Bock HG Compressors - R134a

Semi-hermetic Compressors optimized for the Refrigerant R134a

engineering for a better world

GEA Refrigeration Technologies

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.

In this brochure we present you our semi-hermetic compressors for the refrigerant R134a.

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

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Production Program

Semi-hermetic compressors HG (HA)

The GEA 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
- CO_2 compressors subcritical
- CO_2 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
- NH_3 compressors
- Compressor units for direct drive
- NH_3 Compressor units for direct drive

° Single-stage compressors R134a

The refrigerant R134a

Our solutions are customer-oriented and user-friendly, because they are low-priced, energy-efficient, long-lasting and tailored to your individual needs.

Based on our current semi-hermetic product range, with its outstanding advantages and features Bock now presents you a compressor variant optimised especially for the use with the refrigerant R134a.
Especially suited for normal refrigeration in supermarket applications, as well as in cascade systems in conjunction with CO_2.
Further information see separate brochure "Semi-hermetic Bock compressors".

Special features
With technical optimisations we continually improve the energy consumption of our compressors. Because of the special design of the different components we can adapt the compressors ideally to the individual demands. Those compressors optimised for the specific characteristics of R134a achieve a higher efficiency and therefore increase the annual capacity of the refrigeration plant.

The refrigerant R134a
Especially in the area of normal refrigeration for supermarket applications numerous studies have shown that R134a as a refrigerant contributes to a very high efficiency of the system.
Suitable refrigeration oils are ester oils, such as Fuchs Reniso SE55.

