Shinhoo 新沪
PUMPS & MOTOR

空调机用屏蔽电泵使用维护说明书

Canned motor pump for absorption type refrigerators operating instructions

合肥新沪屏蔽泵有限公司

HEFEI XINHU CANNED MOTOR PUMP CO., LTD.

NP SERIES

Canned motor pump for Air conditioning

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公司简介

合肥新沪屏蔽泵有限公司是国内专业制造生产屏蔽电泵、屏蔽电机的公司，是管道屏蔽电泵行业标准和溴化锂吸收式空调机用屏蔽电泵、起重；台金和屏蔽电机安全要求、防爆型起重冶金和屏蔽电机安全要求。无轴封回转动力泵技术条件(11)国家标准的主要起草单位。合肥新沪屏蔽泵股份有限公司于2007年成立，并投资3亿元人民币在合肥市高新区兴建了占地10万平方米的现代化的厂房，2009年底公司正式投产，公司年产量可达100万台，产品远销欧洲、南美洲、北美洲，东南亚，新西兰等国家和地区。

公司现有H化工屏蔽电泵系列、NP吸收式空调机用屏蔽电泵系列、CP系列卫浴系统用屏蔽电泵、GP管道屏蔽电泵系列、GPD单相管道屏蔽电泵系列、船舶屏蔽电泵系列和屏蔽电机以及舰船等军工行业用屏蔽电泵等等。产品广泛应用于石油化工，化工、机车，中央空调、航空航天、军工、核电，空调系统冷暖循环、供水、新能源等多个领域。

合肥新沪严格按照IS09001质量管理体系要求建立一套完善的设计、生产、服务体系和营销网络，并相继通过了[S09001质量管理体系认证，IS014001环境管理体系认证、CE认证、RoHS认证、GS认证、UL认证、CCC国家强制性认证等，确保了产品质量的稳定可靠、高效耐用。公司大力引进了国际先进的管理经验和各种生产、检测设备，并拥有一批资深的流体机械、电机、控制，材料等工程技术专家，形成了企业的核心竞争力和自主品牌。我公司生产的H型化工屏蔽电泵荣获安徽省高新技术产品、NP型吸收式空调机用屏蔽电泵荣获安徽省高新技术产品，GP型耐热管道屏蔽电泵荣获安徽省高新技术产品。公司是合肥市科技小巨人培育型企业、安徽省高新技术企业。

本公司秉着科学求真、不断创新的精神，诚恳与国内外客商诚信合作、共创辉煌。

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Canned motor pump for Air conditioning

Brief introdution of company

Hefei Xinhu Canned Motor Pump Co., Ltd is a large enterprise specialized in the production of canned Motor and canned Pumps. It is one of the draft units for the industrial standard of pipeline canned motor pumps. It is also the main draft unit for the national standard of canned motor pumps for absorption refrigerator, safety requirement of lifting metallurgy with canned motor, safety requirement of explosion proof type lifting metallurgy with canned motor and no-shaft seal rotodynamic pump technical terms (11). In 2007, Hefei Xinhu Canned Motor Pump Co., Ltd. was established in National Hi-tech Developing Zone in Hefei city with the total investment of 300,000,000 China Yuan, Hefei Xinhu with her modern workshop occupies an area of one hundred thousand square meters, started running since 2009. Now it has the ability of producing around one million canned motor pumps of all kinds per year, and our products are sold abroad to many regions such as Europe, South Africa, North Africa, Southeast Asian and New Zealand.

We have H series for chemical industry, NP series for absorption refrigerator, CP series for sanitary bath equipment, GPD series single-phase motor pipeline canned motor pump, GP series water circulation pipeline canned motor and canned pump, special pumps for military industry such as military naval vessel and so on. Our production are widely use in many areas such as Petroleum chemical industry, locomotive, central cooling and heating installation, aircraft industry, military, and nuclear power, Based on the standard of ISO9001 Quality management system, Hefei Xinhu sets up a complete set of design, producing and service system as well as sales

network, Hefei Xinhu has obtained ISO9001 quality management system certification, ISO14001 environment management system certification, CE, RoSH, GS, UL, CCC, etc. all of which ensure the stability, reliability, durability and high efficiency of its products. On one hand, Hefei Xinhu vigorously introduced international advanced management experience and all kinds of advanced facilities for production and testing, on the other hand, Hefei Xinhu has a group of specialist in different areas including liquid machinery, electrical engineering, possess control and material science. All those advantages form the core of its competitiveness. Our products of H series canned motor pumps for Chemical Industry; NP series canned motor pumps for absorption refrigerator and heat resistant pipeline canned motor pumps in GP series have won the award of Anhui Province Hi-Tech Product. Our company has been identified as Anhui Province Hi-Tech Enterprise and enterprise to be developed as little giant of science and technology in Hefei City.

