CONTENTS

1. General Introduction

This Semiautomatic auger filling machine consists of main parts, electrical cabinet, control box and weighing scale.

This machine could do weighing & filling work. Due to its special design, it is more suitable for packing easy-flowing material or hard-flowing powder material, such as milk powder, solid drink, sugar, dextrose, coffee, fodder, solid medicine, pesticide, powder-shape additive, and dyestuff, etc. Because of the specially-designed auger filling and real-time track, so the machine is with features of fast speed and precise accuracy.

This machine has many kinds : semi-automatic, full-automatic machine model with single head, used for bag filling and can/tin filling; and also has two filling head machine models to meet different filling requirements.

Please read this manual carefully before using this machine, so to operate the machine regularly and make the machine at the optimum work state.

2. Technical Parameter

2-1．Model：TP-PF-A1 series

2-2．Metering mode：Auger screw rotary style with weighing feedback

2-3．Filling weight：10—5000g（ by changing auger screw sets）

2-4．Packing accuracy：packing weight$\leqslant$100g error$\pm$1g

100g-500g error$\leqslant$ $\pm$1%   above 500g error$\leqslant$ $\pm$0.5%

2-5．Packing speed：10—45 bags/min

2-6．Power supply: 3 phase 380V   50—60HZ

2-7．Total power：1.4KW

2-8．Total weight：260Kg

2-9．Total dimensions：1140×970×2030mm

3. Main parts name

3-1.Filling motor

3-2.Main filling head

3-3.Material input

3-4. Hopper

3-5.Electric cabinet

3-6.Filling output（auger screw parts: auger screw, hopper and netty

cover）

3-7. Standing column

3-8.Base

3-9.Level detector

3-10.Control box

3-11.Pedal switch

3-12.Weighing scale

4. Installation & adjustment

4-1.Installtion doesn't need to build a base, but machine should connect with ground safely.

4-2.Move the worktable up and down, change its corresponding position with filling output, so the packing container could go through easily. Take the weighing scale out, and link its wire to the electric cabinet.

4-3．Install hopper, auger screw accessories : hopper, screw and dosing cup must be installed correctly according to the right sequence. The installation sequence is: hopper → auger screw → dosing cup → net cover. If the operation sequence is wrong, the auger screw is easily pressed to be bent.

4-4．Watch the leaning status between auger screw and hopper mouth: install auger screw and should make the dosing cup enter into the cup base very easily. If any rub, block, and one-side closer, should adjust the hexagonal hung column to adjust the concentric degree between auger screw and dosing cup(should make sure that the auger screw doesn't distorted)

Note: Running auger without installing dosing cup is prohibited.

4-5. Check the mixer installation is right or not, install hopper, auger screw, dosing cup, and turn on mixing motor. If there is any abnormal noise during mixing, should stop the motor immediately, and check if the mixer is distorted or not, or it touches the hopper wall or not, if that happens, should maintenance on it.

Note: It is prohibited that running on the mixer while the hopper isn't fixed well.

4-6. Connect the power source, and enter into "click test" interface according to7-2 show to turn on the motor, watch the mixer running direction is right or not; if not, should stop immediately and change power phase connection.

4-7. To ensure material's enough supply, the material inside the hopper shouldn't be less than 1/3 of the whole hopper, otherwise the packing accuracy would be effected. To leave some space in the hopper, the mixing system will be destroyed if material fills whole hopper.

Note: If user doesn't have feeding system, pls ask for our factory to offer it.

5-1. The clean steps of screw feeder:

a. Empty the feeder's hopper, and make the feeder's pipe in a horizontal level, unscrew the screw cover and pull the auger inside carefully.

b. Washing auger screw and scrub feeder pipe inside wall and hoper inside wall.

c. Install all parts according to the sequence which is contrary to step a.

5-2. Check the equipment roundly every three month. Clean the dust in electric cabinet and computer-controlled box with blowing equipment, check if the mechanical parts are wearing or less crowded.

5-3. If the machine needs to be off for a long time, then must do a full clean on the machine, and turn off the general power supply. When turn

it on again, should connect the electric after checking the machine parts.

6. Trouble analysis and resolution

6-1. Feed & Fill solutions**:**

Trouble	Error Analysis	Error Resolution
1.More noise when filling	hopper,auger screw and dosing cup's installation are not properly	See this manual"4-4"
2.Noise arise when mixing	1.mixer distorts, and touches the hopper	Adjust mixer
	2.noise of motor or retarder	Mend or change
	3.chains sound	Adjust
3.No material feeding on (on condition that there is feeding system)	1.there is material inside hopper	
	2.level detector doesn't work because of material attached	clean level detector
	3.the level detector is too sensitive or got broken	Adjust or change
	4.pipe is blocked with material,the feding motor is protected automatically	Reverse feeding screw And clean the pipe
	5.something wrong with electric circle and electric equipment	Inspect and obviate
	6.motor is broken	Mend or change new one
4.Feeding continuously without stop	1.the level detector is too sensitiveless,signal is too little or broken	Adjust or change new one
	2.level detector wire is broken	Inspect and obviate
	3.24V power supply is broken	Inspect and mend
	4.mixer doesn't work	Turn on "mixing motor"
5.no filling	1. servo motor doesn't work: switch is broken, wire connect isn't well,controller or motor is broken.	Inspect, mend and obvite
	2.pedal switch doesn't work well	Mend, obviate or change a new one
	3.PLC is broken	Change a new one or send back to factory for maintance
	5.some other thing inside the material block the auger screw	Get rid of the other material things

	1.pulse setting is too much or program is turbulent	Reset immediately and set newly
6.filling continously without stop	2.servo controller is broken	Inspect,mend and obviate
	3.PLC is broken	Change a new one or send back to factory for maintance
7.filling weight error is too much	1.choose wrong work mode	Read this manual carefully
	2.some other material mix with the product	Get rid of the other material
	3.supplying isn't flowing smoothly,so the material in hopper is too much or too little	Inspect, mend and obviate
	4.hopper isn't cleaned for a long time, so the material inside is agglomerated.	Clean hopper
	5.weighing weight isn't correct: other things touches electric scale, without peeling operation, vibrate too much, aerial parts connecting not good, sensor or PLC is broken	Inspect,mend,calibrate electric scale, changea new one or send back to factory for maintenance

6-2. Driver abnormal alarm illustration and solution

When the left two blanks shows sth, means the driver doesn't work normally, user should resolve it according to the below illustration; after resolving it, then operate the driver normally; if the alarm info couldn't get resolution, pls contact dealer or manufacturer.

