

Sabroe product profile



Sabroe/ – Get refrigeration right



The polar bear says it all



In the world of refrigeration, the Sabroe name and the Sabroe polar bear are renowned as symbols of strength, reliability and business integrity.

We put the Sabroe name on all our vast range of high-quality refrigeration products and systems – and are proud to do so.

It's all part of “getting refrigeration right”.

Sabroe has a unique history and is lined up for a unique future – read more at www.sabroe.com

»» *The Sabroe polar bear – a uniquely recognisable identity, and a name to be proud of*

Get refrigeration right

How Sabroe gets refrigeration right

The Sabroe name is renowned throughout the world of refrigeration products and systems – famous for reliability, technological excellence and our ability to meet even the most demanding customer requirements.

We are one of the best-known designers, specialist manufacturers and suppliers of high-quality refrigeration equipment in the world. This means we have unparalleled experience in getting refrigeration just right for every single customer.

The full story is at www.sabroe.com



» *Renowned throughout the world – for strength and reliability*



Sabroe gets refrigeration right because of our

Reliability

» *Maximum reliability
builds on unparalleled
experience*

Maximum reliability is a prime concern in the world of refrigeration.

Sabroe solutions are backed by more than a century of continuous technical development, refinement and improvement.

And backed by extensive testing at the Sabroe End Of Line (EOL) Test Centre.

Technology

» *The benchmark by
which others are
judged*

The Sabroe manufacturing facilities, technology and development resources – including the state-of-the-art Sabroe R&D Test Lab – are the benchmark by which others are judged.



Quality

» *Advanced test facilities and pride in work well done*

Sabroe has a name to live up to and a reputation to protect.

That's why we insist on an exceptional level of quality assurance, with the best possible combination of advanced test facilities, QA procedures, common-sense experience and our natural Sabroe pride in work well done.

Environmental focus

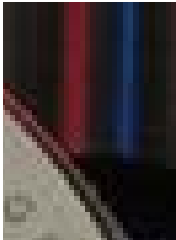
» *With a century of experience, we help determine future standards*

Refrigeration is closely linked with environmental concerns.

As one of the world's major forces in refrigeration, Sabroe and its associated companies play an important role in determining the details of future legislation and industrial standards about refrigerants.

We can provide solutions for any refrigerant currently in use – and we have more than a century of practical experience with using natural refrigerants.

More at www.sabroe.com



The benefits

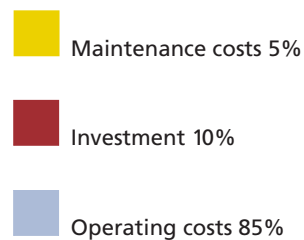
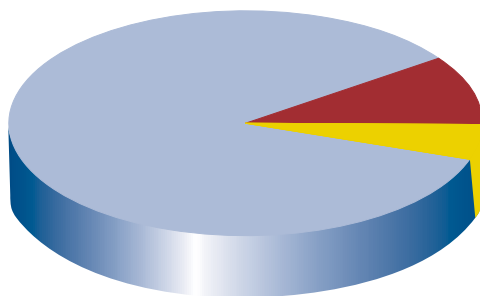
» *Turn an expense into a benefit*

We focus on the life cycle costs (LCC) of your refrigeration system, rather than just on the initial purchase costs.

This Sabroe standard means that your refrigeration systems move from being an expense to a benefit - a benefit that has a marked influence on both your operating costs and your product quality.

In the world of refrigeration compressors and equipment, the Sabroe standard is the benchmark you can use to judge the others by.

More at www.sabroe.com



Compressors – screw or reciprocating?



There is no simple answer to the constantly recurring question of whether it is best to use screw compressors or reciprocating compressors. Both types are viable alternatives in virtually all applications, and both types are normally capable of doing the job.

The right decision about the most efficient solution to your needs requires a detailed, individual assessment of your specific requirements and a clear analysis of particular operating conditions in your installation. To download a clear, comprehensive overview of all the main criteria involved, provided by Sabroe experts, go to www.sabroe.com

Sabroe experience reveals that the parameters you should focus on include

- operating conditions
- part-load requirements
- energy consumption.

Get in touch and we'll guide you through the decision-making process.

