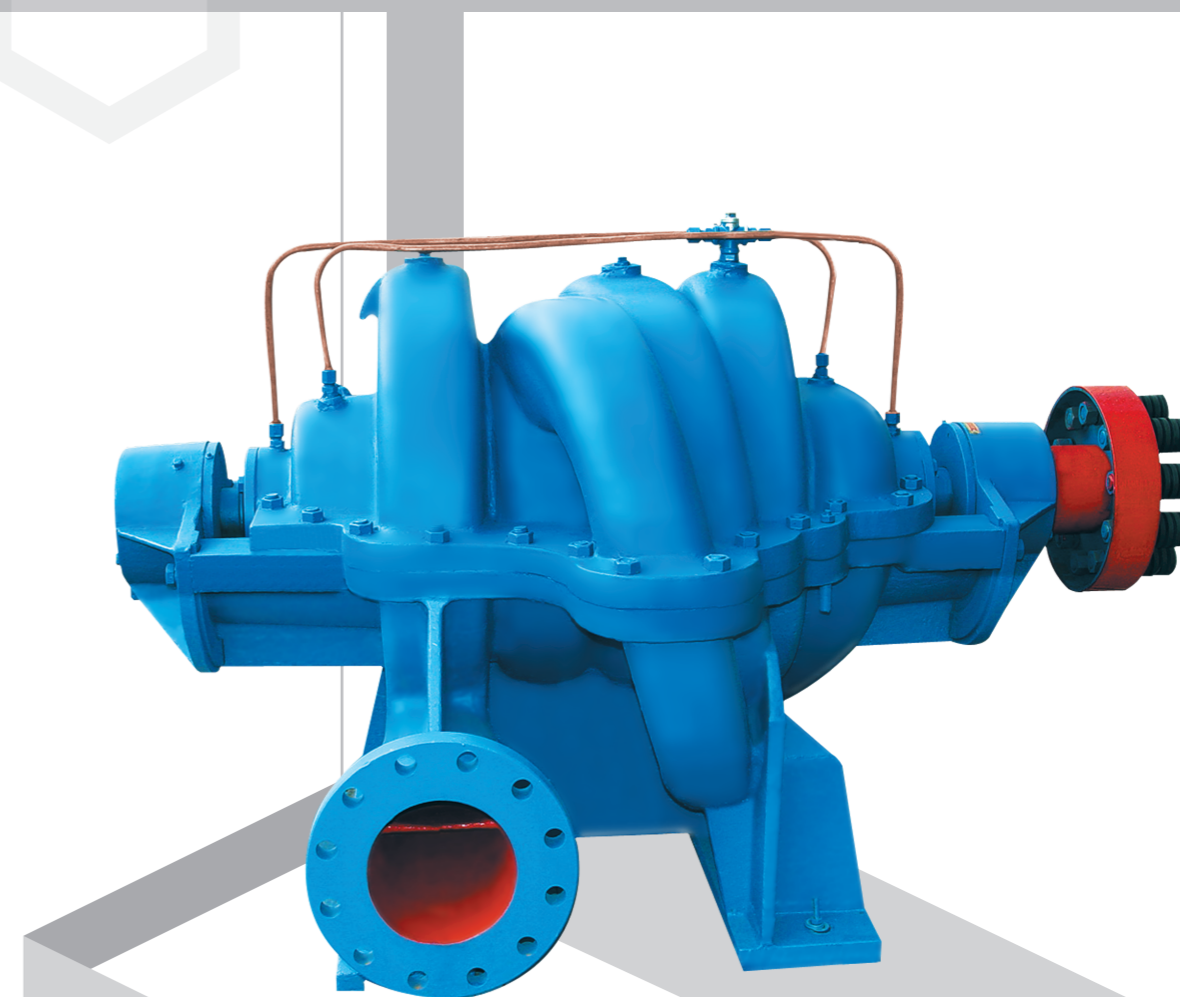




SLOW双级双吸中开蜗壳式离心泵

SLOW DOUBLE-STAGE DOUBLE-SUCTION BISECT VOLUTE TYPE CENTRIFUGAL PUMP



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产品概述 Product outline

SLOW型双级双吸中开蜗壳式离心泵，是我公司专门满足钢铁厂、电厂、泵站等大流量高扬程的需要而设计制造的。揉合了国内外先进的双级中开泵设计经验，采用专用机床加工制造。本产品输送介质为水及类似于水的液体，液体温度-10℃~80℃。

SLOW Centrifugal Pump of Double-stage and Double-suction Bisect Volute Type is specially designed and manufactured by our company for using in the occasions which require large flux and high lift, such as iron works, electric power plants and pump station, etc. In combination with advanced design experience of double-stage bisect pump at home and abroad, the products are processed by using special machine tool. This product is applicable for feeding such media as water or liquid similar to water at the temperature from -10°C to 80°C.

产品特点 Product characteristic

- 进出水口全部在泵体上，检修时只需吊起泵盖即可，极大地方便了维修。
- 叶轮采用首级双吸，次级单吸，提高了泵的抗汽蚀性能，减少了泵的轴向尺寸。
- 转速为1480r/min，避免了高转速容易引起的振动。
- 相比单级泵，同样的性能，叶轮直径小，运行平稳。
- 压水室采用双蜗壳设计，减小径向力。
- 采用滚动轴承，油脂或稀油润滑，轴承维护方便。
- 采用国际先进的流体力学软件进行设计，三维软件造型，有限元软件进行强度校核，确保泵高效、平稳、可靠地运行。
- 全部采用机械密封，8000小时无泄漏，根据客户要求可定制填料密封。
- 泵为顺时针旋转，可根据用户要求订制逆时针旋转；
- 本产品已申请了国家专利(专利号：ZL200520046059.0)

- Water inlet and outlet are all installed in pump body. Just hoist the pump cover when overhaul, greatly facilitating maintenance.
- Primary-stage double-suction and secondary-stage single-suction of impeller adopted, greatly improving anti-cavitation performance of pump and decreasing axial dimension of pump.
- At rotary speed of 1480 rpm, avoiding vibration caused by high rotary speed.
- In comparison with single-stage pump, the products have same performance and smaller impeller diameter and stable operation.
- The pumping chamber adopts double-volute design, reducing radial force.
- Applying rolling bearing and lubrication with grease or thin oil and facilitating the maintenance of bearing.
- Designing in virtue of international advanced hydromechanics software, modeling by using 3DM software, and checking the strength with finite element software, ensuring high efficient, stable and reliable operation of pump.
- Fully mechanical seal ensures no leakage within 8000 h, and packing seal is customizable.
- The pump turns clockwise, and anticlockwise turning is customizable.
- This product has applied for national patent (patent number: ZL200520046059.0)

