

KCB SCREW PUMP

Operation Manual



Introduction

KCB Series gear pump

1. Purpose

Suitable for conveying without solid particles and fibers, with a temperature not exceeding 300 ℃ and a viscosity of 5 × 10-6~1.5 × 10-3m ²/ Lubricating oil of s (5-1500cSt) or other liquids with properties similar to lubricating oil.

By reducing the pump speed, the viscosity of the conveying medium can reach 5 × 104cSt.

2. Application scope

Can be used as a transmission and booster pump in oil transportation systems;

It can be used as a fuel for conveying, pressurizing, and injecting in the fuel system;

It can be used as a lubricating oil in all industrial fields.

3. Structural characteristics

The FLOWELL series gear pump mainly consists of gears, shaft, pump body, safety valve, shaft end seal (special requirements, magnetic drive can be selected, zero leakage structure), etc. The gear has high hardness and strength after heat treatment, and is installed together with the shaft in a replaceable shaft sleeve for operation. The lubrication of all parts inside the pump is automatically achieved by using the conveying medium during pump operation.

There are well-designed oil discharge and return grooves inside the pump, which minimize the torque force borne by the gears during operation. Therefore, the bearing load is small, wear is small, and the pump efficiency is high.

The pump is equipped with a safety valve as overload protection. The total reflux pressure of the safety valve is 1.5 times the rated discharge pressure of the pump, and can also be adjusted according to actual needs within the allowable discharge pressure range. However, please note that this safety valve cannot be used as a pressure reducing valve for long-term operation. If necessary, it can be installed separately on the pipeline.

From the extended end of the spindle towards the pump, it rotates clockwise.



Performance Parameter

Performance parameters of KCB gear pump

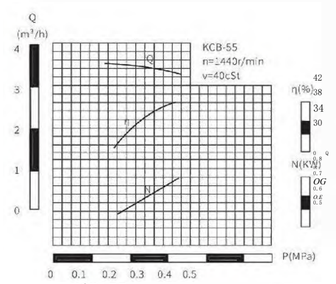
For reference

Model	Flow Rate		Set Pressure (MPa)	Power (kW)	Head (m)	Required NPSH (m)	Efficiency(%)
	(m³/h)	(L/min)					
KCB-18.3	1.1	18.3	1.45	2.2	5	5	59
KCB-33.3	2	33.3	1.45	2.2-4	5	5	59
KCB-55	3.3	55	0.33	1.5-4	5	7	41
KCB-83.3	5	83.3	0.33	2.2-4	5	7	43
KCB-135	8	135	0.33	2.2-6	5	5	46
KCB-200	12	200	0.33	4-4	5	5	46
KCB-200	12	200	0.5	5.5-4	5	5	46
KCB-300	18	300	0.36	5.5-6	5	5	42
KCB-483.3	29	483.3	0.36	7.5-4	5	5.5	42
KCB-483.3	29	483.3	0.6	11-4	5	5.5	42
KCB-633	38	633	0.28	11-6	5	6.5	43
KCB-960	58	960	0.28	18.5-4	5	6.5	43
KCB-960	58	960	0.5	22-4	5	6.5	43

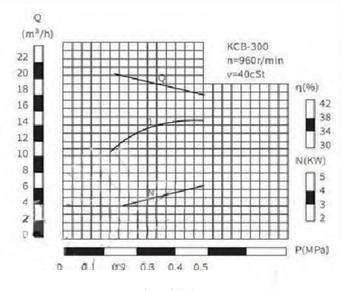
Performance Curve

The performance parameters of various types of gear pumps are determined at a medium viscosity of 4x10M/s (40cSt). The parameter values given in the performance parameter table are applicable to the medium viscosity range of 1x10-5 to 8x10-5M/s (10-80cSt). If it exceeds this range, it will be determined separately based on the performance parameter requirements proposed by the user.

