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ZPD/ZPDF/ZPDY/ZPMD

系列卧式多级离心泵(自平衡型)

ZPD/ZPDF/ZPDY/ZPMD series horizontal multi-stage centrifugal pump(self-balancing)



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## 自平衡泵，十大优势

<b>新结构</b>	具有叶轮对称布置的转子部件，使正、反两组叶轮在运行中产生的轴向推力基本得到相互抵消，从而不需要小间隙、高压降、易冲刷、易磨损、易出故障的平衡盘装置来维持轴向力的平衡，突破了多级泵的传统结构。
<b>新技术</b>	独有的节流、减压装置、奇数级的平衡装置。还能起到辅助支承的作用。
<b>高效节能</b>	采用先进的水力模型，自主研发的高效节能的产品；由于泵转子没有了平衡盘的磨损及轴向脉动，叶轮与导叶的对中性总是处于最佳状态，不会像普通多级泵结构随平衡盘的磨损、转子部件前移而出现效率明显下降；且没有了平衡水的泄露，减少了容积损失，在整体上提高了泵的运行效率，比普通多级泵效率平均高2%~3%
<b>高可靠性</b>	自相平衡的轴向力载荷使泵的磨损和系统干扰降到最小。极小部分残余轴向力由推力轴承承受，这样使泵轴始终处于受拉状态、轴的受力状态均匀，且应力峰值较原型结构大大降低，从而提高了泵转子的刚性和临界转速，使泵转子运行的平稳性和可靠性显著提高。
<b>高稳定性</b>	通过对称叶轮和导叶的最佳配备，以及合理的配合间隙和较宽的轴向节流设计，使泵在长期运行后仍然能保持其高度的稳定性和极高的运行效率。
<b>汽蚀性能好</b>	优化的水力模型及结构设计、特殊的首级叶轮双吸结构，加上精密的铸造、可靠的耐磨材质，使泵具有良好的抗汽蚀性能，整机运转平稳、噪音低，用户无需另外配置前置泵或提高进水箱的高度。
<b>机封强可靠性</b>	泵启、停时转子部件没有轴向窜动，工作时没有轴向脉动，克服了一直困扰多级泵的机封可靠性差这一难题。
<b>检修方便</b>	快速的装配和拆卸设计，允许水泵在不拆卸泵体和进、出口管路的情况下更换密封、轴承，泵内没有了平衡盘等易损部件，节省了大修和检查时间。
<b>低维护率</b>	采用精密铸造，减少了易损部件以及维修拆装次数，延长了产品寿命，并最大限度地避免了由于拆装过多引起的一系列问题，降低了维护成本。
<b>适用性强</b>	先进的组合模块化的设计，经过大量使用、长期运行考验的局部组件，零部件具有高度的可互换性。 取消了小间隙平衡盘装置，比传统结构多级泵更适应于介质性质更为恶劣的场合。

## ADVANTAGES OF SELF-BALANCING PUMP

<b>New Structure</b>	The rotor components which have the structural feature of Symmetrical set impeller, which could counter balance the axial thrust generated by the forward impeller and backward impeller, which make the balance disc useless and break the traditional structure of the multi stage centrifugal pump.
<b>New Design</b>	With unique throttling and pressure releasing component, the odd balance component which also have the function of auxiliary support.
<b>High Efficiency</b>	Adopted advanced hydraulic model and with unique structural design, centering of the impeller and diffusor always in perfect state after the abandoning of balance disc since it will cause wearing & tearing to the pump components and axial pulsation of related parts, which greatly increased the pump efficiency and reduced the shaft power.
<b>Stationary &amp; Low Vibration</b>	Self-balanced axial force can reduce the wearing & tearing of the pump components and assure the pump in good state. The remanent axial force will be carried by the thrust bearing which will make the pump shaft in equally tension state, and it will reduce peak stress and increase the rigidity and critical speed of rotation, which makes the rotor more stable and low vibration.
<b>High Stability</b>	With the Symmetrical set impeller and diffusor structure, proper tolerance clearance and widen axial throttling design, the pump could remain in high stability and efficiency after long period of running.
<b>Good Cavitation Performance</b>	Optimized hydraulic model and unique dual suction of the forward impeller which casting with wear resistant material precisely, the pump have good cavitation performance and low noise, users would not need to equip extra boost pump or elevate the height of the inlet chamber.
<b>Reliable Mechanical Seals</b>	No axial movements of the rotor parts while starting-up and stop the pump, no axial pulsation when the pump running, it almost settled the problem of low reliability of the mechanical seals which always existed in the multi stage centrifugal pump.
<b>Easy Maintenance</b>	Since the easy installation and disassembly design, the inside components like the bearing, seals could be replaced without disassembly the whole pump and the inlet & outlet pipeline system, meanwhile, after the abandoning some of the easy wearing components like the balance disc, it has greatly shorten the time of checking and repairing.
<b>Low Failure Ratio</b>	All parts and accessories with precise casting, which greatly reduced the possibilities of maintenance and repairing of the wearing parts, and avoid possible damaging while the installation and disassembly of the pump.
<b>Parts sharable &amp; Wide range of application</b>	Advanced module design, each part and component gone through long term and heavily testing, and the parts & components could be sharable among the total four series. Meanwhile, the abandoning of the balance disc makes the pump could be applied to a wide range of site conditions after change the flow passage parts.

## 产品概述

ZPD、ZPDF、ZPDY、ZPMD系列卧式多级离心泵(自平衡型),分为单吸多级结构和双吸多级结构。该系列产品是为加速多级离心泵技术发展,并满足用户需求,在吸收消化国外先进技术的基础上,结合本公司多年研发经验设计的创新产品,产品性能达到业内同类产品的先进水平,是普通多级离心泵最好的替代品。

该型泵典型特点表现于在结构上彻底取消传统的用于平衡轴向力的平衡盘系统,依靠叶轮对称布置自动平衡轴向力,这一创新使得多级泵运行具节能高效、平稳可靠、易损件少、运行成本大大降低等优势。

## 型号意义

如 ZPD (DF、DY、MD) S 280-95 x 13

- D —— 表示卧式多级清水离心泵
- DF —— 表示矿用耐磨卧式多级离心泵
- DY —— 表示卧式多级离心油泵
- MD —— 表示矿用耐磨卧式多级离心泵
- S —— 表示首级叶轮为双吸结构
- 280 —— 表示设计点流量为280m<sup>3</sup>/h
- 95 —— 表示设计点单级扬程为95m
- 13 —— 表示泵级数为13级
- ZP —— 表示自平衡型

## 性能范围

ZPD、ZPDF、ZPDY、ZPMD型泵具有相同的性能参数

泵吸入、排出口径 40~350mm  
流量Q=3.75~1360m<sup>3</sup>/h  
扬程H=92~1384m  
电机功率N=7.5~4000kW

(注:本册中所列性能参数值为常温清水状态值。)

## 应用范围

可供输送不含固体颗粒(磨料)、不含悬浮物的清水或物理化学性质类似于清水的其它液体之用。也可通过改变泵的材质(或泵过流部件的材质)、密封形式和增加冷却系统用于输送热水、油类、腐蚀性或含磨料的介质等。

泵允许进口压力不大于0.6MPa。

### ZPD型

用于输送不含固体颗粒、温度低于80℃的清水或物理化学性质类似于清水的液体。适合于矿山、工厂和城市给排水工程之用。

### ZPDF型

用于输送不含固体颗粒、温度低于105℃的腐蚀性液体,泵进口允许压力小于0.6MPa。用户可根据输送介质的名称、浓度、比重、使用温度及泵进口压力等合理选用泵的材质、密封形式、泵的结构和确定电机的容量等。

### ZPDY型

用于输送不含固体颗粒、温度低于105℃、粘度小于120厘沲的油类和石油产品。

### ZPMD型

用于输送颗粒含量≤1.5%,粒度≤1.3mm,温度低于80℃的中性矿井水及其他类似的污水。

## 执行标准

GB/T5657-1995 《离心泵技术条件(Ⅲ类)》  
JB/T1051-2006 《多级清水离心泵型式及基本参数》  
GB/T3216-2005 《回转动力泵水力性能验收试验1级和2级》  
MT/T 114-2005 《煤矿用多级离心泵》

## General Description

This series of horizontal multistage centrifugal pump (self-balancing function) can be divided into single-suction structure and double-suction structure. This series of products greatly accelerated the technology development of multi-stage centrifugal pump and met user's demands. On the basis of absorbing oversea advanced technology and combination of our own innovative design which with many years' R&D experience, the product performance reached the advanced rank of similarly products.

Main features of this series of pump is that it removed the balancing disc system which is traditional used to balance axial thrust force in structure and rely on impeller is symmetric assignment to balance the axial force automatically instead. This innovative design makes the multi-stage pump with the advantages of high efficiency & energy saving, stable and reliable performance, less consumable parts & greatly reducing operating costs etc.

## Instruction of Model

For example: ZPD(DF\DY\MD) S280-95 x 13

- D--Horizontal multi-stage centrifugal clean water pump
- DF--Corrosion-resistance horizontal multi-stage centrifugal pump
- DY--Horizontal multi-stage centrifugal oil pump
- MD--Abrasion-resistance horizontal multi-stage centrifugal pump
- S--Forward impeller design in double-suction structure
- 280--Rate flow is 280 m<sup>3</sup>/h
- 95--Rate delivery head is 95m by single stage
- 13--13 stages
- ZP--Self-balancing function

## Performance Range

ZPD\ZPDF\ZPDY\ZPMD series pump share the same performance range

Pump suction, discharge diameter 40-350mm  
Flow Capacity (Q)=3.75-1360m<sup>3</sup>/h  
Delivery Head (H)=92-1384M  
Motor Power(N)=7.5-4000KW

(Remarks: Performance parameters listed in this brochure are based on normal ambient temperature)

## Application Range

The pump is widely used to deliver water without solid particles and suspended matters, or other liquid similarly. It could deliver hot water, oil, corrosive liquid by change the material of flow passage parts.

The max inlet pressure should not exceed 0.6MPa.

### ZPD series

Used to deliver clean water or similar liquid without solid particle sand the liquid temperature is below 80℃ It is widely used in mines, factories, urban water supply and drainage system.

### ZPDF series

Used to deliver corrosive liquids without solid particles and the liquid temperature is below 80℃. Users may choose the pump's material, sealing mode, pump structure and motor power according to the liquid by its PH value, density, gravity, temperature and the working pressure.

### ZPDY series

Used to deliver oils and petroleum products without solid particles, the liquid temperature is below 80℃ and its viscosity is less than 120cP.

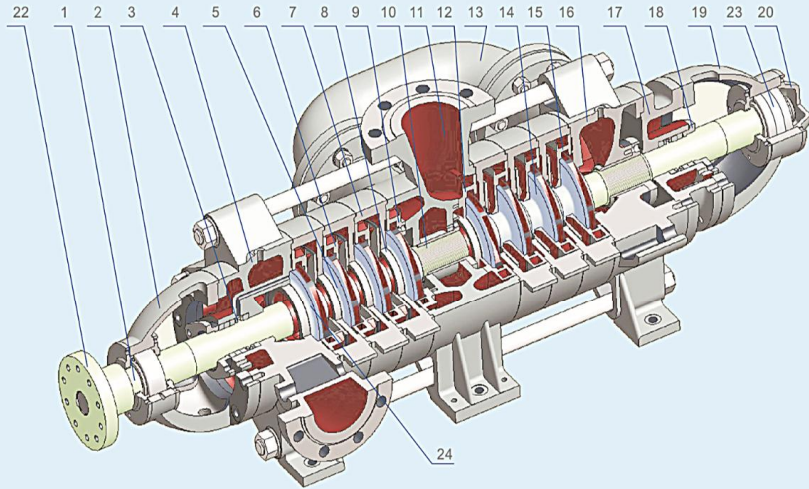
### ZPMD series

Used to deliver neutral water or similar liquid with solid particles, and the particle contents less than 1.5%, particle diameter less than 1.3mm, and the liquid temperature is below 80℃.

