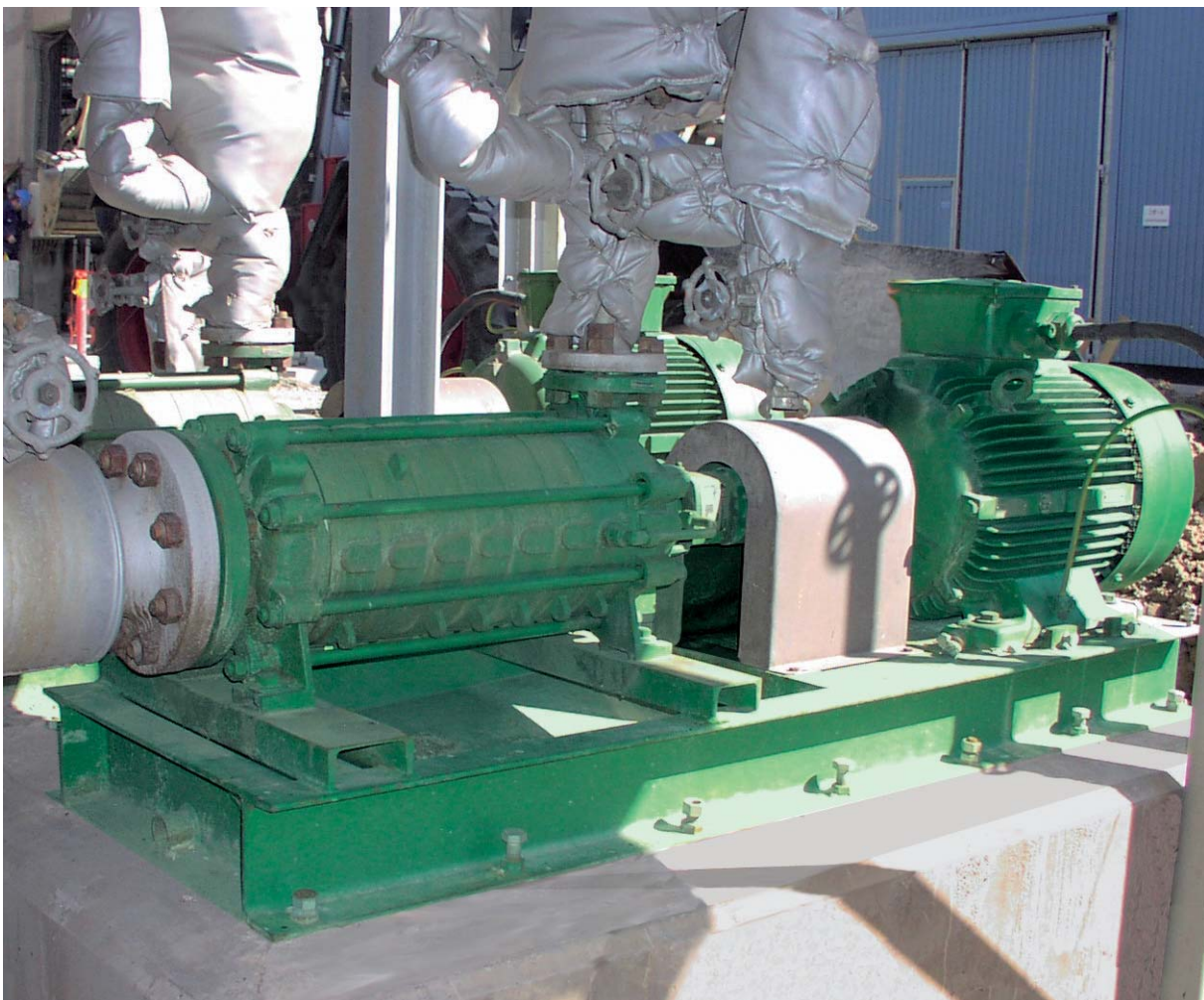




**DICKOW  
PUMPEN**



**Multistage Centrifugal Pumps  
with Shaft Sealing  
Type HZ / HZA / HZAR**

## General

DICKOW-pumps of series HZ/HZA are single- or multistage centrifugal pumps with shaft sealing.

## Application

HZ/HZA-pumps are applied in industrial and municipal water supply, for handling condensates, boiler feed water, fuels and for various other applications.

