

GEA Bock FK and HG compressors for mobile applications

For bus- and railway air-conditioning

GEA – Your partner for bus- and railway air-conditioning

Continuity through change

GEA Group AG

GEA is one of the largest suppliers of process technology for the food industry and serves a wide spectrum of other sectors. As an international technology group, the company has its focus on world-beating process solutions and components for challenging production processes.

GEA is also active in bus and railway air-conditioning as well as transport refrigeration, and it offers the right compressor for every sector.

The company is known worldwide for the high level of quality and reliability of its products. GEA compressors in the air-conditioning range offer sustainable comfort for passengers in buses and trains worldwide.

Continuity through change

In today's world the only constant is change. F-gas regulations, electrification, hybridisation, political and economic change in our markets. All these topics and more are our concern, and everything is subject to constant and ever more rapid change. We confront these changes on a daily basis, but there are some things that we don't want to change. One example of this is our claim to market leadership in quality. We only achieve this by constantly impro-

ving our products. In the case of the FKX40 for example, we are currently in the 31st improved design. Only change therefore helps us to achieve our objectives.

The new GEA Bock FKX40/755K:

In order to meet the Euro 6 standard, the switching points and engine rotation speed in today's buses have to be significantly below those of earlier generations. This means that the cooling capacity is frequently no longer sufficient. In order to meet these new requirements, we have used the design principle that is proven over decades to expand the cubic capacity class of the FKX40. Our newly developed FKX40/755K enables us to meet these changed requirements, and we can offer up to 15 % more capacity with the same external dimensions. A large number of continuous running tests and worldwide field trials are running very positively. We are looking forward to the start of series production in October 2016!

On the following pages you can find a lot of useful information and data on our products.

Our expert team is available at all times should you have any further questions.

DISCLAIMER

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Production program



Vehicle compressors FK

GEA vehicle compressors are the result of many years of experience in the domain of mobile cooling systems and air-conditioning. Particularly in bus air-conditioning systems, all well-known vehicle manufacturers today consider them as the standard worldwide. This is why GEA is the pioneer and today's market leader in vehicle compressors.

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. We offer the ideally tailored design version for every application, e.g. Euro 5 or Euro 6 (see information on special housings on page 20).

FK vehicle compressors are used in bus air-conditioning, truck refrigeration and other mobile applications, such as for example rail transport.



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Semi-hermetic compressors HG

Together with the smaller HGX22, the HGX34 compressor was developed in an aluminium design specially for the requirements of mobile applications.

Thanks to the lightweight aluminium design, GEA offers the perfect solution for all applications, where the weight of the compressor is important. Whether used in train, bus or other mobile air-conditioning, these compressors, which are up to 40 % lighter than standard compressors, offer system manufacturers new possibilities.

GEA compressors are also available in 2-pole design. This means that, compared with the 4-pole designs, the rotation speed is doubled and the refrigerating capacity significantly increased with the same compressor size.

The two-pole HG34 compressor is available in grey cast iron as well as aluminium.



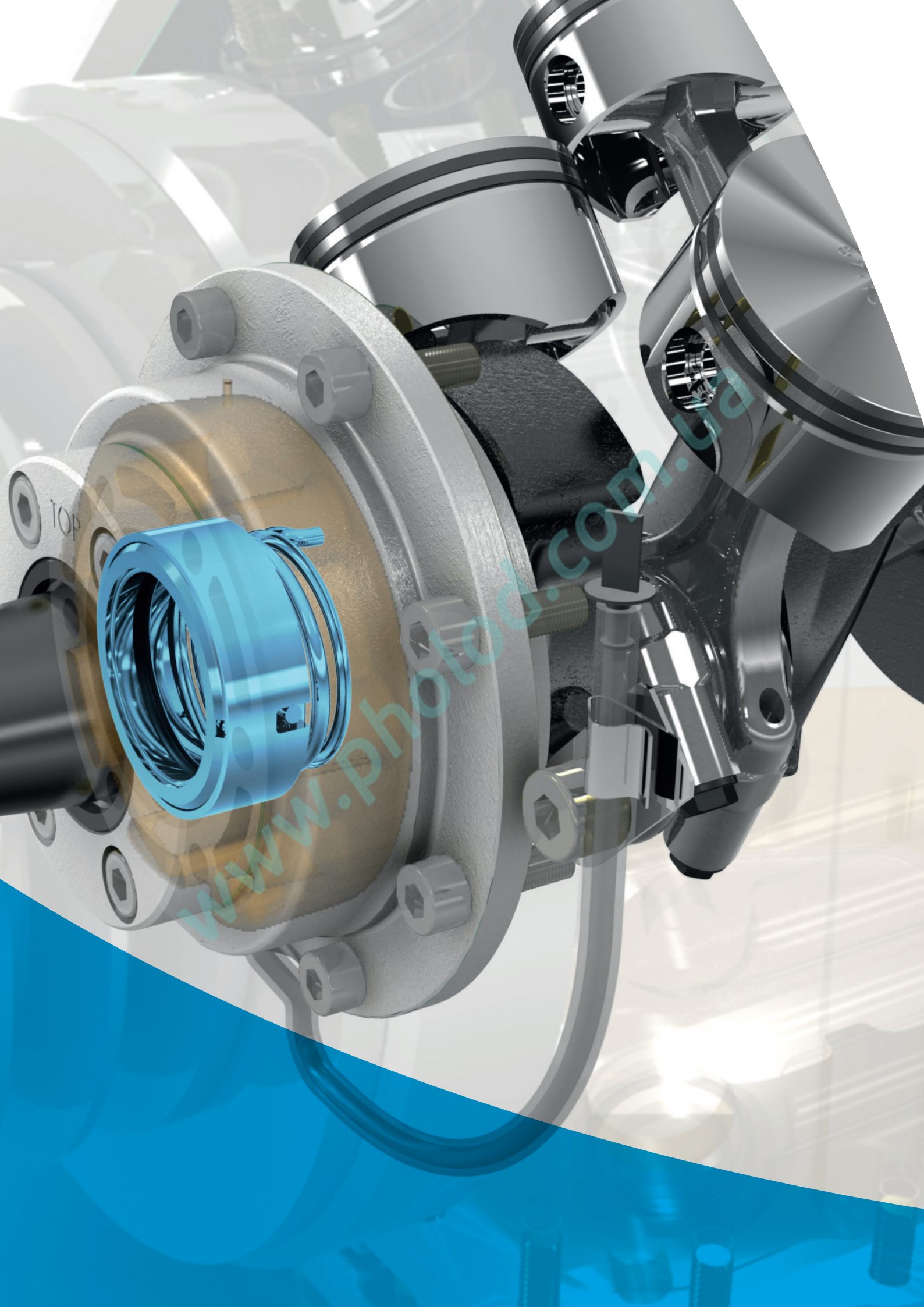
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Characteristics FK vehicle compressors for bus- and railway air-conditioning

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Special features

Open type 2-, 4- and 6-cylinder compressors in full-aluminium lightweight construction

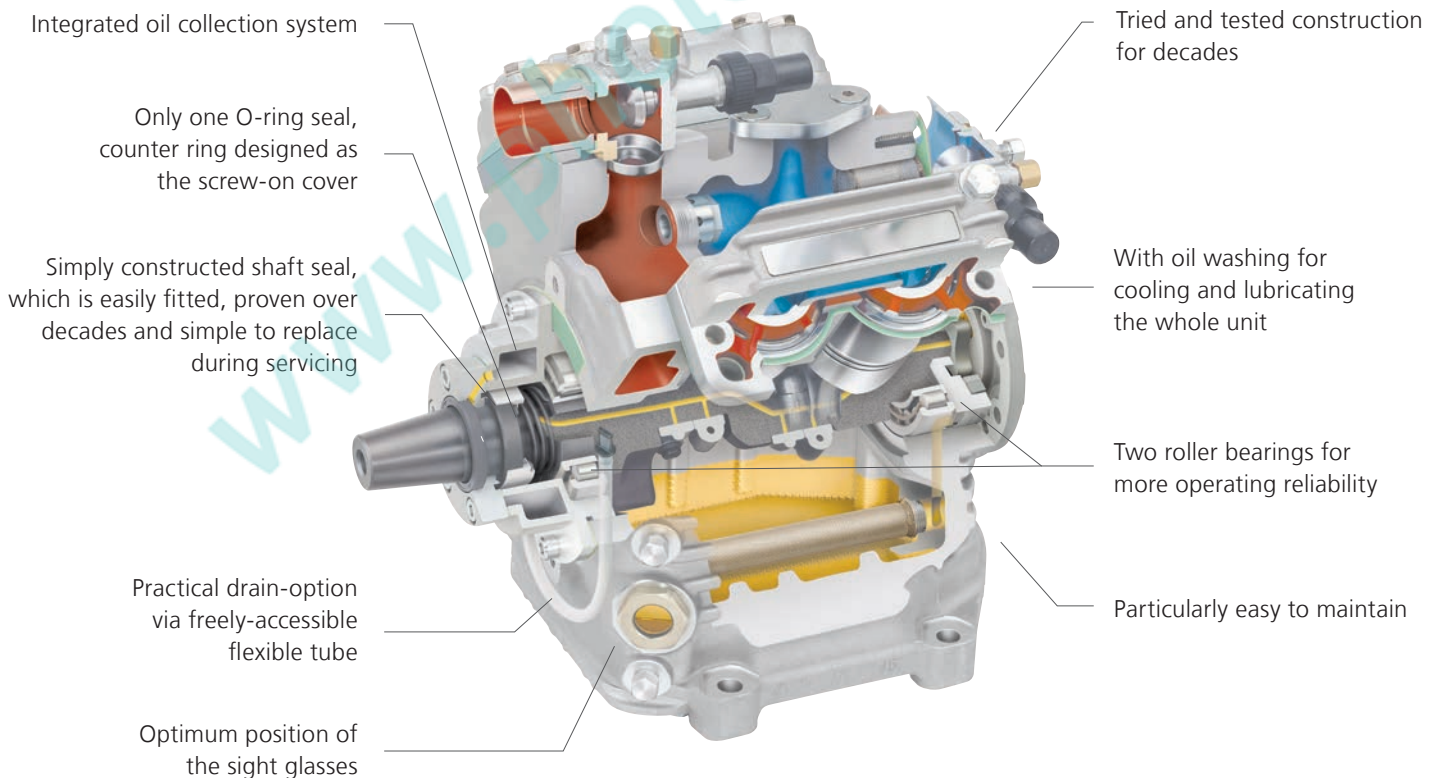
Whether in bus- or railway air-conditioning, transport refrigeration or other applications of mobile cooling – GEA Bock FK compressors are specialists around the world.

GEA compressors are designed for mobile applications. They are lightweight and use the installation space ideally. The exceptionally robust design enables a wide range of rotation speeds to be achieved.

- Light and compact construction
- Economic capacity regulation
- Unique valve plate option
- Wide speed range
- Very robust and service-friendly

A particular feature is the valve plate tooling, which is matched to the particular application range for optimum operating reliability and efficiency. In addition to this, we also have many other ways of matching the compressor to your individual requirements.

Come and talk to us, our expert team will be pleased to advise you.



Low-wearing long-lived mechanism



- Solid construction and robust crankshaft construction with hardened surface
- Double-sided roller bearing mounting design for maximum radial forces
- Aluminium pistons with two-ring assembly
- Dynamic mass balance of the whole drive-mechanism
- High volume pressure area to dampen pulsations
- Particularly quiet with low vibrations

Forged connecting rod



- Very high level of stability
- Optimum running performance
- High level of reliability
- Resistance to slugging
- Aluminium connecting rod in split design with screws, so that simple handling is possible
- Oil-lubricated small connecting rod end for maximum endurance capabilities

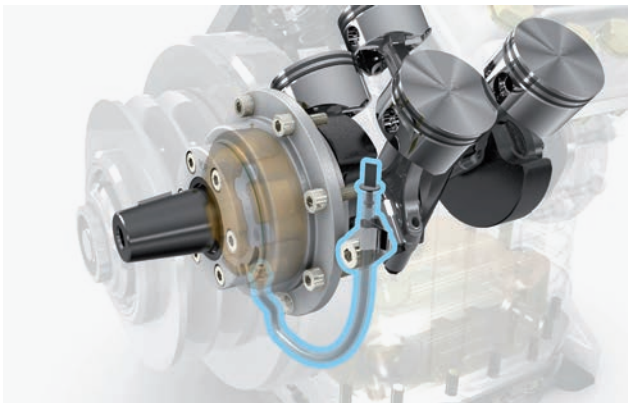
Reliable and safe oil supply



- High performance self-contained lubrication
- Independent of rotating direction internal rotor pump
- Oil overpressure valve to regulate the oil pressure
- High volume oil sump
- Two sight glasses for checking the oil level (FK40/50)

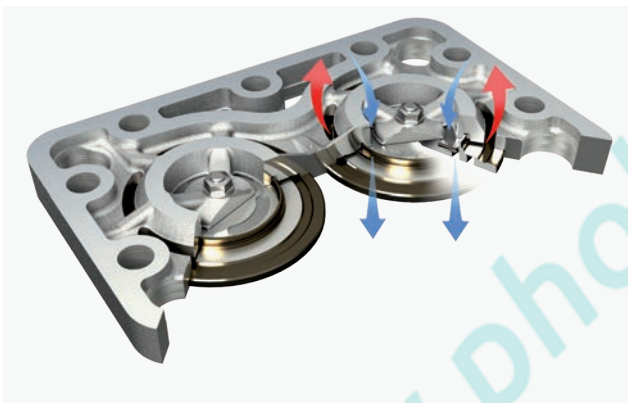
SPECIAL FEATURES

Integrated oil collection system with a large storage volume



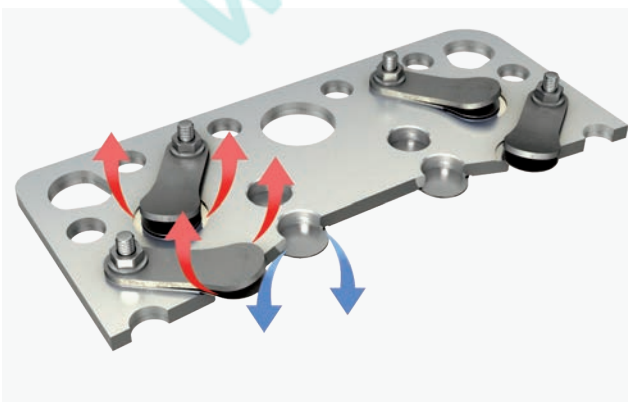
- Particularly easy maintenance
- Oil level easily visible
- Practical drain option through a feely accessible flexible tube
- For maintenance purposes no dismantling of the clutch necessary

Valve plate: K Design



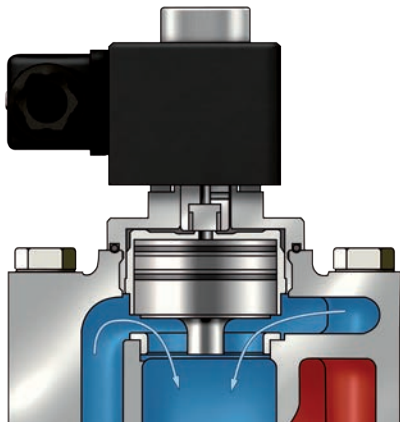
- Unique GEA Bock FK valve plate system specially developed for bus air-conditioning systems
- Aluminum base plate
- Service valves made out of high quality, impact resistant spring steel
- Extremely robust and reliable towards variations in speed, pressure and effects of fluids
- No flexing or torsion forces thanks to loosely fitted ring fins, giving a long service life
- Highest safety and efficiency in all areas of application

Valve plate: N Design

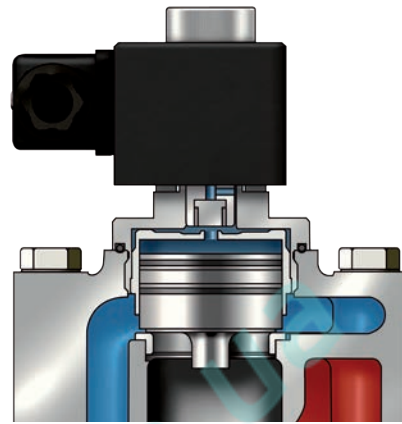


- Cost-effective and simple alternative to the K Design
- For universal use in mobile applications
- One-sided fixed tongue fins exposed to flexing and torsion forces; limited load carrying ability in conjunction with high speed levels and exposure to liquids in comparison to the K-design

Economic performance regulation (option)



Full load operation



Partial load operation

- Blocking of the intake of a cylinder bank with an electromagnetic pilot valve
- Possible residual capacity: 4-cylinder compressor: 50 %, 6-cylinder compressor: 66/33 %
- Up to 40 % fuel saving compared with full load operation
- Higher level of comfort

Variable connection and fixing options



Special design, example:

Suction shut-off valve mounted on cylinderbank with intermediate adapter

- Variable position of the suction shut-off valve (FK40/50)
- Rotate options for the suction and discharge shut-off valve
- Fixing options for supplementary attachments



Sonderausführung, Beispiel:

Suction shut-off valve mounted between the cylinder covers

- More variants for fixing the compressor
- Customer-made designs on request



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Technical data

FK vehicle compressors

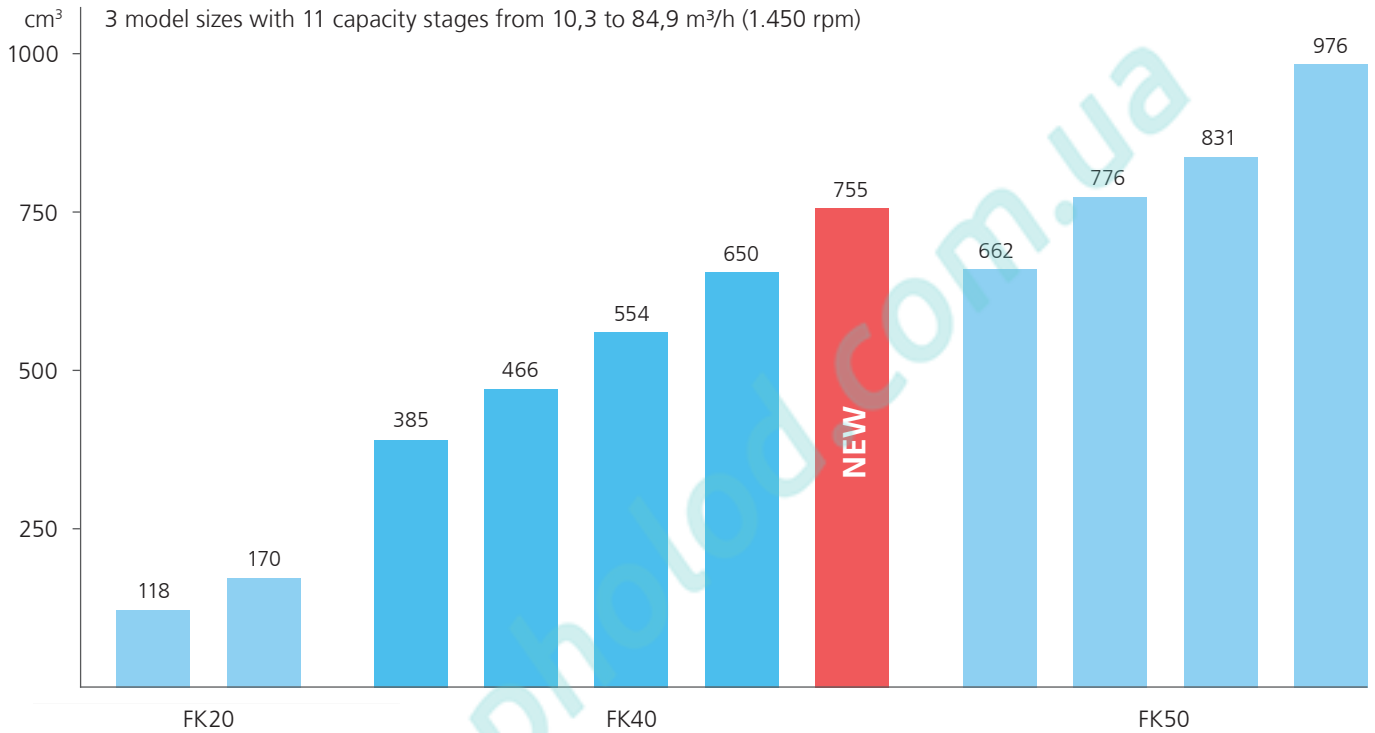
- At a glance
- Operating limits and performance data
- Technical data
- Dimensions and connections
- Scope of supply and accessories

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At a glance

THE CURRENT PROGRAM FOR BUS- AND RAILWAY AIR-CONDITIONING

3 model sizes with 11 capacity stages from 10,3 to 84,9 m³/h (1.450 rpm)



For information to the model FK30:
see product catalog for transport refrigeration