NP SERIES

Canned motor pump for Air conditioning

1.前言 THE PREAMBLE

本公司生产的NP系列吸收式空调机用屏蔽泵在高度真空条件下，作为吸收式空调机冷剂水及溴化锂吸收液工作循环的专用设备。本系列产品是由水泵部分和屏蔽式电动机构成的一个密封整体,机电一体化绿色环保工业产品。本产品主要配套使用在溴化锂制冷装备上，作为该装置在真空状态下输送溴化锂溶液或水的动力，也可输送类似的介质。

本说明书详细介绍了设计压力0.5MPa,额定电压400V和230V，频率50Hz/60Hz,使用在环境温度为-20 +40℃,大气压为86-106KPa 的环境,空气相对湿度不超过85% (25℃) 时输送介质温度不超过110℃，不含颗粒的NP型屏蔽电泵的使用要求、结构、安装及维护检查等内容。

Our company's NP series canned motor pump for absorption type refrigerators are specially designed for the absorption work cycle of of absorption type air conditioners using cooling water and lithium bromide under a high level of vacuum condition. Every pump is a sealed whole constructed by pump part and canned motor part. It is a green product with electromechanical intergration. Those pumps are mainly used in supporting LiBr refrigeration equipment. As the driving power in the vacuum state transportation system for lithium bromide or water, this product can also transmit medium similar to them.

This statement detailed introduces the use requirement, structure, installation, maintenance, inspection and some other contents of NP series canned motor pump, for which, the designed pressure is 0.5MPa, Rated voltage is 230V/400V, frequency is 50Hz/60Hz, the ambient temperature of working environment should be between -20 and +40℃, atmospheric pressure should be between 86 and 106 KPa, the humidity of the air should not be over 85% (25℃), transmission medium temperature should not be over 110℃.

2.产品型号举例 FOR EXAMPLE MODEL

NP65—40C/122H4—F

- NP65 空调机用屏蔽电泵 Canned motor pump for Air conditioning
- 40C 吸入直径65mm Inlet diameter of 65mm；排出直径40mm Discharge diameter of 40mm
- 122 叶轮公称直径160mm Nominal impeller dia 160mm
- H4 电压400V 400V Voltage；绝缘等级H级 Insulation grade class H
- F 50Hz无诱导轮 50Hz without inducer
- 电机型号 Motor type

3.技术参数 TECHNICAL DATA

序号 No	型号 Model	流量 Flow m³/h	扬程 Head H(m)	汽蚀余量 NPSHr (m)	额定功率 Rated power (kW)	电压VOLT.(230V) 额定电流 Rated current I_N(A)	电压VOLT.(230V) 起动电流 Starting current I_{st}(A)	电压VOLT.(400V) 额定电流 Rated current I_N(A)	电压VOLT.(400V) 起动电流 Starting current I_{st}(A)	机组效率 Unit efficiency η	转速 Speed rpm
1	NP20-10A/011F(2/4)-B	0.5	4	0.45	0.28	1.6	5.4	0.95	3.1	9	2900
2	NP40-20A2/121H(2/4)-B	3.6	3.5	0.45	0.15	1.9	5.2	1.1	3.0	16	1450
3	NP50-30B2/121F(2/4)-B	5	4	0.45	0.2	1.9	5.2	1.1	3.0	28	1450
4	NP50-30C2/122F(2/4)-B	8	4	0.45	0.37	2.8	7.3	1.6	4.2	27	1450
5	NP65-40C/122F(2/4)-B	15	4	0.45	0.37	2.8	7.3	1.6	4.2	35	1450
6	NP70-40D/321H(2/4)-F	10	14	0.45	1.5	8.0	21.7	4.6	12.5	25	1450
7	NP100-50A/114F(2/4)-B	15	4	0.45	0.75	4.2	13.2	2.4	7.6	18	2900
8	NP100-50A/212F(2/4)-B	25	4	0.45	1.5	7.4	39.8	4.3	23.0	15	2900
9	NP100-50B/212F(2/4)-F	20	12	0.45	2.2	10.6	39.8	6.1	23.0	36	2900
10	NP100-50C/221H(2/4)-F	10	7	0.45	0.75	4.7	12.5	2.7	7.2	26	1450