The HZA type of end suction design has been developed for operating conditions with low NPSHA-values. The wear resistant SiC-sleeve bearing on the suction side reduces the maintenance costs because there is no second mechanical seal required.

The performance range is subdivided to achieve best efficiencies for all service conditions.

With the possibility of applying several shaft sealing systems, HZ/HZA-pumps are suitable for handling almost all kinds of liquids which are free of abrasive solids and of suitable viscosity.

Max. capacity and differential head:  
50 Hz - appr. 500 m<sup>3</sup>/h and appr. 380 m  
60 Hz - appr. 500 m<sup>3</sup>/h and appr. 460 m  
(appr. 2200 gpm and 1500 ft)

The maximum operating temperature is 180°C, operating pressure is 40 bar.

## Hazardous area

Together with the required Ex-drive motors, the HZ/HZA-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.

## Design

HZ/HZA-pumps are multistage between bearings ring section pumps of radial split casing design.

## Suction and discharge casing

Suction and discharge casings are provided with sturdy casted feet for mounting on base plates or base frames. To obtain low NPSH-values, the suction casings of the HZ-pumps are designed volute shaped.

HZA-pumps have end suction design to obtain lowest possible NPSH-values.

## Wear rings

Suction, discharge and stage casings as well as diffusers are fitted with interchangeable wear rings as a standard.

Additional impeller and casing wear rings are available on request.

## Stage casings / diffusers

The impellers are centered inside of the diffusers. The diffusers are of multifold channel design converting part of the generated speed in the impeller into pressure. The guide vanes on the back side of the diffusers lead the pumped liquid to the impeller eye of the following stage.

## Impellers / NPSH-values

The closed impellers are hydraulically balanced by wear rings and balance holes in the impeller hubs. The ball bearings are only carrying the residual thrust loads. Further balancing devices are not required.

When handling volatile liquids such as condensate, hydrocarbons or liquified petroleum gases, partial vaporization of the pumped fluid and break down of the performance by cavitation should be avoided in any case.

The possibility of cavitation is reduced by applying pumps with low NPSH-Required values. Lowest NPSH-values are achieved with HZA-pumps using impeller with enlarged eye in the first stage and the end suction design of the casing. The HZ-pumps with vertical inlet have slightly higher NPSH-values. Reference is made to our pump performance curve.

## Ball bearing

The pump shaft is fixed axially in a generously dimensioned double row angular ball bearing. The ball bearing is placed directly on the pump shaft and secured by a shaft nut. The bearing can be regreased through grease nipples, available in the bearing bracket.

The type HZA is also available with oil lubricated bearing bracket, type HZAR. The bearings are rated for 25000 operating hours. The oil bath is protected against the atmosphere by a labyrinth seal. Oil level is controlled by a constant level oiler and an additional sight glass.

### Sleeve bearing

On suction side, the pump shaft is carried by a sleeve bearing unit. The stationary sleeve bearing and the rotating shaft sleeve are made of wear resistant and corrosion proof SiC material. With additional dry safe coating, the sleeve bearing can also tolerate dry running conditions. The shaft sleeve is fitted to the pump shaft by metallic tolerance rings to avoid thermal stresses.

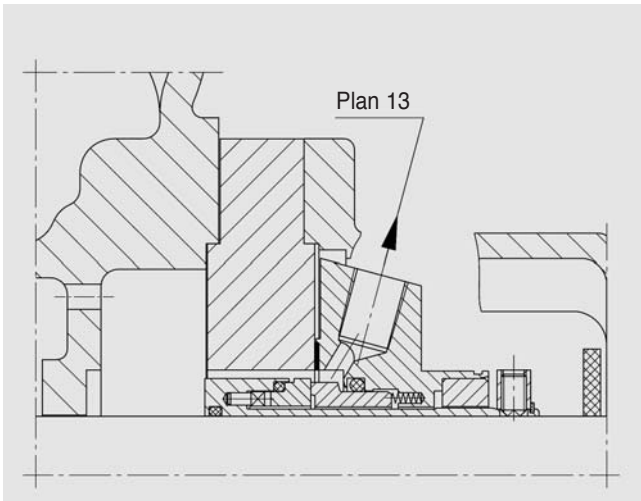
The bearing unit is located in the pumped liquid. To guarantee a stable fluid film in the gap between rotating shaft sleeve and stationary sleeve bearing, the bearing unit is pressurized from discharge side (Plan 13).

