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汉森
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国家产品质量免检 丨 中国著名品牌

2SK 水环真空泵

SK Water Ring Vacuum Pum

Product Catalog 2020

汉森
Hanthing

2SK Type
WATER RING VACUUM PUMP

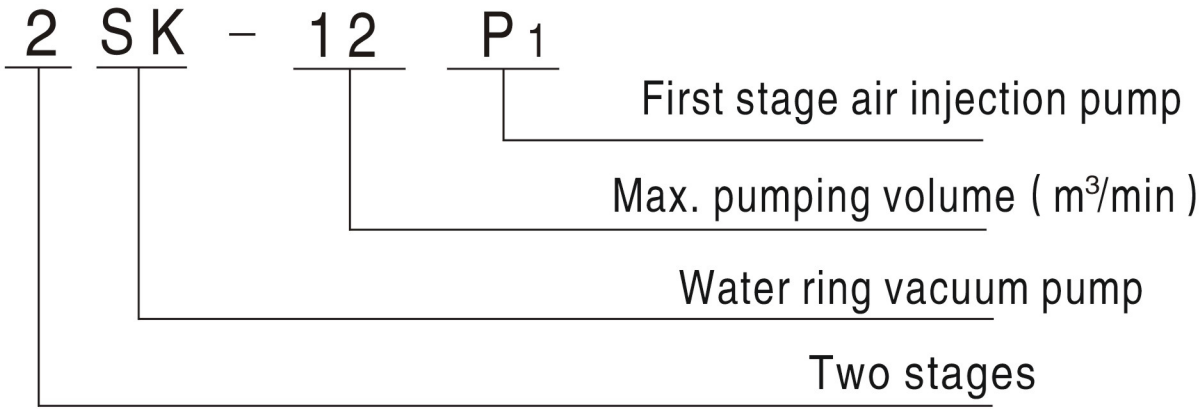
Operating instructions

Instruction

2SK series and 2SK–P_1 series two stage water ring vacuum pump are air injection pump group, which are invented and developed according to"Industry Standard JB/T 7255–94 Models and basal parameter for water ring vacuum pump and water ring compressor". The pumps have advantages, like high vacuity, fast pumping speed in high vacuity space, compact structures, trustable operation and convenient assembly or disassembly.

The pump group is formed by two stage water ring vacuum pump and first class air injection pump group. Users can use two stage water ring vacuum pump and vacuum pump group separately to pump air or other gas which is water–fast, without solids or noncorrosive. The pump group is most suitable in food, chemical, mining, light textile and other industries, where the insdustries need processes like vacuum evaporation, vacuum concentration, vacuum reversion, vacuum drying, vacuum smelting and others.

Model meaning

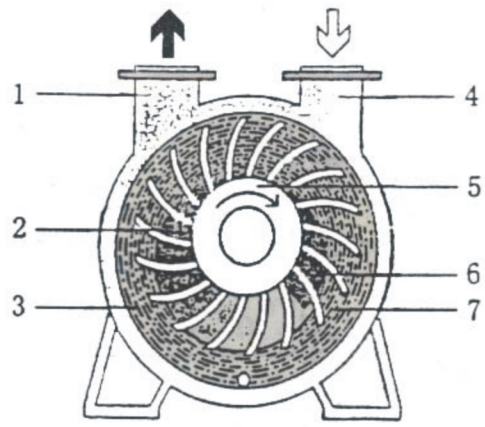


Work principle

Working principle of Two stage water ring vacuum pump is as drawing Ⅰ. When the pump starts, the impeller slings the liquid sealant by centrifugal force, to the outside walls of the body, forming a ring of liquid at the outside walls of the body. Because the impeller is off–set from the body, some of the blades are fully immersed in