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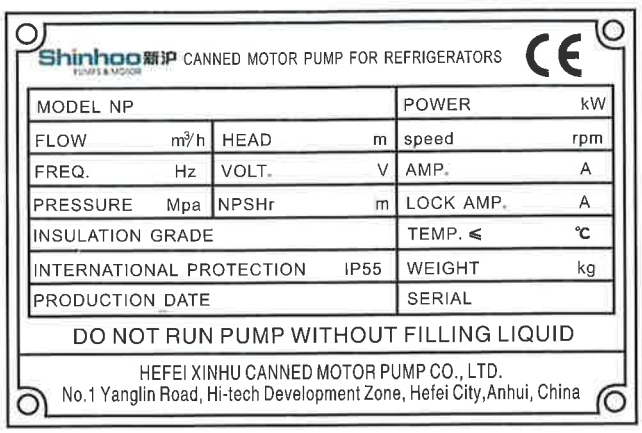
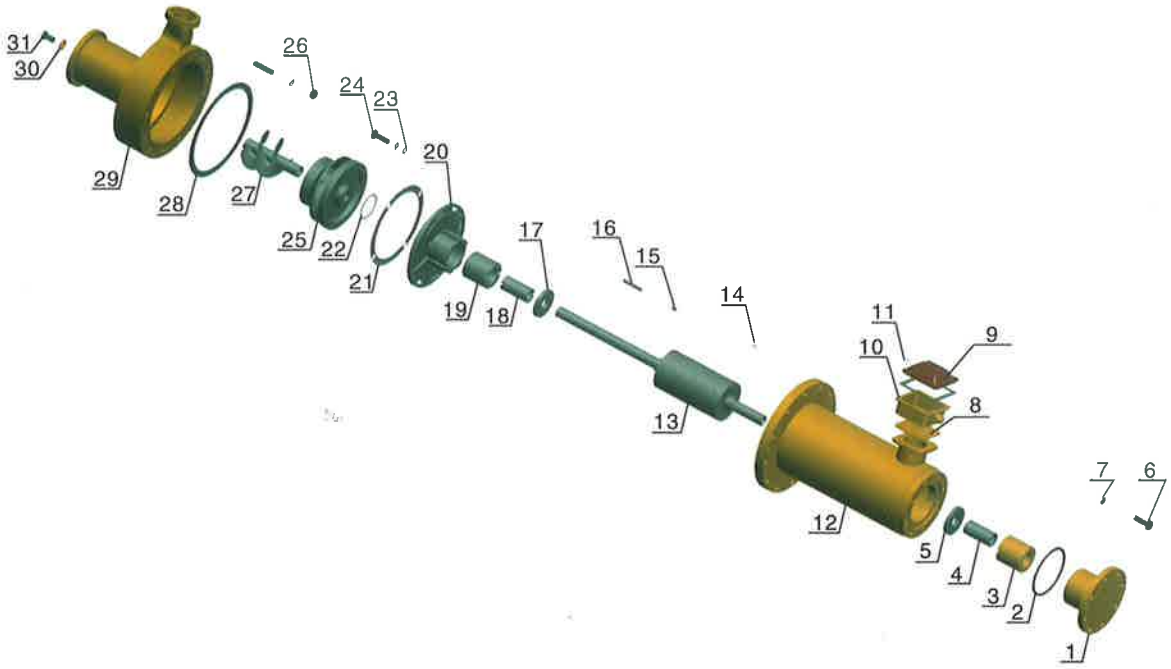
序号 No	型号 Model	流量 Flow m³/h	扬程 Head H(m)	汽蚀余量 NPSHr (m)	额定功率 Rated power (kW)	电压VOLT.(230V) 额定电流 Rated current I_N(A)	电压VOLT.(230V) 起动电流 Starting curren I_S(A)	电压VOLT.(400V) 额定电流 Rated current I_N(A)	电压VOLT.(400V) 起动电流 Starting current I_S(A)	机组效率 Unit efficiency η	转速 Speed rpm
11	NP100-50D/321H(2/4)-F	40	12	0.5	2.2	11.3	35.0	6.5	20.2	42	1450
12	NP125-80D/322H(2/4)-F	50	7	0.5	3.7	18.4	58.9	10.6	34.0	45	1450
13	NP125-80E/322H(2/4)-F	60	12	0.55	3.7	18.4	58.9	10.6	34.0	42	1450
14	NP150-100E/322H(2/4)-F	90	10	0.55	3.7	18.4	58.9	10.6	34.0	44	1450
15	NP150-100E/431H(2/4)-B	90	5	0.55	2.2	17.3	45.0	10.0	26.0	42	960
16	NP30-10A/012H(2/4)-B	1.2	14	0.45	0.37	2.1	7.1	1.2	4.1	18	2900
17	NP50-30B2/114H(2/4)-B	3	15	0.45	0.75	4.2	13.2	2.4	7.6	15	2900
18	NP70-40D/321H(2/4)-F	5	14	0.45	2.2	11.3	35.0	6.5	20.2	17	1450
19	NP80-40C/212H(2/4)-F	15	10	0.45	2.2	10.6	39.8	6.1	23.0	25	2900
20	NP80-40C/213H(2/4)-F	15	14	0.45	3	14.0	50.2	8.1	29.0	22	2900
21	NP100-50A/115H(2/4)-B	15	4	0.55	1.3	6.8	20.6	3.9	11.9	18	2900
22	NP100-50A/212H(2/4)-B	25	4	0.45	2.2	10.6	39.8	6.1	23.0	15	2900
23	NP100-50B/213H(2/4)-F	20	10	0.45	3	14.0	50.2	8.1	29.0	26	2900
24	NP100-50C/222H(2/4)-F	30	4	0.5	1.5	8.3	21.7	4.8	12.5	40	1450
25	NP100-50C/312H(2/4)-F	30	22	0.5	5.5	24.6	103.9	14.2	60.0	39	2900
26	NP100-60C/312H(2/4)-F	30	16	0.5	5.5	24.6	103.9	14.2	60.0	35	2900
27	NP100-50D/322H(2/4)-F	35	10	0.5	3.7	18.4	58.9	10.6	34.0	38	1450
28	NP125-80E/412H(2/4)-F	50	14	0.5	7.5	34.3	118.8	19.8	68.6	40	1450
29	NP125-80F/522H(2/4)-F	50	28	0.55	15	63.2	218.2	36.5	126.0	38	1450
30	NP150-100E/421H(2/4)-F	70	12	0.55	7.5	34.3	118.8	19.8	68.6	46	1450
31	NP150-100F/522H(2/4)-F	90	20	0.55	15	63.2	218.2	36.5	126.0	42	1450
32	NP150-125E/522H(2/4)-F	125	14	0.55	15	63.2	218.2	36.5	126.0	48	1450
33	NP200-150E/522H(2/4)-F	200	8	1.5	15	63.2	218.2	36.5	126.0	50	1450
34	NP150-100F/532H(2/4)-B	90	10	0.55	7.5	45.7	103.9	26.4	60.0	42	960
35	NP200-150F/532H(2/4)-B	125	7	0.65	7.5	45.7	103.9	26.4	60.0	45	960

