



FG型系列卫生级单螺杆泵

FG SERIES SANITARY SINGLE SCREW PUMP

使用说明书 USER'S MANUAL



上海阳光泵业制造有限公司

Shanghai Sunshine Pump Manufacture Co., Ltd.

公司概况

上海阳光泵业制造有限公司座落于上海市金山工业园区，是国内一家著名的集研制、开发、生产、销售、服务于一体
的大型多元化企业，注册资本 1100 万元。主导产品包括：螺杆泵、隔膜泵、液下泵、磁力泵、排污泵、化工泵、多级泵、
自吸泵、齿轮油泵、计量泵、卫生泵、真空泵、潜水泵、转子泵等类别。产品以优越的性能，精良的品质已获得各项专业
认证证书及客户的认可。公司拥有多名水泵专家和各类中高级工程师，不断的开发制造，升级换代产品年年都有问世。

公司拥有国内高水准的水泵性能测试中心，产品全部采用 CAD 设计软件和 CFD 计算流体力学软件等先进设计手段，
产品经过精密铸造、热锻压、焊接、热处理、精加工、装配等十多道工序。使用先进的数控加工中心、等离子焊接机、全
自动气体保护、半自动真空熔焊机、超频真空热处理设备、高效加工专机、理化和探伤设备等各类高精密加工检测设备。
齐全的加工检测设备，于同行业中处领先地位，更加充分保证了产品的质量。公司产品达二十大系列，一万多种规格。产
品广泛应用于：工业生产，建筑城镇供水，环保污水处理，市政工程，食品制药，水利电力，石油船舶等多种领域。客户
包括大庆油田、胜利油田、中国水利水电、浦项集团等世界知名企业。

不仅如此，阳光泵业同时拥有完善的一体化服务体系：包括前期的专业技术人员快速解答各项技术咨询，应对您的需
求，为您选择合适的产品，提供合理可靠的建议；对产品质量、供货周期等的承诺，提供具体货品方案及报价。售后包括：
提供产品安装、使用、维护、排除故障等服务。欢迎广大新老客户光临指导，洽谈业务，我们将不断的努力，为您提供优
质的产品和服务。





装配车间



轴加工车间



电机加工车间



铸铝车间



生产加工车间

荣誉证书



ISO 环境管理体系证书



ISO 质量管理体系证书



ISO 职业健康安全管理体系证书



AAA 级信用企业

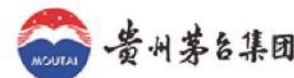


AAA 级诚信经营示范单位



AAA 级质量服务诚信企业

合作伙伴



强强联手, 合力共筑品牌力量
Cooperating to build up the branding together.

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▲注意:

note: 为了确保安全, 在使用阳光牌卫生级单螺杆泵前, 请你认真阅读使用说明书
In order to ensure safety, please read the instruction manual carefully before using the Sunshine brand sanitary single screw pump

产品概述 product description

单螺杆泵属容积式位移泵, 主要工作部分是偏心螺杆(转子)和固定的衬套(定子), 由于转子、定子的特殊几何形状, 分别形成数字单独的密封腔, 转子的运转将给予密封腔内的介质连续地匀速地容积变化从吸入端输送到压出端。该泵可用于输送中性或腐蚀性的液体, 洁净的或磨损性的液体, 含有气体或易产生气泡的液体, 高粘度或低粘度的液体, 包括含有纤维物和固体物质的液体。能长时间连续工作而保持平稳的流量。

G 型螺杆泵广泛应用于:

- 食品业: 用于酒厂输送酒、废渣及制酒流程中的投配料的输送。
- 纺织业: 用于输送合成纤维液、粘胶液、染料、油墨、尼龙粉液。
- 造纸业: 用于纸浆黑液的输送。
- 石油业: 用于多种油类、油脂产品的地面集输送。
- 化工业: 用于输送各种悬浮液, 乳胶液、酸、碱、盐液。
- 造船业: 用于输送渣油, 扫舱和污水、海水等。
- 建筑业: 输送灰浆、灰膏。
- 核工业: 输送带颗粒的放射性液体。
- 冶金和矿业: 用于输送氧化物和废水, 矿井排水和液体炸药的输送。
- 污水处理厂: 输送泥浆。
- 电厂: 用于水煤浆的输送。

G 型螺杆泵的设计特点:

●联接轴两端采用一字或精制的万向接头, 其稍子和稍套是由特殊材料制成的, 因而其寿命得到了很大的改善, 其结构简单容易拆卸。

●衬套两端有包过来的橡胶, 使其与进、出管联接处密封可靠, 从而保证了衬套体不受到腐蚀。

●在吸入管和轴承之间装有一个可进行更换的填料箱, 即能用于填料密封又能用于机械密封(可进行不同形式的密封更换), FG 型卫生级单螺杆泵都采用机械密封。

1. 1 使用前务请注意

为保证泵长期而可靠地工作, 请按说明书操作和定期保养!