Abnormal sign   Abnormal Number
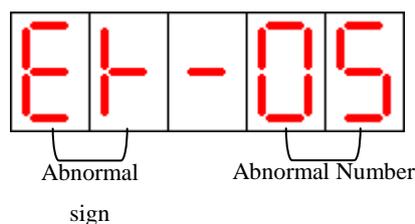
Abnormal alarm and resolution illustration:

Abnormal Number	Abnormal resolution	Abnormal alarm information	Resolution
1	Reset	Power voltage is too low / Outside power voltage is lower then rated voltage（180V）	Use ammeter test outer power voltage to make sure the voltage input accord with specification. If still cant resolve it, maybe sth wrong with the spare parts inside driver. ＊This usually happens when power is transferred to driver.

2	Reset	**power voltage is too high （BEMF error）** 1、External power source is higher than Rating power source（240V）. 2、Voltage of BEMF is over higher. Checking the BEMF reference to Dn008及Dn009.	1.Use ammeter test outer power voltage to make sure the voltage input accord with specification. 2. Make sure parameter 40 set according to rules. 3.If this happens in action, user can delay the time of speedup and speed-down within allowed range, or reduce the load capacity, otherwise need add the BEMF.(pls consult dealer or manufacturer)
3	Reset	**Motor is overloaded.** When driver works continuously, and more than 2 times of rated load, this abnormal happens about 10 seconds later. When driver works continuously, and with 3 times of rated load, this abnormal happens about 4 seconds later.	1. Check if the wire connecting of motor(U.V.W) and code is normal or not 2. Check driver parameter is consistent with the using motor or not（refer to **Dn015**）。 3. Adjust driver plus, if improper, then cause motor resonates. 4、Delay the time of speed up and speed down within limited range, or reduce the load capacity. ＊This usually happens in operation process, if there is abnormal situation soon after operating, pls operate according to 1 .2 at first. **The overload time of Edition 03707 add to 200% (may watch the change of Dn019)**
4	reset / start	**Wisdom module (IPM)abnormity** Driver's temperature, current, voltage is out of protection range, abnormity happens on IPM directly.	1.Check motor terminal wire connecting (U.V.W) and coder wire connecting is normal or not. 2. Turn off power firstly, then connect power 30mins later, if abnormal exists also, maybe the spare parts inside IPM is broken or the noise makes it happen, pls connect outer power source according to standard power wire connect diagram.
5	Reset	**Motor coder feedback is abnormal** Sth wrong with motor coder or coder connecting wire is not good.	1.Check motor coder is linked to driver or not. 2.Check if coder connect point is of short circuit, cold welding or break off. 3、If coder connects outer power source, make sure coder power (5V) supply in normal situation.

Abnormal alarm list (continue) Alarm & Remove schedule(Extending)

Error NO.	Remove	Illustration	Solution
6	Reset	`Electric current numerical readout Error` `Wrong Numeral value of the motor electric current`	Take the power source on after 30 mins in power source off, If it's still error , it will be the problem of the driver inside or noise jamming,
7	Reset	`Parameter Error---- E-gear rate` `E-gear rate is not included in 1/127~ 127times`	Reset the **parameter 21 & 22**
8	Reset	**Parameter Error—wrong identifying code** Input the wrong parameter	1. Carry out the original parameter set（**Fn009**）。 2. Use the communication of OEM, upload the inside files.
9	Reset	**Imurgency stop** **Break through CN1 Pin9** and **DG**	1. Relieve the tie-in signal of **CN1 Pin9** 2. Noise of driver inside do, pls connect the power source and signal line according to **Standard Power source diagram.**
10	Reset	**Overhigh current of the motor** Motor current is 4 times higher than the standard.	1. Checking the circuit of motor（U、V、W）and of the encoder. 2. Noise of driver inside do, pls connect the power source and signal line according to **Standard Power source diagram.**
11	Reset	Error-counter overflow The difference of command pulses and feedback pulses is larger than the range of error-counter, which is defined in PN25.	1. Add pluse of **parameter 25.** 2. Add pluse of **parameter 25,** in order to increase the reaction time of the motor. 3. Delay the speed timing in permissible range , or reduce the inertia of lade. 4. It need set to 0 on parameter 12-2. 5 . Checking the circuit of motor（U、V、W）.
12	Reset	**Over speed** The motor speed is 1.2 times than the standard.	1. Reduce the speed of order. 2. Improper E-gear rate, reset the E-gear rate. 3. Adjust the **Parameter 1**, increase the reaction time of the motor to the speed..
13	Reset	**Overhigh Pluse** Peak input pulse exceeds 600kpps.	1. Reduce the Peak input pulse. 2. Improper E-gear rate, reset the E-gear rate.
14	Reset	**Driver stop Error 1**	1. Relieve the tie-in signal of **CN1 Pin9** , reference to

		CN1 Pin4 and Pin5 are running in the opened circuits at the same time.	Parameter **11-3**. 2. Noise of driver inside do, pls connect the power source and signal line according to **Standard Power source diagram.** 3、 **CN1 Pin45** must connect with DC24V 。 ※**The editions after 4326** When driver finds it's power on from external power source at servo off case, the Alarm will be Auto-relieve.
15	Reset	**Driver stop Error 2** **CN1 Pin4 and Pin5** are running in the opened circuits at the same time, but it's 1 hour in Parameter **12-3**.	1. Relieve the tie-in signal of **CN1 Pin9** , reference to Parameter **11-3**. 2. Noise of driver inside do, pls connect the power source and signal line according to **Standard Power source diagram.**
16	Reset	**Current inductor feedback Error** electric current inductor has exceptional value . (It should be zero)	1. Checking the circuit of motor（U、V、W）and of the encoder. 2. Noise of driver inside do, pls connect the power source and signal line according to **Standard Power source diagram.**

Alarm & Remove schedule(Extending)

17	Reset	**CPU Error** Control systerm can't run normally	Take the power source on after 30 mins in power source off, If it's still error , it will be the problem of the driver inside or noise jamming, pls connect the power source according to **Standard Power source diagram.**
18	Reset	**Overhigh Voltage** DC voltage higher than 360V ， or AC voltage higher than 255V，or the circuit of voltage sense error.	Take the power source on after 30 mins in power source off, If it's still error , it will be the problem of the driver inside or noise jamming, pls connect the power source according to **Standard Power source diagram.**

Note 1: After settling the error, it need restart(Shut off the power & resume), or run the function Fn004. The drive return back to work.

