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HG semi-hermetic compressors

HA semi-hermetic compressors

HGZ two-stage semi-hermetic compressors



#### 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

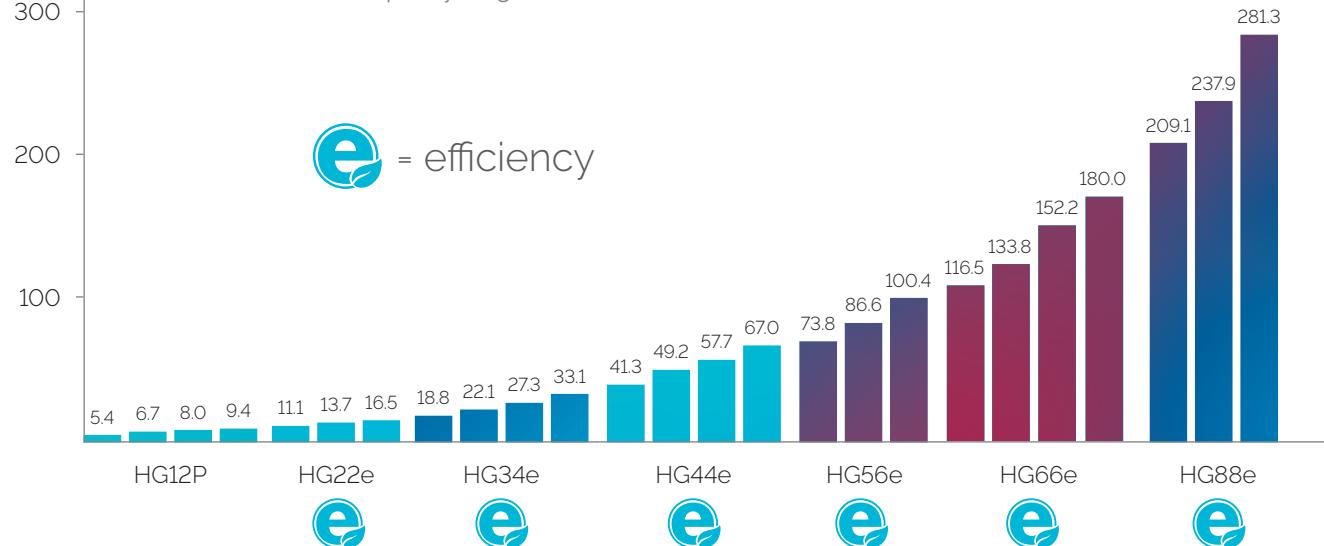
## HG (gas-cooled)

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.



### HG Single-Stage

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



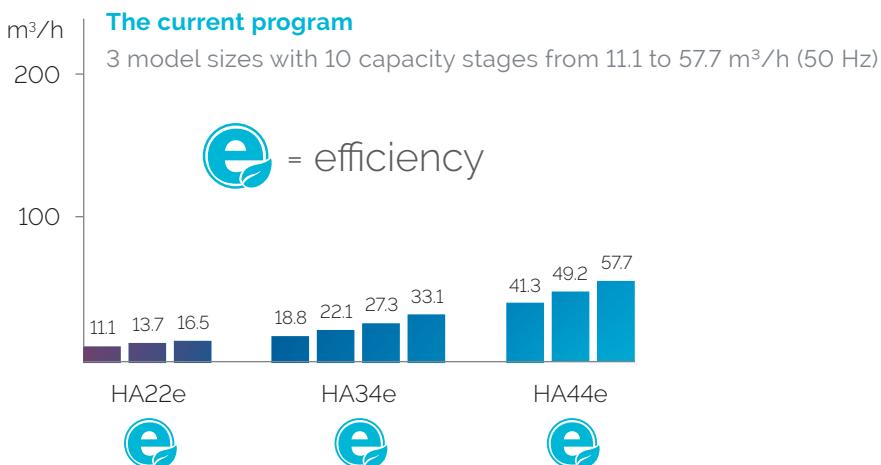
### HGZ Two-Stage

3 capacity stages from 93.7 to 122.4 m<sup>3</sup>/h (50 Hz)



## 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.



# Improved HG/HA Series

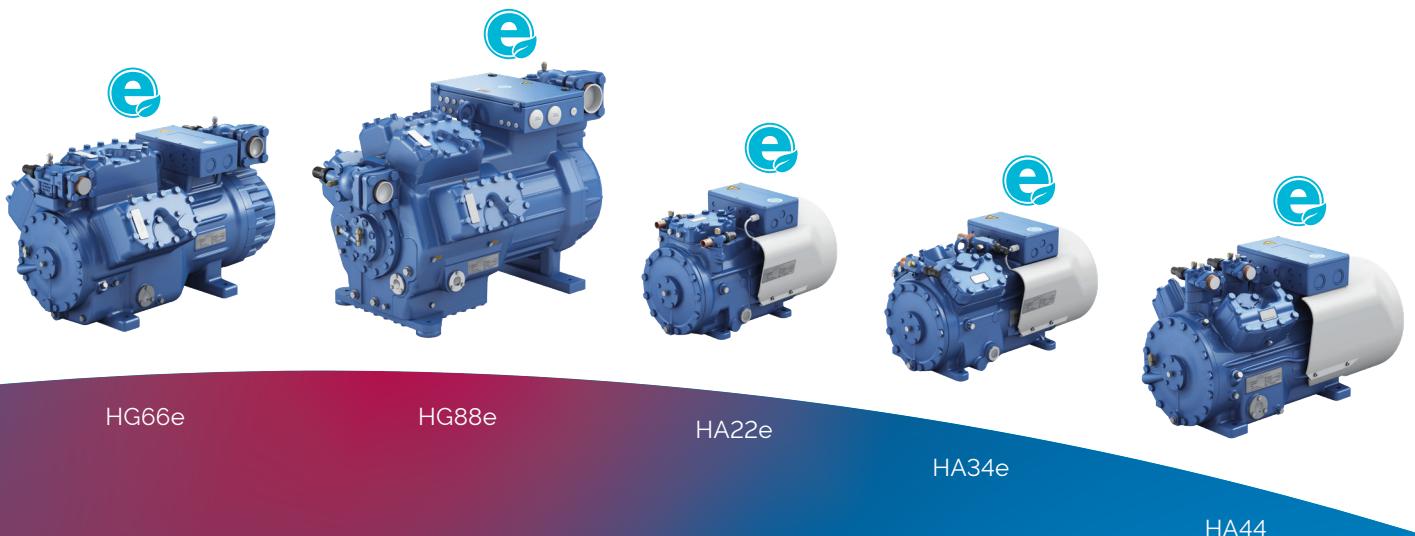
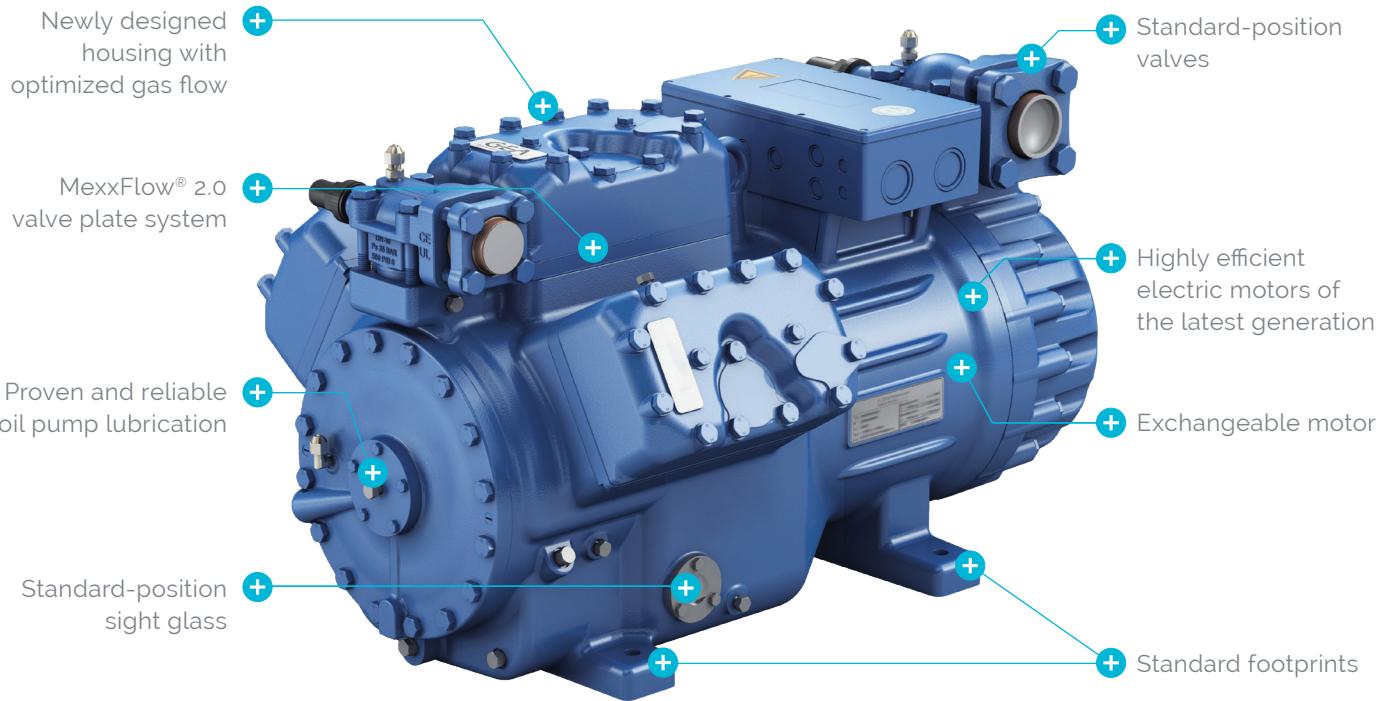
For new advancements in efficiency, BOCK has now updated its entire semi-hermetic compressor range. The new models, marked with the letter "e" (= efficiency), all offer decisive mechanical improvements, a more compact design and easier-to-use connections.

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.

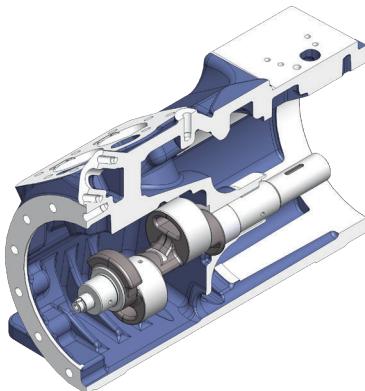




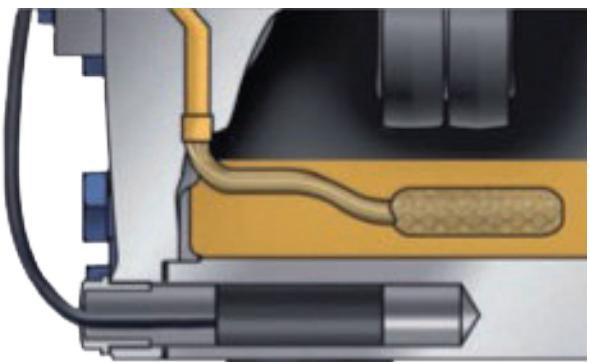
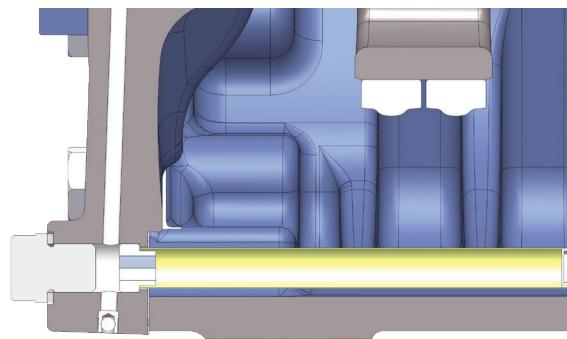
# Improved technology

## Optimized drive gear

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



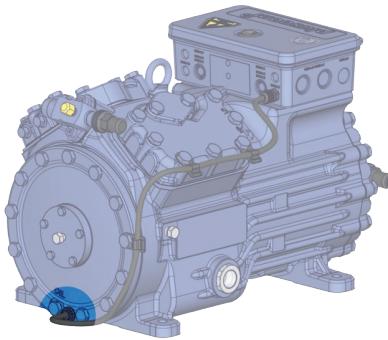
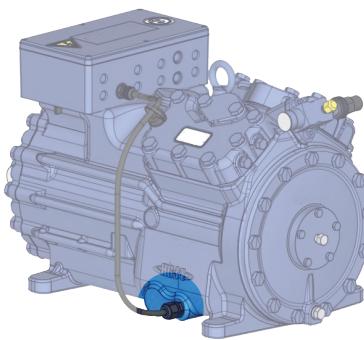
## New, easy-to-maintain strainer



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

• Former version

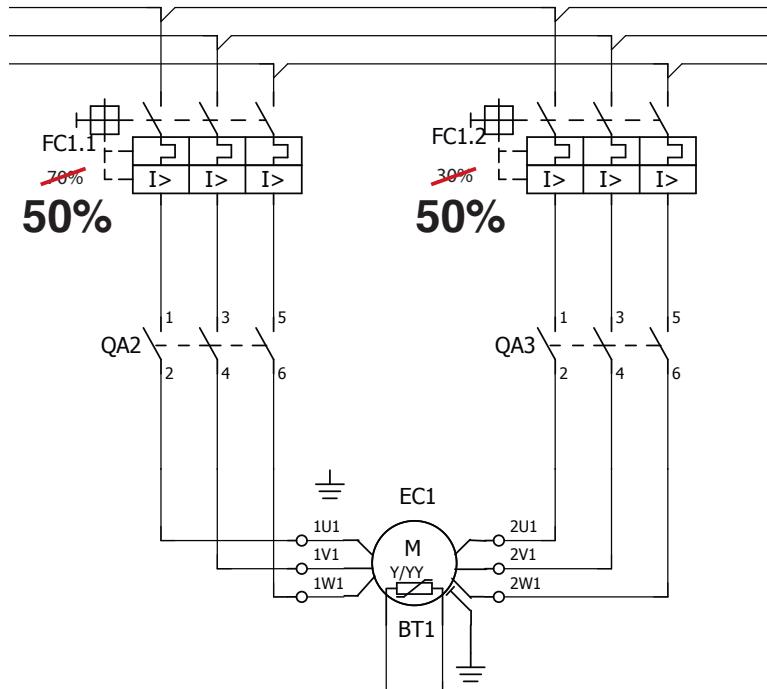
## Optimized fastening of oil sump heater



- New, optimized fastening of oil sump heater

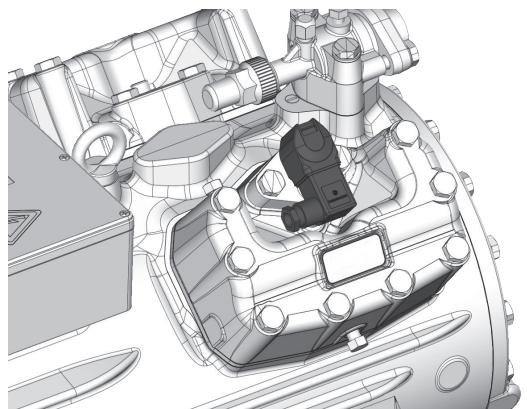
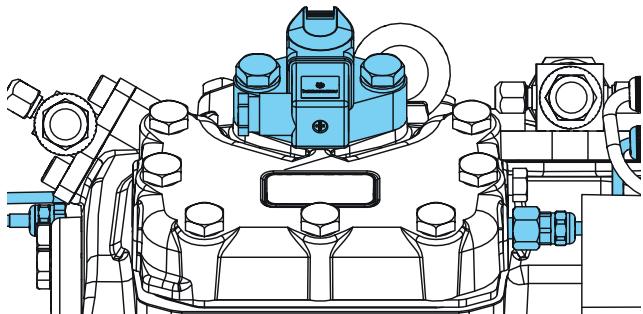
• Former version

## 50 / 50 winding sectioning



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

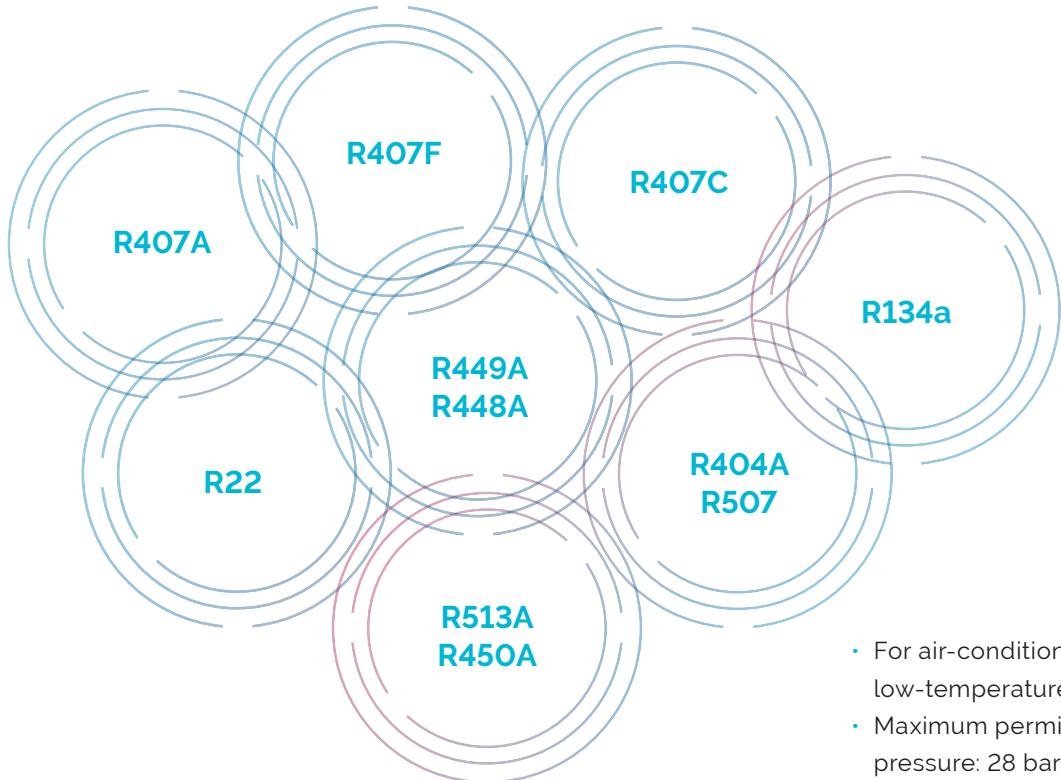
## Digital Capacity Regulator DCR14 (HG34e / HG44e / HG56e / HA34e / HA44e)



- 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

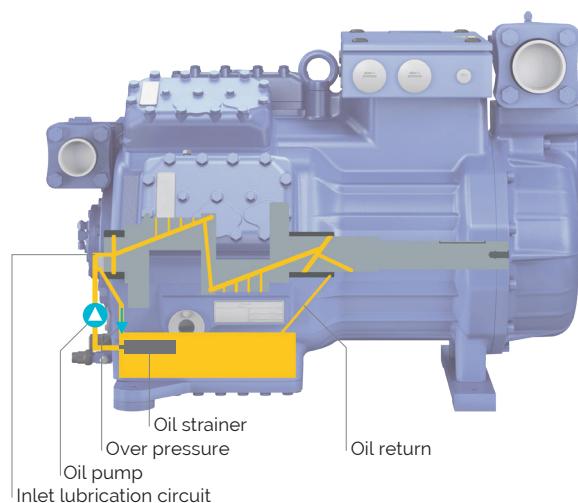


- For air-conditioning, medium and low-temperature application
- Maximum permissible operating pressure: 28 bar

Safe, reliable oil supply

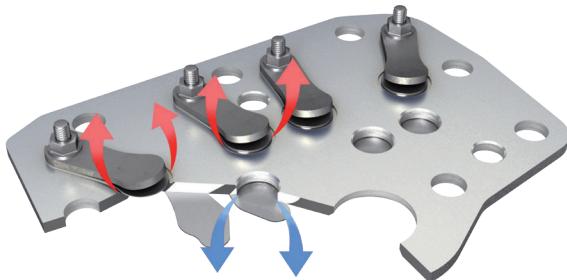


- All compressors with a conventional single circuit lubricating system
- All compressors with oil pump lubrication independent of direction of rotation
- Minimized oil carryover
- Service-friendly oil strainer



- 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



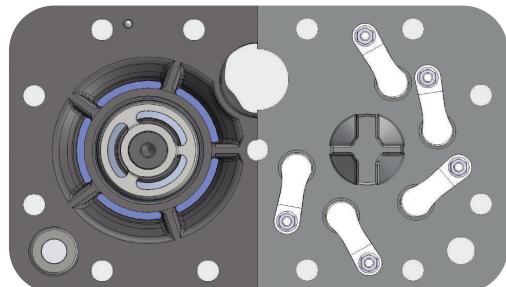
HG12P-56e

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

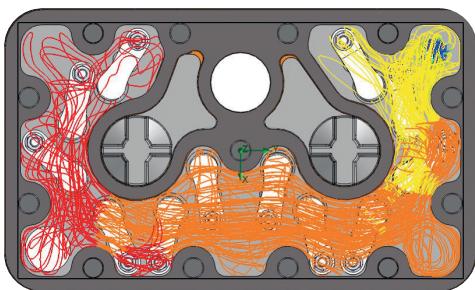
## Valve plate innovation: mexxFlow®, only from BOCK



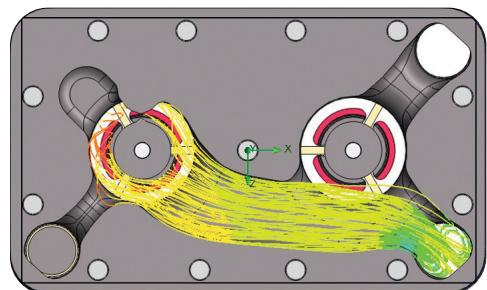
**mexxFlow**  
benchmark for efficiency



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

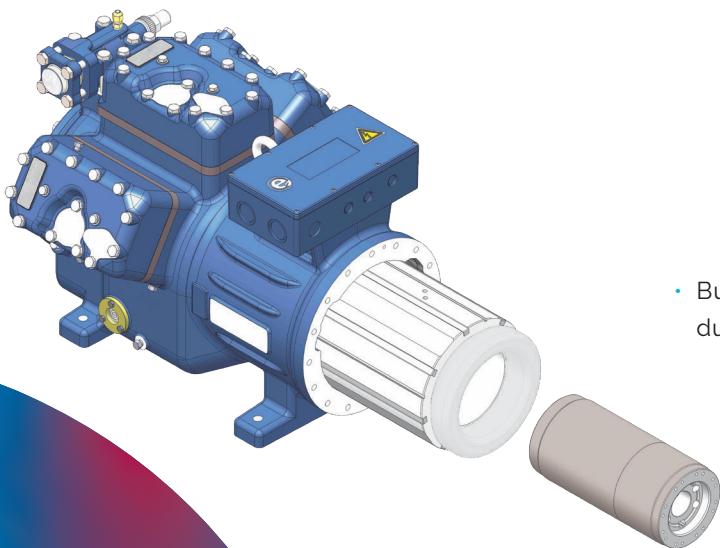
- Solid design of eccentric shaft
- High durability due to low-friction sleeve bearings
- Low oil carryover due to aluminum pistons with double ring assembly



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

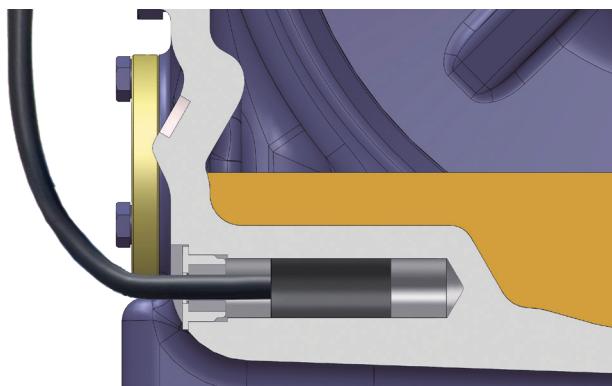
- Solid design of crankshaft
- High durability due to low-friction sleeve bearings
- Aluminum pistons with triple ring assembly, hard-chromium-plated sealing ring, HG44e and HG56e with double ring assembly
- Aluminum connecting rod with high-resistance piston bolt bearings, for HG44e and upwards
- Heavy-duty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

## Service-friendly design

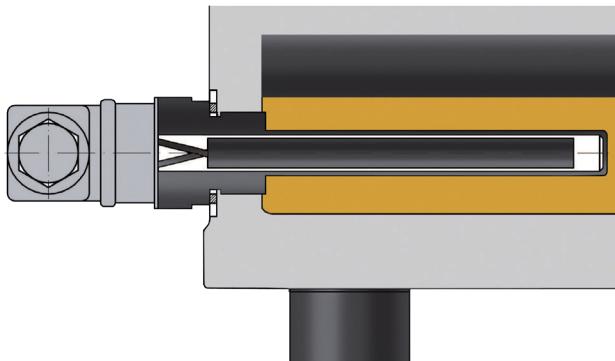


- Built-in motor, easy to replace due to slide fit (not press fit)

## **Oil sump heater**

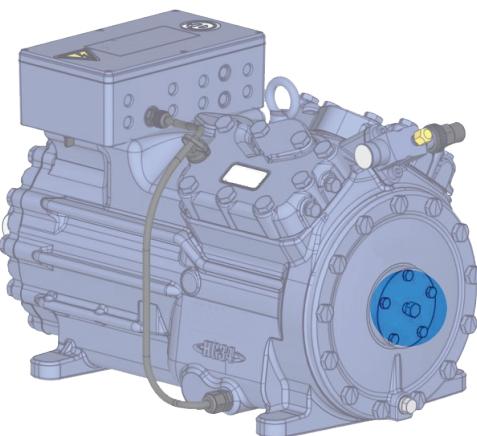


- PTC heater, self-regulating for HG12P up to HG34e
- Constant power for HG44e up to HG66e



- Standard in 8-cylinder compressors HG88e

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



- For HG12P up to HG34e compressors

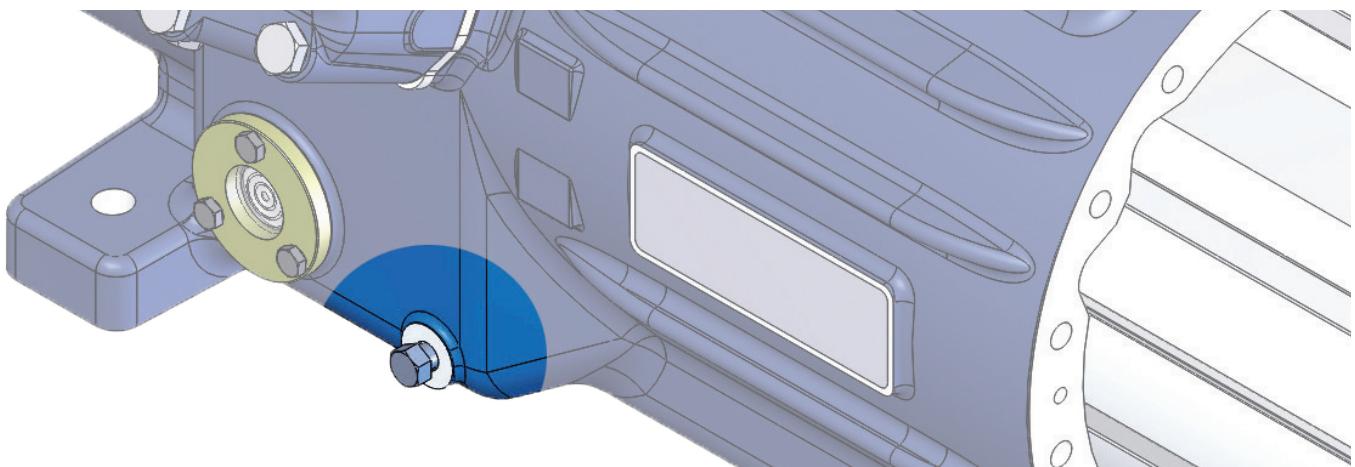
## Variable suction line valve position HG



- **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
<b>HG12P, HG22e, HG34e, HG44e</b>	90°	–
<b>HG56e</b>	180°	90°
<b>HG66e</b>	180°	90°
<b>HG88e</b>	180°	90°

## Connection facility oil temperature sensor



- Available for HG44e – HG88e

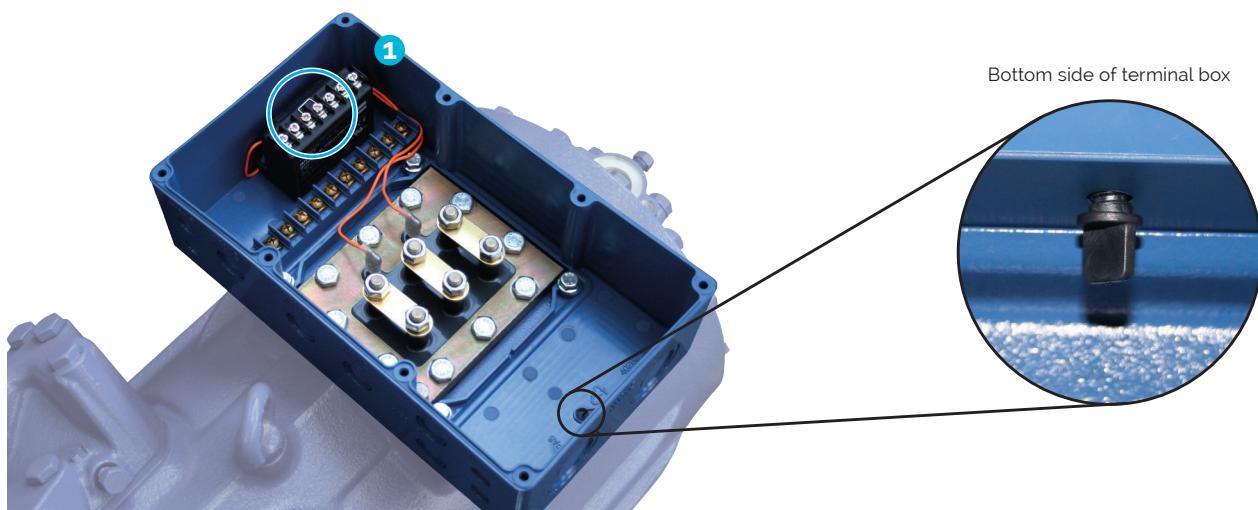
## Electronic motor protection INT69 G



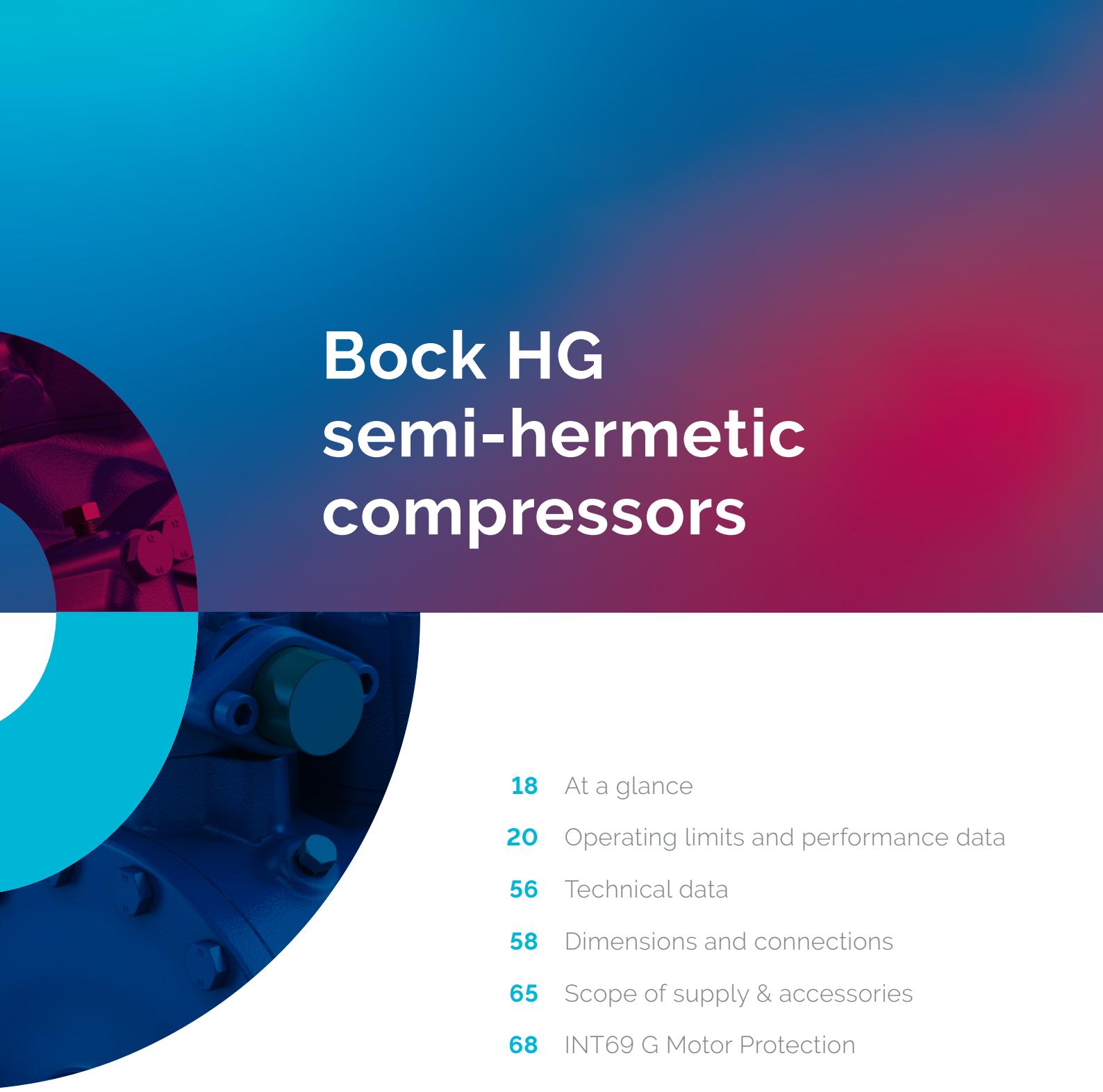
Temperature safety drive for the drive motor

- 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

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## Bock HG12P – HG88e

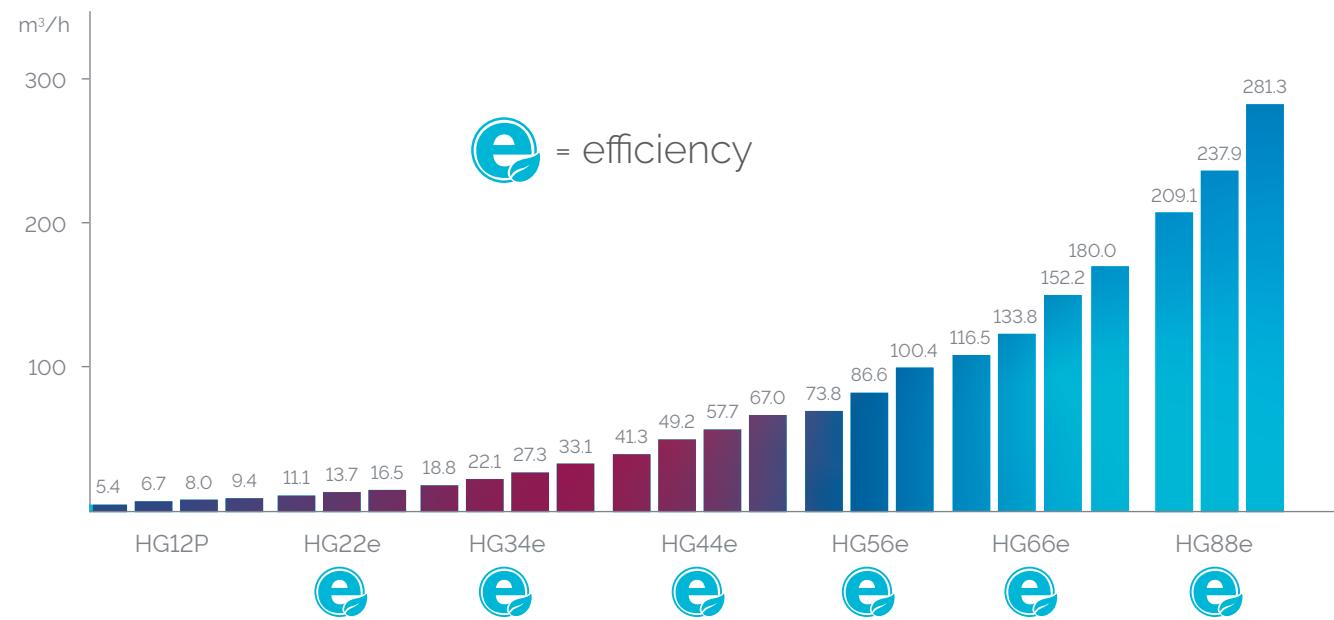


# Bock HG semi-hermetic compressors

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)

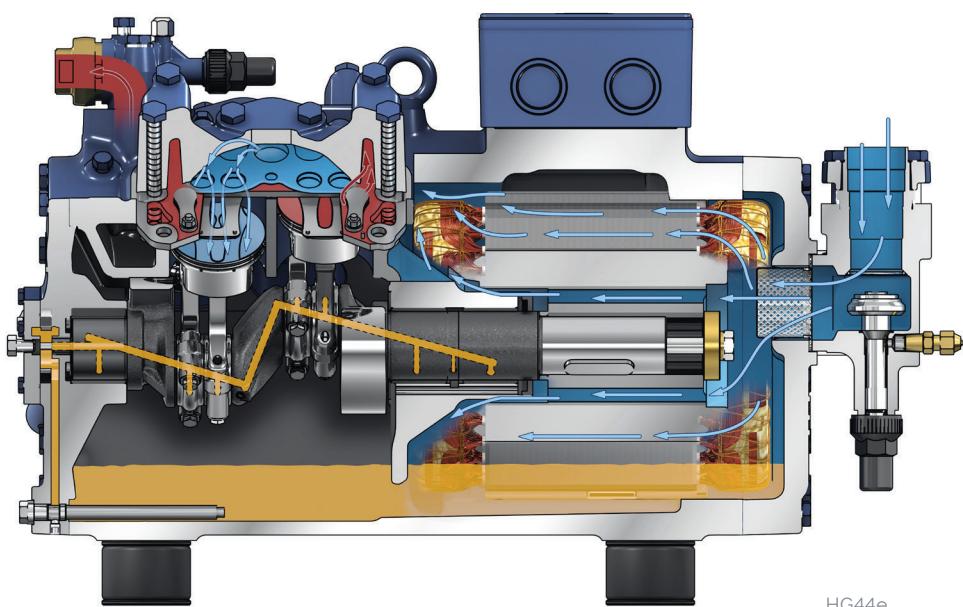


# HG semi-hermetic compressors

## At a glance

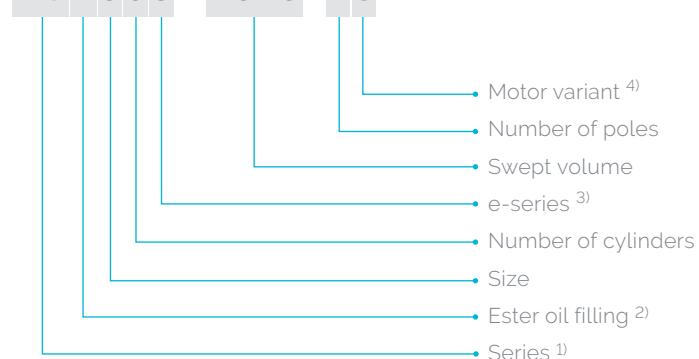
### Special features:

- 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**



<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)

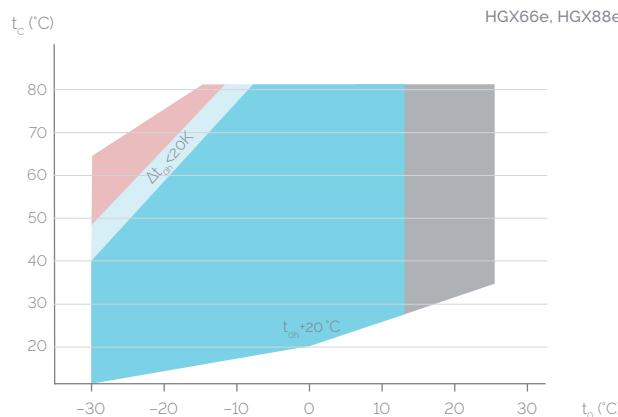
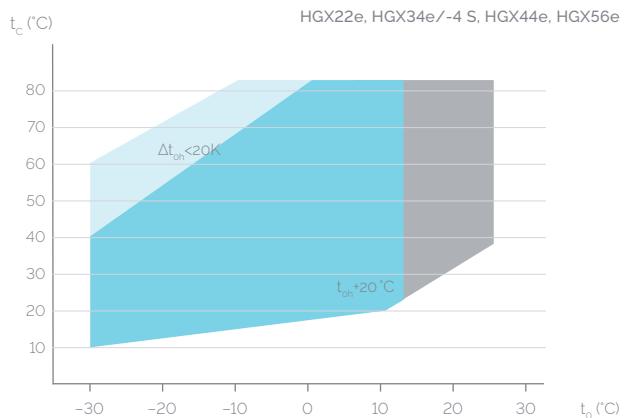
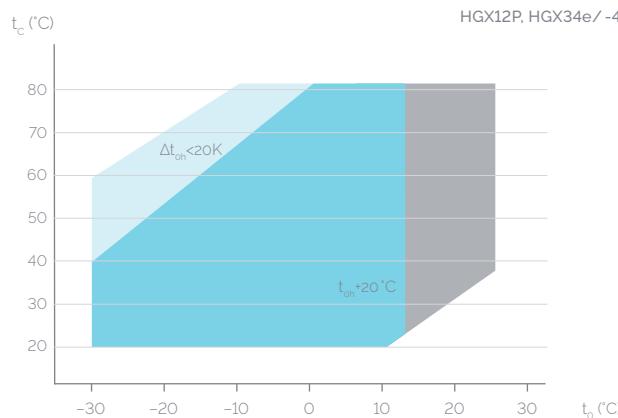
<sup>3)</sup> = Additional declaration for e-series compressors

