

ENGINEERING
TOMORROW



Danfoss BOCK® Compressors | Compressor Program

BOCK® CO₂ compressor program

Transcritical and subcritical CO₂ compressor ranges.



Extended CO₂ T
displacement range
from 1.7 up to

59.1 m³/h
(50 Hz)

bock.danfoss.com

BOCK®

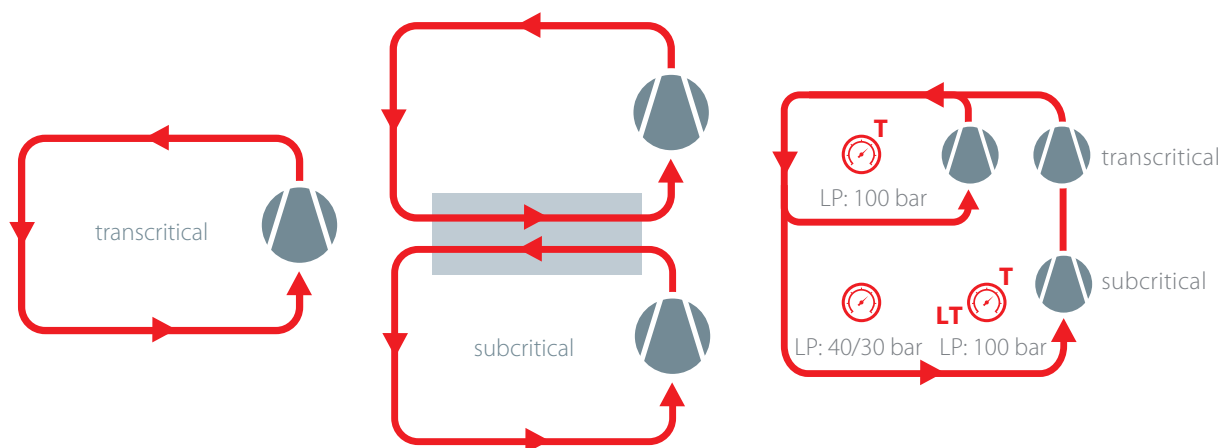
CO₂ specialists for all capacity ranges

Your plus at Danfoss 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 nine 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.





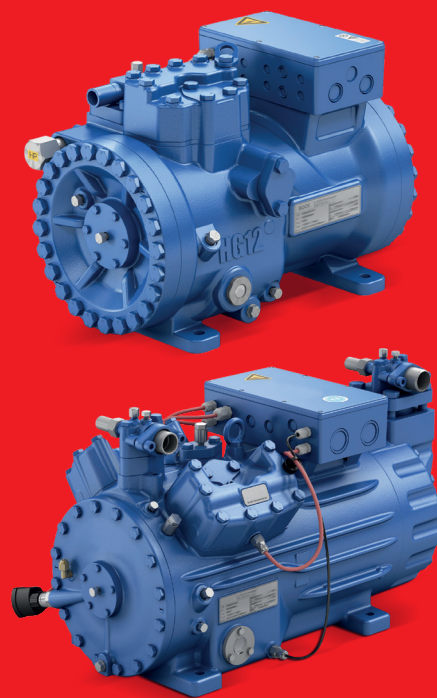
Wide range of applications

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 medium 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 is the HGX56 CO₂ T range for bigger cooling and heating 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: HGX12 CO₂ T and HGX44e CO₂

Danfoss BOCK® goes big – with CO₂ compressors

Danfoss BOCK® HGX56 CO₂ T: Transcritical compressors for large capacities in industrial, commercial, sport facility applications and heat pumps

Designed for performance increases with the natural refrigerant R744. The new 6-cylinder design ensures greater capacities while reducing the number of compressors, which means reduced system complexity and investments costs.

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 HGX12 CO₂ and HGX24 CO₂ ranges set new standards in terms of user comfort, space requirements and connection, e.g. in supermarkets, heat pumps and air conditioning systems. Furthermore different design variants of HGX56 CO₂ T offer optimized solutions especially for industrial refrigeration, cold storage, ice sports facilities and heat pumps – an attractive and sustainable alternative to synthetic refrigerants and NH₃ applications. High efficiency and highest reliability due to holistic BOCK® CO₂ compressor design.



