

Semi-hermetic Bock Compressors

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

° In touch with our customers

GEA Refrigeration Technologies: Your partner for low temperatures

GEA Refrigeration Technologies, part of the internationally active GEA Group, is a synonym for industrial refrigeration technology. Since the end of the 19th century, it has been our business to cool processes and products, and to control the temperature of goods in transport. You will find our solutions in the food and beverage sector; in the petrochemical, chemical, and pharmaceutical industries; on fishing ships; in natural gas liquefaction; in infrastructure facilities; and in ice factories. We are also at the top with know-how when it comes to refrigeration at leisure facilities. After all, we have been excited about refrigeration for decades now. As a result, our staff enthusiastically goes about its development and production projects – to include preventive and remedial maintenance of your refrigeration systems.

This enthusiasm is highly apparent in the daily work of all companies in our Segment. Whether it's complete systems or individual valves: we have the experience in every section of our company to optimally design, manufacture, and install refrigeration systems. And to take full advantage of this experience, we not only carry out development in our own company: we also manufacture, assemble, and test the core components. A chain is, after all, only as strong as its weakest link: and this also applies equally well to refrigeration technology, cooling processes, and cooling chains.

This makes it all the more important that you have a partner – in GEA Refrigeration Technologies – that has learned to master refrigeration from A to Z. And all of this since 1896, when Willem Grasso founded his refrigeration division. From this history of GEA Refrigeration Technologies, you will profit in the form of technical expertise and top sector know-how.

But we all live in the present and think about the future. We ponder a future in which more and more processes need energy around the world, and fewer natural resources are available. As a result, we have taken it as our goal to create solutions that are not only long-life and cost-effective, but also energy-saving and environment-protecting. We feel obligated to sustainability in many respects. Our objective is to produce longlife and material-saving products over the long run – as well as products that use environmentally benign refrigerants. And we aim to produce efficiently. But our responsibility does not end at the factory gate. As a result, we take great pains to ensure that our systems are energy-efficient and that they protect the climate. With GEA Refrigeration Technologies, you can also count on optimal economy: saving energy indeed means reducing money spent for energy. At the same time, you protect the environment. Thanks to our refrigeration technology, your processes will run more economically and more ecologically. To maintain our standard of living and to assure quality of life for future generations as well.

Our claim of combining economy with saving natural resources is reflected in all components of our company, such as the following: compressors, chillers, heat pumps, ice machines, fittings and valves, control systems, and many, many more. You can find proof of the above throughout the world. Our international corporate network – and above all our reference projects – are spread all over the globe.

GEA Bock - More than a compressor

Over 75 years ago, when the refrigeration and air-conditioning industry was still in its infancy, our company's founder, Wilhelm Bock, had a vision: he wanted to build first-class and reliable refrigeration machines. In the following decades Bock developed into one of the world's leading manufacturers of refrigeration and air-conditioning compressors.

Today, GEA Bock offers as part of GEA Refrigeration Technologies the right compressor for all fields of commercial-, industrial-, rail-, bus- and transport refrigeration.

That GEA Bock places the highest demands on compressors for energy efficiency shows our EFC system. For many years we offer with the EFC system a solution to reduce the energy consumption by 25 %.

In this brochure we present you our current program of single-stage and two-stage semi-hermetic Bock compressors.

Be inspired. By our new products, our established product series and the entire passion that goes into each of our products.

Semi-hermetic compressors HG (HA)

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

The HA (Hermetic Air-cooled) range, specially engineered by GEA Bock, is available for deep-freezing applications, in particular for use with the refrigerants R22 and R404A.

- ° Single-stage
- ° CO₂ compressors subcritical
- ° CO₂ compressors transcritical
- ° R134a compressors
- ° R407C compressors
- ° R410A compressors
- ° ATEX compressors
- ° HC compressors
- ° Aluminium compressors
- ° 2-pole compressors
- ° Two-stage compressors
- ° Duplex compressors
- ° Compressor units with receiver
- ° Condenser units air-cooled

Vehicle compressors FK

Bock vehicle compressors of the FK range are the result of many years of experience in the domain of mobile cooling systems.

The unsurpassed light, compact, robust design and wide r.p.m. range are only some of the outstanding features of this unique product range of two, four and six cylinder compressors.

A wide variety of designs can be tailored to suit individual requirements.

The so-called K version is a special innovation with a unique valve plate system for maximum requirements in bus and coach air-conditioning systems.

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

Open type compressors F

The F model series provides modern open type compressors for separate drive systems (using V belts or direct couplings). Load transfer through a V pair.

Virtually all drive capacity requirements can be met.

Very compact compressor design, robust and easy to handle. Oil pump lubrication as standard.

- ° Single-stage compressors
- ° NH₃ compressors
- ° Compressor units for direct drive
- ° NH₃ Compressor units for direct drive

The Bock semi-hermetic compressor program provides a full performance range of innovative and modern compressor designs in 2, 4, 6 and 8 cylinder constructions. The ideal solution for any kind of application.

HG (Hermetic Gas-cooled)

Conventional suction gas-cooled compressor design

HA (Hermetic Air-cooled)

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

All the compressors display the same particularly remarkable features:

- Outstanding running comfort
- High efficiency and reliability to the highest quality standard
- Easy maintenance, e.g. interchangeable motors
- Oil pump lubrication
- Bock MP10 electronic motor protection, especially easy to operate with LED status indicators
- Suitable for conventional and chlorine-free HFC refrigerants

Available versions:

The Bock semi-hermetic program provides the following product variants:

- Single-stage HG (HA) compressors
- Two-stage HGZ compressors
- Duplex DHG (DHA) compressors
- SHG (SHA) compressor units with receiver
- SHG (SHA) condenser units air-cooled

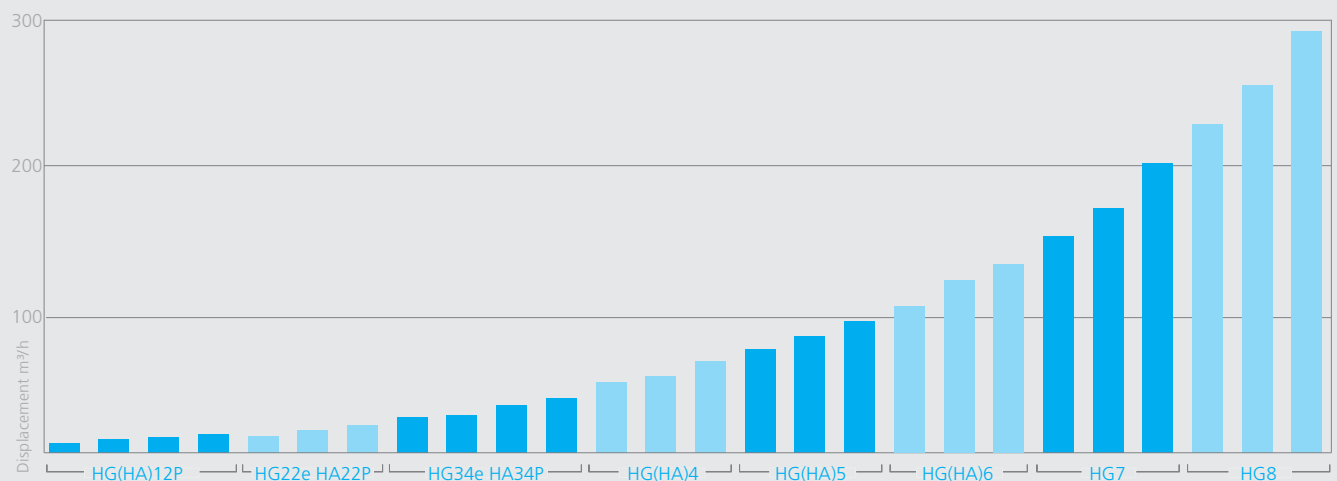
Forward looking compressor models

Bock offers a choice of interesting compressor versions in the established semi-hermetic range for current market trends such as alternative refrigerants, deep-freezing or EX protection.

