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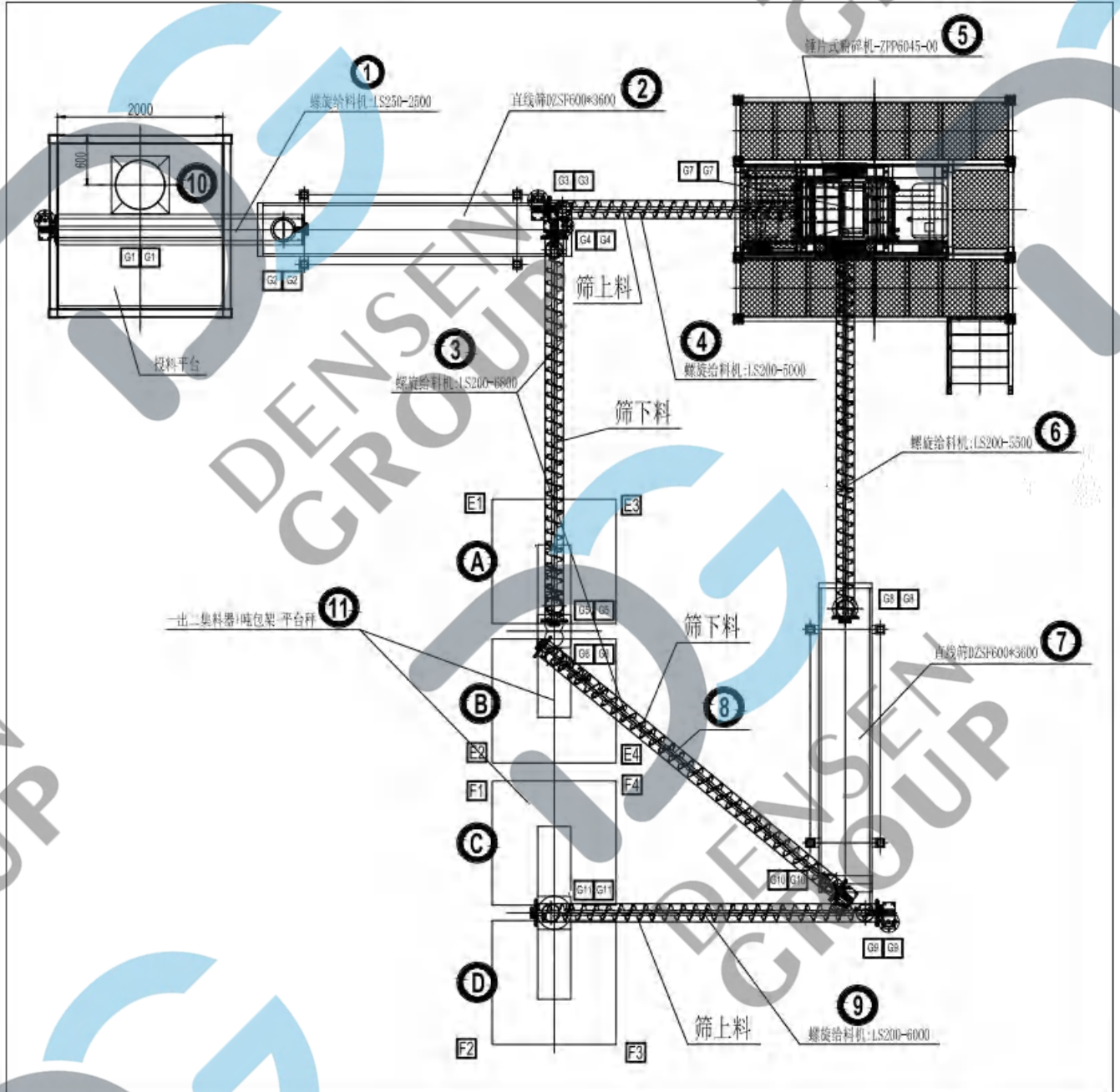
# Stage2-Alkaline Battery Sorting Line

