Automatic Conveyor Needle Detector

Model: JZQ-630(K)

Operation Instructions

SHANGHAI DINGLI NEEDLE DETECTOR INSTRUMENT CO., LTD.

ADD: 4068 Mingxing Rd, Jinshan District, Shanghai 201502, China

TEL: +86-21-57360999 57357316

FAX: 021-57367758

WEB: www.shdingli.com

Mobile: 15000747928 13801643901

E-mail: sales@shdingli.com

To Inform Users

1. Thank you for purchasing the metal detector series products manufactured by our company.

2. To keep the machine in the best working condition at all times, please use it correctly in accordance with this manual.

3. This instrument may be affected by many factors in its operating environment, and its sensitivity may also be affected. Please take note.

Contents

1. Overview

2. Performance Specifications

3. Operation Modes

4. Installation and Operating Procedures

5. Maintenance

6. Faults and Repair

7. Instructions for Safe Use

8. Applicable Standard

1. Overview

Dear Customer:

Our company sincerely wishes you good health and a prosperous business.

The JZQ-630(K) Automatic Conveyor Needle Detector you are now using is one of the most advanced and durable products among similar equipment in China.

Before operating this machine, please read this manual carefully so that the machine works normally and delivers its best performance. Please keep this manual properly for future reference.

Please read this operating manual carefully before use!

2. Performance Specifications

1. It adopts the DOUBLE patented technology, providing high sensitivity and strong anti-interference capability. With integrated technology, the switching power supply, control circuit, microcomputer, and amplifier circuit are integrated together, making the circuit board compact and more reliable.

2. SPI serial data transmission is used between the main board and the panel, so all indicator lights and the keyboard can be controlled with only three wires, which improves product reliability.

3. The power supply combines switching and linear power supplies to achieve a wider operating range and stronger anti-interference capability.

4. The microcomputer uses an American RISC high-performance chip; its powerful data processing capability ensures high sensitivity and high stability.

3. Operation Modes

1. Turn on the main power switch. All the indicator lights on the panel will flash; pressing any key will stop the flashing.

2. Sensitivity Adjustment

Sensitivity is adjustable in 10 levels. To adjust sensitivity, press the sensitivity adjustment button lightly: press the Up button (A) once and the sensitivity increases by one level, with indicator light (F) moving up one position; press the Down button (B) once and the sensitivity decreases by one level, with indicator light (F) moving down one position. The user can select the appropriate sensitivity according to actual requirements. Sensitivity can be adjusted in any working state. When a metal object passes through, the induction intensity indicator light (H) shows different intensity according to the size of the metal, and at the same time the position display indicator light (I) lights up, showing the area where the detected metal is located.

3. Mode Regulation

(1) Viewing Mode

Press the Mode key (E) and release it quickly; the display screen (G) immediately shows the mode number, displaying only one digit.

b- (Accessory mode): when the instrument detects a ferromagnetic object, it returns automatically, then starts automatically one second later, and the defective-product count increases by one accordingly. The return distance is determined by the user (see “Return Distance Adjustment” for the adjustment method). In this mode the photoelectric switch does not function, and it is used for detecting relatively small objects. Therefore there may be errors in the good-product count for small items, but no error in the defective-product count.

c- (Finished-product mode): when the instrument detects a ferromagnetic object, it returns automatically, then starts automatically one second later, and the defective-product count increases by one accordingly. The return distance is determined by the user (see “Return Distance Adjustment” for the adjustment method). In this mode the photoelectric switch does not function and it is used for detecting relatively large objects; the good-product counting is completed by the photoelectric switch. This mode is used for high-efficiency work.

(2) Adjustment Mode

Press and hold the Mode button (E); the display screen (G) immediately shows the mode number, with only one digit flashing. If the user presses the Mode button (E) briefly and releases it quickly, the mode number changes immediately, cycling in the order b-c-b. Once adjustment is finished, press any other key to exit this state.

a. Count Display

Press the Count key (D) and release it quickly; the display screen (G) shows the count data, and the corresponding good-product, defective-product, and total indicator lights flash.

b. Reset Count to Zero

In any of the good-product, defective-product, and total states, press and hold the Count key (D), and the corresponding count data resets to zero.