Note 2: After settling the error, make short-circuited between the CN Pin2 and DG, also could remove the stop of exceptional error. But the If the rated voltage of the motor is 100 V, the voltage level to alarm will be

half of the value listed (DC112V for low voltage, DC195V for over voltage).

Note 3: If the ways above are not taking effect, Please contact with the franchiser or send back to OEM.

※**ATTENTION: Do confirm the controller doesn't send the order to**

drive before alarm relieve. In order to avoid the Motor overloaded!

7. Operation & Set (electronic controlled parts)

7-1 prepare to work for first time

Ⅰ. Insert into the plug and connect power source, deasil turn 90 degree of "General Switch" in cabinet, turn on equipment power source.

Ⅱ. Deasil turn the red" emergency stop " button, make it bomb, and turn on controlled power supply.

Ⅲ. Pls refer to 7-5 for machine's first time work, firstly to do "click test" ,to make sure all parts in normal work status.

7.2 Enter into work status

1. Click any place to enter into operation choice menu(picture 7-2).
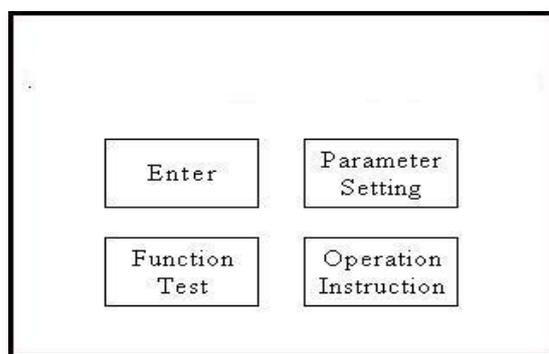
Picture 7-2　operation choice menu

2. Operation menu　steps diagram(Picture7-4),there are 4 operation choices on operation interface:

Enter into work：enter into main operation interface (see picture 7-3), this interface is use operation interface;

Parameter set：all technical parameters' set

Action test：click test interface, to test all parts run normally or not

Operation instruction：enter into operation manual
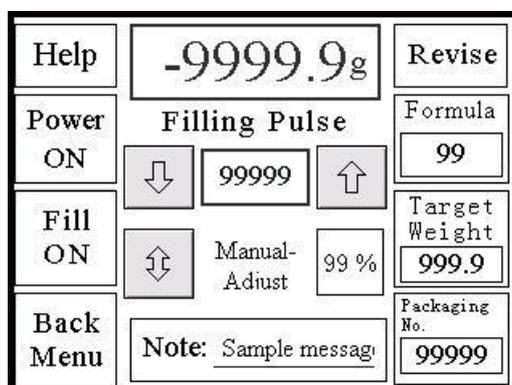
Picture 7-3　main operation interface

Main Menu box:
- Enter
- Parameter Setting
- Function Test
- Operation Instruction

Manual Book

Filling Test
- Filling ON
- Feeding ON
- Valve Open
- Mixing On
- Carr-orientation ON
- Back
- Help

Parameter Setting
- Filling
- Mixing
- Feeding
- Scale
- Canr-orientation
- Warning
- Transit
- Back
- Help
- Enter Console

ABCDEFGHIJK / ABCDEFGHIJKLMNOPQRST
1 2 3 Quit
4 5 6 Clear Up
7 8 9 Del
. 0
Confirm

Feeding Set
- Mixing Mode — Manual
- Delay Time — 9.9 s
- Back
- Enter Console

Warning Set
- +Error 99.9 g — Warning OFF — Moto Error — Warning OFF
- -Error 99.9 g — Warning OFF — Secunity — Warning OFF
- Need Feeding 999 s — Warning OFF
- Back
- Enter Console

Mixing Set
- Mixing Mode — Manual
- Delay Time — 9.9 s
- Back
- Enter Console

Filling Setting
- Mixing Mode — Portion (Manual)
- Interval Time — 9.99 s
- Auger Speed — 99
- Before-fil Delay — 9.9 s
- Back
- Enter Console

Scale Set
- Scale Weight — -9999.9 — Revise
- Label Weight — ABCD — Zero clearing — Standard Tag
- Decimal Digits — **** — SAVE — COF2
- Back

Main display:
-9999.9 g — Revise
Help
Power ON
Fill ON
Back Menu
Filling Pulse — 99999 ↑ ↓ ↕
Formula — 99
Target Weight — 999.9
99 % — Manual-Adjust
Packaging No. — 99999
Note: Sample message

Detailed set
- Filling Await — ON
- Mixing Motor — ON
- Feeding Motor — ON
- Back — General Power — Help

Shortcut Power Set
- Filling Await — NO
- Mixing Motor — NO
- Feeding Motor — NO
- Transmit Motor — NO
- Back — General Power — Help

Standard Track Mode table:
No.	Phse	Standard	Track Mode
01	9999	9999	Manual-Adjust
02	9999	9999	Manual-Adjust
03	9999	9999	Manual-Adjust
04	9999	9999	Manual-Adjust
05	9999	9999	Manual-Adjust
Quit — Help — Confirm — Back

(second table same structure)
No.	Phse	Standard	Track Mode
01	9999	9999	Manual-Adjust
02	9999	9999	Manual-Adjust
03	9999	9999	Manual-Adjust
04	9999	9999	Manual-Adjust
05	9999	9999	Manual-Adjust
Quit — Help — Confirm — Back
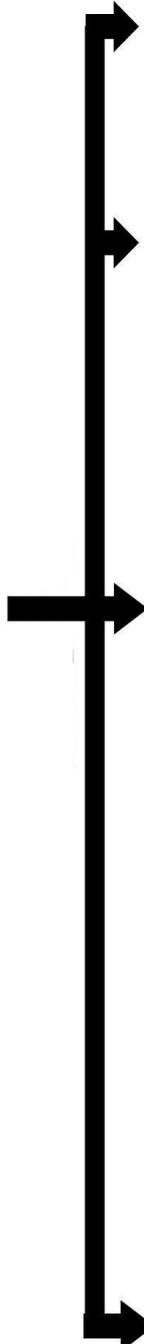
7.3 Operation steps

