TOEG Series

Heat transfer pumps for heat transfer oils from -30 °C up to 350 °C and hot water up to 160 °C

with uncooled mechanical seals bearing brackets 360 and 470
Pumps for heat transfer technology

Main applications

» Tempering in plastics and die cast industry
» Baking ovens, large frying units as well as in the production of edible oils and dry masses for the food and feedstuff industries
» Heating calenders and melting pots in the leather and rubber industry
» Heating stirring and mixing vessels in the production of paints and varnishes
» Heating tank storage facilities on stationary and FPSE platforms as well as in tankers
» Heating press lines in the wood and pulp industry
» Flat glass production
» Solar power stations and ORC processes

Usage

These pumps are designed for circulating organic or synthetic heat transfer oils in heat transfer plants in acc. with DIN 4754, as well as hot water.

Suitable for media to be pumped with little non-abrasive contaminations

<table>
<thead>
<tr>
<th>Media</th>
<th>Heat transfer oil / thermal oil</th>
<th>Hot water versions</th>
</tr>
</thead>
<tbody>
<tr>
<td>T_{\text{min}}</td>
<td>- 30 °C</td>
<td>Water</td>
</tr>
<tr>
<td>T_{\text{max}}</td>
<td>+ 350 °C</td>
<td>+ 160 °C, + 180 °C on request</td>
</tr>
<tr>
<td>Casing</td>
<td>Spheroidal graphite cast iron</td>
<td></td>
</tr>
</tbody>
</table>

Nominal pressure PN 16
H_{\text{max}} (2900 min^{-1}) 100 m
Q_{\text{max}} (2900 min^{-1}) 550 m³/h
ATEX II 2GD IIC cb TX

Denomination

Type code | Example
Denomination of series
Mechanical seal
N = Version with bearing bracket, volute casing ax/top
A = Close-coupled version with bracket, volute casing ax/top
I = Close-coupled version with bracket, inline casing
Nominal width of outlet nozzle DN
Nominal impeller diameter in mm
Actual impeller diameter in mm

Your contacts

Speck Pumpen Systemtechnik GmbH
Regensburger Ring 6-8
91154 Roth
Phone: +49 9171 809-0
Fax: +49 9171 809-10
info@speck.de
www.speck.de

International representatives

→ page 23

www.speck.de
## TOEG Series

### Features
- Bearing bracket / process design
- Base plate
- Dismantling of the bearing bracket without moving the motor is possible with optional spacer type coupling
- Alignment / checking of the coupling required before start-up
- Pump and aggregate dimensions in acc. with EN 733

### Pump dimensions
- TOEGN: Pages 16 and 17
- TOEGA: Pages 16 and 17
- TOEGI: Page 18

### Hydraulics and casing
- Identical hydraulics for TOEGN and TOEGA
- Characteristic curves → pages 12 and 13
- Identical volute casing for each frame size
- Large pumps with centreline mounting and double volute
- Description → page 5

### Sizes
- Only two bearing brackets for all sizes
- Bearing bracket 360 for 12 sizes - identical and interchangeable
- Bearing brackets 470 for 7 sizes - identical and interchangeable
- Only one bracket per size

### Description
- Thermal oil versions → page 6
- Hot water versions → page 7

### Interchangeability of parts
- Within all series including the versions with magnetic coupling (see catalogue TOEMN/MA/MI series)
- There is a high degree of interchangeability.
- This means minimum spare parts stock and full flexibility as replacing pumps or components or retrofitting to a different design is very easy.
- Table of interchangeable parts → page 19
High operational safety, optimal design and service-friendly

Robust design

Torsion-resistant casing cover and ball bearings with lifetime lubrication

Wear-resistant SiC sleeve bearings
Solid, hydrodynamically lubricated sleeve bearings made from SiC as tried-and-tested slide material - extremely wear-resistant and good resistance in corrosive media.

Impellers with back vanes
The back vanes of the impellers significantly reduce the axial thrust and therefore remove strain from the mechanical seal and the ball bearings considerably. They also keep dirt particles away from the sleeve bearings.

Optimised for synthetic heat transfer oils

Dry-run safety function for the mechanical seal
Synthetic heat transfer oils are being used more and more frequently due to the benefits they offer. However, low-boilers develop in the synthetic oils over time in form of gas bubbles, can lead to dry-running on the mechanical seal.

This is ruled out completely in the generously designed mechanical seal casings from Speck. An anti-vortex rib reliably prevents gas bubbles from forming on the mechanical seal.

