



# BOCK Semi-hermetic Compressors

Single- and two-stage reciprocating  
Bock compressors (HG/HA)

# BOCK

colour the world  
of tomorrow



HG semi-hermetic compressors

HA semi-hermetic compressors

HGZ two-stage semi-hermetic compressors

1

2

3



ASERCOM Certification  
Based on the requirements of the EU Ecodesign Directive and the corresponding regulation.

ASERCOM, the association of European manufacturers of components for refrigeration and air conditioning, addresses scientific and technical challenges, promotes performance and safety standards, supports better environmental protection, and serves the refrigeration and air conditioning industry and its customers. ASERCOM's compressors certification

program enables an objective performance comparison of the wide range of products on the market.

**Many of the BOCK compressors are certified.**

**An overview can be found here:**

**<https://www.asercom.org/list-of-certified-compressors/>**



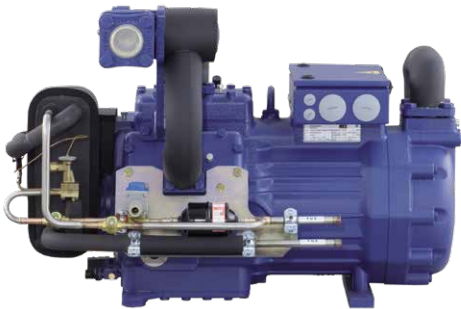
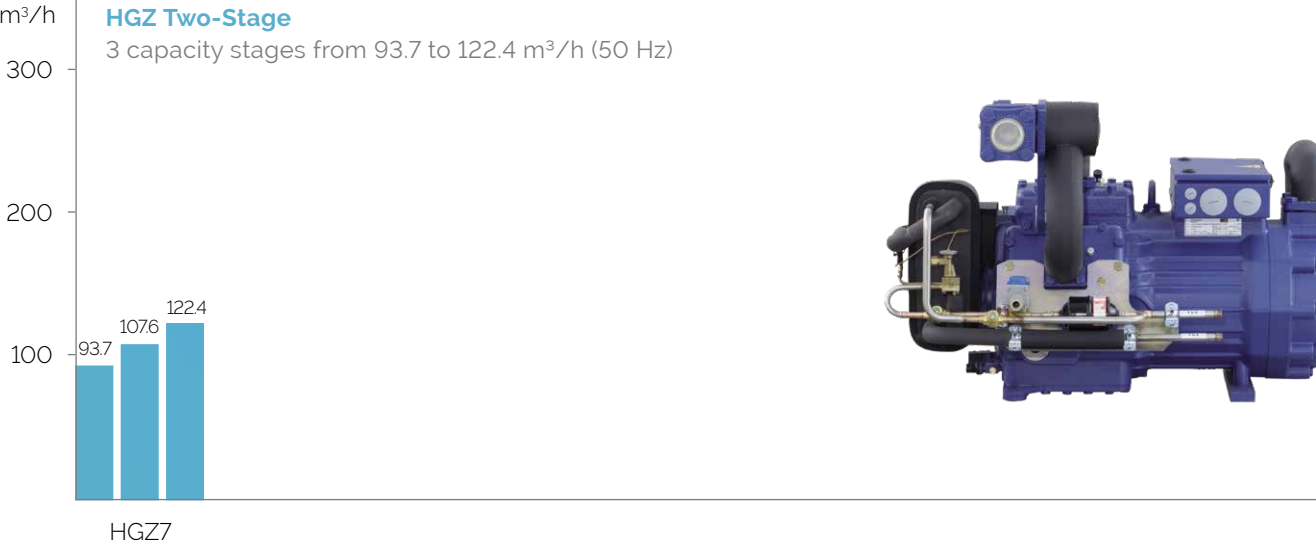
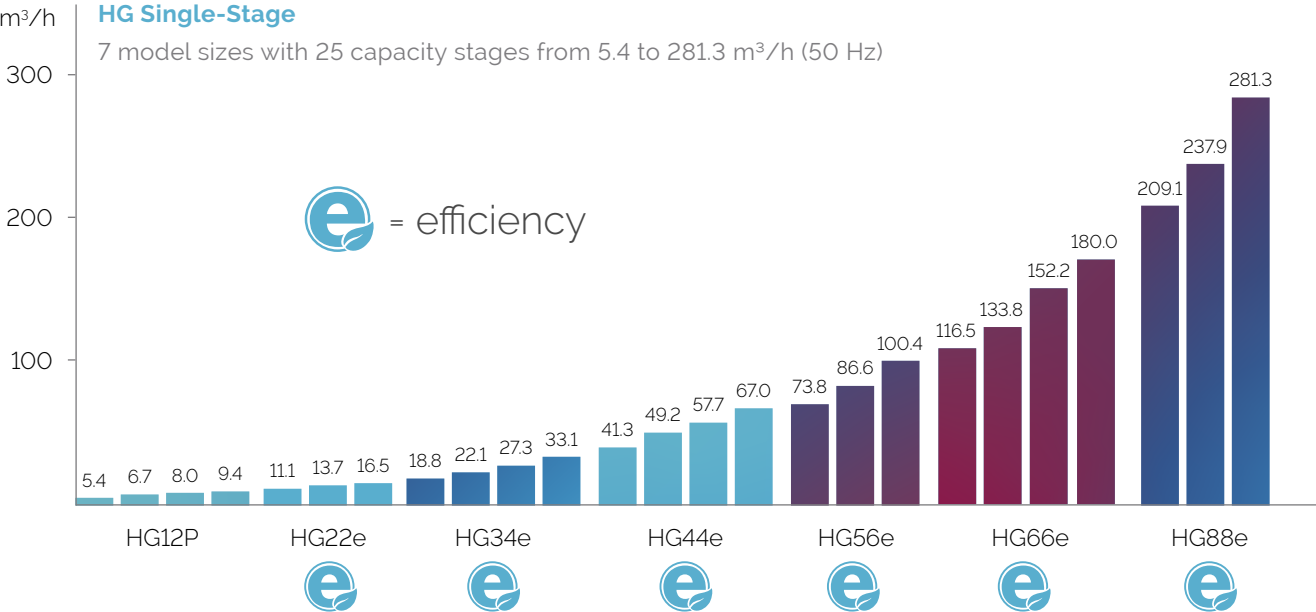
# Overview

### HG (gas-cooled)

The BOCK HG range of semi-hermetic compressors offers traditional suction-gas-cooled compressor technology. These compressors are state-of-the-art, excelling in ease of running, simple maintenance, high efficiency, and reliability.



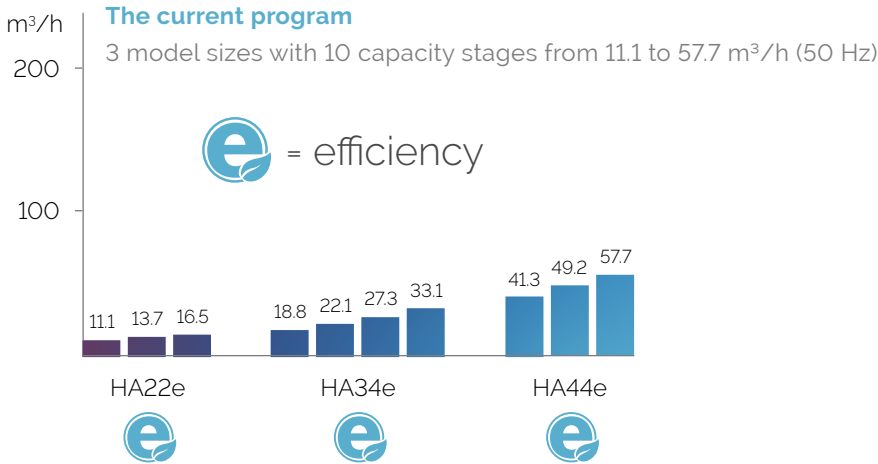
HG66e



HGZ7

### HA (air-cooled)

The BOCK HA range of semi-hermetic compressors has been specially engineered for low temperature applications. While gas-cooled compressors can reach their temperature limit due to heat-up of the suction gas by the drive motor, the unique BOCK HA principle prevents this: Drive motor and cylinder heads are air-cooled via a compact ventilation unit, and the suction gas is fed directly to the compressor without passing through the motor. HA compressors are suitable as standard for conventional or chlorine-free HFC refrigerants and are particularly offered for the refrigerants R404A, R507, R407A, R407F, R448A, R449A, R22.



HA44e

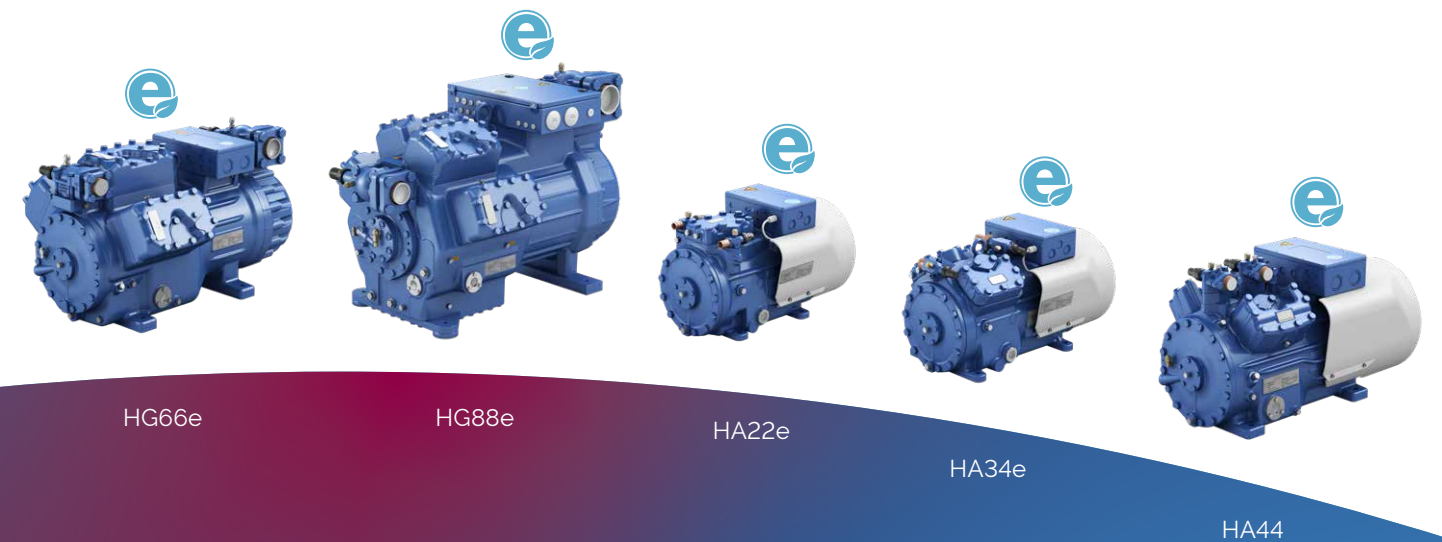
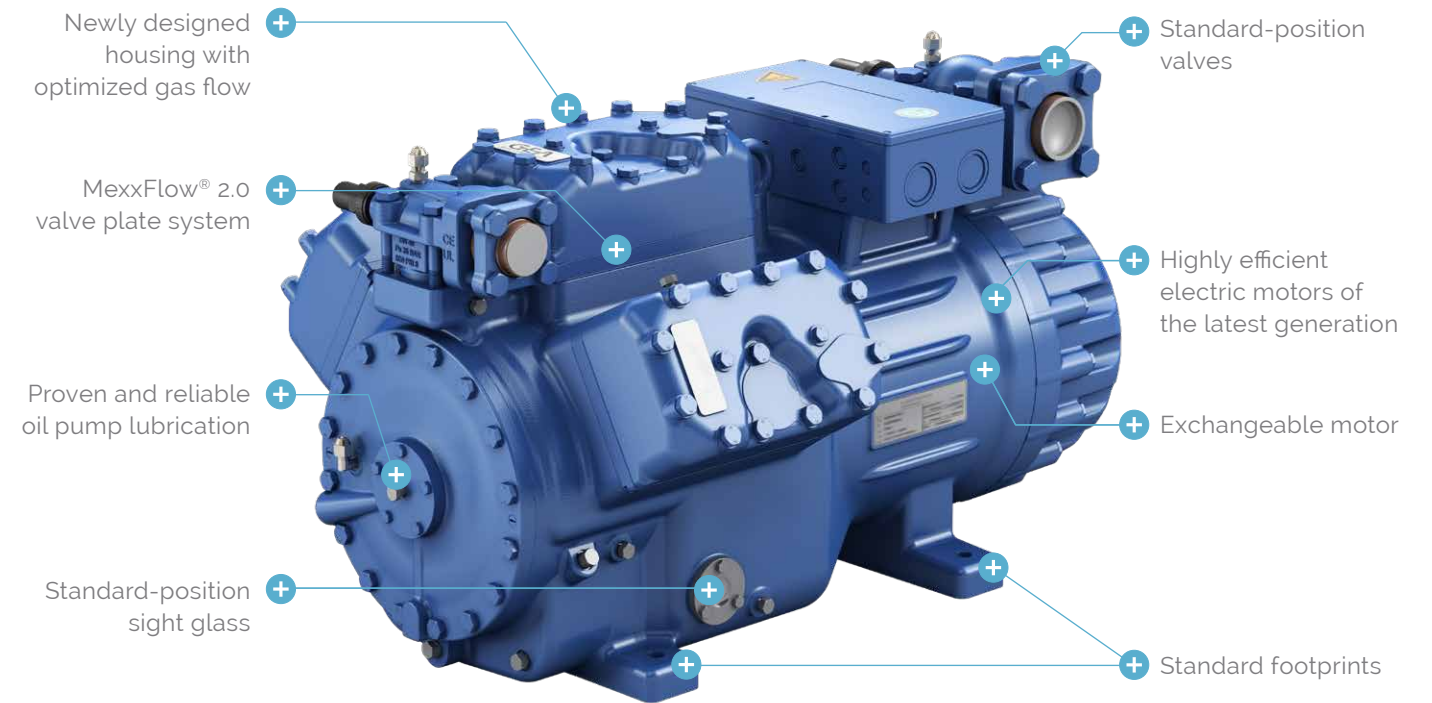
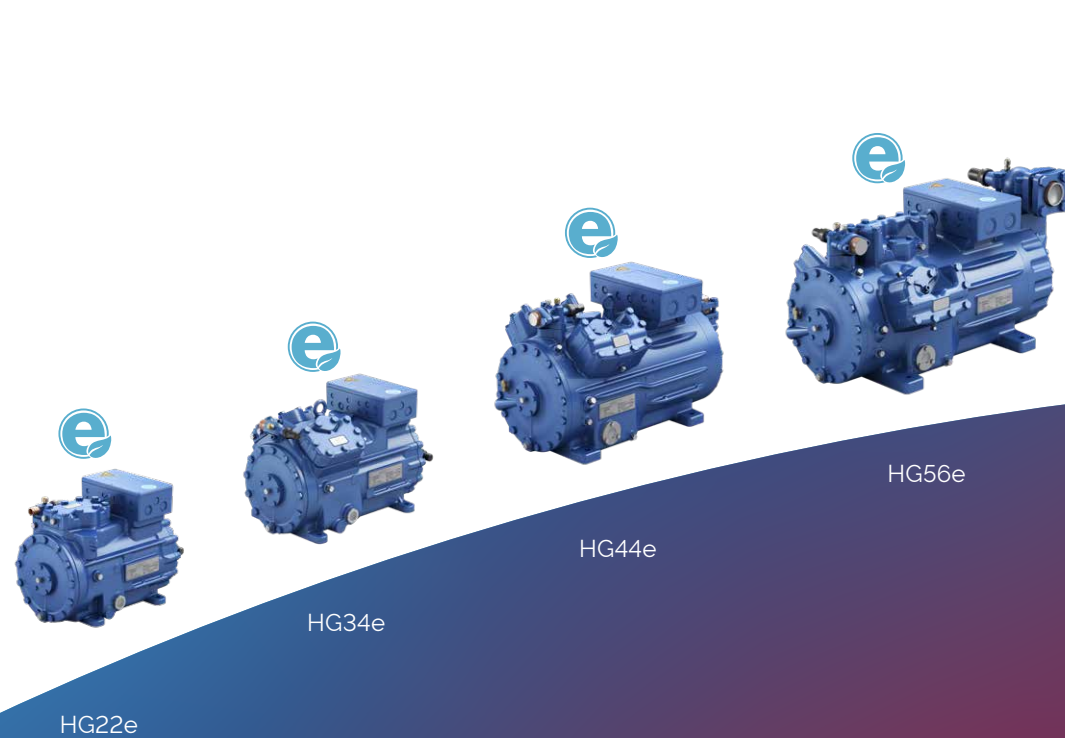
# Improved HG/HA Series

For new advancements in efficiency, BOCK has now updated its entire semi-hermetic compressor range. The new models, marked with the letter "e" (= efficiency), all offer decisive mechanical improvements, a more compact design and easier-to-use connections.

The entire range of gas-cooled commercial BOCK compressors is now available in the new, optimized design. In addition to their uses in the fields of refrigeration and air-conditioning, the new compressors are ideally suited for refrigeration in supermarkets. They offer improved efficiency over their predecessors, greater displacement stages, a more compact structural design, and a new configuration of connections.

To increase efficiency and reduce energy consumption, the new models profit from a new and advanced valve plate system, electrical motors from the latest generation, and enhanced gas flow.

The re-designed connections match the gas connections normally found in the sector, to ensure that no adaptation work is necessary when the user invests in a replacement compressor. The foot mountings of the new compressor likewise conform to sector standards.

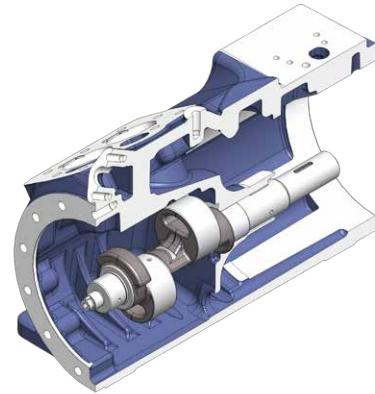




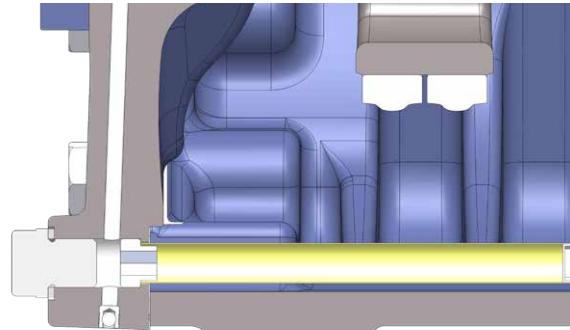
# Improved technology

## Optimized drive gear

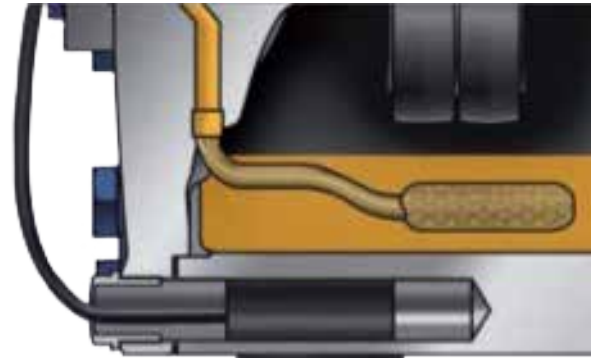
- Optimized drive gear with thrust washer, improving emergency-mode operation and resistance against damage in case of insufficient lubrication



## New, easy-to-maintain strainer

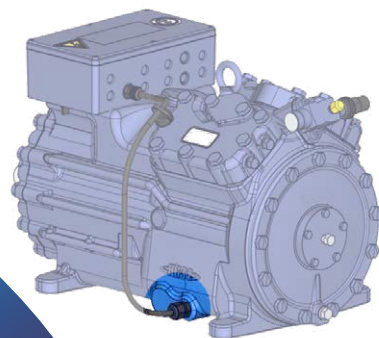


- New, easy-to-remove oil strainer for easier maintenance and increased availability

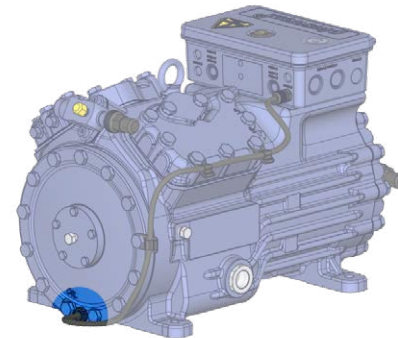


- Former version

## Optimized fastening of oil sump heater

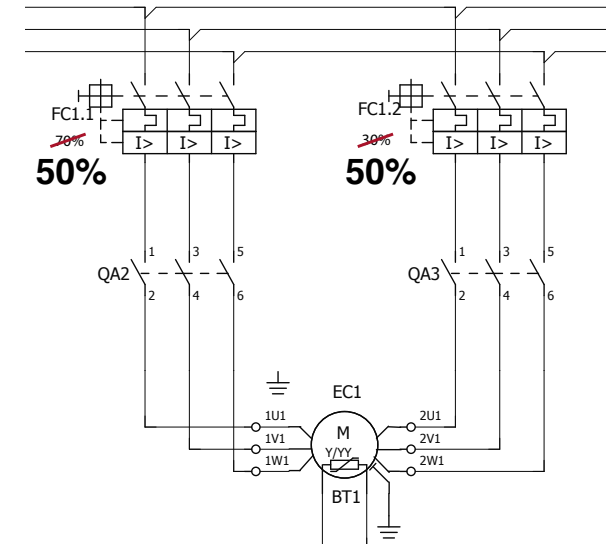


- New, optimized fastening of oil sump heater



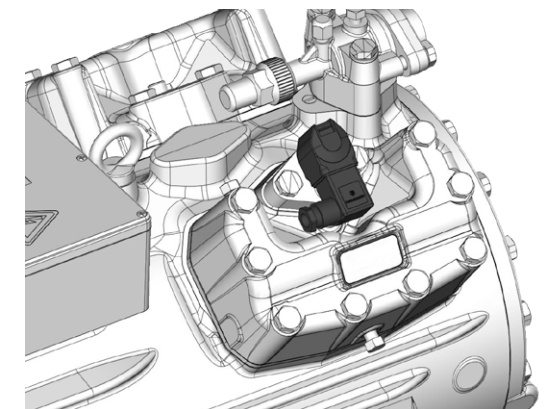
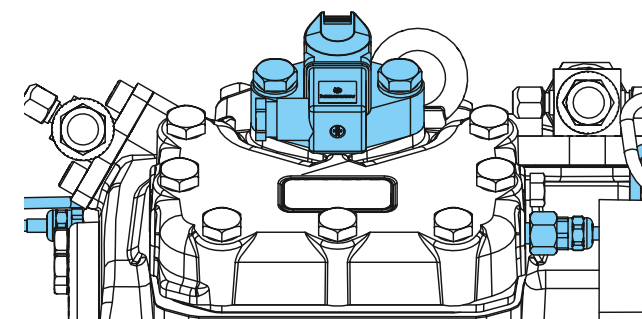
- Former version

## 50 / 50 winding sectioning



- HG44e, HG56e, HG66e & HG88e state-of-the-art 50/50 performance

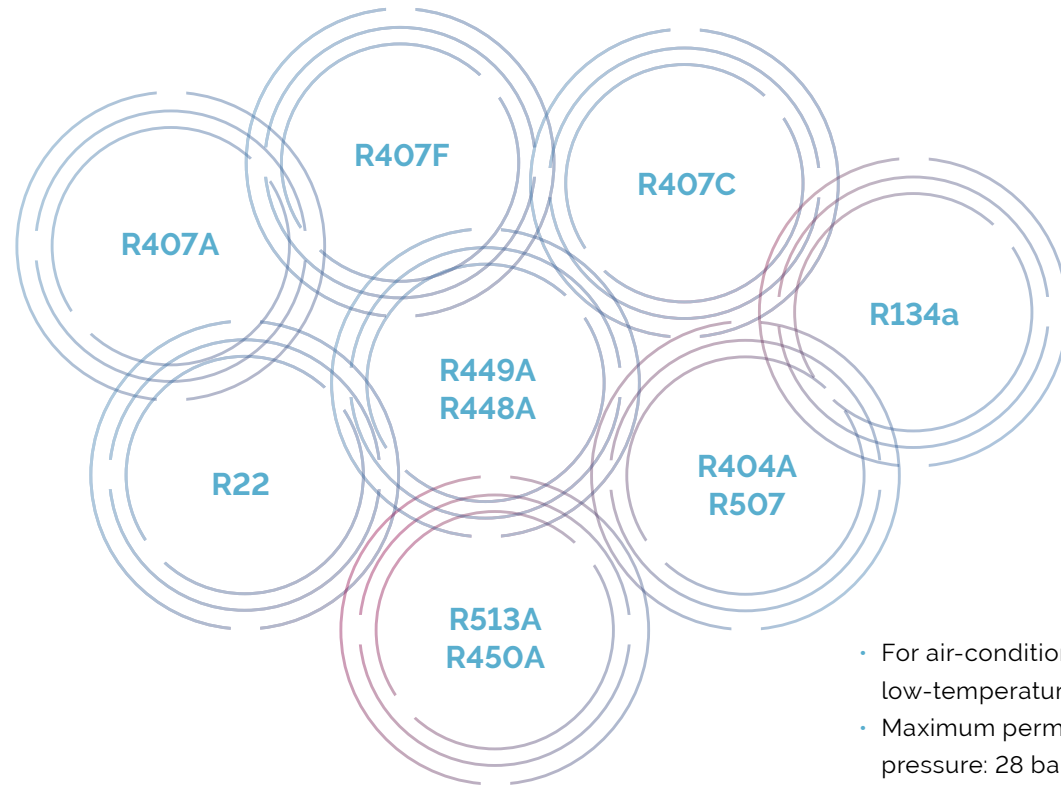
## Digital Capacity Regulator DCR14 (HG34e / HG44e / HG56e / HA34e / HA44e)



- Digital control with the possibility of high switching frequency
- Almost infinite capacity regulation
- Economical alternative to a frequency converter

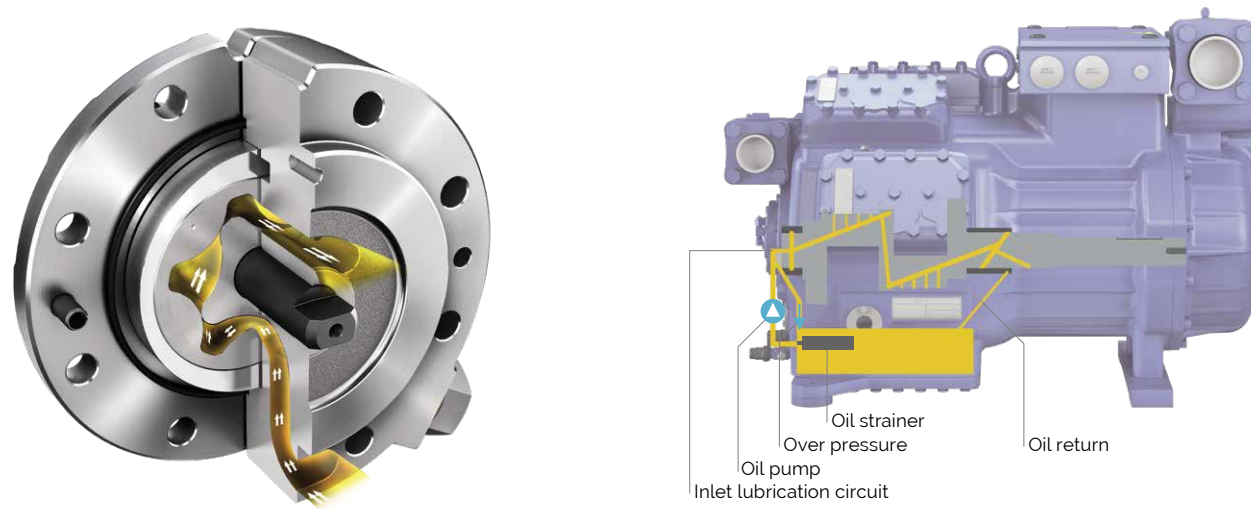
# Unique features and advantages

One compressor design for all standard refrigerants



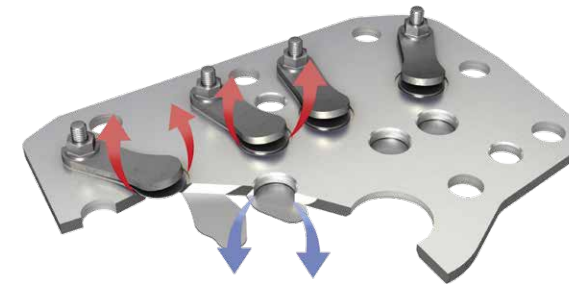
- For air-conditioning, medium and low-temperature application
- Maximum permissible operating pressure: 28 bar

Safe, reliable oil supply



- All compressors with a conventional single circuit lubricating system
- All compressors with oil pump lubrication independent of direction of rotation
- Minimized oil carryover
- Service-friendly oil strainer
- Oil pump lubrication independent of direction of rotation
- Connection possibility for oil pressure monitoring
- Large-volume oil sump
- Coupling option for oil level regulator included as standard

Standard valve plate design



HG12P-56e

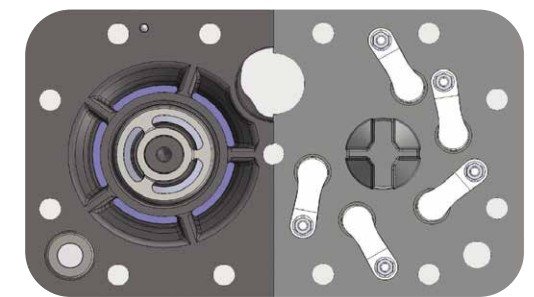
- Valves made of high-quality, impact-resistant spring steel
- Universally proven valve design with suction and discharge finger reed valves

Valve plate innovation: mexxFlow®, only from BOCK

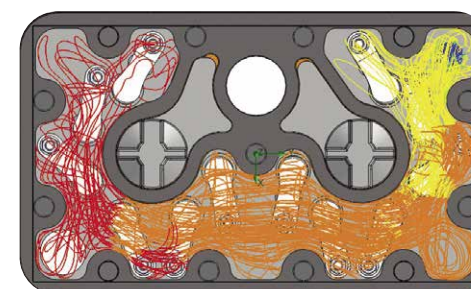


HG66e  
HG88e

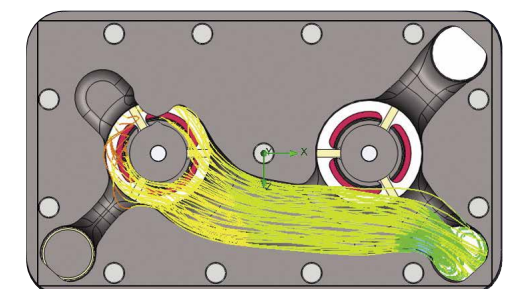
**mexxFlow**  
benchmark for efficiency



mexxFlow® vs. previous design



Previous cylinder cover – high pressure drops and turbulences



mexxFlow® – reduced pressure drops and improved gas flow

- 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 that is specially adapted to the valve plate. Thus, the efficiency of the compressor is increased significantly



### Wear-resistant durable driving gear



2- and 4-cylinder compressor  
HG12P to HG34e

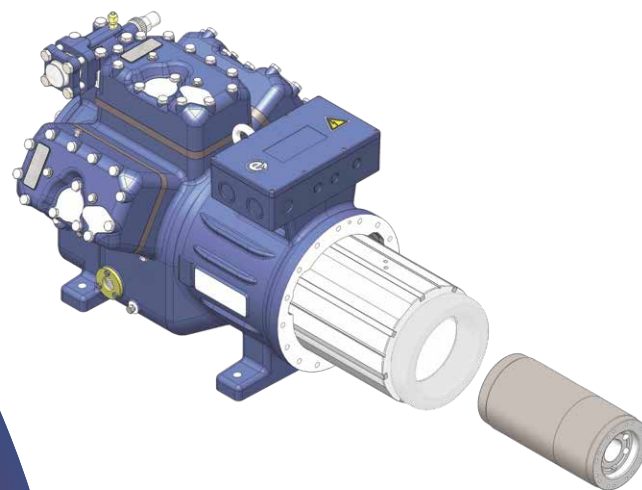
- Solid design of eccentric shaft
- High durability due to low-friction sleeve bearings
- Low oil carryover due to aluminum pistons with double ring assembly



4-, 6- and 8-cylinder compressor  
HG44e to HG88e

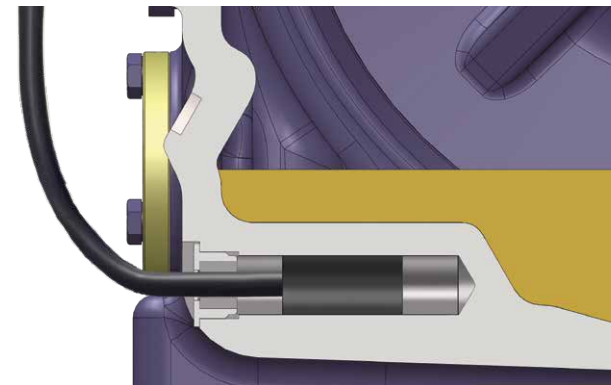
- Solid design of crankshaft
- High durability due to low-friction sleeve bearings
- Aluminum pistons with triple ring assembly, hard-chromium-plated sealing ring, HG44e and HG56e with double ring assembly
- Aluminum connecting rod with high-resistance piston bolt bearings, for HG44e and upwards
- Heavy-duty and robust, split-forged connecting rod

### Service-friendly design

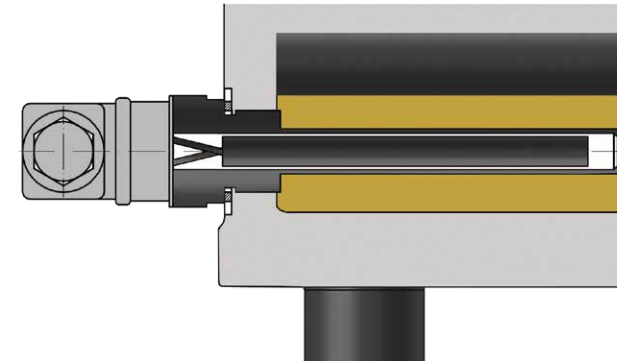


- Built-in motor, easy to replace due to slide fit (not press fit)

### Oil sump heater

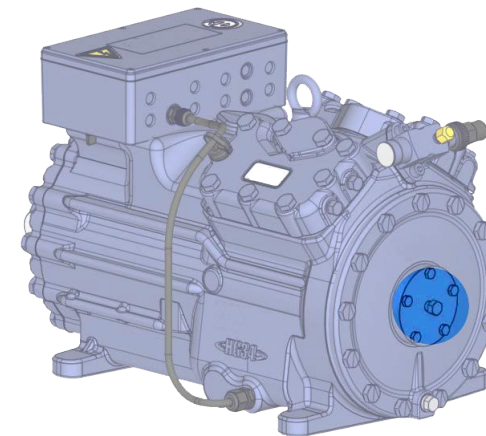


- PTC heater, self-regulating for HG12P up to HG34e
- Constant power for HG44e up to HG66e



- Standard in 8-cylinder compressors HG88e

### Connection plug for oil monitoring with oil pressure safety switch MP55



- For HG12P up to HG34e compressors

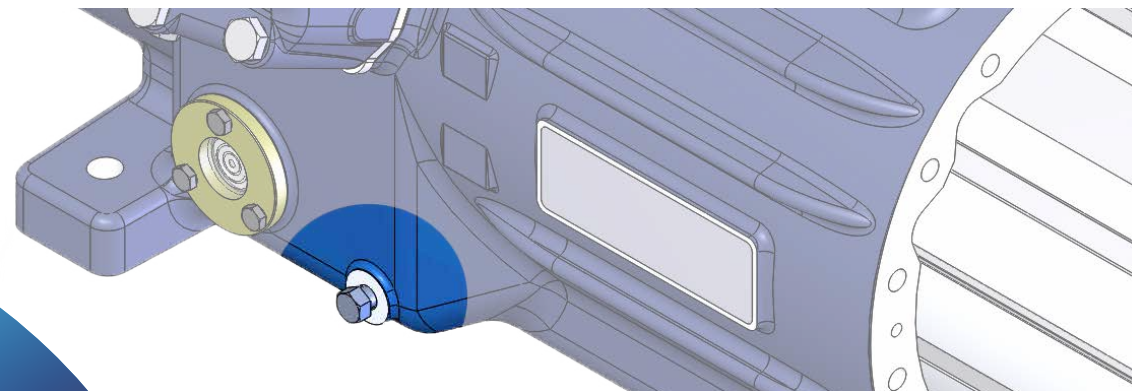
### Variable suction line valve position HG



- 1 Shut-off valve rotates 90°
- 2 Suction cover rotates 90°
- 1+2 Flexible position for suction line connection

	Shut-off valve rotation	Suction cover rotation
HG12P, HG22e, HG34e, HG44e	90°	-
HG56e	180°	90°
HG66e	180°	90°
HG88e	180°	90°

### Connection facility oil temperature sensor



- Available for HG44e – HG88e

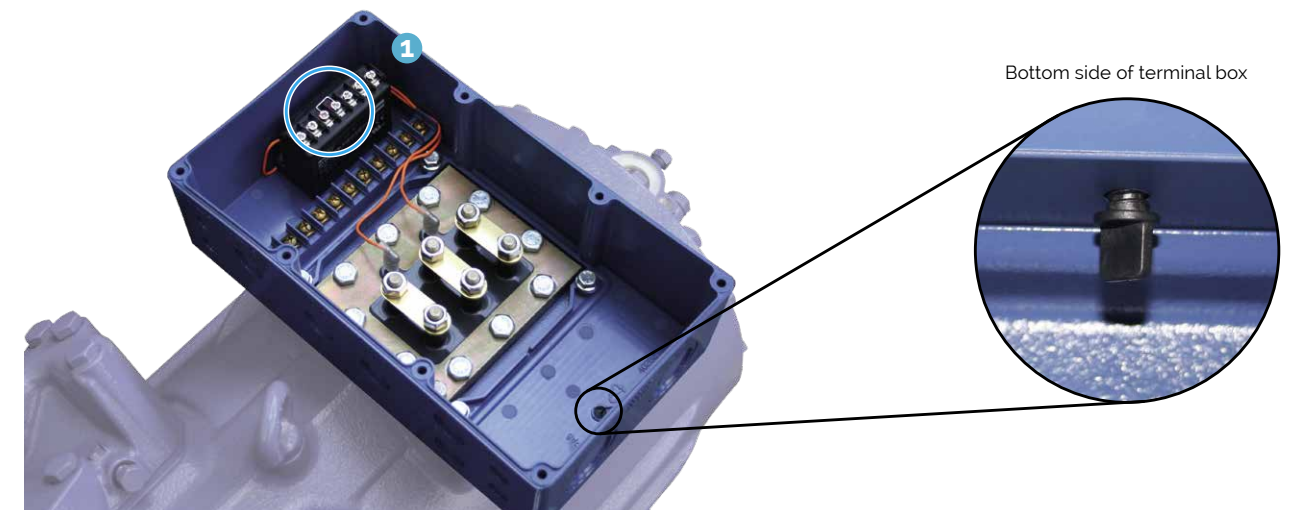
### Electronic motor protection INT69 G



Temperature safety drive for the drive motor

- The INT69 G also provides the usual functions, such as:
  - Motor temperature monitoring
  - Hot gas temperature monitoring
  - Reconnection preventing device
  - Reset function
- 1 PTC sensors
- Connection of up to nine PTC sensors possible

### State-of-the-art terminal box



- Easy electrical installation due to large internal volume
- Terminal board with cable entry points in glass seal model
- 1 Electrical motor protection INT69 G integrated
- High level of protection IP66
- HG12P to HG66e equipped with plug to drain condensed water from the terminal box under unfavorable circumstances (when in use, Ip protection is reduced)



# Bock HG semi-hermetic compressors

Bock HG12P – HG88e

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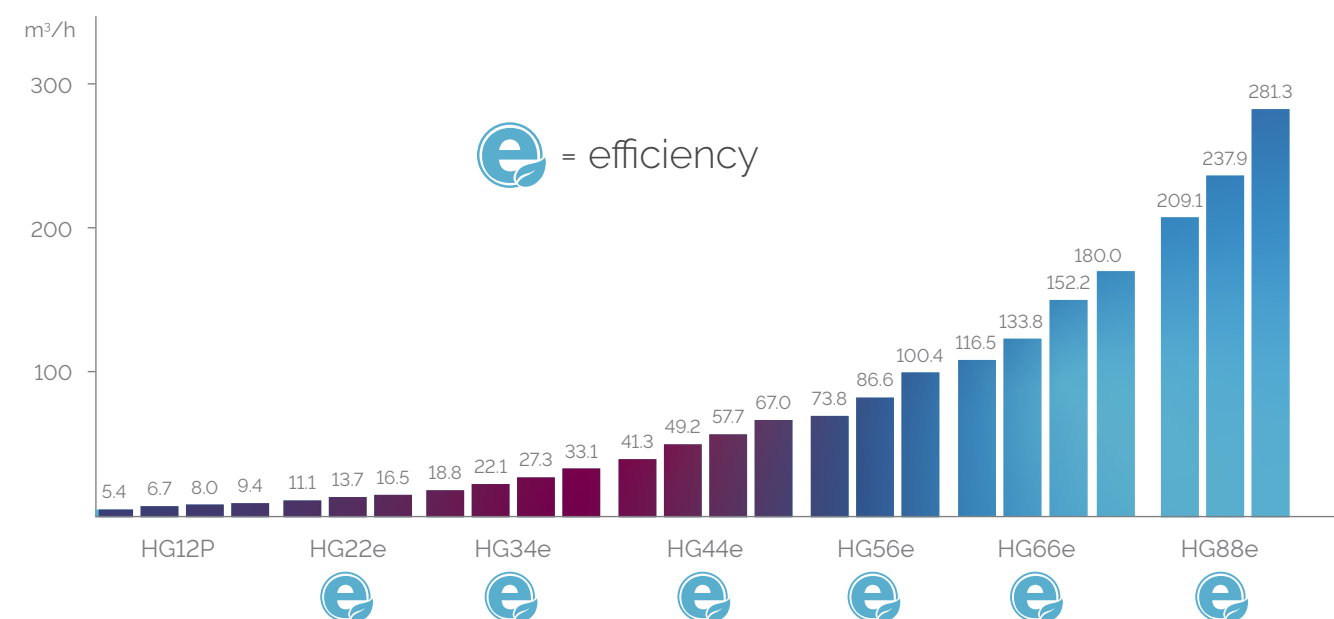


# Bock HG semi-hermetic compressors

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

## HG Single-Stage

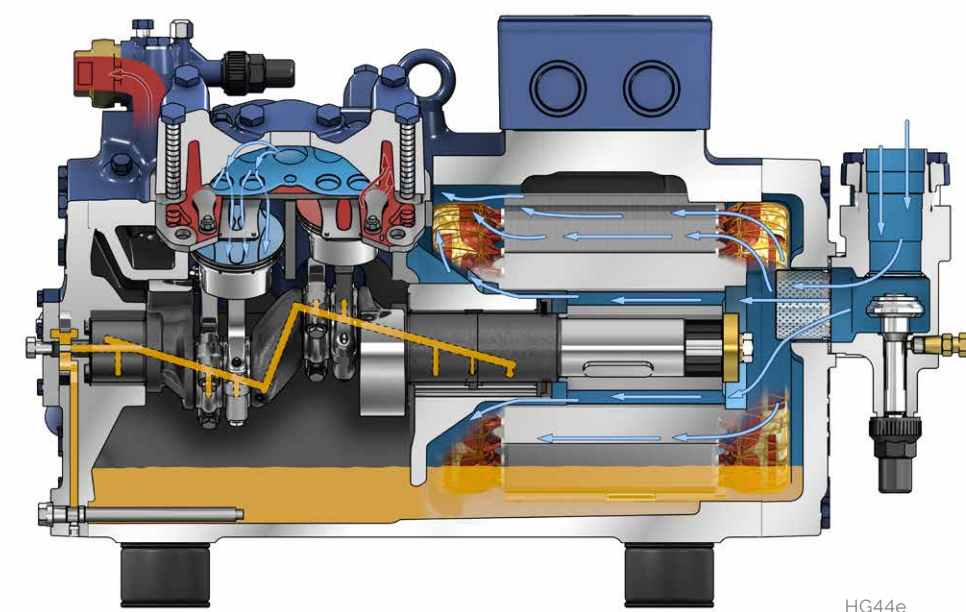
7 model sizes with 25 capacity stages from 5.4 to 281.3 m<sup>3</sup>/h (50 Hz)



## HG semi-hermetic compressors At a glance

### Special features:

- Outstanding running comfort
- Efficiency and reliability on the highest level of quality
- Service-friendly design, e.g. with replaceable drive motors
- Oil pump lubrication
- Electronic motor protection
- Suitable components for conventional or chlorine-free HFC refrigerants



### Type key

**HGX66e / 2070-4S**

- Series <sup>1)</sup>
- Ester oil filling <sup>2)</sup>
- Size
- Number of cylinders
- e-series <sup>3)</sup>
- Swept volume
- Number of poles
- Motor variant <sup>4)</sup>

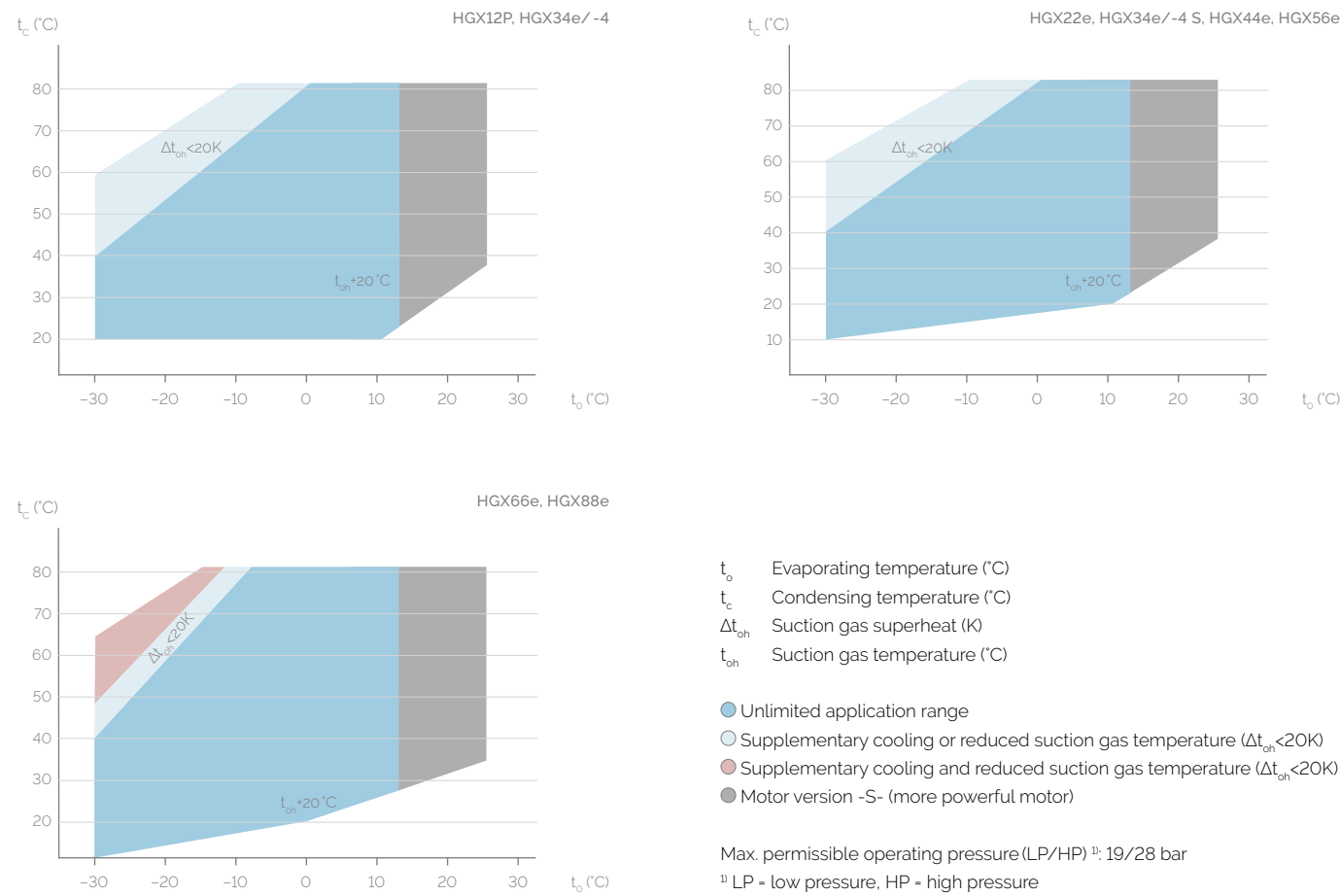
- <sup>1)</sup> HG - Hermetic Gas-cooled (suction gas-cooled)
- <sup>2)</sup> X - Ester oil filling (HFC refrigerants e.g. R134a, R404A, R448A, R449A)
- <sup>3)</sup> - Additional declaration for e-series compressors
- <sup>4)</sup> S - More powerful motor e.g. air-conditioning applications



# HG semi-hermetic compressors

## Operating limits

### R134a



### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter. For further explanations consult [www.rock.de](http://www.rock.de)

#### Performance data

The performance data for R134a are based on European Standard EN 12900 50 Hz power supply frequency.

