HI-SPEED
Checkweighing

# 2-Series Weighframe

Operator Manual

METTLER TOLEDO

66086199
(6/2014)

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# Table of Contents

**Chapter** **Page**

# 1 General

This operating instruction manual describes all possible checkweigher functions. The featured functions depend on the version purchased.

The weighing terminal is a component of a modular system. The range of weighframes which can be teamed with the weighing terminal and the extensive range of accessories allow for the setup of a checkweigher or weighing system which optimally meets the user's requirements. The weighing terminal can be mounted to the weighframe or be remote from the weighframe. The remote weigh terminal is ordered separately - please inquire.

## 1.1 Safety Symbols

- ISO 3864 provides a very thorough and concise method of identifying different levels and types of hazards. Your checkweigher will be provided with hazard notification safety labels based on this standard, and on the levels and types of hazards identified in our design.
- Hazard notification safety labels are strategically located at potentially hazardous positions on the checkweigher. This includes the machine, the control, and any auxiliary devices controlled by the checkweigher.
- All hazard notification safety labels should be maintained in good condition and remain legible. They should also be in the language of the personnel using the equipment.
- Should a hazard notification safety label become worn or illegible, contact the METTLER TOLEDO Service department and we will provide replacement safety labels free of charge.

### 1.1.1 Hazard Notification Descriptions (ISO 3864)

Signal Words

| | |
|---|---|
| ⚠ CAUTION | SIGNAL WORD USED TO INDICATE A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN MINOR OR MODERATE INJURY |
| ⚠ WARNING | SIGNAL WORD USED TO INDICATE A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY |
| ⚠ DANGER | SIGNAL WORD USED TO INDICATE AN IMMINENTLY HAZARDOUS SITATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY |

Other Notification

NOTICE

# Hazard Labels: Symbols and Definitions

For symbol definitions, reference EN619

| Hazard Icon | Description | Hazard Icon | Description |
|---|---|---|---|
|  | 1.1 General |  | 1.2 Electrostatic |
|  | 1.3 Crush and Shear |  | 1.4 High Frequency Magnetic Fields |
|  | 1.5 Cutting |  | 1.6 Burning, Scalding by Direct or Indirect Contact |
|  | 1.7 Entanglement |  | 1.8 Hearing Impairment or Other Physical Disorder (Loss of Balance) |
|  | 1.9 Drawing-in, Trapping |  | 1.10 Laser |
|  | 1.11 Impact |   | 1.12 UV Light |
|  | 1.13 Abrasion, Friction |  | 1.14 Radiation |
|  | 1.15 High Pressure Fluid Ejection |  | 1.16 Loss of Stability, Tipping |
|  | 1.17 Slipping, Tripping, Rushing |  | 1.18 Electrical Shock and Arc |
|  | 1.19 Read Technical Manual Before Servicing |  | 1.20 Lift point |

| Hazard Icon | Description | Hazard Icon | Description |
|---|---|---|---|
|  | 1.21 LockOut/Electrical Power |  | 1.22 Read Operators Manual |
|  | 1.23 Wear Ear Protection |  | 1.24 No Pacemakers |
|  | 1.25 Do Not Operate With Guards Removed |  | 1.26 Do Not Expose to Water |

## 1.2 Principle of proper use

This system has been designed with the latest technologies in mechanical and electrical engineering and according to recognized safety rules.

This system must be used only when it is in perfect running order and all safety rules stated in the operating manual are observed. Any malfunction or faults which may affect the safety of personnel must be fixed immediately!

This system is suitable for dynamic weighing, or intermittent/static weighing. It is not intended for any other use. The manufacturer/distributor of the system cannot be held liable for any damages or injuries which result from improper use of the system; in such case the user absorbs the risk.

The intended use of the system 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 the loss of the approval!

## 1.3 Organizational measures

Keep the operating manual near the location where the system is used so that it is always available.

In addition to the operating manual, observe the general safety rules 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 this particular organizational situation – e.g. relating to the organization of work, processes, staff – and extend this operating manual by such rules.

The person who operates or works on the system must have read the operating instructions manual first, in particular, chapter 1 "General, Safety". This is especially important for persons who operate the system.

The person operating the system or working on it should be supervised regularly to ensure that the operating instructions and accident prevention rules are observed.

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

All warning labels and symbols on the system must be kept in good condition (check that no such sign or symbol is missing or illegible). Warning labels can be ordered from the METTLER TOLEDO HI-SPEED service department at (607) 257-6000. There is no charge for replacement warning stickers.

Observe all warning labels and symbols on the system!

If there is a fault code or abnormal performance of the system, which may affect operator safety, the system must be stopped immediately and the responsible person/supervisor must be informed.

Do not modify or redesign the system without the prior consent of METTLER TOLEDO HI-SPEED, as alterations may affect the safety and the warranty. This also applies to the installation or adjustment of safety devices/ guards and to welding or drilling on bearing parts.

Only use METTLER TOLEDO HI-SPEED authorized spare parts.

## 1.4 Selecting qualified personnel

Only allow authorized personnel to operate or use the system.

Only allow authorized METTLER TOLEDO HI-SPEED service technicians to repair or upgrade the system.

Only allow authorized METTLER TOLEDO HI-SPEED service technicians to repair the electrical components of the system.

Personnel using or working on the system must be trained and the responsibilities must be clearly determined (operation, preparation, maintenance of the system).

Ensure that no unauthorized personnel use the system or attempts to do repairs.

The responsibility of the system operator must be clearly determined and must be enabled to refuse any instructions by a third party if such instructions affect the safety.

Personnel who are taught how to use the system, or who are generally shown how to use it as part of their training or job, may use the system only while under supervision.

## 1.5 Safety information on certain operation phases

a) Normal operation

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

Use the system only when all protective devices (e. g. guards, E-stop, noise absorbers) are in their intended locations.

A visual check of the system must be done at least once during a shift to ensure that damage or fault codes can be recognized. Any changes (including changes in the performance of the system) must be reported to the supervisor or technician. If necessary, stop the system and disconnect power.

If the system malfunctions, press the E-stop and disconnect power. Have the fault code cleared as soon as possible.

For starting and stopping the system follow the operating instructions and observe the indicator lights.

Before switching ON the system, make sure that the system will be of no danger to anyone.

b) Special work related to the use and maintenance of the system as well as fault code clearing_

For adjusting, inspecting the system or maintenance, observe the intervals in the operating manual and follow the described steps. When replacing a part or assembly, proceed in accordance with the operating manual. The aforementioned work must be performed by a qualified technician.

Before special work or maintenance is carried out, inform the system operator and the supervisor.

For any work which concerns the system operation, adaptation to production requirements, conversion or adjustment of the 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 system.

If necessary, secure the area around the location where maintenance or repair of the system is being done.

When the system has been switched off for maintenance or repair, you must disconnect the main power supply:

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

Only allow experienced and licensed personnel for lifting heavy objects using a forklift, a crane, or industrial

truck. 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 system or parts of it for climbing or standing on! When maintenance or other work must be done at greater height, use protective means to prevent you from falling. Keep all handles, steps, banisters, pedestals, stages, scaffoldings and ladders clean!

Before cleaning the system with water or another cleaning solution, cover all openings which must be protected against ingress of water/vapor/cleaning solution or use adhesive tape to seal them. 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're finished cleaning.

