

Operation Manual

CK Series Checkweigher

Mettler-Toledo Instruments (Shanghai) Co., Ltd.



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1 General

We congratulate you on having purchased this checkweigher. We recommend that this instruction manual be carefully read before the first use to ensure trouble-free operation such that you will always get the optimum benefit. This operating manual describes all functions of the checkweigher series which are possible in principle; the actually featured functions depend on the version purchased. Usually, described but missing functions can be retrofitted.

The weighing terminal is a component of a modular system. The range of weighing frame which can be teamed with the weighing terminal and the extensive range of accessories allow for the setup of a checkweigher or weighing system that optimally meets the user's requirements. The weighing terminal can be mounted to the weighing frame but it can be installed remotely from the weighing frame as well.

1.1 Warnings and symbols

The heading "NOTE:" is used in this manual to point out additional information, e. g. comments on the



economic use or comments to help you avoid errors when entering data. "ATTENTION:" or "IMPORTANT:" is used for particular comments or statements concerning the damage prevention (i. e. when something is compulsory or forbidden) or the avoidance of wrong operation.



"ATTENTION:" or "IMPORTANT:" is also used for particular comments or statements concerning the accident prevention (i. e. when something is compulsory or forbidden) or wrong operation, in order to avoid injuries of the user or a third party as well as considerable damages of the machine/system or material. As these statements are

very important, they have been additionally marked with warning symbols.

1.2 Principle of proper use

This machine/system has been designed according to the latest technologies in mechanical and electrical engineering and recognized safety rules. Even though, the misuse of this machine/system may imply danger to life and limb of the user or a third party as well as disturbances or damages of the machine/system and other assets. This machine/system must be used only when it is technically in a perfect order, and safety rules as well as the operating instructions must be observed. Any disturbances or faults – in particular those which may affect the safety – must be eliminated immediately!

This machine/system is exclusively suitable for dynamic weighing or intermittent/static weighing respectively. It is not intended for any other usage than this. In particular the use of the machine/system for the transport of persons is forbidden. The manufacturer/distributor of the machine/system cannot be held liable for any damages or injuries which result from improper use of the machine/system; in such a case the user takes own risk.

The intended use of the machine/system also implies that the user proceeds in accordance with the operating manual and follows the instructions for inspection and maintenance.

Calibration seals applied by the weight & measures authorities must never be broken as this means a loss of the approval!

1.3 Organizational measures

Keep the operating manual near the location where the machine/system is used so that the operating manual is always at hand! In addition to the operating manual, observe the general rules for the prevention of accidents and all other binding rules or laws for the prevention of accidents and protection of the environment, and ask other staff to do so. State any further duties which may include supervisory tasks or reporting tasks for the sake of the particular organizational situation – e.g. relating to the organization of work, processes, and staff – and extend this operating manual by such rules.

The person to use the machine/system or to work on it must have read the operating manual first, in particular the chapter "General, Safety". This is especially important for persons who use the machine/system occasionally only. The person using the machine/system or working on it should be supervised regularly to ensure that the operating instructions and accident prevention rules be observed.

The person using the machine/system must not have long hair, wear loosely fitted clothing or jewelry (including rings); otherwise the person runs the risk of being caught by moving parts and pulled into the machine/system which will cause severe injuries.

For the sake of safety, all warning signs and symbols on the machine/system must be kept in good condition (check that no such sign or symbol is missing or illegible). For the sake of safety, all warning signs and symbols on the machine/system must always be observed!

If there is a fault or a change in the behavior or performance of the machine/system which may affect the safety, the machine/system must be stopped immediately and the responsible person/supervisor must be informed.

Do not modify or redesign the machine/system without the prior consent of the manufacturer/distributor, as alterations may affect the safety. This also applies to the installation or adjustment of safety devices and to welding or drilling on bearing parts.

Spare parts must comply with the specifications issued by the machine/system manufacturer. To ensure this, we

recommend that genuine spare parts be used.

Should inspection intervals be indicated in the operating manual or otherwise specified, keep such intervals.

Suitable tools and other suitable workshop equipment are required for maintenance.

1.4 Selecting qualified personnel

Only reliable persons must be allowed to use the machine/system or work on it. The person to use the machine/system or work on it must be trained and the responsibilities (operation, preparation, maintenance of the machine/system) must be clearly determined.

Ensure that no unauthorized person uses the machine/system or works on it. The responsibility of the machine/system user must be clearly determined and the machine/system user must be enabled to refuse any instructions by a third party if such instructions affect the safety. Persons who are taught how to use the machine/system, or who are generally shown how to use it as part of their training, may use the machine/system only when they are being supervised by another, experienced persons.

Only a qualified electrician may work on the electric components of the machine/system or system and must supervise any auxiliary staff. The accident prevention rules for electrical engineering must be observed.

1.5 Safety information on certain operation phases

a) Normal operation

Never use the machine/system improperly or work in an unsafe manner.

Take measures to ensure that the machine/system is used only when it is in a safe condition and trouble-free.

Use the machine/system only when all protective devices e. g. guards, emergency-off devices, noise absorbers are in the intended locations and operative.

A visual check of the machine/system must be affected at least once during a shift to ensure that visible damages or faults can be recognized. Any changes (including changes in the performance or behavior of the machine/system) must be reported to the supervisor. If necessary, stop the machine/system at once and secure it.

In the case of a malfunction stop the machine/system immediately and secure it. Have the fault cleared as soon as possible.

For starting and stopping the machine/system follow the operating instructions and observe indicator lamps.

Before switching on the machine/system, make sure that the running machine/system will be no danger to anyone.

b) Special work related to the use and maintenance of the machine/system as well as fault clearing

For adjusting or inspecting the machine/system and for maintenance observe the intervals set out in the operating manual and follow the operating instructions. When replacing a part or assembly, proceed in accordance with the operating manual. The aforementioned work must be effected by skilled persons only.

Before special work or maintenance is carried out, inform the machine/system operator i. e. user and determine a supervisor.

For any work which concerns the machine/system operation, adaptation to production requirements, conversion or adjustment of the machine/system or its safety devices as well as inspection, maintenance and repair, follow the instructions set out in the operating manual for starting and stopping the machine/system as well as for maintenance.

If necessary, secure a large area around the location where maintenance or repair of the machine/system is to be affected.

When the machine/system has been switched off for maintenance or repair, it must be secured against somebody switching the machine/system on again by accident:

- Main control devices must be locked and the key be removed after switching off the power supply
- Place a warning sign next to the main power switch

Only experienced persons must be charged with the hoisting of heavy objects or instructing of drivers of cranes, industrial trucks or other transport vehicles. The instructor must be within view of the operator or driver, or they must use an intercom.

For overhead working use safety stages and scaffoldings only, or other safety devices, never use the machine/system or parts of it for climbing or standing on! When maintenance or other work must be effected in greater height, use protective means to prevent you from falling down. Keep all handles, steps, banisters, pedestals, stages, scaffoldings and ladders clean!

Before cleaning the machine/system with water or another cleaning solution, cover all openings which must be protected against ingress of water/vapor/cleaning solution for the sake of safety or trouble-free operation, or close them with adhesive tape. In particular electric motors and switch cabinets must be protected! See the ingress protection (IP degree) on the ratings plates!