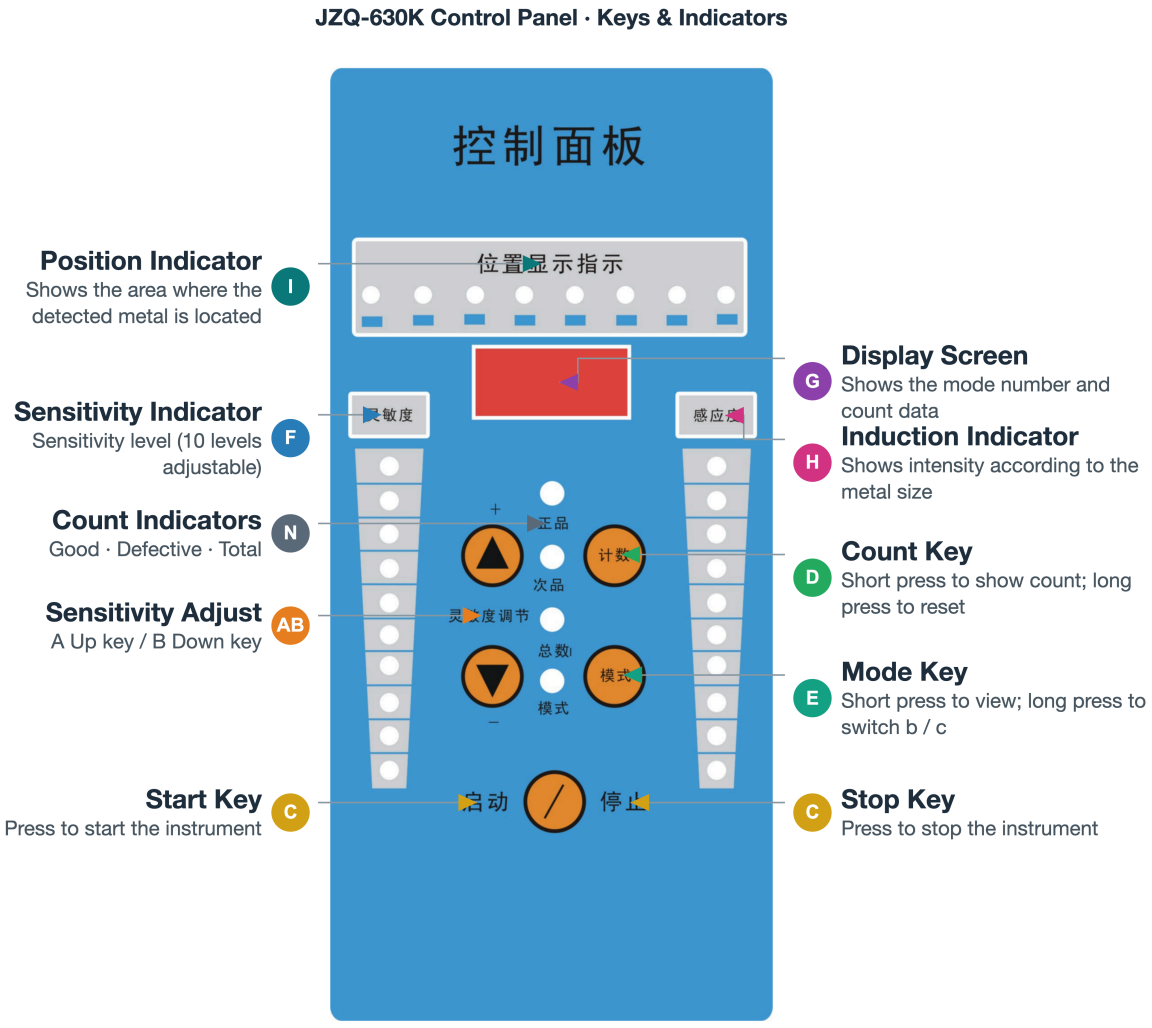
c. Return Distance Adjustment

In any mode, press Start/Stop (C) lightly to start the instrument, then hold down the Mode button (E), and place a test block on the table. Once the instrument detects it, it returns. Depending on the user's needs, release the Mode key (E) immediately at the position where it should stop, and the adjustment is complete. This data is also saved to the computer.

d. Other Functions

In any mode, once the photoelectric switch is blocked continuously for one minute, the buzzer will sound; please check whether the belt is lifted. However, when the belt stops running, the computer will not check it.

In any mode, when the belt is running, if no object is detected for 10 consecutive minutes, the instrument will stop automatically to extend its service life.



4. Installation and Operating Procedures

1. Installation

(1) This instrument is precisely constructed and should not be operated in high-temperature or humid environments.

(2) Pay attention to the surrounding environment; there should be no moving ferromagnetic objects such as electric fans or sewing machines. Although the machine has an anti-interference circuit, such objects should still be avoided.

(3) The machine should be properly fixed during operation; shaking or vibration of the instrument may cause false alarms.

(4) Operators must not carry ferromagnetic items on their person, such as large bunches of keys, mobile phones, pagers, steel tape measures, calipers, screwdrivers, etc.

2. Operating Procedures

(1) Check whether there is any debris, tools, etc. on the machine probe, on and below the conveyor belt, and between the surface under the probe window and the conveyor belt support plate; if any, remove them.

(2) Detection

2.1 Before each test, the sensitivity must be corrected once to confirm that the machine is normal before testing.

2.2 During testing, sensitivity correction must be performed every hour to confirm whether the machine is working normally; testing may continue only when it is working normally. If the machine is found to be malfunctioning, testing should be stopped immediately. After the fault is removed, the sensitivity should be corrected again to confirm that the machine is normal before testing resumes. Items inspected during the fault period should be rechecked to ensure nothing is missed.

