Side channel pumps
SK and ASK series
with mechanical seal or magnetic coupling
PN 40
Applications

Heating & Cooling technology
- Delivering cooling brine
- Filling and emptying thermal oil systems

Energy technology
- Delivery and circulation in closed circuits
- Feeding boilers in boiler systems and steam generators
- Tank systems, including delivering liquid gas
- Delivery of diesel in backup generators in power stations

Chemical & Pharmaceutical industry
- Delivering aggressive, highly flammable and toxic media
- Recovery of condensates, e.g. solvents

Further applications
- Delivery of salt water and fresh water in ships

Contact an representations
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International representations
See page 28
Side channel pumps made by Speck
High operational safety, optimal design and service-friendly

Fields of application
» Designed for feeding, filling and emptying operations under difficult physical conditions
» Suitable for the delivery of gas / self-priming
» Suitable for liquids without abrasive contaminants and without solid particles
» Wide temperature range from -100 °C up to +350 °C

Modular system
» Horizontal multistage modular pumps
» Available in a wide range of materials with components from stainless steel, bronze and spheroidal graphite cast iron
» Minimum stock of spare parts required
» Designs with mechanical seal, packing gland and magnetic coupling
» Medium-specific designs
» ATEX certified (II 2G)

Operating limits
<table>
<thead>
<tr>
<th>With mechanical seal</th>
<th>from</th>
<th>0 bis + 140 °C uncooled</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0 bis + 180 °C cooled</td>
</tr>
<tr>
<td>With magnetic coupling</td>
<td>from</td>
<td>-100 bis + 350 °C</td>
</tr>
<tr>
<td>Nominal pressure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H_{max} 400 m
Q_{max} 35 m³/h (50 Hz)
42 m³/h (60 Hz)

Temperature ranges depend on materials, seals and pumped media

SK series
Side channel pumps in acc. with EN 734

Proven side channel pumps for universal applications

ASK series
Side channel pumps with NPSH stage

Combi-pumps for delivering liquids in physically difficult conditions on the suction side

Their very good NPSH values make them particularly suitable for pumped media near the boiling-point
The right pump for your system
Choose from eight series

Each system is unique in its own way - on some, the sealing principle is key, on others the installation frame or perhaps the special properties of the medium. You can choose from eight series and find the best solution for your system.

▼ Sealing

Version with mechanical sealing (G) ►
- Packing gland on request
- Media form 0 up to + 180 °C
- Wide range of seals
- ATEX II 2G

Version with 2 rolling bearings ►
- 2 external lifetime lubricated rolling bearings
- 2 mechanical sealings or respectively packing glands
- Motor coupled
- Base plate
- 1 – 8 stages

Version with 1 sleeve bearing und 1 rolling bearing ►
- 1 media-lubricated sleeve bearing (carbon or SiC)
- 1 external lifetime lubricated rolling bearing
- 1 mechanical sealing or respectively packing gland
- Motor coupled
- Base plate
- 1 – 8 stages

Version with 1 sleeve bearing, 1 rolling bearing, bracket ►
- 1 media-lubricated sleeve bearing (carbon or SiC)
- 1 external lifetime lubricated rolling bearing
- 1 mechanical seal or respectively packing gland
- Motor close-coupled with bracket
- Bracket with feet
- 1 – 3 stages

Version with magnetic coupling (M) ►
- Media from - 100 up to + 350 °C
  depending on the materials used
  (➔ Type code page B)
- Wide range of magnetic coupling sizes
- Hastelloy® or ceramic separating cans, PN 4D
- ATEX II 2G

Version with bracket ►
- 2 media-lubricated sleeve bearings (carbon or SiC)
- Bracket for magnetic coupling
- Motor close-coupled with bracket
- Base plate
- 1 – 8 stages

Version with bracket und bearing bracket ►
- 2 media-lubricated sleeve bearings (carbon or SiC)
- Bracket for magnetic coupling
- Bearing bracket with optional secondary seal
- Motor coupled
- Base plate
- 1 – 8 stages
### SK series

#### Main dimensions in acc. with EN 734
- Proven side channel pumps for universal applications

### ASK series

#### Combi-pumps with NPSH suction stage
- Combi-pumps for delivering liquids in physically difficult conditions on the suction side
- Their very good NPSH values make them particularly suitable for pumped media near the boiling-point

**SKG-LL**

**SKG-LO**

**SKG-LA**

**SKM**

**SKM-LT**

**ASKG**

**ASKM**

**ASKM-LT**
Modular system

With Speck you get a modular system with many identical parts.

