Semi-hermetic GEA Bock Compressors

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

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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Characteristics semi-hermetic GEA Bock compressors I 1
Single-stage semi-hermetic GEA Bock compressors I 2
Two-stage semi-hermetic GEA Bock compressors I 3
Service - Made by GEA Bock I 4

GEA Bock - More than a compressor

Over 80 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.

As part of the GEA Group AG, GEA Bock offers the right compressor for refrigeration and air conditioning in all commercial, industrial, rail, bus and transport sectors.

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.

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Production Program

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
- CO_2 compressors subcritical
- CO_2 compressors transcritical
- R134a compressors
- R407C compressors
- ATEX compressors
- HC compressors
- Aluminium compressors
- 2-pole compressors
- Two-stage compressors
- Duplex compressors
- Compressor units with receiver
- Condenser units air-cooled

Vehicle compressors FK

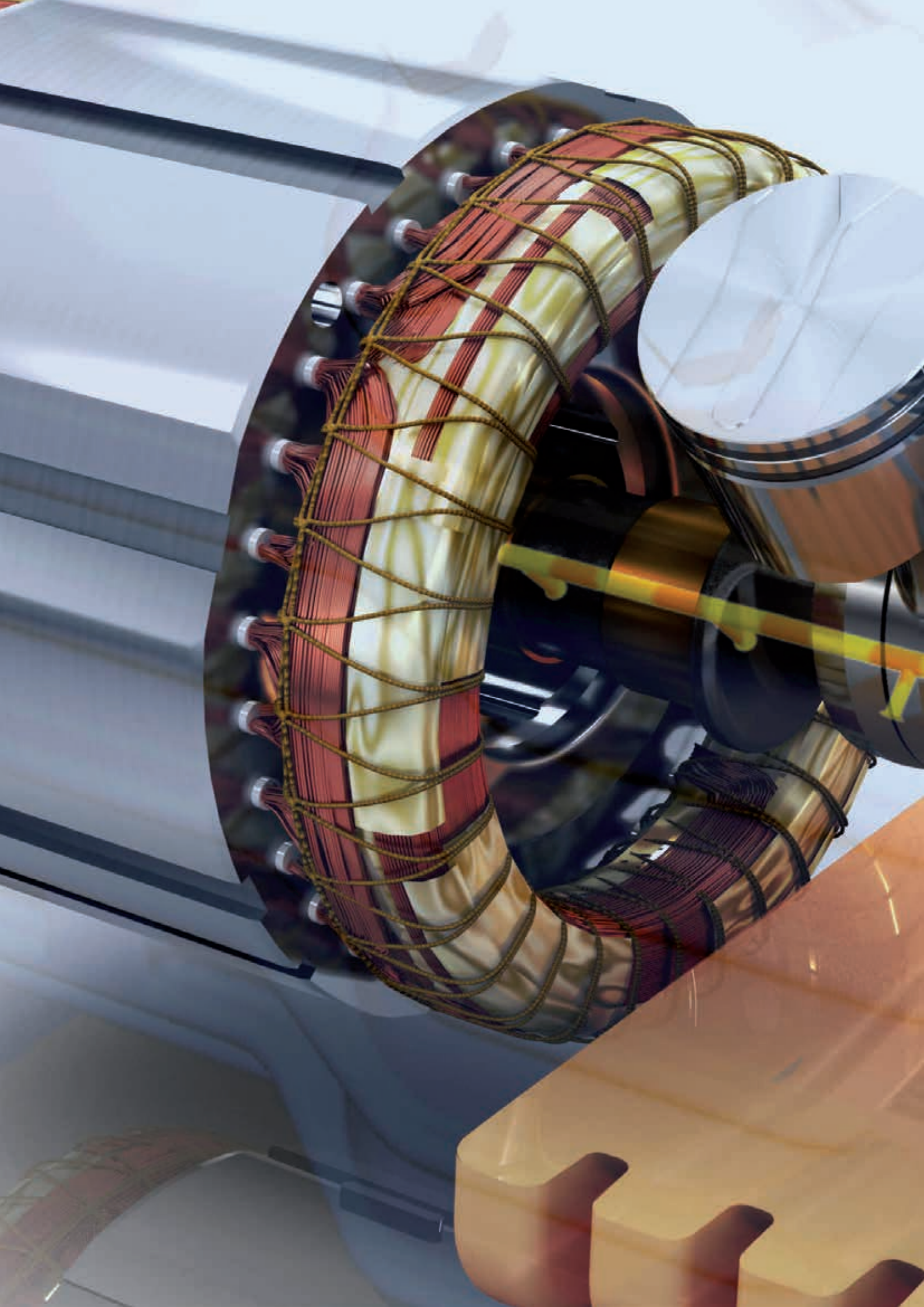
GEA Bock vehicle compressors of the FK range are the result of many years of experience in the domain of mobile cooling systems.
The unsurpassed light, compact, robust design and wide r.p.m. range are only some of the outstanding features of this unique product range of two, four and six cylinder compressors.
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.

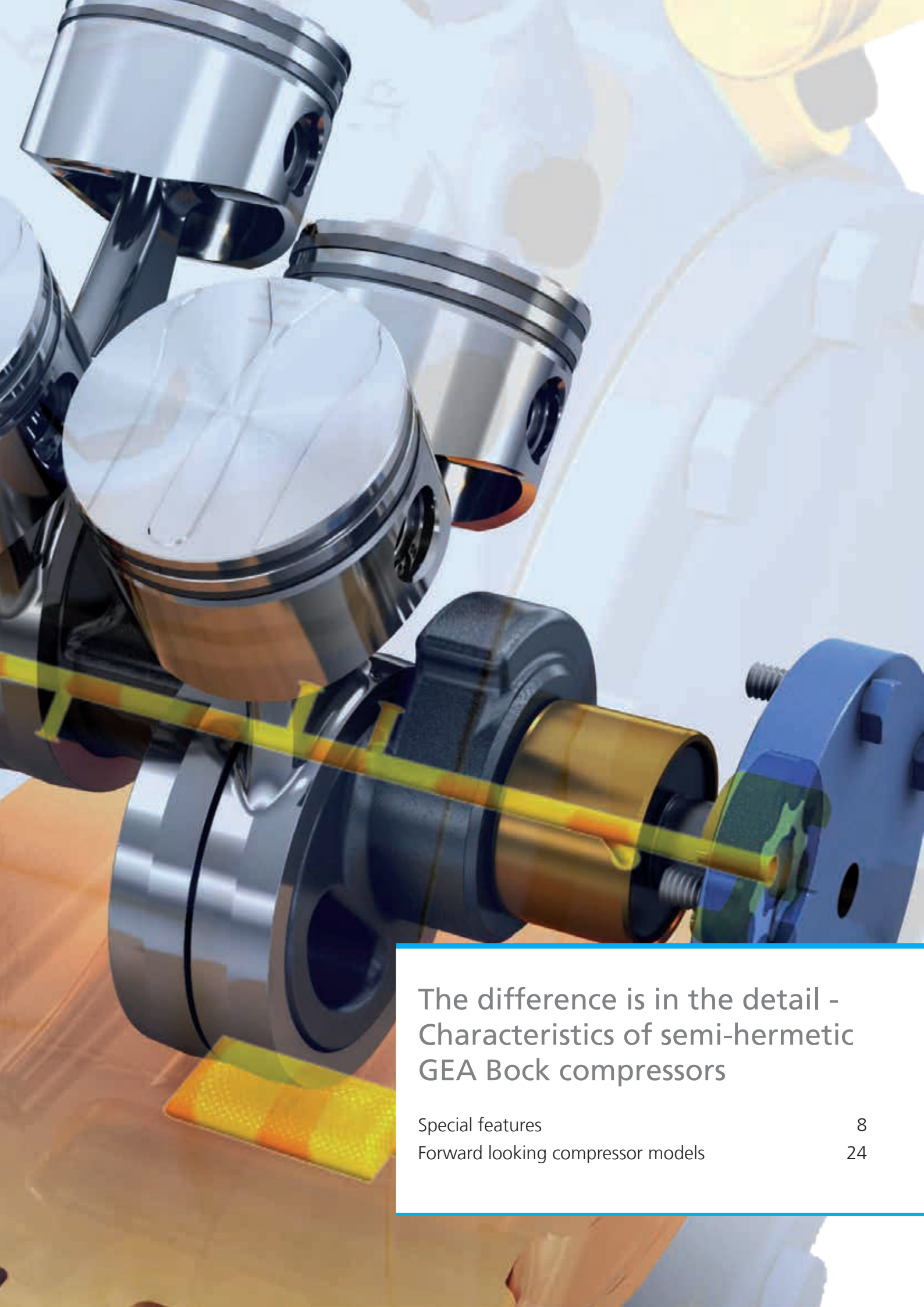
- Compressors for bus and train air-conditioning
- Compressors for transport refrigeration and other applications

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.

- F compressors
- F NH_3 compressors
- Compressor units for direct drive
- NH_3 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 24

Special features

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.

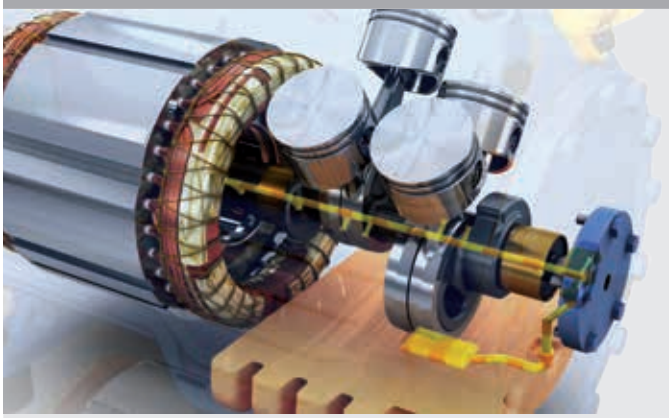
Minimum space requirement

Particularly low installation height and width

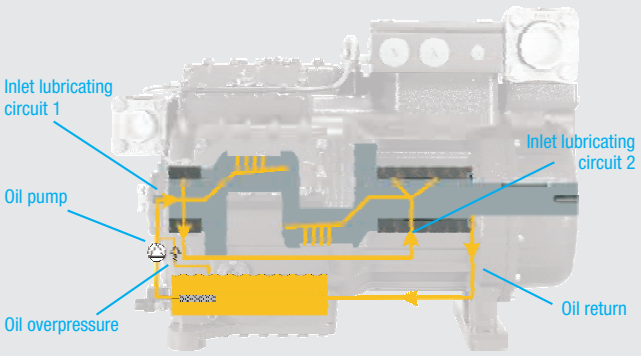
Quiet and low vibration

- Generously dimensioned crank mechanism
- Optimized mass balance
- Large volume pressure section for pulsation absorption
- 4 cylinder design from as little as 19 m³/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

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Special features

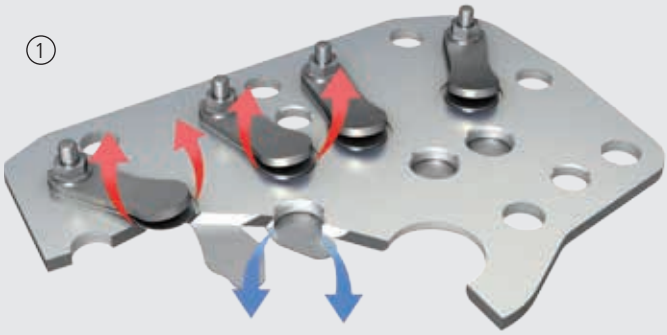
Wear-resistant durable driving gear

- 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 HG88e
- 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

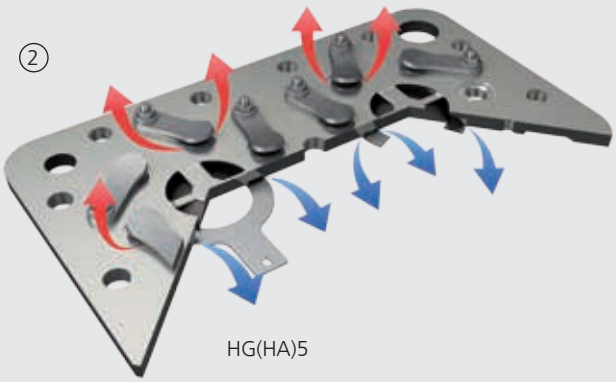
Solid construction and design

①



HG(HA)12-34
HG(HA)4

②



HG(HA)5

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

HG88e

With the mexxFlow® system pressure losses can be minimized thanks to a flow-optimized double ring fin construction of the valve plate in combination with a cylinder head, which is specially adapted to the valve plate. Thus, the efficiency of the compressor can be increased considerably.

Special features

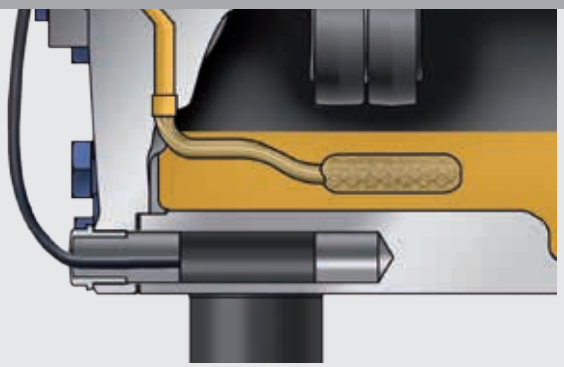
Variable suction line valve position (HG)

4 cylinder

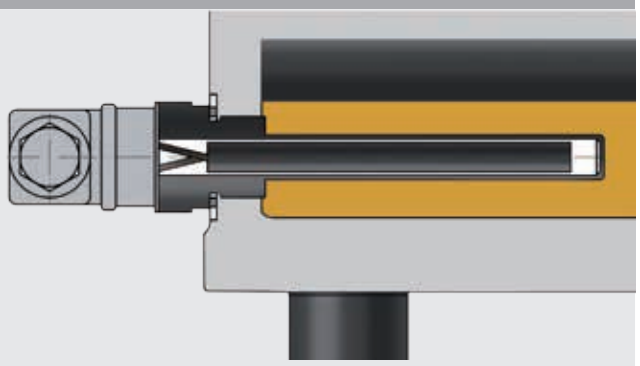
8 cylinder

- 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 HG88e
- Immersion case design
- Replacement without opening the refrigerating circuit

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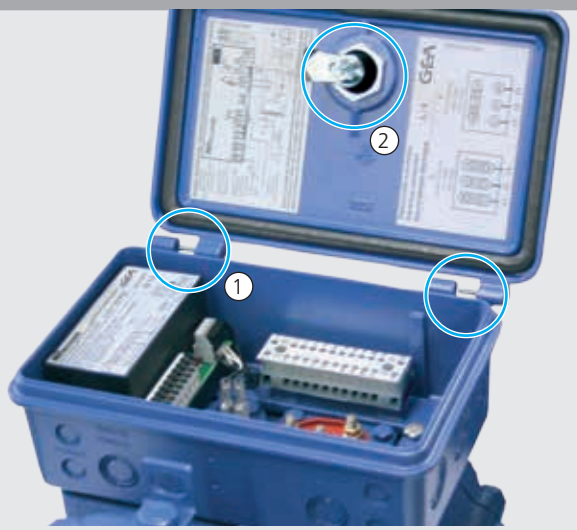
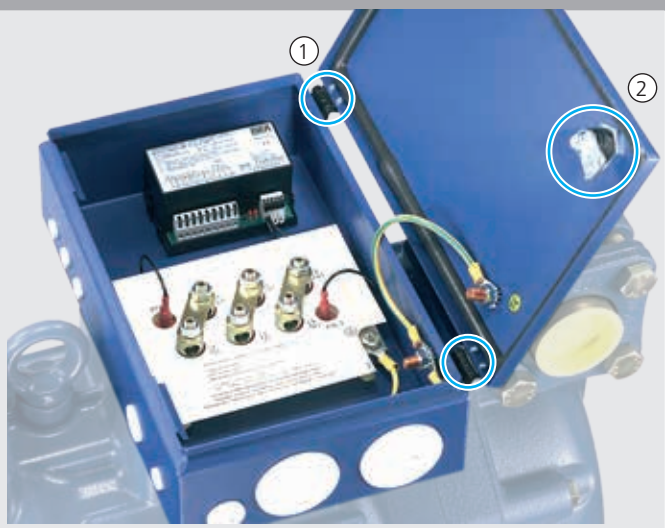
Special features

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
- Protection system: IP65

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.

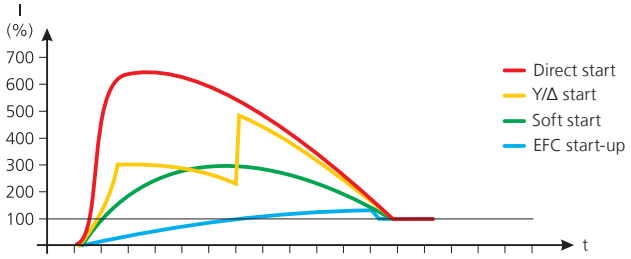
In December 2009, the EFC system received the BMU (German Environment Ministry) Climate Protection Innovation Award in Refrigeration Technology from the German Minister for Environment.

Klima schutz – DIE BMU KLIMASCHUTZ-INITIATIVE

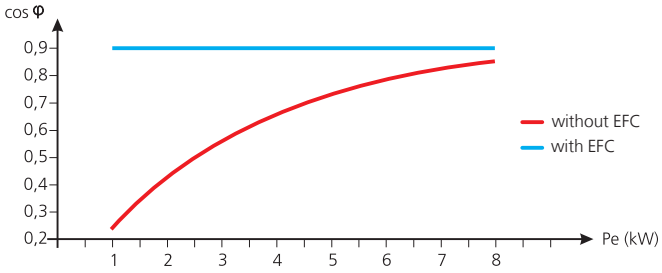
The advantages of frequency-converter operation:

- 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

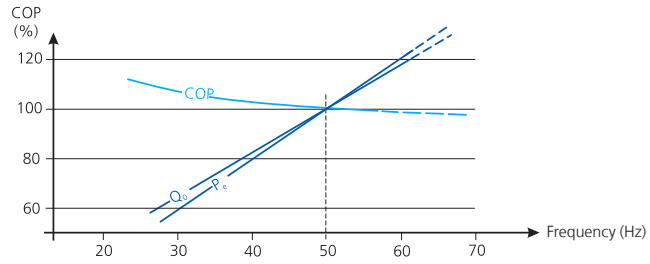
Start-up current with and without EFC



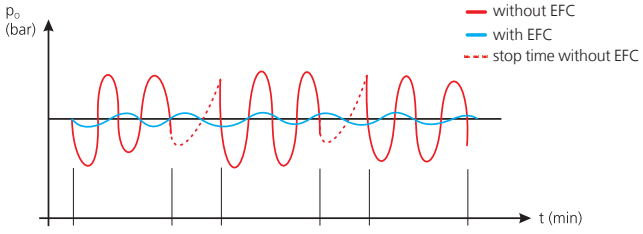
Engine performance factor (cos φ) with and without EFC



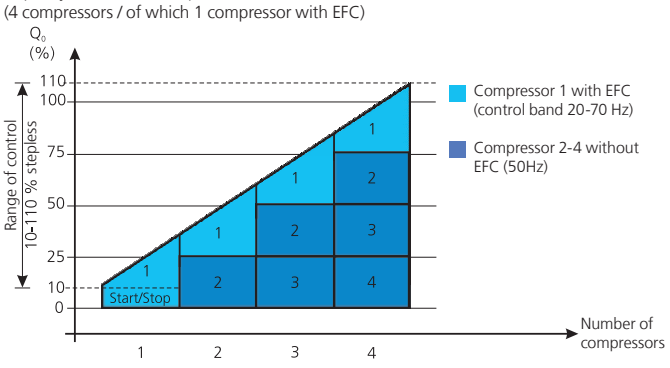
COP behaviour with EFC



Start/stop behaviour with and without EFC



Capacity control in rack operation
(4 compressors / of which 1 compressor with EFC)



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EFC System
Electronic Frequency Control

EFC versions

Single compressors

HG12P, HA12P, HG22e, HA22P, HG34e, HA34P

Duplex compressors

DHG12P, DHA12P, DHG22e, DHA22P, DHG34e, DHA34P

Type key - EFC System

EFC 7,5 / A1

- Software version [2)]
- Capacity [1)]
- Electronic Frequency Control

[1)] Capacity - Product selection

Compressor	EFC 2,2 kW	EFC 4,0 kw	EFC 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 [1)] mounted on the compressor
- Programming and readout hand-held terminal with connecting cable

[2)] 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:

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

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:

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

$\dot{Q}_{0\ operation}$ = Refrigerating capacity at the chosen operating point [W]

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

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

ⓘ As a rule, the maximum permissible power consumption of the compressor Pmax 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.

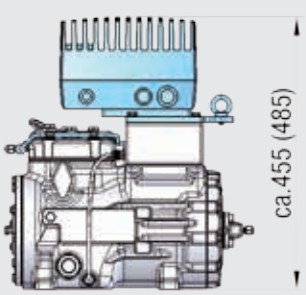
Technical data, EFC

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 [1]	30 - 70 Hz	30 - 70 Hz	25 - 70 Hz

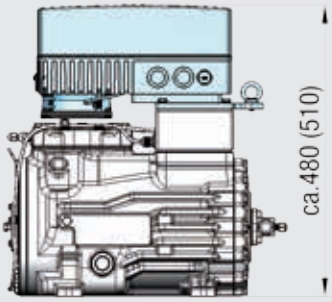
[1] The specified control ranges may vary depending on the operating condition and system structure.

Dimensional variations with the EFC system

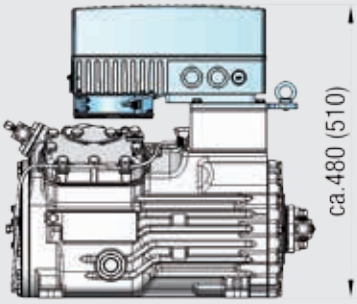
HG(HA)12P



HG22e, HA22P



HG34e, HA34P



Dimensions in ( ) = HA version

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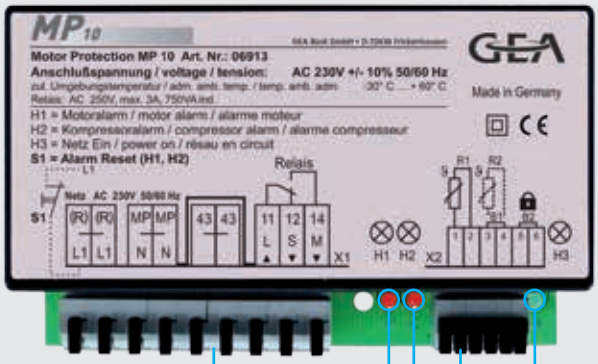
MP10 – Motor Protection

MP10 Electronic Motor Protection



Supply section
Cable connections
with screwless terminalsen

Red LED
Temperature fault in motor

Red LED
Temperature fault (random
e.g. heat protection thermostat)

Green LED
Mains supply
available

Drive section
Cable connections by
screwless terminals

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.

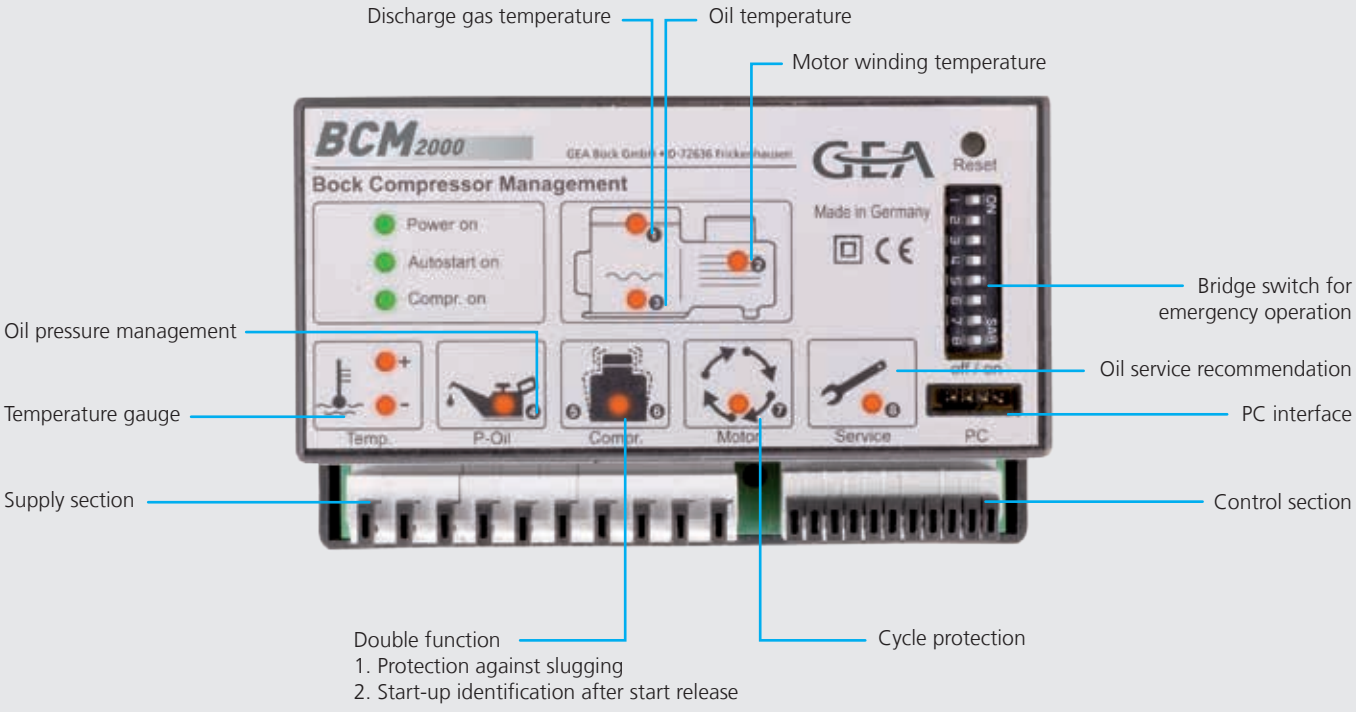
The MP10 also provides the usual functions as standard, e.g. a reconnection preventing device, a reset, free terminals for PTC temperature sensors (e.g. heat protection thermostat) and other useful items.