2.3 During testing, when placing inspected items on the conveyor belt or after they leave the conveyor belt, the operator's movements should be gentle and not reckless, to prevent strong vibration that would cause false alarms.

2.4 During testing, an inspected item that triggers an alarm should be rechecked once more. If the alarm still occurs, it proves that the item contains metallic substance; it should be checked and cleared, then rechecked until the alarm no longer occurs.

(3) The inspected items should not be too large and must not exceed the detection channel; hitting the detection probe will cause false alarms.

(4) If the machine makes abnormal sounds during testing, stop the machine immediately for inspection, and resume testing after the fault is cleared.

(5) The detection probe should be kept very stable. Nothing may be piled on the probe, and the probe may not be used as a resting support. When starting, press the “Run” button gently to prevent false alarms caused by vibration.

(6) Affected by vibration or power supply fluctuation, the machine may occasionally trigger an alarm once; this is a normal phenomenon, not a fault.

(7) After each test, press the “Power” button promptly and unplug the power plug to cut off the power supply.

5. Maintenance

1. After each test, the conveyor belt and probe should be maintained, and foreign matter on the machine removed. In particular, no debris is allowed between the surface under the probe window and the conveyor belt support plate.

2. The detector must not be rinsed with water to remove debris. Keep the conveyor belt, probe, and electrical box dry.

3. When the machine is not used for a long time or the humidity is high in summer, wipe the condensed moisture from the conveyor belt, support plate, and electrical box before starting.

4. Regularly check and lubricate the transmission parts of the machine, and tighten any loose fastening screws.

5. Motor Maintenance

A horizontal gear reducer is used, which is grease-lubricated under normal conditions. Pay attention to the temperature rise and noise of the reducer during operation; if there is any abnormal sound, stop the machine in time and check the cause.

