

BOCK CO₂ compressor program

Transcritical and subcritical
CO₂ compressor ranges

BOCK

colour the world
of tomorrow

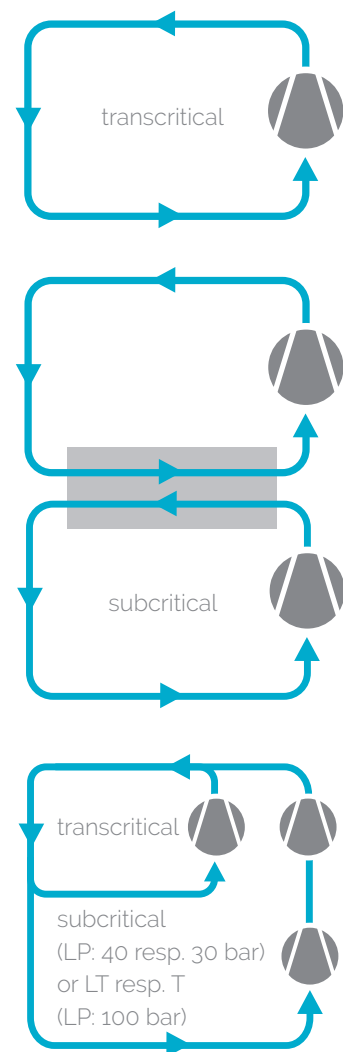
CO₂ specialists for all capacity ranges

Your plus at BOCK: Every compressor capacity size equipped with all CO₂ relevant features

For many years, BOCK compressors have been key components for commercial and industrial applications in the field of air conditioning, refrigeration, heating and heat pumps – with the focus on the use of future-proof natural refrigerants such as CO₂ (R744). They provide planners, investors and operators with clever solutions in which functionality, cost-effectiveness and climate protection go hand in hand. Another plus: Minimized noise, vibrations and pulsations ensure a high degree of user comfort and a high level of plant safety and reliability.

CO₂ driving gear design with proven BOCK technology

Perfect solutions for small and large performance requirements: The semi-hermetic BOCK CO₂ compressor program offers seven specialists for use in transcritical and subcritical CO₂ systems – stationary and mobile. Your advantage: An optimized driving gear design specifically for operation with the environmentally friendly refrigerant R744 combined with decades of proven BOCK compressor technology – equipped with all CO₂ relevant features. This ensures highest plant efficiency with minimized investment, energy and operating costs as well as maximum operational reliability and runtime. We call it: The °Clever Art of Cooling





Requirement- and environment-oriented solutions with high efficiency and reliability, excellent running performance and minimized investment, energy and operating costs

» to CO₂ compressor video

Wide range of applications

With their wide application limits and frequency ranges the gas cooled BOCK CO₂ compressors offer suitable solutions for single-stage, cascade or booster systems in stationary and mobile applications: from normal and low temperature cooling in supermarkets, hypermarkets or industrial applications up to air conditioning systems and heat pumps in buses and trains. In doing so support the fulfillment of leading energy efficiency and environmental standards such as the European F-Gas Regulation or the global Kigali Agreement and meet strict European standards and ASERCOM directives.

A new highlight in the range is the HGX24 CO₂ T and LT series – ideal for solutions with smaller performance requirements.

CO₂ transcritical and subcritical

All transcritical and subcritical CO₂ compressors support a wide frequency band with a broad capacity range, so that the cooling and heating capacity can be flexibly adapted to the respective requirements. For special subcritical requirements with high operating and standstill pressures, BOCK offers a specifically designed LT – Low Temperature variant with two motor versions*.



