	151	28 / 11/8	35 / 13/8	2,7
HG4/555-4	4	48,20 / 57,80	④	24	14,1	82 / 107	150	28 / 11/8	35 / 13/8	2,7
HG4/555-4 S	4	48,20 / 57,80	④	30	16,9	107 / 140	153	28 / 11/8	35 / 13/8	2,7
HG4/650-4	4	56,60 / 67,90	④	29	16,8	82 / 107	152	28 / 11/8	42 / 15/8	2,7
HG4/650-4 S	4	56,60 / 67,90	④	37	20,9	107 / 140	155	28 / 11/8	42 / 15/8	2,7
HG5/725-4	4	62,90 / 75,50	④	30	17,2	82 / 107	198	28 / 11/8	42 / 15/8	3,6
HG5/725-4 S	4	62,90 / 75,50	④	37	21,0	107 / 140	201	28 / 11/8	42 / 15/8	3,6
HG5/830-4	4	72,20 / 86,70	④	35	20,3	82 / 107	197	28 / 11/8	42 / 15/8	3,6
HG5/830-4 S	4	72,20 / 86,70	④	42	24,5	126 / 160	203	28 / 11/8	42 / 15/8	3,6
HG5/945-4	4	82,20 / 98,60	④	42	23,9	107 / 140	201	35 / 13/8	54 / 21/8	3,6
HG5/945-4 S	4	82,20 / 98,60	④	49	28,6	126 / 160	205	35 / 13/8	54 / 21/8	3,6
HG6/1080-4	4	93,70 / 112,40	④	48	27,7	149 / 189	218	35 / 13/8	54 / 21/8	3,6
HG6/1080-4 S	4	93,70 / 112,40	④	59	33,7	172 / 212	223	35 / 13/8	54 / 21/8	3,6
HG6/1240-4	4	107,60 / 129,10	④	57	32,5	172 / 212	222	35 / 13/8	54 / 21/8	3,6
HG6/1240-4 S	4	107,60 / 129,10	④	75	41,8	204 / 250	224	35 / 13/8	54 / 21/8	3,6
HG6/1410-4	4	122,40 / 146,90	④	65	38,3	172 / 212	219	35 / 13/8	54 / 21/8	3,6
HG6/1410-4 S	4	122,40 / 146,90	④	76	42,3	204 / 250	222	35 / 13/8	54 / 21/8	3,6
HG7/1620-4	6	140,60 / 168,80	⑤	72	39,5	223 / 340	278	42 / 15/8	54 / 21/8	4,5
HG7/1620-4 S	6	140,60 / 168,80	⑤	83	47,4	268 / 373	299	42 / 15/8	54 / 21/8	4,5
HG7/1860-4	6	161,40 / 193,70	⑤	80	45,8	268 / 373	296	42 / 15/8	54 / 21/8	4,5
HG7/1860-4 S	6	161,40 / 193,70	⑤	104	56,7	343 / 494	292	42 / 15/8	54 / 21/8	4,5
HG7/2110-4	6	183,60 / 220,30	⑤	97	53,1	343 / 494	289	42 / 15/8	64 / 25/8	4,5
HG7/2110-4 S	6	183,60 / 220,30	⑤	119	65,6	344 / 500	297	42 / 15/8	64 / 25/8	4,5
HG8/2470-4	8	214,30 / 257,10	⑤	102	60,0	274 / 301	432	54 / 21/8	76 / 31/8	9,0
HG8/2470-4 S	8	214,30 / 257,10	⑤	145	76,1	475 / 551	432	54 / 21/8	76 / 31/8	9,0
HG8/2830-4	8	245,90 / 295,10	⑤	151	79,0	475 / 551	429	54 / 21/8	76 / 31/8	9,0
HG8/2830-4 S	8	245,90 / 295,10	⑤	157	88,1	520 / 605	449	54 / 21/8	76 / 31/8	9,0
HG8/3220-4	8	279,80 / 335,80	⑤	163	83,6	475 / 551	423	54 / 21/8	76 / 31/8	9,0
HG8/3220-4 S	8	279,80 / 335,80	⑤	176	101,4	520 / 605	443	54 / 21/8	76 / 31/8	9,0

HA	Number of cylinders	Displacement 50 / 60 Hz (1450/1740 rpm)	Electrical data				Weight	Connections ⑥		Oil charge
			Voltage ①	Max. working current ②	Max. power consump- tion ②	Starting current (rotor locked) ②		Discharge line DV	Suction line SV	
Type		m³/h	A	kW	A	kg	mm l inch	mm l inch	Ltr.	
HA12P/60-4	2	5,40 / 6,40	③	4,7 / 2,7	1,3	40 / 23	52,0	12 1 1/2	12 1 1/2	0,8
HA12P/75-4	2	6,70 / 8,10	③	5,5 / 3,2	1,6	40 / 23	53,0	12 1 1/2	12 1 1/2	0,8
HA12P/90-4	2	8,00 / 9,60	③	6,3 / 3,7	1,9	43 / 25	53,0	12 1 1/2	12 1 1/2	0,8
HA12P/110-4	2	9,40 / 11,30	③	7,0 / 4,1	2,2	43 / 25	53,0	12 1 1/2	12 1 1/2	0,8
HA22P/125-4	2	11,10 / 13,30	③	8,1 / 4,7	2,4	69 / 40	80,0	12 1 1/2	16 1 5/8	1,0
HA22P/160-4	2	13,70 / 16,40	③	9,6 / 5,5	2,9	87 / 50	82,0	12 1 1/2	16 1 5/8	1,0
HA22P/190-4	2	16,50 / 19,80	③	10,9 / 6,3	3,5	87 / 50	81,0	12 1 1/2	16 1 5/8	1,0
HA34P/215-4	4	18,80 / 22,60	③	12,1 / 7,0	4,0	87 / 50	98,0	16 1 5/8	22 1 7/8	1,3
HA34P/255-4	4	22,10 / 26,60	③	13,8 / 8,0	4,7	87 / 50	98,0	16 1 5/8	22 1 7/8	1,3
HA34P/315-4	4	27,30 / 32,80	③	17,1 / 9,9	5,8	132 / 76	100,0	16 1 5/8	22 1 7/8	1,3
HA34P/380-4	4	33,10 / 39,70	③	20,2 / 11,7	7,0	132 / 76	100,0	16 1 5/8	22 1 7/8	1,3
				*PW 1+2		*PW1 / PW 1+2				
HA4/465-4	4	40,50 / 48,60	④	17	9,1	82 / 107	155,0	28 / 1 1/8	35 / 1 3/8	2,7
HA4/555-4	4	48,20 / 57,80	④	21	10,3	107 / 140	157,0	28 / 1 1/8	35 / 1 3/8	2,7
HA4/650-4	4	56,60 / 67,90	④	22	11,4	107 / 140	156,0	28 / 1 1/8	35 / 1 3/8	2,7
HA5/725-4	4	62,90 / 75,50	④	24	12,5	107 / 140	204,0	28 / 1 1/8	42 / 1 5/8	3,6
HA5/830-4	4	72,20 / 86,70	④	24	12,9	126 / 160	207,0	28 / 1 1/8	42 / 1 5/8	3,6
HA5/945-4	4	82,20 / 98,60	④	25	13,3	126 / 160	205,0	28 / 1 1/8	42 / 1 5/8	3,6
HA6/1080-4	4	93,70 / 112,40	④	32	17,0	172 / 212	223,0	28 / 1 1/8	42 / 1 5/8	3,6
HA6/1240-4	4	107,60 / 129,10	④	33	17,6	172 / 212	221,0	28 / 1 1/8	42 / 1 5/8	3,6
HA6/1410-4	4	122,40 / 146,90	④	33	17,7	172 / 212	219,0	28 / 1 1/8	42 / 1 5/8	3,6

\* PW = Part Winding, motors for part winding start

1 = 1. part winding

2 = 2. part winding

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**Oil sump heater 110-240 V - 1 - 50/60 Hz (option)**

HG(HA)12, HG(HA)22, HG(HA)34: 50-120 W

PTC heater, self-regulating, installation in housing bore

**Oil sump heater 230 V - 1 - 50/60 Hz (option)**

- HG(HA)4: 80 W

- HG(HA)5, HG(HA)6, HG7: 140 W

- HG8: 200 W

Permanently set version, installation in immersion sleeve

**Fan motors for the HA version 230 V - 1 - 50/60 Hz**

- HA12P: 40 W / 0,3 A

- HA22P, HA34P: 72 W / 0,53 A

- HA4, HA5, HA6: 140 W / 0,71 A

**Explanations:**

① Tolerance ( $\pm 10\%$ ) relates to the mean value of the voltage range.  
Other voltages and current types on request.

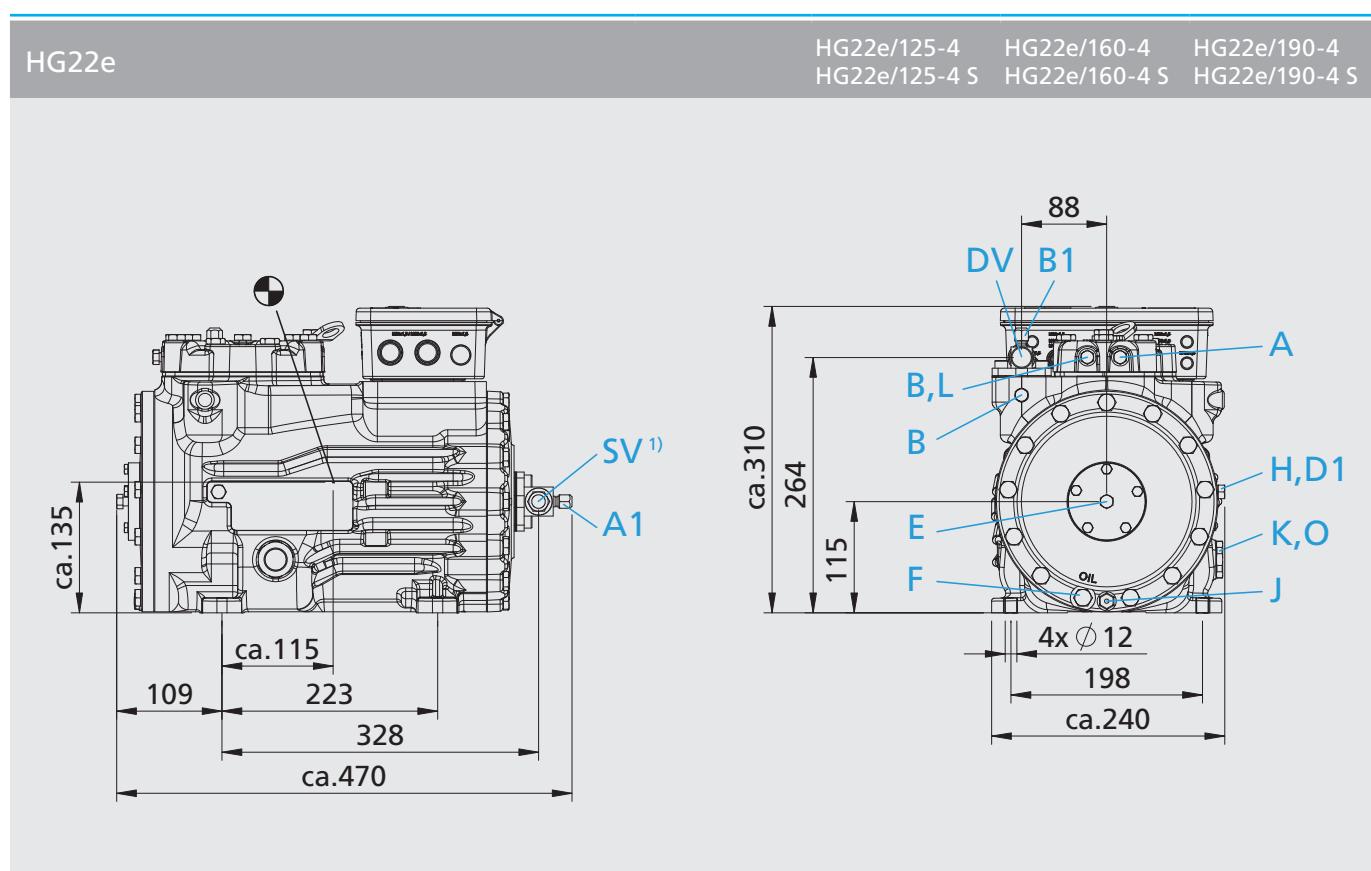
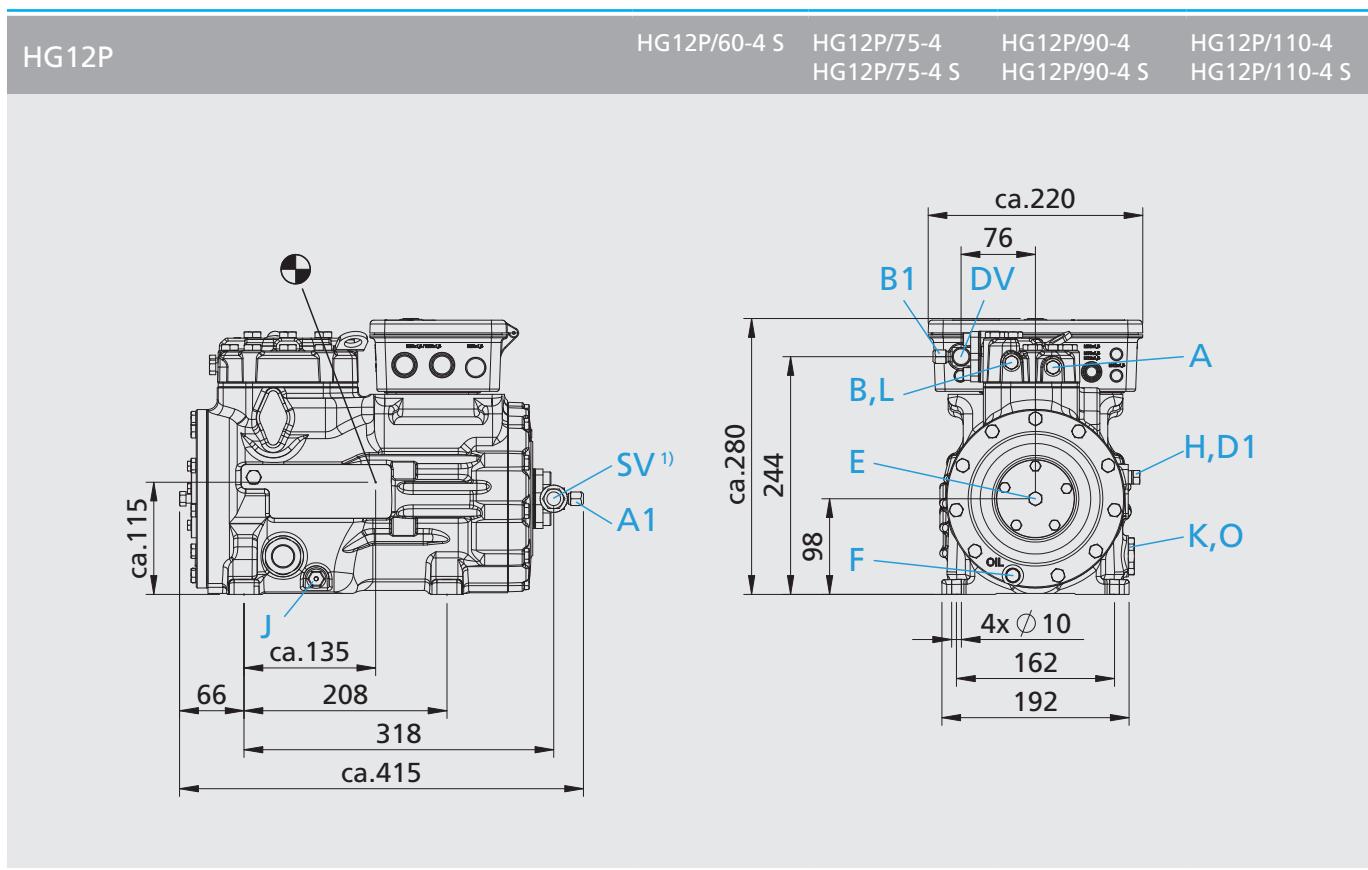
② - The specifications for max. power consumption apply for 50Hz operation. For 60Hz operation, the specifications have to be multiplied by the factor 1.2. The max. working current remains unchanged.  
- Take account of the max. operating current / max. power consumption when designing contactors, leads and fuses.  
Switches: Service category AC3

