GEA Bock HC Compressors

Semi-hermetic Compressors
for Hydrocarbons

engineering for
a better world

gea.com

Advanced competence, in touch with you

In this brochure we present our current program of semi-hermetic GEA compressors for hydrocarbons.Always close to our customers' market and process requirements, GEA offers the right compressors for refrigeration and air conditioning in all commercial, industrial, and transport sectors.

You will find our semi-hermetic compressors across today's food and beverage industries, spanning the entire cold chain. In addition to many other uses, these compressors are ideally suited for refrigeration in supermarkets and food transport. Likewise, they support state-of-the-art refrigeration and air-conditioning solutions in petrochemical, chemical, pharmaceutical, marine and leisure facility applications.

We develop these compressors as a global refrigeration expert with more than a century of experience. All core components are developed, manufactured, assembled, and tested at our own facilities, always reflecting our enthusiasm for your success. Our worldwide dealer and service network is ready to show you compressors and maintenance solutions for your maximum productivity, wherever you are.

World-leading technology from GEA

GEA is one of the largest suppliers of process technology for the food industry and for a wide range of other industries. As an international technology group, the company focuses on world-leading process solutions and components for sophisticated production processes.

Long-life, energy-efficient GEA solutions ensure both economical savings and reduced ecological footprint, to help you protect the climate and your standing with customers and authorities.

Be inspired by our state-of-the-art products and the entire passion that goes into each of our components.

HC Compressors for Hydrocarbons

Semi-hermetic Compressors for Hydrocarbons

Natural refrigerants are on the advance

For various applications, such as the field of supermarket refrigeration, hydrocarbons have established as another natural alternative besides CO2. The GEA compressors of the hydrocarbon series meet all the requirements of the F-gas regulation. They can be used for the long-term and therefore increase the planning dependability for system manufacturers, users and investors.

Due to the flammability of hydrocarbons the compressor and the equipment has some safety related modifications.

Special features

Based on our current semi-hermetic product range GEA Bock offers now an alternative compressor variant especially for the use with hydrocarbons.

Compressors in HC-design have the following features:

- Durable driving gear
- Thermal protection thermostat (recommended)
- Oil sump heater (neccessary)
- Special oil charge
- Motor protection INT69 G for installation in the switch cabinet

Important notes

We would like to explicitly state that those compressors are a special edition and the compressors filled with hydrocarbons are to be operated by trained specialists only. Please see assembly instructions for additional important instructions. To ensure the safety measures, an additional agreement, hydrocarbons as refrigerant (GEA Bock Art. No. 09996) has to be signed.

F-gas Regulation – HFC on the way out

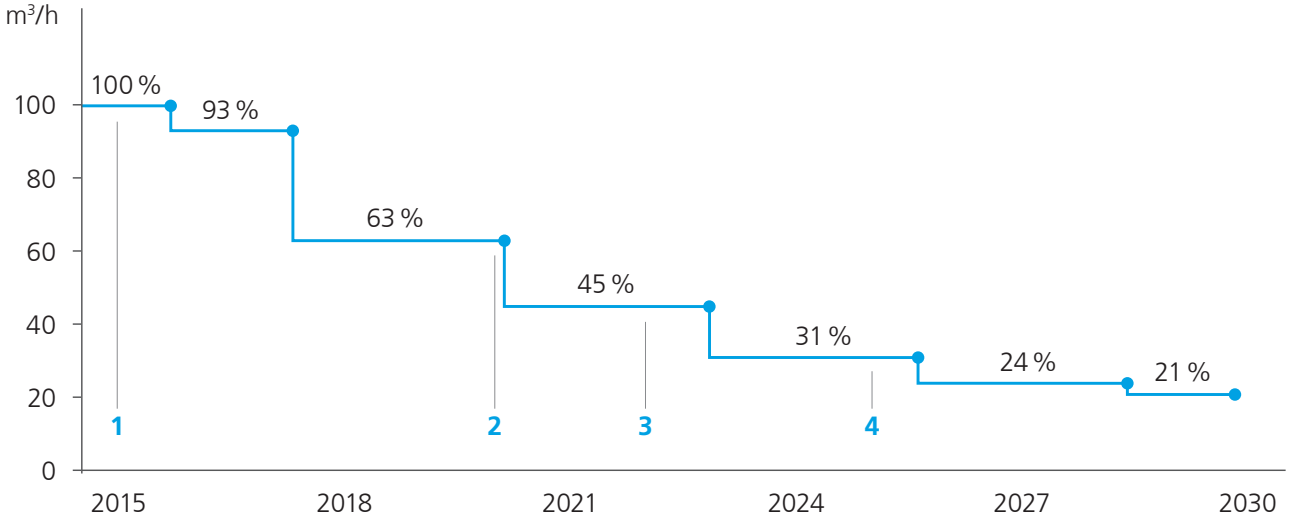
Since 2006 the F-gas Regulation (EC) No 842/2006 has been governing the use of fluorinated hydrocarbons (HFC) in technical refrigeration systems. The reason why emissions into the atmosphere must be kept within limits is that the heat-absorbing properties of HFC represent a cause of the greenhouse effect and global climate warming.

Since the beginning of 2015, the new F-gas Regulation EU 517/2014 is effective. Planners, manufacturers, implementers and operators of refrigeration systems must undergo considerable reorientation. The new directive narrows their choice of applicable refrigerants more than ever, marking a fundamental turn away from refrigerants with a high greenhouse effect.

The goal set for the year 2030 is to reduce emissions of partly fluorinated hydrocarbons (HFC) to a fifth of the average output 2009–2012. Already in the near future, equipment for refrigerants with high greenhouse potential will be banned from the market, and refilling of existing systems will be subjected to restrictions.

As a technology partner for refrigeration, air-conditioning and heating applications GEA offers comprehensive advice and support for your switch to the natural refrigerants ammonia (NH_3), carbon dioxide (CO_2), and hydrocarbons (HC/R290). An extensive portfolio of compressors is available for any task.

PLACING ON THE MARKET PROHIBITIONS



1 2015:
Household refrigeration appliances
(GWP ≥ 150)

2 2020:
Movable room AC systems (hermetically sealed systems)
(GWP ≥ 150);
Stationary refrigeration systems (GWP ≥ 2500),
Prohibited: e.g. R404A, R507
Refrigerators and freezers for commercial use
(hermetically sealed systems) (GWP ≥ 2500)

3 2022:
Multipack centralised commercial refrigeration systems
> 40 kW (GWP ≥ 150) – except primary circuit of
cascaded systems (GWP ≥ 1500)
Refrigerators and freezers for commercial use
(hermetically sealed systems) (GWP ≥ 150)

4 2025:
Single-Split AC systems < 3 kg charge
(GWP ≥ 750)

Type key – Compressors for hydrocarbons

HG 5 6 e – 1155 – 4 S HC

- HC: Hydrocarbons
- S: Motor variant [3]
- 4: Number of poles
- 1155: Swept volume
- e: e Series [2]
- 6: Number of cylinders
- 5: Size
- HG: Series [1]

[1] HG = Hermetic Gas-cooled (suction-gas-cooled)

[2] = Additional marker for e-series compressors

[3] S = More powerful motor, e. g. air-conditioning applications

Overview hydrocarbons

Refrigerant	Composition (Formula)	Name	ODP [R11=1,0]	GWP $_{(100a)}$ [2) 3)] [CO_2=1,0]	Safety group [1)]	Critical value [kg/m³] [2)]
R290	C_3H_8	Propan	0	3	A3	0,008
R1270	C_3H_6	Propylen	0	3	A3	0,008

[1] Classification according to EN378-1or ASHRAE 34 [2] According to EN378-1 [3] Time horizon 100 years – according to IPCC II (1996), Basis for Kyoto protocol

Further hydrocarbons on request.

DIFFERENCES TO A STANDARD COMPRESSOR

1 Oil sump heater (neccessary)

2 Thermal protection thermostat (recommended)

3 Special oil charge

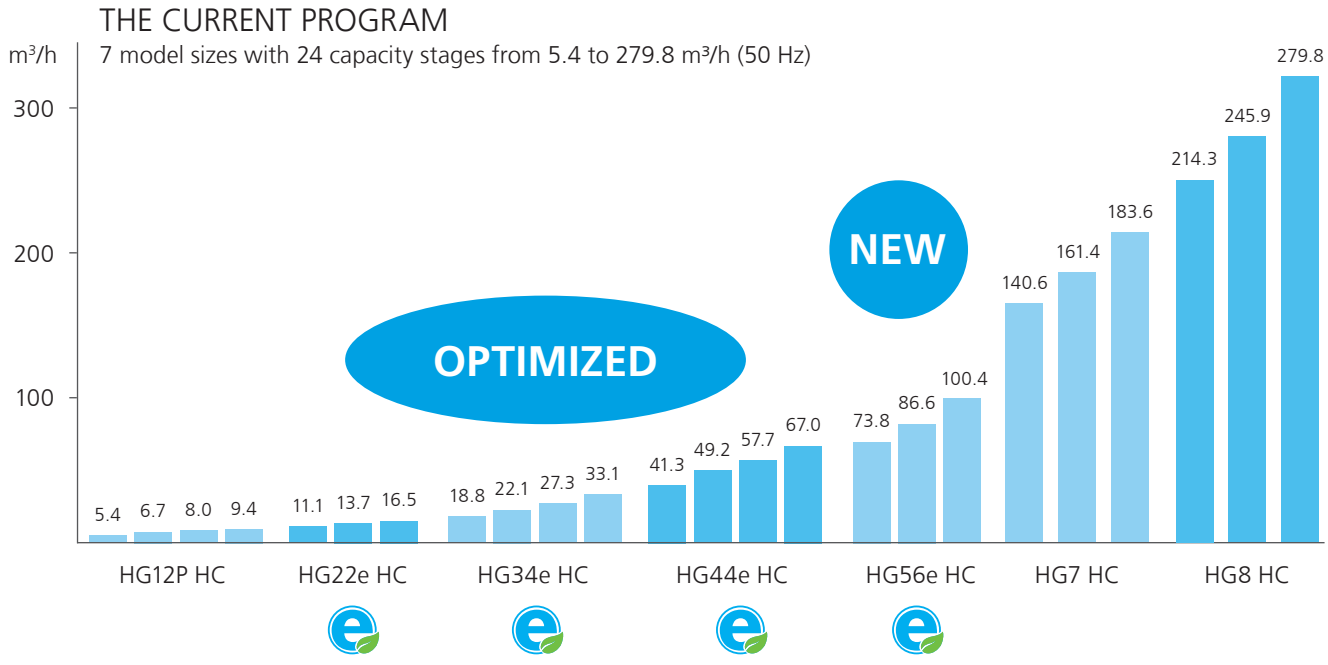
4 Durable driving gear for demanding applications with hydrocarbons

