



YBQ132 (IP68) 潜水用隔爆型
三相异步电动机

YBQ132(IP68) submersible
Explosion-proof Three Phase
Induction Motor

使用说明书

Operating Manual

安徽皖南电机股份有限公司
Anhui Wannan Electric Machine Co.,Ltd

衷心感谢您选购、使用皖南电机。

在使用电动机之前，请扫码仔细阅读本说明书，以便您正确的使用和维护。

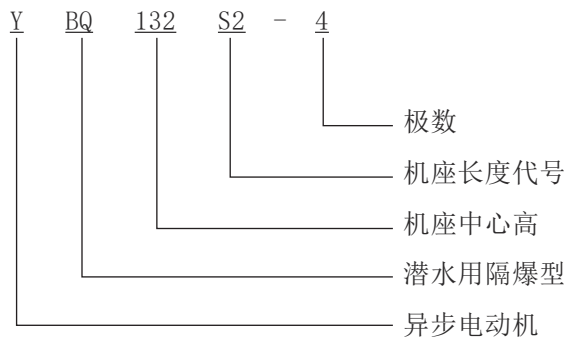
1 产品概述

YBQ132(IP68) 潜水用隔爆型三相异步电动机，效率指标达到了国家能效标准 GB18613-2020《中小型三相异步电动机能效限定值及能效等级》3级能效。

YBQ132(IP68) 潜水用隔爆型三相异步电动机，按照 GB 3836.1-2021《爆炸性环境 第1部分：设备 通用要求》和 GB 3836.2-2021《爆炸性环境 第2部分：由隔爆外壳“d”保护的的设备》的要求，制成隔爆型。其防爆标志为 Ex db II AT1 Gb、Ex db II AT2 Gb、Ex db II AT3 Gb、Ex db II AT4 Gb、Ex db II BT1 Gb、Ex db II BT2 Gb、Ex db II BT3 Gb、Ex db II BT4 Gb。产品适用于工厂（Ex db II AT4 Gb、Ex db II BT4 Gb）含有II类 A、B级 T1 ~ T4 组可燃性气体或蒸汽与空气形成的爆炸性混合物的场所。

并且电动机外壳，按照 GB 4942.1-2006《旋转电机整体结构的防护等级（IP 代码）分级》的要求，防护等级达到 IP68(1.5m\0.5h)。

2 产品型号及名称



3 使用范围及使用条件

3.1 适用常见可燃性气体、蒸汽级别、温度组别举例见表 1。

表 1

级别	引燃温度组别			
	T1	T2	T3	T4
II A	甲烷、乙烷、丙烷、苯乙烯、甲苯、二甲苯、一氧化碳、醋酸	丁烷、丙烷、乙苯、甲醇、乙醇、丙醇、本醇	戊烷、己烷、庚烷、辛烷、癸烷、环己烷 煤油、柴油、汽油	
II B	丙炔、环丙烷、焦炉煤气	乙烯、1.3丁二烯环氧乙烷、1.2-环氧丙烷	二甲醚、丙烯醛、甲氢糠醇四氢呋喃、硫化氢	乙基甲基醚二乙醚 四氟乙烯

3.2 运行使用条件

- 3.2.1 海拔不超过 1000m。
- 3.2.2 防护等级 IP68(1.5m/0.5h)。
- 3.2.3 环境空气温度随季节而变化，但最高不超过 40℃，最低为 -15℃。
- 3.2.4 电动机额定电压为 380V，额定频率为 50Hz，绝缘等级为 F 级。
- 3.2.5 电动机接法为 Y。
- 3.2.6 电动机的定额是以连续工作制（S1）为基准的连续定额，允许满压起动。
- 3.2.7 电动机外壳最高表面温度（温度计法）在规定允许最不利的工作条件下应不超过 130℃。
- 3.2.8 电动机运行时，电源电压和频率与额定值的偏差按 GB 755 的规定。
- 3.2.9 电机使用时由用户自配防爆电缆引入装置，且装置需具有相应的防爆认证证书以及 IP68 级防护等级。