Because Sabroe supplies a complete range of state-of-the-art compressors of both types, we're uniquely placed to give you unbiased advice based on practical experience.

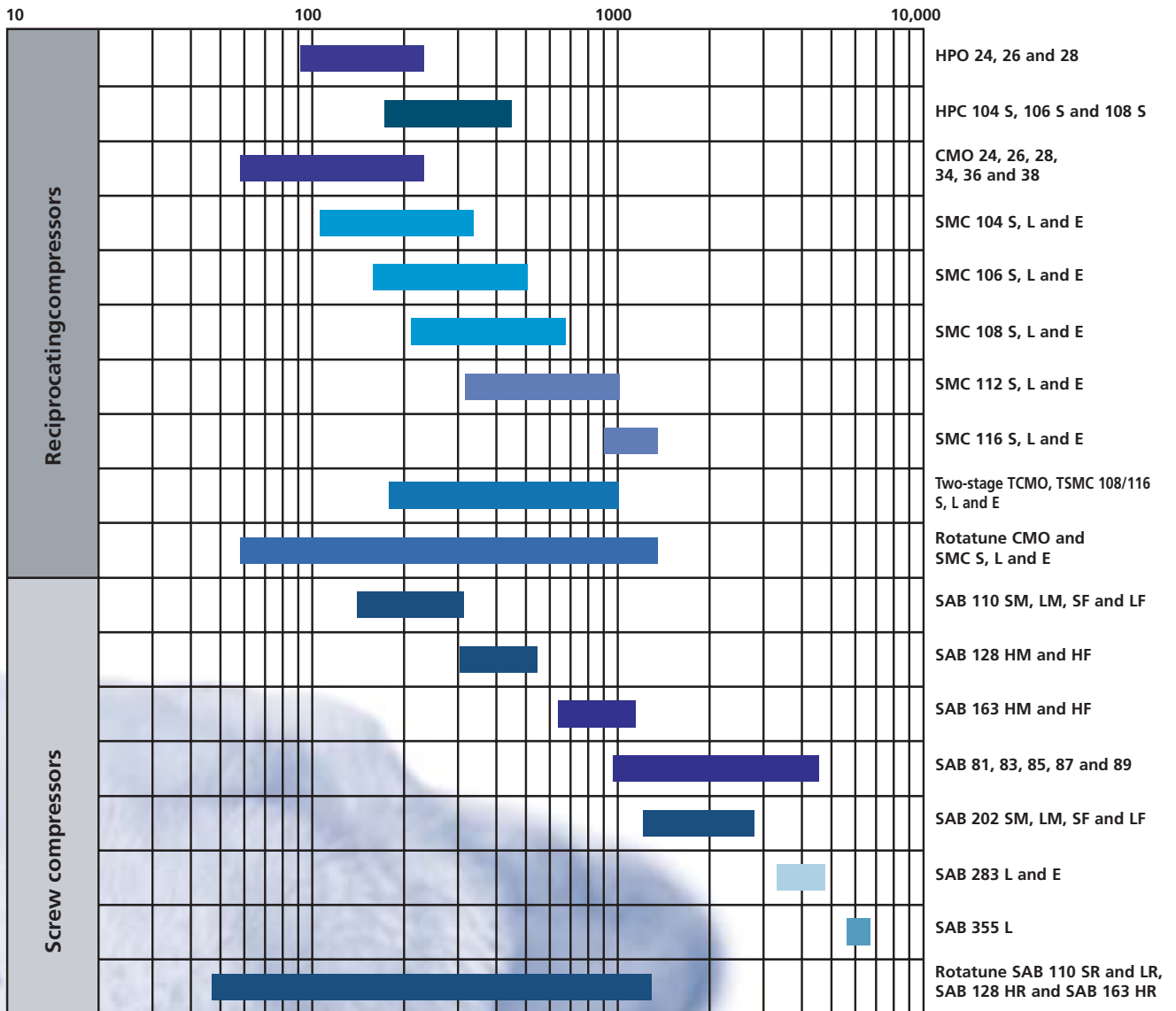
» *The basic truth about refrigeration is that every installation is a special case*





Full compressor range

Swept volume in [m³/h]
 Reciprocating and Rotatune compressors at minimum
 and maximum speed.
 Screw compressors at 50 and 60 Hz