Danfoss BOCK® efficiency for HGX56/680-4 S CO₂ T

Cooling



Heating



¹ -10°C/ +35°C/90 bar / 10 K / 50 Hz EER (Energy Efficiency Ratio) Cooling

² +5°C/ +25°C/1-10°C/ +35°C/90 bar / 10 K / 50 Hz COP (Coefficient Of Performance) Heating

Large capacity range +
Capacity range cooling¹: 90-135 kW
Capacity range heating²: 250-350 kW

Displacement m³/h at 50 Hz +
CO₂ T: 41.7-59.1 m³/h
(4 capacity stages)

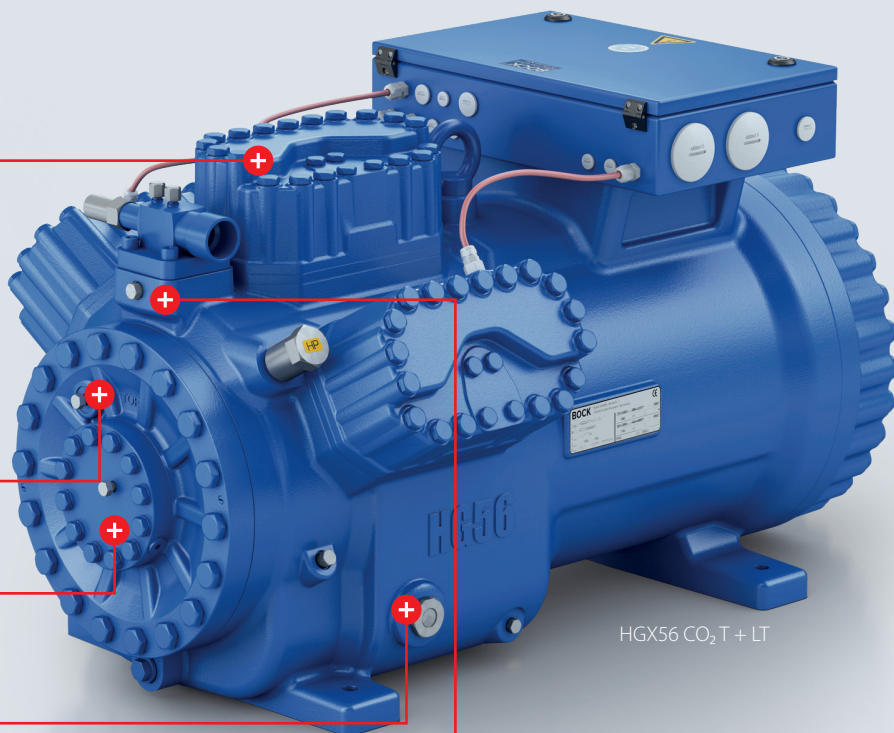
CO₂-specific pressure design +
CO₂ T: max. (LP/HP)
100/150 bar

Frequency range +
20 - 70 Hz

Oil pump for reliable lubrication system +

Maximum permissible inclination +
15° continuous operation,
30° short-term

Lowest oil carry over rate +



HGX56 CO₂ T + LT

¹ 10°C/ +35°C/90 bar / 10 K / 50 Hz
² +5°C/ +25°C (100 bar) / 10 K / 50 Hz

MAIN BENEFITS



Lowest energy and operating costs

Highest efficiency and reliability thanks to more than 30 years of Danfoss 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



Certified compressors:

HGX56/480-4 S CO₂T
HGX56/680-4 ML CO₂T
HGX56/680-4 S CO₂T
HGX56/680-4 SH CO₂T

ASERCOM certified performance data

The performance data of compressors bearing this label has been certified to the strict requirements of ASERCOM. ASERCOM is the Association of European Refrigeration Compressors and Controls Manufacturers. Further ASERCOM certification please find on: www.asercom.org