③ 220-240 V  $\Delta$  / 380-420 V Y - 3 - 50 Hz  
265-290 V  $\Delta$  / 440-480 V Y - 3 - 60 Hz

④ 380-420 V Y/YY - 3 - 50 Hz PW  
440-480 V Y/YY - 3 - 60 Hz PW  
PW = Part Winding, motors for part winding start  
(no start unloaders required)  
- Winding ratios: HG(HA)4, HG(HA)5, HG(HA)6 = 66% / 33%  
- Designs for Y/ $\Delta$  on request

⑤ 380-420 V  $\Delta$ /YYY - 3 - 50 Hz PW  
440-480 V  $\Delta$ /YYY - 3 - 60 Hz PW  
PW = Part Winding, motors for part winding start  
(no start unloaders required)  
- Winding ratios: HG7, HG8 = 60% / 40%  
- Designs for Y/ $\Delta$  on request

⑥ For soldering connections



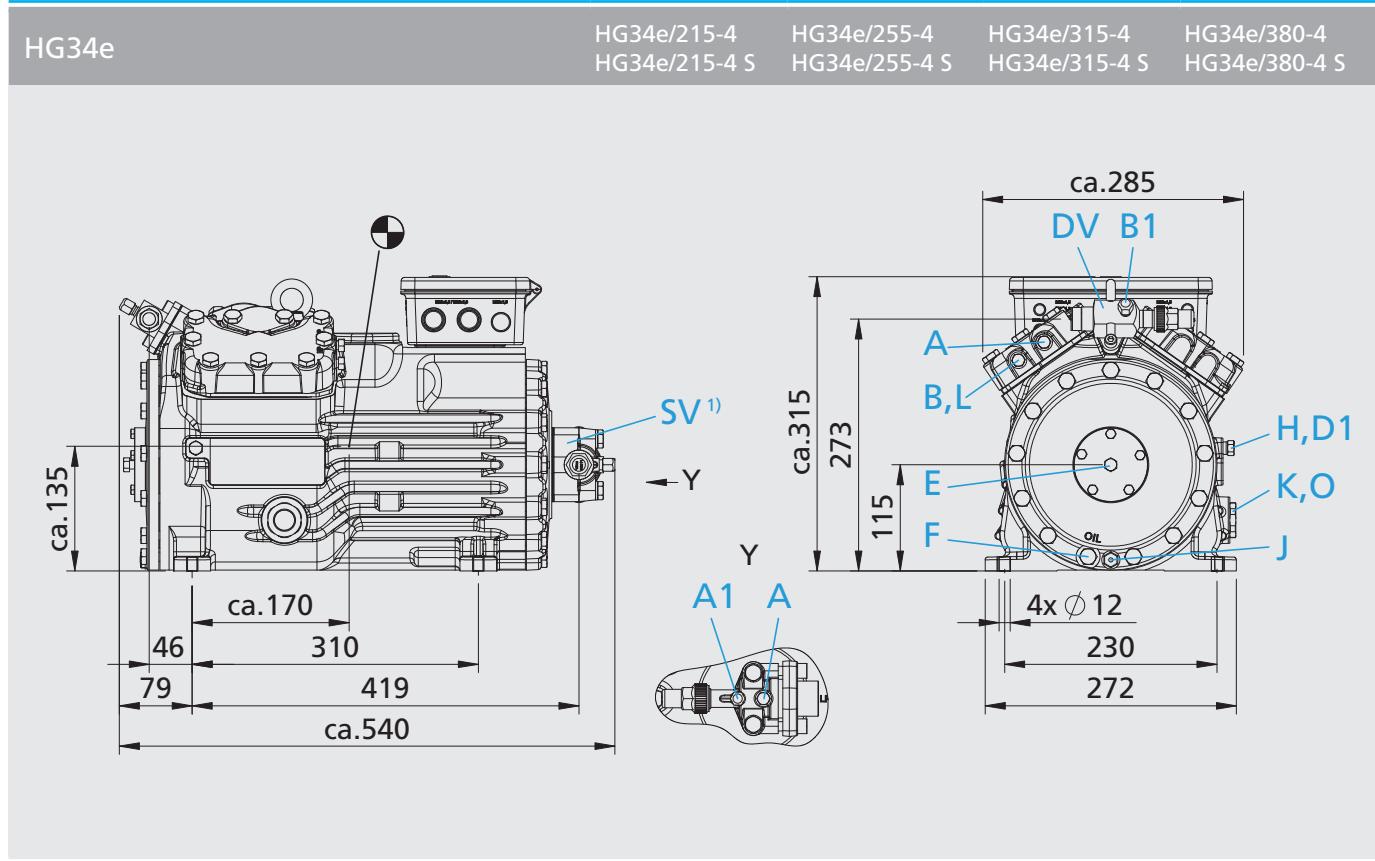
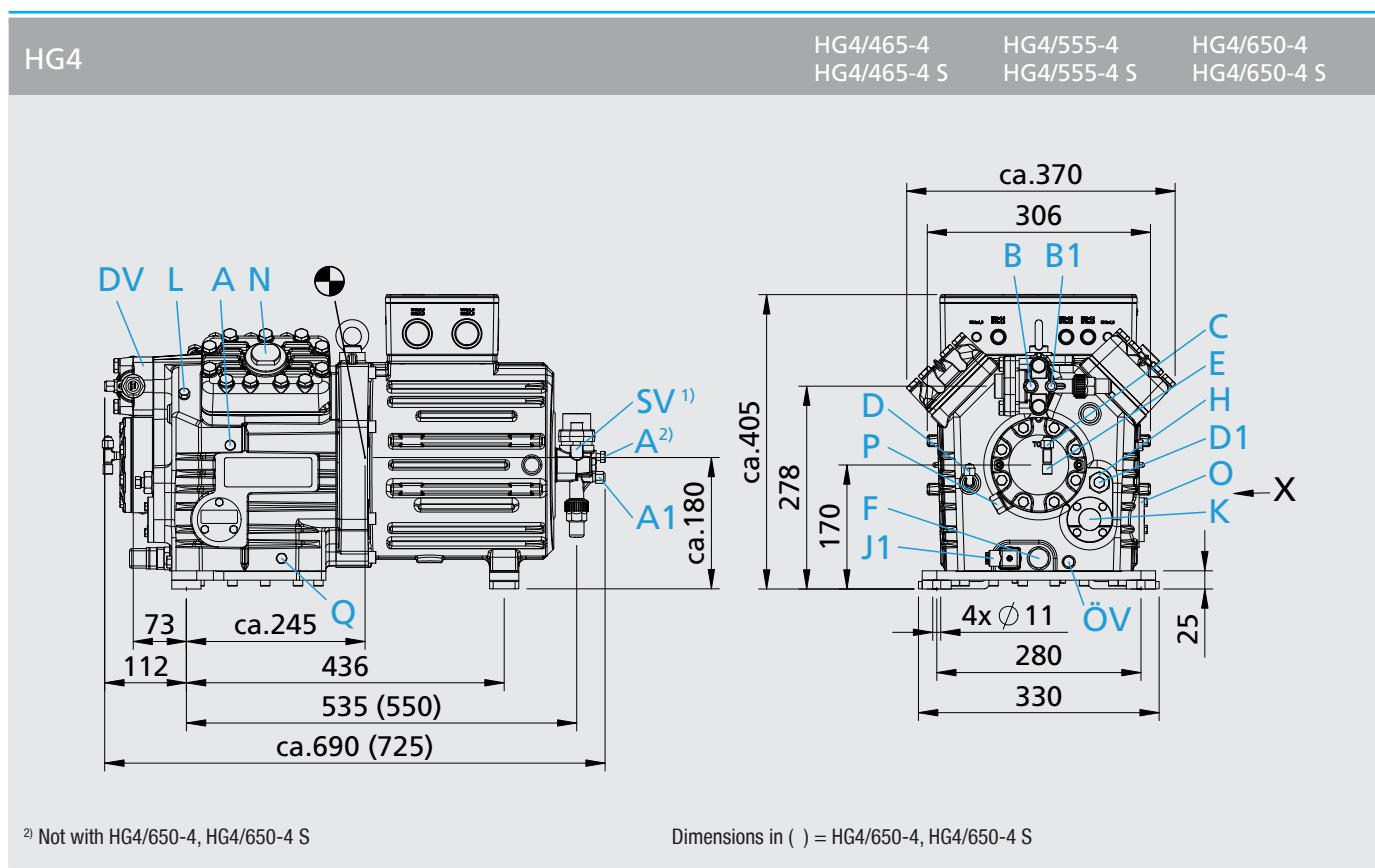
Dimensions in mm

<sup>1)</sup> SV 90° rotatable

● Centre of gravity

- Connections see page 60

- Dimensions for anti-vibration pad see page 57

1  
2  
3  
4<sup>2)</sup> Not with HG4/650-4, HG4/650-4 S

Dimensions in ( ) = HG4/650-4, HG4/650-4 S

Dimensions in mm

1) SV 90° rotatable

● Centre of gravity

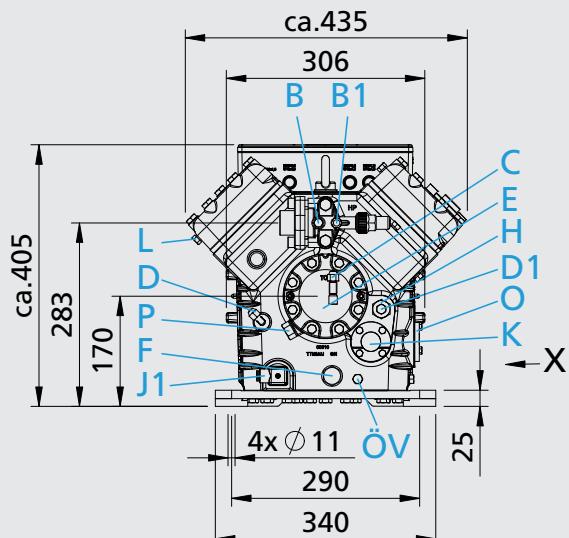
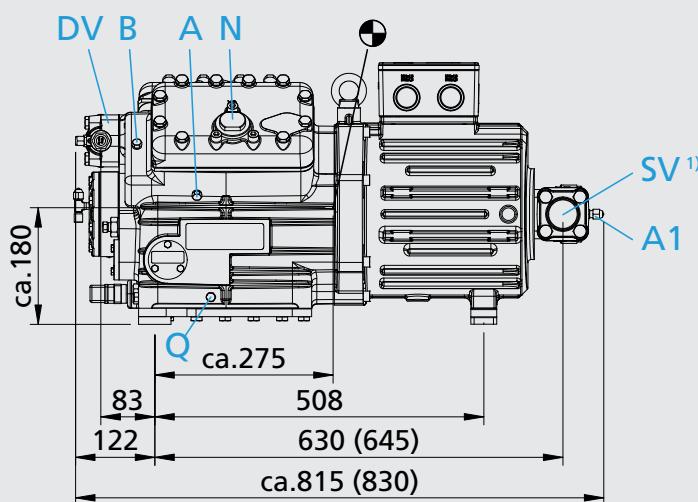
- Connections see page 60
- Dimensions for anti-vibration pad see page 57
- Dimensions for view X see page 57

HG5

HG5/725-4  
HG5/725-4 S

HG5/830-4  
HG5/830-4 S

HG5/945-4  
HG5/945-4 S



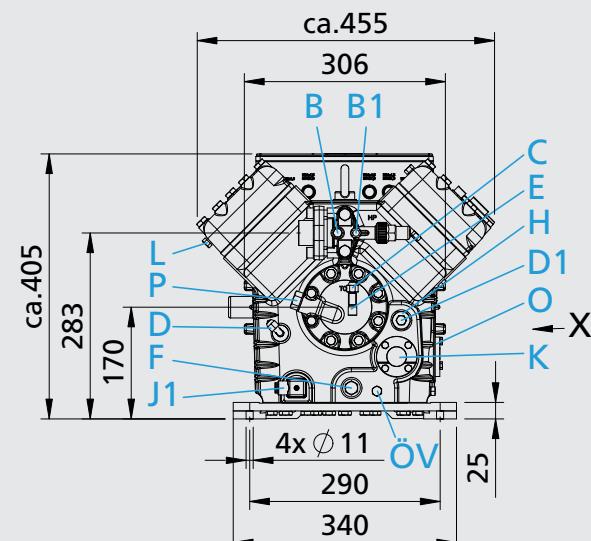
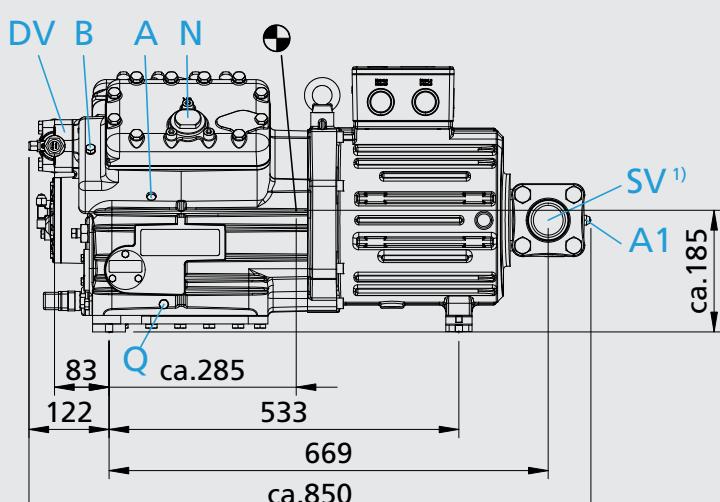
Dimensions in ( ) = HG5/945-4, HG5/945-4 S

HG6

HG6/1080-4  
HG6/1080-4 S

HG6/1240-4  
HG6/1240-4 S

HG6/1410-4  
HG6/1410-4 S



Dimensions in mm

<sup>1)</sup> SV 90° rotatable

● Centre of gravity

- Connections see page 60

- Dimensions for anti-vibration pad see page 57

- Dimensions for view X see page 57

The image contains two technical drawings of a compressor unit. The left drawing shows a front-side view with dimensions: total width ca. 830, cylinder center distance 612, cylinder height 90, cylinder bore diameter Q ca. 315, cylinder stroke 150, and overall height 439. Components labeled include DV, B, N, A, SV, and A2. The right drawing shows a side view with dimensions: total width ca. 510, cylinder height 331, cylinder stroke 189, and base dimensions 290 and 340. Components labeled include B1, A1, B, L, C, E, H, D1, K, O, P, D, F, J1, and X.

**HG8**

Dimensions (approximate values):

- Front view: Total width ca. 940, Left side height 163, Middle height 569, Total height ca. 940, Left side width 100, Middle width ca. 350, Total length ca. 285, Total height ca. 570.
- Side view: Total height ca. 655, Left side height 412, Middle height 252, Total width ca. 580.