HPO 24
 HPO 26
 HPO 28



CMO 24, 34
 CMO 26, 36
 CMO 28, 38



HPC 104
 HPC 106
 HPC 108



SMC 104
 SMC 106
 SMC 108



SMC 112
 SMC 116



Rotatune recip



TCMO



TSMC 108
 TSMC 116

Recognised quality

Sabroe compressors are carefully designed to integrate a wide range of technologies into one highly efficient unit. Each Sabroe compressor and package solution complies with the stringent standards set out by virtually all the classification authorities in the world. In addition, Sabroe compressor manufacturing facilities are ISO 9001:2000 certified.

Virtually all refrigerants

Sabroe compressor designs are extremely versatile and are designed to work with the vast majority of refrigerants in use both now and in the future. These include hydrofluorocarbons (HFCs) and hydrochlorofluorocarbons (HCFCs), in addition to natural refrigerants such as ammonia (NH₃), carbon dioxide (CO₂) and hydrocarbons (HCs).

Design and development

The intensity and focus of our R&D work mean that Sabroe compressors always incorporate the latest advances in refrigeration compressor technology.

An important feature of the Sabroe design approach is that each of these design improvements is normally also compatible with earlier compressor models. This makes it easy for you to upgrade your existing compressor equipment to the latest designs and specifications, and thus benefit from the continual flow of new Sabroe features and the improved efficiency these provide.

Variable speed drive

Most Sabroe compressor models are available with Rotatune variable speed drive to provide the stepless control of compressor capacity. This enables you to reduce your energy consumption and operating costs to the absolute minimum.

Optional equipment

The extremely comprehensive range of Sabroe standard screw compressors and reciprocating compressors is supplemented by extensive additional options that help ensure all your requirements are met.



SAB 110



SAB 128



SAB 163



SAB 202



SAB 80



Rotatune screw



SAB 283



SAB 355

Sabroe provides an extensive range of screw compressors that meet the requirements of virtually any refrigeration plant or system, either as standard or in specially customised configurations. There is a choice of more than 20 standard models and sizes, covering capacities between 47 and 5638 m³/h swept volume at 60 Hz. All are designed to achieve maximum efficiency at both full and part load.

World-renowned

Sabroe is known throughout the world as the supplier of choice for the kinds of highly reliable screw compressors used in industrial refrigeration, process refrigeration and air conditioning, as well as for heat pump applications. Sabroe screw compressors are world-renowned for their efficient operation as well as their durability, reliability and safety, even under extreme conditions and loads.

Design you can rely on

You can always rely on the design and engineering of Sabroe screw compressors, delivered as an integrated, reliable and well-proven package anywhere in the world, and thus avoiding the ad hoc solutions often seen elsewhere. The basic design features the careful integration of many of the major components and technologies into one highly efficient, reliable unit, with a well-engineered structure in which nothing is left to chance.

This integrated design philosophy results in greater reliability and extended service life, as well as a compact design with less complicated external tubing.

Sabroe SAB 110, 128 and 163 screw compressor models are available with the unique Rotatune variable speed drive concept that considerably reduces energy consumption.

For details of the complete range of Sabroe screw compressors, along with individual product descriptions, go to www.sabroe.com



Exceptional range

Sabroe designs and supplies a full range of reciprocating compressors designed for use in refrigeration, air-conditioning and heat-pump operations in even the toughest industrial, marine and offshore applications.

The range includes more than 20 different sizes of single-stage reciprocating compressors. Six are also available in high-pressure versions for heat pump operation using ammonia, for CO₂ applications and for use with other high-pressure refrigerants, such as R410A.

Two-stage reciprocating compressors are available in 8 different sizes for use in low-temperature applications.

Reliable

In all kinds of different applications and with all kinds of refrigerants, Sabroe reciprocating compressors have a proven capacity for long service life and problem-free operation. Sabroe reciprocating compressors are therefore generally considered the market leader in terms of reliability and operating efficiency.

Single-stage and two-stage

In most low-temperature refrigeration installations, two-stage reciprocating compressors are more economical than single-stage screw compressors. Sabroe TCMO and TSMC packages are designed to meet this requirement.