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Performance data

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
HGX6/1080-4 R134a	30	Q	89500	81600	74300	67300	54900	44200	35100	27400	21100	15900	11800
		P	14,10	13,70	13,30	12,90	12,00	11,10	10,10	9,17	8,15	7,12	6,09
	40	Q	78500	71500	65000	58900	48000	38600	30600	23900	18300	13700	9910
		P	16,20	15,70	15,20	14,60	13,50	12,40	11,20	9,99	8,75	7,50	6,25
	50	Q	67800	61700	56100	50800	41400	33300	26300	20500	15600	11400	7940
		P	18,30	17,70	17,00	16,40	15,00	13,50	12,10	10,60	9,12	7,61	6,11
	60	Q	57400	52200	47400	42900	34900	28000	22100	17000	12700	9020	5800
		P	20,40	19,60	18,80	18,00	16,30	14,50	12,70	11,00	9,19	7,38	5,58
	70	Q	47300	43000	38900	35200	28500	22800	17800	13600	9780		
		P	22,40	21,40	20,40	19,40	17,30	15,20	13,10	11,00	8,86		
HGX6/1240-4 R134a	30	Q	103000	93400	84900	77000	62800	50500	40000	31300	24000	18100	13500
		P	16,20	15,70	15,30	14,80	13,80	12,70	11,60	10,50	9,35	8,18	6,99
	40	Q	89600	81700	74300	67400	54900	44100	35000	27300	20900	15600	11400
		P	18,60	18,00	17,40	16,80	15,50	14,20	12,80	11,40	10,00	8,61	7,18
	50	Q	77300	70500	64000	58000	47300	38000	30100	23400	17700	13100	9120
		P	21,10	20,30	19,60	18,80	17,20	15,50	13,80	12,10	10,40	8,75	7,02
	60	Q	65400	59500	54100	49000	39800	31900	25200	19400	14500	10300	6660
		P	23,50	22,60	21,60	20,60	18,70	16,70	14,60	12,60	10,50	8,50	6,44
	70	Q	53800	48900	44300	40100	32500	26000	20300	15400	11200		
		P	25,80	24,60	23,50	22,30	19,90	17,50	15,10	12,60	10,20		
HGX6/1410-4 R134a [1]	30	Q	113000	103000	93100	84500	68900	55400	44000	34300	26400	19900	14800
		P	18,60	18,10	17,50	17,00	15,80	14,60	13,30	12,00	10,70	9,38	8,04
	40	Q	98300	89600	81500	73900	60200	48500	38400	30000	22900	17200	12500
		P	21,30	20,70	20,00	19,30	17,80	16,30	14,70	13,10	11,50	9,88	8,26
	50	Q	84900	77400	70300	63700	51900	41700	33000	25700	19500	14300	10000
		P	24,10	23,30	22,40	21,50	19,70	17,80	15,90	13,90	12,00	10,00	8,07
	60	Q	71900	65500	59400	53800	43800	35100	27700	21400	16000	11400	7310
		P	26,90	25,80	24,70	23,60	21,40	19,10	16,80	14,40	12,10	9,74	7,39
	70	Q	59200	53800	48800	44100	35700	28500	22300	16900	12300		
		P	29,40	28,10	26,80	25,50	22,80	20,10	17,30	14,50	11,60		
HGX7/1620-4 R134a	30	Q	133000	122000	111000	101000	81600	65500	51600	39800	30100	22200	16000
		P	18,50	18,40	18,10	17,80	17,00	15,90	14,70	13,30	11,80	10,30	8,82
	40	Q	118000	107000	97300	88200	71600	57200	44800	34300	25500	18400	12800
		P	22,40	22,00	21,40	20,80	19,40	17,90	16,10	14,30	12,40	10,60	8,86
	50	Q	102000	92800	84300	76200	61600	48900	38000	28700	20900	14600	9430
		P	26,00	25,30	24,40	23,50	21,60	19,40	17,20	15,00	12,70	10,60	8,54
	60	Q	86500	78600	71100	64100	51500	40500	31000	23000	16300	10700	6070
		P	29,20	28,10	26,90	25,70	23,20	20,60	17,90	15,20	12,60	10,00	7,75
	70	Q	71100	64300	57900	52000	41300	32000	24000	17200	11500		
		P	31,80	30,40	28,90	27,40	24,30	21,10	17,90	14,80	11,80		
HGX7/1860-4 R134a	30	Q	153000	139000	127000	115000	93600	75100	59200	45700	34500	25400	18400
		P	21,10	20,90	20,70	20,40	19,40	18,20	16,80	15,20	13,50	11,80	10,00
	40	Q	135000	123000	112000	102000	82100	65600	51400	39400	29300	21200	14700
		P	25,60	25,10	24,50	23,80	22,20	20,40	18,50	16,40	14,30	12,10	10,10
	50	Q	117000	107000	96600	87400	70600	56100	43600	33000	24100	16800	10900
		P	29,80	28,90	28,00	26,90	24,70	22,30	19,70	17,20	14,60	12,10	9,80
	60	Q	99200	90100	81600	73500	59100	46500	35700	26500	18700	12300	6970
		P	33,50	32,20	30,90	29,50	26,60	23,60	20,50	17,40	14,40	11,60	8,91
	70	Q	81500	73700	66500	59700	47400	36800	27600	19800	13200		
		P	36,50	34,80	33,10	31,40	27,80	24,20	20,60	17,00	13,60		
HGX7/2110-4 R134a	30	Q	172000	157000	143000	130000	106000	84800	66800	51600	38900	28700	20700
		P	24,00	23,90	23,60	23,20	22,20	20,80	19,10	17,30	15,30	13,40	11,40
	40	Q	152000	139000	126000	115000	92700	74100	58000	44400	33100	23900	16600
		P	29,10	28,60	27,90	27,10	25,30	23,30	21,00	18,60	16,20	13,80	11,50
	50	Q	132000	121000	109000	98600	79700	63200	49100	37100	27100	18900	12300
		P	33,80	32,90	31,80	30,60	28,10	25,40	22,50	19,60	16,60	13,80	11,10
	60	Q	112000	102000	91900	82900	66500	52300	40100	29700	21000	13800	7830
		P	38,00	36,60	35,10	33,50	30,30	26,80	23,30	19,90	16,40	13,10	10,10
	70	Q	91700	83000	74800	67100	53300	41300	31100	22300	14900		
		P	41,30	39,50	37,60	35,60	31,60	27,50	23,40	19,40	15,40		