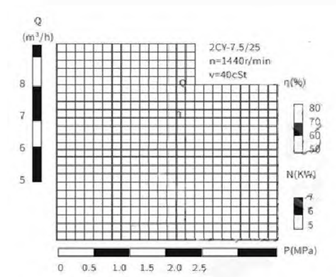
The discharge pressure given in the performance parameters of each type of gear pump is the maximum working pressure value given, and within this range, the pump can operate normally. The working range is shown in Figure 1。



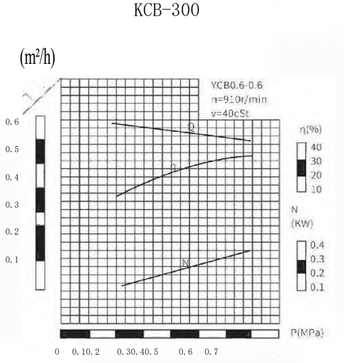
KCB-55



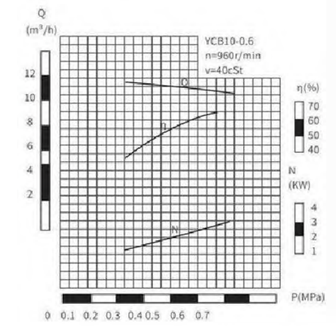
KCB-300



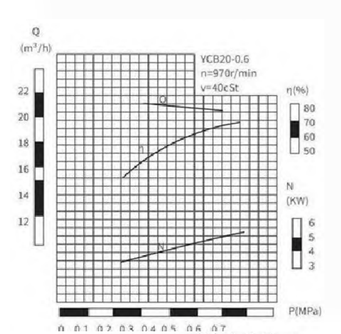
2CY-7.5/25



YCB0.6-0.6

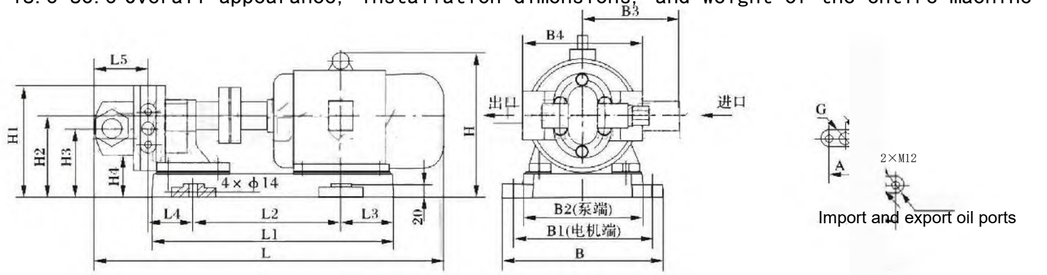


YCB10-0.6



YCB-20-0.6

KCB-18.3~83.3 Overall appearance, installation dimensions, and weight of the entire machine

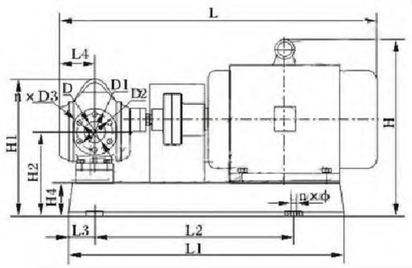


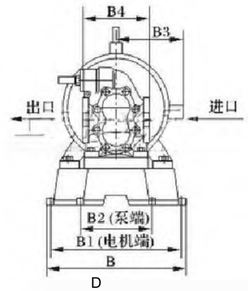
For reference

Model	L	L1	L2	L3	L4	L5	H	H1	H2	H3	H4	B	B1	B2	B3	B4	A	G	Weight
KCB-18.3	566	391	239	86	75	86	230	176	130	109	40。	259	225	190	155	192	52	G3/4	62.15
KCB-33.3	618	416	256	94	82	93	285	186	140	119	50	279	245	190	180	192	52	G3/4	66.8
KCB-55	595	391	239	86	89.5	100.5	230	176	130	109	40	259	225	190	155	192	70	G1	64.15
KCB-83.3	652	416	256	94	102	113	285	186	]4C	119			245	190	180	192	78	G1/2	70.15

