



INSTRUCTION

NAME: SOCKET INSERTION
& EXTRACTION FORCE
TESTING EQUIPMENT

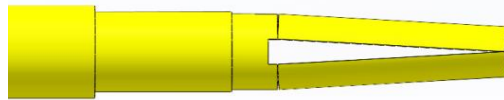
MODEL:CLJ-02

JIAXING JINGRUI INSTRUMENT & EQUIPMENT CO., LTD

1 GENERAL INFORMATION

1.1 Introduction

This equipment is used for insertion and extraction force testing and screening of necked contacts. Products are divided into qualified products, products with insertion and extraction force over the upper limit and products with insertion and extraction force below the lower limit based on test results.



Necked terminals to be tested

1.2 Technical Parameters

1.2.1 Working Voltage: 220V 50HZ, Control Voltage 24V

1.2.2 Compressed Air Source: 5-8kg/cm² clean pressure air

1.2.3 Cycle Time: 10-12s

1.2.4 Accessories: needle plate, clamping module, standard needle or standard weight, square plate with 10*10 needle plate, which can meet the feeding of 100 terminals

1.2.5 Equipment Dimension: length 1360mm * width 700mm (floor area)

1.3 Features

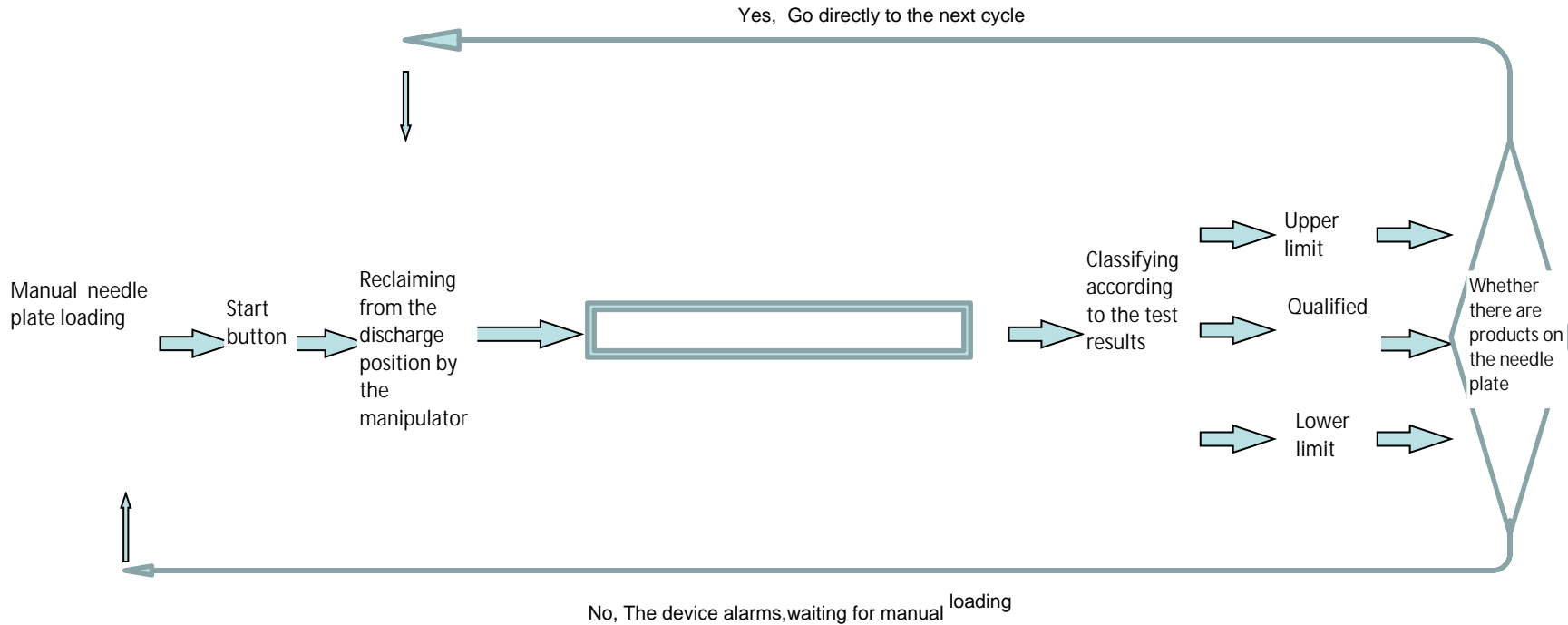
1.3.1 Open structure, similar to platform design, diversification of process settings

1.3.2 All parts are on one working surface, which is convenient for parts replacement and observation of operating conditions

1.3.3 High overall precision. The selected parts are made of mature products of international famous brands. The design and manufacture of structural parts can be completed independently. The running accuracy of each moving part is 0.02mm