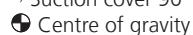
Labels:

- Front view: DV, B, N, A, SV<sup>1)</sup>, A2.
- Side view: B, B1, A1, L1, C, E, H, K, O, Q1, ÖV1, P1, D, D1, F, J1, X.

Dimensions in mm

Dimensions in mm

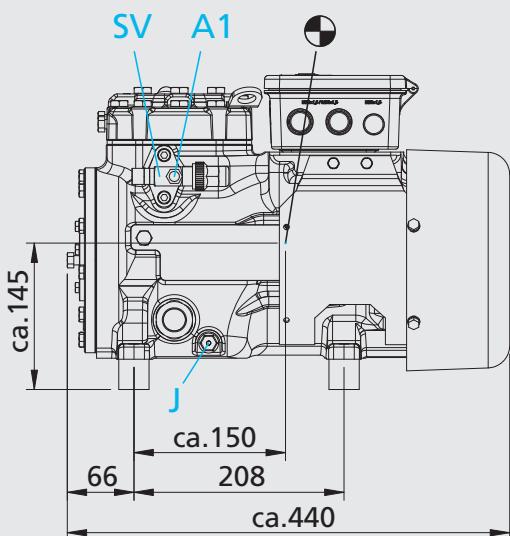
1) Suction cover 90° rotatable



- Connections see page 60
- Dimensions for anti-vibration pad see page 57
- Dimensions for view X see page 57

# Dimensions and connections

HA12P

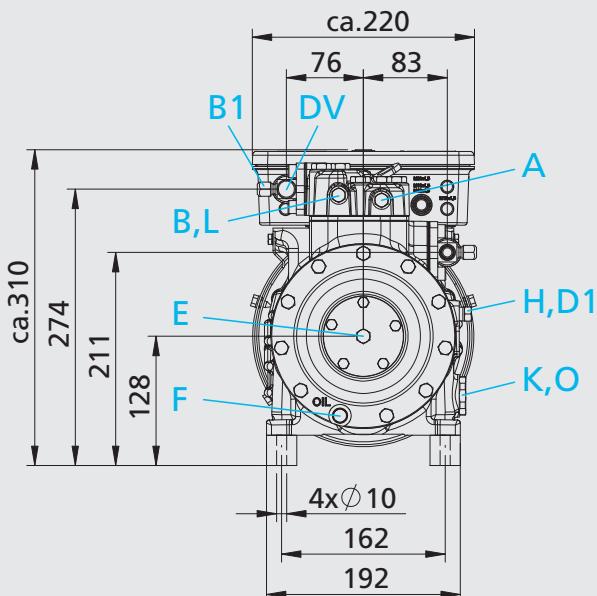


HA12P/60-4

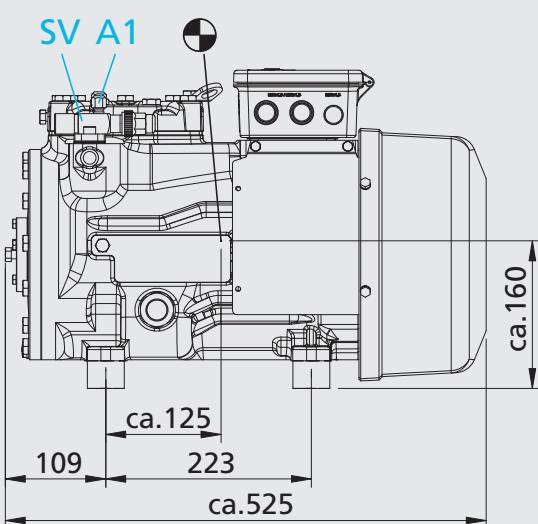
HA12P/75-4

HA12P/90-4

HA12P/110-4



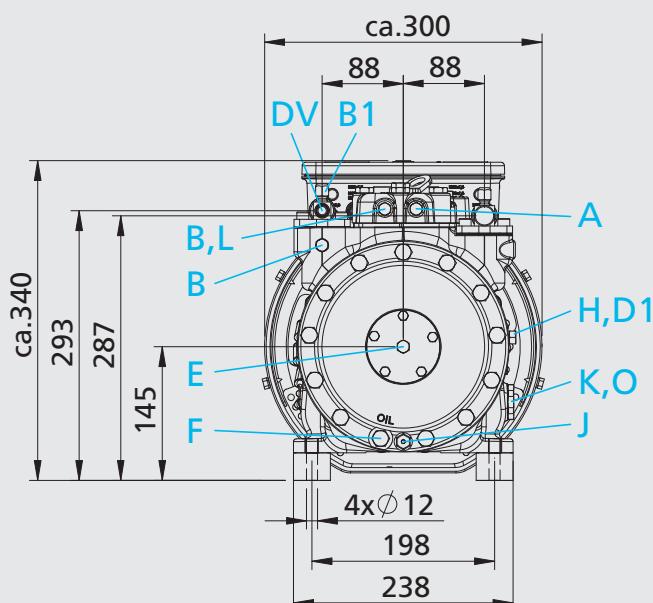
HA22P



HA22P/125-4

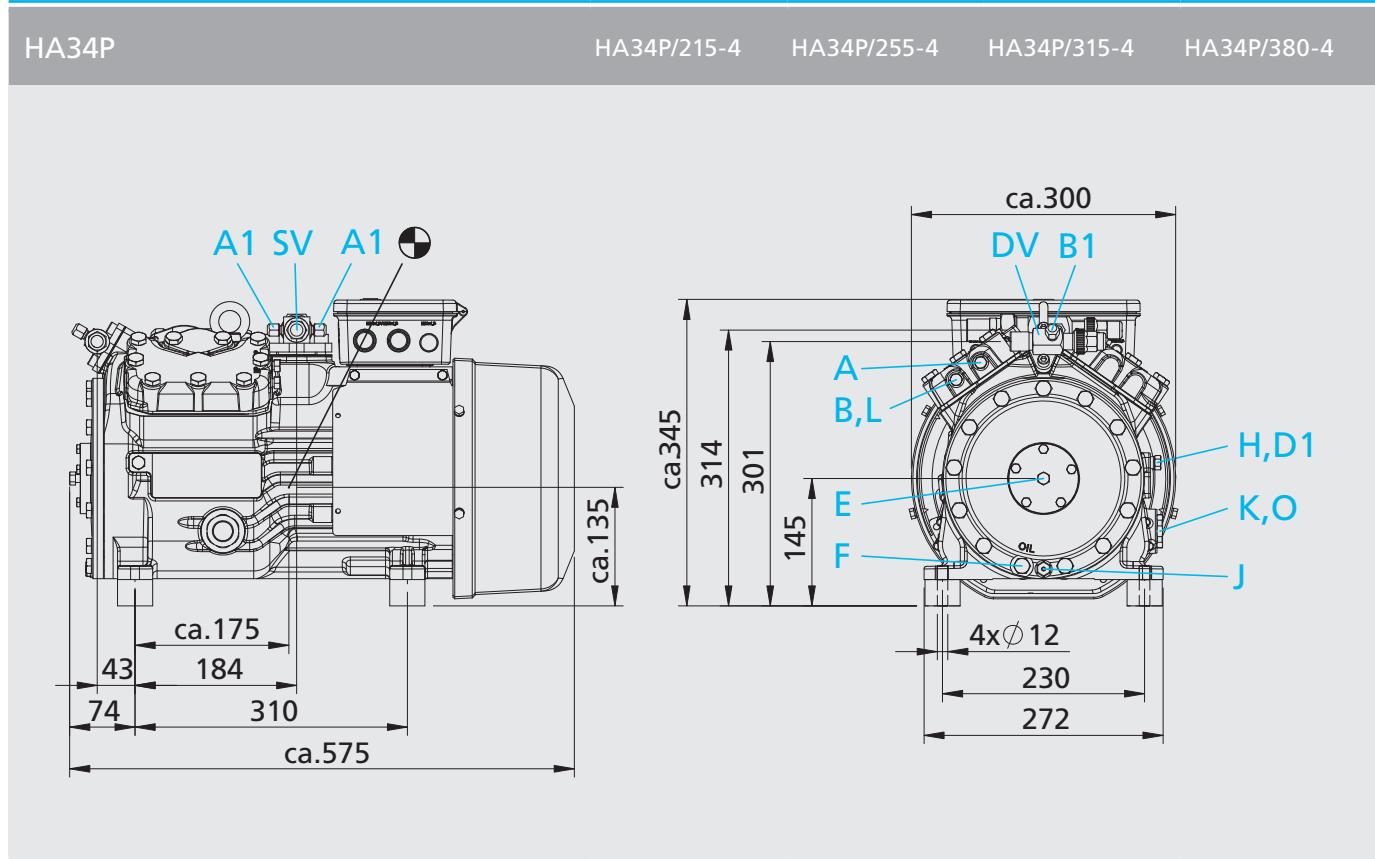
HA22P/160-4

HA22P/190-4

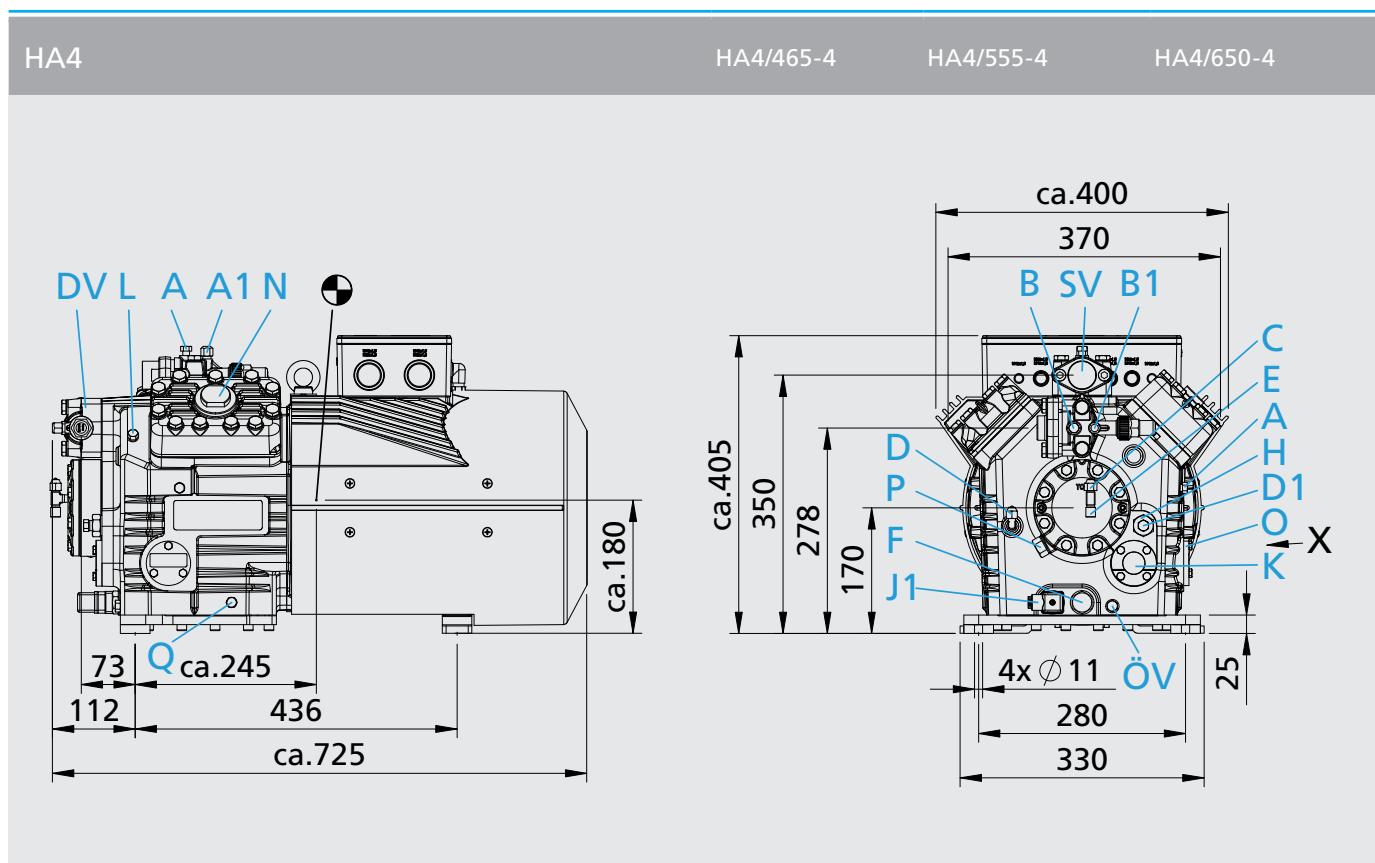


Dimensions in mm  
● Centre of gravity

- Connections see page 60
  - Dimensions for anti-vibration pad see page 57
  - Dimensions for view X see page 57



1  
2  
3  
4



Dimensions in mm

● Centre of gravity

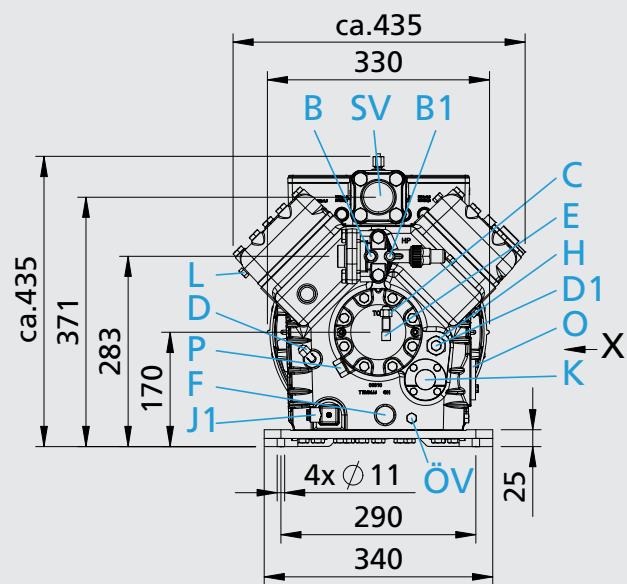
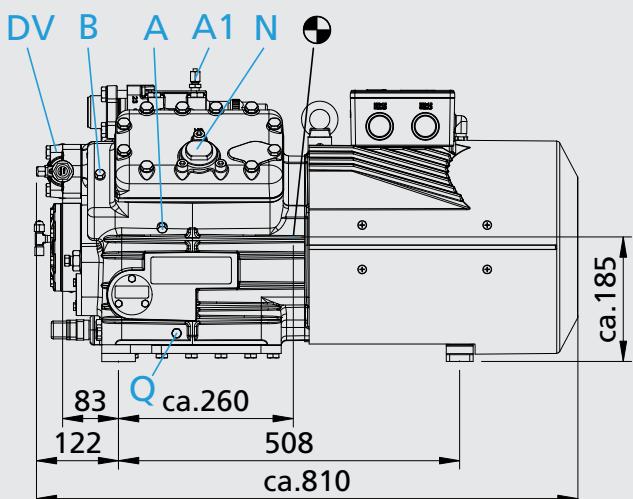
- Connections see page 60
- Dimensions for anti-vibration pad see page 57
- Dimensions for view X see page 57

