HANISOME RUICHEN PUMP

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RUICHEN PUMP

HIGH SPEED
ENTRIFUGAL PUMP

BROCHURE

ZHEJIANG RUICHEN PUMP TECHNOLOGY CO.,LTD.

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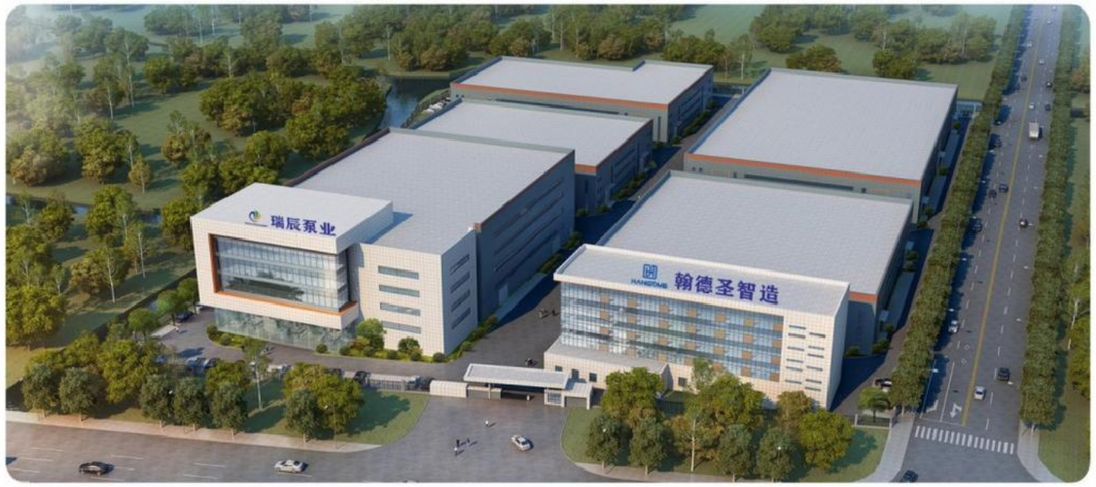
ORGANIZATIONAL STRUCTURE



Mission: Dedicated to providing first-class products and technical services for global petrochemical equipment

Vision: Committed to being an expert for global petrochemical equipment technology solution

COMPANY PROFILE

Zhejiang Ruichen Pump Technology Co.,Ltd.focuses on providing high-end fluid equipment solutions for the global market,covering the R&D,production and remanufacturing technical services of high-speed centrifugal pumps,high-speed centrifugal compressors and magnetic pumps.With excellent product quality and strong technical research and development strength, Ruichen Pump has established a good reputation in the industry.The company has an R&D team composed of technical experts with more than 20 years'industry experience,and has established strategic cooperation with the Metal Research Institute of the Chinese Academy of Sciences,and set up an academician expert workstation and a postdoctoral research workstation,providing solid academic support for technological innovation.Through developing 32 kinds of high-performance metal powder and 128 kinds of additive remanufacturing processes,we not only significantly extend the service life of the equipment,but also take the product quality to a new height.

Ruichen Pump consistently adheres to the development concept of "innovation-driven", actively explores new technologies and business models,and is committed to providing efficient and reliable technical support and customized solutions for customers.Looking into the future, we will continue to take technological innovation as our guide,deepen our presence in the field of high-end fluid equipment,and work together with global customers to jointly promote the development of the industry,and strive to be your trustworthy ideal partner.

DESIGN AND RESEARCH

Driven by professional technology and innovation,we are providers of high-performance, highly reliable fluid equipment solutions for customers.

Professional Team

Own a R&D team for 20 years' experience with strong design ability on product &hydraulic power.

Advanced Tools

Adopt advanced design softw are,CAD,Pro/E, SolidWorks and etr,for make sure to the design precision and efficiency.

Standard Certification

Products strictly,conform to API610,DIN,ANSI,ISO,GB and other intern ation al and domestic standards,to ensure every equipment can satisfy th e d iver e demand from g b bal c us tsme rs

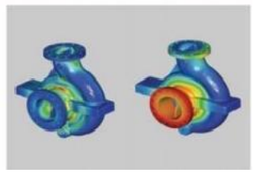
Customized Service

With consideration of user requirements,to provide customized remodel design service,tailor-made efficient solutions.

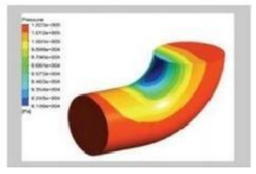
Sustainable Innovation

Join with profession al colleges,sustainably promote product research and technical innovation and en sure technical leadership.

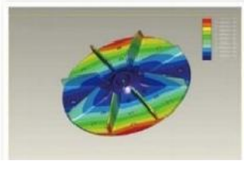
3D Drawing



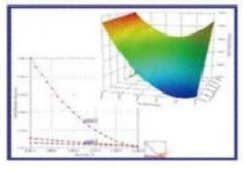
FEA



Fluids Analysis

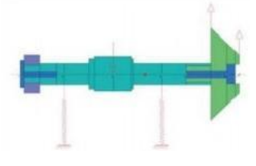


Ansys

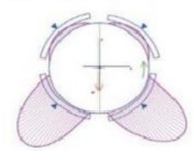


CFD

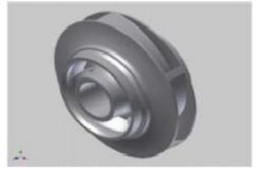
Fluids Analysis



Calculation Model



Tilt Pad Bearing Analysis



3D Cartography

INTELLIGENT MANUFACTURING BASE

Ruichen Pump workshop integrates advanced equipment,informative management with strict quality control,and is committed to providing high-performance and reliable fluid equipment to customers.The workshop covers an area of 5000m²in total,equipped with a maximum lift capacity of 20 tons and a maximum lift height of 8.5mtr.

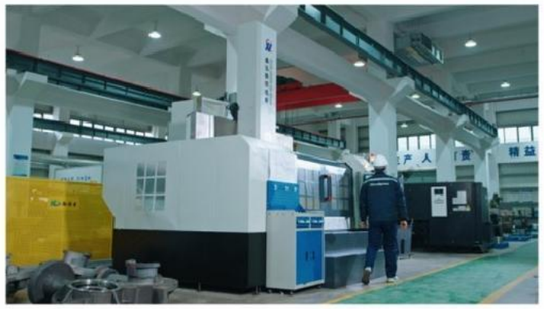
★Advanced Fabrication Facilities★

- Five-axis fabrication center
- Four-axis fabrication center
- Pentahedral fabrication center
- VMC(vertical machining centre)
- DC-VBM
- Vertical lathe
- Boring machine
- Gantry milling machine

★Advanced Inspection And Testing Equipment★

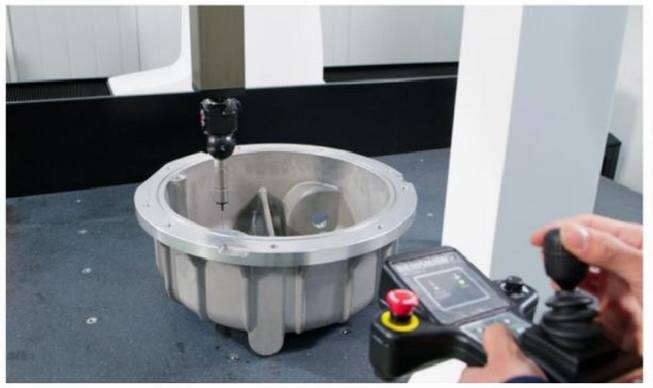
- Three coordinate inspection device
- Full speed dynamic balance machine
- 3D scan&survey instrument
- High speed pump test platform
- Compressor test platform

INTELLIGENT MANUFACTURING BASE



INSPECTION AND DETECTION

- Consistently stick to the inspection principle of "Quality First, Strive For Perfection".
- Aim at "Zero Defect", through the advanced detection devices and perfect quality management system and provide customers with trustworthy products and services.

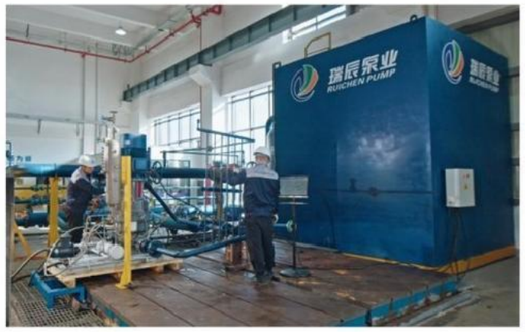


TEST PLATFORM--HIGH-SPEED PUMP INTEGRATED TEST PLATFORM

High-speed pump comprehensive test platform specification:Max Capacity: 410m³/h,Max Head:3020 m,Max Power:630 kw,NPSH Test Range:0.5m～5m.

