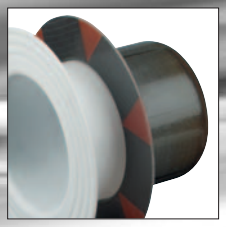
Richter High Capacity Lined Magnetic Drive Pumps

Flow Rates up to 600 m^3/h

MNK 200-150-315



Time-tested and optimised MNK technology

SAFEGLIDE® PLUS dry-run capability

PFA/PTFE lining

Low NPSHr design

RICHTER
Process Pumps & Valves

IDEX FLUID & METERING

Richter sealless chemical magnetic drive pumps

Fields of application

Conveyance of corrosive, hazardous and solids-laden media in the chemical and pharmaceutical industries, water treatment, pulp production and metal processing, waste disposal/recycling:

- Chlorine electrolysis (anolyte and catholyte, precipitation brine, purified brine, bleaching solution)
- Large multi-purpose ("world scale") plants
- H_2SO_4, HCl, NaOH, NaOCl, waste chemicals handling
- MDI and TDI production
- Plastic and special fibre production
- Metal pickling solutions
- Petrochemical plants

The Richter MNK series is rated

- for media where stainless steel and special cast iron do not have sufficient corrosion resistance
- as an alternative to pumps made of expensive exotic metals (Hastelloy®, monel, tantalum, titanium, nickel etc.) or pumps with rubber or other linings
- for solids-laden, crystallizing, toxic or other critical media.

Design

Single-stage, plastic-lined, magnetic drive chemical centrifugal pump. Dimensions and performance data to EN 22858/ISO 2858/ ISO 5199. Flanges ISO 7005-2, type B.
Flanges drilled to ISO/DIN or ASME/ANSI.
Heavy-duty horizontal design. Sealless. Eddy-current-free.
Double "back pull-out" design.

Operating range

- Flow rates up to 600 m³/h (2,650 US gpm)
- Delivery height up to 75 m (245 ft) LC
- Operating temperatures: -60 to 150 °C (-75 to 300 °F) (observe local rules for ductile iron)
- Operating pressures: up to 16 bar (230 psi)
- Solids and gas contents on request, depending on pump design

Type codes, materials

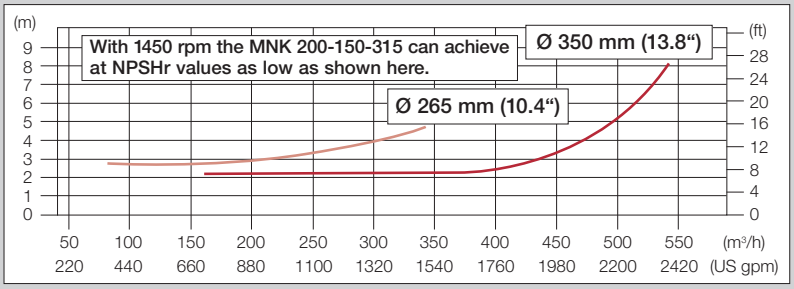
- Frame-mounted design MNK/...

Lining

- PFA, PTFE (perfluoroalkoxy, polytetrafluoroethylene) .../F

Very low NPSH required ("NPSHr")

The MNK 200-150-315 features 2 specific hydraulics including a configuration providing an extra low NPSH ("NPSHr"). Such low NPSH values are demanded in various processes, e.g. in chlorine electrolysis.



① **Closed PFA impeller with flow-optimised vane channels**
- High efficiency
- **2 hydraulics, one of which with very low NPSHr, see graph below**

Large metal core. Secured screw connection to the shaft. Back vanes to minimize axial thrust forces.

② **Thick-walled virgin PTFE housing lining (optionally PE-UHMW), wall thickness up to 20 mm (0.8")**
- **Full chemical resistance**
- **Full-surface armouring** made of ductile cast iron EN-JS 1049/ASTM A395 absorbs system pressure and pipe forces and eliminates the need for expansion joints
- Housing drain connection Ø 15 mm (0.59")
- Heating jacket optional

③ **Robust plain bearings made of pure SSiC**
- **SAFEGLIDE® PLUS** option to **prevent damage in case of dry-running**
- Plain bearing design with **optimised** torque introduction
- High load capacity, positive connection, anti-torsion feature. No setting of gap required.