01. Click "Enter into work" on operation interface. Enter into main operation interface(see picture 7-3).

02. Click "start to work", "Motor on/off chosen page" appears（see picture7-5）, manually to choose motor on or off, click "back" to enter into ready status for work.
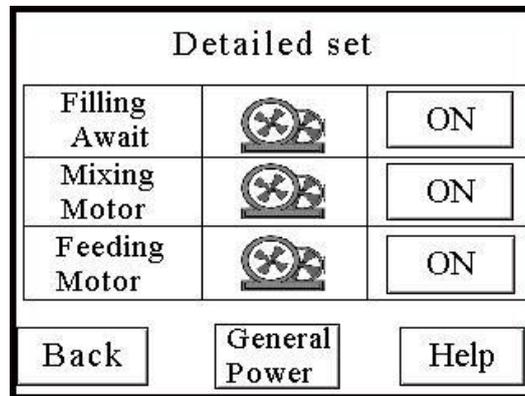
Picture 7-5 Motor On Choice Interface
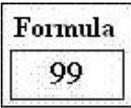
03. Click" "below number area, enter into formula chose and set interface(see picture 7-6). Formula is taken as the packing specification change for different materials and different packing weight, this machine could stock 10 formulas at most. When changing packing material or weight, but there was same packing specification before, just need to click according "formula No. ",then "confirm" to select the responding formula and enter into pack status quickly, no need to adjust packing specification again. If need to save a new formula, then click a blank formula, click "formula NO." ,then "confirm", enter into this formula and later setting will be saved in it, unless choose another new formula.
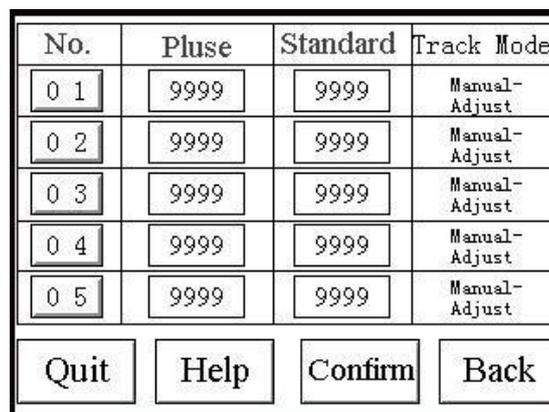
Picture7-6 Formula Choose Interface
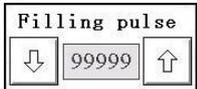
04. Click " " up & down arrowhead to adjust pulse number slightly, click the

number area to input pulse number.

05. click " **Revise** " Take all weight on weighing scale as peel weight, now the weight window shows "0".To make the packing weight to be net weight, should weigh the package weight and peel, then the packed weight will be net weight.

06. Click " **Target weight** **999.9** the number area in the window, and input the packing weight.

07. Click " **⇕ Auto-adjust 99%** " the arrowhead area, there are 3 choices: micro-adjusting track, proportion track, no track.

Minitrim Track："**⇕ Minitrim 4** " Under this way, put the packaged product on the weighing scale, if the real filling weight is not consistent with target weight, the pulse number will increase or reduce automatically based on the minitrim pulse number in right window, if no error, no modulation. The pulse modulates automatically after each time filling and weighing.

Proportion Track："   " Under this way, put the packaged product on the weighing scale, if the real filling weight is not consistent with target weight, the pulse number will increase or reduce automatically based on the minitrim pulse number in right window, if no error, no modulation. The pulse modulates automatically after each time filling and weighing. If the error between real filling weight and target weight is more than the +/- % (the number showed in the right window), pulse won't do modulation, it means the pulse set number is with big error difference with the target weight, should change the pulse set number.
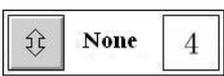
None Track："**⇕ None 4** " This way couldn't do automatic track. How it weighs on the scale, the pulse wont change. It needs to change the pulse manually.
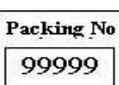
08. " **Packing No** **99999** This window counts the filling times. When need to clear the count number, click the number area, the springs a window to click "clear", then "back " to quit.
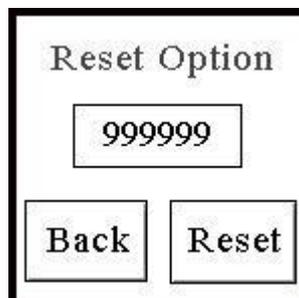
Picture7-7   Clear Operation Interface

09. " **Fill ON** " On this window, the auger screw runs one time when click it under

13

status of "Ready Filing(see picture7-5)"（Auger screw cicumrotates one round, it needs 200 pulse.）

10．" Note: Sample message " This window shows system alarm hint, if all parts are ready for work, then shows："system in normal",and can work normally. If there is no feedback even operate correctly, should look at the hint window, it alarms" no hopper, no material in hopper", etc, and should resolve it according to the hint. When the motor is lack of phase or other material block to make the electric current too much, then springs "motor trouble alarm " window (see picture 7-8). This machine has the function of motor current protection, when this trouble happens, must find how the current goes through motor.
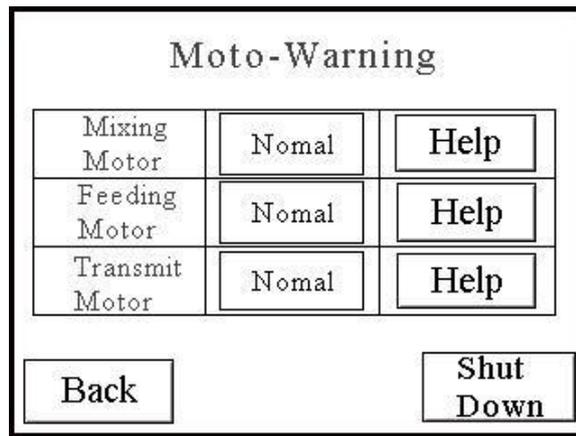
Picture7-8   Motor trouble alarm window

7.4   parameter setting

click "parameter set", enter into parameter set interface, input code firstly(see picture7-9), (the code is 112233), and enter into parameter setting interface(see picture 7-10), all the parameter are saved in corresponding formula.

