

# RMKN

Horizontal metal pump



## Avoid unplanned downtime

The pump is equipped with the i-ALERT®2 sensor as standard. This monitors vibrations and temperature. If preset limit values are exceeded, LEDs in the sensor light up. All measured values can be retrieved via an app or the Ai Platform. This means that necessary measures can be taken in good time before the pump fails.



# The RMKN

## Magnetic drive pump

Magnetic drive Rheinütte pumps are used to pump high-grade aggressive, corrosive as well as toxic, generally hazardous or environmentally polluting media safely at all times. This means safe solutions for all demanding pumping tasks. With its variable material selection and the high level of standardisation of the drive components, the revised modular principle of the RMKN range offers considerable potential for savings to be made. In addition, flow-optimised impellers and volute casings allow cost-neutral adjustments and thus also increase the efficiency of the unit.

### Design features

- Design: horizontal, single-stage
- Construction: back-pull-out design according to ISO 2858
- Casing design: single or double volute casing
- Bearing lubrication: lifetime grease lubrication
- Installation versions: base frame welded or base plate cast
- Ambient temperature: -20 °C to +60 °C (-4 °F to +140 °F)
- Solid content limit value: approx. 2 %





## Technical data

	RMKN
Size DN	25 to 150
$Q_{\max}$ m <sup>3</sup> /h (gpm)	500 (2201)
$H_{\max}$ m (ft)	150 (492)
Temperature °C (°F)	-40 to +250 (-40 to 482)
Standards	EN 22858, ISO 2858, ISO 5199
Closed impeller	Standard
Flange motor design	RMKNF
Heatable	Option
Seal	Magnetic drive



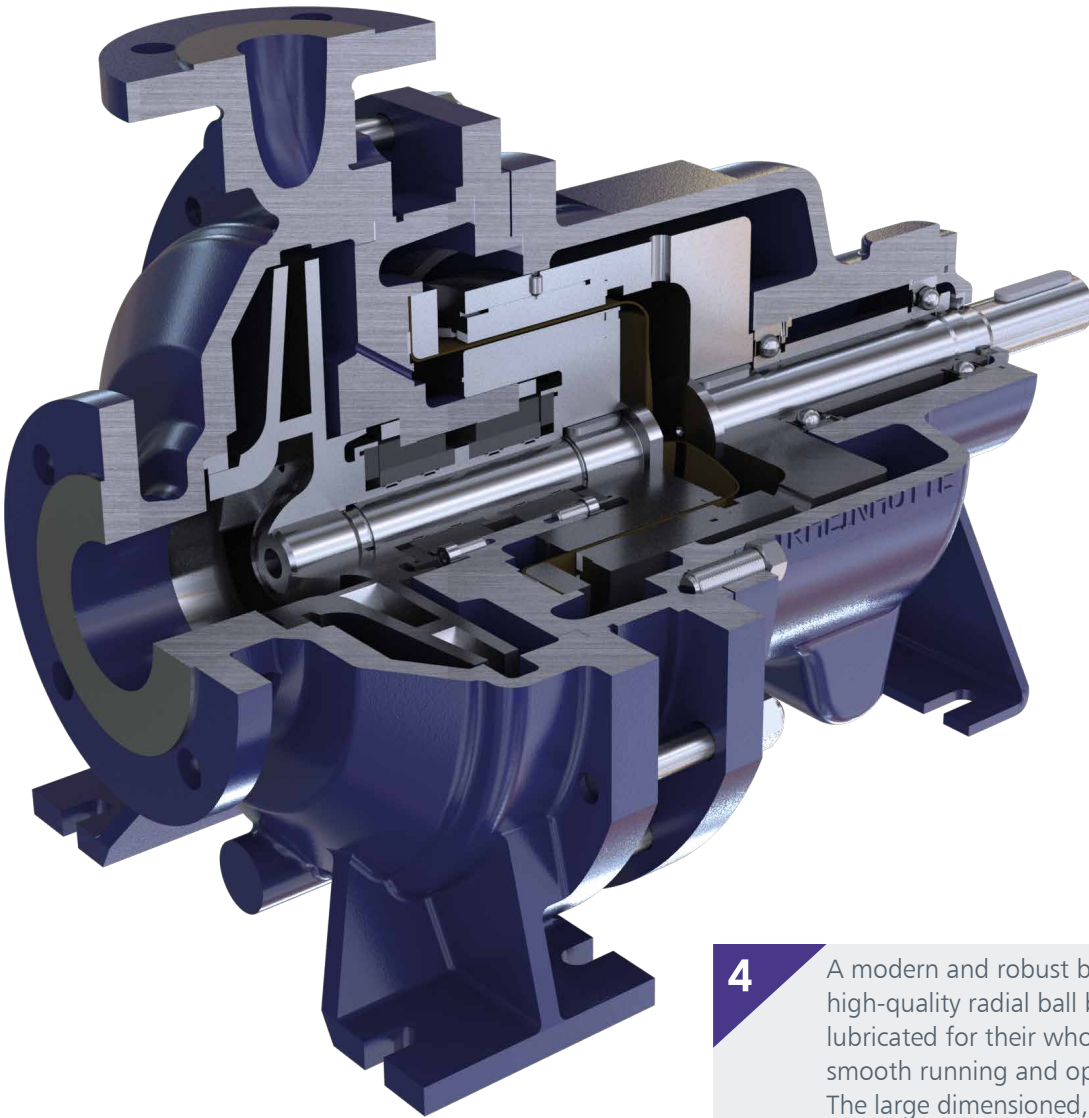
## Options

- Inducer
- Volute casing drain
- Temperature and vibration monitoring
- Flange connections according to international standards
- Leakage monitoring
- External lubrication and cooling circuit
- Secondary sealing
- Pump accessories

