



High Tek Multihead Weigher

Model:

HTMW-T2-2.5X-XX (SS-2.5G)

User Manual

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1) Preface

At High Tek USA we pride ourselves in providing quality equipment at affordable prices. Our service and support is bar none and with our 24hr tech support line you can be confident that when you have a technical issue or question we will be here to help.

Our HTMW-T1 and T2 series multi-head weighers are fully automatic computerized combination scales, specially designed to ensure you have all the tools needed to automate your weighing process while saving on cost by utilizing only the key items needed in a production line. The weigher makes use of advanced technology with a 32 bit high speed microprocessor to ensure the highest efficiency and degree of accuracy.

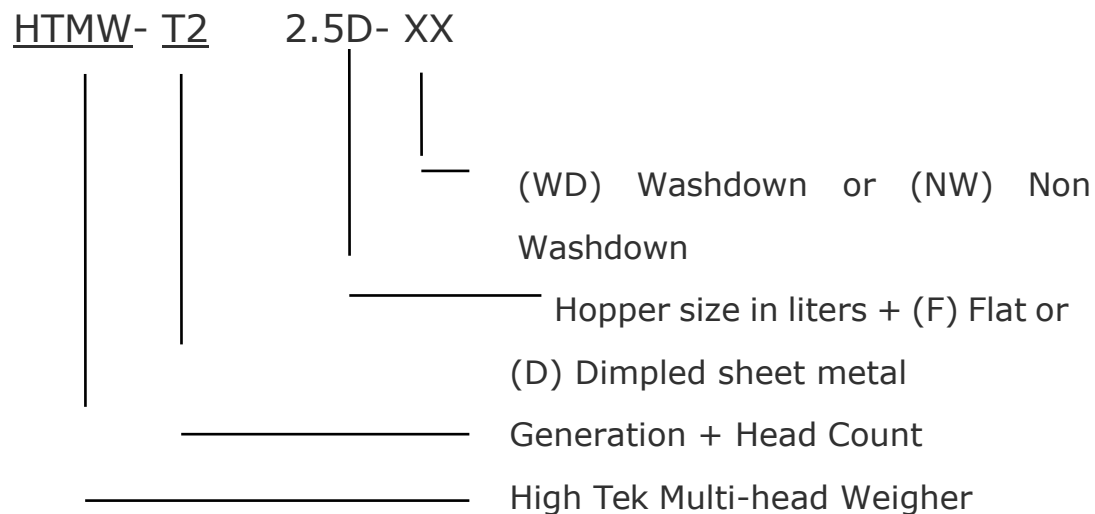
The purpose of this manual is to help users properly operate and maintain their equipment. This manual provides information regarding operation of the machine and some basic maintenance measures. We fully service and support all of our equipment so if you are ever in need of Technical Support, Training, Replacement Parts, or Emergency Service please contact 800-504-7120. This manual is designed for our High Tek economy weighers Model HTMW-T2-X.XX-XX (14 head) and HTMW-T1-X.XX-XX (10 Head).

NOTE: The manual is designed for our Version 3 Software

2) Basic Descriptions

2.1 Machine Model Specifications

In this example, this machine's model number is HTMW-T2. The model number can be explained as follows



2.2 Working Environment

- [1] Temperature: 0~ 40⁰C, Humidity: 35-85%.
- [2] Electrical power: AC 208V ~ 240V 50/60Hz.
- [3] Installation environment: On a hard, level and sturdy surface.
- [4] Grounding: Make sure the grounding terminal is grounded.
- [5] Noise: Shield interface cables if necessary
- [6] Environment should be axenic and non-dusty workshop when packing food products.
- [7] Avoid working in environments containing caustic gases
- [8] Do Not touch remote control touch screen with sharp objects.

2.3 Attention

- [1] Do not apply excessive force to the Weigh Buckets. Load cell can be damaged.
- [2] Before running production, ensure hoppers are clear of product and a "zero adjustment" is performed.
- [3] Be sure to turn the machine's power off when sanitizing or cleaning.
- [4] If there is an electrical malfunction, shut the machines power off immediately and contact your electrician or our technical support dept.
- [5] If your machine is a WD (wash down) model, be sure that only garden hose pressure is applied to machine. Do not use high pressure. Use extra caution when sanitizing around gaskets and seals.
- [6] All interface signals between the weigher and packaging equipment such bucket elevator, packaging machine, etc. require a signal of 24VDC or less with a load current of not more than 100mA. High voltage signals will cause damage to circuit boards inside the machine.
- [7] Do not touch or put hands or fingers into moving parts of the equipment such as hoppers or drive actuators.
- [8] Please read this manual thoroughly to familiarize yourself with the proper operation of this equipment.

2.4 Specification

Parameter	Machine Model	
Series	HTMW-T2	HTMW-T1
Voltage	AC220V	AC220V
Frequency	50/60Hz	50/60Hz
Amp rating	9A	8A
Power usage	2.0kW	1.5kW
Head count	14	10
Max. weight	9999.9g	9999.9g
Min. weight	7-9999.9g	7-9999.9g
Bucket capacity	2500mL / 2.5L	2500mL / 2.5L
Max. speed	140bags/min	80bags/min
Program qty	0-99	0-99

Table 1

2.5 Accessories

User Manual	Qty 1	1000G Weight	Qty 1	Air Dryer W/ Gauge	Option
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3) Machine Structure

3.1 Main Components

The main components of **HTMW-T2**, series are shown in Fig. 3.1.1

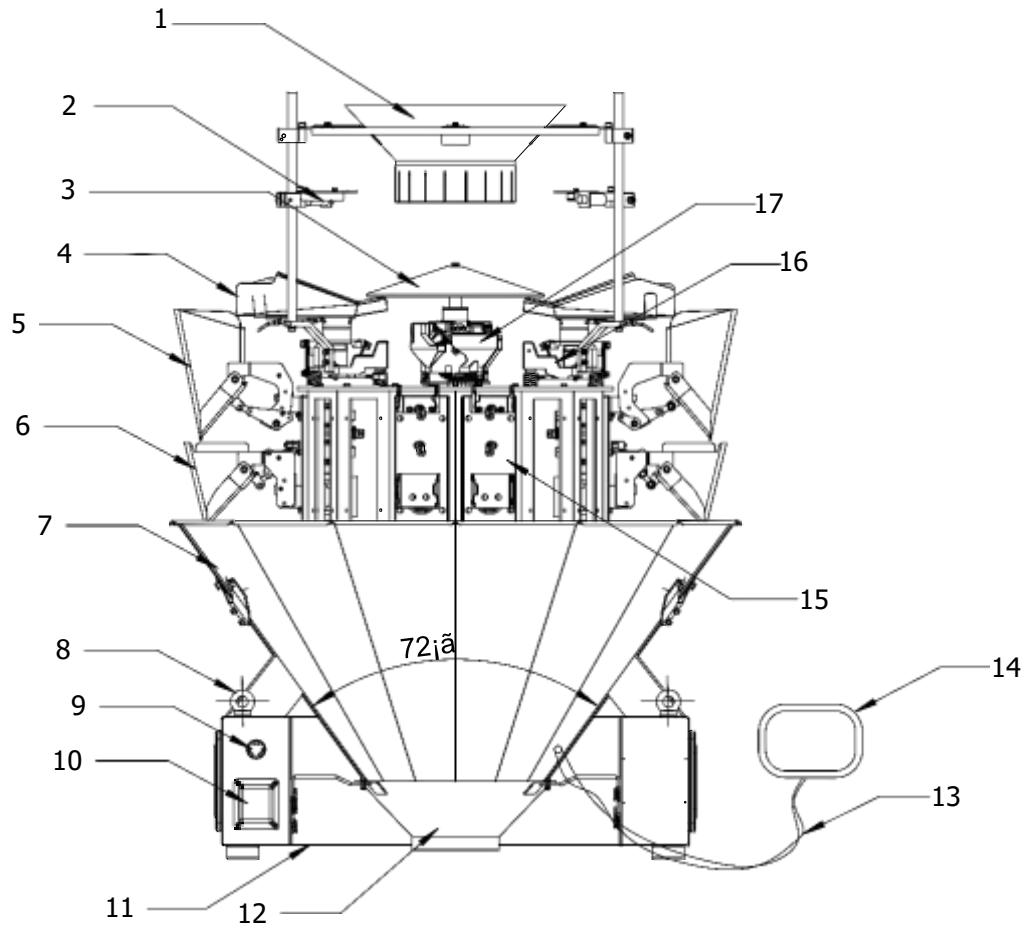


Fig. 3.1.1

1	Indeed Funnel	10	Main Breaker
2	Level Sensor	11	Main Body
3	Top Cone	12	Discharge Funnel
4	Linear Feeder Pan	13	RCU Harness
5	Feed Bucket	14	Remote Control (RCU)
6	Weigh Bucket	15	Drive Unit
7	Discharge Chutes	16	Linear Vibrator Assembly
8	Eye Bolt	17	Main Vibrator Assembly
9	Emergency Stop		

Table 2

3.2 External Parameters

1. Crate Size:	HTMW-T2	1136(L)×1586(W)×1488(H)
	HTMW-T1	1086(L)×1436(W)×1308(H)
2. Crate Weight:	HTMW-T2	420kg
	HTMW-T1	250kg

1. Assembly Dimension: Fig. 3.2.1-3

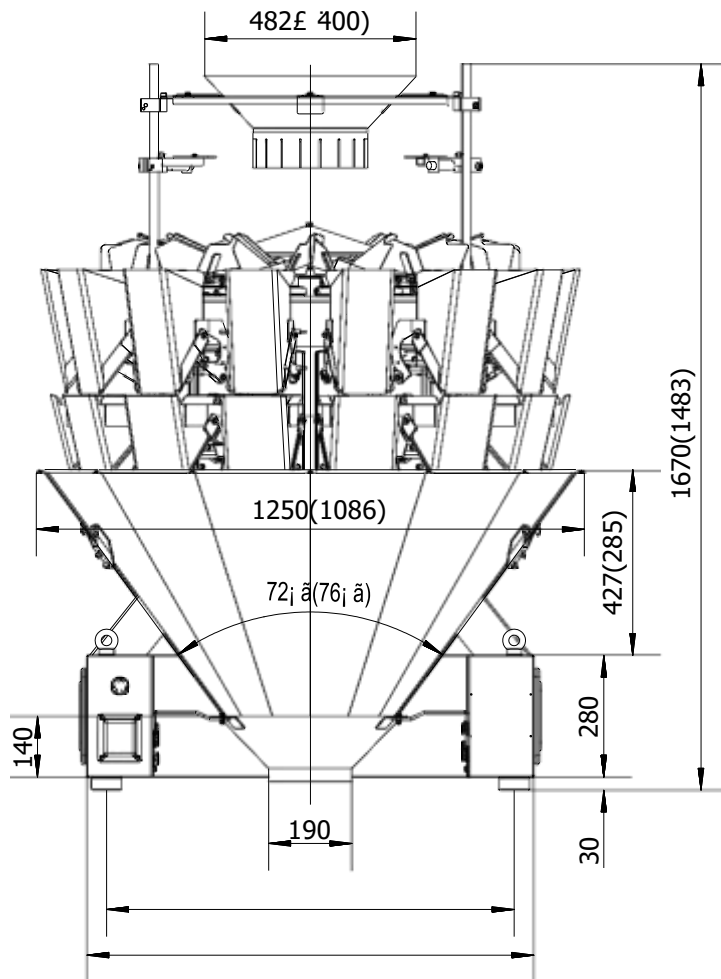


Fig3-2-1 HTMW-T2 (T1)

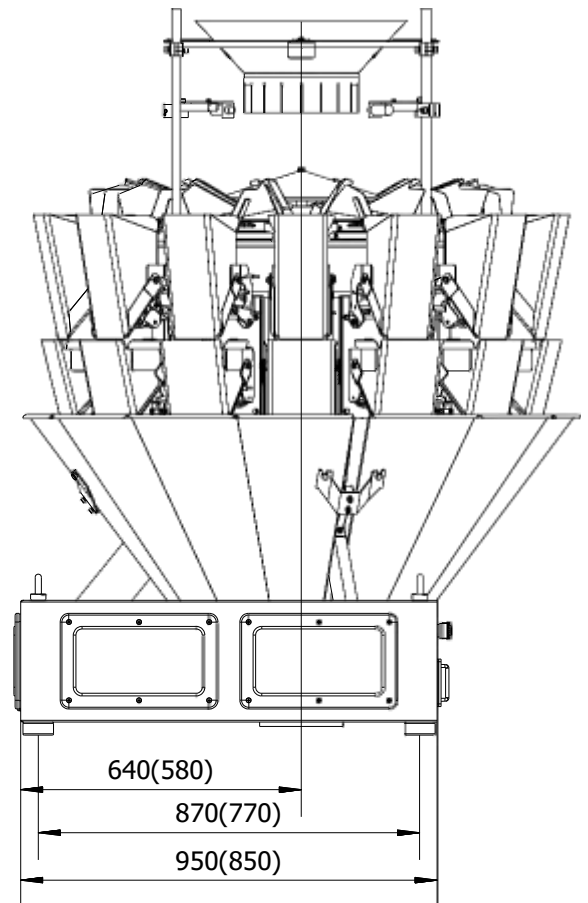


Fig3-2-2 HTMW-T2 (T1)

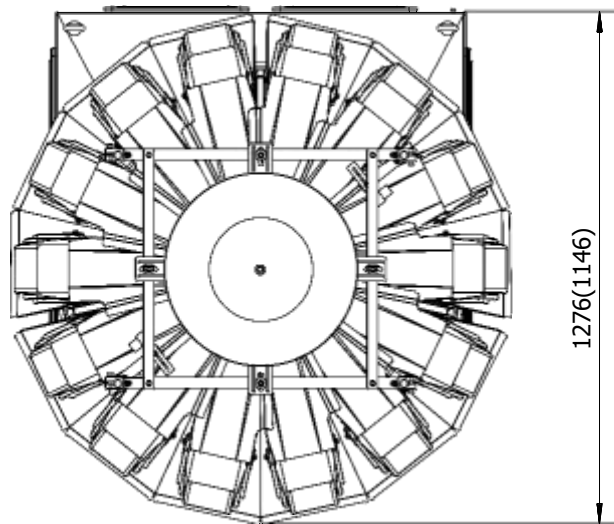


Fig3-2-3 HTMW-T2 (T1)

3.3 Assembly

3.3.1 Bracket and Infeed Funnel Installation

The exploded diagram of bracket and infeed funnel is shown in Fig. 3.3.1. Users can install the bracket and infeed funnel according to the exploded diagram.

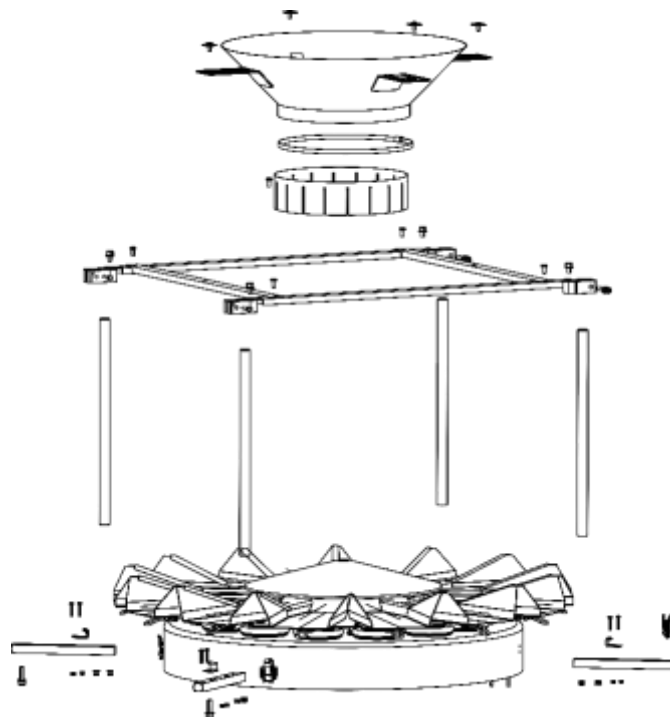


Fig. 3.3.1

3.3.2 Weigh Bucket Installation

1. As shown in Fig3-3-2a, hold the outer edge of the bucket and make the bucket tilt slightly with your hand so that the fixed rod connects to the locking mount in position 1 as shown in Fig3-3-2a. After aligning the locking mount, allow the bucket to gently sit down into the mount.