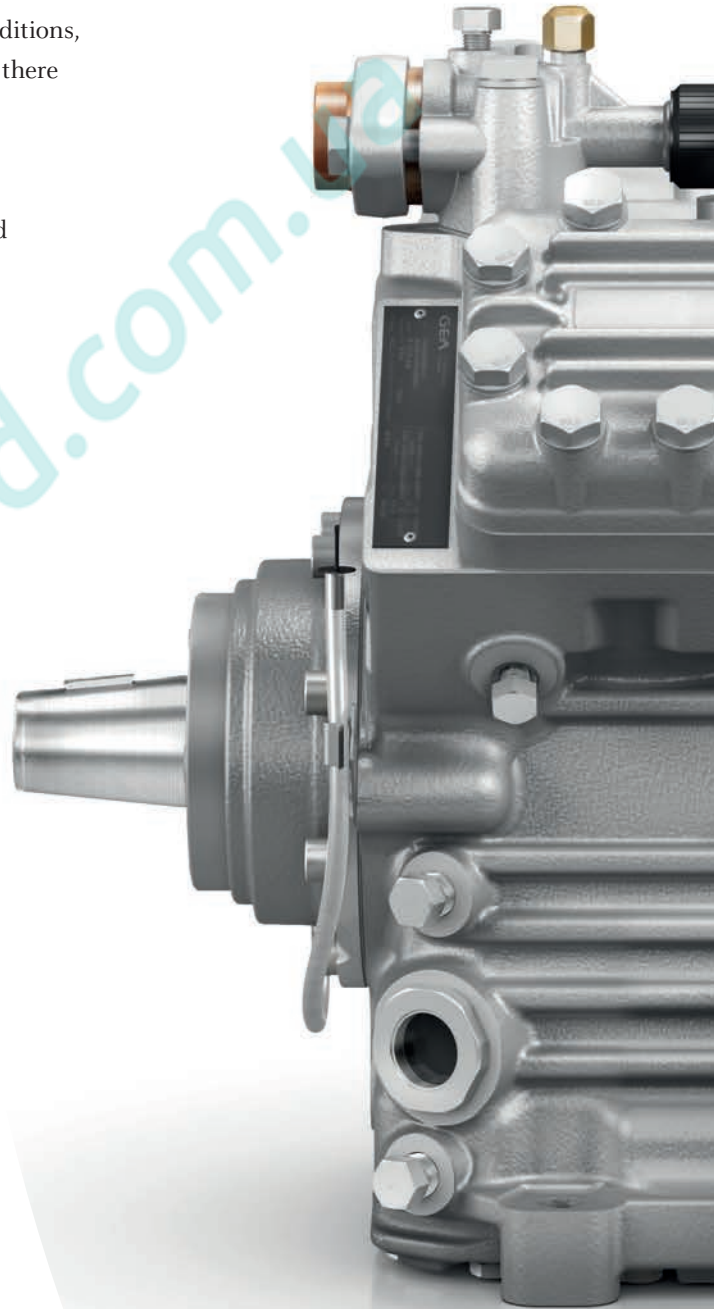
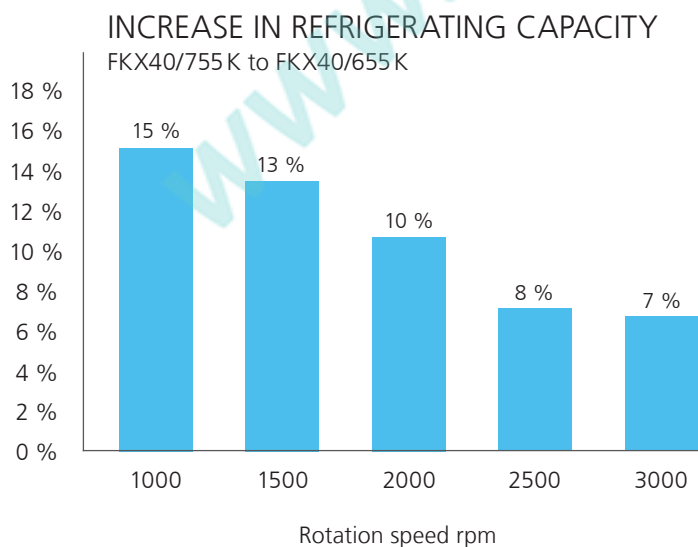
The new GEA Bock FKX40/755K – More capacity in a small installation space

With its FKX40/755 K compressor, GEA is expanding its range of the proven FK40 model for bus and railway air-conditioning. The four cubic capacity sizes up to now have been expanded to include 755 cm³ – this means that the FK40 series with five sizes now covers the range from 395 cm³ to 755 cm³ displacement.

The new FK40 model is particularly suitable for use in buses, which have an increased need for refrigerating capacity, such as for example large articulated or city buses that operate under more strenuous climatic conditions, or in the case of vehicles with lower motor rotation speeds, where there is no favourable transmission ratio to the compressor.

The FKX40/755 K is equipped as standard with the K valve plate, which was specially developed for use in bus air-conditioning, and it can be equipped with all the other options of the FK series.

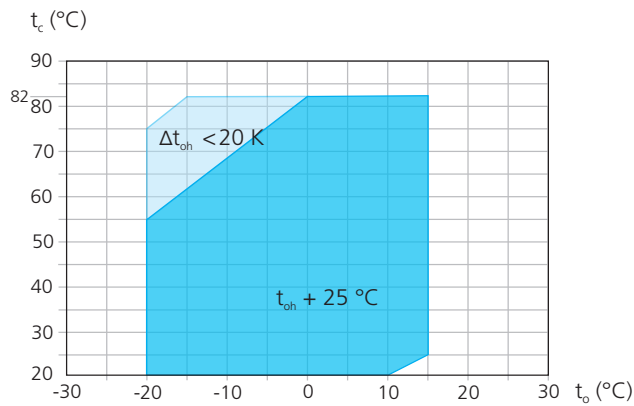
Despite the increased cubic capacity size, the dimensions of all FK40 models are the same – the FKX40/755 K can therefore be installed in exactly the same way and offers more capacity in the same installation space! When compared with the proven FKX40/655, the FKX40/755 offers an increased capacity of up to 15 %.



OPERATING LIMITS

R134a

FKX20 / FKX40 / FKX50



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

Permissible rotation speed

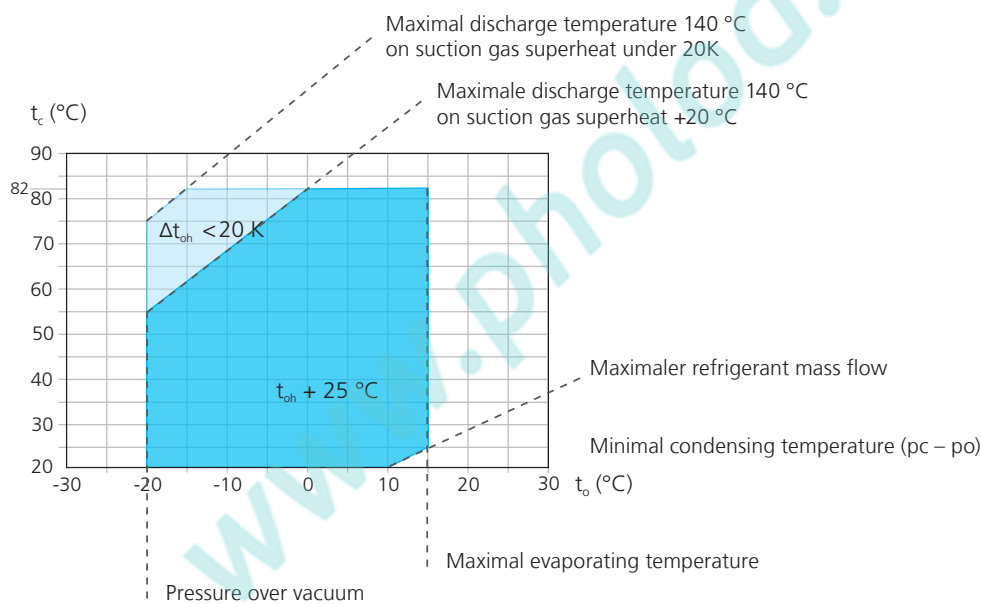
- N Design: 500 - 3.000 rpm
(max. rotation speed 3.500 rpm)
- K Design: 500 - 3.500 rpm

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

- Unlimited application range
- Reduced suction gas temperature

¹⁾ LP = low pressure, HP = high pressure

Description of the operating limits

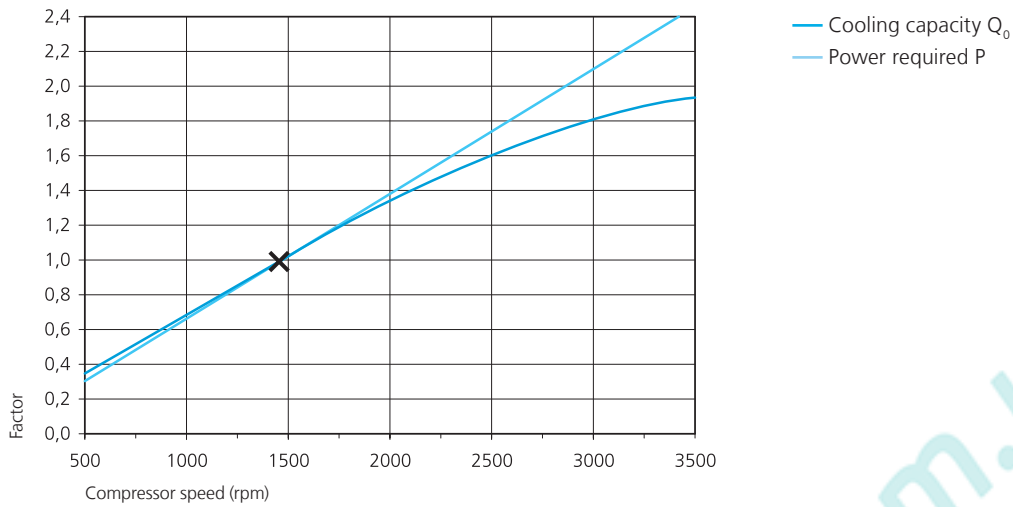


Compressor operation is possible within the limits shown on the application diagrams. Please note the coloured areas. Compressor application limits should not be chosen for design purposes or continuous operation.

Restrictions to the operating limits may occur when using a capacity regulator.

PERFORMANCE DATA

R134a

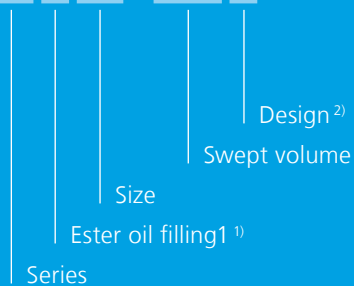


Performance specifications for the R134a are based on 25 °C suction gas temperatures without liquid subcooling (FKX50/830 and FKX50/980 on 20 °C suction gas temperature). Compressor speed 1450 rpm. The values can be stated to judge the overall performance at other speed with the help of the shown calculation factors. Performance data for other operating points, see GEA software.

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TYPE KEY

FK X 50 / 980 K



¹⁾ X = Ester oil filling (HFC refrigerant e.g. R134a, R407C)

²⁾ K = specially for air-conditioning
N = for air-conditioning or normal cooling

PERFORMANCE DATA

R134a		Performance data								1.450 rpm
Type	Cond. temp. °C	Cooling capacity \dot{Q}_0 [W]					Power consumption P [kW]			
		Evaporation temperature °C								
		15	12,5	10	5	0	-5	-10	-15	
FKX20/120 N FKX20/120 K	30	Q	9827	8983	8194	6771	5540	4484	3584	2823
		P	0,91	0,95	0,99	1,03	1,02	0,99	0,93	0,85
	40	Q	8789	8020	7302	6009	4895	3940	3129	2443
		P	1,30	1,31	1,32	1,29	1,24	1,16	1,06	0,96
	50	Q	7720	7027	6380	5221	4226	3376	2655	2045
		P	1,65	1,63	1,60	1,52	1,42	1,31	1,18	1,05
60	Q	6629	6012	5438	4415	3540	2798	2170	1639	
	P	1,95	1,90	1,85	1,72	1,58	1,43	1,27	1,13	
70	Q	5522	4982	4483	3598	2847	2214	1682	1232	
	P	2,20	2,12	2,05	1,88	1,70	1,52	1,35	1,19	
FKX20/170 N FKX20/170 K	30	Q	14150	12936	11800	9751	7978	6456	5160	4066
		P	1,31	1,37	1,42	1,48	1,47	1,42	1,34	1,23
	40	Q	12656	11549	10514	8654	7048	5674	4505	3517
		P	1,87	1,89	1,90	1,86	1,78	1,67	1,53	1,38
	50	Q	11117	10118	9188	7519	6085	4861	3823	2945
		P	2,38	2,35	2,31	2,20	2,05	1,88	1,70	1,51
60	Q	9545	8657	7831	6357	5098	4029	3125	2361	
	P	2,81	2,74	2,66	2,48	2,27	2,05	1,84	1,62	
70	Q	7951	7175	6456	5181	4100	3189	2422	1775	
	P	3,17	3,06	2,94	2,70	2,44	2,19	1,94	1,72	
FKX40/390 N FKX40/390 K	30	Q	32100	29345	26769	22120	18098	14646	11707	9223
		P	2,96	3,12	3,23	3,35	3,34	3,23	3,03	2,78
	40	Q	28711	26198	23852	19631	15990	12872	10221	7979
		P	4,25	4,29	4,30	4,22	4,04	3,78	3,47	3,12
	50	Q	25220	22954	20842	17056	13803	11028	8673	6681
		P	5,39	5,33	5,24	4,98	4,65	4,26	3,85	3,43
60	Q	21653	19638	17765	14421	11565	9140	7089	5355	
	P	6,37	6,21	6,03	5,62	5,15	4,66	4,16	3,69	
70	Q	18037	16276	14646	11752	9301	7234	5494	4026	
	P	7,19	6,94	6,68	6,13	5,55	4,96	4,41	3,89	
FKX40/470 N FKX40/470 K	30	Q	38841	35508	32390	26765	21899	17722	14165	11160
		P	3,58	3,77	3,91	4,05	4,04	3,91	3,67	3,37
	40	Q	34740	31700	28861	23753	19347	15575	12367	9655
		P	5,15	5,20	5,20	5,11	4,89	4,58	4,20	3,78
	50	Q	30516	27774	25219	20638	16702	13344	10494	8084
		P	6,52	6,45	6,34	6,03	5,63	5,16	4,66	4,15
60	Q	26201	23762	21496	17450	13994	11060	8578	6479	
	P	7,71	7,52	7,30	6,80	6,23	5,64	5,04	4,46	
70	Q	21825	19693	17721	14220	11254	8753	6648	4871	
	P	8,70	8,40	8,08	7,41	6,71	6,01	5,33	4,71	
FKX40/560 N FKX40/560 K	30	Q	46224	42257	38547	31853	26062	21090	16858	13281
		P	4,26	4,49	4,65	4,83	4,81	4,65	4,37	4,00
	40	Q	41343	37725	34347	28268	23025	18535	14718	11490
		P	6,12	6,18	6,19	6,08	5,82	5,45	5,00	4,50
	50	Q	36316	33053	30013	24561	19877	15880	12489	9621
		P	7,77	7,67	7,54	7,17	6,69	6,14	5,54	4,94
60	Q	31181	28278	25582	20767	16654	13162	10208	7711	
	P	9,18	8,95	8,69	8,09	7,42	6,71	5,99	5,31	
70	Q	25973	23437	21090	16924	13393	10416	7912	5797	
	P	10,35	10,00	9,62	8,82	7,99	7,15	6,34	5,60	
FKX40/655 N FKX40/655 K	30	Q	54249	49594	45239	37383	30586	24752	19784	15587
		P	5,01	5,27	5,46	5,66	5,65	5,46	5,13	4,70
	40	Q	48521	44275	40310	33176	27022	21753	17273	13485
		P	7,19	7,26	7,27	7,14	6,83	6,39	5,86	5,28
	50	Q	42621	38792	35224	28825	23328	18637	14657	11291
		P	9,11	9,01	8,85	8,42	7,86	7,21	6,50	5,79
60	Q	36594	33188	30023	24372	19545	15447	11980	9050	
	P	10,77	10,50	10,20	9,49	8,71	7,87	7,04	6,23	
70	Q	30483	27506	24751	19862	15718	12225	9285	6804	
	P	12,14	11,73	11,29	10,35	9,37	8,39	7,44	6,58	
FKX40/755 K	30	Q	62884	57494	52450	43340	35449	28670	22895	18018
		P	5,87	6,17	6,39	6,60	6,58	6,35	5,97	5,49
	40	Q	56119	51215	46632	38378	31250	25140	19942	15550
		P	8,41	8,48	8,48	8,32	7,95	7,44	6,82	6,15
	50	Q	49160	44749	40637	33255	26905	21481	16877	12986
		P	10,65	10,51	10,33	9,81	9,14	8,38	7,56	6,75
60	Q	42053	38145	34511	28017	22462	17741	13746	10372	
	P	12,58	12,26	11,90	11,07	10,14	9,17	8,19	7,26	
70	Q	34846	31447	28301	22710	17967	13964	10596	7756	
	P	14,20	13,71	13,19	12,09	10,94	9,78	8,68	7,67	

Relating to 25°C suction gas temperature without liquid subcooling

■ Reduced suction gas temperature

R134a		Performance data							1.450 rpm	
Type	Cond. temp. °C	Cooling capacity \dot{Q}_0 [W]					Power consumption P [kW]			
		Evaporation temperature °C								
		15	12,5	10	5	0	-5	-10	-15	
FKX50/660 N FKX50/660 K	30	Q	55186	50450	46020	38029	31114	25179	20126	15856
		P	5,09	5,36	5,56	5,76	5,75	5,55	5,22	4,78
	40	Q	49359	45039	41006	33749	27489	22129	17571	13718
		P	7,31	7,38	7,39	7,26	6,95	6,51	5,96	5,37
	50	Q	43357	39462	35832	29322	23731	18959	14910	11486
		P	9,27	9,16	9,00	8,56	7,99	7,33	6,62	5,89
60	Q	37226	33761	30542	24793	19883	15714	12187	9206	
	P	10,96	10,68	10,37	9,66	8,86	8,01	7,16	6,34	
70	Q	31009	27981	25179	20205	15990	12436	9446	6921	
	P	12,35	11,93	11,48	10,53	9,53	8,54	7,57	6,69	
FKX50/775 N FKX50/775 K	30	Q	64767	59209	54010	44631	36516	29551	23620	18609
		P	5,98	6,29	6,52	6,76	6,74	6,51	6,12	5,61
	40	Q	57928	52859	48125	39608	32261	25971	20622	16099
		P	8,58	8,66	8,68	8,52	8,16	7,63	7,00	6,30
	50	Q	50885	46313	42053	34413	27851	22251	17499	13480
		P	10,88	10,75	10,57	10,05	9,38	8,60	7,76	6,92
60	Q	43689	39622	35844	29097	23335	18442	14303	10804	
	P	12,86	12,54	12,17	11,34	10,40	9,40	8,40	7,44	
70	Q	36393	32838	29550	23712	18766	14595	11085	8123	
	P	14,50	14,00	13,48	12,36	11,19	10,02	8,89	7,85	
FKX50/830 N FKX50/830 K	30	Q	69133	63194	57636	47606	38926	31477	25144	19808
		P	6,40	6,74	7,00	7,26	7,24	6,99	6,57	6,02
	40	Q	61668	56269	51225	42145	34309	27601	21904	17099
		P	9,20	9,29	9,31	9,15	8,76	8,19	7,51	6,76
	50	Q	53991	49141	44620	36507	29533	23583	18538	14282
		P	11,66	11,53	11,34	10,79	10,07	9,23	8,33	7,41
60	Q	46161	41869	37879	30749	24654	19479	15104	11413	
	P	13,78	13,44	13,06	12,16	11,16	10,08	9,01	7,97	
70	Q	38235	34508	31058	24929	19730	15346	11658	8550	
	P	15,53	15,01	14,45	13,26	12,01	10,75	9,53	8,42	
FKX50/980 N FKX50/980 K	30	Q	81175	74192	67663	55889	45709	36976	29545	23272
		P	7,54	7,93	8,21	8,51	8,49	8,20	7,71	7,07
	40	Q	72420	66072	60145	49486	40297	32433	25748	20098
		P	10,80	10,90	10,91	10,71	10,26	9,61	8,82	7,94
	50	Q	63408	57703	52390	42865	34688	27713	21794	16787
		P	13,68	13,52	13,28	12,64	11,80	10,83	9,78	8,71
60	Q	54208	49158	44468	36098	28953	22887	17754	13411	
	P	16,17	15,76	15,30	14,25	13,08	11,83	10,58	9,37	
70	Q	44893	40507	36451	29256	23162	18025	13699	10040	
	P	18,24	17,62	16,95	15,55	14,08	12,61	11,19	9,89	

Relating to 25°C suction gas temperature (FKX50/830 and FKX50/980 on 20°C suction gas temperature) without liquid subcooling

■ Reduced suction gas temperature

Further information can be found on the internet at vap.gea.com/mobileapplication



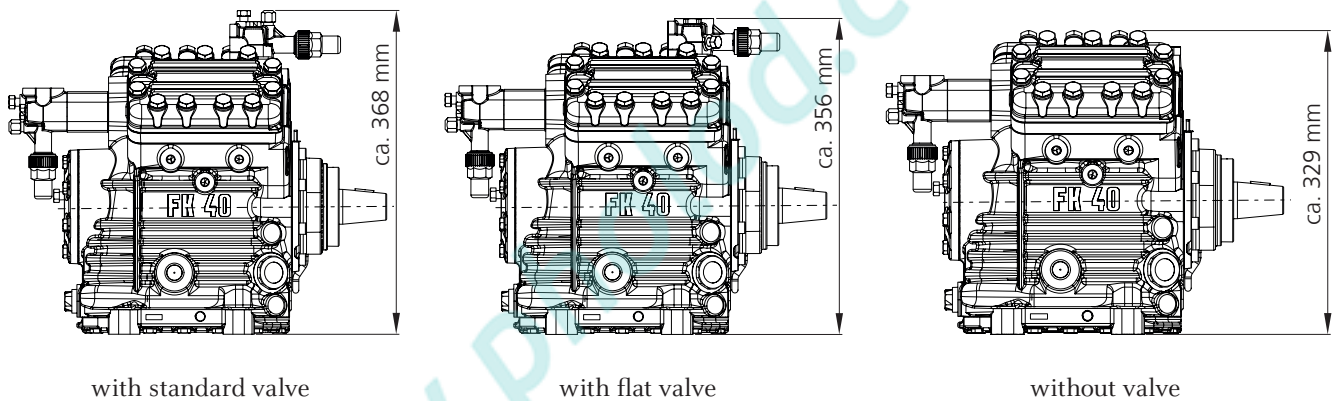
SPECIAL HOUSING K1 – APPLICATIONS FOR EURO 6

Due to special requirements by customers, there is a demand for additional fastening options on the compressor housing – particularly where there is little installation space available, as is the case in many Euro 6 buses. This has been achieved by means of the **K1 special housing**, which creates a higher level of stability thanks to the compressor being fastened directly to the vehicle motor.

