WPDJ®

Z4 系列直流电动机 · 使用维护说明书

Z4 Series DC Motors — *Usage and Maintenance Manual*

一、特点和用途

I. Features and Uses

Z4 系列直流电动机是我公司最新产品，广泛用作塑料挤出机械、冶金工业轧机传动、造纸、印染、纺织、印刷等各类机械的传动源。

Z4 series DC motors are our company's latest products, which are widely used as prime movers in various machinery, such as plastic extruding machines, mill auxiliary machinery in the metallurgical industry, paper-making, printing and dyeing, textile, printing, etc.

本系列电动机完全符合 JB6316-92 Z4 系列直流电动机技术条件（机座号 100-355），其外形安装尺寸除了两底脚孔间轴向尺寸“B”之外符合 IEC72 国际标准。

Z4 series DC motors fully comply with the JB6316-92 technical specifications for Z4 series DC motors (frame size 100-355). The outline mounting dimensions of the motors comply with the IEC72 standard, except for the axial distance between the two base holes (dimension B).

本系列电动机绝缘等级为 F 级，采用多角形结构，定子磁扼为叠片式，适应整流器供电，可用三相全控桥式整流电源长期工作。

The motors are Class F insulated, with a polygonal structure. The stators have laminated yokes, which are suitable for rectifier power supplies. The motors can operate continuously on a fully-controlled three-phase bridge rectifier supply.

二、型号说明

II. Type Designation

型号	含义说明（中英对照）
Z4-200-21	Z=直流电动机（DC motor）；4=第 4 次设计序号（4th design）；200=中心高 200mm（center height 200mm）；2=2 号铁芯（No.2 armature core）；1=正常端盖（normal end-shield）
Z4-250-12	Z=直流电动机（DC motor）；4=第 4 次设计序号（4th design）；250=中心高 250mm（center height 250mm）；1=1 号铁芯（No.1 armature core）；2=加长端盖（long end-shield）

三、电动机性能及结构

III. Electrical Performance

1、本系列电动机可在下列使用条件下工作：

1. Z4 series DC motors can be operated under the following conditions:

- a、海拔不超过 1000m。 — *a. Altitude shall not exceed 1,000 m above sea level;*
- b、环境温度不大于 40℃。 — *b. Ambient temperature shall not exceed 40 ℃;*
- c、作环境不应含有酸性、碱性或其他对绝缘有腐蚀作用的气体。 — *c. The ambient environment shall not contain acidic, alkaline or other gases that are corrosive to the insulation;*
- d、电机为连续作制（S1)。 — *d. Duty: Continuous (S1);*
- e、本系列电动机性能均符合国标 GB/T755《旋转电机基本技术要求》。 — *e. The performance of the motors complies with GB/T 755"Basic Requirements for Rotating Electrical Machines".*

2、电动机标准额定工作电压 440V，额定转速一般有 1500, 1000, 750, 600, 500, 400r/min 等几档。电机有调磁、调压两种调速方式，减少电枢电压为恒转矩调速，降低励磁电压为恒功率调速。

2. The rated voltage of the motors is 440V. The rated speeds are generally 1500, 1000, 750, 600, 500, 400 r/min, etc. The speed of the motors can be adjusted by armature-voltage control or field control. Reducing the armature voltage gives constant-torque speed control, while reducing the field voltage gives constant-power speed control.

3、电动机标准励磁电压为 180V，为确保励磁系统绝缘的可靠性，在断开励磁回路时，需在励磁绕组两端并联一个释放电阻，以防止自感电势。在标准励磁电压时，其值约为七倍励磁绕组电阻（冷态）。励磁电压高于标准电压时，并接释放电阻值可小于七倍，反之大于七倍。

3. The rated field voltage is 180V. To ensure the insulation reliability of the excitation system, when the excitation circuit is disconnected a release resistor should be connected in parallel with the field winding to prevent self-induced voltages. At rated field voltage, its value is about seven times the field winding resistance (cold). When the field voltage is higher than the rated value, the shunt resistor value may be less than seven times; otherwise it should be greater than seven times.

