



INSTRUCTION MANUAL



Multihead Weigher 7" Touch Screen A Series



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1. Preface

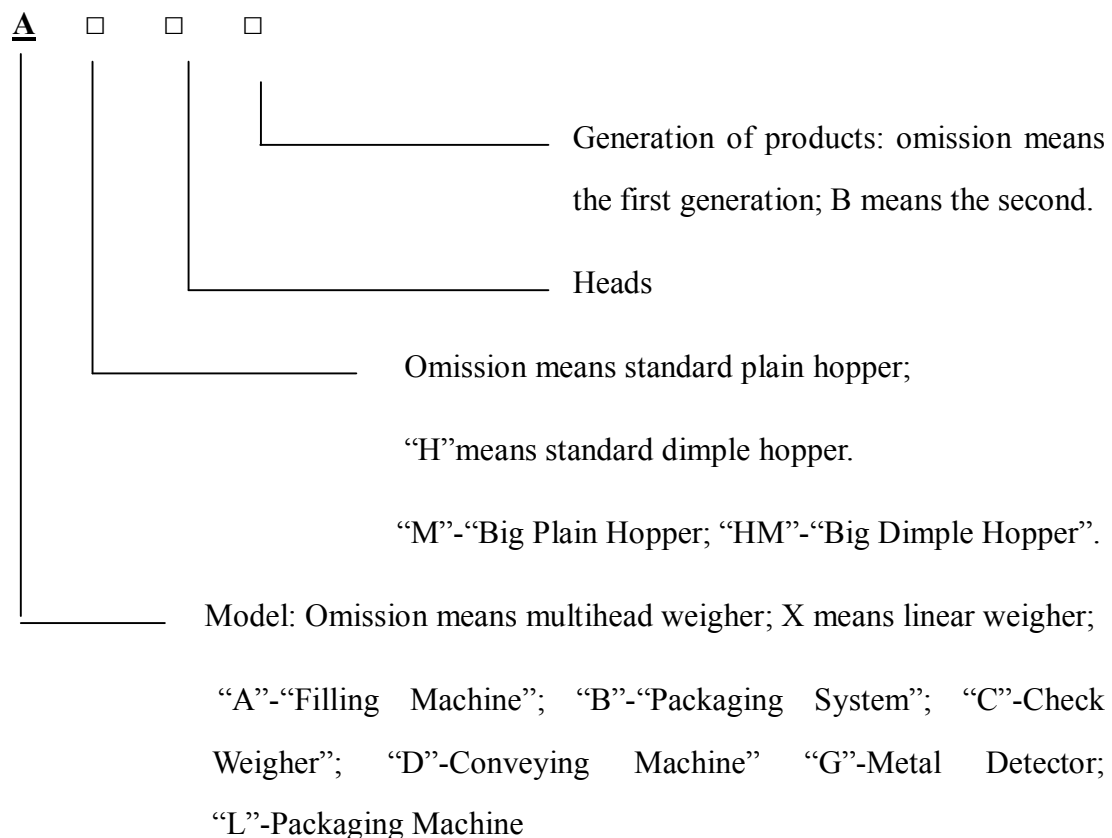
Thank you for choosing our A Series Multihead Weigher.

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 Basic 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: □□□-□□, its mark as follows



1.2 Notices

Please read carefully before proceeding.

1. Environmental requirements :
 - Temperature: 0 ~ 40⁰C;
 - 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 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

Items	Model				
	A16	A14	A12	A10	A8
Voltage	AC110/220 V	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	50/60 Hz
Required Current	14 A	10 A	9 A	8 A	7 A
Power	1.8 kW	1.5 kW	1.2 kW	1.0 kW	0.9 kW
Weigh Head Nos.	16	14	12	10	8
Max weight range	6500 g	6500 g	6500 g	6500 g	6500 g
Single weigh Range	10-150 g	10-1200 g	10-1000 g	10-800 g	10-150 g
Weigh Volume	1600 mL	1600 mL	1600 mL	1600 mL	1600 mL
Max. Speed	2×65 bags/min	130 bags/min	120 bags/min	70 bags/min	70 bags/min
Preset Program	100	100	100	100	100
Machine Size L	1550 mm	1240 mm	1172 mm	1100 mm	959 mm
Machine Size W	1470 mm	1180 mm	1115 mm	1080 mm	959 mm
Machine Size H	1520 mm	1440 mm	1425 mm	1320 mm	1320 mm
Machine Weight	530 kg	420 kg	380 kg	330 kg	280 kg

3. Operating Principle

3.1 Feeding

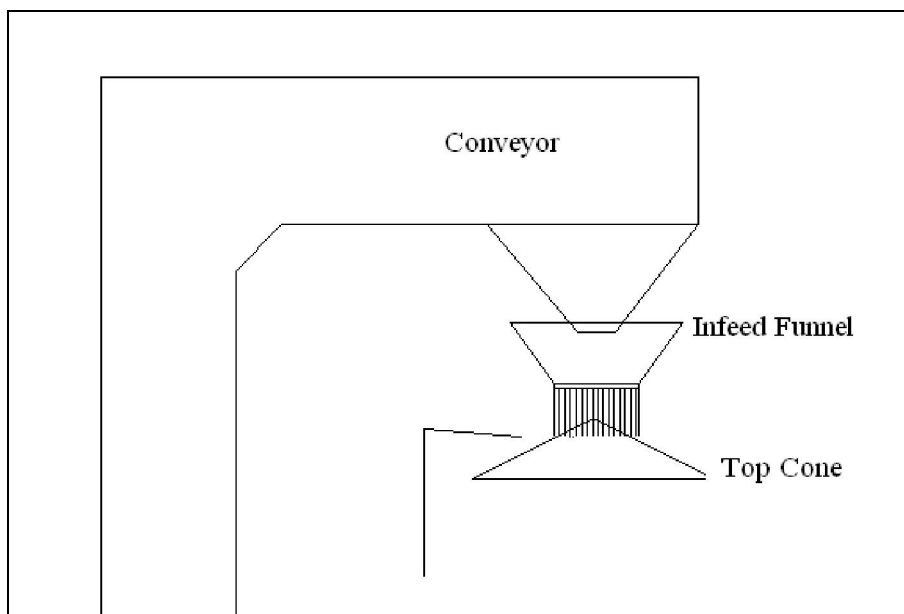


Chart 3-1-1

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

3.2 Distribution

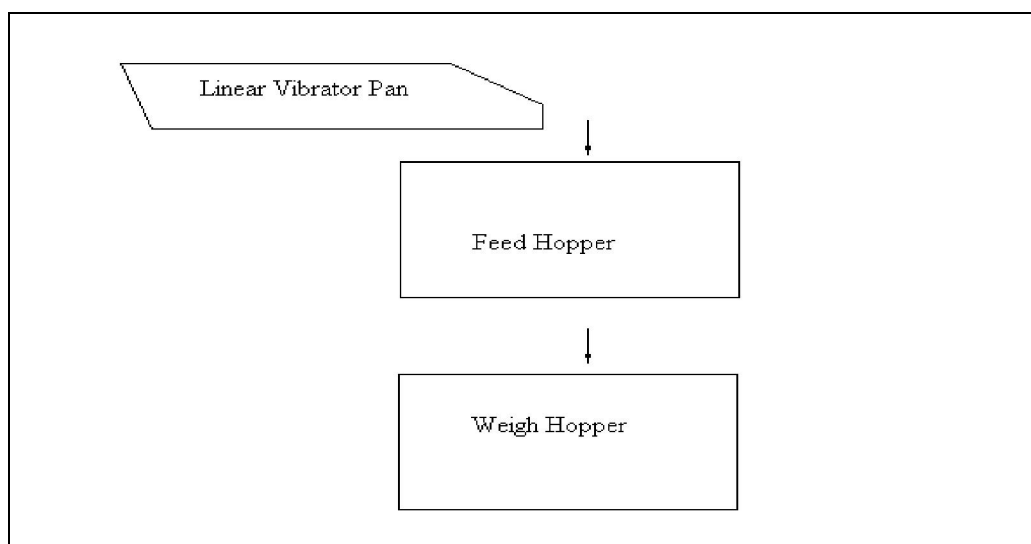


Chart 3-2-1

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** \geq **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.