### Shaft sealing systems

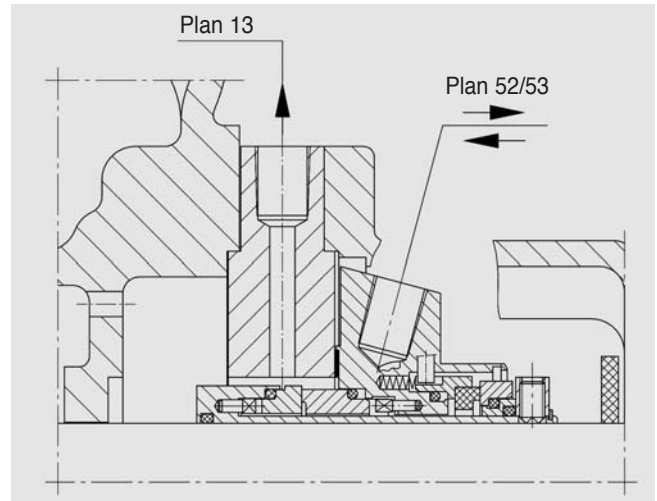
The seal chamber of the pumps is designed to accept all common mechanical seal brands and types. With the sleeve bearing provided on suction side, no second shaft sealing – typical design for multistage pumps – is required.

Below some examples of available seals are shown.

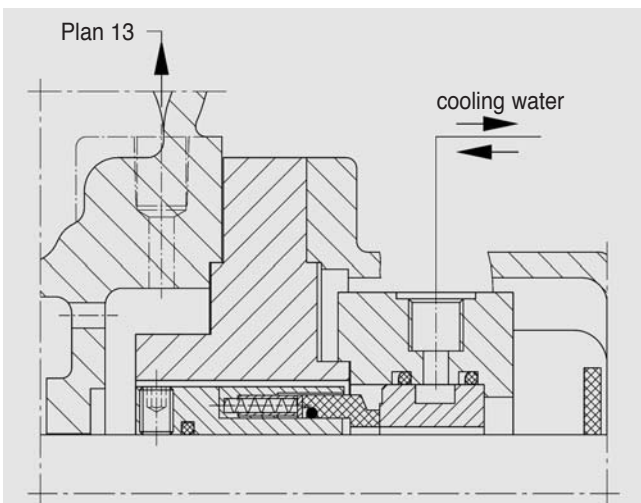
### Examples of available seals



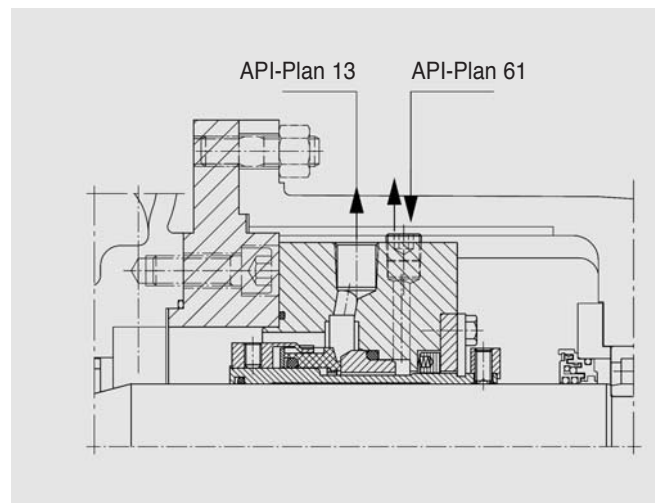
Single mechanical seal, cartridge design, to handle non-hazardous liquids.



Double mechanical seal, cartridge design, to handle hazardous liquids.