HA5

HA5/725-4

HA5/830-4

HA5/945-4

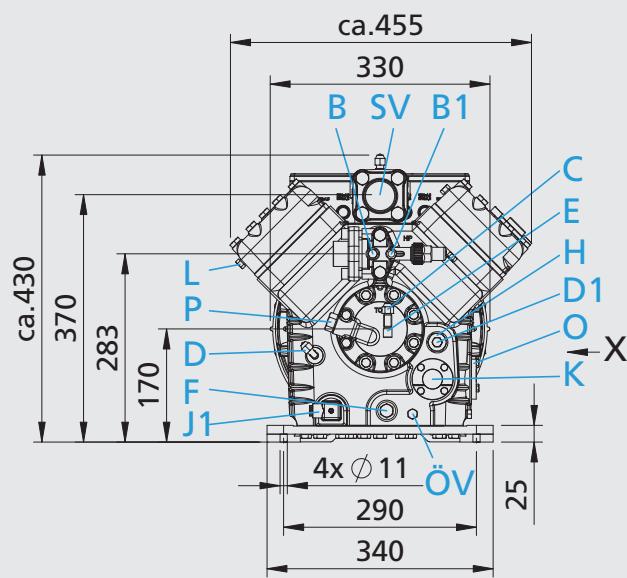
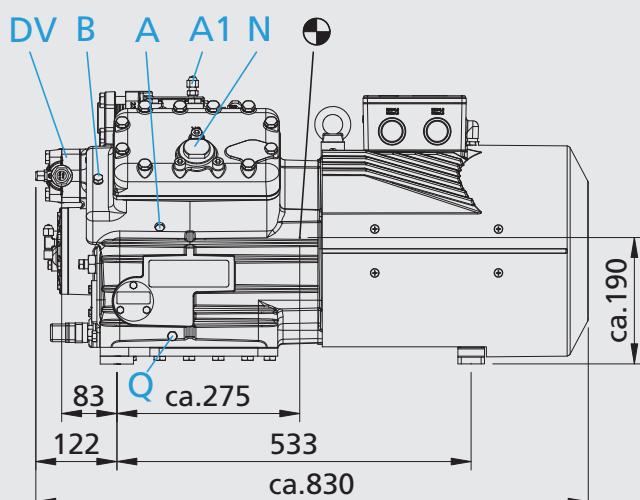


HA6

HA6/1080-4

HA6/1240-4

HA6/1410-4



Dimensions in mm  
● Centre of gravity

- Connections see page 60  
- Dimensions for anti-vibration pad see page 57  
- Dimensions for view X see page 57

## View X

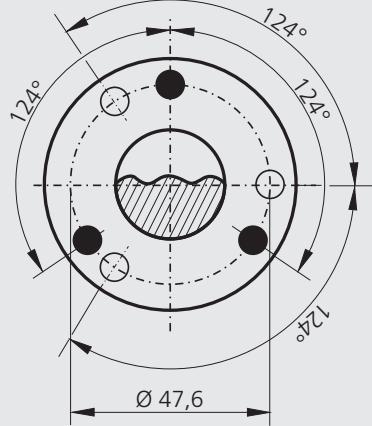
## Possibility to connect to oil level regulator

HG4, HG5, HG6, HG7, HG8

HA4, HA5, HA6

Three-hole connection for oil level regulator  
make ESK, AC+R, CARLY (3x M6, 10 deep)

Three-hole connection for oil level regulator  
make TRAXOIL (3 x M6 x 10 deep)



Dimensions in mm

1

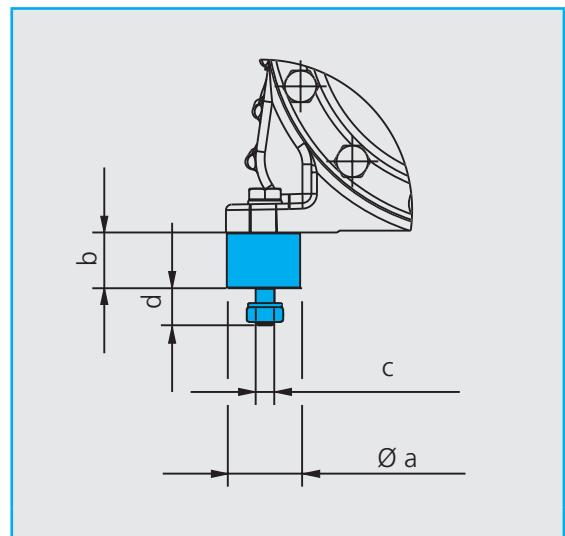
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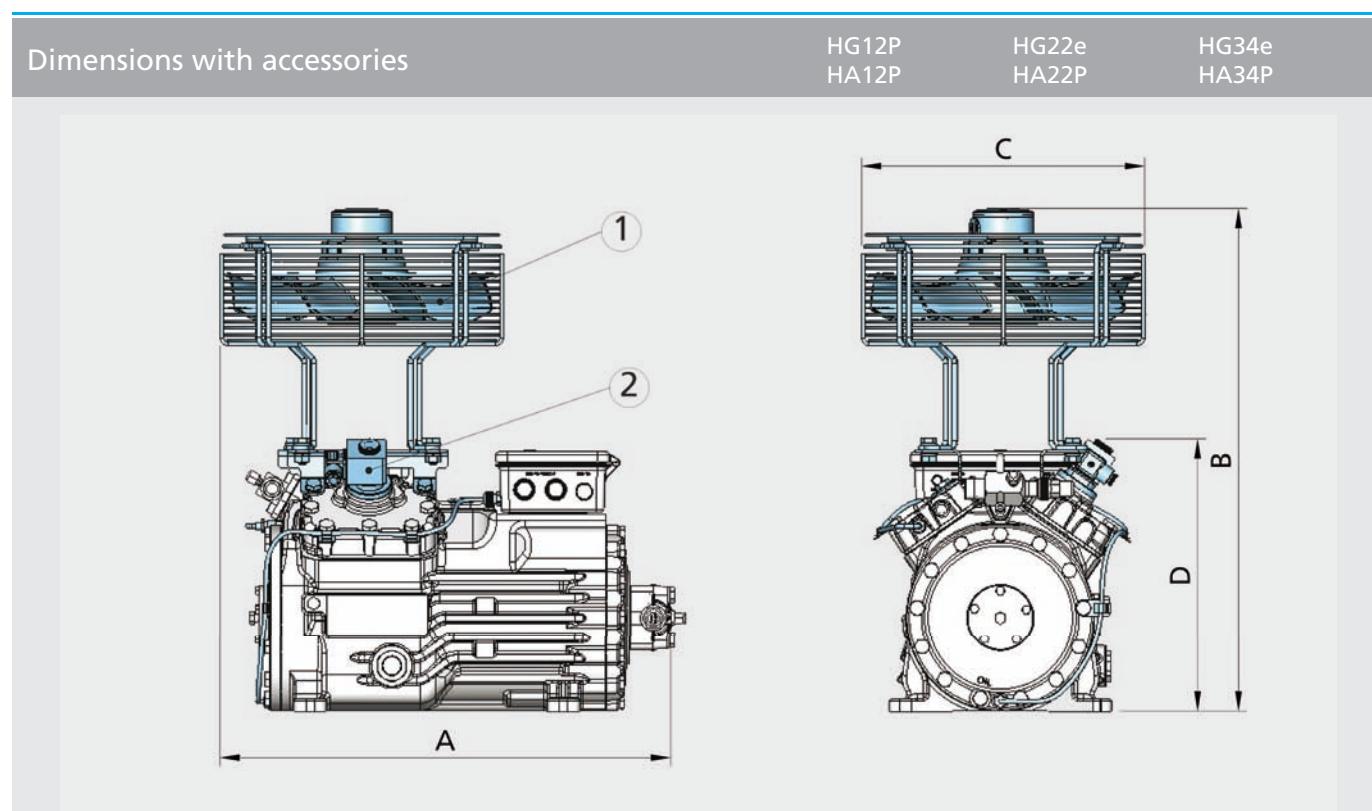
3

4

## Dimensions for anti-vibration pad

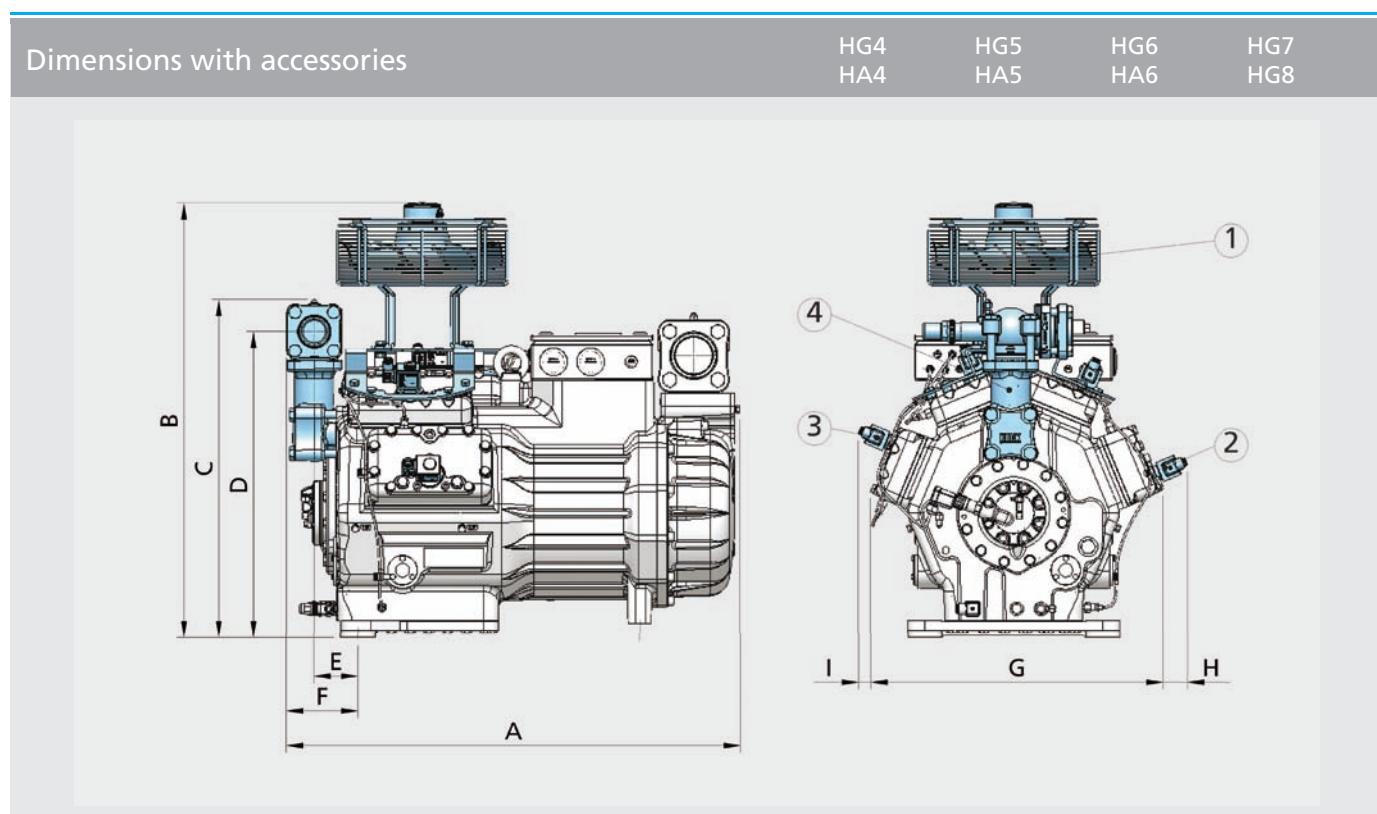
Type	Ø a mm	b mm	c mm	d mm
HG12P, HA12P	30	30	M8	20
HG22e, HA22P	40	30	M10	20
HG34e, HA34P	40	30	M10	20
HG4, HA4	40	30	M10	20
HG5, HA5	50	30	M10	25
HG6, HA6	50	30	M10	25
HG7	50	30	M10	25
HG8	70	45	M12	37





① Additional fan    ② Capacity regulator

Type	A mm	B mm	C mm	D mm
HG12P	ca. 460	ca. 500	ca. 315	-
HA12P	-	-	-	-
HG22e	ca. 515	ca. 595	ca. 350	-
HA22P	-	-	-	-
HG34e	ca. 570	ca. 620	ca. 350	ca. 340
HA34P	-	-	-	ca. 370



(1) Additional fan    (2) Capacity regulator    (3) Start unloader    (4) Intermediate adapter for discharge line valve

1  
2  
3  
4

Type	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm
HG4/465, HG4/555	ca. 705	ca. 680	ca. 455	416	91	131	ca. 375	ca. 20	ca. 20
HG4/650	ca. 740	ca. 680	ca. 455	416	91	131	ca. 375	ca. 20	ca. 20
HA4	-	-	-	-	-	-	ca. 400	ca. 5	ca. 5
HG5/725, HG5/830	ca. 835	ca. 730	ca. 465	422	101	141	ca. 440	ca. 30	-
HG5/945	ca. 850	ca. 730	ca. 465	422	101	141	ca. 440	ca. 30	-
HA5	-	-	-	-	-	-	ca. 435	ca. 30	-
HG6	ca. 870	ca. 740	ca. 460	421	101	141	ca. 460	ca. 30	-
HA6	-	-	-	-	-	-	ca. 455	ca. 30	-
HG7	ca. 830	ca. 760	ca. 580	520,5	95	150	ca. 510	ca. 45	ca. 15
HG8	ca. 920	ca. 880	ca. 680	617	90	145	ca. 580	ca. 50	ca. 20

Connections	HG12P HA12P	HG22e HA22P	HG34e HA34P	HG4 HA4	HG5 HA5	HG6 HA6	HG7	HG8
SV Suction line	please refer to Technical data page 48							
DV Discharge line								
A Connection suction side, not lockable	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF
A1 Connection suction side, lockable	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF
A2 Connection suction side, not lockable	-	-	-	-	-	-	1/4 " NPTF	1/4 " NPTF
B Connection suction side, not lockable	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF
B1 Connection suction side, lockable	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF
C Connection oil pressure safety switch OIL	-	-	-	7/16 " UNF				
D Connection oil pressure safety switch LP	-	-	-	7/16 " UNF				
D1 Connection oil return from oil separator	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF
E Connection oil pressure gauge	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	7/16 " UNF				
F Oil drain	M 8	M 10	M 10	M 22 x 1,5				
H Oil charge plug	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF	M 22 x 1,5	M 33 x 2			
J Connection oil sump heater	Ø 15 mm <sup>1)</sup>	Ø 15 mm <sup>1)</sup>	Ø 15 mm <sup>1)</sup>	-	-	-	-	-
J1 Oil sump heater (accessories)	-	-	-	M 22 x 1,5				
K Sight glass	1 1/8 " - 18 UNEF	1 1/8 " - 18 UNEF	1 1/8 " - 18 UNEF	4 hole M 6	4 hole M 6	4 hole M 6	3 hole M 6	3 hole M 6
L Connection thermal protection thermostat	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	-
L1 Thermal protection thermostat (accessories)	-	-	-	-	-	-	-	1/8 " NPTF
N Connection capacity controller	-	-	-	M 48 x 1,5	M 45 x 1,5			
O Connection oil level regulator	1 1/8 " - 18 UNEF	1 1/8 " - 18 UNEF	1 1/8 " - 18 UNEF	①	①	①	①	①
ÖV Connection oil service valve	-	-	-	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF	-
ÖV1 Oil service valve (accessories)	-	-	-	-	-	-	-	7/16 " UNF
P Connection oil pressure differential sensor	-	-	-	M 20 x 1,5	-			
P1 Oil pressure differential sensor (accessories)	-	-	-	-	-	-	-	M 20 x 1,5
Q Connection oil temperature sensor	-	-	-	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	-
Q1 Oil temperature sensor (accessories)	-	-	-	-	-	-	-	1/8 " NPTF

