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小流量高扬程的聪明选择!

Advanced integrated technology
Smart choice for small flow and high lift!



HYWY型涡旋泵

HYWY TYPE VORTEX PUMP



JINGLUN BENGYE

江苏精伦泵业制造有限公司

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XYWY TYPE VORTEX PUMP HYWY型涡旋泵



概述 Overview

精伦涡旋泵体积小，压力高，高度实现设备小型化、小流量区域稳定送液、无脉动、无振动，可随意控制流量，移送混入微细杂质的液体，能够经受水锤剧烈的间歇运转，高强制压、带压运行，适用于各种溶剂、汽油、轻油、油质液、燃料、废油、废液喷雾处理（环保设备特制型）、碱性液、水族、碳氢族溶剂以及研磨液的移送循环、喷雾、洗涤等。温度从-20°C到+300°C。

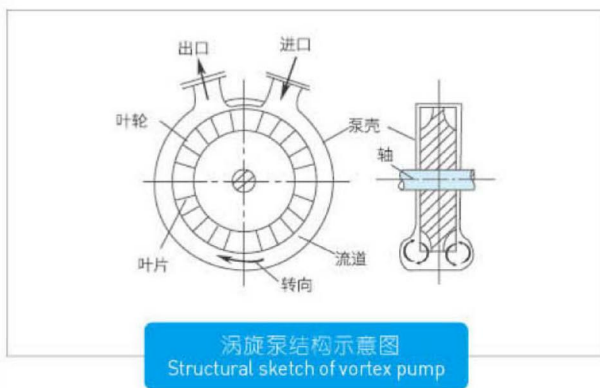
Jinglun vortex pump has small volume, high pressure, high equipment miniaturization, stable flow in small flow area, no pulsation, no vibration, free flow control, transfer of liquid mixed with fine impurities, able to withstand the intermittent operation of water hammer High forced pressure and pressure operation, suitable for various solvents, gasoline, light oil, oily liquid, fuel, waste oil, waste liquid spray treatment (special type of environmental protection equipment), alkaline liquid, aquarium, hydrocarbon solvent And transfer of the slurry, spraying, washing, and the like. The temperature is from -20 ° C to +300 ° C.

工作原理 Working principle

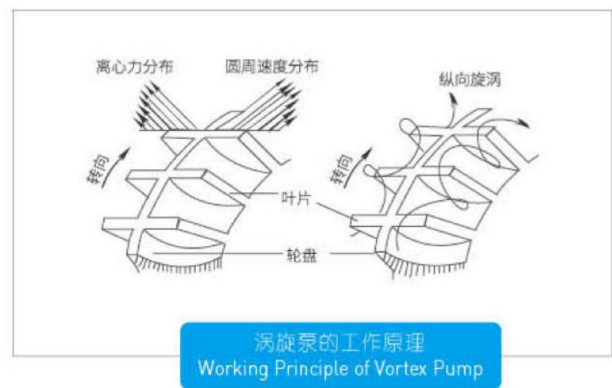
涡旋泵由叶轮、泵壳和轴封等组成。工作时，见图1.1，被送液体一般由径向进入涡压泵内，并充满泵壳的环形流道，旋转的叶轮将原动机的能量传递给被送液体，压力增高后再由径向排出管排至泵的输出管路。在吸入管和排出管之间，有“隔壁”以间隙密封，阻止被送液体由排出（高压）区回流到吸入（低压）区。如图1.1所示，被送液体在涡压泵中通过两个环流获得能量，当叶轮内与叶轮一起旋转的液体的圆周线速度大于叶轮两侧流道内随叶轮旋转的液体的圆周线速度时，在这两部分液体之间离心力差的作用下产生纵向环流；同时，叶轮旋转时，叶轮叶片的工作面和背面的压力差又产生另一方向的环流。这两种环流的合成使被送液体在从吸入口进入泵后，随叶轮转动到排出口的过程中，多次进入和流出化工泵叶轮，每进、出一次叶轮便获得一次能量，液体最终获得的能量为多次得到能量的叠加。因此，涡旋泵有较高的扬程。涡旋泵的旋转方向：由泵往电机方向看为逆时针方向旋转。如用户需要，也可以顺时针方向旋转，但此时吸入和压出的作用正好相反。

