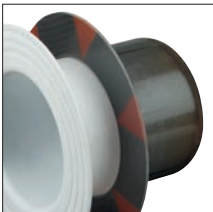
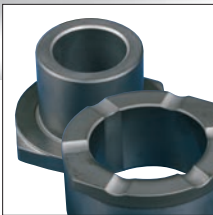
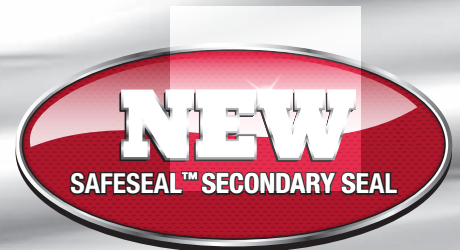


Richter Sealless Chemical Magnetic Drive Pumps

Optional with SAFERUN®
Pump Monitoring System



Up to 600 m³/h
Linings PFA/PTFE,
PFA-L, PE-UHMW
Up to 200 °C



RICHTER
Process Pumps & Valves



Richter sealless chemical magnetic drive pumps

Fields of application

Conveyance of corrosive, hazardous and pure media in the chemical, pharmaceutical and petrochemical industries, semi-conductor production, water treatment, pulp, metal processing and waste disposal/recycling industries.

The Richter MNK series is rated

- for medium to most difficult operating conditions
- for media where stainless steel, iron silicon alloy and others do not have sufficient corrosion resistance
- as an alternative to pumps made of expensive exotic metals (Hastelloy®, Monel, tantalum etc.)
- for solids-laden, crystallising, toxic, hot or otherwise critical media

Design

Single-stage, fluoropolymer-lined, magnetic drive chemical centrifugal pump. Dimensions and performance data to EN 22858/ISO 2858/ISO 5199.

Heavy-duty horizontal design. Sealless. Eddy-current-free. FDA-conformity.

Alternatively as

- close-coupled design MNK-B
- ANSI series MNKA/MNKA-B
- self-priming MNK-S
- vortex pump MNK-X

High-purity media

e.g. in the pharmaceutical, semi-conductor and fine chemical industries: special MNK version available

Type codes, materials

- Frame-mounted design MNK/...
- Close-coupled design MNK-B/...

Linings:

- Perfluoroalkoxy (PFA) .../F
- Polytetrafluoroethylene (PTFE) .../F
- PFA-L, PTFE-L, antistatic .../F-L
- Polyethylene, ultra-high molecular (PE-UHMW) .../E

Operating range

50 Hz operation

0.1-600 m³/h**

(0.4-2650 USgpm)

up to 95 m (310 ft) LC

60 Hz operation

0.1-600 m³/h**

(0.4-2650 USgpm)

up to 95 m (310 ft) LC

- Operating temperatures: -60/+180 °C (-75/+360 °F)*
- Operating pressures up to 16 bar (235 psi)*
- Solids up to 50 % and gas contents up to 5 %, depending on pump design

* Higher operating temperatures to more than 200 °C (400 °F) and pressures to 25 bar (360 psi) available on request.

** For flow rates up to 600 m³/h (2650 USgpm) see performance curves in the brochure of MNK 200-150-315.

- ① **Closed impeller with flow-optimised vane channels** for high efficiency and low NPSH values. The large metal core increases the mechanical strength considerably. Secured screw connection to the shaft.

- ⑨ **Thick-walled housing lining**

- **Anchored** in the armouring
- **Vacuum-resistant**
- **Armouring** absorbs system pressure and pipe forces and eliminates the need for expansion joints
- Housing drain and heating jacket optional.

- ⑧ **Robust plain bearings made of pure SSiC**

With optional **SAFEGLIDE® PLUS** dry-running for a brief period will not cause any damage. Reinforced plain bearing engagement to increase reliability in case of particularly high loads and in critical operating ranges.

- ⑦ **Plain bearing pedestal and inner magnet assembly** with stable metal core, with full and seamless thermofluoropolymer lining. The plain bearing pedestal absorbs all hydraulic forces.

Optional SAFERUN® Pump Monitoring System available.



Additional brochure

② **The radial rubbing safety surface** protects – in the event of a rolling bearing failure – the can from damage by a possibly tumbling drive magnet assembly.

③ **Bearing pedestal interior can be monitored** with optional leak sensor; suitable for conductive media.