4 电动机的主要技术参数及安装结构型式

- 4.1 电动机的外壳防护等级为 IP68。
- 4.2 电动机的结构及安装型式为 IMB14 和 IMV18。
- 4.3 电动机的额定频率为 50Hz，额定电压为 380V。
- 4.4 电动机的极数为 4 极，同步转速 1500r/min。
- 4.5 电动机共有以下规格及额定功率：YBQ132S1-4（2.2kW/3HP）、YBQ132S2-4（3.7kW/5HP）。

5 主要结构

- 5.1 电动机的接线盒位于电动机顶部，内设一个接地端子，两个热敏开关接线端子，一个接线架。在接线盒座与接线盒盖的止口处，以及接线盒与机座连接处加设 O 型密封圈。
- 5.2 电动机有一个圆柱形轴伸，用联轴器传动。
- 5.3 电动机转轴旋转部位采用骨架油封与铜制迷宫环保护。
- 5.4 电动机无风叶风罩，尾轴不出端盖，冷却方式 IC410。
- 5.5 电动机主体结构见图 1、接线盒结构见图 2。
- 5.6 电动机轴伸端轴承型号为 6308ZZC3，非轴伸端轴承型号为 6308ZZC3。

6 防爆要点

- 6.1 本系列电动机为隔爆型。若电动机内部的可燃易爆性混合物爆炸时，隔爆型电动机外壳不应损坏或产生影响隔爆性能的变形；内部爆炸火焰不允许通过电机的隔爆接合面引起外部爆炸性混合物的爆炸。
- 6.2 隔爆型电动机的元件（如机座、端盖、轴承内盖、接线盒盖、接线盒座等），精加工后须经压力为 1.5Mpa，加压时间为 10S+2 的静压试验，以不滴水为合格。
- 6.3 隔爆接合面的长度、间隙、表面粗糙度、接线盒内部裸露导体之间、裸露导体与金属外壳之

间的电气间隙及爬电距离应符合 GB3836.1 和 GB3836.2 的规定。

6.4 联接隔爆外壳的螺栓均装有弹簧垫圈，防止自行松脱。

6.5 机座、端盖、轴承内盖、接线盒盖、接线盒座、轴、电缆连接器、隔爆闷盖是隔爆元件。

6.6 该电机隔爆外壳紧固螺栓应保证抗拉强度 $\geq 800\text{MPa}$ ，屈服强度 $\geq 640\text{MPa}$ 。

7 安装与使用

警告！



严禁带电开盖！

搬运电动机时，应小心谨慎！

强烈的摔、碰、震会严重损坏轴承及隔爆元件。

吊装带有吊攀的电机时，一定要将吊攀旋紧。

7.1 安装前的准备

7.1.1 仔细检查电动机外观是否完好、核对电动机铭牌内容是否与实际需求相符。

7.1.2 电动机是否有防爆标志、防爆合格证编号和生产许可证。

7.1.3 隔爆外壳各零部件联接正确，紧固可靠无松动。

7.1.4 所有隔爆元件应无裂纹或影响隔爆性能的缺陷。

7.1.5 取下接线盒盖检查电动机定子绕组绝缘电阻应不低于 $20\text{M}\Omega$ 。

注意！



该产品不能用于煤矿井下。在检查过程中，您若有疑问，请向有关专业技术人员请教或与我们联系。

7.2 安装

7.2.1 电动机的安装应由专业技术人员完成。

7.2.2 电动机宜采用弹性联轴器传动。

7.2.3 电机使用时由用户自配防爆电缆引入装置，且装置需具有相应的防爆认证证书以及 IP68 级防护等级。

7.2.4 电动机轴中心与被传动的主机轴中心要保持一致。

7.2.5 对带底脚的电动机，安装平面应平整、坚固。

7.2.6 联接电动机的电源线（电缆）不宜过细、过长。

7.2.7 电动机的相序 U、V、W（T1、T2、T3）须与接入外电源相序 A、B、C 相对应，电动机转向从轴伸端视之为顺时针方向，否则电动机将反转。

7.2.8 电动机内、外接地螺栓必须可靠接地。

7.2.9 电动机接好线，经检查确认无误后，方可接通电源进行空载试运转，并观察电机有无异常现象，待空转正常后方可投入负载运行。

警告!