Special features of the K1 housing:

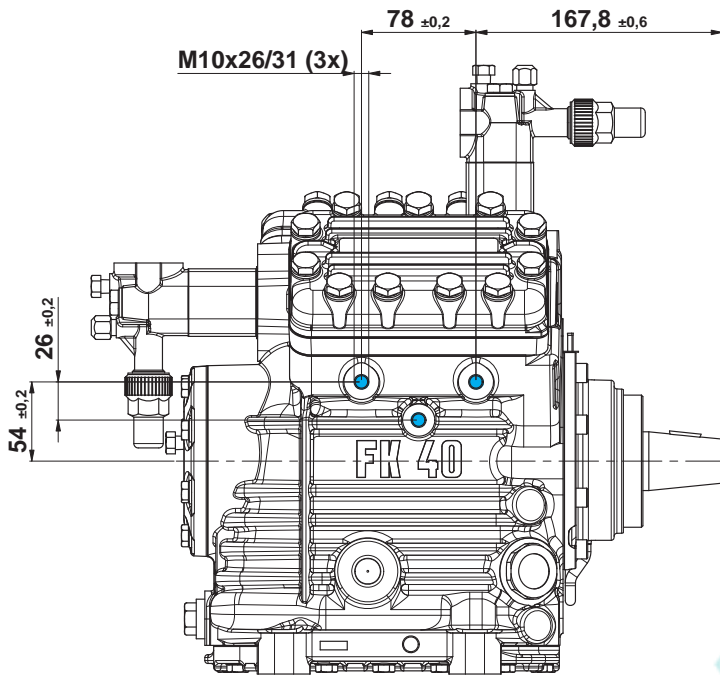
- Optimised housing
- With 46 mm intermediate flange for suction and discharge line valves
- Suction and discharge valves without soldered flanges
- Models available: FKX40/470 K1, 560 K1, 655 K1 and 755 K1

The K1 version is available in three different options:

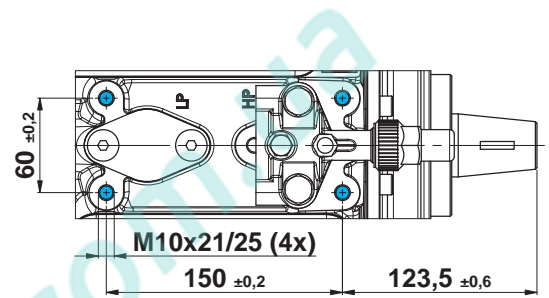


There are also special housings available with additional fastening points for the 6-cylinder compressors of the FK50 series. Just ask our Application Technology department – they will be happy to advise you!

SPECIAL HOUSING K1 – APPLICATIONS FOR EURO 6

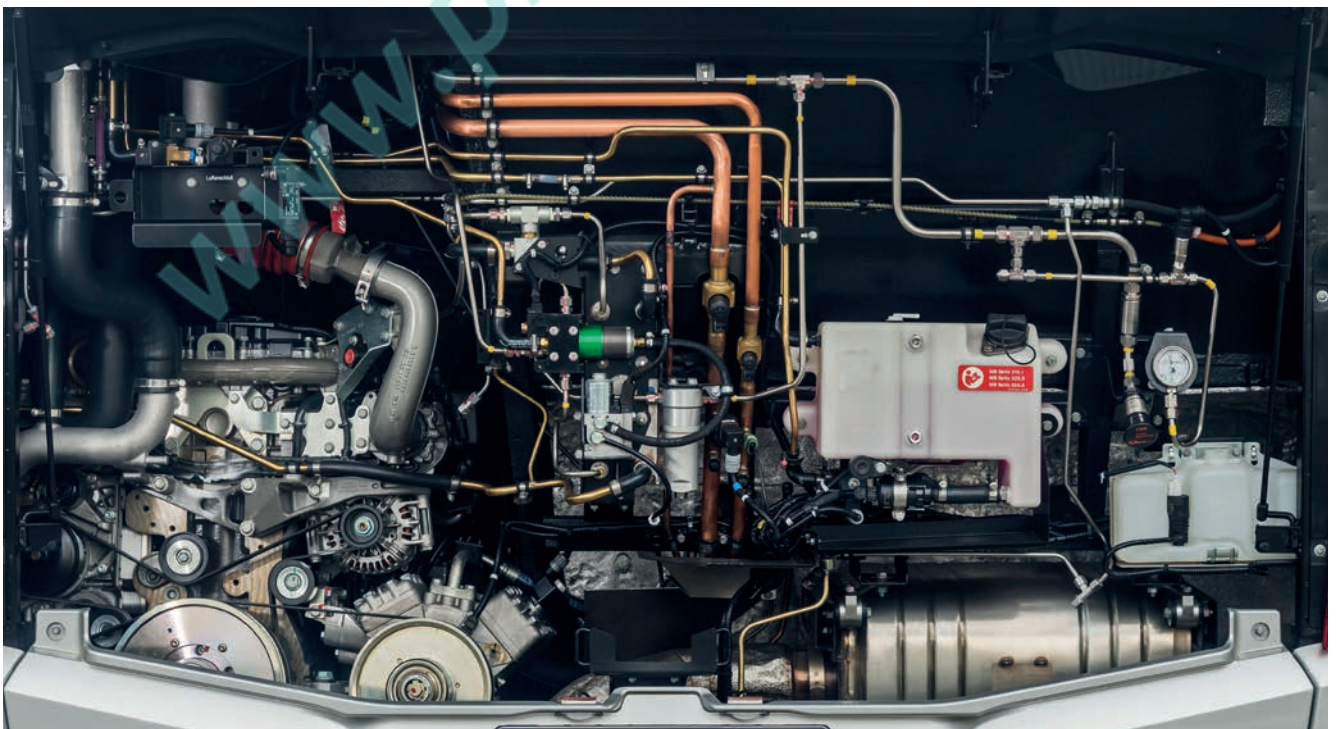


Mounting thread only on this side of the compressor available.



Mounting threads (top view).

Installation example: FKX40 in Euro 6 engine



TECHNICAL DATA

FK	Type	Number of cylinders	Swept volume	Displacement (1450 rpm)	Weight	Connections		Oil charge
						Discharge line DV	Suction line SV	
			cm ³	m ³ /h	kg	mm inch	mm inch	Ltr.
FKX20/120	N	2	118	10,3	15	16 5/8	16 5/8	0,7
FKX20/120	K							
FKX20/170	N	2	170	14,8	14	16 5/8	16 5/8	0,7
FKX20/170	K							
FKX40/390	N	4	385	33,5	34	22 7/8	28 1 1/8	2,0
FKX40/390	K							
FKX40/470	N	4	466	40,5	33	28 1 1/8	35 1 3/8	2,0
FKX40/470	K							
FKX40/560	N	4	554	48,3	33	28 1 1/8	35 1 3/8	2,0
FKX40/560	K							
FKX40/655	N	4	650	56,6	31	35 1 3/8	35 1 3/8	2,0
FKX40/655	K							
FKX40/755	K	4	755	65,6	31	35 1 3/8	35 1 3/8	2,0
FKX50/660	N	6	662	57,6	42	35 1 3/8	2 x 35 1 3/8	2,5
FKX50/660	K							
FKX50/775	N	6	776	67,6	41	35 1 3/8	2 x 35 1 3/8	2,5
FKX50/775	K							
FKX50/830	N	6	831	72,3	43	35 1 3/8	2 x 35 1 3/8	2,5
FKX50/830	K							
FKX50/980	N	6	976	84,9	41	35 1 3/8	2 x 35 1 3/8	2,5
FKX50/980	K							

Further information can be found on the internet at vap.gea.com/mobileapplication

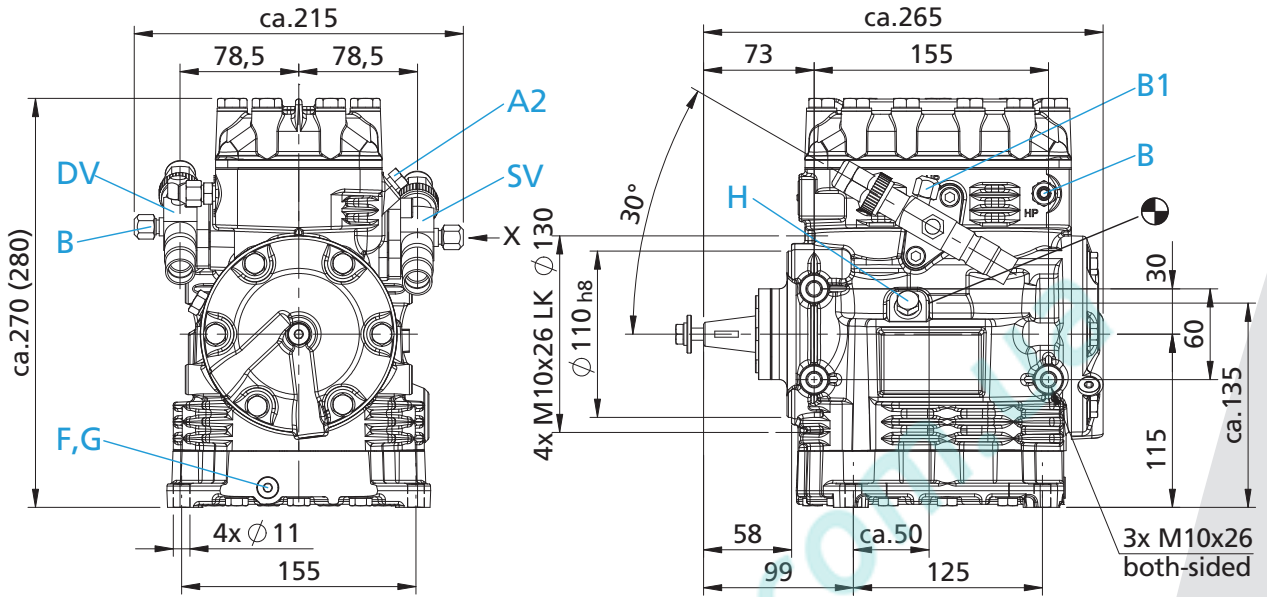


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DIMENSIONS AND CONNECTIONS

FK20

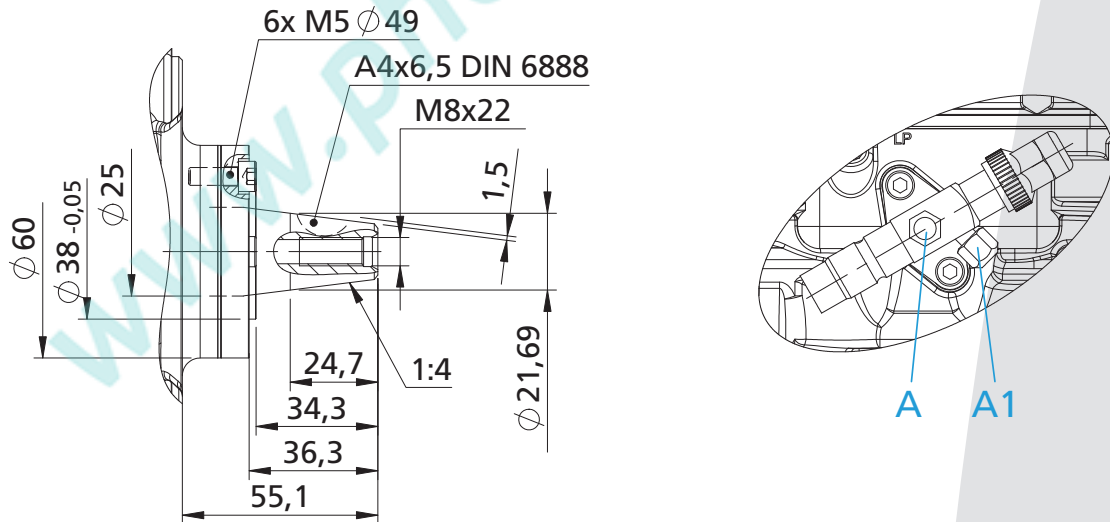
FKX20/120 K FKX20/170 K
FKX20/120 N FKX20/170 N



Dimensions in () = K Design

Shaft end

View X

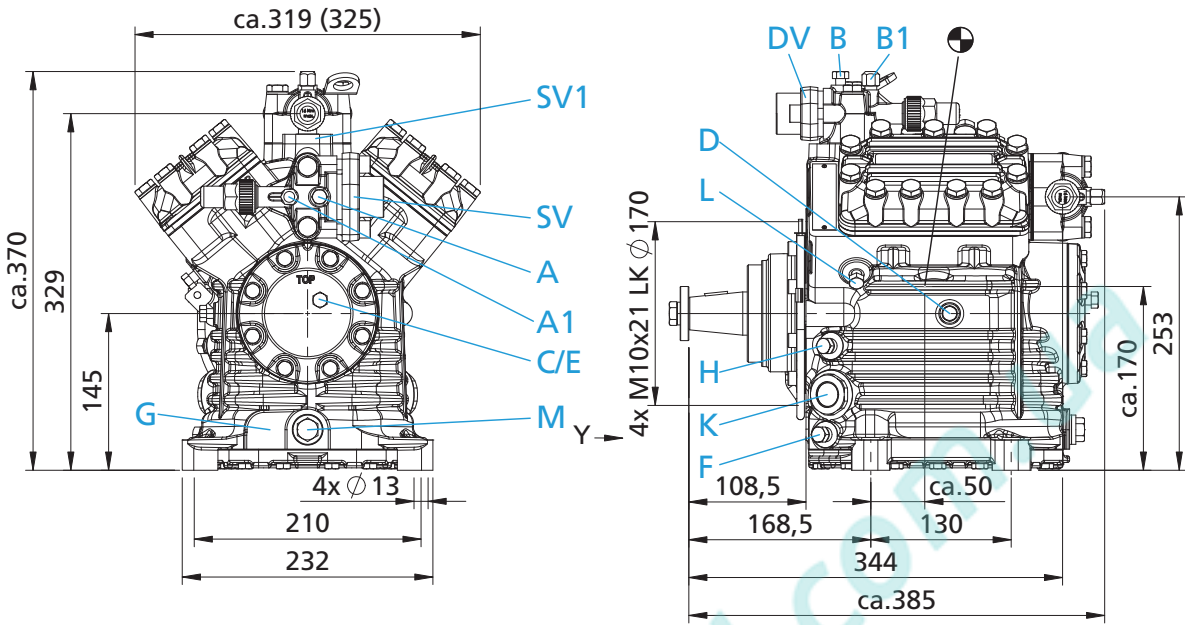


Dimensions in mm
● Centre of gravity

Connections see page 26

DIMENSIONS AND CONNECTIONS

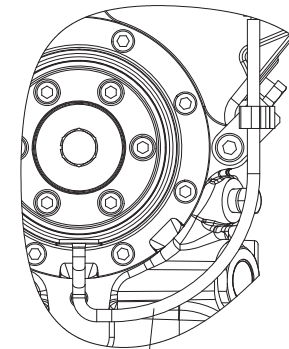
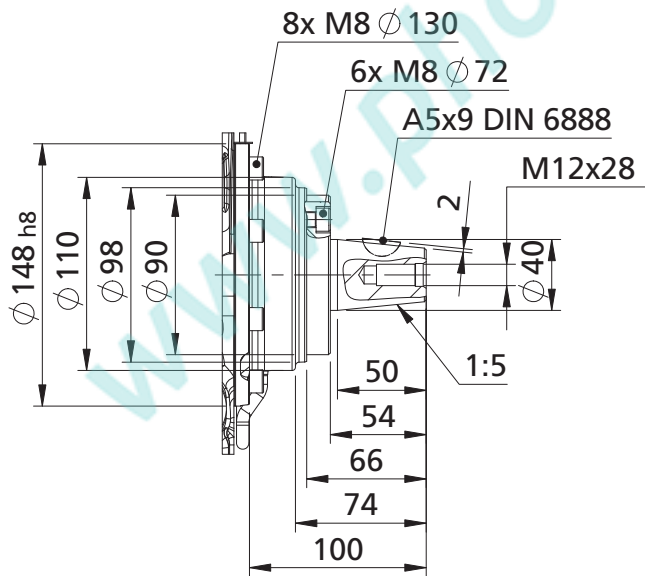
FK40	FKX40/390 K	FKX40/470 K	FKX40/560 K	FKX40/655 K	FKX40/755 K
	FKX40/390 N	FKX40/470 N	FKX40/560 N	FKX40/655 N	