2 EQUIPMENT PROCESS

2.1 Insertion and Extraction Force Testing & Screening Process:

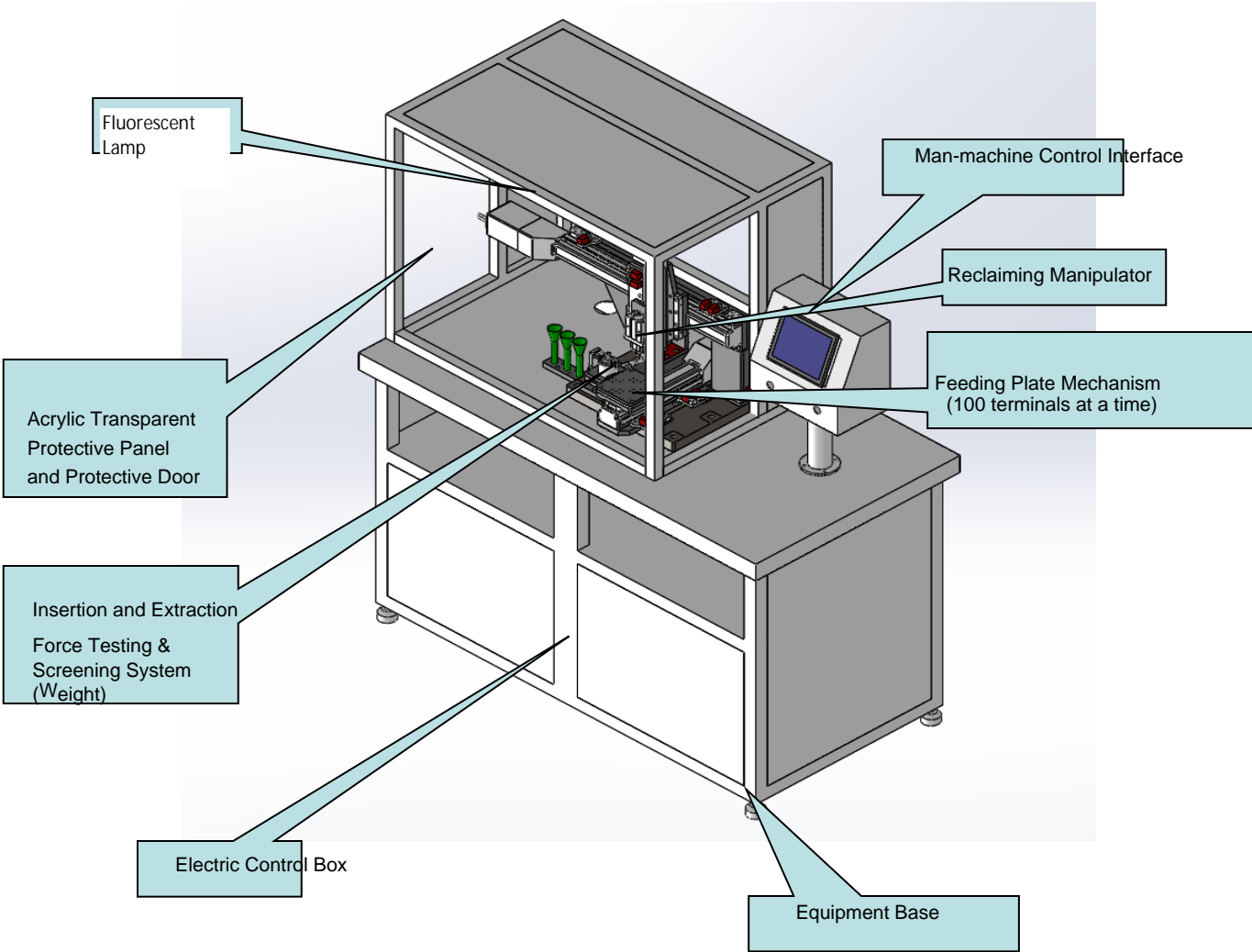


2.2 Operation Process

Power supply - Ventilation - Waiting for PLC to enter the system - Automatic reset -Manual external start button - manipulator and feeding plate reach the loading position - Manual external start button (5s) - Reclaiming start - 100 terminals detection finish - Alarm - Manual external start button - manipulator and feeding plate reach the loading position - Manual external start button (5s) -Reclaiming start - Cycle start