## Applications

- Chemical industry
- Liquid sulphur
- Phosphoric acid
- Nitric acid
- Sulphuric acid
- Caustics
- Organic media

# Main features



1

Safely sealed. The low-stress, deep-drawn containment spacer can, made of resistant material, is not subject to stress corrosion cracking. A flow breaker in the bottom reliably prevents erosion corrosion.

2

Safely sealed. Nominal starting points for the inner and outer rotor reliably protect the containment shroud in case of bearing damage.

3

High power magnets take over the frictional connection even at temperatures of  $-40$  to  $250\text{ }^{\circ}\text{C}$  ( $-40$  to  $482\text{ }^{\circ}\text{F}$ ).

4

A modern and robust bearing concept with high-quality radial ball bearings which are lubricated for their whole life-span ensures smooth running and operational reliability. The large dimensioned, hydrodynamic sleeve bearings ensure long service life and low downtimes even with highly corrosive media.

5

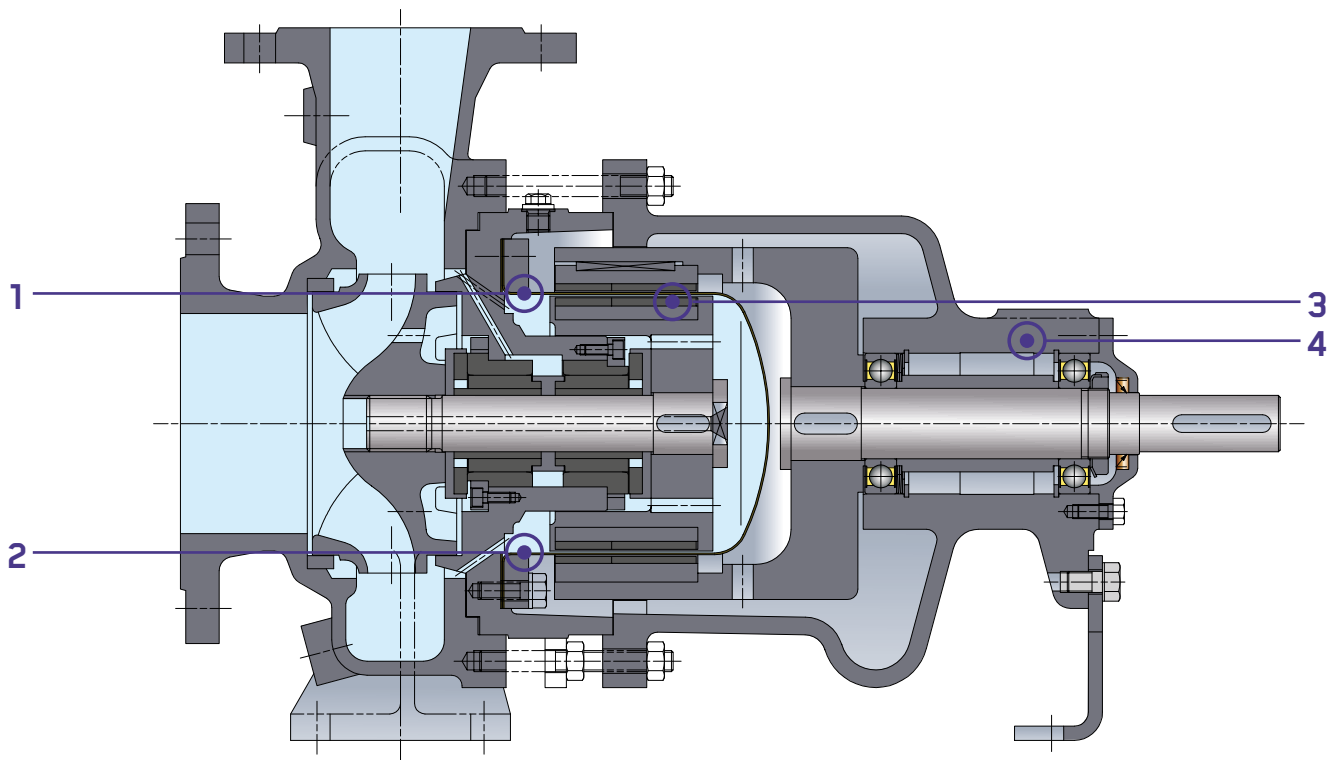
Areas of application in which the medium needs to be kept at a constant temperature do not present any problem for the RMKN. The use of heating chamber systems means that the RMKN is also ideally suited to difficult situations, e.g. the pumping of molten sulphur, pitch and tar.

