

## HZW<sup>®</sup> 系列卧式化工轴流循环泵

HZW Series Horizontal Chemical Axial Flow Circulation Pump

参照ISO5199、ASMEB73.1标准

Conform to ISO5199/ASME B73.1 standard

输送介质温度 -40°C~250°C

Operation temperature -40°C~250°C

最大工作压力 1.6MPa

Max working pressure 1.6MPa

传动方式 直联、带传动

Driven type direct /belt

安装方式 落地、半悬挂、悬挂

Installation floor mount/semi-hanging/hanging mount



Since 1958

# 卧式化工轴流循环泵

Horizontal Chemical Axial Flow Circulation Pump

## 主要应用于 Application

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> 氯碱 | <input checked="" type="checkbox"/> Chlor-alkali industry  |
| <input checked="" type="checkbox"/> 制盐 | <input checked="" type="checkbox"/> Salt                   |
| <input checked="" type="checkbox"/> 环保 | <input checked="" type="checkbox"/> Environment protection |
| <input checked="" type="checkbox"/> 化工 | <input checked="" type="checkbox"/> Chemical industry      |
| <input checked="" type="checkbox"/> 冶金 | <input checked="" type="checkbox"/> Metallurgy             |
| <input checked="" type="checkbox"/> 发酵 | <input checked="" type="checkbox"/> Fermentation           |

## 用法 Usage

HZW型泵用于大流量，低扬程，物料蒸发浓缩结晶强制循环工艺，符合ISO5199标准。

HZW series axial flow pump is mainly used in evaporation, thickening, crystallization etc. compulsive circulation process, conform to ISO5199 standard.

法兰标准 Flange standard	EN 1092-1	ASME/ANSI B16.5
公称压力 Nominal pressure	PN10	class150

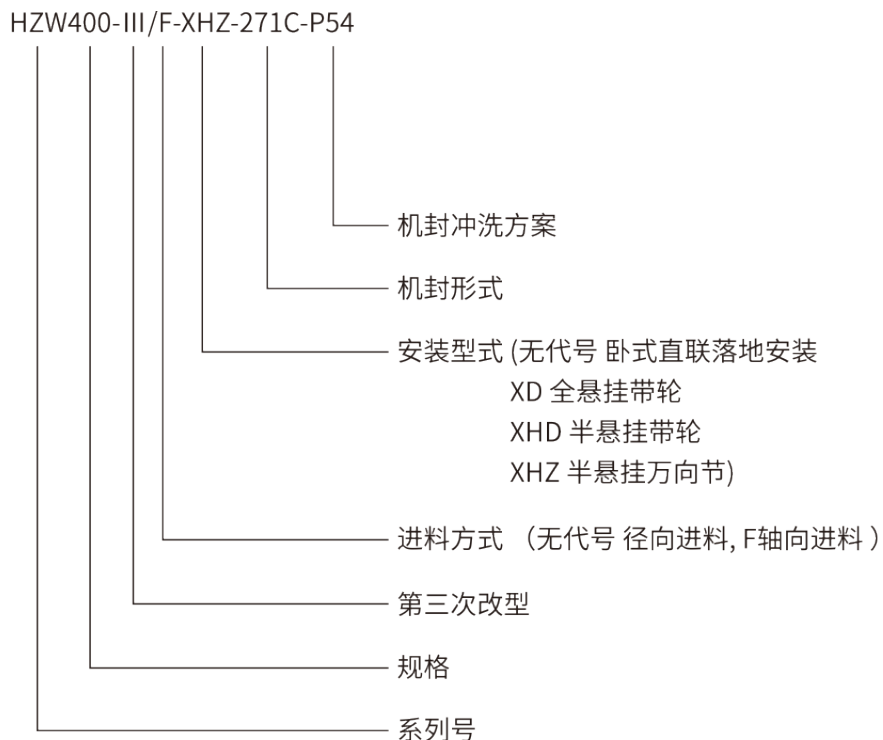
## 材料 Material

与介质接触的过流部件，材料符合ASTM标准，常用材料如下：

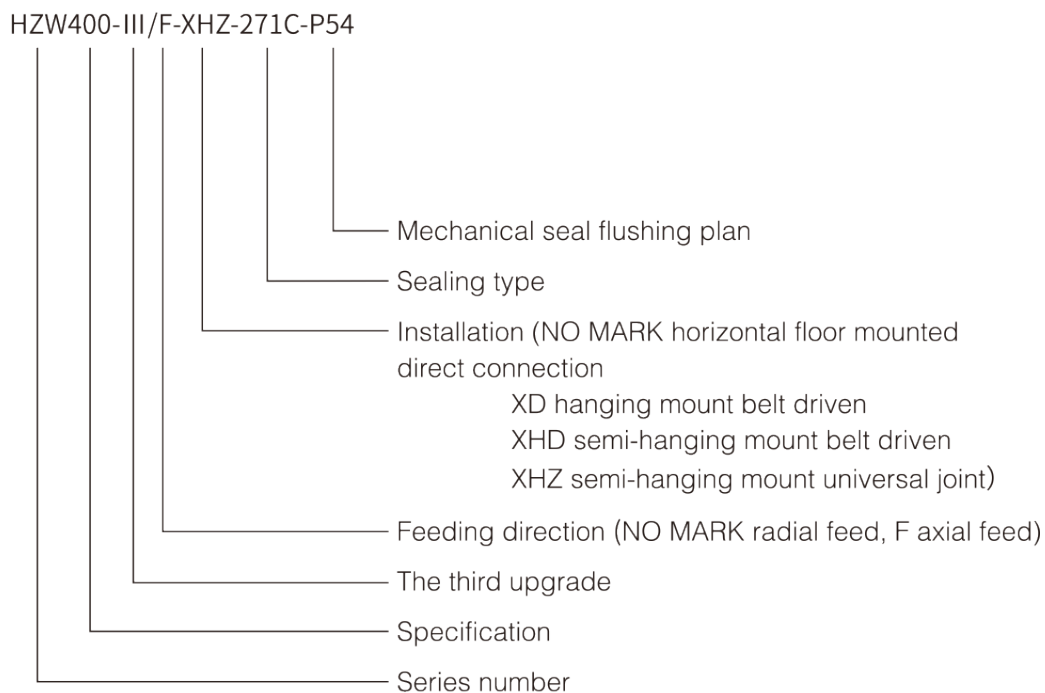
Wetted parts comply to ASTM standard, common material as follows:

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> 不锈钢 | <input checked="" type="checkbox"/> Stainless steel |
| <input checked="" type="checkbox"/> 钛材  | <input checked="" type="checkbox"/> Titanium        |

## 泵型号说明



## Pump model instruction



## 泵运行数据 Operating data

流量 (500~25000) m<sup>3</sup>/h  
扬程 (2.5~6) m  
温度 (-40~250) °C

Flow rate (500~25000)m<sup>3</sup>/h  
Total heads (2.5~6)m  
Operating temperature (-40~250)°C

## 现场标准条件

Standard conditions  
at site

- 连续运行过程中的相对湿度不大于90%
- 环境温度不高于40°C，不低于4°C
- 海拔高度不超过1000m

当场地条件与上述规定不符时必须加以说明。

- Relative humidity during continuous operation max. 90%
- Ambient temperature max.40°C, min.4°C
- Permissible altitude up to 1000m above sea level

Deviations from the site conditions specified herein must already be disclosed in the inquiry.

## 流量

Flow rate

轴流泵的允许运行范围取决于：

- 叶轮叶片角度
- 转速
- 振动
- 介质特性
- 轴承与轴载荷
- 工况进出口管路阻力与泵汽蚀余量

适用工作范围在性能曲线和泵数据表中表示。

Flow rate: The permissible operating range of axial flow pump depends on:

- The blade angle of impeller
- Speed
- Vibration
- Medium characteristics
- Bearing and shaft load
- The import and export pipeline resistance of the working condition and NPSH

The operating range applicable to the pump is indicated in the individual characteristic curves and the pump data sheet.

## 出口压力

Outlet pressure

轴流泵出口压力取决于：

- 泵入口压力
- 选定叶轮叶片角度的最大扬程
- 泵送介质的密度

The outlet pressure of axial flow pump depends on:

- The pump inlet pressure
- The maximum total head of the selected blade angle
- The density of the medium to be pumped

## 压力和温度限制 Pressure and temperature limitations

泵体和泵盖最大工作压力取决于工作温度：

The maximum casing operating pressure of the casing and the casing cover depends on the operating temperature:

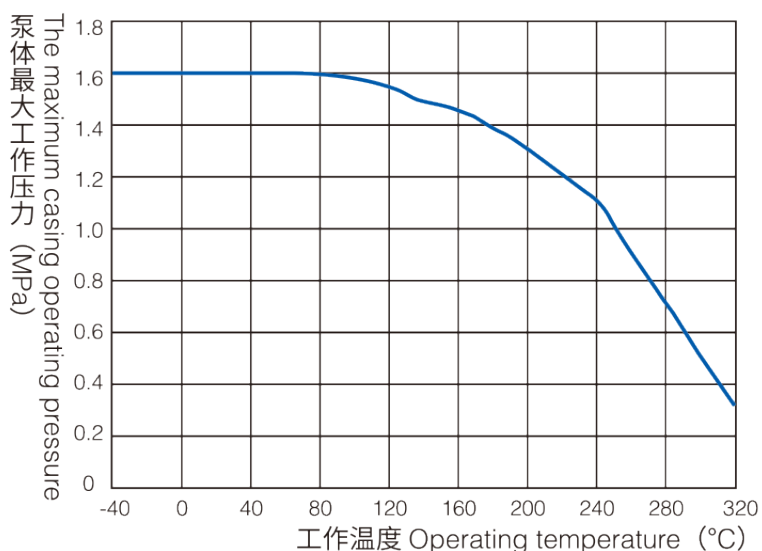


图1：泵最大允许工作压力

Fig.1: maximum permissible casing operating pressure pall wc.

