



About This Document

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1 Introduction

In this manual, the METTLER TOLEDO Product Inspection solution, including all of its components, is referred to as the "equipment".

Before installing, commissioning, operating, or maintaining the equipment, you must:

- Carefully read the entire manual.
- Understand the meanings of all hazard notifications and hazard labels attached to the equipment.
- Pay particular attention to all safety information in all documents supplied with the equipment.

Keep this manual within reach for easy access and reference.

If you lose this manual, provide the information on the nameplate and reorder the manual from METTLER TOLEDO Service.

1.1 Original Instructions and Translations

This document is the Original Instructions (written in English). If the Original Instructions are translated into the country's official language, both the translation and the Original Instructions will be included with the technical documentation. If you have a question about the intended meaning of any translated text, consult the Original Instructions.

1.2 Additional Documents

The following additional documents may be included with your equipment:

- Operator Manual
- Technical Manual
- Declaration of Conformity
- Wiring diagrams and technical drawings
- Spare parts list
- Supplier documentation

1.3 Contacting METTLER TOLEDO Service

Contact METTLER TOLEDO Service, using the link ► <http://www.mt.com/contact>, about the following products and services:

- Start-up support
- Commissioning
- Performance verification and audit services to certify that your equipment is maintaining its performance levels
- Genuine parts and accessories that METTLER TOLEDO supplies
- Emergency repairs and support
- Service contracts customized to your needs
- Customer training

When you contact METTLER TOLEDO Service, have the following information available, if applicable:

- METTLER TOLEDO order number and date
- Equipment name, model, or type
- Serial number
- Production line name
- Software version
- Precise wording of the displayed error message or the detailed fault description
- Pictures or videos of the part or problem

1.4 Warranty

For information on warranty, refer to the official METTLER TOLEDO terms and conditions at:

► http://www.mt.com/us/en/home/site_content/legal/commercial_terms.html.

1.5 Manufacturer Maintenance

In case of any worn or damaged component, contact METTLER TOLEDO Service.

2 Important Safety Information

All information related to safety in this manual is important. The information in this chapter is general. There is other important safety information throughout the manual that you must read and understand.

2.1 Intended Audience

Type of Manual	Definition of Manual	Intended Audience	Definition of Intended Audience
Operator Manual	The Operator Manual is for all personnel who operate the equipment. It is an overview of the equipment and depicts its functionality.	Operator	An operator is a person who performs acts that are routine, repetitive, and integral to the use of the equipment for production, and has access only to areas which do not require tools, or higher security levels, where routine, repetitive and Integral are defined as follows: Routine - performed as part of a regular, basic course of procedure; Repetitive - repeated regularly as part of the production process or cycle; and Integral - inherent to, and be performed as part of, the production process.
Technical Manual	The Technical Manual contains information and instructions for installation, operation, use, maintenance, troubleshooting, parts list support, and training requirements. It may also serve as a reference for METTLER TOLEDO service technicians.	Technical person	A technical person is a person qualified with higher levels of training, reasoning, judgment, responsibility, and authority, who performs tasks that are not necessarily routine, and has access to areas requiring tools or higher security levels. A qualified person is a person who, by possession of a recognized degree or certificate of professional standing or by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve problems relating to the subject matter and work.

2.2 Safety Labels and Notice Labels

The ISO 3864 safety labels are installed at potentially hazardous areas on the equipment. They give special safety-related notifications. The locations of these labels are given in the drawings supplied with your equipment. There are three types of safety labels:

- Hazard notifications
- Mandatory procedures
- Prohibitive procedures

Additionally, **NOTICE** labels may appear on your equipment.

The meanings of the different kinds of safety labels are explained in the following sections.

Before you transport, install, operate, or work on the equipment, find out about the location and meanings of the safety labels. Maintain the labels so that they are clear of obstructions and are readable. Do not remove any labels. Replace any label that is no longer readable.

2.2.1 Hazard Notifications

A hazard notification consists of the following:

- Hazard alert symbol (yellow triangle with black symbol)

- Signal word (**DANGER**, **WARNING**, or **CAUTION**)
- Special notifications related to the hazard (as required)

The hazard severity panels are attached next to the labels for the hazard alert symbols on the equipment.

2.2.1.1 Definitions of Hazard Severity Panels

Hazard severity panels describe the level of risk of a particular hazard. The background color shows the risk as shown in the following table. According to ISO 3864, a hazard severity panel can be used as an alternative to a signal word. The labels on the equipment may contain both options. In this manual, however, hazard severity panels are always used together with their signal words. The following definitions are based upon the ISO 3864 definitions.

	(red): This hazard severity panel indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	(orange): This hazard severity panel indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	(yellow): This hazard severity panel indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

2.2.1.2 Meaning of Hazard Alert Symbols

The following hazard alert symbols may appear on your equipment.

	Crushing
	Shearing
	Cutting
	Entanglement
	Drawing-in, trapping
	Impact
	Ejection of parts
	Abrasion, friction

	High pressure fluid ejection
	Loss of stability
	Slipping, tripping
	Electrical shock
	Electrostatic
	Non-ionizing radiation
	Permanent magnetic fields
	Burning, scalding by direct contact, flames or thermal radiation
	Hearing impairment
	Arc flash, explosion
	Laser
	UV light
	Optical radiation
	Ionizing radiation

2.2.2 Mandatory Procedures

Mandatory procedures alert personnel to special, required actions. These are round labels with blue backgrounds and white symbols. The symbols describe the required action. The following table lists the mandatory procedures labels which may appear on your equipment.

	Read the manual
	Read the Technical Manual
	Wear ear protection
	Lockout, tagout
	Lift point

2.2.3 Prohibited Procedures

Prohibited procedures alert personnel to particular actions to avoid. These labels are round with a circular red band and red diagonal cross bar. The black symbol describes the action to avoid. The following table lists the prohibited procedure labels that may be installed on your equipment.

	Do not operate without safeguards
	Do not operate the equipment if you have implanted medical devices
	Do not step on the equipment

2.2.4 Notice

The text that follows **NOTICE** in this manual does not give safety information. However, it is still important because it informs you about activities that may damage the equipment or other property. The following definition is based upon the ANSI Z535.4 definition.

	NOTICE (blue): This indicates important information that is not related to personal injury but, if ignored, could damage the equipment or the property, and cause malfunctions, erroneous results, or loss of data.
---	--

2.2.5 Additional Labels

Your equipment may have additional labels which must be observed to avoid equipment damage. The following table lists the additional labels that may be installed on your equipment.

	Do not unplug components such as motors or terminals during operation
---	---

2.3 Messages in this Manual

This section describes the layout and use of safety messages and other messages in this manual.

2.3.1 Safety Messages

The layout and use of the safety messages in this manual follow ANSI Z535.6.

2.3.1.1 Supplemental Directives

This manual contains supplemental directives to promote awareness and use of safety-related information. Supplemental directives do not contain a signal word and do not address a specific hazard.

This is the typical structure and layout of a supplemental directive:



Important Safety Message

Information about general safety implications

If applicable: Generic consequence information

2.3.1.2 Grouped Safety Messages

Grouped safety messages are part of this manual in chapter 2. Chapter 2 contains general safety information about the equipment.

2.3.1.3 Section Safety Messages

Section safety messages provide safety information applicable to the section or procedure following the safety message.

This is the typical structure and layout of a section safety message:



CAUTION

Type and source of hazard

Possible consequences of the hazard

- Measure to prevent the hazard.

A section safety message starts with a signal word according to [Definitions of Hazard Severity Panels ▶ Page 10] ("Caution" in our example above) followed by a general or a specific hazard alert symbol. Specific hazard alert symbols are defined in section [Meaning of Hazard Alert Symbols ▶ Page 10].

2.3.1.4 Embedded Safety Messages

This manual may contain embedded safety messages to provide safety information within a procedure. An embedded safety message applies only to the procedure step it precedes.

This is the typical structure and layout of an embedded safety message:

-  **WARNING: Type and source of hazard. Possible consequences of the hazard. If applicable: Measure(s) to prevent the hazard.**
Procedure step.

An embedded safety message starts with a signal word in accordance with [Definitions of Hazard Severity Panels ► Page 10] ("Warning" in our example above). The safety message itself is printed in bold type and indicates the hazard and probable consequences. To avoid repetition, measures to avoid the hazard are only included, if they are not described in the procedure step itself.

2.3.2 Note

Note is not a signal word and the text does not give safety information. A **Note** gives the reader useful supplementary information, hints, and tips.

2.4 Intended Use and Foreseeable Misuse



Important Safety Message

Read and understand all the safety information in the following sections as well as the safety messages in the rest of this manual.

If you do not follow the safety information and messages, this may lead to personal injury up to and including death as well as damage to the equipment and other property.

Only use the equipment to automatically inspect and sort products, according to the procedures in this manual. Any other use of the equipment is considered misuse. If you use the equipment beyond the limits of the design specification without written consent from METTLER TOLEDO, it is considered misuse.

Common foreseeable misuses include the following:

- Disabling safeguards, or operating the equipment without the properly functioning safeguards in place
- Climbing or standing on the equipment
- Adding parts or modifying the equipment without approval from METTLER TOLEDO
- Operating the equipment beyond the limits of the design specification
- Not following the instructions and important safety information described in this manual
- Using the equipment in a specific environment, unless the equipment is designed for that environment, for example:
 - Hygienic environments
 - Hazardous locations (explosive atmospheres)
 - Environments where there is need for aggressive cleaning or sanitization
- Placing anything on the equipment that is not designed to be placed on the equipment
- Operating the equipment in the reverse direction of transport
- Not maintaining the equipment according to the instructions in the manual
- Accessing the area around the conveyors or rejectors while the equipment is running
- Accessing any hazard area before de-energizing and using LOTO procedures on the equipment
- Operating without the reject bins in place, if reject bins are included in your equipment
- Operating equipment that is not properly installed or integrated with other equipment
- Using pens, tools, or any other item instead of a finger on the HMI
- Doing tasks not authorized by your employer

2.5 General Protective Procedures



Important Safety Message

Make sure that all personnel who work on or near the equipment are capable of doing all operations in a safe way.

- Keep the manual in a convenient location near the equipment. Replace the manual if it becomes lost or damaged.
- Wear Personal Protective Equipment (PPE) in accordance with your plant's safety procedures.
- Understand the hazards of the equipment and the risks related to those hazards before working on or near the equipment.

- Follow all safety procedures of the local plant.
- Do not wear loose clothing, jewelry, long hair, or anything that can become entangled with the equipment.
- Be careful around the equipment to avoid hitting your head, arms, or other body parts against the equipment. Be careful if the equipment is over your head.
- Be careful not to trip over cables or other parts of the equipment.
- Do not move quickly in the area around the equipment.
- Do not climb, hang onto, or use any of the part of the equipment as a support.
- Follow the lockout tagout (LOTO) procedures of the plant.
- If there is a safety-related malfunction when you are operating the equipment, press the emergency stop pushbutton. Inform your supervisor and follow the applicable steps approved by your company to fix the malfunction.

2.6 Safety Information for Various Activities



Important Safety Message

Read and understand all parts of the manual before you use or work on any equipment.

The following sections list safety information for particular activities or groups of activities. Refer to the correct sections in the manual for more detailed instructions.

2.6.1 Transporting and Moving the Equipment

- Only transport or move the equipment if you have the applicable training as defined by your company.
- Your company has sole responsibility for the safe moving and transporting of the equipment.
- Use safe moving procedures during transporting to maintain stability and to prevent the equipment from tipping or falling.
- Disconnect the electrical supply, the pneumatic supply, and the communication cables before you move the equipment.
- Use the correct lifting devices. If you use a forklift, lift the equipment at the correct lift points as shown by the blue lift point labels.
- Blue lift point labels are placed on the equipment to show recommended locations for lifting. These lift point locations were tested with the manufacturer's forklift trucks. A qualified rigger (material handler) must make sure that the lift points are correct for your lifting equipment.
- When you lift the equipment by hand, follow the safe lifting procedures of your company.

2.6.2 Installing

Only install the equipment if you have had the applicable training as defined by your company.

2.6.3 Operating the Equipment and Monitoring the Inspection Process

- Before beginning operation, make sure that the area is safe.
- Know the location and effect of each emergency stop button that controls the equipment.
- Do not operate the equipment without protective guards and doors in place.
- Do not reach into path of the products when any conveyors are in motion.
- Do not reach into the area around any sorting device, when the equipment is turned on.
- Make sure the safety circuit is working correctly.
- Do regular inspections of the equipment.
- If there is a fault or change in the equipment behavior, stop the equipment and inform responsible personnel.
- Only operate the equipment if you have the applicable training as defined by your employer.

2.6.4 Testing and Verifying the Equipment

Only test and verify the equipment if you have had the applicable training as defined by your company.

2.6.5 Maintaining, Cleaning, and Sanitizing the Equipment

- Remove all power from the equipment before doing any work.
- Keep the equipment in good working order.
- Follow a preventative maintenance program.
- Replace parts when needed.
- Follow the lockout tagout (LOTO) procedures of the plant.
- Test (validate) the safety circuit after parts are replaced.
- Only use genuine METTLER TOLEDO spare parts and accessories.
- Do not make any modifications to the equipment without official authorization from METTLER TOLEDO.
- Replace safety labels if damaged, missing, or unreadable.
- Do a visual check of the equipment at least once during a shift to identify any visual damage or faults. Report any equipment changes immediately to the responsible supervisor.
- When required for a hygienic production environment, do regular sanitizing of the equipment according to your company's procedures.
- After cleaning or sanitizing, check all cables, connectors, and pneumatic hoses for leakage, loose connections, rub marks, and damage. Tighten, repair, or replace any faulty cables and air tubing, as necessary.

2.7 Special Hazards

The following sections describe special instructions for equipment that may have special hazards.

2.7.1 Electricity

- Only work on the electrical systems if you have the applicable electrical training as defined by your company.
- Keep all electrical enclosure doors closed. If the doors have locks on them, keep them locked.
- Remove all power from the equipment before doing any work.

2.7.2 Pneumatics

- Only work on the pneumatic system if you have the applicable training as defined by your company.
- Check pneumatic parts for visible damage.
- Before any repair or maintenance work, remove the pneumatic supply and relieve the pressure in the pneumatic system parts.
- Make sure that there is a consistent pneumatic supply when you operate the equipment.
- If a pneumatic pipe becomes loose during the operation of the equipment, keep away from the loose pipe.

2.7.3 Moving Parts and Hot Parts

- Product inspection equipment moves automatically, intermittently and without notice. Some surfaces may get hot. Do not place hands or any other body parts on or near the moving parts.

The following are examples of moving parts and hot parts:

- Conveyor belts and rollers
- Rejectors and product diverters
- Motors
- Gearboxes
- Side grips
- Automatic position adjusters
- Encoders
- Pneumatic cylinders
- Solenoids
- Only operate the equipment with all safeguards in place.
- Make sure that all safeguards are in correct operating condition.
- Do not climb, sit, stand, walk, or ride on the conveyor.

2.7.4 Rejectors

- Be aware around rejectors because they move quickly and without notice.
- Do not reach into the rejector area or reject bin while the rejector is operating.
- Make sure the rejector is installed correctly.
- Make sure the rejected products do not cause harm.
- Keep your eyes and other body parts away from air blast nozzles when the equipment is operating.

2.7.5 Noise

- Make sure that all noise-absorbing parts of the equipment are present and installed in the correct position.
- Wear hearing protection as directed by your local safety authority.

2.7.6 Electromagnetic Fields

- High frequency electromagnetic fields exist in the aperture of the metal detector and in the area near the aperture.
- When the metal detector is operating, avoid prolonged exposure to the electromagnetic field inside the aperture and up to 200 mm from the aperture.
- Consult your doctor if you have a pacemaker or other medical device before you operate the metal detection system or approach the metal detector's aperture.

2.7.7 Lights and Laser Sensors

- Do not stare directly at any lights or lasers.
- Avoid prolonged exposure to ultraviolet (UV) light, infrared (IR) light, and lasers.

2.7.8 Strobe Lights

- Strobe lights can cause seizures in individuals with photosensitive epilepsy.
- Individuals with photosensitive epilepsy must not operate the equipment.
- Do not operate the equipment when excessively fatigued or after consuming alcohol.
- Do not look directly at the lights, especially at close distances.
- Avoid placing the equipment in areas with reduced lighting.

2.7.9 X-ray Radiation

- The equipment meets international and local requirements for radiation exposure with less than or equal to 1 µSv/h emission at a distance of less than or equal to 10 cm from any external surface. USA and Canada have adopted 5 µSv/h as their maximum emission value.
- METTLER TOLEDO tests the equipment for radiation emissions before shipment and records the results in a Critical Examination Report.
- Do not operate the equipment with any part of the body within the conveyor tunnel ends or within the protective radiation shielding curtains.
- Do not operate the equipment if the protective radiation shielding curtains are damaged. Check the curtains regularly and replace them if necessary.
- Test the equipment when it is installed to make sure it is below the safe level for radiation emission. Install additional shielding if necessary as directed in the technical manual supplied with the equipment.
- It is the end user's responsibility to observe the legislation and local rules with regards to operating X-ray inspection equipment.

2.7.10 Explosive Atmospheres or Locations

- Use only properly evaluated and marked equipment in a potentially explosive atmosphere or location.
- Requirements for marking equipment vary by jurisdiction, and you must identify the regulations and standards that apply. For example, the ATEX directive (2014/34/EU) with EN 60079-0 apply to the European Union, and the Code of Federal Regulations (CFR 1910.307) with NFPA 70 apply to the USA.
- Only qualified persons may classify a potentially explosive atmosphere or location.

- If your equipment is marked for use in a potentially explosive atmosphere or location, read the additional information provided before installation.

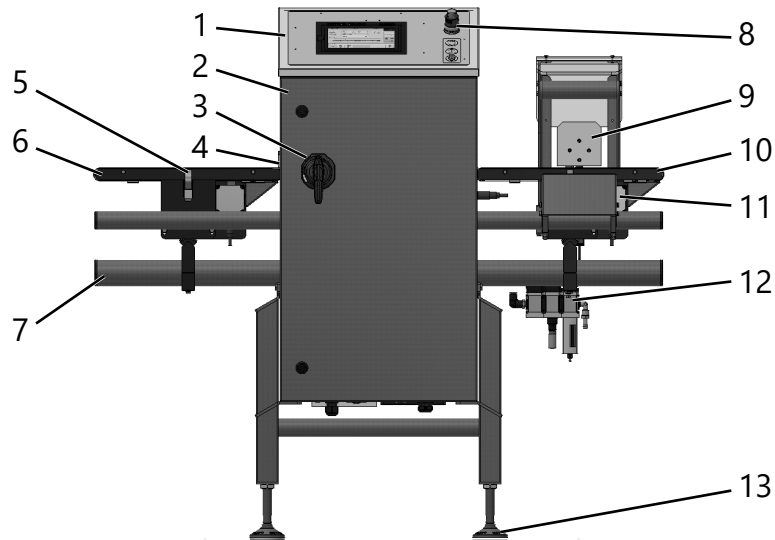
3 Equipment Description

This chapter provides an overview of the main components and additional options of the checkweigher.

A checkweigher weighs products as they move along a production line, classifies them into preset weight zones, and sorts out unacceptable products.

3.1 Overall Equipment

The equipment has the following main components:



#	Component
1	Terminal with human machine interface (HMI)
2	Control enclosure
3	Disconnect switch
4	Light barrier
5	Quick-release latch
6	Infeed conveyor
7	Equipment frame
8	Emergency stop pushbutton (E-stop)
9	Product sorting device
10	Outfeed conveyor
11	Drive unit with motor and timing belt
12	Pneumatic maintenance unit
13	Leveling foot

3.2 IP Rating

Depending on the customer's requirements and operating environment, the equipment is available with different component construction levels and equipment IP ratings. The IP rating of the equipment is indicated on the nameplate. The IP rating gives information on the proper cleaning of the equipment.

3.3 Human Machine Interface (HMI)

The human machine interface (HMI) is mainly used to operate the equipment. The HMI displays the results of the current weigh operation, statistics, and package configuration settings. Error messages are displayed on the HMI. The HMI is also used for package changeovers and package maintenance as well as system setup and user administration.

The system is operated using the terminal and the 7" touchscreen.

3.3.1 The Terminal

A terminal has the following buttons and interfaces:



Terminal with 7" touchscreen

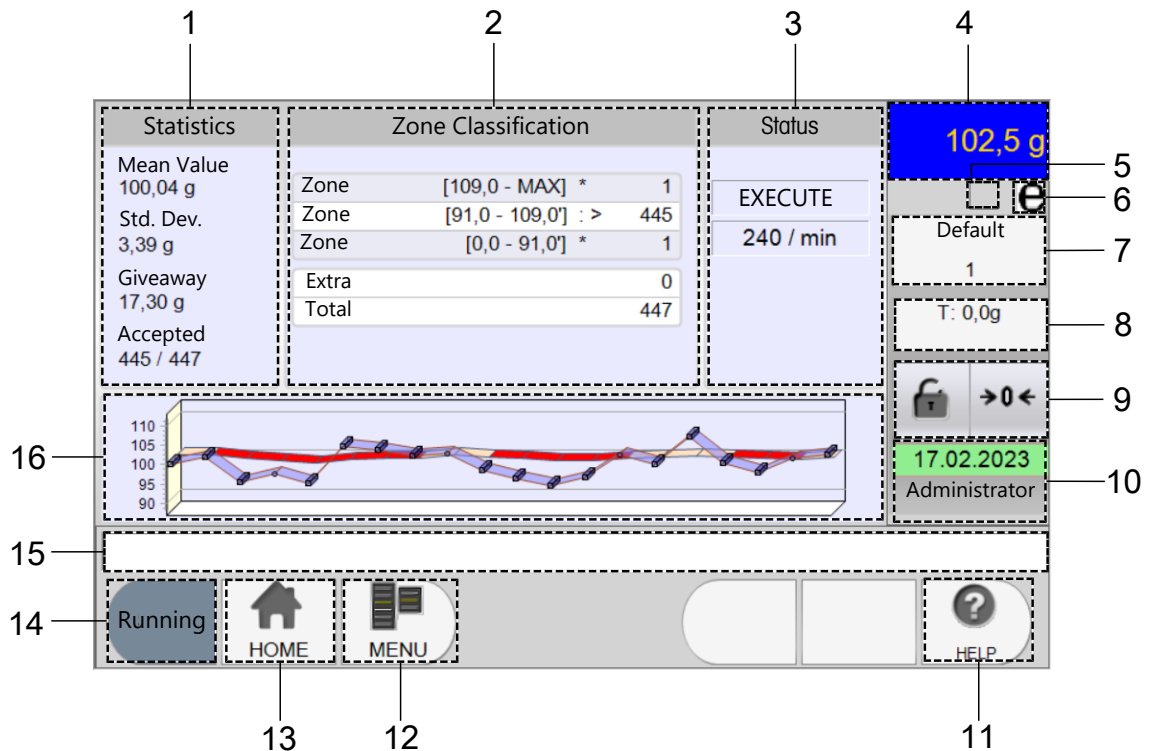
#	Button / interface	Color	Function
1	USB port	Silver	Interface for data transfer, protected by a cap.
2	Emergency stop	Red / yellow	Cuts off all hazardous energies (electrical and pneumatic energy supplies) immediately. Note The emergency stop pushbutton must be pushed in emergency situations only. Do not stop the equipment with the emergency stop pushbutton unless there is an emergency situation.
3	Reset	Blue, if reset is required	Resets the safety circuit, which resets the pneumatics for the product sorting devices and the power of the conveyor motors.
4	Start	Green, illuminated after system start	Starts the conveyors.
5	Stop	Red, illuminated after system start	Stops the conveyors.