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 BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

ASERCOM certified performance data



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

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

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

# HG semi-hermetic compressors

## Performance data

### R134a | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [kW]										Power consumption P <sub>e</sub> [kW]				
		Evaporating temperature °C														
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30				
HGX12P/60-4S	30	Q	4920	4490	4080	3700	3010	2420	1910	1480	1130	836	605			
		P	0.703	0.710	0.711	0.706	0.682	0.645	0.597	0.544	0.491	0.443	0.403			
	40	Q	4260	3880	3520	3190	2590	2070	1630	1250	932	670	456			
		P	0.851	0.843	0.830	0.813	0.768	0.713	0.653	0.592	0.535	0.487	0.453			
	50	Q	3630	3300	2990	2700	2190	1740	1350	1030	742	505	302			
		P	0.991	0.968	0.942	0.912	0.846	0.774	0.701	0.631	0.571	0.523	0.494			
60	Q	3020	2740	2480	2240	1800	1420	1100	806	558	341	146				
	P	1.11	1.08	1.04	0.999	0.910	0.821	0.735	0.657	0.593	0.546	0.521				
HGX12P/75-4	30	Q	6150	5610	5100	4620	3760	3020	2390	1850	1410	1050	756			
		P	0.879	0.887	0.888	0.882	0.853	0.805	0.746	0.680	0.614	0.553	0.503			
	40	Q	5320	4850	4400	3980	3230	2590	2030	1560	1170	837	569			
		P	1.06	1.05	1.03	1.01	0.959	0.891	0.815	0.739	0.668	0.609	0.565			
	50	Q	4530	4120	3730	3380	2730	2170	1690	1280	927	630	377			
		P	1.23	1.21	1.17	1.14	1.05	0.967	0.875	0.789	0.713	0.654	0.617			
60	Q	3780	3430	3100	2800	2250	1780	1370	1010	697	425	182				
	P	1.39	1.35	1.30	1.24	1.13	1.02	0.918	0.821	0.741	0.682	0.651				
HGX12P/90-4	30	Q	7300	6670	6070	5520	4510	3630	2870	2230	1700	1260	912			
		P	1.08	1.10	1.12	1.12	1.10	1.06	0.997	0.915	0.826	0.735	0.649			
	40	Q	6380	5820	5290	4790	3890	3110	2440	1880	1410	1020	708			
		P	1.33	1.33	1.32	1.30	1.24	1.16	1.06	0.955	0.846	0.742	0.649			
	50	Q	5490	4990	4520	4080	3290	2610	2030	1540	1130	793	522			
		P	1.59	1.56	1.53	1.48	1.38	1.26	1.14	1.01	0.885	0.770	0.672			
60	Q	4620	4180	3780	3400	2720	2140	1640	1230	876	592	359				
	P	1.82	1.77	1.71	1.65	1.51	1.35	1.20	1.05	0.914	0.790	0.690				
HGX12P/110-4	30	Q	8620	7860	7150	6480	5280	4240	3350	2600	1980	1470	1060			
		P	1.23	1.24	1.24	1.23	1.19	1.13	1.04	0.954	0.861	0.776	0.706			
	40	Q	7460	6790	6170	5580	4530	3620	2850	2190	1640	1180	798			
		P	1.49	1.47	1.45	1.42	1.34	1.24	1.14	1.03	0.938	0.854	0.793			
	50	Q	6350	5770	5230	4730	3830	3040	2370	1790	1300	884	529			
		P	1.73	1.69	1.65	1.59	1.48	1.35	1.22	1.10	1.00	0.917	0.866			
60	Q	5290	4800	4350	3920	3160	2490	1920	1420	978	596	255				
	P	1.96	1.89	1.82	1.75	1.59	1.43	1.28	1.15	1.03	0.957	0.914				
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				
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				
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 temperature



# HG semi-hermetic compressors

## Performance data

R134a | 50 Hz

Type	Cooling capacity $Q_0$ [kW]											Power consumption $P_e$ [kW]												
	Cond. temp. °C	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	2.27	2.30	2.32	2.31	2.25	2.14	1.98	1.80	1.59	1.38	1.18
		P	15200	13800	12600	11400	9120	7190	5530	4120	2970	2060	1400	2.87	2.84	2.78	2.72	2.55	2.34	2.11	1.87	1.64	1.42	1.22
	40	Q	13000	11800	10700	9540	7590	5890	4440	3240	2270	1540	1040	3.38	3.27	3.16	3.03	2.76	2.47	2.18	1.90	1.64	1.42	1.24
		P	10800	9690	8690	7750	6070	4620	3400	2420	1660	1120	784	3.79	3.62	3.45	3.27	2.90	2.54	2.20	1.89	1.61	1.39	1.24
	50	Q	8590	7680	6830	6040	4630	3440	2480	1730	1190	-	-	4.12	3.89	3.66	3.43	2.99	2.56	2.17	1.84	1.56	-	-
		P	20600	18800	17200	15600	12700	10100	7800	5890	4320	3080	2190	2.61	2.67	2.71	2.71	2.66	2.53	2.34	2.12	1.88	1.63	1.41
HGX34e/255-4 <sup>1)</sup>	30	Q	18100	16500	15000	13600	11000	8660	6660	4960	3570	2490	1710	3.36	3.35	3.31	3.25	3.08	2.84	2.57	2.27	1.97	1.68	1.43
		P	15600	14200	12900	11600	9310	7280	5540	4070	2880	1960	1330	4.02	3.93	3.83	3.71	3.42	3.08	2.73	2.36	2.01	1.68	1.41
	40	Q	13100	11900	10700	9610	7640	5920	4450	3220	2240	1510	1030	4.56	4.41	4.24	4.06	3.66	3.23	2.80	2.37	1.96	1.61	1.32
		P	10500	9430	8480	7590	5970	4570	3380	2410	1660	-	-	4.98	4.77	4.54	4.30	3.79	3.28	2.76	2.28	1.83	-	-
	50	Q	25500	23300	21100	19200	15500	12400	9660	7390	5520	4040	2920	3.40	3.43	3.43	3.40	3.29	3.11	2.88	2.61	2.32	2.02	1.72
		P	22300	20300	18500	16700	13500	10700	8260	6260	4620	3320	2330	4.22	4.17	4.10	4.01	3.78	3.49	3.16	2.80	2.43	2.07	1.73
HGX34e/315-4 <sup>1)</sup>	30	Q	19200	17400	15800	14200	11400	8950	6880	5140	3720	2600	1740	4.97	4.85	4.71	4.55	4.19	3.79	3.36	2.91	2.47	2.04	1.65
		P	16100	14600	13100	11800	9350	7280	5520	4050	2850	1900	1170	5.63	5.44	5.22	5.00	4.51	4.00	3.46	2.93	2.41	1.92	1.47
	40	Q	13100	11800	10600	9390	7380	5660	4200	3000	2010	-	-	6.18	5.91	5.62	5.33	4.71	4.08	3.44	2.82	2.22	-	-
		P	30700	28100	25600	23200	19000	15300	12100	9310	7060	5250	3860	4.27	4.28	4.26	4.22	4.06	3.83	3.53	3.20	2.83	2.46	2.09
	50	Q	27000	24600	22400	20300	16600	13300	10400	8000	6020	4420	3180	5.26	5.19	5.09	4.97	4.67	4.30	3.89	3.46	3.00	2.56	2.13
		P	23200	21200	19300	17400	14100	11300	8760	6670	4940	3540	2450	6.17	6.01	5.83	5.63	5.18	4.69	4.16	3.62	3.07	2.55	2.06
HGX34e/380-4 <sup>1)</sup>	30	Q	19600	17800	16100	14600	11700	9240	7130	5350	3860	2650	1690	6.97	6.73	6.46	6.18	5.59	4.96	4.31	3.66	3.02	2.42	1.86
		P	16000	14500	13100	11800	9340	7290	5530	4040	2800	-	-	7.65	7.31	6.97	6.60	5.86	5.09	4.32	3.56	2.83	-	-
	40	Q	39200	35700	32500	29500	24100	19400	15400	12100	9190	6850	4920	4.71	4.75	4.76	4.74	4.62	4.41	4.13	3.79	3.42	3.03	2.63
		P	34500	31400	28600	25900	21100	16900	13400	10400	7790	5670	3890	5.95	5.90	5.82	5.71	5.43	5.07	4.65	4.19	3.70	3.20	2.72
	50	Q	29900	27200	24700	22300	18100	14400	11300	8660	6430	4520	2880	7.12	6.97	6.80	6.61	6.16	5.64	5.08	4.49	3.88	3.27	2.69
		P	25400	23000	20800	18800	15100	12000	9280	7000	5040	3340	1840	8.16	7.91	7.65	7.36	6.74	6.06	5.35	4.62	3.89	3.17	2.49
HGX44e/475-4	30	Q	20800	18800	16900	15200	12100	9450	7210	5280	3600	-	-	8.99	8.65	8.28	7.90	7.10	6.26	5.40	4.52	3.66	-	-
		P	46600	42600	38700	35200	28800	23200	18500	14500	11100	8310	6010	5.58	5.62	5.64	5.61	5.47	5.22	4.88	4.48	4.03	3.56	3.09
	40	Q	41100	37500	34100	30900	25200	20300	16100	12500	9480	6950	4820	7.07	7.01	6.91	6.79	6.45	6.01	5.51	4.95	4.37	3.78	3.19
		P	35700	32500	29500	26700	21700	17400	13700	10600	7890	5610	3640	8.49	8.31	8.10	7.87	7.33	6.71	6.03	5.31	4.58	3.86	3.17
	50	Q	30400	27600	25000	22600	18200	14500	11400	8620	6280	4240	2410	9.75	9.45	9.13	8.78	8.03	7.21	6.35	5.47	4.59	3.74	2.92
		P	25000	22600	20400	18400	14700	11600	8910	6610	4590	-	-	10.7	10.3	9.90	9.44	8.47	7.45	6.41	5.36	4.32	-	-
HGX44e/565-4	30	Q	55700	50900	46400	42100	34400	27700	21900	17000	12900	9520	6880	6.61	6.71	6.76	6.76	6.62	6.33	5.92	5.40	4.82	4.20	3.57
		P	49200	44900	40800	37000	30100	24100	18900	14600	10900	7930	5580	8.52	8.45	8.34	8.18	7.76	7.21	6.57	5.86	5.11	4.35	3.61
	40	Q	42600	38800	35200	31800	25700	20400	15900	12100	8940	6360	4310	10.2	10.0	9.73	9.42	8.72	7.92	7.06	6.16	5.26	4.37	3.54
		P	36000	32700	29500	26600	21300	16800	13000	9700	7030	4850	3110	11.6	11.3	10.8	10.4	9.45	8.42	7.35	6.27	5.22	4.22	3.30
	50	Q	29400	26500	23900	21400	17000	13200	10100	7380	5200	-	-	12.8	12.3	11.7	11.1	9.90	8.64	7.38	6.14	4.95	-	-
		P	57000	52000	47000	42000	34000	27000	21000	16000	12000	9200	6800	6.61	6.71	6.76	6.76	6.62	6.33	5.92	5.40	4.82	4.20	3.57

Relating to 20 °C suction gas temperature without liquid subcooling

Supplementary cooling or reduced suction gas temperature

<sup>1)</sup> ASERCOM certified

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# HG semi-hermetic compressors

## Performance data

R134a | 50 Hz

Type	Cooling capacity $Q_0$ [kW]											Power consumption $P_e$ [kW]												
	Cond. temp. °C	Evaporating temperature °C											12.5	10										
		7.5	5	0	-5	-10	-15	-20	-25	-30														
HGX44e/770-4	30	Q	63600	58000	52800	47900	39100	31600	25100	19700	15100	11300	8100	7.62	7.68	7.70	7.67	7.48	7.14	6.69	6.14	5.54	4.90	4.25
		P	56000	51100	46400	42100	34200	27500	21800	16900	12800	9360	6460	9.63	9.54	9.42	9.24	8.79	8.21	7.53	6.78	5.99	5.19	4.40
	40	Q	48700	44200	40100	36300	29500	23600	18600	14300	10700	7510	4830	11.5	11.2	11.0	10.7	9.97	9.14	8.23	7.26	6.28	5.30	4.35
		P	41300	37500	33900	30600	24700	19600	15300	11600	8390	5630	3160	13.2	12.8	12.3	11.9	10.9	9.82	8.66	7.48	6.29	5.13	4.02
	50	Q	34000	30700	27700	24900	19900	15600	12000	8810	6070	-	-	14.5	13.9	13.4	12.7	11.5	10.1	8.74	7.32	5.93	-	-
		P	71500	65200	59400	53900	43900	35300	28000	21700	16500	12300	8870	8.74	8.80	8.79	8.74	8.49	8.08	7.52	6.86	6.11	5.30	4.45
HHGX56e/850-4	30	Q	62900	57400	52200	47300	38500	30900	24300	18800	14200	10400	7330	11.1	10.9	10.8	10.5	9.99	9.27	8.43	7.50	6.51	5.48	4.45
		P	54500	49600	45000	40700	33000	26400	20700	15900	11900	8470	5720	13.2	12.9	12.5	12.1	11.2	10.2	9.11	7.93	6.71	5.47	4.26
	40	Q	46000	41800	37900	34200	27600	21900	17100	13000	9440	6520	4060	15.1	14.6	14.1	13.5	12.3	10.9	9.57	8.13	6.68	5.24	3.85
		P	37600	34100	30800	27700	22200	17500	13400	9960	7050	-	-	16.7	16.0	15.3	14.6	13.0	11.4	9.77	8.09	6.41	-	-
	50	Q	82900	75700</																				



# HG semi-hermetic compressors

## Performance data

### R134a | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>0</sub> [kW]										Power consumption P <sub>e</sub> [kW]			
		Evaporating temperature °C													
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30			
HGX66e/2070-4	30	Q	168000	154000	141000	129000	106000	85300	67900	53000	40500	30200	22000		
		P	21.7	21.9	21.9	21.8	21.1	20.0	18.6	16.9	15.0	13.1	11.2		
	40	Q	150000	137000	125000	114000	93000	74900	59200	45800	34500	25300	17900		
		P	27.6	27.2	26.7	26.1	24.6	22.7	20.6	18.3	15.9	13.7	11.5		
	50	Q	131000	120000	109000	98300	79900	63900	50100	38400	28600	20600	-		
		P	32.8	31.9	30.9	29.9	27.5	24.8	22.0	19.2	16.4	13.8	-		
60	Q	111000	101000	91100	82400	66500	52800	41100	31200	23000	-	-			
	P	37.3	35.9	34.4	32.9	29.7	26.3	22.9	19.6	16.5	-	-			
70	Q	89900	81500	73700	66300	53200	41900	32400	24600	-	-	-			
	P	40.9	39.0	37.1	35.2	31.2	27.2	23.2	19.4	-	-	-			
HGX88e/2400-4	30	Q	197000	181000	165000	151000	124000	99900	79500	62000	47400	35300	25700		
		P	26.1	26.3	26.3	26.1	25.4	24.2	22.5	20.6	18.4	16.1	13.8		
	40	Q	176000	161000	147000	134000	110000	87800	69400	53700	40500	29600	21000		
		P	32.8	32.4	31.8	31.1	29.4	27.2	24.8	22.2	19.5	16.8	14.2		
	50	Q	154000	141000	128000	116000	94000	75100	58900	45100	33600	24200	-		
		P	38.8	37.8	36.7	35.4	32.7	29.7	26.5	23.3	20.1	17.0	-		
60	Q	131000	119000	108000	97100	78400	62200	48300	36700	27100	-	-			
	P	44.0	42.4	40.7	38.9	35.3	31.5	27.6	23.8	20.2	-	-			
70	Q	107000	96400	87100	78400	62800	49400	38200	29000	-	-	-			
	P	48.2	46.1	43.9	41.6	37.1	32.5	28.0	23.7	-	-	-			
HGX88e/2735-4	30	Q	225000	206000	188000	171000	141000	114000	90500	70600	53900	40200	29300		
		P	29.9	30.1	30.1	29.9	29.0	27.6	25.8	23.5	21.1	18.5	15.8		
	40	Q	201000	184000	168000	152000	125000	100000	79000	61100	46100	33700	23900		
		P	37.4	36.9	36.3	35.5	33.5	31.1	28.4	25.4	22.3	19.2	16.3		
	50	Q	176000	160000	146000	132000	108000	85600	67100	51400	38200	27500	-		
		P	44.1	43.0	41.7	40.3	37.3	33.9	30.3	26.7	23.0	19.5	-		
60	Q	149000	136000	123000	111000	89400	70900	55100	41800	30900	-	-			
	P	49.8	48.1	46.2	44.3	40.2	35.9	31.5	27.2	23.1	-	-			
70	Q	122000	111000	99400	89400	71600	56300	43500	33000	-	-	-			
	P	54.5	52.2	49.7	47.2	42.2	37.0	32.0	27.1	-	-	-			
HGX88e/3235-4	30	Q	265000	243000	222000	202000	166000	135000	107000	83300	63500	47300	34400		
		P	35.2	35.4	35.4	35.2	34.2	32.5	30.3	27.6	24.7	21.6	18.5		
	40	Q	237000	217000	198000	180000	147000	118000	93200	72000	54200	39600	28000		
		P	44.1	43.5	42.7	41.8	39.4	36.6	33.3	29.8	26.1	22.5	18.9		
	50	Q	207000	189000	172000	156000	127000	101000	78900	60400	44900	32300	-		
		P	52.0	50.6	49.1	47.5	43.8	39.8	35.6	31.2	26.9	22.7	-		
60	Q	176000	160000	145000	131000	106000	83400	64700	49100	36100	-	-			
	P	58.7	56.6	54.4	52.1	47.2	42.1	37.0	31.8	26.9	-	-			
70	Q	144000	130000	117000	106000	84200	66200	51100	38600	-	-	-			
	P	64.3	61.4	58.5	55.6	49.5	43.4	37.4	31.5	-	-	-			

Relating to 20 °C suction gas temperature without liquid subcooling

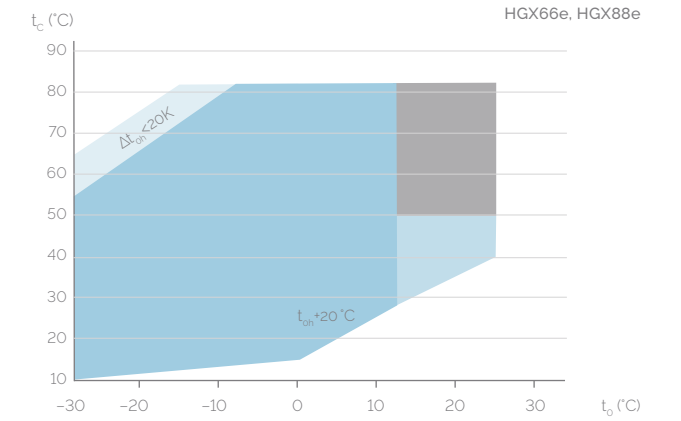
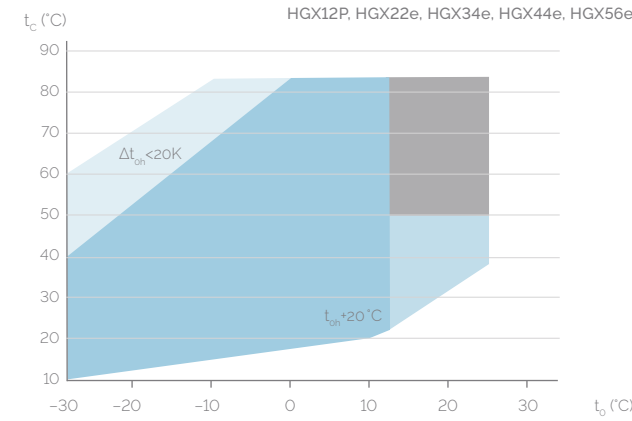
Supplementary cooling or reduced suction gas temperature



# HG semi-hermetic compressors

## Operating limits

### R513A



t<sub>e</sub> Evaporating temperature (°C)  
 t<sub>c</sub> Condensing temperature (°C)  
 Δt<sub>sh</sub> Suction gas superheat (K)  
 t<sub>sh</sub> Suction gas temperature (°C)

- Unlimited application range
- Supplementary cooling or reduced suction gas temperature (Δt<sub>sh</sub> < 20K)
- Motor version -S- (more powerful motor)
- Required minimum superheating Δt<sub>sh</sub> = 20K

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

### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter. For further explanations consult [www.bock.de](http://www.bock.de)

#### Performance data

The performance data for R513A 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 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 BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

# HG semi-hermetic compressors

## Performance data

R513A | 50 Hz

Type	Cooling capacity $Q_0$ [kW]											Power consumption $P_e$ [kW]												
	Cond. temp. °C	Evaporating temperature °C																						
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	
HGX12P/60-4 S	30	Q	5040	4610	4210	3830	3150	2550	2040	1600	1230	925	677	0.722	0.732	0.735	0.732	0.713	0.679	0.633	0.581	0.527	0.475	0.431
		P	4320	3950	3600	3270	2680	2170	1720	1340	1020	745	520	0.879	0.873	0.862	0.847	0.805	0.751	0.691	0.629	0.569	0.516	0.474
	40	Q	3620	3310	3010	2730	2230	1800	1420	1090	809	570	365	1.02	1.00	0.981	0.953	0.888	0.816	0.741	0.668	0.603	0.548	0.508
		P	2950	2690	2450	2220	1800	1440	1130	850	611	401	213	1.16	1.12	1.08	1.04	0.956	0.865	0.777	0.694	0.622	0.566	0.529
	50	Q	2320	2110	1910	1730	1400	1110	849	625	424	-	-	1.27	1.22	1.17	1.11	1.00	0.895	0.792	0.699	0.622	-	-
		P	6280	5750	5260	4790	3930	3190	2550	2000	1540	1160	846	0.970	0.987	0.998	1.00	0.891	0.848	0.791	0.726	0.658	0.594	0.538
HGX12P/75-4 HGX12P/75-4 S	30	Q	5500	5030	4590	4180	3350	2700	2150	1680	1270	931	650	1.19	1.18	1.18	1.16	1.00	0.939	0.864	0.786	0.711	0.645	0.592
		P	4690	4280	3890	3530	2790	2240	1770	1360	1010	712	456	1.39	1.37	1.34	1.31	1.10	1.01	0.926	0.835	0.753	0.684	0.635
	40	Q	3840	3500	3170	2870	2250	1800	1410	1070	763	501	266	1.57	1.54	1.49	1.44	1.19	1.08	0.970	0.867	0.777	0.707	0.660
		P	2990	2710	2440	2200	1740	1380	1060	780	529	-	-	1.75	1.69	1.63	1.57	1.25	1.11	0.990	0.874	0.777	-	-
	50	Q	7550	6890	6270	5690	4710	3830	3060	2410	1860	1400	1030	1.15	1.17	1.19	1.19	1.14	1.10	1.04	0.963	0.874	0.780	0.689
		P	6570	5990	5440	4940	4030	3250	2580	2010	1530	1130	800	1.42	1.42	1.41	1.39	1.30	1.22	1.12	1.01	0.908	0.799	0.698
HGX12P/90-4 HGX12P/90-4 S	30	Q	5590	5090	4620	4180	3370	2700	2130	1640	1230	880	600	1.67	1.65	1.62	1.58	1.45	1.34	1.21	1.08	0.953	0.831	0.723
		P	4600	4180	3790	3420	2730	2170	1690	1280	940	658	426	1.90	1.86	1.80	1.75	1.58	1.43	1.28	1.12	0.983	0.850	0.737
	40	Q	3600	3260	2940	2650	2110	1660	1280	956	689	-	-	2.10	2.03	1.96	1.88	1.66	1.48	1.30	1.12	0.969	-	-
		P	8820	8070	7370	6710	5510	4470	3570	2800	2160	1620	1190	1.26	1.28	1.28	1.28	1.25	1.18	1.10	1.01	0.923	0.833	0.755
	50	Q	7560	6910	6300	5730	4690	3790	3010	2350	1780	1310	911	1.54	1.53	1.51	1.48	1.41	1.31	1.21	1.10	0.997	0.904	0.831
		P	6340	5790	5270	4780	3900	3140	2480	1910	1420	998	640	1.80	1.76	1.71	1.66	1.55	1.42	1.29	1.17	1.05	0.960	0.891
HGX12P/110-4 HGX12P/110-4 S	30	Q	5170	4710	4280	3880	3150	2520	1970	1490	1070	702	373	2.03	1.97	1.90	1.82	1.67	1.51	1.36	1.21	1.09	0.991	0.926
		P	4050	3690	3340	3020	2440	1940	1490	1100	741	-	-	2.23	2.14	2.05	1.95	1.76	1.56	1.38	1.22	1.08	-	-
	40	Q	10400	9540	8730	7970	6540	5280	4170	3210	2410	1750	1240	1.31	1.37	1.41	1.43	1.44	1.40	1.32	1.22	1.09	0.964	0.832
		P	9130	8370	7640	6950	5670	4540	3550	2700	1990	1420	975	1.73	1.74	1.74	1.73	1.66	1.56	1.43	1.28	1.13	0.980	0.837
	50	Q	7810	7130	6490	5880	4760	3770	2920	2190	1580	1100	741	2.08	2.05	2.01	1.97	1.83	1.68	1.51	1.33	1.15	0.986	0.839
		P	6440	5860	5310	4790	3840	3010	2290	1690	1210	825	558	2.36	2.30	2.23	2.15	1.95	1.76	1.55	1.35	1.15	0.986	0.843
HGX22e/125-4 HGX22e/125-4 S	30	Q	5060	4580	4130	3700	2920	2260	1700	1240	875	-	-	2.57	2.48	2.38	2.28	2.03	1.80	1.57	1.35	1.15	-	-
		P	13100	12000	11000	10100	8150	6600	5270	4130	3160	2360	1700	1.71	1.75	1.77	1.79	1.71	1.66	1.59	1.50	1.38	1.24	1.07
	40	Q	11500	10600	9600	8740	7010	5660	4490	3490	2640	1930	1340	2.17	2.16	2.15	2.12	2.00	1.90	1.78	1.63	1.46	1.27	1.07
		P	9850	8990	8170	7400	5930	4750	3740	2870	2120	1490	944	2.56	2.51	2.46	2.40	2.25	2.09	1.91	1.71	1.49	1.26	1.00
	50	Q	8170	7420	6720	6050	4870	3860	2990	2230	1580	1010	505	2.89	2.80	2.71	2.61	2.44	2.22	1.99	1.73	1.47	1.18	0.888
		P	6490	5850	5260	4700	3830	2980	2230	1580	994	-	-	3.15	3.03	2.91	2.78	2.57	2.30	2.00	1.70	1.38	-	-
HGX22e/160-4 HGX22e/160-4 S	30	Q	15700	14500	13300	12200	10100	8230	6620	5200	3990	2970	2140	2.11	2.13	2.14	2.14	2.10	2.02	1.90	1.76	1.59	1.41	1.21
		P	13700	12600	11600	10600	8760	7130	5690	4430	3360	2460	1740	2.64	2.62	2.59	2.55	2.45	2.29	2.11	1.91	1.69	1.47	1.24
	40	Q	11800	10800	9840	8980	7420	5990	4740	3660	2740	1980	1380	3.15	3.08	3.01	2.93	2.76	2.53	2.28	2.03	1.77	1.51	1.25
		P	9740	8920	8150	7410	6070	4850	3800	2900	2140	1540	1070	3.61	3.50	3.38	3.25	3.01	2.72	2.41	2.11	1.81	1.52	1.23
	50	Q	7780	7100	6460	5850	4710	3730	2880	2170	1600	-	-	4.00	3.84	3.68	3.51	3.20	2.84	2.49	2.14	1.80	-	-
		P																						

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

vap.bock.de



# HG semi-hermetic compressors

## Performance data

R513A | 50 Hz

Type	Cooling capacity $Q_0$ [kW]											Power consumption $P_e$ [kW]												
	Cond. temp. °C	Evaporating temperature °C																						
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	
HGX34e/215-4 HGX34e/215-4 S	30	Q	17600	16200	14800	13500	11100	8960	7080	5460	4080	2960	2070	2.36	2.39	2.41	2.41	2.36	2.25	2.10	1.92	1.71	1.50	1.29
		P	15400	14100	12800	11700	9470	7570	5900	4480	3290	2320	1590	3.00	2.96	2.91	2.84	2.68	2.47	2.24	2.00	1.76	1.53	1.32
	40	Q	13000	11800	10800	9680	7790	6130	4700	3490	2500	1720	1160	3.54	3.43	3.31	3.19	2.91	2.62	2.33	2.04	1.76	1.52	1.32
		P	10600	9550	8610	7730	6120	4730	3550	2570	1800	1220	839	3.98	3.81	3.63	3.45	3.08	2.71	2.36	2.03	1.73	1.49	1.30
	50	Q	8170	7340	6560	5830	4530	3420	2510	1790	1250	-	-	4.33	4.10	3.87	3.64	3.18	2.75	2.34	1.98	1.67	-	-
		P	21000	19300	17700	16200	13300	10700	8420	6470	4820	3490	2470	2.69	2.77	2.81	2.83	2.79	2.67	2.50	2.28	2.03	1.78	1.53
HGX34e/255-4 HGX34e/255-4 S	30	Q	18300	16800	15400	14000	11500	9140	7140	5420	3980	2820	1940	3.48	3.47	3.45	3.40	3.24	3.01	2.74	2.45	2.14	1.84	1.56
		P	15600	14200	13000	11800	9550	7590	5870	4400	3180	2210	1490	4.16	4.09	3.99	3.88	3.60	3.28	2.92	2.55	2.18	1.84	1.53
	40	Q	12700	11600	10600	9520	7670	6040	4620	3420	2430	1670	1130	4.73	4.59	4.43	4.25	3.86	3.44	3.01	2.57	2.15	1.77	1.44
		P	9810	8920	8070	7260	5790	4500	3390	2480	1750	-	-	5.17	4.96	4.74	4.51	4.01	3.50	2.99	2.49	2.02	-	-
	50	Q	26200	23900	21900	19900	16300	13200	10400	8050	6110	4520	3280	3.53	3.56	3.57	3.56	3.46	3.29	3.07	2.80	2.50	2.19	1.89
		P	22700	20700	18900	17200	14000	11200	8810	6770	5080	3700	2620	4.38	4.34	4.28	4.20	3.98	3.69	3.37	3.01	2.64	2.26	1.90
HGX34e/315-4 HGX34e/315-4 S	30	Q	19200	17500	15900	14400	11700	9290	7240	5500	4060	2890	1970	5.16	5.05	4.92	4.77	4.42	4.02	3.59	3.15	2.69	2.25	1.83
		P	15800	14300	13000	11700	9390	7410	5710	4270	3080	2110	1350	5.85	5.66	5.46	5.24	4.76	4.25	3.72	3.18	2.65	2.14	1.67
	40	Q	12400	11200	10100	9020	7170	5580	4220	3090	2150	-	-	6.41	6.15	5.88	5.59	4.99	4.36	3.73	3.10	2.48	-	-
		P	31400	28800	26400	24100	19900	16200	12900	10100	7760	5840</												



# HG semi-hermetic compressors

## Performance data

R513A | 50 Hz

Type	Cooling capacity Q <sub>0</sub> [kW]											Power consumption P <sub>e</sub> [kW]			
	Cond. temp. °C	Evaporating temperature °C											P <sub>e</sub> [kW]	P <sub>e</sub> [kW]	
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30			
HGX44e/770-4 HGX44e/770-4 S	30	Q	65200	59700	54600	49700	41000	33400	26800	21200	16500	12500	9160	12500	9160
		P	7.93	8.01	8.04	8.03	7.86	7.55	7.11	6.57	5.96	5.31	4.64		
	40	Q	57000	52100	47500	43300	35500	28800	23100	18200	14000	10400	7400	10400	7400
		P	10.0	9.95	9.83	9.68	9.24	8.68	8.02	7.27	6.47	5.65	4.83		
	50	Q	48800	44500	40500	36800	30100	24300	19400	15100	11500	8350	5680	8350	5680
		P	11.9	11.7	11.4	11.1	10.4	9.66	8.76	7.80	6.81	5.81	4.82		
60	Q	40500	36900	33500	30300	24700	19800	15700	12100	8970	6300	3940	6300	3940	
	P	13.6	13.2	12.8	12.4	11.4	10.3	9.24	8.06	6.87	5.68	4.53			
70	Q	32200	29200	26400	23800	19200	15300	11900	8940	6420	-	-	-	-	
	P	15.0	14.4	13.9	13.3	12.0	10.7	9.36	7.95	6.55	-	-			
HGX56e/850-4 HGX56e/850-4 S	30	Q	73600	67400	61600	56200	46100	37400	30000	23600	18200	13700	10100	13700	10100
		P	9.23	9.29	9.30	9.26	8.96	8.57	8.03	7.37	6.62	5.80	4.94		
	40	Q	64200	58800	53600	48800	39900	32400	25800	20200	15500	11600	8310	11600	8310
		P	11.6	11.5	11.3	11.1	10.5	9.83	9.00	8.08	7.09	6.05	5.00		
	50	Q	54800	50000	45600	41400	33700	27200	21600	16900	12800	9360	6530	9360	6530
		P	13.7	13.4	13.1	12.7	11.8	10.8	9.76	8.58	7.35	6.11	4.87		
60	Q	45300	41300	37500	34000	27600	22100	17500	13500	10100	7170	4750	7170	4750	
	P	15.6	15.2	14.7	14.1	12.9	11.6	10.2	8.85	7.40	5.95	4.53			
70	Q	35800	32500	29500	26600	21400	17000	13300	10100	7350	-	-	-	-	
	P	17.3	16.6	15.9	15.2	13.8	12.2	10.5	8.89	7.21	-	-			
HGX56e/995-4 HGX56e/995-4 S	30	Q	85100	78000	71300	65000	53500	43400	34700	27200	20900	15700	11500	15700	11500
		P	10.5	10.6	10.6	10.6	10.3	9.86	9.20	8.40	7.51	6.56	5.57		
	40	Q	74300	68100	62200	56600	46400	37500	29900	23300	17700	13100	9200	13100	9200
		P	13.3	13.2	13.0	12.7	12.0	11.2	10.2	9.18	8.03	6.84	5.66		
	50	Q	63400	58000	52800	48000	39200	31600	25000	19300	14500	10400	6940	10400	6940
		P	15.8	15.5	15.1	14.6	13.6	12.4	11.1	9.73	8.32	6.90	5.51		
60	Q	52400	47800	43500	39400	31900	25600	20000	15300	11200	7660	4660	7660	4660	
	P	18.0	17.5	16.9	16.2	14.8	13.2	11.6	9.98	8.30	6.65	5.07			
70	Q	41300	37600	34000	30700	24700	19600	15100	11300	7910	-	-	-	-	
	P	19.8	19.1	18.2	17.4	15.6	13.7	11.8	9.84	7.91	-	-			
HGX56e/1155-4 HGX56e/1155-4 S	30	Q	98000	89700	81900	74500	60700	49200	39300	30800	23700	17900	13200	17900	13200
		P	13.8	13.8	13.7	13.5	12.7	11.9	11.0	9.95	8.95	7.83	6.72		
	40	Q	85900	78500	71600	65100	52800	42700	34000	26500	20300	15100	10800	15100	10800
		P	16.8	16.5	16.2	15.8	14.7	13.6	12.3	11.0	9.65	8.26	6.91		
	50	Q	73500	67100	61100	55500	44800	36100	28600	22200	16700	12200	8410	12200	8410
		P	19.5	19.1	18.5	18.0	16.5	15.0	13.4	11.7	10.1	8.43	6.83		
60	Q	61000	55500	50400	45700	36700	29400	23100	17700	13200	9280	6030	9280	6030	
	P	22.1	21.4	20.6	19.8	18.0	16.1	14.2	12.1	10.1	8.21	6.34			
70	Q	48300	43900	39700	35800	28500	22600	17600	13300	9600	-	-	-	-	
	P	24.2	23.3	22.3	21.3	19.1	16.8	14.5	12.1	9.76	-	-			
HGX66e/1340-4 HGX66e/1340-4 S	30	Q	116000	106000	96700	88100	72200	58700	47000	36900	28500	21500	15800	21500	15800
		P	15.4	15.5	15.4	15.3	14.6	13.7	12.7	11.5	10.3	9.06	7.85		
	40	Q	102000	93100	84900	77200	62900	50800	40300	31400	23800	17600	12500	17600	12500
		P	18.9	18.6	18.3	17.8	16.7	15.4	13.9	12.4	10.8	9.33	7.90		
	50	Q	87200	79600	72400	65600	53000	42500	33400	25700	19300	14000	9660	14000	9660
		P	21.9	21.4	20.8	20.1	18.4	16.7	14.9	13.0	11.1	9.36	7.74		
60	Q	72100	65500	59300	53600	42900	34100	26600	20400	15200	11000	7580	11000	7580	
	P	24.5	23.7	22.8	21.9	19.8	17.6	15.4	13.2	11.0	9.09	7.29			
70	Q	56500	51100	46100	41500	32900	26000	20300	15600	11800	8800	-	-	-	
	P	26.6	25.5	24.4	23.2	20.7	18.1	15.5	13.0	10.6	8.45	-			
HGX66e/1540-4 HGX66e/1540-4 S	30	Q	133000	122000	111000	102000	83100	67600	54300	42800	33100	25100	18600	25100	18600
		P	17.6	17.7	17.6	17.5	16.8	15.8	14.7	13.3	11.9	10.5	9.13		
	40	Q	117000	107000	97700	88900	72500	58700	46700	36500	27800	20700	14900	20700	14900
		P	21.7	21.4	21.0	20.5	19.3	17.8	16.1	14.4	12.6	10.9	9.29		
	50	Q	101000	91600	83400	75700	61300	49200	38900	30100	22700	16600	11700	16600	11700
		P	25.3	24.7	24.0	23.2	21.4	19.4	17.3	15.2	13.0	11.0	9.22		
60	Q	83100	75600	68500	62000	49800	39700	31200	24000	18000	13200	9310	13200	9310	
	P	28.4	27.5	26.5	25.4	23.1	20.6	18.1	15.5	13.1	10.8	8.85			
70	Q	65300	59200	53400	48100	38400	30500	23900	18500	14200	10800	-	-	-	
	P	30.9	29.7	28.4	27.1	24.2	21.3	18.3	15.5	12.8	10.3	-			
HGX66e/1750-4 HGX66e/1750-4 S	30	Q	151000	138000	126000	115000	95000	77300	62000	48900	37900	28700	21300	28700	21300
		P	20.2	20.3	20.2	20.0	19.2	18.1	16.8	15.3	13.7	12.1	10.5		
	40	Q	133000	122000	111000	101000	82900	67100	53500	41800	31900	23700	17100	23700	17100
		P	24.8	24.5	24.1	23.5	22.0	20.4	18.5	16.5	14.5	12.6	10.7		
	50	Q	114000	104000	94700	86000	70200	56400	44600	34500	26100	19100	13500	19100	13500
		P	29.0	28.3	27.5	26.6	24.5	22.2	19.8	17.4	15.0	12.8	10.7		
60	Q	94300	85800	77900	70500	57100	45600	35800	27600	20800	15200	10800	15200	10800	
	P	32.6	31.5	30.4	29.1	26.4	23.6	20.7	17.9	15.2	12.6	10.3			
70	Q	74200	67200	60800	54800	44000	35000	27500	21300	16400	12500	-	-	-	
	P	35.5	34.0	32.6	31.0	27.7	24.4	21.1	17.9	14.8	12.0	-			

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

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# HG semi-hermetic compressors

## Performance data

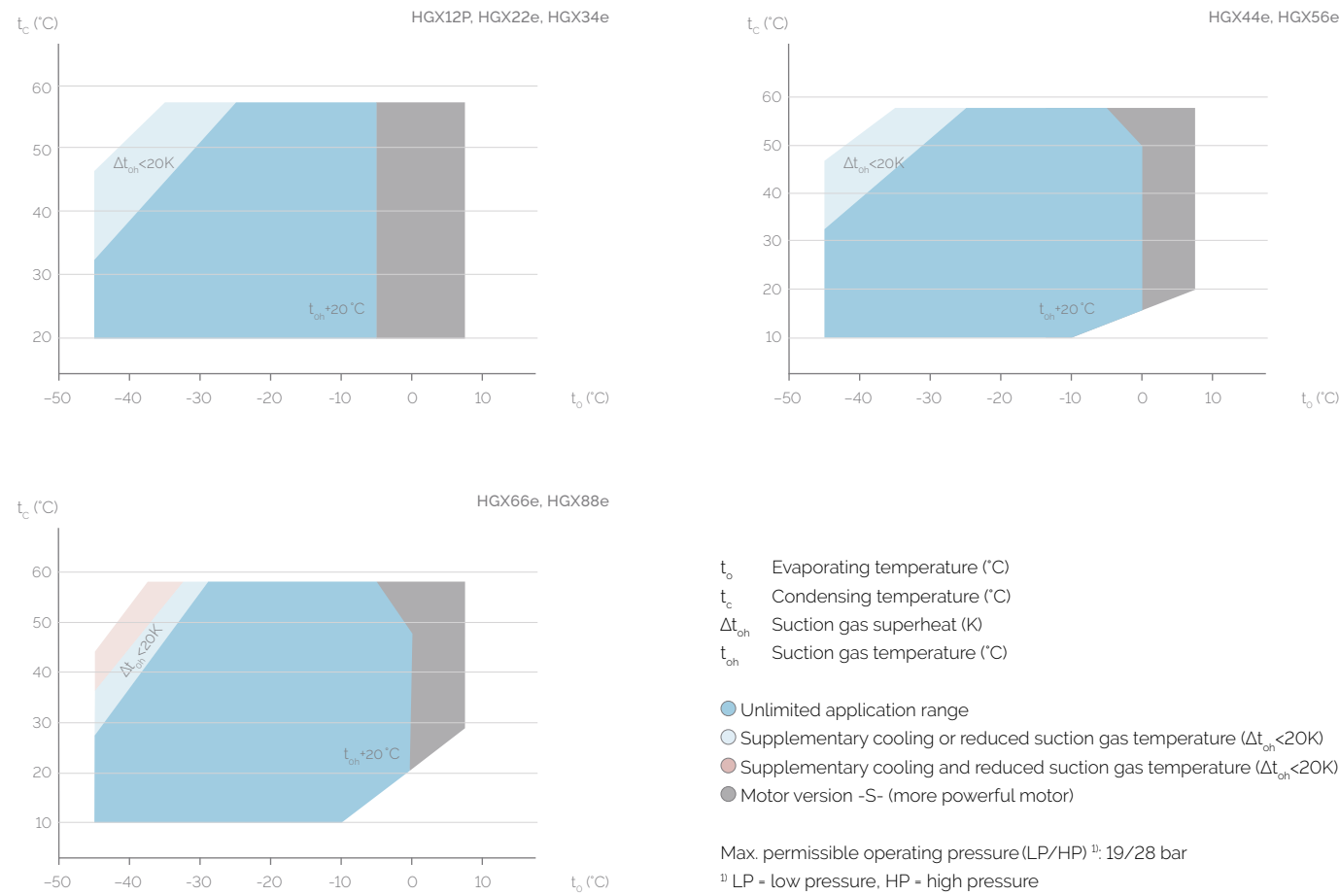
R513A | 50 Hz

Type	Cooling capacity Q <sub>0</sub> [kW]											Power consumption P <sub>e</sub> [kW]			
	Cond. temp. °C	Evaporating temperature °C											P <sub>e</sub> [kW]	P <sub>e</sub> [kW]	
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30			
HGX66e/2070-4 HGX66e/2070-4 S	30	Q	177000	163000	149000	136000	112000	91100	73100	57700	44700	33900	25100	25100	19300
		P	23.8	23.9	23.8	23.6	22.6	21.3	19.8	18.0	16.1	14.1	12.3		
	40	Q	157000	143000	131000	119000	97600	79100	63000	49200	37600	28000	20200	28000	20200
		P	29.3	29.0	28.4	27.8	26.0	24.0	21.8	19.4	17.0	14.7	12.6		
	50	Q	134000	123000	112000	102000	82500	66400	52500	40700	30800	22600	15900	22600	15900
		P	34.3	33.5	32.5	31.5	29.0	26.3	23.4	20.5	17.7	15.0	12.5		
60	Q	111000	101000	91500	82800	67100	53600	42200	32500	24500	18000	12800	18000	12800	
	P	38.6	37.3	36.0	34.5	31.3	27.9	24.5	21.1	17.8	14.8	12.1			
70	Q	87100	78900	71400	64300	51700	41200	32400	25100	19300	14700	-	-	-	
	P	42.1	40.4	38.6	36.8	32.9	28.9	24.9	21.0	17.4	14.0	-			
HGX88e/2400-4 HGX88e/2400-4 S	30	Q	209000	192000	175000	160000	131000	107000	85600	67500	52300	39600	29400	29400	22600
		P	28.9	28.9	28.8</										

# HG semi-hermetic compressors

## Operating limits

### R404A/R507



### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter. For further explanations consult [www.bock.de](http://www.bock.de).