4.铭牌 NAMEPLATE



5.爆炸图STRUCTURAL DIAGRAM



序号 №	名 称 Name	序号 №	名 称 Name
1	后轴承座 Back Bearing Housing	17	推力盘 Thrust Collar
2	密封垫圈 Seal Gasket	18	轴套 Shaft Sleeve
3	轴承 Bearing	19	轴承 Bearing
4	轴套 Shaft Sleeve	20	前轴承座 Front Bearing Housing
5	推力盘 Thrust Collar	21	过滤网 Filter Net
6	螺栓 Bolt	22	调整垫圈 Adjusting Washer
7	弹簧垫片 Spring Washer	23	平垫 Washer
8	接线盒体密封垫 Terminal Box Seal Gasket	24	螺栓 Bolt
9	接线盒盖 Terminal Box Cover	25	叶轮 Impeller
10	接线盒体 Terminal Box	26	螺母 Nut
11	螺栓 Bolt	27	诱导轮 Inducer
12	定子组件 Stator Assembly	28	密封垫圈 Seal Gasket
13	转子组件 Rotor Assembly	29	泵体 Casing
14	键 Key	30	止动垫圈 Lock Washer
15	键 Key	31	轴头螺栓 Shaft Bolt
16	键 Key		

6.警告 WARNING

6.1 非专业人员不得对泵进行安装和维护保养。
6.2 产品采用木箱包装，在运输、搬运、贮存过程中应按包装箱明示的标志进行，以防发生损坏或伤害。
6.3 泵在工作中不可触摸以防触电危险,如图1；
6.4 泵在工作中不可触摸以防高温烫伤,如图2；

6.1 Do not install, disassembly or maintain the pump if you are not professional.
6.2 The products are packed with wooden box during transportation or storage. Please attach signs outside the box to avoid damage.
6.3 Do not touch when running to avoid getting burned as shown in Picture 1.
6.4 Do not touch when running to avoid scald yourself as shown in Picture 2.