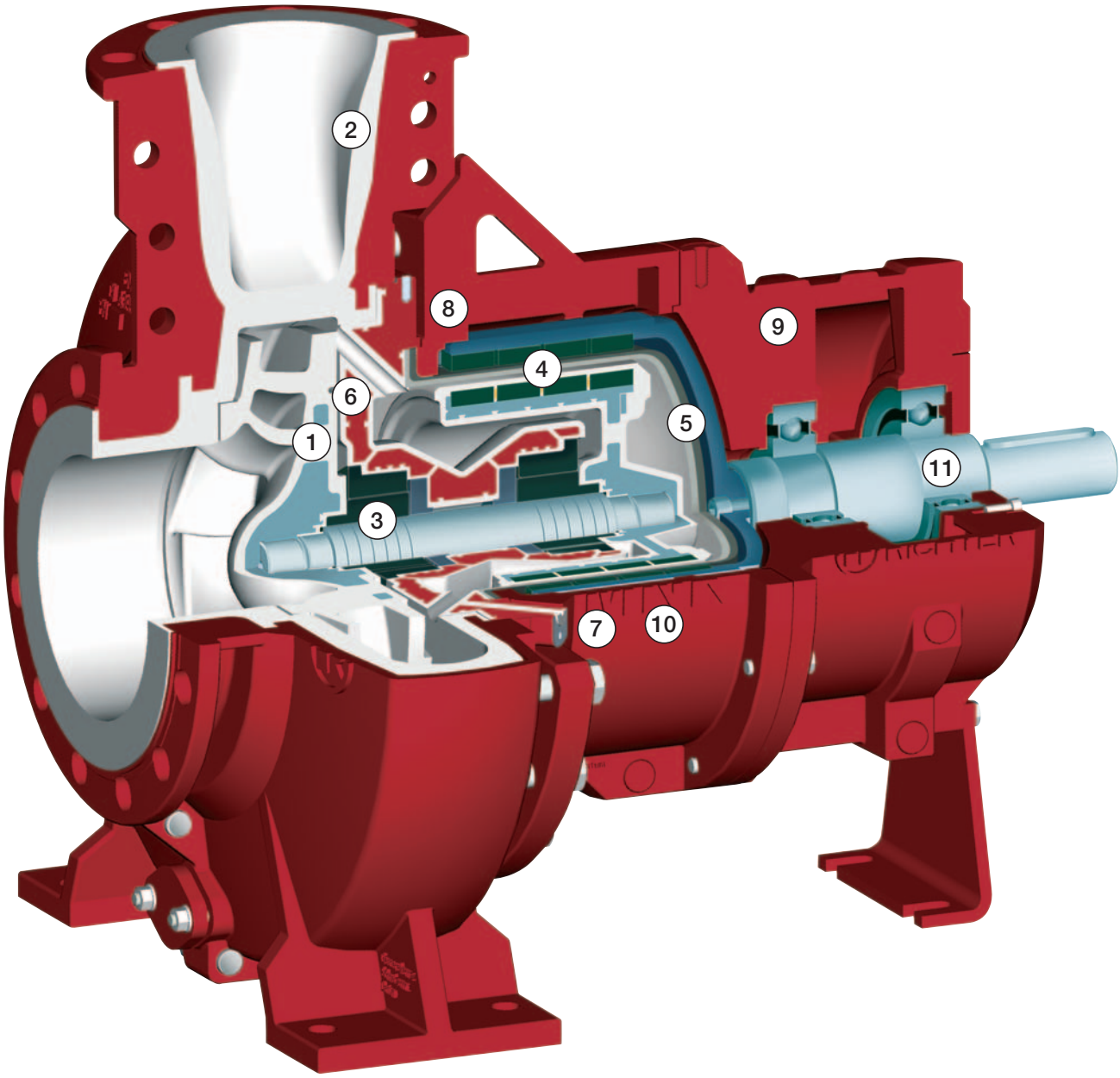
④ **High-performance permanent magnets** for torques of up to 800 Nm/590 ft-lbs (approx. 120 kW/161 hp at 1,450 rpm, 165 kW/222 hp at 2,000 rpm)