Dimensions in () = K Design

Shaft end

View Y



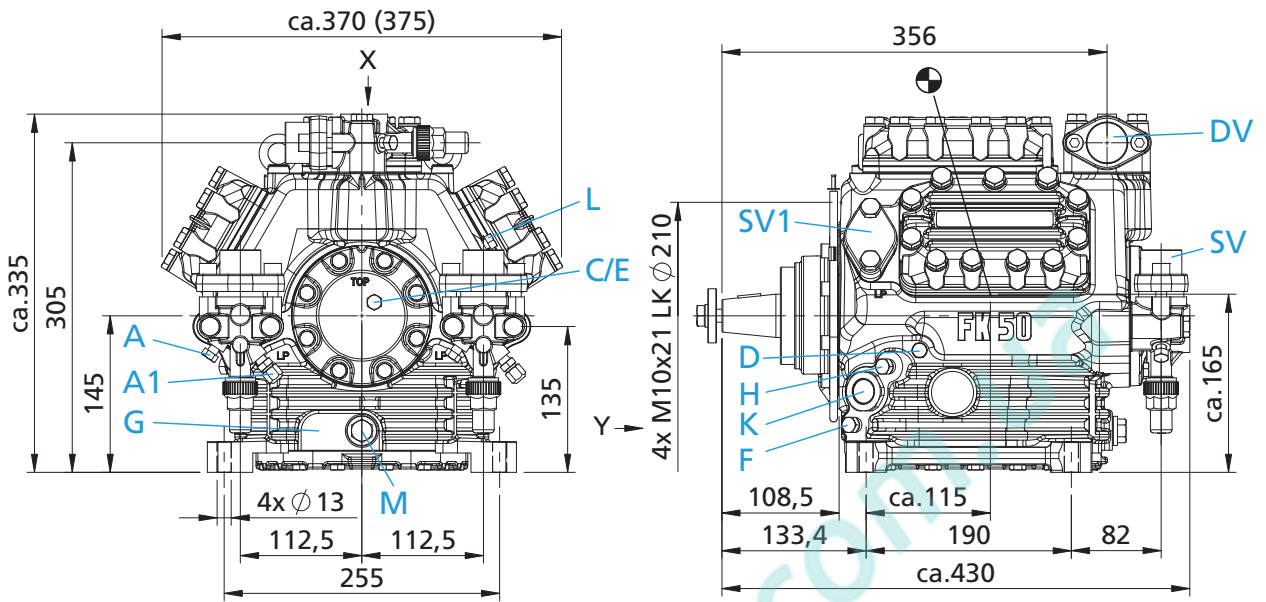
Leak oil drain hose

Dimensions in mm
 ● Centre of gravity

Connections see page 26

FK50

FKX50/660 K	FKX50/775 K	FKX50/830 K	FKX50/980 K
FKX50/660 N	FKX50/775 N	FKX50/830 N	FKX50/980 N

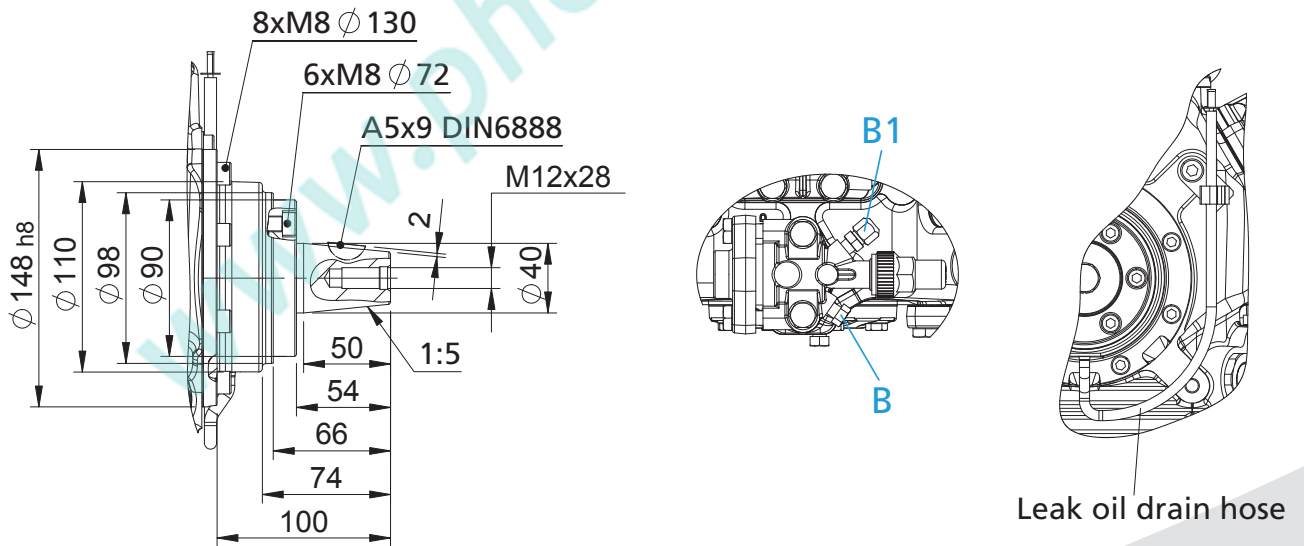


Dimensions in () = K Design

Shaft end

View X

View Y



Dimensions in mm
 ● Centre of gravity

Connections see page 26

CONNECTIONS

		FK20	FK40	FK50
SV	Suction line	please refer to technical data page 22		
DV	Discharge line	please refer to technical data page 22		
A	Connection suction side, not lockable	7/16" UNF	1/8" NPTF	1/8" NPTF
A1	Connection suction side, lockable	7/16" UNF	7/16" UNF	7/16" UNF
A2	Connection suction side, not lockable	1/8" NPTF	–	–
B	Connection discharge side, not lockable	7/16" UNF	1/8" NPTF	1/8" NPTF
B1	Connection discharge side, lockable	7/16" UNF	7/16" UNF	7/16" UNF
C	Connection oil pressure safety switch OIL	–	1/8" NPTF	1/8" NPTF
D	Connection oil pressure safety switch LP	–	1/8" NPTF	1/8" NPTF
E	Connection oil pressure gauge	–	1/8" NPTF	1/8" NPTF
F	Oil drain	G 1/8"	1/4" NPTF	1/4" NPTF
G	Optional connection oil sump heater	• 1)	• 1)	• 1)
H	Oil charge plug	1/4" NPTF	1/4" NPTF	1/4" NPTF
K	Sight glass	• 2)	2 x 1 1/8" - 18 UNEF	2 x 1 1/8" - 18 UNEF
L	Connection thermal protection thermostat	• 3)	1/8" NPTF	1/8" NPTF
M	Oil filter	–	M 22 x 1,5	M 22 x 1,5
SV1	Optional connection suction line valve	–	•	•

• Option available

• Available on request

¹⁾ No connection available as standard (connection M 22 x 1,5)

²⁾ Standard is without sight glass (connection M 20 x 1)

³⁾ No connection available as standard (1/8" NPTF, intermediate flange required)

SCOPE OF SUPPLY

Scope of supply		FK20	FK40	FK50
Open type compressor in a light weight aluminium construction, with suction and discharge valves		•	•	•
Cylinder arrangement:	Two cylinder in row	•		
	Four cylinder in V		•	
	Six cylinder in W			•
Integrated oil collecting system for the shaft seal, hose drain design			•	•
Seat front bearing flange			•	•
Fastening possibility for electromagnetic clutch		•	•	•
Possible design variants: ¹⁾	K Design	•	•	•
	N Design	•	•	•
Oil charge: ²⁾	FK: FUCHS Reniso SP 46	•	•	•
	FKX: FUCHS Reniso Triton SE 55	•	•	•
Two sight glasses			•	•
Pressure relief valve			•	•
Inert gas charge		•	•	•

¹⁾ Only the selected design variant is contained in the scope of supply.

²⁾ Additional types of oil on request.

The scope of supply is the same for the various levels of displacement and the design variants K and N. In the data concerning the type of compressor, these additions are not taken into account.

SPECIAL DESIGN

GEA compressors are used in many different applications. Our strength lies in our flexibility in being able to meet our customers' requirements. In conjunction with our customers, we develop optimum solutions for special challenges. Come and talk to us, our expert team will be pleased to advise you.

ACCESSORIES

			FK20	FK40	FK50
1	Capacity regulator 24 V DC:	1 Capacity regulator = 50 % residual capacity IP65 ¹⁾		•	
		1-2 Capacity regulator = 66/33 % residual capacity IP65 ¹⁾			•
2	Electromagnetic clutch 24 V DC:	Manufacturer/Type: Kendrion LA21 Lang 66,1 Power consumption: 48 W ¹⁾²⁾ 45 W ¹⁾²⁾	•		
		Manufacturer/Type: Kendrion LA16 Lang 73,1 Power consumption: 39 W ¹⁾²⁾ 62 W ¹⁾²⁾		•	•
		Manufacturer/Type: Kendrion LA26 Lang 73,5 Power consumption: 62 W ¹⁾²⁾ 80 W ¹⁾²⁾			•
3	Compressor flywheel (three-spoke, grey cast iron):	Ø 165 mm, 2 x SPA	•		
		Ø 210 mm, 2 x SPA			
		Ø 210 mm, 3 x SPA		•	•
4	Oil sump heater 24 V DC:	40 W IP65 ¹⁾	• ⁴⁾		
		80 W IP65 ¹⁾		• ⁴⁾	• ⁴⁾
5	Thermal protection thermostat (bimetal sensor) IP67		• ³⁾	•	•
6	Intermediate flange for changing the position of the shut-off valves ²⁾ Oval flange, height 5, 10, 12, 15, 25, 30, 34, 46, 57,5, 62, 71, 75 oder 95 mm			•	•
		Sight glass	• ⁴⁾		

¹⁾ Other voltages on request

²⁾ Other designs on request

³⁾ With intermediate flange

⁴⁾ Possible just ex works, cannot be retrofitted

The accessories are the same for the various levels of displacement and the design variants N and K.

In the data concerning the type of compressor, these additions are not taken into account.

1 Capacity regulator



2 Electromagnetic clutch



3 Compressor flywheel



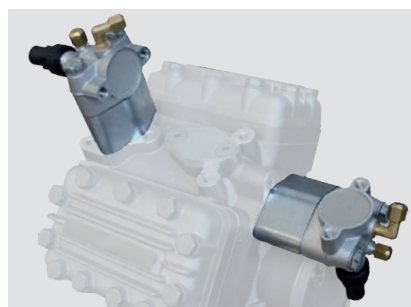
4 Oil sump heater



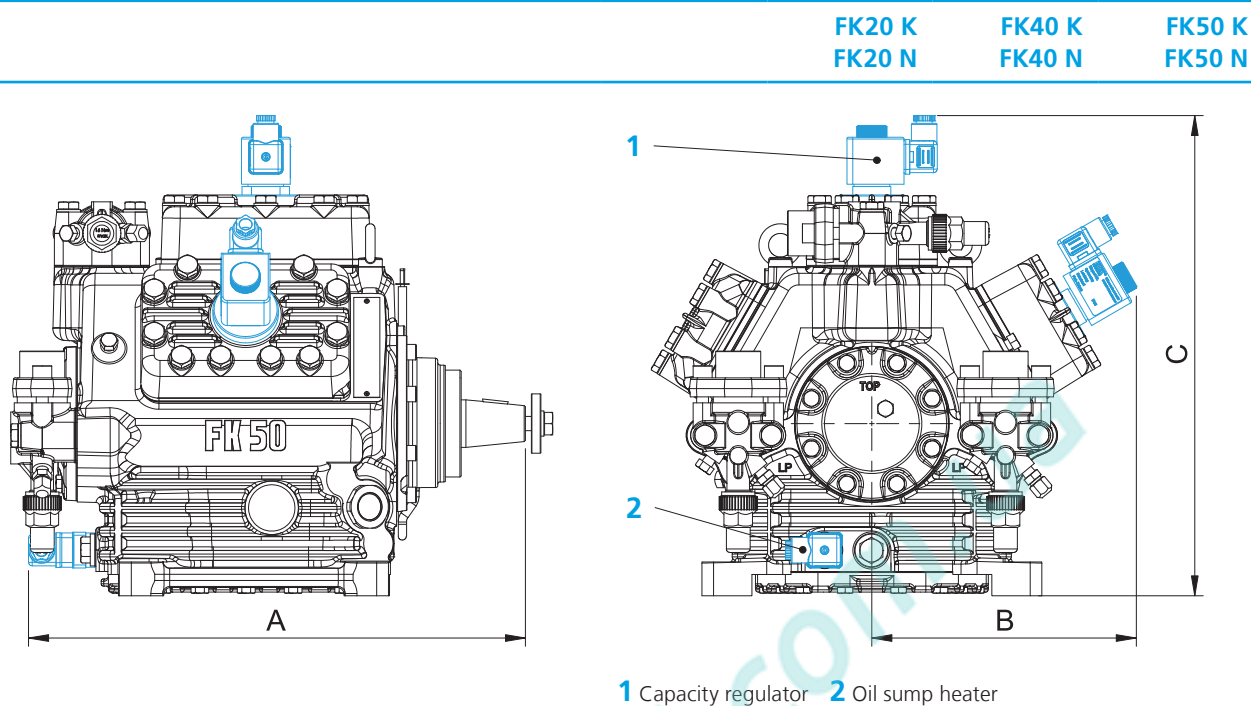
5 Thermal protection thermostat



6 Intermediate flange



DIMENSIONS WITH ACCESSORIES



Type	A (mm)	B (mm)	C (mm)
FK20 N, K	ca. 290	–	–
FK40 N	ca. 410	ca. 180	–
FK40 K	ca. 410	ca. 185	–
FK50 N	–	ca. 225	ca. 405
FK50 K	–	ca. 240	ca. 420



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Characteristics

Electrical HG compressors

- Special features
- 2-pole compressors
- Silent blocks
- Motor Protection INT69 / MP10
- Operation with frequency converter technology

Characteristics FK vehicle compressors for bus- and railway air-conditioning	1	P. 6
Technical data FK vehicle compressors	2	P. 12
Characteristics Electrical HG compressors	3	P. 30
Technical data Electrical HG compressors	4	P. 40
Service – Made by GEA	5	P. 58

Special features

Semi-hermetic 2- und 4-cylinder compressors

The HG compressors are specially designed for mobile applications. They have a low weight, particularly in the aluminium version, and this is of crucial importance for many

applications. The 2-pole version also allows a significant increase in capacity with the same installation space.

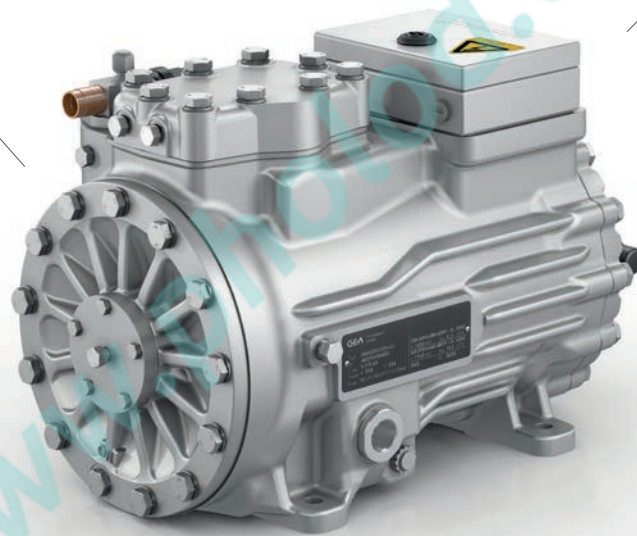
Universal

- Housing in aluminium and cast iron
- One compressor design for all standard refrigerants. For air-conditioning applications, normal refrigeration and deep-freezing
e. g. R134a, R404A, R507, R407C, R22, R513A
- Maximum allowed operating pressure: 28 bar
- On request maximum allowed operating pressure: 35 bar

High refrigeration capacity combined with minimum power requirement

- Optimized gas flow
- Efficient service valves
- Minimum clearance volume
- Powerful, economic drive motors

Reliable oil management system for Mobile Applications



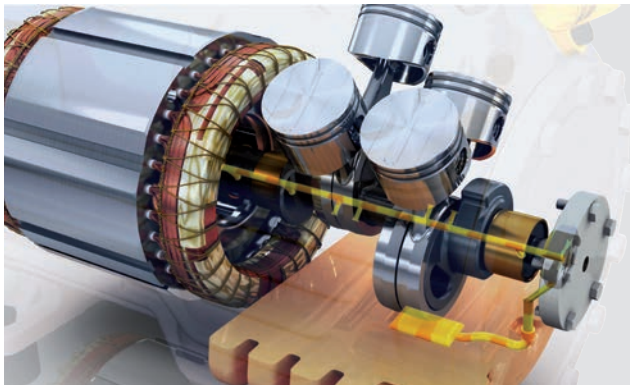
Reliable piston technology

4-pole and 2-pole motors

Frequency control possible in wide range

Same mechanical interfaces across HGX34 range

Safe, reliable oil supply



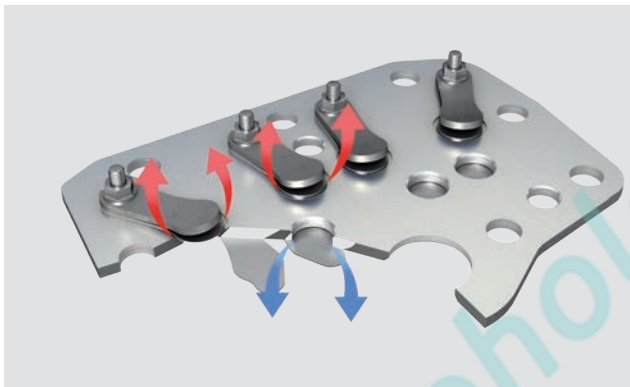
- Forced-feed lubrication independent of direction of rotation
- Large volume oil sump

Wear-resistant durable driving gear



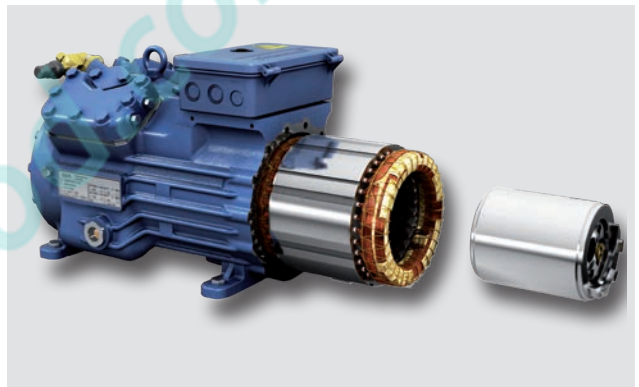
- Solid construction and design
- Low friction sleeve bearings
- Aluminium pistons with two ring assembly

Solid construction and design



- Valve design, tried and trusted all over the world, with one-sided fixed finger reed, suction and pressure side
- Valve made of high quality impact-resistant spring steel

Replaceable motors



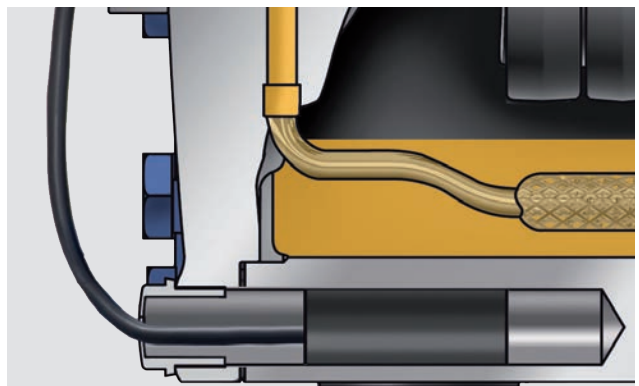
- The compressors can be repaired directly on-site, since the motors are replaceable.
- Only for grey cast iron housings and 4-pole aluminium compressors!

Variable suction line valve position



- Shut-off valves rotatable through 90°
- Flexible location for suction line and discharge line connection

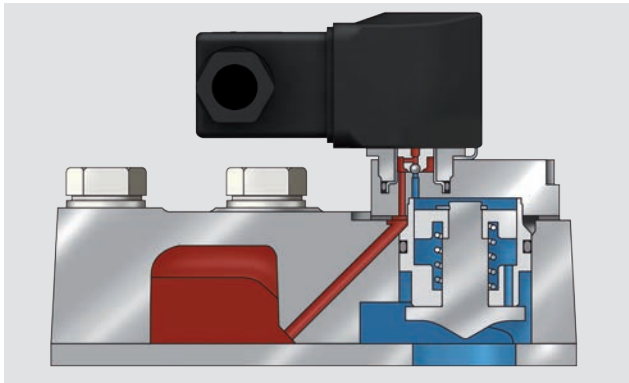
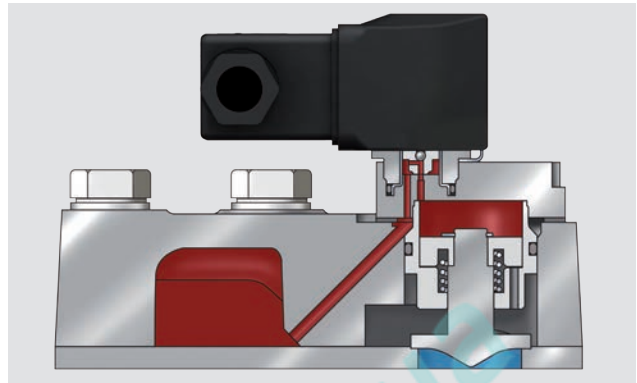
Oil sump heater (option)



Schematic illustration

- Installed in the housing bore
- Replacement without opening the refrigeration circuit

SPECIAL FEATURES

Economic capacity control (option)*Full load operation**Partial load operation*

- Locking of suction port of a cylinder bank with an electromagnetic pilot valve
- Possible residual capacity: 4-cylinder compressor: 50 %

Electric switch box with reduced height (option)

- Terminal box with reduced height (-15 mm)
- Motor protection MP10/INT69 as an extra item for control cabinet installation

- Standard terminal box
- Motor protection MP10/INT69 integrable

SEMI-HERMETIC COMPRESSORS WITH 2-POLE DRIVE MOTOR

Based on our compressors of the Pluscom series with its outstanding advantages and features, GEA offers already for some time a compressor version with 2-pole drive. This compressor version enables double the rotation speed to be achieved with the same mains power frequency, and this gives a refrigerating capacity that is up to 70 % higher than that of a 4-pole motor.

This increase in the maximum possible compressor capacity can be realized through the use of a special valve plate system. The so-called GEA Bock K valve plate, which was developed by GEA Bock especially for mobile applications, is already used thousands of times in the area of bus air-conditioning and sets the international standard for quality and reliability.

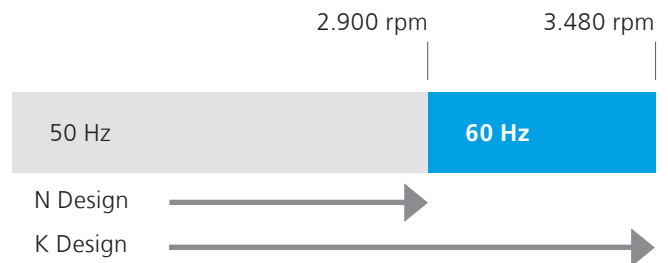
Shall the compressor without a frequency converter operate at a power supply frequency of 50 Hz, the adaptation of the mains frequency is necessary. e.g.