- **HA (Hermetic Air-cooled)**, air-cooled compressors for deep-freezing applications
- **CO₂ Compressors (subcritical)**, for subcritical cascade systems
- **CO₂ Compressors (transcritical)**, for transcritical CO₂ applications
- **R410A Compressors**, for the refrigerant R410A
- **ATEX (ATmospheres EXplosibles)**, for explosion-risk environments

The current program

...8 model sizes with 26 capacity stages from 5,4 to 279,8 m³/h (50 Hz)

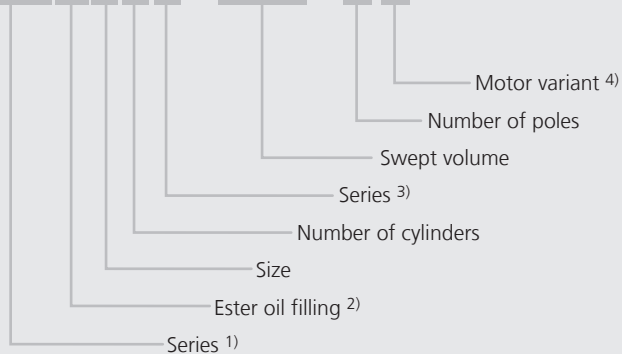




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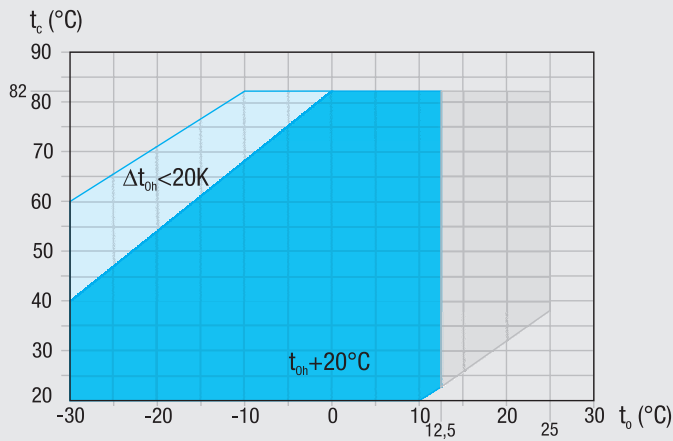
HGX34e / 215 - 4S



- 1) HG = Hermetic Gas-Cooled (suction gas-cooled)
HA = Hermetic Air-Cooled (for deep-freezing)
- 2) X = Ester oil filling
(HFC refrigerants e.g. R134a, R404A, R507, R407C)
- 3) e = Additional declaration for e-series compressors
P = Additional declaration for Pluscom compressors
- 4) S = More powerful motor e.g. air-conditioning applications

R134a Operating limits

HGX12P / HGX22e / HGX34e
HGX4 / HGX5 / HGX6 / HGX7 / HGX8



- Unlimited application range
- Supplementary cooling or reduced suction gas temperature
- Motor version -S- (more powerful motor)

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

1) LP = low pressure HP = high pressure

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

R134a Notes

Operating limits

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

Restrictions to the operating limits may occur when using the Bock EFC (Electronic Frequency Control). Further explanation see separate brochure "Bock semi-hermetic compressors - Electronic Controls".

Performance data

The performance data for R134a are based on ISO-DIS 9309 (DIN 8928) with a 50 Hz power supply frequency. This signifies:

25 °C suction gas temperature without liquid subcooling.

For Pluscom compressors and HGX8/2470-4 operating at 50 Hz already comply with EN 12900. This signifies **20 °C suction gas temperature without liquid subcooling.**

This results in significant differences compared to specifications with liquid undercooling and/or suction-gas temperatures.

A comprehensive modification to 20 °C suction gas temperature will follow at a later date.

Conversion factor for 60 Hz = 1,2

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

ASERCOM certified performance data



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 and www.bock.de.

R134a		Performance data											50 Hz
Type	Cond. temp. °C	Cooling capacity \dot{Q}_o [W]						Power consumption P_e [kW]					
		Evaporating temperature °C											
		12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30	
HGX5/725-4	30	Q	57279	52351	47725	43390	35549	28736	22862	17835	13564	9960	6930
		P	10,01	9,65	9,30	8,97	8,34	7,75	7,18	6,62	6,04	5,45	4,81
	40	Q	51552	47064	42859	38926	31832	25690	20410	15901	12072	8834	6094
		P	11,27	10,84	10,42	10,01	9,23	8,48	7,75	7,02	6,28	5,51	4,69
	50	Q	44810	40821	37097	33626	27398	22047	17481	13610	10343	7589	5259
		P	12,58	12,05	11,54	11,04	10,07	9,13	8,20	7,27	6,32	5,34	4,31
60	Q	36939	33511	30327	27378	22136	17695	13963	10849	8264	6116	4314	
	P	13,92	13,29	12,67	12,06	10,87	9,71	8,55	7,38	6,19	4,97	3,69	
70	Q	27829	25020	22438	20070	15934	12523	9744	7508	5724			
	P	15,32	14,56	13,82	13,08	11,64	10,21	8,78	7,35	5,89			
HGX5/830-4	30	Q	65754	60097	54786	49810	40808	32988	26244	20474	15571	11433	7956
		P	11,49	11,08	10,68	10,30	9,58	8,90	8,24	7,59	6,94	6,25	5,53
	40	Q	59180	54028	49200	44686	36541	29491	23430	18254	13859	10141	6995
		P	12,94	12,44	11,96	11,49	10,60	9,74	8,90	8,06	7,21	6,32	5,39
	50	Q	51440	46861	42586	38601	31452	25309	20067	15623	11873	8712	6037
		P	14,44	13,83	13,25	12,67	11,56	10,48	9,42	8,35	7,26	6,13	4,95
60	Q	42405	38469	34814	31429	25412	20313	16029	12455	9487	7021	4952	
	P	15,98	15,26	14,55	13,85	12,48	11,14	9,81	8,47	7,11	5,70	4,24	
70	Q	31947	28722	25758	23040	18292	14376	11186	8619	6571			
	P	17,59	16,72	15,86	15,02	13,36	11,72	10,08	8,44	6,76			
HGX5/945-4	30	Q	74814	68376	62334	56673	46431	37533	29860	23294	17717	13009	9052
		P	13,08	12,60	12,15	11,71	10,89	10,12	9,38	8,64	7,89	7,12	6,29
	40	Q	67334	61471	55979	50842	41576	33554	26658	20768	15768	11538	7959
		P	14,73	14,16	13,61	13,08	12,06	11,08	10,12	9,17	8,20	7,19	6,13
	50	Q	58527	53317	48453	43920	35785	28796	22832	17776	13509	9913	6869
		P	16,43	15,74	15,07	14,42	13,16	11,93	10,71	9,50	8,26	6,98	5,64
60	Q	48247	43769	39611	35759	28913	23112	18237	14171	10794	7988	5635	
	P	18,19	17,36	16,55	15,76	14,20	12,68	11,16	9,64	8,09	6,49	4,82	
70	Q	36349	32680	29306	26214	20812	16356	12727	9807	7476			
	P	20,01	19,02	18,05	17,09	15,20	13,33	11,47	9,60	7,69			
HGX6/1080-4	30	Q	85736	78334	71386	64875	53098	42867	34049	26509	20114	14729	10219
		P	14,90	14,37	13,87	13,39	12,46	11,59	10,74	9,90	9,04	8,14	7,19
	40	Q	77231	70507	64206	58310	47666	38441	30501	23712	17939	13049	8906
		P	16,80	16,16	15,53	14,93	13,77	12,65	11,56	10,47	9,36	8,22	7,01
	50	Q	67028	61090	55541	50366	41068	33062	26213	20387	15449	11267	7704
		P	18,77	17,98	17,21	16,46	15,01	13,59	12,20	10,82	9,41	7,96	6,46
60	Q	54908	49861	45172	40824	33086	26510	20965	16315	12425	9163	6393	
	P	20,84	19,87	18,93	18,01	16,20	14,44	12,70	10,96	9,20	7,40	5,54	
70	Q	40651	36602	32879	29464	23497	18566	14537	11275	8647			
	P	23,02	21,85	20,71	19,59	17,38	15,22	13,08	10,93	8,77			
HGX6/1240-4	30	Q	98422	89924	81948	74474	60954	49209	39087	30432	23090	16908	11731
		P	17,10	16,50	15,92	15,37	14,31	13,31	12,33	11,36	10,38	9,35	8,25
	40	Q	88658	80940	73706	66937	54718	44128	35014	27220	20593	14979	10224
		P	19,29	18,55	17,83	17,14	15,81	14,52	13,27	12,02	10,75	9,43	8,05
	50	Q	76946	70129	63759	57818	47145	37954	30091	23403	17735	12934	8844
		P	21,55	20,64	19,76	18,90	17,23	15,61	14,01	12,42	10,80	9,14	7,41
60	Q	63033	57239	51856	46865	37981	30433	24067	18729	14264	10519	7339	
	P	23,92	22,81	21,73	20,67	18,60	16,58	14,58	12,58	10,56	8,50	6,36	
70	Q	46666	42017	37743	33824	26974	21313	16688	12944	9926			
	P	26,42	25,09	23,77	22,48	19,95	17,47	15,01	12,55	10,06			
HGX6/1410-4	30	Q	111982	102314	93239	84735	69352	55989	44472	34624	26271	19237	13347
		P	19,46	18,77	18,11	17,48	16,28	15,14	14,03	12,93	11,81	10,63	9,39
	40	Q	100873	92091	83861	76160	62257	50208	39838	30970	23431	17043	11632
		P	21,95	21,10	20,29	19,50	17,98	16,53	15,10	13,68	12,23	10,73	9,16
	50	Q	87547	79791	72544	65784	53640	43183	34237	26628	20179	14716	10062
		P	24,52	23,49	22,48	21,50	19,60	17,76	15,94	14,13	12,29	10,40	8,43
60	Q	71717	65125	59000	53322	43214	34626	27383	21309	16229	11968	8350	
	P	27,22	25,96	24,73	23,52	21,16	18,86	16,59	14,32	12,02	9,67	7,23	
70	Q	53096	47807	42943	38484	30690	24250	18987	14727	11294			
	P	30,06	28,54	27,05	25,58	22,70	19,88	17,08	14,28	11,45			
HGX7/1620-4	30	Q	121493	110976	101143	91966	75469	61262	49126	38837	30174	22916	16842
		P	16,46	16,72	16,84	16,83	16,46	15,69	14,61	13,32	11,90	10,44	9,03
	40	Q	108919	99297	90317	81950	66947	54067	43088	33788	25945	19339	13748
		P	21,03	20,91	20,66	20,30	19,29	17,97	16,41	14,72	12,99	11,29	9,73
	50	Q	95988	87281	79173	71637	58168	46654	36872	28600	21618	15703	10634
		P	25,19	24,70	24,11	23,42	21,82	19,98	17,99	15,95	13,94	12,05	10,37
60	Q	82743	74970	67755	61069	49175	39066	30521	23318	17235	12052	7545	
	P	28,86	28,03	27,11	26,12	23,97	21,65	19,28	16,92	14,68	12,64	10,89	
70	Q	69228	62411	56108	50292	40012	31348	24080	17985	12842			
	P	31,98	30,82	29,60	28,32	25,66	22,92	20,19	17,56	15,13			