Transcritical CO₂ compressors

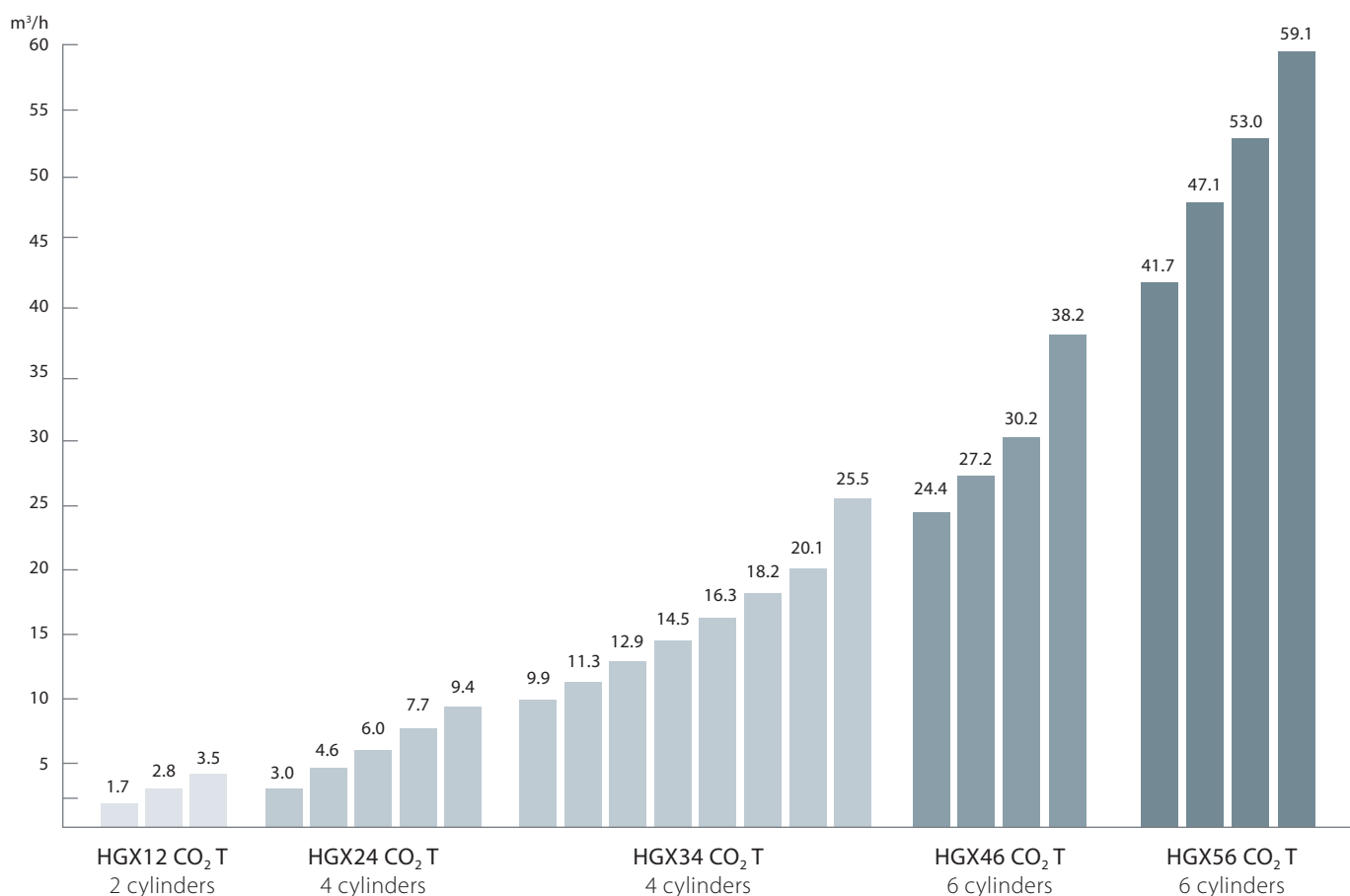
Flexible use in transcritical and subcritical applications for supermarkets, commercial and industrial refrigeration systems and heat pumps