- 400 V / 50 Hz
- 460 V / 60 Hz

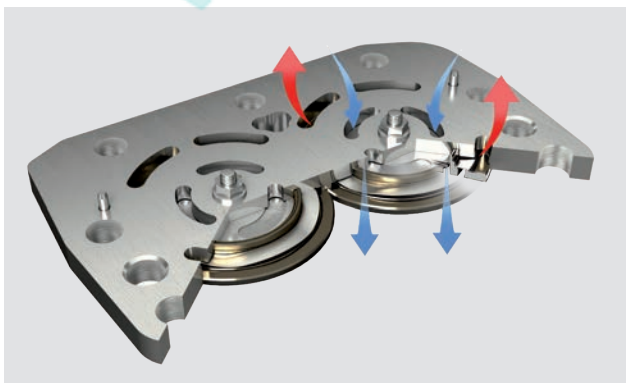
Advantages

- High performance with 2-pole drive motor (up to 3.480 rpm)
- With oil pump lubrication as standard
- Optional: GEA Bock K valve plate
- Available in aluminium lightweight design (ca. 40 % weight savings)
- Also available with terminal box with reduced height

Available models	Displacement	Displacement
	50 Hz (2.900 rpm)	60 Hz (3.480 rpm)
HGX34P/255-2 HGX34P/255-2 A	44,3 m³/h	–
HGX34P/315-2 HGX34P/315-2 A HGX34P/315-2 S HGX34P/315-2 S A	54,7 m³/h	–
HGX34P/315-2 A K HGX34P/315-2 S A K	54,7 m³/h	65,6 m³/h
HGX34P/380-2 HGX34P/380-2 A	66,1 m³/h	–
HGX34P/380-2 A K	66,1 m³/h	79,4 m³/h

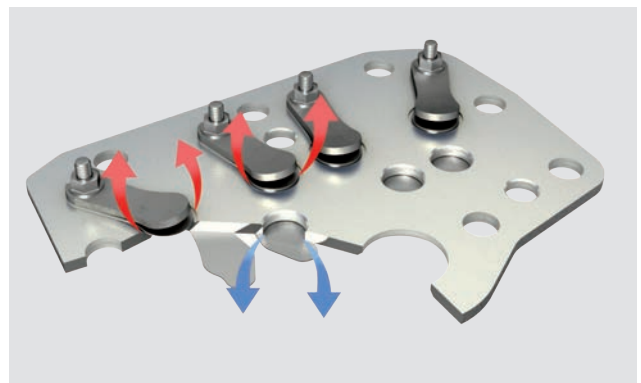


K Design for 50 Hz und 60 Hz



- The GEA Bock K-valve plate with ringfins for higher loads

N Design for 50 Hz



- Valve design, tried and trusted all over the world, with one-sided fixed finger reed valves, suction and pressure side
- Valve made out of high quality, impact resistant spring steel

SILENT BLOCKS FOR GEA BOCK HG34 ALUMINIUM COMPRESSORS

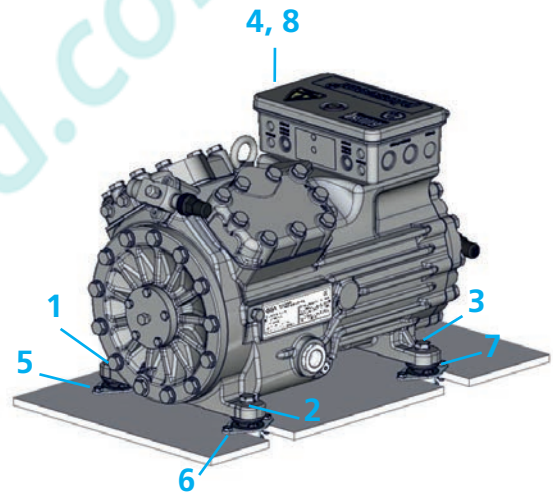
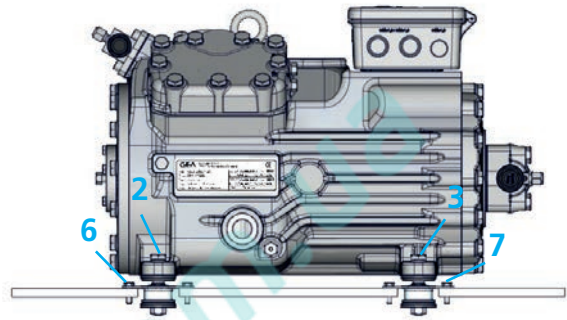
After numerous and extensive tests, GEA Bock was able to develop silent blocks that are especially adjusted to the specific demands of mobile applications (bus and rail air-conditioning). Those silent blocks can be used with all Bock aluminium compressors of the HG34 series at ambient temperatures from -30°C to $+70^{\circ}\text{C}$.

Many test runs were needed to adjust the silent blocks exactly to the GEA Bock HG34 Aluminium compressors. This was done by the installation of acceleration sensors in front and behind the respective silent blocks. At control points 1 to 4 they were used to measure vibrations of the compressor at the compressor foot. Control points 5 to 8 measured vibrations at the base plate. The result showed a vibration reduction of up to 78 %.

With the new silent blocks, GEA offers an ideal solution to reduce the vibrations caused by the compressor.

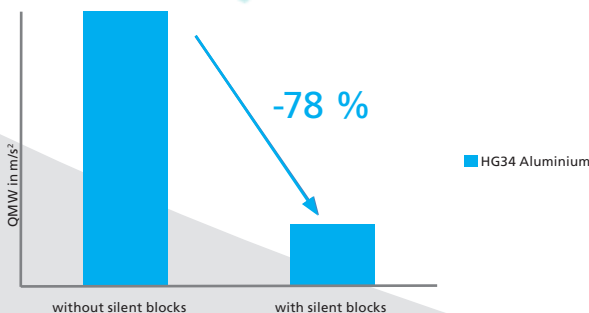
Due to their unique design, the running comfort increases and therefore the vibrations at the vehicle decrease. This way a quieter, safer operation can be ensured.

Especially in partial load operation at low rotation speeds, vibration at the compressor and therefore the vehicle increasingly occur. The vibrations are ideally damped by the silent blocks. In addition, the reduced transmission of vibrations results in a higher passenger comfort in the vehicle.



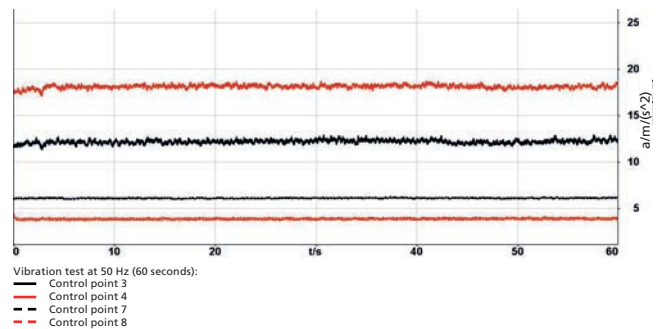
Test results with and without silent blocks

Average vibration at 50Hz operation



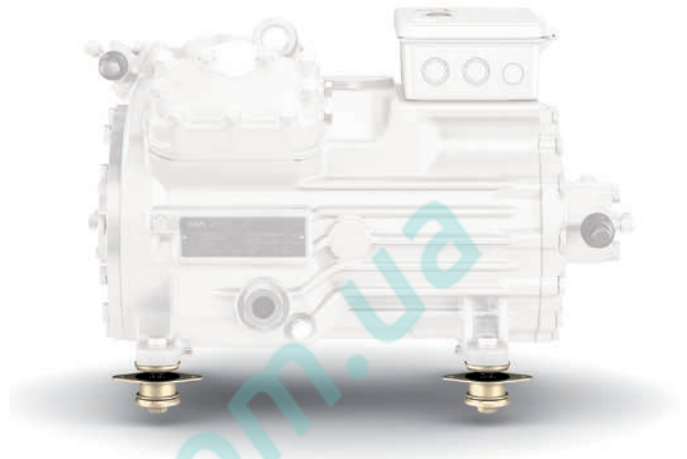
RMS: root mean square (average increase in velocity of a vibration)

Vibration with and without silent blocks



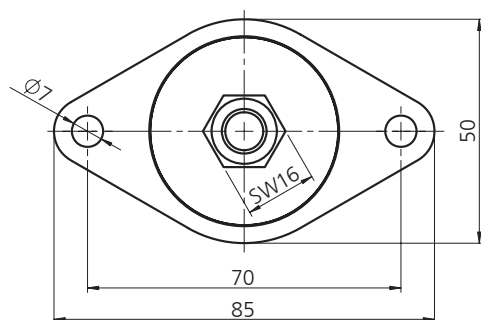
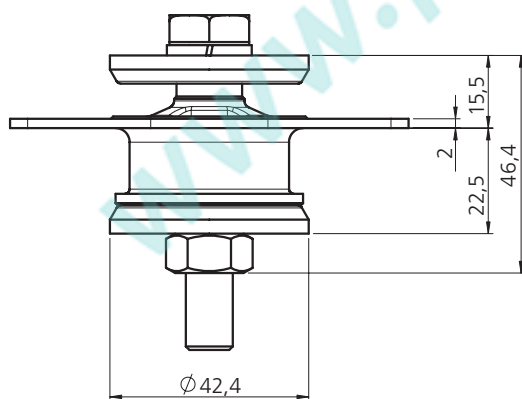
Advantages

- Special design for the use with GEA Bock HG34 aluminium compressors
- Suitable for rail and bus applications
- Vibrations and annoying noises are minimized up to 78 %
- Running comfort of compressor is increased
- Increased passenger comfort
- Easy installation
- Suitable for ambient temperatures from -30°C to $+70^{\circ}\text{C}$
- Safe compressor operation, also in case of damage (if the rubber element is breaking/torn off, the compressor stays in its safe holder)



The GEA silent blocks are developed and tested as a universal solution. The use of these silent blocks in series systems requires a pre-testing in an identical model system.

Dimensions silent blocks



Dimensions in mm

INT69 G MOTOR PROTECTION

Electronic Motor Protection INT69 G



Temperature safety drive for the drive motor

The INT69 G also provides the usual functions, as:

- Motor temperature monitoring
- Hot gas temperature monitoring
- A reconnection preventing device
- A reset

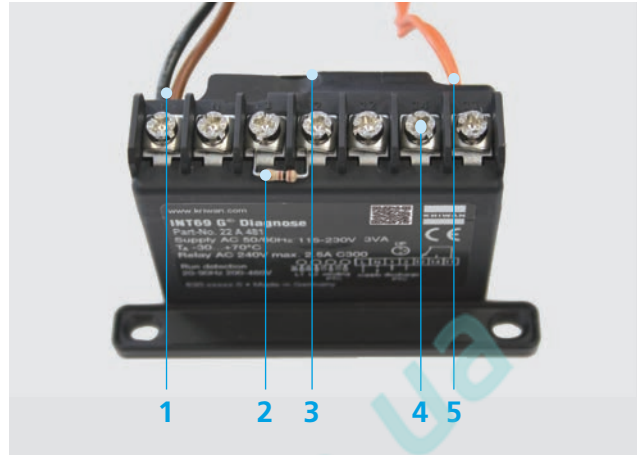
1 Interlocking contact B1 B2

2 Operation & fault contact

3 PTC sensors

Connection of up to nine PTC sensors possible

INT69 G Diagnosis



1 Operating recognition

2 Connection hot gas sensor

3 Interface for USB / DP-Modbus Gateway

4 Operation & fault contact

5 PTC sensors

Technical data: INT69 G, INT69 G Diagnose Units

Unit designation	INT69 G	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/B/H)	68 x 33 x 53 mm	68 x 33 x 53 mm

Note: Customer-specific versions still available with motor protection MP10.

In the case of new projects from 2017 onwards, INT69 G should be planned in.

OPERATION WITH FREQUENCY CONVERTER

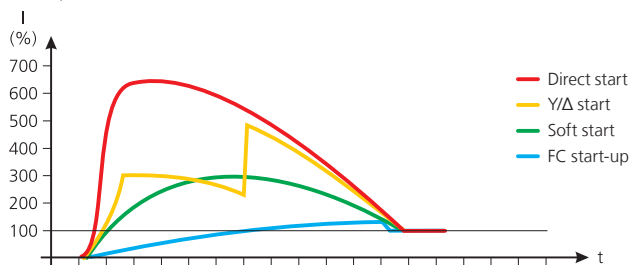
Continuously variable speed control using frequency converter technology is the most efficient means of adapting the capacity of the compressor to current refrigeration plant requirements.

Thanks to the oil pump lubrication all GEA compressors are ideal for speed control, in particular for low frequencies.

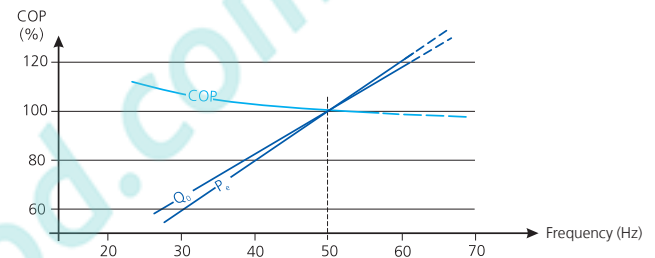
The advantages of frequency-converter operation:

- Fully variable adjustment of the refrigerating capacity on demand
- No high-energy, high-wear start/stop operation
- 25 % or more energy saving potential
- Reduced mechanical compressor load for longer service life
- Always optimum machine pressures and operating conditions
- Lower pressure losses in the heat exchangers
- Lower cooling down and heating up losses throughout the system
- Reduced start-up current at full torque
- Part windings and star-delta circuits no longer required

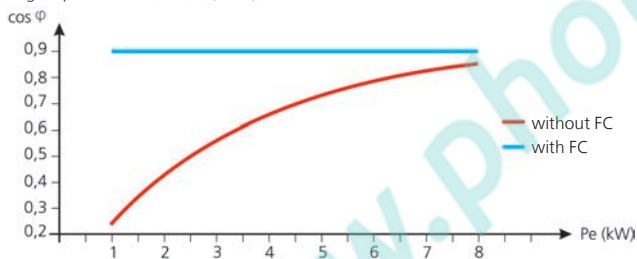
Start-up current with and without FC



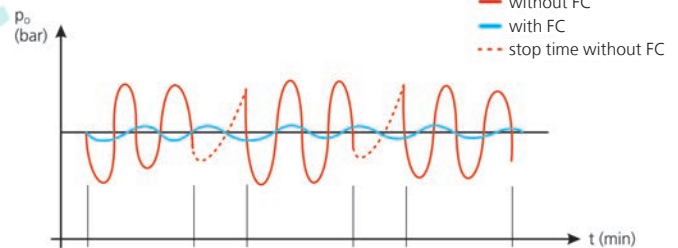
COP behaviour with FC



Engine performance factor (cos φ) with and without FC



Start/stop behaviour with and without FC



Calculations for 4-pole compressors

Calculating the maximum possible frequency of the compressor under specific operating conditions:

The following calculation is used to obtain the maximum possible frequency at the selected operating point:

$$f_{\max} = \frac{P_{\max} \times 50 \text{ Hz}}{P_e}$$

f_{\max} = Maximum permissible frequency [Hz]

P_{\max} = Maximum power consumption [kW] (see technical data)

P_e = Power consumption at the operating point at 50 Hz [kW] (see performance data, compressors)

Calculating the corresponding refrigerating capacity:

Refrigeration capacity can be determined as a function of frequency from the following calculation:

$$\dot{Q}_{0 \text{ operation}} = \frac{f_{\text{operation}} \times \dot{Q}_{0 \text{ 50 Hz}}}{50 \text{ Hz}}$$

$\dot{Q}_{0 \text{ operation}}$ = Refrigerating capacity at the chosen operating point [W]

$f_{\text{operation}}$ = Frequency at the chosen operating point [Hz]

$\dot{Q}_{0 \text{ 50 Hz}}$ = Refrigerating capacity at the operating point at Hz [W] (see performance data, compressors)

As a rule, the maximum permissible power consumption of the compressor P_{\max} must not be exceeded.



Technical data

Electrical HG compressors

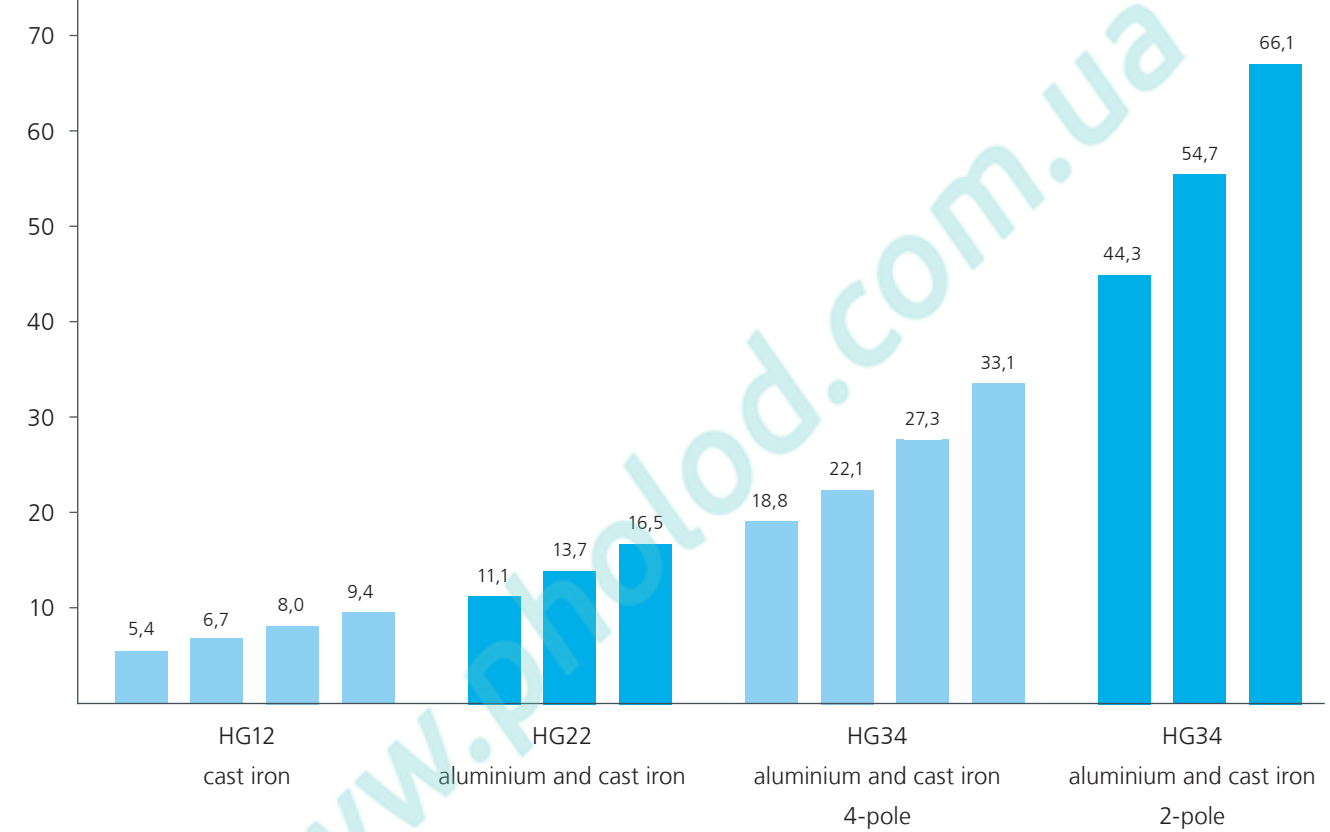
- At a glance
- Operating limits and performance data
- Technical data
- Dimensions and connections
- Scope of supply and accessories

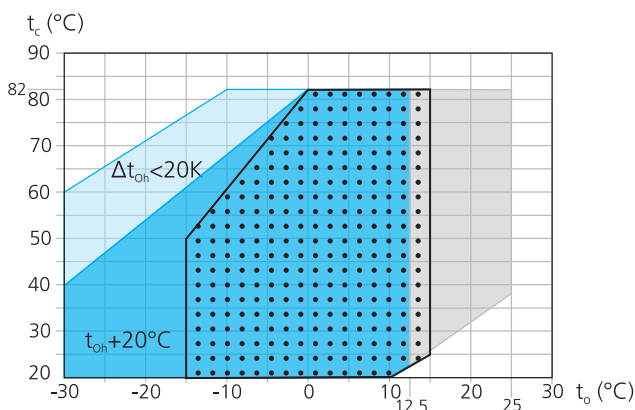
Characteristics FK vehicle compressors for bus- and railway air-conditioning	1	P. 6
Technical data FK vehicle compressors	2	P. 12
Characteristics Electrical HG compressors	3	P. 30
Technical data Electrical HG compressors	4	P. 40
Service – Made by GEA	5	P. 58

At a glance

THE CURRENT PROGRAM

m³/h 3 model sizes with 14 capacity stages from 5,4 to 33,1 (1.450 rpm) and 44,3 to 66,1 m³/h (2.900 rpm)



R134a Operating limits

¹⁾ LP = low pressure, HP = high pressure

HGX12P / HGX22e / HGX34e / HGX34P 2-pole

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

Permissible rotation speeds

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

4-pole

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

2-pole

- Unlimited application range

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

For further information see sample calculation page 39.

For operation with frequency converter:

HGX12P	... -4	30–70 Hz
HGX22e	... -4	30–70 Hz
HGX34e	... -4	25–70 Hz
HGX34P	... -2	15–50 Hz
HGX34P	... -2 K	15–60 Hz

Performance data

The performance data for R134a are based on EN 12900 at 50Hz apply frequency. This signifies 20 °C suction gas temperature without liquid subcooling. This results in significant differences compared to specifications with liquid undercooling and/or suction gas temperatures.

4-pole compressor:

Conversion factor for 60 Hz = 1,2
 Performance data for other operating points, see GEA software.

Pluscom / e-series:

The proven Pluscom series relates primarily to 2-pole compressors in the mobile range. The e-series compressors set a new benchmark as regards motor efficiency, gas flow and the efficiency of the valve system. This enables the compressor to provide a higher refrigerating capacity with reduced drive power. In addition to this, the limits of use have been expanded to a liquefaction temperature of 15 °C and an evaporation temperature of -15 °C.

