INSTRUCTION MANUAL

Multihead Weigher

7″ Touch Screen A Series

Contents

1. Preface

Thank you for choosing Multihead Weigher.

As one of the leading companies in the multihead weigher field, we are specialized in R&D, manufacturing, marketing various multihead weighers with high speed and precision, and provided our customers with professional and all-round service.

This manual is designed for our users to use and maintain the equipment, in order to keep the machine running in effective and stable in a long-duration.

1.1 Safety rules

1. Children should not get near, all visitors must be keep a safe distance.in the operating area
2. Factories must prevent children from playing turn on the device.
3. Do not force the operation of equipment, the design should allow the device to operate in the safe operation speed.
4. Use the right tools, do not forced to modify or additional equipment, which may cause the device to malfunction.
5. Operating personnel have to wear appropriate clothing. Do not wear loose-fitting clothes, neckties, decorations, or long hair when operate equipment
6. Do not let the device operation in case of unattended , turn off the power.
7. Never touch wheel or bearing, when equipment operate which can cause injuries and fatalities.
8. Do not remove or modify any warning signs and replace any signs may cause confusing.

1.2Basic Introduction

1.This machine adopts factorial theory, it will pick out a closest combination to the target weight from the plenty of passed combinations.

2.This machine is mainly applied in weighing various granular and irregular products in production line.

3.Model：KC-□□□-□□，its mark as follows

MD - A □□- □□

1 means first machine of this generation; 2 means second machine of this generation, and so on.

1 means first generation; 2 means the second, and so on

Weighing heads

“A”-“Filling Machine”; “B”-“Packaging System”; “L”-Packaging Machine;“D”-Conveying Machine”

“C”-Check Weigher”; “G”-Metal Detector;

Company’s short name

1.3 Notices

Please read carefully before proceeding.

1. Environmental requirements :
   - Temperature: 0 ～ 40^{0}C;
   - Humidity: 35—85%;
   - Power: AC 220±5V, 50/60HZ;
   - Installation place: Horizontal, rigid and no vibration surface;
   - Earth line: Make sure the machine is connected with the earth safely and separately;
   - Interference: Keep away or shield off from the interference;
   - It must be work in aseptic and non-dust plant when apply in food packing.
2. Do not bump or crush on weigh hopper.
3. Check and clean the rest products inside the machine before running.
4. Press Empty to make empty and zero operation before the first running.
5. Power must be turn off before repairing and cleaning the machine.
6. When the electric parts are failed, only the electric engineers are permitted to repair.
7. Be careful during cleaning and repairing, for it is a certain height when the weigher is installed on the top of the packing machine.
8. For the signal connecting with other equipments (Packing machine, Conveyor, etc.), DC voltage can not exceed 30V, load current should not exceed 100mA.
9. Do not touch the hoppers while the machine is running.

2. Parameters and Characteristics

Model No. / Parameter	Model			
	MM-AM14	**MM-M14H**	**MM-M12H**	**MM-M10H**
Voltage	AC110/220 V	AC110/220 V	AC110/220 V	AC110/220 V
Power Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Required Current	14 A	10 A	9 A	8 A
Power	1.8 kW	1.5 kW	1.2 kW	1.0 kW
Weigh Head Nos.	14	14	12	10
Max weight range	6500 g	6500 g	6500 g	6500 g
Single weigh Range	10-2000 g	10-1200 g	10-1000 g	10-800 g
Weigh Volume	2000 mL	1300 mL	1300 mL	1300 mL
Max. Speed	2×65 bags/min	130 bags/min	120 bags/min	70 bags/min
Preset Program	100	100	100	100
Machine Size L	1550 mm	1240 mm	1172 mm	1100 mm
Machine Size W	1470 mm	1180 mm	1115 mm	1080 mm
Machine Size H	1520 mm	1440 mm	1425 mm	1320 mm
Machine Weight	530 kg	420 kg	380 kg	330 kg

3. Operating Principle

3.1Feeding

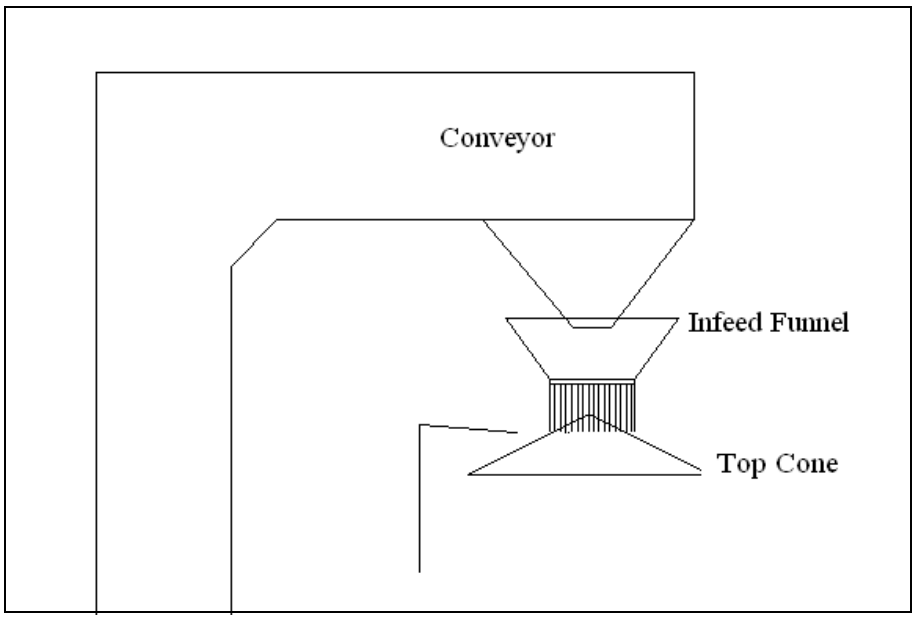


Chart 3-1-1

Firstly, product is transferred to infeed funnel by conveyor, and then distributed to linear vibrator pan by the vibration of top cone. The height of infeed funnel is adjustable by adjusting the supporting bar, which can adjust the thickness of product on the top cone. As show in Chart 3-1-1

3.2Distribution

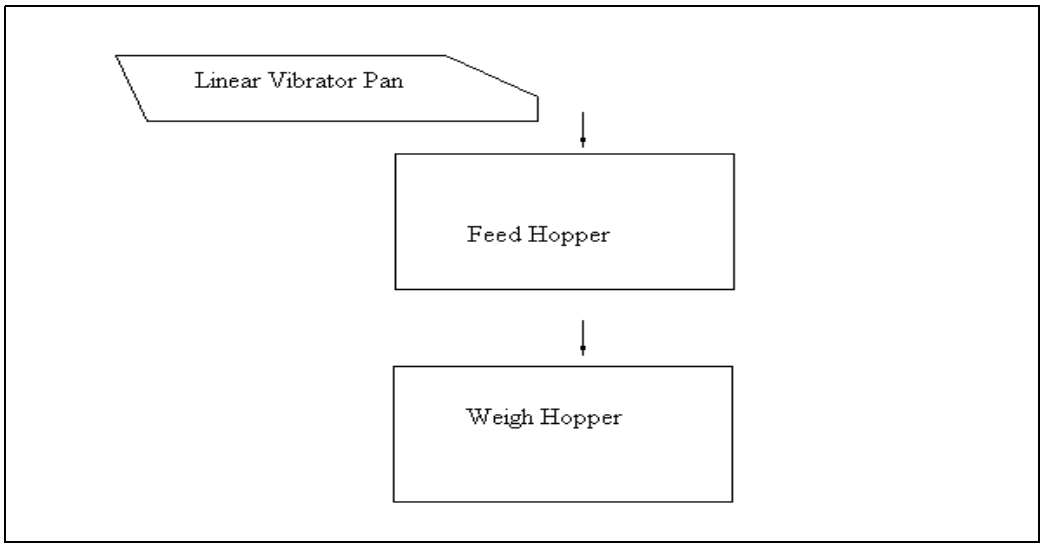


Chart 3-2-1

Product is distributed evenly into each linear vibrator pan and then drop into feed

hopper by linear vibration. After the weigh hopper finished the previous combination, the feed hopper will drop down the product into weigh hopper by opening the door. As show in Chart 3-2-1

3.3 Combination

According to the target weigh, the CPU will combine the weight data received from each weigh hopper, then pick out a closest combination from numerous qualified combination.(As show in chart 3-1-1)

1. The parameters related with the weigh hopper: “AFC”, “Main AMP”, “Lin AMP”, “Average Combination Hoppers”, and “Single Hopper Weigh”. (Details refer to System Setup 6.2)

AFC 0： The bigger of the “Main AMP” and “Lin AMP”, the heavier of the single weigh hopper.

AFC 1：The bigger of the “ Avg Comb HPs”, the lighter of the single weigh hopper.

AFC 2：The bigger of the “Sgl HP Wt”, the heavier of each weigh hopper.

2. The parameters related with the combination: “Optimum”, “Combined Hoppers”

Optimum: Accuracy will be more precise by increasing this value. As show in Chart 3-3-1, if the “Optimum” is 98, the best group (6) will be selected, and then it is unnecessary to combine again.

Combined Hoppers: The pass rate will be better by increasing this value. As show in Chart 3-3-1, if there is no qualified combination and the **actual combined hoppers≥ preset “Combined Hoppers”**, the product will be enforced to discharge to ensure the machine in continuous running. If the **actual combined hoppers< preset “Combined Hoppers”**, the machine will wait for the discharged hoppers to re-feed again, and then combine together.

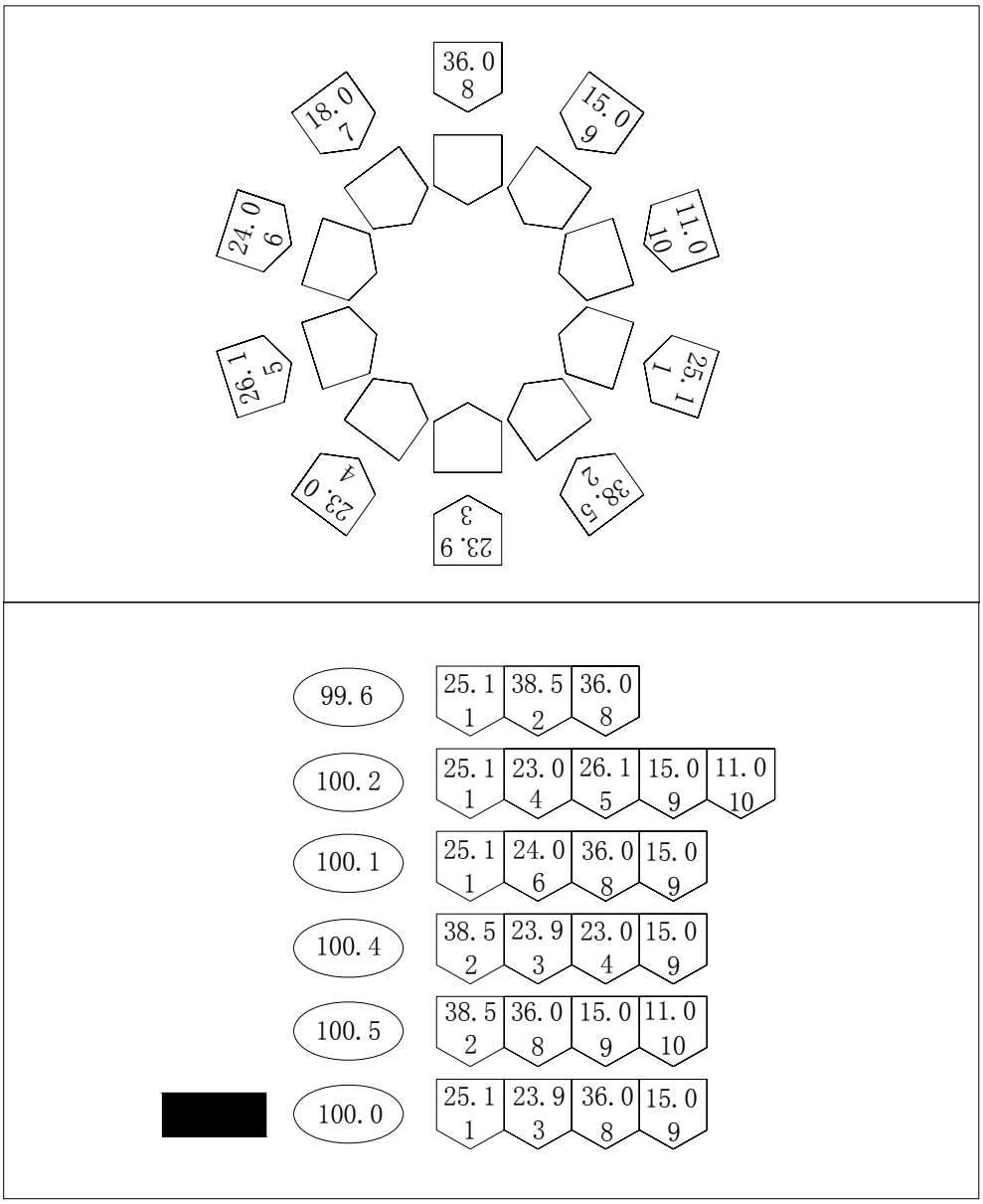


Chart 3-3-1

3.4 Discharging

There are four ways to discharge the products to the next equipment.

1. Direct Discharge (Timing Hopper set as 0): Product is directly discharged from the collecting funnel to the next equipment.