The vacuum generated by the back vanes also ensures that the low-boilers do not collect in the mechanical seal casing and are returned to the media circuit.

Clever temperature management

Optimised cooling of ball bearings, mechanical seal and sleeve bearings
The air flow generated by the fan blade on the coupling cools the mechanical seal and the ball bearing optimally in combination with coupling protection or bracket and several cooling fins. The additional cooling zone reduces the temperature on the sleeve bearings.

Also suitable for critical applications

Mechanical seal with quench
For media, which are prone to crack product formation on the sealing surfaces of the mechanical seal, versions with quench are available.

ATEX
All pumps of the TOEG and TOEM series are ATEX certified.

Optimal design

Energy efficiency
High energy efficiency secures a lasting competitive edge.
Speck offers the important criteria for energy-optimised design: Seamless range of sizes, highly efficient impellers, switching of impellers for the best design at the operating point and natural motors in accordance with IE2.

Maintenance-friendly and flexible

Simple installation
All series are extremely maintenance-friendly thanks to easy-to-remove bearing brackets.

Minimum spare parts stock
The high level of interchangeability of identical parts guarantees minimal spare parts stock requirements and an extremely high level of flexibility.

The bearing bracket 360 alone is used with mechanical seal in all three series in up to twelve sizes.

Retrofitting to a different series is also no problem at all - the volute casing can even be left in the system.

Dry-run safety function
Back vanes
Anti-vortex rib

Temperature management
Cooling zone
Cooling fins
Fan blades

Robust
Double-row angular ball bearings from bearing bracket 470

Robust
Solid sleeve bearing made from SiC

Fig.: TOEGN, bearing bracket 470, casing with centreline mounting
Longer lifetime

There are effects, which have little or no relevant impact on smaller designs, but lead to increased wear in larger pumps.

Speck offers larger pumps with special designs to guarantee a longer lifetime: Casing with centreline mounting and double volute.

Centreline mounting relieves strain from the bearings and coupling

Casings with feet: The larger the pump, the more strain placed on the bearings and coupling by heat expansion.

Speck is the only manufacturer to use a centreline mounting for heat transfer pump volute casings, PN 16. It eliminates the impact of vertical expansion completely. The shaft is also always aligned at the optimal height, even in hot operation, and bearings and coupling achieve a significantly higher lifetime.

A double volute remove strain from the sleeve bearings

Radial forces are applied directly on the sleeve bearings. The forces increase with higher impeller diameters and higher speeds. This is why the sleeve bearings on larger pumps with single volute casings wear faster.

Speck therefore uses casings with double volute for larger pumps, which significantly reduce the radial forces. The strain on the radial and axial bearings is considerably reduced, helping them achieve a much longer lifetime.

TOEGN / TOEGA – Sizes and casing designs

<table>
<thead>
<tr>
<th>Size</th>
<th>Bearing bracket 360</th>
<th>Bearing bracket 470</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-160</td>
<td>40-160</td>
<td>50-160</td>
</tr>
<tr>
<td>32-200</td>
<td>40-200</td>
<td>50-200</td>
</tr>
<tr>
<td>32-250</td>
<td>40-250</td>
<td>50-250</td>
</tr>
</tbody>
</table>

All casings with dimensions in accordance with EN 733

Casing with double volute

Casing with centreline mounting
Thermal oil versions

TOEGN

Standard version without quench

TOEIG

Admissible installations positions:
» horizontal
» vertical

TOEGA

Quench version

Bearing bracket 360 with Ø 250 mm impeller

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Impeller</td>
<td>EN-GJL-250</td>
</tr>
<tr>
<td>2</td>
<td>Casing</td>
<td>EN-GJS-400-15</td>
</tr>
<tr>
<td>3</td>
<td>Casing cover</td>
<td>EN-GJS-400-15</td>
</tr>
<tr>
<td>4</td>
<td>Shaft</td>
<td>1.4122</td>
</tr>
<tr>
<td>5</td>
<td>Sleeve bearing</td>
<td>SiC</td>
</tr>
<tr>
<td>6</td>
<td>Mechanical seal casing</td>
<td>EN-GJS-400-15</td>
</tr>
<tr>
<td>7</td>
<td>Mechanical seal</td>
<td>AQ/VGG, unbalanced</td>
</tr>
<tr>
<td>8</td>
<td>Rolling bearing</td>
<td>High-quality brand</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Leakage pipe</td>
<td>not applicable to quench version</td>
</tr>
<tr>
<td>10</td>
<td>Quench reservoir</td>
<td>optional</td>
</tr>
<tr>
<td>11</td>
<td>Counter flange</td>
<td>EN-GJS-400-15</td>
</tr>
<tr>
<td>12</td>
<td>Radial shaft sealing ring</td>
<td>only available with quench version</td>
</tr>
<tr>
<td>13</td>
<td>Ventilation</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Bracket</td>
<td>EN-GJS-400-15</td>
</tr>
</tbody>
</table>

