

Thanks for using this capacitance power for magnetizing.

### Special notice

This magnetizing power source is special multi polar and impulse power source. It must be equipped with the special multi polar loads of our company or the loads that have the same standard. Incorrect connection, change of the load and short of the pan-out will scrap the product and damage the equipment!

This magnetizing power source works under high pressure and great current, the user must act according to the regulations. Any factor from the electric net, incorrect use will damage the equipment and endanger the personnel safety. Read the manual before using the equipment in order to get he best results.

Our company is always applying itself to improve the quality of the products. We hold the right to improve the product standards and technical parameters in this manual without informing in advance. At the same time, we try our best to ensure the exactness of the data without taking on any responsibility to any fault or leak.

Our company will offer you quick and get technical support at the same time with improving the product quality.

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#### **1. Summary**

In recent years the require of magnetizing equipments becomes higher and higher with the development of forever-magnetic materials. The area to be magnetized in the mold magnetic production field becomes bigger and bigger. So the production efficiency must be improved. This problem puzzles also large multipolar magnetizing industry at the same time. If we still use old magnetizing power source with single-phase output, the magnetizing equipment must be very large, machining of the loads to be magnetized (magnetizing plate, multipolar magnetizing clamp) becomes more difficult, and magnetizing quality cannot be ensured. These are factors that can block the development of the field of mold magnetic and multipolar products. In order to solve the problems above we have designedDC2000 magnetizing power source intentionally. This type of power source breaks up the whole into parts and enhances the reliability and flexibility of

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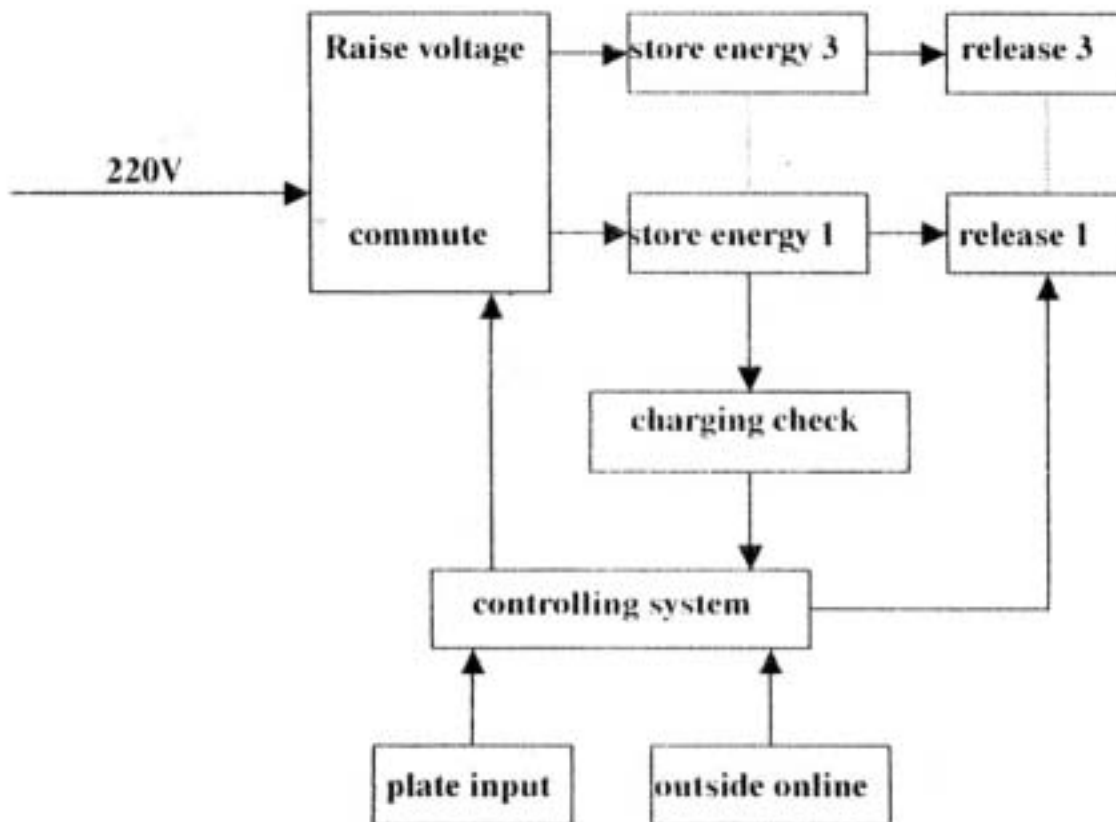
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the system. This series has advanced controlling system and bran-new design of the power source. This makes its magnetizing efficiency better than the efficiency of the former magnetizing power source. In the field of mold magnetic industry: it makes that it is possible to use production line of high efficiency in the mold magnetic field. It reduces the working procedure of cutting out mold magnetic materials because of small magnetizing area. At the same time, it reduces wastage because of several times cutting out and machining cost of producing once more. The products from the product line, finished or semi finished, can be carried in coils. These all will promote the development of the mold magnetic production field. In the multipolar magnetizing field: it can also bring the magnetizing field of large multipolar magnetic materials revolutionary change. With special magnetizing clamps the power source to magnetic pole discharging and magnetizing can be performed. This type of magnetizing has good results and high efficiency producers can use better production technique to bring forever-magnetic materials into full play. What's more, this magnetizing power source can have several loads that work alone but be magnetized together. It makes that one can use this power source flexibly.