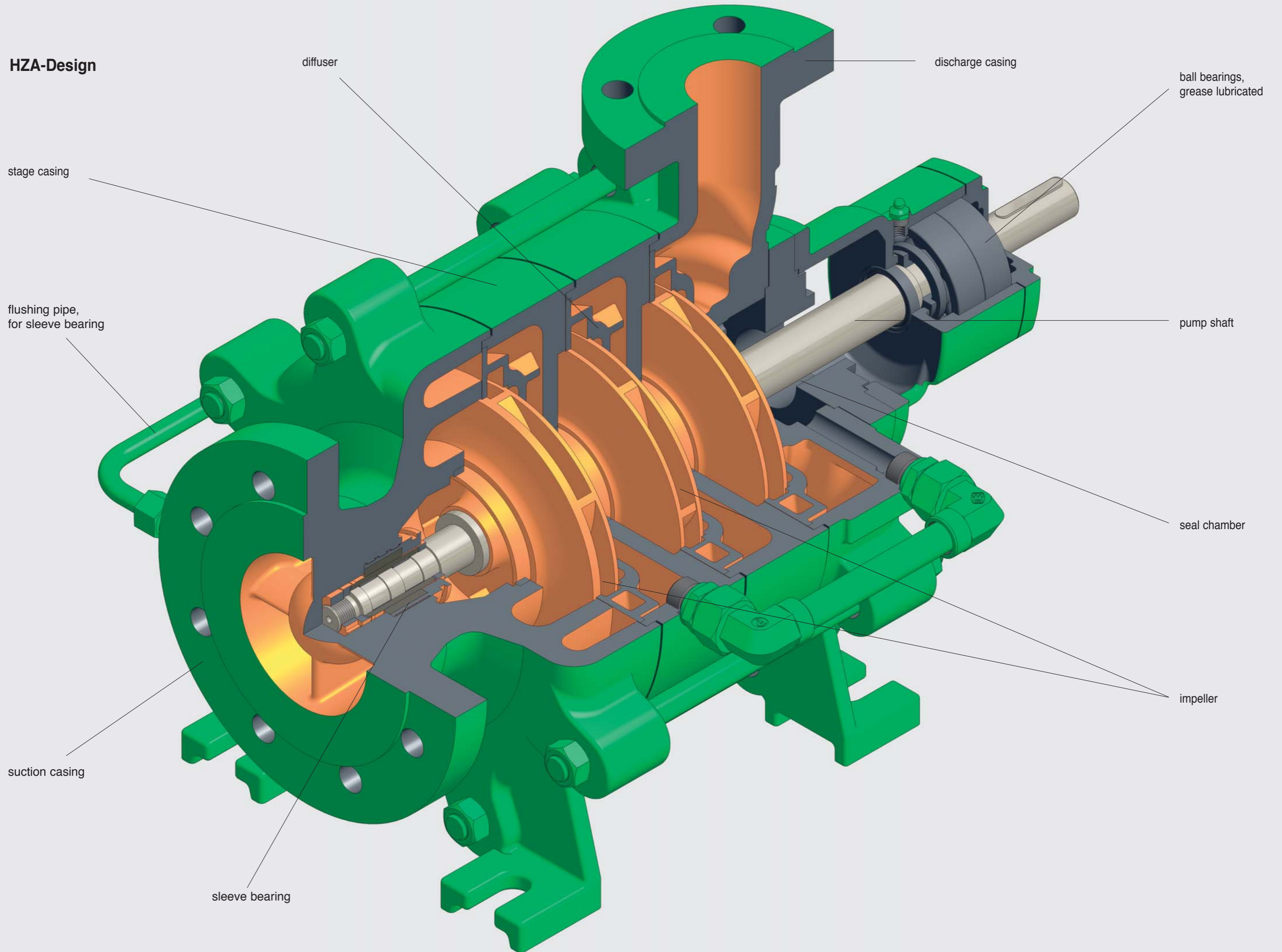


Single mechanical seal with water cooled seal ring, cartridge design, to handle hot water.