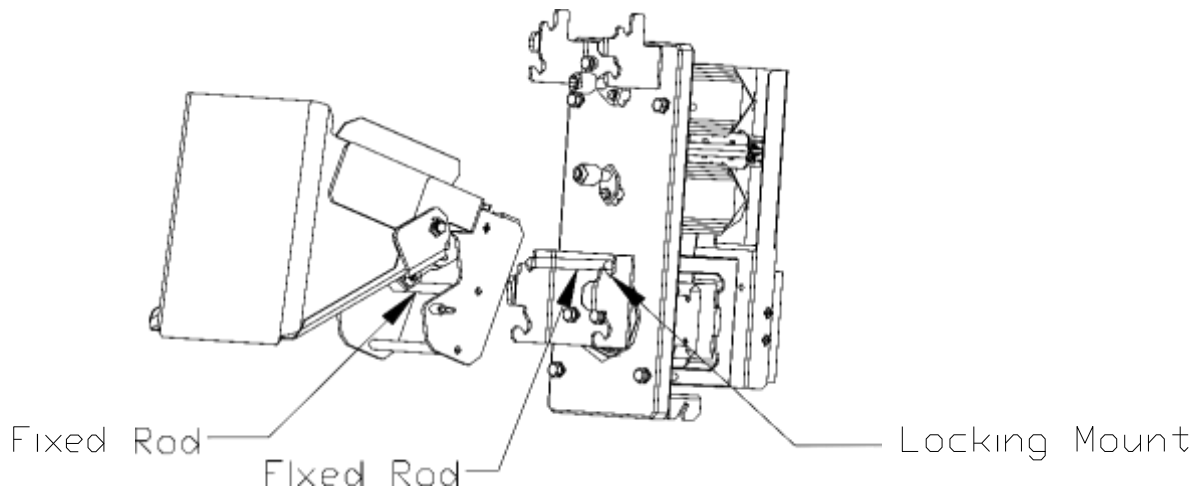


Fig. 3.3.2a

2. Allow the bottom of the bucket to swing down into its resting position, as shown in Fig. 3.3.2b.

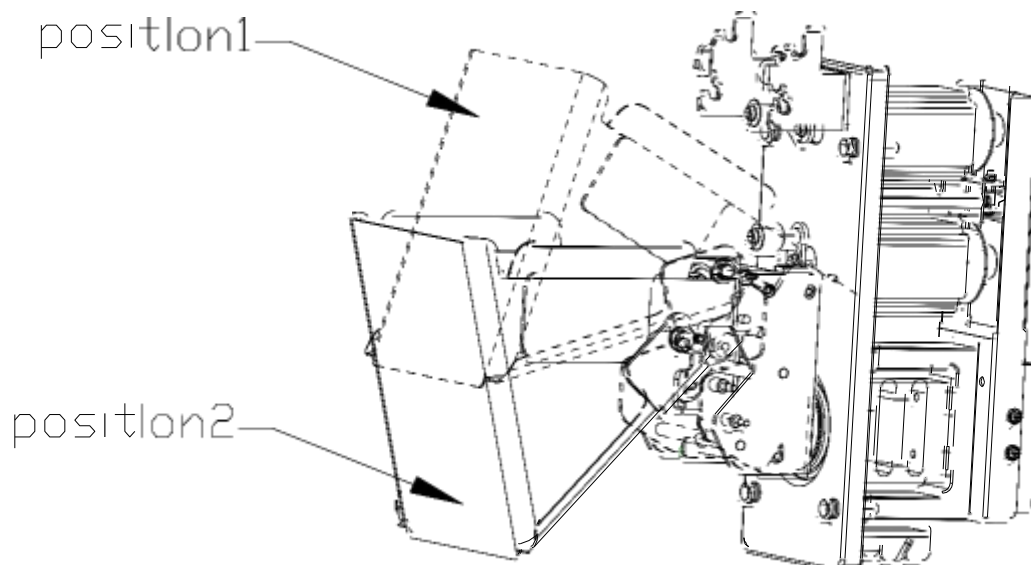


Fig. 3.3.2b

Remove in reverse order, beginning by tilting the bottom of the bucket up, and then lifting the bucket up out of the mount.

3.3.3 Linear Feeder Pan Installation

The installation of feeder pan is shown in Fig. 3.3.3. Place the feeder pan above the notch in the vibrator. Insert section "a" of the feeder pan into section "b" of the vibrator. Insert section "a" of the feeder pan into section "b" of the vibrator.

NOTE: Each Linear Feeder Pan should be installed tightly. Ensure none of the feeder pans are touching each other.

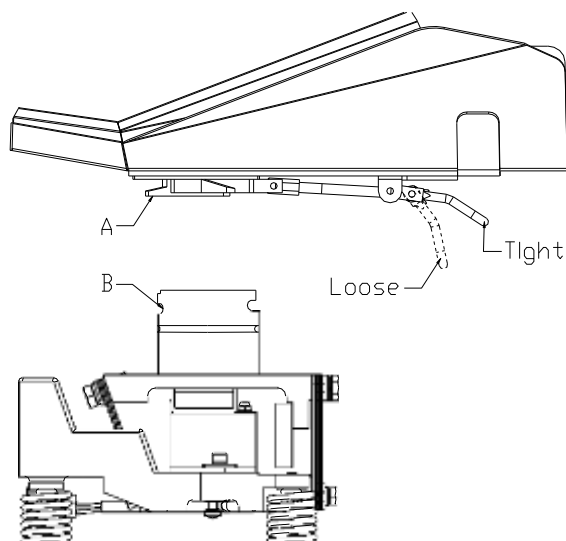


Fig. 3.3.3

3.3.4 Discharge Chute Installation

As show in Fig. 3.3.4, put the Discharge Chutes into the weigher beginning by holding them in Position 1, and placing them gently into position 2 in the brackets.

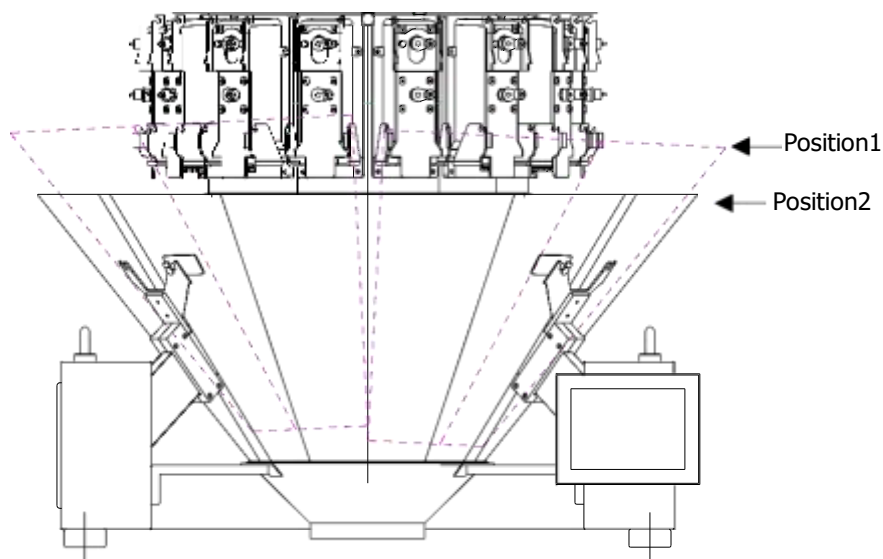


Fig. 3.3.4

3.3.5 Feed Bucket Installation

Refer to the Weigh Bucket installation diagram and instructions.

3.3.6 Collection Bucket Installation

1. As shown in Fig. 3.3.5, install the Collection Bucket brackets on the main body, and tighten bolts.

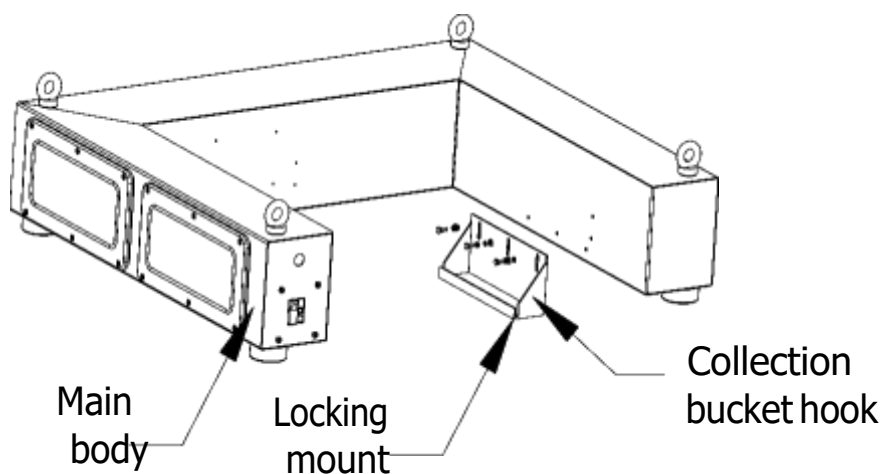


Fig. 3.3.5

2. Insert the Collection Bucket into the Locking mount for both sides. Set bucket horizontally.

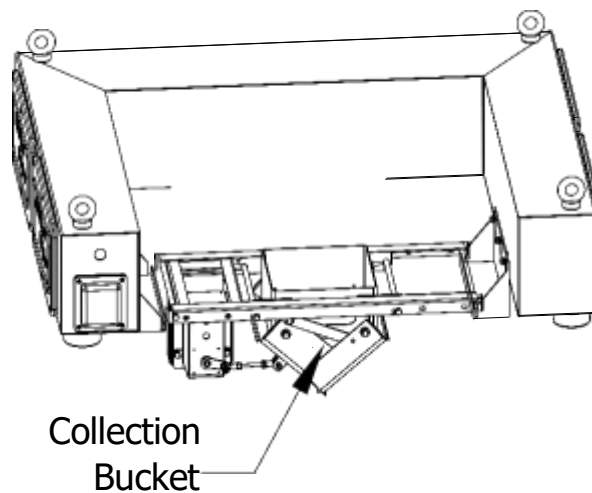


Fig. 3.6.6

NOTE: Please ensure the component number corresponds with the drive unit number when installing the feed buckets, weigh buckets and discharge chutes

4) Working Principle

Product to be weighed is first delivered by a conveyor and fed into the infeed funnel. It is then dispersed to the linear feeder pans by the vibrating top cone. The product flow can be altered by adjusting the height of the infeed funnel. Products to be weighed are distributed evenly by each linear feeder pan into the feed buckets. When a weigh bucket is used to complete the current combination, the product being stored in the feed bucket will be fed to the weigh bucket to prepare for next combination. This machine can be used with other equipment like packaging machines or conveyors by using interface signals, The work flow is shown in Fig. 4.1.

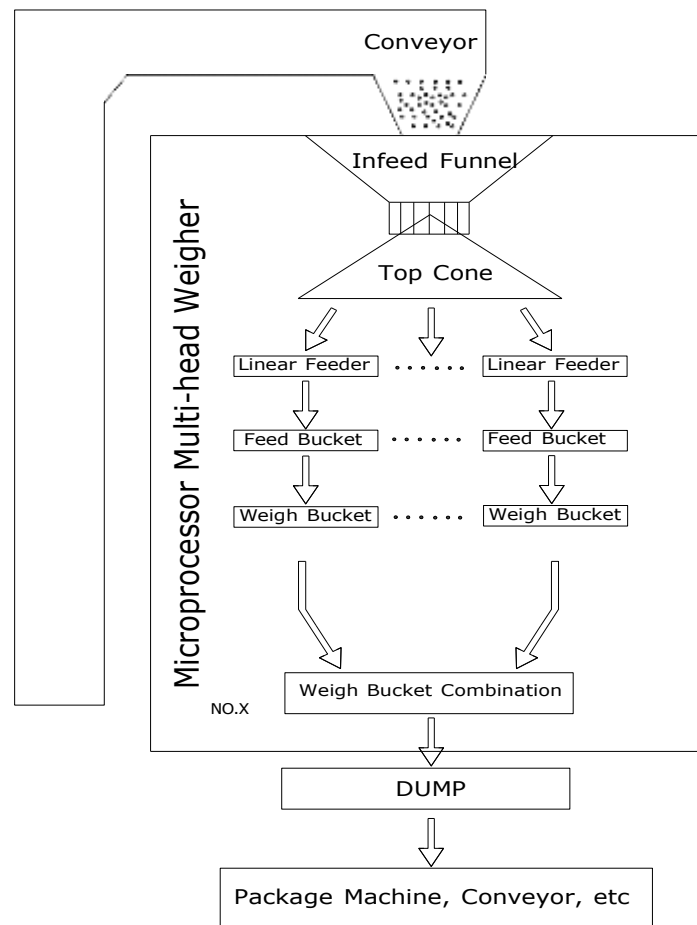
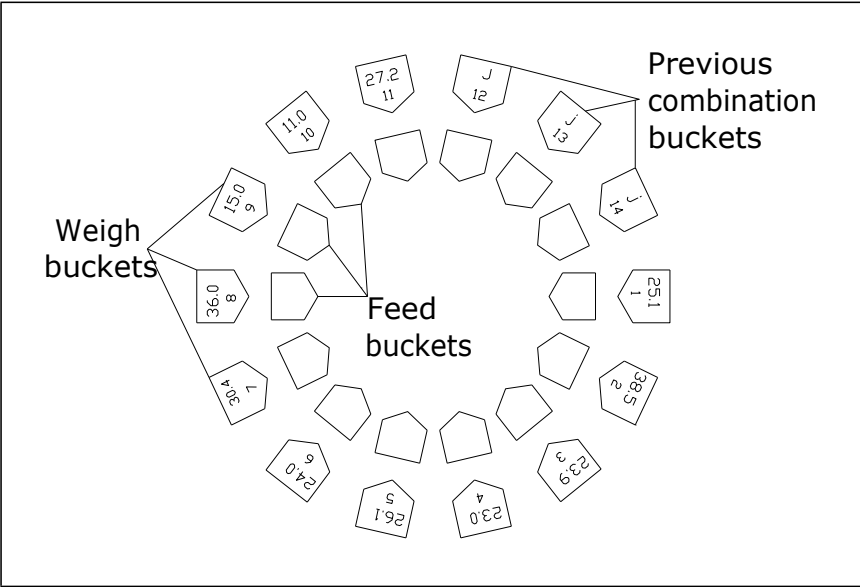


Fig. 4.1 Work flow

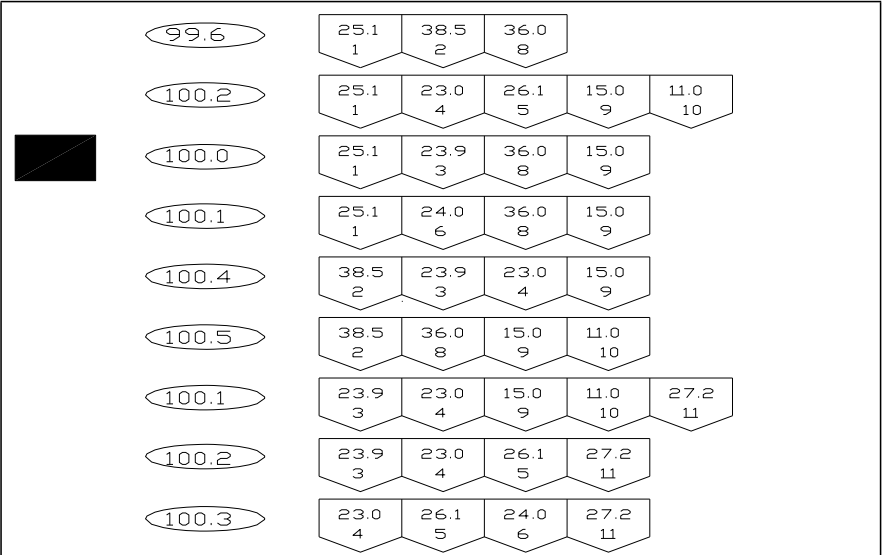
4.1 Combination

The CPU calculates the weight value from each Weigh Bucket (Fig. 4.1.1), adds up the individual weights and finds multiple combinations which fall within the set target weight, then selects the closest combination to the target weight. Principle shown in Fig. 4.1.1-2.