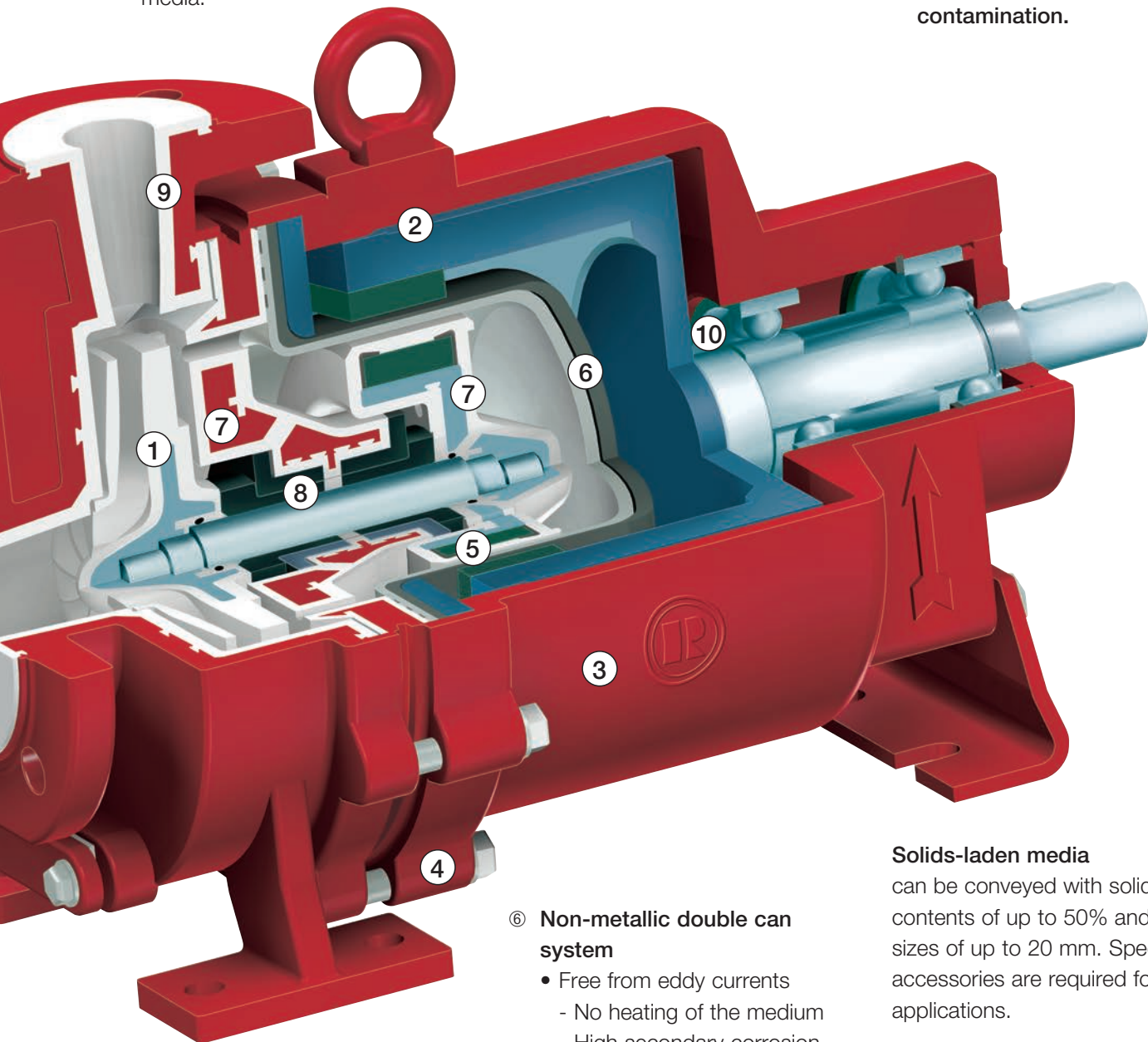
⑩ **SAFESEAL™ (optional):**

Innovative secondary seal, developed for greater protection; reduces the medium leaking from the pump to 0,1 %. For this purpose, an additional barrier comprising a PTFE seal is installed in the rolling bearing chamber.

Pure, unfilled lining fluoropolymers

The linings need no stabilising fillers. Therefore:

- considerably easier and more reliable **quality control**
- no reduction in the **permeation resistance**
- pure pharmaceutical and fine chemical media: **no contamination**.



⑤ **High-performance permanent magnets**
Patented magnet attachment.