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
GEA Bock Compressor Management

GEA 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

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BCM2000
GEA Bock Compressor Management

Multifunctional management system

Available as an option for HG(HA)4, 5, 6, HG7 and HG88e.

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

INT69 G
Motor Protection

Electronic Motor Protection INT69 G

Temperature safety drive for the drive motor

The INT69 G is replacing, initially in the HG88e and in all future new developments, the MP10 compressors used as standard at GEA Bock.

The INT69 G also provides the usual functions, as:
- motor temperature monitoring
- hot gas temperature monitoring
- a reconnection preventing device
- a reset

Technical data, INT69 G

Unit designation	INT69 G
Connection voltage	AC 115-230 V - 1 - 50/60 Hz ± 10% 3 VA
Relay	AC 240 V, 2,5A, C300
Dimensions L/B/H	53 x 33 x 68 mm

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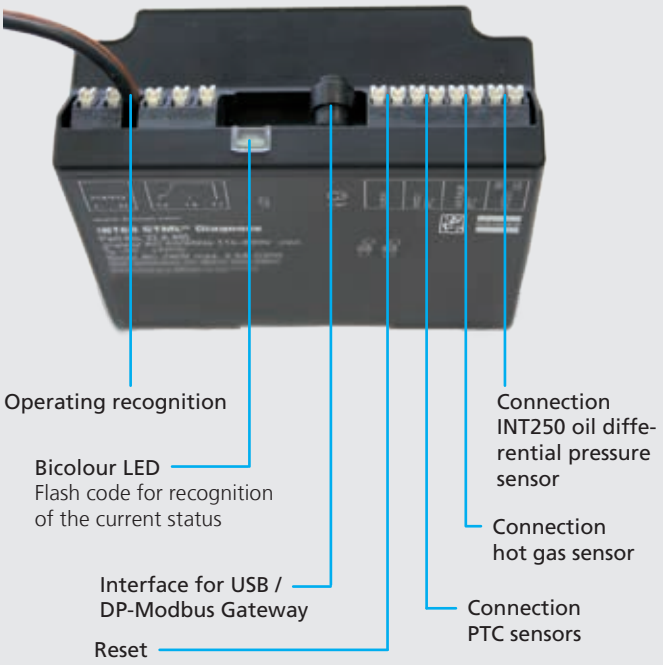
INT69 G Diagnosis Units
Motor Protection

INT69 GTML Diagnosis



Technical data, INT69 G Diagnose Units

Unit designation	INT69 GTML Diagnose
Connection voltage	AC 115-230 V - 1 - 50/60 Hz ± 10% 3 VA
Relay	AC 240 V, 2,5A, C300
Dimensions L/B/H	87 x 40 x 81,5 mm

INT69 G Diagnose Units Motor Protection

Multifunctional management system

The KRIWAN Diagnosis units are a further development of the reliable KRIWAN compressor protection units and optionaly available for HG88e and all following new developments.
GEA Bock offers with this diagnosis units a complete management system providing all the main functions for safe compressor operation with the possibility of remote access in a practical compact assembly, userfriendly and economical.
The INT69 G Diagnose units automatically saves operational and error data in a non-volatile memory. This data can be retrieved on a PC as needed and analysed for diagnosis.
Both diagnosis units are provided with additional inputs for hot gas sensor. The INT69 GTML Diagnose unit also has inputs for the INT250 oil differential pressure sensor. Its additional flexible-response protective functions help to extend the service life of a refrigeration system.

Simple electrical connection

- All monitoring functions are wired ready for operation
- Simple integration of the INT69 G Diagnose units into the control circuit
- The cable connections from the INT69 GTML Diagnose units have screwless terminals

Other important functions

Monitoring of discharge gas temperature, motor winding temperature, oil pressure (only for INT69 GTML Diagnose) and cycle protection.

Reliable and economical

- Intelligent monitoring of the various functions including operating hour metering
- Simple recognition of the current status using an optical flash code on the INT69 GTML Diagnose units
- 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
- USB readout via USB converter
- Remote scanning possible via additional DP-Modbus Gateway / LAN-Gateway

Read facility via INTspector diagnosis app for android smartphones

The KRIWAN diagnosis app INTspector enables the LED flash code on the INT69 GTML Diagnose unit to be read out and the error code interpreted. The INTspector diagnosis software can be downloaded for free at www.kriwan.com
Advantages:
- Simple, intuitive use
- Instant diagnosis
- Datasheet retrieval

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INT69 G Diagnose Units
Motor Protection

Read facility via INTelligence diagnosis software

With the INTelligence software, valuable information can be obtained on the status of the compressor and the system. The diagnosis function includes the plausibility checks of the logic sequences, all important operation and error values of the compressor and provides for its clear visualization.

Crucial evaluation parameters can be configured individually. This allows for a quick analysis and an efficient system management.

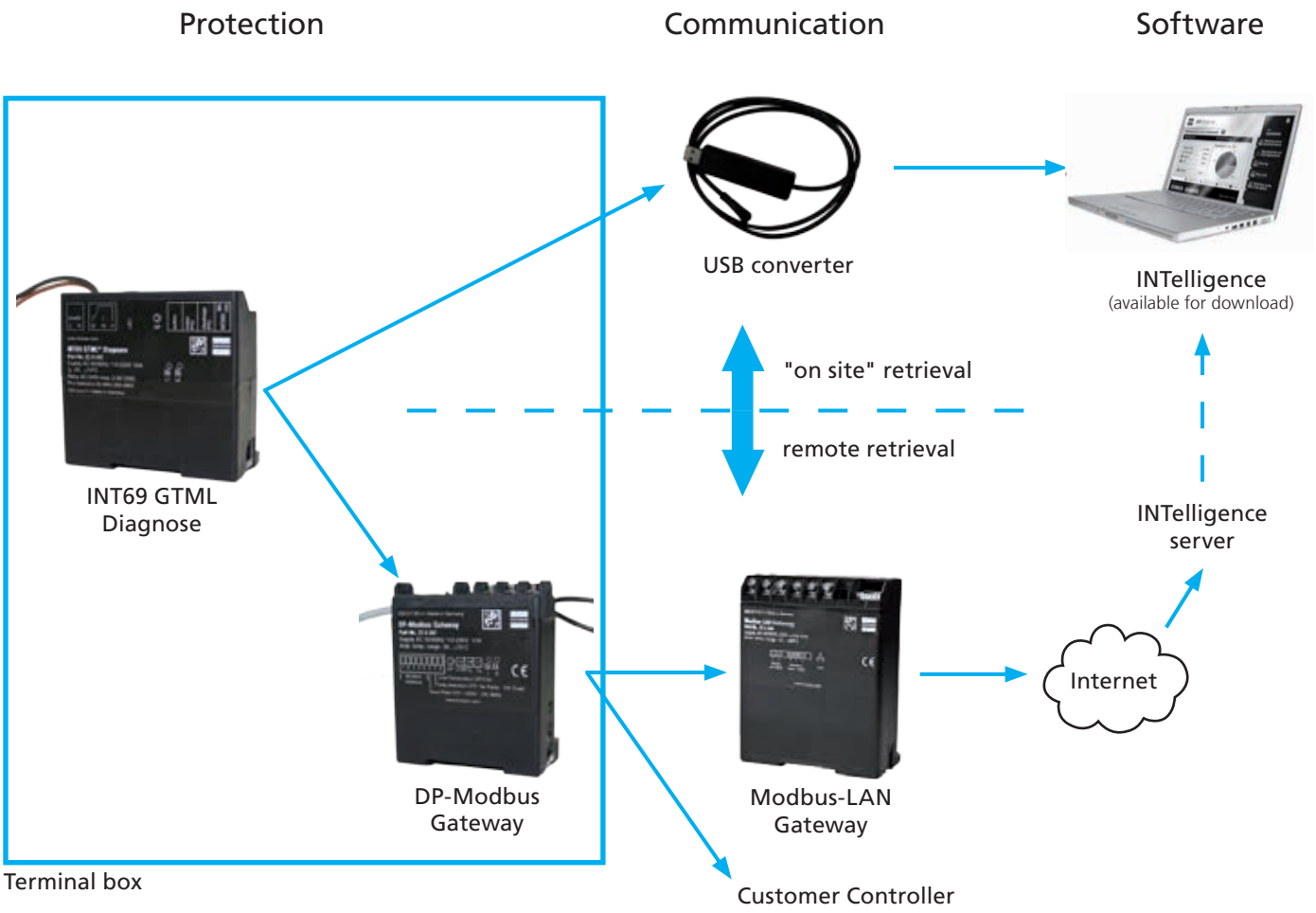
Advantages:

- Simple operation
- Immediate diagnosis and precise problem solving
- Specially adaptable to the user's needs

If required, data can be retrieved directly at each compressor via USB port. A Modbus interface is available for integration in a network.

The data are sent periodically via the DP-Modbus gateway and the Modbus-LAN gateway to a server and can be retrieved remotely by the INTelligence diagnosis software.

The INTelligence diagnosis software can be downloaded for free at www.kriwan.com.



Further explanation can be found at www.kriwan.com.
In the event of inquiries please contact our Department for Application Technology, phone +49 7022 9454-0.

ESS System
Electronic Soft Start

Start unloader with the ESS (option)

ESS (**E**lectronic **S**oft **S**tart)

- 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

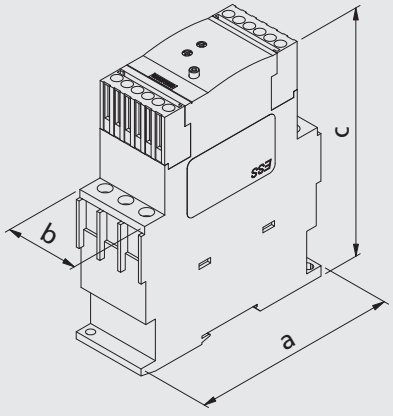
Available as option for:
HG22e, HA22P, HG34e, HA34P
HG(HA)4, 5, 6
HG7

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

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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 [1]					● ●
HG7/2110-4 [1]					●

[1] up to max. +40 °C ambient temperature

Technical data, ESS

Unit designation	Protection	Max. output current [1]	Input	Lost heat	Dimensions a / b / c
ESS 25	IP 20 Connectors IP00	25 A	AC 400 V -3- 50/60 Hz	8 W	125 x 45 x 150
ESS 38		38 A		19 W	125 x 45 x 150
ESS 63		63 A		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

[1] at +50 °C ambient temperature

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.

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_2 Compressors subcritical
for subcritical cascade systems

CO_2 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	HG88e
HA compressors	●	●	●	●	●	●		
CO_2 compressors subcritical	●	●	●	●				
CO_2 compressors transcritical			●					
HC compressors	●	●	●	●	●	●	●	●
R134a compressors				●	●	●	●	
ATEX compressors	●	●	●	●	●	●		
2-pole compressors aluminium			●					
2-pole compressors cast iron			●					
4-pole compressors aluminium		●	●					
R407C compressors			●					

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HA System
Hermetic Air-cooled

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

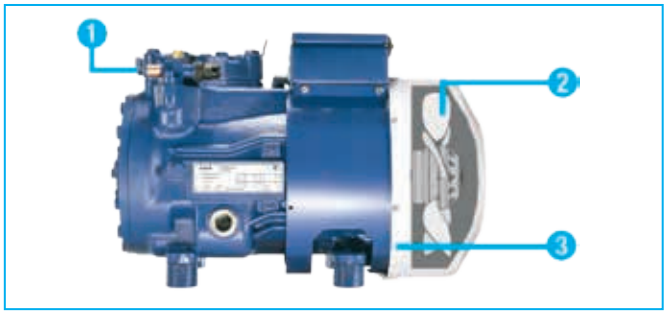
Available for all 2 and 4 cylinder versions.

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.

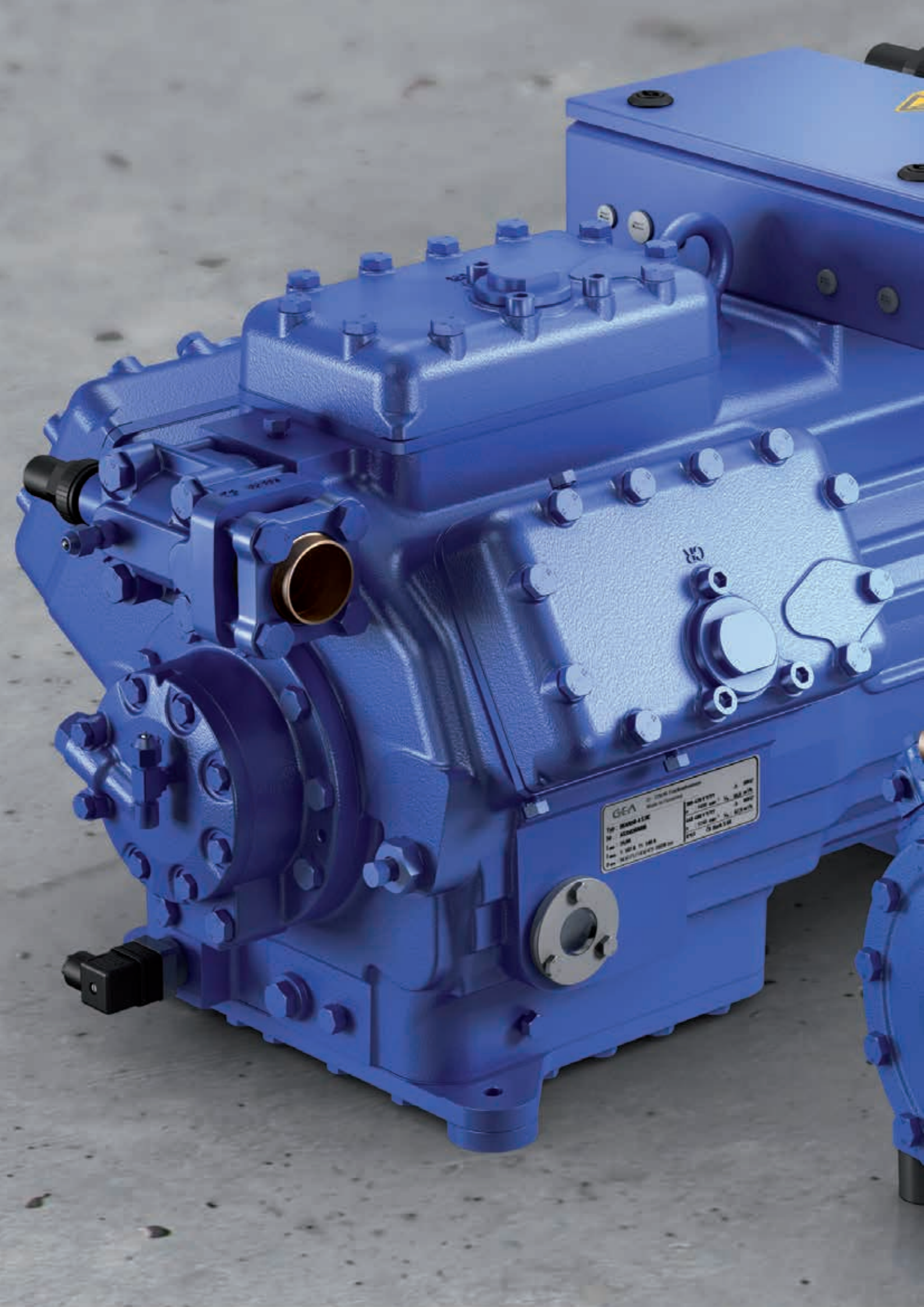
The unique "GEA Bock HA principle" prevents this. The drive motor is air-cooled and compressor suction is direct. The suction gas is not heated by the motor, but is fed directly to the compressor without being diverted through the motor. The motor is cooled by a compact integrated ventilation unit. Its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



Single-stage semi-hermetic GEA Bock compressors

At a glance	28
Special features	29
Operating limits and performance data	30
Technical data	52
Dimensions and connections	54
Scope of supply and accessories	65

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

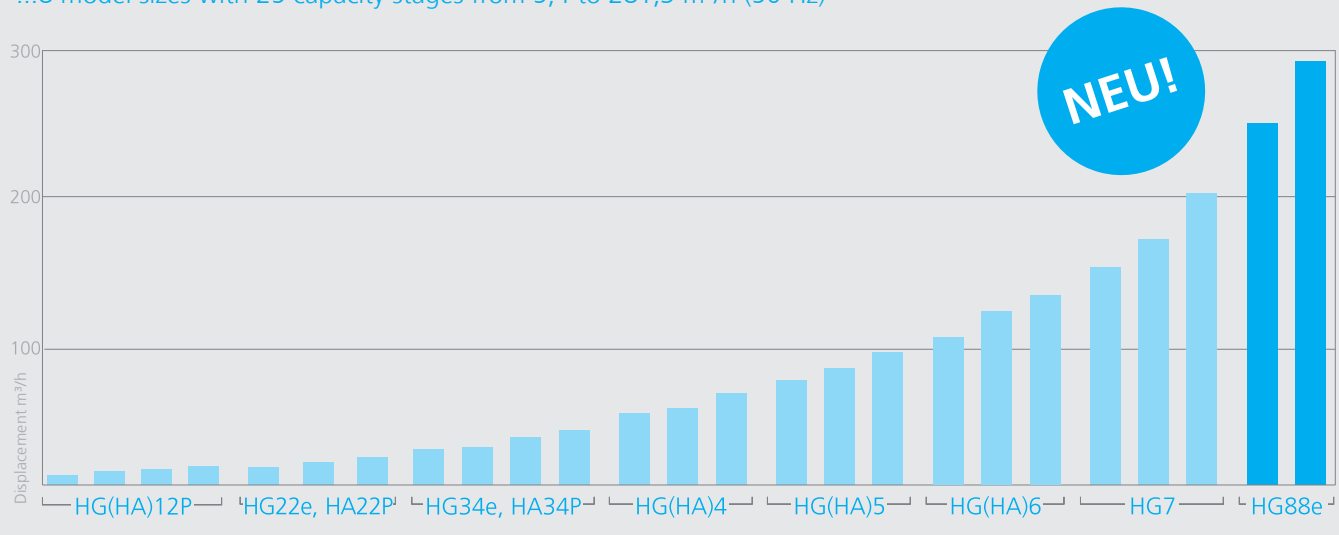
HA (Hermetic Air-cooled)
Special GEA Bock design for deep-freezing (R22/R404A) with an air-cooled motor and direct suction at the cylinder.

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
- 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** (**H**ermetic **A**ir-cooled), air-cooled compressors for deep-freezing applications
- **CO_2** Compressors (subcritical), for subcritical cascade systems
- **CO_2** Compressors (transcritical), for transcritical CO_2 applications
- **ATEX** (**AT**mospheres **EX**plosibles), for explosion-risk environments

The current program
...8 model sizes with 25 capacity stages from 5,4 to 281,3 m³/h (50 Hz)



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Special features

Type key

HGX34e / 215 - 4 S

- Motor variant [4]
- Number of poles
- Swept volume
- Series [3]
- Number of cylinders
- Size
- Ester oil filling [2]
- Series [1]

[1] HG = Hermetic Gas-Cooled (suction gas-cooled)
HA = Hermetic Air-Cooled (for deep-freezing)

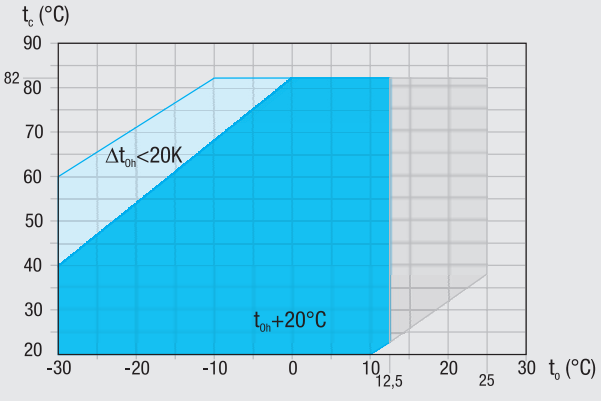
[2] X = Ester oil filling
(HFC refrigerants e.g. R134a, R404A, R507, R407C)

[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

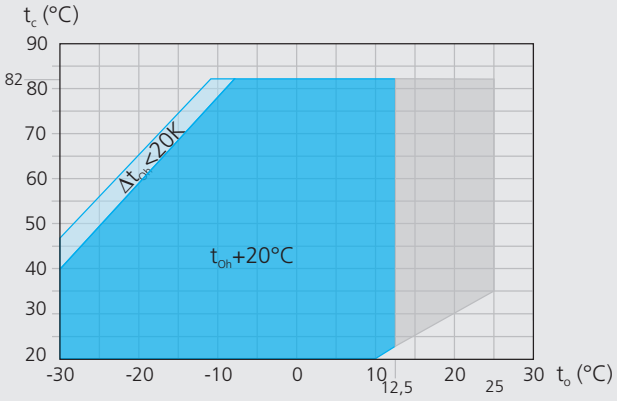


Unlimited application range

Supplementary cooling or reduced suction gas temperature

Motor version -S- (more powerful motor)

HGX88e



t_O Evaporating temperature (°C)
t_C Condensing temperature (°C)
Δt_{Oh} Suction gas superheat (K)
t_{Oh} Suction gas temperature (°C)

[1] LP = low pressure HP = high pressure

Max. permissible operating pressure (LP/HP)[1]: 19/28 bar

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 EFC (Electronic Frequency Control).
Further explanation see www.gea.com

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 HGX88e 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

CERTIFIED PRODUCT
ASERCOM

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 GEA Bock compressors can be found at www.asercom.org and www.gea.com.

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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
HGX12P/60-4 S	30	Q	4920	4486	4078	3697	3009	2415	1908	1480	1125	836	605
		P	0,70	0,71	0,71	0,71	0,68	0,65	0,60	0,54	0,49	0,44	0,40
	40	Q	4254	3874	3518	3185	2585	2066	1622	1246	931	670	455
		P	0,85	0,84	0,83	0,81	0,77	0,71	0,65	0,59	0,54	0,49	0,45
	50	Q	3620	3292	2985	2698	2181	1734	1349	1021	742	504	302
		P	0,99	0,97	0,94	0,91	0,85	0,77	0,70	0,63	0,57	0,52	0,49
	60	Q	3018	2740	2480	2237	1799	1419	1090	806	558	340	145
		P	1,12	1,08	1,04	1,00	0,91	0,82	0,74	0,66	0,59	0,55	0,52
	70	Q	2450	2220	2004	1804	1441	1124	846	601	381		
		P	1,23	1,18	1,12	1,07	0,96	0,85	0,75	0,66	0,60		
HGX12P/75-4	30	Q	6147	5604	5095	4619	3760	3017	2383	1849	1405	1044	756
		P	0,88	0,89	0,89	0,88	0,85	0,81	0,75	0,68	0,61	0,55	0,50
	40	Q	5315	4840	4395	3979	3229	2581	2027	1557	1163	837	569
		P	1,06	1,05	1,04	1,02	0,96	0,89	0,82	0,74	0,67	0,61	0,57
	50	Q	4523	4113	3729	3371	2725	2166	1686	1276	927	630	377
		P	1,24	1,21	1,18	1,14	1,06	0,97	0,88	0,79	0,71	0,65	0,62
	60	Q	3770	3423	3098	2795	2248	1773	1362	1006	697	425	182
		P	1,40	1,35	1,30	1,25	1,14	1,03	0,92	0,82	0,74	0,68	0,65
	70	Q	3060	2773	2504	2253	1800	1404	1058	751	476		
		P	1,53	1,47	1,40	1,33	1,19	1,06	0,94	0,83	0,74		
HGX12P/90-4	30	Q	7295	6663	6069	5511	4501	3623	2869	2229	1696	1259	911
		P	1,09	1,11	1,12	1,13	1,11	1,06	1,00	0,92	0,83	0,74	0,65
	40	Q	6377	5811	5280	4782	3883	3104	2437	1872	1402	1016	707
		P	1,34	1,34	1,32	1,30	1,24	1,16	1,06	0,96	0,85	0,74	0,65
	50	Q	5481	4981	4513	4075	3286	2606	2025	1535	1127	792	521
		P	1,60	1,57	1,53	1,49	1,39	1,27	1,14	1,01	0,89	0,77	0,67
	60	Q	4611	4176	3771	3393	2714	2132	1637	1222	876	591	358
		P	1,83	1,78	1,72	1,65	1,51	1,36	1,21	1,06	0,91	0,79	0,69
	70	Q	3771	3402	3059	2740	2172	1687	1279	937	652		
		P	2,01	1,93	1,85	1,76	1,59	1,40	1,23	1,06	0,90		
HGX12P/110-4	30	Q	8619	7858	7145	6477	5272	4231	3342	2593	1971	1464	1060
		P	1,23	1,24	1,25	1,24	1,20	1,13	1,05	0,95	0,86	0,78	0,71
	40	Q	7453	6787	6163	5580	4528	3619	2842	2183	1631	1173	797
		P	1,49	1,48	1,45	1,42	1,35	1,25	1,14	1,04	0,94	0,85	0,79
	50	Q	6342	5767	5229	4726	3820	3037	2364	1789	1299	883	528
		P	1,74	1,70	1,65	1,60	1,48	1,36	1,23	1,11	1,00	0,92	0,87
	60	Q	5287	4800	4344	3919	3152	2486	1910	1411	977	596	255
		P	1,96	1,89	1,82	1,75	1,60	1,44	1,29	1,15	1,04	0,96	0,91
	70	Q	4291	3888	3511	3159	2524	1969	1483	1053	667		
		P	2,15	2,06	1,96	1,87	1,68	1,49	1,31	1,16	1,04		
HGX22e/125-4	30	Q	10200	9270	8440	7660	6220	4960	3860	2930	2160	1550	1090
		P	1,30	1,35	1,38	1,39	1,39	1,34	1,25	1,14	1,02	0,891	0,765
	40	Q	8990	8200	7450	6740	5440	4300	3310	2480	1790	1260	860
		P	1,69	1,70	1,69	1,67	1,59	1,48	1,35	1,20	1,05	0,903	0,769
	50	Q	7800	7090	6420	5780	4630	3620	2750	2020	1440	978	657
		P	2,02	1,98	1,94	1,88	1,75	1,59	1,41	1,24	1,06	0,908	0,773
	60	Q	6570	5950	5360	4810	3810	2940	2200	1590	1110	744	504
		P	2,27	2,21	2,13	2,04	1,86	1,66	1,45	1,25	1,07	0,909	0,783
	70	Q	5330	4800	4310	3840	3000	2280	1690	1200	829		
		P	2,48	2,38	2,27	2,16	1,93	1,70	1,47	1,25	1,06		
HGX22e/160-4	30	Q	12800	11600	10600	9560	7780	6240	4920	3810	2870	2110	1490
		P	1,63	1,65	1,66	1,65	1,63	1,59	1,51	1,41	1,29	1,15	0,983
	40	Q	11200	10200	9200	8330	6750	5390	4230	3240	2410	1730	1160
		P	2,07	2,05	2,03	2,00	1,92	1,81	1,68	1,53	1,36	1,17	0,962
	50	Q	9640	8760	7930	7170	5780	4580	3560	2680	1940	1310	783
		P	2,46	2,41	2,36	2,29	2,15	1,99	1,80	1,60	1,38	1,14	0,884
	60	Q	8230	7460	6730	6060	4840	3790	2880	2100	1430	844	335
		P	2,80	2,72	2,63	2,54	2,33	2,11	1,87	1,61	1,34	1,04	0,744
	70	Q	6880	6210	5580	4990	3930	3000	2190	1490	862		
		P	3,09	2,97	2,85	2,72	2,45	2,17	1,87	1,56	1,23		
HGX22e/190-4	30	Q	15300	14000	12900	11700	9630	7800	6180	4790	3610	2640	1870
		P	2,04	2,06	2,06	2,05	2,00	1,92	1,80	1,65	1,48	1,29	1,09
	40	Q	13600	12500	11400	10400	8460	6810	5360	4110	3060	2200	1530
		P	2,59	2,55	2,51	2,46	2,33	2,17	1,98	1,78	1,57	1,34	1,11
	50	Q	11900	10800	9840	8940	7270	5800	4520	3430	2520	1790	1220
		P	3,09	3,01	2,92	2,83	2,62	2,39	2,14	1,89	1,63	1,37	1,12
	60	Q	10100	9160	8320	7520	6070	4800	3700	2770	2010	1410	959
		P	3,54	3,41	3,28	3,14	2,86	2,56	2,26	1,96	1,66	1,37	1,10
	70	Q	8280	7510	6790	6110	4880	3810	2900	2150	1540		
		P	3,91	3,74	3,57	3,39	3,03	2,68	2,32	1,97	1,64		

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

Supplementary cooling or reduced suction gas temp.