7-9   Parameter set & code input picture   7-10 Operator parameter set interface
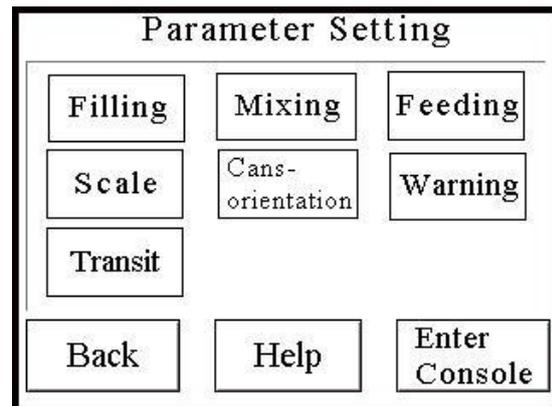
1. Filling set: see picture（7-11）

Mode change: continuous filling or order filling

Continuous Filling Click | Fill ON | in the operation

Interface, the auger screw runs one time, one filling

finishes.

Later to run again based on the time set on Waiting

Time

Picture7-11　Filling Set Interface

Filling screw, system enters into filling status，press " | Fill OFF | " to stop filling。

Order Filling Click the | Fill ON | in the main operation interface or step on the pedal switch, the filling screw runs one time. Usually this machine is set to be "Order Filling".

Auger Screw Speed：The running speed of filling screw The faster it runs, the faster

filling, and adjust based on the material flowing and density, the set range is1-99. We

set it to 60 leaving factory.

2. Mixing set：picture（7-12）

Mode Change：choose automatic mix or Manually mix

Automatic mix When filling starts, mixing
  Starts meanwhile. After filling, the mixing

Picture7-12　mixing set window

Stops automatically after the time of set delay time. This mode is used only for
    easy-flowing material, in order to prevent material fall continuously from mixing
    vibration, so to make the filling weight with big error. If filling time is less than
    delay time, then mixing continues without stop.

Manually mixing is to turn on or off manually and keep the same action always unless
    manually change it.

This machine is usually set to be manually mixing.

3. Feeding system:（see picture 7-13）

Mode Change：Auto feeding or manually
 Feeding Auto feeding, that is, level sensor has no
Signal within time of level sensor delay time

Then it is taken as low level, and begin to feed.

Manual feeding that is, manually turn on the motor

Picture7-13   supplying set window

To do feeding.This machine is usually set to

Auto Feeding

Level sensor delay time：During mixing, the material

Moves like wave, level sensor feels the signal discontinuously .If not adopting delay time, supply motor will start frequently to break down the supplying system easily.

4. Weighing equipment: See picture（7-14）

Calibration weight：calibration poise weight,

100g poise.

Peel ：Press this button, the system considered

All weight on weighing system as tare, now

The real weight in window sets"0"

Calibrate steps：take away all things in the

Weighing scale, click "zero calibration", now
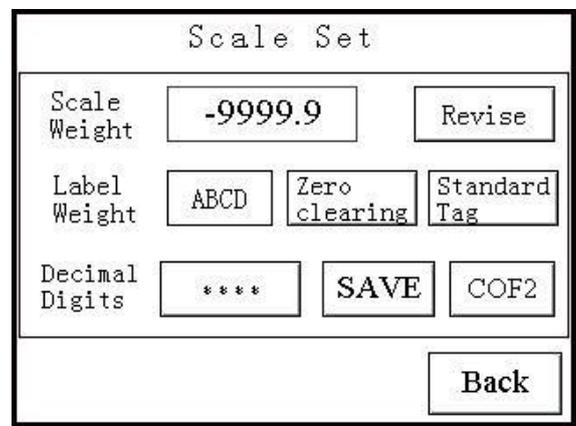
Picture7-14   weighing set window

The real weight shows "0"; Then put the standard poise on the scale and click "full load calibration", if the showing weight is consistent with its real weight, then calibration is ok. Otherwise, repeat the above steps until calibration is ok. Click "save " to back.

Save ：save calibration result .

real weight ：the showing weight of things on the scale, based on the calibrations status

mode change：COF2   This button couldn't be used when calibrating, and couldn't be pressed in normal work status.

5. Alarming set：see picture（7-15）

＋ error：real weight is more than target

Weight of this number, system alarms.

－ error：real weight is less than target

Weight of this number, system alarms.

No material：When level sensor couldn't feel
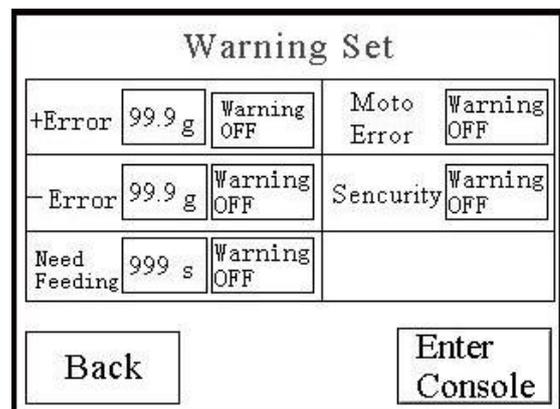
Material for a while of this time, it is regarded

As no material inside,   system alarms.   **Picture 7-15   alarm set window**

Motor trouble：When something wrong with motor, will come alarming window, see picture 7-8,，This function should be on usually.

Security :if disconnecting hopper's door is not closed, system alarms; but not for knocked-down hopper.