<sup>1)</sup> = Possibility of connection of oil sump heater

① Dimensions see view X page 57

Scope of supply HG	HG12P	HG22e	HG34e	HG4	HG5	HG6	HG7	HG8
Semi-hermetic two cylinder reciprocating compressor with drive motor for direct start 220-240 V Δ / 380-420 V Y - 3 - 50 Hz 265-290 V Δ / 440-480 V Y - 3 - 60 Hz Single-section compressor housing with hermetically integrated electric motor	●	●						
Semi-hermetic four cylinder reciprocating compressor with drive motor for direct start 220-240 V Δ / 380-420 V Y - 3 - 50 Hz 265-290 V Δ / 440-480 V Y - 3 - 60 Hz Single-section compressor housing with hermetically integrated electric motor			●					
Semi-hermetic four cylinder reciprocating compressor with drive motor for part winding start 380-420 V Y/YY - 3 - 50 Hz 440-480 V Y/YY - 3 - 60 Hz Motor unit flanged onto the compressor housing				●	●	●		
Semi-hermetic six cylinder reciprocating compressor with drive motor for part winding start 380-420 V Δ / YYY - 3 - 50 Hz 440-480 V Δ / YYY - 3 - 60 Hz Single-section compressor housing with hermetically integrated electric motor							●	
Semi-hermetic eight cylinder reciprocating compressor with drive motor for part winding star 380-420 V Δ / YYY - 3 - 50 Hz 440-480 V Δ / YYY - 3 - 60 Hz Single-section compressor housing with hermetically integrated electric motor								●
Winding protection with PTC resistor sensors and electronic triggering unit Bock MP10	●	●	●	●	●	●	●	●
Oil pump	●	●	●	●	●	●	●	●
Oil pump cover with screwed connection for differential oil pressure sensor (Δp-switch Kriwan make)				●	●	●	●	●
Possibility to connect to oil level controllers makes ESK, AC+R or CARLY	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	●	●	●	●	●
Possibility to connect to oil level controllers make Traxoil	● <sup>1)</sup>							
Oil service valve								●
Oil charge: HG: FUCHS Reniso SP46 HGX: FUCHS Reniso Triton SE55	●	●	●	●	●	●	●	●
Sight glass	●	●	●	●	●	●		
Two sight glasses							●	
Three sight glasses								●
Prepared for capacity regulator (1 cylinder cover)				●	●	●		
Prepared for capacity regulator (2 cylinder covers)							●	
Prepared for capacity regulator (3 cylinder covers)								●
Decompression valve				●	●	●	●	●
Suction and discharge line valve	●	●	●	●	●	●	●	●
Inert gas charge	●	●	●	●	●	●	●	●
4 anti-vibration pads enclosed	●	●	●	●	●	●	●	●

<sup>1)</sup> Only possible with additional adapter

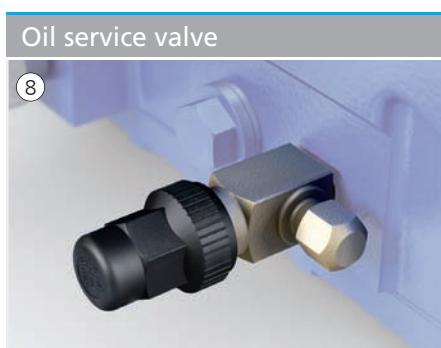
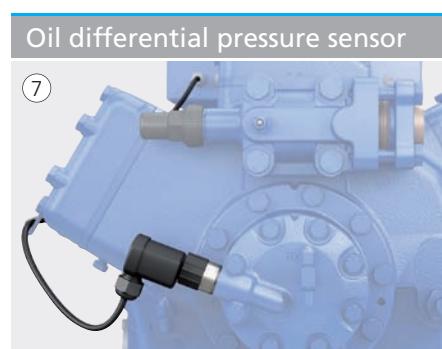
Scope of supply HA	HA12P	HA22P	HA34P	HA4	HA5	HA6
Semi-hermetic two cylinder reciprocating compressor with drive motor for direct start 220-240 V Δ / 380-420 V Y - 3 - 50 Hz 265-290 V Δ / 440-480 V Y - 3 - 60 Hz Single-section compressor housing with hermetically integrated electric motor	●	●				
Semi-hermetic four cylinder reciprocating compressor with drive motor for direct start 220-240 V Δ / 380-420 V Y - 3 - 50 Hz 265-290 V Δ / 440-480 V Y - 3 - 60 Hz Single-section compressor housing with hermetically integrated electric motor			●			
Semi-hermetic four cylinder reciprocating compressor with drive motor for part winding start 380-420 V Y/YY - 3 - 50 Hz 440-480 V Y/YY - 3 - 60 Hz Motor unit flanged onto the compressor housing				●	●	●
Motor is cooled by an integrated fan with air deflection hood 230 V - 1 - 50/60 Hz, IP44, 40 W, 0,30 A	●					
Motor is cooled by an integrated fan with air deflection hood 230 V - 1 - 50/60 Hz, IP44, 72 W, 0,53 A		●	●			
Motor is cooled by an integrated fan with air deflection hood 230 V - 1 - 50/60 Hz, IP44, 140 W, 0,71 A				●	●	●
Winding protection with PTC resistor sensors and electronic motor protection unit Bock MP10	●	●	●	●	●	●
Oil pump	●	●	●	●	●	●
Oil pump cover with screwed connection for differential oil pressure sensor ( $\Delta p$ -switch Kriwan make)				●	●	●
Possibility to connect to oil level controllers makes ESK, AC+R or CARLY	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	●	●	●
Possibility to connect to oil level controllers make Traxoil	● <sup>1)</sup>					
Oil charge: HA: FUCHS Reniso SP46 HAX: FUCHS Reniso Triton SE55	●	●	●	●	●	●
Sight glass	●	●	●	●	●	●
Prepared for capacity regulator (1 cylinder cover)				●	●	●
Decompression valve				●	●	●
Suction and discharge line valve	●	●	●	●	●	●
Inert gas charge	●	●	●	●	●	●
4 anti-vibration pads enclosed	●	●	●	●	●	●

<sup>1)</sup> Only possible with additional adapter

Accessories HG + HA	HG12P HA12P	HG22e HA22P	HG34e HA34P	HG4 HA4	HG5 HA5	HG6 HA6	HG7	HG8
① Oil sump heater 110-240 V - 1 - 50/60 Hz, 50-120 W, PTC heater, self-regulating	●	●	●					
Oil sump heater 220-240 V - 1 - 50/60 Hz, 80 W				●				
Oil sump heater 220-240 V - 1 - 50/60 Hz, 140 W					●	●	●	
Oil sump heater 220-240 V - 1 - 50/60 Hz, 200 W								●
② Thermal protection thermostat (PTC)	●	●	●	●	●	●	●	●
③ Capacity regulator 230 V - 1 - 50/60 Hz, IP65 1 Capacity regulator = 50% residual capacity			●	●	●	●		
Capacity regulator 230 V - 1 - 50/60 Hz, IP65 1-2 Capacity regulators = 66/33% residual capacity							●	
Capacity regulator 230 V - 1 - 50/60 Hz, IP65 1-3 Capacity regulators = 75/50/25% residual capacity								●
④ Start unloader 230 V - 1 - 50/60 Hz, IP65, without check valve, including thermal protection thermostat (PTC sensor)				●	●	●	●	●
⑤ Start unloader by means of a Bock ESS (Electronic Soft Start) 400 V - 3 - 50/60 Hz, IP20, (Connection clamps IP00) for installation in switch cabinet		● <sup>1)</sup> 2)						
⑥ Oil pressure safety switch MP 54 230 V - 1 - 50/60 Hz, IP20				● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	
⑦ Oil differential pressure sensor ( $\Delta p$ -switch Kriwan make) 220-240 V - 1 - 50/60 Hz				● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>
⑧ Oil service valve				●	●	●	●	
⑨ Cylinder cover prepared for capacity regulator			●					
⑩ Additional fan 230 V $\Delta$ / 400 V Y - 3 - 50 Hz, 120 W, 230-265 V $\Delta$ / 400-460 V Y - 3 - 60 Hz, 190 W, IP54, Voltage range $\pm 10\%$	● 1) 3)	● 1) 3)	● 1) 3)	● 1) 3)	● 1) 3)	● 1) 3)	● 1)	● 1)
⑪ Continuously variable speed control by means of a Bock EFC (Electronic Frequency Control), for single compressors, compactly built onto compressor and connected ready-to-operate, with pressure transducer, control signal 4-20 mA	●	●	●					
Continuously variable speed control by means of a Bock EFC (Electronic Frequency Control), for single compressors, compactly built onto compressor and connected ready-to-operate, without pressure transducer, control signal 4-20 mA or 0-10 V	●	●	●					
⑫ Bock Compressor Management BCM2000 including oil pressure control ( $\Delta p$ -switch Kriwan make) ⑦, oil temperature control (NTC) ⑬, thermal protection thermostat (PTC) per cylinder cover ⑫				●	●	●	●	●
⑭ Water-cooled cylinder covers				●	●	●	●	●
Sea water resistant water-cooled cylinder covers				●	●	●	●	●
⑮ Intermediate adapter for discharge line valve				● 3)	● 3)	● 3)	●	●
⑯ Connection piece suction and discharge valve in welded construction				● 4)	● 4)	● 4)	● 4)	●
Special voltage and/or frequency	● 4)	● 4)	● 4)	● 4)	● 4)	● 4)	● 4)	● 4)

<sup>1)</sup> enclosed package<sup>2)</sup> Not available HG7/2110-4 S<sup>3)</sup> Only available for HG compressors<sup>4)</sup> On request

Pictures of accessories see page 64-65



EFC Electronic Frequency Control



BCM2000 Bock Compressor Management



Oil temperature control



Water-cooled cylinder covers



Intermediate adapter for discharge line valve



Connection piece in welded construction

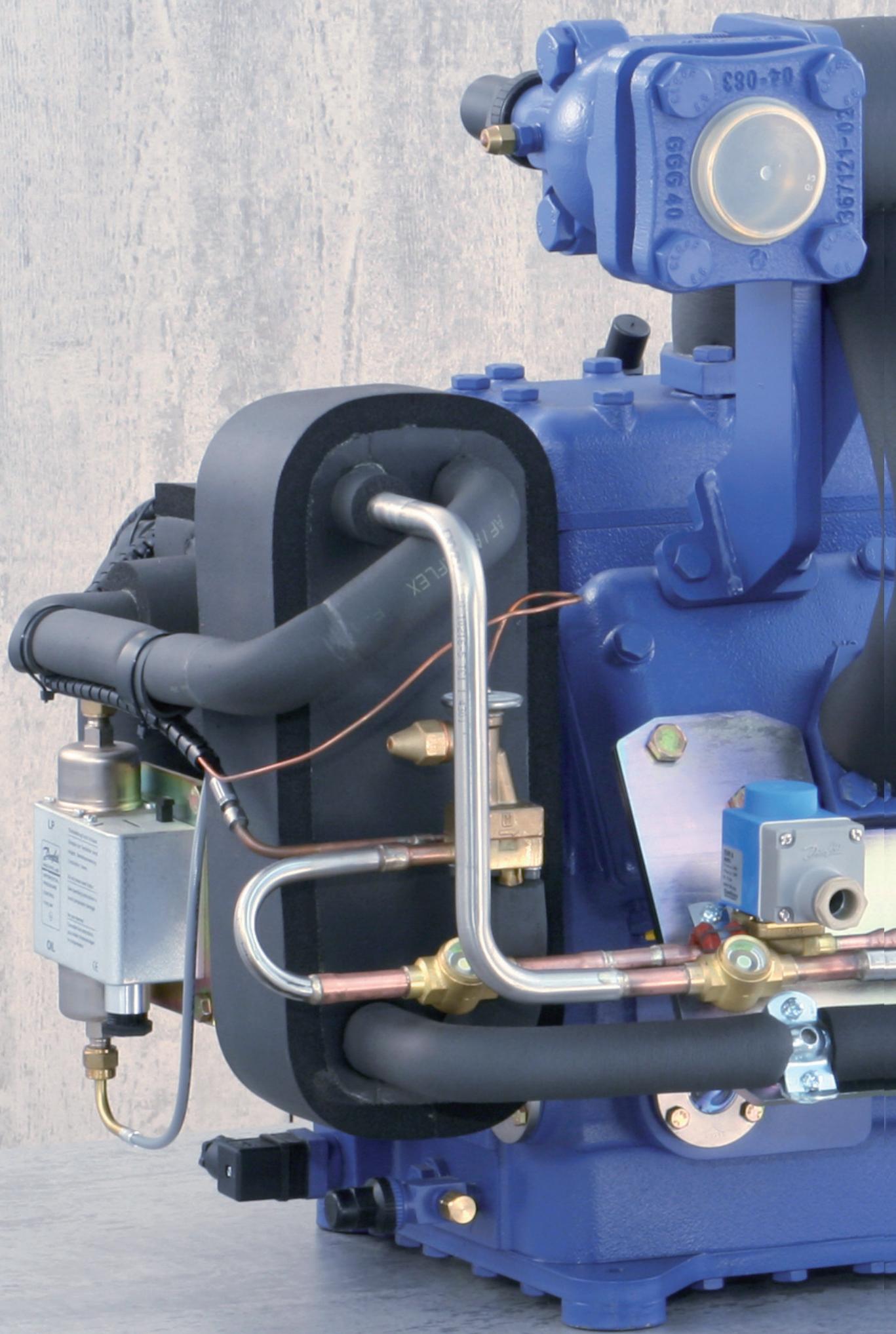


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## Two-stage semi-hermetic GEA Bock compressors

At a glance	68
Special features	69
Operating limits and performance data	70
Technical data	74
Dimensions and connections	75
Scope of supply and accessories	78

A two-stage variant based on the GEA Bock HG semi-hermetic 6 cylinder range is available for extended use in the domain of deep-freezing.

#### The two stage system consists of:

- Liquid subcooler
- Reinjection valve
- Solenoid valve
- Sight glass
- Filter drier

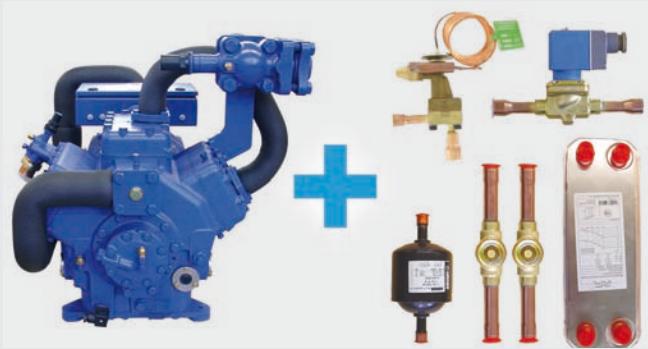
Available models  
for refrigerants R404A, R410A, R507, R22

Type	Displacement (50 Hz) LP / HP
HGXZ7/1620-4 R404A/R507	
HGXZ7/1620-4 R410A	93,70 m <sup>3</sup> /h / 46,90 m <sup>3</sup> /h
HGZ7/1620-4 R22	
HGXZ7/1860-4 R404A/R507	
HGXZ7/1860-4 R410A	107,60 m <sup>3</sup> /h / 53,80 m <sup>3</sup> /h
HGZ7/1860-4 R22	
HGXZ7/2110-4 R404A/R507	
HGXZ7/2110-4 R410A	122,40 m <sup>3</sup> /h / 61,20 m <sup>3</sup> /h
HGZ7/2110-4 R22	

The two possible designs of the HGZ7:

#### Design: everything enclosed separately

Medium-pressure mixed line mounted on the compressor and insulated, liquid subcooler, expansion valve, solenoid valve, two sight glasses, filter drier everything enclosed separately for individual, external mounting.