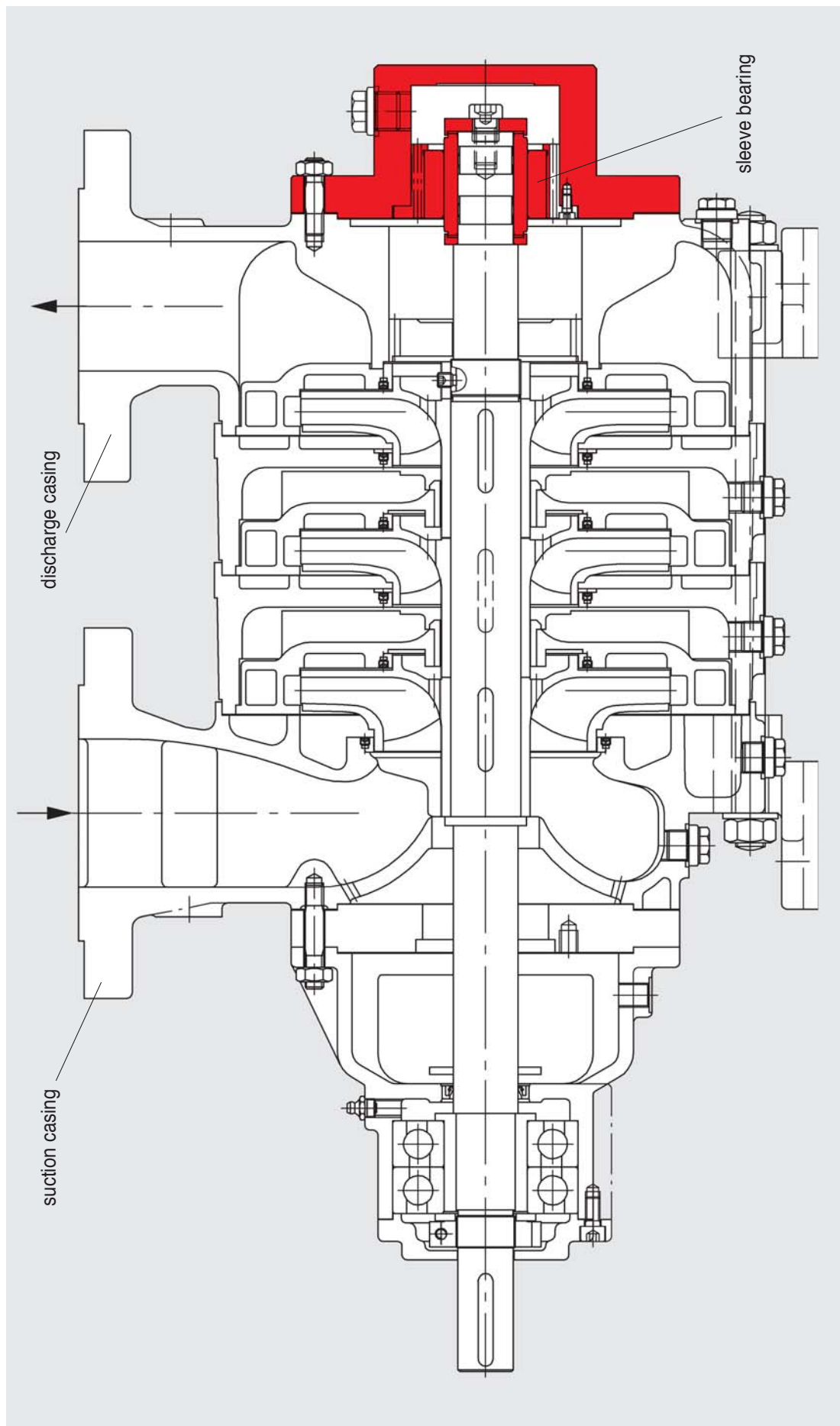


Single mechanical seal acc. to API 682, cartridge design, to handle non-hazardous liquids.