2. Timing Hopper Discharge（Timing Hopper set as 1）: Product is firstly stored in the timing hopper after discharging from collecting funnel, and then dumped to the next equipment. This function is to collect products and shorten the drop time. As show in Chart 3-4-1

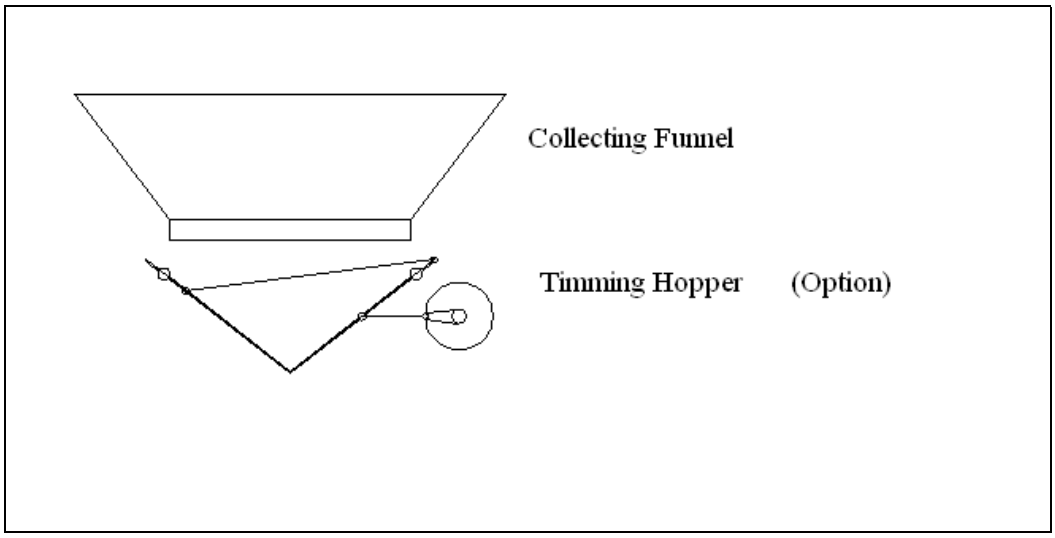


Chart 3-4-1

3. Timing Hopper Discharge（Timing Hopper set as 2）：Product is firstly stored in the timing hopper after discharging from collecting funnel, and then discharged respectively to the next two equipments according to their dump request signal. This function is full utilizing the high speed of multihead weigher. As show in Chart3-4-2

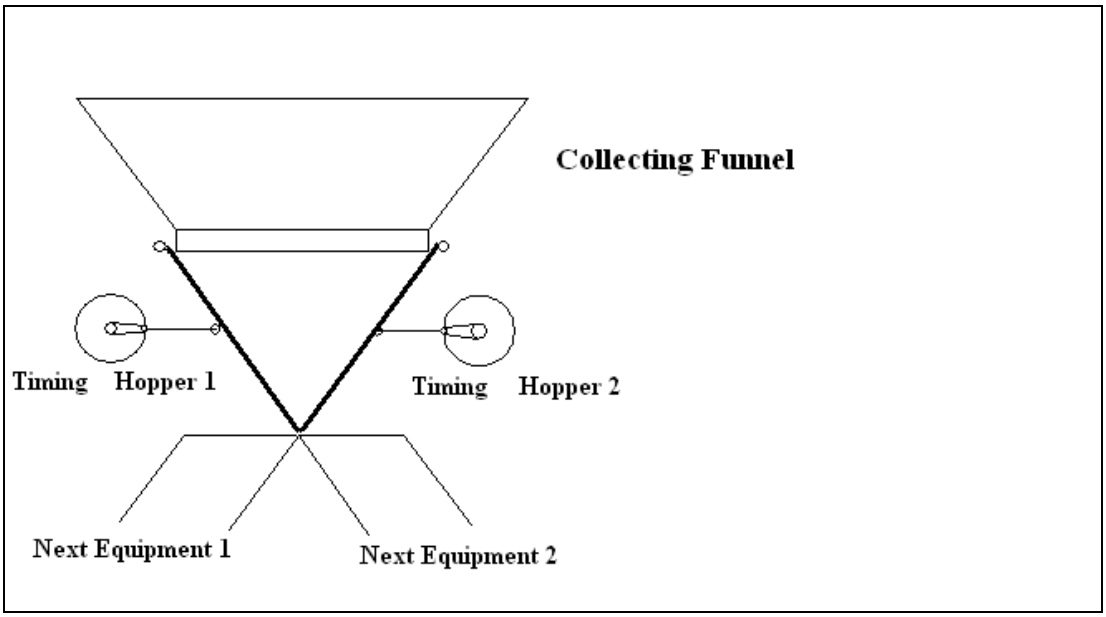


Chart 3-4-2

4. Timing Hopper + Auto-sorting（Timing Hopper set as 3）：Product is firstly stored in the timing hopper after discharging from collecting funnel. When the weigh of product is unqualified, the Auto-sorting motor will open the right door to dump them to the unqualified channel. As show in Chart 3-4-3

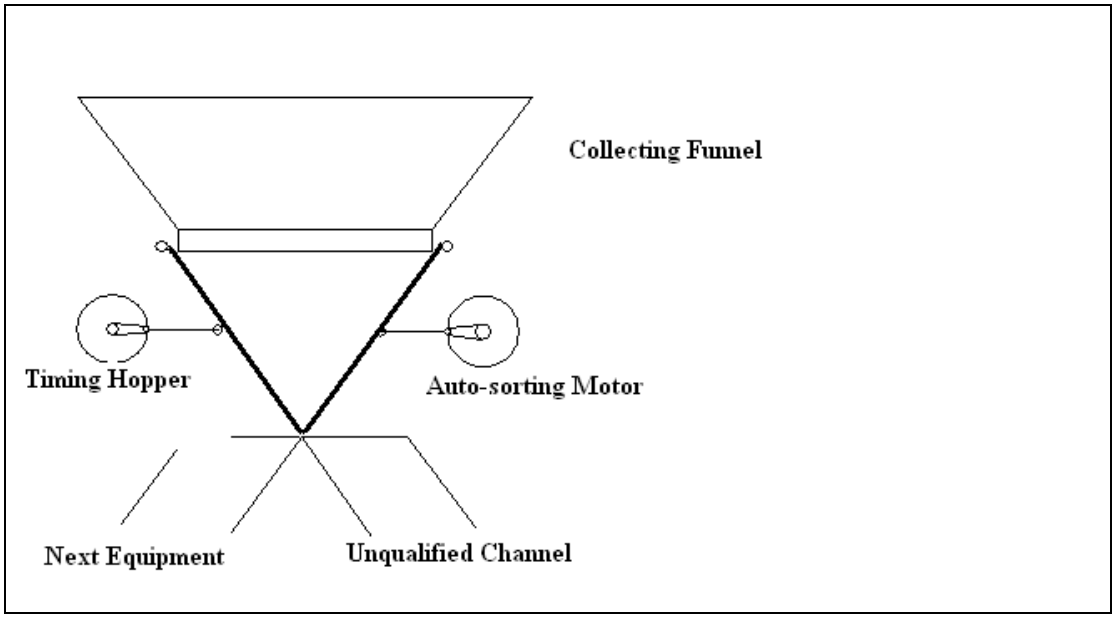
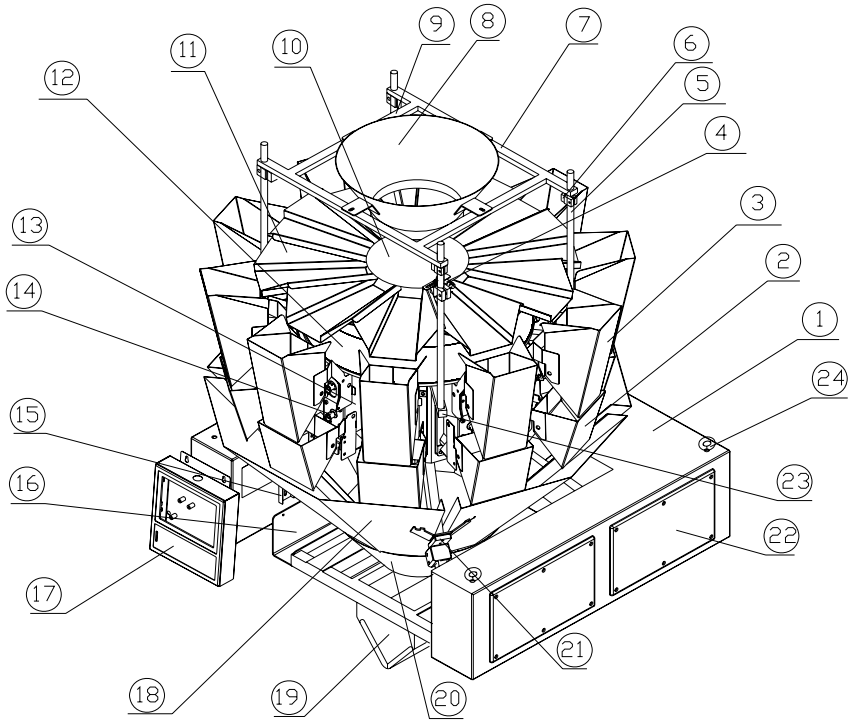

Collecting Funnel
Timing Hopper
Auto-sorting Motor
Next Equipment
Unqualified Channel

Chart 3-4-3

4. Machine Structure

4.1 Main Parts Diagram



No.	Description	Note	No.	Description	Note
1	Machine Frame		15	Lower Holder	
2	Weigh Hopper		16	Timing Hopper Board	
3	Feed Hopper		17	Control Panel	
4	Level Sensor		18	Discharge Chute	
5	Support Post		19	Timing Hopper	Option
6	Clamps		20	Discharge Funnel	
7	Upper Bracket 1		21	Discharge chute Holder	
8	Infeed Funnel		22	Base Cover	
9	Upper Bracket 2		23	Lower Post Bracket	
10	Main Vibrator Pan		24	Handling Ring	
11	Linear Vibrator Pan		25	Printer	Option
12	Waterproof Cover		26	Dimple Plate	Option
13	Actuator		27	Diverter Device	Option
14	Crank Arm		28	Rotary Top Cone	Option

