Please read this manual thoroughly before using the product!

Installation and Operation Manual

For Middle-frequency Induction Heating Equipment

Content

Equipment Type

Middle-frequency Induction Heating Equipment

☐DDZP-15 ☐DDZP-25 ☐DDZP-35 ☐DDZP-45

☐DDZP-70 ☐DDZP-90 ☐DDZP-110 ☐DDZP-160

☐DDZP-240

1. Input voltage

☐Three phase 380V AC ☐Three phase_____V AC

2. Time function

☐0.1—99.9sec ☐1—999sec ☐None

Special Attention

1. To ensure the purified water to be cooled, the temperature of the cooling water from the inlet must not exceed 45℃, thus to avoid damaging the machine.

2. Firstly, make sure the type, additional function and facilities of the equipment you buy.

3. The design of induction coil, should maintain inductance in the appropriate scope. Please use our company's induction loop, if made, to the Company advice, so as to avoid undue induction loop parameters affecting the efficiency of heating, or cause damage to equipment.

4. This product is a company owned intellectual property rights, protected by law, any unauthorized copying, mapping, the demolition of the damaged equipment; the companies will not repair, and will retain the right to pursue their violations.

Security Caution

1. Because the output voltage of middle-frequency power is 70-550 V, so its power output, compensation capacitor connectors, induction loop joints have high pressure; can not be exposed to prevent the operation of the workers after contact with the risk of electric shock.
2. When found there is a damage of induction loop insulation, it should be re-insulated or replacement of a new induction loop in case the risk of electric shock.
3. Any connection and installation must apply under the circumstances of power-down in case the risk of electric.
4. Equipment maintenance must be operated by professionally trained staff.
5. For operational safety, operation works should wear insulated gloves, shoes and clothing, etc.
6. For operational safety, the working table of IF should be used insulating material such as insulation boards.

Main technical parameters of MF series

Type	DDZP-15	DDZP-25	DDZP-35	DDZP-45	DDZP-70	DDZP-90	DDZP-110
Input power	15KW	25KW	35KW	45KW	70KW	90KW	110KW
Output current	3~22A	5~45A	10~70A	15~95A	20~130A	25~170A	30~200A
Output voltage	70~520V	70~550V	70~550V	70~550V	70~550V	70~550V	70~550V
Input power supply	Three phase 380V±20% 50 or 60HZ						
Output oscillating frequency	1KHZ~20KHZ It is made based on customer's requirement of parts hea						
Duty cycle	100%24 hours of continuous work						
Weight	26.5KG	28KG	41KG	50KG	55KG	80KG	85KG
Volume (cm)	55*29*50		63*34*54	72*36*60		40*87*75	
Cooling water desire	≥0.2Mpa ≥6L/Min		≥0.3Mpa ≥10L/Min			≥0.3Mpa ≥20L/Min	
Cooling water desire	≥0.2Mpa ≥3L/Min		≥0.2Mpa ≥4L/Min			≥0.2Mpa ≥6L/Min	
Power waterways	One water inlet, one water outlet				One water inlet, three water ou		

Automatically panel with time PCB function, could custom 1-999se		
Heating time	0.1~99.9sec	Heating preservation time

D. Water fail indicator: There is a hydrostatic switch installed inside the equipment, the equipment automatically stops working in case that the pressure of the cooling water is less than 0.2Mpa, the water fail indicator is on, and the buzzer gives off continuous alarming sound. The alarm is removed and water fail indicator off in case of increased water pressure. When there is a water shortage, you may try to remove the alarm in the following way: plug the water outlet to increase the pressure of the cooling water, thus to close the pressure switch, then remove the plug of the outlet. This method is not effective so much in case that the water pressure is not very low, now you must improve the cooling water, for details, please refer to the attachment: Installation & Maintenance Guide for Dongda Induction Heating Equipment.

E. Phase fall indicator: Power supply of equipment is three-phase 380V, from which the two leads on the control of power, see schematic. When a lack of phase, there are two cases: (1)

Lack of power for the control of one phase, at this time no power of equipment, power indicator light is not bright, equipment did not working. (2) For lack of power outside the control of one phase, at this point lack of phase bright light, automatically stop working equipment, and sound alarm.

F. **Over current indicator:** This light indicates that the power-conditioning equipment or frequency adjustment in the current loop is too large, the equipment stops working automatically, and the buzzer gives off continuous sound. Now turn off the power supply switch and then turn it on again to remove the alarm. If over current occurs repetitively, please try to find the cause and rectify it.