For details of the complete range of Sabroe reciprocating compressors, along with individual product descriptions, go to www.sabroe.com



To extend the capabilities of Sabroe screw compressors and reciprocating compressors still further, we have developed the unique Rotatune concept.

Rotatune is a variable-speed drive system that automatically matches output to demand so that all energy is used for maximum effect. This is achieved with an advanced frequency converter combined with the Sabroe Unisab II microprocessor control system to control the electric drive motor at variable speed.

Reduce energy costs by 30%
Because they are designed to closely align capacity and speed, Sabroe Rotatune compressor packages reduce energy costs by up to 30% compared with traditional fixed-speed compressors.

Precise control

The refrigeration capacity of a Rotatune compressor is closely aligned with its speed, thus providing previously unheard of accuracy in controlling pressures or temperatures.



Rotatune packages can therefore be used for even the most sensitive industrial processes.

Rotatune electronic stepless speed control is available over an operating range of 17–100 Hz and 1000–6000 rpm for screw compressors, and a range of 700–1500/1800 rpm for reciprocating compressors.

Better part-load performance

On conventional screw compressors, slide valves are used to regulate capacity, resulting in losses due to the by-pass of refrigerant. The Rotatune principle, however, totally eliminates this by-pass by relying solely on the speed of the motor.

On conventional reciprocating compressors, unloading of the cylinders also gives rise to certain losses. The installation of Rotatune, combined with a generally higher COP at lower rpm, therefore results in substantial savings at part load.

The best start

With Rotatune compressor packages, start-up is also more efficient, since the gradual build-up of speed eliminates current peaks and heat build-up. In addition, the power supply requirements are smaller.

Less wear

Rotatune means the compressor runs at lower speeds when working at part load. This reduces wear, extends the working life of the equipment and results in lower maintenance costs.

For more information about the Sabroe Rotatune concept, go to www.sabroe.com

Sabroe standard package solutions

» *Sabroe compressors are the ideal basis for standard package solutions*

The quality and reliability of Sabroe compressors and other refrigeration equipment mean they are ideal as the basis on which to build larger, specialised package solutions.

Sabroe compressor technology and refrigeration know-how can be combined into many innovative new refrigeration packages.

A selection of the Sabroe standard package solutions is shown here.

There are always more in the pipeline. Contact us for details, or if you have a specific requirement.

Sabroe packaged chillers

Many customers' applications require indirect rather than direct cooling. This is normally provided by special chiller units, in which a compressor, rather than acting directly, cools a secondary refrigerant that then provides the desired cooling effect.



Secondary refrigerants on the rise

The use of secondary refrigerants such as water, glycols, brine, etc., is increasing rapidly because of the demand for safer installations and the growing focus on energy consumption, as well as legislative requirements for the phasing out of certain refrigerants.

At the forefront

Sabroe chillers are at the forefront of this rapidly developing market, and we have built up extensive know-how and experience relating to chilling applications of all types. We provide a comprehensive range of more than 30 standard packaged chillers based on the world-renowned screw and reciprocating

compressor products developed and optimised by Sabroe. Customers benefit from factory-assembled, pre-tested equipment built from top-quality standardised components.



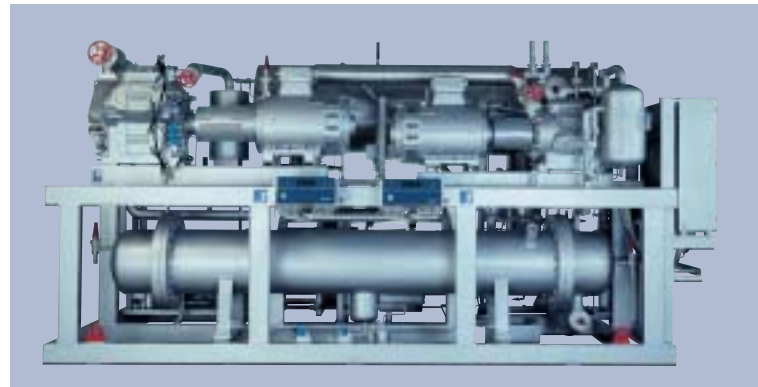
Refrigerants

Sabroe chillers normally use natural ammonia (R717) as refrigerant on account of its very high COP (coefficient of performance).