4.2 Specifications

1．Packing Dimensions: **KC-A10:** 1620(L) ×1100(W) ×1100(H) mm

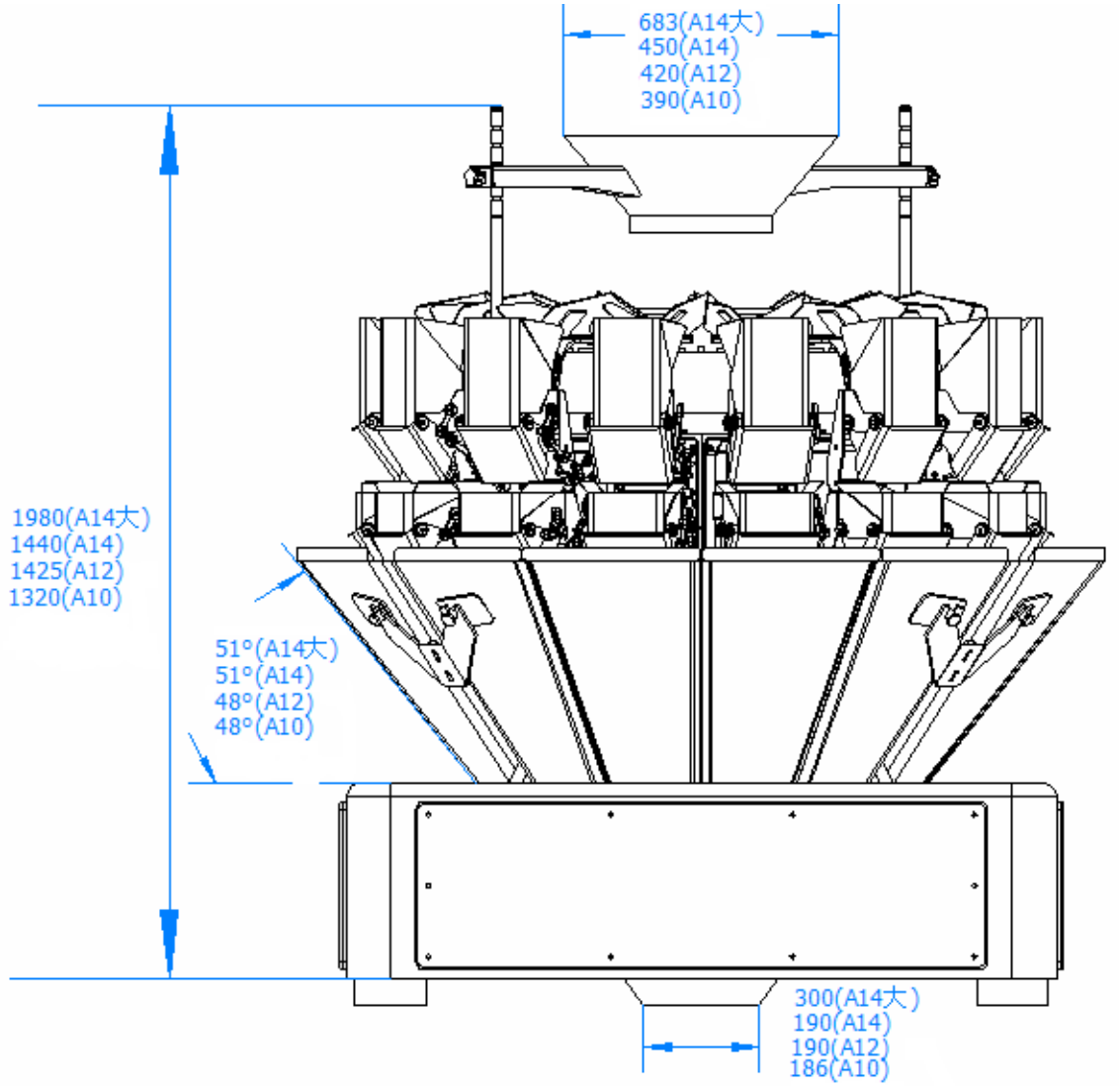
KC-A12: 1720(L) ×1100(W) ×1100(H) mm

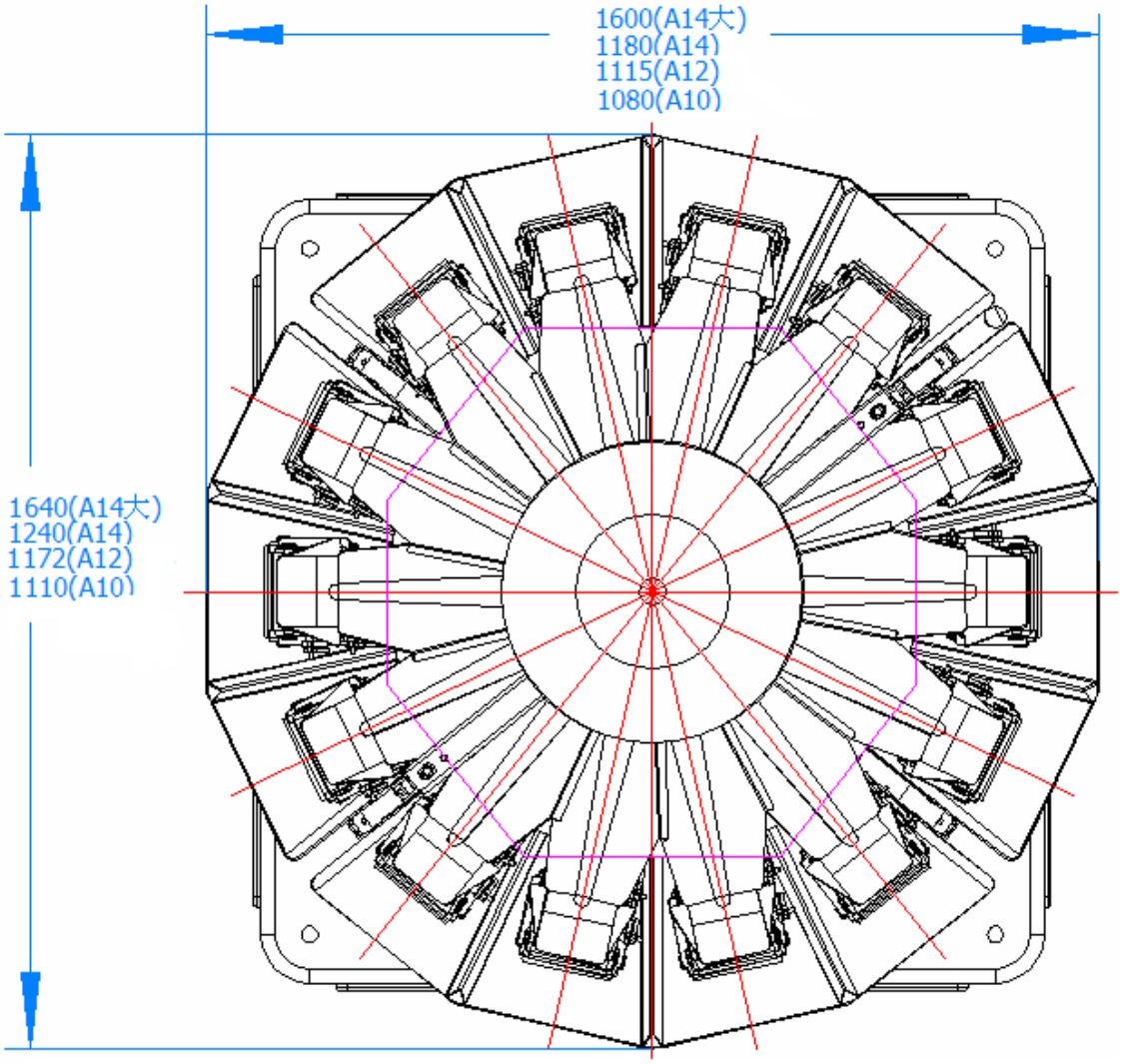
KC-A14: 1720(L) ×1100(W) ×1100(H) mm

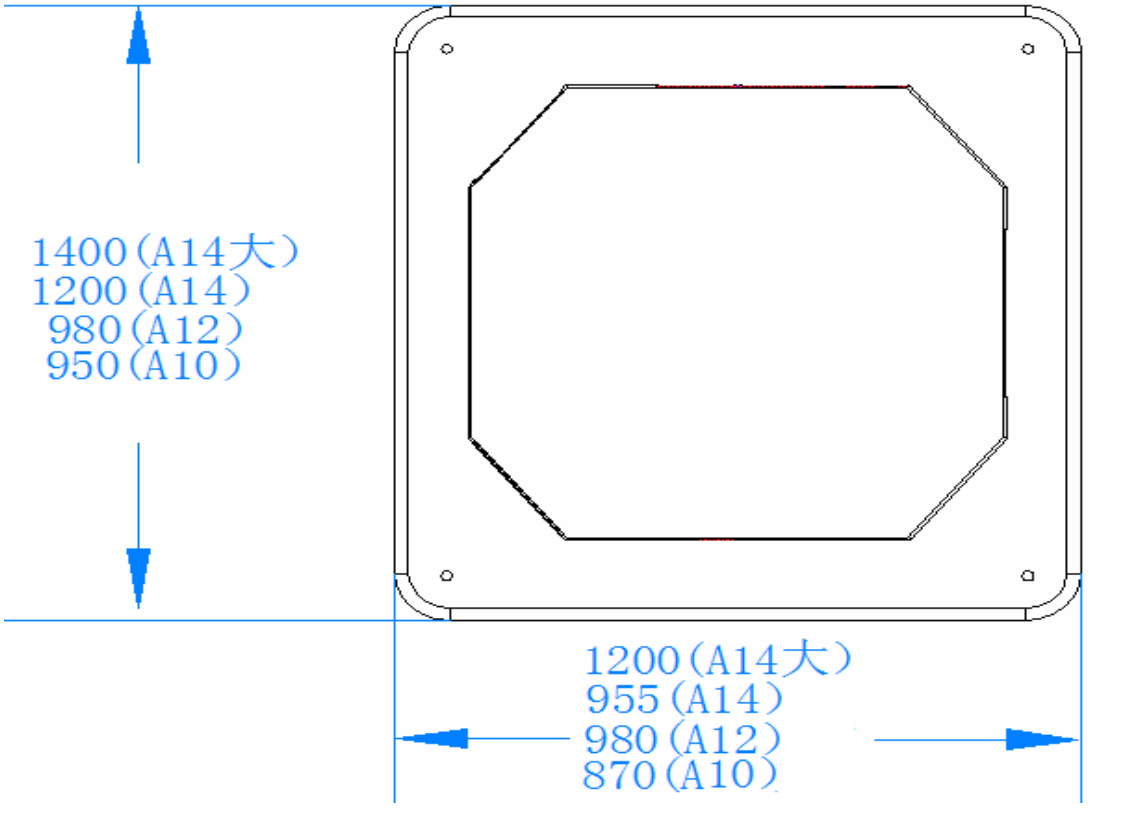
KC-AM14: 2179(L) ×1382(W) ×1805(H) mm

2.Packing Weight: 380 kg(10), 440 kg(12), 480 kg(14), 600 kg(big 14)

3.Installation Dimension：As show in the following chart.



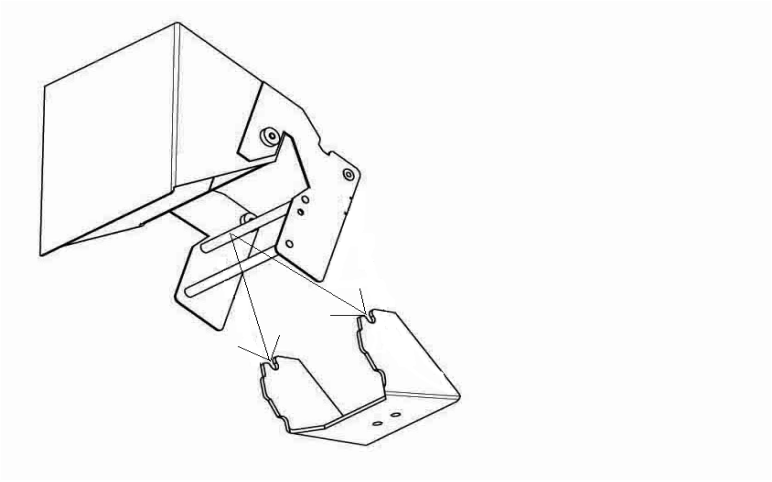

1600(A14大)
1180(A14)
1115(A12)
1080(A10)
1640(A14大)
1240(A14)
1172(A12)
1110(A10)


1400（A14大）
1200（A14）
980（A12）
950（A10）
1200（A14大）
955（A14）
980（A12）
870（A10）

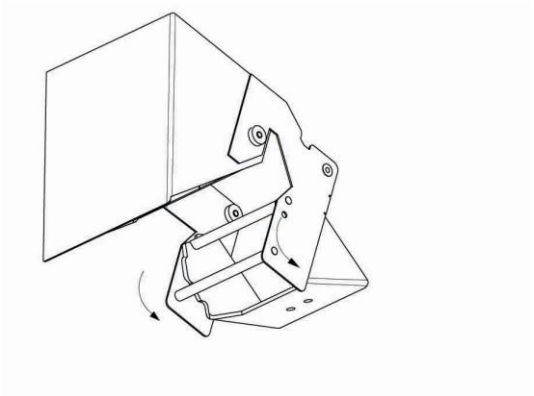
4.3 Common Parts Installation

4.3.1 Feed Hopper Installation

1. As show on the right, hold the outer edge of feed hopper with your right hand and put the two sides of operating lever 1 into groove completely



2. Keep the position of operating lever 1, take the fixed lever 1 as whirl center, whirls downward, and put operation lever 2 into groove completely.



4.3.2 Linear Vibrator Pan Installation

Waterproof feeder pan: As show in Chart 4-3-2, firstly, loosing the locking handle, and insert the part of vibrator pan “A” into the part of linear vibrator “B”, then keep the pan in level and tighten the locking handle.

Warning: Each linear vibrator pan should be well installed without bumping with each other.

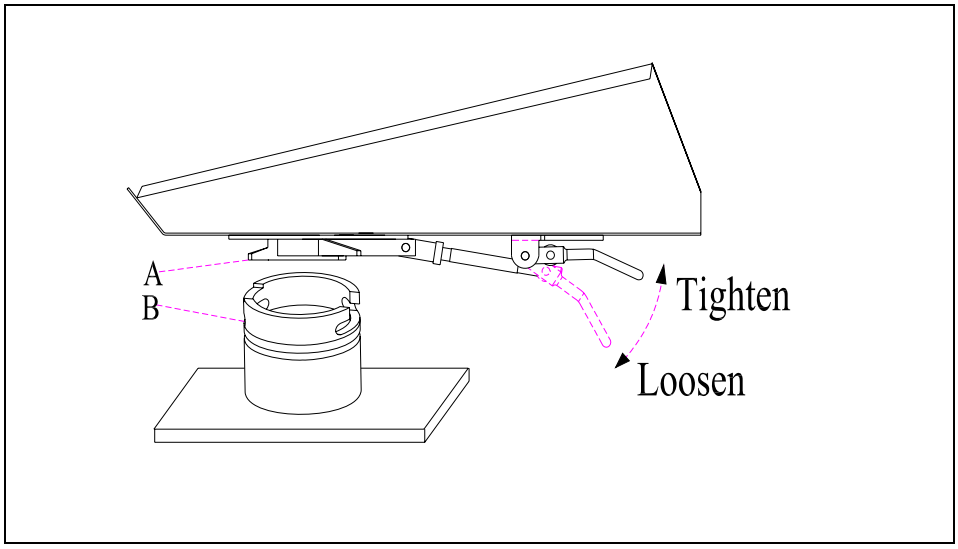


Chart 4-3-2

5. Operation

5.1 Screen

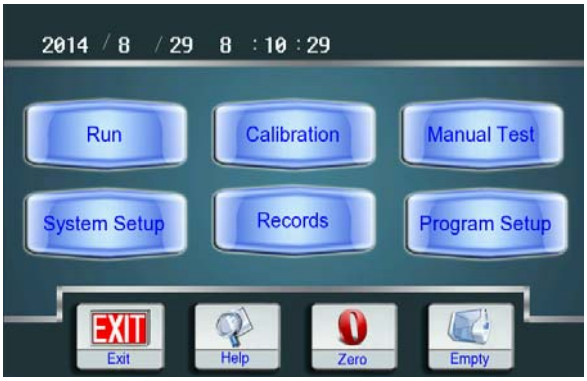
Panel is the controller of multihead weigher. The weigher can be operated by touching the corresponding button on screen.

Touch the screen with finger pulp; do not touches with nail, sharp pencil or the sharp and hard objects, which may scrape the screen and make the panel out of work, this is the man-made damage by the operator.

Login menu will be show on the screen after connecting with power, as below chart shows.

Remarks: This instruction manual adopts KC-A10 screen pictures, other models' screen will display differently, such as "Manual test" "Calibration" "Running" etc. Pls note!

Choose the language, and input corresponding user's right password, then touch "  " to enter main menu.



Touch “Exit” to return to login menu.

In the login menu, touch language box and choose the display language.

In the login menu, touch password input box “  ”, the digital keyboard will display, input the corresponding password, press “Enter”, then press “  ”. So the language and user’s right cutover completes.

 2: “2” means user’s level of password, there is three level passwords, 0-2

Remarks:a. Level 0: Worker Login without password (only for “Running Menu”, “Manual Test”, “Production records”, “Help”, “Zero” can not change parameter);

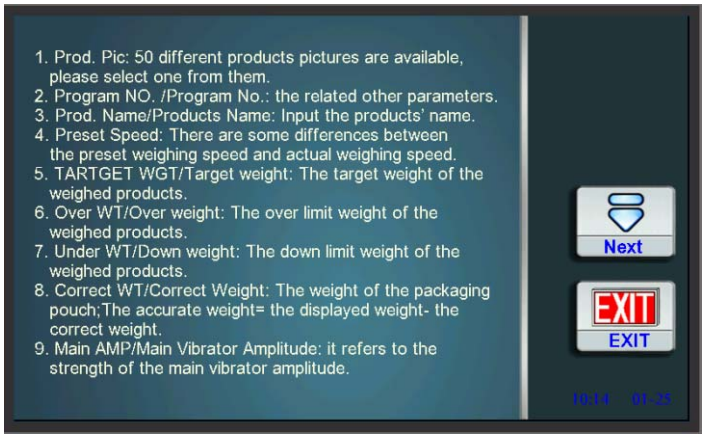
b. Level 1(181818): Allow revise all the menu except for “System setup” “Calibration” .

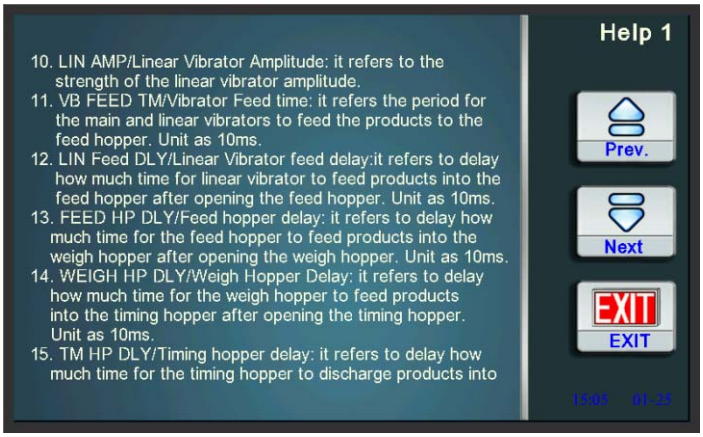
c. Level 2(282828): Administrator- Password Ⅱ (All parameters allowed for revising)

d. Password level change: Return to login menu, input password again, and press “  ”, to enter main menu again.

5.2 Help

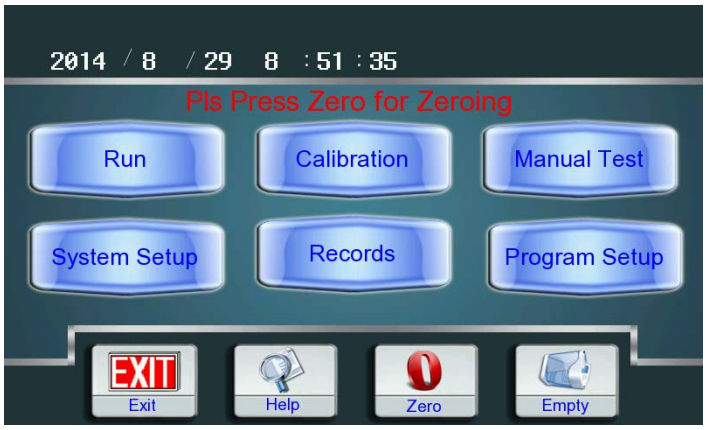
Press Help on the main menu to enter Help menu.