⑤ **Double can system**
- Wetted: modified PTFE, 4 mm (0.16") thick, considerably **more permeation-resistant** than standard PTFE
- Pressure-bearing: carbon-fibre reinforced plastic CFRP, eddy-current-free, metal-free, break-proof, high safety reserves

⑥ **Plain bearing frame and inner magnet assembly with stable metal core,** with a full and seamless thermoplastic PFA lining, min. 5 mm (0.2") thick

⑦ **Flushing and monitoring connections** as standard features, prepared for plain bearing flushing, housing flushing, temperature monitoring, measurement of rolling bearing temperature and vibrations.

⑧ **Radial rubbing safety surface protects** – in the event of a ball bearing failure – **the can unit** from damage by a possibly tumbling drive magnet assembly. Optionally: non-sparking thrust ring.



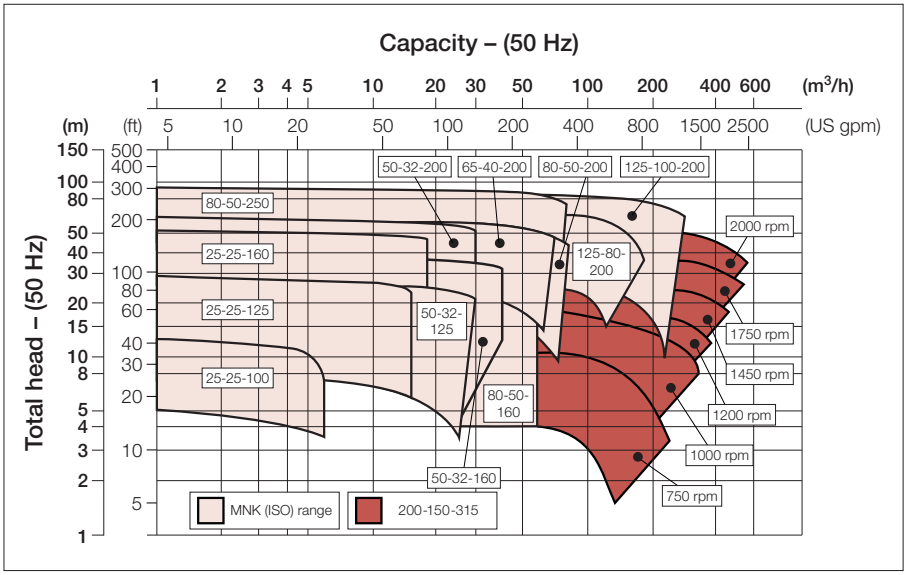
⑨ **Service-friendly design**
- Double “back pull-out” with separate bearing pedestal
- Design-backed fault prevention during maintenance work
- Integrated assembly aids: crane hooks, jacking thread, thread in shaft for vertical assembly

⑩ **Lantern chamber can be monitored,** advantageous for extremely hazardous media