- 1、电源电压的波动不得超过额定电压的 95% ~ 105%。
- 2、必须接好接地线。
- 3、电机运行若有异常立即停机。
- 4、保持身体、衣物远离电动机运转部分。

8 保养与维修

8.1 电动机应定期检查和清洁，外壳不得堆积灰尘。

8.2 对于存储半年的电动机，建议每 2 个月将电机轴旋转 180 度；存储超过半年的，通电运转一段时间，使轴承润滑脂分布均匀。

8.3 电动机运行时轴承允许温度不得超过 95℃（温度计法），轴承每运行 2500 小时（约半年）至少检查一次。

8.4 拆装电动机时应注意保护隔爆面。拆卸电动机时，应先拆掉前端盖、后端盖的固定螺栓，卸下后端盖后，将前端盖连同转子和轴承内盖一同抽出，再对轴承内盖进行拆除。装配时，所有隔爆面需涂 204-1 防锈脂。

8.5 电机受潮后，必须经干燥处理后方可使用。干燥处理可采用烘干或短路电流法。在烘焙过程中，温度应逐渐升高，但不可超过 145℃。用短路电流法干燥时，（严重受潮的电机不宜用此方法，以免发生电解现象。）电机处于短路状态，其输入电流为 0.6 ~ 0.8 倍额定电流值为宜。

8.6 更换绕组时，须记下原绕组的型式、尺寸、线规、匝数。当失落这些数据时，应向我公司索取。随意改变设计绕组会使电动机某项或几项性能恶化，以致不能使用。防爆零部件维修、更换，须由专业技术人员按有关技术标准进行维修、验收。