Remove all covers or adhesive tape when you finished cleaning.

After cleaning, check all cables, connectors, compressed air hoses or pipes for leakage, loose connections, rub marks and damages! Clear any fault found immediately/have any fault found cleared immediately!

Remember to fasten all screws and bolts which you had to loosen for maintenance or repair!

If the preparation, maintenance or repair of the machine/system requires the disassembly of safety devices, the safety devices must be fitted back and thoroughly inspected immediately when the preparation, maintenance or repair has been completed!

1.6 Information on special risks

a) Electricity

Only a qualified electrician may work on electric systems, components or process materials and must supervise the staff; and the electrical engineering rules and accident prevention regulations must be observed!

If required or stated, the machines or system components must be disconnected from the power supply before inspection, maintenance or repair. First check that the disconnected parts are no longer live, then earth and short-out them and make sure that any live parts which are near them are insulated.

The electric parts of the machine/system must be regularly inspected and thoroughly checked. Any faults – e. g. loose connections or charred cables – must be cleared immediately. Do not operate unsafe equipment!

b) Pneumatics

Only persons having the required knowledge and experience may work on the compressed air system or components thereof. Check all pipes and lines, hoses and screwed joints regularly for leakage and visible damages! Clear any fault immediately/have any fault cleared immediately!

Relieve the pressure of compressed air pipes, hoses or system components to be opened for repair or maintenance before working on them.

Compressed air pipes and hoses must be laid and fitted properly and in accordance with the installation regulations.

The fittings as well as the length and quality of pipes and hoses must meet the required specifications.

c) Noise

If required for the machine/system, all noise-absorbing elements of the machine/system must be in their proper

places during operation of the machine/system.

d) Transport of the machine/system

For loading or transporting the machine/system, use only lifting and transporting devices and equipment with a sufficient bearing force!

Determine an experienced instructor for the lifting/hoisting process!

Lift the machine/system by attaching the lifting devices only to the appropriate points according to the operating manual.

1.7 Safety

Depending on the model, the weighing terminal (when installed away from the weigh frame) works with a rated voltage of 230 V (A.C.) +/- 10 % or 115 V (A.C.).

ATTENTION: Weighing terminals of the "E" or "S" or "X" series, when installed separately i. e. away from the weigh frame, require 24V direct current (24 VDC) as this type of weighing terminal does not have an internal power unit.

Please check whether the ratings plate of your checkweigher, or weigh frame and weighing terminal respectively, corresponds to your power mains before connecting. Some special design weigh frames must be connected to 400 V three-phase current (5-wire network with N and PE).

The use of frequency inverters can cause derivative currents. Therefore the use of safety power breakers ("fi" fault current circuit breakers) alone is insufficient and not permitted. Protective earthing (grounding) is compulsory. The rating of the fuse in the power mains must correspond to the current intensity in the power cable of the machine. Fixed wiring of the power cable to a power outlet is compulsory, according to VDE 0160.

To avoid accidents the appliance must not be opened by persons other than qualified technicians. The valid, general recommendations for safety at work when working with electro-mechanical equipment must always be observed!

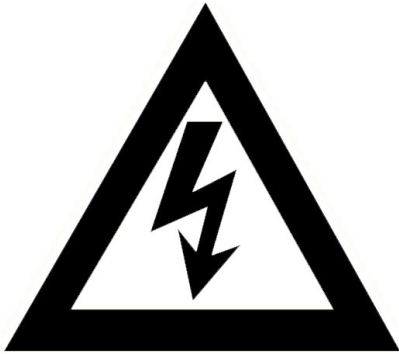


Always pull the mains plug / disconnect the power supply before opening the machine!

If the power supply of the checkweigher or weighing system is switched on and off from a remote point such as an electrical distribution or fuse box or a control cabinet, you must take measures against somebody switching the machine on by accident; e. g. lock the

distribution/fuse box or control cabinet and place a warning sign on it.

When the checkweigher or weighing system is equipped ex works with an infeed or outfeed conveyor – or if such a belt conveyor was retrofitted– power is usually supplied to such belt conveyors from electric terminals inside the weigh frame’s base. **Therefore the checkweigher/weigh frame must be disconnected from the power mains before shifting or removing an infeed or outfeed conveyor. The cables leading from such conveyors to the weigh frame must be disconnected by a qualified electrician.**



After shifting the infeed/outfeed conveyor in the desired position, the cables must be connected again by a qualified electrician.

The appliance must only be connected to a properly earthed (grounded) safety outlet which complies with the electrical safety standards valid in your country.

Attention must always be paid when using the checkweigher as the running belt conveyors or other parts may be a possible hazard when touched or when long hair or loose clothing – e. g. scarves, ties or wide sleeves – comes near.



Always keep a sufficient safety distance to moving parts! Be aware that sorting/rejecting devices such as pushers, gates etc. react (move) instantly and may therefore be dangerous.

With the exception of those machines having a specified degree of moisture protection (wash down design), the machine must never be used in a moist environment – e. g. humid rooms – nor be exposed to moisture.

In the case of danger switch the checkweigher off/pull the plug at once!

The checkweigher or weighing system is only intended for the continuous or intermittent weighing of articles as indicated in our order confirmation. Using it for a purpose other than this will increase the risk of injuries, damages or accidents and is therefore not permitted! If you want to use the checkweigher for weighing articles of a different kind or if the ambient conditions of the machines have to be changed, contact us for advice. In most cases the checkweigher can be easily adapted or redesigned according to the requirements.

1.8 Important notes concerning the operation of the checkweigher

The **weigh cell** of the weigh frame is a very sensitive precision measuring instrument and must therefore be handled with care. Shocks, jamming, or objects falling on the weighing belt conveyor (weighing table) must be avoided. Never put tools on the weighing belt conveyor.

A **regular infeed** of the objects to be weighed – i. e. product spacing as regular as possible – is a prerequisite for trouble-free weighing.



Read and observe the hints concerning

- **Transport preparation**
- **Installation**
- **Cleaning and maintenance**
- **Optional equipment (if any)**

Given in the respective chapters of this operation manual.

When the line height of the checkweigher shall be changed – for example, as the height of the production line in general is changed – please contact the after-sales service.

Please note that the replacement or dismantling of the weighing terminal, weigh cell and motors must be done exclusively by after-sales service engineers or qualified personnel authorized by GARVENS. In this respect, please contact the after-sales service.