#### Performance data

The performance data for R404A/R507 are based on European Standard EN 12900 with a 50 Hz power supply frequency. This signifies: 20 °C suction gas temperature without liquid subcooling.

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

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

Conversion factor for 60 Hz = 1.2

Performance data for other operating points, see BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

ASERCOM certified performance data



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

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# HG semi-hermetic compressors

## Performance data

### R404A/R507 | 50 Hz

Type	Cond. temp. °C	Cooling capacity $Q_o$ [kW]											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 <sup>1)</sup>	30	Q	6540	5990	5000	4110	3340	2670	2100	1610	1210	879	617	415		
		P	120	121	122	120	115	108	100	0.908	0.810	0.712	0.618	0.533		
	40	Q	5540	5070	4200	3430	2770	2200	1710	1300	959	685	466	296		
		P	148	147	143	136	127	117	106	0.945	0.827	0.713	0.609	0.519		
	50	Q	4540	4130	3400	2750	2200	1730	1330	994	722	503	330	-		
		P	172	168	159	149	136	123	109	0.959	0.825	0.700	0.589	-		
HGX12P/75-4 <sup>1)</sup>	30	Q	8160	7500	6290	5230	4290	3470	2770	2170	1670	1250	911	648		
		P	152	154	155	150	144	136	126	115	1.03	0.908	0.789	0.680		
	40	Q	6940	6360	5310	4420	3610	2910	2300	1790	1370	1020	734	513		
		P	190	189	183	172	162	150	136	122	1.08	0.939	0.807	0.689		
	50	Q	5730	5240	4350	3640	2950	2360	1860	1440	1090	805	577	-		
		P	221	216	2.05	1.92	1.77	1.62	1.45	1.28	1.12	0.963	0.821	-		
HGX12P/90-4 <sup>1)</sup>	30	Q	9740	8950	7510	6090	5000	4060	3240	2530	1940	1450	1050	731		
		P	185	186	185	177	168	157	145	132	117	1.03	0.888	0.745		
	40	Q	8290	7600	6350	5150	4210	3390	2680	2080	1580	1160	818	550		
		P	227	224	217	2.02	1.87	1.72	1.55	1.38	1.21	1.04	0.876	0.719		
	50	Q	6870	6280	5220	4220	3420	2730	2140	1640	1230	886	611	-		
		P	2.66	2.60	2.46	2.25	2.05	1.85	1.64	1.44	1.23	1.04	0.857	-		
HGX12P/110-4 <sup>1)</sup>	30	Q	11300	10400	8700	7220	5970	4870	3920	3100	2400	1820	1340	947		
		P	2.16	2.17	2.15	2.15	2.04	1.91	1.76	1.59	1.41	1.22	1.05	0.883		
	40	Q	9590	8800	7370	6130	5040	4100	3280	2570	1980	1480	1070	728		
		P	2.64	2.61	2.52	2.47	2.29	2.10	1.89	1.67	1.45	1.24	1.05	0.877		
	50	Q	7880	7220	6010	5020	4100	3310	2620	2040	1550	1150	804	-		
		P	3.12	3.05	2.88	2.73	2.49	2.24	1.98	1.73	1.48	1.25	1.05	-		
HGX22e/125-4	30	Q	13400	12400	10500	8790	7250	5870	4650	3590	2680	1920	1320	857		
		P	2.18	2.22	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	3.20	3.03	2.84	2.60	2.34	2.07	1.80	1.53	1.27	1.03	-		
HHGX22e/160-4	30	Q	17000	15700	13200	10900	8980	7320	5850	4560	3450	2510	1750	1170		
		P	2.70	2.75	2.78	2.73	2.62	2.47	2.29	2.07	1.84	1.59	1.34	1.08		
	40	Q	14600	13400	11200	9170	7540	6090	4810	3700	2750	1960	1330	851		
		P	3.42	3.40	3.31	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	972	-		
		P	4.01	3.93	3.73	3.51	3.22	2.90	2.58	2.25	1.92	1.60	1.30	-		
HGX22e/190-4	30	Q	20800	19200	16100	13300	11000	8920	7140	5620	4330	3240	2350	1620		
		P	3.47	3.49	3.47	3.41	3.26	3.07	2.84	2.57	2.29	2.00	1.70	1.41		
	40	Q	17800	16300	13700	11300	9200	7450	5940	4640	3540	2620	1860	1230		
		P	4.29	4.24	4.09	3.93	3.68	3.39	3.08	2.74	2.39	2.03	1.68	1.35		
	50	Q	14800	13500	11300	9150	7460	6000	4750	3680	2780	2020	1390	-		
		P	5.04	4.92	4.65	4.40	4.06	3.68	3.27	2.85	2.43	2.01	1.61	-		
HGX34e/215-4 <sup>1)</sup>	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		
	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	-		
HGX34e/255-4 <sup>1)</sup>	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		
	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	-		
HGX34e/315-4 <sup>1)</sup>	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		
	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	-		

<sup>1)</sup> ASERCOM certified

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

[vap.bock.de](http://vap.bock.de)





# HG semi-hermetic compressors

## Performance data

R404A/R507 | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>0</sub> [kW]											Power consumption P <sub>e</sub> [kW]													
		Evaporating temperature °C																								
		7.5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	7.5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
HGX34e/380-4 HGX34e/380-4 S	30	Q	40900	37600	31700	25800	21200	17300	13800	10900	8300	6200	4490	3120	720	715	698	684	645	598	546	488	428	367	305	245
	40	Q	34600	31800	26700	21600	17700	14300	11400	8850	6730	4960	3510	2340	875	859	818	784	725	659	590	518	445	372	300	233
	50	Q	28400	26000	21800	17600	14300	11500	9030	6960	5210	3760	2550	-	101	986	923	873	792	708	622	534	447	362	281	-
HGX44e/475-4 HGX44e/475-4 S	30	Q	52500	48300	40200	33500	27500	22400	18000	14300	11100	8340	6060	4110	773	785	791	780	752	710	657	594	526	454	381	311
	40	Q	45200	41400	34200	28300	23200	18800	15000	11800	9010	6670	4650	2870	997	990	962	916	857	788	712	631	547	464	384	311
	50	Q	37600	34300	28100	23100	18800	15100	12000	9260	6970	5000	3270	-	118	115	110	102	941	849	755	659	565	476	394	-
HGX44e/565-4 HGX44e/565-4 S	30	Q	62700	57700	47800	39800	32800	26800	21600	17200	13400	10200	7470	5140	918	932	945	931	897	847	782	707	624	538	451	366
	40	Q	54000	49600	40700	33700	27700	22500	18100	14300	11100	8230	5820	3680	118	117	115	109	102	942	849	751	650	550	455	367
	50	Q	45100	41200	33400	27500	22500	18200	14500	11400	8620	6270	4180	-	140	137	132	123	112	101	901	785	672	564	466	-
HGX44e/665-4 HGX44e/665-4 S	30	Q	73100	67100	56000	46500	38300	31100	25000	19800	15300	11600	8340	5630	107	109	110	109	105	994	919	832	736	635	533	434
	40	Q	62700	57400	47500	39300	32200	26000	20800	16300	12500	9160	6360	3910	139	138	134	128	120	110	997	883	766	649	537	434
	50	Q	52000	47500	38900	32000	26000	20900	16500	12800	9570	6840	4440	-	165	161	154	143	131	118	105	922	791	666	551	-
HGX44e/770-4 HGX44e/770-4 S	30	Q	84600	77800	65300	54300	44700	36500	29400	23300	18100	13800	10100	6840	124	126	128	126	121	115	106	962	851	734	616	502
	40	Q	72600	66500	55600	46100	37800	30700	24500	19300	14900	11100	7750	4860	161	160	155	148	138	127	115	102	886	751	622	502
	50	Q	60300	55100	45700	37600	30700	24700	19600	15300	11600	8360	5530	-	192	188	178	165	152	137	122	106	915	770	637	-
HGX56e/850-4 HGX56e/850-4 S	30	Q	93700	86100	71800	59800	49300	40200	32400	25800	20100	15300	11200	7710	137	139	141	139	134	126	117	106	938	808	677	549
	40	Q	80500	73800	61100	50600	41600	33800	27200	21400	16600	12400	8720	5520	177	176	171	163	153	140	127	112	976	827	683	550
	50	Q	67000	61200	50100	41300	33800	27300	21800	17000	13000	9410	6280	-	211	206	196	183	168	151	134	117	100	848	700	-
HGX56e/995-4 HGX56e/995-4 S	30	Q	111000	102000	85000	70800	58300	47400	38000	29800	22900	17100	12200	8120	186	183	176	167	158	146	134	121	107	921	761	594
	40	Q	94300	86600	72100	59800	49000	39600	31500	24500	18500	13400	9110	5480	220	215	204	192	178	163	147	129	111	923	723	515
	50	Q	78000	71400	59000	48600	39500	31700	24900	19100	14100	9800	6130	-	253	246	231	214	196	176	155	134	111	875	630	-
HGX56e/1155-4 HGX56e/1155-4 S	30	Q	127000	117000	97500	81100	66800	54500	43900	34800	27100	20600	15000	10300	194	197	200	197	190	179	166	150	132	114	959	780
	40	Q	109000	99900	83000	68800	56400	45800	36700	28900	22200	16600	11700	7280	251	249	244	232	217	199	180	159	138	117	968	780
	50	Q	90600	82800	68200	56200	45800	36900	29300	22900	17300	12500	8270	-	299	292	279	260	238	215	191	166	142	120	991	-
HGX66e/1340-4 HGX66e/1340-4 S	30	Q	150000	138000	115000	95700	78800	64100	51300	40400	31000	23100	16500	11000	250	249	242	232	219	203	185	165	144	123	103	830
	40	Q	129000	118000	97900	81200	66600	53800	42800	33400	25400	18500	12700	-	303	297	284	266	245	223	199	174	149	125	101	-
	50	Q	106000	97000	79900	65900	53700	43100	34100	26400	19800	14200	-	-	349	339	318	293	266	238	209	179	150	122	-	-
HGX66e/1540-4 HGX66e/1540-4 S	30	Q	172000	158000	132000	110000	90700	73900	59400	46900	36200	27100	19500	13200	288	286	280	269	254	235	215	192	169	145	121	987
	40	Q	148000	136000	113000	93400	76800	62300	49700	39000	29800	21900	15300	-	351	344	329	309	286	260	233	204	176	147	120	-
	50	Q	122000	112000	91900	75900	62100	50100	39800	31000	23400	17000	-	-	405	394	371	342	311	279	245	211	178	146	-	-

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

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# HG semi-hermetic compressors

## Performance data

R404A/R507 | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>0</sub> [kW]											Power consumption P <sub>e</sub> [kW]													
		Evaporating temperature °C																								
		7.5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	7.5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
HGX66e/1750-4 HGX66e/1750-4 S	30	Q	195000	180000	151000	126000	104000	84700	68000	53700	41500	31100	22400	15200	32.9	32.8	31.9	30.7	28.9	26.9	24.5	22.0	19.3	16.6	14.0	11.4
	40	Q	167000	154000	129000	107000	88000	71400	57100	44800	34200	25200	17600	-	40.1	39.4	37.6	35.3	32.6	29.7	26.6	23.4	20.2	17.0	13.9	-
	50	Q	138000	127000	106000	87000	71200	57500	45700	35600	27000	19600	-	-	46.3	45.1	42.3	39.1	35.6	31.9	28.1	24.3	20.5	16.9	-	-
HGX66e/2070-4 HGX66e/2070-4 S	30	Q	229000	211000	177000	148000	122000	99600	80000	63200	48900	36700	26500	17900	39.1	38.9	38.0	36.4	34.4	31.9	29.1	26.0	22.8	19.6	16.4	13.4
	40	Q	196000	180000	151000	126000	104000	83800	67100	52700	40300	29800	20800	-	47.8	46.9	44.8	42.0	38.8	35.3	31.6	27.7	23.8	20.0	16.4	-
	50	Q	162000	148000	123000	102000	83400	67400	53700	41900	31800	23100	-	-	55.4	53.8	50.6	46.7	42.4	37.9	33.3	28.7	24.2	19.9	-	-
HGX88e/2400-4 HGX88e/2400-4 S	30	Q	272000	251000	209000	175000	144000	118000	94200	74300	57400	43100	31100	21100	46.0	45.8	44.8	43.0	40.6	37.8	34.6	31.1	27.4	23.7	20.1	16.6
	40	Q	235000	216000	179000	149000	122000	99000	79100	62000	47400	35100	24500	-	55.6	54.6	52.7	49.5	45.8	41.8	37.5	33.1	28.6	24.3	20.1	-
	50	Q	194000	178000	147000	121000	98900	79800	63400	49400	37500	27300	-	-	63.9	62.2	59.4	54.9	50.0	44.8	39.6	34.3	29.2	24.2	-	-
HGX88e/2735-4 HGX88e/2735-4 S	30	Q	309000	284000	239000	199000	164000	134000	108000	84700	65400	49100	35400	24000	52.2	51.9	50.7	48.7	46.1	42.9	39.3	35.5	31.4	27.2	23.0	19.0
	40	Q	266000	244000	204000	170000	140000	113000	90200	70700	54100	39900	27900	-	63.3	62.1	59.5	55.9	51.8	47.4	42.6	37.7	32.7	27.8	23.0	-
	50	Q	220000	202000	168000	139000	113000	91100	72400	56400	42700	31100	-	-	73.1	71.0	67.0	61.9	56.5	50.8	44.9	39.1	33.3	27.7	-	-
HGX88e/3235-4 HGX88e/3235-4 S	30	Q	365000	336000	282000	235000	194000	158000	127000	99800	77000	57700	41500	28100	61.5	61.1	59.8	57.5	54.3	50.6	46.3	41.6	36.8	31.8	26.9	22.1
	40	Q	314000	288000	241000	200000	165000	133000	107000	83200	63500	46800	32600	-	74.5	73.1	70.2	66.0	61.1	55.7	50.1	44.2	38.3	32.4	26.8	-
	50	Q	260000	238000	198000	163000	133000	108000	85100	66200	50100	36400	-	-	85.9	83.5	79.1	73.0	66.5	59.7	52.7	45.8	38.9	32.2</		





# HG semi-hermetic compressors

## Performance data

### R448A | 50 Hz

Type	Cond. temp. °C	Q <sub>o</sub> [kW]	Evaporating temperature °C											P <sub>e</sub> [kW]															
			12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30		-35	-40													
			Q	P	Q	P	Q	P	Q	P	Q	P	Q		P	Q	P												
HGX34e/380-4 HGX34e/380-4 S	30	48800	44600	40600	37000	30000	24500	19800	15700	12300	9440	7070	5090	3430	6.17	6.20	6.20	6.17	5.95	5.71	5.38	4.97	4.50	3.98	3.44	2.88	2.33	-	
	40	42400	38700	35200	32000	25800	21000	16900	13400	10400	7890	5790	3990	2420	7.82	7.74	7.62	7.48	7.06	6.62	6.09	5.50	4.87	4.20	3.52	2.85	2.19		-
	50	35900	32600	29600	26900	21600	17500	14000	11100	8530	6410	4590	2990	-	9.40	9.19	8.96	8.70	8.08	7.42	6.69	5.92	5.11	4.28	3.46	2.65	-		
HGX44e/475-4 HGX44e/475-4 S	30	61800	56500	51700	47100	38600	31500	25400	20200	15800	12200	9150	6660	4620	7.17	7.30	7.37	7.39	7.26	7.00	6.62	6.12	5.54	4.89	4.21	3.53	2.85	-	
	40	54300	49600	45200	41100	33500	27300	21900	17300	13500	10300	7590	5340	3430	9.44	9.40	9.30	9.17	8.77	8.23	7.58	6.84	6.05	5.21	4.37	3.55	2.76		-
	50	46700	42500	38700	35100	28400	22900	18200	14300	11000	8150	5790	3760	-	11.5	11.3	11.0	10.7	10.0	9.25	8.33	7.34	6.32	5.28	4.26	3.28	-		
HGX44e/565-4 HGX44e/565-4 S	30	73700	67500	61700	56200	45900	37500	30300	24200	19000	14700	11200	8160	5710	8.52	8.66	8.75	8.77	8.65	8.35	7.88	7.28	6.58	5.80	4.99	4.16	3.36	-	
	40	64900	59300	54100	49200	40000	32600	26200	20900	16300	12500	9300	6620	4320	11.2	11.1	11.0	10.8	10.4	9.83	9.04	8.15	7.19	6.19	5.18	4.19	3.25		-
	50	55900	51000	46400	42100	33800	27400	21900	17300	13400	10100	7190	4750	-	13.7	13.4	13.1	12.7	12.1	11.0	9.95	8.75	7.52	6.27	5.04	3.87	-		
HGX44e/665-4 HGX44e/665-4 S <sup>1)</sup>	30	87000	79500	72600	66000	53700	43800	35300	28100	22000	16900	12700	9210	6350	9.92	10.1	10.2	10.2	10.1	9.81	9.26	8.57	7.75	6.85	5.90	4.93	3.99	-	
	40	76200	69500	63300	57500	46600	37900	30400	24000	18700	14200	10500	7330	4670	13.0	13.0	12.9	12.7	12.2	11.5	10.6	9.58	8.47	7.30	6.12	4.96	3.86		-
	50	65400	59500	54000	48800	39300	31700	25200	19800	15100	11300	7930	5120	-	16.0	15.7	15.3	14.9	14.1	12.9	11.6	10.2	8.84	7.39	5.97	4.59	-		
HGX44e/770-4 HGX44e/770-4 S	30	99500	91100	83200	75900	62600	51100	41300	32900	25800	19900	15100	11000	7650	11.5	11.7	11.8	11.8	11.7	11.3	10.7	9.91	8.96	7.92	6.82	5.71	4.61	-	
	40	87300	79800	72800	66300	54500	44300	35600	28300	22100	16900	12600	8860	5760	15.3	15.2	15.0	14.8	14.1	13.3	12.2	11.0	9.79	8.44	7.08	5.74	4.46		-
	50	75100	68400	62200	56500	46200	37300	29800	23400	18000	13500	9620	6320	-	18.8	18.4	18.0	17.4	16.3	14.9	13.4	11.8	10.2	8.55	6.90	5.31	-		
HGX56e/850-4 HGX56e/850-4 S	30	110000	101000	92100	83900	69000	56300	45500	36300	28600	22100	16700	12300	8560	12.7	12.9	13.0	13.1	12.9	12.5	11.8	10.9	9.87	8.72	7.49	6.25	5.04	-	
	40	96600	88400	80600	73400	60000	48900	39400	31300	24500	18800	14000	9920	6480	16.8	16.7	16.5	16.3	15.6	14.7	13.5	12.2	10.7	9.29	7.78	6.29	4.87		-
	50	83100	75800	69000	62600	50800	41200	32900	25900	20000	15100	10800	7130	-	20.6	20.2	19.7	19.1	18.0	16.5	14.8	13.1	11.2	9.41	7.58	5.82	-		
HGX56e/995-4 HGX56e/995-4 S	30	129000	119000	108000	98500	81100	66400	53800	43000	33900	26200	19800	14400	9760	15.6	15.8	15.9	15.9	15.6	15.0	14.1	13.1	11.8	10.5	9.08	7.60	6.11	-	
	40	113000	104000	94300	86000	70500	57600	46600	37100	29100	22300	16500	11400	6880	20.3	20.1	19.9	19.5	18.7	17.5	16.1	14.6	12.9	11.1	9.34	7.50	5.70		-
	50	96900	88500	80700	73300	59800	48700	39200	31000	24000	18000	12700	7940	-	24.6	24.2	23.6	22.9	21.5	19.8	17.8	15.8	13.6	11.4	9.22	7.01	-		
HGX56e/1155-4 HGX56e/1155-4 S	30	150000	137000	125000	114000	93500	76400	61600	49100	38600	29800	22500	16500	11500	18.0	18.3	18.5	18.5	18.3	17.7	16.7	15.4	13.9	12.3	10.6	8.88	7.17	-	
	40	132000	120000	110000	99500	81300	66200	53200	42300	33000	25200	18800	13300	8620	23.8	23.7	23.4	23.1	22.2	20.8	19.2	17.3	15.3	13.1	11.0	8.93	6.93		-
	50	113000	103000	93500	84800	68900	55700	44400	34900	26900	20200	14400	9460	-	29.2	28.6	27.9	27.2	25.6	23.4	21.1	18.5	15.9	13.3	10.7	8.26	-		
HGX66e/1340-4 HGX66e/1340-4 S	30	160000	146000	133000	123000	109000	88300	71200	56700	44500	34200	25600	18400	-	22.8	22.6	22.4	22.4	21.6	20.5	19.2	17.6	15.8	14.0	12.1	10.1	-	-	
	40	140000	128000	116000	106000	94100	76500	61400	48700	37900	28800	21100	-	-	27.9	27.4	26.8	26.8	25.3	23.6	21.6	19.4	17.1	14.8	12.4	-	-		-
	50	120000	109000	98600	89600	79700	64400	51400	40400	31000	23100	-	-	-	32.6	31.7	30.8	30.8	28.7	26.2	23.6	20.8	17.9	14.9	-	-	-		
HGX66e/1540-4 HGX66e/1540-4 S	30	183000	167000	152000	138500	125000	102000	82100	65500	51600	39800	30000	21700	-	26.2	26.1	25.8	25.9	25.0	23.7	22.2	20.4	18.4	16.3	14.1	11.9	-	-	
	40	161000	146000	133000	121000	109000	88100	71000	56400	44100	33700	24900	-	-	32.2	31.6	31.0	30.8	29.4	27.4	25.1	22.6	20.0	17.3	14.6	-	-		-
	50	138000	125000	114000	103000	91800	74400	59600	47000	36400	27300	-	-	-	37.9	36.9	35.8	35.8	33.4	30.6	27.5	24.3	21.0	17.7	-	-	-		

<sup>1)</sup> ASERCOM certified

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

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# HG semi-hermetic compressors

## Performance data

### R448A | 50 Hz

Type	Cond. temp. °C	Q <sub>o</sub> [kW]	Evaporating temperature °C											P <sub>e</sub> [kW]															
			12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30		-35	-40													
			Q	P	Q	P	Q	P	Q	P	Q	P	Q		P	Q	P												
HGX66e/1750-4 HGX66e/1750-4 S	30	207000	189000	173000	158500	143000	117000	94000	75100	59100	45700	34400	24900	-	30.0	29.8	29.5	29.5	28.5	27.1	25.3	23.3	21.1	18.7	16.2	13.7	-	-	
	40	182000	166000	151000	138000	124000	101000	81300	64700	50600	38700	28600	-	-	36.8	36.2	35.4	35.4	33.5	31.3	28.7	25.9	22.9	19.9	16.8	-	-		-
	50	156000	142000	129000	118000	106000	85200	68300	54000	41800	31400	-	-	-	43.3	42.2	40.9	40.9	38.1	34.9	31.5	27.9	24.1	20.3	-	-	-		
HGX66e/2070-4 HGX66e/2070-4 S	30	244000	223000	203000	185000	167000	137000	111000	88300	69600	53800	40600	29400	-	35.5	35.3	35.0	35.0	33.8	32.1	30.0	27.6	24.9	22.0	19.1	16.1	-	-	
	40	213000	195000	177000	160000	146000	119000	95500	76100	59600	45600	33700	-	-	43.8	43.0	42.1	42.1	39.9	37.2	34.1	30.7	27.1	23.4	19.8	-	-		-
	50	183000	166000	151000	137000	123000	99900	80200	63400	49200	37000	-	-	-	51.7	50.3	48.7	48.7	45.5	41.6	37.5	33.1	28.5	24.0	-	-	-		
HGX88e/2400-4 HGX88e/2400-4 S	30	289000	264000	241000	218500	197000	161000	130000	104000	81700	63200	47600	34500	-	42.0	41.8	41.4	41.4	39.9	38.0	35.6	32.9	29.8	26.5	23.1	19.7	-	-	
	40	255000	232000	211000	190000	172000	140000	113000	89600	70100	53600	39600	-	-	51.1	50.3	49.3	49.3	47.0	43.9	40.3	36.5	32.4	28.2	24.0	-	-		-
	50	219000	199000	181000	163000	146000	119000	94800	74900	58000	43600	-	-	-	59.8	58.3	56.7	56.7	53.6	49.1	44.3	39.2	34.1	28.9	-	-	-		
HGX88e/2735-4 HGX88e/2735-4 S	30	328000	300000	273000	248500	225000	184000	149000	119000	93100	72000	54200	39300	-	47.5	47.2	46.8	46.8	45.3	43.2	40.5	37.4	34.0	30.3	26.5	22.6	-	-	
	40	289000	263000	240000	218000	196000	160000	129000	1030																				

# HG semi-hermetic compressors

## Performance data

R449A | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>0</sub> [kW]												Power consumption P <sub>e</sub> [kW]			
		Evaporating temperature °C															
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	-35	-40			
HGX22e/160-4 HGX22e/160-4 S	30	Q	20200	18500	16900	15400	12600	10200	8150	6450	5040	3860	2900	2100	1440		
		P	2.92	2.88	2.83	2.78	2.61	2.53	2.40	2.23	2.02	1.80	1.57	1.35	1.14		
	40	Q	17600	16000	14600	13300	10800	8710	6960	5490	4260	3240	2390	1670	1040		
	P	3.63	3.53	3.44	3.34	3.09	2.91	2.69	2.44	2.17	1.90	1.63	1.39	1.18			
	50	Q	15000	13700	12500	11400	9040	7270	5780	4530	3490	2610	1870	1230			
	P	4.31	4.16	4.01	3.86	3.50	3.22	2.91	2.59	2.26	1.95	1.66	1.40				
HGX22e/190-4 HGX22e/190-4 S	30	Q	24400	22300	20400	18600	15400	12600	10300	8220	6550	5150	3970	2970	2110		
		P	3.55	3.50	3.44	3.37	3.33	3.13	2.91	2.69	2.46	2.22	1.97	1.71	1.44		
	40	Q	21200	19400	17700	16100	13400	10900	8840	7110	5650	4410	3360	2450	1630		
	P	4.43	4.31	4.19	4.07	3.93	3.63	3.32	3.01	2.71	2.40	2.09	1.78	1.47			
	50	Q	18200	16600	15100	13800	11400	9230	7460	5970	4710	3640	2710	1870			
	P	5.29	5.11	4.93	4.74	4.49	4.07	3.67	3.27	2.88	2.51	2.13	1.77				
HGX34e/215-4 HGX34e/215-4 S	30	Q	27400	25100	22800	20800	16800	13600	10800	8460	6470	4820	3460	2360	1500		
		P	3.46	3.47	3.46	3.44	3.35	3.18	2.95	2.69	2.41	2.12	1.84	1.57	1.34		
	40	Q	24000	21800	19800	17900	14300	11500	9010	6940	5210	3790	2640	1730	1030		
	P	4.56	4.46	4.35	4.22	3.99	3.65	3.29	2.91	2.54	2.18	1.85	1.56	1.33			
	50	Q	20400	18500	16700	15000	11800	9320	7230	5480	4050	2900	2000	1310			
	P	5.55	5.35	5.14	4.92	4.55	4.06	3.56	3.08	2.62	2.21	1.84	1.54				
HGX34e/255-4 HGX34e/255-4 S	30	Q	32100	29400	26900	24600	19900	16300	13100	10300	7940	5940	4280	2940	1870		
		P	3.57	3.70	3.79	3.84	3.90	3.81	3.61	3.35	3.02	2.66	2.28	1.91	1.57		
	40	Q	27800	25400	23200	21100	17100	13900	11100	8670	6630	4900	3470	2300	1360		
	P	4.81	4.83	4.82	4.78	4.71	4.44	4.09	3.69	3.24	2.78	2.32	1.89	1.50			
	50	Q	23100	21100	19200	17500	14000	11300	8980	7000	5310	3900	2740	1790			
	P	5.92	5.84	5.73	5.60	5.40	4.96	4.46	3.92	3.36	2.80	2.26	1.76				
HGX34e/315-4 HGX34e/315-4 S	30	Q	40900	37300	33900	30800	24900	20100	16100	12700	9800	7420	5460	3840	2510		
		P	4.81	4.87	4.90	4.90	4.73	4.56	4.31	3.99	3.61	3.19	2.75	2.31	1.87		
	40	Q	35500	32300	29300	26500	21300	17200	13700	10700	8190	6120	4390	2940	1710		
	P	6.19	6.15	6.08	5.98	5.64	5.30	4.89	4.41	3.90	3.36	2.81	2.26	1.73			
	50	Q	30000	27200	24600	22200	17800	14200	11300	8710	6620	4880	3410	2160			
	P	7.50	7.35	7.18	6.99	6.47	5.95	5.36	4.74	4.08	3.40	2.73	2.08				
HGX34e/380-4 HGX34e/380-4 S	30	Q	48500	44300	40400	36800	29900	24400	19700	15700	12300	9410	7050	5080	3420		
		P	6.14	6.17	6.17	6.14	5.92	5.69	5.36	4.95	4.48	3.97	3.43	2.88	2.33		
	40	Q	42100	38400	35000	31800	25700	20900	16800	13300	10400	7860	5760	3970	2410		
	P	7.78	7.70	7.58	7.44	7.03	6.59	6.06	5.48	4.85	4.19	3.51	2.84	2.18			
	50	Q	35600	32400	29400	26600	21400	17400	13900	11000	8480	6370	4560	2980			
	P	9.35	9.14	8.91	8.65	8.04	7.38	6.66	5.89	5.09	4.27	3.45	2.64				
HGX44e/475-4 HGX44e/475-4 S	30	Q	61400	56200	51400	46800	38400	31300	25300	20100	15800	12200	9120	6650	4610		
		P	7.14	7.26	7.33	7.36	7.22	6.98	6.59	6.10	5.52	4.88	4.20	3.52	2.85		
	40	Q	53900	49300	44900	40900	33300	27100	21800	17300	13400	10300	7550	5320	3420		
	P	9.39	9.35	9.26	9.12	8.73	8.19	7.55	6.81	6.02	5.20	4.36	3.54	2.75			
	50	Q	46300	42200	38400	34800	28100	22700	18100	14200	10900	8100	5760	3750			
	P	11.4	11.2	11.0	10.7	10.0	9.21	8.29	7.31	6.29	5.26	4.25	3.27				
HGX44e/565-4 HGX44e/565-4 S	30	Q	73300	67100	61300	55900	45700	37400	30200	24100	19000	14700	11100	8140	5700		
		P	8.47	8.62	8.71	8.73	8.61	8.31	7.85	7.25	6.55	5.78	4.97	4.15	3.35		
	40	Q	64400	58900	53700	48900	39700	32400	26100	20700	16200	12500	9260	6590	4300		
	P	11.1	11.1	10.9	10.8	10.4	9.79	9.01	8.12	7.16	6.17	5.16	4.17	3.24			
	50	Q	55500	50600	46000	41800	33600	27200	21800	17200	13300	9950	7150	4730			
	P	13.6	13.3	13.0	12.7	12.0	11.0	9.91	8.72	7.48	6.24	5.02	3.86				
HGX44e/665-4 HGX44e/665-4 S <sup>1)</sup>	30	Q	85400	78200	71400	65100	53500	43600	35200	28000	21900	16900	12700	9180	6340		
		P	9.91	10.0	10.1	10.2	10.1	9.77	9.23	8.54	7.72	6.83	5.88	4.92	3.98		
	40	Q	74900	68400	62400	56700	46300	37600	30200	23900	18600	14200	10500	7310	4660		
	P	13.0	13.0	12.8	12.7	12.2	11.4	10.5	9.54	8.43	7.28	6.10	4.95	3.85			
	50	Q	64200	58500	53200	48200	39000	31500	25100	19600	15100	11200	7890	5090			
	P	16.0	15.7	15.3	14.9	14.0	12.8	11.6	10.2	8.81	7.37	5.95	4.58				
HGX44e/770-4 HGX44e/770-4 S	30	Q	98900	90600	82800	75500	62300	50900	41100	32700	25700	19900	15000	11000	7640		
		P	11.4	11.6	11.8	11.8	11.6	11.2	10.6	9.87	8.93	7.90	6.80	5.69	4.60		
	40	Q	86800	79300	72300	65800	54100	44100	35400	28100	22000	16800	12500	8830	5740		
	P	15.2	15.1	14.9	14.7	14.1	13.2	12.2	11.0	9.75	8.41	7.06	5.72	4.45			
	50	Q	74500	67900	61800	56000	45800	37000	29600	23200	17900	13400	9570	6290			
	P	18.7	18.3	17.9	17.4	16.2	14.8	13.4	11.8	10.1	8.52	6.88	5.30				

<sup>1)</sup> ASERCOM certified

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

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# HG semi-hermetic compressors

## Performance data

R449A | 50 Hz

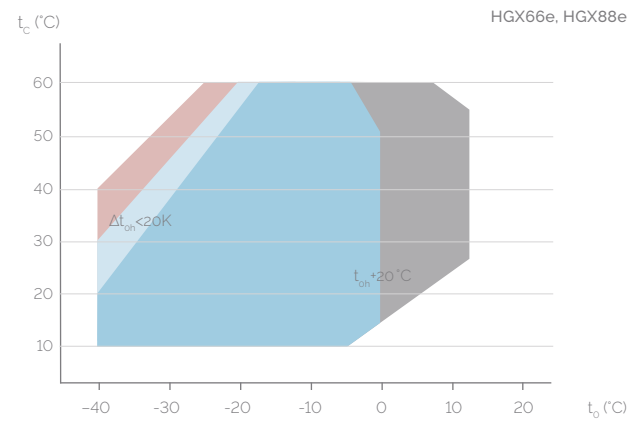
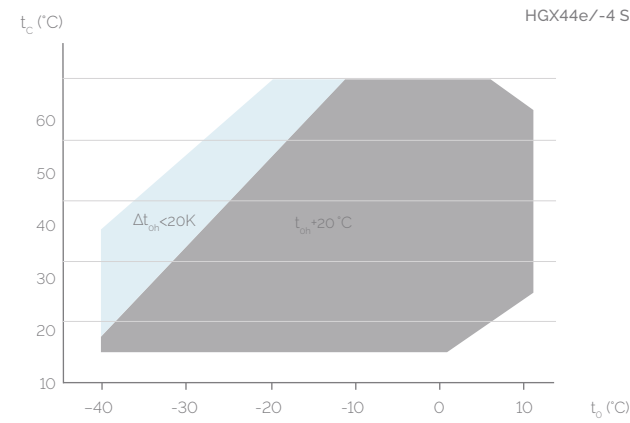
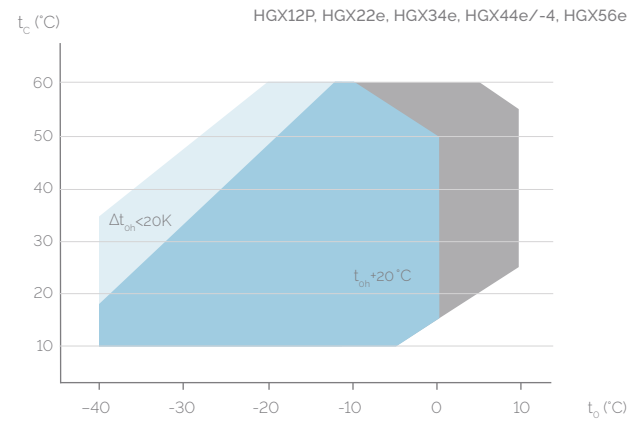
Type	Cond. temp. °C	Cooling capacity Q <sub>0</sub> [kW]												Power consumption P <sub>e</sub> [kW]			
		Evaporating temperature °C															
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	-35	-40			
HGX56e/850-4 HGX56e/850-4 S	30	Q	110000	101000	91600	83500	68600	56100	45300	36200	28500	22000	16700	12300	8550		
		P	12.6	12.8	13.0	13.0	12.8	12.4	11.7	10.8	9.84	8.69	7.47	6.23	5.03		
	40	Q	96000	87800	80100	72900	59600	48600	39200	31100	24400	18700	13900	9880	6450		
	P	16.7	16.6	16.4	16.2	15.5	14.6	13.4	12.1	10.7	9.26	7.75	6.27	4.86			
	50	Q	82500	75200	68400	62100	50400	40900	32700	25800	19900	15000	10800	7100			
	P	20.5	20.1	19.6	19.0	17.9	16.4	14.8	13.0	11.2	9.38	7.56	5.80				
HGX56e/995-4 HGX56e/995-4 S	30	Q	129000	118000	108000	98000	80700	66100	53500	42800	33800	26200	19800	14400	9740		
		P	15.6	15.7	15.8	15.8	15.5	14.9	14.1	13.0	11.8	10.4	9.06	7.58	6.10		
	40	Q	113000	103000	93700	85400	70100	57300	46300	36900	29000	22200	16400	11400	6860		
	P	20.2	20.0	19.8	19.4	18.6	17.4	16.1	14.5	12.9	11.1	9.31	7.48	5.68			
	50	Q	96100	87800	80000	72800	59400	48400	38900	30800	23900	17900	12600	7900			
	P	24.5	24.0	23.5	22.8	21.4	19.7	17.8	15.7	13.6	11.4	9.19	6.99				
HGX56e/1155-4 HGX56e/1155-4 S	30	Q	149000	136000	125000	114000	93100	76000	61400	48900	38500	29700	22400	16400	11500		
		P	17.														



# HG semi-hermetic compressors

## Operating limits

### R407A



$t_o$  Evaporating temperature (°C)  
 $t_c$  Condensing temperature (°C)  
 $\Delta t_{sh}$  Suction gas superheat (K)  
 $t_{sh}$  Suction gas temperature (°C)

- Unlimited application range
- Supplementary cooling or reduced suction gas temperature ( $\Delta t_{sh} < 20K$ )
- Supplementary cooling and reduced suction gas temperature ( $\Delta t_{sh} < 20K$ )
- Motor version -S- (more powerful motor)

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

### Notes

#### Operating limits

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

Restrictions to the operating limits may occur when using a frequency converter.

#### Performance data

The performance data for R407A are based on European Standard EN 12900 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 BOCK VAP software (vap.bock.de).