## Instruction



### Flow chart

This line is a battery powder treatment line, the basic flow is as follows:

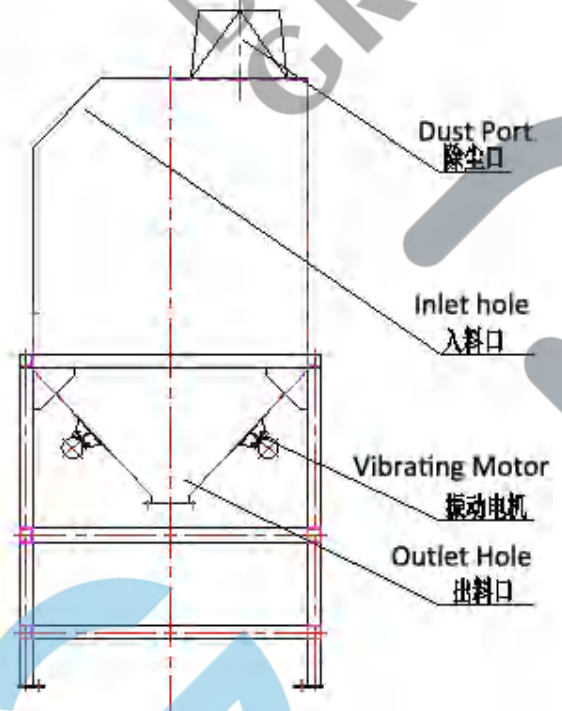


## 一、 Introduce of main equipment

### 1. Hopper

Function: store battery powder and ensure the continuous supply of materials for the next process.

Structural Features:only the vibration motor and the main frame are fixed by bolts the rest of the whole equipment is a whole welded structure, no need to group and install on site.



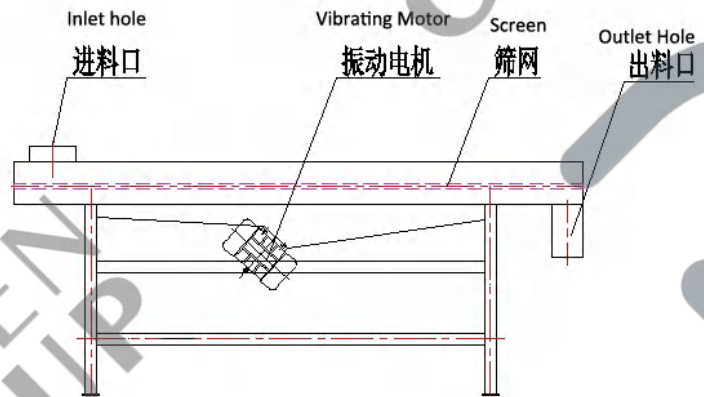
Work description: By turning on the vibration motor from time to time, the residual materials in the hopper can be transport to the next process, and the vibration strength of the vibration motor can be adjusted by adjusting the amplitude of the vibration motor.

Specification			
Stock (m <sup>3</sup> )	Motor Model	Power	Perishable Part
2	YZU-3-2A	2×0.2KW	Vibrating Motor

## 2. Vibrating Screen

Function: Filtering difference size battery powder

Structural Features: consists of vibrating motor screen body and legs, the screen and vibrating motor can be replaced when there is damage belongs to wearing parts.



Working Principle: Through the vibration of the vibrating motor, the material larger than the screen goes to the next process through the screen upper material outlet, and the material smaller than the screen goes to the screen lower material outlet through the screen.