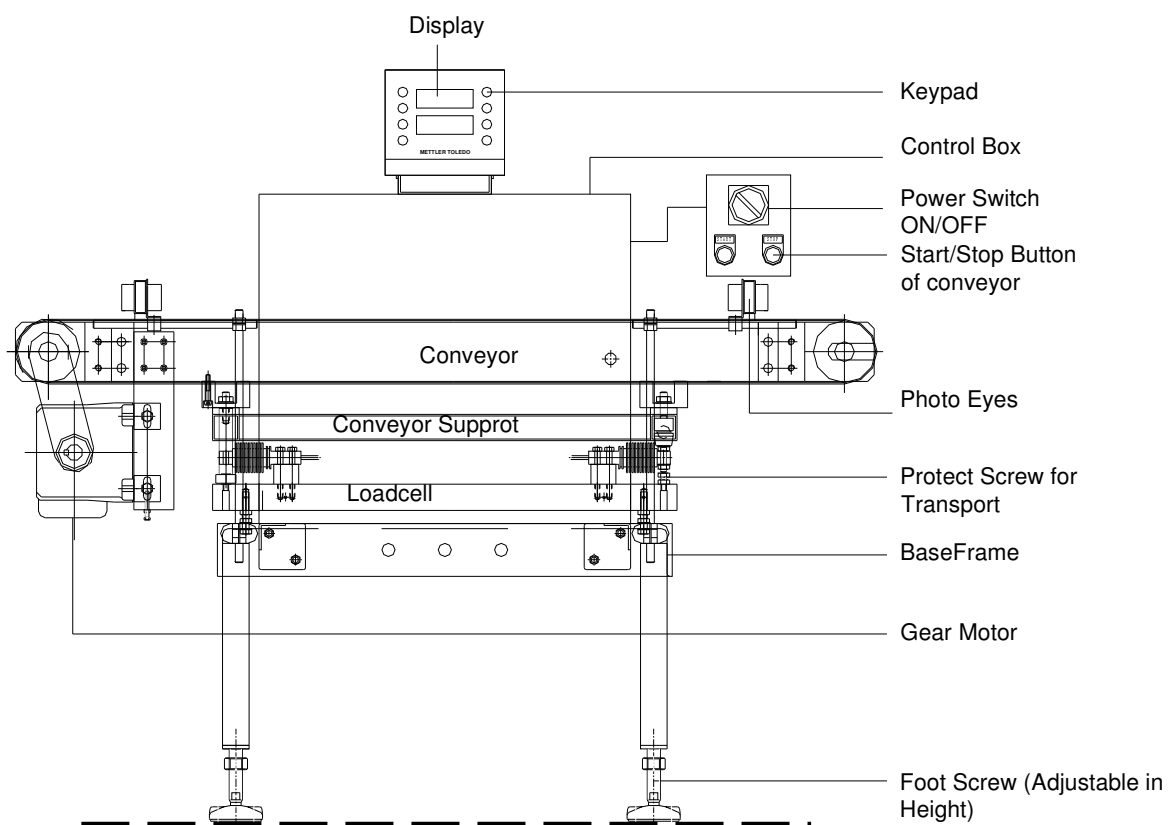


DANGER: Never loosen or unscrew the fixation of the conveyors on the columnar base frame (switch cabinet). Risk of severe injuries!

NOTE – Material recycling: At the end of the useful life of a checkweigher, the modular design of the checkweigher allows for easy dismantling of an old checkweigher so that the individual parts can be subsequently forwarded to the appropriate recycling facilities.

2 Setup and function

The following illustration is a simplified representation of the setup of a checkweigher. Numerous variations of the design are possible due to the customized design, e. g. the start/stop push-buttons for the transport belts and the main power switch can be in another location than shown below, depending on the weigh frame type.

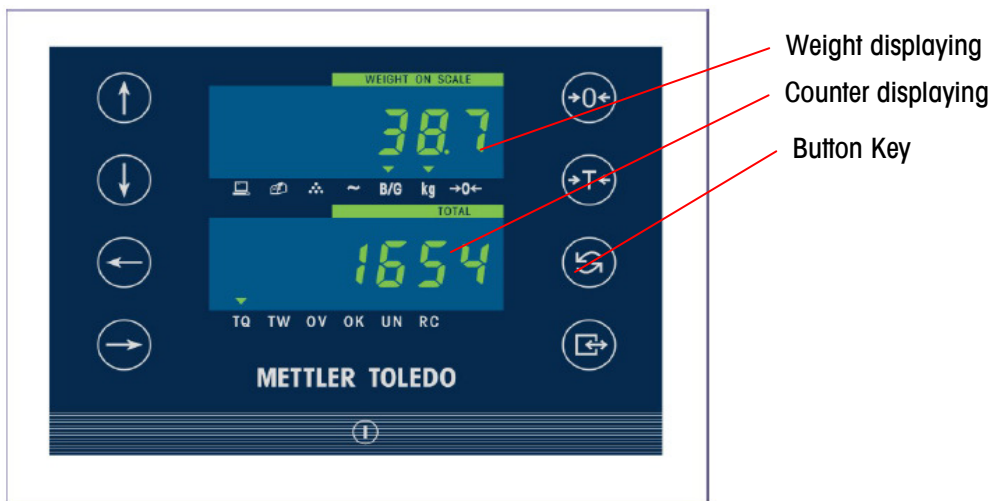


Usually those weigh frames for lightweight goods are equipped with their own infeed and outfeed conveyor.

NOTE: Information about the mechanical and electrical installation can be found in the next chapter "Installation".

3 Weighing Terminal

The case weigher weighing terminal is adopted the Panther 2000 L700, The terminal face as following:



3.1 Display

Power-on and display

Step 1: The upper and lower window will show **[8.8.8.8.8]** for one second.

Step 2: The upper window shows software series number and the lower shows software version and state indicators will show one by one. (If the terminal has any abnormal state during operation, please provide the equipment's software number and software version When you feedback to the manufacturer).

- This handbook corresponds to L700 weighing terminal whose software version number is [r 1.00] and thereafter.





Step 3: Enter the weighing display. If the gross weight value on the current scale is within the scope of zeroing (setup by the set parameter F2.2.1), then, the weighing terminal will automatically perform the function of zeroing.

- If the showing weight is too big and most functions cannot be used, please confirm whether or not it is in the display state of extended weight, the state is setup by the set parameter F1.7 that should be setup as "0" under normal weight control.

Display instruction

Display	Normal condition	Selecting menu	Setting up
Upper displayer	Weight	Menu name	Item code
Lower displayer	Empty	Empty	Set value

Cursor of state

Cursor	meaning
	Communication state
	Weighing
	Weighing data keeping
	Dynamic
B/G	Gross weight
Kg	Kg unit
→0←	Zero
TQ	Total quantity
TW	Total weight
OV	Overload Counter
OK	Normal Counter
UN	Under load Counter
RC	Recipe input

Buzzer

The buzzer is available only when the parameter F2.7 = 1.

Buzzer	Description
One short beep	The key pressing is accepted.
One long beep	The key pressing is not accepted, or the weighing terminal is startup self-testing.
Continuous short beep	The weighing terminal is calibrating, or there is an error (please refer to the appendix to confirm the error according to the error code on the upper displayer, and press any key to quit).
Intermittent short beep	Scale is overloaded or under-loaded.


3.2 Keyboard operation







Service engineer and design engineer of the weighing equipment is suggested to fill the "Note" column in the following operation descriptions.

For example: In "Note" after "Clear" function in "Keyboard operation when gross weight is displaying", fill "push-bottom clear". In "Note" after "tare" function, draw "√" or "x" to show if the function is allowed or not.

These notes can help operator understand and use weighing equipment correctly.




Keyboard operation when gross weight is displaying

The upper window will show gross weight, the lower window will show passing articles number, and the indicator  and Kg indicator is on.