6

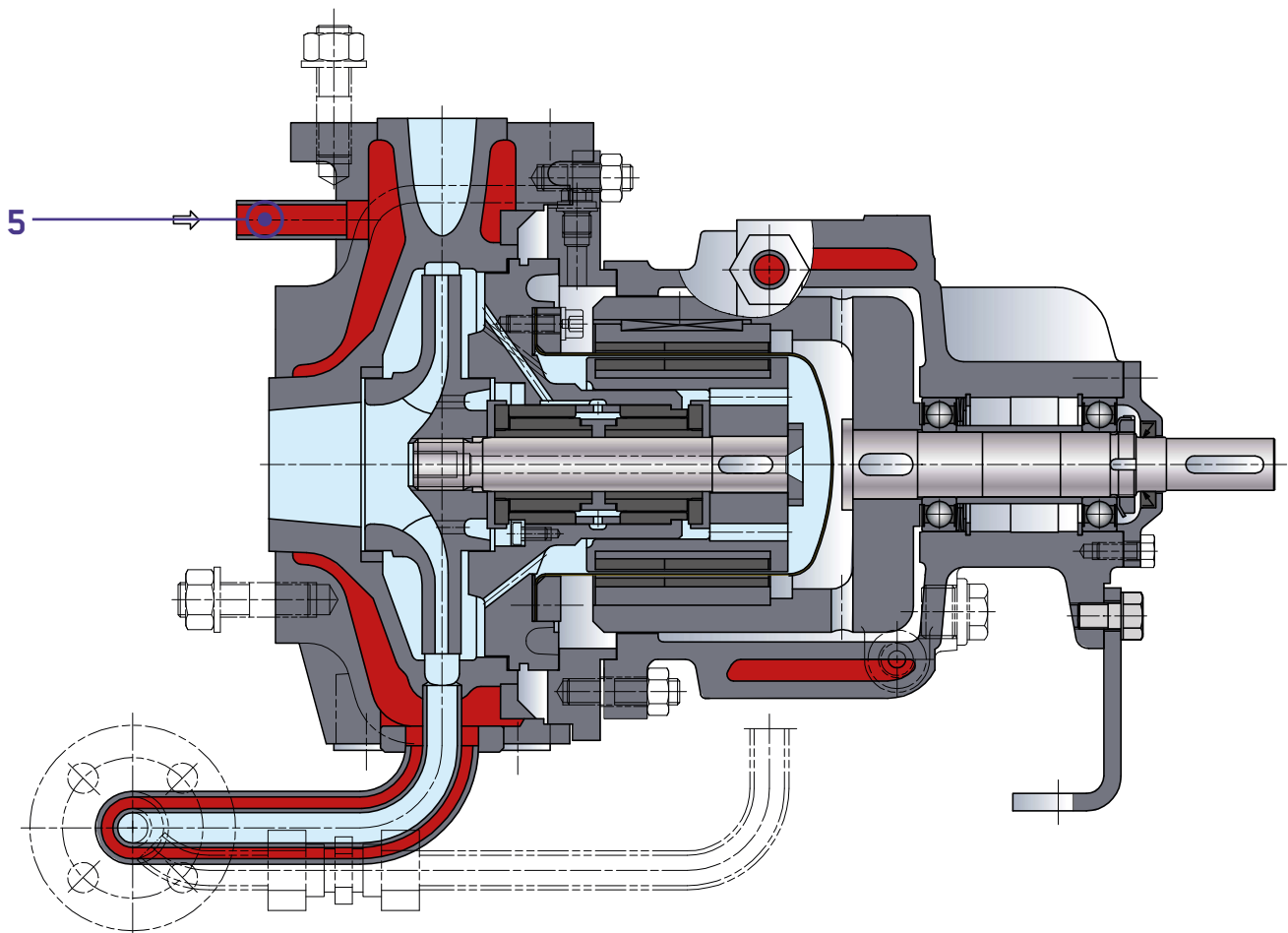
The service and maintenance-friendly machine concept with simple dismantling and inspection options. Cost-efficient operation and, overall, low life cycle costs.

The drawings essentially correspond to the execution. We reserve the right to make design changes.

## Standard design (RMKN)



## Fully heated version (RMKN H)



# Metal materials

The range of metallic materials includes a wide range of very different types of material which are distinguished mainly by their alloy composition, their structure and their manufacturing process. This gives each material its characteristic properties and allows an optimal material to be selected to suit the application.

## 1.4136S

Corrosion and erosion resistant high alloy ferritic cast steel. Typical applications are highly concentrated sulphuric acid up to 180 °C (356 °F), oleum, fertiliser production, crude phosphoric acid containing solids.

## 1.4306S

High-quality, molybdenum-free material suitable for applications such as pumping of ammonium nitrate melt, hot nitric acid at medium concentrations and also the vaporization of waste nitric acid.

## 1.4361

Low carbon silicon alloy material for pumping strongly oxidising media. Particularly suitable for hot highly concentrated nitric acid, e.g. 98 % HNO<sub>3</sub>.

## 1.4408

Fully austenitic chromium nickel molybdenum steels with a good general resistance to corrosion. These materials are suitable for pumping almost all organic liquids, 50 % caustic soda up to 90 °C (194 °F), KTL paint, pure phosphoric acid, dry chlorine, liquid sulphur, PTA and many other media.

## 1.4517

Duplex (Semi-austenitic), molybdenum and copper alloyed material with a high resistance to pitting and stress corrosion. This material is one of the super duplex steels. It can be used with crude phosphoric acid, containing solids at up to 100 °C (212 °F), hot sea water, many solutions containing chloride, FGD suspensions and sulphuric acid at all concentrations at low temperatures.