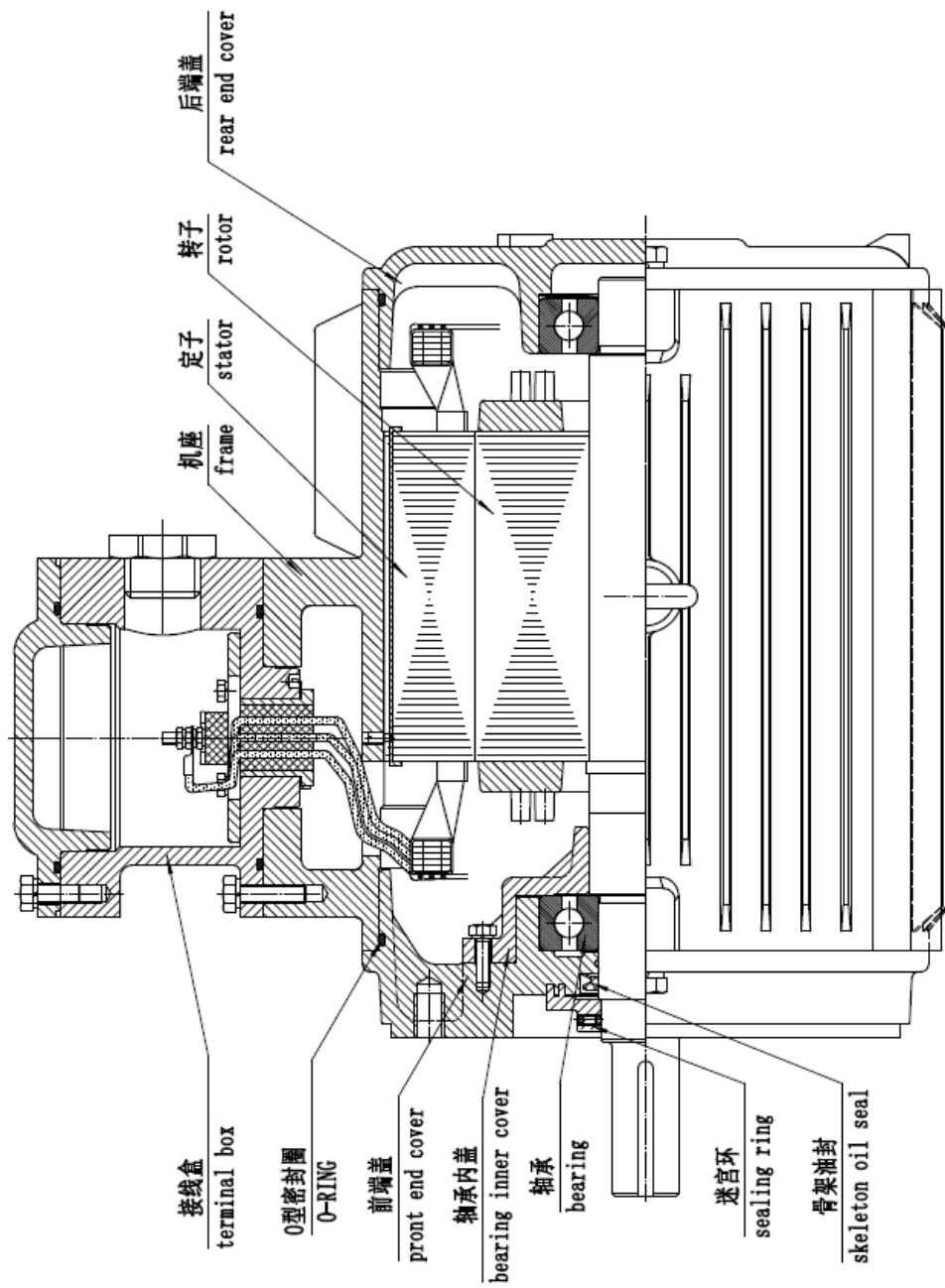


图1 电机主体结构
Fig motor structure

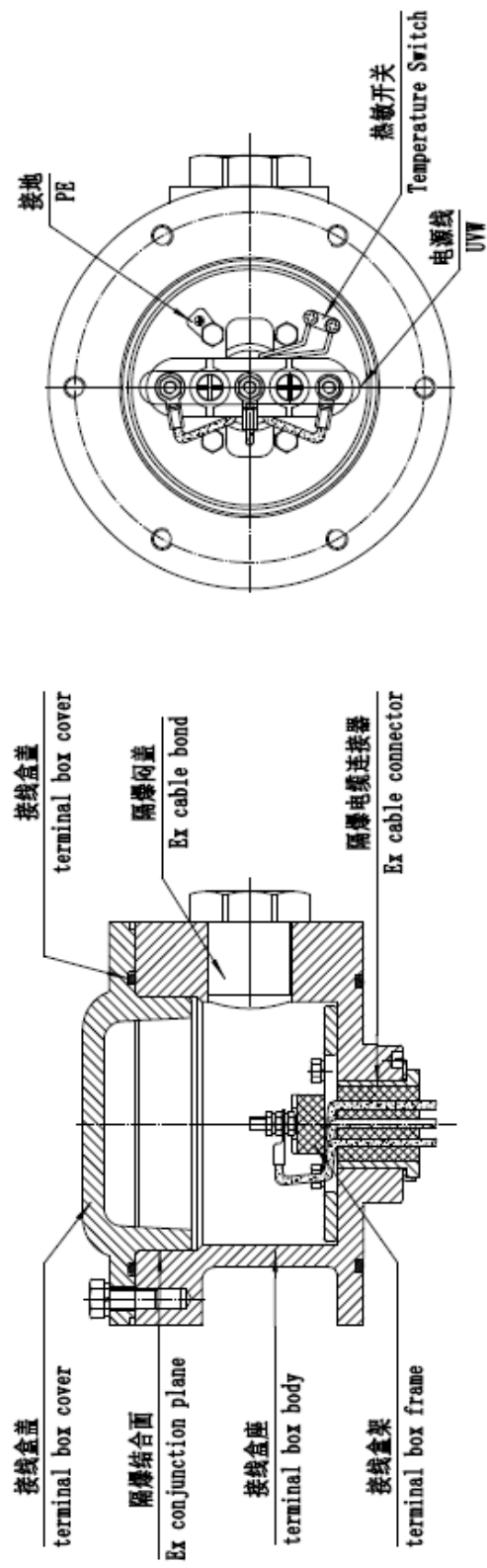


图2 接线盒结构
fig terminal box

We are truly grateful for your purchasing of Wannan Motors. Before using the motor, please scan the QR code to read the manual so as to use and maintain the motor in a right way.