**ASERCOM certified performance data**

For compressors with this label, the performance data are certified according to the strict requirements of ASERCOM. Information about the Association and the constantly updated overview of certified GEA compressors can be found at www.asercom.org

TYPSCHLÜSSEL

HG	X	3	4	P	/	215	-	2	S	A	K
Series ¹⁾	Ester oil filling ²⁾	Size	Number of cylinders	e-series / Pluscom ³⁾	Swept volume	Number of poles ⁴⁾	Motor variant ⁵⁾	Aluminium version	Version ⁶⁾		

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

²⁾ X = Ester oil filling (HFC refrigerant e. g. R134a, R407C)

³⁾ = Additional indication for e-series and Pluscom compressors

⁴⁾ 2 = 2-poles (2.900 rpm – 50 Hz)

4 = 4-poles (1.450 rpm – 50 Hz)

⁵⁾ S = More powerful motor e.g. air-conditioning systems

⁶⁾ K = K valve plate

PERFORMANCE DATA

R134a		Performance data											50 Hz 4-pole		
Type	Cond. temp. °C	Cooling capacity \dot{Q}_0 [W]										Power consumption P_e [kW]			
		Evaporation temperature °C													
		12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30			
HGX12P/60-4 S	30	Q	4920	4490	4080	3700	3010	2420	1910	1480	1130	836	605		
		P	0,70	0,71	0,71	0,71	0,68	0,65	0,60	0,54	0,49	0,44	0,40		
	40	Q	4260	3880	3520	3190	2590	2070	1630	1250	932	670	456		
		P	0,85	0,84	0,83	0,81	0,77	0,71	0,65	0,59	0,54	0,49	0,45		
	50	Q	3630	3300	2990	2700	2190	1740	1350	1030	742	505	302		
		P	0,99	0,97	0,94	0,91	0,85	0,77	0,70	0,63	0,57	0,52	0,49		
60	Q	3020	2740	2480	2240	1800	1420	1100	806	558	341	146			
	P	1,11	1,08	1,04	1,00	0,91	0,82	0,74	0,66	0,59	0,55	0,52			
70	Q	2450	2220	2010	1810	1450	1130	847	602	381					
	P	1,22	1,17	1,12	1,06	0,96	0,85	0,75	0,66	0,60					
HGX12P/75-4 HGX12P/75-4 S	30	Q	6150	5610	5100	4620	3760	3020	2390	1850	1410	1050	756		
		P	0,88	0,89	0,89	0,88	0,85	0,81	0,75	0,68	0,61	0,55	0,50		
	40	Q	5320	4850	4400	3980	3230	2590	2030	1560	1170	837	569		
		P	1,06	1,05	1,03	1,01	0,96	0,89	0,82	0,74	0,67	0,61	0,57		
	50	Q	4530	4120	3730	3380	2730	2170	1690	1280	927	630	377		
		P	1,23	1,21	1,17	1,14	1,05	0,97	0,88	0,79	0,71	0,65	0,62		
60	Q	3780	3430	3100	2800	2250	1780	1370	1010	697	425	182			
	P	1,39	1,35	1,30	1,24	1,13	1,02	0,92	0,82	0,74	0,68	0,65			
70	Q	3070	2780	2510	2260	1800	1410	1060	751	476					
	P	1,53	1,46	1,40	1,33	1,19	1,06	0,94	0,83	0,74					
HGX12P/90-4 HGX12P/90-4 S	30	Q	7300	6670	6070	5520	4510	3630	2870	2230	1700	1260	912		
		P	1,08	1,10	1,12	1,12	1,10	1,06	1,00	0,92	0,83	0,74	0,65		
	40	Q	6380	5820	5290	4790	3890	3110	2440	1880	1410	1020	708		
		P	1,33	1,33	1,32	1,30	1,24	1,16	1,06	0,96	0,85	0,74	0,65		
	50	Q	5490	4990	4520	4080	3290	2610	2030	1540	1130	793	522		
		P	1,59	1,56	1,53	1,48	1,38	1,26	1,14	1,01	0,89	0,77	0,67		
60	Q	4620	4180	3780	3400	2720	2140	1640	1230	876	592	359			
	P	1,82	1,77	1,71	1,65	1,51	1,35	1,20	1,05	0,91	0,79	0,69			
70	Q	3780	3410	3060	2750	2180	1690	1280	937	653					
	P	2,00	1,93	1,84	1,76	1,58	1,40	1,22	1,05	0,90					
HGX12P/110-4 HGX12P/110-4 S	30	Q	8619	7858	7145	6477	5272	4231	3342	2593	1971	1464	1060		
		P	1,23	1,24	1,25	1,24	1,20	1,13	1,05	0,95	0,86	0,78	0,71		
	40	Q	7453	6787	6163	5580	4528	3619	2842	2183	1631	1173	797		
		P	1,49	1,48	1,45	1,42	1,35	1,25	1,14	1,04	0,94	0,85	0,79		
	50	Q	6342	5767	5229	4726	3820	3037	2364	1789	1299	883	528		
		P	1,74	1,70	1,65	1,60	1,48	1,36	1,23	1,11	1,00	0,92	0,87		
60	Q	5287	4800	4344	3919	3152	2486	1910	1411	977	596	255			
	P	1,96	1,89	1,82	1,75	1,60	1,44	1,29	1,15	1,04	0,96	0,91			
70	Q	4291	3888	3511	3159	2524	1969	1483	1053	667					
	P	2,15	2,06	1,96	1,87	1,68	1,49	1,31	1,16	1,04					
HGX22e/125-4 HGX22e/125-4 S HGX22e/125-4 A HGX22e/125-4 S A	30	Q	10200	9270	8440	7660	6220	4960	3860	2930	2160	1550	1090		
		P	1,30	1,35	1,38	1,39	1,39	1,34	1,25	1,14	1,02	0,891	0,765		
	40	Q	8990	8200	7450	6740	5440	4300	3310	2480	1790	1260	860		
		P	1,69	1,70	1,69	1,67	1,59	1,48	1,35	1,20	1,05	0,903	0,769		
	50	Q	7800	7090	6420	5780	4630	3620	2750	2020	1440	978	657		
		P	2,02	1,98	1,94	1,88	1,75	1,59	1,41	1,24	1,06	0,908	0,773		
60	Q	6570	5950	5360	4810	3810	2940	2200	1590	1110	744	504			
	P	2,27	2,21	2,13	2,04	1,86	1,66	1,45	1,25	1,07	0,909	0,783			
70	Q	5330	4800	4310	3840	3000	2280	1690	1200	829					
	P	2,48	2,38	2,27	2,16	1,93	1,70	1,47	1,25	1,06					
HGX22e/160-4 HGX22e/160-4 S HGX22e/160-4 A HGX22e/160-4 S A	30	Q	12800	11600	10600	9560	7780	6240	4920	3810	2870	2110	1490		
		P	1,63	1,65	1,66	1,65	1,63	1,59	1,51	1,41	1,29	1,15	0,983		
	40	Q	11200	10200	9200	8330	6750	5390	4230	3240	2410	1730	1160		
		P	2,07	2,05	2,03	2,00	1,92	1,81	1,68	1,53	1,36	1,17	0,962		
	50	Q	9640	8760	7930	7170	5780	4580	3560	2680	1940	1310	783		
		P	2,46	2,41	2,36	2,29	2,15	1,99	1,80	1,60	1,38	1,14	0,884		
60	Q	8230	7460	6730	6060	4840	3790	2880	2100	1430	844	335			
	P	2,80	2,72	2,63	2,54	2,33	2,11	1,87	1,61	1,34	1,04	0,744			
70	Q	6880	6210	5580	4990	3930	3000	2190	1490	862					
	P	3,09	2,97	2,85	2,72	2,45	2,17	1,87	1,56	1,23					

Relating to 20 °C suction gas temperature without liquid subcooling

■ Supplementary cooling or reduced suction gas temperature

R134a		Performance data										50 Hz 4-pole		
Type	Cond. temp. °C		Cooling capacity \dot{Q}_0 [W]						Power consumption P_e [kW]					
			Evaporation temperature °C											
			12,5	10	7,5	5	0	-5	-10	-15	-20	-25	-30	
HGX22e/190-4	30	Q	15300	14000	12900	11700	9630	7800	6180	4790	3610	2640	1870	
		P	2,04	2,06	2,06	2,05	2,00	1,92	1,80	1,65	1,48	1,29	1,09	
HGX22e/190-4 S	40	Q	13600	12500	11400	10400	8460	6810	5360	4110	3060	2200	1530	
		P	2,62	2,55	2,51	2,46	2,33	2,17	1,98	1,78	1,57	1,34	1,11	
HGX22e/190-4 A	50	Q	11900	10800	9840	8940	7270	5800	4520	3430	2520	1790	1220	
		P	3,09	3,01	2,92	2,83	2,62	2,39	2,14	1,89	1,63	1,37	1,12	
HGX22e/190-4 S A	60	Q	10100	9160	8320	7520	6070	4800	3700	2770	2010	1410	959	
		P	3,54	3,41	3,28	3,14	2,86	2,56	2,26	1,96	1,66	1,37	1,10	
	70	Q	8280	7510	6790	6110	4880	3810	2900	2150	1540			
		P	3,91	3,74	3,57	3,39	3,03	2,68	2,32	1,97	1,64			
HGX34e/215-4	30	Q	17200	15700	14400	13000	10600	8450	6590	5000	3670	2610	1800	
		P	2,27	2,30	2,32	2,31	2,25	2,14	1,98	1,80	1,59	1,38	1,18	
HGX34e/215-4 S	40	Q	15200	13800	12600	11400	9120	7190	5530	4120	2970	2060	1400	
		P	2,87	2,84	2,78	2,72	2,55	2,34	2,11	1,87	1,64	1,42	1,22	
HGX34e/215-4 A	50	Q	13000	11800	10700	9540	7590	5890	4440	3240	2270	1540	1040	
		P	3,38	3,27	3,16	3,03	2,76	2,47	2,18	1,90	1,64	1,42	1,24	
HGX34e/215-4 S A	60	Q	10800	9690	8690	7750	6070	4620	3400	2420	1660	1120	784	
		P	3,79	3,62	3,45	3,27	2,90	2,54	2,20	1,89	1,61	1,39	1,24	
	70	Q	8590	7680	6830	6040	4630	3440	2480	1730	1190			
		P	4,12	3,89	3,66	3,43	2,99	2,56	2,17	1,84	1,56			
HGX34e/255-4¹⁾	30	Q	20600	18800	17200	15600	12700	10100	7800	5890	4320	3080	2190	
		P	2,61	2,67	2,71	2,71	2,66	2,53	2,34	2,12	1,88	1,63	1,41	
HGX34e/255-4 S	40	Q	18100	16500	15000	13600	11000	8660	6660	4960	3570	2490	1710	
		P	3,36	3,35	3,31	3,25	3,08	2,84	2,57	2,27	1,97	1,68	1,43	
HGX34e/255-4 A	50	Q	15600	14200	12900	11600	9310	7280	5540	4070	2880	1960	1330	
		P	4,02	3,93	3,83	3,71	3,42	3,08	2,73	2,36	2,01	1,68	1,41	
HGX34e/255-4 S A	60	Q	13100	11900	10700	9610	7640	5920	4450	3220	2240	1510	1030	
		P	4,56	4,41	4,24	4,06	3,66	3,23	2,80	2,37	1,96	1,61	1,32	
	70	Q	10500	9430	8480	7590	5970	4570	3380	2410	1660			
		P	4,98	4,77	4,54	4,30	3,79	3,28	2,76	2,28	1,83			
HGX34e/315-4¹⁾	30	Q	25500	23300	21100	19200	15500	12400	9660	7390	5520	4040	2920	
		P	3,40	3,43	3,43	3,40	3,29	3,11	2,88	2,61	2,32	2,02	1,72	
HGX34e/315-4 S	40	Q	22300	20300	18500	16700	13500	10700	8260	6260	4620	3320	2330	
		P	4,22	4,17	4,10	4,01	3,78	3,49	3,16	2,80	2,43	2,07	1,73	
HGX34e/315-4 A	50	Q	19200	17400	15800	14200	11400	8950	6880	5140	3720	2600	1740	
		P	4,97	4,85	4,71	4,55	4,19	3,79	3,36	2,91	2,47	2,04	1,65	
HGX34e/315-4 S A	60	Q	16100	14600	13100	11800	9350	7280	5520	4050	2850	1900	1170	
		P	5,63	5,44	5,22	5,00	4,51	4,00	3,46	2,93	2,41	1,92	1,47	
	70	Q	13100	11800	10600	9390	7380	5660	4200	3000	2010			
		P	6,18	5,91	5,62	5,33	4,71	4,08	3,44	2,82	2,22			
HGX34e/380-4¹⁾	30	Q	30700	28100	25600	23200	19000	15300	12100	9310	7060	5250	3860	
		P	4,27	4,28	4,26	4,22	4,06	3,83	3,53	3,20	2,83	2,46	2,09	
HGX34e/380-4 S	40	Q	27000	24600	22400	20300	16600	13300	10400	8000	6020	4420	3180	
		P	5,26	5,19	5,09	4,97	4,67	4,30	3,89	3,46	3,00	2,56	2,13	
HGX34e/380-4 A	50	Q	23200	21200	19300	17400	14100	11300	8760	6670	4940	3540	2450	
		P	6,17	6,01	5,83	5,63	5,18	4,69	4,16	3,62	3,07	2,55	2,06	
HGX34e/380-4 S A	60	Q	19600	17800	16100	14600	11700	9240	7130	5350	3860	2650	1690	
		P	6,97	6,73	6,46	6,18	5,59	4,96	4,31	3,66	3,02	2,42	1,86	
	70	Q	16000	14500	13100	11800	9340	7290	5530	4040	2800			
		P	7,65	7,31	6,97	6,60	5,86	5,09	4,32	3,56	2,83			

Relating to 20 °C suction gas temperature without liquid subcooling 1) Compressors are ASERCOM certified

■ Supplementary cooling or reduced suction gas temperature



Further information can be found on the internet at vap.gea.com/mobileapplication



PERFORMANCE DATA

R134a		Performance data								50 Hz 2-pole	
Type	Cond. temp. °C	Cooling capacity \dot{Q}_0 [W]						Power consumption P_e [kW]			
		Evaporation temperature °C									
		15	12,5	10	5	0	-5	-10	-15		
HGX34P/255-2 HGX34P/255-2 A	30	Q	39699	32887	29809	26941	21802	17406	13692	10598	
		P	8,45	7,93	7,64	7,35	6,72	6,06	5,39	4,73	
	40	Q	35067	28934	26166	23588	18969	15013	11659	8846	
		P	9,53	8,81	8,43	8,05	7,25	6,45	5,65	4,86	
	50	Q	30304	24875	22429	20153	16077	12585	9615	7106	
		P	10,40	9,49	9,03	8,56	7,62	6,68	5,76	4,87	
60	Q	25473	20771	18659	16696	13188	10184	7622			
	P	11,05	9,97	9,42	8,88	7,80	6,74	5,72			
70	Q	20632	16682	14916	13279	10362	7869				
	P	11,46	10,22	9,61	9,00	7,79	6,63				
HGX34P/315-2 HGX34P/315-2 A HGX34P/315-2 A K	30	Q	49386	40993	37189	33638	27263	21812	17227	13450	
		P	8,65	8,62	8,51	8,34	7,86	7,24	6,52	5,75	
	40	Q	43240	35838	32488	29362	23754	18957	14914	11567	
		P	10,52	10,14	9,87	9,55	8,79	7,92	6,99	6,04	
	50	Q	37096	30698	27807	25113	20284	16154	12665	9760	
		P	12,03	11,34	10,92	10,47	9,47	8,39	7,28	6,19	
60	Q	30994	25612	23187	20930	16893	13441	10519			
	P	13,20	12,23	11,69	11,12	9,91	8,66	7,41			
70	Q	24974	20620	18667	16854	13620	10860				
	P	14,04	12,83	12,18	11,51	10,14	8,75				
HGX34P/380-2 HGX34P/380-2 A HGX34P/380-2 A K	30	Q	54230	45243	41160	37338	30436	24457	19322	14952	
		P	13,28	12,00	11,41	10,86	9,81	8,83	7,88	6,92	
	40	Q	48142	40109	36453	33023	26803	21371	16647	12551	
		P	14,18	12,89	12,28	11,68	10,54	9,42	8,28	7,09	
	50	Q	41930	34842	31607	28565	23018	18124	13801	9971	
		P	15,17	13,79	13,12	12,46	11,15	9,81	8,42	6,93	
60	Q	35602	29450	26632	23973	19091	14724	10794			
	P	16,15	14,61	13,85	13,08	11,53	9,91	8,19			
70	Q	29169	23944	21538	19257	15030	11182				
	P	16,99	15,23	14,34	13,44	11,57	9,60				

Relating to 20 °C suction gas temperature without liquid subcooling

Further information can be found on the internet at vap.gea.com/mobileapplication



www.pholob.com

R134a		Performance data								60 Hz 2-pole	
Type	Cond. temp. °C	Cooling capacity \dot{Q}_0 [W]						Power consumption P_e [kW]			
		Evaporation temperature °C									
		15	12,5	10	5	0	-5	-10	-15		
HGX34P/315-2 A K	30	Q	55162	45788	41539	37572	30452	24363	19242	15024	
		P	10,43	10,39	10,26	10,06	9,48	8,73	7,86	6,93	
	40	Q	48298	40030	36288	32797	26533	21175	16659	12920	
		P	12,69	12,23	11,90	11,51	10,60	9,55	8,43	7,29	
	50	Q	41435	34289	31060	28050	22657	18043	14146	10902	
		P	14,51	13,67	13,17	12,62	11,42	10,12	8,78	7,47	
60	Q	34619	28607	25899	23379	18869	15014	11750			
	P	15,91	14,75	14,09	13,41	11,95	10,44	8,94			
70	Q	27895	23031	20850	18825	15213	12130				
	P	16,93	15,47	14,69	13,89	12,23	10,55				
HGX34P/380-2 A K	30	Q	60573	50535	45975	41705	33996	27318	21582	16701	
		P	16,02	14,47	13,77	13,09	11,83	10,65	9,50	8,34	
	40	Q	53773	44801	40717	36885	29938	23871	18594	14020	
		P	17,10	15,54	14,81	14,09	12,71	11,36	9,98	8,55	
	50	Q	46834	38917	35304	31906	25711	20243	15415	11137	
		P	18,30	16,63	15,83	15,03	13,45	11,83	10,15	8,36	
60	Q	39766	32895	29748	26777	21324	16446	12056			
	P	19,47	17,62	16,70	15,78	13,90	11,95	9,88			
70	Q	32581	26745	24057	21510	16788	12490				
	P	20,49	18,37	17,29	16,20	13,95	11,57				