BOCK CO₂ specialists for small and large performance requirements: HGX24 CO₂ T and HGX44e CO₂

* HG CO₂ LT available from Q2/2021

BOCK HGX24 CO₂ T + LT – compact, reliable, powerful

Transcritical and subcritical CO₂ compressors
for smaller capacity requirements

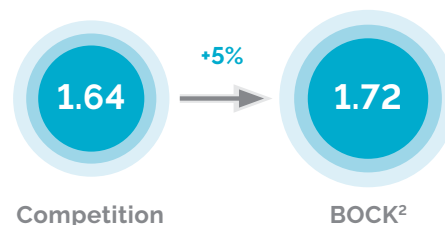


The smallest among the strongest from BOCK: The new series for the natural refrigerant R744 convinces with highest compressor and system efficiency, safety and reliability – equipped with all the necessary features for use with CO₂. Even at low capacities, BOCK relies on the proven oil pump for reliable oil supply in the compressor even under demanding conditions. The basis for this is a CO₂-optimized driving gear design combined with proven BOCK compressor technology.

Advantages and benefits that set standards

The advantages for you: significantly reduced energy and operating costs with a long service life and low maintenance effort. And maximum flexibility for stationary or mobile use in all application and performance ranges. At the same time, the low-noise and low-vibration operation as well as the compact and lightweight design of the HGX24 CO₂ range sets new standards in terms of user comfort, space requirements and connection, e.g. in supermarkets, heat pumps and air conditioning systems.

BOCK efficiency in competitive comparison (MT Efficiency – EER¹)