Performance data

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

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

[1] Compressors are ASERCOM certified

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

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

Supplementary cooling or reduced suction gas temp.

Performance data

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
		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
		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
		P		28,92	28,36	27,68	26,89	25,05	22,94	20,65	18,31	16,00	13,83	11,91
	60	Q		94985	86063	77780	70105	56451	44847	35037	26768	19786	13835	8662
		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		
		P		36,71	35,38	33,98	32,51	29,45	26,31	23,18	20,16	17,37		
HGX7/2110-4	30	Q		158685	144949	132106	120119	98571	80016	64164	50725	39411	29932	21997
		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
		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
		P		32,90	32,26	31,49	30,59	28,50	26,10	23,50	20,83	18,20	15,74	13,55
	60	Q		108072	97921	88497	79764	64229	51026	39864	30456	22512	15741	9855
		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		
		P		41,77	40,25	38,66	36,99	33,51	29,93	26,37	22,94	19,77		
HGX88e/2735-4	30	Q		232000	211000	192000	174000	141000	113000	88900	69000	52500	39100	28500
		P		30,10	30,10	29,90	29,50	28,30	26,70	24,70	22,50	20,10	17,70	15,40
	40	Q		205000	186000	169000	153000	123000	98000	76800	59000	44300	32400	22800
		P		37,10	36,50	35,60	34,70	32,50	29,90	27,10	24,10	21,20	18,40	15,80
	50	Q		178000	161000	146000	131000	106000	83500	65000	49600	36900	26400	
		P		43,30	42,00	40,60	39,10	35,90	32,50	29,00	25,40	22,00	18,90	
	60	Q		150000	136000	123000	110000	88000	69400	53800	40800	30000		
		P		48,50	46,70	44,80	42,80	38,70	34,50	30,40	26,30	22,60		
	70	Q		123000	111000	99500	89200	71000	55700	43000	32500			
		P		52,80	50,50	48,10	45,70	40,80	36,00	31,30	26,80			
HGX88e/3235-4	30	Q		275000	250000	227000	205000	166000	133000	105000	81300	62100	46600	34500
		P		37,80	37,20	36,40	35,60	33,70	31,40	28,90	26,20	23,40	20,70	18,00
	40	Q		242000	219000	199000	180000	145000	116000	90600	69900	52800	39000	27900
		P		45,10	43,90	42,60	41,30	38,30	35,10	31,80	28,40	25,00	21,70	18,60
	50	Q		209000	189000	171000	154000	124000	98200	76700	58700	43800	31500	
		P		51,90	50,20	48,30	46,40	42,50	38,40	34,20	30,10	26,00	22,20	
	60	Q		176000	159000	143000	129000	103000	81200	62900	47600	34800		
		P		57,90	55,50	53,10	50,70	45,70	40,70	35,70	30,90	26,20		
	70	Q		143000	129000	116000	104000	82200	64300	49200	36600			
		P		62,60	59,70	56,70	53,80	47,80	41,90	36,10	30,50			

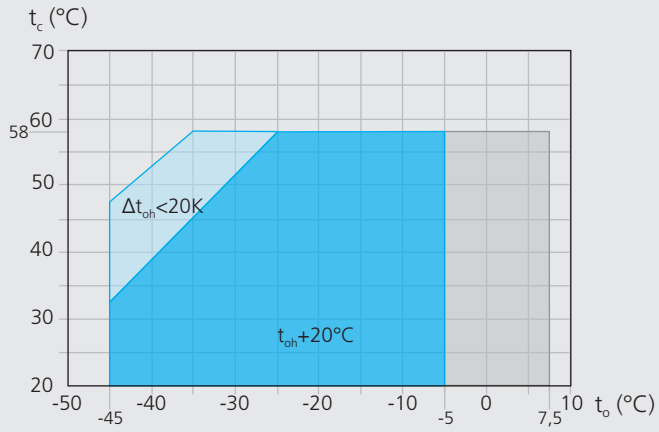
Relating to 25 °C suction gas temperature
(HGX88e to 20 °C suction gas temperature)
without liquid subcooling

Supplementary cooling or reduced suction gas temp.

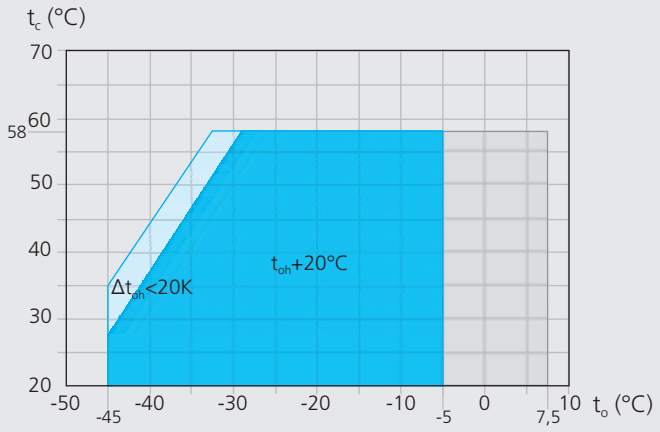
96215-10.2014-Gb Subject to change without notice

R404A/R507 Operating limits

HGX12P / HGX22e / HGX34e
HGX4 / HGX5 / HGX6① / HGX7

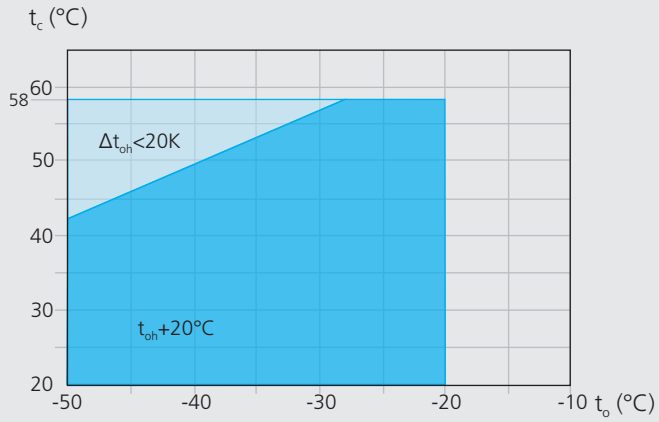


HGX88e

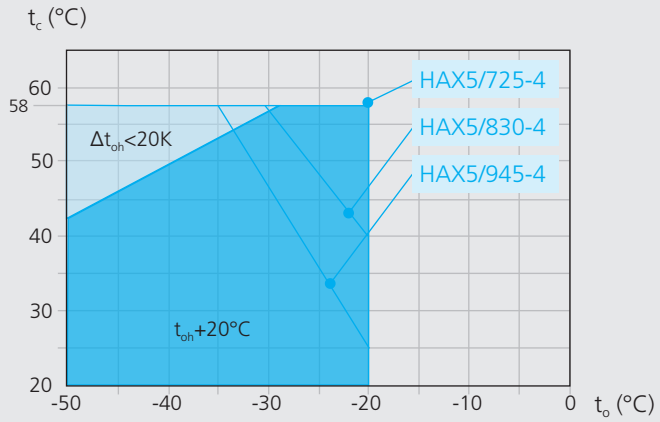


① **HGX6/1410-4S** Maximum evaporating temperature t_O = 2 °C
HGX6/1410-4 Maximum evaporating temperature t_O = -7 °C

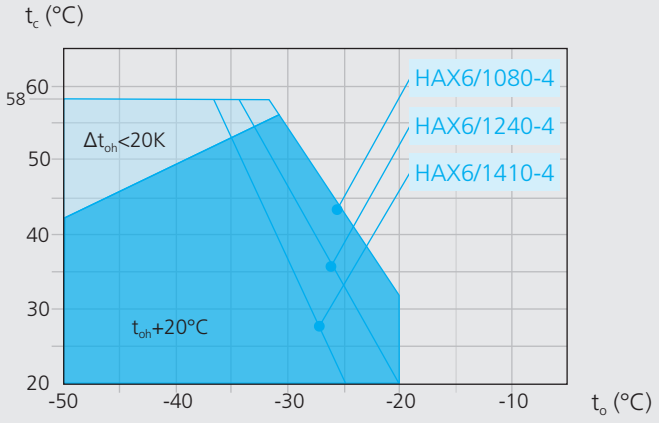
HAX12P / HAX22P / HAX34P / HAX4



HAX5



HAX6



Max. permissible operating pressure (LP/HP)[1]: 19/28 bar

[1] LP = low pressure HP = high pressure

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 (°C)
t_C Condensing temperature (°C)
Δt_{Oh} Suction gas superheat (K)
t_{Oh} Suction gas temperature (°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 EFC (Electronic Frequency Control).
Further explanation see www.gea.com.

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 GEA Bock compressors can be found at www.asercom.org and www.gea.com.

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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
HGX12P/60-4 S [1]	30	Q	6535	5989	4990	4108	3336	2667	2094	1610	1207	878	616	414
		P	1,20	1,22	1,23	1,20	1,15	1,08	1,00	0,91	0,81	0,71	0,62	0,53
	40	Q	5537	5060	4191	3428	2764	2193	1706	1297	959	684	465	296
		P	1,49	1,48	1,43	1,37	1,28	1,18	1,06	0,95	0,83	0,71	0,61	0,52
	50	Q	4535	4128	3390	2748	2195	1723	1324	993	722	503	329	
		P	1,72	1,69	1,60	1,49	1,37	1,24	1,10	0,96	0,83	0,70	0,59	
HAX12P/60-4	30	Q							2327	1851	1442	1097	809	573
		P							1,04	0,95	0,86	0,75	0,66	0,56
	40	Q							1956	1538	1182	883	635	435
		P							1,12	1,00	0,88	0,76	0,65	0,54
	50	Q							1582	1223	921	670	465	301
		P							1,18	1,04	0,89	0,75	0,62	0,51
HGX12P/75-4 [1] HGX12P/75-4 S [1]	30	Q	8160	7498	6284	5227	4288	3469	2764	2164	1661	1246	911	648
		P	1,52	1,54	1,55	1,50	1,45	1,37	1,26	1,15	1,03	0,91	0,79	0,68
	40	Q	6934	6357	5304	4419	3606	2902	2299	1789	1364	1015	734	513
		P	1,91	1,89	1,83	1,73	1,63	1,50	1,37	1,23	1,08	0,94	0,81	0,69
	50	Q	5729	5238	4345	3632	2945	2355	1855	1435	1087	804	577	
		P	2,21	2,17	2,05	1,92	1,78	1,62	1,45	1,29	1,12	0,96	0,82	
HAX12P/75-4	30	Q							2888	2296	1789	1361	1004	711
		P							1,29	1,18	1,06	0,94	0,81	0,70
	40	Q							2427	1908	1466	1095	788	540
		P							1,39	1,25	1,10	0,95	0,80	0,67
	50	Q							1962	1517	1143	831	577	374
		P							1,46	1,29	1,11	0,93	0,77	0,63
HGX12P/90-4 [1] HGX12P/90-4 S [1]	30	Q	9738	8948	7500	6085	5000	4052	3231	2529	1937	1446	1047	730
		P	1,85	1,86	1,86	1,78	1,69	1,58	1,46	1,32	1,18	1,03	0,89	0,75
	40	Q	8288	7600	6344	5145	4202	3381	2676	2075	1571	1155	817	549
		P	2,27	2,25	2,17	2,02	1,88	1,72	1,56	1,39	1,21	1,04	0,88	0,72
	50	Q	6863	6276	5212	4219	3418	2727	2137	1640	1226	886	611	
		P	2,66	2,60	2,46	2,25	2,06	1,85	1,65	1,44	1,24	1,04	0,86	
HAX12P/90-4	30	Q							3407	2698	2089	1574	1146	796
		P							1,56	1,43	1,29	1,15	1,00	0,86
	40	Q							2853	2229	1699	1254	889	596
		P							1,67	1,50	1,33	1,15	0,98	0,82
	50	Q							2287	1752	1303	932	633	399
		P							1,75	1,54	1,33	1,13	0,93	0,76
HGX12P/110-4 [1] HGX12P/110-4 S [1]	30	Q	11247	10345	8691	7218	5966	4868	3914	3094	2397	1814	1334	946
		P	2,17	2,18	2,16	2,15	2,05	1,92	1,76	1,59	1,41	1,23	1,05	0,88
	40	Q	9581	8796	7361	6125	5039	4091	3270	2567	1972	1473	1062	728
		P	2,65	2,62	2,53	2,47	2,30	2,10	1,89	1,68	1,46	1,25	1,05	0,88
	50	Q	7877	7211	6000	5010	4095	3301	2619	2039	1549	1141	803	
		P	3,12	3,05	2,89	2,74	2,50	2,25	1,99	1,73	1,49	1,26	1,05	
HAX12P/110-4	30	Q							4092	3265	2558	1960	1461	1051
		P							1,78	1,63	1,46	1,28	1,11	0,94
	40	Q							3451	2726	2109	1590	1159	806
		P							1,94	1,74	1,52	1,30	1,10	0,92
	50	Q							2809	2189	1664	1227	866	572
		P							2,05	1,80	1,55	1,30	1,07	0,88
HGX22e/125-4 HGX22e/125-4 S [1]	30	Q	13400	12400	10500	8790	7250	5870	4650	3590	2680	1920	1320	857
		P	2,19	2,23	2,26	2,24	2,16	2,03	1,88	1,69	1,49	1,28	1,07	0,878
	40	Q	11600	10700	8970	7460	6090	4880	3820	2900	2120	1490	992	640
		P	2,77	2,75	2,68	2,58	2,41	2,22	2,00	1,76	1,52	1,28	1,06	0,853
	50	Q	9650	8860	7390	6080	4910	3880	2990	2230	1610	1110	749	
		P	3,26	3,19	3,03	2,84	2,60	2,34	2,07	1,80	1,53	1,27	1,03	
HAX22P/125-4	30	Q							4728	3791	2981	2291	1715	1247
		P							1,92	1,71	1,51	1,32	1,13	0,94
	40	Q							3959	3158	2466	1876	1382	977
		P							2,09	1,84	1,60	1,37	1,14	0,92
	50	Q							3211	2538	1956	1458	1037	689
		P							2,22	1,92	1,64	1,37	1,10	0,83
HGX22e/160-4 HGX22e/160-4 S [1]	30	Q	16900	15600	13200	10900	8980	7320	5850	4560	3450	2510	1750	1170
		P	2,71	2,75	2,78	2,73	2,62	2,47	2,29	2,07	1,84	1,59	1,34	1,08
	40	Q	14500	13400	11200	9170	7540	6090	4810	3700	2750	1960	1330	851
		P	3,42	3,40	3,30	3,17	2,96	2,72	2,47	2,19	1,91	1,62	1,34	1,07
	50	Q	12100	11100	9150	7480	6090	4860	3790	2860	2090	1460	971	
		P	4,02	3,94	3,73	3,51	3,22	2,90	2,58	2,25	1,92	1,60	1,30	
HAX22P/160-4	30	Q							5837	4680	3680	2828	2118	1540
		P							2,37	2,11	1,87	1,63	1,40	1,17
	40	Q							4888	3899	3044	2316	1706	1207
		P							2,58	2,27	1,98	1,69	1,41	1,14
	50	Q							3964	3134	2414	1799	1281	851
		P							2,74	2,38	2,03	1,69	1,36	1,03

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

[1] Compressors (R404A) are ASERCOM certified

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temp.

Performance data

R404A/R507 — Performance data — 50 Hz

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

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

[1] Compressors (R404A) are ASERCOM certified

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temp.

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R404A/R507 — Performance data — 50 Hz

Type	Cond. temp. °C		Cooling capacity $\dot{Q}_o$ [W] Evaporating temperature °C 7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
HGX4/555-4 [1] HGX4/555-4 S [1]	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
		P												
	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
		P												
	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	
		P												
HAX4/555-4	30	Q							21842 8,84	17569 7,84	13875 6,87	10713 5,93	8037 5,01	5799 4,12
		P												
	40	Q							18374 9,46	14675 8,27	11488 7,14	8766 6,04	6461 4,99	4528 3,98
		P												
	50	Q							15013 9,95	11894 8,60	9220 7,31	6944 6,08	5018 4,90	3396 3,78
		P												
HGX4/650-4 [1] HGX4/650-4 S [1]	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
		P												
	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
		P												
	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	
		P												
HAX4/650-4	30	Q							24978 9,71	20136 8,62	15945 7,57	12352 6,54	9304 5,55	6747 4,57
		P												
	40	Q							21012 10,39	16819 9,10	13202 7,86	10107 6,67	7480 5,53	5268 4,42
		P												
	50	Q							17167 10,93	13632 9,46	10596 8,05	8006 6,71	5809 5,43	3951 4,20
		P												
HGX5/725-4 [1] HGX5/725-4 S [1]	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
		P												
	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
		P												
	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	
		P												
HAX5/725-4	30	Q							26886 10,67	21437 9,42	16746 8,19	12756 7,01	9409 5,86	6644 4,75
		P												
	40	Q							22619 11,41	17905 9,93	13864 8,51	10437 7,15	7565 5,84	5189 4,60
		P												
	50	Q							18487 12,01	14513 10,33	11125 8,72	8265 7,19	5874 5,74	3892 4,37
		P												
HGX5/830-4 [1] HGX5/830-4 S [1]	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
		P												
	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
		P												
	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	
		P												
HAX5/830-4	30	Q							30392 12,06	24266 10,65	19003 9,29	14530 7,96	10772 6,67	7655 5,43
		P												
	40	Q							25602 12,90	20281 11,24	15733 9,65	11882 8,12	8654 6,65	5976 5,25
		P												
	50	Q									12641 9,88	9414 8,16	6718 6,53	4480 4,99
		P												
HGX5/945-4 [1] HGX5/945-4 S [1]	30	Q	99975 18,52	91955 18,31	77277 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
		P												
	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
		P												
	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	
		P												
HAX5/945-4	30	Q								27994 12,27	21989 10,72	16866 9,21	12548 7,74	8959 6,32
		P												
	40	Q									18205 11,13	13799 9,39	10088 7,71	6997 6,11
		P												
	50	Q										10929 9,44	7834 7,57	5248 5,81
		P												
HGX5/1080-4 [1] HGX5/1080-4 S [1]	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
		P												
	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
		P												
	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	
		P												
HAX5/1080-4	30	Q							41973 16,66	33574 14,73	26360 12,86	20224 11,05	15061 9,29	10763 7,58
		P												
	40	Q								28072 15,55	21828 13,36	16539 11,27	12098 9,26	8401 7,33
		P												
	50	Q									17547 13,68	13107 11,32	9392 9,09	6297 6,97
		P												

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

[1] Compressors (R404A) are ASERCOM certified

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temp.

Performance data

R404A/R507 — Performance data — 50 Hz

Type	Cond. temp. °C		Cooling capacity $\dot{Q}_o$ [W] Evaporating temperature °C 7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
HGX6/1240-4 [1]	30	Q	133368	122554	102765	83399	68935	56229	45169	35643	27538	20744	15146	10634
		P	27,78	27,28	26,04	23,70	22,26	20,54	18,62	16,56	14,43	12,29	10,21	8,25
HGX6/1240-4 S [1]	40	Q	113720	104299	87122	71042	58440	47422	37874	29684	22741	16931	12143	8265
		P	33,36	32,38	30,24	27,42	25,14	22,68	20,13	17,53	14,97	12,49	10,17	8,08
	50	Q	94323	86295	71734	58323	47668	38420	30468	23698	17998	13257	9362	
		P	38,27	36,83	33,86	30,45	27,41	24,30	21,19	18,14	15,22	12,49	10,02	
HAX6/1240-4	30	Q								38742	30407	23329	17378	12423
		P								17,00	14,83	12,74	10,72	8,75
	40	Q									25193	19081	13958	9695
		P									15,43	13,01	10,69	8,48
	50	Q										15126	10835	7265
		P										13,08	10,49	8,05
HGX6/1410-4 [1]	30	Q			112574	94071	76961	63138	51088	40671	31748	24176	17817	12528
		P			28,95	27,60	26,50	24,11	21,69	19,26	16,84	14,43	12,06	9,73
HGX6/1410-4 S [1]	40	Q			96228	80122	65316	53413	43056	34104	26417	19854	14276	9540
		P			33,76	31,54	30,24	26,98	23,78	20,67	17,65	14,74	11,96	9,32
	50	Q			79925	66235	53148	43254	34677	27278	20915	15450	10739	
		P			37,91	34,88	33,29	29,21	25,29	21,54	17,98	14,63	11,49	
HAX6/1410-4	30	Q									33768	25918	19311	13807
		P									16,48	14,13	11,86	9,68
	40	Q										21163	15482	10756
		P										14,43	11,83	9,36
	50	Q										16757	12003	8054
		P										14,53	11,62	8,90
HGX7/1620-4 [1]	30	Q	163130	150297	126636	106031	87518	71107	56728	44306	33770	25047	18065	12751
		P	32,39	32,05	30,98	30,00	28,31	26,22	23,83	21,24	18,56	15,88	13,30	10,93
HGX7/1620-4 S [1]	40	Q	139724	128531	107945	89756	73736	59585	47232	36603	27628	20232	14343	9890
		P	38,16	37,38	35,48	34,27	31,69	28,79	25,68	22,46	19,22	16,08	13,12	10,45
	50	Q	115792	106272	88826	73671	60144	48254	37928	29093	21678	15609	10816	
		P	43,47	42,23	39,46	37,57	34,13	30,47	26,68	22,85	19,10	15,52	12,22	
HGX7/1860-4 [1]	30	Q	184191	169853	143432	119116	98208	79858	63906	50195	38563	28854	20907	14563
		P	37,41	37,14	36,15	35,68	32,91	30,00	27,00	23,95	20,89	17,88	14,95	12,15
HGX7/1860-4 S [1]	40	Q	157436	144933	121960	100333	82508	66907	53368	41734	31846	23543	16668	11061
		P	45,37	44,40	42,11	39,79	36,14	32,43	28,71	25,02	21,40	17,91	14,59	11,48
	50	Q	130989	120333	100832	82100	67304	54394	43213	33601	25399	18448	12589	
		P	51,97	50,38	46,93	43,28	38,81	34,37	29,99	25,73	21,63	17,73	14,08	
HGX7/2110-4 [1]	30	Q	201969	186202	157288	130628	108549	89073	72027	57236	44527	33724	24655	17144
		P	46,49	45,47	43,22	40,64	37,84	34,82	31,63	28,33	24,95	21,53	18,14	14,81
HGX7/2110-4 S [1]	40	Q	173523	159904	134971	112651	93282	76227	61312	48362	37205	27665	19568	12741
		P	54,03	52,52	49,31	45,59	41,96	38,14	34,18	30,13	26,03	21,92	17,87	13,90
	50	Q	144329	132872	111953	93475	77007	62564	49972	39055	29641	21555	14623	
		P	60,77	58,78	54,63	49,93	45,43	40,76	35,99	31,14	26,28	21,44	16,68	
HGX88e/2735-4	30	Q	315000	289000	243000	202000	165000	134000	106000	82700	63200	47300	34600	25000
		P	52,70	52,10	50,40	48,50	45,40	42,00	38,20	34,30	30,20	26,30	22,40	18,90
HGX88e/2735-4 S	40	Q	268000	246000	206000	170000	139000	112000	88300	68700	52300	38900	28200	
		P	62,60	61,20	57,90	54,70	50,40	45,80	41,10	36,30	31,60	27,10	22,90	
	50	Q	222000	203000	169000	139000	113000	90300	71200	55100	41800	31000		
		P	71,30	69,10	64,50	60,00	54,60	49,00	43,40	37,90	32,60	27,70		
HGX88e/3235-4	30	Q	362000	334000	281000	234000	192000	156000	124000	97000	74300	55700	40700	29100
		P	62,00	61,50	59,80	57,60	54,10	50,00	45,40	40,60	35,70	30,80	26,20	22,00
HGX88e/3235-4 S	40	Q	310000	285000	239000	198000	162000	131000	104000	80100	60900	45200	32600	
		P	74,40	72,80	69,10	65,20	60,00	54,50	48,70	42,80	37,00	31,50	26,40	
	50	Q	255000	234000	195000	161000	131000	105000	82000	63400	48000	35500		
		P	84,50	82,00	76,50	71,10	64,50	57,70	50,90	44,20	37,80	31,80		

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

[1] Compressors (R404A) are ASERCOM certified

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temp.