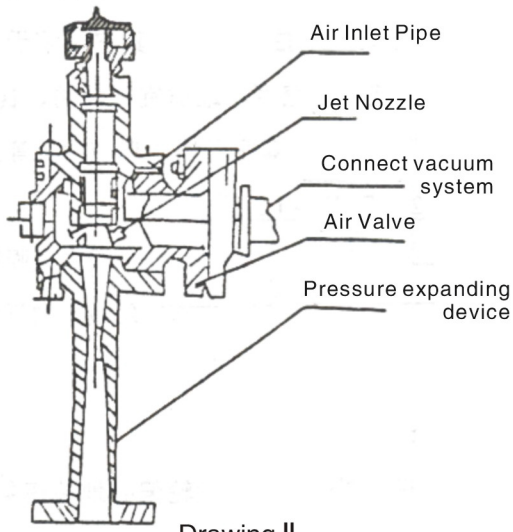
Liquid, and some are almost out of the liquid. The area of void space without liquid, is sealed off between the liquid (and hence the term "sealant") and between the impeller blades, called an "impeller cell".As we follow one impeller cell from the top of the pump, counter–clockwise, you can see the liquid recedes from the center hub, acting as a liquid piston to create a larger cell. This is the suction of the pump, drawing in air, gases, or vapors thru the "inlet port" at the sides of the impeller. After impeller cell passes the inlet port and travels toward the discharge port, the sealant liquid is forced back toward the center hub of the impeller, creating the compression step. As the impeller cell passes the discharge port, the compression is at its highest, and the gases, along with some of the liquid sealant are exhausted thru the discharge port to atmosphere. Although the diagrams show a very smooth ring of liquid, in actuality, the liquid sealant is highly turbulent, which is why some of the liquid sealant is discharged with the gases.

Air injection vacuum pump is a kind of jet injector as drawing Ⅱ. Working principle is as below: The effect of water ring vacuum pump, forming a certain of vacuum container, when close to the limit of vacuum pump, connect big pump inlet, outside the atmosphere (or pressed air) and the pressure difference is very big, in the differential pressure under the influence of atmospheric sharply in pipe, through the nozzle of air injection pump and airflow velocity, thus further increases rapidly reduced pressure, form within the nozzle. So, continue to higher vacuum pump system will be the gas suction pump.



1. Vent–pipe
2. Air outlet
3. Pump casing
4. Air inlet
5. Impeller
6. Water ring
7. Air suction port

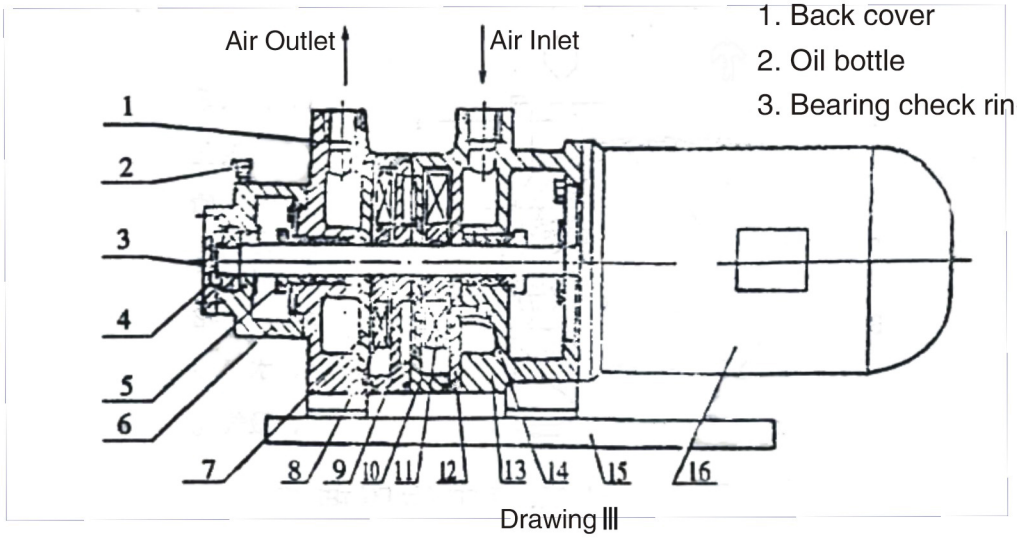
Drawing Ⅰ
Working principle drawing of water ring pump