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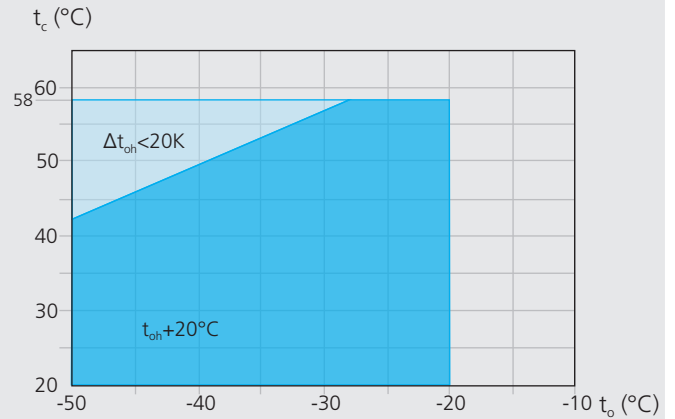
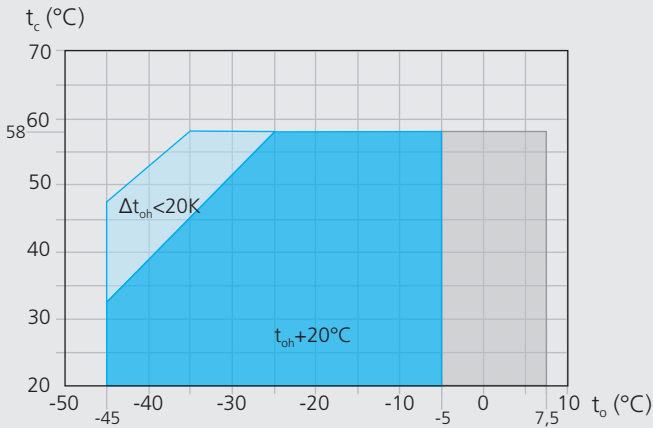
Relating to 25 °C suction gas temperature, without liquid subcooling

Supplementary cooling or reduced suction gas temp.

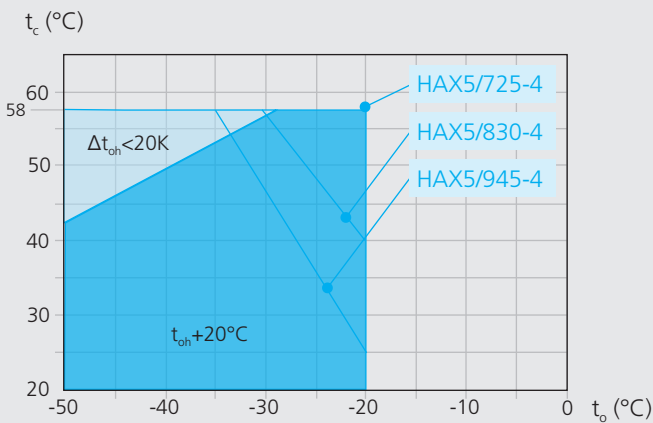
R404A/R507 Operating limits

HGX12P / HGX22e / HGX34e /
HGX4 / HGX5 / HGX6^① / HGX7 / HGX8^②

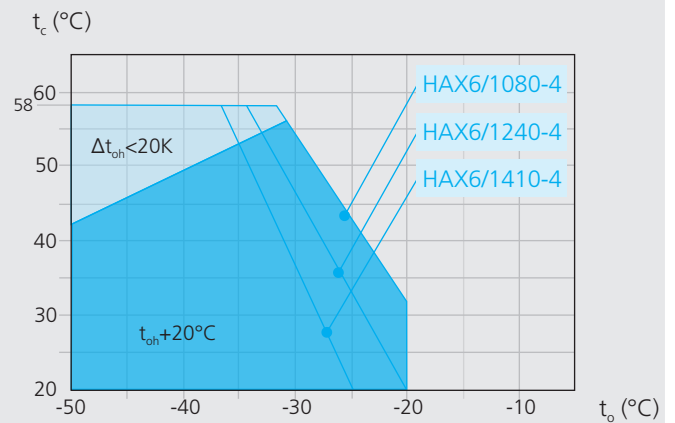
HAX12P / HAX22P / HAX34P / HAX4



HAX5



HAX6



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

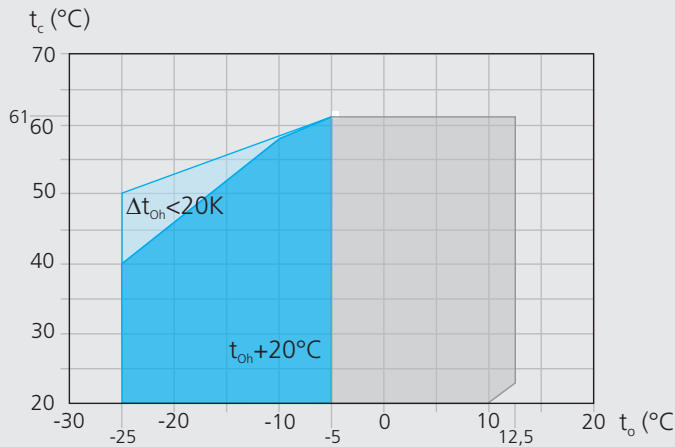
¹⁾ LP = low pressure HP = high pressure

- ① **HGX6/1410-4S**
Max. evaporating temperature
 $t_o = 2\text{ °C}$
HGX6/1410-4
Max. evaporating temperature
 $t_o = -7\text{ °C}$
- ② **HGX8/2830-4**
Max. evaporating temperature
 $t_o = 0\text{ °C}$

- Unlimited application range
- HG Supplementary cooling or reduced suction gas temperature
- HA reduced suction gas temperature
- Motor version -S- (more powerful motor)
- t_o Evaporating temperature (°C)
- t_c Condensing temperature (°C)
- Δt_{oh} Suction gas superheat (K)
- t_{oh} Suction gas temperature (°C)

R407C Operating limits

HGX12P / HGX22e / HGX34e
HGX4 / HGX5 / HGX6 / HGX7 / HGX8^①



- Unlimited application range
- Supplementary cooling or reduced suction gas temperature
- Motor version -S- (more powerful motor)

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

① HGX8/2470-4 - HGX8/2830-4 - HGX8/3220-4
Max. evaporating temperature $t_o = 0\text{ °C}$

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

¹⁾ LP = low pressure HP = high pressure

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R407C Notes

Operating limits

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

Restrictions to the operating limits may occur when using the Bock EFC (Electronic Frequency Control). Further explanation see separate brochure "Bock semi-hermetic compressors - Electronic Controls".