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

Remember to fasten all screws and bolts which had to be loosened for maintenance or repair!

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

## 1.6 Information on special risks

Electricity

Only allow qualified electrical engineers or technicians to work on the system. The electrical engineering rules and 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 ground and short them out and make sure that any live parts which are near them are insulated.

The electrical parts of the system must be regularly inspected and thoroughly checked. Any loose connections or charred cables must be replaced or repaired immediately. Do not operate unsafe equipment!

Pneumatics

Only persons with 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!

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 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.

Noise

If required, all noise-absorbing elements of the system must be in their proper places during operation of the system.

Transporting the system

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

Allow only licensed experienced operators for the lifting/hoisting process!

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

Use a suitable transport vehicle with sufficient carrying force. After loading secure the load.

Disconnect all power before moving the system to another location.

## 1.7 Safety

Depending on the model, the weighing terminal (when installed away from the weighframe) works with a rated voltage of 230 VAC ±10 % or 115 VAC.

Note: When XE and XS weighing terminals are installed remotely they require 24 VDC power.

Check that the power rating of your checkweigher, or weighframe and weighing terminal corresponds to your power mains before connecting power. Some specially designed weighframes 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. Protective grounding is required. 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 required, according to UL508.

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!

**⚠WARNING**

**Before opening the machine disconnect the power supply!**

**If the power supply of the checkweigher or weighing system is switched ON and OFF from a remote point such as an electrical distribution, fuse box, or the 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 designed for an explosion protected environment (ex) 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 weighframe's base. Therefore the checkweigher/weighframe must be disconnected from the power mains before shifting or removing an infeed or outfeed conveyor. The cables leading from such conveyors to the weighframe must be disconnected by a qualified electrician or technician.

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

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

**⚠CAUTION**

**Checkweigher belt conveyors or other moving parts may be a possible hazard when touched or when long hair or loose clothing – e. g. scarfs, ties or wide sleeves – come in contact.**

**Always keep a sufficient safety distance from moving parts! Be aware that sorting/rejecting devices such as pushers, gates etc. move instantly without warning and therefore can be dangerous.**

The checkweigher must never be used in a moist environment/humid room or exposed to moisture unless it has specified ingress protection (washdown).

In the case of danger, switch the checkweigher OFF and 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 its intentions 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 METTLER TOLEDO HI-SPEED. In most cases the checkweigher can be easily adapted or redesigned to the customer requirements.

## 1.8 Hazardous locations

With the exceptions of those machines having a specific design for hazardous location use, the machine must never be used in a hazardous location (areas with a potentially explosive atmosphere)! See the special identification on such systems/components!

The installation and initial operation of systems in a hazardous location (potentially explosive atmosphere) is not part of METTLER TOLEDO HI-SPEED's normal scope of delivery and related services.

Service must be carried out in accordance with the legal requirements concerning work on electrical systems in potentially explosive atmospheres (e. g. as per FM, ISA, and NFDA regulations) by a qualified electrical engineer or technician.

It's the responsibility of the customer/user to hire a qualified electrical engineer for hazardous area connections. The same applies to all other work which – according to the legal requirements, directives and technical standards, in particular concerning electrical installations in potentially explosive atmospheres – must be carried out by a qualified electrical engineer or technician only.

If a system needs to be serviced in an area with a potentially explosive atmosphere by METTLER TOLEDO HI-SPEED service engineers, the customer/user must ensure that any risk of explosion or other hazard is stabilized before service can be done to the system. If this cannot be ensured, the customer/user may have the machine dismounted by a qualified electrical engineer or technician so that the necessary service work can be done in a non-hazardous location.

**DANGER**

**The standard system must never be used in a hazardous location – e. g. near gases, vapors, or dusts which may explode or burn – since any electrical appliance not having a special design for hazardous location use (explosion protection) represents a considerable risk when used in areas with a potentially explosive atmosphere.**

## 1.9 Important notes concerning the operation of the checkweigher

The weighcell of the weighframe is a very sensitive precision measuring instrument and must be handled with care. Shocks, jamming, or objects falling on the weighing conveyor must be avoided. Never put tools on the weighing conveyor.

A regular product spacing – i. e. package spacing as regular as possible – is a prerequisite for trouble-free weighing.

Read and observe the hints concerning transport preparation, installation, cleaning and maintenance and optional equipment given in the respective chapters of this operating instructions manual.

If the line height of the checkweigher needs adjusting – e.g., the line height of the production line has changed – please contact the METTLER TOLEDO HI-SPEED service department 607-257-6000.

Replacement or dismantling of the weighing terminal, weighcell, or motors must be done exclusively by a qualified METTLER TOLEDO HI-SPEED service engineer. Please contact the METTLER TOLEDO HI-SPEED service department at 607-257-6000.

**DANGER**

**Never loosen or unscrew the conveyors from the baseframe (switch cabinet). Risk of severe personal injuries!**

Material Recycling Note: The modular design of the checkweigher allows for easy dismantling such that the individual parts can be subsequently recycled.

# 2 Transportation and storage of the checkweigher

## 2.1 Moving The Checkweigher

It is the user's responsibility to determine the safest means to transport the equipment. Below is a list of items that you should consider, as a minimum, before moving this equipment. These items are based on our experience, with our transport equipment and our personnel. Your transport personnel may have a different set of knowledge and skills from their experience in your facility.

Proceed slowly, and never take any action from which you cannot apply a reverse action to return to a safe state.

- Before moving the checkweigher system the weigh conveyor should be removed (see Installing the Weigh Conveyor). This system should be moved by the lift points identified by the blue Lift Point labels located on the base frame of the machine (see illustration below). Make sure that lift point locations do not interfere with cabling, tubing or other structures that could be damaged by the weight of the machine.
- Lift points specific to this equipment can be found on the machine assembly drawing located in the drawings section of this manual.
- The lift points identified on the machine are the same used in our factory to lift and transport the machine. These lift points are selected based on the type of equipment we use to lift the machine.
- It is recommended to select lift points best suited to the machine's environment and best suited for the lifting equipment used. It is also recommended that initially the machine is raised slightly off the ground in order to assess stability before raising the machine to full transport height.
- Always consider the path of travel when transporting the checkweigher and consider floor transitions such as slopes and steps. Do not raise the machine above the necessary height to clear obstacles during transport as greater height increases risk.
- When moving the checkweigher always follow workplace safety procedures and the safety guidelines provided by the lifting equipment manufacturer.

**Never** push or drag the checkweigher by the conveyors.

Read and understand all sections of this manual before attempting to move the checkweigher. Observe all posted and printed hazard notifications.