Key	Function	Description	Note
	Zero	Weighing terminal is in weighing state, and the currently tare is in the zero limits (this scope value is setup in Parameter Table F2.2.2), and the currently terminal is static ( indicator is off).	[]
		Weighing terminal is on weighing state, and the equipment is set to be keyboard tare function (F2.1=1), and the currently terminal is static ( cursor is off), press the key to tare.	[]
	Tare /Clear	Weighing terminal is on weighing state, and the equipment is set to be preset tare function (Parameter F2.1=2), press the key, the lower displayer will show the tare value to be confirmed (if tare has never been preset or the preset tare is zero, the tare value in the lower displayer equals the current gross weight value); At the time, the operator can press [print] key to accept the currently showed tare value, and perform tare function; The operator can also, after inputting new tare value (namely, the preset tare value. For the input method, see "value input operation" section), press [print] key to accept the input tare value, and perform tare function. If the tare value input by the operator equals zero, when pressing again [print] key, the gross weight value in the upper displayer should be used as the current tare value, and perform tare function; The operator can press at any time [clear] key to ignore and quit tare operation function.	[]
	Select	Press the key continuously and show various menus, at the time, the upper display window will show menu name. When selecting and displaying these menus, weighing process is not affected.	[✓]
	Print/ output	(Parameter F3.1 = 2) When the weighing terminal is showing weight (gross weight or net weight), press the key, the current weight data will be output via serial interface.	[]







Keyboard operation when menu is displaying

At this time, the upper displayer will show the menus. For list and description of all the menus, see appendix of this chapter.

Key	Function	Description	Note
	Select	Press the key to show other menus.	[✓]
	Confirm	Press the key to execute the displayed menu, or enter into its submenus.	[✓]
	Quit	Press the key to quit the menu, or return to the upper level of menu.	[✓]




Value input operation

In tare preset and parameter setup, the operator will be required to input various values, at this moment, the lower displayer will show the input values. When entering into value input, the lower displayer flickers to indicate the first place of the value, and the operator can operate according to the following descriptions of the table

Key	Function	Description	Note
	Quit	Quit the input value and return.	[✓]
 	Change	Press the key to change the flickering value in the lower displayer up and down, with scope of 0-9.	[✓]
 	Shift	Press the key to shift the number place left or right.	[✓]
	Confirm	Accept the input value and return.	[✓]


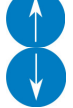

Keyboard operation during setting up menu

During menu setup, the operator will be required to operate according to the following definitions of keyboard; at the same time, the upper display window will show menu name, and the lower display window, parameters.

Key	Function	Description	Note
	Return	When submenu is on display, press the key to return to the upper level of menu. When the first level of menu is on display, press the key to return to normal weight state.	[✓]
	Select	Repeatedly press the key to show various operational menus at the same level (for the content of menus, see operational menu table in the next section), at the time, the upper display window will show menu name. When showing the name of master menu, it will not influence working state of the instrument.	[✓]
	Confirm	Press the key to enter into the current menu's submenu, or execute the command of the current menu.	[✓]

Keyboard operation during setting up new parameter

During parameter setup, the operator will be required to select and input various parameter values, at the moment; the lower displayer will show the values. When pressing confirm key to enter into parameter value input, the lower displayer flickers to show the parameter values, and the operator can operate according to the descriptions of following table.

Key	Function	Description	Note
	Return	Quit the current parameter setup and return to the last level (the top level is normal weight state).	[✓]
	Change	Press the key to adjust and display new parameter value from the showed parameter table of parameter items. Parameter item is showed in the upper displayer and parameter value, the lower displayer.	[✓]
	Confirm	Accept the new parameter in the lower displayer and return.	[✓]

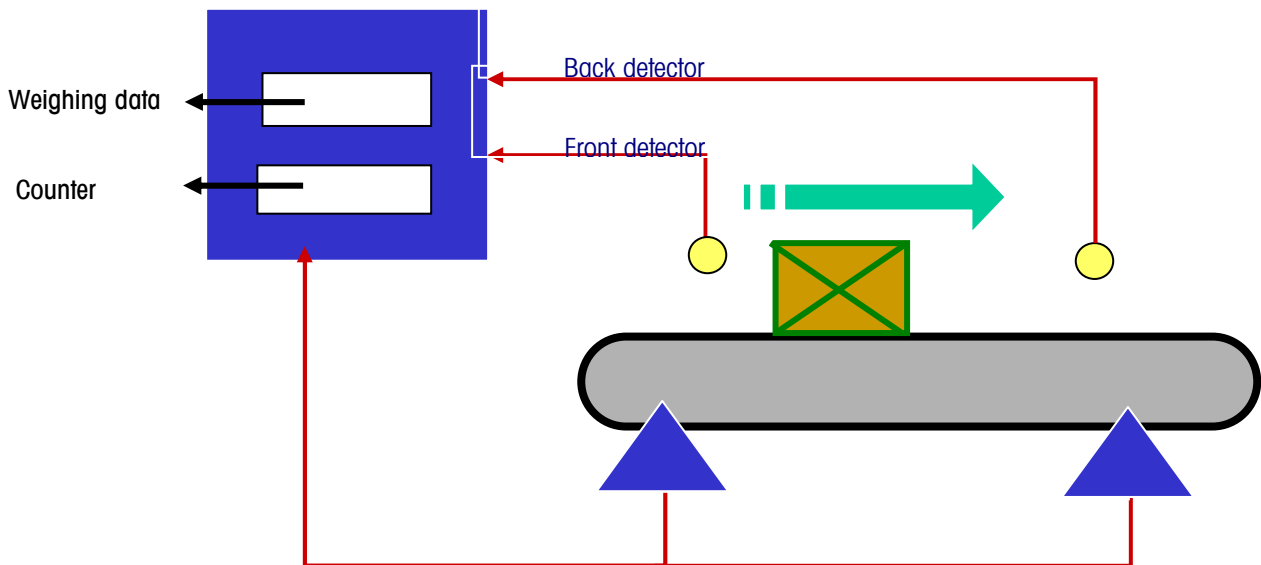
3.3 Operation

This equipment is a dynamic weighing scale. Generally, no manual operation is required on site.

For simple operations of zero/tare/print, refer to the above descriptions about key pressing.