The terminal can be mounted to the control enclosure or separately from it.

Note The IP rating of the equipment is only achieved if the cap of the USB port is closed.

3.3.2 The Home Screen

The following figure shows the Home screen:



Home Screen of the 7" HMI

#	Function and description	Reaction when touched
1	Statistical information about the package: If the General Statistics option is deactivated for the active package: "Statistics Disabled" If the General Statistics is enabled for the active package: Number of the accepted products from all weighed products and the corresponding mean value, standard deviation and "giveaway"	Opens up the screen Total Statistics
2	Zone name, tolerance limits, quantity of products per weight zone The corresponding zone of the last product that has been weighed is marked with ">". A value that is marked with a tick mark (') is inclusive. For example, the zone values "[0,0 - 91,0']" include a package with 91,0 gram but the zone values [91,0 - 109,0'] do not.	Opens up the screen Zone Classification
3	PackML state and the number of inspected products per minute.	Opens up the screen PackML Machine Status
4	Shows the gross weight of the package	Opens up the screen Large Weight Display
5	The color shows if the current values of the feedback control are above (green) or below (red) the configured mean values	Opens up the screen Feedback
6	"e" indicates that the system meets the Conformity Assessment. It is only displayed for approved systems.	Opens up the screen Metrology Info

#	Function and description	Reaction when touched
7	Displays package name and optional code of current package	Opens up the screen Package Changeover
8	Given tare weight of the package	No functionality
9	The lock can have the following states: <ul style="list-style-type: none"> Open: the user is logged in Closed: the user is logged off and the monitoring mode is active 	You can log off or log on
	[→0←]	Resets the load cell to zero
10	Date and time Current user profile	No functionality
11	Online help	Opens up an online help that explains the screen The online help is also available in most of the other screens
12	[MENU] button	Opens up the menu
13	[HOME] button	Opens up the home screen
14	Conveyor mode: Start , Starting, Running, Stop , Stopped, Not ready, or Init.	Indicates the state of the system
15	Field of system information and error messages	Opens up the screen Messages
16	Displays the weight of each item graphically	Zooms into the graph for more details. Touch multiple times to zoom in further. After the highest zoom level is reached the original zoom level (100%) is shown

3.3.3 The Menu Tree in Supervisor Mode

The following table displays the menu tree when the user is logged in in supervisor mode.

In other access modes, the menu tree depends on the configuration.

The Supervisor Mode 7" HMI

MENU	Information	Messages	
		State	PackML Machine Status
			Components Status
			Output Info
			Input Info
			Positions
		XRTC*	XRTC: Log Selection
			XRTC: Log Message
			XRTC: Motor and IO
			XRTC: Oscilloscope
MENU	Production Data	System Information	
		Stored Printouts	
		Zone Classification	
		Statistics	Total Statistics
			Current Hour
			Interval Statistics
			Batch Statistics
			Records table
			Records Graphics
		Charts	Feedback
			Items
		Large Weight Display	

MENU	Packages	Active Package	Main Package Setup
			Add. Package Setup
			Zone Limit Setup
			Statistical Limits Setup
			Interval Setup
			Feedback Setup
			Metal Detector Setup
			Rejector Adjustment
			Dynamic Adjustment
		Package Maintenance	Package Changeover
			Create New Package
			Edit Package
			Delete Package
			Copy Package
			Print Package
		Packages Export and Import	
		Zone Calculation Setup	
MENU	Actions	Login	
		Display Cleaning Mode	
		Final Evaluation	
		Batch	
		Load Package from Host	
		Reset PackML Operation Timers	
		Peripherals control panel	
MENU	Setup	Users	Edit Users
			Edit Profiles
			Assign Rights to Profiles
			Quick Access Setup
			Users Export and Import
		General	Time and Date
			Rejector Settings
			Zone Actions
			Metal Detector
			Miscellaneous Setup
			Final Evaluation Setup
		System	Interfaces > ProdX settings
			Interfaces > OPC UA Setup
			Speed
			Function Allocations
			Performance Verification (PV)
MENU	Maintenance	Data Backup	Backup Internally
			Backup to USB Stick
			Restore Internally
			Restore from USB Stick
		File Copy	

* Only needed in collaboration with the METTLER TOLEDO Service.

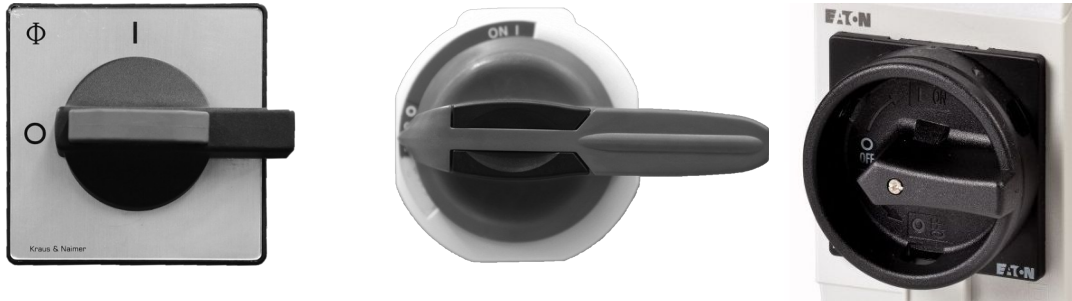
3.4 Disconnect Switch

The disconnect switch turns the power of the equipment on or off.

The disconnect switch is intended for use in a lockout tagout procedure.

The disconnect switch has to be turned to the OFF position before the door of the control enclosure can be opened. This requires an additional step to re-energize the control for troubleshooting with an open door.

The following figures are examples of a disconnect switch:



3.5 Emergency Stop Pushbutton (E-Stop)

An emergency stop pushbutton (E-stop) is included when the equipment has motion components (for example, product sorting devices and conveyors). The E-stop is installed at the HMI or at another convenient location.



Note The E-stop may not be located right at your equipment, but at a more suitable position at the line. Not every equipment necessarily has its own E-stop.

When you push the E-stop, all hazardous energies (electrical and pneumatic energy supplies) are cut off.

3.6 Guards

A guard is a barrier that prevents access to a hazard. It is either a fixed guard, an interlocking movable guard, or a shield-guard.

Fixed Guard

A fixed guard is a guard that requires tool(s) for opening or mounting and removal. These guards may incorporate hinges, pins or other means to attach them to the machinery.

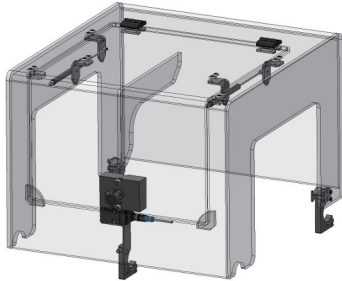


Example of a fixed guard, stainless steel, dry design

Interlocking movable guard

An interlocking movable guard is a guard that can be opened without tools (for frequent access to the danger zone) and requiring an interlocking device. The interlocking device, together with the control system of the equipment, performs the following functions:

- Prevents the equipment from operating while the guard is open.
- Sends a stop command to the system control when the guard is opened.
- Allows the equipment to operate when the guard is closed (the closure of the guard by itself does not start the equipment). The interlocking device may contain an additional guard locking device.



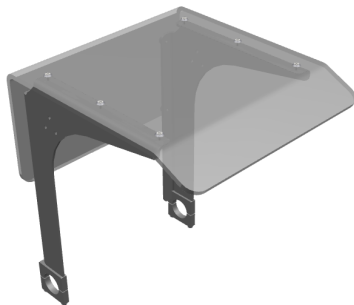
Example of an interlocking movable guard, plastic, dry design

Shield-Guard

A shield-guard is a partial enclosure designed to prevent accidental or inadvertent accessing of a hazard. It is used where access to a hazard zone cannot be completely prevented for reasons of technical infeasibility, for example in the impact area of product sorting devices and sorted products.

Note A shield-guard does not completely cover the hazard area. Personnel must not access that area while the equipment is operating.

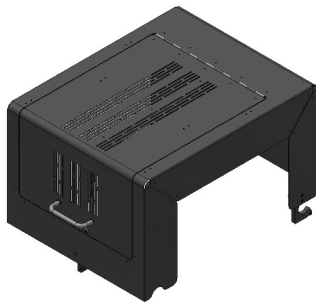
Shield-guards are often equipped with safety labels that make the user aware of residual risks due to partial access to a hazard zone.



Example of a shield-guard: Product sorting device guard

3.7 Covers

A cover protects the conveyors against dirt, dust, and air drafts, which could affect the weighing accuracy. It also prevents operator access to the product flow. A cover can be combined with an access door with magnetic switch. The conveyor stops, when opening the access door.



Example of a cover with access door, stainless steel, dry design

3.8 Conveyors

There are three types of conveyors in a standard checkweigher:

- Infeed conveyor - accepts products from an upstream conveyor, stabilizes the products and transports the products to the weigh conveyor or to another infeed conveyor.
- Weigh conveyor - transports products over the load cell, which determines the product weight.
- Outfeed conveyor - accepts products from the weigh conveyor or from another outfeed conveyor, stabilizes the products and transports them to downstream machinery or to another outfeed conveyor. It may also serve as a product sorting device, for example as a lift up or drop down conveyor.

Each checkweigher consists of one weigh conveyor and at least one infeed conveyor and one outfeed conveyor. Additional infeed and outfeed conveyors are possible depending on the checkweigher configuration.

The following sections describe the conveyor designs for the different fields of application.

3.8.1 Conveyor, Dry Design

The infeed/outfeed/weigh conveyor in standard design can be used on all C3x models and is intended for dry applications in the food, pharma and industrial consumer industries. The conveyor bed and brackets are made of black anodized aluminum and the rollers (drive and idle) are made of aluminum with a diameter of 29 mm. The conveyor drive motor is IP54 and uses a timing belt to drive the rollers and conveyor belt.



3.8.2 Conveyor, Waterprotected Design

The infeed/outfeed/weigh conveyor in waterprotected design can be used on all C3x models and is intended for water protected applications in the food, pharma and industrial consumer industries. The conveyor bed and brackets are made of stainless steel and the rollers are made of stainless steel with a diameter of 29 mm. The conveyor drive motor is IP65 and uses a timing belt to drive the rollers and conveyor belt.

The conveyors can be cleaned with water and mild detergents and sanitized using an alcohol-dampened cloth. The glide plate can be removed and sanitized with heat.



3.8.3 Transfer Plate

The transfer plate covers the space between two conveyor belts, so smaller products cannot slip through or get damaged. The transfer plate allows for smoother product transport between the conveyor belts and prevents unstable products from tipping over.

The transfer plates must be removed for maintenance work, such as the replacement of a motor, a conveyor belt, or a roller.



3.9 Load Cell

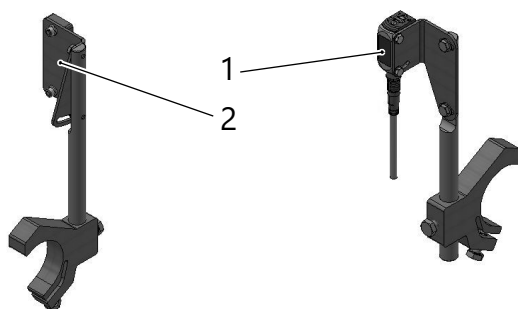
A load cell can either be used with a strain gauge or an electromagnetic force restoration (EMFR) technology. The following figure shows a strain gauge load cell:



3.10 Light Barriers

The most common sensors in the system are light barriers. The light barriers can be mounted in different positions at the frame to detect objects and to support the fulfillment of the different functions:

- triggering the weighing process
- monitoring the filling level of the product collection area
- detecting product backups
- confirming the sorting of a product
- detecting products with an open flap
- detecting askew products



#	Component
1	Sensor
2	Reflector

3.11 Control Enclosure

The control enclosure houses various controls and electronic components. It can be mounted to the frame or on a separate frame. The HMI can be mounted to the control enclosure or separately from it.

Note You can find a hardcopy of the wiring diagrams inside the control enclosure.

3.12 Signaling Device

The signaling device indicates the status of the processed products and the equipment. It consists of up to five signaling elements of which one element can be an alarm horn. Each light element has a different color and can emit a flashing light and a static light. Flashing lights are recommended for equipment status indications, such as "Machine ready".

The signaling device is mounted on top of the equipment to be well visible.

Before transporting the equipment, the signaling device must be disassembled to prevent damages.



Note This figure is an example of a signaling device. The number and color of lamps are customized.

3.13 Equipment Frame

The frame is made of a tubular steel construction, support bearings, and side panels. Load cell, conveyors, product sorting and product collection devices, catch bins, cable conduits and other optional devices are mounted on the frame.

3.14 Product Sorting Devices

Product sorting devices reject products from the production line or sort products into preset categories. The design of the product sorting devices depend on the dimensions and characteristics of the products inspected.

Most of the available product sorting devices require the use of a compressed air system to reject products off the equipment. The energy supplied to the compressed air system is clean dry air. Depending on the configuration and the performance level of the safety circuit, your equipment may have one of these pneumatic maintenance units with valves:

3.14.1 Pneumatic Maintenance Unit

The energy supplied to the compressed air system is normally regulated to 4-6 bar / 0.4-0.6 MPa / 58-87 psi. The product sorting device is activated by a 24 V DC signal from the main control module.

This device is used for lockout/tagout (LOTO) procedures as it is secured, for example with a lock, to hold the device in a safe position and prevent the energizing of the equipment.

Some of the components of the maintenance units are going to be different depending on the safety circuit of the equipment. Category 1 and Category 3 are the most often used safety circuits.

Category 1 Safety Circuit

The following types of maintenance units are for a CAT 1 safety circuit:

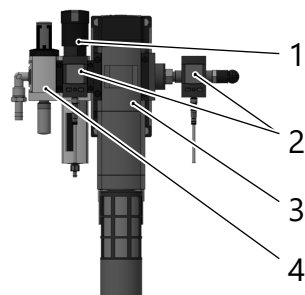


Maintenance unit: Festo (left), SMC (right)

#	Component	Description
1	Pressure sensor	Monitors the pressure in the system.
2	Soft start/quick exhaust valve	Reduces pressure quickly in case of an emergency, builds up pressure slowly when the equipment is started, and protects the system from unexpected pressurization; electro-pneumatically actuated.
3	On/off valve	Pressurizes or vents the pneumatic circuit; manually operated.
4	Filter regulator	Filters air and maintains a constant pressure from supply.

Category 3 Safety Circuit

The following pneumatic maintenance unit is used for a CAT 3 safety circuit (see table below for component name and description):

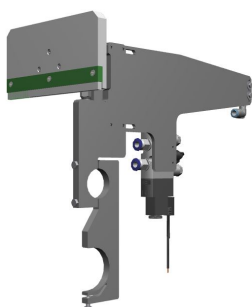


#	Component	Description
1	Filter regulator	Filters air and maintains a constant pressure from supply.
2	Pressure sensor	Monitors the pressure in the system.
3	Soft start/quick exhaust valve	Reduces pressure quickly in case of an emergency, builds up pressure slowly when the equipment is started, and protects the system from unexpected pressurization; electro-pneumatically actuated.
4	On/off valve	Pressurizes or vents the pneumatic circuit; manually operated.

3.14.2 Basic Pusher

The pusher uses a pneumatic cylinder with a pusher plate attachment that contacts faulty products and directs them off the equipment. The pusher plate can be either plastic (UHMW) or stainless steel and is available with or without a brush strip attachment on the bottom edge of the pusher plate.

The recommended operating air pressure is 6 bar (0.6 MPa, 87 psi).



3.14.3 Air Blast

The air blast directs a stream of compressed air through a nozzle to remove a "bad" product. There is no direct contact between the nozzle and the product.

Based on the product height and width, the air blast can have a single nozzle, twin nozzles (stacked) or tandem nozzles (side by side). An air deflector is standard for this rejector.

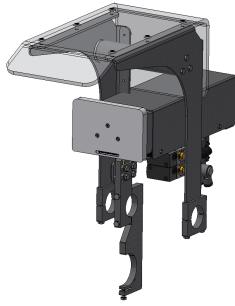
The recommended operating air pressure is 6 bar (0.6 MPa, 87 psi).



3.14.4 Pusher Air Blast Combination

The combination of a pusher and an air blast provides air blast sorting and pusher sorting in a single component to move products selected for sorting off the conveyor belt.

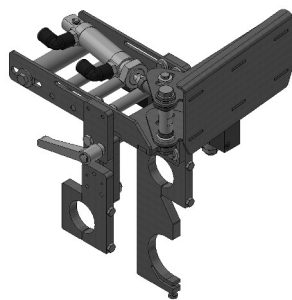
The recommended operating air pressure is 6 bar (0.6 MPa, 87 psi).



3.14.5 Swing Gate

The swing gate is a guide plate mounted to the outfeed conveyor. It sorts products by deflecting them from the outfeed conveyor. The swing gate is operated by compressed air and typically sorts the products onto a turntable.

The recommended operating air pressure is 6 bar (0.6 MPa, 87 psi).



3.15 Product Collection Devices

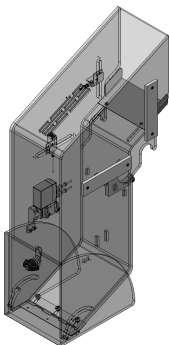
Product collection devices collect or guide the products that have been rejected or sorted by a product sorting device.

3.15.1 Catch Bin

Catch bins are used for the collection of products that have been rejected and moved off the conveyor belt. They are equipped with a key lock that prevents unauthorized access to the product collection area.

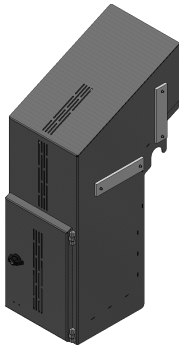
3.15.1.1 Plastic Catch Bin, Standard

The standard plastic catch bin has a lockable door which controls access to products. The transparent plastic allows the operator to monitor the fill level of the catch bin.



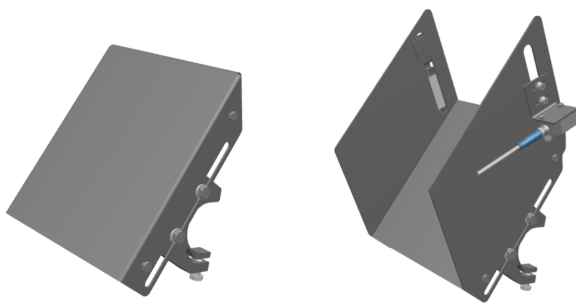
3.15.1.2 Stainless Steel Catch Bin, Standard

The standard stainless steel catch bin has a lockable door, which controls access to the rejected products. The slots in the catch bin allow the operator to monitor the fill level of the catch bin.



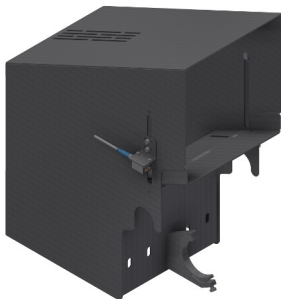
3.15.2 Chute

The chute is a metal sheet which is mounted to the conveyor side. It transfers rejected or sorted products smoothly over the conveyor edge to a product collection area provided by the customer.



3.15.3 Reject Tunnel

The reject tunnel guides products that have been sorted off the conveyor belt into the customer's product collection area.



3.16 Product Handling Devices

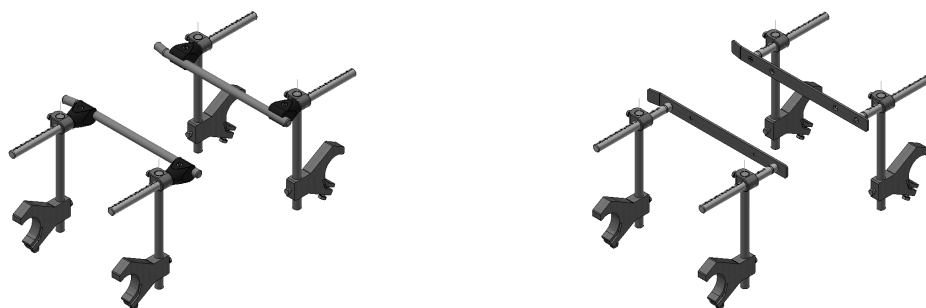
Product handling devices improve transfer, timing, and/or spacing of products.

3.16.1 Guide Rails

The guide rails are intended to reliably guide the products on the conveyor and protect them from falling down. They are installed on both sides of the conveyor and can have direct contact with the product. They are scaled for width adjustment.

The height of the guide rails depends on the height of the product. They are available as single or double guide rails, and as round or flat guide rails for infeed and outfeed conveyors. In many cases, guide rails can only be mounted on the outfeed conveyor when the sorting device is omitted.