The vortex pump consists of an impeller, a pump casing and a shaft seal. When working, see Figure 1.1 below. The liquid to be sent generally enters the vortex pump in the radial direction and fills the annular flow passage of the pump casing. The rotating impeller transfers the energy of the prime mover to the liquid to be sent. Discharge to the discharge line to the output line of the pump. Between the suction pipe and the discharge pipe, there is a "partition wall" sealed by a gap to prevent the liquid to be returned from the discharge (high pressure) zone to the suction (low pressure) zone. As shown in Fig. 1.1, the liquid to be fed is energized in the vortex pump through two circulations. When the circumferential linear velocity of the liquid rotating with the impeller in the impeller is greater than the circumferential linear velocity of the liquid rotating with the impeller in the flow passages on both sides of the impeller. The longitudinal circulation is generated by the centrifugal force difference between the two parts of the liquid; meanwhile, when the impeller rotates, the pressure difference between the working surface and the back surface of the impeller blade generates a circulation in the other direction. The synthesis of the two circulations causes the liquid to be fed to enter and exit the pump from the suction port, and enters and exits the chemical pump impeller multiple times as the impeller rotates to the discharge port. Each time the impeller enters and exits, the impeller receives an energy, and the liquid finally The energy obtained is a superposition of the energy obtained multiple times. Therefore, the turbo pump has a high lift. The direction of rotation of the vortex pump: it is counterclockwise as seen by the pump in the direction of the motor. If the user wants, it can also be rotated clockwise, but the effect of suction and extrusion is just the opposite.

图1.1



叶轮在轴上是可以自由移动的，以保证叶轮与泵体、泵盖之间的轴向间隙两侧相等。间隙的大小可以用厚（薄）垫片进行调整，两头滚动轴承均采用钙基黄油进行润滑。



The impeller can move freely on the axis to ensure that the axial clearance between the impeller and the pump body and the pump cover is equal on both sides. The clearance can be adjusted by thick [thin] gaskets. Calcium-based butter is used to lubricate both ends of rolling bearings.

安装 Install

- 泵安装工作，对于泵的平稳运行和使用寿命有很重要的影响，所以安装工作必须仔细进行。
- 泵吸入管路的安装高度，长度和管径应符合设计要求，力求短而直。
- 泵的吸入压出管路应有支撑或吊架，泵不允许承受管路重量。
- 泵的安装地点应足够宽敞、以方便检修。
- 安装泵的基础平面应用水平仪找平，并用水平仪检测泵与电机的水平情况，如不水平，应用垫铁调正，直至水平为止。
- 安装后需检查泵轴与电机的同心度。可用泵联与电联外圆检查，两联轴器外圆上、下、左、右的差数不得超过0.1mm，两联轴器端面间隙差数一周圆上下不得超过0.3mm。
- Pump installation work has a very important impact on the smooth operation and service life of the pump, so the installation work must be carried out carefully.
- Installation height, length and diameter of pump suction pipeline should meet the design requirements and strive to be short and straight.
- The suction and extrusion pipeline of the pump should have support or hanger, and the pump is not allowed to bear the weight of the pipeline.
- Pump installation site should be spacious enough to facilitate maintenance.
- The base plane of the pump is leveled by the level gauge, and the level of the pump and the motor is checked by the level gauge. If not, the pad iron is used to adjust until the level is reached.
- After installation, check the concentricity of pump shaft and motor. The difference between the upper, lower, left and right sides of the outer circle of the two couplings shall not exceed 0.1 mm, and the difference between the ends of the two couplings shall not exceed 0.3 mm.