3 EQUIPMENT SCHEMATIC

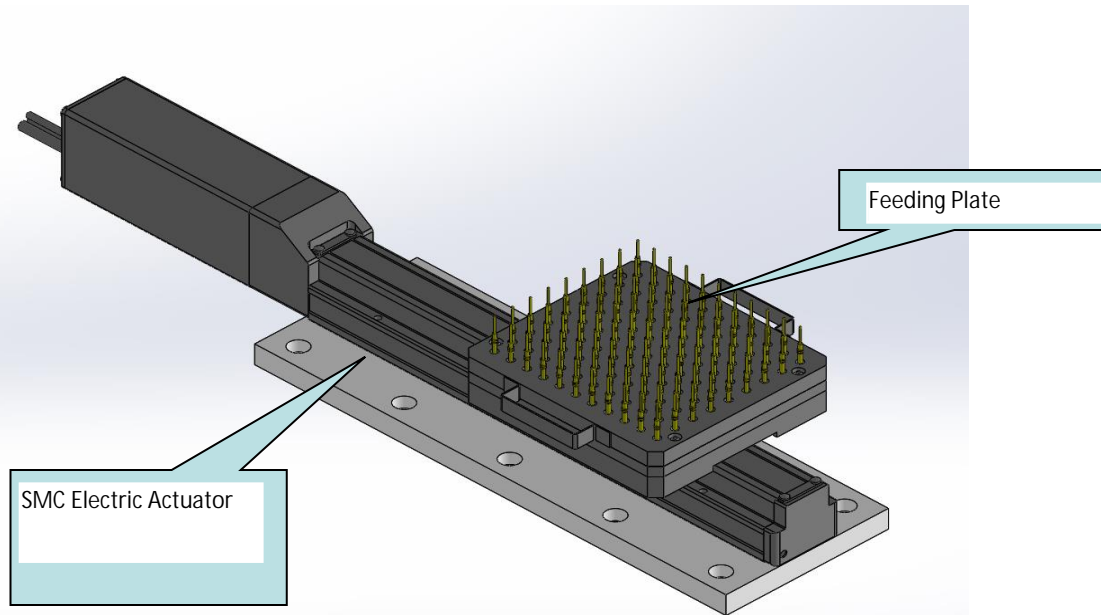
3.1 Equipment 3D Schematic Sketch



3.2 Overall Function Description

1. This equipment is the insertion and extraction force testing and screening equipment. The operator can directly place the needle plate inserted with terminals into the feeding mechanism. The equipment can automatically detect the insertion and extraction force of the product according to the set parameters; and automatically collect the products by the detected insertion and extraction force status.
2. The equipment mechanism is motor servo control, and the position and speed are controllable. (The range of terminals used is relatively wide)
3. Acrylic protective cover and protective door, push-pull type for convenient use and easy to observe the operation of the equipment.

4.1 Feeding Positioning Mechanism:



1. In order to adapt the device to different products, different plates need to be replaced for different products. Equidistant alignment and positioning for contacts.

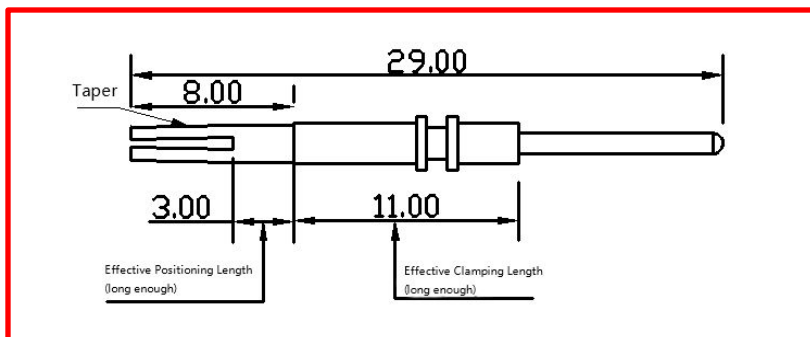
2. SMC electric actuator is used in the front and rear direction with an accuracy of 0.02mm. Cooperate with the manipulator to complete the fixed positioning of reclaiming.

3. The feeding method adopts replaceable plate feeding and each plate can be loaded with up to 100 pieces.

4. The analog disassembly adopts pin-type repeat positioning for easy disassembly.

5. The feeding plate is divided into 2 types.

4.1.1 Feeding Positioning Mechanism Plate Form 1:



1. Feeding Plate Form 1, the terminal positioning length should be long enough to ensure that the terminal is placed vertically and it is positioned by shape. The diameter of the positioning hole is the diameter of the terminal end, and the tolerance is positive (refer to the left terminal diagram).

2. It is also possible to adjust the clamping position of different terminals by replacing the pads with different thicknesses, so that the clamping position of the manipulator is always unchanged, reducing the cumbersome debugging.