There are 2 work stations(1 for horizontal high-speed pumps and 1 for vertical high-speed pumps).

The accuracy requirements comply with Class 1/B as specified in the international standard ISO9906-2000 and the national standard GB/T3216-2005.



TEST PLATFORM--COMPRESSOR COMPREHENSIVE TEST PLATFORM

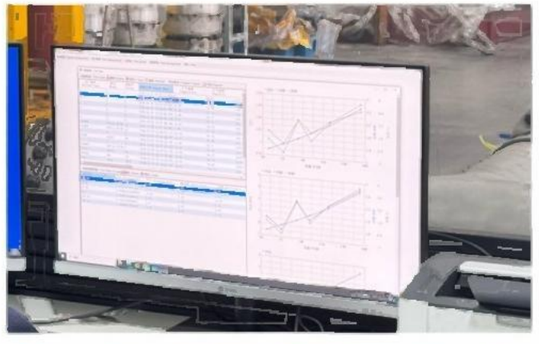
Compressor comprehensive test platform:design and test standards.
National standards:JB/T3165-1999(refer to ASME PTC10-1997).
The flow measurement standards:GB/T 2624.

The compressor test stand is suitable for the compressor performance test with an input power not exceeding 630kW and an inlet volume flow within 600-20000m³/h (at normal temperature and pressure for air),and the pressure ratio range should be within the limits corresponding to the specified power at the specified flow rate.The specific test range is indicated in the following chart:

Item	Unit	Parameter
Inlet pressure(AP)	bara	0 to 1.0
Outlet pressure(AP)	bara	0.4 to 9.0
Capacity	m³/h	600 to 20000
Inlet temperature	℃	-15 to 45
Outlet temperature	℃	30 to 150
Shell vibration	mm/s	0.11 to 11.2

Item RCY-M3 (Lf2180)	Unit	Parameter
Flow	m³/hr	10200
Max Operating Pressure	bar	100
Max Speed	rpm	32000
Temperature Range	℃	-130 to 260
Max Power	kW	596
Bearing shaft diameter	mm	38.1-50.8
Intake flange	in	4 to 10
Discharge flange	in	3 to 10
Flange standard		Class 300 Class 600

Item RCY-M5 (LF2240)	Unit	Parameter
Flow	m³/hr	17000
Max Operating Pressure	bar	350
Max Speed	rpm	42000
Temperature Range	℃	-160 to 260
Max Power	kW	7500
Intake flange	in	3 to 14
Discharge flange	in	2 to 12
Flange standard		Class 150 Class 300 Class 600



PRODUCT INTRODUCTION

High Precision,High Reliability Gearbox Transmission System

Gearbox body and gear shaft are the key parts of a high-speed pump.The heat treatment process is complicated,and there is a high requirement for fabrication and accuracy.After years of exploration,our company has developed a set of perfect processing technology.We have strict control over the chemical composition of casting and heat treatment,and carry out stabilization treatment for several times after the preliminary treatment to ensure that the box body meets the requirements of high strength and high stability.After each part completes fabrication,it is strictly tested and filed to achieve traceability of the quality process.

Gearbox

Inducer

Impeller

High Load And High Stable Sliding Bearing

We have independently developed multiple series of sliding bearings,which can be freely matched according to different working conditions.Under the specified conditions of high inlet pressure and high power,we have successfully developed axial,radial and axial-radial bearings that integrate a variety of tilting pads,to improve the stability and reliability of high-speed pump products and extend the application field of high-speed pumps.

Design On High Efficient,High Performance On Hydraulic Parts

High speed pump hydraulic parts are mainly composed of inducer,impeller, diffuser,housing,etc.

By relying on the help of numerical simulation software,we optimize the high-speed pump hydraulic model.

Flexible Seal Type

The assembling unit is configured in accordance with the API standard sealing and flushing plan,and meets user requirements under various working conditions.

Gear and Shaft

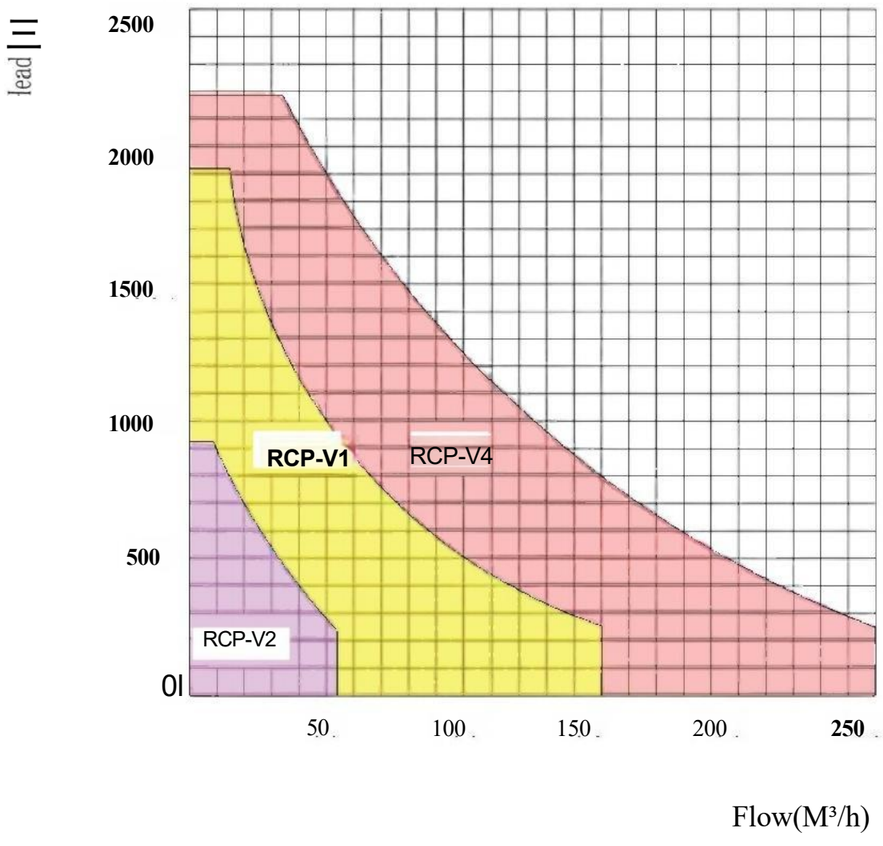
Diffuser

Bearing

RCP-V Vertical High Speed Pump

RCP-V series pumps are single stage,single suction,cantilever,vertical high-speed pump,mainly comprised of electronic motor,gearbox,pump body, lubrication system,base plate and etc.The speed increasing ratio of the gear box is divided into the first level and the second level according to different working conditions and configuration requirements.Inlet/outlet flanges of this series of high-speed pumps are symmetrically arranged on the same horizontal center line,with a compact structure,good appearance and small floor space.