## 转速和 叶轮直径限制 Speed and impeller diameter limitations

泵轴运行速度不能超过叶轮最大允许周转速度，这相当于26m/s。

The operating speed of the pump shaft must not exceed the maximum permissible peripheral speed of the impeller, which corresponds to 26m/s.

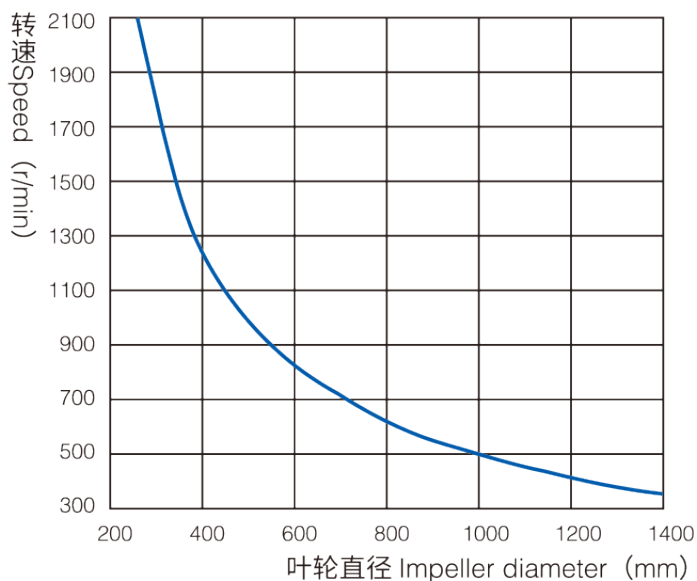


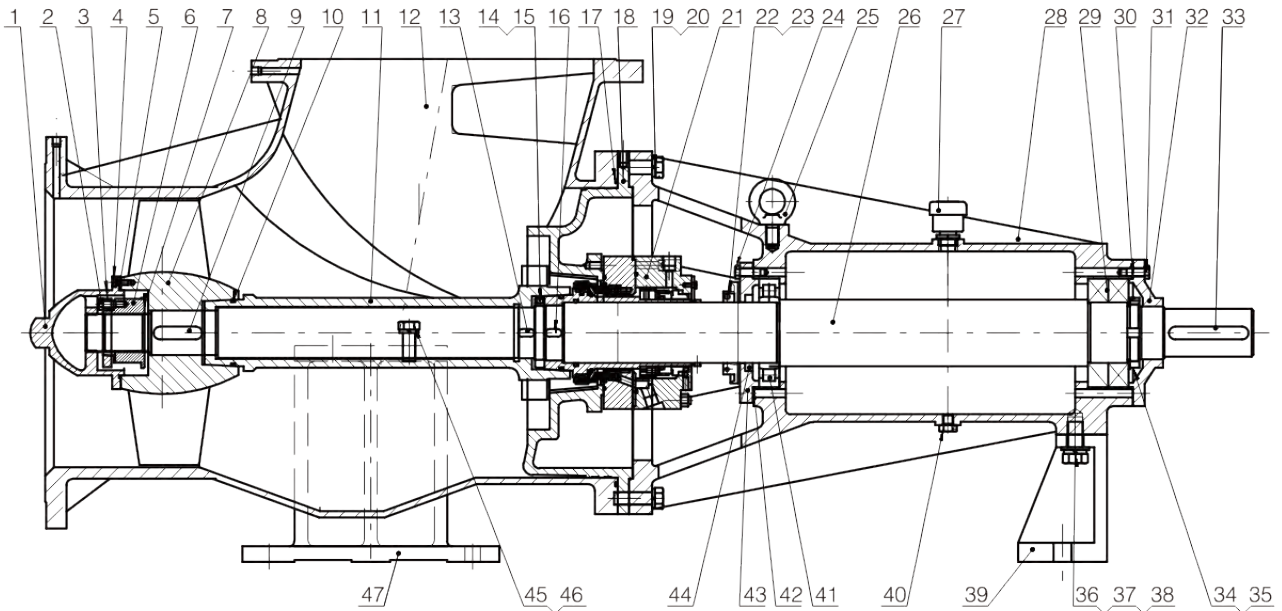
图2：最大允许泵轴运行速度

Fig.2: maximum permissible shaft speed

# 泵的结构 STRUCTURE

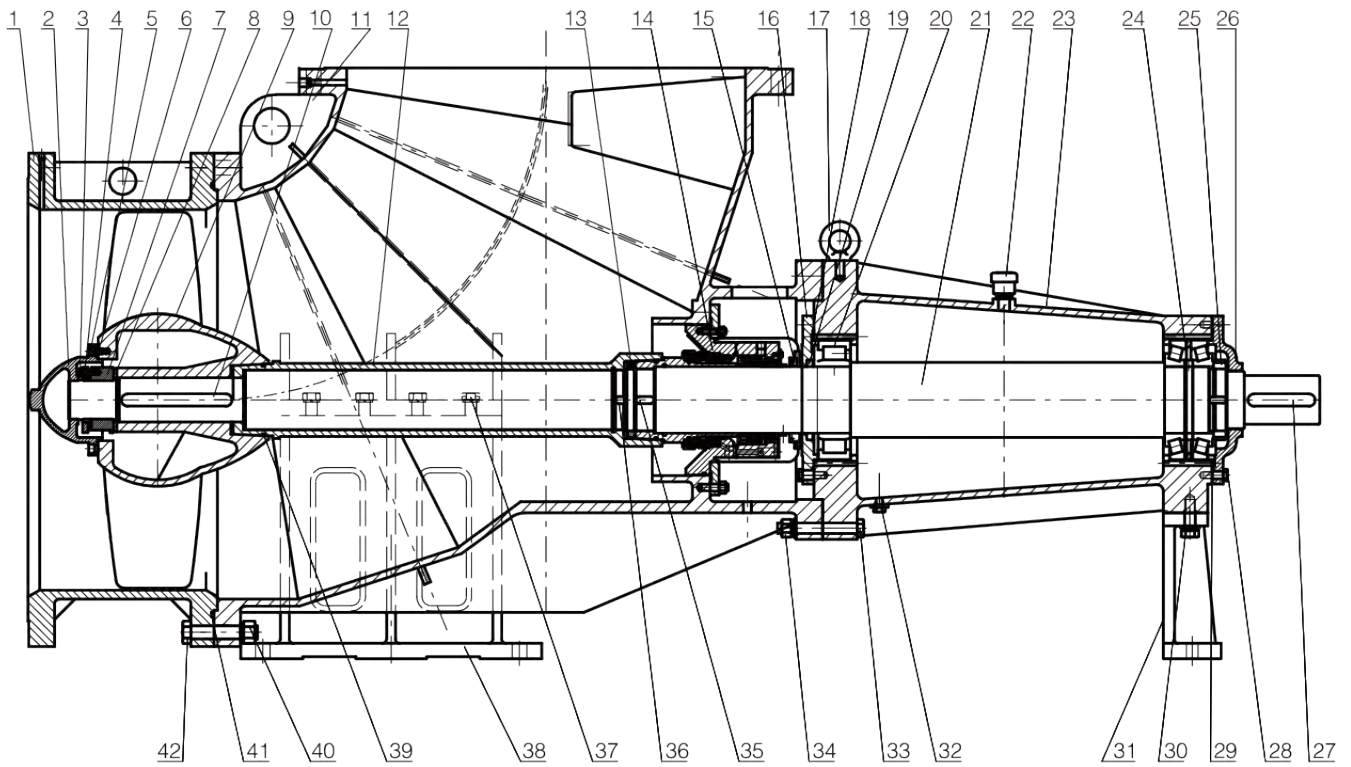
HZW化工轴流泵是卧式单级单吸悬臂式离心泵，中心线支撑，700口径及以下为总成后抽出式。技术要求符合ISO5199标准。

HZW chemical axial flow pump is horizontal single suction, single stage, cantilever type of pump, centerline mounted, 700mm diameter and below is back drawing type which conforms to ISO5199.



■ HZW轴流泵结构示意图（700及以下规格）

1	导水锥 / hub cap	17	O型圈 / O-ring	33	键 / key
2	防转螺钉 / lock bolt	18	法兰体 / body flange	34	小圆螺母 / small round nut
3	止退螺母锁圈 / stop nut ring	19	螺栓 / bolt	35	止动垫圈 / tab washer
4	防转螺钉 / lock bolt	20	弹簧垫圈 / spring washer	36	螺栓 / bolt
5	O型圈 / O-ring	21	机械密封 / mechanical seal	37	弹簧垫圈 / spring washer
6	止退螺母 / stop nut	22	甩水盘 / dumped dish	38	平垫圈 / flat washer
7	止退片 / stop nut gasket	23	内六角圆柱头螺钉 / bolt	39	支架 / bracket
8	叶轮 / impeller	24	螺栓 / bolt	40	管堵 / pipe plug
9	叶轮键 / impeller key	25	吊环螺钉 / lifting bolt	41	轴承 / bearing
10	O型圈 / O-ring	26	轴 / shaft	42	前盖垫 / front cover gasket
11	叶轮轴套 / impeller sleeve	27	加油孔盖 / oil air vent	43	轴承前盖 / front bearing gland
12	泵体 / pump casing	28	悬架体 / frame	44	油封 / skeleton oil seal
13	键 / Key	29	轴承 / bearing	45	螺栓 / bolt
14	止退螺母 / stop nut	30	后盖垫 / back cover gasket	46	弹簧垫圈 / spring gasket
15	紧定螺钉 / lock bolt	31	螺栓 / bolt	47	支座 / support
16	键 / key	32	轴承后盖 / back bearing cover		