Dynamic Weighing

- When detectors (Photo eyes) has inspected the former article has left the scale and testing article has entered the scale, the terminal begins to sample and calculate the sampling data, and displays the average value of sampling real time.
- When the detectors (Photo eyes) has inspected the article is leaving the scale or the next article is entering the scale, the terminal stops sampling and at the same time, outputs the result according to the average value of on-site sampling



3.4 Parameter Setup

Keyboard Setup Operating

Key	Function	Description	Note
	Return	1) In submenu, Press the key to return to upper level of menu, e.g. When F1.1 show, press the key to return to F1. 2) In main menu, Press the key to return to normal weight displaying. 3) In-modifying parameter, press the key means give up and return .	[✓]
	Modify	When the parameter flickers, press the key to change the value by upper and down.	[✓]
	Shift	Press the key to shift the changing bit.	[✓]
	Select	Repeating press the key to show all menu. The upper windows show the menu name	[✓]
	Enter	Press the key to enter submenu; In the lowest level of menu, press the key to modify the lower windows parameter, and the value of parameter will flicker.	[✓]

Weighing modes

A. Dynamic Weighing Mode (F5.1=0)

- a) When normal weight is on display, use select key to choose [RECALL] menu, press confirm key to enter.
- b) At this time, the upper window will show the name of [TOTAL CN] menu and the lower window, the total number of inspected articles.
- c) When there is a need to delete the data of the total under this state, press Confirm key to confirm, at the moment, the lower window will show the name of [CLRACC] menu, press confirm key to confirm it. At this time, the data of the total and total weight have all been deleted to 0; if just now, you did not intend to delete the total, you may, however, under the above-mentioned state (the lower window shows the name of [CLRACC] menu), press return key to quit deleting. (Note: Once deleted, the data in the instrument will never be restored.)
- d) When [TOTAL CN] is on display, press select key to choose [TOTAL GT] menu, at the moment, the lower window will show the past total weight. The data cannot be solely deleted. If deleted, please do it in [TOTAL CN] menu.
- e) When the instrument is setup into command format, just press, when regulating and displaying the total article number, the confirm key to output printed data with the output format as follows:

XXXXX BAGS

XXX.XX KG

B. Sorting Mode (F5.1=1)

- a) When normal weight is on display, use select key to choose [RECALL] menu, press confirm key to enter.
- b) At this time, the upper window will show the name of [TOTAL CN] menu and the lower window, the total number of inspected articles.
- c) When there is a need to delete the data of the total, you can, under this state, press Confirm key, at the moment, the lower window will show the name of [CLRACC] menu, press confirm key to confirm it. At this time, the data of the total and total weight have all been deleted to 0; if just now, you did not intend to delete the total, you may, however, under the above-mentioned state (the

lower window shows the name of [CLRACC] menu), press return key to quit deleting. (Note: Once deleted, the data in the instrument will never be restored.)

- d) When [TOTAL CN] is on display, press select key to choose [TOTAL GT] menu, at the moment, the lower window will show the past total weight. The data cannot be solely deleted. If deleted, please do it in [TOTAL CN] menu.
- e) When the instrument is setup into command format, just press, when regulating and displaying the total article number, the confirm key to output printed data with the output format as follows:

XXXXX BAGS

XXX.XX KG

- f) When [TOTAL GT] is on display, press select key to choose [UNDER CN] menu, [UNDER GT] menu, [GOOD CN] menu, [GOOD GT] menu, [OUER CN] menu, [OUER GT] menu and [NO] menu. The menus shall start from [UNDER CN] till [NO] to finish. The meanings of the above menus are respectively: number of underweight articles, weight of underweight articles; number of conforming articles, weight of conforming articles; number of overweight articles, weight of overweight articles; the serial number of current recipe (Sorting Mode includes 4 recipes).

C. Weight-checking Mode (F5.1=2)

- a) When normal weight is on display, use select key to choose [RECALL] menu, press confirm key to enter.
- b) At this time, the upper window will show the name of [TOTAL CN] menu and the lower window, the total number of inspected articles.
- c) When there is a need to delete the data of the total, under this state, press Confirm key, at the moment, the lower window will show the name of [CLRACC] menu, press confirm key to confirm it. At this time, the data of the total and total weight have all been deleted to 0; if just now, you did not intend to delete the total, you may, however, under the above-mentioned state (the lower window shows the name of [CLRACC] menu), press return key to quit deleting. (Note: Once deleted, the data in the instrument will never be restored.)
- d) When [TOTAL CN] is on display, press select key to choose [TOTAL GT] menu, at the moment, the lower window will show the past total weight of the assembly line. The data cannot be solely deleted. If deleted, please do it in [TOTAL CN] menu.
- e) When the instrument is setup into command format, just press, when regulating and displaying the

total piece number, the confirm key to output printed data with the output format as follows:

XXXXX BAGS

XXX.XX KG

- f) When [TOTAL GT] is on display, press select key to choose [UNDER CN] menu, [UNDER GT] menu, [GOOD CN] menu, [GOOD GT] menu, [OUER CN] menu, [OUER GT] menu and [NO] menu. The menus shall start from [UNDER CN] till [NO] to finish. The meanings of the above menus are respectively: piece number of underweight articles, weight of underweight articles; number of conforming articles, weight of conforming articles; number of overweight articles, weight of overweight articles; the serial number of current recipe (Weight-checking Mode includes 4 recipes).

Recipe Menu

- A. Sorting Mode (F5.1=1)
- a) When normal weight is on display, use select key to choose [RECIPE] menu, press confirm key to enter.
- b) At the time, the upper window is showing the name of [GROUP 1] menu, press confirm key to enter.
- c) At the time, the upper window is showing [SB1] and the lower window, the value of SB1. Press confirm key to make this value flicker, use shift key to move the value, use revise key to input the value of SB1, and then, press confirm key to confirm this value.
- d) When the upper window is showing [SB1], use select key to choose [SB2] and [SB3] menus; the input method of the values of SB2 and SB3 is the same with that of SB1.
- e) When the upper window is showing [GROUP 1], use select key to choose [GROUP 2], [GROUP 3] and [GROUP 4], the input method of the values of SB1, SB2 and SB3 in [GROUP 2], [GROUP 3] and [GROUP 4] is the same as that of SB1, SB2 and SB3 in [GROUP 1].
- f) When the upper window is showing [GROUP 1], use select key to choose [SELECT] menu. By changing the value in the lower window, you can decide which group in the GROUP 1~GROUP 4 of recipe to be used.

B. Weight-checking Mode (F5.1=2)

- a) When normal weight is on display, use select key to choose [RECIPE] menu, press confirm key to enter.
- b) At the time, the upper window is showing the name of [SP 1] menu, press confirm key to enter.
- c) At the time, the upper window is showing [PO] and the lower window, the value of PO. Press confirm key to make this value flicker, use shift key to move the value, use revise key to input the value of PO, and then, press confirm key to confirm this value.
- d) When the upper window is showing [PO], use select key to choose [P1] and [P2] menus; the input method of the values of P1 and P2 is the same as that of P0.
- e) When the upper window is showing [SP 1], use select key to choose [SP 2], [SP 3] and [SP 4], the input method of the values of P0, P1 and P2 in [SP 2], [SP 3] and [SP 4] is the same as that of P0, P1 and P2 in [SP 1].
- f) When the upper window is showing [SP 1], use select key to choose [SELECT] menu. By changing the value in the lower window, you can decide which group in the SP 1~SP 4 of recipe to be used.

Parameter setup menu

- a) in normal weight, press the select key to select [SETUP] menu.
- b) Press setup key and enter parameter setup menu, after entering parameter setup state, the upper window will first show [F1] group.