Performance data

The performance data for R407C are based on ISO-DIS 9309 (DIN 8928) with a **50 Hz power supply frequency**.

This signifies: **25 °C suction gas temperature without liquid subcooling**. EN 12900 is already valid for Pluscom compressors, HGX4 and HGX8/2470-4 **operating at 50 Hz. 20 °C suction gas temperature without liquid subcooling**.

Evaporation and condensing temperatures are based on the dew point values (saturated vapour conditions).

A comprehensive modification to 20 °C suction gas temperature will follow at a later date.

This results in significant differences compared to specifications with liquid undercooling and/or suction-gas temperatures.

Conversion factor for 60 Hz = 1,2

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

R407C		Performance data										50 Hz	
Type	Cond. temp. °C		Cooling capacity \dot{Q}_0 [W]							Power consumption P_e [kW]			
			Evaporating temperature °C										
			12,5	10	7,5	5	0	-5	-10	-15	-20	-25	
HGX4/465-4	30	Q	52241	47689	43438	39475	32358	27293	21900	17313	13459	10267	
		P	7,84	7,76	7,67	7,56	7,31	7,08	6,58	6,02	5,42	4,78	
HGX4/465-4 S	40	Q	45881	41827	38049	34532	28226	23704	18952	14925	11550	8752	
		P	9,73	9,55	9,36	9,16	8,69	8,14	7,40	6,63	5,84	5,03	
	50	Q	39635	36073	32759	29681	24173	20139	16049	12600	9721	7338	
		P	11,44	11,16	10,86	10,55	9,85	9,12	8,14	7,16	6,17	5,19	
HGX4/555-4	30	Q	62010	56703	51739	47101	38751	31207	25091	19907	15531	11833	
		P	9,36	9,30	9,22	9,12	8,84	8,53	7,92	7,29	6,62	5,87	
HGX4/555-4 S	40	Q	54852	50089	45636	41481	34003	27316	21859	17204	13225	9795	
		P	11,45	11,27	11,07	10,84	10,31	9,88	9,02	8,13	7,19	6,18	
	50	Q	47717	43491	39547	35869	29256	23377	18539	14373	10752	7550	
		P	13,51	13,20	12,86	12,49	11,67	11,13	9,97	8,78	7,52	6,17	
HGX4/650-4	30	Q	73505	67118	61158	55607	45658	36887	29718	23650	18538	14235	
		P	11,85	11,66	11,45	11,22	10,68	10,03	9,28	8,56	7,80	6,95	
HGX4/650-4 S	40	Q	64535	58930	53705	48840	40118	32465	26041	20581	15939	11970	
		P	14,25	13,95	13,62	13,26	12,48	11,59	10,60	9,60	8,54	7,35	
	50	Q	55792	50933	46405	42188	34616	27833	22140	17274	13090	9442	
		P	16,75	16,31	15,84	15,34	14,26	13,13	11,79	10,42	8,96	7,34	
HGX5/725-4	30	Q	82066	75111	68581	62458	51370	41718	33371	26199	20072	14859	
		P	12,72	12,43	12,13	11,81	11,13	10,38	9,57	8,68	7,72	6,69	
HGX5/725-4 S	40	Q	73653	67297	61341	55769	45715	37005	29506	23091	17627	12986	
		P	15,09	14,67	14,23	13,79	12,86	11,88	10,85	9,75	8,60	7,39	
	50	Q	64721	58974	53605	48597	39600	31854	25228	19592	14817	10770	
		P	17,35	16,80	16,24	15,67	14,50	13,30	12,06	10,77	9,44	8,06	
HGX5/830-4	30	Q	94208	86225	78728	71699	58971	47891	38309	30076	23042	17057	
		P	14,60	14,27	13,92	13,56	12,78	11,92	10,99	9,97	8,87	7,68	
HGX5/830-4 S	40	Q	84551	77254	70417	64021	52480	42480	33872	26507	20235	14907	
		P	17,32	16,84	16,34	15,83	14,76	13,64	12,45	11,20	9,88	8,48	
	50	Q	74298	67700	61536	55787	45459	36567	28961	22491	17009	12364	
		P	19,92	19,28	18,64	17,99	16,65	15,27	13,84	12,37	10,84	9,25	
HGX5/945-4	30	Q	107188	98104	89575	81578	67096	54489	43587	34219	26216	19407	
		P	16,61	16,23	15,84	15,43	14,54	13,56	12,50	11,34	10,09	8,74	
HGX5/945-4 S	40	Q	96200	87898	80118	72842	59710	48332	38539	30159	23023	16961	
		P	19,71	19,16	18,59	18,01	16,80	15,52	14,17	12,74	11,24	9,65	
	50	Q	84534	77027	70014	63473	51722	41605	32951	25590	19352	14068	
		P	22,66	21,94	21,21	20,46	18,94	17,37	15,75	14,07	12,33	10,53	
HGX6/1080-4	30	Q	122447	112071	102327	93191	76648	62246	49792	39091	29948	22170	
		P	18,97	18,55	18,10	17,62	16,61	15,49	14,28	12,96	11,53	9,98	
HGX6/1080-4 S	40	Q	109895	100411	91524	83211	68210	55213	44025	34453	26301	19376	
		P	22,51	21,88	21,24	20,57	19,19	17,72	16,18	14,55	12,84	11,02	
	50	Q	96568	87993	79981	72509	59085	47528	37642	29233	22107	16070	
		P	25,89	25,06	24,23	23,38	21,64	19,85	17,99	16,08	14,09	12,03	
HGX6/1240-4	30	Q	140564	128652	117467	106980	87989	71456	57159	44875	34379	25450	
		P	21,78	20,23	20,77	20,23	19,06	17,79	16,39	14,88	13,23	11,46	
HGX6/1240-4 S	40	Q	25450	115267	105066	95523	78303	63382	50539	39550	30193	22243	
		P	11,46	25,12	24,38	23,61	22,02	20,35	18,58	16,71	14,74	12,65	
	50	Q	110857	101013	91815	83238	67828	54560	43211	33558	2538	18448	
		P	29,72	28,77	27,81	26,84	24,84	22,78	20,66	18,45	16,17	13,81	
HGX6/1410-4	30	Q	159931	146378	133651	121719	100112	81301	65035	51058	39116	28957	
		P	24,78	24,22	23,64	23,02	21,69	20,24	18,65	16,92	15,05	13,03	
HGX6/1410-4 S	40	Q	143537	131149	119452	108684	89091	72115	57503	45000	34352	25307	
		P	29,40	28,58	27,74	26,87	25,06	23,15	21,14	19,01	16,77	14,4	
	50	Q	126130	114930	104466	94706	77173	62077	49165	38182	28875	20990	
		P	33,81	32,73	31,64	30,53	28,26	25,92	23,50	21,00	18,40	15,71	
HGX7/1620-4	30	Q	176654	161203	146809	133424	109484	88991	71553	56778	44276	33654	
		P	28,74	28,45	28,06	27,56	26,30	24,73	22,92	20,92	18,79	16,61	
HGX7/1620-4 S	40	Q	156630	142783	129901	117934	96552	78246	62623	49292	37862	27940	
		P	35,77	34,91	33,96	32,93	30,69	28,23	25,62	22,93	20,21	17,53	
	50	Q	136448	124231	112886	102364	83592	67524	53768	41933	31626	22457	
		P	42,12	40,70	39,22	37,69	34,51	31,21	27,86	24,53	21,26	18,13	
HGX7/1860-4	30	Q	202792	185054	168531	153166	125683	102158	82139	65179	50827	38633	
		P	32,99	32,66	32,21	31,64	30,19	28,39	26,31	24,01	21,57	19,07	
HGX7/1860-4 S	40	Q	179805	163909	149121	135384	110838	89823	71888	56585	43464	32074	
		P	41,07	40,07	38,98	37,81	35,23	32,40	29,41	26,32	23,20	20,13	
	50	Q	156636	142612	129589	117510	95960	77515	61724	48137	36305	25779	
		P	48,35	46,72	45,03	43,27	39,61	35,83	31,99	28,15	24,41	20,82	