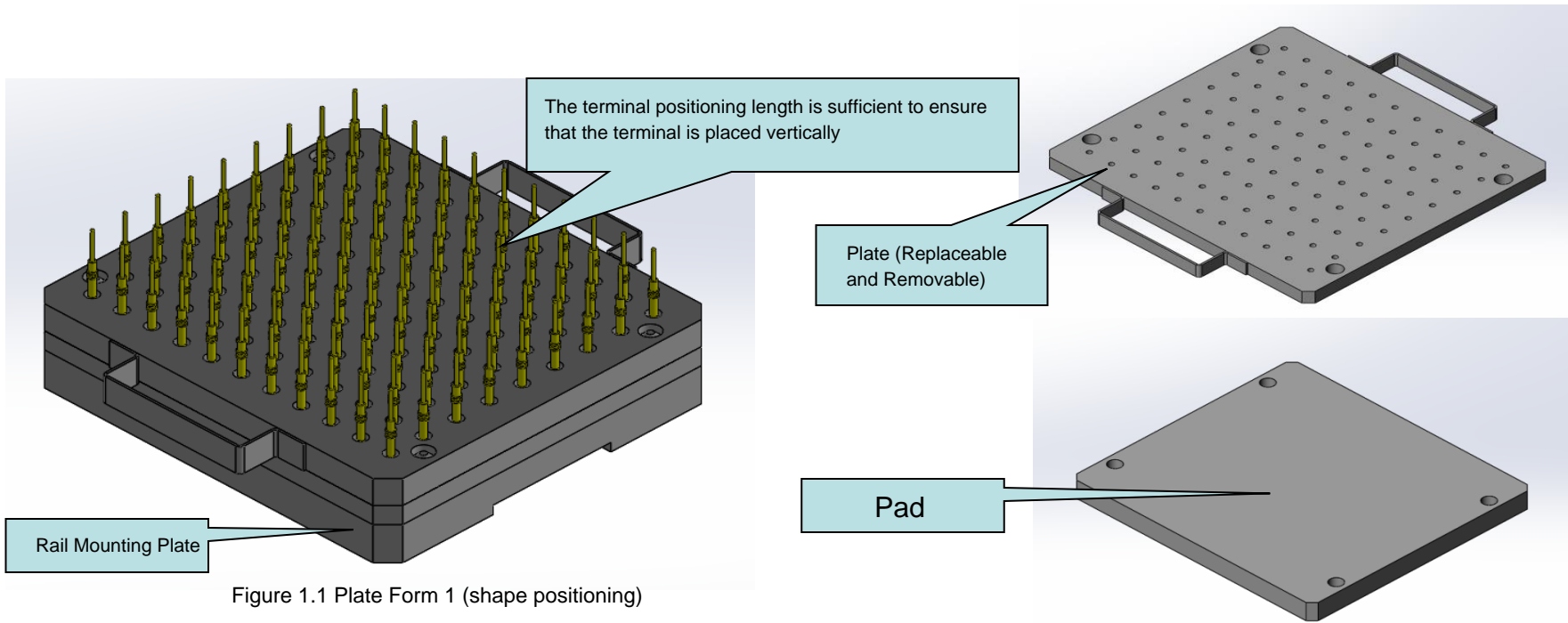
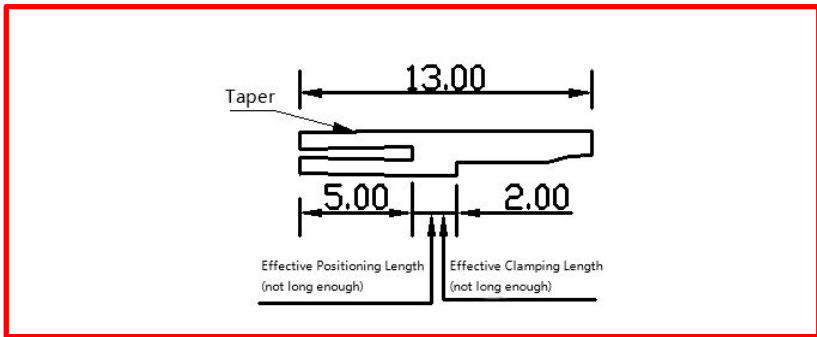


Figure 1.1 Plate Form 1 (shape positioning)

4.1.2 Feeding Positioning Mechanism Plate Form 2:



1. Feeding Plate Form 2, the positioning length of the terminal can not effectively ensure that the terminal is placed vertically, and it is positioned by inner hole. There are positioning pins on the needle plate. (the diameter is smaller than the standard pin, which will not affect the terminal insertion and extraction force). The cost is relatively high. (Refer to the left terminal diagram)
2. It is also possible to adjust the clamping position of different terminals by replacing the pads with different thicknesses, so that the clamping position of the manipulator is always unchanged, reducing the cumbersome debugging.