Menu	2nd Menu	3rd Menu	Menu's name	Operating Description
F1			Interface setting	
	F1.1		Max capacity (5-100000)	For corresponding table of maximum weighing and increments value, see appendix of the chapter.
	F1.2		Scale interval (0.005-10)	
	F1.3		Calibration (0/1)	0: Calibration mode adopts two-point sampling. 1: Calibration mode adopts three-point sampling.
	F1.4		Zero adjusting	(The scale must be calibrated before zero)

				adjusting.)
		ESCAL	Note: This function is used in daily maintenance of scale zero.	Empty scale, then press [confirm] key capture the Zero. During the calibration process, the display state bar of the weighing terminal indicates scale zero adjustment process. If the scale goes into dynamic state, the display state bar will stop advancing.
	F1.5		Adjustment of scale's weighing range	(Before weighing range is to be adjusted, complete calibration of scale must be conducted by [CAL].)
		Add Ld	Note: This function is used for daily maintenance of linearity.	Press [confirm] key to enter, add weights on scale and input its value (the add weights is should be 20%-100% of the maximum scale capacity), and then press [confirm] key and the scale's capacity will adjust automatically The display state bar indicates adjustment process
	CAL		Completely calibrating	(When scale needs calibration, execute this item only, needless to execute Item F1.4 or F1.5.)
		ESCAL		Empty scale should be maintained, press [confirm] key to enter into scale zero calibration process. The display state bar of the weighing terminal indicates scale calibration process.
		Add Ld	Loading calibration	Only when Parameter F1.3 appears "0", press [confirm] key to enter, load weight on scale and input its weight value (the loaded weight is recommended to be 20%-100% of the maximum weighing capacity, and at last, press [confirm] key to enter into calibration state. The display state bar of the weighing terminal indicates calibration process of the scale.
		Add Hi	Loading calibration of high quantum range	Only when Parameter F1.3 appears "1" this menu. Press [confirm] key to enter, load weight on scale and input its weight value (the loaded weight is recommended to be 60%-100% of the maximum weighing capacity),

				and at last, press [confirm] key to enter into calibration state. The display state bar of the weighing terminal indicates calibration process of the scale.
		Add Lo	Loading calibration of low quantum range	Only when Parameter F1.3 appears "1" this menu. Press [confirm] key to enter, load weight on scale and input its weight value (the loaded weight is recommended to be 20%-100% of the maximum weighing capacity, and at last, press [confirm] key to enter into calibration state. The display state bar of the weighing terminal indicates calibration process of the scale.
	F1.6		Scale's calibration parameter	Only when Parameter F1.3 appears "1" Item C2 and C3. Please record the coefficients here. In case the parameters of this weighing terminal have lost unexpectedly, or new weighing terminal is updated, these several coefficients can be put into Parameter F1.6 of the new equipment, which can be used as calibration-free measures in emergency. In daily operation, please be careful not to modify these coefficients.
		C0	Scale's calibration coefficient C0	
		C1	Scale's calibration coefficient C1	
		C2	Scale's calibration coefficient C2	
		C3	Scale's calibration coefficient C3	
	F1.7		Display of extended weight (0/1)	0: When weight is displayed, show standard weight value. 1: When weight is displayed, show extended weight value. When extending, such operations as zeroing, taring, printing and recipe-preparing prohibited. At the same time, Parameter F3.1 is compulsorily setup as "0" (continuous output format of Toledo). When extended weight is on display, theoretically, empty scale corresponds to "0", and full load, "100,000". The display of extended weight is used only when there is a need to observe weight data of higher precision. In normal use, this parameter should be setup as "0".
	F1.9		Modified parameter	Permillage input is adopted, with scope 900-

			selection (900-1100)	1100. 1000 representing non-modified, 1100, max modified number, 900, min modified number, with the stepping number one fail graduation value. This parameter is used to modify systematic deviation of the equipment, making the final output value closer to the actual output value of weight. Generally, optimal output value can be reached by actual regulation on the site.
F2			Scale application setup	
	F2.1		Tare operation (0/1/2)	0: tare operation prohibited 1: tare operation allowed (this set parameter is recommended for use) 2: preset tare allowed
	F2.2		Weight zero operation	
		F2.2.1	Power-up zero (0-10)	Refers to percentage of maximum weight: 0%-10%
		F2.2.2	Push-bottom clear (0-10)	Refers to percentage of maximum weight: 0%-10%
		F2.2.3	Auto zero tracking range (0-4)	The set scope is increments from 0-4. When the set value is 0, zero-tracking function is prohibited.
	F2.4		Dynamic weighing range selection (0-10)	The set scope is increments from 0-10. When the set value is 0, dynamic weighing function of scale is prohibited.
	F2.5		Filter (0-9)	0: light filter 9: heavy filter
	F2.6		Noise filter selection (0-1)	0: prohibited 1: allowed
	F2.7		Beep operation (0/1)	0: buzzer off 1: buzzer on
	F2.8		Sampling speed (0/1/2)	0: 7.5HZ/s 1: 15HZ/s 2: 30HZ/s Note: After this parameter has been changed, the instrument needs to be repowered.
	F2.9		Peak value treatment (0/1)	0: with peak value treatment function 1: without peak value treatment function
F3			Serial port configuration	
	F3.1		Output format selection	! When the weighing terminal is on display of

