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AFB-FB型耐腐蚀离心泵
AFB-FB ANTI-CORROSIVE CENTRIFUGAL PUMP

KAI CHENG
凯程®

上海凯程制泵有限公司

SHANGHAI KAICHENG MAKE PUMP CO.,LTD.



AFB-FB型耐腐蚀离心泵
AFB-FB ANTI-CORROSIVE CENTRIFUGAL PUMP



AFB-FB PATTERN SINGLE-STAGE SINGLE-SUCTION ANTI-CORROSIVE CENTRIFUGAL PUMP

➤ FIRST GENERAL

AFB,FB pattern is single-stage single-suction cantilever anti-corrosive centrifugal pump, which absorb characteristics of various anti-corrosive pump,utilize advanced hydraulic model and it has advantages of compact and elegant configuration,high efficient and energetic, stable performanceetc.

➤ SECOND PURPOSE

AFB,FB pattern has been widely utilized in industrial department of chemical industry, petroleum,metallurgy,light industry,printing,and dyeing,pharmacy,seawater desalt,oil extraction in the sea,paper-making,foodstuff, generate electricity etc.to transport organic and inorganic chemical industry medium,petroleum product and corrosive liquid,also can be used to supply water and drain water to enterprise and city.

THIRD CHARACTERISTICS OF PUMP

This kind of pump has stable and reliable performance, perfect sealing, performance, elegant configuration, and maintain conveniently, overlie parts such as pump casing cover, impeller, shaft sleeve etc. are all utilized ZC1Cr18Ni9Ti material to manufacture.

4. FOURTH WORKING CONDITION AND PERFORMANCE RANGE

1. Thickness Range $P=1.0N18410kg/m^3$
2. Medium Temperature between $-20C \sim +130C$
3. Capacity $2-400m^3/h$
4. Pump Head $H10m-105m$
5. Particular, high temperature, high pressure and particular material please specify in addition

FIFTH. SIGNIFICANCE OF MODEL

Impeller cut first time(B as second time)

Pump head of pump as 25 meters

Pump and contact overfloe part is made of 1Cr18Ni9Ti

Single-stage single-suction cantilever anti-corrosive pump

Secondary impeller powerseal wished actuatou
(without Arefre to mechanical seal actuator Bfpattern)

Diameter of pump suction nozzle as 50m

SIXTH STRUCTURE OF PUMP AND PERFORMANCE

FB pattern pump is single-stage, single-suction cantilever anti-corrosive centrifugal pump with horizontal suction nozzle, drainage nozzle is vertical, upward. Mainly composed of pump casing, cover, impeller, shaft, shaft sleeve, bracket, base plate etc., utilize front and back door open types. cover is located in front of pump casing is called front door open structure, cover is located on back of pump casing is called back door open structure. Extension end of shaft is supported rolling bearing on bracket, bearing utilize grease to lubricate.

FB pattern utilize mechanical seal equipment, according to requirement to select single-end or double ends mechanical seal, pour definite press-ure of water into sealing cavity to washend of attrition to cooling.

AF pattern of pump is cantilever single-suction, single-stage anti-corrosive centrifugal pump, which has same configuration and installation dimension with FB pattern pump, mainly composed of pump casing, cover, impeller, secondary impeller, shaft, sealing box, bracket etc. Extension end of shaft is supported rolling bearing on bracket, bearing utilize grease to lubricate.

AFB pattern reform prat of structure and sealing type of F pattern,utilize secondary impeller power sealing equipment to reduce pressure and through out connection cooling water pipe to take on cooling circulation.

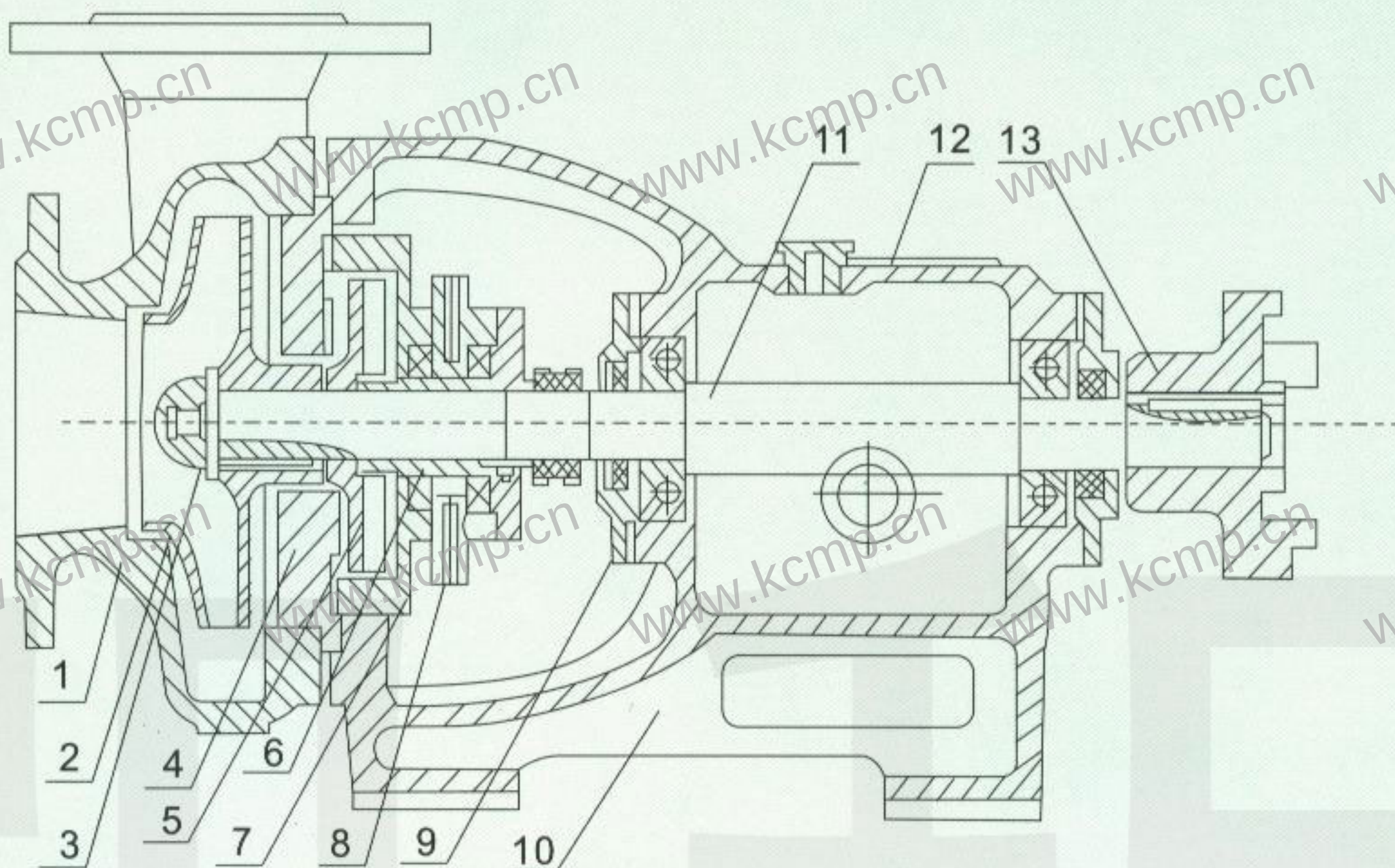
AFB,FBpattern driving pump is directly driving by motor through flexible coupling.view from driving direction,the pump is driven clockwise.