***i*NOTE:**

**NEVER LIFT, PUSH, PULL, DRAG OR CARRY THE CHECKWEIGHER BY THE CONVEYORS. THIS ACTION WILL CAUSE SIGNIFICANT DAMAGE TO THE WEIGH CELL**

***i*NOTE:**

**ALLOW ONLY QUALIFIED FORK LIFT OPERATORS TO MOVE THIS EQUIPMENT.**

Look for this symbol on the machine frame to locate recommended lift points

**After moving, follow the procedures in "Installation Instructions" outlined previously in this manual.**

**The image provided here is to show approximate lift point locations. Refer to the Order Confirmation Drawing specific to your checkweigher located in the back of this manual for suggested lift point locations.**

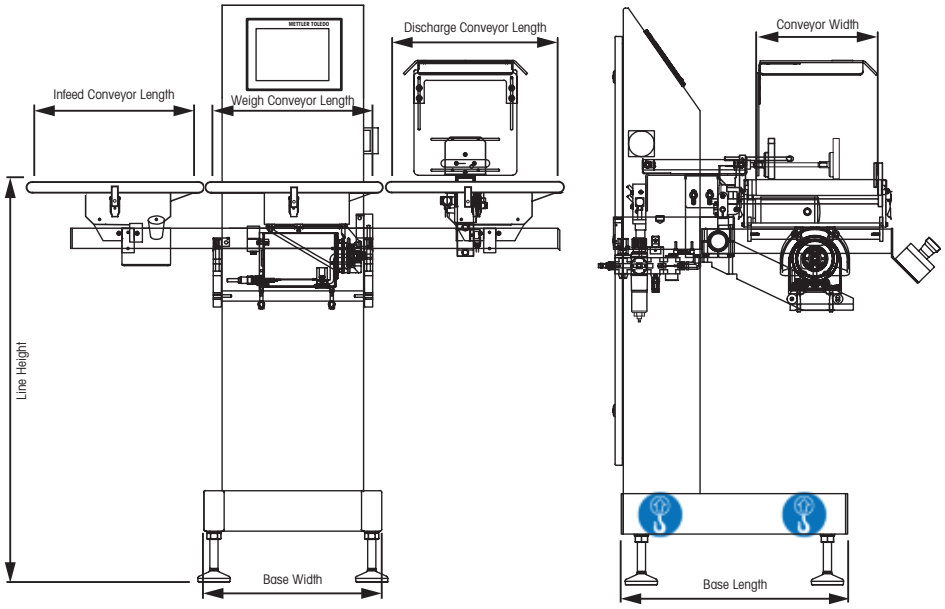



**Figure 2.1: Lift Points**

Keep spare boards, fuses, and power supply assemblies on hand at all times. To place a spare parts order call Mettler-Toledo Hi-Speed at 1-800-836-0836 and ask for Service Parts.

## 2.2 How to store the checkweigher, accessories, and spare parts

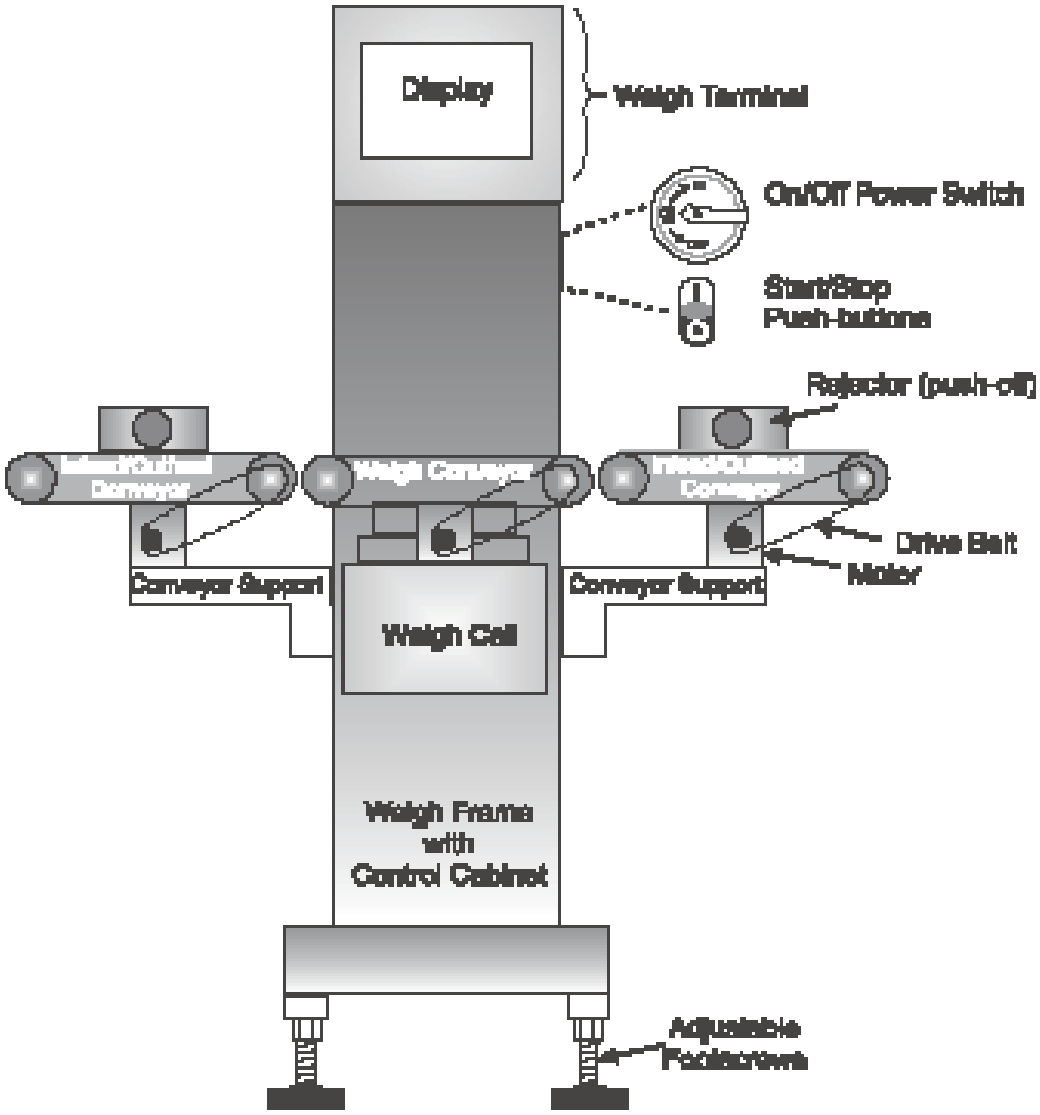
- Until the checkweigher is to be installed, leave it in its original crate, upright, in a clean and dry room.

Keep all electronic parts (e. g. printed circuit boards) in their supplied anti-static pouches until they are used.

# 3 Setup and function

The illustration below shows a typical checkweigher set up. Your checkweigher may be different depending on your specifications (e.g. the start/stop push-buttons for the transport belts and the main power switch may be located elsewhere on the weighframe). If the customer has lightweight packages they may have their own infeed and outfeed conveyor.

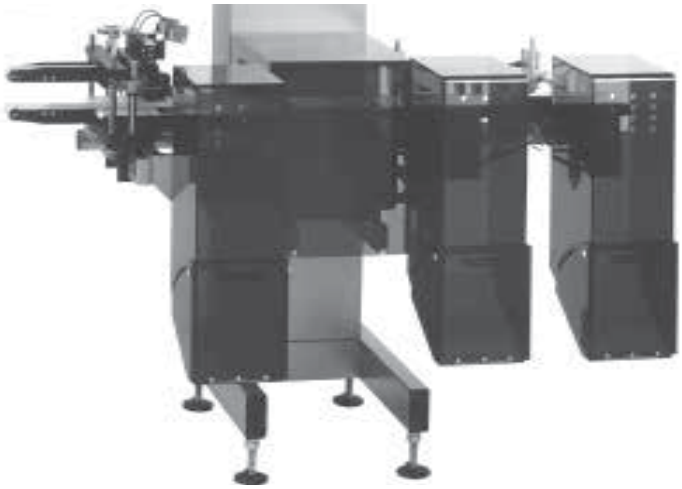
Note: See chapter 4: Installation for information about mechanical and electrical installation.