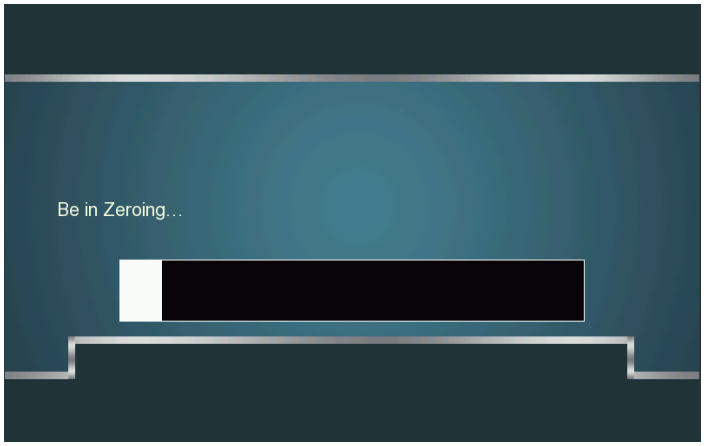
Prev. and Next button will help you to turn the pages, and you may easily to learn how to set the parameters. Press EXIT back to the main menu for another operation.

5.3 Zero Operation



Please Press Zero will display on the main menu, reminding you to make manual zero operation after turning on the machine.

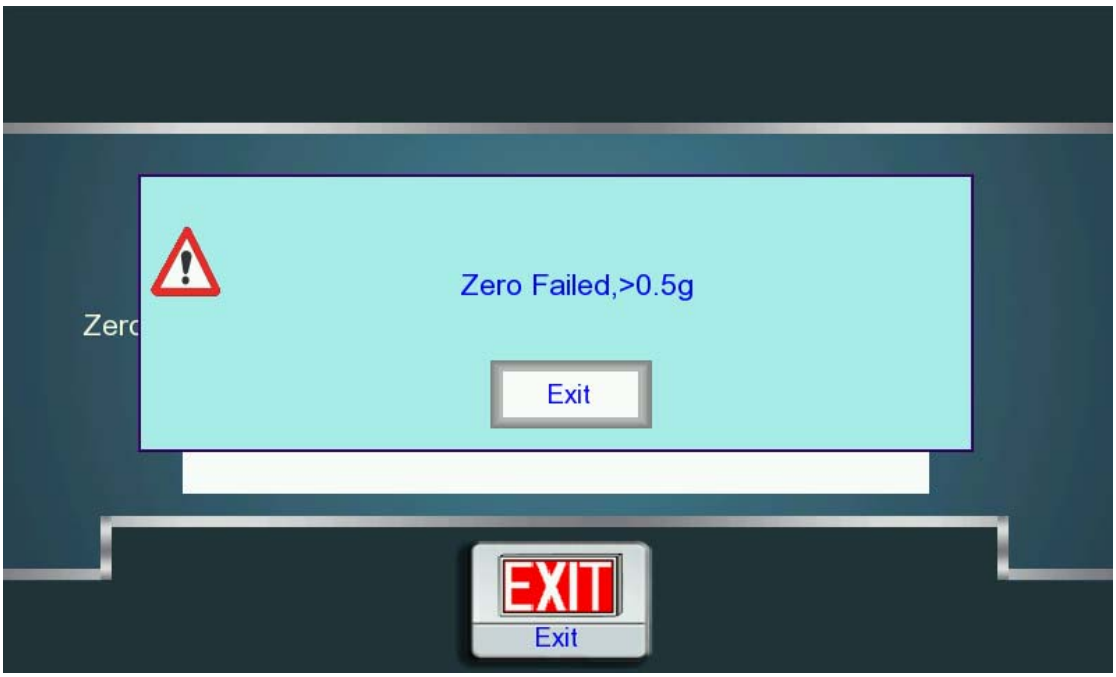
Touch “Zero”, it will enter zero menu automatically （Remarks: First empty weighing hopper, then zero)



After press Zero, it will show Be In Zeroing…

Five seconds later, the multihead weigher will make a sound “di” , then zero successfully. Touch “Exit” to return main menu. The main menu will displace the current time instead of Be In Zeroing.

If zero unsuccessfully, it will alarm as below pictures:



This alarm shows that, zero float of some hopper is more than0.5g, other alarm is more than 2000g.

Failure analysis during zero operation:

(1) “di” one time: zeroing success.

(2) “di” twice: warming that one of the load cell float between 0.5~200g after zeroing.

(3) “di” three times: zeroing is failure for one of the load cell float over 200g, the load cell has failures; E will display on running menu and stop running the corresponding hopper if the weighing hopper has zero float more than 1000g

.

5.4 Empty Operation

Empty function is that discharging weigher's remaining products into recycling bag in turn after the system stops working.

Press Empty in the main menu, then enter empty menu.

The weigher will acts vibrator, feeding hopper, weighing hopper, timing hopper in turns at the preset speed. After empty, press "EXIT" to return main menu.

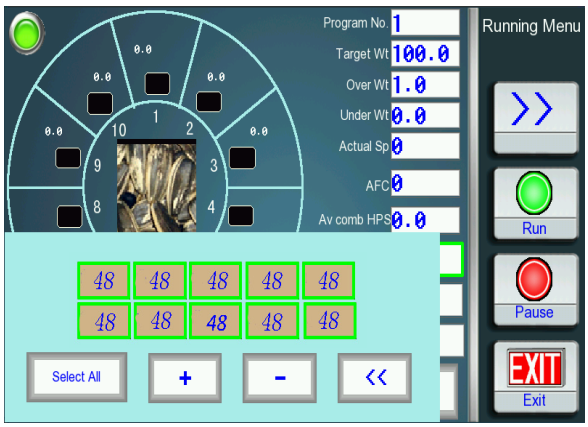
5.5 Running Operating

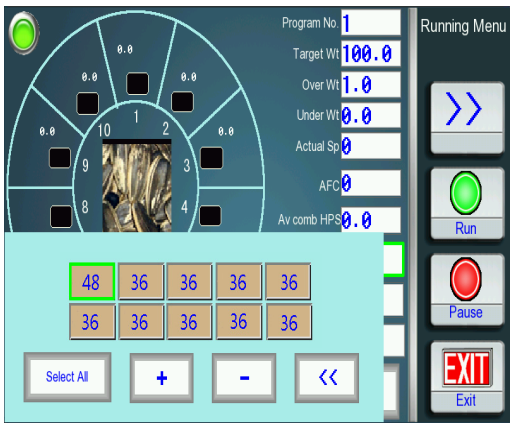
On the main menu, press Run to access running menu.

When enter running menu first, the machine is stopping, the indicator on the left up is red. The parameters can be modified at this situation.(Remarks: If the machine starts running, parameters cann't be modified)

Press Run in the right for running and the indicator will turn into green. If no material, the machine will stop running automatically, but indicator shows green. In the running menu, Preset Speed, Main AMP and Lin AMP can be revised in the running menu. The Lin AMP can be revised together or separately.

Revising ways: Selecting the Preset Speed, Main AMP or Lin AMP and adjusting them separately by pressing [+] [-]. If need to adjust Lin AMP separately, press >> and then [+] [-] adjust them separately.





1. Explanation of the icons on the running menu:

C: Being combined this time;

D: This hopper was disabled;

E：Invalid in zeroing on the main menu, and fail in zeroing during running;

e: Error in collecting data during running;

U: Enforced to discharge due to the weight of single hopper is over the target weight;

J: Being fed products;

K: After feeding, and the sampling stable time is passed, but there is no next combination.

L: The weight of single hopper is less than the preset weight of least single hopper;

Q：Enforced to discharge due to no combination;

R：Ready for combination;

T：Communication error on the load cell;

W：Execute IDLE without combination;

Y：Execute IDLE with combination；

Z：Auto zeroing during running.

O: The weigh hopper just finishes Zeroing.

Attentions: If such unformal letters“ E ” “ e ” “ T ” or others is displayed, pls take the Chapter 9 Self-diagnose&Solve the failures as reference.

2. √ will be displayed if the weighing is qualified and × will be displayed if the weighting is unqualified.
3.  will be displayed on left bottom to indicate there are not enough products in the infeed funnel.
4. The displayed weight is the products discharging from the weigh hoppers.
   a) The displayed weight is the products in the packing machine when there is no timing hopper.
   b) The displayed weight is the products in the timing hopper when there is a timing hopper.

Press Pause to stop running, then the green indicator will turn into red after 5 seconds. Meanwhile, weigher stops running.

Press EXIT back to the main menu after stop running.

5.6 Manual Test

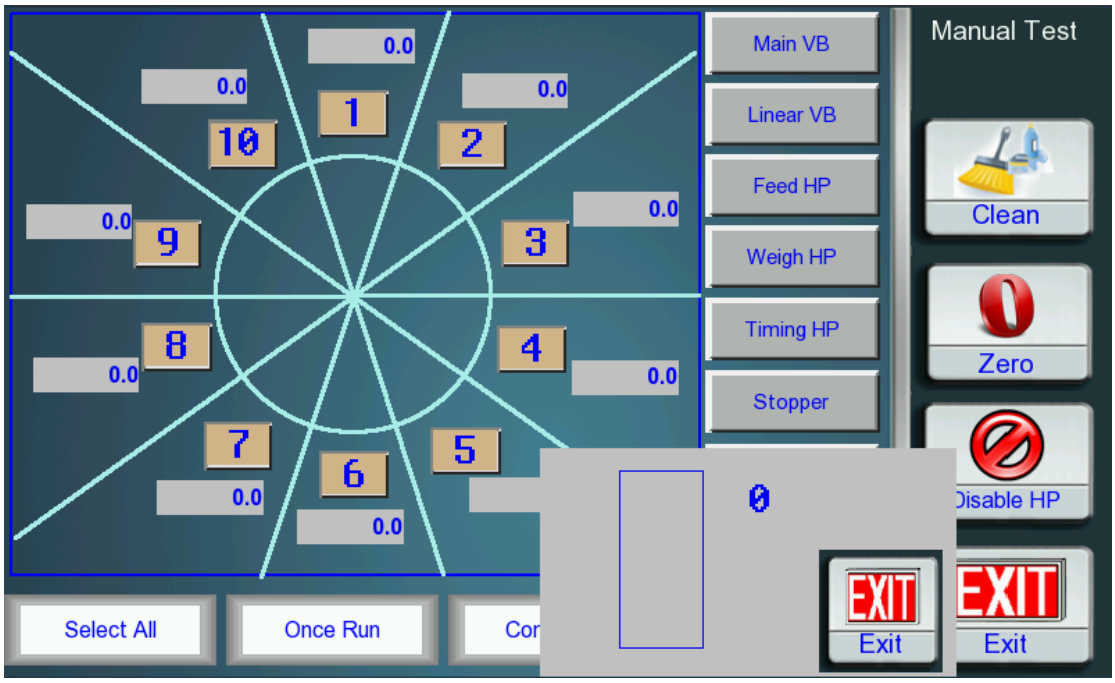
On the main menu, press Manual Test to access Manual Test menu.

1) **Main VB**/Main Vibrator: Press Main VB to start testing. Then the main vibrator

will vibrate or rotary according to the preset program with the preset program.

2) **Linear VB**/Linear Vibrator : Press number key to select the linear vibrator number or “Select All”and press Linear VB to start testing. Then the selected linear vibrator will vibrate according to the preset program.
3) **Feed HP**/Feed Hopper: Press number key to select the feed hopper number and press **Feed HP** to start testing. Then the selected feed hopper will run according to the preset program. Selecting 01-10 means to select the corresponding feed hopper, and **Select All** means to select all feed hoppers.
4) **Weigh HP**/Weigh Hopper: Press number key to select the weigh hopper number and press **Weigh HP** to start testing. Then the selected weigh hopper will run according to the preset program. Selecting 01-10 means to select the corresponding weigh hopper, and **Select All** means to select all weigh hopper.
5) **Timing HP**/Timing Hopper: Press number key select the timing hopper ways and press **Timing HP** to start testing. Then the selected timing hopper will run according to the preset program. Selecting 1-2 means to select the corresponding timing hopper ways, and **Select All** means to select the two timing hopper motors.
6) **Timing stopper** / Timing stopper: Press Timing stopper, it will run on time according to the preset program(remarks: Timing stopper is optional choice, it may be not used, pls note the detailed setup according to Chapter 7 System setup)
7) **Once Run**: Press number key to select the hopper No. and press **Once Run**, the selected hopper will have a running from its vibrator, feed hopper, weigh hopper to timing hopper according to the preset program. Selecting 01-10 means to select the corresponding hopper, and **Select All** means to select all hoppers.
8) **Cont. Run**/Continuous Running: Press number key to select the hopper No. and press **Cont. Run**. Then the selected hopper will have a continuous running from its timing hopper; weigh hopper, feed hopper to vibrator according to the preset program.
9) **Load Cell**: Press number key to select and start testing. Selecting 01-10 means to select the corresponding load cell, **Select All** means to select all load cells. Then press **Load Cell** and the current value of each load cell will be displayed in the **ATTN** column. (If the load cell is in failure, it will display “*” or “×”)

10) **Prod. Sensor**/Product Level Sensor: Press **Prod. Sensor** to check material in the infeed funnel. It is through photoelectric sensor or weight senor to check the material is enough or not. Press Prod. Sensor, it will display the current material situation in a window.



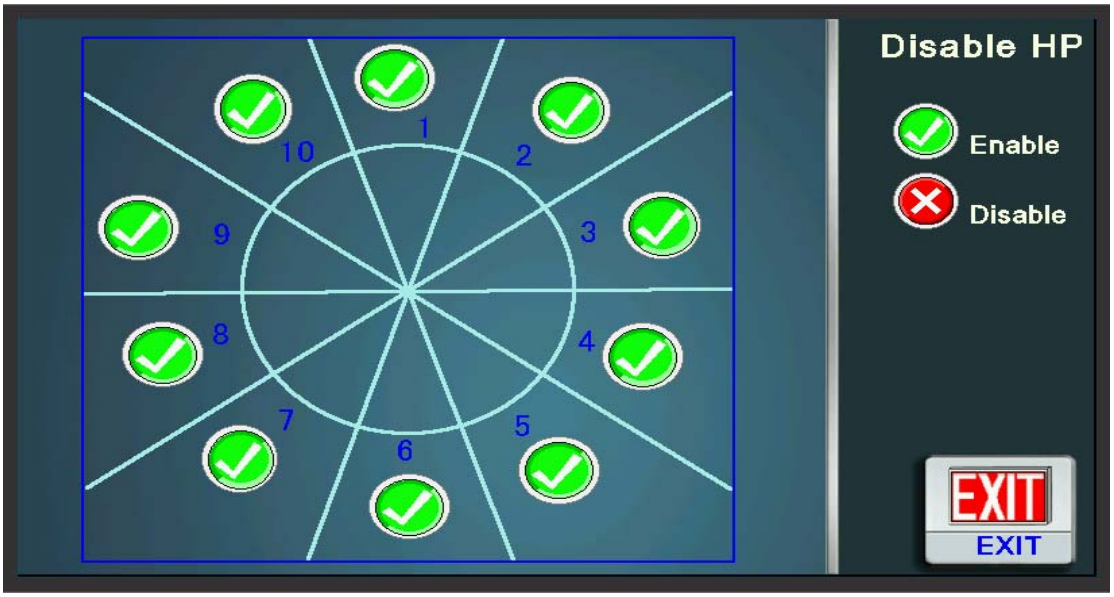
Relational parameters: Start feeding weight, stop feeding weight, feeding time

11) **Test:** Press **Test,** it will go automatically to running interface. The machine will run without products according to the preset program. It needs to input the dump asking signal and output all the normal running signals, which is mainly used for signal test by connecting with packaging machine.