ASERCOM certified performance data



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

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# HG semi-hermetic compressors

## Performance data

### R407A | 50 Hz

Type	Cooling capacity $Q_o$ [kW]												Power consumption $P_e$ [kW]			
	Cond. temp. °C	Evaporating temperature °C														
		10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40			
HGX12P/60-4 S	30	Q	6820	6230	5680	4690	3810	3060	2420	1870	1430	1060	770	553		
		P	105	107	108	108	104	0.993	0.921	0.839	0.753	0.669	0.593	0.532		
	40	Q	5900	5390	4900	4030	3260	2610	2050	1580	1200	884	639	-		
		P	132	132	130	125	118	109	0.996	0.892	0.791	0.697	0.618	-		
	50	Q	5030	4570	4150	3390	2730	2170	1690	1300	968	-	-	-		
		P	157	154	150	140	129	117	105	0.927	0.811	-	-	-		
HGX12P/75-4 HGX12P/75-4 S	30	Q	8490	7760	7080	5850	4770	3830	3040	2360	1800	1350	989	715		
		P	130	133	134	134	130	123	114	103	0.928	0.823	0.728	0.653		
	40	Q	7350	6710	6120	5030	4090	3270	2580	2010	1530	1140	828	-		
		P	164	164	162	157	147	136	124	111	0.983	0.866	0.768	-		
	50	Q	6260	5710	5180	4240	3430	2730	2140	1650	1250	-	-	-		
		P	196	192	187	177	163	148	132	116	101	-	-	-		
HGX12P/90-4 HGX12P/90-4 S	30	Q	10100	9240	8430	6960	5680	4570	3630	2830	2170	1630	1200	872		
		P	157	160	162	159	154	146	135	122	109	0.970	0.856	0.764		
	40	Q	8740	7990	7280	5990	4870	3910	3100	2410	1840	1380	1010	-		
		P	199	198	196	186	176	162	147	132	117	102	0.909	-		
	50	Q	7450	6790	6170	5050	4090	3270	2580	1990	1510	-	-	-		
		P	238	234	228	211	195	177	158	139	121	-	-	-		
HGX12P/110-4 HGX12P/110-4 S	30	Q	11900	10900	9870	8150	6660	5360	4260	3330	2550	1920	1420	1040		
		P	184	188	190	187	181	171	158	144	128	113	100	0.893		
	40	Q	10300	9340	8510	7000	5710	4590	3640	2840	2170	1630	1200	-		
		P	235	234	231	220	207	192	174	155	137	121	107	-		
	50	Q	8690	7930	7210	5910	4790	3840	3030	2350	1790	-	-	-		
		P	283	277	270	250	231	209	186	164	143	-	-	-		
HGX22e/125-4 HGX22e/125-4 S	30	Q	15200	13800	12600	10200	8240	6580	5180	4000	3030	2220	1570	1030		
		P	206	208	209	208	201	190	177	162	146	129	113	100	0.992	
	40	Q	13300	12000	10900	8810	7090	5630	4400	3370	2520	1830	1250	-		
		P	260	257	253	243	229	212	193	174	155	137	120	-		
	50	Q	11300	10200	9170	7410	5920	4660	3620	2750	2040	-	-	-		
		P	308	301	293	274	253	230	207	184	163	-	-	-		
HHGX22e/160-4 HGX22e/160-4 S	30	Q	19300	17500	15900	12600	10200	8120	6450	5060	3920	2960	2130	1360		
		P	272	269	266	258	243	230	216	202	187	169	148	122		
	40	Q	17000	15400	13900	11100	8860	7060	5580	4350	3310	2400	1580	-		
		P	330	323	315	300	279	260	241	221	199	175	148	-		
	50	Q	14700	13200	11900	9540	7630	6050	4720	3600	2630	-	-	-		
		P	386	374	361	340	313	288	262	235	206	-	-	-		
HGX22e/190-4 HGX22e/190-4 S	30	Q	22500	20500	18600	15300	12600	10200	8100	6400	4970	3760	2750	1870		
		P	348	340	332	326	304	282	262	241	220	198	175	149		
	40	Q	19600	17800	16200	13400	10900	8760	6980	5490	4240	3180	2270	-		
		P	423	410	396	381	350	321	294	267	240	213	186	-		
	50	Q	16800	15300	13900	11400	9190	7370	5850	4570	3510	-	-	-		
		P	500	480	461	435	395	357	322	289	256	-	-	-		
HGX34e/215-4 HGX34e/215-4 S	30	Q	24600	22400	20400	16500	13300	10600	8200	6230	4590	3270	2220	1430		
		P	347	347	344	334	317	294	267	238	208	179	153	131		
	40	Q	21500	19500	17600	14100	11300	8800	6740	5020	3620	2500	1640	-		
		P	447	436	423	399	364	327	288	250	213	180	152	-		
	50	Q	18200	16400	14800	11700	9170	7070	5310	3880	2730	-	-	-		
		P	537	515	493	455	404	353	303	256	214	-	-	-		
HGX34e/255-4 HGX34e/255-4 S	30	Q	28900	26500	24100	19600	16000	12800	9990	7640	5670	4050	2760	1790		
		P	372	381	386	391	381	360	332	297	260	222	185	153		
	40	Q	25000	22800	20800	16800	13600	10900	8440	6400	4690	3290	2180	-		
		P	486	485	481	473	444	408	365	319	271	225	182	-		
	50	Q	20900	19000	17300	13900	11200	8820	6810	5110	3700	-	-	-		
		P	589	578	564	542	496	443	387	328	271	-	-	-		
HGX34e/315-4 HGX34e/315-4 S	30	Q	36600	33300	30200	24400	19700	15700	12300	9450	7100	5180	3630	2400		
		P	489	492	492	474	456	429	395	356	313	268	223	180		
	40	Q	31700	28800	26100	21000	16900	13400	10400	7920	5870	4180	2790	-		
		P	619	612	602	567	530	487	437	384	328	272	217	-		
	50	Q	26800	24300	21900	17600	14000	11000	8480	6370	4620	-	-	-		
		P	741	723	703	650	594	533	467	398	329	-	-	-		

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

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# HG semi-hermetic compressors

## Performance data

R407A | 50 Hz

Type	Cooling capacity $Q_0$ [kW]												Power consumption $P_e$ [kW]													
	Cond. temp. °C	Evaporating temperature °C												10	15											
		10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40													
HGX34e/380-4 HGX34e/380-4 S	30	Q	43800	39900	36200	29300	23900	19200	15200	11900	9030	6720	4830	3290	6.24	6.23	6.19	5.93	5.68	5.33	4.91	4.42	3.89	3.34	2.79	2.25
	40	Q	37900	34500	31300	25300	20500	16500	13000	10100	7560	5510	3790	-	7.77	7.64	7.49	7.05	6.59	6.04	5.43	4.77	4.09	3.40	2.72	-
	50	Q	32000	29100	26300	21200	17200	13700	10700	8180	6060	-	-	-	9.22	8.97	8.70	8.08	7.38	6.62	5.81	4.97	4.12	-	-	-
HGX44e/475-4 HGX44e/475-4 S	30	Q	56800	51900	47300	38700	31500	25300	20000	15600	11900	8840	6390	4420	7.37	7.47	7.51	7.40	7.15	6.75	6.22	5.61	4.95	4.26	3.57	2.92
	40	Q	49700	45300	41200	33500	27100	21700	17100	13200	9960	7310	5130	-	9.41	9.35	9.23	8.86	8.33	7.67	6.91	6.09	5.24	4.39	3.57	-
	50	Q	42500	38600	35000	28300	22800	18100	14100	10800	8040	-	-	-	11.2	11.0	10.7	10.1	9.34	8.41	7.42	6.39	5.35	-	-	-
HGX44e/565-4 HGX44e/565-4 S	30	Q	67800	61900	56400	46000	37500	30200	24000	18800	14400	10800	7830	5480	8.75	8.87	8.92	8.84	8.53	8.04	7.41	6.67	5.87	5.04	4.22	3.44
	40	Q	59400	54200	49300	39900	32400	26000	20600	16000	12200	8970	6380	-	11.1	11.1	10.9	10.6	9.95	9.15	8.24	7.25	6.22	5.20	4.22	-
	50	Q	51000	46300	42000	33700	27300	21800	17100	13200	9890	-	-	-	13.4	13.1	12.8	12.1	11.1	10.0	8.85	7.60	6.35	-	-	-
HGX44e/665-4 HGX44e/665-4 S <sup>1)</sup>	30	Q	79000	72100	65700	53800	43800	35200	27800	21600	16500	12300	8820	6070	10.2	10.3	10.4	10.3	10.0	9.45	8.71	7.86	6.93	5.96	5.00	4.09
	40	Q	69000	62900	57100	46500	37700	30100	23700	18300	13800	10100	7030	-	13.1	13.0	12.8	12.4	11.6	10.7	9.68	8.53	7.34	6.15	5.00	-
	50	Q	58900	53500	48500	39200	31500	25000	19500	14900	11100	-	-	-	15.7	15.4	15.0	14.2	13.0	11.7	10.3	8.94	7.49	-	-	-
HGX44e/770-4 HGX44e/770-4 S	30	Q	91500	83600	76200	62700	51100	41100	32600	25400	19500	14600	10600	7340	11.8	12.0	12.0	11.9	11.5	10.9	10.0	9.09	8.01	6.89	5.78	4.73
	40	Q	80000	72900	66300	54400	44100	35300	27900	21600	16400	12100	8530	-	15.2	15.1	14.9	14.3	13.4	12.4	11.1	9.86	8.49	7.11	5.78	-
	50	Q	68400	62200	56400	46000	37100	29500	23100	17800	13300	-	-	-	18.3	18.0	17.5	16.4	15.1	13.6	12.0	10.3	8.66	-	-	-
HGX56e/850-4 HGX56e/850-4 S	30	Q	99300	90700	82500	69100	56300	45400	36000	28100	21600	16200	11800	8220	13.0	13.2	13.2	13.2	12.7	12.0	11.1	10.0	8.82	7.57	6.33	5.16
	40	Q	86800	79000	71800	59900	48700	39000	30900	24000	18200	13500	9570	-	16.7	16.6	16.4	15.8	14.8	13.7	12.3	10.8	9.35	7.82	6.34	-
	50	Q	74300	67500	61100	50700	40900	32700	25700	19800	14900	-	-	-	20.1	19.7	19.2	18.1	16.6	15.0	13.2	11.4	9.54	-	-	-
HGX56e/995-4 HGX56e/995-4 S	30	Q	116000	106000	96400	79600	65300	52900	42200	33100	25500	19000	13600	9140	15.6	15.6	15.6	15.2	14.6	13.8	12.7	11.5	10.2	8.81	7.32	5.81
	40	Q	103000	93500	85300	70000	57100	45900	36400	28300	21400	15600	10700	-	19.9	19.6	19.2	18.3	17.1	15.7	14.2	12.5	10.7	8.90	7.02	-
	50	Q	88600	80700	73300	59700	48300	38500	30100	23100	17100	-	-	-	23.8	23.2	22.5	21.0	19.2	17.3	15.2	13.0	10.8	-	-	-
HGX56e/1155-4 HGX56e/1155-4 S	30	Q	138000	126000	115000	93400	75800	60800	48000	37300	28400	21100	15200	10500	18.6	18.9	19.0	18.8	18.2	17.2	15.9	14.4	12.7	11.1	9.43	7.86
	40	Q	121000	110000	99300	80800	65400	52200	41000	31600	23900	17500	12200	-	23.9	23.7	23.4	22.6	21.2	19.6	17.7	15.7	13.6	11.5	9.61	-
	50	Q	103000	93400	84500	68300	54900	43500	33900	25900	19200	-	-	-	28.7	28.1	27.4	25.9	23.9	21.6	19.1	16.6	14.1	-	-	-
HGX66e/1340-4 HGX66e/1340-4 S	30	Q	156000	142000	129000	105000	85200	68400	54200	42300	32400	24100	17200	11200	22.3	22.2	22.0	21.2	20.1	18.8	17.3	15.5	13.6	11.7	9.77	7.81
	40	Q	136000	124000	113000	90900	73600	58900	46500	36000	27200	19700	-	-	27.6	27.0	26.4	25.0	23.2	21.2	19.0	16.7	14.3	11.9	-	-
	50	Q	117000	106000	95500	76900	61900	49300	38600	29500	21700	-	-	-	32.4	31.5	30.5	28.3	25.8	23.1	20.3	17.3	14.4	-	-	-
HGX66e/1540-4 HGX66e/1540-4 S	30	Q	179000	163000	148000	121000	97900	78800	62600	49100	37700	28300	20300	13400	25.7	25.5	25.3	24.5	23.3	21.8	20.0	18.0	15.9	13.7	11.4	9.24
	40	Q	156000	142000	129000	105000	84800	68000	53900	42000	31900	23300	-	-	31.9	31.3	30.6	29.0	27.0	24.7	22.2	19.5	16.8	14.0	-	-
	50	Q	134000	122000	110000	88600	71600	57200	44900	34600	25700	-	-	-	37.7	36.6	35.4	33.0	30.2	27.1	23.8	20.4	17.0	-	-	-

<sup>1)</sup> ASERCOM certified

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

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# HG semi-hermetic compressors

## Performance data

R407A | 50 Hz

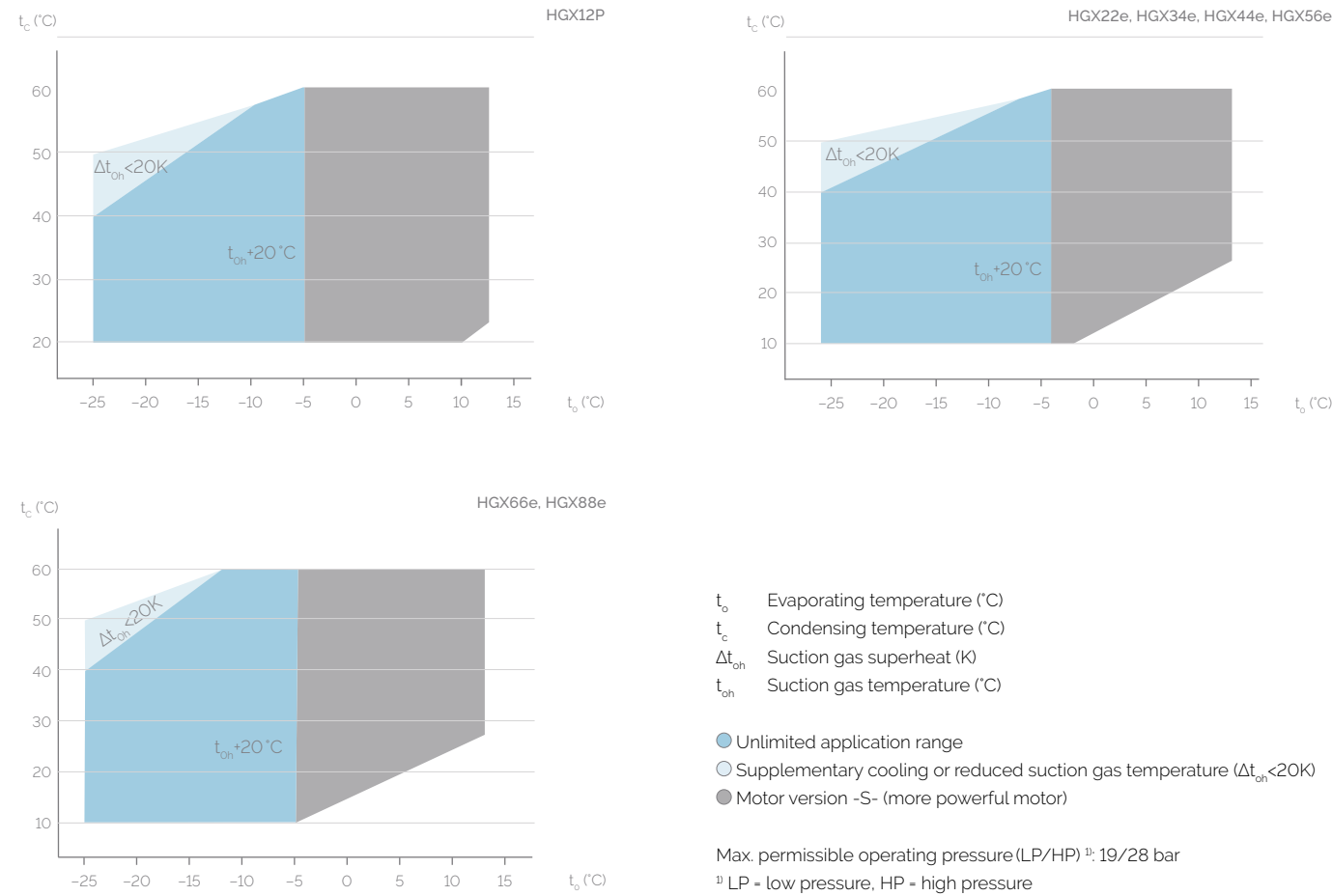
Type	Cooling capacity $Q_0$ [kW]												Power consumption $P_e$ [kW]													
	Cond. temp. °C	Evaporating temperature °C												10	15											
		10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40													
HGX66e/1750-4 HGX66e/1750-4 S	30	Q	203000	185000	168000	138000	113000	90200	71700	56200	43300	32400	23300	15400	29.4	29.2	28.9	27.9	26.6	24.9	22.9	20.6	18.2	15.7	13.2	10.7
	40	Q	177000	161000	147000	120000	97100	78000	61800	48200	36700	26800	-	-	36.4	35.8	35.0	33.1	30.8	28.2	25.4	22.4	19.3	16.1	-	-
	50	Q	152000	138000	125000	102000	82000	65600	51600	39800	29600	-	-	-	43.0	41.8	40.5	37.7	34.4	30.9	27.3	23.4	19.6	-	-	-
HGX66e/2070-4 HGX66e/2070-4 S	30	Q	239000	218000	198000	162000	132000	107000	84400	66200	51000	38200	27500	18200	34.8	34.6	34.3	33.1	31.5	29.5	27.0	24.4	21.5	18.5	15.5	12.5
	40	Q	208000	189000	172000	141000	114000	91600	72700	56700	43200	31600	-	-	43.3	42.5	41.5	39.4	36.6	33.5	30.1	26.5	22.8	19.0	-	-
	50	Q	178000	161000	146000	119000	96100	77000	60700	46800	34800	-	-	-	51.3	49.9	48.3	45.0	41.0	36.8	32.3	27.7	23.1	-	-	-
HGX88e/2400-4 HGX88e/2400-4 S	30	Q	283000	258000	234000	191000	155000	125000	99200	77800	59900	44900	32300	21400	41.2	41.0	40.6	39.1	37.3	35.0	32.2	29.2	25.9	22.5	19.0	15.5
	40	Q	248000	226000	205000	166000	135000	108000	85600	66700	50800	37200	-	-	50.6	49.7	48.7	46.4	43.2	39.6	35.8	31.7	27.4	23.1	-	-
	50	Q	213000	194000	175000	141000	114000	91000	71600	55200	41100	-	-	-	59.5	57.9	56.2	52.9	48.4	43.5	38.4	33.2	27.9	-	-	-
HGX88e/2735-4 HGX88e/2735-4 S	30	Q	321000	293000	266000	218000	177000	143000	114000	88600	68200	51100	36700	24300	46.6	46.4	45.9	44.4	42.4	39.8	36.7	33.3	29.6	25.7	21.7	17.7
	40	Q	281000	256000	232000	190000	154000	124000	97600	76100	57900	42400	-	-	57.5	56.5	55.3	52.5	49.0	45.0	40.7	36.1	31.3	26.4	-	-
	50	Q	242000	219000	199000	161000	131000	104000	81700	62900	46800	-	-	-	67.9	66.0	64.0	59.8	54.7	49.3	43.6	37.8	31.8	-	-	-
HGX88e/3235-4 HGX88e/3235-4 S	30	Q	379000	346000	314000	257000	209000	168000	134000	105000	80300	60100	43100	28500	54.9	54.6	54.1	52.4	49.9	4						



# HG semi-hermetic compressors

## Operating limits

### R407C



### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter. For further explanations consult [www.bock.de](http://www.bock.de).

#### Performance data

The performance data for R407C are based on European Standard EN 12900 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). 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 BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

# HG semi-hermetic compressors

## Performance data

### R407C | 50 Hz

Type	Cooling capacity $Q_0$ [kW]										Power consumption $P_e$ [kW]			
	Cond. temp. °C	Evaporating temperature °C										Q	P	
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25			
HGX12P/60-4 S	30	Q	6780	6180	5610	5080	4140	3330	2650	2080	1610	1230	0.88	0.90
		P	0.88	0.90	0.92	0.92	0.91	0.88	0.82	0.76	0.69	0.62		
	40	Q	5870	5340	4840	4380	3560	2860	2270	1780	1360	1020	1.16	1.16
		P	1.16	1.16	1.15	1.13	1.08	1.01	0.92	0.83	0.74	0.66		
	50	Q	5010	4550	4120	3720	3020	2420	1920	1490	1130	827	1.41	1.39
		P	1.41	1.39	1.35	1.31	1.22	1.12	1.00	0.90	0.79	0.69		
HGX12P/75-4 S	30	Q	8740	7960	7230	6550	5340	4300	3420	2680	2080	1580	1.12	1.16
		P	1.12	1.16	1.18	1.18	1.17	1.13	1.06	0.98	0.89	0.79		
	40	Q	7560	6880	6240	5650	4590	3690	2920	2290	1760	1320	1.50	1.49
		P	1.50	1.49	1.48	1.46	1.39	1.30	1.19	1.07	0.96	0.84		
	50	Q	6450	5860	5310	4800	3890	3120	2470	1920	1460	1070	1.82	1.79
		P	1.82	1.79	1.74	1.69	1.58	1.44	1.29	1.15	1.01	0.89		
HGX12P/90-4 S	30	Q	10500	9490	8620	7810	6360	5120	4080	3200	2480	1890	1.34	1.38
		P	1.34	1.38	1.40	1.41	1.40	1.34	1.26	1.16	1.05	0.95		
	40	Q	9020	8200	7440	6730	5470	4400	3490	2730	2090	1570	1.79	1.78
		P	1.79	1.78	1.77	1.74	1.66	1.55	1.42	1.28	1.13	1.00		
	50	Q	7690	6990	6330	5720	4640	3720	2940	2290	1740	1280	2.17	2.13
		P	2.17	2.13	2.08	2.02	1.88	1.72	1.55	1.37	1.21	1.06		
HGX12P/110-4 S	30	Q	12300	11200	10200	9180	7480	6020	4790	3760	2910	2220	1.58	1.62
		P	1.58	1.62	1.65	1.66	1.64	1.58	1.48	1.37	1.24	1.11		
	40	Q	10600	9640	8750	7910	6430	5170	4100	3200	2460	1850	2.10	2.10
		P	2.10	2.10	2.08	2.05	1.95	1.82	1.67	1.50	1.33	1.18		
	50	Q	9040	8210	7440	6730	5460	4370	3460	2690	2040	1500	2.56	2.51
		P	2.56	2.51	2.45	2.38	2.21	2.02	1.82	1.61	1.42	1.25		
HGX22e/125-4 S	30	Q	14400	13100	11900	10800	8790	7070	5630	4420	3420	2600	1.78	1.82
		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	2.36	2.35
		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	2.87	2.81
		P	2.87	2.81	2.75	2.67	2.48	2.27	2.04	1.81	1.59	1.40		
HHGX22e/160-4 S	30	Q	17600	16000	14500	13200	10700	8730	6950	5470	4240	3230	2.18	2.24
		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	2.90	2.90
		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	3.53	3.46
		P	3.53	3.46	3.38	3.28	3.05	2.93	2.64	2.34	2.06	1.81		
HGX22e/190-4 S	30	Q	21800	19900	18100	16400	13300	10800	8550	6700	5180	3960	2.67	2.74
		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	3.54	3.54
		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	4.31	4.23
		P	4.31	4.23	4.13	4.01	3.73	3.60	3.24	2.87	2.53	2.22		
HGX34e/215-4 S	30	Q	25600	23300	21100	19100	15600	12200	9720	7650	5910	4480	3.45	3.49
		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	4.38	4.33
		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	5.19	5.06
		P	5.19	5.06	4.91	4.75	4.39	3.98	3.54	3.09	2.66	2.27		
HGX34e/255-4 S	30	Q	29600	27000	24600	22300	18300	14500	11500	9040	7030	5300	4.30	4.30
		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	5.33	5.24
		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	6.25	6.08
		P	6.25	6.08	5.89	5.69	5.25	4.83	4.29	3.76	3.26	2.79		
HGX34e/315-4 S	30	Q	35900	32700	29800	27000	22100	17600	14100	11100	8590	6550	4.95	5.00
		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	6.32	6.25
		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	7.63	7.45
		P	7.63	7.45	7.24	7.02	6.50	5.87	5.25	4.63	3.99	3.37		

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

[vap.bock.de](http://vap.bock.de)



# HG semi-hermetic compressors

## Performance data

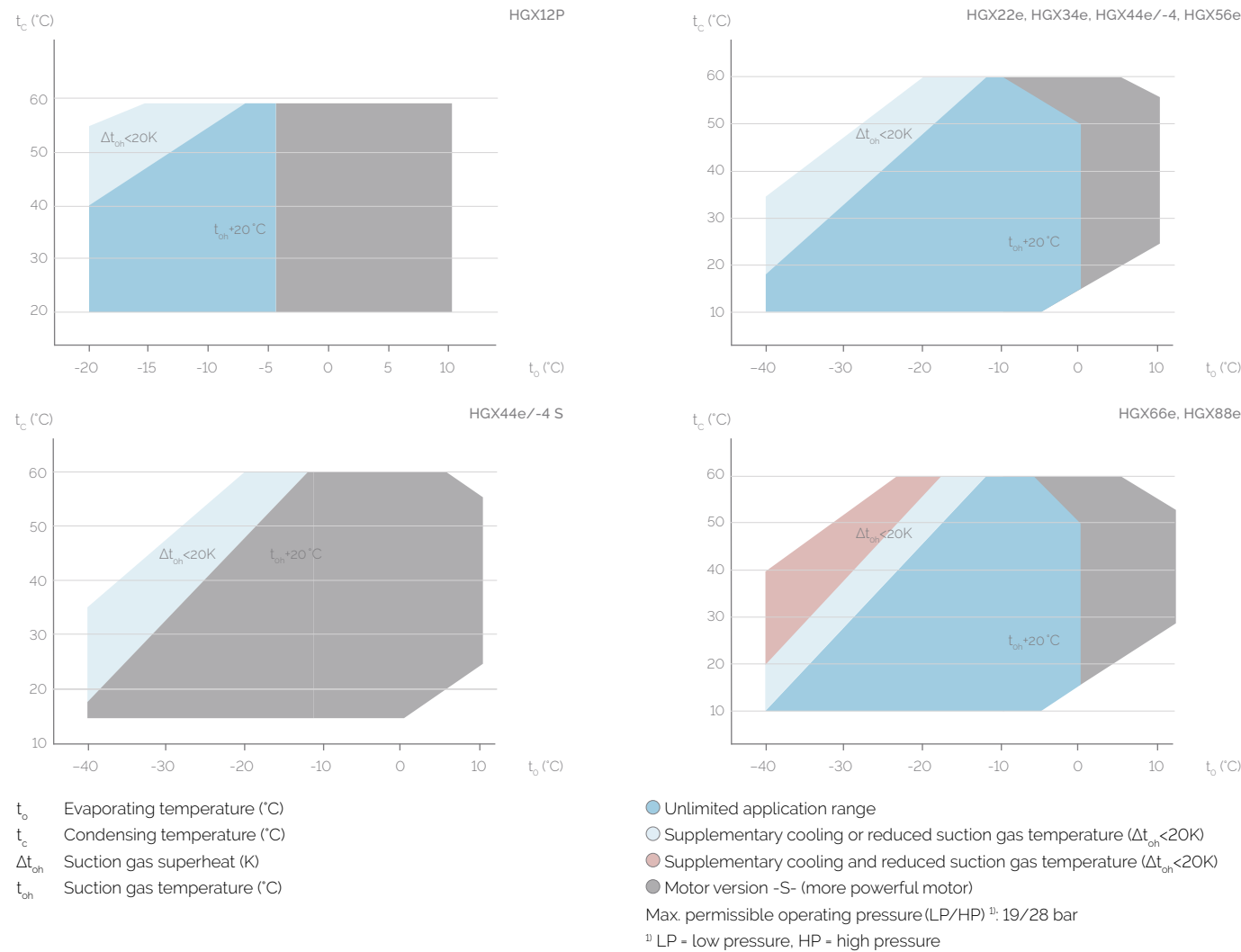
R407C | 50 Hz

Type	Cond. temp. °C	Q P	Cooling capacity Q <sub>0</sub> [kW]								Power consumption P <sub>e</sub> [kW]			
			Evaporating temperature °C											
			12.5	10	7.5	5	0	-5	-10	-15	-20	-25		
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		
HGX44e/475-4 HGX44e/475-4 S	30	Q	56600	51700	47100	42800	35200	28500	22900	18100	14100	10700		
		P	7.20	7.25	7.25	7.21	7.03	6.66	6.24	5.73	5.18	4.59		
	40	Q	50200	45800	41700	37800	30900	24900	19900	15600	12000	8850		
HGX44e/565-4 HGX44e/565-4 S	30	Q	67400	61600	56200	51100	42000	33900	27300	21700	17000	12900		
		P	8.54	8.60	8.61	8.56	8.34	7.93	7.42	6.81	6.14	5.44		
	40	Q	60000	54700	49800	45200	37000	29700	23800	18700	14500	10800		
HGX44e/665-4 HGX44e/665-4 S <sup>1)</sup>	30	Q	78700	71900	65500	59600	48900	40000	32200	25500	19800	15000		
		P	10.00	10.00	10.00	10.00	9.76	9.23	8.65	7.95	7.17	6.36		
	40	Q	69800	63600	57900	52500	42900	34900	27900	21900	16800	12400		
HGX44e/770-4 HGX44e/770-4 S	30	Q	92000	84000	76600	69600	57100	46300	37100	29300	22700	17000		
		P	11.60	11.70	11.70	11.60	11.30	10.80	10.00	9.22	8.26	7.23		
	40	Q	81400	74200	67400	61200	49900	40300	32000	25000	19000	13900		
HGX56e/850-4 HGX56e/850-4 S	30	Q	101000	92000	83900	76300	62800	50900	41000	32600	25400	19300		
		P	12.7	12.8	12.8	12.7	12.4	11.8	11.1	10.2	9.23	8.17		
	40	Q	89400	81500	74200	67400	55200	44500	35700	28100	21700	16100		
HGX56e/995-4 HGX56e/995-4 S	30	Q	121000	111000	101000	91500	75400	61200	49300	39100	30500	23200		
		P	14.3	14.5	14.6	14.6	14.4	13.8	13.0	11.9	10.7	9.45		
	40	Q	107000	96900	88300	80300	65900	53300	42700	33600	25900	19400		
HGX56e/1155-4 HGX56e/1155-4 S	30	Q	139000	127000	115000	105000	85600	69200	55500	43800	33900	25400		
		P	18.2	18.3	18.3	18.2	17.7	16.9	15.7	14.4	12.8	11.2		
	40	Q	123000	112000	102000	91800	74900	60100	47800	37300	28400	20700		
HGX66e/1340-4 HGX66e/1340-4 S	30	Q	164000	149000	136000	123000	101000	80800	64600	51000	39500	29900		
		P	21.3	21.1	20.9	20.6	19.8	18.8	17.6	16.1	14.5	12.6		
	40	Q	144000	131000	119000	108000	87800	70300	56000	43900	33700	25100		
HGX66e/1540-4 HGX66e/1540-4 S	30	Q	187000	171000	156000	141000	116000	92900	74500	59000	45900	34800		
		P	24.4	24.3	24.0	23.7	22.8	21.7	20.3	18.7	16.8	14.7		
	40	Q	165000	150000	137000	124000	102000	81000	64800	51000	39300	29400		
HGX88e/2400-4 HGX88e/2400-4 S	30	Q	296000	270000	246000	223000	183000	147000	118000	93300	72600	55200		
		P	39.3	39.0	38.6	38.1	36.9	34.8	32.7	30.2	27.3	24.1		
	40	Q	261000	238000	217000	196000	161000	129000	103000	81000	62500	46800		
HGX88e/2735-4 HGX88e/2735-4 S	30	Q	336000	306000	279000	253000	208000	168000	135000	107000	82700	62900		
		P	44.4	44.1	43.6	43.1	41.7	39.6	37.3	34.5	31.2	27.5		
	40	Q	296000	270000	246000	223000	182000	147000	118000	92300	71200	53300		
HGX88e/3235-4 HGX88e/3235-4 S	30	Q	396000	362000	329000	299000	245000	198000	159000	126000	97500	74000		
		P	52.3	51.9	51.4	50.8	49.1	46.7	43.9	40.5	36.7	32.3		
	40	Q	350000	319000	290000	263000	215000	173000	139000	109000	83800	62700		
HGX88e/4400-4 HGX88e/4400-4 S	30	Q	522000	475000	431000	390000	318000	253000	201000	157000	120000	86500		
		P	12.80	12.50	12.20	11.80	11.00	10.20	9.18	8.10	7.01	5.95		
	40	Q	452000	410000	370000	330000	265000	212000	168000	131000	98500	71000		
HGX88e/5600-4 HGX88e/5600-4 S	30	Q	600000	547000	498000	452000	370000	297000	238000	187000	145000	108000		
		P	10.80	10.70	10.50	10.30	9.83	9.18	8.40	7.55	6.67	5.78		
	40	Q	522000	475000	431000	390000	318000	253000	201000	157000	120000	86500		
HGX88e/7000-4 HGX88e/7000-4 S	30	Q	787000	719000	655000	596000	489000	400000	322000	255000	198000	150000		
		P	10.00	10.00	10.00	10.00	9.76	9.23	8.65	7.95	7.17	6.36		
	40	Q	698000	636000	579000	525000	429000	349000	279000	219000	168000	124000		
HGX88e/8500-4 HGX88e/8500-4 S	30	Q	920000	840000	766000	696000	571000	463000	371000	293000	227000	170000		
		P	11.60	11.70	11.70	11.60	11.30	10.80	10.00	9.22	8.26	7.23		
	40	Q	814000	742000	674000	612000	499000	403000	320000	250000	190000	139000		
HGX88e/10000-4 HGX88e/10000-4 S	30	Q	1010000	920000	839000	763000	628000	509000	410000	326000	254000	193000		
		P	12.7	12.8	12.8	12.7	12.4	11.8	11.1	10.2	9.23	8.17		
	40	Q	894000	815000	742000	674000	552000	445000	357000	281000	217000	161000		
HGX88e/12000-4 HGX88e/12000-4 S	30	Q	1210000	1110000	1010000	915000	754000	612000	493000	391000	305000	232000		
		P	14.3	14.5	14.6	14.6	14.4	13.8	13.0	11.9	10.7	9.45		
	40	Q	1070000	969000	883000	803000	659000	533000	427000	336000	259000	194000		
HGX88e/14000-4 HGX88e/14000-4 S	30	Q	1390000	1270000	1150000	1050000	856000	692000	555000	438000	339000	254000		
		P	18.2	18.3	18.3	18.2	17.7	16.9	15.7	14.4	12.8	11.2		
	40	Q	1230000	1120000	1020000	918000	749000	601000	478000	373000	284000	207000		
HGX88e/16000-4 HGX88e/16000-4 S	30	Q	1640000	1490000	1360000	1230000	1010000	808000	646000	510000	395000	299000		
		P	21.3	21.1	20.9	20.6	19.8	18.8	17.6	16.1	14.5	12.6		
	40	Q	1440000	1310000	1190000	1080000	878000	703000	560000	439000	337000	251000		
HGX88e/18000-4 HGX88e/18000-4 S	30	Q	1870000	1710000	1560000	1410000	1160000	929000	745000	590000	459000	348000		
		P	24.4	24.3	24.0	23.7	22.8	21.7	20.3	18.7	16.8	14.7		
	40	Q	1650000	1500000	1370000	1240000	1020000	810000	648000	510000	393000	294000		
HGX88e/20000-4 HGX88e/20000-4 S	30	Q	2120000	1940000	1770000	1600000	1320000	1070000	853000	675000	525000	399000		
		P	28.0	27.8	27.5	27.1	26.2	24.8	23.2	21.4	19.3	16.9		
	40	Q	1870000	1710000	1550000	1410000	1150000	928000	742000	585000	451000	338000		
HGX88e/22000-4 HGX88e/22000-4 S	30	Q	2250000	2060000	1870000	1700000	1400000	1120000	891000	700000	540000	410000		
		P	41.5	40.4	39.2	38.0	35.3	32.3	29.0	25.5	21.8	17.8		
	40	Q	1990000	1810000	1640000	1480000	1220000	980000	780000	610000	470000	350000		
HGX88e/24000-4 HGX88e/24000-4 S	30	Q	2500000	2280000	2080000	1890000	1550000	1260000	1010000	795000	619000	471000		
		P	33.1	32.8	32.5	32.0	30.9	29.3	27.5	25.3	22.8	19.9		
	40	Q	2200000	2000000	1820000	1650000	1350000	1090000	873000	688000	532000	398000		
HGX88e/26000-4 HGX88e/26000-4 S	30	Q	2800000	2580000	2380000	2180000	1780000	1420000	1160000	928000	740000	581000		
		P	49.5	48.1	46.7	45.2	41.9	38.4	34.4	30.2	25.7	21.0		
	40	Q	2490000	2270000	2070000	1870000	1500000	1220000	980000	770000	600000	450000		

# HG semi-hermetic compressors

## Operating limits

### R407F



### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter.  
 For further explanations consult [www.bock.de](http://www.bock.de).

#### Performance data

The performance data for R407F are based on European Standard 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 BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

ASERCOM certified performance data



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

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

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

# HG semi-hermetic compressors

## Performance data

### R407F | 50 Hz

Type	Cooling capacity $Q_0$ [kW]												Power consumption $P_e$ [kW]			
	Cond. temp. °C	Evaporating temperature °C														
		10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40			
HGX12P/60-4 S	30	Q	7240	6570	5950	4840	3890	3080	2410	1850	-	-	-	-	-	-
		P	110	113	115	115	112	106	0.982	0.894	-	-	-	-	-	-
	40	Q	6290	5700	5150	4180	3340	2640	2040	1540	-	-	-	-	-	-
		P	141	142	140	136	127	117	106	0.948	-	-	-	-	-	-
	50	Q	5300	4800	4330	3490	2780	2170	1660	1220	-	-	-	-	-	-
		P	167	164	160	151	138	124	110	0.963	-	-	-	-	-	-
HGX12P/75-4	30	Q	9010	8200	7440	6090	4950	3960	3130	2430	-	-	-	-	-	
		P	139	143	146	146	140	133	123	112	-	-	-	-	-	
	40	Q	7850	7140	6470	5290	4310	3440	2690	2070	-	-	-	-	-	
		P	182	182	180	174	162	149	136	121	-	-	-	-	-	
	50	Q	6670	6060	5490	4480	3670	2910	2260	1720	-	-	-	-	-	
		P	215	211	206	194	178	161	144	127	-	-	-	-	-	
HGX12P/90-4	30	Q	10800	9780	8880	7270	5760	4620	3650	2840	-	-	-	-	-	
		P	171	174	176	175	166	155	143	129	-	-	-	-	-	
	40	Q	9380	8530	7740	6320	5020	4000	3140	2400	-	-	-	-	-	
		P	218	217	214	206	189	173	155	138	-	-	-	-	-	
	50	Q	7990	7260	6580	5370	4270	3370	2620	1980	-	-	-	-	-	
		P	260	255	248	232	209	187	165	144	-	-	-	-	-	
HGX12P/110-4	30	Q	12500	11300	10300	8420	6830	5510	4390	3440	-	-	-	-	-	
		P	201	204	206	203	201	188	173	157	-	-	-	-	-	
	40	Q	10900	9860	8960	7330	5970	4800	3790	2940	-	-	-	-	-	
		P	254	252	250	240	231	211	189	168	-	-	-	-	-	
	50	Q	9160	8330	7560	6180	5070	4040	3170	2430	-	-	-	-	-	
		P	304	298	291	272	254	227	200	174	-	-	-	-	-	
HGX22e/125-4	30	Q	15400	14100	12800	10600	8560	6860	5410	4190	3180	2350	1690	1160		
		P	225	226	226	222	214	203	189	174	157	139	122	105		
	40	Q	13600	12400	11200	9180	7420	5910	4630	3560	2670	1940	1360	-		
		P	281	277	272	260	244	226	207	187	166	146	127	-		
	50	Q	11700	10600	9580	7800	6260	4950	3840	2920	2160	-	-	-		
		P	335	325	316	294	271	247	222	197	173	-	-	-		
HHGX22e/160-4	30	Q	19600	17900	16300	13100	10600	8470	6740	5300	4110	3120	2280	1520		
		P	298	293	288	277	261	246	232	217	201	181	158	130		
	40	Q	17500	15900	14400	11600	9300	7440	5890	4580	3490	2540	1690	-		
		P	359	349	339	322	299	279	258	237	214	187	157	-		
	50	Q	15300	13800	12500	10200	8140	6460	5040	3820	2770	-	-	-		
		P	420	405	390	367	337	309	280	251	219	-	-	-		
HGX22e/190-4	30	Q	22700	20800	19000	15800	13000	10600	8450	6680	5200	3960	2940	2100		
		P	385	373	362	352	327	304	282	260	238	214	188	159		
	40	Q	20000	18300	16700	13900	11400	9180	7330	5770	4460	3370	2450	-		
		P	464	446	430	412	377	346	316	287	258	229	198	-		
	50	Q	17400	15900	14500	11900	9680	7790	6180	4830	3700	-	-	-		
		P	547	524	502	472	427	385	346	309	272	-	-	-		
HGX34e/215-4	30	Q	25900	23600	21400	17200	13900	11100	8570	6520	4820	3430	2320	1450		
		P	362	361	357	348	329	305	277	247	217	188	161	138		
	40	Q	22700	20600	18600	14800	11800	9230	7080	5290	3840	2680	1770	-		
		P	470	457	443	418	381	341	301	262	224	191	163	-		
	50	Q	19400	17500	15700	12300	9650	7460	5650	4180	3020	-	-	-		
		P	568	545	520	480	426	372	320	272	229	-	-	-		
HGX34e/255-4	30	Q	30300	27700	25200	20500	16700	13400	10500	8020	5970	4280	2910	1820		
		P	383	392	398	405	394	373	344	310	272	233	196	161		
	40	Q	26300	24000	21800	17600	14300	11400	8860	6760	5000	3540	2360	-		
		P	505	504	499	492	462	425	381	334	286	239	194	-		
	50	Q	22000	20000	18100	14500	11700	9230	7190	5470	4050	-	-	-		
		P	615	603	588	567	519	465	407	347	289	-	-	-		
HGX34e/315-4	30	Q	38500	34900	31700	25600	20600	16400	12900	9900	7460	5450	3800	2430		
		P	504	507	507	491	472	445	411	371	327	282	236	191		
	40	Q	33500	30400	27500	22100	17700	14000	11000	8350	6230	4470	3000	-		
		P	644	636	625	590	552	507	457	402	346	289	232	-		
	50	Q	28500	25700	23200	18500	14800	11600	8990	6840	5070	-	-	-		
		P	776	757	735	680	623	559	492	422	351	-	-	-		

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

[vap.bock.de](http://vap.bock.de)