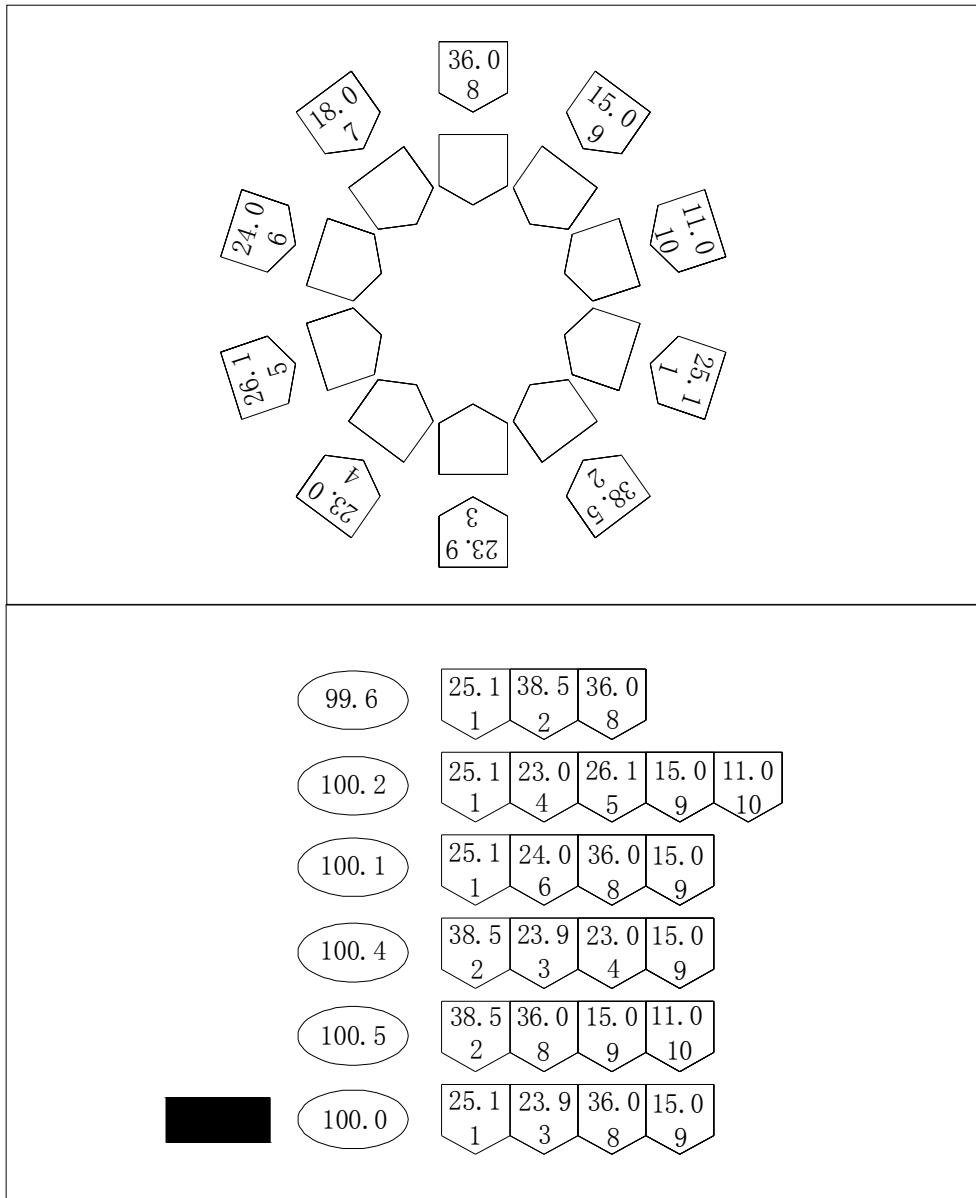


Chart 3-3-1

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

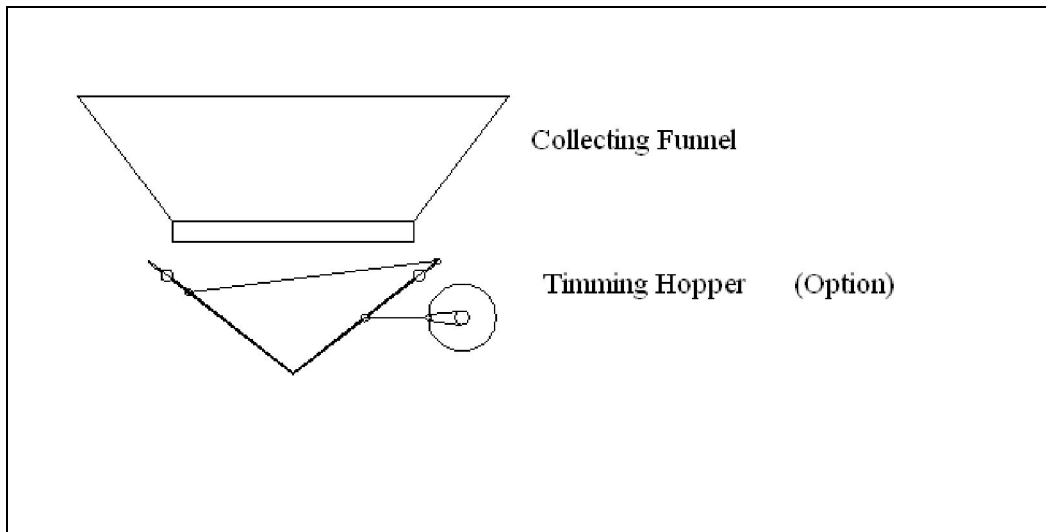


Chart 3-4-1

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

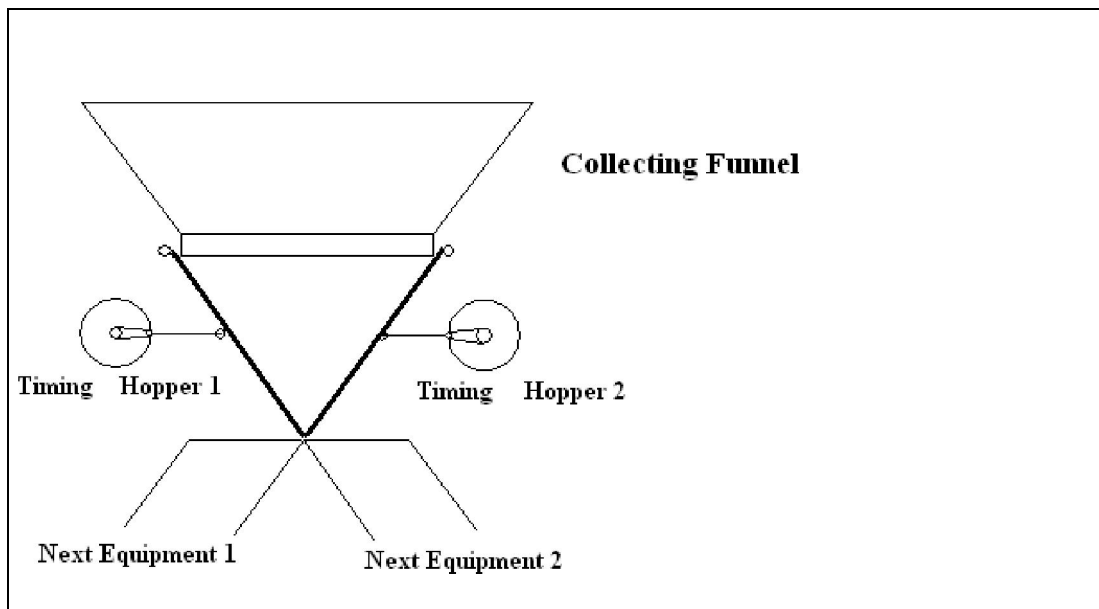


Chart 3-4-2

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

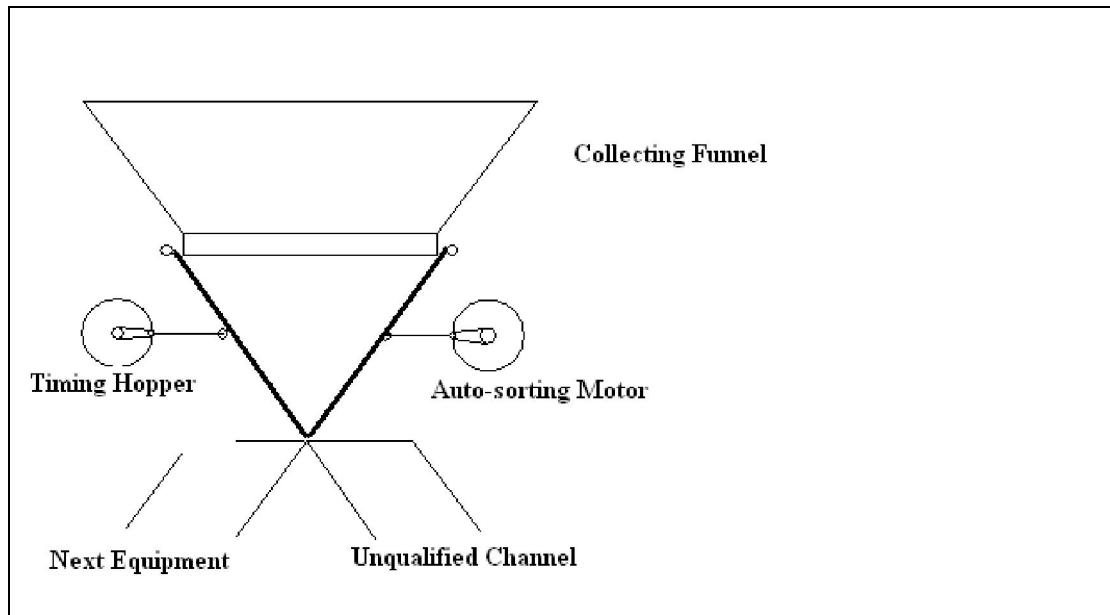


Chart 3-4-3

5. Product Stopper: When the product stopper is installed, it will reduce the products to collide. As show in Chart 3-4-4

