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# Powder Filling Machine

# Operation Manual

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## 1、 Summarize:

Automatic powder filling machine was composed of filling machine, electrical box, touch screen panel and electronic scale.

This powder filling machine can be finished measurement and filling working, it a

Man-machine interface, touch screen operation, servo motor drive screw, open type seal damping airbag powder hopper, dust recovery unit, can be manually lifting worktable, in addition to the electric parts all stainless steel structure.

With higher speed and precision, high stability, strong anti-interference, corrosion resistant, easy cleaning, beautiful appearance, long service life, etc

More suitable for packing food, medicine, chemical industry, etc liquid or illiquid powder products, such as milk powder, monosodium glutamate, solid drink, white sugar, glucose, coffee, feed, veterinary drugs, medicine, pesticide, solid powder.

## 2、 Technical paratemer

2-1. Model: KP-5

2-2. Measurement mode: Weighing feedback tracking spiral rotary

2-3. Filling weight: 10-5000g (change the screw)

2-4. Filling accuracy (Test flour) :  $\leq 1\%$

2-5. Packing speed:15-60 bag/min

2-6. Voltage: 3 phase, 380V, 50HZ

2-7. Power: 1.5KW

2-8. Weight: 260Kg

2-9. Size : 1000×1300×2200mm

## 4、 Installation and adjustment (mechanical parts)

4-1. This machine was vertical packing machine, normally no need installation, but it must be connect ground (there is connector in electrical box), connect the electronic scale, panel switch, and infrared photoelectric switch.

4-2. Adjust the height of filling nozzle and worktable, turn the hand wheel to adjust the height of worktable.

4-3. Install the powder hopper and inside screw component: powder hopper, screw and

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powder cup must be installed correctly, it should be installed the front & back alignment, namely: close the front half hopper → screw → powder cup ( put powder cup, fasten clamp ) → mesh enclosure. Disassembly should be opposite. If not installed and disassembly like above, the screw will be easily to be bended by hopper.

4-4. Check the eccentric degree between screw and powder hopper: fix the screw, then the powder cup will be easily put, powder cup and powder hopper should be connect smoothly, if there was friction, lock or out of flatness, we have to adjust the eccentric degree by increase or decrease the hanging pillar gasket, before put the powder cup, the motion of the screw around the circle core should be symmetrical front & back, right & left.

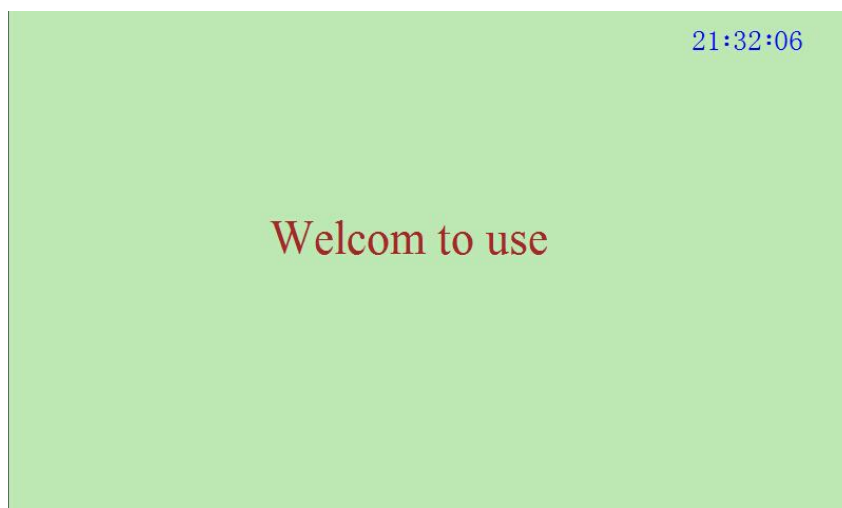
4-5. Check the mixer installation is correct or not : install the powder hopper, screw, powder cup, then start the mixing motor, if there was abnormal noise when mixer running in rotary, it should be stop immediately, and check the mixer was distortion or connect with hopper, if there was, please move the mixer up and adjust it.

4-7. In order to ensure the sufficient feeding of powder, the powder height inside of hopper can not be lower than 1/3 of hopper height, or there will not be accuracy during filling, please note: the powder also can not be full of the hopper, or the mixing system will be damaged.