起动、停止 Start and stop

- 检查轴承内是否有钙基黄油，泵出厂前轴承箱内已加注好油脂，不到检修时无须再加注油脂。
- 转动联轴器，证实转子部件转动轻松并均匀后，再检查电机转向，然后将泵、电机连接好。
- **泵起动前先打开进口和出口闸阀引液到泵内，待泵进入正常工作状态后，再将排出阀调到所需开度。**
- 泵停止工作前，应先全开排出阀门，然后停机再关闭吸入管阀门。
- 短时间停车，如环境温度低于液体凝固点，要放空液体。长期停车，应将泵拆卸，清洗，涂油重装后妥善保管。
- Check whether there is calcium-based butter in the bearing, the bearing box has been filled with grease before the pump is produced, and no need to add grease before maintenance.
- Rotate the coupling to confirm that the rotor parts rotate easily and evenly, then check the motor steering, and then connect the pump and motor.
- Before the pump starts, first open the inlet and outlet gate valves to introduce the liquid into the pump. After the pump enters the normal working state, adjust the discharge valve to the required opening degree.
- Before the pump stops working, the valve should be fully opened and then closed and the suction pipe valve closed.
- Stop for a short time. If the ambient temperature is lower than the freezing point of the liquid, empty the liquid. For long-term parking, the pump should be disassembled, cleaned, and re-installed after oiling.

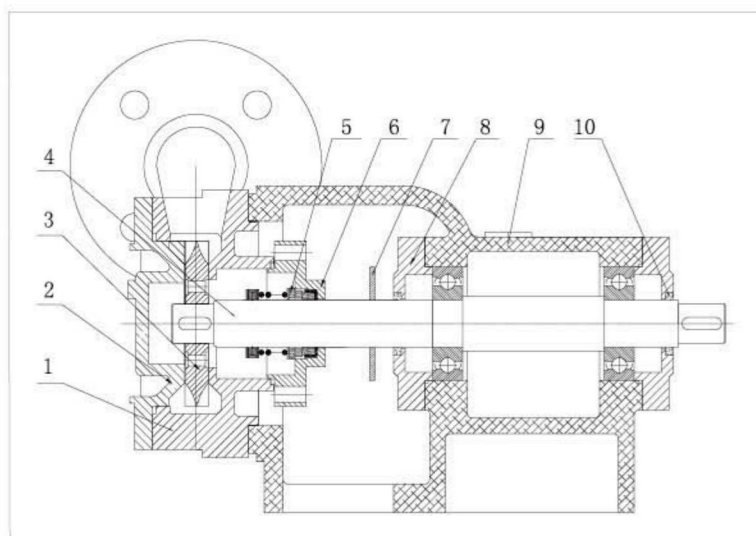
运转 Work

- 轴承温度允许升温不得超过80℃。
- 泵在超过规定的压力（扬程）下运转会造成超负荷运转，因此会出现电机烧毁的情况。
- **特别提醒：运转时绝对不要关闭排出管路上的阀门！**
- 涡压泵在高压运转时会出现一些金属音（啸音），这是涡压泵的固有特性，不是异常；频繁起动、停止会对泵造成损坏。建议电机功率 $\leq 4\text{kw}$ ，每小时不超过100次起动；电机功率 $> 4\text{kw}$ 每小时不超过20次起动。
- 发现故障后应立即停车进行检查。
- The bearing temperature is allowed to rise not to exceed 80 °C.
- If the pump runs above the specified pressure (head), it will cause overload operation, so the motor will burn out.
- Special reminder: Never close the valve on the discharge line during operation!
- When the vortex pump is running at high pressure, some metal sounds (howling sounds) will appear. This is an inherent characteristic of the vortex pump, not abnormal; frequent starting and stopping will cause damage to the pump. It is recommended that the motor power $\leq 4\text{kw}$, no more than 100 starts per hour; motor power $> 4\text{kw}$ no more than 20 starts per hour.
- Stop parking and check immediately after the fault is found.

