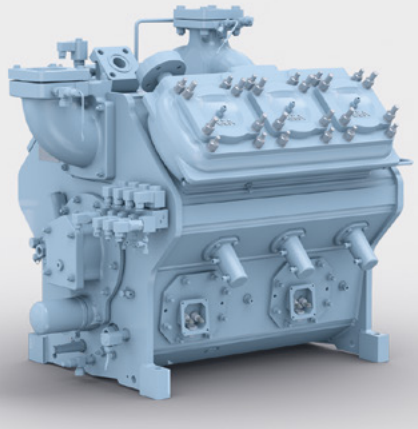
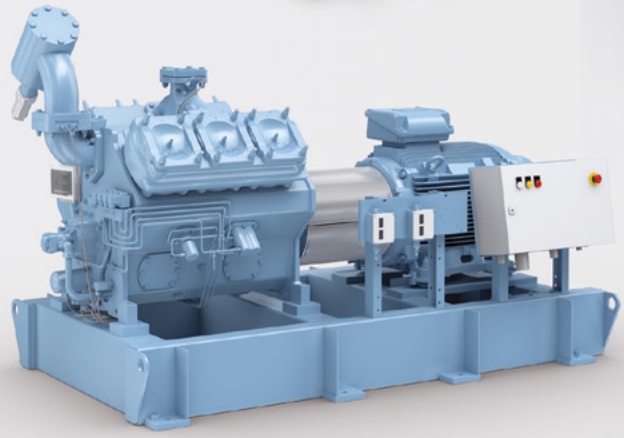
Engineering for a better world.

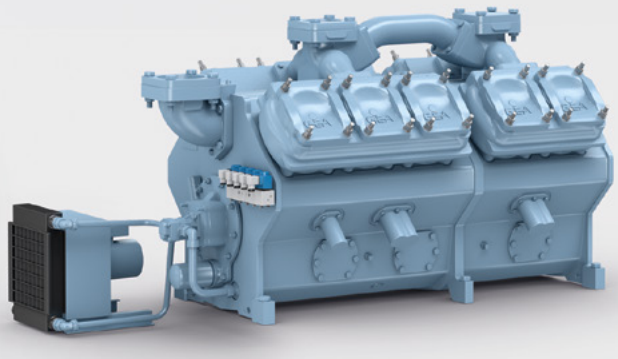
GEA.com

GEA RECIPROCATING COMPRESSORS.

Reciprocating compressors for industrial refrigeration, air conditioning and heating







GEA provides cooling and freezing technology tailored to the requirements and wishes of our customers: cost-efficient, long-life, energy-efficient, sustainable and customized. After all, we know your business and your needs from experience of more than 100 years. This is why we offer the best solutions together with top quality products. Solutions for your processes, for greater efficiency and for enhanced climate protection.

COOLING AND HEATING EVOLVED FROM EXCELLENCE.

Leading technology and experience, all in touch with your markets and processes.

GEA is one of the leading manufacturers of reciprocating and screw compressors and packages for industrial refrigeration and heating. The extensive range of high-quality, reliable and modern refrigeration compressors can be applied in almost every industrial refrigeration process. Our products find their way to the end-user via contractors, distributors and Original Equipment Manufacturers (OEM). Our main markets are:

- Food, dairy and beverage processing
- Storage and distribution
- Facility climatization and heating
- Industrial processes
- Sport and leisure

From the beginning, GEA refrigeration solutions have continuously been extended to cover many different industries. Our latest developments go even further addressing the heating sector, too. For most industrial cooling, freezing and heating applications our products offer optimal solutions with high reliability and low energy consumption.

Refrigeration and heating technology is an inherent and essential part of the food processing industry. GEA supplies an excellent range of components which can be used throughout the whole value chain, beginning with the production itself and ending with the product ready for market. GEA solutions comprise components for cold storage on fishing vessels, heating, cooling and freezing solutions for meat, vegetables, beer and beverages, dairy products – within the production process or for storage. For storage and distribution of food along the trade chain, cooling and freezing is a must.

Refrigeration from GEA is also responsible for entertainment and well-being in leisure time. Winter sports like ice skating and skiing in a perfect, cool winter atmosphere – independent of season or geographical region – are the result of the application of GEA components.

Heating from GEA has become extremely relevant, too, in view of the necessary decarbonization of the heat supply and the subsequent replacement of fossil fueled heating systems like boilers with modern heat pumps. GEA heating equipment is suitable for all applications with heating demands, from industrial processes in the food, beverage, dairy sector, in the paper or chemical industry to communal heating grids to decentralized facility heating.

REDUCE YOUR TOTAL COST OF OWNERSHIP – AND YOUR CARBON FOOTPRINT.

The GEA reciprocating compressor series includes 47 compressor models as the perfect future-proof solution for a range of applications.

Trendsetter GEA Grasso V series
With the GEA Grasso V series reciprocating compressors, GEA heralded the start of a complete new era for the industrial refrigeration market. GEA continues to invest in reciprocating technology with a clear vision for the future, and with good reason. The total cost of ownership, where energy consumption is the major part, has become an important parameter, which is why the market is now demanding energy-efficient solutions.