SK series

SKM-L T

SKM

SKG-LL

SKG-LO

SKG-LA

SKM-LT

Version with ceramic can and secondary seal (16)
Side channel pumps – SK and ASK series | Subject to technical modifications and errors.

<table>
<thead>
<tr>
<th>SKG-LL</th>
<th>SKG-L0</th>
<th>SKG-LA</th>
<th>SKM</th>
<th>SKM-LT</th>
<th>ASKG</th>
<th>ASKM</th>
<th>ASKM-LT</th>
<th>No.</th>
<th>Designation / notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>1</td>
<td>Suction casing</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>2</td>
<td>Discharge casing</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>3</td>
<td>Suction stage</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>4</td>
<td>Discharge stage</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>5</td>
<td>Shaft</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>6</td>
<td>Star impeller</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>7</td>
<td>Mechanical seal (or stuffing box packing, not illustrated)</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>8</td>
<td>Rolling bearing</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>9</td>
<td>Sleeve bearing made of SiC (or carbon bearing, not illustrated)</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>10</td>
<td>Stage N</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>11</td>
<td>Radial impeller</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>12</td>
<td>Bearing cartridge made of SiC</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>13</td>
<td>Magnetic coupling, can made of Hastelloy® or ceramics</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>14</td>
<td>Bearing bracket</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>15a / 15b</td>
<td>Bracket</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>16</td>
<td>Secondary seal (radial shaft sealing) for magnetic couplings with ceramic can</td>
</tr>
</tbody>
</table>

Also for critical media and applications
- Medium-specific designs suitable for the delivery of acids, lyes, fuel, glycol, glycerine, hot water, oil, etc.
- Casing seals with O-rings, graphite, FKM, FFKM or EPDM
- Stage sealings made of graphite, Teflon® or various liquid seals by Epple®
- ATEX certified (II 2G)

Robust and durable
- Robust lifetime lubricated rolling bearings
- Solid, hydrodynamically lubricated sleeve bearings made from carbon, a proven slide material – extremely hard wearing and highly resistant to corrosive media
- SiC sleeve bearings alternatively
## Versions

Type code with versions and material designs

<table>
<thead>
<tr>
<th>Type code with versions and material designs</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASK G 32 04 -012 -11 000</td>
</tr>
<tr>
<td>SK G 32 04 LL -113 -40 000</td>
</tr>
<tr>
<td>SK G 32 04 L0 -013 -30 000</td>
</tr>
<tr>
<td>ASK S 32 04 LA -000 -11 000</td>
</tr>
<tr>
<td>ASK M 32 04 - 62 4 -60 000</td>
</tr>
<tr>
<td>SK M 32 04 L0 - 75 2 -20 000</td>
</tr>
<tr>
<td>ASK M 32 04 LT - 62 4 -60 000</td>
</tr>
<tr>
<td>SK M 32 04 LT - 75 6 -20 000</td>
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</tbody>
</table>

### Table 1: Sealing

<table>
<thead>
<tr>
<th>Code</th>
<th>M</th>
<th>G</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Magnetic coupling</td>
<td>Mechanical seal</td>
<td>Stuffing box packing (on request)</td>
</tr>
</tbody>
</table>

### Table 2: Versions

<table>
<thead>
<tr>
<th>Code</th>
<th>ASKG / ASKS</th>
<th>SKG /SKS</th>
<th>ASKM / SKM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage number</td>
<td>1 - 8</td>
<td>1 - 8</td>
<td>1 - 8</td>
</tr>
<tr>
<td>Bearing suction-side</td>
<td>Sleeve bearing</td>
<td>Rolling bearing</td>
<td>Rolling bearing</td>
</tr>
<tr>
<td>Bearing pressure-side</td>
<td>Rolling bearing</td>
<td>Rolling bearing</td>
<td>Sleeve bearing</td>
</tr>
<tr>
<td>Mech. seal / Stuffing box suction-side</td>
<td>x / x</td>
<td>x / x</td>
<td>x / x</td>
</tr>
<tr>
<td>Mech. seal / Stuffing box pressure-side</td>
<td>x / x</td>
<td>x / x</td>
<td>x / x</td>
</tr>
<tr>
<td>Design</td>
<td>Base plate version</td>
<td>Base plate version</td>
<td>Bracket version</td>
</tr>
</tbody>
</table>