型号说明 About the model

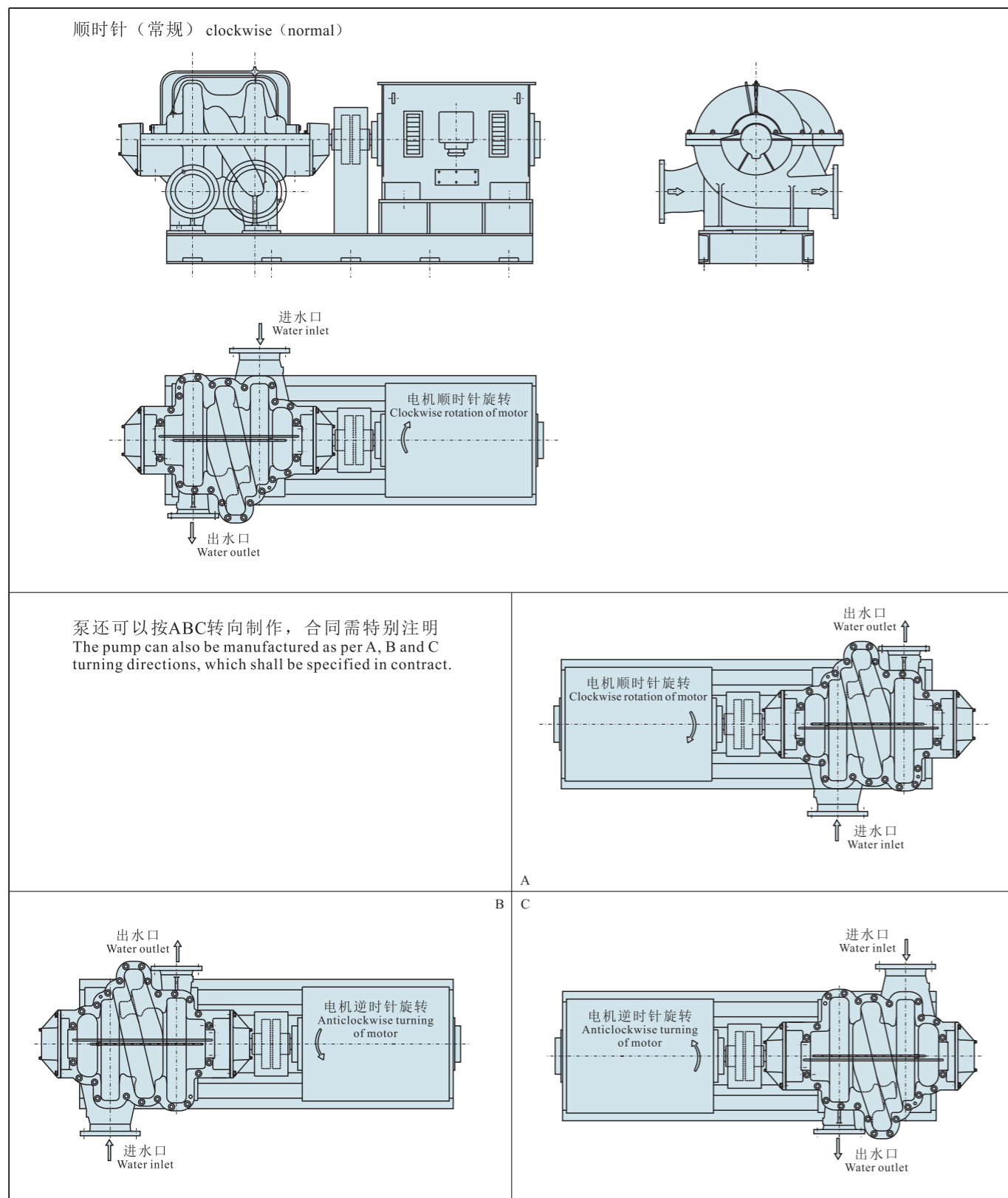


主要部件材料 Main part material

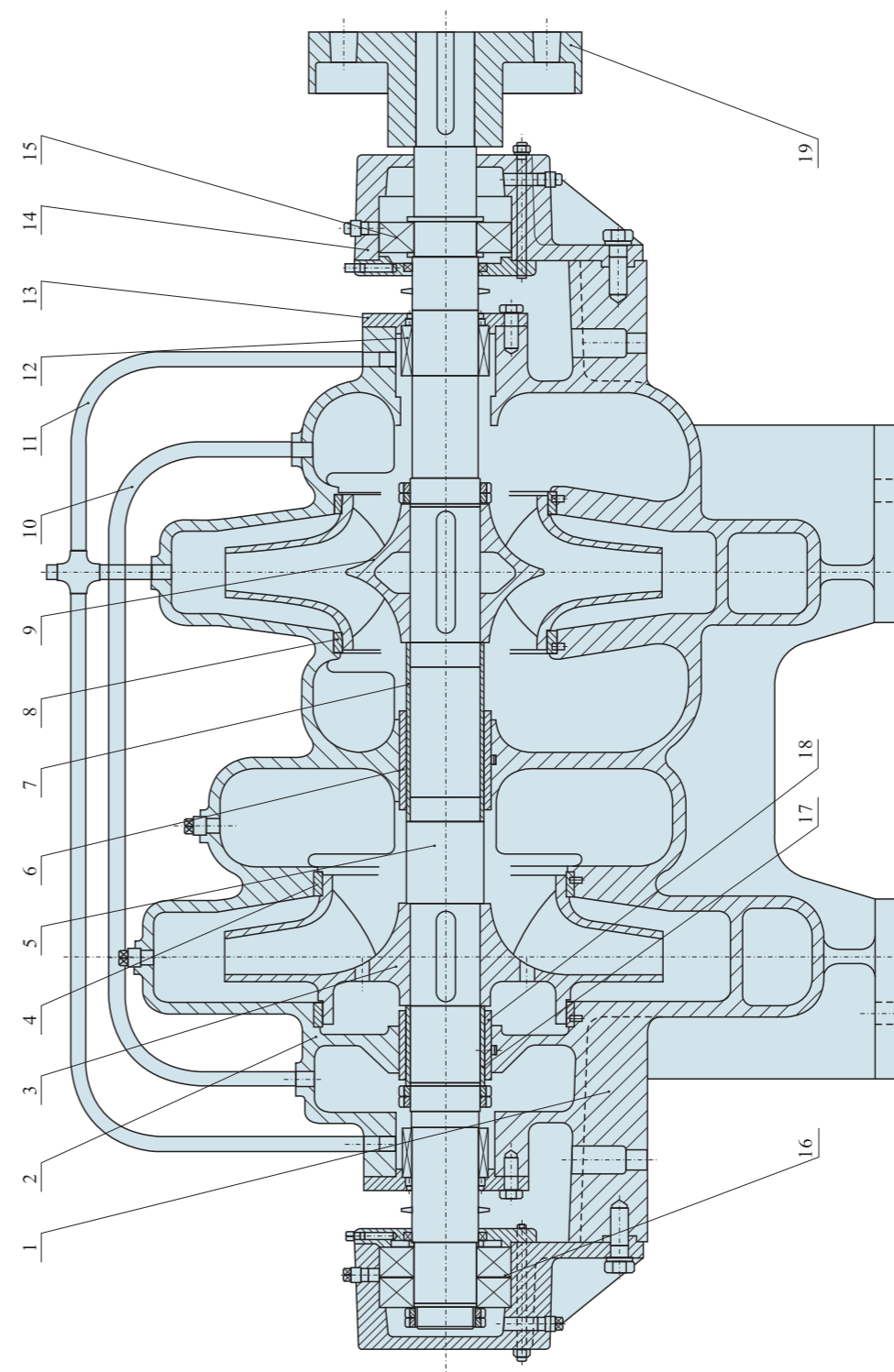
名称 Part	材料 Material	名称 Part	材料 Material
泵体 Pump body	◆ 铸铁 Cast iron HT250	轴 Shaft	◆ 碳素钢 Carbon steel 40Cr
	球铁 Magnesium iron QT400-18		不锈钢 Stainless steel 2Cr13
	铸钢 Cast steel ZG230-450		
泵盖 Pump cover	◆ 铸铁 Cast steel HT250	密封环 Seal ring	◆ 铸铁 Cast steel HT200
	球铁 Magnesium iron QT400-18		不锈钢 Stainless steel 2Cr13
	铸钢 Cast steel ZG230-450		球铁 Magnesium iron QT400-18
叶轮 Impeller	◆ 铸铁 Cast iron HT250		
	球铁 Magnesium iron QT400-18		
	不锈钢 Stainless steel 1Cr18Ni9Ti		
	铸钢 Cast steel ZG230-450		