SEVENTH. MATERIAL OF PUMP AND STRUCTURAL DRAWING

材 料 Material	代 号 Symbol
ZG1Cr18Ni12Mo2Ti	307
ZG00Cr17Ni14Mo2	316L
ZG1Cr18Ni13Mo2CuN	402

AF 型耐腐蚀离心泵结构图

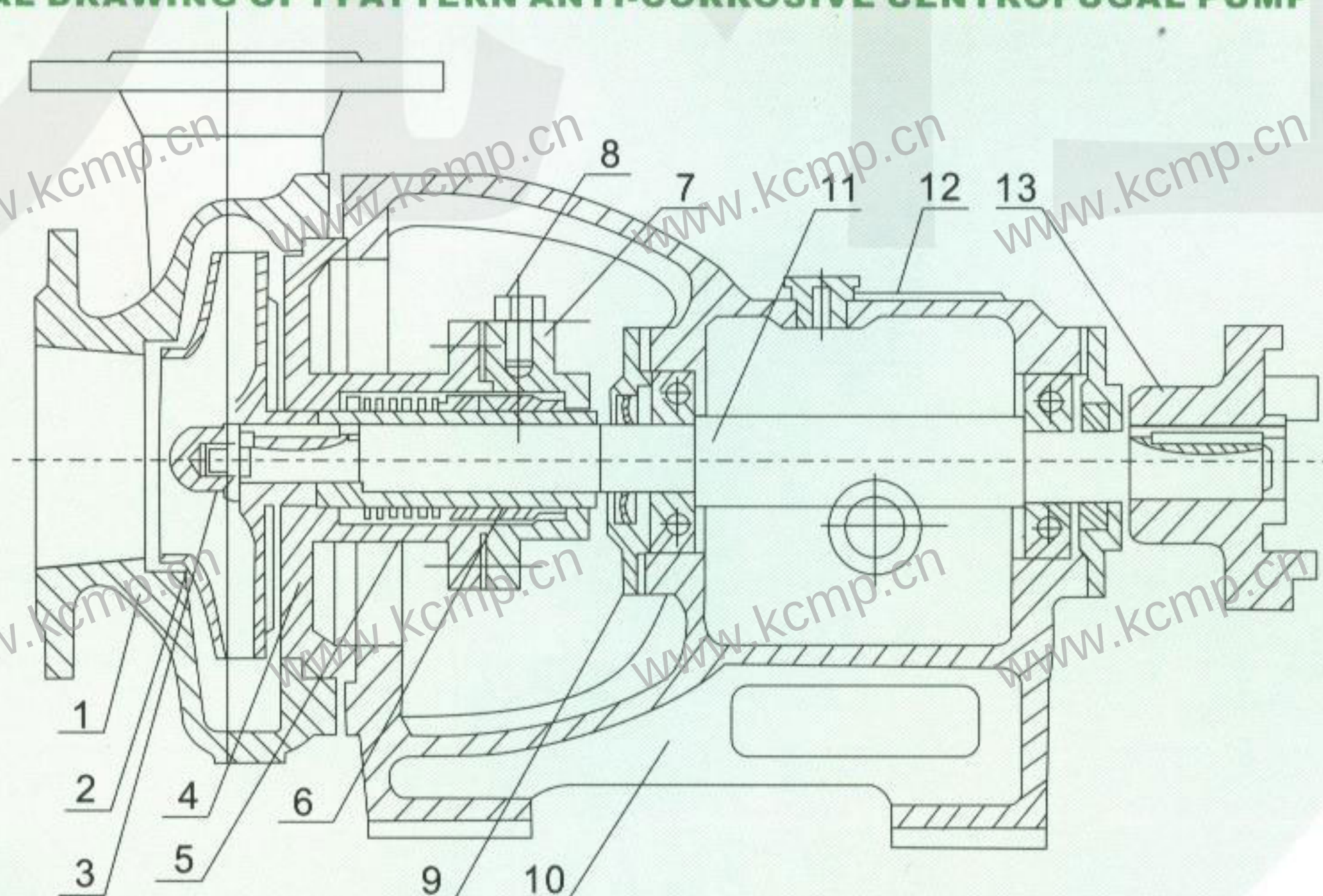
STRUCTURAL DRAWING OF AF PATTERN ANTI-CORROSIVE CENTRIFUGAL PUMP



- 1、泵体(Pump Casing) 2、叶轮(Impeller) 3、叶轮螺母(Impellernut) 4、泵盖(Cover)
5、付叶轮(Secondary Impeller) 6、轴套(Shaft Sleeve) 7、密封箱(Sealing box)
8、冷却水管(Cooling Waterpipe) 9、轴承压盖(Bearing Gland) 10、托架(Bracket)
11、泵轴(Pump Shaft) 12、标牌(Scutcheon) 13、联轴器(Coupling)

F 型耐腐蚀离心泵结构图

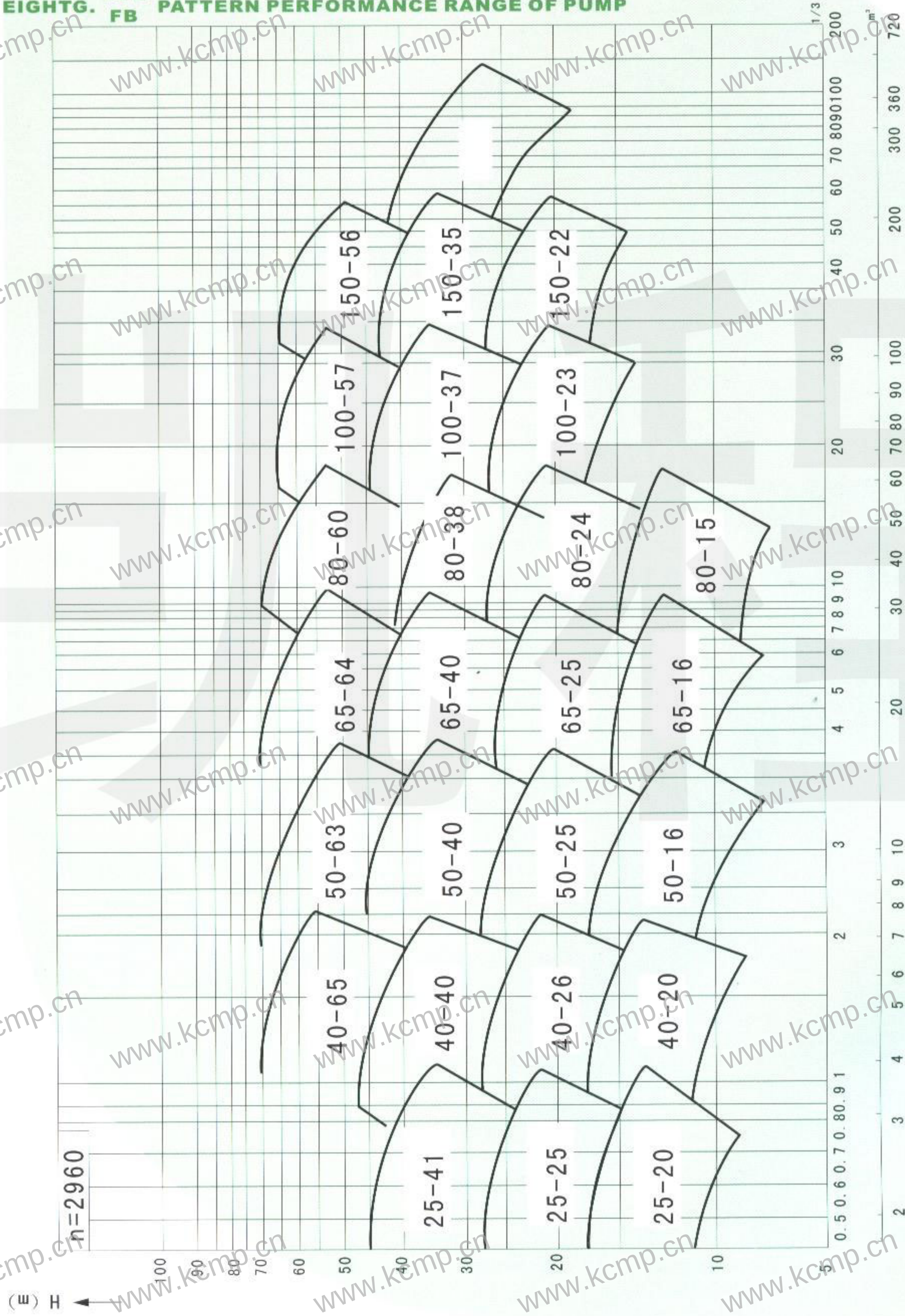
STRUCTURAL DRAWING OF FPATTERN ANTI-CORROSIVE CENTRIFUGAL PUMP



- 1、泵体(Pump Casing) 2、叶轮(Impeller) 3、叶轮螺母(Impellernut) 4、泵盖(Cover)
5、机械密封件(Secondary Impeller) 6、轴套(Shaft Sleeve) 7、密封压盖(Sealing box)
8、螺堵(Cooling Waterpipe) 9、轴承压盖(Bearing Gland) 10、托架(Bracket) 11、泵轴(Pump Shaft)
12、标牌(Scutcheon) 13、联轴器(Coupling)

