



**DICKOW  
PUMPEN**



**Sealless Magnetic Coupled  
Centrifugal Pumps  
acc. to EN 22858 / ISO 2858**

**Type NML / NMB**

*our  
contribution  
for  
environmental  
protection*

## General

Magnetic coupled DICKOW-pumps of the series NM are sealless pumps. The static containment shell forms a closed system with hermetically sealed liquid end.

## Applications

Magnetic coupled NM-pumps are designed to improve plant and personnel safety, especially when handling toxic, explosive or other dangerous liquids which react on contact with the atmosphere. For all these services the containment shell replaces the double acting mechanical seal with external fluid reservoirs and the necessary control equipment. NM-pumps therefore offer exceptional benefits to the chemical, petrochemical and allied industries, and protect the environment.

Max. capacity and differential head:  
50 Hz – appr. 400 m<sup>3</sup>/h and appr. 150 m  
60 Hz – appr. 480 m<sup>3</sup>/h and appr. 220 m  
(appr. 2100 gpm and 720 ft)

The maximum operating temperature is 200°C (390°F) for NML-series and 240°C (464°F) for NMB-series. Higher temperatures are possible with the pump types NMR / NMWR.

## Hazardous area

Together with suitable Ex-drive motors, the NML/NMB-pumps can be applied in hazardous area Group II, Category 2. The pumps meet the basic safety and health requirements of Explosion-proof Directive 94/9 EC and are suitable for plants with increased safety requirement.

For close coupled pumps (NMB) the containment shell temperature is limited when using ex-motors. The values are available on request.

## Design / Pump casing

NML-pumps are single stage volute casing pumps with closed impellers, back-pull-out design, with end suction and top discharge flange. Sturdy feet are provided as standard for mounting on the base plate.

Capacity and outer dimensions comply with DIN EN 22858 resp. ISO 2858.

## Containment shell

The containment shell is a pressure vessel to separate the pumped liquid from the atmosphere

only. The shell is not used as an additional bearing holder. Therefore, no dynamic stress occurs.

The standard containment shell is a one piece deep-draw design without additional welds made of 2.4610 (Hastelloy C).



Other available material options are:

- Zirconium oxide (industrial ceramic) without eddy current losses.
- PEEK composite (carbon fibre reinforced Polyetheretherketon) without eddy current losses.
- Titanium for high pressure applications.