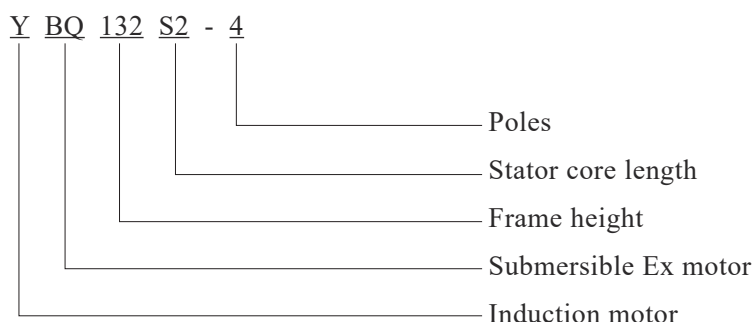
1. Summary

YBQ132(IP68) submersible explosion-proof three-phase induction motors, reaches the Level 3 efficiency of national standard GB 18613-2020 “limit allowable values of energy efficiency and energy efficiency grades for small and medium three-phase induction motors”.

YBQ132(IP68) submersible motors are in conforming to the requirements of standard GB3836.1-2021 “Part 1 of Electrical equipment used in explosive environment: General Requirement” and GB3836.2-2021 “Part 2: The Apparatus with the flameproof enclosure ”d” “. The products marked with Ex db II AT1 Gb、 Ex db II AT2 Gb、 Ex db II AT3 Gb、 Ex db II AT4 Gb、 Ex db II BT1 Gb、 Ex db II BT2 Gb、 Ex db II BT3 Gb、 Ex db II BT4 Gb can be used in workshop where there is Category II Class A and B flammable gas or the flammable mixture of air and steam in Temperature Group T1~T4.

And the motor shell, according to the requirements of GB 4942.1-2006 “Rotating Motor Overall Structure protection Grade (IP Code) Classification”, protection grade reaches IP68(1.5m\0.5h).

2 Type and designation



3 Application circumstance

3.1 The applicable common inflammable gas, steam and temperature groups are listed in the table 1 below:

Table 1

Level	Temperature Groups			
	T1	T2	T3	T4
II A	Methane, ethane, propane, styrene, toluene, xylene, carbon monoxide, acetic acid	Butane, propane, ethyl benzene, methanol, ethanol, propyl alcohol, Benzene alcohol	Pentane, hexane, heptane, octane, decane, cyclohexane kerosene, diesel oil, gasoline	
II B	Propin, cyclopropane, coke oven gas	Ethylene, 1.3 butadiene epoxy ethane, 1.2 epoxy propane	Dimethylether, propylene aldehyde, hydrogen furfuryl alcohol furan, hydrogen sulfide	Ethyl methyl ether, diethyl ether, tetrafluoroethylene

3.2 Operating condition

3.2.1 Not exceed 1000m above the sea level

3.2.2 IP68(1.5m/0.5h)

3.2.3 Ambient temperature varies as season varies, but the highest temperature should be not higher than 40℃ , and the lowest be -15℃ .

3.2.4 The rated voltage of the motor is 380V rated frequency is 50Hz, insulation F class.

3.2.5 The motor should adopt Y connection.

3.2.6 The rating here refers to the continuous rating power on the basis of S1 duty system, the motor allows full voltage starting.

3.2.7 The surface temperature (by thermometer method) of motor casing should be not higher than 130℃ even it is working under the most severe condition within the limit permitted by provision.

3.2.8 Deviation of voltage and frequency from the rating value should be in accordance with the rule of GB755 at the motor running time.

3.2.9 When the motor is used, the user shall set the explosion-proof cable into the device, and the device shall have the corresponding explosion-proof certificate and IP68 protection grade.

4. Main technical parameter and installation type

4.1 Motor enclosure is IP 68

4.2 Motor Structure and installation types are IMB14 and IMV18

4.3 The rated voltage of the motor is 380V, rated frequency is 50Hz, insulation F class.

4.4 This series motor is of 4 poles,synchronous speed is 1500r/min.

4.5 This series is now covering 2 models: YBQ132S1-4 (2.2kW/3HP)、YBQ132S2-4 (3.7kW/5HP).

5. Main Structure

5.1 Motor shaft is of cylindrical type, and driving the equipment with coupling.

5.2 The motor's rotating parts are fitted with skeleton oil seal and labyrinth ring.

5.3 This series motors have no fan or end cover, cooling method IC410.

5.4 Subject structure of the motor see figure 1, and the structure of terminal box see figure 2.

5.5 DE bearing 6308ZZC3, NDE bearing 6308ZZC3

6. Explosion-proof highlight

6.1 The series motor highlights its explosion-proof feature. If the explosive mixture inside the motor explodes, the motor shall not be damaged or deformed to the extent that may affect its explosion-proof performance. The flame inside should not pass through conjunction plane to cause explosion of the flammable mixture outside the motor.