The reducer can be used in various indoor and outdoor situations; the working ambient temperature is 0 ℃ to 40 ℃.

The reducer is grease-lubricated and was fully filled with grease at the factory. Because a newly installed reducer loses grease during operation, grease should be injected after the first 2 months of use, and thereafter grease should be replenished promptly and frequently to ensure normal operation and extended service life of the reducer.

Thereafter, refuel once every half year (based on an 8-hour working day). If working hours are long or the environment is harsh, the refueling interval may be appropriately shortened. Regular cleaning and oil change of the reducer (e.g. every 3 to 6 months) play a very important role in extending its service life. Lubricating oil should be added frequently during use. The frame bearing is grease-lubricated and the oil should be changed at least once a year.

6. Faults and Repair

Electrical troubleshooting must be performed with the power cut off, and must be carried out by qualified electrical personnel.

Fault Condition	Failure Cause	Processing Method
1. No response after pressing the power button; 2. The power indicator sometimes lights and sometimes goes out	A. No power supply B. Blown fuse C. Poor contact of the power cord or socket	The user can handle this: check whether the power cord is energized and whether the power cord and socket are in good contact; install a regulated power supply if necessary.
3. After startup, the probe indicator lights up irregularly when no clothing is placed	A. Sensitivity is set too high B. Dirt on the conveyor belt C. External magnetic field or ferrous interference D. Power supply interference (e.g. frequent starting of multi-head computerized embroidery machines, high-frequency machines, or high-power motors)	A. Lower the sensitivity so that a φ1.2 mm steel ball can be detected B. Clean the dirt and wipe both sides with alcohol C. Check for interference signals such as moving iron objects or ceiling-fan motors nearby D. Move the machine to a place free of interference
4. After startup, the probe indicator lights up regularly when no clothing is placed	A. Dirt on the conveyor belt B. Iron chips embedded in the conveyor belt C. External interference	A. Clean the dirt and scrub both sides of the conveyor belt with alcohol or a damp towel B. Remove the foreign matter (iron chips, etc.) C. Move the machine to a place free of interference

Fault Condition	Failure Cause	Processing Method
5. After startup, the test block alarm sometimes sounds and sometimes does not	A. Sensitivity is low, with too much oil or dust on the clothing B. Poorly demagnetized accessories on the clothing (such as buttons, zippers), or ferric oxide in the clothing dye	A. Adjust the sensitivity so that a φ1.2 mm steel ball can be detected B. Raise the accessory test issue with the accessory supplier
6. No response to the test block after startup	A. Logic circuit fault B. Preamplifier circuit fault	First check whether the sensitivity is set too low and raise it if so; logic circuit and preamplifier circuit faults are to be repaired by the manufacturer.
7. The motor runs normally but the drive shaft does not turn	A. Worn V-belt B. V-belt adjusted too loose C. Drive shaft bearing seized D. Damaged motor capacitor	A. Replace with a new belt (Appendix 1: V-belt replacement) B. Adjust the belt-tensioning screw C. Replace the bearing D. Replace with a capacitor of the same capacity
8. The motor does not turn, but turns when pushed by hand	A. Worn V-belt B. V-belt adjusted too loose C. Drive shaft bearing seized D. Damaged motor capacitor	A. Replace with a new belt (Appendix 1: V-belt replacement) B. Adjust the belt-tensioning screw C. Replace the bearing D. Replace with a capacitor of the same capacity

7. Instructions for Safe Use

1. The power plug of the metal detector is a single-phase (AC 220 V) three-core type. The power socket must match it and have reliable grounding (neutral) protection, wired according to the safety method required by the local power authority.

2. If the user needs to replace the fuse or other electrical components, the power must be cut off to prevent electric shock.

3. Electrical repairs must be carried out by qualified professionals to ensure the safety of persons and property.

8. Applicable Standard

This product complies with standard Q/320683 GHE01-2001.