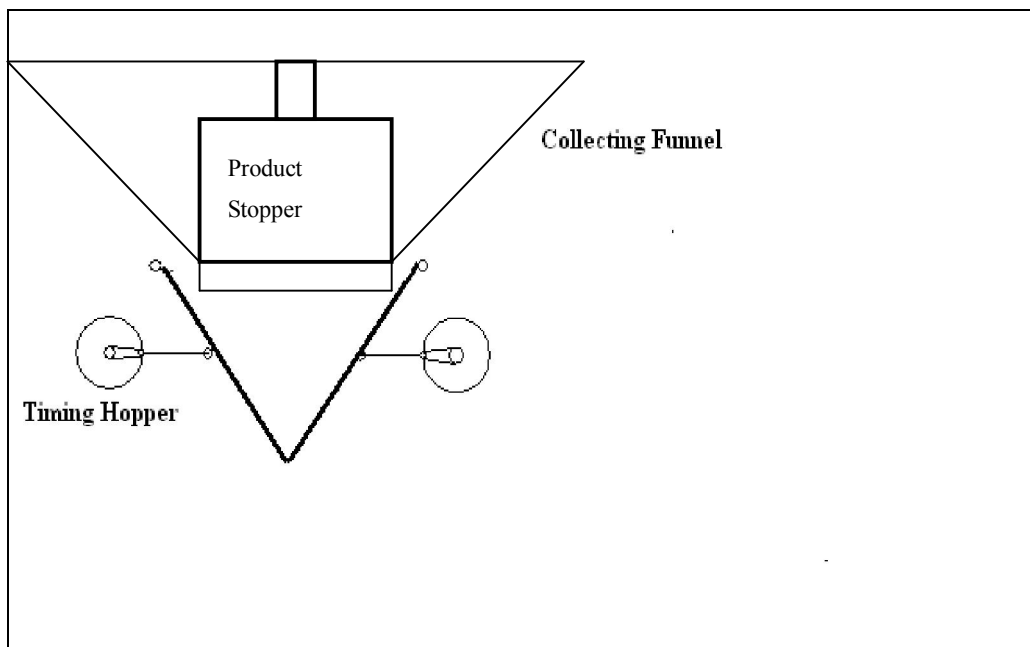
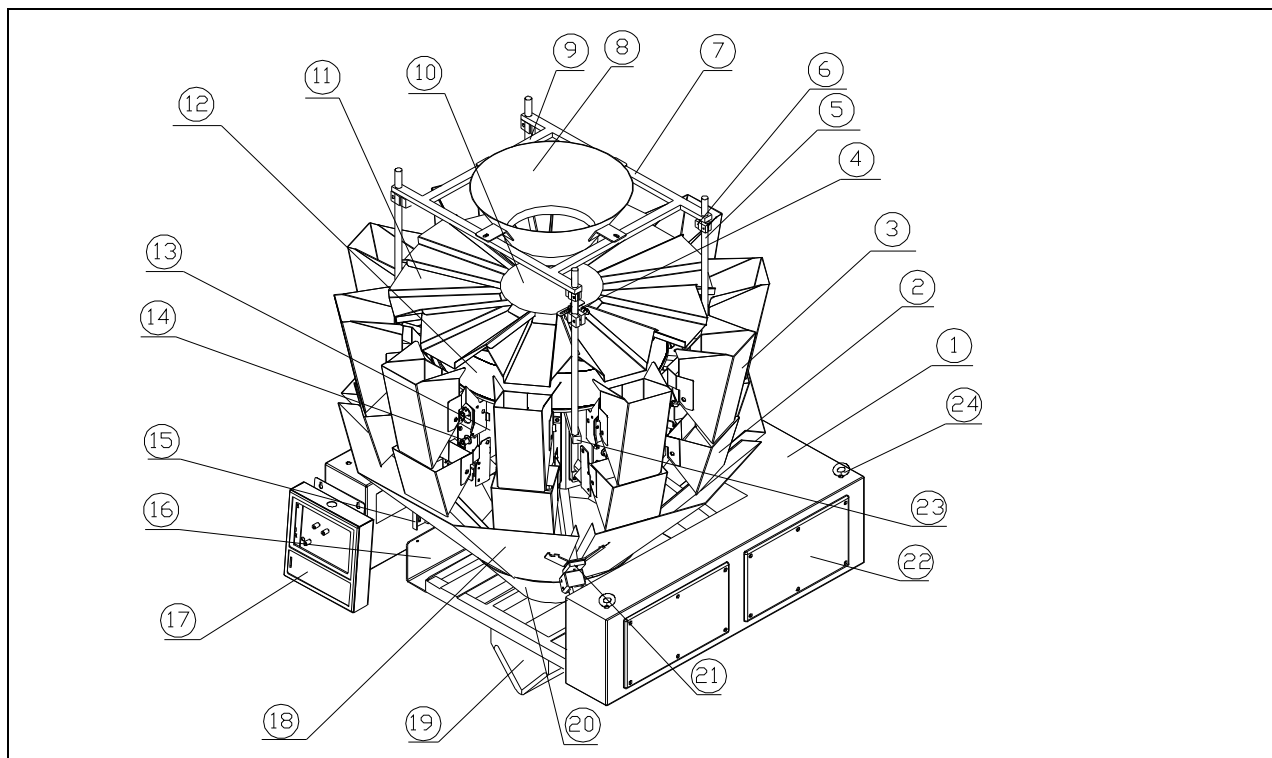