图1 Picture 1

图2 Picture 2

7.电器原理ELECTRIC PRINCIPLE

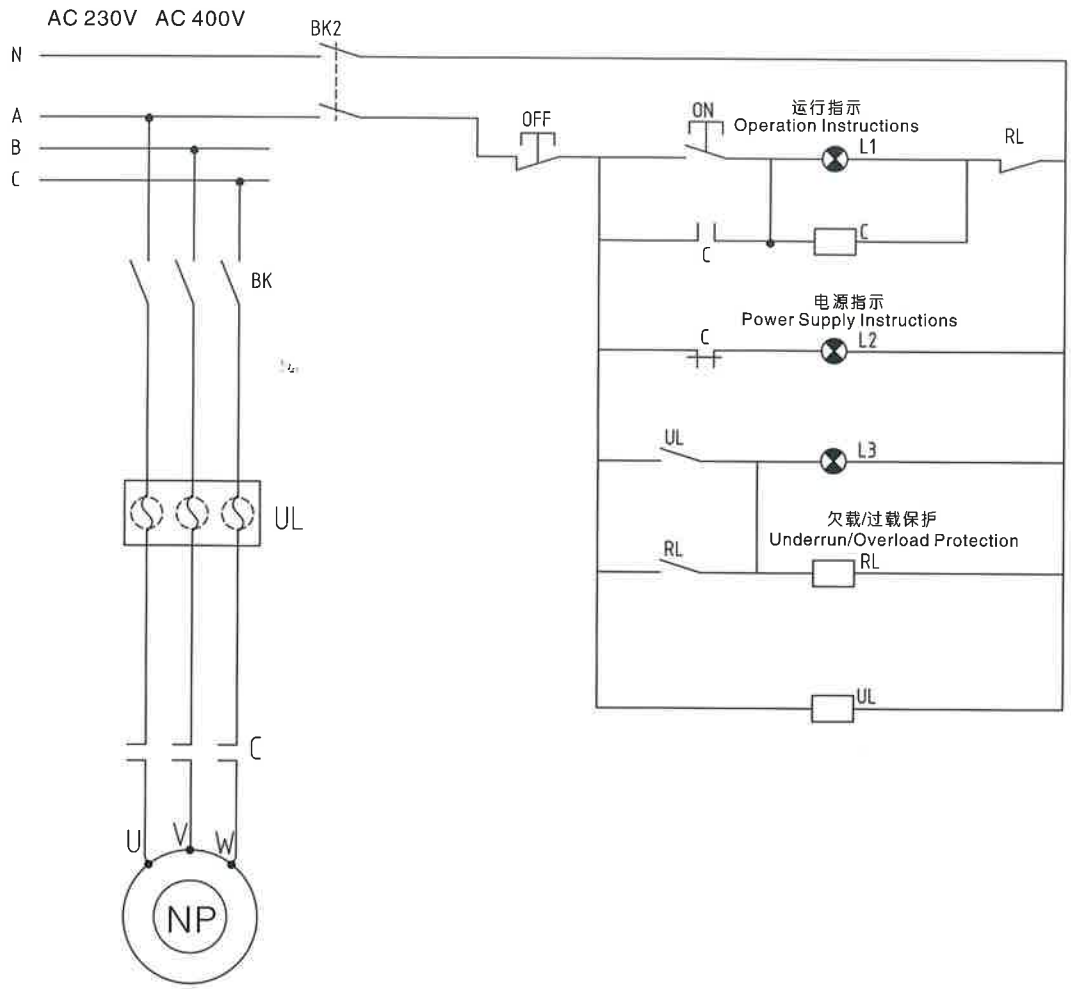


图3 Picture 3

8.使用要求 OPERATION REQUIREMENTS

泵运转时请遵照下列使用要求。

8.1 严禁无液运转。

8.2 运转前应彻底清除装置中的固体异物。

8.3断流运转不得持续1分钟。

8.4 不得逆向持续运转。

8.5 运转中，如发现异常声音或振动时，应迅速查明原因，并彻底排除故障。

8.6 停止运转时，泵内介质有冻结的可能，应采取预防措施。

8.7 泵的正常工作状态，必须是合同要求的性能参数范围。

Please be sure to follow the notes mentioned below when operating the pump.

8.1 Do not run pump without filling liquid.

8.2 Completely remove foreign matters from pipings and accessories.
8.3 Do not keep the pump running with discharge valve closed for more than 1 minute.
8.4 Do not run pump in reverse direction continuously.
8.5 In case abnormal noise or vibration is noticed, check causes and take counter measures promptly.
8.6After stop running the medium is possible frozen,so some counter measures should be prepared.
8.7 Pumps normal working conditions must be included in the specifications scope of the contract.

9.结构及工作原理 CONSTRUCTION

NP型泵分为带诱导轮屏蔽泵和不带诱导轮屏蔽泵，NP型泵的结构面如图4、图5所示。以图4为例，说明其结构和工作原理。如图所示，电机和泵体构成一体，其定子(23)的内表面与转子(24)的外表面装有非磁性的耐腐蚀金属薄板做成的定子屏蔽套(25)和转子屏蔽套(26)。另外在各自的侧面用耐腐蚀的金属厚板将他们焊接密封起来，与输送液体完全隔离开，使定子铁芯和转子铁芯不受侵蚀。

输送的液体一部分由叶轮(3)的排出口→过滤器(31)→前轴承座(5)的小孔→定子屏蔽套(25)与转子屏蔽套(26)之间的缝隙→后侧轴承(20)与后侧轴套(19)之间的缝隙→后轴承座(16)→ 轴(12)中心的贯通孔→螺栓(36)的贯通孔→ 泵体(1)吸入侧。还有一部分输送的液体通过前轴承座(5)的小孔→前侧轴承(9)和前侧轴套(8)之间的缝隙→ 前轴承座(5)→叶轮(3)的平衡孔→叶轮(3)的吸入侧。

循环液对于轴承(9)、轴承(20)的润滑冷却以及电动机的冷却起着非常重要的作用。因此，在循环液中如果由泥浆杂质或流量不足时，就会导致发生故障。

在液体中旋转的转子(24)是由前后两个轴承 (9)、(20) 所支撑的轴(12) 构成一体。在轴(12)的前端装有叶轮(3)、诱导轮(2)，形成没有轴封的屏蔽电泵。泵的叶轮(3)、 诱导轮(2)，产生的轴推力作用在前后推力盘(10)、(21)上。

There are 2 types for NP pumps:inducer type and no inducer type,which the structural drawing is shown hin picture 4 and 5. Take picture 4 as example to explain the structure and working principle. The inner side of the stator(23) and surface of the rotor (24) were covered by stator can (25) and rotor can (26) which are made by metal sheet that was non-magnetic metal and corrosive-resistant, each side were welded and sealed by the thick metal.so working liquid was separated and stator core,rotor core will not be corroded.
Parts of liquid flows from outlet of the impeller(3)→filter(31)→hole of F.B.housing(5) →gap between stator can(25)and motor can (26)→gap between end bearing (20) and end bearing
shaft leeve (19)→R.B.housing (16)→hole of shaft (12)→hole of bolt (36) →inlet of pump case(1).Some liquids flows from hole of F.B.housing(5)→gap between front bearing (9) and front shaft sleeve(8)→F.B.housing(5)→hole of impeller(3)→inlet of impeller.
Circulation liquid cools the motor and lubricate the shaft(9). If the flow is not enough or there is slurry inside,failures wil happen.
Rotor(24) and shaft which were supported by front and back bearing(9) (20) forms a whole part.impeller(3) and inducer(2) which are in the front of the shaft(12)make the mechanical seal of this pump unnecessary, axial force created by impeller(3),inducer(2)
will beput on the front and back thrust collar(10)(21).