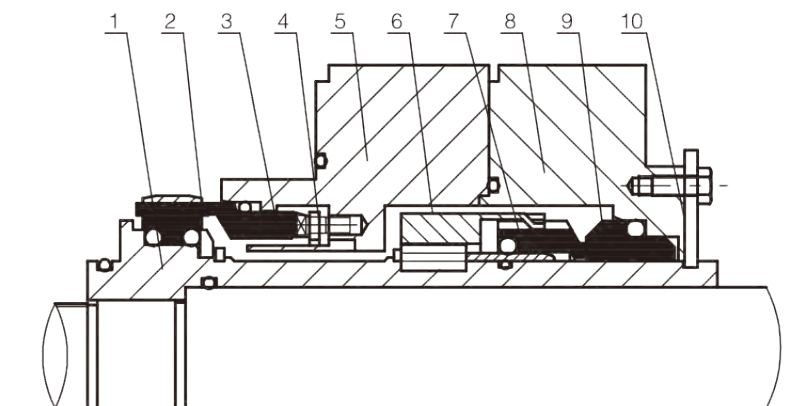
■ HZW轴流泵结构示意图（800及以上规格）

1 泵体口环 / casing choma	15 甩水盘 / dumped dish	29 O型圈 / O-ring
2 导水锥 / hub cap	16 轴承前盖 / front bearing gland	30 螺栓 / bolt
3 防转螺钉 / lock bolt	17 吊环 / lifting ring	31 支架 / bracket
4 止退螺母锁圈 / stop nut ring	18 O型圈 / O-ring	32 管堵 / pipe plug
5 防转螺钉 / lock bolt	19 骨架油封 / skeleton oil seal	33 螺栓 / bolt
6 O型圈 / O-ring	20 轴承 / bearing	34 螺母 / nut
7 止退螺母 / stop nut	21 轴 / shaft	35 键 / key
8 止退片 / stop nut gasket	22 气孔盖 / air vent cover	36 键 / key
9 叶轮 / impeller	23 轴承座 / bearing base	37 螺栓 / bolt
10 叶轮键 / impeller key	24 轴承 / bearing	38 支座 / support
11 泵体 / pump casing	25 小圆螺母 / small round nut	39 O型圈 / O-ring
12 叶轮轴套 / impeller sleeve	26 轴承后盖 / back bearing cover	40 螺母 / Nut
13 止退螺母 / stop nut	27 键 / key	41 O型圈 / O-ring
14 机械密封 / mechanical seal	28 螺栓 / bolt	42 螺栓 / bolt

## 泵的密封 STRUCTURE

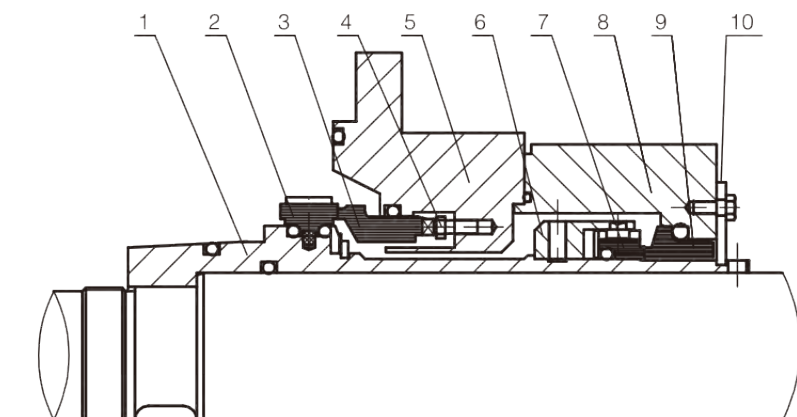
泵的密封采用本公司专业设计的 271C/H75、271C/M74机封。

The shaft seal of pump is professional designed 271C/H75, 271C/M74 seal.



■ 271C/H75

1 机封轴套 / shaft sleeve	6 传动座 / driving seat
2 前动环 / dynamic ring	7 后动环 / dynamic ring
3 前静环 / static ring	8 机封压盖 / gland
4 推环 / thrust ring	9 后静环 / static ring
5 前压盖 / gland	10 偏心挡板 / eccentric baffle



■ 271C/M74

1 机封轴套 / shaft sleeve	6 传动座 / driving seat
2 前动环 / dynamic ring	7 后动环 / dynamic ring
3 前静环 / static ring	8 机封压盖 / gland
4 推环 / thrust ring	9 后静环 / static ring
5 前压盖 / gland	10 偏心挡板 / eccentric baffle



# 结构优化设计，操作安全性高 维修方便，使用寿命长

## *Optimized design, safe operation Easy maintenance, long running life*

HZW700及以下规格总成采用后抽出式，检修时无需拆卸进出口管道，灵活方便，安装简易。

产品零件高度互换，降低用户备件库存。

大泵叶轮重，设计为拆分式泵体与口环，检修方便。

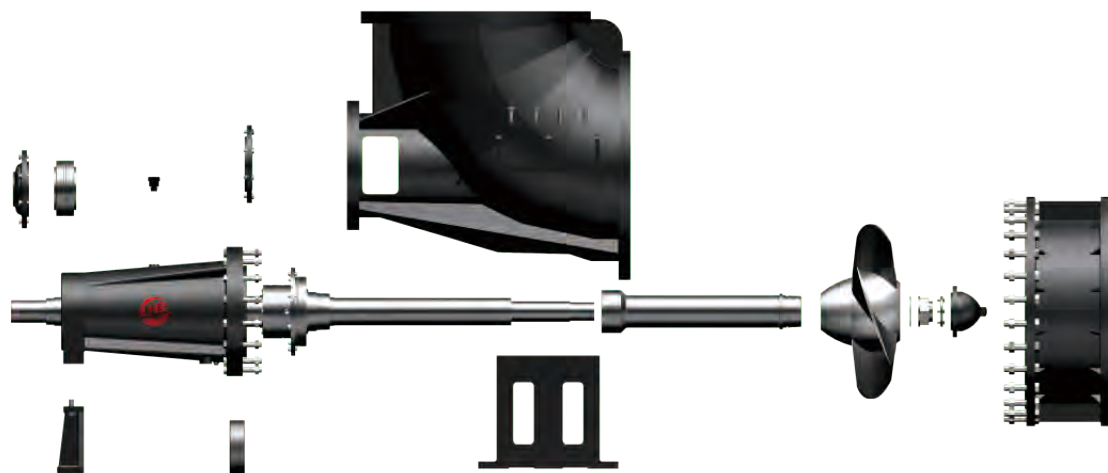
低速型轴流泵设计，对结晶体介质无破损，汽蚀余量低，运行平稳，确保泵长周期可靠运转。

HZW700 and below pumps are back drawing struction, no need to disassemble the suction and discharge pipe line during maintenance, convenient and easy installation.

Highly interchangeable in produce parts reduce stocks of spare part for customers.

Separable casing and choma, make large impeller disassembly easy.

Low speed design, no damage to crystal medium, lower cavitation, higher efficiency, and smooth operation, to ensure reliable running long time.



# 结构优化设计，操作安全性高

## 维修方便，使用寿命长

加粗重型轴，提高轴的强度和刚度，配对轴承设计，提高承载能力及运行稳定性，降低维修费用及运行成本。

大空间轴承箱及油池提高泵整体刚性，无需外加油杯，降低润滑油温度，延长轴承运行寿命。

泵体优化弯管式流道设计，水力性能好；焊接结构，材料致密性好，加厚叶轮室壁厚，延长泵体使用寿命。

特殊设计导叶吸水室，速度场均匀，水力损失少，减少液流周向预旋，降低水头损失，提高效率。

双向平衡集装式锥形腔机械密封，无需调整压缩量，改善冲洗、冷却润滑条件、延长机械密封使用寿命。

机械密封加热冷却可变，输送介质适应性广，提高泵型的通用性。

Heavy paired duty shaft and bearing ensure large load capacity and stable operation, saving maintenance and operation cost.

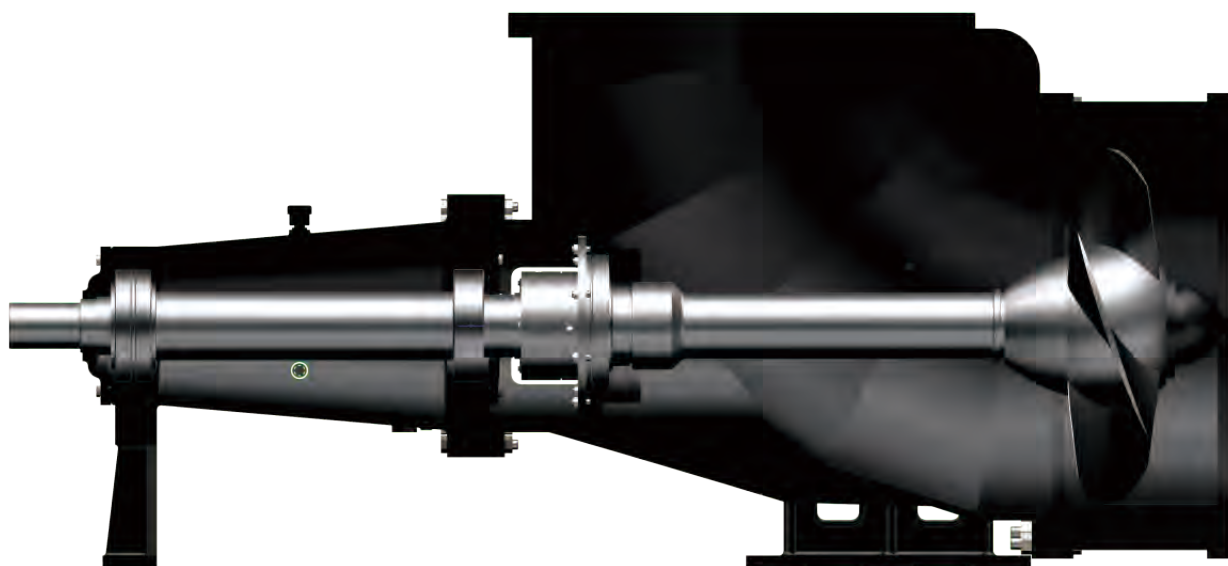
Large bearing box and oil tank, no need for external oil cup which improve rigidity of pump, reduce the temperature raise of lubrication oil, and extend service life of bearing.