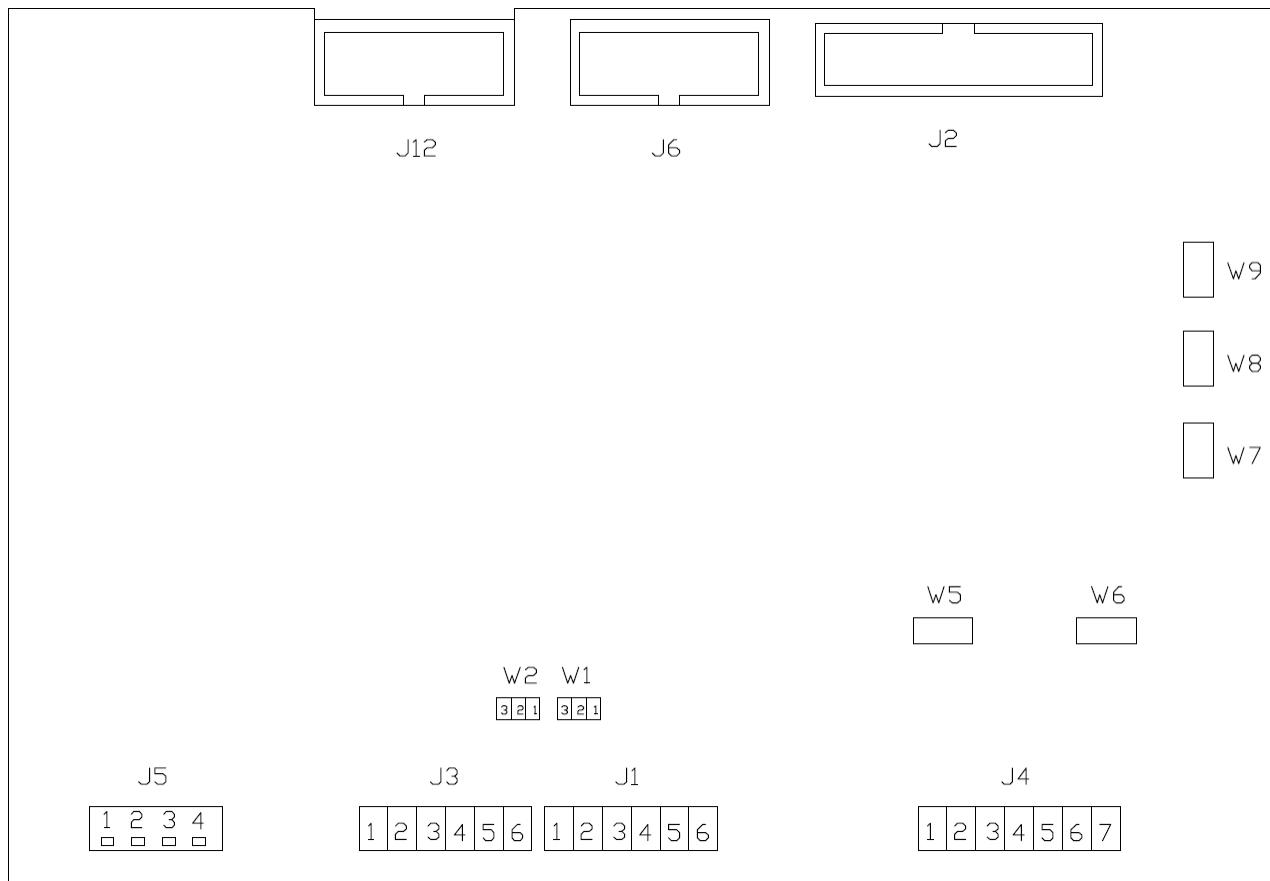
		(0-4)	extended weight (Parameter F1.7=1), this parameter is fixed as "0". 0: continuous format of Toledo 1: format outputting stable data and serial No. (continuous output) 2: order format of Toledo 4: format outputting stable data and serial No. (single output)
	F3.2	Calibration and sending of characters (0/1)	! When Parameter F3.1 is not "0", this parameter is invisible. 0: not sending total of calibration in continuous format of Toledo 1: sending total of calibration in continuous format of Toledo
	F3.3	Baud rate selection (1200-19200)	1200/2400/4800/9600/19200
	F3.4	Communication number selection (0/1/2)	0: 8-digit data place/without calibration place 1: 7-digit data place/odd calibration place 2: 7-digit data place/even calibration place
	F3.5	485 output selection (0/1)	0: 485 serial port output prohibited 1: 485 serial port output allowed
F5		Operation mode selection	
	F5.1	Operation mode (0/1/2)	0: dynamic weighing 1: sorting mode 2: weight-checking mode
	F5.2	Weight display delay time (0.0-9.9S)	After the article has passed through the scale, the weighing data should be kept to ensure that these data could be seen on the site. When the next article comes in or after 0-9.9 seconds (optional), the data will be automatically deleted (by order). Operation modes 1 and 2 are also used as maintaining time of output signal.
	F5.3	Time delay for change back to normal weighing state (00-99S)	If for 1-99 seconds after passing through Photoelectric Switch 1, the goods have not yet reached Photoelectric Switch 2, the instrument will change back to normal weight state. When the parameter appears "00", this function will be invalid.

	F5.4	Alarming relieve mode (0/1)	0: automatic mode (after the goods have all left, it will automatically relieve) 1: manual mode (press [confirm] key to relieve)
	F5.5	Time delay for start of weighing (00-99)	After the goods have passed through Photoelectric Switch 1, delay corresponding time to read and get weight data 00-99 means 0 x 10ms-99 x 10ms.
	F5.6	Input signal response time (0/1/2)	0: 20 millisecond 1: 30 millisecond 2: 40 millisecond
F7		Interface diagnosis group	! When conducting test of interface in this group, the interface to be tested should be disconnected with other systems.
	F7.1	Input interface test	As for L700 weighing terminal, press [confirm] key, the lower displayer will show "00", the user can change the state of input end and observe its corresponding change displayed. (“1” means closed, “0” means disconnected.) Press [return] key to quit interface test.
	F7.2	Output interface test When conducting this test, please be sure the connection equipment of output port is safe!	Press [confirm] key, the lower displayer will show the state of output end, the user can press↑↓ key to change the state of all output terminal, and observe whether or not the state of external output terminal has changed correspondingly. (“1” means output high level, “0” means output low level) Press [return] key to quit interface test.

3.5 Installation and interface connection

Work temperature is -10 to +40°C, and humidity is 10% to 95% (no freezing). Pls. cut off the power doing connection by qualified electrical engineer to guarantee safety.

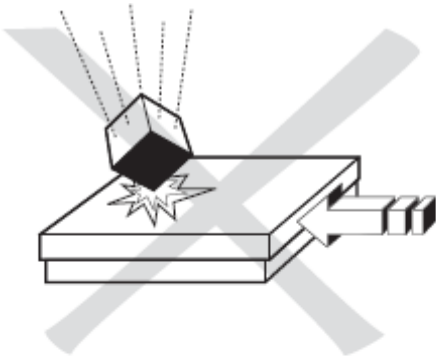
After shifting the infeed/outfeed conveyor in the desired position, the cables must be connected again by a qualified electrician.



4 Transport and storage of checkweigher

You should observe the following important points when transporting the checkweigher or for storing it.

4.1 The transport of the checkweigher



We recommend you not to unpack the checkweigher before you reach the location where the checkweigher is to be installed, as the crate protects it. The weighing belt conveyor is not mounted but packaged separately to prevent the weighing system from getting damaged. Do not exert force on the weighing belt conveyor (avoid shocks; don't let any objects fall on it).

For another transport of the checkweigher please note:

The weighing belt conveyor must never be mounted in place during transport (in order to protect the weigh cell). To avoid damages, we recommend that the weighing belt conveyor be carefully dismantled and that the checkweigher and the weighing belt conveyor be carefully and thoroughly packaged before transporting it.



CAUTION: When the checkweigher is transported with an elevating platform truck or a similar cart, the upper portion of the checkweigher must be held by one –or better two – persons, to prevent it from tilting.

The weight of a checkweigher is considerable, and the centre of mass (gravity) varies corresponding to the customized design. Therefore we cannot recommend which points of the crate to use best for lifting the checkweigher. Proceed carefully to avoid injuries!

More detailed information about the centre of gravity (i. e. specific to the checkweigher ordered) can be found in the annex of this manual.

If the crate has already been removed and the checkweigher must be transported, hold on to the **housing of the checkweigher** (e. g. the switch cabinet) to prevent the checkweigher from tilting. **Never hold on to the conveyors (e. g. weighing belt, infeed or outfeed belt conveyor) or the conveyor motors.**

4.2 How to store the checkweigher, accessory and spare part

- a) Until the checkweigher is to be installed, leave it in its original crate, upright, in a clean and dry room.
- b) Keep all electronic parts (e. g. printed circuit boards) which are supplied in anti-static pouches in the latter until they are used. This will protect them best.