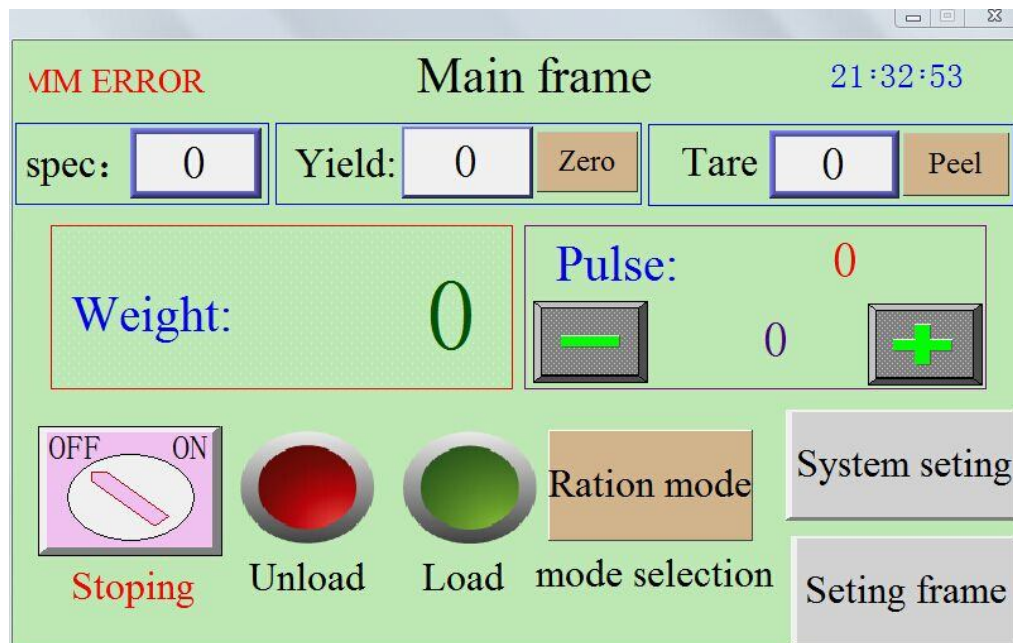
**Note: strictly prohibit to start machine after install the screw but without install the powder cup.**

## 5、 Operation and setting ( electric control parts )

Connect power supply, turn switch ON, the screen will be indicate welcome to use.



5-1. Touch the screen and go into the operation interface.



The ERROR (left up corner) means the machine was failure warning.

Press the “spec” to input the target weight.

“Yield” is output quantity. “Zero” is clear 0.

“Tare” is used to set the gross weight of packing container. “peel” is to remove the tare weight on electronic scale.

Press “weight”, the number indicated is net weight, it is the weight after peel tare.

Press “Pulse” , the screen will indicated to input the number. It means the screw rotary quantity, in other words, if the pulse number was high, the screw will rotary more and feeding out more powder. If pulse number ws low, will be opposite.

“ Mode selection”, there was 3 mode inside, namely “ Auto mode” , Ration mode” , and “ Fine tuning mode”

In condition of “Auto mode”, machine will make contrast automatically for the weighing weight and target weight, if the weighing weight was less, the pulse number will be increased automatically, if the weighing weight was more, the pulse number will be decreased automatically. The pulse number will be adjusted automatically against every weighting and filling. when the weighing weight and target weight are identical, the pulse number adjustment will be stopped. The pulse number will not be adjusted when there

is weighting powder on the scale but the machine is filling. And also the pulse number will not be adjusted when weighing again but not filling.

In condition of “ Fine tuning mode”, machine will make contrast automatically for the weighing weight and target weight, if the weighing weight was less, the pulse number will be increased, or pulse number will be decreased.

In condition of “ Ration mode” , machine will make contrast automatically for the weighing weight and target weight, the pulse number will not be changed when weighing weight less or more, need to change the pulse number by hand + or -.

Press “ON” and “OFF” key, all motor was running and machine go standby mode, at this moment, the key indicate “Running status”

In standby mode, press “unload” , the servo motor will run one time, this “unload” key and panel swith are same function.

## 5-2. Paremeter setting:

Press “seting frame” key, the interface will indicate following:

The screenshot shows a software interface titled "Seting frame" with a light green background. It features several input fields for parameter settings:

- Target value: 0
- Unload speed: 0
- Error range: 0
- Pulse NO: 0
- Loading NO: 0
- Accelerate time: 0.000
- Unload delay: 0.00
- Reaching time: 0.00
- Bottle delay: 0.00
- Leaving time: 0.00

Navigation and control elements include:

- A button labeled "NO.00" with left and right arrow icons.
- A button labeled "上传" (Upload).
- A button labeled "Recipe setting".
- Bottom navigation buttons: "Home", "Calibration", "debug", and "Return".

Target value: in condition of automatic mode and fine tuning mode, the specification size of packing powder can be adjusted automatically by PLC against the powder filling quantity.

Erro rang: if the filling weight was within erro rang, PLC will not adjust.

Loading no (load number): The powder elevator is working against the powder filling quantity, and powder elevator was controller by the sensor in powder hopper.

Unload speed: it means to receive the maximum frequency when servo motor driving unload.

Pulse NO: the motor rotary steps quantity.