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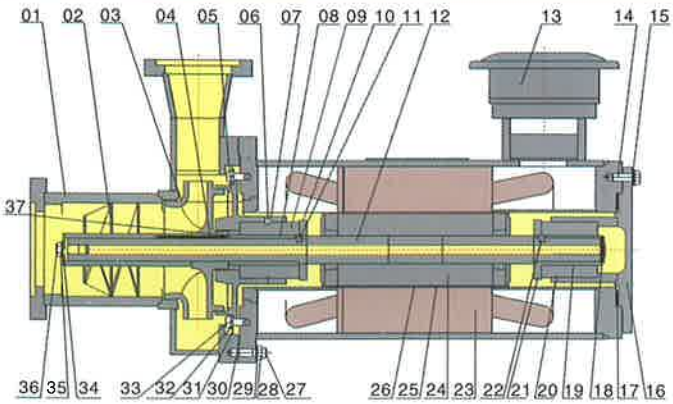

图4 带诱导轮屏蔽泵
Picture 4 THE CANNED MOTOR PUMP WITH THE INDUCER

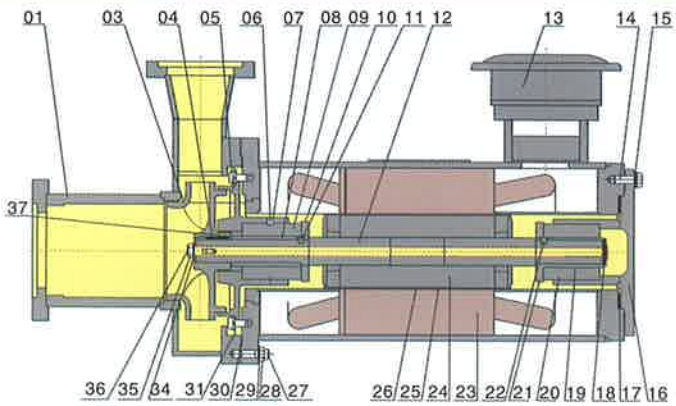

图5 不带诱导轮屏蔽泵
Picture 5 THE CANNED MOTOR PUMP WITHOUT THE INDUCER

序号 №	名称 Name	序号 №	名称 Name
1	泵体 Casing	20	轴承 Bearing
2	诱导轮 Inducer	21	推力盘 Thrust collar
3	叶轮 Impeller	22	键 Key
4	键 Key	23	定子组件 Stator components
5	前轴承座 F.B.housing	24	转子组件 Rotor componets
6	紧定螺钉 Catch bolt	25	定子屏蔽套 Stator can
7	垫片 Gasket	26	转子屏蔽套 Rotor can
8	轴套 Shaft sleeve	27	双头螺栓 Double-headed stud
9	轴承 Bearing	28	六角螺母 Nut
10	推力盘 Thrust collar	29	弹簧垫片 Spring gaskets
11	键 Key	30	密封垫圈 Sealing gaskets
12	轴 Shaft	31	过滤网 Filter
13	接线盒 Terminal box	32	弹簧垫圈 Spring washer
14	六角螺栓 Bolt	33	螺栓 Bolt
15	弹簧垫圈 Spring washer	34	平垫 Washer
16	后轴承座 R.B. Housing	35	止动垫圈 Lock washers
17	密封垫圈 Sealing gasket	36	轴头螺栓 Bolt
18	弹性挡圈 Spring gasket	37	垫圈 Gasket
19	轴套 Shaft sleeve		

10. 安装与试运转INSTALLATION AND TRIAL OPERATION

10.1安装前注意事项

a.在搬运屏蔽电泵过程中，要避免碰撞。

b.保管时，不要打开包装。

c.核对泵的规格是否符合要求，应检查铭牌以及随泵附带的试验报告。

10.2 安装、配线

a. 要彻底清除管路及其附属件内的异物。

b.必须在安装之前,确认泵的旋转方向,配线相序应该接成R-U、S-V、T-W、此时旋转方向 从叶轮侧看应为逆时针方向，可以在极短的时间内（1秒钟以下）确认转向是否正确。

c.不要在泵的附属件上施加外力。
d.泵接线盒带接地螺栓，安装时，接地螺栓要可靠接地，以防异常情况下，电机漏电对人体造成伤害。
10.3试运转
10.3.1 保护给定值的设定
屏蔽电机的额定电流比普通电机的额定电流值稍大些，因此用户应注意铭牌上的数据，从保护电动机方面考虑，希望把电流设定在不至于误动作的范围内较低数值上，建议按以下大致标准设定：
在电压、负荷变化小时.....额定电流值的1.1倍
在电压、负荷变化大时.....额定电流值的1.25倍
如果电动机的运行电流比额定电流小的多，建议以运行电流为基准。
10.3.2 试运行
进行操作顺序如下：
a.打开吸入侧阀门。
b.关闭排出侧阀门。
c.接通电源。
d.稍微打开排出侧阀门。
e.观察排出侧压力。
f.观察电流值是否超过额定值。
g.观察有无异常，如有异常，应立即切断电源，查明原因。其方法参照“11、维护与检查”。
10.4 运转
试运转后，可以用输送液体进行正常运转。运转中注意事项见“8 使用要求”。