为确保泵正确使用, 输送介质和使用环境应与订货时提出的要求一致。如要改变, 必须确认泵与介质接触的零件材质、密封形式、介质温度、工作压力、配套电器容量与性能等方面相适应后方可使用、特别是用于腐蚀性、有毒或其他危险介质时更需慎重。

1. 2 泵的长期储存

泵在装箱前已做防锈处理。用户在泵使用前如要长期储存, 按下述方面重做防锈处理:

用防锈脂涂抹非油漆金属表面, 包括轴表面、填料壳体内腔等。用非不锈钢制造的转子, 最好取下定子后用防锈脂保护表面。对不锈钢材质的零件可不需上述工作。

The single screw pump is a positive displacement pump. The main working parts are the eccentric screw (rotor) and the fixed bushing (stator). Due to the special geometric shapes of the rotor and the stator, a number and separate sealed cavity are formed. The operation of the rotor will give the medium in the sealed cavity is continuously and uniformly changed in volume and delivered from the suction end to the pressure output end. The pump can be used to transport neutral or corrosive liquids, clean or abrasive liquids, liquids containing gas or bubbles, high-viscosity or low-viscosity liquids, including liquids containing fibrous and solid substances. It can work continuously for a long time and maintain a stable flow.

G type screw pump is widely used in:

- Food industry: used for the transportation of wine, waste residue and ingredients in the wine making process.
 - Textile industry: used to transport synthetic fiber liquid, viscose liquid, dye, ink, nylon powder liquid.
 - Paper industry: used for the transportation of black liquor.
 - Petroleum industry: used for the ground collection and transportation of various oils and grease products.
 - Chemical industry: used to transport various suspensions, latex, acids, alkalis, and salt solutions.
 - Shipbuilding industry: used to transport residual oil, stripping and sewage, sea water, etc.
 - Construction industry: conveying mortar and plaster.
 - Nuclear industry: Conveyor belt particles of radioactive liquid.
 - Metallurgy and mining industry: used to transport oxides and wastewater, mine drainage and liquid explosives.
 - Sewage treatment plant: transport mud.
 - Power plant: used for the transportation of coal water slurry.
- Design features of G type screw pump:
- The two ends of the connecting shaft adopt flat-shaped or refined universal joints, and the sleeves and sleeves are made of special materials, so its service life has been greatly improved, and its structure is simple and easy to disassemble.
 - Both ends of the bushing are covered with rubber to make the joints with the inlet and outlet pipes sealed reliably, thereby ensuring that the bushing body is not corroded.
 - A replaceable stuffing box is installed between the suction pipe and the bearing, which can be used for packing seal and mechanical seal (different forms of seal replacement can be carried out). FG type sanitary single screw pump adopts mechanical seal.

1.1 Please note before use

In order to ensure the long-term and reliable operation of the pump, please operate and maintain regularly according to the instructions!

In order to ensure the correct use of the pump, the delivery medium and use environment should be consistent with the requirements put forward when ordering. If you want to change it, you must confirm that the material of the parts in contact with the medium, the sealing form, the medium temperature, the working pressure, the capacity and performance of the supporting electrical appliances, etc. can be used before it can be used, especially when it is used for corrosive, toxic or other dangerous media. Be cautious.

1.2 Long-term storage of the pump

The pump has been anti-rust treatment before packing. If the user wants to store the pump for a long time before use, redo the anti-rust treatment according to the following aspects:

Use anti-rust grease to smear non-painted metal surfaces, including shaft surfaces and the inner cavity of the filler housing. For rotors made of non-stainless steel, it is best to use anti-rust grease to protect the surface after removing the stator. The above work is not required for parts made of stainless steel.