60 279

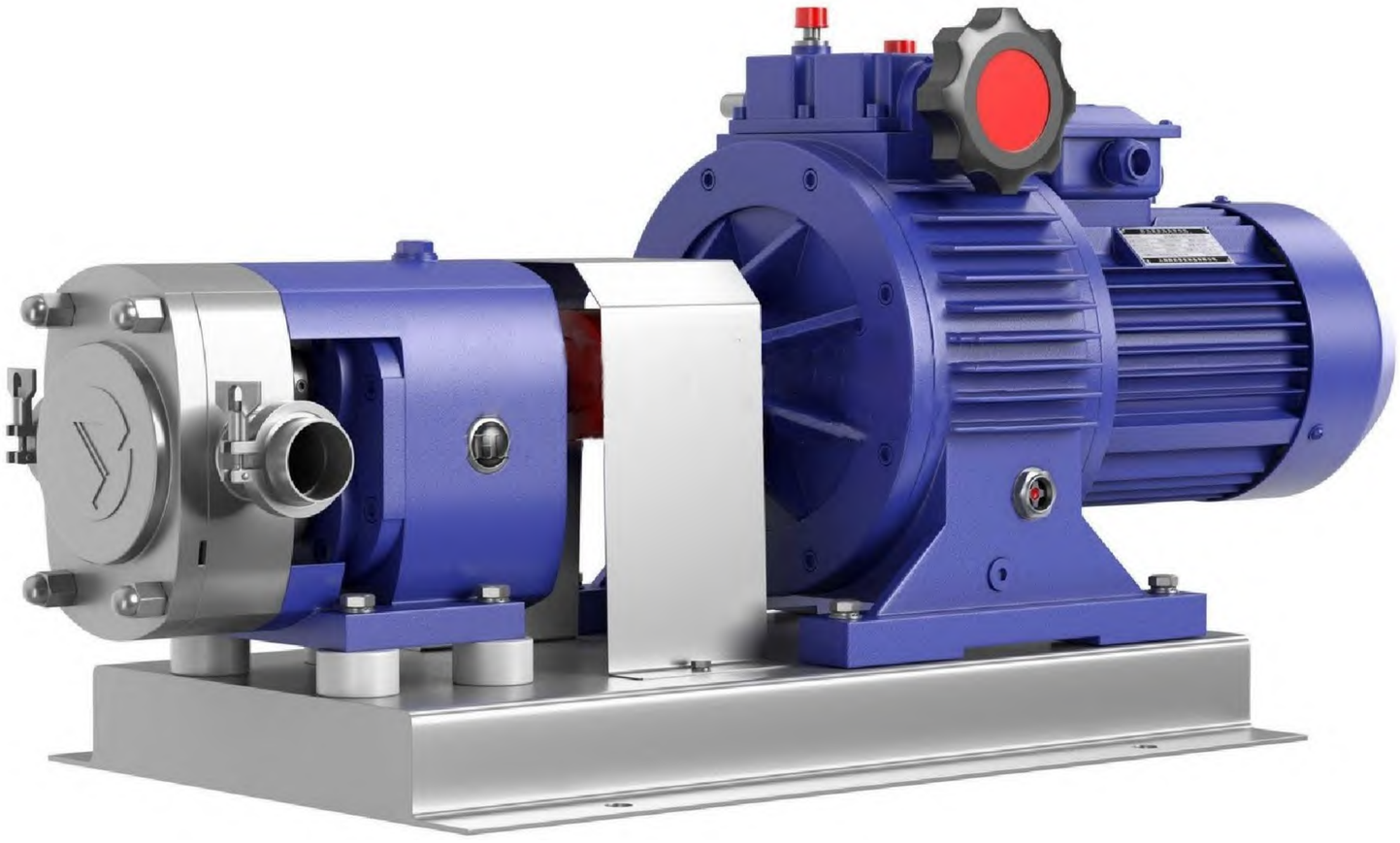
KCB-200~960 Overall appearance, installation dimensions, and weight of the entire machine