EN-GJL-250 = GG-25
EN-GJS-400-15 = GGG-40

Media
- Heat transfer oil / thermal oil
- Tmax: + 350 °C
- Tmin: - 30 °C
- Nominal pressure: PN 16
- Hmax (2900 min⁻¹): 100 m
- Qmax (2900 min⁻¹): 550 m³/h

ATEX II 2GD IIC cb TX

www.speck.de
Hot water versions

With degassing tank

Bearing bracket 360 with Ø 250 mm impeller

No. Description Material / Remarks
1 Impeller EN-GJL-250
2 Casing EN-GJS-400-15
3 Casing cover EN-GJS-400-15
4 Shaft 1.4122
5 Sleeve bearing SiC
6 Mechanical seal casing EN-GJS-400-15
7 Mechanical seal AQ:KGG, balanced
8 Rolling bearing High-quality brand
9 Leakage pipe
10 Splash ring
11 Counter flange EN-GJS-400-15
12 Radial shaft sealing ring
13 Degassing tank
14 Bracket EN-GJS-400-15
15 Bush

EN-GJL-250 = GG-25 | EN-GJS-400-15 = GGG-40

Admissible installations positions: > horizontal

Media Water

T<sub>min</sub> – +180 °C, +160 °C on request

Nominal pressure PN 16

H<sub>max</sub> (2900 min<sup>-1</sup>) 100 m

Q<sub>max</sub> (2900 min<sup>-1</sup>) 550 m³/h

ATEX II 2GD IIC db TX
Simple and optimal configuration software

SPAIX selection program

The software allows you to configure heat transfer pumps, side channel pumps and boiler feed pumps via your Internet browser. As well as design details, the system will also request operating details and details about the medium to be pumped.

Ideal for system planners
Speck now also offers the latest version 4 of the renowned SPAIX design software. We make the program available to authorised customers who can pre-select the pumps within their system. The web-based software always accesses an up-to-date database.

Easy pre-selection
The configuration system avoids a wide range of selection parameters with regard to design, sealing systems, hydraulics, operating conditions and media. The software has language options for German and English.

Checking the pre-selection
When the order is submitted, the customer’s choices are double-checked to ensure that your project requirements are met.

Key

1 List of all pump designs that can be configured in the software
2 List of all series within the pump designs
3 Selection parameters, operating parameters and medium data in the first instance
4 Characteristic curve depending on hydraulic selection generated

Characteristic curve depending on hydraulic selection
Documentation based on the selection program

Save projects
Interim configuration results such as characteristic curves, scale drawings or technical data sheets can be saved as a project and generated as a pdf file.
Order-related tests

**Pressure tests**
Speck carries out the tests below as standard:

**Gas pressure test**
The gas pressure test is used to prove that the components are leak-proof. All components that bear pressure are tested, such as the volute casing, casing cover and mechanical seal casing. The test is carried out with forming gas at 2 bar. The holding time is 15 minutes.

**Hydrostatic pressure test**
The hydrostatic pressure test is used to prove strength of the components and that the pump is leak-proof. The fully assembled pump is tested. The test is carried out with a hydrostatic test pressure based on prEN 12162; the hydrostatic test pressure corresponds to 1.5 x the nominal pressure (PN16) at 20 °C. The holding time is 10 minutes.

If you want to use pressure tests according to different criteria, please enter them in the request.

**Testing the performance**
At the customer’s request, Speck offers the following tests:

**Hydraulic tests**
Measurement according to EN ISO 9906, Class II, Acceptance Class 2B, Edition March 2013

**NPSH test**
In this test, the suction-side pressure is gradually reduced until the decrease in the delivered head reaches 3 % at a constant flow rate. At least four flows are evaluated that are spread appropriately over the admissible operating range. The NPSH value is not a guarantee point.

**Vibration test**
Vibration test according to EN ISO 5199, Edition 2002
The vibration values are measured radially and vertically at every operating point on the bearing casing at the nominal speed and with the corresponding flow rate.

