

Rotatune variable-speed screw compressors



SAB 163 HR
screw compressor package

Rotatune variable-speed screw compressor packages are based on the well-proven SAB 128 and 163 Sabroe screw compressors.

Reduced energy costs, proven reliability

Specifically designed to automatically match output to demand, the highly innovative Rotatune screw compressor packages reduce energy costs by up to 30% compared with traditional screw compressors.

Significant advantages

The advantages of Sabroe Rotatune variable-speed compressors include

- Improved performance compared with conventional slide valve-controlled screw compressors, due to faster-running rotors and no internal gas bypass when operating at part load.
- Continuous optimum internal volume ratio (V_i) setting over the entire load range.
- The economiser function operates over the entire load range.
- Accurate capacity control, which is ideal for sensitive processes and high differential pressures.
- Fewer moving parts.
- No reactive power load on main supply ($\cos \phi \approx 1$).
- No starting current peaks (better than soft start).

By working at speeds that automatically vary to match conditions, Rotatune installations can meet a wide range of varying requirements with unparalleled efficiency.

Innovative and versatile

Sabroe's innovative range of variable-speed screw compressors provides an ideal alternative to conventional fixed-speed compressors. All Rotatune models use an advanced frequency converter to run a high-speed motor at variable speed. This provides stepless electronic speed control over a wide range (17–100 Hz and 1000–6000 rpm).

By replacing conventional slide valve capacity control with variable speed drive (VSD), minimum power consumption is achieved throughout the entire load range.

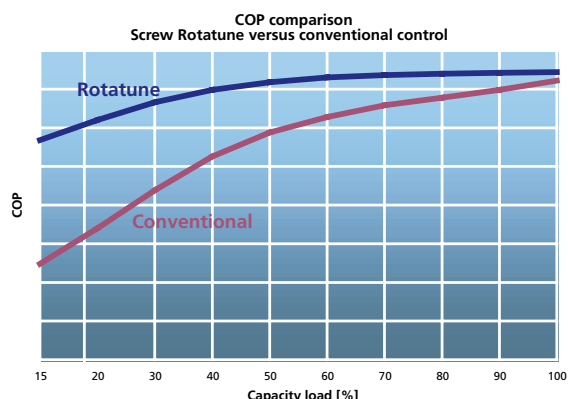
Variable speed drive makes Rotatune compressors extremely versatile. They are well-suited for small installations and chiller packages, where the compressor deals with the load alone. However, they are also ideal for larger multi-compressor systems, where Rotatune models are highly efficient in handling load variations.

Customer benefits

For the customer, the benefits of Sabroe Rotatune variable-speed compressors include

- ▶ Up to 30% power savings compared with conventional slide valve-controlled screw compressors.
- ▶ As there is no capacity slide movement, the internal volume ratio (V_i) does not alter when operating at part load, which means better performance.
- ▶ The lowest possible operational costs due to the increase in economiser COP over the entire capacity load range.
- ▶ The ability to match output to demand regardless of conditions. This results in stable plant conditions and rapid reaction to any changes in demand.
- ▶ A higher degree of reliability and long service life due to the absence of wear on moving parts associated with traditional capacity control operations.
- ▶ Savings on installation costs, because the absence of reactive power eliminates the need to install capacitors in the power supply.
- ▶ Savings on main power supply equipment and the ability to benefit from cheaper power rates.

SAB 128/163 Rotatune



Standard equipment

Sabroe Rotatune compressor packages are supplied with the following equipment as standard

- compressor block design based on the well-proven Sabroe fixed-speed designs
- high-speed electric drive motor with external fan cooling
- inverter panel completely assembled and wired ready to operate, including approved screened cabling to the drive motor
- highly efficient horizontal oil separator, standstill heating and level sight glasses, oil pump assembly for pre-lubrication, automatically adjusting oil return system and all required interconnecting piping and service valves
- flexible coupling and coupling guard

- suction and discharge side stop valves
- Sabroe Unisab II microprocessor control unit wired to sensors and transmitters for compressor protection and monitoring. The inverter and the Unisab II controllers are pre-programmed to ensure communication and easy set-up at commissioning
- A selection of different oil cooling systems is available, including refrigerant cooling (thermosyphon) and water cooling.

Optional equipment

A wide range of optional equipment is also available, including

- three-way oil temperature control valve mounted in the oil piping
- single or dual external oil filters with isolating valves
- complete economiser systems mounted or supplied as detached assemblies, or economiser connection system
- vibration dampers
- check valve for discharge line
- dual safety valves with changeover valve system
- RFI filter as an integrated item in the inverter panel
- tools and Sabroe spare part kits.

Documented compliance

All equipment complies with the European Pressure Equipment Directive (PED).

All the appropriate certificates and test reports are included. Approvals other than PED are available on request.

| Model | Swept volume at 6000 rpm m ³ /hour | Drive ¹⁾ line size kW | Cooling capacities in kW ²⁾ | | | Dimensions | | | Weight ³⁾ pressure level kg | Sound ⁴⁾ dB(A) |
|------------|---|--|--|---------|------------|------------|-----|-----|--|------------------------------|
| | | | High stage | | Economiser | L | W | H | | |
| | | | -10/+35°C | 0/+40°C | -40/+35°C | m | m | m | | |
| SAB 128 HR | 616 | 132/160/110 | 411 | 591 | 115 | 3.2 | 1.3 | 2.1 | 2300 | 86 |
| SAB 163 HR | 1292 | 250/315/200 | 867 | 1248 | 242 | 3.5 | 1.6 | 2.3 | 3000 | 87 |

¹⁾ Each size related to each individual operating condition.

²⁾ Nominal, 5K liquid subcooling, 5K suction gas superheat.

³⁾ Including largest drive line and excluding oil charge.

⁴⁾ -10/+35°C, free field, reflecting plane and one metre distance.

Due to variations in equipment configuration, dimensions and weights are guidelines only.

All information is subject to change without previous notice