八、 AFB 型泵的性能范围图

EIGHTG. FB PATTERN PERFORMANCE RANGE OF PUMP



AFB 型耐腐蚀泵性能范围图

AFB PATTERN PERFORMANCE RANGE OF PUMP

SINGLE-STAGE SINGLE-SUCTION ANTI-CORROSIVE CENTRIFUGAL PUMP

九、**AFB** 型泵的性能参数表

NINTH. AFB PERFORMANCE PARAMETER FORM OF PUMP

型 号 Model	流 量 Weight		扬程 Head H (m)	转速 Rotating Speed H (r/mm)	允许吸上真 空高度 Allowable Suction Vacuum Height Hs (m)	功率 Power N (比重Proportion: 1≤1.3)		效率 Efficiency η (%)	泵重量 Weight of Pump W (kg)
	(m³/h)	(L/S)				轴功率 Inputpower (kw)	电动机功率 Electromotor (kw)		
25 FB AFB-16	3.6	1	16	2900	6	0.68	1.1	35	30
25 FB AFB-20	3.6	1	20	2900	6	0.7	1.5	27	31
25 FB AFB-25	3.6	1	25	2900	6	0.9	2.2	27	32
25 FB AFB-41	3.6	1	40	2900	6	1.75	3	23	38
40 FB AFB-16	7.2	2.0	16	2900	6.5	0.6	1.5	50	30
40 FB AFB-20	7.2	2.0	20	2900	6	0.9	2.2	40	33
40 FB AFB-26	7.2	2.0	25	2900	6	1.14	3	44	38
40 FB AFB-40	7.2	2.0	40	2900	6	2.24	4	35	40
40 FB AFB-65	7.2	2.0	65	2900	5.5	4.09	7.5	26	60
50 FB AFB-16	14.4	4	16	2900	6	0.99	2.2	62	35
50 FB AFB-25	14.4	4	25	2900	6	1.8	4	52	44
50 FB AFB-40	14.4	4	40	2900	6	3.5	5.5	46	54
50 FB AFB-63	14.4	4	63	2900	5.5	7.0	11	35	70
65 FB AFB-16	28.8	4	15.7	2900	6	1.4	3	68	42
65 FB AFB-25	28.8	8	25	2900	5.5	3.11	5.5	63	44
65 FB AFB-30	30	8.3	30	2900	3.5	2.75	7.5	42	72
65 FB AFB-40	28.8	8	40	2900	6	5.23	11	60	70
65 FB AFB-64	28.8	8	64	2900	5.5	9.47	15	53	70
80 FB AFB-15	54	15	15	2900	5.5	3.16	5.5	70	54
80 FB AFB-24	54	15	24	2900	5.5	4.91	7.5	68	56
80 FB AFB-38	54	15	38	2900	5.5	8.66	15	66	70
80 FB AFB-60	54	15	60	2900	5.5	9.5	18.5	62	80
100 FB AFB-23	100.8	28	22.5	2900	4.5	8.25	11	75	58
100 FB AFB-37	100.8	28	36.5	2900	4.5	12.85	18.5	70	64
100 FB AFB-57	100	28	57	2900	4	21.7	30	69	72
150 FB AFB-22	190.8	53	22	2900	4.5	11.2	22	80	60
150 FB AFB-35	190.8	53	34.7	2900	4.5	18.5	30	75	68

十、泵的装配和拆装

TENTH.INSTALLATION AND DISASSEMBLY OF PUMP

1、装配:

- (1) 分别进行转子部件、托架部件、密封部件、联轴器等试装配。
- (2) 轴承转子部件装入托架部件后,装上轴承压盖,然后装好轴联轴器。
- (3) 旋入园螺母,套上密封部件、F4垫片,再装好叶轮及叶轮螺母,调整好叶轮与泵盖的间隙。
- (4) 将装好螺栓的泵体与托架组装,紧固螺栓,(AFB型装上冷却水管)。
- (5) 用手转动联轴器,有否轻重不均匀现象和摩擦声,若有异常,拆开检查需要新调整装配,排除异常后方可进行试验。

1.ASSEMBLY:

- (1) Respectively take on test assenbly of rotor, bracket, sealing part, coupling etc.
- (2) After bearing rotor install into bracket, install bearing gland then install coupling.
- (3) Screw round nut, cover sealing part, F4 washer, then, install impeller and impeller nut, adjust the clearance between impeller and cover.
- (4) Assemble bolt casing and bracket, tighten bolt (AFB pattern install cooling tube)
- (5) Manually turn coupling, if there has unequal weight and attrition noise, please disassemble to check then reassemble it, after eliminate the abnormality can take on test.

2、拆卸:

和安装位置相反,进行泵的拆卸。

2.DISASSEMBLY:

Reverse direction to installation position

十一 安装说明

ELEVENTH.SPECIFICATION FOR INSTALLATION

1、安装前的准备工作:

- (1) 准备安装工具及起吊设备;
- (2) 检查水泵机组各部件在运输过程中有否松动和损坏;
- (3) 检查基础是否水平。

1.PREPARATION BEFORE INSTALLATION:

- (1) Prepare installation tool and hoist equipment
- (2) Check each pare of water pump unit whether loosen or danate or net on the road of transportation.
- (3) Check the base level.

2、安装顺序:

- (1) 机组运至现场时,已将泵机组固定在底座上并已校正,找平底座时可不必卸下机组,所以安装十分方便;
- (2) 将底座放在基础上,并在地脚螺栓附近垫楔形铁,将底座垫高20~40mm,作校平后填充水泥浆之用;
- (3) 用水平低度检查底座的水平度,同时注意是否能与管路连接,否则应作调整。

2.INSTALLATION ORDER:

- (1) When the unit transport to the spot, please fix pump unit on base plate and check it, needn't to remove unit when look for flat base plate, so the whole installation is very convenient.
- (2) place base plate on the base level, and put wedge iron near the foundation bolt, put base plate up to 20-40mm, use to fill cement mortar after flat check.
- (3) Utilize level to check horizontal of base plate, meanwhile pay attention to whether it can connect with pipeline, otherwise should adjust it.

3、安装注意事项:

- (1) 安装时管路重量不应承受在泵上,否则易损坏水泵;
- (2) 安装时必须拧紧地脚螺栓,且每隔一定段应对机组进行检查防止其松动,以免水泵启动时发生剧烈振动而影响泵的性能;
- (3) 安装水泵前应仔细检查泵流道内有无影响水泵运行的硬质物(如石块、铁砂等)以免水泵运行时损坏过流部件;
- (4) 为了维修方便和安全,应在泵的进出口管路上安装一只调节阀及在泵进出口法兰上各安装一只压力表对于高扬程泵,为防止水锤,还应在出口闸阀前安装一只止回阀以应付突然断电等失去动力事故,从而确保水泵在最佳工况下运行,延长水泵的使用寿命;
- (5) 泵用于有吸程场合时,应装有底阀,并且进口管路不应有过多弯道,同时不得有漏水,漏气现象,以免影响水泵的吸入性能及液体漏出伤人;
- (6) 为不使杂质进入泵内而堵塞流道影响性能,应在泵进口前面安装过滤器;
- (7) 安装管路前转动水泵的转子部件,应无摩擦声或卡死现象,否则应将泵拆开检查原因。

3.ATTENTIONS FOR INSTALLATION:

- (1) Shouldn't press weight of pipeline on the pump while installing, otherwise will damage water pump easily.
- (2) Must tighten foundation bolt while installing, and check the unit in every period to prevent it loosening, so as to avoid the drastic vibration that caused by operation of water pump and effect the performance of pump
- (3) Before water pump installation, please check carefully whether there are hard substance (such as stone, iron sand etc.) in port to effect operation of water pump.
- (4) In order to maintain conveniently and operate safely, it should install an adjustable valve on the inlet and outlet pipeline and install a pressure meter on inlet and outlet nozzle flange. As to high head pump, in order to prevent water hammering, it should install a check valve on the front of outlet gate valve to deal with event of electric cut-off suddenly etc. so as to ensure water pump operate under the best working status and prolong service life of water pump.
- (5) When pump is used in suction head occasion, it should install base plate and no more tortuors path on inlet pipeline, meanwhile, mustn't have leakage to effect suction performance of water pump and liquid leakage to injur people.
- (6) In order to prevent dirt enter into pump to block port and effect performance, please install filter on front of pump inlet.
- (7) please rotate rotor part before pipeline installation, mustn't have attrition noise or block status, otherwise should diassemble the pump to check the cause.