标◆为普通型供货，可根据客户要求材料供应
◆ denotes general supply, to be supplied as request.

泵转向示意图 Schematic drawing of pump turning



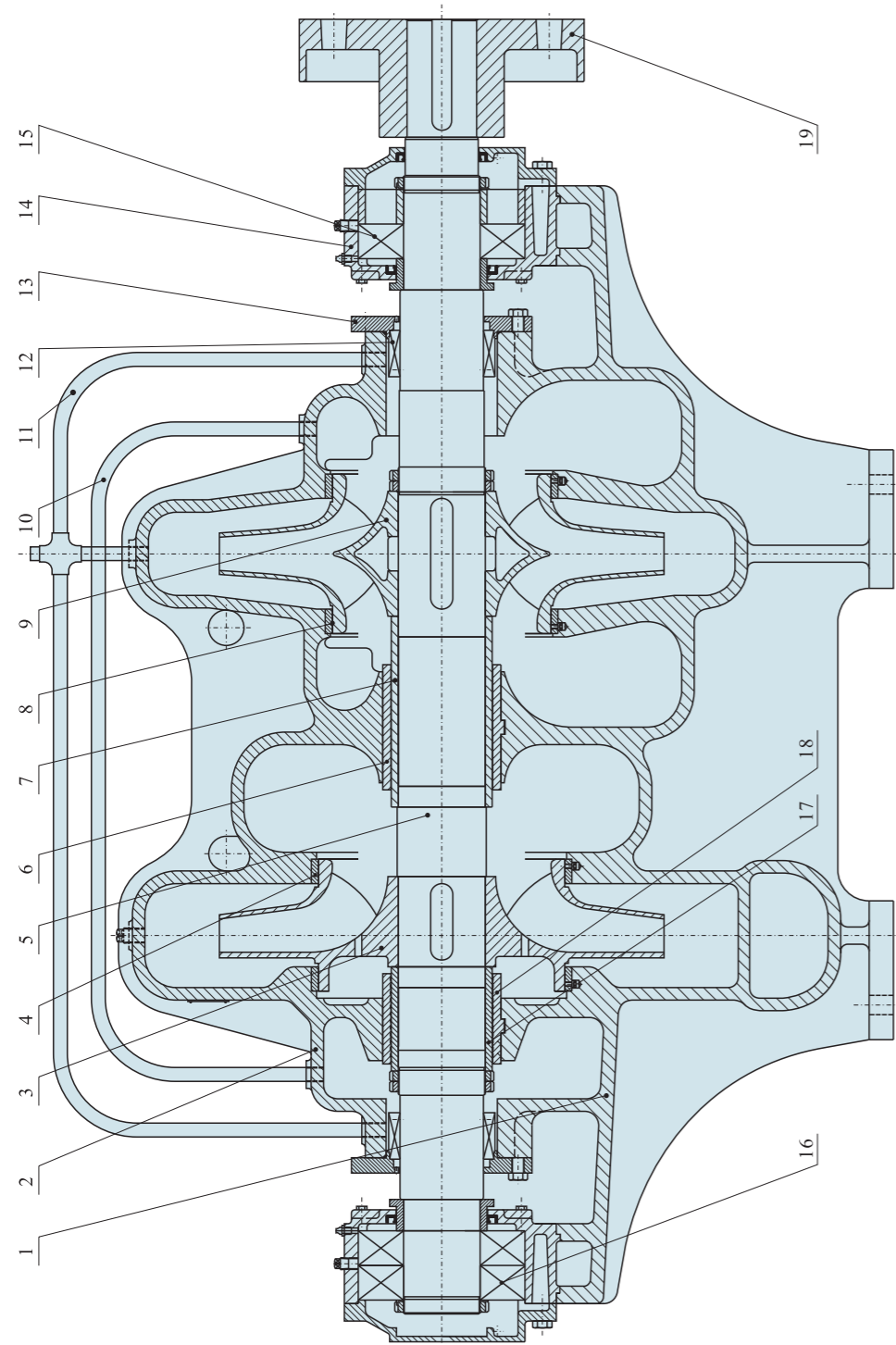
泵结构图 Pump structure drawing



结构图一 (用于SLOW150-570×2 SLOW200-530×2)
Structural diagram 1 (for SLOW150-570×2 and SLOW200-530×2)

1	泵体 Pump casing	11	水封管 Water-sealed pipe
2	泵盖 Pump cover	12	机械密封 Mechanical seal
3	次级叶轮 Secondary-stage impeller	13	机封压盖 Gland of mechanical seal
4	密封环 Seal ring	14	轴承体 Bearing body
5	轴 Shaft	15	轴承 Bearing
6	轴套甲 Shaft sleeve A	16	轴承 Bearing
7	轴套乙 Shaft sleeve B	17	轴承 Bearing
8	密封环 Seal ring	18	卸压套 Releasing cover
9	密封环 Seal ring	19	联轴器 Clutch
10	平衡水管 Balancing water pipe		