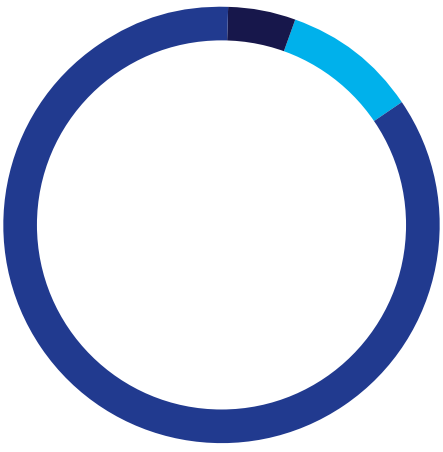
The successful V series now has become a blueprint for further developments with regards to higher speeds or higher pressures and temperatures.

Innovation
During the development of Grasso reciprocating compressors, GEA engineers continually put themselves in the position of the end-user. Time and again, each component was assessed for the most important elements that contribute to a low total cost of ownership:

- Energy efficiency
- Minimal maintenance costs
- Maximum reliability with minimal downtime

Sustainability
To get the maximum out of the GEA Grasso compressors, we focus on natural refrigerants like ammonia. At zero global warming potential (GWP = 0) and zero ozone depletion potential (ODP = 0) our customers can be sure that climate friendly NH_3 is not subject to the global warming and ozone layer discussions. And when it comes down to efficiency, ammonia is definitely number one.

Total cost of ownership



GEA Grasso compressors are a 100% European quality product. More than 100 years of design experience have been combined with state-of-the-art research and technology. The results are not only the most efficient and reliable reciprocating compressors on the market, but also extended and flexible service intervals. With the V series, GEA sets a new standard for the future.

REVOLUTIONARY DESIGN AND PERFORMANCE.

The end-users' choice for well-designed, cost-effective solutions.

Energy
Reciprocating compressor technology is synonymous with highly efficient operation resulting in lower power consumption. This is the result of minimum internal leakages, automatic head pressure adjustment and increased efficiency at lower speed especially in combination with a frequency inverter.

Minimum maintenance
The selection of the highest quality parts and construction methods enables GEA to reduce the downtime and maintenance frequency. Furthermore, we believe that maintenance should only be carried out when it is necessary – which is in contradiction with the fixed maintenance schedules in general use today for industrial compressors. That is why each compressor of the GEA Grasso V family is factory-fitted with a so-called 'conditional maintenance monitor', which indicates the right time for maintenance.

Unconditional reliability
At GEA we believe that our customers should be able to focus 100% on their business. That is why we place so much emphasis on reliable and trustworthy systems. With the maintenance carried out in accordance with the GEA Maintenance Monitor, you can be sure of problem-free operation throughout the entire life-span of the machine.

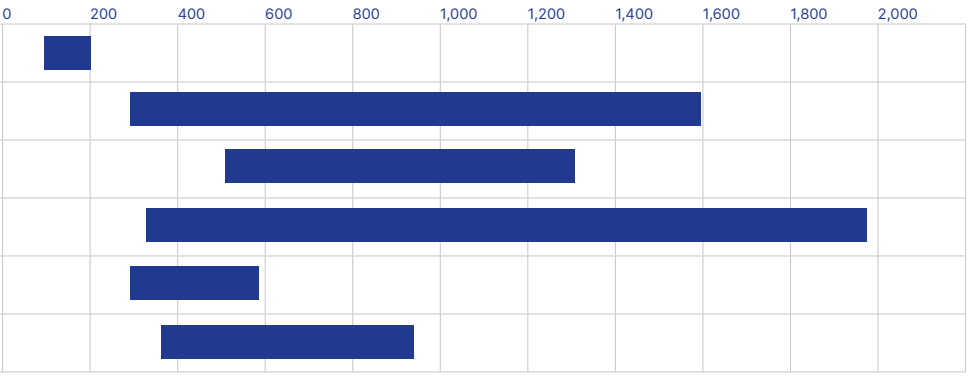
Lower investment
The optimized components of this new compressor series as well as the chosen running speed result in a lower price per kW cooling power. Due to the very low oil carry-over of the complete range of the GEA Grasso V series, packaging these compressors without oil separator is an option.

An unequalled design
The design of the welded compressor crankcase housing is innovative 'from top to bottom'. This is probably the most striking change in the history of GEA welded compressor construction. By using a revolutionary process of forming the steel sections creating the complete crankcase, the optimum shape and size can be made without compromises, and it retains all the advantages of a welded concept.

An unequalled performance
The optimized shape and size of the compressor crankcase made it possible to achieve the highest energy efficiency, minimum maintenance and maximum reliability. Another result is a much lower sound level. The unique combination of a welded crankcase with integrated, generously sized suction chamber and cast-iron cylinder heads placed externally much better separates temperatures between the suction side and the discharge side of the compressor. The results is less internal superheat, more stable oil temperature and a higher volumetric efficiency. Another effect is that the field of application for part load running has been extended.