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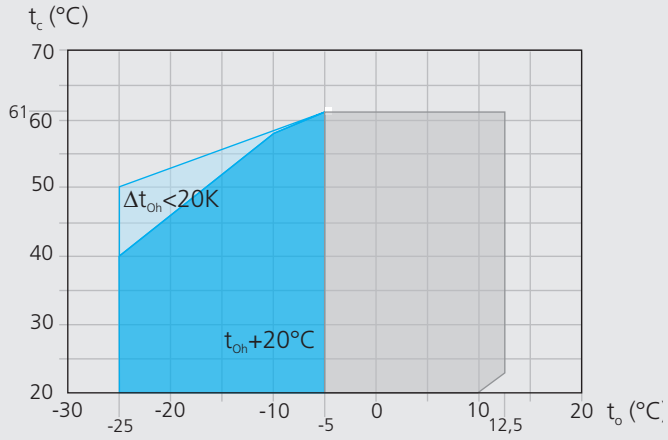
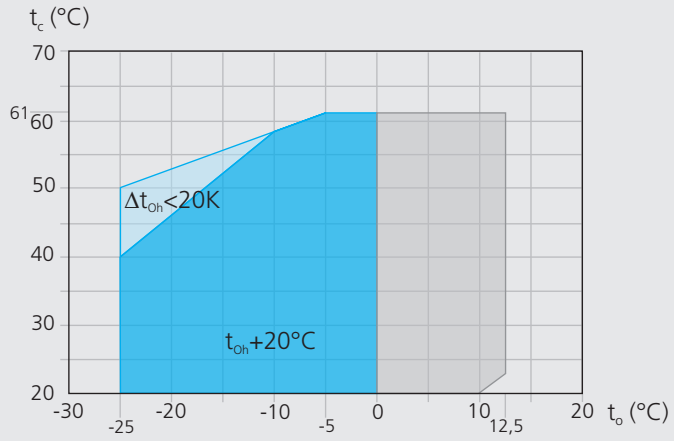
R407C Operating limits

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



HGX88e



Unlimited application range

Supplementary cooling or reduced suction gas temperature

Motor version -S- (more powerful motor)

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

Max. permissible operating pressure (LP/HP)[1]: 19/28 bar

[1] LP = low pressure HP = high pressure

R407C 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 EFC (Electronic Frequency Control).

Further explanation see www.gea.com.

Performance data

The performance data for R407C 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, HGX4 and HGX88e **operating at 50 Hz. 20 °C suction gas temperature without liquid subcooling**.
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.

Conversion factor for 60 Hz = 1,2

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

Performance data

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

96215-10.2014-Gb Subject to change without notice

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

Performance data

R407C	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
HGX7/2110-4 HGX7/2110-4 S	30	Q	230732	210551	191751	174268	143000	116233	93456	74159	57829	43956
		P	37,54	37,16	36,65	36,00	34,35	32,30	29,93	27,32	24,55	21,70
	40	Q	204578	186492	169666	154036	126109	102198	81793	64381	49452	36493
		P	46,72	45,59	44,35	43,01	40,08	36,87	33,47	29,95	26,40	22,90
	50	Q	178217	162261	147443	133700	109182	88195	70228	54769	41308	29331
		P	55,02	53,16	51,23	49,23	45,07	40,77	36,39	32,03	27,77	23,68
HGX88e/2735-4 HGX88e/2735-4 S	30	Q	323000	295000	269000	244000	201000	163000	130000	103000	79900	61000
		P	40,60	41,00	41,00	40,80	39,70	37,70	35,00	31,90	28,50	25,00
	40	Q	286000	260000	237000	215000	176000	142000	113000	87700	67300	50300
		P	51,80	51,20	50,30	49,20	46,40	43,00	39,10	34,90	30,60	26,40
	50	Q	248000	225000	204000	185000	150000	120000	94400	73000	55200	40400
		P	61,20	59,70	58,00	56,10	51,80	47,10	42,10	37,00	32,00	27,30
HGX88e/3235-4 HGX88e/3235-4 S	30	Q	374000	341000	311000	283000	232000	188000	151000	119000	92500	70500
		P	48,00	48,40	48,50	48,30	46,90	44,50	41,40	37,80	33,80	29,60
	40	Q	331000	302000	274000	249000	203000	164000	130000	102000	78000	58300
		P	61,30	60,50	59,50	58,20	54,90	50,80	46,20	41,30	36,20	31,20
	50	Q	287000	261000	237000	214000	174000	139000	110000	84800	64200	47000
		P	72,50	70,70	68,60	66,30	61,30	55,70	49,90	43,80	37,90	32,20

Relating to 25 °C suction gas temperature (HGX88e to 20 °C suction gas temperature) without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temp.

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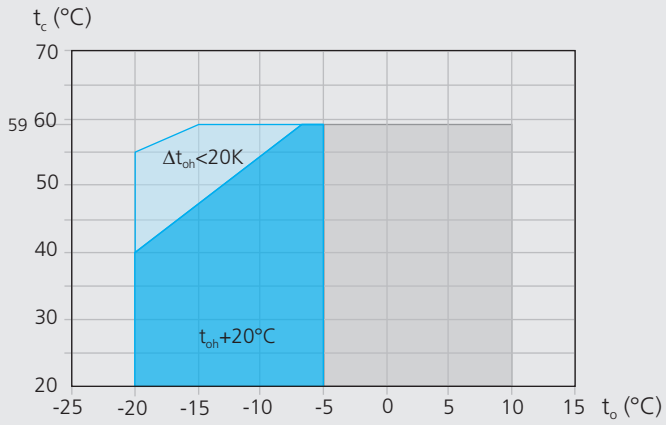
Operating limits and performance data

R407F Operating limits

HGX88e



Unlimited application range

Supplementary cooling or reduced suction gas temperature

Motor version -S- (more powerful motor)

t_O Evaporation temperature (°C)
t_C Condensing temperature (°C)
Δt_{Oh} Suction gas superheat (K)
t_{Oh} Suction gas temperature (°C)

Max. permissible operating pressure (LP/HP)[1]: 19/28 bar

[1] LP = low pressure HP = high pressure

R407F 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 EFC (Electronic Frequency Control).
Further explanation see www.gea.com.

Performance data

The performance data for R407F are based on EN 12900 with a **50 Hz power supply frequency**.
This signifies: **20 °C suction gas temperature without liquid subcooling**.
Evaporation and condensing temperatures are based on the dew point values (saturated vapour conditions).

Conversion factor for 60 Hz = 1,2

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

R407F Performance data 50 Hz

Type	Cond. temp. °C		Cooling capacity $\dot{Q}_o$ [W] / Power consumption P_e [kW] — Evaporating temperature °C: 10	7,5	5	0	-5	-10	-15	-20
HGX88e/2735-4 HGX88e/2735-4 S	30	Q	346000	315000	287000	235000	191000	153000	121000	93000
		P	50,10	49,90	49,30	47,50	45,40	41,80	38,00	34,10
	40	Q	302000	275000	250000	205000	166000	132000	104000	79300
		P	61,20	60,00	58,50	54,90	51,30	46,40	41,40	36,60
	50	Q	258000	235000	213000	174000	141000	111000	86300	65800
		P	70,70	68,50	66,00	60,80	55,80	49,70	43,70	38,10
HGX88e/3235-4 HGX88e/3235-4 S	30	Q	398000	363000	331000	272000	221000	178000	141000	109000
		P	58,80	58,70	58,20	56,30	54,00	49,80	45,30	40,60
	40	Q	349000	318000	290000	238000	193000	154000	121000	92600
		P	72,70	71,30	69,60	65,40	61,20	55,30	49,20	43,30
	50	Q	297000	270000	245000	200000	162000	129000	99600	75800
		P	83,70	81,10	78,30	72,10	66,10	58,70	51,50	44,70

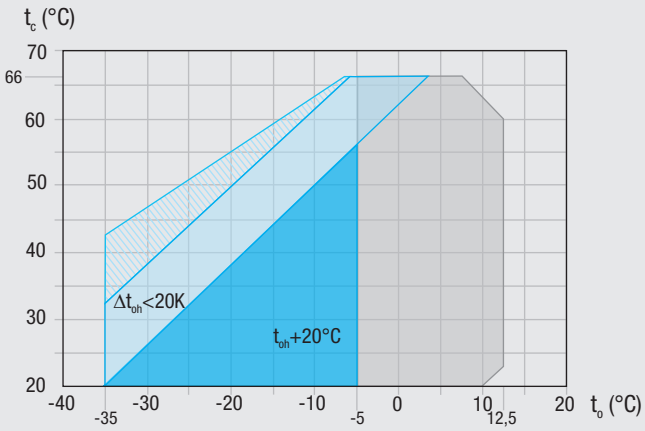
Relating to 20 °C suction gas temp. without liquid subcooling

Motor version -S- (more powerful motor)

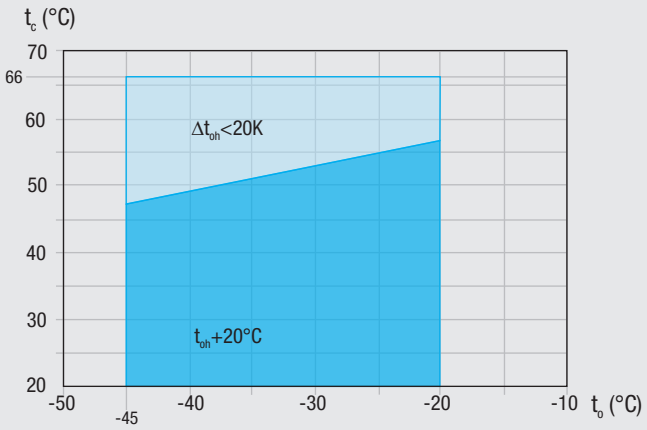
Supplementary cooling or reduced suction gas temp.

R22 Operating limits

HG12P / HG22e / HG34e /
HG4 / HG5 / HG6① / HG7 / HG88e



HA12P / HA22P / HA34P / HA4



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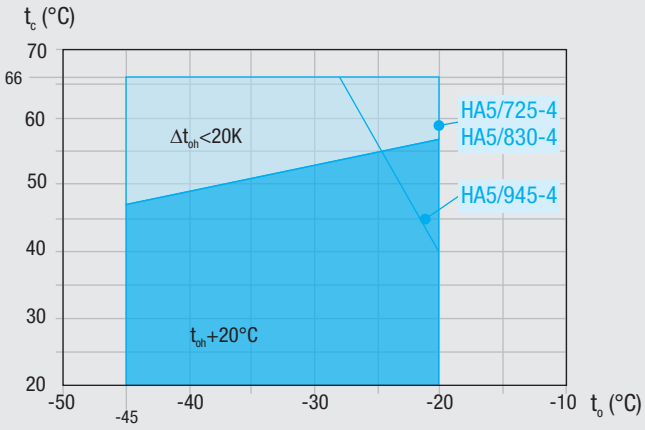

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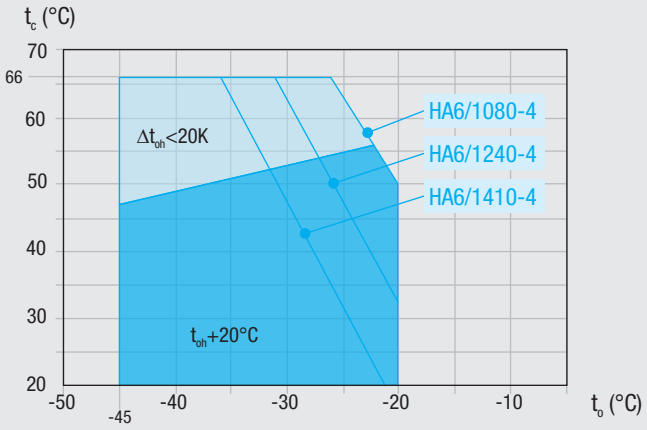

Max. permissible operating pressure (LP/HP)[1]: 19/28 bar

[1] LP = low pressure HP = high pressure

① **HG7 „Motor version -S-"**
in the evaporation range of t_0 = 5 °C bis 12,5 °C
limited condensing temperature up to t_C = 50 °C

t_O Evaporating temperature (°C)
t_C Condensing temperature (°C)
Δt_{Oh} Suction gas superheat (K)
t_{Oh} Suction gas temperature (°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)

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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 EFC (Electronic Frequency Control).

Further explanation see www.gea.com.

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 HG88e **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.

Performance data

R22 — 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	-30	-35	-45
HG12P/60-4 S	30	Q	7110	6523	5971	5454	4518	3703	2997	2390	1868	1422	1039	708	
		P	0,89	0,91	0,93	0,94	0,94	0,92	0,89	0,84	0,78	0,71	0,63	0,55	
	40	Q	6288	5759	5263	4799	3958	3227	2593	2044	1570	1158	798	477	
		P	1,20	1,19	1,19	1,18	1,14	1,08	1,01	0,94	0,85	0,76	0,66	0,57	
	50	Q	5494	5023	4581	4168	3422	2772	2207	1716	1287	909			
		P	1,47	1,44	1,42	1,38	1,31	1,22	1,12	1,02	0,91	0,80			
HA12P/60-4	30	Q									1824	1407	1054	758	512
		P									0,72	0,63	0,53	0,43	0,33
	40	Q									1599	1237	930	672	456
		P									0,79	0,68	0,57	0,46	0,35
	50	Q									1437	1127	865	643	455
		P									0,84	0,73	0,62	0,51	0,40
HG12P/75-4 HG12P/75-4 S	30	Q	8883	8149	7460	6814	5645	4626	3745	2985	2334	1776	1298	884	
		P	1,11	1,14	1,16	1,17	1,17	1,15	1,11	1,05	0,97	0,88	0,79	0,69	
	40	Q	7856	7195	6575	5995	4945	4031	3239	2554	1961	1447	997	596	
		P	1,49	1,49	1,48	1,47	1,42	1,35	1,27	1,17	1,06	0,95	0,83	0,71	
	50	Q	6864	6275	5723	5207	4275	3463	2758	2144	1608	1135			
		P	1,83	1,80	1,77	1,73	1,63	1,52	1,40	1,27	1,13	0,99			
HA12P/75-4	30	Q									2265	1748	1310	942	637
		P									0,90	0,78	0,66	0,53	0,41
	40	Q									1986	1536	1156	836	568
		P									0,99	0,85	0,72	0,58	0,44
	50	Q									1785	1400	1075	800	567
		P									1,05	0,91	0,78	0,64	0,51
HG12P/90-4 HG12P/90-4 S	30	Q	10595	9719	8897	8127	6732	5518	4466	3561	2784	2119	1548	1054	
		P	1,32	1,36	1,38	1,40	1,40	1,37	1,32	1,25	1,16	1,05	0,94	0,83	
	40	Q	9370	8582	7842	7150	5898	4808	3863	3046	2339	1726	1189	711	
		P	1,78	1,78	1,77	1,75	1,69	1,61	1,51	1,39	1,27	1,13	0,99	0,85	
	50	Q	8186	7484	6826	6211	5098	4130	3289	2557	1918	1354			
		P	2,19	2,15	2,11	2,06	1,95	1,82	1,67	1,51	1,35	1,19			
HA12P/90-4	30	Q									2702	2084	1562	1123	758
		P									1,06	0,92	0,77	0,62	0,47
	40	Q									2369	1832	1378	996	676
		P									1,16	1,00	0,84	0,67	0,51
	50	Q									2129	1669	1281	953	674
		P									1,22	1,06	0,90	0,74	0,58
HG12P/110-4 HG12P/110-4 S	30	Q	12456	11427	10460	9555	7915	6487	5251	4186	3273	2491	1820	1240	
		P	1,56	1,60	1,62	1,64	1,65	1,61	1,55	1,47	1,36	1,24	1,11	0,97	
	40	Q	11016	10089	9220	8406	6934	5653	4542	3581	2750	2029	1398	836	
		P	2,10	2,09	2,08	2,06	1,99	1,90	1,78	1,64	1,49	1,33	1,16	1,00	
	50	Q	9625	8799	8025	7302	5994	4856	3867	3007	2255	1592			
		P	2,57	2,53	2,48	2,42	2,29	2,14	1,96	1,78	1,59	1,39			
HA12P/110-4	30	Q									3175	2449	1835	1320	891
		P									1,25	1,09	0,92	0,74	0,57
	40	Q									2783	2153	1619	1170	794
		P									1,38	1,19	1,00	0,81	0,62
	50	Q									2501	1961	1505	1119	792
		P									1,46	1,27	1,08	0,89	0,70
HG22e/125-4 HG22e/125-4 S	30	Q	15700	14400	13200	12000	9930	8150	6630	5340	4250	3340	2580	1960	
		P	1,94	1,97	1,99	2,00	1,98	1,91	1,82	1,69	1,55	1,40	1,25	1,09	
	40	Q	13800	12700	11600	10600	8740	7170	5840	4700	3730	2900	2200	1600	
		P	2,54	2,53	2,50	2,47	2,37	2,24	2,08	1,90	1,72	1,52	1,33	1,15	
	50	Q	12000	11000	10000	9120	7540	6170	5010	4010	3150	2400			
		P	3,11	3,06	2,99	2,91	2,73	2,53	2,31	2,07	1,83	1,59			
HA22P/125-4	30	Q									3866	2983	2235	1607	1085
		P									1,53	1,33	1,12	0,91	0,69
	40	Q									3390	2621	1972	1425	967
		P									1,68	1,45	1,22	0,98	0,75
	50	Q									3046	2389	1833	1363	965
		P									1,78	1,55	1,32	1,09	0,86
HG22e/160-4 HG22e/160-4 S	30	Q	19400	17800	16300	14900	12300	10100	8190	6590	5240	4120	3190	2420	
		P	2,40	2,44	2,46	2,47	2,44	2,36	2,24	2,09	1,92	1,73	1,54	1,35	
	40	Q	17100	15600	14300	13100	10800	8860	7200	5790	4590	3580	2720	1980	
		P	3,13	3,12	3,09	3,05	2,93	2,77	2,57	2,35	2,11	1,88	1,64	1,42	
	50	Q	14800	13500	12400	11300	9300	7620	6180	4940	3880	2960			
		P	3,84	3,77	3,69	3,60	3,38	3,13	2,85	2,55	2,26	1,96			

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.

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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
HA22P/160-4	30	Q									4773	3682	2759	1984	1340
		P									1,89	1,64	1,38	1,12	0,86
	40	Q									4185	3236	2434	1760	1194
		P									2,07	1,79	1,50	1,21	0,93
	50	Q									3761	2949	2262	1683	1191
		P									2,20	1,91	1,63	1,34	1,06
HG22e/190-4 HG22e/190-4 S	30	Q	23400	21400	19600	17900	14800	12200	9850	7920	6300	4950	3840	2910	
		P	2,90	2,94	2,97	2,98	2,94	2,84	2,70	2,52	2,31	2,09	1,86	1,63	
	40	Q	20600	18900	17200	15700	13000	10700	8680	6980	5540	4320	3280	2380	
		P	3,78	3,76	3,72	3,67	3,52	3,32	3,09	2,83	2,55	2,27	1,99	1,72	
	50	Q	17800	16300	14900	13600	11200	9200	7450	5960	4670	3560			
		P	4,63	4,54	4,44	4,33	4,06	3,76	3,43	3,08	2,72	2,37			
HA22P/190-4	30	Q									5775	4456	3338	2401	1621
		P									2,28	1,98	1,67	1,35	1,04
	40	Q									5064	3916	2945	2129	1445
		P									2,51	2,17	1,82	1,47	1,12
	50	Q									4550	3568	2738	2036	1441
		P									2,66	2,31	1,97	1,62	1,28
HG34e/215-4 HG34e/215-4 S	30	Q	26500	24300	22200	20300	16800	13900	11300	9010	7160	5620	4360	3310	
		P	3,30	3,35	3,38	3,39	3,35	3,25	3,08	2,88	2,64	2,38	2,12	1,86	
	40	Q	23300	21400	19600	17900	14800	12200	9870	7930	6290	4910	3730	2710	
		P	4,31	4,29	4,25	4,19	4,02	3,80	3,53	3,23	2,91	2,58	2,26	1,96	
	50	Q	20200	18500	17000	15500	12800	10500	8480	6780	5330	4060			
		P	5,29	5,19	5,07	4,94	4,64	4,29	3,91	3,51	3,11	2,71			
HA34P/215-4	30	Q									6576	5074	3801	2734	1846
		P									2,60	2,25	1,90	1,54	1,18
	40	Q									5766	4459	3354	2425	1646
		P									2,86	2,47	2,07	1,67	1,28
	50	Q									5181	4063	3117	2318	1641
		P									3,02	2,63	2,24	1,85	1,46
HG34e/255-4 HG34e/255-4 S	30	Q	31200	28600	26200	23900	19800	16300	13200	10600	8440	6630	5130	3890	
		P	3,87	3,94	3,98	3,99	3,94	3,82	3,62	3,37	3,10	2,80	2,49	2,19	
	40	Q	27400	25100	23000	21000	17400	14300	11600	9330	7410	5780	4390	3200	
		P	5,06	5,04	4,99	4,92	4,72	4,46	4,14	3,79	3,42	3,03	2,66	2,29	
	50	Q	23700	21800	19900	18200	15000	12300	9970	7970	6260	4770			
		P	6,21	6,09	5,96	5,80	5,45	5,04	4,59	4,12	3,64	3,17			
HA34P/255-4	30	Q									7732	5965	4469	3214	2170
		P									3,06	2,65	2,23	1,81	1,39
	40	Q									6779	5243	3943	2851	1935
		P									3,36	2,90	2,44	1,97	1,50
	50	Q									6092	4777	3665	2726	1930
		P									3,56	3,10	2,63	2,17	1,71
HG34e/315-4 HG34e/315-4 S	30	Q	38500	35300	32300	29500	24500	20100	16400	13200	10500	8200	6340	4800	
		P	4,79	4,87	4,92	4,93	4,87	4,71	4,49	4,19	3,83	3,45	3,07	2,70	
	40	Q	33900	31100	28500	26000	21600	17700	14400	11600	9160	7140	5420	3940	
		P	6,26	6,23	6,17	6,09	5,84	5,51	5,13	4,69	4,22	3,74	3,27	2,84	
	50	Q	29400	26900	24600	22500	18600	15200	12400	9850	7730	5890			
		P	7,67	7,53	7,37	7,18	6,74	6,23	5,69	5,10	4,50	3,91			
HA34P/315-4	30	Q									9546	7365	5518	3969	2679
		P									3,77	3,27	2,76	2,24	1,71
	40	Q									8369	6473	4868	3519	2389
		P									4,15	3,58	3,01	2,43	1,85
	50	Q									7521	5898	4525	3365	2382
		P									4,39	3,82	3,25	2,68	2,12
HG34e/380-4 HG34e/380-4 S	30	Q	46700	42800	39100	35700	29600	24300	19800	16000	12700	9950	7690	5830	
		P	5,82	5,92	5,97	5,99	5,91	5,72	5,43	5,06	4,64	4,19	3,73	3,29	
	40	Q	41000	37600	34400	31400	26100	21400	17400	14000	11200	8650	6560	4780	
		P	7,60	7,56	7,49	7,39	7,08	6,68	6,21	5,68	5,12	4,54	3,98	3,45	
	50	Q	35500	32500	29800	27200	22500	18500	15000	12000	9360	7120			
		P	9,31	9,14	8,93	8,70	8,16	7,56	6,89	6,18	5,46	4,75			
HA34P/380-4	30	Q									11550	8911	6677	4802	3242
		P									4,57	3,96	3,34	2,71	2,07
	40	Q									10127	7832	5891	4259	2890
		P									5,02	4,33	3,64	2,94	2,24
	50	Q									9101	7136	5475	4072	2882
		P									5,31	4,62	3,93	3,24	2,56