泵结构图 Pump structure drawing



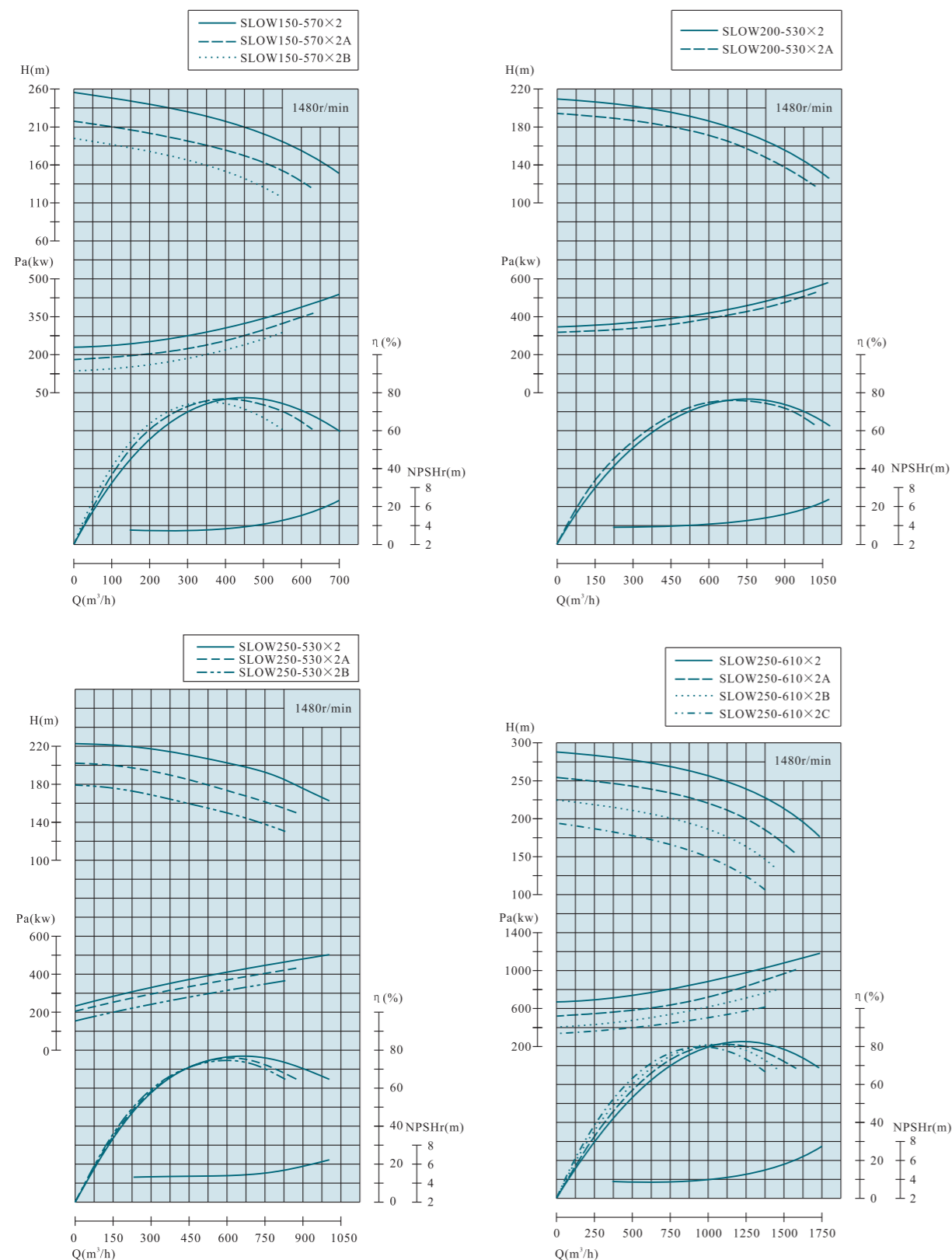
结构图二 (用于SLOW250-610×2)
Structural diagram 2 (for SLOW250-610×2)

1	泵体 pump casing	11	水封管 Water-sealed pipe
2	泵盖 Pump cover	12	机械密封 Mechanical seal
3	次级叶轮 Secondary-stage impeller	13	机械密封 Gland of mechanical seal
4	密封环 Seal ring	14	轴承盖 Bearing body
5	轴 Shaft	15	轴承 Bearing
6	级间套 Interstage cover	16	轴承 Bearing
7	轴套甲 Shaft sleeve A	17	轴套乙 Shaft sleeve B
8	密封环 Seal ring	18	轴套乙 Releasing cover
9	首级叶轮 Primary-stage impeller	19	联轴器 Clutch
10	平衡水管 Balancing water pipe		