十二 起动、运行和停止与维护(泵的使用)

TWELVETH.DRIVE, OPERATION, CEASING AND MAINTENANCE (USAGE OF PUMP)

1、起动前准备

- (1) 起动前要把泵和现场清理干净;
- (2) 检查托架内润滑油量是否适量(油标可显示);
- (3) 未接联轴器前检查原动机的转向,与泵的转向箭头一致后,(从电机端看,叶轮逆时针旋转),接好联轴器;
- (4) 在装好机械密封(或填料)和联轴器后可轻便地用手转动泵轴,应无摩擦现象;
- (5) 泵在有吸程情况下使用,起动前应灌泵或抽真空;泵在倒灌情况下使用,起动前应用所输送液将泵灌满,驱除泵中的空气后,将吐出管的闸阀关闭;
- (6) 起动前检查基础螺栓有无松动,压盖是否歪斜,以及润滑油和冷却水的供应情况;
- (7) AFB要连接冷却水管、以达到冷却密封装置之用。

1.PREPARATION BEFORE START

- (1) Please clean pump and working spor before driving.
- (2) Check lubricant oil proper or not (oil surface is about central line 2 mm on oil meter) and oil meter perfect or not.
- (3) Before connect coupling should check the rotating direction of motor, the rotating direction should same as rotating direction of pump (looke from end of motor, impeller rotate as clockwise).
- (4) After install mechanical seal (or packing) and coupling, it can easily manual rotate shaft of pump and with no attrition phenomenon, then install safe cover of coupling.
- (5) When pump use under condition of suction process, should irrigate pump or deflate vacuum before drive, pump use under the condition of flow backward should fill full of pump before drive, after get rid of the air in the pump, please shut off the gate valve of discharge tube.
- (6) Check foundation bolt loosen or not before drive, check stuffing gland whether crooked or not and supply status of lubricant oil and cooling water.
- (7) AFB should connect with cooling water pipe to use as cooling sealing equipment.

SINGLE-STAGE SINGLE-SUCTION ANTI-CORROSIVE CENTRIFUGAL PUMP

2. 启动

- (1) 关闭进出口压力（或真空）表和出水阀门、（如有旁通管、此时也应关闭）启动电机（最好先点动、确认泵转向正确后，才开始正式运行），然后打开进出口压力（或真空）计，当泵达到正常转速、且仪表指出相应压力时，再慢慢打开出水阀门，调节到需要的工况。在吐出管路关闭的情况下，泵连续工作时间，不能超过3分钟；
- (2) 启动过程中要注意原动机的电流读数及泵的振动情况；
- (3) 密封情况：机械密封应无泄漏、发热现象、填料密封应呈连续滴流状态。

2. START

- (1) Shut off pressure meter on inlet and outlet (or vacuum) and outlet valve (any bypass tube should be shut off either) drive motor (had better start in advance, confirm correct rotating direction to operate), then open outlet pressure meter (vacuum), when pump reach to normal rotating speed and instrument to corresponding pressure, slowly open outlet valve and adjust to demanded working status. Under the condition of discharge pipeline being shut off, continuous work time of pump can't exceed 3 minutes.
- (2) In process of operation it should pay attention to electric current digit of motor and vibration status of pump from time to time.
- (3) Sealing Status: Mechanical seal shouldn't have leakage, heating phenomenon, packing seal should be in continuous trickling status.

3. 运行

- (1) 经常检查和电机的发热情况（轴承的温度不应超过75℃）及油位计油面情况。（一般每运行1500小时后，要全部更换润滑油一次）；
- (2) 不能用吸入阀来调节流量，避免产生汽蚀；
- (3) 泵不宜在低于30%设计流量连续运转，如果必须在该条件下连续运转，则应在出口处安装旁通管，排除多余的流量；
- (4) 注意泵运转有无杂音，如发现异常状态时，应及时消除或停车检查。

3. OPERATION

- (1) Constantly check heating circumstance of pump and motor (temperature of bearing shouldn't exceed 75℃) and oil meter without oil surface status. (generally, it should replace lubricant oil once after every 1500 hours).
- (2) Shouldn't use suction valve to adjust capacity, prevent generating air erosion.
- (3) Pump cannot operate continuously lower than 30% design capacity, if it has to operate under such condition, must install bypass pipe to get rid of unnecessary capacity.
- (4) Pay attention to the noise of operation of pump, if discover any abnormal state, please eliminate or stop operating timely.

4. 停止

- (1) 缓慢关闭吐出管路闸阀（如果泵在倒灌情况下使用，还要关闭吸入管路的闸阀）、并关闭各种仪表的开关；
- (2) 切断电源；
- (3) 如果密封采用外部件引液时，还要关闭外引液阀门；
- (4) 如果环境温度低于液体凝固时，要放净泵内的液体，以防冻裂；
- (5) 如果长时间停车不用，除将泵内的腐蚀性液体放净外，各零件应拆卸清洗干净，尤其是密封腔，最好是将泵拆下清洗后重新装好，除涂油防锈处理和封闭泵进、出口外，还应定期检查。

4. CEASING

- (1) Slow close discharge nozzle pipeline gate valve, and close switch on various instrument.
- (2) Switch off electric power.
- (3) If seal utilize outside pilot liquid, need to close outside pilot liquid valve.
- (4) If environmental temperature is lower than liquid freezing point, please drain out liquid cleanly to prevent being splitted.
- (5) If deposit it for a long time, please drain out corrosive liquid in pump clearly, disassemble and clean each part, especially the seal cavity. Had better reassemble it after cleanliness, cover with anti-rust oil and block outlet and inlet of pump, besides, it should be inspected periodically.

十三 使用机械密封注意事项

THIRTEEN. ATTENTION FOR MECHANICAL SEAL

本型号泵可根据不同的使用条件装不同形式的机械密封，（如内装单端面平衡型和非平衡型，双端面平衡型及非平衡型，外装式机械密封等）根据所选用密封式不同，其使用方法和注意事项也有所不同，具体情况参阅机械密封安装使用说明书、GB3215-82“炼油厂、化工及石油流程用离心泵通用技术条件”，下面仅提几点一般应注意的事项。

This kind of pump can according different operating condition to install different type of mechanical seal, different sealing type with different operating method and attention, detailed content refer to Mechanical Sealing Installation Manual, GB3215-82 refinery, the following is general attention for reference:

- (1) 由于机械密封一般适用在清洁的，无悬浮颗粒的介质中使用，因此，对新安装的管路系统和储液罐，应认真冲洗干净，严防固体杂质进入机械密封端面而使密封失效；
- (2) 在易结晶的介质中使用机械密封应注意经常冲洗。停车后重新启动前，要将机械密封上的结晶清洗干净。
- (3) 拆卸机械密封应仔细，不许用手锤、铁器等敲击，以免破坏、静环密封面；
- (4) 如果有污垢拆不下来时，应设法清除污垢，冲洗干净后再进行拆卸，以免损坏密封元件；
- (5) 安装机械密封前，应检查所有密封元件是否有失效或损坏，如有则应重新修复或更换；
- (6) 应严格检查动环与静环的相对磨擦密封面，不允许有任何细微的划痕、碰伤等缺陷。所有零部件，包括泵体、叶轮、密封腔等在装配前均应冲洗干净，尤其是动、静环端面，要用清洁、柔软的布或棉纱认真擦拭干净，然后涂上一层清洁的油脂或机油；
- (7) 装配中要注意消除偏差，紧固螺钉时，要均匀拧紧，避免发生偏斜，使密封失效；
- (8) 正确的调整弹簧的压缩量，泵安装好以后，以手扳转子时，应感觉到密封弹簧既有一定的压缩量，而又能轻快、灵活地转动没有咬紧的感觉，如感觉太紧或盘不动，则应适当调松一些；
- (9) 对有外部冲洗的机械密封，启动前应先开启冲洗液，使密封腔内充满密封液。停车时，先停泵，后关密封冲洗液。