6.2 Components of the explosion-proof motor (such as frame, end cover, bearing inner cover, connection box cover, connection box body etc) should be tested with 1.5Mpa static pressure for

10S+2. The motor should be checked as qualified one if they won't drip in or after the test.

6.3 The length of the explosion-proof conjunction plane, clearance, roughness of the surface, the electric clearance between the bare conductors, the electric clearance between bare conductor and metal casing all should be in accordance with GB3836.1 and GB3836.2.

6.4 Ring washer on fastening bolt can prevent the bolts releasing down from explosion-proof casing.

6.5 Frame, end closure, bearing inner cover, terminal box cover, terminal box body, shaft, terminal lug(or connection board) all are flameproof components.

6.6 The fastening bolts of the flameproof shell of the motor shall ensure the tensile strength $\geq 800\text{MPa}$ and yield strength $\geq 640\text{MPa}$.

7. Installation and operation



Warning!

Motor cover is forbidden to open with power on.

Handle the motor with care.

Strong fall, impact, vibration will heavily damage bearing or explosion proof components.

Fasten onto the lifting hook tightly if the motor is moved by the crane.

7.1 Inspection

7.1.1 Examine the appearance of the motor to see whether it is in good condition, and check the nameplate to see whether the data is conform to actual requirement.

7.1.2 Check whether motor has explosion-proof mark, explosion-proof certificate Number and production license.

7.1.3 The explosion proof components are connected correctly and tightly.

7.1.4 There should be neither crack on explosion proof component nor defect that affects the explosion proof performance.

7.1.5 Check the cold insulation resistance of the stator winding, and ensure that the resistance value should be no less than $20\text{M}\Omega$.



Note!

This series motor can not be used for coal facing .

Any problems please consult technician or contact us.

7.2 Installation

7.2.1 Motor should be installed by technician.

7.2.2 Spring coupling ought to be used to drive the motor

7.2.3 When the motor is used, the user shall set the explosion-proof cable into the device, and the device shall have the corresponding explosion-proof certificate and IP68 protection grade.

7.2.4 Keep the shaft center of the motor at the same level with the that of driven machine

7.2.5 For the motor with feet, all the feet should be fixed to sound and flat plane.

7.2.6 Power wires should be neither too thin nor too long.

7.2.7 External diameter of the cable should fit bore diameter of the seal ring (Figure 3). The min diameter of cable is D1, max D5, seal ring is of rubber XH-21, specification and dimension see table 4(concentric-ring of seal gasket can be striped off to fit inner diameter of incoming cable). The diameter gap should not exceed 1mm. Clamp the connection plug and ensure that there is no clearance between seal ring and power cable as well as between seal ring and connection box body, otherwise the motor will lose its explosion-proof function.

7.2.8 The lead-in cable core should be attached between arched washers, and thorn on the cable corn can't be protruding. Prevent the cable corn from damaging when pulling it out through the bonding hole. The lead-in cable shall be fixed by connection board on arched washer to avoid movement.

7.2.9 To fit different supply voltage, different connection method should be chosen. For the connection box which has 6 terminals, connection way can be changed by connection strap. As one multi-core cable is introduced into one of the inlet holes, the head plug of the other unused hole can't be removed; otherwise the motor will lose its explosion-proof function.

Warn!



1. Supply voltage fluctuation should not go beyond the range $\pm 5\%$ the rated voltage.
2. Ground wire must be connected
3. Turn off the motor when abnormal problem occurs.
4. Keep the person and clothe away from the rotation part.

8 Maintenance and repair

8.1 Examine and clean the motor periodically, ensure that no dust accumulate on the casing. Spraying with tap for cleaning is not allowed.

8.2 Turn the shaft by 180° with hand every 2 month for the motor which has been stored half year; the motor need to work for a period of time to make the lubrication grease equispaced when the motor has been stored longer than half year.