<sup>4)</sup> S = More powerful motor e.g. air-conditioning applications

# HG semi-hermetic compressors

## Operating limits

R134a



$t_o$  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 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> [W]										Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C											
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25		
HGX12P/60-4S	30 Q	4920	4490	4080	3700	3010	2420	1910	1480	1130	836	605	
	30 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	
	40 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	
	50 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	
HGX12P/75-4	60 P	111	108	104	0.999	0.910	0.821	0.735	0.657	0.593	0.546	0.521	
	70 Q	2450	2220	2010	1810	1450	1130	847	602	381	-	-	
	70 P	122	117	112	106	0.956	0.849	0.750	0.664	0.595	-	-	
	30 Q	6150	5610	5100	4620	3760	3020	2390	1850	1410	1050	756	
	30 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	
	40 P	106	105	103	101	0.959	0.891	0.815	0.739	0.668	0.609	0.565	
HGX12P/90-4	50 Q	4530	4120	3730	3380	2730	2170	1690	1280	927	630	377	
	50 P	123	121	117	114	105	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	
	60 P	139	135	130	124	113	102	0.918	0.821	0.741	0.682	0.651	
	70 Q	3070	2780	2510	2260	1800	1410	1060	751	476	-	-	
	70 P	153	146	140	133	119	106	0.937	0.829	0.743	-	-	
	30 Q	7300	6670	6070	5520	4510	3630	2870	2230	1700	1260	912	
HGX12P/110-4	30 P	108	110	112	112	110	106	0.997	0.915	0.826	0.735	0.649	
	40 Q	6380	5820	5290	4790	3890	3110	2440	1880	1410	1020	708	
	40 P	133	133	132	130	124	116	106	0.955	0.846	0.742	0.649	
	50 Q	5490	4990	4520	4080	3290	2610	2030	1540	1130	793	522	
	50 P	159	156	153	148	138	126	114	101	0.885	0.770	0.672	
	60 Q	4620	4180	3780	3400	2720	2140	1640	1230	876	592	359	
	60 P	182	177	171	165	151	135	120	105	0.914	0.790	0.690	
HGX22e/125-4	70 Q	3780	3410	3060	2750	2180	1690	1280	937	653	-	-	
	70 P	2.00	1.93	1.84	1.76	1.58	1.40	1.22	1.05	0.903	-	-	
	30 Q	8620	7860	7150	6480	5280	4240	3350	2600	1980	1470	1060	
	30 P	123	124	124	123	119	113	104	0.954	0.861	0.776	0.706	
	40 Q	7460	6790	6170	5580	4530	3620	2850	2190	1640	1180	798	
	40 P	149	147	145	142	134	124	114	103	0.938	0.854	0.793	
	50 Q	6350	5770	5230	4730	3830	3040	2370	1790	1300	884	529	
HGX22e/160-4	50 P	173	169	165	159	148	135	122	110	100	0.917	0.866	
	60 Q	5290	4800	4350	3920	3160	2490	1920	1420	978	596	255	
	60 P	196	189	182	175	159	143	128	115	103	0.957	0.914	
	70 Q	4300	3890	3520	3160	2530	1970	1490	1060	668	-	-	
	70 P	2.15	2.05	1.96	1.86	1.67	1.48	1.31	1.16	1.04	-	-	
	30 Q	10200	9270	8440	7660	6220	4960	3860	2930	2160	1550	1090	
	30 P	130	135	138	139	139	134	125	114	102	0.891	0.765	
HGX22e/190-4	40 Q	8990	8200	7450	6740	5440	4300	3310	2480	1790	1260	860	
	40 P	169	170	169	167	159	148	135	120	105	0.903	0.769	
	50 Q	7800	7090	6420	5780	4630	3620	2750	2020	1440	978	657	
	50 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	
	60 P	2.27	2.21	2.13	2.04	1.86	1.66	1.45	1.25	1.07	0.909	0.783	
	70 Q	5330	4800	4310	3840	3000	2280	1690	1200	829	-	-	
HGX22e/190-4	70 P	2.48	2.38	2.27	2.16	1.93	1.70	1.47	1.25	1.06	-	-	
	30 Q	12800	11600	10600	9560	7780	6240	4920	3810	2870	2110	1490	
	30 P	163	165	166	165	163	159	151	141	129	115	0.983	
	40 Q	11200	10200	9200	8330	6750	5390	4230	3240	2410	1730	1160	
	40 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	
	50 P	2.46	2.41	2.36	2.29	2.15	1.99	1.80	1.60	1.38	1.14	0.884	
HGX22e/190-4	60 Q	8230	7460	6730	6060	4840	3790	2880	2100	1430	844	335	
	60 P	2.80	2.72	2.63	2.54	2.33	2.11	1.87	1.61	1.34	1.04	0.744	
	70 Q	6880	6210	5580	4990	3930	3000	2190	1490	862	-	-	
	70 P	3.09	2.97	2.85	2.72	2.45	2.17	1.87	1.56	1.23	-	-	
	30 Q	15300	14000	12900	11700	9630	7800	6180	4790	3610	2640	1870	
	30 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	
HGX22e/190-4	40 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	
	50 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	
	60 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	-	-	
	70 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

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# HG semi-hermetic compressors

## Performance data

R134a | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]									Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C											
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	
HGX34e/215-4	30 Q	17200 2.27	15700 2.30	14400 2.32	13000 2.31	10600 2.25	8450 2.14	6590 1.98	5000 1.80	3670 1.59	2610 1.38	1800 1.18	
	40 Q	15200 2.87	13800 2.84	12600 2.78	11400 2.72	9120 2.55	7190 2.34	5530 2.11	4120 1.87	2970 1.64	2060 1.42	1400 1.22	
	50 Q	13000 3.38	11800 3.27	10700 3.16	9540 3.03	7590 2.76	5890 2.47	4440 2.18	3240 1.90	2270 1.64	1540 1.42	1040 1.24	
	60 Q	10800 3.79	9690 3.62	8690 3.45	7750 3.27	6070 2.90	4620 2.54	3400 2.20	2420 1.89	1660 1.61	1120 1.39	784 1.24	
	70 Q	8590 4.12	7680 3.89	6830 3.66	6040 3.43	4630 2.99	3440 2.56	2480 2.17	1730 1.84	1190 1.56	- -	- -	
	30 P	20600 2.61	18800 2.67	17200 2.71	15600 2.66	12700 2.53	10100 2.34	7800 2.12	5890 1.88	4320 1.63	3080 1.41	2190 1.21	
HGX34e/255-4 <sup>1)</sup>	40 Q	18100 3.36	16500 3.35	15000 3.31	13600 3.25	11000 3.08	8660 2.84	6660 2.57	4960 2.27	3570 1.97	2490 1.68	1710 1.43	
	50 Q	15600 4.02	14200 3.93	12900 3.83	11600 3.71	9310 3.42	7280 3.08	5540 2.73	4070 2.36	2880 2.01	1960 1.68	1330 1.41	
	60 Q	13100 4.56	11900 4.41	10700 4.24	9610 4.06	7640 3.66	5920 3.23	4450 2.80	3220 2.37	2240 1.96	1510 1.61	1030 1.32	
	70 Q	10500 4.98	9430 4.77	8480 4.54	7590 4.30	5970 3.79	4570 3.28	3380 2.76	2410 2.28	1660 1.83	- -	- -	
	30 Q	25500 3.40	23300 3.43	21100 3.43	19200 3.40	15500 3.29	12400 3.11	9660 2.88	7390 2.61	5520 2.32	4040 2.02	2920 1.72	
	40 P	22300 4.22	20300 4.17	18500 4.10	16700 4.01	13500 3.78	10700 3.49	8260 3.16	6260 2.80	4620 2.43	3320 2.07	2330 1.73	
HGX34e/315-4 <sup>1)</sup>	50 Q	19200 4.97	17400 4.85	15800 4.71	14200 4.55	11400 4.19	8950 3.79	6880 3.36	5140 2.91	3720 2.47	2600 2.04	1740 1.65	
	60 Q	16100 5.63	14600 5.44	13100 5.22	11800 5.00	9350 4.51	7280 4.00	5520 3.46	4050 2.93	2850 2.41	1900 1.92	1170 1.47	
	70 Q	13100 6.18	11800 5.91	10600 5.62	9390 5.33	7380 4.71	5660 4.08	4200 3.44	3000 2.82	2010 2.22	- -	- -	
	30 Q	30700 4.27	28100 4.28	25600 4.26	23200 4.22	19000 4.06	15300 3.83	12100 3.53	9310 3.20	7060 2.83	5250 2.46	3860 2.09	
	40 P	27000 5.26	24600 5.19	22400 5.09	20300 4.97	16600 4.67	13300 4.30	10400 3.89	8000 3.46	6020 3.00	4420 2.56	3180 2.13	
	50 Q	23200 6.17	21200 6.01	19300 5.83	17400 5.63	14100 5.18	11300 4.69	8760 4.16	6670 3.62	4940 3.07	3540 2.55	2450 2.06	
HGX34e/380-4 <sup>1)</sup>	60 Q	19600 6.97	17800 6.73	16100 6.46	14600 6.18	11700 5.59	9240 4.96	7130 4.31	5350 3.66	3860 3.02	2650 2.42	1690 1.86	
	70 Q	16000 7.65	14500 7.31	13100 6.97	11800 6.60	9340 5.86	7290 5.09	5530 4.32	4040 3.56	2800 2.83	- -	- -	
	30 Q	39200 4.71	35700 4.75	32500 4.74	29500 4.62	24100 4.41	19400 4.13	15400 3.79	12100 3.42	9190 3.42	6850 3.03	4920 2.63	
	40 P	34500 5.95	31400 5.90	28600 5.82	25900 5.71	21100 5.43	16900 5.07	13400 4.65	10400 4.19	7790 3.70	5670 3.20	3890 2.72	
	50 Q	29900 7.12	27200 6.97	24700 6.80	22300 6.61	18100 6.16	14400 5.64	11300 5.08	8660 4.49	6430 3.88	4520 3.27	2880 2.69	
	60 P	25400 8.16	23000 7.91	20800 7.65	18800 7.36	15100 6.74	12000 6.06	9280 5.35	7000 4.62	5040 3.89	3340 3.17	1840 2.49	
HGX44e/475-4	70 Q	20800 8.99	18800 8.65	16900 8.28	15200 7.90	12100 7.10	9450 6.26	7210 5.40	5280 4.52	3600 3.66	- -	- -	
	30 Q	46600 5.58	42600 5.62	38700 5.64	35200 5.61	28800 5.47	23200 5.22	18500 4.88	14500 4.48	11100 4.03	8310 3.56	6010 3.09	
	40 P	41100 7.07	37500 7.01	34100 6.91	30900 6.79	25200 6.45	20300 6.01	16100 5.51	12500 4.95	9480 4.37	6950 3.78	4820 3.19	
	50 Q	35700 8.49	32500 8.31	29500 8.10	26700 7.87	21700 7.33	17400 6.71	13700 6.03	10600 5.31	7890 4.58	5610 3.86	3640 3.17	
	60 P	30400 9.75	27600 9.45	25000 9.13	22600 8.78	18200 8.03	14500 7.21	11400 6.35	8620 5.47	6280 4.59	4240 3.74	2410 2.92	
	70 Q	25000 10.7	22600 10.3	20400 9.90	18400 9.44	14700 8.47	11600 7.45	8910 6.41	6610 5.36	4590 4.32	- -	- -	
HGX44e/565-4	30 Q	55700 6.61	50900 6.71	46400 6.76	42100 6.62	34400 6.33	27700 5.92	21900 5.40	17000 4.82	12900 4.20	9520 3.57	6880 3.54	
	40 P	49200 8.52	44900 8.45	40800 8.34	37000 8.18	30100 7.76	24100 7.21	18900 6.57	14600 5.86	10900 5.11	7930 4.35	5580 3.61	
	50 Q	42600 10.2	38800 10.0	35200 9.73	31800 9.42	25700 8.72	20400 7.92	15900 7.06	12100 6.16	8940 5.26	6360 4.37	4310 3.54	
	60 P	36000 11.6	32700 11.3	29500 10.8	26600 10.4	21300 9.45	16800 8.42	13000 7.35	9700 6.27	7030 5.22	4850 4.22	3110 3.30	
	70 Q	29400 12.8	26500 12.3	23900 11.7	21400 11.1	17000 9.90	13200 8.64	10100 7.38	7380 6.14	5200 4.95	- -	- -	
	80 P	32000 13.2	29000 12.3	26000 11.7	23000 11.1	18000 9.90	14000 8.64	10500 7.38	7500 6.14	5500 4.95	- -	- -	

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	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C											
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25		
HGX44e/770-4	30	Q P 7.62 7.68	63600 58000 770 767	52800 47900 748	47900 39100 714	39100 31600 6.69	31600 25100 6.14	25100 19700 5.54	19700 15100 4.90	15100 11300 4.25	11300 8100 4.25		
	40	Q P 9.63 9.54	56000 51100 9.42 9.24	46400 42100 8.79	42100 34200 8.21	34200 27500 753	27500 21800 6.78	21800 16900 5.99	16900 12800 5.19	12800 9360 4.40	9360 6460 4.40		
	50	Q P 11.5 11.2	48700 44200 11.0	40100 36300 10.7	36300 29500 9.97	29500 23600 9.14	23600 18600 8.23	18600 14300 7.26	14300 10700 6.28	10700 7510 5.30	7510 4830 4.35		
	60	Q P 13.2 12.8	41300 37500 12.3	30600 24700 11.9	24700 19600 10.9	19600 15300 9.82	15300 11600 8.66	11600 8390 7.48	8390 5630 6.29	5630 3160 5.13	3160 2000 4.02		
	70	Q P 14.5 13.9	34000 30700 13.4	27700 24900 12.7	24900 19900 11.5	19900 15600 10.1	15600 12000 8.74	12000 8810 7.32	8810 6070 5.93	6070 - -	- - -		
HHGX56e/850-4	30	Q P 8.74 8.80	71500 65200 8.79	59400 43900 8.74	53900 43900 8.49	43900 35300 8.08	35300 28000 7.52	28000 21700 6.86	21700 16500 6.11	16500 12300 5.30	12300 8870 4.45		
	40	Q P 11.1 10.9	62900 57400 10.8	52200 47300 10.5	47300 38500 9.99	38500 30900 9.27	30900 24300 8.43	24300 18800 7.50	18800 14200 6.51	14200 10400 5.48	10400 7330 4.45		
	50	Q P 13.2 12.9	54500 49600 12.5	45000 40700 12.1	40700 33000 11.2	33000 26400 10.2	26400 20700 9.11	20700 15900 7.93	15900 11900 6.71	11900 8470 5.47	8470 5720 4.26		
	60	Q P 15.1 14.6	46000 41800 14.1	37900 34200 13.5	34200 27600 12.3	27600 21900 10.9	21900 17100 9.57	17100 13000 8.13	13000 9440 6.68	9440 6520 5.24	6520 4060 3.85		
	70	Q P 16.7 16.0	37600 34100 15.3	30800 27700 14.6	27700 22200 13.0	22200 17500 11.4	17500 13400 9.77	13400 9960 8.09	9960 7050 6.41	7050 - -	- - -		
HGX56e/995-4	30	Q P 10.1 10.1	82900 75700 10.1	68900 62500 10.1	62500 51000 9.81	51000 41000 9.29	41000 32400 8.62	32400 25100 7.81	25100 19000 6.92	19000 14000 5.98	14000 10100 5.03		
	40	Q P 12.7 12.6	73100 66600 12.7	66600 54900 12.4	60600 44700 12.1	54900 44700 11.4	44700 35800 10.6	35800 28100 9.60	28100 21600 8.51	21600 16200 7.36	16200 11700 6.20		
	50	Q P 15.2 14.8	63200 57600 14.8	52300 47300 14.4	47300 38300 13.9	38300 30500 12.9	30500 23900 11.6	23900 18100 10.3	18100 13300 8.98	13300 9260 7.58	9260 5930 6.19		
	60	Q P 17.4 16.8	53300 48500 16.1	43900 39700 15.5	39700 32000 14.0	32000 25300 12.4	25300 19500 10.8	19500 14600 9.16	14600 10400 7.49	10400 6770 5.88	6770 3720 4.35		
	70	Q P 19.1 18.3	43500 39400 17.5	35600 32000 16.6	32000 25600 14.7	25600 20000 12.8	20000 15200 10.9	15200 11000 8.94	11000 7380 7.02	7380 - -	- - -		
HGX56e/1155-4	30	Q P 13.0 12.9	94600 86200 12.8	78400 71100 12.6	71100 57800 12.0	57800 46400 11.2	46400 36600 10.3	36600 28400 9.31	28400 21600 8.24	21600 16000 7.16	16000 11700 6.12		
	40	Q P 15.9 15.6	83600 76200 15.3	69200 62600 14.9	62600 50800 13.9	50800 40700 12.8	40700 32000 11.5	32000 24700 10.2	24700 18600 8.85	18600 13600 7.51	13600 9550 6.24		
	50	Q P 18.7 18.2	72600 66000 17.6	59900 54100 17.0	54100 43800 16.7	43800 34900 15.6	34900 27300 14.1	27300 20800 12.5	20800 15500 10.8	15500 11000 9.21	11000 7340 7.60		
	60	Q P 21.3 20.5	61500 55800 19.7	50500 45500 18.9	45500 36700 17.1	36700 29000 15.1	29000 22500 13.2	22500 17000 11.1	17000 12300 9.20	12300 8370 7.29	8370 5090 5.50		
	70	Q P 23.5 22.5	50400 45600 21.4	41100 37000 20.3	37000 29500 18.1	29500 23200 15.7	23200 17700 13.3	17700 13100 11.0	13100 9130 8.69	9130 - -	- - -		
HGX66e/1340-4	30	Q P 14.0 14.2	109000 99700 14.2	91000 82900 14.1	82900 68000 13.6	68000 54900 12.9	54900 43600 12.0	43600 33900 10.8	33900 25800 9.66	25800 19100 8.40	19100 13800 7.16		
	40	Q P 17.7 17.5	97000 88700 17.2	80800 73400 16.8	73400 59900 15.8	59900 48000 14.5	48000 37800 13.1	37800 29100 11.6	29100 21800 10.1	21800 15800 8.65	15800 11100 7.22		
	50	Q P 20.9 20.4	84400 76900 19.7	69900 63300 19.0	63300 51300 17.5	51300 40800 15.8	40800 31800 14.0	31800 24200 12.1	24200 17900 10.3	17900 12700 8.62	12700 - -		
	60	Q P 23.6 22.8	71300 64800 21.8	64800 52900 20.8	52900 42500 18.8	42500 33500 16.6	33500 25900 14.4	25900 19500 12.3	19500 14200 10.2	14200 - -	- - -		
	70	Q P 25.8 24.6	57900 52400 23.4	47200 42400 22.1	42400 33800 20.1	33800 26400 19.6	26400 20200 17.0	20200 15100 14.4	15100 - 12.0	- - -	- - -		
HGX66e/1540-4	30	Q P 16.1 16.2	125000 115000 16.3	105000 95200 16.2	95200 78200 15.7	78200 63300 14.9	63300 50400 13.8	50400 39300 12.5	39300 30000 11.1	30000 22300 9.74	22300 16200 8.33		
	40	Q P 20.4 20.2	112000 102000 19.8	92900 84400 19.4	84400 69000 18.2	69000 55500 16.8	55500 43900 15.2	43900 33900 13.5	33900 25500 11.8	25500 18700 10.1	18700 13200 8.50		
	50	Q P 24.2 23.6	97000 88500 22.9	80500 73000 22.1	73000 59300 20.3	59300 47400 18.3	47400 37100 16.3	37100 28400 14.2	28400 21100 12.1	21100 15200 10.2	15200 - -		
	60	Q P 27.5 26.4	82100 74700 24.3	67700 61200 23.9	61200 49300 21.9	49300 39100 19.4	39100 30400 17.6	30400 23000 14.5	23000 16900 12.1	16900 - -	- - -		
	70	Q P 30.1 28.7	66900 60600 27.3	54700 49200 25.9	49200 39400 23.0	39400 31000 20.0	31000 23900 17.1	23900 18100 14.3	18100 - -	- - -	- - -		
HGX66e/1750-4	30	Q P 18.4 18.6	143000 131000 18.6	120000 109000 18.5	109000 89400 17.9	89400 72400 17.0	72400 57600 15.8	57600 44900 14.4	44900 34300 12.8	34300 25600 11.2	25600 18600 9.67		
	40	Q P 23.3 23.0	128000 117000 22.6	107000 96600 22.1	96600 79000 20.8	79000 63600 19.2	63600 50200 17.5	50200 38800 15.5	38800 29300 13.6	29300 21400 11.7	21400 15200 9.89		
	50	Q P 27.6 26.9	111000 102000 25.2	92200 83600 23.2	83600 67900 21.0	67900 54300 18.7	54300 42500 16.3	42500 32600 14.0	32600 24200 11.8	24200 17400 -	17400 - -		
	60	Q P 31.3 30.2	94100 85600 27.7	77600 70100 25.1	70100 56600 22.3	56600 44900 19.4	44900 34900 16.7	34900 26500 14.0	26500 19500 14.0	19500 - -	- - -		
	70	Q P 34.3 32.8	76700 69500 31.2	62800 56500 29.6	56500 45200 26.3	45200 35600 23.0	35600 27500 19.7	27500 20800 16.5	20800 - -	- - -	- - -		

Relating to 20 °C suction gas temperature  
without liquid subcooling

Supplementary cooling or  
reduced suction gas temperature

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# HG semi-hermetic compressors

## Performance data

### R134a | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C											
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25		
HGX66e/2070-4	30	Q P 217	168000 154000 219	141000 125000 219	129000 114000 218	106000 93000 211	85300 74900 20.0	67900 59200 18.6	53000 45800 16.9	40500 34500 15.0	30200 25300 131	22000 17900 112	
	40	Q P 276	150000 137000 272	125000 114000 26.7	114000 98300 261	93000 79900 24.6	74900 63900 22.7	59200 50100 20.6	45800 38400 18.3	34500 28600 15.9	25300 20600 13.7	17900 138 115	
	50	Q P 32.8	131000 120000 31.9	109000 98300 30.9	98300 79900 29.9	79900 63900 27.5	63900 50100 24.8	50100 41100 22.0	38400 32400 19.2	28600 24600 16.4	20600 19.4 13.8	-	
	60	Q P 37.3	111000 101000 35.9	91100 82400 34.4	82400 66500 32.9	66500 52800 29.7	52800 41100 26.3	41100 31200 22.9	32400 23200 19.6	23000 16.5 16.5	-	-	
	70	Q P 40.9	89900 81500 39.0	73700 66300 371	66300 53200 352	53200 41900 312	41900 32400 272	32400 23200 23.2	24600 19.4 -	-	-	-	
HGX88e/2400-4	30	Q P 26.1	197000 181000 26.3	165000 151000 26.3	151000 124000 26.1	124000 99900 25.4	99900 79500 24.2	79500 62000 22.5	62000 47400 20.6	47400 35300 18.4	35300 161 13.8	25700	
	40	Q P 32.8	176000 161000 32.4	147000 134000 31.8	134000 110000 31.1	110000 87800 29.4	87800 69400 27.2	69400 53700 24.8	53700 40500 22.2	40500 29600 19.5	29600 16.8 14.2	21000	
	50	Q P 38.8	154000 141000 37.8	128000 116000 36.7	116000 94000 35.4	94000 75100 32.7	75100 58900 29.7	58900 45100 26.5	45100 33600 23.3	33600 24200 20.1	24200 170 -	-	
	60	Q P 44.0	131000 119000 42.4	108000 97100 40.7	97100 78400 38.9	78400 62200 35.3	62200 48300 31.5	48300 36700 27.6	36700 27100 23.8	27100 20.2 -	-	-	
	70	Q P 48.2	107000 96400 46.1	87100 78400 43.9	78400 62800 41.6	62800 49400 37.1	49400 38200 32.5	38200 29000 28.0	29000 23.7 23.7	-	-	-	
HGX88e/2735-4	30	Q P 29.9	225000 206000 30.1	188000 171000 30.1	171000 141000 29.9	141000 114000 29.0	114000 90500 27.6	90500 70600 25.8	70600 53900 23.5	53900 40200 21.1	40200 18.5 15.8	29300	
	40	Q P 37.4	201000 184000 36.9	168000 152000 36.3	152000 125000 35.5	125000 100000 33.5	100000 79000 31.1	79000 61100 28.4	61100 46100 25.4	46100 33700 22.3	33700 19.2 16.3	23900	
	50	Q P 44.1	176000 160000 43.0	146000 132000 41.7	132000 108000 40.3	108000 85600 37.3	85600 67100 33.9	67100 51400 30.3	51400 38200 26.7	38200 27500 23.0	27500 19.5 -	-	
	60	Q P 49.8	149000 136000 48.1	123000 111000 46.2	111000 89400 44.3	89400 70900 40.2	70900 55100 35.9	55100 41800 31.5	41800 30900 27.2	30900 23.1 23.1	-	-	
	70	Q P 54.5	122000 111000 52.2	99400 98400 49.7	98400 71600 47.2	71600 56300 42.2	56300 43500 37.0	43500 33000 32.0	33000 271 -	-	-	-	
HGX88e/3235-4	30	Q P 35.2	265000 243000 35.4	222000 202000 35.4	202000 166000 35.2	166000 135000 34.2	135000 107000 32.5	107000 83300 30.3	83300 63500 27.6	63500 47300 24.7	47300 21.6 18.5	34400	
	40	Q P 44.1	237000 217000 43.5	198000 180000 42.7	180000 147000 41.8	147000 118000 39.4	118000 93200 36.6	93200 72000 33.3	72000 54200 29.8	54200 39600 26.1	39600 22.5 18.9	28000	
	50	Q P 52.0	207000 189000 50.6	172000 156000 49.1	156000 127000 47.5	127000 101000 43.8	101000 78900 39.8	78900 60400 35.6	60400 44900 31.2	44900 32300 26.9	32300 22.7 -	-	
	60	Q P 58.7	176000 160000 56.6	145000 131000 54.4	131000 106000 52.1	106000 83400 47.2	83400 64700 42.1	64700 49100 37.0	49100 36100 31.8	36100 26.9 -	-	-	
	70	Q P 64.3	144000 130000 61.4	117000 106000 58.5	106000 84200 55.6	84200 66200 49.5	66200 51100 43.4	51100 38600 37.4	38600 315 -	-	-	-	

Relating to 20 °C suction gas temperature without liquid subcooling

Supplementary cooling or reduced suction gas temperature

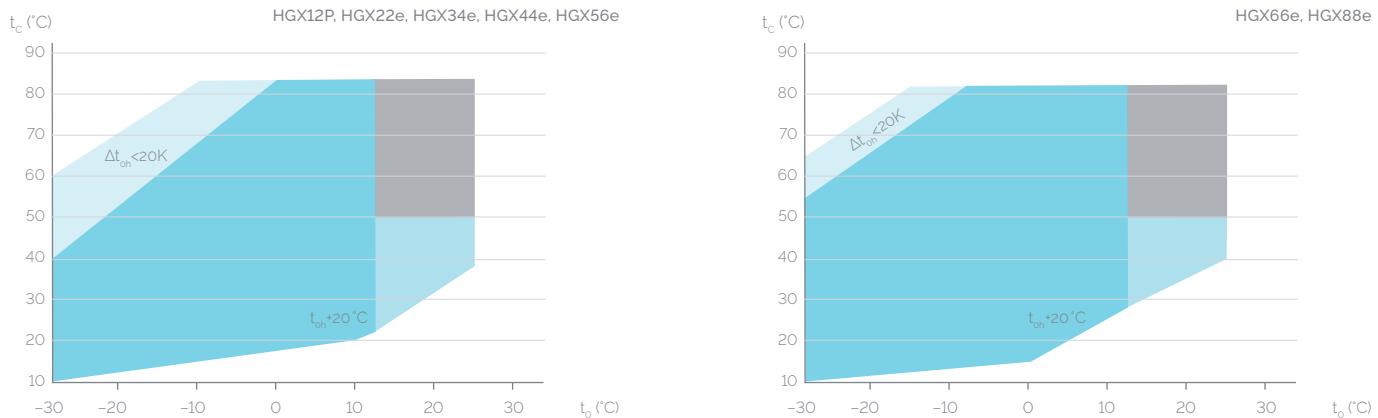
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# HG semi-hermetic compressors

## Operating limits

### R513A



$t_o$  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 ( $\Delta t_{oh} < 20K$ )
- Motor version -S- (more powerful motor)
- Required minimum superheating  $\Delta t_{Oh}=20K$

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	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C											
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25		
HGX12P/60-4 S	30 Q	5040	4610	4210	3830	3150	2550	2040	1600	1230	925	677	
	30 P	0.722	0.732	0.735	0.732	0.713	0.679	0.633	0.581	0.527	0.475	0.431	
	40 Q	4320	3950	3600	3270	2680	2170	1720	1340	1020	745	520	
	40 P	0.879	0.873	0.862	0.847	0.805	0.751	0.691	0.629	0.569	0.516	0.474	
	50 Q	3620	3310	3010	2730	2230	1800	1420	1090	809	570	365	
	50 P	102	100	0.981	0.953	0.888	0.816	0.741	0.668	0.603	0.548	0.508	
HGX12P/75-4	60 Q	2950	2690	2450	2220	1800	1440	1130	850	611	401	213	
	60 P	116	112	108	104	0.956	0.865	0.777	0.694	0.622	0.566	0.529	
	70 Q	2320	2110	1910	1730	1400	1110	849	625	424	-	-	
	70 P	127	122	117	111	100	0.895	0.792	0.699	0.622	-	-	
	30 Q	6280	5750	5260	4790	3930	3190	2550	2000	1540	1160	846	
	30 P	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 S	40 Q	5500	5030	4590	4180	3350	2700	2150	1680	1270	931	650	
	40 P	119	118	118	116	100	0.939	0.864	0.786	0.711	0.645	0.592	
	50 Q	4690	4280	3890	3530	2790	2240	1770	1360	1010	712	456	
	50 P	139	137	134	131	110	101	0.926	0.835	0.753	0.684	0.635	
	60 Q	3840	3500	3170	2870	2250	1800	1410	1070	763	501	266	
	60 P	157	154	149	144	119	108	0.970	0.867	0.777	0.707	0.660	
HGX12P/90-4	70 Q	2990	2710	2440	2200	1740	1380	1060	780	529	-	-	
	70 P	175	169	163	157	125	111	0.990	0.874	0.777	-	-	
	30 Q	7550	6890	6270	5690	4710	3830	3060	2410	1860	1400	1030	
	30 P	115	117	119	119	114	110	104	0.963	0.874	0.780	0.689	
	40 Q	6570	5990	5440	4940	4030	3250	2580	2010	1530	1130	800	
	40 P	142	142	141	139	130	122	112	101	0.908	0.799	0.698	
HGX12P/90-4 S	50 Q	5590	5090	4620	4180	3370	2700	2130	1640	1230	880	600	
	50 P	167	165	162	158	145	134	121	108	0.953	0.831	0.723	
	60 Q	4600	4180	3790	3420	2730	2170	1690	1280	940	658	426	
	60 P	190	186	180	175	158	143	128	112	0.983	0.850	0.737	
	70 Q	3600	3260	2940	2650	2110	1660	1280	956	689	-	-	
	70 P	210	203	196	188	166	148	130	112	0.969	-	-	
HGX12P/110-4	30 Q	8820	8070	7370	6710	5510	4470	3570	2800	2160	1620	1190	
	30 P	126	128	128	128	125	118	110	101	0.923	0.833	0.755	
	40 Q	7560	6910	6300	5730	4690	3790	3010	2350	1780	1310	911	
	40 P	154	153	151	148	141	131	121	110	0.997	0.904	0.831	
	50 Q	6340	5790	5270	4780	3900	3140	2480	1910	1420	998	640	
	50 P	180	176	171	166	155	142	129	117	105	0.960	0.891	
HGX12P/110-4 S	60 Q	5170	4710	4280	3880	3150	2520	1970	1490	1070	702	373	
	60 P	2.03	1.97	1.90	1.82	1.75	1.67	1.51	1.36	1.21	0.991	0.926	
	70 Q	4050	3690	3340	3020	2440	1940	1490	1100	741	-	-	
	70 P	2.23	2.14	2.05	1.95	1.76	1.56	1.38	1.22	1.08	-	-	
	30 Q	10400	9540	8730	7970	6540	5280	4170	3210	2410	1750	1240	
	30 P	131	137	141	143	144	140	132	122	109	0.964	0.832	
HGX22e/125-4	40 Q	9130	8370	7640	6950	5670	4540	3550	2700	1990	1420	975	
	40 P	173	174	174	173	166	156	143	128	113	0.980	0.837	
	50 Q	7810	7130	6490	5880	4760	3770	2920	2190	1580	1100	741	
	50 P	2.08	2.05	2.01	1.97	1.83	1.68	1.51	1.33	1.15	0.986	0.839	
	60 Q	6440	5860	5310	4790	3840	3010	2290	1690	1210	825	558	
	60 P	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 S	70 Q	5060	4580	4130	3700	2920	2260	1700	1240	875	-	-	
	70 P	2.57	2.48	2.38	2.28	2.03	1.80	1.57	1.35	1.15	-	-	
	30 Q	13100	12000	11000	10100	8150	6600	5270	4130	3160	2360	1700	
	30 P	171	175	177	179	171	166	159	150	138	124	107	
	40 Q	11500	10600	9600	8740	7010	5660	4490	3490	2640	1930	1340	
	40 P	2.17	2.16	2.15	2.12	2.00	1.90	1.78	1.63	1.46	1.27	1.07	
HGX22e/160-4	50 Q	9850	8990	8170	7400	5930	4750	3740	2870	2120	1490	944	
	50 P	2.56	2.51	2.46	2.40	2.25	2.09	1.91	1.71	1.49	1.26	1.00	
	60 Q	8170	7420	6720	6050	4870	3860	2990	2230	1580	1010	505	
	60 P	2.89	2.80	2.71	2.61	2.44	2.22	1.99	1.73	1.47	1.18	0.888	
	70 Q	6490	5850	5260	4700	3830	2980	2230	1580	994	-	-	
	70 P	3.15	3.03	2.91	2.78	2.57	2.30	2.00	1.70	1.38	-	-	
HGX22e/190-4	30 Q	15700	14500	13300	12200	10100	8230	6620	5200	3990	2970	2140	
	30 P	2.11	2.13	2.14	2.14	2.10	2.02	1.90	1.76	1.59	1.41	1.21	
	40 Q	13700	12600	11600	10600	8760	7130	5690	4430	3360	2460	1740	
	40 P	2.64	2.62	2.59	2.55	2.45	2.29	2.11	1.91	1.69	1.47	1.24	
	50 Q	11800	10800	9840	8980	7420	5990	4740	3660	2740	1980	1380	
	50 P	3.15	3.08	3.01	2.93	2.76	2.53	2.28	2.03	1.77	1.51	1.25	
HGX22e/190-4 S	60 Q	9740	8920	8150	7410	6070	4850	3800	2900	2140	1540	1070	
	60 P	3.61	3.50	3.38	3.25	3.01	2.72	2.41	2.11	1.81	1.52	1.23	
	70 Q	7780	7100	6460	5850	4710	3730	2880	2170	1600	-	-	
	70 P	4.00	3.84	3.68	3.51	3.20	2.84	2.49	2.14	1.80	-	-	

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	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C											
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25		
HGX34e/215-4 HGX34e/215-4 S	30 Q	17600	16200	14800	13500	11100	8960	7080	5460	4080	2960	2070	
	30 P	2.36	2.39	2.41	2.41	2.36	2.25	2.10	1.92	1.71	1.50	1.29	
	40 Q	15400	14100	12800	11700	9470	7570	5900	4480	3290	2320	1590	
	40 P	3.00	2.96	2.91	2.84	2.68	2.47	2.24	2.00	1.76	1.53	1.32	
	50 Q	13000	11800	10800	9680	7790	6130	4700	3490	2500	1720	1160	
	50 P	3.54	3.43	3.31	3.19	2.91	2.62	2.33	2.04	1.76	1.52	1.32	
	60 Q	10600	9550	8610	7730	6120	4730	3550	2570	1800	1220	839	
HG34e/255-4 HGX34e/255-4 S	60 P	3.98	3.81	3.63	3.45	3.08	2.71	2.36	2.03	1.73	1.49	1.30	
	70 Q	8170	7340	6560	5830	4530	3420	2510	1790	1250	-	-	
	70 P	4.33	4.10	3.87	3.64	3.18	2.75	2.34	1.98	1.67	-	-	
	30 Q	21000	19300	17700	16200	13300	10700	8420	6470	4820	3490	2470	
	30 P	2.69	2.77	2.81	2.83	2.79	2.67	2.50	2.28	2.03	1.78	1.53	
	40 Q	18300	16800	15400	14000	11500	9140	7140	5420	3980	2820	1940	
	40 P	3.48	3.47	3.45	3.40	3.24	3.01	2.74	2.45	2.14	1.84	1.56	
HGX34e/315-4 HGX34e/315-4 S	50 Q	15600	14200	13000	11800	9550	7590	5870	4400	3180	2210	1490	
	50 P	4.16	4.09	3.99	3.88	3.60	3.28	2.92	2.55	2.18	1.84	1.53	
	60 Q	12700	11600	10600	9520	7670	6040	4620	3420	2430	1670	1130	
	60 P	4.73	4.59	4.43	4.25	3.86	3.44	3.01	2.57	2.15	1.77	1.44	
	70 Q	9810	8920	8070	7260	5790	4500	3390	2480	1750	-	-	
	70 P	5.17	4.96	4.74	4.51	4.01	3.50	2.99	2.49	2.02	-	-	
	30 Q	26200	23900	21900	19900	16300	13200	10400	8050	6110	4520	3280	
HGX34e/315-4 HGX34e/315-4 S	30 P	3.53	3.56	3.57	3.56	3.46	3.29	3.07	2.80	2.50	2.19	1.89	
	40 Q	22700	20700	18900	17200	14000	11200	8810	6770	5080	3700	2620	
	40 P	4.38	4.34	4.28	4.20	3.98	3.69	3.37	3.01	2.64	2.26	1.90	
	50 Q	19200	17500	15900	14400	11700	9290	7240	5500	4060	2890	1970	
	50 P	5.16	5.05	4.92	4.77	4.42	4.02	3.59	3.15	2.69	2.25	1.83	
	60 Q	15800	14300	13000	11700	9390	7410	5710	4270	3080	2110	1350	
	60 P	5.85	5.66	5.46	5.24	4.76	4.25	3.72	3.18	2.65	2.14	1.67	
HGX34e/380-4 HGX34e/380-4 S	70 Q	12400	11200	10100	9020	7170	5580	4220	3090	2150	-	-	
	70 P	6.41	6.15	5.88	5.59	4.99	4.36	3.73	3.10	2.48	-	-	
	30 Q	31400	28800	26400	24100	19900	16200	12900	10100	7760	5840	4320	
	30 P	4.44	4.46	4.45	4.42	4.28	4.06	3.77	3.44	3.07	2.69	2.31	
	40 Q	27300	25100	22900	20900	17200	13900	11100	8610	6560	4880	3540	
	40 P	5.47	5.41	5.32	5.21	4.92	4.56	4.16	3.72	3.26	2.80	2.35	
	50 Q	23200	21200	19400	17600	14400	11600	9170	7090	5340	3890	2730	
HGX44e/475-4 HGX44e/475-4 S	60 Q	19100	17500	15900	14400	11700	9350	7320	5580	4120	2910	1930	
	60 P	7.25	7.01	6.76	6.48	5.90	5.28	4.63	3.97	3.32	2.70	2.12	
	70 Q	15100	13700	12400	11200	9020	7140	5510	4120	2940	-	-	
	70 P	7.95	7.62	7.28	6.93	6.20	5.44	4.67	3.90	3.16	-	-	
	30 Q	40400	37000	33800	30800	25200	20500	16500	13000	10100	7610	5570	
	30 P	4.97	5.03	5.05	5.04	4.86	4.66	4.39	4.06	3.68	3.28	2.87	
	40 Q	35300	32300	29400	26800	21800	17700	14200	11100	8490	6310	4470	
HGX44e/475-4 HGX44e/475-4 S	50 Q	30200	27500	25100	22800	18500	14900	11900	9180	6950	5040	3390	
	50 P	7.42	7.29	7.14	6.96	6.47	5.97	5.41	4.82	4.20	3.59	2.98	
	60 Q	25100	22800	20700	18700	15100	12100	9500	7290	5400	3760	2320	
	60 P	8.46	8.23	7.99	7.72	7.08	6.41	5.71	4.98	4.24	3.51	2.80	
	70 Q	19900	18000	16300	14700	11700	9230	7150	5370	3820	-	-	
	70 P	9.28	8.96	8.62	8.27	7.46	6.64	5.78	4.91	4.04	-	-	
	30 Q	48200	44100	40300	36700	30100	24500	19700	15600	12200	9220	6800	
HGX44e/565-4 HGX44e/565-4 S	30 P	5.90	5.96	5.99	5.97	5.76	5.52	5.20	4.80	4.35	3.87	3.37	
	40 Q	42200	38600	35200	32000	26100	21200	17000	13400	10400	7710	5520	
	40 P	7.41	7.36	7.28	7.17	6.79	6.37	5.87	5.32	4.73	4.12	3.51	
	50 Q	36200	33000	30100	27300	22200	17900	14300	11200	8510	6230	4260	
	50 P	8.81	8.66	8.47	8.26	7.70	7.10	6.43	5.71	4.98	4.23	3.51	
	60 Q	30100	27400	24900	22600	18200	14700	11600	8950	6700	4730	2980	
	60 P	10.0	9.78	9.48	9.16	8.44	7.64	6.79	5.91	5.02	4.14	3.29	
HGX44e/665-4 HGX44e/665-4 S	70 Q	24000	21800	19700	17800	14200	11300	8810	6690	4830	-	-	
	70 P	11.0	10.6	10.2	9.81	8.91	7.91	6.87	5.82	4.78	-	-	
	30 Q	56200	51500	47000	42800	36000	29300	23400	18400	14200	10700	7760	
	30 P	6.87	6.94	6.97	6.96	6.96	6.69	6.29	5.78	5.21	4.58	3.93	
	40 Q	49100	44800	40900	37200	31200	25200	20100	15700	11900	8800	6300	
	40 P	8.66	8.60	8.50	8.37	8.17	7.63	7.00	6.29	5.54	4.77	4.00	
	50 Q	41900	38200	34800	31600	26300	21100	16700	12900	9670	7030	4890	
HGX44e/665-4 HGX44e/665-4 S	50 P	10.3	10.1	9.91	9.66	9.18	8.40	7.55	6.65	5.73	4.82	3.95	
	60 Q	34700	31600	28600	25900	21400	17000	13300	10200	7490	5330	3570	
	60 P	11.7	11.4	11.1	10.7	9.96	8.94	7.88	6.79	5.73	4.69	3.73	
HGX44e/665-4 HGX44e/665-4 S	70 Q	27500	24900	22500	20200	16400	13000	9950	7480	5430	-	-	
	70 P	12.9	12.4	12.0	11.5	10.4	9.21	7.94	6.69	5.48	-	-	