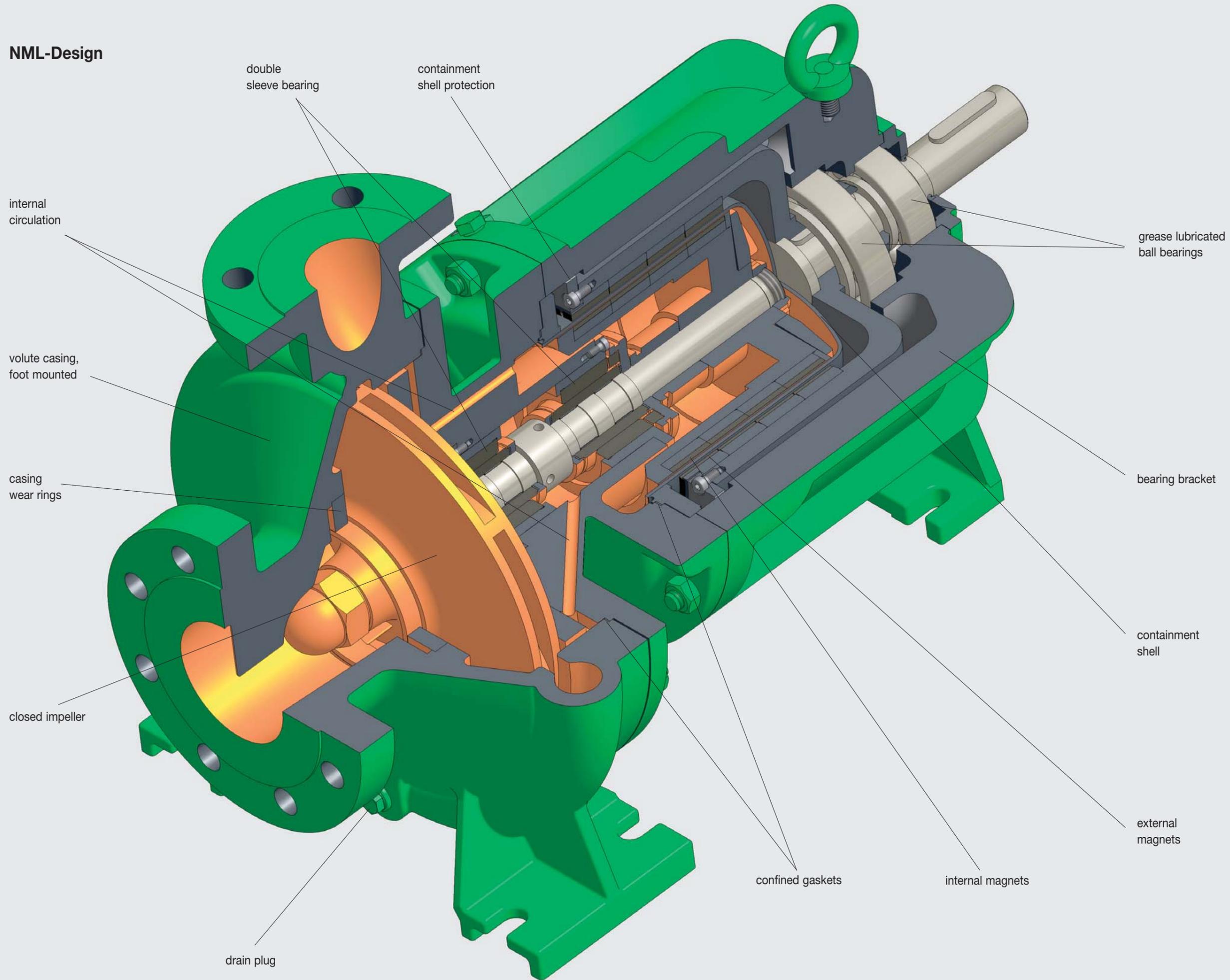
The containment shell is bolted to the bearing housing in a manner that allows removal of the bearing bracket (NML-pumps) respectively of the drive motor (NMB-pumps) together with the drive rotor without draining the pump.

## Magnet coupling

The single elements of the multipolar magnet coupling are manufactured of permanent magnet material "Cobalt Samarium" with unlimited life-time. The magnets in the driven rotor are completely encapsulated, not in contact with liquid. Power is transmitted to the hermetically sealed liquid end by a bank of external magnets. Inner and outer magnet rings are locked together by magnet forces and work as a synchronous coupling. The inner magnet ring transmits the required torque direct to the impeller. Overload of the magnet coupling and slipping will not cause demagnetization if temperature monitoring is available. The magnet couplings are designed for electric motors, direct on line starting. Should a increase of motor power be required, i.e. when