## Products Standard

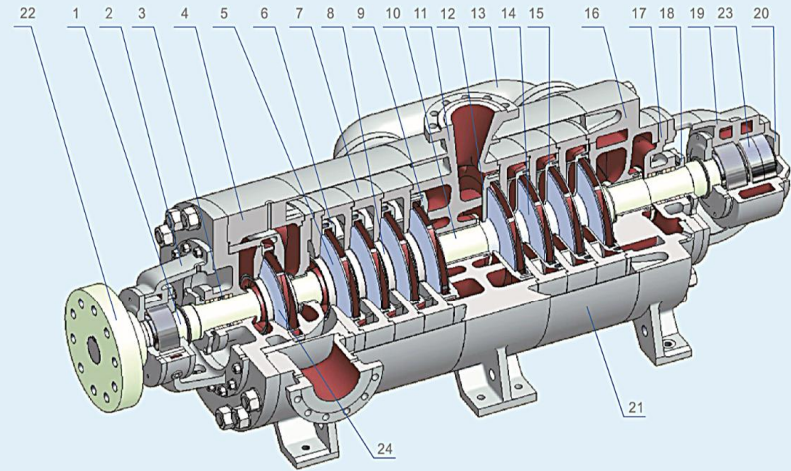
GB/T5657-1995  
<< Technical conditions for Centrifugal water Pump (Ⅲ) >>  
JB/T1051-2006  
<< Type and basic parameter of multi stage water pump >>  
GB/T3216-2005  
<< Hydraulic performance testing of rotating pump I & II >>  
MT/T 114-2005  
<< Multi stage centrifugal pump for coal mining >>

结构示意图 (首级为单吸结构)  
Structure chart (Single Suction Forward Impeller)



序号 No.	名称 Name	序号 No.	名称 Name	序号 No.	名称 Name	序号 No.	名称 Name	序号 No.	名称 Name
1	轴 shaft	6	正导叶 forward guide vane	11	出水段 discharge stage	16	次级进水段 secondary inlet section	21	泵罩 pump cover
2	前轴承体 front bearing housing	7	中段 middle stage	12	末级反导叶 end-level backward guide vane	17	尾盖 end gland	22	联轴器 coupling
3	填料环 packing ring	8	密封环 seal ring	13	过渡管 transition pipe	18	填料压盖 gland packing	23	轴承 bearing
4	进水段 suction stage	9	末级正导叶 end-level forward guide vane	14	反叶轮 backward impeller	19	后轴承体 back bearing housing	24	首级叶轮 first-stage impeller
5	正叶轮 forward impeller	10	节流、减压装置 throttling and pressure reducing device	15	反导叶 backward guide vane	20	轴承端盖 bearing gland		

结构示意图 (首级为双吸结构)  
Structure chart (Double Suction Forward Impeller)



序号 No.	名称 Name	序号 No.	名称 Name	序号 No.	名称 Name	序号 No.	名称 Name	序号 No.	名称 Name
1	轴 shaft	6	正导叶 forward guide vane	11	出水段 discharge stage	16	次级进水段 secondary inlet section	21	泵罩 pump cover
2	前轴承体 front bearing housing	7	中段 middle stage	12	末级反导叶 end-level backward guide vane	17	尾盖 end gland	22	联轴器 coupling
3	填料环 packing ring	8	密封环 seal ring	13	过渡管 transition pipe	18	填料压盖 gland packing	23	轴承 bearing
4	进水段 suction stage	9	末级正导叶 end-level forward guide vane	14	反叶轮 backward impeller	19	后轴承体 back bearing housing	24	首级叶轮 first-stage impeller
5	正叶轮 forward impeller	10	节流、减压装置 throttling and pressure reducing device	15	反导叶 backward guide vane	20	轴承端盖 bearing gland		

## 结构特点

## Structure Features

ZPD, ZPDF, ZPDY, ZPMD型泵系卧式自平衡型结构多级离心泵, 按吸入形式分为单吸多级结构和双吸多级结构。其吸入口在进水段为水平方向, 吐出口在出水段上垂直向上, 用拉紧螺栓将泵的进水段、中段、出水段、次级进水段联成一体, 扬程高低可增减泵的级数。

ZPD, ZPDF, ZPDY, ZPMD pumps are horizontal multi stage self-balanced centrifugal pump, it can be divided into single-suction multi-stage structure and double-suction multi-stage structure according to the form of suction. The inlet suction is in horizontal direction and the outlet discharge. Its suction nozzle at suction-stage is in horizontal is vertical upward. The pump suction-stage, Middle-stage, Discharge-stage and secondary suction-stage all connected with outward bolt and the delivery head may adjust according to the pump stages.

- ◆ 水泵的主要零件: 进水段、中段、出水段、次级进水泵、正导叶、反导叶、正叶轮、反叶轮、轴、节流减压装置, 挡套、轴承体、过滤管等;
- ◆ 转子由装在轴上的正叶轮、节流减压装置、反叶轮、轴套、轴承挡套等零件组成; 轴承采用“固-游式”干油润滑结构, 驱动端采用圆柱滚子轴承, 末端采用圆柱滚子轴承与角接触球轴承的组合结构;
- ◆ 泵的进水段、中段、出水段之间的密封面均采用密封胶或O型圈密封, 转子部分与固定部分之间装有密封环、导叶套等进行密封, 当密封环和导叶套的磨损程度已影响泵的工作性能时应及时予以更换;
- ◆ 轴的密封形式有机械密封和填料密封两种。泵采用填料密封时, 填料环的位置安装要正确, 填料的松紧程度必须适当, 以液体能一滴一滴渗出为宜。泵各种密封元件装在密封腔内, 腔内要通入一定压力的水, 起水封、水冷或水润滑作用。用轴封处装有可更换的轴套, 以保护泵轴;
- ◆ 该系列泵通过弹性联轴器由原动机直接驱动。从原动机方向看, 泵为顺时针方向旋转。

(电机常规配置为Y系列电机, 在有可燃易爆气体的场合采用YB/YB2系列防爆电机。)

- ◆ Main parts of the pump: Suction-stage, Middle-stage, Discharge-stage, Secondary suction-stage, forward guide vane, backward guide vane, Impeller, backward guide impeller, Shaft, Throttling & Pressure reducing devices, space sleeve, Bearing, Filter tube, etc.

- ◆ The pump rotoris consist of Impeller which installed on shaft, Throttling pressure-reducing device, backward impeller, shaft sleeve, bearing sleeve etc. The bearing adopts "fix-floating-form" grease oil lubrication structure, the drive side use cylindrical roller bearings, the end use combination structure of cylindrical roller bearings and angular contact ball bearing.

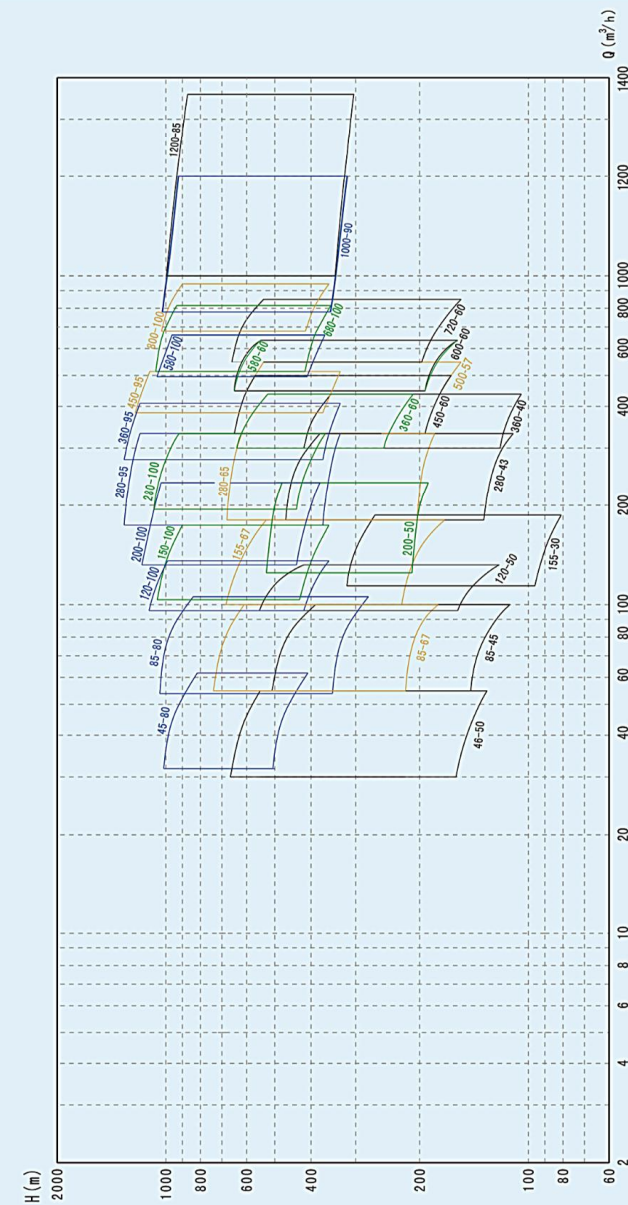
- ◆ The sealing surface among suction-stage, middle-stage, and discharge-stage use sealant or O-ring to do the sealing. The rotator parts and the fixed parts use sealing ring and diffuser sleeve etc. to do the sealing. Replacement of sealing ring and diffuser sleeve when its degree of wear affects the pump's working performance.

- ◆ There are two types of shaft sealing: mechanical sealing and packing sealing. When using packing sealing, the packing ring must install in correct position and proper tightness to make sure the packing liquid can exude drop by drop. The various sealing elements of pump in stallin the sealing cavity which passing into water with certain pressure for water sealing, water-cooling or water lubrication purposes. The shaft sealing part equipped with replaceable shaft sleeve to protect the shaft;

- ◆ This series pump driven by a motor which connected to pump by a flexible coupling. View from the mover to the pump, the pump's rotating in clockwise.

(usually equipped with Y series motor, YB/YB2 will be available while the pump applied to flammable and explosive site conditions)

## 型谱图 Model Spectrum



**泵零件材质推荐表** Materials Recommendation of Pump Components

水泵类型 Pump Model	进水段 次级进水段 出水段 Inlet Outlet	中段 正导叶 反导叶 尾盖 Guide Jane	正叶轮 反叶轮 Impeller	主轴 Shaft		轴套 Shaft Sleeve		中节流轴套 后节流轴套 Throttle Bushing	中节流套 后节流套 Orifice Sleeve	密封环 导叶套 Seal Ring	材质类别 Material Sorts
				正常轴 细长轴	机械密封 填料密封 seals seals						
ZPD	HT200	HT200	HT200	45	40Cr	2Cr13	HT250	40Cr	QT600Mn2	HT250	普通材质 Normal
ZPDF	2Cr13	2Cr13	1Cr18Ni9	3Cr13		2Cr13		2Cr13	2Cr13	2Cr13	轻度耐腐 Mild anti corrosive
	0Cr18Ni9 (304)	0Cr18Ni9 (304)	1Cr18Ni9Ti	3Cr13		0Cr18Ni9 (304)		0Cr18Ni9 (304)	0Cr18Ni9 (304)	3Cr13	中度耐腐 Moderate anti corrosive
ZPDY	HT200	HT200	HT200	45	40Cr	2Cr13		2Cr13	2Cr13	HT250	高度耐腐 High anti corrosive
	ZG230-450	ZG230-450	ZG230-450	45	40Cr	2Cr13		2Cr13	2Cr13	2Cr13	普通材质 Cast iron
ZPMD	QT400	QT400	ZG230-450 QT500	45	40Cr	2Cr13	QT500	40Cr	QT600Mn2	QT500	铸钢材质 Cast steel
											不锈钢材质 Stainless steel
											耐磨球铁材质 Wearproof ductile iron

注: 除上表推荐材质外, 我公司还可根据用户的具体要求选配材质, 或根据用户需要的材质进行生产。  
Remarks: buyers may choose material according to their specific site conditions.

**泵的性能参数表** Model & Specification

12-80 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H	转速 Speed n	功率 Power		效率 Eff η	必须气蚀余量 NPSHr	叶轮直径 Impeller Dia D2	泵重量 Weight
		m³/h	L/S			轴功率 Shaft Power	电机功率 Motor Power				
				KW	%						
ZPD (DF, DY, MD) 12-80	3	7.5	2.08	252	2950	13.55	30	38	2.4	235	348
		12.5	3.47	240		20.44	40	2.9			
		15.0	4.17	220		24.30	37	4.6			
	4	7.5	2.08	332	2950	17.86	45	38	2.4	235	373
		12.5	3.47	320		27.25	40	2.9			
		15.0	4.17	300		33.14	37	4.6			
	5	7.5	2.08	412	2950	22.16	55	38	2.4	235	398
		12.5	3.47	400		34.06	40	2.9			
		15.0	4.17	380		41.98	37	4.6			
	6	7.5	2.08	492	2950	26.46	55	38	2.4	235	423
		12.5	3.47	480		40.86	40	2.9			
		15.0	4.17	460		50.82	37	4.6			
	7	7.5	2.08	572	2950	30.76	75	38	2.4	235	448
		12.5	3.47	560		47.60	40	2.9			
		15.0	4.17	540		59.66	37	4.6			
	8	7.5	2.08	652	2950	35.07	75	38	2.4	235	473
		12.5	3.47	640		54.50	40	2.9			
		15.0	4.17	600		66.28	37	4.6			
	9	7.5	2.08	732	2950	39.37	90	38	2.4	235	498
		12.5	3.47	720		61.31	40	2.9			
		15.0	4.17	680		75.12	37	4.6			
	10	7.5	2.08	812	2950	43.67	90	38	2.4	235	523
		12.5	3.47	800		68.13	40	2.9			
		15.0	4.17	760		83.96	37	4.6			
11	7.5	2.08	892	2950	47.97	110	38	2.4	235	549	
	12.5	3.47	880		74.94	40	2.9				
	15.0	4.17	840		92.80	37	4.6				
12	7.5	2.08	982	2950	52.81	132	38	2.4	235	575	
	12.5	3.47	960		73.23	40	2.9				
	15.0	4.17	920		101.64	37	4.6				

