Richter Self-Priming Chemical Centrifugal Pumps

Magnetic drive and mechanical seal designs
Primes against 18 m (59 ft) WC back pressure
Corrosion-resistant PFA/PTFE
Richter self-priming chemical centrifugal pumps

The self-priming pump from Richter primes automatically with the suction line empty. Feed tanks are not required!

Suction lift, delivery head and back pressure compatibility govern the performance of a self-priming pump. The Richter pump permits a much greater application range than is possible with standard lined pumps of this type (see page 4).

Top entry vessels, tankers and sumps can be emptied without risk. Bottom drain nozzles below the liquid level can be dispensed with. High-maintenance, large-volume submersible and oscillating pumps can be replaced by this dry-installation pump.

The pump is also suitable for draining waste water sumps.

Air pockets in the suction line are readily transported through the pump even when liquid is being conveyed.

Primes against 18 m (59 ft) WC back pressure:
Suction lift up to 6 m (20 ft) WC at a specific gravity of $\rho = 1.0 \text{ kg/dm}^3$. Delivery capacities of 1-33 m$^3$/h (4-145 US gpm) up to 40 m (130 ft) LC.

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1. Pump housing
   - Ductile cast iron EN-JS 1049/ASTM A395 with thick PFA lining
   - No expansion joints required
   - Housing drain connection as standard feature

2. „Back pull-out unit“
   - of the time-tested magnetic drive pump MNK, with eddy-current-free can system and SAFEGLIDE® PLUS SSiC silicon carbide plain bearings (frame-mounted and close coupled pumps)
   - or of the SCK series with internal or external double mechanical seal (frame-mounted pumps)

3. Sturdy design
   - Bearing pedestal made of ductile cast iron EN-JS 1049/ASTM A395
   - Impeller and plain bearing pedestal/back plate made of PFA/PTFE with stable metallic cores

4. Optimised-flow separation chamber
   - Short priming phase
   - High efficiency
Alternatives to the magnetic drive pump MNK-S of frame-mounted design:

- Mechanical seal pump SCK-S, frame-mounted, with internal or external double mechanical seal
- Magnetic drive pump MNK-SB, close-coupled, with flanged motor

Components and materials

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<th>Item</th>
<th>Designation</th>
<th>Standard design</th>
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<td>101</td>
<td>Pump housing</td>
<td>Ductile iron EN-JS 1049 (ASTM A395) PFA</td>
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<td>102</td>
<td>Volute housing</td>
<td>Ductile iron EN-JS 1049 (ASTM A395)/PFA</td>
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<td>122</td>
<td>Blind cover</td>
<td>Ductile iron EN-JS 1049 (ASTM A395)</td>
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<td>Ductile iron EN-JS 1049 (ASTM A395)/PFA</td>
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<td>158</td>
<td>Can insert</td>
<td>PTFE, PFA, PFA-P highly permeation-resistant</td>
</tr>
<tr>
<td>159</td>
<td>Can</td>
<td>CFRP carbon-fibre reinf. plastic</td>
</tr>
<tr>
<td>160</td>
<td>Cover</td>
<td>Ductile iron EN-JS 1049 (ASTM A395)/PTFE</td>
</tr>
<tr>
<td>161</td>
<td>Back plate</td>
<td>Ductile iron EN-JS 1049 (ASTM A395)/PTFE</td>
</tr>
<tr>
<td>210</td>
<td>Pump shaft</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>211</td>
<td>Pump shaft</td>
<td>Stainless steel/PFA, PFA-P</td>
</tr>
<tr>
<td>230</td>
<td>Impeller</td>
<td>PFA, with steel core</td>
</tr>
<tr>
<td>330</td>
<td>Plain bearing pedestal</td>
<td>Ductile iron EN-JS 1049 (ASTM A395)</td>
</tr>
<tr>
<td>441</td>
<td>Mechanical seal housing</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>524</td>
<td>Shaft sleeve</td>
<td>Al₂O₃, SSiC etc. depending on specification</td>
</tr>
<tr>
<td>529</td>
<td>Bearing sleeve</td>
<td>Pure SSiC, on request with SAFEGLIDE® PLUS</td>
</tr>
<tr>
<td>545</td>
<td>Bearing bush</td>
<td>Pure SSiC, on request with SAFEGLIDE® PLUS</td>
</tr>
<tr>
<td>580</td>
<td>Cap</td>
<td>PTFE</td>
</tr>
<tr>
<td>711</td>
<td>Discharge pipe</td>
<td>PTFE</td>
</tr>
<tr>
<td>752</td>
<td>Priming valve</td>
<td>PTFE</td>
</tr>
<tr>
<td>858</td>
<td>Drive magnet assembly</td>
<td>Steel, permanent magnets</td>
</tr>
<tr>
<td>859</td>
<td>Inner magnet assembly</td>
<td>Steel/PFA/PFA-P, permanent magnets</td>
</tr>
</tbody>
</table>

For detailed sectional drawings and descriptions of the basic pumps, refer to the publications SCK or MNK/MNK-B.

Magnetic drive pumps:
- Optional: SAFEGLIDE® PLUS dry-run optimised SSiC plain bearings
- Non-metallic, eddy-current-free cans made of carbon-fibre reinforced plastic with inserts of PTFE, PFA; monitor connection on request
- Sturdy, heavy-duty design

Mechanical seal pumps:
- Type SCK-S (heavy-duty design), also for high loads
- Shaft sleeve Al₂O₃, SSiC, Hastelloy etc.

Closed impellers:
- With large metallic core
- Protected against unscrewing in case of start-up in the wrong direction of rotation
- Optimised-flow curved channels

Pressure/temperature range:
- Operating temperature: -60 to +150 °C (-75 to +300 °F)
- Operating pressure up to 10 bar (145 psi)
- Design for elevated vacuum (at pump standstill) on request

Solids-containing media:
Consultation with Richter required

* Pump housing filled with medium also at minus temperatures:
  Note risk of freezing.

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Further technical features

Flanges
- For connection to ISO 7005-2/PN 16 (formerly DIN 2533/PN 16), on request for connection to ANSI or BS

Rolling bearings
- Permanent grease lubrication, oil lubrication on request (for frame-mounted design)

Type code
- with magnetic drive, frame-mounted MNK-S/...
- with magnetic drive, close-coupled MNK-SB/...
- with mechanical seal, frame-mounted SCK-S/...
- PFA/PTFE lining .../F

Weight
- Approx. 170 kg without motor and base plate

Applications

For conveying
- corrosive liquids
- hazardous liquids
- liquids with varying composition
  (chemical residues, waste water)

Solids-containing liquids:
Consultation with Richter necessary

Emptying tankers
Road, rail

Suction lift, back pressure compatibility

<table>
<thead>
<tr>
<th>Speed (rpm)</th>
<th>1450</th>
<th>2900</th>
<th>1750</th>
<th>3500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. suction lift (m (ft) WC at $\rho = 1 \text{ kg/dm}^3$)</td>
<td>4 (13.1)</td>
<td>6 (19.7)</td>
<td>6 (19.7)</td>
<td>5 (16.4)</td>
</tr>
<tr>
<td>Back pressure compatibility (m (ft) WC at $\rho = 1 \text{ kg/dm}^3$)</td>
<td>0.6 (0.197)</td>
<td>0.4 (0.131)</td>
<td>0.18 (0.59)</td>
<td>0.18 (0.59)</td>
</tr>
</tbody>
</table>

Delivery capacities

Emptying vessels
Chemical production, chemical tank depot

Emptying sumps
Waste water collecting sumps