Chart 3-4-4

4. Machine Structure

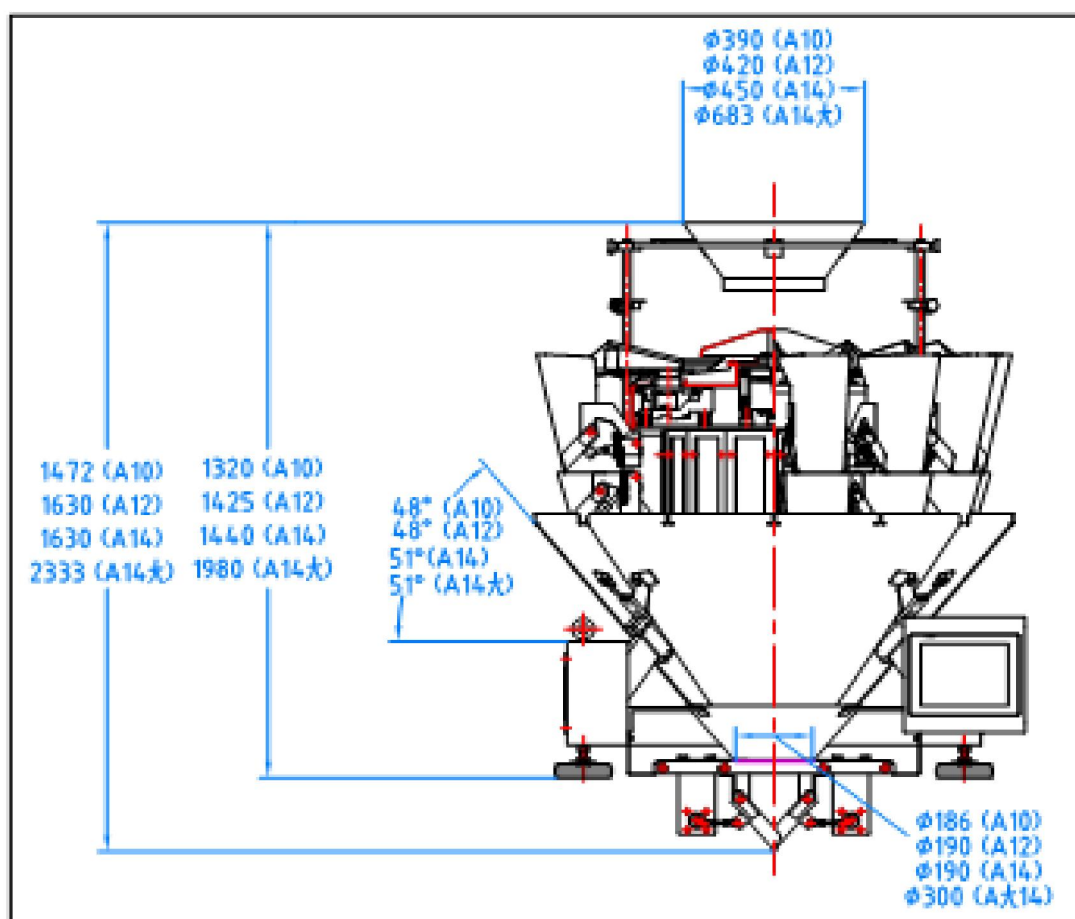
4.1 Main Parts Diagram

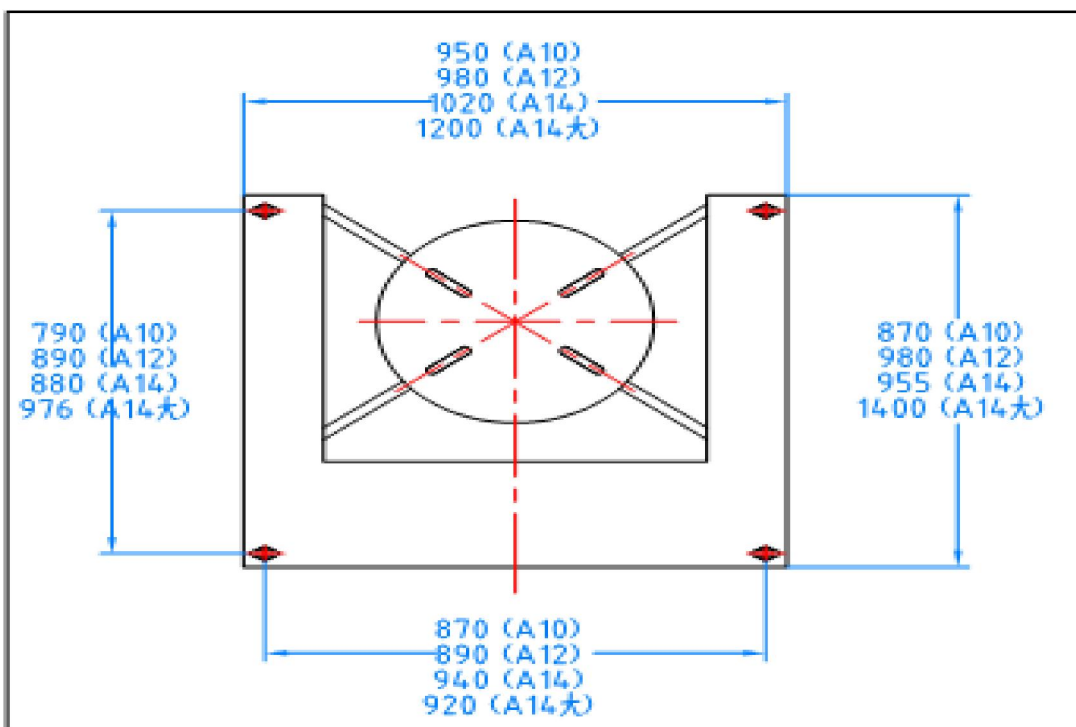
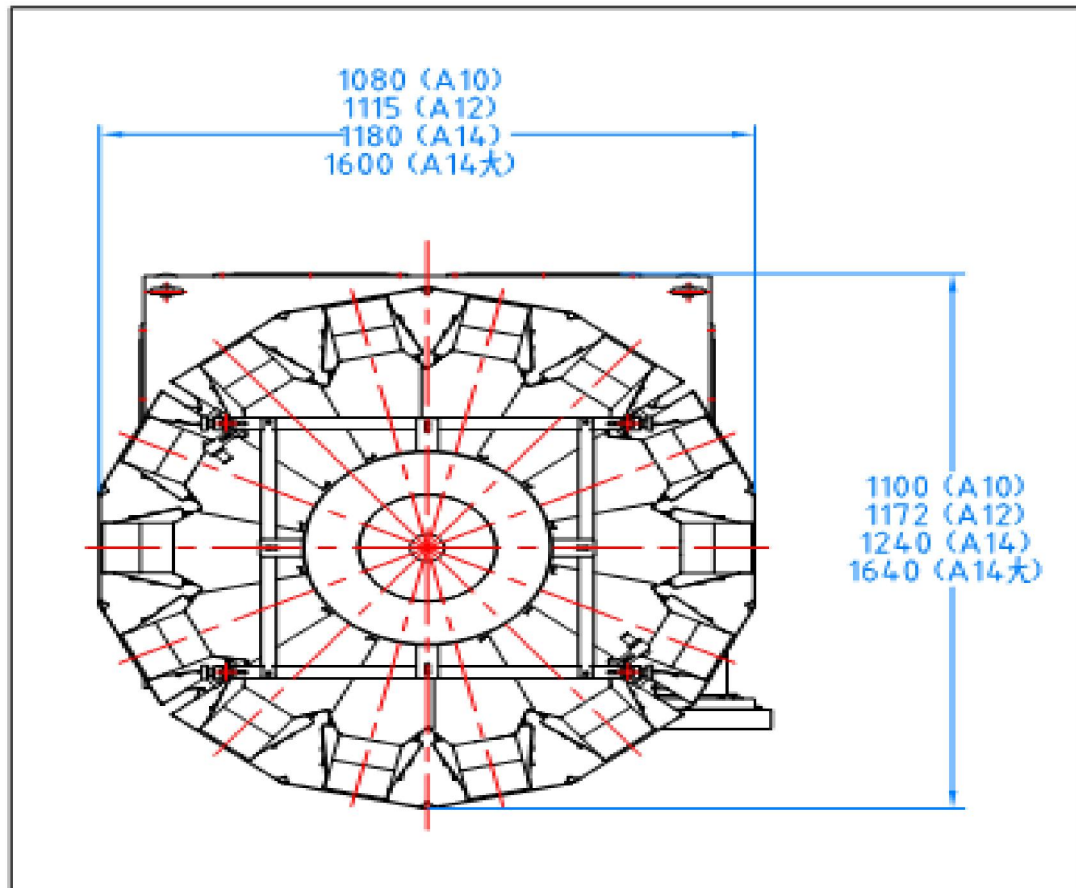


No.	Description	Note	No.	Description	Note
1	Machine Frame		15	Lower Holder	
2	Weigh Hopper		16	Timing Hopper Board	
3	Feed Hopper		17	Control Panel	
4	Level Sensor		18	Discharge Chute	
5	Support Post		19	Timing Hopper	Option
6	Clamps		20	Discharge Funnel	
7	Upper Bracket 1		21	Discharge chute Holder	
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: **JW-A10:** 1620(L) × 1100(W) × 1100(H) mm
JW-A12: 1720(L) × 1100(W) × 1100(H) mm
JW-A14: 1720(L) × 1100(W) × 1100(H) mm
JW-AM14: 2230(L) × 1420(W) × 1870(H) mm
1. Packing Weight: 420 kg(10), 450 kg(12), 490 kg(14), 650 kg(big 14)
2. Installation Dimension: As show in the following chart.

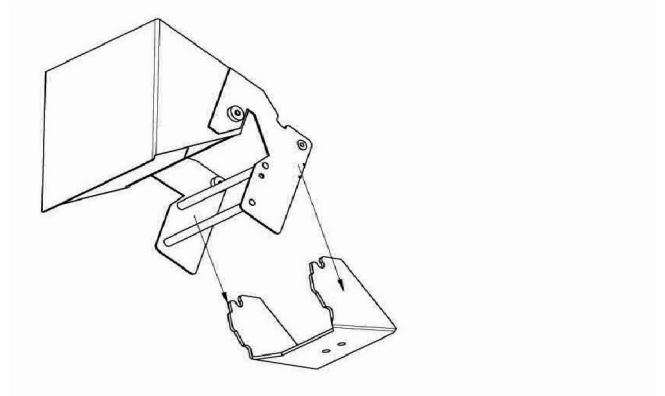




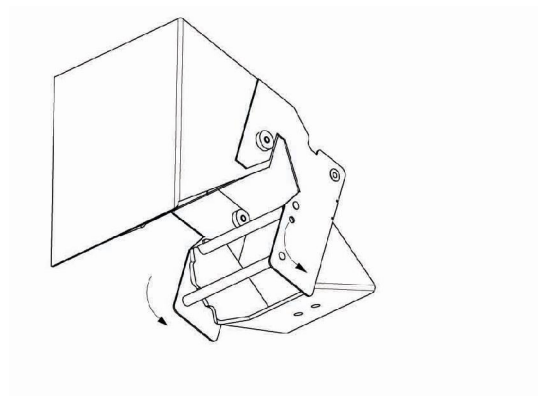
4.3 Common Parts Installation

4.3.1 Feed Hopper Installation

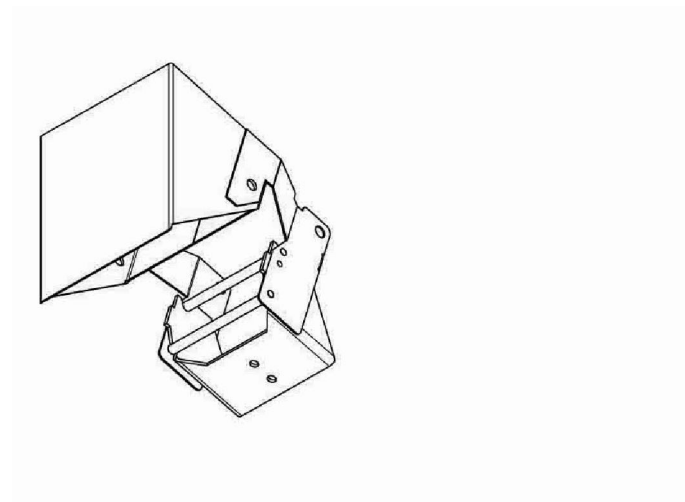
1. As show on the right,
hold the edge of feed
hopper with your right
hand and put the upper
lever of the feed hopper
on the “U” shape slot of
the lower actuator axis.



2. Pushing the lower lever
of the feed hopper into
the groove of the lower
actuator axis.



3. Fix the feed hopper on the
lower axis of the actuator.



4.3.2 Linear Vibrator Pan Installation

Waterproof feeder pan: As show in Chart 4-3-2, firstly, loosening 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.

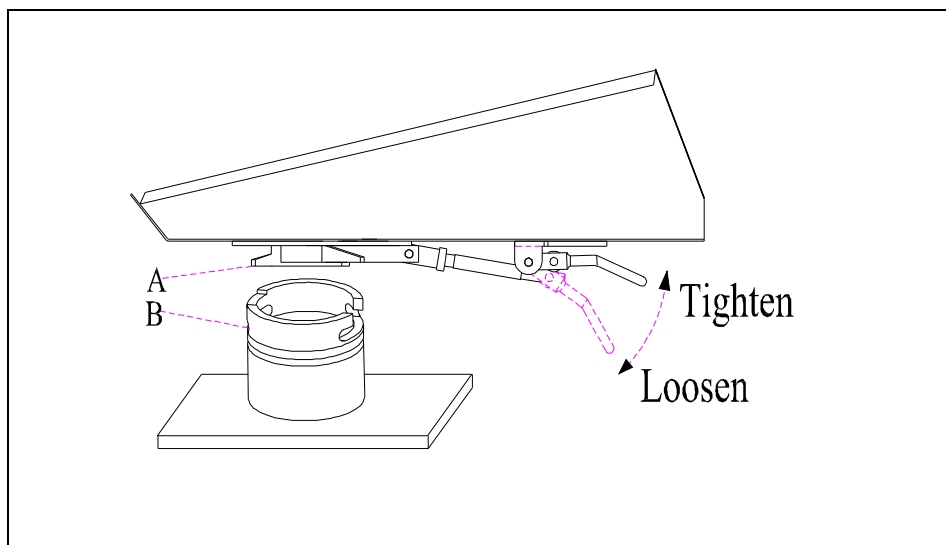


Chart 4-3-2

5. Operation

5.1 Screen

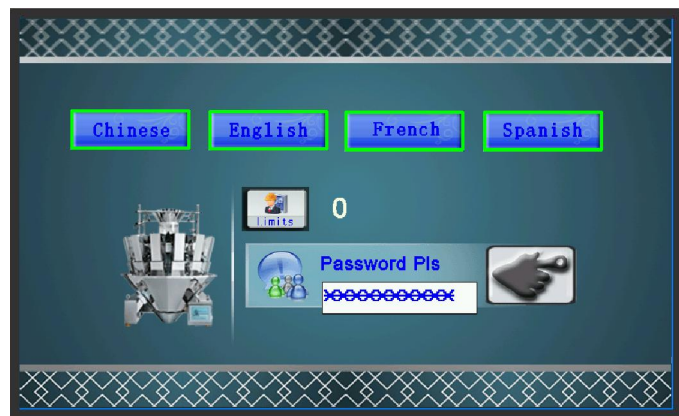
Panel is the controller of multihead weigher. The weigher can be operated by touching the corresponding button on screen.