**泵的性能参数表** Model & Specification

46-50 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H	转速 Speed n	功率 Power		效率 Eff η	必须气蚀余量 NPSHr	叶轮直径 Impeller Dia D2	泵重量 Weight
		m³/h	L/S			轴功率 Shaft Power	电机功率 Motor Power				
				KW	%						
ZPD (DF, DY, MD) 46-50	3	30	8.33	166.5	2950	24.74	37	55	2.5	Φ208	348
		46	12.78	150		28.91	65	2.8			
		55	15.28	138		32.03	64	3.2			
	4	30	8.33	222	2950	32.98	45	55	2.5	Φ208	373
		46	12.78	200		38.55	65	2.8			
		55	15.28	184		42.71	64	3.2			
	5	30	8.33	277.5	2950	41.23	75	55	2.5	Φ208	398
		46	12.78	250		48.19	65	2.8			
		55	15.28	230		53.80	64	3.2			
	6	30	8.33	333	2950	49.47	75	55	2.5	Φ208	423
		46	12.78	300		57.83	65	2.8			
		55	15.28	276		64.56	64	3.2			
	7	30	8.33	388.5	2950	57.72	90	55	2.5	Φ208	448
		46	12.78	350		67.46	65	2.8			
		55	15.28	322		75.32	64	3.2			
	8	30	8.33	444	2950	65.96	90	55	2.5	Φ208	473
		46	12.78	400		77.10	65	2.8			
		55	15.28	368		86.08	64	3.2			
	9	30	8.33	499.5	2950	74.21	110	55	2.5	Φ208	498
		46	12.78	450		86.74	65	2.8			
		55	15.28	414		96.84	64	3.2			
	10	30	8.33	555	2950	82.45	132	55	2.5	Φ208	523
		46	12.78	500		96.38	65	2.8			
		55	15.28	460		107.60	64	3.2			
11	30	8.33	610.5	2950	90.69	132	55	2.5	Φ208	549	
	46	12.78	550		106.01	65	2.8				
	55	15.28	506		118.36	64	3.2				
12	30	8.33	666	2950	88.94	160	55	2.5	Φ208	575	
	46	12.78	600		115.65	65	2.8				
	55	15.28	552		129.12	64	3.2				

45-80 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H	转速 Speed n	功率 Power		效率 Eff η	必须气蚀余量 NPSHr	叶轮直径 Impeller Dia D2	泵重量 Weight
		m³/h	L/S			轴功率 Shaft Power	电机功率 Motor Power				
				KW	%						
ZPD (DF, DY, MD) 45-80	6	32	8.89	506.6	2950	88.3	160	50	3.9	Φ260	900
		45	12.5	480		102.3	57.5	4.0			
		62	17.2	409		122.2	56.5	5.5			
	7	32	8.89	591	2950	103.0	160	50	3.9	Φ260	980
		45	12.5	560		119.4	57.5	4.0			
		62	17.2	447.2		133.6	56.5	5.5			
	8	32	8.89	675.4	2950	117.7	200	50	3.9	Φ260	1060
		45	12.5	640		136.4	57.5	4.0			
		62	17.2	545.4		163.0	56.5	5.5			
	9	32	8.89	759.8	2950	132.4	220	50	3.9	Φ260	1140
		45	12.5	720		153.5	57.5	4.0			
		62	17.2	613.6		183.4	56.5	5.5			
	10	32	8.89	844.3	2950	147.2	220	50	3.9	Φ260	1220
		45	12.5	800		170.5	57.5	4.0			
		62	17.2	681.8		203.7	56.5	5.5			
	11	32	8.89	928.7	2950	161.9	250	50	3.9	Φ260	1300
		45	12.5	880		187.6	57.5	4.0			
		62	17.2	750		224.1	56.5	5.5			
	12	32	8.89	1013	2950	176.6	280	50	3.9	Φ260	1380
		45	12.5	960		204.6	57.5	4.0			
		62	17.2	818.2		244.5	56.5	5.5			





## 泵的性能参数表 Model & Specification

### 120-100 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H m	转速 Speed n r / min	功率 Power		效率 Eff η %	必须气蚀余量 NPSHr m	叶轮直径 Impeller Dia D2 mm	泵重量 Weight kg
		m³/h	L/S			轴功率 Shaft Power KW	电机功率 Motor Power				
ZPD (DF, DY, MD) 120-100	4	96	26.7	420	2950	161.5	220	68	3.8	Φ275	2630
		120	33.3	394		176.4	220	73	4.5		
		144	40	360		190.8	220	74	5.5		
	5	96	26.7	525	2950	201.8	280	68	3.8	Φ275	2752
		120	33.3	492.5		220.5	280	73	4.5		
		144	40	450		238.5	280	74	5.5		
	6	96	26.7	630	2950	242.2	315	68	3.8	Φ275	2874
		120	33.3	591		264.6	315	73	4.5		
		144	40	540		286.2	315	74	5.5		
	7	96	26.7	735	2950	282.6	355	68	3.8	Φ275	2996
		120	33.3	689.5		308.7	355	73	4.5		
		144	40	630		333.9	355	74	5.5		
	8	96	26.7	840	2950	323.0	450	68	3.8	Φ275	3118
		120	33.3	788		352.8	450	73	4.5		
		144	40	720		381.6	450	74	5.5		
	9	96	26.7	945	2950	363.3	500	68	3.8	Φ275	3240
		120	33.3	886.5		396.9	500	73	4.5		
		144	40	810		429.3	500	74	5.5		
	10	96	26.7	1050	2950	403.7	560	68	3.8	Φ275	3362
		120	33.3	985		441.0	560	73	4.5		
		144	40	900		476.9	560	74	5.5		
	11	96	26.7	1155	2950	444.1	630	68	3.8	Φ275	3484
		120	33.3	1083.5		485.1	630	73	4.5		
		144	40	990		524.7	630	74	5.5		

### 155-30 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H m	转速 Speed n r / min	功率 Power		效率 Eff η %	必须气蚀余量 NPSHr m	叶轮直径 Impeller Dia D2 mm	泵重量 Weight kg
		m³/h	L/S			轴功率 Shaft Power KW	电机功率 Motor Power				
ZPD (DF, DY, MD) 155-30	3	119	33	96	1480	44.0	75	69.5	3.2	Φ305	750
		155	43	90		49.6	75	76.5	3.9		
		190	52.8	81		55.4	75	76	4.8		
	4	119	33	128	1480	58.7	90	69.5	3.2	Φ305	820
		155	43	120		66.1	90	76.5	3.9		
		190	52.8	108		73.9	90	76	4.8		
	5	119	33	160	1480	73.4	110	69.5	3.2	Φ305	890
		155	43	150		82.6	110	76.5	3.9		
		190	52.8	135		92.4	110	76	4.8		
	6	119	33	192	1480	88.1	132	69.5	3.2	Φ305	960
		155	43	180		99.2	132	76.5	3.9		
		190	52.8	162		110.8	132	76	4.8		
	7	119	33	224	1480	102.8	160	69.5	3.2	Φ305	1030
		155	43	210		115.7	160	76.5	3.9		
		190	52.8	189		129.3	160	76	4.8		
	8	119	33	256	1480	117.5	200	69.5	3.2	Φ305	1100
		155	43	240		132.2	200	76.5	3.9		
		190	52.8	216		147.8	200	76	4.8		
	9	119	33	288	1480	132.2	200	69.5	3.2	Φ305	1170
		155	43	270		148.7	200	76.5	3.9		
		190	52.8	243		166.3	200	76	4.8		
	10	119	33	320	1480	146.9	220	69.5	3.2	Φ305	1240
		155	43	300		165.3	220	76.5	3.9		
		190	52.8	270		184.7	220	76	4.8		

## 泵的性能参数表 Model & Specification

### 155-67 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H m	转速 Speed n r / min	功率 Power		效率 Eff η %	必须气蚀余量 NPSHr m	叶轮直径 Impeller Dia D2 mm	泵重量 Weight kg
		m³/h	L/S			轴功率 Shaft Power KW	电机功率 Motor Power				
ZPD (DF, DY, MD) 155-67	3	100	27.8	228	2950	95.6	132	65	3.2	Φ235	722
		155	43.1	201		112.4	132	75.5	5.0		
		185	51.4	177		122.1	132	73	6.6		
	4	100	27.8	304	2950	127.4	185	65	3.2	Φ235	794
		155	43.1	268		149.9	185	75.5	5.0		
		185	51.4	236		162.8	185	73	6.6		
	5	100	27.8	380	2950	159.3	220	65	3.2	Φ235	866
		155	43.1	335		187.4	220	75.5	5.0		
		185	51.4	295		203.5	220	73	6.6		
	6	100	27.8	456	2950	191.1	280	65	3.2	Φ235	938
		155	43.1	402		224.9	280	75.5	5.0		
		185	51.4	354		244.2	280	73	6.6		
	7	100	27.8	532	2950	222.9	315	65	3.2	Φ235	1010
		155	43.1	469		262.3	315	75.5	5.0		
		185	51.4	413		284.9	315	73	6.6		
	8	100	27.8	608	2950	254.8	355	65	3.2	Φ235	1082
		155	43.1	536		299.8	355	75.5	5.0		
		185	51.4	472		325.6	355	73	6.6		
	9	100	27.8	684	2950	286.7	450	65	3.2	Φ235	1154
		155	43.1	603		337.3	450	75.5	5.0		
		185	51.4	531		366.3	450	73	6.6		

### 150-100 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H m	转速 Speed n r / min	功率 Power		效率 Eff η %	必须气蚀余量 NPSHr m	叶轮直径 Impeller Dia D2 mm	泵重量 Weight kg
		m³/h	L/S			轴功率 Shaft Power KW	电机功率 Motor Power				
ZPD (DF, DY, MD) 150-100	4	120	33.3	420	2950	198.7	280	69	3.8	Φ275	2630
		150	41.7	394		220.7	280	73	4.5		
		180	50	360		238.5	280	74	5.5		
	5	120	33.3	525	2950	248.4	355	69	3.8	Φ275	2752
		150	41.7	492.5		275.8	355	73	4.5		
		180	50	450		298.1	355	74	5.5		
	6	120	33.3	630	2950	298.1	450	69	3.8	Φ275	2874
		150	41.7	591		331.0	450	73	4.5		
		180	50	540		357.7	450	74	5.5		
	7	120	33.3	735	2950	347.8	500	69	3.8	Φ275	2996
		150	41.7	689.5		386.1	500	73	4.5		
		180	50	630		417.3	500	74	5.5		
	8	120	33.3	840	2950	397.4	560	69	3.8	Φ275	3118
		150	41.7	788		441.3	560	73	4.5		
		180	50	720		476.9	560	74	5.5		
	9	120	33.3	945	2950	447.1	630	69	3.8	Φ275	3240
		150	41.7	886.5		496.5	630	73	4.5		
		180	50	810		536.6	630	74	5.5		
	10	120	33.3	1050	2950	496.8	710	69	3.8	Φ275	3362
		150	41.7	985		551.6	710	73	4.5		
		180	50	900		596.2	710	74	5.5		

泵的性能参数表 Model & Specification

200-50 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H m	转速 Speed n r / min	功率 Power		效率 Eff η %	必须气蚀余量 NPSHr m	叶轮直径 Impeller Dia D2 m m	泵重量 Weight kg
		KW				轴功率 Shaft Power KW	电机功率 Motor Power KW				
		m³/h	L/S								
ZPD (DF、DY、MD) 200-50	4	132	36.7	218	2950	117.1	200	76	4.3	Φ 225	840
		200	55.6	208		149.2	80	5.6			
		240	66.7	198		175.0	79	6.8			
	5	132	36.7	272	2950	146.1	250	76	4.3	Φ 225	905
		200	55.6	260		186.5	80	5.6			
		240	66.7	248		219.2	79	6.8			
	6	132	36.7	326	2950	175.1	280	76	4.3	Φ 225	970
		200	55.6	312		223.8	80	5.6			
		240	66.7	298		263.3	79	6.8			
	7	132	36.7	381	2950	204.6	355	76	4.3	Φ 225	1035
		200	55.6	364		261.1	355	80	5.6		
		240	66.7	347		306.6	79	6.8			
	8	132	36.7	435	2950	233.6	400	76	4.3	Φ 225	1100
		200	55.6	416		298.4	400	80	5.6		
		240	66.7	397		350.8	79	6.8			
	9	132	36.7	490	2950	263.1	450	76	4.3	Φ 225	1165
		200	55.6	468		335.7	450	80	5.6		
		240	66.7	446		394.1	79	6.8			
	10	132	36.7	544	2950	292.1	500	76	4.3	Φ 225	1230
		200	55.6	520		373.0	500	80	5.6		
		240	66.7	496		438.3	79	6.8			