For certain applications where ammonia is not applicable, there are also Sabroe PLCH chillers that use thermodynamically efficient, high-pressure R410A, an environmentally friendly HFC. In general, Sabroe chillers are available with any of the most common HFC refrigerants, in accordance with your needs.

Sabroe CO₂/Ammonia Freeze Package (CAFP)

The innovative Sabroe CO₂/Ammonia Freeze Package (CAFP) concept is based on a cascade system that combines the advantages of using carbon dioxide (CO₂) on the low-temperature side and ammonia on the high-temperature side. This meets a range of particular requirements at evaporating temperatures below approx. -30 to -40°C, and provides significant savings for these specific applications.



For more information, along with a product description, go to www.sabroe.com

Sabroe monitoring and control



More than a century of Sabroe experience with operating refrigeration systems has now been incorporated into our software and communications technology. Sabroe monitoring and control solutions provide a significant boost to the ways that compressors of all types can be monitored, controlled and integrated into modern refrigeration installations.

Sabroe control systems make it possible to leverage the capacity and capabilities of a wide range of equipment, enabling users to achieve significant boosts in productivity and efficiency from refrigeration compressors and other equipment – both new and old, and regardless of supplier.

Integrated system – maximum benefit

By connecting a wide variety of refrigeration equipment into a single, easily controlled system, with remote access as and when required, you will be able to reduce your manpower requirements, minimise downtime and cut down on risks of production losses.

Integrated monitoring and control also allows operators to optimise virtually every aspect of their refrigeration operations, making the best use of staff skills, running costs and energy consumption as well as boosting efficiency and safety.

Modular design

Sabroe control products feature a modular design that makes them fully scalable and future-compatible. They are easy to install along with your existing equipment, with only minor system modifications required.

This makes Sabroe controls ideal when you wish to upgrade your existing systems and for retrofitting to bring your older systems into line with modern standards.



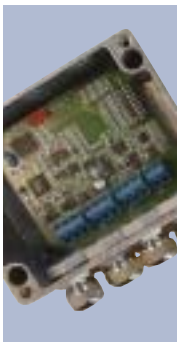
Built around Unisab II

The hub of the Sabroe control concept is the Unisab II control system. This is designed to make it easy and safe for you to control, monitor and optimise all aspects of your compressor operation.

In addition to the efficient control of individual compressors, Unisab II provides advanced, optimised sequence control of any combination of reciprocating and/or screw compressors.

There are also Unisab II versions designed to use standard, open software protocols and featuring full network capability. This makes this unique control and monitoring system compatible with virtually all systems and equipment, both current and future.

For more information, along with a product description, go to www.sabroe.com



» *Compressors of all types can be made more efficient using Sabroe monitoring and control systems*

Exceptional and individual

Sabroe standard equipment sets the industry norm for what can be achieved in terms of strength and reliability. Sabroe standard compressors, packages and control systems are therefore in great demand when special equipment is needed for exceptional projects and new ways of using refrigeration.

Soil freezing for tunnel operations, concrete cooling in construction work, airport air conditioning and mine cooling are just a few examples of what can be achieved. Heat pumps for industrial applications that include district heating, pharmaceutical and petrochemical processing are also a field in which Sabroe refrigeration equipment is being used.

With more than a century of experience with refrigeration assignments in every corner of the globe, Sabroe experts are always the people to talk to – we have the resources and the know-how to individually customise our standard equipment into the non-standard systems you need for getting refrigeration right.

Heat exchangers and pressure vessels

At Sabroe, we know that each system is only as strong as its weakest link.

We therefore also supply a wide range of both standard and individually customised heat exchangers for most applications within the industrial and marine sectors.

Sabroe can also provide you with other key equipment, including condensers, liquid coolers, cascade coolers, economisers and inert gas coolers – all designed, manufactured and tested by Sabroe to suit the exact purpose.

In addition, long-term cooperation with our preferred suppliers strengthens our ability to design packages with the best possible selection of controls, valves, motors and heat exchangers. These are all designed and selected to live up to our stringent Sabroe requirements for durability and reliability.

» *The best non-standard solutions are based on the best standard solutions*



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