10.1 Notes Before installation
a. Avoid collision in the process of handling the canned motor pump.
b. Do not open the packaging in the process of storage.
c. Check nameplate and test report attached to the pump and check whether the specifications meet the requirements.
10.2 Installation and wiring
a. Completely remove the foreign matters within the pipes and its subsidiary.
b. Check rotating direction before piping. Connect the electric source (R, S, T) to the terminals (U, V, W) of the pump as follow order: R-U S-V T-W. Direction of pump rotation
should be counter clockwise viewed from impeller side. Switch
on the pump for a second to check the direction.
c. Pay attention not to put external force on outside subsidiary parts such as pipes.
d. Make sure grounded bolt in terminal box is wired to earth, to avoid electric shock which cause damage to human body.
10.3 Trial Operation
10.3.1 Setting of overload relay
As the rated current of canned motors is higher than ordinary motors, overload relay should be set according to the rated current indicated on the name plate. For protection to motor, it is preferable to set the current as low as possible within a range that the relay works properly .Generally, it is recommended to set the relay to the following value:

Variation of voltage & load is relatively small .....rated current ×1.1
Variation of voltage & load is relatively large .....rated current ×1.25
If operating current is much smaller than the rated, set the relay based on the operating current.
10.3.2 Trial Operation
Operate the pump according to following order:
a. Open suction valve
b. Close discharge valve or slightly open it.
c. Switch on the pump.
d. Slightly open discharge valve.
e. Make sure the pressure gauge indicate the required value.
f. Make sure the operating current is not larger than the rated value.
g. Check if there are any abnormal conditions. If any abnormal condition is noticed, stop the pump and
find the cause's .Refer to 11 trouble shooting.
10.4 Operation
After trial operation the pump can be operated at any time. Pay attention to Introduction 8.

11.维护与检查 MAINTENANCE AND INSPECTION

11.1 分解(以带诱导轮屏蔽泵为例，图4)
11.1.1 卸下紧固泵体用的六角螺母(28)，将泵体组件抽出，注意应水平往外抽，以免诱导轮(2)碰到泵体上(1)上。
11.1.2 松开止动垫圈(35)，卸下螺栓(36)及垫圈(34)，将诱导轮(2)、叶轮(3)抽出。
11.1.3 卸下弹簧垫片螺栓(32)、(33)，再卸下前轴承座(5)及后轴承座(16)。这时要注意别碰伤轴承(9)、(20)。
11.1.4 把转子(24)从定子(23)中水平慢慢抽出，注意别碰伤定子屏蔽套(25)和转子屏蔽套(26)，将转子放在干净的橡胶垫上最好。
11.1.5 取下键(4,11)和调整垫圈(37)，卸下弹性挡圈(18)，取出轴套(8)、(19)，推力盘(10)、(21)也可取出。
在进行上述各分解时，请注意各个零部件的保管。
11.2 检查
11.2.1 轴承(9)、(20)
经过长期运转之后，由于各种原因可能导致轴承取不下来，此时不应强取，而应该在轴承座内检查，主要检查下列项目；
a.工作面有无光泽，损伤等。
b.内径的磨损量应符合表1规定。
c.推力面放射形沟槽磨损程度。
如果发现上述的某一项不符合要求时，把紧定螺钉(6)松开，取下轴承。

表1 轴承磨损极限表　　单位：mm

电动机机座号	ΦA-ΦB	电动机机座号	ΦA-ΦB
0.37kW	0.25	5.5kW	0.35
0.75kW	0.30	7.5kW	0.35
1.1kW	0.30	9.0kW	0.35
1.5kW	0.30	11kW	0.40
2.2kW	0.30	15kW	0.40
3.7kW	0.30		

11.2.2 轴套(8)、(19)及推力盘(10)、(21)
a.有无腐蚀。
b.工作面有无光泽、损伤等。
c.磨损程度。
经过检查确定是否需要更换。
11.2.3检查液体循环线路上有无堵塞或附着异物等。
11.2.4各个部分有无磨损等。主要检查各相互接触部位及易磨损部位是否能影响泵的性能。
11.3组装
把零部件洗净，干燥之后，按解体逆顺序组装，在组装时应特别注意下列事项：
a.为了防止轴套(8)、(19)的转动，必须按图7所示装上键（11或22）。确认轴套(8)、(19)的啮合部位是否准确。另外，推力盘(10)、(21)有一端面是喷焊面，应注意安装时此面朝向轴承(9)、(20)。
b.后侧轴套(19)装上后，应正确锁紧止动垫圈(18)。
c.叶轮轴向间隙的调整。
将叶轮(3)沿轴向内推，测定g尺寸(见图6)，用调整垫圈(37)将g尺寸调整到0.5～0.9mm。
d.将叶轮(3)、诱导轮(2)固定，锁紧止动垫圈(35)。
e.密封垫圈(17)、(30)之类的零件及其接合面，均需确认无有害的伤痕和污物后方可组装。

11.1 Disassembling (Take the pump with the inducer as example, see Picture 4)
11.1.1 Remove Nuts (28) and pull the pump assembly out horizontally. Pay full attention not to hit Inducer (2) against Casing (1).
11.1.2 Release the lock washer (35) on the shaft end and remove Bolt (36) and Washer (34), then Inducer (2) and Impeller (3) can be removed.
11.1.3 Remove Bolt (32),(33)and pull out F.B. Housing (5) and R.B. Housing (16) from either end of Stator. Pay attention not to damage bearing (9) and (20).
11.1.4 Pull out Rotor Assembly (24) from Stator Assembly (23) slowly and horizontally with care along the stator can. Be careful not to hit the shaft end against the stator can (25)to avoid cracking or damaging to each other .Removed rotor assembly should be placed on clean cloth so as not to damage Rotor Can (26).
11.1.5 Remove key (4,11)， Adjusting washer (37)， Spring gasket (18),Sleeves (8) (19),Thrust Collars (10)、(21)from the removed rotor assembly .
When disassembling, please keep all the parts well.
11.2 Inspection
11.2.1 Bearings(9)、(20)
After a long time running, the bearings may not be removing for some reasons, do not use force to remove, please check the bearings for the following points:
a. Sliding surface (luster, scratches, etc.)
b. Wear of inside bore (refer to Table 1)
c. Wear and scratch on the thrust face. Depth of radial grooves.
If any problem discovered, please remove bolts (6) and pull the bearings.
Table 1 BEARING WEAR LIMIT (unit: mm)