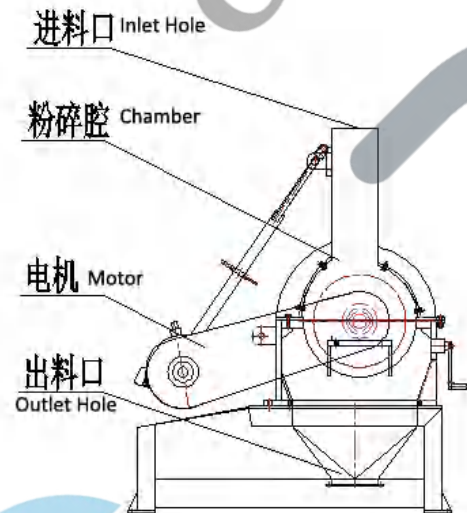
Specification				
Model	Screen Diameter	Motor Model	Power	Perishable Part
DZSF600×3600	0.82 mm	YZS10-6	0.75	Screen/Vibrating Motor

### 3. Hammermill

3.1 Function: Crushing big size battery powder that from vibrating screen upper outlet

3.2 Structural Feature: This hammermill is a pendant type crusher where the material enters tangentially from the crushing chamber.

3.3 Working Principle: This equipment adopts the impact crushing method, using the relative movement of the movable hammer body running at high speed inside and the fixed tooth ring around, so that the materials are crushed by the impact of the hammer teeth, friction and each other.

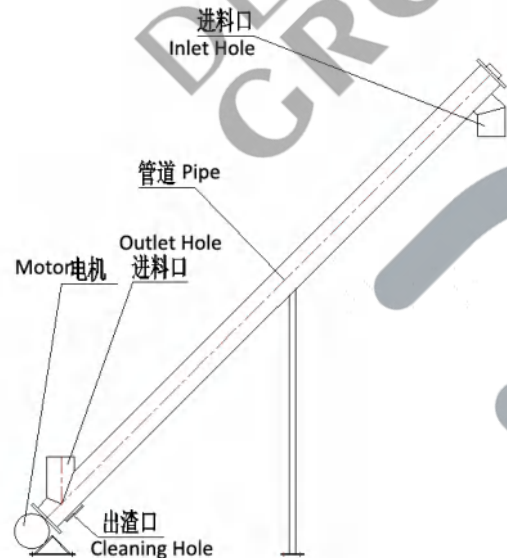


Specification						
Model	Feeding Size(mm)	Hammer	Fixed Tools	Screen Diameter(mm)	Motor Power(kw)	Perishable Parts
ZPP6045	450x600	28pcs	2pcs	9	45	Hammer

## 4. Screw Conveyor

### 4.1 Function: Transporting Battery Powder

4.2 Structural Feature: Consists of a barrel, a large and small pitch screw, a large and small gear, and a cover plate in a fully sealed form.



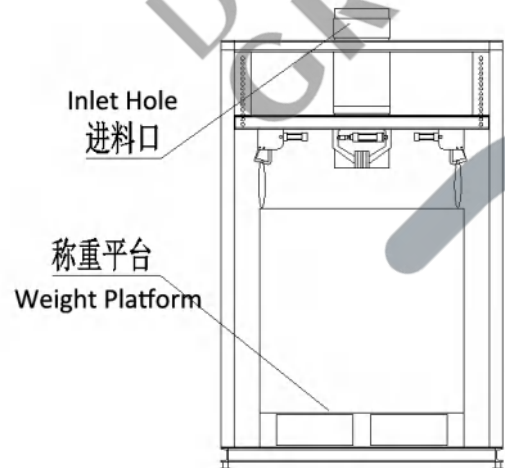
4.3 Working Principle: The use of spiral blades of the spiral shaft rotation, so that the material produced along the spiral surface of the relative movement, the material by the friction of the wall of the tube does not rotate with the spiral, so that the material axial propulsion, to achieve the transport of materials, if the direction of rotation of the spiral conveyor can be reversed its motor wiring arbitrary swap two, re-wiring.

Specification				
Model	Diameter (mm)	Length (mm)	Motor Power (kw)	Perishable Part
LS250×2500	250	2750	4	Bearing/Motor
LS200×6000	219	6000	4	Bearing/Motor
LS200×5000	219	5000	5.5	Bearing/Motor
LS200×5500	219	5500	4	Bearing/Motor
LS200×6800	219	6800	5.5	Bearing/Motor

## 5. Weight System

5.1 Function: Automatic packing of bags of set weight

5.2 Structure Feature: It consists of a weighing unit, a pneumatic system, a belt clamping device and a bag hanging device, etc. These structures work together to complete the quantitative baling work.