## 3.1 Weighframe 2 design series

Weighframe 2

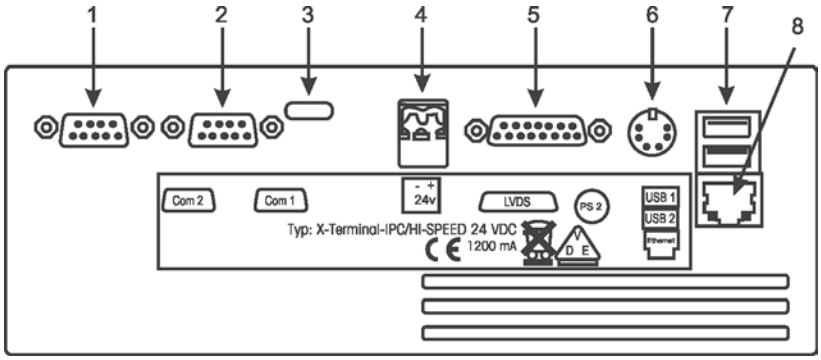
Weighframe 2 with optional draft shield on the weighing conveyor



Weighframe 2 pharmaceutical version with optional top-and-bottom belts and catch bins for rejects

These pictures are only a small portion of the numerous solutions that are possible.

## 3.2 Overview of the interface connections (on the IPC) inside the control cabinet




1. Serial interface COM 1 D-Sub 9 Pins
2. Serial interface COM 2 D-Sub 9 Pins
3. LED Indicator 12V / 5 V
4. 24 VDC
5. HMI (Terminal connection)
6. PS/2 Keyboard connection
7. USB (Qty 2)
8. Ethernet

# 4 Installation

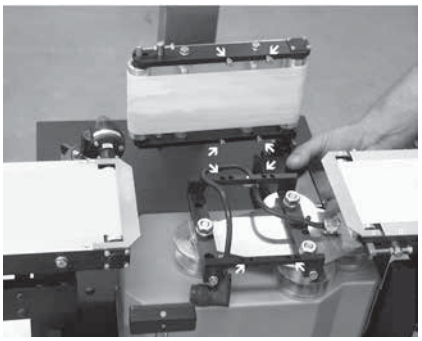
The following information applies when installing or uninstalling the checkweigher. Don't remove the crate until the checkweigher is in its final installation location. The crate protects the system.

Depending on the type of weighcell that is used in the weighframe, and the conveyor dimensions, the design of the mount for the weigh conveyor may vary (i. e. the area beneath the weigh conveyor). See below for the different descriptions for installing or removing the weigh conveyor:

"Version A" is a quick-release latch connection on the weigh conveyor mount. The quick-release latch fastens on the detent (or loosened for transport). See Version A photo on the right.

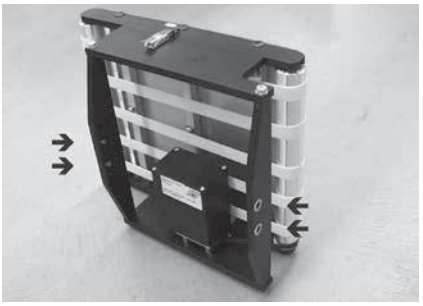
Version "A" quick-release latch

"Version B" is a four (4) knurled knob connection on the weigh conveyor mount. See Version B photo on the right. The arrows point to the connections.



Version "B" four knurled knobs

"Version C" is a four (4) hex-head bolt connection on the weigh conveyor mount. The mount must be connected to the weighcell with the hex head bolts from both sides. See Version C photo on the right. The arrows point to the connections.



Version "C" four hex-head bolts

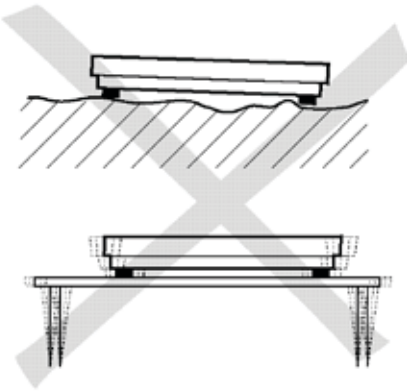
***i*NOTE:** When installing a rejector that has its own base, be sure to bolt the footplate to the floor. Bolting down the rejector cuts down on vibration.

## 4.1 Mechanical installation of the checkweigher

The weigh conveyor is packed separately at the factory before shipping, for better protection of the weighing mechanism while being transported. For installation, please proceed as follows:

1. Take the checkweigher to the installation location. Choose a location where it is not subject to noticeable vibration.
2. Put the checkweigher carefully down and remove the protective crate. Unpack the weigh conveyor.
3. Align the weighframe so that it is level by adjusting the footscrews; use the bubble level located in the framework. Afterwards tighten the lock nuts of the footscrews. Bolt the footcups of the footscrews to the floor; breakthrough holes are provided in the footcups for this purpose.

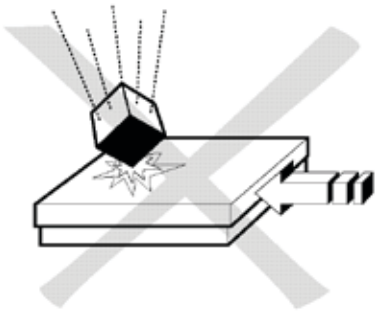
Continue according to description 4.1.1 (A) or 4.1.1 (B) or 4.1.1 (C).



### 4.1.1 (A) Mechanical installation of the checkweigher with latches – version A

4. Conveyor mount version "A" has a quick-release latch:
   Place the weigh conveyor on the weighcell, observing the four guide pins. Don't use excessive force.

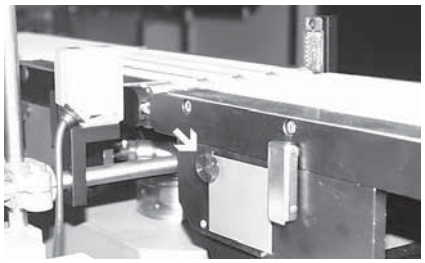
**NEVER lift by the mounted conveyor weighcell or the conveyor.**



***i*NOTE:**

**Don't place any tools or other objects on the weigh conveyor and don't let anything drop or fall on it.**

5. Loosen the knurled head screw of the cover plate covering the motor pulley, then remove the cover plate. See arrow in the figure to the left.
6. Put the drive roller's toothed belt carefully on the motor pulley.

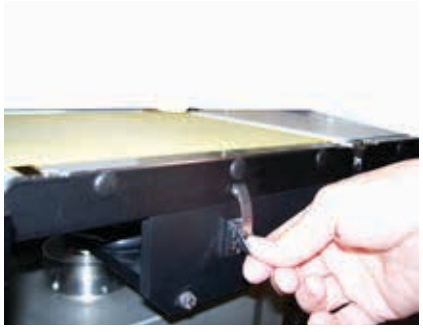


Cover plate of the timing belt

***i*NOTE:**

**Don't bend the belt excessively there is a risk of fabric rupture.**

7. Check that the weigh conveyor is properly placed on the weighcell (observe the four guide pins) and secure the conveyor with the quick-release latch. See figure on the left.
8. Put the cover plate back on and make sure it covers the motor pulley and then tighten it with the knurled head screw.
9. Make sure that the infeed and outfeed conveyors are still aligned so that they do not touch or rub the weigh conveyor.