# HG semi-hermetic compressors

## Performance data

R407F | 50 Hz

Type	Cond. temp. °C	Q	Cooling capacity Q <sub>0</sub> [kW]										Power consumption P <sub>e</sub> [kW]													
			Evaporating temperature °C												-30	-35	-40									
			10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40												
HGX34e/380-4 HGX34e/380-4 S	30	P	45700	41600	37800	30700	25000	20100	15900	12400	9460	7040	5030	3320	6.39	6.39	6.36	6.15	5.88	5.53	5.09	4.60	4.07	3.51	2.94	2.38
	40	P	39900	36200	32900	26500	21500	17200	13600	10600	8000	5870	4050	8.05	7.93	7.77	7.34	6.85	6.29	5.67	5.00	4.31	3.61	2.92		
	50	P	33800	30700	27800	22300	18000	14400	11300	8760	6630	9.65	9.39	9.10	8.45	7.73	6.94	6.11	5.26	4.40						
HGX44e/475-4 HGX44e/475-4 S	30	P	58200	53100	48400	39600	32300	26000	20600	16100	12400	9210	6640	4520	7.56	7.67	7.73	7.62	7.37	6.98	6.45	5.84	5.15	4.43	3.71	3.00
	40	P	51000	46500	42400	34500	28100	22600	17900	13900	10500	7620	5210	9.81	9.74	9.63	9.22	8.67	7.99	7.21	6.36	5.46	4.55	3.65		
	50	P	43900	40000	36300	29400	23900	19100	15000	11500	8460	11.8	11.6	11.3	10.6	9.78	8.81	7.76	6.67	5.55						
HGX44e/565-4 HGX44e/565-4 S	30	P	69400	63400	57800	47100	38500	31000	24700	19400	14900	11200	8120	5600	9.05	9.18	9.24	9.13	8.84	8.36	7.73	6.99	6.16	5.30	4.42	3.57
	40	P	61000	55700	50700	41100	33500	27000	21500	16700	12800	9330	6460	11.7	11.6	11.5	11.1	10.4	9.61	8.66	7.63	6.54	5.44	4.36		
	50	P	52600	47900	43600	35100	28600	22900	18100	14000	10400	14.1	13.8	13.5	12.8	11.8	10.6	9.35	8.02	6.66						
HGX44e/665-4 HGX44e/665-4 S <sup>1)</sup>	30	P	81800	74700	68000	55700	45400	36500	29000	22600	17300	12900	9260	6270	10.5	10.6	10.7	10.6	10.2	9.72	9.00	8.15	7.20	6.20	5.18	4.19
	40	P	71600	65300	59400	48500	39400	31600	25000	19400	14700	10700	7220	13.6	13.5	13.4	12.8	12.0	11.1	10.0	8.88	7.63	6.36	5.11		
	50	P	61600	56000	50900	41300	33400	26700	20900	16000	11800	16.5	16.2	15.8	14.8	13.6	12.3	10.8	9.33	7.78						
HGX44e/770-4 HGX44e/770-4 S	30	P	93600	85500	77900	64300	52400	42200	33600	26300	20200	15100	10900	7350	12.1	12.3	12.4	12.3	11.9	11.3	10.4	9.50	8.42	7.29	6.16	5.08
	40	P	82000	74900	68200	56100	45700	36700	29100	22600	17100	12500	8480	15.8	15.7	15.5	14.9	14.0	12.9	11.7	10.3	8.99	7.58	6.20		
	50	P	70500	64300	58400	47900	38900	31100	24400	18700	13900	19.2	18.8	18.3	17.2	15.8	14.3	12.7	11.0	9.27						
HGX56e/850-4 HGX56e/850-4 S	30	P	104000	94600	86300	70700	57800	46600	37100	29100	22400	16800	12200	8390	13.5	13.7	13.8	13.6	13.2	12.5	11.6	10.4	9.26	7.96	6.64	5.36
	40	P	90800	82900	75500	61800	50400	40600	32200	25100	19100	14100	9680	17.5	17.4	17.2	16.5	15.5	14.3	12.9	11.4	9.82	8.18	6.55		
	50	P	78100	71200	64700	52700	42900	34400	27200	21000	15600	21.3	20.8	20.3	19.1	17.5	15.8	13.9	12.0	10.0						
HGX56e/995-4 HGX56e/995-4 S	30	P	122000	112000	102000	83700	68600	55500	44200	34600	26600	19800	14100	9420	16.5	16.5	16.4	16.0	15.4	14.5	13.4	12.1	10.7	9.23	7.65	6.04
	40	P	108000	98400	89700	73600	60000	48200	38100	29600	22300	16200	11000	20.9	20.6	20.2	19.3	18.0	16.6	15.0	13.2	11.3	9.38	7.36		
	50	P	93700	85400	77600	63100	51100	40700	31900	24300	17900	25.1	24.4	23.8	22.2	20.4	18.4	16.2	13.9	11.4						
HGX56e/1155-4 HGX56e/1155-4 S	30	P	141000	129000	117000	96000	78300	63100	50200	39300	30100	22500	16300	11100	18.9	19.2	19.3	19.2	18.6	17.6	16.3	14.8	13.1	11.3	9.59	7.89
	40	P	124000	113000	103000	83800	68200	54900	43500	33800	25600	18700	12700	24.6	24.4	24.1	23.4	22.0	20.3	18.3	16.2	14.0	11.8	9.65		
	50	P	106000	96600	87800	71500	58000	46400	36500	28000	20700	29.8	29.2	28.5	27.0	24.9	22.5	19.9	17.2	14.4						
HGX66e/1340-4 HGX66e/1340-4 S	30	P	164000	149000	136000	111000	89600	71900	56900	44300	33800	25000	23.1	23.0	22.8	22.1	21.0	19.6	17.9	16.1	14.2	12.2				
	40	P	144000	131000	119000	96300	78000	62400	49100	38000	28700	29.0	28.5	27.8	26.3	24.4	22.3	19.9	17.5	15.0						
	50	P	124000	113000	102000	82200	66200	52600	41100	31500	34.5	33.4	32.3	30.0	27.3	24.4	21.4	18.3								
HGX66e/1540-4 HGX66e/1540-4 S	30	P	187000	171000	156000	127000	103000	82900	65800	51400	39300	29300	26.6	26.5	26.3	25.5	24.3	22.7	20.8	18.7	16.5	14.2				
	40	P	165000	150000	137000	111000	89800	72000	57000	44300	33600	33.6	32.9	32.2	30.5	28.3	25.9	23.3	20.5	17.6						
	50	P	143000	130000	118000	94600	76400	61000	47900	36900	40.1	38.9	37.6	35.0	31.9	28.6	25.1	21.6								

<sup>1)</sup> ASERCOM certified

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

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# HG semi-hermetic compressors

## Performance data

R407F | 50 Hz

Type	Cond. temp. °C	Q	Cooling capacity Q <sub>0</sub> [kW]										Power consumption P <sub>e</sub> [kW]									
			Evaporating temperature °C												-30	-35	-40					
			10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40								
HGX66e/1750-4 HGX66e/1750-4 S	30	P	212000	194000	177000	145000	118000	94900	75300	58900	45100	33600	30.5	30.4	30.1	29.1	27.7	25.9	23.8	21.4	18.9	16.4
	40	P	187000	171000	155000	127000	103000	82600	65300	50800	38600	38.3	37.6	36.8	34.8	32.3	29.6	26.6	23.5	20.2		
	50	P	162000	147000	133000	109000	87600	69900	55000	42400	45.8	44.4	43.0	40.0	36.4	32.7	28.8	24.8				
HGX66e/2070-4 HGX66e/2070-4 S	30	P	250000	228000	207000	171000	139000	112000	88700	69300	53100	39700	36.1	36.0	35.7	34.5	32.8	30.7	28.1	25.3	22.3	19.3
	40	P	219000	200000	182000	149000	121000	97000	76800	59800	45400	45.6	44.8	43.8	41.4	38.5	35.1	31.5	27.7	23.9		
	50	P	189000	172000	156000	127000	103000	82000	64600	49900	54.7	53.1	51.3	47.8	43.5	38.9	34.2	29.3				
HGX88e/2400-4 HGX88e/2400-4 S	30	P	296000	270000	246000	201000	163000	132000	105000	81400	62400	46500	42.7	42.5	42.2	40.8	38.9	36.4	33.5	30.3	26.9	23.3
	40	P	262000	239000	217000	176000	143000	115000	90500	70400	53400	53.2	52.3	51.1	48.8	45.4	41.6	37.4	33.1	28.7		
	50	P	227000	207000	187000	151000	122000	97100	76300	58800	63.2	61.4	59.5	56.1	51.2	45.9	40.5	35.0				
HGX88e/2735-4 HGX88e/2735-4 S	30	P	336000	307000	279000	230000	187000	150000	119000	93000	71200	53100	48.3	48.1	47.7	46.3	44.2	41.5	38.3	34.7	30.9	26.9
	40	P	297000	271000	246000	202000	164000	131000	104000	80400	61000	60.5	59.4	58.1	55.0	51.4	47.2	42.7	37.9	33.0		
	50	P	258000	234000	212000	173000	140000	112000	87300	67200	72.2	70.1	67.9	63.0	57.7	52.0	46.1	40.0				
HGX88e/3235-4 HGX88e/3235-4 S	30	P	397000	362000	330000	270000	220000	177000	140000	110000	83700	62300	56.9	56.7	56.2	54.5	52.0	48.7	44.9	40.6	36.0	31.3
	40	P	351000	320000	290000	237000	192000	154000	122000	94400	71600	71.3	69.9	68.4	65.1	60.6	55.5	50.0	44.3	38.4		
	50	P	304000	276000	250000	203000	164000	131000	103000	78800	84.9	82.4	79.8	74.7	68.2	61.2	54.0	46.7				

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

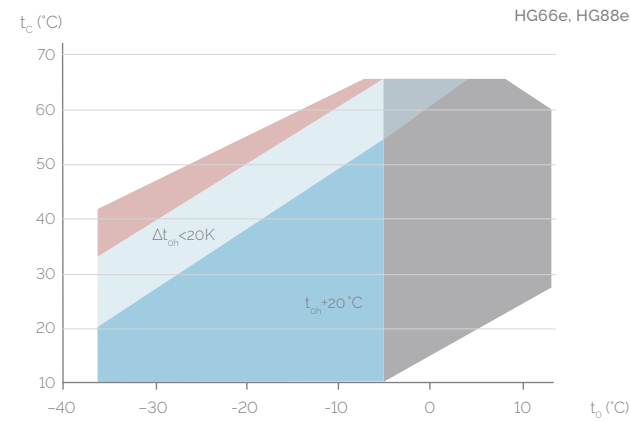
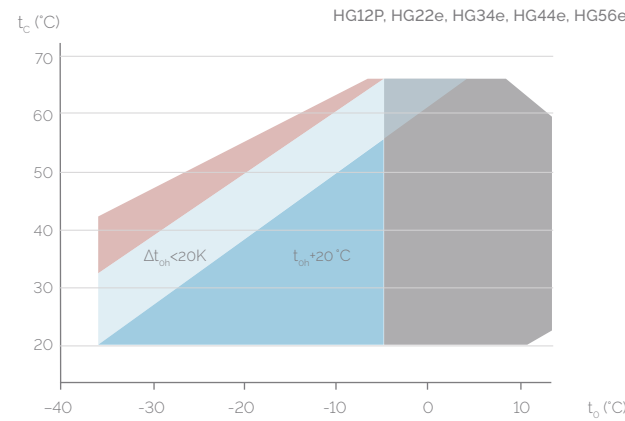
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# HG semi-hermetic compressors

## Operating limits

R22



- $t_o$  Evaporating temperature (°C)
  - $t_c$  Condensing temperature (°C)
  - $\Delta t_{oh}$  Suction gas superheat (K)
  - $t_{oh}$  Suction gas temperature (°C)
- Unlimited application range
  - Supplementary cooling or reduced suction gas temperature ( $\Delta t_{oh} < 20K$ )
  - Supplementary cooling and reduced suction gas temperature ( $\Delta t_{oh} < 20K$ )
  - Motor version -S- (more powerful motor)
- Max. permissible operating pressure (LP/HP) <sup>1)</sup>: 19/28 bar  
<sup>1)</sup> LP - low pressure, HP - high pressure

### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter.  
 For further explanations consult [www.bock.de](http://www.bock.de).

#### Performance data

The performance data for R22 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 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 BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

# HG semi-hermetic compressors

## Performance data

R22 | 50 Hz

Type	Cond. temp. °C	Cooling capacity $Q_o$ [kW]											Power consumption $P_e$ [kW]			
		Evaporating temperature °C														
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	-35			
HGX12P/60-4 S <sup>1)</sup>	30	Q	7120	6530	5980	5460	4520	3710	3000	2390	1870	1430	1040	708		
		P	0.889	0.911	0.927	0.936	0.939	0.921	0.886	0.837	0.776	0.707	0.632	0.553		
	40	Q	6290	5760	5270	4800	3960	3230	2600	2050	1570	1160				
		P	1.19	1.19	1.18	1.17	1.13	1.08	1.01	0.936	0.849	0.758				
	50	Q	5500	5030	4590	4170	3430	2780	2210	1720	1290					
		P	1.46	1.44	1.41	1.38	1.30	1.21	1.12	1.01	0.906					
HGX12P/75-4 <sup>1)</sup>	30	Q	8890	8150	7460	6820	5650	4630	3750	2990	2340	1780	1300	885		
		P	1.11	1.13	1.15	1.17	1.17	1.15	1.10	1.04	0.970	0.883	0.789	0.691		
	40	Q	7860	7200	6580	6000	4950	4040	3240	2560	1970	1450				
		P	1.49	1.49	1.48	1.46	1.42	1.35	1.26	1.16	1.06	0.947				
	50	Q	6870	6280	5730	5210	4280	3470	2760	2150						
		P	1.83	1.80	1.76	1.72	1.63	1.52	1.40	1.26						
HGX12P/90-4 <sup>1)</sup>	30	Q	10600	9720	8900	8130	6740	5520	4470	3570	2790	2120	1550	1060		
		P	1.32	1.35	1.38	1.39	1.39	1.37	1.32	1.24	1.15	1.05	0.941	0.825		
	40	Q	9380	8590	7850	7160	5900	4810	3870	3050	2340	1730				
		P	1.78	1.77	1.76	1.75	1.69	1.61	1.51	1.39	1.26	1.12				
	50	Q	8190	7490	6830	6220	5100	4140	3290	2560						
		P	2.18	2.15	2.10	2.06	1.94	1.81	1.66	1.51						
HGX12P/110-4 <sup>1)</sup>	30	Q	12500	11500	10500	9560	7920	6490	5260	4190	3280	2500	1820	1240		
		P	1.55	1.59	1.62	1.64	1.64	1.61	1.55	1.46	1.36	1.23	1.10	0.970		
	40	Q	11100	10100	9230	8410	6940	5660	4550	3590	2750	2030				
		P	2.09	2.09	2.08	2.05	1.99	1.89	1.77	1.63	1.48	1.32				
	50	Q	9630	8800	8030	7310	6000	4860	3870	3010						
		P	2.57	2.52	2.48	2.42	2.29	2.13	1.96	1.77						
HGX22e/125-4	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				
		P	2.54	2.53	2.50	2.47	2.37	2.24	2.08	1.90	1.72	1.52				
	50	Q	12000	11000	10000	9120	7540	6170	5010	4010						
		P	3.11	3.06	2.99	2.91	2.73	2.53	2.31	2.07						
HHGX22e/160-4	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				
		P	3.13	3.12	3.09	3.05	2.93	2.77	2.57	2.35	2.11	1.88				
	50	Q	14800	13500	12400	11300	9300	7620	6180	4940						
		P	3.84	3.77	3.69	3.60	3.38	3.13	2.85	2.55						
HGX22e/190-4	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				
		P	3.78	3.76	3.72	3.67	3.52	3.32	3.09	2.83	2.55	2.27				
	50	Q	17800	16300	14900	13600	11200	9200	7450	5960						
		P	4.63	4.54	4.44	4.33	4.06	3.76	3.43	3.08						
HGX34e/215-4 <sup>1)</sup>	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				
		P	4.31	4.29	4.25	4.19	4.02	3.80	3.53	3.23	2.91	2.58				
	50	Q	20200	18500	17000	15500	12800	10500	8480	6780						
		P	5.29	5.19	5.07	4.94	4.64	4.29	3.91	3.51						
HGX34e/255-4 <sup>1)</sup>	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				
		P	5.06	5.04	4.99	4.92	4.72	4.46	4.14	3.79	3.42	3.03				
	50	Q	23700	21800	19900	18200	15000	12300	9970	7970						
		P	6.21	6.09	5.96	5.80	5.45	5.04	4.59	4.12						
HGX34e/315-4 <sup>1)</sup>	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				
		P	6.26	6.23	6.17	6.09	5.84	5.51	5.13	4.69	4.22	3.74				
	50	Q	29400	26900	24600	22500	18600	15200	12400	9850						
		P	7.67	7.53	7.37	7.18	6.74	6.23	5.69	5.10						

<sup>1)</sup> ASERCOM certified

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

[vap.bock.de](http://vap.bock.de)



# HG semi-hermetic compressors

## Performance data

R22 | 50 Hz

Type	Cond. temp. °C	Q	Cooling capacity Q <sub>0</sub> [kW]										Power consumption P <sub>e</sub> [kW]													
			Evaporating temperature °C												P <sub>e</sub> [kW]	P <sub>e</sub> [kW]										
			12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	-35												
HGX34e/380-4 HGX34e/380-4 S	30	P	46700	42800	39100	35700	29600	24300	19800	16000	12700	9950	7690	5830	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	P	41000	37600	34400	31400	26100	21400	17400	14000	11200	8650			7.60	7.56	7.49	7.39	7.08	6.68	6.21	5.68	5.12	4.54		
	50	P	35500	32500	29800	27200	22500	18500	15000	12000					9.31	9.14	8.93	8.70	8.16	7.56	6.89	6.18				
HGX44e/475-4 HGX44e/475-4 S	30	P	58200	53600	49100	45000	37500	30800	25100	20300	16100	12500	9390	6730	7.16	7.27	7.34	7.36	7.29	7.02	6.68	6.25	5.73	5.16	4.55	3.93
	40	P	52700	48300	44300	40500	33600	27400	22200	17800	14000	10700			9.17	9.15	9.08	8.97	8.66	8.19	7.63	6.99	6.29	5.54		
	50	P	47000	43100	39300	35900	29600	24000	19300	15300					11.0	10.8	10.6	10.4	9.90	9.24	8.46	7.62				
HGX44e/565-4 HGX44e/565-4 S	30	P	69400	63900	58600	53700	44800	36700	30000	24300	19300	15100	11400	8180	8.50	8.64	8.71	8.74	8.65	8.37	7.96	7.43	6.81	6.12	5.39	4.64
	40	P	62900	57700	52900	48400	40200	32600	26600	21300	16800	12900			10.8	10.8	10.7	10.6	10.2	9.79	9.11	8.33	7.48	6.58		
	50	P	56300	51500	47100	43000	35500	28600	23200	18400					13.1	12.9	12.6	12.4	11.7	11.0	10.1	9.10				
HGX44e/665-4 HGX44e/665-4 S	30	P	81000	74500	68300	62600	52100	43300	35300	28500	22600	17500	13200	9410	9.95	10.1	10.1	10.2	10.1	9.73	9.26	8.66	7.94	7.15	6.30	5.44
	40	P	73100	67100	61500	56200	46600	38400	31200	24900	19600	14900			12.7	12.7	12.6	12.5	12.0	11.3	10.5	9.69	8.71	7.68		
	50	P	65200	59700	54600	49700	41000	33600	27000	21400					15.4	15.2	14.9	14.5	13.8	12.8	11.7	10.5				
HGX44e/770-4 HGX44e/770-4 S	30	P	93900	86300	79200	72600	60500	50000	40900	33000	26200	20400	15400	11100	11.5	11.7	11.8	11.8	11.7	11.3	10.8	10.1	9.28	8.35	7.36	6.36
	40	P	84700	77800	71300	65200	54100	44500	36200	29000	22800	17500			14.8	14.8	14.6	14.5	13.9	13.2	12.3	11.3	10.1	8.97		
	50	P	75600	69300	63300	57800	47700	39000	31500	25000					17.9	17.7	17.3	16.9	16.0	14.9	13.6	12.3				
HGX56e/850-4 HGX56e/850-4 S	30	P	104000	95400	87600	80200	66900	55000	45000	36400	29000	22600	17100	12300	12.7	12.9	13.0	13.0	12.9	12.5	11.9	11.1	10.2	9.19	8.10	6.97
	40	P	93700	86000	78800	72100	59900	49000	39900	32000	25200	19400			16.3	16.2	16.1	15.9	15.3	14.6	13.6	12.4	11.2	9.88		
	50	P	83700	76600	70100	64000	52900	43000	34800	27600					19.6	19.4	19.0	18.6	17.6	16.5	15.1	13.6				
HGX56e/995-4 HGX56e/995-4 S	30	P	122000	112000	103000	93700	78000	64700	52800	42600	33800	26200	19700	14100	14.9	15.1	15.2	15.3	15.1	14.5	13.8	12.9	11.8	10.6	9.42	8.14
	40	P	110000	101000	91900	84000	69700	57400	46600	37300	29200	22300			19.1	19.1	18.9	18.7	18.0	16.9	15.7	14.4	13.0	11.4		
	50	P	97500	89300	81600	74400	61300	50200	40400	32000					23.1	22.8	22.4	21.9	20.7	19.0	17.4	15.7				
HGX56e/1155-4 HGX56e/1155-4 S	30	P	141000	130000	119000	109000	90700	74700	61000	49300	39200	30500	23100	16600	18.0	18.2	18.4	18.5	18.3	17.7	16.9	15.8	14.4	13.0	11.4	9.89
	40	P	128000	117000	107000	97800	81200	66500	54000	43300	34100	26100			23.1	23.0	22.9	22.6	21.8	20.7	19.3	17.7	15.9	14.0		
	50	P	114000	105000	95100	86800	71700	58300	47000	37300					27.9	27.5	27.0	26.4	24.9	23.4	21.4	19.3				
HGX66e/1340-4 HGX66e/1340-4 S	30	P	168000	155000	142000	131000	109000	89400	73100	59000	46800	36400	27700	20400	21.4	21.6	21.7	21.6	21.2	20.3	19.2	17.8	16.2	14.4	12.6	10.8
	40	P	152000	140000	128000	118000	97600	79700	64800	51900	40900	31400			27.4	27.1	26.8	26.3	25.1	23.5	21.7	19.7	17.5	15.3		
	50	P	135000	124000	114000	104000	85600	69500	56100	44600					32.8	32.1	31.3	30.4	28.4	26.2	23.8	21.2				
HGX66e/1540-4 HGX66e/1540-4 S	30	P	192000	177000	163000	150000	126000	103000	84200	68100	54200	42300	32300	24000	24.6	24.8	24.9	24.9	24.4	23.5	22.2	20.6	18.8	16.8	14.7	12.6
	40	P	174000	160000	147000	135000	113000	91800	74800	60200	47500	36700			31.7	31.4	30.9	30.4	29.0	27.3	25.2	22.9	20.5	17.9		
	50	P	155000	142000	130000	119000	98600	80200	65000	51900					38.1	37.3	36.3	35.3	33.1	30.6	27.8	24.8				

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S- (more powerful motor)

Supplementary cooling or reduced suction gas temperature

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# HG semi-hermetic compressors

## Performance data

R22 | 50 Hz

Type	Cond. temp. °C	Q	Cooling capacity Q <sub>0</sub> [kW]										Power consumption P <sub>e</sub> [kW]													
			Evaporating temperature °C												P <sub>e</sub> [kW]	P <sub>e</sub> [kW]										
			12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	-35												
HGX66e/1750-4 HGX66e/1750-4 S	30	P	218000	201000	185000	170000	142000	118000	96400	78000	62100	48500	37100	27500	28.2	28.4	28.5	28.5	27.9	26.8	25.4	23.6	21.5	19.3	16.9	14.5
	40	P	197000	182000	167000	153000	128000	106000	85800	69000	54500	42200			36.2	35.8	35.4	34.8	33.2	31.2	28.8	26.2	23.5	20.6		
	50	P	175000	161000	148000	135000	112000	91900	74600	59600					43.5	42.6	41.6	40.4	37.8	34.9	31.7	28.4				
HGX66e/2070-4 HGX66e/2070-4 S	30	P	256000	236000	217000	200000	167000	139000	114000	91700	73100	57100	43700	32400	33.3	33.6	33.7	33.7	33.0	31.8	30.0	27.9	25.4	22.7	19.9	17.1
	40	P	231000	213000	196000	180000	150000	124000	101000	81100	64200	49700			43.0	42.6	42.0	41.3	39.4	37.1	34.2	31.1	27.8	24.3		
	50	P	205000	189000	173000	158000	132000	108000	87500	70000					51.9	50.8	49.5	48.1	45.0	41.6	37.8	33.7				
HGX88e/2400-4 HGX88e/2400-4 S	30	P	304000	280000	258000	237000	198000	163000	134000	108000	85900	67200	51400	38100	39.6	39.9	40.0	40.0	39.3	37.6	35.7	33.2	30.4	27.3	24.1	20.8
	40	P	276000	254000	233000	214000	179000	146000	119000	95500	75500	58500			50.3	49.9	49.2	48.4	46.3	43.8	40.6	37.0	33.1	29.2		
	50	P	246000	226000	207000	190000	157000	128000	104000	82700					60.1	58.9	57.5	56.0	52.6	49.1	44.7	40.0				
HGX88e/2735-4 HGX88e/2735-4 S	30	P	345000	318000	292000	269000	225000	186000	152000	123000	97900	76500	58500	43400	44.7	45.1	45.3	45.2	44.4	42.8	40.6	37.8	34.7	31.2	27.5	23.8
	40	P	313000	288000	265000	243000	202000	167000	136000	109000	86100	66600			57.2	56.6	55.9	55.0	52.6	49.6	46.0	42.0	37.7	33.3		
	50	P	279000	256000	235000	215000	179000	146000	119000	94300					68.6	67.2	65.5	63.8	59.8	55.5	50.6	45.4				
HGX88e/3235-4 HGX88e/3235-4 S	30	P	407000	376000	346000	317000	266000	219000	180000	145000	116000	90100	68800	51000	52.7	53.1	53.3	53.2	52.3	50.4	47.8	44.5	40.7	36.6	32.3	27.9
	40	P	370000	340000	313000	286000	239000	196000	160000	129000	102000	78300			67.3	66.7	65.8	64.7	61.8	58.4	54.1	49.4	44.3	39.0		
	50	P	329000	303000	277000	254000	210000	172000	140000																	



## HG semi-hermetic compressors

## Technical data

## HG

Type	Number of cylinders	Displacement		Electrical data						Weight	Connections <sup>5)</sup>				Oil charge	Frequency range	
		m <sup>3</sup> /h		Voltage <sup>1)</sup>	Max. Working current <sup>2)</sup>	Max. Power consumption <sup>2)</sup>	Starting current (rotor locked)		Discharge line DV		Suction line SV						
		50 Hz 1450 rpm	60 Hz 1740 rpm				Δ	Y	Δ		Y	mm	inch	mm			inch
HG12P/60-4 S	2	5.40	6.40	3 <sup>1)</sup>	6.8	3.9	2.2	40	23	48.0	12	1/2	16	5/8	0.8	30-70	
HG12P/75-4	2	6.70	8.10	3 <sup>1)</sup>	7.1	4.1	2.3	40	23	48.0	12	1/2	16	5/8	0.8	30-70	
HG12P/75-4 S	2	6.70	8.10	3 <sup>1)</sup>	8.0	4.6	2.6	43	25	49.0	12	1/2	16	5/8	0.8	30-70	
HG12P/90-4	2	8.00	9.60	3 <sup>1)</sup>	8.5	4.9	2.8	43	25	49.0	12	1/2	16	5/8	0.8	30-70	
HG12P/90-4 S	2	8.00	9.60	3 <sup>1)</sup>	9.1	5.3	3.0	45	26	49.0	12	1/2	16	5/8	0.8	30-70	
HG12P/110-4	2	9.40	11.30	3 <sup>1)</sup>	9.2	5.3	3.1	43	25	49.0	12	1/2	16	5/8	0.8	30-70	
HG12P/110-4 S	2	9.40	11.30	3 <sup>1)</sup>	10.6	6.1	3.6	45	26	49.0	12	1/2	16	5/8	0.8	30-70	
HG22e/125-4	2	11.10	13.30	3 <sup>1)</sup>	9.3	5.4	3.0	69	40	74.0	16	5/8	22	7/8	1.0	30-70	
HG22e/125-4 S	2	11.10	13.30	3 <sup>1)</sup>	10.8	6.2	3.6	69	40	74.0	16	5/8	22	7/8	1.0	30-70	
HG22e/160-4	2	13.70	16.40	3 <sup>1)</sup>	11.1	6.4	3.7	69	40	74.0	16	5/8	22	7/8	1.0	30-70	
HG22e/160-4 S	2	13.70	16.40	3 <sup>1)</sup>	13.1	7.6	4.4	87	50	76.0	16	5/8	22	7/8	1.0	30-70	
HG22e/190-4	2	16.50	19.80	3 <sup>1)</sup>	13.8	8.0	4.8	69	40	74.0	16	5/8	22	7/8	1.0	30-70	
HG22e/190-4 S	2	16.50	19.80	3 <sup>1)</sup>	16.2	9.4	5.6	87	50	75.0	16	5/8	22	7/8	1.0	30-70	
HG34e/215-4	4	18.80	22.60	3 <sup>1)</sup>	14.0	8.1	4.8	87	50	92.0	22	7/8	28	1 1/8	1.2	25-70	
HG34e/215-4 S	4	18.80	22.60	3 <sup>1)</sup>	18.3	10.5	6.0	132	76	97.0	22	7/8	28	1 1/8	1.2	25-70	
HG34e/255-4	4	22.10	26.60	3 <sup>1)</sup>	17.0	9.8	6.0	87	50	92.0	22	7/8	28	1 1/8	1.2	25-70	
HG34e/255-4 S	4	22.10	26.60	3 <sup>1)</sup>	21.1	12.2	7.2	132	76	96.0	22	7/8	28	1 1/8	1.2	25-70	
HG34e/315-4	4	27.30	32.80	3 <sup>1)</sup>	21.1	12.2	7.4	111	64	94.0	22	7/8	28	1 1/8	1.2	25-70	
HG34e/315-4 S	4	27.30	32.80	3 <sup>1)</sup>	25.5	14.7	8.9	132	76	97.0	22	7/8	28	1 1/8	1.2	25-70	
HG34e/380-4	4	33.10	39.70	3 <sup>1)</sup>	26.1	15.1	9.3	111	64	93.0	22	7/8	28	1 1/8	1.2	25-70	
HG34e/380-4 S	4	33.10	39.70	3 <sup>1)</sup>	31.2	18.0	11.1	132	76	96.0	22	7/8	28	1 1/8	1.2	25-70	
					PW 1+2'			PW1/PW1+2'									
HG44e/475-4	4	41.30	49.60	4 <sup>1)</sup>	19.0	11.0	8.3	109	164.0	28	1 1/8	35	1 3/8	2.3	25-70		
HG44e/475-4 S	4	41.30	49.60	4 <sup>1)</sup>	23.0	13.1	11.5	150	168.0	28	1 1/8	35	1 3/8	2.3	25-70		
HG44e/565-4	4	49.20	59.00	4 <sup>1)</sup>	22.0	13.2	8.3	109	164.0	28	1 1/8	35	1 3/8	2.3	25-70		
HG44e/565-4 S	4	49.20	59.00	4 <sup>1)</sup>	26.0	15.6	13.3	171	170.0	28	1 1/8	42	1 5/8	2.3	25-70		
HG44e/665-4	4	57.70	69.20	4 <sup>1)</sup>	26.0	15.4	11.5	150	171.0	28	1 1/8	42	1 5/8	2.3	25-70		
HG44e/665-4 S	4	57.70	69.20	4 <sup>1)</sup>	30.0	18.3	13.3	171	168.0	28	1 1/8	42	1 5/8	2.3	25-70		
HG44e/770-4	4	67.00	80.40	4 <sup>1)</sup>	30.0	17.8	13.3	171	168.0	28	1 1/8	42	1 5/8	2.3	25-70		
HG44e/770-4 S	4	67.00	80.40	4 <sup>1)</sup>	35.0	21.4	13.3	171	168.0	28	1 1/8	42	1 5/8	2.3	25-70		
HG56e/850-4	6	73.80	88.60	4 <sup>1)</sup>	32.6	19.7	13.3	171	194.3	35	1 3/8	54	2 1/8	2.7	25-70		
HG56e/850-4 S	6	73.80	88.60	4 <sup>1)</sup>	39.4	23.5	16.2	210	211.1	35	1 3/8	54	2 1/8	2.7	25-70		
HG56e/995-4	6	86.60	103.90	4 <sup>1)</sup>	38.9	23.2	16.2	210	194.3	35	1 3/8	54	2 1/8	2.7	25-70		
HG56e/995-4 S	6	86.60	103.90	4 <sup>1)</sup>	46.4	27.7	18.9	246	211.3	35	1 3/8	54	2 1/8	2.7	25-70		
HG56e/1155-4	6	100.40	120.50	4 <sup>1)</sup>	46.9	28.0	18.9	246	211.8	35	1 3/8	54	2 1/8	2.7	25-70		
HG56e/1155-4 S	6	100.40	120.50	4 <sup>1)</sup>	58.3	33.3	25.3	330	220.6	35	1 3/8	54	2 1/8	2.7	25-70		

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

1 - first part winding

2 - second part winding

## HG semi-hermetic compressors

## Technical data

## HG

Type	Number of cylinders	Displacement		Electrical data						Weight	Connections <sup>5)</sup>				Oil charge	Frequency range
		m <sup>3</sup> /h		Voltage <sup>1)</sup>	Max. Working current <sup>2)</sup>	Max. Power consumption <sup>2)</sup>	Starting current (rotor locked)		Discharge line DV		Suction line SV					
		50 Hz 1450 rpm	60 Hz 1740 rpm				Δ	Y	Δ		Y	mm	inch	mm		
HG66e/1340-4	6	116.50	139.80	4 <sup>1)</sup>	53.7	31.9	170	275	282.0	42	1 5/8	54	2 1/8	4.4	25-60	
HG66e/1340-4 S	6	116.50	139.80	4 <sup>1)</sup>	65.3	38.1	196	335	287.0	42	1 5/8	54	2 1/8	4.4	25-60	
HG66e/1540-4	6	133.80	160.50	4 <sup>1)</sup>	62.1	37.2	170	275	280.0	42	1 5/8	54	2 1/8	4.4	25-60	
HG66e/1540-4 S	6	133.80	160.50	4 <sup>1)</sup>	75.0	44.4	196	335	285.0	42	1 5/8	54	2 1/8	4.4	25-60	
HG66e/1750-4	6	152.20	182.60	4 <sup>1)</sup>	71.9	42.4	196	335	280.0	42	1 5/8	54	2 1/8	4.4	25-60	
HG66e/1750-4 S	6	152.20	182.60	4 <sup>1)</sup>	86.8	50.7	222	361	282.0	42	1 5/8	54	2 1/8	4.4	25-60	
HG66e/2070-4	6	180.00	216.00	4 <sup>1)</sup>	85.1	50.7	196	335	276.0	42	1 5/8	64	2 1/8	4.4	25-60	
HG66e/2070-4 S	6	180.00	216.00	4 <sup>1)</sup>	103.0	60.7	222	361	278.0	42	1 5/8	64	2 1/8	4.4	25-60	
HG88e/2400-4	8	209.10	250.90	4 <sup>1)</sup>	101.0	59.5	298	438	452.0	54	2 1/8	76	3 1/8	9.6	25-60	
HG88e/2400-4 S	8	209.10	250.90	4 <sup>1)</sup>	120.0	69.8	447	657	452.0	54	2 1/8	76	3 1/8	9.6	25-60	
HG88e/2735-4	8	237.90	285.50	4 <sup>1)</sup>	116.0	67.1	386	567	455.0	54	2 1/8	76	3 1/8	9.6	25-60	
HG88e/2735-4 S	8	237.90	285.50	4 <sup>1)</sup>	136.0	80.0	447	657	464.0	54	2 1/8	76	3 1/8	9.6	25-60	
HG88e/3235-4	8	281.30	337.60	4 <sup>1)</sup>	135.0	79.2	447	657	459.0	54	2 1/8	76	3 1/8	9.6	25-60	
HG88e/3235-4 S	8	281.30	337.60	4 <sup>1)</sup>	162.0	93.9	538	791	467.0	54	2 1/8	76	3 1/8	9.6	25-60	

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

1 - first part winding

2 - second part winding

## Explanations

- 1) Tolerance ( $\pm 10\%$ ) relates to the mean value of the voltage range. Other voltages and current types on request.
- 2) The specifications for max. power consumption apply for 50 Hz operation. For 60 Hz operation, the specifications have to be multiplied by the factor 1.2. The max. working current remains unchanged.
  - Take account of the max. operating current / max. power consumption when designing contactors, leads and fuses. Switches: Service category AC3

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

- HG12P, HG22e, HG34e: 50-120 W
- PTC heater, self-regulating, installation in housing bore

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

- 4) PW - Part Winding, motors for part winding start (no start unloaders required)

- Winding ratios:  
HG44e, HG56e, HG66e, HG88e = 50% / 50%
- Designs for Y/ $\Delta$  on request

- 5) For soldering connections

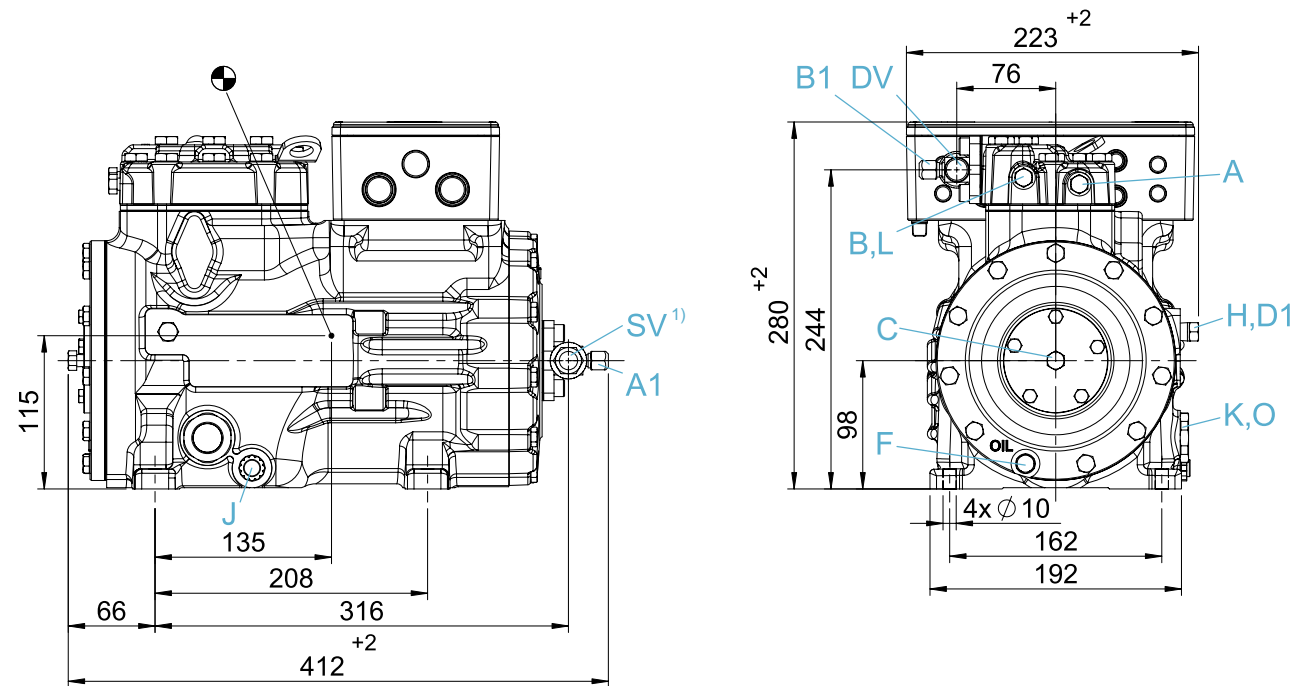
## Oil sump heater 230 V - 1 - 50 / 60 Hz (option)

- HG44e, HG56e, HG66e: 160 W, installation in housing bore
- HG88e: 200 W, installation in immersion sleeve
- Permanently set version

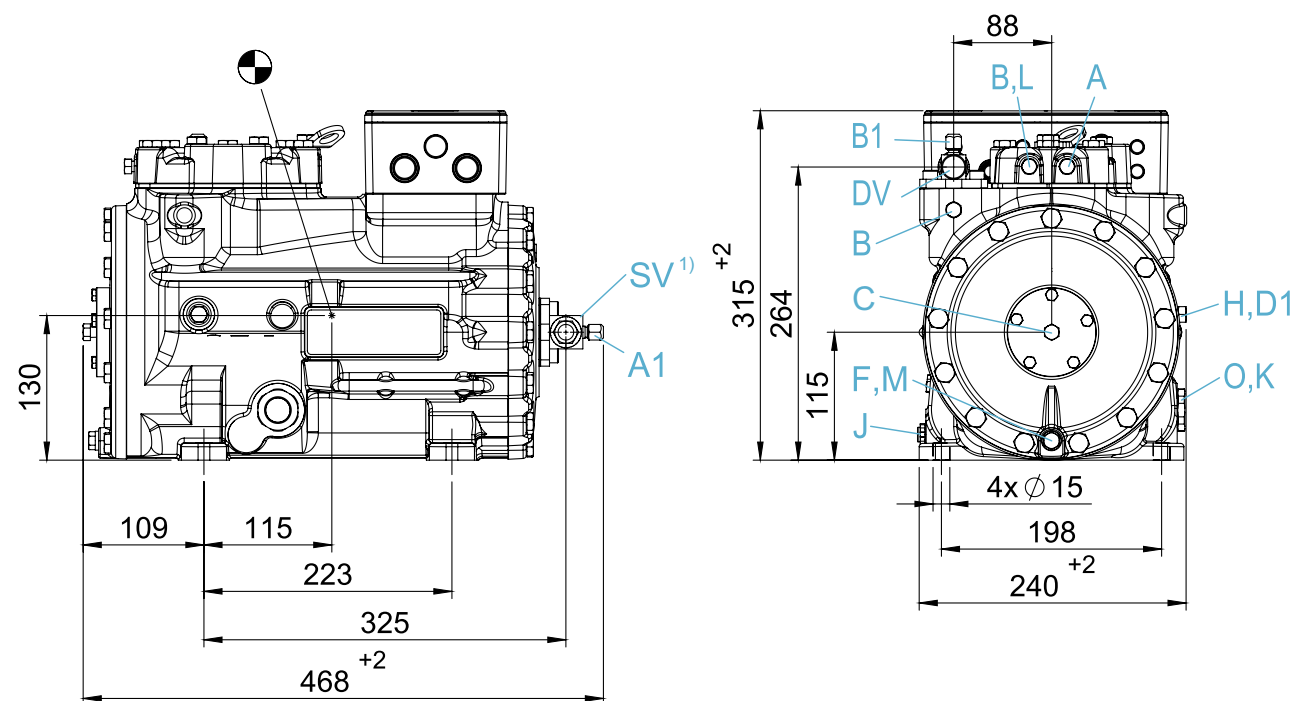
# HG semi-hermetic compressors

## 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



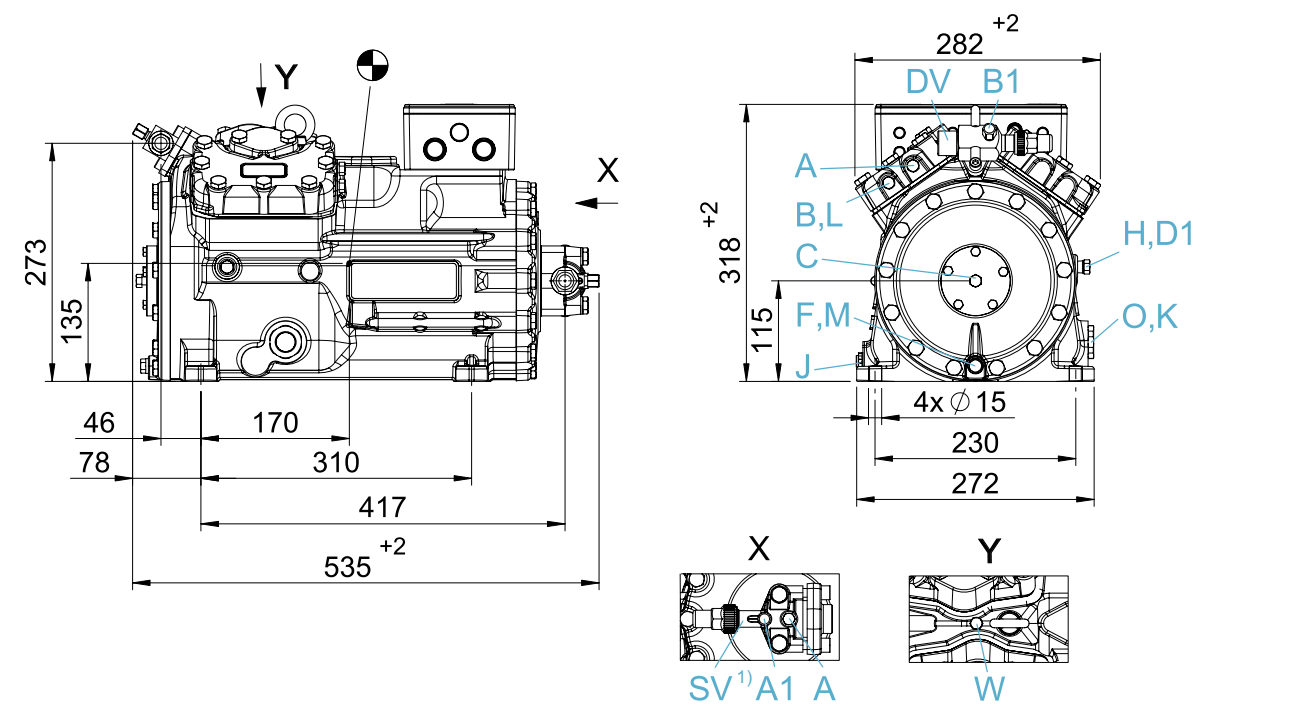
Dimensions in mm  
 ☉ Center of gravity  
<sup>1</sup> SV 90° rotatable