5.3 Working Principle: When the tonne bag machine enters the automatic operation state, the weighing control system opens the feeding port and starts to feed, when the weight of the material reaches the feeding set value, stop feeding and change the feeding port to complete the dynamic weighing process; unload the weighed tonne bag, reinstall the tonne bag, when the tonne bag has been clamped, wait for the adjacent tonne bag to be filled and the system sends out the change signal to continue feeding, and so on and so forth in automatic operation.

5.4 Operating procedures:

- 1、 Connection to power supply air supply,each tonne bag machine has a scale at each of the four corners to ensure that all four scales are on the same "horizontal" surface for each machine
- 2、 Check that the initial condition of each cylinder is normal
- 3、 Calibration of scales:

1. Pass and hold "weight calibration" until appearing "4.1....." in the screen, after need to ensure no-load values in a stable status, and then pass "Enter" until appearing "4.2...." in the screen
2. Place the standard weight item on the platform and once the progressively increasing value has stabilised, pass "Enter"
3. Pass "weight calibration" to move cursor, use the number keys to change the showing value to the actual item weight (in kg), after that pass "Enter", the screen will return to the weighing state.

#### 4、 Fault indication:

E1: Sensor installation error (Check Wire)

E2: Incorrect production value

(Target value > Timing advance > Ogham)

E3 Wrong value setting, too large or too small (Reset)

E4 Overloading (Scale recalibration), Max 4Ton

#### 5、 Weight setting:

Target value(Enter the desired value)

Timing advance(Less than target value, more than ogham)

Ogham(Overhanging material from the dividing plate to the bag)

For example: Target 1000kg ; Timing 999kg ; Ogham 1kg(Need to confirm actual data during the test)

- 6、 If you need to "tare" then first place the empty pack on the scale and then press and hold the "weight calibration" button until "4.1 ...." appears. Press "Enter" after the increased value has stabilised and "4.2..." appears on the screen Then press "back" to complete the "tare" process.

- 7、 Working Process: After putting the bags into the hooks, toggle the bag



clamping switch, 1 set of bag clamping hooks will close automatically, when the weight reaches the target value, the hooks will open automatically, the upper part of the feeder flap will switch to the other side automatically, then remove the bag and hang a new empty bag.

## 二、 Stand-alone commissioning

Lay out each individual machine according to the installation layout diagram provided by Densen Machine and connect each set of equipment to the corresponding electrical control cabinet according to its equipment and electrical number.

### 1. Commissioning of the hopper

First Secure the hopper floor bolts in place once the location has been determined.

Secondly, fix the vibration motor, (if the vibration motor has been shipped to the field has been installed, must check whether the fixed bolt is tight) start the power supply of the hopper vibration motor in the control cabinet for trial operation, at this time, observe whether the two vibration motors turn opposite, if not then swap any one vibration motor of any two-phase wiring.

Finally, after the overall equipment running without abnormalities, add a small amount of material to the hopper to test whether the hopper outlet meets the requirements(adjustment of the vibration motor amplitude if doesn't meet requirements) , wait for the complete set of line test run.

Commissioning of vibratory motor amplitudes:

When the adjustable block is installed in the opposite direction to the fixed block, the eccentric force is zero, and the eccentric force is maximum when they

coincide, and when the eccentric force is large, the excitation force is also large. Note that when adjusting, two vibration motor eccentric block adjustment position and each vibration motor of the two groups of eccentric block position should be exactly the same effect is better.

## 2. Commissioning of vibrating screen

First of all Determine the installation position, install the foot fixing bolts and loosen the bolts holding the vibrating screen spring in place.