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Motor version -S-  
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Supplementary cooling or  
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# HG semi-hermetic compressors

## Performance data

### R513A | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C												
		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		
	30 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		
	40 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		
	50 P	11.9	11.7	11.4	11.1	10.4	9.66	8.76	7.80	6.81	5.81	4.82		
HGX56e/850-4 HGX56e/850-4 S	60 Q	40500	36900	33500	30300	24700	19800	15700	12100	8970	6300	3940		
	60 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	-	-		
	70 P	15.0	14.4	13.9	13.3	12.0	10.7	9.36	7.95	6.55	-	-		
	30 Q	73600	67400	61600	56200	46100	37400	30000	23600	18200	13700	10100		
	30 P	9.23	9.29	9.30	9.26	8.96	8.57	8.03	7.37	6.62	5.80	4.94		
HGX56e/995-4 HGX56e/995-4 S	40 Q	64200	58800	53600	48800	39900	32400	25800	20200	15500	11600	8310		
	40 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		
	50 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		
	60 P	15.6	15.2	14.7	14.1	12.9	11.6	10.2	8.85	7.40	5.95	4.53		
HGX56e/1155-4 HGX56e/1155-4 S	70 Q	35800	32500	29500	26600	21400	17000	13300	10100	7350	-	-		
	70 P	17.3	16.6	15.9	15.2	13.8	12.2	10.5	8.89	7.21	-	-		
	30 Q	85100	78000	71300	65000	53500	43400	34700	27200	20900	15700	11500		
	30 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		
	40 P	13.3	13.2	13.0	12.7	12.0	11.2	10.2	9.18	8.03	6.84	5.66		
HGX66e/1340-4 HGX66e/1340-4 S	50 Q	63400	58000	52800	48000	39200	31600	25000	19300	14500	10400	6940		
	50 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		
	60 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	-	-		
	70 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		
	30 P	13.8	13.8	13.7	13.5	12.7	11.9	11.0	10.0	8.95	7.83	6.72		
	40 Q	85900	78500	71600	65100	52800	42700	34000	26500	20300	15100	10800		
	40 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		
	50 P	19.5	19.1	18.5	18.0	16.5	15.0	13.4	11.7	10.1	8.43	6.83		
HGX66e/1340-4 HGX66e/1340-4 S	60 Q	61000	55500	50400	45700	36700	29400	23100	17700	13200	9280	6030		
	60 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	-	-		
	70 P	24.2	23.3	22.3	21.3	19.1	16.8	14.5	12.1	9.76	-	-		
	30 Q	116000	106000	96700	88100	72200	58700	47000	36900	28500	21500	15800		
	30 P	15.4	15.5	15.4	15.3	14.6	13.7	12.7	11.5	10.3	9.06	7.85		
HGX66e/1540-4 HGX66e/1540-4 S	40 Q	102000	93100	84900	77200	62900	50800	40300	31400	23800	17600	12500		
	40 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		
	50 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		
	60 P	24.5	23.7	22.8	21.9	19.8	17.6	15.4	13.2	11.0	9.09	7.29		
HGX66e/1540-4 HGX66e/1540-4 S	70 Q	56500	51100	46100	41500	32900	26000	20300	15600	11800	8800	-		
	70 P	26.6	25.5	24.4	23.2	20.7	18.1	15.5	13.0	10.6	8.45	-		
	30 Q	133000	122000	111000	102000	83100	67600	54300	42800	33100	25100	18600		
	30 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		
	40 P	21.7	21.4	21.0	20.5	19.3	17.8	16.1	14.4	12.6	10.9	9.29		
HGX66e/1750-4 HGX66e/1750-4 S	50 Q	101000	91600	83400	75700	61300	49200	38900	30100	22700	16600	11700		
	50 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		
	60 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	-		
	70 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		
	30 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		
	40 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		
	50 P	29.0	28.3	27.5	26.6	24.5	22.2	19.8	17.4	15.0	12.8	10.7		
HGX66e/1750-4 HGX66e/1750-4 S	60 Q	94300	85800	77900	70500	57100	45600	35800	27600	20800	15200	10800		
	60 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	-		
	70 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	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C											
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25		
HGX66e/2070-4	30	Q P	177000 23.8	163000 23.9	149000 23.8	136000 23.6	112000 22.6	91100 21.3	73100 19.8	57700 18.0	44700 16.1	33900 14.1	25100 12.3
	40	Q P	157000 29.3	143000 29.0	131000 28.4	119000 27.8	97600 26.0	79100 24.0	63000 21.8	49200 19.4	37600 17.0	28000 14.7	20200 12.6
	50	Q P	134000 34.3	123000 33.5	112000 32.5	102000 31.5	82500 29.0	66400 26.3	52500 23.4	40700 20.5	30800 17.7	22600 15.0	15900 12.5
	60	Q P	111000 38.6	101000 37.3	91500 36.0	82800 34.5	67100 31.3	53600 27.9	42200 24.5	32500 21.1	24500 17.8	18000 14.8	12800 12.1
	70	Q P	87100 42.1	78900 40.4	71400 38.6	64300 36.8	51700 32.9	41200 28.9	32400 24.9	25100 21.0	19300 17.4	14700 14.0	-
HGX88e/2400-4	30	Q P	209000 28.9	192000 28.9	175000 28.8	160000 28.6	131000 27.1	107000 25.7	85600 23.9	67500 21.8	52300 19.6	39600 17.3	29400 15.1
	40	Q P	185000 35.1	169000 34.7	155000 34.1	141000 33.4	115000 31.0	92800 28.8	73900 26.2	57700 23.5	44100 20.8	32900 18.1	23700 15.5
	50	Q P	159000 40.7	145000 39.8	132000 38.7	120000 37.5	97100 34.4	78100 31.4	61700 28.1	47800 24.8	36100 21.5	26500 18.4	18800 15.5
	60	Q P	132000 45.5	120000 44.1	109000 42.6	98400 41.0	79100 37.1	63200 33.3	49600 29.4	38300 25.5	28900 21.8	21200 18.2	15200 15.0
	70	Q P	104000 49.4	94100 47.5	85000 45.6	76600 43.6	61100 39.1	48600 34.5	38200 29.9	29700 25.5	22800 21.3	17500 17.4	-
HGX88e/2735-4	30	Q P	237000 32.6	218000 32.6	199000 32.5	182000 32.2	150000 30.9	122000 29.3	97500 27.3	76900 25.0	59500 22.5	45100 19.9	33500 17.3
	40	Q P	210000 39.7	192000 39.2	176000 38.5	160000 37.7	131000 35.4	106000 32.8	84200 30.0	65800 26.9	50300 23.8	37400 20.7	27000 17.7
	50	Q P	181000 46.1	165000 45.0	150000 43.8	137000 42.4	111000 39.2	89000 35.8	70300 32.1	54500 28.4	41200 24.7	30200 21.1	21400 17.7
	60	Q P	150000 51.6	137000 50.0	124000 48.2	112000 46.4	90200 42.2	72000 38.0	56600 33.6	43600 29.2	32900 24.9	24200 20.9	17300 17.2
	70	Q P	118000 56.1	107000 53.9	96500 51.7	86900 49.4	69700 44.4	55400 39.3	43500 34.2	33800 29.2	26000 24.4	19900 19.9	-
HGX88e/3235-4	30	Q P	280000 38.4	257000 38.5	235000 38.4	215000 38.0	177000 36.4	144000 34.5	116000 32.1	90700 29.3	70100 26.3	53100 23.3	39300 20.2
	40	Q P	248000 46.8	227000 46.2	207000 45.4	189000 44.4	155000 41.6	125000 38.6	99200 35.2	77500 31.6	59100 27.9	43900 24.2	31600 20.7
	50	Q P	213000 54.3	195000 53.0	177000 51.5	161000 49.9	131000 46.1	105000 42.0	82800 37.7	64000 33.3	48300 28.8	35400 24.6	25000 20.6
	60	Q P	177000 60.7	161000 58.8	146000 56.7	132000 54.5	107000 49.7	84700 44.6	66500 39.3	51100 34.1	38500 29.0	28200 24.2	20100 19.9
	70	Q P	139000 65.9	126000 63.4	114000 60.7	103000 57.9	82000 52.1	65100 46.1	51000 40.0	39600 34.0	30400 28.3	23200 23.0	-

Relating to 20 °C suction gas temperature without liquid subcooling

Motor version -S-  
(more powerful motor)

Supplementary cooling or  
reduced suction gas temperature

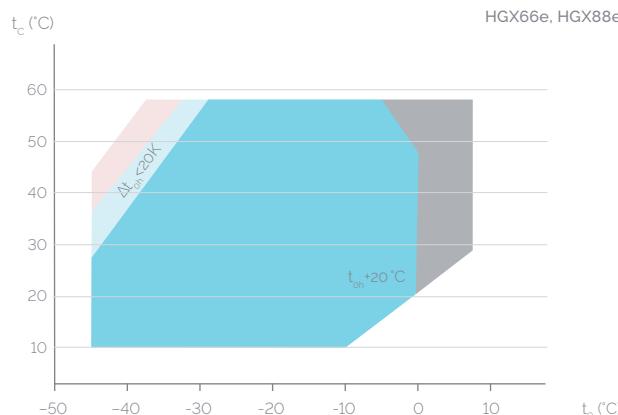
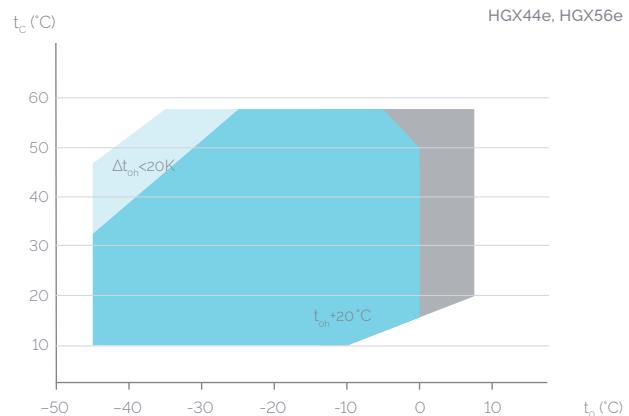
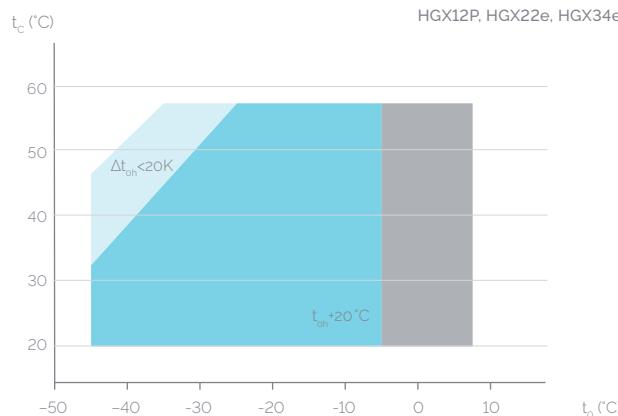
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# HG semi-hermetic compressors

## 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  
● 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 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 <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C												
		7.5	5	0	-5	-10	-15	-20	-25	-30	-35			
HGX12P/60-4 S <sup>1)</sup>	30	Q P	6540 120	5990 121	5000 122	4110 120	3340 115	2670 108	2100 100	1610 0.908	1210 0.810	879 0.712	617 0.618	415 0.533
	40	Q P	5540 148	5070 147	4200 143	3430 136	2770 127	2200 117	1710 106	1300 0.945	959 0.827	685 0.713	466 0.609	296 0.519
	50	Q P	4540 172	4130 168	3400 159	2750 149	2200 136	1730 123	1330 109	994 0.959	722 0.825	503 0.700	330 0.589	- -
	30	Q P	8160 152	7500 154	6290 155	5230 150	4290 144	3470 136	2770 126	2170 115	1670 103	1250 0.908	911 0.789	648 0.680
	40	Q P	6940 190	6360 189	5310 183	4420 172	3610 162	2910 150	2300 136	1790 122	1370 108	1020 0.939	734 0.807	513 0.689
	50	Q P	5730 221	5240 216	4350 205	3640 192	2950 177	2360 162	1860 145	1440 128	1090 112	805 0.963	577 0.821	- -
HGX12P/75-4 <sup>1)</sup> HGX12P/75-4 S <sup>1)</sup>	30	Q P	9740 185	8950 186	7510 185	6090 177	5000 168	4060 157	3240 145	2530 132	1940 117	1450 103	1050 0.888	731 0.745
	40	Q P	8290 227	7600 224	6350 217	5150 202	4210 187	3390 172	2680 155	2080 138	1580 121	1160 104	818 0.876	550 0.719
	50	Q P	6870 2.66	6280 2.60	5220 2.46	4220 2.25	3420 2.05	2730 1.85	2140 1.64	1640 1.44	1230 1.23	886 1.04	611 0.857	- -
	30	Q P	11300 216	10400 217	8700 215	7220 215	5970 204	4870 191	3920 176	3100 159	2400 141	1820 122	1340 105	947 0.883
	40	Q P	9590 2.64	8800 2.61	7370 2.52	6130 2.47	5040 2.29	4100 2.10	3280 1.89	2570 1.67	1980 1.45	1480 1.24	1070 1.05	728 0.877
	50	Q P	7880 3.12	7220 3.05	6010 2.88	5020 2.73	4100 2.49	3310 2.24	2620 1.98	2040 1.73	1550 1.48	1150 1.25	804 1.05	- -
HGX12P/110-4 <sup>1)</sup> HGX12P/110-4 S <sup>1)</sup>	30	Q P	13400 2.18	12400 2.22	10500 2.26	8790 2.24	7250 2.16	5870 2.03	4650 1.88	3590 1.69	2680 1.49	1920 1.28	1320 1.07	857 0.878
	40	Q P	11600 2.77	10700 2.75	8970 2.68	7460 2.58	6090 2.41	4880 2.22	3820 2.00	2900 1.76	2120 1.52	1490 1.28	992 1.06	640 0.853
	50	Q P	9650 3.26	8860 3.20	7390 3.03	6080 2.84	4910 2.60	3880 2.34	2990 2.07	2230 1.80	1610 1.53	1110 1.27	749 1.03	- -
	30	Q P	17000 2.70	15700 2.75	13200 2.78	10900 2.73	8980 2.62	7320 2.47	5850 2.29	4560 2.07	3450 1.84	2510 1.59	1750 1.34	1170 1.08
	40	Q P	14600 3.42	13400 3.40	11200 3.31	9170 3.17	7540 2.96	6090 2.72	4810 2.47	3700 2.19	2750 1.91	1960 1.62	1330 1.34	851 1.07
	50	Q P	12100 4.01	11100 3.93	9150 3.73	7480 3.51	6090 3.22	4860 2.90	3790 2.58	2860 2.25	2090 1.92	1460 1.60	972 1.30	- -
HGX22e/125-4 HGX22e/125-4 S <sup>1)</sup>	30	Q P	20800 3.47	19200 3.49	16100 3.47	13300 3.41	11000 3.26	8920 3.07	7140 2.84	5620 2.57	4330 2.29	3240 2.00	2350 1.70	1620 1.41
	40	Q P	17800 4.29	16300 4.24	13700 4.09	11300 3.93	9200 3.68	7450 3.39	5940 3.08	4640 2.74	3540 2.39	2620 2.03	1860 1.68	1230 1.35
	50	Q P	14800 5.04	13500 4.92	11300 4.65	9150 4.40	7460 4.06	6000 3.68	4750 3.27	3680 2.85	2780 2.43	2020 2.01	1390 1.61	- -
	30	Q P	23900 3.83	21900 3.85	18200 3.84	14600 3.70	11900 3.52	9470 3.26	7390 2.94	5610 2.58	4120 2.21	2900 1.84	1940 1.49	1220 1.18
	40	Q P	20200 4.72	18500 4.65	15300 4.48	12200 4.26	9840 3.94	7770 3.56	5990 3.14	4480 2.70	3230 2.27	2220 1.85	1430 1.47	851 1.15
	50	Q P	16500 5.48	15000 5.33	12200 4.99	9770 4.67	7800 4.23	6090 3.75	4630 3.25	3420 2.74	2420 2.26	1630 1.81	1040 1.42	- -
HGX34e/215-4 <sup>1)</sup> HGX34e/215-4 S <sup>1)</sup>	30	Q P	28000 4.57	25700 4.61	21500 4.59	17200 4.44	14200 4.23	11500 3.95	9120 3.61	7080 3.22	5350 2.81	3900 2.39	2730 1.97	1820 1.58
	40	Q P	23800 5.64	21800 5.58	18100 5.38	14500 5.14	11800 4.76	9460 4.33	7430 3.86	5680 3.37	4210 2.87	3010 2.38	2050 1.92	1320 1.50
	50	Q P	19500 6.55	17700 6.40	14600 6.02	11700 5.68	9410 5.15	7450 4.58	5760 4.00	4330 3.41	3150 2.84	2200 2.30	1480 1.80	- -
	30	Q P	33800 5.86	31000 5.82	26000 5.67	21300 5.47	17600 5.20	14300 4.85	11400 4.43	8840 3.98	6700 3.49	4930 2.99	3490 2.49	2370 2.01
	40	Q P	28700 7.05	26300 6.92	22000 6.59	17900 6.29	14700 5.83	11900 5.32	9350 4.76	7220 4.18	5400 3.58	3880 2.98	2650 2.40	1690 1.86
	50	Q P	23500 8.13	21500 7.90	17800 7.39	14500 6.97	11800 6.34	9430 5.67	7370 4.96	5600 4.25	4100 3.54	2840 2.85	1820 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

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# HG semi-hermetic compressors

## Performance data

### R404A/R507 | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C												
		7.5	5	0	-5	-10	-15	-20	-25	-30	-35			
HGX34e/380-4 HGX34e/380-4 S	30	Q P	40900 7.20	37600 715	31700 6.98	25800 6.84	21200 6.45	17300 5.98	13800 5.46	10900 4.88	8300 4.28	6200 3.67	4490 3.05	3120 2.45
	40	Q P	34600 8.75	31800 8.59	26700 8.18	21600 7.84	17700 7.25	14300 6.59	11400 5.90	8850 5.18	6730 4.45	4960 3.72	3510 3.00	2340 2.33
	50	Q P	28400 10.1	26000 9.86	21800 9.23	17600 8.73	14300 7.92	11500 7.08	9030 6.22	6960 5.34	5210 4.47	3760 3.62	2550 2.81	- -
	30	Q P	52500 773	48300 785	40200 791	33500 780	27500 752	22400 710	18000 6.57	14300 5.94	11100 5.26	8340 4.54	6060 3.81	4110 3.11
	40	Q P	45200 9.97	41400 9.90	34200 9.62	28300 9.16	23200 8.57	18800 7.88	15000 7.12	11800 6.31	9010 5.47	6670 4.64	4650 3.84	2870 3.11
	50	Q P	37600 11.8	34300 11.5	28100 11.0	23100 10.2	18800 9.41	15100 8.49	12000 7.55	9260 6.59	6970 5.65	5000 4.76	3270 3.94	- -
HGX44e/475-4 HGX44e/475-4 S	30	Q P	62700 9.18	57700 9.32	47800 9.45	39800 9.31	32800 8.97	26800 8.47	21600 7.82	17200 7.07	13400 6.24	10200 5.38	7470 4.51	5140 3.66
	40	Q P	54000 11.8	49600 11.7	40700 11.5	33700 10.9	27700 10.2	22500 9.42	18100 8.49	14300 7.51	11100 6.50	8230 5.50	5820 4.55	3680 3.67
	50	Q P	45100 14.0	41200 13.7	33400 13.2	27500 12.3	22500 11.2	18200 10.1	14500 9.01	11400 7.85	8620 6.72	6270 5.64	4180 4.66	- -
	30	Q P	73100 10.7	67100 10.9	56000 10.9	46500 10.5	38300 9.94	31100 9.19	25000 8.32	19800 7.36	15300 6.35	11600 5.33	8340 4.34	5630 4.34
	40	Q P	62700 13.9	57400 13.8	47500 13.4	39300 12.8	32200 12.0	26000 11.0	20800 9.97	16300 8.83	12500 7.66	9160 6.49	6360 5.37	3910 4.34
	50	Q P	52000 16.5	47500 16.1	38900 15.4	32000 14.3	26000 13.1	20900 11.8	16500 10.5	12800 9.22	9570 7.91	6840 6.66	4440 5.51	- -
HGX44e/665-4 HGX44e/665-4 S	30	Q P	84600 12.4	77800 12.6	65300 12.6	54300 12.1	44700 11.5	36500 10.6	29400 9.62	23300 8.51	18100 7.34	13800 6.16	10100 5.02	6840 5.02
	40	Q P	72600 16.1	66500 16.0	55600 15.5	46100 14.8	37800 13.8	30700 12.7	24500 11.5	19300 10.2	14900 8.86	11100 7.51	7750 6.22	4860 5.02
	50	Q P	60300 19.2	55100 18.8	45700 17.8	37600 16.5	30700 15.2	24700 13.7	19600 12.2	15300 10.6	11600 9.15	8360 7.70	5530 6.37	- -
	30	Q P	93700 13.7	86100 13.9	71800 14.1	59800 13.9	49300 13.4	40200 12.6	32400 11.7	25800 10.6	20100 9.38	15300 8.08	11200 6.77	7710 5.49
	40	Q P	80500 17.7	73800 17.6	61100 17.1	50600 16.3	41600 15.3	33800 14.0	27200 12.7	21400 11.2	16600 9.76	12400 8.27	8720 6.83	5520 5.50
	50	Q P	67000 21.1	61200 20.6	50100 19.6	41300 18.3	33800 16.8	27300 15.1	21800 13.4	17000 11.7	13000 10.0	9410 8.48	6280 7.00	- -
HGX56e/995-4 HGX56e/995-4 S	30	Q P	111000 18.6	102000 18.3	85000 17.6	70800 16.7	58300 15.8	47400 14.6	38000 13.4	29800 12.1	22900 10.7	17100 9.21	12200 7.61	8120 5.94
	40	Q P	94300 22.0	86600 21.5	72100 20.4	59800 19.2	49000 17.8	39600 16.3	31500 14.7	24500 12.9	18500 11.1	13400 9.23	9110 7.23	5480 5.15
	50	Q P	78000 25.3	71400 24.6	59000 23.1	48600 21.4	39500 19.6	31700 17.6	24900 15.5	19100 13.4	14100 11.1	9800 8.75	6130 6.30	- -
	30	Q P	127000 19.4	117000 19.7	97500 20.0	81100 19.7	66800 19.0	54500 17.9	43900 16.6	34800 15.0	27100 13.2	20600 11.4	15000 9.59	10300 7.80
	40	Q P	109000 25.1	99900 24.9	83000 24.4	68800 23.2	56400 21.7	45800 19.9	36700 18.0	28900 15.9	22200 13.8	16600 11.7	11700 9.68	7280 7.80
	50	Q P	90600 29.9	82800 29.2	68200 27.9	56200 26.0	45800 23.8	36900 21.5	29300 19.1	22900 16.6	17300 14.2	12500 12.0	8270 9.91	- -
HGX66e/1340-4 HGX66e/1340-4 S	30	Q P	150000 25.0	138000 24.9	115000 24.2	95700 23.2	78800 21.9	64100 20.3	51300 18.5	40400 16.5	31000 14.4	23100 12.3	16500 10.3	11000 8.30
	40	Q P	129000 30.3	118000 29.7	97900 28.4	81200 26.6	66600 24.5	53800 22.3	42800 19.9	33400 17.4	25400 14.9	18500 12.5	12700 10.1	- -
	50	Q P	106000 34.9	97000 33.9	79900 31.8	65900 29.3	53700 26.6	43100 23.8	34100 20.9	26400 17.9	19800 15.0	14200 12.2	- -	- -
	30	Q P	172000 28.8	158000 28.6	132000 28.0	110000 26.9	90700 25.4	73900 23.5	59400 21.5	46900 19.2	36200 16.9	27100 14.5	19500 12.1	13200 9.87
	40	Q P	148000 35.1	136000 34.4	113000 32.9	93400 30.9	76800 28.6	62300 26.0	49700 23.3	39000 20.4	29800 17.6	21900 14.7	15300 12.0	- -
	50	Q P	122000 40.5	112000 39.4	91900 37.1	75900 34.2	62100 31.1	50100 27.9	39800 24.5	31000 21.1	23400 17.8	17000 14.6	- -	- -

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

Relating to 20 °C suction gas temperature  
without liquid subcooling

Motor version -S-  
(more powerful motor)

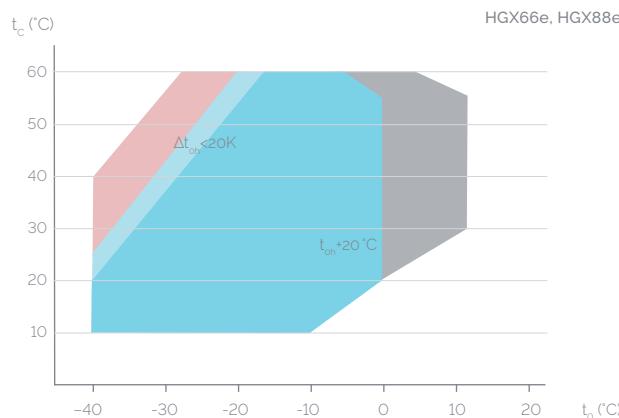
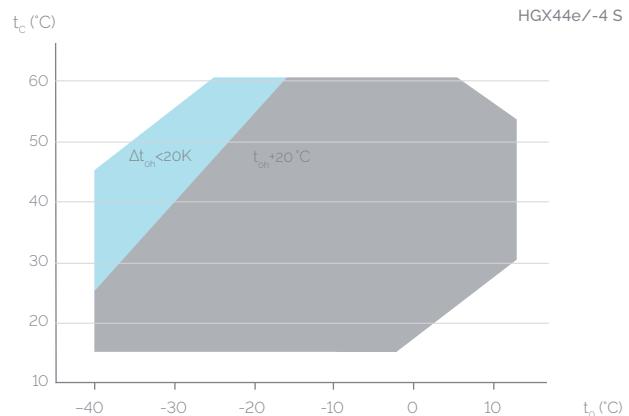
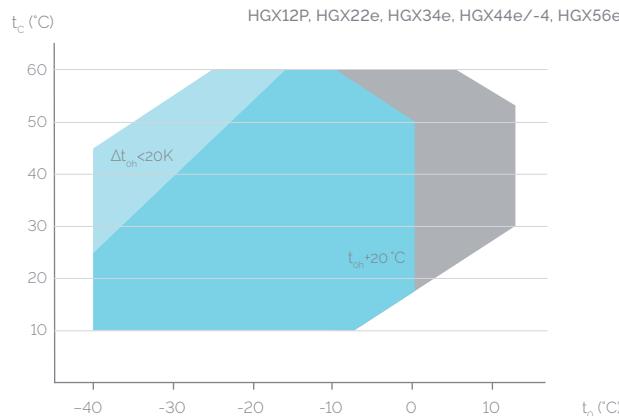
Supplementary cooling or  
reduced suction gas temperature [vap.bock.de](http://vap.bock.de)



# HG semi-hermetic compressors

## Operating limits

### R448A/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  
 ● 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 the operating limits may occur when using a frequency converter.

#### Performance data

The performance data for R448A and R449A 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.

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

R448A | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]											Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C													
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	-35		
HGX12P/60-4 S	30	Q P	7620 112	6970 114	6360 115	5790 115	4760 109	3870 103	3110 0.957	2460 0.871	1920 0.780	1470 0.687	1100 0.597	790 0.515	543
	40	Q P	6730 142	6140 141	5590 140	5070 137	4140 132	3350 124	2670 114	2100 104	1630 0.931	1230 0.817	907 0.705	644 0.600	428 0.507
	50	Q P	5850 174	5320 171	4820 167	4360 162	3540 152	2830 140	2240 127	1740 113	1330 0.988	988 0.847	712 0.712	487 0.588	-
HGX12P/75-4	30	Q P	9480 138	8680 140	7920 141	7220 142	5940 140	4840 135	3900 128	3090 118	2420 107	1860 0.962	1400 0.845	1020 0.732	703 0.629
	40	Q P	8380 176	7640 175	6960 174	6320 171	5180 165	4190 155	3350 143	2650 130	2060 116	1570 101	1170 0.875	835 0.743	563 0.626
	50	Q P	7290 218	6630 214	6020 209	5450 203	4420 192	3550 176	2820 160	2200 142	1690 124	1270 106	924 0.893	641 0.737	-
HGX12P/90-4	30	Q P	11300 167	10400 170	9430 171	8590 172	7070 167	5760 160	4650 151	3700 140	2900 127	2230 113	1680 0.997	1230 0.861	857 0.736
	40	Q P	9960 213	9090 213	8280 211	7530 208	6160 196	5000 185	4010 170	3170 155	2470 138	1890 120	1410 103	1020 0.881	694 0.739
	50	Q P	8670 264	7890 260	7160 254	6490 247	5270 229	4240 211	3370 191	2640 170	2040 148	1540 127	1130 106	789 0.880	-
HGX12P/110-4	30	Q P	13200 196	12100 199	11100 201	10100 202	8280 196	6750 189	5450 178	4340 165	3410 149	2630 133	1990 116	1460 100	1020 0.857
	40	Q P	11700 252	10700 251	9680 248	8800 245	7210 232	5850 218	4700 201	3720 182	2910 162	2230 142	1670 122	1210 103	828 0.865
	50	Q P	10200 3.14	9200 3.08	8360 3.01	7570 2.93	6150 2.71	4960 2.50	3950 2.26	3100 2.01	2400 1.75	1820 1.50	1340 1.26	942 1.03	-
HGX22e/125-4	30	Q P	16600 2.00	15200 2.06	13800 2.10	12600 2.12	10300 2.12	8330 2.06	6680 1.96	5290 1.82	4130 1.66	3160 1.48	2370 1.30	1710 1.12	1170 0.958
	40	Q P	14500 2.64	13200 2.65	12000 2.63	10900 2.60	8870 2.51	7170 2.37	5730 2.19	4510 1.99	3500 1.78	2660 1.56	1950 1.35	1370 1.15	853 0.987
	50	Q P	12400 3.22	11200 3.16	10200 3.10	9180 3.02	7470 2.83	6010 2.61	4770 2.37	3730 2.11	2870 1.85	2150 1.60	1540 1.37	1010 1.16	-
HHGX22e/160-4	30	Q P	20300 2.94	18600 2.90	17000 2.85	15400 2.79	12600 2.62	10200 2.54	8180 2.41	6480 2.23	5060 2.03	3880 1.80	2900 1.57	2100 1.35	1440 1.15
	40	Q P	17700 3.65	16100 3.55	14700 3.45	13400 3.35	10900 3.11	8760 2.92	7000 2.70	5520 2.45	4290 2.18	3260 1.90	2400 1.64	1670 1.39	1050 1.18
	50	Q P	15200 4.34	13800 4.19	12600 4.04	11400 3.88	9110 3.52	7330 3.24	5820 2.93	4560 2.60	3510 2.27	2630 1.96	1880 1.66	1230 1.40	-
HGX22e/190-4	30	Q P	24500 3.57	22400 3.51	20500 3.45	18700 3.39	15400 3.35	12700 3.14	10300 2.93	8260 2.70	6570 2.47	5170 2.23	3980 1.98	2980 1.72	2110 1.44
	40	Q P	21300 4.45	19500 4.33	17800 4.22	16200 4.09	13400 3.95	11000 3.64	8890 3.33	7140 3.03	5670 2.72	4430 2.41	3380 2.10	2460 1.79	1630 1.47
	50	Q P	18300 5.33	16700 5.14	15200 4.96	13900 4.77	11500 4.51	9300 4.09	7510 3.68	6010 3.29	4740 2.90	3660 2.52	2730 2.14	1880 1.78	-
HGX34e/215-4	30	Q P	27600 3.48	25200 3.49	23000 3.48	20900 3.45	16800 3.36	13700 3.19	10900 2.96	8490 2.70	6500 2.42	4830 2.13	3470 1.84	2370 1.57	1500 1.34
	40	Q P	24200 4.58	22000 4.48	20000 4.37	18100 4.24	14400 4.01	11600 3.67	9060 3.30	6980 2.93	5240 2.55	3810 2.19	2650 1.86	1740 1.57	1030 1.33
	50	Q P	20600 5.59	18600 5.38	16800 5.17	15100 4.95	11900 4.57	9380 4.08	7280 3.58	5520 3.10	4080 2.64	2920 2.21	2010 1.85	1320 1.54	-
HGX34e/255-4	30	Q P	32200 3.59	29600 3.72	27100 3.80	24700 3.86	20000 3.92	16400 3.82	13200 3.63	10400 3.36	7970 3.03	5960 2.67	4300 2.29	2950 1.92	1880 1.58
	40	Q P	27900 4.83	25600 4.85	23400 4.84	21300 4.80	17200 4.73	14000 4.46	11200 4.11	8720 3.70	6660 3.26	4930 2.79	3490 2.33	2310 1.89	1370 1.50
	50	Q P	23300 5.95	21300 5.87	19400 5.76	17600 5.63	14100 5.43	11400 4.99	9040 4.49	7040 3.94	5350 3.38	3930 2.81	2750 2.27	1790 1.77	-
HGX34e/315-4	30	Q P	41100 4.84	37500 4.90	34100 4.92	30900 4.75	25000 4.75	20200 4.58	16200 4.33	12800 4.00	9840 3.62	7440 3.20	5470 2.76	3850 2.31	2510 1.87
	40	Q P	35700 6.23	32500 6.18	29500 6.11	26700 6.01	21500 5.67	17300 5.33	13800 4.91	10800 4.43	8230 3.91	6140 3.37	4410 2.82	2960 2.27	1720 1.74
	50	Q P	30300 7.55	27400 7.40	24800 7.22	22400 7.03	17900 6.50	14300 5.98	11300 5.39	8770 4.76	6660 4.09	4910 3.42	3430 2.74	2170 2.09	-