### Table 3: Shaft sealing

<table>
<thead>
<tr>
<th>SKG-LL</th>
<th>ASKG, SKG-LO, SKG-LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 mechanical seals and 2 external rolling bearings</td>
<td>1 mechanical seal, 1 sleeve bearing and 1 external rolling bearing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>O-ring</th>
<th>Single-acting mechanical seal</th>
<th>O-ring</th>
<th>Single-acting mechanical seal</th>
<th>Double-acting mechanical seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Properties</td>
<td>Elastomer</td>
<td>SIC / A</td>
<td>SIC / B</td>
<td>SIC / C</td>
</tr>
<tr>
<td>Suction-side: unbalanced</td>
<td>Pressure-side: unbalanced</td>
<td>Pressure-side: unbalanced</td>
<td>up to 140 °C</td>
<td>Balanced</td>
</tr>
<tr>
<td>FFKM</td>
<td>110</td>
<td>220</td>
<td>330</td>
<td>FFKM</td>
</tr>
<tr>
<td>EPDM</td>
<td>112</td>
<td>222</td>
<td>332</td>
<td>EPDM</td>
</tr>
<tr>
<td>FKM</td>
<td>113</td>
<td>223</td>
<td>333</td>
<td>FKM</td>
</tr>
<tr>
<td>FFKM</td>
<td>140</td>
<td>250</td>
<td>360</td>
<td>FFKM</td>
</tr>
<tr>
<td>EPDM</td>
<td>142</td>
<td>252</td>
<td>362</td>
<td>EPDM</td>
</tr>
<tr>
<td>FKM</td>
<td>143</td>
<td>253</td>
<td>363</td>
<td>FKM</td>
</tr>
<tr>
<td>FFKM</td>
<td>440</td>
<td>550</td>
<td>660</td>
<td>FFKM</td>
</tr>
<tr>
<td>EPDM</td>
<td>442</td>
<td>552</td>
<td>662</td>
<td>EPDM</td>
</tr>
<tr>
<td>FKM</td>
<td>443</td>
<td>553</td>
<td>663</td>
<td>FKM</td>
</tr>
</tbody>
</table>

000: Stuffing box packing (SKS / ASKS)

XXX: Special version, details in order-related documents

05/2018 | 1096.1324 www.speck.de
Table 4: Size of magnetic coupling

<table>
<thead>
<tr>
<th>Code no.</th>
<th>51</th>
<th>52</th>
<th>61</th>
<th>62</th>
<th>63</th>
<th>71</th>
<th>72</th>
<th>73</th>
<th>74</th>
<th>75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>60-40</td>
<td>60-60</td>
<td>75-40</td>
<td>75-50</td>
<td>75-60</td>
<td>110-40</td>
<td>110-50</td>
<td>110-60</td>
<td>110-70</td>
<td>110-80</td>
</tr>
<tr>
<td>$p_{\text{max}} \text{ bar}$</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>25/40</td>
<td>25/40</td>
<td>25/40</td>
<td>25/40</td>
<td>25/40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code no.</th>
<th>81</th>
<th>82</th>
<th>83</th>
<th>84</th>
<th>85</th>
<th>91</th>
<th>92</th>
<th>93</th>
<th>94</th>
<th>95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>135-50</td>
<td>135-60</td>
<td>135-70</td>
<td>135-80</td>
<td>165-40</td>
<td>165-50</td>
<td>165-60</td>
<td>165-70</td>
<td>165-80</td>
<td>165-90</td>
</tr>
<tr>
<td>$p_{\text{max}} \text{ bar}$</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>25/40</td>
<td>25/40</td>
<td>25/40</td>
<td>25/40</td>
<td>25/40</td>
<td>25/40</td>
</tr>
</tbody>
</table>

Table 5: Magnetic coupling - Material design of separating can

<table>
<thead>
<tr>
<th>Code no.</th>
<th>2</th>
<th>4</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. admissible pressure</td>
<td>PN 25, max. 25 bar,</td>
<td>PN 40, max. 40 bar,</td>
<td>PN 40, max. 40 bar,</td>
</tr>
<tr>
<td>Material design of separating can</td>
<td>Hastelloy®</td>
<td>Hastelloy®</td>
<td>Ceramics</td>
</tr>
</tbody>
</table>

Table 6: Material designs and temperature ranges

<table>
<thead>
<tr>
<th>Sealing</th>
<th>SK</th>
<th>ASK</th>
</tr>
</thead>
</table>