Secondly, start the power supply of the vibration motor of the vibrating screen in the control panel for trial operation, add a small amount of material to the vibrating screen to test whether the material discharge meets the requirements, if outlet size doesn't meet requirements, adjustment of the vibration motor amplitude, adjust to meet until.

Finally carry out more than 1 hour of continuous operation, no problems and then switch off the power and wait for the complete set of lines to test run.

Commissioning of vibration motor amplitude as above.

## 3. Commissioning of hammermill

Hammermill commissioning instructions are detailed in the hammermill instruction, more than 1 hour of trial operation, until without any questions coming out, waiting for the complete set of line trial operation.



#### 4. Commissioning of screw conveyor

Determine the mounting position and fix the ground bolts

Start the power supply of the screw conveyor in the control panel for trial operation, put less material in the inlet, if the material does not run upwards then change any two phases of the motor wiring.

Final run of more than 1 hour, no problems then switch off the power and wait for the complete set of lines to test run

### 三、 Sealing soft connection

After the commissioning of all the individual machines, the sealing of the equipment and equipment connections should be carried out, using spiral pvc pipes and clamps to seal the import and export connections as one.



#### 四、 Commissioning of complete plants

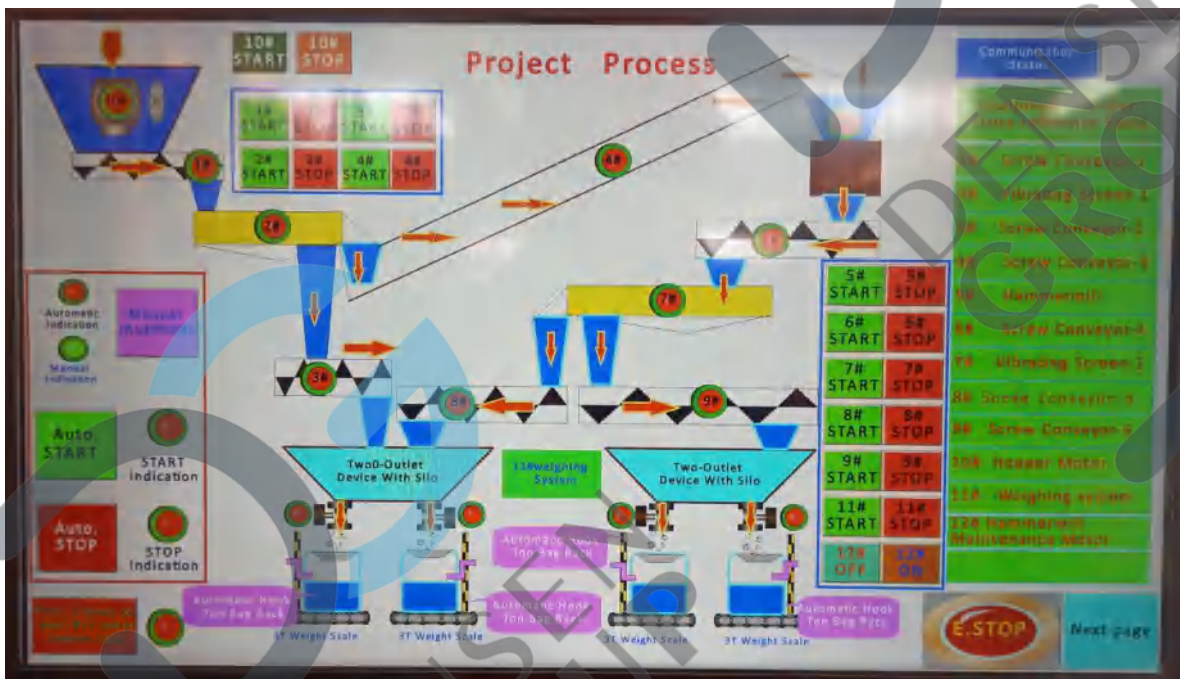
After the installation of the entire line and the commissioning of the individual sets of equipment, the final test run and commissioning of the complete line was carried out.