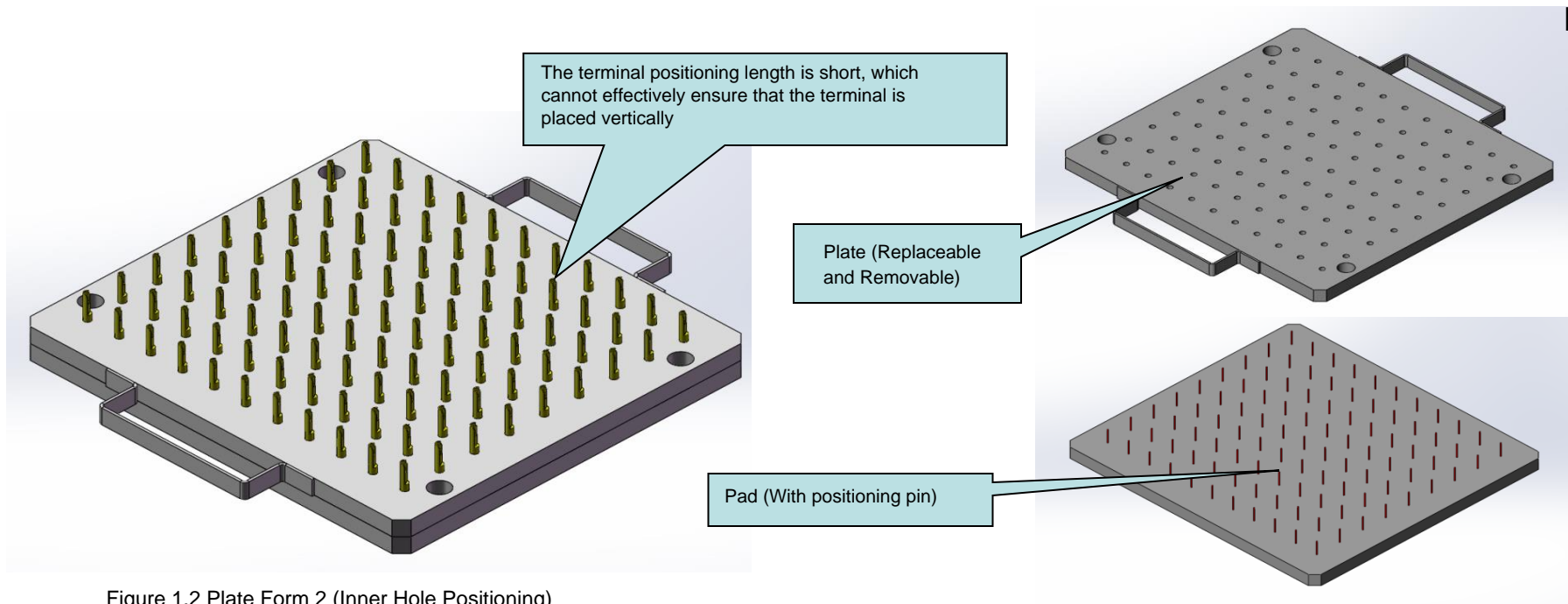


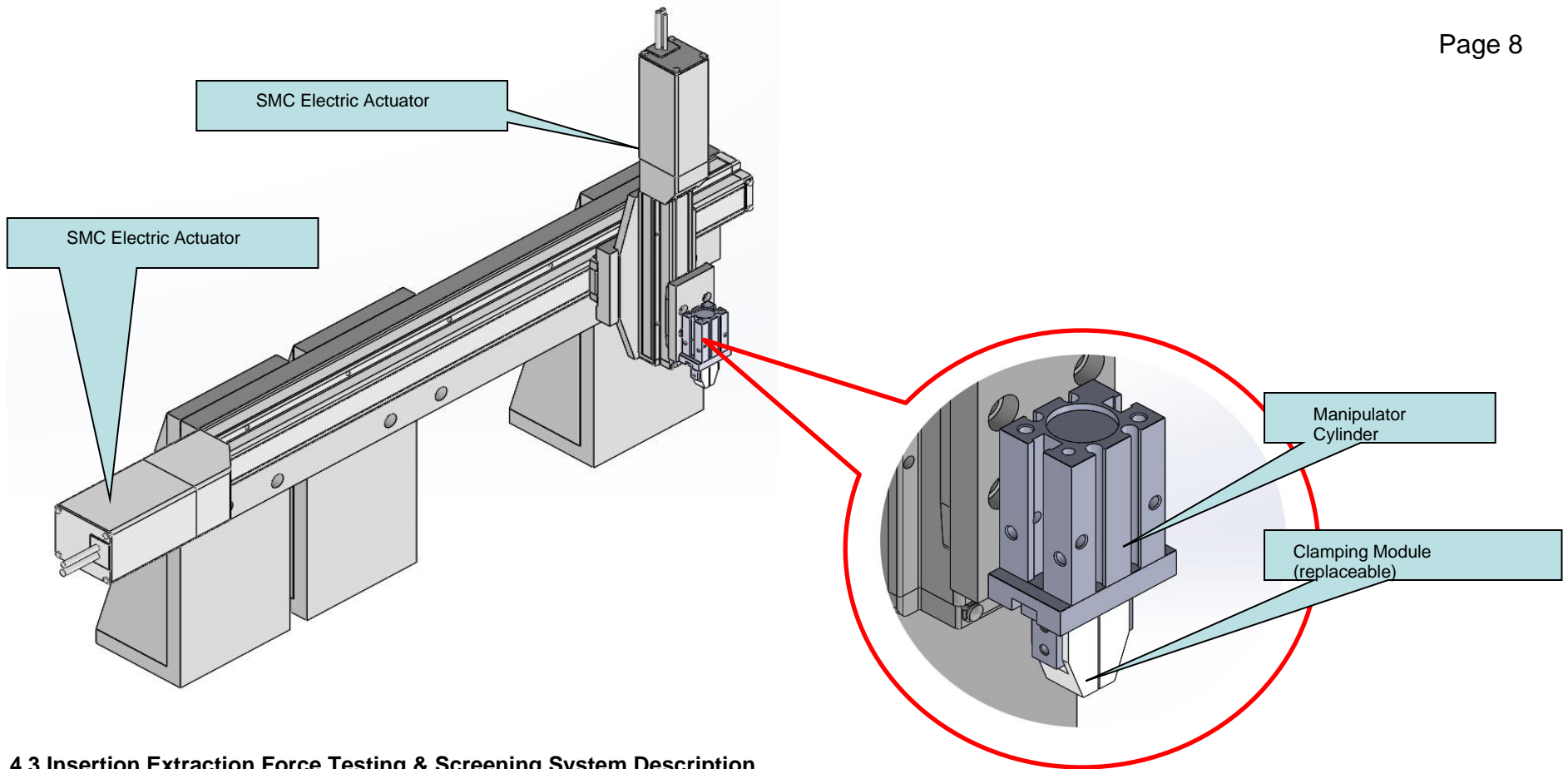
Figure 1.2 Plate Form 2 (Inner Hole Positioning)