Optimized bent-pipe flow passage design, good hydraulic performance, thickened impeller chamber and casing with welding structure.

Straight tapered suction chamber, uniform velocity field, small hydraulic loss, suction chamber and guide plate, reduce the amount of liquid flow circumferential rotation, reduce head loss and improve efficiency.

Bidirectional balanced mounted conical cavity seal, no need to adjust the amount of compression, improve flushing, cooling, lubrication conditions and extend service life of mechanical seal.

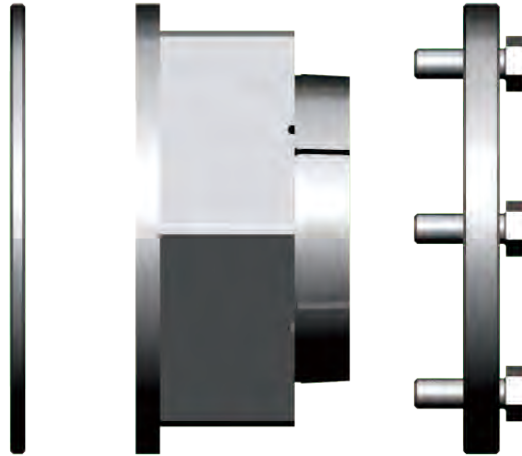
Optional heating or cooling system of mechanical seal improve the adaptability of pump.



# Optimized design, safe operation Easy maintenance, long running life

专用防螺母松脱技术，提高泵使用可靠性，消除叶轮螺母松脱危险。

Patented design of self-locking impeller nut eliminate risk of release improve reliability.



叶轮叶片优化设计，适合蒸发浓缩工艺特点，轴功率曲线平坦，高效范围宽，使用范围大，降低运行成本。

Optimized impeller for evaporation and concentration process, flat shaft power curve and wide range of high efficiency reduce the operating cost.

可调式叶片，适应要求不同工况，扩大使用范围并可高效运行，提高泵的通用性。

Adjustable blade for different working requirements, expand the application range and improve the versatility of pump.



## 泵的安装方式

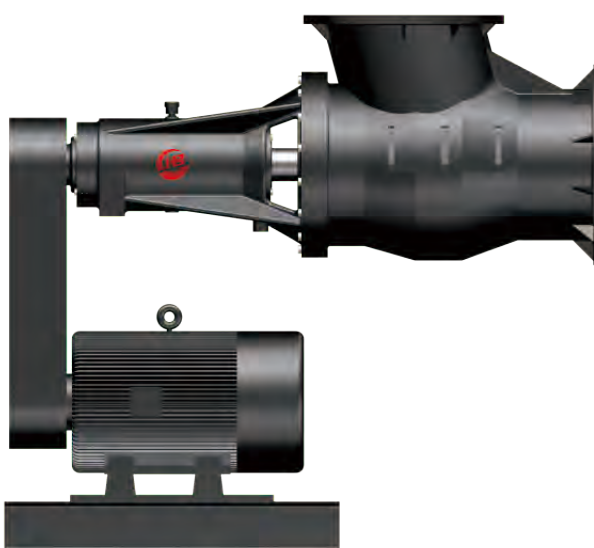
泵的安装方式有全悬挂、半悬挂、卧式落地可供用户选择，传动方式有皮带轮传动、万向节传动、联轴器传动几种方式方便用户选择。

Installation styles could be hanging type, semi-hanging or floor mount, driven type has belt, universal joint or coupling transmission to choose.



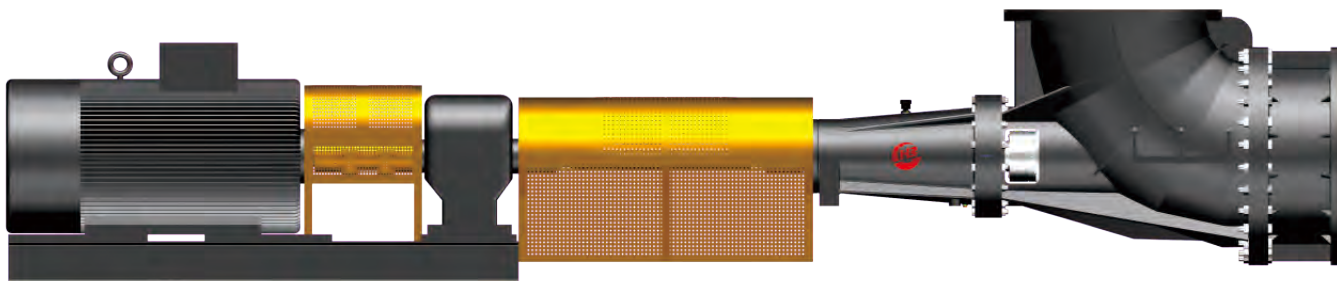
全悬挂方式：泵与电机用三角带传动，整泵不需要基础连接。

Hanging type: pump is hanging and driven by motor through belt, no need any basis.



半悬挂、皮带轮传动方式：泵不用基础，电机装在基础上，泵与电机用三角带传动

Semi-hanging and belt transmission type: pump is hanging and driven by belt, motor is mounted on basis.



半悬挂、万向节传动方式：泵不用基础，电机装  
基础上，泵与电机用万向节传动

Semi-hanging and universal joint transmission  
type: pump is hanging and driven by motor  
through universal joint, motor is mounted on  
basis.



卧式落地方式：泵与电机（减速机）共有底座或泵  
与电机单独底座；传动方式可根据用户需要选择联  
轴器传动或皮带轮传动。

Floor mount type: pump and motor(reducer) could  
be mounted on common base or separate base,  
driven type could be coupling type or belt type,  
based on customer's requirement.

# 合同试验， 保证泵性能的满足

本公司依据合同和标准执行以下测试：

## 静水压试验

试验基于常温清水，压力为基本设计压力的1.5倍，保压10分钟。

## 性能试验

依据ISO9906标准测量，试验精度II类，验收类2B。

## NPSH试验

依据ISO5199标准测量。

## 振动试验

依据ISO5199进行振动试验，泵的振动烈度级别控制在A级。

## 温度测量

在工作温度下，对轴承温升进行测量，测量的结果记录在案。

## 材料检验

零部件材质检验，铸件无损检测，保证整机可靠性。

*Order-related tests,  
confirm the performance of pump conform*

The company carries out the tests below as standard:

#### Hydrostatic pressure test

Hydrostatic pressure test based on clean water at ambient temperature, test pressure is 1.5 times on design pressure.

#### Performance test

Measurement according to ISO9906, accuracy class II, acceptance class 2B.

#### NPSH test

According to ISO5199 standard.

#### Vibration test

According to ISO5199, vibration lightness level is controlled at class A.

#### Temperature test

Test the temperature rise of bearing, and keep records.

#### Raw material inspect

Spare and casting parts inspection, to ensure the reliability of the whole machinery.



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## 订货须知

### Notice to Order

(一) 配用电机的额定输出功率与泵的额定轴功率之比应按照下列的百分数：

轴功率	百分比%
22kW以下	125%
(22~75)kW	115%
75kW以上	115%

The ratio of the motor's rated power to the pump's shaft power should be the following:

The shaft power of the pump	the ratio (%)
Below 22kW	125%
(22-75)kW	115%
Above 75kW	115%

(二) 订货时按《泵工作条件》详细填写。

When ordering, please fill in the table "Working conditions of the pump".