5 Electronic motor protection INT69 G enclosed for installation in the switch cabinet

Available models

Model		Displacement 50 Hz (1.450 rpm)
HG12P/...	60-4 S HC	5,4 m³/h
	75-4 HC, 75-4 S HC	6,7 m³/h
	90-4 HC, 90-4 S HC	8,0 m³/h
	110-4 HC, 110-4 S HC	9,4 m³/h
HG22e/...	125-4 HC, 125-4 S HC	11,1 m³/h
	160-4 HC, 160-4 S HC	13,7 m³/h
	190-4 HC, 190-4 S HC	16,5 m³/h
HG34e/...	215-4 HC, 215-4 S HC	18,8 m³/h
	255-4 HC, 255-4 S HC	22,1 m³/h
	315-4 HC, 315-4 S HC	27,3 m³/h
	380-4 HC, 380-4 S HC	33,1 m³/h

Model		Displacement 50 Hz (1.450 rpm)
HG44e/...	475-4 HC, 475-4 S HC	41,3 m³/h
	565-4 HC, 565-4 S HC	49,2 m³/h
	665-4 HC, 665-4 S HC	57,7 m³/h
	770-4 HC, 770-4 S HC	67,0 m³/h
HG56e/...	850-4 HC, 850-4 S HC	73,8 m³/h
	995-4 HC, 995-4 S HC	86,6 m³/h
	1155-4 HC, 1155-4 S HC	100,4 m³/h
HG7/...	1620-4 HC, 1620-4 S HC	140,6 m³/h
	1860-4 HC, 1860-4 S HC	161,4 m³/h
	2110-4 HC, 2110-4 S HC	183,6 m³/h
HG8/...	2470-4 S HC	214,3 m³/h
	2830-4 HC, 2830-4 S HC	245,9 m³/h
	3220-4 HC, 3220-4 S HC	279,8 m³/h

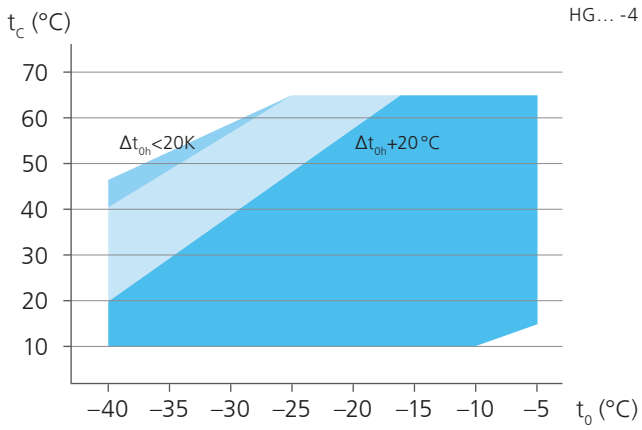


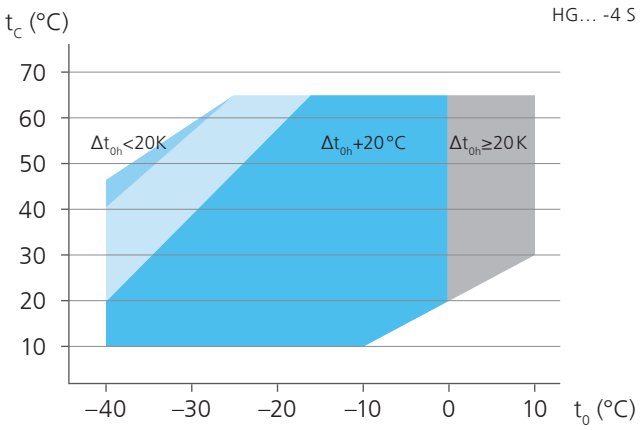
With technical optimizations we continuously improve the energy consumption of our compressors. The compressors of the e-series set a new standard when it comes to motor-efficiency, gas flow and efficiency of the valve system. All this results in a higher refrigerating capacity of the compressor at a lower drive power.

Additionally, **ATEX compressors** are available that can be operated with hydrocarbons as well. You can find more information on these compressors in our ATEX catalog.

OPERATING LIMITS

R290 Operating Limits





Diagrams for other areas available on request

The use of other hydrocarbons is permitted only following prior written approval from GEA Bock

t_O Evaporating temperature (°C)
t_C Condensing temperature (°C)
Δt_{Oh} Suction gas superheat (K)
t_{Oh} Suction gas temperature (°C)

- Required minimum superheat Δt_{Oh} = 20 K
- Required minimum superheat Δt_{Oh} = 20 K, the suction gas temperature has to be adapted accordingly
- Supplementary cooling or reduced suction gas temperature (Δt_{Oh} < 20 K)
- Supplementary cooling and reduced suction gas temperature (Δt_{Oh} < 20 K)

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

[1] LP = low pressure, HP = high pressure

Notes

Operating limits

Compressor operation is possible within the limits shown on the application diagrams. Please note the coloured areas. the dark blue and gray application area a minimum superheat Δt_{Oh} = 20 K must be applied. If necessary there must be planned an internal heat exchanger IHX. Compressor application limits should not be chosen for design purposes or continuous operation.

Performance data

The performance data are based on 20 °C suction gas superheat without liquid subcooling, at 50 Hz power supply frequency. These are computed, preliminary values. Variations cannot be excluded. Please follow the notes to the suction gas superheat.

Conversion factor for 60 Hz = 1,2

PERFORMANCE DATA

R290 **50 Hz**

Type	Displacement m³/h (50 Hz)	Cooling capacity $\dot{Q}_0$ [W]						Drive power P_e [kW]		
		Deep freezing			Normal cooling			Air-conditioning		
		–35 °C Evaporating temp. +40 °C Condensing temp.			–10 °C Evaporating temp. +45 °C Condensing temp.			+5 °C Evaporating temp. +50 °C Condensing temp.		
		$\dot{Q}_0$	P_e	COP	$\dot{Q}_0$	P_e	COP	$\dot{Q}_0$	P_e	COP
HG12P/60-4 S HC	5,4	725	0,586	1,24	2360	0,997	2,37	3810	1,21	3,15
HG12P/75-4 HC	6,7	911	0,724	1,26	2830	1,22	2,32			
HG12P/75-4 S HC	6,7	885	0,727	1,22	2900	1,23	2,36	4670	1,50	3,11
HG12P/90-4 HC	8,0	1150	0,843	1,36	3400	1,46	2,33			
HG12P/90-4 S HC	8,0	1120	0,835	1,34	3430	1,41	2,43	5540	1,73	3,20
HG12P/110-4 HC	9,4	1370	0,991	1,38	4000	1,72	2,33			
HG12P/110-4 S HC	9,4	1340	0,982	1,36	4050	1,66	2,44	6500	2,03	3,20
HG22e/125-4 HC	11,1	1430	0,923	1,55	4880	2,07	2,36			
HG22e/125-4 S HC	11,1	1400	0,963	1,45	4910	2,04	2,41	8170	2,68	3,05
HG22e/160-4 HC	13,7	1820	1,19	1,53	6090	2,63	2,32			
HG22e/160-4 S HC	13,7	1780	1,21	1,47	6090	2,56	2,38	10200	3,35	3,04
HG22e/190-4 HC	16,5	2340	1,53	1,53	7510	3,20	2,35			
HG22e/190-4 S HC	16,5	2320	1,54	1,51	7610	3,12	2,44	12500	4,06	3,08
HG34e/215-4 HC	18,8	2310	1,56	1,48	8140	3,45	2,36			
HG34e/215-4 S HC	18,8	2210	1,60	1,38	8210	3,37	2,44	13700	4,38	3,13
HG34e/255-4 HC	22,1	2840	1,87	1,52	9700	4,09	2,37			
HG34e/255-4 S HC	22,1	2780	1,92	1,45	9780	3,99	2,45	16200	5,18	3,13
HG34e/315-4 HC	27,3	3590	2,47	1,45	12200	5,09	2,40			
HG34e/315-4 S HC	27,3	3530	2,50	1,41	12300	4,95	2,48	20100	6,32	3,18
HG34e/380-4 HC	33,1	4630	3,21	1,44	15100	6,24	2,42			
HG34e/380-4 S HC	33,1	4550	3,19	1,43	15300	6,16	2,48	25000	7,83	3,19
HG44e/475-4 HC	41,3	5540	3,77	1,47	18500	7,71	2,40			
HG44e/475-4 S HC	41,3	5380	3,84	1,40	18600	7,23	2,57	30700	9,02	3,40
HG44e/565-4 HC	49,2	5950	4,11	1,45	21300	8,72	2,44			
HG44e/565-4 S HC	49,2	5910	4,24	1,39	21500	8,42	2,55	35700	10,6	3,37
HG44e/665-4 HC	57,7	7420	5,15	1,44	25500	10,5	2,43			
HG44e/665-4 S HC	57,7	7200	5,24	1,37	25600	10,0	2,56	42100	12,5	3,37
HG44e/770-4 HC	67,0	8590	6,02	1,43	30000	11,6	2,59			
HG44e/770-4 S HC	67,0	8590	6,02	1,43	30000	11,6	2,59	49500	14,6	3,39