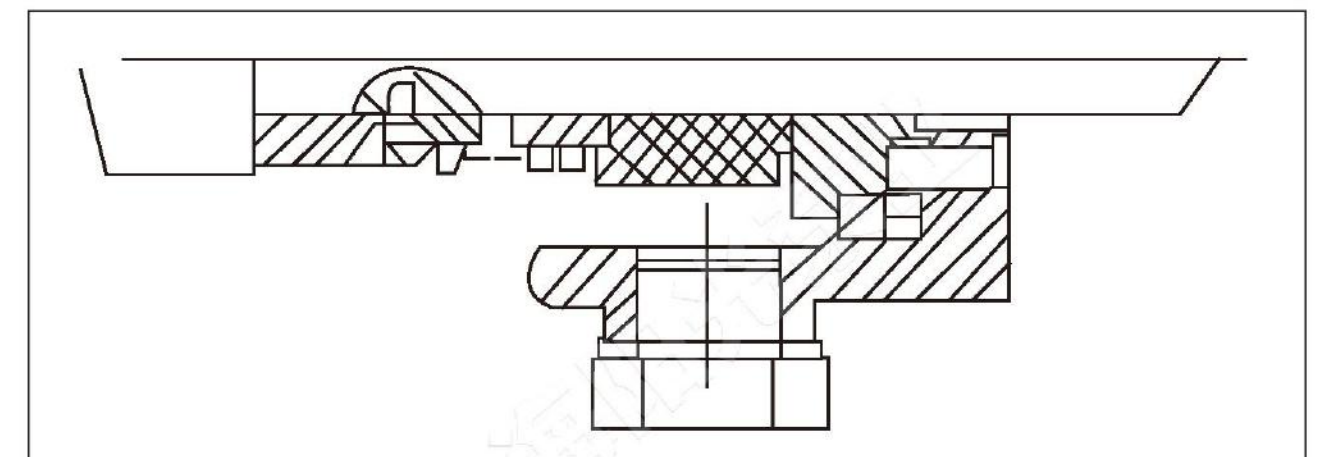
型号说明 Model Description



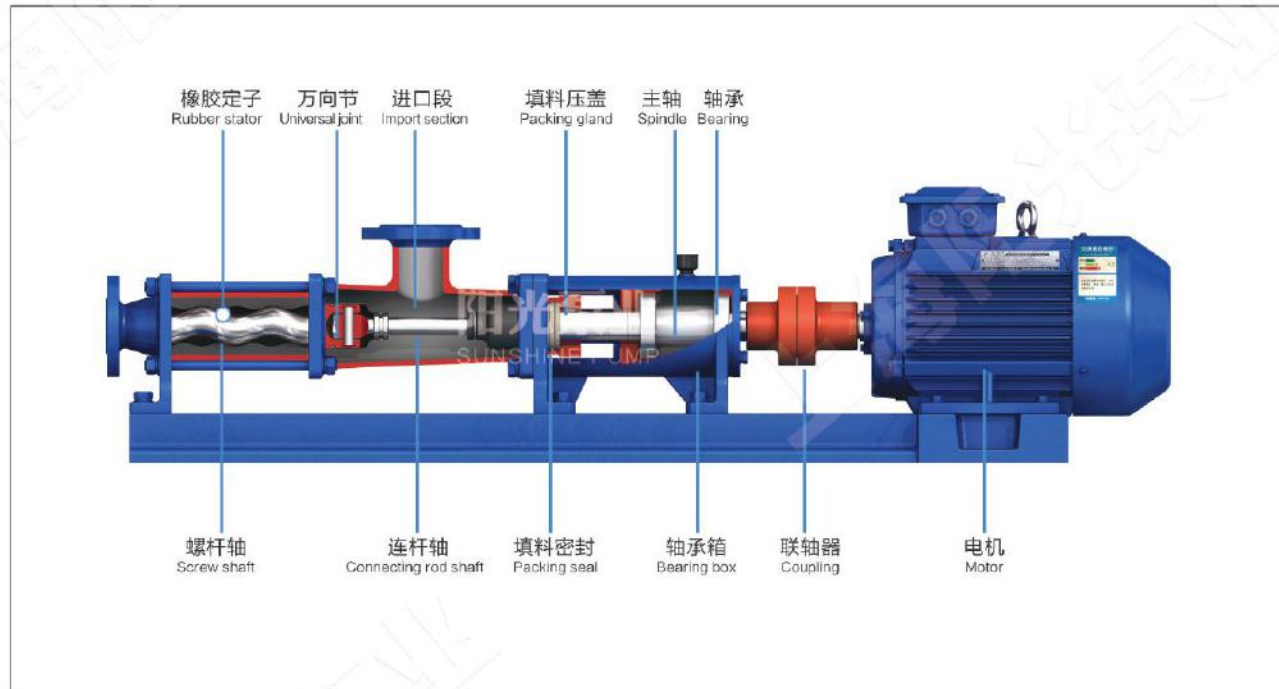
驱动方式 Drive method

驱动方式	说明
	由弹性联轴器联接和变频调速电机驱动方式 Connected by elastic coupling and driven by variable frequency speed motor
	由弹性联轴器联接和无级变速电机驱动方式 Connected by an elastic coupling and driven by a continuously variable motor
	由弹性联轴器联接和固定减速电机驱动方式 Drive mode of geared motor connected and fixed by elastic coupling