Drawing Ⅱ
Construction drawing of air injection pump

Structure declaration

Structure of 2SK–0.4,2SK–0.8 two stage water ring vacuum pump is as drawing Ⅲ , the upper and lower vacuum stage structure is same as drawing Ⅳ which has no connecting pipe. The pumps are matched with special–made extended motor. Longer and shorter impellers are fixed on shaft by a key, but they can be axial eccentricity and assembled in longer and shorter pump casing eccentrically.



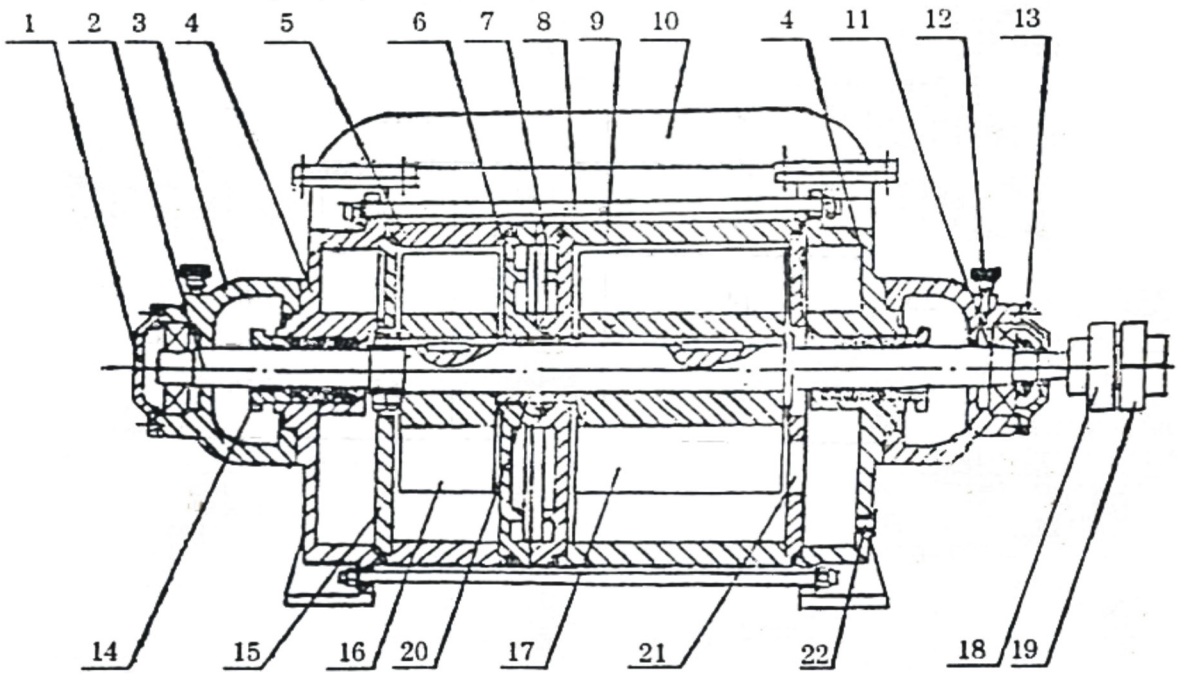
Drawing Ⅲ

1. Back cover
2. Oil bottle
3. Bearing check ring
4. Bearing gland
5. Packing gland
6. Bearing bracket
7. Exhausting plate
8. Short impeller
9. Short pump casing
10. Long pump casing
11. Long impeller
12. Air suction plate
13. Front cover
14. Water inlet
15. Base
16. Motor