⑥ **Non-metallic double can system**

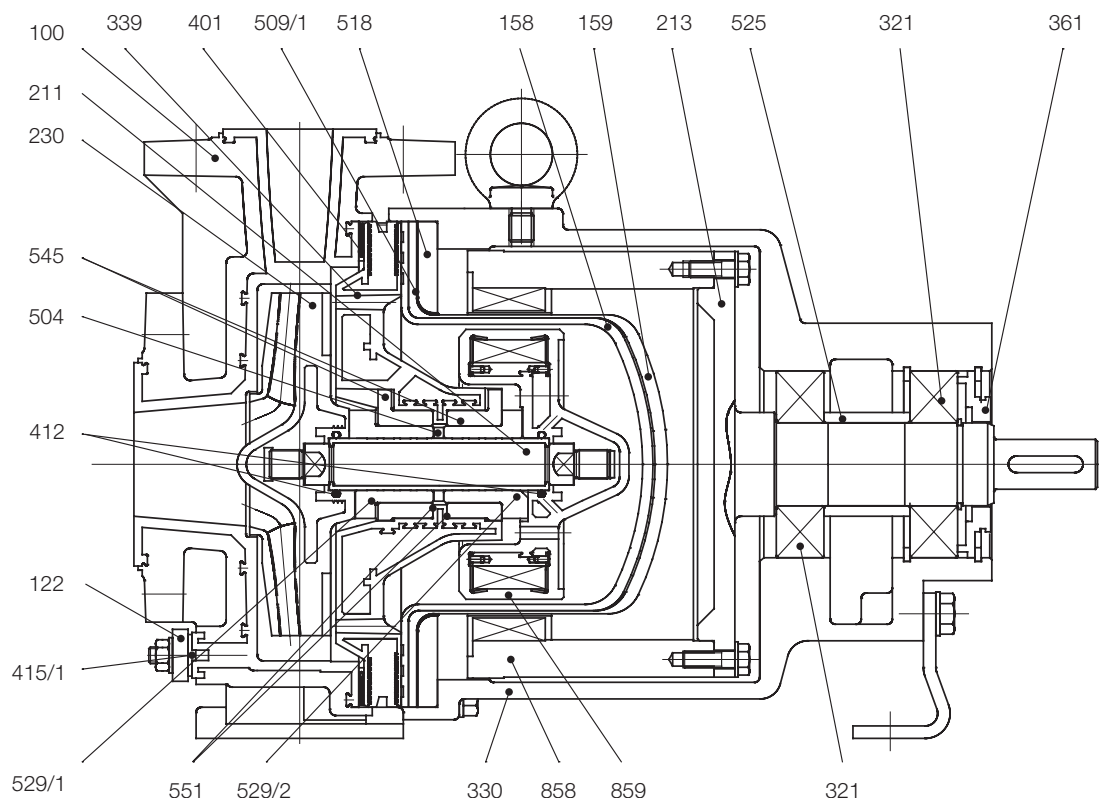
- Free from eddy currents
 - No heating of the medium
 - High secondary corrosion resistance
- wetted: PTFE, PFA, PFA-L
- pressure-bearing: carbon-fibre reinforced resin
- pressure-resistant, breakproof, high safety reserves

Solids-laden media

can be conveyed with solids contents of up to 50% and grain sizes of up to 20 mm. Special pump accessories are required for these applications.

④ **High-quality external corrosion protection**

Epoxy coating of the pump. Screws and drive shaft made from stainless steel.



Components and materials

Item	Designation	Material
100	Housing	Ductile cast iron EN-JS 1049 [0.7043]/PFA ¹⁾
122	Blind cover	Steel
158	Can insert	PTFE
159	Can	Carbon-fibre-reinforced fluoropolymer
211	Pump shaft	Stainless steel/PFA ¹⁾
213	Drive shaft	Stainless steel
230	Impeller	PFA ¹⁾ with stainless steel/steel core
321	Radial ball bearing	Long-life grease, optionally: oil-lubricated
330	Bearing pedestal	Ductile cast iron EN-JS 1049 [0.7043]
339	Plain bearing pedestal	Ductile cast iron EN-JS 1049 [0.7043]/PFA ¹⁾
361	Rear bearing cover	Stainless steel
401	Housing gasket	PTFE
412	O-ring	FFKM® [Kalrez® or equivalent]
415/1	Centering gasket	PTFE
504	Distance ring	PTFE
509/1	Intermediate ring	PTFE
518	Support ring	Steel
525	Distance sleeve	Steel
529/545	Bearing sleeve/bearing bush set	SSiC/SSiC, optionally with SAFEGLIDE® PLUS
551	Distance washer	PTFE
858	Drive magnet assembly	Steel, magnets
859	Inner magnet assembly	Steel/PFA ¹⁾ , magnets

¹⁾ PE-UHMW and antistatic linings on request

Viton®, Kalrez®: TM of DuPont
 SAFEGLIDE®: TM Richter Chemie-Technik GmbH
 Hastelloy®: TM of Haynes
 Monel®: TM of Special Metals Corp.