8.3 Bearing permitted temperature should not exceed 95°C during its operation (by thermometer method), the motor should be examined at least once for every 2500-hour operation(approximate half a year). Bearing lubrication grease should be replaced when it is found to be spoiled. Before that the waste grease at bearing external cover, storage box, grease discharging device including oil tube and oil cup should be cleaned up, and clean the bearing with machine oil. No.2 lubricating grease for small medium size motor is recommended. For 2P motor, it's proper to fill 1/3~1/2, for motor of 4P or above to fill 2/3 capacity of the bearing chamber with lubrication grease.Bearing grease condition see table 5. Bearing type see table 6.

8.4 Take care of the explosion-proof plane if the motor need to be dismantled. Frame H80~132

Motors have no internal and external shaft cover, so windshield should be removed at first, then remove the V-shape shaft sealing ring, knock down the fastener on front and rear end closure, and take out rear end closure together with the rotor and fan. Explosion proof plane of the motor has been painted with 204-1 rust protection grease when assembled. .

8.5 When the winding need to be changed, please keep such data as the type size, wire gage, number of turns of the original winding firmly in mind . Contact us and ask for the date in case they are lost. Winding should not be optionally changed, otherwise some of the motor's properties may be deteriorated and even affect its running.

8.6 Explosion-proof components should be repaired, replaced, tested by technician following relevant technical standards.