Construction drawing of two stage water ring vacuum pump 2SK–0.4/2sk–0.8

Structure of Two stages water ring vacuum pump, which Pumping volumn is 1.5m3/min and above is as drawing Ⅳ . Longer and shorter impellers are fixed on shaft by a key, and between them there is shaft housing for allocation and locked by nut, which forms the rotor part and was assembled eccentrically in the pump, support in two separate centripetal ball bearing parts, rotor pump coupling is connected with the report couplet additionally, and at the same speed motor with rotation. Longer impeller, pump body and suction parts form the high vacuum, the shorter impeller, pump body and discharge parts form the lower vacuum, high vacuum level vacuum exhaust and the lower vacuum suction connection with connecting pipe (2SK–1.5 doesn't have this part) forms double levels concatenation, the double levels are devided by midfellow A and B. There is discharging hole on midfellow A and suction port on midfellow B.

Oiled asbestos packing is used for sealing in two sides of 2SK series two stage pump.



Drawing Ⅳ

Construction of pumping volume above 1.5m³/min (2SK–1.5) two stage water ring vacuum pump

1. Back bearing cover
2. Shaft
3. Bearing frame
4. Front and back cover
5. Short pump casing
6. Midfellow (B)
7. Midfellow (A)
8. Tightening nut
9. Long pump casing
10. Connecting pipe
11. Adjusting gasket
12. Oil pump
13. Front bearing cover
14. Packing gland
15. back cover plate
16. Short impeller
17. Long impeller
18. Coupling of pump
19. Coupling of motor
20. Shaft housing
21. Front cover plate
22. Water inlet port

Main performance indication and technical specifications

Notes:

1. The performance indication mentioned in below tables are under 3 conditions:

A. Air pressure: 0.1013Mpa(760mmHg)

b. Inlet water temperature is 15℃.

c. Inlet air temperature is 20℃.

d. Relative humidity of air is 70%

2. Figure of water supply volumn is made out when inlet pressure is 0.05Mpa(400mmHg). The figure will be bigger when space is final vacuum.

3. Allowed difference of performance is ± 10%.

Table 1: Technical Specification of 2SK series two stage water ring vacuum pump

Model	Pumping volume		Extreme pressure Mpa (mmHg)	Power kW	Speed r/min	Supplying L/min	Size mm
	Max.	sucking pressure –700mmHg					
2SK–0.4	0.4	0.25	–0.096 (–725)	2.2	2900	3~5	25
2SK–0.8	0.8	0.5	–0.096 (–725)	3	2900	5~8	25
2SK–1.5	1.5	0.9	–0.097 (–730)	4	1450	10~15	40
2SK–3	3	2	–0.098 (–735)	7.5	1450	15~20	50
2SK–6	6	4	–0.098 (–735)	15	1450	25~35	70
2SK–12	12	8	–0.098 (–735)	22	970	40~50	100
2SK–20	20	14	–0.098 (–735)	45	740	60~80	125
2SK–30	32	20	–0.098 (–735)	55	740	70~90	125

Table 2: Technical Specification of 2SK–P_1 series two stage water ring vccum pumpair injection pump group

Model	Pumping volume		Extreme pressure Mpa (mmHg)	Power kW	Speed r/min	Supplying L/min	Size mm
	sucking pressure –700mmHg	sucking pressure –700mmHg					
2SK–0.4P_1	0.28	0.24	–0.096 (–725)	2.2	2900	3~5	25
2SK–0.8P_1	0.56	0.48	–0.096 (–725)	3	2900	5~8	25
2SK–1.5P_1	1.05	0.9	–0.097 (–730)	4	1450	10~15	40
2SK–3P_1	2.1	1.8	–0.098 (–735)	7.5	1450	15~20	50
2SK–6P_1	4.2	3.6	–0.098 (–735)	15	1450	25~35	70
2SK–12P_1	8.4	7.2	–0.098 (–735)	22	970	40~50	100
2SK–20P_1	14	12	–0.098 (–735)	45	740	60~80	125
2SK–30P_1	21	18	–0.098 (–735)	55	740	70~90	125