The performance data are based on 20 °C suction gas superheat without liquid subcooling, at 50 Hz power supply frequency. These are computed, preliminary values. Variations cannot be excluded. Please observe the following marking notes:

Supplementary cooling or red. suction gas temperature

Adjustment of the suction gas temperature on t_{0h} =25 °C necessary (to comply with the required minimum superheat Δt_{oh} = 20 K)

PERFORMANCE DATA

R290 **50 Hz**

Type	Displacement m³/h (50 Hz)	Cooling capacity $\dot{Q}_0$ [W]									Drive power P_e [kW]
		Deep freezing			Normal cooling			Air-conditioning			
		–35 °C Evaporating temp. +40 °C Condensing temp.			–10 °C Evaporating temp. +45 °C Condensing temp.			+5 °C Evaporating temp. +50 °C Condensing temp.			
		$\dot{Q}_0$	P_e	COP	$\dot{Q}_0$	P_e	COP	$\dot{Q}_0$	P_e	COP	
HG56e/850-4 HC	73,8	10600	7,31	1,45	33900	13,6	2,49				
HG56e/850-4 S HC	73,8	9850	7,07	1,39	33700	13,0	2,59	55600	16,3	3,41	
HG56e/995-4 HC	86,6	12600	8,74	1,44	40100	16,3	2,46				
HG56e/995-4 S HC	86,6	12200	8,46	1,44	40000	15,4	2,60	65500	19,2	3,41	
HG56e/1155-4 HC	100,4	13300	9,57	1,39	45000	18,0	2,50				
HG56e/1155-4 S HC	100,4	12200	9,09	1,34	44700	17,3	2,58	74000	21,7	3,41	
HG7/1620-4 HC	140,6	19700	15,6	1,26	63300	27,5	2,30				
HG7/1620-4 S HC	140,6	18200	14,6	1,25	62800	26,0	2,42	103000	32,3	3,19	
HG7/1860-4 HC	161,4	23000	17,8	1,29	72800	31,6	2,30				
HG7/1860-4 S HC	161,4	21200	16,6	1,28	72700	29,8	2,44	120000	37,1	3,23	
HG7/2110-4 HC	183,6	26500	20,4	1,30	83000	35,9	2,31				
HG7/2110-4 S HC	183,6	24500	18,9	1,30	82500	33,9	2,43	135000	42,2	3,20	
HG8/2470-4 S HC	214,3	27300	23,3	1,17	95500	41,7	2,29	157000	51,7	3,04	
HG8/2830-4 HC	245,9	34600	28,5	1,21	111000	50,6	2,19				
HG8/2830-4 S HC	245,9	32700	26,6	1,23	111000	47,8	2,32	181000	59,5	3,04	
HG8/3220-4 HC	279,8	39800	32,6	1,22	127000	57,4	2,21				
HG8/3220-4 S HC	279,8	36900	30,3	1,22	126000	54,3	2,32	206000	67,5	3,05	

The performance data are based on 20 °C suction gas superheat without liquid subcooling, at 50 Hz power supply frequency. These are computed, preliminary values. Variations cannot be excluded. Please observe the following marking notes:

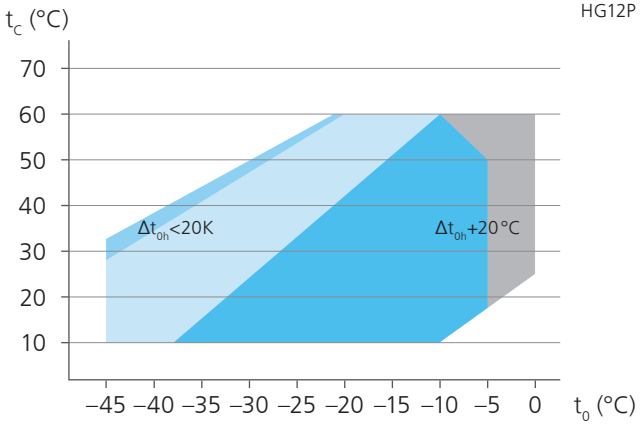
Supplementary cooling or red. suction gas temperature

Adjustment of the suction gas temperature on t_{0h} =25 °C necessary (to comply with the required minimum superheat Δt_{oh} = 20 K)

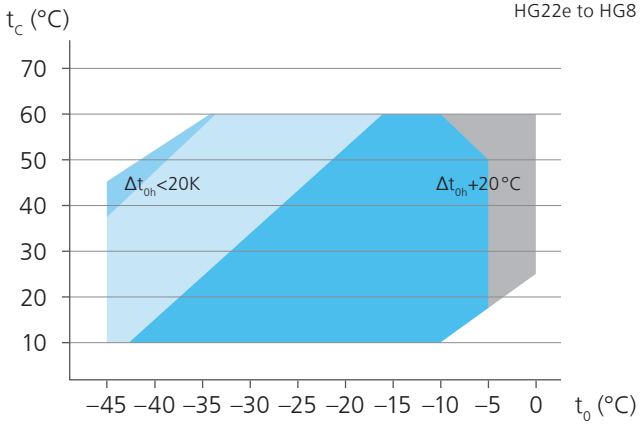
OPERATING LIMITS

R1270 Operating Limits

HG12P



HG22e to HG8



Diagrams for other areas available on request

The use of other hydrocarbons is permitted only following prior written approval from GEA Bock

t_0 Evaporating temperature (°C)
t_C Condensing temperature (°C)
Δt_{Oh} Suction gas superheat (K)
t_{Oh} Suction gas temperature (°C)

- Required minimum superheat Δt_{Oh} = 20 K
- Required minimum superheat Δt_{Oh} = 20 K, the suction gas temperature has to be adapted accordingly
- Supplementary cooling or reduced suction gas temperature (Δt_{Oh} < 20 K)
- Supplementary cooling and reduced suction gas temperature (Δt_{Oh} < 20 K)

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

[1] LP = low pressure, HP = high pressure

Notes

Operating limits

Compressor operation is possible within the limits shown on the application diagrams. Please note the coloured areas. the dark blue and gray application area a minimum superheat Δt_{Oh} = 20 K must be applied. If necessary there must be planned an internal heat exchanger IHX. Compressor application limits should not be chosen for design purposes or continuous operation.

Performance data

The performance data are based on 20 °C suction gas superheat without liquid subcooling, at 50 Hz power supply frequency. These are computed, preliminary values. Variations cannot be excluded. Please follow the notes to the suction gas superheat.

Conversion factor for 60 Hz = 1,2

PERFORMANCE DATA

R290 — **50 Hz**

Type	Displacement m³/h (50 Hz)	Cooling capacity $\dot{Q}_0$ [W]						Drive power P_e [kW]
		Deep freezing –35 °C Evaporating temp. +40 °C Condensing temp.			Normal cooling –10 °C Evaporating temp. +45 °C Condensing temp.			
		$\dot{Q}_0$	P_e	COP	$\dot{Q}_0$	P_e	COP	
HG12P/60-4 S HC	5,4	925	0,794	1,16	2790	1,32	2,11	
HG12P/75-4 HC	6,7	1210	1,000	1,21	3470	1,66	2,09	
HG12P/75-4 S HC	6,7	1160	0,992	1,17	3460	1,64	2,11	
HG12P/90-4 HC	8,0	1420	1,15	1,23	4150	1,97	2,11	
HG12P/90-4 S HC	8,0	1380	1,17	1,18	4140	1,95	2,12	
HG12P/110-4 HC	9,4	1670	1,38	1,21	4870	2,32	2,10	
HG12P/110-4 S HC	9,4	1630	1,37	1,19	4850	2,30	2,11	
HG22e/125-4 HC	11,1	1960	1,32	1,48	5960	2,56	2,33	
HG22e/125-4 S HC	11,1	1980	1,36	1,46	5970	2,52	2,37	
HG22e/160-4 HC	13,7	2470	1,69	1,46	7420	3,25	2,28	
HG22e/160-4 S HC	13,7	2480	1,70	1,46	7450	3,17	2,35	
HG22e/190-4 HC	16,5	3110	2,14	1,45	9090	3,93	2,31	
HG22e/190-4 S HC	16,5	3180	2,17	1,47	9170	3,86	2,38	
HG34e/215-4 HC	18,8	3190	2,21	1,44	9960	4,21	2,37	
HG34e/215-4 S HC	18,8	3210	2,23	1,44	9960	4,13	2,41	
HG34e/255-4 HC	22,1	3910	2,69	1,45	11900	5,00	2,38	
HG34e/255-4 S HC	22,1	3940	2,71	1,45	11900	4,91	2,42	
HG34e/315-4 HC	27,3	4910	3,45	1,42	14900	6,16	2,42	
HG34e/315-4 S HC	27,3	4960	3,49	1,42	14900	6,04	2,47	
HG34e/380-4 HC	33,1	6250	4,39	1,42	18200	7,47	2,44	
HG34e/380-4 S HC	33,1	6400	4,39	1,46	18400	7,45	2,47	
HG44e/475-4 HC	41,3	8400	5,53	1,52	24000	9,58	2,51	
HG44e/475-4 S HC	41,3	7870	5,02	1,57	23300	8,85	2,63	
HG44e/565-4 HC	49,2	9070	5,91	1,53	27400	10,7	2,56	
HG44e/565-4 S HC	49,2	8470	5,40	1,57	26800	10,1	2,65	
HG44e/665-4 HC	57,7	11000	7,13	1,54	32500	12,9	2,52	
HG44e/665-4 S HC	57,7	10500	6,65	1,58	32600	12,0	2,72	
HG44e/770-4 HC	67,0	11900	7,60	1,57	36900	13,9	2,65	
HG44e/770-4 S HC	67,0	11900	7,60	1,57	36900	13,9	2,65	