## 1.4529 S

A high grade special material having a high resistance to acidic media containing solids and rich in chlorides. Used

in absorber and quencher fluids of the FGD, for acidic and chloride containing gypsum slurries, in the manufacture of phosphoric acid, in vaporisation and crystallisation processes and also for hot sea water.

## R 3020

Fully austenitic special stainless steel with a high molybdenum and copper content. High resistance to pitting, stress corrosion and intercrystalline corrosion. Suitable for 70 % caustic soda up to 200 °C (392 °F), sulphuric acid at all concentrations at low and medium temperatures, sulphuric acid pickling solutions, in certain areas of the manufacture of phosphoric acid, for pumping solutions with a high chloride content and in spin baths.

## 2.4686

Highly resistant nickel-base alloys for special applications such as liquids containing high chloride, hydrochloric acid, FGD liquids, very heavily contaminated phosphoric acid, hypochlorites and solutions with oxidising chlorides.

## 3.7031

Titanium is especially resistant to heavily oxidising and chloride containing media. The material is preferred for use in chloralkali-electrolysis, bleaching solutions containing chlorine and in the manufacture of acetic acid.

## 3.7032

Titanium alloyed with palladium. This improves the corrosion resistance in reducing media, e.g. in solutions of iron chloride or aluminium chloride containing hydrochloric acid.



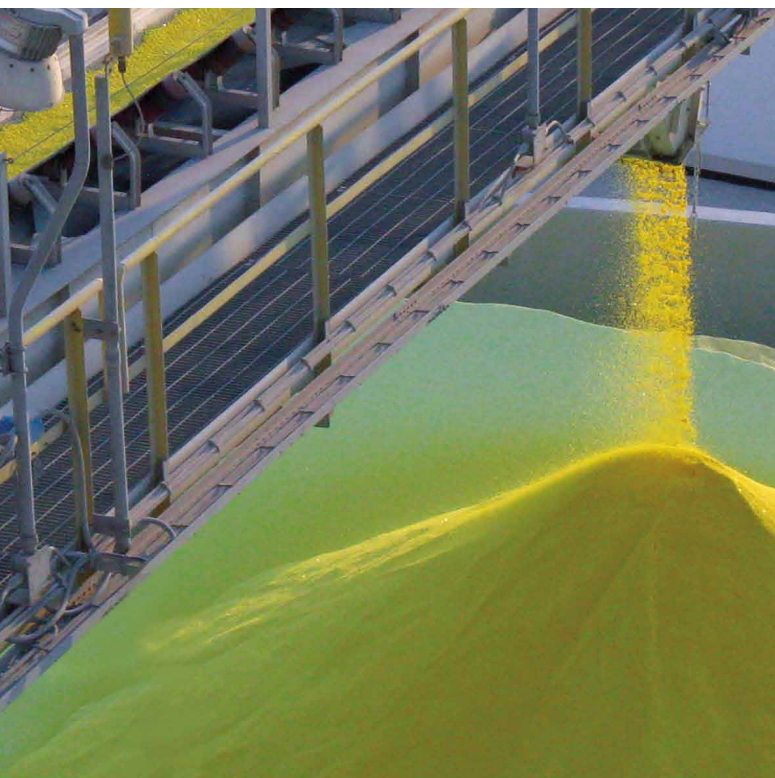
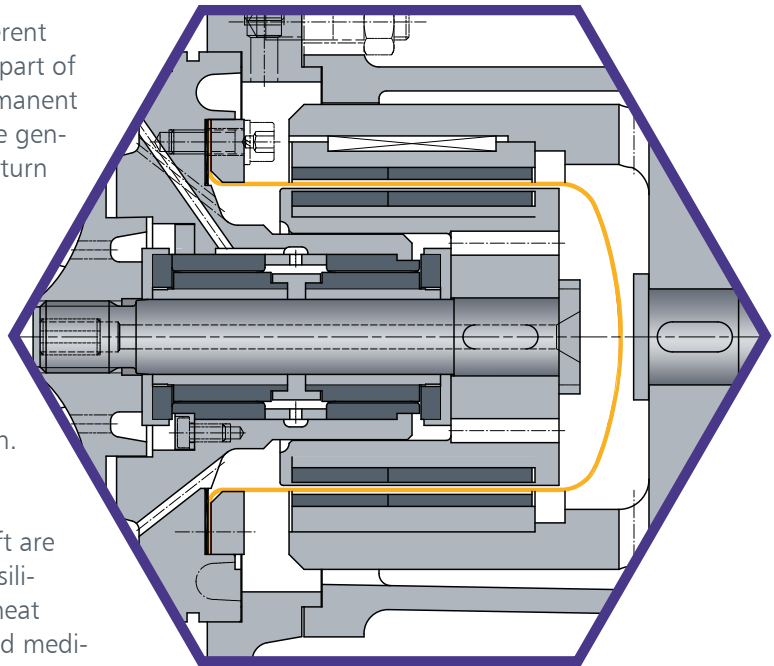
# Magnetic drive

The sealing is done by a containment spacer can, which is available in different materials. With the magnetic drive, the usual gap between the rotating shaft and the housing is avoided by splitting the shaft and transmitting the torque magnetically.