For reference

Model	L	L1	L2	L3	L4	H	H1	H2	H4	B	B1	B2	B3	B4	D1	D2	nxD3	nxφ	Weigh
KCB-200	709	577	419	58	90	355	314	168	50	326	290	240	190	214	Φ50	Φ110	Φ140 4xM12	4xΦ16	135
KCB-300	883	715	502	80	124	423	378	198	70	390	340	280	210	228	Φ70	Φ123	Φ155 6xM14	4xΦ22	173
KCB-483.3	972	795	565	80	124	465	*378*	198	70	450	400	290	255	228	Φ70	Φ123	Φ155 6xM14	4xΦ22	213
KCB-633	1074	901	629	100	145	500	455	258	70	450	400	285	255	280	Φ100	Φ158	Φ190 8xM14	4xΦ22	274.5
KCB-960	1099	900	635	100	145	525	455	258	70	470	420	285	285	280	Φ100	Φ158	Φ190 8xM14	4xΦ22	304.5



LQ3A cam rotor pump

Operation Manual

Introduction

All spare parts in contact with the conveyed materials in the LQ series rotor pump are made of stainless steel materials that meet hygiene standards, and their sealing components are made of non-toxic rubber. The reliable rust prevention and non-toxic sealing ensure safety and hygiene.

The streamline structure of the rotor and the absence of dead points and non-metallic components in the rotor chamber prevent contamination of the transported material. It is suitable for conveying foam and medium with high viscosity, high concentration and any particles in the conveying process. The conveyed materials will maintain the original quality and will not undergo any physical and chemical reaction.

Features

1. Compact structure, easy maintenance, almost no vulnerable parts, and low operating cost.
2. After configuring the frequency converter, the flow can be adjusted freely and used as a general metering pump.
3. Small volume, high flow rate, high head pressure, suitable for long-distance and high resistance quantitative conveying.
4. Innovative design, simple and easy installation and maintenance, convenient cleaning, ensuring hygiene and cleanliness inside the machine and production.
5. Adopting external dynamic and static ring mechanical seals, it can be directly rinsed with water, resistant to high pressure, not easily worn, and has no leakage.
6. There is no contact between the rotor and the rotor, and there is no wear during long-term use. The operation is smooth, with low noise and high efficiency.
7. Suitable for conveying high viscosity, concentration, and any medium (material) containing particles. Suitable for temperatures ranging from -30 to+200 ℃.
8. The rotational speed is low, usually between 200RDM and 600RPM. The material conveyed by it maintains its original quality and does not undergo any physical or chemical reactions.
9. All parts in contact with the medium (material) are made of stainless steel (material SUS304)
SUS316 meets hygiene standards.
10. The impeller of the pump is separated from the transmission gear, ensuring a certain gap between the various components in the pump chamber, without contact, without wear, low noise, good reliability, long service life, and energy conservation and consumption reduction.

Scope of application

1. Industrial boilers and power plants: conveying coal water slurry.
2. Mining industry: solid particles, groundwater, and wastewater in mines.
3. Construction industry: spraying of cement mortar, lime slurry, coatings, and paste.
4. Medicine and daily chemical products: various viscous slurries, emulsions, various ointments and cosmetics.
5. Shipbuilding Industry: Bottom cleaning, oil and water, oil residue, oil and sewage transportation.





Product Overview

Scope of application

6. Chemical industry: various suspensions, oils, colloids, and adhesives.

7. Food canned industry: various viscous starches, concentrated distiller's grains, grain product residues, various sauces, pastes, solids Body fluid.