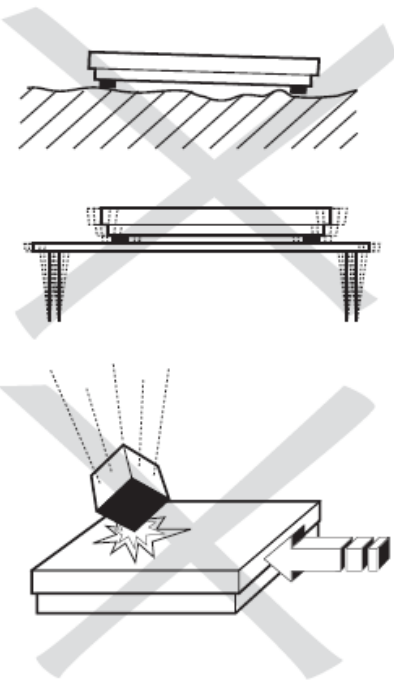
5 Installation

The following points should be observed as they are important when installing or uninstalling the checkweigher.

We recommend you to remove the crate only when the checkweigher is finally in the location where it is to be installed, as the crate protects it.

5.1 The mechanical installation of the checkweigher

The weighing belt conveyor is packaged separately in the works, for better protection of the weighing mechanism against mechanical impact during a transport. For installation please proceed as follows:



- a) Take the checkweigher to the place where it is to be installed.
- b) Choose a place where it is not subject to noticeable oscillations.
- c) Put the checkweigher carefully down and remove the protective crate. Unpack the weighing belt conveyor.
- d) Loose the protection screw on the frame. Avoid any unnecessary force on it. Any tool or article is forbidden to put on the conveyor specially a falling article.
- e) Align the weigh frame so that it is level by precisely adjusting the foot screws; use a water-level as a reference.
- f) Align the infeed and outfeed conveyor and keep a distance with weighing conveyor, i.e. the weighing conveyor must be rolling freely without any contact with other thing.

5.2 The electrical installation

Any wiring or connecting of the checkweigher must be affected by a qualified electrician only!

- a) Proceed according to the wiring diagram to connect the motor in the annex of the operating manual! Make sure the motor cable is free and loosen meanwhile the conveyor could be rolling freely.

Note: pls. use and only use the original cable from the manufacturer.

- b) Before power on, make sure you've checked the information on the brand that the power is suitable and the connection is right by a professional device. At last, use million level resistance meter to check the insulation resistance is more than 20MΩ.

For further information pls. refer to "Safety".

5.3 Disassembly of the checkweigher

For transporting, the checkweigher must be dismantled and carefully packaged. Please proceed in the reverse manner as for installation – see previous sections "mechanical/electrical installation of the checkweigher".

Remove the weighing belt conveyor from the body support and package the weighing belt conveyor carefully (for example, wrap it in several layers of air-cell foil).

To avoid mechanical impact against the conveyor support and prevent it from being used as a handle i.e. lifted, affix a well visible warning sign ("Fragile") to the conveyor support on the weigh cell, e. g. a red paper fixed with adhesive tape.

The weigh cell is a sensitive precision measuring instrument; it must **not be subject to mechanical impact (shocks etc.)**. The weigh cell will be considerably damaged by shocks, irrespective of the direction from where such excessive mechanical impact is exerted on the weigh cell, or by falling down.

Ensure that protruding parts such as light barrier holders and the like are sufficiently protected to avoid bending them or somebody getting injured. Acrylic covers, if any, should be particularly well protected.

Switch off the checkweigher **and have it disconnected from the power supply (mains) by a qualified electrician.**

When the checkweigher or weighing system is equipped ex works with an infeed or outfeed conveyor on separate support frame – or if such a conveyor unit was retrofitted – power is usually supplied to such belt conveyors from electric terminals inside the weigh frame's base.

Therefore the checkweigher/weigh frame must be disconnected from the power supply (mains) before shifting or removing an infeed or outfeed conveyor. The cables leading from such conveyors to the weigh frame must be disconnected by a qualified electrician only.

After shifting the infeed/ outfeed conveyor in the desired position, the cables must be connected again by a qualified electrician.

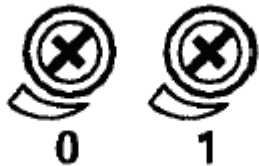
6 Q&A

6.1 How to configure the rejector?

Pls. do it as follow:

Use flat screwdriver to turn two potentiometers. (The original set is turned to maximum.)

Analog control 0



Analog control 1

Analog control 0: the set range is 0.00 to 2.00 seconds.

Setting the rejector delay (time between the ending of weighing and the beginning of the actual rejection)

Analog control 1: the set range is 0.00 to 2.00 seconds.

Setting the rejector pulse duration

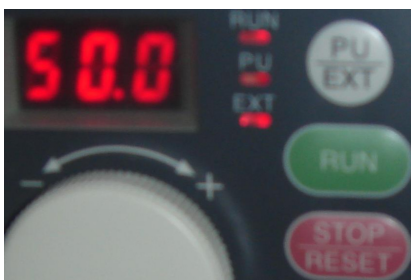


6.2 How to setup the transducer?

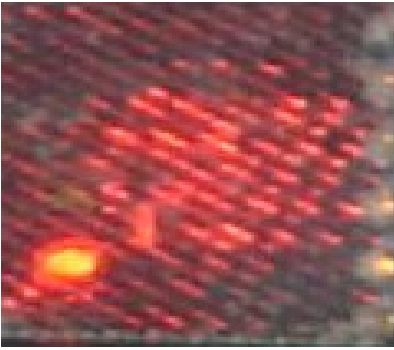
Normally we use Mitsubishi FR-S500 series transducer, pls. setup as follow:

	Original set	Our definition
Accelerate time P7	5s	2s (time from switch-on to normal speed)
Slow down time P8	5s	1.5s (stop time)
Over limit current protection P9	Rating output currency	Field adjustment (when it stops often to protect)
Extension function P30	0	1 (all menu could be viewed)
Speed regulation screw	0	1 (Speed regulation through screw)
Run function P64	0	0 (running signal output)
A,B,C function P65	99	0 (warning signal output)
Operation mode option P79	0	3 (outside control, Speed regulation through screw)

Note: pls. read the operation manual of Mitsubishi transducer to guarantee safety. Other type transducer may have different way to setup.



6.3 How to adjust the light barrier



- c) Check if the red and green light on the light barrier are both bright first and look at the reflector along the light barrier to see if the red light is focus on the center. If not, adjust it until the red speckle appears. (Pls. note that it should be a large speckle instead of a small spot)
- d) If the light sparkles when a product passes through, pls. adjust the light power by the screw on the light barrier as the surface of product is light reflected or penetrated.

6.4 Why is not working after swich-on?



Check if the protection screw is loose unexpected first. If the screw lifts the weighing conveyor, the terminal will fail to show the weight.

6.5 Why does the sensitivity reduce on site?

- a) To get an optimized sensitivity, pls. make sure the 4 screws for protection do not touched the conveyor, the cable is tightened properly and no unexpected component touches the conveyor.
- b) Check if any nut for screw protection touches the conveyor. The sensitivity is greatly affected by foreign body.

Technical changes reserved

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Mettler-Toledo Instruments (Shanghai) Co., Ltd.

No.589 GUI PING ROAD, SHANGHAI, P.R.CHINA

Tel: (86) 21-64850435, Fax: (86) 21-64853351

E-mail: mtcs@public.sta.net.cn

<http://www.mtchina.com>