**SK**

<table>
<thead>
<tr>
<th>Sealing</th>
<th>Code no.</th>
<th>11</th>
<th>20</th>
<th>30</th>
<th>31</th>
<th>40</th>
<th>60</th>
<th>61</th>
</tr>
</thead>
<tbody>
<tr>
<td>G S M</td>
<td>Parts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>Suction casing</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>–</td>
<td>GBz</td>
<td>1.4581</td>
<td>1.4531</td>
</tr>
<tr>
<td>x x x</td>
<td>Discharge casing</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>–</td>
<td>GBz</td>
<td>1.4581</td>
<td>1.4581</td>
</tr>
<tr>
<td>x x x</td>
<td>Stage</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>–</td>
<td>GBz</td>
<td>1.4581</td>
<td>1.4581</td>
</tr>
<tr>
<td>x x</td>
<td>Shaft seal casing</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>–</td>
<td>GBz</td>
<td>1.4581</td>
<td>1.4581</td>
</tr>
<tr>
<td>x x x</td>
<td>Star impeller</td>
<td>GBz</td>
<td>1.4408</td>
<td>1.4408</td>
<td>–</td>
<td>GBz</td>
<td>1.4408, hardened 1.4408, hardened</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>Pump frame</td>
<td>1.4122</td>
<td>1.4122</td>
<td>1.4122</td>
<td>1.4122</td>
<td>1.4571</td>
<td>1.4571</td>
<td></td>
</tr>
<tr>
<td>x x</td>
<td>Temperature limits</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td></td>
</tr>
<tr>
<td>x x</td>
<td>Temperature limits</td>
<td>0 up to + 200 °C</td>
<td>0 up to + 200 °C</td>
<td>0 up to + 350 °C</td>
<td>0 up to + 200 °C</td>
<td>0 up to + 250 °C</td>
<td>0 up to + 350 °C</td>
<td></td>
</tr>
</tbody>
</table>

1 no contact with the medium
2 in contact with the medium

**ASK**

<table>
<thead>
<tr>
<th>Sealing</th>
<th>Code no.</th>
<th>11</th>
<th>20</th>
<th>30</th>
<th>31</th>
<th>40</th>
<th>60</th>
<th>61</th>
</tr>
</thead>
<tbody>
<tr>
<td>G S M</td>
<td>Parts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>Suction casing</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>1.4581</td>
<td>1.4581</td>
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<tr>
<td>x x x</td>
<td>Discharge casing</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>1.4581</td>
<td>1.4581</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>Stage</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
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<td>1.4581</td>
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</tr>
<tr>
<td>x x x</td>
<td>Stage / NPSH</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>1.4581</td>
<td>1.4581</td>
<td></td>
</tr>
<tr>
<td>x x</td>
<td>Shaft seal casing</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>EN-GJS-400-15</td>
<td>GBz</td>
<td>1.4581</td>
<td>1.4581</td>
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<tr>
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<td>Star impeller</td>
<td>GBz</td>
<td>1.4408</td>
<td>1.4408</td>
<td>1.4408</td>
<td>GBz</td>
<td>1.4408, hardened 1.4408, hardened</td>
<td></td>
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<tr>
<td>x</td>
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<td>EN-GJL-250</td>
<td>EN-GJL-250</td>
<td>1.4408</td>
<td>1.4408</td>
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<td></td>
</tr>
<tr>
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<td>Shaft</td>
<td>1.4122</td>
<td>1.4122</td>
<td>1.4122</td>
<td>1.4122</td>
<td>1.4571</td>
<td>1.4571</td>
<td></td>
</tr>
<tr>
<td>x x</td>
<td>Pump frame</td>
<td>1.4122</td>
<td>1.4122</td>
<td>1.4122</td>
<td>1.4122</td>
<td>1.4571</td>
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<td></td>
</tr>
<tr>
<td>x x</td>
<td>Temperature limits</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x x</td>
<td>Temperature limits</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td>0 up to + 180 °C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 no contact with the medium
2 in contact with the medium

The operating limit values result from the max. permissible pressure and the max. permissible temperature as well as the pumped medium with its specific vapour pressure. See "Dimensioning" Page 11.
Quality assurance and tests

Modern, computer-controlled and fully automated test stands on the premises of Speck

Test stand for liquid pumps 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.

Thermal oil test stand with pump surveillance system on the premises of Speck in Roth.
Research of impacts of high temperatures up to 350 °C on the lifetime of the pumps.
Order-related tests and dimensioning

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 discharge casing and the suction casing, stages 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.

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
The measurement of the characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed Tolerances: flow rate ± 10 %, total head ± 10 % power requirement + 10 %. Deviating properties of the media to be pumped affect the characteristic curves.

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.