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	Cooling capacity Q <sub>o</sub> [W]												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	
HGX34e/380-4 HGX34e/380-4 S	30	Q P	48800 6.17	44600 6.20	40600 6.20	37000 6.17	30000 5.95	24500 5.71	19800 5.38	15700 4.97	12300 4.50	9440 3.98	7070 3.44	5090 3.44	3430 2.88
	40	Q P	42400 7.82	38700 7.74	35200 7.62	32000 7.48	25800 7.06	21000 6.62	16900 6.09	13400 5.50	10400 4.87	7890 4.20	5790 3.52	3990 2.85	2420 2.19
	50	Q P	35900 9.40	32600 9.19	29600 8.96	26900 8.70	21600 8.08	17500 7.42	14000 6.69	11100 5.92	8530 5.11	6410 4.28	4590 3.46	2990 2.65	-
	30	Q P	61800 7.17	56500 7.30	51700 7.37	47100 7.39	38600 7.26	31500 7.00	25400 6.62	20200 6.12	15800 5.54	12200 4.89	9150 4.21	6660 3.53	4620 2.85
	40	Q P	54300 9.44	49600 9.40	45200 9.30	41100 9.17	33500 8.77	27300 8.23	21900 7.58	17300 6.84	13500 6.05	10300 5.21	7590 4.37	5340 3.55	3430 2.76
	50	Q P	46700 11.5	42500 11.3	38700 11.0	35100 10.7	28400 10.0	22900 9.25	18200 8.33	14300 7.34	11000 6.32	8150 5.28	5790 4.26	3760 3.28	-
HGX44e/475-4 HGX44e/475-4 S	30	Q P	73700 8.52	67500 8.66	61700 8.75	56200 8.77	45900 8.65	37500 8.35	30300 7.88	24200 7.28	19000 6.58	14700 5.80	11200 4.99	8160 4.16	5710 3.36
	40	Q P	64900 11.2	59300 11.1	54100 11.0	49200 10.8	40000 10.4	32600 9.83	26200 9.04	20900 8.15	16300 7.19	12500 6.19	9300 5.18	6620 4.19	4320 3.25
	50	Q P	55900 13.7	51000 13.4	46400 13.1	42100 12.7	33800 12.1	27400 11.0	21900 9.95	17300 8.75	13400 7.52	10100 6.27	7190 5.04	4750 3.87	-
	30	Q P	87000 9.92	79500 10.1	72600 10.2	66000 10.2	53700 10.1	43800 9.81	35300 9.26	28100 8.57	22000 7.75	16900 6.85	12700 5.90	9210 4.93	6350 3.99
	40	Q P	76200 13.0	69500 13.0	63300 12.9	57500 12.7	46600 12.2	37900 11.5	30400 10.6	24000 9.58	18700 8.47	14200 7.30	10500 6.12	7330 4.96	4670 3.86
	50	Q P	65400 16.0	59500 15.7	54000 15.3	48800 14.9	39300 14.1	31700 12.9	25200 11.6	19800 10.2	15100 8.84	11300 7.39	7930 5.97	5120 4.59	-
HGX44e/665-4 HGX44e/665-4 S <sup>1)</sup>	30	Q P	99500 11.5	91100 11.7	83200 11.8	75900 11.8	62600 11.7	51100 11.3	41300 10.7	32900 9.91	25800 8.96	19900 7.92	15100 6.82	11000 5.71	7650 4.61
	40	Q P	87300 15.3	79800 15.2	72800 15.0	66300 14.8	54500 14.1	44300 13.3	35600 12.2	28300 11.0	22100 9.79	16900 8.44	12600 7.08	8860 5.74	5760 4.46
	50	Q P	75100 18.8	68400 18.4	62200 18.0	56500 17.4	46200 16.3	37300 14.9	29800 13.4	23400 11.8	18000 10.2	13500 8.55	9620 6.90	6320 5.31	-
	30	Q P	110000 12.7	101000 12.9	92100 13.0	83900 13.1	69000 12.9	56300 12.5	45500 11.8	36300 10.9	28600 9.87	22100 8.72	16700 7.49	12300 6.25	8560 5.04
	40	Q P	96600 16.8	88400 16.7	80600 16.5	73400 16.3	60000 15.6	48900 14.7	39400 13.5	31300 12.2	24500 10.7	18800 9.29	14000 7.78	9920 6.29	6480 4.87
	50	Q P	83100 20.6	75800 20.2	69000 19.7	62600 19.1	50800 18.0	41200 16.5	32900 14.8	25900 13.1	20000 11.2	15100 9.41	10800 7.58	7130 5.82	-
HGX56e/995-4 HGX56e/995-4 S	30	Q P	129000 15.6	119000 15.8	108000 15.9	98500 15.9	81100 15.6	66400 15.0	53800 14.1	43000 13.1	33900 11.8	26200 10.5	19800 9.08	14400 7.60	9760 6.11
	40	Q P	113000 20.3	104000 20.1	94300 19.9	86000 19.5	70500 18.7	57600 17.5	46600 16.1	37100 14.6	29100 12.9	22300 11.1	16500 9.34	11400 7.50	6880 5.70
	50	Q P	96900 24.6	88500 24.2	80700 23.6	73300 22.9	59800 21.5	48700 19.8	39200 17.8	31000 15.8	24000 13.6	18000 11.4	12700 9.22	7940 7.01	-
	30	Q P	150000 18.0	137000 18.3	125000 18.5	114000 18.5	93500 18.3	76400 17.7	61600 16.7	49100 15.4	38600 13.9	29800 12.3	22500 10.6	16500 8.88	11500 7.17
	40	Q P	132000 23.8	120000 23.7	110000 23.4	99500 23.1	81300 22.2	66200 20.8	53200 19.2	42300 17.3	33000 15.3	25200 13.1	18800 11.0	13300 8.93	8620 6.93
	50	Q P	113000 29.2	103000 28.6	93500 27.9	84800 27.2	68900 25.6	55700 23.4	44400 21.1	34900 18.5	26900 15.9	20200 13.3	14400 10.7	9460 8.26	-
HGX66e/1340-4 HGX66e/1340-4 S	30	Q P	160000 22.8	146000 22.6	133000 22.4	133000 22.4	109000 21.6	88300 20.5	71200 19.2	56700 17.6	44500 15.8	34200 14.0	25600 12.1	18400 10.1	-
	40	Q P	140000 27.9	128000 27.4	116000 26.8	116000 26.8	94100 25.3	76500 23.6	61400 21.6	48700 19.4	37900 17.1	28800 14.8	21100 12.4	-	-
	50	Q P	120000 32.6	109000 31.7	98600 30.8	98600 30.8	79700 28.7	64400 26.2	51400 23.6	40400 20.8	31000 17.9	23100 14.9	-	-	-
	30	Q P	183000 26.2	167000 26.1	152000 25.8	98500 15.9	125000 25.0	102000 23.7	82100 22.2	65500 20.4	51600 18.4	39800 16.3	30000 14.1	21700 11.9	-
	40	Q P	161000 32.2	146000 31.6	133000 31.0	86000 19.5	109000 29.4	88100 27.4	71000 25.1	56400 22.6	44100 20.0	33700 17.3	24900 14.6	-	-
	50	Q P	138000 37.9	125000 36.9	114000 35.8	73300 22.9	91800 33.4	74400 30.6	59600 27.5	47000 24.3	36400 21.0	27300 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	Cooling capacity Q <sub>o</sub> [W]												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			
HGX66e/1750-4	30	Q P	207000 30.0	189000 29.8	173000 29.5	98500 15.9	143000 28.5	117000 27.1	94000 25.3	75100 23.3	59100 21.1	45700 18.7	34400 16.2	24900 13.7	-		
	40	Q P	182000 36.8	166000 36.2	151000 35.4	86000 19.5	124000 33.5	101000 31.3	81300 28.7	64700 25.9	50600 22.9	38700 19.9	28600 16.8	-	-		
	50	Q P	156000 43.3	142000 42.2	129000 40.9	73300 22.9	106000 38.1	85200 34.9	68300 31.5	54000 27.9	41800 24.1	31400 20.3	-	-	-		
	30	Q P	244000 35.5	223000 35.3	203000 35.0	98500 15.9	167000 33.8	137000 32.1	111000 30.0	88300 27.6	69600 24.9	53800 22.0	40600 19.1	29400 16.1	-		
	40	Q P	213000 43.8	195000 42.1	177000 19.5	86000 39.9	146000 37.2	119000 34.1	95500 30.7	76100 27.1	59600 23.4	45600 19.8	33700 -	-	-		
	50	Q P	183000 51.7	166000 50.3	151000 48.7	73300 22.9	123000 45.5	99900 41.6	80200 37.5	63400 33.1	49200 28.5	37000 24.0	-	-	-		
HGX66e/2070-4	30	Q P	289000 42.0	264000 41.8	241000 41.4	98500 15.9	197000 39.9	161000 38.0	130000 35.6	104000 32.9	81700 29.8	63200 26.5	47600 23.1	34500 19.7	-		
	40	Q P	255000 51.1	232000 50.3	211000 49.3	86000 19.5	172000 47.0	140000 43.9	113000 40.3	89600 36.5	70100 32.4	53600 28.2	39600 24.0	-	-		
	50	Q P	219000 59.8	199000 58.3	181000 56.7	73300 22.9	146000 53.6	119000 49.1	94800 44.3	74900 39.2	58000 34.1	43600 28.9	-	-	-		
	30	Q P	328000 47.5	300000 47.2	273000 46.8	98500 15.9	225000 45.3	184000 43.2	149000 40.5	119000 37.4	93100 34.0	72000 30.3	54200 26.5	39300 22.6	-		
	40	Q P	289000 58.1	263000 57.1	240000 55.9	86000 19.5	196000 53.2	160000 49.7	129000 45.7	103000 41.4	79900 36.9	61100 32.2	45100 27.4	-	-		
	50	Q P	248000 68.3	226000 66.5	205000 64.6	73300 22.9	167000 60.5	136000 55.5	109000 50.2	85400 44.6	66100 38.8	49700 33.0	-	-	-		
HGX88e/2735-4	30	Q P	387000 55.9	354000 55.6	323000 55.1	98500 15.9	265000 53.4	217000 50.9	175000 47.7	140000 44.0	110000 39.9	84700 35.5	63800 31.0	46100 26.4	-		
	40	Q P	341000 68.4	311000 67.2	283000 65.8	86000 19.5	232000 62.7	189000 58.6	152000 53.9	121000 48.7	94000 43.3	71800 37.7	53000 32.1	-	-		
	50	Q P	293000 80.3	267000 78.2	242000 75.9	73300 22.9	197000 71.3	160000 65.4	128000 59.0	101000 52.4	77700 45.5	58300 38.6	-	-	-		
	30	Q P	9430 138	8630 140	7880 141	7180 141	5920 140	4820 135	3880 127	3080 118	2410 107	1850 97.9	1390 0.779	1020 0.686	703 0.597	429 0.515	-
	40	Q P	8320 175	7600 174	6920 173	6290 170	5150 164	4170 154	3340 142	2640 129	2050 115	1560 101	1170 0.928	834 0.815	564 0.704	429 0.600	507 0.507
	50	Q P	7240 2.16	6580 2.13	5970 2.08	5410 2.02	4390 1.91	3530 1.76	2800 1.59	2190 1.41	1680 1.23	1270 1.06	922 0.892	641 0.736	-	-	-
HGX12P/90-4	30	Q P	11300 1.67	10300 1.69	9380 1.71	8550 1.71	7040 1.66	5740 1.60	4630 1.51	3680 1.40	2890 1.27	2230 1.13	1680 0.995	1230 0.860	857 0.736	-	
	40	Q P	9890 2.12	9030 2.12	8230 2.10	7480 2.07	6130 1.95	4970 1.84	3990 1.70	3160 1.54	2460 1.37	1880 1.20	1410 1.03	1020 0.880	694 0.739	-	
	50	Q P	8600 2.63	7830 2.58	7110 2.53	6440 2.46	5230 2.28	4210 2.10	3350 1.90	2630 1.69	2030 1.48	1530 1.27	1130 1.06	789 0.879	-	-	-
	30	Q P	13200 1.95	12100 1.99	11000 2.00	10000 2.01	8240 1.95	6730 1.88	5430 1.78	4320 1.64	3400 1.49	2620 1.33	1980 1.16	1460 1.00	1020 0.857	-	
	40	Q P	11600 2.51	10600 2.50	9620 2.47	8750 2.44	7170 2.31	5820 2.17	4670 2.00	3710 1.82	2900 1.62	2220 1.41	1670 1.22	1210 1.03	829 0.864	-	
	50	Q P	10100 3.12	9130 3.06	8300 2.99	7520 2.91	6110 2.70	4930 2.49	3930 2.25	3090 2.00	2390 1.75	1810 1.50	1340 1.25	942 1.03	-	-	-
HGX22e/125-4	30	Q P	16500 1.99	15100 2.05	13800 2.09	12500 2.11	10300 2.11	8300 2.06	6650 1.95	5270 1.81	4110 1.65	3150 1.47	2360 1.29	1710 1.11	1170 0.956	-	
	40	Q P	14400 2.63	13100 2.63	11900 2.62	10800 2.59	8820 2.50	7130 2.36	5700 2.18	4490 1.98	3480 1.77	2640 1.55	1950 1.34	1360 1.15	850 0.984	-	
	50	Q P	12300 3.20	11100 3.14	10100 3.08	9110 3.00	7420 2.82	5960 2.60	4740 2.36	3710 2.10	2850 1.85	2130 1.60	1530 1.36	1010 1.16	-	-	-

### R449A | 50 Hz

HGX12P/60-4 S	30	Q P	7580 112	6940 113	6330 114	5760 114	4740 113	3860 108	3100 102	2460 0.955	1920 0.870	1470 0.779	1100 0.686	790 0.597	544 0.515	-	
	40	Q P	6690 141	6100 140	5550 139	5040 137	4120 131	3330 123	2660 114	2090 103	1620 0.928	1230 0.815	905 0.704	644 0.600	429 0.507	-	
	50	Q P	5810 173	5280 170	4790 166	4330 161	3510 151	2820 139	2230 126	1730 112	1320 0.985	985 0.845	711 0.712	487 0.588	-	-	
	30	Q P	9430 138	8630 140	7880 141	7180 141	5920 140	4820 135	3880 127	3080 118	2410 107	1850 0.960	1390 0.844	1020 0.732	703 0.629	-	
	40	Q P	8320 175	7600 174	6920 173	6290 170	5150 164	4170 154	3340 142	2640 129	2050 115	1560 101	1170 0.874	834 0.743	564 0.626	-	
	50	Q P	7240 2.16	6580 2.13	5970 2.08	5410 2.02	4390 1.91	3530 1.76	2800 1.59	2190 1.41	1680 1.23	1270 1.06	922 0.892	641 0.736	-	-	-
HGX12P/90-4	30	Q P	11300 1.67	10300 1.69	9380 1.71	8550 1.71	7040 1.66	5740 1.60	4630 1.51	3680 1.40	2890 1.27	2230 1.13	1680 0.995	1230 0.860	857 0.736	-	
	40	Q P	9890 2.12	9030 2.12	8230 2.10	7480 2.07	6130 1.95	4970 1.84	3990 1.70	3160 1.54	2460 1.37	1880 1.20	1410 1.03	1020 0.880	694 0.739	-	
	50	Q P	8600 2.63	7830 2.58	7110 2.53	6440 2.46	5230 2.28	4210 2.10	3350 1.90	2630 1.69	2030 1.48	1530 1.27	1130 1.06	789 0.879	-	-	-
	30	Q P	13200 1.95	12100 1.99	11000 2.00	10000 2.01	8240 1.95	6730 1.88	5430 1.78	4320 1.64	3400 1.49	2620 1.33	1980 1.16	1460 1.00	1020 0.857	-	
	40	Q P	11600 2.51	10600 2.50	9620 2.47	8750 2.44	7170 2.31	5820 2.17	4670 2.00	3710 1.82	2900 1.62	2220 1.41	1670 1.22	1210 1.03	829 0.864	-	
	50	Q P	10100 3.12	9130 3.06	8300 2.99	7520 2.91	6110 2.70	4930 2.49	3930 2.25	3090 2.00	2390 1.75	1810 1.50	1340 1.25	942 1.03	-	-	-
HGX22e/125-4	30	Q P	16500 1.99	15100 2.05	13800 2.09	12500 2.11	10300 2.11	8300 2.06	6650 1.95	5270 1.81	4110 1.65	3150 1.47	2360 1.29	1710 1.11	1170 0.956	-	
	40	Q P	14400 2.63	13100 2.63	11900 2.62	10800 2.59	8820 2.50	7130 2.36	5700 2.18	4490 1.98	3480 1.77	2640 1.55	1950 1.34	1360 1.15	850 0.984	-	

# HG semi-hermetic compressors

## Performance data

### R449A | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]											Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C													
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	-35		
HGX22e/160-4	30	Q P	20200 2.92	18500 2.88	16900 2.83	15400 2.78	12600 2.61	10200 2.53	8150 2.40	6450 2.23	5040 2.02	3860 1.80	2900 1.57	2100 1.35	1440 114
	40	Q P	17600 3.63	16000 3.53	14600 3.44	13300 3.34	10800 3.09	8710 2.91	6960 2.69	5490 2.44	4260 2.17	3240 1.90	2390 1.63	1670 1.39	1040 118
	50	Q P	15000 4.31	13700 4.16	12500 4.01	11400 3.86	9040 3.50	7270 3.22	5780 2.91	4530 2.59	3490 2.26	2610 1.95	1870 1.66	1230 1.40	-
HGX22e/190-4	30	Q P	24400 3.55	22300 3.50	20400 3.44	18600 3.37	15400 3.33	12600 3.13	10300 2.91	8220 2.69	6550 2.46	5150 2.22	3970 1.97	2970 1.71	2110 144
	40	Q P	21200 4.43	19400 4.31	17700 4.19	16100 4.07	13400 3.93	10900 3.63	8840 3.32	7110 3.01	5650 2.71	4410 2.40	3360 2.09	2450 1.78	1630 147
	50	Q P	18200 5.29	16600 5.11	15100 4.93	13800 4.74	11400 4.49	9230 4.07	7460 3.67	5970 3.27	4710 2.88	3640 2.51	2710 2.13	1870 1.77	-
HGX34e/215-4	30	Q P	27400 3.46	25100 3.47	22800 3.44	20800 3.35	16800 3.18	13600 2.95	10800 2.69	8460 2.41	6470 2.12	4820 1.84	3460 1.57	2360 134	1500
	40	Q P	24000 4.56	21800 4.46	19800 4.35	17900 4.22	14300 3.99	11500 3.65	9010 3.29	6940 2.91	5210 2.54	3790 2.18	2640 1.85	1730 1.56	1030 133
	50	Q P	20400 5.55	18500 5.35	16700 5.14	15000 4.92	11800 4.55	9320 4.06	7230 3.56	5480 3.08	4050 2.62	2900 2.21	2000 1.84	1310 1.54	-
HGX34e/255-4	30	Q P	32100 3.57	29400 3.70	26900 3.79	24600 3.84	19900 3.90	16300 3.81	13100 3.61	10300 3.35	7940 3.02	5940 2.66	4280 2.28	2940 1.91	1870 157
	40	Q P	27800 4.81	25400 4.83	23200 4.82	21100 4.78	17100 4.71	13900 4.44	11100 4.09	8670 3.69	6630 3.24	4900 2.78	3470 2.32	2300 1.89	1360 150
	50	Q P	23100 5.92	21100 5.84	19200 5.73	17500 5.60	14000 5.40	11300 4.96	8980 4.46	7000 3.92	5310 3.36	3900 2.80	2740 2.26	1790 1.76	-
HGX34e/315-4	30	Q P	40900 4.81	37300 4.87	33900 4.90	30800 4.90	24900 4.73	20100 4.56	16100 4.31	12700 3.99	9800 3.61	7420 3.19	5460 2.75	3840 2.31	2510 187
	40	Q P	35500 6.19	32300 6.15	29300 6.08	26500 5.98	21300 5.64	17200 5.30	13700 4.89	10700 4.41	8190 3.90	6120 3.36	4390 2.81	2940 2.26	1710 173
	50	Q P	30000 7.50	27200 7.35	24600 7.18	22200 6.99	17800 6.47	14200 5.95	11300 5.36	8710 4.74	6620 4.08	4880 3.40	3410 2.73	2160 2.08	-
HGX34e/380-4	30	Q P	48500 6.14	44300 6.17	40400 6.17	36800 6.14	29900 5.92	24400 5.69	19700 5.36	15700 4.95	12300 4.48	9410 3.97	7050 3.43	5080 2.88	3420 2.33
	40	Q P	42100 7.78	38400 7.70	35000 7.58	31800 7.44	25700 7.03	20900 6.59	16800 6.06	13300 5.48	10400 4.85	7860 4.19	5760 3.51	3970 2.84	2410 2.18
	50	Q P	35600 9.35	32400 9.14	29400 8.91	26600 8.65	21400 8.04	17400 7.38	13900 6.66	11000 5.89	8480 5.09	6370 4.27	4560 3.45	2980 2.64	-
HGX44e/475-4	30	Q P	61400 7.14	56200 7.26	51400 7.33	46800 7.36	38400 7.22	31300 6.98	25300 6.59	20100 6.10	15800 5.52	12200 4.88	9120 4.20	6650 3.52	4610 2.85
	40	Q P	53900 9.39	49300 9.35	44900 9.26	40900 9.12	33300 8.73	27100 8.19	21800 7.55	17300 6.81	13400 6.02	10300 5.20	7550 4.36	5320 3.54	3420 2.75
	50	Q P	46300 11.4	42200 11.2	38400 11.0	34800 10.7	28100 10.0	22700 9.21	18100 8.29	14200 7.31	10900 6.29	8100 5.26	5760 4.25	3750 3.27	-
HGX44e/565-4	30	Q P	73300 8.47	67100 8.62	61300 8.71	55900 8.73	45700 8.61	37400 8.31	30200 7.85	24100 7.25	19000 6.55	14700 5.78	11100 4.97	8140 4.15	5700 3.35
	40	Q P	64400 11.1	58900 11.1	53700 10.9	48900 10.8	39700 10.4	32400 9.79	26100 9.01	20700 8.12	16200 7.16	12500 6.17	9260 5.16	6590 4.17	4300 3.24
	50	Q P	55500 13.6	50600 13.3	46000 13.0	41800 12.7	33600 12.0	27200 11.0	21800 9.91	17200 8.72	13300 7.48	9950 6.24	7150 5.02	5760 3.86	-
HGX44e/665-4	30	Q P	85400 9.91	78200 10.0	71400 10.1	65100 10.2	53500 10.1	43600 9.77	35200 9.23	28000 8.54	21900 7.72	16900 6.83	12700 5.88	9180 4.92	6340 3.98
	40	Q P	74900 13.0	68400 13.0	62400 12.8	56700 12.7	46300 12.2	37600 11.4	30200 10.5	23900 9.54	18600 8.43	14200 7.28	10500 6.10	7310 4.95	4660 3.85
	50	Q P	64200 16.0	58500 15.7	53200 15.3	48200 14.9	39000 14.0	31500 12.8	25100 11.6	19600 10.2	15100 8.81	11200 7.37	7890 5.95	5090 4.58	-
HGX44e/770-4	30	Q P	98900 11.4	90600 11.6	82800 11.8	75500 11.8	62300 11.6	50900 11.2	41100 10.6	32700 9.87	25700 8.93	19900 7.90	15000 6.80	11000 5.69	7640 4.60
	40	Q P	86800 15.2	79300 15.1	72300 14.9	65800 14.7	54100 14.1	44100 13.2	35400 12.2	28100 11.0	22000 9.75	16800 8.41	12500 7.06	8830 5.72	5740 4.45
	50	Q P	74500 18.7	67900 18.3	61800 17.9	56000 17.4	45800 16.2	37000 14.8	29600 13.4	23200 11.8	17900 10.1	13400 8.52	9570 6.88	6290 5.30	-

<sup>a</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>o</sub> [W]												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	30	Q P	110000 12.6	101000 12.8	91600 13.0	83500 12.8	68600 12.4	56100 11.7	45300 10.8	36200 9.84	28500 8.69	22000 7.47	16700 6.23	12300 5.03	8550
	40	Q P	96000 16.7	87800 16.6	80100 16.4	72900 16.2	59600 15.5	48600 14.6	39200 13.4	31100 12.1	24400 10.7	18700 9.26	13900 7.75	9880 6.27	6450
	50	Q P	82500 20.5	75200 20.1	68400 19.6	62100 19.0	50400 17.9	40900 16.4	32700 14.8	25800 13.0	19900 11.2	15000 9.38	10800 7.56	7100 5.80	-
	30	Q P	129000 15.6	118000 15.7	108000 15.8	98000 15.8	80700 15.5	66100 14.9	53500 14.1	42800 13.0	33800 11.8	26200 10.4	19800 9.06	14400 7.58	9740 6.10
	40	Q P	113000 20.2	103000 20.0	93700 19.8	85400 19.4	70100 18.6	57300 17.4	46300 16.1	36900 14.5	29000 12.9	22200 11.1	16400 9.31	11400 7.48	6860 5.68
	50	Q P	96100 24.5	87800 24.0	80000 23.5	72800 22.8	59400 21.4	48400 19.7	38900 17.8	30800 15.7	23900 13.6	17900 11.4	12600 9.19	7900 6.99	-
HGX56e/995-4	30	Q P	149000 17.9	136000 18.2	125000 18.4	114000 18.5	93100 18.3	76000 17.6	61400 16.6	48900 15.4	38500 13.9	29700 12.3	22400 10.5	16400 8.85	11500 7.15
	40	Q P	131000 23.7	120000 23.5	109000 23.3	98800 23.0	80900 22.1	65800 20.7	52900 19.1	42000 17.2	32800 15.2	25100 13.1	18700 11.0	13300 8.90	8590 6.91
	50	Q P	112000 29.0	102000 28.5	92800 27.8	84200 27.0	68400 25.4	55300 23.3	44100 21.0	34700 18.5	26700 15.9	20000 13.2	14400 10.7	9420 8.23	-
	30	Q P	159000 22.7	145000 22.6	132000 22.3	114000 21.5	108000 20.5	87900 19.1	71000 17.5	56500 15.8	44400 14.0	34200 12.0	25600 10.1	18400 -	-
	40	Q P	139000 27.7	127000 27.2	115000 26.7	98800 23.0	93600 25.2	76100 23.5	61100 21.5	48500 19.4	37700 17.1	28700 14.7	21000 12.3	- -	-
	50	Q P	119000 32.5	108000 31.6	97900 30.6	84200 27.0	79200 28.5	64000 26.1	51100 23.5	40200 20.7	30900 17.8	23000 14.9	- -	- -	-
HGX66e/1340-4	30	Q P	182000 26.1	166000 26.0	152000 25.7	114000 18.5	124000 24.9	102000 23.7	81800 22.1	65300 20.3	39700 18.4	30000 16.2	21700 14.1	21700 11.9	-
	40	Q P	160000 32.1	146000 31.5	133000 30.8	98800 23.0	108000 29.3	87700 27.3	70600 25.0	56200 22.6	43900 20.0	33600 17.3	24800 14.5	- -	-
	50	Q P	137000 37.7	124000 36.7	113000 35.6	84200 27.0	91200 33.3	73900 30.5	59200 27.4	46800 24.3	36200 21.0	27200 17.6	- -	- -	-
	30	Q P	206000 29.9	189000 29.7	172000 29.4	114000 18.5	142000 28.4	116000 27.0	93600 25.3	74800 23.3	58900 21.0	45600 18.6	34400 16.2	24900 13.7	-
	40	Q P	181000 36.7	165000 36.0	150000 35.3	98800 23.0	124000 33.4	101000 31.1	81000 28.6	64400 25.8	50400 22.9	38600 19.8	28500 16.8	- -	-
	50	Q P	155000 43.1	141000 42.0	128000 40.7	84200 27.0	105000 38.0	84700 34.8	68000 31.4	53700 27.8	41600 24.1	31300 20.3	- -	- -	-
HGX66e/1750-4	30	Q P	242000 35.3	222000 35.2	202000 34.8	114000 18.5	167000 33.7	136000 32.0	111000 29.9	88000 27.5	69400 24.8	53700 22.0	40500 19.0	29400 16.1	-
	40	Q P	212000 43.6	194000 42.8	176000 41.9	98800 23.0	145000 39.7	118000 37.0	95100 33.9	75800 30.6	59400 27.0	45500 23.4	33600 19.7	- -	-
	50	Q P	181000 51.4	165000 50.0	150000 48.5	84200 27.0	123000 45.3	99300 41.5	79700 37.3	63100 33.0	49000 28.5	36900 24.0	- -	- -	-
	30	Q P	287000 41.8	263000 41.6	239000 41.2	114000 18.5	196000 39.7	160000 37.9	130000 35.5	104000 32.8	81500 29.7	63000 26.5	47500 23.1	34500 19.7	-
	40	Q P	253000 50.9	231000 50.1	210000 49.1	98800 23.0	171000 46.8	140000 43.7	113000 40.2	89200 36.3	69800 32.3	53500 28.1	39600 23.9	- -	-
	50	Q P	218000 59.6	198000 58.0	180000 56.4	84200 27.0	146000 53.3	118000 48.9	94300 44.1	74500 39.1	57800 34.0	43500 28.8	- -	- -	-
HGX88e/2400-4	30	Q P	326000 47.3	298000 47.1	272000 46.6	114000 18.5	224000 45.1	183000 43.0	148000 40.4	118000 37.3	92900 33.9	71800 30.2	54100 26.4	39300 22.6	-
	40	Q P	287000 57.9	262000 56.9	238000 55.7	98800 23.0	195000 53.0	159000 49.5	128000 45.6	102000 41.3	79600 36.8	60900 32.1	45100 27.4	- -	-
	50	Q P	247000 68.0	224000 66.2	204000 64.3	84200 27.0	166000 60.2	135000 55.3	108000 50.0	85000 44.4	65800 38.7	49600 32.9	- -	- -	-
	30	Q P	385000 55.7	352000 55.4	321000 54.9	114000 18.5	264000 53.2	216000 50.7	175000 47.6	139000 43.9	110000 39.8	84500 35.5	63700 30.9	46100 26.4	-
	40	Q P	339000 68.1	309000 66.9	281000 65.6	98800 23.0	230000 62.5	188000 58.4	151000 53.7	120000 48.6	93700 43.2	71600 37.6	52900 32.0	- -	-
	50	Q P	291000 79.9	265000 77.8	240000 75.5	84200 27.0	196000 71.0	159000 65.1	127000 58.8	100000 52.2	77400 45.4	58100 38.5	- -	- -	-

Relating to 20 °C suction gas temperature  
without liquid subcooling

Motor version -S-  
(more powerful motor)

Supplementary cooling or  
reduced suction gas temperature

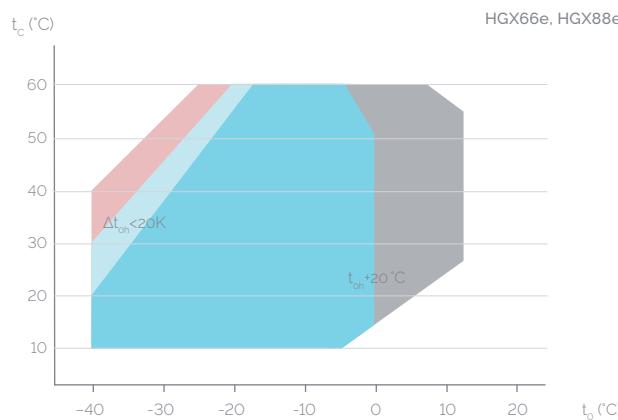
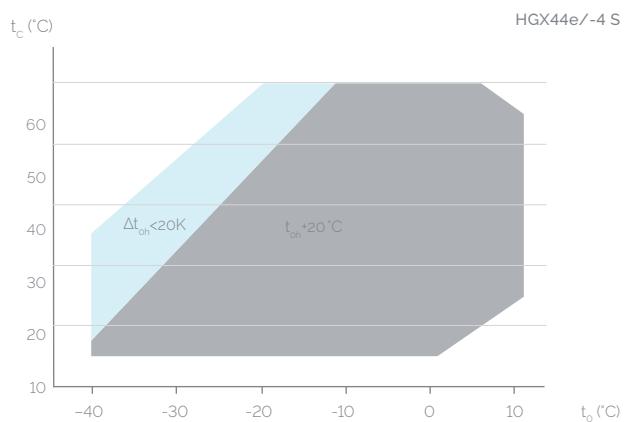
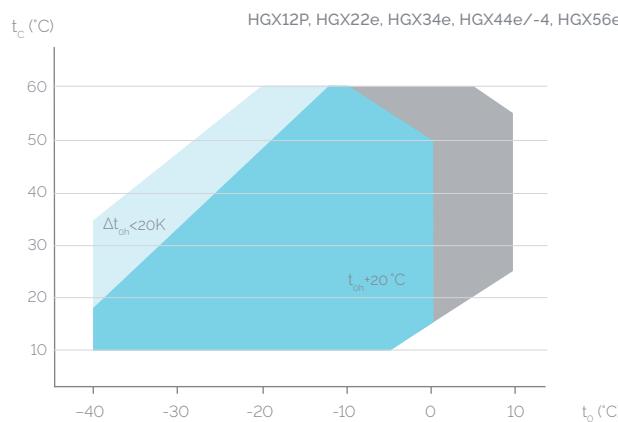
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# HG semi-hermetic compressors

## Operating limits

### R407A



$t_o$  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 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.

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

### R407A | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C												
		10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
HGX12P/60-4 S	30 Q P	6820 105	6230 107	5680 108	4690 104	3810 0.993	3060 0.921	2420 0.839	1870 0.753	1430 0.753	1060 0.669	770 0.593	553 0.532	
	40 Q P	5900 132	5390 132	4900 130	4030 125	3260 118	2610 109	2050 0.996	1580 0.892	1200 0.791	884 0.697	639 0.618	-	
	50 Q P	5030 157	4570 154	4150 150	3390 140	2730 129	2170 117	1690 105	1300 0.927	968 0.811	-	-	-	
HGX12P/75-4	30 Q P	8490 130	7760 133	7080 134	5850 130	4770 123	3830 114	3040 103	2360 0.928	1800 0.928	1350 0.823	989 0.728	715 0.653	
	40 Q P	7350 164	6710 164	6120 162	5030 157	4090 147	3270 136	2580 124	2010 111	1530 1.09	1140 0.983	828 0.866	-	
	50 Q P	6260 196	5710 192	5180 187	4240 177	3430 163	2730 148	2140 132	1650 116	1250 101	-	-	-	
HGX12P/90-4	30 Q P	10100 157	9240 160	8430 162	6960 159	5680 154	4570 146	3630 135	2830 122	2170 109	1630 0.970	1200 0.856	872 0.764	
	40 Q P	8740 199	7990 198	7280 196	5990 186	4870 176	3910 162	3100 147	2410 132	1840 117	1380 102	1010 0.909	-	
	50 Q P	7450 2.38	6790 2.34	6170 2.28	5050 2.11	4090 1.95	3270 1.77	2580 1.58	1990 1.39	1510 1.21	-	-	-	
HGX12P/110-4	30 Q P	11900 184	10900 188	9870 190	8150 187	6660 181	5360 171	4260 158	3330 144	2550 128	1920 113	1420 100	1040 0.893	
	40 Q P	10300 2.35	9340 2.34	8510 2.31	7000 2.20	5710 2.07	4590 1.92	3640 1.74	2840 1.55	2170 1.37	1630 1.21	1200 1.07	-	
	50 Q P	8690 2.83	7930 2.77	7210 2.70	5910 2.50	4790 2.31	3840 2.09	3030 1.86	2350 1.64	1790 1.43	-	-	-	
HGX22e/125-4	30 Q P	15200 2.06	13800 2.08	12600 2.09	10200 2.08	8240 2.01	6580 1.90	5180 1.77	4000 1.62	3030 1.46	2220 1.29	1570 113	1030 0.992	
	40 Q P	13300 2.60	12000 2.57	10900 2.53	8810 2.43	7090 2.29	5630 2.12	4400 1.93	3370 1.74	2520 1.55	1830 1.37	1250 1.20	-	
	50 Q P	11300 3.08	10200 3.01	9170 2.93	7410 2.74	5920 2.53	4660 2.30	3620 2.07	2750 1.84	2040 1.63	-	-	-	
HHGX22e/160-4	30 Q P	19300 2.72	17500 2.69	15900 2.66	12600 2.58	10200 2.43	8120 2.30	6450 2.16	5060 2.02	3920 1.87	2960 1.69	2130 1.48	1360 1.22	
	40 Q P	17000 3.30	15400 3.23	13900 3.15	11100 3.00	8860 2.79	7060 2.60	5580 2.41	4350 2.21	3310 1.99	2400 1.75	1580 1.48	-	
	50 Q P	14700 3.86	13200 3.74	11900 3.61	9540 3.40	7630 3.13	6050 2.88	4720 2.62	3600 2.35	2630 2.06	-	-	-	
HGX22e/190-4	30 Q P	22500 3.48	20500 3.40	18600 3.32	15300 3.26	12600 3.04	10200 2.82	8100 2.62	6400 2.41	4970 2.20	3760 1.98	2750 1.75	1870 1.49	
	40 Q P	19600 4.23	17800 4.10	16200 3.96	13400 3.81	10900 3.50	8760 3.21	6980 2.94	5490 2.67	4240 2.40	3180 2.13	2270 1.86	-	
	50 Q P	16800 5.00	15300 4.80	13900 4.61	11400 4.35	9190 3.95	7370 3.57	5850 3.22	4570 2.89	3510 2.56	-	-	-	
HGX34e/215-4	30 Q P	24600 3.47	22400 3.47	20400 3.44	16500 3.34	13300 3.17	10600 2.94	8200 2.67	6230 2.38	4590 2.08	3270 1.79	2220 1.53	1430 1.31	
	40 Q P	21500 4.47	19500 4.36	17600 4.23	14100 3.99	11300 3.64	8800 3.27	6740 2.88	5020 2.50	3620 2.13	2500 1.80	1640 1.52	-	
	50 Q P	18200 5.37	16400 5.15	14800 4.93	11700 4.55	9170 4.04	7070 3.53	5310 3.03	3880 2.56	2730 2.14	-	-	-	
HGX34e/255-4	30 Q P	28900 3.72	26500 3.81	24100 3.86	19600 3.91	16000 3.81	12800 3.60	9990 3.32	7640 2.97	5670 2.60	4050 2.22	2760 1.85	1790 1.53	
	40 Q P	25000 4.86	22800 4.85	20800 4.81	16800 4.73	13600 4.44	10900 4.08	8440 3.65	6400 3.19	4690 2.71	3290 2.25	2180 1.82	-	
	50 Q P	20900 5.89	19000 5.78	17300 5.64	13900 5.42	11200 4.96	8820 4.43	6810 3.87	5110 3.28	3700 2.71	-	-	-	
HGX34e/315-4	30 Q P	36600 4.89	33300 4.92	30200 4.92	24400 4.74	19700 4.56	15700 4.29	12300 3.95	9450 3.56	7100 3.13	5180 2.68	3630 2.23	2400 1.80	
	40 Q P	31700 6.19	28800 6.12	26100 6.02	21000 5.67	16900 5.30	13400 4.87	10400 4.37	7920 3.84	5870 3.28	4180 2.72	2790 2.17	-	
	50 Q P	26800 7.41	24300 7.23	21900 7.03	17600 6.50	14000 5.94	11000 5.33	8480 4.67	6370 3.98	4620 3.29	-	-	-	

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

<sup>a</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	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C												
		10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
HGX66e/1750-4	30	Q P	203000 29.4	185000 29.2	168000 28.9	138000 27.9	113000 26.6	90200 24.9	71700 22.9	56200 20.6	43300 18.2	32400 15.7	23300 13.2	15400 10.7
	40	Q P	177000 36.4	161000 35.8	147000 35.0	120000 33.1	97100 30.8	78000 28.2	61800 25.4	48200 22.4	36700 19.3	26800 16.1	-	-
	50	Q P	152000 43.0	138000 41.8	125000 40.5	102000 37.7	82000 34.4	65600 30.9	51600 27.3	39800 23.4	29600 19.6	-	-	-
	30	Q P	239000 34.8	218000 34.6	198000 34.3	162000 33.1	132000 31.5	107000 29.5	84400 27.0	66200 24.4	51000 21.5	38200 18.5	27500 15.5	18200 12.5
	40	Q P	208000 43.3	189000 42.5	172000 41.5	141000 39.4	114000 36.6	91600 33.5	72700 30.1	56700 26.5	43200 22.8	31600 19.0	-	-
	50	Q P	178000 51.3	161000 49.9	146000 48.3	119000 45.0	96100 41.0	77000 36.8	60700 32.3	46800 27.7	34800 23.1	-	-	-
HGX66e/2070-4	30	Q P	283000 41.2	258000 41.0	234000 40.6	191000 39.1	155000 37.3	125000 35.0	99200 32.2	77800 29.2	59900 25.9	44900 22.5	32300 19.0	21400 15.5
	40	Q P	248000 50.6	226000 49.7	205000 48.7	166000 46.4	135000 43.2	108000 39.6	85600 35.8	66700 31.7	50800 27.4	37200 23.1	-	-
	50	Q P	213000 59.5	194000 57.9	175000 56.2	141000 52.9	114000 48.4	91000 43.5	71600 38.4	55200 33.2	41100 27.9	-	-	-
	30	Q P	321000 46.6	293000 46.4	266000 45.9	218000 44.4	177000 42.4	143000 39.8	114000 36.7	88600 33.3	68200 29.6	51100 25.7	36700 21.7	24300 17.7
	40	Q P	281000 57.5	256000 56.5	232000 55.3	190000 52.5	154000 49.0	124000 45.0	97600 40.7	76100 36.1	57900 31.3	42400 26.4	-	-
	50	Q P	242000 67.9	219000 66.0	199000 64.0	161000 59.8	131000 54.7	104000 49.3	81700 43.6	62900 37.8	46800 31.8	-	-	-
HGX88e/2735-4	30	Q P	379000 54.9	346000 54.6	314000 54.1	257000 52.4	209000 49.9	168000 46.9	134000 43.2	105000 39.1	80300 34.7	60100 30.1	43100 25.4	28500 20.7
	40	Q P	332000 67.7	302000 66.5	274000 65.1	224000 61.9	181000 57.7	146000 53.0	115000 47.8	89500 42.3	68000 36.7	49700 30.9	-	-
	50	Q P	285000 79.8	259000 77.6	234000 75.2	190000 70.5	154000 64.5	123000 58.0	96100 51.2	73900 44.3	54900 37.2	-	-	-
	30													
	40													
	50													

Relating to 20 °C suction gas temperature  
without liquid subcooling

Motor version -S-  
(more powerful motor)

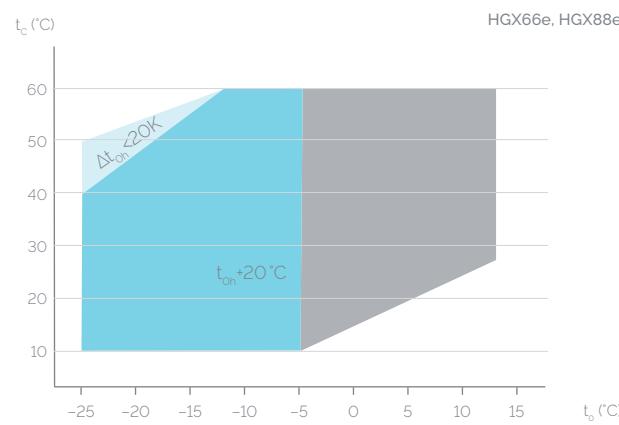
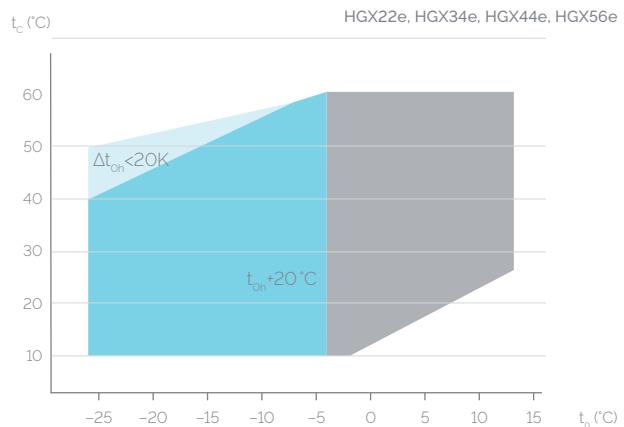
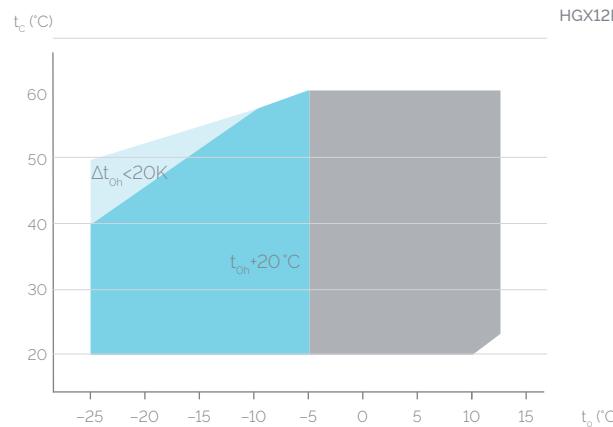
Supplementary cooling or  
reduced suction gas temperature [vap.bock.de](http://vap.bock.de)