轴端密封形式 Shaft end seal form



产品结构图 Product Structure



产品展示图 Product display diagram

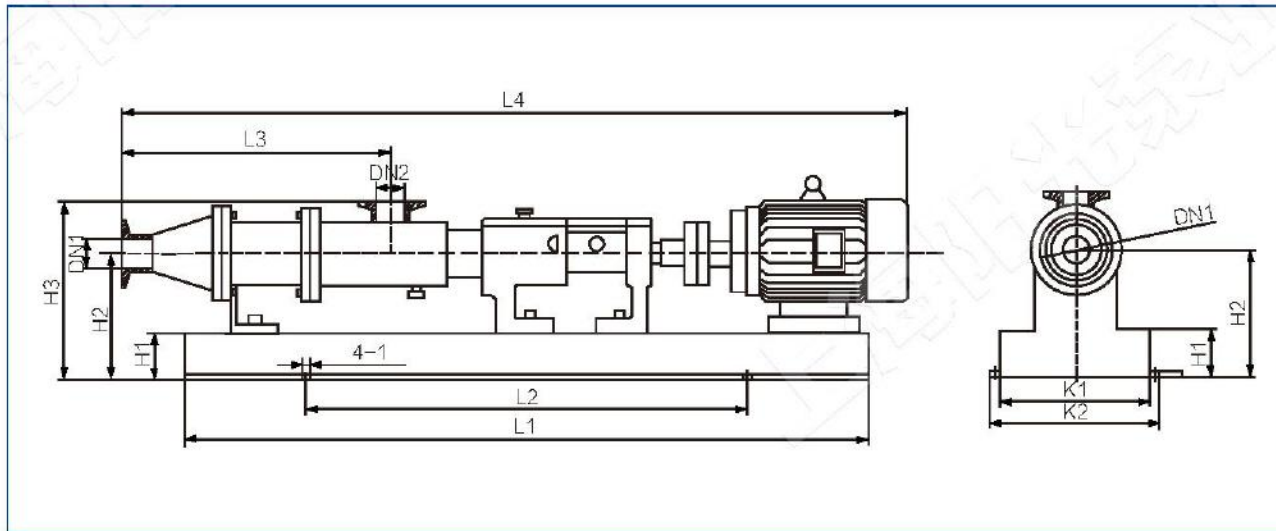


性能参数 Performance parameters

仅供参考
For reference only

型号 model	流量 m ³ /h Flow m ³ /h	压力 MPA Pressure MPA	功率 KW Power KW	转速 r/min Speed r/min	口径 caliber
FG10-1	0.5	0.6	0.37	960	卡箍 20 Clamp 20
FG10-2	0.5	1.2	0.75	960	卡箍 20 Clamp 20
FG15-1	1	0.6	0.55	960	卡箍 25 Clamp 25
FG15-2	1	1.2	1.1	960	卡箍 25 Clamp 25
FG20-1	1.5	0.6	0.75	960	卡箍 32 Clamp 32
FG25-1	2	0.6	1.1	960	卡箍 32 Clamp 32
FG25-2	2	1.2	2.2	960	卡箍 32 Clamp 32
FG30-1	3	0.6	1.5	960	卡箍 40 Clamp 40
FG30-2	3	1.2	2.2	960	卡箍 40 Clamp 40
FG35-1	5	0.6	2.2	960	卡箍 50 Clamp 50
FG35-2	5	1.2	3	960	卡箍 50 Clamp 50
FG40-1	7	0.6	3	960	卡箍 50 Clamp 50
FG40-2	7	1.2	5.5	960	卡箍 50 Clamp 50
FG45-1	9	0.6	4	960	卡箍 65 Clamp 65
FG50-1	13	0.6	4	720	卡箍 80 Clamp 80
FG50-2	13	1.2	7.5	720	卡箍 80 Clamp 80
FG55-1	18	0.6	5.5	720	卡箍 80 Clamp 80
FG60-1	32	1.2	7.5	720	法兰 100 Flange 100
FG65-1	32	0.6	7.5	720	法兰 125 Flange 125
FG65-2	32	1.2	11	720	法兰 125 Flange 125
FG70-1	48	0.6	11	720	法兰 150 Flange 150
FG70-2	48	1.2	15	720	法兰 150 Flange 150

外型尺寸图表 Dimensions chart



型号 model	DN1	DN2	L1	L2	L3	L4	K1	K2	H1	H2	H3	I	转速 Rotating speed	流量 flow	电机功率 Motor Power
FG10	20	20	635	365	180	730	140	160	80	150	205	Φ8	1400	0.5	0.37-6
FG15	25	25	770	415	300	880	170	195	80	160	230	Φ9	960	1	0.55-6
FG20	32	32	850	470	340	1000	180	210	80	170	250	Φ12	960	1.5	0.75-6
FG25	32	32	870	470	350	1050	180	210	80	170	250	Φ12	960	2	1.1-6
FG30	38	38	950	575	360	1180	200	240	80	180	270	Φ14	960	3	1.5-6
FG35	51	51	1040	650	410	1270	245	280	80	190	280	Φ14	960	5	2.2-6
FG40	51	51	1250	680	480	1420	255	320	80	215	315	Φ15	960	7	3-6
FG45	63	63	1250	680	480	1470	255	320	80	215	315	Φ15	960	9	4-6
FG50	80	80	1520	780	530	1800	325	370	80	260	410	Φ16	720	13	4-8
FG55	80	80	1570	850	580	1850	335	370	80	260	410	Φ16	720	18	5.5-8
FG60	100	100	1780	1180	630	2100	430	480	80	280	450	Φ16	720	30	7.5-8
FG65	125	125	1780	1180	630	2100	430	480	80	280	450	Φ16	720	35	7.5-8
FG70	150	150	1950	1350	750	2300	450	500	80	280	470	Φ18	720	42	11-8

技术特性 Technical characteristics

4. 1泵出口所允许的流量范围和所需要的功率可从泵性能表中查找

4.1 The allowable flow range and required power at the pump outlet can be found in the pump performance table

泵体最大承压 Maximum pressure of pump body	1.6MPa	同时考虑轴封所允许的压力 Also consider the allowable pressure of the shaft seal
最大输出压力 单级 双极 Maximum output pressure Single-stage Bipolar	0.6MPa 1.2MPa	
最大允许真空度 Maximum allowable vacuum	0.085Mpa	决定于运转条件。级数、旋转方向与轴封方式 Determined by operating conditions. Number of stages, rotation direction and shaft seal
泵所输介质允许最高温度 The maximum temperature of the medium delivered by the pump	150℃	决定于所输介质和所用的弹性体材料 Depends on the conveyed medium and elastomer material used
最大粘度 Maximum viscosity	270000cst	决定于泵所输送的介质及泵的转速和规格 Determined by the medium delivered by the pump and the speed and specifications of the pump
最大允许固体含量(体积) Maximum allowable solid content (volume)	60%by volume	决定于泵的规格及固体的特性和大小 Determined by the specifications of the pump and the characteristics and size of the solid

4. 2根据介质的磨损性选择泵转速

●表中给出了所输送的具体介质及其磨损特性的特例，请注意介质的特性随其浓度和温度的变化而变化

●当泵的规格越大时，转速应选低一些

4.2 Choose the pump speed according to the abrasiveness of the medium

●The table gives special examples of the specific medium transported and its wear characteristics. Please note that the characteristics of the medium vary with its concentration and temperature.