Swept volume range single stage

Series	Motor speed	Swept volume (m^3/h)
GEA Grasso 5HP (4 sizes)	at 1,500 rpm 101–202 m^3/h	
GEA Grasso V (7 sizes)	at 1,500/1,200 rpm 290–1,593 m^3/h	
GEA Grasso V CM (4 sizes)	at 1,000 rpm 530 - 1,327 m^3/h	
GEA Grasso V HS (7 sizes)	at 1,800/1,500 rpm 348–1,991 m^3/h	
GEA Grasso V HP (3 sizes)	at 1,500 rpm 290– 580 m^3/h	
GEA Grasso V XHP (4 sizes)	at 1,500 rpm 376–941 m^3/h	



GEA Grasso 5HP is the reciprocating compressor series for CO_2 refrigeration and NH_3 heating. A trusted and established component to make industrial applications with small to medium capacity demands sustainable with fully natural refrigerants.

GEA GRASSO 5HP – SUSTAINABLE AND RELIABLE FREEZING AND HEATING.

The GEA Grasso 5HP compressor is a big performer – thanks to the extremely low volume flow in relation to the cooling capacity. The high-pressure series is developed for many applications using the natural refrigerants CO_2 and NH_3 for freezing, cooling and heating. 4 single stage models from 3 up to 6 cylinders cover a wide range of capacities.

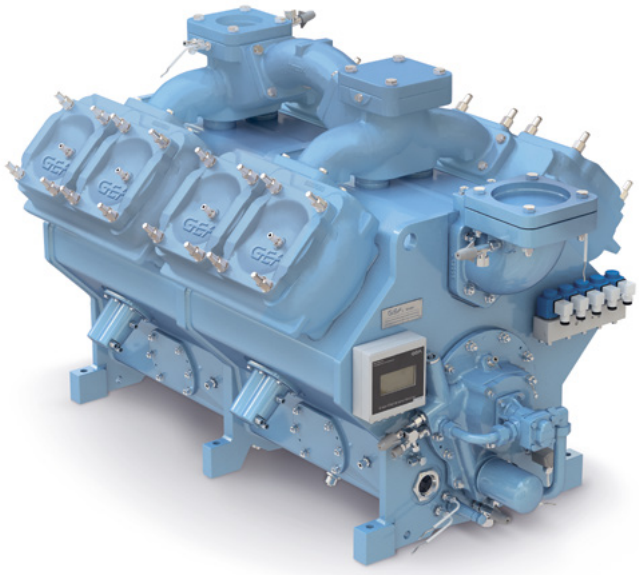
The 50 bar compressor has been developed originally for use in CO_2 cascade freezing systems and is a well-accepted and reliable appearance in the industrial refrigeration market. A logic further development of the GEA Grasso 5HP Series is the integration in NH_3 heat pump systems. The 50 bar design makes it possible to condensate up to 80°C and results in producing high level of water temperatures.

Highlights at a glance

- 50 bar design pressure
- CO_2 freezing applications as low as –55 °C
- NH_3 heating applications as high as + 80 °C
- Suited for variable speeds 500 – 1,500 min-1
- Robust design

GEA GRASSO V SERIES – COOLING AND FREEZING EVOLVED FROM EXCELLENCE.

GEA Grasso V series reciprocating compressors have set new standards. Focusing on highest possible efficiency and reliability, GEA offers sustainability, low total cost of ownership, and a future-proof solution.



With the GEA Grasso V reciprocating compressor series, GEA heralds the start of a completely new era for the industrial refrigeration market. During the development of the GEA Grasso V series, GEA continually puts itself in the position of the end user. Every component was assessed for the most important elements that contribute to a low total cost of ownership like energy, maintenance and reliability with minimum downtime.

The result is not only the most efficient reciprocating compressor on the market, but also a compressor with electronically controlled service intervals (extended as well as flexible) in order to reduce the total cost of ownership without jeopardizing reliability.

The GEA Grasso V series covers a large range of single-stage and two-stage models.

Highlights at a glance

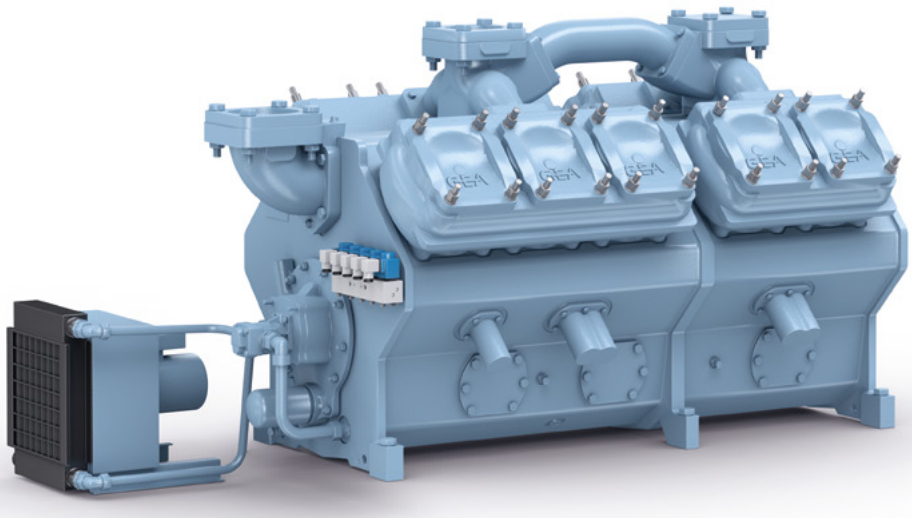
- 25 bar design pressure
- NH_3 freezing and cooling applications
- Suitable for variable speeds from 500 to max allowed
- Flexible and extended maintenance intervals above point best-in-class efficiency returning highest sustainability and lowest total costs

ONE SERIES, MANY STRENGTHS – THE VERSATILE GEA GRASSO V SERIES.