Relating to 20 °C suction gas temperature without liquid subcooling

[1] Compressors are ASERCOM certified

Supplementary cooling or reduced suction gas temperature

Technical data

R134a Type	Number of cylinders	Displacement 50 / 60 Hz (1450 / 1740 rpm)	Electrical data ③				Weight	Connections ⑥		Oil charge
			Voltage ①	Max. working current ②	Max. power consumption ②	Starting current (rotor locked)		Discharge line DV	Suction line SV	
		m³/h		A	kW	A	kg	mm I inch	mm I inch	Ltr.
				* PW 1+2		*PW1 / PW 1+2				
HGX4/465-4 R134a	4	40,50 / 48,60	④	16	9,4	56 / 73	148	28 / 1 1/8	35 / 1 3/8	2,7
HGX4/555-4 R134a	4	48,20 / 57,80	④	19	11,2	84 / 109	197	28 / 1 1/8	35 / 1 3/8	2,7
HGX4/650-4 R134a	4	56,60 / 67,90	④	22	13,1	84 / 109	201	28 / 1 1/8	42 / 1 5/8	2,7
HGX5/725-4 R134a	4	62,90 / 75,50	④	25	14,6	84 / 109	198	28 / 1 1/8	42 / 1 5/8	4,5
HGX5/830-4 R134a	4	72,20 / 86,70	④	28	16,7	84 / 109	197	28 / 1 1/8	42 / 1 5/8	4,5
HGX5/945-4 R134a	4	82,20 / 98,60	④	33	19,1	110 / 141	201	35 / 1 3/8	54 / 2 1/8	4,5
HGX6/1080-4 R134a	4	93,70 / 112,40	④	42	24,6	152 / 183	218	35 / 1 3/8	54 / 2 1/8	4,5
HGX6/1240-4 R134a	4	107,60 / 129,10	④	48	28,2	156 / 193	222	35 / 1 3/8	54 / 2 1/8	4,5
HGX6/1410-4 R134a	4	122,40 / 146,90	④	55	32,2	156 / 193	219	35 / 1 3/8	54 / 2 1/8	4,5
HGX7/1620-4 R134a	6	140,60 / 168,70	⑤	63	34,1	223 / 340	278	42 / 1 5/8	54 / 2 1/8	4,8
HGX7/1860-4 R134a	6	161,40 / 193,70	⑤	68	39,2	268 / 373	296	42 / 1 5/8	54 / 2 1/8	4,8
HGX7/2110-4 R134a	6	183,60 / 220,40	⑤	81	44,6	291 / 429	289	42 / 1 5/8	64 / 2 5/8	4,8

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

Explanations:

① Tolerance (± 10%) relates to the mean value of the voltage range. Other voltages and current types on request.

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

③ All data are based on the mean value of the voltage range.

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: HGX4, HGX5, HGX6 = 66% / 33%
- Designs for Y/Δ on request

⑤ 380-420 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: HGX7 = 60% / 40%
- Designs for Y/Δ on request

⑥ For soldering connections

Oil sump heater 230 V - 1 - 50/60 Hz (standard)
- HGX4: 80 W
- HGX5, HGX6, HGX7: 140 W
Permanently set version, installation in immersion sleeve

Dimensions and connections

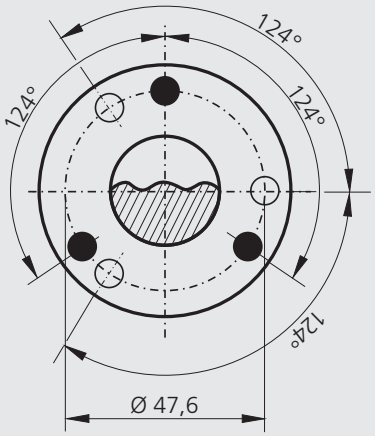
View X

Possibility to connect to oil level regulator

HGX 4, 5, 6, 7

● 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)