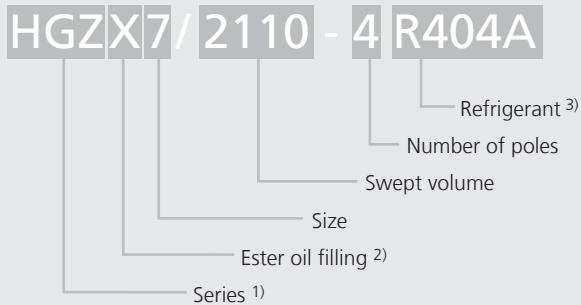


#### Special features:

- 6 cylinder design
- LP/HP stage ratio 2:1
- 2 stage operation with liquid subcooler
- Reinjection valve adapted to refrigerant and application
- Extremely reliable and economic compressor design

Further information on the HG7 basic compressor see chapter "Single-stage semi-hermetic GEA Bock compressors" from page 24.

#### Type key



<sup>1)</sup> HGZ = Hermetic Gas-Cooled (suction gas-cooled), two-stage

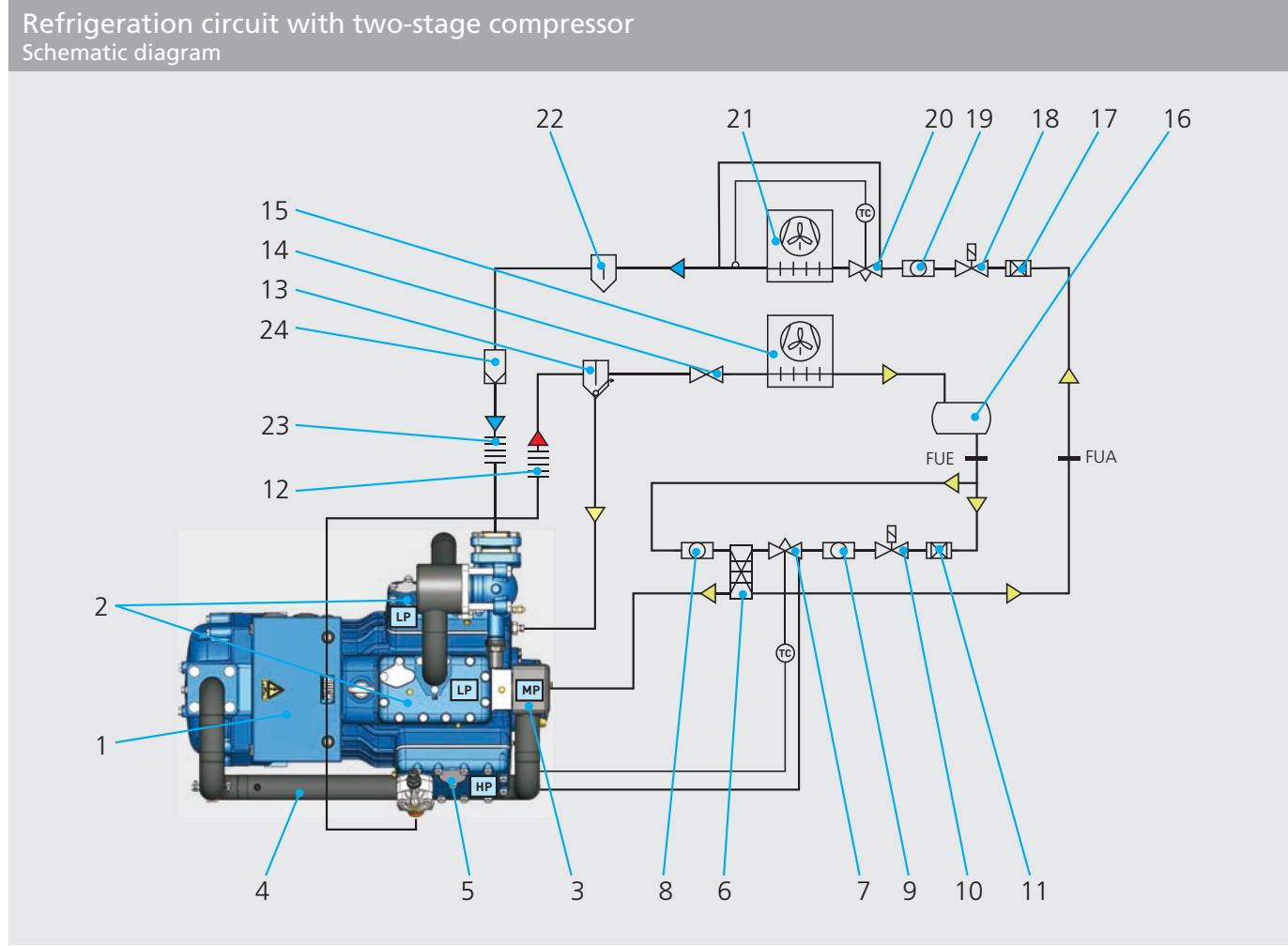
<sup>2)</sup> X = Ester oil filling (HFC refrigerants R404A, R410A)

<sup>3)</sup> Possible refrigerants are R404A, R410A, R22

#### Design: mounted directly to the compressor

Liquid subcooler, expansion valve, solenoid valve, two sight glasses, filter drier mounted directly to the compressor, lined and insulated.





1  
2  
3  
4

### Explanations

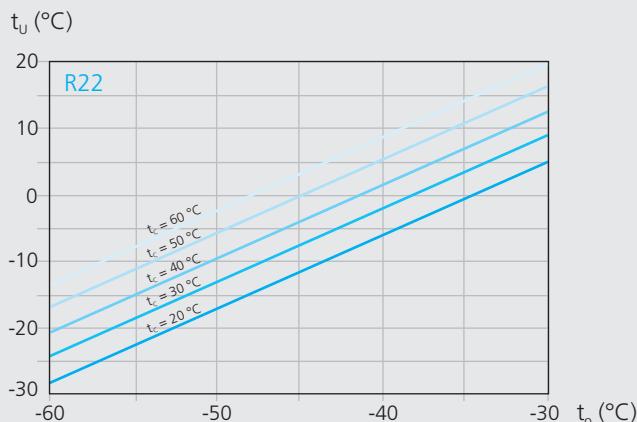
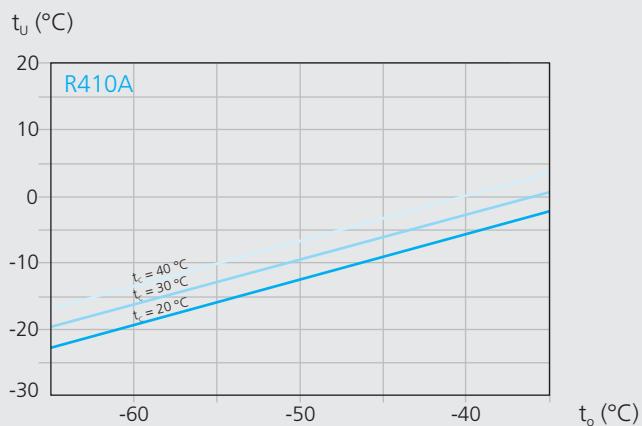
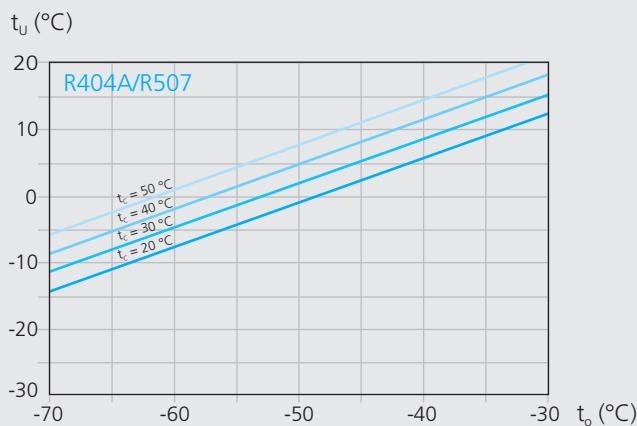
- |                                    |                                   |
|------------------------------------|-----------------------------------|
| 1 Compressor                       | 17 Filter drier                   |
| 2 Cylinder LP-stage                | 18 Solenoid valve                 |
| 3 Intermediate pressure chamber MP | 19 Sight glass                    |
| 4 Intermediate pressure line MP    | 20 Expansion valve (evaporator)   |
| 5 Cylinder HP-stage                | 21 Evaporator                     |
| 6 Subcooler*                       | 22 Liquid separator               |
| 7 Reinjection valve*               | 23 Vibration damper, suction line |
| 8 Sight glass 1*                   | 24 Filter suction line            |
| 9 Sight glass 2*                   |                                   |
| 10 Solenoid valve*                 |                                   |
| 11 Filter drier*                   |                                   |
| 12 Vibration damper, pressure line | LP = Low pressure                 |
| 13 Oil separator                   | MP = Medium pressure              |
| 14 Non-return valve                | HP = High pressure                |
| 15 Condenser                       | FUE = Liquid subcooler, inlet     |
| 16 Refrigerant receiver            | FUA = Liquid subcooler, outlet    |

\* Components for subcooling system  
not supplied as standard

## Subcooling temperature

Defined with the help of the diagram by approximately calculating the subcooling temperature arising in the relevant operating conditions ( $t_o/t_c$ ).

Subcooling temperature calculation diagram for the intermediate cooler outlet

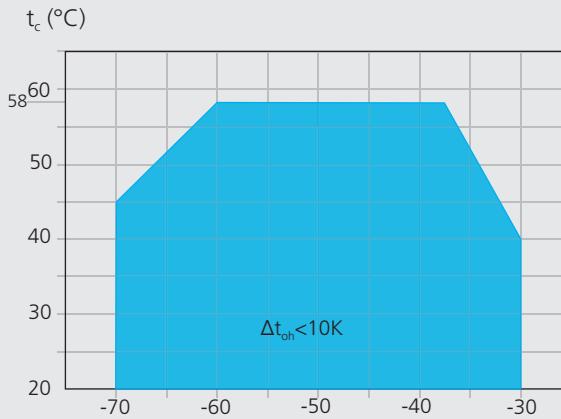


$t_u$  = Subcooling temperature at the intermediate cooler outlet (FUA)

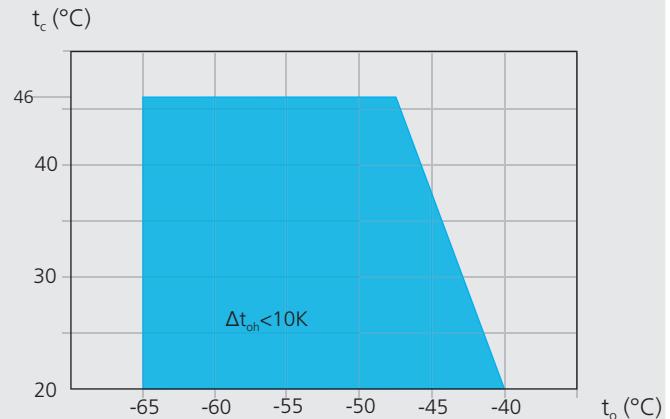
$t_o$  = Evaporation temperature

## Operating limits

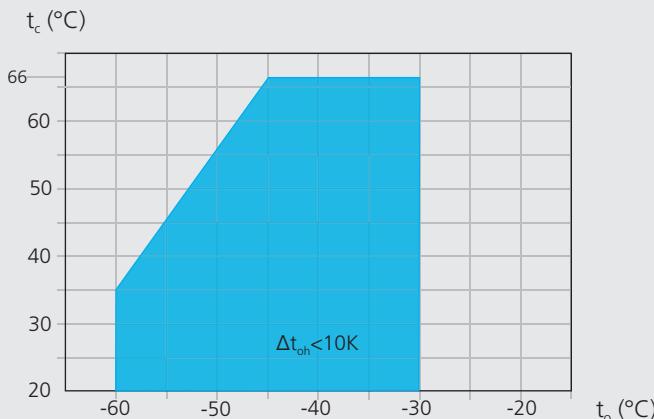
R404A/R507



R410A



R22



Application range

$t_o$  Evaporating temperature (°C)

$t_c$  Condensing temperature (°C)

$\Delta t_{oh}$  Suction gas superheat (K)

Max. permissible operating pressure (LP/MP/HP)<sup>1)</sup>: 19/19/28 bar

<sup>1)</sup> LP = low pressure MP = medium pressure HP = high pressure

## Notes

## Operating limits

Compressor operation is possible within the limits shown on the application diagrams. Please note the coloured areas. Compressor application limits should not be chosen for design purposes or continuous operation.

## Performance data

The stated performance values are based on 10 K suction gas superheat with liquid subcooling, operating at 50 Hz.

Performance data were compiled for R404A and R507.  
The base values are the data for R404A.

Conversion factor für 60 Hz = 1,2

Performance data for other operating points, see GEA Bock software

R404A/R507			Performance data								50 Hz	
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]	Evaporating temperature °C								Power consumption	$P_e$ [kW]
			-30	-35	-40	-45	-50	-55	-60	-65	-70	
HGZX7/1620-4	30	Q P 21,17 19,41	34869 28471 17,63	23098 18628 15,84	14936 14,05	11899 12,31	9394 10,61	7296 8,99	5482 7,46			
	40	Q P 23,42	33437 27315 21,42	22181 17910 19,40	14380 15,41	11467 13,48	9047 11,61	6997 9,84	5192 8,17			
	50	Q P 23,49	25860 20950 21,24	16866 19,02	13484 16,84	10680 14,72	8332 12,68	6315 10,75				
HGZX7/1860-4	30	Q P 24,31	40042 32694 22,29	26525 21391 20,24	17152 18,18	13665 16,14	10787 14,13	8378 12,19	6294 10,32			
	40	Q P 26,90	38397 31367 24,60	25471 20567 22,28	16514 19,97	13169 17,70	10390 15,48	8035 13,34	5962 11,30			
	50	Q P 26,98	29696 24057 24,39	19367 19,84	15484 19,33	12265 16,90	9568 14,56	7252 12,35				
HGZX7/2110-4	30	Q P 27,66	45550 37191 25,36	30173 24334 23,03	19511 18,36	15544 16,08	12271 13,86	9530 11,74	7160 9,74			
	40	Q P 30,60	43679 35681 27,98	28974 23396 25,34	18785 22,72	14980 20,13	11819 17,61	9140 15,17	6782 12,85			
	50	Q P 30,69	33780 27366 27,75	22031 24,84	17614 21,99	13952 19,23	10884 16,57	8249 14,04				

R410A			Performance data								50 Hz	
Type	Cond. temp. °C	Cooling capacity $\dot{Q}_o$ [W]	Evaporating temperature °C								Power consumption	$P_e$ [kW]
			-35	-40	-45	-50	-55	-60	-65			
HGZX7/1620-4	30	Q P 22,89		25354 19967 20,80		15285 18,67		11396 16,43			8385 14,00	
	50	Q P 22,87		19131 14630 20,63		10868 18,25		7930 15,68				
HGZX7/1860-4	30	Q P 26,28	29182 22859 23,89		17530 21,44		13136 18,87				9614 16,08	
	50	Q P 26,26	21959 16774 23,68		12508 23,68		9101 20,96				18,00	
HGZX7/2110-4	30	Q P 29,90	33195 26003 27,17		19941 24,39		14943 21,46				10937 18,29	
	50	Q P 29,87	24980 19082 26,94		14229 26,94		10352 23,84				20,48	