(三) 保修条款只有在使用本公司原厂备件时才有法律效力。

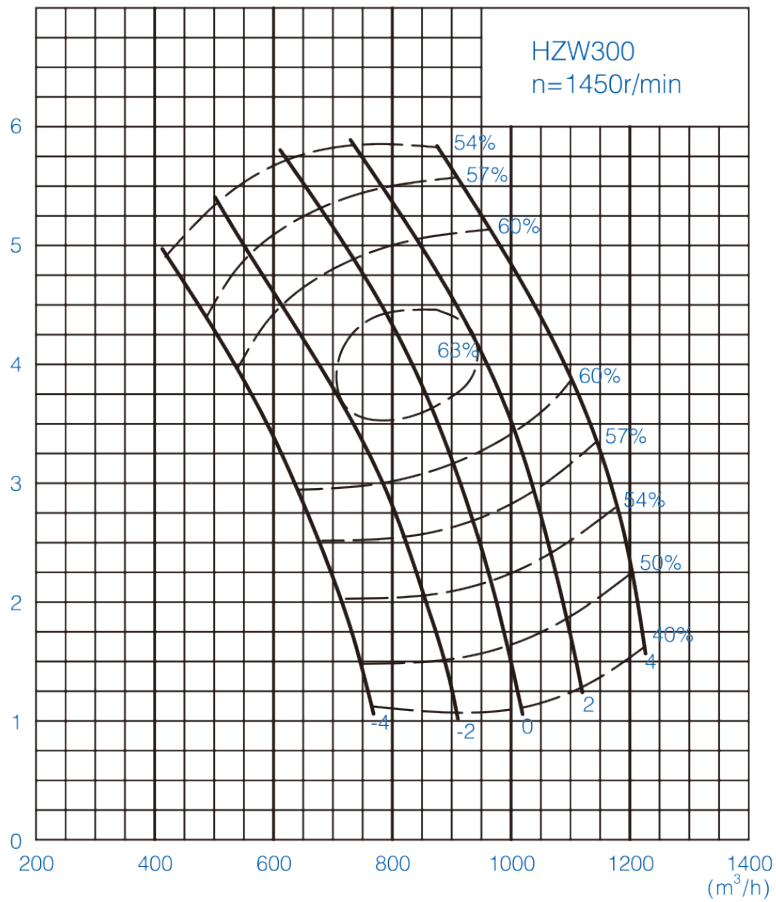
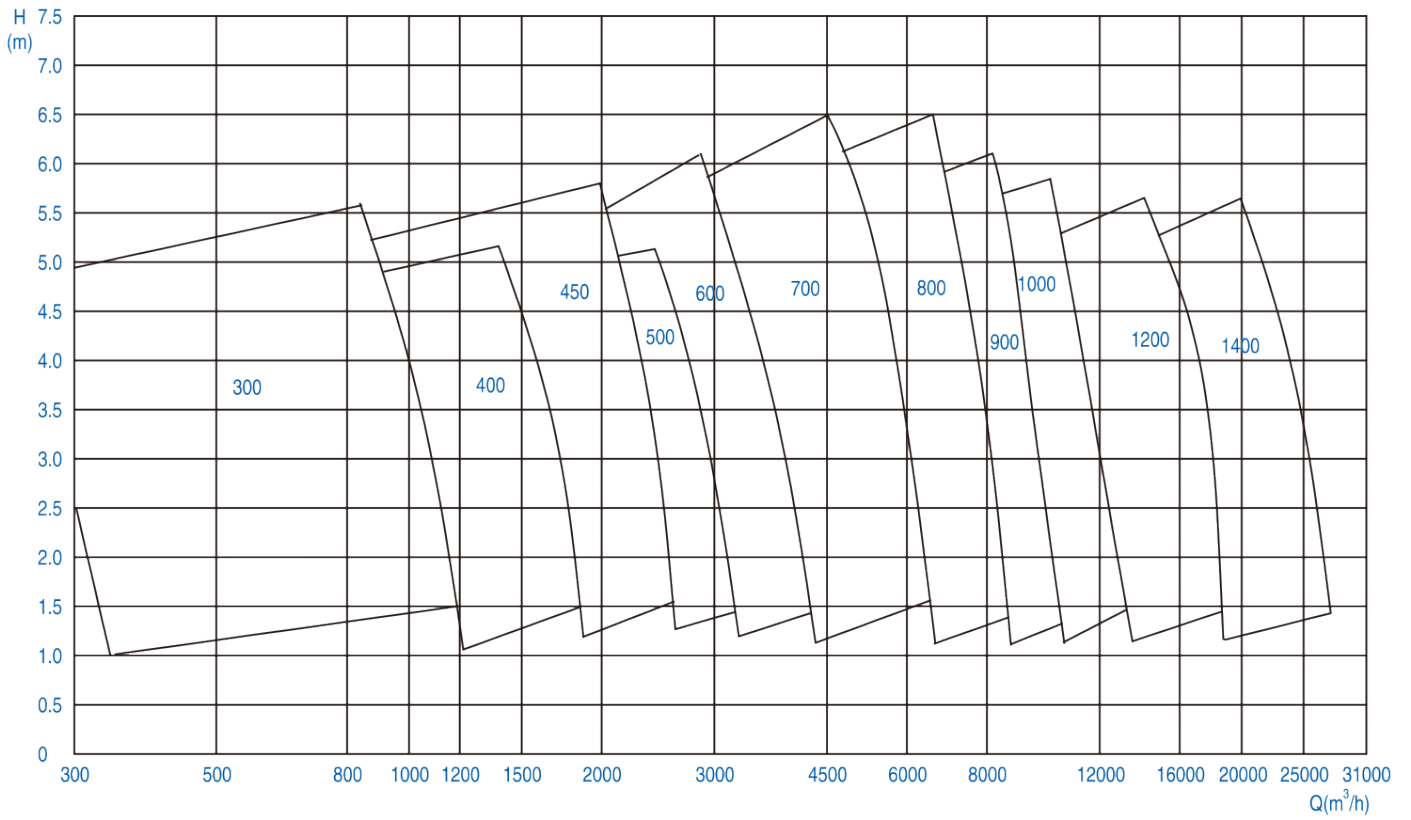
Warranty is valid only when genuine spare parts of our company are used.

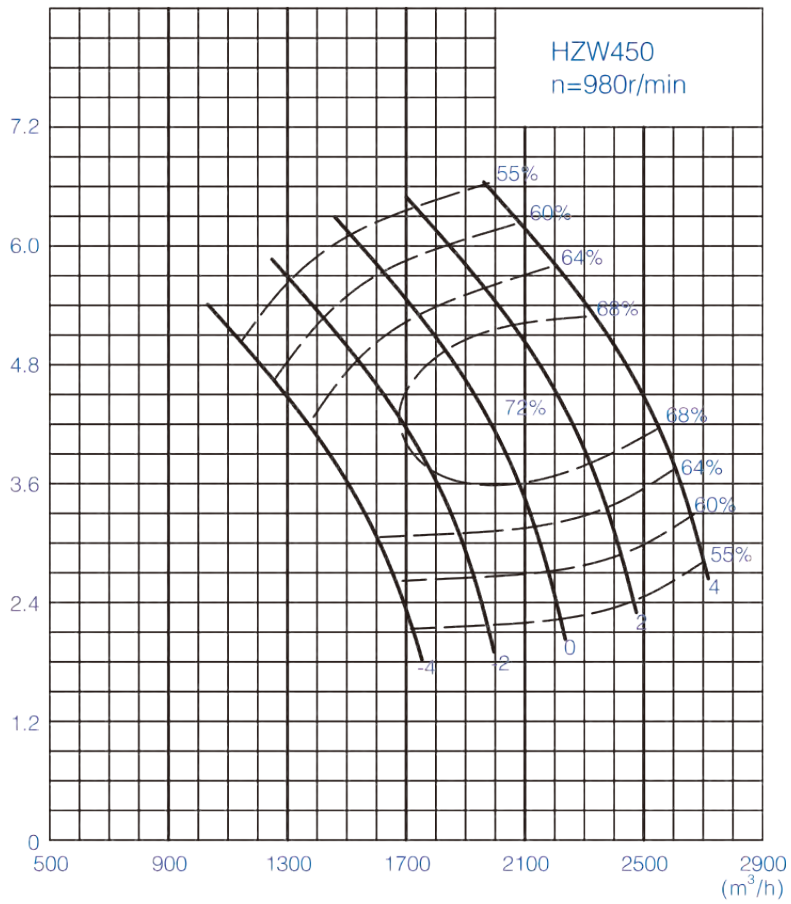
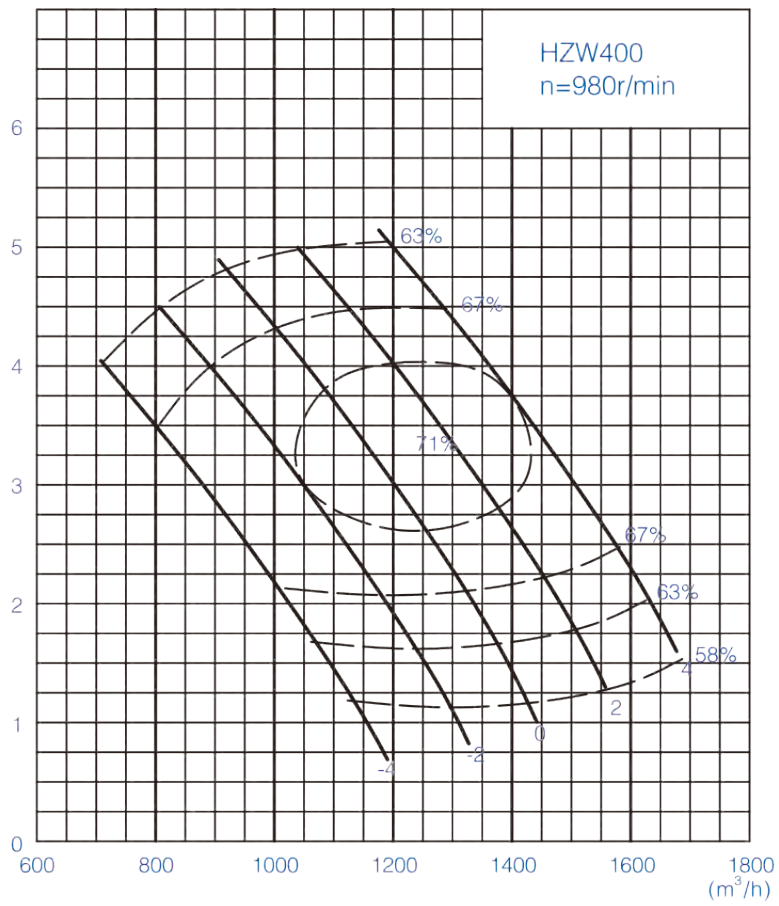