**NML-Design**



double sleeve bearing

containment shell protection

internal circulation

grease lubricated ball bearings

volute casing, foot mounted

bearing bracket

casing wear rings

containment shell

closed impeller

external magnets

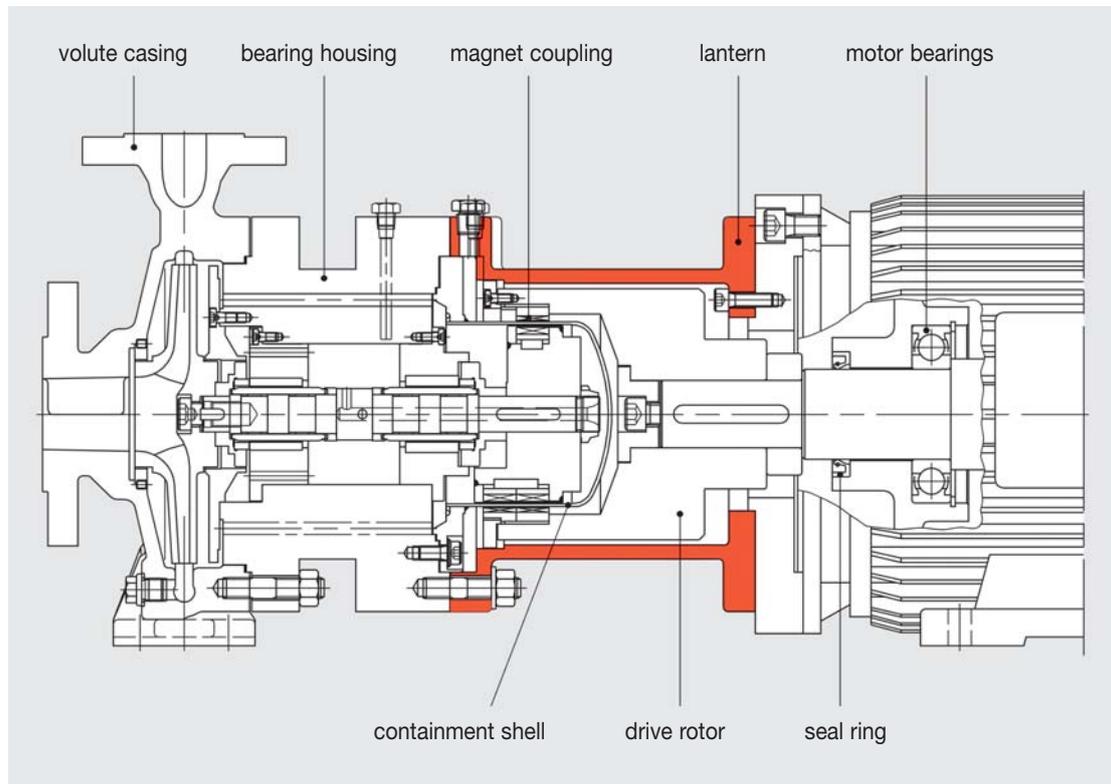
drain plug

confined gaskets

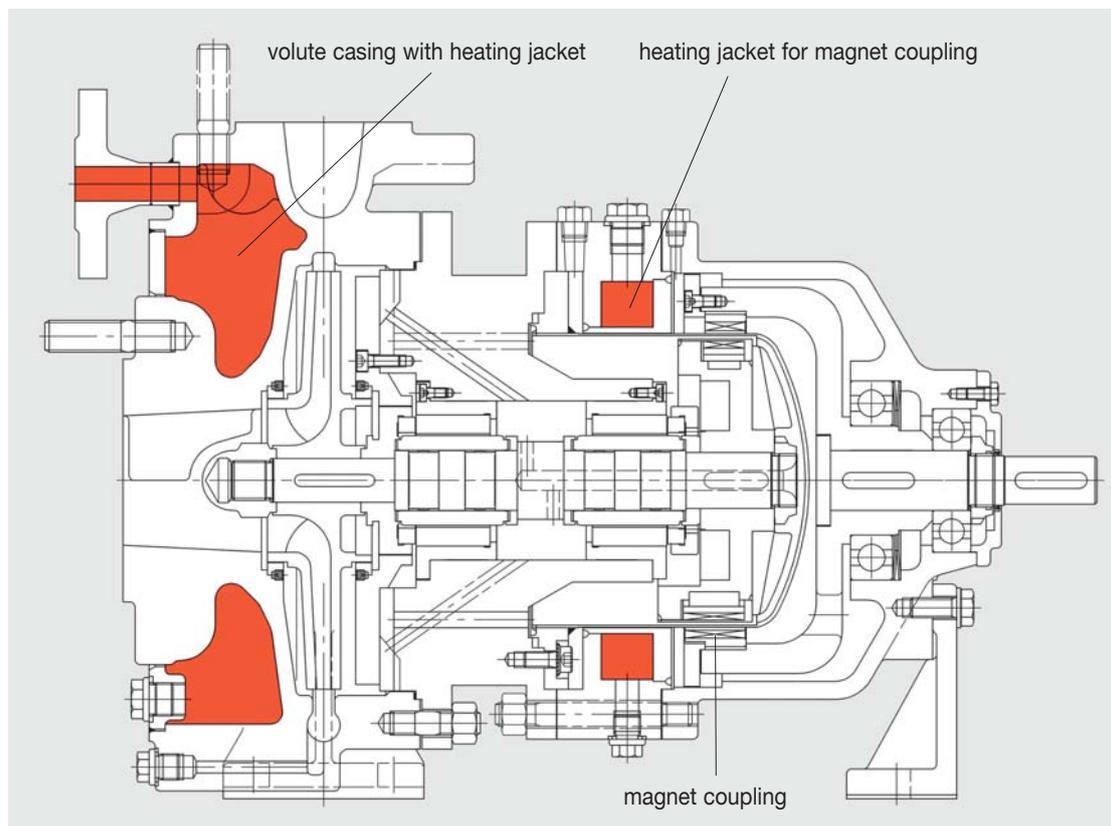
internal magnets

## Optional designs

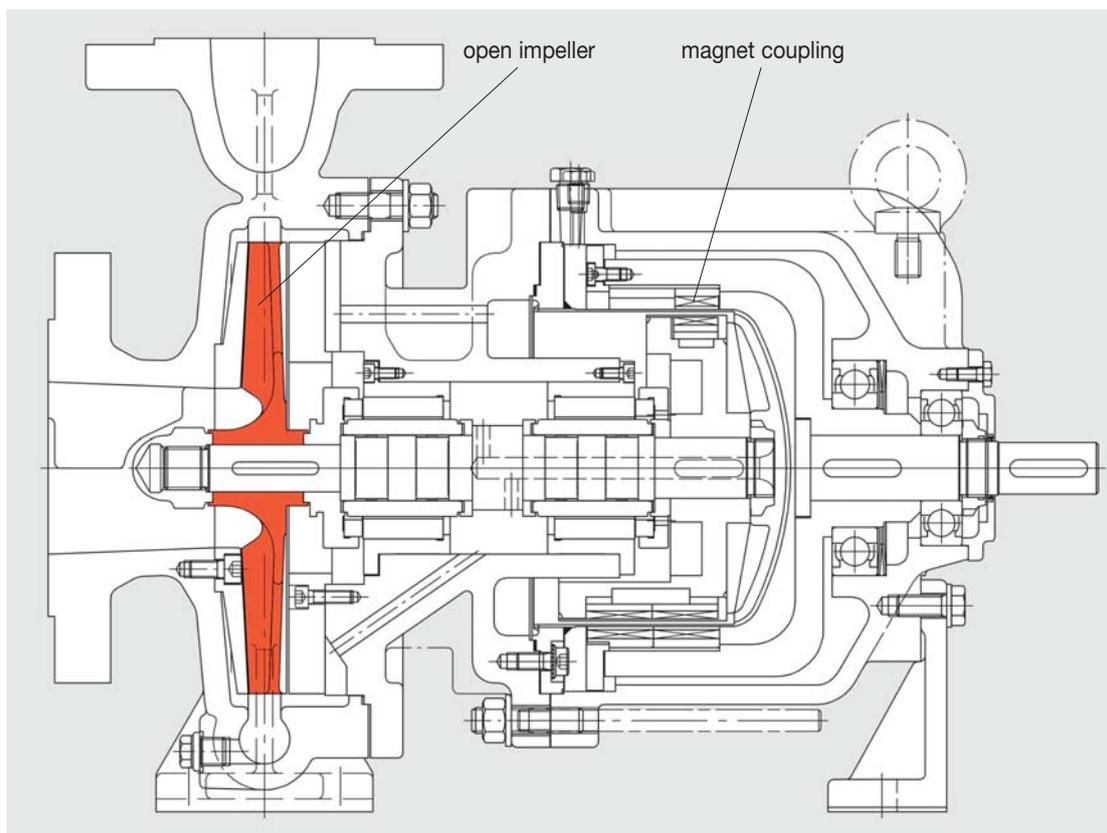