R22			Performance data						50 Hz	
Type	Cond. temp. °C	Cooling capacity Q̄_o [W]	Evaporating temperature °C							Power consumption P_e [kW]
			-30	-35	-40	-45	-50	-55	-60	
HGZ7/1620-4	30	Q P 29711 18,26	24214 16,81	19448 15,40	15365 14,03	11921 12,70	9070 11,41	6765 10,16		
	40	Q P 29059 20,23	23630 18,52	18930 16,86	14914 15,23	11537 13,64	8753 12,10			
	50	Q P 28355 22,30	22992 20,33	18360 18,41	14411 16,53	11100 14,69				
	60	Q P 27598 24,47	22302 22,25	17736 20,07	13854 17,93					
HGZ7/1860-4	30	Q P 30088 20,97	27881 19,31	22408 17,69	17669 16,11	13664 14,58	10393 13,10	7855 11,67		
	40	Q P 33296 23,23	27181 21,27	21800 19,36	17153 17,49	13240 15,67	10061 13,89			
	50	Q P 32434 25,60	26411 23,35	21122 21,14	16567 18,98	12746 16,68				
	60	Q P 31503 28,09	25572 25,54	20375 23,04	15912 20,59					
HGZ7/2110-4	30	Q P 38811 23,86	31632 21,96	25406 20,12	20072 18,33	15573 16,59	11848 14,91	8837 13,27		
	40	Q P 37960 26,43	30868 24,20	24729 22,02	19483 19,89	15071 17,82	11433 15,80			
	50	Q P 37040 29,13	30035 26,56	23984 24,05	18825 21,59	14500 19,18				
	60	Q P 36050 31,96	29133 29,06	23169 26,21	18097 23,42					

Performance data 50 Hz relative to 10 K suction gas superheat with liquid subcooling

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HGZ Type	Number of cylinders	Displacement				Electrical data				Weight	Oil charge
		50 Hz (1450 rpm)		60 Hz (1740 rpm)		Voltage	Max. working current ①	Max. power consump- tion ②	Starting current (rotor locked) ②		
		LP	HP	LP	HP	①	②	②	②		
		m³/h		m³/h			A	kW	A	kg	Ltr.
HGZX7/1620-4 R404A											
HGZX7/1620-4 R410A	6	93,70 / 46,90		112,50 / 56,20		③	50	27,0	185 / 278	294	4,5
HGZ7/1620-4 R22											
HGZX7/1860-4 R404A											
HGZX7/1860-4 R410A	6	107,60 / 53,80		129,10 / 64,60		③	55	30,0	185 / 278	291	4,5
HGZ7/1860-4 R22											
HGZX7/2110-4 R404A											
HGZX7/2110-4 R410A	6	122,40 / 61,20		146,90 / 73,50		③	65	36,0	191 / 286	289	4,5
HGZ7/2110-4 R22											

\* PW = Part Winding, motors for part winding start      1 = 1. part winding      2 = 2. part winding

LP = low pressure

HP = high pressure

#### Oil sump heater 230V -1- 50/60 Hz 140 W (option)

Permanently set version, installation in immersion sleeve

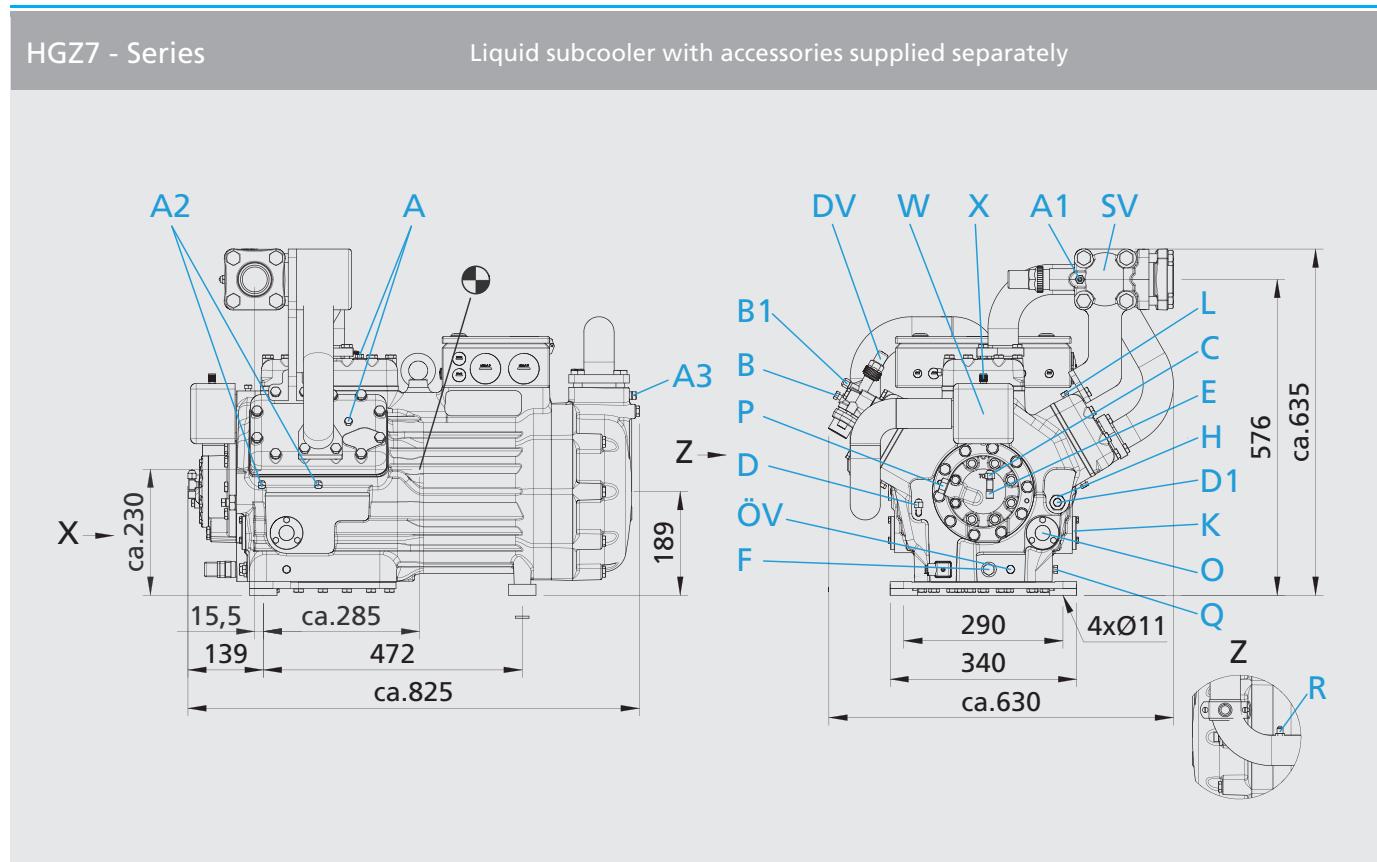
#### Explanations:

① Tolerance ( $\pm 10\%$ ) relates to the mean value of the voltage range. Other voltages and current types on request.

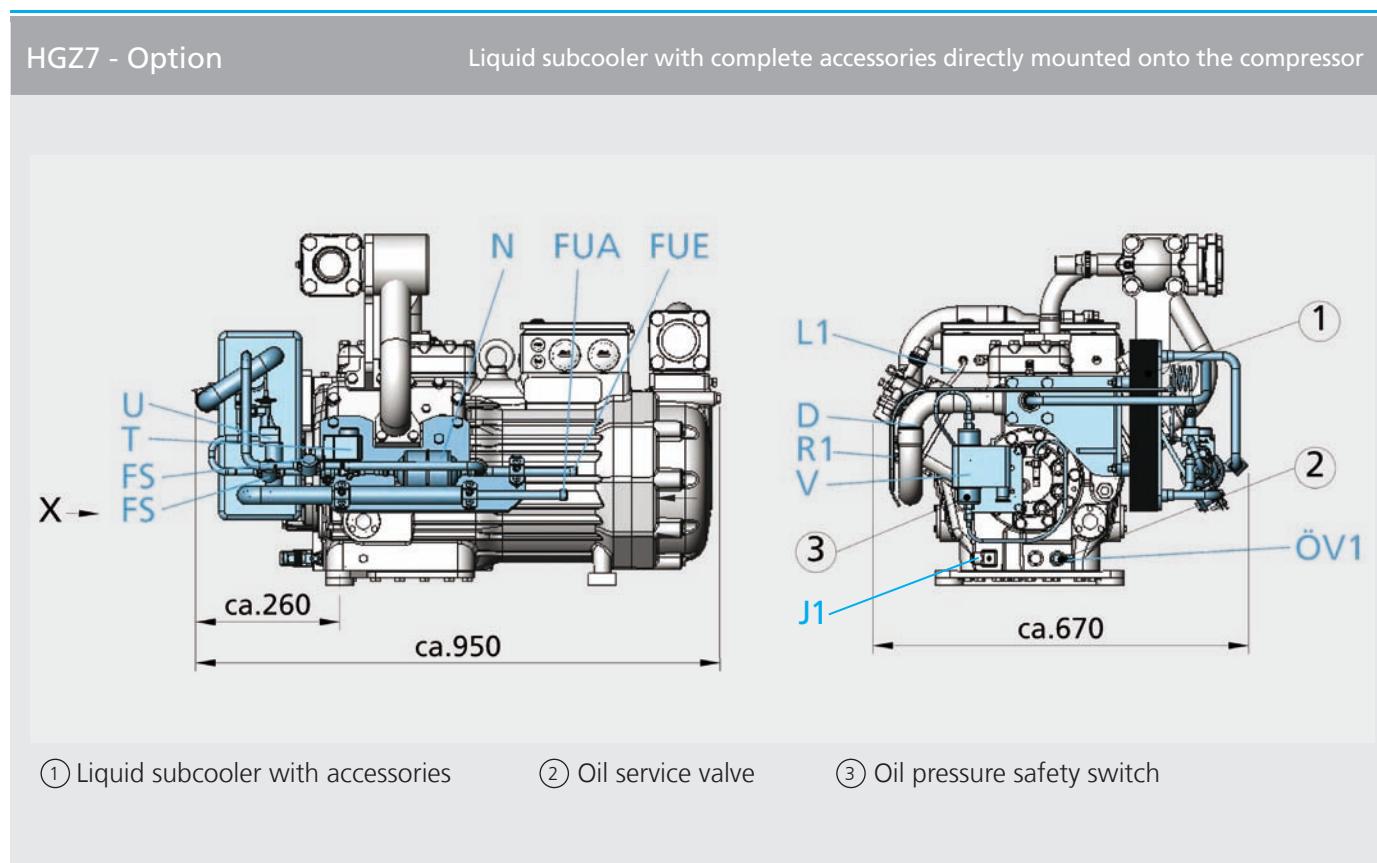
② - The specifications for max. power consumption apply for 50 Hz operation. For 60 Hz operation, the specifications have to be multiplied by the factor 1.2. The max. working current remains unchanged.

- Take account of the max. operating current / max. power consumption when designing contactors, leads and fuses. Switches: Service category AC3

③ 380-420 V  $\Delta$  / YYY - 3 - 50 Hz PW  
440-480 V  $\Delta$  / YYY - 3 - 60 Hz PW  
PW = Part Winding, motors for part winding start  
(no start unloaders required)  
Winding ratios: 60% / 40%



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① Liquid subcooler with accessories

② Oil service valve

③ Oil pressure safety switch

Dimensions in mm  
● Centre of gravity

- Connections see page 76  
- Rigid fixing without anti-vibration pad  
- Dimensions for view X see page 77

Connections		
DV	Discharge line	Ø 35 mm / 1 $\frac{3}{8}$ "
SV	Suction line	Ø 54 mm / 2 $\frac{1}{8}$ "
FUE	Liquid subcooler IN	Ø 16 mm - $\frac{5}{8}$ "
FUA	Liquid subcooler OUT	Ø 16 mm - $\frac{5}{8}$ "
A	Connection suction side, not lockable	$\frac{1}{8}$ " NPTF
A1	Connection suction side, lockable	$\frac{7}{16}$ " UNF
A2	Connection intermediate pressure, not lockable	$\frac{1}{8}$ " NPTF
A3	Connection intermediate pressure, not lockable	$\frac{1}{4}$ " NPTF
B	Connection discharge side, not lockable	$\frac{1}{8}$ " NPTF
B1	Connection discharge side, lockable	$\frac{7}{16}$ " UNF
C	Connection oil pressure safety switch OIL	$\frac{7}{16}$ " UNF
D	Connection oil pressure safety switch LP	$\frac{7}{16}$ " UNF
D1	Connection oil return from oil separator	$\frac{1}{4}$ " NPTF
E	Connection oil pressure gauge	$\frac{7}{16}$ " UNF
F	Oil drain	M 22 x 1,5
FS	Sight glass Liquid line	Ø 12 mm
H	Oil charge plug	M 22 x 1,5

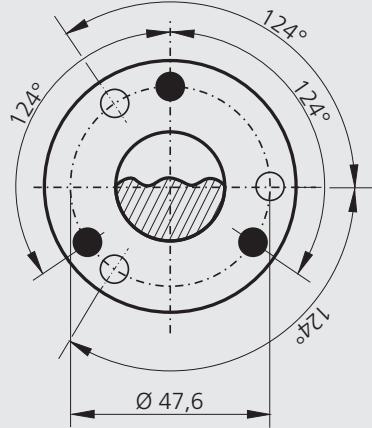
① Dimensions see view X see page 77

Connections		
J1	Oil sump heater	M 22 x 1,5
K	Sight glass	3 hole M 6
L	Connection thermal protection thermostat	$\frac{1}{8}$ " NPTF
L1	Thermal protection thermostat	$\frac{1}{8}$ " NPTF
N	Filter drier	Ø 12 mm
O	Connection oil level regulator	①
ÖV	Connection oil service valve	$\frac{1}{4}$ " NPTF <sup>1)</sup>
ÖV1	Oil service valve	$\frac{7}{16}$ " UNF
P	Connection oil pressure differential sensor	M 20 x 1,5
Q	Connection oil temperature sensor	$\frac{1}{8}$ " NPTF <sup>1)</sup>
R	Connection equalizer for injection valve	$\frac{7}{16}$ " UNF
R1	Equalizer for injection valve	Ø 6 mm
T	Solenoid valve	Ø 12 mm
U	Reinjection valve - dependent on refrigerant	Ø 12 mm
V	Oil pressure safety switch MP 54	-
W	Connection refrigerant injection	M 22 x 1,5
X	Connection for Schrader valve for intermediate pressure manometer	$\frac{7}{16}$ " UNF

## View X

**Possibility to connect to oil level regulator**

- Three-hole connection for oil level regulator make ESK, AC+R, CARLY (3x M6, 10 deep)



Dimensions in mm

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**Scope of supply**

Semi-hermetic six cylinder reciprocating compressor with drive motor for part winding start

380-420 V Δ/YYY - 3 - 50 Hz

440-480 V Δ/YYY - 3 - 60 Hz

Single-section compressor housing with hermetically integrated electric motor

Cylinder design in W form, LP/HP stage ratio 2:1

① Intermediate pressure line mounted and insulated

② Winding protection with PTC sensors and Bock MP10 electronic motor protection

Oil pump

③ Oil pump cover with screw connection for oil differential pressure sensor ( $\Delta p$  switch Kriwan make)

④ Direct connection possibility for oil level regulators ESK, AC+R or CARLY

Oil charge:

HGZ: FUCHS Reniso SP46

HGX: FUCHS Reniso Triton SE55

⑤ Three sight glasses

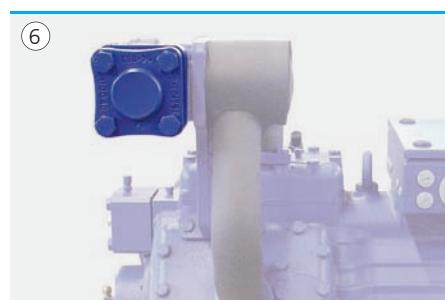
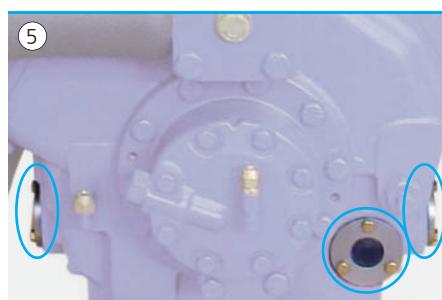
Decompression valve