4.2 Manipulator Mechanism

4.2.1. The manipulator cylinder adopts SMC standard claw cylinder, which is stable and reliable

4.2.2 The operating mechanism adopts SMC thin electric actuator, ball screw type, the running speed can reach 500mm/s, and the precision can reach 0.02mm

4.2.3 The clamping module can be customized and replaced according to the product. 4.2.4 The terminal length is less than 50mm within the claw clamping range. The claw need to be replaced if the outer diameter of the terminals is different. (V-shaped claw can also be made to increase the clamping range)

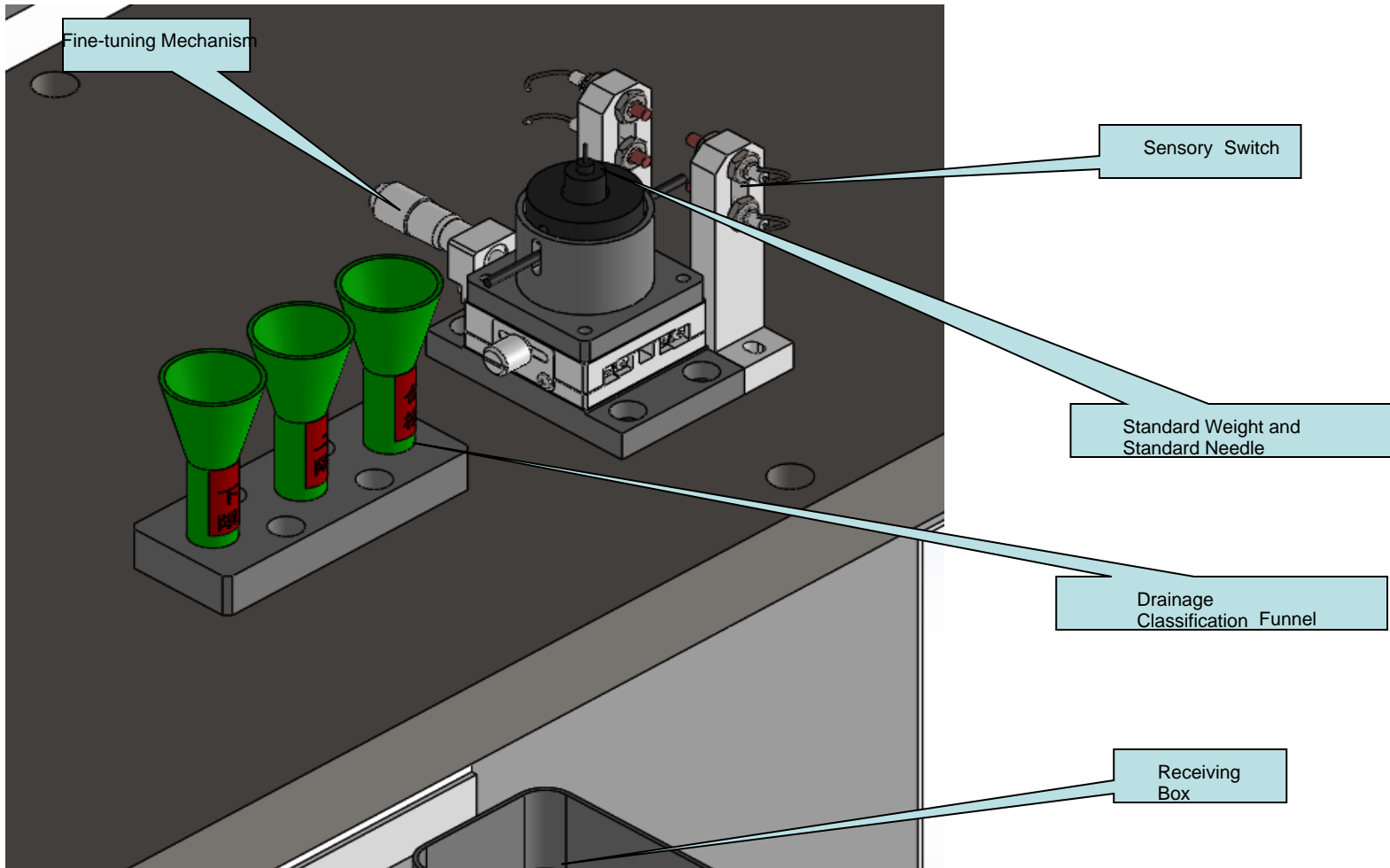


4.3 Insertion Extraction Force Testing & Screening System Description

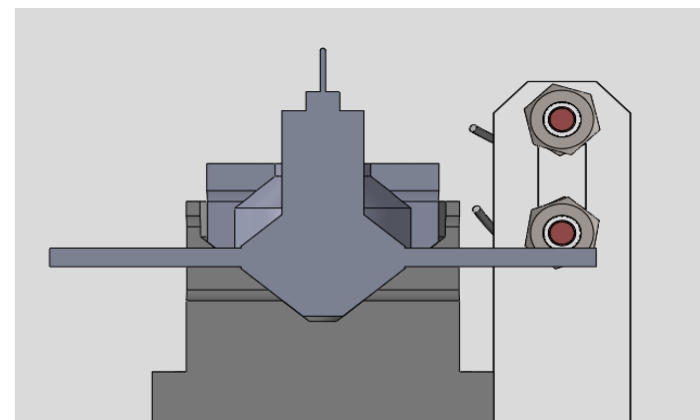
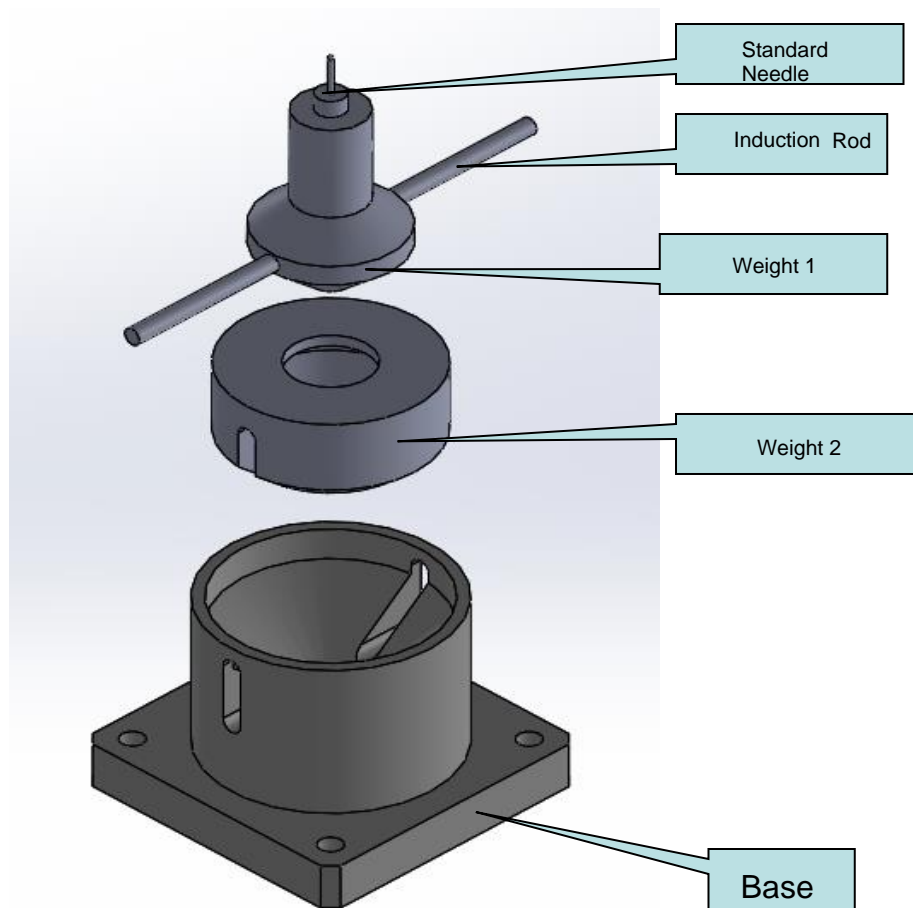
4.3.1 This mechanism adopts standard weight lifting testing, laser sensing, position detection, PLC automatic detection, screening and classification. When the product is a good product, the product is collected by the good flow channel. When the insertion extraction force is unqualified, the product is placed in the corresponding defective product box by the materializing manipulator

4.3.2 In order to avoid a large number of defective products, the equipment will automatically stop and alarm when continuous defects are found during the test

4.3.3 When replacing the product, if you need to replace the different insertion and extraction force pins, you can also replace the standard



4.4 Schematic Diagram of Standard Weight Structure



Sectional View of Standard Weight

4.4.1 Different terminals require standard needles of different diameters and can be directly replaced.

4.4.2 The taper design of the standard weight guarantees repeat positioning consistency. The production of the standard weight should ensure that the external dimensions and the insertion and removal position remain unchanged, avoid any adjustment of the sensing position, and avoid the cumbersome debugging.