The value of each weigh bucket

Fig. 4.1.1



Possible combinations and selection

Fig. 4.1.2 combination principle

5) Introduction to RCU (Remote Control Unit)

All functions of the Multi-head Weigher can be performed by touching the display. To operate the touch screen, touch the display for 0.5-1 second. The range of every parameter is shown after RANGE: in the lower right hand corner of the display.

5.0 Start-up

Switch the E-Stop to "ON" by rotating the button, software begins to self-examine and then we can see the Main Screen as shown in Fig. 5.0.2.

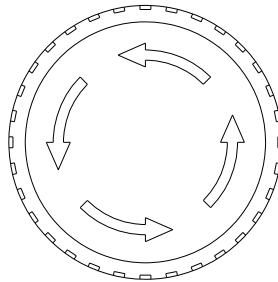


Fig. 5.0.1 E-Stop Switch

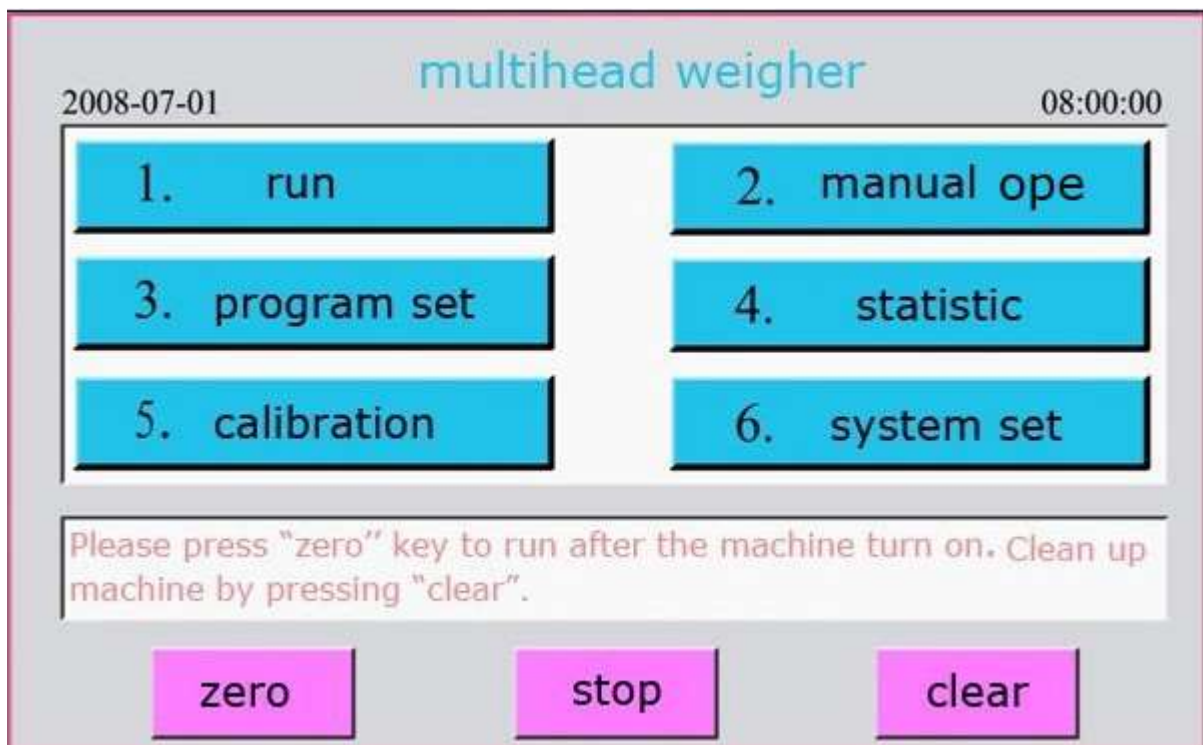
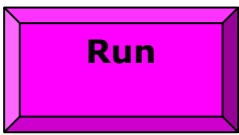
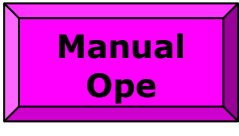


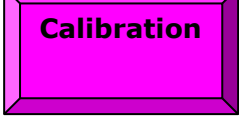
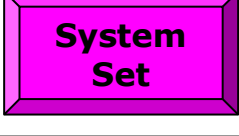
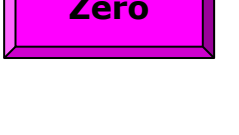


Fig. 5.0.2 Main menu

Main Menu Introduction:

1. The current date and time are displayed in the upper left and right corner of the main menu respectively. These two parameters can be modified in the system setting interface.
2. When powering the weigher on, remember to perform a “zero” adjustment before running the machine .

	Enters the production screen. Used for running Production.
	Allows you to manually operate any section or component of the machine. Also gives you the ability to view the weight in each weigh bucket.
	Enters the program setting interface, here you set the weigher operating parameters based on the specific product and package size.
	Enters statistic interface, the results for each combination and failure are recorded here.
	Enters the calibration menu. This is where you perform the span adjustment utilizing the provided 1000g weight.
	Enters the system setup interface, here you set the high level system parameters based on application and the equipment being used.
	Removes any remaining product in the feed and weigh buckets while also adjusting the load cells to zero (This is NOT a calibration). During Zero you will see a black progress bar to indicate the zero adjustment progress.

<div data-bbox="172 255 373 342" style="border: 1px solid black; background-color: #ff00ff; color: black; padding: 5px; text-align: center; width: fit-content;">Clear</div>	Used to remove all product remaining on top of and in the machine. The main feeder, the linear feeder, feed buckets and weigh buckets will run continuously to drain the product out of the scale.
<div data-bbox="172 443 373 530" style="border: 1px solid black; background-color: #ff00ff; color: black; padding: 5px; text-align: center; width: fit-content;">Stop</div>	To stop the function of clear

5.1 RUN

<div data-bbox="172 817 367 904" style="border: 1px solid black; background-color: #00bfff; color: black; padding: 5px; text-align: center; width: fit-content;">Run</div>	<p>Touch this button for about one second to enter the run interface as shown in Fig. 5.1.1 which is just for reference. Please make sure you have performed a zero adjustment if it is required before entering the run interface.</p>
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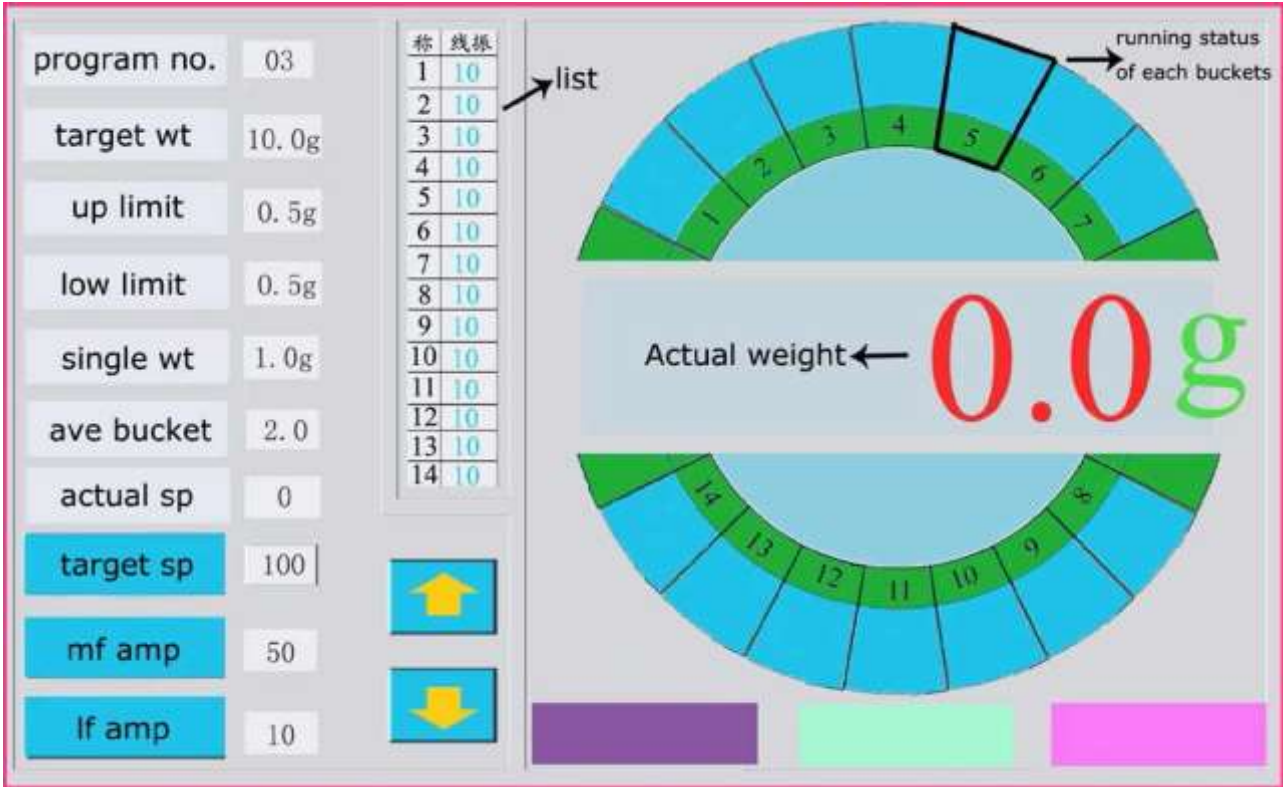


Fig. 5.1.1 Run

Running interface introduction:

1: Program number, target weight, maximum weight, and minimum weight can be set within the “program set” interface. The set value is displayed in the run interface for reference.


2: Average bucket and actual speed reflect the current state of operation. The average bucket number displays the number of buckets being used in a combination on average in the last set of combinations, this value should normally be between 3-5. The actual speed value shows how many packages per minute the scale is making on average in the last set of combinations.







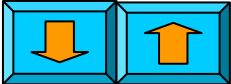



3: Target speed, main feeder amplitude, and linear feeder amplitude can be adjusted in the run interface. These three parameters can be manually increased or decreased during operation with the up and down arrow keys. This is used to fine tune and ensure optimum performance without requiring the user to pause operation.

4: The list of numbers displays the corresponding amplitude of each linear feeder pan. On the left of the list is the number of linear feeder pan, and on the right is the linear vibrator amplitude value.

5: The ring of numbers displays the operation state of the buckets of the weigher. Digital blocks show different color-codes to represent different states of operation. Blue indicates the bucket is ready and red indicates the bucket is being used in a combination, specific color meanings can be seen in section 5.1.8.

6: The displayed weight value is the actual weight discharged by the weigher.

5.1.1		Used to set an expected speed for packaging. Should be set according to the working speed of the packaging machine. Touch the key to select and press ↑↓ to change its value. These parameters won't be saved after powering off.
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5.1.2		Used to control the amplitude (Strength) of the main feeder. The higher the value, the harder the main feeder will vibrate, which will distribute more product to the linear feeders. Touch the key to select and press   to change its value. These parameters won't be saved after powering off.
5.1.3		Used to control the amplitude (Strength) of the linear feeders. The higher the value, the harder the linear feeders will vibrate, which will distribute more product to the feed buckets. Touch the key to select and press   to change its value. These parameters won't be saved after powering off.
5.1.4		Increase and decrease the value of dynamic parameters.
5.1.5		Press to RUN or PAUSE the weigher.
5.1.6		Exit to the main screen. Please pause the weigher before exiting to the main screen when running.
5.1.7		1. The weigher will stop due to lack of product on main feeder, and the LLL on/off button will be flashing.

		<p>There are two situations that may cause the weigher stop working due to lack of product on main feeder:</p> <p>(1) The lever-sensor has detected a lack of product, and meets the conditions required to stop the machine (refer to the LLL Ratio and dispersion max and min settings)</p> <p>(2) The lever-sensor has detected product, but the weigher is stops working due to the weigh buckets not detecting and product for a minimum of 10 minutes. Inlet funnel may be plugged.</p> <p>To resume running, press the LLL on/off key while the key is flashing, the weigher will continue to run after the RUN key is pressed. When product is detected, the weigher will begin running automatically after 10 seconds.</p> <p>When the LLL on/off key is set to off, the machine will continue to try and find combinations regardless of whether there is enough product is on the main feeder or not.</p> <p>When the value of LLL Ratio setting is set to 0, the LLL function is disabled.</p>
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5.1.8 Display Color and the Meaning

NO.	Color	Meaning
1	Yellow	Single bucket weight is more than the target weight and upper limit.
2	Red	Weigh bucket was chosen in combination.
3	Blue	Weigh bucket has product and is ready but was not chosen in combination.
4	Light Blue	Weigh bucket has some product but is being re-filled to obtain more.
5	Purple	Single bucket in Zero Error due to reading negative number when being auto zero adjusted.
6	Green	Weigh bucket is being automatically zero adjusted.
7	Light Green	Zero error, zero drift of weigh bucket is over 20% of full scale, or the bucket was not empty during the zero adjustment.
8	Black	The bucket is disabled
9	White	Little or no product in weigh bucket

5.2 MANUAL OPE

<div>Manual Ope</div>	Manual operation. Touch this button for about one second to enter the manual operation interface as shown in Fig. 5.2.1. Manual operation is used to test any part of the machine as well as to enable or disable buckets (Inhibit Head) and check weight in the weigh buckets (WB Zero).
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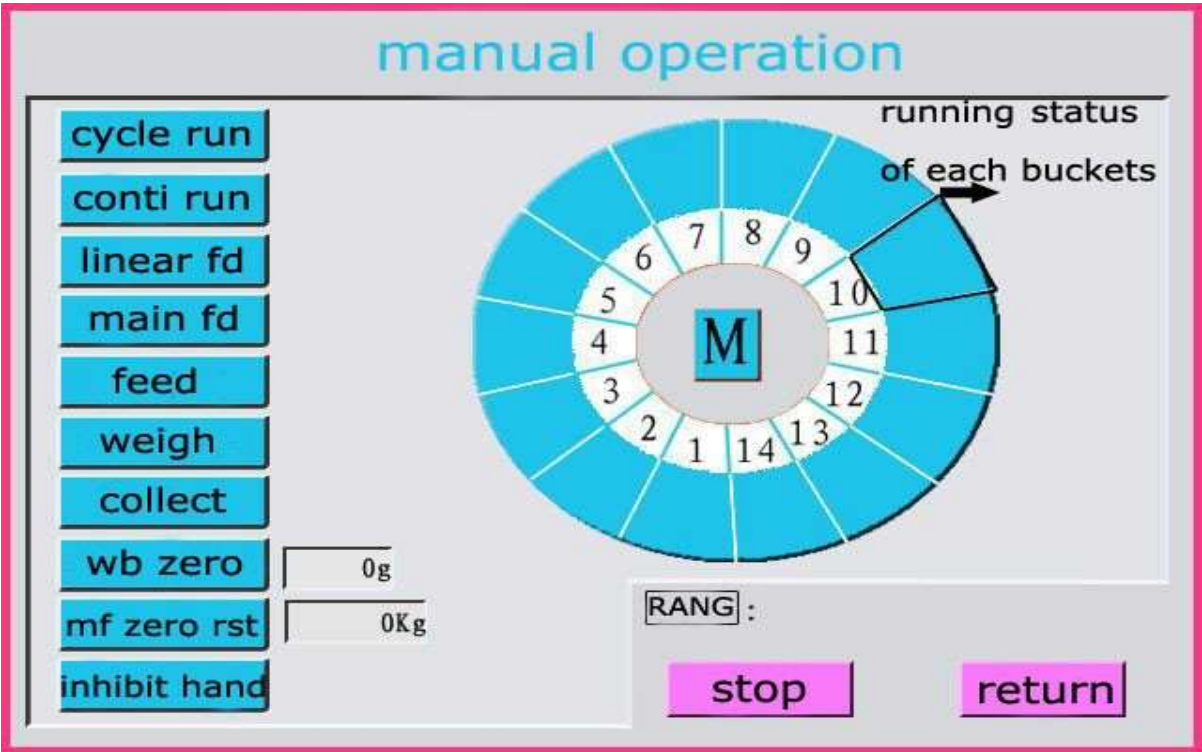