⑥ Suction and

⑦ discharge line shut off valve

Inert gas charge

4 anti-vibration pads enclosed

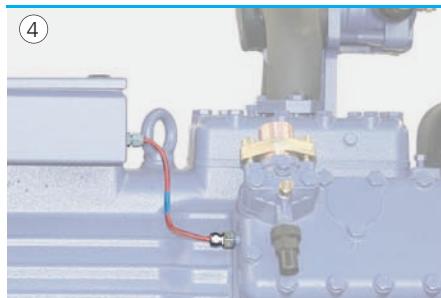
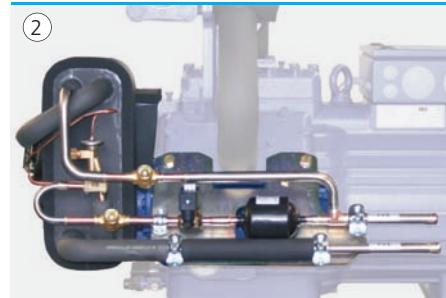


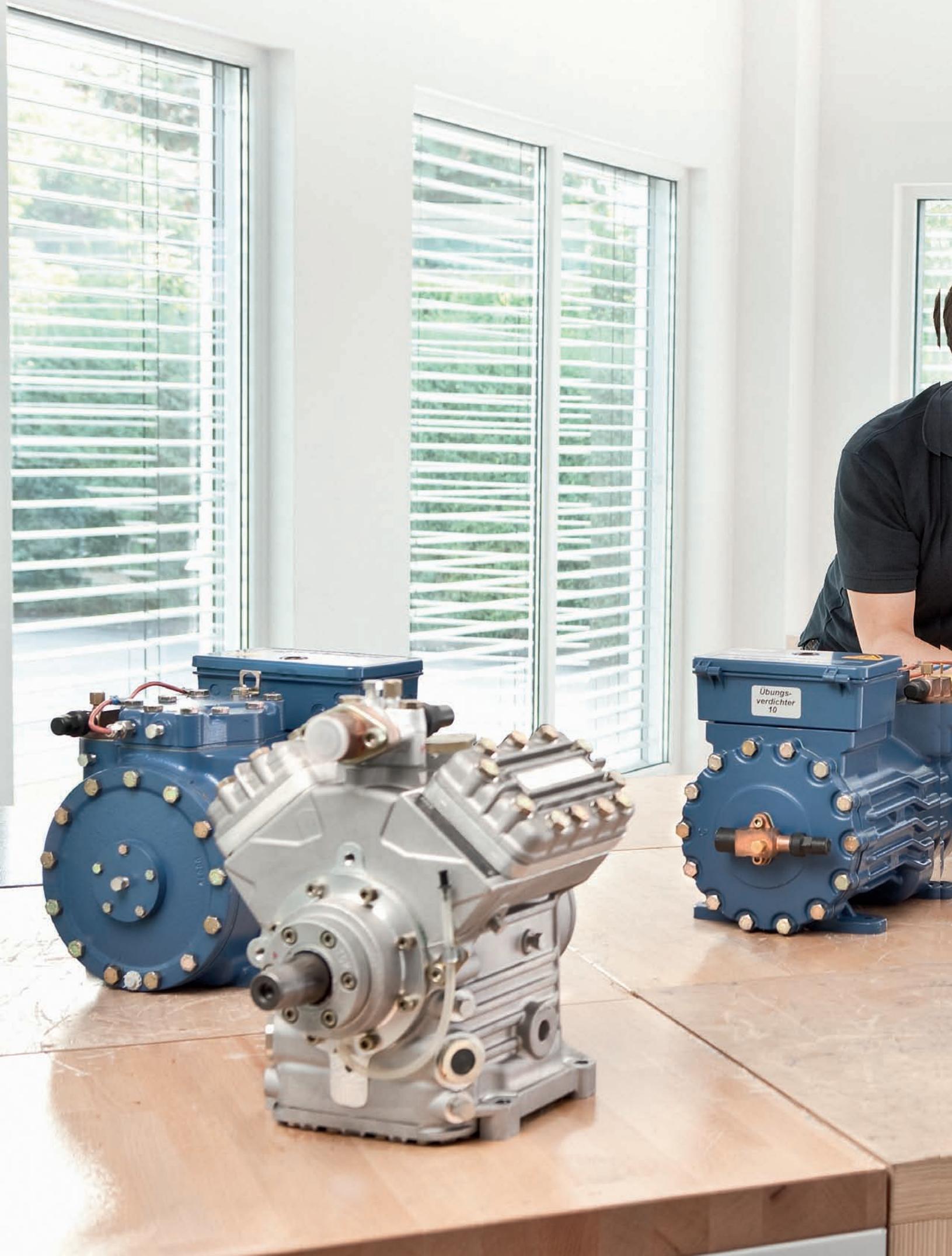
## Accessories

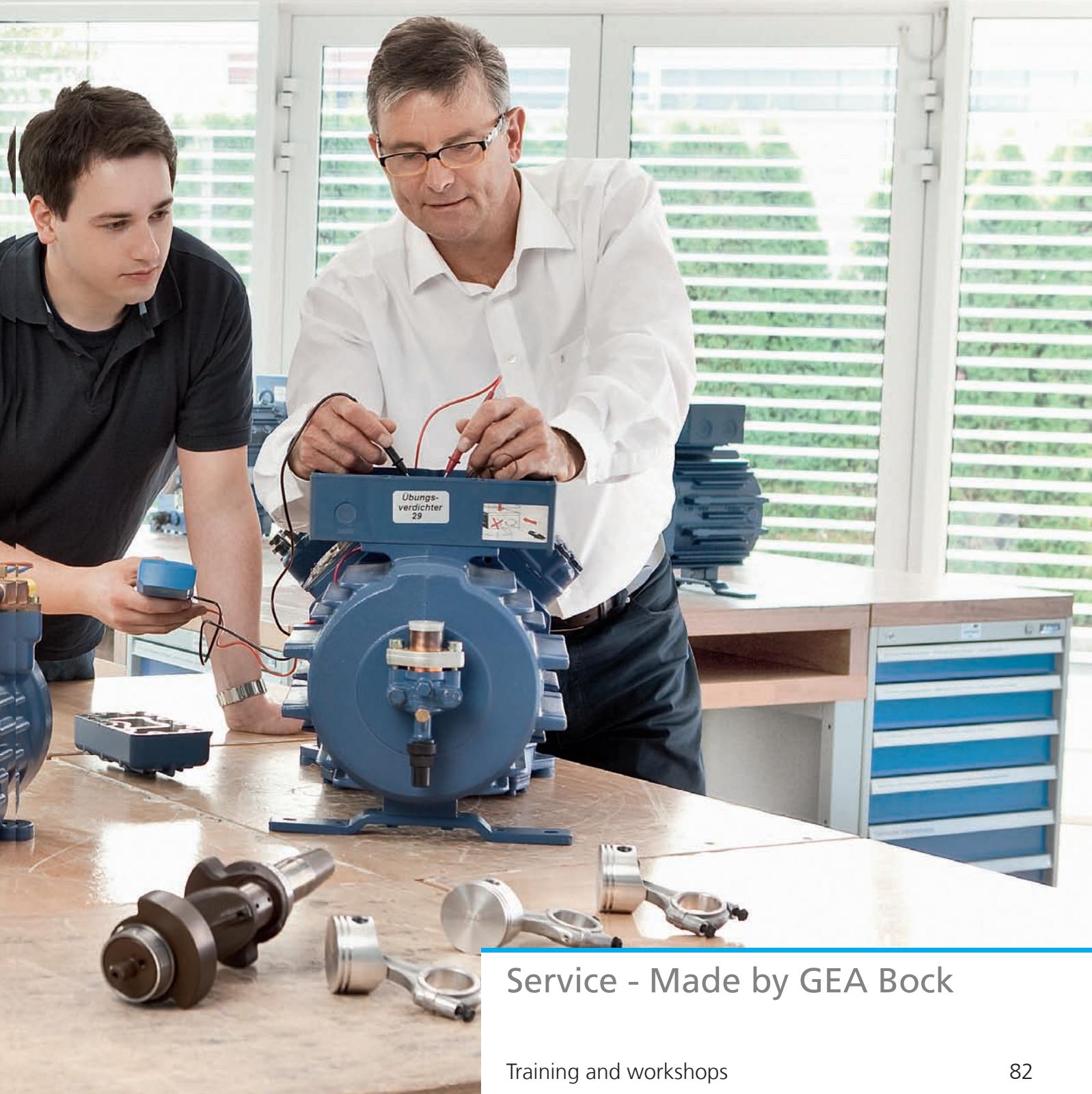
- ① Liquid subcooler, reinjection valve, solenoid valve 230 V - 1 - 50/60 Hz, two sight glasses, filter drier, supplied separately for individual, external installation. Assembly is for the function of the compressor mandatory.
  - ② Liquid subcooler, reinjection valve, solenoid valve 230 V - 1 - 50/60 Hz, two sight glasses, filter drier, directly mounted onto the compressor, fully assembled and insulated with pipes ready for connection
  - ③ Oil sump heater 220-240 V - 1 - 50/60 Hz, 140 W
  - ④ Thermal protection thermostat (PTC sensor) 230 V - 1 - 50/60 Hz
  - ⑤ Oil pressure safety switch MP 54, 230 V - 1 - 50/60 Hz, IP20 <sup>1)</sup>
  - ⑥ Oil differential pressure sensor ( $\Delta p$ -switch Kriwan make) 220-240 V - 1 - 50/60 Hz <sup>1)</sup>
  - ⑦ Oil service valve
  - ⑧ Bock Compressor Management BCM2000 including oil pressure control ( $\Delta p$ -switch Kriwan make) ⑥, oil temperature control (NTC), thermal protection thermostat (PTC) per cylinder cover ④
- Special voltage and/or frequency (on request)

<sup>1)</sup> enclosed package

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## Service - Made by GEA Bock

Training and workshops	82
GEA Bock on the Internet	83
Quality by GEA Bock	84

### Because you're never done learning - GEA Bock training and workshops on compressors

Many years ago, GEA Bock intensified its commitment in the area of customer training.

And so we offer a comprehensive array of attractive training events, from two-day practitioners' workshops in Frickenhausen to afterwork workshops throughout Germany. Regardless of the type of training you are interested in.

Three things are characteristic of all GEA Bock training:

- The captivating way that the training director Peter Spies carries out the events
- The strong practice orientation of the training events, and
- The fact that all training events from GEA Bock are offered as a free service

Current training dates can be found online at [www.bock.de](http://www.bock.de)

#### Overview of training events offered:

- GEA Bock Practitioners' Workshop
- Training tailored to your individual needs
- Training for your entire staff
- Training on your premises

For additional questions or advice, please contact our training director:

Peter Spies  
Telephone +49 70 22 / 94 54-157  
Fax +49 70 22 / 94 54-137  
Email: [Peter.Spies@gea.com](mailto:Peter.Spies@gea.com)



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GEA Bock on the Internet - [www.bock.de](http://www.bock.de)

#### Products

- Comprehensive product brochure
- Data on all products
- Dimensions and exploded views
- Spare parts lists

#### Sales network

- Contact persons in over 60 countries
- Direct link to your trading partner

#### Company

- Current company information
- Company film
- Subsidiaries
- History
- References

#### News

- Company news
- Product news
- Current dates

#### Wordbock - Translation Tool

- Available as an app and
- As an online version on [www.bock.de](http://www.bock.de)

#### Know-how

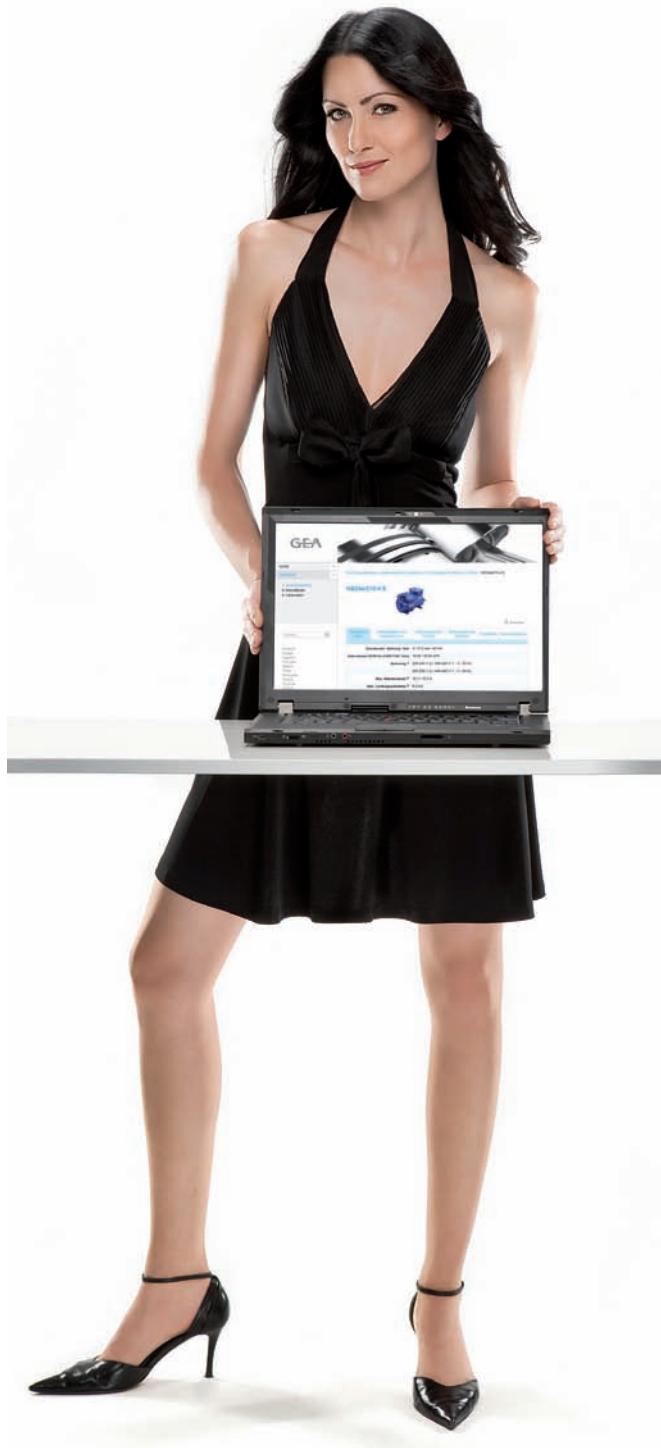
- Error analysis tool
- VAP software
- Comprehensive information

### After Sales Service

GEA Bock offers you individual, personal consultation and assistance after the purchase as well.

As a customer, GEA Bock always has competent contact people available to you for technical questions.

During our business hours, you can reach us on our free hotline: 00 800 / 800 000 88.



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## Quality by GEA Bock - The benchmark in cooling and air-conditioning

The name GEA Bock stands worldwide for compressor technology with the highest level of quality.

The goal of quality leadership in all product areas has always been at the centre of our company philosophy in our over 75-year history.

Today, permanent optimisation of quality, not just on the product but in all areas, is the core of GEA Bock's company strategy.

GEA Bock meets the requirements of DIN EN ISO 9001:2008, certified through DQS, as well as numerous additional European and globally recognised standards.

In addition, GEA Bock maintains a system of internal company standards, which go well beyond public regulations in many points.

### Certified quality from GEA Bock



## Semi-hermetic GEA Bock Compressors

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*We live our values.*

Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 index.

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