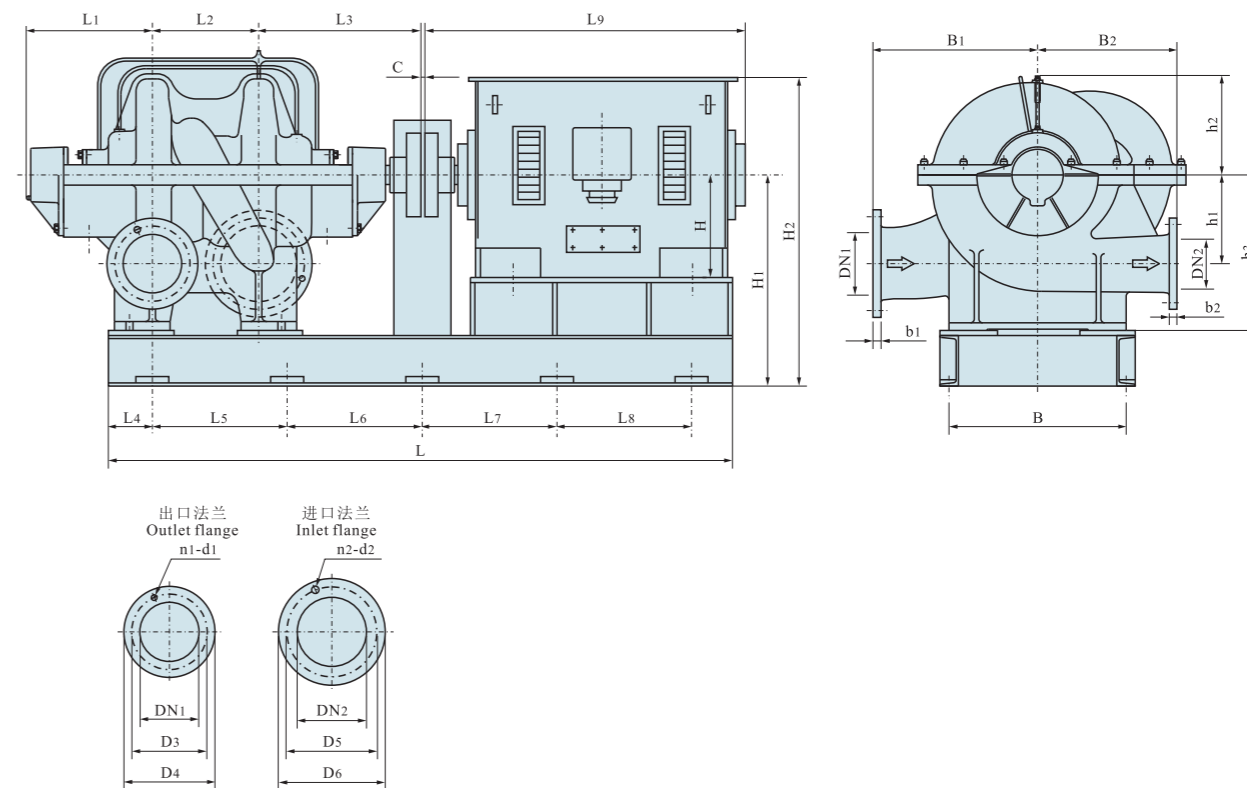
性能参数表 Performance data

泵型号 Pump type	流量 Q		扬程 H (m)	转速 n (r/min)	电机功率 P (Kw)	效率 η (%)	必需汽蚀余量 (NPSH)r (m)	泵净重 W (Kg)
	(m³/h)	(L/s)						
SLOW150-570×2	320	89	228	1480	450	77	4	1760
	450	125	210					
	580	161	184					
SLOW150-570×2A	280	78	194	1480	355	76	4	1760
	400	110	180					
SLOW150-570×2B	520	144	160	1480	280	75	4.2	2200
	240	67	172					
SLOW200-530×2	350	97	160	1480	560	78	4.2	2200
	460	128	142					
SLOW200-530×2A	600	167	185	1480	500	77	7	2800
	760	211	170					
	950	264	148					
SLOW200-530×2B	550	153	178	1480	630	76	4.4	2800
	740	206	160					
	900	250	139					
SLOW250-530×2	558	155.0	205	1480	560	75	7	2800
	790	219.4	188					
SLOW250-530×2A	1000	277.8	163	1480	450	74	4.4	2800
	511	141.9	178					
SLOW250-530×2B	730	202.8	164.5	1480	1120	83	4.4	2800
	876	243.3	150					
SLOW250-610×2	479.5	133.2	157	1480	900	82	4.4	2800
	685	190.3	145					
	822	228.3	131					
SLOW250-610×2A	900	250	262	1480	800	81	4.4	2800
	1250	347	240					
	1550	431	206					
SLOW250-610×2B	800	222	228	1480	560	80	4.4	2800
	1150	319	210					
	1400	389	180					
SLOW250-610×2C	750	208	200	1480	800	81	4.4	2800
	1080	300	180					
	1300	361	158					
SLOW250-610×2C	700	194	170	1480	560	80	4.4	2800
	1000	278	150					
	1200	333	128					

性能曲线图 Performance curve



安装外形尺寸图 Installation overall dimension drawing

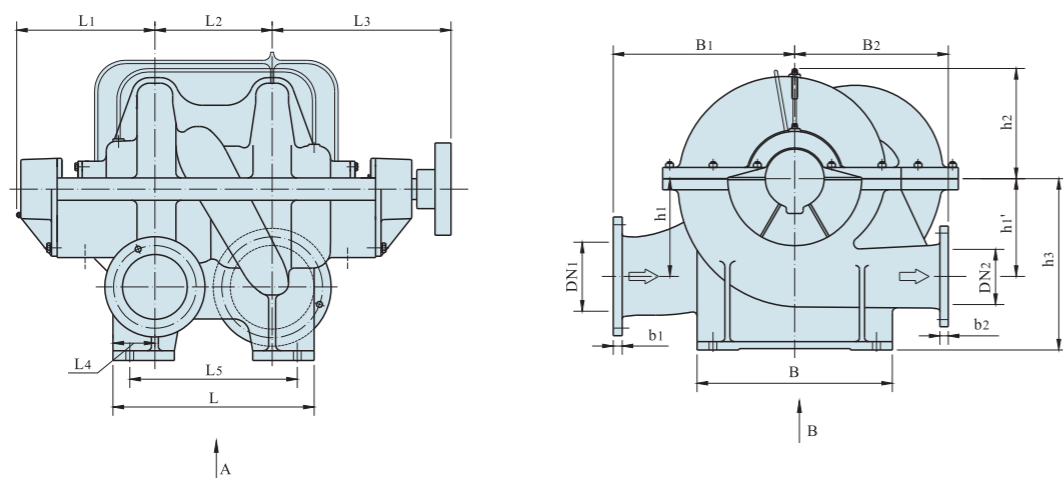


泵型号 Pump type	电机型号 Motor model	电机功率 Motor power	电机电压 Motor voltage	L	L1	L2	L3	L4	L5	L6	L7	L8	L9	B	B1	B2	H	H1	H2	h1	h2	h3	C	地脚螺栓 anchor bolt	电机重量 Motor weight
SLOW150-570×2	Y400-4	400	6KV	3050	500	420	650	160	910	910	910	--	1920	840	600	500	400	730	1180	300	400	530	4	8-M24×400	2700
SLOW150-570×2A	Y355-4	315	6KV	2930	500	420	650	160	870	870	870	--	1790	740	600	500	355	730	1140	300	400	530	4	8-M24×400	2130
SLOW150-570×2B	Y355-4	250	6KV	2930	500	420	650	160	870	870	870	--	1790	740	600	500	355	730	1140	300	400	530	4	8-M24×400	2040
SLOW200-530×2	Y400-4	560	6KV	3110	500	470	660	160	930	930	930	--	1920	840	650	550	400	800	1250	350	400	600	6	8-M24×400	3010
SLOW200-530×2A	Y400-4	500	6KV	3110	500	470	660	160	930	930	930	--	1920	840	650	550	400	800	1250	350	400	600	6	8-M24×400	2890
SLOW250-610×2	Y500-4	1120	6KV	3600	590	550	770	160	810	810	810	810	2200	1060	650	550	500	850	1400	350	500	650	6	10-M30×600	4500
SLOW250-610×2A	Y450-4	900	6KV	3430	590	550	770	160	775	775	775	775	2000	920	650	550	450	850	1350	350	500	650	6	10-M30×600	3580
SLOW250-610×2B	Y450-4	800	6KV	3430	590	550	770	160	775	775	775	775	2000	920	650	550	450	850	1350	350	500	650	6	10-M30×600	3440
SLOW250-610×2C	Y400-4	560	6KV	3300	590	550	770	160	1000	1000	1000	--	1920	840	650	550	400	850	1300	350	500	650	6	8-M24×400	3010

