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**JY**

**INDUSTRY STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**JY/T 0022-2011**

Replacing JY 22-1987

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**Small motor experimenter  
(English Translation)**

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### Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces JY 22-1987. In addition to editorial changes, the main technical requirements of this standard have changed as follows.

-Deleted the regulations on the size of the permanent magnet, the radius of the arc of the

pole shoe, the geometry of the rotor, and the screw specifications-Removed the provisions on working conditions;

- Removed the regulations on the magnetic induction strength of magnets;

- Removed the provisions for copper and brush materials for terminals;

- Modified the width of the half circle of the commutator;

- Increased the starting requirements for exchange and co-excitation;

- Adjusted the start-up and speed-regulating voltages of the horizontal motor model in parallel and series excitation mode.

Please note that some content of this standard may involve patents, and the issuing authority of this standard is not responsible for identifying these patents.

This standard was proposed by the National Technical Committee for Standardization of Teaching Instruments (SAC/TC125).

This standard is under the jurisdiction of the National Technical Committee for Standardization of Teaching Instruments (SAC/TC125).

This standard was drafted. Hangzhou Jinfan Science and Education Instrument Co., Ltd., Teaching Instrument Research Institute of the Ministry of Education, Changzhou Tianyi Teaching Instrument and Equipment Co., Ltd., Wenzhou Lianying Teaching Instrument Co., Ltd.

## 1 Scope

This standard specifies the type designation, requirements, test methods, inspection rules and marks, instruction manuals, packages of small electric motor experimental devices.

Loading, transportation and storage.

This standard applies to small electric motor experimenters for primary and secondary schools.

## 2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

GB/T 2828.1-2003 Counting sampling inspection procedures. Part 1. Batch inspection sampling plan retrieved by acceptance quality limit (AQL) JY 0001-2003 General quality requirements for teaching instruments and equipment products JY 0002-2003 Inspection

rules for teaching instruments and equipment products JY 0009-1990 Environmental requirements and test methods for electronic equipment for teaching JY 0026-1991 teaching instrument and teaching equipment product model naming method

### **3.1 Nomenclature**

The composition and form of the product model are implemented in accordance with the relevant provisions of the JY 0026-1991 standard.

The model of small electric motor experimenter is named.

D-XDJ-W-YD

Product working mode. permanent magnet and electromagnetic Product Feature Code. Rotor is horizontal Product name Pinyin prefix. Small motor Product classification code. special equipment for electricity Model example.

D-XDJ-W-YD means special equipment for electricity. The rotor is a horizontal, permanent magnet and electromagnetic dual-purpose small motor experimenter.

### **4.1 Structure**

#### **4.1.1**

The small motor experimenter shall be composed of a stator, a rotor, a brush, a rotor bracket and a base. A disassembly tool should be attached.

#### **4.1.2**

Each component shall be positioned in a storage box. The storage box should be firm and able to be used for a long time.

### **4.2 Stator**

#### **4.2.1**

The stator shall include arc-shaped pole pieces, and the stator and permanent magnet shall be painted in red and blue, respectively.

#### **4.2.2**

The stator magnet shall include a permanent magnet and an excitation coil (with an iron core). The assembly dimensions of the two and the pole shoe should be the same, and should be able to Enough to form a stator.

#### **4.2.3**

The winding of the excitation coil shall be flat and the winding direction shall be marked. Multi-core RV sheathed wires should be used for the coil lead-out wires, and two wires should be used.

Different colors are distinguished; the front end of the wire should be welded with a fork and can be connected to the M4 terminal.

### **4.3 Rotor**

#### **4.3.1**

The rotor shall be composed of armature coil, armature core, commutator and detachable pulley.

#### **4.3.2**

The armature coil should be wound on the armature core, and the winding should be flat.

#### **4.3.3**

The commutator shall be composed of two half-rings. The half-rings shall be inset and straight. The gap between the two halves shall be evenly spaced, and the direction of the gap and the armature.

The core direction should be the same. The distance between the two commutators should not be greater than 30% of the outer diameter of the commutator, and the commutator when the armature coil is in any position it is impossible to short the two brushes.

The gap between the two commutators should be filled with insulation, as shown in Figure 1. The two leads of the rotor coil should be welded firmly to the commutator.

Figure 1 Two commutator installation structure

#### **4.3.4**

The coaxiality error between the commutator and the rotor shaft should not be greater than 0.5mm.

#### **4.3.5**

The pulley shall be a grooved wheel, and shall not be loosened after being mounted on the rotor shaft.

#### **4.3.6**

The rotor should be balanced as it encounters.

### **4.4 Brush**

Brushes should be made of materials with good elasticity.

### **4.5 Base**

#### **4.5.1**

The base shall have mounting holes for the stator, brushes, rotor bracket and power