Classic Mechanism models GEA Grasso V CM

For those who value classic technology paired with low investment and high efficiency, the GEA Grasso V CM series is an excellent choice. This compressor features the reliable and cost-effective “Grasso 12”-cylinder and steel valve technology. Operating at a maximum speed of 1,000 rpm, it maintains impressive efficiency and long fixed maintenance intervals.

The GEA Grasso V CM series is available in a wide range of models, from the V 700 to the V 1800, in both single-stage and two-stage configurations. These compressors can be equipped with either direct or V-belt drive setups to suit your specific needs.



Two-stage models GEA Grasso VT

GEA Grasso two-stage-or ‘compound’ reciprocating compressors benefit from the same characteristics as the single-stage models. Internally they have separate suction chambers for low and intermediate pressure and, on the outside, two connections are added for the intermediate side. The range also comprises the complete Grasso V 25 bar range, each with only one LP/HP cylinder ratio in order to simplify the selection procedure. For the two-stage compressors, several highly efficient and patented intermediate cooling systems are available.

Two-stage models are relevant for applications requiring low evaporation temperatures, like freezers. The minimum suction temperature of the GEA Grasso VT series is –55 °C.

High-speed models GEA Grasso V HS

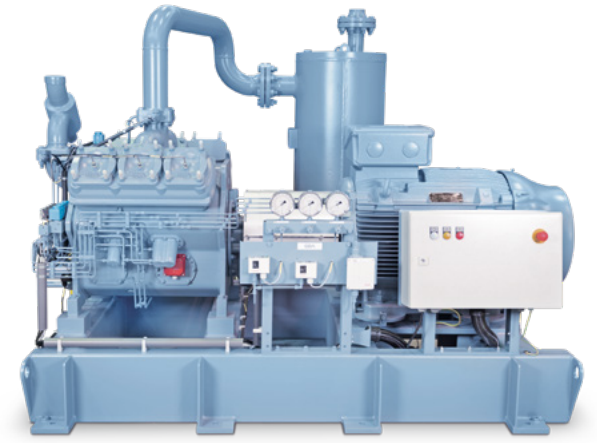
The Grasso V HS series builds on our standard V series, but operates at a higher maximum speed. This enhancement significantly boosts capacity while maintaining an almost identical footprint, resulting in a notable improvement in the cost-efficiency ratio (kilowatts per euro).

For users facing occasional high peak load requirements, the increased capacity allows for the use of a smaller compressor model, offering both reduced investment costs and greater flexibility. At lower speeds, the Grasso V HS maintains the same excellent performance as the standard Grasso V compressor.

The Grasso V HS series is now available across the entire range of cooling compressor models.

GEA GRASSO V HP – SUSTAINABLE HEATING AT TOP EFFICIENCY.

The GEA Grasso V HP high-pressure series is first choice for heating demands up to +70 °C heat sink temperatures. Unparalleled efficiencies, the use of the fully natural refrigerant NH_3, and the reliable, proven concept make the future-proof solution an integral element to decarbonize your heat supply.



Welcome to a new era of industrial heating: Based on the successfully proven GEA Grasso V series, a 39 bar high-pressure series has been designed. Providing heat sink temperatures up to +70 °C the GEA Grasso V HP series suits heating demands in all kinds of industries and communities – an integral part in the decarbonization of the heat supply.

Industry-leading efficiency was a central factor in developing the GEA Grasso V HP series. A unique housing shape and the use of specific materials allow high-end temperature and separates them extremely well from the suction temperatures making extra cylinder head cooling unnecessary and ensuring best performances. The lower energy consumption not only further increase sustainability but also reduce your total costs of ownership.

The latest generation of this compressor is executed with special bearings which increased reliability and the compressor can be used with standard oil for cooling applications, the ISO VG 68 type. This can simplify the oil system in a combined cooling and heating refrigeration installation A further step towards Industry 4.0. is the unique Continuous Status Analysis (CSA) function for measuring operating conditions and alerting the operator in case of deviation from normal values.

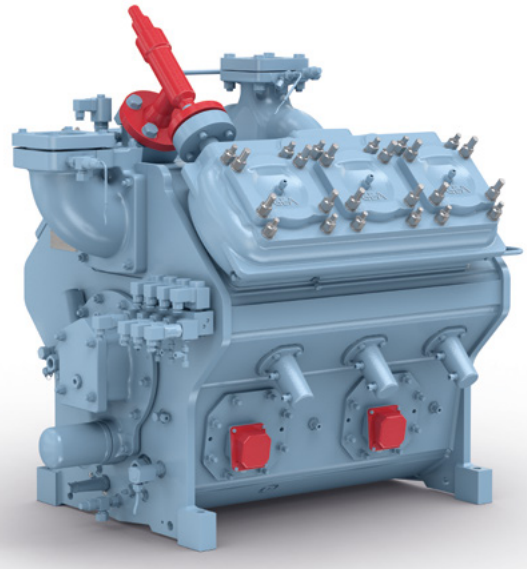
In short, the new V HP is true to its roots in the V series philosophy, which has efficiency and reliability in its DNA.