### Type NMB – close coupled design



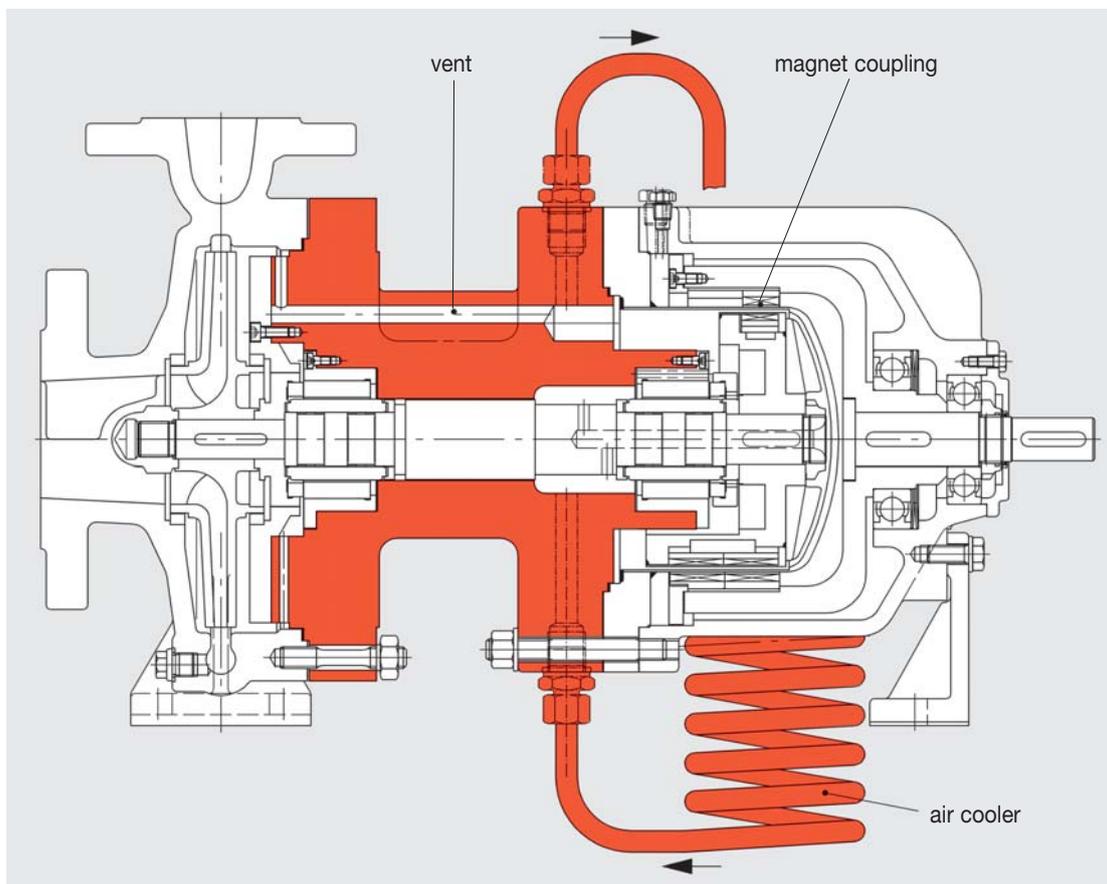
### Type NML b – with heating jacket



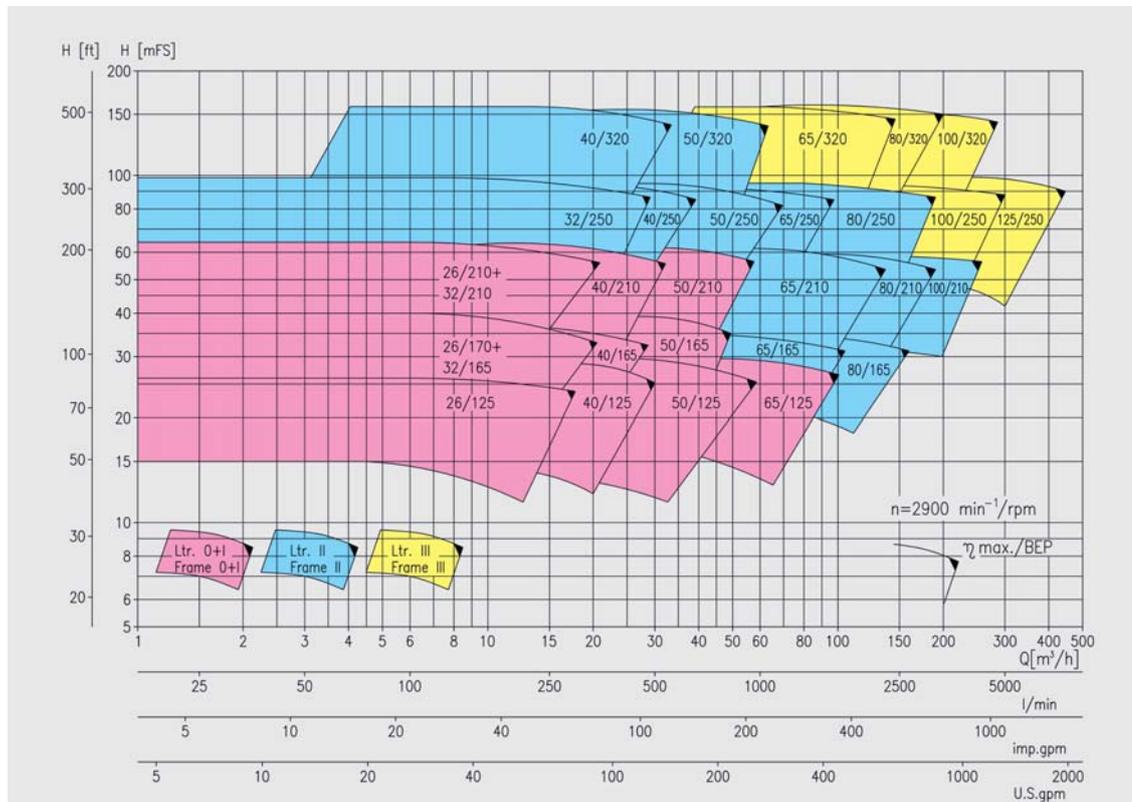
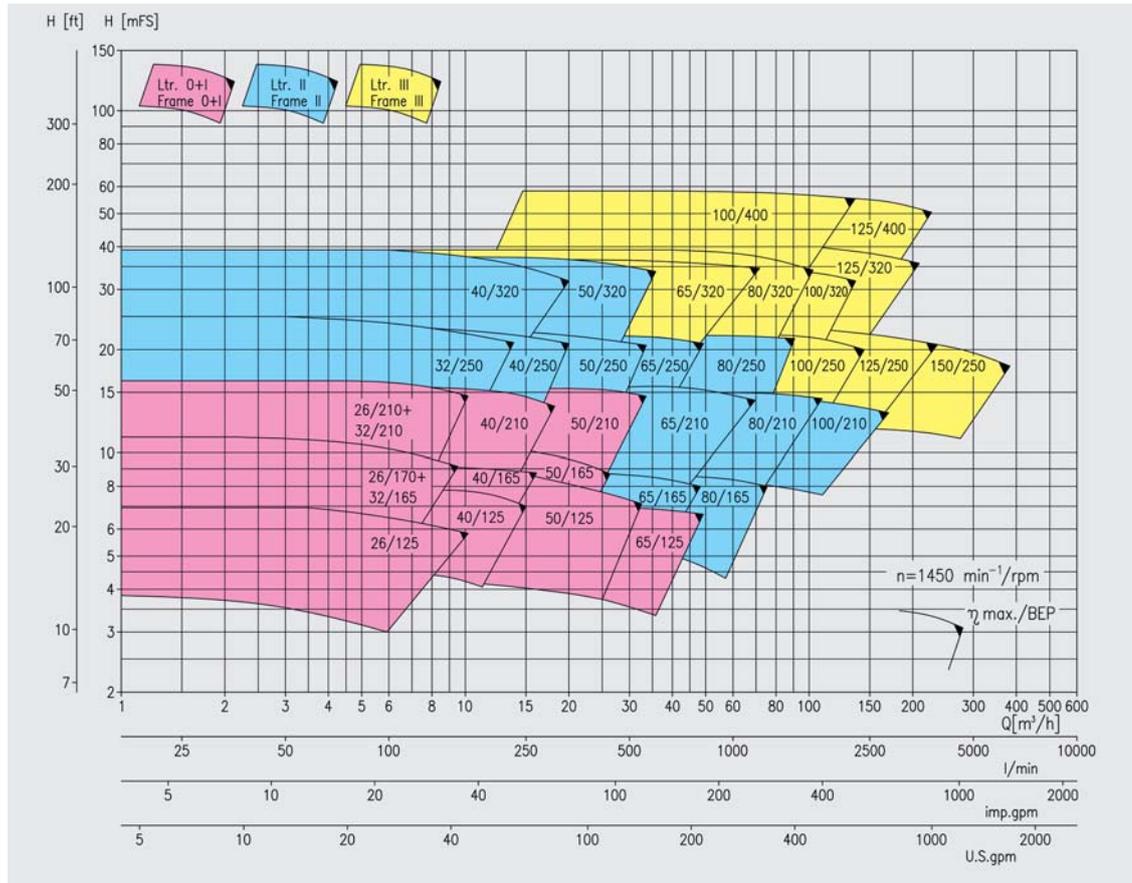
**Type NML o - with open impeller**



**Type NHM - hot water design**



## Performance range



Performance curves for the individual pump sizes, also for 1750 / 3500 rpm, with NPSH-values and power consumption, are available on request.