拆卸顺序 Disassembly sequence

- 拆下泵盖。叶轮上有四个均衡孔，用其中两个带螺纹的孔拆下叶轮。取出键。
- 拆下泵体。先将机封压盖的螺母松开，然后将泵体与轴承座连接的螺母松开即可拆下泵体。对单端面密封部件，应先拆下轴用挡圈，将单端面密封部件和单端面密封压盖一起从轴上拿下来。
- 拆下联轴器，再拆下两个轴承端盖，即可将两个滚动轴承与轴一起从轴承座上拆出。
- 装配：按拆卸的顺序相反进行。
- 间隙调整：涡压泵叶轮与泵体及泵盖之间的轴向总间隙的大小，直接影响泵的工作性能，因此必须严格调整在规定范围内。一般规定在 (0.15mm-0.3mm) 之间。
- 间隙的大小可用厚(薄)垫片进行调整。
- Remove the pump cover. There are four equalization holes on the impeller, and the two impellers are used to remove the impeller. Remove the button.
- Remove the pump body. First loosen the nut of the machine cover and then loosen the nut connected to the bearing housing to remove the pump body.
- For single-end seal parts, the shaft retaining ring should be removed first, and the single-end seal part and the single-end seal gland should be removed from the shaft.
- Remove the coupling and remove the two bearing end caps to remove the two rolling bearings from the bearing housing together with the shaft.
- Assembly: Reverse in the order of disassembly.
- Gap adjustment: The axial total clearance between the impeller of the vortex pump and the pump body and the pump cover directly affects the working performance of the pump, so it must be strictly adjusted within the specified range. Generally specified between (0.15mm-0.3mm).
- The clearance can be adjusted by thick (thin) gaskets.

结构示意图 Structural Sketch



1	泵体 Pump body	2	泵盖 Pump cover
3	叶轮 Impeller	4	泵轴 Pump shaft
5	机械密封 Mechanical seal	6	密封压盖 Seal gland
7	挡液圈 Liquid baffle ring	8	轴承压盖 Bearing Cover
9	轴承座 Bearing block	10	油封 Oil seal

性能参数 Performance Parameters

泵型号 Pump Type	流量 m³/h Capacity (Q)	扬程 m Head (H)	转速 r/min Speed (n)	电机功率 kW Power (N)	效率 % Efficiency (η)
HYWY25-20-15-2A	1.1	15	2900	0.75	21
HYWY25-20-18-2A	1.8	18	2900	0.75	26
HYWY25-20-20-2A	0.85	20	2900	0.75	18
HYWY25-20-25-2A	1.5	25	2900	0.75	25
HYWY25-20-30-2A	0.36	30	2900	0.75	15
HYWY25-20-40-2A	0.8	40	2900	1.1	18
HYWY25-20-50-2A	0.5	50	2900	1.1	15
HYWY25-20-60-2A	0.2	60	2900	1.5	10

泵型号 Pump Type	流量 m³/h Capacity (Q)	扬程 m Head (H)	转速 r/min Speed (n)	电机功率 kW Power (N)	效率 % Efficiency (η)
HYWY25-20-20-2B	2.2	20	2900	1.1	28
HYWY25-20-30-2B	1.8	30	2900	1.1	26
HYWY25-20-40-2B	1.4	40	2900	1.5	22
HYWY25-20-50-2B	1.2	50	2900	1.5	18
HYWY25-20-60-2B	0.8	60	2900	1.5	15
HYWY25-20-70-2B	0.5	70	2900	2.2	10