●When the pump size is larger, the speed should be lower

磨损性 Abrasion	介质名称 Media Name	转速 Rotating speed
无 no	淡水、促凝剂、油、浆沫、肉沫、肥皂水、血液、甘油 Fresh water, coagulant, oil, foam, meat foam, soapy water, blood, glycerin	400-1000 (rpm)
一般 general	泥浆、悬浮液、工业废水、油漆颜料、废丝水(糖)、灰浆、鱼、麦麸/菜籽油过滤后的沉积物 Mud, suspension, industrial waste water, paint pigment, waste silk water (sugar), mortar, fish, wheat bran/rapeseed oil filtered sediment	200-400 (rpm)
严重 serious	石灰浆、粘土、灰泥、陶土、水煤浆 Lime slurry, clay, stucco, clay, coal water slurry	50-200 (rpm)

4. 3按介质粘度选择转速

4.3 Select the speed according to the viscosity of the medium

介质粘度 Medium mucus	1~1000 (cst)	1000~10000 (cst)	10000~100000 (cst)	100000~1000000 (cst)
转速 Rotating speed	400-1000 (rpm)	200-400 (rpm)	<200 (rpm)	<100 (rpm)

4.4橡胶基本特性

4.4 Basic characteristics of rubber

橡胶特性 Rubber characteristics	丁腈橡胶 NBR Nitrile rubber NBR	氟橡胶 EPM Viton EPM	乙丙橡胶 EPDM Ethylene propylene rubber EPDM
耐最高温度 Highest temperature resistance	90°C	150°C	120°C
耐磨性 Abrasion resistance	○	○	●
耐老化性 Aging resistance	●	○	○
耐臭氧 Ozone resistant	×	○	○
耐蒸性 Steam resistance	●	○	○
耐燃性 Flame resistance	●	○	○

○优 ●很好 △一般 ×不行
○Excellent ●Very good △General ×Not good

4.5单螺杆泵的衬套常用橡胶

4.5 Commonly used rubber for bushing of single screw pump

橡胶特性 Rubber characteristics	丁腈橡胶 Nitrile rubber	氟橡胶 Fluororubber	食品橡胶 Food rubber	乙丙橡胶 Ethylene propylene rubber	
介质 Medium	代号 code	NBR	FPM	W.NBR	EPDM
水(含污水) Water (including sewage)		●	●	●	●
植物油 Vegetable oil		●	●	●	△
矿物油 mineral oil		●	●	●	×
氨水 ammonia		●	×	●	△
芳香族溶剂 Aromatic solvent		×	●	×	×
浓碱 Concentrated alkali		●	×	●	●
浓硝酸 Concentrated nitric acid		×	△	×	×
冰醋酸 glacial acetic acid		●	●	●	×
稀硫酸 Dilute sulfuric acid		●	●	●	●
浓硫酸 Concentrated sulfuric acid		×	●	×	△
稀盐酸 Dilute hydrochloric acid		●	●	×	●
浓盐酸 Dilute hydrochloric acid		●	●	●	●
热水 Hot water		△	×	△	●
汽油 gasoline		●	●	●	×
甲苯 Toluene		×	●	×	×
二甲苯 Xylene		×	●	×	×
乙醇 Ethanol		●	●	●	△

橡胶特性 Rubber characteristics	丁腈橡胶 Nitrile rubber	氟橡胶 Fluororubber	食品橡胶 Food rubber	乙丙橡胶 Ethylene propylene rubber	
介质 Medium	代号 code	NBR	FPM	W.NBR	EPDM
煤油 kerosene		●	●	●	×
柴油 Diesel oil		●	●	●	×
氯化氢 Argon chloride		×	△	×	×
含酮类物料 Ketone-containing materials		×	×	×	●
含醇类物料 Alcohol-containing materials		●	●	●	●
含脂类物料 Lipid materials		×	×	×	●
含醚类物料 Ether-containing materials		×	×	×	●
泥浆 mud		●	△	●	●
磷酸 Phosphoric acid		△	△	△	●
碳酸钠 Sodium carbonate		●	×	●	●
糖醛 Sodium carbonate		△	△	△	●
苯 100 Benzene 100		×	●	×	×
丙酮 acetone		×	×	×	●
亚麻籽油 Linseed oil		●	●	●	●
二硫化碳 Carbon disulfide		×	●	×	×

注：表中介质时一些常用介质的定性情况，如有特殊介质情况或特殊要求可与我厂联系。

我厂生产的食品橡胶均经过市食品卫生监督检验所检验合格。

●很好 △一般 ×不行

Note: The medium in the table is the qualitative situation of some commonly used media. If you have special media or special requirements, please contact our factory.