Standard conditions at site
- Ambient temperature from - 20 °C to + 40 °C
- Permissible altitude up to 1000 m above sea level

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

Dimensioning
Assessment of the maximum pump outlet pressure
The pump outlet pressure at the pump nozzle depends on
- the pump inlet pressure
- 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}} = \text{maximum pump outlet pressure [bar]}
- p_{1\text{max,op}} = \text{maximum pump inlet pressure [bar]}
- \rho = \text{density of the medium to be pumped [kg/m³]}
- g = \text{gravitation constant [m/s²]}
- H = \text{maximum total head at zero flow or at the peak of the pump's characteristic curve [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 $p_{\text{all,w,c}}$ 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 $p_{\text{all,w,c}}$ of the pressure retaining parts depends on the operating temperature:

- EN-GJS-400-15
- 1.4581 stainless steel

Maximum permissible casing operating pressure $p_{\text{all,w,c}}$
- EN-GJS-400-15: spheroidal graphite cast iron
- 1.4581: stainless steel
Magnetic couplings

Optimal design

The wide range of magnetic couplings offers an optimum configuration for your operating conditions and cuts energy consumption.

Wide range

Magnetic couplings consist of an inner rotor, a separating can and an outer rotor. The separating can seals the pumped media from the atmosphere. A great variety of sizes and configuration using the latest software guarantee the best design for your operating point. The transmissible torques of the magnetic couplings range between 10 and 500 Nm.

Type code for magnetic couplings

<table>
<thead>
<tr>
<th>Type code (example)</th>
<th>135-70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal diameter DN</td>
<td></td>
</tr>
<tr>
<td>Magnet length [mm]</td>
<td></td>
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</tbody>
</table>

Magnetic coupling sizes and versions

<table>
<thead>
<tr>
<th>Magnet length in mm</th>
<th>DN 60</th>
<th>DN 75</th>
<th>DN 110</th>
<th>DN 135</th>
<th>DN 165</th>
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</thead>
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<tr>
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<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<td>120</td>
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</tr>
</tbody>
</table>

Separating can made of Hastelloy®

<table>
<thead>
<tr>
<th>Separating can made of Hastelloy®</th>
<th>PN 40</th>
<th>PN 40</th>
<th>PN 40</th>
<th>PN 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separating can made of ceramic ZrO₂MgO</td>
<td>not available</td>
<td>PN 40</td>
<td>on request</td>
<td></td>
</tr>
</tbody>
</table>

Cooling through flushing bores

Eddy current, viscosity and bearing friction losses generate heat inside the pump, adding to the temperature of the medium. Flushing bores in the inner rotor and the casing ensure that critical points are cooled with the medium. At the same time, gases or air are conducted out of the inner rotor.

Robust Hastelloy® separating cans

Proven and with low eddy current losses

High-grade Hastelloy® separating cans come as standard with Speck. This robust material has proven its properties in daily use in many industries. The finely graduated coupling and separating can diameters allow optimum design with minimum eddy current losses.

Safety with temperature monitoring

If required (e.g. in areas with potentially explosive atmospheres), with Hastelloy® separating cans, temperature sensors can be mounted into the bracket to monitor the surface temperature of the separating can.

PT-100 temperature sensor (standard design)

The universal linear PT-100 temperature sensor with a detection range from -100 to +400 °C is available in three versions.

» Standard design
» ATEX design without SIL/IPL2
» ATEX design with SIL/IPL2

All three versions can be optimally adjusted for length using a compression fitting. In addition, the sensor tip is held against the separating can using a spring to guarantee secure contact.
Ceramic ZrO₂MgO separating cans

Ceramic separating cans have two advantages:

**Energy savings**
Magnetic fields cause eddy currents within metal separating cans, increasing the overall energy consumption of the pumps. Ceramic separating cans mean there are no eddy currents, leading to significant energy savings.

The graph below shows the additional energy consumption of a metal separating can due to eddy currents. It shows the energy consumption in relation to the length of the magnet (in 10 mm increments) and to the diameters. In the case of the largest separating can diameter, energy consumption rises to the power of three.

The additional energy consumption found in magnetic couplings with metal separating cans due to electrical eddy currents is completely eliminated by using ceramic separating cans.

**No entry of heat into the medium**
In metal separating cans, the electrical eddy currents described above are converted into thermal energy, thereby increasing the heat of the medium. With ATEX applications and media near vapour pressure, this can become a considerable problem. With ceramic separating cans the medium retains its temperature.

**Safety through leak detection**
Separating cans often break as a result of vibrations caused, for example, by damaged bearings after they have been running dry, or by vibrations in the system.

In the event of a rupture, there is a danger of the medium getting into the motor through the motor casing, which must be avoided when explosive substances are being pumped.

For your safety we can offer a leak monitoring sensor which detects any medium emerging after a rupture of the separating can and immediately switches off the pump or the system.