The BOCK® CO₂ compressor program offers you with HGX12 CO₂ T, HGX24 CO₂ T, HGX34 CO₂ T, HGX46 CO₂ T and HGX56 CO₂ T five transcritical models sizes with 24 displacements 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 CO₂ compressors

5 model sizes with 24 capacity stages from 1.7 to 59.1 m³/h (50 Hz)



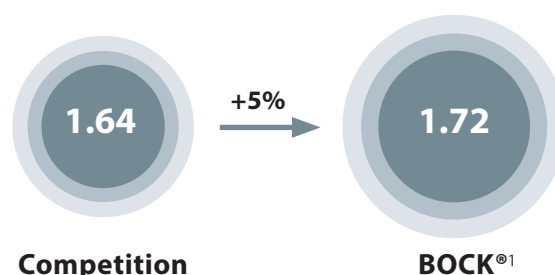
BOCK® efficiency in competitive comparison (MT Efficiency – EER¹)

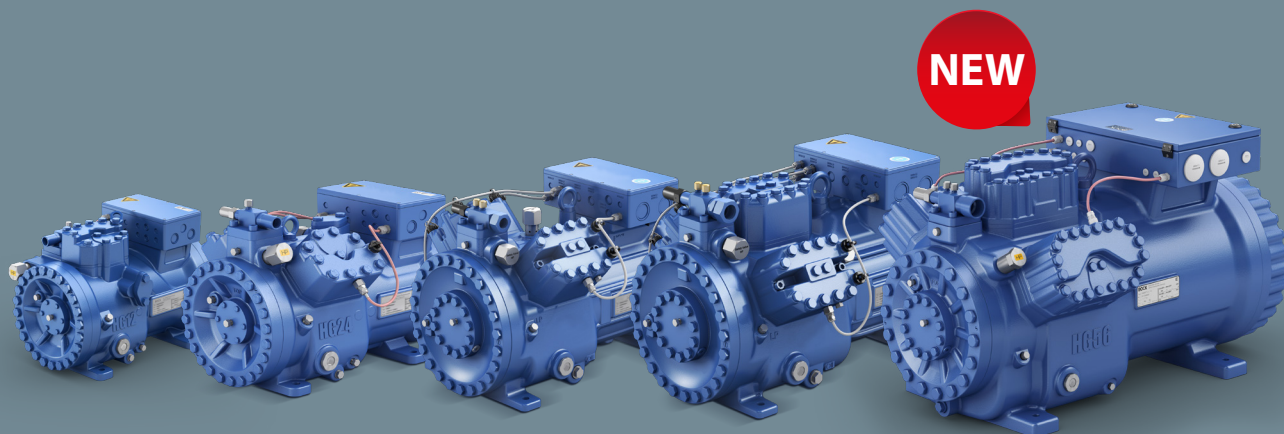
¹ EER = Energy Efficiency Ratio = Refrigeration capacity/power consumption

² HGX24/70–40 S CO₂ T

Evaporating temperature at 50Hz: –10 °C

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





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

Medium temperature application

Cooling capacity. HGX CO₂ T range with HGX56 CO₂ T

HGX CO₂ T range
3 – 85 kW¹

HGX56 CO₂ T
90 – 135 kW¹



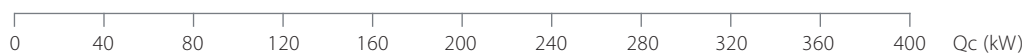
¹ -10°C/ +35°C/90 bar / 10 K / 50 Hz EER (Energy Efficiency Ratio) Cooling