- (1) Due to mechanical seal is generally suitable for clean with no suspending medium, therefore, it should clean new installation pipeline system and liquid storage tank carefully to prevent dirt entering into end of mechanical seal, make seal inefficiently.
- (2) Mechanical seal is used in easy crystal medium should wash it constantly, before restart it should clean crystal on mechanical seal.
- (3) Remove mechanical seal must be careful, don't beat with hand, iron tool etc, in order to avoid to damage dynamic and static circle facing.
- (4) If it cannot be removed due to dirt, try to clean dirt, wash neatly to remove, so as to avoid damage sealing component.
- (5) Before install mechanical seal should check all of sealing components whether have been damaged or disabled, if there are any damaged or disabled components should be repaired or replaced timely.
- (6) Strictly check dynamic and static circle opposite attrition facing even with no tiny nick and scar. All of components including pump casing, impeller, sealing cavity etc. should be wash cleanly especially the dynamic static circle end should be rubbed by soft cloth or cotton gauze then cover clean grease or engine oil on it.
- (7) Pay attention to eliminate eccentricity while assembling, equally tighten screw, prevent to be inclined and make seal invalid.
- (8) Properly adjust compression ratio of spring, after pump installation, when manually turn rotor will feel sealing spring has definite compression ratio and also can turn trippingly and neatly without snap sense. If feel too tight or cannot turn, please adjust to somewhat loose.
- (9) As to outside wash mechanical seal, please open lotion before start to fill sealing cavity with sealing lotion. When stop operating, secure pump in advance then close sealing lotion.

十四、特别提示

FOURTEEN. SPECIAL INSTRUCTION

- (1) 水泵使用前请详阅此书；
- (2) 管路重量不应承受在水泵上；
- (3) 严禁空载运转；
- (4) 正确的传动方向；
- (5) AFB型要安装上外部冲洗液。
- (1) Before use water pump, please read this manual carefully.
- (2) Weight of pipeline shouldn't impose on water pipe.
- (3) Empty carry operation are not allowed.
- (4) Correct transmission direction.
- (5) AFB pattern should install outside washing lotion.

十五、可能发生的故障、原因及消除法

FIFTEEN. PROBABILITY HITCH, CAUSE AND SOLUTION

产生振动及噪音 Cause vibration and noise

功率消耗过大 Power expend too much

流量、扬程不足 Capacity, head insufficient

泵输不出液体 Pump cannot output liquid

Overfull leakage on seal 密封处泄漏过多

Lubrication (including stuffing box) 轴封 (包括填料) 发热

Immoderate heat of pump and cannot turn 泵过份发热及转不动

Bearing heating and bearing worn 轴承发热及轴承磨损

故障不出液体 Cause

Solution 消除方法

泵内或吸入管内留有空气 Air exist in pump or suction tube	重新灌泵排除空气 Affuse pump again to drive out air
吸入扬程过高或灌注液不够 Up suction head too high or affusion lotion insufficient	降低泵位, 增加进出口处压力灌满液 Decline the position of pump, increase pressure on inlet nozzle to fill liquid
吸入管径过小或有杂物堵塞 Diameter of suction tube too small or dirt blocked	加大吸入管径, 清除堵塞 Enlarge diameter of suction tube, clean out block
吸入管浸入深度不够或漏气 Suction tube havn't been immersed deeply or leak air	增大浸入深度或检修管路 Deep immersing depth to check pipeline
转速过高或过低 Rotating speed too quick or too slow	按规定要求检查原动机转速 Check rotating speed of motor
泵转向不对 Rotating direction of pump incorrect	调整转向 Adjust direction of turning
总扬程与泵扬程不符 Total head is not in accordance with pump head	降低吐出系统阻力或高度 Decline resistance of dischang system or height
介质密度与粘度与泵要求不符 Medium thickness and stickness is not in accordance with pump requirement	应进行换算并调整电机 Adjust motor
在流量过小时运转产生振动 Little capadity operation cause vibration	加大流量或设旁通循环管 Enlarge capacity or install bypass circle pipe
泵与电机轴线不一致或轴弯曲 Pump differ to motor axes or shaft winding	校正 Revise
转动部分与固定部分有磨擦 Attrition between rotating part and fixing part	检修泵 Repair pump
轴承磨损严重或损坏 Bearing worn badly or being damaged	更换之 Replace it
密封环磨损过多 Sealing ring worn badly	更换之 Replace it
轴套、填料或动静环磨损过多 Shaft sleeve, packing or dynamic and static ring worn badly	更换之 Replace it
填料 (或机械密封) 选用或安装不当 Packing (or mechanical seal) select or installation incorrect	按使用要求重新选用或安装 Reselect or reinstall
转动部分不平衡引起振动 Rotating part inbalance cause vibration	检查原因设法消除 Check cause try to eliminate
油室油量过多 (或油过脏) Oil house has too much oil (or oil too dirty)	按油位要求加油 (或换新油) Pour into oil according to requirement of oil position (or replace new oil)
管路或泵内有杂物堵塞 Pipeline or pump has dirt to be blocked	检查并排除 Check and eliminate it
密封液压力不当 Sealing lotion pressure improper	应按密封腔前的压力大小 According to pressure front sealing cavity, enlarge to 0.049-0.147 MPa
填料压盖过紧或过松 Stuffing gland too tight or too loose	适当调整之 Properly adjust it