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 HG4/465-4 S	30	Q	56368	52042	47946	44073	36965	30657	25090	20203	15935	12226	9016	6244	
		P	6,99	6,93	6,86	6,80	6,64	6,46	6,24	5,98	5,66	5,28	4,83	4,29	
	40	Q	51425	47427	43647	40077	33537	27748	22649	18178	14277	10884	7939	5382	
		P	8,92	8,77	8,61	8,45	8,11	7,74	7,33	6,88	6,37	5,80	5,15	4,42	
	50	Q	45657	42026	38601	35374	29481	24288	19734	15759	12303	9304			
		P	10,92	10,66	10,39	10,11	9,55	8,96	8,33	7,66	6,92	6,13			
HA4/465-4	30	Q									16459	12893	9840	7251	5074
		P									5,74	5,32	4,83	4,26	3,58
	40	Q									14621	11365	8586	6234	4256
		P									6,58	5,98	5,29	4,51	3,61
	50	Q									12490	9599	7148	5086	3362
		P									7,24	6,42	5,50	4,48	3,32
HG4/555-4 HG4/555-4 S	30	Q	67083	61934	57059	52450	43991	36485	29859	24043	18964	14550	10730	7431	
		P	8,32	8,25	8,17	8,09	7,90	7,69	7,43	7,11	6,74	6,28	5,74	5,11	
	40	Q	61200	56442	51943	47695	39912	33023	26954	21634	16991	12953	9449	6405	
		P	10,62	10,43	10,25	10,05	9,65	9,21	8,72	8,18	7,58	6,90	6,13	5,27	
	50	Q	54335	50015	45939	42098	35085	28905	23485	18755	14641	11072			
		P	13,00	12,68	12,36	12,04	11,37	10,67	9,92	9,11	8,24	7,29			
HA4/555-4	30	Q									19587	15343	11711	8630	6039
		P									6,83	6,33	5,75	5,07	4,26
	40	Q									17400	13525	10218	7419	5065
		P									7,83	7,12	6,30	5,36	4,29
	50	Q									14864	11423	8507	6053	4001
		P									8,61	7,64	6,55	5,33	3,95
HG4/650-4 HG4/465-4 S	30	Q	78729	72686	66965	61556	51628	42819	35043	28217	22256	17076	12593	8721	
		P	9,77	9,68	9,59	9,49	9,28	9,02	8,72	8,35	7,90	7,37	6,74	6,00	
	40	Q	71825	66241	60961	55975	46842	38756	31633	25390	19941	15202	11089	7518	
		P	12,46	12,25	12,03	11,80	11,32	10,81	10,24	9,60	8,89	8,09	7,19	6,18	
	50	Q	63768	58698	53914	49406	41176	33923	27562	22011	17183	12995			
		P	15,25	14,88	14,51	14,13	13,34	12,52	11,64	10,69	9,67	8,56			
HA4/650-4	30	Q									22988	18007	13744	10128	7087
		P									8,01	7,43	6,75	5,95	5,00
	40	Q									20421	15873	11993	8707	5944
		P									9,19	8,35	7,39	6,30	5,04
	50	Q									17445	13407	9984	7104	4696
		P									10,11	8,97	7,69	6,25	4,63
HG5/725-4 HG5/725-4 S	30	Q	87633	80907	74539	68518	57467	47662	39007	31409	24774	19008	14017	9708	
		P	10,87	10,77	10,67	10,56	10,33	10,04	9,70	9,29	8,80	8,21	7,50	6,68	
	40	Q	79948	73733	67856	62306	52139	43139	35211	28261	22196	16921	12343	8368	
		P	13,87	13,63	13,39	13,13	12,60	12,03	11,39	10,69	9,90	9,01	8,01	6,88	
	50	Q	70981	65337	60012	54994	45833	37759	30680	24500	19126	14464			
		P	16,98	16,57	16,15	15,72	14,85	13,93	12,95	11,90	10,76	9,52			
HA5/725-4	30	Q									25631	20086	15342	11316	7926
		P									8,94	8,29	7,52	6,62	5,56
	40	Q									22752	17689	13371	9718	6646
		P									10,25	9,31	8,24	7,01	5,61
	50	Q									19423	14921	11112	7912	5239
		P									11,27	9,99	8,57	6,97	5,18
HG5/830-4 HG5/830-4 S	30	Q	100599	92878	85568	78656	65970	54713	44778	36056	28439	21820	16091	11144	
		P	12,48	12,37	12,25	12,13	11,85	11,53	11,14	10,67	10,10	9,42	8,61	7,66	
	40	Q	91777	84642	77896	71525	59854	49522	40421	32443	25480	19425	14169	9606	
		P	15,93	15,65	15,37	15,08	14,47	13,81	13,08	12,27	11,36	10,34	9,19	7,90	
	50	Q	81483	75004	68891	63131	52614	43346	35219	28125	21956	16605			
		P	19,49	19,02	18,54	18,05	17,05	15,99	14,87	13,66	12,36	10,93			
HA5/830-4	30	Q									29343	22994	17562	12953	9072
		P									10,24	9,49	8,61	7,58	6,37
	40	Q									26046	20248	15306	11124	7609
		P									11,73	10,66	9,43	8,03	6,42
	50	Q									22234	17080	12720	9059	6003
		P									12,90	11,44	9,81	7,98	5,92
HG5/945-4 HG5/945-4 S	30	Q	114460	105675	97357	89493	75059	62252	50947	41024	32358	24827	18308	12679	
		P	14,20	14,07	13,94	13,80	13,49	13,12	12,67	12,14	11,49	10,72	9,80	8,72	
	40	Q	104422	96304	88628	81379	68100	56345	45990	36912	28991	22101	16122	10929	
		P	18,12	17,80	17,48	17,15	16,46	15,71	14,88	13,96	12,93	11,77	10,46	8,98	
	50	Q	92709	85338	78383	71829	59863	49318	40072	32000	24981	18892			
		P	22,17	21,64	21,09	20,54	19,40	18,20	16,92	15,55	14,06	12,44			
HA5/945-4	30	Q									33374	26174	20007	14774	10374
		P									11,64	10,78	9,78	8,61	7,24
	40	Q									29594	22995	17376	12635	8674
		P									13,35	12,14	10,75	9,15	7,32
	50	Q										19387	14394	10227	6786
		P										13,04	11,20	9,12	6,77

96215-10.2014-Gb Subject to change without notice

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
HG6/1080-4 HG6/1080-4 S	30	Q	129363	119434	110034	101145	84833	70357	57581	46365	36571	28059	20692	14330	
		P	18,28	18,00	17,72	17,43	16,80	16,10	15,29	14,33	13,22	11,91	10,38	8,61	
	40	Q	118019	108844	100169	91976	76968	63681	51978	41719	32765	24979	18221	12352	
		P	22,56	22,15	21,72	21,28	20,33	19,27	18,07	16,71	15,16	13,38	11,36	9,06	
	50	Q	104781	96450	88589	81182	67658	55740	45289	36167	28234	21352			
		P	26,66	26,07	25,47	24,83	23,49	22,00	20,35	18,51	16,44	14,13			
HA6/1080-4	30	Q									37747	29595	22620	16702	11720
		P									12,65	11,26	9,89	8,49	7,05
	40	Q									33470	26012	19664	14306	9816
		P									14,58	12,95	11,30	9,62	7,86
	50	Q									28580	21920	16301	11605	7710
		P									16,24	14,31	12,36	10,34	8,23
HG6/1240-4 HG6/1240-4 S	30	Q	148504	137106	126315	116111	97384	80768	66101	53225	41982	32211	23754	16451	
		P	20,98	20,66	20,34	20,01	19,29	18,48	17,55	16,45	15,17	13,67	11,92	9,88	
	40	Q	135481	124948	114989	105584	88356	73103	59668	47891	37613	28675	20917	14180	
		P	25,90	25,43	24,94	24,43	23,34	22,12	20,75	19,18	17,40	15,36	13,04	10,40	
	50	Q	120284	110720	101696	93193	77669	63987	51990	41518	32411	24511			
		P	30,61	29,93	29,23	28,51	26,96	25,26	23,36	21,25	18,88	16,22			
HA6/1240-4	30	Q									43328	33978	25970	19174	13463
		P									14,52	12,92	11,35	9,75	8,10
	40	Q									38417	29848	22551	16399	11262
		P									16,74	14,87	12,98	11,05	9,03
	50	Q									32848	25165	18685	13281	8824
		P									18,64	16,44	14,20	11,89	9,46
HG6/1410-4 HG6/1410-4 S	30	Q	168964	155996	143718	132108	110802	91895	75208	60559	47766	36649	27026	18717	
		P	23,87	23,51	23,14	22,77	21,95	21,03	19,96	18,72	17,26	15,56	13,56	11,24	
	40	Q	154147	142163	130832	120131	100529	83176	67889	54490	42796	32626	23799	16134	
		P	29,47	28,93	28,37	27,80	26,55	25,17	23,61	21,83	19,80	17,48	14,84	11,83	
	50	Q	136857	125975	115708	106033	88370	72803	59153	47238	36877	27889			
		P	34,82	34,06	33,26	32,44	30,67	28,73	26,58	24,17	21,48	18,46			
HA6/1410-4	30	Q										38625	29529	21803	15324
		P										14,69	12,90	11,08	9,20
	40	Q											25605	18595	12767
		P											14,77	12,57	10,28
	50	Q												15015	9929
		P												13,54	10,78
HG7/1620-4 HG7/1620-4 S	30	Q	178802	164852	151711	139349	116850	97132	79968	65133	52401	41547	32345	24570	
		P	23,29	24,07	24,65	25,03	25,25	24,85	23,94	22,64	21,04	19,26	17,42	15,60	
	40	Q	163682	150728	138537	127084	106272	88068	72246	58580	46844	36813	28261	20963	
		P	31,23	31,46	31,51	31,39	30,68	29,46	27,83	25,89	23,77	21,56	19,38	17,34	
	50	Q	148020	136086	124873	114354	95282	78644	64215	51770	41082	31926			
		P	38,75	38,45	37,98	37,37	35,77	33,74	31,41	28,87	26,24	23,62			
HG7/1860-4 HG7/1860-4 S	30	Q	205257	189244	174158	159966	134139	111504	91800	74770	60154	47694	37131	28205	
		P	26,74	27,64	28,29	28,73	28,98	28,53	27,49	25,99	24,16	22,11	19,99	17,91	
	40	Q	187901	173029	159035	145887	121996	101099	82935	67247	53775	42259	32442	24065	
		P	35,85	36,12	36,17	36,03	35,22	33,82	31,94	29,72	27,28	24,75	22,25	19,90	
	50	Q	169921	156221	143350	131274	109380	90280	73717	59429	47160	36649			
		P	44,49	44,14	43,60	42,90	41,06	38,73	36,05	33,14	30,12	27,12			
HG7/2110-4 HG7/2110-4 S	30	Q	233537	215317	198153	182006	152621	126866	104448	85072	68442	54266	42247	32091	
		P	30,42	31,44	32,19	32,69	32,98	32,46	31,27	29,57	27,48	25,16	22,75	20,38	
	40	Q	213789	196869	180947	165987	138805	115028	94362	76512	61184	48082	36912	27380	
		P	40,79	41,09	41,16	41,00	40,08	38,48	36,35	33,82	31,04	28,16	25,31	22,64	
	50	Q	193332	177745	163100	149360	124450	102719	83873	67618	53658	41699			
		P	50,62	50,22	49,61	48,81	46,72	44,07	41,02	37,70	34,27	30,85			
HG88e/2735-4 HG88e/2735-4 S	30	Q	342000	314000	288000	263000	219000	181000	148000	119000	94300	73400	55300	39500	
		P	43,70	44,30	44,70	44,70	44,10	42,50	40,30	37,40	34,10	30,50	26,70	23,00	
	40	Q	308000	282000	258000	236000	196000	161000	130000	104000	81300	61700	44400	28800	
		P	56,20	55,90	55,30	54,40	52,10	49,10	45,40	41,30	37,00	32,50	28,10	23,80	
	50	Q	274000	251000	229000	209000	172000	140000	113000	88400	67600	49100			
		P	67,00	65,80	64,30	62,60	58,80	54,30	49,40	44,20	39,00	33,70			
HG88e/3235-4 HG88e/3235-4 S	30	Q	396000	364000	334000	305000	254000	210000	171000	138000	110000	85100	64700	47300	
		P	51,70	52,40	52,80	52,90	52,10	50,30	47,60	44,10	40,20	36,00	31,70	27,60	
	40	Q	357000	328000	300000	274000	227000	186000	151000	121000	94500	72400	53400	37000	
		P	66,60	66,10	65,40	64,40	61,60	58,00	53,60	48,90	43,80	38,80	33,80	29,30	
	50	Q	318000	291000	266000	242000	199000	162000	131000	103000	79500	59300			
		P	79,40	77,90	76,10	74,10	69,50	64,20	58,50	52,60	46,60	40,90			

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

Relating to 25 °C suction gas temperature (HGX88e to 20 °C suction gas temperature) without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling and red. suction gas temp.

Technical data

HG	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 consumption ②	Starting current (rotor locked)		Discharge line DV	Suction line SV	
Type		m³/h		A	kW	A	kg	mm I inch	mm I 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 I 1/2	16 I 5/8	0,8
HG12P/75-4	2	6,70 / 8,10	③	7,1 / 4,1	2,3	40 / 23	48,0	12 I 1/2	16 I 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 I 1/2	16 I 5/8	0,8
HG12P/90-4	2	8,00 / 9,60	③	8,5 / 4,9	2,8	43 / 25	49,0	12 I 1/2	16 I 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 I 1/2	16 I 5/8	0,8
HG12P/110-4	2	9,40 / 11,30	③	9,2 / 5,3	3,1	43 / 25	49,0	12 I 1/2	16 I 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 I 1/2	16 I 5/8	0,8
HG22e/125-4	2	11,10 / 13,30	③	9,3 / 5,4	3,0	69 / 40	74,0	16 I 5/8	22 I 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 I 5/8	22 I 7/8	1,0
HG22e/160-4	2	13,70 / 16,40	③	11,1 / 6,4	3,7	69 / 40	74,0	16 I 5/8	22 I 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 I 5/8	22 I 7/8	1,0
HG22e/190-4	2	16,50 / 19,80	③	13,8 / 8,0	4,8	69 / 40	74,0	16 I 5/8	22 I 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 I 5/8	22 I 7/8	1,0
HG34e/215-4	4	18,80 / 22,60	③	14,0 / 8,1	4,8	87 / 50	92,0	22 I 7/8	28 I 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 I 7/8	28 I 1 1/8	1,3
HG34e/255-4	4	22,10 / 26,60	③	17,0 / 9,8	6,0	87 / 50	92,0	22 I 7/8	28 I 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 I 7/8	28 I 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 I 7/8	28 I 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 I 7/8	28 I 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 I 7/8	28 I 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 I 7/8	28 I 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 / 1 1/8	35 / 1 3/8	2,7
HG4/465-4 S	4	40,50 / 48,60	④	25	14,2	82 / 107	151	28 / 1 1/8	35 / 1 3/8	2,7
HG4/555-4	4	48,20 / 57,80	④	24	14,1	82 / 107	150	28 / 1 1/8	35 / 1 3/8	2,7
HG4/555-4 S	4	48,20 / 57,80	④	30	16,9	107 / 140	153	28 / 1 1/8	35 / 1 3/8	2,7
HG4/650-4	4	56,60 / 67,90	④	29	16,8	82 / 107	152	28 / 1 1/8	42 / 1 5/8	2,7
HG4/650-4 S	4	56,60 / 67,90	④	37	20,9	107 / 140	155	28 / 1 1/8	42 / 1 5/8	2,7
HG5/725-4	4	62,90 / 75,50	④	30	17,2	82 / 107	198	28 / 1 1/8	42 / 1 5/8	3,6
HG5/725-4 S	4	62,90 / 75,50	④	37	21,0	107 / 140	201	28 / 1 1/8	42 / 1 5/8	3,6
HG5/830-4	4	72,20 / 86,70	④	35	20,3	82 / 107	197	28 / 1 1/8	42 / 1 5/8	3,6
HG5/830-4 S	4	72,20 / 86,70	④	42	24,5	126 / 160	203	28 / 1 1/8	42 / 1 5/8	3,6
HG5/945-4	4	82,20 / 98,60	④	42	23,9	107 / 140	201	35 / 1 3/8	54 / 2 1/8	3,6
HG5/945-4 S	4	82,20 / 98,60	④	49	28,6	126 / 160	205	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1080-4	4	93,70 / 112,40	④	48	27,7	149 / 189	218	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1080-4 S	4	93,70 / 112,40	④	59	33,7	172 / 212	223	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1240-4	4	107,60 / 129,10	④	57	32,5	172 / 212	222	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1240-4 S	4	107,60 / 129,10	④	75	41,8	204 / 250	224	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1410-4	4	122,40 / 146,90	④	65	38,3	172 / 212	219	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1410-4 S	4	122,40 / 146,90	④	76	42,3	204 / 250	222	35 / 1 3/8	54 / 2 1/8	3,6
HG7/1620-4	6	140,60 / 168,80	④	72	39,5	223 / 340	278	42 / 1 5/8	54 / 2 1/8	4,5
HG7/1620-4 S	6	140,60 / 168,80	④	83	47,4	268 / 373	299	42 / 1 5/8	54 / 2 1/8	4,5
HG7/1860-4	6	161,40 / 193,70	④	80	45,8	268 / 373	296	42 / 1 5/8	54 / 2 1/8	4,5
HG7/1860-4 S	6	161,40 / 193,70	④	104	56,7	291 / 429	292	42 / 1 5/8	54 / 2 1/8	4,5
HG7/2110-4	6	183,60 / 220,30	④	97	53,1	291 / 429	289	42 / 1 5/8	64 / 2 5/8	4,5
HG7/2110-4 S	6	183,60 / 220,30	④	119	65,6	344 / 500	297	42 / 1 5/8	64 / 2 5/8	4,5
HG88e/2735-4	8	237,90 / 285,50	⑤	118	63,7	475 / 551	447,6	54 / 2 1/8	76 / 3 1/8	9,0
HG88e/2735-4 S	8	237,90 / 285,50	⑤	141	77,5	520 / 605	467,7	54 / 2 1/8	76 / 3 1/8	9,0
HG88e/3235-4	8	281,30 / 337,60	⑤	135	74,6	475 / 551	442,1	54 / 2 1/8	76 / 3 1/8	9,0
HG88e/3235-4 S	8	281,30 / 337,60	⑤	160	91,0	520 / 605	462,1	54 / 2 1/8	76 / 3 1/8	9,0

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

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HA 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 consumption ②	Starting current (rotor locked)		Discharge line DV	Suction line SV	
		m³/h		A	kW	A	kg	mm I inch	mm I inch	Ltr.
				Δ / Y		Δ / Y				
HA12P/60-4	2	5,40 / 6,40	③	4,7 / 2,7	1,3	40 / 23	52,0	12 I 1/2	12 I 1/2	0,8
HA12P/75-4	2	6,70 / 8,10	③	5,5 / 3,2	1,6	40 / 23	53,0	12 I 1/2	12 I 1/2	0,8
HA12P/90-4	2	8,00 / 9,60	③	6,3 / 3,7	1,9	43 / 25	53,0	12 I 1/2	12 I 1/2	0,8
HA12P/110-4	2	9,40 / 11,30	③	7,0 / 4,1	2,2	43 / 25	53,0	12 I 1/2	12 I 1/2	0,8
HA22P/125-4	2	11,10 / 13,30	③	8,1 / 4,7	2,4	69 / 40	80,0	12 I 1/2	16 I 5/8	1,0
HA22P/160-4	2	13,70 / 16,40	③	9,6 / 5,5	2,9	87 / 50	82,0	12 I 1/2	16 I 5/8	1,0
HA22P/190-4	2	16,50 / 19,80	③	10,9 / 6,3	3,5	87 / 50	81,0	12 I 1/2	16 I 5/8	1,0
HA34P/215-4	4	18,80 / 22,60	③	12,1 / 7,0	4,0	87 / 50	98,0	16 I 5/8	22 I 7/8	1,3
HA34P/255-4	4	22,10 / 26,60	③	13,8 / 8,0	4,7	87 / 50	98,0	16 I 5/8	22 I 7/8	1,3
HA34P/315-4	4	27,30 / 32,80	③	17,1 / 9,9	5,8	111 / 64	100,0	16 I 5/8	22 I 7/8	1,3
HA34P/380-4	4	33,10 / 39,70	③	20,2 / 11,7	7,0	111 / 64	100,0	16 I 5/8	22 I 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	156 / 193	223,0	28 / 1 1/8	42 / 1 5/8	3,6
HA6/1240-4	4	107,60 / 129,10	④	33	17,6	156 / 193	222,0	28 / 1 1/8	42 / 1 5/8	3,6
HA6/1410-4	4	122,40 / 146,90	④	33	17,7	156 / 193	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

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
- HG88e: 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 (± 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 Δ / 380-420 V Y - 3 - 50 Hz
265-290 V Δ / 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%
- Winding ratios: HG7 = 50% / 50%
- Designs for Y/Δ on request

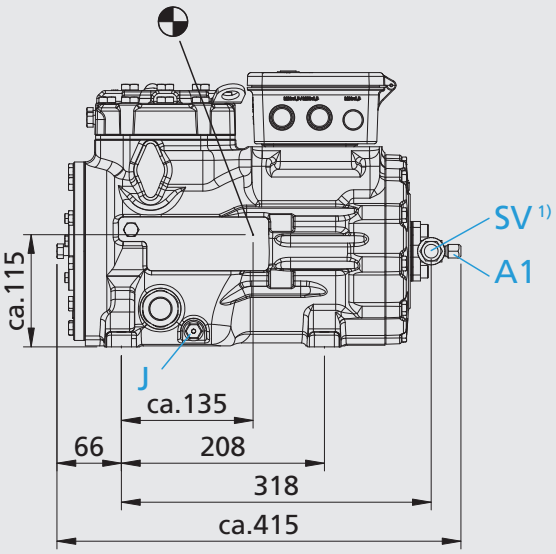
⑤ 380-420 V Δ/ YYY - 3 - 50 Hz PW
440-480 V Δ/ YYY - 3 - 60 Hz PW
PW = Part Winding, motors for part winding start
(no start unloaders required)
- Winding ratios: HG88e = 60% / 40%
- Designs for Y/Δ on request

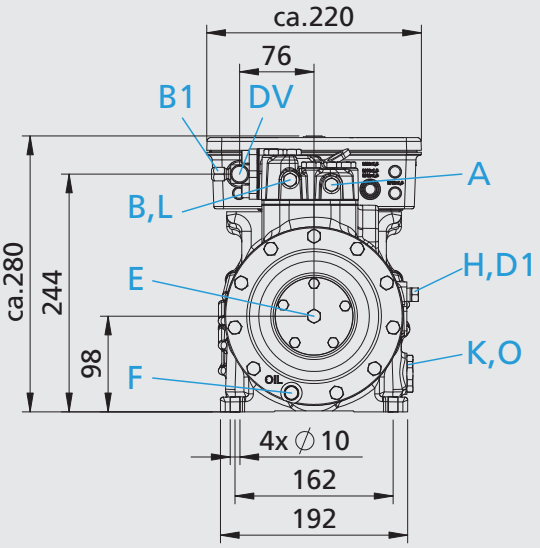
⑥ For soldering connections

Dimensions and connections

HG12P

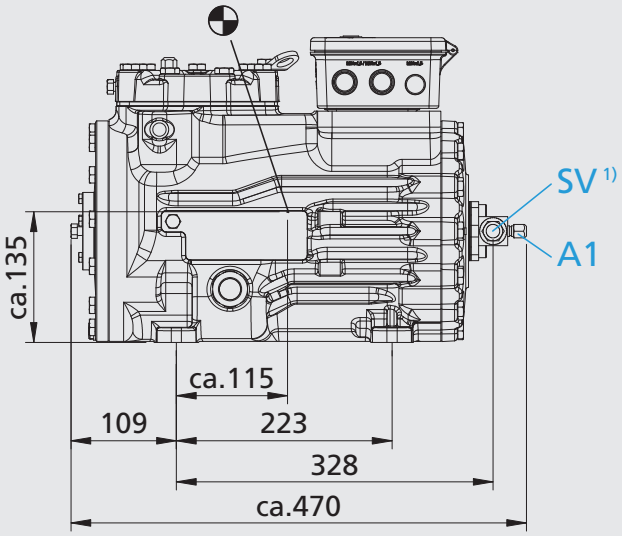
HG12P/60-4 S | HG12P/75-4 HG12P/75-4 S | HG12P/90-4 HG12P/90-4 S | HG12P/110-4 HG12P/110-4 S

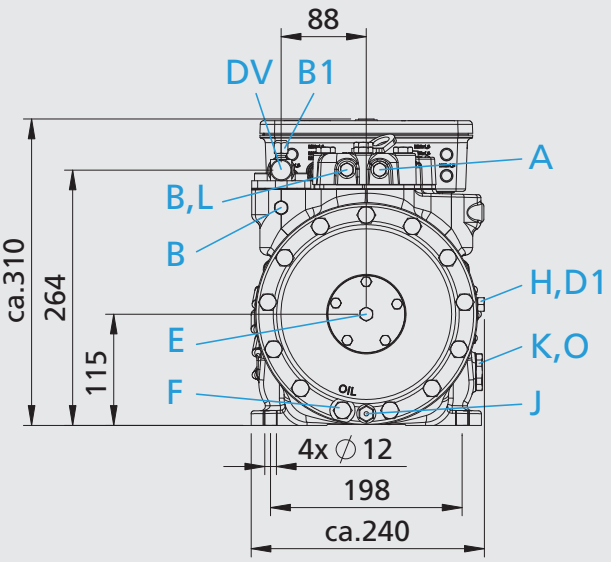




HG22e

HG22e/125-4 HG22e/125-4 S | HG22e/160-4 HG22e/160-4 S | HG22e/190-4 HG22e/190-4 S