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.

WELCOME will be show on the screen after turning on the machine.

Selecting the language you need for login.



5.2 Login

There will be 3 level passwords selecting for login.

Permission: Level 0: Worker Login without password (only for Running Menu, Manual Test, can not change parameter);

Level 1: Operator-Password I (Allow revise program setup).

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

Permission Introduction:

Level 0: Login without password, this user does not have the permissions as follow:

1. Revise any parameters;
2. Calibrate the load cell;
3. Delete the Production Records, Unqualified Records;

4. Recover parameters.

There is no respond when you operate the above function.

Permissions:

1. Manual test;
2. Check the Production Records, Unqualified Records and Alarm Records.
3. Running Menu Operation.

Level 1:

Login with password I (**181818**), this user do not have the permissions as follow:

1. Calibrate the load cell;
2. System Setup

There is no respond when you operate the above function.

Permissions:

1. Check any parameters;
2. Running, including simulation running;
3. Manual test;
4. Setting any parameters as the running parameter;
5. Check the Production Records, Unqualified Records;
6. Revise program setup;
7. Delete the Production Records.

Level 2:

Login with password II (**282828**), this user have all the permissions.

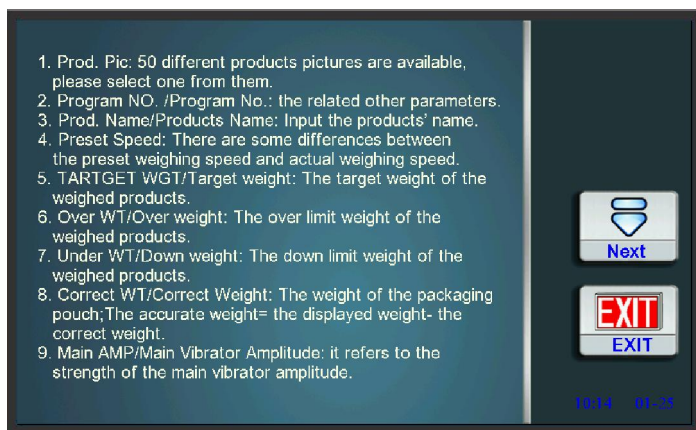
Permissions:

1. Check any parameters;
2. Running, including simulation running;
3. Manual test;
4. Setting any parameters as the running parameter;
5. Check the Production Records, Unqualified Records;
6. Revise program setup and system setup;
7. Delete the Production Records.
8. Calibrate the load cell;

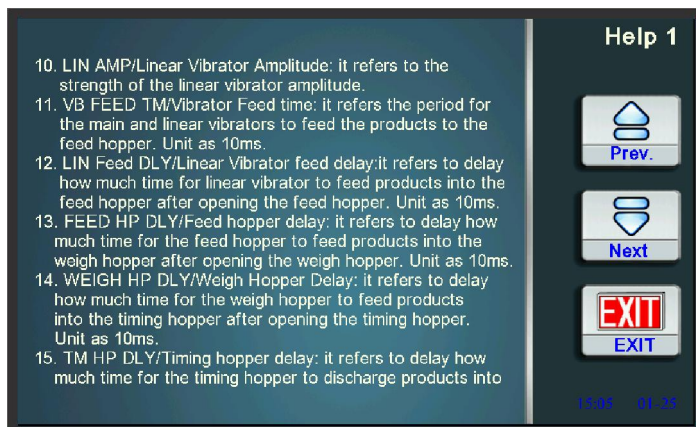
5.3 Help



Press Help on the main menu, and you can get help for every parameters.

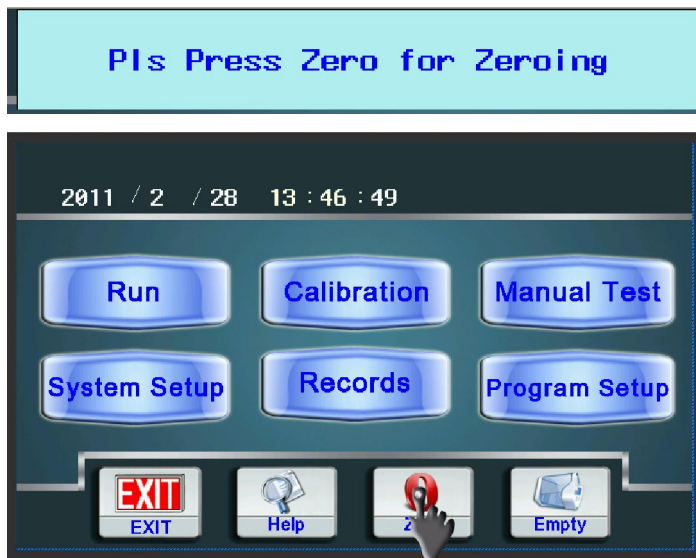


The explanations of the parameters are place in order.



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.

5.4 Zero Operation



An attention: Please Press Zero will display on the main menu, reminding you to make manual zero operation after turning on the machine. (As when the machine was turning on, the automatic zero tracking will zeroing the weigh hoppers which are actually not empties, and result in inaccurate zeroing.)

After press Zero, it will show Be In Zeroing...

Five seconds later, the main menu will displace the current time instead of Be In Zeroing, Please Wait, a sound “di” means zeroing is successful. (The user can also set their local time as the display time in System Setup).

Failure analysis during zero operation:

- (1) “di” one time: zeroing success.
- (2) “di” twice: warning 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, E will display on running menu and stop running the corresponding hopper.

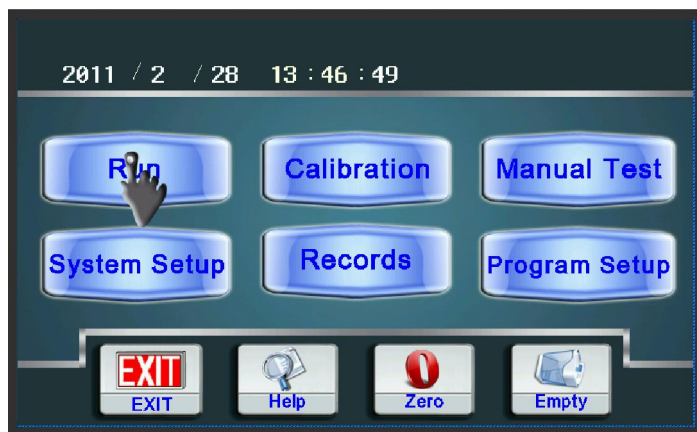
5.5 Empty Operation



Press Empty in the main menu, and the rest products will be discharged into recycling bag while finishing production. Press any key to exit.

5.6 Running Operating

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



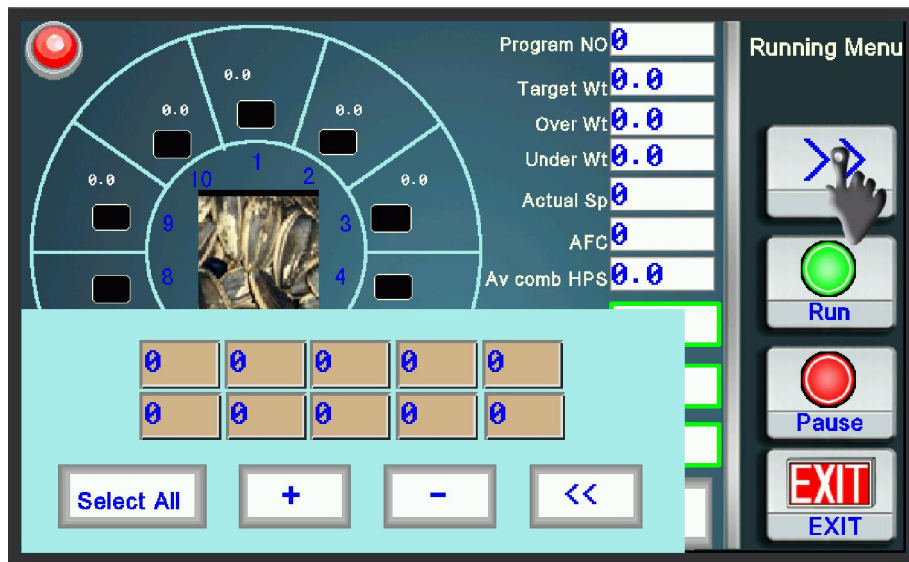
Running menu is as show on the left after pressing Start to Run, the indicator is in red while stop running.



Press Run in the right for running and the indicator will turn into green.

Target 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 Target Speed, Main AMP or Lin AMP and adjusting them by pressing $\boxed{+}$ $\boxed{-}$. If need to adjust Lin AMP separately, press >> and adjust them accordingly as below:



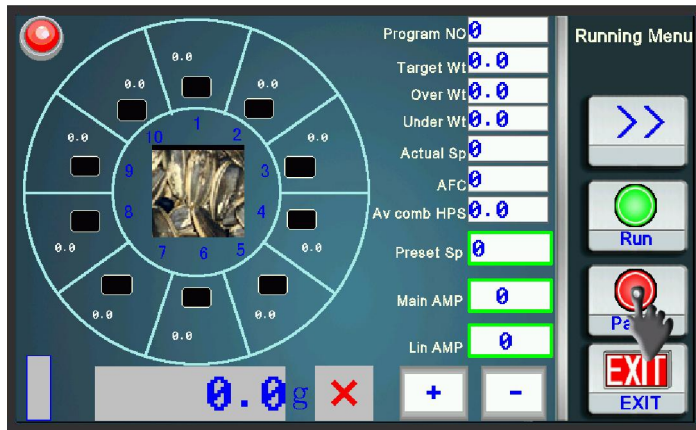
1. Explanation of the icons on the running menu:

- 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;
- 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.