Fig. 5.2.1

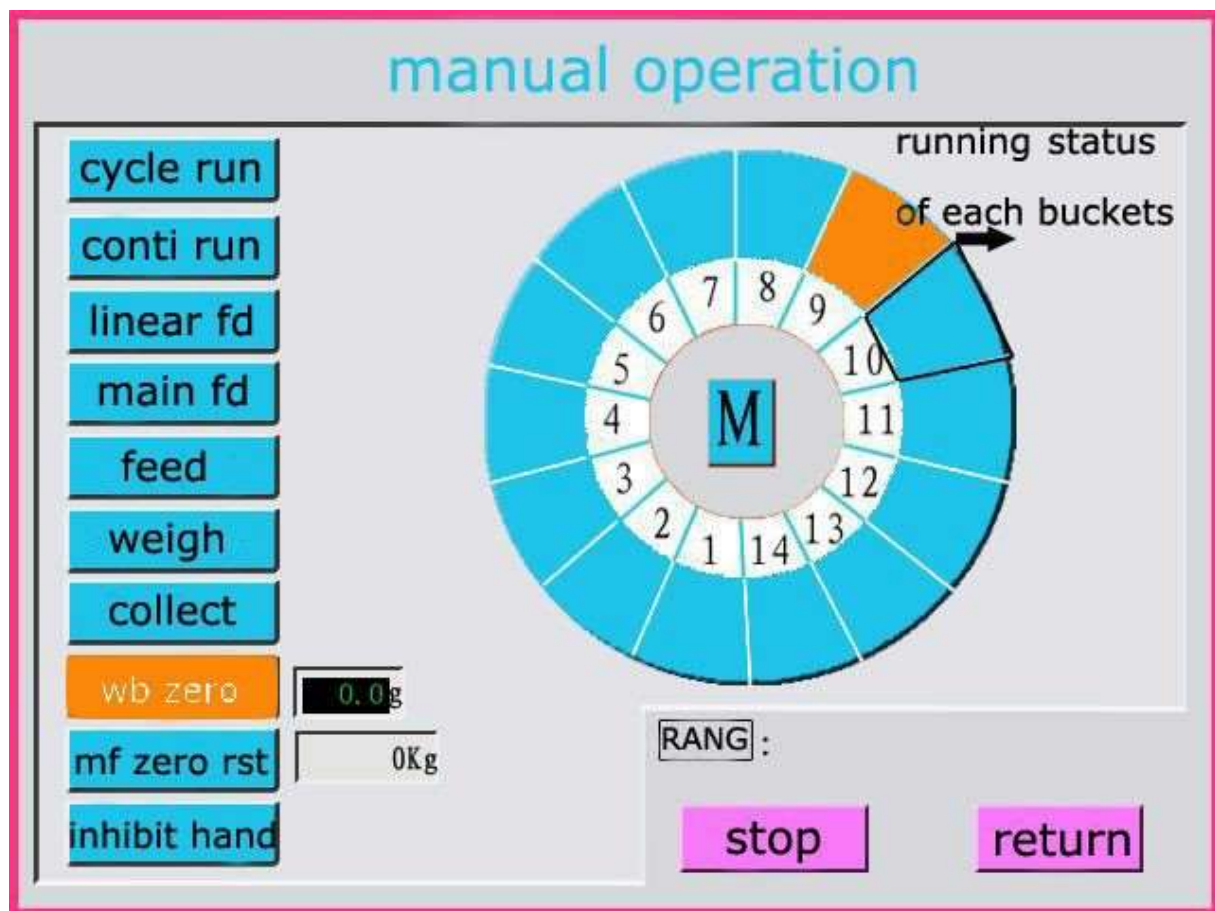







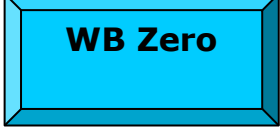






Fig. 5.2.2 Manual operation

Manual operation interface introduction:

Cycle run and continuous run can be used to test the operation of the entire weigher and individual sections. Linear vibrator, main vibrator, feed bucket, weigh bucket, collection bucket can test individual components. Weigh bucket zero is for observation of the weight reading in the weigh bucket to ensure its accuracy. If photo eyes are installed to detect product on top of the main feeder, the main feeder detection mode within system setting must be 0 and MF Zero RST is not used. If a load cell is being used to detect product on the main feeder you can select MF Zero Rst and main feeder weight will be displayed on the right. Notice: Zero can not be set when you click the key again. Inhibit head is used to disable a bucket. When the bucket is pressed, the color from blue to orange, as shown on the digital block 9 and the wb zero key.

5.2.1		Press to select and press the channel number corresponding to each weighing section, the selected section will operate the MF, LF, FB, WB and CB once. If the M key is pressed, all sections will operate for one cycle.
5.2.2		Continuous run functions similarly to cycle run, but will run continually and only stop when another key is pressed.
5.2.3		Linear Feeder, press to select and then select the channel number for the desired linear feeder, the selected Linear Feeder will operate for one cycle. All Linear Feeders will operate for one cycle is the M key is pressed. Keep the button pressed and the linear feeders will operate continually.
5.2.4		Main Feeder, press to select and press the M key. the Main Feeder will operate for one cycle. Keep the button pressed and the Main Feeder will operate continually.

5.2.5		<p>Feed bucket, press to select and press a channel number, the selected feed bucket will operate for one cycle. All feed buckets will operate for one cycle if M is selected. Keep the button pressed and the feed buckets will operate continuously.</p>
5.2.6		<p>Weigh bucket, press to select and press a channel number, the selected weigh bucket will operate for one cycle. All weigh buckets will operate for one cycle if M is selected. Keep the button pressed and the weigh buckets will operate continuously.</p>
5.2.7		<p>Collection bucket, press to select and press a channel number, the collection bucket will operate for one cycle. Keep the button pressed and the collection buckets will operate continuously. (Collection buckets are optional, they will only be active if the collect value is set to 1 in the system parameter settings).</p>
5.2.8		<p>Press to select and select a channel number, the weight of the selected channel will be displayed. Press the same channel number again and the weigh will be reset to zero. (Before setting zero, be sure that there is no product left in weigh buckets or zero adjustment may fail or cause weighing errors.)</p>

5.2.9		<p>Select main feeder zero reset, and then select M. The load cell of Main Feeder will be reset to zero. (Before setting zero, make sure there is no product left on Main Feeder. The function will fail if there is too much product left on the Main Feeder.)</p>
5.2.10		<p>Used to enable or disable a head on the machine. Select the channel to disable the LF, FB, and WB. The digital block corresponding to the deactivated head will be displayed in black. When the inhibited head is reactivated it will return to the standard blue color.</p>
5.2.11		<p>Used to stop all currently running sections and components.</p>
5.2.12		<p>Used to exit the manual operation menu and return to the Main Screen.</p>

5.3 PROGRAM SET

<div data-bbox="161 342 448 488">Program Set</div>	Press this key for about one second, Then input the password (factory password is 111111) and enter program set interface as shown in Fig. 5.3.1-2
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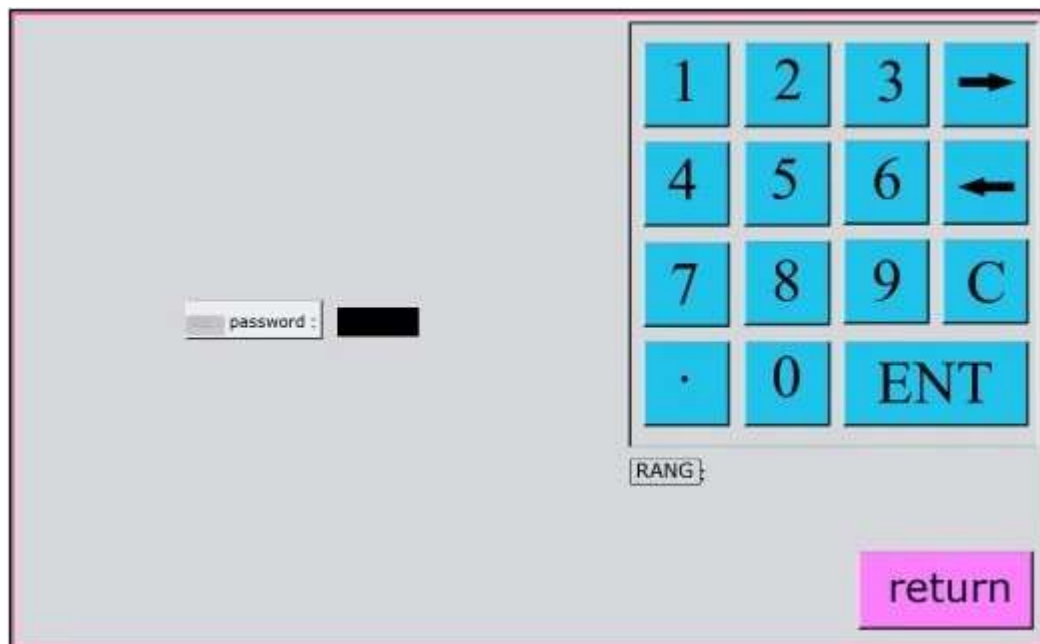


Fig. 5.3.1 Password input interface

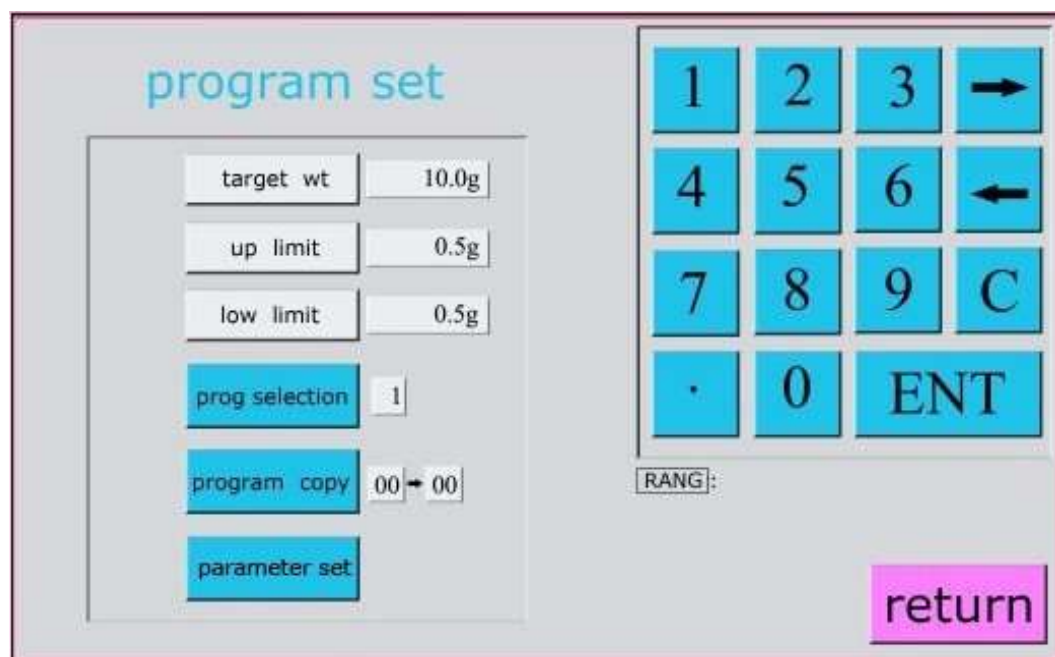


Fig. 5.3.2 Parameter set interface1

<div data-bbox="161 992 523 1077" data-label="Text"> <p>Pro Selection</p> </div>	<p>Program selection, used to select a saved program with unique parameters. Touch this button and input the program number using the keypad on the right, and then press ENT key to confirm. OK will appear on the RANGE when the operation is successful.</p>
<div data-bbox="161 1393 523 1478" data-label="Text"> <p>Program Copy</p> </div>	<p>Input the number of original Program on the left side, and enter the number of the target program on the right. Press ENT to confirm, and all parameter settings will be copied to the target program. OK will appear on the RANGE when the operation is successful.</p>
<div data-bbox="161 1736 523 1865" data-label="Text"> <p>Parameter Set</p> </div>	<p>Press this button to enter the parameter settings interface as shown in Fig. 5.3.3</p>

parameter set

program NO.		bias wt	0.0g
product NO.	80	zero interval	1
target weight	10.0g	AFC	1
up limit	0.5g	AFC target NO.	3.5
low limit	0.5g	AFC reset int	1
wt/ count	100	AFC limit NO.	4.0
single wt	35	AFC single wt	0.1g
speed	10	AFC reset int	1
vibrator set	15	AFC limit wt	1.0g

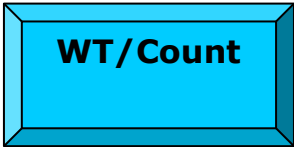


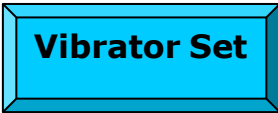
1	2	3	→
4	5	6	←
7	8	9	C
.	0	ENT	

RANG:

next
return

Fig. 5.3.3 Parameter set interface2

5.3.1	<div style="border: 1px solid black; padding: 5px; text-align: center; background-color: #0070C0; color: white; font-weight: bold;">Program NO.</div>	Displays current program number for reference
5.3.2	<div style="border: 1px solid black; padding: 5px; text-align: center; background-color: #0070C0; color: white; font-weight: bold;">Product NO.</div>	Used to set a custom number for the product. Can be used to identify which product the program is intended to run.
5.3.3	<div style="border: 1px solid black; padding: 5px; text-align: center; background-color: #0070C0; color: white; font-weight: bold;">Target Wt</div>	Used to set a target weight or target quantity for one combination to be packed. The range is between 0.1g and 9999.9g.
5.3.4	<div style="border: 1px solid black; padding: 5px; text-align: center; background-color: #0070C0; color: white; font-weight: bold;">Up Limit</div>	Used to set the maximum combination limit. An acceptable combination can not weigh more than the target weight plus the upper limit. The range is 0.0 grams up to 9999.9 grams.
5.3.5	<div style="border: 1px solid black; padding: 5px; text-align: center; background-color: #0070C0; color: white; font-weight: bold;">Low Limit</div>	Used to set the minimum combination limit. An acceptable combination can not weigh less than the target weight minus the lower limit. The range is 0.0 grams down to -9999.9 grams.