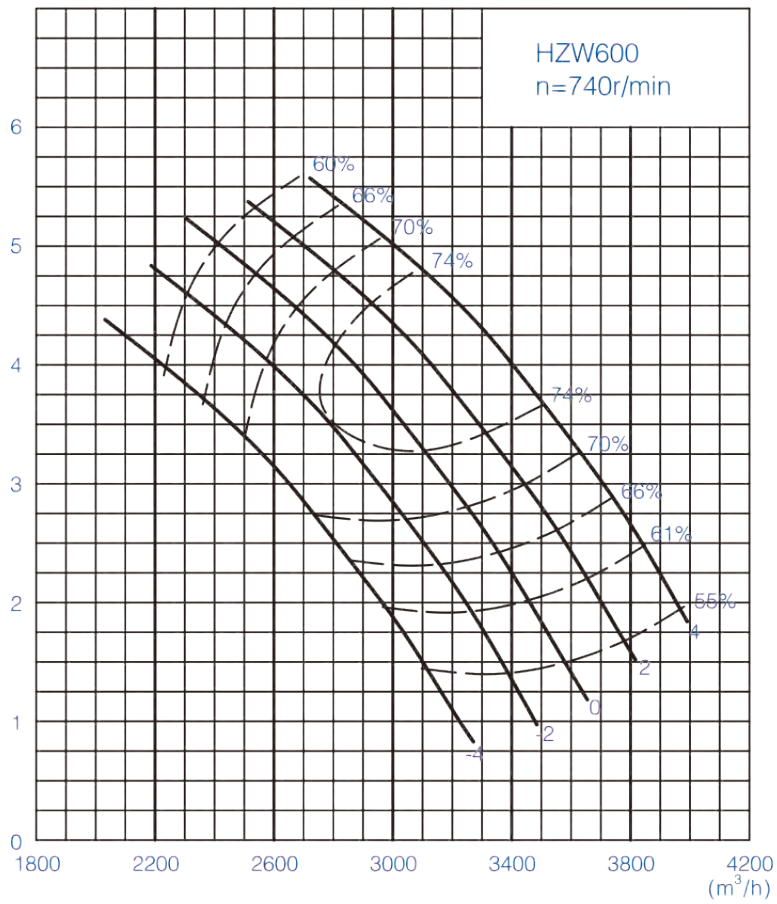
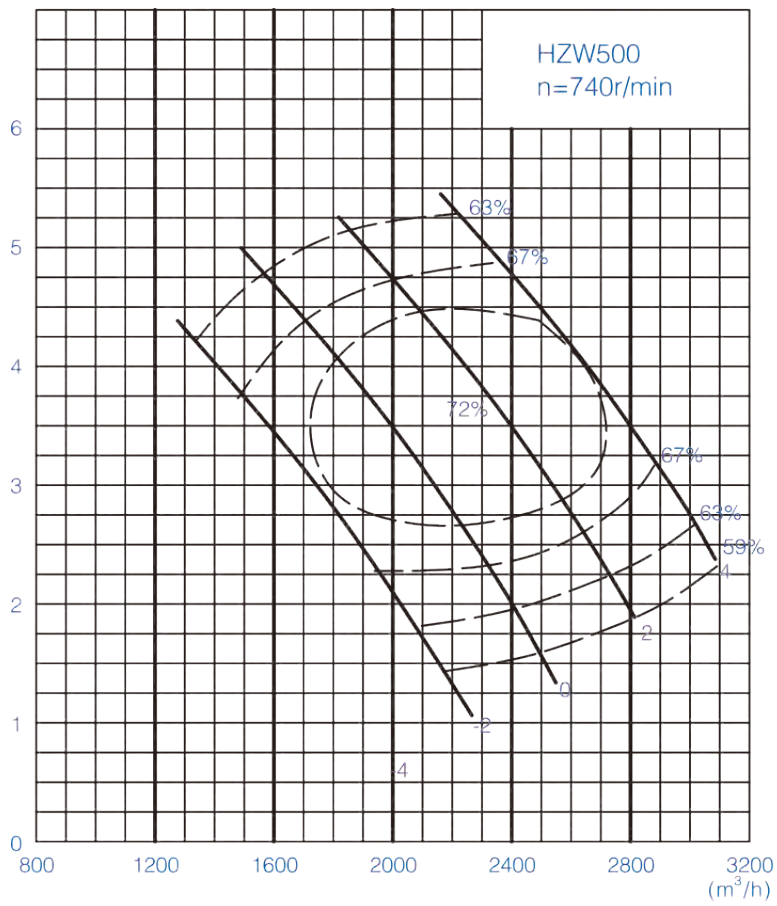
## 泵工作条件 Working Conditions of the Pump

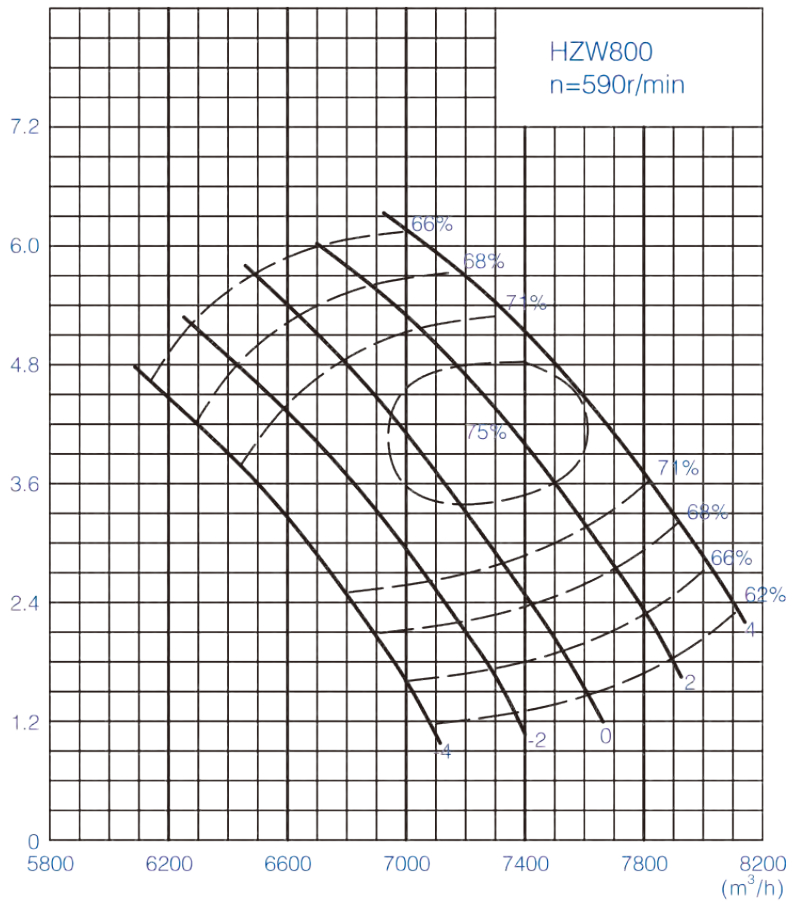
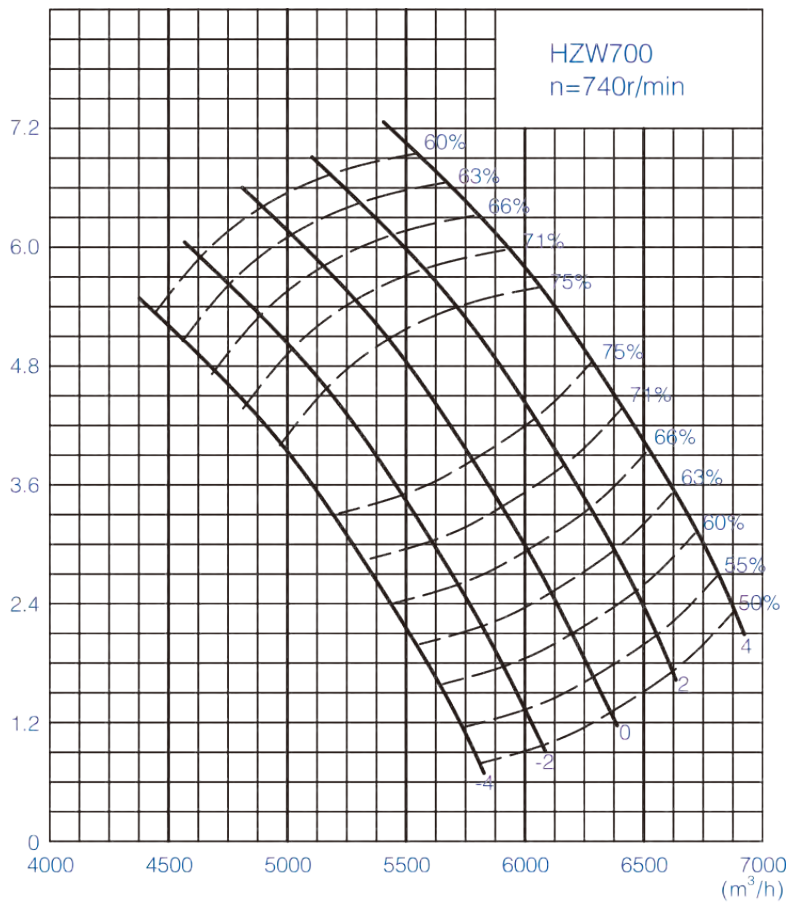
工作条件 Operating conditions				输送介质 Pumped fluid					
流量 Capacity	m <sup>3</sup> /h	最大 Max	额定 Rated	最小 Min	介质 1 Media	最大比例 Max ratio	最小比例 Min ratio	%	
扬程 Total head	m	最大 Max	额定 Rated	最小 Min	介质 2 Media	最大比例 Max ratio	最小比例 Min ratio	%	
进口压力 Suction pressure	MPa	最大 Max	额定 Rated	最小 Min	介质 3 Media	最大比例 Max ratio	最小比例 Min ratio	%	
出口压力 Discharge pressure	MPa	最大 Max	额定 Rated	最小 Min	固体 Solid	含量 (湿基) Content (humidity) Wt %			
必需汽蚀余量 NPSH required	m					粒度直径 Particle diameter mm			
操作条件 Operating conditions	连续 Continuous		间断 Intermittent		介质特性 Medium characteristics	腐蚀 Corrosion	磨(冲)蚀 Abrasion		
<b>现场资料和公用事业条件 Spot conditions</b>					泵送温度 Operation temp	°C	最大 Max	正常 Normal	最小 Min
<b>位置 Position</b>					密度 Density	在操作温度下 Under operating temp kg/m <sup>3</sup>			
室内 Indoor	有采暖 With heating		有遮棚 With shield		粘度 Viscosity	在操作温度下 Under operating temp mPa.s			
室外 Outdoor	无采暖 Without heating		无遮棚 Without shield		汽化压力 Vapor pressure	在操作温度下 Under operating temp MPa(A)			
必须的防寒气候条件 Requirement of Cold-proof					比热 Specific heat		kcal/kg°C		
必须的耐湿热气候条件 Requirement of Damp-heat-proof					氯化物浓度 Concentration of chloride		PPM		
<b>现场资料 Site condition</b>					H2S(硫化氢)浓度 Concentration of H2S		PPM		
海拔高度 Altitude				m	危险程度 Hazardous liquid	易燃 Flammable	易爆 Explosive	有毒 Toxic	
大气压力 Atmosphere pressure				kPa	挥发特性 Volatile characteristics	易 Easy	不易 Not easy		
相对湿度 Relative humidity	最大 Max	最小 Min			%	沸点 Boiling point	°C		
环境温度范围 Ambient temp. Range				°C		结晶温度 Crystallization temp	°C		
异常条件 Abnormal conditions	粉尘 Dust	烟雾 Smoking				熔点 Smelting point	°C		
危险区域 Electrical classification	类 Class	级 Division	组 Group		闪点 Point of flammability		°C		
电源 Power source	伏特 Volt	赫兹 Hz	相 Phase		相溶的液体 Compatible liquid				
冷却水 Cooling water	温度 Temp	压力 °C Pressure		MPa	相溶的橡胶 Compatible rubber				
	氯化物浓度 Chloride concentration			PPM	临界温度 Critical temp		°C		
仪表压缩空气 Compressed air of instrument	最大/最小压力 Max / Min. Pressure			/MPa	临界压力 Critical pressure		MPa		
传动方式 Driving way					其它 Other				
联轴器 Coupling type									