# HG semi-hermetic compressors

## Operating limits

### R407C



$t_o$  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 ( $\Delta t_{oh} < 20K$ )
- 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 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	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]									Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C										
		12.5	10	7.5	5	0	-5	-10	-15	-20		
HGX12P/60-4 S	30	Q P	6780 0.88	6180 0.90	5610 0.92	5080 0.92	4140 0.91	3330 0.88	2650 0.82	2080 0.76	1610 0.76	1230 0.62
	40	Q P	5870 1.16	5340 1.16	4840 1.15	4380 1.13	3560 1.08	2860 1.01	2270 0.92	1780 0.83	1360 0.74	1020 0.66
	50	Q P	5010 1.41	4550 1.39	4120 1.35	3720 1.31	3020 1.22	2420 1.12	1920 1.00	1490 0.90	1130 0.79	827 0.69
	30	Q P	8740 1.12	7960 1.16	7230 1.18	6550 1.18	5340 1.17	4300 1.13	3420 1.06	2680 0.98	2080 0.89	1580 0.79
	40	Q P	7560 1.50	6880 1.49	6240 1.48	5650 1.46	4590 1.39	3690 1.30	2920 1.19	2290 1.07	1760 0.96	1320 0.84
	50	Q P	6450 1.82	5860 1.79	5310 1.74	4800 1.69	3890 1.58	3120 1.44	2470 1.29	1920 1.15	1460 1.01	1070 0.89
HGX12P/75-4 HGX12P/75-4 S	30	Q P	10500 1.34	9490 1.38	8620 1.40	7810 1.41	6360 1.40	5120 1.34	4080 1.26	3200 1.16	2480 1.05	1890 0.95
	40	Q P	9020 1.79	8200 1.78	7440 1.77	6730 1.74	5470 1.66	4400 1.55	3490 1.42	2730 1.28	2090 1.13	1570 1.00
	50	Q P	7690 2.17	6990 2.13	6330 2.08	5720 2.02	4640 1.88	3720 1.72	2940 1.55	2290 1.37	1740 1.21	1280 1.06
	30	Q P	12300 1.58	11200 1.62	10200 1.66	9180 1.64	7480 1.58	6020 1.48	4790 1.37	3760 1.24	2910 1.11	2220 1.11
	40	Q P	10600 2.10	9640 2.10	8750 2.08	7910 2.05	6430 1.95	5170 1.82	4100 1.67	3200 1.50	2460 1.33	1850 1.18
	50	Q P	9040 2.56	8210 2.51	7440 2.45	6730 2.38	5460 2.21	4370 2.02	3460 1.82	2690 1.61	2040 1.42	1500 1.25
HGX12P/110-4 HGX12P/110-4 S	30	Q P	14400 1.78	13100 1.82	11900 1.85	10800 1.87	8790 1.85	7070 1.78	5630 1.67	4420 1.53	3420 1.39	2600 1.25
	40	Q P	12500 2.36	11400 2.35	10300 2.33	9300 2.30	7560 2.19	6060 2.04	4800 1.87	3760 1.68	2890 1.5	2160 1.32
	50	Q P	10700 2.87	9640 2.81	8740 2.75	7910 2.67	6410 2.48	5120 2.27	4050 2.04	3150 1.81	2400 1.59	1760 1.40
	30	Q P	17600 2.18	16000 2.24	14500 2.28	13200 2.30	10700 2.27	8730 2.30	6950 2.16	5470 1.99	4240 1.79	3230 1.61
	40	Q P	15200 2.90	13800 2.90	12500 2.87	11300 2.83	9180 2.69	7500 2.64	5950 2.42	4650 2.18	3580 1.94	2680 1.72
	50	Q P	12900 3.53	11700 3.46	10700 3.38	9590 3.28	7780 3.05	6350 2.93	5020 2.64	3900 2.34	2970 2.06	2180 1.81
HGX22e/190-4 HGX22e/190-4 S	30	Q P	21800 2.67	19900 2.74	18100 2.79	16400 2.81	13300 2.78	10800 2.83	8550 2.65	6700 2.44	5180 2.20	3960 1.98
	40	Q P	18900 3.54	17200 3.54	15600 3.51	14100 3.46	11500 3.29	9220 3.25	7310 2.97	5710 2.68	4390 2.38	3290 2.10
	50	Q P	16100 4.31	14600 4.23	13300 4.13	12000 4.01	9700 3.73	7790 3.60	6170 3.24	4810 2.87	3650 2.53	2670 2.22
	30	Q P	25600 3.45	23300 3.49	21100 3.50	19100 3.48	15600 3.39	12200 3.16	9720 2.94	7650 2.67	5910 2.38	4480 2.09
	40	Q P	22400 4.38	20300 4.33	18400 4.26	16600 4.17	13400 3.94	10400 3.60	8190 3.25	6410 2.89	4920 2.52	3700 2.17
	50	Q P	19100 5.19	17300 5.06	15600 4.91	14100 4.75	11300 4.39	8590 3.98	6820 3.54	5330 3.09	4100 2.66	3100 2.27
HGX34e/255-4 HGX34e/255-4 S	30	Q P	29600 4.30	27000 4.30	24600 4.28	22300 4.23	18300 4.08	14500 3.84	11500 3.54	9040 3.20	7030 2.85	5300 2.48
	40	Q P	26000 5.33	23600 5.24	21500 5.13	19500 5.00	15800 4.71	12300 4.38	9730 3.94	7660 3.50	5940 3.06	4430 2.63
	50	Q P	22200 6.25	20200 6.08	18300 5.89	16500 5.69	13400 5.25	10200 4.83	8080 4.29	6420 3.76	5050 3.26	3820 2.79
	30	Q P	35900 4.95	32700 5.00	29800 5.01	27000 4.99	22100 4.86	17600 4.69	14100 4.34	11100 3.96	8590 3.55	6550 3.11
	40	Q P	31300 6.32	28500 6.25	25900 6.16	23500 6.04	19200 5.72	15100 5.33	12000 4.85	9420 4.33	7260 3.80	5500 3.27
	50	Q P	26800 7.63	24300 7.45	22100 7.24	20000 7.02	16200 6.50	12800 5.87	10200 5.25	7910 4.63	6060 3.99	4550 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



# HG semi-hermetic compressors

## Performance data

R407C | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]									Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C										
		12.5	10	7.5	5	0	-5	-10	-15	-20		
HGX34e/380-4	30	Q P	43500 6.40	39600 6.35	36000 6.27	32700 6.17	26700 5.93	21600 5.84	17500 5.38	13900 4.91	10900 4.42	8310 3.90
	40	Q P	38000 7.95	34600 7.78	31400 7.59	28400 7.39	23200 6.94	18700 6.71	15100 6.08	12000 5.45	9320 4.82	7140 4.18
	50	Q P	32200 9.52	29300 9.23	26500 8.92	24000 8.60	19600 7.93	15800 7.49	12800 6.69	10100 5.91	7900 5.13	6070 4.36
	30	Q P	56600 7.20	51700 7.25	47100 7.25	42800 7.21	35200 7.03	28500 6.66	22900 6.24	18100 5.73	14100 5.18	10700 4.59
HGX44e/475-4	40	Q P	50200 9.13	45800 9.03	41700 8.89	37800 8.72	30900 8.28	24900 7.69	19900 7.05	15600 6.35	12000 5.61	8850 4.87
	50	Q P	43600 10.80	39700 10.50	36000 10.30	32600 10.00	26500 9.33	21200 8.54	16800 7.69	13100 6.80	9850 5.90	7100 5.02
	30	Q P	67400 8.54	61600 8.60	56200 8.61	51100 8.56	42000 8.34	33900 7.93	27300 7.42	21700 6.81	17000 6.14	12900 5.44
	40	Q P	60000 10.80	54700 10.70	49800 10.50	45200 10.30	37000 9.83	29700 9.18	23800 8.40	18700 7.55	14500 6.67	10800 5.78
HGX44e/565-4	50	Q P	52200 12.80	47500 12.50	43100 12.20	39000 11.80	31800 11.00	25300 10.20	20100 9.18	15700 8.10	12000 7.01	8650 5.95
	30	Q P	78700 10.00	71900 10.00	65500 10.00	59600 9.76	48900 9.23	40000 8.65	32200 7.95	25500 7.17	19800 6.36	15000 5.44
	40	Q P	69800 12.70	63600 12.50	57900 12.30	52500 12.10	42900 11.50	34900 10.60	27900 9.77	21900 8.80	16800 7.78	12400 6.75
	50	Q P	60600 15.10	55100 14.70	49900 14.40	45200 13.90	36700 13.00	29700 11.80	23500 10.60	18300 9.43	13800 8.18	9890 6.96
HGX44e/665-4	30	Q P	92000 11.60	84000 11.70	76600 11.60	69600 11.30	57100 10.80	46300 10.00	37100 9.22	29300 8.26	22700 7.23	17000 7.23
	40	Q P	81400 14.80	74200 14.70	67400 14.40	61200 14.10	49900 13.30	40300 12.40	32000 11.30	25000 10.00	19000 8.82	13900 7.51
	50	Q P	70400 17.60	64000 17.20	58000 16.70	52400 16.20	42500 15.00	34000 13.60	26800 12.10	20600 10.60	15400 9.06	10800 7.49
	30	Q P	101000 12.7	92000 12.8	83900 12.8	76300 12.7	62800 12.4	50900 11.8	41000 11.1	32600 10.2	25400 9.23	19300 8.17
HGX56e/850-4	40	Q P	89400 16.2	81500 16.0	74200 15.8	67400 15.4	55200 14.7	44500 13.7	35700 12.5	28100 11.3	21700 10.0	16100 8.68
	50	Q P	77600 19.3	70600 18.8	64100 18.3	58100 17.8	47300 16.5	38000 15.2	30200 13.7	23600 12.1	18000 10.5	13000 8.93
	30	Q P	121000 14.3	111000 14.5	101000 14.6	91500 14.6	75400 14.4	61200 13.8	49300 13.0	39100 11.9	30500 10.7	23200 9.45
	40	Q P	107000 18.8	96900 18.7	88300 18.5	80300 18.2	65900 17.3	53300 16.2	42700 14.8	33600 13.3	25900 11.6	19400 10.0
HGX56e/995-4	50	Q P	92100 23.1	83900 22.6	76400 22.0	69300 21.4	56700 19.9	45600 18.2	36300 16.3	28400 14.3	21600 12.2	15800 10.2
	30	Q P	139000 18.2	127000 18.3	115000 18.3	105000 18.2	85600 17.7	69200 16.9	55500 15.7	43800 14.4	33900 12.8	25400 11.2
	40	Q P	123000 23.1	112000 22.9	102000 22.5	91800 22.0	74900 20.8	60100 19.4	47800 17.6	37300 15.7	28400 13.7	20700 11.7
	50	Q P	106000 27.4	96100 26.8	87100 26.0	78700 25.2	63800 23.4	50800 21.3	40000 19.0	30800 16.6	23000 14.1	16100 11.6
HGX66e/1340-4	30	Q P	164000 21.3	149000 21.1	136000 20.9	123000 20.6	101000 19.8	80800 18.8	64600 17.6	51000 16.1	39500 14.5	29900 12.6
	40	Q P	144000 26.4	131000 25.9	119000 25.4	108000 24.8	87800 23.4	70300 21.7	56000 19.9	43900 17.9	33700 15.6	25100 13.2
	50	Q P	124000 31.3	113000 30.5	102000 29.6	92200 28.6	74900 26.5	59600 24.2	47300 21.7	36800 19.0	27900 16.1	20300 13.1
	30	Q P	187000 24.4	171000 24.3	156000 24.0	141000 23.7	116000 22.8	92900 21.7	74500 20.3	59000 18.7	45900 16.8	34800 14.7
HGX66e/1540-4	40	Q P	165000 30.5	150000 29.9	137000 29.3	124000 28.6	102000 27.0	81000 25.2	64800 23.1	51000 20.8	39300 18.3	29400 15.5
	50	Q P	142000 36.3	129000 35.3	118000 34.3	107000 33.2	86400 30.8	69000 28.2	54900 25.4	43000 22.3	32800 19.0	24000 15.5

<sup>a</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

### R407C | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>e</sub> [W]									Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C											
		12.5	10	7.5	5	0	-5	-10	-15	-20			
HGX66e/1750-4	30	Q P	212000 28.0	194000 27.8	177000 27.5	160000 27.1	132000 26.2	107000 24.8	85300 23.2	67500 21.4	52500 19.3	39900 16.9	
	40	Q P	187000 34.9	171000 34.2	155000 33.5	141000 32.7	115000 31.0	92800 28.8	74200 26.4	58500 23.8	45100 21.0	33800 17.8	
HGX66e/1750-4 S	50	Q P	161000 41.5	147000 40.4	133000 39.2	121000 38.0	98100 35.3	79100 32.3	63000 29.0	49400 25.5	37700 21.8	27600 17.8	
	30	Q P	250000 33.1	228000 32.8	208000 32.5	189000 32.0	155000 30.9	126000 29.3	101000 27.5	79500 25.3	61900 22.8	47100 19.9	
HGX66e/2070-4	40	Q P	220000 41.4	200000 40.6	182000 39.8	165000 38.8	135000 36.7	109000 34.2	87300 31.3	68800 28.2	53200 24.8	39800 21.0	
	50	Q P	189000 49.5	172000 48.1	156000 46.7	142000 45.2	116000 41.9	92800 38.4	74000 34.4	58100 30.2	44400 25.7	32500 21.0	
HGX88e/2400-4	30	Q P	296000 39.3	270000 39.0	246000 38.6	223000 38.1	183000 36.9	147000 34.8	118000 32.7	93300 30.2	72600 27.3	55200 24.1	
	40	Q P	261000 48.5	238000 47.7	217000 46.7	196000 45.7	161000 43.3	129000 40.4	103000 37.2	81000 33.6	62500 29.6	46800 25.4	
HGX88e/2400-4 S	50	Q P	226000 57.5	206000 56.0	187000 54.4	169000 52.7	138000 49.1	110000 45.3	87400 40.8	68500 36.0	52300 30.9	38400 25.5	
	30	Q P	336000 44.4	306000 44.1	279000 43.6	253000 43.1	208000 41.7	168000 39.6	135000 37.3	107000 34.5	82700 31.2	62900 27.5	
HGX88e/2735-4	40	Q P	296000 55.1	270000 54.1	246000 53.0	223000 51.8	182000 49.1	147000 45.9	118000 42.3	92300 38.2	71200 33.8	53300 29.1	
	50	Q P	257000 65.5	233000 63.8	212000 61.9	192000 60.0	156000 55.8	126000 51.3	99700 46.3	78100 40.9	59600 35.2	43700 29.2	
HGX88e/3235-4	30	Q P	396000 52.3	362000 51.9	329000 51.4	299000 50.8	245000 49.1	198000 46.7	159000 43.9	126000 40.5	97500 36.7	74000 32.3	
	40	Q P	350000 64.9	319000 63.7	290000 62.4	263000 61.0	215000 57.8	173000 54.0	139000 49.7	109000 44.9	83800 39.7	62700 34.0	
HGX88e/3235-4 S	50	Q P	303000 77.1	275000 75.0	250000 72.8	226000 70.5	184000 65.6	148000 60.4	118000 54.4	91800 48.0	70000 41.2	51300 34.1	

Relating to 20 °C suction gas temperature  
without liquid subcooling



Motor version -S-  
(more powerful motor)



Supplementary cooling or  
reduced suction gas temperature

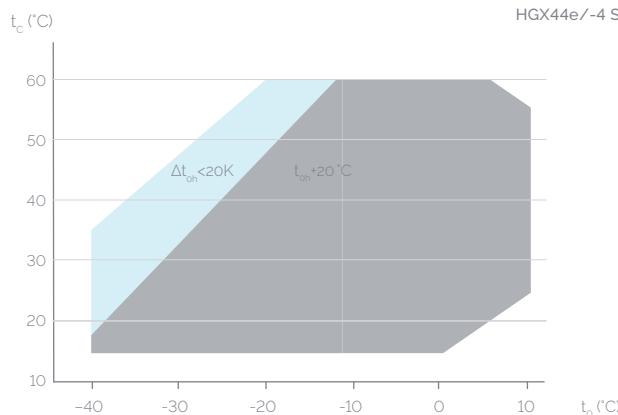
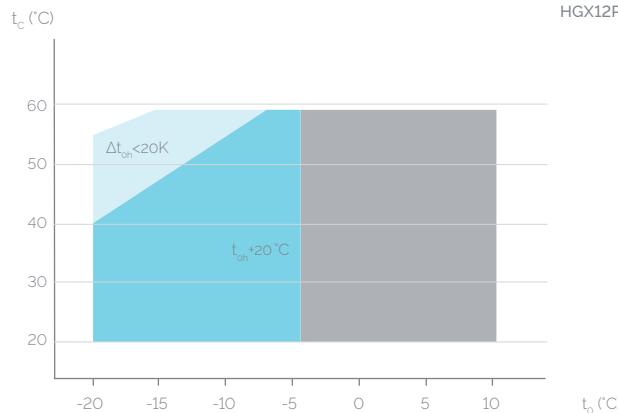
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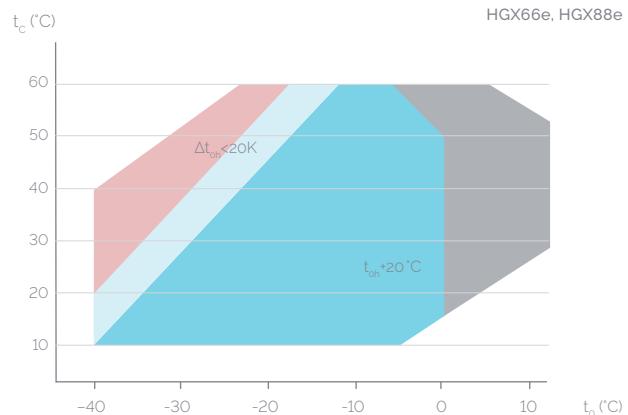
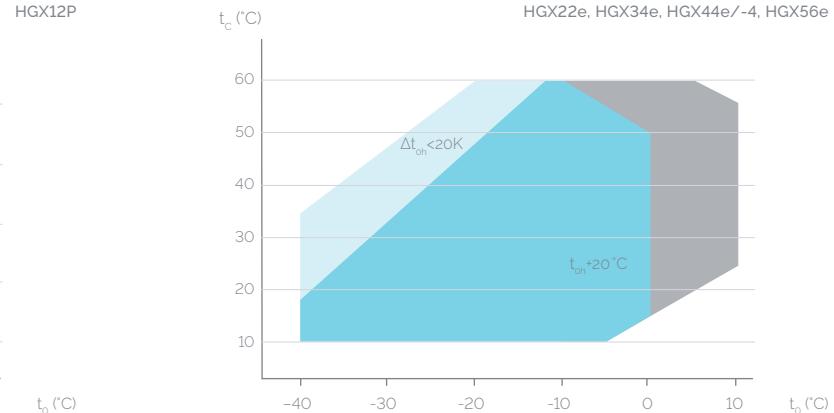
# HG semi-hermetic compressors

## Operating limits

R407F



- $t_o$  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 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	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C												
		10	7,5	5	0	-5	-10	-15	-20	-25	-30			
HGX12P/60-4 S	30	Q P	7240 110	6570 113	5950 115	4840 115	3890 112	3080 106	2410 0.982	1850 0.894	-	-	-	
	40	Q P	6290 141	5700 142	5150 140	4180 136	3340 127	2640 117	2040 106	1540 0.948	-	-	-	
	50	Q P	5300 167	4800 164	4330 160	3490 151	2780 138	2170 124	1660 110	1220 0.963	-	-	-	
	30	Q P	9010 139	8200 143	7440 146	6090 146	4950 140	3960 133	3130 123	2430 112	-	-	-	
	40	Q P	7850 182	7140 182	6470 180	5290 174	4310 162	3440 149	2690 136	2070 121	-	-	-	
	50	Q P	6670 215	6060 211	5490 206	4480 194	3670 178	2910 161	2260 144	1720 127	-	-	-	
HGX12P/75-4 HGX12P/75-4 S	30	Q P	10800 171	9780 174	8880 176	7270 175	5760 166	4620 155	3650 143	2840 129	-	-	-	
	40	Q P	9380 218	8530 217	7740 214	6320 206	5020 189	4000 173	3140 155	2400 138	-	-	-	
	50	Q P	7990 2.60	7260 2.55	6580 2.48	5370 2.32	4270 2.09	3370 1.87	2620 1.65	1980 1.44	-	-	-	
	30	Q P	12500 2.01	11300 2.04	10300 2.06	8420 2.03	6830 2.01	5510 1.88	4390 1.73	3440 1.57	-	-	-	
	40	Q P	10900 2.54	9860 2.52	8960 2.50	7330 2.40	5970 2.31	4800 2.11	3790 1.89	2940 1.68	-	-	-	
	50	Q P	9160 3.04	8330 2.98	7560 2.91	6180 2.72	5070 2.54	4040 2.27	3170 2.00	2430 1.74	-	-	-	
HGX12P/110-4 HGX12P/110-4 S	30	Q P	15400 2.25	14100 2.26	12800 2.26	10600 2.22	8560 2.14	6860 2.03	5410 1.89	4190 1.74	3180 1.57	2350 1.39	1690 1.22	1160 1.05
	40	Q P	13600 2.81	12400 2.77	11200 2.72	9180 2.60	7420 2.44	5910 2.26	4630 2.07	3560 1.87	2670 1.66	1940 1.46	1360 1.27	-
	50	Q P	11700 3.35	10600 3.25	9580 3.16	7800 2.94	6260 2.71	4950 2.47	3840 2.22	2920 1.97	2160 1.73	-	-	-
	30	Q P	19600 2.98	17900 2.93	16300 2.88	13100 2.77	10600 2.61	8470 2.46	6740 2.32	5300 2.17	4110 2.01	3120 1.81	2280 1.58	1520 1.30
	40	Q P	17500 3.59	15900 3.49	14400 3.39	11600 3.22	9300 2.99	7440 2.79	5890 2.58	4580 2.37	3490 2.14	2540 1.87	1690 1.57	-
	50	Q P	15300 4.20	13800 4.05	12500 3.90	10200 3.67	8140 3.37	6460 3.09	5040 2.80	3820 2.51	2770 2.19	-	-	-
HGX22e/160-4 HGX22e/160-4 S	30	Q P	22700 3.85	20800 3.73	19000 3.62	15800 3.52	13000 3.27	10600 3.04	8450 2.82	6680 2.60	5200 2.38	3960 2.14	2940 1.88	2100 1.59
	40	Q P	20000 4.64	18300 4.46	16700 4.30	13900 4.12	11400 3.77	9180 3.46	7330 3.16	5770 2.87	4460 2.58	3370 2.29	2450 1.98	-
	50	Q P	17400 5.47	15900 5.24	14500 5.02	11900 4.72	9680 4.27	7790 3.85	6180 3.46	4830 3.09	3700 2.72	-	-	-
	30	Q P	25900 3.62	23600 3.61	21400 3.57	17200 3.48	13900 3.29	11100 3.05	8570 2.77	6520 2.47	4820 2.17	3430 1.88	2320 1.61	1450 1.38
	40	Q P	22700 4.70	20600 4.57	18600 4.43	14800 4.18	11800 3.81	9230 3.41	7080 3.01	5290 2.62	3840 2.24	2680 1.91	1770 1.63	-
	50	Q P	19400 5.68	17500 5.45	15700 5.20	12300 4.80	9650 4.26	7460 3.72	5650 3.20	4180 2.72	3020 2.29	-	-	-
HGX34e/215-4 HGX34e/215-4 S	30	Q P	30300 3.83	27700 3.92	25200 3.98	20500 4.05	16700 3.94	13400 3.73	10500 3.44	8020 3.10	5970 2.72	4280 2.33	2910 1.96	1820 1.61
	40	Q P	26300 5.05	24000 5.04	21800 4.99	17600 4.92	14300 4.62	11400 4.25	8860 3.81	6760 3.34	5000 2.86	3540 2.39	2360 1.94	-
	50	Q P	22000 6.15	20000 6.03	18100 5.88	14500 5.67	11700 5.19	9230 4.65	7190 4.07	5470 3.47	4050 2.89	-	-	-
	30	Q P	38500 5.04	34900 5.07	31700 5.07	25600 4.91	20600 4.72	16400 4.45	12900 4.11	9900 3.71	7460 3.27	5450 2.82	3800 2.36	2430 1.91
	40	Q P	33500 6.44	30400 6.36	27500 6.25	22100 5.90	17700 5.52	14000 5.07	11000 4.57	8350 4.02	6230 3.46	4470 2.89	3000 2.32	-
	50	Q P	28500 7.76	25700 7.57	23200 7.35	18500 6.80	14800 6.23	11600 5.59	8990 4.92	6840 4.22	5070 3.51	-	-	-

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

### R407F | 50 Hz

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

<sup>a</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



# HG semi-hermetic compressors

## Performance data

### R407F | 50 Hz

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

Relating to 20 °C suction gas temperature  
without liquid subcooling

Motor version -S-  
(more powerful motor)

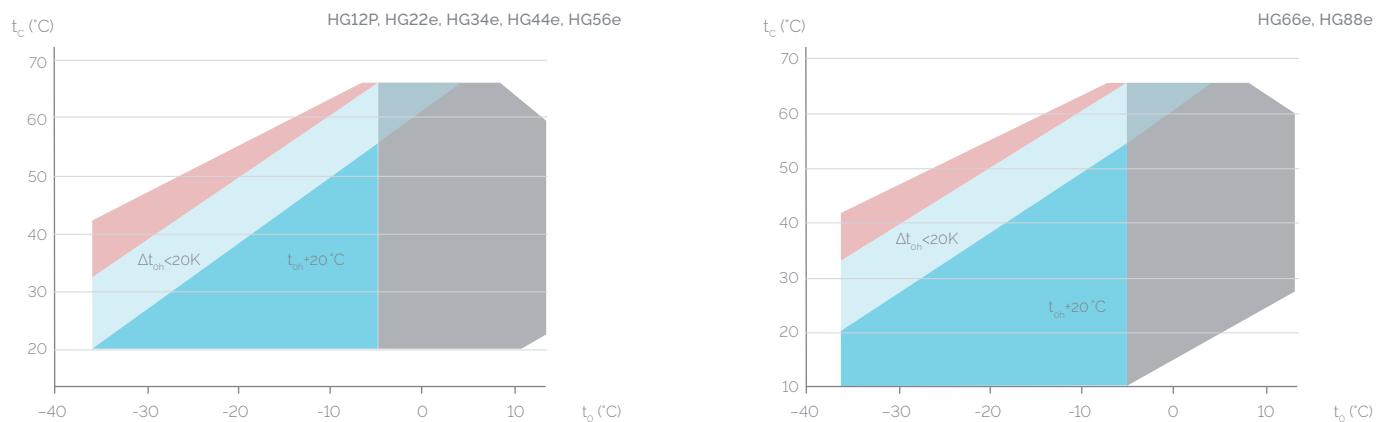
Supplementary cooling or  
reduced suction gas temperature [vap.bock.de](http://vap.bock.de)



# 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 <sub>o</sub> [W]										Power consumption P <sub>e</sub> [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 P 0.889 0.911	7120 5760 119	6530 5270 119	5980 4800 118	5460 3960 117	4520 3230 113	3710 2600 108	3000 2050 101	2390 1570 0.936	1870 1160 0.849	1430 0.707 0.758	1040 0.632 0.553	708
	40	Q P 119	6290	5760	5270	4800	3960	3230	2600	2050	1570	1160	-	-
	50	Q P 146	5500	5030	4590	4170	3430	2780	2210	1720	1290	-	-	-
HGX12P/75-4 <sup>1)</sup>	30	Q P 111	8890	8150	7460	6820	5650	4630	3750	2990	2340	1780	1300	885
	40	Q P 149	7860	7200	6580	6000	4950	4040	3240	2560	1970	1450	-	-
HGX12P/75-4 S <sup>1)</sup>	50	Q P 183	6870	6280	5730	5210	4280	3470	2760	2150	-	-	-	-
	30	Q P 132	10600	9720	8900	8130	6740	5520	4470	3570	2790	2120	1550	1060
HGX12P/90-4 <sup>1)</sup>	40	Q P 178	9380	8590	7850	7160	5900	4810	3870	3050	2340	1730	-	-
	50	Q P 2.18	8190	7490	6830	6220	5100	4140	3290	2560	-	-	-	-
	30	Q P 1.55	12500	11500	10500	9560	7920	6490	5260	4190	3280	2500	1820	1240
HGX12P/110-4 <sup>1)</sup>	40	Q P 2.09	11100	10100	9230	8410	6940	5660	4550	3590	2750	2030	-	-
	50	Q P 2.57	9630	8800	8030	7310	6000	4860	3870	3010	-	-	-	-
	30	Q P 1.94	15700	14400	13200	12000	9930	8150	6630	5340	4250	3340	2580	1960
HGX22e/125-4	40	Q P 2.54	13800	12700	11600	10600	8740	7170	5840	4700	3730	2900	-	-
	50	Q P 3.11	12000	11000	10000	9120	7540	6170	5010	4010	-	-	-	-
	30	Q P 2.40	19400	17800	16300	14900	12300	10100	8190	6590	5240	4120	3190	2420
HHGX22e/160-4	40	Q P 3.13	17100	15600	14300	13100	10800	8860	7200	5790	4590	3580	-	-
	50	Q P 3.84	14800	13500	12400	11300	9300	7620	6180	4940	-	-	-	-
	30	Q P 2.90	23400	21400	19600	17900	14800	12200	9850	7920	6300	4950	3840	2910
HGX22e/190-4	40	Q P 3.78	20600	18900	17200	15700	13000	10700	8680	6980	5540	4320	-	-
	50	Q P 4.63	17800	16300	14900	13600	11200	9200	7450	5960	-	-	-	-
	30	Q P 3.30	26500	24300	22200	20300	16800	13900	11300	9010	7160	5620	4360	3310
HGX34e/215-4 <sup>1)</sup>	40	Q P 4.31	23300	21400	19600	17900	14800	12200	9870	7930	6290	4910	-	-
	50	Q P 5.29	20200	18500	17000	15500	12800	10500	8480	6780	-	-	-	-
	30	Q P 3.87	31200	28600	26200	23900	19800	16300	13200	10600	8440	6630	5130	3890
HGX34e/255-4 <sup>1)</sup>	40	Q P 5.06	27400	25100	23000	21000	17400	14300	11600	9330	7410	5780	-	-
	50	Q P 6.21	23700	21800	19900	18200	15000	12300	9970	7970	-	-	-	-
	30	Q P 4.79	38500	35300	32300	29500	24500	20100	16400	13200	10500	8200	6340	4800
HGX34e/315-4 <sup>1)</sup>	40	Q P 6.26	33900	31100	28500	26000	21600	17700	14400	11600	9160	7140	-	-
	50	Q P 7.67	29400	26900	24600	22500	18600	15200	12400	9850	-	-	-	-

<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



# HG semi-hermetic compressors

## Performance data

R22 | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C												
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	-35	
HGX34e/380-4	30	Q P	46700 5.82	42800 5.92	39100 5.97	35700 5.99	29600 5.91	24300 5.72	19800 5.43	16000 5.06	12700 4.64	9950 4.19	7690 3.73	5830 3.29
	40	Q P	41000 7.60	37600 7.56	34400 7.49	31400 7.39	26100 7.08	21400 6.68	17400 6.21	14000 5.68	11200 5.12	8650 4.54	-	-
	50	Q P	35500 9.31	32500 9.14	29800 8.93	27200 8.70	22500 8.16	18500 7.56	15000 6.89	12000 6.18	-	-	-	-
HGX44e/475-4	30	Q P	58200 716	53600 727	49100 734	45000 736	37500 729	30800 702	25100 6.68	20300 6.25	16100 5.73	12500 5.16	9390 4.55	6730 3.93
	40	Q P	52700 9.17	48300 9.15	44300 9.08	40500 8.97	33600 8.66	27400 8.19	22200 7.63	17800 6.99	14000 6.29	10700 5.54	-	-
	50	Q P	47000 11.0	43100 10.8	39300 10.6	35900 10.4	29600 9.90	24000 9.24	19300 8.46	15300 7.62	-	-	-	-
HGX44e/565-4	30	Q P	69400 8.50	63900 8.64	58600 8.71	53700 8.74	44800 8.65	36700 8.37	30000 7.96	24300 7.43	19300 6.81	15100 6.12	11400 5.39	8180 4.64
	40	Q P	62900 10.8	57700 10.8	52900 10.7	48400 10.6	40200 10.2	32600 9.79	26600 9.11	21300 8.33	16800 7.48	12900 6.58	-	-
	50	Q P	56300 13.1	51500 12.9	47100 12.6	43000 12.4	35500 11.7	28600 11.0	23200 10.1	18400 9.10	-	-	-	-
HGX44e/665-4	30	Q P	81000 9.95	74500 10.1	68300 10.2	62600 10.1	52100 10.1	43300 9.73	35300 9.26	28500 8.66	22600 7.94	17500 7.15	13200 6.30	9410 5.44
	40	Q P	73100 12.7	67100 12.7	61500 12.6	56200 12.5	46600 12.0	38400 11.3	31200 10.5	24900 9.69	19600 8.71	14900 7.68	-	-
	50	Q P	65200 15.4	59700 15.2	54600 14.9	49700 14.5	41000 13.8	33600 12.8	27000 11.7	21400 10.5	-	-	-	-
HGX44e/770-4	30	Q P	93900 11.5	86300 11.7	79200 11.8	72600 11.8	60500 11.7	50000 11.3	40900 10.8	33000 10.1	26200 9.28	20400 8.35	15400 7.36	11100 6.36
	40	Q P	84700 14.8	77800 14.8	71300 14.6	65200 14.5	54100 13.9	44500 13.2	36200 12.3	29000 11.3	22800 10.1	17500 8.97	-	-
	50	Q P	75600 17.9	69300 17.7	63300 17.3	57800 16.9	47700 16.0	39000 14.9	31500 13.6	25000 12.3	-	-	-	-
HGX56e/850-4	30	Q P	104000 12.7	95400 12.9	87600 13.0	80200 13.0	66900 12.9	55000 12.5	45000 11.9	36400 11.1	29000 10.2	22600 9.19	17100 8.10	12300 6.97
	40	Q P	93700 16.3	86000 16.2	78800 16.1	72100 15.9	59900 15.3	49000 14.6	39900 13.6	32000 12.4	25200 11.2	19400 9.88	-	-
	50	Q P	83700 19.6	76600 19.4	70100 19.0	64000 18.6	52900 17.6	43000 16.5	34800 15.1	27600 13.6	-	-	-	-
HGX56e/995-4	30	Q P	122000 14.9	112000 15.1	103000 15.2	93700 15.3	78000 15.1	64700 14.5	52800 13.8	42600 12.9	33800 11.8	26200 10.6	19700 9.42	14100 8.14
	40	Q P	110000 19.1	101000 19.1	91900 18.9	84000 18.7	69700 18.0	57400 16.9	46600 15.7	37300 14.4	29200 13.0	22300 11.4	-	-
	50	Q P	97500 23.1	89300 22.8	81600 22.4	74400 21.9	61300 20.7	50200 19.0	40400 17.4	32000 15.7	-	-	-	-
HGX56e/1155-4	30	Q P	141000 18.0	130000 18.2	119000 18.4	109000 18.5	90700 18.3	74700 17.7	61000 16.9	49300 15.8	39200 14.4	30500 13.0	23100 11.4	16600 9.89
	40	Q P	128000 23.1	117000 23.0	107000 22.9	97800 22.6	81200 21.8	66500 20.7	54000 19.3	43300 17.7	34100 15.9	26100 14.0	-	-
	50	Q P	114000 27.9	105000 27.5	95100 27.0	86800 26.4	71700 24.9	58300 23.4	47000 21.4	37300 19.3	-	-	-	-
HGX66e/1340-4	30	Q P	168000 21.4	155000 21.6	142000 21.7	131000 21.6	109000 21.2	89400 20.3	73100 19.2	59000 17.8	46800 16.2	36400 14.4	27700 12.6	20400 10.8
	40	Q P	152000 27.4	140000 27.1	128000 26.8	118000 26.3	97600 25.1	79700 23.5	64800 21.7	51900 19.7	40900 17.5	31400 15.3	-	-
	50	Q P	135000 32.8	124000 32.1	114000 31.3	104000 30.4	85600 28.4	69500 26.2	56100 23.8	44600 21.2	-	-	-	-
HGX66e/1540-4	30	Q P	192000 24.6	177000 24.8	163000 24.9	150000 24.9	126000 24.4	103000 23.5	84200 22.2	68100 20.6	54200 18.8	42300 16.8	32300 14.7	24000 12.6
	40	Q P	174000 31.7	160000 31.4	147000 30.9	135000 30.4	113000 29.0	91800 27.3	74800 25.2	60200 22.9	47500 20.5	36700 17.9	-	-
	50	Q P	155000 38.1	142000 37.3	130000 36.3	119000 35.3	98600 33.1	80200 30.6	65000 27.8	51900 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

vap.bock.de



# HG semi-hermetic compressors

## Performance data

R22 | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]										Power consumption P <sub>e</sub> [kW]		
		Evaporating temperature °C												
		12.5	10	7.5	5	0	-5	-10	-15	-20	-25	-30	-35	
HGX66e/1750-4	30	Q P	218000 28.2	201000 28.4	185000 28.5	170000 28.5	142000 27.9	118000 26.8	96400 25.4	78000 23.6	62100 21.5	48500 19.3	37100 16.9	27500 14.5
	40	Q P	197000 36.2	182000 35.8	167000 35.4	153000 34.8	128000 33.2	7106000 312	85800 28.8	69000 26.2	54500 23.5	42200 20.6	-	-
	50	Q P	175000 43.5	161000 42.6	148000 41.6	135000 40.4	112000 37.8	91900 34.9	74600 31.7	59600 28.4	-	-	-	-
	30	Q P	256000 33.3	236000 33.6	217000 33.7	200000 33.7	167000 33.0	139000 318	114000 30.0	91700 27.9	73100 25.4	57100 22.7	43700 19.9	32400 171
	40	Q P	231000 43.0	213000 42.6	196000 42.0	180000 41.3	150000 39.4	124000 37.1	101000 34.2	81100 31.1	64200 27.8	49700 24.3	-	-
	50	Q P	205000 51.9	189000 50.8	173000 49.5	158000 48.1	132000 45.0	108000 416	87500 37.8	70000 33.7	-	-	-	-
HGX66e/2070-4	30	Q P	304000 39.6	280000 39.9	258000 40.0	237000 40.0	198000 39.3	163000 37.6	134000 35.7	108000 33.2	85900 30.4	67200 27.3	51400 24.1	38100 20.8
	40	Q P	276000 50.3	254000 49.9	233000 49.2	214000 48.4	179000 46.3	146000 43.8	119000 40.6	95500 37.0	75500 33.1	58500 29.2	-	-
	50	Q P	246000 60.1	226000 58.9	207000 57.5	190000 56.0	157000 52.6	128000 49.1	104000 44.7	82700 40.0	-	-	-	-
	30	Q P	345000 44.7	318000 45.1	292000 45.3	269000 45.2	225000 44.4	186000 42.8	152000 40.6	123000 37.8	97900 34.7	76500 31.2	58500 27.5	43400 23.8
	40	Q P	313000 57.2	288000 56.6	265000 55.9	243000 55.0	202000 52.6	167000 49.6	136000 46.0	109000 42.0	86100 37.7	66600 33.3	-	-
	50	Q P	279000 68.6	256000 67.2	235000 65.5	215000 63.8	179000 59.8	146000 55.5	119000 50.6	94300 45.4	-	-	-	-
HGX88e/2735-4	30	Q P	407000 52.7	376000 53.1	346000 53.3	317000 53.2	266000 52.3	219000 50.4	180000 47.8	145000 44.5	116000 40.7	90100 36.6	68800 32.3	51000 27.9
	40	Q P	370000 67.3	340000 66.7	313000 65.8	286000 64.7	239000 61.8	196000 58.4	160000 54.1	129000 49.4	102000 44.3	78300 39.0	-	-
	50	Q P	329000 80.7	303000 79.0	277000 77.1	254000 75.0	210000 70.3	172000 65.4	140000 59.5	111000 53.3	-	-	-	-
	30													
	40													
	50													