200-100 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H m	转速 Speed n r / min	功率 Power		效率 Eff η %	必须气蚀余量 NPSHr m	叶轮直径 Impeller Dia D2 m m	泵重量 Weight kg
		KW				轴功率 Shaft Power KW	电机功率 Motor Power KW				
		m³/h	L/S								
ZPD (DF、DY、MD) 200-100	4	140	38.9	444	2980	245	355	69	4.0	Φ 290	2715
		200	55.6	400		280	355	78	4.5		
		240	66.7	380		327	76	5.0			
	5	140	38.9	555	2980	307	450	69	4.0	Φ 290	2865
		200	55.6	500		349	450	78	4.5		
		240	66.7	475		409	76	5.0			
	6	140	38.9	666	2980	368	560	69	4.0	Φ 290	3015
		200	55.6	600		419	560	78	4.5		
		240	66.7	570		490	76	5.0			
	7	140	38.9	777	2980	429	630	69	4.0	Φ 290	3165
		200	55.6	700		489	630	78	4.5		
		240	66.7	665		572	76	5.0			
	8	140	38.9	888	2980	491	710	69	4.0	Φ 290	3315
		200	55.6	800		559	710	78	4.5		
		240	66.7	760		654	76	5.0			
	9	140	38.9	999	2980	552	800	69	4.0	Φ 290	3465
		200	55.6	900		629	800	78	4.5		
		240	66.7	855		736	76	5.0			
	10	140	38.9	1110	2980	614	900	69	4.0	Φ 290	3615
		200	55.6	1000		699	900	78	4.5		
		240	66.7	950		817	76	5.0			
	11	140	38.9	1221	2980	675	1000	69	4.0	Φ 290	3765
		200	55.6	1100		769	1000	78	4.5		
		240	66.7	1045		899	76	5.0			

泵的性能参数表 Model & Specification

280-43 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H m	转速 Speed n r / min	功率 Power		效率 Eff η %	必须气蚀余量 NPSHr m	叶轮直径 Impeller Dia D2 m m	泵重量 Weight kg
		KW				轴功率 Shaft Power KW	电机功率 Motor Power KW				
		m³/h	L/S								
ZPD (DF、DY、MD) 280-43	3	185	51.4	141	1480	102.2	160	69.5	3.0	Φ 360	1210
		280	77.8	129		125.3	160	78.5	4.7		
		335	93.1	114		135.2	77	6.0			
	4	185	51.4	188	1480	136.2	200	69.5	3.0	Φ 360	1330
		280	77.8	172		167.0	200	78.5	4.7		
		335	93.1	152		180.2	77	6.0			
	5	185	51.4	235	1480	170.9	250	69.5	3.0	Φ 360	1450
		280	77.8	215		208.8	250	78.5	4.7		
		335	93.1	190		225.3	77	6.0			
	6	185	51.4	282	1480	205.1	315	69.5	3.0	Φ 360	1570
		280	77.8	258		250.5	315	78.5	4.7		
		335	93.1	228		270.3	77	6.0			
	7	185	51.4	329	1480	239.2	355	69.5	3.0	Φ 360	1690
		280	77.8	301		292.3	355	78.5	4.7		
		335	93.1	266		315.4	77	6.0			
	8	185	51.4	376	1480	273.4	450	69.5	3.0	Φ 360	1810
		280	77.8	344		334.0	450	78.5	4.7		
		335	93.1	304		360.4	77	6.0			
	9	185	51.4	423	1480	307.6	450	69.5	3.0	Φ 360	1930
		280	77.8	387		375.8	450	78.5	4.7		
		335	93.1	342		405.5	77	6.0			
	10	185	51.4	470	1480	341.8	500	69.5	3.0	Φ 360	2050
		280	77.8	430		417.5	500	78.5	4.7		
		335	93.1	380		450.5	77	6.0			

280-65 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H m	转速 Speed n r / min	功率 Power		效率 Eff η %	必须气蚀余量 NPSHr m	叶轮直径 Impeller Dia D2 m m	泵重量 Weight kg
		KW				轴功率 Shaft Power KW	电机功率 Motor Power KW				
		m³/h	L/S								
ZPD (DF、DY、MD) 280-65	3	185	51.4	204	1480	153.4	250	67	2.8	Φ 430	1770
		280	77.8	195		200.9	250	76	3.7		
		335	93.1	186		232.4	73	5.0			
	4	185	51.4	272	1480	204.5	355	67	2.8	Φ 430	1980
		280	77.8	260		267.9	355	76	3.7		
		335	93.1	248		309.9	73	5.0			
	5	185	51.4	340	1480	255.6	450	67	2.8	Φ 430	2190
		280	77.8	325		334.9	450	76	3.7		
		335	93.1	310		387.4	73	5.0			
	6	185	51.4	408	1480	306.8	500	67	2.8	Φ 430	2400
		280	77.8	390		401.9	500	76	3.7		
		335	93.1	372		464.9	73	5.0			
	7	185	51.4	476	1480	357.9	630	67	2.8	Φ 430	2610
		280	77.8	455		468.9	630	76	3.7		
		335	93.1	434		542.4	73	5.0			
	8	185	51.4	544	1480	409.1	710	67	2.8	Φ 430	2820
		280	77.8	520		535.8	710	76	3.7		
		335	93.1	496		619.9	73	5.0			
	9	185	51.4	612	1480	460.2	800	67	2.8	Φ 430	3030
		280	77.8	585		602.8	800	76	3.7		
		335	93.1	558		697.4	73	5.0			
	10	185	51.4	680	1480	511.3	900	67	2.8	Φ 430	3240
		280	77.8	650		669.8	900	76	3.7		
		335	93.1	620		774.8	73	5.0			







泵的性能参数表 Model & Specification

720-60 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H	转速 Speed n	功率 Power		效率 Eff $\eta$	必须气蚀余量 NPSHr	叶轮直径 Impeller Dia D <sub>2</sub>	泵重量 Weight
		m <sup>3</sup> /h	L/S			轴功率 Shaft Power	电机功率 Motor Power				
		KW				%					
ZPD (DF, DY, MD) 720-60	3	550	152.8	198	1480	384.9	560	77	3.5	Φ 450	3585
		720	200	180		435.5		81	4.5		
		850	236.1	162		471.7		79.5	5.5		
	4	550	152.8	264	1480	513.2	710	77	3.5	Φ 450	3940
		720	200	240		580.7		81	4.5		
		850	236.1	216		628.9		79.5	5.5		
	5	550	152.8	330	1480	641.5	900	77	3.5	Φ 450	4295
		720	200	300		725.9		81	4.5		
		850	236.1	270		786.2		79.5	5.5		
	6	550	152.8	396	1480	769.8	1120	77	3.5	Φ 450	4650
		720	200	360		871.1		81	4.5		
		850	236.1	324		943.4		79.5	5.5		
	7	550	152.8	462	1480	898.1	1250	77	3.5	Φ 450	5005
		720	200	420		1016.2		81	4.5		
		850	236.1	378		1100.6		79.5	5.5		
	8	550	152.8	528	1480	1026.4	1400	77	3.5	Φ 450	5360
		720	200	480		1161.4		81	4.5		
		850	236.1	432		1257.9		79.5	5.5		
	9	550	152.8	594	1480	1154.7	1600	77	3.5	Φ 450	5715
		720	200	540		1306.6		81	4.5		
		850	236.1	486		1415.1		79.5	5.5		
	10	550	152.8	660	1480	1283.0	1800	77	3.5	Φ 450	6070
		720	200	600		1451.8		81	4.5		
		850	236.1	540		1572.3		79.5	5.5		

800-100 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H	转速 Speed n	功率 Power		效率 Eff $\eta$	必须气蚀余量 NPSHr	叶轮直径 Impeller Dia D <sub>2</sub>	泵重量 Weight
		m <sup>3</sup> /h	L/S			轴功率 Shaft Power	电机功率 Motor Power				
		KW				%					
ZPD (DF, DY, MD) S800-100	4	680	188.9	416	1480	1007.1	1400	76.5	4.0	Φ 480	6510
		800	222.2	394		1072.9		80	4.6		
		945	262.5	360		1203.2		77	5.8		
	5	680	188.9	520	1480	1258.8	1800	76.5	4.0	Φ 480	7090
		800	222.2	492.5		1341.1		80	4.6		
		945	262.5	450		1504.0		77	5.8		
	6	680	188.9	624	1480	1510.6	2000	76.5	4.0	Φ 480	7670
		800	222.2	591		1609.3		80	4.6		
		945	262.5	540		1804.8		77	5.8		
	7	680	188.9	728	1480	1762.4	2500	76.5	4.0	Φ 480	8250
		800	222.2	689.5		1877.5		80	4.6		
		945	262.5	630		2105.6		77	5.8		
	8	680	188.9	832	1480	2014.2	2800	76.5	4.0	Φ 480	8830
		800	222.2	788		2145.8		80	4.6		
		945	262.5	720		2406.4		77	5.8		
	9	680	188.9	936	1480	2265.9	3150	76.5	4.0	Φ 480	9410
		800	222.2	886.5		2414.0		80	4.6		
		945	262.5	810		2707.2		77	5.8		
	10	680	188.9	1040	1480	2517.7	3550	76.5	4.0	Φ 480	9990
		800	222.2	985		2682.2		80	4.6		
		945	262.5	900		3008.0		77	5.8		

泵的性能参数表 Model & Specification

1000-90 Series / 系列

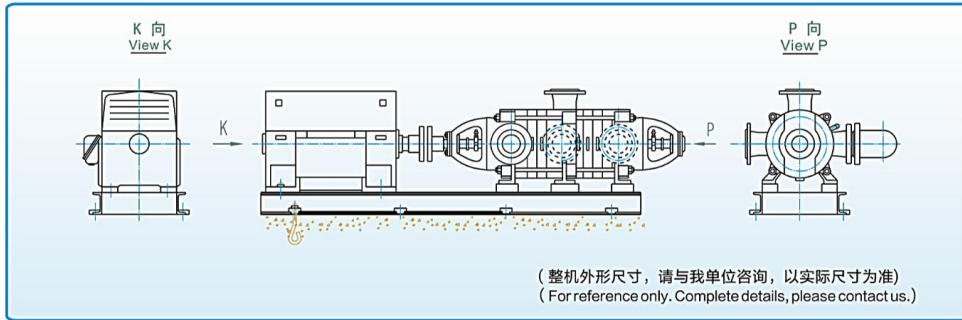
泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H	转速 Speed n	功率 Power		效率 Eff $\eta$	必须气蚀余量 NPSHr	叶轮直径 Impeller Dia D <sub>2</sub>	泵重量 Weight
		m <sup>3</sup> /h	L/S			轴功率 Shaft Power	电机功率 Motor Power				
		KW				%					
ZPD (DF, DY, MD) S1000-90	4	780	216.7	360	1480	968	1400	79	4.6	Φ 470	6880
		1000	277.8	345		1132		83		Φ 550	
		1200	333.3	325		1311		81			
	5	780	216.7	457	1480	1229	1800	79	4.6	Φ 470	7465
		1000	277.8	437.5		1435		83		Φ 550	
		1200	333.3	412		1662		81			
	6	780	216.7	554	1480	1490	2240	79	4.6	Φ 470	8050
		1000	277.8	530		1739		83		Φ 550	
		1200	333.3	499		2013		81			
	7	780	216.7	651	1480	1750	2500	79	4.6	Φ 470	8635
		1000	277.8	622.5		2042		83		Φ 550	
		1200	333.3	586		2364		81			
	8	780	216.7	748	1480	2011	3150	79	4.6	Φ 470	9220
		1000	277.8	715		2346		83		Φ 550	
		1200	333.3	673		2715		81			
	9	780	216.7	845	1480	2272	3550	79	4.6	Φ 470	9805
		1000	277.8	807.5		2649		83		Φ 550	
		1200	333.3	760		3066		81			
	10	780	216.7	942	1480	2533	4000	79	4.6	Φ 470	10390
		1000	277.8	900		2953		83		Φ 550	
		1200	333.3	847		3417		81			

1200-85 Series / 系列

泵型号 Model	级数 Stage	流量 Flow Q		扬程 Head H	转速 Speed n	功率 Power		效率 Eff $\eta$	必须气蚀余量 NPSHr	叶轮直径 Impeller Dia D <sub>2</sub>	泵重量 Weight
		m <sup>3</sup> /h	L/S			轴功率 Shaft Power	电机功率 Motor Power				
		KW				%					
ZPD (DF, DY, MD) S1200-85	4	1000	277.8	346	1480	1149	1600	82	5.5	Φ 470	6885
		1200	333.3	325		1250		85		Φ 550	
		1360	377.8	304		1348		83.5			
	5	1000	277.8	439	1480	1458	1800	82	5.5	Φ 470	7470
		1200	333.3	412		1584		85		Φ 550	
		1360	377.8	385		1708		83.5			
	6	1000	277.8	532	1480	1767	2240	82	5.5	Φ 470	8055
		1200	333.3	499		1918		85		Φ 550	
		1360	377.8	466		2067		83.5			
	7	1000	277.8	625	1480	2076	2800	82	5.5	Φ 470	8645
		1200	333.3	586		2253		85		Φ 550	
		1360	377.8	547		2426		83.5			
	8	1000	277.8	718	1480	2385	3150	82	5.5	Φ 470	9230
		1200	333.3	673		2587		85		Φ 550	
		1360	377.8	628		2786		83.5			
	9	1000	277.8	811	1480	2693	3550	82	5.5	Φ 470	9815
		1200	333.3	760		2922		85		Φ 550	
		1360	377.8	709		3145		83.5			
	10	1000	277.8	904	1480	3002	4000	82	5.5	Φ 470	10400
		1200	333.3	847		3256		85		Φ 550	
		1360	377.8	790		3504		83.5			