The magnetic drive is based on a completely different sealing principle. Here the drive for the hydraulic part of the pump takes place through the pairing of permanent magnets whose external unit transmits the torque generated by the motor to an internal unit, which in turn transfers this to the impeller.

The external or atmosphere side magnet system is separated from the internal product side magnetic system by a spacer can made of non-magnetic material. The torque needed to drive the impeller is transmitted exclusively by magnetic forces which act through the spacer can. The pump is thus hermetically sealed.

The axial and radial mountings for the pump shaft are through hydro-dynamic sleeve bearings made of silicon-free silicon carbide. Bearing lubrication and heat removal normally takes place through the pumped medium, in two separate circuits.



## Customer benefits

- A solid, large dimensioned sleeve bearing made of high-purity silicon carbide (SiC) tolerates rough operating conditions and guarantees absolutely easy handling during maintenance work.
- The special design of the sleeve bearing mountings prevents stress due to axial temperature expansion.
- Rheinhütte standard for clean sulphur
- Perfect for sulphur charge pumps (intermediate stage)
- 100 % leakage free
- Pumps according to DIN 5199

# Pumps & installation dimensions

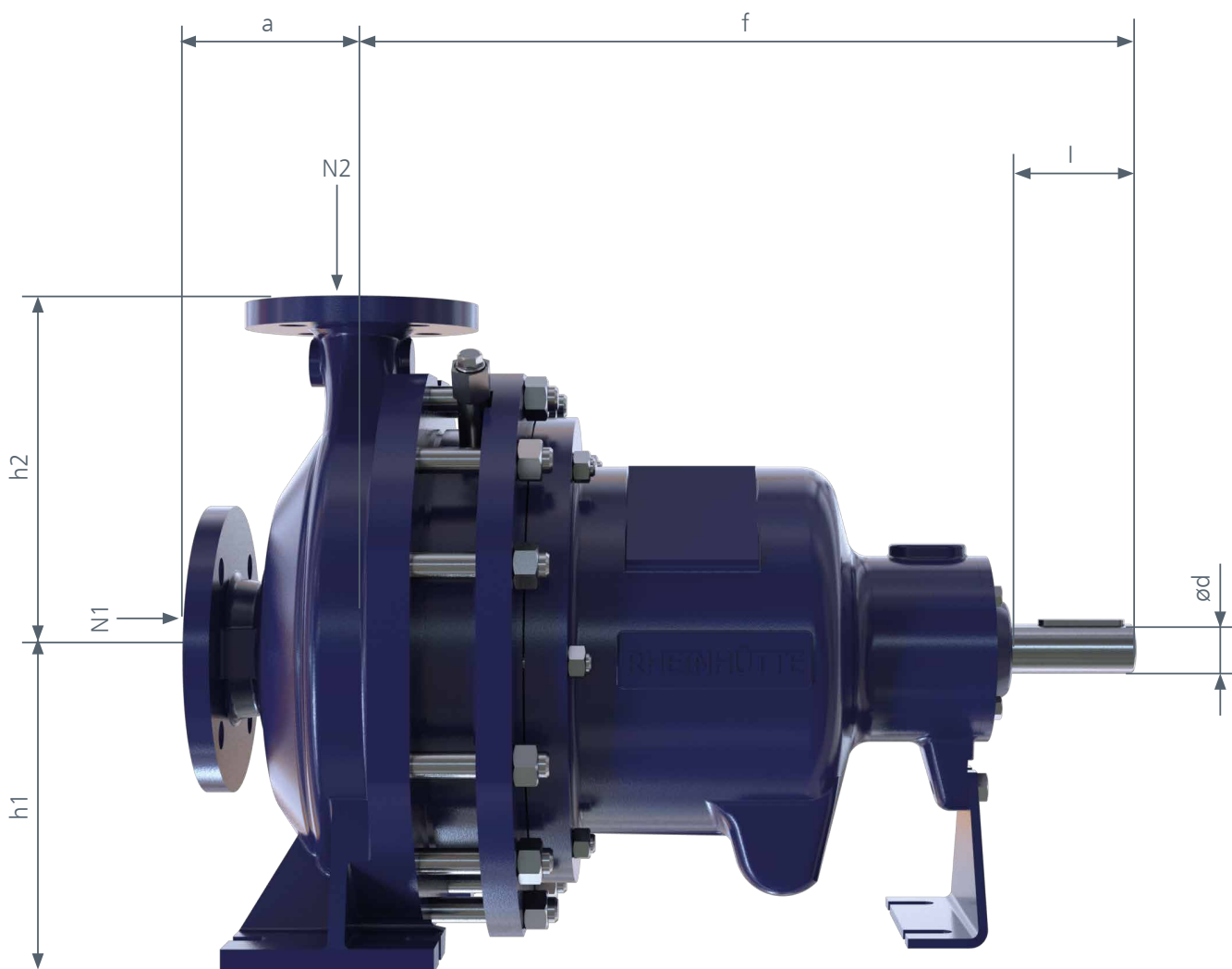
Size	BB	Pump dimensions				Base dimensions	Shaft end		Flange dimensions	
		a	f	h <sub>1</sub>	h <sub>2</sub>	w	ød	l	N1	N2
25-160	1	80	385	132	160	285	24	50	40	25
25-200	1	80	385	160	180	285	24	50	40	25
32-125	1	80	385	112	140	285	24	50	50	32
32-160	1	80	385	132	160	285	24	50	50	32
32-200	1	80	385	160	180	285	24	50	50	32
40-125	1	80	385	112	140	285	24	50	65	40
40-160	1	80	385	132	160	285	24	50	65	40
40-200	1	100	385	160	180	285	24	50	65	40
50-125	1	100	385	132	160	285	24	50	80	50
50-160	1	100	385	160	180	285	24	50	80	50
50-200	1	100	385	160	200	285	24	50	80	50
65-125	1	100	385	160	180	285	24	50	100	65
32-250	2	100	500	180	225	370	32	80	50	32
40-250	2	100	500	180	225	370	32	80	65	40
40-315	2	125	500	200	250	370	32	80	65	40
50-250	2	125	500	180	225	370	32	80	80	50
50-315	2	125	500	225	280	370	32	80	80	50
65-160	2	100	500	160	200	370	32	80	100	65
65-200	2	100	500	180	225	370	32	80	100	65
65-250	2	125	500	200	250	370	32	80	100	65
80-160	2	125	500	180	225	370	32	80	125	80
80-200	2	125	500	180	250	370	32	80	125	80
80-250	2	125	500	225	280	370	32	80	125	80
100-200	2	125	500	200	280	370	32	80	125	100
65-315	3	125	530	225	280	370	42	110	100	65
80-315	3	125	530	250	315	370	42	110	125	80
80-400	3	125	530	280	355	370	42	110	125	80
100-250	3	140	530	225	280	370	42	110	125	100
100-315	3	140	530	250	315	370	42	110	125	100
125-250	3	140	530	250	355	370	42	110	150	125
125-315	3	140	530	280	355	370	42	110	150	125
150-250	3	160	530	280	375	370	42	110	200	150