In addition, the sealed bracket temporarily prevent the medium from entering the environment.

On request, we can also fit a pipe to the bracket to safely remove the pumped medium. The connector for the pipe is directly opposite the sensor.
Main dimensions

SK series

Connecting dimensions for SKG-LL, SKG-L0, SKG-LA and SKM

Position of inlet and outlet nozzle

Dimensions Flanges Position of inlet and outlet nozzle

<table>
<thead>
<tr>
<th>Stage no. →</th>
<th>a</th>
<th>h1</th>
<th>h2</th>
<th>Suction + Discharge</th>
<th>SKG</th>
<th>SKM</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK…20</td>
<td>120</td>
<td>120</td>
<td>154</td>
<td>188</td>
<td>222</td>
<td>256</td>
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<tr>
<td>SK…32 / 33</td>
<td>146</td>
<td>146</td>
<td>186</td>
<td>226</td>
<td>266</td>
<td>306</td>
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<tr>
<td>SK…40</td>
<td>160</td>
<td>215</td>
<td>270</td>
<td>325</td>
<td>380</td>
<td>435</td>
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<tr>
<td>SK…50</td>
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<td>250</td>
<td>325</td>
<td>400</td>
<td>475</td>
<td>550</td>
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<tr>
<td>SK…65</td>
<td>195</td>
<td>285</td>
<td>375</td>
<td>465</td>
<td>555</td>
<td>645</td>
</tr>
</tbody>
</table>

SKG: Direction of rotation anticlockwise on request.

ASK series

Connecting dimensions for ASKG and ASKM

Position of outlet nozzle

<table>
<thead>
<tr>
<th>Stage no. →</th>
<th>a</th>
<th>h1</th>
<th>h2</th>
<th>Suction</th>
<th>Discharge</th>
<th>ASKG and ASKM</th>
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<td>229</td>
<td>263</td>
<td>297</td>
<td>331</td>
<td>365</td>
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<tr>
<td>ASK…32 / 33</td>
<td>213</td>
<td>253</td>
<td>293</td>
<td>333</td>
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<td>413</td>
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<td>268</td>
<td>323</td>
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<td>433</td>
<td>488</td>
<td>543</td>
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<td>ASK…50</td>
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<td>455</td>
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<td>605</td>
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<td>ASK…65</td>
<td>338</td>
<td>428</td>
<td>518</td>
<td>608</td>
<td>698</td>
<td>788</td>
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</tbody>
</table>

Flanges

Flanges in acc. with EN 1092 PN 40.
Flanges in acc. with DIN EN 1092-2, drilled in acc. with ANSI 150 lbs or 300 lbs on request.
Simple and optimal configuration software
Perfect for production engineers and plant planners – liquid pump configuration with SPAIX

We make SPAIX available to our authorised customers so they can configure and pre-select centrifugal and side channel pumps.

The web-based software accesses a continuously maintained database to offer a variety of selection parameters for design, sealing systems, hydraulic systems, operating conditions and media. Users can select either German or English as the language.

Production engineers and plant planners can use SPAIX to design new plants.

After consultation with Speck, users can also check currently installed pumps for which the plant parameters have changed, for example, after medium changeover or new operating conditions.

Executed configurations can be saved as a project and exported as a PDF with one click.

When the order is received, Speck also checks the customer’s pre-selections to ensure that the project requirements have been satisfied.

Step 1
Selection of pump design or respectively application
For example
» Side channel pumps
» Heat transfer pumps
» High-pressure pumps
» Stainless steel pumps

Step 2
Selection of pump series
For example ASK / SK
» ASKM
» ASKG
» SKM
» SKG
» SKG-L0
» SKG-LA
» SKG-LL

Step 3
Hydraulic selection and configuration of operating parameters
For example
» Operating point
» Operating conditions
» Medium
» Design features
» Seals

Step 4
Save and output the project as PDF
Topics
» Technical pump data sheet
» Characteristic curves with hydraulic performance, power consumption, efficiency and NPSH values
» Dimensional drawing of the pump with motor

Easy documentation with one click: Data sheet, characteristic curves and dimensional drawing as PDF in English or German.
Characteristic curves SK...20

50 Hz - 1450 min⁻¹

60 Hz - 1750 min⁻¹

Binding characteristic curves only by SPAIX

These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances
Flow rate ± 10 %, total head ± 10 %, power requirement + 10 %

Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value
The NPSH value above shows the required NPSH value of the pump NPSHrequired. This value has to exceed the NPSH value of the system NPSH available with a minimum surcharge of 0.5 m to exclude cavitation damages.