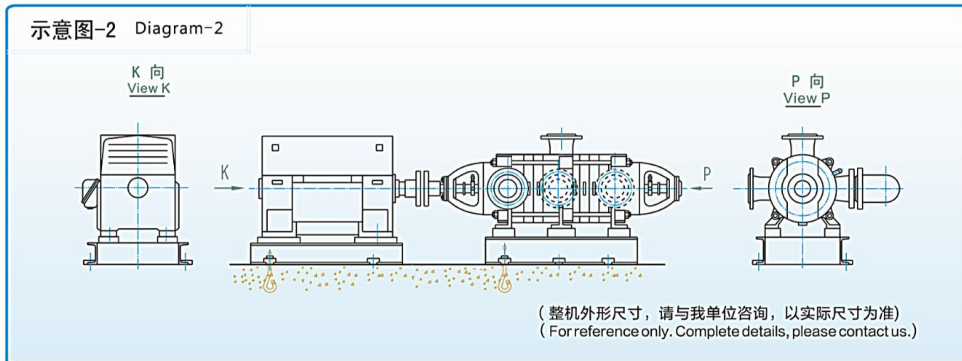
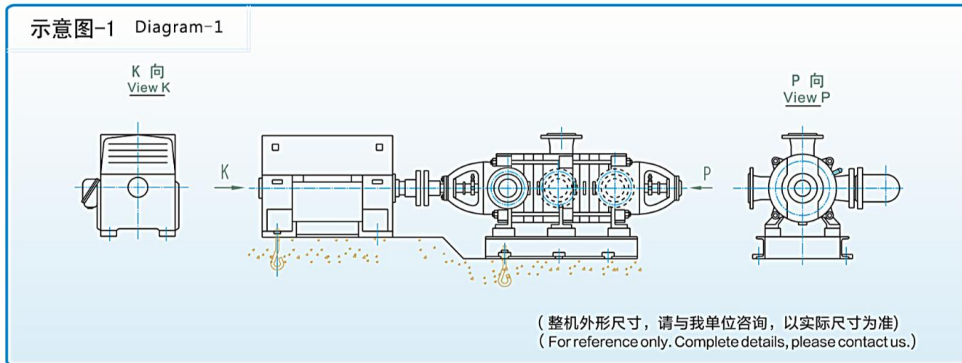
### 泵外形安装尺寸示意图(公用底座)

Pump Overall Installation Dimensions Diagram (Common Base)

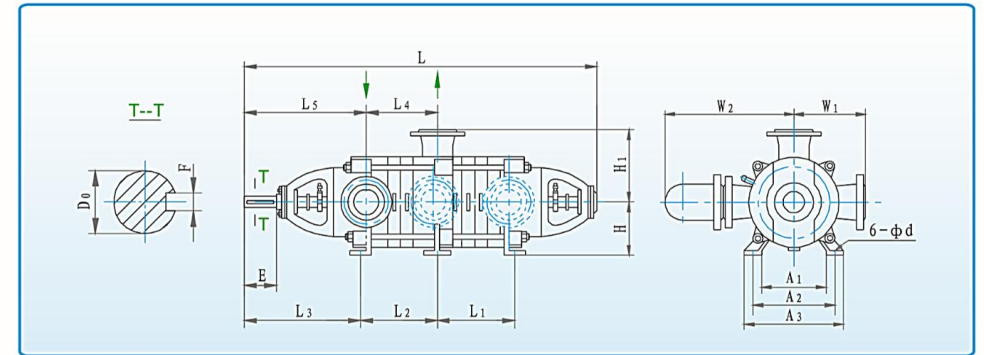


### 泵外形安装尺寸示意图(本身底座)

Pump Overall Installation Dimensions Diagram (Pump's Own Base)

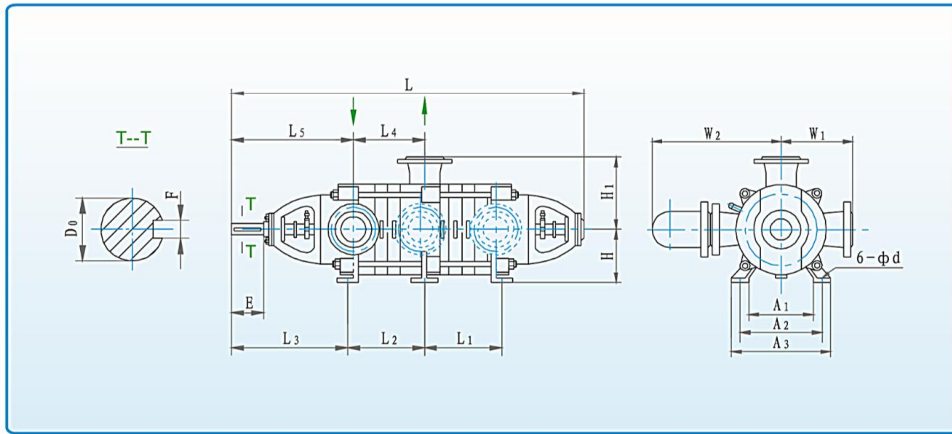


### 泵安装尺寸图、表 Pump Installation Dimensions Chart



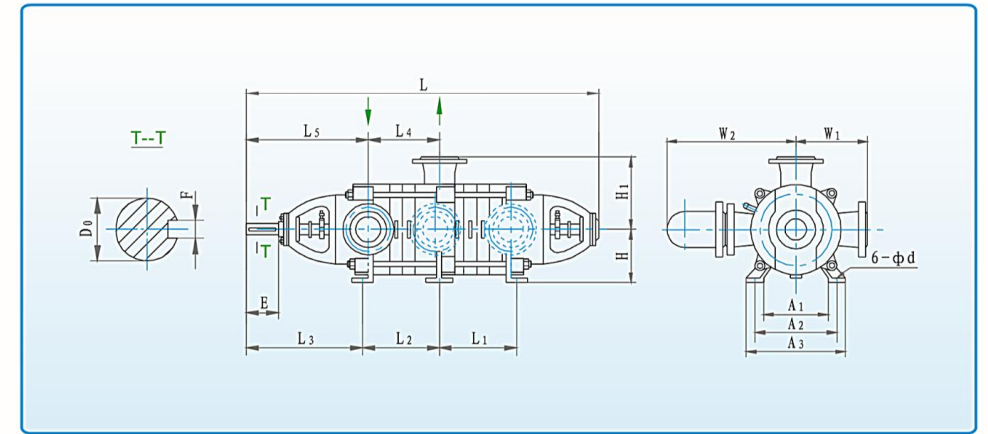
泵型号 Pump Model	泵 安 装 尺 寸 Installation Dimensions Chart																		
	级数 Stage	L	L1	L2	L3	L4	L5	H	H1	W1	W2	A1	A2	A3	6-φd	E	F	D0	
12-80	3	1091	135	75		120													
	4	1151	135	135		180													
	5	1211	195	135		180													
	6	1271	195	195		240													
	7	1331	255	195		240													
	8	1391	255	255	435	300	435	225	275	275	243	215	325	365	φ18	80	10	φ35	
	9	1451	315	255		300													
	10	1511	315	315		360													
	11	1571	375	315		360													
	12	1631	375	315		420													
	46-50	3	1146	252	192		195												
		4	1206	252	252		255												
5		1266	312	252		255													
6		1326	312	312		315													
7		1386	372	312		315													
8		1446	372	372	324	375	357	210	270	300	500	170	320	360	φ23	80	12	φ45	
9		1506	432	372		375													
10		1566	432	432		435													
11		1626	492	432		435													
12		1686	492	492		495													
45-80		6	1587	331	343		373												
		7	1666	410	343		373												
	8	1745	410	422		452													
	9	1824	489	422	420	452	427	290	355	350	465	330	450	530	φ24	110	16	φ55	
	10	1903	489	501		531													
	11	1982	568	501		531													
12	2061	568	580		610														

泵安装尺寸图、表 Pump Installation Dimensions Chart



泵型号 Pump Model	泵 安 装 尺 寸 Installation Dimensions Chart																		
	级数 Stage	L	L1	L2	L3	L4	L5	H	H1	W1	W2	A1	A2	A3	6-φd	E	F	D0	
85-45	3	1140	274	186		209													
	4	1214	274	260		283													
	5	1288	348	260		283													
	6	1362	348	334	306	357													
	7	1436	422	334		357	323	210	250	250	435	280	345	385	φ18.5	80	10	φ35	
	8	1510	422	408		431													
	9	1584	496	408		431													
	10	1658	496	482		505													
	85-67 155-67	3	1543	307	205		229												
		4	1631	307	293		317												
5		1719	395	293		317													
6		1807	395	381	468	405	468	270	355	355	610	250	400	480	φ24	110	16	φ55	
7		1895	483	381		405													
85-67	8	1983	483	469		493													
	9	2071	571	469		493													
85-80	10	2159	571	557		581													
	4	1594	277.5	277.5		328													
	5	1674	357.5	277.5		328													
	6	1754	357.5	357.5		407													
	7	1834	437.5	357.5		407													
	8	1914	437.5	437.5	477	486	482	285	360	360	515	340	450	520	φ24	110	18	φ60	
	9	1994	517.5	437.5		486													
	10	2074	517.5	517.5		565													
	11	2154	597.5	518.2		565													
	12	2234	597.5	597.5		644													

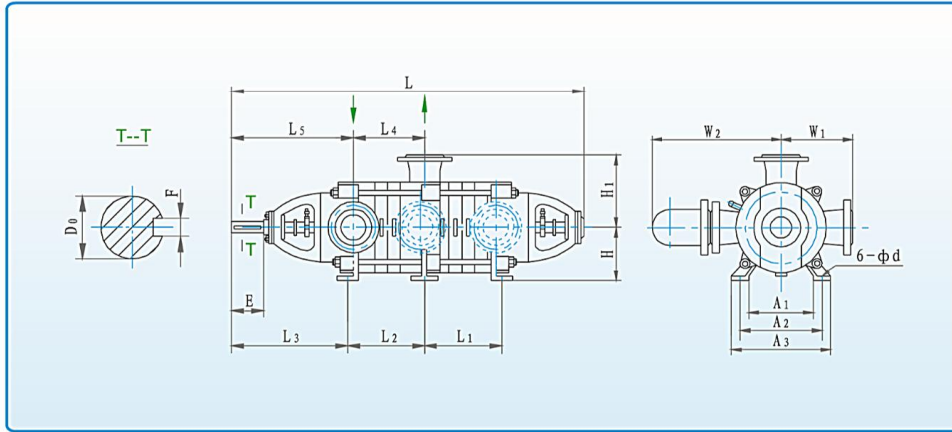
泵安装尺寸图、表 Pump Installation Dimensions Chart



泵型号 Pump Model	泵 安 装 尺 寸 Installation Dimensions Chart																		
	级数 Stage	L	L1	L2	L3	L4	L5	H	H1	W1	W2	A1	A2	A3	6-φd	E	F	D0	
120-50	3	1251	292	205		250.5													
	4	1338	292	292		337.5													
	5	1425	379	292		337.5													
	6	1512	379	379		424.5													
	7	1599	466	379	360	424.5	353.5	230	300	305	500	260	360	420	φ18	110	12	φ45	
	8	1686	466	466		511.5													
	9	1773	553	466		511.5													
	10	1860	553	553		598.5													
	120-100 150-100	4	2188	401	401		477												
		5	2293	506	401		477												
6		2398	506	506		582													
7		2503	611	506	691	582	666	360	570	570	660	430	570	670	φ33	140	22	φ80	
8		2608	611	611		687													
120-100	9	2713	716	611		687													
	10	2818	716	716		792													
155-30	11	2923	821	716		792													
	3	1433	336	259		285													
	4	1548	336	374		400													
	5	1693	451	374		400													
	6	1808	451	489		515													
	7	1923	566	489	386	515	421	280	350	350	545	335	420	480	φ18	105	16	φ50	
	8	2038	566	604		630													
	9	2153	681	604		630													
	10	2268	681	719		745													