Relating to 20 °C suction gas temperature without liquid subcooling

Further information can be found on the internet at vap.gea.com/mobileapplication



www.pholod.com

TECHNICAL DATA

Semi-hermetic Compressors HG – technical data

HG HG Alu Typ	Number of cylinders	Displace- ment 50 / 60 Hz (1.450/1.740 rpm) m ³ /h	Electrical data				Weight kg	Connections ⁴⁾		Oil charge Ltr.
			Voltage ¹⁾	Max. working current ²⁾	Max. power consumption ²⁾	Starting current (rotor locked)		Discharge line DV	Suction line SV	
HGX12P/60-4 S	2	5,4 / 6,4	3)	6,8 / 3,9	2,2	40 / 23	48,0	12 1/2	16 5/8	0,8
HGX12P/75-4	2	6,7 / 8,1	3)	7,1 / 4,1	2,3	40 / 23	48,0	12 1/2	16 5/8	0,8
HGX12P/75-4 S	2	6,7 / 8,1	3)	8,0 / 4,6	2,6	43 / 25	49,0	12 1/2	16 5/8	0,8
HGX12P/90-4	2	8,0 / 9,6	3)	8,5 / 4,9	2,8	43 / 25	49,0	12 1/2	16 5/8	0,8
HGX12P/90-4 S	2	8,0 / 9,6	3)	9,1 / 5,3	3,0	45 / 26	49,0	12 1/2	16 5/8	0,8
HGX12P/110-4	2	9,4 / 11,3	3)	9,2 / 5,3	3,1	43 / 25	49,0	12 1/2	16 5/8	0,8
HGX12P/110-4 S	2	9,4 / 11,3	3)	10,6 / 6,1	3,6	45 / 26	49,0	12 1/2	16 5/8	0,8
HGX22e/125-4	2	11,1 / 13,3	3)	9,3 / 5,4	3,0	69 / 40	74,0	16 5/8	22 7/8	1,0
HGX22e/125-4 A	2	11,1 / 13,3	3)	9,3 / 5,4	3,0	69 / 40	44,0	16 5/8	22 7/8	1,0
HGX22e/125-4 S	2	11,1 / 13,3	3)	10,8 / 6,2	3,6	69 / 40	74,0	16 5/8	22 7/8	1,0
HGX22e/125-4 S A	2	11,1 / 13,3	3)	10,8 / 6,2	3,6	69 / 40	46,0	16 5/8	22 7/8	1,0
HGX22e/160-4	2	13,7 / 16,4	3)	11,1 / 6,4	3,7	69 / 40	74,0	16 5/8	22 7/8	1,0
HGX22e/160-4 A	2	13,7 / 16,4	3)	11,1 / 6,4	3,7	69 / 40	46,0	16 5/8	22 7/8	1,0
HGX22e/160-4 S	2	13,7 / 16,4	3)	13,1 / 7,6	4,4	87 / 50	76,0	16 5/8	22 7/8	1,0
HGX22e/160-4 S A	2	13,7 / 16,4	3)	13,1 / 7,6	4,4	87 / 50	47,0	16 5/8	22 7/8	1,0
HGX22e/190-4	2	16,5 / 19,8	3)	13,8 / 8,0	4,8	69 / 40	74,0	16 5/8	22 7/8	1,0
HGX22e/190-4 A	2	16,5 / 19,8	3)	13,8 / 8,0	4,8	69 / 40	45,0	16 5/8	22 7/8	1,0
HGX22e/190-4 S	2	16,5 / 19,8	3)	16,2 / 9,4	5,6	87 / 50	75,0	16 5/8	22 7/8	1,0
HGX22e/190-4 S A	2	16,5 / 19,8	3)	16,2 / 9,4	5,6	87 / 50	47,0	16 5/8	22 7/8	1,0
HGX34e/215-4	4	18,8 / 22,6	3)	14,0 / 8,1	4,8	87 / 50	92,0	22 7/8	28 1 1/8	1,3
HGX34e/215-4 A	4	18,8 / 22,6	3)	14,0 / 8,1	4,8	87 / 50	55,0	22 7/8	28 1 1/8	1,3
HGX34e/215-4 S	4	18,8 / 22,6	3)	18,3 / 10,5	6,0	132 / 76	97,0	22 7/8	28 1 1/8	1,3
HGX34e/215-4 S A	4	18,8 / 22,6	3)	18,3 / 10,5	6,0	132 / 76	58,0	22 7/8	28 1 1/8	1,3
HGX34e/255-4	4	22,1 / 26,6	3)	17,0 / 9,8	6,0	87 / 50	92,0	22 7/8	28 1 1/8	1,3
HGX34e/255-4 A	4	22,1 / 26,6	3)	17,0 / 9,8	6,0	87 / 50	55,0	22 7/8	28 1 1/8	1,3
HGX34e/255-4 S	4	22,1 / 26,6	3)	21,1 / 12,2	7,2	132 / 76	96,0	22 7/8	28 1 1/8	1,3
HGX34e/255-4 S A	4	22,1 / 26,6	3)	21,1 / 12,2	7,2	132 / 76	58,0	22 7/8	28 1 1/8	1,3
HGX34e/315-4	4	27,3 / 32,8	3)	21,1 / 12,2	7,4	111 / 64	94,0	22 7/8	28 1 1/8	1,3
HGX34e/315-4 A	4	27,3 / 32,8	3)	21,1 / 12,2	7,4	111 / 64	57,0	22 7/8	28 1 1/8	1,3
HGX34e/315-4 S	4	27,3 / 32,8	3)	25,5 / 14,7	8,9	132 / 76	97,0	22 7/8	28 1 1/8	1,3
HGX34e/315-4 S A	4	27,3 / 32,8	3)	25,5 / 14,7	8,9	132 / 76	60,0	22 7/8	28 1 1/8	1,3
HGX34e/380-4	4	33,1 / 39,7	3)	26,1 / 15,1	9,3	111 / 64	93,0	22 7/8	28 1 1/8	1,3
HGX34e/380-4 A	4	33,1 / 39,7	3)	26,1 / 15,1	9,3	111 / 64	56,0	22 7/8	28 1 1/8	1,3
HGX34e/380-4 S	4	33,1 / 39,7	3)	31,2 / 18,0	11,1	132 / 76	96,0	22 7/8	28 1 1/8	1,3
HGX34e/380-4 S A	4	33,1 / 39,7	3)	31,2 / 18,0	11,1	132 / 76	59,0	22 7/8	28 1 1/8	1,3

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

²⁾ The specifications for max. power consumption apply for 50Hz operation. For 60Hz 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⁾ For soldering connections

Semi-hermetic Compressors HG – technical data

HG 2-pole HG 2-pole Alu	Number of cylinders	Displacement 50 / 60 Hz (2.900 rpm)	Electrical data				Weight	Connections ⁴⁾		Oil charge
			Voltage ¹⁾	Max. working current ²⁾	Max. power consumption ²⁾	Starting current (rotor locked)		Discharge line DV	Suction line SV	
Typ		m ³ /h		A Δ / Y	kW	A Δ / Y	kg	mm inch	mm inch	Ltr.
HGX34P/255-2	4	44,3	³⁾	25,8	16,0	117	95,0	22 7/8	35 1 3/8	1,3
HGX34P/255-2 A	4	44,3	³⁾	25,8	16,0	117	58,0	22 7/8	35 1 3/8	1,3
HGX34P/315-2	4	54,7	³⁾	24,3	14,7	117	95,0	22 7/8	35 1 3/8	1,3
HGX34P/315-2 A	4	54,7	³⁾	24,3	14,7	117	58,0	22 7/8	35 1 3/8	1,3
HGX34P/315-2 S	4	54,7	³⁾	32,2	19,0	172	103,0	22 7/8	35 1 3/8	1,3
HGX34P/315-2 S A	4	54,7	³⁾	32,2	19,0	172	68,0	22 7/8	35 1 3/8	1,3
HGX34P/380-2	4	66,1	³⁾	38,0	23,5	172	102,0	22 7/8	35 1 3/8	1,3
HGX34P/380-2 A	4	66,1	³⁾	38,0	23,5	172	67,0	22 7/8	35 1 3/8	1,3

HG 2-pole Alu K	Number of cylinders	Displacement 50 / 60 Hz (2.900/3.480 rpm)	Electrical data				Weight	Connections ⁴⁾		Oil charge
			Voltage ¹⁾	Max. working current ²⁾	Max. power consumption ²⁾	Starting current (rotor locked)		Discharge line DV	Suction line SV	
Typ		m ³ /h		A Δ / Y	kW	A Δ / Y	kg	mm inch	mm inch	Ltr.
HGX34P/315-2 A K	4	54,7 / 65,6	⁴⁾	24,3	14,7	117	58,0	22 7/8	35 1 3/8	1,3
HGX34P/315-2 S A K	4	54,7 / 65,6	⁴⁾	32,2	19,0	172	68,0	22 7/8	35 1 3/8	1,3
HGX34P/380-2 A K	4	66,1 / 79,4	⁴⁾	38,0	23,5	172	67,0	22 7/8	35 1 3/8	1,3

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

³⁾ 380-420 V Y - 3 - 50 Hz

⁴⁾ 380-420 V Y - 3 - 50 Hz, 440-480 V Y - 3 - 60 Hz

⁵⁾ For soldering connections

Further information can be found on the internet at vap.gea.com/mobileapplication



DIMENSIONS AND CONNECTIONS

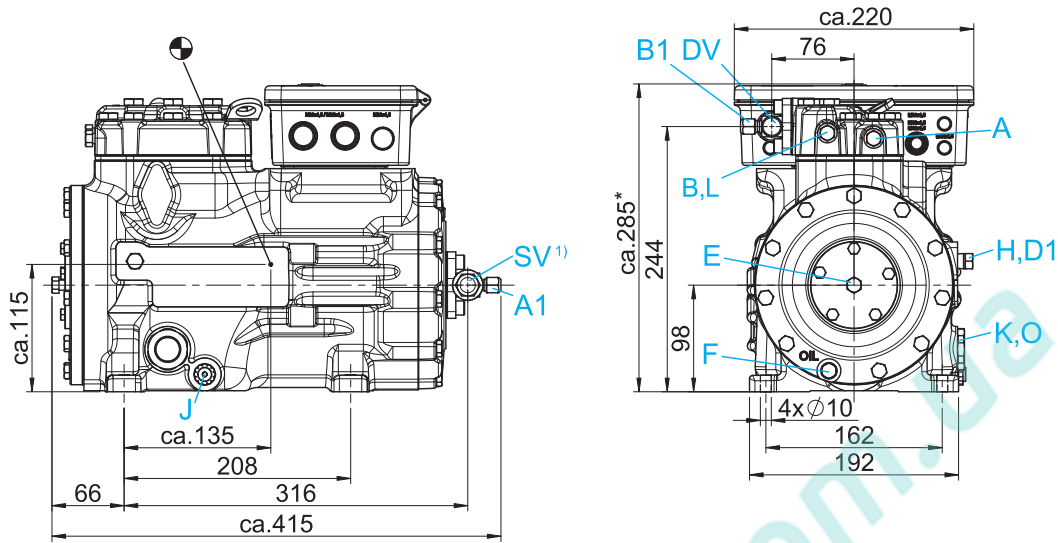
HG12P 4-pole

HGX12P/60-4 S

HGX12P/75-4
HGX12P/75-4 S

HGX12P/90-4
HGX12P/90-4 S

HGX12P/110-4
HGX12P/110-4 S



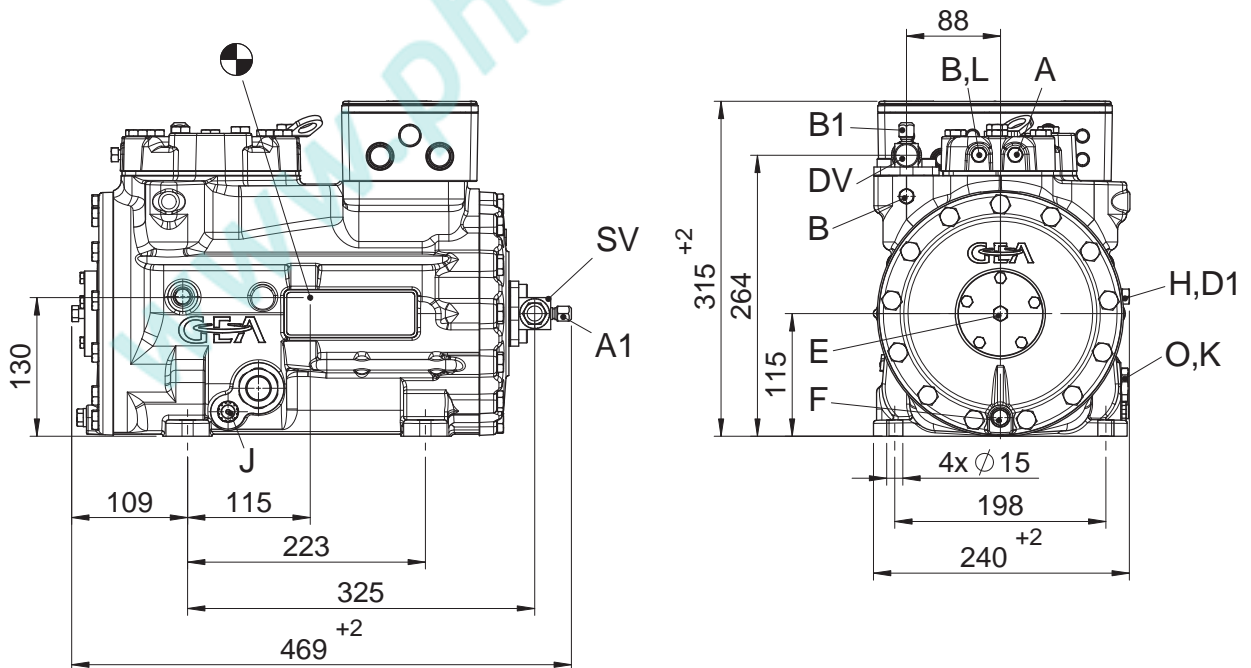
* With the accessory "Terminal box with reduced height" about ca. 270 mm (Motor protection INT69 as an extra for control cabinet installation)

HG22e 4-pole

HGX22e/125-4
HGX22e/125-4 S

HGX22e/160-4
HGX22e/160-4 S

HGX22e/190-4
HGX22e/190-4 S



* With the accessory "Terminal box with reduced height" about ca. 300 mm (Motor protection INT69 as an extra for control cabinet installation)

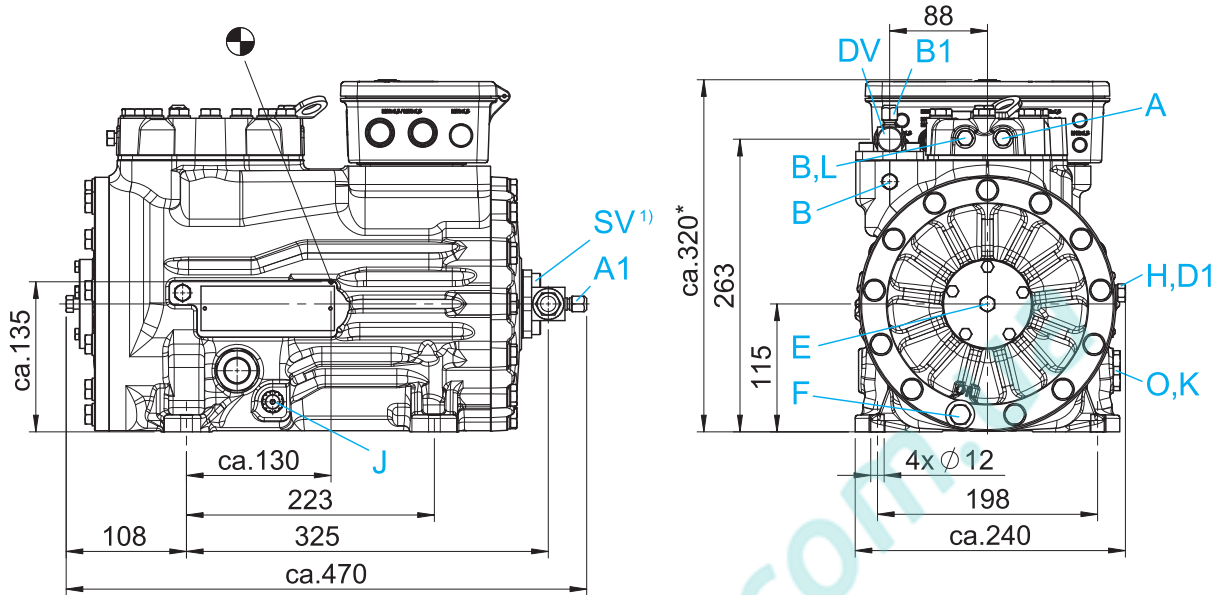
¹⁾ SV 90° rotatable ● Centre of gravity
Dimensions in mm

HG22e Aluminium 4-pole

HGX22e/125-4 A
HGX22e/125-4 S A

HGX22e/160-4 A
HGX22e/160-4 S A

HGX22e/190-4 A
HGX22e/190-4 S A



* With the accessory "Terminal box with reduced height" about ca. 300 mm
(Motor protection INT69 as an extra for control cabinet installation)

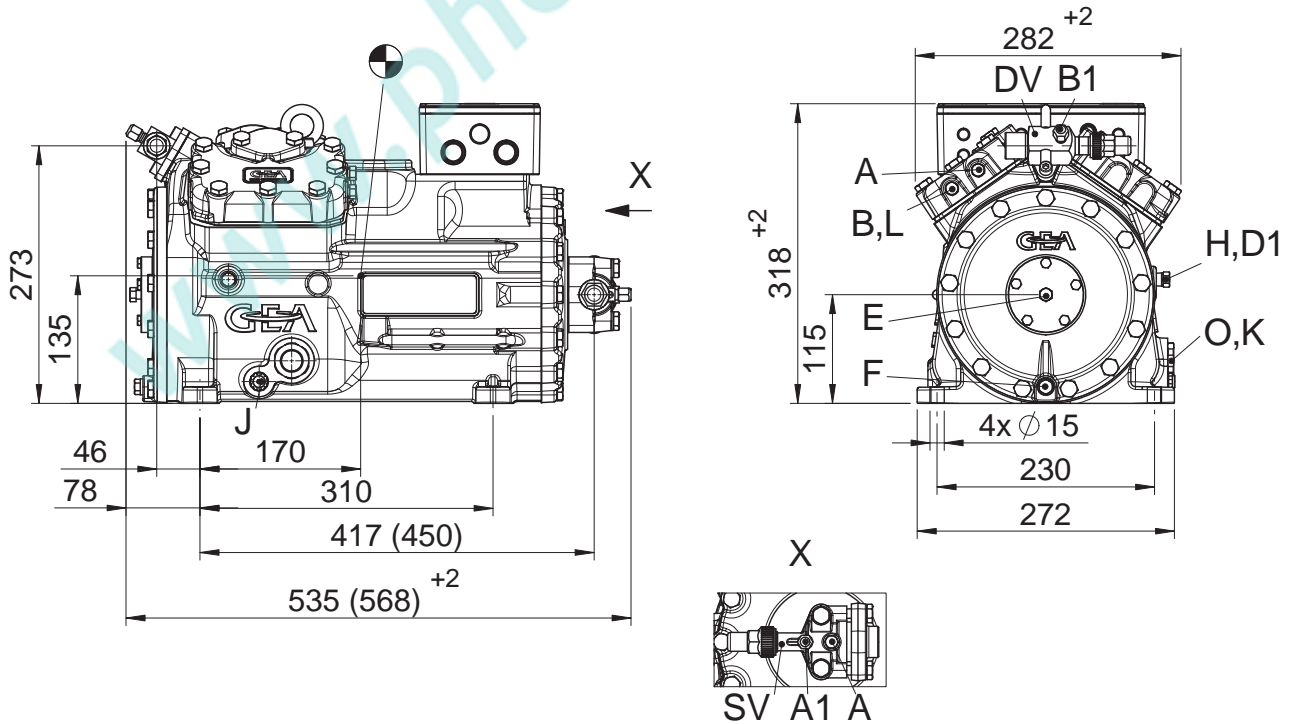
HG34e 4-pole

HGX34e/215-4
HGX34e/215-4 S

HGX34e/255-4
HGX34e/255-4 S

HGX34e/315-4
HGX34e/315-4 S

HGX34e/380-4
HGX34e/380-4 S



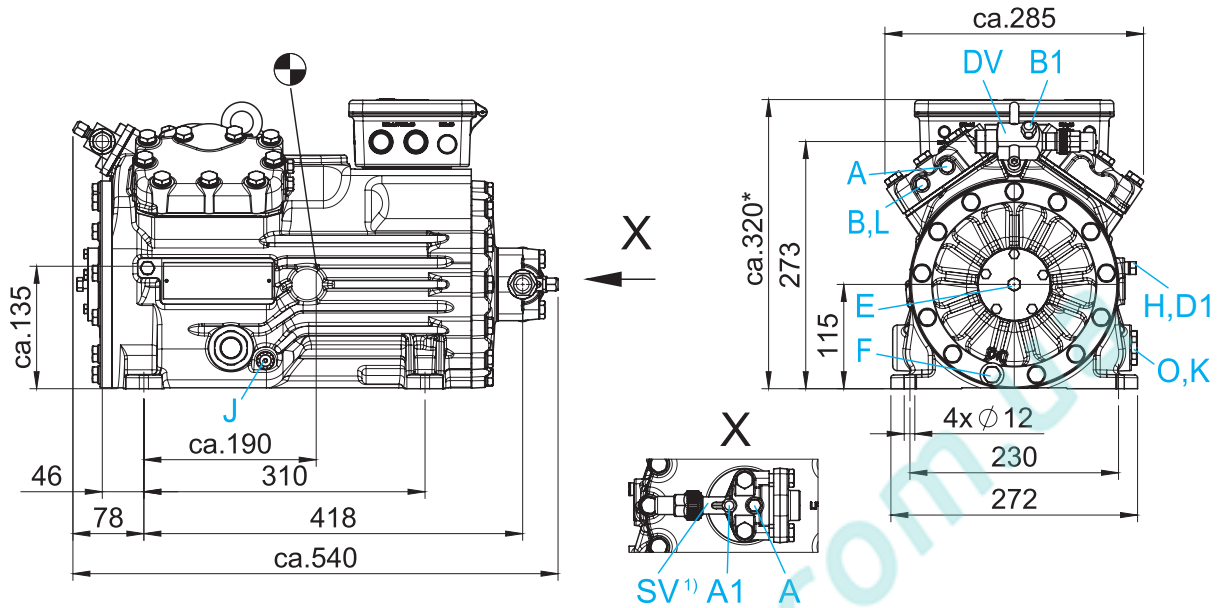
* With the accessory "Terminal box with reduced height" about ca. 300 mm
(Motor protection INT69 as an extra for control cabinet installation)