性能参数 Performance Parameters

泵型号 Pump Type	流量 m³/h Capacity (Q)	扬程 m Head (H)	转速 r/min Speed (n)	电机功率 kW Power (N)	效率 % Efficiency (η)
HYWY32-25-20-2A	3.6	20	2900	1.5	26
HYWY32-25-30-2A	3	30	2900	1.5	29
HYWY32-25-40-2A	2.5	40	2900	1.5	27
HYWY32-25-50-2A	2	50	2900	2.2	23
HYWY32-25-60-2A	1.8	60	2900	2.2	20
HYWY32-25-70-2B	1.5	70	2900	2.2	18
HYWY32-25-80-2B	1.8	80	2900	3	25
HYWY32-25-100-2B	1.4	100	2900	3	20
HYWY32-25-120-2B	1.1	120	2900	4	15
HYWY32-25-150-2B	0.6	150	2900	4	10
HYWY40-32-30-2A	7.5	30	2900	3	36
HYWY40-32-40-2A	6	40	2900	3	34
HYWY40-32-50-2A	5	50	2900	4	31
HYWY40-32-60-2A	4	60	2900	4	27
HYWY40-32-80-2B	4.5	80	2900	5.5	38
HYWY40-32-100-2B	4.5	100	2900	5.5	36
HYWY40-32-120-2B	4	120	2900	5.5	35
HYWY40-32-150-2B	3.5	150	2900	7.5	32
HYWY40-32-180-2B	2.8	180	2900	7.5	28
HYWY40-32-200-2B	2.4	200	2900	11	25
HYWY40-32-220-2B	2	220	2900	11	20
HYWY40-32-250-2B	1.3	250	2900	11	15
HYWY40-32-280-2B	0.6	280	2900	11	10
HYWY40-32-70-2C	6.5	70	2900	7.5	30
HYWY40-32-90-2C	5.5	90	2900	7.5	28
HYWY40-32-120-2C	6.5	120	2900	11	30
HYWY40-32-150-2C	6	150	2900	15	26
HYWY40-32-180-2C	5	180	2900	15	22
HYWY40-32-200-2C	4.2	200	2900	18.5	18
HYWY40-32-220-2C	3	220	2900	18.5	15
HYWY40-32-120-2D	8.5	120	2900	15	39
HYWY40-32-150-2D	8.2	150	2900	15	37
HYWY40-32-180-2D	7.5	180	2900	15	35
HYWY40-32-200-2D	6.5	200	2900	15	34
HYWY40-32-250-2D	5	250	2900	18.5	28
HYWY40-32-280-2D	3.2	280	2900	22	16
HYWY40-32-300-2D	2.5	300	2900	22	14
HYWY40-32-330-2D	1.6	330	2900	30	10
HYWY50-40-30-2	10	30	2900	4	38
HYWY50-40-50-2	8.5	50	2900	5.5	36
HYWY50-40-70-2	7	70	2900	5.5	33

泵型号 Pump Type	流量 m³/h Capacity (Q)	扬程 m Head (H)	转速 r/min Speed (n)	电机功率 kW Power (N)	效率 % Efficiency (η)
HYWY65-50-40-2	18	40	2900	7.5	50
HYWY65-50-60-2	15	60	2900	7.5	45
HYWY65-50-80-2	12	80	2900	11	37
HYWY65-50-100-2	9	100	2900	15	29
HYWY65-50-110-2	8	110	2900	15	25
HYWY65-50-120-2	7	120	2900	15	22
HYWY25-20-5-4A	0.8	5	1450	0.75	8
HYWY25-20-10-4A	0.4	10	1450	0.75	9
HYWY25-20-15-4A	0.1	15	1450	0.75	6
HYWY25-20-5-4B	1.1	5	1450	0.75	12
HYWY25-20-10-4B	0.7	10	1450	0.75	10
HYWY25-20-15-4B	0.4	15	1450	0.75	8
HYWY25-20-20-4B	0.2	20	1450	0.75	6
HYWY32-25-20-4B	1	20	1450	0.75	15
HYWY32-25-25-4B	0.8	25	1450	0.75	12
HYWY32-25-30-4B	0.6	30	1450	0.75	10
HYWY32-25-35-4B	0.4	35	1450	1.1	7
HYWY32-25-40-4B	0.2	40	1450	1.1	4
HYWY40-32-10-4A	3.2	10	1450	0.75	20
HYWY40-32-15-4A	2.2	15	1450	1.1	15
HYWY40-32-20-4B	2.5	20	1450	1.1	26
HYWY40-32-25-4B	2.2	25	1450	1.5	22
HYWY40-32-30-4B	2	30	1450	1.5	20
HYWY40-32-40-4B	1.6	40	1450	2.2	15
HYWY40-32-50-4B	1.2	50	1450	2.2	12
HYWY40-32-60-4B	0.7	60	1450	2.2	10
HYWY40-32-70-4B	0.3	70	1450	2.2	8
HYWY40-32-30-4C	3.5	30	1450	1.5	25
HYWY40-32-40-4C	2.5	40	1450	2.2	20
HYWY40-32-50-4C	1.5	50	1450	2.2	15
HYWY40-32-60-4C	1	60	1450	3	12
HYWY40-32-40-4D	4	40	1450	2.2	25
HYWY40-32-50-4D	3.4	50	1450	3	21
HYWY40-32-60-4D	2.6	60	1450	3	16
HYWY40-32-70-4D	1.6	70	1450	3	11
HYWY40-32-80-4D	1	80	1450	4	8
HYWY50-40-10-4	5	10	1450	1.1	20
HYWY50-40-20-4	3	20	1450	1.5	18
HYWY50-40-30-4	1.5	30	1450	1.5	12
HYWY65-50-15-4	7	15	1450	2.2	32
HYWY65-50-25-4	5	25	1450	2.2	27
HYWY65-50-35-4	3	35	1450	2.2	20