## 2. Work theory

The sketch map of this power source for magnetizing is as following.



## Chart 1

From the chart above we can see, after the magnetizing power source have received indications from outside (charging or magnetizing), 220V50Hz alternation current will be stepped up by controlling system to charge through transformer 3 to step up. At the same time energy storing machine is charged through commutation system 3. When the charging voltage, which is checked by voltage checking system, is the same as the voltage which is set before, the controlling system will close the charging system, stop charging and wait for magnetizing indications and send out these indications (show only by far-control). At the same time, when the checking system finds that the voltage of the energy strong piece waves, it will start the charging system, and reinforce electricity to the energy storing piece. It will not stop until the magnetizing power source receives indications. After the input system have received magnetizing indications (plate indications or far-control indications), the Si 3 which can be controlled will be open and the charge of energy storing piece 3 will be released through the outside loop. In the center of the loop a strong magnetic field will come into being, magnetizing will be finished soon, and then the controlling system will come back to the original state. If the automatic function of the input system is in effect, the controlling system will bring the charging system into the next period work to charge after it comes back to the original state.

The charging checks mainly the charging voltage of the energy storing piece and the terminal protection voltage. If there is something wrong with the charging system, that is to say, the charging voltage is higher than the highest voltage set by the system, the checking system will cut off the main communication contact equipment, and let out the charge on the energy storing piece through the inside discharging resistance. This checking system uses separate check and concentrated control. Its strongpoint is: fault of any part will arouse protection of the whole equipment. This equipment combines three magnetizing parts organically. The three magnetizing parts have nothing to do with each other on electric and are isolated totally. The concentrated control technique enhances the reliability of the equipment as whole. The three magnetizing parts charge and discharge at the same time. It ensures the integrality of the magnetizing work. The magnetizing problem of extra large mold magnetic materials and other large multipolar materials is solved, and the capability and productivity of the products are raised. This magnetizing power source has not outside online interface, which includes far-control magnetizing on-off interface and interface of light that indicates waiting for magnetizing. The installation of this interface enhances the online ability of the power source, and does favor to far distant control at different places and online use of the product line.

In order to make check easy, this equipment has three charging indication lights, which show the charging situation of the three capacitances besides the voltage watch. Open the front door, and you will see three red indication lights, which are bright when the charging voltage is higher than 600V. It helps the judging of faults and check of the equipment.

### **3. Technical parameters**

#### 3.1 Work conditions

Voltage:  $220V \pm 10\%$  single-phase three-thread-system

Frequency: 50Hz

Environmental temperature:  $-10 \sim 40^{\circ}\text{C}$

Elevation:  $\leq 1000\text{m}$

#### 3.2 Technical parameters

Name: capacitance power source for magnetizing

Type: DCD2000/15-48

input current(A):  $\leq 40\text{A}$

Voltage to charge (V): 50V-2000V

Maximal work period: 9second

Maximal output current (A):  $50000\text{A} \times 3$

Capacitance ( $\mu\text{F}$ ):  $1600\mu\text{F} \times 3$

Volume ( $\text{mm}^3$ ):  $600 \times 800 \times 2100 \times 2$

Weight (Kg): 1200

### **4. Name and function of each part**

- (1) On-off button of the power source: while pressing the button, it will be locked by itself and the red light on it will be bright. It means that the power source is turn-on.
- (2) Button with automatic function: while pressing it, the button will be locked by itself and the green light will be bright. It means that the power source is working under the state of being charged by itself. It makes the power source be charged automatically after one work period without that operators press the button again. This function can improve work efficiency.
- (3) Manipulation faceplate: part of the power source to control and operate.
- (4) Perform-button to magnetize: while pressing button, the green light will be bright. It means that the operation begins. When the light turns off, the operation finishes.
- (5) Perform-button to charge: while pressing the button, the red light will be bright. It means that the operation begins. When the light turns off, the next operation can be performed.
- (6) Button to regulate voltage: it is used to regulate the charging voltage steplessly. The regulation of the voltage is only in effect during and after charging. It is useless at any other times. But next charging, it will be charged at the last regulation number.