G. **Short-circuit indicator:** When the light get on and alarm, maybe is the damage of IGBT module or assistance-board, or the damage of short-circuit sensors. Please refer to guidance or ask our company to repairs.

H. **Input overvoltage indicator:** the equipment of three-phase 380V input voltage has an upper limit for input voltage for 420V. When the input voltage exceeds 420V, the equipment stops working automatically and the overvoltage indicator gets on, giving off sound of “beep” continuously from the buzzer. When the input voltage is below 420V, the alarm is removed automatically and the overvoltage indicator off.

I. **Overheat indicator:** there is a 55℃ temperature switch installed on the radiator of power device in the equipment, when the temperature of the radiator is over 55℃, the equipment stops working automatically, and the over voltage indicator gets on, giving off sound of “beep” continuously from the buzzer. When water flow is increased, the temperature of the cooling water is reduced, and the temperature of the radiator drops below 55℃, the alarm is removed automatically and the overvoltage indicator off.

J. **Unsuitable frequency indicator:** When the oscillation frequency less than 1KHZ or less than 20KHZ, light get on. Equipment will continue to work, but the output voltage, power, and so will automatically attenuation to protect the equipment from being damaged. Can be adjusted through the following methods: (1) If the frequency is too low, can reduce the induction loop turns, or reduce the diameter of induction loop, or reduce the compensation capacitor to increase the capacity of frequency. (2) If the frequency too high, can increase the induction loop turns, or increase the diameter of induction loop, or increase the capacity of compensation capacitor to reduce the frequency.

K. **Frequency indicator:** This light indicate the current number of oscillation frequency, the unit is KHZ.

L. **Current indicator:** This light indicate the output current oscillation (A)

M. Voltage indicator: This light indicate the output voltage oscillation (V)

N. Power indicator: This light indicate the output power oscillation, the unit is KW.

Buttons

A. START: Press this button to start heating equipment. When using the footswitch operation, this button does not work.

B. STOP: Press this button to stop heating equipment.

C. FREQUENCY: When the equipment working, hold on this button, digital table shows the size of the current oscillation frequency (KHZ), at this time, light on.

D. CURRENT: Hold on this button when working, digital table shows the size of output current (A), at this time, light on.

E. VOLTAGE: Hold on this button when working, digital table shows the size of output voltage (V), at this time, light on. Constant pressure/power selection switch: This panel could used for intermediate/high-frequency. When used IF power, for the constant pressure/ constant power mode. When used in high-frequency power, for the constant current/ constant power mode.

IF power of the constant pressure / constant power option:

A. When the choice of constant pressure control, the significant number of conventional table shows the size of the output voltage, light on. When working, Power-conditioning knobs with panel set up to regulate voltage value, Equipment will seek to maintain the actual output voltage and set up the same, and maintain stability.

B. When the choice of constant power control, the significant number of conventional table shows the size of the output power, light on. When working, Power-conditioning knobs with panel set up to regulate power value, Equipment will seek to maintain the actual output power and set up the same, and maintain stability.

C. We propose to use conventional constant pressure, choose the constant power state in the occasion of continuous heating.

Special note for constant pressure / constant power:

A. Whether the constant pressure or power can be maintain, it will be affected by many factors. Heating materials arising from the load changes, sensors match, setting the size, many cases, constant pressure or constant power can not be achieved, are considered as a normal phenomenon

B. When equipment working in a constant state of output power control, regardless of the work piece cold or hot, magnetic or non-magnetic, network pressure fluctuations, and other

conditions change, the devices are trying to maintain a constant power output unchanged

Digital table: Shows that the frequency / current / voltage / power value. When the current light gets on, shows the output current value. And so on.

Heating power adjustment knob: IF power supply, adjustable output voltage oscillation, or the size of output power, thereby regulating heating rate.

Power-controlled switch: Control circuit power for the equipment.

Remote control socket: connected remote control switch, foot switch, or other micro switch can take the place of START and STOP buttons on the console to operate the equipment. When the two non-self locking button switches of “ON” and “OFF” are connected for remote control, both the remote control switch and the “START” & “STOP” buttons on the console will be effective when the equipment is controlled through two independent normal open contacts, both also can be used to control the equipment to work or stop. While if the connected is foot switch or other non-self locking switch and control the equipment with the contacts of “Normal open” and “Normal close”, after connecting the remote control plug, the “START” button on the console will get ineffective in “Manual” mode, in which the equipment starts to work while the foot switch is pressed and stops while the foot switch is released.