NPSHavailable ≥ NPSHrequired + 0.5 m
Characteristic curves SK...32

50 Hz - 1450 min⁻¹

60 Hz - 1750 min⁻¹

**Binding characteristic curves only by SPAIX**

These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

**Test conditions**

The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

**Tolerances**

Flow rate ± 10 %, total head ± 10 %, power requirement + 10 %

Deviating properties of the media to be pumped affect the characteristic curves.
Characteristic curves SK...33

50 Hz – 1450 min⁻¹

60 Hz – 1750 min⁻¹

Binding characteristic curves only by SPAIX
These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances
Flow rate ± 10 %, total head ± 10 %, power requirement + 10 %
Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value
The NPSH value above shows the required NPSH value of the pump \( \text{NPSH}_{\text{required}} \). This value has to exceed the NPSH value of the system \( \text{NPSH}_{\text{available}} \) with a minimum surcharge of 0.5 m to exclude cavitation damages.

\( \text{NPSH}_{\text{available}} \geq \text{NPSH}_{\text{required}} + 0.5 \text{ m} \)
Characteristic curves SK...40

50 Hz - 1450 min⁻¹

60 Hz - 1750 min⁻¹

**Binding characteristic curves only by SPAIX**
These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

**Test conditions**
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

**Tolerances**
Flow rate ± 10 %, total head ± 10 %, power requirement + 10 %
Deviating properties of the media to be pumped affect the characteristic curves.

**NPSH value**
The NPSH value above shows the required NPSH value of the pump $\text{NPSH}_{\text{required}}$. This value has to exceed the NPSH value of the system $\text{NPSH}_{\text{available}}$ with a minimum surcharge of 0.5m to exclude cavitation damages.

$\text{NPSH}_{\text{available}} \geq \text{NPSH}_{\text{required}} + 0.5 \text{ m}$
Characteristics of SK...50 pumps

50 Hz – 1450 min⁻¹

Capacity Q

US g.p.m.

40 50 60 70 80

60 Hz – 1750 min⁻¹

Capacity Q

US g.p.m.

50 60 70 80 90 100

Binding characteristic curves only by SPAIX
These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances
Flow rate ± 10 %, total head ± 10 %, power requirement + 10 %

Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value
The NPSH value above shows the required NPSH value of the pump NPSH_required. This value has to exceed the NPSH value of the system NPSH_available with a minimum surcharge of 0.5 m to exclude cavitation damages.

NPSH_available ≥ NPSH_required + 0.5 m
Characteristic curves SK...65

50 Hz - 1450 min⁻¹

60 Hz - 1750 min⁻¹

Binding characteristic curves only by SPAIX

These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions

The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate ± 10 %, total head ± 10 %, power requirement + 10 %

Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value

The NPSH value above shows the required NPSH value of the pump NPSHrequired. This value has to exceed the NPSH value of the system NPSHavailable with a minimum surcharge of 0.5 m to exclude cavitition damages.

NPSHavailable ≥ NPSHrequired + 0.5 m
Binding characteristic curves only by SPAIX
These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances
Flow rate ± 10 %, total head ± 10 %, power requirement ± 10 %
Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value
The NPSH value above shows the required NPSH value of the pump NPSH\text{required}. This value has to exceed the NPSH value of the system NPSH\text{available} with a minimum surcharge of 0.5 m to exclude cavitation damages.

\[ \text{NPSH}_{\text{required}} > \text{NPSH}_{\text{available}} + 0.5 \text{ m} \]

Minimum suction head
The intake pressure (\(H_{\text{smin}}\)) above is valid for closed systems with boiling liquids and short feed lines.

\[ \text{NPSH}_{\text{required}} > \text{NPSH}_{\text{available}} > H_{\text{smin}} \]
may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.

\[ \text{NPSH}_{\text{available}} > H_{\text{smin}} \]
Binding characteristic curves only by SPAIX

These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions

The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances

Flow rate ± 10 %, total head ± 10 %, power requirement ± 10 %

Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value

The NPSH value above shows the required NPSH value of the pump \( NPSH_{\text{required}} \). This value has to exceed the NPSH value of the system \( NPSH_{\text{available}} \), with a minimum surcharge of 0.5 m to exclude cavitation damages.

\[ NPSH_{\text{available}} \geq NPSH_{\text{required}} + 0.5 \text{ m} \]

Minimum suction head

The intake pressure (\( H_{\text{smin}} \)) above is valid for closed systems with boiling liquids and short feed lines.

\[ NPSH_{\text{available}} \geq NPSH_{\text{required}} \geq H_{\text{smin}} \] may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.

\[ NPSH_{\text{available}} > H_{\text{smin}} \]
Characteristic curves ASK...33

50 Hz – 1450 min⁻¹

60 Hz – 1750 min⁻¹

Binding characteristic curves only by SPAIX
These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances
Flow rate ± 10 %, total head ± 10 %, power requirement + 10 %
Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value
The NPSH value above shows the required NPSH value of the pump NPSH_required. This value has to exceed the NPSH value of the system NPSH_available with a minimum surcharge of 0.5 m to exclude cavitation damages.