12) Clean: Press **Clean**, all the hoppers will be opened, which can be used to clean the machine. Press any key to exit. (Remarks: KC-A10/12 and KC-A14/12 don't have such function)

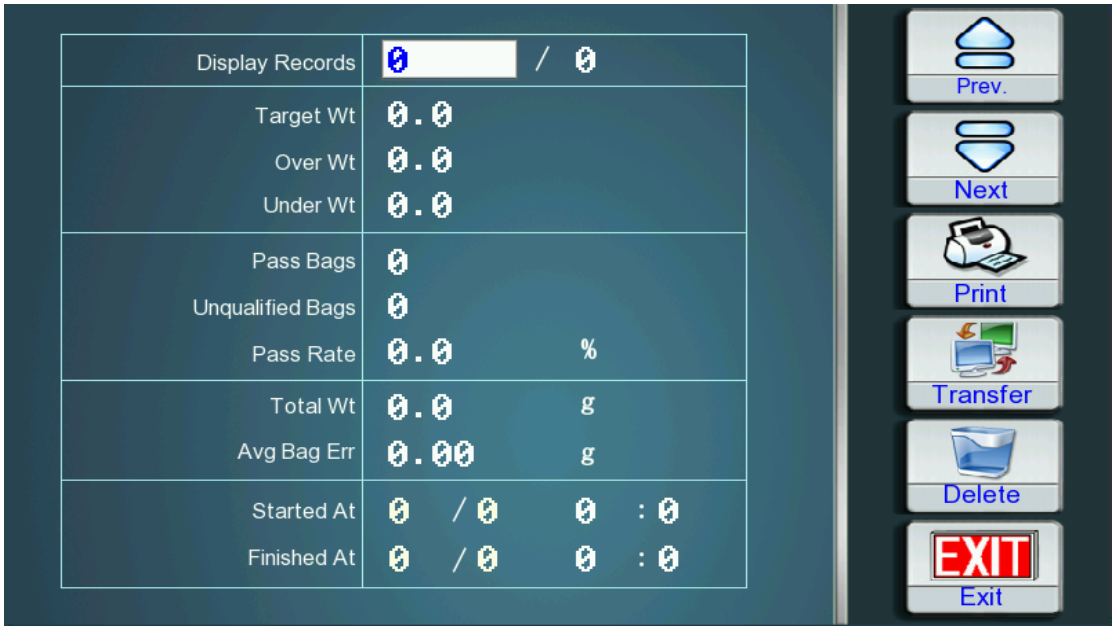
13) **Zero:** Use to zeroing the load cells.

14) **Disable HP**/Disable hopper**:** It refers to stop the failed hopper to work. Press Disable HP to disable hopper menu, press √ nearby the number it will turn into ×, it will turn back to √ if press again. (× means disable, √ means running)



5.7Production Records

1. On the main menu, press Production Records to access Records menu.



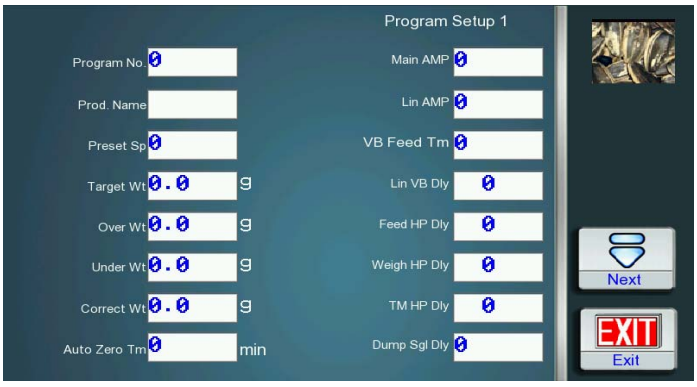
2. **Display Record:** Input the record number on [ ] and it will display the relevant record, it can total save for 2000 records.
3. **Prev.**/Previous Record: Press Prev. to check the previous record.
4. **Next**/Next Record: Press Next to check the next record.
5. **Delete Record:** Press Delete Record and confirm, it will delete all records.
6. **Print:** Press Print and it will print the display record.
7. **Transfer:** Press Transfer to transfer all production records to PC by COM.
8. **Exit**: Press Exit to return to main menu.

6. Program Setup

6.1 Program Setup-1

On the main menu, press Program Setup to access Program Setup menu.

Press Next to enter Program Setup-2 and Program Setup-3

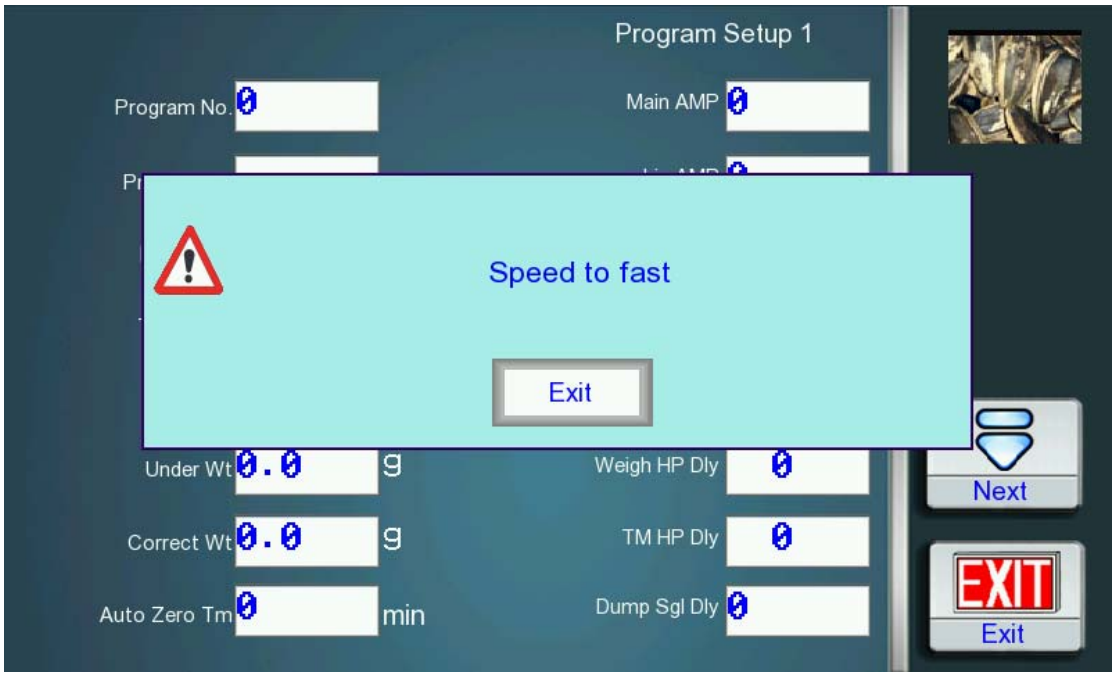


Press Prev. back to the previous menu. Press EXIT back to main menu.

Product Picture: Press the icon of product picture on Program Setup-1 to enter and select one from the 50 different images. Press Next to next pages of pictures. Press Exit to set other parameters.

1. **Program NO.**/Program Number: Press Program No. and it will display a keyboard. Input a number and the related parameters will be changed correspondingly with the program. 100 programs are ready for key in.
2. **Prod. Name**/Product Name: Press this item, there will be a keyboard for you to input the name of the product you choose.
3. **Preset Sp**/Preset Speed: The preset speed of the multihead weigher. The preset speed may be different from the actual speed. Range of speed, 10~150 bags/minutes.

   If preset speed is set too big, it will display below alarm:



This alarm shows the preset speed is too fast.

4. **Target Wt**/Target Weight: The target weight of the weighed products. Input with 2.0~6500(g), the last number is decimal place, there are no need to input point.
5. **Over Wt**/Over Weight: The over limit weight of the weighed products. Input with 0~99.9(g), the last number is decimal place.
6. **Under Wt**/Under Weight: The down limit weight of the weighed products. Input with 0~99.9(g), the last number is decimal place.
7. **Correct Wt**/Correct Weight: The weight of the packaging pouch. The actual weight=Display weight—Correct weight. Input the correct weight with +/— 0—99.9 (g).
8. **Auto Zero Tm**/INTERVAL: Used to set interval Automatic Zero Resetting in the

running process. Range: 01-99. Unit is 1 min. Recommendation: 5min.

9. **Main AMP**/Main Vibrator Amplitude: it refers to the strength of the main vibrator amplitude. Press number key to input value from 01 to 99. The bigger the value is, the stronger the main amplitude is. Recommendation: 40-90.
10. **Lin AMP**/Linear Vibrator Amplitude: it refers to the strength of the linear vibrator amplitude. Press number key to input value from 01 to 99. The bigger the value is, the stronger the linear amplitude is. Recommendation: 40-90.
11. **VB Feed Tm**/Vibrator Feed time: it refers to lasting time for the main and linear vibrators to feed products to the feed hopper. Input 01-250, unit is 10ms. Recommendation: 20-100.
12. **Lin VB Dly**/Linear Vibrator feed delay: it refers to the delay time for linear vibrator to feed products into the feed hopper after feed hopper opens. Input 01-999, unit is 10ms. Recommendation: 20-35.
13. **Feed HP Dly**/Feed hopper delay: it refers to the delay time for the feed hopper to feed products into the weigh hopper after weigh hopper opens. Input 01-999, unit is 10ms. Recommendation: 20-35.
14. **Weigh HP Dly**/Weigh Hopper Delay: When there is no timing stopper, it refers to the delay time after timing hopper opens, the weigh hopper starts to feed products into the timing hopper and prepare next bag of products. When there is timing stopper, it refers that the delay time after timing stopper opens, the weigh hopper starts to feed products into the timing stopper and prepare next bag of products. Input 01-999, unit is 10ms. Recommendation: 0-30.
15. **TM HP Dly**/Timing hopper delay: When there is no timing stopper, it refers to the delay time after weigh hopper opens, the timing hopper starts to receive products discharged by weigh hopper. When there is timing stopper, it refers to the delay time after timing stopper opens, timing hopper starts to receive products discharged by timing stopper.
16. **Dump Sgl Dly**/Dumping signal delay: under the circumstance of ready combinations, the combination weigher will discharge materials to the packaging machine at once, after receiving the ‘dump asking signal’ from packaging machine. And then combination weigher delays a period of time to send a 100ms ‘confirmed signal’ to the packaging machine. Input 01-999, unit is 10ms. Recommendation: 50-80.

6.2 Program Setup-2

Press Next to enter Program Setup-2.

1. **AFC**: Automatic Frequency Control. Input 0-2.

0: means to close AFC function.

1: AFCT, it will adjust the amplitudes according to the combination hoppers and it will give an auto adjustment to all linear vibrator amplitudes; each linear vibrator amplitudes can be modified separately.

2: AFCW, it will adjust the amplitude according to the single hopper weight and it will give an auto adjustment to every linear amplitude and display the amplitude separately.

----------**AFCT** ----------

a. **Avg Comb Hps**/AVG Combination hoppers: it refers to the average combination hoppers which are used in a successful combination weighing. Range: 01-9.9. Recommendation: 3.0-4.0.

b. **Acpt Comb Err**/Single Acceptable combination error hoppers: it refers to the average combination hoppers windages which are used in each successful combination. Range: 01-9.9. Recommendation: 0.1-1.0

c. **Track Interval**/Track Interval: After how many successful combinations, it will give an auto adjustment to all linear amplitudes. Range: 01-9.9. Recommendation: 1.0.

---------**AFCT Working Procedures**----------

A. The linear amplitudes are too strong which leads to less combination hoppers, and

need adjusting.

The actual total combination hoppers after the combination in a track interval＜((AV combination hoppers – Single acceptable error) × Track Interval) ==＞All linear amplitudes – 1.

B. The linear amplitudes are too weak which leads to more combination hoppers, and need adjusting.

The actual total combination hoppers after the combination in a track interval＞((AV combination hoppers – Single acceptable error) × Track Interval) ==＞All linear amplitudes + 1.

----------**AFCW**----------

a. **Avg HP Wt%**/ Single AVG Hopper weight percent: it refers to the ideal average weight of single hopper, and it was calculated as certain percent of single combination weight. Range: 01-99. Recommendation: 20%-40%

b. **ACPT HP Wt Err**/Single Hopper Acceptable Error Weight: it refers to the single allowable hopper weight error in the running. Range: 01-999. Recommendation: 10g

c. **Track Interval**/Track interval: After how many successful combinations for each single hopper, it will give an auto adjustment to the linear amplitude of the single hopper. Range: 01-99. Recommendation: 10

---------**AFCW Working Procedures**--------

A. Single linear amplitude is too strong which leads to overweight of the single hopper, and needs adjusting.

The actual single hopper weight after the combination in a track interval ＞ ((Single AV weight % × Single target combination weight + Single acceptable error) × Track Interval) ==＞Single linear amplitude – 1.

B. Single linear amplitude is too weak which leads to light weight of the single hopper, and needs adjusting.

The actual single hopper weight after the combination in a track interval ＜ ((Single AV weight % × Single target combination weight－Single acceptable error) × Track Interval) ==＞Single linear amplitude + 1.

3. **Min HP WT%**/Minimum single hopper weight%: it means that the single hopper weight is less than the single combination weight percent, which is regarded as 'low product', and not allowed to attend the combination, and it needs feeding material. Input 1-99, unit is %. Recommendation: 11%--14%.

4. **FD HP Motor**/Feed hopper motor mode: it refers to the running model of the feed hopper motor; you can use the preset 5 kinds of 'feed motor model' in the 'system setting' menu. The default factory setting is that the bigger this value is, the faster the speed is. Range: 0-4. Recommendation: 0-3.