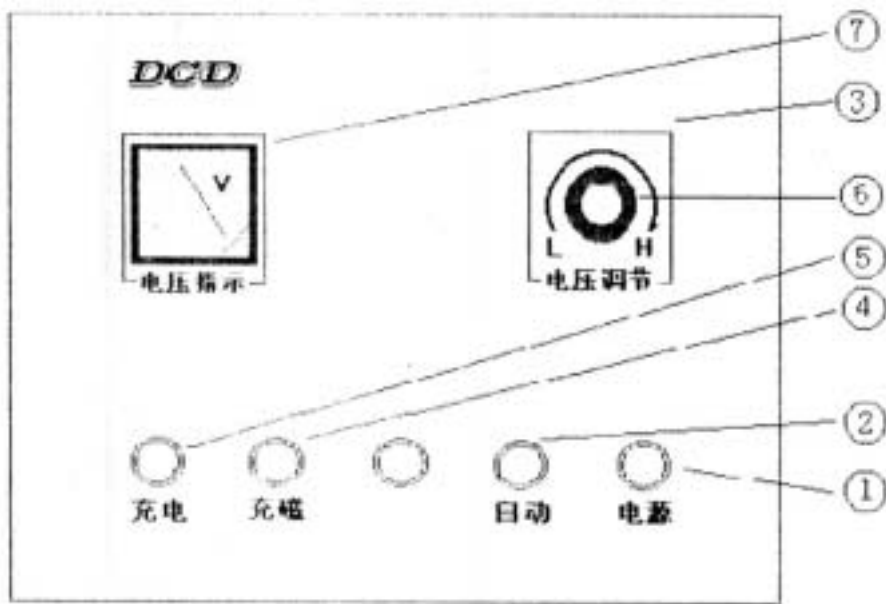
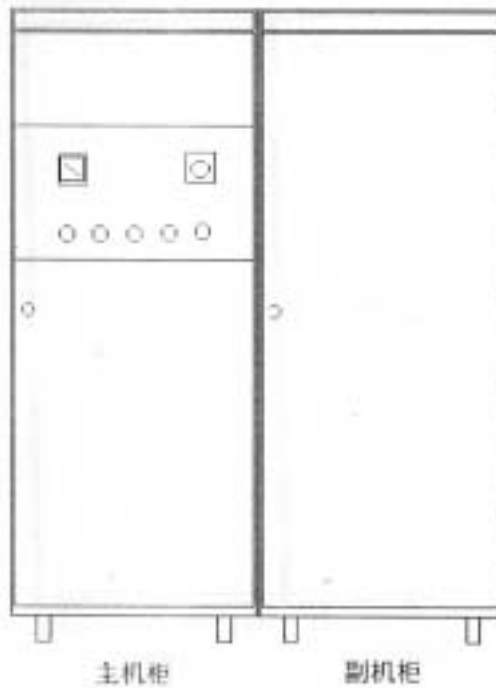