Motor Frame Number	ΦA-ΦB	Motor Frame Number	ΦA-ΦB
0.37kW	0.25	5.5kW	0.35
0.75kW	0.30	7.5kW	0.35
1.1kW	0.30	9.0kW	0.35
1.5kW	0.30	11kW	0.40
2.2kW	0.30	15kW	0.40
3.7kW	0.30		

11.2.2 Shaft Sleeves (14), (26) and Thrust Collars (16), (28)
a. Corrosion.
b. Sliding surface (luster, scratches).
c. Wear and tear.
Determine whether replacement is needed.
11.2.3 Check liquid flow cycle for any foreign matters such as plug or attachment
11.2.4 Any contact marks, wear or corrosion.
11.3. Reassembly
Clean and dry parts. Reassembly as the reverse order of disassembling. During assembly, some adjustments are required .pay attention to the following:
a. In order to prevent the rotation of the Shaft sleeve (8) and (19), Key（11 or 22) must be installed as shown in picture 7. Make sure that the joggle part is accurate. On each of the Thrust Collars(10) and (21),the hardened surface is the side with small chamfer at the inside bore .
Make sure that the hardened surface face to Bearings (9) and (20).
b. Install rear shaft Sleeve (19) and Lock with lock washer (18) properly.
c. Adjust axial gap of impeller(See Picture 6)
Push impeller toward the F.B.Bearing, measure "g", the gap " g " should be within the value shown in Picture 6. Adjustment can be made with Adjusting Washer (37).
d.Tighten Impeller (3), Inducer (3) firmly and then lock washer (35).
e.Make sure that no defect or flaw exists on Gaskets and its contact surfaces.
Install Gasket after cleaning.

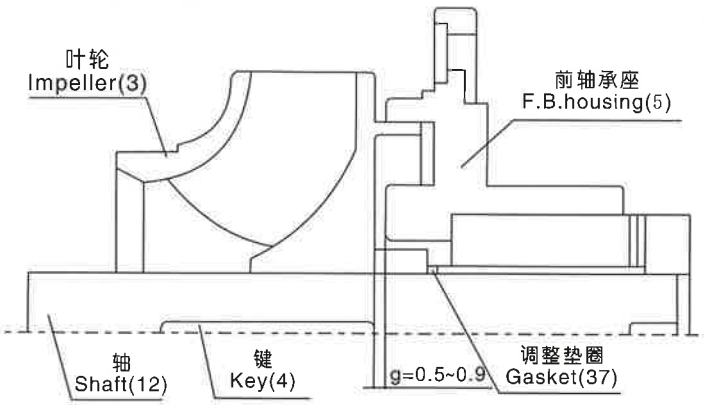

图6
Picture 6

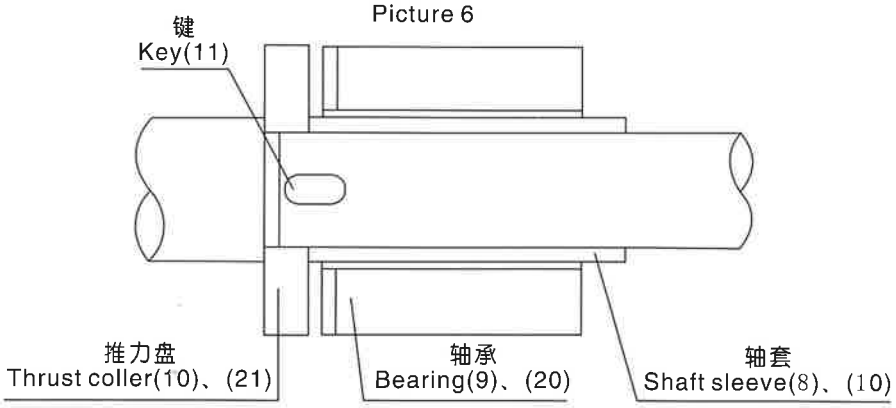

图7
Picture 7

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合肥新沪屏蔽泵有限公司
HEFEI XINHU CANNED MOTOR PUMP CO., LTD.
地址：中国 合肥市高新区柏堰科技园区杨林路一号（集贤路）
Add: No.1 Yanglin Road, Hi-tech Development Zone, Hefei City, Anhui, China
邮编（Pc）：230088

电话（Tel）：+86（0）551-62379850 62379851
电话（Fax）：+86（0）551-62379851
网站（Web）：www.shinhoopump.com
电子邮箱（E-mail）：business@xinhu.com pump@xinhu.com
中国·合肥新沪