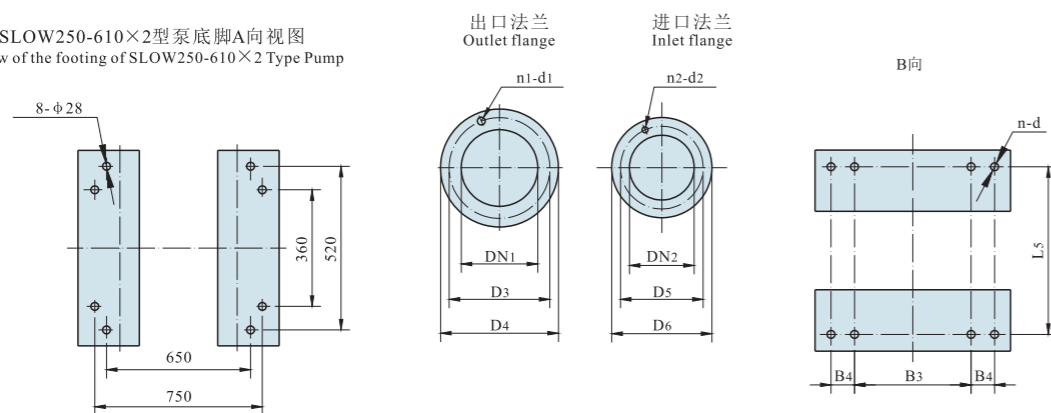
泵型号 Pump type	进口法兰 Inlet flange						出口法兰 Outlet flange					
	DN1	D3	D4	b1	n1-d1	压力等级 Pressure grade	DN2	D5	D6	b2	n2-d2	压力等级 Pressure grade
SLOW150-570×2	200	310	360	34	12-φ28	2.5MPa	150	250	300	34	8-φ28	4.0MPa
SLOW200-530×2	250	370	425	36	12-φ31	2.5MPa	200	310	360	34	12-φ28	2.5MPa
SLOW250-610×2	300	430	485	40	16-φ31	2.5MPa	250	385	450	44	12-φ34	4.0MPa

安装外形尺寸图 Installation overall dimension drawing

单泵外形尺寸图 Overall dimension drawing of single pump



SLOW250-610×2型泵底座A向视图
A view of the footing of SLOW250-610×2 Type Pump



泵型号 Pump type	单泵外形尺寸 Overall dimension drawing of single pump														底座尺寸 Footing dimensions				泵重量 Pump weight	
	L	L1		L2	L3		L4	B	B1	B2	h1	h1'	h2	h3	L5	B3	B4	n-d1	泵 Pump	含水重 Water content
SLOW150-570×2	720	450	470	420	650	630	150	700	600	500	300	300	400	530	530	600	-	4-φ28	1760	1960
SLOW200-530×2	800	450	480	470	660	630	150	800	650	550	350	350	400	600	640	700	-	4-φ28	2200	2410
SLOW250-530×2	800	675	650	450	870		170	800	650	550	350	380	540	620	650	460	120	8-φ35		
SLOW250-610×2	850	590		550	770		150	600	650	550	350	350	500	650	-	-	-	8-φ28	2800	3060

泵型号 Pump type	进口法兰 Inlet flange						出口法兰 Outlet flange					
	DN1	D3	D4	b1	n1-d1	压力等级 Pressure grade	DN2	D5	D6	b2	n2-d2	压力等级 Pressure grade
SLOW150-570×2	200	310	360	34	12-φ28	2.5MPa	150	250	300	34	8-φ28	4.0MPa
SLOW200-530×2	250	370	425	36	12-φ31	2.5MPa	200	310	360	34	12-φ28	2.5MPa
SLOW250-530×2	300	410	460	32	12-φ28	1.6MPa	250	370	425	36	12-φ31	2.5MPa
SLOW250-610×2	300	430	485	40	16-φ31	2.5MPa	250	385	450	44	12-φ34	4.0MPa

泵运输、起吊 Transportation and hoisting of pump

- 泵、电机及底座应单独包装，牢固固定在运输器上。
- 水泵泵盖上的吊钩仅用于起吊泵盖，不能用于起吊整台泵。
- 电机上的吊环仅用于起吊电机，不能用来起吊整个泵组。
- 大型泵不能同时起吊整个泵组，应分别起吊泵、电机及底座。

- Pump, motor and base shall be packaged separately and firmly fixed on the conveyer.
- Hook on the cover of water pump is only for hoisting pump cover, not for the whole pump.
- Hanging ring on motor is only for hoisting motor, not for the whole pump set.
- For hoisting large pump, do not hoist the whole pump set at the same time, but pump, motor and base separately.

泵的安装 Installation of pump

1、泵和电机带公用底座

- 1) 安装前混凝土必须坚固，表面应光滑平整；
- 2) 地脚螺栓置于基础预留孔中，底座放在基础上，底座和基础之间留有40~50mm，用楔形块或调整螺钉调整底座使之水平；
- 3) 对基础螺栓及底座进行灌浆，并让其坚固；(底座要求灌浆)
- 4) 均匀拧紧地脚螺栓；
- 5) 把电机和泵放在底座上，精确校正两轴的同轴度，同时拧紧泵脚、电机脚螺栓。

1.pump and motor with public base

- 1) Concrete shall be firm enough before installation, and the surface shall be smooth and even.
- 2) Insert anchor bolt into the pre-moded hole of foundation, and place the base on the foundation. Remain distance of 40~50 mm between base and foundation, and adjust the base with plug or adjusting screw to make it horizontal.
- 3) It is necessary to grout the foundation bolt and base to make them firm. (The base must be grouted)
- 4) Screw down anchor bolt evenly.
- 5) Place the motor and pump on the base, adjust the concentricity of the two axes accurately, and screw down pump foot and anchor bolt of motor at the same time.

2、泵和电机不带公用底座：

- 1) 地脚螺栓置于基础预留孔中，把泵放在基础上，泵脚下垫楔块，用水平仪在轴端校正泵轴的水平；
- 2) 电机安装同泵；
- 3) 精确校正两轴的同轴度；
- 4) 对基础螺栓进行灌浆，并让其坚固；
- 5) 拧紧地脚螺栓，并重新检查两轴的同轴度。

2.pump and motor without public base

- 1) Insert anchor bolt into pre-moded hole of foundation, and place the pump on the foundation, plug under pump foot, and then adjust the horizontal of pump shaft at axle end with level meter.
- 2) Motor installation is identical with pump
- 3) Correct the concentricity of the two axes accurately.
- 4) Grout foundation bolt to make it firm.
- 5) Screw up anchor bolt and then recheck the concentricity of the two axes.

3、泵轴和电机轴的同轴度校正：

方法：用游标卡尺或千分尺检查联轴器外径、端面，每次测量时应均匀旋转量具90°，如果联轴器的端面偏差不得超过0.04mm，径向偏差不得超过0.1mm，那么可以认定机组已经很好地对中了。

3.correct the concentricity of pump shaft And motor shaft

Method: check the external diameter and end face of clutch with vernier caliper or micrometer caliper, turn measuring tool at 90° evenly in each measurement. The machine set is well aligned if end face deviation and radial deviation of clutch are separately less than 0.04 mm and 0.1 mm.