The food rubber produced by our factory has passed the inspection of the Municipal Food Sanitation Supervision and Inspection Institute.

●Very good △ Fair × No

4. 6最大允许颗粒直径和纤维长度（举几例）

4.6 Maximum allowable particle diameter and fiber length (to name a few)

泵规格 Pump specifications	G20	G25	G35	G40	G50	G70	G85	G105	G135
最大允许颗粒直径 Maximum allowable particle diameter	3.5	4.5	5.7	7.1	9	11.4	14.3	17.9	22.8
最大允许纤维长度 Maximum allowable fiber length	20	26	32	40	51	64	80	102	128

颗粒直径和固体含量增加则泵的转速降低。

As the particle diameter and solid content increase, the pump speed decreases.

安装与管道系统的连接 Installation and piping system connection

7. 1 泵、动力机和底座在出厂前已调整固定。安装时如果基础不平，地脚螺栓拧紧时会使底座扭曲，造成联轴器中心偏移。为此应拆除联轴器护罩，并检查联轴器安装偏差：

$\Delta Y \leq 0.2\text{mm}$ 、 $\Delta a \leq 30'$ 。

7. 2 泵允许正反运转，我们推荐逆时针方向运转——从泵出轴端看（进出口未知和轴旋转方向在泵的铭牌上有说明）。

7. 3 泵与管道系统连接时，应在泵出口端安装一段大于定子长度的活络管，便于更换定子或维修。

管道系统应设立支撑点，泵的进出口法兰不能作管道承载之用。

管道应预先清洗干净，防止杂物堵塞或损坏定子、转子。

7. 4 如果泵轴封采用水环密封或双端机械密封，则应接上密封液进排管及有关附件。

7. 5 单螺杆泵严禁干运转！甚至极少的几转也会造成定子的严重损坏。

首次启动之前，必须用所输送的介质注入泵吸入腔内，如果介质浓度过高，则稀释后注入。这种灌注措施对橡胶定子的润滑绝对必要。然后，在泵与电机之间的联轴器处，用管钳扳动传动轴，使传动轴带动螺杆转子转动3-5转，再通电启动。否则橡胶定子内缺介质润滑，形成干磨，使启动困难，甚至磨坏橡胶定子。

如果泵在运转中需短时停车，应保证足够的介质留在泵内，作为再次启动对定子润滑。用户在设计管道布置时应予以考虑。

7. 6 单螺杆泵是容积式位移泵，不能在阀门关闭时工作。

如果出口管路堵塞或阀门意外关闭时，泵的压力降急剧升高到额定压力的数倍，其结果将造成泵的损坏或管

道破裂。在输送危险介质时必须绝对避免此情况。因此，安装压力开关等安全装置十分必要。

7. 7 泵启动前，必须确认所有机件和安全装置如皮带罩壳等，已安装无误后方可开机。

7. 7 通过瞬时接通电机，检查泵轴旋转方向是否正确。

7. 9 泵在会使介质冻结的环境温度中停用，为防止冻裂，应保证泵被排空。泵在连接体下方设有排液孔。

7. 10 输送易沉淀、易固化介质的泵，应定期清洗。因输送的介质和操作方法不同，清洗的间隔时间由操作者决定。

7. 11 使用无极调速泵，必须在启动泵后可调速。否则会造成调速器内结构破坏，无法调整。

7.1 The pump, power machine and base have been adjusted and fixed before leaving the factory. If the foundation is not flat during installation, the foundation will be twisted when the anchor bolts are tightened, causing the coupling center to shift. To this end, the coupling guard should be removed and the coupling installation deviation should be checked:

$\Delta Y \leq 0.2\text{mm}$, $\Delta a \leq 30'$.

7.2 The pump is allowed to run in both forward and reverse directions. We recommend running in a counterclockwise direction—viewed from the shaft end of the pump (the inlet and outlet are unknown and the direction of shaft rotation is stated on the pump nameplate).

7.3 When the pump is connected to the piping system, a flexible pipe longer than the length of the stator should be installed at the outlet of the pump to facilitate replacement of the stator or maintenance.

The piping system should set up support points, and the inlet and outlet flanges of the pump cannot be used for piping load.

The pipeline should be cleaned in advance to prevent debris from clogging or damaging the stator and rotor.

7.4 If the pump shaft seal adopts a water ring seal or a double-ended mechanical seal, the sealing liquid inlet and outlet pipes and related accessories should be connected.

7.5 Dry operation of single screw pump is strictly prohibited! Even a few revolutions can cause serious damage to the stator.

Before starting for the first time, the delivered medium must be injected into the suction cavity of the pump. If the concentration of the medium is too high, it must be diluted and injected. This filling measure is absolutely necessary for the lubrication of the rubber stator. Then, at the coupling between the pump and the motor, use a pipe clamp to move the drive shaft so that the drive shaft drives the screw rotor to rotate 3-5 revolutions, and then power on to start. Otherwise, the rubber stator lacks medium lubrication, resulting in dry grinding, making it difficult to start, and even wearing the rubber stator.