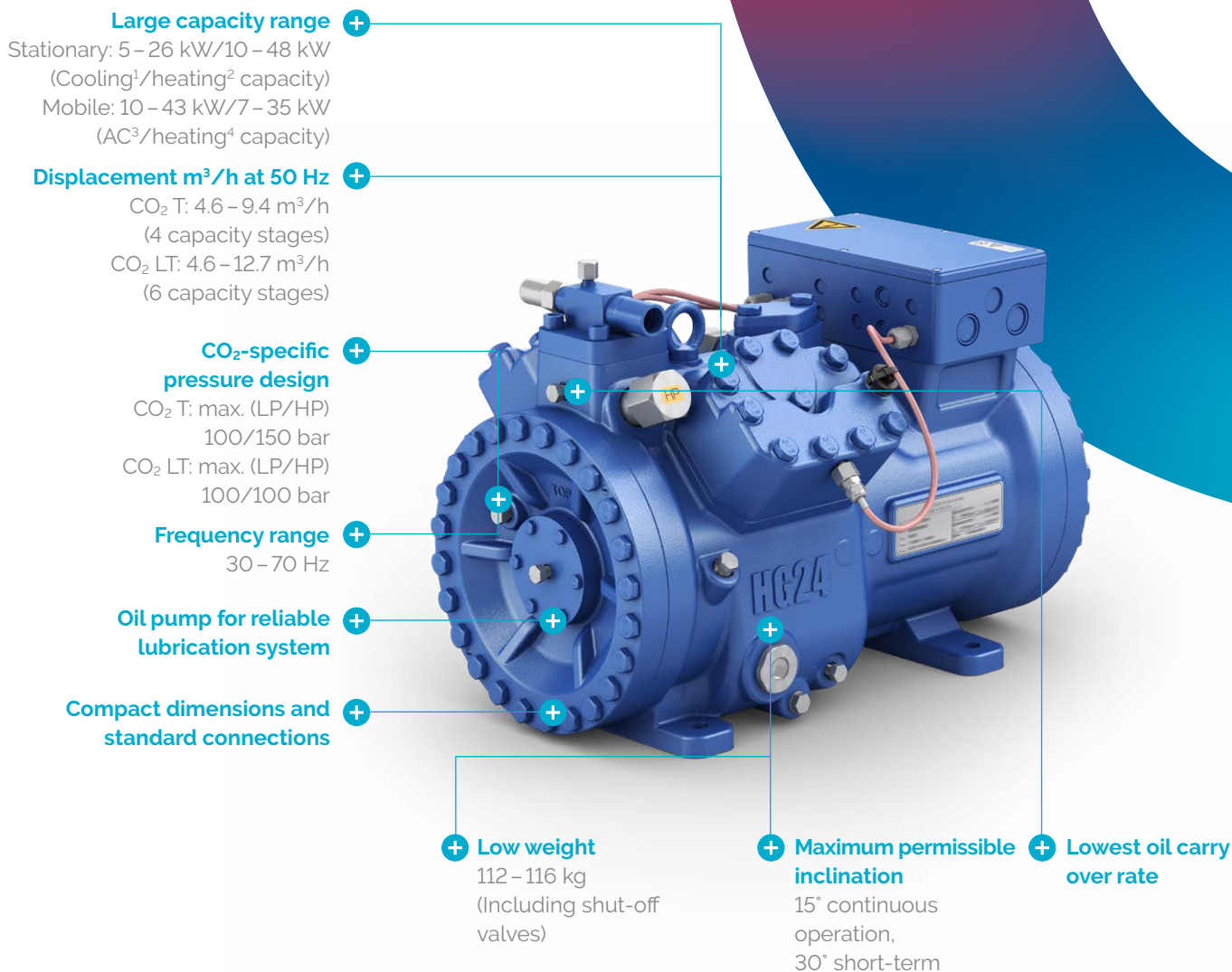


¹ EER = Energy Efficiency Ratio = Refrigeration capacity/power consumption

² HGX24/70-4 S CO₂ T

Evaporating temperature at 50 Hz: -10 °C,

Gas cooler outlet temperature: +35 °C/90 bar, suction gas superheat: 10 K



The most important at a glance



Lowest energy and operating costs

Highest efficiency and reliability thanks to more than 25 years of BOCK expertise in CO₂ compressor technology



Wide range of applications

From low temperature to high-temperature heat pumps – with reliable and flexible partial and full load



Outstanding running comfort

Low noise and vibration, compact and lightweight design and minimal oil carry over rate

¹ -10 °C/35 °C (90 bar)/10 K/30 – 70 Hz | ² -10 °C/25 °C (80 bar)/10 K/30 – 70 Hz
³ +10 °C/40 °C (100 bar)/10 K/30 – 70 Hz | ⁴ -20 °C/+25 °C (80 bar)/10 K/30 – 70 Hz

Transcritical CO₂ compressors

Flexible use in transcritical and subcritical applications for supermarkets, commercial and industrial refrigeration systems and heat pumps

The BOCK CO₂ compressor program offers you with HGX24 CO₂ T, HGX34 CO₂ T and HGX46 CO₂ T three transcritical model sizes with 16 displacement stages, which set groundbreaking standards in the market. Their broad operating limits and wide frequency range enable tailor-made solutions for a wide range of applications.

With their optimized efficiency, the gas-cooled semi-hermetic compressors achieve the highest EER/COP values within their range of applications – officially confirmed by ASERCOM (Association of European Refrigeration Component Manufacturers) certification for several displacement stages. Further advantages of reciprocating compressors: highest reliability and durability.



Transcritical BOCK CO₂ compressor program – highest efficiency with minimized operating costs

Cooling capacity

9 – 85 kW



Evaporating temperature at 50 Hz: -10°C ,

Gas cooler outlet temperature: $+35^{\circ}\text{C}/90\text{ bar}$, suction gas superheat: 10 K