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

## Technical data

HG																	
Type	Number of cylinders	Displacement		Voltage <sup>1)</sup>	Electrical data				Weight	Connections <sup>5)</sup>		Oil charge	Frequency range				
					Max. Working current <sup>2)</sup>	Max. Power consumption <sup>2)</sup>	Starting current (rotor locked)	Discharge line DV		Suction line SV							
		m <sup>3</sup> /h		A	kW	A	kg		mm	inch	mm	inch	Ltr.	Hz			
		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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	31.2	18.0	11.1	132	76	96.0	22	7/8	28	1 1/8	1.2	25-70	
PW 1+2*																	
HG44e/475-4	4	41.30	49.60	4)	19.0	11.0	83	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)	23.0	13.1	115	150	168.0	28	1 1/8	35	1 3/8	2.3	25-70		
HG44e/565-4	4	49.20	59.00	4)	22.0	13.2	83	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)	26.0	15.6	133	171	170.0	28	1 1/8	42	1 5/8	2.3	25-70		
HG44e/665-4	4	57.70	69.20	4)	26.0	15.4	115	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)	30.0	18.3	133	171	168.0	28	1 1/8	42	1 5/8	2.3	25-70		
HG44e/770-4	4	67.00	80.40	4)	30.0	17.8	133	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)	35.0	21.4	133	171	168.0	28	1 1/8	42	1 5/8	2.3	25-70		
HG56e/850-4	6	73.80	88.60	4)	32.6	19.7	133	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)	39.4	23.5	162	210	211.1	35	1 3/8	54	2 1/8	2.7	25-70		
HG56e/995-4	6	86.60	103.90	4)	38.9	23.2	162	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)	46.4	27.7	189	246	211.3	35	1 3/8	54	2 1/8	2.7	25-70		
HG56e/1155-4	6	100.40	120.50	4)	46.9	28.0	189	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)	58.3	33.3	253	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	Fre- quency range				
		50 Hz/60Hz (1450/1,740 rpm)		Voltage <sup>1)</sup>		Max. Working current <sup>2)</sup>		Max. Power consump- tion <sup>2)</sup>			Starting current (rotor locked)							
		m <sup>3</sup> /h		A		kW		A			kg							
		50 Hz 1450 rpm	60 Hz 1,740 rpm	Δ	Y	Δ	Y	Δ	Y	mm	inch	mm	inch	Ltr.	Hz			
HG66e/1340-4	6	116.50	139.80	4)		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)		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)		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)		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)		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)		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)		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)		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)		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)		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)		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)		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)		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)		162.0		93.9		538	791	467.0	54	2 1/8	76	3 1/8	9.6	25-60

<sup>1</sup>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

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:

HG44e, HG56e, HG66e, HG88e = 50% / 50%

• Designs for Y/Δ on request

5) For soldering connections

## 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

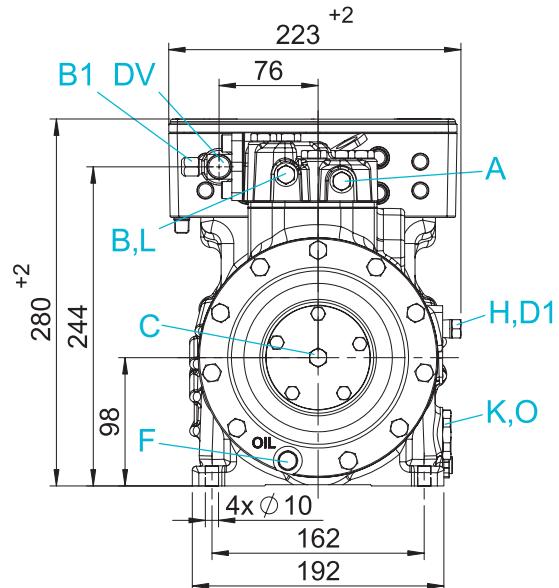
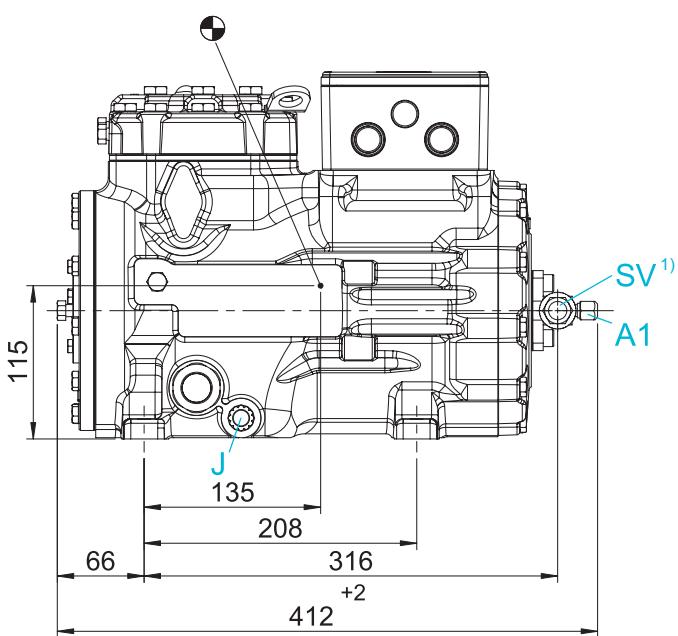
## Oil sump heater 230 V - 1 - 50 / 60 Hz (option)

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

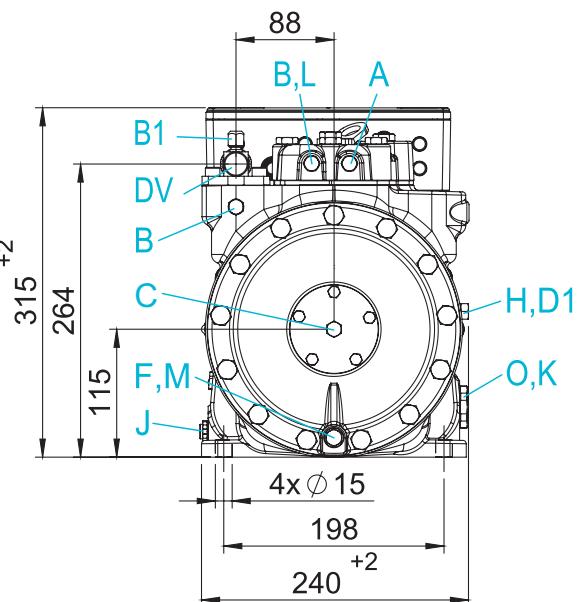
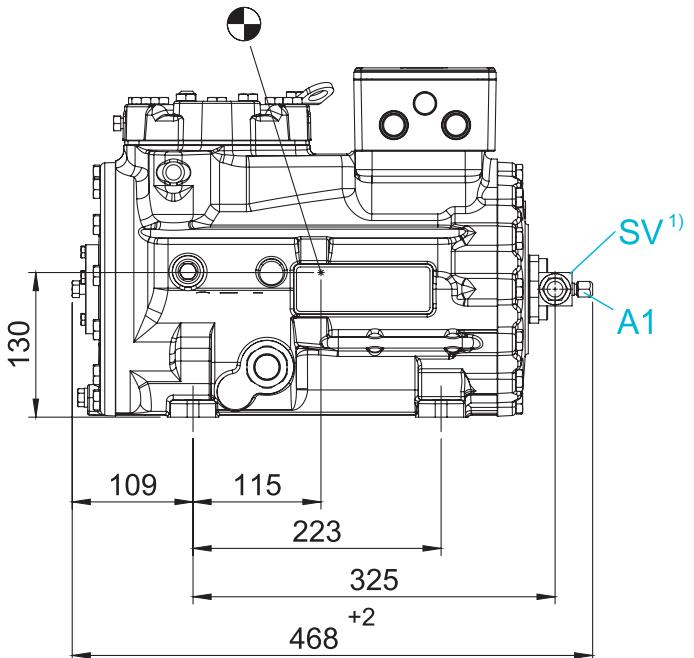
# HG semi-hermetic compressors

## 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



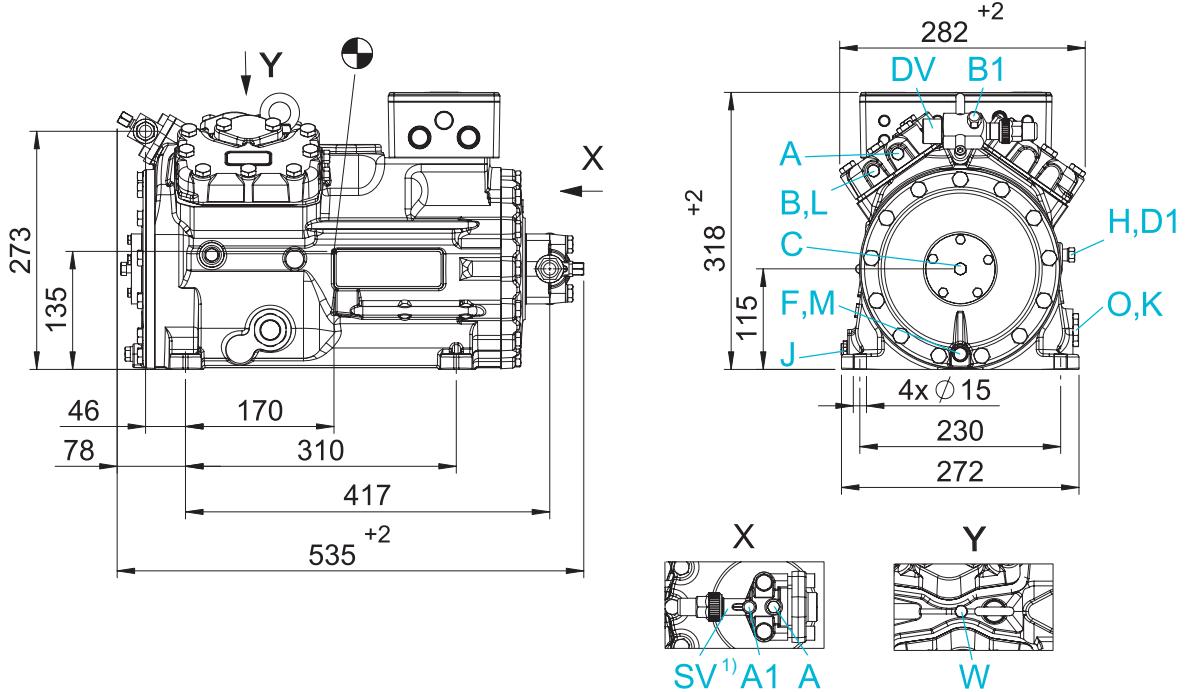
Dimensions in mm  
 ● Center of gravity  
<sup>1)</sup> SV 90° rotatable

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

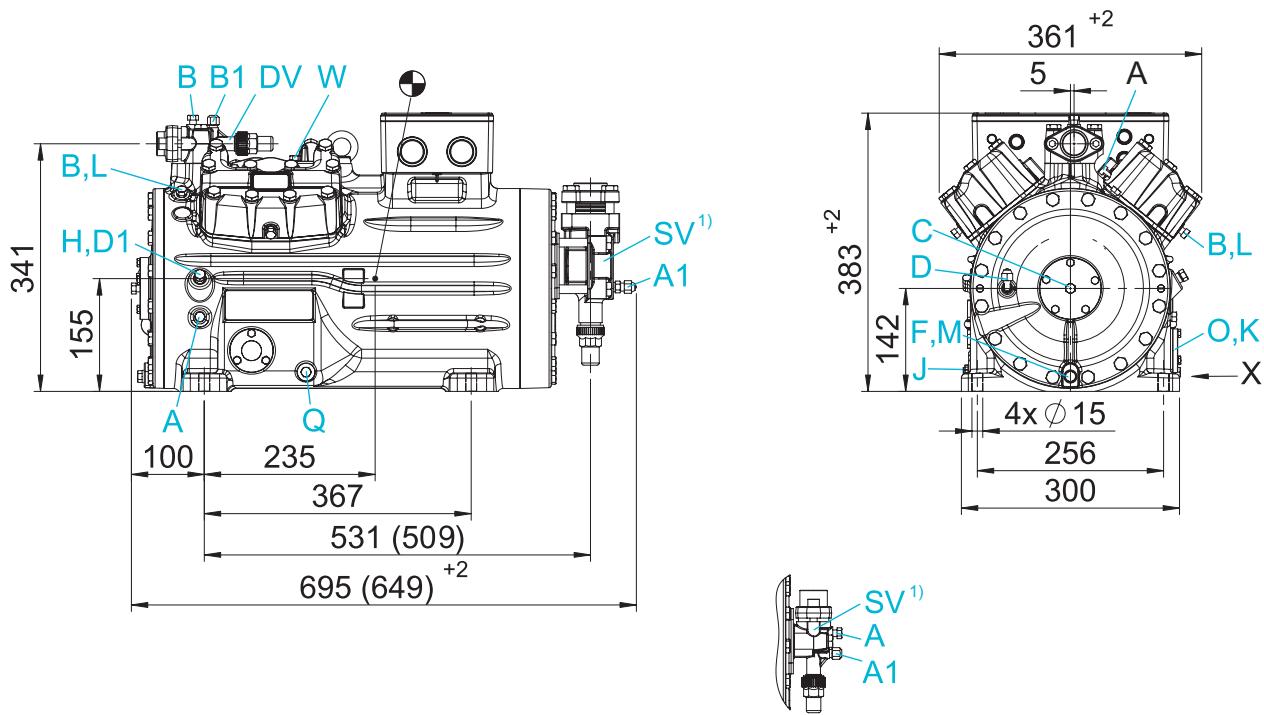
# HG semi-hermetic compressors

## 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



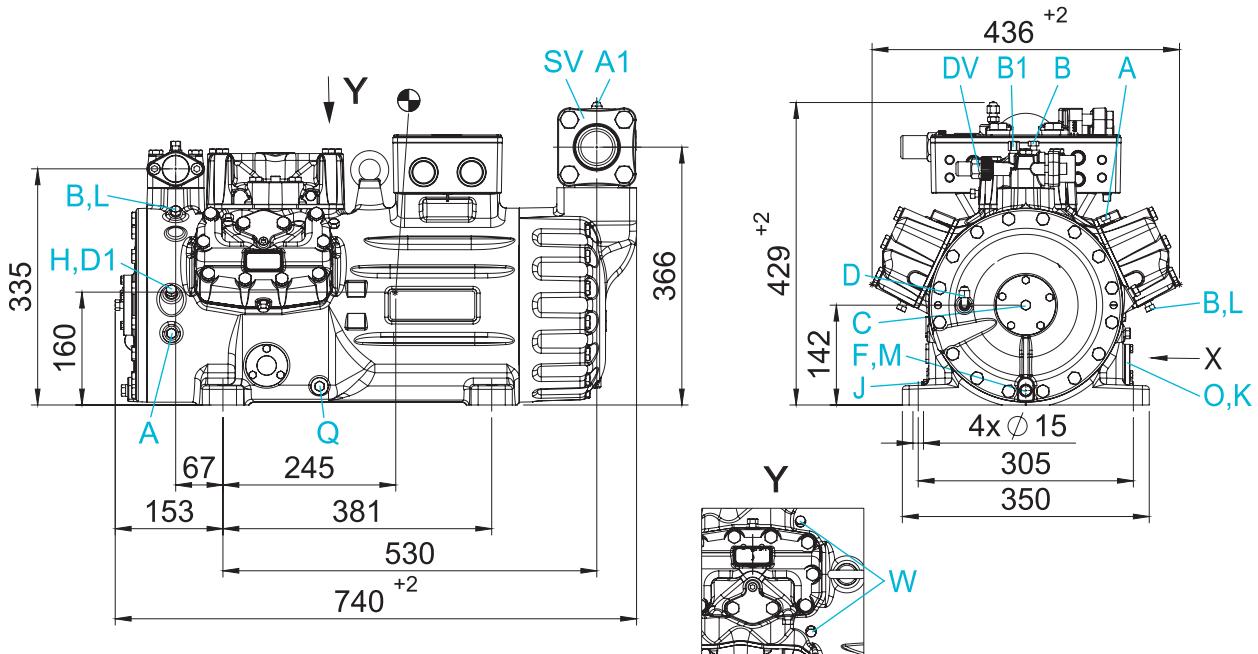
Dimensions in mm  
 ● Center of gravity  
<sup>1)</sup> SV 90° rotatable

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

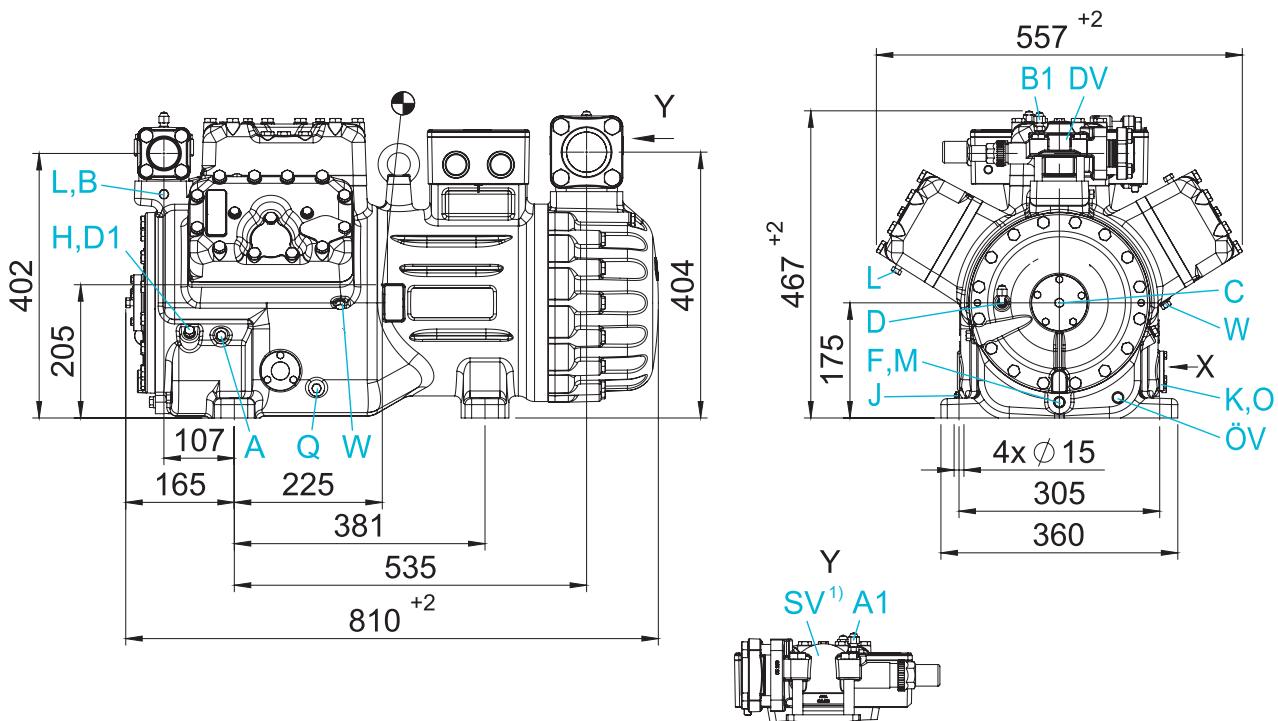
# HG semi-hermetic compressors

## 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



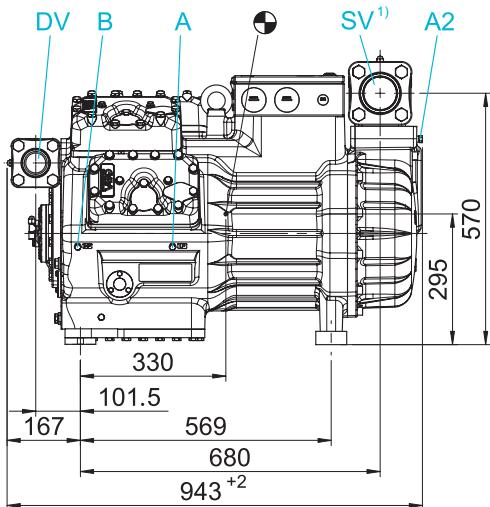
Dimensions in mm  
 ● Center of gravity  
<sup>1)</sup> SV 180° rotatable

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

# HG semi-hermetic compressors

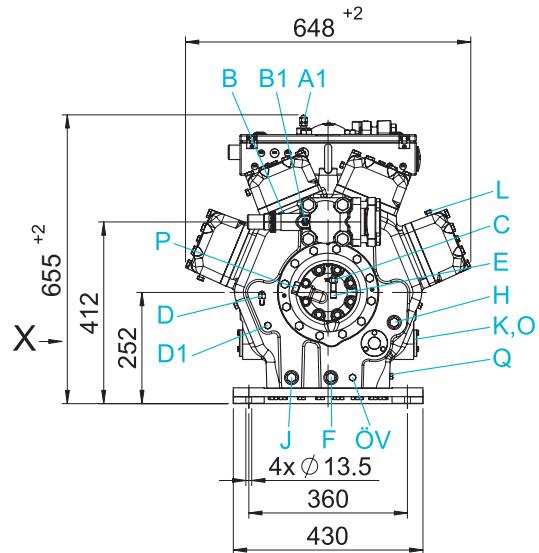
## Dimensions and connections

**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

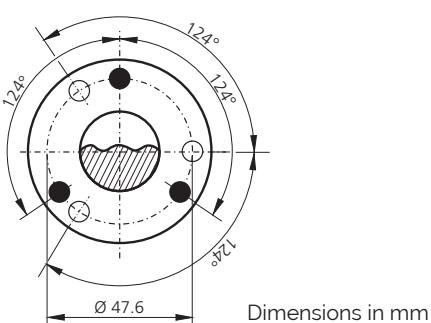
● Center of gravity  
<sup>1)</sup> SV 180° rotatable



Connections see page 64

Dimensions for anti-vibration pad see below

**View X**



Dimensions in mm

Possibility to connect to oil level regulator

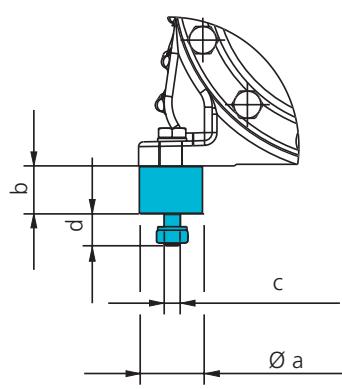
HG44e, HG56e, HG66e, HG88e

- Three-hole connection for oil level regulator of brands ESK, AC+R, CARLY (3 x M 6 x 10 deep)
- Three-hole connection for oil level regulator of brand TRAXOIL (3 x M 6 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	M 12	25
HG66e	50	30	M 12	25
HG88e	70	45	M12	37

Dimensions in mm

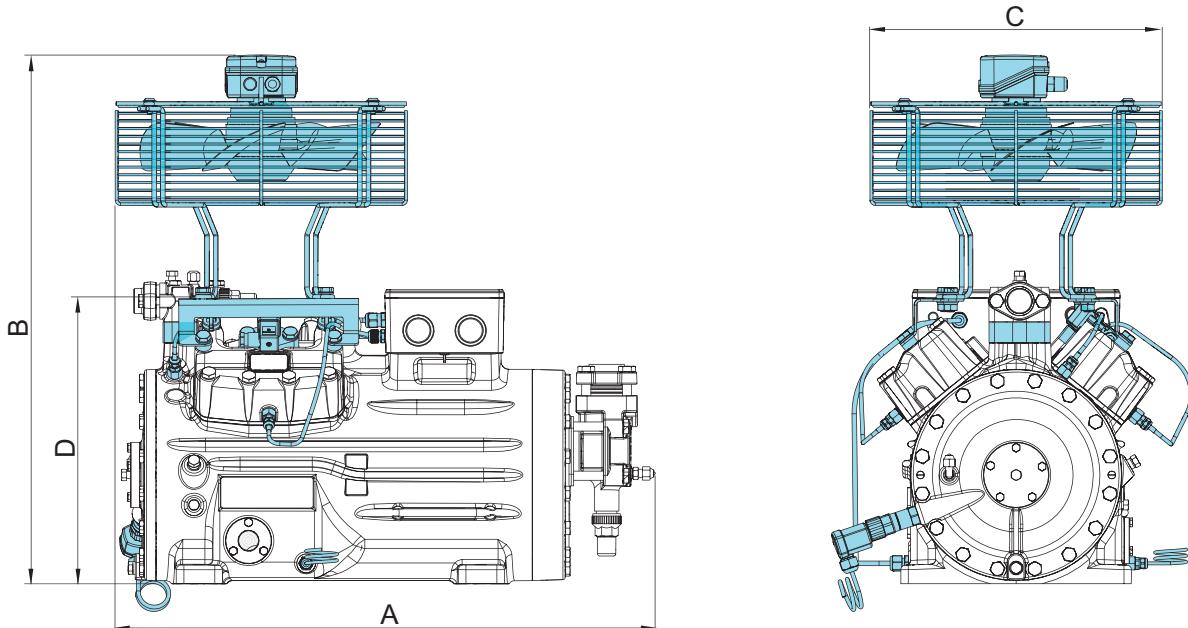


# HG semi-hermetic compressors

## 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	-

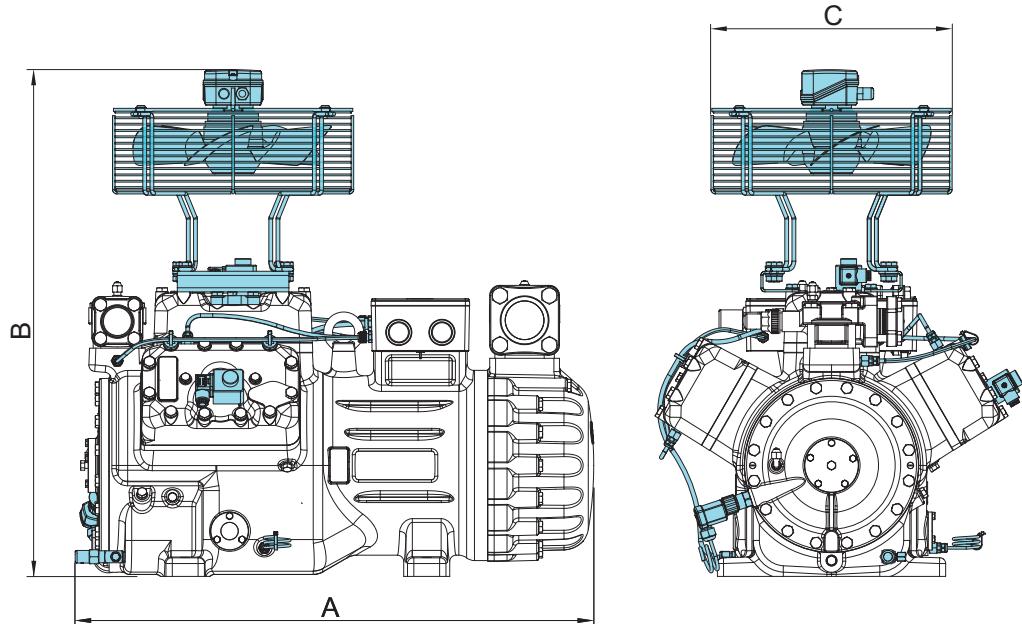
Dimensions in mm

# HG semi-hermetic compressors

## Dimensions and connections

HG66e

Dimensions with accessories



Type

A

B

C

HG66e

ca. 820

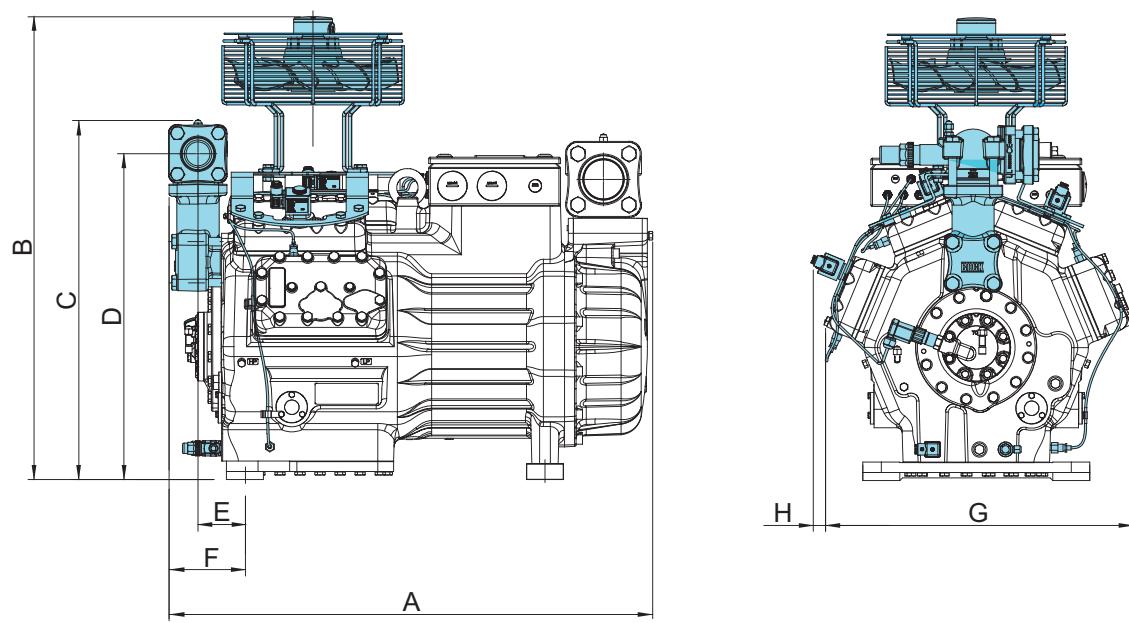
ca. 800

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							
DV	Discharge line							
A	Connection suction side, not lockable	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF
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 15	M12 x 15	M12 x 15	M12 x 15	M12 x 15	M22 x 15
H	Oil charge plug	1/4" NPTF	1/4" NPTF	1/4" NPTF	1/4" NPTF	1/4" NPTF	1/4" NPTF	M22 x 15
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 15
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 15	M12 x 15	M12 x 15	M12 x 15	M12 x 15	M22 x 15
O	Connection oil level regulator	1 1/8"-18 UNEF	1 1/8"-18 UNEF	1 1/8"-18 UNEF	1 <sup>1)</sup>	1 <sup>1)</sup>	1 <sup>1)</sup>	1 <sup>1)</sup>
ÖV	Connection oil service valve	-	-	-	-	-	1/4" NPTF	1/4" NPTF
P	Connection oil pressure differential sensor	-	-	-	-	-	-	M20 x 15
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	—	—	—	●	—	—	—
LSemi-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)	●	●	●	●	●	●	●
<b>① Thermal protection PTC</b>	● <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	●	●	●	●	●	—
	Three	—	—	—	—	—	●
<b>② Oil sump heater</b>	110–240 V - 1 - 50 / 60 Hz, 50–120 W, PTC heater, self-regulating	● <sup>2)</sup>	● <sup>2)</sup>	● <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>
<b>③ Oil differential pressure sensor DELTA-P II</b>	220–240 V - 1 - 50 / 60 Hz	—	—	—	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>
<b>④ Oil pressure safety switch</b>	230 V - 1 - 50/60 Hz, IP20 MP54	—	—	—	● <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>	—	—	—
<b>⑤ Oil service valve</b>	—	—	—	—	—	● <sup>2)</sup>	● <sup>2)</sup>
	1 capacity regulator = 50 % residual capacity	—	—	● <sup>2)</sup>	● <sup>2)</sup>	—	—
<b>⑥ Capacity regulator</b>	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

vap.bock.de



# 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>				
	2 cylinder covers	–	–	–	–	● <sup>2)</sup>	● <sup>2)</sup>	● <sup>2)</sup>
	3 cylinder covers	–	–	–	–	–	–	● <sup>2)</sup>
⑧ Oil temperature sensor	Start unloader by means of ESS (Electronic Soft Start)	–	–	–	● <sup>2)</sup>	● <sup>2)</sup>	● <sup>2)</sup>	● <sup>2)</sup>
⑨ 400 V - 3 - 50 / 60 Hz, IP20, (connection clamps IPOO) for installation in switch cabinet		–	● <sup>1)</sup>	–				
⑩ Connection piece suction and discharge valve in welded construction	Additional fan 230 V - 1 - 50 Hz, 97 W, IP44, 230 V - 1 - 60 Hz, 128 W, Voltage range ± 10 %	● <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, IPOO (INT69 G not applicable)		–	● <sup>1)</sup>	–				
⑭ INT250, thermal protection thermostat (PTC) per cylinder cover (INT69 G not applicable)	INT69 GTML Diagnose 115 / 230 V Ac, 50 / 60 Hz, IPOO, incl. oil differential pressure sensor	–	–	–	–	–	–	● <sup>2)</sup>
		–	–	–	–	–	–	● <sup>2)</sup>
⑮ DP – modbus gateway 115 / 230 V Ac, 50 / 60 Hz, IPOO incl. adapter cable		–	● <sup>1)</sup>					
⑯ Modbus – LAN gateway 230 V Ac, 50 / 60 Hz, IPOO		–	● <sup>1)</sup>					
⑰ USB converter for INT69 G Diagnose and INT69 GTML Diagnose		–	● <sup>1)</sup>					
Connection for oil level regulator of brands ESK, AC+ R or CARLY	● <sup>4)</sup>	● <sup>4)</sup>	● <sup>4)</sup>	● <sup>4)</sup>	● <sup>4)</sup>	● <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>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

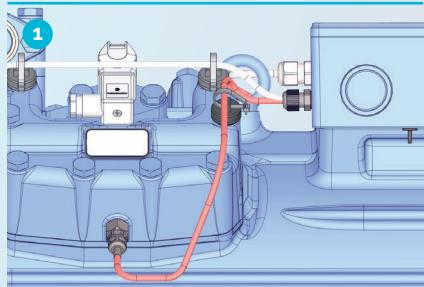
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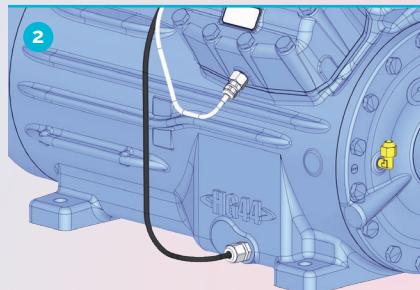
# HG semi-hermetic compressors

## Accessories

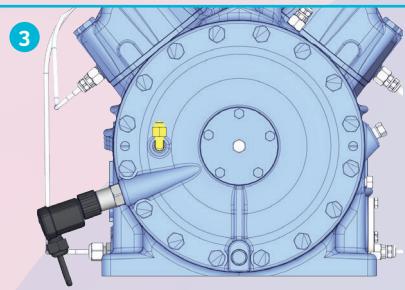
**Thermal protection thermostat**



**Oil sump heater**



**Oil differential pressure sensor**



**Oil pressure safety switch**



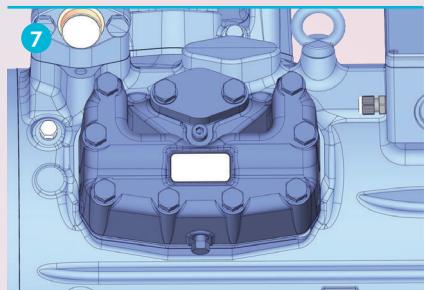
**Oil service valve**



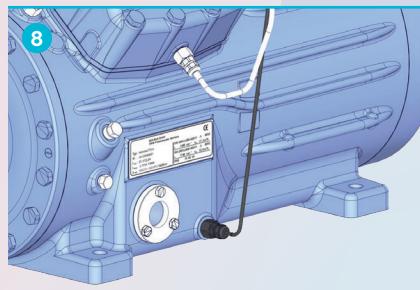
**Capacity regulator**



**Prepared for capacity regulator**



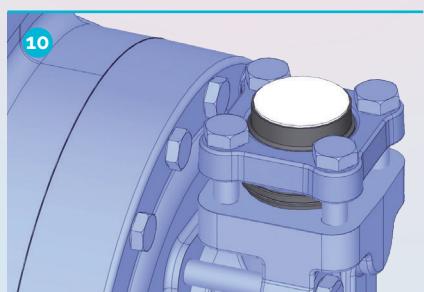
**Oil temperature sensor**



**ESS Electronic Soft Start**



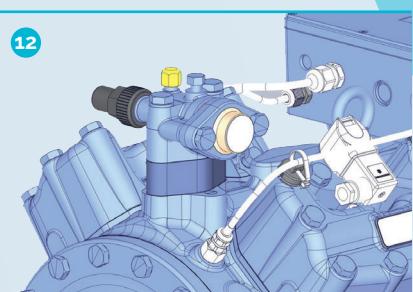
**Connection piece in welded construction**



**Additional fan**



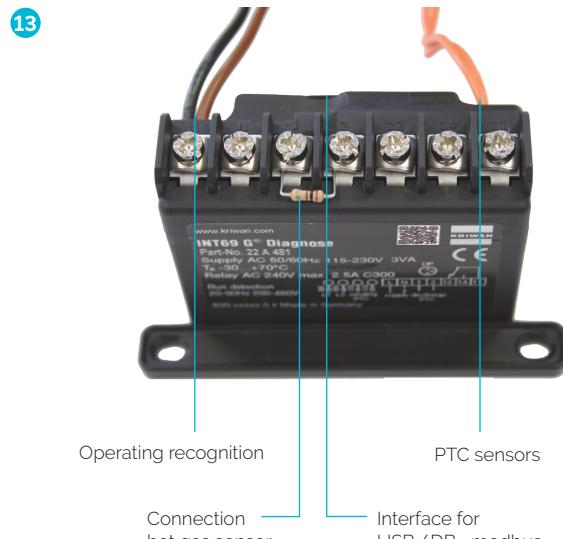
**Intermediate flange for discharge line valve**



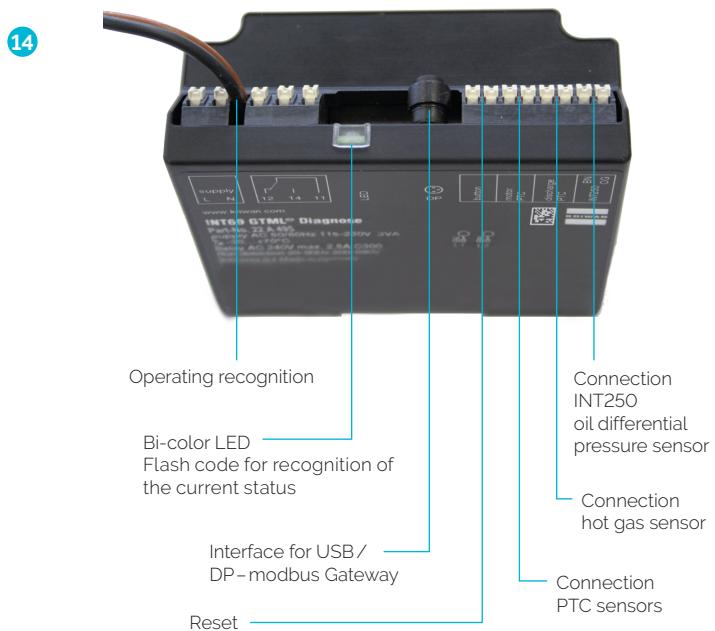
# HG semi-hermetic compressors

## 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 × 33 × 68 mm	50 × 33 × 68 mm	87 × 40 × 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.

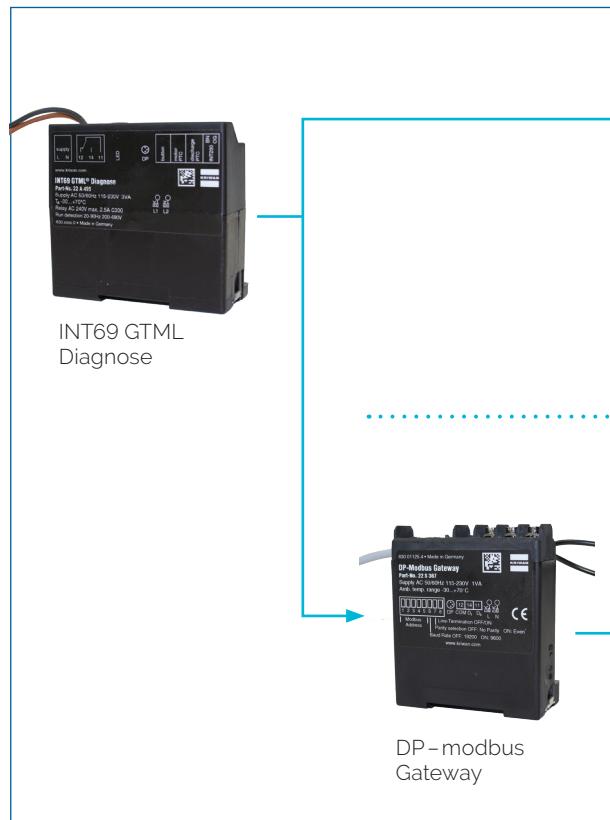
#### Advantages:

- 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.

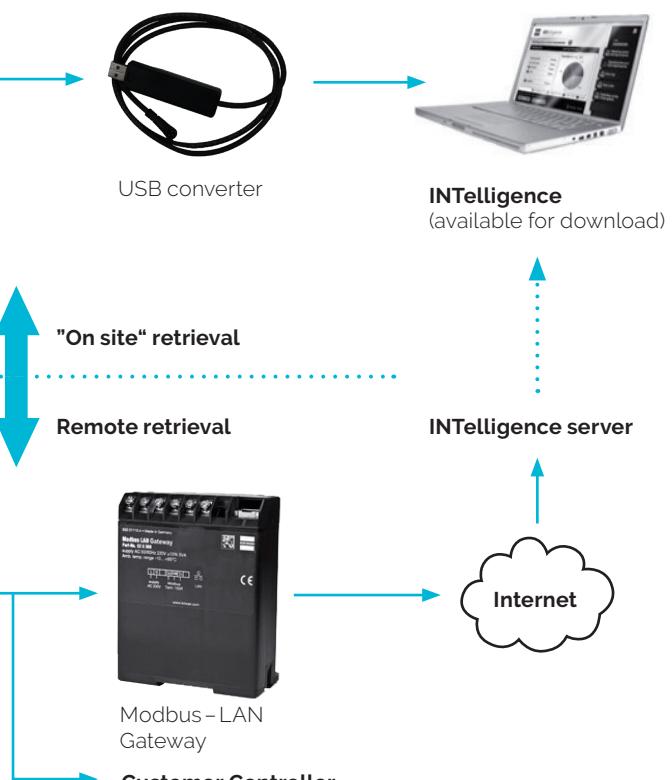
The data is sent periodically via the DP – modbus gateway and the modbus – LAN gateway to a server and can be retrieved remotely by the INTelligence diagnosis software. The INTelligence diagnosis software can be downloaded for free at [www.kriwan.com](http://www.kriwan.com).