BB = Bearing bracket N2 = Pressure flange

All dimensions are shown in millimetres.

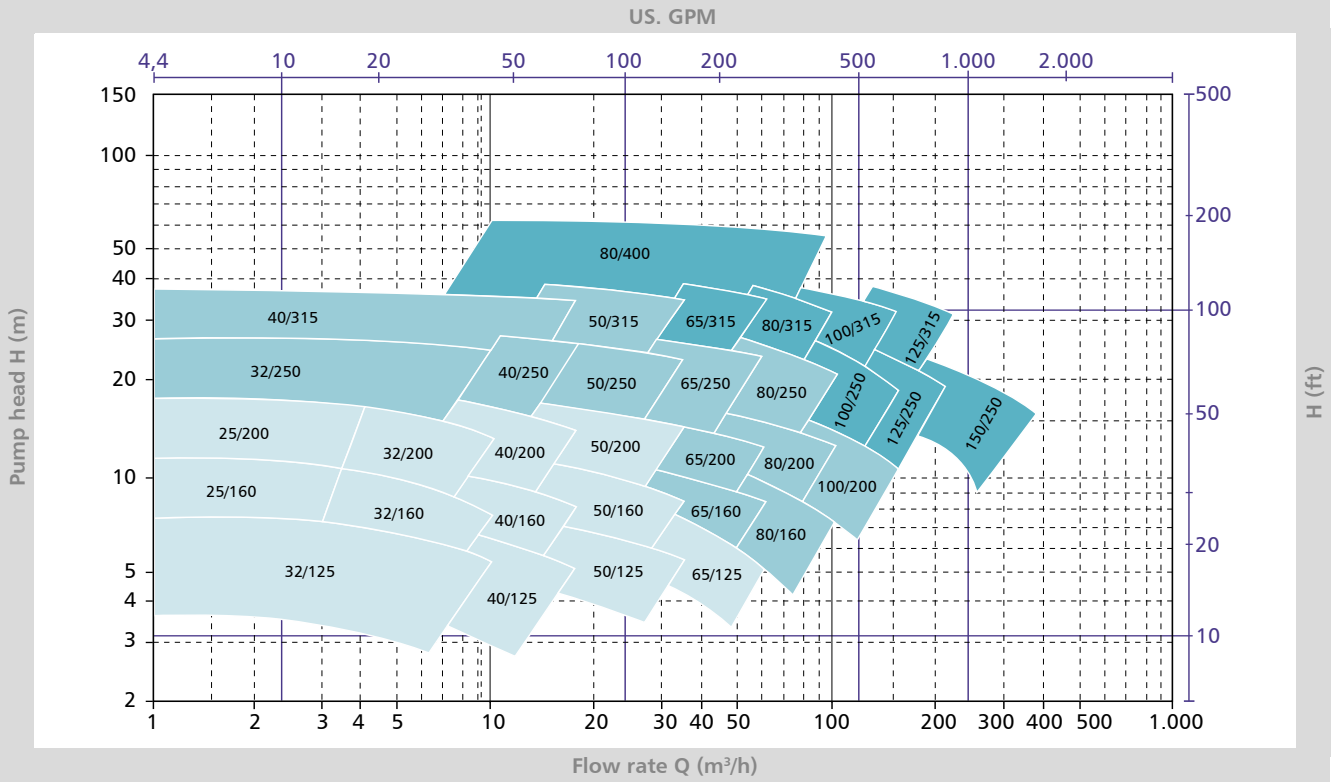


# RMKN: Standard design

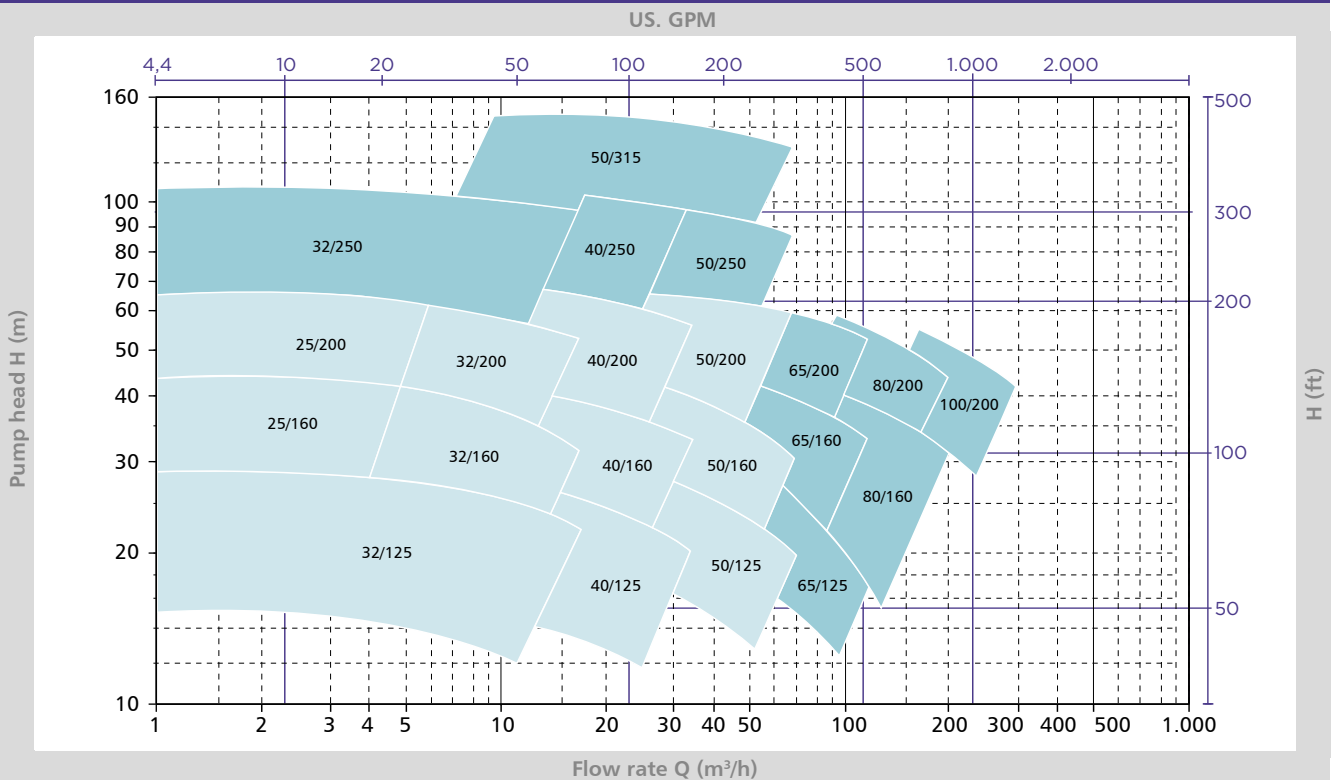