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.



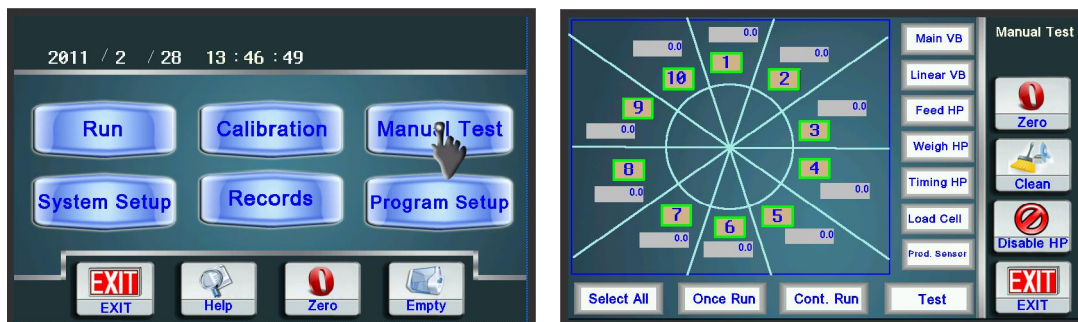
Press Pause to stop running, then the green indicator will turn into red after 5 seconds. Meanwhile, weigher stops running.



Press EXIT back to the main menu after stop running.

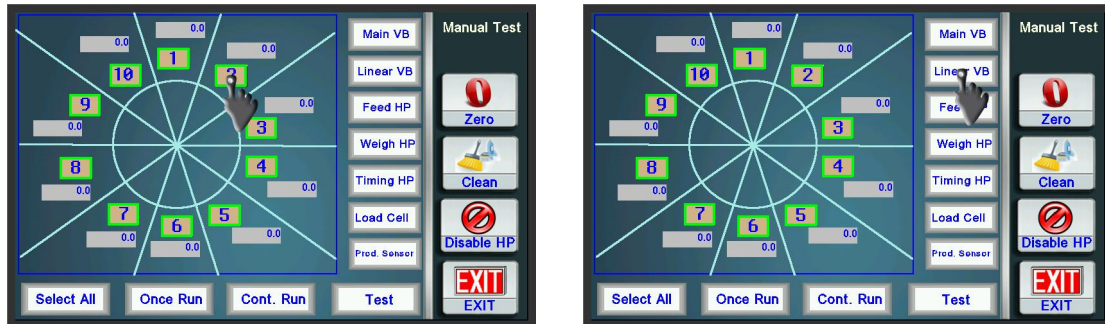
5.7 Manual Test

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.

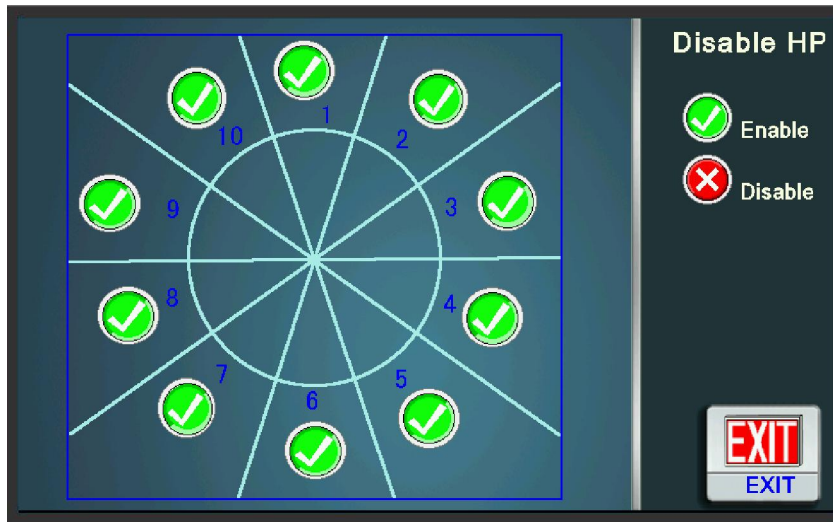
2) **Linear VB/Linear Vibrator** : Press number key to select the linear vibrator number and press **Linear VB** to start testing. Then the selected linear vibrator will vibrate according to the preset program. Selecting 01-10/14 means to select the corresponding linear vibrator, and **Select All** means to select all linear vibrators. Take Linear VB 2 as an example, press 2 and then press Linear VB, then No. 2 Linear VB will vibrate according to the preset program. The testing methods of other Linear Vibrators are as the same.



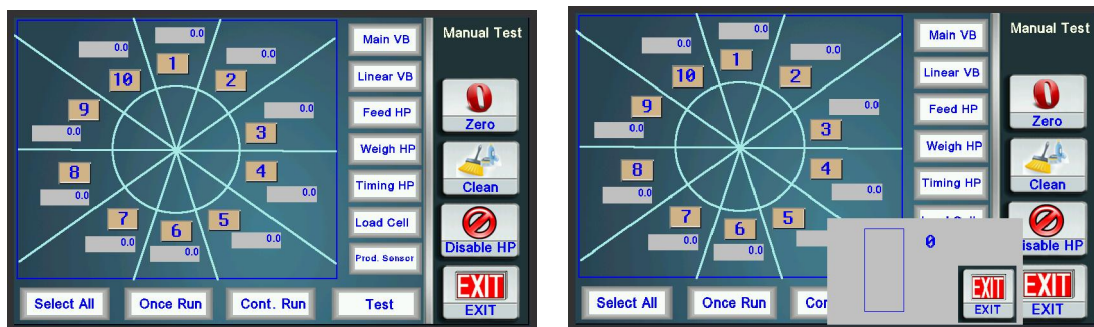
- 3) **Feed HP/Feed Hopper**: Press number key to select the feed hopper number and press **Feed HP** to start testing. Then the selected feed hopper will run according to the preset program. Selecting 01-10/14 means to select the corresponding feed hopper, and **Select All** means to select all feed 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 01-10/14 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) **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 01-10/14 means to select the corresponding hopper, and **Select All** means to select all hoppers.
- 7) **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.
- 8) **Load Cell**: Press number key to select and start testing. Selecting 01-10/14 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 'Err')

- 9) **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)



- 10) **Prod. Sensor/Product Level Sensor:** Press **Prod. Sensor** and the check diagram will be show. Full in green means full of products on the top cone, empty in blank means lack of products. If it is weighing level sensor, the weight of products will also be displayed.



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

5.8 Production Records

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

Displace Record	12	/	0
Target Wt	0.0		
Over Wt	0.0		
Under Wt	0.0		
Pass Bags	0		
Unqualify Bags	0		
Pass Rate	0.0	%	
Total Wt	0	g	
Avg Bag Err	0.00	g	
Started At	0 / 0	0 : 0	
Finished At	0 / 0	0 : 0	

Prev.
Next
Print
Transfer
Delete Record
EXIT

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.

6. Program Setup

6.1 Program Setup-1

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

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Run Calibration Manual Test

System Setup Records Program Setup

EXIT Help Zero Empty

Program Setup 1

Program NO. 0 Main AMP 0

Prod. Name Lin AMP 0

Preset Sp 0 VB Feed Tm 0

Target Wt 0.0 g Lin VB Dly 0

Over Wt 0.0 g Feed HP Dly 0

Under Wt 0.0 g Weigh HP Dly 0




Correct Wt 0.0 g TM HP Dly 0

Auto Zero Tm 0 min Dump Sgl Dly 0

EXIT

Program Setup 2




AFC <input type="text" value="0"/>	FD HP Motor <input type="text" value="0"/>
Avg Comb HPS <input type="text" value="0.0"/>	WG HP Motor <input type="text" value="0"/>
Acpt Comb Err <input type="text" value="0.0"/>	TM HP Motor <input type="text" value="0"/>
Track Interval <input type="text" value="0"/>	FD HP Opn Tm <input type="text" value="0"/>
Avg HP Wt % <input type="text" value="0"/> %	WG HP Opn Tm <input type="text" value="0"/>
Acpt HP Wt Err <input type="text" value="0.0"/>	TM HP Opn Tm <input type="text" value="0"/>
Track Interval <input type="text" value="0"/>	Stable Tm <input type="text" value="0"/>
Min HP Wt % <input type="text" value="0"/> %	Multicomb Tms <input type="text" value="0"/>

Prev.   

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

Program Setup 3




Single Pcs Wt <input type="text" value="0.00"/>	Force Feeding <input type="text" value="0"/>
Target PCS <input type="text" value="0"/>	No. Prod. Pau. Dly <input type="text" value="0"/> s
Over PCS <input type="text" value="0"/>	Stop Feed Wt <input type="text" value="0"/>
Under PCS <input type="text" value="0"/>	Star Feed Wt <input type="text" value="0"/>
Max Dump HPS <input type="text" value="0"/>	Level Fed Tm <input type="text" value="0"/> s
Over Sgl Tm <input type="text" value="0"/>	Stopper Dly <input type="text" value="0"/>
Stgger Dump Tm <input type="text" value="0"/>	Stopper Opn Tm <input type="text" value="0"/>
IDLE <input type="text" value="0"/>	Copy to <input type="text" value="0"/>

Prev.   