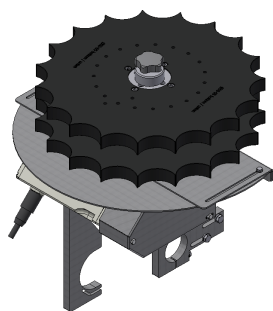
Guide rails are attached to the side frame of the equipment with mounting plates and held on with easily adjustable clamps to allow for adjustment of guide positions.



3.16.2 Infeed Timing/Spacing Starwheel

The infeed timing/spacing starwheel separates products that arrive without a gap at the infeed conveyor. The evenly spaced pockets (indentations in the starwheel) grip the products and pass them to the downstream conveyor at the specified pitch required for weighing the product. The starwheel is either on a horizontal or vertical axis and can be used as a holdback device or to ensure acceleration. Guide rails that stabilize the products are included. Depending on the configuration, the starwheel may be combined with sidegrip conveyors.

The starwheel drive is equipped with a safety coupling that prevents damage by overload.



3.17 Metal Detector

The metal detector inspects the products to identify any unwanted metal contaminants. Usually, when metal is detected, the contaminated product is automatically rejected by a product sorting device. The different types of metal detectors with seals are shown in the figure:



Metal detectors: Profile LS Combi (left), Profile R/RZ or Profile Advantage with power supply unit box (right)

#	Type of seal
1	Aperture seal
2	Cover seal of module
3	Cover seal of power supply unit box

3.18 Safety Circuits

METTLER TOLEDO equipment complies with relevant industry regulatory standards including the Machinery Directive, ANSI B155-2016 and, more specifically for safety circuits, the ISO standards 13849-1 and 13849-2. METTLER TOLEDO uses the ISO 13849-1 and -2 standard as the basis for safety circuit qualification and validation. The safety circuits employed in all METTLER TOLEDO equipment have similar characteristics, but vary in implementation depending on options and customization. The safety circuits described here are based on typical components used by METTLER TOLEDO. For specific information about your equipment, please refer to the wiring diagrams.

It is important to note the following warning when working with safety circuits:

The safety circuit design is an outcome of a comprehensive risk assessment and qualification of the circuit components and architecture. The safety circuit should not be modified in any manner at any time without the express written consent of METTLER TOLEDO. Modification of the circuit structure or components can make this critical circuit less reliable, and may cause damage to property, injury to persons, or death.

3.18.1 General Information

METTLER TOLEDO machinery requires occasional access to a hazard area when the equipment is powered and running. Safety circuits are designed to de-energize hazards when intervention is required. Power interruption is done by pressing an (E-stop), or by action of a sensor such as an electronic interlock on an interlocking movable guard. Safety circuits and interlocking movable guards provide a means to allow users to access these hazard areas with the hazard energy reduced. When a safety sensor detects that a guard door has opened, it sends a signal to the safety circuit control logic to disable the hazardous devices. Safety circuits can operate on a single zone, or multiple zones, and can be configured to disable combinations of hazardous devices in different hazard zones.

3.18.2 Safety Circuit Categories

Safety circuit categories are defined according to the ISO 13849-1 standard. They are categorized by determining the performance level requirement which is defined as the "discrete level used to specify the ability of safety-related parts of control systems to perform a safety function under foreseeable conditions". The required performance level (PLr) is identified by the risk assessment and used for the safety circuit design. Performance levels are defined in terms of probability of dangerous failure per hour (PFHD), and are divided into five categories; PLa → PLd, where PLd safety functions must have the lowest average probability of dangerous failure per hour. Generally, where risks are higher, as determined by a formal risk assessment process for each machine, the required performance level assigned to the safety circuits for a given safety function is higher.

Based on the required performance level of a safety function, a safety circuit or safety function category is determined. These categories (CAT B, 1, 2, 3 and 4) described in the table below are the basic parameters used to achieve a given performance level and define the required behavior of the safety circuit, or safety related parts of the control system (SRP/CS). Category B (CAT B) uses basic safety principles where failure of the safety circuit can lead to the loss of the safety function. Four more categories are defined above CAT B with a progressively lower probability of failure, from CAT 1 to CAT 4.

Safety Circuit Categories

Cat	Architecture	Failure Mode	Principles (performance Levels Possible)	Component Life (MTTF _d)	Diagnostic Coverage	CCF
B	Uses components and design practices that follow standards in place. Basic Safety principles apply.	Failure of the safety circuit can lead to a loss of the Safety Function	Mostly Component Selection (a, b)	Low to Medium	None	Not a Factor

Cat	Architecture	Failure Mode	Principles (performance Levels Possible)	Component Life (MTTF _d)	Diagnostic Coverage	CCF
1	In addition to "B", the application of well-tried components, and well-tried principles.	Failure of the safety circuit can lead to a loss of the Safety Function, but probability is low.	Mostly Component Selection (b, c)	High	None	Not a Factor
2	In addition to "1", a means to periodically check the Safety Function is part of the Control System.	A fault can lead to a loss of the Safety Function, but the loss is detected between checks	Mostly by Structure of the Circuit (a, b, c)	Low to High	Low to Medium	Requires a score of ≥ 65 of 100 on segregation, diversity, knowledge and experience of the designers, immunity from environmental factors (e.g., shock, vibration, EM fields) See Annex F
3	In addition to "1", a single fault does not cause the loss of the Safety Function (Redundancy), and whenever practicable, the occurrence of the single fault is detected	A single fault can occur, but the Safety Function performs. Some faults are detected. A combination of individual faults can lead to loss of the Safety Function	Mostly by Structure of the Circuit (a-d, b-e)	Low to High	Low to Medium	
4	In addition to "1", a single fault in any of the parts does not lead to loss of the Safety Function, and is detected on or before the next use of the Safety Function. If that detection is not possible, combined faults do not lead to a loss of the Safety Function.	The Safety Function is always performed, even with a single fault. Detection reduces probability of Safety Function loss. Faults are detected in time to prevent loss of the safety function.	Both Component Selection and Structure of the Circuit (a-e)	High	High	

METTLER TOLEDO generally provides either a CAT 1 or CAT 3 safety circuit for SRP/CS of the product inspection systems. This distinction normally is determined by the presence of a hazard with a relatively high severity. Users sometimes request a higher category safety circuit to provide an additional level of reliability, when appropriate, for removing energy for minor servicing actions.

3.18.2.1 Category 1 Safety Circuits

Category 1 safety circuits use single-channel architecture for input devices, for example E-Stop pushbuttons and electronic interlocks, as well as for the controlling logic and connected output devices. When the E-Stop is pressed, the contact opens and sends a signal to the control logic, which in turn sends a signal to the connected output devices that disconnects power to the attached hazardous device. This safety function may be required where access to a hazardous area is needed on a regular basis.

Category 1 requirements specify that the safety circuit components have the following:

- No redundancy requirement for this circuit
- Component life or MTTFd (mean time to dangerous failure) must be high, where the failure of a safety circuit can lead to loss of the safety function but that probability is low.
- No diagnostics coverage required
- Common cause failures are not a factor

3.18.2.2 Category 3 Safety Circuits

Category 3 safety circuits use dual-channel architecture for input devices, for example emergency stop pushbuttons and electronic interlocks, as well as for the controlling logic and connected output devices. When the E-Stop is pressed or a movable guard is opened, the hazard must be disabled with a reliability of the controlling circuits beyond that of CAT 1 circuits. For a CAT 3 circuit, there must be all of the same consideration applied to the CAT 1 circuit, and in addition the following:

- Dual (redundant) channels for input, logic, and output circuitry
- Low to high MTTFd of the components used
- Low to medium diagnostics coverage capability
- Requires a “score” (ref ISO 13849-1) of 65 or above in consideration of CCF (common cause failures).

Category 3 requires the logic section of the safety circuit to monitor and provide diagnostics coverage of the components that implement the safety functions. METTLER TOLEDO uses SRP/CS which adds diagnostic coverage to the Cat 3 safety functions. The safety relay, or logic portion of the safety circuit, allows connection from electronic interlocks placed in series to detect guard doors being opened, as well as from the E-Stop pushbutton. Its internal dual (redundant) high MTTFd output contacts will open in such an event to control output devices and disconnect hazards from their power source.

If the E-Stop is actuated (pushed), or if a fault condition occurs, the safety relay will open its redundant output contacts and disconnect power from output devices controlling hazardous devices such as motors controlling conveyors, motors controlling other devices, exhaust air dump subsystem (removing air pressure from a product sorting device), etc.

3.18.2.3 Resetting Category 3 Safety Circuits

Once the inputs are reset (for example; the movable guard doors are closed, electronic interlocks are closed, E-Stop pushbutton is reset), the safety relay may require a reset pulse from the blue reset pushbutton. This reset pushbutton is connected to the safety control logic that effectively ensures that the outputs controlling hazards are in the correct state. This is done before a system reset can restore power to the systems hazards. There is also a timing restriction for the reset input to the safety relay to prevent false resets, only recognizing a pushbutton duration between 0.25 and 3.0 seconds. The safety exhaust valve is also connected to the blue reset pushbutton, and requires a reset duration of an even more restrictive 0.1 to 2.0 seconds. Therefore it is best to aim for a 1-second reset to re-enable the system after a fault condition has been reset.

3.18.3 Safety Circuit Components

The components that make up a safety circuit are generally classified into three groups:

3.18.3.1 Input Components

Sensors or switches such as Emergency-Stop (E-Stop) pushbuttons and electronic interlocks.



These devices send a signal to the logic component of the safety circuit which disconnects the output components. Inputs may also be connected directly to output devices in simple systems to directly disable a hazard. Components commonly used include E-Stop Pushbutton (single channel – CAT 1), E-Stop pushbutton (dual channel – CAT 3) and Electronic Interlock (dual channel – CAT 3).

For category 3 architecture safety functions, E-Stop pushbuttons are dual-contact positive opening force (or mechanically linked) acting contacts allowing for redundant operation within a safety circuit. In this case, redundancy means that even in the event that one pushbutton contact fails, the other contact remains effective to disable the hazard. Because of the diagnostics coverage provided for Cat 3, this failure will also be detected before the next demand on the safety system.

Electronic Interlocks typically used are RFID sensor type switches, although other safety switches may be used. The RFID type devices are considered a safety circuit subsystem, providing all diagnostic coverage internally to these devices. This also allows multiple switches to be connected in series while remaining compliant with specifications for up to a CAT- 4 installation.

3.18.3.2 Logic Components

Electronic devices that monitor inputs and control outputs, and may require diagnostic coverage of these components. This provides the logic function of the safety circuit allowing for removal of hazardous energy, based on one or more E-Stop pushbutton inputs, or one or more movable guard electronic interlock inputs. Logic components may include safety relays or safety-rated Programmable Logic Controllers (Safety PLC).

The safety relay provides configurable logic allowing it to be used in a variety of applications. It provides indicator LEDs to show its status. It is also considered a safety circuit subsystem, providing diagnostics coverage, and extending that diagnostic coverage to connected E-Stop pushbutton switches.

3.18.3.3 Output Components

Devices that control or power the hazardous devices, such as relays that can cut power to a motor or a safety exhaust valve. Components include Safety Control relays (contactors), AC or DC Variable Speed Drives (VSD) and Safety Air Exhaust Valves.

Output devices control the power that are connected to motors or pneumatics that can create a hazard. They can be a simple control relay or contactor that removes power to a device. Redundant output contacts are also provided within the safety relay, which can disconnect power from relatively low powered hazardous devices, or from control external contactors. Safety exhaust valves may also have internal redundancy and internal logic. Each of these subsystems typically provides its own diagnostic coverage, identifies a component fault, and prevents a re-start. Otherwise, sensors may be used to prevent the safety circuit reset from occurring unless correct operation is indicated.

3.18.4 Safety Circuit Validation, Verification and Monitoring

3.18.4.1 Validation

There is a requirement in ISO 13849-1 that the safety circuit must be validated. The complementary standard ISO 13849-2 instructs how to validate. The purpose of the validation is to confirm that the design of the safety circuit meets the overall safety requirements for the equipment. The process demonstrates that the safety circuit avoids systematic failures and performs the proper safety function.

The validation process includes executing functional tests under normal and fault conditions. It is important that the tests be made on a production sample for all safety-related parts being tested. The validation itself is confirmation, on first use, that the circuit operates as intended and if it fails, it will recover in a predictable way. The practice followed is a form of "Induced Failure Test" (IFT). The typical steps are to disconnect critical parts of the circuit, observe behavior, and then restore and confirm operation as intended. This field verification procedure can be used at the customer location to verify that the safety function is operating properly. This should only be done by qualified personnel.

While not required in the ISO 13949 standards, users commonly verify the action of a safety circuit, prior to operation of the equipment. These are determined by the local management, and can be as simple as operating an emergency-stop or interlocked guard, and observing that the controlled area is de-energized.

The validation process should be practiced periodically if there is any repair or replacement of parts of the safety circuit. The tests are performed using proper validation protocols to test emergency stop and interlock conditions. If any changes have been made to the safety circuit then the complete design validation procedure must be performed by a qualified person.

3.18.4.2 Verification

Verification is the periodic qualification that the safety circuit continues to be effective. Verification makes sure that all current safety standards are being complied with and all fail safe systems are functioning correctly. The verification procedure should be undertaken by a technically qualified person typically at 6 to 12 month intervals.

3.18.4.3 Monitoring

Routine monitoring of the safety circuits is a series of performance verification checks completed at frequent, regular intervals. Monitoring seeks to confirm whether the safety circuit continues to perform as expected. The tests can be performed by the line operator or Quality Manager during daily intervals such as the start or finish of a production run, regular intervals during a production run or product changeover. The frequency may be dictated by industry standards or end user codes of practice. Therefore, the purpose of the monitoring test is to confirm there has been no significant change in the safety circuit performance level since the last successful test.

3.19 Communication Interfaces

This section describes the communication interfaces available with the equipment. The hardware interfaces and serial interfaces are explained including the Industrial PC (IPC) and the main control module.

Most of these interfaces are located inside the control enclosure. For detailed information on the interfaces and their connections, refer to the wiring diagrams.

3.19.1 Ethernet

Ethernet is a network connection for Local Area Networks (LAN). All C-Series systems have Ethernet interfaces, which are located on the IPC or the main control module inside the control enclosure. Optionally, an external Ethernet interface is located on the bottom of the control enclosure.

A connection is indicated by an LED. The color of the LED indicates the state of the data transfer:

- Yellow (steadily): Connection is active
- Green (blinking): Data transfer is active

3.19.2 USB

All USB interfaces comply with the USB 2.0 specification. An external USB interface is located on the front or the back of the HMI, depending on the configuration.

A USB hub with additional USB interfaces can be used to connect peripheral devices such as a printer, the PrintStick, and an external standard keyboard for servicing purposes.

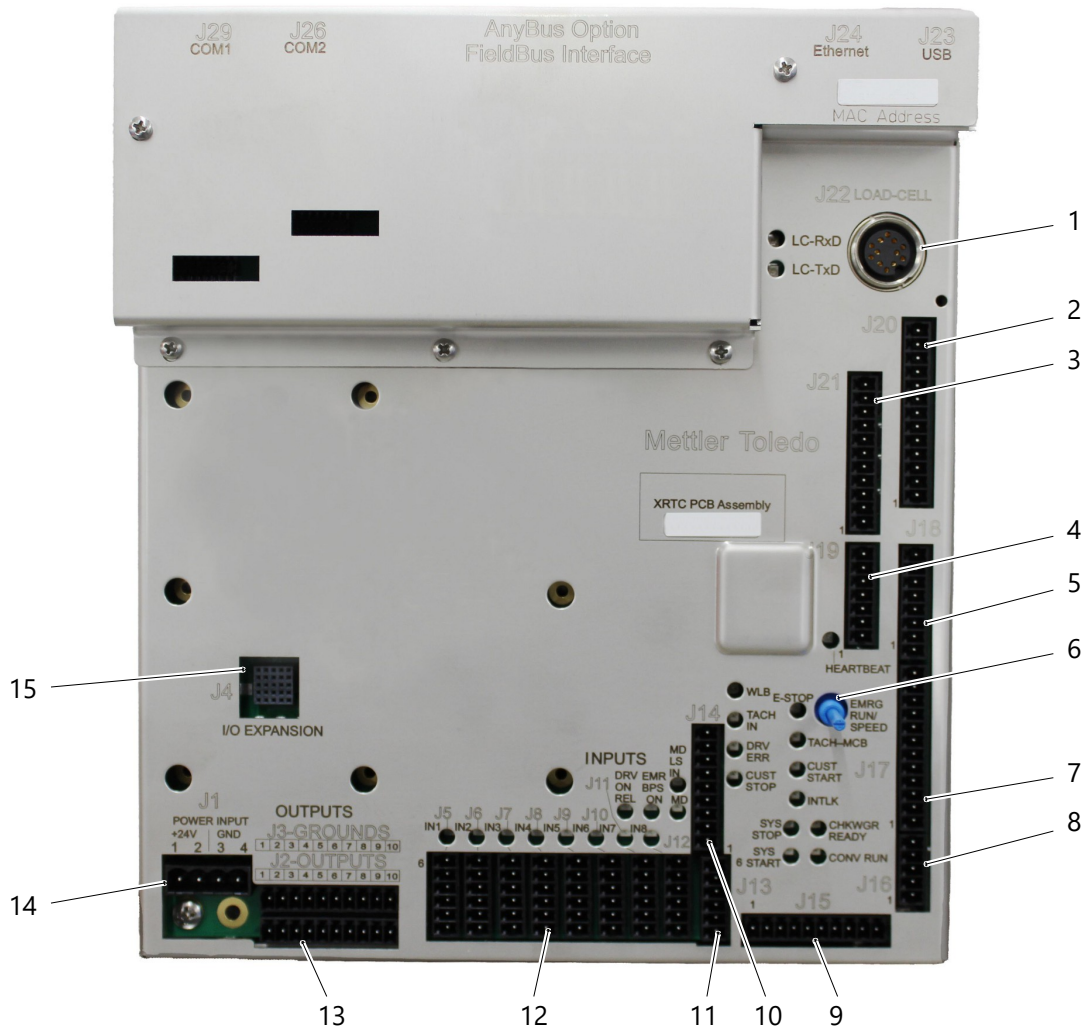
3.19.3 Main Control Module XRTC

The main control module XRTC carries out the functions, such as timing for weighing and sorting, zone classification, weight processing, input/output and motor control. IPC and main control module are connected by an ethernet cable.

Some of the interface cables run from the bottom of the control enclosure to the equipment. If a floor-mounted control enclosure is used, the interface cables run from the bottom of the control enclosure to the equipment through a conduit.

The connectors and interfaces on the main control module XRTC are defined as follows:

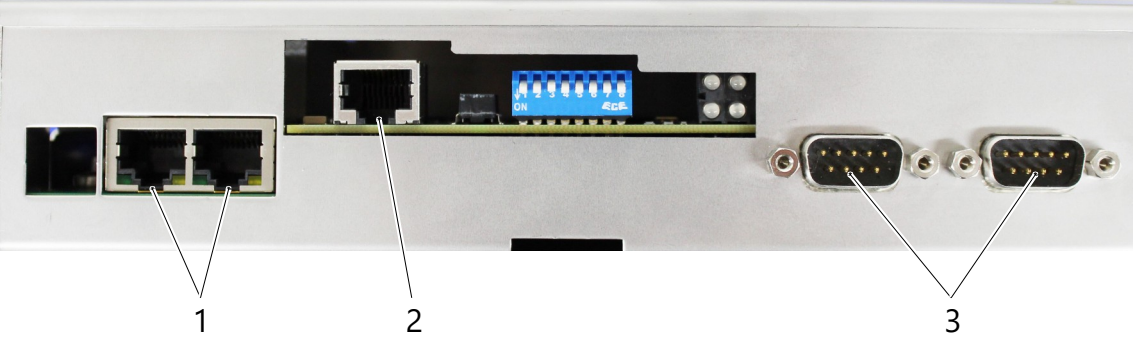
Front view



#	Component
1	Interface for load cell (RS485)
2	Interface for analog signals (input/output)
3	CAN bus signals (input/output): connector for RS422 from or to an external device or for a CAN I/O module
4	Emergency bypass (input/output): connector that enables the emergency run
5	Motor input/output: connector for various system functions, such as conveyor start/stop, E-stop, and emergency run (status and speed)
6	Potentiometer for emergency run
7	Interface for motor connection board (input/output)
8	System start, system stop and interlock circuit (input/output)
9	Customer input/output: connector for extended customer control over system functions, such as conveyor start/stop, conveyor run, and machine status
10	External tachometer (input)
11	Weigh light barrier (input/output)
12	8 digital inputs (freely programmable)
13	10 digital outputs (freely programmable)
14	External power supply +24V DC (pins: +DC, PE, GND)

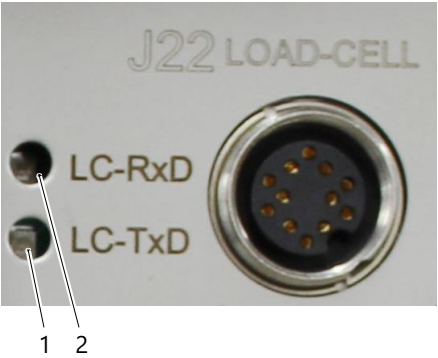
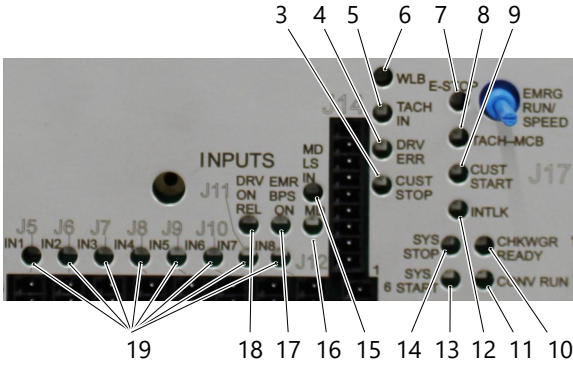
#	Component
15	I/O expansion board for additional inputs and outputs

Top view



#	Component
1	Ethernet connections
2	Fieldbus interface
3	Serial ports for interface cards, for example for a metal detector or a weigh data interface: <ul style="list-style-type: none"> Pin 5: ground connection (COM GND) Pin 3: data reception (RxD) Pin 2: data transmission (TxD)