Heating capacity

26 – 182 kW

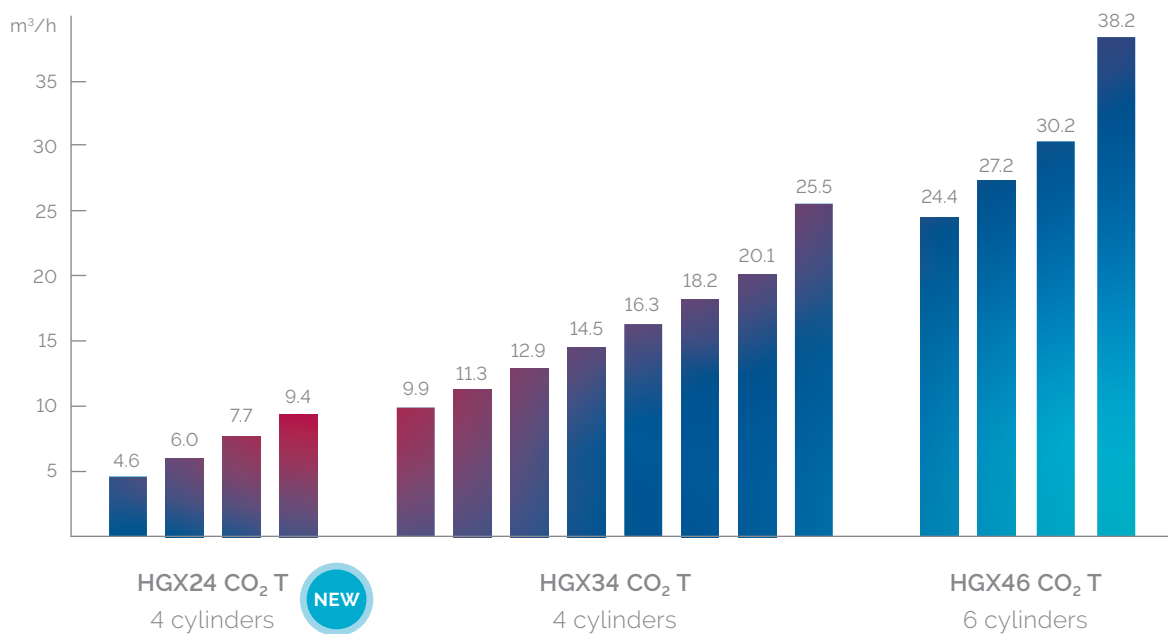


Evaporating temperature at 50 Hz: 5°C

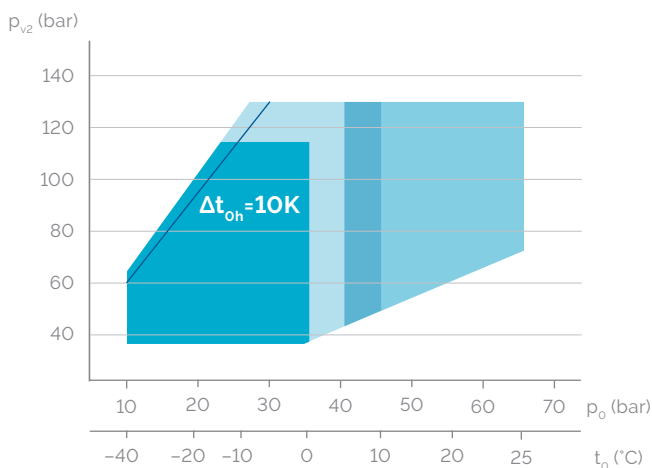
Gas cooler outlet temperature: $+25^{\circ}\text{C}/100\text{ bar}$, suction gas superheat 10 K

Transcritical CO₂ compressors

3 model sizes with 16 capacity stages from 4.6 to 38.2 m³/h (50 Hz)



Operating limits

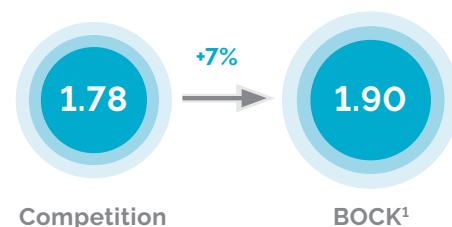


Max. permissible operating pressure (LP/HP) 100/150 bar

● compressor version ML ● compressor version S ● compressor version SH

— compressor range HGX24 CO₂ T

BOCK efficiency in competitive comparison (MT Efficiency – EER¹)