5. **WG HP Motor**/Weigh Hopper Motor Mode: it refers to the running model of the weigh hopper motor; you can use the preset 5 kinds of 'weigh motor model' in the 'system setting' menu. The default factory setting is that the bigger this value is, the faster the speed is. Range: 0-4. Recommendation: 0-3.

6. **Tm HP Motor**/ Timing hopper motor mode: it refers to the running model of the timing hopper motor; you can use the preset 5 kinds of 'timing motor model' in the 'system setting' menu. The default factory setting is that the bigger this value is, the faster the speed is. Range: 0-4. Recommendation: 2-3.

7. **Top Cone revolution**:When top cone is whirl mode and controlled by step motor, the circles that top cone acting one time needs.

Relational setup: step motor driving divied numbers

8.**Top Cone Speed**: When top cone is whirl mode and controlled by step motor, top cone's whirl speed: circle/min

Relational parameter: Main vibrator mode

9.**FD HP Opn Tm**/Feed hopper opened time: it refers to the feed hopper opens, then pauses a period, begin to close its cover in order to discharge all the products in the feed hopper. Range: 01-200. Unit is 10ms. Recommendation: 1-20.

10. **WG HP Opn Tm**/ Weigh hopper opened time: it refers to the weigh hopper opens, then pauses a period, begin to close its cover in order to discharge all the products in the weigh hopper. Range: 01-200. Unit is 10ms. Recommendation: 1-20.

11. **TM HP Opn Tm**/Timing hopper opened time: it refers to the timing hopper opens, then pauses a period, begin to close its cover in order to discharge all the products in the timing hopper. Range: 01-200. Unit is 10ms. Recommendation: 1-20.

12. **Stable Tm**/Sample stable Time: in order to ensure weighing precision, after opening the feed hopper, it will wait a moment to stabilize the sample products in the weighing hopper and then begin to read the load cell data. Input 01-999, unit is 10ms. Recommendation: 70-100.

13. **Multicomb Tms**/Multi-combination Times: one target weight will be divided into many combinations. In this case, Weight of one combination = Target Weight / Multicomb Times. This function is used to weigh products with big target weight. Fox example, weighing 3000g product is easy to cause the unqualified combinations increasing or material is block, then adopts Multicomb Times function to avoid this. Set the value as 3, that's, each package will be divided into 3 combinations, each is 1000g.

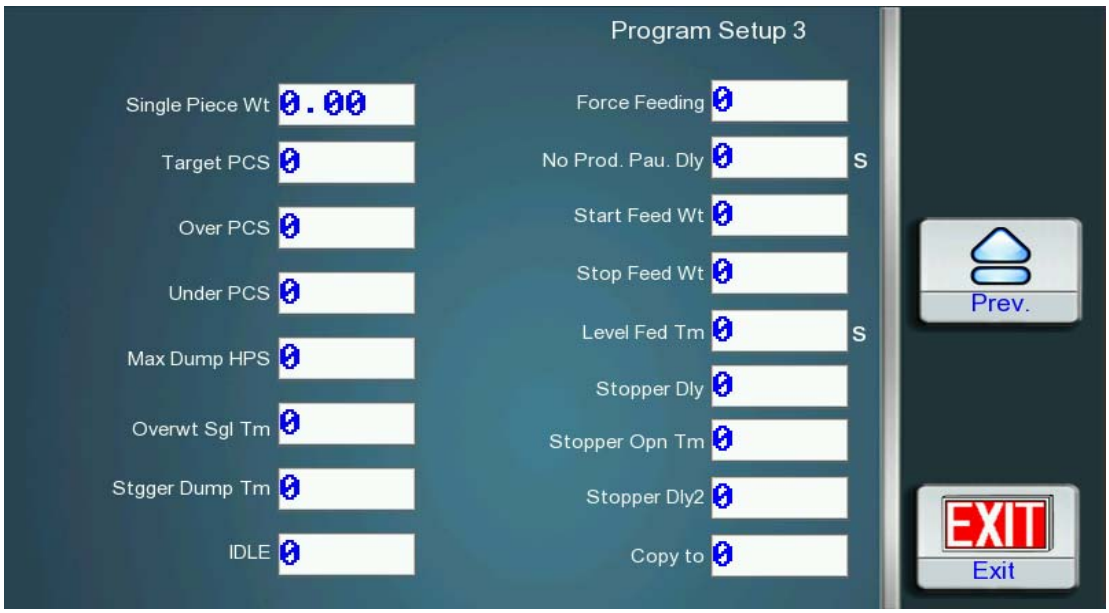
First time:999.5

Second time:1000.1

Third time:1000.4(Total target weight-The first two combinations) to make sure the best accuracy.

6.3 Program Setup-3

Press Next to enter Program Setup-3.



1. **Single Piece Wt**/Standard piece weight: the single piece standard weight for the uniform products which is applicable to calculate the combination weight to finish the target pieces. Range: 0-500.00g.

2. **Target Pcs**: the target pieces of the weighing products. Range: 0-32000. Total weight=Target Pcs×Single Piece WT. (Total weight is no more than 6500.00g)

Related Parameter: Piece Model

3. **Over Pcs**/Over pieces limit: the up allowable limit of the weighed products. Range: 0-32000.

Related Parameter: Piece Model

4. **Under Pcs**/Under piece limit: the down allowable limit of the weighed products. Range: 0-32000.

Related Parameter: Piece Model

5. **Max Dump HPS**/Max dumping hoppers: In order to reduce the blockage of puffy products, one combination will be divided into many times to dump. Max Dump Hps refers to the max simultaneous dumping hoppers in a combination dumping. Input 1-9, 0 means this function is closed.

Related Parameter: Stagger Dump Time

6. **Over Sgl Tm**/Overweight signal time: it means the lasting time for the combination weigher to send 'overweight signal' to next equipment, when it dumps the overweight materials. Input 01-999, unit is 10ms.

7. **Stgger Dump Tm**: When choose for Max Dump Hoppers, that's to say, one combination will be divided into several dumpings with a certain interval to discharge. Unit is 10ms.

8. **IDLE**/No combination times: It refers to the times for one single hopper not attends in combinations, which is applicable to limit the products remaining times in the weight hopper. For example, we set IDLE as N, if one weigh hopper was not selected in continuous N combinations, in the N+1 combination, this weigh hopper have to attend combination. This function is ineffective when N is less than 11.

9. **Force Feeding:** It refers to while there is no combination, re-feed again for re-combination or not, which can increase combination rate. Set "0" when close this function.

10. **No Prod. Pau. Dly.:** The period time for the machine to pause when there is not enough products on the funnel. The machine will automatically run if there are enough products on the upper storage funnel. If you want to weigh all the rest

products, pls press **RUN** to cancel this function. Range: 1-99S.

11. **Start Feed WT.** /start feed weight: It refers to a weight for the machine to send 'feeding' signal when the product level sensor checks there is not enough products on the upper storage funnel. (Note: this is useful for the combination weighers using weighing load cell). Range: 0-32000. Unit is 0.1KG.

12. **Stop Feed WT**/Stop feed weight: It refers to a weight for the machine to stop 'feeding' signal when the product level sensor checks there are enough products on the infeed funnel. It will show  while feeding enough products. (Note: this is useful for the combination weighers using weighing load cell). Range: 0-32000. Unit is 0.1KG.

13. **Level Fed Time**/Level products feed time: when the products photoelectric level sensor checks there is not enough product in the upper storage funnel, it will output 'feeding signal' and till there is enough material in the upper storage funnel. So it refers to the lasting time of feeding signal. Range: 5-10.

14. **Stopper Dly**/Stopper Delay: It refers to the delay time after weigh hopper opens, the stopper start to receive product discharged by weighing hopper. Input 01-999, unit is 10ms. Recommendation: 50-80.

15. **Stopper Opn Tm**/Stopper open time: It refers to the Stopper will pause how much time and then begin to close stopper in order to discharge all the products. Input with 1~200; Recommendation: 10~30; Unit: 10ms.

16. Stopper Dly down/Stopper delay down: It refers to the delay time after timing hopper opens, stopper starts to discharge products to back packaging machine and make sure that discharges after all the products is discharged into timing hopper. Input 01-999, unit is 10ms. Recommendation: 0.

15. **Copy To**/copy this program to: it refers to the program No., to which the current programs will be copied. Default as the original program No. If you want to copy to another program, input the target program No., and press E to confirm. Range: 1-50.

7. System Setup

7.1 System Setup

Press System Setup to enter System Setup menu. It needs level 2 password.

1. **No Comb Action**/No Combination Action: Select the process ways in case there is no combination. Input with 0~1, default as 0.

   0： Auto enforced discharging. Recalculate all the combinations and choose the combination larger than and closest to the target weight to discharge. At the same time, it will output overweight signal.

   1：Manual interfere. The machine stop automatically, notifying manual interfere is needed. Press E to confirm after manual interference, it will feed and recombine.

2. **No Multicombn**/No Multi-combination Times: Turn on or off the function of multi-combination discharging.

   0：Allow this function;

   1：Disable the function.

3. **Measure Mode:** Weighing or counting by piece. Input 0~1, default as 0.

   0：Weighing, the target weight will be combined by weighing. Unit: g.

   1：Counting, target pieces will be combined by counting pieces. Unit: pcs.

4. **TM HP Mode**/Timing Hopper Mode: Input with 0~3 to select one of the discharging ways of timing hopper.

   0：Without timing hopper;

   1：Single timing hopper. Feature: High speed.

   2： Double timing hoppers will discharging the products to two packaging machine alternatively.

   3： Single timing hopper + Auto-sorting, it will be thrown to the unqualified channel automatically when the products are unqualified, then high

packaging speed.

4: Single timing hopper: for big weight with many times combinations, it will discharge in many times to avoid products block discharge exit of packaging machine and achieve big weight with many times combinations.

5. **Combi Module/**Combination Module: It's only for 14 head weigher.

   0： It refers to the remaining hoppers from the previous combination can combine by themselves, the speed will be up to 120~130 bags/min.

   1：It will combine only with all the hoppers were fed, which suitable for the heavy target weight with low speed requirement.

6. **Top Cone MD/**Top Cone Model: Input 0~1 to select one of the model.

   0：Vibrating model, more suitable for weighing the granular products or the easy flow products, etc.

   1： Rotary model, more suitable for weighing the long volume of poor liquidity products, etc.

7. **Storage model**: 0:No timing stopper 1:Timing stopper

8. **Optimum:** Calculate the number of successful combinations up to optimum and then select the best one from them. This value can improve the precision. Input with 1~99; Recommendation: 98.

9. **Combn HPS/**Combined Hoppers: For 14 heads weigher, if there is no combination, it will decide to re-feed products for combining again or enforce to discharge according to the actual combined hoppers. Judge formula:

   Actual combined hoppers ≥ Preset combined hoppers ≡ ＞ Enforced discharging

   Actual combined hoppers < Preset combined hoppers ≡ ＞ Re-feed products for combining again.

   This value control the pass rate and running continuity（When this value is too small, it will run in continuous, but the pass rate will be decline; When this value is too high, the running continuity is poor, but the pass rate will be improve.）Input with 6~14.

10. **Dump signal:** It refers to preset the receiving models of dump request signal

from the packaging machine. Input with 0~3.

A. 0: Pulse with memory, receiving the pulse of dump request signal once discharging the previous products. (If receive the dump request signal before finish weighing, it will dump products immediately without output the ready signal.)

B. 1: Pulse without memory, receiving the pulse of dump request signal after a combination is ready.

C. 2: Tension with memory, receiving the tension of dump request signal once discharging the previous products. (If receive the dump request signal before finish weighing, it will dump products immediately without output the ready signal.)

D. 3: Tension without memory, receiving the tension of dump request signal after a combination is ready.

Note： Pulse — The dump request signal is valid when the signal is turn from ON to OFF.

Tension — It will be valid as long as connected.

11. **System Management**/System Management: Touch System Management on the system setup to enter system management, press “Exit” to return system setup.

1) **Date Setting:** Modify the current date, input year month date.

2) **Time Setting:** Modify the current time, input current time.

3) **Level 1 password modify**: Operator password modification. Touch password box, and input six figures on the keyboard, press “enter” to confirm. This level password can enter all the menus except for system setup and calibration. Please change to the password you prefer. Original password: 181818.

4) **Level 2 password modify**: Administrator password. Touch password box, and input six figures on the keyboard, press "enter" to confirm. This level password can enter all the menus. Please change to the password you prefer. Original password: 282828.

Please take care the passwords, loss or damage cause by disclosure of your password will be bear by yourself.

5) **Backlight Time:** The backlight will be turn off after a certain time without touching. Input with 1~99 min. 0 means screen backlight cann't close automatically.

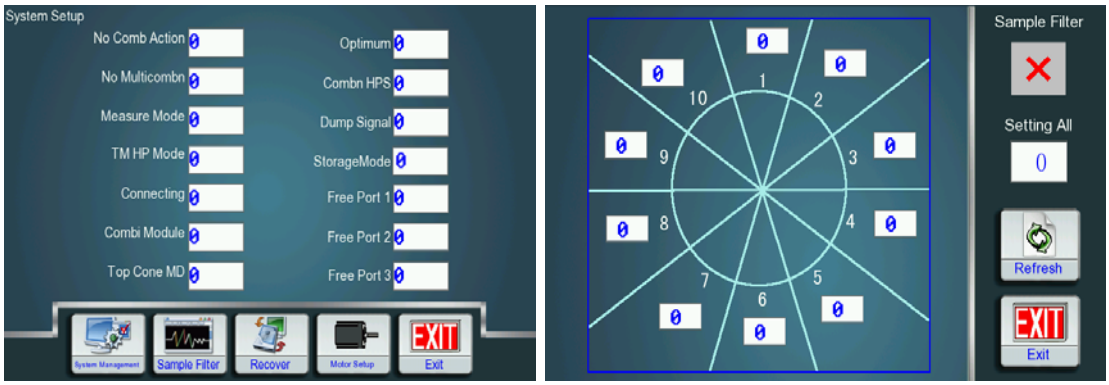
12. Touch "**Version**" on the system management menu to enter Version menu. Press "Exit" to return system management menu.

A. Screen version No.: Number of screen software.

B. Mother board program No.: Number of mother board software version.

13. Touch "**Screen**" on the system manage menu to enter screen collation, touch "+" button on the blank screen in turns, it will return system manage menu automatically after collating successfully. If collate unsuccessfully, it will collate again. Cut off the power to exit screen collation.

14. **Sample Filter/** Sample Filter Value: Touch "Sample filter" on system setup menu to enter sample filter. Press "Exit" to return system setup.