Image detail of indicator lights



#	Component
1	LC-TxD: signal for load cell data transmission
2	LC-RxD: signal for load cell data reception
3	CUST STOP: external stop signal by customer
4	DRV ERR: drive error signal
5	TACH IN: tachometer input
6	WLB: weigh light barrier signal
7	E-STOP: emergency stop signal
8	TACH-MCB: tachometer signal from motor control board
9	CUST START: external start signal by customer
10	CHKWGR READY: checkweigher-ready signal

#	Component
11	CONV RUN: conveyor run signal
12	INTLK: interlock circuit signal
13	SYS START: system start signal
14	SYS STOP: system stop signal
15	MD LS IN: metal detector (Profile Combi LS) input signal
16	MD: metal detector input signal
17	EMR BPS ON: emergency bypass ON signal
18	DRV ON REL: drives ON relay signal
19	IN1 - IN8: signals for inputs 1-8

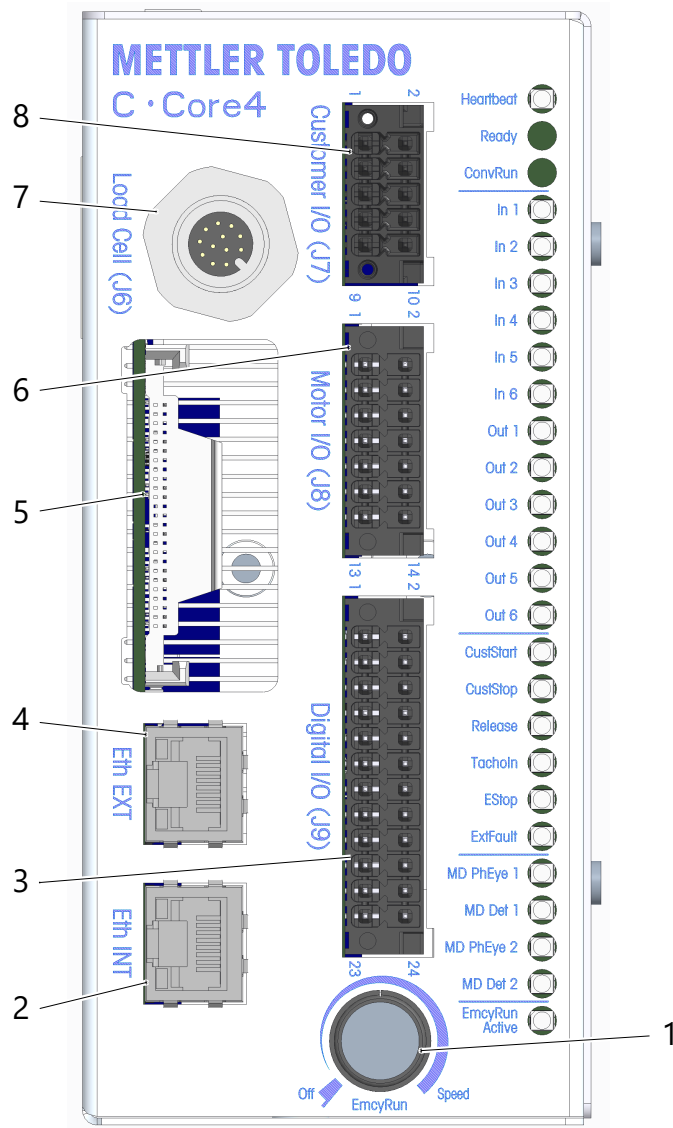
3.19.4 Main Control Module CCore4

The main control module CCore4 carries out the functions, such as timing for weighing and sorting, zone classification, weight processing, input/output and motor control. IPC and main control module are connected by an ethernet cable.

Some of the interface cables run from the bottom of the control enclosure to the equipment. If a floor-mounted control enclosure is used, the interface cables run from the bottom of the control enclosure to the equipment through a conduit.

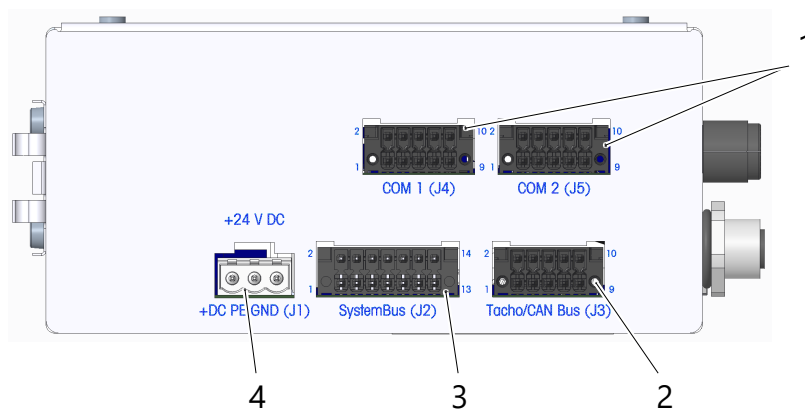
The connectors and interfaces on the main control module CCore4 are defined as follows:

Front view



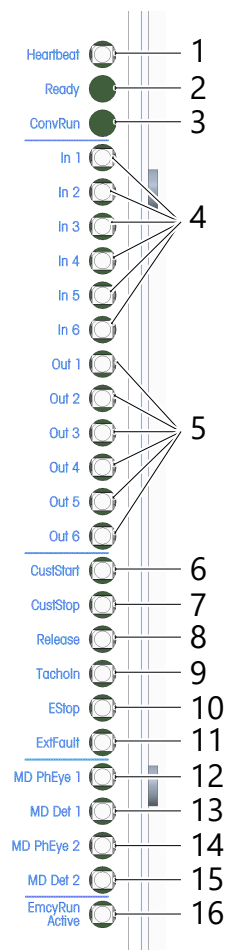
#	Component
1	Potentiometer for emergency run
2	Internal Ethernet port: connection to IPC
3	6 digital inputs and 6 digital outputs (freely programmable)
4	External Ethernet port: connection to customer network
5	Module for Fieldbus ports
6	Motor input/output: connector for various system functions, such as conveyor start/stop, E-stop, and emergency run (status and speed)
7	Interface for load cell (RS485)
8	Customer input/output: connector for extended customer control over system functions, such as conveyor start/stop, conveyor run, and machine status

Top view



#	Component
1	Serial ports for interface cards, for example for a metal detector or a weigh data interface: <ul style="list-style-type: none"> Pin 10: shield Pin 5: ground connection (COM GND) Pin 3: data reception (RxD) Pin 2: data transmission (TxD)
2	Tacho/CAN bus (input/output): connector for RS422 or 24V tachometer from or to an external device or for a CAN I/O module
3	System bus (input/output): main connection between C-Core4 and SCBs
4	External power supply +24V DC (pins: +DC, PE, GND)

Image detail of indicator lights

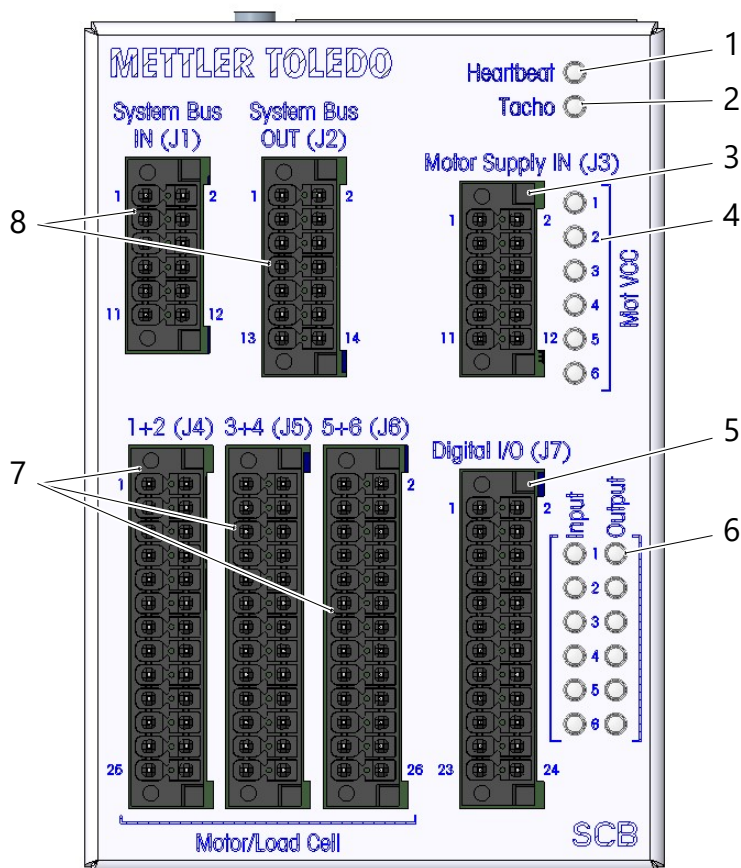


#	Component
1	Heartbeat: power-on signal
2	Ready: system-ready signal
3	ConvRun: conveyor run signal
4	In 1 - In 6: signals for inputs 1-6
5	Out 1 - Out 6: signals for outputs 1-6
6	CustStart: external start signal by customer
7	CustStop: external stop signal by customer
8	Release: motor release signal (motors can be started if LED is on)
9	TachIn: tachometer input
10	EStop: emergency stop signal
11	ExFault: extern fault signal by customer
12	MD PhEye 1: signal of metal detector light barrier 1
13	MD Det 1: signal of metal detector 1
14	MD PhEye 2: signal of metal detector light barrier 2
15	MD Det 2: signal of metal detector 2
16	EmergencyRun Active: emergency run ON signal

3.19.5 Smart Connection Board SCB

The smart connection board (SCB) is an optional device that is connected to the main control module CCore4. It provides 6 additional CAN-bus connectors for up to six motors and/or load cells. The SCB also provides 6 additional digital input and output pins. Depending on the configuration, the system can be equipped with several cascaded SCBs.

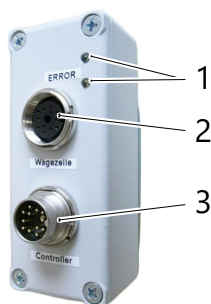
The connectors and interfaces on the SCB are defined as follows:



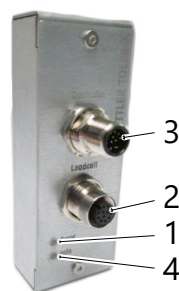
#	Component
1	Heartbeat: power-on signal During normal operation, the heartbeat LED flashes with a frequency of 2 Hz. If not, this may indicate an error.
2	Motor tachometer signal
3	Motor power supply (24 V / 48 V)
4	Motor supply indicator lights
5	6 digital inputs and 6 digital outputs (freely programmable)
6	Input/output indicator lights
7	CAN-bus connector for up to 6 motors and/or load cells
8	System bus input/output for the connection between CCore4 and other SCBs (if available)

3.19.6 MID-Box

The MID-Box is required to fulfill the requirements of the Measuring Instruments Directive (MID). It is only necessary for MID-approved equipment.



MID-box for main control module XRTC



MID-box for main control module CCore4

#	Component
1	Indicator light for error signals
2	Interface for load cell (RS485)
3	Interface for main control module
4	Indicator light for information signals

The MID-Box is mounted between the main control module and the load cell. It performs several tasks:

- passing non-deletable entries in the logbook
- providing a query function for the availability of logbook entries
- providing permanent data storage for software authentication and integration tests
- processing error outputs for system notifications
- transmitting load cell data
- deleting logbook entries

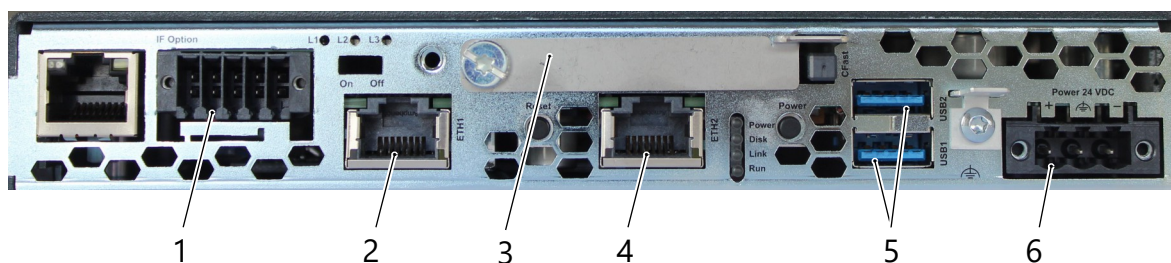
3.19.7 IPC Module

The IPC (Industrial PC) provides serial interfaces and transfers statistical data between the main control module and the HMI. The operating system and the data are stored on a memory card. IPC and main control module are connected by an ethernet cable.

IPC Module for 7" and 12" HMI - Option 1

This IPC module is mounted to the back of the HMI.

The 12" HMI is available in two different designs with different IPCs. The following figure shows the interfaces of option 1 which is also applicable for the 7" HMI:



#	Component
1	Serial port for weigh data interface: <ul style="list-style-type: none"> Pin 10: shield Pin 9: ground connection (COM GND) Pin 3: data reception (RxD) Pin 5: data transmission (TxD)
2	Ethernet connection 1 (ETH1)
3	CFAST card
4	Ethernet connection 2 (ETH2)
5	USB port
6	External power supply

IPC Module for 12" HMI - Option 2:

The following figure shows the interfaces of option 2 which is only available for the 12" HMI:

#	Component
1	Ethernet connection 1 (ETH1)
2	External power supply
3	USB port
4	Ethernet connection 2 (ETH2)
5	Serial port for weigh data interface: <ul style="list-style-type: none"> Pin 1: not assigned Pin 2: data reception (COM1_RxD) Pin 3: data transfer (COM1_TxD) Pin 4: not assigned Pin 5: ground (GND) Pin 6: not assigned Pin 7: request to send (COM1_RTS#) Pin 8: clear to send (COM1_CTS#) Pin 9: +5 V
6	USB port

4 Spare and Wear Parts

This chapter gives information on the replacement of spare and wear parts.

Before replacing parts of your equipment, please consider the following information.

NOTICE

Property damage due to non-original parts

Replacing equipment components with non-original parts can lead to performance losses and property damage.

- 1 Use only original spare parts and accessories from METTLER TOLEDO.
- 2 Make sure that the new spare part has the same article number as the old part.

Note The spare parts list is stored in the Installation and Maintenance Documentation folder on the download portal. The file name starts with "ET...".

All warranty claims are void in case of damages that result from using non-original spare parts.

For safety and warranty reasons, only METTLER TOLEDO authorized and trained technical personnel must carry out the replacement of the following components:

- Terminal
- Load cell

If you want to conduct maintenance and repair yourself, then please contact your METTLER TOLEDO Service representative for information about training.

4.1 Service

If you wish to contact the Service department, please have as much information on hand as possible:

- Equipment type
- Serial number
- METTLER TOLEDO order number
- Precise wording of the error message or detailed fault description
- Your contact details

4.2 Contact Information

For technical support, please contact your local METTLER TOLEDO representative.

5 Transporting and Unpacking

This chapter gives Information on how to unpack and transport the equipment.



WARNING

Serious injury due to wrong handling of the metal detector

Inappropriate handling of the metal detector may cause crushing or tipping over.

- Follow the instructions given in the accompanying documentation for a safe handling of the metal detector .



CAUTION

Crushing by falling objects

The equipment and its components are heavy. They can cause injuries when they drop or tip over.

- Always wear safety shoes with steel-protected caps when handling equipment and equipment components.

NOTICE

Risk of property damage

In order to avoid any damage to the equipment, only unpack the equipment after it has reached its final destination.



NOTICE

Consider the lift point labels

In order to avoid damage to the equipment, lift the equipment at the correct lift points as shown by the blue lift point labels. Allow only qualified personnel to operate the lifting devices when transporting and lifting the equipment.

5.1 General Information

The equipment can be delivered either on a wooden pallet or in a crate:

- Wooden pallet: The equipment is tied with bolts and PET stripping bands to the wooden pallet. A packaging film is wrapped around it.
- Crate: The equipment is delivered in a wooden crate and fixed with bolts to the floor of the crate.

Note The packaging material protects the equipment from damage and must not be removed until the equipment reaches the desired destination.

5.2 Unpacking the Equipment

This section describes how to unpack the equipment after shipment.

NOTICE

Risk of property damage

Take care not to disturb the positioning of the components when you remove the wrapping.

To unpack the equipment, proceed as follows:

- 1 If the equipment is delivered in a crate, it is bolted to the floor of the crate. Remove the front of the crate, unscrew the bolts and use a forklift to move out the equipment.
- 2 **NOTICE: Risk of property damage. Make sure you do not damage the surface of the equipment.** Carefully cut the packaging film.
- 3 Remove the protective cover.
- 4 Remove the PET strapping bands.

- 5 Carefully remove all cling or bubble wrap from around the components of the equipment.
- 6 Make sure that all bolts are tight and secure.

5.3 Transporting the Unpacked Equipment

NOTICE

Risk of property damage

Never hold, lift, push, pull, drag or carry the checkweigher by the weigh conveyor, the infeed conveyor, the outfeed conveyor or motors. This can cause significant damage to the load cell.

NOTICE

Property damage when lifting the equipment

The equipment can be damaged when it is lifted without due caution.

- 1 When accessing the lifting points with the forks of the forklift make sure that no cables are crushed in between equipment frame and forks.
- 2 If your equipment contains catch bins, make sure not to crush them with the forks.
- 3 Before lifting the equipment off the ground make sure it is resting stably on the forks.

To transport the equipment after it has been unpacked follow the steps below:

- Use a forklift to move the equipment.
- 1 Move the forks of the forklift under the lowest tubes of the frame to the lifting points.
- 2 Adapt the distance of the forks according to the center of gravity of the equipment and the lifting points.
- 3 Have another person hold the upper tube of the frame to ensure stability of the equipment.
- 4 Test the stability of the equipment by raising it slightly from the floor.
- 5 If the equipment is stable, lift it completely from the floor.
If the equipment is not stable, adjust the distance of the forks and test the stability again until the equipment is stable.
- 6 Move the equipment carefully to the desired place.
- 7 Put the equipment down and remove the forks of the forklift.

6 Installation and Setup

This chapter describes the installation steps before handing the equipment over to the operator.



⚠ DANGER

Danger to life by electrocution

Make sure that the control enclosure is only accessed by authorized personnel.



⚠ DANGER

Danger to life for personnel with cardiac pacemakers

The electromagnetic fields inside and directly outside the aperture of metal detectors can affect the operation of cardiac pacemakers and other active or passive medical devices (implanted or external).

- Keep personnel fitted with these types of devices away from the proximity of the aperture (at least 200 mm distance) until they have confirmed that they are safe at a magnetic field strength of 1 A/m.



⚠ CAUTION

Crushing by falling or moving objects

The equipment and its components are heavy. They can cause injuries when they drop, tip over or move during maintenance.

- 1 Always wear safety gloves and safety shoes with steel-protected caps when handling equipment and equipment components.
- 2 When closing a guard door, do not place hands underneath the guard door.



⚠ CAUTION

Risk of crushing the hand when reaching into a catch bin

Reaching into a catch bin during operation can lead to hand injury.

- Only trained and authorized personnel must have access to the catch bin.

Note Before you start installing the equipment, inspect the equipment internally and externally for physical damage. If there are any signs of physical damage to the equipment, do not proceed. Call METTLER TOLEDO Service for advice.

The following sections describe the installation of the equipment.

6.1 Positioning the Equipment

This section describes how to position the equipment at its destination place.



⚠ WARNING

Personal injury caused by control enclosure tipping over

A freestanding or floor-mount control enclosure can easily tip over and cause personal injury.

- 1 Do not place the control enclosure onto blocks or temporary supports.
- 2 Bolt a freestanding or floor-mount control enclosure to the floor.



CAUTION

Crushing between HMI and wall/pillar

If the HMI is not correctly fixated, you may crush your hands or fingers between the HMI and the wall or pillar when operating, transporting, or maintaining the equipment.

- When installing the HMI, tighten up the screws of the HMI so that it is fixated.

NOTICE

Incorrect weighing results due to outside influences

Air drafts, vibrations, and other outside influences can cause incorrect weighing results.

- 1 Make sure that there are no noticeable air flows in the vicinity of the equipment.
- 2 Make sure that the floor is level and solid.
- 3 Make sure that the equipment does not touch any other machinery.
- 4 Do not attach cable conduits to the equipment.

When positioning the equipment, observe the following points:

- Make sure that the floor is level and solid.
- Locate the equipment correctly in relation to other machinery of the production line.
- Make sure that the equipment is located in the correct orientation for the product flow.
- Make sure that you have access to the control enclosure at any time.
- If your system is equipped with a freestanding or floor-mount control enclosure, bolt it to the floor to prevent it from tipping over.
- If the HMI needs to be mounted on a wall or a pillar, make sure that the screws are tightened.

6.2 Mechanical Installation

The following sections describe the mechanical installation of the equipment.



WARNING

Personal injury caused by equipment tipping over

- 1 Do not use blocks or temporary supports to increase the transport height. Use only the leveling feet.
- 2 Bolt all leveling feet to the floor after positioning and height adjustment.

6.2.1 Installing the Weigh Conveyor

The weigh conveyor is packaged separately from the equipment. This protects the weigh conveyor against possible mechanical impact and damage during transport.

NOTICE

Risk of improper use of the weigh conveyor

The weigh conveyor and the load cell are high precision weigh instruments and can be easily damaged when improperly used.

- 1 Do not place any tools on the weigh conveyor.
- 2 Do not let any objects drop onto the weigh conveyor.

Installing the Frame

Before you install the frame, make sure that there is enough space and no noticeable vibrations present at the location where you install the frame. To install the frame, follow these instructions:

- 1 Transport the frame to the installation location.
- 2 Put the frame down gently.

- 3 Remove the protective crate carefully.
- 4 Unpack the weigh conveyor and attach it to the frame (see instructions below).
- 5 Level the frame by precisely adjusting the leveling feet.
- 6 Tighten the lock nuts of the leveling feet of the equipment.
- 7 Bolt all leveling feet to the floor.