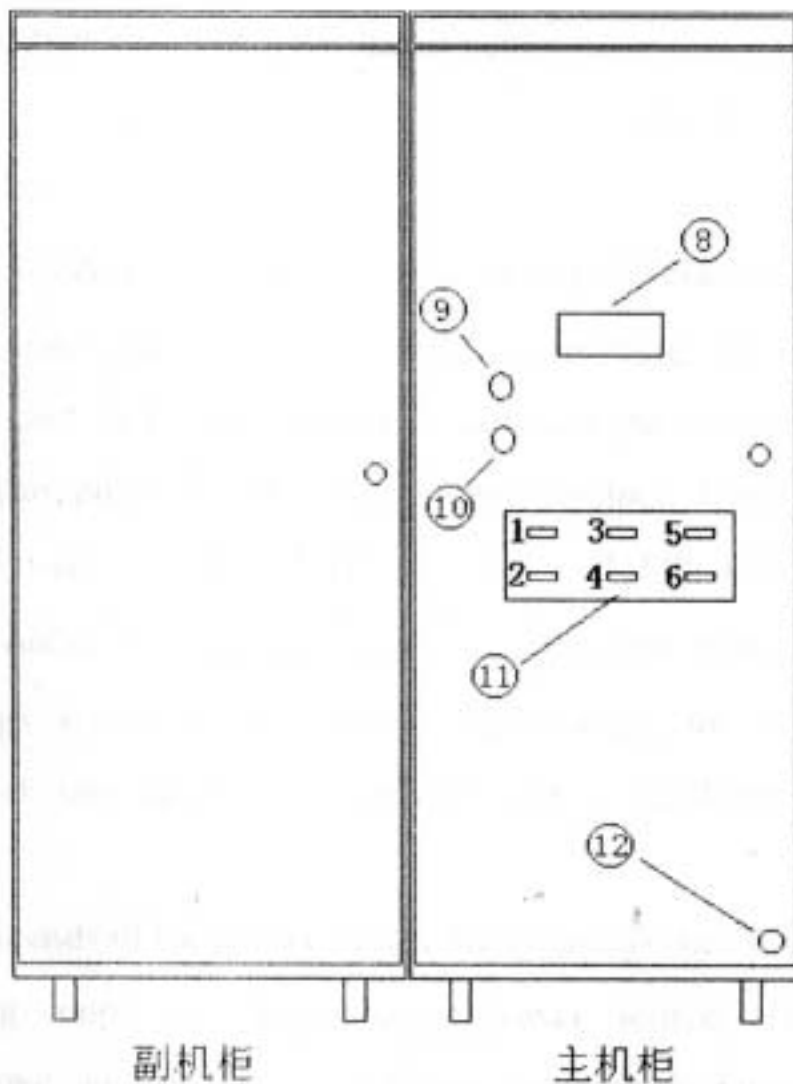
Chart 2 Manipulation faceplate



the main machine tank

the assistant machine tank

chart 3 Installation chart



the assistant machine tank

the main machine tank

**view from backsight**

- (7) Voltage watch: it shows the voltage value of components that can store energy.
- (8) Equipment nameplate.
- (9) Far-control electric outlet: used together with far-control connector plugs which are computer accessories, to make controlling of the directions to magnetize and to be magnetized at different places come true. Far-control connector plugs 1 and 2 meet on-off contact, 3 and 4 meet far-control LBD, 3 meets (+) of the LBD, 4 meets (-) of the LBD.
- (10) Standby electrical outlet of the power source: used together with the standby connector plugs, which are equipment accessories, to offer peripheral equipment of the magnetizing power source 200V50Hz alternating current.
- (11) Output connection ends of the power source for magnetizing: used to connect magnetizing loops and magnetizing power source. The corresponding ends above and below are ends to one group. Group according to the chart by connection. 1 and 2 belong to one group, 3 and 4 to one group, and 5 and 6 to one group. Among them 1,3 and 5 are (+) ends, 2,4 and 6 are (-) ends. Especially regarded: while connecting several loads, one must group them clearly. It is unallowed that any load strides

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two groups, for example: one end of the load meets 1, and the other end meets 3 or 4.  
(12)Connecting line of the power source: used to connect 220V50Hz alternation current.

## **5 Using methods**

### **5.1 Installation**

#### **(1) Installation of the equipment**

Put well the main machine tank and the assistant machine tank of the power source for magnetizing according to chart 3.

When you open the front and back door of the equipment, you will find copper rows for connection. Please connect them according to the color.

Notice: the connection must be firm.

#### **(2) Installation of the power source:**

The installation of the power source will influence its work situation directly. Before using this power source for magnetizing please ensure right installation and pay attention to the following points:

- 1) On the electrical net which is used by the power source for magnetizing, frequency conversion, middle or high frequency, or mix-phase equipments that need high-power cannot be used at the same time. When processing corresponding conditions, one can use electrical net of one way singly or add wave-sieving equipments.
- 2) Layout must be performed according to the technical parameters. The coming-into thread must be single-phase and three-thread-system. By installation of the power source, please differentiate live line, zero line and terra line clearly. Their connection must be firm.
- 3) If peripheral equipments need electricity, please use stander power source or other power source.
- 4) The crust of the machine must be fixed with terra line reliably.

#### **(3) Install loads**

Please pay attention to: this equipment must use magnetizing loads, which are suitable to it or share the same electric standard with it. Too small inductance of the loads or short of the fan-out will damage the magnetizing power source.

It will influence the magnetizing results if the load is installed correctly. Please ensure the correct installation of the load before using this power source.

- 1) Connect with the magnetic plate: Because the magnetizing plate uses the structure of combination of several groups and connection according to group. Please make clear how the correct goes between groups (see direction of the magnetizing plate).
- 2) Connection of the power source with the multipoler magnetizing clamps: Because the multipolar magnetizing clamp uses the structure of multigroup combination and connection, please connect with the power source correctly according to the polarity of the magnetic pole. If the polarity of the poles that are next to each other is different, the currents between these two groups go also differently.
- 3) Because the parameters of each route inside this power source are different, and each route isn't connected with electric, the power source can be looks as several magnetizing power sources. Each route must be connected with the same load to compose single magnetizing work.
- 4) The connection method doesn't allow redundant fan-out ends. If the ends of the load are less than the fan-out ends of the power source, the redundant fan-out ends that are not connect with loads, the magnetizing power source cannot work normally.