#### Protection



Terminal box

#### Communication



#### Software

**INTelligence**  
(available for download)

INTelligence server





# Bock HA semi-hermetic compressors

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

## Bock HA22e – HA44e

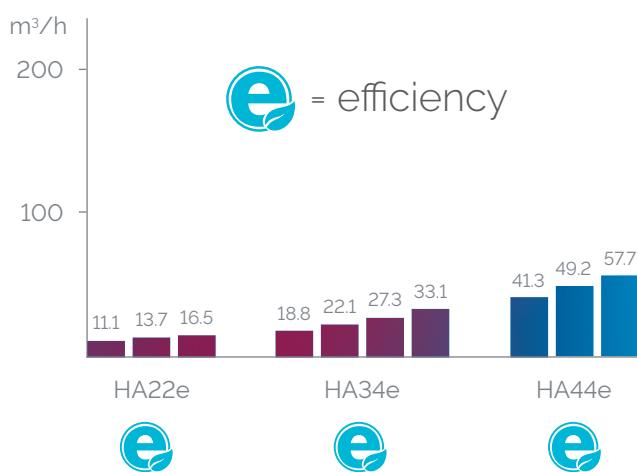


# Bock HA semi-hermetic compressors

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 programm

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



HA44e

# HA semi-hermetic compressors

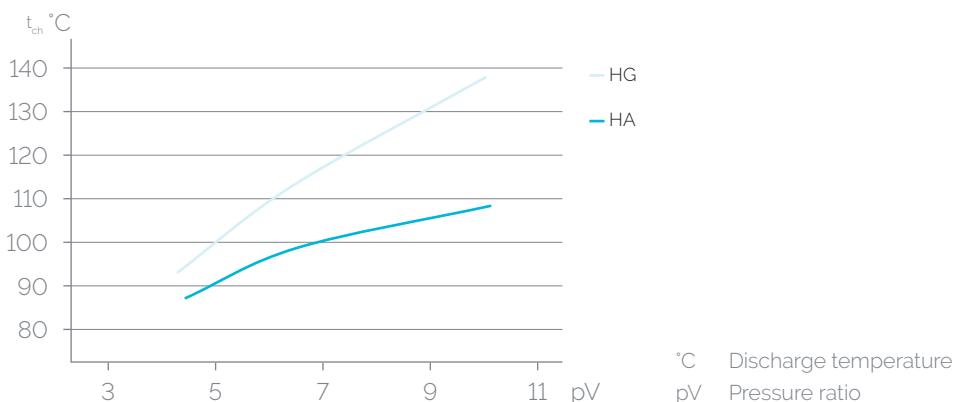
## At a glance

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:

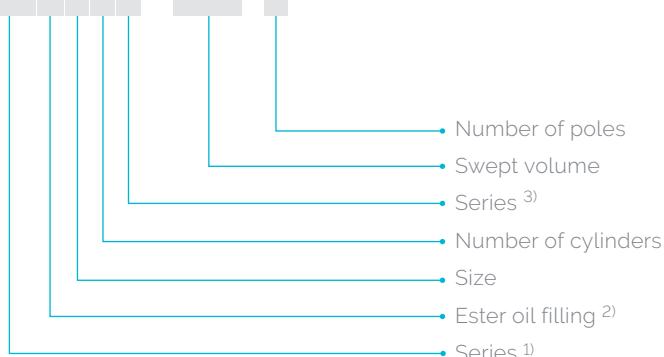
- The volumetric efficiency is reduced due to the decreasing specific density
- The discharge temperature and oil temperature are higher. This means that the oil ages more quickly and the lubrication properties deteriorate

### HA vs. HG R449A discharge temperature



### Type key

**HAX44e / 465 - 4**



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.

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

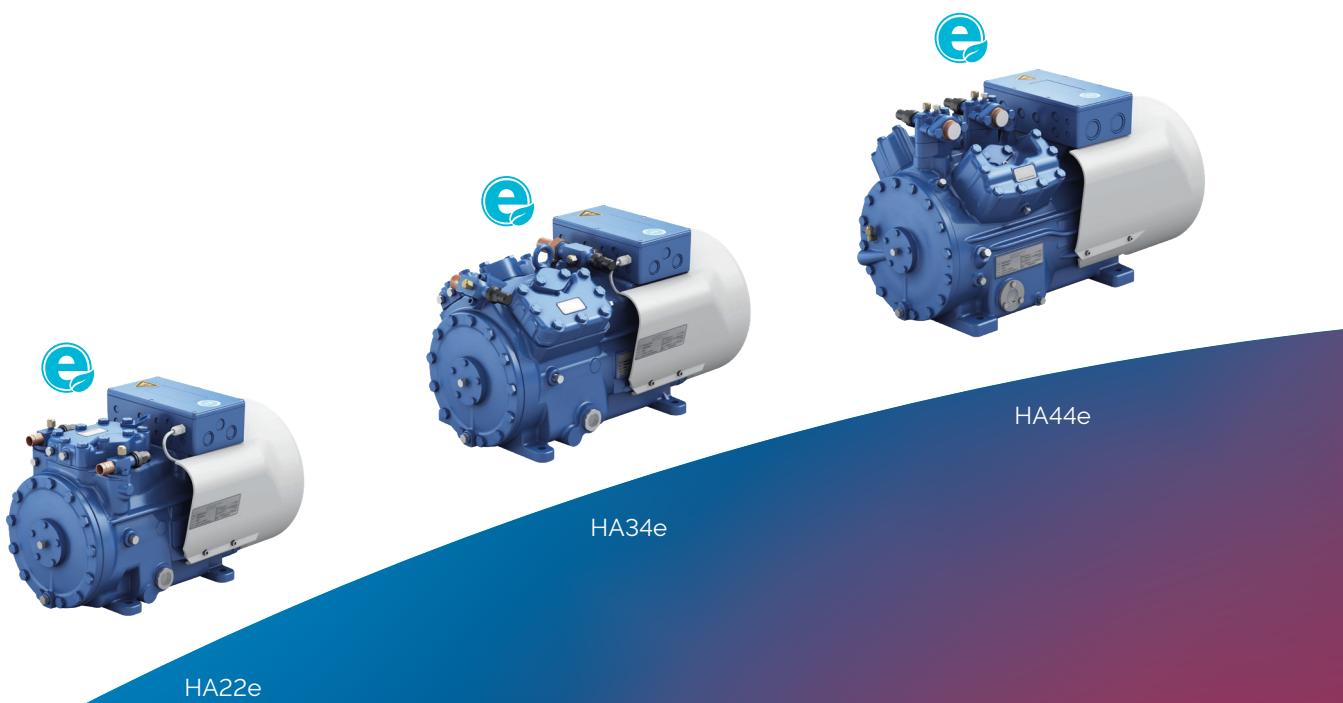
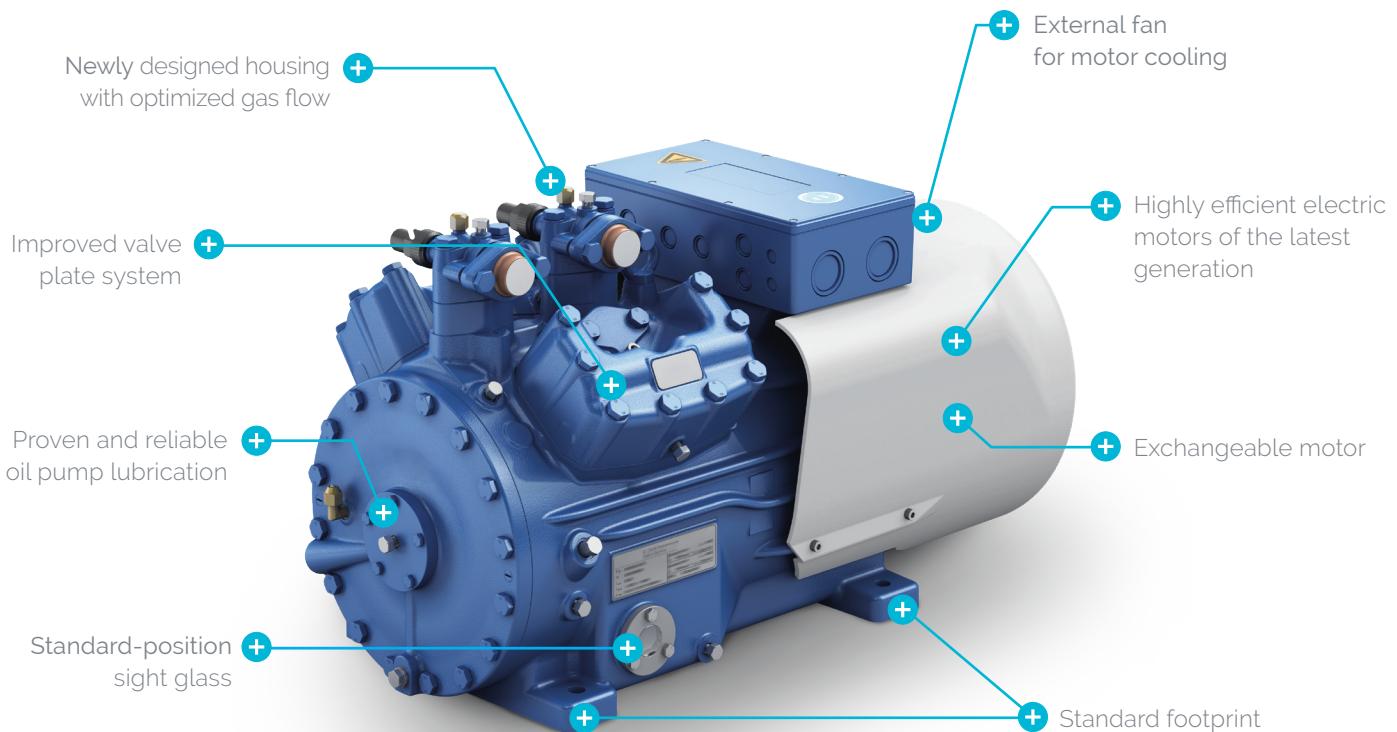
<sup>2)</sup> X = Ester oil filling  
(HFC refrigerants e.g. R134a, R404A, R507, R407C)

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

P = Additional marker for Pluscom compressors

# HA semi-hermetic compressors

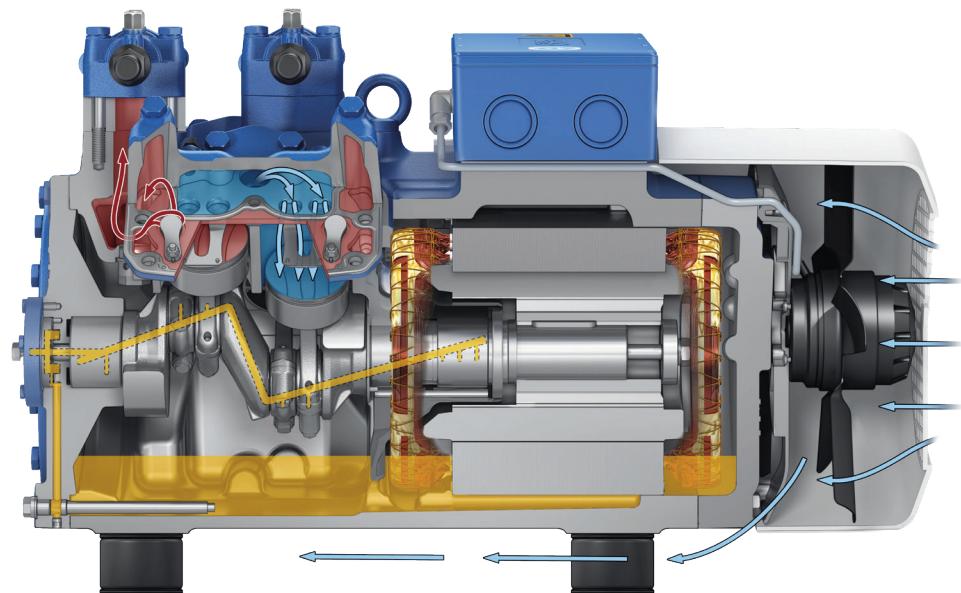
## Overview



# HA semi-hermetic compressors

## Overview

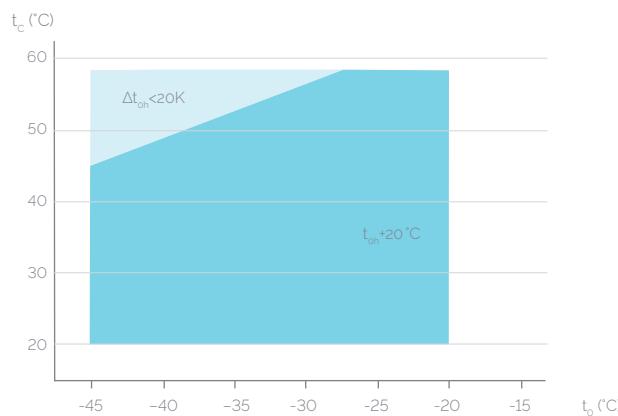
HA44e sectional drawing



# 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 <sub>o</sub> [W]					Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C						
		-20	-25	-30	-35	-40		
HA22e/125-4	30	Q P	4730 191	3800 171	2990 151	2300 131	1720 113	1250 0.94
	40	Q P	3960 2.09	3160 1.84	2470 1.60	1880 1.37	1390 1.14	978 0.92
	50	Q P	3220 2.21	2540 1.92	1960 1.64	1460 1.36	1040 1.09	690 0.83
HA22e/160-4	30	Q P	5840 2.36	4690 2.11	3690 1.86	2830 1.62	2120 1.39	1540 1.16
	40	Q P	4890 2.58	3900 2.27	3050 1.97	2320 1.69	1710 1.41	1210 1.13
	50	Q P	3970 2.73	3140 2.37	2420 2.02	1800 1.68	1290 1.35	851 1.03
HA22e/190-4	30	Q P	7070 2.86	5670 2.55	4460 2.25	3430 1.96	2570 1.68	1870 1.41
	40	Q P	5920 3.12	4720 2.75	3690 2.39	2810 2.04	2070 1.70	1460 1.37
	50	Q P	4800 3.31	3800 2.87	2930 2.45	2180 2.04	1550 1.64	1030 1.24
HA34e/215-4	30	Q P	8050 3.26	6450 2.90	5080 2.57	3900 2.24	2920 1.92	2130 1.60
	40	Q P	6740 3.55	5380 3.13	4200 2.72	3200 2.33	2350 1.94	1670 1.56
	50	Q P	5470 3.77	4320 3.27	3330 2.79	2480 2.32	1770 1.86	1180 1.41
HA34e/255-4	30	Q P	9460 3.83	7590 3.42	5970 3.02	4590 2.63	3440 2.26	2500 1.88
	40	Q P	7920 4.18	6320 3.68	4940 3.20	3760 2.74	2770 2.28	1960 1.84
	50	Q P	6430 4.43	5080 3.84	3920 3.28	2920 2.73	2080 2.19	1380 1.66
HA34e/315-4	30	Q P	11700 4.73	9370 4.22	7370 3.73	5660 3.25	4240 2.79	3080 2.33
	40	Q P	9780 5.16	7800 4.54	6090 3.95	4640 3.38	3420 2.82	2420 2.27
	50	Q P	7930 5.47	6270 4.75	4830 4.05	3600 3.37	2570 2.71	1710 2.06
HA34e/380-4	30	Q P	14200 5.50	11400 4.96	8910 4.39	6850 3.81	5130 3.22	3730 2.65
	40	Q P	11900 5.95	9440 5.28	7370 4.58	5610 3.86	4130 3.16	2920 2.74
	50	Q P	9600 6.25	7590 5.43	5850 4.59	4360 3.74	3100 3.28	2060 2.07
HA44e/475-4	30	Q P	18700 6.64	15100 6.01	11900 5.35	9100 4.66	6800 3.95	4890 3.24
	40	Q P	15700 7.13	12600 6.32	9760 5.47	7430 4.62	5450 3.76	3810 2.91
	50	Q P	12900 7.44	10200 6.43	7830 5.41	5880 4.39	4230 3.38	2850 2.40
HA44e/565-4	30	Q P	21900 8.08	17600 7.36	13900 6.58	10800 5.77	8040 4.93	5800 4.09
	40	Q P	18400 8.73	14700 7.79	11500 6.82	8770 5.83	6470 4.83	4530 3.84
	50	Q P	15100 9.17	11900 8.02	9230 6.85	6950 5.68	5020 4.52	3400 3.39
HA44e/665-4	30	Q P	25000 9.33	20200 8.43	16000 7.49	12400 6.52	9310 5.53	6750 4.55
	40	Q P	21100 10.10	16900 8.97	13300 7.79	10200 6.60	7480 5.42	5270 4.27
	50	Q P	17200 10.70	13700 9.29	10600 7.87	8010 6.47	5810 5.10	3960 3.78

Relating to 20 °C suction gas temperature  
without liquid subcooling



Reduced suction gas temperature

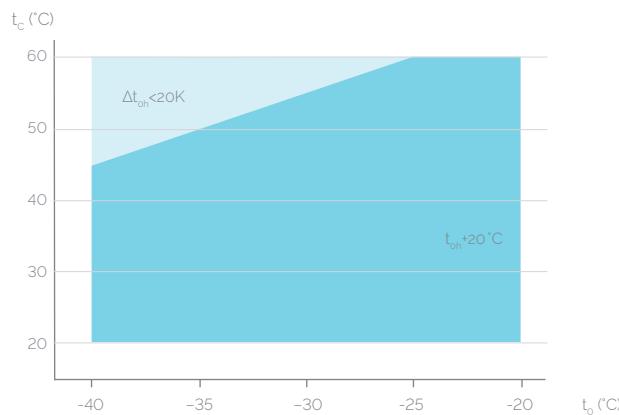
vap.bock.de



# HA semi-hermetic compressors

## Operating limits

### R448A



$t_o$  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 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	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]					Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C						
		-20	-25	-30	-35	-40		
HA22e/125-4	30	Q P	4190 170	3250 153	2450 136	1780 118	1230 100	
	40	Q P	3530 181	2700 159	2000 138	1410 116	915 0.96	
	50	Q P	2910 187	2190 162	1570 136	1060 112	631 0.88	
	30	Q P	5220 2.03	4030 183	3020 162	2170 139	1470 117	
	40	Q P	4420 2.17	3350 190	2450 164	1700 137	1070 110	
	50	Q P	3640 2.25	2700 193	1910 161	1250 130	691 100	
HA22e/160-4	30	Q P	6310 2.48	4940 2.23	3780 1.97	2810 1.71	2010 1.45	
	40	Q P	5440 2.67	4210 2.35	3170 2.03	2300 1.71	1570 1.40	
	50	Q P	4570 2.80	3470 2.41	2550 2.03	1780 1.66	1140 1.30	
	30	Q P	6790 2.59	5230 2.32	3920 2.03	2810 1.74	1900 1.44	
	40	Q P	5690 2.78	4300 2.41	3120 2.04	2130 1.67	1310 1.31	
	50	Q P	4600 2.87	3370 2.41	2330 1.96	1460 1.52	731 110	
HA34e/215-4	30	Q P	8250 3.16	6410 2.81	4850 2.45	3540 2.08	2460 1.72	
	40	Q P	6980 3.39	5340 2.94	3960 2.49	2800 2.05	1840 1.62	
	50	Q P	5740 3.54	4310 2.99	3100 2.46	2090 1.94	1240 1.45	
	30	Q P	10400 3.86	8020 3.44	6020 3.00	4370 2.55	3010 2.12	
	40	Q P	8790 4.16	6670 3.60	4890 3.05	3410 2.51	2220 1.99	
	50	Q P	7190 4.34	5320 3.66	3770 3.00	2490 2.36	1460 1.77	
HA34e/315-4	30	Q P	12700 4.76	9820 4.23	7430 3.69	5430 3.14	3780 2.60	
	40	Q P	10800 5.17	8220 4.50	6070 3.82	4260 3.15	2770 2.50	
	50	Q P	8860 5.44	6600 4.62	4690 3.80	3090 3.01	1760 2.26	
	30	Q P	16300 5.79	12600 5.18	9480 4.54	6890 3.87	4750 3.21	
	40	Q P	13900 6.21	10600 5.41	7750 4.60	5420 3.78	3490 2.98	
	50	Q P	11500 6.47	8500 5.48	6040 4.49	3970 3.52	2250 2.58	
HA44e/565-4	30	Q P	20200 7.06	15700 6.33	11900 5.57	8740 4.78	6130 3.99	
	40	Q P	17400 7.63	13400 6.70	9920 5.74	7070 4.78	4710 3.84	
	50	Q P	14600 8.02	11000 6.88	7950 5.74	5420 4.61	3310 3.53	
	30	Q P	22800 8.06	17800 7.19	13600 6.27	9960 5.34	7030 4.42	
	40	Q P	19700 8.76	15100 7.63	11300 6.49	8100 5.36	5450 4.26	
	50	Q P	16500 9.27	12500 7.88	9090 6.52	6270 5.19	3910 3.93	

Relating to 20 °C suction gas temperature  
without liquid subcooling



Reduced suction gas temperature

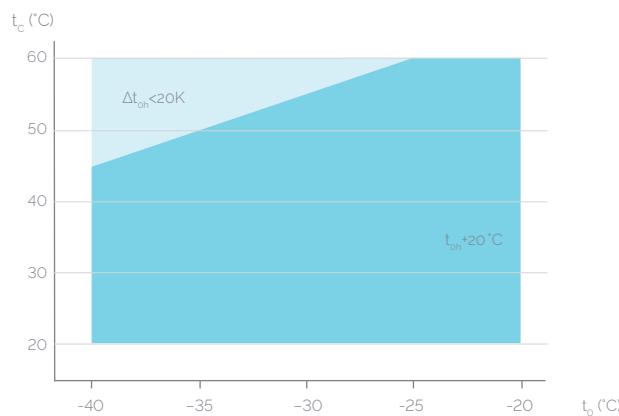
vap.bock.de



# 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 <sub>o</sub> [W]					Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C						
		-20	-25	-30	-35	-40		
HA22e/125-4	30	Q P	4170 169	3240 153	2440 135	1780 118	1230 100	
	40	Q P	3520 180	2690 159	1990 137	1400 116	912 0.96	
	50	Q P	2890 187	2170 161	1570 136	1060 111	628 0.88	
	30	Q P	5200 2.03	4010 183	3010 161	2160 139	1470 117	
	40	Q P	4400 2.16	3340 190	2440 163	1690 136	1070 110	
	50	Q P	3620 2.24	2680 192	1900 160	1240 129	688 100	
HA22e/160-4	30	Q P	6280 2.47	4920 2.22	3770 196	2800 170	2010 144	
	40	Q P	5420 2.66	4190 2.34	3150 2.02	2290 170	1570 140	
	50	Q P	4540 2.79	3450 2.40	2540 2.02	1770 165	1130 130	
	30	Q P	6760 2.59	5220 2.31	3900 2.03	2810 174	1900 144	
	40	Q P	5670 2.76	4280 2.40	3110 2.03	2130 167	1310 131	
	50	Q P	4580 2.86	3350 2.40	2320 196	1450 152	728 110	
HA34e/215-4	30	Q P	8220 3.15	6390 2.80	4830 2.44	3530 2.08	2460 172	
	40	Q P	6940 3.37	5320 2.93	3940 2.48	2790 2.04	1830 162	
	50	Q P	5700 3.52	4280 2.98	3080 2.45	2080 194	1240 145	
	30	Q P	10400 3.85	7990 3.42	6010 2.99	4360 2.55	3010 2.11	
	40	Q P	8740 4.14	6640 3.59	4870 3.04	3400 2.50	2210 199	
	50	Q P	7150 4.32	5290 3.65	3750 2.99	2480 2.36	1450 1.77	
HA34e/315-4	30	Q P	12600 4.74	9790 4.22	7410 3.68	5420 3.14	3770 2.60	
	40	Q P	10800 5.15	8180 4.48	6040 3.81	4250 3.14	2760 2.49	
	50	Q P	8800 5.42	6560 4.60	4660 3.79	3070 3.00	1750 2.25	
	30	Q P	16200 5.77	12600 5.16	9450 4.52	6870 3.86	4740 3.20	
	40	Q P	13800 6.19	10500 5.39	7720 4.58	5400 3.77	3480 2.97	
	50	Q P	11400 6.44	8450 5.46	6000 4.47	3950 3.51	2240 2.58	
HA44e/565-4	30	Q P	20100 7.03	15700 6.31	11900 5.55	8720 4.77	6120 3.98	
	40	Q P	17300 7.60	13300 6.67	9880 5.72	7050 4.77	4690 3.83	
	50	Q P	14500 7.99	11000 6.85	7910 5.72	5390 4.60	3290 3.52	
	30	Q P	22700 8.04	17700 7.16	13500 6.26	9940 5.33	7020 4.41	
	40	Q P	19600 8.73	15100 7.60	11300 6.47	8070 5.34	5430 4.25	
	50	Q P	16400 9.23	12400 7.85	9040 6.49	6240 5.18	3890 3.92	

Relating to 20 °C suction gas temperature  
without liquid subcooling



Reduced suction gas temperature

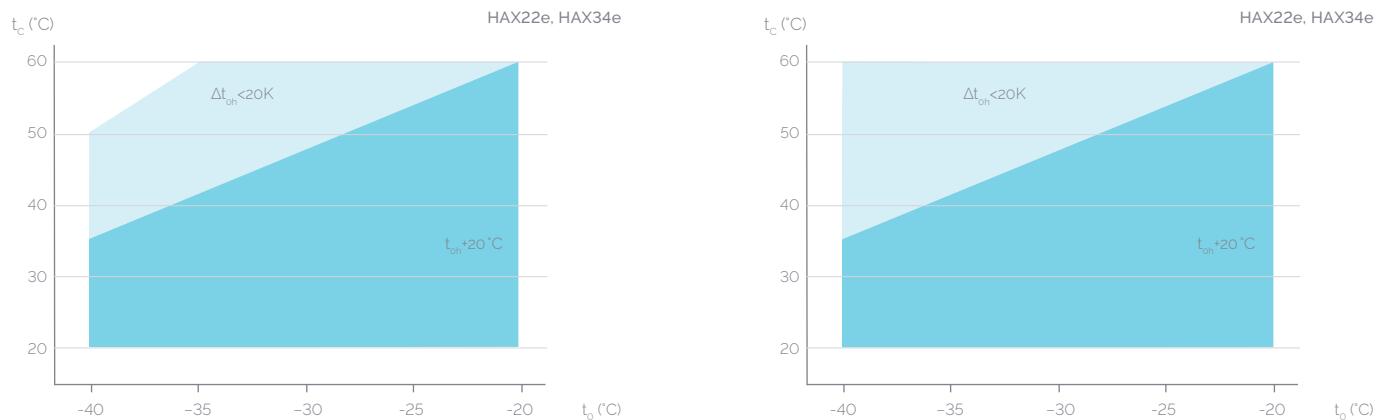
vap.bock.de



# HA semi-hermetic compressors

## Operating limits

### R407A



$t_o$  Evaporating temperature (°C)  
 $t_c$  Condensing temperature (°C)  
 $\Delta t_{oh}$  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 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	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]				Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C					
		-20	-25	-30	-35		
HA22e/125-4	30	Q P	4090 165	3120 148	2330 130	1680 112	1140 0.95
	40	Q P	3460 176	2600 153	1900 130	1310 108	804 0.88
	50	Q P	2830 181	2070 153	1450 126	923 100	454 0.77
	30	Q P	5110 198	3890 177	2870 154	2030 132	1350 110
	40	Q P	4330 2.10	3230 182	2310 154	1550 127	920 1.00
	50	Q P	3530 2.16	2550 182	1730 148	1060 115	503 0.84
HA22e/160-4	30	Q P	6160 2.41	4750 2.15	3610 188	2670 162	1880 136
	40	Q P	5330 2.59	4060 2.25	3020 192	2150 159	1400 129
	50	Q P	4440 2.70	3310 2.28	2370 187	1560 148	844 112
	30	Q P	6700 2.51	5120 2.25	3790 197	2680 168	1770 139
	40	Q P	5630 2.69	4200 2.33	3000 197	2000 160	1170 124
	50	Q P	4540 2.78	3260 2.32	2200 187	1310 142	561 100
HA34e/215-4	30	Q P	8160 3.05	6290 2.71	4710 2.37	3390 2.01	2310 166
	40	Q P	6920 3.28	5240 2.85	3820 2.40	2640 196	1660 154
	50	Q P	5680 3.43	4190 2.89	2940 2.35	1900 183	1030 133
	30	Q P	10300 3.76	7850 3.33	5850 2.88	4180 2.42	2810 1.97
	40	Q P	8630 4.04	6500 3.48	4710 2.91	3220 2.35	1990 180
	50	Q P	7060 4.21	5180 3.51	3600 2.83	2280 2.16	1200 152
HA34e/315-4	30	Q P	12500 4.64	9590 4.10	7220 3.55	5230 2.98	3540 2.42
	40	Q P	10600 5.03	8010 4.35	5870 3.65	4060 2.95	2480 2.26
	50	Q P	8690 5.28	6420 4.44	4500 3.60	2860 2.76	1390 195
	30	Q P	15800 5.69	12200 5.08	9080 4.44	6510 3.78	4400 3.11
	40	Q P	13400 6.08	10100 5.28	7350 4.46	5050 3.64	3160 2.84
	50	Q P	11000 6.30	8090 5.31	5650 4.32	3620 3.35	1940 2.41
HA44e/475-4	30	Q P	19600 6.94	15200 6.22	11400 5.45	8280 4.66	5710 3.88
	40	Q P	16800 7.48	12800 6.54	9430 5.58	6630 4.63	4310 3.69
	50	Q P	14100 7.83	10500 6.69	7490 5.54	5000 4.42	2940 3.34
	30	Q P	22200 7.93	17200 7.05	13000 6.14	9450 5.21	6560 4.29
	40	Q P	19000 8.58	14600 7.44	10800 6.30	7600 5.18	5000 4.09
	50	Q P	15900 9.03	11900 7.65	8570 6.29	5800 4.97	3490 3.72

Relating to 20 °C suction gas temperature  
without liquid subcooling



Reduced suction gas temperature

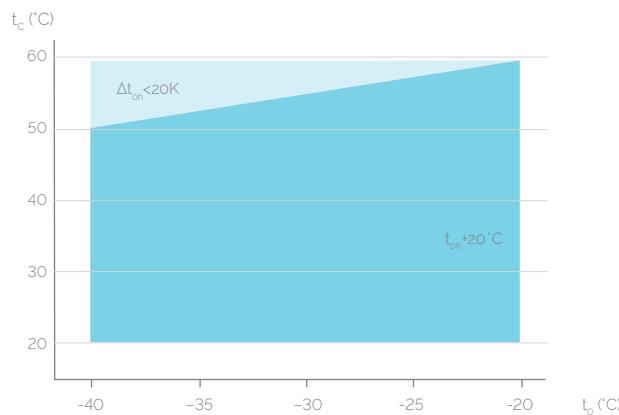
vap.bock.de



# HA semi-hermetic compressors

## Operating limits

### R407F



$t_o$  Evaporating temperature (°C)  
 $t_c$  Condensing temperature (°C)  
 $\Delta t_{oh}$  Suction gas superheat (K)  
 $t_{oh}$  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 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 <sub>o</sub> [W]				Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C					
		-20	-25	-30	-35		
HA22e/125-4	30	Q P	4300 172	3270 154	2420 135	1730 117	1190 100
	40	Q P	3670 184	2740 160	1990 137	1380 115	912 0.96
	50	Q P	3030 190	2220 162	1570 135	1060 111	669 0.90
	30	Q P	5370 2.06	4060 184	2980 161	2110 138	1420 117
	40	Q P	4590 2.20	3400 191	2440 162	1660 136	1060 111
	50	Q P	3790 2.28	2750 193	1900 159	1230 129	722 102
HA22e/160-4	30	Q P	6490 2.52	4990 2.24	3750 196	2740 170	1960 145
	40	Q P	5660 2.72	4280 2.36	3160 2.02	2260 170	1580 1.41
	50	Q P	4770 2.84	3540 2.41	2550 2.01	1780 165	1210 1.33
	30	Q P	7030 2.67	5370 2.37	3970 2.06	2820 175	1910 145
	40	Q P	5930 2.86	4440 2.47	3180 2.07	2150 168	1330 1.32
	50	Q P	4800 2.94	3480 2.45	2360 1.97	1450 151	726 109
HA34e/215-4	30	Q P	8540 3.25	6570 2.87	4920 2.48	3560 2.09	2480 1.73
	40	Q P	7270 3.49	5510 3.00	4040 2.52	2840 2.06	1880 1.64
	50	Q P	6000 3.63	4450 3.05	3170 2.48	2120 1.94	1290 1.46
	30	Q P	10800 4.03	8160 3.53	6000 3.03	4240 2.54	2860 2.09
	40	Q P	9110 4.33	6770 3.69	4860 3.07	3320 2.49	2120 1.97
	50	Q P	7460 4.50	5410 3.73	3760 3.01	2450 2.35	1450 1.78
HA34e/315-4	30	Q P	13100 4.97	9990 4.36	7400 3.74	5280 3.14	3580 2.57
	40	Q P	11200 5.38	8350 4.61	6030 3.85	4140 3.13	2630 2.47
	50	Q P	9190 5.64	6700 4.71	4650 3.82	3010 3.00	1720 2.25
	30	Q P	17000 5.99	13000 5.34	9640 4.65	6910 3.95	4670 3.25
	40	Q P	14500 6.42	11000 5.59	7980 4.75	5560 3.93	3570 3.13
	50	Q P	11900 6.68	8800 5.67	6260 4.69	4170 3.75	2460 2.87
HA44e/475-4	30	Q P	21100 7.30	16200 6.52	12100 5.72	8770 4.89	6050 4.05
	40	Q P	18200 7.88	13900 6.91	10300 5.94	7270 4.99	4850 4.06
	50	Q P	15200 8.28	11400 7.13	8270 6.01	5730 4.94	3640 3.94
	30	Q P	23900 8.35	18300 7.42	13800 6.45	10100 5.47	6950 4.49
	40	Q P	20600 9.07	15700 7.90	11700 6.73	8350 5.60	5620 4.53
	50	Q P	17200 9.59	13000 8.19	9480 6.86	6650 5.60	4310 4.45

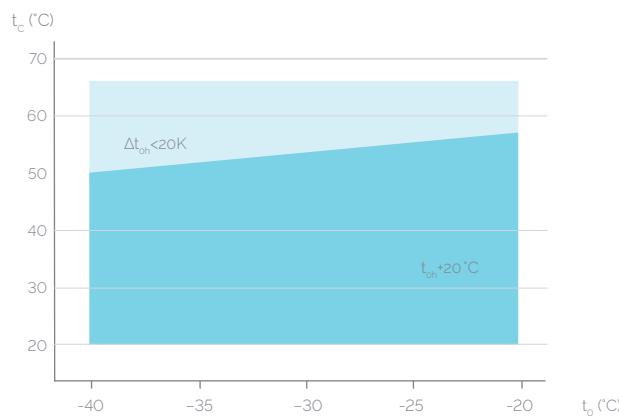
Relating to 20 °C suction gas temperature  
without liquid subcooling

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# HA 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

○ 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

### 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 <sub>o</sub> [W]					Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C						
		-20	-25	-30	-35	-40		
HA22e/125-4	30	Q P	4270 173	3360 158	2590 142	1930 126	1390 109	
	40	Q P	3710 186	2890 167	2190 147	1600 127	1100 107	
	50	Q P	3180 196	2440 173	1820 149	1290 125	836 103	
	30	Q P	5330 2.07	4180 189	3200 170	2370 150	1680 129	
	40	Q P	4650 2.23	3600 2.00	2700 1.75	1950 150	1310 126	
	50	Q P	3980 2.35	3040 2.06	2230 1.77	1540 148	960 119	
HA22e/160-4	30	Q P	6400 2.52	5080 2.29	3960 2.06	3010 182	2230 157	
	40	Q P	5670 2.74	4460 2.45	3430 2.15	2560 186	1840 157	
	50	Q P	4950 2.92	3840 2.56	2910 2.21	2120 186	1450 152	
	30	Q P	6950 2.65	5450 2.41	4180 2.15	3100 189	2200 162	
	40	Q P	6030 2.87	4660 2.55	3490 2.22	2500 188	1670 154	
	50	Q P	5110 3.04	3870 2.63	2800 2.21	1900 180	1140 141	
HA34e/215-4	30	Q P	8420 3.22	6640 2.90	5130 2.58	3850 2.24	2780 191	
	40	Q P	7340 3.49	5720 3.09	4350 2.68	3190 2.27	2220 186	
	50	Q P	6290 3.71	4840 3.21	3600 2.72	2560 2.23	1680 177	
	30	Q P	10600 3.92	8310 3.55	6380 3.15	4750 2.75	3410 2.35	
	40	Q P	9240 4.29	7150 3.79	5390 3.28	3910 2.78	2690 2.29	
	50	Q P	7890 4.56	6010 3.94	4420 3.32	3090 2.73	1990 2.16	
HA34e/315-4	30	Q P	12900 4.82	10200 4.35	7830 3.86	5880 3.36	4250 2.85	
	40	Q P	11300 5.31	8780 4.70	6650 4.08	4850 3.45	3350 2.84	
	50	Q P	9670 5.68	7400 4.92	5460 4.17	3820 3.43	2430 2.71	
	30	Q P	16600 5.88	13100 5.35	10100 4.77	7510 4.17	5390 3.56	
	40	Q P	14600 6.40	11300 5.69	8550 4.95	6220 4.19	4270 3.44	
	50	Q P	12600 6.79	9580 5.89	7070 4.98	4940 4.08	3150 3.19	
HA44e/475-4	30	Q P	20500 7.15	16200 6.51	12500 5.82	9420 5.10	6850 4.37	
	40	Q P	18100 7.83	14200 6.98	10900 6.11	7970 5.23	5590 4.34	
	50	Q P	15800 8.35	12200 7.31	9120 6.26	6520 5.21	4330 4.18	
	30	Q P	23200 8.17	18400 7.39	14300 6.57	10800 5.72	7850 4.86	
	40	Q P	20500 8.99	16100 7.97	12300 6.92	9120 5.87	6450 4.84	
	50	Q P	17900 9.65	13900 8.38	10500 7.12	7520 5.88	5070 4.68	

Relating to 20 °C suction gas temperature  
without liquid subcooling



Reduced suction gas temperature

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# HA semi-hermetic compressors

## Technical data

HA																
Type	Number of cylinders	Displacement		Voltage <sup>1)</sup>	Electrical data				Starting current (rotor locked)	Weight	Connections <sup>5)</sup>		Oil charge	Frequency range		
					Max. Working current <sup>2)</sup>	Max. Power consumption <sup>2)</sup>	A	kW			Discharge line DV	Suction line SV				
		50 Hz 1450 rpm	60 Hz 1740 rpm		Δ	Y			Δ	Y	mm	inch	mm	inch	Ltr.	Hz
HA22e/125-4	2	11.10	13.30	<sup>3)</sup>	8.1	4.7	2.4	69	40	75.5	12	1½	16	5/8	0.9	30-70
HA22e/160-4	2	13.70	16.40	<sup>3)</sup>	9.6	5.5	2.9	87	50	77.5	12	1½	16	5/8	0.9	30-70
HA22e/190-4	2	16.50	19.80	<sup>3)</sup>	10.9	6.3	3.5	87	50	76.5	12	1½	16	5/8	0.9	30-70
HA34e/215-4	4	18.80	22.60	<sup>3)</sup>	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	<sup>3)</sup>	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	<sup>3)</sup>	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	<sup>3)</sup>	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	<sup>4)</sup>	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	<sup>4)</sup>	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	<sup>4)</sup>	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 ( $\pm 10\%$ ) relates to the mean value of the voltage range. Other voltages and current types on request.