Highlights at a glance

- 39 bar design pressure
- Heat carrier supply temperatures up to +70 °C
- Suited for variable speeds 500–1,500 min-1
- Compatible with standard ISO VG 68 oil

GEA GRASSO V XHP – A NEW BREAK-THROUGH GENERATION OF INDUSTRIAL HEATING.

Higher temperatures, more capacity, additional models: The GEA Grasso V XHP compressor series takes industrial heating to new heights. Evolved from the best-in-class GEA Grasso V HP series, the extra high-pressure models allow supply temperatures up to +95 °C and significantly larger capacity range compared with any other comparable models.



The GEA Grasso V XHP series is the next generation of sustainable industrial heating equipment. Evolved from the industry-leading GEA Grasso V HP series, the V XHP models at 63 bar design provide higher temperatures up to +95 °C and an enhanced capacity range with four different types (4, 6, 8 and 10 cylinders).

The GEA Grasso V XHP series provides in combination with the speed range up to 1,500 min-1 a significantly higher capacity compared with benchmark models.

This enables users to meet larger capacity demands with fewer compressors, lowering both operational costs and required footprint. With best-in-class efficiency and low maintenance, the GEA Grasso V XHP series ensures the lowest operational costs.

Highlights at a glance

- 63 bar design pressure
- Heat carrier supply temperatures up to +95 °C
- Heat source temperatures up to +60 °C
- Suited for variable speeds 500–1,500 min-1
- Patented condensate drain system
- OMNI controller for continuously monitoring and protection

OPTIMIZE THE PERFORMANCE – WITH INGENIOUS MONITORING AND SERVICE.

We are proud of the quality and reliability of all GEA solutions. Our after sales and service philosophy enhance performance and maintenance for you.

GEA Maintenance Monitor (GMM)
GEA Grasso V based compressors are equipped with the GMM. This compact, microprocessor-based stand-alone unit monitors relevant data online to determine flexible 'on-time' maintenance intervals. Automatically generated messages can be read directly from a small built-in display, remote PC, or can be sent by email to the person/company responsible for the maintenance. Packaged units and complete heat pumps including the GEA Omni control panel provide the device integrated in the GEA Omni.

Connected to a network, even real-time data are available as well as information about any upcoming service. 'On-time' maintenance balances the lifetime of wearing components and the expected reliability. In other words: The end user benefits from longer service intervals without jeopardizing reliability. In industrial refrigeration this is quite a new approach. The traditional 'fixed' service intervals will slowly be taken over by the new system.

GEA service
Our objective is to ensure that GEA reciprocating compressors are well-designed and properly installed and maintained. We know that correct preventive maintenance will ensure the highest level of reliability and unexpected breakdowns can be minimized. At the same time the lifetime of compressors will increase.

With this in mind GEA takes care of its customers by offering the best possible service in terms of technical consultation, warrantee management, field service and training courses. All supported by rapid spare parts supply all over the world.

Spare parts
A practical and fast-working spare parts organization has been established to supply the required spare parts worldwide. To shorten delivery times further, distribution centers have been created at GEA offices throughout the world. We have an extensive stock of spare parts, covering new as well as phased-out GEA compressors.

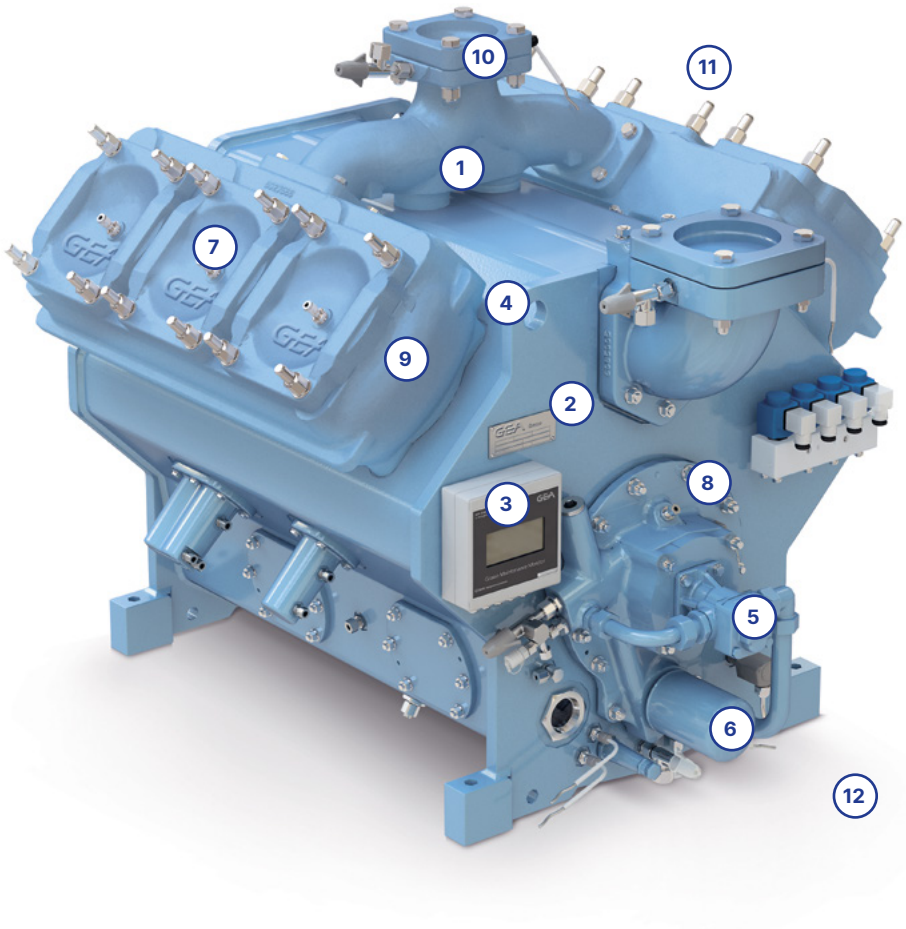
Laboratory tests and field experience have proven that the use of genuine GEA parts keeps compressor performance, reliability and a low total cost of ownership at a best-in-class level.