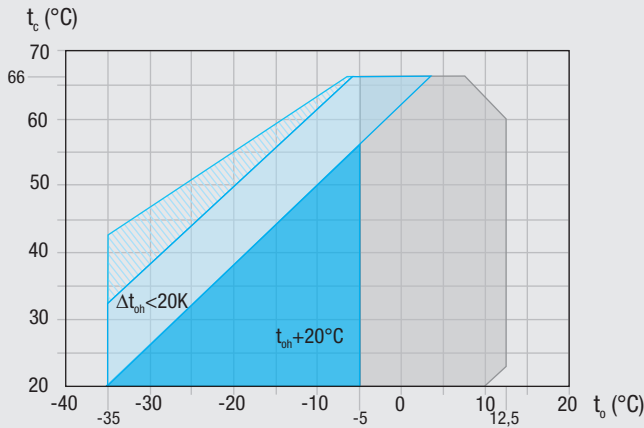
Relating to 25 °C suction gas temperature (HGX4 to 20 °C suction gas temperature) without liquid subcooling

Motor version -S- (more powerful motor)

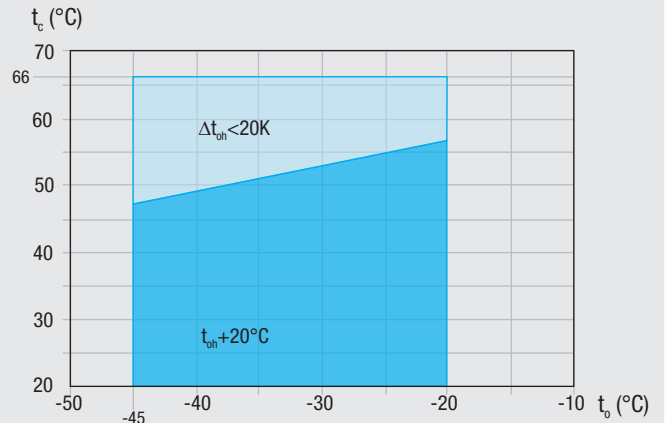
Supplementary cooling or reduced suction gas temp.

R22 Operating limits

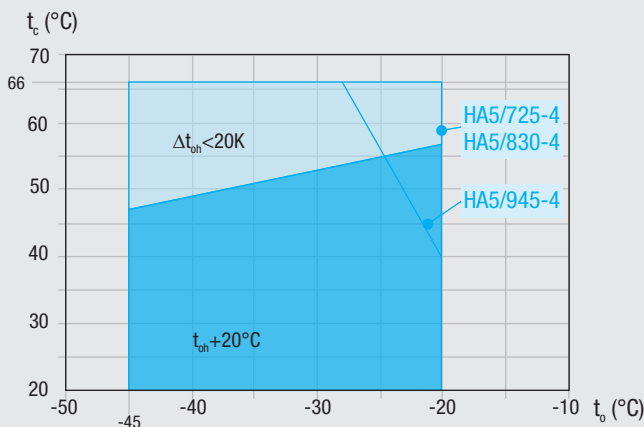
HG12P / HG22e / HG34e /
HG4 / HG5 / HG6^① / HG7 / HG8^②



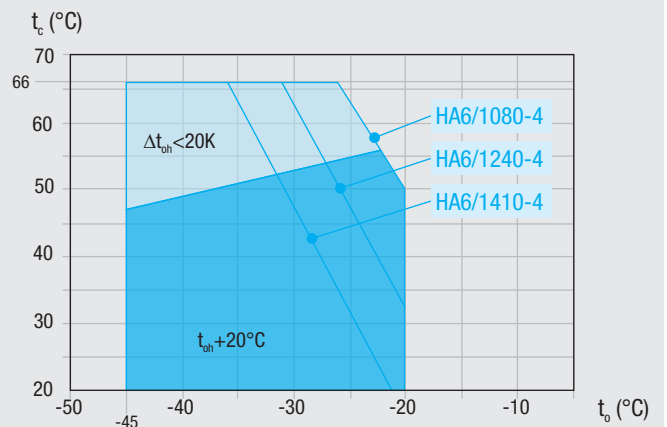
HA12P / HA22P / HA34P / HA4



HA5



HA6



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

¹⁾ LP = low pressure HP = high pressure

- ① HG7 „Motor version -S-“
in the evaporation range of $t_o = 5\text{ °C}$ bis $12,5\text{ °C}$
limited condensing temperature up to $t_c = 50\text{ °C}$
- ② HG8/2830-4
max. evaporating temperature $t_o = 0\text{ °C}$
HG8/2470-4 S
in the evaporation range of $t_o = 7\text{ °C}$ bis $12,5\text{ °C}$
limited condensing temperature up to $t_c = 55\text{ °C}$
HG8/3220-4 S
max. evaporating temperature $t_o = 5\text{ °C}$

- Unlimited application range
- HG Supplementary cooling or red. suction gas temp.
-HA reduced suction gas temperature
- Supplementary cooling and reduced suction gas temperature
- Motor version -S- (more powerful motor)

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

R22		Performance data												50 Hz		
Type	Cond. temp. °C	Q	Cooling capacity \dot{Q}_o [W]										Power consumption P_e [kW]			
			Evaporating temperature °C													
			12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30	-35	-45	
HG4/465-4 HG4/465-4 S	30	Q	56368	52042	47946	44073	36965	30657	25090	20203	15935	12226	9016	6244		
		P	6,99	6,93	6,86	6,80	6,64	6,46	6,24	5,98	5,66	5,28	4,83	4,29		
	40	Q	51425	47427	43647	40077	33537	27748	22649	18178	14277	10884	7939	5382		
P		8,92	8,77	8,61	8,45	8,11	7,74	7,33	6,88	6,37	5,80	5,15	4,42			
HG4/465-4 S	30	Q	45657	42026	38601	35374	29481	24288	19734	15759	12303	9304				
		P	10,92	10,66	10,39	10,11	9,55	8,96	8,33	7,66	6,92	6,13				
	40	Q									16459	12893	9840	7251	5074	
P										5,74	5,32	4,83	4,26	3,58		
HG4/555-4 HG4/555-4 S	30	Q	67083	61934	57059	52450	43991	36485	29859	24043	18964	14550	10730	7431		
		P	8,32	8,25	8,17	8,09	7,90	7,69	7,43	7,11	6,74	6,28	5,74	5,11		
	40	Q	61200	56442	51943	47695	39912	33023	26954	21634	16991	12953	9449	6405		
P		10,62	10,43	10,25	10,05	9,65	9,21	8,72	8,18	7,58	6,90	6,13	5,27			
HA4/555-4	30	Q	54335	50015	45939	42098	35085	28905	23485	18755	14641	11072				
		P	13,00	12,68	12,36	12,04	11,37	10,67	9,92	9,11	8,24	7,29				
	40	Q									19587	15343	11711	8630	6039	
P										6,83	6,33	5,75	5,07	4,26		
HG4/650-4 HG4/650-4 S	30	Q	78729	72686	66965	61556	51628	42819	35043	28217	22256	17076	12593	8721		
		P	9,77	9,68	9,59	9,49	9,28	9,02	8,72	8,35	7,90	7,37	6,74	6,00		
	40	Q	71825	66241	60961	55975	46842	38756	31633	25390	19941	15202	11089	7518		
P		12,46	12,25	12,03	11,80	11,32	10,81	10,24	9,60	8,89	8,09	7,19	6,18			
HA4/650-4	30	Q	63768	58698	53914	49406	41176	33923	27562	22011	17183	12995				
		P	15,25	14,88	14,51	14,13	13,34	12,52	11,64	10,69	9,67	8,56				
	40	Q									22988	18007	13744	10128	7087	
P										8,01	7,43	6,75	5,95	5,00		
HG5/725-4 HG5/725-4 S	30	Q	87633	80907	74539	68518	57467	47662	39007	31409	24774	19008	14017	9708		
		P	10,87	10,77	10,67	10,56	10,33	10,04	9,70	9,29	8,80	8,21	7,50	6,68		
	40	Q	79948	73733	67856	62306	52139	43139	35211	28261	22196	16921	12343	8368		
P		13,87	13,63	13,39	13,13	12,60	12,03	11,39	10,69	9,90	9,01	8,01	6,88			
HA5/725-4	30	Q	70981	65337	60012	54994	45833	37759	30680	24500	19126	14464				
		P	16,98	16,57	16,15	15,72	14,85	13,93	12,95	11,90	10,76	9,52				
	40	Q									25631	20086	15342	11316	7926	
P										8,94	8,29	7,52	6,62	5,56		
HG5/830-4 HG5/830-4 S	30	Q	100599	92878	85568	78656	65970	54713	44778	36056	28439	21820	16091	11144		
		P	12,48	12,37	12,25	12,13	11,85	11,53	11,14	10,67	10,10	9,42	8,61	7,66		
	40	Q	91777	84642	77896	71525	59854	49522	40421	32443	25480	19425	14169	9606		
P		15,93	15,65	15,37	15,08	14,47	13,81	13,08	12,27	11,36	10,34	9,19	7,90			
HA5/830-4	30	Q	81483	75004	68891	63131	52614	43346	35219	28125	21956	16605				
		P	19,49	19,02	18,54	18,05	17,05	15,99	14,87	13,66	12,36	10,93				
	40	Q									29343	22994	17562	12953	9072	
P										10,24	9,49	8,61	7,58	6,37		
HG5/945-4 HG5/945-4 S	30	Q	114460	105675	97357	89493	75059	62252	50947	41024	32358	24827	18308	12679		
		P	14,20	14,07	13,94	13,80	13,49	13,12	12,67	12,14	11,49	10,72	9,80	8,72		
	40	Q	104422	96304	88628	81379	68100	56345	45990	36912	28991	22101	16122	10929		
P		18,12	17,80	17,48	17,15	16,46	15,71	14,88	13,96	12,93	11,77	10,46	8,98			
HG5/945-4 S	30	Q	92709	85338	78383	71829	59863	49318	40072	32000	24981	18892				
		P	22,17	21,64	21,09	20,54	19,40	18,20	16,92	15,55	14,06	12,44				