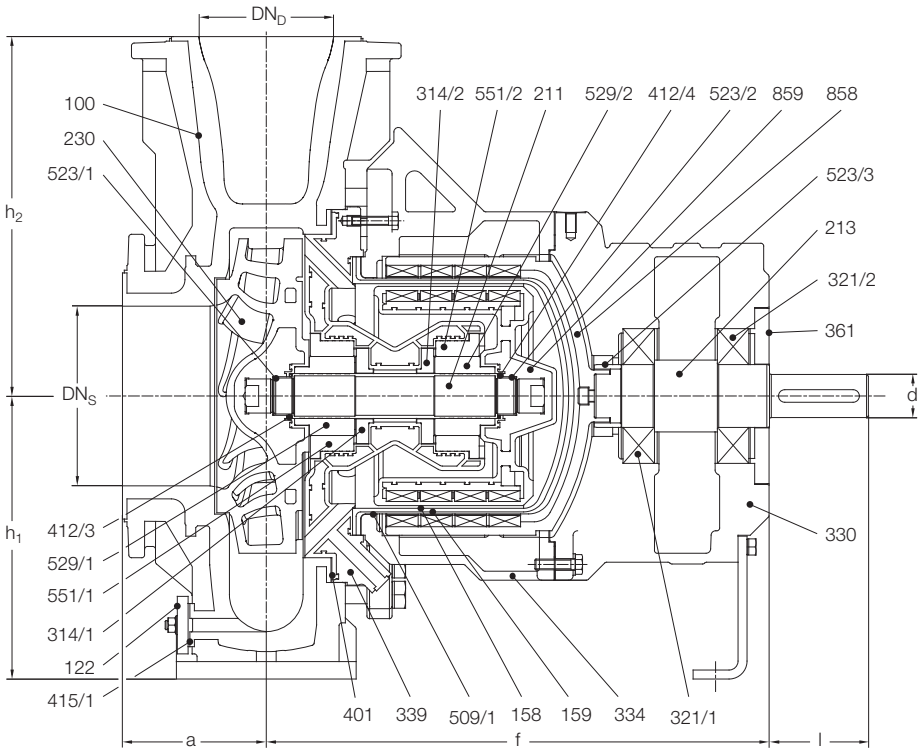
⑪ **Ball bearing lubrication** optionally using
- permanent grease lubrication
- replenishable grease
- oil bath lubrication

Replaceable hardened races for shaft seals

For fully ASME/ANSI conform pumps with flows to 160 m³/h and heads to 150 m see Richter pump series RMA and MNKA.



MNK 200-150-315



Components and materials

Item	Designation	Material
100	Housing	Ductile cast iron ASTM A395 (EN-JS 1049)/PTFE [1]
122	Blind cover	Steel
158	Can insert	TFM-PTFE (modified)
159	Can	Carbon-fiber reinforced plastic (CFRP)
211	Pump shaft	Stainless steel/PFA
213	Drive shaft	Hardened steel
230	Impeller	PFA with steel core
321/X	Radial ball bearing	
330	Bearing pedestal	Ductile cast iron ASTM A395 (EN-JS 1049)
344	Lantern	Ductile cast iron ASTM A395 (EN-JS 1049)
339	Plain bearing frame	Ductile cast iron ASTM A395 (EN-JS 1049)/PFA
361	Rear bearing cover	Steel
401	Housing gasket	PTFE
412/X	O-ring	FFKM (Kalrez® or equivalent)
415/1	Centering gasket	PTFE
509/1	Intermediate ring	PTFE
523/1/2	Shaft sleeve	PEEK (not wetted)
523/3	Bush	Steel, chromium-oxide coated
529/X, 551/X, 314/X	Bearing sleeve/bearing bush/axial bearing	SSiC/SSiC, optionally with SAFEGLIDE® PLUS
858	Drive magnet assembly	Ductile cast iron ASTM A395/EN-JS 1049/NdFeB [2]
859	Inner magnet assembly	Steel/PFA/CoSm [2]

Kalrez®: Trademark of DuPont; Hastelloy®: Trademark of Haynes
SAFEGLIDE® and Richter: Trademark of Richter Chemie-Technik GmbH

Dimensions

	mm	inch
DN_S	200	8
DN_D	150	6
a	160	6.3
f	670	26.4
h_1	315	12
h_2	400	16
d	48	1.9
l	110	4.3

Weights

kg	lbs
400* without motor	880* without motor

* with 590 ft-lbs (800 Nm) coupling

[1] PE-UHMW on request
[2] NdFeB: neodymium iron boron
CoSm: cobalt samarium

Presented by:

RICHTER Process Pumps & Valves
IDEX FLUID & METERING

Richter Chemie-Technik GmbH
Otto-Schott-Str. 2, D-47906 Kempen, Germany
Tel. +49 (0) 21 52/146-0, Fax +49 (0) 21 52/146-190
www.richter-ct.com, richter-info@idexcorp.com