Heat pump application

Heating capacity. HGX CO₂ T range with HGX56 CO₂ T

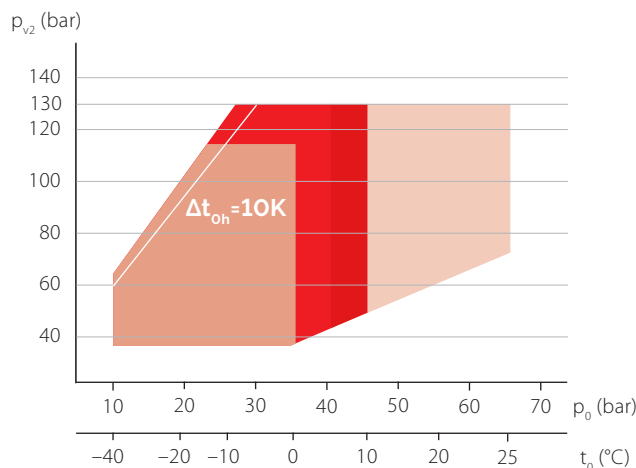
HGX CO₂ T range
9 – 180 kW²

HGX56 CO₂ T
250 – 350 kW²



² +5°C/ +25°C (100 bar) / 10 K / 50 Hz COP (Coefficient Of Performance) Heating

Operating limits



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

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

– compressor ranges HGX12 CO₂ T, HGX24 CO₂ T and HGX56 CO₂ T

Subcritical CO₂ compressors and LT compressors

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

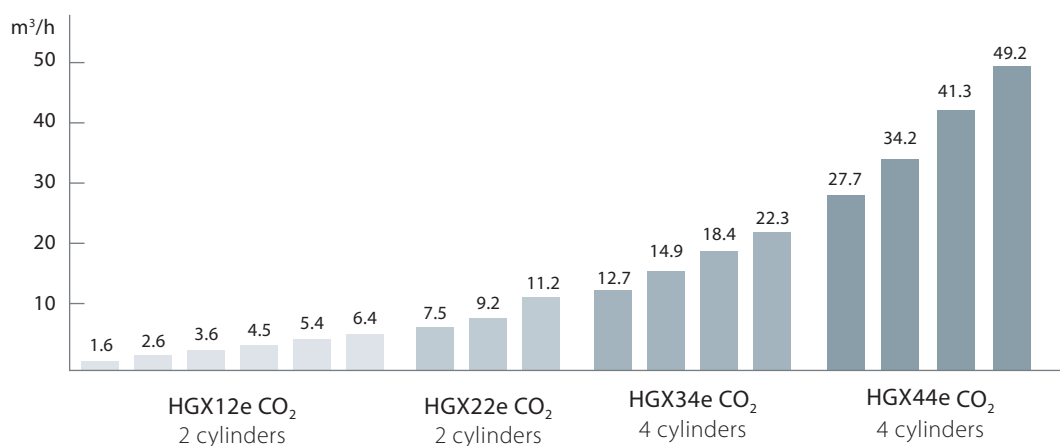
For use in low temperature applications, the BOCK® CO₂ compressor program offers four subcritical model sizes with 17 displacements: HGX12e CO₂, HGX22e CO₂, HGX34e CO₂ and HGX44e CO₂. The subcritical series is based on the advantages of the proven Danfoss BOCK® compressor technology, which has been holistically 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 compressors are 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.

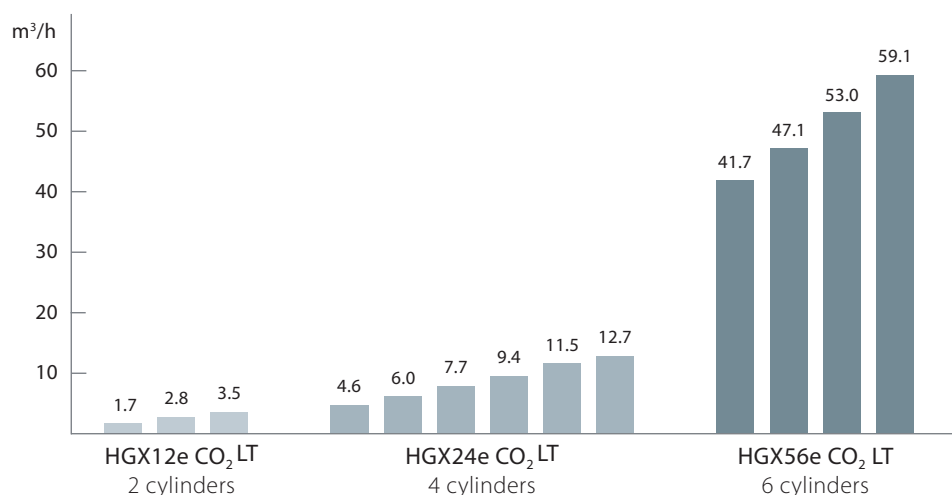
Subcritical CO₂ compressors (LP 40 or 30 bar)