Training courses
For GEA is it very important to ensure maximum support for the end-users all over the world. This can only be achieved when the right training programs are available. Local representatives and contractors are welcome to attend these training courses. Tuned for design and service engineers, they focus on the correct selection and application of GEA compressors as well as performing the correct service to maintain the highest level of reliability.

Courses take place at the GEA manufacturing site for reciprocating compressors but can on request also happen locally if more convenient for a larger audience. We strongly recommend attending our training courses on a regular basis to offer the local market the best possible up-to-date support.

KEY FEATURES AND REASONS TO CHOOSE GEA RECIPROCATING COMPRESSORS.

GEA Grasso reciprocating compressors are used worldwide across many industries and communities. For many good reasons.



1. Safety first
- Counter pressure independent overflow valve(s) between suction and discharge chamber to secure a safe operation.

2. Optimized suction gas entry
- Oversized suction gas chamber and optimized filtering and distribution results in low pressure drop and increased resistance against liquid hammer.

3. Flexible and extended maintenance
- To calculate and indicate upcoming maintenance intervals by means of measuring of actual running conditions.

4. Optimized temperature separation
- The cold suction chamber is clearly separated from the hot discharge area by means of an isolating gasket and an air gap. In this way we have less internal heating up the suction gas resulting in lower discharge temperatures and more flexibility in part load operation.

5. Oil pump
- Different sizes tuned to compressor model.

6. Oil filter
- Large capacity ‘screw-on’ oil filter to cover long service intervals. Externally accessible.

7. Maximum lifetime
- Composite material for suction and discharge valves.
- Free-flow discharge valve configuration with gas damping chambers.
- High volume and low gas velocity suction chamber.
- Oil pump size adapted to compressor size.
- High-end bearing materials.

8. Reliability and ease of maintenance
- Axial roller bearing construction to withstand high crank-case pressures for maximum lifetime at high loads.
- Increased main bearing diameter for stable low-speed inverter drive running.
- Large-capacity, externally mounted oil filter for long service intervals.
- Full oil pump flow over shaft seal for maximum cooling/life time extension.

9. O-ring sealing
- Easy disassembly and assembly.
- Over 60% fewer fixing bolts contribute to reduced service times.

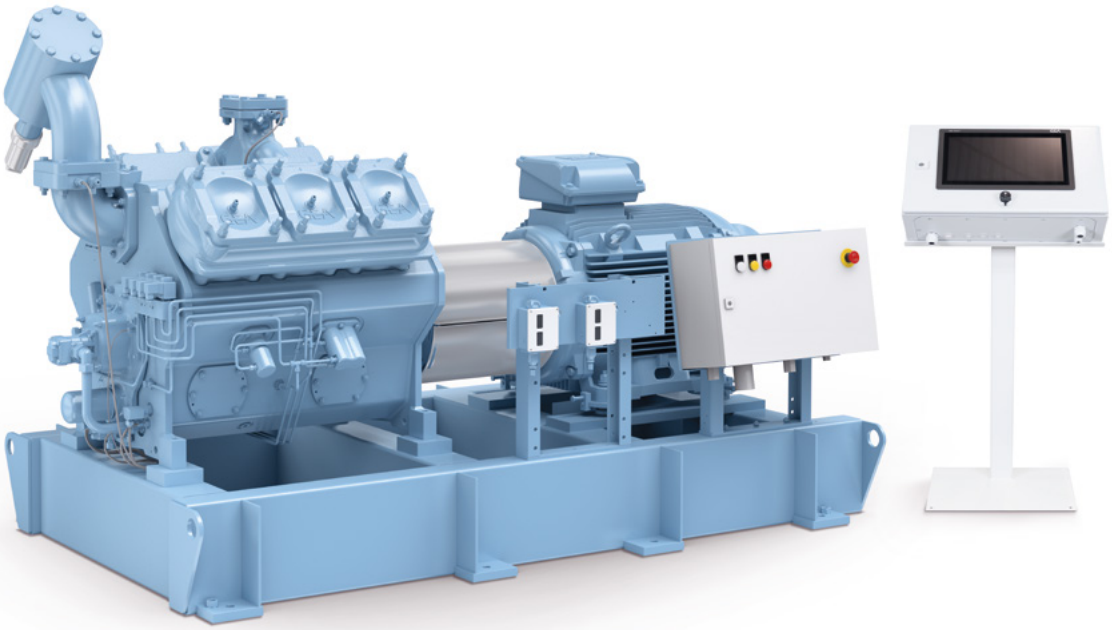
10. Minimized oil carry-over to refrigeration system
- The oversized common suction chamber, the position of the cylinder liners, as well as the increased distance between oil sump and crankshaft (and lower internal temperatures) result in an extremely low oil carry-over. The necessity of using an oil separator is subject to application and, in some cases, can be omitted.