Dimensions in mm
1) SV 90° rotatable
Centre of gravity

- Connections see page 64
- Dimensions for anti-vibration pad see page 61

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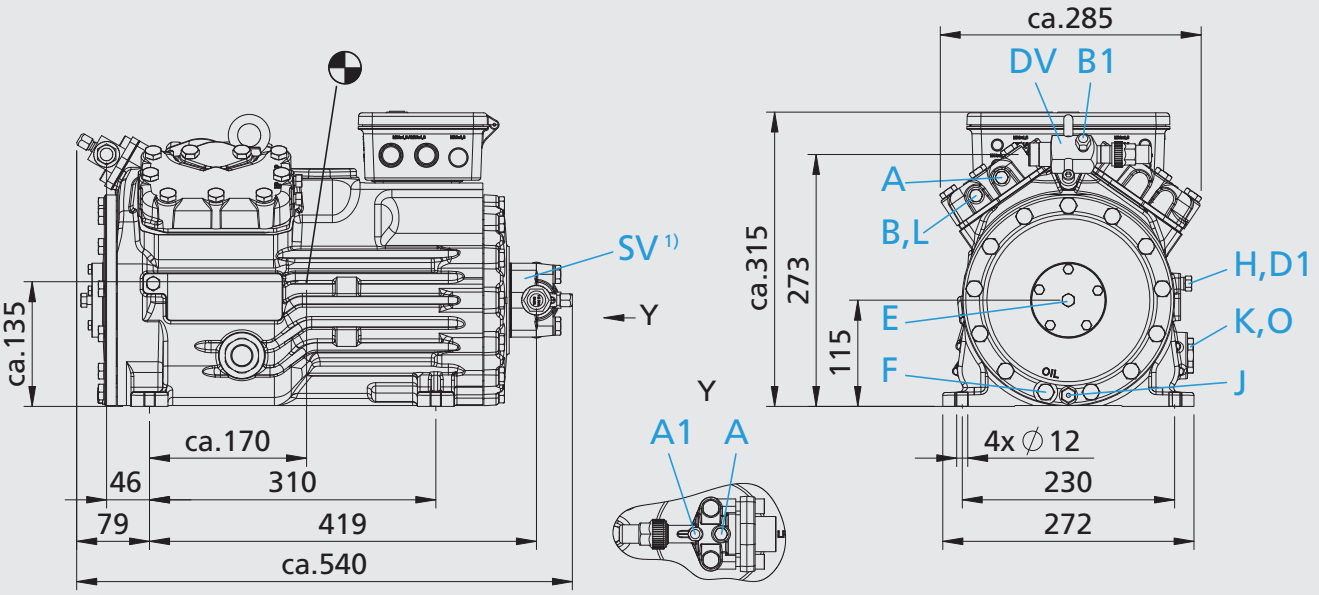
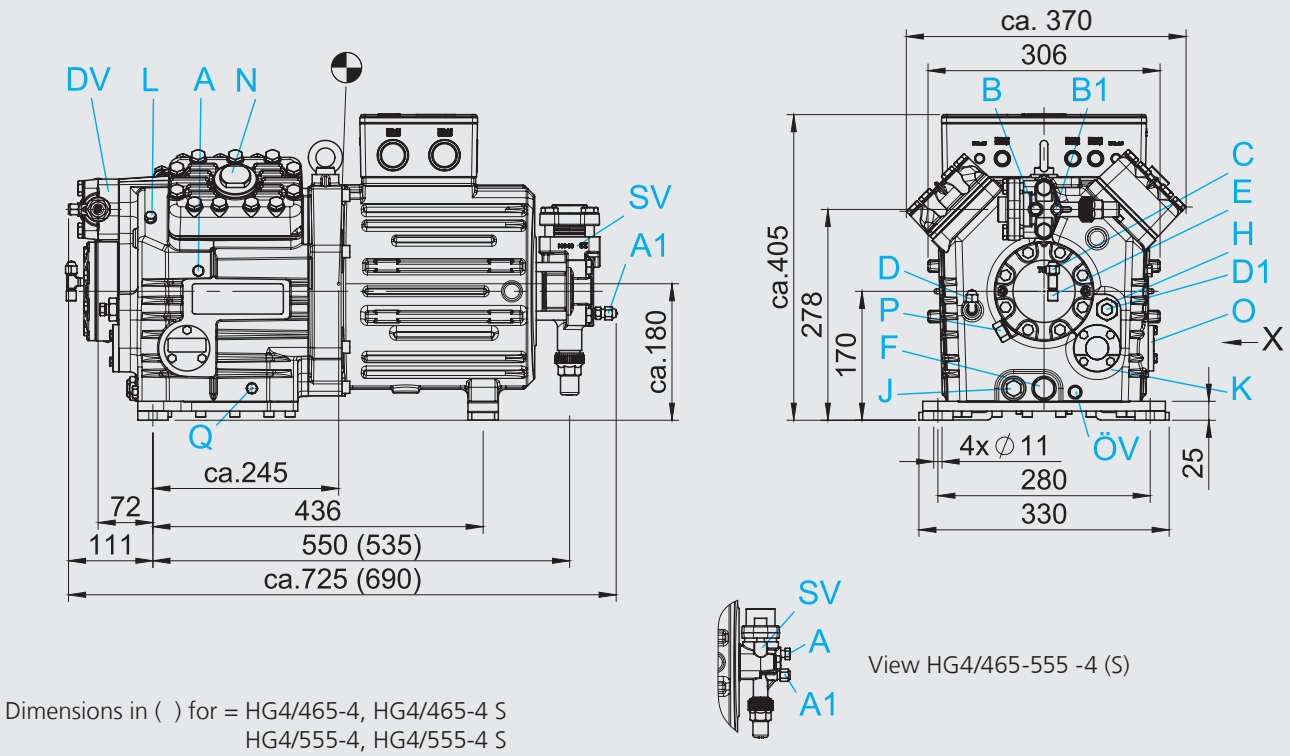
HG34e

HG34e/215-4 HG34e/215-4 S | HG34e/255-4 HG34e/255-4 S | HG34e/315-4 HG34e/315-4 S | HG34e/380-4 HG34e/380-4 S



HG4

HG4/465-4 HG4/465-4 S | HG4/555-4 HG4/555-4 S | HG4/650-4 HG4/650-4 S



View HG4/465-555 -4 (S)

Dimensions in ( ) for = HG4/465-4, HG4/465-4 S
HG4/555-4, HG4/555-4 S

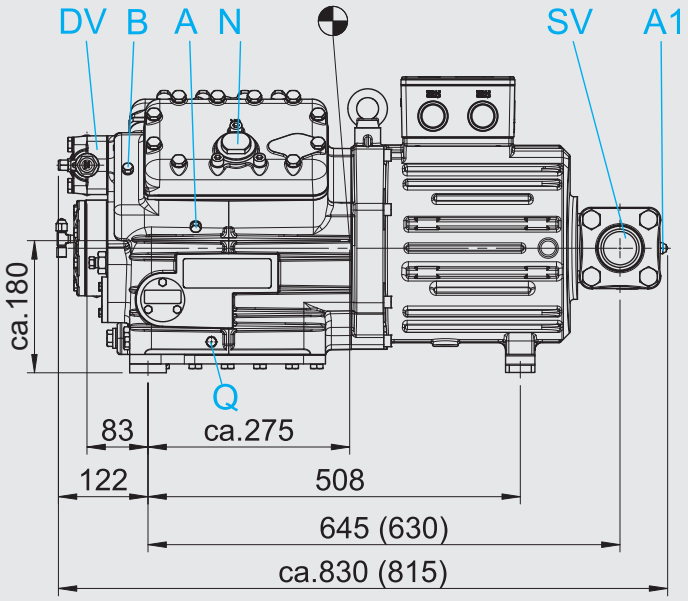
Dimensions in mm
1) SV 90° rotatable
Centre of gravity

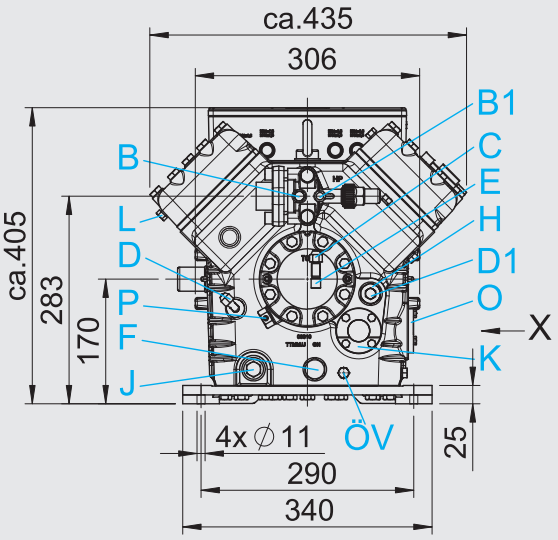
- Connections see page 64
- Dimensions for anti-vibration pad see page 61
- Dimensions for view X see page 61

Dimensions and connections

HG5

HG5/725-4
HG5/725-4 S
HG5/830-4
HG5/830-4 S
HG5/945-4
HG5/945-4 S

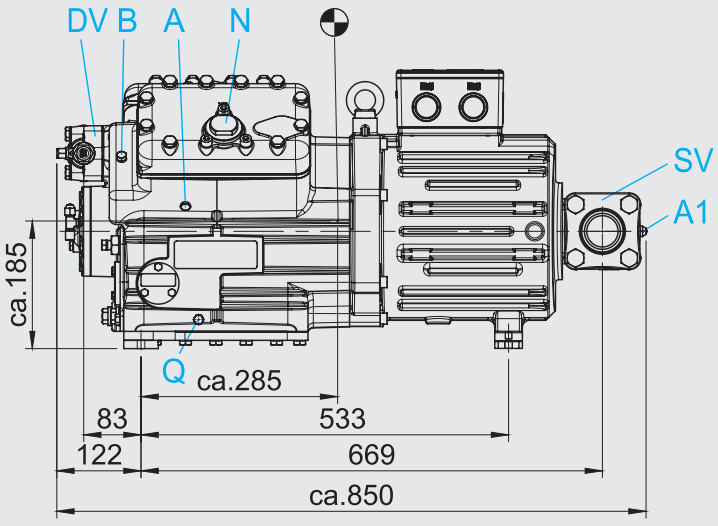


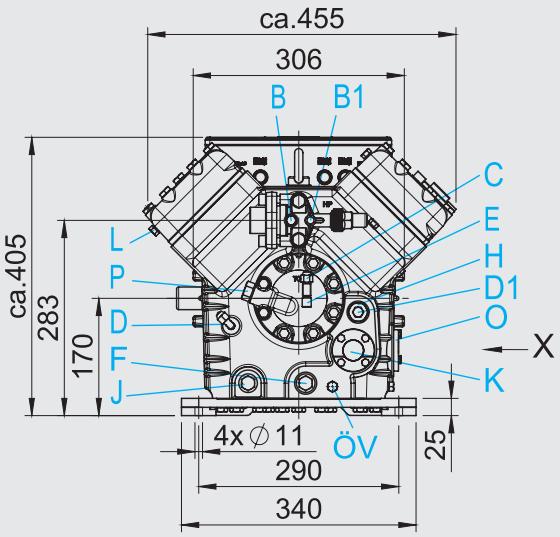


Dimensions in ( ) for = HG5/725-4, HG5/725-4 S
HG5/830-4, HG5/830-4 S

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
1) SV 90° rotatable
Centre of gravity

- Connections see page 64
- Dimensions for anti-vibration pad see page 61
- Dimensions for view X see page 61

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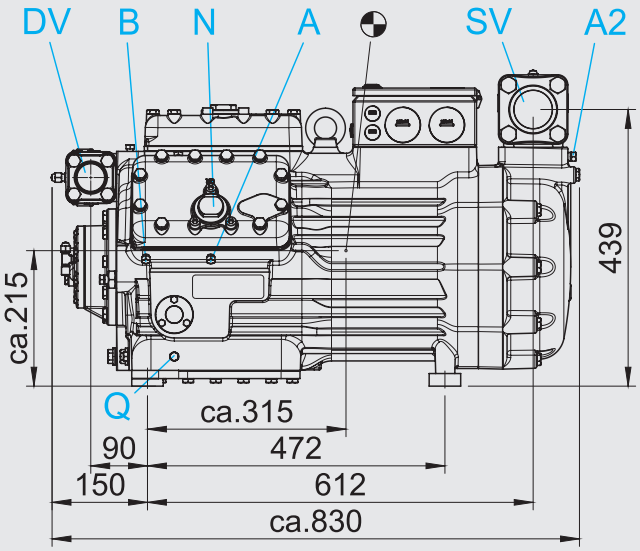
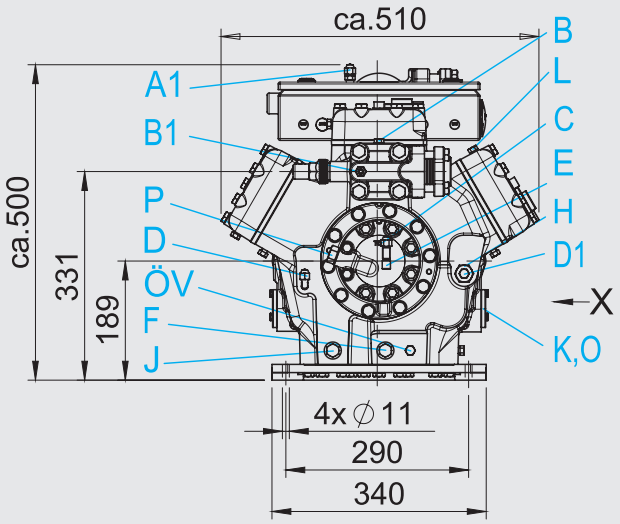
HG7

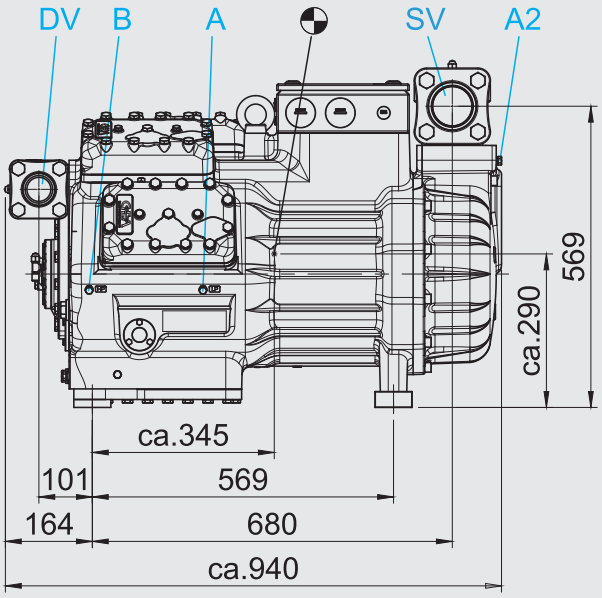
HG7/1620-4 HG7/1620-4 S
HG7/1860-4 HG7/1860-4 S
HG7/2110-4 HG7/2110-4 S

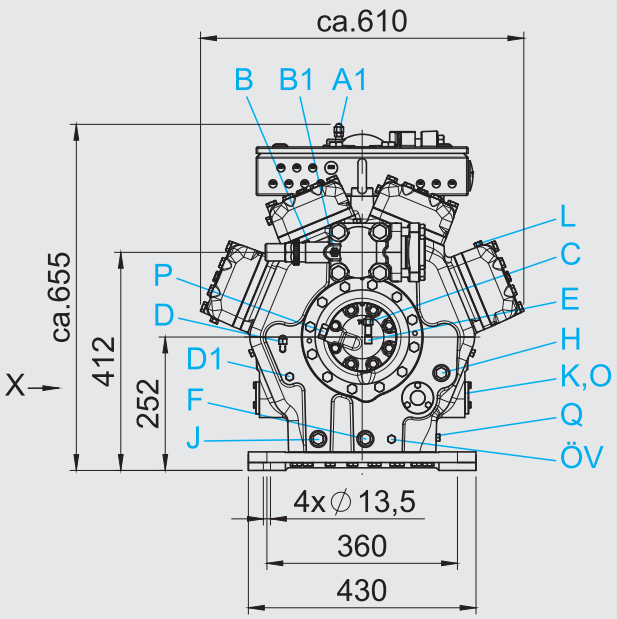




HG88e

HG88e/2735-4 HG88e/2735-4 S
HG88e/3235-4 HG88e/3235-4 S





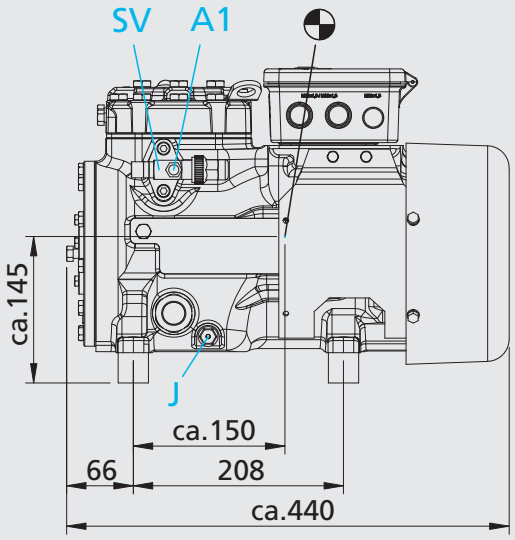
Dimensions in mm
1) Suction cover 90° rotatable
Centre of gravity

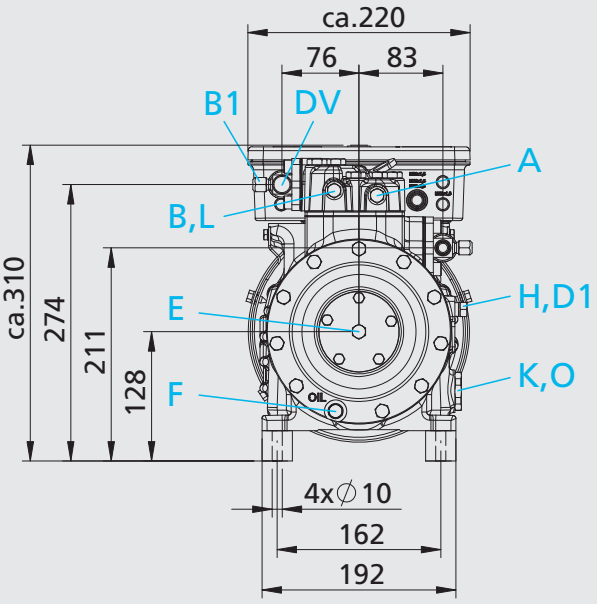
- Connections see page 64
- Dimensions for anti-vibration pad see page 61
- Dimensions for view X see page 61

Dimensions and connections

HA12P

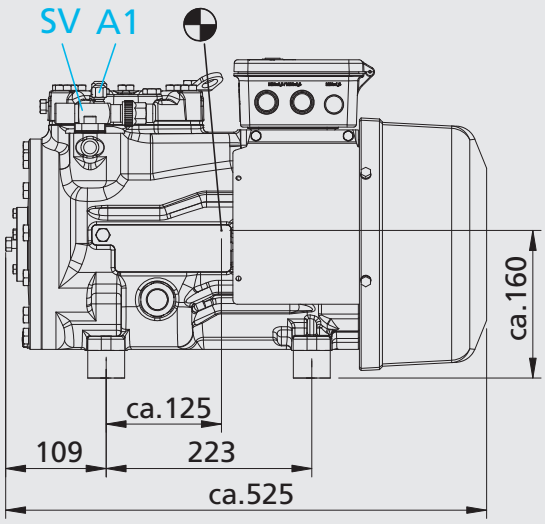
HA12P/60-4 HA12P/75-4 HA12P/90-4 HA12P/110-4

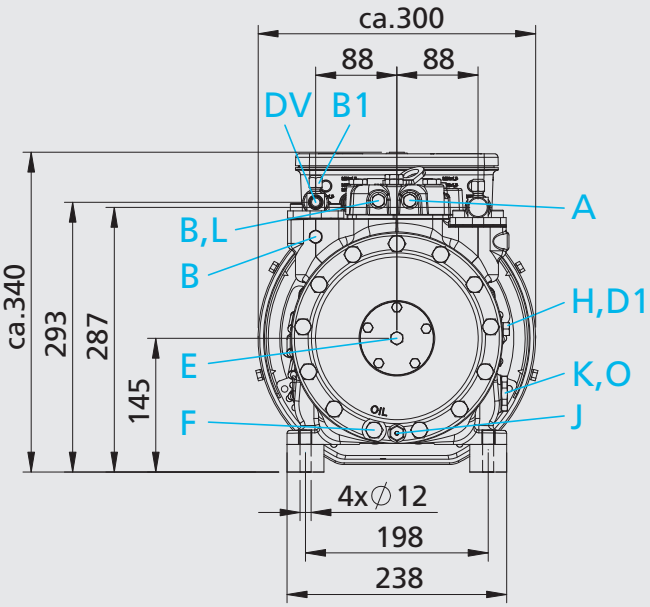




HA22P

HA22P/125-4 HA22P/160-4 HA22P/190-4





Dimensions in mm
Centre of gravity

- Connections see page 64
- Dimensions for anti-vibration pad see page 61
- Dimensions for view X see page 61

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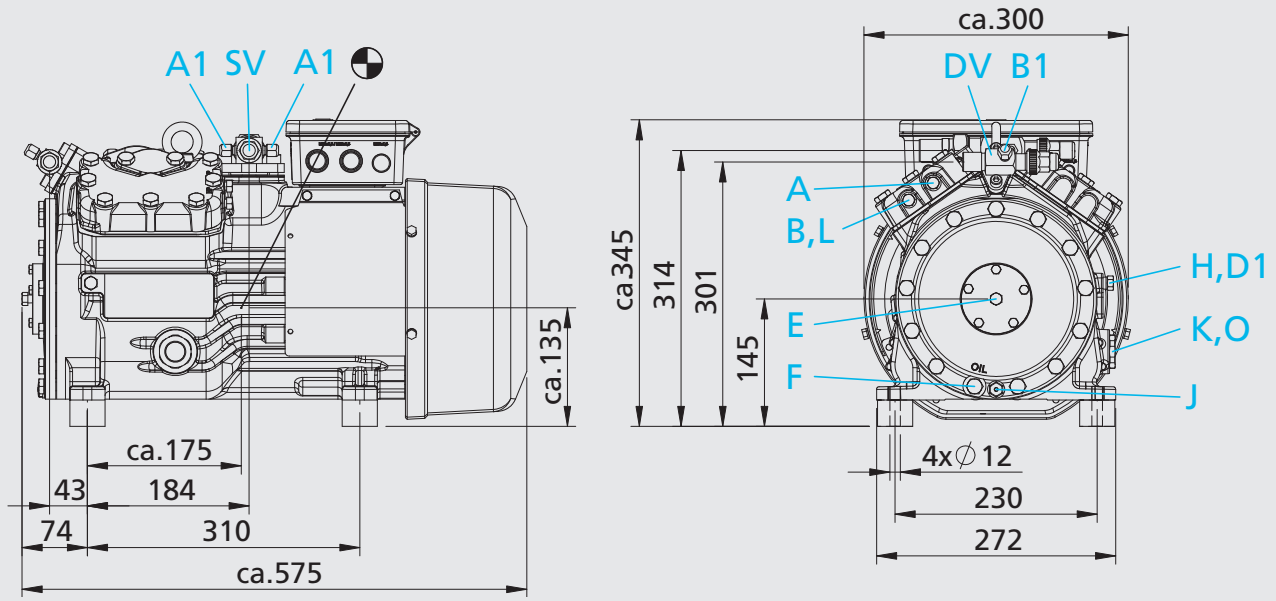
Dimensions and connections