1. Switch on: mains power on (red Power LED on)



2. When the system start/stop switch is turned to Start, the system start LED lights up (green System Start LED), the display screen appears.





(Control screen - Touch screen page)

### 3.Touch screen operation

3.1The operating status displayed after the system has been started is manual control status, at this time the start sequence is to press the green start key in order to start according to the number 1# to 11# (excluding 10#). The stop sequence can be operated in reverse with the start sequence.

#### 3.2 Automatic control status

3.2.1 Tap the manual/automatic switch, the automatic indicator lights up (RED)



3.2.2 Auto,Start: By pressing the start button (Auto.START), the device starts in a fixed time sequence (excluding 10#).

3.2.3Aut.Stop: By pressing the stop button(Auto.STOP),the device stops in a fixed time sequence.

### 3.2.4 10# Hopper Vibrating Motor Start/stop instructions

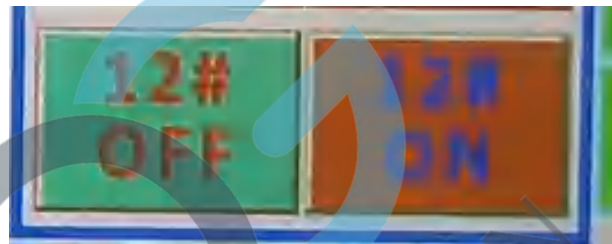
When too much material accumulates in the hopper, press the 10# green start button at any time in the automatic or manual state to vibrate and unload the accumulated material in the hopper.

### 3.2.5 12#Hammermill Maintenance Button Start/Stop instructions

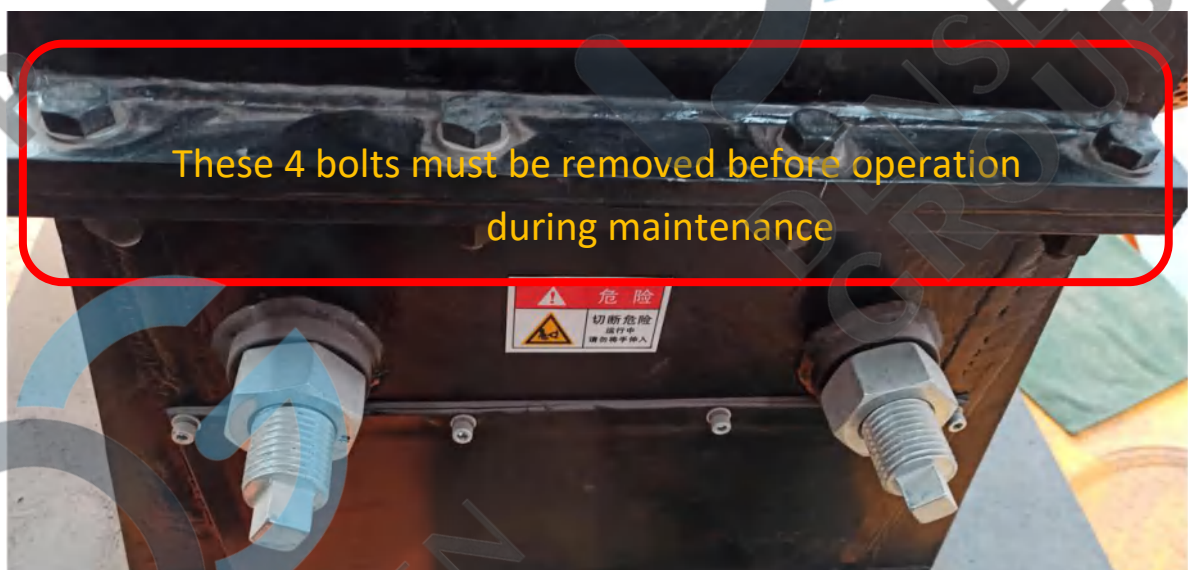
When need to open 12# switch, the unlocking button must be pressed 3 times in succession in the manual state, at this time the unlocking light turns green and at the same time the upper and lower box bolts (4 pieces in total) of the crusher must be removed. 12# start and stop keys are non-self-locking buttons, press to work, release to stop. After all maintenance is completed and all parts of the hammermill are reset and fixed, tap the unlocking key, at this time The green light turns red (reset). At this point the 12# start and stop button is disabled.