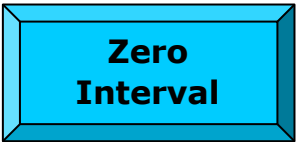



5.3.6		<p>Used to determine the method of measurement.</p> <p>There are three patterns (0,1,2) for product weighing.</p> <p>0: Weight Mode - weighing in g/kg units and displaying in g/kg for unit too.</p> <p>1: Piece Weight Mode - weighing in g/kg for unit and displaying in p(ieces) for unit. P(iece) value = Target weight(g/kg) divided by Single Wt(g/kg).</p> <p>2: Piece Count Mode - weighing in p for unit and displaying in p for unit too.</p>
5.3.7		<p>Sets the weight of one product. Piece count mode only performs when all individual pieces of product are the same weight.</p>
5.3.8		<p>To set a target weighing speed. Should be set according to the speed of the packaging machine. The range is between 1 and 140.</p>
5.3.9		<p>Click on this button to enter the vibrator setting interface, shown in Fig. 5.3.4. You can set amplitude and time values for main and linear vibrators. To adjust the feeders, press the corresponding box and input value using the keypad on the right side of the interface, then press ENT to confirm. Main and linear feeder amplitude can also be adjusted by pressing the ← and → keys to increase or decrease vibration.</p>





5.3.9	<div data-bbox="391 226 671 338" data-label="Section-Header"> <h3>Vibrator Set</h3> </div>	<p>All linear feeder amplitude may be adjusted at the same time by selecting one of the linear feeders and then pressing the copy button. All linear feeder amplitudes will be adjusted to match the selected feeder.</p>
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Fig 5.3.4

5.3.10	<div data-bbox="383 1355 679 1467" data-label="Section-Header"> <h3>Bias Wt</h3> </div>	<p>Used to compensate for weight deviation between actual weight and displayed weight. "Actual WT = Display WT + Bias". It can be set as positive or negative value. The range is between -999.9g and +999.9g.</p>
5.3.11	<div data-bbox="383 1731 679 1872" data-label="Section-Header"> <h3>Zero Interval</h3> </div>	<p>Used to set the how often during production the machine will automatically zero adjust the weigh buckets. When the weigh bucket is used in a combination, it won't be filled the next cycle and the digital block will be a</p>

5.3.11		green color. The range is between 1min and 999mins. The recommended value is 10min.
5.3.12		<p>Sets the automatic control mode of the linear feeders. 0, 1 or 2 can be chosen.</p> <p>0 means the AFC function is off, i.e. the program can not modify the amplitude of linear feeder automatically, it only can be changed manually.</p> <p>1 means the program can automatically modify the amplitude of linear feeder according to the AFCT TARGET NO. It is called AFCT model.</p> <p>2 means the program can automatically modify the amplitude of linear feeder according to the AFCI SINGLE WT. It is called AFCI model.</p>
5.3.13		When AFC is set to 1, the program will automatically modify the amplitude of linear feeder according to the AFCT target NO , i.e. it is the desired average number of weigh buckets attended to combination. The range is between 0.1 and 7.0. The recommended value is 3.5.
5.3.14		Sets the number of combinations after which the amplitude of Linear Feeder will be changed once. The range is between 1 and 99. The recommended value is 10.

5.3.15		Sets the allowable deviation based on the total number of combined buckets in the range of AFCT rest int parameter. The range is between 0.1 and 99.9.
5.3.16		When AFC model is set to 2, the AFCI model is active. AFCI single wt is the expected weight in each individual bucket and is an average value. The range is between 0.1 and 3200.0.
5.3.17		Sets the number of combinations after which the amplitude of linear feeder will be changed once. The range is between 1 and 99.
5.3.18		Sets to the allowable deviation based on the AFCI single wt of each individual bucket in the range of AFCI reset int in total. The range is between 0.1 and 999.9. The recommend value is $(\text{AFCI single wt} \times (1/6-1/10) \times \text{AFCI rest int})$.

parameter set

<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 40%;">no load</td><td style="width: 10%; text-align: center;">5</td><td style="width: 50%;"></td></tr> <tr><td>no select</td><td style="text-align: center;">300</td><td></td></tr> <tr><td>feed times</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>fb delay</td><td style="text-align: center;">20</td><td></td></tr> <tr><td>wc delay</td><td style="text-align: center;">20</td><td></td></tr> <tr><td>cb delay</td><td style="text-align: center;">20</td><td></td></tr> <tr><td>after cb delay</td><td style="text-align: center;">10</td><td></td></tr> <tr><td>dis delay time</td><td style="text-align: center;">40</td><td></td></tr> <tr><td>dis on time</td><td style="text-align: center;">10</td><td></td></tr> </table>	no load	5		no select	300		feed times	1		fb delay	20		wc delay	20		cb delay	20		after cb delay	10		dis delay time	40		dis on time	10		<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 40%;">sta interval</td><td style="width: 10%; text-align: center;">3</td><td style="width: 50%;"></td></tr> <tr><td>feed time</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>max mf</td><td style="text-align: center;">70</td><td></td></tr> <tr><td>min mf</td><td style="text-align: center;">20</td><td></td></tr> <tr><td>LLL ratio</td><td style="text-align: center;">10</td><td></td></tr> <tr><td>reservation</td><td></td><td></td></tr> <tr><td>fb mot patt</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>wb mot patt</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>cb mot patt</td><td style="text-align: center;">1</td><td></td></tr> </table>	sta interval	3		feed time	1		max mf	70		min mf	20		LLL ratio	10		reservation			fb mot patt	1		wb mot patt	1		cb mot patt	1	
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1	2	3	→
4	5	6	←
7	8	9	C
.	0	ENT	





RANG:






up






return

Fig. 5.3.5 Parameter set interface 3

5.3.19	<div style="border: 2px solid black; background-color: #00bfff; padding: 10px; width: fit-content; margin: 0 auto;">No Load</div>	<p>This value is a percentage of the target weight. When the weight in a single weigh bucket is less than this percentage of the target weight, the feed bucket will feed the weigh bucket again until the weight in this single weigh bucket is equal to or greater than this percentage, so that this weigh bucket can be used in a combination. The range is between 1 and 99%.</p>
5.3.20	<div style="border: 2px solid black; background-color: #00bfff; padding: 10px; width: fit-content; margin: 0 auto;">No Select</div>	<p>Sets how many times a bucket can not be used in a combination before the bucket will be forced into a combination. Using this feature can improve the speed and accuracy of the scale by increasing the number of possible combinations. The range is between 1 and 9999.</p>

5.3.21		<p>Sets the feed times used to reach the target weight. The target weight is divided by this setting when making a combination. Typically used when the target weight is too large to be dumped in one combination. The range is between 1 and 99, and the recommended value is the lowest number possible.</p>
5.3.22		<p>Sets the delay time between when the feed bucket begins to open and when the linear feeder begins to operate and vibrate products into the feed bucket. During this period, the feed bucket should have enough time to be emptied and close before new product reaches the bottom of the bucket. Its range is from 1-999*10ms. If the delay time is too short, the product will fall into the weigh bucket directly or be caught by the door of the feed bucket. But if the delay is too long, it will reduce the weighing speed. The appropriate value is set in reference to the characteristics of product and speed.</p>
5.3.23		<p>Sets the delay time between when the weigh bucket begins to open to when the feed bucket begins to open and dump products into the weigh bucket. For the working principle and set method please refer to FB delay. The range is between 1 and 9999ms.</p>
5.3.24		<p>Sets the delay time from when the weigh bucket begins to open to before the collection bucket is allowed to operate again and dump products into the packaging</p>

5.3.24		machine. The range is between 1ms and 999×10ms. (Parameter only active when a collection bucket is installed and enabled).
5.3.25		Sets the delay time from when the collection bucket begins to open to when the weigh bucket begins to open. For the working principle and set method please refer to FB delay. The range is between 1ms and 999×10ms. (Only active after installing a Collection Bucket).
5.3.26		Sets the delay time between when the weigher discharges product and when the scale begins to transmit a discharge signal to the packing machine. The range is between 1 and 999×10ms.
5.3.27		Sets the duration for discharge signal sent to the packaging machine. The range is between 1ms and 999×10ms. The recommended value for most packing machines is 10 (100ms).
5.3.28		Setting a value greater than zero for this parameter will cause the buckets chosen for a combination to be opened one at a time. The value of this setting determines how long the scale will wait between opening each bucket before opening the next bucket. If the product to be discharged is low density or the combination is high volume, this parameter may be necessary to avoid blocking the discharge chutes when all weigh buckets being used drop product at the same time.

5.3.28		<p>The combined weigh buckets will drop the product into the collection bucket or a packing machine according to the collection bucket parameter in system set. When the weigher is being used with a collection bucket, the collection bucket will open once after all products are dumped. The range is between 1 and 999×10ms.</p>
5.3.29		<p>Sets a feeding delay for an external feeding machine (such as a conveyor). When the level sensor (or the main feeder load cell) detects no product in the infeed funnel, it will transmit the infeed signal. The conveyor will receive the signal and feed product into the infeed funnel. When the product is up to the upper limit of the level sensor (or main feeder load cell), the infeed signal will remain active for the duration of the feed time before ceasing output. The range is between 1s and 99s.</p>
5.3.30		<p>Sets a maximum weight value for the main feeder. When using the MF load cell, this value is the upper weight value of product to be added. After this weight is reached, the infeed signal will cease output.</p>
5.3.31		<p>Sets a minimum weight value for the main feeder. When using the MF load cell, this value is the lower weight value of product to be added. After this weight is reached, the infeed signal will begin output.</p>
5.3.32		<p>Low-Low Limit Ratio. 1. When using the MF load cell to detect product (the parameter is set to 1), the LLL function will activate if the product weight is less than the low low limit. The low low limit is a percentage of the Max MF setting</p>

5.3.32	LLL ratio	<p>2. When using photo eyes to detect the product on the top cone (the parameter is set to 0), the LLL ratio function depends on the feed on time parameter. The range is between 1 and 99%. For example, assuming the feed time is set to 10s and the LLL ratio is set to 90%, the LLL function will activate when the scale lacks material for longer than 9s. The LLL function will not activate if the LLL Ratio is set to 0.</p> <p>When the LLL function activates, The weigher will stop running until enough product is added to the scale. The LLL function can be deactivated in the run screen by pressing the LLL key</p>
5.3.33	Reservation	Optional setting position, may or may not be used depending on equipment
5.3.34	FB Mot Patt	<p>Sets the motor pattern of the feed bucket. Make a selection from one of the four patterns, that is, 0, 1, 2, or 3. The motor patterns are adjustable and can be made to run slower or faster</p>
5.3.35	WB Mot Patt	<p>Sets the motor pattern of the weigh bucket. Make a selection from one of the four patterns, that is, 0, 1, 2, or 3. The motor patterns are adjustable and can be made to run slower or faster</p>
5.3.36	CB Mot Patt	<p>Sets the motor pattern of the collection bucket. Make a selection from one of the four patterns, that is, 0, 1, 2, or 3. The motor patterns are adjustable and can be made to run slower or faster</p>

5.4 STATISTIC

STATISTIC	Touch this button for about 1 second; it will enter the menu interface as shown in Fig. 5.4.1
------------------	---

Fig. 5.4.1 Statistic interface 1

5.4.1	Total Records	Displays total number of records, the system can record a maximum of 99 individual records.
5.4.2	Day Records	displays the total number of records for a selected date.
5.4.3	Input Check Date	Press this button, and then press → or ← to select the year, month, date, then ENTER to confirm. The display will show all saved records for a selected date.
5.4.4	Input Record Number	Input the record number, and press ENT to confirm. The selected record will be displayed on the interface as shown in Fig. 5.4.2 which will

5.4.4	Input Record Number	display detailed statistics for the record selected.
5.4.5	Clear all record	Press this button and press then press ENT. All record will be cleared.

The screenshot shows a screen titled "record" with a list of fields on the left and control buttons on the right. The fields are as follows:

Field	Value
program NO.	1
product NO.	80
target weight	10.0g
up limit	0.5g
low limit	0.5g
start time	2008/07/01 08:00
stop time	2008/07/01 08:00
pass package	0000000001
fail package	0000000000
pass rate	100%
ave error	0.00
total weight	00000000010.0g

On the right side, there is a "Record NO." field showing "1" and four buttons: "next record" (blue), "up record" (blue), "Print" (blue), and "return" (pink).




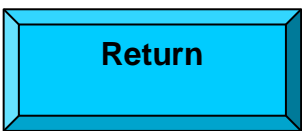
Fig. 5.4.2 Statistic interface 2

Program NO, product NO, target weight, up limit, low limit are set in advance within the program setting interface. Shown here in this display for the convenience of the user.

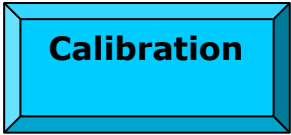
Start and stop time displays the begin and end time of the current record.

Pass package, fail package, pass rate, ave error, and total weight are for statistical analysis, and display the results of the operation period.

Record number: Displays the number of the record currently being inspected.

5.4.6		Show the content of next record.
5.4.7		Show the content of previous record.
5.4.8		Prints the content of the current record number.
5.4.9		Return to the previous statistic interface, as shown in Fig. 5.4.1.

5.5 CALIBRATION

	Press this key for about 1 second, input the correct password, and then press ENT to confirm. The display will navigate to the calibration interface as shown in Fig. 5.5.1 (The factory password is 111111).
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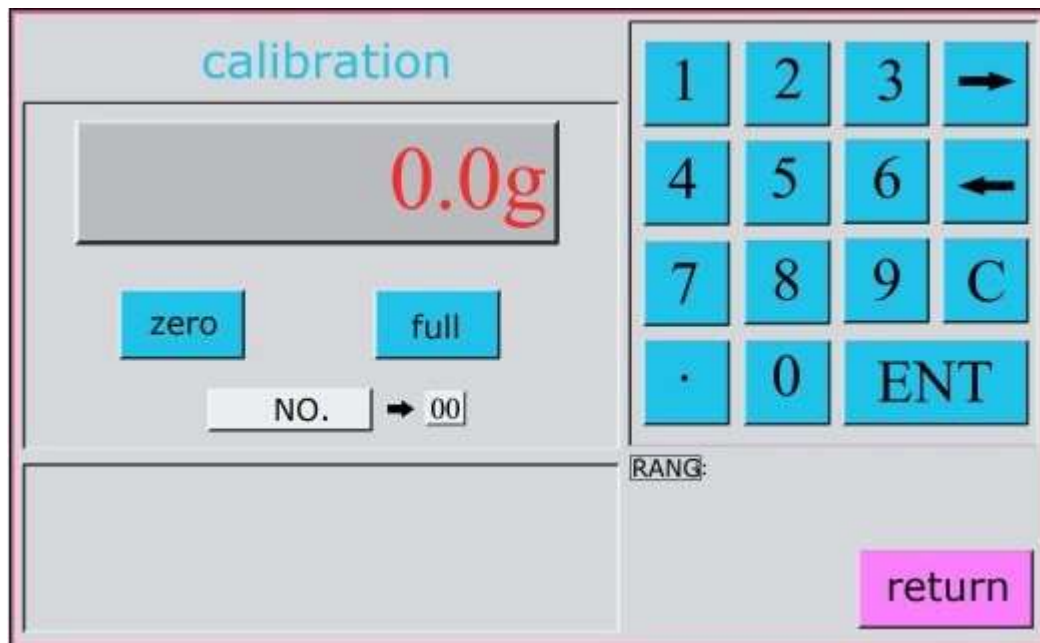


Fig. 5.5.1 Calibration

Calibration method:

1. Click on the right side of the keyboard and input weigh bucket number (e.g. 01) or main vibrator number (15), then press the "ENT" key. The current weight read by the weigh bucket or main feeder load cell will be displayed, but may or may not read 0.0g.
2. Press "ENT" key to confirm zero (ensure that the weigh bucket is empty and has no product hanging on it)
3. When the zero key dims and the full key becomes lit, place the 1kg calibration weight in the weigh bucket. Press the "ENT" key

to set the calibration. When calibrating the main feeder, carefully place a 30kg weight on top of the main feeder pan.