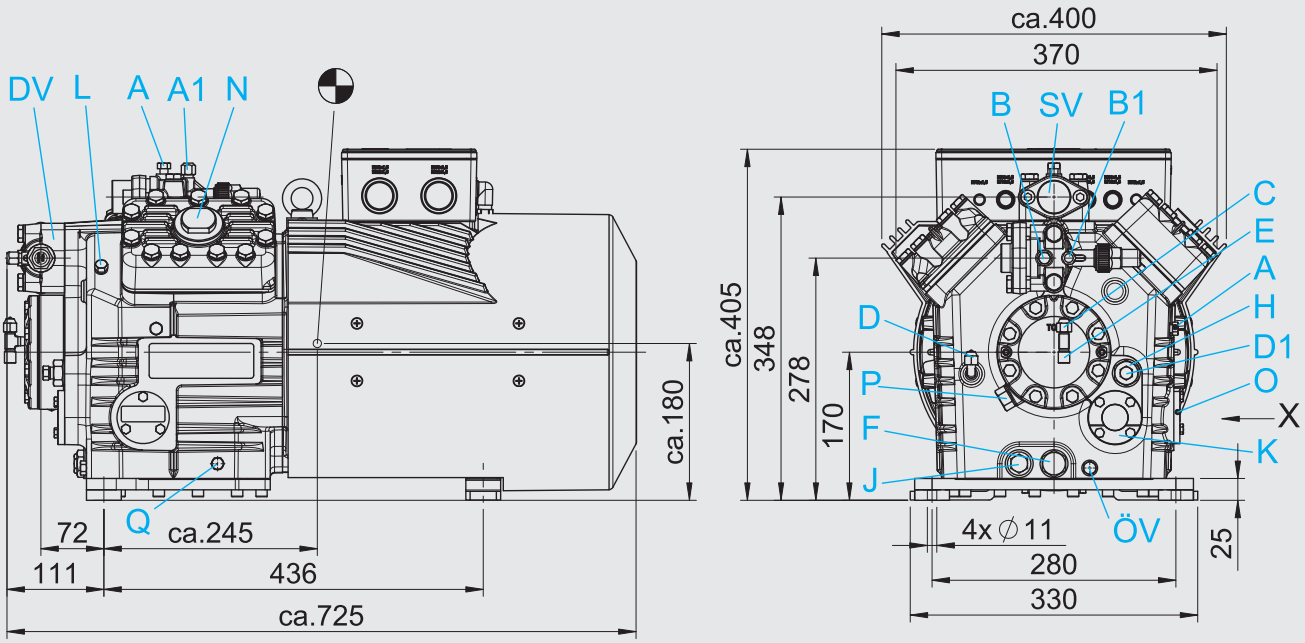
HA34P

HA34P/215-4 HA34P/255-4 HA34P/315-4 HA34P/380-4



HA4

HA4/465-4 HA4/555-4 HA4/650-4



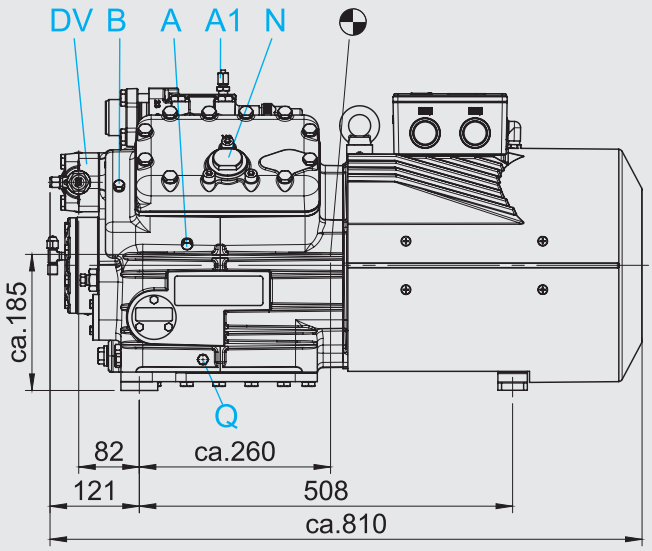
Dimensions in mm
Centre of gravity

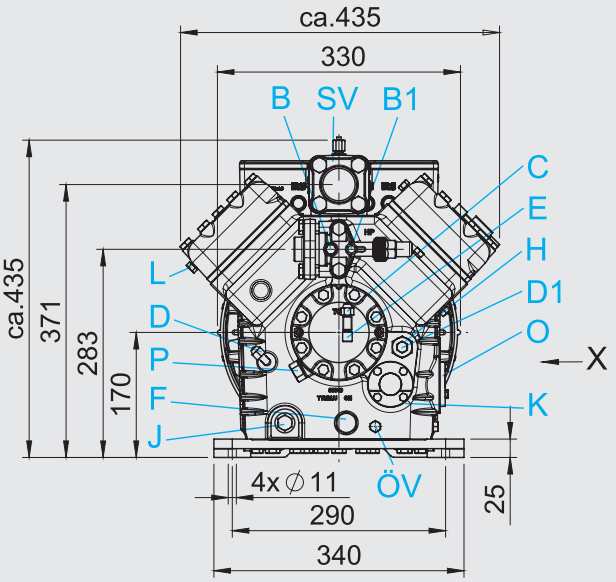
- Connections see page 64
- Dimensions for anti-vibration pad see page 61
- Dimensions for view X see page 61

Dimensions and connections

HA5

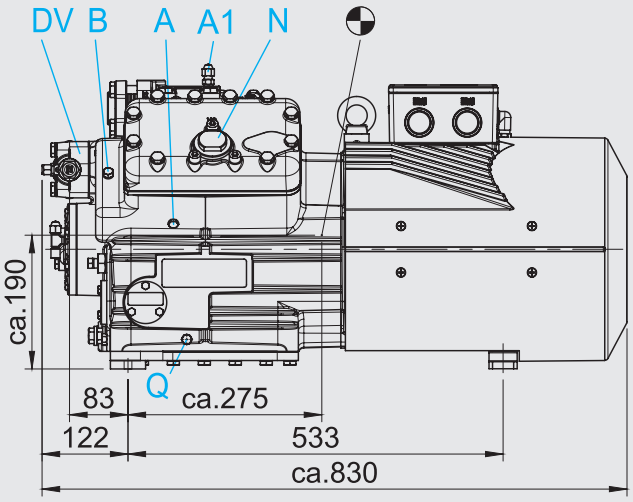
HA5/725-4 HA5/830-4 HA5/945-4

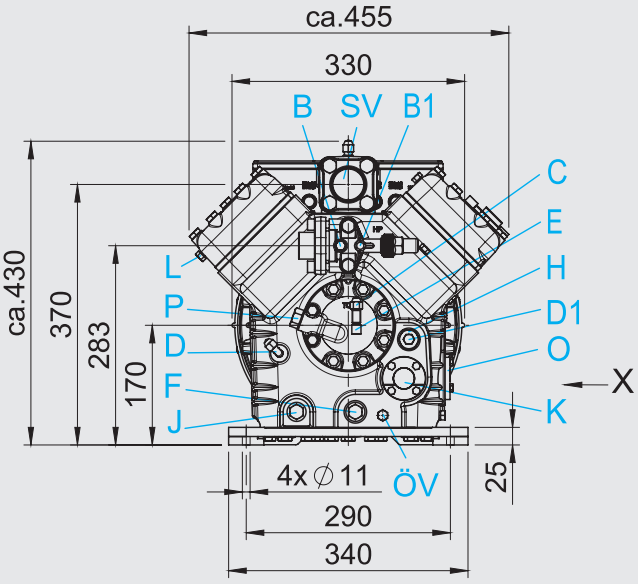




HA6

HA6/1080-4 HA6/1240-4 HA6/1410-4





Dimensions in mm
Centre of gravity

- Connections see page 64
- Dimensions for anti-vibration pad see page 61
- Dimensions for view X see page 61

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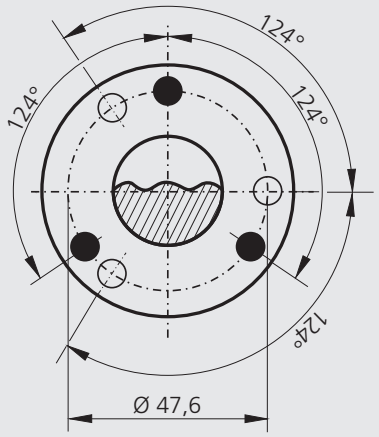
View X

Possibility to connect to oil level regulator

HG4, HG5, HG6, HG7, HG88e
HA4, HA5, HA6

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

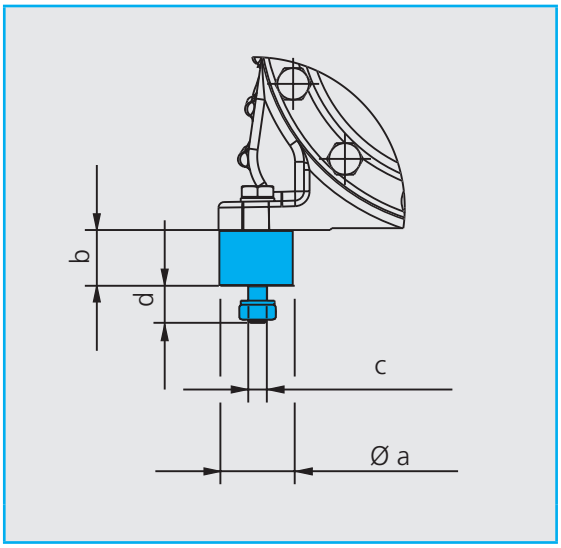
○ Three-hole connection for oil level regulator make TRAXOIL (3 x M6 x 10 deep)



Dimensions in mm

Dimensions for anti-vibration pad

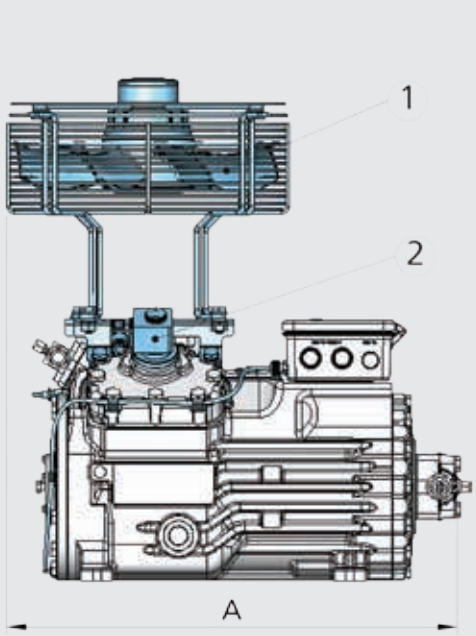
Type	Ø a mm	b mm	c mm	d mm
HG12P, HA12P	30	30	M8	20
HG22e, HA22P	40	30	M10	20
HG34e, HA34P	40	30	M10	20
HG4, HA4	40	30	M10	20
HG5, HA5	50	30	M10	25
HG6, HA6	50	30	M10	25
HG7	50	30	M10	25
HG88e	70	45	M12	37

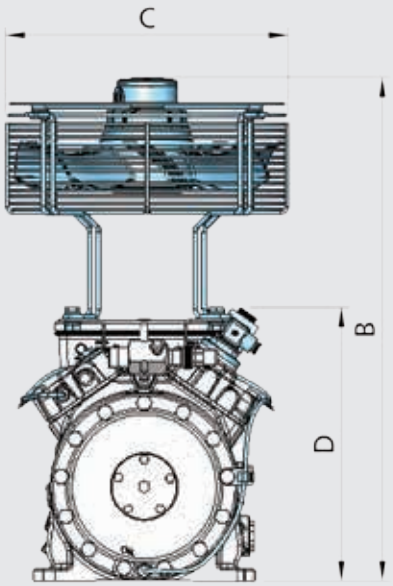


Dimensions and connections

Dimensions with accessories

HG12P HA12P | HG22e HA22P | HG34e HA34P





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

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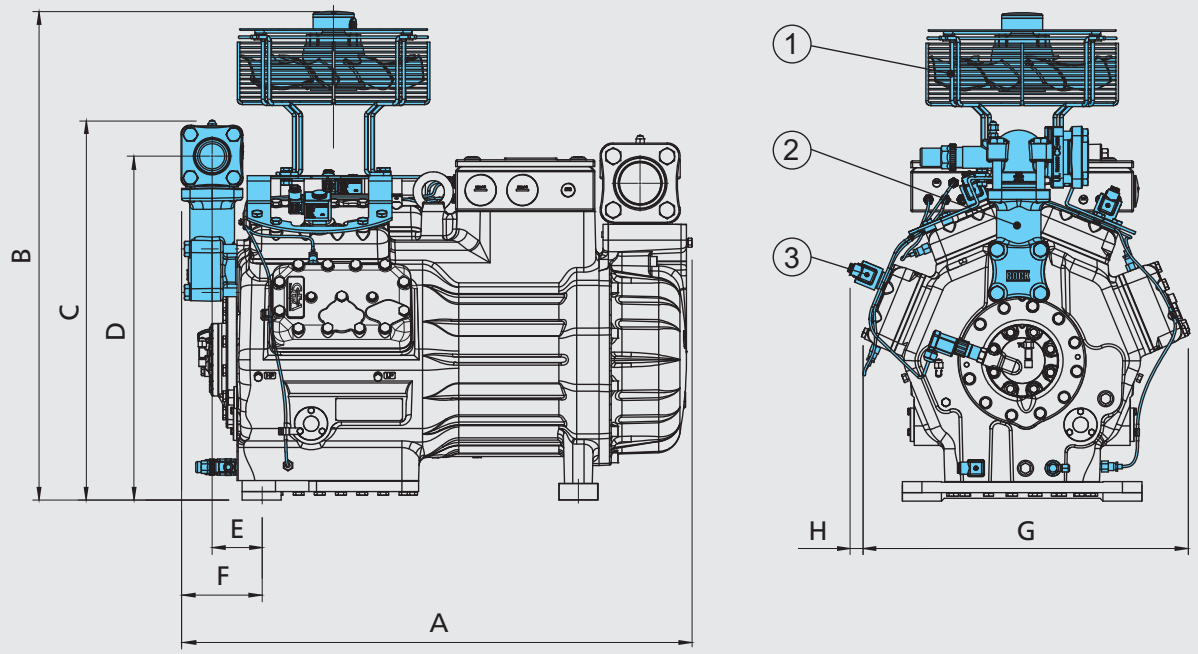
Dimensions and connections

Dimensions with accessories

HG4 HA4 | HG5 HA5 | HG6 HA6 | HG7 HG88e



① Additional fan ② Intermediate adapter for discharge line valve ③ Capacity regulator

Type	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm
HG4/465, HG4/555	ca. 705	ca. 680	ca. 455	416	91	131	ca. 375	ca. 20
HG4/650	ca. 740	ca. 680	ca. 455	416	91	131	ca. 375	ca. 20
HA4	-	-	-	-	-	-	ca. 400	ca. 5
HG5/725, HG5/830	ca. 835	ca. 730	ca. 465	422	101	141	ca. 440	-
HG5/945	ca. 850	ca. 730	ca. 465	422	101	141	ca. 440	-
HA5	-	-	-	-	-	-	ca. 435	-
HG6	ca. 870	ca. 740	ca. 460	421	101	141	ca. 460	-
HA6	-	-	-	-	-	-	ca. 455	-
HG7	ca. 830	ca. 760	ca. 580	520,5	95	150	ca. 510	ca. 15
HG88e	ca. 920	ca. 880	ca. 680	617	90	145	ca. 610	ca. 20

Dimensions and connections

Connections		HG12P HA12P	HG22e HA22P	HG34e HA34P	HG4 HA4	HG5 HA5	HG6 HA6	HG7	HG88e
SV DV	Suction line Discharge line	please refer to Technical data page 52 + 53							
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	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF
D	Connection oil pressure safety switch LP	-	-	-	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF	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	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF
F	Oil drain	M 8	M 10	M 10	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5
H	Oil charge plug	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5
J	Connection oil sump heater	Ø 15 mm	Ø 15 mm	Ø 15 mm	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5	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	1/8 " NPTF
N	Connection capacity controller	-	-	-	M 48 x 1,5	M 45 x 1,5	M 45 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	1/4 " NPTF
P	Connection oil pressure differential sensor	-	-	-	M 20 x 1,5	M 20 x 1,5	M 20 x 1,5	M 20 x 1,5	M 20 x 1,5
Q	Connection oil temperature sensor	-	-	-	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF

① Dimensions see view X page 61

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Scope of supply

Scope of supply HG	HG12P	HG22e	HG34e	HG4	HG5	HG6	HG7	HG88e
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 Y/YY - 3 - 50 Hz 440-480 V Y/YY - 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 MP10	●	●	●	●	●	●	●	
Winding protection with PTC resistor sensors and electronic triggering unit INT69 G								●
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	● [1]	● [1]	● [1]	●	●	●	●	●
Possibility to connect to oil level controllers make Traxoil	● [1]	● [1]	● [1]	● [1]	● [1]	● [1]	● [1]	● [1]
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)							●	
Decompression valve				●	●	●	●	●
Suction and discharge line valve	●	●	●	●	●	●	●	●
Inert gas charge	●	●	●	●	●	●	●	●
4 anti-vibration pads enclosed	●	●	●	●	●	●	●	●

[1] Only possible with additional adapter

Scope of supply

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 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	● [1]	● [1]	● [1]	●	●	●
Possibility to connect to oil level controllers make Traxoil	● [1]	● [1]	● [1]	● [1]	● [1]	● [1]
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	●	●	●	●	●	●

[1] Only possible with additional adapter

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Accessories

Accessories HG + HA	HG12P HA12P	HG22e HA22P	HG34e HA34P	HG4 HA4	HG5 HA5	HG6 HA6	HG7	HG88e
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 ESS (Electronic Soft Start) 400 V - 3 - 50/60 Hz, IP20, (Connection clamps IP00) for installation in switch cabinet		●[1]	●[1]	●[1]	●[1]	●[1]	●[1] [2]	
⑥ Oil pressure safety switch MP 54 230 V - 1 - 50/60 Hz, IP20				●[1]	●[1]	●[1]	●[1]	●[1]
⑦ Oil differential pressure sensor (Δp-switch Kriwan make) 220-240 V - 1 - 50/60 Hz				●[1]	●[1]	●[1]	●[1]	●[1]
⑧ Oil service valve				●	●	●	●	●
⑨ Oil temperature control (NTC)								●[1]
⑩ Cylinder cover prepared for capacity regulator			●					
⑪ Additional fan 230 V Δ / 400 V Y - 3 - 50 Hz, 120 W, 230-265 V Δ / 400-460 V Y - 3 - 60 Hz, 190 W, IP54, Voltage range ± 10%	●[1] [3]	●[1] [3]	●[1] [3]	●[1] [3]	●[1] [3]	●[1] [3]	●[1]	●[1]
⑫ Continuously variable speed control by means of a 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 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	●	●	●					
⑬ GEA Bock Compressor Management BCM2000 including oil pressure control (Δp-switch Kriwan make) ⑦, oil temperature control (NTC) ⑨, thermal protection thermostat (PTC) per cylinder cover ②				●	●	●	●	●
⑭ INT69 GTML Diagnose 115 V / 230 V AC, 50/60 Hz, IP00, incl. Oil differential pressure sensor INT250, Thermal protection thermostat (PTC) per cylinder cover, (INT69 G not applicable)								●
⑮ DP-Modbus Gateway 115 V / 230 V AC, 50/60 Hz, IP00 incl. adapter cable								●
⑯ Modbus-LAN Gateway 230 V AC, 50/60 Hz, IP00								●[1]
⑰ USB converter for INT69 G Diagnose and INT69 GTML Diagnose								●[1]
⑱ Water-cooled cylinder covers				●	●	●	●	
Sea water resistant water-cooled cylinder covers				●	●	●	●	
⑲ Intermediate adapter for discharge line valve				●[3]	●[3]	●[3]	●	●
⑳ 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]

[1] Enclosed package

[2] Not available HG7/2110-4 S

[3] Only available for HG compressors

[4] On request

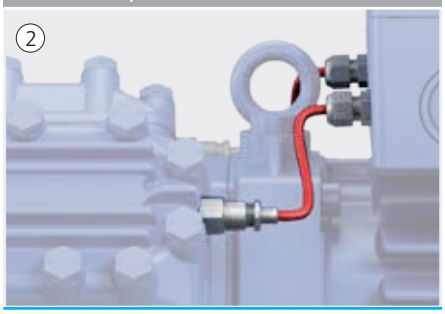
Pictures of accessories see page 68-69

Accessories

Oil sump heater

① 

Thermal protection thermostat

② 

Start unloader / Capacity regulator

③ ④ 

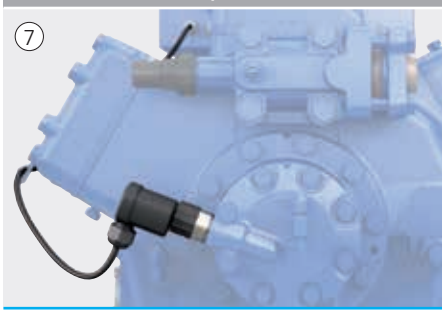
ESS Electronic Soft Start

⑤ 

Oil pressure safety switch

⑥ 

Oil differential pressure sensor

⑦ 

Oil service valve

⑧ 

Oil temperature control

⑨ 

Prepared for capacity regulator

⑩ 

Additional fan

⑪ 

EFC Electronic Frequency Control

⑫ 

BCM2000

⑬ 

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Accessories

INT69 GTML Diagnose

⑭

DP-Modbus Gateway

⑮

Modbus-LAN Gateway

⑯

USB converter

⑰

Water-cooled cylinder covers

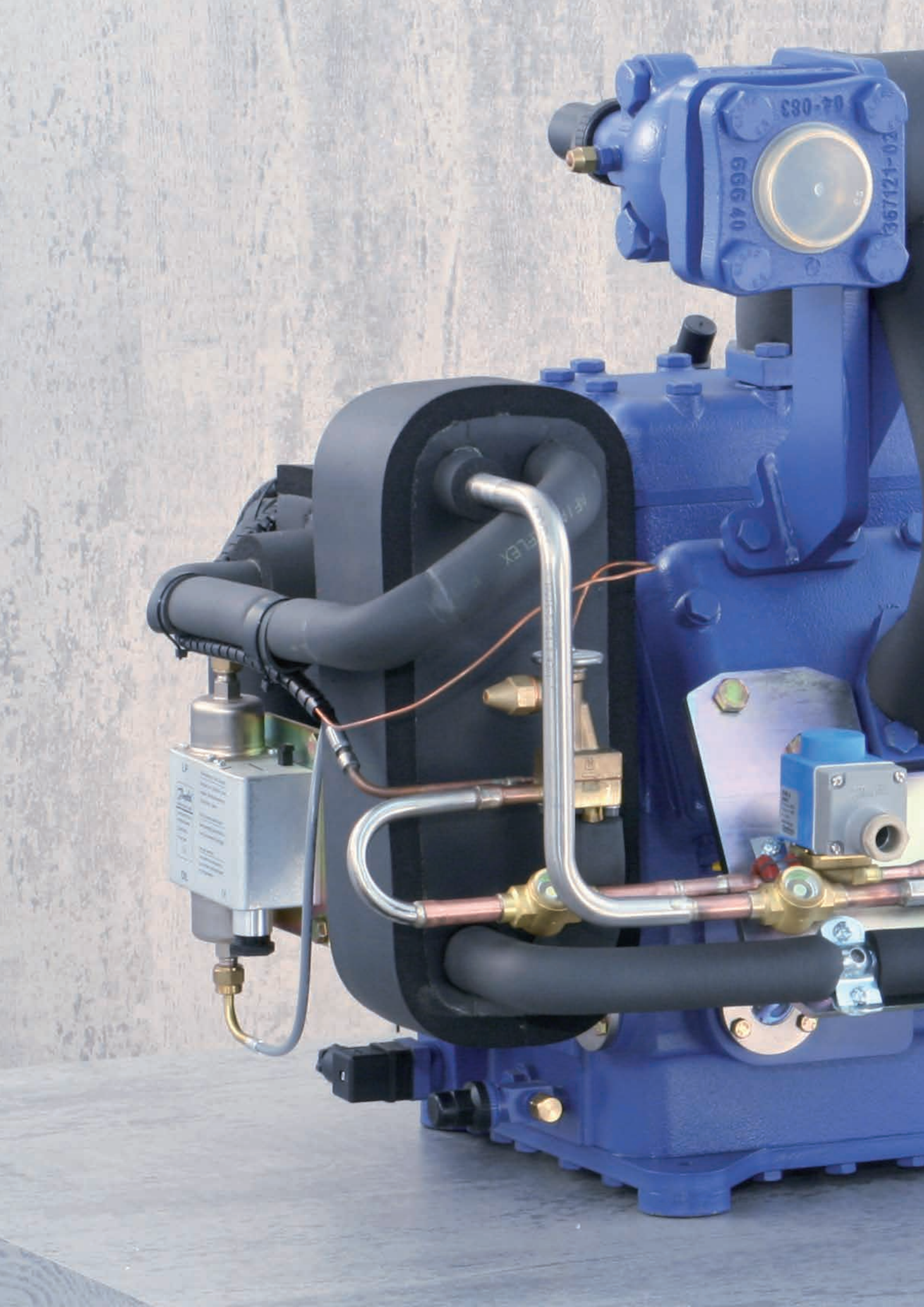
⑱

Intermediate adapter for discharge line valve

⑲

Connection piece in welded construction

⑳



Two-stage semi-hermetic GEA Bock compressors

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Special features	73
Operating limits and performance data	74
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Dimensions and connections	79
Scope of supply and accessories	82

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

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

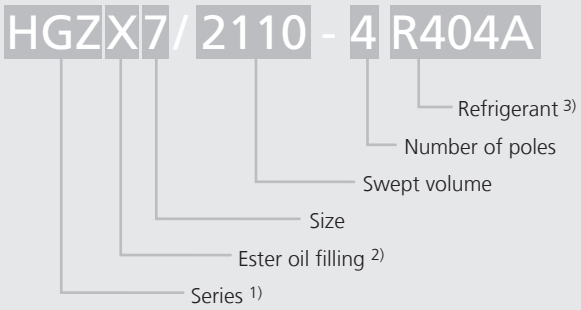
Further information on the HG7 basic compressor see chapter "Single-stage semi-hermetic GEA Bock compressors" from page 28.

Available models

for refrigerants R404A, R410A, R507, R22

Type	Displacement (50 Hz) LP / HP
HGZX7/1620-4 R404A/R507 HGZX7/1620-4 R410A HGZ7/1620-4 R22	93,70 m³/h / 46,90 m³/h
HGZX7/1860-4 R404A/R507 HGZX7/1860-4 R410A HGZ7/1860-4 R22	107,60 m³/h / 53,80 m³/h
HGZX7/2110-4 R404A/R507 HGZX7/2110-4 R410A HGZ7/2110-4 R22	122,40 m³/h / 61,20 m³/h

Type key



1) HGZ = Hermetic Gas-Cooled (suction gas-cooled), two-stage
2) X = Ester oil filling (HFC refrigerants R404A,R410A)
3) Possible refrigerants are R404A, R410A, R22

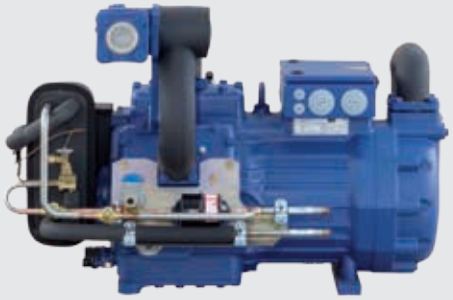
The two possible designs of the HGZ7:

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.