(Unlocking Button& Indicator)



(12#Start/Stop Button)

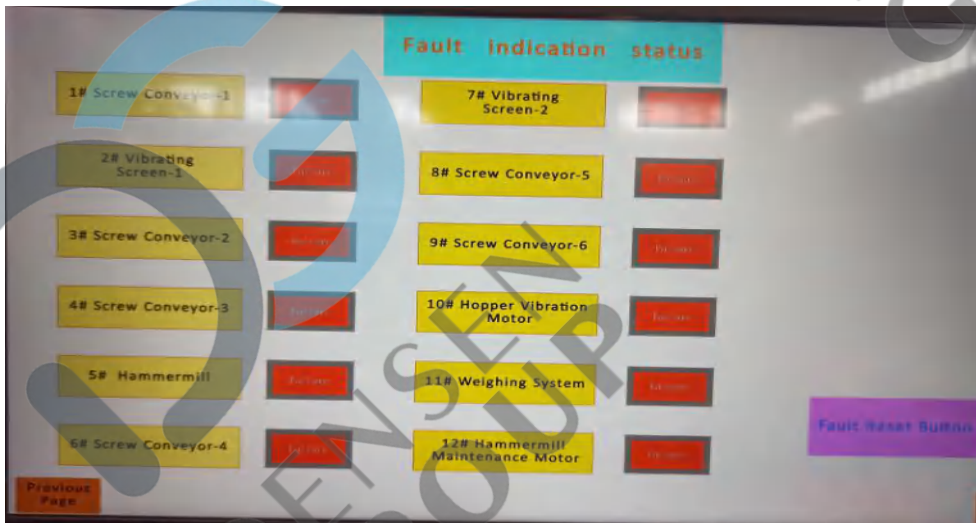


These 4 bolts must be removed before operation during maintenance

(4pcs hammemill fixed bolts must to be removed before maintenance)

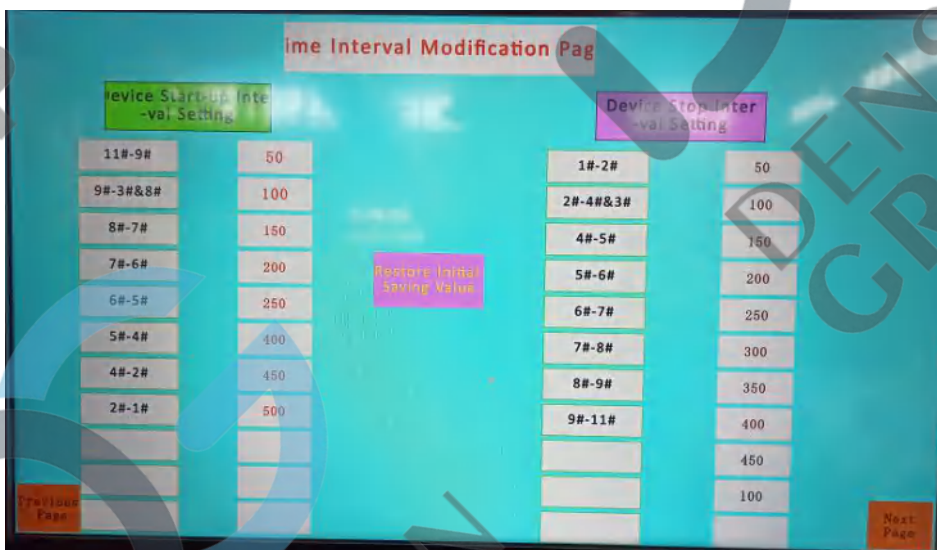
### 3.2.6 Next Page 1 Instruction of screen

This page is a fault indication page, the red light is flashing and the corresponding number of the machine is faulty, press the reset button to reset after troubleshooting.