¹ HGX46/345-4 S CO₂ T

Evaporating temperature at 50 Hz: -10°C ,

Gas cooler outlet temperature: $+35^{\circ}\text{C}/90\text{ bar}$, suction gas superheat: 10 K

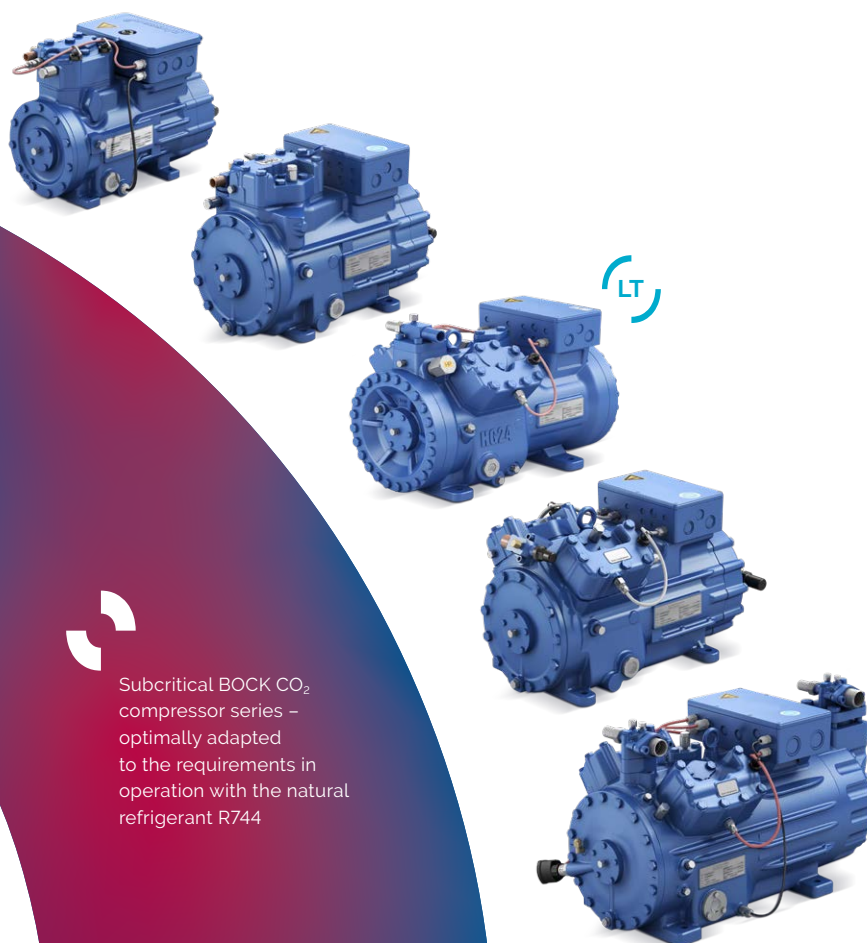
Subcritical CO₂ compressors and LT compressors

Flexible use for cascade and booster CO₂ systems in supermarket, commercial and industrial refrigeration applications

For use in low temperature applications, the BOCK CO₂ compressor program offers four subcritical model sizes with 17 displacements: HGX12e CO₂, HGX22e CO₂, HGX34e CO₂ and HGX44e CO₂. The subcritical series is based on the advantages of the proven BOCK compressor technology, which has been holistically optimized to meet the requirements of CO₂ operating conditions. Its wide range of applications enables tailor-made, cost-saving solutions for the most diverse applications – and all this with the highest reliability and durability.

Specialist for Low Temperature (LT)

For special specifications in the low temperature range with evaporating temperatures between -50 °C to 0 °C and condensing temperatures up to 25 °C, BOCK offers a specifically designed LT variant with high efficiency: The compressor is designed for subcritical CO₂ systems with high standstill pressures (LP 100 bar) – available in two motor versions ML and S for a wide frequency band and wider operating limits.