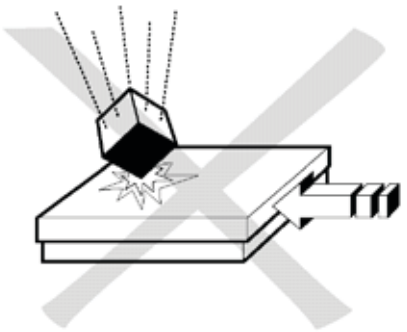


Quick-release latch

***i*NOTE:** The weigh conveyor must not rub or touch anything else.

10. Connect the compressed air hose to a suitable pneumatic system (approx. 90 PSI). Check the manometer indication: 140 PSI maximum.

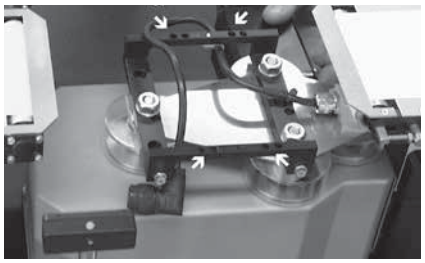
### 4.1.1 (B) Mechanical installation of the conveyor with four (4) bolt connections – version B



4. Conveyor mount "B" is connected with four (4) M5 knurled knobs: Unscrew the four (4) M5 knurled bolts (for attaching the conveyor to the weighcell) from the conveyor; they have been put here for transport.
5. Place the weigh conveyor on the weighcell, observing the four guide pins under the conveyor.

**iNOTE:**

**Don't place any tools or other objects on the weigh conveyor and don't let anything drop or fall on it.**



Conveyor mount with four holes; motor connector cable (or similar view)

6. Attach the weigh conveyor to the mount from below – through the four holes in the mount – with the four (4) M5 knurled knobs (see figure on the left, note arrows.) When tightening the bolts avoid excessive force.

**NEVER lift by the mounted conveyor weighcell or the conveyor.**

7. Plug the weighcell cable into the weigh conveyor motor and turn the ring of the plug until it is tightened.

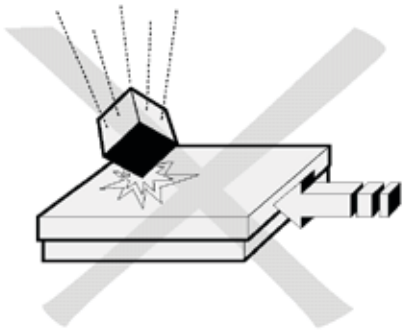
8. Make sure that the infeed and outfeed conveyors are still aligned so that they do not touch or rub the weigh conveyor.

**iNOTE:** The weigh conveyor must not rub or touch anything else.

9. Connect the compressed air hose to a suitable pneumatic system (approx. 90 PSI). Check the manometer indication: 140 PSI maximum.

### 4.1.1 (C) Installation of the weigh conveyor with two hex head bolts on each side – version C

4. Conveyor mount design "C" (conveyor mount with four (4) hex head bolts): Unscrew the two right and the two left M6 hex head bolts – they will also be used for connecting the weigh conveyor to the weighcell – from the transversal plate on top of the weighcell; they have been screwed in for transport. Move the motor connection cable aside.

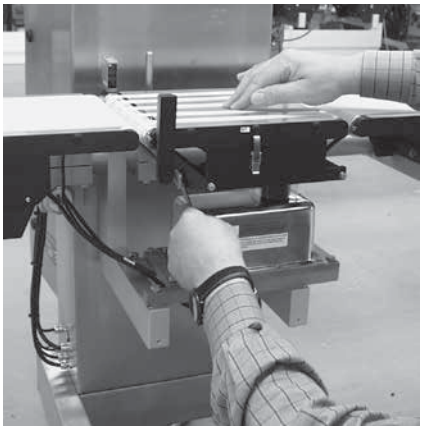


5. Before delivery, the weigh conveyor was mounted to the conveyor mount by a quick-release latch. Place the complete weigh conveyor carefully onto the top plate of the weighcell.

***i*NOTE:**

**Don't place any tools or other objects on the weigh conveyor and don't let anything drop or fall on it.**

Make sure the conveyor mount fully rests on the top plate of the weighcell. Light pressure with your fingertips to the center of the weigh conveyor is acceptable while tightening the hex bolts (see figure on the left).



Make sure the mount fully rests on the weighcell when tightening bolts

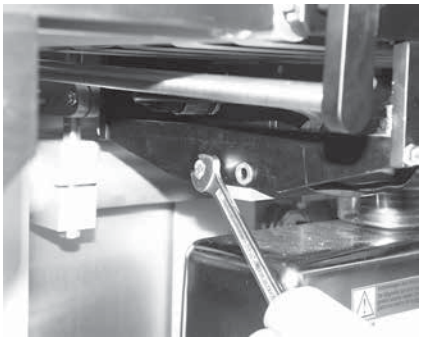
6. Screw the four (4) M6 hex head bolts **(two (2) on each side)** through the holes in the weigh conveyor mount, place the weigh conveyor mount on the weighcell (see figure to the right.) When tightening the bolts avoid excessive force.

**NEVER lift by the mounted conveyor weighcell or the conveyor.**

7. Plug the weighcell cable into the weigh conveyor motor and turn the ring of the plug until it is tightened.
8. Make sure that the infeed and outfeed conveyors are still aligned so that they do not touch or rub the weigh conveyor.

***i*NOTE:** The weigh conveyor must not rub or touch anything else.

9. Connect the compressed air hose to a suitable pneumatic system (approx. 90 PSI). Check the manometer indication: 140 PSI maximum.



Two of the four lateral holes in the conveyor mount (or similar)

## 4.2 Electrical installation

Any checkweigher wiring must be done by a qualified electrician only!

**iNOTE:**

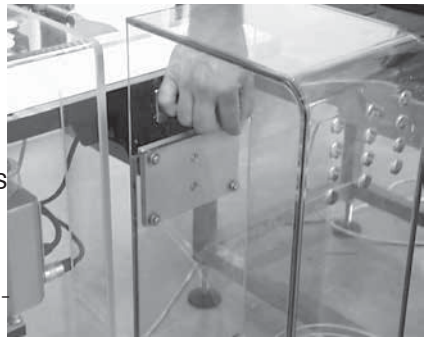
**Check that the power rating of your checkweigher corresponds to your power supply before connecting power. Some specially designed weighframes must be connected to 400 V three-phase current (5-wire case with N and PE).**

## 4.3 How to fit optional equipment/ accessories

Draft shield for the weigh conveyor (optional): Unpack the draft shield and place it over the weigh conveyor. Make sure the shield does not touch the conveyor itself.

Catch bin (optional - for side reject only): To install a catch bin for rejected products, proceed as follows:

- Unscrew the four (4) M5 or M6 hex-head bolts using an 8 mm or 10 mm wrench. Remove the bolts from the mount plate. Place the washers and bolts in a safe place.
- Hold the catch bin (or have another person hold the bin) against the mount plate so that the four holes on the back of the bin line up with the four threaded holes in the mount plate.
- First place the washer on the hex-head bolt then screw the hex-head bolt through the holes in back of the bin into the threaded holes of the mount plate. Tighten the bolts with a wrench. See photo on the left.