The performance data are based on 20 °C suction gas superheat without liquid subcooling, at 50 Hz power supply frequency. These are computed, preliminary values. Variations cannot be excluded. Please observe the following marking notes:

Supplementary cooling or adapting the suction gas temperature necessary

PERFORMANCE DATA

R290 — **50 Hz**

Type	Displacement m^3/h (50 Hz)	Cooling capacity $\dot{Q}_0$ [W]						Drive power P_e [kW]
		Deep freezing –35 °C Evaporating temp. +40 °C Condensing temp.			Normal cooling –10 °C Evaporating temp. +45 °C Condensing temp.			
		$\dot{Q}_0$	P_e	COP	$\dot{Q}_0$	P_e	COP	
HG56e/850-4 HC	73,8	14700	9,39	1,57	42300	16,5	2,56	
HG56e/850-4 S HC	73,8	13800	8,74	1,58	41300	15,7	2,63	
HG56e/995-4 HC	86,6	16800	10,5	1,60	48900	19,3	2,53	
HG56e/995-4 S HC	86,6	16600	10,3	1,61	48900	18,3	2,67	
HG56e/1155-4 HC	100,4	17900	11,3	1,58	55500	21,2	2,62	
HG56e/1155-4 S HC	100,4	17100	11,0	1,55	54300	20,5	2,65	
HG7/1620-4 HC	140,6	22900	15,1	1,52	72800	29,5	2,47	
HG7/1620-4 S HC	140,6	23500	16,3	1,44	74400	30,2	2,46	
HG7/1860-4 HC	161,4	26500	17,5	1,51	83300	33,9	2,46	
HG7/1860-4 S HC	161,4	27200	18,6	1,46	85200	34,3	2,48	
HG7/2110-4 HC	183,6	30300	20,1	1,51	94500	38,9	2,43	
HG7/2110-4 S HC	183,6	31300	21,3	1,47	97200	38,9	2,50	
HG8/2470-4 S HC	214,3	35800	26,4	1,36	113000	48,3	2,34	
HG8/2830-4 HC	245,9	40200	28,4	1,42	128000	55,1	2,32	
HG8/2830-4 S HC	245,9	40900	30,0	1,36	129000	55,5	2,32	
HG8/3220-4 HC	279,8	46200	32,1	1,44	144000	62,2	2,32	
HG8/3220-4 S HC	279,8	47300	34,2	1,38	147000	63,1	2,33	

The performance data are based on 20 °C suction gas superheat without liquid subcooling, at 50 Hz power supply frequency. These are computed, preliminary values. Variations cannot be excluded. Please observe the following marking notes:

Supplementary cooling or adapting the suction gas temperature necessary

Further information can be found online at **vap.gea.com**

TECHNICAL DATA

HC

Type	Number of cylinders	Displacement 50/60 Hz 1450/1740 rpm) m³/h	Electrical data: Voltage ①	Electrical data: Max. working current ② A	Electrical data: Max. power consumption ② kW	Electrical data: Starting current (rotor blocked) A	Weight kg	Connections ⑤: Discharge line DV mm | inch	Connections ⑤: Suction line SV mm | inch	Oil charge Ltr.
				Δ / Y		Δ / Y				
HG12P/60-4 S HC	2	5,40 / 6,40	③	6,8 / 3,9	2,2	40 / 23	48	12 | 1/2	16 | 5/8	0,8
HG12P/75-4 HC	2	6,70 / 8,10	③	7,1 / 4,1	2,3	40 / 23	49	12 | 1/2	16 | 5/8	0,8
HG12P/75-4 S HC	2	6,70 / 8,10	③	8,0 / 4,6	2,6	43 / 25	49	12 | 1/2	16 | 5/8	0,8
HG12P/90-4 HC	2	8,00 / 9,60	③	8,5 / 4,9	2,8	43 / 25	49	12 | 1/2	16 | 5/8	0,8
HG12P/90-4 S HC	2	8,00 / 9,60	③	9,1 / 5,3	3,0	45 / 26	49	12 | 1/2	16 | 5/8	0,8
HG12P/110-4 HC	2	9,40 / 11,30	③	9,2 / 5,3	3,1	43 / 25	48	12 | 1/2	16 | 5/8	0,8
HG12P/110-4 S HC	2	9,40 / 11,30	③	10,6 / 6,1	3,6	45 / 26	49	12 | 1/2	16 | 5/8	0,8
HG22e/125-4 HC	2	11,10 / 13,30	③	9,3 / 5,4	3,0	69 / 40	73	16 | 5/8	22 | 7/8	0,9
HG22e/125-4 S HC	2	11,10 / 13,30	③	10,8 / 6,2	3,6	69 / 40	73	16 | 5/8	22 | 7/8	0,9
HG22e/160-4 HC	2	13,70 / 16,40	③	11,3 / 6,5	3,8	69 / 40	73	16 | 5/8	22 | 7/8	0,9
HG22e/160-4 S HC	2	13,70 / 16,40	③	13,1 / 7,6	4,5	87 / 50	75	16 | 5/8	22 | 7/8	0,9
HG22e/190-4 HC	2	16,50 / 19,80	③	13,8 / 8,0	4,8	69 / 40	73	16 | 5/8	22 | 7/8	0,9
HG22e/190-4 S HC	2	16,50 / 19,80	③	16,2 / 9,4	5,6	87 / 50	75	16 | 5/8	22 | 7/8	0,9
HG34e/215-4 HC	4	18,80 / 22,60	③	14,0 / 8,1	4,8	87 / 50	91	22 | 7/8	28 | 1 1/8	1,1
HG34e/215-4 S HC	4	18,80 / 22,60	③	18,3 / 10,5	6,0	132 / 76	98	22 | 7/8	28 | 1 1/8	1,1
HG34e/255-4 HC	4	22,10 / 26,60	③	17,0 / 9,8	6,0	87 / 50	91	22 | 7/8	28 | 1 1/8	1,1
HG34e/255-4 S HC	4	22,10 / 26,60	③	21,1 / 12,2	7,2	132 / 76	97	22 | 7/8	28 | 1 1/8	1,1
HG34e/315-4 HC	4	27,30 / 32,80	③	21,1 / 12,2	7,4	111 / 64	93	22 | 7/8	28 | 1 1/8	1,1
HG34e/315-4 S HC	4	27,30 / 32,80	③	25,5 / 14,7	8,9	132 / 76	97	22 | 7/8	28 | 1 1/8	1,1
HG34e/380-4 HC	4	33,10 / 39,70	③	26,1 / 15,1	9,3	111 / 64	93	22 | 7/8	28 | 1 1/8	1,1
HG34e/380-4 S HC	4	33,10 / 39,70	③	31,2 / 18,0	11,1	132 / 76	96	22 | 7/8	28 | 1 1/8	1,1

Further information can be found online at **vap.gea.com**

TECHNICAL DATA

HC

Type	Number of cylinders	Displacement 50/60 Hz 1450/1740 rpm)	Electrical data				Weight	Connections ⑤		Oil charge
			Voltage ①	Max. working current ②	Max. power consumption ②	Starting current (rotor blocked)		Discharge line DV	Suction line SV	
		m³/h		A	kW	A	kg	mm | inch	mm | inch	Ltr.
				*PW 1+2		*PW1/PW 1+2				
HG44e/475-4 HC	4	41,30 / 49,60	④	19,0	11,0	65 / 109	166	28 I 1 1/8	35 I 1 3/8	2,3
HG44e/475-4 S HC	4	41,30 / 49,60	④	23,0	13,1	87 / 149	171	28 I 1 1/8	35 I 1 3/8	2,3
HG44e/565-4 HC	4	49,20 / 59,00	④	22,0	13,2	65 / 109	166	28 I 1 1/8	35 I 1 3/8	2,3
HG44e/565-4 S HC	4	49,20 / 59,00	④	26,0	15,6	101 / 174	173	28 I 1 1/8	42 I 1 5/8	2,3
HG44e/665-4 HC	4	57,70 / 69,20	④	26,0	15,4	87 / 149	174	28 I 1 1/8	42 I 1 5/8	2,3
HG44e/665-4 S HC	4	57,70 / 69,20	④	30,0	18,3	101 / 174	171	28 I 1 1/8	42 I 1 5/8	2,3
HG44e/770-4 HC	4	67,00 / 80,40	④	30,0	17,8	101 / 174	171	28 I 1 1/8	42 I 1 5/8	2,3
HG44e/770-4 S HC	4	67,00 / 80,40	④	35,0	21,4	101 / 174	171	28 I 1 1/8	42 I 1 5/8	2,3
HG56e/850-4 HC	6	73,80 / 88,60	④	32,6	19,7	101 / 174	195	35 I 1 3/8	54 I 2 1/8	2,7
HG56e/850-4 S HC	6	73,80 / 88,60	④	39,4	23,5	125 / 209	212	35 I 1 3/8	54 I 2 1/8	2,7
HG56e/995-4 HC	6	86,60 / 103,90	④	38,9	23,2	125 / 209	209	35 I 1 3/8	54 I 2 1/8	2,7
HG56e/995-4 S HC	6	86,60 / 103,90	④	46,4	27,7	149 / 246	212	35 I 1 3/8	54 I 2 1/8	2,7
HG56e/1155-4 HC	6	100,40 / 120,50	④	46,9	28,0	149 / 246	213	35 I 1 3/8	54 I 2 1/8	2,7
HG56e/1155-4 S HC	6	100,40 / 120,50	④	58,3	33,3	196 / 335	221	35 I 1 3/8	54 I 2 1/8	2,7
HG7/1620-4 HC	6	140,60 / 168,70	④	72,0	39,5	223 / 340	279	42 I 1 5/8	54 I 2 1/8	4,5
HG7/1620-4 S HC	6	140,60 / 168,70	④	83,0	47,4	268 / 373	300	42 I 1 5/8	54 I 2 1/8	4,5
HG7/1860-4 HC	6	161,40 / 193,70	④	80,0	45,8	268 / 373	297	42 I 1 5/8	54 I 2 1/8	4,5
HG7/1860-4 S HC	6	161,40 / 193,70	④	104,0	56,7	291 / 429	293	42 I 1 5/8	54 I 2 1/8	4,5
HG7/2110-4 HC	6	183,60 / 220,40	④	97,0	53,1	291 / 429	290	42 I 1 5/8	64 I 2 5/8	4,5
HG7/2110-4 S HC	6	183,60 / 220,40	④	119,0	65,6	344 / 500	298	42 I 1 5/8	64 I 2 5/8	4,5
HG8/2470-4 S HC	8	214,30 / 257,10	④	133,2	76,1	447 / 657	423	54 I 2 1/8	76 I 3 1/8	9,0
HG8/2830-4 HC	8	245,90 / 295,10	④	135,6	79,0	386 / 567	420	54 I 2 1/8	76 I 3 1/8	9,0
HG8/2830-4 S HC	8	245,90 / 295,10	④	151,6	88,1	447 / 657	440	54 I 2 1/8	76 I 3 1/8	9,0
HG8/3220-4 HC	8	279,80 / 335,80	④	144,6	83,6	447 / 657	414	54 I 2 1/8	76 I 3 1/8	9,0
HG8/3220-4 S HC	8	279,80 / 335,80	④	175,6	101,4	538 / 791	434	54 I 2 1/8	76 I 3 1/8	9,0