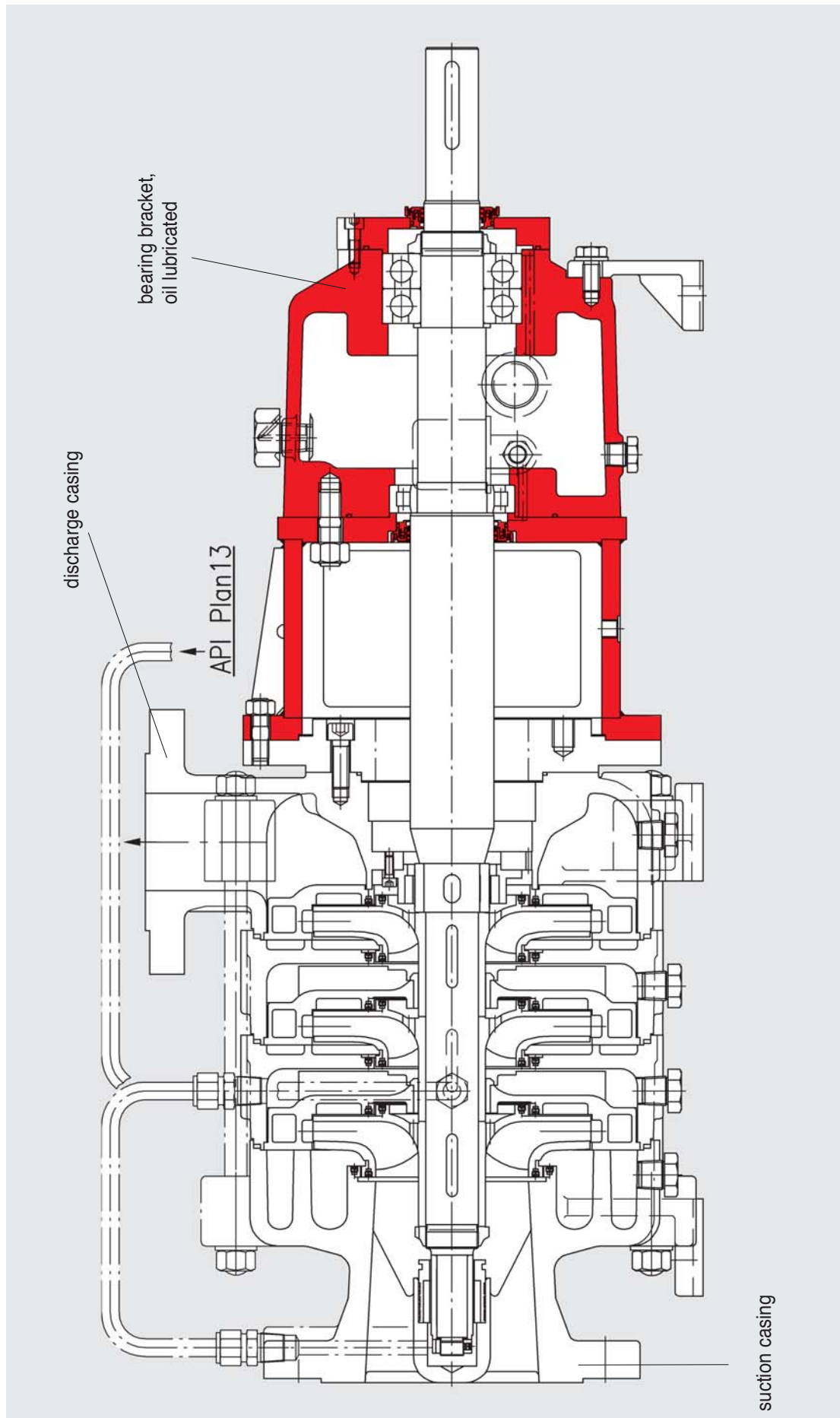
**HZA-Design**



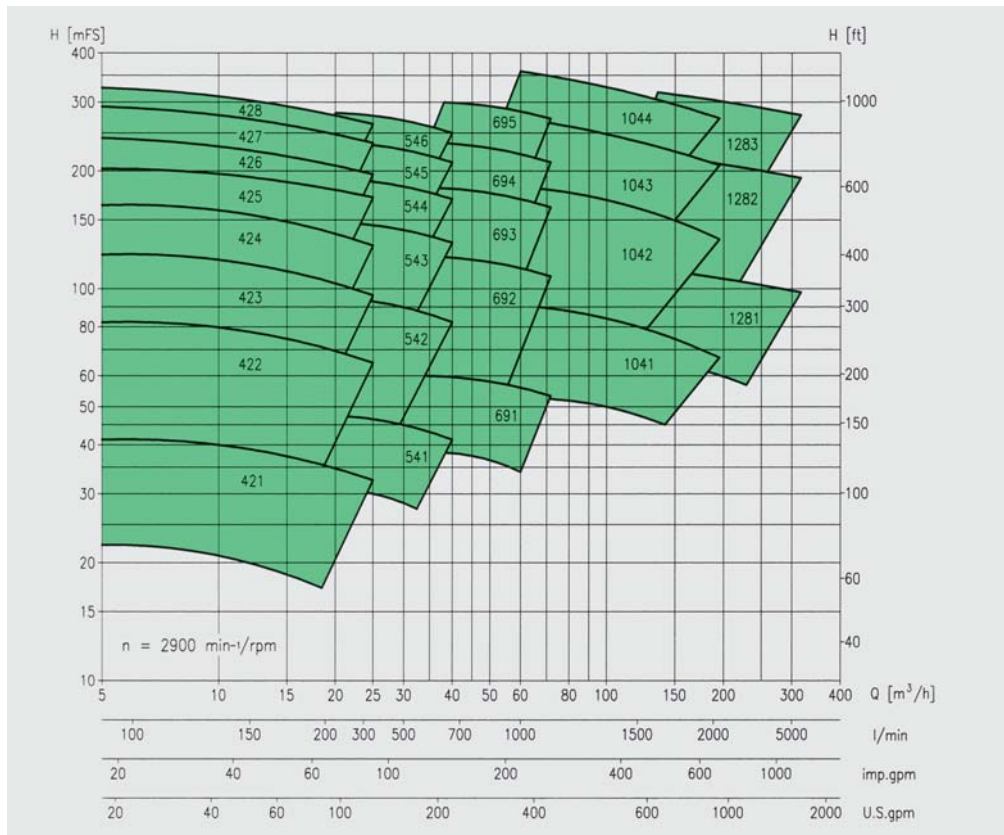
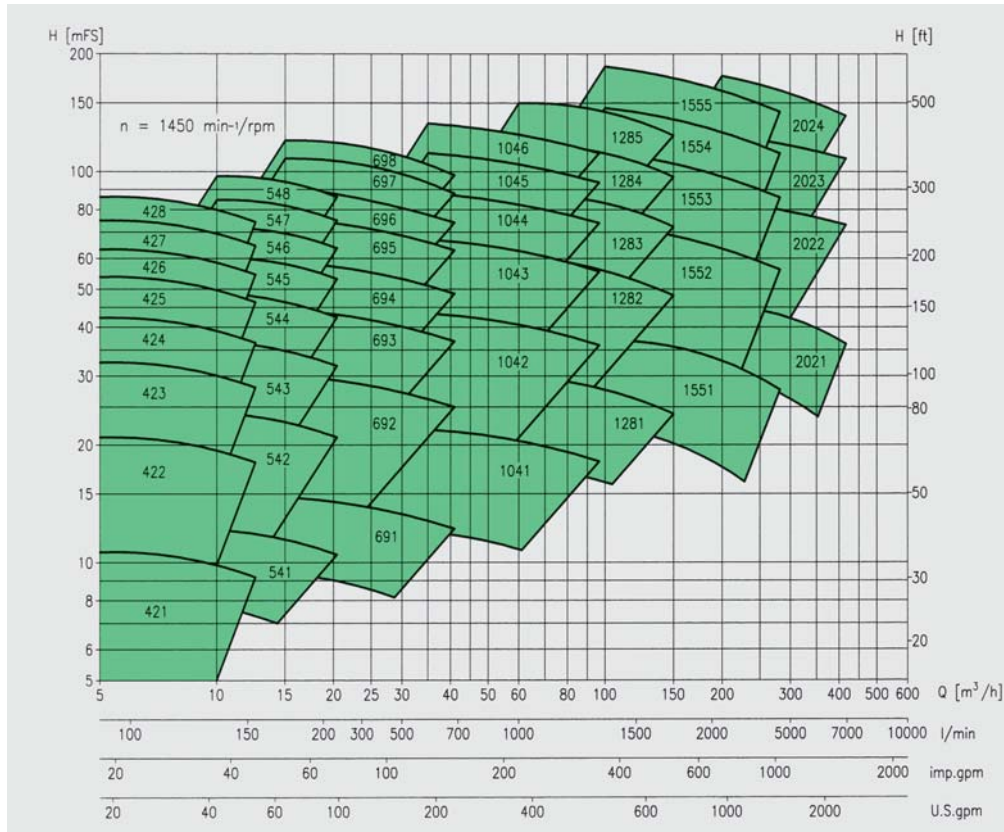
Optional designs  
Type HZ – with sleeve bearing on discharge side



Type HZAR – with oil lubricated bearing bracket



## Performance range



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