7.5 Filling test： see picture（7-16）

    All signs are for click test, click each to check its corresponding action, click again to stop.

```
             Filling Test

        ┌──────────┐    ┌──────────┐
        │ Filling  │    │ Mixing   │
        │   ON     │    │   On     │
        └──────────┘    └──────────┘

   ┌──────────┐  ┌──────────┐  ┌──────────┐
   │ Feeding  │  │  Valve   │  │Can-orien │
   │   ON     │  │  Open    │  │tation ON │
   └──────────┘  └──────────┘  └──────────┘

   ┌──────────┐                ┌──────────┐
   │  Back    │                │  Help    │
   └──────────┘                └──────────┘
```
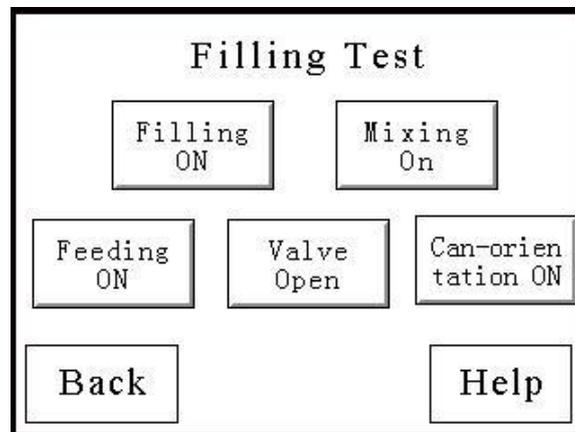
Picture 7-16   click test window
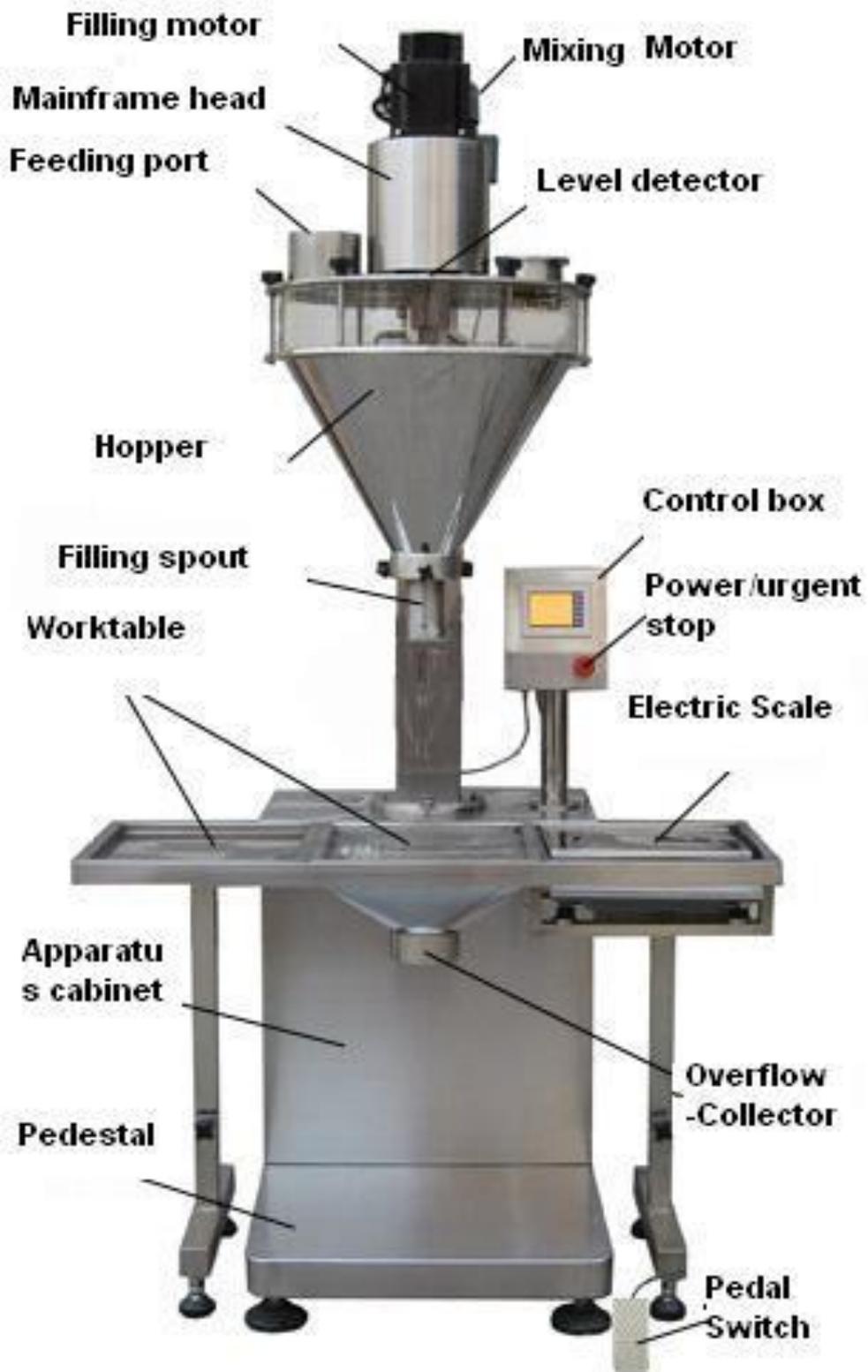
Picture 1   Front View of TP-PF-A14
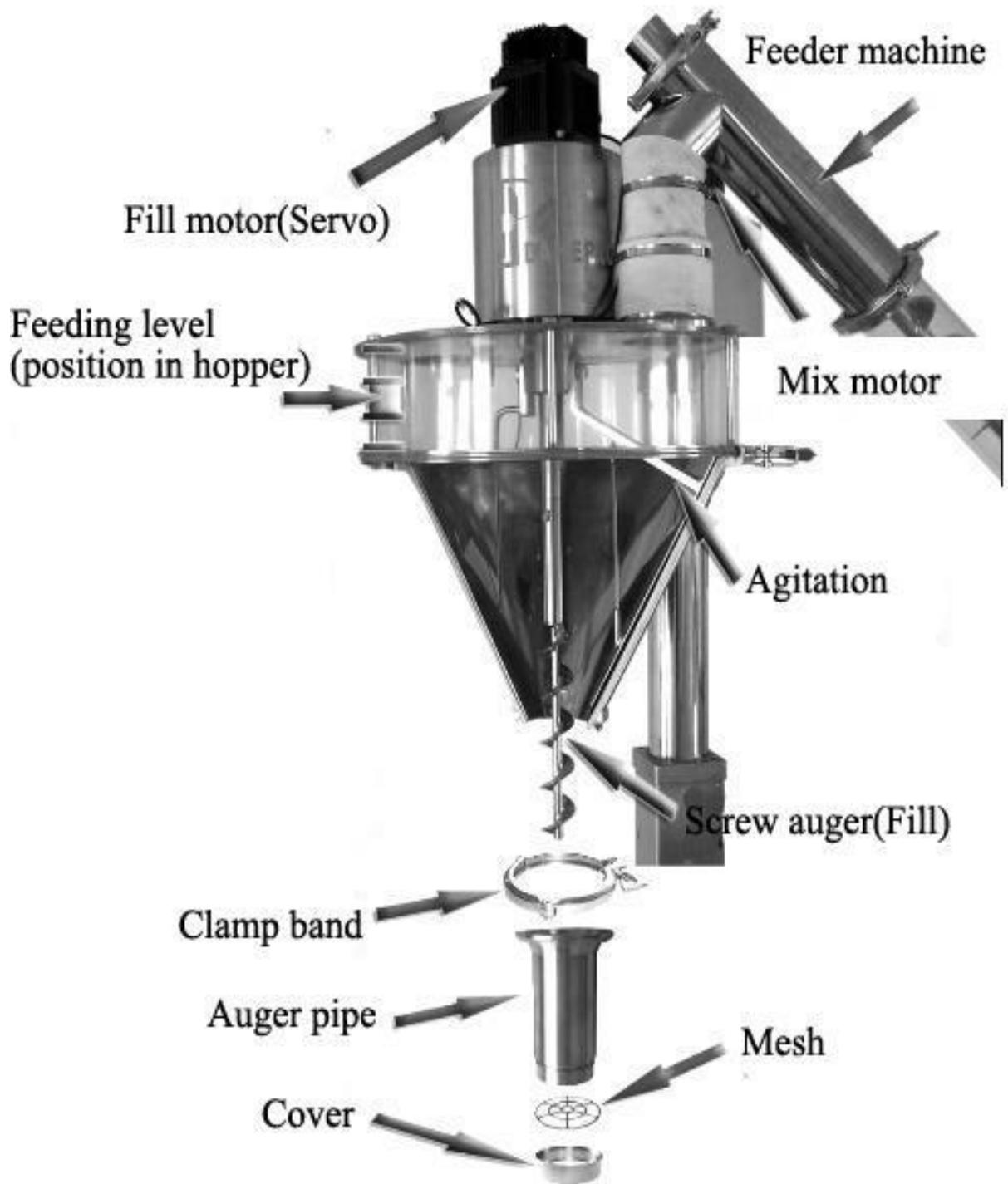
Picture 2　Hopper Inside Constructure