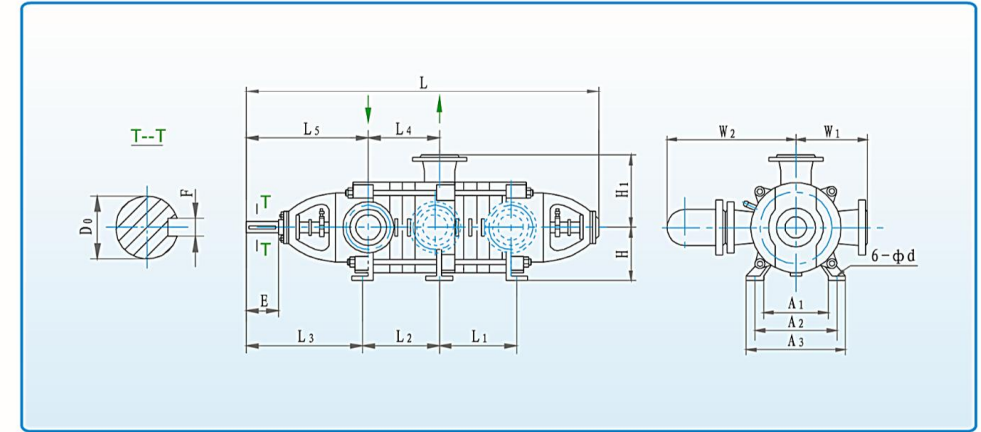


泵安装尺寸图、表 Pump Installation Dimensions Chart



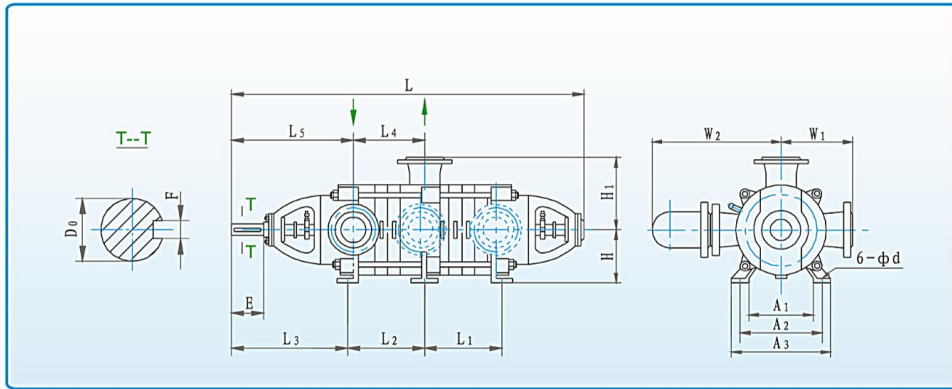
泵型号 Pump Model	泵 安 装 尺 寸 Installation Dimensions Chart																		
	级数 Stage	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	H	H <sub>1</sub>	W <sub>1</sub>	W <sub>2</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	6-φd	E	F	D <sub>0</sub>	
200-50	4	1530	290.5	290.5		326													
	5	1630	390.5	290.5		326													
	6	1730	390.5	390.5		426													
	7	1830	490.5	390.5	443	426	443	270	350	350	430	270	400	480	φ23	115	18	φ65	
	8	1930	490.5	490.5		526													
	9	2030	590.5	490.5		526													
200-100	4	2197	413	405		472													
	5	2309	525	405		472													
	6	2421	525	517		584													
	7	2533	637	517	686	584	681	360	570	505	720	430	570	670	φ33	140	22	φ80	
280-100	8	2645	637	629		696													
	9	2757	749	629		696													
	10	2869	749	741		808													
	11	2981	861	741		808													
280-43	3	1595	355	284		387													
	4	1725	355	414		517													
	5	1855	485	414		517	386									110			
	6	1985	485	544		647													
	7	2145	615	544	446	647		330	400	450	730	430	520	600	φ24		18	φ65	
	8	2275	615	674		777													
500-57	9	2405	745	674		777										140			
	10	2535	745	804		907													

泵安装尺寸图、表 Pump Installation Dimensions Chart



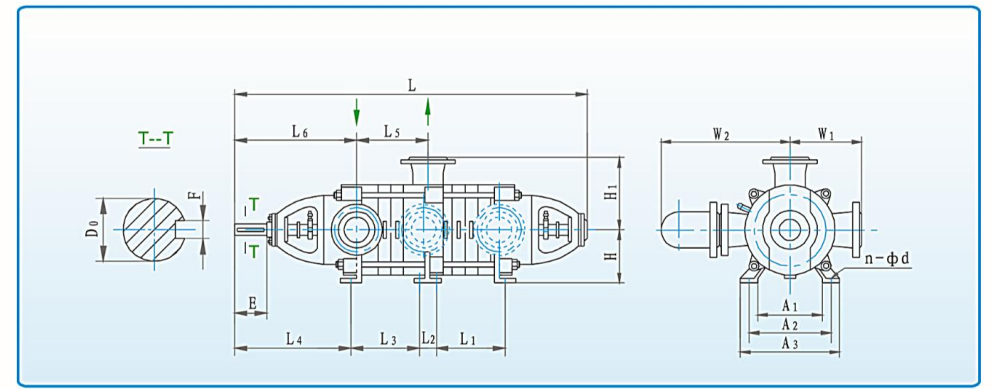
泵型号 Pump Model	泵 安 装 尺 寸 Installation Dimensions Chart																		
	级数 Stage	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	H	H <sub>1</sub>	W <sub>1</sub>	W <sub>2</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	6-φd	E	F	D <sub>0</sub>	
280-65	3	1939.5	393	263		340.5													
	4	2069.5	393	393		470.5													
	5	2199.5	523	393		470.5													
360-60	6	2329.5	523	523		600.5													
	7	2459.5	653	523	616	600.5	599	380	500	500	750	430	600	670	φ30	170	22	φ85	
	8	2589.5	653	653		730.5													
	9	2719.5	783	653		730.5													
360-40	10	2849.5	783	783		860.5													
	3	1646	372	292		394													
	4	1786	372	432		534													
	5	1926	512	432		534													
	6	2066	512	572		674													
	7	2206	652	572	475	674	415	330	400	450	730	430	520	600	φ24	140	18	φ65	
	8	2346	652	712		814													
	9	2486	792	712		814													
	10	2626	792	852		954													
	450-60	3	2029	475	267		392												
4		2182	475	420		545													
5		2335	628	420		545													
6		2488	628	573		698													
7		2641	781	573	627	698	589	410	555	500	900	450	620	710	φ32	170	25	φ90	
8		2794	781	726		851													
9		2947	934	726		851													
10		3100	934	879		1004													

泵安装尺寸图、表 Pump Installation Dimensions Chart



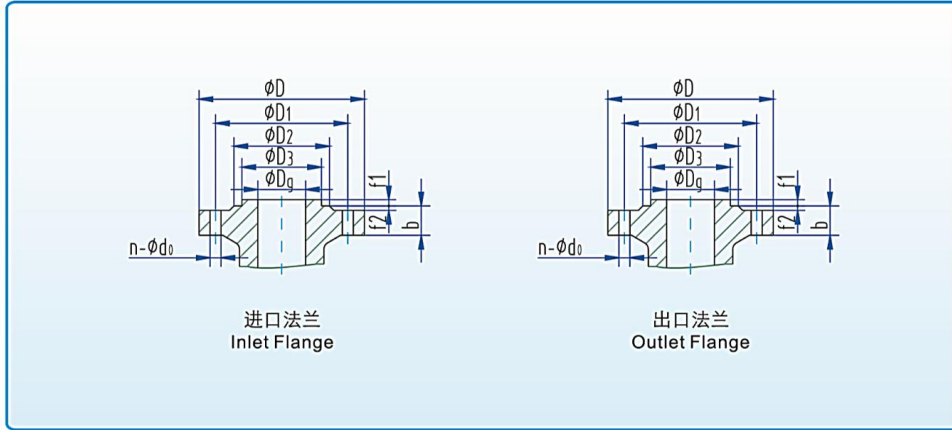
泵型号 Pump Model	泵 安 装 尺 寸 Installation Dimensions Chart																	
	级数 Stage	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	H	H <sub>1</sub>	W <sub>1</sub>	W <sub>2</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	6-φd	E	F	D <sub>0</sub>
580-60 600-60	3	2294	587	387		460												
	4	2494	587	587		660												
	5	2694	787	587		660												
	6	2894	787	787		860												
	7	3094	987	787	615	860	624	430	550	550	915	550	700	780	φ33	170	25	φ90
	8	3294	987	987		1060												
800-100 1000-90 1200-85	9	3494	1187	987		1060												
	10	3694	1187	1187		1260												
	4	3595	741	823		774												
	5	3810	741	1038		989												
1000-90 1200-85	6	4025	956	1038		989												
	7	4240	956	1253	973	1204	1105	600	680	1053	550	850	1100	φ42	210	36	φ138	
	8	4455	1171	1253		1204												
	9	4670	1171	1468		1419												
10	4885	1386	1468		1419													

泵安装尺寸图、表 Pump Installation Dimensions Chart

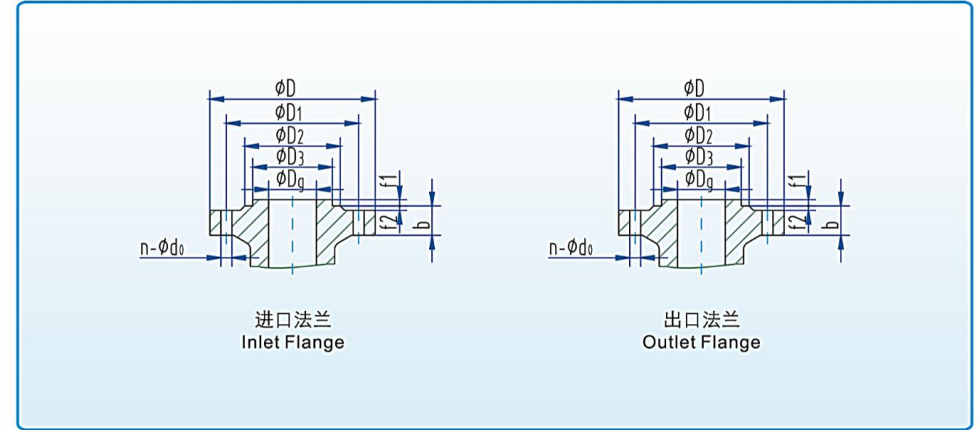


泵型号 Pump Model	泵 安 装 尺 寸 Installation Dimensions Chart																			
	级数 Stage	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	H	H <sub>1</sub>	W <sub>1</sub>	W <sub>2</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	n-φd	E	F	D <sub>0</sub>	
280-95 360-95 450-95	4	2590	434			418		557												
	5	2732	434			560		699												
	6	2874	576			560		699												
	7	3016	576			702		841												
	8	3158	718			702		841												
	9	3300	718	180		844	802	983	842	535	655	650	960	720	870	1020	8-φ33	190	32	φ123
	10	3442	860			844		983												
	11	3584	860			986		1125												
	12	3726	1002			986		1125												
	13	3868	1002			1128		1267												
	14	4010	1144			1128		1267												
	280-95 360-95 580-100 680-100	4	3051	512			454		603											
		5	3221	512			624		773											
6		3391	682			624		773												
7		3561	682	200		794	1076	943	1127	610	760	760	1006	820	1040	1150	4-φ30 / 4-φ36	240	36	φ135
8		3731	852			794		943												
9		3901	852			964		1113												
10		4071	1022			964		1113												
3		2365	311			486		734												
4		2550	496			486		734												
5		2735	496			671		919												
6	2920	681			671		919													
7	3105	681	210		856	642	1104	607	520	630	620	975	500	700	840	8-φ33	170	25	φ95	
8	3290	866			856		1104													
9	3475	866			1041		1289													
10	3660	1051			1041		1289													

进、出口法兰尺寸图、表 Pump Inlet & Outlet Dimensions Chart



进、出口法兰尺寸图、表 Pump Inlet & Outlet Dimensions Chart



泵型号 Pump Model	进口法兰 Inlet Flange									出口法兰 Outlet Flange								
	Dg	D	D1	D2	D3	b	f1 / f2	n-Ød0	压力等级 (Mpa)	Dg	D	D1	D2	D3	b	f1 / f2	n-Ød0	压力等级 (Mpa)
12-80	50	165	125	87	-	21	-	4-Ø18	0.6	50	195	145	87	-	34	-	4-Ø26	10
46-50	80	185	150	125	-	18	-/3	8-Ø18	0.6	80	210	170	140	120	30	4/3	8-Ø23	6.3
45-80	80	200	160	135	-	22	-/3	8-Ø18	1.6	65	220	170	138	109	28	4/3	8-Ø22	10
85-45	100	210	170	154	-	24	-/3	4-Ø17.5	0.6	100	235	190	158	149	30	4.5/3	8-Ø23	4.0
85-67	150	265	225	202	-	23	-/3	8-Ø17.5	0.6	150	345	280	242	203	43	4.5/3	8-Ø33	6.3
85-80	100	220	180	156	-	24	-/3	8-Ø18	1.6	100	265	210	172	149	38	4.5/3	8-Ø30	10
120-50	125	270	220	184	-	24	-/3	8-Ø26	2.5	125	295	240	184	165	30	4.5/3	8-Ø30	6.3
120-100	200	360	310	278	-	45	-/3	12-Ø26	2.5	150	355	290	250	203	46	4.5/3	12-Ø33	10
155-30	150	285	240	212	-	27	-/3	8-Ø22	1.6	125	300	250	184	165	38	4.5/3	8-Ø30	2.5
155-67	150	265	225	202	-	23	-/3	8-Ø17.5	0.6	150	345	280	242	203	43	4.5/3	8-Ø33	6.3
150-100	200	360	310	278	-	45	-/3	12-Ø26	2.5	150	355	290	250	203	46	4.5/3	12-Ø33	10
200-50	150	265	225	202	-	33	-/3	8-Ø17.5	0.6	150	345	280	230	203	38	4.5/3	8-Ø34	6.3
200-100	200	375	320	282	259	48	3/4.5	12-Ø30	4.0	150	355	290	250	203	48	4.5/3	12-Ø34	10
280-43	200	340	295	268	-	28	-/3	8-Ø22	1.0	200	375	320	285	259	42	4/3	12-Ø30	4
280-65	200	340	295	268	-	30	-/3	12-Ø22	1.6	200	415	345	285	259	44	4.5/3	12-Ø36	6.3
280-95	250	450	385	345	-	42	-/2	12-Ø33	4.0	200	430	360	312	259	60	4.5/3	12-Ø36	16