The pump housing

with ductile cast iron armoured absorbs all the hydraulic and pipework forces to DIN/ISO5199. In contrast to partially or non-armoured fluoropolymer pumps, no expansion joints are required. Flanges with service-minded through holes to DIN, ANSI, BS, JIS.

Available on request:

- Housing drain, also serves as a flushing and monitoring connection.
- Heating jacket, e.g. for crystallising or polymerising media

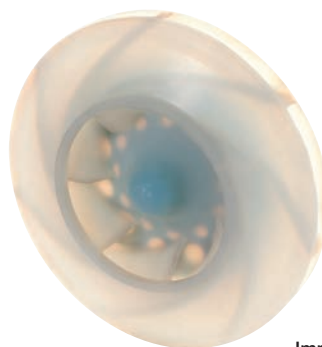


Pump housing

Impeller with curved vanes

The large metal core ensures dimensional stability, even at elevated temperatures and high flow rates. Axial forces are reduced by back vanes.

The metal core is protected by a thick-walled seamless fluoropolymer lining. The impeller is secured against loosening if the pump is started up in the wrong direction of rotation or in the case of back-flowing media.



Impeller

Eddy-current-free double can

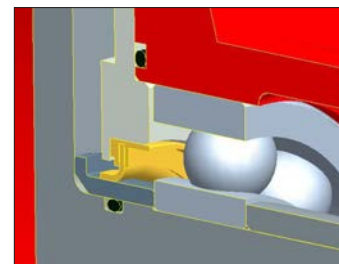
The metal-free can system does not induce any eddy currents and thus avoids unnecessary heat generation. Efficiency and operational reliability benefit from this. Even low flow rates or media near their boiling point can therefore be conveyed without the introduction of heat.



Double can

The secondary seal (option)

increases safety by reducing escape media to the atmosphere to 0,1 %, if the can unit is damaged.

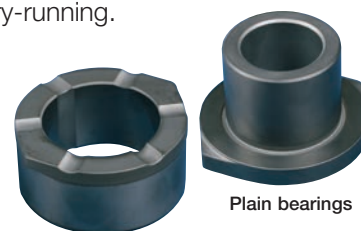


SAFESSEAL™ - Secondary Seal

Plain bearings of pure SSiC with optional Richter SAFEGLIDE® PLUS dry-run-optimisation.

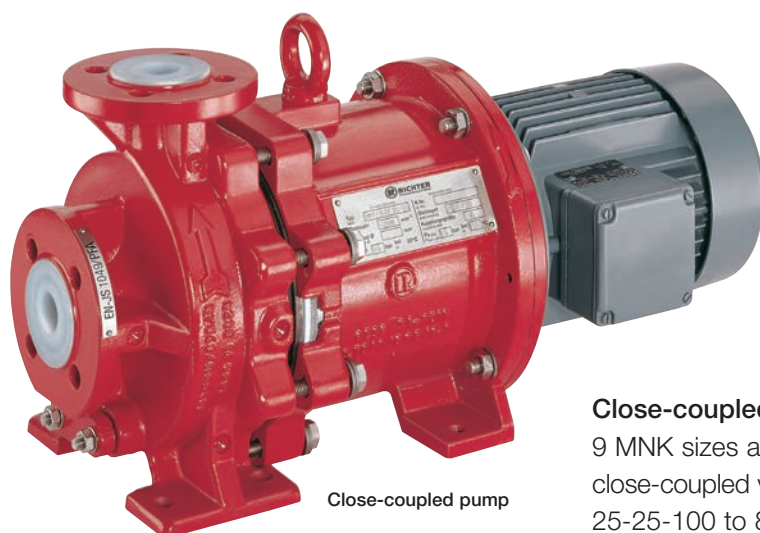
They make a decisive contribution to operational reliability and the long service life of the pump. Richter has gained experience in thousands of applications.

Pure SSiC as a base material produces maximum dimensional stability; the optional Richter SAFEGLIDE® PLUS system offers protection against damage from dry-running.