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

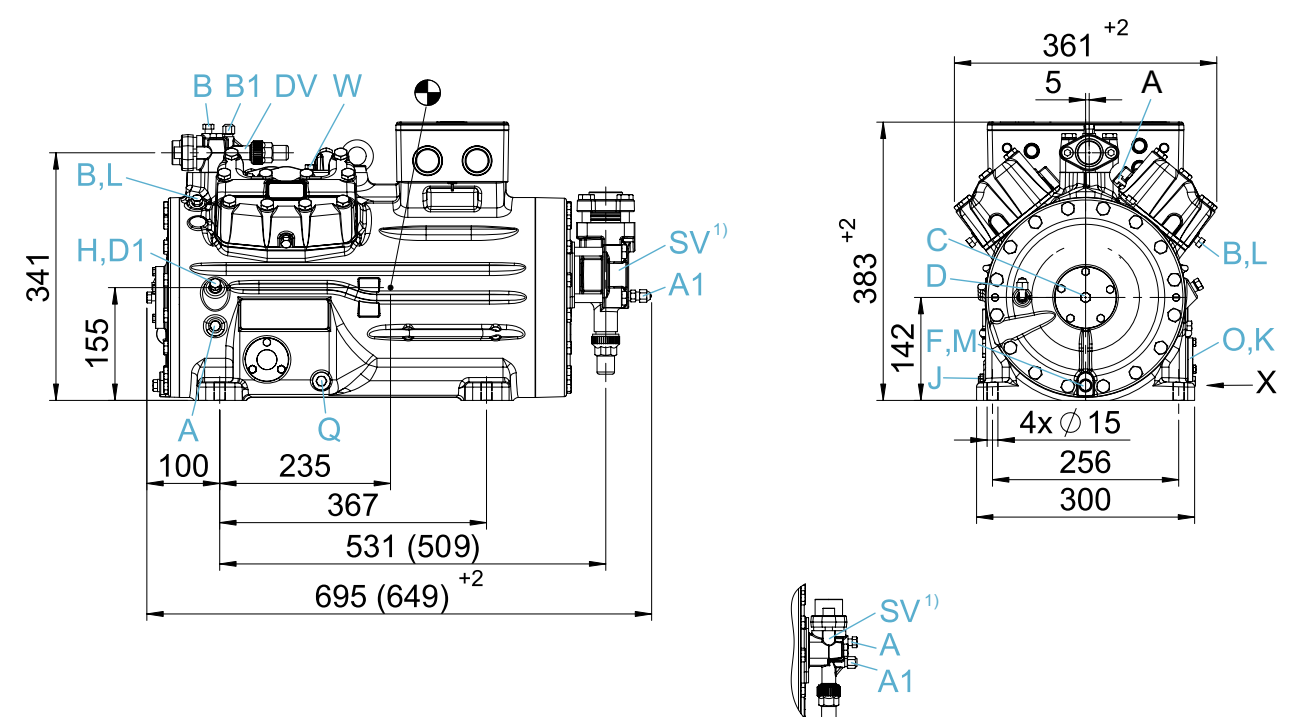
# HG semi-hermetic compressors

## Dimensions and connections

**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



**HG44e** » HG44e/475-4 » HG44e/475-4 S » HG44e/565-4 » HG44e/565-4 S  
 HG44e/665-4 » HG44e/665-4 S



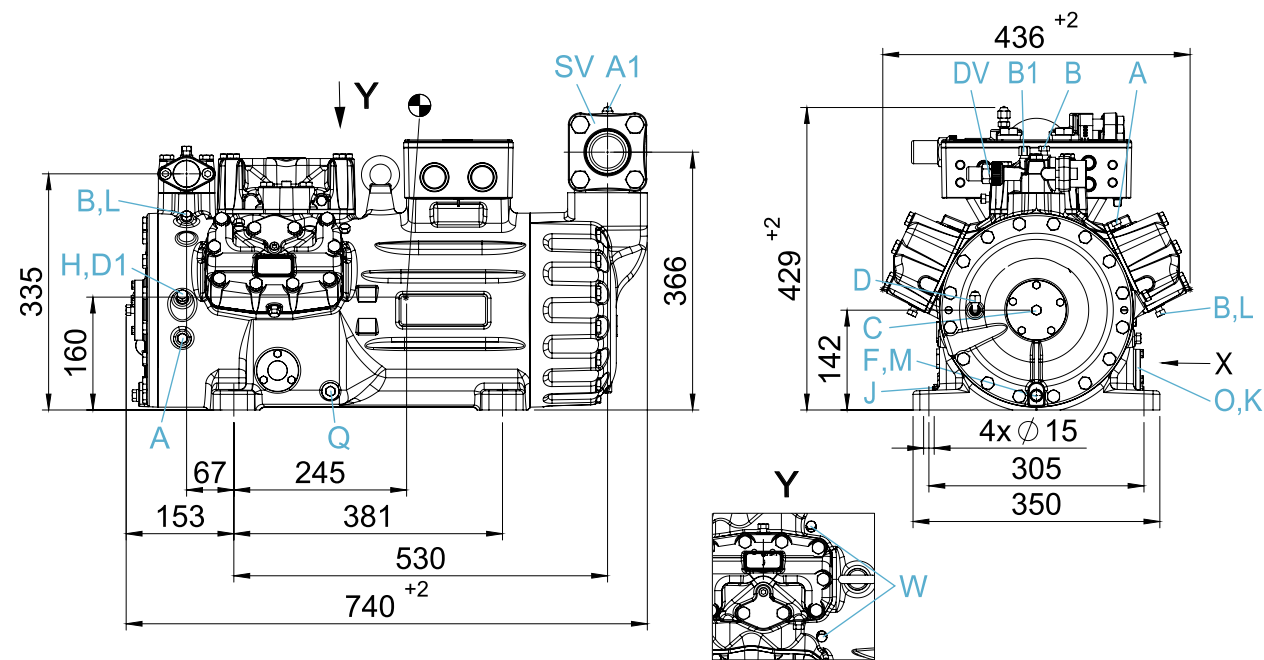
Dimensions in mm  
 ☉ Center of gravity  
<sup>1</sup> SV 90° rotatable

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

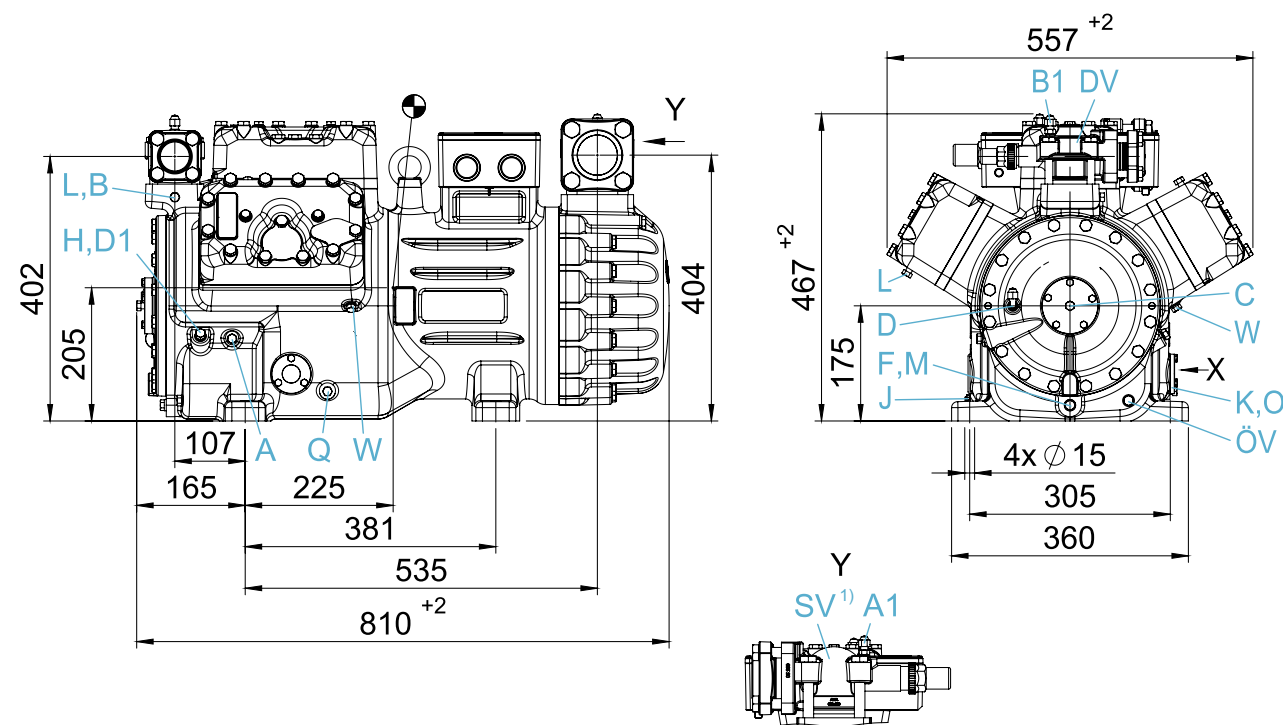
# HG semi-hermetic compressors

## Dimensions and connections

**HG56e** » HG56e/850-4 » HG56e/850-4 S » HG56e/995-4  
HG56e/995-4 S » HG56e/1155-4 » HG56e/1155-4 S



**HG66e** » HG66e/1340-4 » HG66e/1340-4 S » HG66e/1540-4 » HG66e/1540-4 S  
HG66e/1750-4 » HG66e/1750-4 S » HG66e/2070-4 » HG66e/2070-4 S



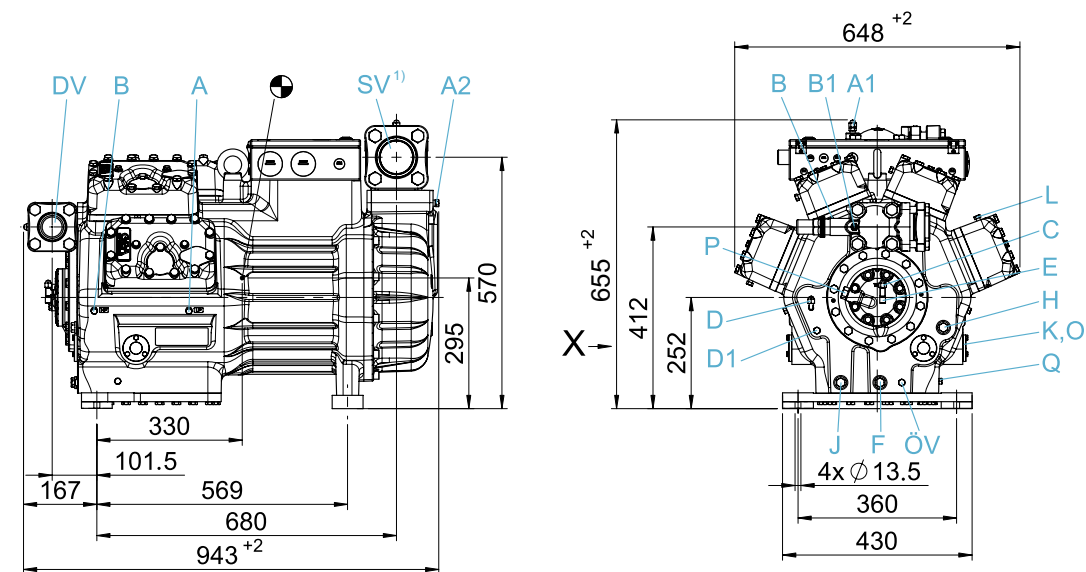
Dimensions in mm  
● Center of gravity  
<sup>1)</sup> SV 180° rotatable

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

# HG semi-hermetic compressors

## Dimensions and connections

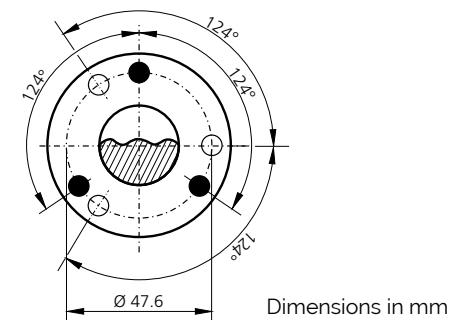
**HG88e** » HG88e/2400-4 » HG88e/2400-4 S » HG88e/2735-4  
HG88e/2735-4 S » HG88e/3235-4 » HG88e/3235-4 S



Dimensions in mm  
● Center of gravity  
<sup>1)</sup> SV 180° rotatable

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

### View X



Possibility to connect to oil level regulator

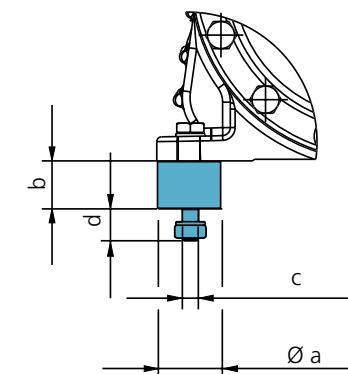
HG44e, HG56e, HG66e, HG88e

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

### Dimensions for anti-vibration pad

Type	Ø a	b	c	d
HG12P	30	30	M8	20
HG22e	40	30	M10	20
HG34e	40	30	M10	20
HG44e	50	30	M12	25
HG56e	50	30	M12	25
HG66e	50	30	M12	25
HG88e	70	45	M12	37

Dimensions in mm



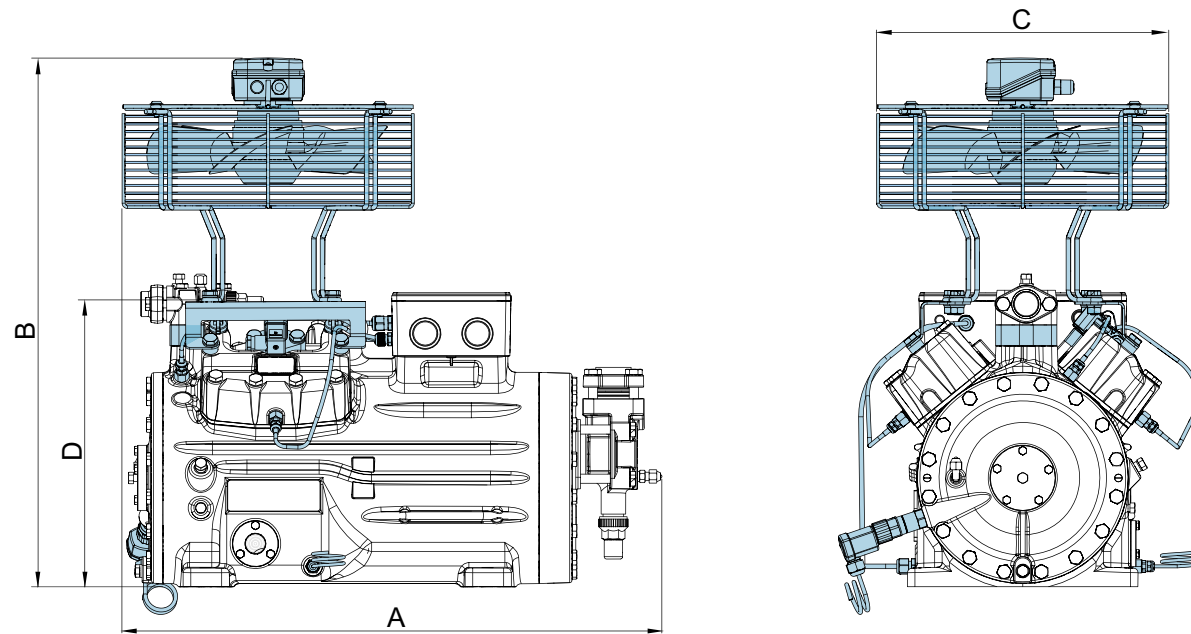


# HG semi-hermetic compressors

## Dimensions and connections

HG12P HG22e HG34e HG44e HG56e

Dimensions with accessories



Type	A	B	C	D
HG12P	ca. 460	ca. 500	ca. 315	-
HG22e	ca. 525	ca. 610	ca. 380	-
HG34e	ca. 580	ca. 640	ca. 380	-
HG44e	ca. 710	ca. 685	ca. 380	368
HG56e	-	ca. 710	ca. 380	-

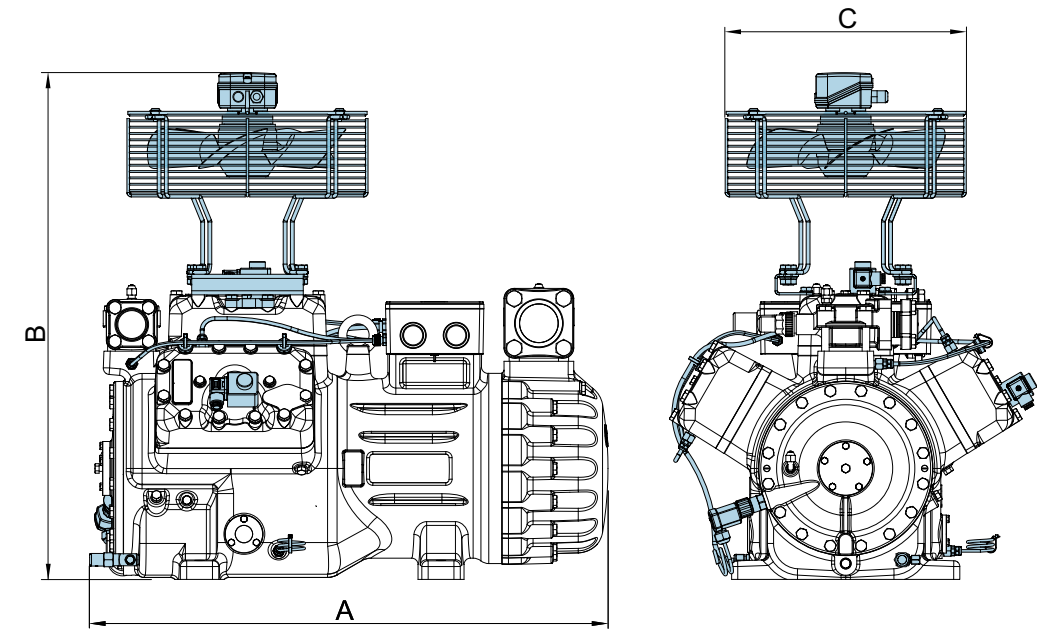
Dimensions in mm

# HG semi-hermetic compressors

## Dimensions and connections

HG66e

Dimensions with accessories

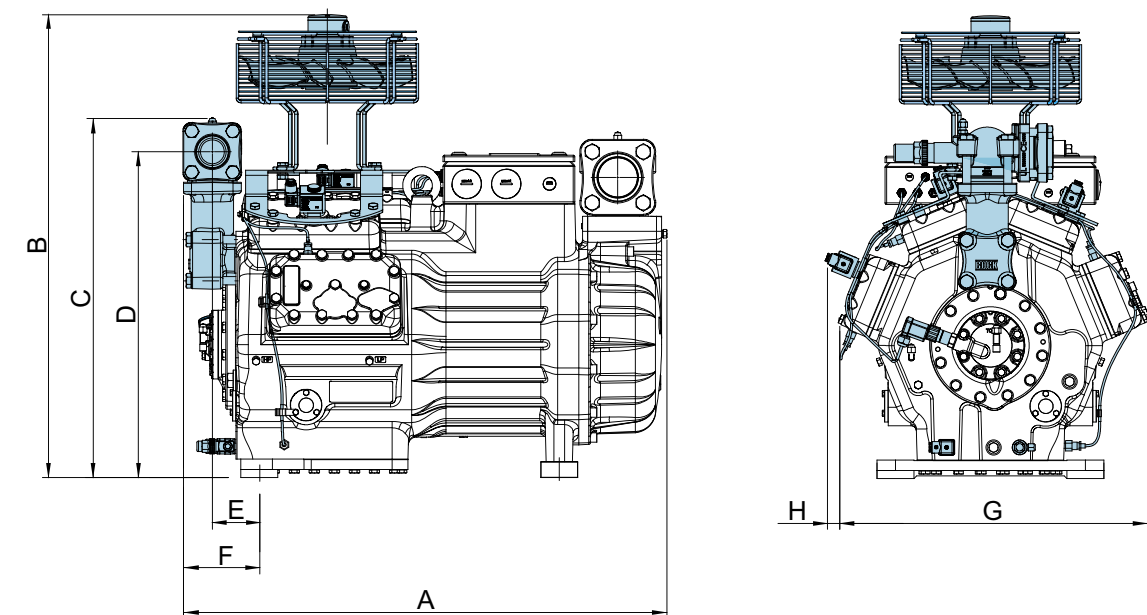


Type	A	B	C
HG66e	ca. 820	ca. 800	ca. 380

Dimensions in mm

HG88e

Dimensions with accessories



Type	A	B	C	D	E	F	G	H
HG88e	ca. 920	ca. 880	ca. 680	617	90	145	ca. 610	ca. 20

Dimensions in mm

# HG semi-hermetic compressors

## Dimensions and connections

Connections		HG12P	HG22e	HG34e	HG44e	HG56e	HG66e	HG88e
SV	Suction line	Please refer to technical data page 56						
DV	Discharge line	Please refer to technical data page 56						
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
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
A2	Connection suction side, not lockable	-	-	-	-	-	-	1/4" NPTF
B	Connection discharge side, not lockable	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF
B1	Connection discharge side, lockable	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 HP	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	7/16" UNF
D	Connection oil pressure safety switch LP	-	-	-	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
F	Oil drain plug	M8	M12 x 1.5	M12 x 1.5	M12 x 1.5	M12 x 1.5	M12 x 1.5	M22 x 1.5
H	Oil charge plug	1/4" NPTF	1/4" NPTF	1/4" NPTF	1/4" NPTF	1/4" NPTF	1/4" NPTF	M22 x 1.5
J	Connection oil sump heater	3/8" NPTF	3/8" NPTF	3/8" NPTF	3/8" NPTF	3/8" NPTF	3/8" NPTF	M22 x 1.5
K	Sight glass	1 1/8" - 18 UNEF	1 1/8" - 18 UNEF	1 1/8" - 18 UNEF	3 hole M6	3 hole M6	3 hole M6	3 hole M6
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
M	Oil strainer	-	M12 x 1.5	M12 x 1.5	M12 x 1.5	M12 x 1.5	M12 x 1.5	M22 x 1.5
O	Connection oil level regulator	1 1/8" - 18 UNEF	1 1/8" - 18 UNEF	1 1/8" - 18 UNEF	∅	∅	∅	∅
ÖV	Connection oil service valve	-	-	-	-	-	1/4" NPTF	1/4" NPTF
P	Connection oil pressure differential sensor	-	-	-	-	-	-	M20 x 1.5
Q	Connection oil temperature sensor	-	-	-	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF
W	Connection for refrigerant injection	-	-	1/8" NPTF	1/8" NPTF	2 1/8" NPTF	2 1/8" NPTF	-

<sup>1)</sup> Dimensions see view X page 61

# HG semi-hermetic compressors

## Scope of supply and accessories

	HG12P	HG22e	HG34e	HG44e	HG56e	HG66e	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	●	●	-	-	-	-	-
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	-	-	●	-	-	-	-
Semi-hermetic four-cylinder reciprocating compressor with drive motor for part winding start (50/50) 380-420 V Y/YY - 3 - 50 Hz 440-480 V Y/YY - 3 - 60 Hz	-	-	-	●	-	-	-
L Semi-hermetic six-cylinder reciprocating compressor with drive motor for part winding start (50/50) 380-420 V Y/YY - 3 - 50 Hz 440-480 V Y/YY - 3 - 60 Hz	-	-	-	-	●	●	-
Semi-hermetic eight-cylinder reciprocating compressor with drive motor for part winding start (50/50) 380-420 V Y/YY - 3 - 50 Hz 440-480 V Y/YY - 3 - 60 Hz	-	-	-	-	-	-	●
Special voltage and/or frequency	○ <sup>3)</sup>	○ <sup>3)</sup>	○ <sup>3)</sup>	○ <sup>3)</sup>	○ <sup>3)</sup>	○ <sup>3)</sup>	○ <sup>3)</sup>
Winding protection with PTC resistor sensors with electronic triggering unit INT69 G (230 V)	●	●	●	●	●	●	●
<sup>1)</sup> Thermal protection PTC	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>
Oil pump	●	●	●	●	●	●	●
Oil charge: FUCHS Reniso SP46, HGX: FUCHS Rensio Triton SE55	●	●	●	●	●	●	●
Inert gas charge	●	●	●	●	●	●	●
4 anti-vibration pads	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>
Internal safety valve	-	-	-	●	●	●	●
Suction and discharge line valve	●	●	●	●	●	●	●
Sight glasses	One ●	One ●	One ●	One ●	One ●	One ●	One ●
Three ●	-	-	-	-	-	-	●
<sup>2)</sup> Oil sump heater	110-240 V - 1 - 50/60 Hz, 50-120 W, PTC heater, self-regulating ○ <sup>2)</sup>	110-240 V - 1 - 50/60 Hz, 50-120 W, PTC heater, self-regulating ○ <sup>2)</sup>	110-240 V - 1 - 50/60 Hz, 50-120 W, PTC heater, self-regulating ○ <sup>2)</sup>	-	-	-	-
220-240 V - 1 - 50/60 Hz, 160 W -	-	-	-	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	-
220-240 V - 1 - 50/60 Hz, 200 W -	-	-	-	-	-	-	○ <sup>2)</sup>
Rear bearing flange prepared for oil differential pressure sensor	-	-	-	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>
<sup>3)</sup> Oil differential pressure sensor DELTA-P II 220-240 V - 1 - 50/60 Hz	-	-	-	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>
<sup>4)</sup> Oil pressure safety switch	230 V - 1 - 50/60 Hz, IP20 MP54 -	230 V - 1 - 50/60 Hz, IP20 MP54 -	230 V - 1 - 50/60 Hz, IP20 MP54 -	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>
230 V - 1 - 50/60 Hz, IP20 MP55 ○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	-	-	-	-
<sup>5)</sup> Oil service valve	-	-	-	-	-	○ <sup>2)</sup>	○ <sup>2)</sup>
<sup>6)</sup> Capacity regulator	1 capacity regulator - 50% residual capacity -	1 capacity regulator - 50% residual capacity -	1 capacity regulator - 50% residual capacity ○ <sup>2)</sup>	1 capacity regulator - 50% residual capacity ○ <sup>2)</sup>	-	-	-
1-2 capacity regulators - 66/33% residual capacity -	-	-	-	-	○ <sup>2)</sup>	○ <sup>2)</sup>	-
1-3 capacity regulators - 75/50/25% residual capacity -	-	-	-	-	-	-	○ <sup>2)</sup>

<sup>1)</sup> Enclosed <sup>2)</sup> Mounted <sup>3)</sup> On request  
<sup>4)</sup> Only possible with additional adapter

● Scope of supply (standard)  
○ Available accessories



# HG semi-hermetic compressors

## Scope of supply and accessories

		HG12P	HG22e	HG34e	HG44e	HG56e	HG66e	HG88e
7 Prepared for capacity regulator	1 cylinder cover	-	-	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>
	2 cylinder covers	-	-	-	-	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>
	3 cylinder covers	-	-	-	-	-	-	○ <sup>2)</sup>
8 Oil temperature sensor	-	-	-	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>
9 Start unloader by means of ESS (Electronic Soft Start) 400 V - 3 - 50 / 60 Hz, IP20, (connection clamps IP00) for installation in switch cabinet		-	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	-
10 Connection piece suction and discharge valve in welded construction Additional fan		-	-	-	○ <sup>3)</sup>	○ <sup>3)</sup>	○ <sup>3)</sup>	○ <sup>3)</sup>
11 230 V - 1 - 50 Hz, 97 W, IP44, 230 V - 1 - 60 Hz, 128 W, Voltage range ± 10%		○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>
12 Intermediate flange for discharge line valve on right or left, seen from oil pump		-	-	-	○ <sup>1)</sup>	-	-	-
13 INT69 G Diagnose 115 / 230 V Ac, 50 / 60 Hz, IP00 (INT69 G not applicable)		-	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	-
14 INT69 GTML Diagnose 115 / 230 V Ac, 50 / 60 Hz, IP00, incl. oil differential pressure sensor INT250, thermal protection thermostat (PTC) per cylinder cover (INT69 G not applicable)		-	-	-	-	-	-	○ <sup>2)</sup>
15 DP-modbus gateway 115 / 230 V Ac, 50 / 60 Hz, IP00 incl. adapter cable		-	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>
16 Modbus-LAN gateway 230 V Ac, 50 / 60 Hz, IP00		-	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>
17 USB converter for INT69 G Diagnose and INT69 GTML Diagnose		-	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>
Connection for oil level regulator of brands ESK, AC+ R or CARLY		● <sup>4)</sup>	● <sup>4)</sup>	● <sup>4)</sup>	●	●	●	●
Connection for oil level regulator of brand Traxoil		● <sup>4)</sup>	● <sup>4)</sup>	● <sup>4)</sup>	● <sup>4)</sup>	● <sup>4)</sup>	● <sup>4)</sup>	● <sup>4)</sup>

<sup>1)</sup> Enclosed <sup>2)</sup> Mounted <sup>3)</sup> On request  
<sup>4)</sup> Only possible with additional adapter

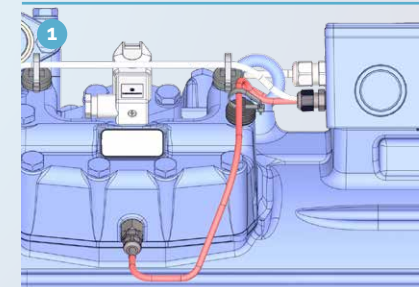
● Scope of supply (standard)  
○ Available accessories



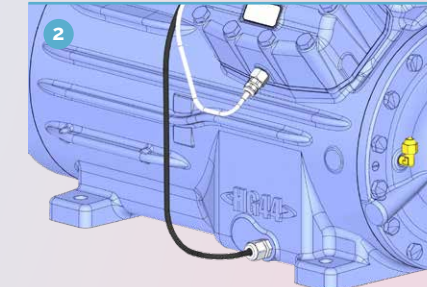
# HG semi-hermetic compressors

## Accessories

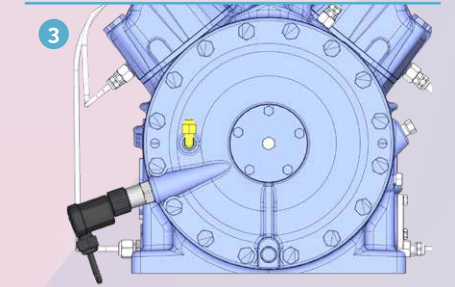
Thermal protection thermostat



Oil sump heater



Oil differential pressure sensor



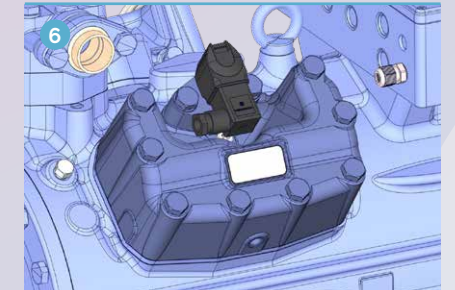
Oil pressure safety switch



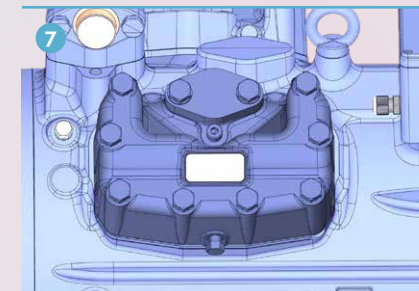
Oil service valve



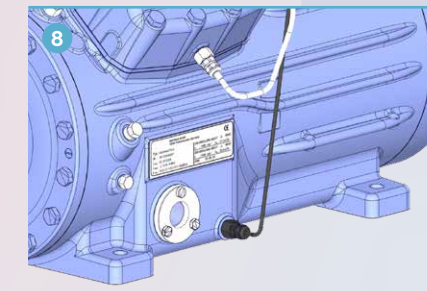
Capacity regulator



Prepared for capacity regulator



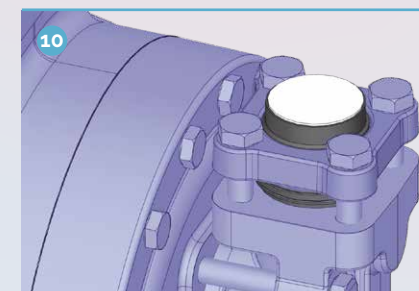
Oil temperature sensor



ESS Electronic Soft Start



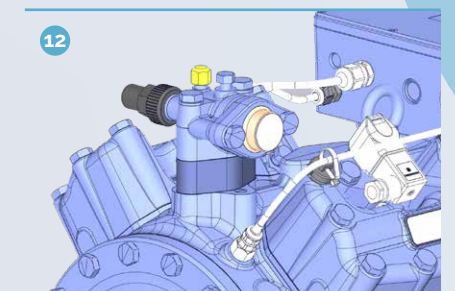
Connection piece in welded construction



Additional fan



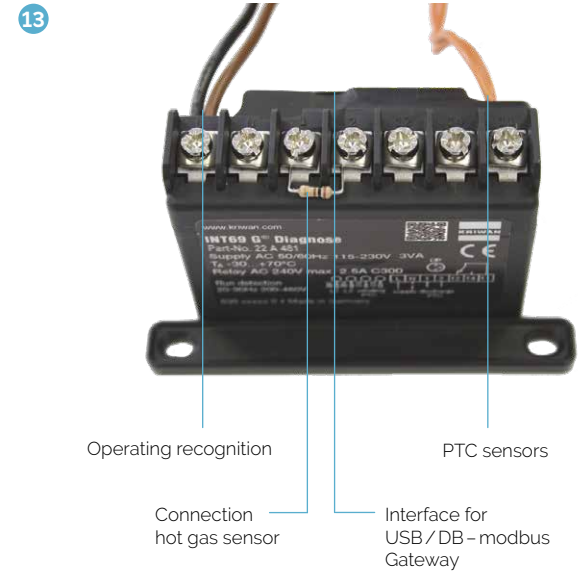
Intermediate flange for discharge line valve



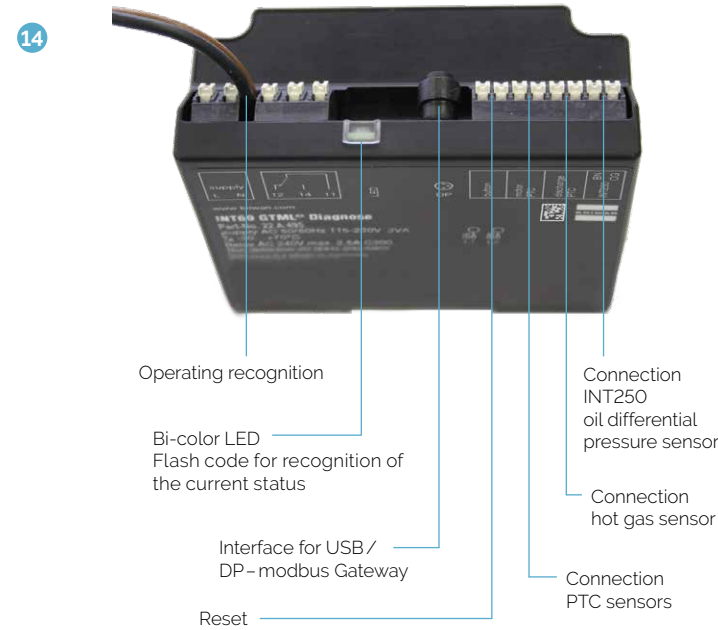


# HG semi-hermetic compressors Accessories

## INT69 G Diagnose



## INT69 GTML Diagnose



## DP-modbus Gateway



## Modbus-LAN Gateway



## USB converter



# INT69 G Motor Protection

### Technical Data

Unit designation	INT69 G (Standard)	INT69 G Diagnose	INT69 GTML Diagnose
Connection voltage	AC 115-230 V - 1- 50/60 Hz ± 10% 3 VA	AC 115-230 V - 1- 50/60 Hz ± 10% 3 VA	AC 115-230 V - 1- 50/60 Hz ± 10% 3 VA
Relay	AC 240 V, 2.5 A, C300	AC 240 V, 2.5 A, C300	AC 240 V, 2.5 A, C300
Dimensions L/W/H	53 x 33 x 68 mm	50 x 33 x 68 mm	87 x 40 x 81.5 mm

# HG semi-hermetic compressors Accessories

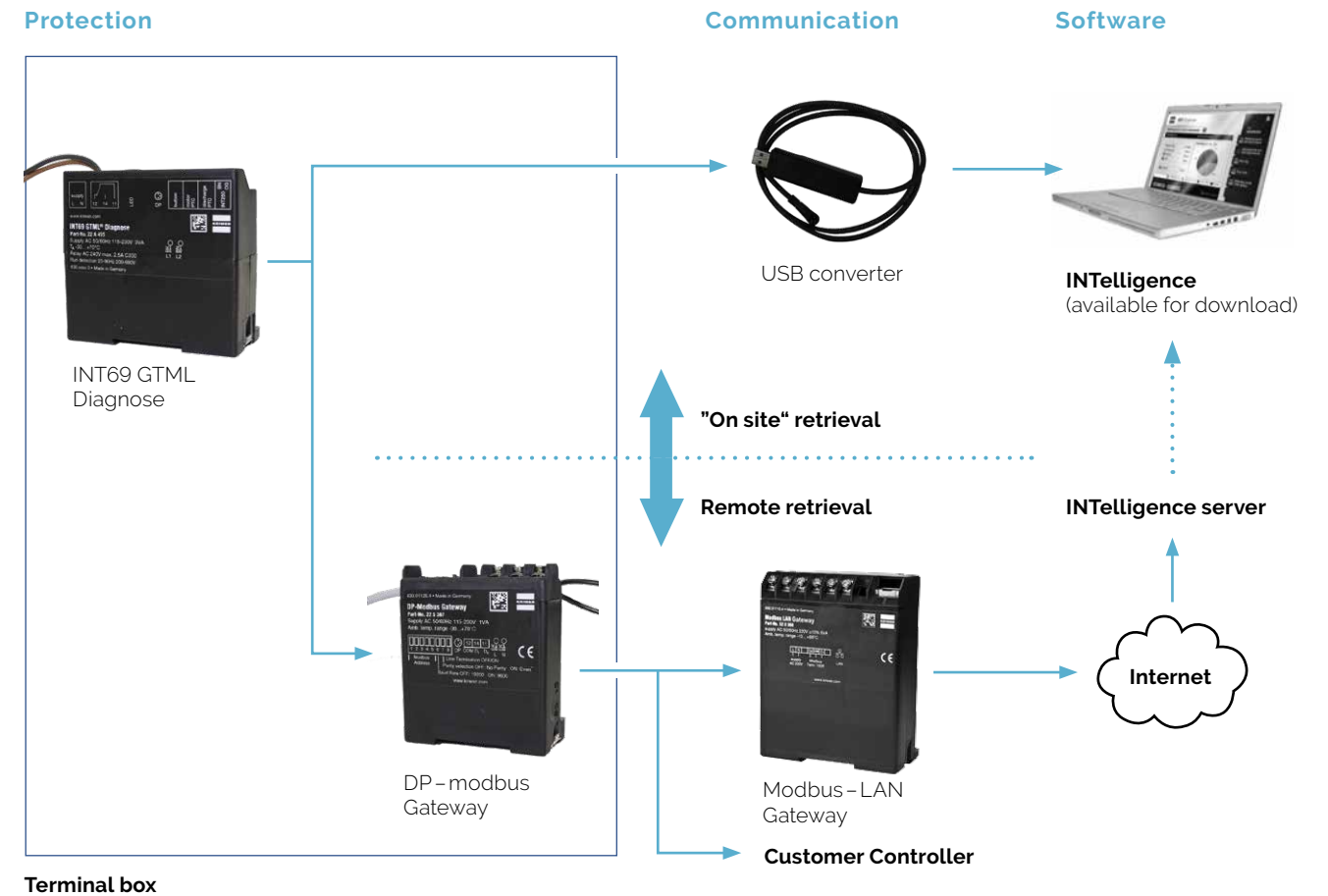
## INT69 G Diagnose Unit Motor Protection

**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 it provides 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 into a network. The data is 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](http://www.kriwan.com).



# Bock HA semi-hermetic compressors

Bock HA22e – HA44e

- 72 At a glance
- 76 Operating limits and performance data
- 88 Technical data
- 89 Dimensions and connections
- 94 Scope of supply & accessories

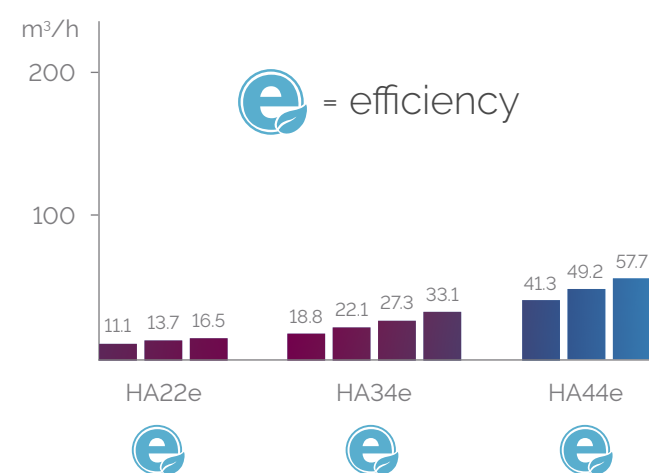


# Bock HA semi-hermetic compressors

The "HA principle" of air-cooled compressors, specially developed by BOCK, is the most efficient semi-hermetic solution for low-temperature applications. It employs a direct-suction compressor combined with an air-cooled drive motor.

## The current program

3 model sizes with 10 capacity stages from 11.1 to 57.7 m<sup>3</sup>/h (50 Hz)



## HA semi-hermetic compressors At a glance

Low-temperature applications place greater demands on compressors. This applies particularly to suction-gas-cooled semi-hermetic compressors. Within low-temperature applications the refrigerant mass flow is smaller and is heated up disproportionately by the drive motor. This has the following effects on the operation of the compressor.

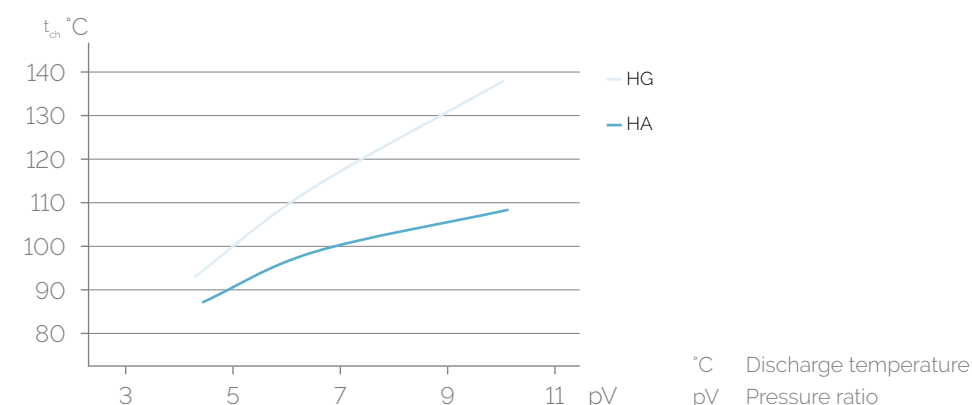
- The volumetric efficiency is reduced due to the decreasing specific density
- The discharge temperature and oil temperature are higher. This means that the oil ages more quickly and the lubrication properties deteriorate

This particularly affects refrigerants with a high isentropic exponent, such as the new HFO/HFC blends with lower GWP, which are envisaged as transitional R404A replacement refrigerants.

For these refrigerants in low-temperature applications with suction-gas-cooled semi-hermetic compressors it is important that special technical measures are envisaged for reduction of the discharge temperature!

The suction gas in BOCK air-cooled HA compressors is not heated additionally, but rather fed directly into the cylinders without diversions via the motor. A compact ventilation unit is integrated to cool the motor and provide air flow for the cylinder heads, partially cooling them as well. This solution reduces the discharge temperature, increasing capacity and extending the range of applications.

### HA vs. HG R449A discharge temperature



### Type key

**HAX44e / 465-4**

- Number of poles
- Swept volume
- Series <sup>3)</sup>
- Number of cylinders
- Size
- Ester oil filling <sup>2)</sup>
- Series <sup>1)</sup>

<sup>1)</sup> HA = Hermetic Air-Cooled (low temperature application)

<sup>2)</sup> X = Ester oil filling  
(HFC refrigerants e.g. R134a, R404A, R507, R407C)

<sup>3)</sup> e = Additional marker for e-series compressors

P = Additional marker for Pluscom compressors



# HA semi-hermetic compressors

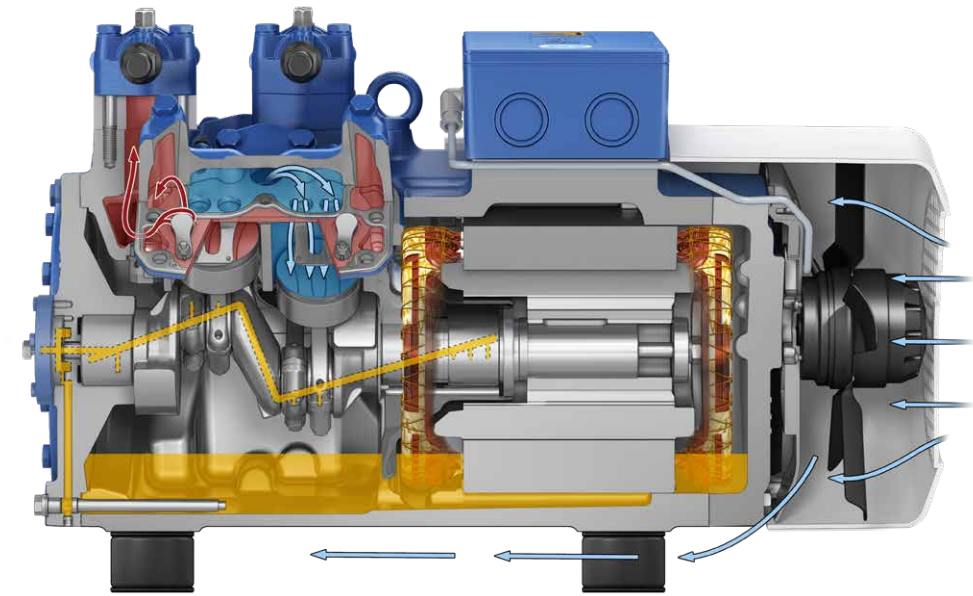
## Overview



# HA semi-hermetic compressors

## Overview

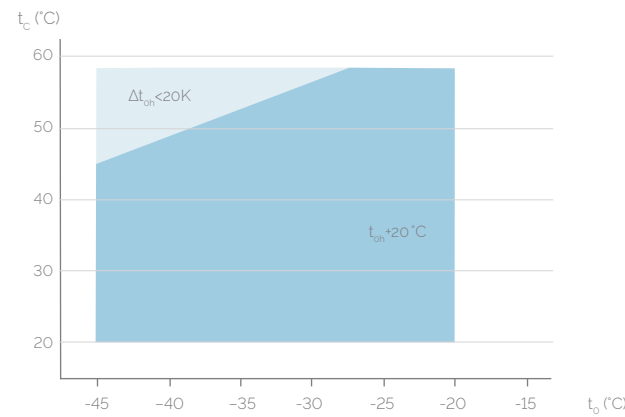
HA44e sectional drawing



# HA semi-hermetic compressors

## Operating limits

### R404A/R507



$t_o$  Evaporating temperature (°C)  
 $t_c$  Condensing temperature (°C)  
 $\Delta t_{oh}$  Suction gas superheat (K)  
 $t_{oh}$  Suction gas temperature (°C)

- Unlimited application range
- Reduced suction gas temperature

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

### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter. For further explanations consult [www.bock.de](http://www.bock.de).