RCP-V High Speed Pump Type Spectrum Diagram

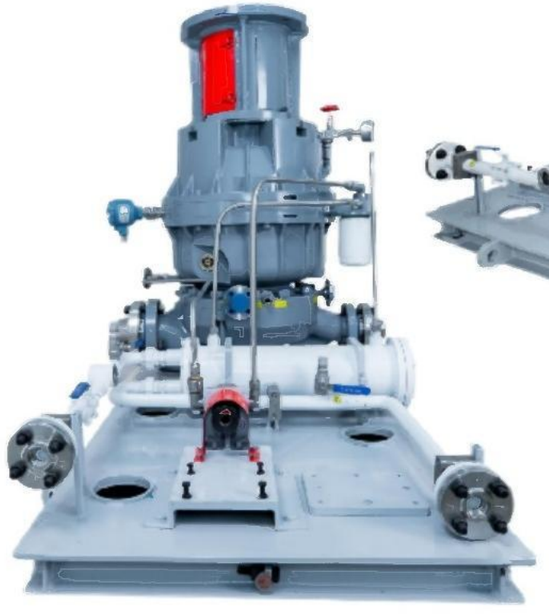


RCP-V High Speed Pump Performance Parameter Table

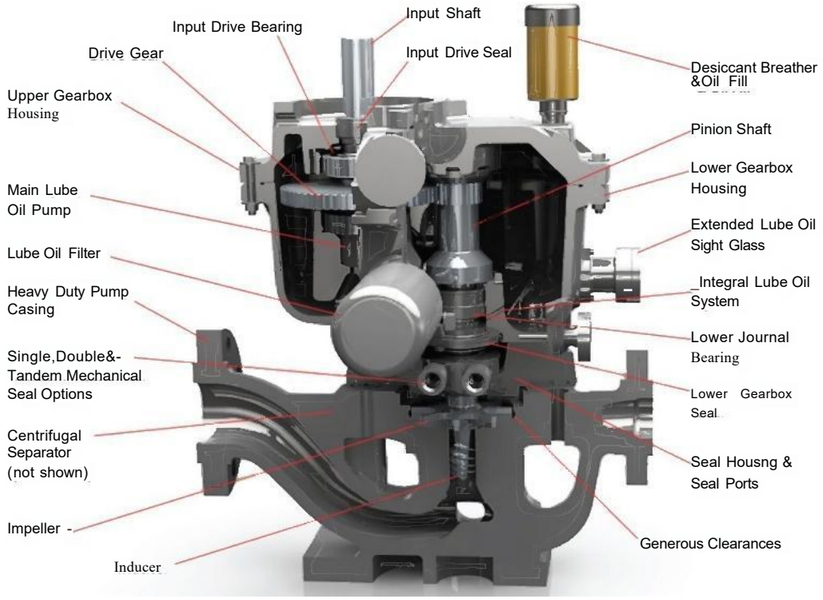
Parameter Name	RCP-V2	RCP-V1	RCP-V4
Max Capacity(m^3/h)	52	150	250
Max Head(m)	915	1920	2180
Max Suction Pressure(Mpa)	4.0	6.8	6.8
Max Operating Pressure(Mpa)	10.0	20.0	20.0
Max Motor Power(kW)	37	132	355
Operating Temperature(℃)	-130℃ to 340℃	-130℃ to 340℃	-130℃ to 340℃
Rotational Speed(rpm)	3800 to 14200	4800 to 26000	4950 to 28000
Gearbox Structure Form	First-stage speed increase	Second-stage speed increase	Second-stage speed increase

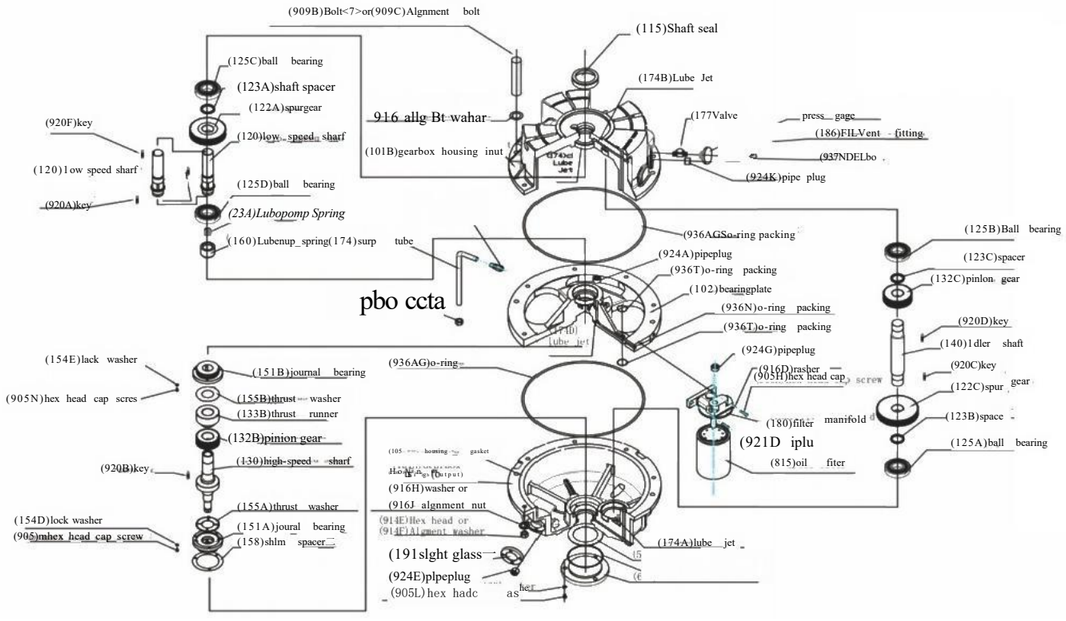
RCP-V1 Vertical High Speed Pump

- Single -stage speed increase,single-suction, vertical;
- Adopt open straight blade centrifugal impeller;
- Support type:sliding shaft bearing +thrust shaft bearing(integral copper alloy shaft bearing);
- Lubrication type:built-in oil pump+auxiliary gear oil pump;



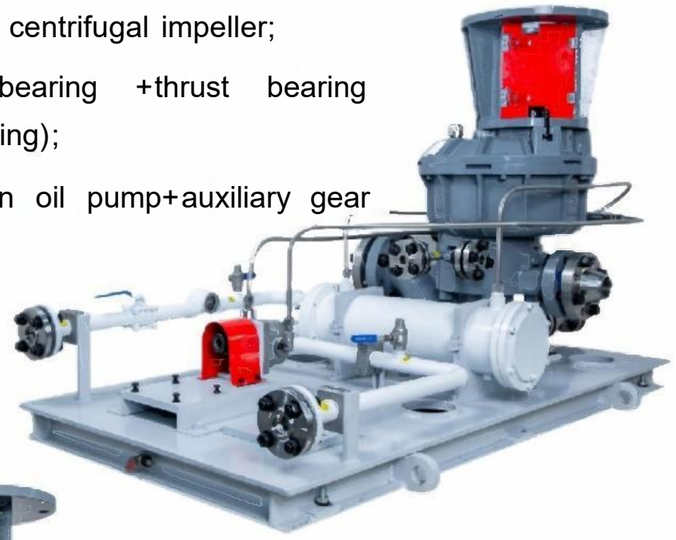
RCP-V1 High Speed Pump Sectional Drawing



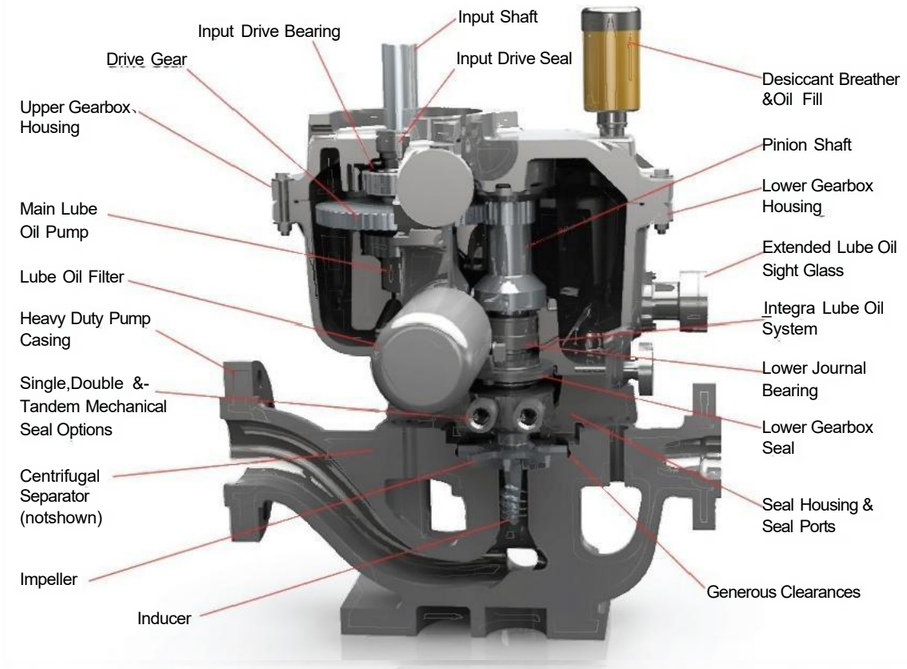


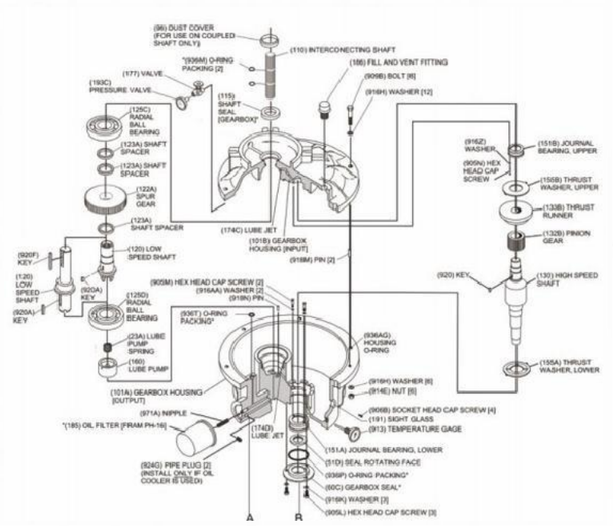
RCP-V2 Vertical High Speed Pump

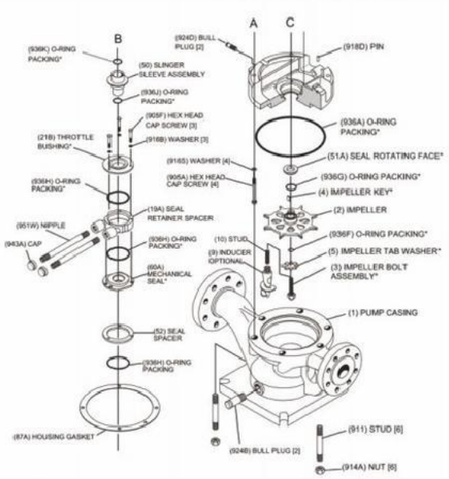
- Single-stage speed increase, single suction, vertical;
- Adopt open straight blade centrifugal impeller;
- Support mode: sliding bearing +thrust bearing (integral copper alloy bearing);
- Lubrication method: built-in oil pump+auxiliary gear oil pump;