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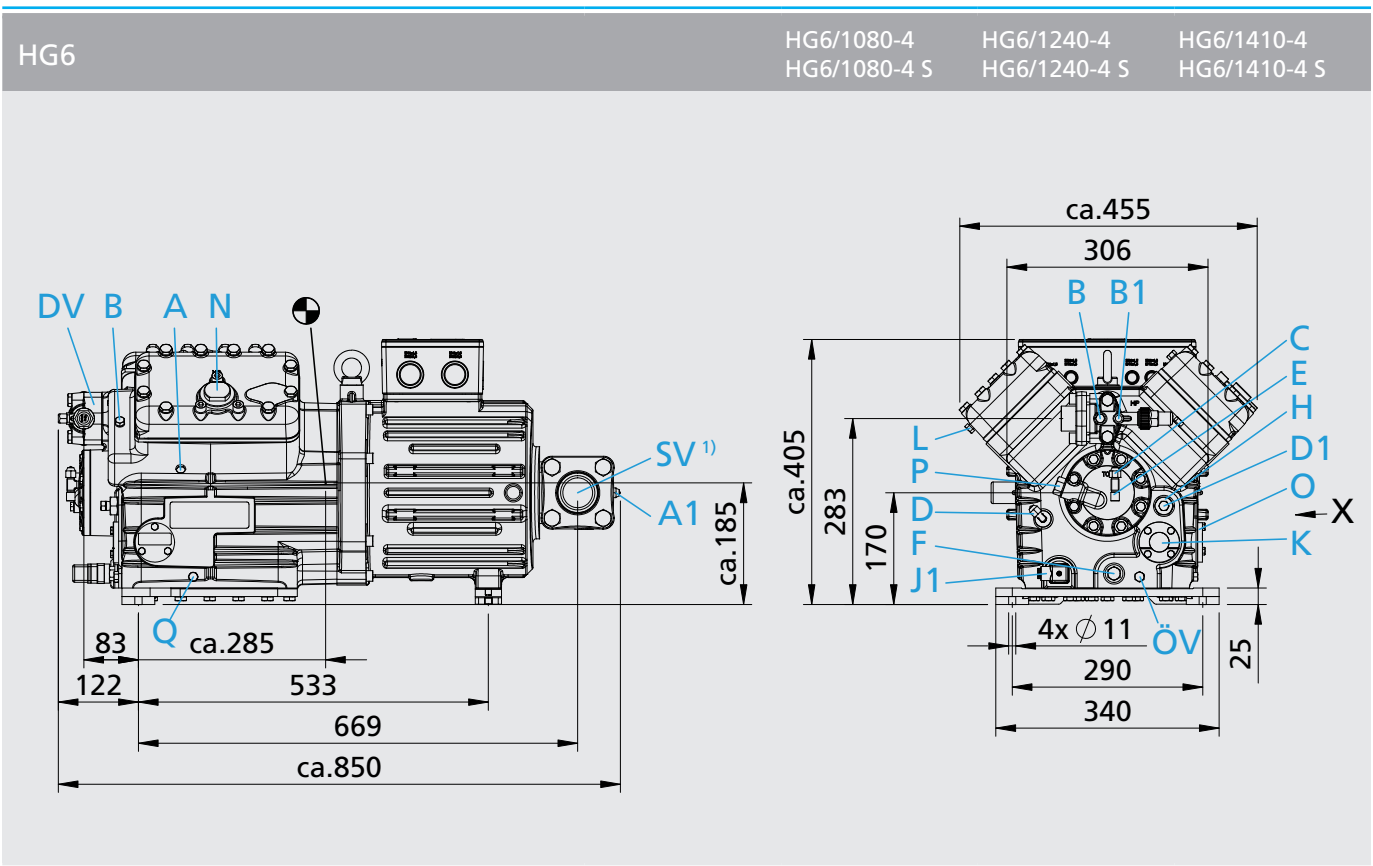
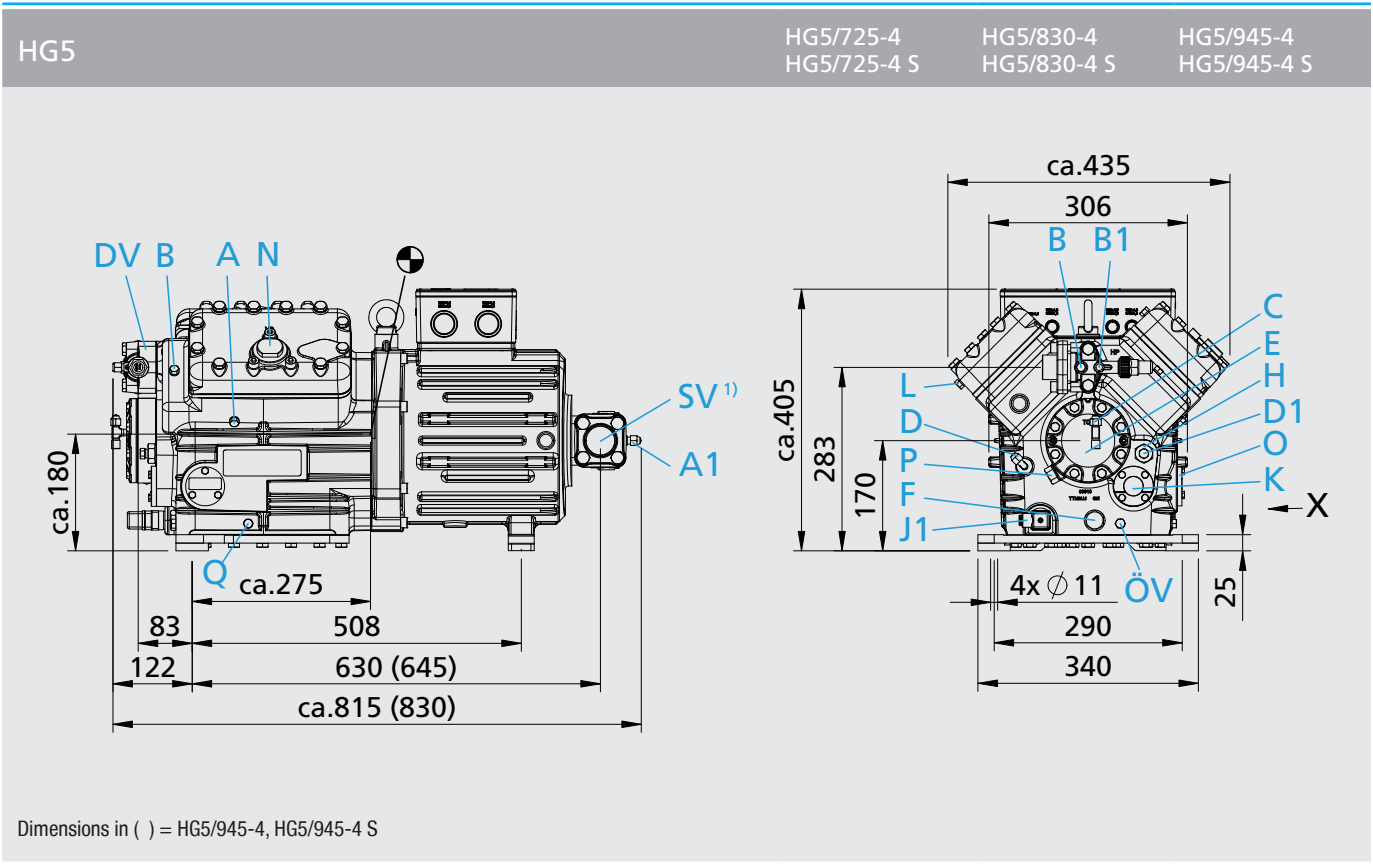
HG Supplementary cooling or red. suction gas temp.
 HA reduced suction gas temp.