Design: mounted directly to the compressor

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



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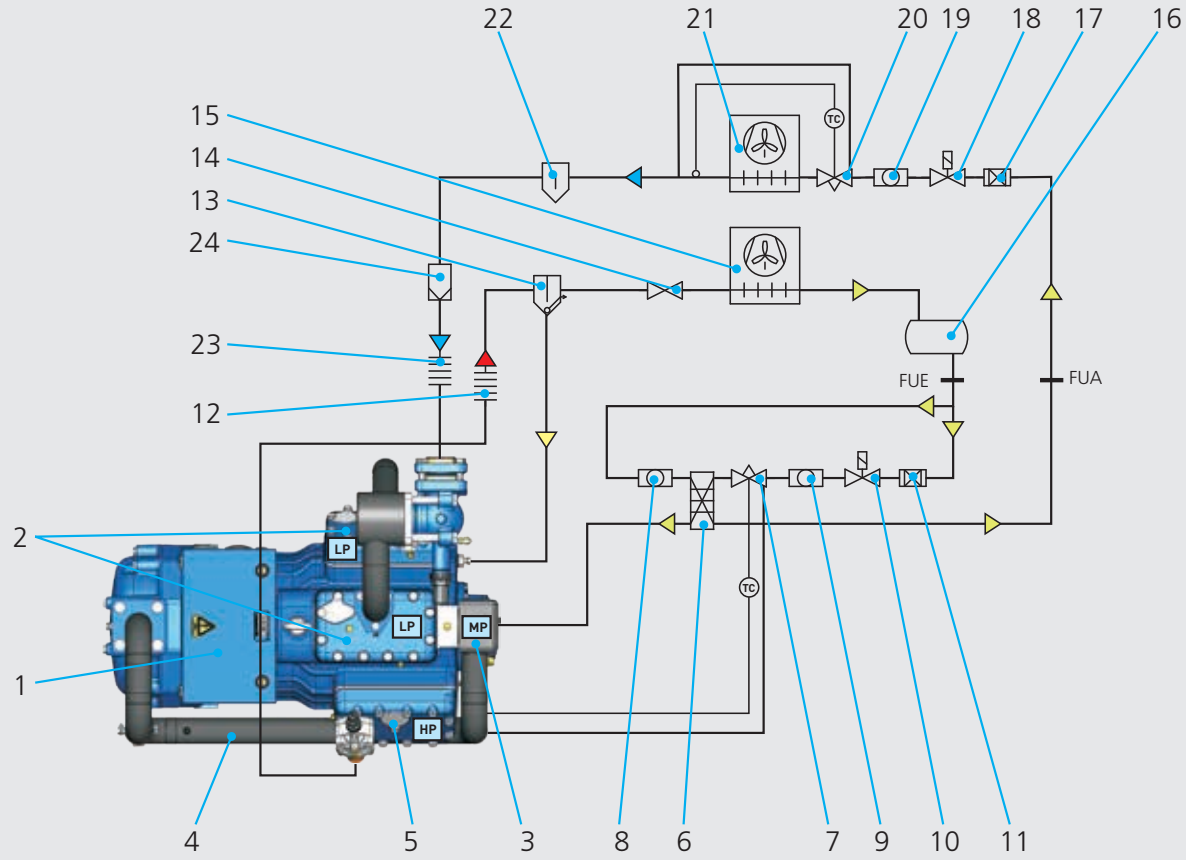
Refrigeration circuit with two-stage compressor
Schematic diagram



Explanations

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

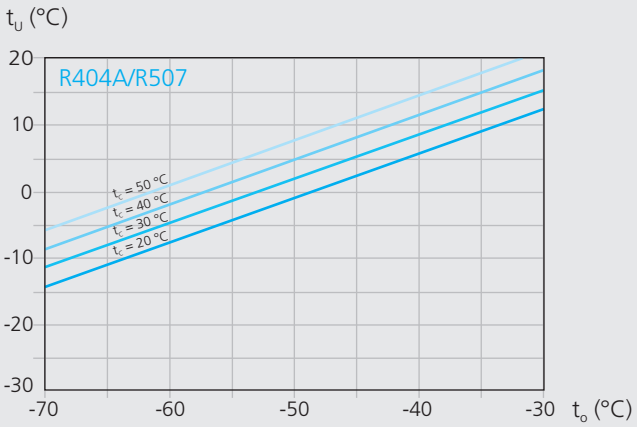
LP = Low pressure
MP = Medium pressure
HP = High pressure
FUE = Liquid subcooler, inlet
FUA = Liquid subcooler, outlet

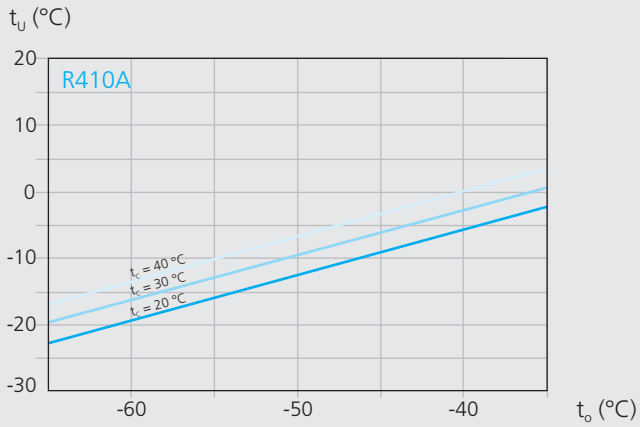
* Components for subcooling system not supplied as standard

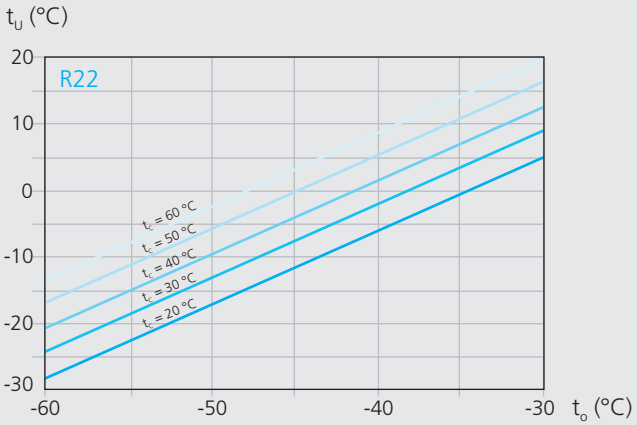
Subcooling temperature

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

Subcooling temperature calculation diagram for the intermediate cooler outlet







t_U = Subcooling temperature at the intermediate cooler outlet (FUA)

t_O = Evaporation temperature

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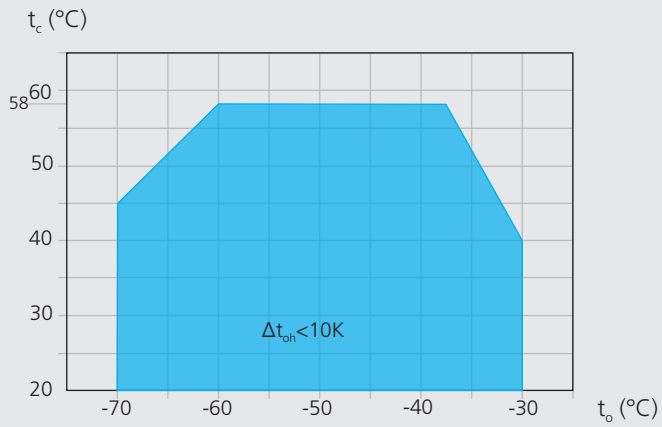
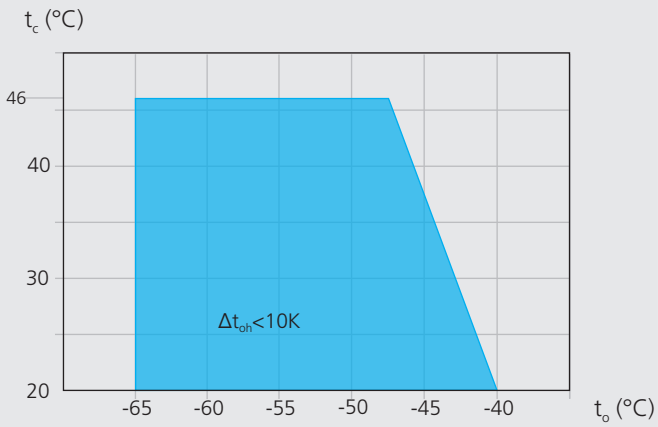
Operating limits

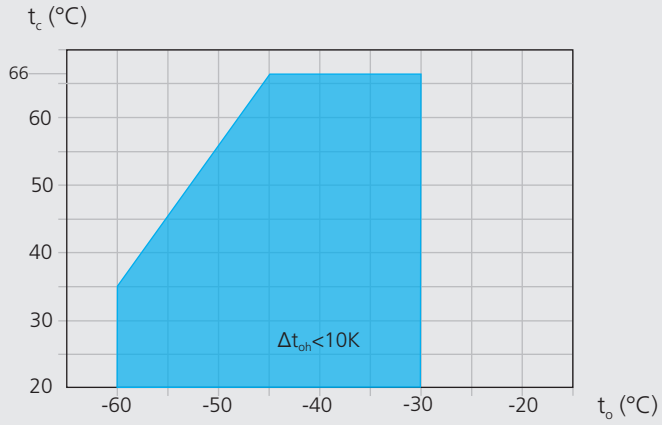
R404A/R507



R410A



R22



Application range

t_O Evaporating temperature (°C)
t_C Condensing temperature (°C)
Δt_{Oh} Suction gas superheat (K)

Max. permissible operating pressure (LP/MP/HP)[1]: 19/19/28 bar

[1] 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

Performance data

R404A/R507 — Performance data — 50 Hz

Type	Cond. temp. °C		Cooling capacity $\dot{Q}_o$ [W] / Power consumption P_e [kW] — Evaporating temperature °C								
			-30	-35	-40	-45	-50	-55	-60	-65	-70
HGZX7/1620-4	30	Q	34869	28471	23098	18628	14936	11899	9394	7296	5482
		P	21,17	19,41	17,63	15,84	14,05	12,31	10,61	8,99	7,46
	40	Q	33437	27315	22181	17910	14380	11467	9047	6997	5192
		P	23,42	21,42	19,40	17,39	15,41	13,48	11,61	9,84	8,17
	50	Q		25860	20950	16866	13484	10680	8332	6315	
		P		23,49	21,24	19,02	16,84	14,72	12,68	10,75	
HGZX7/1860-4	30	Q	40042	32694	26525	21391	17152	13665	10787	8378	6294
		P	24,31	22,29	20,24	18,18	16,14	14,13	12,19	10,32	8,56
	40	Q	38397	31367	25471	20567	16514	13169	10390	8035	5962
		P	26,90	24,60	22,28	19,97	17,70	15,48	13,34	11,30	9,38
	50	Q		29696	24057	19367	15484	12265	9568	7252	
		P		26,98	24,39	21,84	19,33	16,90	14,56	12,35	
HGZX7/2110-4	30	Q	45550	37191	30173	24334	19511	15544	12271	9530	7160
		P	27,66	25,36	23,03	20,69	18,36	16,08	13,86	11,74	9,74
	40	Q	43679	35681	28974	23396	18785	14980	11819	9140	6782
		P	30,60	27,98	25,34	22,72	20,13	17,61	15,17	12,85	10,67
	50	Q		33780	27366	22031	17614	13952	10884	8249	
		P		30,69	27,75	24,84	21,99	19,23	16,57	14,04	

R410A — Performance data — 50 Hz

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

Performance data

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

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

Technical data

HGZ Type	Number of cylinders	Displacement 50 Hz (1450 rpm) LP	Displacement 50 Hz (1450 rpm) HP	Displacement 60 Hz (1740 rpm) LP	Displacement 60 Hz (1740 rpm) HP	Electrical data Voltage ①	Electrical data Max. working current ②	Electrical data Max. power consumption ②	Electrical data Starting current (rotor locked) ②	Weight	Oil charge
		m³/h		m³/h			A	kW	A	kg	Ltr.
							* PW 1+2		* PW1 / PW 1+2		
HGZX7/1620-4 R404A HGZX7/1620-4 R410A HGZ7/1620-4 R22	6	93,70	46,90	112,50	56,20	③	50	27,0	185 / 278	294	4,5
HGZX7/1860-4 R404A HGZX7/1860-4 R410A HGZ7/1860-4 R22	6	107,60	53,80	129,10	64,60	③	55	30,0	185 / 278	291	4,5
HGZX7/2110-4 R404A HGZX7/2110-4 R410A HGZ7/2110-4 R22	6	122,40	61,20	146,90	73,50	③	65	36,0	191 / 286	289	4,5

* 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 (± 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 Δ/ YYY - 3 - 50 Hz PW
440-480 V Δ/ 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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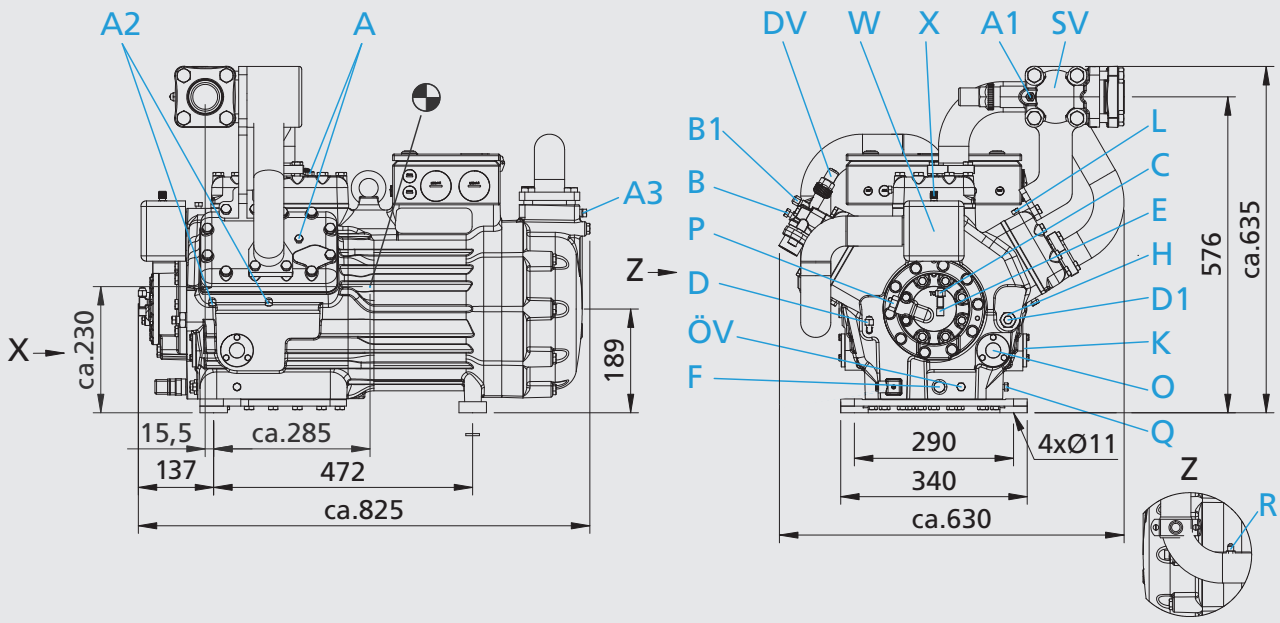
Dimensions and connections

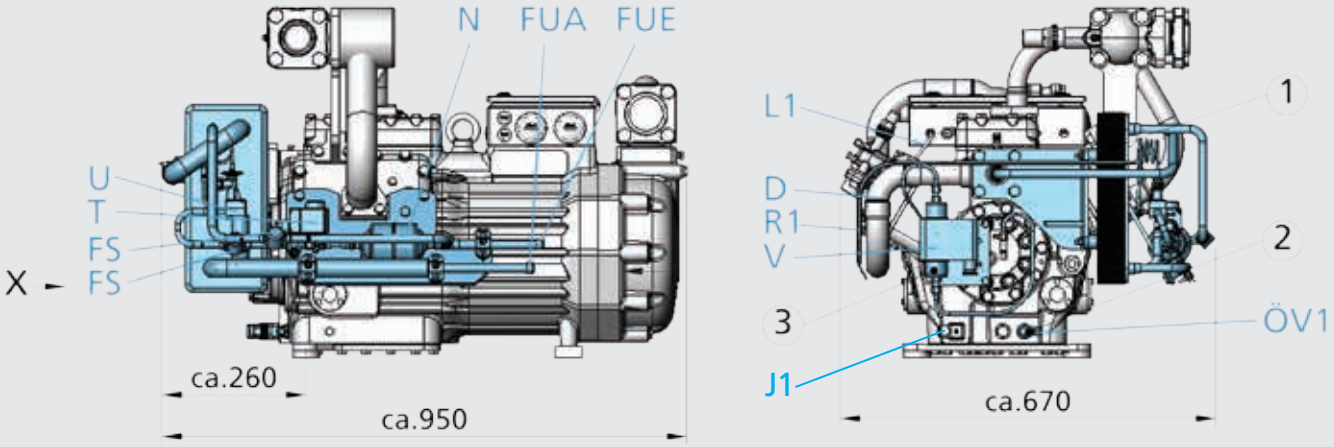
HGZ7 - Series

Liquid subcooler with accessories supplied separately



HGZ7 - Option

Liquid subcooler with complete accessories directly mounted onto the compressor



① Liquid subcooler with accessories ② Oil service valve ③ Oil pressure safety switch

Dimensions in mm
Centre of gravity

- Connections see page 80
- Rigid fixing without anti-vibration pad
- Dimensions for view X see page 81

Dimensions and connections

Connections		
DV	Discharge line	Ø 35 mm / 1 3/8 "
SV	Suction line	Ø 54 mm / 2 1/8 "
FUE	Liquid subcooler IN	Ø 16 mm - 5/8 "
FUA	Liquid subcooler OUT	Ø 16 mm - 5/8 "
A	Connection suction side, not lockable	1/8 " NPTF
A1	Connection suction side, lockable	7/16 " UNF
A2	Connection intermediate pressure, not lockable	1/8 " NPTF
A3	Connection intermediate pressure, not lockable	1/4 " NPTF
B	Connection discharge side, not lockable	1/8 " NPTF
B1	Connection discharge side, lockable	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
E	Connection oil pressure gauge	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

Connections		
J1	Oil sump heater	M 22 x 1,5
K	Sight glass	3 hole M 6
L	Connection thermal protection thermostat	1/8 " NPTF
L1	Thermal protection thermostat	1/8 " NPTF
N	Filter drier	Ø 12 mm
O	Connection oil level regulator	①
ÖV	Connection oil service valve	1/4 " NPTF 1)
ÖV1	Oil service valve	7/16 " UNF
P	Connection oil pressure differential sensor	M 20 x 1,5
Q	Connection oil temperature sensor	1/8 " NPTF 1)
R	Connection equalizer for injection valve	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	7/16 " UNF

① Dimensions see view X see page 81

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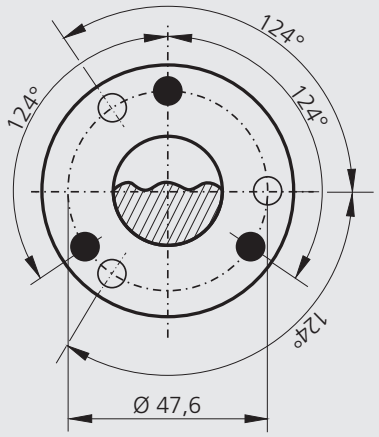
Dimensions and connections

View X

Possibility to connect to oil level regulator

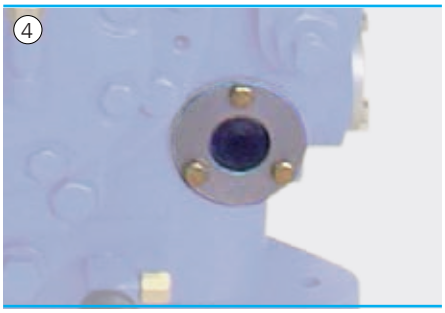
● Three-hole connection for oil level regulator
make ESK, AC+R, CARLY (3x M6, 10 deep)



Dimensions in mm

Scope of supply

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 MP10 electronic motor protection
Oil pump
③ Oil pump cover with screw connection for oil differential pressure sensor (Δp switch Kriwan make)
④ Direct connection possibility for oil level regulators ESK, AC+R or CARLY
Oil charge: HGZ: FUCHS Reniso SP46 HGZX: 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



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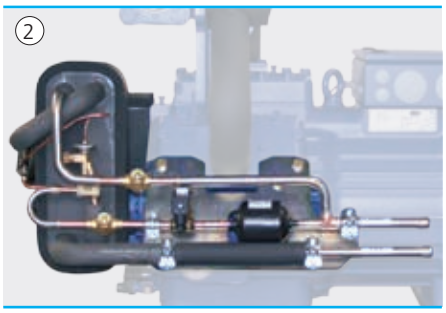
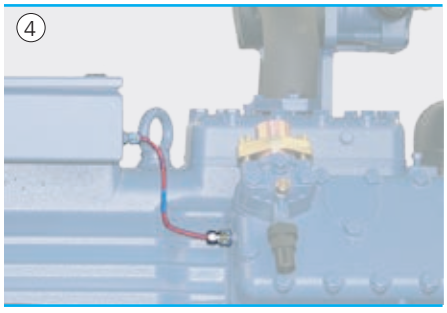
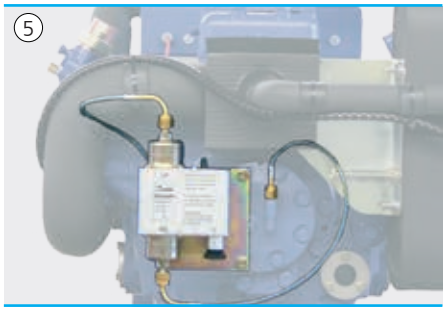
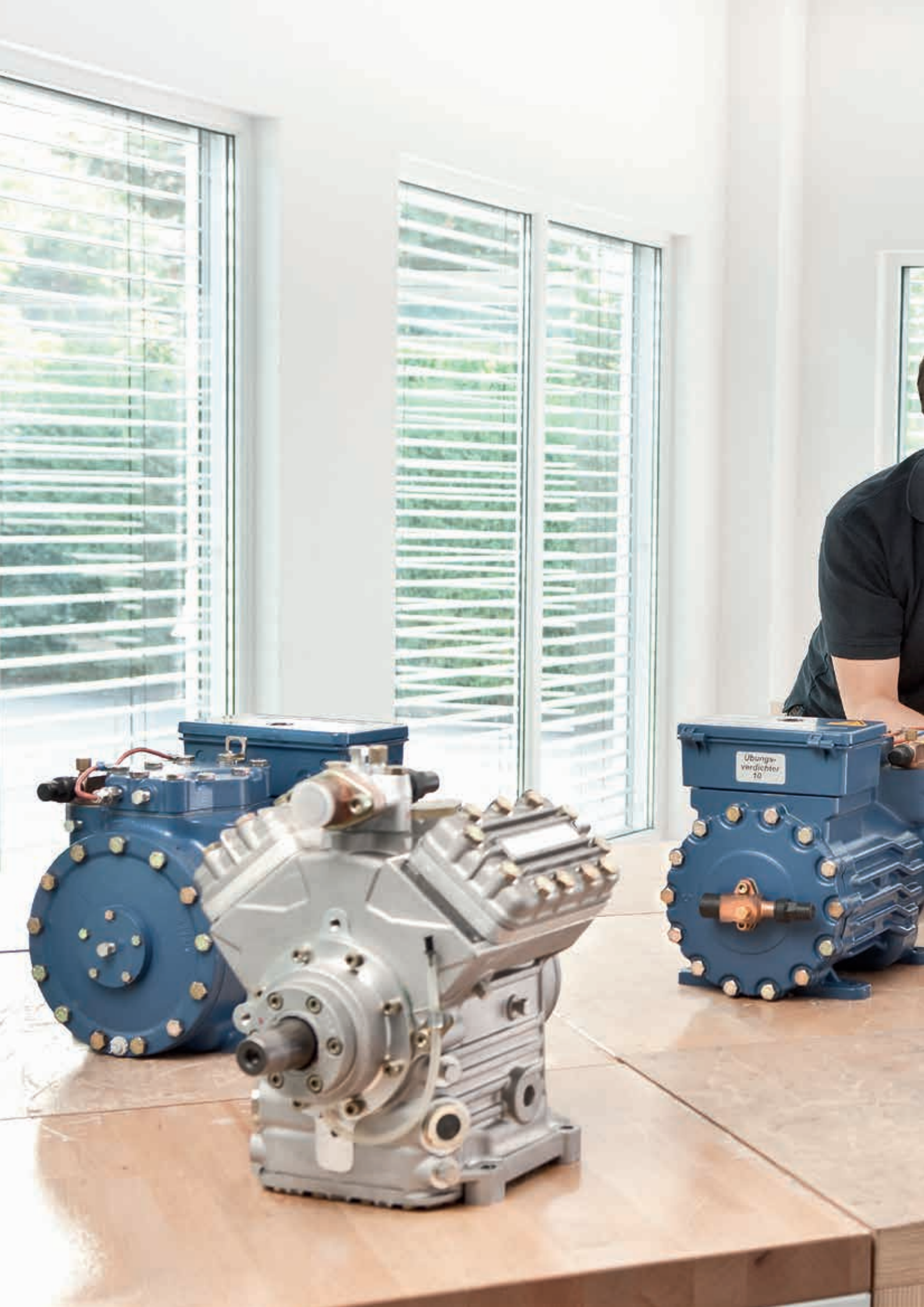
Accessories
① Liquid subcooler, reinjection valve, solenoid valve 230 V - 1 - 50/60 Hz, two sight glasses, filter drier, supplied separately for individual, external installation. Assembly is for the function of the compressor mandatory.
② Liquid subcooler, reinjection valve, solenoid valve 230 V - 1 - 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 [1]
⑥ Oil differential pressure sensor (Δp-switch Kriwan make) 220-240 V - 1 - 50/60 Hz [1]
⑦ Oil service valve
⑧ GEA Bock Compressor Management BCM2000 including oil pressure control (Δp-switch Kriwan make) ⑥, oil temperature control (NTC), thermal protection thermostat (PTC) per cylinder cover ④
Special voltage and/or frequency (on request)

[1] enclosed package





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10

Service - Made by GEA Bock

Training and workshops 86
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Telephone +49 70 22 / 94 54-157
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