Attaching the Weigh Conveyor to the Frame

To attach the weigh conveyor to the frame, follow these instructions:

- 1 Use the four guiding pins for the correct alignment and place the weigh conveyor onto the conveyor body support of the load cell.
 - 2 Loosen the hex head screws of the timing belt guard and remove it.
 - 3 Attach the timing belt of the conveyor pulley to the motor pulley.
 - 4 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.** Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.
 - 5 Make sure that the weigh conveyor is placed correctly on the four guiding pins.
 - 6 Fix the conveyor body with the lateral clips.
 - 7 Reassemble the timing belt guard.
 - 8 Make sure that the weigh conveyor is horizontally aligned and on a level with the infeed and outfeed conveyor.
- ➔ The weigh conveyor is installed.

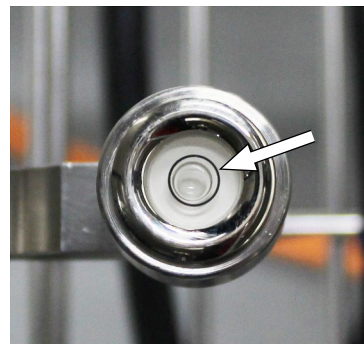
6.2.2 Leveling a Load Cell

To achieve precise weighing results, the load cell must be leveled before initial commissioning. The load cell may or may not be equipped with a circular spirit level.

Note Load cells without a circular spirit level have already been aligned to the weigh conveyor at the manufacturer's site. However before commissioning, the equipment must be leveled in accordance with the weigh conveyor at the site of operation. MID-approved equipment must not be moved again after installation, otherwise the MID approval will expire.

Load Cell with Integrated Spirit Level

- 1 Check if the air bubble of the spirit level is inside the black circle.
 - 2 If necessary, align the load cell horizontally by adjusting the leveling feet of the equipment until the air bubble of the integrated spirit level is inside the black circle.
- ➔ The load cell is level.



Load Cell without Integrated Spirit Level

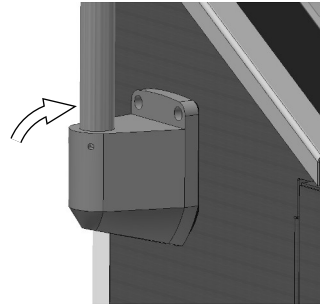
- 1 To check if the weigh conveyor is level, use a spirit level which has a deviation of max. 0.5 mm/m and place it onto the weigh conveyor, once in transport direction and once across transport direction.
 - 2 If necessary, align the weigh conveyor by adjusting the leveling feet of the equipment until the air bubble of the spirit level is within the two marks.
- Note** Make sure that the transport height of the equipment equals the transport height of upstream and downstream machinery.
- ➔ The load cell is level.



6.2.3 Installing the Signaling Device

For transportation, the signaling device is removed to avoid damages during transportation of the equipment. This section describes how to reinstall the signaling device.

- 1 Open the control enclosure and loosen the three screws of the signaling device base.
 - 2 Turn the signaling device around into the upright position and retighten the screws that fix the signaling device to the control enclosure.
- ➔ The signaling device is installed.



6.2.4 Installing a Load Cell on a Separate Frame

This installation is optional and only valid if the load cell is mounted on a separate frame.



CAUTION

Excessive physical load due to heavy load cell frame

The load cell frame is heavy. Lifting it can lead to excessive physical load.

- Have at least two people assemble the separate load cell frame.



CAUTION

Crushing between load cell frame and floor

When installing the load cell on a separate frame, you may crush your hands or fingers between the load cell frame and the floor.

- 1 At first assemble the leveling feet.
- 2 Then unscrew the transport locks.

NOTICE

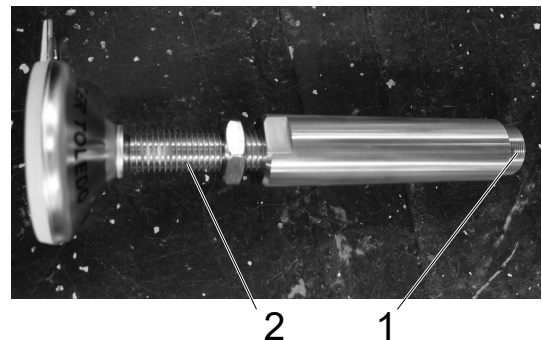
Load cell damage due to incorrect installation

The load cell can drop to the floor and get destroyed. This will happen if the leveling feet are not mounted when the transport locks are removed.

- 1 Mount the leveling feet before removing the transport locks.
- 2 Do not apply force to the separate load cell assembly.

A load cell that is on a separate frame is delivered with transport locks. For the installation the separate frame needs to be disconnected from the main frame of the equipment. To install the load cell, proceed as follows:

- 1 The additional leveling feet are shipped with the equipment. Each has a mounting thread (1) and a thread to adjust the height (2).



- 2 The inner frame has two tubes with four threads at the bottom (3). Mount the four additional leveling feet with the mounting threads (1) into the tubes of the separate frame.

➔ In total, eight or more leveling feet are mounted.

- 3 Adjust the height of the leveling feet by turning the adjustment thread (2) until the leveling foot touches the ground.



3

- 4 Unscrew the four transport locks (4). **Note** Make sure the additional leveling feet are mounted before you remove the transport locks.

➔ The separate frame stands on its own leveling feet and is disconnected from the main frame.



4

6.2.5 Mounting a Pusher to a Customer Conveyor

This installation is optional and only valid if the sorting device is delivered separately and not mounted on the outfeed conveyor by METTLER TOLEDO.



CAUTION

Personal injury because of incorrect installation

Hands can be crushed between conveyor and pusher plate if the space between these components is incorrect.

- 1 Make sure that the space between conveyor surface and pusher plate is smaller than 5 mm or greater than 25 mm.
- 2 Make sure that the pusher plate is positioned above the conveyor body when the pusher cylinder is not extended.

NOTICE

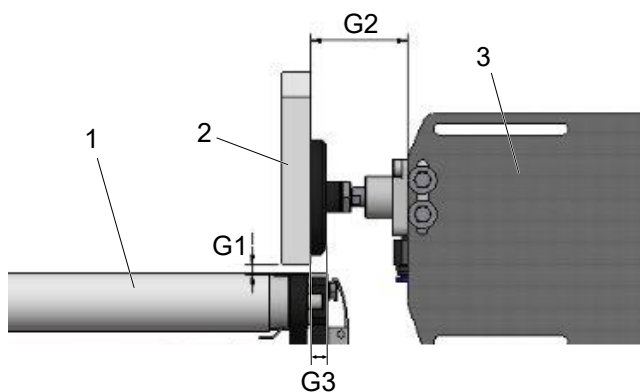
Risk of damaging the pusher and the conveyor

If mounted in the wrong position, the pusher interferes with the conveyor or the product. This can damage the pusher and the conveyor.

- Make sure that the pusher is mounted correctly.

METTLER TOLEDO does risk assessments on each equipment. Since we do not know how you mount the sorting device, it is your responsibility to fulfill the safety standards. As support, we can provide instructions for a safe installation. If you have any questions, contact your METTLER TOLEDO Service representative to help with proper installation and setup.

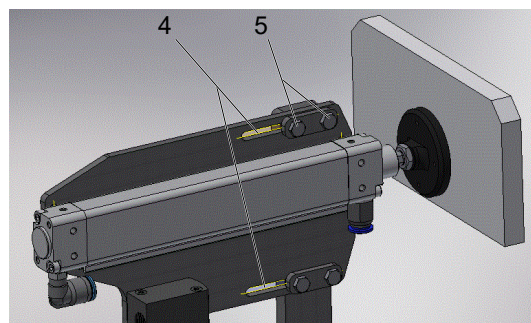
The following figure is an example of a pusher:



- You need to supply your own frame to mount the pusher. This frame needs to be stable to guarantee a smooth and reliable sorting of products.
- To avoid a cutting hazard, the pusher plate (2) must be mounted above the conveyor (1). The distance (G3) must be greater than 0mm.
- To avoid a crushing hazard, the distance (G1) between pusher plate (2) and conveyor (1) shall be less than 5mm or greater than 25mm.
- The spacing (G2) between the pusher plate (2) and the pusher body (3) shall be greater than 50mm. No part of the frame shall reduce this spacing.
- Proper guarding must be installed to minimize the risk of reaching into the sorting area. The dimensions of the guards can be defined with a task-based risk assessment.

The following steps explain how to mount the pusher to your frame using the mounting clamp provided:

- 1 Attach the pusher to the two mounting slots (4).
- 2 Use two screws (5) and an additional plate for each mounting slot (4). This increases the stability.

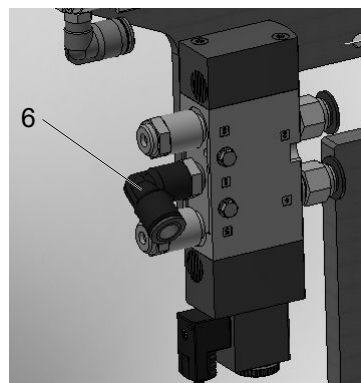


Example how the pusher can be mounted on the outfeed conveyor

- 3 After mounting, the pusher valve must be connected to the air supply. Attach the tube from the air supply to the connector (6) at the pusher valve, as per pneumatic plan.

See section [Pneumatic Installation ► Page 62] for more information about compressed air supply.

After having completed the mechanical, pneumatic, and electrical equipment installation, configure the software settings. For details see section Setting the Rejectors.



Attaching the air supply

6.2.6 Mounting a Soft Pusher to a Customer Conveyor

This installation is optional and only valid if the sorting device is delivered separately and not mounted on the outfeed conveyor by METTLER TOLEDO.



CAUTION

Personal injury because of incorrect installation

Hands can be crushed between conveyor and pusher guard if the space between these components is incorrect.

- 1 Make sure that the space between conveyor surface and pusher guard is smaller than 5 mm or greater than 25 mm.
- 2 Make sure that the pusher guard is positioned above the conveyor body.

NOTICE

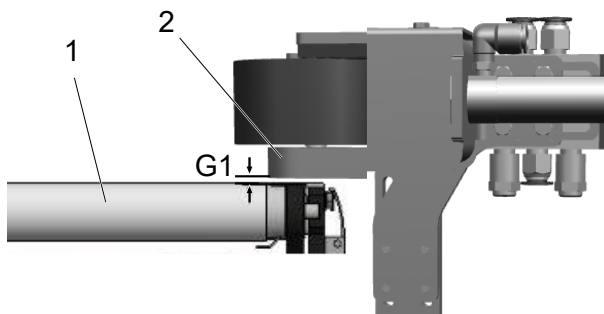
Risk of damaging the pusher and the conveyor

If mounted in the wrong position, the pusher interferes with the conveyor or the product. This can damage the pusher and the conveyor.

- Make sure that the pusher is mounted correctly.

METTLER TOLEDO does risk assessments on each equipment. Since we do not know how you mount the sorting device, it is your responsibility to fulfill the safety standards. As support, we can provide instructions for a safe installation. If you have any questions, contact your METTLER TOLEDO Service representative to help with proper installation and setup.

The following figure is an example of a soft pusher:



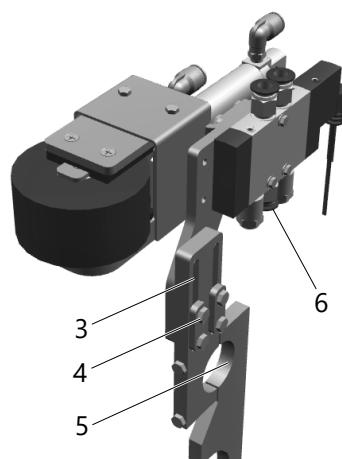
- You need to supply your own frame to mount the pusher. This frame needs to be stable to guarantee a smooth and reliable sorting of products.
- Evaluate, if the mounting clamp provided by us fits with your frame. If not, you need to build your own mounting clamp, too.
- To avoid a cutting hazard, the pusher guard (2) must be above the conveyor (1) as shown in the figure, not next to or behind the conveyor.
- To avoid a crushing hazard, the distance (G1) between pusher guard (2) and conveyor (1) shall be smaller than 5mm or greater than 25mm.
- Proper guarding must be installed to minimize the risk of reaching into the sorting area. The dimensions of the guards can be defined with a task-based risk assessment.

The following steps explain how to mount the pusher to your frame using the mounting clamp provided:

- 1 Attach the pusher to the two mounting slots (4).
- 2 Use two screws (4) and an additional plate for each mounting slot (3). This increases the stability.
- 3 After mounting, the pusher valve must be connected to the air supply. Attach the tube from the air supply to the connector (6) at the pusher valve, as per pneumatic plan.

See section [Pneumatic Installation ► Page 62] for more information about compressed air supply.

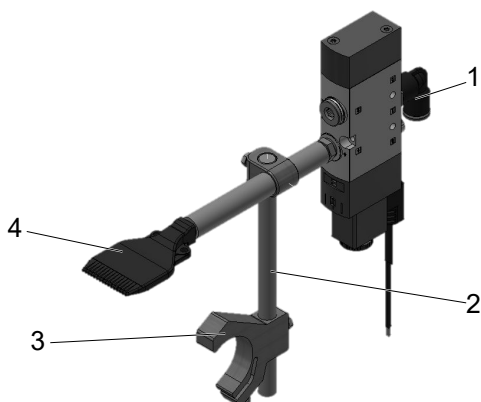
After having completed the mechanical, pneumatic, and electrical equipment installation, configure the software settings. For details see section Setting the Rejectors.



6.2.7 Mounting an Air Blast to a Customer Conveyor

This installation is optional and only valid if the sorting device is delivered separately and not mounted on the outfeed conveyor by METTLER TOLEDO.

METTLER TOLEDO does risk assessments on each equipment. Since we do not know how you mount the sorting device, it is your responsibility to fulfill the safety standards. As support, we can provide instructions for a safe installation. If you have any questions, contact your METTLER TOLEDO Service representative to help with proper installation and setup.



To mount the air blast, proceed as follows:

- 1 Evaluate if the mounting clamp (3) fits with your equipment. If not, you need to build your own frame to mount the rod (2) of the air blast.
- 2 Mount the air blast in the way that the air from the jet (4) removes the products smoothly. Do some testing and readjust the jet accordingly.
 - ➔ Products sorted by the air blast may cause additional hazards and may require additional guarding. The dimensions of the guards can be defined with a task-based risk assessment.
- 3 To have a more efficient air flow, you can mount an air flow deflector which directs the air towards the product. This can be a plate above the jet (4) which is in parallel with the air flow.
- 4 Attach the tube from the air supply to the connector (1) at the air blast.

See section [Pneumatic Installation ► Page 62] for more information about compressed air supply.

After having completed the mechanical, pneumatic, and electrical equipment installation, configure the software settings. For details see section Setting the Rejectors.

6.2.8 Adjusting the Chute

The distance between chute and outfeed conveyor must be as small as possible to avoid personal injury. Therefore, the chute must be adjusted before initial commissioning of the equipment and should be regularly checked and readjusted.



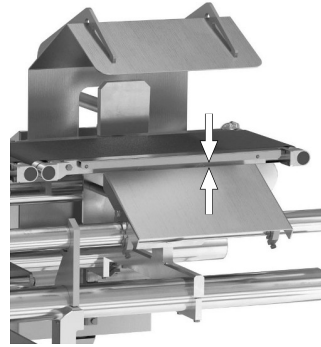
CAUTION

Risk of shearing

When putting fingers or other body parts into the gap between chute and conveyor body, these body parts can be sheared by an active product sorting device.

- 1 Never put fingers or other body parts into any gaps of the equipment during operation.
- 2 Mount the chute as close to the conveyor body as possible.
- 3 Regularly check the distance between chute and conveyor body and readjust if necessary.

- 1 Check if the space between chute and conveyor body is as small as possible.
 - 2 Readjust the space if necessary.
- ➔ The chute is adjusted.

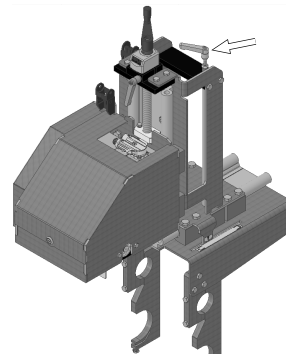


6.2.9 Installing the Servo Rotary Plate

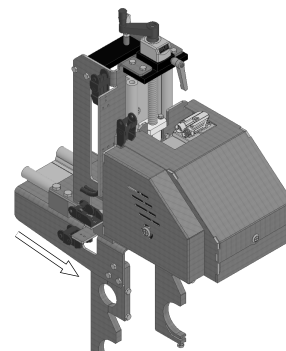
To install the servo rotary plate, proceed as follows:

- 1 Loosen the clamping lever for horizontal movement of the servo rotary plate.

Note It is recommended to note the values at the position indicators before moving the servo rotary plate. This helps to reset the position after having finished the product changeover or maintenance work.



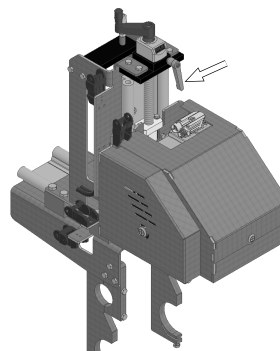
- 2 Slide the servo rotary plate towards the conveyor.



- 3 Loosen the clamping lever for vertical movement of the servo rotary plate.

Note It is recommended to note the values at the position indicators before moving the servo rotary plate. This helps to reset the position after having finished the product changeover or maintenance work.

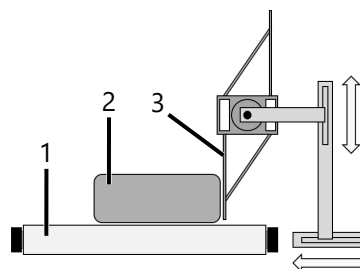
- 4 Turn the crank handle to move the servo rotary plate vertically.



- 5 Adjust the servo rotary plate vertically and horizontally so that the position of the paddles (3) corresponds to the dimensions of the products (2) that move along the conveyor (1).

- 6 Tighten both clamping levers to lock the vertical and horizontal movement of the servo rotary plate.

After having completed the mechanical, pneumatic, and electrical equipment installation, configure the software settings. For details see section Setting the Rejectors.



6.2.10 Adjusting the Starwheel to Customer Components

If the infeed timing/spacing starwheel is used for handling products on customer components, it must be adjusted to the customer components.



WARNING

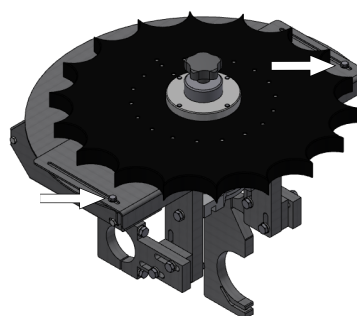
Crushing or drawing-in between starwheel and customer components

If the starwheel is not correctly adjusted to the customer components, your fingers can be crushed or drawn-in between the starwheel and the customer components during operation. The user is responsible for appropriate risk mitigation.

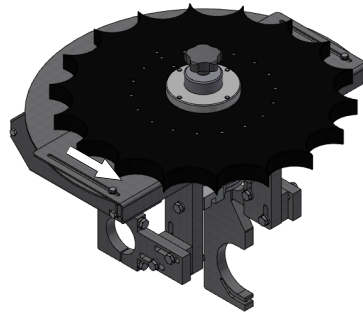
- 1 Before starting the operation, adjust the starwheel to the customer components as described below.
- 2 Make sure that the distance of the metal sheet to customer components is less than 5 mm.
- 3 Perform a risk assessment for the equipment to identify and turn off any hazards.

To adjust a starwheel to customer components, proceed as follows:

- 1 Integrate the starwheel assembly into your production line.
- 2 Loosen the screws of the flat metal sheet of the starwheel.

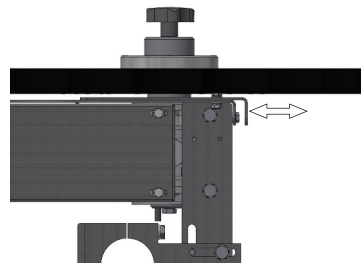


- 3 Move the metal sheet as close as possible to the components.



- 4 Tighten the screws in a position where the distance between metal sheet and customer components is less than 5 mm.

➔ The starwheel is adjusted.



6.3 Electrical Installation

This section describes the electrical installation of the equipment.



DANGER

Death by electric shock due to incorrect installation

Incorrect electrical installation or disassembly can cause fatal injuries.

- 1 The equipment must be connected to and disconnected from power supply by an electrician or equally qualified personnel.
- 2 Observe the wiring diagrams when connecting and disconnecting the equipment.
- 3 Ensure that the connection complies with the safety standards and regulations in your country.
- 4 Before connecting or disconnecting the equipment, de-energize the power supply cable and apply a lockout / tagout procedure and use a suitable measuring instrument to check if supply cable and equipment are de-energized.



CAUTION

Personal injury and property damage due to use of unauthorized spare parts

The use of unauthorized spare parts or cable assemblies may result in personal injury, property damage, and malfunctions or erroneous results.

- Use only genuine METTLER TOLEDO spare parts and cable assemblies with this equipment.

NOTICE

Risk of property damage

Incorrect connection of the equipment to the electric power supply may damage your equipment.

- Ensure that the electrical ratings on the nameplate of the equipment correspond to your supply power.

The equipment was disconnected for shipping. The following sections describe the electrical installation of the equipment.

For electrical installation of the equipment you need the following documents:

- Wiring diagrams
- Order confirmation

Note You can find the wiring diagrams as hardcopy inside the control enclosure and in digital format in the Installation and Maintenance folder on the download portal. The file name starts with "EPL..."

Before you start electrical installation, compare the electrical ratings on the equipment nameplate with wiring diagrams and order confirmation. If the information does not correspond, contact your local METTLER TOLEDO Service representative. If the information corresponds, continue as described below.

6.3.1 Providing a Protected Earth (PE) Ground



⚠ DANGER

Death by electric shock due to incorrect PE grounding

Incorrect PE grounding of the equipment can cause fatal injuries. For correct PE grounding observe the instructions in this chapter and especially the following rules:

- 1 Use stranded cable with 10 mm² gauge or larger and a total resistance of max. 1 ohm.
- 2 Do not use wire nuts.
- 3 Do not daisy chain the PE ground connection.
- 4 Only use the ground studs at the machine frames and inside the control enclosure.

