

Rotatune reciprocating compressors

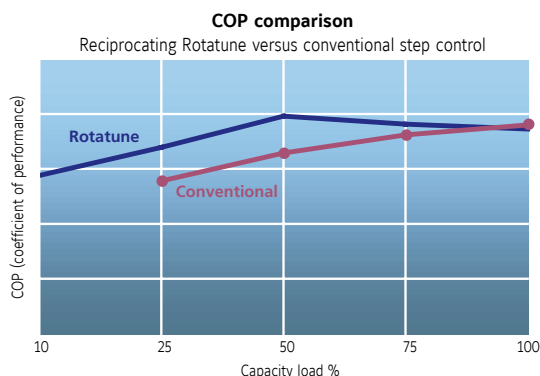
The Sabroe Rotatune reciprocating compressor concept is an innovative extension of the Sabroe reciprocating compressor range to include a series with variable speed drive.



SMC 108 Rotatune

Energy savings

The aim is to enable customers to reduce energy consumption and operating costs to a minimum. Although Sabroe reciprocating compressors with traditional cylinder



Significant advantages

The Sabroe Rotatune range features all the advantages of the corresponding standard Sabroe reciprocating compressor range, with the following additions

- Excellent part-load characteristics.
- Stepless control of the compressor capacity.
- Low starting current and low reactive power.
- Average operating speed lower than maximum speed.

unloading already set the industry standard for part-load performance, the Rotatune series provides significant additional savings in applications where the compressor frequently operates at part load.

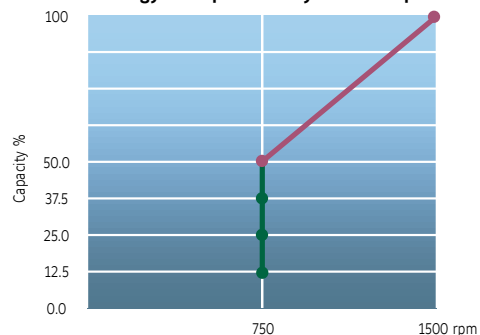
Stepless capacity control

With variable speed drive, it is possible to provide stepless control of the compressor capacity over a range of around 10–100% of total capacity. This extends the use of reciprocating compressors into applications where very precise capacity control is necessary. These requirements are currently largely met using screw compressors with a stepless capacity control slide valve, but power consumption for these compressors is relatively high under part-load conditions.

Another solution often used in such applications is suction pressure control valves, which feature very high power consumption.

The Sabroe Rotatune concept is based on the use of a frequency converter combined with a Unisab III microprocessor control system. The combination of compressor speed and cylinder unloading is always optimised, which results in minimum power consumption for any specific set of operating conditions.

Control strategy example for 8-cylinder compressor



Customer benefits

For the customer, the benefits of the Sabroe Rotatune reciprocating compressor include

- ▶ Extremely low power consumption at part load. This results in significantly reduced operating costs.
- ▶ Ability to control temperature/pressure with great precision.
- ▶ Cost savings because there are no extra electricity costs due to starting current peaks and high reactive power.
- ▶ Extended service life for all moving parts and lower average noise level.

Sabroe product description



Extended service life and lower maintenance costs

Sabroe reciprocating compressors are unequalled in terms of their reliability, service life and easy maintenance. These compressors are designed for relatively high operating speeds of 1500–1800 rpm. However, wear on moving parts is related to speed. The Sabroe Rotatune concept therefore extends service life and results in lower maintenance costs, because the compressor runs at lower speed when operating at part loads.

Standard equipment

Sabroe Rotatune reciprocating compressors are supplied with the equipment included in the corresponding standard Sabroe reciprocating compressor, with the following additions

- base frame, coupling and coupling guard for direct drive

- Sabroe Unisab III microprocessor for Rotatune applications
- modified oil pressure control for compressor
- compressor motor for frequency control operation (IP23)
- frequency converter mounted in an electrical panel with main switch, panel ventilation fan, standstill heater, etc. (no extra starting equipment required)
- electrical panel mounted on the base frame
- wiring between electrical panel and motor.

Optional equipment

Optional equipment available on Sabroe Rotatune reciprocating compressors includes

- oil separator with oil return system mounted on unit
- RFI filter for frequency converter
- separate electrical panel with frequency converter for separate installation
- single cylinder unloading.

Model	Number of cylinders	Bore x stroke mm	Min./max. rpm ¹	Swept volume at min./max. rpm m ³ /h	Capacity control range %	Nominal capacity kW	Approx. dimensions L x W x H mm	Sound pressure level at max. rpm dB (A)
CMO 24	4	70 x 70	900/1800	58-116	12-100	102	1800-2100 x 800 x 1700	69
CMO 26	6	70 x 70	900/1800	87-175	8-100	153	1800-2100 x 800 x 1700	70
CMO 28	8	70 x 70	900/1800	116-233	6-100	204	1800-2100 x 800 x 1700	71
CMO 34	4	70 x 82	900/1800	68-136	12-100	119	1800-2100 x 800 x 1700	69
CMO 36	6	70 x 82	900/1800	102-204	8-100	179	1800-2100 x 800 x 1700	70
CMO 38	8	70 x 82	900/1800	136-273	6-100	239	1800-2100 x 800 x 1700	71
SMC 104 S	4	100 x 80	700/1500	106-226	12-100	209	2400-2900 x 1000 x 1900	80
SMC 104 L	4	100 x 100	700/1500	132-283	12-100	266	2400-2900 x 1000 x 1900	81
SMC 104 E	4	100 x 120	700/1500	158-339	12-100	324	2400-2900 x 1000 x 1900	81
SMC 106 S	6	100 x 80	700/1500	158-339	8-100	313	2500-3100 x 1000 x 1900	81
SMC 106 L	6	100 x 100	700/1500	198-424	8-100	398	2500-3100 x 1000 x 1900	82
SMC 106 E	6	100 x 120	700/1500	238-509	8-100	486	2500-3100 x 1000 x 1900	82
SMC 108 S	8	100 x 80	700/1500	211-452	6-100	417	2600-3100 x 1000 x 1900	82
SMC 108 L	8	100 x 100	700/1500	264-565	6-100	531	2600-3100 x 1000 x 1900	83
SMC 108 E	8	100 x 120	700/1500	317-679	6-100	648	2600-3100 x 1000 x 1900	83
SMC 112 S	12	100 x 80	700/1500	317-679	8-100	626	3000-3600 x 1100 x 1900	83
SMC 112 L	12	100 x 100	700/1500	396-848	8-100	796	3000-3600 x 1100 x 1900	83
SMC 112 E	12	100 x 120	700/1500	475-1018	8-100	972	3000-3600 x 1100 x 1900	83
SMC 116 S	16	100 x 80	700/1500	422-905	6-100	834	3100-3800 x 1150 x 1900	84
SMC 116 L	16	100 x 100	700/1500	528-1131	6-100	1062	3100-3800 x 1150 x 1900	84
SMC 116 E	16	100 x 120	700/1500	633-1357	6-100	1297	3100-3800 x 1150 x 1900	84

Normal capacities are based on 1500 rpm and 5°C liquid cooling

¹ The max. rpm indicated is the most common, and can vary depending on operating conditions and refrigerant.

All information is subject to change without previous notice