泵的启动、运行、停机 Start, operation and stop of pump

1、泵在启动前必须检查以下几项：

- 1) 所有仪器、仪表是否能准确工作；
- 2) 底座是否与基础紧固；
- 3) 联轴器是否很好地对中；
- 4) 管路是否按要求连接；
- 5) 电机是否按使用说明书安装；
- 6) 轴承润滑脂是否加好；
- 7) 泵是否已排气；
- 8) 对于机械密封，如泄漏量较大，应拆检、更换。
- 9) 检查泵转向与电机转向是否一致，可以用点式启动电机判别。泵不允许频繁启动。

2、启动

泵不允许干转！

启动前，泵排完气后，出口阀门应是关闭的。进口阀门完全打开，关闭压力表旋塞，以防启动瞬间，压力突然升高，损坏压力表。完成以上步骤后启动电机，待转速正常后打开压力表旋塞，可在压力表上看到压力升高，然后慢慢打开出口阀。如果电机不是直接启动，请按相关说明书进行电机启动程序。注意：泵只有在启动和停止时才关闭出口阀，而且若泵的实际工作点不是合同所要求的点，可通过阀门来调节。

3、运行

泵必须在允许的范围内工作，泵不能在小流范围内工作，若在这个范围长期运行会引起机械负载大量增加，从而使零件无法承受。但允许瞬时通过此范围，如启动泵时。

4、停机

关闭压力表旋塞，关闭出口闸阀，进口阀不要关闭，关闭电机时，要确保机组能平缓地停下来。泵长期停止工作时，进口阀必须关闭，应拆开水泵，将零件上的水擦干，在加工表面涂上防锈油保管好。为了确保泵随时可以启动，并防止泵内及泵入口处产生沉淀物，每个月或每三个月要启动一次泵（五分钟左右的）。泵长期不用时，若环境温度较低，需将泵内的液体放干净。

1. Check the following items before starting the pump

- 1) Whether all the instruments and meters work accurately;
- 2) Whether the base firmly connects with the foundation;
- 3) Whether the clutch is well aligned;
- 4) Whether the pipeline is connected as request;
- 5) Whether the motor is installed according to operational instruction;
- 6) Whether the bearing is lubricated with grease;
- 7) Whether the air in the pump is exhausted;
- 8) Overhaul and replace mechanical seal if with large leakage;
- 9) Check whether turning direction of pump is identical with that of motor by inching the motor. Frequently starting pump is prohibited.

2. Start

The pump running dry is prohibited!

Outlet valve shall be closed after fully exhaustion of pump and before starting the pump. Fully open inlet valve, close the cock of pressure gauge to prevent pressure gauge from being damaged due to instant start and sudden rising pressure. Start the motor after finishing the following procedures. Open the cock of pressure gauge when the motor runs at normal rotary speed. Rising pressure value will be seen through pressure gauge and then open outlet valve slowly. Start the motor following relative operational instruction if it does not start directly. Note: The outlet valve can only be closed when the pump starts or stops, and if the actual working point of pump is not the point specified in the contract, adjust it with valve.

3. Operation

The pump must work within allowable scope, not the scope with low discharge. If it runs long-term within such scope, machine load will increase greatly, making parts fail in standing. However, instant working within this scope is allowable, for example, starting the machine.

4. Stop

Close the cock of pressure gauge and outlet gate valve and open inlet valve. Ensure that machine set stops mildly when you stop the motor. If the pump is out of work for long time, close inlet valve, demount water pump, dry up the water on the parts, and then apply antirust oil to processing surface and keep it well. Start the pump for about five minutes every month or three months to ensure the pump start at all time and avoid deposit producing in the pump or pump inlet. Completely exhaust liquid in the pump if it is out of use for long time and at low ambient temperature.

泵的拆装 Disassembly and assembly of pump

1、结构图一的拆装

- 1) 关闭进出口阀，打开放水螺塞和放气螺塞，将泵内液体排尽；
- 2) 拆卸辅助管路；
- 3) 拆除联轴器防护罩；
- 4) 拆除泵联轴器和电机联轴器之间的紧固件；
- 5) 松开机械密封压盖；
- 6) 拆除泵盖和泵体上的联接螺栓和2个锥销，拿掉泵盖置于安全地方；
- 7) 松开轴承压盖和轴承体的连接螺栓，拆除轴承体和泵体的联接螺栓；
- 8) 将两侧轴承体退出泵体凹槽，将转子吊出；
- 9) 用拉马拉下联轴器；
- 10) 拆除非轴伸端轴承体，拆除锁紧螺母；拆除轴伸端轴承体，拆除轴用弹性挡圈；
- 11) 用拉马拉下两侧轴承；
- 12) 拆下挡水圈；
- 13) 拆除机械密封，要小心，防止损坏机械密封；
- 14) 拆除锁紧螺母，拆除轴套及叶轮，允许用榔头或木棒敲击叶轮轮毂；
- 15) 安装按以上程序相反即可。

2、结构图二的拆装

- 1) 关闭进出口阀，打开放水螺塞和放气螺塞，将泵内液体排尽；
- 2) 拆卸辅助管路；
- 3) 拆除联轴器防护罩；
- 4) 拆除泵联轴器和电机联轴器之间的紧固件；
- 5) 松开机械密封压盖；
- 6) 拆除泵盖和泵体上的联接螺栓和2个锥销，拿掉泵盖置于安全地方；
- 7) 拆除轴承体和泵体的联接螺栓，将转子吊出；
- 8) 用拉马拉下联轴器；
- 9) 拆除轴承体压盖和锁紧螺母

1. Disassembly and assembly of structural diagram 1

- 1) Drain away liquid in the pump by closing inlet and outlet valves and opening the drainage and deflation screw plugs;
- 2) Disassemble auxiliary piping;
- 3) Disassemble the clutch protector;
- 4) Disassemble fasteners between the clutches of both pump and motor;
- 5) Loosen mechanical gland;
- 6) Disassemble the coupling bolt and two taper pins on pump cover and body. Remove pump cover and place it in safety place;
- 7) Loosen the connecting bolts between bearing gland and bearing body, and remove the connecting bolts between bearing body and pump body;
- 8) Withdraw the bearing bodies at two sides from the notch of pump body, and sling up the rotor;
- 9) Haul down the clutch by wheel puller;
- 10) Disassemble bearing body of non-shaft-extension end, lock nut, bearing body of shaft-extension end and axial circlip;
- 11) Haul down the bearings at two sides by wheel puller;
- 12) Disassemble the water deflector;
- 13) Disassemble mechanical seal carefully to avoid damage;
- 14) Disassemble the lock nut, axle sleeve and impeller. It is allowed to knock on the impeller hub with hammer or wood bar;
- 15) Assembly is opposite to the above procedure.