8. Printing and papermaking: high viscosity ink, PVC polymer plastic paste for wallpaper, and pulp of various concentrations,Short fiber slurry.

9. Petroleum industry: transporting crude oil, mixtures of crude oil and water, mixtures of coalfield gas and water, and into geological formations Inject polymers, etc.

10. Environmental protection: transportation of industrial wastewater, domestic wastewater, sludge and turbid water containing solid particles and short fibers, Specially used in oil-water separators, plate and frame filter presses, and other equipment.。

Widely applicable for conveying: various special materials, viscous materials, mixtures of different densities, corrosive materials, and large particle materials.

Note: The flow range in the table refers to the data measured when the medium is "water". The speed regulation adopts a continuously variable transmission or frequency converter, and its speed regulation range is set according to the actual working conditions. The motor power is set according to the actual application conditions, and when conveying high viscosity concentrated liquids, the electric power must be increased.



Left and right import and export types



Import and export upper and lower types



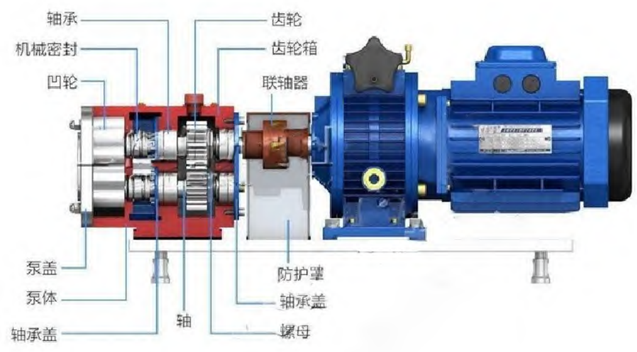
LQ3A Performance parameter table

for reference

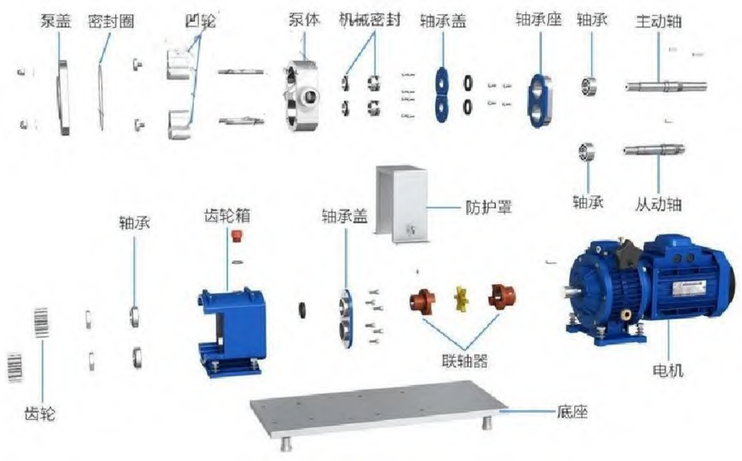
Model	Displacement per 100r(L)	Corresponding flow(L/h)	Pressure (MPa)	power (kW)	diameter (mm)	Suggested speed range(RPM)	Machine seal model
LQ3A-3	3	300-800	0.3	0.55	25	200-500	20
LQ3A-6	6	650-1600	0.3	0.75	25	200-500	25
LQ3A-8	8	850-2100	0.3	1.5	32	200-500	25
LQ3A-12	12	1300-3200	0.3	3	38	200-500	30
LQ3A-20	20	2100-5400	0.6	3	38	200-500	35
LQ3A-30	30	3200-6400	0.6	4	51	200-400	35
LQ3A-36	36	3800-7600	0.6	4	38	200-400	40
LQ3A-52	52	5600-11000	0.6	5.5	51	200-400	40
LQ3A-66	66	7100-14000	0.6	7.5	63	200-400	B45
LQ3A-78	78	9000-18000	0.6	7.5	63	200-400	50
LQ3A-100	100	11000-22000	0.6	11	76	200-400	50
LQ3A-135	135	15000-30000	0.6	15	89	200-400	50
LQ3A-160	160	17000-34000	0.6	18.5	102	200-400	B60
LQ3A-200	200	21600-43000	0.6	22	102	200-400	B60
LQ3A-300	300	32000-64000	0.6	30	108	200-400	B60
LQ3A-350	350	40000-80000	0.6	30	129	200-400	B60
LQ3A-400	400	45000-90000	0.6	37	159	200-400	B60