Accelerate time: the time for rotary speed of unload driving motor from 0 to maximum, unit is seconds.

Unload delay, bottle delay, reaching time, leaving time, which are parameter for machine connect with conveyor. if no have conveyor, no need to set parameter.

Unload delay: powder dropping time after unload screw stopped.

Reaching time: the time from bottle sensed to bottle arrived correct location.

Leaving time: the time from sensor light disappear to bottle leave completely.

Use to adjust the recipe stored in touch screen.

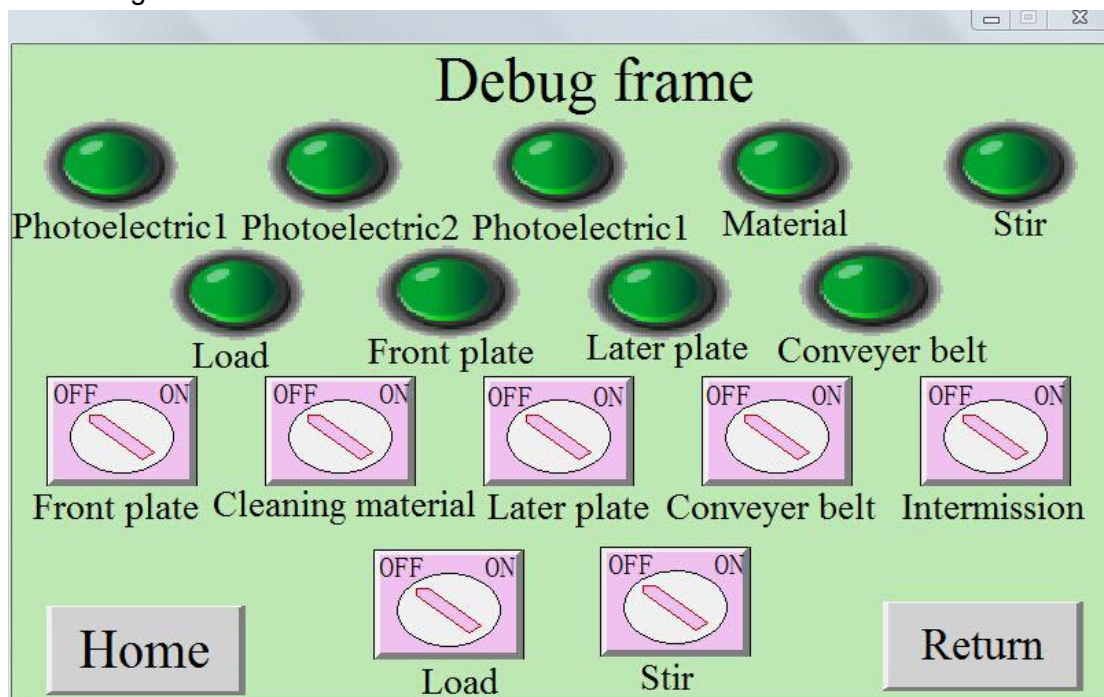
Upload the parameter(setted by PLC) into recipe,

“Recipe setting”, press key into recipe download interface.

“Debug”, press to enter into test interface.

“Calibration”, press into calibration interface to do calibration for electronic scale.

5-3. Debug interface as follows:



This interface are all for test switch, it is for us to test machine function and action before delivery.

#### 5-4. Recipe setting

Recipe setting

Target value: 10 Unload speed: 0 NO.00

Error range: 1000 Pulse NO: 2

Loading NO: 2000 Accelerate time: 0.003 Download

Unload delay: 12.34 Reaching time: 0.04

Bottle delay: 56.78 Leaving time: 0.05

Return

The parameter of this interface is parameter in touch screen, it is not the current running parameter, you can download into PLC.