泵型号 Pump Model	进口法兰 Inlet Flange									出口法兰 Outlet Flange								
	Dg	D	D1	D2	D3	b	f1 / f2	n-Ød0	压力等级 (Mpa)	Dg	D	D1	D2	D3	b	f1 / f2	n-Ød0	压力等级 (Mpa)
280-100	200	375	320	282	259	48	3/4.5	12-Ø30	4.0	150	355	290	250	203	48	4.5/3	12-Ø34	10
360-40	200	340	295	268	-	28	-/3	8-Ø22	1.0	200	375	320	285	259	42	4/3	12-Ø30	4.0
360-60	200	340	295	268	-	30	-/3	12-Ø22	1.6	200	415	345	285	259	44	4.5/3	12-Ø36	6.3
360-95	250	450	385	345	-	42	-/2	12-Ø33	4.0	200	430	360	312	259	60	4.5/3	12-Ø36	16
450-60	250	405	355	320	-	35	-/3	12-Ø26	1.6	250	470	400	345	312	48	4.5/3	12-Ø36	6.3
450-95	250	450	385	345	-	42	-/2	12-Ø33	4.0	200	430	360	312	259	60	4.5/3	12-Ø36	16
500-57	250	405	355	320	-	35	-/3	12-Ø26	1.6	250	470	400	345	312	48	4.5/3	12-Ø36	6.3
580-60	300	460	410	370	-	38	-/3	12-Ø26	1.6	250	470	400	352	312	44	4/3	12-Ø36	6.3
580-100	300	515	450	363	-	42	4.5	16-Ø33	4.0	300	585	500	-	363	88	4.5	16-Ø42	16
600-60	300	460	410	370	-	38	-/3	12-Ø26	1.6	250	470	400	352	312	44	4/3	12-Ø36	6.3
680-100	300	515	450	363	-	42	4.5	16-Ø33	4.0	300	585	500	-	363	88	4.5	16-Ø42	16
720-60	300	460	410	370	-	34	-/3	12-Ø26	1.6	300	530	460	412	363	54	4.5/3	16-Ø36	6.3
800-100	350	555	490	421	-	38	-/5	16-Ø30	2.5	300	530	460	410	363	60	4.5/3	12-Ø36	10
1000-90	350	555	490	421	-	38	-/5	16-Ø30	2.5	300	530	460	410	363	60	4.5/3	12-Ø36	10
1200-85	350	555	490	421	-	38	-/5	16-Ø30	2.5	300	530	460	410	363	60	4.5/3	12-Ø36	10

## 装配与拆卸

泵装配质量的好坏直接影响泵能否正常运行，并影响泵的使用寿命和性能参数及机组的振动和噪音，装配中须特别注意。

### ● 装配前的准备

- ◆ 泵在装配前首先检查零件有无影响装配的缺陷，并清洗干净，方可进行装配。
- ◆ 检查各处的配合是否合适。

### ● 泵的装配

- ◆ 应保护好零件的加工精度和表面粗糙度，不允许有碰伤、划伤等现象，作密封用的密封胶要干净，紧固螺钉和螺栓应受力均匀；
- ◆ 叶轮出口流道与导叶进口流道的对中性是依各零件的轴向尺寸来保证，流道对中性的好坏直接影响泵的性能，故泵的尺寸不能随意调整。
- ◆ 泵装配完后，在未装填料前，用手转动泵转子，检查转子在泵中旋转是否灵活；
- ◆ 检查合格后压入填料，并注意填料环在填料腔的相对位置。

### ● 泵拆卸时应注意的事项

- ◆ 按停车顺序停车；
- ◆ 泵壳内液体（包括冷却水）应放掉；轴承部件是稀油润滑时，应放掉润滑油；
- ◆ 拆去妨碍拆卸的附属管路，如回水管等；
- ◆ 拆卸时应严格保护零件的制造精度不受损伤，拆卸穿杆的同时应将各中段用垫块垫起，以免各中段止口松动下沉将轴压弯。

### ● 泵的拆卸顺序

- ◆ 卸下泵联轴器后，拧下轴承压盖上的螺栓、进水段和轴承体的联接螺母后，卸下前轴承体；
- ◆ 拧下轴上圆螺母并依次卸下轴承内圈、轴承压盖和挡圈；
- ◆ 将各中段用垫块垫起，卸下穿杆螺母，卸下进水段，及进水段上的填料压盖、填料环、填料等；
- ◆ 依次卸下前级叶轮，平键、正导叶，正叶轮，末级正导叶，出水段，中节流、减压装置；
- ◆ 依次卸下末级反导叶，末级反叶轮，平键、反导叶，反叶轮，后节流、减压装置，千万注意正、反叶轮，导叶的方向和顺序；
- ◆ 拧下次级进水段、尾盖之间的螺母，将主轴，尾盖、后轴承体部件取去；
- ◆ 拧下尾盖、轴承体之间的螺母，卸下尾盖上的填料压盖、填料环、填料等；
- ◆ 拧下后轴承压盖上的螺栓，将轴承，小圆螺母，轴承盖依次卸下；
- ◆ 采用滑动轴承的泵，其拆卸顺序基本相同，仅在拆卸轴承部件时略有不同。

## 泵的安装

本型泵安装时除满足一般要求外，还应注意以下几点：

- ◆ 安装泵的基础平面应用水平仪找平。基础水泥凝固后，应检查底座和地脚螺栓孔是否松动；
- ◆ 电机、泵和底座组装后，应严格检查泵轴和电机轴的同轴度，保证两轴线在同一水平线上；
- ◆ 电机和水泵组装时，保证泵和电机两联轴器端面的轴向间隙值，该系列泵无轴向窜动；
- ◆ 泵只能承受自身内力，不能承受任何外力，所以泵的吸入管路和压出管路应有各自的支架，以免将泵压坏。
- ◆ 用于含有可燃易爆气体的矿井下运行的 ZPD、ZPMD 型泵，必须采用防爆电机并要求具有相应的防护等级和防爆标志。⚠

## Installation & Disassembly

Please pay attention to the pump assembly which will directly affect the pump's normal operation, usage life, performance and the vibration & noise level

### ● Preparation Before Assembly

- ◆ TO check all the parts to avoid any defect, clean up all the parts before assembly.
- ◆ TO check all parts for any scratches and surface roughness.

### ● The Pump Assembly

- ◆ Ensure the parts' machining accuracy and surface roughness without crack, scratches etc, the sealant for sealing purpose should keep clean and make sure to keep the screws and bolts under average stress;
- ◆ The centering of impeller outlet channel and diffuser inlet flow channel depend on the axial dimension of each part, the flow passage centering will affect the pump performance directly, so the pump size should not be changed at random;
- ◆ After the assembly, rotating the pump rotor by hands before filling with packing seal to check the flexibility of rotor;
- ◆ Fulfill the packing seal chamber after the above checking and pay attention to the position of the sealing ring in the relative position of the packing chamber.

### ● Disassembly Notice

- ◆ The pump stopping should strictly follow the instructions
- ◆ Draining off the liquid inside pump (including the cooling water), and also draining off the lubricating oil when the bearings were lubricated by diluted oil;
- ◆ TO remove the subsidiary pipeline which obstructing the disassembly
- ◆ Keep all the parts strictly away from damage in disassembly. When removing the wear rod, every middle part should be hold by cushion to prevent the shaft bending by the sink of each middle part.

### ● Disassembly Sequence Of The Pump

- ◆ After removing the pump coupling, unscrew the bolts of bearing cover and coupling nut of suction-stage and bearing housing, then removing the front bearing;
- ◆ Unscrew the round nut on the shaft and remove the bearing inner ring, bearing cover and the fixed ring in order.
- ◆ Underlay each middle stage, remove wear rod nuts, suction-stage and packing gland, packing ring, packing seals on the suction-stage;
- ◆ Remove the front stage impeller, flat key, forward guide vane, backward guide vane, discharge-stage, throttling & Pressure reducing device one by one.
- ◆ Remove the backward reverse guide vane, backward reverse impeller, flat key, backward reverse impeller, backward reverse guide vane, rear throttle and pressure relief device in order. Please notice the sequence and the directions of impellers and guide vane.
- ◆ Unscrew the nuts between secondary suction stage and end cover, and then take down shaft, end cover and back bearing parts.
- ◆ Unscrew the nuts between end cover and bearing, and remove the packing gland, packing ring and packing seals etc.
- ◆ Unscrew the bolts on the rear bearing caps, and take down the bearings, small round nut, bearing caps one by one in sequence;
- ◆ The pump with sliding bearing can take the same disassemble sequence, only slight difference when removing the bearing parts.

## Pump Installation

### Additional points are advised apart from general requirements:

- ◆ Horizontal instrument is advised for installation foundation. Assure the foundation bolts are tight sufficiently into the foundation.
- ◆ Concentricity of shafts of pump and motor shall be checked strictly to make sure that these two shafts are on the same line after assembly of motor, pump and foundation.
- ◆ When installing motor and pump, ensure the axial gap between the coupling pump, and also the axial gap between the coupling and motor, since this series of pump are without axial movement;
- ◆ Independent brackets for inlet pipelines and discharging pipelines are necessary in that the pump can sustain its own stress only This avoids possible damage to the pump from external pressure.
- ◆ Explosive-proof motor is a must for ZPDP and ZPMD pump under circumstances of inflammable and explosive. mining well for instance, while insulation class and explosive-proof mark shall be indicated.⚠

## 泵的起动、运行和停机

### ● 起动

- ◆ 泵起动前应转动泵转子，检查转子是否灵活；
- ◆ 检查电机转向是否与泵转向一致；
- ◆ 打开泵吸入阀（如果装有吸入阀时），关闭泵出口管路闸阀及压力表旋塞，使泵内充满液体，或用真空系统排除吸入管路和泵内空气；
- ◆ 检查泵和电机联接螺栓的松紧程度和泵周围的安全情况，使泵处于准备起动状态；
- ◆ 起动机，待泵运转正常后，打开压力表旋塞，慢慢开启泵出口闸阀，直到压力表指针指到所需压力为止（按出口压力表读数控制泵给定的扬程）。

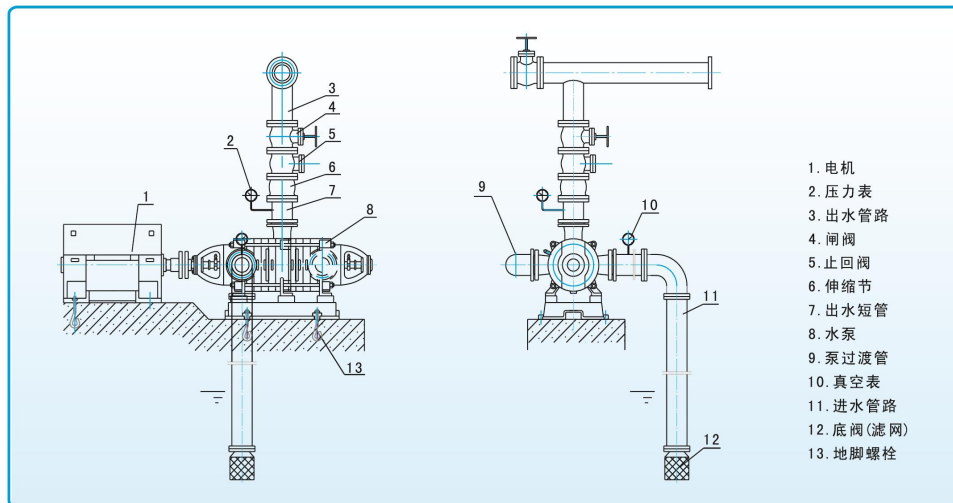
### ● 运行

- ◆ 该泵轴向力靠泵自身平衡，故无平衡水管；为保证泵正常运行，回水管不允许堵塞；
- ◆ 在起动和运行过程中，必须注意观察仪表读数、轴承发热、填料漏水和温度、泵的振动和声音等是否正常，如发现异常情况，应及时处理；
- ◆ 轴承温升变化反映了泵的装配质量，轴承温升不得高于环境温度35℃，轴承的最高温度不得高于75℃；
- ◆ 泵在运行期间应定期检查叶轮、密封环、导叶套、轴套、节流、减压装置等零件的磨损情况，磨损过大时应及时更换。

### ● 停机

- ◆ 停机前应先关闭压力表旋塞，慢慢关闭出口闸阀，待出口闸阀关闭完毕后再停电机，泵停稳后再关闭泵的吸入阀（如果装有吸入阀时）；
- ◆ 如泵长期停用，应将泵的进水段，出水段，次级进水段下方放水螺塞全部卸下，放掉余水，并将泵拆卸清洗上油，包装保管。