Make a proper space without rubbing&noise

Picture 3　　match of mixing & auger screw
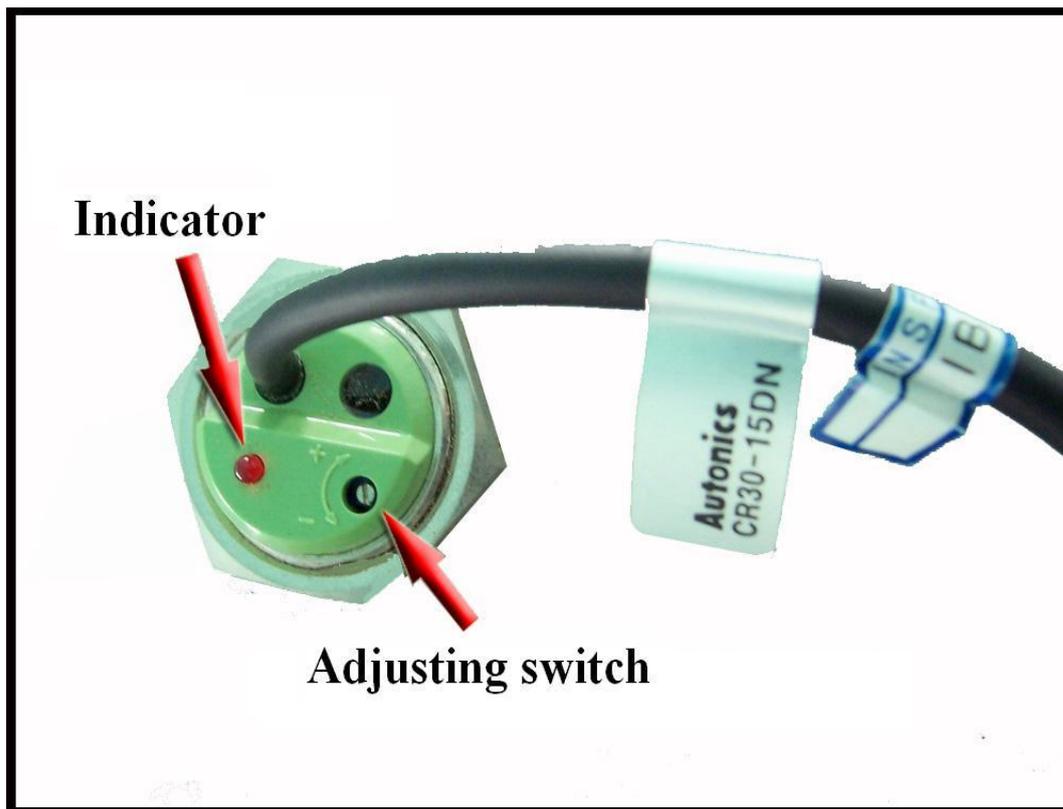
Indicator