### **5.2 Using method**

#### **(1) Magnetize with hand**

- 1) Connect multichannel magnetizing loads (magnetic plate, multipolar magnetizing clamp) and

- fan-out end (11). (Please see direction of magnetizing clamps)
- 2) Connect the coming-into line of the power source according to single-phase and three-thread-system.
  - 3) Connect far-control connector plugs and far-control electric outlet (10). You don't need to connect them when you don't use this function.
  - 4) Press button of the power source (1), and the indicator light will be bright. It shows that electrify is in order.
  - 5) Modulate the automatic on-off button (2) to the state with hand (the indicator light of this button is not bright).
  - 6) When magnetizing at the first time, one cannot know the magnetizing voltage, please modulate the voltage-regulate-button (6) to minimal anti-clockwisely.
  - 7) Press the charging button (5), the button will go out after flashing. It shows that charging is finished. Regulate the magnetizing voltage according to concrete production technique. Loosen the button (6); the value on the voltage watch doesn't go up any more. The electricity filling function begins to work.
  - 8) Press magnetizing button (4), the indicator light of the button will go out after flashing. The value on the voltage watch is 0, and it show that magnetizing is finished.
  - 9) When magnetizing is not good, regulate charging voltage until it is suitable for magnetizing.
  - 10) After regulating the magnetizing voltage, press the charging button (5). After charging press the magnetizing button (4). Repeat magnetizing with hand.
- (2) Magnetize automatically
- 1) Act from 1) to 9) according magnetizing with hand.
  - 2) Press automatic on-off button (2). The green light will be bright and it means the automatic function is in effect. If one has charged before pressing this button, the magnetizing power source will charge at once. If one has not charged before pressing this button, he must charge with hand at first. In the future the magnetizing power source will charge automatically. The operator presses the button to magnetize automatically, and then magnetizing will be performed.
  - 3) Press magnetizing button (4) or use far-control magnetizing on-off, which is obligated by far-control electric outlet (9), far-control magnetizing can be performed. If this magnetizing power source is equipped with magnetizing loop of our company, you can find a far-control magnetizing button and an indicator light that shows waiting for magnetizing. After charging this light will be bright. It means the operator at the different place can magnetize. The operator presses the far-control magnetizing button on the magnetizing loop, and then magnetizing can be performed.

Especial notice:

To make-work more safe and reliable, this series of magnetizing power has an especial function. That is, when pressing the magnetizing button, the magnetizing power source will stop charging. With this function it is very easy to control charging at different places.

Because this equipment works under high voltage and great current, there will be strong electromagnetic power and it will make the piece to be magnetized shake. This will influence the effect of magnetizing and demagnetizing. When serious, the piece to be magnetized will fly out of magnetizing loop and arise unnecessary damage. So please press out the piece before magnetizing it.

## 6 Maintenance

This magnetizing power source belongs to equipments that use high voltage and great current. So users must pay attention to maintenance besides performing according to the manual. Maintenance personnel must have professional work experience by operating electrics.

- 1) Because this equipment works under high voltage, please pay special attention to moisture proof

treatment of the work environment density of the environment powder. The equipment should be got rid of powder once half a year.

- 2) Because this equipment works under voltage and great current, please pay especial attention to the density of the environment powder. The equipment should be got rid of powder once half a year.
- 3) Because this equipment works under voltage and great current, long timework will make fastener flexible, and it will influence magnetizing results. So examination should be carried through once three months to prevent fasteners from becoming flexible.

## **7 Electrical theory chart of the magnetizing power source and Chinese translation of icons**

(1) Electrical theory chart of the magnetizing power source

(2) Chinese translation

B: transformer

V: voltage watch

BLQ: converter

Y: annunciator

BHB: circuit plate for protection

SCR: Si that can be controlled

BX: safety

TXMK: module to regulate phases

C: capacitance

KDY: on-off of the power source

CCD: light for magnetizing

KTC: on-off for demagnetizing

CDD: light showing that it is waiting for magnetizing. It is used only by far-control

RDT: voltage-regulate-button

JP: connector plugs, electrical outlet

KCD: button for charging

JCB: circuit plate for examining

J: relay

JSQ: number counting implements

R: resistance

KCC: button for magnetizing