**Temperature measurement**
The measurement is taken on the motor-side bearing at operating temperature. The operating temperature and the ambient temperature at every operating point measured are documented.

Computer-controlled and fully automated test stands on the premises of Speck in Roth.
Measuring of hydraulics, power requirements, axial thrust, vibrations and NPSH values. Heads of up to 400 m and flow rates of up to 750 m³/h are possible.
Further data and notes

**Standard conditions at site**

- Ambient temperature from -20 °C to +40 °C
- Permissible altitude up to 1000 m above seal level

Deviations from the site conditions specified herein must already be disclosed in the inquiry.

**Painting**

The pumps are coated with highly heat-resistant white aluminium paint, colour code RAL 9006.

---

**Dimensioning**

**Assessment of the maximum pump outlet pressure**

The pump outlet pressure at the pump nozzle depends on

- the pump inlet pressure
- the maximum total head of the selected impeller diameter
- the density of the medium to be pumped

The maximum pump outlet pressure $P_{2\text{max \; op}}$ is calculated using the formula:

$$P_{2\text{max \; op}} = P_{1\text{max \; op}} + \rho \cdot g \cdot H \cdot 10^5$$

With:

- $P_{2\text{max \; op}}$ = maximum pump outlet pressure [bar]
- $P_{1\text{max \; op}}$ = maximum pump inlet pressure [bar]
- $\rho$ = density of the medium to be pumped [kg/m³]
- $g$ = gravitation constant [m/s²]
- $H$ = maximum total head at zero flow or at the peak of the pump’s characteristic curve at the selected impeller diameter [m]

Pumps must be selected and operated in a way which ensures that the maximum pump outlet pressure does by no means exceed the maximum permissible operating pressure of the casing $P_{\text{all \; wc}}$ at operating pressure.

This also applies to commissioning while the discharge valve is closed (refer to diagram).

**Pressure and temperature limitations**

The maximum casing operating pressure $P_{\text{all \; wc}}$ of the pressure retaining parts depends on the operating temperature:

- Maximum permissible casing operating pressure $P_{\text{all \; wc}}$
TOEGN / TOEGA – Characteristic curves

50 Hz

TOEGN / TOEGA – Characteristic curves

Q [U.S.GPM]

H [m]

Q [m³/h]

H [feet]

Bearing bracket 360  Bearing bracket 470  Casing with double volute  Casing with centreline mounting

www.speck.de
60 Hz

Size 125-200 not available for 60 Hz/3500 l/min

Bearing bracket 360  Bearing bracket 470  Casing with double volute  Casing with centreline mounting
TOEGI – Characteristic curves

50 Hz

Bearing bracket 360
Size 40-160 with hydraulics A or B available
**Bearing bracket 360**

Size 40-160 with hydraulics A or B available

TOEG Series | Subject to technical modifications and error.
### TOEGN / TOEGA – Dimensions and connections