* PW = Part Winding, motors for part winding start 1 = 1. part winding 2 = 2. part winding

TECHNICAL DATA

Explanations:

① Toleranz (± 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

④ 380-420 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 ratio: HG44e, HG56e, HG7, HG8 = 50% / 50%
Designs for Y/Δ on request

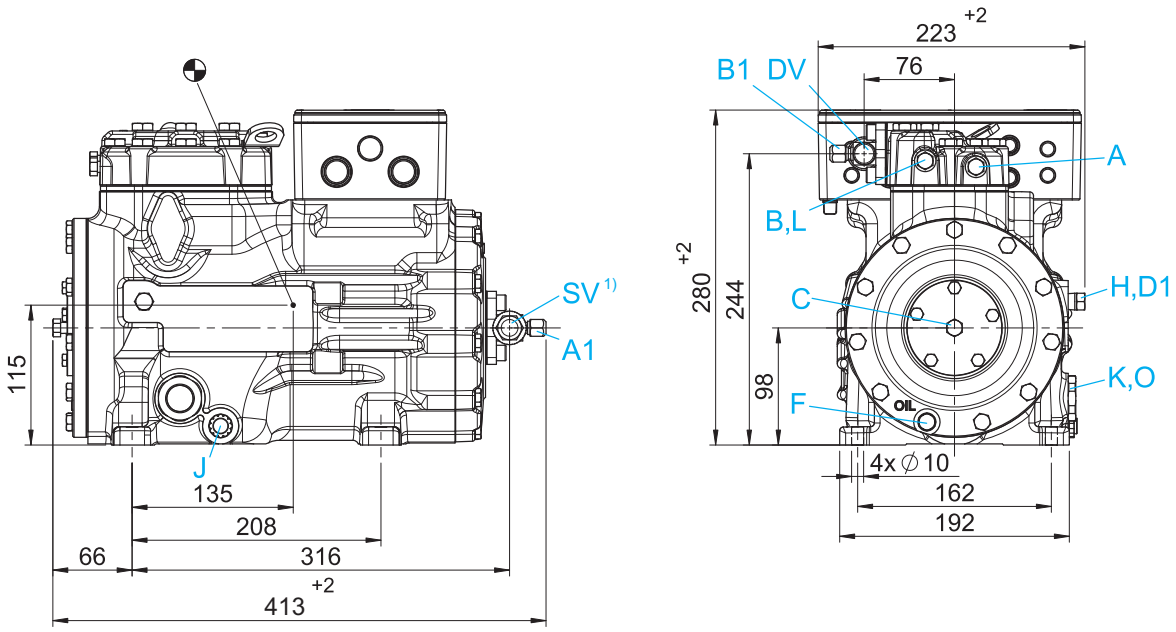
⑤ For soldering connections

Oil sump heater 110-240 V - 1 - 50/60 Hz (Option)
HG12P..HC, HG22e..HC, HG34e..HC: 50-120 W
PTC heater, self-regulating, installation in housing bore

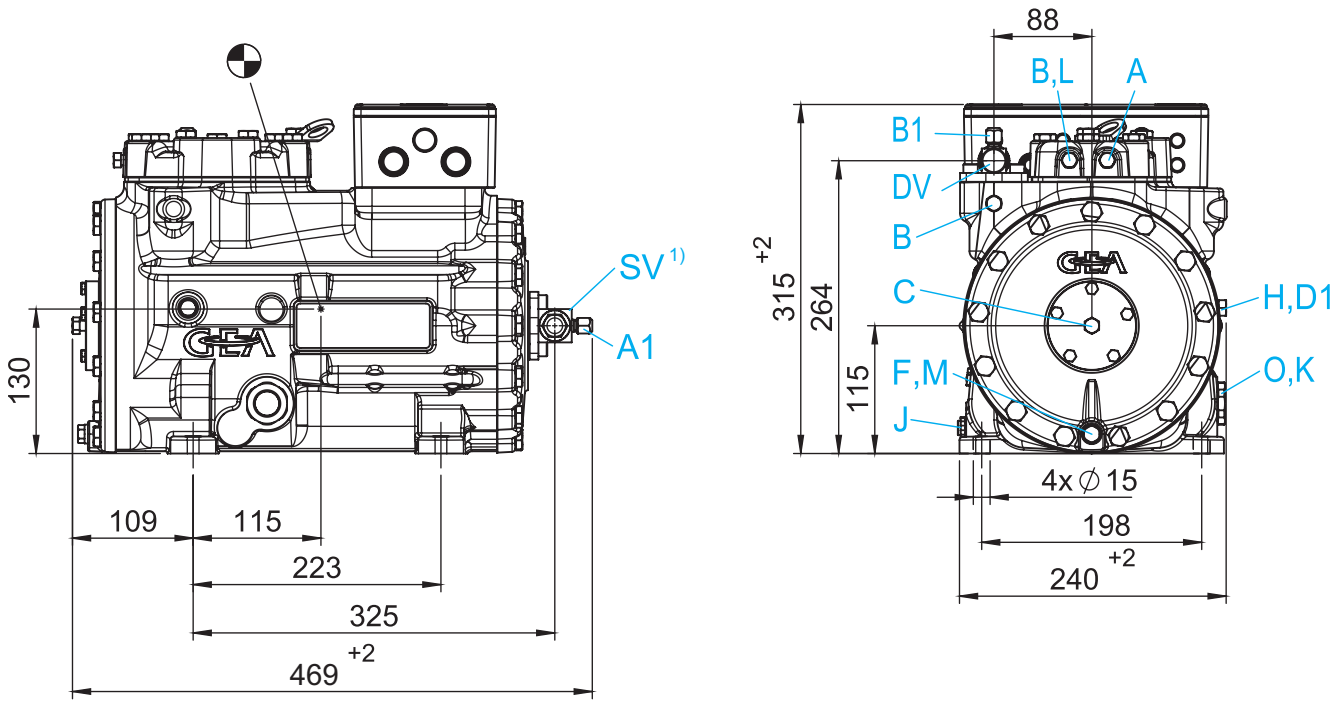
Oil sump heater 230 V - 1 - 50/60 Hz (Option)
HG44e..HC: 80 W
HG56e...HC, HG7...HC: 140 W
HG8..HC: 200 W
Permanently set version, installation in immersion sleeve