4、电机提供有接地标注的接线柱。

4. A marked earthing terminal is provided for the motors.

5、电机防护形式为 IP21S。

5. The degree of protection of the motors is IP21S.

6、电机安装方式正常为 IMB-3 型，也可为 IMB-35 型。

6. The normal mounting mode of the motors is IMB3, or IMB35.

7、电机冷却方式为 IC06 型（即他冷、强迫通风），在径向配有骑式鼓风机，独立供电，采用三相二级 380V, 50Hz 交流电源。

7. The cooling mode of the motors is IC06 (i.e. separate cooling and forced ventilation). Cooling is provided by a separately powered, radially mounted ventilating fan on the frame, which uses a three-phase, two-pole, 380V, 50Hz AC supply.

8、电机可配带测速发电机等附件于非传动端。

8. The motors can be fitted with a tachogenerator or other accessories at the non-drive end.

四、使用时注意事项

IV. Cautions needed in use

1、电动机开机时，必须先启动冷却风机，然后接通励磁线圈`至额定电压，最后接通电枢回路；电动机停机时，必须先切断电枢回路，然后断开磁场回路，最后风机停止运转，避免在启动和停车时因失磁引起过速而损坏电机。

1. Starting the motor: first start the cooling fan, then energize the field winding to rated voltage, and finally switch on the armature circuit. Stopping the motor: first cut off the armature circuit, then switch off the field circuit, and finally stop the cooling fan. These procedures avoid damage to the motor caused by overspeed due to field weakening during starting or stopping.

2、电动机正常运行时，其电枢工作电流不允许超过领定电流使用。其励磁工作电压不允许超过180V。冷却风机旋转方向必须正确，不允许反转，否则电动机会很快烧坏。

2. During normal operation, the armature current must not exceed the rated current, and the field voltage must not exceed 180V. The cooling fan must rotate in the correct direction; reversing is forbidden, otherwise the motor will be burned out quickly.

3、电动机在运转状态中，应保持外表面及周围环境的清洁，在电机上或电机内部不得放置外物。经常检查电机底脚是否紧固于地基，运转时是否有异声或非正常振动，通风口是否空气通畅，是否过载，接地装置是否安全可靠。

3. When the motor is running, the outer surface and the surrounding environment should be kept clean, and no foreign objects should be placed on or inside the motor. Frequently check whether the motor base is firmly fixed to the foundation, whether there is abnormal noise or vibration during operation, whether the ventilation openings are unobstructed, whether it is overloaded, and whether the earthing device is safe and reliable.

4、对经常运转的直流电机，需做定期检查，每月不少于一次。在额定负载下换向器上不允许有大于 1 1/2 级的火花出现，检查换向器表面是否光洁，电刷与换向器工作表面是否接触良好、是否磨损过甚，刷握之压力是否适当。

4. For frequently operated DC motors, periodic inspection is required at least once a month. Under rated load, sparks larger than 1 1/2 grade are not permitted on the commutator.

Check whether the commutator surface is clean, whether the brushes are in good contact with the commutator working surface, whether they are excessively worn, and whether the brush-holder pressure is appropriate.

5、电机运转过程中，经常检查电机的轴承运转状况，轴承正常工作温升不超过 55K，当发现温度太高或夹有不均匀杂声时，说明轴承可能损坏或有外物侵入，应立即拆下清洗加以检查，如轴承有故障而不能正常使用，则必须更换新轴承。电机轴承部位应定期加注高温理基润滑脂。

5. During operation, frequently check the running condition of the bearings. The normal temperature rise of the bearings should not exceed 55K. If the temperature is too high or there is irregular noise, it indicates that the bearing may be damaged or foreign matter has entered; it should be removed, cleaned and inspected immediately. If the bearing is faulty and cannot be used normally, it must be replaced with a new one. The bearing positions of the motor should be periodically filled with high-temperature lithium-based grease.

6、如电机较长时间停止运转，则应对电机注意封存，以保护电机性能及结构完好。

6. If the motor ceases operation for a long time, it should be properly preserved to protect its performance and structure.

江苏王牌电机制造有限公司

Jiangsu Wangpai Motor Manufacturing Co., Ltd.