11. Low noise level
- Modular setup of the steel-welded housing in combination with the rigid cast iron cylinder heads guarantees the lowest possible noise emissions.

12. Future-proof sustainability
- Highest efficiency through revolutionary design, the use of NH_3, smart maintenance not only reduce your total cost of ownership but also the carbon footprint.

PACKAGED RECIPROCATING COMPRESSOR UNITS.

Most compressors produced at GEA are turned into compact packaged before they leave the factory.



The choice of components to fit on and around the compressors is huge, and the fact that all required components are factory-fitted gives the contractor the advantage to concentrate 100% on the erection of the refrigeration plant.

Direct drive or V belt drive arrangements are available for all V series based cooling compressors, the GEA Grasso 5HP, V HS, V HP and V XHP series are optimized for direct drive only. The introduction of high power inverters in combination with maintenance-free couplings gives the customer the opportunity to positively influence energy and maintenance costs.

The extremely low oil carry-over, related to the design of the compressor particularly on cooling applications, can be even less than 10 ppm and gives the customer the opportunity to ex-ecute a compressor package with or without an oil separator, depending on the system demands. The use of GEA's high-efficiency oil separator will further reduce the carry-over to an absolute minimum, and oil contamination through to the installation.

TECHNICAL DATA

GEA Grasso 5 HP
CO_2 Freezing applications/50 bar

Model	Swept volume* (m^3/h)	Number of cylinders	Speed range (rpm/min)	Type of drive**	Cooling capacity (kW)***	
					-50/0°C	-40/-10°C
GEA Grasso 35HP	101	3	500 – 1,500	Direct	85	161
GEA Grasso 45HP	135	4	500 – 1,500	Direct	113	215
GEA Grasso 55HP	168	5	500 – 1,500	Direct	141	268
GEA Grasso 65HP	202	6	500 – 1,500	Direct	169	320

GEA Grasso 5 HP
NH_3 Heat pump applications/50 bar

Model	Swept volume* (m^3/h)	Number of cylinders	Speed range (rpm/min)	Type of drive	Heating capacity (kW)***	
					+35/+80°C	+30/+70°C
GEA Grasso 35HP	101	3	500 – 1,500	Direct	265	242
GEA Grasso 45HP	135	4	500 – 1,500	Direct	353	321
GEA Grasso 55HP	168	5	500 – 1,500	Direct	441	402
GEA Grasso 65HP	202	6	500 – 1,500	Direct	529	481

GEA Grasso V (Medium/Large series)
NH_3 cooling applications 25bar – single stage

Model	Swept volume* (m^3/h)	Number of cylinders	Speed range (rpm/min)	Type of drive	Cooling capacity (kW)***	
					-10/+35°C	+0/+40°C
GEA Grasso V 300-2	290	4	500 – 1,500	Direct/V-belt	155	237
GEA Grasso V 450-2	435	6	500 – 1,500	Direct/V-belt	233	358
GEA Grasso V 600-2	580	8	500 – 1,500	Direct/V-belt	312	478
GEA Grasso V 700-2	637	4	500 – 1,200	Direct/V-belt	363	543
GEA Grasso V 1100-2	955	6	500 – 1,200	Direct/V-belt	550	822
GEA Grasso V 1400-2	1,274	8	500 – 1,200	Direct/V-belt	734	1,096
GEA Grasso V 1800-2	1,593	10	500 – 1,200	Direct/V-belt	917	1,372

* Theoretical swept volume based on max. speed mentoined in the table

** Variable speed drive only

*** Capacity based on package with 2K non-useful superheat & 0K subcooling (two-stage on open flash C interstage cooler)

TECHNICAL DATA

GEA Grasso VT (Medium/Large series)
NH_3 freezing applications 25bar – two stage

Model	Swept volume* (m^3/h)	Number of cylinders	Speed range (rpm/min)	Type of drive	Cooling capacity (kW)***	
					-35/+35°C	-40/+35°C
GEA Grasso V 300T-2	218	3/1	500 – 1,500	Direct/V-belt	45	34
GEA Grasso V 450T-2	290	4/2	500 – 1,500	Direct/V-belt	67	52
GEA Grasso V 600T-2	435	6/2	500 – 1,500	Direct/V-belt	90	68
GEA Grasso V 700T-2	478	3/1	500 – 1,200	Direct/V-belt	105	82
GEA Grasso V 1100T-2	637	4/2	500 – 1,200	Direct/V-belt	151	117
GEA Grasso V 1400T-2	955	6/2	500 – 1,200	Direct/V-belt	211	164
GEA Grasso V 1800T-2	1,114	7/3	500 – 1,200	Direct/V-belt	259	201