Before you connect the equipment to electrical power supply, you have to ensure Protective Earth (PE) grounding.

- 1 Connect your PE ground rod to a ground stud inside the equipment control enclosure. Ground studs can be found in the lower portion of the control enclosure near a green and yellow sticker.
- 2 Ensure that the green and yellow PE cable between the disconnect switch and a ground stud on the upper left side inside the control enclosure is connected properly.
- 3 If you are installing optional equipment (such as an infeed conveyor): connect every optional equipment frame to a ground stud inside the control enclosure. Use the green and yellow PE cables provided with the equipment. Use the ground studs on the optional equipment frames.

6.3.2 Connection to Electrical Power Supply

Note The equipment has to be connected to a dedicated circuit. The supply power has to be transient free and compatible with the SCCR of the machine.

The supply power introduction is located close to the disconnect switch inside the control enclosure.

To connect the equipment to the power supply, proceed as follows:

- Make sure that the equipment is grounded before you connect it to power supply.
- 1 De-energize the supply cable and apply a lockout / tagout procedure.
 - 2 Ensure that the supply cable is de-energized by means of a suitable measuring instrument.
 - 3 Connect the components as shown in the wiring diagrams.

6.4 Pneumatic Installation

The product sorting devices work with compressed air. This section describes how to install the air supply.

NOTICE

Property damage caused by contaminated compressed air

Moisture or grit causes valves and cylinders to operate sluggishly, to stick, or to fail prematurely. Contaminated compressed air may also contaminate the product.

- Make sure that the compressed air supplied by your system is clean and dry.

The system may be fitted with a single, dual or multiple product sorting device. The air consumption of the product sorting device depends on type and frequency of operation.

In order to install the compressed air, follow the instruction below:

- 1 See the nameplate that is attached to the side of the control enclosure for your equipment's air supply limit values. The standard connection requires a hose of 8 mm. The operating air pressure depends on the product sorting device and is indicated in the respective component description of chapter Equipment Description.

- 2 Connect the compressed air hose of the equipment to the pneumatic system of your plant. This is normally adjacent to the product sorting device. The air supply hose is a push fit to the connector on the side of the regulator.
- 3 Check the pressure gauge.
- 4 Adjust the compressed air supply to the operating air pressure that is required for your product sorting device.
Note The sorting speed is often proportional to the operating air pressure. So you may need to adjust the operating air pressure within the limit values to the throughput and product specifications.
- 5 Make sure that the compressed air supply can handle repetitive product sorting operations. If the compressed air supplied to the product sorting device is not sufficient, the product sorting device may not remove "bad" products from the production line.

6.5 Safe Equipment Integration

The following sections describe the necessary steps for the safe integration of the METTLER TOLEDO equipment with the customer's production line equipment.

6.5.1 General Policy

METTLER TOLEDO takes equipment and workplace safety very seriously and fully assists our customers to provide a safe workplace. These safety procedures include evaluating equipment designs to enhance the safety of our products, collaborating with equipment users to understand their needs, and assisting their efforts to safely integrate the METTLER TOLEDO equipment as part of a functioning production line.

As part of the equipment safety process, METTLER TOLEDO evaluates the risks for its equipment and applies safeguards that are intended to mitigate the identified risks. As a general policy, METTLER TOLEDO provides safeguards that extend up to the normal envelope of the equipment, and therefore, do not provide safeguards beyond that normal envelope. Safeguards at equipment interfaces must be provided by those who have control of the design in those interface areas, and have knowledge of hazards that may be present or may be introduced through the assembly of equipment. To assist the user in this task, METTLER TOLEDO provides safety and interface information to allow the responsible persons to plan and execute the safe integration in an efficient way.

This policy is in alignment with the guidance given in Annex E, ANSI B155-2016, NFPA 79, and provisions of the Machinery Directive that make the "user or the user's integrator" responsible for a declaration of conformity for the assembly of machinery.

Disclaimer: METTLER TOLEDO goes beyond what is normally provided by most equipment suppliers as integration guidance to users. The information given is based on practice applied by METTLER TOLEDO, and our experience with our equipment. Because other equipment presents other conditions unknown to us, METTLER TOLEDO does not guarantee that the methods or materials described will eliminate the potential hazards or risks, and the user accepts sole responsibility for the safeguarding they apply. Once the safeguards are in place, the user must validate their effectiveness, periodically verify their function, and continuously monitor their condition to maintain a safe work environment.

6.5.2 Equipment Hazards and Risks

The METTLER TOLEDO equipment is part of an assembly of equipment, and product in various forms of completion are transferred from equipment to equipment. The equipment supplier has a responsibility to disclose safety hazards and related risks that are accessible through open areas, so the user can devise safeguards for these transfer areas. The information provided by the equipment supplier includes the description of each component and its action that creates the hazard, the location of the hazard relative to the point of access, the size of the access aperture, and the distance from the hazard area to the point of access. The equipment supplier also provides guidance on any hazards that require special guarding and design practices commonly applied to mitigate risks from those hazards.

6.5.3 User's Responsibility

Packaging and processing equipment and production lines often include components and equipment from different sources and therefore, risk can be introduced when the equipment is integrated. Packaging and processing equipment commonly provides openings or connection points at various locations to enable product to move from one piece of equipment to another. It is also normal to extend product transfer mechanisms from one piece of equipment into, onto, or through another piece of equipment to maintain product stability and speed.

The user needs to consider the following when they integrate the METTLER TOLEDO equipment with their production line equipment:

- Mechanical
 - Transfers and safeguarding of transfer points
 - Transport and setting in place of the equipment
 - Interfacing to other equipment
 - Reject management
- Electrical
 - Power introduction and external current limitation
 - Verification of electrical ratings for the environment
- Safeguards
 - Transfer area guarding, hazard labels, and personnel training - identified from the risk assessment for the integration of equipment
- Safety circuit
 - The safety circuit for the integration of equipment
 - Interfaces to individual equipment safety circuits
 - Verification that the safety circuit for the assembly works as intended

6.5.4 Transfer Area Risk Assessment

It is important that the user does a task-based risk assessment of the transfer area. The risk assessment is an evaluation of equipment, or key components of the equipment, to determine the hazards, related harms from the hazards, the probability of harm occurring, and how to reduce the effects of those hazards to a safe level. The transfer area risk assessment needs to include the following:

- The intended use of the METTLER TOLEDO equipment and the user's integrated equipment, with focus on the transfer area.
- The hazards in the proposed guard area, including those disclosed by the equipment supplier, and those created through equipment integration made by the user.
- The interactions of the two pieces of equipment and any hardware component additions.
- The line-control logic between the two pieces of equipment; for example, a 24 V input signal to the METTLER TOLEDO equipment from a remote freestanding product sorting device that is located downstream from the METTLER TOLEDO equipment.

The risk assessment process involves the following steps:

Risk Assessment Process

Step	Task
Scope	Establish what is included, excluded in the assessment.
Use	Define intended use, and foreseeable misuse.
Hazard and harms	Define potential damages and their sources.
Personnel and lifecycle	Establish who is exposed to hazards, and when that exposure is likely.
Identify risk	Estimate probability of occurrence of the hazard resulting in harm.
Risk reduction	Take the necessary steps to reach an acceptable risk level.
Verify reduction	Check the steps used to achieve desired results and do not create additional risks.

These steps are consistent among the different standards where risk assessment methods are described. The common standards used specifically for risk assessments are:

- In the EU, ISO 12100 provides practical guidance and examples of methods required to facilitate risk assessments.
- In the US, ANSI B11.TR3 provides guidance to identify hazards and a procedure for reducing the risks associated with the hazards.

6.5.5 Transfer Area Guarding

Risk minimization is part of the risk assessment process, and guarding is one form of risk minimization. In designing the guard for the transfer area, the user needs to:

- Consider if a fixed or movable guard is necessary. A fixed guard requires a tool for removal and a movable guard requires interlocking, but does not require a tool for removal.
- Choose materials that are appropriate for the specific hazard forms identified in the transfer area risk assessment. Depending on the equipment installation environment, guarding can be either clear plastic or stainless steel.
- Select appropriate openings in the guard that provide access to hazards within the guarded area, or permit the hazard to pass through the guard. The guard must protect the area above the conveyor belt (moving parts over the conveyor) and the areas below the conveyor belt that could provide access.
 - The ingress and egress openings in the guarding must fit to the height of the largest expected package.
 - The movable guard door must be large enough to remove a package from the transfer area after de-energizing the hazard.
- Consider any operational and maintenance activities that require access to the transfer area. It is important to identify the following:
 - Type of activity – personnel may need to access the transfer area:
 - 1) During cyclic operation of the equipment to feed, move, or remove product from the transfer area.
 - 2) While the equipment is de-energized for any maintenance or repair work.
 - Frequency of access – you need to determine if access to the hazard area is necessary on a regular basis or only required from time to time.
 - Personnel who will access the transfer area – operator, supervisor, safety officer, or technically-qualified person.

The common standards used specifically for guarding are:

- In the EU:
 - ISO 13857 establishes values for safety distances in industrial and non-industrial environments to prevent equipment hazard zones being reached.
 - ISO 13854 specifies minimum gaps relative to parts of the human body in equipment.
 - ISO 14120 specifies general requirements for the design, construction, and selection of guards provided to protect persons from mechanical hazards.
- In the US:
 - ANSI B15 specifies requirements for safeguarding suppliers and users, and includes detailed requirements on general safeguarding concepts.
 - ANSI/ASME B20 presents particular guides for the design, construction, installation, operation, and maintenance of conveyors and related equipment.

6.5.6 Integrating the Safety Circuit

Safety circuits are designed to de-energize hazards when intervention is required. Power is interrupted by pressing an emergency stop (E-stop) pushbutton, or by action of a sensor such as an electronic interlock on a movable guard. Safety circuits and movable guards allow users to access these hazard areas with the hazard energy reduced. If the safety circuit is part of the risk mitigation effort, the equipment supplier identifies how the safety circuit is designed, with specific attention to the hazards being addressed. Interfaces to the safety circuit are also identified including input, logic, and output components that are designed into the safety circuit.

If there is a safety hazard that must be de-energized as part of the risk mitigation for the transfer area, the user must integrate the transfer area safety circuit with the METTLER TOLEDO equipment safety circuit. The user must consider the following conditions:

- If an e-stop or movable guard is applied as a safeguard in the transfer area.
- If a hazard needs to be de-energized within the METTLER TOLEDO equipment.
- If a hazard needs to be de-energized outside the METTLER TOLEDO equipment.

For more information on safety circuits, see section [Safety Circuits ► Page 34].

6.5.7 Sorting Signal Output

The equipment may be provided with a potential-free (PFC) signal instead of a product sorting device, e.g. a pusher. This signal can be used to trigger a customer's product sorting or signal device.

The function for a sorting signal is to provide a PFC signal on the internal sorting output (Output 1) of the main control module XRTC. The terminals are UL-listed and rated IP20. The reject signal timing can be distance- or clock-pulse-based. The user can set the timing of the sorting output with a maximum value of 1,000 units. The reject signal output can be assigned to various functions such as weight zone classification, faults or customer actions. To actuate the sorting signal, the conveyors must be running.

6.5.8 Review of Integration Safety Plan

Once the user completes the risk assessment for the transfer area, it should be reviewed with the equipment supplier. This is to make sure there is understanding of the hazards internal to the equipment, and the appropriateness of the safeguards that are planned.

6.5.9 Executing the Safeguard Design

The design must be done by personnel who are qualified in guard design, equipment integration, and safety circuits. Detailed documentation of the design, including the qualification of the safety circuit must be conducted by the user so it is available to any party needing to maintain, repair, or modify the safeguards through the life of the equipment.

6.5.10 Validating the Design

Once the safeguards for the transfer area are built and installed, the design must be validated to make sure it performs as expected. This is generally a good practice for any design, but a required action in ISO 13849-2. A common form of validation is a variation of an "Induced Failure Test" (IFT). IFTs create a known fault condition, with an expected symptom of the fault. The fault is then remedied and the system is restored to an operating condition. Failure in any of the response actions invalidates proof of the safeguard. Validation is also done when the design of the safeguard changes, including the replacement of any of the constituent equipments involved with the safeguards.

Validation procedures usually involve internal and external parties, and may involve processes conducted at the equipment supplier's manufacturing site, at the end customer's site, or both. The table below provides an overview of some common validation processes, and the parties involved in executing them.

Validation Processes

Parties involved	At the supplier (equipment manufacturer)	At the end user site
External	<ul style="list-style-type: none"> General - By a National Recognized Testing Lab (NRTL) notified body in the EU, as a proof of product compliance with a standard (for example - UL review of design and first allowance for UL listing) Hygienic design - USDA or 3-A design qualification Weighing performance - (for example - MID, NTEP), or an application Weighing performance - (for example - MID, NTEP), or an application Hazardous locations - ATEX or FM initial qualification Quality process - ISO 9001 initial qualification 	<ul style="list-style-type: none"> USDA inspection of the equipment or assembly of equipment, before the first use ATEX qualification at the site (EU) Pre-Start, health and safety review by NRTL for Canadian installations, before start, or on modification of the line MID qualification by the supplier at the site Installation qualifications - by the supplier

Parties involved	At the supplier (equipment manufacturer)	At the end user site
Internal	<ul style="list-style-type: none"> FAT protocol, or IFT protocol, using supplier methods, or using the criteria supplied by the customer - done by supplier's personnel Supplier initial safety audits of manufacturers Declaration of Conformity for the equipment, or Incorporation for partly completed equipment Safety circuit qualification for a product, or first-use on custom equipment Equipment safety - designbased risk assessment, safety circuit qualification and induced failure testing, for a model, or a custom application 	<ul style="list-style-type: none"> Declaration of Conformity for the Assembly of Machinery (required by the Machinery Directive) Hazardous location - site installation by the user's professional engineer Safety qualification of equipment or line by the corporate safety officer; task-based risk assessment and safety circuit IFT Functional and performance testing for accuracy, product sorting device cycling

6.5.11 Verifying the Safeguards

Over the life of the equipment, the user directs the appropriate type and frequency of verification methods that provide periodic qualification of the safeguards applied. The table below highlights some common activities related to performance verification processes. These activities can be performed for both the equipment and equipment integration components.

Verification Processes

Parties involved	At the supplier (equipment manufacturer)	At the end user site
External	<ul style="list-style-type: none"> Quarterly review of electrical documents and constructions to retain UL-listing, or other third-party approvals ISO 9001 annual audits 	<ul style="list-style-type: none"> Annual or semi-annual qualifications by weights and measures notified bodies USDA visits to ensure continued compliance OSHA inspection
Internal	<ul style="list-style-type: none"> High-potential and ground testing for HV circuits Safety circuit semi-annual qualification for models Supplier annual safety audits 	<ul style="list-style-type: none"> Safety circuit checks Accuracy tests Product sorting device challenge tests with known faults

As with validation, documentation of the verification practices is done as part of the user's safety or quality program.

6.5.12 Monitoring the Safeguards

Monitoring of the safeguards are done by simple observation of the condition and function of the component parts of the safeguard system. With Category 3 safety circuits, safety relays have continuous monitoring of the two channels of the safety circuit. The table below outlines the recommended procedures when routine performance monitoring testing is done for the equipment and equipment integration components within the manufacturing cycle.

Monitoring Procedures

Point in time	Objective
Start and finish of the daily production shift	To confirm the in-line product inspection systems detects and rejects in accordance with the standards that have been set, and make sure any additional warning systems are functioning correctly.
Regular intervals during a production run	To make sure that any product that has passed through the in-line product inspection equipment since the last successful test can be quarantined if a system fails a performance test. The product can therefore be easily identified and isolated pending further action.

Point in time	Objective
Production batch changeover	To confirm the device continues to detect and reject in accordance with the standards. This is most important when the change of product type requires a selection of a different product memory setting within the equipment.
Settings changes	To confirm detection and rejection in accordance with the sensitivity standard.
After downtime for repairs	To make sure that the in-line product inspection system and reject mechanism are operating in accordance with the standards.

As with validation, documentation of the monitoring practices is done as part of the user's safety or quality program.

6.6 Measuring the Noise Emission

The equipment's noise emission is below 80 dB. However, the noise emission can temporarily be higher when products are sorted. This value depends on the product type and the drop height. It is therefore recommended to measure the noise emission before initial use of the equipment and after each package changeover.



CAUTION

Hearing impairment by sorted products

Depending on the type of products being sorted, the noise emission can temporarily be higher than 80 dB. This may cause hearing impairment.

- 1 Measure the noise emission in the proximity of the product sorting and product collection areas when the equipment is operating.
- 2 If the measured values are higher than 80 dB, attach warning labels to the affected area and consider this hazard in your risk assessment and SOP.

To measure the noise emission of the equipment, proceed as follows:

- 1 Make sure that all equipment components and safety devices are correctly installed and operational.
- 2 Turn on the equipment.
- 3 Let several trial products pass the equipment while measuring the noise emission near the product sorting and collection devices when the products are rejected.
- 4 If the measured values are higher than 80 dB, attach warning labels to the affected areas and consider this hazard in your risk assessment and SOP.

6.7 Preparing the Equipment for Operation

This chapter describes the installation steps before handing the equipment over to the operator.

To prepare the equipment for operation, proceed as follows:



DANGER

Danger to life by electrocution

Make sure that the control enclosure is only accessed by authorized personnel.

- 1 Make sure that the equipment is correctly positioned as described in [Positioning the Equipment ► Page 51].
- 2 Make sure that all equipment components and safety devices are correctly installed.
- 3 Make sure that the equipment is connected to the energy supplies.
- 4 Turn on the equipment.
- 5 Follow the instructions in the following sections to set up the HMI and create a new package as described in [Packages: Creation and Maintenance ► Page 107].
- 6 Conduct a trial run to check if all components are operational.
- 7 Measure the noise emission of the equipment as described in [Measuring the Noise Emission ► Page 68].
- 8 **CAUTION: Risk of crushing by falling products when reaching into a catch bin during operation. Only trained personnel should have access to the catch bin.**
Make sure that the catch bins may only be accessed by authorized personnel.

6.8 Time and Date

To set the time and date of your system, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Setup > General > Time and Date**.
 - ➔ The screen **Time and Date** opens up.
 - 3 Edit the data. For more information, see table below.
 - 4 To confirm time and date, touch **Set Time**.
 - ➔ The window **Perform Final Evaluation?** opens up. See [Final Evaluation Confirmation Prompt ▶ Page 91].
 - 5 To perform final evaluation, touch **Yes**.
 - or-
 - To deny final evaluation, touch **No**.
- ➔ The settings are saved.

Explanation of the screen

Parameter	Description
Select 'Today'	Current day
Hour (24h)/Minute	Exact time in 24h modus
Time Zone	Local time zone
Auto Daylight	Automatically sets the daylight saving time / summer time
Time server	If activated allows for synchronization with the Network Time Protocol (NTP) Server

Explanation of the buttons

Button	Description
Set Time	Confirms time and date
Set Zone	Confirmation of the time zone
Synchronize now	Synchronization with the Network Time Protocol (NTP) Server

6.9 Peripherals Control Panel

Selected potential-free contacts can be released on this Peripherals Control Panel by the operator. A very common use is a sensor-actuator test. The Peripherals Control Panel sends a pulse to an actuator when the operator touches a dedicated button on the Peripherals Control Panel. It also can be used to interrupt the electrical connection to a specific sensor. This simulates a system fault such as a cable breakage and verifies the electrical input of the main control module. All crucial sensors and actuators can be checked for responding or non-responding condition quickly and easily. The Peripherals Control Panel can be used in combination with PLC controls to release certain actions manually.

To test the sensors and actuators with the Peripherals Control Panel, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Actions > Peripherals control panel**.
 - ➔ The screen **Peripherals control panel** opens up.
- 3 Touch the button of the function that you want to test.
 - ➔ A message is displayed in the message section.
- 4 If an actuator is tested, observe the actuator.
 - ➔ The function is tested.

Explanation of the screen

Symbol	Description
	The function is tested with a static signal.
	The static signal is switched off and the function is not tested.
	If no symbol is displayed, the function is tested with a dynamic pulse.

Note All static outputs and all messages are reset to default after exiting the Peripheral Control Panel.

6.10 Equipment Configuration: First steps

In this menu, you can change various settings and parameters of the system.

To change the system settings, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > General > Miscellaneous Setup**.
➔ The screen **Miscellaneous Setup** opens.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
➔ The settings are saved.

Explanation of the screen

Parameter	Description
Machine-ID	Identification of the equipment. Is used in the network, for printouts etc. Note It is recommended that the machine ID consist exclusively of numerical characters.
Timeout Language	The basic language if no user is logged in.
Save Last Login Name	 : The last logged-in user account is suggested.  : No user account is suggested.
Quick Access Box	Activation and positioning of the Quick Access Box button on the home screen. For more information see the section Quick Access Box.
Audit Trail	 : Storage of local audit trail data is active.  : Storage of local audit trail data is not active. The local audit trail is still visible in the screen Information but not up-to-date. The audit trail is a list in the form of a table, containing the records of all changes / modifications made to parameters. It is the base for the list 'Who did what when?' in the Login Server.
Use sub-batches	Only visible if the function Counter Statistics is activated.  : The function Counter Statistics uses sub-batches.  : The function Counter Statistics does not use sub-batches. Note: Only deactivate after all orders and batches are completed, because it affects the batch record table.
Culture	Culture specific features for character set of the keyboard, time/date display etc.
Hold Statistics Time During Motor Stop	Only visible if the function General Statistics is activated.  : One statistics hour has the same length as one production hour. The production hour is only accumulated, as long as the motors run. The time measurement for recording the production hours is interrupted at every motor stop.  : One statistics hour has the same length as one real-time hour.
Reset Weight Chart	Deleting the chart of the items on the home screen, if the package memory changeover is carried out.  : The Individual Weights Curve starts over after every change of the article data and after any article changeover (standard).  : The Individual Weights Curve is continuous without any interruption (article changeover etc.).