DIMENSIONS AND CONNECTIONS

HG12P HC	HG12P/60-4 S HC	HG12P/75-4 HC HG12P/75-4 S HC	HG12P/90-4 HC HG12P/90-4 S HC	HG12P/110-4 HC HG12P/110-4 S HC



HG22e HC	HG22e/125-4 HC HG22e/125-4 S HC	HG22e/160-4 HC HG22e/160-4 S HC	HG22e/190-4 HC HG22e/190-4 S HC



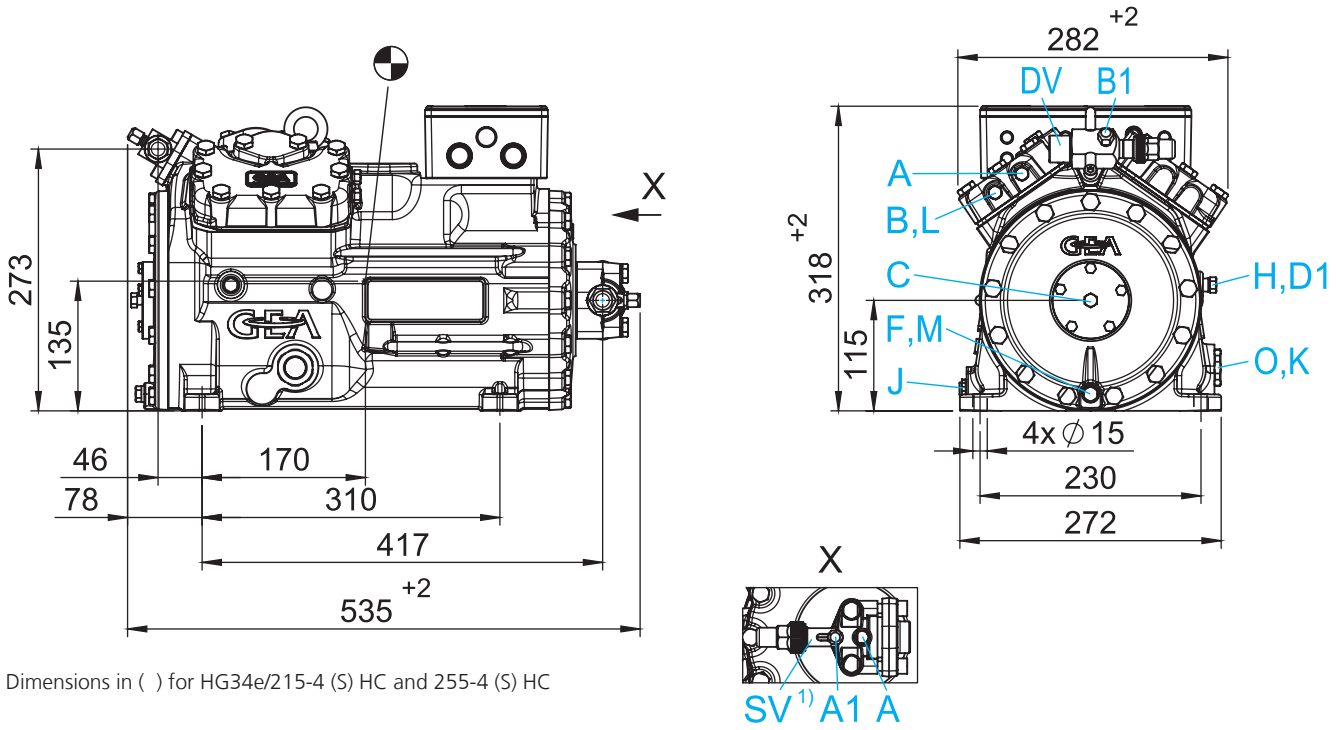
1) SV 90° rotatable

Centre of gravity

Dimensions in mm

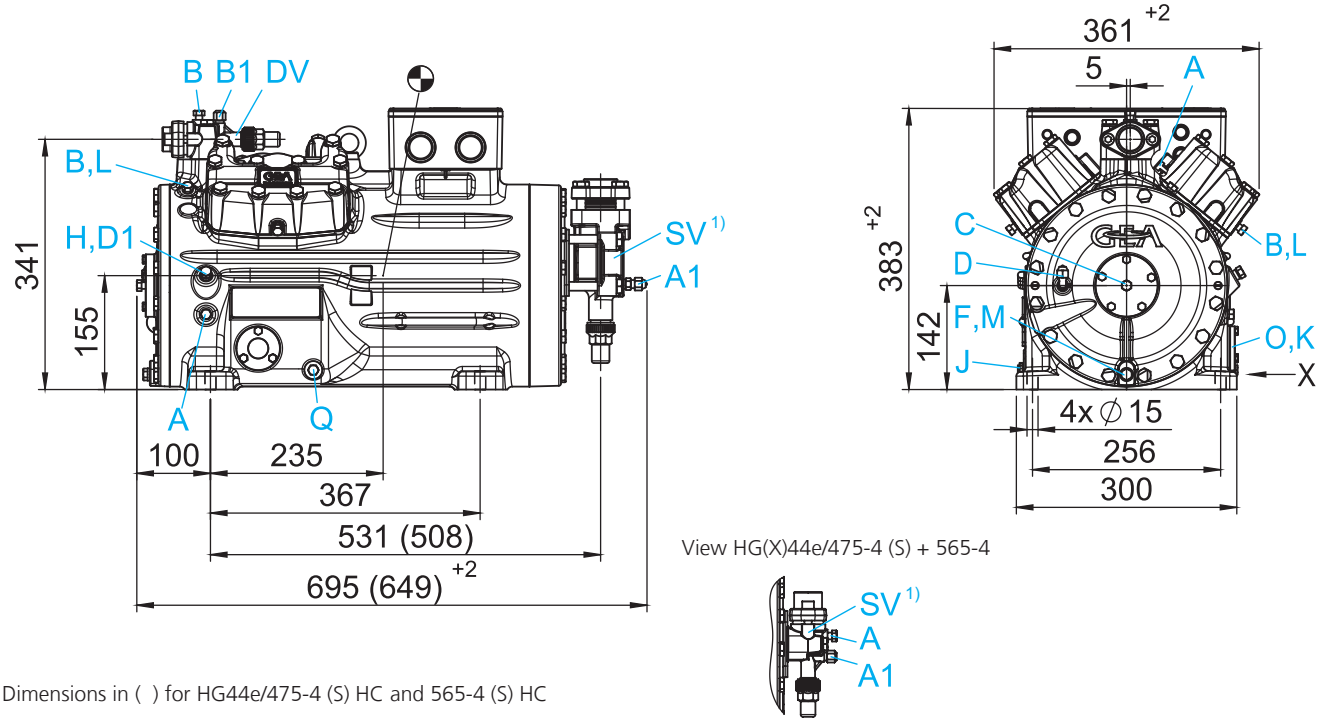
DIMENSIONS AND CONNECTIONS

HG34e HC	HG34e/215-4 HC HG34e/215-4 S HC	HG34e/255-4 HC HG34e/255-4 S HC	HG34e/315-4 HC HG34e/315-4 S HC	HG34e/380-4 HC HG34e/380-4 S HC