Adjusting switch

Picture 4 Level Sensor Adjust

Fixing screw
tighten the screws
for using

Adjusting post
More space means more
pressure

This pressure plate is setup on top of the auger, only used for the
light or low fluidity materials, in order to increase the packaging accuracy
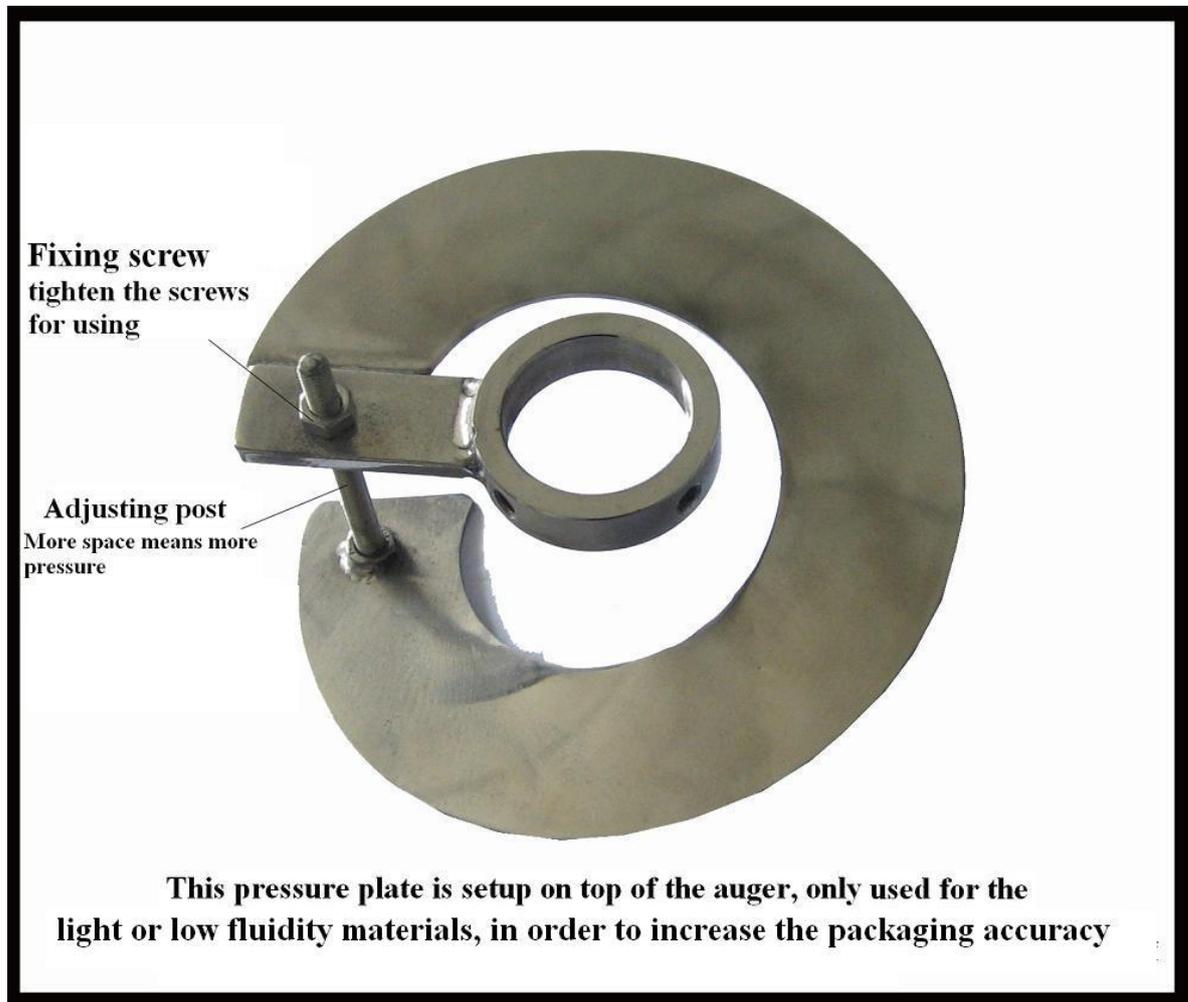
Picture 5 Pressure Plate
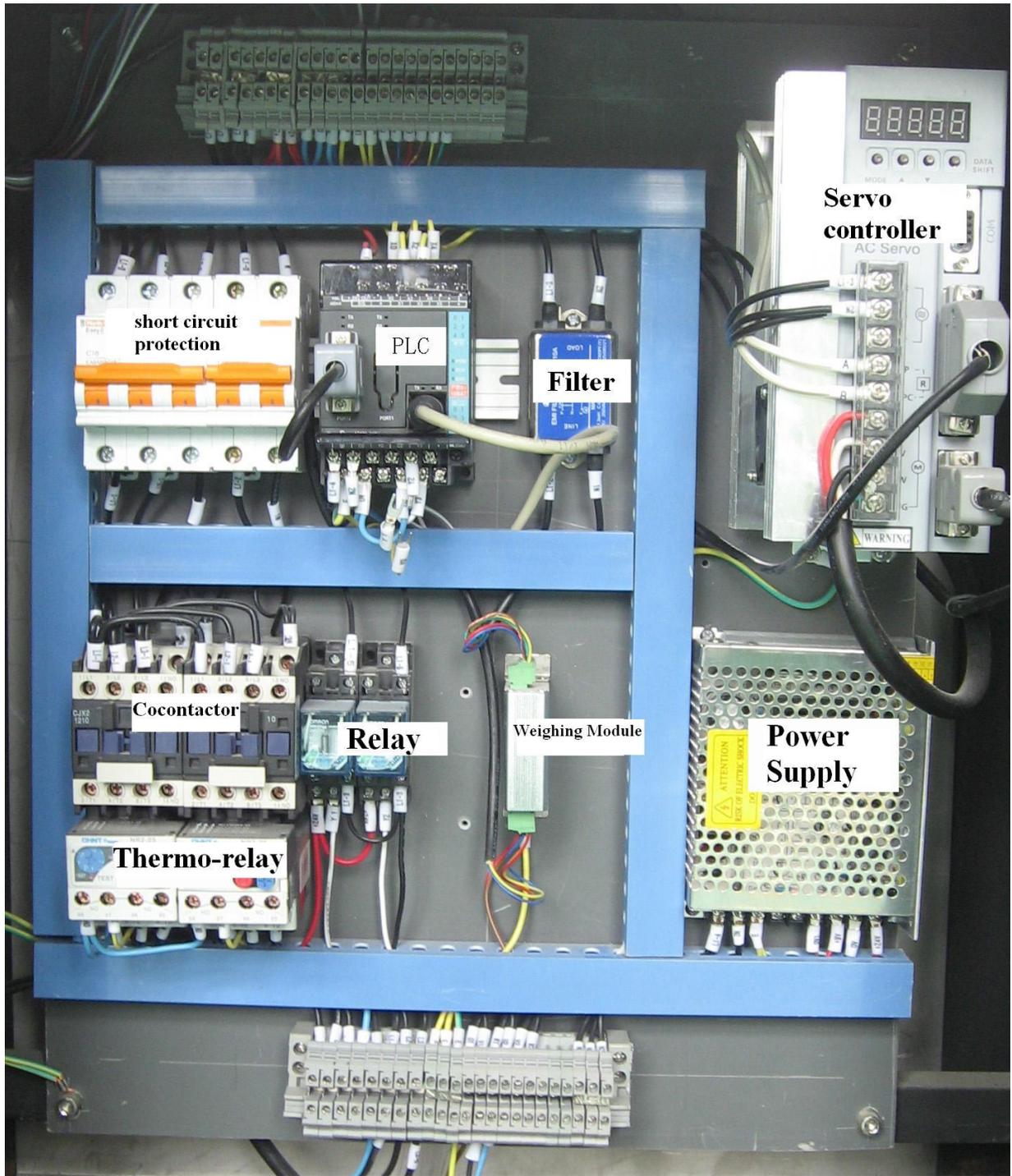
Picture 6 Modules of apparatus cabinet