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

3) 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

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

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

### 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

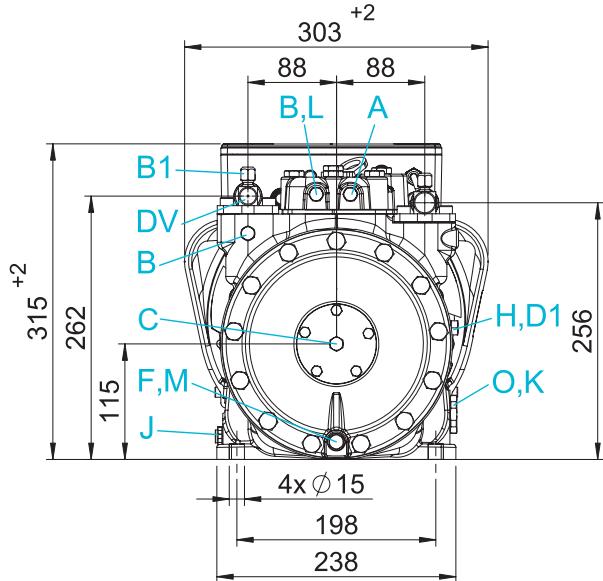
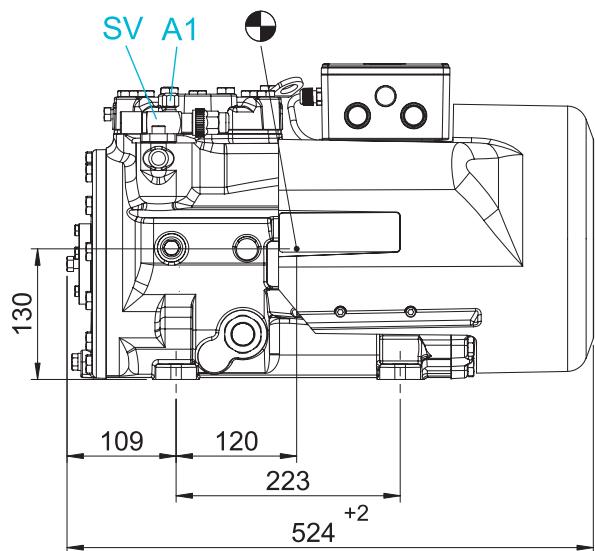
### Oil sump heater 230 V - 1 - 50 / 60 Hz (option)

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

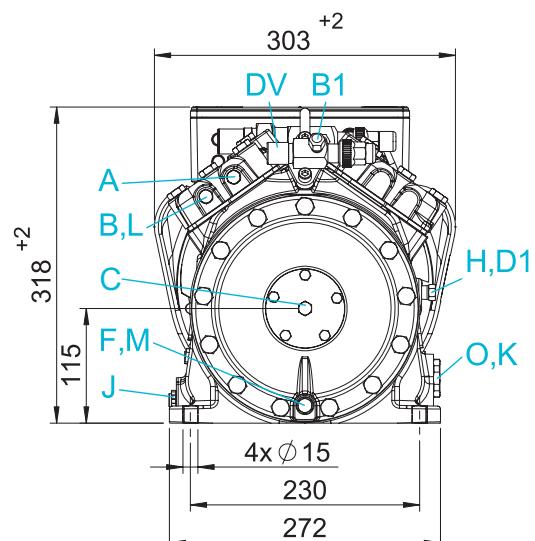
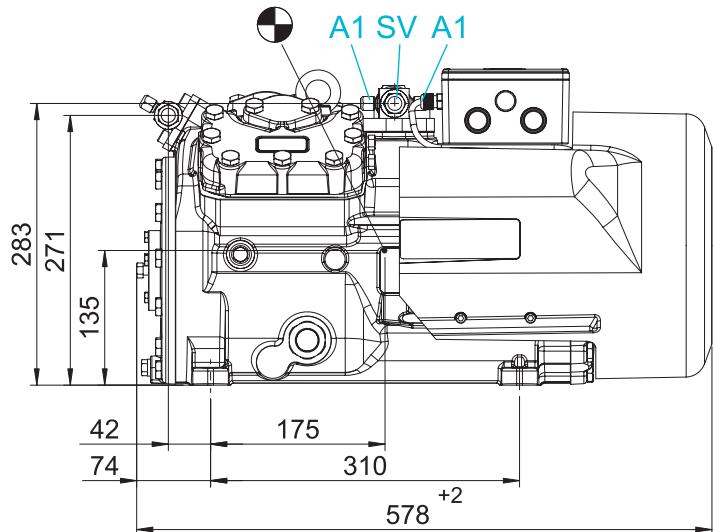
# HA semi-hermetic compressors

## 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



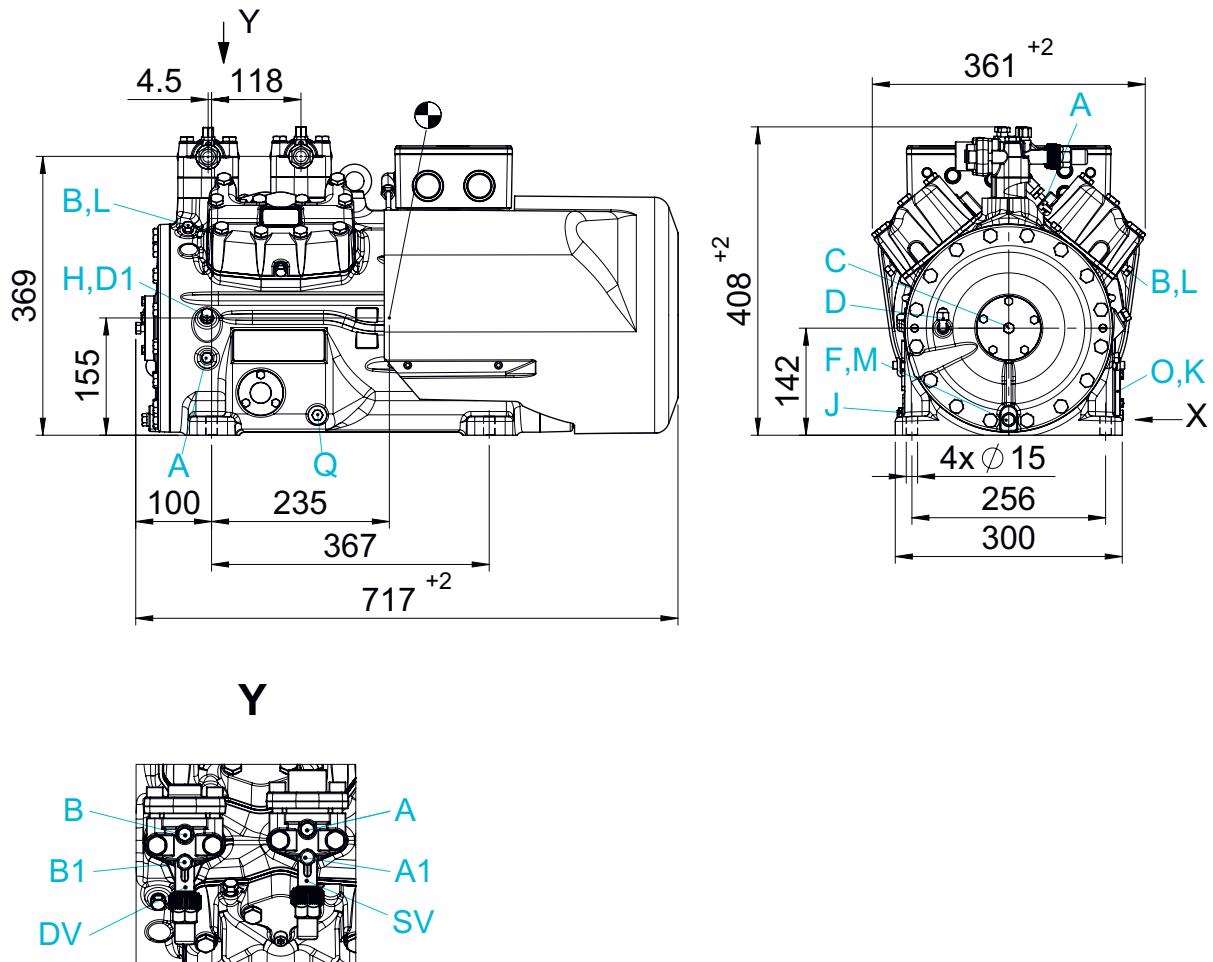
Dimensions in mm  
● Center of gravity

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



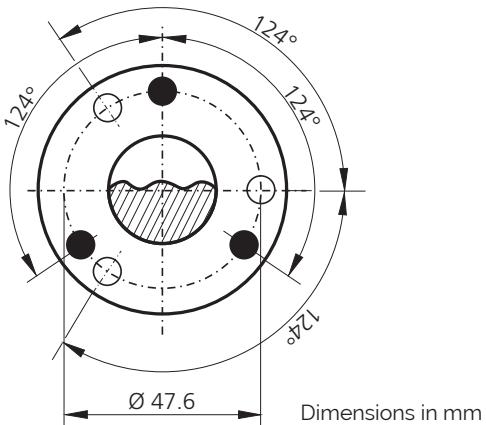
Dimensions in mm  
● Center of gravity

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

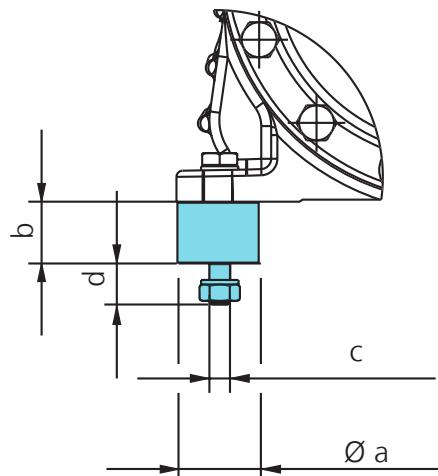
HA44e

- Three-hole connection for oil level regulator of brands ESK, AC+R, CARLY (3 x M 6 x 10 deep)
- Three-hole connection for oil level regulator of brand TRAXOIL (3 x M 6 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

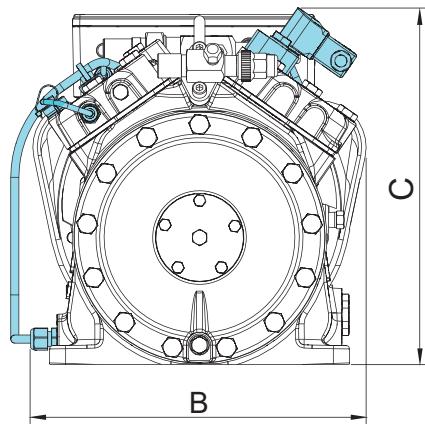
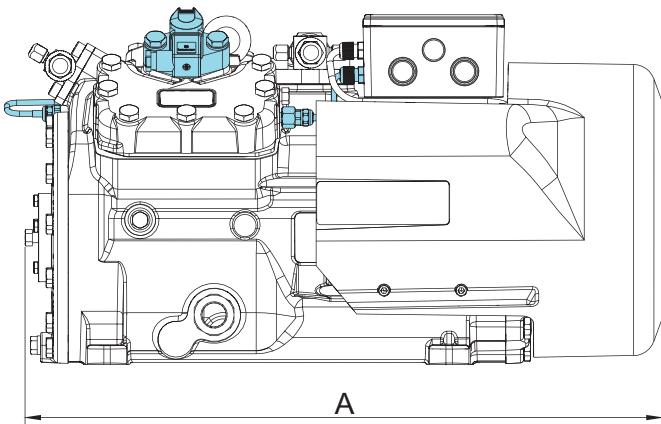


# HA semi-hermetic compressors

## Dimensions and connections

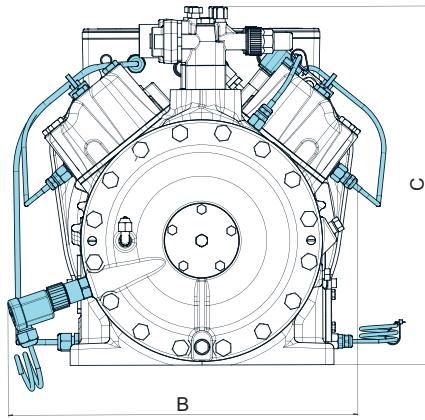
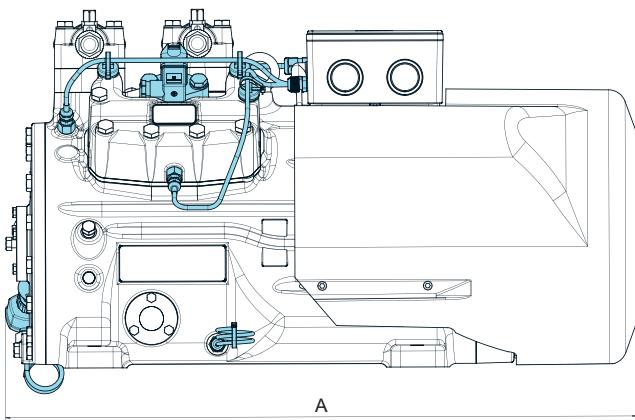
HA22e HA34e

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				
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	●	●	●
<b>① Thermal protection PTC</b>	● <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	●	●	●
<b>② Oil sump heater</b> 110–240 V - 1 - 50 / 60 Hz, 50–120 W, PTC heater, self-regulating 220–240 V - 1 - 50 / 60 Hz, 160 W	● <sup>2)</sup>	● <sup>2)</sup>	-
Rear bearing flange prepared for oil differential pressure sensor	-	-	● <sup>2)</sup>
<b>③ Oil differential pressure sensor DELTA-P II</b> 220–240 V - 1 - 50 / 60 Hz	-	-	● <sup>1)</sup>
<b>④ Oil pressure safety switch</b> 230 V - 1 - 50/60 Hz, IP20 MP54 230 V - 1 - 50/60 Hz, IP20 MP55	-	-	● <sup>1)</sup>
<b>⑤ Capacity regulator</b> 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 Start unloader by means of ESS (Electronic Soft Start)	—	—	● <sup>2)</sup>
⑨ 400 V - 3 - 50 / 60 Hz, IP20, (connection clamps IPOO) for installation in switch cabinet	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>
⑩ Intermediate flange for discharge line valve on right or left, seen from oil pump	—	—	● <sup>1)</sup>
⑪ INT69 G Diagnose 115 / 230 V Ac, 50 / 60 Hz, IPOO (INT69 G not applicable)	● <sup>2)</sup>	● <sup>2)</sup>	● <sup>2)</sup>
⑫ DP - modbus gateway 115 / 230 V Ac, 50 / 60 Hz, IPOO incl. adapter cable	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>
⑬ Modbus – LAN gateway 230 V Ac, 50 / 60 Hz, IPOO	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>
⑭ USB converter for INT69 G Diagnose and INT69 GTML Diagnose Connection for oil level regulator of brands ESK, AC+ R or CARLY	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>
⑮ Connection for oil level regulator of brand Traxoil	● <sup>4)</sup>	● <sup>4)</sup>	●
⑯ 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

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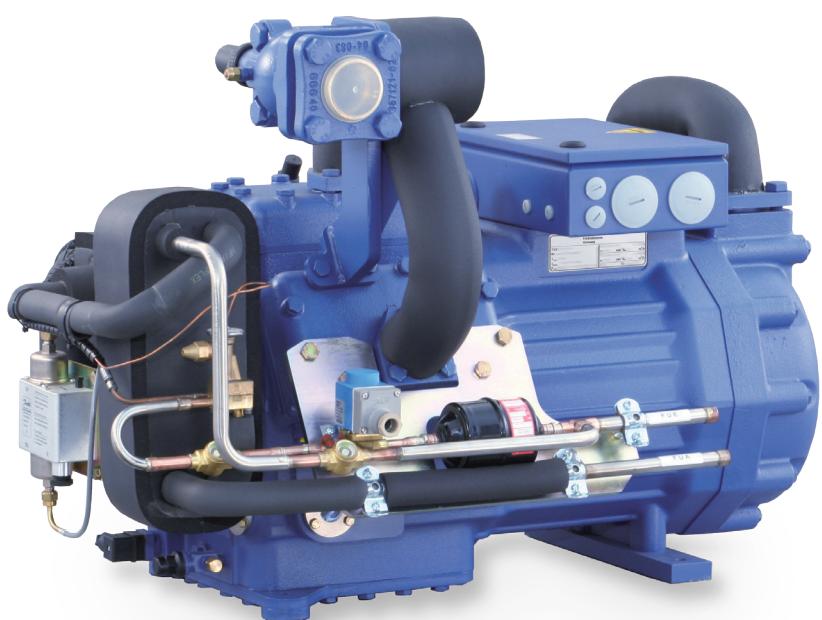
● Pictures see page 67/68



# Bock HGZ semi-hermetic compressors

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

Bock HGZ7 two-stage



# 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.

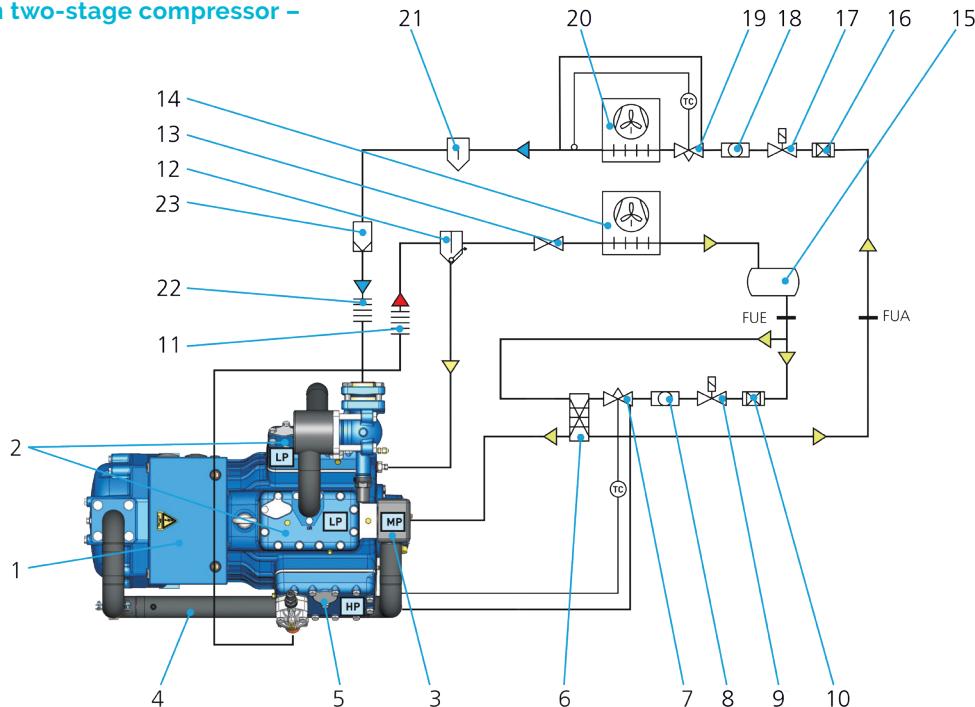


Image similar

# HGZ two-stage semi-hermetic compressors

## Spezial features

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



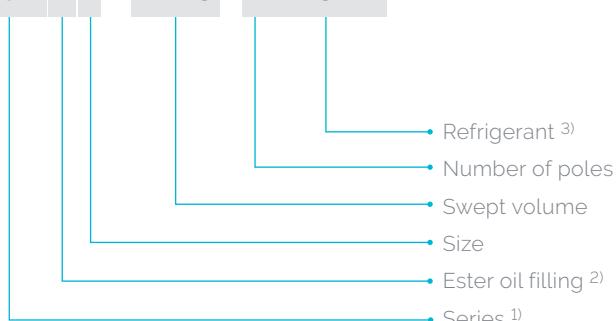
### Explanations

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

\* Components for subcooling system not supplied as standard

### Type key

**HGZ X7 / 2110 - 4R404A**



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

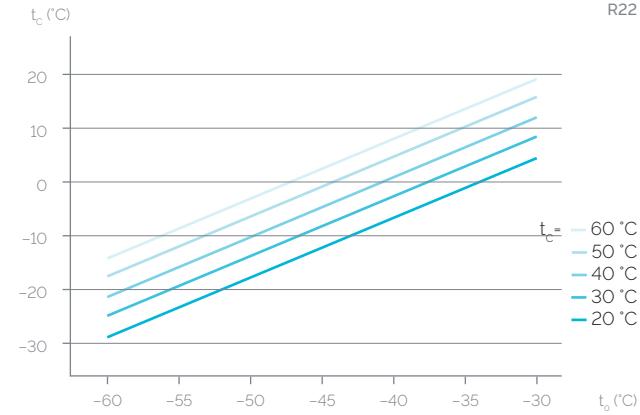
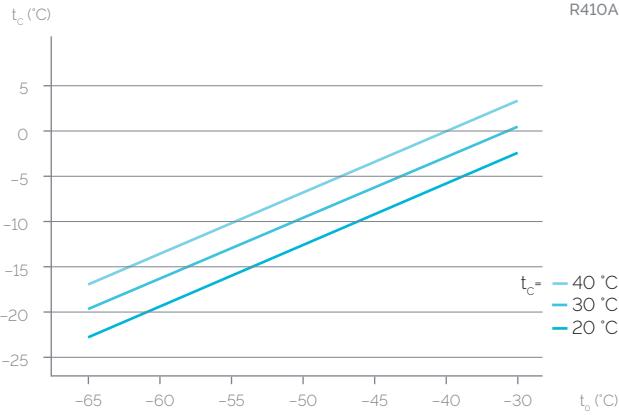
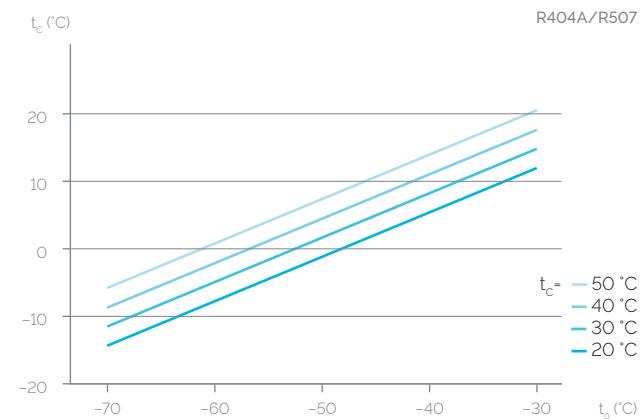
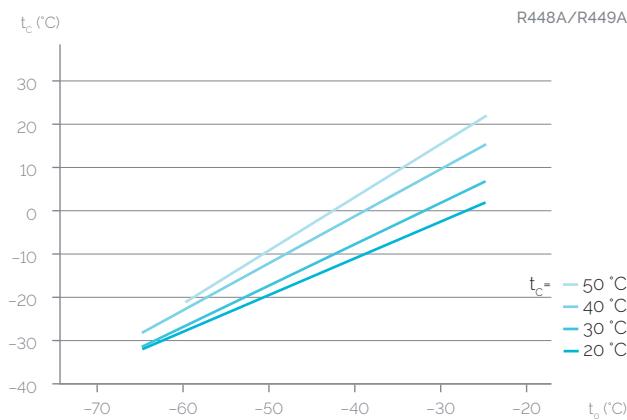
# HGZ two-stage semi-hermetic compressors

## Operating limits

### Subcooling temperature

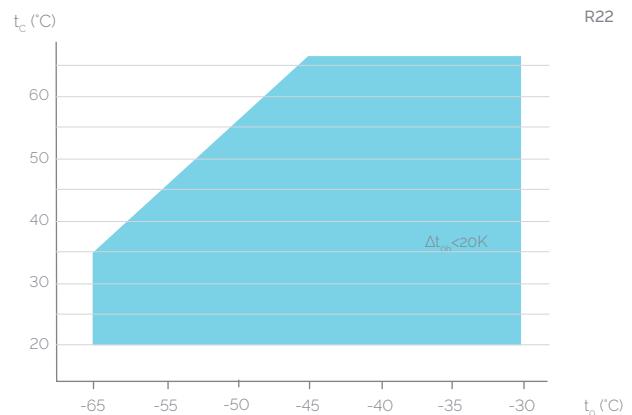
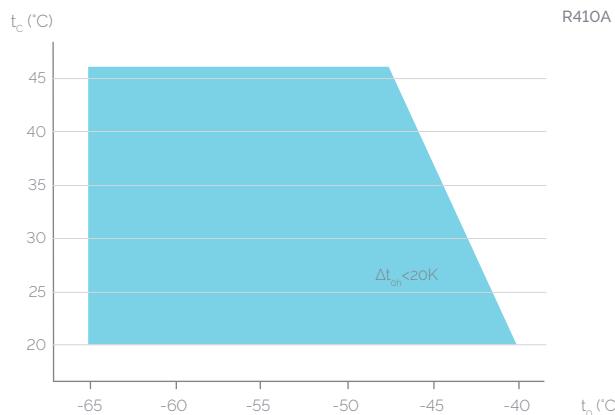
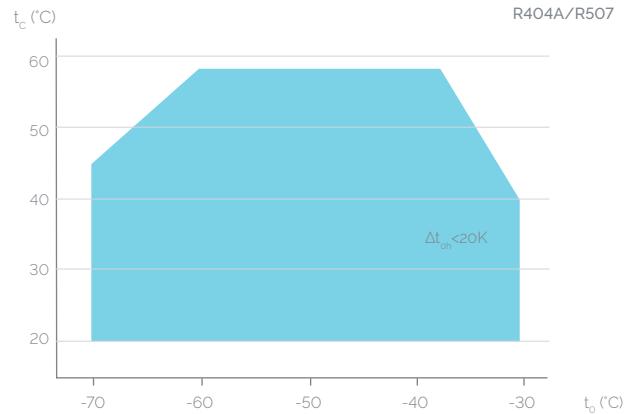
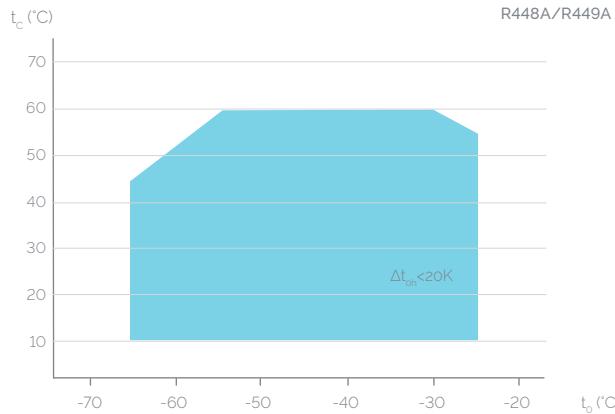
Defined with the help of the diagram by approximately calculating the subcooling temperature arising in the relevant operating conditions ( $t_0/t_c$ ).

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

# HGZ two-stage semi-hermetic compressors

## Performance data

### R448A | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]						Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C							
		-30	-35	-40	-45	-50	-55	-60	
HGZX7/1620-4	30	Q P	30500 17.10	25000 15.50	19900 13.90	15500 12.30	11700 10.80	8650 9.51	6420 8.32
	40	Q P	28900 19.10	23700 17.20	19000 15.40	14900 13.60	11400 12.00	8460 10.40	6360 9.06
	50	Q P	27000 21.00	22300 19.00	18000 17.00	14200 15.10	10900 13.20	8260 11.50	6330 9.95
HGZX7/1860-4	30	Q P	35100 19.70	28700 17.80	22900 15.90	17800 14.10	13500 12.40	9930 10.90	7370 9.56
	40	Q P	33100 21.90	27200 19.80	21800 17.70	17100 15.70	13000 13.80	9720 12.00	7300 10.40
	50	Q P	31000 24.20	25600 21.80	20600 19.60	16300 17.30	12500 15.20	9480 13.20	7270 11.40
HGZX7/2110-4	30	Q P	39900 22.40	32600 20.20	26000 18.10	20200 16.10	15300 14.10	11300 12.40	8380 10.80
	40	Q P	37700 24.90	31000 22.50	24800 20.20	19400 17.80	14800 15.60	11100 13.60	8310 11.80
	50	Q P	35200 27.50	29100 24.90	23500 22.30	18500 19.70	14200 17.30	10800 15.00	8260 13.00

### R449A | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]						Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C							
		-30	-35	-40	-45	-50	-55	-60	
HGZX7/1620-4	30	Q P	30500 17.00	24900 15.40	19900 13.80	15500 12.30	11700 10.80	8660 9.49	6430 8.31
	40	Q P	28800 19.00	23700 17.20	19000 15.40	14900 13.60	11400 11.90	8470 10.40	6370 9.05
	50	Q P	26900 20.90	22200 18.90	17900 17.00	14100 15.00	10900 13.20	8260 11.50	6340 9.93
HGZX7/1860-4	30	Q P	35000 19.60	28600 17.70	22900 15.90	17800 14.10	13500 12.40	9950 10.90	7390 9.55
	40	Q P	33000 21.80	27200 19.70	21800 17.60	17100 15.60	13000 13.70	9730 11.90	7320 10.30
	50	Q P	30800 24.00	25500 21.80	20600 19.50	16200 17.30	12500 15.10	9490 13.20	7280 11.40
HGZX7/2110-4	30	Q P	39800 22.30	32500 20.20	26000 18.10	20200 16.00	15300 14.10	11400 12.40	8400 10.80
	40	Q P	37600 24.80	30900 22.40	24800 20.10	19400 17.80	14800 15.60	11100 13.60	8330 11.80
	50	Q P	35100 27.40	29000 24.80	23400 22.20	18500 19.60	14200 17.20	10800 15.00	8280 12.90

### R404A/R507 | 50 Hz

Type	Cond. temp. °C	Cooling capacity Q <sub>o</sub> [W]						Power consumption P <sub>e</sub> [kW]	
		Evaporating temperature °C							
		-30	-35	-40	-45	-50	-55	-60	
HGZX7/1620-4	30	Q P	34869 21.17	28471 19.41	23098 17.63	18628 15.84	14936 14.05	11899 12.31	9394 10.61
	40	Q P	33437 23.42	27315 21.42	22181 19.40	17910 17.39	14380 15.41	11467 13.48	9047 11.61
	50	Q P	-	25860 23.49	20950 21.24	16866 19.02	13484 16.84	10680 14.72	8332 12.68
HGZX7/1860-4	30	Q P	40042 24.31	32694 22.29	26525 20.24	21391 18.18	17152 16.14	13665 14.13	10787 12.19
	40	Q P	38397 26.90	31367 24.60	25471 22.28	20567 19.97	16514 17.70	13169 15.48	10390 13.34
	50	Q P	-	29696 26.98	24057 24.39	19367 21.84	15484 19.33	12265 16.90	9568 14.56
HGZX7/2110-4	30	Q P	45550 27.66	37191 25.36	30173 23.03	24334 20.69	19511 18.36	15544 16.08	12271 13.86
	40	Q P	43679 30.60	35681 27.98	28974 25.34	23396 22.72	18785 20.13	14980 17.61	11819 15.17
	50	Q P	-	33780 30.69	27366 27.75	22031 24.84	17614 21.99	13952 19.23	10884 16.57

# HGZ two-stage semi-hermetic compressors

## Performance data

### R410A | 50 Hz

Type	Cooling capacity $Q_o$ [W]					Power consumption $P_e$ [kW]
	Evaporating temperature °C					
	Cond. temp. °C	-45	-50	-55	-60	-65
HGZX7/1620-4	30 Q	25354 2289	19967 20.80	15285 18.67	11396 16.43	8385 14.00
	50 P	- -	19131 22.87	14630 20.63	10868 18.25	7930 15.68
HGZX7/1860-4	30 Q	29182 26.28	22859 23.89	17530 21.44	13136 18.87	9614 16.08
	50 P	- -	21959 26.26	16774 23.68	12508 20.96	9101 18.00
HGZX7/2110-4	30 Q	33195 29.90	26003 27.17	19941 24.39	14943 21.46	10937 18.29
	50 P	- -	24980 29.87	19082 26.94	14229 23.84	10352 20.48

### R22 | 50 Hz

Type	Cooling capacity $Q_o$ [W]							Power consumption $P_e$ [kW]
	Evaporating temperature °C							
	Cond. temp. °C	-30	-35	-40	-45	-50	-55	-60
HGZX7/1620-4	30 Q	29711 18.26	24214 16.81	19448 15.40	15365 14.03	11921 12.70	9070 11.41	6765 10.16
	40 P	29059 20.23	23630 18.52	18930 16.86	14914 15.23	11537 13.64	8753 12.10	- -
	50 Q	28355 22.30	22992 20.33	18360 18.41	14411 16.53	11100 14.69	- -	- -
	60 P	27598 24.47	22302 22.25	17736 20.07	13854 17.93	- -	- -	- -
HGZX7/1860-4	30 Q	30088 20.97	27881 19.31	22408 17.69	17669 16.11	13664 14.58	10393 13.10	7855 11.67
	40 P	33296 23.23	27181 21.27	21800 19.36	17153 17.49	13240 15.67	10061 13.89	- -
	50 Q	32434 25.60	26411 23.35	21122 21.14	16567 18.98	12746 16.68	- -	- -
	60 P	31503 28.09	25572 25.54	20375 23.04	15912 20.59	- -	- -	- -
HGZX7/2110-4	30 Q	38811 23.86	31632 21.96	25406 20.12	20072 18.33	15573 16.59	11848 14.91	8837 13.27
	40 P	37960 26.43	30868 24.20	24729 22.02	19483 19.89	15071 17.82	11433 15.80	- -
	50 Q	37040 29.13	30035 26.56	23984 24.05	18825 21.59	14500 19.18	- -	- -
	60 P	36050 31.96	29133 29.06	23169 26.21	18097 23.42	- -	- -	- -

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

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# HGZ two-stage semi-hermetic compressors

## Technical data / Dimensions and connections

HGZ7											Two-Stage Compressors				
Type	Number of cylinders	Displacement		Displacement		Voltage <sup>1)</sup>	Electrical data			Starting current (rotor locked)	Weight	Oil charge			
		50 Hz (1450 rpm)		60Hz (1,740 rpm)			Max. Working current <sup>2)</sup>	Max. Power consump- tion <sup>2)</sup>							
		m <sup>3</sup> /h		m <sup>3</sup> /h		A	kW	A	kg				Ltr.		
		LP <sup>**</sup>	HP <sup>**</sup>	LP <sup>**</sup>	HP <sup>**</sup>		Δ / Y		Δ	Y		PW1+2*	PW1 / PW1+2*		
HGZ7/1620-4 R448A/R449A															
HGZX7/1620-4 R404A															
HGZX7/1620-4 R410A	6	93.70	46.90	112.50	56.20	3)	50	27.0	175	269	294	4.5			
HGZ7/1620-4 R22															
HGZ7/1860-4 R448A/R449A															
HGZX7/1860-4 R404A/R507	6	107.60	53.80	129.10	64.60	3)	55	30.0	175	269	291	4.5			
HGZX7/1860-4 R410A															
HGZ7/1860-4 R22															
HGZ7/2110-4 R448A/R449A															
HGZX7/2110-4 R404A/R507	6	122.40	61.20	146.90	73.40	3)	68	36.0	232	357	289	4.5			
HGZX7/2110-4 R410A															
HGZ7/2110-4 R22															

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

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

3) 380 – 420 V Y/YY - 3 - 50 Hz PW

440 – 480 V Y/YY - 3 - 60 Hz PW

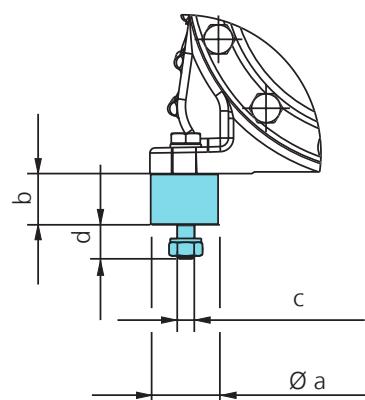
PW = Part Winding, motors for part winding start  
(no start unloaders required)

Winding ratios: 50% / 50%

### Dimensions for anti-vibration pad

Type	Ø a	b	c	d
HGZ7	50	30	M10	25

Dimensions in mm

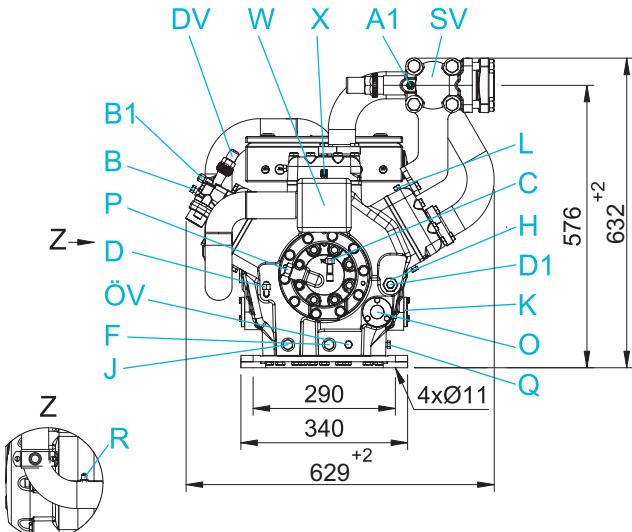
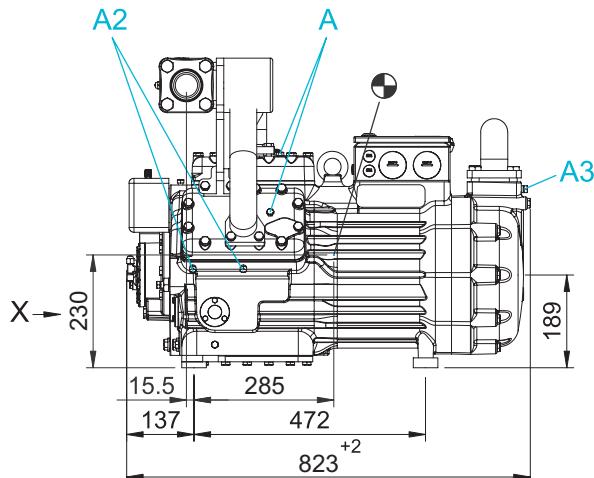


# HGZ two-stage semi-hermetic compressors

## Dimensions and connections

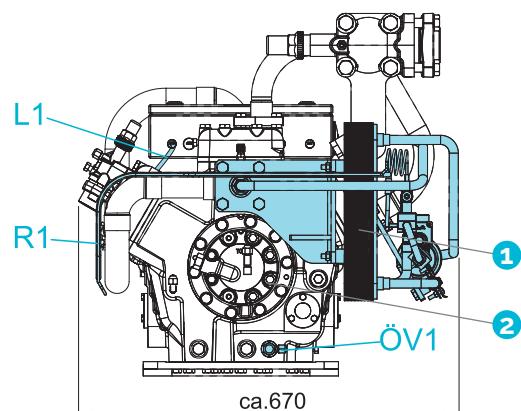
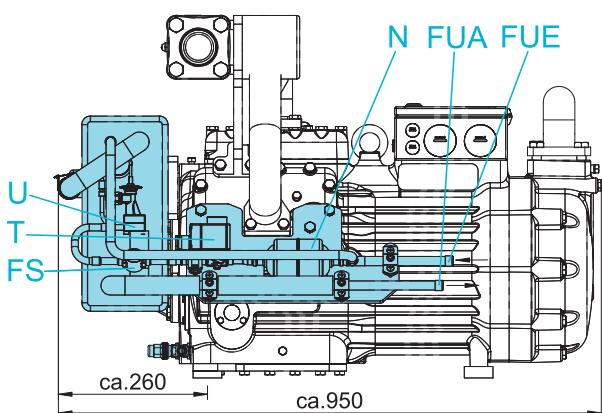
### HGZ7 - Series

Liquid subcooler with accessories supplied separately



### HGZ7 - Option

Liquid subcooler with complete accessories directly mounted onto the compressor

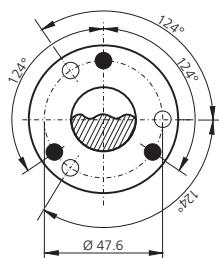


**1** Liquid subcooler with accessories    **2** Oil service valve

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 1.5
H	Oil charge plug	M22 x 1.5
J	Connection oil sump heater	M22 x 1.5
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 1.5
Q	Connection oil temperature sensor	1/8" NPTF
R	Connection equalizer for injection valve	7/16" UNF
W	Connection for refrigerant injection	M22 x 1.5
X	Connection for Schrader valve for intermediate pressure manometer	7/16" UNF

1) 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	●
HGX: 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 ⑧ 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, ⑨ 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

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# HGZ two-stage semi-hermetic compressors

## Accessories

Intermediate pressure line



1

Winding protection



2

Oil pump cover



3

Direct connection possibility



4

Sight glasses



5

Suction line shut-off valve



6

Discharge line shut-off valve



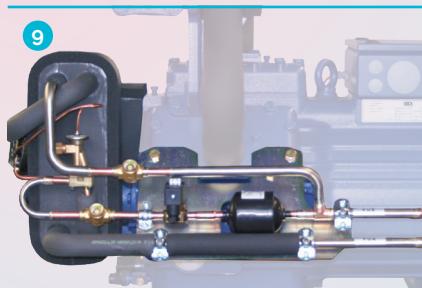
7

Components enclosed separately



8

Components mounted directly



9

# HGZ two-stage semi-hermetic compressors

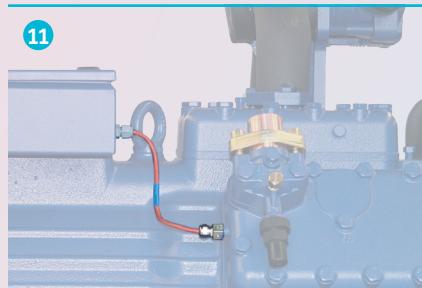
## Accessories

**Oil sump heater**



10

**Thermal protection thermostat**



11

**Oil pressure safety switch**



12

**Oil differential pressure sensor**



13

**Oil service valve**



14

**Oil temperature sensor**



15

# 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** ↗



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

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

## **BOCK training courses**

Together with Danfoss, BOCK offers special (online) user training courses. For this purpose, a complete transcritical supermarket refrigeration system with the latest 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)