可能发生的故障及解决方法 Possible Failures and Solutions

故障特征 Fault characteristics	产生原因 Causes	解决方案 Solution
泵不出水 No water coming out of the pump	· 水泵反转 · Pump reversal · 进水管漏气 · Leakage of Intake Pipeline · 吸程太高 · Too high suction range · 管道堵死 · Pipe blocking	· 改变电机接线 · Change motor wiring · 杜绝漏气 · Stop leakage · 降低泵安装位置 · Reduce pump installation position · 清理管道 · Pipe cleaning
流量不足 Insufficient flow	· 进口管径太小 · The inlet diameter is too small · 流道堵塞 · Flow blockage · 扬程过高 · High lift · 转速太低 · Too low speed · 叶轮与泵体、泵盖之间的间隙太大 · The clearance between impeller and pump body and pump cover is too large	· 调整进水管 · Change motor wiring · 清洗流道 · Stop leakage · 开大出口阀 · Reduce pump installation position · 恢复额定转速 · Pipe cleaning · 减小泵盖止口处垫的厚度使间隙达到设计要求 · Reducing the thickness of the cushion at the seal of the pump cover to make the gap meet the design requirements · Reducing the thickness of the cushion at the seal of the pump cover to make the gap meet the design requirements
扬程过低 Low lift	· 流量过大 · Excessive flow · 转速太低 · Too low speed	· 关小出水阀 · Cleaning pipe · 恢复额定转速 · Open large outlet valve
机械密封漏液 Leakage of mechanical seal	· 轴封处未调整好 · Shaft seal not adjusted properly · “O”型密封圈损坏 · Damage of "O" Seal Ring · 密封面磨损 · Wear of Sealing Surface · 弹簧松弛 · Spring relaxation	· 重新调整 · Readjustment · 更换“O”型密封圈 · Replacement of "O" Seal Ring · 更换机械密封 · Replacement of mechanical seals · 更换弹簧 · Replace spring
功率过大 Excessive power 电机发热 Motor heating	· 扬程高 · Development high · 泵内有杂物使叶轮咬住 · The impeller is bitten by sundries in the pump	· 如果超出范围, 调整压出管路闸阀, 使 泵在规定范围内运行 · If it goes beyond the scope, adjust the pressure-out pipeline gate valve to make the pump run within the specified range · 清理杂物重新修整叶轮、泵体、泵盖 · Clean up debris and repair impeller, pump body and pump cover
轴承发热 Bearing heating	· 泵轴与电机同心度不好 · Poor concentricity between pump shaft and motor · 无钙基黄油或油中有杂物 · Calcium-free butter or oil containing impurities	· 检查联轴器的同心度并更正 · Check the concentricity of the coupling and correct it · 加钙基黄油或拆洗并更换钙基黄油 · Add Calcium Butter or Remove and Replace Calcium Butter



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