Dimensions in ( ) for HG34e/215-4 (S) HC and 255-4 (S) HC

HG44e HC	HG44e/475-4 HC HG44e/475-4 S HC	HG44e/565-4 HC HG44e/565-4 S HC	HG44e/665-4 HC HG44e/665-4 S HC



View HG(X)44e/475-4 (S) + 565-4

Dimensions in ( ) for HG44e/475-4 (S) HC and 565-4 (S) HC

1) SV 90° rotatable

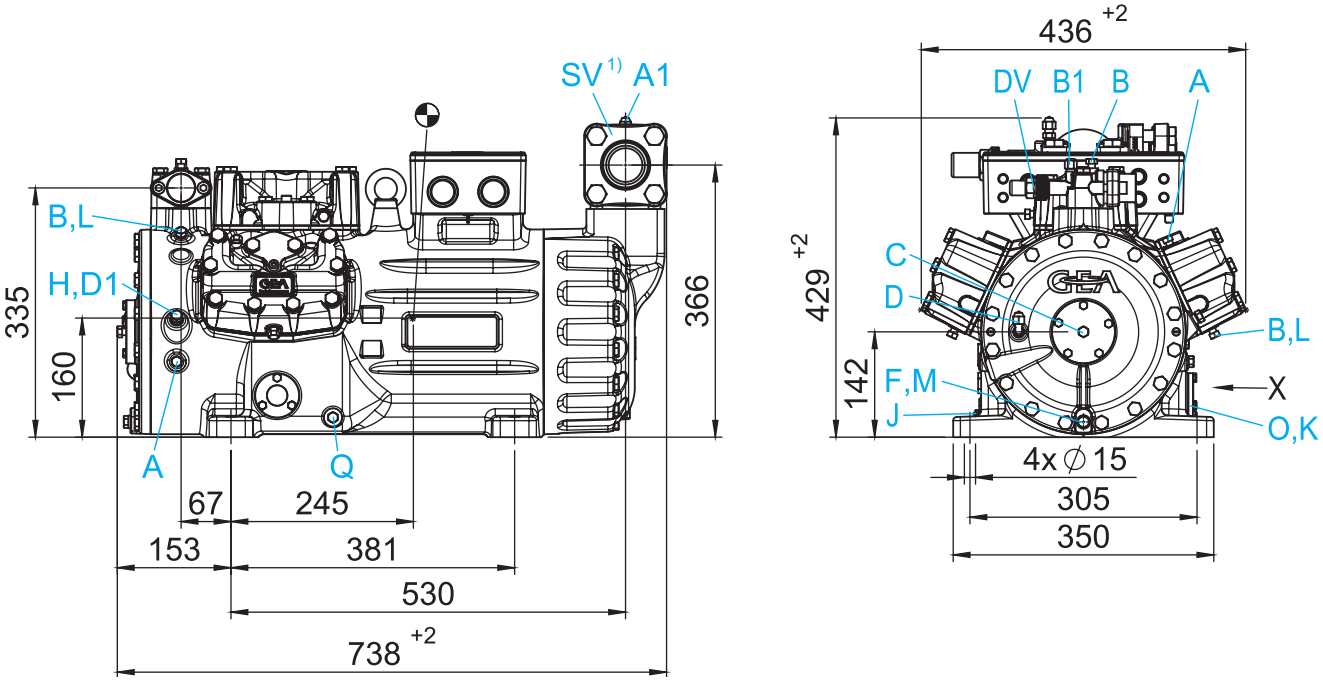
Centre of gravity

Dimensions in mm

Dimensions for view X see page 23

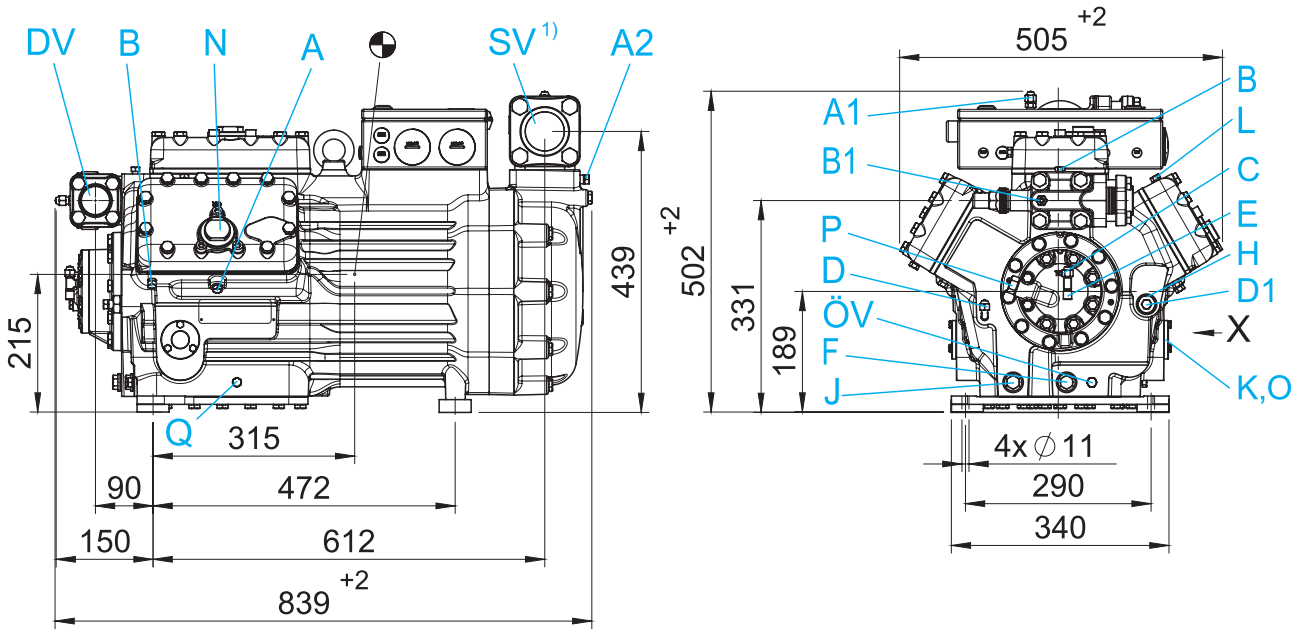
DIMENSIONS AND CONNECTIONS

HG56e HC	HG56e/850-4 HC HG56e/850-4 S HC	HG56e/995-4 HC HG56e/995-4 S HC	HG56e/1155-4 HC HG56e/1155-4 S HC



Dimensions in ( ) for HG56e/850-4 (S) HC and 995-4 (S) HC

HG7 HC	HG7/1620-4 HC HG7/1620-4 S HC	HG7/1860-4 HC HG7/1860-4 S HC	HG7/2110-4 HC HG7/2110-4 S HC



1) SV 180° rotatable

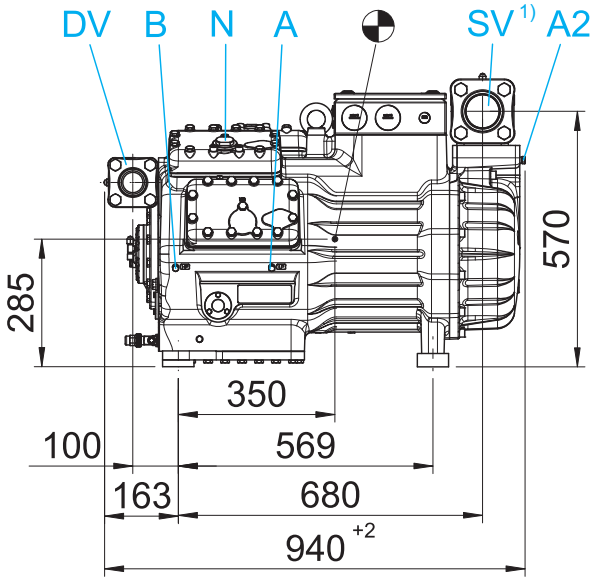
◒ Centre of gravity

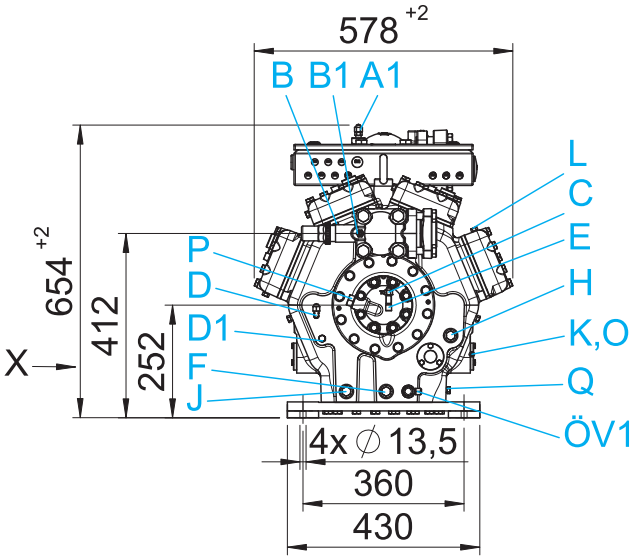
Dimensions in mm

Dimensions for view X see page 23

DIMENSIONS AND CONNECTIONS

HG8 HC | **HG8/2470-4 S HC** | **HG8/2830-4 HC** **HG8/2830-4 S HC** | **HG8/3220-4 HC** **HG8/3220-4 S HC**





1) SV 180° rotatable
Centre of gravity

Dimensions in mm
Dimensions for view X see page 23

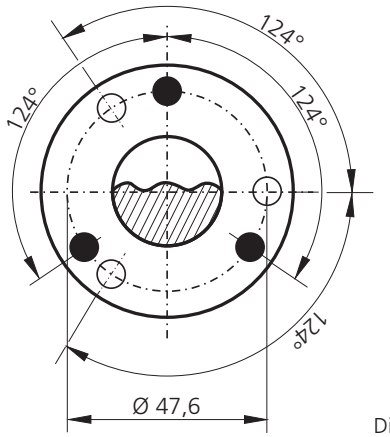
View X

Possibility to connect oil level regulator

HG44e...HC, HG56e...HC, HG7...HC, HG8...HC

● 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

DIMENSIONS AND CONNECTIONS

Connections		HG12P..HC	HG22e..HC	HG34e..HC	HG44e..HC	HG56e..HC	HG7..HC	HG8..HC
SV	Suction line	please refer to technical data page 14 and 15						
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	–	–	–	1/8" NPTF	–	1/4" NPTF	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 OIL	–	–	–	–	–	7/16" UNF	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
E	Connection oil pressure gauge	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	7/16" UNF	7/16" UNF
F	Oil drain	M 8	M 12 × 1,5	M 12 × 1,5	M 12 × 1,5	M 12 × 1,5	M 22 × 1,5	M 22 × 1,5
H	Oil charge plug	1/4" NPTF	1/4" NPTF	1/4" NPTF	1/4" NPTF	1/4" NPTF	M 22 × 1,5	M 33 × 2
J	Oil sump heater (accessories)	3/8" NPTF	3/8" NPTF	3/8" NPTF	3/8" NPTF	3/8" NPTF	M 22 × 1,5	M 22 × 1,5
K	Sight glass	1 1/8" – 18 UNEF	1 1/8" – 18 UNEF	1 1/8" – 18 UNEF	3 x M 6	3 x M 6	3 Loch M 6	3 Loch M 6
L	Thermal protection thermostat (accessories)	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF
M	Oil strainer	–	M 12 × 1,5	M 12 × 1,5	M 12 × 1,5	M 12 × 1,5	–	M 45 × 1,5
N	Connection capacity controller	–	–	–	–	–	M 45 × 1,5	M 45 × 1,5
O	Connection oil level regulator	1 1/8" – 18 UNEF	1 1/8" – 18 UNEF	1 1/8" – 18 UNEF	3 x M 6	3 x M 6	3 × M 6	3 × M 6
ÖV	Connection oil service valve	–	–	–	–	–	1/4" NPTF	–
ÖV1	Oil service valve	–	–	–	–	–	–	7/16" UNF
P	Connection oil differential pressure sensor	–	–	–	–	–	M 20 × 1,5	M 20 × 1,5
Q	Connection oil temperature sensor	–	–	–	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF

[1] Dimensions see view X page 20

Attention

Electric, respectively electronic components of the standard extent of delivery, from the accessories or that are obtained otherwise have to be handled and mounted in such a way that the corresponding regulations for the use of hydrocarbons are fulfilled.