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

Program Setup 1

Program NO. <input type="text" value="0"/>	Main AMP <input type="text" value="0"/>
Prod. Name <input type="text"/>	Lin AMP <input type="text" value="0"/>
Preset Sp <input type="text" value="0"/>	VB Feed Tm <input type="text" value="0"/>
Target Wt <input type="text" value="0.0"/> g	Lin VB Dly <input type="text" value="0"/>
Over Wt <input type="text" value="0.0"/> g	Feed HP Dly <input type="text" value="0"/>
Under Wt <input type="text" value="0.0"/> g	Weigh HP Dly <input type="text" value="0"/>
Correct Wt <input type="text" value="0.0"/> g	TM HP Dly <input type="text" value="0"/>
Auto Zero Tm <input type="text" value="0"/> min	Dump Sgl Dly <input type="text" value="0"/>

 Next  

4. 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.

Product Picture 1

Next  

Product Picture 2

Prev.  

- 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.
- Prod. Name/Product Name:** Press this item, there will be a keyboard for you to input the name of the product you choose.
- 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.

8. **Target Wt/Target Weight:** The target weight of the weighed products. Input with 10~6500(g), the last number is decimal place, there are no need to input point.
9. **Over Wt/Over Weight:** The over limit weight of the weighed products. Input with 0~999(g), the last number is decimal place.
10. **Under Wt/Under Weight:** The down limit weight of the weighed products. Input with 0~999(g), the last number is decimal place.
11. **Correct Wt/Correct Weight:** The weight of the packaging pouch. The actual weight=Display weight—Correct weight. Input the correct weight with +/— 0—999 (g), the last number is decimal place.
12. **Auto Zero Tm/INTERVAL:** Used to set interval Automatic Zero Resetting in the running process. Range: 01-99. Unit is 1 min. Recommendation: 5min.
13. **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.
14. **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.
15. **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 01-999, unit is 10ms. Recommendation: 20-100.
16. **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.
17. **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.
18. **Weigh HP Dly/Weigh Hopper Delay:** it refers to the delay time for the weigh hopper to feed products into the timing hopper after timing hopper opens. Input 01-999, unit is 10ms. Recommendation: 0-30.
19. **TM HP Dly/Timing hopper delay:** it refers to the delay time for the timing hopper to discharge products into the packaging machines after weigh hopper opens, in order to make sure all the materials are in the timing hopper and then allow timing hopper to discharge. Input 01-999, unit is 10ms. Recommendation: 50-80.
20. **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 this 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;

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** -----

2. **Avg Comb Hps**/AVG Combination hoppers: it refers to the average combination hoppers which are used in a successful combination weighing. Range: 01-99. Recommendation: 3.0-4.0.

3. **Acpt Comb Err**/Single Acceptable combination error hoppers: it refers to the average combination hoppers windages which are used in each successful combination. Range: 01-99. Recommendation: 0.1-1.0

4. **Track Interval**/Track Interval: After how many successful combinations, it will give an auto adjustment to all linear amplitudes. Range: 01-99. Recommendation: 10.

-----**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 $> ((AV \text{ combination hoppers} - \text{Single acceptable error}) \times \text{Track Interval}) \Rightarrow \text{All linear amplitudes} + 1$.

-----AFCW-----

5. **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%
6. **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
7. **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 $> ((\text{Single AV weight \%} \times \text{Single target combination weight} + \text{Single acceptable error}) \times \text{Track Interval}) \Rightarrow \text{Single linear amplitude} - 1$.

- 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 $< ((\text{Single AV weight \%} \times \text{Single target combination weight} - \text{Single acceptable error}) \times \text{Track Interval}) \Rightarrow \text{Single linear amplitude} + 1$.

8. **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%--15%.
9. **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.

10. **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.

11. **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: 0-2.

12. **FD HP Opn Tm**/Feed hopper opened time: it refers to the period for the feed hopper cover to pause and then begin to close its cover in order to discharge all the products in the feed hopper. Range: 01-150. Unit is 10ms. Recommendation: 1-20.

13. **WG HP Opn Tm**/ Weigh hopper opened time: it refers to the period for the weigh hopper cover to pause and then begin to close its cover in order to discharge all the products in the weigh hopper. Range: 01-150. Unit is 10ms. Recommendation: 1-20.

14. **TM HP Opn Tm**/Timing hopper opened time: it refers to the period for the timing hopper cover to pause and then begin to close its cover in order to discharge all the products in the timing hopper. Range: 01-150. Unit is 10ms. Recommendation: 1-30.

15. **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.

16. **Multicomb Tms**/Multi-combination Times: one target weight will be divided into many combinations. In this case, $\text{Weight of one combination} = \text{Target Weight} / \text{Multicomb Times}$. This function is used to weigh products with big target weight.

6.2 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. **Stagger Dump Tm:** When there is a limit 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.

0: means force feeding while no combination;

1: means re-feed in lightest weigh hopper for re-combination.

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 Main Vibrator with 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 Main Vibrator with 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 for the stopper to feed products into the timing hopper after timing hopper opens. Input 01-999, unit is 10ms. Recommendation: 50-80.

14. **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 1~150; Recommendation: 10~50; Unit: 10ms.

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.



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: Timing hopper + Auto-sorting, it will be thrown to the unqualified channel when the products are unqualified.
5. **Connecting:** Use to check the connection situation between multihead weigher and computer.
6. **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.
7. **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.
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:
$$\text{Actual combined hoppers} \geq \text{Preset combined hoppers} \Rightarrow \text{Enforced discharging}$$
$$\text{Actual combined hoppers} < \text{Preset combined hoppers} \Rightarrow \text{Re-feed products for combining again.}$$

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. Pulse without memory, receiving the pulse of dump request signal after a combination is ready.
- C. 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. 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. **Free Port**/Free Output Port 1~4: Output a signal you want from this port, only empty, running and feeding signal are allowed revise as below:

- 1: Dump signal 1;
- 2: Dump signal 2;
- 3: Ready signal;
- 4: Overweight signal;
- 5: Empty signal;
- 6: Running signal;
- 7: Feeding signal;

No	Signal	Free Port	Signal No
OUT 1	Dump Signal1		
OUT 2	Dump Signal2		
OUT 3	Ready Signal		
OUT 4	Overweight Signal		
OUT 5	Empty Signal	Free port1	7
OUT 6	Running Signal	Free port2	6
OUT 7	Feeding Signal	Free port3	5

For example: The original ready signal was failed, but the user can quickly choose a port to output the ready signal in the condition of not repairing the circuit board. The user just needs to set one of the free output ports as 3 and connect original ready signal wire to the corresponding port. The emergency can be solved by this function.

12. **System Manage/System Management:**

1). Password: Password have 3 levels, you can change level 1 & 2 as follow:

Level 1: Please change to the password you prefer. Original password: 181818

Level 2: Please change to the password you prefer. Original password: 282828

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

2). Backlight Time: The backlight will be turn off after a certain time without touching. Input with 1~99.

3). Time Setting: Input the current time with 0~9.

4). Date Setting: Input the current date with 0~9.

13. **Sample Filter/ Sample Filter Value:** It 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.

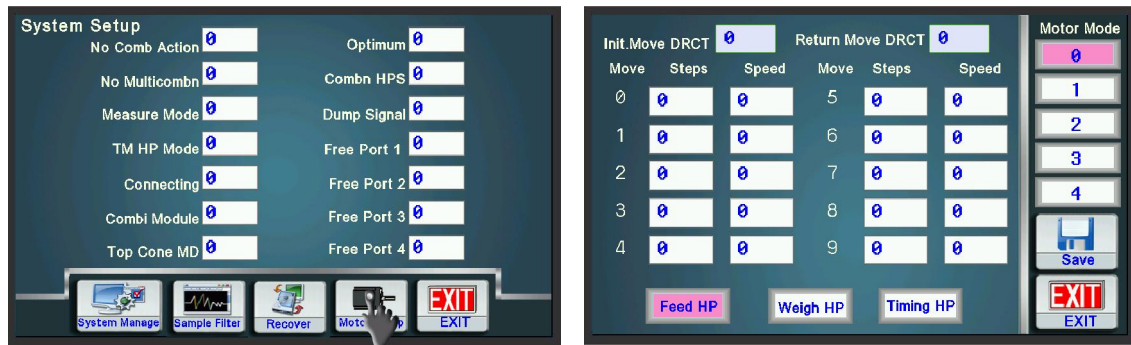
If the user want to revise each sample filter separately, input a new one according to the load cell number (1-10/14).

If the user want to revise the entire sample filter in uniform, please choose Setting All and input a number.

14. **Recovery/Program Recovery:** Press the icon of recovery, it will recover all the original parameter settings after confirm.

7.2 Motor Setup

Press the icon of motor to enter Motor Setup menu.



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°

7. **Speed**: the rotary speed for each step within the segment. Range: 1-50. (Input the steps, the speed will change automatically)

8. **Current**: it refers to the motor current level during the running. Range: 1- 15. The bigger this value is, the stronger the rotary strength is.

9. **Front Move total steps**: the total steps of the front segment.

NOTICE: The back move total steps must be equal to the front move total steps.

10. **Save**: Used to save the amended parameters. It will display OK on the screen and there will be a TICK notice after a successful operation

11. **ATTN**: When you set the motor model, you can take below illustration for

reference to get the graph, as shown in chart 7-2-3.

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.