#### Performance data

The performance data for R404A/R507 are based on European Standard EN 12900 with a 50 Hz power supply frequency. This signifies: 20 °C suction gas temperature without liquid subcooling.

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

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

Conversion factor for 60 Hz = 1.2  
 Performance data for other operating points, see BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

# HA semi-hermetic compressors

## Performance data

### R404A/R507 | 50 Hz

Type	Cond. temp. °C		Cooling capacity $Q_o$ [kW]						Power consumption $P_e$ [kW]	
			Evaporating temperature °C							
			-20	-25	-30	-35	-40	-45		
HA22e/125-4	30	Q	4730	3800	2990	2300	1720	1250		
		P	191	171	151	131	113	094		
	40	Q	3960	3160	2470	1880	1390	978		
	P	2.09	184	160	137	114	092			
	50	Q	3220	2540	1960	1460	1040	690		
	P	2.21	192	164	136	109	083			
HA22e/160-4	30	Q	5840	4690	3690	2830	2120	1540		
		P	2.36	2.11	1.86	1.62	1.39	1.16		
	40	Q	4890	3900	3050	2320	1710	1210		
	P	2.58	2.27	1.97	1.69	1.41	1.13			
	50	Q	3970	3140	2420	1800	1290	851		
	P	2.73	2.37	2.02	1.68	1.35	1.03			
HA22e/190-4	30	Q	7070	5670	4460	3430	2570	1870		
		P	2.86	2.55	2.25	1.96	1.68	1.41		
	40	Q	5920	4720	3690	2810	2070	1460		
	P	3.12	2.75	2.39	2.04	1.70	1.37			
	50	Q	4800	3800	2930	2180	1550	1030		
	P	3.31	2.87	2.45	2.04	1.64	1.24			
HA34e/215-4	30	Q	8050	6450	5080	3900	2920	2130		
		P	3.26	2.90	2.57	2.24	1.92	1.60		
	40	Q	6740	5380	4200	3200	2350	1670		
	P	3.55	3.13	2.72	2.33	1.94	1.56			
	50	Q	5470	4320	3330	2480	1770	1180		
	P	3.77	3.27	2.79	2.32	1.86	1.41			
HA34e/255-4	30	Q	9460	7590	5970	4590	3440	2500		
		P	3.83	3.42	3.02	2.63	2.26	1.88		
	40	Q	7920	6320	4940	3760	2770	1960		
	P	4.18	3.68	3.20	2.74	2.28	1.84			
	50	Q	6430	5080	3920	2920	2080	1380		
	P	4.43	3.84	3.28	2.73	2.19	1.66			
HA34e/315-4	30	Q	11700	9370	7370	5660	4240	3080		
		P	4.73	4.22	3.73	3.25	2.79	2.33		
	40	Q	9780	7800	6090	4640	3420	2420		
	P	5.16	4.54	3.95	3.38	2.82	2.27			
	50	Q	7930	6270	4830	3600	2570	1710		
	P	5.47	4.75	4.05	3.37	2.71	2.06			
HA34e/380-4	30	Q	14200	11400	8910	6850	5130	3730		
		P	5.50	4.96	4.39	3.81	3.22	2.65		
	40	Q	11900	9440	7370	5610	4130	2920		
	P	5.95	5.28	4.58	3.86	3.16	2.74			
	50	Q	9600	7590	5850	4360	3100	2060		
	P	6.25	5.43	4.59	3.74	3.28	2.07			
HA44e/475-4	30	Q	18700	15100	11900	9100	6800	4890		
		P	6.64	6.01	5.35	4.66	3.95	3.24		
	40	Q	15700	12600	9760	7430	5450	3810		
	P	7.13	6.32	5.47	4.62	3.76	2.91			
	50	Q	12900	10200	7830	5880	4230	2850		
	P	7.44	6.43	5.41	4.39	3.38	2.40			
HA44e/565-4	30	Q	21900	17600	13900	10800	8040	5800		
		P	8.08	7.36	6.58	5.77	4.93	4.09		
	40	Q	18400	14700	11500	8770	6470	4530		
	P	8.73	7.79	6.82	5.83	4.83	3.84			
	50	Q	15100	11900	9230	6950	5020	3400		
	P	9.17	8.02	6.85	5.68	4.52	3.39			
HA44e/665-4	30	Q	25000	20200	16000	12400	9310	6750		
		P	9.33	8.43	7.49	6.52	5.53	4.55		
	40	Q	21100	16900	13300	10200	7480	5270		
	P	10.10	8.97	7.79	6.60	5.42	4.27			
	50	Q	17200	13700	10600	8010	5810	3960		
	P	10.70	9.29	7.87	6.47	5.10	3.78			

Relating to 20 °C suction gas temperature without liquid subcooling

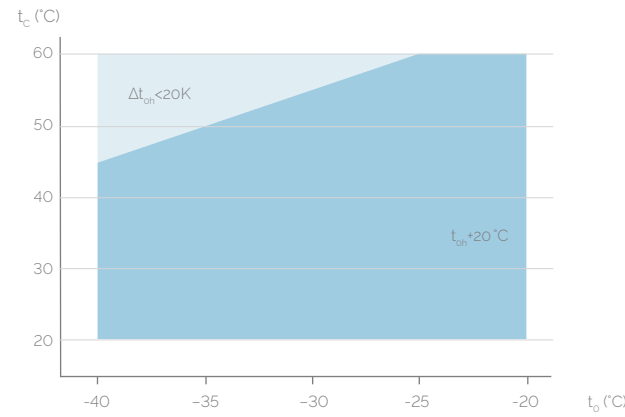
Reduced suction gas temperature



# HA semi-hermetic compressors

## Operating limits

### R448A



$t_0$  Evaporating temperature (°C)  
 $t_c$  Condensing temperature (°C)  
 $\Delta t_{0h}$  Suction gas superheat (K)  
 $t_{0h}$  Suction gas temperature (°C)

- Unlimited application range
- Reduced suction gas temperature

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

### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter. For further explanations consult [www.bock.de](http://www.bock.de).

#### Performance data

The performance data for R448A are based on European Standard 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 BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

# HA semi-hermetic compressors

## Performance data

### R448A | 50 Hz

Type	Cooling capacity $Q_0$ [kW]		Power consumption $P_e$ [kW]				
			Evaporating temperature °C				
			-20	-25	-30	-35	-40
HA22e/125-4	30	Q	4190	3250	2450	1780	1230
		P	170	153	136	118	100
	40	Q	3530	2700	2000	1410	915
		P	181	159	138	116	0.96
	50	Q	2910	2190	1570	1060	631
		P	187	162	136	112	0.88
HA22e/160-4	30	Q	5220	4030	3020	2170	1470
		P	2.03	1.83	1.62	1.39	1.17
	40	Q	4420	3350	2450	1700	1070
		P	2.17	1.90	1.64	1.37	1.10
	50	Q	3640	2700	1910	1250	691
		P	2.25	1.93	1.61	1.30	1.00
HA22e/190-4	30	Q	6310	4940	3780	2810	2010
		P	2.48	2.23	1.97	1.71	1.45
	40	Q	5440	4210	3170	2300	1570
		P	2.67	2.35	2.03	1.71	1.40
	50	Q	4570	3470	2550	1780	1140
		P	2.80	2.41	2.03	1.66	1.30
HA34e/215-4	30	Q	6790	5230	3920	2810	1900
		P	2.59	2.32	2.03	1.74	1.44
	40	Q	5690	4300	3120	2130	1310
		P	2.78	2.41	2.04	1.67	1.31
	50	Q	4600	3370	2330	1460	731
		P	2.87	2.41	1.96	1.52	1.10
HA34e/255-4	30	Q	8250	6410	4850	3540	2460
		P	3.16	2.81	2.45	2.08	1.72
	40	Q	6980	5340	3960	2800	1840
		P	3.39	2.94	2.49	2.05	1.62
	50	Q	5740	4310	3100	2090	1240
		P	3.54	2.99	2.46	1.94	1.45
HA34e/315-4	30	Q	10400	8020	6020	4370	3010
		P	3.86	3.44	3.00	2.55	2.12
	40	Q	8790	6670	4890	3410	2220
		P	4.16	3.60	3.05	2.51	1.99
	50	Q	7190	5320	3770	2490	1460
		P	4.34	3.66	3.00	2.36	1.77
HA34e/380-4	30	Q	12700	9820	7430	5430	3780
		P	4.76	4.23	3.69	3.14	2.60
	40	Q	10800	8220	6070	4260	2770
		P	5.17	4.50	3.82	3.15	2.50
	50	Q	8860	6600	4690	3090	1760
		P	5.44	4.62	3.80	3.01	2.26
HA44e/475-4	30	Q	16300	12600	9480	6890	4750
		P	5.79	5.18	4.54	3.87	3.21
	40	Q	13900	10600	7750	5420	3490
		P	6.21	5.41	4.60	3.78	2.98
	50	Q	11500	8500	6040	3970	2250
		P	6.47	5.48	4.49	3.52	2.58
HA44e/565-4	30	Q	20200	15700	11900	8740	6130
		P	7.06	6.33	5.57	4.78	3.99
	40	Q	17400	13400	9920	7070	4710
		P	7.63	6.70	5.74	4.78	3.84
	50	Q	14600	11000	7950	5420	3310
		P	8.02	6.88	5.74	4.61	3.53
HA44e/665-4	30	Q	22800	17800	13600	9960	7030
		P	8.06	7.19	6.27	5.34	4.42
	40	Q	19700	15100	11300	8100	5450
		P	8.76	7.63	6.49	5.36	4.26
	50	Q	16500	12500	9090	6270	3910
		P	9.27	7.88	6.52	5.19	3.93

Relating to 20 °C suction gas temperature without liquid subcooling

Reduced suction gas temperature



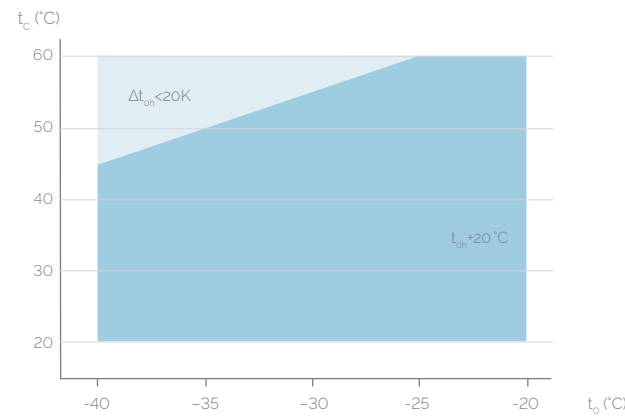
vap.bock.de



# HA semi-hermetic compressors

## Operating limits

### R449A



$t_o$  Evaporating temperature (°C)  
 $t_c$  Condensing temperature (°C)  
 $\Delta t_{oh}$  Suction gas superheat (K)  
 $t_{oh}$  Suction gas temperature (°C)

- Unlimited application range
- Reduced suction gas temperature

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

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

### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter. For further explanations consult [www.bock.de](http://www.bock.de).

#### Performance data

The performance data for R449A are based on European Standard 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 BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

# HA semi-hermetic compressors

## Performance data

### R449A | 50 Hz

Type	Cond. temp. °C		Cooling capacity $Q_o$ [W]					Power consumption
			Evaporating temperature °C					$P_e$ [kW]
			-20	-25	-30	-35	-40	
HA22e/125-4	30	Q	4170	3240	2440	1780	1230	
		P	169	153	135	118	100	
	40	Q	3520	2690	1990	1400	912	
		P	180	159	137	116	0.96	
	50	Q	2890	2170	1570	1060	628	
		P	187	161	136	111	0.88	
HA22e/160-4	30	Q	5200	4010	3010	2160	1470	
		P	2.03	1.83	1.61	1.39	1.17	
	40	Q	4400	3340	2440	1690	1070	
		P	2.16	1.90	1.63	1.36	1.10	
	50	Q	3620	2680	1900	1240	688	
		P	2.24	1.92	1.60	1.29	1.00	
HA22e/190-4	30	Q	6280	4920	3770	2800	2010	
		P	2.47	2.22	1.96	1.70	1.44	
	40	Q	5420	4190	3150	2290	1570	
		P	2.66	2.34	2.02	1.70	1.40	
	50	Q	4540	3450	2540	1770	1130	
		P	2.79	2.40	2.02	1.65	1.30	
HA34e/215-4	30	Q	6760	5220	3900	2810	1900	
		P	2.59	2.31	2.03	1.74	1.44	
	40	Q	5670	4280	3110	2130	1310	
		P	2.76	2.40	2.03	1.67	1.31	
	50	Q	4580	3350	2320	1450	728	
		P	2.86	2.40	1.96	1.52	1.10	
HA34e/255-4	30	Q	8220	6390	4830	3530	2460	
		P	3.15	2.80	2.44	2.08	1.72	
	40	Q	6940	5320	3940	2790	1830	
		P	3.37	2.93	2.48	2.04	1.62	
	50	Q	5700	4280	3080	2080	1240	
		P	3.52	2.98	2.45	1.94	1.45	
HA34e/315-4	30	Q	10400	7990	6010	4360	3010	
		P	3.85	3.42	2.99	2.55	2.11	
	40	Q	8740	6640	4870	3400	2210	
		P	4.14	3.59	3.04	2.50	1.99	
	50	Q	7150	5290	3750	2480	1450	
		P	4.32	3.65	2.99	2.36	1.77	
HA34e/380-4	30	Q	12600	9790	7410	5420	3770	
		P	4.74	4.22	3.68	3.14	2.60	
	40	Q	10800	8180	6040	4250	2760	
		P	5.15	4.48	3.81	3.14	2.49	
	50	Q	8800	6560	4660	3070	1750	
		P	5.42	4.60	3.79	3.00	2.25	
HA44e/475-4	30	Q	16200	12600	9450	6870	4740	
		P	5.77	5.16	4.52	3.86	3.20	
	40	Q	13800	10500	7720	5400	3480	
		P	6.19	5.39	4.58	3.77	2.97	
	50	Q	11400	8450	6000	3950	2240	
		P	6.44	5.46	4.47	3.51	2.58	
HA44e/565-4	30	Q	20100	15700	11900	8720	6120	
		P	7.03	6.31	5.55	4.77	3.98	
	40	Q	17300	13300	9880	7050	4690	
		P	7.60	6.67	5.72	4.77	3.83	
	50	Q	14500	11000	7910	5390	3290	
		P	7.99	6.85	5.72	4.60	3.52	
HA44e/665-4	30	Q	22700	17700	13500	9940	7020	
		P	8.04	7.16	6.26	5.33	4.41	
	40	Q	19600	15100	11300	8070	5430	
		P	8.73	7.60	6.47	5.34	4.25	
	50	Q	16400	12400	9040	6240	3890	
		P	9.23	7.85	6.49	5.18	3.92	

Relating to 20 °C suction gas temperature without liquid subcooling

Reduced suction gas temperature

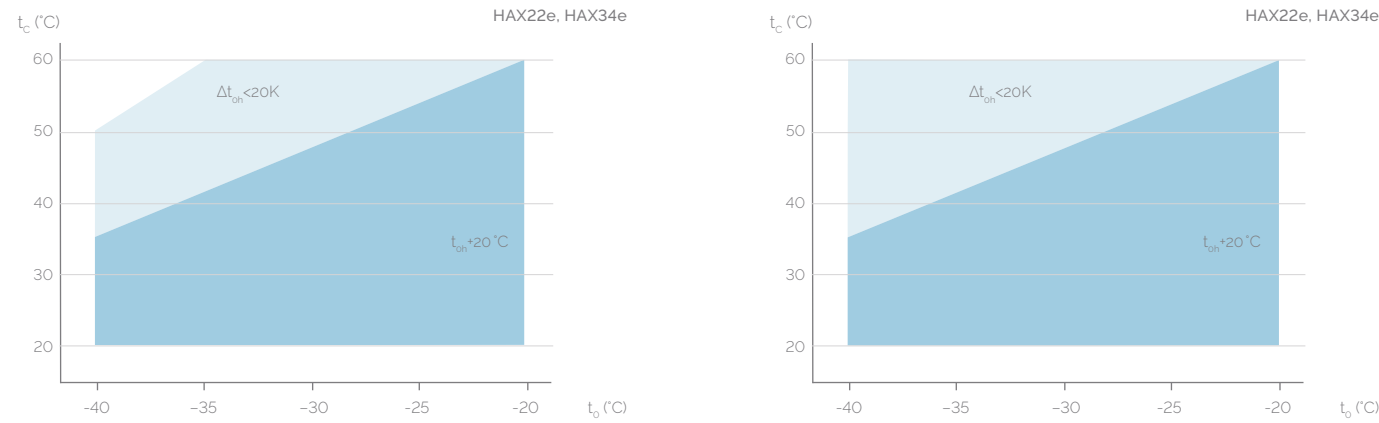


vap.bock.de

# HA semi-hermetic compressors

## Operating limits

### R407A



$t_o$  Evaporating temperature (°C)  
 $t_c$  Condensing temperature (°C)  
 $\Delta t_{sh}$  Suction gas superheat (K)  
 $t_{sh}$  Suction gas temperature (°C)

● Unlimited application range  
 ○ Reduced suction gas temperature

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

### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter. For further explanations consult [www.bock.de](http://www.bock.de).

#### Performance data

The performance data for R407A are based on European Standard 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 BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

# HA semi-hermetic compressors

## Performance data

### R407A | 50 Hz

Type	Cooling capacity $Q_o$ [kW]					Power consumption $P_e$ [kW]	
	Cond. temp. °C	Evaporating temperature °C					
		-20	-25	-30	-35		-40
HA22e/125-4	30	Q	4090	3120	2330	1680	1140
		P	165	148	130	112	0.95
	40	Q	3460	2600	1900	1310	804
		P	176	153	130	108	0.88
	50	Q	2830	2070	1450	923	454
		P	181	153	126	100	0.77
HA22e/160-4	30	Q	5110	3890	2870	2030	1350
		P	198	177	154	132	110
	40	Q	4330	3230	2310	1550	920
		P	210	182	154	127	100
	50	Q	3530	2550	1730	1060	503
		P	216	182	148	115	0.84
HA22e/190-4	30	Q	6160	4750	3610	2670	1880
		P	241	215	188	162	136
	40	Q	5330	4060	3020	2150	1400
		P	259	225	192	159	129
	50	Q	4440	3310	2370	1560	844
		P	270	228	187	148	112
HA34e/215-4	30	Q	6700	5120	3790	2680	1770
		P	251	225	197	168	139
	40	Q	5630	4200	3000	2000	1170
		P	269	233	197	160	124
	50	Q	4540	3260	2200	1310	561
		P	278	232	187	142	100
HA34e/255-4	30	Q	8160	6290	4710	3390	2310
		P	305	271	237	201	166
	40	Q	6920	5240	3820	2640	1660
		P	328	285	240	196	154
	50	Q	5680	4190	2940	1900	1030
		P	343	289	235	183	133
HA34e/315-4	30	Q	10300	7850	5850	4180	2810
		P	376	333	288	242	197
	40	Q	8630	6500	4710	3220	1990
		P	404	348	291	235	180
	50	Q	7060	5180	3600	2280	1200
		P	421	351	283	216	152
HA34e/380-4	30	Q	12500	9590	7220	5230	3540
		P	464	410	355	298	242
	40	Q	10600	8010	5870	4060	2480
		P	503	435	365	295	226
	50	Q	8690	6420	4500	2860	1390
		P	528	444	360	276	195
HA44e/475-4	30	Q	15800	12200	9080	6510	4400
		P	569	508	444	378	311
	40	Q	13400	10100	7350	5050	3160
		P	608	528	446	364	284
	50	Q	11000	8090	5650	3620	1940
		P	630	531	432	335	241
HA44e/565-4	30	Q	19600	15200	11400	8280	5710
		P	694	622	545	466	388
	40	Q	16800	12800	9430	6630	4310
		P	748	654	558	463	369
	50	Q	14100	10500	7490	5000	2940
		P	783	669	554	442	334
HA44e/665-4	30	Q	22200	17200	13000	9450	6560
		P	793	705	614	521	429
	40	Q	19000	14600	10800	7600	5000
		P	858	744	630	518	409
	50	Q	15900	11900	8570	5800	3490
		P	903	765	629	497	372

Relating to 20 °C suction gas temperature without liquid subcooling

Reduced suction gas temperature

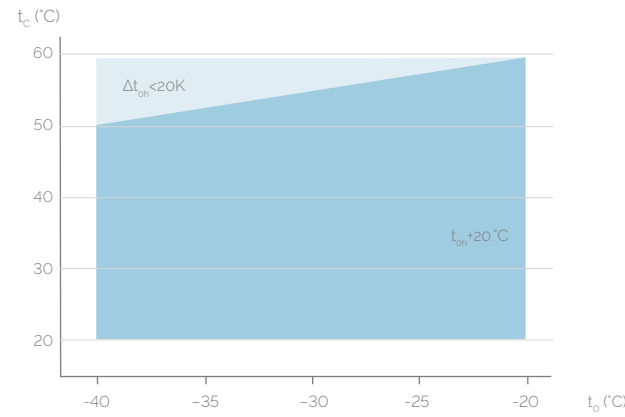


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# HA semi-hermetic compressors

## Operating limits

### R407F



$t_o$  Evaporating temperature (°C)  
 $t_c$  Condensing temperature (°C)  
 $\Delta t_{oh}$  Suction gas superheat (K)  
 $t_{on}$  Suction gas temperature (°C)

- Unlimited application range
- Reduced suction gas temperature

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

### Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter. For further explanations consult [www.bock.de](http://www.bock.de).

#### Performance data

The performance data for R407F are based on European Standard 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 BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

# HA semi-hermetic compressors

## Performance data

### R407F | 50 Hz

Type	Cond. temp. °C		Cooling capacity $Q_o$ [W]					Power consumption $P_e$ [kW]
			Evaporating temperature °C					
			-20	-25	-30	-35	-40	
HA22e/125-4	30	Q	4300	3270	2420	1730	1190	
		P	172	154	135	117	100	
	40	Q	3670	2740	1990	1380	912	
		P	184	160	137	115	0.96	
	50	Q	3030	2220	1570	1060	669	
		P	190	162	135	111	0.90	
HA22e/160-4	30	Q	5370	4060	2980	2110	1420	
		P	2.06	1.84	1.61	1.38	1.17	
	40	Q	4590	3400	2440	1660	1060	
		P	2.20	1.91	1.62	1.36	1.11	
	50	Q	3790	2750	1900	1230	722	
		P	2.28	1.93	1.59	1.29	1.02	
HA22e/190-4	30	Q	6490	4990	3750	2740	1960	
		P	2.52	2.24	1.96	1.70	1.45	
	40	Q	5660	4280	3160	2260	1580	
		P	2.72	2.36	2.02	1.70	1.41	
	50	Q	4770	3540	2550	1780	1210	
		P	2.84	2.41	2.01	1.65	1.33	
HA34e/215-4	30	Q	7030	5370	3970	2820	1910	
		P	2.67	2.37	2.06	1.75	1.45	
	40	Q	5930	4440	3180	2150	1330	
		P	2.86	2.47	2.07	1.68	1.32	
	50	Q	4800	3480	2360	1450	726	
		P	2.94	2.45	1.97	1.51	1.09	
HA34e/255-4	30	Q	8540	6570	4920	3560	2480	
		P	3.25	2.87	2.48	2.09	1.73	
	40	Q	7270	5510	4040	2840	1880	
		P	3.49	3.00	2.52	2.06	1.64	
	50	Q	6000	4450	3170	2120	1290	
		P	3.63	3.05	2.48	1.94	1.46	
HA34e/315-4	30	Q	10800	8160	6000	4240	2860	
		P	4.03	3.53	3.03	2.54	2.09	
	40	Q	9110	6770	4860	3320	2120	
		P	4.33	3.69	3.07	2.49	1.97	
	50	Q	7460	5410	3760	2450	1450	
		P	4.50	3.73	3.01	2.35	1.78	
HA34e/380-4	30	Q	13100	9990	7400	5280	3580	
		P	4.97	4.36	3.74	3.14	2.57	
	40	Q	11200	8350	6030	4140	2630	
		P	5.38	4.61	3.85	3.13	2.47	
	50	Q	9190	6700	4650	3010	1720	
		P	5.64	4.71	3.82	3.00	2.25	
HA44e/475-4	30	Q	17000	13000	9640	6910	4670	
		P	5.99	5.34	4.65	3.95	3.25	
	40	Q	14500	11000	7980	5560	3570	
		P	6.42	5.59	4.75	3.93	3.13	
	50	Q	11900	8800	6260	4170	2460	
		P	6.68	5.67	4.69	3.75	2.87	
HA44e/565-4	30	Q	21100	16200	12100	8770	6050	
		P	7.30	6.52	5.72	4.89	4.05	
	40	Q	18200	13900	10300	7270	4850	
		P	7.88	6.91	5.94	4.99	4.06	
	50	Q	15200	11400	8270	5730	3640	
		P	8.28	7.13	6.01	4.94	3.94	
HA44e/665-4	30	Q	23900	18300	13800	10100	6950	
		P	8.35	7.42	6.45	5.47	4.49	
	40	Q	20600	15700	11700	8350	5620	
		P	9.07	7.90	6.73	5.60	4.53	
	50	Q	17200	13000	9480	6650	4310	
		P	9.59	8.19	6.86	5.60	4.45	

Relating to 20 °C suction gas temperature without liquid subcooling



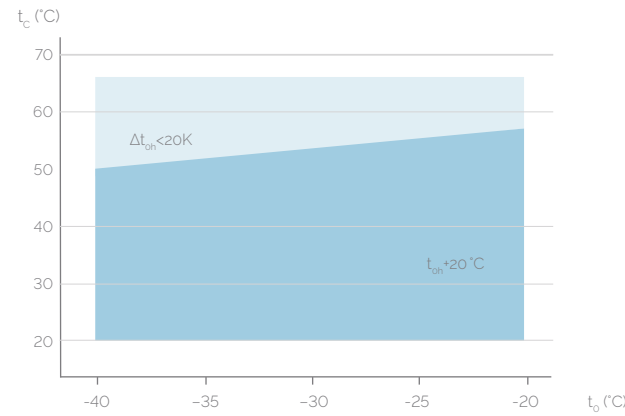
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# HA semi-hermetic compressors

## Operating limits

### R22



### R22 Notes

#### Operating limits

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

Restrictions to operating limits may occur when using a frequency converter. For further explanations consult [www.bock.de](http://www.bock.de).

#### Performance data

The performance data for R22 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 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 BOCK VAP software ([vap.bock.de](http://vap.bock.de)).

# HA semi-hermetic compressors

## Performance data

### R22 | 50 Hz

Type	Cond. temp. °C		Cooling capacity $Q_o$ [W]					Power consumption
			Evaporating temperature °C					$P_e$ [kW]
			-20	-25	-30	-35	-40	
HA22e/125-4	30	Q	4270	3360	2590	1930	1390	
		P	173	158	142	126	109	
	40	Q	3710	2890	2190	1600	1100	
		P	186	167	147	127	107	
	50	Q	3180	2440	1820	1290	836	
		P	196	173	149	125	103	
HA22e/160-4	30	Q	5330	4180	3200	2370	1680	
		P	207	189	170	150	129	
	40	Q	4650	3600	2700	1950	1310	
		P	223	200	175	150	126	
	50	Q	3980	3040	2230	1540	960	
		P	235	206	177	148	119	
HA22e/190-4	30	Q	6400	5080	3960	3010	2230	
		P	252	229	206	182	157	
	40	Q	5670	4460	3430	2560	1840	
		P	274	245	215	186	157	
	50	Q	4950	3840	2910	2120	1450	
		P	292	256	221	186	152	
HA34e/215-4	30	Q	6950	5450	4180	3100	2200	
		P	265	241	215	189	162	
	40	Q	6030	4660	3490	2500	1670	
		P	287	255	222	188	154	
	50	Q	5110	3870	2800	1900	1140	
		P	304	263	221	180	141	
HA34e/255-4	30	Q	8420	6640	5130	3850	2780	
		P	322	290	258	224	191	
	40	Q	7340	5720	4350	3190	2220	
		P	349	309	268	227	186	
	50	Q	6290	4840	3600	2560	1680	
		P	371	321	272	223	177	
HA34e/315-4	30	Q	10600	8310	6380	4750	3410	
		P	392	355	315	275	235	
	40	Q	9240	7150	5390	3910	2690	
		P	429	379	328	278	229	
	50	Q	7890	6010	4420	3090	1990	
		P	456	394	332	273	216	
HA34e/380-4	30	Q	12900	10200	7830	5880	4250	
		P	482	435	386	336	285	
	40	Q	11300	8780	6650	4850	3350	
		P	531	470	408	345	284	
	50	Q	9670	7400	5460	3820	2430	
		P	568	492	417	343	271	
HA44e/475-4	30	Q	16600	13100	10100	7510	5390	
		P	588	535	477	417	356	
	40	Q	14600	11300	8550	6220	4270	
		P	640	569	495	419	344	
	50	Q	12600	9580	7070	4940	3150	
		P	679	589	498	408	319	
HA44e/565-4	30	Q	20500	16200	12500	9420	6850	
		P	715	651	582	510	437	
	40	Q	18100	14200	10900	7970	5590	
		P	783	698	611	523	434	
	50	Q	15800	12200	9120	6520	4330	
		P	835	731	626	521	418	
HA44e/665-4	30	Q	23200	18400	14300	10800	7850	
		P	817	739	657	572	486	
	40	Q	20500	16100	12300	9120	6450	
		P	899	797	692	587	484	
	50	Q	17900	13900	10500	7520	5070	
		P	965	838	712	588	468	

Relating to 20 °C suction gas temperature without liquid subcooling

Reduced suction gas temperature



# HA semi-hermetic compressors

## Technical data

Type	Number of cylinders	Displacement		Electrical data						Weight		Connections <sup>5)</sup>				Oil charge	Frequency range
		m <sup>3</sup> /h		Voltage <sup>1)</sup>		Max. Working current <sup>2)</sup>		Max. Power consumption <sup>2)</sup>		Starting current (rotor locked)		Discharge line DV		Suction line SV			
		50 Hz 1450 rpm	60 Hz 1740 rpm	Δ	Y	A	kW	Δ	Y	A	kg	mm	inch	mm	inch		
HA22e/125-4	2	11.10	13.30	3)	8.1	4.7	2.4	69	40	75.5	12	1/2	16	5/8	0.9	30-70	
HA22e/160-4	2	13.70	16.40	3)	9.6	5.5	2.9	87	50	77.5	12	1/2	16	5/8	0.9	30-70	
HA22e/190-4	2	16.50	19.80	3)	10.9	6.3	3.5	87	50	76.5	12	1/2	16	5/8	0.9	30-70	
HA34e/215-4	4	18.80	22.60	3)	12.1	7.0	4.0	87	50	94.0	16	5/8	22	7/8	1.2	25-70	
HA34e/255-4	4	22.10	26.60	3)	13.8	8.0	4.7	87	50	93.5	16	5/8	22	7/8	1.2	25-70	
HA34e/315-4	4	27.30	32.80	3)	17.1	9.9	5.8	111	64	96.5	16	5/8	22	7/8	1.2	25-70	
HA34e/380-4	4	33.10	39.70	3)	19.4	11.2	6.4	132	76	96.0	16	5/8	22	7/8	1.2	25-70	
					PW 1+2'		PW1/PW1+2'										
HA44e/475-4	4	41.30	49.60	4)	15.2	7.6	87	149	174.0	28	1 1/8	35	1 3/8	2.3	25-70		
HA44e/565-4	4	49.20	59.00	4)	18.3	9.4	101	174	178.5	28	1 1/8	35	1 3/8	2.3	25-70		
HA44e/665-4	4	57.70	69.30	4)	20.3	11.0	101	174	173.5	28	1 1/8	35	1 3/8	2.3	25-70		

\*PW - Part Winding, motors for part winding start      1 - first part winding      2 - second part winding

### 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

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

- HA22e, HA34e: 50-120 W
- PTC heater, self-regulating, installation in housing bore

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

- HA44e: 160 W
- Permanently set version, installation in immersion sleeve

- 3) 220 - 240 V Δ / 380 - 420 V Y - 3 - 50 Hz,  
265 - 290 V Δ / 440 - 480 V Y - 3 - 60 Hz
- 4) PW - Part Winding, motors for part winding start (no start unloaders required)  
• Winding ratios: HA44e - 50% / 50%  
• Designs for Y/Δ on request
- 5) For soldering connections

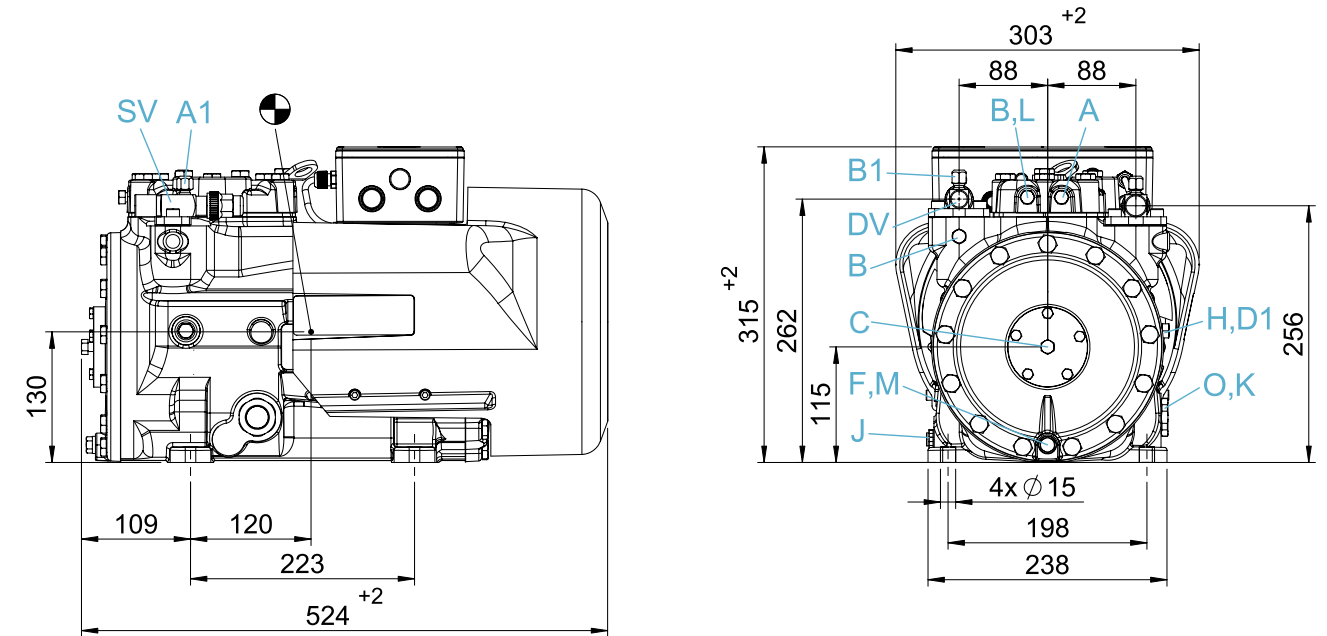
#### Fan motors for the HA version 230 V - 1 - 50/60 Hz

- HA22e, HA34e: 38 W / 0.17 A
- HA44e: 140 W / 0.71 A

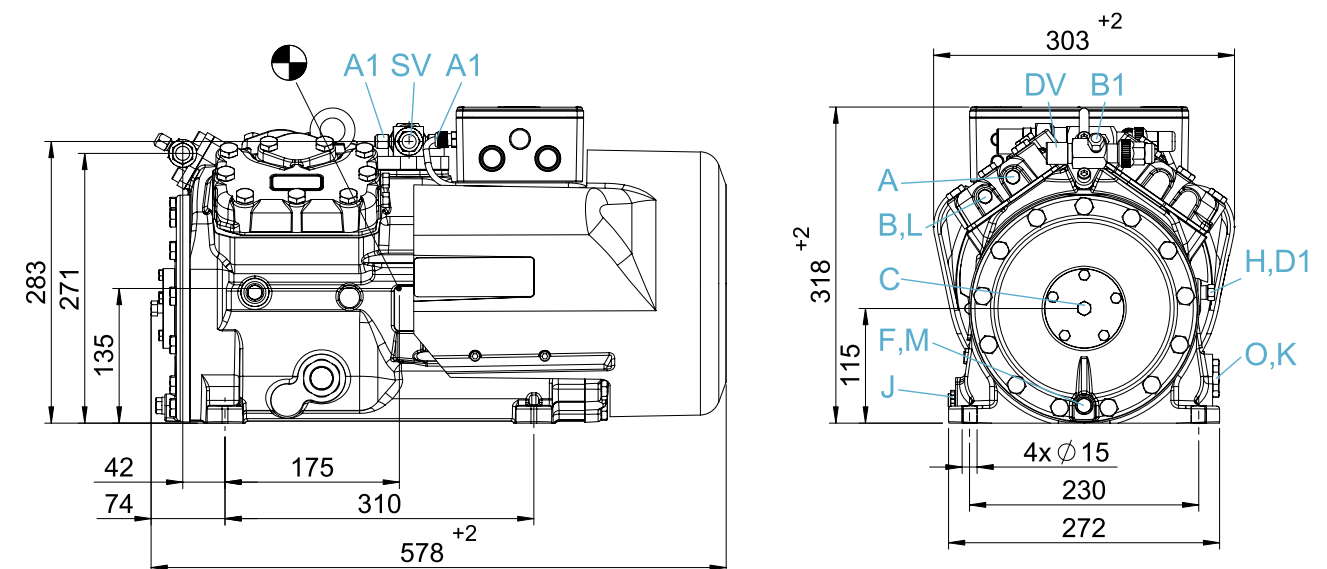
# HA semi-hermetic compressors

## Dimensions and connections

HA22e » HA22e/125-4 » HA22e/160-4 » HA22e/190-4



HA34e » HA34e/215-4 » HA34e/255-4 » HA34e/315-4 » HA34e/380-4



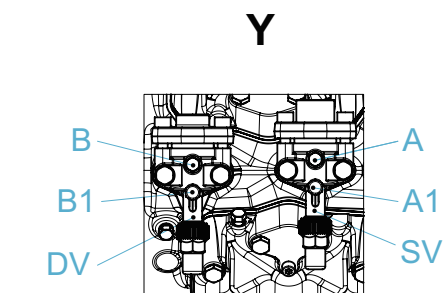
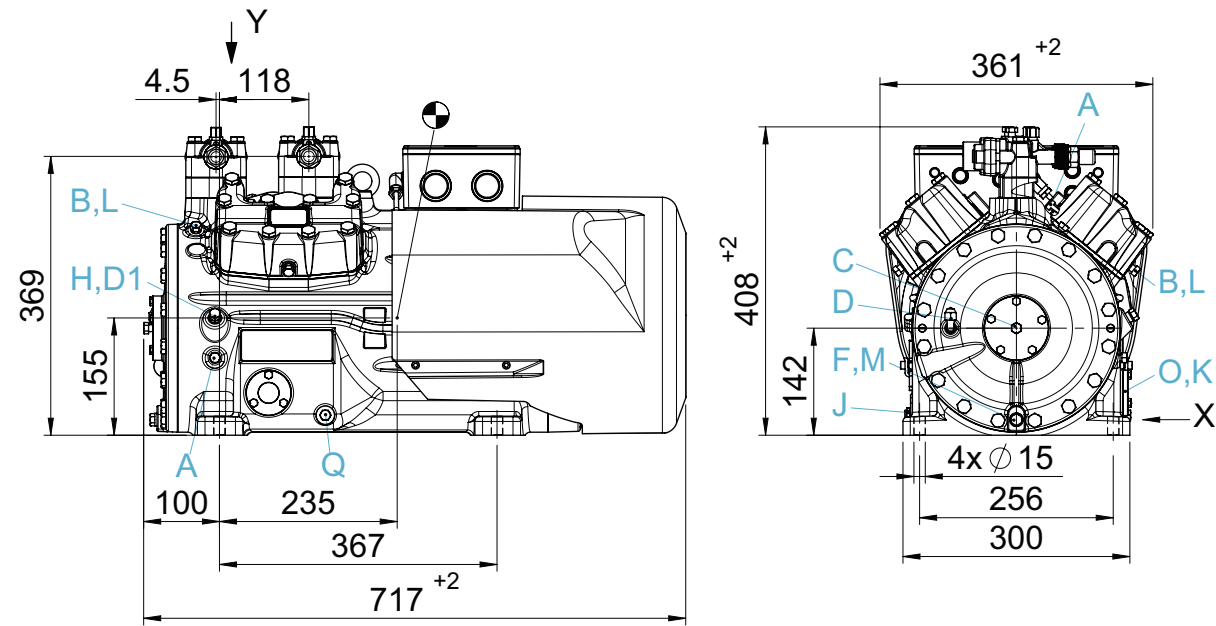
Dimensions in mm  
● Center of gravity

Connections see page 93  
Dimensions for anti-vibration pad see page 91  
Dimensions for view X see page 91

# HA semi-hermetic compressors

## Dimensions and connections

HA44e » HA44e/475-4 » HA44e/565-4 » HA44e/665-4



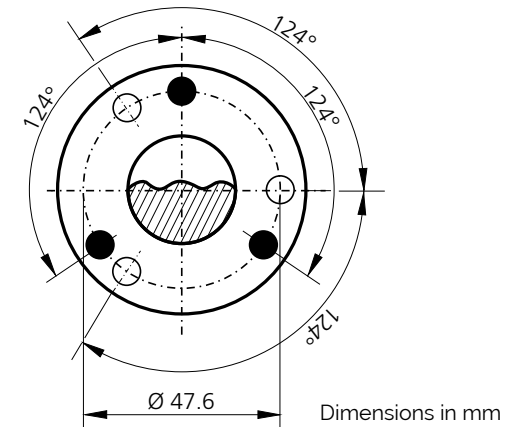
Dimensions in mm  
 ● Center of gravity

Connections see page 93  
 Dimensions for anti-vibration pad see page 91  
 Dimensions for view X see page 91