Installing a catch bin for rejected products

**iNOTE:** Don't over tighten - there is a risk of cracking the acrylic material.

## 4.4 Checkweigher disassembly for transport or moving

***i*NOTE:**

**Switch OFF the checkweigher and disconnect the main power supply by a qualified electrician.**

If the checkweigher is equipped with (ex) hazardous protection and the infeed or outfeed conveyor is on a separate mount frame, power is usually supplied to the belt conveyors from electrical terminals inside the weighframe's base.

**The main power supply must be disconnected from the checkweigher or weighframe before moving or removing an infeed or outfeed conveyor. The cables leading from the conveyors to the weighframe must be disconnected by a qualified electrician only.**

After moving the infeed/outfeed conveyor to the desired position, reconnect the cables - by a qualified electrician.

**Before transporting the checkweigher, it must be dismantled and carefully packaged.** Please proceed in the reverse direction of installation – see section 4 regarding the mechanical and electrical installation of the checkweigher. Loosen the weigh belt conveyor's bolts and cable, remove the weigh belt conveyor from the weighcell and pack the weigh conveyor carefully by wrapping it in several layers of bubble wrap.

On the Version "B" conveyor (conveyor body attached with four (4) hex-head bolts): screw the four hex-head bolts of the weigh conveyor mount back into the four threaded holes in the conveyor, so as not to lose them.

To avoid mechanical impact against the conveyor mount and to prevent it from being used as a handle, place a visible "Fragile" warning sign to the conveyor mount on the weighcell, (e. g. Red paper with "Fragile" affixed with adhesive tape).

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

Ensure that options such as light barrier holders, rejectors, etc. are sufficiently protected to avoid bending them or causing personal injury.

Optional acrylic draft shields or catch bins should be particularly well protected.

# 5 Cleaning and maintenance

**Note:** Turn OFF the power before cleaning or servicing the checkweigher.

## 5.1 Visual check and cleaning of the checkweigher

***i*NOTE:**

**Make sure the conveyor and motor are at room temperature before wiping with a damp cloth. Cleaning a hot checkweigher will cause damage.**

For cleaning the weighframe and the weighing terminal, use mild, non-abrasive detergents only. Never use strong solvents, pure alcohol, concentrated acids, or bases.

Wipe with a soft, moist cloth using a mild solution of household detergent and water.

Be particularly careful when cleaning the weighcell (and the weighing conveyor) in order to avoid damaging the weighcell and to prevent moisture from penetrating it.

## 5.2 Visual check and cleaning of light barriers

• Weekly inspection recommended

Always keep light barriers (photoeyes, photocells and reflectors, etc.) clean. Dust, dirt, or condensation on the optical parts may cause malfunctions. If needed, wipe with a soft, lightly moist cloth or a Q-tip.

## 5.3 Visual check and cleaning of gaskets/seals

• Monthly inspection recommended

Visually check the seals of covers such as doors and flaps, or gaskets of optional indicator light glasses (caps). Have them replaced when necessary – to prevent moisture and dust from penetrating into the checkweigher.

## 5.4 Compressed air supply check

• Weekly recommended inspection (visual inspection, plus check external air system)

Compressed air must always be clean and dry; otherwise the function of pneumatic parts (e. g. reject devices such as pushers or swing gates) may be affected and cause excessive wear.

Also regularly check the pressure hose leading to the checkweigher. Replace damaged or worn hoses immediately.

Check the manometer for correct pressure. It should be 90 PSI (140 PSI maximum).

• Monthly inspection recommended

Check the inspection glass of the water separator (at the compressed air inlet of the machine) and drain the condensation which may have accumulated inside:

1 Turn off the compressed air supply.

2 Remove the drain screw (located at the bottom of the inspection glass).

3 After draining, put the screw back in and tighten it by hand.

## 5.5 Belt conveyor check

- Daily recommended inspection (visual inspection)

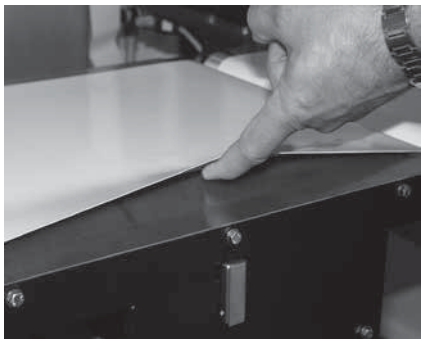
Keep the transport belts, and transition plates (if any) between conveyors, clean at all times. Wipe them with a soft, moist cloth using a mild household detergent and water. This helps to keep the top-plates under the belts clean and smooth.

The belt conveyors do not require lubrication.

Make sure that the transport belts do not touch or rub against any guards or transition plates (dead-plates located in the transition zones between conveyors – if any, depending on the design).
If the running transport belts rub against something, this will cause excessive wear and vibration which may have a negative effect on the measurement accuracy. If guards are fitted, ensure that they are in a good condition and in proper position.

Check the transport belts daily to ensure that they are in good condition. Replace worn transport belts immediately (see below).

- Weekly recommended inspection



**Sufficiently tensioned belt**

Check the transport belts weekly for sufficient belt tension.

Soft elastic belts "rubber belts" or belts of this kind cannot be tensioned with the belt tensioners (since the belts would elongate). Soft elastic belts must be replaced when they show noticeable marks of wear or loss of elasticity.

Most transport belt types expand a little during use. Two hints for checking the belt tension:

With the belt conveyors switched off, try to put the tip of a finger under the edge of the belt (at approx. halfway between its pulleys); when only the very edge of the belt can be lifted off the top-plate underneath
this means that the belt tension is still sufficient.

**Still sufficiently tensioned belt**

A clear indication of too much slack is that the belt is slipping with normal loads.

If the belt needs to be tensioned, use the lateral tensioners to adjust it. This will ensure that there is no more slip when the belt conveyor is loaded with an object that represents a normal load.

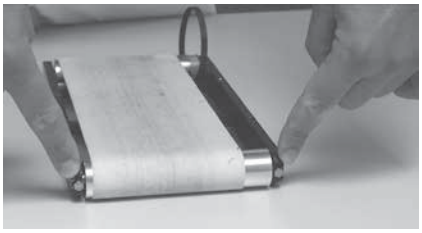
***i*NOTE:** Do not overtension the belt. If the belt is overtensioned, it will result
in excessive belt wear and the bearings in the drive pulley and roller pulley.

Always adjust the tensioners to the same extent, so that the belt is centered and runs straight . Make sure there is no skewing when the belt runs.

Weigh conveyors with version "C" (four connection hex-head bolts) have a gearhead motor which is directly coupled with the shaft of the weighing conveyor (so there is no timing belt to replace).