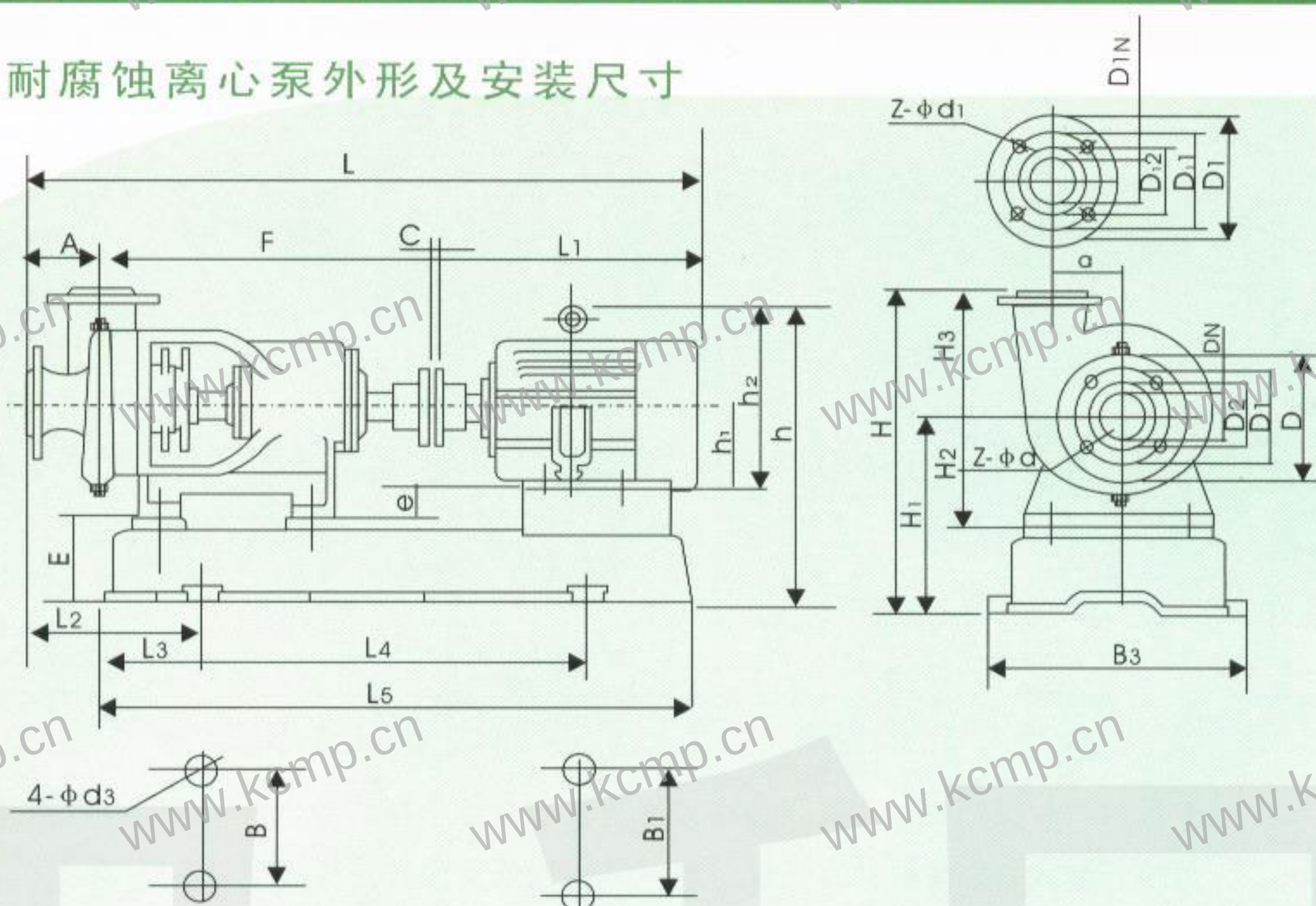
进出口法兰尺寸

SUCTION AND DISCHANG FLANGE DIMENSION

型 号 Model	DN	D ₁	D ₂	D ₃	Z-d	D ₁ N	D ₁ 1	D ₁ 2	D ₁ 3	Z-d ₁
25-16 25-20 25-25 25-41	φ25	φ115	φ85	φ68	4-φ14	φ20	φ105	φ75	φ58	4-φ14
40-16 40-20 40-26 40-40 40-65	φ40	φ145	φ110	φ88		φ25	φ115	φ85	φ68	
50-16	φ50	φ140	φ110	φ88		φ40	φ130	φ100	φ80	
50-25 50-40 50-63		φ160	φ125	φ105	φ145		φ110	φ88		
65-16 65-25 65-30	φ65	φ165	φ130	φ110	4-φ18	φ50	φ160	φ125	φ105	4-φ18
65-40 65-64		φ180	φ145	φ120						
80-15	φ80	φ185	φ150	φ128		φ65	φ180	φ145	φ122	
80-24 80-38 80-60		φ195	φ160	φ133						
100-23 100-37 100-57	φ100	φ215	φ170	φ145	φ80	φ195	φ160	φ133		
150-22 150-35	φ150	φ260	φ225	φ202	8-φ18	φ125	φ245	φ210	φ184	8-φ18

SINGLE-STAGE SINGLE-SUCTION ANTI-CORROSIVE CENTRIFUGAL PUMP

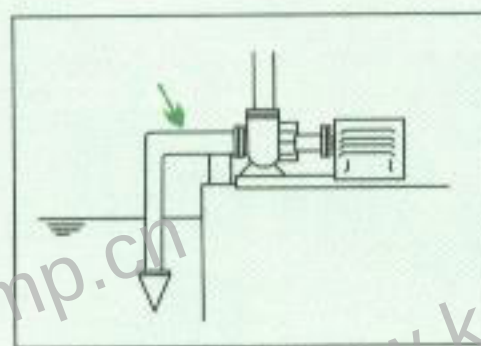
十六、AFB/ FB型耐腐蚀离心泵外形及安装尺寸



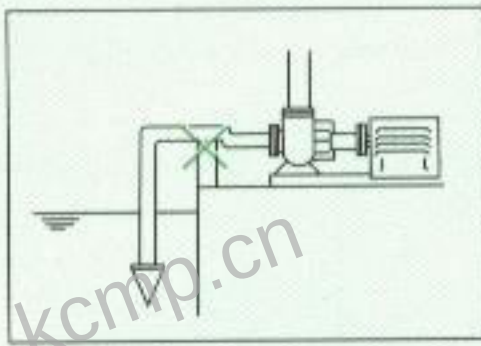
AFB/ FB型耐腐蚀外形及安装尺寸表

型号	L	A	F	C	L1	L2	L3	L4	L5	B	B1	B2	H	H1	H2	H3	a	h	h1	h2	4-d ₃	E	e	底座号																		
25-16	740	68	378	2	290	235	135	380	620	255	255	300	305	175	112	130	75	365	80	170	4-φ18	63	32	1"																		
25-20	765				315													275	90	190			22																			
25-25	785				335													275	90	190			22																			
25-41	935	72	455		400	255		470	735	290	330	380	385	225	150	160	105	370	100	245		75	50	2"																		
40-16	765	70	378	2	315	237	135	380	620	255	255	300	305	175	112	130	75	275	90	190	4-φ18	63	22	1"																		
40-20	785				335																																					
40-26	930	72	455			400																			245		470	735				365			140	90	370	100	245		75	50
40-40	942	74			410	250		475	760	290	330	380	385	225	150	160	102	383	112	265	4-φ18	75	38	3"																		
40-65	1042	100	460		480	275							435	235	160	200	132	413	132	315									18	3B"												
50-16	797	75	380	2	340	235	135	380	620	255	255	300	305	175	112	130	75	275	90	190	4-φ18	63	22	1"																		
50-25	940	77	455		405	248																				385		160	91	383	112	265	38	3"								
50-40	1027	85	460		480	260																				390		165	110	413	132	315	18	3B"								
50-63	1167	100		605	275	180	550	920	320	425	475	450	250	160	200	132	475	160	385		90	0	4"																			
65-16	937	80	435	2	400	255	135	470	735	290	330	380	380	225	150	155	80	338	100	245	4-φ18	75	50	3"																		
65-25					480	260																				475	760		405		180	90	413	132	315	18	3B"					
65-30	1022	85	460																																							
65-40					605	320	180	550	920	320	425	475	450	250	160	200	110	475	160	385		100	-10	4B"																		
65-64	1167	100															132					90	0	4"																		
80-15	1035	93	460	2	485	270	135	475	760	290	330	380	365	225	150	140	94	413	132	315	4-φ18	75	18	3B"																		
80-24	1045	103				280																					385		160	100												
80-38	1060	93			605	315							180			550	920								320	425	475	405	250	160	180	110	475	160	385							
80-60	1232	120			650	345																																				450
100-23	1165	98	460	2	605	320	180	550	920	320	425	475	430	250	150	180	110	475	160	385	4-φ18	100	-10	4B"																		
100-37	1210				650																					450	200	118														
100-57	1342				100	780							270			125	730								980	335				480	260	160	220	140	545	200	475		110	-40	5"	
150-22	1282	130	470	2	680	380	180	550	920	320	425	475	510	260	150	250	125	510	180	430	4-φ18	110	-30	4C"																		
150-35	1382				780	325	125	730	980	330			530	280			148	545	200	475					130	-50	5B"															