### 3.2.7 Next Page 2 Instruction of screen

This page shows the start-up interval of the machine in the automatic control state. This interval can be adjusted appropriately according to the site conditions, and when the time is adjusted confusingly, the initial setting can be restored by pressing the "restore initial saving value button" in the middle.

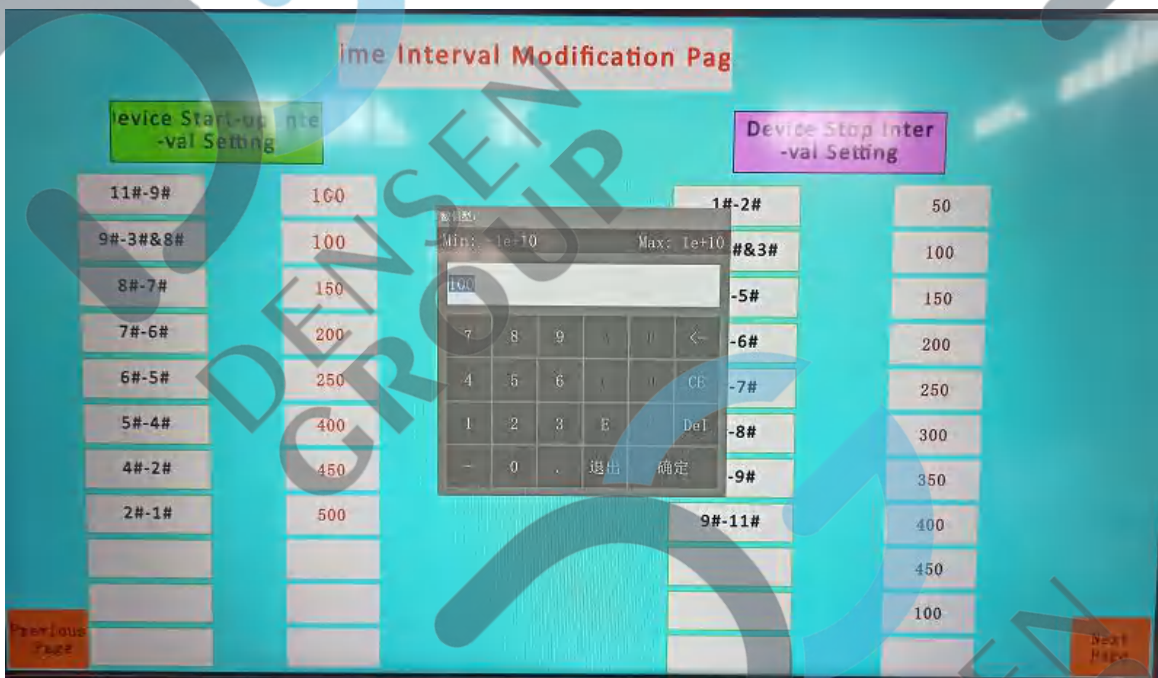


(Display page)

The units of the digital dispatch are “-1e+10” in the control panel , in order words, the value read out in this system is in this unit.

50 mean 5s ; 100 means 10s ; 150 means 15s

“确定”means”Enter” ; “退出” means “ Back”



(Time Modification Display)

Start in automatic mode starts from 11#, then 11# - 9#, and then starts from 9# to 3# & 8# .....

The shutdown in automatic mode is 1# turned off first, then off from 1# to 2#, and finally 11# off ..

10# and 12# need to start manually. There is no control over their startup in automatic mode.



## 4.Frequency description of the inverter

4.1 The frequency of the inverter is controlled by the up and down arrows on the panel of the inverter body, with a long press on the up arrow increasing the frequency continuously and a long press on the down arrow decreasing the frequency continuously;

4.2 When the inverter needs to be flipped, “enter a negative value i.e.” , In order words, press and hold the down arrow until the negative value is displayed..



(Inverter Control Panel)



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