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

Motor version -S- (more powerful motor)

Supplementary cooling and red. suction gas temp.

HG	Number of cylinders	Displacement 50 / 60 Hz (1450/1740 rpm)	Electrical data				Weight	Connections ⑥		Oil charge
			Voltage	Max. working current	Max. power consumption	Starting current (rotor locked)		Discharge line DV	Suction line SV	
Type		m³/h		A	kW	A				
HG12P/60-4 S	2	5,40 / 6,40	③	6,8 / 3,9	2,2	40 / 23	48,0	12 l 1/2	16 l 5/8	0,8
HG12P/75-4	2	6,70 / 8,10	③	7,1 / 4,1	2,3	40 / 23	48,0	12 l 1/2	16 l 5/8	0,8
HG12P/75-4 S	2	6,70 / 8,10	③	8,0 / 4,6	2,6	43 / 25	49,0	12 l 1/2	16 l 5/8	0,8
HG12P/90-4	2	8,00 / 9,60	③	8,5 / 4,9	2,8	43 / 25	49,0	12 l 1/2	16 l 5/8	0,8
HG12P/90-4 S	2	8,00 / 9,60	③	8,8 / 5,1	2,9	45 / 26	49,0	12 l 1/2	16 l 5/8	0,8
HG12P/110-4	2	9,40 / 11,30	③	9,2 / 5,3	3,1	43 / 25	49,0	12 l 1/2	16 l 5/8	0,8
HG12P/110-4 S	2	9,40 / 11,30	③	10,6 / 6,1	3,6	45 / 26	49,0	12 l 1/2	16 l 5/8	0,8
HG22e/125-4	2	11,10 / 13,30	③	9,3 / 5,4	3,0	69 / 40	74,0	16 l 5/8	22 l 7/8	1,0
HG22e/125-4 S	2	11,10 / 13,30	③	10,8 / 6,2	3,6	69 / 40	74,0	16 l 5/8	22 l 7/8	1,0
HG22e/160-4	2	13,70 / 16,40	③	11,1 / 6,4	3,7	69 / 40	74,0	16 l 5/8	22 l 7/8	1,0
HG22e/160-4 S	2	13,70 / 16,40	③	13,1 / 7,6	4,4	87 / 50	76,0	16 l 5/8	22 l 7/8	1,0
HG22e/190-4	2	16,50 / 19,80	③	13,8 / 8,0	4,8	69 / 40	74,0	16 l 5/8	22 l 7/8	1,0
HG22e/190-4 S	2	16,50 / 19,80	③	16,2 / 9,4	5,6	87 / 50	75,0	16 l 5/8	22 l 7/8	1,0
HG34e/215-4	4	18,80 / 22,60	③	14,0 / 8,1	4,8	87 / 50	92,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/215-4 S	4	18,80 / 22,60	③	18,3 / 10,5	6,0	132 / 76	97,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/255-4	4	22,10 / 26,60	③	17,0 / 9,8	6,0	87 / 50	91,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/255-4 S	4	22,10 / 26,60	③	21,1 / 12,2	7,2	132 / 76	96,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/315-4	4	27,30 / 32,80	③	21,1 / 12,2	7,4	111 / 64	94,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/315-4 S	4	27,30 / 32,80	③	25,5 / 14,7	8,9	132 / 76	97,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/380-4	4	33,10 / 39,70	③	26,1 / 15,1	9,3	111 / 64	93,0	22 l 7/8	28 l 1 1/8	1,3
HG34e/380-4 S	4	33,10 / 39,70	③	31,2 / 18,0	11,1	132 / 76	96,0	22 l 7/8	28 l 1 1/8	1,3
				*PW 1+2		*PW1 / PW 1+2				
HG4/465-4	4	40,50 / 48,60	④	18	11,0	57 / 75	148	28 / 1 1/8	35 / 1 3/8	2,7
HG4/465-4 S	4	40,50 / 48,60	④	27	13,0	82 / 107	151	28 / 1 1/8	35 / 1 3/8	2,7
HG4/555-4	4	48,20 / 57,80	④	27	12,9	82 / 107	150	28 / 1 1/8	35 / 1 3/8	2,7
HG4/555-4 S	4	48,20 / 57,80	④	34	15,2	107 / 140	153	28 / 1 1/8	35 / 1 3/8	2,7
HG4/650-4	4	56,60 / 67,90	④	27	15,7	82 / 107	152	28 / 1 1/8	42 / 1 5/8	2,7
HG4/650-4 S	4	56,60 / 67,90	④	34	18,4	107 / 140	155	28 / 1 1/8	42 / 1 5/8	2,7
HG5/725-4	4	62,90 / 75,50	④	33	16,5	82 / 107	198	28 / 1 1/8	42 / 1 5/8	3,6
HG5/725-4 S	4	62,90 / 75,50	④	37	19,4	107 / 140	201	28 / 1 1/8	42 / 1 5/8	3,6
HG5/830-4	4	72,20 / 86,70	④	33	18,9	82 / 107	197	28 / 1 1/8	42 / 1 5/8	3,6
HG5/830-4 S	4	72,20 / 86,70	④	49	22,3	126 / 160	203	28 / 1 1/8	42 / 1 5/8	3,6
HG5/945-4	4	82,20 / 98,60	④	37	22,6	107 / 140	201	35 / 1 3/8	54 / 2 1/8	3,6
HG5/945-4 S	4	82,20 / 98,60	④	49	28,6	126 / 160	205	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1080-4	4	93,70 / 112,40	④	47	26,3	149 / 189	218	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1080-4 S	4	93,70 / 112,40	④	57	31,0	172 / 212	223	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1240-4	4	107,60 / 129,10	④	57	30,5	172 / 212	222	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1240-4 S	4	107,60 / 129,10	④	71	36,0	204 / 250	224	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1410-4	4	122,40 / 146,90	④	57	35,6	172 / 212	219	35 / 1 3/8	54 / 2 1/8	3,6
HG6/1410-4 S	4	122,40 / 146,90	④	71	42,6	204 / 250	222	35 / 1 3/8	54 / 2 1/8	3,6
HG7/1620-4	6	140,60 / 168,80	⑤	76	38,7	223 / 340	278	42 / 1 5/8	54 / 2 1/8	4,5
HG7/1620-4 S	6	140,60 / 168,80	⑤	83	46,3	268 / 373	299	42 / 1 5/8	54 / 2 1/8	4,5
HG7/1860-4	6	161,40 / 193,70	⑤	83	44,6	268 / 373	296	42 / 1 5/8	54 / 2 1/8	4,5
HG7/1860-4 S	6	161,40 / 193,70	⑤	98	53,3	343 / 494	292	42 / 1 5/8	54 / 2 1/8	4,5
HG7/2110-4	6	183,60 / 220,30	⑤	98	51,2	343 / 494	289	42 / 1 5/8	64 / 2 5/8	4,5
HG7/2110-4 S	6	183,60 / 220,30	⑤	115	60,5	344 / 500	297	42 / 1 5/8	64 / 2 5/8	4,5
HG8/2470-4	8	214,30 / 257,10	⑤	102	60,0	274 / 301	432	54 / 2 1/8	76 / 3 1/8	9,0
HG8/2470-4 S	8	214,30 / 257,10	⑤	155	72,5	475 / 551	432	54 / 2 1/8	76 / 3 1/8	9,0
HG8/2830-4	8	245,90 / 295,10	⑤	155	77,5	475 / 551	429	54 / 2 1/8	76 / 3 1/8	9,0
HG8/2830-4 S	8	245,90 / 295,10	⑤	170	84,5	520 / 605	449	54 / 2 1/8	76 / 3 1/8	9,0
HG8/3220-4	8	279,80 / 335,80	⑤	155	78,3	475 / 551	423	54 / 2 1/8	76 / 3 1/8	9,0
HG8/3220-4 S	8	279,80 / 335,80	⑤	170	94,2	520 / 605	443	54 / 2 1/8	76 / 3 1/8	9,0