RCP-V2 High Speed Pump Sectional Drawing



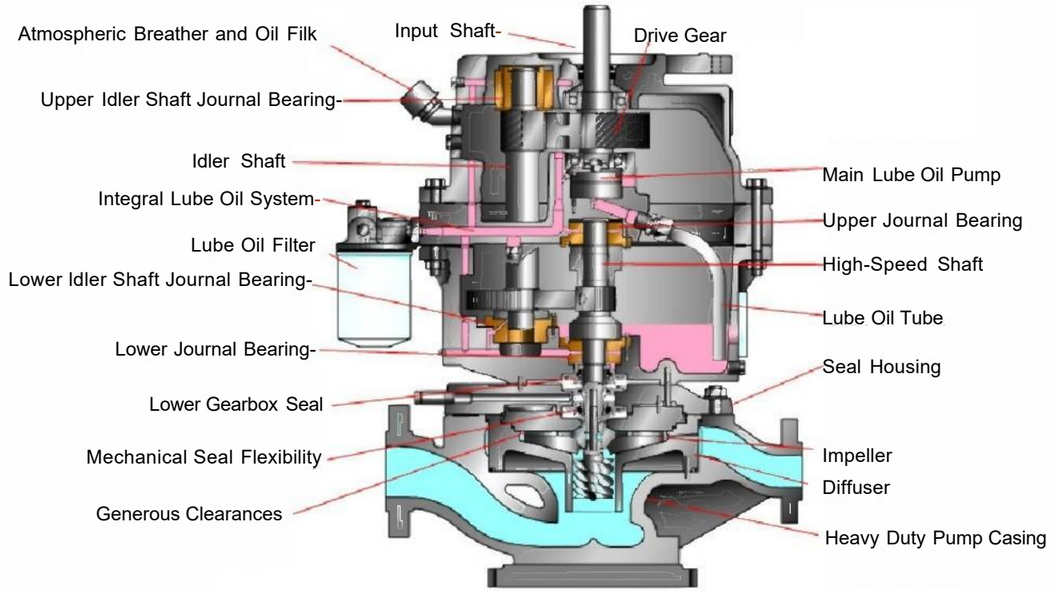


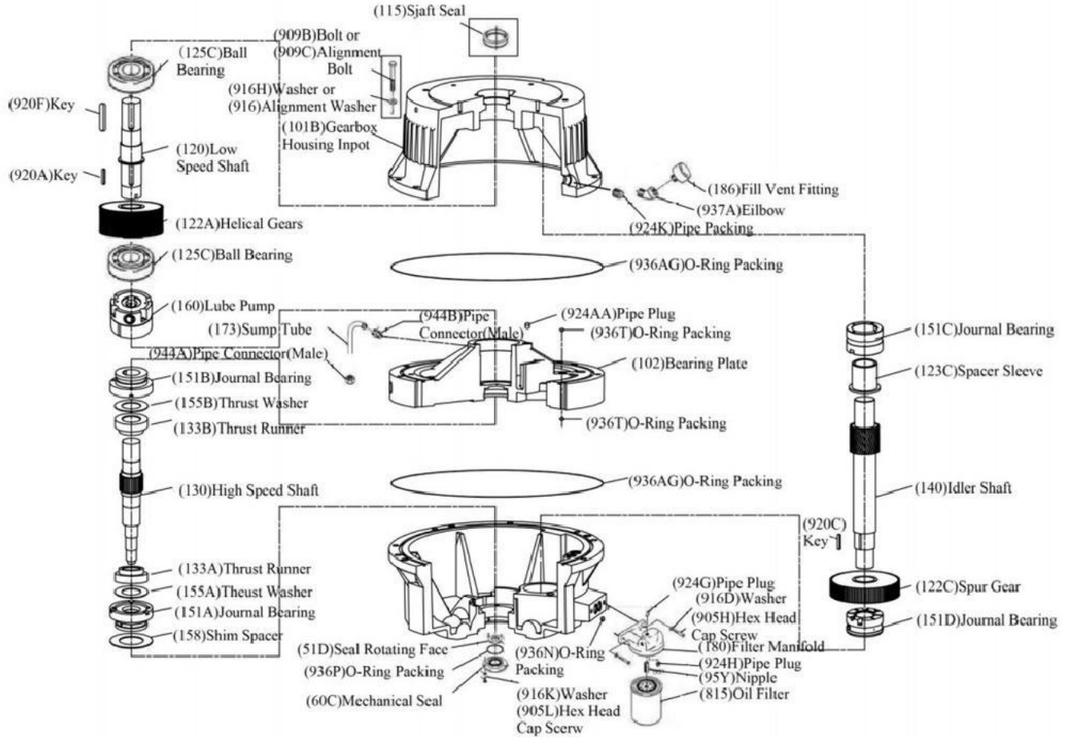


RCP-V4 Vertical High Speed Pump

- ●Single-stage speed increase,single-suction, vertical;
- ●Adopt open straight blade centrifugal impeller;
- ●Support mode:plain bearing +thrust bearing (integral copper alloy bearing);
- ●Lubrication method:built-in oil pump + auxiliary gear oil pump;

RCP-V4 High Speed Pump Sectional Drawing

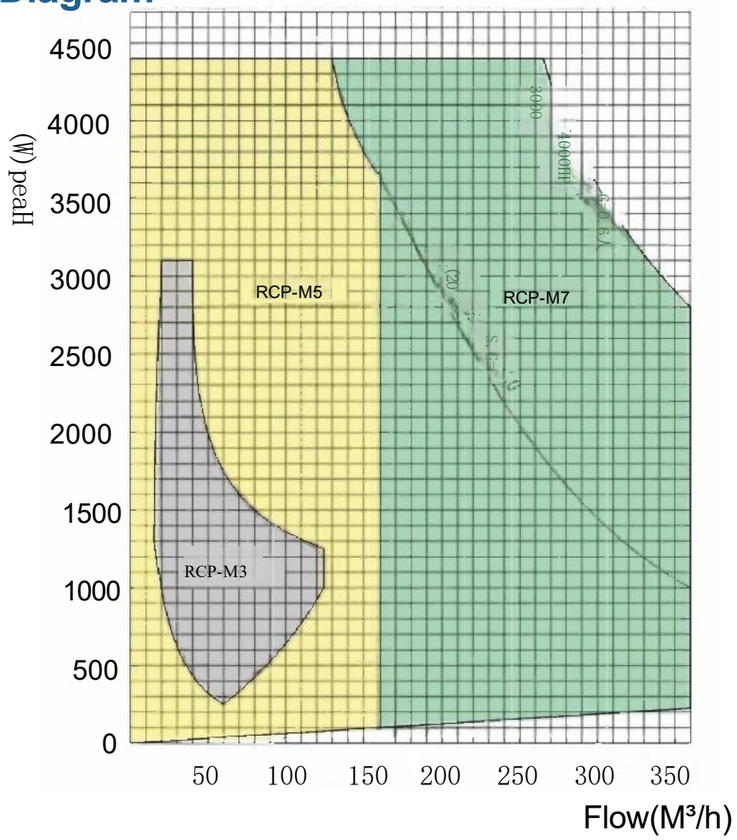




RCP-M Heavy Duty Horizontal High Speed Pump

The RCP-M series is an integral gear-driven multi-stage heavy duty and high speed centrifugal pump for low flow and high head applications.The RCP-M series high speed centrifugal pumps can be supplied with three pump heads, which can be operated in series or parallel according to the needs of the capacity and head range.This series of high-speed centrifugal pumps is based on the introduction of foreign technology,independent digestion of the technology and innovative design and production.This series of high-speed centrifugal pump technology is at the domestic leading level,and multiple technologies have filled the domestic gaps.Its maximum capacity can reach 410 m³/h, maximum head can reach 4400 m,operating temperature is -130 to 340℃, maximum speed can be up to 22000 r/min,maximum power can reach 3000 kW.