4. To test the calibration, a smaller weight can be used(e.g. 100g in the weigh bucket or 1kg load on the main feeder pan). The display will show the corresponding value.


5. Input the next number of weigh bucket by “ENT” key, then restart and follow steps 2, 3, and 4 until all drives are calibrated.

6. If you are not satisfied with the initial calibration, you can re-calibrate to get satisfactory results.

7. A calibration does not need performed to correct zero drift. Press the zero key within the main menu to reset the zero adjustment. If the load cells can be set to 0.0, you do not need to perform a calibration procedure.

Note: The main board has a 2-position DIP switch. When the DIP switch is ON, the normal operating state is active, other states may cause the calibration interface to be locked, preventing calibration. The whole calibration process should be performed in an environment without wind or vibration .

5.6 SYSTEM SET

 A blue rectangular button with a black border and the text "System Set" in bold black font.	Touch this key for about 1 second, enter the password (The initial password is 222222), and the display will navigate to the system set interface as shown in Fig. 5.6.1.
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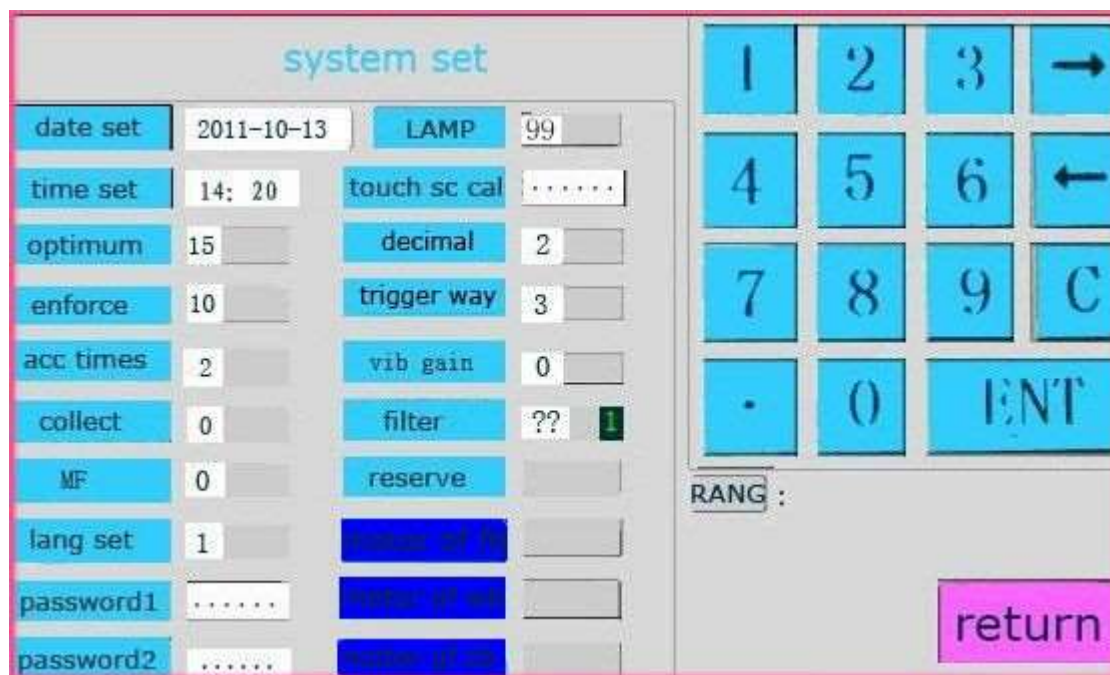
















Fig. 5.6.1 System setting interface

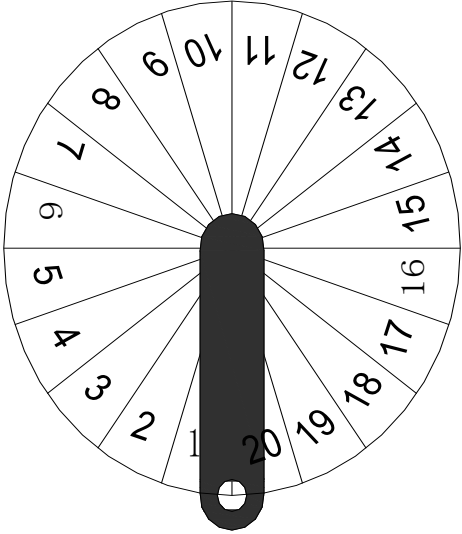
5.6.1		Used to set the system date. Press the → or ← key to move between year, month, and day, input the current value, and then press ENT.
5.6.2		Used to set the system time. Press the → or ← key to move between hour, minute, and second, input the current value, and then press ENT.
5.6.3		System will select the best combination from all eligible combinations, increasing this value will increase the accuracy of the scale, but the scale will also run slower.

5.6.4		<p>This is the enforce discharge setting. Setting this value higher will increase the accuracy of the combinations, but may reduce the running speed of the scale. Usually, the program will find another combination in the residual buckets after an acceptable combination. If there is no eligible combination, it will compare the number of residual buckets with the enforce value, and if the number of residual buckets is greater than or equal to the enforce value, it will choose the combination closest to the target weight to dump. If the value is lower, the scale will include the buckets used in the previous combination, and recalculate new possible combinations. Setting range: 6-14.</p>
5.6.5		<p>This is the accuracy times parameter. This sets the multiplier for the upper and lower limits. When the system can't find a combination within the set upper and lower limits, the multiplier may be used to increase the acceptable range. This may help limit the number of very heavy packages by allowing a few slightly heavy combinations. The range is between 1 and 99. The recommended value is 2.</p>
5.6.6		<p>Used to select the collection bucket mode. A value of 0 deactivates the collection bucket, and a value of 1 will activate the collection bucket.</p>

5.6.7		<p>Sets the main feeder detecting way.</p> <p>0 indicates that the product fed to the main feeder will be detected by Photo Eyes.</p> <p>1 indicates that the product fed to main feeder will be detected by the MF load cell.</p>
5.6.8		<p>There are three languages that can be chosen for the display. Choose either 0, 1, or 2 to select the different languages. Language may be chosen based on the requirements of the user.</p>
5.6.9		<p>Password 1 is the password for entering the program set and calibration interfaces. The factory password is 111111. Enter a new password with 6 digits and press ENT to confirm.</p>
5.6.10		<p>Password 2 is the password for entering the system set interface. The factory password is 222222. Enter a new password with 6 digits and press ENT to confirm. Please remember your new password, you will only be asked once to confirm the new entry.</p>
5.6.11		<p>Sets the on time of the display. When set to 0, the display will never enter the screen saver mode. When set to 1-99, the display will enter the screen saver mode when it is not being touched, turning the LCD and back-light off after the set value. Touch the display and it will resume normal operation. The range is 0 or 1-99 and is set in minutes.</p>

5.6.12		<p>This is the touch screen calibration function. The touch screen should be calibrated if the touch screen does not select the correct key when it's pressed. Touch this button for about one second and enter the password "123456" to enter the calibration interface. Follow the operation outlined below to complete the process. First, touch the red point in top left corner of the screen. Second, touch the red point on lower right corner of the screen. Finally the screen will display installation successful and exit the adjustment interface automatically.</p>
5.6.13		<p>Determines the decimal point position used when making combinations and calibrating the scale. The options are 1, 2, or 3, depending on the selection, the weight can be displayed in single gram units, ten gram units or 100 gram units.</p>
5.6.14		<p>Determines the packer interlock mode. There are 4 options for communicating with the packing machine. The principle is shown in Fig. 5.6.1</p> <p>0: Slave W/ Memory. After the Multi-head Weigher receives a dump signal which is an impulse signal, the program will remember it. After receiving an impulse signal, the scale will dump products as soon as it's ready. When the dump signal goes from high voltage to low voltage, the scale will dump.</p>

		<p>1: Slave W/o Memory. After the Multi-head Weigher receives a dump signal which is an impulse signal, the program will not remember it if it. If there is no impulse signal, it won't dump products if it is not currently ready. When the dump signal goes from high voltage to low voltage, the scale will dump.</p> <p>2: Master W/ Memory. After the Multi-head Weigher receives a dump signal which is a level signal, the program will memorize it. When it receives a dump signal, the scale will dump products as soon as it's ready. When the dump signal goes from low voltage to high voltage, the scale will dump.</p> <p>3: Master W/o Memory. After the Multi-head Weigher receives a dump signal which is a level signal, the program will not remember it if it. If there is no impulse signal, it won't dump products if it is not currently ready. When the dump signal goes from low voltage to high voltage, the scale will dump.</p>
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		 <p>Fig.5-6-2</p>
5.6.15	<div style="border: 1px solid black; background-color: #00FFFF; padding: 5px; text-align: center;"> Vib Gain </div>	<p>The of vibrator gain setting is a percentage of amplitude. The higher the setting, the harder the linear feeders will vibrate. Setting range is 0, 1, or 2. 0=60%, 1=80%, 2=100%.</p>
5.6.16	<div style="border: 1px solid black; background-color: #00FFFF; padding: 5px; text-align: center;"> Filter </div>	<p>Sets the filter coefficient of the weigh bucket load cells. The filter coefficient determines the number of times that A/D card samples the weight data from load cell. As the frequency of sampling increases, the values will be closer to the actual weight, but A/D card will spend more time performing the sampling. There are 19 grades of filter coefficient. To adjust, press → or ← to select a load cell and the filter coefficient will be displayed. Press C to clear the original value and then enter a new value. Confirm by pressing ENT to change the Filter Coefficient. If successful, the display will read OK. To adjust the other load cells, press → or ←, enter the new value, and confirm by pressing ENT.</p>

5.6.17	Reserve	Optional setting position, may or may not be used depending on equipment
5.6.18	Motor of FB	Used to adjust the motor patterns of the feed bucket. These settings should only be adjusted by a professional.
5.6.19	Motor of WB	Used to adjust the motor patterns of the weigh bucket. These settings should only be adjusted by a professional.
5.6.20	Motor of CB	Used to adjust the motor patterns of the collection bucket. These settings should only be adjusted by a professional.

The motor patterns of the FB, WB, and CB operate and are adjusted in the same way. Each type of motor has 4 unique sets of motor patterns, which are typically designed to run faster or slower to be used with different products. See Fig. 5.6.3-5 for an example motor pattern.

ph NO.	pa 0	pa 1	pa 2	pa 3
phase 1	35	32	29	26
phase 2	35	32	29	26
phase 3	35	32	29	26
phase 4	35	32	29	26
phase 5	35	32	29	26
phase 6	35	32	29	26
phase 7	35	32	29	26
phase 8	35	32	29	26

fb motor

1 2 3 →

4 5 6 ←

7 8 9 C

. 0 ENT

RANG:

next return

Fig. 5.6.3 motor pattern page 1

motor pattern

fb motor

pa NO. / ph NO.	pa 0	pa 1	pa 2	pa 3
phase 9	37	34	31	28
phase 10	37	34	31	28
stop time	01	02	01	01
phase 11	37	35	31	29
phase 12	37	35	31	29
phase 13	35	32	30	29
phase 14	35	32	30	29
phase 15	37	35	31	30

1

2

3

→

4

5

6

←

7

8

9

C

.

0

ENT

RANG:

next

up

Fig. 5.6.4 motor pattern page 2

motor pattern

fb motor

pa NO. / ph NO.	pa 0	pa 1	pa 2	pa 3
phase 16	37	35	31	30
phase 17	37	35	31	30
phase 18	37	35	31	30
phase 19	37	35	31	30
phase 20	28	26	24	32
current	15	15	15	15
Rot way	000	000	000	000
reserve				

1

2

3

→

4

5

6

←

7

8

9

C

.

0

ENT

RANG:

up

return

Fig. 5.6.5 motor pattern page 3

1. Section numbers: the stepper motor rotation cycle is divided into 20 sections, as shown in Fig. 5.6.6, the previous three diagrams show

the rotation in the 20 sections in units of time, setting the value higher will increase the length of time the stepper motor takes to complete that portion of the rotation, and the motor will rotate slower.

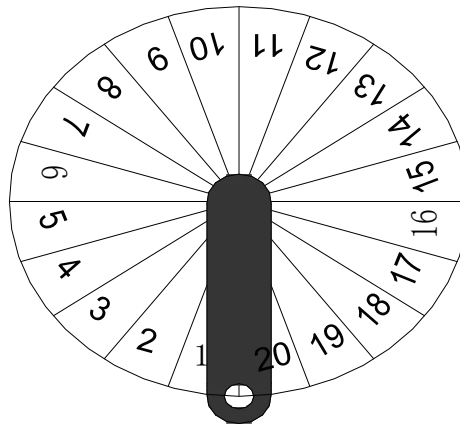


Fig. 5.6.6 Motor running segment

2. The stop time is located half-way through the cycle of the motor pattern, and determines how long the bucket will remain open in milliseconds;
3. The "current" value determines the motor rotation torque, the greater the value, the greater the rotational torque, the recommended value is 15.
4. The Rot way setting determines the direction of motor rotation. The options are 0, 1, or 60-180. A value of 0 indicates the motor will rotate 360°, and return to it's home position. A value of 1 indicates that the motor will rotate 180°, and then run in reverse 180° back into it's home position. A value of 60-180 indicates that the motor will rotate a number of degrees, set by the input value, and then reverse back to it's home position. For the motor of the collection bucket, the Rot way must be set to 1.
5. Reserve: This section does not have any set function, and is reserved for a future expansion.
6. The motor patterns are divided into four separate sections pattern 0, 1, 2, and 3. Each pattern may be set individually to meet the needs of different products.

6 Machine Setting Parameters

This chapter describes common setting methods for the weigher, but not necessarily the most appropriate setting methods. Please set the parameters according to the application and operation of the weigher. It is strongly recommended that you save the factory parameters for reference in future.

6.1 Program settings

Product No, target weight, target speed, feed time, feed times, accuracy times, upper limit, and lower limit are easily set according to the application and packages being made. Here are some other commonly used methods of parameter setting.

1. Set the MF amp, LF amp, and LF on time parameters according to the weight needed for each individual weigh bucket. Usually, all the feed buckets should be fed about 1/4 to 1/3 of the target weight every time the linear feeder above it activates. If the buckets are becoming too full or are too empty, adjust the values of these settings accordingly to adjust the product flow. Typically, it is easier to start with a lower value and increase the product flow if it is required. The amp and on time parameters function together, as either is increased, the other can be decreased to achieve the same product flow. When making larger combinations, it is advisable to split the combination using the feed times setting. Larger combinations may over fill the buckets and long continuous running of the feeders may cause the main and linear vibrator coils to be burn, or the associated transformer may become hot which may cause the weigher to shut down.

2. The infeed funnel is not one of the parameters, but a component

of the weigher. The height of infeed funnel determines in part the amount of material that falls onto the linear feeder pans. The higher the infeed funnel is set, the more material may be allowed to pass through between the MF top cone and the infeed funnel to Linear Feeder Pan. Height should be set according to the size of the individual pieces of product and according to the amount required for smooth continuous operation.

3. BIAS WT is used to compensate for deviation between the display weight and the actual weight. Actual weight = display weight + bias weight. In most cases, the value of this parameter should be 0, the display weight will reflect the actual weight. If it does not, you may need to adjust other parameters. To adjust the bias weight, weigh 50 to 100 bags while the scale is running, and calculate the average deviation between display weight and actual weight of bags. Use this value as your bias weight.

4. ZERO INTERVAL is used to set the automatic zero interval delay. Should be set according to the material properties. If the material is sticky or leaves some kind of residue, you may need to set a shorter delay in order to keep the weights accurate.

5. AFC is used to choose the automatic feeder control mode. Please refer to Fig. 6.1.1. The recommended value is 0. If you decide to choose AFCT or AFCI mode, please read the following contents carefully.