**Bearing bracket 360**

#### Utility connections

<table>
<thead>
<tr>
<th>Size</th>
<th>DNS</th>
<th>DS</th>
<th>t5</th>
<th>DND</th>
<th>DD</th>
<th>tD</th>
<th>a</th>
<th>bL</th>
<th>bR</th>
<th>h1</th>
<th>h2</th>
<th>b</th>
<th>m1</th>
<th>m2</th>
<th>n1</th>
<th>n2</th>
<th>x</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-160</td>
<td>50</td>
<td>165</td>
<td>20</td>
<td>32</td>
<td>140</td>
<td>15</td>
<td>80</td>
<td>116</td>
<td>121</td>
<td>132</td>
<td>160</td>
<td>50</td>
<td>100</td>
<td>70</td>
<td>240</td>
<td>190</td>
<td>110</td>
</tr>
<tr>
<td>32-200</td>
<td>50</td>
<td>165</td>
<td>20</td>
<td>32</td>
<td>140</td>
<td>18</td>
<td>80</td>
<td>123</td>
<td>135</td>
<td>160</td>
<td>180</td>
<td>50</td>
<td>100</td>
<td>70</td>
<td>240</td>
<td>190</td>
<td>110</td>
</tr>
<tr>
<td>32-250</td>
<td>50</td>
<td>165</td>
<td>20</td>
<td>32</td>
<td>140</td>
<td>18</td>
<td>100</td>
<td>152</td>
<td>163</td>
<td>180</td>
<td>225</td>
<td>65</td>
<td>125</td>
<td>95</td>
<td>320</td>
<td>250</td>
<td>110</td>
</tr>
<tr>
<td>40-160</td>
<td>65</td>
<td>185</td>
<td>20</td>
<td>40</td>
<td>150</td>
<td>18</td>
<td>80</td>
<td>123</td>
<td>129</td>
<td>132</td>
<td>160</td>
<td>50</td>
<td>100</td>
<td>70</td>
<td>240</td>
<td>190</td>
<td>110</td>
</tr>
<tr>
<td>40-200</td>
<td>65</td>
<td>185</td>
<td>20</td>
<td>40</td>
<td>150</td>
<td>18</td>
<td>100</td>
<td>127</td>
<td>141</td>
<td>160</td>
<td>180</td>
<td>50</td>
<td>100</td>
<td>70</td>
<td>265</td>
<td>212</td>
<td>110</td>
</tr>
<tr>
<td>40-250</td>
<td>65</td>
<td>185</td>
<td>20</td>
<td>40</td>
<td>150</td>
<td>18</td>
<td>100</td>
<td>151</td>
<td>160</td>
<td>180</td>
<td>225</td>
<td>65</td>
<td>125</td>
<td>95</td>
<td>320</td>
<td>250</td>
<td>110</td>
</tr>
<tr>
<td>50-160</td>
<td>65</td>
<td>185</td>
<td>20</td>
<td>50</td>
<td>165</td>
<td>20</td>
<td>100</td>
<td>123</td>
<td>136</td>
<td>160</td>
<td>180</td>
<td>50</td>
<td>100</td>
<td>70</td>
<td>265</td>
<td>212</td>
<td>110</td>
</tr>
<tr>
<td>50-200</td>
<td>65</td>
<td>185</td>
<td>20</td>
<td>50</td>
<td>165</td>
<td>20</td>
<td>100</td>
<td>130</td>
<td>148</td>
<td>160</td>
<td>200</td>
<td>50</td>
<td>100</td>
<td>70</td>
<td>265</td>
<td>212</td>
<td>110</td>
</tr>
<tr>
<td>50-250</td>
<td>65</td>
<td>185</td>
<td>20</td>
<td>50</td>
<td>165</td>
<td>20</td>
<td>100</td>
<td>157</td>
<td>170</td>
<td>180</td>
<td>225</td>
<td>65</td>
<td>125</td>
<td>95</td>
<td>320</td>
<td>250</td>
<td>110</td>
</tr>
<tr>
<td>65-160</td>
<td>80</td>
<td>200</td>
<td>22</td>
<td>65</td>
<td>185</td>
<td>20</td>
<td>100</td>
<td>124</td>
<td>151</td>
<td>160</td>
<td>200</td>
<td>65</td>
<td>125</td>
<td>95</td>
<td>280</td>
<td>212</td>
<td>110</td>
</tr>
<tr>
<td>65-200</td>
<td>80</td>
<td>200</td>
<td>22</td>
<td>65</td>
<td>185</td>
<td>20</td>
<td>100</td>
<td>136</td>
<td>164</td>
<td>180</td>
<td>225</td>
<td>65</td>
<td>125</td>
<td>95</td>
<td>320</td>
<td>250</td>
<td>110</td>
</tr>
<tr>
<td>65-250</td>
<td>80</td>
<td>200</td>
<td>22</td>
<td>65</td>
<td>185</td>
<td>20</td>
<td>100</td>
<td>136</td>
<td>164</td>
<td>180</td>
<td>225</td>
<td>65</td>
<td>125</td>
<td>95</td>
<td>320</td>
<td>250</td>
<td>110</td>
</tr>
</tbody>
</table>

- **P1**: G 1/4 Manometer connection pressure-side (without bore)
- **P2**: G 1/8 Manometer connection suction-side (without bore)
- **V1**: G 1/8 Ventilation mechanical seal casing (horizontal set-up), not applicable for hot water version
- **V2**: G 1/8 Ventilation mechanical seal casing (vertical set-up), not applicable for hot water version
- **D1**: G 3/8 Drainage volute casing
- **D2**: G 1/8 Drainage mechanical seal casing
- **QE**: G 1/8 Leakage evacuation mechanical seal
- **QA**: G 1/8 Quench (optional)