RCP-M High Speed Pump Performance Parameter Type Spectrum Diagram



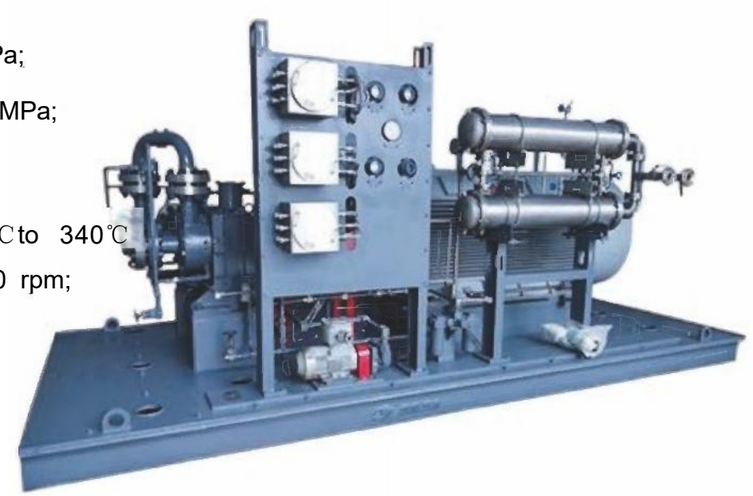
Product Feature

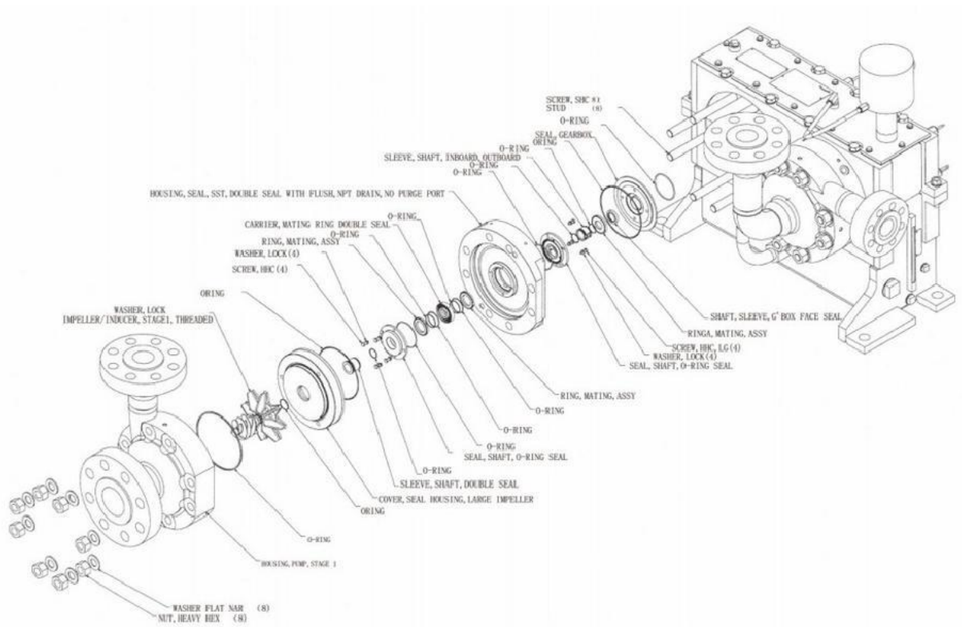
- Two or three stage cantilever type integral gear centrifugal high-speed pump complies with API610-ISO13709 standard;
- Centrifugal designs are characterized by smooth operation,a wide performance range and no pulse transmission;
- The wear-free ring doesn't need to adjust the impeller gap and is easy to install;
- The pump is designed with compact and light -weight parts,and it has a small floor area;
- The open impeller blades and proper gaps make it suitable for sites with particles;
- The modular design increases reliability,facilitates maintenance,uses fewer parts and reduces costs;
- A whole set of assembling units can provide a whole-set unit design according to the customer's needs;
- The fluid mechanics selection allows for future modifications.

Parameter Name	RCP-M3	RCP-M5	RCP-M7
Max Capacity(m³/h)	110	150	410
Max Head(m)	3050	4420	4420
Max Suction Pressure(Mpa)	10.0	10.0	10.0
Max Operating Pressure(Mpa)	30.0	45.0	45.0
Max Motor Power(kW)	630	1850	3000
Operating Temperature(℃)	-130℃ to 340℃	-130℃ to 340℃	-130℃ to 340℃
Rotational Speed(rpm)	5500 to 22000	5500 to 22000	5500 to 22000
Gearbox Structure Form	First-stage speed increase	Second-stage speed increase	First-stage speed increase

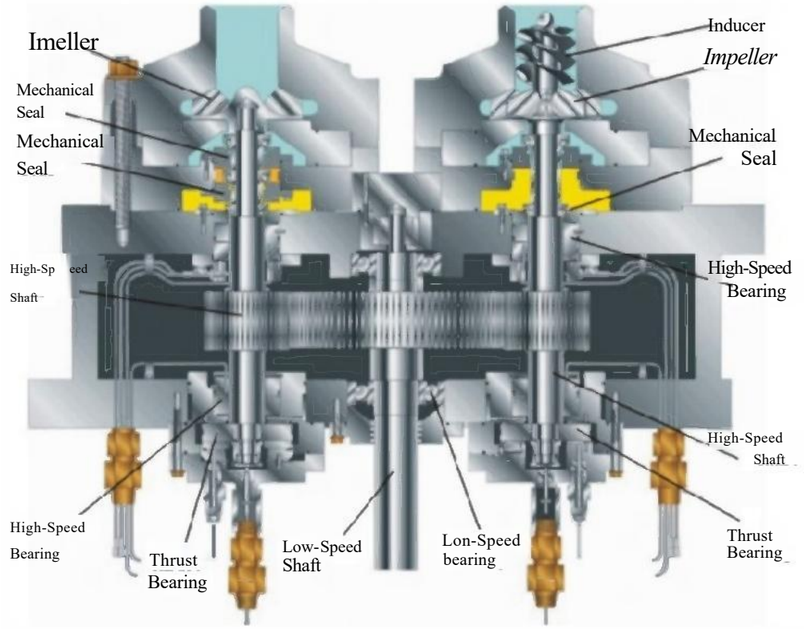
RCP-M3 Heavy Duty Horizontal High Speed Pump

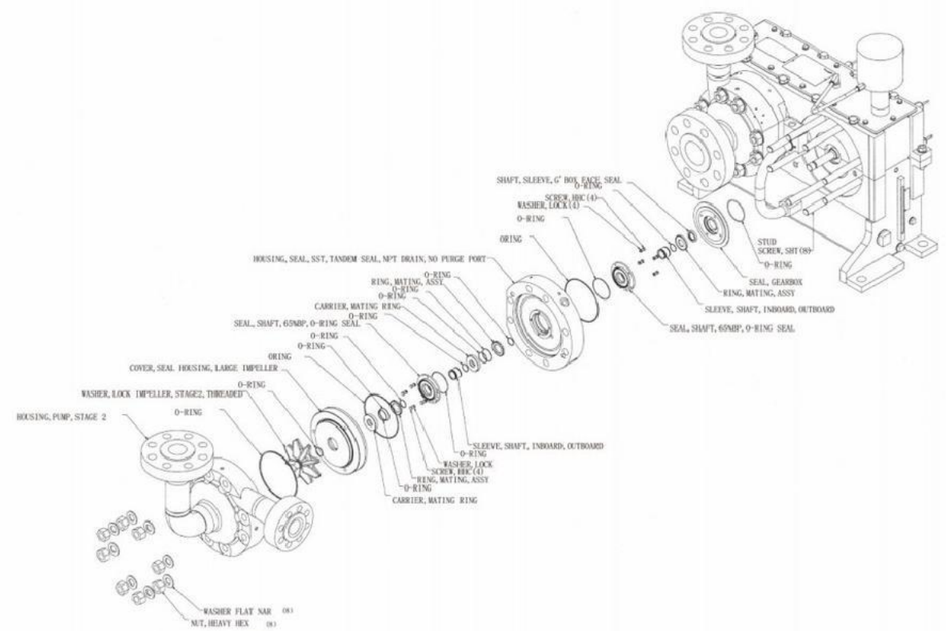
- Max Capacity:110(m³/h)
- Max Head:3050m;
- Max Suction Pressure:10.0 MPa;
- Max Operating Pressure:30.0 MPa;
- Max Motor Power:630 kW;
- Operating Temperature:-130°℃to 340℃
- Rotation Speed:5500 to 22000 rpm;
- First-stage speed increase.