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

Connections see page 54

DIMENSIONS AND CONNECTIONS

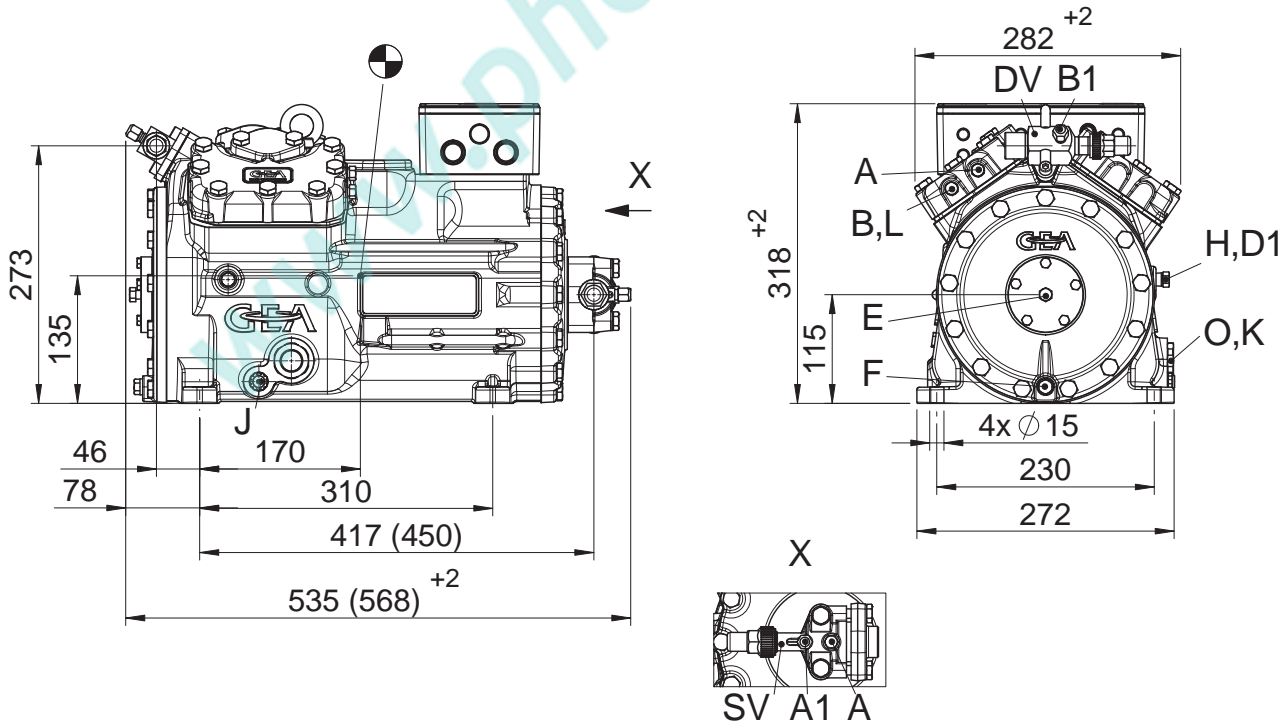
HG34e Aluminium 4-pole	HGX34e/215-4 A HGX34e/215-4 S A	HGX34e/255-4 A HGX34e/255-4 S A	HGX34e/315-4 A HGX34e/315-4 S A	HGX34e/380-4 A HGX34e/380-4 S A
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* With the accessory "Terminal box with reduced height" about ca. 300 mm
(Motor protection INT69 as an extra for control cabinet installation)

HGX34P 2-pole

HGX34P/255-2	HGX34P/315-2 HGX34P/315-2 S	HGX34P/380-2
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Dimensions in () = HGX34P/315-2 S
HGX34P/380-2

* With the accessory "Terminal box with reduced height" about ca. 300 mm
(Motor protection INT69 as an extra for control cabinet installation)

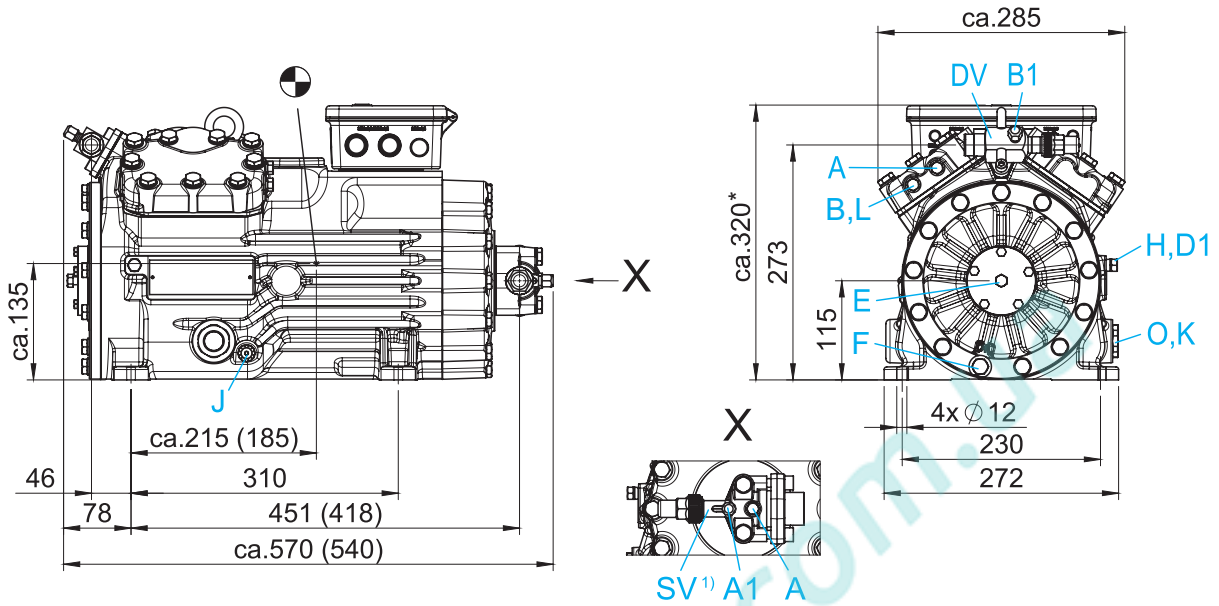
¹⁾ SV 90° rotatable ◉ Centre of gravity
Dimensions in mm

HGX34P Aluminium 2-pole

HGX34P/255-2 A

HGX34P/315-2 A
HGX34P/315-2 S A

HGX34P/380-2 A



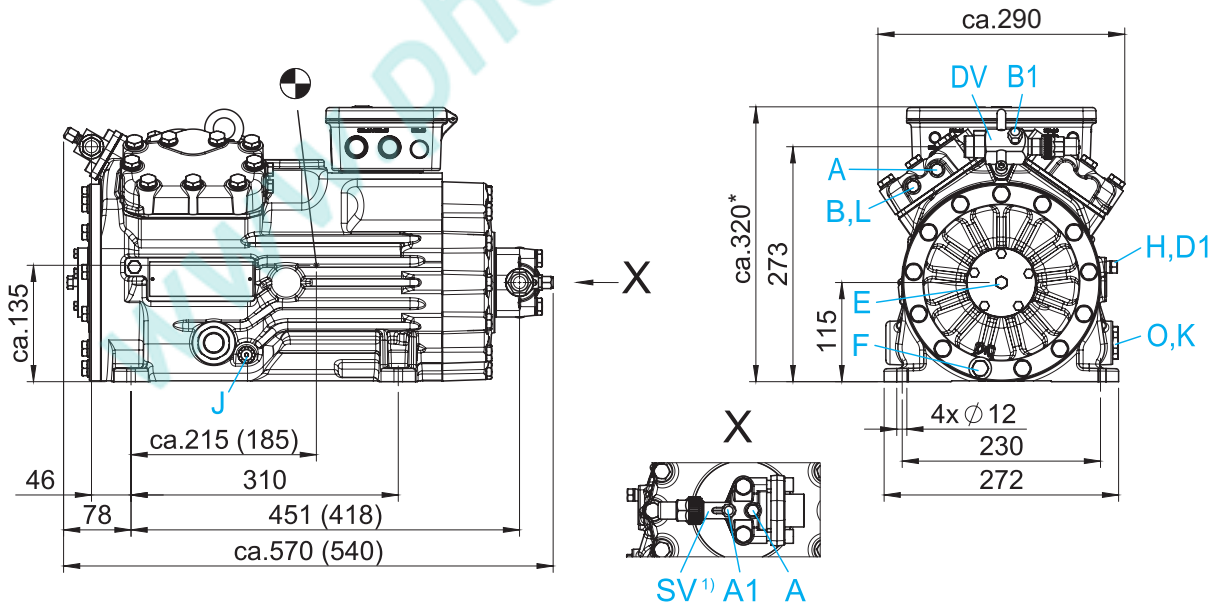
Dimensions in () = HGX34P/255-2 A
HGX34P/315-2 A

* With the accessory "Terminal box with reduced height" about ca. 300 mm
(Motor protection INT69 as an extra for control cabinet installation)

HGX34P Aluminium 2-pole

HGX34P/315-2 A K
HGX34P/315-2 S A K

HGX34P/380-2 A



Dimensions in () = HGX34P/255-2 A K
HGX34P/315-2 A K

* With the accessory "Terminal box with reduced height" about ca. 300 mm
(Motor protection INT69 as an extra for control cabinet installation)

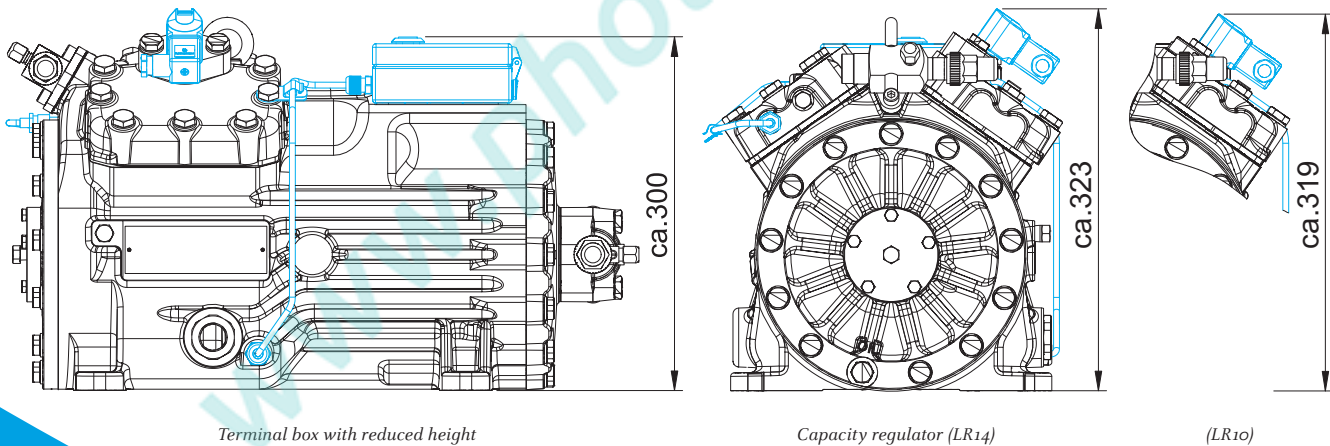
¹⁾ SV 90° rotatable ◐ Centre of gravity
Dimensions in mm

DIMENSIONS AND CONNECTIONS

Connections		HG12P	HG22e ¹⁾	HG34e ¹⁾	HGX34P-2 ¹⁾
SV	Suction line	please refer to technical data page 48 & 49			
DV	Discharge line	please refer to technical data page 48 & 49			
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
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
D1	Connection oil return from oil separator	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
F	Oil drain	M 8	M 10	M 10	M 10
H	Oil charge plug	1/4" NPTF	1/4" NPTF	1/4" NPTF	1/4" NPTF
J	Connection oil sump heater	3/8" NPTF	3/8" NPTF	3/8" NPTF	3/8" NPTF
K	Sight glass	1 1/8" – 18 UNEF	1 1/8" – 18 UNEF	1 1/8" – 18 UNEF	1 1/8" – 18 UNEF
L	Connection thermal protection thermostat	1/8" NPTF	1/8" NPTF	1/8" NPTF	1/8" NPTF
O	Connection oil level regulator	1 1/8" – 18 UNEF	1 1/8" – 18 UNEF	1 1/8" – 18 UNEF	1 1/8" – 18 UNEF

¹⁾ In cast iron and aluminium version

Dimensions with accessories



Scope of supply cast iron compressor	HGX12P	HGX22e	HGX34e	HGX34P-2
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 Single-section compressor housing with hermetically integrated electric motor	•	•		
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 Single-section compressor housing with hermetically integrated electric motor			•	
Semi-hermetic four cylinder reciprocating compressor with drive motor for direct start 380-420 V Y - 3 - 50 Hz Single-section compressor housing with hermetically integrated electric motor				•
Winding protection with PTC resistor sensors and electronic trigger unit MP10 230 V - 1 - 50/60 Hz	•	•	•	•
Oil charge: HG: FUCHS Reniso SP 46 HGX: FUCHS Reniso Triton SE 55	•	•	•	•
Sight glass	•	•	•	•
Suction and discharge line valve	•	•	•	•
Inert gas charge	•	•	•	•

Accessories cast iron compressors	HGX12P	HGX22e	HGX34e	HGX34P-2
1 Capacity regulator ¹⁾ 12 V DC, IP65			•	•
24 V DC, IP65			•	•
24 V - 1 - 50/60 Hz, IP65			•	•
110 V - 1 - 50/60 Hz, IP65			•	•
230 V - 1 - 50/60 Hz, IP65			•	•
2 Oil sump heater 24 V DC, 80 W, IP66, permanently set version	•	•	•	•
110-240 V - 1 - 50/60 Hz, 50-120 W, IP66 PTC heater self-regulating	•	•	•	•
400 V - 1 - 50/60 Hz, 80 W, IP66, permanently set version	•	•	•	•
3 Thermal protection thermostat per cylinder cover	• ²⁾	• ²⁾	• ²⁾	• ²⁾
4 Terminal box with reduced height (-15 mm), IP66 (Motor protection INT69 G as an extra item for installation in switch cabinet)	•	•	•	•
5 INT69 G with 24 V DC control voltage	•	•	•	•
INT69 G with 110 V - 1 - 50/60 Hz control voltage	•	•	•	•
Special voltage and/or frequency (on request)	•	•	•	•

¹⁾ 1 Capacity regulator = 50% residual capacity ²⁾ Installed

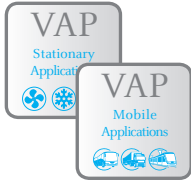
SCOPE OF SUPPLY

Scope of supply aluminium compressor	HGX22e A	HGX34e A	HGX34P-2 A	HGX34P-2 A K
Semi-hermetic 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 Single-section compressor housing with hermetically integrated electric motor	•	•		
Semi-hermetic four cylinder reciprocating compressor with drive motor for direct start 380-420 V Y - 3 - 50 Hz Single-section compressor housing with hermetically integrated electric motor			•	•
Semi-hermetic four cylinder reciprocating compressor with drive motor for direct start 440-480 V Y - 3 - 60 Hz Single-section compressor housing with hermetically integrated electric motor				•
Winding protection with PTC resistor sensors and electronic trigger unit MP10 230 V - 1 - 50/60 Hz	•	•	•	•
Oil charge: HG: FUCHS Reniso SP 46 HGX: FUCHS Reniso Triton SE 55	•	•	•	•
Sight glass	•	•	•	•
Suction and discharge line valve	•	•	•	•
Inert gas charge	•	•	•	•

Accessories aluminium compressors	HGX22e A	HGX34e A	HGX34P-2 A	HGX34P-2 A K
1 Capacity regulator ¹⁾	12 V DC, IP65		•	•
	24 V DC, IP65		•	•
	24 V - 1 - 50/60 Hz, IP65		•	•
	110 V - 1 - 50/60 Hz, IP65		•	•
	230 V - 1 - 50/60 Hz, IP65		•	•
2 Oil sump heater	24 V DC, 80 W, IP66, permanently set version	•	•	•
	110-240 V - 1 - 50/60 Hz, 50-120 W, IP66 PTC heater self-regulating	•	•	•
	400 V - 1 - 50/60 Hz, 80 W, IP66, permanently set version	•	•	•
3 Thermal protection thermostat per cylinder cover	• ²⁾	• ²⁾	• ²⁾	• ²⁾
4 Terminal box with reduced height (-15 mm), IP66 (Motor protection INT69 G as an extra item for installation in switch cabinet)	•	•	•	•
5 INT69 G with 24 V DC control voltage	•	•	•	•
	INT69 G with 110 V - 1 - 50/60 Hz control voltage	•	•	•
	Special voltage and/or frequency (on request)	•	•	•
6 Kit for silent block		•	•	•

¹⁾ 1 Capacity regulator = 50% residual capacity ²⁾ Installed

Service – Made by GEA



VAP Compressor selection program

The GEA compressor selection software supports you in searching the suitable compressor or rather condensing unit for your application. On the basis of the searched refrigerating capacity and operating condition (refrigerant, evaporation and condensing temperature) suitable compressors will be found. Furthermore the software provides additional information on the chosen compressor (e. g. technical data, scope of supply & accessoires, measures etc.).

- Quick search for the right compressor
- Software data material updated daily
- For stationary and mobile applications
- All compressors in one version
- Available in 12 languages (Chinese, German, English, Finnish, French, Italian, Korean, Polish, Portuguese, Russian, Spanish, Turkish)



Software data material updated daily

Maintenance manuals for our tried-and-tested GEA Bock FK40 and FK50 compressors are available in the following languages::

- German
- Spanish
- Turkish
- English
- Portuguese
- Japanese

GEA compressor training

Because you never stop learning – GEA compressor training sessions and workshops. Many years ago, GEA intensified its commitment in the area of customer training. Consequently, we offer an extensive range of attractive training events, from two-day practitioners' workshops in Frickenhausen, to afterwork workshops throughout Germany – regardless of the type of training you are interested in.

Those aspects are characteristic of all GEA training activities:

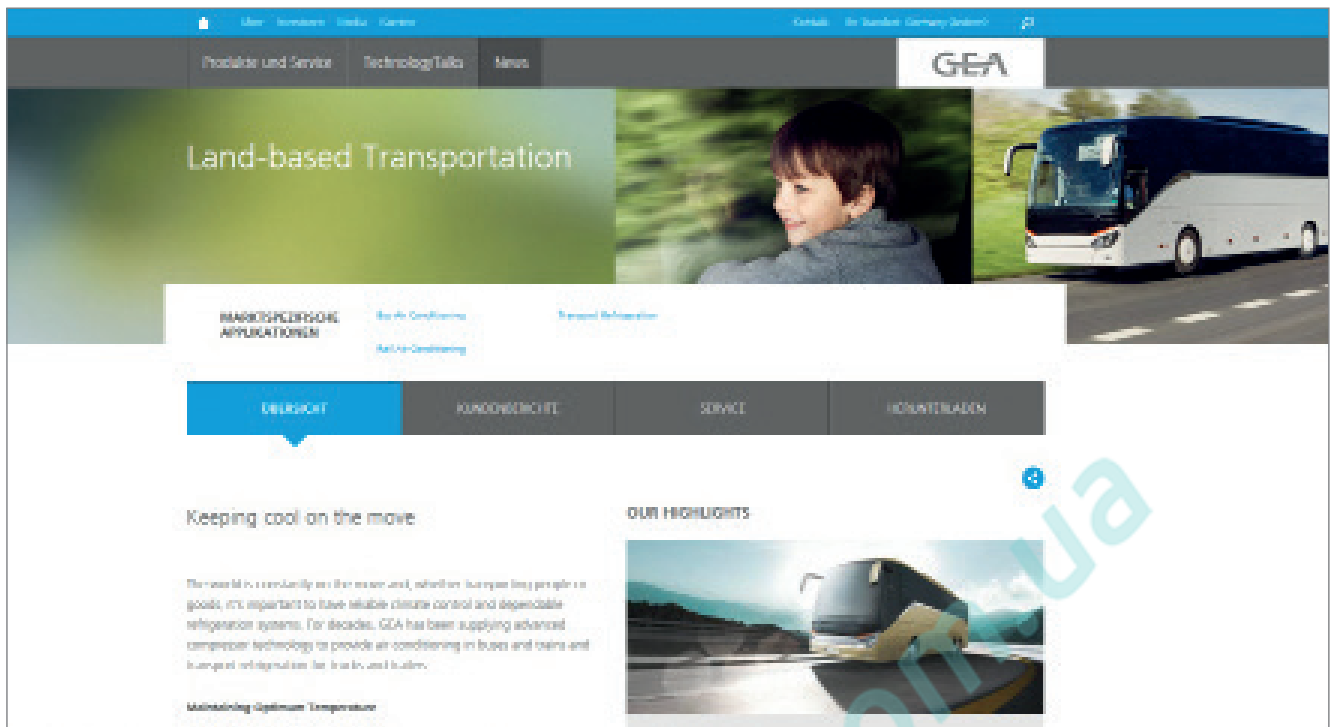
- the captivating way that the training director carries out the events
- the strong practice orientation of the training events



Our trainer Peter Spies in his element.

For additional questions or advice, please contact our training director:

Peter Spies, Phone +49 7022 9454-0, Fax +49 7022 9454-137, Email: Peter.Spies@gea.com



Here's how to find our mobile compressors

1. Go to the homepage www.gea.com and click on „Compressors“ in the „Products“ menu
2. Select the „Compressors for Commercial Refrigeration“ product group
3. You will find the following compressors under „Vehicle Compressors“:
 - Open FK compressors: FK20, FK30, FK40, FK50
 - Semi-hermetic HG compressors: HG Alu (HG22e, HG34e), HG 2-Pole, HG R407C

As usual, the corresponding product pages contain all relevant information and data about our compressors:

- Product overview
- Special features
- Technical data
- Links to the VAP compressor selection program
- Video animations

More information

Go to the homepage www.gea.com and click on „Land-based Transportation“ under „Other Applications“ in the „Applications“ menu. You will find useful information about the following subjects here:

- Bus air-conditioning
- Rail air-conditioning
- Transport refrigeration

This includes news, trade fairs/events, „customer stories“ and video animations.

We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.

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