NPSH_required ≥ NPSH_available + 0.5 m

Minimum suction head
The intake pressure (Hs_min) above is valid for closed systems with boiling liquids and short feed lines.
NPSH_required ≥ NPSH_available ≥ Hs_min may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.
NPSH_available > Hs_min
Characteristic curves ASK...40

50 Hz - 1450 min⁻¹

60 Hz - 1750 min⁻¹

Binding characteristic curves only by SPAIX
These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances
Flow rate ± 10 %, total head ± 10 %, power requirement ± 10 %
Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value
The NPSH value above shows the required NPSH value of the pump NPSHrequired. This value has to exceed the NPSH value of the system NPSHavailable with a minimum surcharge of 0.5 m to exclude cavitation damages.
NPSHavailable ≥ NPSHrequired + 0.5 m

Minimum suction head
The intake pressure (Hsmin) above is valid for closed systems with boiling liquids and short feed lines.
NPSHavailable ≥ NPSHrequired ≥ Hsmin may cause a pressure drop and excessive vibrations.
A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.
NPSHavailable > Hsmin.

Characteristic curves ASK...40

50 Hz - 1450 min⁻¹

60 Hz - 1750 min⁻¹
Characteristic curves ASK...50
50 Hz - 1450 min⁻¹

60 Hz - 1750 min⁻¹

Binding characteristic curves only by SPAIX
These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances
Flow rate ± 10 %, total head ± 10 %, power requirement ± 10 %
Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value
The NPSH value above shows the required NPSH value of the pump NPSHrequired. This value has to exceed the NPSH value of the system NPSHavailable with a minimum surcharge of 0.5 m to exclude cavitation damages. NPSHavailable ≥ NPSHrequired + 0.5 m

Minimum suction head
The intake pressure (Hsmin) above is valid for closed systems with boiling liquids and short feed lines.
NPSHrequired ≥ NPSHavailable ≥ Hsmin may cause a pressure drop and excessive vibrations.
A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point. NPSHavailable > Hsmin.
Characteristic curves ASK...65

50 Hz - 1450 min⁻¹

60 Hz - 1750 min⁻¹

Binding characteristic curves only by SPAIX
These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances
Flow rate ± 10 %, total head ± 10 %, power requirement ± 10 %
Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value
The NPSH value above shows the required NPSH value of the pump NPSHrequired. This value has to exceed the NPSH value of the system NPSHavailable with a minimum surcharge of 0.5 m to exclude cavitation damages.

NPSHavailable ≥ NPSHrequired + 0.5 m

Minimum suction head
The intake pressure (Hsmin) above is valid for closed systems with boiling liquids and short feed lines.

NPSHavailable ≥ NPSHrequired ≥ Hsmin may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.

NPSHrequired > Hsmin.

Capacity Q

Characteristic curves ASK...65

50 Hz - 1450 min⁻¹

60 Hz - 1750 min⁻¹

Binding characteristic curves only by SPAIX
These characteristic curves can be used to preselect a pump. They are deviating slightly depending on the material design. Only characteristic curves, which are specified with SPAIX configuration software can be referred to as binding.

Test conditions
The characteristic curves apply to the delivery of water with a temperature of 20 °C at nominal speed.

Tolerances
Flow rate ± 10 %, total head ± 10 %, power requirement ± 10 %
Deviating properties of the media to be pumped affect the characteristic curves.

NPSH value
The NPSH value above shows the required NPSH value of the pump NPSHrequired. This value has to exceed the NPSH value of the system NPSHavailable with a minimum surcharge of 0.5 m to exclude cavitation damages.

NPSHavailable ≥ NPSHrequired + 0.5 m

Minimum suction head
The intake pressure (Hsmin) above is valid for closed systems with boiling liquids and short feed lines.

NPSHavailable ≥ NPSHrequired ≥ Hsmin may cause a pressure drop and excessive vibrations.

A drop in the pump performance is caused by the delivery of gas shares at temperatures over the boiling point.

NPSHrequired > Hsmin.