Subcritical BOCK CO₂ compressor series – optimally adapted to the requirements in operation with the natural refrigerant R744

Cooling capacity

2.7 – 90 kW

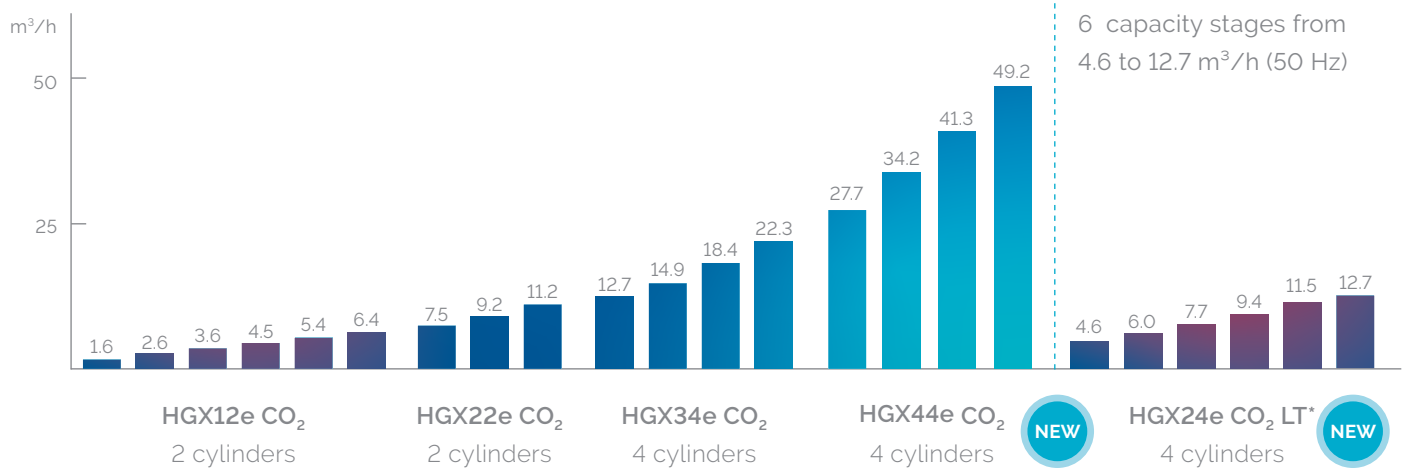


Evaporating temperature at 50 Hz: -35 °C,

Condensing temperature: -5 °C, suction gas superheat: 10 K, subcooling: 0 K

Subcritical CO₂ compressors (LP 40 bzw. 30 bar)

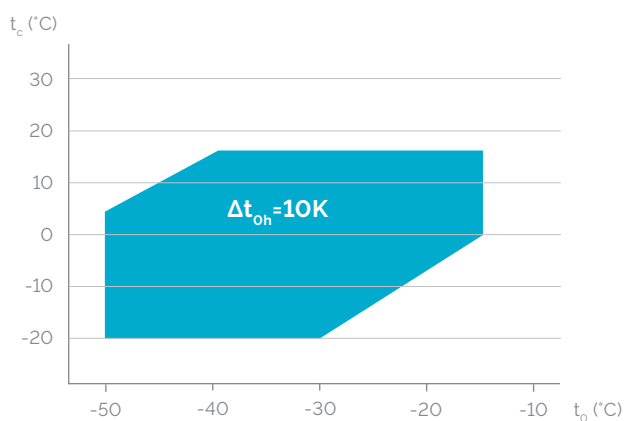
4 model sizes with 17 capacity stages from 1.6 to 49.2 m³/h (50 Hz)



Subcritical CO₂ compressors (LT range – LP 100 bar)