Product structure diagram

Section view::



Explosion diagram:



Installation instructions

1、 The name of the conveying medium or liquid;

1. The viscosity and temperature of the medium (-20 to 150 ℃, maximum sterilization temperature 180 ℃)

2. Need to transport head, pressure, and flow rate;

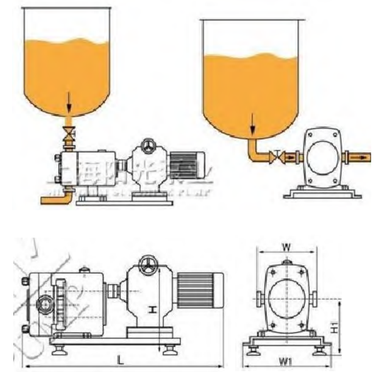
3. The number and size of particles contained in the medium;

4. Selection of interfaces (clamps, threads, flanges).

2、 Pump body material: Select according to the medium requirements of 304, 316, and 316L.

3、 Can be equipped with cooling and heating devices

4、 Sealing material: The standard rubber sealing ring is silicone rubber; Select fluororubber and EPDM according to the medium requirements; PTFE, nitrile. The standard mechanical seal is made of silicon carbide, iodine based alloy, and graphite silicon carbide, graphite ceramic, etc. are selected according to the medium.



转子泵安装示意图

For reference

Model	Power (kW)	Connection size	L	H	H1	W	W1	Connection mode
LQ3A-3	0.55	Φ25X1.5	710	290	150	150	240	
LQ3A-6	0.75	Φ25X1.5	780	390	170	190	240	
LQ3A-8	1.5	Φ32X1.5	850	400	170	190	280	
LQ3A-12	1.5-1.22	Φ38X1.5	980	450	185	220	330	
LQ3A-20	1.5-1.3	Φ38X1.5	1000	450	190	250	330	
LQ3A-30	2.2-4	Φ50.8X1.5	1050	480	220	270	350	
LQ3A-36	2.2-4	Φ38X1.5	1100	490	220	270	360	Clamp
LQ3A-52	3-5.5	Φ50.8X1.5	1250	580	260	270	480	Thread
LQ3A-66	4-7.5	φ63.5X1.5	1350	600	260	270	480	Flange
LQ3A-78	4-7.5	Φ63.5X1.5	1260	600	295	370	480	
LQ3A-100	5.5-11	Φ76X2	1320	670	295	370	480	
LQ3A-135	5.5-15	Φ89X2	1500	670	295	370	480	
LQ3A-160	5.5-18.5	Φ102X3	1500	720	320	420	560	
LQ3A-200	7.5-22	Φ102X3	1500	720	320	420	560	
LQ3A-300	11-30	Φ125X3	1650	800	400	480	620	
LQ3A-400	15-37	Φ150X3	1700	800	400	480	620	

Working principle

Working principle

Rotary pump, also known as colloid pump, three blade pump, sole pump, etc. Relying on two synchronous reverse rotations,the rotor (with 2-4 teeth) generates suction (vacuum degree) at the inlet during rotation, which sucks in the material to be transported. The two rotors separate the rotor chamber into several small spaces and operate in the order of a → b → c → d. When running to position a, only chamber I is filled with medium; When reaching position b, a portion of the medium is enclosed in room B; When it reaches position c, the medium in chamber A is also enclosed. When it reaches position d, chambers A and B are connected to chamber II, and the medium is transported to the discharge port. In this cycle, the medium (material) is continuously transported out.