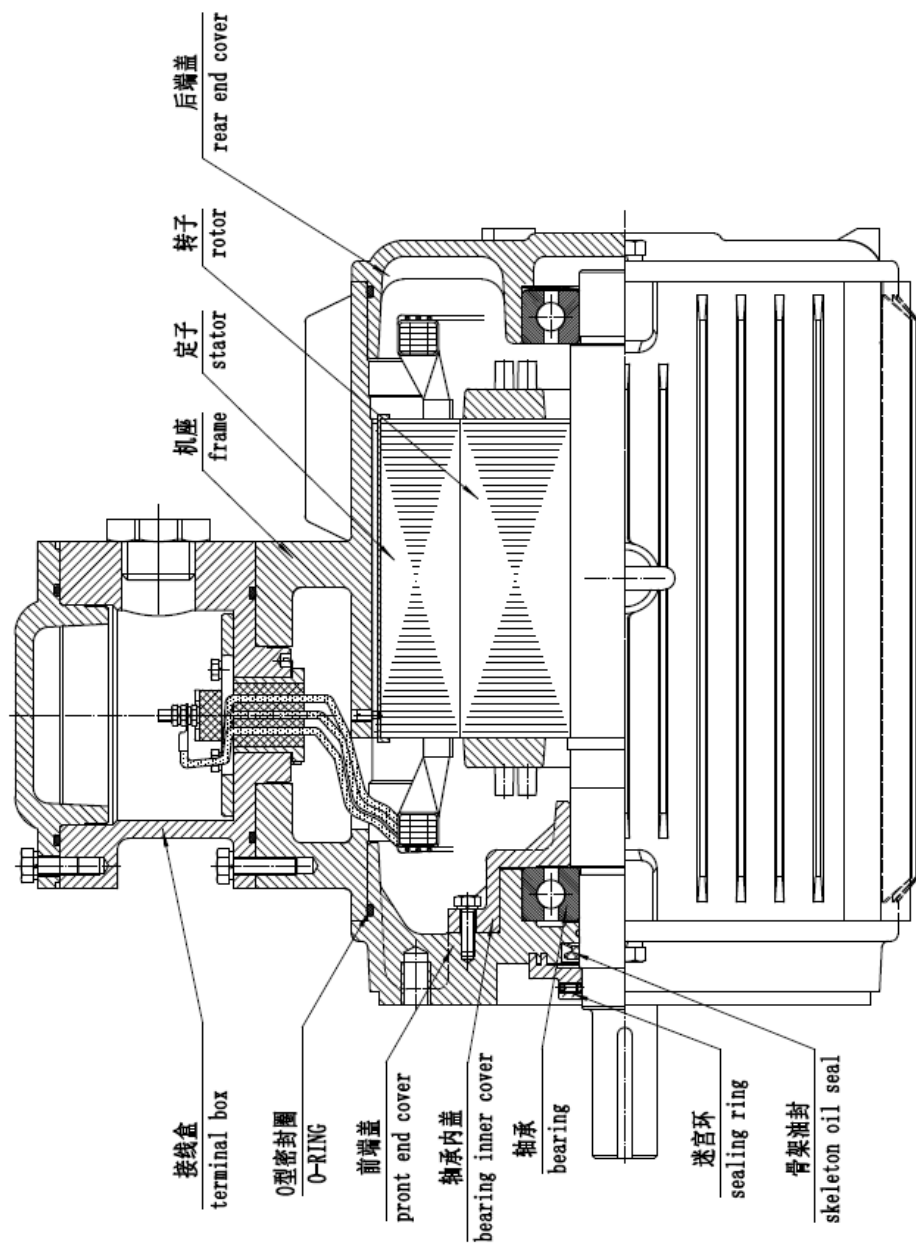


图1 电机主体结构
Fig motor structure

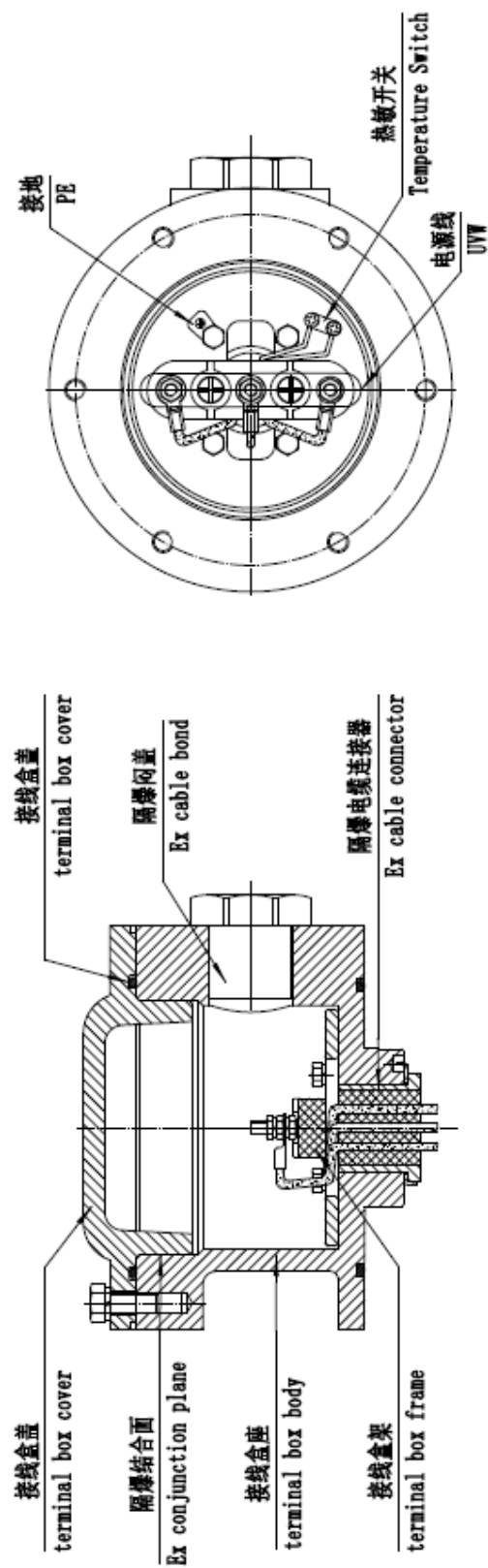


图2 接线盒结构
fig terminal box

敬告用户：

请您按照本使用说明书的规定，正确地使用和储存电动机，我们将为您提供优质、快捷的服务。

在电动机使用过程中，您如有什么疑惑请与我们联系，我们将及时给予您满意的解答；您有什么良好的建议请向我们提出，以便我们改进，为您提供优质、快捷的服务。

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Dear user,

Please use and store the motor right following the instruction of the manual. We will make our effort to provide you with high-quality and prompt service. Contact us if you had any questions in application, and we will offer you timely and effective resolution; let us know if you had any advices or suggestions, with which we can improve ourselves and make service better. Anhui Wannan Motor Co., Ltd. reserves the right of final interpretation of the user manual. No copy, disclosing or using of the content of this user manual to third parties prior to written permission from Anhui Wannan Motor Co., Ltd.

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