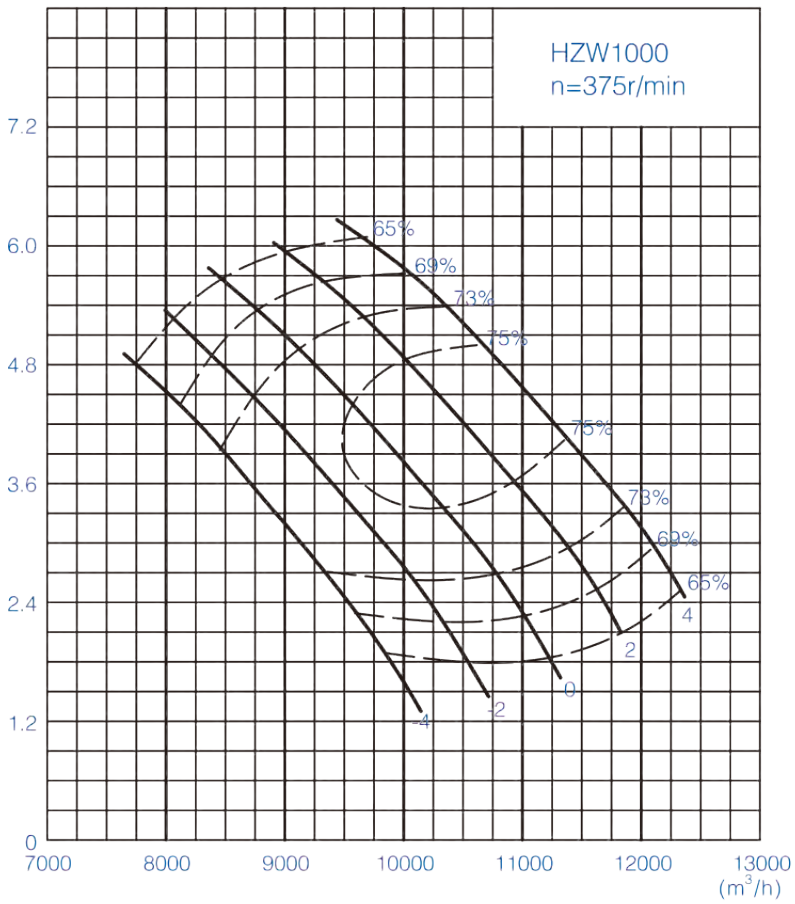
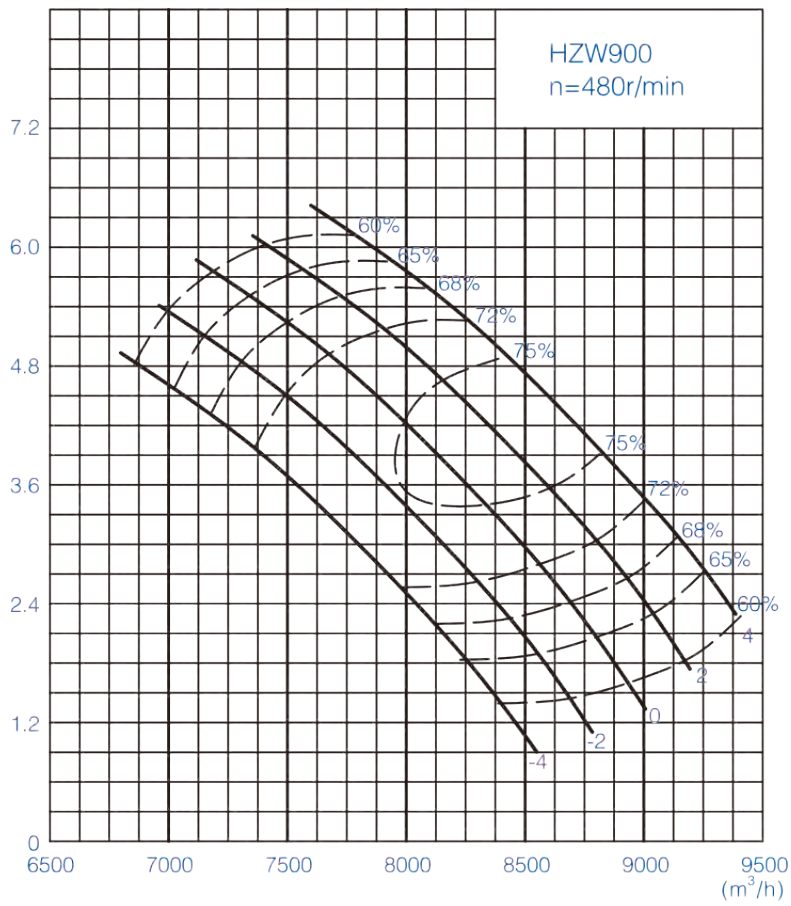
# 性能范围 *Performance range*

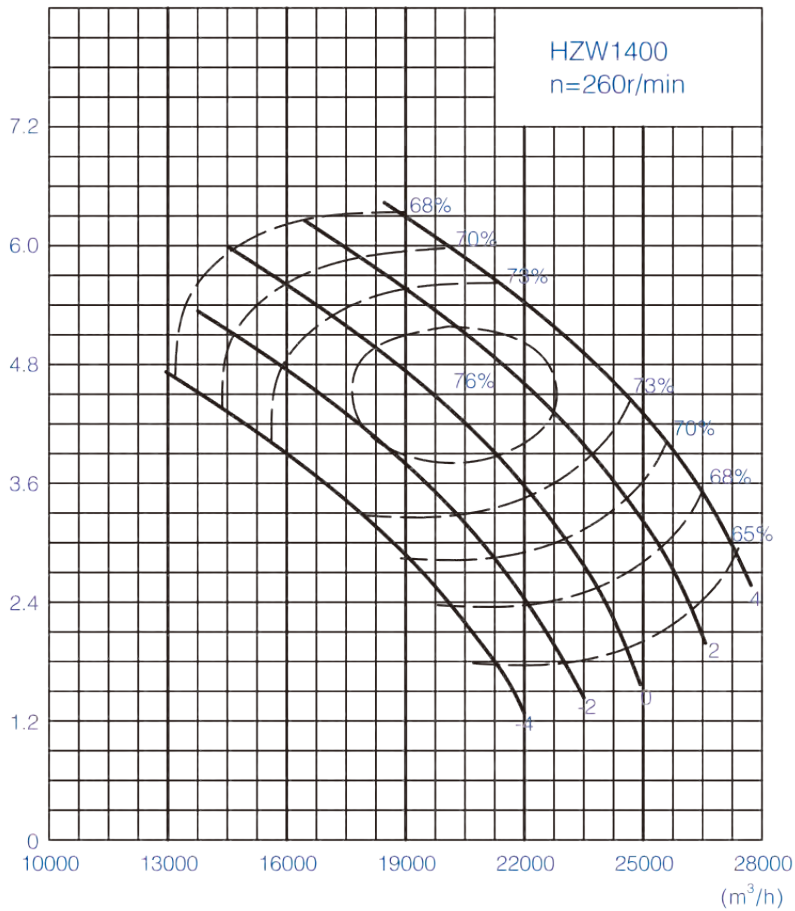
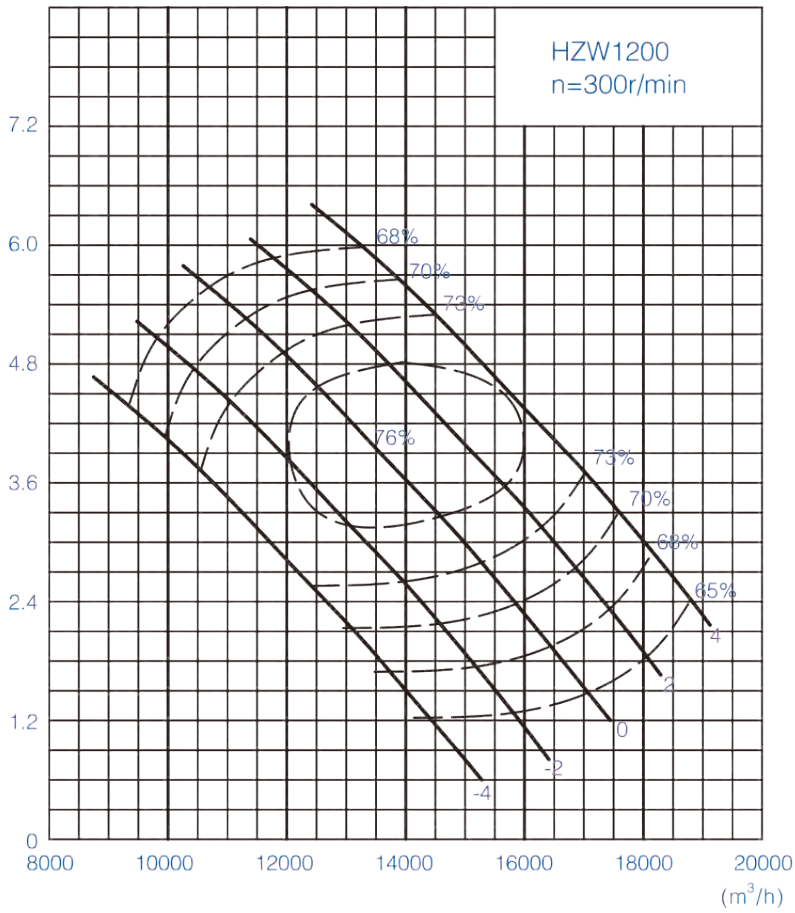