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

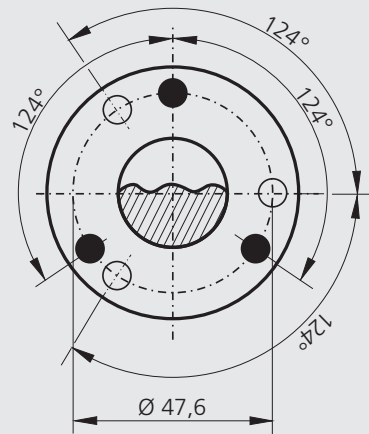
- Connections see page 54
 - Dimensions for anti-vibration pad see page 51
 - Dimensions for view X see page 51

View X

Possibility to connect to oil level regulator

HG4, HG5, HG6, HG7, HG8
HA4, HA5, HA6

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

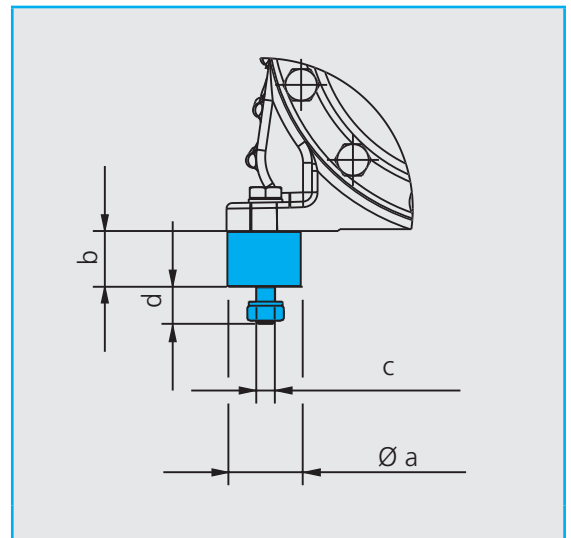


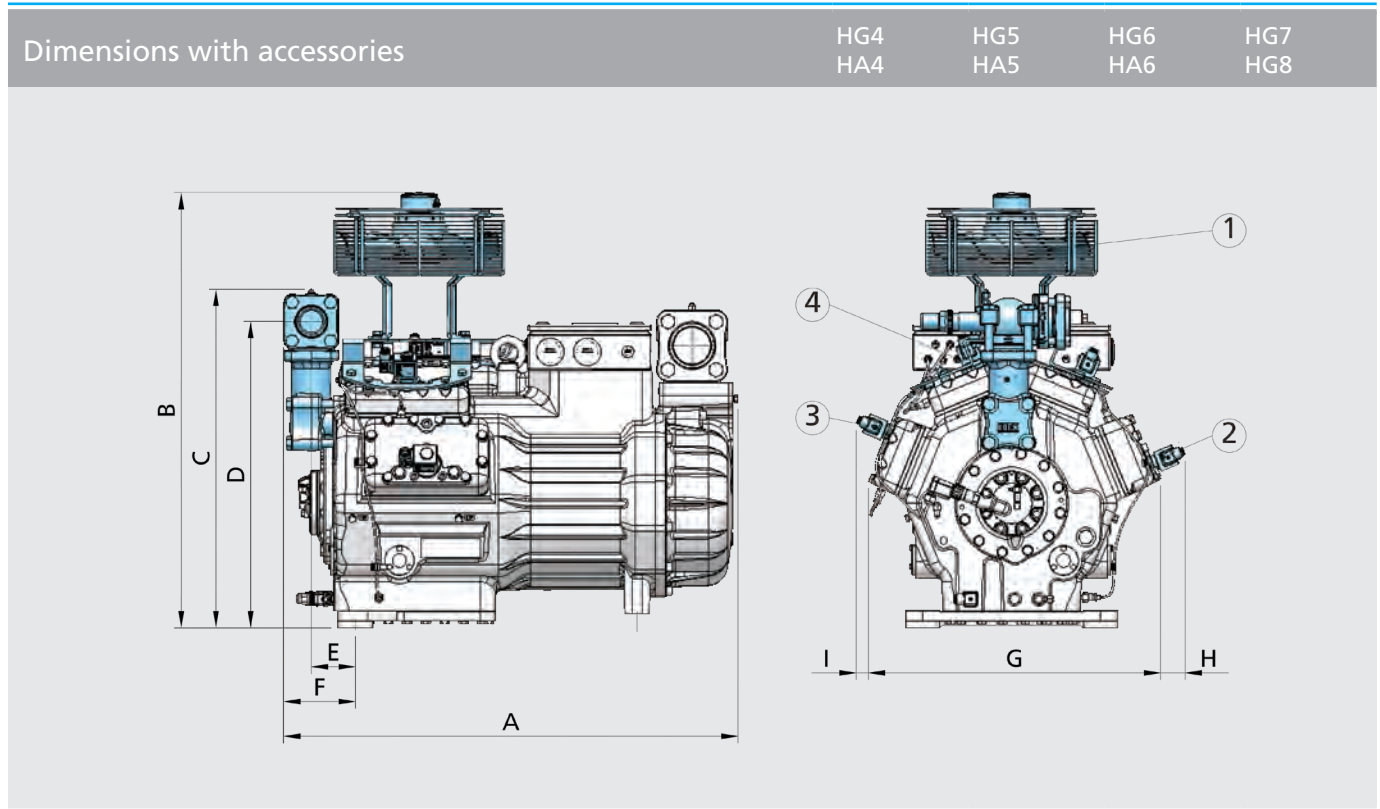
Dimensions in mm

- 1
- 2
- 3
- 4

Dimensions for anti-vibration pad

Type	Ø a mm	b mm	c mm	d mm
HG12P, HA12P	30	30	M8	20
HG22e, HA22P	40	30	M10	20
HG34e, HA34P	40	30	M10	20
HG4, HA4	40	30	M10	20
HG5, HA5	50	30	M10	25
HG6, HA6	50	30	M10	25
HG7	50	30	M10	25
HG8	70	45	M12	37





- ① Additional fan
- ② Capacity regulator
- ③ Start unloader
- ④ Intermediate adapter for discharge line valve

Type	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm
HG4/465, HG4/555	ca. 705	ca. 680	ca. 455	416	91	131	ca. 375	ca. 20	ca. 20
HG4/650	ca. 740	ca. 680	ca. 455	416	91	131	ca. 375	ca. 20	ca. 20
HA4	-	-	-	-	-	-	ca. 400	ca. 5	ca. 5
HG5/725, HG5/830	ca. 835	ca. 730	ca. 465	422	101	141	ca. 440	ca. 30	-
HG5/945	ca. 850	ca. 730	ca. 465	422	101	141	ca. 440	ca. 30	-
HA5	-	-	-	-	-	-	ca. 435	ca. 30	-
HG6	ca. 870	ca. 740	ca. 460	421	101	141	ca. 460	ca. 30	-
HA6	-	-	-	-	-	-	ca. 455	ca. 30	-
HG7	ca. 830	ca. 760	ca. 580	520,5	95	150	ca. 510	ca. 45	ca. 15
HG8	ca. 920	ca. 880	ca. 680	617	90	145	ca. 580	ca. 50	ca. 20

- 1
- 2
- 3
- 4



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