D. Heat preservation power adjustment knob: Only in "automatic" mode, adjust the output current insulation voltage or power or the size of the heating insulation regulation speed

E. Time indication: “Manual” status, show the heating time; “automatic” status, shows heating, heat preservation time as follow.

F. Heating / heat preservation time setting Stubbs code: Set heating time and heat preservation time.

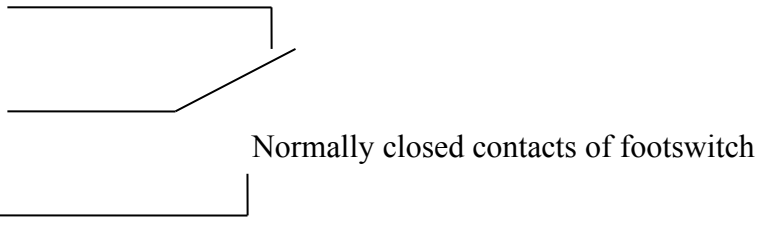
G. Remote control socket: connected remote control switch, foot switch, or other micro switch can take the place of START and STOP buttons on the console to operate the equipment. When the two non-self locking button switches of “ON” and “OFF” are connected for remote control, both the remote control switch and the “START” & “STOP” buttons on the console will be effective when the equipment is controlled through two independent normal open contacts, both also can be used to control the equipment to work or stop. While if the connected is foot switch or other non-self locking switch and control the equipment with the contacts of “Normal open” and “Normal close”, after connecting the remote control plug, the “START” button on the console will get ineffective in “Manual” mode, in which the equipment starts to work while the foot switch is pressed and stops

while the foot switch is released. If the foot switch is pressed in “Auto” mode, the equipment will count the time automatically according to the preset value, and automatically completes the process of heating, heat keeping and cooling, then stops automatically. However, if the foot switch is pressed again or START is pressed before the completion of auto timing procedure, program disorder is likely to occur.

Connection methods of footswitch and remote contorl box”

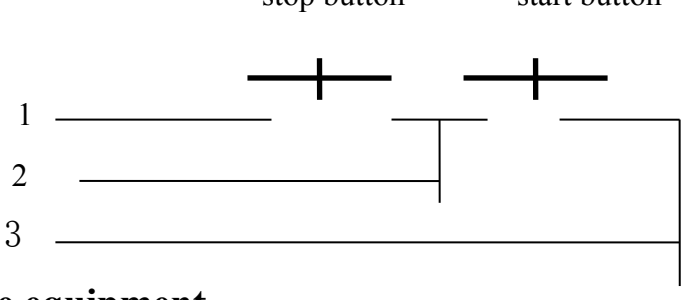
Footswitch connection：

1. Stop
2. Public
3. Start
4. Blank



Remote box connection：

1. Stop
2. Public
3. Start
4. Blank



Rear Control Panel of the equipment

1. **Control fuse:** 1A fuse for control loop.
2. **Single phase 380V output:**
3. **Three phase 380V input:** Power input, according to installation requirement, choose a suitable copper cable, and wire line will be connected by head line, then locking screw.
4. **Water inlet and outlet:** The equipment required to connect the cooling water, water inlet and outlet can't be wrong, so as to avoid adverse damage to the cooling equipment.
5. **IF power output:** Using coaxial cable connecting with the compensation capacitor, the output of this joint use of rapid-on approach. Install cable quick connectors, you must clip after bear in rotation to achieve a good connection. As the use of cables often swings quick connector release easily, resulting connection badness and trigger fault, it is proposed: (1)Installation, the opposite direction to the cable twist angle, locking joints inserted quickly, cable just not endure screw power. (2) Carry out regular checks of cable lock situation. (3) The cable connector will be fixed quickly, so that the cable operators in the swing at the joints will not cause rapid rotation.
6. **Navigation control socket:** linking 2 cell navigation control socket in the compensation capacitor box. Compensation capacitor box joints on the temperature switch signal for the normally open contacts, when cool enough to make the capacitance temperature higher than 55 ℃, IF power will stop work and warming, the bright lights of overheating. If remove this socket, the protection does not work, do not recommend that users do not have to disconnect the socket.
7. **Grounding:** Power must be well grounded, to prevent workers operating the risk of electric shock

Installation of IF power

Cautions for Installation

1. Please read "Installation and maintenance guide for Dongda induction heating equipment" carefully before installing the equipment.
2. Because the output voltage of middle-frequency power is 70-550 V, so its power output, compensation capacitor connectors, induction loop joints have high pressure; can not be exposed to prevent the operation of the workers after contact with the risk of electric shock.
3. IF power, compensation capacitor box, IF induction loop and transformers should find a suitable match to achieve a good heating effect, when a customer self supporting or create sensors, make my company technical staff to the advisory.