#### Flange dimensions → page 16
TOEGN / TOEGA – Dimensions and connections

Bearing bracket 470

TOEGN

TOEGA

<table>
<thead>
<tr>
<th>Size</th>
<th>DNS</th>
<th>DS</th>
<th>tS</th>
<th>DND</th>
<th>DD</th>
<th>tD</th>
<th>a</th>
<th>bl</th>
<th>bR</th>
<th>h1</th>
<th>h2</th>
<th>b1</th>
<th>m1</th>
<th>m2</th>
<th>n1</th>
<th>n2</th>
<th>øs1</th>
<th>x</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-250</td>
<td>80</td>
<td>200</td>
<td>22</td>
<td>65</td>
<td>185</td>
<td>20</td>
<td>100</td>
<td>233.5</td>
<td>233.5</td>
<td>200</td>
<td>250</td>
<td>80</td>
<td>18</td>
<td>160</td>
<td>120</td>
<td>360</td>
<td>280</td>
<td>18</td>
</tr>
<tr>
<td>80-2001</td>
<td>100</td>
<td>220</td>
<td>24</td>
<td>80</td>
<td>200</td>
<td>22</td>
<td>125</td>
<td>162.5</td>
<td>191</td>
<td>180</td>
<td>250</td>
<td>65</td>
<td>15</td>
<td>125</td>
<td>95</td>
<td>345</td>
<td>280</td>
<td>14</td>
</tr>
<tr>
<td>80-2502</td>
<td>100</td>
<td>220</td>
<td>24</td>
<td>80</td>
<td>200</td>
<td>22</td>
<td>125</td>
<td>181</td>
<td>206.5</td>
<td>200</td>
<td>280</td>
<td>80</td>
<td>18</td>
<td>160</td>
<td>120</td>
<td>400</td>
<td>315</td>
<td>18</td>
</tr>
<tr>
<td>100-160</td>
<td>125</td>
<td>254</td>
<td>26</td>
<td>100</td>
<td>230</td>
<td>25</td>
<td>125</td>
<td>233.5</td>
<td>233.5</td>
<td>200</td>
<td>280</td>
<td>80</td>
<td>18</td>
<td>160</td>
<td>120</td>
<td>360</td>
<td>280</td>
<td>18</td>
</tr>
<tr>
<td>100-2003</td>
<td>125</td>
<td>254</td>
<td>26</td>
<td>100</td>
<td>230</td>
<td>25</td>
<td>125</td>
<td>233.5</td>
<td>233.5</td>
<td>200</td>
<td>280</td>
<td>80</td>
<td>18</td>
<td>160</td>
<td>120</td>
<td>360</td>
<td>280</td>
<td>18</td>
</tr>
<tr>
<td>100-2503</td>
<td>125</td>
<td>254</td>
<td>26</td>
<td>100</td>
<td>230</td>
<td>25</td>
<td>140</td>
<td>230</td>
<td>230</td>
<td>225</td>
<td>280</td>
<td>80</td>
<td>18</td>
<td>160</td>
<td>120</td>
<td>400</td>
<td>315</td>
<td>18</td>
</tr>
<tr>
<td>125-2003</td>
<td>150</td>
<td>285</td>
<td>26</td>
<td>125</td>
<td>254</td>
<td>26</td>
<td>140</td>
<td>262</td>
<td>262</td>
<td>250</td>
<td>315</td>
<td>80</td>
<td>18</td>
<td>160</td>
<td>120</td>
<td>400</td>
<td>315</td>
<td>18</td>
</tr>
</tbody>
</table>

1 Casing with feet resp. without centreline mounting
2 Casing with feet – as of 2015 with centreline mounting
3 Casing with double volute

Utility connections

P1 G 1/4 Manometer connection pressure-side (without bore)
P2 G 1/8 Manometer connection suction-side (without bore)
V1 G 1/8 Ventilation mechanical seal casing (horizontal set-up), not applicable for hot water version
V2 G 1/8 Ventilation mechanical seal casing (vertical set-up), not applicable for hot water version
D1 G 3/8 Drainage volute casing
D2 G 1/8 Drainage mechanical seal casing
QE G 1/8 Leakage evacuation mechanical seal
QA G 1/8 Quench (optionally)