#### 5-5. calibration frame

Calibrate frame

Weight 0 Zero

Weights value 0 Write

Acquisition frequency 0.00 Calibration

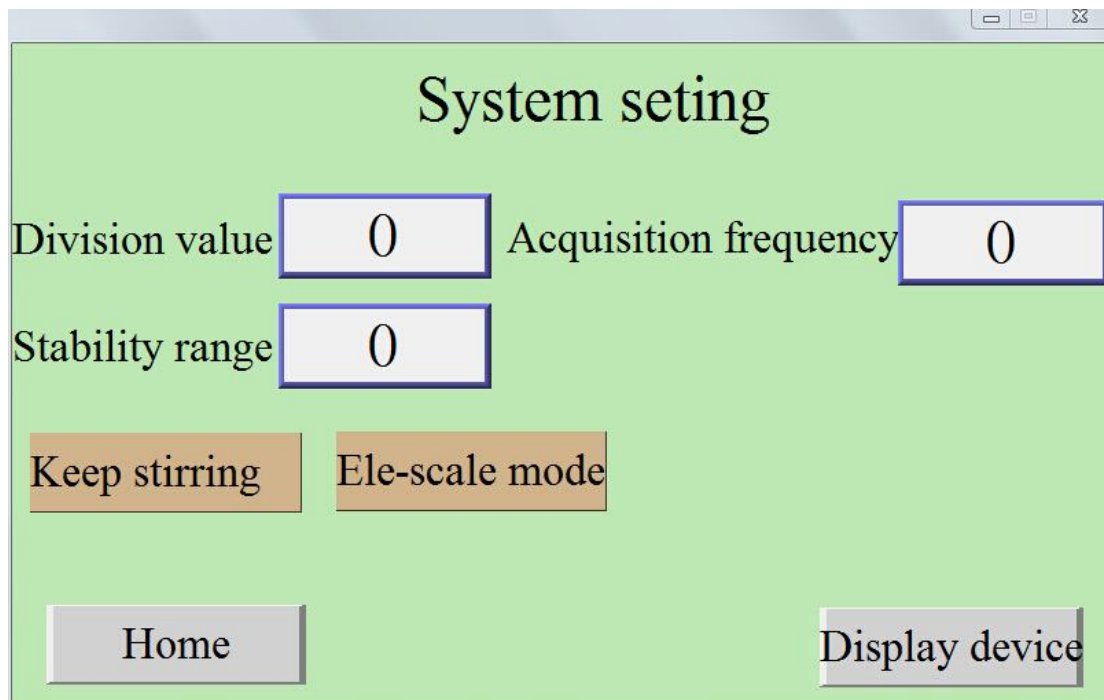
Calibration steps: 1 set zero; 2 input weights; 3 write; 4 calibration

Return

Do the instruction as per following interface:

Acquisition frequency: the interval time of every time Acquisition weight, normally to set 0.05

5-6. Press system setting into setting interface.



## 6、 Maintenance and servicing

In order to ensure that the equipment is always working under the best working state of operators in the process of daily use, must do the following:

6-1. when shift work is completed, cut off the power supply and the device should be cleaned and cleaning steps are as follows:

6-1-1. Main machine cleaing steps:

- a. Twist Off the clamp under parts, take off the clamp and powder cup, then take off the screw, then open the powder hopper.
- b. Cleaning hopper cup, screw, hopper.
- c. Install as per the opposite of No.a

6-1-2. Cleaning the powder elevator

- a. Open the bottom discharger of the pipe, turning the reversing switch, contrarotate the screw in pipe and discharge the powder, then press the upper head and let the pipe horizontal, open the screw head and take out the screw.
- b. Cleaning the screw and pipe inside.
- c. Install as per the opposite of No.a



d. When you install the screw, please note the connector between screw bottom and motor, it should be no water and rusty, so that next time we can take off the screw easily. If rust, you can put some oil.

6-2. Check the machine every 3 month, use the compressed air to blow the dust in electric box and control panel, and check if the parts was lossen or others.

6-3. If long time no use machine, we have to clean the machine completely and cut off power supply, when running again, check all electric parts.

## 7、 Fault analysis and elimination

Fault	Fault problem and analysis	Elimination
1. Much noize while filling	Powder hopper,cup, screw installation not correct	See the operaion manual
2、 Noize when start mixing	1、 mixer deformation, or connect with hopper	adjust mixer
	2、 motor problem	repair or change new
	3、 conveyor belt noize	adjust
3、 Not feeding powder	1、 there is powder in hopper	
	2、 the level sensor stick with powder, no singal.	Cleaning sensor
	3、 high sensibility or damage	Adjust or change
	4、 powder elevator blocking in pipe, so motor was protected.	Cleaning the elevator pipe and inside screw
	5、 electric components problem	Check and repair
	6、 motor problem	Repair or change new
4、 powder feeding without stop	1. Sensor sensibility low, signal low or damage	Adjust and change
	2、 the level sensor disconnection	Check and repair
	3、 24V power switch problem	Check and repair
	4、 mixer not running	Start mixing motor
5、 Not filling	1、 High voltage, high temperature, powder stickness	Check, repair
	2、 filling key and panel switch connection not good.	Repair and change
	3、 motor problem or driven damage	Repair or change
	4、 PLC damage	Change
6、 filling not stop	1、 Pulse number is high or problem confusion	Reset
	1、 Encoder no signal, rubber belt broken, or encode problem	Check and repair

	3、 PLC or touch problem	Change
7、 Filling weight much difference	1.working mode not correct	See operation manual
	2.Powder in hopper less or more.	
	3. long time no clean the hopper , stickers or paste	
	4.Motor problem or driven damage, high temperature or encoder problem	
	5. Weighing not accuracy, the electronic scale touch with others, not remove tare, shaking too much, connector not completely, sensor problem, PLC problem	Check and repair