Plain bearings

SSiC and SAFEGLIDE® PLUS are extremely resistant to corrosion and abrasion.



Close-coupled pump

Close-coupled pump MNK-B

9 MNK sizes are alternatively available as a cost and space-saving, close-coupled version MNK-B. In terms of performance, the sizes 25-25-100 to 80-50-200 cover most of the applications which arise in chemical processing.

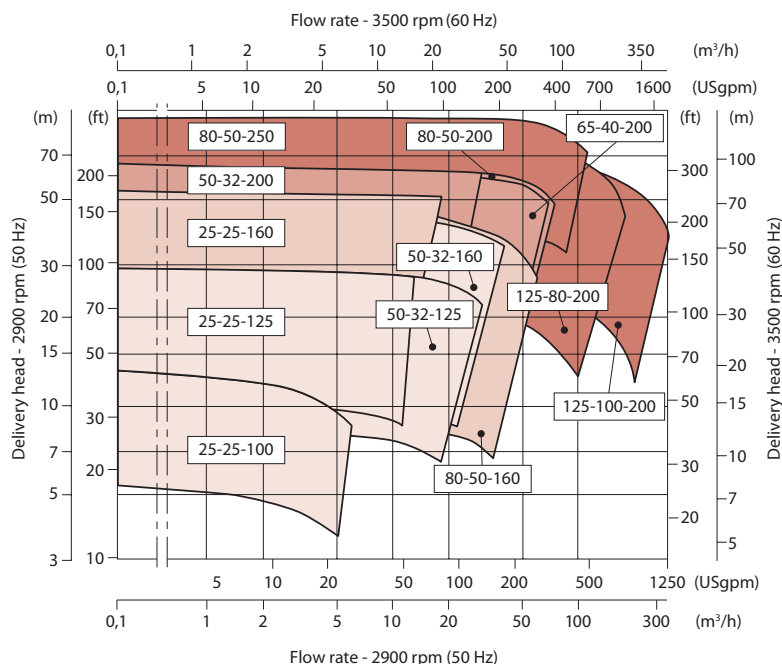
Performance curves

The MNK/MNKA family offers by far the largest application range in the world of all available fluor-fluoropolymer-lined magnetic drive pumps: Flow rates of up to 600 m³/h (2650 USgpm), delivery heads of up to 140 m (500 ft) LC.

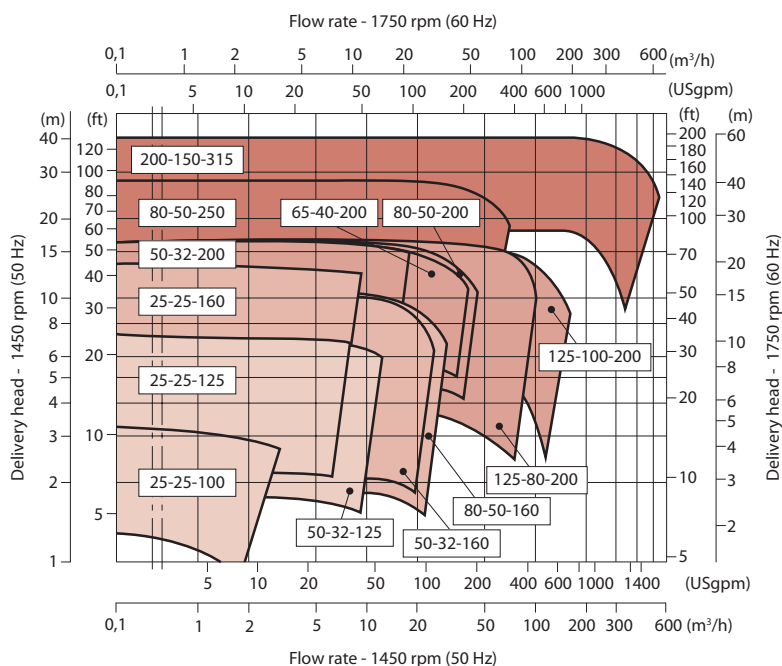
Depending on the pump accessories, the suitability for medium temperatures of -60 to 200 °C (-75 to 400 °F), the extraordinary capability for conveying solids-laden media and the problem-solving options package contribute to its leading market position.

* For flow rates up to 600 m³/h (2650 USgpm) use brochure MNK 200-150-315

Performance curves - 2900/3500 rpm



Performance curves - 1450/1750 rpm*



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