2. Disassembly and assembly of structural diagram 2

- 1) Drain away liquid in the pump by closing inlet and outlet valves and opening the drainage and deflation screw plugs;
- 2) Disassemble auxiliary piping;
- 3) Disassemble the clutch protector;
- 4) Disassemble fasteners between the clutches of both pump and motor;
- 5) Loosen mechanical gland;
- 6) Disassemble the coupling bolt and two taper pins on the pump cover and body. Remove the pump cover and place it in safety place;
- 7) Remove the connecting bolts between the bearing body and pump body, and then sling up the rotor;
- 8) Haul down the clutch by wheel puller;
- 9) Disassemble the bearing body gland and lock nut;

- 10) 用专用拉马拉住轴承挡套，将轴承和轴承体整体拉下（切记）；
- 11) 用长螺栓顶住轴承外圈，从轴承体内把轴承顶出；
- 12) 拆除机械密封，要小心，防止损坏机械密封；
- 13) 松开锁紧螺母，拆除轴套及叶轮，允许用榔头或木棒敲击叶轮轮毂；
- 14) 安装按以上程序相反即可。

- 10) Pull and hold the bearing retaining cover with special wheel puller, then haul down the complete bearing and bearing body (be sure to keep in mind);
- 11) Hold on the bearing outer ring by through bolt, then eject the bearing from the bearing body;
- 12) Disassemble mechanical seal carefully to avoid damage;
- 13) Disassemble the lock nut, axle sleeve and impeller. It is allowed to knock on the impeller hub with hammer or wood bar;
- 14) Assembly is opposite to the above procedure.

泵的维护 Maintenance of pump

- 1) 必须确保所有的维护、检查工作要由合格的人员执行；
- 2) 运行中时刻留意三相电流值；
- 3) 泵必须平稳地运转；
- 4) 泵不允许干运转；
- 5) 为防止介质升温，泵不能在出口阀门关闭的情况下长期运转；
- 6) 要经常检查联接螺栓，若有松动及时拧紧；
- 7) 泵运行时不得关闭进出口阀；
- 8) 定期检查和启动备用泵；
- 9) 检查联轴器上的弹性元件，一旦有磨损立即更换；
- 10) 确保平衡水管的畅通，如堵塞容易引起轴向力增大，轴承温度上升；
- 11) 当环境温度达到30°C时，轴承温度不能超出80°C；轴承润滑脂应占轴承体空间的1/3~1/2为宜。每隔3个月加油一次。

- 1) The machine shall be maintained and checked by qualified personnel;
- 2) Pay attention to three-phase current value;
- 3) The pump must run stably;
- 4) The pump running dry is prohibited.
- 5) To prevent heating up of medium, the pump is not allowed to run for long time when the outlet valve is closed;
- 6) Regularly check the connecting bolt. If looses, tighten timely.
- 7) Do not close the inlet valve when the pump is running;
- 8) Regularly check and start up emergency pump;
- 9) Check the elastic component on the clutch, and change it if any abrasion occurs;
- 10) Ensure that the balancing water pipe is expedite. If it is clogged up, the axial force will increase and bearing temperature will rise.
- 11) If ambient temperature is up to 30°C, the bearing temperature shall not exceed 80°C. It is advisable that the bearing grease shall occupies 1/3~1/2 area of bearing body and add the oil once every three months.

管路损耗参考表 Reference table for pipeline loss

直管摩擦损失简表(供估计用) 100m直管损失米数以新铸铁管为标准，旧管加倍。
Brief table for the frictional loss of a straight pipe (for evaluation), the lost meters of a 100m straight pipe takes the newly cast iron pipe as the standard and multiple for the old one.

管径 Pipe diameter (mm)	流量 Capacity (L/s)																									
	1	2	4	6	8	10	15	20	25	30	40	50	60	70	80	90	100	110	120	130	140	160	180	200	300	
25	32.7	13.0																								
38	3.5	14					15	20																		
50	0.8	3.1	13	29																						
65		1.6	3.2	7.1	13	20																				
75		0.4	0.8	3.3	5.9	9.6	21.6																			
100			0.23	0.8	1.3	2.1	6.8	8.6	13	19.4																
125				0.23	0.4	0.63	1.3	2.7	4.1	5.9	10.7															
150					0.16	0.26	0.58	1.1	1.6	2.3	4.2	6.4	9.4													
175						0.11	0.27	0.5	0.74	1.05	1.9	2.9	4.3	5.8	7.7	9.6										
200							0.13	0.26	0.37	0.53	0.93	1.5	2.1	2.9	3.7	4.7	6.1	7.2	8.5							
250								0.07	0.12	0.18	0.30	0.48	0.68	0.93	1.2	1.5	1.9	2.3	2.8	3.3	3.7	4.9	5.2			
300									0.12	0.12	0.12	0.19	0.27	0.37	0.49	0.61	0.76	0.9	1.1	1.3	1.5	2.0	2.4	2.4	3.0	

一定管径之最大流量限制

Limit of the maximum flow for a pipe with a certain diameter

管径 Pipe diameter (mm)	最大流量 Maximum flow (L/s)	最大流速 Maximum flow rate (m/s)	管径 Pipe diameter (mm)	最大流量 Maximum flow (L/s)	最大流速 Maximum flow rate (m/s)
25	1	2.04	125	30.0	2.44
38	2.5	1.69	150	43.0	2.45
50	4.17	2.12	175	60.0	2.49
65	6.67	2.01	200	83.3	2.69
75	10.0	2.26	250	133.0	2.72
100	18.4	2.33	300	192.0	2.71

注：超过此假使管路损失显著增加。
Note: The pipeline loss would be made greatly increased once the limit is over.

阀及弯管折合直管长度(每个)

The length of a straight pipe converted into from both valve and elbow(each)

种类 Variety	折合直管直径倍数 Convert into the times of the diameter of a straight pipe	备注 Remark
标准弯管 Standard elbow	12	未畅开加倍 Multiple in case of unopen
全开闸阀 Fully opened gate valve	25	
逆止阀 Back valve	100	
底阀 Foot valve	100	部分堵塞加倍 Partial block-up multiplied

注：例如100mm直管，底阀折合100倍直径等于100×100=10000mm=10m直径长度，假定流量为8L/s查上表，直管每100m损失1.3m，则10m损失0.13m，即一个100mm底阀，流量为8L/s时，则损失扬程0.13m。
Note: For instance, a 100mm diameter pipe, the foot valve has a 100×100=10000mm=10m diameter when which is converted into 100 times that of the pipe's diameter. Suppose the flow is 8L/s, looked into the above table, the loss of the straight pipe is 1.3m each 100m, then the one for 100mm is 0.13m, that is, for a 100mm foot valve with a flow 8L/s, its head loss is 0.13m.

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