Sabroe TCMO/TSMC two-stage reciprocating compressor units

Two-stage versions of CMO and SMC reciprocating compressors, with swept volumes of 150–1000 m³/h

Sabroe TCMO/TSMC two-stage reciprocating compressors are an economical operating alternative to single-stage compressors in smaller low-temperature refrigeration installations.

TCMO/TSMC compressor units are also ideal for medium-size industrial refrigeration installations that involve a big temperature range, such as freezer installations. Furthermore, these units are easy to customise with intermediate cooling systems.

Using a two-stage set-up built together as a single unit helps avoid equipment duplication – and thus reduce costs and save space.

Our three-year guarantee covers the complete unit, including compressor block, UniSAB, motor and coupling – for all refrigerants.

Range

Eight different models are available to provide swept volumes of between 150 and 1000 m³/h.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Splitting the temperature lift into two separate stages reduces overall energy consumption</td>
<td>Two-stage installations are relatively cost-effective, which helps reduce energy costs</td>
</tr>
<tr>
<td>Relatively small footprint</td>
<td>Can be installed in relatively small locations, or where space is limited</td>
</tr>
<tr>
<td>High coefficient of performance (COP), with excellent performance under part-load conditions</td>
<td>Low power consumption, which greatly reduces operating costs</td>
</tr>
<tr>
<td>Variable-speed drive (optional) provides stepless capacity control over the entire operating range</td>
<td>Power consumption and operating costs kept to a minimum</td>
</tr>
</tbody>
</table>

Options

- UniSAB systems controller
- Gauges, thermometers and temperature/pressure control switches
- Oil level regulator (for use in parallel systems)
- ATEX-compliant configuration
- Special vibration dampening.

TSMC 108 two-stage reciprocating compressor unit shown with closed flash inter-stage cooling system and UniSAB systems controller
Intermediate cooling system options

In plants with multiple two-stage compressors, TCMO/TSMC units can be connected to a shared intermediate cooler, in a separate installation.

Alternatively, a range of built-on intermediate cooling systems are available, as optional equipment.

- Injection inter-stage gas cooling without liquid subcooling
- Injection inter-stage gas cooling with liquid subcooling in a shell-and-tube heat exchanger
- Closed flash inter-stage cooling in a shell-and-coil intermediate cooler, with liquid subcooling in the coil.

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of cylinders</th>
<th>Low/high-pressure side</th>
<th>Swept volume at 1500 rpm</th>
<th>Swept volume at 1800 rpm</th>
<th>Nominal capacities in kW R717*</th>
<th>Unit dimensions in mm</th>
<th>Weight excluding motor</th>
<th>Sound pressure level at 1500 rpm</th>
<th>Sound pressure level at 1800 rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCMO 28</td>
<td>6 / 2</td>
<td>146 m³/h</td>
<td>175 m³/h</td>
<td>20 L</td>
<td>1400-1750</td>
<td>700 W</td>
<td>1000 kg</td>
<td>500 dB(A)</td>
<td>68 dB(A)</td>
</tr>
<tr>
<td>TCMO 38</td>
<td>6 / 2</td>
<td>170 m³/h</td>
<td>205 m³/h</td>
<td>23 L</td>
<td>1400-1750</td>
<td>700 W</td>
<td>1000 kg</td>
<td>500 dB(A)</td>
<td>69 dB(A)</td>
</tr>
<tr>
<td>TSMC 108 S</td>
<td>6 / 2</td>
<td>339 m³/h</td>
<td>407 m³/h</td>
<td>50 L</td>
<td>2311-2915</td>
<td>1052 H</td>
<td>1247 kg</td>
<td>1746 dB(A)</td>
<td>80 dB(A)</td>
</tr>
<tr>
<td>TSMC 108 L</td>
<td>6 / 2</td>
<td>424 m³/h</td>
<td>509 m³/h</td>
<td>66 L</td>
<td>2311-2915</td>
<td>1052 H</td>
<td>1247 kg</td>
<td>1781 dB(A)</td>
<td>81 dB(A)</td>
</tr>
<tr>
<td>TSMC 116 S</td>
<td>12 / 4</td>
<td>679 m³/h</td>
<td>814 m³/h</td>
<td>100 L</td>
<td>3329-3737</td>
<td>1445 H</td>
<td>1796 kg</td>
<td>2791 dB(A)</td>
<td>81 dB(A)</td>
</tr>
<tr>
<td>TSMC 116 L</td>
<td>12 / 4</td>
<td>848 m³/h</td>
<td>1018 m³/h</td>
<td>133 L</td>
<td>3329-3737</td>
<td>1445 H</td>
<td>2841 kg</td>
<td>83 dB(A)</td>
<td>83 dB(A)</td>
</tr>
<tr>
<td>TSMC 116 E</td>
<td>12 / 4</td>
<td>1018 NA</td>
<td>183 m³/h</td>
<td>159 L</td>
<td>3329-3737</td>
<td>1445 H</td>
<td>2891 kg</td>
<td>84 dB(A)</td>
<td>84 dB(A)</td>
</tr>
</tbody>
</table>

* Other refrigerants are available on request.

Nominal capacities are based on:
- 1500 rpm at 50 Hz.
- 1800 rpm at 60 Hz or VSD.

For R717
2 K liquid subcooling, 0.5 K non-usable suction superheat and liquid subcooling in intermediate cooler to 10 K above intermediate temperature.

For TCMO
Design pressure, HP side: 28 bar
Design pressure, LP side: 18 bar
Differential pressure: 25 bar.

For TSMC
Design pressure, HP side: 28 bar
Design pressure, LP side: 18 bar
Differential pressure: 25 bar.

Sound pressure levels measured in free field, over reflecting plane and one metre distance from the compressor block.