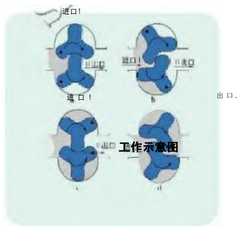


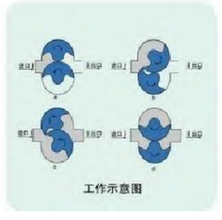
三叶型转子泵



单蝶曲线型颗粒转子泵









Special structure

Special structure

Butterfly rotor pump: Due to the use of a butterfly rotor, it not only has the characteristics of a general rotor pump, but also has certain advantages in conveying materials with high viscosity and larger particles, and can effectively transport particularly viscous materials.

Single butterfly curved rotor pump (particle rotor pump): This series of pumps from Sunshine Pump Industry is specially designed and manufactured to solve the problem of conveying materials containing large particles. Its unique shape and curve form enable it to have unparalleled advantages in conveying materials containing large particles compared to other pumps. It can effectively avoid particle damage during the material conveying process and is the preferred pump for conveying materials containing particles.



Mobile rotor pump with mixing tank



Filling conveying rotary pump (upper and lower types))

Transmission selection

1. Motor+fixed ratio deceleration

This transmission method is simple, with a constant rotor speed. This also determines the non adjustability of traffic.

2. Electric motor+mechanical friction continuously variable transmission

The speed of this transmission is achieved through manual adjustment, characterized by safety and reliability, high torque, and stepless adjustable flow rate. The disadvantage is that it is not automatically adjustable, which is more troublesome. The speed regulation is carried out during operation and cannot be adjusted in a shutdown state. Its use and maintenance should refer to the manufacturer's user manual.

3. Variable frequency motor+frequency converter

This method can achieve automatic adjustment of rotational speed, which means stepless adjustment of flow rate. Its advantages are high degree of automation and large low-speed torque. The disadvantage is that the price of the transformer is relatively high. Its use and maintenance refer to the manufacturer's user manual.



Feature：

1. High viscosity material conveying pump
The characteristics of low speed, high output torque, and high temperature resistance of the positive displacement pump enable the Sunshine brand rotor pump to excel in the field of conveying high viscosity and high temperature materials. Its unique working principle is combined with a powerful driving system. Ensure that the rotor pump can output strong driving torque at low speeds, ensuring continuous and uninterrupted material transportation, and ensuring that the material performance during transportation is not compromised,The viscosity of the medium that this pump can transport can reach up to 1000000CP.

2. Thin medium delivery pump
The rotor pump also shows significant performance advantages when conveying extremely thin media, especially when it requires non pulsating output of thin media. The drive system equipped with a rotary pump can operate at a higher speed when the viscosity of the medium being transported decreases and the leakage increases. And ensure a constant output flow rate。

3. Sanitary conveying pump
All parts in contact with materials are made of stainless steel materials that meet hygiene standards, which can meet the hygiene and corrosion resistance requirements of all food, beverage, pharmaceutical, and chemical industries.

4.Insulation jacket design
According to different working environments, rotor pumps with insulation jacket functions can be provided. This structure ensures that materials that are easy to solidify at low temperatures are kept at a constant temperature during transportation, without condensation phenomenon.

5. Water flushing mechanical seal
It can provide a mechanical seal structure with water flushing function to prevent material condensation on the end face of the mechanical seal during the transportation of high viscosity materials, which affects the normal operation of the equipment, and can ensure the service life of the mechanical seal in hazardous environments.

6. Almost no vulnerable parts
The rotor pump has no wear on any parts during operation (except for mechanical seals), and all parts in contact with materials are made of stainless steel. A pair of rotors operate synchronously during operation, maintaining a certain gap between them without any contact or theoretical wear. The rotor pump can work in various environments at temperatures up to 220 degrees Celsius