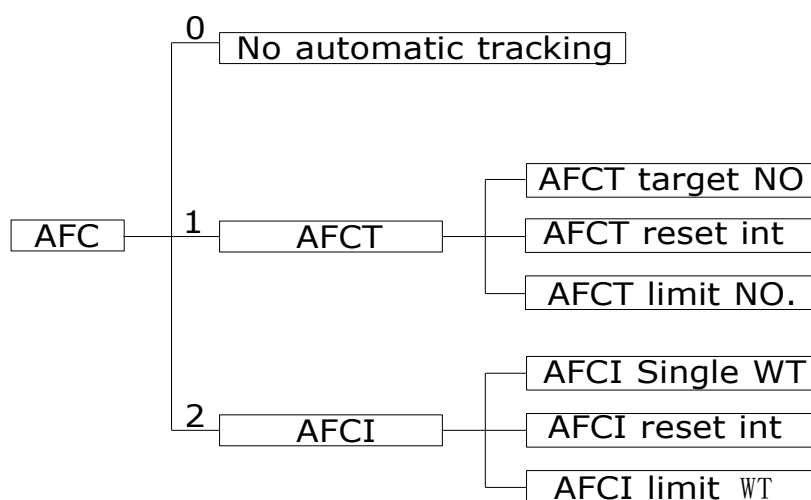


Fig. 6.1.1

-----AFCT PROCESS-----

1. When LF amplitude is set too high:

When the average bucket number is $<$ AFCT target No, after the number of combinations set by the AFCT reset INT, the linear feeder amplitude will be adjusted down by the AFCT limit No.

2. When LF amplitude is set too low:

When the average bucket number is $>$ AFCT target No, after the number of combinations set by the AFCT reset INT, the linear feeder amplitude will be adjusted up by the AFCT limit No.

3. To maintain proper LF amplitude:

When the average bucket number is $=$ AFCT target No, after the number of combinations set by the AFCT reset INT, the linear feeder amplitude will not be adjusted.

-----AFCI PROCESS-----

1. When LF amplitude is set too high:

When the average weight in an individual bucket is $>$ AFCI single Wt, after the number of combinations set by the AFCI reset INT, the linear feeder amplitude will be adjusted down until its within the AFCI limit Wt.

2. When LF amplitude is set too low:

When the average weight in an individual bucket is $<$ AFCI single Wt, after the number of combinations set by the AFCI reset INT, the linear feeder amplitude will be adjusted up until its within the AFCI limit Wt.

3. To maintain proper LF amplitude:

When the average weight in an individual bucket is $=$ AFCI single Wt \pm AFCI limit Wt, after the number of combinations set by the AFCI reset INT, the linear feeder amplitude will not be adjusted.

-
4. NO LOAD is a percentage used to ensure that the total weight of all the buckets is greater than the target weight. The minimum value should be $\geq 1/\text{numbers of buckets}$. Usually the value is set between 10%-20%.
5. NO SELECT determines how long the scale will wait before forcing a bucket into a combination. It can be used to limit how long product is allowed to remain on the scale, which may be especially useful for sticky or cold products. $\text{No select value} \div \text{actual speed (read in packages per minute)} = \text{the time before a bucket will be forced into a combination}$ (e.g. $100 \div 50 \text{ packages per minute} = 2 \text{ minutes}$)
6. FB DELAY , WB DELAY The two parameters are set according to the flow of the product being weighed and the size of the target weight (running light products or larger quantities requires more time). To set these parameters, first ensure that the stop time of each motor pattern is less than these delay times, and second set the value as low as possible based on the product flow. After testing many different products, the FB and WB delay are typically set to 15-20, but this may vary.
7. CB DELAY and AFTER CB DELAY, these two parameters control the flow of product between the weigh buckets and the collection bucket. CB DELAY and AFTER CB DELAY are set according to the distance between weigh bucket and collection bucket, the speed of the weigher, and the density of the product. The longer it takes for product to reach the CB from the WB, the higher these should be set.
8. DIS DELAY TIME and DIS ON TIME parameters should be set up to account for the time it takes product to reach the packing machine from the weigher. $\text{Dis delay time} + \text{dis on time} = \text{the total time for the products discharged to reach the packing machine}$. Usually, we set the values the same, at least 10.
9. FB MOT PATT, WB MOT PATT, and CB MOT PATT are set in the motor pattern interface within the system setting menu. These three parameters are set in a similar way. It is advised that these settings are only adjusted by a professional

6.2 System settings

1.OPTIMUM this value should be set according to the actual weighing speed. It is advisable to set this value as high as possible without decreasing the scale's weighing speed, start low and increase the value slowly while watching the actual speed of the scale. Continue to increase the value until a decrease in speed is noticed, and then return to the highest value that did not decrease the speed of the scale

2.MUL UP LIMIT the recommended value is 2.This limits the upper and lower limits to double their value. For very tight tolerances (an upper limit that is 1% or less of target weight), 3 may function better

3.ENFORCE usually, the program will find another combination in the residual buckets after an acceptable combination. If there is no eligible combination, it will compare the number of residual buckets with the enforce value, and if the number of residual buckets is greater than or equal to the enforce value, it will choose the combination closest to the target weight to dump. If there are fewer residual buckets than the value set by enforce, the scale will calculate possible combinations again, but this time will include the buckets that were being filled previously, increasing the likelihood of finding a combination that is within the set target weight limits. A higher value will increase accuracy, but may decrease speed.

4.FILTER set according to the actual weighing speed. It is advisable to set this vale as high as possible without decreasing the scale's weighing speed. Can be set in the same way as the optimum setting, slowly increasing the value and watching the actual speed.

5.Motor of FB, WB, and CB, There are 4 unique patterns (0, 1, 2 and 3). One cycle of motor rotation is divided into 20 segments (please refer to Fig. 5.6.2-5). For the FB and WB, segments 1-10 control the opening of the bucket (the lowest point the actuator's rotation is the "full-open" position), 10-20 control the closing of the bucket (the highest point of the actuator's rotation is the "full-closed" position). The value being set is time, the more time used for each segment, the slower the bucket will open or close.

6.3 Detailed Chart of Processes

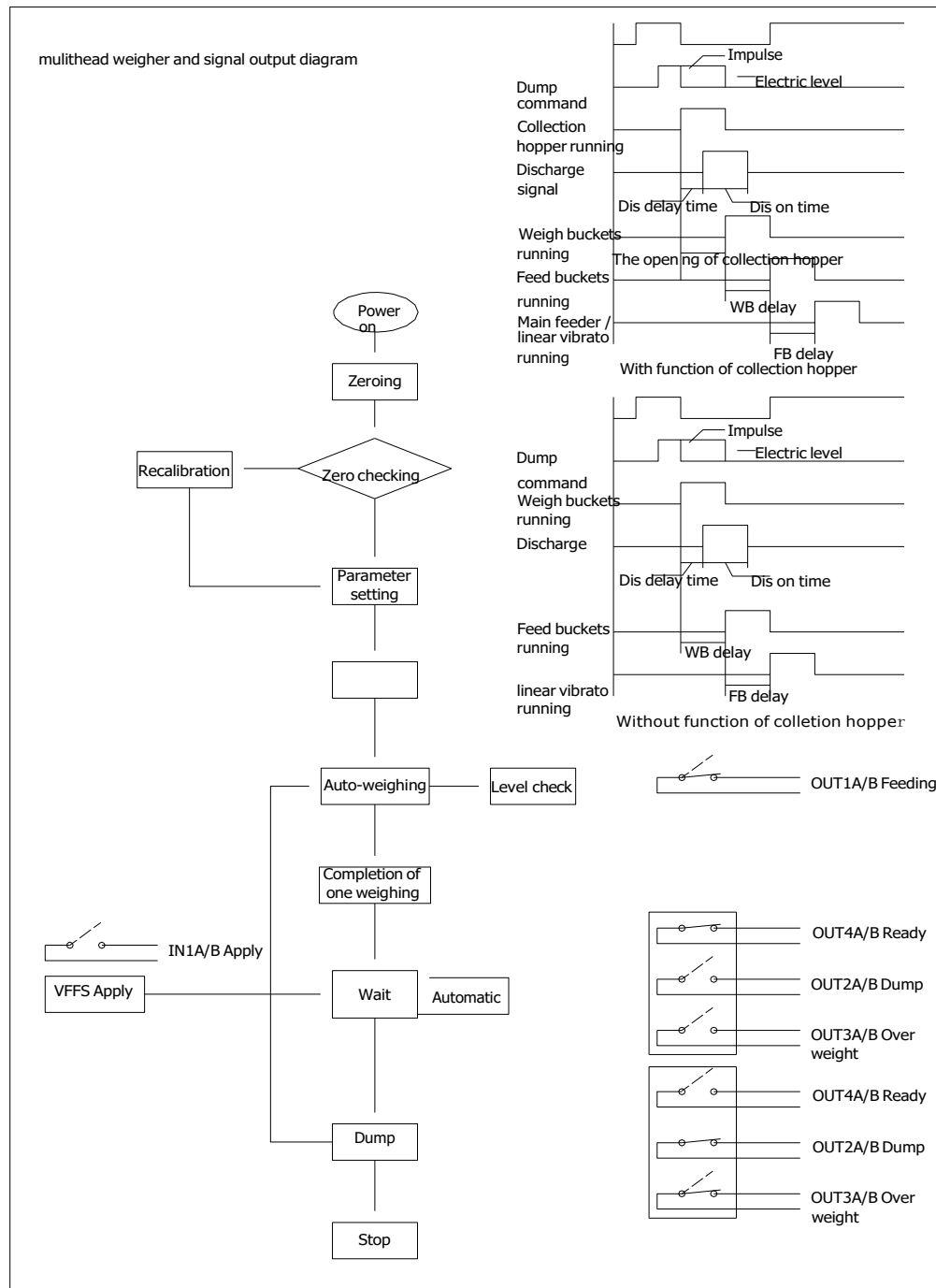


Fig. 6.3 detailed flow chart of operation processes

7 Run Screen Head Color Interpretation

No.	Color	Meaning
1	Yellow	Single Bucket Weight exceeds Up Limit and enforced dumping.
2	Red	Combination
3	Blue	Sufficient material
4	Light Blue	Insufficient material
5	Purple	Load cell detected negative weight
6	Green	Automatic Zeroing during operation
7	Light Green	During automatic zeroing, the zero error of weigh bucket exceeds 20% of the bucket full value
8	Black	A Bucket Inhibited
9	White	Less or No Material in Weigh Bucket

Symbols	Problem Reasons	Solution Methods
Yellow	Indicates single bucket WT exceeds the target weight and upper limit (over weight)	1. Reduce "LF AMP" when AFC=0; 2. Increase target bucket number when AFC=1; 3. Reduce "Single Bucket WT" when AFC=2.
Light Blue	Not enough products in the weigh bucket	1. The amplitude of Linear feeder is too low 2. Affected by no load setting, if there are too many light blue buckets, the no load value may need to be decreased
White	A combination under enforced dumping	1. Increase the enforce value 2. Adjust the feeders and ensure that the average bucket value is 3-5 if possible. 3. If possible, increase the upper and lower limits to increase the range of acceptable combinations.
Purple	WB detected a negative value during operation	1. Clear dust and remove build-up from WB hanger 2. Adjust "WB motor pattern", ensure no product is caught in the WB doors

Cyan	Enforced combination failed when "no select" operating	Increase "No Select" value. or set within 00-09.(This function can be closed if the product won't be thawed or can keep unsticked for a long time.
Black	Bucket is inhibited	1. It can be restarted in MANUAL OPE.
	Module communication failed	Check the DDC power supply proper contact and voltage Check if CON081-086 is connected properly between the module and main boards
Light Green	When performing an auto-zero, the empty weight of the weigh bucket exceeds 20% of the maximum weight value	1. Clear the dust and build-up on the WB hanger 2. Adjust the WB motor pattern, ensure all product is cleared out when the bucket is opened 3. Press "clear" key in main menu after finishing the two steps above, then restart the machine if necessary
Discharge is slow or inconsistent	Scale spends too much time calculating combinations	1. Reduce the value of optimum 2. Reduce the value of enforce

Discharge is slow or inconsistent	Scale spends too much time calculating combinations	3. Increase the value of upper or lower limit
Packing speed becomes slower	AFC is set improperly	1. The value of AFCT target NO should be set to 3-5 2. The value of AFCI single WT should be set between 1/5 and 1/3 of target WT
Over and under weights	Low number of possible or acceptable combinations	1. reduce the amplitude to increase the average number of buckets per combination 2. increase the value of up limit and low limit
Motors are too weak to open buckets	Motor is set to open too fast	Increase value of Steps 00-10 in the motor pattern settings
Buckets are noisy when closing the doors	Motor is set to close too fast	Increase value of Steps 10-20 in the motor pattern settings
The bucket doors do not close properly after being opened	The photoelectric motor position detection has failed	The manual operation interface may be used to diagnose damaged drives. Determine which motors are functioning improperly and check the Photoelectric detection switch
Initial Calibration cannot be accessed	Hardware lock is active	Set DIP switch 2 to the on position on the Main Board

Printing error	Error displayed on RCU	<ol style="list-style-type: none"> 1. Check if the connector for 26P is loose 2. If power supply of printer is normal
	Feature may be disabled	Set DIP switch 2 to the on position on the Main Board
RCU display not working	Communication failed	<ol style="list-style-type: none"> 1. Ensure grounds are secure 2. Ensure display is properly connected 3. The 5V power source for the display should not be lower than 4.5V, and the 9V should not be lower than 8.5V.
Unexpected shut down or fault phenomenon	Processor may be experiencing interference	Turn the machine off, wait at least 10 seconds, and then start it again
discrepancy between displayed Weight and actual Weight too great	1. Zero Deviation, empty buckets do not read zero	<ol style="list-style-type: none"> 1. Grounds should be secure. 2. Perform a zero adjustment, and then a full calibration if necessary. 3. Increase the filter value.
	2. Discharged weight heavier than display weight	1. Set the bias setting to a positive value
	3. Discharged Weight lighter	1. Set the bias setting to a negative value

	4. Products remain in weigh bucket after the bucket has been opened	1. Adjust Motor Pattern, increase stop time for the motor. 2. Increase WB delay value
	5. Load cell response speed is too slow	1. Reduce filter value

8 Mainboard's Colors, DIP Switch and I/O Cables

There are 2 sets of DIP switch on the main board

DIP 1(2 PIN): Calibration is only enabled when both PINs are on

DIP 2(4 PIN): Set Weigher ID when there are more than one Weigher connected to PC.

When it is at "ON" position, the value of each PIN will be show as follow:

PIN1 value=1 PIN2 value=2 PIN3 value=4 PIN4 value=8

When the PIN is off, the value is 0

E.g. if there are 2 weighers, to set the first weigher as NO.1, PIN 1=ON, PIN 2=OFF, PIN 3=OFF, PIN 4=OFF; to set the second weigher as NO.10, PIN 1=OFF, PIN 2=ON, PIN 3=OFF, PIN 4= ON (2+8=10)

Number	Color	Number	Color	Meaning	I/ Cable
Ready1A	Black	Ready1B	White	Ready 1 signal output	I
Drop2A	Green	Drop2B	Blue	Drop 1 signal output	I
OverWT1A	White	OverWT1B	Gray	Overweight 1 signal output	I
Empty1		Empty2		Empty signal output	I
Ready2A	Brown	Ready2B	Red	Ready 2 signal output	II
Drop2A	Orange	Drop2B	Yellow	Drop 2 signal output	II
OverWT2A	Green	OverWT2B	Blue	Overweight 2 signal output	II
Fill 1	Blue	Fill 2	Brown	Filling signal output	III
Input1A	Red	Input1B	Brown	Request dropping input (1)	I
Input2A	White	Input2B	Black	Request dropping input (2)	II

1. Explanation

Ready: multihead weigher has found the best weight and is ready to discharge. It will output a continuous signal.