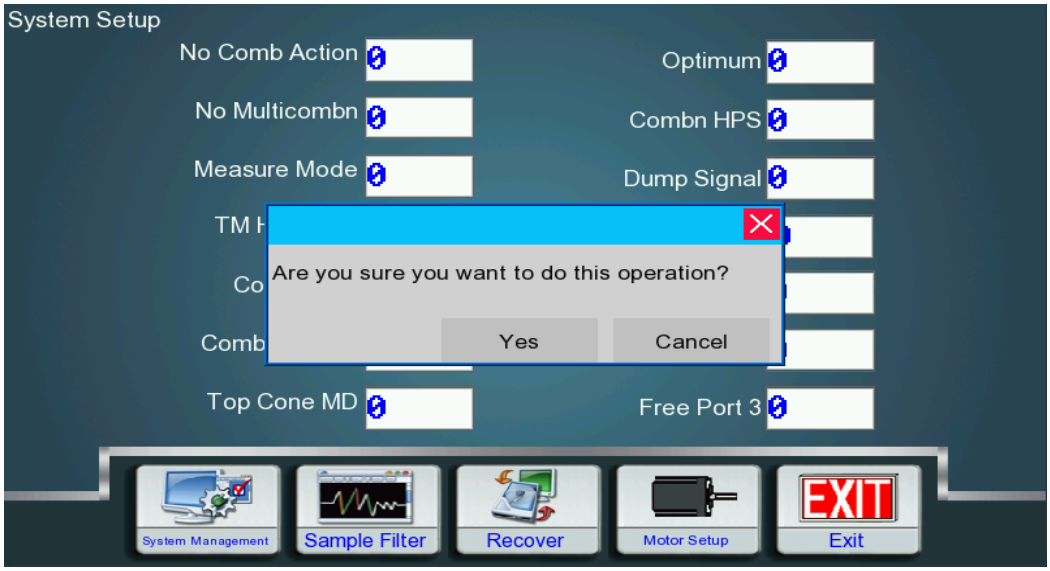


Sample filter refers to the filtering time of load cell. The higher of the value, the more precision of the combination, but the speed will be declined. Press Refresh after revising. Input with 1~19; Recommendation: 5~8.

a. If revise the entire sample filter, please touch " [ ] " below"total set" , input new filter value, then press "refresh" to update current filter value.

b. If revise each sample filter separately, such as No.1 filter value, pls touch "[ ]" above "1", input new filter value, then press "refresh" to update current filter value. Others is the same.

15. **Recovery**/Program Recovery: Press Recovery, it will display an alarm window, touch "Confirm" to recover the parameter setup and system setup of program No. Of 1-13 as default.



16. **Free Port**/Free Output Port: OUT5, OUT6, OUT7 alow user to revise signal output, port set is as below:

Marks(circuit board)	Signal
P061	Dump signal 1
P062	Dump signal 2
P063	Ready signal
P064	Overweight signal
P065	Free port 1
P066	Free port 2
P067	Free port 3

Free port	Figure	Signal
Free port 1（default as 7） Free port 2（default as 6） Free port 3（default as 5）	0	No input
	1	Dump Signal 1
	2	Dump Signal 2
	3	Ready Signal
	4	Overweight Signal
	5	Feeding Signal
	6	Running Signal
	7	Empty Signal
	8	Timing stopper

7.2 Motor Setup

Press motor setup on system setup to enter Motor Setup menu. Touch “Exit” to return system setup.

1. **Feed HP**/Feed hopper: Press Feed HP and select 0-4 on the right for motor model. The corresponding step and speed will be displayed on the screen, which can also be changed independently.

2. **Weigh HP**/Weigh hopper: Press Weigh HP and select 0-4 on the right for motor model. The corresponding step and speed will be displayed on the screen, which can also be changed independently.

3. **Timing HP**/Timing hopper: Press Timing HP and select 0-4 on the right for motor model. The corresponding step and speed will be displayed on the screen, which can also be changed independently.

4. **Init. Move DRCT**: the rotary direction of the front 5 segments (0-4).

1: anticlockwise rotary. 0: clockwise rotary.

5. **Return Move DRCT**: the rotary direction of the back 5 segments (5-9).

1: anticlockwise rotary. 0: clockwise rotary.

6. **Steps**: it means that the step motor runs how many pulses within this segment, for each pulse, the step motor rotary angle is 1.8°.(If need rotary half circle 180° , the steps should be 100)

7. **Speed**: the rotary speed for each step within the segment. Range: 1-50. Bigger the value , more quick the speed. Pls press "Save" to confirm the value's modification.

Attentions: Total steps of return move should be equal to total steps of Init. Move.

8. **Save**: Used to save the amended parameters. After modifying parameters, it will display an alarm window, touch "YES" to confirm the modification.

ATTN: When you set the motor model, you can take below illustration for reference to get the graph, as shown in chart 7-2-1.

A. The setting methods of the front 5 segments when the hoppers are opening.

① the start speed of the motor should not be too fast. ② the motor speed should be slow in order to reduce noise when it begins to touch the hopper pole.③ when it completely touches the hopper pole, the motor should be as fast as possible. ④⑤ keep fast to save time.

B. The setting methods of the back segment when the hoppers are closing.

① the start speed of the motor should not be too fast. ② the motor begins to speed up. ③ keep speeding up for a while.④ begin to slow down and prepare to keep away from the hopper pole ⑤ keep slow down to keep away from the hopper pole at a stable speed to reduce noise and vibration.

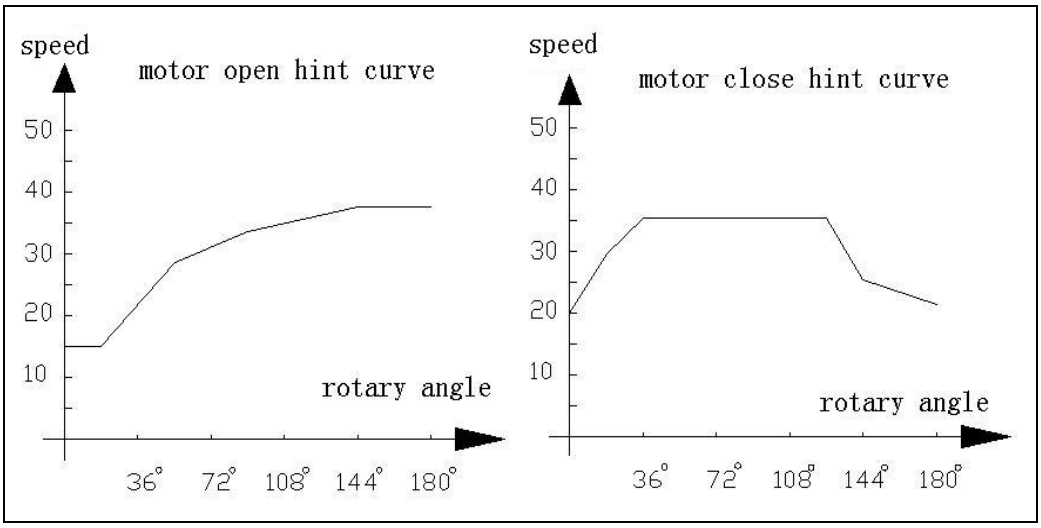


Chart 7-2-1

7.3 Screen Collation

When the display place of screen key and the touch key are not in the same position, please enter System Setup-System Manage-Screen for collation. You need to make screen correction by moving + accordingly displace on the screen.

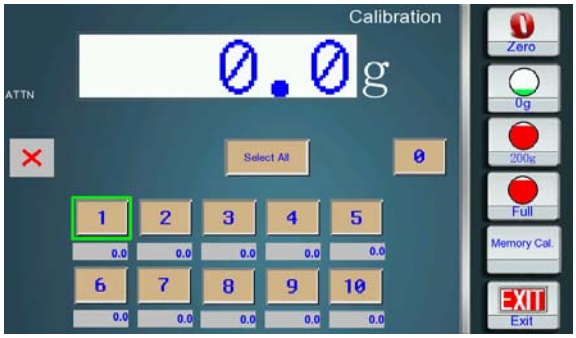
Screen collation on the screen:

a) If screen collation success, **"adjust success"** will be displaced on the certer, and then the screen will automatic turn to System Setup menu.

b) If screen collation fails, please press + according turn on the screen until success.

8. Calibration

On the main menu, press Calibration to enter calibration menu. Touch "Exit" to return main menu. (It needs level 2 password to enter calibration.



Load Cell Testing

1. Press number keys to choose the tested hopper NO. Then the current products weight in this weigh hopper will be displayed at once. If there is no product in the weigh hopper, it will display '0.0', if not, pls zero the load cell first.

2. Put a standard weight（≤1000.0g) in a weigh hopper and observe whether the displayed weight is equal to the actual standard weight, if not, there is a requirement to make a calibration to this load cell.

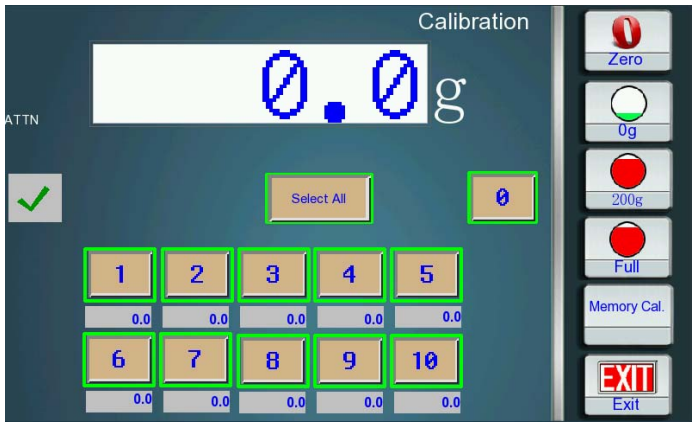
Load Cell Zeroing

Press number keys or to choose the tested hopper NO. Then the current weight in this weigh hopper will be displayed at once. Ensure that there is no product in the weigh hopper; press "Zero" and it will display '0.0', if there is still a large error or skipping, please make a calibration to this load cell.

Load Cell Calibration

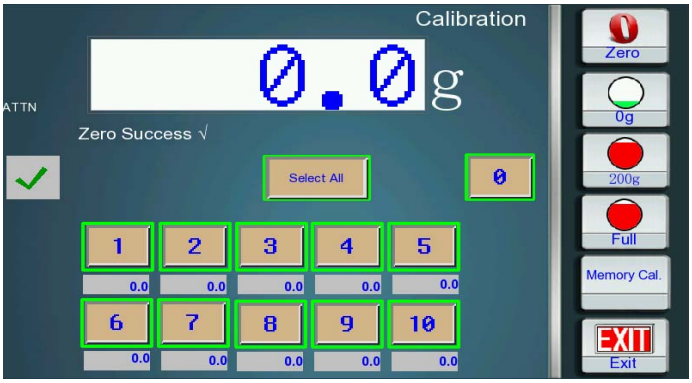
1.1 200g one key calibration

1. Enter Manual test menu, press “Select all” to choose all weigh hoppers, then press “Weigh hopper” to empty products.

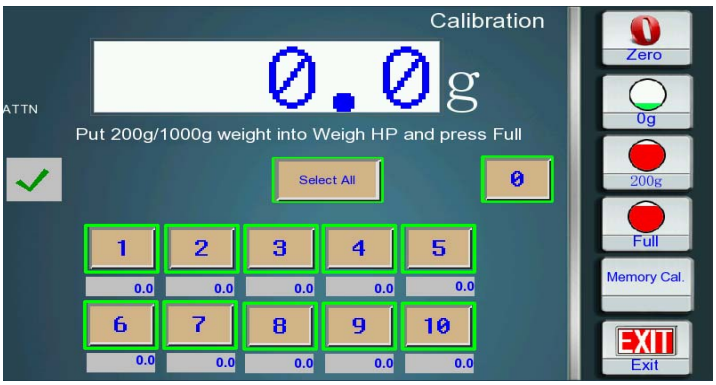


2. Enter Calibration menu, press “read”, then press “Select all”, it will display each hopper’s current weight below each hopper No., they may be not the same, but it won’t affect calibration.

3. Press “Zero value” and wait for all the hopper’s numbers display “ ✓ ”. Press “Exit ” to return Calibration menu.



4. Calibration menu will display “ Zero calibrates successfully”



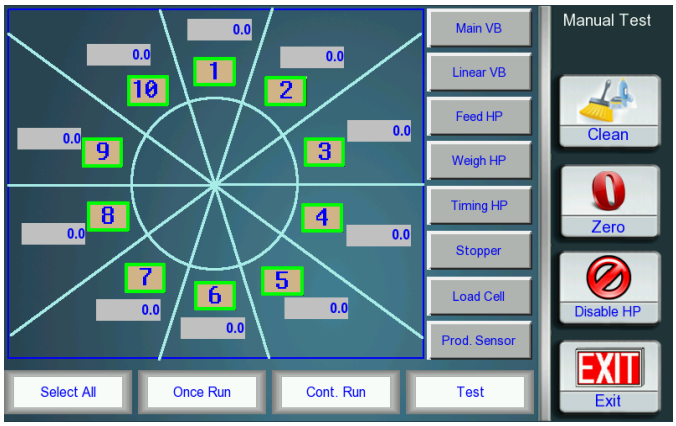
5. After 1 second, it will display "Pls put 200g/1000gstandard weight and press Full". Put 200g standard weight in each weigh hopper.

6. Then press "200g", the 200g one key calibration is successful. Press "Exit" to return to calibration menu.

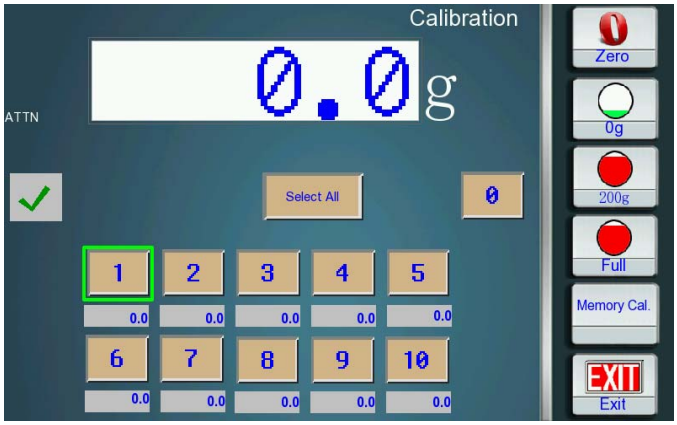
1.2 1000g one key calibration.

1. Follow the steps 1-4 of 200g one key calibration.
2. Step 5, put 1000g standard weight in each weigh hopper
3. Step 6, press "Full", then 1000g one key calibration is successful.