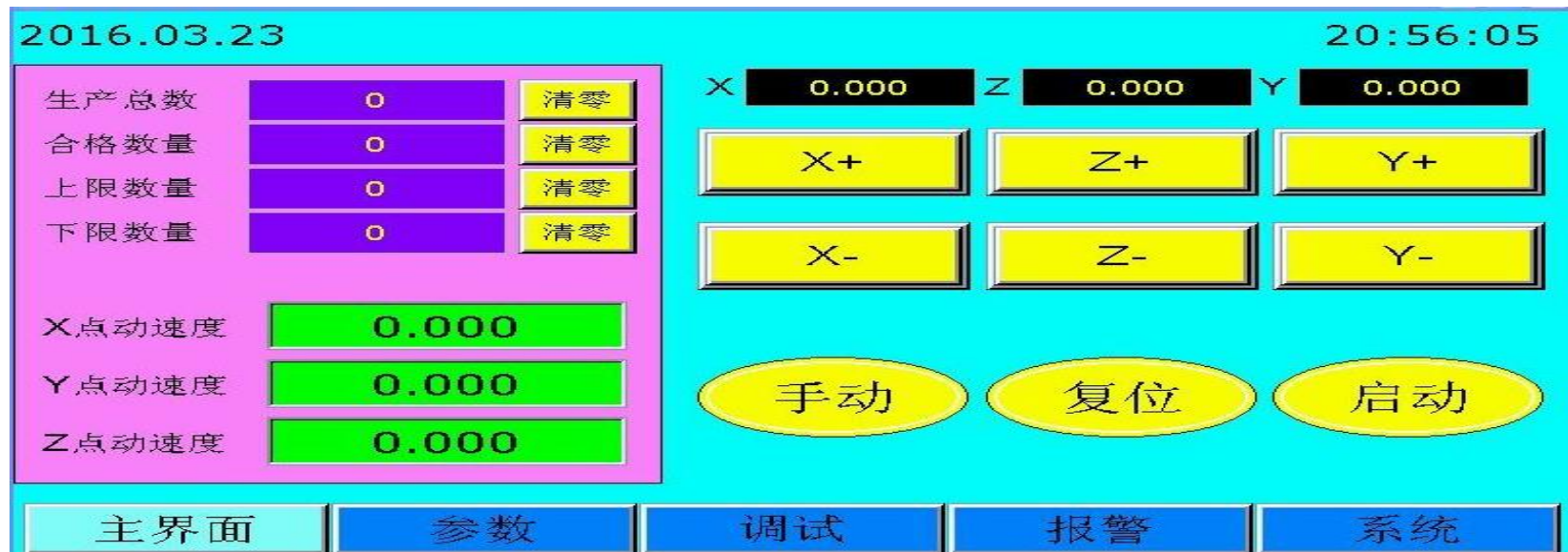
4.4.3 Detecting the position of the sensing rod through the inductive switch, the PLC accepts the feedback signal for screening and classification .

5 OPERATION INTERFACE

5.1 Boot Interface (click to enter the system)



5.2 Main Interface (zero reset after each boot)



高級	X轴位置 10	Y轴位置 10	退出	其它位置	其它速度
位置00	0.000	0.000	Z快向下	0.000	0.000
位置01	0.000	0.000	Z慢向下	0.000	0.000
位置02	0.000	0.000	Z提起	0.000	0.000
位置03	0.000	0.000	Y测试位	0.000	0.000
位置04	0.000	0.000	Z快向下	0.000	0.000
位置05	0.000	0.000	Z慢向下	0.000	0.000
位置06	0.000	0.000	Z慢向上	0.000	0.000
位置07	0.000	0.000	Z快向上	0.000	0.000
位置08	0.000	0.000	Z放料下	0.000	0.000
位置09	0.000	0.000	Z提起	0.000	0.000

主界面 参数 调试 报警 系统

5.4 Debugging Interface

退出

X 0.000 Z 0.000 Y 0.000

X+ Z+ Y+

X- Z- Y-

手动 复位 启动

Y列数 10

X列数 10

手指

X点动 0.000

Y点动 0.000

Z点动 0.000

主界面 参数 调试 报警 系统

5.5 Alarm Interface



6 ATTACHMENT

6.1 Supporting Tools

6.2 Technical Drawings

6.3 Standard Accessories: 1 piece of

clamping module, 3 needle pieces of plates, 1 set of weight