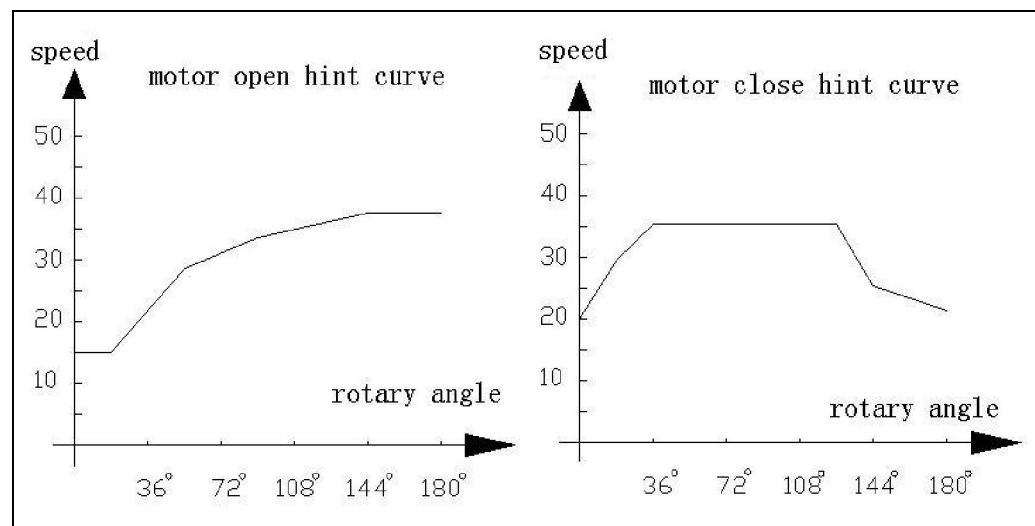


Chart 7-2-1

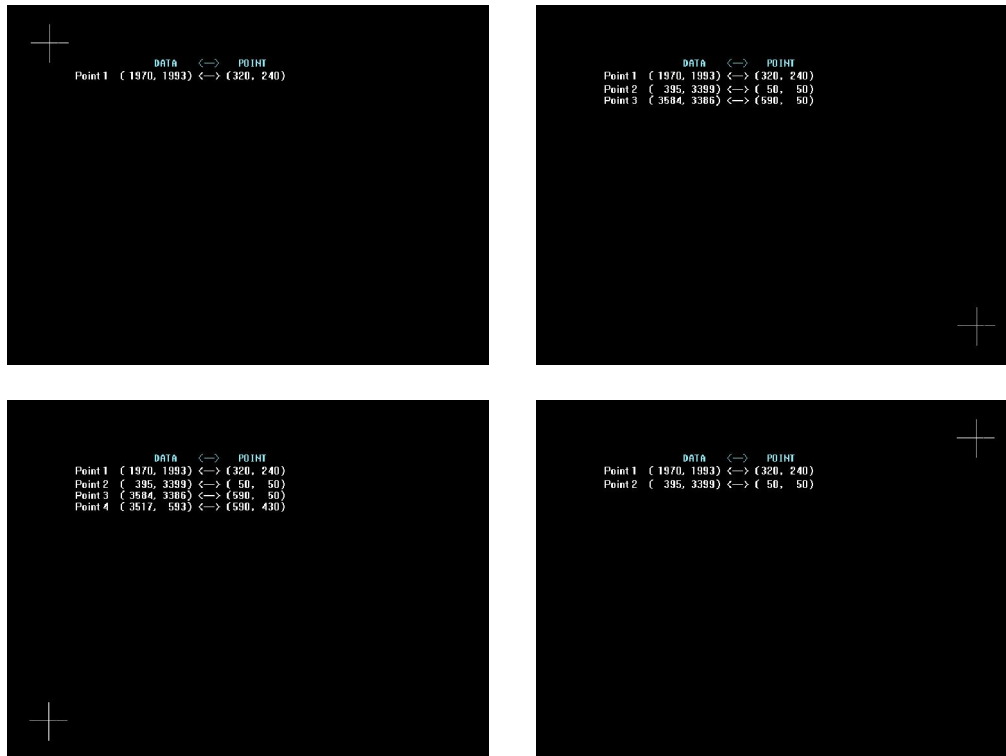
7.3 Screen Collation

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.



1. Screen collation on the screen:

- If screen collation success, “**adjust success**” will be displaced on the center, and then the screen will automatic turn to System Setup menu.
- If screen collation fails, please press + according turn on the screen until success.



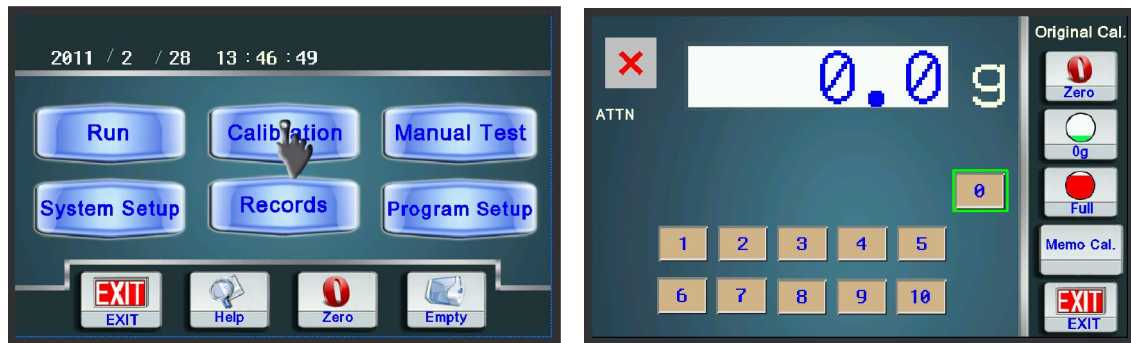
2. Screen collation by screen system

- Turn off the machine, open the back cover of screen and put 2P to ON position.
- Re-start machine, screen will access to screen setting menu as below.
- Press Screen Collation, and then screen will automatic collation screen.




7.4 Calibration



On the main menu, press Calibration to access to calibration menu (Turn on the J2 switch on the mother board can prohibit to enter this menu).





7.4.1 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, press  to make a zeroing operation to the load cell.
2. Put a standard weight ($\leq 1000.0g$) 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.
3. Check other load cells. Press number keys to access the load cell NO. to check.

7.4.2 LOAD CELL ZEROING

1. 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  to have a zeroing and it will display '0.0', if there is still a large error or skipping, please make a calibration to this load cell.
2. Have a zeroing to other load cells. Press number keys to access the load cell NO. to check and press  to have a zeroing.

7.4.3 LOAD CELL CALIBRATION

1. Input the hopper No. and then the current weight in the weigh hopper will be displayed at once, the icon will move to .
2. Ensure that there is no remaining product in the weight hopper, and press .
3. Put a standard weight ($\leq 1000\text{g}$) in a weigh hopper, and then press **Full** to confirm.

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.

8. Self-diagnose & Solve the failures

Icon	Reason	Check & Solve
------	--------	---------------

Phenomena	Possible Reason	Check & Solve
U	Single hopper weight is heavier than the target weight	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 abnormality, press Empty and running again; 4. Re-calibration.
e	The Wt HP with negative value during running	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Increase Zero Interval properly when the product is not sticky.
L	The weight in Wt HP is less than the Min HP Wt%	<ol style="list-style-type: none"> 1. Increase AMP; 2. Decline the Min HP Wt% ; 3. Adjust the Lin AMP to discharge evenly.
D	This HP was disabled	<ol style="list-style-type: none"> 1. Restart the hopper in Manual Test.
T	Failure in module communication	<ol style="list-style-type: none"> 1. DC2 power switch is out of order; 2. QF2 breaker is ON or OFF; 3. Check if P031~6 connected correctly.

Suddenly discharging or power off during running	The power switch is OFF	<ol style="list-style-type: none"> 1. Check the power connected correctly 2. Check if any loose wire terminals
The difference between the displayed weight and the actual weight is quite big	1.Zero over-floating	<ol style="list-style-type: none"> 1. Grounding must be secure 2. Re-calibration 3. Increase Simple Filter
	2.The packed products are too heavy	<ol style="list-style-type: none"> 1. Set the Correct Weight as positive
	3.The packed products are too heavy	<ol style="list-style-type: none"> 1. Set the Correct Weight as negative
	4.Products in Wt HP did not discharge completely	<ol style="list-style-type: none"> 1. Increase the motor pause time 2. Increase the hoppers delay time
	5.Load cell speed is lower	<ol style="list-style-type: none"> 1. Decline Sample Filter
Discharging with pause	Wait for the previous discharged hopper to combine	<ol style="list-style-type: none"> 1. Decline Combn HPs 2. Increase Over or Under Weight
The packing speed is slowing	Unreasonable AFC setting	<ol style="list-style-type: none"> 1. In AFCT, Avg Comb Hps should be between 3~4 2. In AFCW, Avg HP Wt% should be between 25-33%。
Low pass rate	Poor combination	<ol style="list-style-type: none"> 1. Adjust AMP to make the Avg Comb Hps between 3~4 2. Increase Over and Under Weight in permission 3. Adjust the Lin AMP to discharge evenly
Open hopper weakly	The opening speed of motor is too fast	<ol style="list-style-type: none"> 1. Decline the front move speed in the Motor Setup
Louder sound with closing hoppers	The closing speed of motor is too fast	<ol style="list-style-type: none"> 1. Increase the back move speed in the Motor Setup
Hopper open several times	Fail in checking motor position	<ol style="list-style-type: none"> 1. For all motors like this, check whether the DC2 with 18V is normal or not; whether the 34P ribbon wire is loose or not. 2. For the individual motor, check whether the relevant photo-electric board is normal or not
Can't access to calibration	Hardware lock was turn on	<ol style="list-style-type: none"> 1. Set J1 on mother board as OFF
Invalid displayer	Fail in communication	<ol style="list-style-type: none"> 1. Grounding must be secure 2. Displayer wire is connected or not 3. QF1 is ON or OFF

9. 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.

10. 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.

11. 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.

12. Electric Diagram