Parameter	Description
Gliding Mean Value Count / Gliding Mean Value Cnt	Number of products which are considered for the computation of the gliding mean value.
USB Drive	Selection of the USB drive letter.
PC Name	Computer identification in the network. 15 characters maximum. Note A window opens and asks permission for system restart. Touch Yes to save the new PC name and to restart the equipment.

6.11 Allocating Actions to Weight Zones

You can allocate actions of the system to specific weight zones of the current package, such as rejectors, outputs or messages.

To allocate actions to weight zones, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > General > Zone Actions**.
➔ The screen **Zone Actions** opens.
- 3 In **Zones: Default**, select the weight zone.
- 4 In **Action List**, select the action that you want to allocate to the weight zone.
- 5 Touch **[→]**.
- 6 Continue until the list on the right hand side contains all actions that you want to allocate.
- 7 To save the settings, touch **HOME**.
- 8 Confirm with **Yes**.
➔ The actions are allocated to the weight zones.

6.12 Ethernet Network Settings

For this functionality you may need additional user rights.

To edit the Ethernet network, proceed as follows:

- 1 Touch **Menu**.
- 2 Select menu items **Setup > System > Interfaces > Network**.
➔ The screen **Network** opens.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
➔ The Ethernet network settings are edited.
➔ The settings are saved.

Explanation of the screen

Parameter	Description
IP Address	External Internet Protocol address of the equipment. An IP address is a unique address in computer networks and is assigned to each device in the network to interchange data. Provided by customer IT admin.
Subnet Mask	An IP subnet is a subnetwork in which all computers can reach each other. This numerical value determines the local IP subnet. Provided by customer IT admin.
Gateway	Optional. Device that acts as a node and enables data flow between two networks. Provided by customer IT admin.
DNS Server	Optional. Domain Name System. Service that converts addresses of websites or domain names into IP addresses. Provided by customer IT admin.

Parameter	Description
Listening on Port	A port supplements an IP address. Ports are required to be able to assign the data sent to an IP address specifically to an application or service. After starting the TCP server, the TCP server waits for connection requests from TCP clients through the port 'Listening on Port'. The value 23 is pre-set and safe since the default service "Telnet" is based on this port number.
Gareco full length	Optional. Extends the transmission of article and batch names through the Gareco protocol from 10 to 20 characters. Should only be disabled if Freeweigh is used in a version smaller than 6.
Transmission Message Box	

Explanation of the buttons

Button	Description
Open Port 23	
Open LARS port for one session	

6.13 ProdX Integration

ProdX is a supervisory control system designed specifically for METTLER TOLEDO Product Inspection products (checkweighers, metal detectors, x-ray systems, and vision systems).

ProdX is a centralized package management platform where process parameters are deployed across all product inspection devices, production lines, and locations. With ProdX, changes to product setups can be securely implemented simultaneously on multiple product inspection devices including metal detectors and X-ray. This reduces human error and supports production line performance data security. It also monitors for nonconformance or variation in different site locations.

6.13.1 Editing the ProdX Settings

To edit the ProdX settings, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > System > Interfaces > ProdX settings**.
➔ The screen **ProdX settings** opens up.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
➔ The window **To activate the changes the system must be restarted. Restart now?** opens up.
- 5 Confirm with **Yes**.
➔ The ProdX settings are edited.
➔ The settings are saved.

Explanation of the Fields

Field	Description
Enabled	 : ProdX is activated. The article database is compatible with ProdX. The ProdX symbol appears in the home screen.  : ProdX is not activated. No ProdX symbol appears in the home screen.
In home screen: 	Grey symbol: ProdX is activated  but not active due to one of the following conditions: <ul style="list-style-type: none"> the checkweigher is not registered in ProdX the ProdX IP address is incorrect the network connection is interrupted
In home screen: 	Blue symbol: ProdX is activated  and active. The system is connected with ProdX and logged into ProdX.
In home screen: 	Blue symbol with TLS: ProdX is activated  and active. HTTPS is selected and transmits data using Transport Layer Security (TLS), if the HTTPS certificates are correct.
ProdX address	ProdX IP address. Filled automatically by ProdX when connecting. Following communication protocols are available: <ul style="list-style-type: none"> HTTP: Hypertext Transfer Protocol. Transmits data send between server and client. HTTPS: Hypertext Transfer Protocol Secure. Transmits encrypted data send between server and client using Transport Layer Security (TLS).
ProdX port	Filled automatically by ProdX when connecting. Typically '58000' (HTTP) or '58002' (HTTPS).
Server port	Typically '20001' (HTTP) or '20002' (HTTPS). Can be the same on each system.
Offline Backups	Storage of statistics backups if there is no connection to ProdX. Only available if ProdX is configured.  : The storage of statistics backups is activated.  : The storage of statistics backups is not activated. Note By default, the maximum number of stored statistics is 100. If the limit is reached, no more statistics backups are stored.
Client Authentication	Only available if HTTPS is selected.  : Client authentication is activated. Validates if the client certificate was send.  : Client authentication is not activated. Validates server certificate only.

Explanation of the buttons

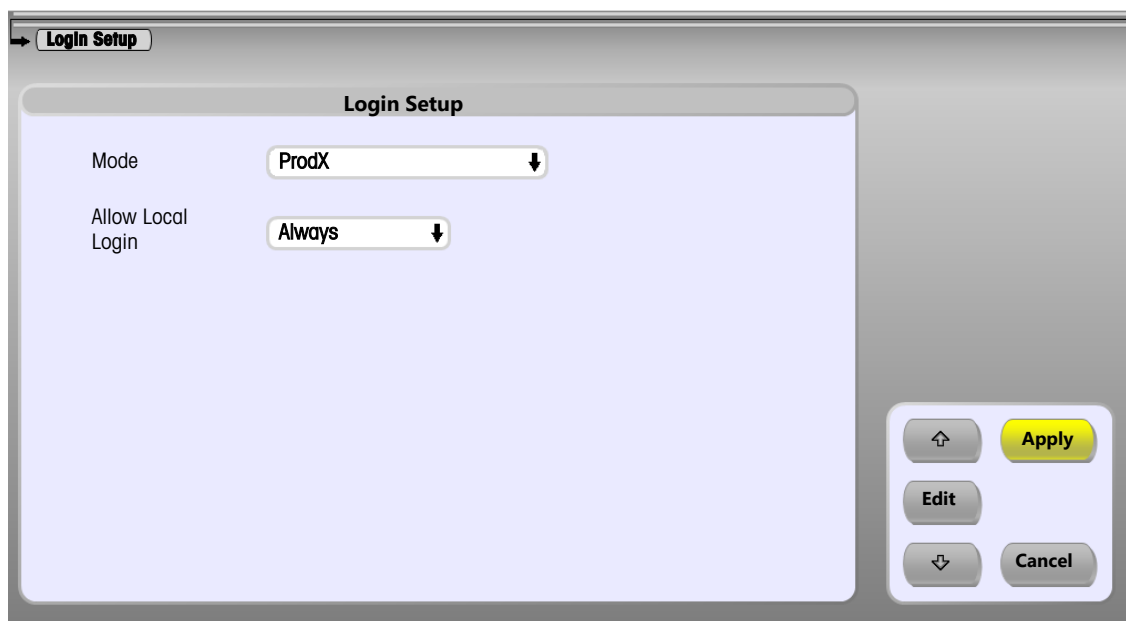
Button	Description
Import certificate	Only available if HTTPS is selected. Imports certificate for client authentication.
Create certificate	Only available if HTTPS is selected. Creates certificate for client authentication.

6.13.2 Editing the ProdX Login

Note The function ProdX is set up either at the factory during setup or after installation by a service technician.

To edit the ProdX login, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > System > Interfaces > Login Setup**.
 - ➔ The screen **Login Setup** opens up.
- 3 In the field **Mode**, select **ProdX**.
- 4 Edit the data. For more information, see table below.
- 5 Confirm with **Apply**.
 - ➔ The ProdX login is edited.
 - ➔ The settings are saved.



Explanation of the Fields

Field	Description
Mode	Select ProdX to use the function ProdX Login with general PC network login credentials provided by the customer server.
Allow Local Login	<ul style="list-style-type: none"> Always: Local login is always possible. User accounts are stored locally on the equipment or in the network. Never: Local login is not possible. Limited: Local login is only possible if there is no connection to the server.

6.14 OPC UA Server

This software function is optional. Depending on the configuration of your system, some functions may not be available.

For this functionality you may need additional user rights.

OPC UA (Open Platform Communication Unified Architecture) is the most recent OPC standard of a method for organizing information and sharing it between systems in industrial processes. OPC is a series of industrial communication protocol standards which are compatible with Ethernet interfaces.

The OPC UA server provides a wide variety of data, setup, and line integration choices by which the equipment can be monitored and controlled remotely. The commands and data sets include information on the entire capabilities of the server, including options and accessories. The OPC server requires a TCP/IP network connection to the equipment. The end user is responsible for PC network creation, administration and maintenance.

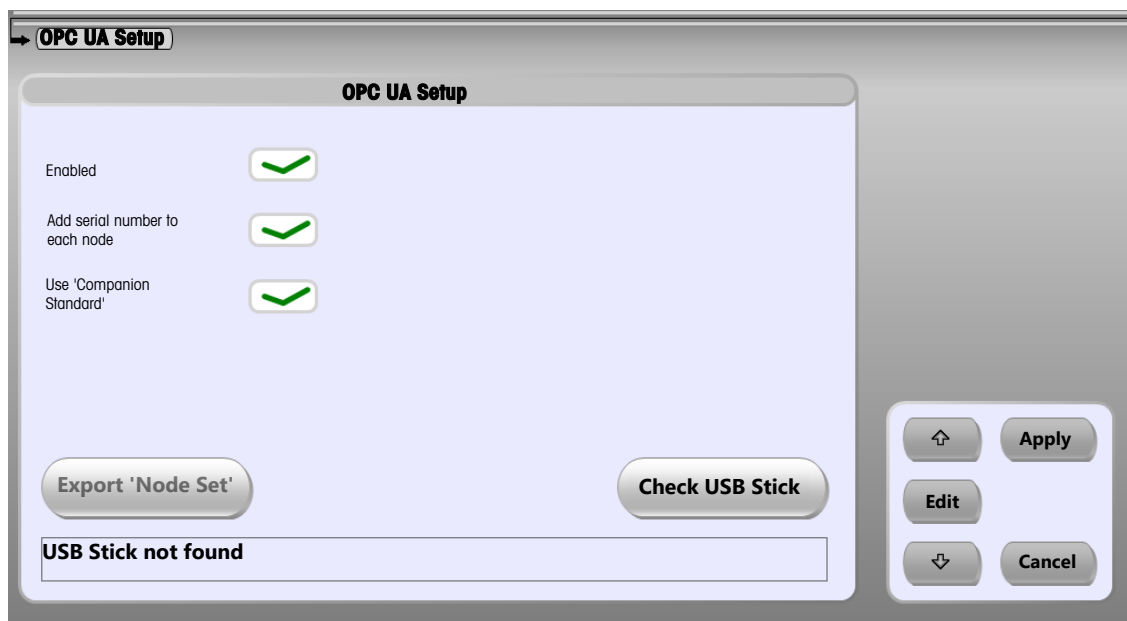
If configured, the OPC UA server is enabled by default. In case of a network malfunction, the OPC UA server can be disabled when searching for the cause.

For more detailed information on the OPC Server, please see the OPC Server Manual.

To set up the OPC UA server, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the item menus **Setup > System > Interfaces > OPC UA Setup**.
 - ➔ The screen **OPC UA Setup** opens.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
 - ➔ If the field **Enabled** was edited, the window **Restart** opens. The equipment needs to be restarted.

- 5 Touch **Yes** to restart the equipment.
 - ➔ The equipment restarts.
 - ➔ The OPC UA server is set up and active.



Explanation of the Fields

Field	Description
Enabled	<p>✓: The OPC UA server is activated.</p> <p>✗: The OPC UA server is deactivated.</p> <p>Note Settings will only be active after the restart.</p>
Add serial number to each node	<p>✓: The OPC UA server hierarchy includes the Companion Specification folder in the address space as defined by the standard.</p> <p>✗: The OPC UA server hierarchy only includes the folder Checkweigher [Serial number]. The OPC UA server hierarchy does not include the folder Companion Specification.</p>
Use 'Companion Standard'	<p>✓: OPC Companion Standard is activated.</p> <p>✗: OPC Companion Standard is deactivated.</p> <p>The Companion Standard defines the OPC client processing of data and information sources represented by the OPC UA server address space, the nodes, the associated types, methods and events available to the clients.</p>
Refresh rate of counters and statistics	Refresh rate of current counter and statistic values available through OPC UA.

Explanation of the buttons

Button	Description
Export 'Node Set'	<ul style="list-style-type: none"> Exports the OPC UA server hierarchy in form of a standardized XML file to a USB stick. The file is exported to a standardized folder drive: \ CSeries\ Model \ Serial number \ OPC \ NodeSet.xml. Existing files will be overwritten. During the export process, a red text box with the message DO NOT POWER DOWN! is displayed.
Check USB Stick	<ul style="list-style-type: none"> Grayed out if no USB stick available. Checks proper connection to the USB stick.

6.15 Final Evaluation Settings

To edit the Final Evaluation Setup, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > General > Final Evaluation Setup**.
 - ➔ The screen **Final Evaluation Setup** opens up.
- 3 Activate the field **Custom Settings**.
- 4 Edit the data. For more information, see table below.
- 5 Confirm with **Apply**.
 - ➔ The Final Evaluation Setup is edited.
 - ➔ The settings are saved.

Explanation of the Fields

Field	Description
Custom Settings	☒ : The settings for the final evaluation can be customized. ☐ : The default settings are activated.
Prompt User	Confirmation prompt Perform Final Evaluation? ☒ : Displays the window Perform Final Evaluation? before a final evaluation is executed. ☐ : Does not display the window Perform Final Evaluation?. All final evaluations are carried out automatically. After completion of an automatic final evaluation, a message is displayed in the message section. The message is logged. Perform Final Evaluation? <ul style="list-style-type: none"> Yes: A final evaluation is carried out. No: The function that caused the request is also cancelled. For example, Final Evaluation Triggered at... Package Change is activated. When denying the final evaluation before a package changeover, the package changeover is not carried out.
Final Evaluation Triggered at...Batch Change	A final evaluation is carried out after a batch change.
Final Evaluation Triggered at... Package Change	A final evaluation is carried out after a package changeover. Forces a batch end prior to any package changeover. The batch name is reset to "###---###".

6.16 Dynamic Load Cell Adjustment

This software function is optional. Depending on the configuration of your system, some functions may not be available.

For this functionality you may need additional user rights.

A package-specific correction factor can be calculated during the dynamic adjustment. This correction factor is calculated by comparison of the mean weight of a package in a dynamic weigh processes and the weight of a package in a static weigh process. The calculation can be done with a test product.

To adjust the load cell, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Packages > Active Package > Dynamic Adjustment**.
 - ➔ The screen **Dynamic Adjustment** opens up.
 - 3 Stop the motor of the system.
 - ➔ The box **Motors stopped?** is checked.
 - ➔ The box **Product on platform?** appears on the screen.
 - 4 Put the test product on the weigh conveyor and wait a few seconds.
 - 5 Touch **Confirm!** to confirm that the product is on the platform.
 - ➔ The box **Product on platform?** is checked.
 - ➔ The box **Motors Started?** appears on the screen.
 - 6 Take the product off the weigh conveyor.
 - 7 Touch **Start** to start the motors.
 - ➔ The motor is running.
 - ➔ The box **Motors Started?** is checked.
 - ➔ The box **Test cycle** appears on the screen. It shows the amount of products to be tested.
 - 8 To change the amount of products for the test cycle, touch the right numeric field and enter the required number.
 - 9 Touch **Start** to start the test cycle.
 - ➔ The test cycle starts.
 - ➔ After the test cycle, the correction factor is displayed in the white field at the bottom of the screen.
 - 10 To accept the correction factor, touch **Apply**.
 - or -
 - To refuse the correction factor, touch **Cancel**.
- ➔ The dynamic load cell is adjusted.

6.17 Product Sorting Device Settings

The settings of the product sorting device (rejector) apply to all packages. A delay offset can be configured for each package individually in the screen Rejector Adjustment, see [Adjusting the Rejectors ► Page 96].

Note The product sorting device settings are set at the factory prior to shipment. Any changes to these settings may cause inaccurate product rejections. Please consult the METTLER TOLEDO service before making changes.

To configure the product sorting device settings, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > General > Rejector Settings**.
 - ➔ The screen **Rejector Settings** opens up.
- 3 In the list **Rejector List**, select the product sorting device.
- 4 Edit the data. For more information, see table below.
- 5 Confirm with **Apply**.
 - ➔ The product sorting device is set up.
 - ➔ The settings are saved.

Explanation of the screen

Parameter	Description
Name	Name of the product sorting device (rejector)

Parameter	Description
Distance	Distance in mm from the center of the product sorting device to the weigh light barrier (WLB). If the product sorting device is upstream of the WLB, the value must be negative. If the product sorting device is downstream of the WLB, the value must be positive.
Offset of delay (+100)	Fine tuning of the product sorting device activation in milliseconds, -500 ms to +1000 ms
Duration	Duration in millisecond (ms) during which the product sorting device is energized by the main control module
Type	Type of product sorting device
Output	The output which is assigned to the control that energizes the product sorting device

6.18 Performance Verification Settings

To configure the dates and settings of the Performance Verification, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > System > Performance Verification (PV)**.
 - ➔ The screen **Performance Verification (PV)** opens up.
 - Note** The information in the tab **Service** can only be edited by authorized personnel.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
 - ➔ The performance verification settings are configured.
 - ➔ The changes are saved.

Explanation of the Field

Field	Description
Lead Time for Warnings	The date from which warning messages until the next Performance Verification and Preventive Maintenance appears on screen. The recommended setting is 14 days.
Lead Time for Alarms	The date from which alarm messages until the next Performance Verification and Preventive Maintenance appears on screen. The recommended setting is 7 days.
Daily Alarm Window Time	The time when the alarm appears on screen. Warnings do not appear on screen. Note A missed date does not affect the functionality of the system.
Info Message Interval	The interval when information messages appear on screen. Note The information messages can be enabled or disabled via the setting Enable Warnings and Alarms.
Enable Warnings and Alarms	All warning messages and alarm messages that are related to the verification setup can be enabled (☒) or disabled (☐).

6.19 User Accounts and User Profiles Setup

The following sections describe how to set up and edit user accounts.

Note The responsibility of the user setup and the user rights allocation lies with the customer!

User Administration Glossary

Term	Explanation															
User	User Account: Login credentials and personal settings of a user.															
Profile	<p>User Profile: Access rights to specific functions. Each user is allocated to a profile and only has access to the functions that are allocated to the user's profile.</p> <p>METTLER TOLEDO provides 4 standard profiles with standard function allocations. The standard profile function allocations can be edited. The standard profiles cannot be deleted.</p> <ul style="list-style-type: none">• QA• Supervisor• Operator• Monitoring															
Level	<p>Access Level: Safety attribute for function access rights to customer user profiles.</p> <p>Each profile is categorized with a level (0 - 3). The higher the level of a profile, the more crucial the functions allocated to it.</p>															
Level of default user profiles	<p>Note The level of default user profiles cannot be changed.</p> <table><tr><td>Default User Profile</td><td>Access Level</td><td>Responsibility Level</td></tr><tr><td>QA</td><td>3</td><td>Crucial functions such as 'Assign Rights to Profiles', 'Edit Profiles', 'Function Allocation'.</td></tr><tr><td>Supervisor</td><td>2</td><td>High responsibility</td></tr><tr><td>Operator</td><td>1</td><td>Low responsibility</td></tr><tr><td>Monitoring</td><td>0</td><td>Only monitoring</td></tr></table>	Default User Profile	Access Level	Responsibility Level	QA	3	Crucial functions such as 'Assign Rights to Profiles', 'Edit Profiles', 'Function Allocation'.	Supervisor	2	High responsibility	Operator	1	Low responsibility	Monitoring	0	Only monitoring
Default User Profile	Access Level	Responsibility Level														
QA	3	Crucial functions such as 'Assign Rights to Profiles', 'Edit Profiles', 'Function Allocation'.														
Supervisor	2	High responsibility														
Operator	1	Low responsibility														
Monitoring	0	Only monitoring														
Level of customized user profiles	<p>When adding a user profile (customized user profile), the added user profile has the same level as the profile of the user which added the new user profile.</p> <p>Only the profiles with the access rights to the function 'Edit Users' can assign profiles and upgrade the level of other profiles and their own profile.</p> <p>METTLER TOLEDO recommends assigning the access rights to the functions 'Assign Rights to Profiles' and 'Edit Profiles' only to a profile of level 3.</p> <p>METTLER TOLEDO recommends assigning the functions 'Assign Rights to Profiles' and level 3 only to a limited number of profiles to prevent access by unauthorized users.</p>															

6.19.1 Adding a User Account

To add a new user, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > Users > Edit Users**.
 - ➔ The screen **Edit Users** opens up.
- 3 Touch **Add**.
- 4 Edit the data. For more information, see table below.
- 5 Touch the field next to **Name** in the section **Edit User Properties**.
 - ➔ An on-screen keyboard appears.
- 6 Enter the user name and confirm with **OK**.
- 7 Touch the field next to **Password** in the section **Edit User Properties**.
 - ➔ An on-screen keyboard opens up.
- 8 Enter the password and confirm with **OK**.
- 9 Enter the new password again and confirm with **OK**.
- 10 Touch the field next to **Profile**.
- 11 Select the desired profile from the list and confirm with **OK**.
- 12 Touch the field next to **Language**.
- 13 Select the desired language and confirm with **OK**.

14 Confirm with **Apply**.

➡ The user is added.

➡ The settings are saved.

Note Write down and do not lose the supervisor password. If you lose the password, then the user access can not be restored. To regain the access, remove and add the user again.

6.19.2 Editing a User Account

To edit user properties, proceed as follows:

1 Touch **Menu**.

2 Select the menu items **Setup > Users > Edit Users**.

➡ The screen **Edit Users** opens up.

3 Edit the data. For more information, see table below.

4 Confirm with **Apply**.

➡ The user is edited.

➡ The settings are saved.

