Intelligent servo press machine technical solution

Model: HH-S.200kN

1. Brief

The HaoHan servo press is driven by an AC servo motor. It changes the rotational force into the vertical direction through a high-precision ball screw. It relies on the pressure sensor loaded on the front end of the driving part to control and manage the pressure. It relies on the encoder to control the speed and position. At the same time, it controls the speed and position.

A device that applies pressure to the work object to achieve the purpose of processing. It can control the pressure/stop position/driving speed/stop time at any time. It can realize the whole-process closed-loop control of the pressing force and the pressing depth in the pressure assembly operation; it adopts user-friendly human-machine The touch screen of the interface is intuitive and easy to operate. Through high-speed collection of pressure-position data during the press-fitting process, online quality judgment and data information management of precision press-fitting are realized.

Equipment mechanical structure:

1.1. The main body of the equipment: it is a four-column three-plate structure frame, and the workbench is machined from a solid plate (one-piece casting); safety gratings are installed on both sides of the machine body, which can safely observe the press-fitting process, and the machine base is made of casting and sheet metal; Carbon steel parts are treated with hard chromium plating, oil coating and other anti-rust treatments.

1.2. Fuselage structure: It adopts four-column and three-plate structure, which is simple and reliable, with strong bearing capacity and small load-bearing deformation. It is one of the most stable and widely used fuselage structures.

2. Equipment specifications and main technical parameters

Device name	Intelligent servo press machine
Device model	HH-S.200KN
Positioning accuracy	±0.01mm
Pressure detection accuracy	0.5%FS
Max. force	200kN _
Pressure range	50N-200kN
Displacement resolution	0.001mm
Data collection frequency	1000 times per second
Program	Can store more than 1000 sets
Stroke	1200mm
Closed mold height	1750mm
Deep throat	375mm
Work surface size	665mm*600mm
Working table to ground distance	400mm _
Dimension	1840mm * 1200mm *4370mm
Pressing speed	0.01-35mm/s
Fast forward speed	0.01-125mm/s
Minimum speed can be set	0.01mm/s
Compress time	0-99s
Equipment power	7.5KW
Supply voltage	3~AC380V 60HZ
Weight approx.	3,000kg

3.   Main components and brands of equipment

Component name	Qty	Brand	Remark
Driver	1	Inovance	
Servo motor	1	Inovance	
Reducer	1	HaoHan	
Servo cylinder	1	HaoHan	HaoHan Patent
Safety grating	1	More luxurious	
Control card + system	1	HaoHan	HaoHan Patent
Computer host	1	Haoden	
Pressure sensor	1	HaoHan	Specifications: 30T
Touch screen	1	Haoden	12''
Intermediate relay	1	Schneider/Honeywell	
Other electrical components	N/A	Schneider/Honeywell based	

4. Dimensional drawing

5.   Main configuration of the system

Sn	Main components
1	Programmable control panel
2	Industrial touch screen
3	Pressure sensor
4	Server system
5	Servo cylinder
6	Safety grating
7	Switching power supply
8	Haoteng industrial computer

(Brief diagram of control system structure)

HaoHan Group | Equipment & Machinery Solutions
HaoHan Automation & Technologies DongGuan Co.,Ltd.
[BoLong Tower, QingShuiHe Street,ShenZhen City, LuoHu District, PR.China]

6. System software main interface

·　The main interface includes interface jump buttons, data display and manual operation functions.

·　Management: Contains jump interface program backup, shutdown, and login method selection.

·　Settings: Contains jump interface units and system settings.

·　Reset to zero: clear the load indication data.

·　View: Language settings and graphical interface selection.

·　Help: version information, maintenance cycle settings.

·　Pressing plan: edit the pressing method.

·　Redo a batch: Clear the current pressing data.

·　Export data: Export the original data of the current pressing data.

·　Online: The board establishes communication with the program.

·　Force: Real-time force monitoring.

·　Displacement: real-time press stop position.

· Maximum force: The maximum force generated during the current pressing process.

· Manual control: automatic continuous descent and rise, inching rise and fall; test initial pressure.

7. Operations:

i. After selecting the product model on the main interface, there is a product model, and you can edit and add the corresponding content independently.

ii. Operator information interface:

iii. You can enter the operator information of this station: work number

iv. Parts information interface:

v. Enter the part name, code, and batch number of the assembly in this process

vi. Displacement uses a grating ruler for signal collection:

vii. Position control mode: precise control accuracy ±0.01mm

viii. Force control mode: precise control of output with 5‰ tolerance.

8. equipment characteristics

a) High equipment accuracy: repetitive displacement accuracy ±0.01mm, pressure accuracy 0.5%FS

b) Energy saving and environmental protection: Compared with traditional pneumatic presses and hydraulic presses, the energy saving effect reaches more than 80%, and it is more environmentally friendly and safe, and can meet the requirements for dust-free workshop equipment.

c) The software is independently patented and easy to upgrade and maintain.

d) Various pressing modes: pressure control, position control and multi-stage control are optional.

e) The software collects, analyzes, records and saves the pressing data in real time, and the data collection frequency is as high as 1000 times per second. The control motherboard of the press installation system is connected to the computer host, making data storage and uploading faster and more convenient. It enables product press installation data to be traced and meets the requirements of ISO9001, TS16949 and other standards.

f) The software has an envelope function, and the product load range or displacement range can be set according to requirements. If the real-time data is not within the range, the equipment will

automatically alarm, 100% identify defective products in real time, and realize online quality control.

g) The equipment is equipped with a computer host, Windows operating system, and the language of the operation interface of the press-fitting control system can be freely switched between Chinese and English.

h) The equipment is equipped with a 12-inch touch screen to provide friendly man-machine dialogue.

i) The equipment is equipped with a safety grating to ensure the safety of operators.

j) Achieve precise displacement and pressure control without the need for hard limits and reliance on precision tooling.

k) Specify the optimal press-fitting process according to specific product requirements.

l) Specific, complete and accurate operation process recording and analysis functions. (Curves have functions such as amplification and traversal)

m) One machine can be used for multiple purposes, flexible wiring and remote device management.

n) Export multiple data formats, EXCEL, WORD, data can be easily imported into SPC and other data analysis systems.

o) Self-diagnosis function: When the equipment fails, the servo press can display an error message and prompt a solution, making it easy to quickly find and solve the problem.

p) Multi-function I/O communication interface: This interface can communicate with external devices to facilitate fully automated integration.

q) The software sets multiple permission setting functions, such as administrator, operator and other permissions.

9. Application fields

✧ Precise press-fitting of automobile engine, transmission shaft, steering gear and other parts

✧ Precision press-fitting of electronic products

✧ Precise press-fitting of core components of imaging technology

✧ Motor bearing precision press-fit application

✧ Precise pressure testing such as spring performance testing

✧ Automated assembly line application

✧ Aerospace core component press-fit application

✧ Medical, power tool assembly

✧ Other occasions that require precise pressure fitting