GEA Grasso V HS (Medium/Large series)
NH_3 cooling applications 25bar – single stage

Model	Swept volume* (m^3/h)	Number of cylinders	Speed range (rpm/min)	Type of drive	Cooling capacity (kW)***	
					-10/+35°C	+0/+40°C
GEA Grasso V 300-2 HS	348	4	500 – 1,800	Direct	186	284
GEA Grasso V 450-2 HS	522	6	500 – 1,800	Direct	279	429
GEA Grasso V 600-2 HS	696	8	500 – 1,800	Direct	374	573
GEA Grasso V 700-2 HS	796	4	500 – 1,500	Direct	451	675
GEA Grasso V 1100-2 HS	1,193	6	500 – 1,500	Direct	687	1,026
GEA Grasso V 1400-2 HS	1,592	8	500 – 1,500	Direct	915	1,368
GEA Grasso V 1800-2 HS	1,991	10	500 – 1,500	Direct	1,144	1,711

GEA Grasso VT HS (Medium/Large series)
NH_3 freezing applications 25bar – two stage

Model	Swept volume* (m^3/h)	Number of cylinders	Speed range (rpm/min)	Type of drive	Cooling capacity (kW)***	
					-35/+35°C	-40/+35°C
GEA Grasso V 300T-2 HS	262	3/1	500 – 1,800	Direct	54	40
GEA Grasso V 450T-2 HS	348	4/2	500 – 1,800	Direct	80	62
GEA Grasso V 600T-2 HS	522	6/2	500 – 1,800	Direct	108	81
GEA Grasso V 700T-2 HS	598	3/1	500 – 1,500	Direct	131	102
GEA Grasso V 1100T-2 HS	796	4/2	500 – 1,500	Direct	188	146
GEA Grasso V 1400T-2 HS	1,194	6/2	500 – 1,500	Direct	263	205
GEA Grasso V 1800T-2 HS	1,395	7/3	500 – 1,500	Direct	323	251

GEA Grasso V CM (Large series)
NH_3 cooling applications 25bar – single stage

Model	Swept volume* (m^3/h)	Number of cylinders	Speed range (rpm/min)	Type of drive	Cooling capacity (kW)***	
					-10/+35°C	+0/+40°C
GEA Grasso V 700 CM	530	4	500 – 1,000	Direct/V-belt	300	449
GEA Grasso V 1100 CM	795	6	500 – 1,000	Direct/V-belt	453	678
GEA Grasso V 1400 CM	1,061	8	500 – 1,000	Direct/V-belt	604	904
GEA Grasso V 1800 CM	1,327	10	500 – 1,000	Direct/V-belt	755	1,130

GEA Grasso VT CM (Large series)
NH_3 freezing applications 25bar – two stage

Model	Swept volume* (m^3/h)	Number of cylinders	Speed range (rpm/min)	Type of drive	Cooling capacity (kW)***	
					-35/+35°C	-40/+35°C
GEA Grasso V 700T CM	398	3/1	500 – 1,000	Direct/V-belt	86	67
GEA Grasso V 1100T CM	530	4/2	500 – 1,000	Direct/V-belt	125	97
GEA Grasso V 1400T CM	796	6/2	500 – 1,000	Direct/V-belt	173	135
GEA Grasso V 1800T CM	930	7/3	500 – 1,000	Direct/V-belt	213	166

GEA Grasso V HP (Large series)
NH_3 Heat pump applications 39bar

Model	Swept volume* (m^3/h)	Number of cylinders	Speed range (rpm/min)	Type of drive	Cooling capacity (kW)***	
					+25/+65°C	+30/+70°C
GEA Grasso V 300-2 HP	290	4	500 – 1,500	Direct	601	681
GEA Grasso V 450-2 HP	435	6	500 – 1,500	Direct	903	1,024
GEA Grasso V 600-2 HP	580	8	500 – 1,500	Direct	1,204	1,365

GEA Grasso V XHP
NH_3 Heat pump applications 63bar

Model	Swept volume* (m^3/h)	Number of cylinders	Speed range (rpm/min)	Type of drive	Cooling capacity (kW)***	
					+40/+90°C	+30/+80°C
GEA Grasso V 350 XHP	376	4	500 – 1,500	Direct	1,092	869
GEA Grasso V 550 XHP	564	6	500 – 1,500	Direct	1,635	1,301
GEA Grasso V 750 XHP	753	8	500 – 1,500	Direct	2,189	1,742
GEA Grasso V 950 XHP	941	10	500 – 1,500	Direct	2,734	2,175

* Theoretical swept volume based on max. speed mentoined in the table

** Variable speed drive only

*** Capacity based on package with 2K non-useful superheat & 0K subcooling (two-stage on open flash C interstage cooler)

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