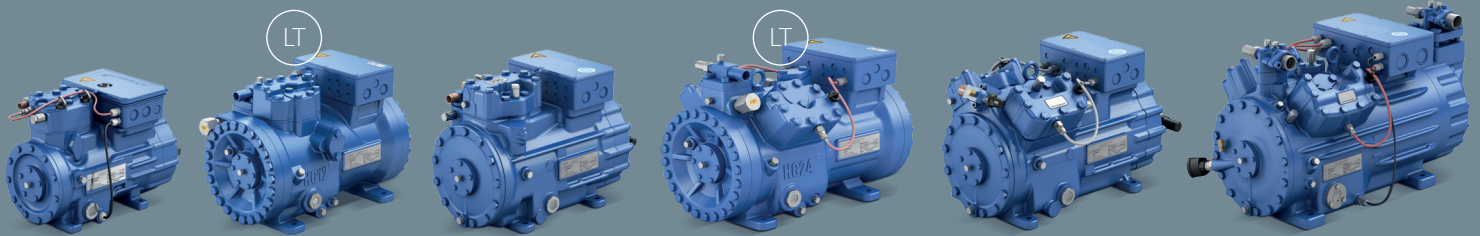
4 model sizes with 17 capacity stages from 1.6 to 49.2 m³/h (50 Hz)



Subcritical CO₂ compressors (LT range – LP 100 bar)

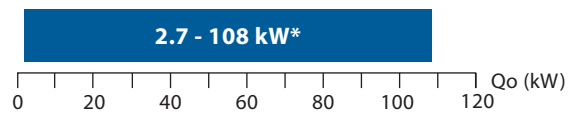
3 model sizes with 13 capacity stages from 1.7 to 12.7 m³/h* and 41.7 to 59.1 m³/h (50 Hz)





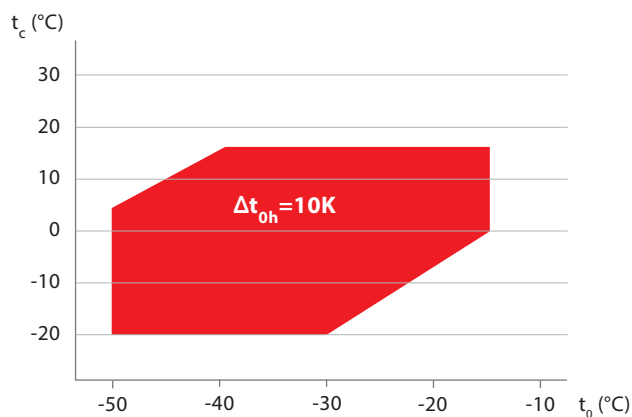
Subcritical BOCK® CO₂ compressor series – optimally adapted to the requirements in operation with the natural refrigerant R744

Cooling capacity



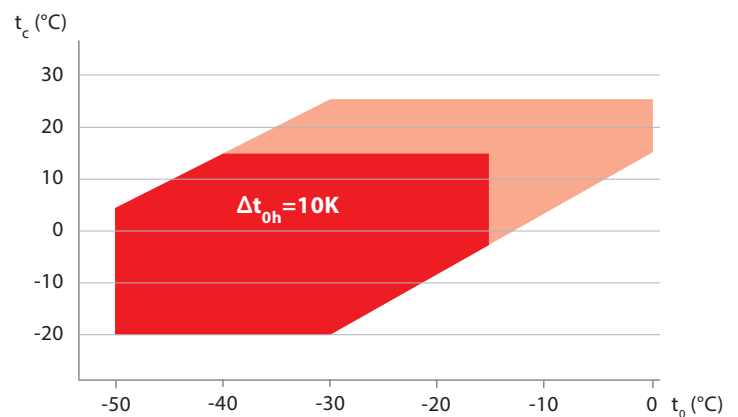
Evaporating temperature at 50 Hz: -35 °C,
Condensing temperature: -5 °C, suction gas superheat: 10 K, subcooling: 0 K

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 (subcritical - LP 100 bar)



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 ML CO₂ T and HGX46 ML CO₂ T are available in the ML version with 12 displacement stages.