If the pump needs to stop for a short time during operation, ensure that enough medium remains in the pump to lubricate the stator as a restart. The user should consider it when designing the piping layout.

7.6 The single screw pump is a positive displacement pump and cannot work when the valve is closed.

If the outlet pipeline is blocked or the valve is accidentally closed, the pressure drop of the pump rises sharply to several times the rated pressure, which will result in damage to the pump or rupture of the pipeline. This situation must be absolutely avoided when transporting hazardous media. Therefore, it is necessary to install safety devices such as pressure switches.

7.7 Before starting the pump, it must be confirmed that all mechanical parts and safety devices such as belt covers have been installed correctly before starting the pump.

7.7 Check whether the rotation direction of the pump shaft is correct by turning on the motor momentarily.

7.9 When the pump is out of service at an ambient temperature that will freeze the medium, in order to prevent freezing and cracking, ensure that the pump is emptied. The pump is provided with a drain hole under the connecting body.

7.10 Pumps that transport media that are easy to precipitate and solidify should be cleaned regularly. Due to the different conveying media and operation methods, the cleaning interval is determined by the operator.

7.11 When using stepless speed regulating pump, the speed must be adjusted after starting the pump. Otherwise, the internal structure of the governor will be damaged and cannot be adjusted.

故障及其排除方法 Trouble and how to eliminate it

故障现象 Failure phenomenon	原因 the reason	排除方法 Method of exclusion
泵不能启动 Pump will not start	新泵转子、定子配合过紧 电压太低 介质粘度过高 The new pump rotor and stator are too tightly matched Voltage is too low Medium viscosity is too high	用工具人力帮助转动几圈 检查、调整 稀释料液 Use tool manpower to help turn a few turns Check and adjust Diluent
泵不出液 No pump	旋转方向不对 吸入管路有问题 介质粘度过高 转子、定子损坏或传动部件损坏 泵内异物堵塞 Wrong direction of rotation Problem with suction line Medium viscosity is too high Damaged rotor, stator or transmission parts Foreign matter in the pump is blocked	调整方向 检查泄漏, 打开进出口阀门 稀释料液 检查更换 排除更换 Adjust direction Check for leaks, open inlet and outlet valves Diluent Check and replace Exclude replacement
流量达不到 Flow can't reach	管路泄漏 阀门未全部打开或局部堵塞 转速太低 转子、定子磨损 Pipeline leak The valve is not fully opened or partially blocked Speed is too low Wear of rotor and stator	检查修理管路 打开全部阀门、排除堵塞物 调整转速 更换损坏零件 Check and repair the pipeline Open all valves and remove blockages Adjust the speed Replace damaged parts
压力达不到 Under pressure	转子、定子磨损 Wear of rotor and stator	更换转子、定子 Replace the rotor and stator
电机过热 Motor overheated	电机故障 出口压力过高, 电机超载 定子烧坏或粘在转子上 Motor failure The outlet pressure is too high and the motor is overloaded The stator burns out or sticks to the rotor	检查电机、电压、电流、频率 检查扬程, 开足出口阀门, 排除堵塞 更换损坏零件 Check the motor, voltage, current, frequency Check the head, open enough outlet valve to remove blockage Replace damaged parts
流量、压力急剧下降 Flow and pressure drop sharply	管道突然堵塞或泄露 定子磨损恶劣 液体粘度突然改变 电压突然下降 Suddenly blocked or leaked pipe Bad stator wear Sudden change in liquid viscosity Sudden voltage drop	检查排除 更换 找出原因排除 找出原因排除 Check and exclude replace Find out the reason Find out the reason
轴密封处大量泄漏液体 A large amount of liquid leakage at the shaft seal	软填料磨损 机械密封损坏 Soft packing wear Damaged mechanical seal	压紧或更换材料 修复或更换 Compress or replace material Repair or replace

维修保养 Maintenance

9. 1 润滑

良好的润滑是泵长期可靠工作的前提之一。

泵的轴承和传动轴万向接头处采用锂基润滑脂润滑。输送食品介质的泵, 在传动轴球头处则采用食品润滑脂。

泵的轴承按使用环境和工作状况应定期拆下清洗, 并重新加润滑脂。润滑脂充填量一般以填满轴承和轴承壳体空间的 1/2-2/3 为宜。

万向接头处更换润滑脂的时间取决于输送介质温度和压力, 及橡胶护套、密封圈是否损坏。无极调速器使用专用油 UB-1、UB-3 牵引液, 运转 2000 小时更换一次。

9. 2 轴封

采用填料密封的泵, 需要经常检查泄露情况, 并及时压紧填料盖, 对略有介质滴出为宜, 压得过紧会使填料与轴发热咬死。更换磨损的填料环时应全部换掉。

采用机械密封的泵一发现泄漏及时检查, 对老化的 O 型密封圈, 密封表面损坏的动环、静环等应及时更换。输送高粘度、易沉淀或固化、腐蚀性介质的泵, 在长期停用前机械密封应充分清洗。并在动环、静环摩擦端面涂上润滑脂。

9.1 Lubrication

Good lubrication is one of the prerequisites for long-term reliable pump operation.