RCP-M3 High Speed Pump Sectional Drawing

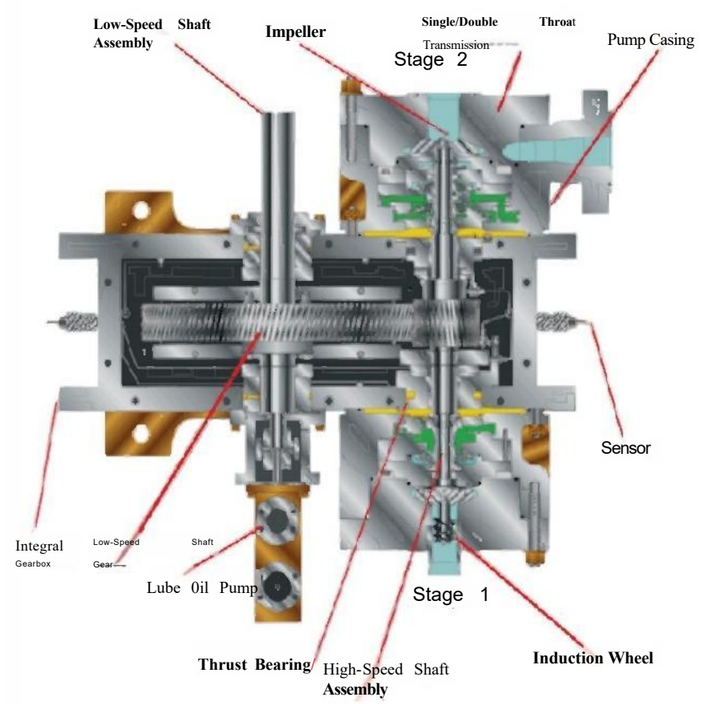


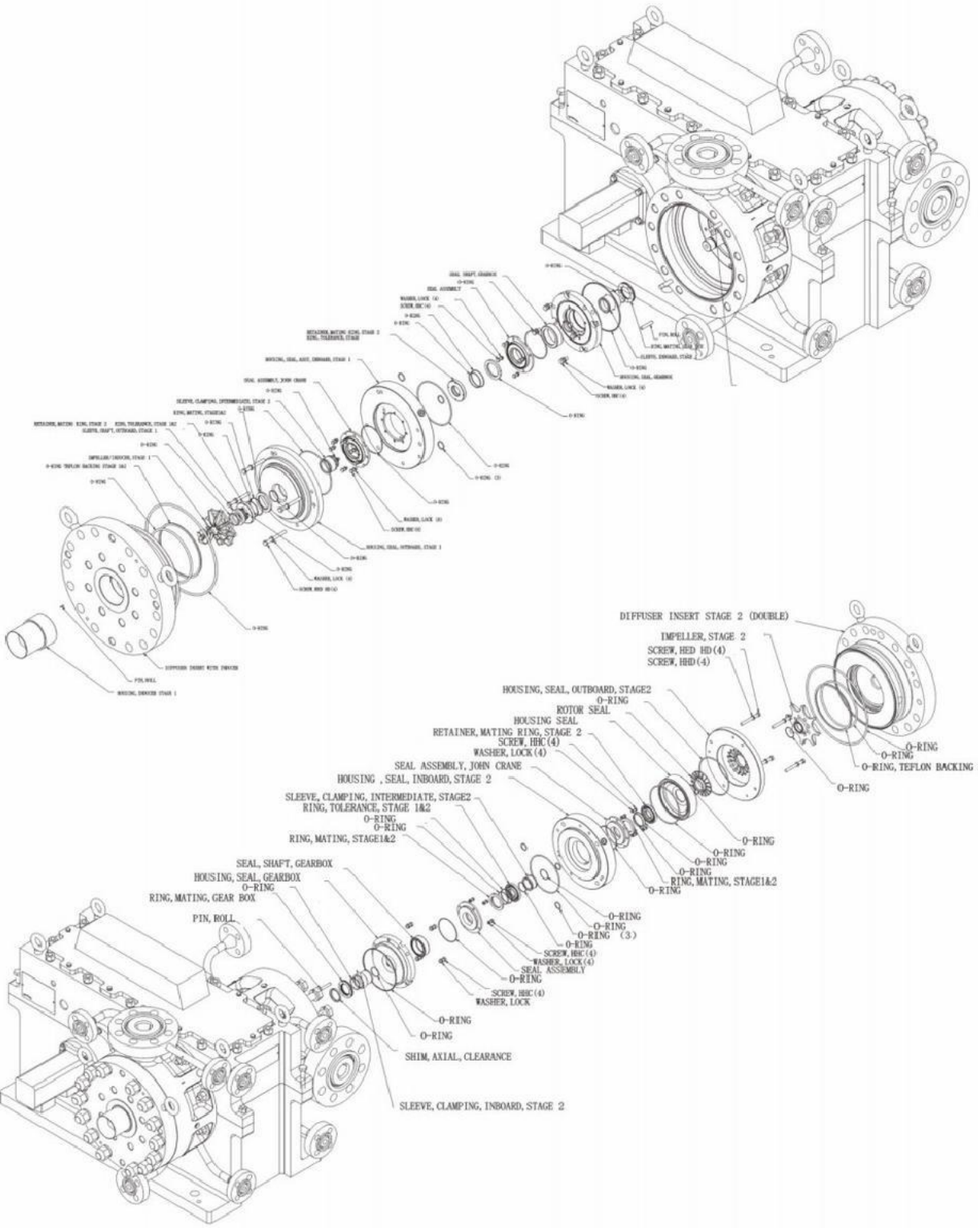


RCP-M5 Heavy Duty Horizontal High Speed Pump

- Max Capacity:150 m³/h;
- Max Head:4420 m;
- Max Suction Pressure:10.0 MPa;
- Max Operating Pressure:45.0 MPa;
- Motor Power:1850 kW;
- Operating Temperature:-130℃ to 340℃;
- Rotational Speed:5500 to 22000 rpm;
- First-stage speed increase.

RCP-M5 High Speed Pump Sectional Drawing





RCP-M7 Heavy Duty Horizontal High Speed Pump

Max Capacity:410m³/h;

Max Head:4420 m;

Max Suction Pressure:10.0 Mpa;

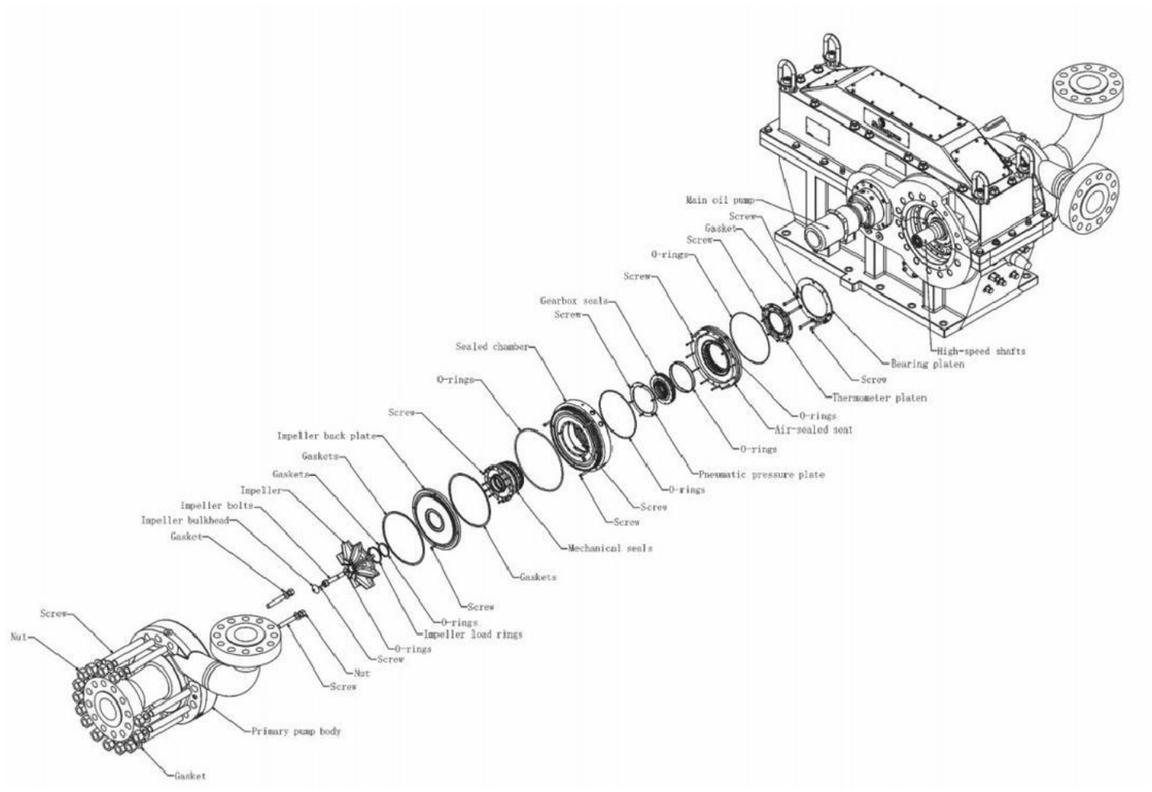
Max Operating Pressure:45.0 Mpa;