SCOPE OF SUPPLY AND ACCESSORIES

	Scope of supply & Accessories		HG12P.. HC	HG22e.. HC	HG34e.. HC	HG44e.. HC	HG56e.. HC	HG7.. HC	HG8.. HC
	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					●			
	Semi-hermetic six cylinder reciprocating compressor with drive motor for part winding start (50/50) 380-420 V Y/YY - 3 - 50 Hz 440-480 V Y/YY - 3 - 60 Hz"						●	●	
	Semi-hermetic eight cylinder reciprocating compressor with drive motor for part winding start (50/50) 380-420 V Y/YY - 3 - 50 Hz 440-480 V Y/YY - 3 - 60 Hz								●
	Special voltage and/or frequency		○ [3]	○ [3]	○ [3]	○ [3]	○ [3]	○ [3]	○ [3]
	Winding protection with PTC resistor sensors and electronic triggering unit INT69 G		● [1]	● [1]	● [1]	● [1]	● [1]	–	–
	Winding protection with PTC resistor sensors and electronic triggering unit MP10		–	–	–	–	–	● [1]	● [1]
1	Thermal protection thermostat		○ [2]	○ [2]	○ [2]	○ [2]	○ [2]	○ [2]	○ [2]
	Oil pump		●	●	●	●	●	●	●
	Oil charge: HG HC: FUCHS Reniso SYNTH 68		●	●	●	●	●	●	●
	Inert gas charge		●	●	●	●	●	●	●
	4 anti-vibration pads		● [1]	● [1]	● [1]	● [1]	● [1]	● [1]	● [1]
	Pressure relief valve		–	–	–	●	●	●	●
	Suction and discharge line valve		●	●	●	●	●	●	●
	Sight glass	One	●	●	●	●	●	–	–
		Two	–	–	–	–	–	●	–
		Three	–	–	–	–	–	–	●
2	Oil sump heater	110-240 V - 1 - 50/60 Hz, 50-120 W, PTC heater, self regulating	○ [2]	○ [2]	○ [2]	–	–	–	–
		230 V - 1 - 50/60 Hz, 160 W, IP66 PTC heater, self regulating	–	–	–	○ [2]	○ [2]	–	–
		220-240 V - 1 - 50/60 Hz, 140 W	–	–	–	–	–	○ [2]	–
		230 V - 1 - 50/60 Hz, 200 W	–	–	–	–	–	–	○ [2]
	Rear bearing flange prepared for oil differential pressure sensor		–	–	–	○ [2]	○ [2]	–	–
	Oil pump cover with screwed connection for oil differential pressure sensor		–	–	–	–	–	●	●
3	Oil differential pressure sensor DELTA-P II 220-240 V - 1 - 50/60 Hz		–	–	–	○ [1]	○ [1]	○ [1]	○ [1]
4	Oil service valve		–	–	–	–	–	○	●
5	Capacity regulator	1 Capacity regulator = 50 % residual capacity	–	–	○ [2]	○ [2]	–	–	–
		1–2 Capacity regulator = 66/33 % residual capacity	–	–	–	–	○ [2]	○ [2]	–
		1–3 Capacity regulator = 75/50/25 % residual capacity	–	–	–	–	–	–	○ [2]

● Scope of supply (Standard)
○ Accessories
– Not available

[1] Enclosed
[2] Mounted
[3] On request

SCOPE OF SUPPLY AND ACCESSORIES

Scope of supply & Accessories		HG12P.. HC	HG22e.. HC	HG34e.. HC	HG44e.. HC	HG56e.. HC	HG7.. HC	HG8.. HC
6 Prepared for capacity regulator	1 cylinder cover	–	–	○ 2)	○ 2)	○ 2)	○ 2)	○ 2)
	2 cylinder covers	–	–	–	–	○ 2)	○ 2)	○ 2)
	3 cylinder covers	–	–	–	–	–	–	○ 2)
7 Oil temperature sensor		–	–	–	○ 2)	○ 2)	○ 2)	○ 2)
8 Start unloader by means of a ESS (Electronic Soft Start) 400 V - 3 - 50/60 Hz, IP20, (connection clamps IP00) for installation in switch cabinet		–	○ 1)	○ 1)	○ 1)	○ 1)	○ 1)	–
Start unloader 230 V - 1 - 50/60 Hz, IP65, without check valve, including thermal protection thermostat (PTC sensor)		–	–	–	–	–	○	○
9 Connection piece suction and discharge valve in welded construction		–	–	–	○ 3)	○ 3)	○ 3)	○ 3)
10 Additional fan 230 V - 1 - 50 Hz, 97 W, IP44, 230- V - 1 - 60 Hz, 128 W, Voltage range ± 10%		○ 1)	○ 1)	○ 1)	○ 1)	○ 1)	○ 1)	○ 1)
11 Intermediate flange for discharge line valve on right or left, seen from oil pump		–	–	–	○ 1)	–	–	–
Intermediate adapter for discharge line valve		–	–	–	–	–	○	○
12 INT69 G Diagnose 115 V / 230 V Ac, 50/60 Hz, IP00 (INT69 G not applicable)		–	○ 1)	○ 1)	○ 1)	○ 1)	–	–
13 DP-Modbus Gateway 115 V / 230 V Ac, 50/60 Hz, IP00 incl. adapter cable		–	○ 1)	○ 1)	○ 1)	○ 1)	–	–
14 Modbus-LAN Gateway 230 V Ac, 50/60 Hz, IP00		–	○ 1)	○ 1)	○ 1)	○ 1)	–	–
15 USB converter for INT69 G Diagnose		–	○ 1)	○ 1)	○ 1)	○ 1)	–	–
Connection possibility of oil level controller makes ESK, AC+R oder CARLY		● 4)	● 4)	● 4)	●	●	●	●
Connection possibility of oil level controller make Traxoil		● 4)	● 4)	● 4)	● 4)	● 4)	● 4)	● 4)

● Scope of supply (Standard)
○ Accessories
– Not available

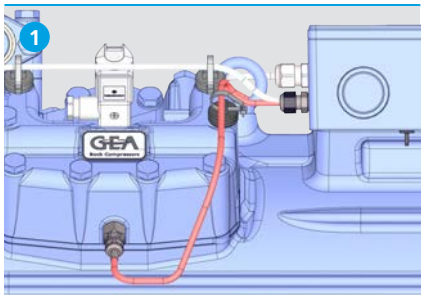
1) Enclosed
2) Mounted
3) On request
4) Only possible with additional adapter

Attention

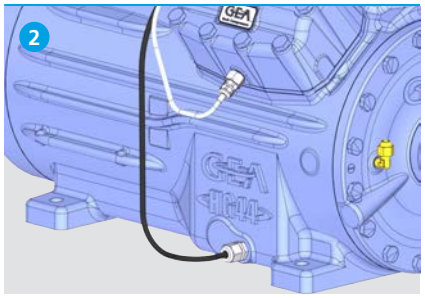
Electric, respectively electronic components of the standard extent of delivery, from the accessories or that are obtained otherwise have to be handled and mounted in such a way that the corresponding regulations for the use of hydrocarbons are fulfilled.

SCOPE OF SUPPLY AND ACCESSORIES

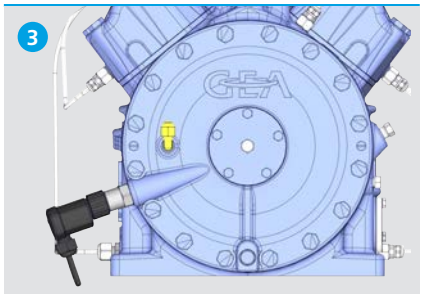
Thermal protection thermostat



Oil sump heater

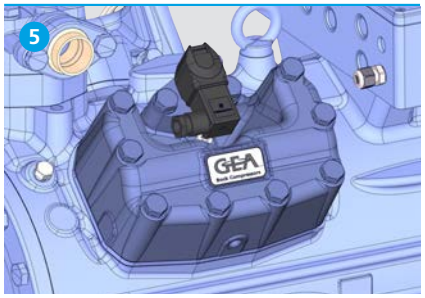


Oil differential pressure sensor

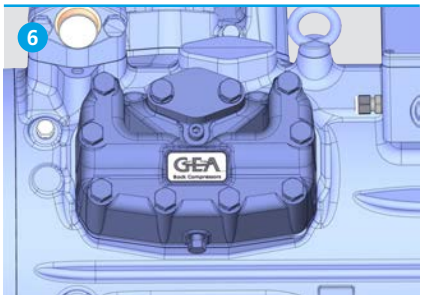


Oil service valve

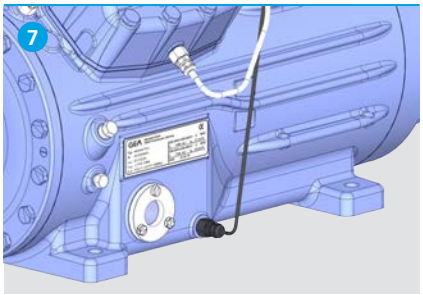
Start unloader / Capacity regulator



Preparation for capacity regulator

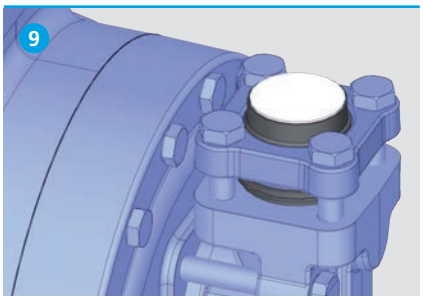


Oil temperature sensor



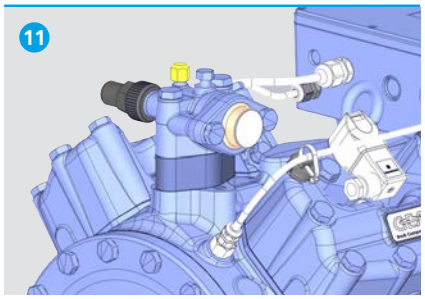
ESS Electronic Soft Start

Connection piece in welded construction



Additional fan

Intermediate adapter for discharge line valve



SCOPE OF SUPPLY AND ACCESSORIES

INT69 G Diagnose

12

DP-Modbus Gateway

13

Modbus-LAN Gateway

14

USB converter

15

INT69 G MOTOR PROTECTION

Technical Data

Unit designation	INT69 G (Standard)	INT69 G 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
Relay	AC 240 V, 2,5 A, C300	AC 240 V, 2,5 A, C300
Dimensions L/W/H	53 x 33 x 68 mm	50 x 33 x 68 mm

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GEA Germany
GEA Bock GmbH
Benzstraße 7
72636 Frickenhausen, Germany
Tel +49 (0)7022 9454-0
Fax +49 (0)7022 9454-137
info@gea.com
gea.com