© Quench optionally
© Fitting key DIN 6885
© Venting pipe
© Feet applicable for motor design B5 only

x = Dismantling dimension

Flange dimensions → page 16
TOEGI – Dimensions and connections

Bearing bracket 360

<table>
<thead>
<tr>
<th>Size</th>
<th>Casing</th>
<th>DNS</th>
<th>DND</th>
<th>a</th>
<th>DD</th>
<th>DS</th>
<th>tD</th>
<th>tS</th>
<th>blL</th>
<th>bR</th>
<th>h1</th>
<th>h2</th>
<th>x</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-160</td>
<td>INA</td>
<td>40</td>
<td>40</td>
<td>97</td>
<td>150</td>
<td>150</td>
<td>20</td>
<td>20</td>
<td>116</td>
<td>116</td>
<td>200</td>
<td>190</td>
<td>110</td>
</tr>
<tr>
<td>40-200</td>
<td>INB</td>
<td>40</td>
<td>40</td>
<td>97</td>
<td>150</td>
<td>150</td>
<td>20</td>
<td>20</td>
<td>135</td>
<td>135</td>
<td>200</td>
<td>190</td>
<td>110</td>
</tr>
<tr>
<td>50-200</td>
<td>INA</td>
<td>50</td>
<td>50</td>
<td>93</td>
<td>150</td>
<td>150</td>
<td>20</td>
<td>20</td>
<td>126</td>
<td>126</td>
<td>200</td>
<td>205</td>
<td>110</td>
</tr>
<tr>
<td>50-200</td>
<td>INB</td>
<td>50</td>
<td>50</td>
<td>92</td>
<td>160</td>
<td>165</td>
<td>21</td>
<td>21</td>
<td>126</td>
<td>139</td>
<td>200</td>
<td>180</td>
<td>110</td>
</tr>
<tr>
<td>65-200</td>
<td>INA</td>
<td>65</td>
<td>65</td>
<td>102</td>
<td>165</td>
<td>165</td>
<td>21</td>
<td>21</td>
<td>131</td>
<td>139</td>
<td>220</td>
<td>205</td>
<td>110</td>
</tr>
<tr>
<td>65/80-200</td>
<td>INB</td>
<td>80</td>
<td>80</td>
<td>112</td>
<td>185</td>
<td>185</td>
<td>23</td>
<td>23</td>
<td>131</td>
<td>151</td>
<td>240</td>
<td>225</td>
<td>110</td>
</tr>
</tbody>
</table>

Anschlüsse

- P1 G 1/4 Manometer connection pressure-side (without bore)
- P2 G 1/8 Manometer connection suction-side (without bore)
- V1 G 1/8 Ventilation mechanical seal casing (horizontal set-up), not applicable for hot water version
- V2 G 1/8 Ventilation mechanical seal casing (vertical set-up), not applicable for hot water version
- D1 G 3/8 Drainage volute casing
- D2 G1/8 Drainage mechanical seal casing
- QE G 1/8 Leakage evacuation mechanical seal
- QA G 1/8 Quench (optionally)

Flange dimensions

<table>
<thead>
<tr>
<th>Flanges in acc. with DIN EN 1092-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>65</td>
</tr>
<tr>
<td>80</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>125</td>
</tr>
<tr>
<td>150</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flanges in acc. with DIN EN 1092-2, drilled in acc. with ANSI 150 lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>65</td>
</tr>
<tr>
<td>80</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>125</td>
</tr>
<tr>
<td>150</td>
</tr>
</tbody>
</table>
Interchangeability of parts

All series including the versions with magnetic coupling (→ brochure TOEMN/MA/MI series) offer a high degree of interchangeability.

Same components within TOEGN/GA/GI series

Compare only numbers within one row:

1 and 1 = same number means same component
1 and 2 and ... = different numbers mean different components

<table>
<thead>
<tr>
<th>Component</th>
<th>No.</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearing bracket complete</td>
<td>–</td>
<td>GN</td>
</tr>
<tr>
<td>Mechanical seal</td>
<td>47</td>
<td>GN</td>
</tr>
<tr>
<td>Volute casing</td>
<td>102</td>
<td>GN</td>
</tr>
<tr>
<td>Casing cover</td>
<td>161</td>
<td>GN</td>
</tr>
<tr>
<td>Shaft</td>
<td>211</td>
<td>GN</td>
</tr>
<tr>
<td>Impeller</td>
<td>230</td>
<td>GN</td>
</tr>
<tr>
<td>Sleeve bearing</td>
<td>310</td>
<td>GN</td>
</tr>
<tr>
<td>Ball bearing</td>
<td>320</td>
<td>GN</td>
</tr>
<tr>
<td>Bracket</td>
<td>341</td>
<td>GN</td>
</tr>
<tr>
<td>Flat gasket</td>
<td>400</td>
<td>GN</td>
</tr>
<tr>
<td>Flat gasket</td>
<td>400.1</td>
<td>GN</td>
</tr>
<tr>
<td>Flat gasket</td>
<td>400.2/</td>
<td>GN</td>
</tr>
<tr>
<td>Mechanical seal casing¹</td>
<td>441</td>
<td>GN</td>
</tr>
<tr>
<td>Counter flange</td>
<td>720</td>
<td>GN</td>
</tr>
<tr>
<td>further parts</td>
<td>–</td>
<td>GN</td>
</tr>
</tbody>
</table>