Product dropped: When the multi-head weigher finishes

the discharge, it will send out one pulse signal. The time of this signal can be set in system settings.

Over weight: When the system detects an overweight that is greater than the upper limit, it will release a pulse signal whose length is same as the discharge signal.

Product filling request: When requiring a combination, the request signal should reach the weigher. It can be a pulse signal or a continuous signal. Its style can be adjusted in the system settings.

Requiring to add: The product level is lower than the value in the system settings, the weigher will transmit a continuous switch signal. The transmission time can be adjusted in the system settings.

Empty: When the zero or empty function is selected, it weigher will send out a pluse signal while the opening the collection hopper or weigh bucket (if no collection hopper is present)

2. Working operation: All the wires labeled "OUT" are a part of the weigher output the signal bulkhead, and wires labeled "IN" are a part of the input signal bulkhead

9 Maintenance

In order to ensure continued successful operation and extend the service life of the weigher, you must diligently perform daily maintenance procedures. Switch the power off before maintaining or inspecting weigher. Anyone maintaining or operating the machine should be trained to do so.

- [1] Non-maintenance personnel do not do teardown of the machine.
- [2] All the components that touch product directly should be cleaned daily before or after use and between different products.
- [3] Before running the machine, ensure that there is nothing caught on the weigh buckets or bucket hangers, and clean out the hanger after operation.
- [4] Add food grade oil on the joint of bucket every week to ensure continued smooth operation.
- [5] Clean the dust on the machine as often as needed, limit the amount of build-up allowed to remain on the scale.

10 Transportation and Storage

- [1] Transport with caution, it is recommended that the vibrators be removed before transport. Do not allow the weigher or the components to be thrown, collided or inverted and limit exposure to vibration and liquids.
- [2] Vibrators should be kept within temperatures between -10°C $\sim 40^{\circ}\text{C}$, relative humidity should be less than 90%. The air must not contain caustic gases.

11 Connecting to Packaging Equipment

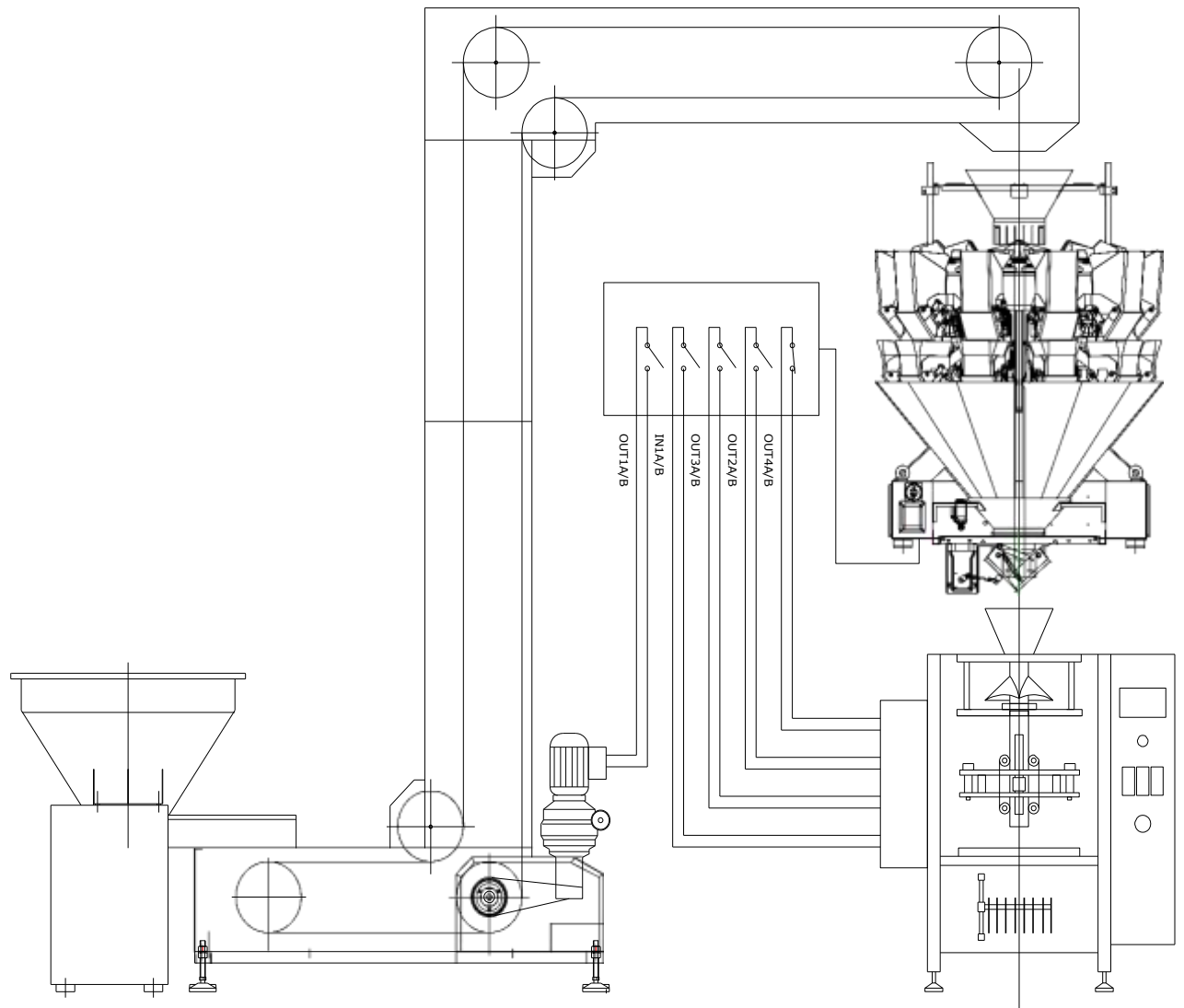
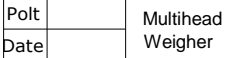
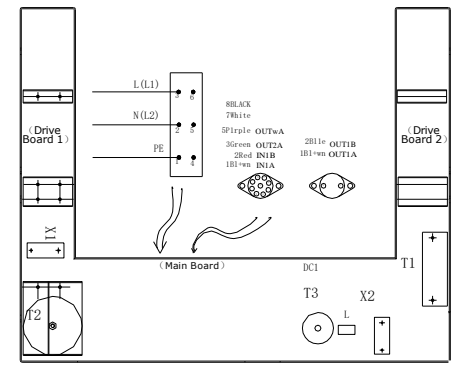


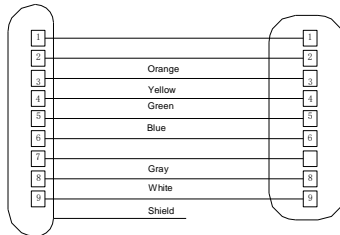
Fig. 11

HTMW-T2

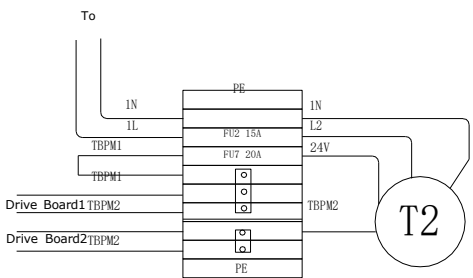




T t5pe pllg 9 pins r+1nd pllg

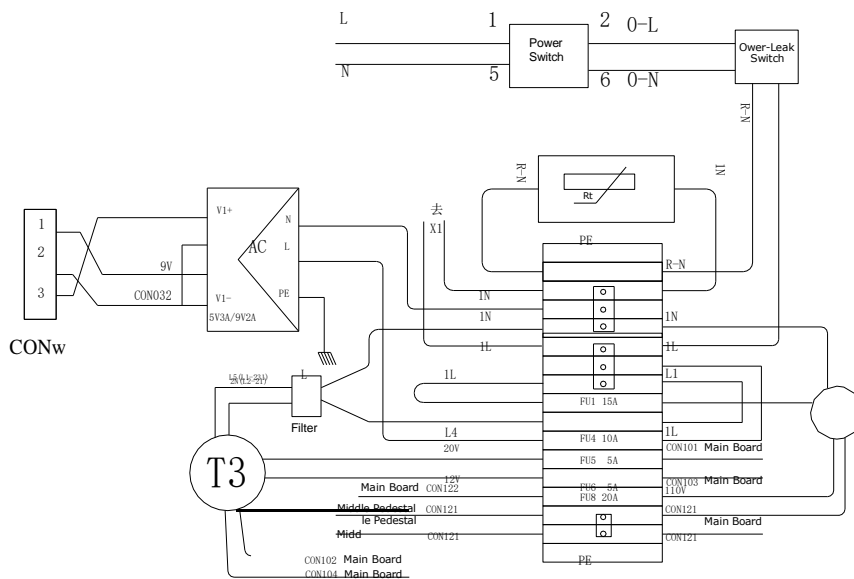


NO.	Parameter	NO.	Parameter
TC2	450VA	FU5	5A
FU1	15A	FU7	20A
FU2	15A	FU8	20A
FU3	5A	DC1	5V3A/9V2A



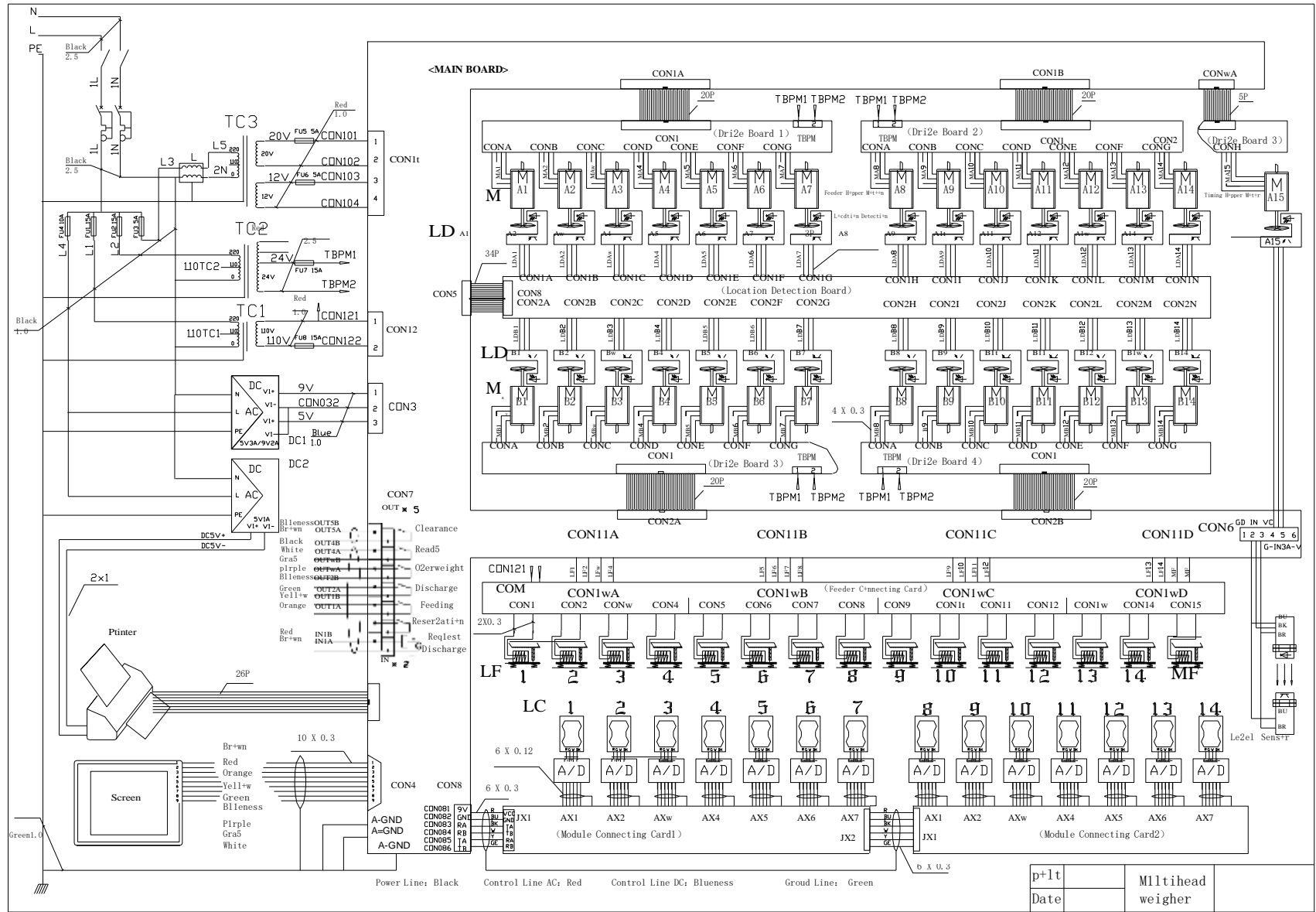
X1

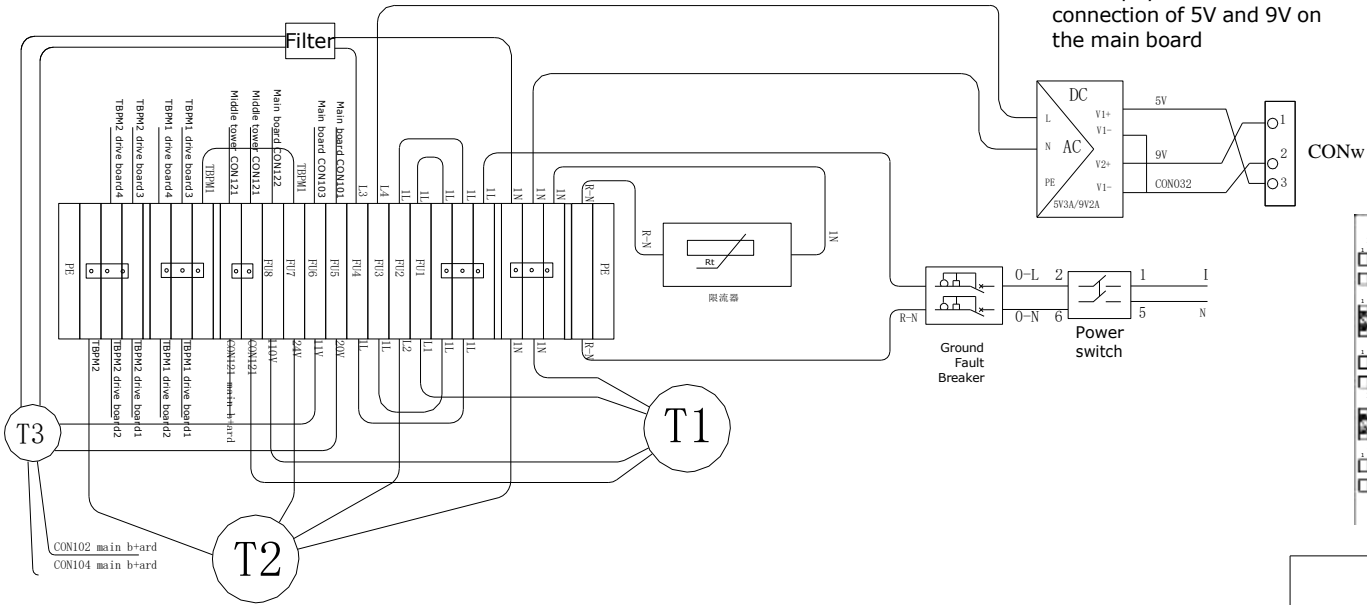
Please pay attention to the connection of 5V and 9V on the main board



X2

Polt		Multihead Weigher
Date		





T type plug

9 pins round plug

1 red

2 orange

3 yellow

4 green

5 blue

6 purple

7 gray

8 white

9