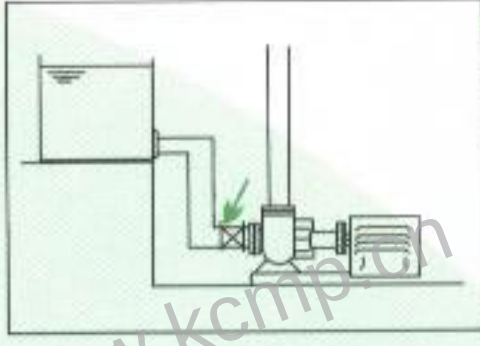
管路设计上的注意事项



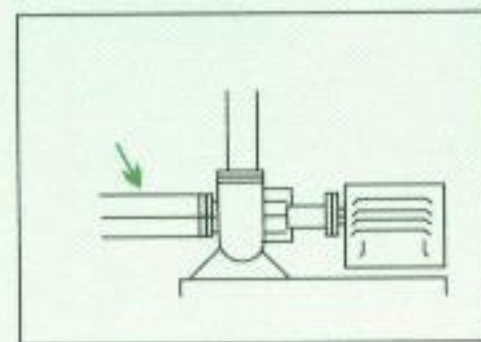
① 尽可能缩短吸入管路，使泵靠近液面，以减少吸程上的管路阻抗。



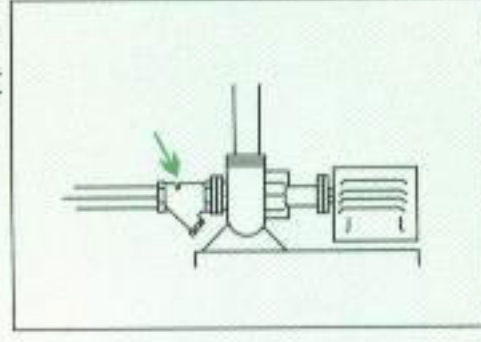
② 吸程管路上不可布设凸起管，以防气阻造成空转，损坏轴封。



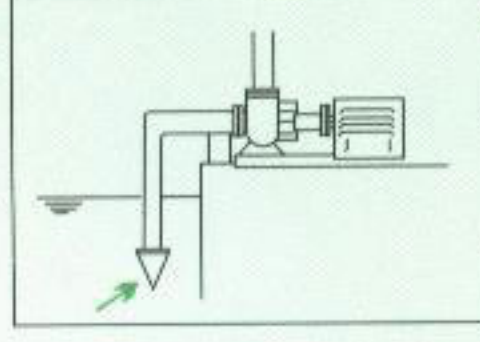
③ 特别是灌压输入式时，请在泵前安装闸阀，以方便检修作业。



④ 吸入管路口径不得小于泵的吸入口径，否则会造成泵内汽蚀。



⑤ 为防止固体物混入泵内，初运行时请在吸入口侧安装筛网。（筛网密度请参见各型号使用说明书）但要及时撤掉切保吸入口通畅。



⑥ 请在吸入管路的端头安装底阀，以维持吸入管路及泵内的满水状态。

★选型时请充分注意管路损失水头。

十七、泵与介质接触的主要零件材料耐腐蚀性能选择

★金属材料耐腐蚀性能通常用腐蚀深度（又称腐蚀速度）作为评定金属材料耐腐蚀性能的一项主要指标。

★腐蚀深度是指金属材料在单位时间内腐蚀的金属深度，单位用“毫米/年”（mm/a）表示。

★按照腐蚀程度的不同，通常分为：腐蚀深度小于0.1mm/a的材料，称为耐腐蚀性能材料；腐蚀深度为0.1~1mm/a，称为尚耐腐蚀材料；腐蚀深度大于1mm/a，称为耐腐蚀性不好的材料。

★一般泵与介质接触的主要零件的材料选项用在指定介质情况中，尚耐腐蚀性材料就可以。

★为便于用户选用泵进，根据所输送介质条件，选择适宜泵的主要零件材料耐腐蚀性能，本说明书汇编了ZG1Cr18-Ni9 (303)、ZG1Cr18Ni9Ti (305)、ZG0Cr18Ni2Mo2Ti (306)、ZG1Cr18Ni12Mo2Ti (307)、ZG00Cr17Ni1-4Mo2 (316L)、ZG1Cr18Mn13Mo2CuN (402)等材料耐腐蚀性能表（表1-表5）供选泵时参考。

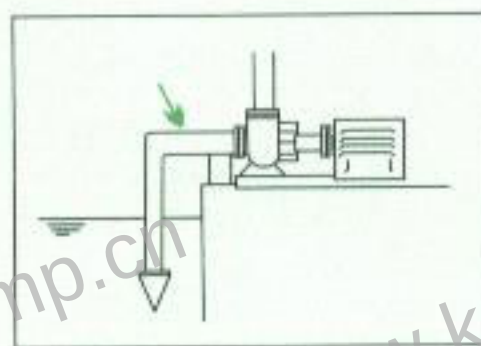
ZG1Cr18Ni9 (303) 钢的耐腐蚀性能表

表一

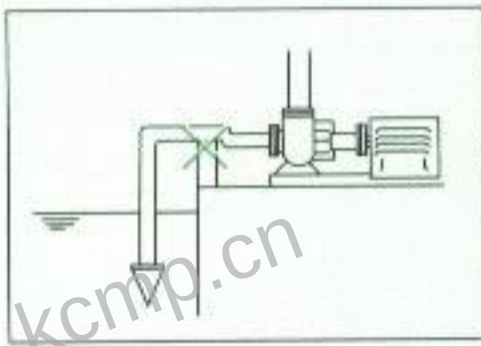
介 质 条 件			腐蚀深度
介 质	浓 度 %	深度 °C	(mm/a)
硝 酸	0.5~99	20	<0.1
	7~37	沸	0.1~1
	65	沸	<1
	93	37	0.01
	93	55	0.21
	97	55	0.76
	99	55	1.25
	99	沸	<10
醋 酸	10	沸	<0.1
	50	沸	<1
	80	沸	<3

介 质 条 件			腐蚀深度
介 质	浓 度 %	深度 °C	(mm/a)
硝 酸	0.5	190	0.06~0.14
	1	20~19	0.002
	5	20	0.6
	5	40	<3
	5	50	3~4.5
	5	100~105	3.3~15
	10~50	20	2~5
	80	20	0.46
	90~95	20	0.006~0.008
柠 檬 酸	1~50	20	<0.1
	5	140	<10
	50	沸	<10
	95	20~140	<0.1

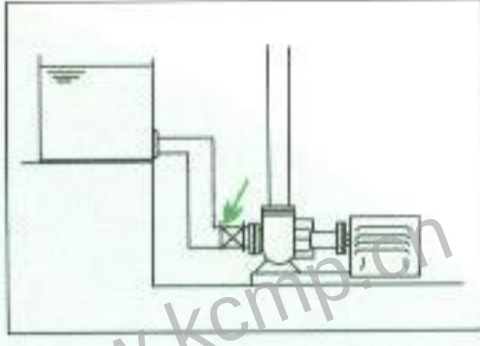
管路设计上的注意事项



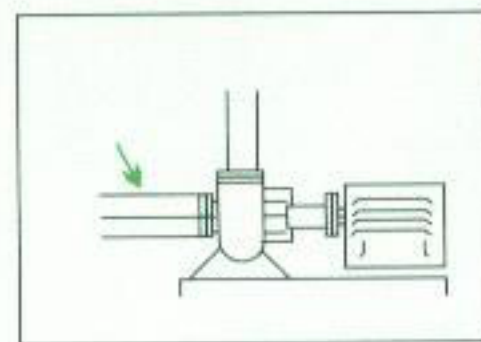
③ 尽可能缩短吸入管路，使泵靠近液面，以减少吸程上的管路阻抗。



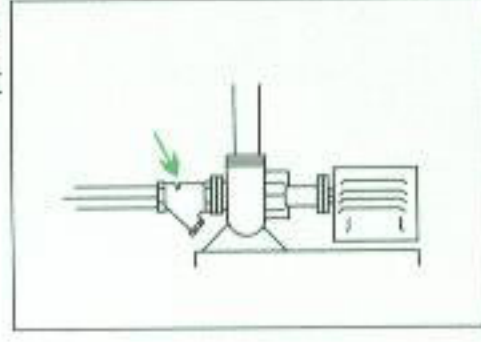
④ 吸程管路上不可布设凸起管，以防气阻造成空转，损坏轴封。



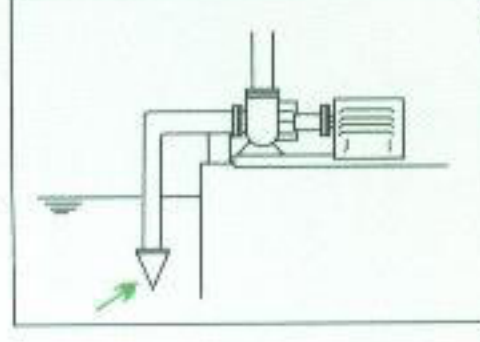
⑤ 特别是灌压输入式时，请在泵前安装闸阀，以方便检修作业。



⑥ 吸入管口径不得小于泵的吸入口径，否则会造成泵内汽蚀。



⑦ 为防止固体物混入泵内，初运行时请在吸入口侧安装筛网。（筛网密度请参见各型号使用说明书）但要及时撤掉切保吸入口通畅。



⑧ 请在吸入管路的端头安装底阀，以维持吸入管路及泵内的满水状态。

★选型时请充分注意管路损失水头。

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★金属材料耐腐蚀性能通常用腐蚀深度（又称腐蚀速度）作为评定金属材料耐腐蚀性能的一项主要指标。

★腐蚀深度是指金属材料在单位时间内腐蚀的金属深度，单位用“毫米/年”（mm/a）表示。

★按照腐蚀程度的不同，通常分为：腐蚀深度小于0.1mm/a的材料，称为耐腐蚀性能材料；腐蚀深度为0.1~1mm/a，称为尚耐腐蚀材料；腐蚀深度大于1mm/a，称为耐腐蚀性不好的材料。