## 泵管路安装示意图



## Start-up, Operating And Halting Of Pump

### ● Start-up

- ◆ Rotate the rotor of the pump to make sure it is flexible;
- ◆ Check and assure the rotation direction of the motor and the pump is identical
- ◆ Open the suction valve, if available and close the gate valve of outlet pipelines and faucet of the pressure meter to fill the pump with liquid; Or use vacuum to expel all air out of the pump and pipelines.
- ◆ Make the pump ready for initializing after qualification of tightness of bolts between the pump and the motor and surroundings of the pump.
- ◆ Open the faucet of the pressure meter after normal operation of the pump and open the gate valve slowly till pointer of the pressure meter to the right value. (Control the head of the pump according to the discharging pressure)

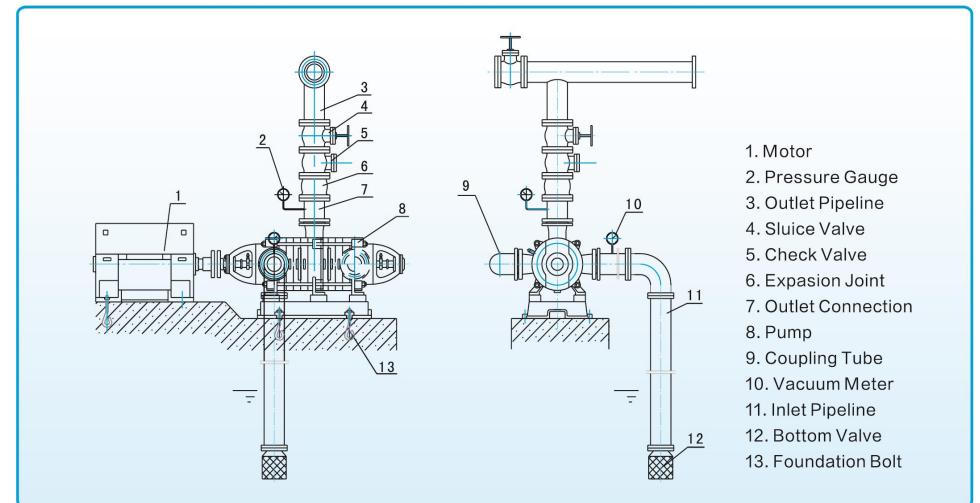
### ● Operating

- ◆ Axial force is balanced by balancing system inside the pump in which equipped none balancing water pipe; water return pipe is not allowed to be blocked to keep normal operation of the pump.
- ◆ Attention shall be made for all meters, temperature of bearing, leakage of filling, vibration and noise of the pump and immediate action shall be made if anything happens as following.
- ◆ Temperature rise of bearing reflects assembly quality of the pump; Temperature shall not be 35. C higher than that of ambient while the max temperature of the bearing is 75 C
- ◆ Axial movement of the rotor of the pump is possible and shall be within allowable range Gad width between end surface of the coupling joints of the motor and the pump.
- ◆ Impeller, sealing ring, guide vane and balancing plate shall be checked regularly during operation and immediate replacement shall be made if any wearing parts found.

### ● Halting

- ◆ Close the faucet of the pressure meter and close the discharging gate valve slowly; Halt the motor till discharging valve is totally closed; Close the suction valve, if any, after halting of the pump.
- ◆ For long time halting of the pump, all water shall be discharged by means of opening of all faucets of inlet segments, the middle, and the discharging; Disassemble the pump and oil all parts for long time keeping.

## Pipeline Installation Diagram



## 泵常见故障分析与排除方法

故障现象	原因分析	排除方法
泵不吸水, 压力表、真空表指针剧烈震动, 或真空表显示高度真空	<ol style="list-style-type: none"> <li>1. 泵充水不够</li> <li>2. 吸水管或表漏气</li> <li>3. 底阀未开</li> <li>4. 吸水管堵塞</li> <li>5. 吸水高度过大</li> </ol>	<ol style="list-style-type: none"> <li>1. 注水排气</li> <li>2. 上紧螺扣</li> <li>3. 修理或更换底阀</li> <li>4. 清洗吸水管</li> <li>5. 降低吸水高度</li> </ol>
压力表有压力, 但不出水或流量过小	<ol style="list-style-type: none"> <li>1. 流道有堵塞, 或底阀局部堵塞</li> <li>2. 泵转速低于规定值</li> <li>3. 系统总扬程高于泵设计扬程</li> <li>4. 泵中进入气体</li> <li>5. 泵转向不对</li> <li>6. 零件磨损, 内部泄漏过大</li> </ol>	<ol style="list-style-type: none"> <li>1. 清洗流道, 或清除底阀异物</li> <li>2. 提高泵转速</li> <li>3. 增加泵级数或减少管路损失</li> <li>4. 堵塞进气部位</li> <li>5. 电机重新接线</li> <li>6. 更换磨损零件</li> </ol>
电机电流过大	<ol style="list-style-type: none"> <li>1. 系统总扬程大大低于泵的设计扬程</li> <li>2. 管路破裂跑水</li> <li>3. 启动时未关闭出口闸阀</li> <li>4. 泵轴与电机轴不同心</li> <li>5. 旋转件与固定件发生摩擦</li> <li>6. 轴承磨损</li> <li>7. 转子不平衡, 产生振动</li> <li>8. 电压过低</li> </ol>	<ol style="list-style-type: none"> <li>1. 关闭闸阀进行调节, 或减少泵级数</li> <li>2. 停泵处理管路</li> <li>3. 关闭闸阀, 重新启动</li> <li>4. 重新找正, 避免系统力作用于泵上</li> <li>5. 拆泵重新调整</li> <li>6. 更换轴承</li> <li>7. 拆卸转子做静平衡、动平衡检测</li> <li>8. 提高电压</li> </ol>
填料函泄漏多, 填料发热冒烟, 填料寿命短	<ol style="list-style-type: none"> <li>1. 泵轴与电机轴不同心</li> <li>2. 轴发生弯曲</li> <li>3. 填料处轴套损伤, 或填料安装不当, 或填料型号不对</li> <li>4. 填料与轴套间有杂质</li> </ol>	<ol style="list-style-type: none"> <li>1. 重新找正</li> <li>2. 拆卸、矫正轴</li> <li>3. 打磨或更换轴套, 或重新安装填料、均匀压紧或更换填料</li> <li>4. 更换填料</li> </ol>
泵震动或有噪音	<ol style="list-style-type: none"> <li>1. 泵发生汽蚀</li> <li>2. 流道有堵塞, 或底阀局部堵塞</li> <li>3. 管路破裂跑水</li> <li>4. 出口阀打开启动</li> <li>5. 泵与电机轴不同心, 或轴弯曲</li> <li>6. 基础刚性不足</li> <li>7. 旋转件与固定件发生摩擦</li> <li>8. 叶轮缺损</li> <li>9. 轴承内润滑脂过多或过少</li> <li>10. 轴承磨损或内有脏物</li> </ol>	<ol style="list-style-type: none"> <li>1. 降低泵的几何安装高度, 减少吸水管阻力</li> <li>2. 清理流道, 或清理底阀</li> <li>3. 停泵处理管路</li> <li>4. 关闭闸阀, 重新启动</li> <li>5. 重新找正, 或检修、换轴</li> <li>6. 加固基础</li> <li>7. 拆卸、重新调整泵</li> <li>8. 更换叶轮</li> <li>9. 添加润滑脂要适量</li> <li>10. 更换或清洗轴承, 并注意密封轴承</li> </ol>
轴承发热	<ol style="list-style-type: none"> <li>1. 泵轴和电机轴不同心, 或轴弯曲</li> <li>2. 旋转件与固定件摩擦</li> <li>3. 轴承损坏, 或轴承内有脏物或进水</li> <li>4. 轴承内润滑脂过多或过少</li> </ol>	<ol style="list-style-type: none"> <li>1. 重新找正, 或检修、换轴</li> <li>2. 拆卸、重新调整泵</li> <li>3. 添加润滑脂要适量</li> <li>4. 更换或清洗轴承, 并注意密封轴承</li> </ol>
中段等处结合面漏液	<ol style="list-style-type: none"> <li>1. 穿杠螺栓紧固力不够或用力不均</li> <li>2. 零件的制造精度(粗糙度, 跳动或垂直度)未达到设计要求, 或残余应力使零件变形</li> <li>3. 结合面不洁或损坏</li> </ol>	<ol style="list-style-type: none"> <li>1. 重新紧固穿杠</li> <li>2. 拆泵检查</li> <li>3. 检修结合面</li> </ol>

## Trouble & Solutions

Failures	Causes	Solution
Water sucking failure Pointer of pressure Meter and vacuum meter Moves severely Vacuum meter indicate Extremely high of vacuum	<ol style="list-style-type: none"> <li>1. Insufficient perfusion</li> <li>2. Leaking of the suction pipeline or the Measure meter</li> <li>3. Bottom valve closed</li> <li>4. Suction pipeline blocked</li> <li>5. Over height of water sucking</li> </ol>	<ol style="list-style-type: none"> <li>1. Re-perfusion and relief the air</li> <li>2. Tighten and seal all the screws and connections</li> <li>3. Repair or replace the bottom valve</li> <li>4. Clean the suction pipeline</li> <li>5. Reduce the height of water sucking</li> </ol>
Pressure meter indicates Rightly but discharging Falls	<ol style="list-style-type: none"> <li>1. Flow path blocked or bottom valve is Partly blocked</li> <li>2. Pump running under low speed or wrong direction</li> <li>3. Air leakage into the pump or pump parts damaged</li> <li>4. The whole delivery distance exceed the design capacity</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the flow path and bottom valve</li> <li>2. Enhance the pump speed or adjust the rotating Direction of the impeller</li> <li>3. Make sure the pump in none air leakage states</li> <li>4. Increase impellers and reduce the pipeline loss</li> </ol>
Currency overflow	<ol style="list-style-type: none"> <li>1. the whole delivery distance exceed the Design capacity</li> <li>2. The pipeline leakage</li> <li>3. Sluice valve not closed when starting up</li> <li>4. The centering of the pump shaft and motor shaft not in the same level</li> <li>5. Friction occurred between the rotating Parts and fixed part</li> <li>6. Bearing wear</li> <li>7. Rotor not balanced</li> <li>8. Low voltage of power supply</li> </ol>	<ol style="list-style-type: none"> <li>1. Close the sluice valve, and reduce the pump stages</li> <li>2. Repair the pipeline system</li> <li>3. Close the sluice valve and re-start the pump</li> <li>4. Centering again</li> <li>5. Disassemble the pump for re-adjustment</li> <li>6. Change the bearing</li> <li>7. Disassemble the pump and re-adjust the dynamic and stationary balancing</li> <li>8. Increase the voltage of power supply</li> </ol>
Packing seal over Leaking Packing seal over Heat Packing seal over Consumption	<ol style="list-style-type: none"> <li>1. The centering of the pump shaft and Motor shaft not in the same level</li> <li>2. Shaft bent</li> <li>3. Shaft sleeve broken, packing seal not Right or not fixed in right position</li> <li>4. Impurities fill between the packing seal And shaft sleeve</li> </ol>	<ol style="list-style-type: none"> <li>1. Centering again</li> <li>2. Adjust the shaft</li> <li>3. Polish or replace the shaft sleeve, refill or replace The packing seal</li> <li>4. Replace the packing seal</li> </ol>
Pump vibration & Noise abnormal	<ol style="list-style-type: none"> <li>1. Pump cavitation</li> <li>2. Flow path blocked or bottom valve is partly blocked</li> <li>3. The pipeline leakage</li> <li>4. Outlet valve not close while starting the pump</li> <li>5. The centering of the pump shaft and motor shaft not in the same level, or the shaft get bent</li> <li>6. The foundation lack of rigidity</li> <li>7. Friction occurred between the rotating parts and fixed part</li> <li>8. Impeller damaged</li> <li>9. Lubricating oil in the bearing is too much or too little</li> <li>10. Bearing wear down or impurity</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the installation height of the pump</li> <li>2. Clean the flow passage and the bottom valve</li> <li>3. Clean the pipeline</li> <li>4. Close the sluice valve and restarting the pump</li> <li>5. Centering again</li> <li>6. Enhance the foundation</li> <li>7. Adjust the pump and reassemble the pump</li> <li>8. Replace the impeller</li> <li>9. Fulfill the lubricating oil or reduce it to the right Volume</li> <li>10. Clean the bearing</li> </ol>
Bearing over heat	<ol style="list-style-type: none"> <li>1. The centering of the pump shaft and motor shaft not in the same level, or the shaft get bent</li> <li>2. Friction occurred between the rotating parts and fixed part</li> <li>3. Bearing wear down or impurity</li> <li>4. Lubricating oil in the bearing is too much or too little</li> </ol>	<ol style="list-style-type: none"> <li>1. Centering again</li> <li>2. Adjust the pump and reassemble the pump</li> <li>3. Replace the bearing or clean the bearing</li> <li>4. Adjust the lubricating oil</li> </ol>
Leakage from juncture Between stages	<ol style="list-style-type: none"> <li>1. Outward bolt loosen</li> <li>2. Surface of the stages not accurate and Smooth or damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten the outward bolt</li> <li>2. Check the stage surface, repair or replace the Damaged one</li> </ol>