### 5.5.1 How to tension the transport belt

For tensioning a belt, follow the steps below **(Not required to remove conveyor)**:

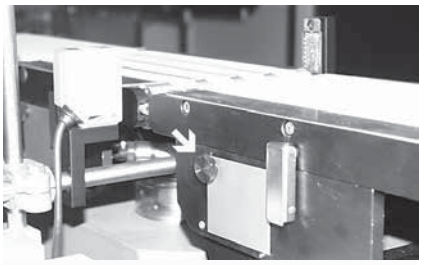


- Turn each of the two tensioning screws – see figure on the left – to the same extent clockwise (begin with one full turn for each screw). This increases the transport belt tension as the pulley is pulled outward a little further by the tensioning screws. Repeat this step if necessary.

**NOTE:** You must tension both sides of the belt to the same extent - otherwise the belt will not be centered and when the conveyor is running, the belt will not run straight.

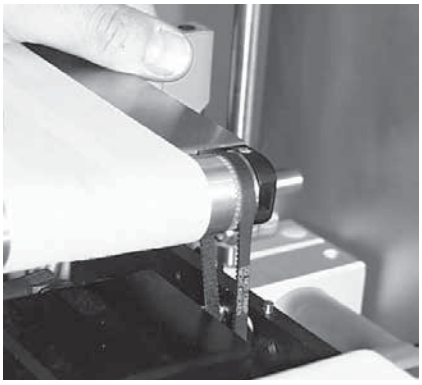
#### 5.5.1.1 How to replace a transport belt

To remove the transport belt, begin by removing the conveyor from the framework:

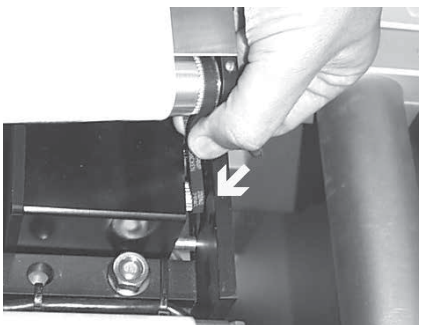


1 If there is a draft shield on the conveyor, remove it.
2 If there is a transition plate (dead-plate) between the weigh conveyor and infeed/outfeed conveyor, unscrew and remove the plate.
3 Loosen and unscrew the knurled screw of the motor cover . See the arrow in the figure on the left. Remove the cover plate.

4 To release the conveyor mount, lift the latch (pull on bottom edge) on both the operator side and the rear side of the conveyor and unhook them. See the figure on the left.

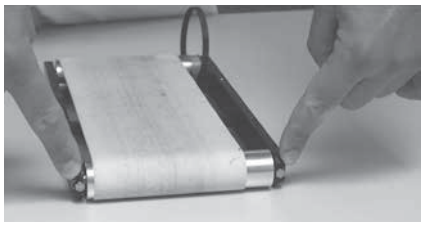


5 Lift the conveyor vertically to take it off the centering pins of its mount by several centimeters (i. e. as far as the timing drive belt allows).
6 Hold the conveyor with one hand so that the timing belt pulley of the drive pulley (in the conveyor) is directly above the motor's timing belt pulley.



7 With the other hand, pinch the timing belt together (toward the middle) to facilitate removal, and take the timing drive belt off of the motor timing belt pulley. See the arrow in the figure opposite.

**NOTE:** Be careful not to bend the timing belt excessively as it could rupture or break the belt fabric.



- Place the conveyor aside (on a scratch-resistant, clean surface).
- Loosen the belt tensioners by turning the two tensioning screws counter-clockwise to the same extent until the transport belt is noticeably slack. See figure on the left.

- Stand the conveyor on edge (with the timing belt facing down) so that the two pulleys are vertical (i.e. drive and idle pulleys).
- Carefully move the transport belt upwards until it can be taken off, but make sure that the two pulleys do not fall off the conveyor body as you remove the transport belt, since they are only loosely held in the side rail. The pulleys must not "hit or drop" on the surface as they are precision parts.
- Proceed in the reverse order for replacing a new transport belt. For tensioning, see page 5-3 section 5.5.1 "How to tension the transport belt".

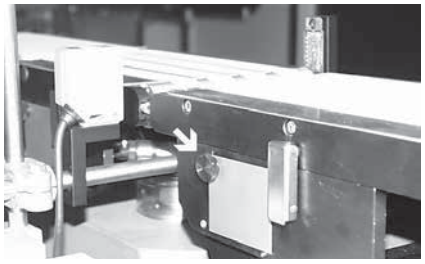
### 5.5.1.2 How to replace a drive pulley or an idle pulley

**If one or both of the pulleys must be replaced, please proceed in the same manner described on page 5-3 section 5.5.1.1 " How to replace a transport belt".**

1 After the transport belt has been taken off, the pulleys can be easily removed.

2 Insert the new pulley(s), put the transport belt back on and install the conveyor back in place, see page 4-1 section 4 "Installation".

### 5.5.2 Check and tensioning of the timing belt



- Inspection is recommended every 250 hours of operation

Depending on the average operating time of the checkweigher, check the condition and tension of the timing drive belt once a month or every 250 operating hours.

- Loosen and unscrew the knurled screw of the lateral cover, giving access to the timing belt pulley (motor disk) and timing belt. See arrow on the figure to the left. Remove the cover plate.

Make sure that the timing belt does not rub against anything and that no teeth are missing at the inner side of the timing belt. (Otherwise excessive wear and vibrations would be caused that may affect the weighing accuracy.) Frequently check covers and guards, if any, to ensure they are in good condition and in their proper positions. Replace worn timing belts.

- For maximum life of the timing drive belt, the timing belt must not deflect by more than 2 mm, but at least 1 mm in its middle (halfway between the two belt pulleys).

If the timing belt needs tensioning, proceed as follows:

1 Loosen the three M4 hexagon socket-head screws by one or two turns (attachment of the motor) – see the arrows in the figure on the left.

2 Displace the motor sideways until the correct belt tension has been obtained. See above.

3 Finally tighten the three M4 hexagon socket-head screws.

### 5.5.2.1 How to replace the timing drive belt (does not apply to "C" connector)

To replace the timing drive belt, remove the conveyor (and proceed as described above for the transport belt replacement).

- Stand the conveyor on edge (with the timing drive belt on top).
- Pull the upper end of the drive pulley out of its support and move the pulley a little upward. Remove the timing belt.
- Put the new timing belt over the timing belt pulley at the drive pulley end, then put the drive pulley back in place (i. e. in the mount) .
- Finally, install the conveyor, install the conveyor back in place, see page 4-1 section 4 "Installation".

***i*NOTE:**

**Replacement of a motor, weighing terminal, or weighcell must be done by a qualified METTLER TOLEDO HI-SPEED service technician.**

**⚠WARNING**

**Never loosen or unscrew the conveyors from the baseframe (switch cabinet). Risk of severe injuries!**

# 6 Modes of operation

Note: You will find information about "Package changeover" with regard to the weighframe in the next chapter and with regards to the weighing parameters (product settings etc.) in the associated X-series control manual.

## 6.1 Start of production

- Turn on the checkweigher with its main power switch.
  (In cases where the power supply for the checkweigher is switched on and off from a remote location, switch on the checkweigher by use of the control system. Observe the safety regulations!)
- After the X-series control starts up, check that the correct article is active (i.e. article memory location) – otherwise choose it (please refer to the weighing terminal manual).
- Press the conveyor START push-button (located on the weighframe) to turn on the conveyors. (Weighframe designs for external control of the conveyor belts allow the conveyors to be switched on and off from a remote point – observe the safety regulations!)