# HA semi-hermetic compressors

## Dimensions and connections

View X



Possibility to connect to oil level regulator

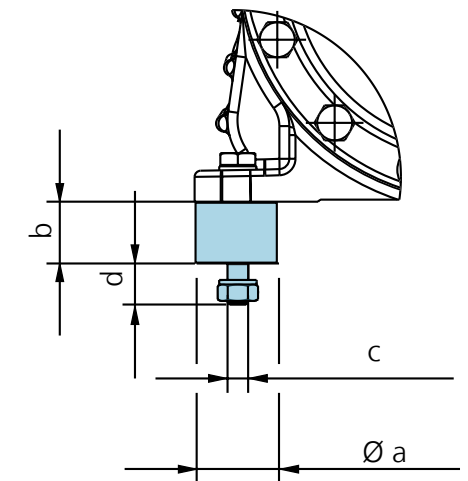
HA44e

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

### Dimensions for anti-vibration pad

Type	Ø a	b	c	d
HA22e	40	30	M10	20
HA34e	40	30	M10	20
HA44e	50	30	M12	25

Dimensions in mm



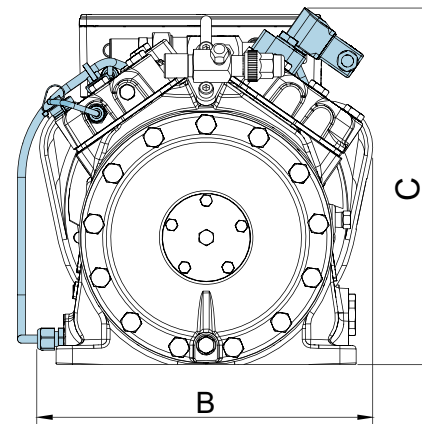
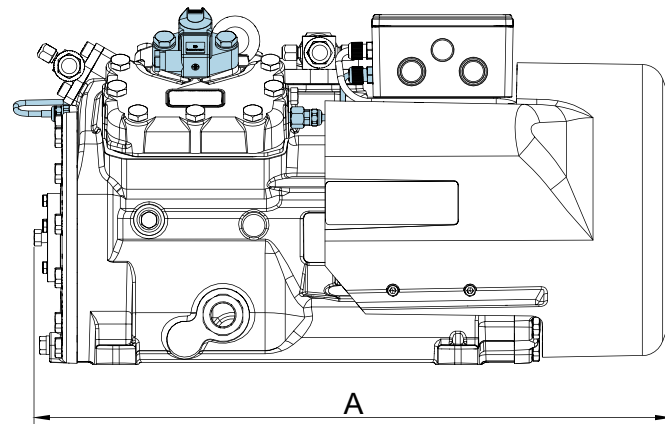


# HA semi-hermetic compressors

## Dimensions and connections

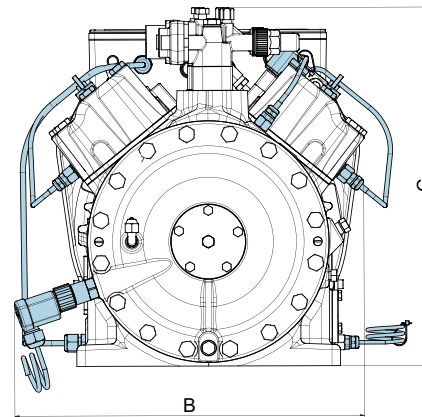
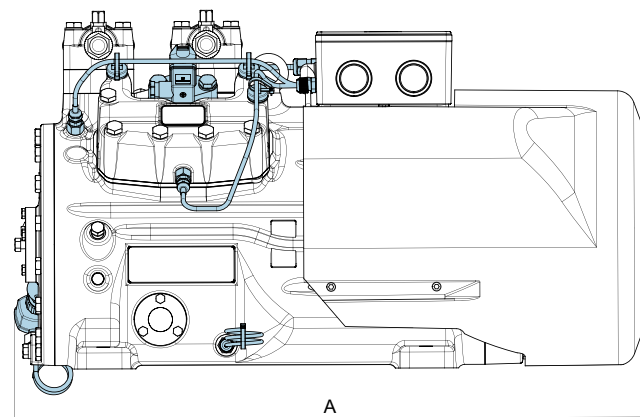
HA22e HA34e

Dimensions with accessories



HA44e

Dimensions with accessories



Type	A	B	C
HA22e	ca. 525	ca. 305	ca. 315
HA34e	ca. 600	ca. 305	ca. 325
HA44e	ca. 720	ca. 400	ca. 410

Dimensions in mm

# HA semi-hermetic compressors

## Connections

HA22e HA34e HA44e

Connections	HA22e	HA34e	HA44e
SV Suction line	Please refer to technical data page 88		
DV Discharge line	Please refer to technical data page 88		
A Connection suction side, not lockable	1/8" NPTF	1/8" NPTF	1/8" NPTF
A1 Connection suction side, lockable	7/16" UNF	7/16" UNF	7/16" UNF
B Connection discharge side, not lockable	1/8" NPTF	1/8" NPTF	1/8" NPTF
B1 Connection discharge side, lockable	7/16" UNF	7/16" UNF	7/16" UNF
C Connection oil pressure safety switch HP	1/8" NPTF	1/8" NPTF	1/8" NPTF
D Connection oil pressure safety switch LP	-	-	7/16" UNF
D1 Connection oil return from oil separator	1/4" NPTF	1/4" NPTF	1/4" NPTF
F Oil drain plug	M12 x 15	M12 x 15	M12 x 15
H Oil charge plug	1/4" NPTF	1/4" NPTF	1/4" NPTF
J Connection oil sump heater	3/8" NPTF	3/8" NPTF	3/8" NPTF
K Sight glass	1 1/8" - 18 UNEF	1 1/8" - 18 UNEF	3 hole M6
L Connection thermal protection thermostat	1/8" NPTF	1/8" NPTF	1/8" NPTF
M Oil strainer	M12 x 15	M12 x 15	M12 x 15
O Connection oil level regulator	1 1/8" - 18 UNEF	1 1/8" - 18 UNEF	3 hole M6
Q Connection oil temperature sensor	-	-	1/8" NPTF

# HA semi-hermetic compressors

## Scope of supply and accessories

	HA22e	HA34e	HA44e
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	●	-	-
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	-	●	-
Semi-hermetic four-cylinder reciprocating compressor with drive motor for part winding start (50/50) 380-420 V Y/YY - 3 - 50 Hz 440-480 V Y/YY - 3 - 60 Hz	-	-	●
Special voltage and/or frequency	○ <sup>3)</sup>	○ <sup>3)</sup>	○ <sup>3)</sup>
Motor is cooled by an integrated fan with air deflection hood 230 V - 1 - 50 / 60 Hz, IP44 38 W, 0.17	●	●	-
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 with electronic triggering unit INT69 G	●	●	●
1 Thermal protection PTC	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>
Oil pump	●	●	●
Oil charge: HA: FUCHS Reniso SP46, HAX: FUCHS Reniso Triton SE55	●	●	●
Inert gas charge	●	●	●
4 anti-vibration pads	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>
Internal safety valve	-	-	●
Suction and discharge line valve	●	●	●
Sight glasses	●	●	●
2 Oil sump heater 110-240 V - 1 - 50 / 60 Hz, 50-120 W, PTC heater, self-regulating	○ <sup>2)</sup>	○ <sup>2)</sup>	-
220-240 V - 1 - 50 / 60 Hz, 160 W	-	-	○ <sup>2)</sup>
Rear bearing flange prepared for oil differential pressure sensor	-	-	○ <sup>2)</sup>
3 Oil differential pressure sensor DELTA-P II 220-240 V - 1 - 50 / 60 Hz	-	-	○ <sup>1)</sup>
4 Oil pressure safety switch 230 V - 1 - 50/60 Hz, IP20 MP54	-	-	○ <sup>1)</sup>
230 V - 1 - 50/60 Hz, IP20 MP55	○ <sup>1)</sup>	○ <sup>1)</sup>	-
6 Capacity regulator 230 V - 1 - 50/60 Hz, IP65 1 capacity regulator = 50% residual capacity	-	○ <sup>2)</sup>	○ <sup>2)</sup>

<sup>1)</sup> Enclosed <sup>2)</sup> Mounted <sup>3)</sup> On request  
<sup>4)</sup> Only possible with additional adapter

● Scope of supply (standard)  
○ Available accessories

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● Pictures see page 67/68

# HA semi-hermetic compressors

## Scope of supply and accessories

	HA22e	HA34e	HA44e
7 Prepared for capacity regulator (1 cylinder cover)	-	○ <sup>2)</sup>	○ <sup>2)</sup>
8 Oil temperature sensor	-	-	○ <sup>2)</sup>
Start unloader by means of ESS (Electronic Soft Start) 9 400 V - 3 - 50 / 60 Hz, IP20, (connection clamps IP00) for installation in switch cabinet	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>
12 Intermediate flange for discharge line valve on right or left, seen from oil pump	-	-	○ <sup>1)</sup>
13 INT69 G Diagnose 115 / 230 V Ac, 50 / 60 Hz, IP00 (INT69 G not applicable)	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>
15 DP - modbus gateway 115 / 230 V Ac, 50 / 60 Hz, IP00 incl. adapter cable	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>
16 Modbus - LAN gateway 230 V Ac, 50 / 60 Hz, IP00	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>
17 USB converter for INT69 G Diagnose and INT69 GTML Diagnose	○ <sup>1)</sup>	○ <sup>1)</sup>	○ <sup>1)</sup>
Connection for oil level regulator of brands ESK, AC+ R or CARLY	● <sup>4)</sup>	● <sup>4)</sup>	●
Connection for oil level regulator of brand Traxoil	● <sup>4)</sup>	● <sup>4)</sup>	● <sup>4)</sup>

<sup>1)</sup> Enclosed <sup>2)</sup> Mounted <sup>3)</sup> On request  
<sup>4)</sup> Only possible with additional adapter

● Scope of supply (standard)  
○ Available accessories

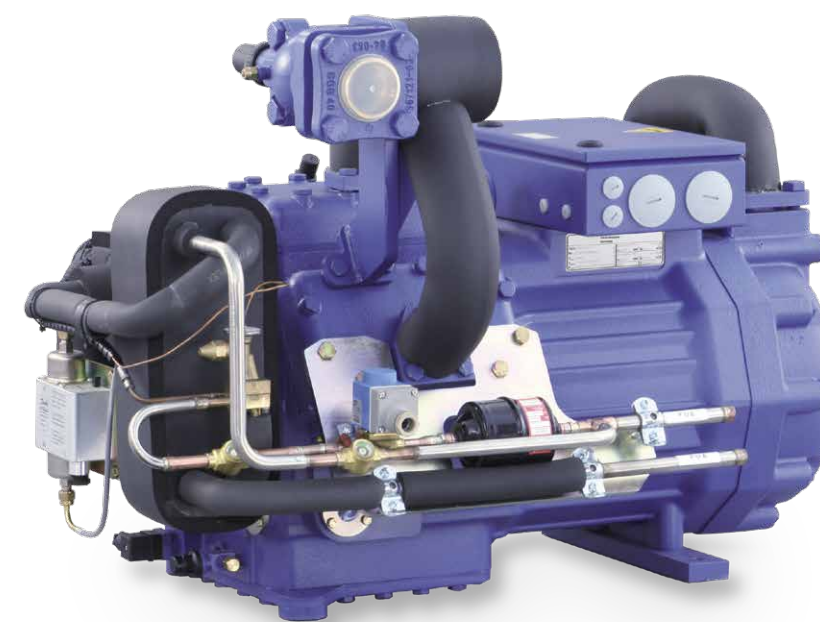
vap.bock.de 

● Pictures see page 67/68

# Bock HGZ semi-hermetic compressors

Bock HGZ7 two-stage

- 98** At a glance
- 100** Operating limits and performance data
- 104** Technical data
- 104** Dimensions and connections
- 107** Scope of supply & accessories





# Bock HGZ two-stage semi-hermetic compressors

A two-stage variant based on the 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
- Re-injection valve
- Solenoid valve
- Sight glass
- Filter drier

## Special features:

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

For more information on the HG7 basic compressor see chapter "Single-stage semi-hermetic BOCK compressors".

Type	Displacement (50 Hz) LP	Displacement (50 Hz) HP
HGZ7/1620-4 R448A/R449A HGZX7/1620-4 R404A/R507 HGZX7/1620-4 R410A HGZ7/1620-4 R22	93.70 m <sup>3</sup> /h	46.90 m <sup>3</sup> /h
HGZ7/1860-4 R448A/R449A HGZX7/1860-4 R404A/R507 HGZX7/1860-4 R410A HGZ7/1860-4 R22	107.60 m <sup>3</sup> /h	53.80 m <sup>3</sup> /h
HGZ7/2110-4 R448A/R449A HGZX7/2110-4 R404A/R507 HGZX7/2110-4 R410A HGZ7/2110-4 R22	122.40 m <sup>3</sup> /h	61.20 m <sup>3</sup> /h

## The two possible designs of the HGZ7

### Design version: everything enclosed separately

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



### Design version: mounted directly to the compressor

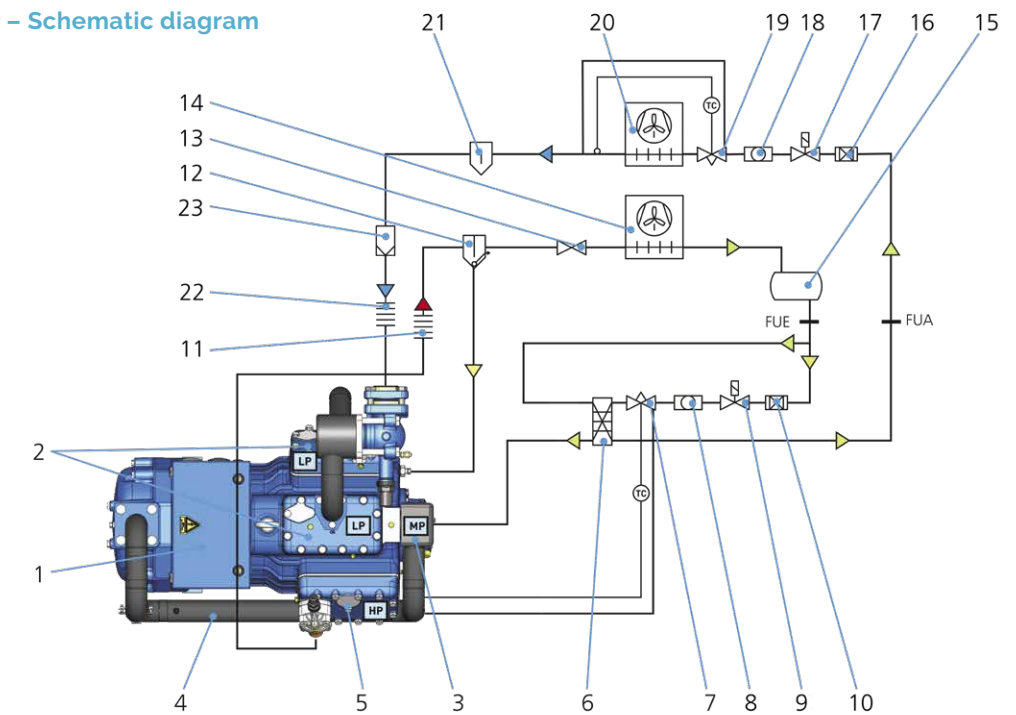
Liquid subcooler, expansion valve, solenoid valve, sight glass, filter dryer mounted directly to the compressor, lined and insulated.



Image similar

## HGZ two-stage semi-hermetic compressors Spezial features

### Refrigeration circuit with two-stage compressor – Schematic diagram



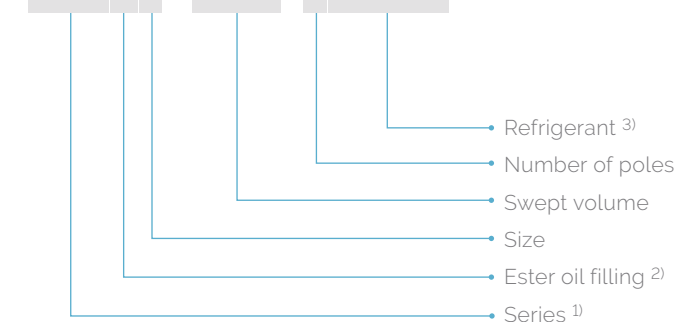
### Explanations

- |  |  |  |
|--|--|--|
| 1 <sup>1)</sup> Compressor                       | 14 <sup>14)</sup> Condenser                    | 21 <sup>21)</sup> Liquid separator               |
| 2 <sup>2)</sup> Cylinder LP-stage                | 15 <sup>15)</sup> Refrigerant receiver         | 22 <sup>22)</sup> Vibration damper, suction line |
| 3 <sup>3)</sup> Intermediate pressure chamber MP | 16 <sup>16)</sup> Filter drier                 | 23 <sup>23)</sup> Filter suction line            |
| 4 <sup>4)</sup> Intermediate pressure line MP    | 17 <sup>17)</sup> Solenoid valve               |  |
| 5 <sup>5)</sup> Cylinder HP-stage                | 18 <sup>18)</sup> Sight glass                  |  |
| 6 <sup>6)</sup> Subcooler*                       | 19 <sup>19)</sup> Solenoid valve*              |  |
| 7 <sup>7)</sup> Re-injection valve*              | 20 <sup>20)</sup> Expansion valve (evaporator) |  |
| 8 <sup>8)</sup> Sight glass*                     |  |  |
| 9 <sup>9)</sup> Solenoid valve*                  |  |  |
| 10 <sup>10)</sup> Filter drier*                  |  |  |
- 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

### Type key

## HGZX7 / 2110 - 4R404A



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

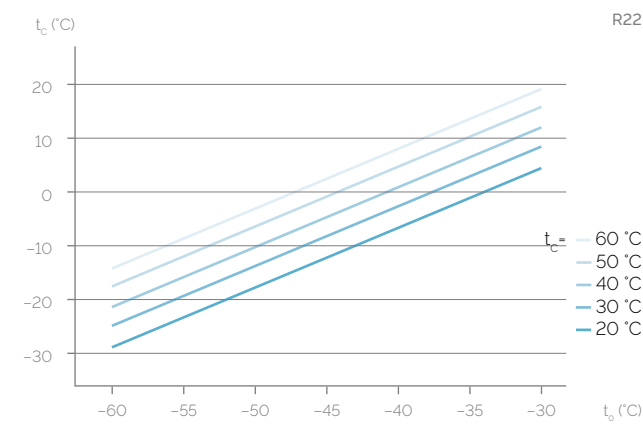
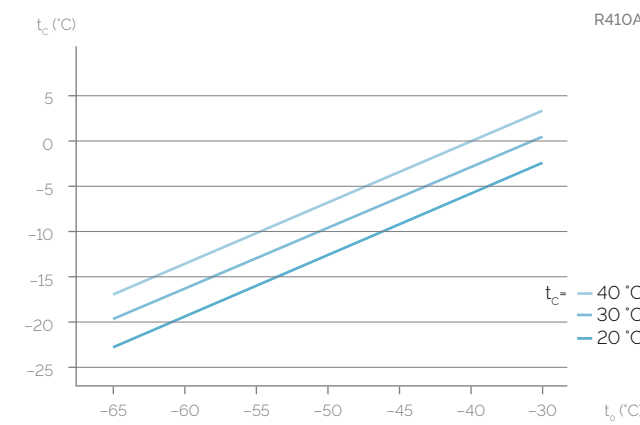
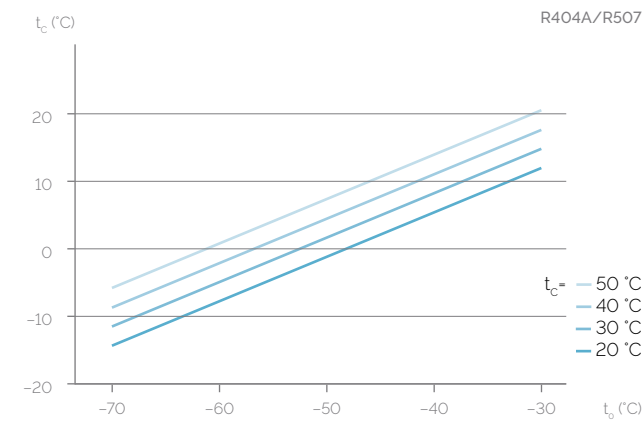
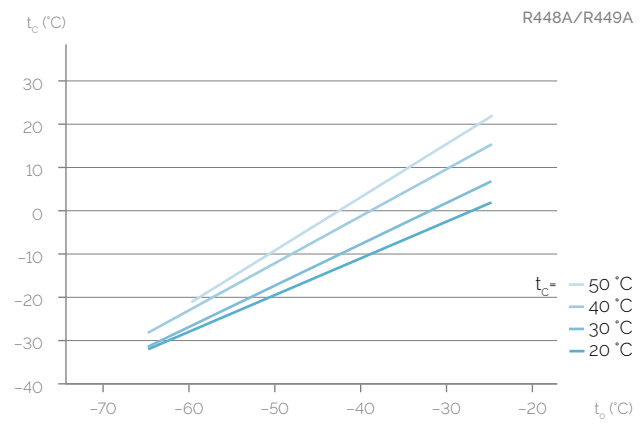
# HGZ two-stage semi-hermetic compressors

## Operating limits

### Subcooling temperature

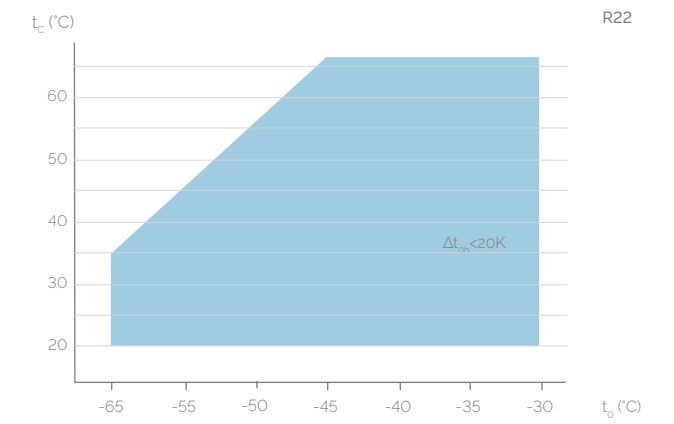
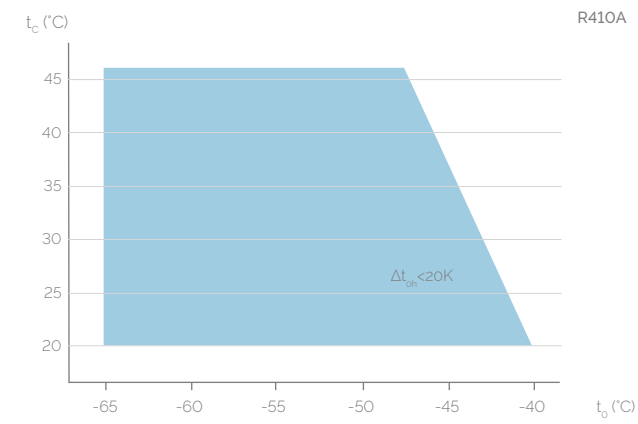
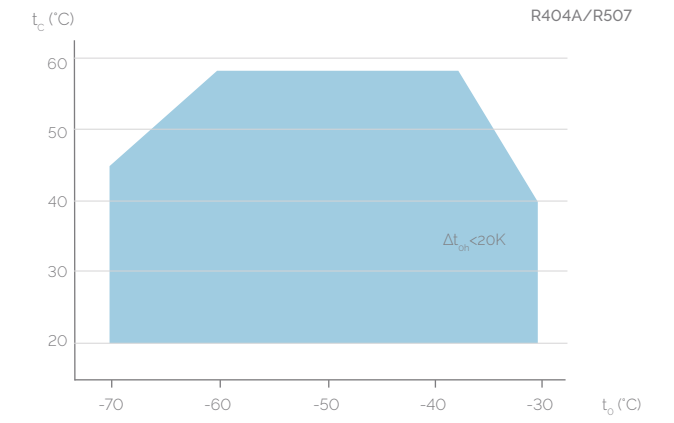
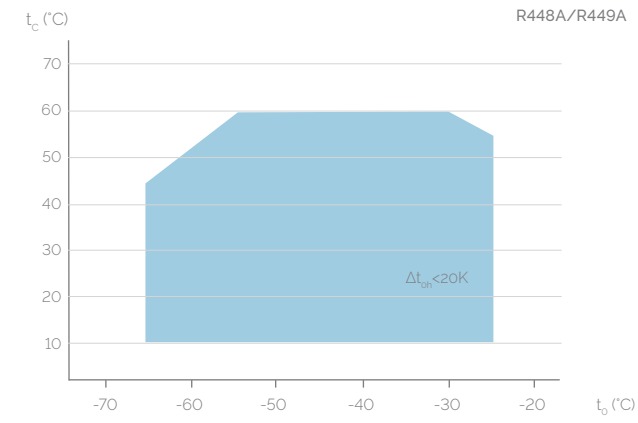
Defined with the help of the diagram by approximately calculating the subcooling temperature arising in the relevant operating conditions ( $t_o/t_c$ ).

Subcooling temperature calculation diagram for the intermediate cooler outlet



# HGZ two-stage semi-hermetic compressors

## Operating limits



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

● Application range

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

### Notes

#### Operating limits

Compressor operation is possible within the limits shown on the application diagrams. Please note the colored 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 BOCK VAP software (vap.bock.de).

# HGZ two-stage semi-hermetic compressors

## Performance data

### R448A | 50 Hz

Type	Cooling capacity $Q_0$ [kW]							Power consumption $P_e$ [kW]		
	Cond. temp. °C	Evaporating temperature °C								
		-30	-35	-40	-45	-50	-55	-60		
HGZX7/1620-4	30	Q 30500 P 1710	25000 15.50	19900 13.90	15500 12.30	11700 10.80	8650 9.51	6420 8.32		
	40	Q 28900 P 1910	23700 17.20	19000 15.40	14900 13.60	11400 12.00	8460 10.40	6360 9.06		
	50	Q 27000 P 2100	22300 19.00	18000 17.00	14200 15.10	10900 13.20	8260 11.50	6330 9.95		
HGZX7/1860-4	30	Q 35100 P 1970	28700 17.80	22900 15.90	17800 14.10	13500 12.40	9930 10.90	7370 9.56		
	40	Q 33100 P 2190	27200 19.80	21800 17.70	17100 15.70	13000 13.80	9720 12.00	7300 10.40		
	50	Q 31000 P 2420	25600 21.80	20600 19.60	16300 17.30	12500 15.20	9480 13.20	7270 11.40		
HGZX7/2110-4	30	Q 39900 P 2240	32600 20.20	26000 18.10	20200 16.10	15300 14.10	11300 12.40	8380 10.80		
	40	Q 37700 P 2490	31000 22.50	24800 20.20	19400 17.80	14800 15.60	11100 13.60	8310 11.80		
	50	Q 35200 P 2750	29100 24.90	23500 22.30	18500 19.70	14200 17.30	10800 15.00	8260 13.00		

### R449A | 50 Hz

Type	Cooling capacity $Q_0$ [kW]							Power consumption $P_e$ [kW]		
	Cond. temp. °C	Evaporating temperature °C								
		-30	-35	-40	-45	-50	-55	-60		
HGZX7/1620-4	30	Q 30500 P 1700	24900 15.40	19900 13.80	15500 12.30	11700 10.80	8660 9.49	6430 8.31		
	40	Q 28800 P 1900	23700 17.20	19000 15.40	14900 13.60	11400 11.90	8470 10.40	6370 9.05		
	50	Q 26900 P 2090	22200 18.90	17900 17.00	14100 15.00	10900 13.20	8260 11.50	6340 9.93		
HGZX7/1860-4	30	Q 35000 P 1960	28600 17.70	22900 15.90	17800 14.10	13500 12.40	9950 10.90	7390 9.55		
	40	Q 33000 P 2180	27200 19.70	21800 17.60	17100 15.60	13000 13.70	9730 11.90	7320 10.30		
	50	Q 30800 P 2400	25500 21.80	20600 19.50	16200 17.30	12500 15.10	9490 13.20	7280 11.40		
HGZX7/2110-4	30	Q 39800 P 2230	32500 20.20	26000 18.10	20200 16.00	15300 14.10	11400 12.40	8400 10.80		
	40	Q 37600 P 2480	30900 22.40	24800 20.10	19400 17.80	14800 15.60	11100 13.60	8330 11.80		
	50	Q 35100 P 2740	29000 24.80	23400 22.20	18500 19.60	14200 17.20	10800 15.00	8280 12.90		

### R404A/R507 | 50 Hz

Type	Cooling capacity $Q_0$ [kW]									Power consumption $P_e$ [kW]		
	Cond. temp. °C	Evaporating temperature °C										
		-30	-35	-40	-45	-50	-55	-60	-65	-70		
HGZX7/1620-4	30	Q 34869 P 2117	28471 19.41	23098 17.63	18628 15.84	14936 14.05	11899 12.31	9394 10.61	7296 8.99	5482 7.46		
	40	Q 33437 P 2342	27315 21.42	22181 19.40	17910 17.39	14380 15.41	11467 13.48	9047 11.61	6997 9.84	5192 8.17		
	50	Q - P -	25860 23.49	20950 21.24	16866 19.02	13484 16.84	10680 14.72	8332 12.68	6315 10.75	- -		
HGZX7/1860-4	30	Q 40042 P 2431	32694 22.29	26525 20.24	21391 18.18	17152 16.14	13665 14.13	10787 12.19	8378 10.32	6294 8.56		
	40	Q 38397 P 2690	31367 24.60	25471 22.28	20567 19.97	16514 17.70	13169 15.48	10390 13.34	8035 11.30	5962 9.38		
	50	Q - P -	29696 26.98	24057 24.39	19367 21.84	15484 19.33	12265 16.90	9568 14.56	7252 12.35	- -		
HGZX7/2110-4	30	Q 45550 P 2766	37191 25.36	30173 23.03	24334 20.69	19511 18.36	15544 16.08	12271 13.86	9530 11.74	7160 9.74		
	40	Q 43679 P 3060	35681 27.98	28974 25.34	23396 22.72	18785 20.13	14980 17.61	11819 15.17	9140 12.85	6782 10.67		
	50	Q - P -	33780 30.69	27366 27.75	22031 24.84	17614 21.99	13952 19.23	10884 16.57	8249 14.04	- -		

# HGZ two-stage semi-hermetic compressors

## Performance data

### R410A | 50 Hz

Type	Cooling capacity $Q_0$ [kW]					Power consumption $P_e$ [kW]		
	Cond. temp. °C	Evaporating temperature °C						
		-45	-50	-55	-60	-65		
HGZX7/1620-4	30	Q 25354 P 22.89	19967 20.80	15285 16.67	11396 16.43	8385 14.00		
	50	Q - P -	19131 22.87	14630 20.63	10868 18.25	7930 15.68		
HGZX7/1860-4	30	Q 29182 P 26.28	22859 23.89	17530 21.44	13136 18.87	9614 16.08		
	50	Q - P -	21959 26.26	16774 23.68	12508 20.96	9101 18.00		
HGZX7/2110-4	30	Q 33195 P 29.90	26003 27.17	19941 24.39	14943 21.46	10937 18.29		
	50	Q - P -	24980 29.87	19082 26.94	14229 23.84	10352 20.48		

### R449A | 50 Hz

Type	Cooling capacity $Q_0$ [kW]							Power consumption $P_e$ [kW]		
	Cond. temp. °C	Evaporating temperature °C								
		-30	-35	-40	-45	-50	-55	-60		
HGZX7/1620-4	30	Q 29711 P 18.26	24214 16.81	19448 15.40	15365 14.03	11921 12.70	9070 11.41	6765 10.16		
	40	Q 29059 P 20.23	23630 18.52	18930 16.86	14914 15.23	11537 13.64	8753 12.10	- -		
	50	Q 28355 P 22.30	22992 20.33	18360 18.41	14411 16.53	11100 14.69	- -	- -		
HGZX7/1860-4	30	Q 30088 P 20.97	27881 19.31	22408 17.69	17669 16.11	13664 14.58	10393 13.10	7855 11.67		
	40	Q 33296 P 23.23	27181 21.27	21800 19.36	17153 17.49	13240 15.67	10061 13.89	- -		
	50	Q 32434 P 25.60	26411 23.35	21122 21.14	16567 18.98	12746 16.68	- -	- -		
HGZX7/2110-4	30	Q 38811 P 23.86	31632 21.96	25406 20.12	20072 18.33	15573 16.59	11848 14.91	8837 13.27		
	40	Q 37960 P 26.43	30868 24.20	24729 22.02	19483 19.89	15071 17.82	11433 15.80	- -		
	50	Q 37040 P 29.13	30035 26.56	23984 24.05	18825 21.59	14500 19.18	- -	- -		
HGZX7/2110-4	60	Q 36050 P 31.96	29133 29.06	23169 26.21	18097 23.42	- -	- -	- -		

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





# HGZ two-stage semi-hermetic compressors

## Technical data / Dimensions and connections

HGZ7		Two-Stage Compressors										
Type	Number of cylinders	Displacement		Voltage <sup>1)</sup>	Electrical data			Weight	Oil charge			
		50 Hz (1450 rpm)			Max. Working current <sup>2)</sup>	Max. Power consumption <sup>2)</sup>	Starting current (rotor locked)					
		LP**	HP**							A	kW	A
m <sup>3</sup> /h		m <sup>3</sup> /h		Δ / Y		PW1+2*		kg	Ltr.			
HGZ7/1620-4 R448A/R449A 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	175	269	294	4.5
HA34e/215-4 HA34e/255-4 HA34e/315-4 HA34e/380-4	6	107.60	53.80	129.10	64.60	3)	55	30.0	175	269	291	4.5
HA34e/215-4 HA34e/255-4 HA34e/315-4 HA34e/380-4	6	122.40	61.20	146.90	73.40	3)	68	36.0	232	357	289	4.5

\*PW - Part Winding, motors for part winding start    1 - first part winding    2 - second part winding    \*\* LP - low pressure    HP - high pressure

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

- Permanently set version, installation in immersion sleeve

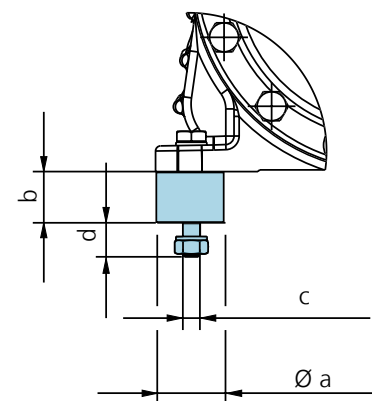
### Explanations

- 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 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: 50% / 50%

### Dimensions for anti-vibration pad

Type	Ø a	b	c	d
HGZ7	50	30	M10	25

Dimensions in mm

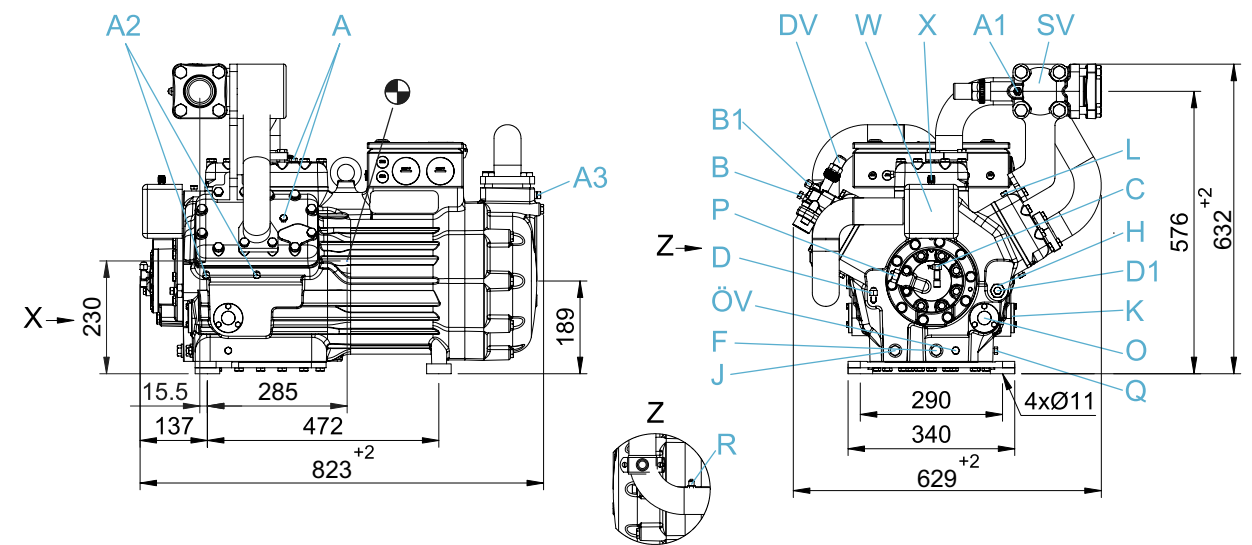


# HGZ two-stage semi-hermetic compressors

## Dimensions and connections

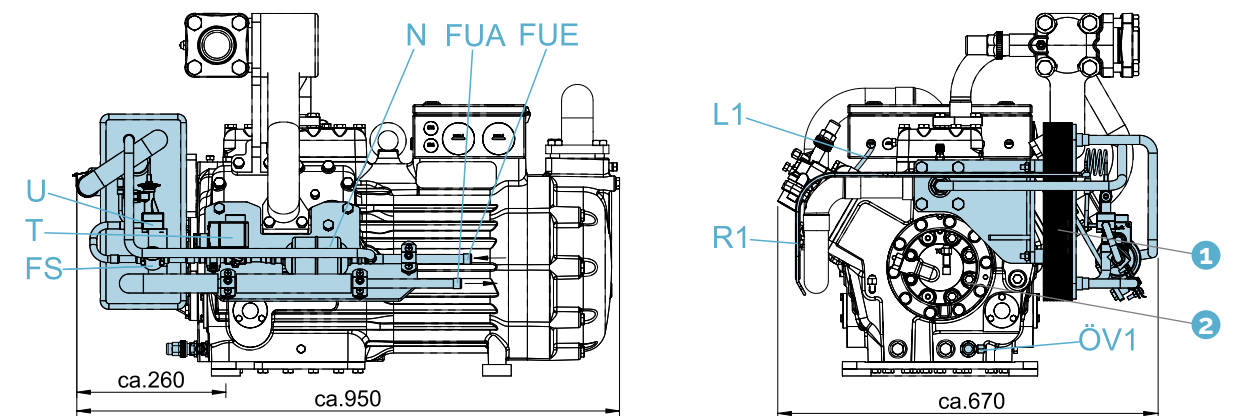
### HGZ7 - Series

Liquid subcooler with accessories supplied separately



### HGZ7 - Option

Liquid subcooler with complete accessories directly mounted onto the compressor

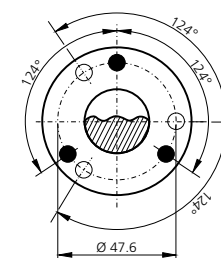


- 1 Liquid subcooler with accessories
- 2 Oil service valve

Dimensions in mm  
● Center of gravity

Connections see page 109  
Rigid fixing without anti-vibration pad  
Dimensions for view X see below

### View X



Possibility to connect to oil level regulator

HGZ7

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

Dimensions in mm

# HGZ two-stage semi-hermetic compressors

## Dimensions and connections

Connections – Series	HGZ7
SV Suction line	Ø 54 mm 2 1/8"
DV Discharge line	Ø 35 mm 1 3/8"
A Connection suction side, not lockable	1/8" NPTF
A1 Connection suction side, lockable	7/16" UNF
A2 Connection suction side, 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 HP	7/16" UNF
D Connection oil pressure safety switch LP	7/16" UNF
D1 Connection oil return from oil separator	1/4" NPTF
F Oil drain plug	M22 x 15
H Oil charge plug	M22 x 15
J Connection oil sump heater	M22 x 15
K Sight glass	3 hole M6
L Connection thermal protection thermostat	1/8" NPTF
O Connection oil level regulator	1)
ÖV Connection oil service valve	1/4" NPTF
P Connection oil pressure differential sensor	M20 x 15
Q Connection oil temperature sensor	1/8" NPTF
R Connection equalizer for injection valve	7/16" UNF
W Connection for refrigerant injection	M22 x 15
X Connection for Schrader valve for intermediate pressure manometer	7/16" UNF

<sup>1)</sup> Dimensions see view X page 105

Connections – Option	HGZ7
FUE Liquid subcooler	Ø 16 mm 5/8"
FUA Liquid subcooler	Ø 16 mm 5/8"
FS Sight glass liquid subcooler	Ø 12 mm
L1 Thermal protection thermostat	1/8" NPTF
N Filter drier	Ø 12 mm
ÖV1 Oil service valve	7/16" UNF
R1 Equalizer for injection valve	Ø 6 mm
T Solenoid valve	Ø 12 mm
U Re-injection valve – dependent on refrigerant	Ø 12 mm

# HGZ two-stage semi-hermetic compressors

## Scope of supply and accessories

	HGZ7
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	●
Special voltage and/or frequency	○ <sup>3)</sup>
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 DELTA-P II	●
4 Direct connection possibility for oil level regulators ESK, AC+R or CARLY	●
Direct connection possibility for oil level regulators Traxoil	● <sup>4)</sup>
Oil charge HGZ: FUCHS Reniso SP46 HGZX: FUCHS Reniso Triton SE55	●
5 Two sight glasses	●
Internal safety valve	●
6 Suction line Shut-off valve	●
7 Discharge line Shut-off valve	●
Inert gas charge	●
4 anti-vibration pads	●
Liquid subcooler, re-injection valve, solenoid valve 230 V - 1 - 50 / 60 Hz, sight glass, filter drier, supplied separately for individual, external installation. Assembly is mandatory for the function of the compressor.	○ <sup>1)</sup>
Liquid subcooler, re-injection valve, solenoid valve 230 V - 1 - 50 / 60 Hz, sight glass, filter drier, directly mounted onto the compressor, fully assembled and insulated with pipes ready for connection.	○ <sup>2)</sup>
10 Oil sump heater 220 – 240 V - 1 - 50 / 60 Hz, 140 W	○ <sup>2)</sup>
11 Thermal protection thermostat (PTC sensor) 230 V - 1 - 50 / 60 Hz	○ <sup>2)</sup>
12 Oil pressure safety switch MP 54, 230 V - 1 - 50 / 60 Hz, IP20	○ <sup>1)</sup>
13 Oil differential pressure sensor DELTA-P II, 220 – 240 V - 1 - 50 / 60 Hz	○ <sup>1)</sup>
14 Oil service valve	○ <sup>2)</sup>
15 Oil temperature sensor	○ <sup>2)</sup>

<sup>1)</sup> Enclosed <sup>2)</sup> Mounted <sup>3)</sup> On request  
<sup>4)</sup> Only possible with additional adapter

● Scope of supply (standard)  
○ Available accessories



# HGZ two-stage semi-hermetic compressors

## Accessories

Intermediate pressure line



Winding protection



Oil pump cover



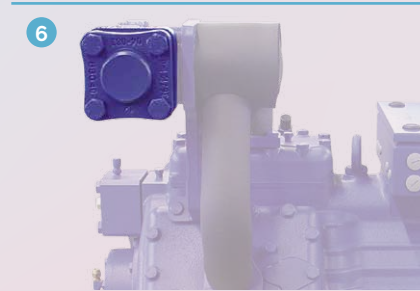
Direct connection possibility



Sight glasses



Suction line shut-off valve



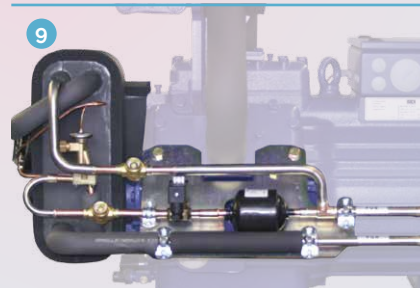
Discharge line shut-off valve



Components enclosed separately



Components mounted directly



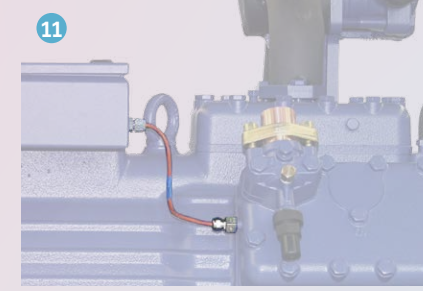
# HGZ two-stage semi-hermetic compressors

## Accessories

Oil sump heater



Thermal protection thermostat



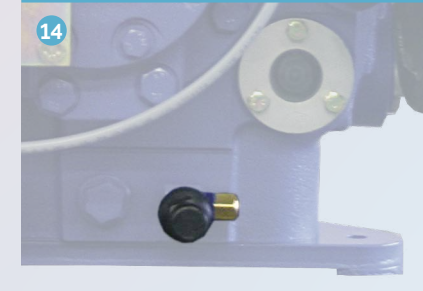
Oil pressure safety switch



Oil differential pressure sensor



Oil service valve



Oil temperature sensor





# BOCK service and support

Up-to-date information, training and tools about BOCK CO<sub>2</sub> compressors, compressors for hydrocarbons and solutions for other refrigerants. Use our expertise for your daily practice – online and free of charge

°Clever+Cool  
Experts<sup>live</sup>

BOCKshop

BOCK CO<sub>2</sub>Tool

BOCK VAP

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 CO<sub>2</sub> 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 and parts lists as well as further information also for printing.

>> [bockshop.bock.de](http://bockshop.bock.de)

#### BOCKCO<sub>2</sub>Tool

The strengths of the BOCKCO<sub>2</sub>Tool based on Excel: Support for the selection of CO<sub>2</sub> 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 CO<sub>2</sub> systems such as booster systems.

>> Usage on request: [vap@bock.de](mailto: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](http://vap.bock.de)



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

**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 CO<sub>2</sub> (R744), hydrocarbons and other low-GWP refrigerants.**

# BOCK

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