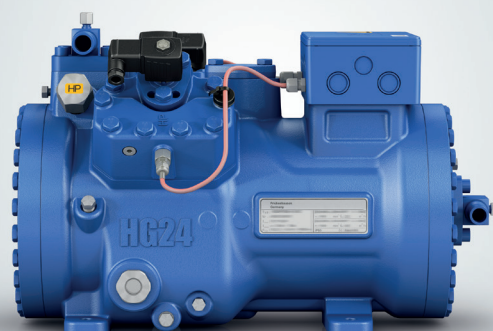
Details and further explanations can be found on the internet via the BOCK®VAP compressor selection tool vap.rock.de.



Pre-mounted Danfoss COM oil level regulator

The Danfoss oil level regulator improving oil control, increased reliability and protection of the compressors and reduced installation costs with pre-mounted option on BOCK® CO₂ compressors.

Best-in-class oil management solution for superior system reliability brochure



flexxCO₂NTROL – the capacity regulator for CO₂ compressors

Danfoss BOCK® flexxCO₂NTROL technology, the compressor capacity regulator for the almost stepless capacity adjustment of transcritical Danfoss BOCK® CO₂ compressors to the current system requirement.

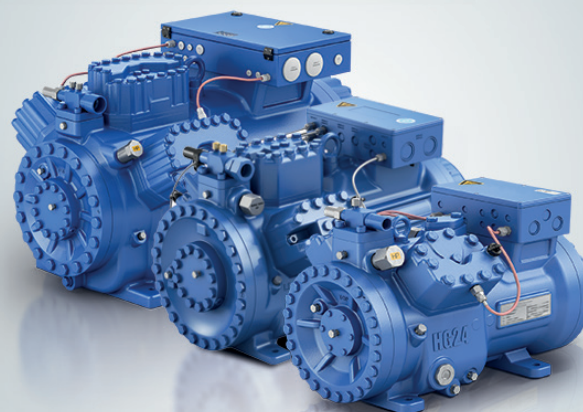
BOCK® flexxCO₂NTROL brochure



Compressors with LSPM motors for highest efficiency

New transcritical Danfoss BOCK® CO₂ compressor series, equipped with LSPM motor technology (Line Start Permanent Magnet). The advantages for users: Economical system solutions with higher efficiency and a plus in capacity – with lower operating costs at the same time.

BOCK® transcritical CO₂ compressors with LSPM motors brochure



UL-recognized CO₂ compressors series

Your plus at Danfoss BOCK®: The UL-HG CO₂ series includes all transcritical and subcritical compressors in 2-, 4- and 6*-cylinder versions, equipped with all CO₂-relevant features. Approved for US and Canadian safety standards.

*UL-HGX56 CO₂ T, beginning of 2025





Danfoss BOCK®

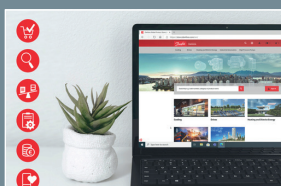
Service and support

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.



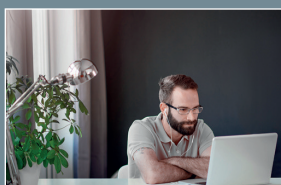
SELECT

Go to vap.bock.de, download VAP – compressor selection tool, and select the appropriate compressors or condensing units.



ORDER

Order BOCK® products at store.danfoss.com or buy the spare parts from BOCKshop via bockshop.bock.de.



LEARN

Learn about the Danfoss BOCK® portfolio and get product training via learning.danfoss.com



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GET PRODUCT SUPPORT

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