## 6.2 End of production

- Press the conveyor STOP push-button (located on the weighframe) to turn off the conveyors. (Weighframe designs for external control of the conveyor belts allow the conveyors to be switched on and off from a remote point by use of the respective control system.)
- Turn off the checkweigher by use of its main power switch.
  (In cases where the power supply for the checkweigher is switched on and off from a remote location, switch off the checkweigher by use of the control system.)

## 6.3 Checkweigher status after a power failure

Power failure (main power supply outage or power surge)

After a power failure, the conveyor weighframe belts remain stopped. The conveyor doesn't startup automatically when the power is restored.

After power is restored, proceed as in "Start of production" (see page 6-1 section 6.1" Start of production").

**Compressed air supply**

Applies only to weighframes with the optional electronic pressure monitoring device – see page 10-1 section 10 "How to set the optional pressure monitoring device".

When the air pressure drops below the "lower limit value" or when there is a complete failure of the compressed air supply to the checkweigher, an error message appears on the weigh terminal's display screen; and depending on the configuration, this message can be accompanied by a stop of the belt conveyors (conveyor shutdown) and/or an optional alarm signal (such as a warning light or alarm horn).

Checkweighers without this option (electronic pressure monitoring device) neither monitor the pressure of the compressed air nor give any alarm message etc.

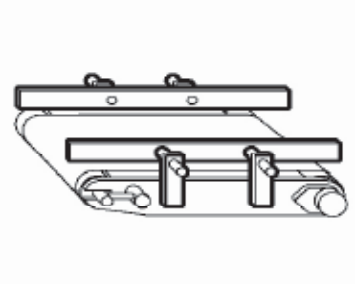
Note: Be aware that checkweighers with an "emergency E-stop push-button" will also interrupt the compressed air supply in the checkweigher when you switch off the electric system by use of the E-stop.

# 7 Optional equipment, package changeover

Depending on the checkweigher, the dynamic weighframe's design can have a combination of different options and accessories. The information below describes the correct adjustment, cleaning and maintenance of optional equipment.

Beside the mechanical adjustments described in this chapter, the changeover to another package needs to be selected on the X-series weigh controller. For weighing a new package (for which data hasn't been setup yet) the package data must be entered first; see page 5-2 chapter 5 "Additional Package Setup" in the X-series weigh control manual.

## 7.1 Guide rails (optional)



The lateral guidance of packages can be achieved by adjusting the lateral guide rails. The knurled head screws or clamping levers of the guide rails can be loosened and adjusted to the desired position and then tightened again. In cases where there is a guide rail at either side of the conveyor make sure that the distance (pass width) between them is kept sufficient for the package size.

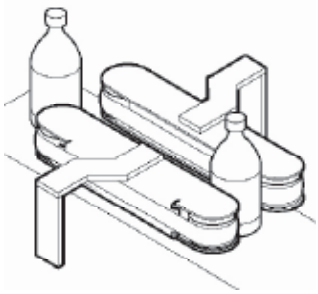
Cleaning and maintenance:

- Check weekly that the guide rails are clean and that all knurled head screws or clamping levers are tightened.

  While production runs, check that the guide rails are in their proper position and that any incoming products do not hit against the front end of the rail; such shocks may damage the products and also affect the weighing accuracy. If articles are hitting or dragging along the rail, correct the rail position or clean the guard rails (see above for adjusting the guide rails).

## 7.2 Side transport belts (optional)

Side transport belts are adjusted so that they can seize and transport the products without deforming them (and move them parallel to the conveyor outfeed). The clearance width between the side transfer belts must be adjusted so that there is no slip between the product and the side transfer belts.



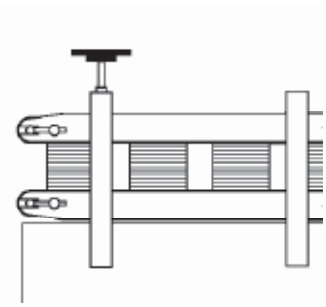
**Cleaning and maintenance:**

- Check weekly that the side transfer belts are clean and don't show any signs of wear. To clean them, switch off the conveyor and wipe them with a clean damp cloth.

To replace worn or expanded belts, call METTLER TOLEDO HI-SPEED Service at 607-257-6000.

## 7.3 Top and Bottom Belt – usually in conjunction with "open flap detection" (optional)

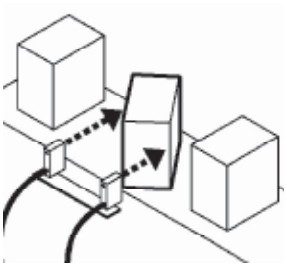
Turn the handwheel of the top and bottom belts to adjust the product clearance (pass height) between them, so that the products will be properly conveyed without being squeezed. The clearance between the top and bottom belts must be small enough to prevent the product from slipping between the belts.



**Cleaning and maintenance:**

- Check weekly that the top and bottom belts are clean and do not show any noticeable wear. To clean them, switched off the conveyors then wipe with a clean damp cloth.

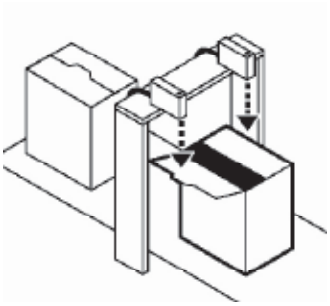
## 7.4 Askew package detection (optional)



Slightly loosen the knurled knobs of the two light barriers so that you can adjust them to the length of the package's edge parallel to the conveyor i. e.g. the length of a package running straight. The package must not interrupt the light beams of both light barriers simultaneously. A package which runs askew to the transport belt looks wider than normal and will interrupt the beam of both light barriers at the same time. Tighten the knurled knobs of the light barriers.

To replace worn or expanded belts, call METTLER TOLEDO HI-SPEED Service at 607-257-6000.

## 7.5 Open flap detection (optional)



Turning the two knurled wheels will adjusts a light barrier. You can adjust the light barriers (photoeyes) transverse to the conveyor according to the length of a correctly closed cardboard box. Adjust the two light barriers so that a closed cardboard box will not interrupt the light beam of either light barrier. Open flaps make the box wider or longer than normal (depending on where the light barriers are positioned) and will interrupt the beam of at least one light barrier.

Note: If the line height of the checkweigher needs to be modified, contact METTLER TOLEDO HI-SPEED Service at 607-257-6000.

# 8 Weighframe technical data

| | |
|---|---|
| Material of the standard design | Framework, control cabinet and pillar made of stainless steel, custom versions available - inquire. |
| Ingress protection of the weighframe | IP54 (dust and water) |
| Compressed air connection | 1/4" |
| Compressed air requirement | 90 PSI (140 PSI maximum) |
| Operating temperature | 0 to +40 °C |
| Noise emission of the checkweigher | Less than 70 dB (A) |
| Electrical ratings of the weighframe | 230/115 VAC ±10%, 50/60 Hz, single-phase |
| Power consumption | Approximately 250 W |

## 8.1 Weighing functions

| | |
|---|---|
| Main function | Dynamic weighing (weighing and conveying) |
| Secondary function | Static weighing |

# 9 Index

## T



## W

# 10 How to set the optional pressure monitoring device

The pressure monitoring device is located on the maintenance unit (filter-regulator) i. e. near the compressed air inlet of the weighframe. This electronic device can be modified by re-programming it. See description below.