Connections		HGX4...R134a	HGX5...R134a	HGX6...R134a	HGX7...R134a
SV DV	Suction line Discharge line	please refer to Technical data page 9			
A	Connection suction side, not lockable	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
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
B1	Connection discharge side, lockable	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	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
E	Connection oil pressure gauge	7/16 " UNF	7/16 " UNF	7/16 " UNF	7/16 " UNF
F	Oil drain	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5
H	Oil charge plug	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5
J1	Oil sump heater	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5	M 22 x 1,5
K	Sight glass	4 hole M 6	4 hole M 6	4 hole M 6	3 hole M 6
L	Connection thermal protection thermostat	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF
N	Connection capacity controller	M 48 x 1,5	-	-	-
O	Connection oil level regulator	3 x M 6	3 x M 6	3 x M 6	3 x M 6
ÖV	Connection oil service valve	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF	1/4 " NPTF
P	Connection oil differential pressure sensor	M 20 x 1,5	M 20 x 1,5	M 20 x 1,5	M 22 x 1,5
Q	Connection oil temperature sensor	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF	1/8 " NPTF

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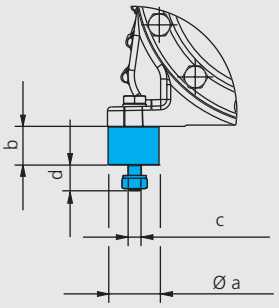
Dimensions and connections

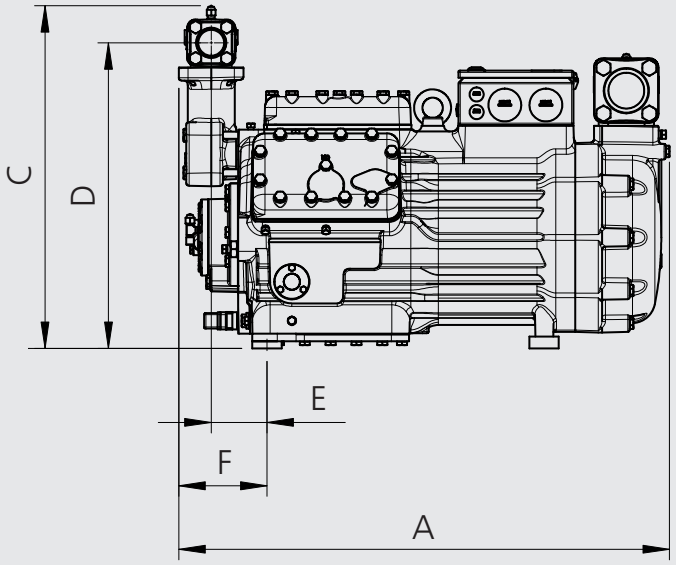
Dimensions for anti-vibration pad

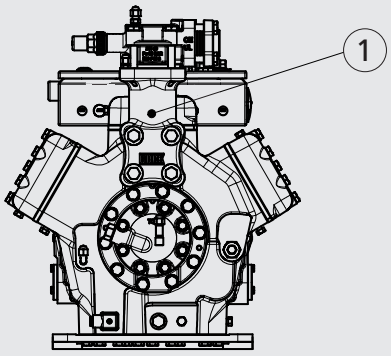
Type	Ø a mm	b mm	c mm	d mm
HGX4 R134a	40	30	M10	20
HGX5 R134a	50	30	M10	25
HGX6 R134a	50	30	M10	25
HGX7 R134a	50	30	M10	25



Dimensions with accessories

HGX4 R134a | HGX5 R134a | HGX6 R134a | HGX7 R134a





① Intermediate adapter for discharge line valve

Type	A mm	B mm	C mm	D mm	E mm	F mm
HGX4/465 R134a HGX4/555 R134a	ca. 705	ca. 680	ca. 455	416	91	131
HGX4/650 R134a	ca. 550	ca. 680	ca. 455	416	91	131
HGX5/725 R134a HGX5/830 R134a	ca. 835	ca. 730	ca. 465	422	101	141
HGX5/945 R134a	ca. 850	ca. 730	ca. 465	422	101	141
HGX6 R134a	ca. 870	ca. 740	ca. 460	421	101	141
HGX7 R134a	ca. 830	ca. 760	ca. 580	520,5	95	150