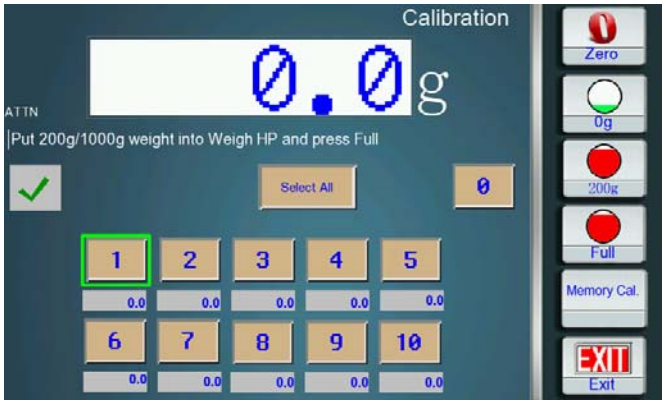
2.1 200g calibration separately



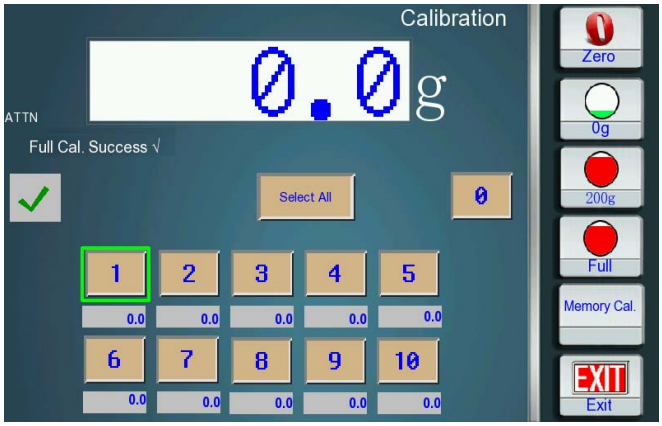
1.Enter Manual test menu, press "Select all" to choose all weigh hoppers, then press "Weigh hopper" to empty products



2. Enter Calibration menu, press "read", then it will display "Pls choose the hopper number which needs to calibrate, and press zero value button".



3. For example: choose No.1 hopper and press “zero value”, it will display Pls put 1000g standard weight, and press Full”



4. Put 200g standard weight in No.1 hopper, then press “200g”, it displays “Satisfy value calibrates successfully” and displays 200g±0.3 below No.1 hopper. No.1 hopper 200g calibrates successfully.

5. Other hoppers are with same method, just follow as step 3 and 4.

2.2 1000g calibration separately

1. Follow steps 1-3 of 200g calibration separately
2. Step 4, put 1000g standard weight in No.1 hopper, then press “Full”, it displays “Satisfy value calibrates successfully” and display 1000g±0.3 below No. 1 hopper. No.1 hopper 1000g calibrates successfully.
3. Step 5, Other hoppers are with same method, just follow as step 3 and 4.

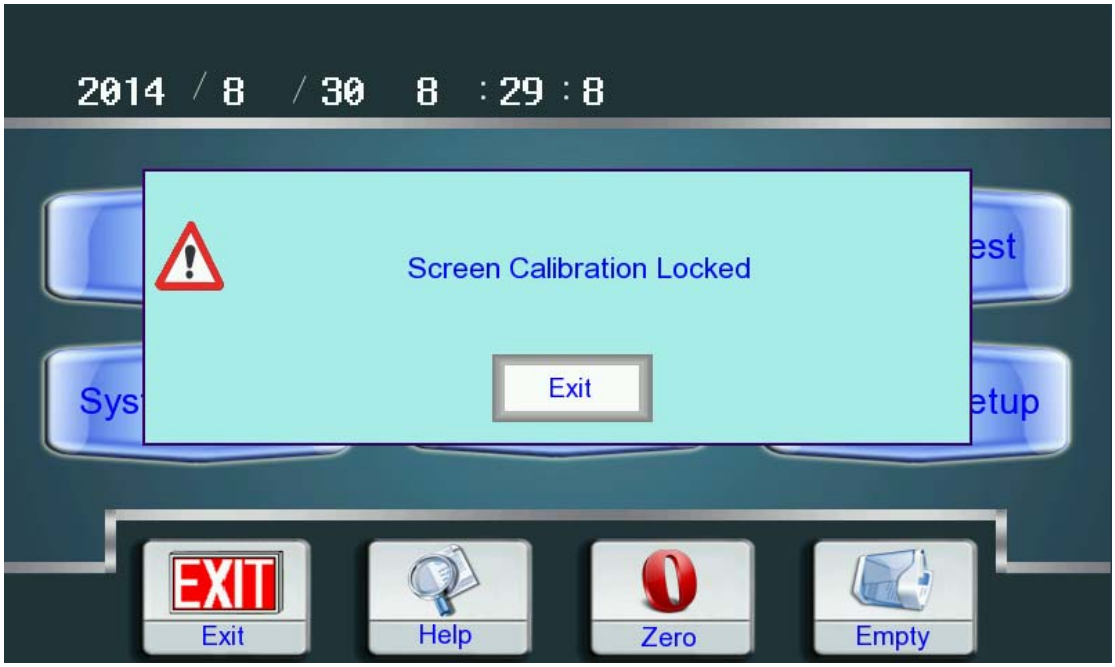
Test for calibration: When calibration completes, put a standard weight with known weight(such as 500g) into weigh hopper and check the weight figure, if the deviation is less than ±0.3g, it means calibration is successful. Otherwise, pls calibrate again.

1. Zero: If the load cell’s zero float is below 200g, pls clear it by touching “Zero”
2. Memory calibration:If the load cell’s zero float is more than 200g, pls clear it b touching “memory calibration”

Note: The whole calibration procedure must be under the

condition that there is no wind and vibration, and the operator must be trained and professional.

3. Lock function of calibration: Set switch J2 on mother board as “ON”, lock calibration. Then press “Calibration”, it won’t enter calibration menu, but will display below alarm window.



9. Self-diagnose & Solve the failures

Icon	Reason	Check & Solve
U	Single hopper weight is heavier than the target weight	1. AFC=0，decline the Lin AMP; 2. AFC=1，increase the Avg Comb Hps; 3. AFC=2，reduce the Avg Hp Wt%; 4. Adjust the Lin AMP to discharge evenly.
Q	Enforce to discharge without combination	1. increase Comb HPs; 2. Adjust the Lin AMP to ensure the Avg Hp Wt% between 25~33%, namely, the Avg Comb Hps between 3~4; 3. Lower the accuracy in permission to increase the over and under weight.
E	The weight of Wt HP is over 200g after zeroing	1. Clean the products on the Wt HP hanger; 2. Adjust Wt HP Motor Mode to ensure no product blocked when closing the hoppers; 3. Turn off the machine and restart it after ensuring the above 2 points without abnormity, press Empty and running again; 4. Re-calibration.
e	The Wt HP with negative value during running	1. Clean the products on the Wt HP hanger; 2. Adjust Wt HP Motor Mode to ensure no product blocked when closing the hoppers; 3. Make a zero operation on the Manual Test.
W	Failure in enforcing combination after IDLE	1. increase IDLE; 2. Set it within 00~09(This function can be closed if the product won't be melted or sticky for a long time.
Y	Success in enforcing combination after IDLE	1. increase IDLE; 2. Set it within 00~09(This function can be closed if the product won't be melted or sticky for a long time.
Z	Auto zeroing	1. Increase Zero Interval properly when the product is not sticky.
L	The weight in Wt HP is less than the Min HP Wt%	1. Increase AMP; 2. Decline the Min HP Wt% ; 3. Adjust the Lin AMP to discharge evenly.
D	This HP was disabled	1. Restart the hopper in Manual Test.
T	Failure in module communication	1. DC2 power switch is out of order; 2. QF2 breaker is ON or OFF; 3. Check if P031~6 connected correctly.

10.Daily debugging skills&failure analysis

Phenomena	Possible Reason	Check & Solve
Suddenly start up when running	1.Power supply don't connect well	1.Check all the power supply connection parts are reliable or not
	2.DC5V don't connect well	1.Check whether there is insulation material causing connecting not well
	3.Power switch's quality problem	1.Knock DC5V power switch slightly, this act will speed the problem occurs
Suddenly no discharging when running	1.Check whether screen display ready or not	1.Material is not enough, some hopper acts all the time(feeding), feed material
	2.Whether there is request signal inputting or not	1.Check the request signal indicator on mother board (Signal inputs when indicator lights)
	3.Interface displays U、Q	1.No combination in system setup(Set as 0)
	4.All interface display R	1.Parameter setup(Single hopper over weight≥10)
The difference between the displayed weight and the actual weight is quite big	1.Zero over-floating is big	1.No wind environment
		2.Machine frame installing table is reliable
		3.Ground is reliable
		4.Increase sample filter
		5.Quality problem of power switch
	2.The actual weight is too big	1.Set the Correct Weight as positive value
		2.Calibrate again at a suitable position
	3.The actual weight is too small	1.Set the Correct Weight as negative value
		2.Calibrate again at a suitable position
	Material is pressed by Hopper	1.Increase delay time
		2.Increase open time
		3.Choose low speed motor mode
	5.Other material on weigh hopper	1.Check whether weigh hopper contacts with other material or not
		2.Check whether there is other material in weigh hopper or not
	6.Parameter setup	1.Increase sample stable time
		2.Decrease sample filter
Open hopper weakly	1.The hopper opening speed is too fast	1.Decline the front move speed in the Motor Setup（20-40）
	2.Circuits don't connect well	1.Check circuit between mother board and driving board is ok or not
		2.Check the circuit pin of mother board and driving board is ok or not
		3.Check motor line and connection is reliable or not
Hoppers' Loud sound	1.The hopper closing speed is too fast	1.Decrease the back move speed in the Motor Setup（60-80）
	2.Action is too slow when hopper closes	1.Hopper movable bearing cover is too tight with bearing, pls use food oil as lubricants oil

	3.Material remains on hopper	1.Hopper gate cann't go back to previous place to causing self-lock lever acts slowly or self-lock unsuccessfully

11. Maintenance and Repair

The machine must be power off during maintenance and inspection, and should be operated by trained technician. To ensure the normal operation, prolong the usage life and exert the economic value, the daily maintenance should be well performed.

1. The untrained person is not allowed to disassemble this machine.
2. The parts contacted with products, like top cone, linear vibrator pan, feed hopper, weigh hopper, etc, should be cleaned after daily use.
3. Check out whether there is any material on the weigh hopper hanger or not before running, and clean out the dust on the hanger after using.
4. Lubricate the joints of each hopper with edible every 7 days.
5. Clean the dust inside of the actuator every 2 months.

12. Transportation & Storage

1、Transport, install and disassemble the vibrators carefully, do not throwing, bumping or reversing. Prevent from strong vibration and raining.

2、Vibrator should be kept in ventilated room with temperature range of -10℃~40℃, humidity no more than 90%, and without corrosive odor in the room.

13. Crate-open & Check

1、The top cover should be dismantled first and then the sideboard, to avoid damage to the machine surface while opening the crate.

2、The following documents are attached with the machine, please check.

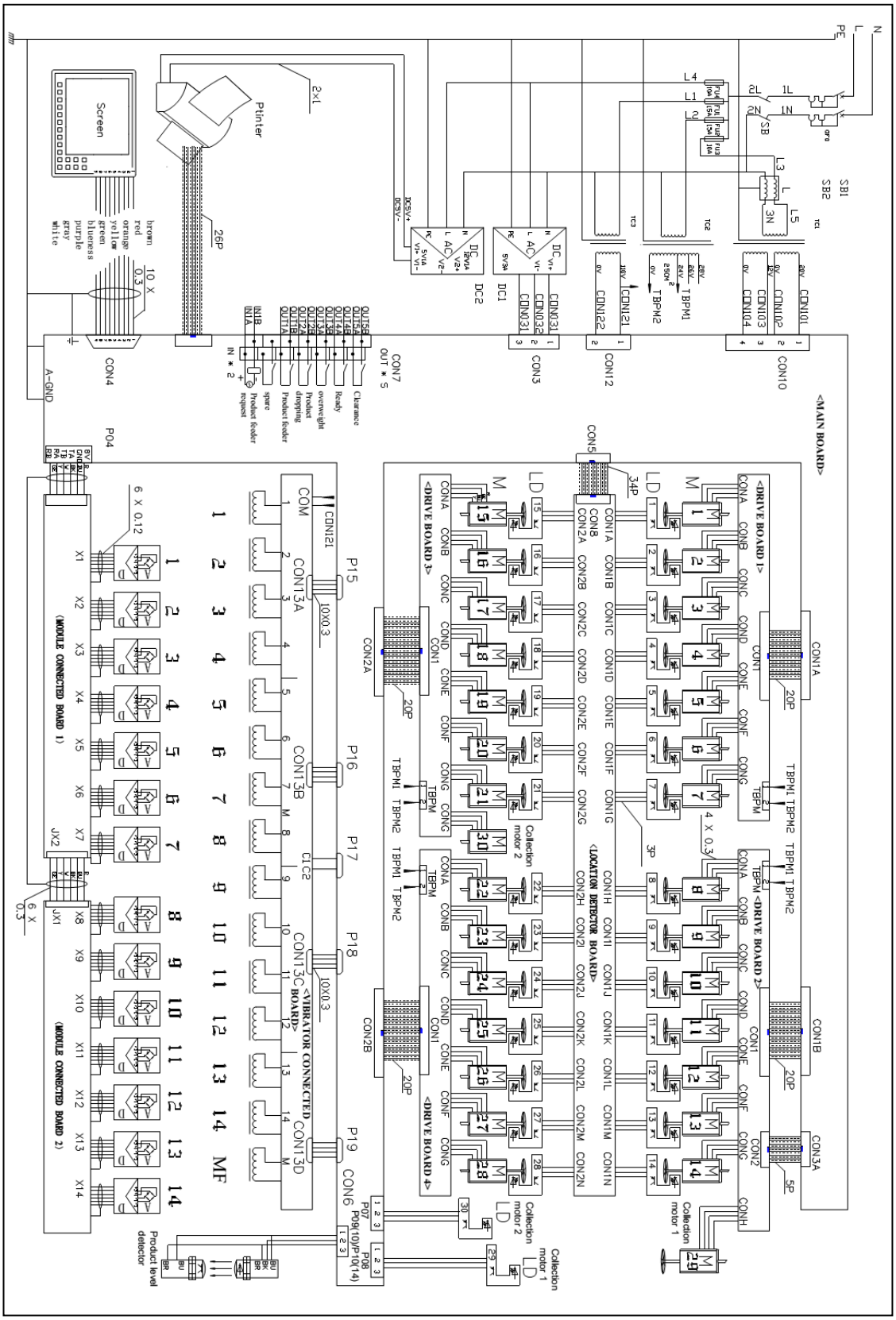
①Instruction Manual

②Spare Parts List

③Inspection Report

3、Please check the machine and spare parts by the list.

14. Electric Diagram



Executive Standard: GB/T 27738-2011