The bearings of the pump and the universal joints of the drive shaft are lubricated with lithium grease. For pumps that transport food media, food grease is used at the ball head of the drive shaft.

The bearings of the pump should be removed and cleaned regularly according to the use environment and working conditions, and re-lubricated. The amount of grease filling is generally to fill 1/2-2/3 of the space between the bearing and the bearing housing.

The time to replace the grease at the universal joint depends on the temperature and pressure of the conveying medium, and whether the rubber sheath and sealing ring are damaged. The stepless speed governor uses special oil UB-1 and UB-3 traction fluid, which is replaced once every 2000 hours.

9.2 Shaft seal

For pumps with packing seals, it is necessary to frequently check the leakage situation and press the packing cover in time. It is advisable for a slight medium to drip out. If the packing is too tight, the packing and shaft will be seized by heat. All worn packing rings should be replaced when replacing them.

The pump with mechanical seal should be checked in time when leakage is found, and the aging O-rings, the dynamic rings and static rings with damaged sealing surfaces should be replaced in time. For pumps that transport high-viscosity, easy to precipitate or solidify, and corrosive media, the mechanical seal should be fully cleaned before long-term use. And apply grease to the friction end faces of the moving and static rings.

拆卸与重新装配 Disassembly and reassembly

10. 1 泵的拆卸 (参阅结构简图)

在拆卸泵进行维修保养前, 应使泵与电机脱离, 防止电机意外触动。泵拆卸时应遵守各项操作规程, 防止危险介质伤人等各种事故发生。

10. 1. 1 拆卸泵头 (13)

拧下固定螺母及底脚处螺栓, 拉出压出管 (13)。对较大规格的泵应在定子 (12) 下面衬垫木块等物后方能拉出泵头。

10. 1. 2 拆卸定子 (12)

用工具轧住定子向后拉出。必要时按泵轴旋转方向盘盘动轴作辅助。

10. 1. 3 拆卸转子 (10)、联接轴 (8)

卸下连接体(9)、拆除万向节处钢带卡(19)、退出护圈(18)、取下销(17)后, 联接轴(8)与转子(10)、轴(1)随即分离。

10. 1. 4 卸下轴承压盖, 把轴(1)从轴承座内压出, 取出轴封。对机械密封装置, 此工作十分小心, 防止密封环损坏。

10. 2 泵的新装配

泵的装配步骤正好与拆卸相反, 并注意下列问题:

10. 2. 1 装配前应将零件仔细清洗、检查, 损坏的零件应更换。

10. 2. 2 正确安装的轴承应使轴转动灵活、无卡阻现象。

10. 2. 3 轴封安装

密封体(22)安装时应使压盖压紧螺栓位置在传动壳体安装窗口内, 便于扳手调整螺栓。机械密封安装应小心, 摩擦副端面应清洁并涂上润滑脂。

10. 2. 4 传动轴两端万向接头装配时, 应检查密封圈有否损坏, 在空腔内填充润滑脂。

10. 2. 5 安装定子时用洗洁精涂抹转子、定子内腔表面, 有利定子安装。

10. 2. 6 泵头压紧固定时螺母拧紧应均匀一致。

10.1 Disassembly of the pump (refer to the structure diagram)

Before disassembling the pump for maintenance, the pump should be separated from the motor to prevent accidental activation of the motor. When disassembling the pump, various operating procedures should be followed to prevent various accidents such as injury from dangerous media.

10.1.1 Remove the pump head (13)

Unscrew the fixing nut and the bolt at the foot, and pull out the extrusion tube (13). For larger pumps, the pump head should be pulled out after the wooden block is lined under the stator (12).

10.1.2 Remove the stator (12)

Roll the stator with a tool and pull it out. If necessary, rotate the steering wheel shaft according to the pump shaft for assistance.

10.1.3 Disassemble the rotor (10) and coupling shaft (8)

After removing the connecting body (9), removing the steel belt clamp (19) at the universal joint, exiting the retainer (18), removing the pin (17), connect the shaft (8) with the rotor (10) and shaft (1) Separated immediately.

10.1.4 Remove the bearing gland, press the shaft (1) out of the bearing seat, and take out the shaft seal. For mechanical seals, this work is very careful to prevent damage to the seal ring.

10.2 Reassembly of the pump

The pump assembly steps are just the opposite of disassembly, and the following issues should be noted:

10.2.1 The parts should be carefully cleaned and inspected before assembly, and damaged parts should be replaced.

10.2.2 The correctly installed bearing should enable the shaft to rotate flexibly without jamming.

10.2.3 Installation of shaft seal

The sealing body (22) should be installed so that the gland compression bolts are located in the installation window of the transmission housing to facilitate the adjustment of the bolts by the wrench. The mechanical seal should be installed carefully, and the end face of the friction pair should be clean and coated with grease.

10.2.4 When assembling the universal joints at both ends of the drive shaft, check whether the sealing ring is damaged, and fill the cavity with grease.

10.2.5 When installing the stator, use detergent to coat the inner cavity surface of the rotor and stator, which is beneficial to the stator installation.

10.2.6 Pump head pressure tightening timing nut tightening should be uniform.

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