¹ Thermal oil version and hot water version deviating

<table>
<thead>
<tr>
<th>Pump size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

03/2018 | 1096.0916
TOEG Series | Subject to technical modifications and error.
Pumps for heat transfer technology

Centrifugal pumps with magnetic coupling

Regenerative turbine pumps with magnetic coupling

Modular system

TOEM and TOEG series mean a consistent designed modular system. Hydraulics and the main part of the used components are identical and interchangeable.

TOEM Series

Developed for circulating organic or synthetic heat transfer oils in heat transfer systems in accordance with DIN 4754

Suitable for pumped media with low amounts of non-abrasive impurities

- Spheroidal graphite cast iron versions
- Stainless steel versions

<table>
<thead>
<tr>
<th>Media</th>
<th>Thermal oil versions</th>
<th>Hot water versions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat transfer oil / thermal oil</td>
<td>Heat transfer oil / thermal oil</td>
<td>Water</td>
</tr>
<tr>
<td>Tmin</td>
<td>- 40 °C</td>
<td>- 100 °C</td>
</tr>
<tr>
<td>Tmax</td>
<td>+ 350 °C</td>
<td>+ 250 °C</td>
</tr>
<tr>
<td>Casing</td>
<td>Spheroidal graphite cast iron</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Nominal pressure</td>
<td>PN 16</td>
<td>PN 25 higher pressures on request</td>
</tr>
<tr>
<td>Hmax (2900 min⁻¹)</td>
<td>100 m</td>
<td>90 m</td>
</tr>
<tr>
<td>Qmax (2900 min⁻¹)</td>
<td>550 m³/h</td>
<td>12 m³/h (200 l/min)</td>
</tr>
<tr>
<td>ATEX</td>
<td>II 2GD IIC cb TX</td>
<td>II 2GD IIC cb TX</td>
</tr>
</tbody>
</table>

Pumps for fluids up to + 400 °C on request

Description in full length ➔ see brochure TOEM series

NPY-MK and CY-MK Series

Tried and tested and compact close-coupled pumps with top/top casings and magnetic coupling. Developed for transporting and circulating organic or synthetic heat transfer oils and hot water. Suitable for pumped media with low amounts of non-abrasive impurities. Suitable for the delivery of gas shares due to the principle of delivery.

<table>
<thead>
<tr>
<th>Media</th>
<th>Thermal oil versions</th>
<th>Hot water versions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat transfer oil / thermal oil</td>
<td></td>
<td>Water</td>
</tr>
<tr>
<td>Tmax</td>
<td>- 100 °C</td>
<td>-</td>
</tr>
<tr>
<td>Tmax</td>
<td>+ 350 °C</td>
<td>+ 400 °C on request</td>
</tr>
<tr>
<td>Casing</td>
<td>Spheroidal graphite cast iron</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Nominal pressure</td>
<td>PN 16</td>
<td>PN 25 higher pressures on request</td>
</tr>
<tr>
<td>Hmax (2900 min⁻¹)</td>
<td>60 m</td>
<td>90 m</td>
</tr>
<tr>
<td>Qmax (2900 min⁻¹)</td>
<td>170 m³/h</td>
<td>24 m³/h (400 l/min) on request</td>
</tr>
<tr>
<td>ATEX</td>
<td>II 2GD IIC cb TX</td>
<td>II 2GD IIC cb TX</td>
</tr>
</tbody>
</table>

Compact, robust, durable and safe

Regenerative turbine pumps with magnetic coupling from Speck have been used in a wide range of systems and assemblies successfully for many years. The compact design requires minimal installation space and reduces the weight. The perfected pumps also impress with the small number of extremely high-quality parts. Robust sleeve bearings made from SiC and ceramic shafts guarantee a long lifetime and are free from leakage and maintenance-free thanks to magnetic couplings.

On request, Speck can also develop special designs for special media or with different hydraulics. Please contact us.

www.speck.de
Representatives