4. IF power Using coaxial cable connecting with the compensation capacitor, the output of this joint use of rapid-on approach. Install cable quick connectors, you must clip after bear in rotation to achieve a good connection. As the use of cables often swings quick connector release easily, resulting connection badness and trigger fault, it is proposed: (1)Installation, the opposite direction to the cable twist angle, locking joints inserted quickly, cable just not endure screw power. (2) Carry out regular checks of cable lock situation. (3) The cable connector will be fixed quickly, so that the cable operators in the swing at the joints will not cause rapid rotation.
5. Cautions for electrical installation: this is high power equipment, the wiring connection must be stable; reduce the contact resistance at the connection point to the most; it is prohibited to just hang the wires onto the electricity network.
6. Grounding: Using 6mm2 soft copper with shell grounding to avoid an electric shock.
7. Cooling water: Is to guarantee the normal work of equipment and the key to longevity, the user carefully read the appendix - induction heating equipment installation • maintenance guidelines to install waterway.
8. After the equipment work, we must continue to water cooling for at least half an hour. Because IF induction melting and forging heating and other purposes, as heating a long time, the high temperature furnace or lining, if one stands immediately water, will burn sensors that connect water pipes, and even equipment.
9. The statement only involves the installation of the intermediate frequency power, the overall installation, according to MF plans to install a full set of equipment for installation.

1. parts temperature and net pressure fluctuations. For iron magnetic materials such as steel, it will heating fast and has huge heating power in cool state. In more than 600℃, slow heating, small heating power, for non magnetic materials such as graphite, the opposite situation may arise.
2. Select constant power control mode: Put the switch under the constant power position, at this state, the equipment will control the output of the active power (including heating power and the power loss, etc.) remains unchanged, regardless of the work piece cold or hot, magnetic or non-magnetic , Iron magnetic material (such as steel) in the heating process of magnetic changes, fluctuations in net pressure conditions change, equipment are trying to maintain a constant power output control, which guarantees heating power is essentially the same, thus obtain faster heating rate and higher heating temperature.
3. Users can compare their own state under the two options to choose the heating effect.

Ⅳ Selection panel operation / footswitch operation

1. Selection panel operation, please disconnect the foot switch (or a remote control switch), click on the start button, the device working, click on the stop button, the device stop.
2. Select footswitch operation, step on the footswitch, equipment working, release footswitch, equipment stopped working.

Ⅴ Basic steps

1. Shut off the external power, the air switch behind the equipment panel, the control power switch of front panel.
2. Open the cooling water to observe the outlet pipe of a certain water flow.
3. Reference "panel features" one, regulating IF power panel on the parameters.
4. Put the heated work piece in the induction loop.
5. Click the operation panel on the launch button, or step on the footswitch, began heating.
6. Click the operation panel on the stop button, or release the footswitch, stop heating.
7. Turn off the power switch in front of the panel, then shutdown the general external power switch, and half an hour later turn off water. The air switch behind equipment panel was established to limit current protection, in order to extend its service life, it should be shut all the time, when turn off power supply, don’t shut off. When installation of equipment, it should be equipped with special power switch and current limit insurance.

Trouble shooting guide for IF power series

Cautions for equipment repair and maintenance

1. Equipment repair and maintenance should be carried out just by professional electricians; non professional personnel repair and maintenance may result in human injury.
2. Please read trouble-shooting guide carefully in case of occurrence of failures, carry out checkup and maintenance according to instructions, please contact our maintenance department for questions.
3. The equipment belongs to professional equipment, parts and accessories are just available in our company and our subordinate maintenance service network; please contact us for consultation immediately in case of failures, do not have the equipment repaired by some repair stores on the street, thus to avoid time delay for repair and more serious damage.
4. The repair charge by us is uniform in the country; if there is arbitrary collection of fees brought

to you, please complain to us directly.

Handle according to the following procedure in case of failure, helping to find the cause

1. Plug the foot switch or other remote control switch out, now operate with START and STOP buttons on the console. Press START then release, do not hold it.
2. If time control is equipped on the equipment, please place the option switch of “Manual/Auto” at “Manual”.
3. Electricity will be transferred to the smallest adjustment knob position, place the option switch of constant voltage/constant power at constant voltage.

The following are normal cases instead of failures:

1. Power and voltage because of the match, was less than the maximum.
2. The panel on display, such as voltage and power as the only value of the same numerical size of the characterization of equipment, different equipment showed that a slight deviation value.