# Capacity ranges

RMKN : 50 Hz n = 1450 /min

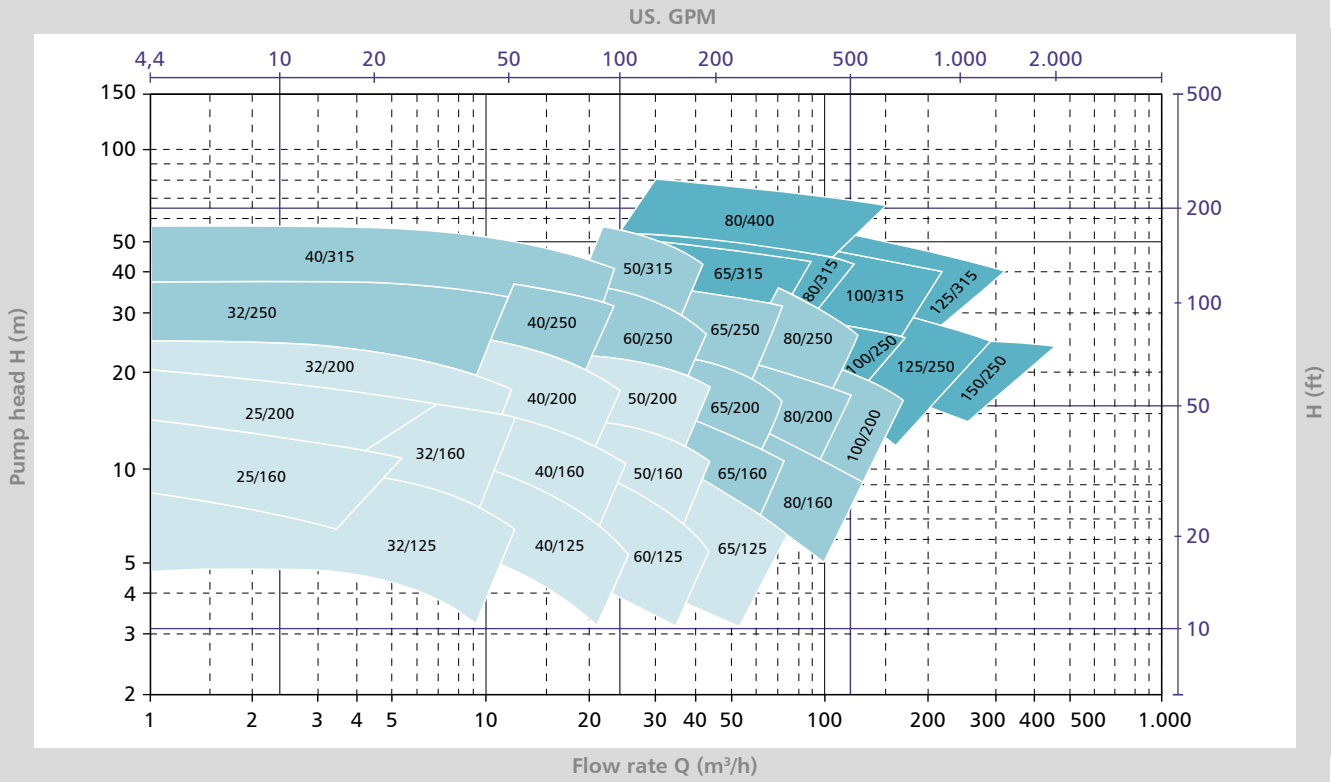


RMKN: 50 Hz n = 2900 /min

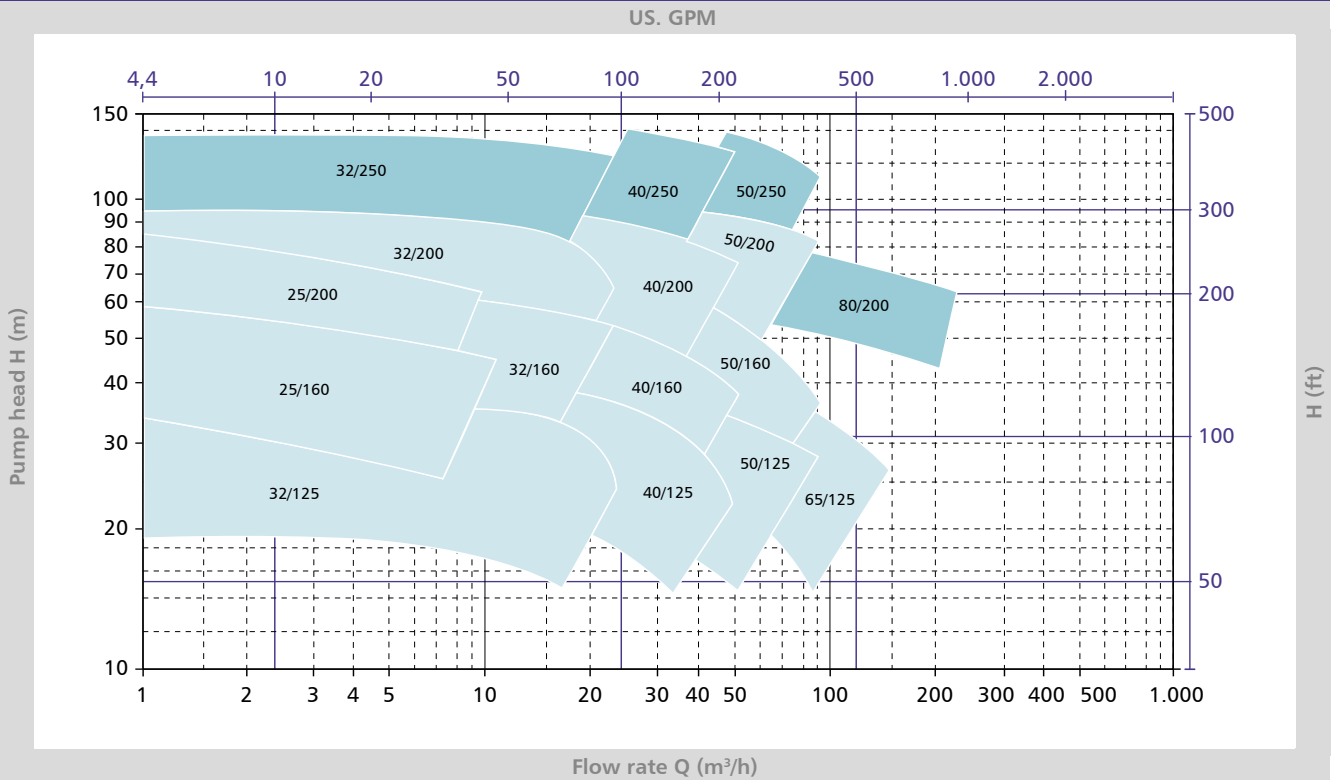


Bearing bracket **1** **2** **3**

RMKN : 60 Hz n = 1750 /min



RMKN : 60 Hz n = 3500 /min





— An ITT Brand

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