Motor Power:3000 kW;

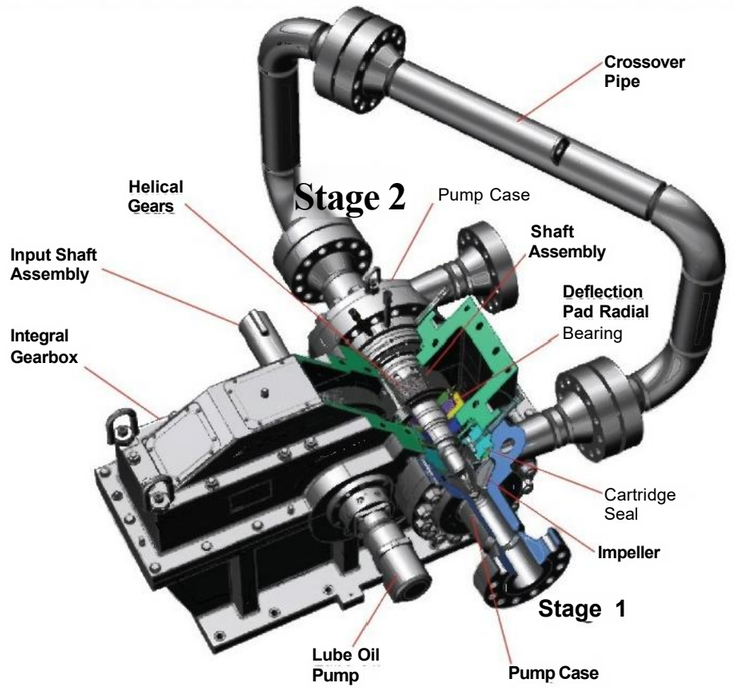
Operating Temperature:-130℃ to 340℃;

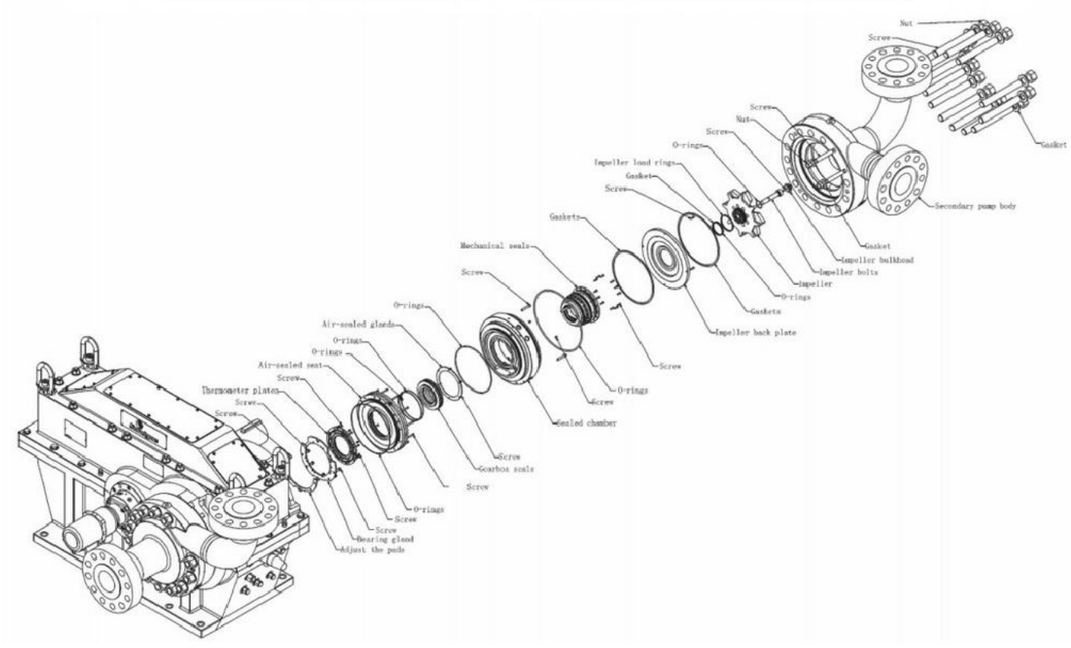
Rotational Speed:5500 to 22000 rpm;

First-stage speed increase.



RCP-M7 High Speed Pump Sectional Drawing



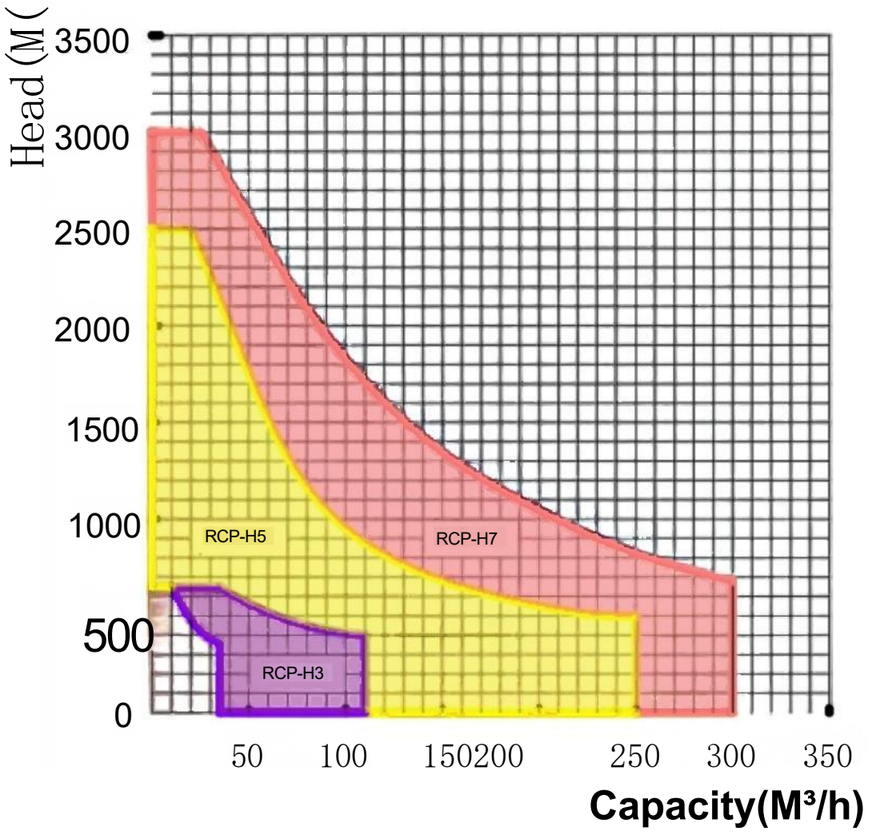


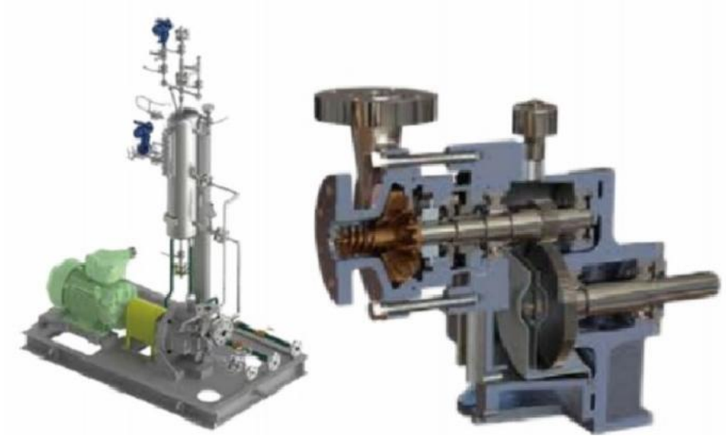
RCP-H Horizontal High Speed Pump

The RCP -H series pumps are horizontal cantilever high -speed pumps, which are mainly composed of a motor,a speed box,a pump body,a lubrication system and a base.This series of pumps has the advantages of stable performance parameters,simple structure,easy maintenance,high reliability and long service life.