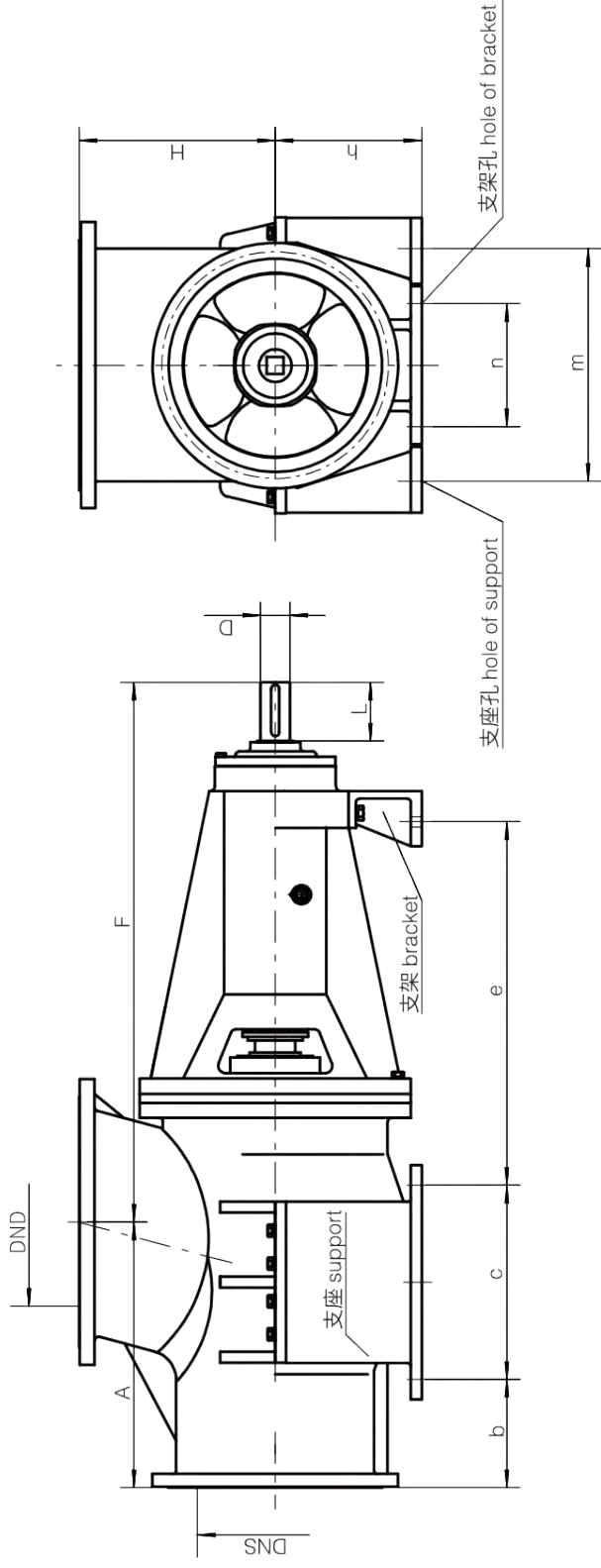
注：上图数据仅供用户初步选型用，具体选型请咨询本公司专业技术人员。

Note: The data are based on clean water at ambient temperature, and are only for user's preliminary selection. For specific selection, please consult our company technical personnel.

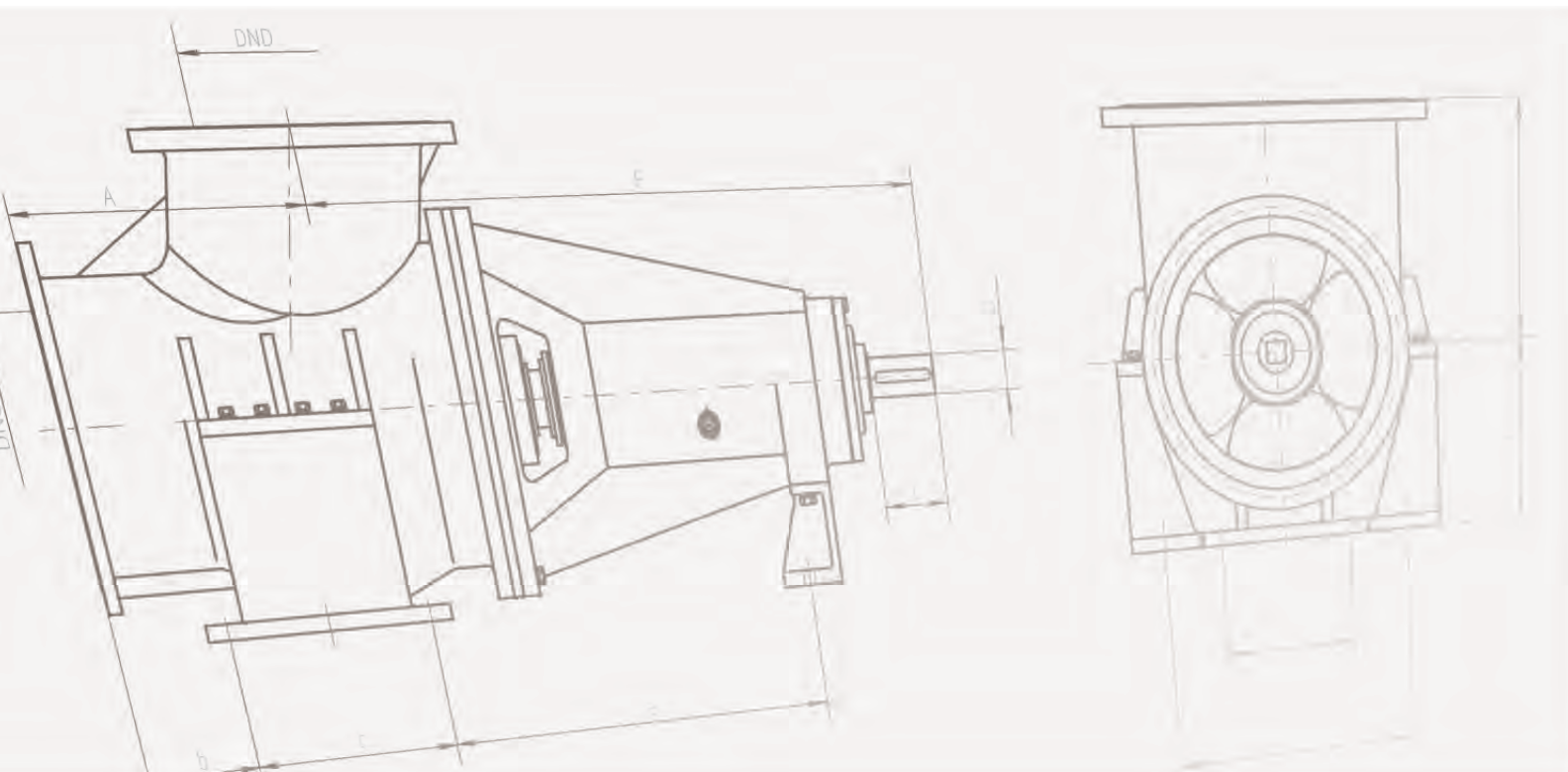
# 泵头安装尺寸图

## Pump dimensions

型号 Pump Model	DND	DNS	A	F	H	L	D	b	c	e	h	m	支座孔 Hole of support	n	支架孔 Hole of bracket
HZW300-III	300	300	444	1020	270	110	Ø60	223	280	715	250	384	4*Ø24	170	2*Ø22
HZW400-III	400	400	532	1220	370	140	Ø70	335	320	835	320	515	4*Ø24	250	2*Ø22
HZW450-III	450	450	632	1270	428	140	Ø75	352	320	930	360	600	4*Ø24	460	2*Ø28
HZW500-I-B	600	500	725	1474	535	160	Ø80	296	530	992	400	740	4*Ø26	480	2*Ø26
HZW600-I-A	600	600	771	1486	580	168	Ø100	346	530	992	400	740	4*Ø26	480	2*Ø26
HZW700	700	700	800	1540	580	168	Ø100	375	530	1047	460	850	4*Ø26	480	2*Ø26
HZW800	800	800	1112	1700	700	170	Ø110	502	580	1442	550	870	4*Ø33	220	2*Ø26
HZW900	900	900	1170	1748	750	170	Ø110	530	580	1522	585	960	4*Ø33	220	2*Ø26
HZW1000	1000	1000	1384	2055	800	210	Ø120	637	710	1745	640	1070	4*Ø33	220	2*Ø26
HZW1200	1200	1200	1492	2220	1000	210	Ø150	650	250/240/250	1972	750	1260	8*Ø33	100/260/100	4*Ø33







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