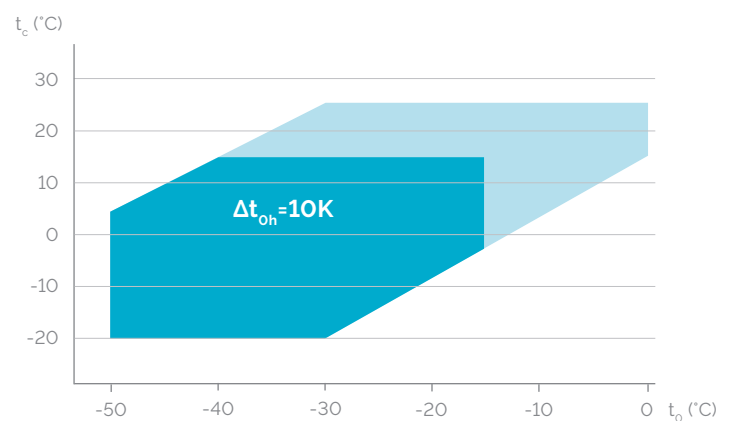
1 model size with
6 capacity stages from
4.6 to 12.7 m³/h (50 Hz)

Operating limits HG CO₂ (subcritical)



Max. permissible operating pressure (LP/HP):
40/55 bar HGX12e CO₂, HGX22e CO₂ & HGX34e CO₂
resp. 30/55 bar HGX44e CO₂

Operating limits HG CO₂ LT



Max. permissible operating pressure (LP/HP): 100/100 bar
● compressor version ML ○ compressor version S

* For higher capacities in low temperature applications with standstill pressures up to LP 100 bar, the HGX34 CO₂ T and HGX46 CO₂ T are available in the ML version with 12 displacement stages.

Details and further explanations can be found on the internet via the [BOCKVAP compressor selection tool vap.bock.de](http://vap.bock.de). HG CO₂ LT available from Q2/2021

BOCK service and support

Up-to-date information, training and tools about BOCK CO₂ compressors, compressors for hydrocarbons and solutions for other refrigerants. Use our expertise for your daily practice – online and free of charge



°Clever+Cool Experts^{live}

BOCKshop | 

BOCK CO₂Tool | 

BOCK VAP | 



From experts for experts –
our new online formats can be
used from any computer,
regardless of location: Office,
workshop or even at home.

To ensure that you can make the best possible use of the advantages of BOCK compressors, we support you online and personal with four service and support modules. There you will find valuable information: from plant planning and design to implementation and operation to retrofitting or upgrading existing systems.

BOCK training courses

Together with Danfoss, BOCK offers special (online) user training courses. For this purpose, a complete transcritical supermarket refrigeration system with the latest CO₂ technology is in operation at the BOCK training center – with heat recovery + air conditioning + parallel compression + ejector – in order to make the seminars more practical.

BOCKshop

The online catalog in the **BOCKshop** is the best choice to find spare parts for your BOCK compressor easily and quickly around the clock. Including all Ex-drawings as well as further information such as parts lists – also for printing.

» bockshop.bock.de

BOCKCO₂Tool

The strengths of the **BOCKCO₂Tool** based on Excel: Support for the selection of CO₂ compressors, e.g. by displaying the system schematic as RI flow diagram and refrigeration circuit in log-p-h-diagram, as well as selecting compressors in rack systems and for special CO₂ systems such as booster systems.

» Usage on request: vap@bock.de

BOCKVAP

The BOCK compressor selection program (VAP) is the perfect tool, to find suitable compressors or condensing units for your stationary or mobile application: Simply enter cooling capacity and operating conditions and the suitable components will be displayed immediately. In addition, the tool provides you with further information, e.g. application limits, performance data, dimensions and connections, scope of delivery, accessories, 3 D compressor models and much more.

Another advantage: **BOCKVAP** is available to you free of charge as an online and offline version for PC installation.

» vap.bock.de



BOCK is one of the world's technology and innovation leaders in the development of environmentally friendly, economical solutions in the field of refrigeration and air-conditioning technology, including heat pumps and heat recovery – with one of the world's largest portfolios of compressors for natural refrigerants such as CO₂ (R744), hydrocarbons and other low-GWP refrigerants.

BOCK

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