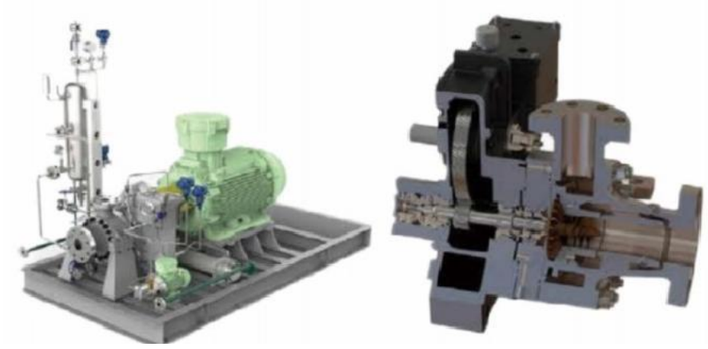
The RCP-H3/H5/H7 series high -speed pumps are equipped with a return stabilizer,which can improve the pump's performance at low flow rates and expand the flow rate regulation range of the pump.The high -speed shaft system is equipped with advanced bidirectional tilting pad bearings to ensure the long -term stable operation of the pump under the conditions of an inlet pressure up to 10.0 MPa.

RCP-H High Speed Pump Performance Type Spectrum Diagram





RCP—H3 Horizontal High Speed Pump



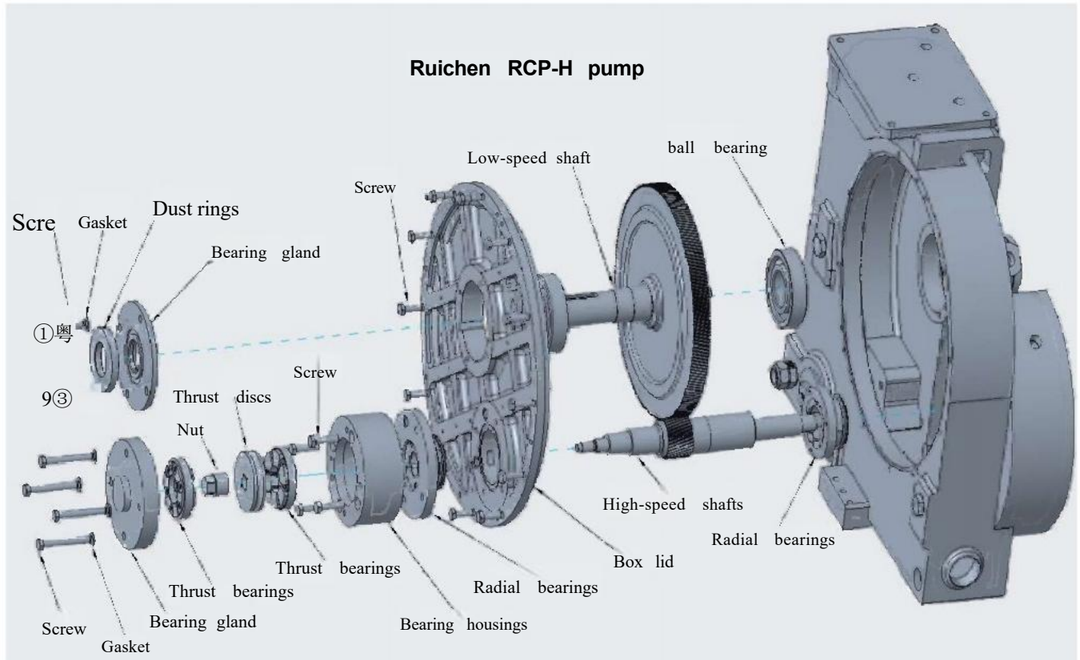
RCP—H5 Horizontal High Speed Pump

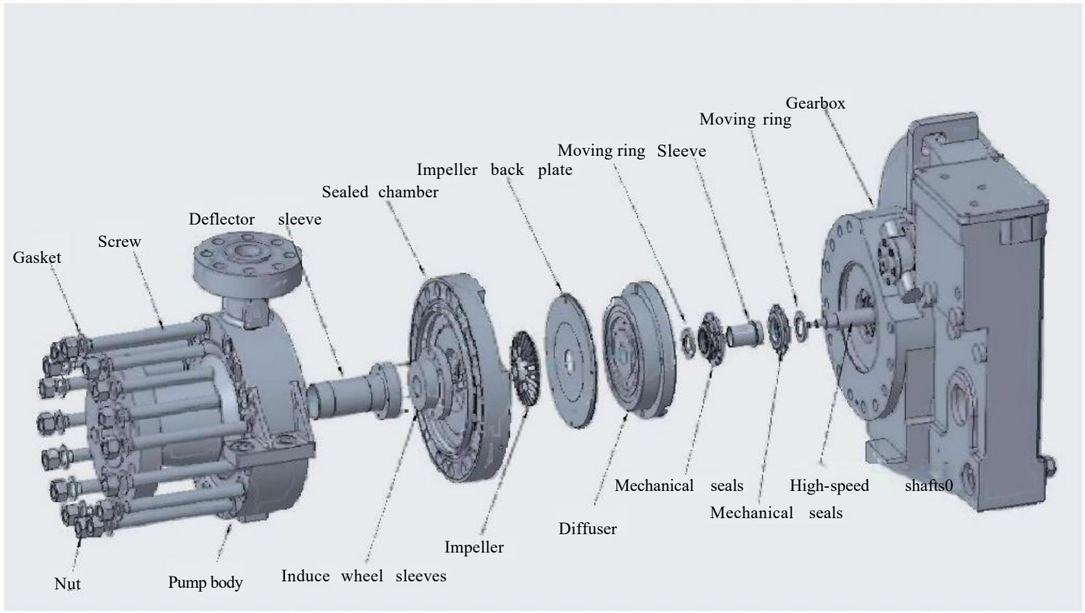
RCP—H7 Horizontal High Speed Pump

RCP-H High Speed Pump Performance Parameter Table

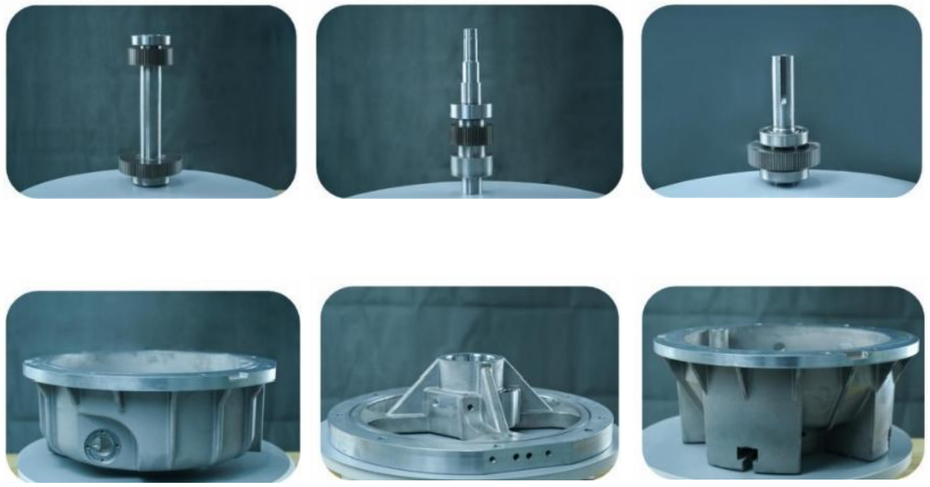
Type	RCP-H3	RCP-H5	RCP-H7
Max Capacity(m³/h)	110	250	300
Max Head(m)	650	2500	3000
Max Suction Pressure(Mpa)	2.0	10.0	10.0
Max Operating Pressure(Mpa)	10.0	25.0	30.0
Max Motor Power	132	355	710
Operating Temperature(℃)	-100℃ to 250℃	-130℃ to 340℃	-130℃ to 340℃
Rotational Speed(rpm)	6100 to 14400	3875 to 17200	9000 to 21000
Gearbox Structure Form	First-stage speed increase	First-stage speed increase	First-stage speed increase

RCP-H High Speed Pump





HIGH SPEED PUMP ACCESSORIES



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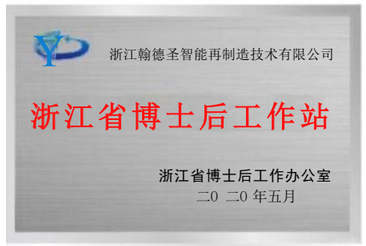

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