★一般泵与介质接触的主要零件的材料选项用在指定介质情况中，尚耐腐蚀性材料就可以。

★为便于用户选用泵进，根据所输送介质条件，选择适宜泵的主要零件材料耐腐蚀性能，本说明书汇编了ZG1Cr18-Ni9 (303)、ZG1Cr18Ni9Ti (305)、ZG0Cr18Ni2Mo2Ti (306)、ZG1Cr18Ni12Mo2Ti (307)、ZG00Cr17Ni14Mo2 (316L)、ZG1Cr18Mn13Mo2CuN (4020)等材料耐腐蚀性能表（表1-表5）供选泵时参考。

ZG1Cr18Ni9 (303) 钢的耐腐蚀性能表

表一

介 质 条 件			腐蚀深度
介 质	浓 度 %	深度 °C	(mm/a)
硝 酸	0.5~99	20	<0.1
	7~37	沸	0.1~1
	65	沸	<1
	93	37	0.01
	93	55	0.21
	97	55	0.76
	99	55	1.25
	99	沸	<10
醋 酸	10	沸	<0.1
	50	沸	<1
	80	沸	<3

介 质 条 件			腐蚀深度
介 质	浓 度 %	深度 °C	(mm/a)
硝 酸	0.5	190	0.06~0.14
	1	20~19	0.002
	5	20	0.6
	5	40	<3
	5	50	3~4.5
	5	100~105	3.3~15
	10~50	20	2~5
	80	20	0.46
柠 檬 酸	90~95	20	0.006~0.008
	1~50	20	<0.1
	5	140	<10
	50	沸	<10
	95	20~140	<0.1

表二

ZG1Cr18Ni9Ti (305) 钢的耐腐蚀性能表

介 质 条 件			腐蚀深度 (mm/a)
介 质	浓 度%	温 度℃	
硝 酸	30	20	0.007
	50~56	20	0
	93	43	0.05
	95	37~55	0.03
	97	55	0.76
	99	55	1.25
	99.67	55	<10
硫 酸	2	50	0.016
	2	100	3~6.5
	5	50	3~4.5
	5	100~105	3.3~15
	80	20	0.46
醋 酸	1~浓	20~40	<0.1
	10	20~40	<0.1
	50	20~40	<0.1
	80	20~40	<0.3
磷 酸	10	80	0.01
	28	80	0.67
	45	80	0.1~1
	60	60	1.7
	80	110	腐蚀深度过大
柠 檬 酸	1~50	20	<0.1
	5	140	<1
	50	140	<0.1
	95	20~140	<0.1
硫	熔化的	130	<0.1
	熔化的	445	<0.3

介 质 条 件			腐蚀深度 (mm/a)
介 质	浓 度 %	温 度℃	
混 合 酸	H ₂ SO ₄ 78	20	0.003
	HNO ₃ 0.5	20	0.003
	H ₂ SO ₄ 78	90	0.05
	HNO ₃ 0.5	90	0.05
	H ₂ SO ₄ 78	20	0.018
	HNO ₃ 1	20	0.018
	H ₂ SO ₄ 78	90	0.0251
	HNO ₃ 1	90	0.0251
氢 氧 化 钾	20	20~沸	<0.1
	50	20	<0.1
	50	沸	<0.1
	熔化的	沸	>10
氢 氧 化 钠	~12	100	0.0044
	~35	100	0.008
重 铬 酸 钾	25	20~沸	<0.1
氯 化 锰	10~50	100	<0.1
过 氧 化 钠	10	20~沸	<0.1
亚 硫 酸 钠	25~50	沸	<0.1
硫 酸 钠	5~饱和	100	<0.1
	熔化的	900	>10.1
硝 酸 银	10	沸	<0.1
氯	干燥的	20	<0.1
	干燥的	100	>10
漂 白 粉	潮湿的	40	0.48
氯 化 氢	干燥的	20~100	<1
	干燥的	100~500	<0.1

ZG0Cr18N2M02Ti (306) 钢的耐腐蚀性能表

表三

介 质 条 件			腐蚀深度
介 质	浓 度 %	温 度 °C	(mm/a)
硝 酸	1~5	20	<0.1
	1~5	80	<0.1
	5	沸	<0.1
	20	20~80	<0.1
	50	20~50	<0.1
	50	80	<0.1
	50	沸	<0.1
	60	20~60	<0.1
	60	沸	0.1~1
	65	20	<0.1
	65	85	<0.1
	65	沸	0.1~1
	90	20	<0.1
	90	70	0.1~1
	90	沸	0.1~3
	99	20	0.1~1
	99	沸	3~10
硫 酸	0.5	20	<0.1
	1	20	<0.1
	3	20	<0.1
	40	20	<0.1
	80	20	0.1~1
	98	20	<0.1
亚硫酸	2	20	<0.1
	20	20	<0.1

介 质 条 件			腐蚀深度
介 质	浓 度 %	温 度 °C	(mm/a)
氢氟酸	10	20	<0.1
	10	100	1~3
氢氧化钠	10~20	沸	<0.1
	30	100	<0.1
	40	90	<0.1
	50	90	<0.1
	50	100	<0.1
	60	90	<0.1
	70	90	<0.1
草 酸	2.5	20	<0.1
	2.5	60	<0.1
	2.5	沸	<0.1
	10	20	<0.1
	10	沸	1~3
	50	沸	0.1~1
	25	沸	<0.1
	50	20	<0.1
氢氧化钾	50	沸	<0.1
	68	120	<0.1
高锰酸钾	5~10	20	<0.1
	10	沸	<0.1
盐 酸	0.5		1~3
	3		<0.1
	5		<0.1
	10		0.1~1
	30		3~10

ZG1Cr18Ni12Mo2Ti (307) 钢的耐腐蚀性能表

表四

介 质 条 件			腐蚀深度
介 质	浓 度 %	温 度 °C	(mm/a)
硫 酸	1	85	<1
	3	80	<3
	5	20	<0.1
	5	80	1~3
	10	20	<0.1
	10	80	1~3
	20	20	<0.1
	20	60	<0.3
	40	20	<0.1
	40	60	>10
	80	20	<1
	80	60	3~10
亚 硫 酸	20	20	<0.1
	饱和溶液	20	<0.1
	潮湿气体	20	<0.1
	饱和溶液	160~200 (0.8~2MPa)	<0.1
磷 酸	1~80	20	<0.1
	1~45	沸腾	<0.1
	1	140 (0.3MPa)	<0.1
	80	60	<0.1
	80	110~沸腾	1~3
	0.5	20	<0.1
	0.5	沸腾	<3
盐 酸	1	20	<0.1
	1	50	<3
	5	20	<0.1
	5	60	<3
	10	20	<1
	10	60	3~10
	20	20	<3
	20	60	>10
	30	60	3~10
铬 酸	10	20	<0.1

介 质 条 件			腐蚀深度
介 质	浓 度 %	温 度 °C	(mm/a)
铬 酸	10	沸腾	<1
	50	20	<0.1
	50	沸腾	<0.3
氢氧化钠	10~30	20~沸腾	<0.1
	40~60	120	<0.1
	60	160	<3
	78	120	<0.1
	熔体	318	1~3
氢氧化钾	25~50	20~沸腾	<0.1
	68	120	<0.1
	熔体	300	1~3
氯	干燥的	20	<0.1
	潮湿的	20	<10
	潮湿的	100	>10
	氯水	20	<1
氯苯	钝的	沸腾	<1
漂白粉	干燥中溶液	20	<0.1
	溶液+25%	20	<0.1
氯化氢	干燥的气体	20~100	<1
	干燥的气体	200	<10
氯化铁	30~50	20	3
氯化铵	28~饱和溶液	100	<0.1
氯化钙	饱和溶液	100	<0.1
碘	溶液	20	<10.1
碘仿	蒸汽	60	<0.1
溴化钾	溶液	20	<0.1
亚硫酸酐	潮湿的	20	<0.1
	潮湿的	300	<0.1
	潮湿的	500	<1
	潮湿的	900	<3
亚硫酸钠	50	沸腾	<0.1
亚硫酸氢钠	50	沸腾	<0.1
纤维素	纤维素蒸时	沸腾	0 (190h)
尿 素	溶液	20	<0.1

注：凯程将不断完善其产品性能，对产品的部分改动或许难以及时通报阁下。