Explanation of the screen

Parameter	Description
User List	Standard: <ul style="list-style-type: none">• Supervisor• Operator• QA
Name	Profile name: standard name of standard profile, or operator name of a customized profile
Profile	List of all profiles, standard profiles and customized profiles
Language	List of all screen languages
Enabled	Only in profile 'QA'. ☒ : Enables the visibility of the marked user name in the login mask. ☐ : Disables the visibility of the marked user name in the login mask. Example: If only customized user accounts are assigned to users, the standard user accounts, such as 'Supervisor' and 'Operator', can be disabled.
Reset button	Only in profile 'QA'. Re-enables the visibility of the marked user name.

6.19.3 Removing a User Account

1 Touch **Menu**.

2 Select the menu items **Setup > Users > Edit Users**.

➡ The screen **Edit Users** opens up.

3 Select the user you want to delete in the section **User List**.

4 Touch **Remove**.

5 Confirm with **Yes**.

6 Confirm with **Apply**.

➡ The user is removed from the system.

➡ The settings are saved.

6.19.4 Resetting a User Account

For this functionality you may need additional user rights.

If the password of a user expires or the allowed number of failed logins is exceeded, the user account becomes locked. After resetting, the user can use the old password again.

To reset the user, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > Users > Edit Users**.
➔ The screen **Edit Users** opens up.
- 3 Select the user whose account is locked.
- 4 Touch **Reset**.
- 5 Confirm with **Apply**.
➔ The user account is reset and the user can log in with the old password.

6.19.5 Adding a User Profile

A user profile is a template that contains common access rights. The user profile makes sure that all users that are allocated this profile have the same access rights.

To add a user profile, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > Users > Edit Profiles**.
➔ The screen **Edit Profiles** opens up.
- 3 Touch **Add**.
- 4 Touch the field next to **Name**.
➔ An on-screen keyboard opens up.
- 5 Enter the profile name and confirm with **OK**.
- 6 Activate (green checkmark) or deactivate (red dash) the parameter and change the values of the parameters if necessary.
- 7 Confirm with **Apply**.
➔ The user profile is added.
➔ The settings are saved.

Explanation of the screen

Parameter	Description
Auto Logoff	Number of minutes (since last screen touch) until the system automatically logs the user off.
Failed Logins	Number of failed logins until a user is blocked.
Min Password	Minimum number of characters for a password.
Password Expiration	Number of days until you have to change the password.
Change password	Forces the user to change the password assigned by the administrator after the first login.
Level	Safety attribute for new profiles. Levels 0 - 3. 0 = lowest level, 3 = highest level. Each new profile has to be assigned to a level. Note Assign the access rights for the functions 'Edit Users', 'Edit Profiles' and 'Assign Rights to Profiles' to a level 3 profile. Note Assign level 3 only to a limited number of profiles to prevent access to the settings by unauthorized users.

6.19.6 Editing a User Profile

To edit a user profile, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > Users > Edit Profiles**.
➔ The screen **Edit Profiles** opens up.

- 3 Select the user profile whose properties you want to change and touch **Edit**.
 - 4 Activate or change the parameters if necessary.
 - 5 Confirm with **Apply**.
- ➔ The user profile is edited.
 - ➔ The settings are saved.

6.19.7 Removing a User Profile

To remove a user profile, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > Users > Edit Profiles**.
 - ➔ The screen **Edit Profiles** opens up.
- 3 Select the user profile that you want to delete and touch **Remove**.
- 4 Confirm with **Yes**.
 - ➔ The user profile is deleted.

6.19.8 Allocating Rights to User Profiles

For this functionality you may need additional user rights.

Note The system is supplied with profiles that have pre-assigned screen allocations. You can change these screen allocations only if you are authorized to do so.

To allocate a specific screen to a specific user profile, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > Users > Assign Rights to Profiles**.
 - ➔ The screen **Assign Rights to Profiles** opens up.
- 3 Touch the profile in the section **Profile List** that you want to change and touch **Edit**.
- 4 Select in the section **Available Rights** the screen rights that you want to add consecutively to the profile.
 - ➔ Section **Available Rights** contains screens that are not allocated to the profile.
- 5 Use → and ← to add or remove screens.
- 6 Repeat until the profile contains all desired screens.
- 7 To save the changes, touch **HOME** and confirm with **Yes**.
 - ➔ The settings are saved and the home screen appears.

Explanation of the screen

Parameter	Description
Allocated Rights	Rights that are already allocated to the profile.
Available Rights	Rights that are currently not allocated to the profile.

6.19.9 Initial Login Data

With the delivery of your equipment the following initial user passwords are set up in the software:

Initial User Passwords

User	Password	Description
Operator	2	Basic user rights that are required to operate the equipment.
Supervisor	3	Advanced user rights including the user setup to create and edit users and passwords.
QS	19991999	This user is used for quality assurance with additional user rights to create statistics. With this user you can add users on supervisor level, in case the password of the supervisor user is lost.

NOTICE

Change user passwords

The user passwords need to be changed after the initial login.

NOTICE

Customer's responsibility

Creation and maintenance of the user passwords, the user profiles and the user rights lies within the customer's responsibility.

Note With sufficient user rights the initial user passwords can be modified. If you lose this information, contact the METTLER TOLEDO Service.

6.19.10 Password Conventions

Users with quality assurance rights or supervisors can specify or change the password conventions. Every password convention can be activated separately for each user profile. The password conventions are set and activated on the screen Edit Profiles.

To open up the screen, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > Users > Edit Profiles**.
➔ The screen **Edit Profiles** opens up.
- 3 Select the user profile of which you want to set the password conventions in the profile list.
- 4 Edit the data. For more information, see table below.
- 5 Confirm with **Apply**.
➔ The password conventions are set up.

Explanation of the Field

Field	Description
	Function activated.
	Function not activated.
Auto Logoff	Automatic logoff. Prevents unauthorized use, if a user forgot to log off from the system. The residual time until the automatic logoff is displayed as a green bar in the field of date and time. After the time has passed, the user is logged off automatically and the system returns to the monitoring mode.
Failed Logins	Amount of failed logins tolerated before the user is blocked. The amount of failed logins can be specified for each user profile separately. When the user exceeds the attempts, then the profile is blocked and he or she cannot login anymore until the profile is reset by authorized personnel.
Min Password	Minimum password length for each user profile to avoid too short and too easy passwords.
Password Expiration	Expiration period of a user password. If the password has already expired, the user is asked to change the password when logging in the next time. The user has to create a new password within the specified period of time, before the old password expires. If the user does not change the password in time, the user profile is blocked. Only a user with quality assurance rights can then unlock this user profile.
Change Password	The administrator provides the first password. The operator needs to change this password at the first login.

6.19.11 Importing and Exporting User Data

You can export and import users and groups. The data is stored to a USB stick. If several systems are operated by the same user group, you only need to create them once and then you can import the user data on the other system.

Export

To export user data, proceed as follows:

- 1 Insert a USB stick into the USB port.
- 2 Touch **Menu**.
- 3 Select the menu items **Setup > Users > Users Export and Import**
 - ➔ The Users Export and Import screen opens up.
- 4 Touch **Export**.
 - ➔ The data is stored on the USB stick.

Import

To import user data, proceed as follows:

- Before you import data, perform a backup of the configuration data. For more information, refer to Backup and Restore.
- 1 Insert a USB stick that contains necessary data into the USB port.
 - 2 Touch **Menu**.
 - 3 Select the menu items **Setup > Users > Users Export and Import**
 - ➔ The Users Export and Import screen opens up.
 - 4 Touch **Import**.
 - 5 Confirm with **Yes**.

The system deletes all existing user data and replaces it with the new data you imported from the USB stick.

7 Operation: Actions

This chapter describes the first actions when operating the equipment.



DANGER

Danger to life for personnel with cardiac pacemakers

The electromagnetic fields inside and directly outside the aperture of metal detectors can affect the operation of cardiac pacemakers and other active or passive medical devices (implanted or external).

- Keep personnel fitted with these types of devices away from the proximity of the aperture (at least 200 mm distance) until they have confirmed that they are safe at a magnetic field strength of 1 A/m.



CAUTION

Crushing between the conveyor body of the separate load cell frame and the standard frame

When applying force to the separate load cell frame, you may crush your hands or fingers between the conveyor body of the separate load cell frame and the standard frame.

- 1 Do not apply force to the separate load cell frame.
- 2 Never reach into the product flow while the equipment is operating.



CAUTION

Eye irritation due to strobe light

Strobe light can lead to eye irritation, constraint vision, and disorientation. Individuals with photosensitive epilepsy may suffer a seizure.

- 1 Do not stare directly at the strobe light, especially at close distance.
- 2 Avoid prolonged exposure to active strobe lights.
- 3 Do not operate the equipment if you have photosensitive epilepsy or if you are sensitive to flashing lights.



CAUTION

Shearing or crushing by moving parts

During operation, product sorting devices move automatically and without notice. Being crushed between or hit by moving parts or falling products causes serious injuries.

- 1 Never reach into the product flow while the equipment is operating.
- 2 Never reach into the area where a product sorting device is working while the equipment is operating.
- 3 Never operate the equipment without the applicable protective guards or product collection devices in place.
- 4 Never open the catch bin or other closed product collection devices while the equipment is operating.

NOTICE

Risk of incorrect inspection results

Vibrations can cause incorrect inspection results.

- Avoid all impacts to the equipment during production.

The system is operated using the terminal, the touchscreen and the switch box (optional).

7.1 Starting the Production

To start the production, proceed as follows:

What to do	As described in...	✓
Start the equipment.	[Starting the Equipment ▶ Page 86]	
Log in.	<ul style="list-style-type: none">• [Standard ▶ Page 88]• ProdX• Login Server• Domain Login	
Select a product.	[Conducting a Package Changeover ▶ Page 93]	

Good to know	As described in...	✓
How to use the user interface	[Using the User Interface ▶ Page 86]	
Changing the Conveyor Belt Speed	[Changing the Conveyor Belt Speed ▶ Page 89]	
Setting the Load Cell to Zero	[Setting the Load Cell to Zero ▶ Page 89]	
Changing the Language	[Changing the Language ▶ Page 90]	
Changing the Password	[Changing the Password ▶ Page 90]	
Enlarging the Weight Display	[Enlarging the Weight Display ▶ Page 90]	
Triggering a Final Evaluation	[Triggering a Final Evaluation ▶ Page 91]	
Resetting the PackML Operation Timers	[Resetting the PackML Operation Timers ▶ Page 91]	
Acknowledging an Error Leading to a Conveyor Stop	[Acknowledging an Error Leading to a Conveyor Stop ▶ Page 91]	
Emergency Stop	[Emergency Stop ▶ Page 92]	
Restarting after a Power Failure	[Restarting after a Power Failure ▶ Page 92]	
Stop the equipment.	[Starting the Equipment ▶ Page 86]	

7.2 Starting the Equipment

- Make sure that your supervisor has checked that all safety devices (for example guards) are installed and operational.
 - Make sure that the product handling devices have been adjusted to the product dimensions. Please see Adjusting the Mechanical Components.
- 1 Turn on the equipment using the disconnect switch at the control enclosure.
 - ➔ The terminal powers on, but the conveyors are not yet running.
 - 2 Press the start button at the terminal or touch [Start] on the touchscreen to turn on the conveyors. For information on the basic functions of the HMI, please see The Home Screen.
 - ➔ The conveyors run.

7.3 Stopping the Equipment

- 1 Press the stop button at the terminal or touch [Stop] on the touchscreen to stop the conveyors.
 - ➔ The conveyors stop.
- 2 To shut down the system, turn the disconnect switch to the OFF position.
 - ➔ The system shuts down and the valves of the compressed air system exhaust the air.

Note The equipment should not be stopped using the E-stop, unless there is an emergency situation.

7.4 Using the User Interface

The equipment is mainly operated through the touchscreen. The following sections describe the operation of the system using the touchscreen of the HMI.

NOTICE

Risk of property damage

The touchscreen must be operated using your fingers or touchpens only. The use of sharp objects, such as a screw driver, can destroy the touchscreen.

Visibility of Buttons and Screens

Always remember that many software features need certain user rights. This means, if your screen does not offer buttons that are shown in this manual, it is likely that you need more user rights. These user rights have to be assigned to your profile by a supervisor.

Note The screenshots in this manual are examples and can differ from the screen on your system. The home screen and the menu options depend on the user profile, the access levels, and the software options that are activated.

In some cases, links to other screens are visible, but the content is restricted. Then the message Access denied is displayed to indicate that more user rights are required. See section [User Accounts and User Profiles Setup ► Page 78].

Displaying Active Software Options

To display the active software functions, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Information > System Information**.
 - ➔ The screen **System Information** opens up.
- 3 In the section **Select Information** on the left-hand side, select the item **Active Options**.
 - ➔ The active software options are displayed.

Data Entries

During operation, there are fields that require information that you need to enter. To enter information, proceed as follows:

- 1 Touch the field to enter information.
 - ➔ An on-screen keyboard opens up.
- 2 Enter the information.
- 3 Confirm with **OK**.
 - ➔ The window closes.

Information can also be entered using a keyboard connected to the USB port.

Software Shadow

The gray shade guides the view to the active prompt. Once the active prompt is confirmed or declined, the screen is operable again. The text 'Software shadow' indicates that the gray shade is an intentional software behavior.

7.5 Access Levels

The access levels are defined in user profiles. Each user has one user profile. The following access levels exist:

Access level	Authorization
Monitoring mode	Basic rights, one can only view parameters and statistics.
Operator	Additional rights for conducting a package changeover and for printing statistics.
Supervisor	Additional rights for creating, editing and deleting packages, adjusting product sorting devices. The supervisor can set up and edit user profiles and parameterize outputs and inputs.

Access level	Authorization
QA (Quality Assurance)	Additional rights for the password reset of the supervisor, adaptation of serial interfaces and approval test. Editing packages as well as the export and import of data are not possible with this profile.

Note The equipment is delivered with default profiles to log into the software. The initial usernames and passwords are listed on a separate page in the documentation folder.

Always remember that many software features need certain user rights. This means, if your screen does not offer buttons that are shown in the Operator Manual, it is likely that you need more user rights. These user rights have to be assigned to your profile by a supervisor. If you need more user rights, then contact your supervisor or a technically qualified person.

7.6 Initial Login Data

With the delivery of your equipment the following initial user passwords are set up in the software:

Initial User Passwords

User	Password	Description
Operator	2	Basic user rights that are required to operate the equipment.
Supervisor	3	Advanced user rights including the user setup to create and edit users and passwords.
QS	19991999	This user is used for quality assurance with additional user rights to create statistics. With this user you can add users on supervisor level, in case the password of the supervisor user is lost.

NOTICE

Change user passwords

The user passwords need to be changed after the initial login.

NOTICE

Customer's responsibility

Creation and maintenance of the user passwords, the user profiles and the user rights lies within the customer's responsibility.

Note With sufficient user rights the initial user passwords can be modified. If you lose this information, contact the METTLER TOLEDO Service.

7.7 Logging In - Standard

Note For initial passwords, see section [Initial Login Data ► Page 88].

To operate the equipment, log in at the touchscreen. Proceed as follows:

- 1 Touch .
-or-
Touch **MENU** and select the menu items **Actions > Login**.
➔ The screen **Login** opens up.
- 2 Select your name or ID and confirm with **OK**.
- 3 Enter your password and confirm with **OK**.
➔ **Note** The password appears in asterisks (***) on the screen.
- 4 Confirm with **OK**.
➔ The home screen opens up with your login name in the upper right corner.
➔ You are logged in.

7.8 Changing the Conveyor Belt Speed

The weigh conveyor speed affects the speed of the infeed and outfeed conveyors and must synchronize with the rest of the production line. The conveyor belt speed is automatically calculated by the system based on the throughput settings for the product. In addition, it can be adjusted manually.

To adjust the conveyor belt speed, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > System > Speed**.
 - ➔ The screen with the speed settings opens up.
 - ➔ The conveyor belt speed is displayed in m/min.
- 3 Use the arrow buttons to increase or decrease the conveyor belt speed.
The large buttons increase and decrease the conveyor belt speed by steps of 5 m/min.
The small buttons increase and decrease the conveyor belt speed by steps of 1 m/min.
- 4 Touch **Home** to return to the home screen.
 - ➔ The conveyor belt speed changes immediately.

Changing the Conveyor Belt Speed with More Speed Zones

This software function is optional. Depending on the configuration of your system, some functions may not be available.

The system can have more than one motor or more than one speed zone, depending on the configuration. The other motors can be the motors of additional options, such as transfer units. Speed zones can only be defined for conveyors that are located in front of the weighing conveyor.

Motor 1 is displayed in the middle of the screen. The other motors are displayed on the right and on the left of motor 1. The speed of motor 1 has to be changed first before adjusting the speed of the other motors. If you change the speed of motor 1, the speed of the other motors is adjusted automatically, so that the speed ratio stays the same. Only if the speed ratio of the motors is not okay, change the motor speed of the other motors.

To adjust the conveyor belt speed of equipment with more than one motors or speed zones, proceed as follows:

- The screen with the speed settings opens up.
- 1 Use the arrow buttons to increase or decrease the conveyor belt speed of motor 1.
 - 2 If necessary, adjust the speed of motor 2 and motor 3.
The arrow buttons of motor 2 and motor 3 are in the corresponding boxes of the motors.
- ➔ The conveyor belt speed changes immediately.

7.9 Setting the Load Cell to Zero

Note If the button is red, setting the load cell to zero is absolutely necessary! If the load cell is not set to zero the product weight might not be accurate!

To set the load cell to zero manually, proceed as follows:

- Touch the button  on the home screen.
- ➔ The load cell is set to zero and the button turns green.

Explanation of the Colors of the Button

Color of the button	Description
Gray	Normal state
Green, pulsing	Zero setting successfully performed
Red	Zero setting not performed. The product weight is not legal for trade.

If the system is legally approved (MID), the button is grayed out.

7.10 Changing the Language

The language of the user interface can be changed for an individual user, so that the screens and menu items are displayed in another language, such as the user's native language.

To change the language, proceed as follows:

- 1 Touch .
- or-
Touch **MENU** and select the menu items **Actions > Login**.
- 2 Choose your user name or ID and enter your password.
- 3 Touch **Show more Options**.
 - ➔ The screen expands by additional options.
- 4 Touch the field next to **Language**.
 - ➔ A list with all available languages opens up.
- 5 Select the language and confirm with **OK**.
 - ➔ The language changes immediately.
 - ➔ The home screen appears.

7.11 Changing the Password

To change your password, proceed as follows:

- 1 Touch .
- or-
Touch **MENU** and select the menu items **Actions > Login**.
- 2 Choose your user name or ID and enter your password.
- 3 Touch **Show Options**.
 - ➔ The screen expands by additional options.
- 4 Activate **Change Password?**.
 - ➔ .
- 5 Confirm with **OK**.
 - ➔ A new window opens up.
- 6 Type in the old and the new password.
- 7 Confirm with **Apply**.
 - ➔ The new password is saved.
 - ➔ The home screen appears.

7.12 Enlarging the Weight Display

The weight display can be enlarged, so that it fills the entire middle area of the screen.

To enlarge the weight display, proceed as follows:

Touch the weight display.

-or-

- 1 Touch **Menu**.
- 2 Select the menu items **Production Data > Large Weight Display**.
 - ➔ The large weight display opens up.

To change the display parameters, touch the list field and choose between:

- Net (the net weight)
- Mean value: Gliding Mean
- Difference (the deviation from the actual weight to the target weight)
- Gross (the gross weight)
- Giveaway

To return to the home screen, touch **HOME**.

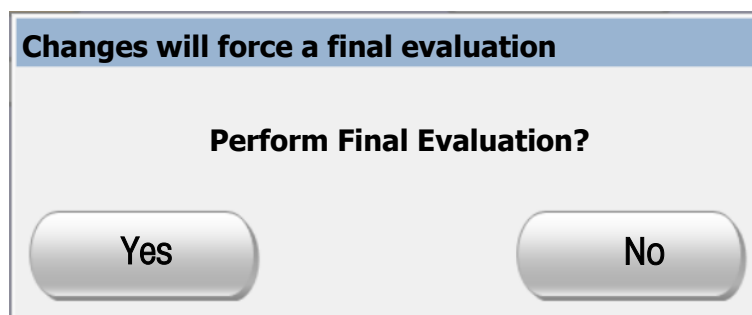
7.13 Triggering a Final Evaluation

Usually, the final evaluation is triggered automatically in combination with specific actions, such as when you change the target weight.

To trigger the final evaluation manually, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Actions > Final Evaluation**.
 - ➔ A window opens up that asks to perform the final evaluation.
- 3 Confirm with **Yes**.
 - ➔ The final evaluation is triggered and finalized.
 - ➔ If a printer is installed, you are asked to print the information of the final evaluation

7.14 Final Evaluation Confirmation Prompt



Explanation of the buttons

Button	Description
Yes	A final evaluation is carried out.
No	Cancels the final evaluation. The function that caused the request is also cancelled. For example, 'Final Evaluation Triggered at Package Change' is activated. When denying a final evaluation before a package changeover, the package changeover is not carried out.

7.15 Resetting the PackML Operation Timers

Resetting the PackML Operation Timers can be helpful in order to avoid a high operation timer value.

To reset the operation timers, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Actions > Reset PackML Operation Timers**.
 - ➔ A window opens up.
- 3 To reset the operation timers, touch **Yes**.
 - ➔ The window closes.
 - ➔ The PackML Operation Timers are reset and the home screen appears.

7.16 Acknowledging an Error Leading to a Conveyor Stop

With the function Authorized Acknowledge only authorized personnel can restart the motors after a conveyor stop.

When an error occurs and the conveyors stop, the window Please acknowledge / [User xyz]: Please acknowledge opens up. The error needs to be acknowledged before restarting the motors.

The information about the user who confirmed this event is recorded in the audit trail (if available).

NOTICE

Risk of property damage

Visually check the mechanical components and the user interface to clear the error leading to the conveyor stop. Pending errors can lead to follow-up errors.

Acknowledging an error without password

To acknowledge an error without password, proceed as follows:

- 1 Confirm with **OK**.
 - 2 Press the start button at the terminal or touch **Start** on the touchscreen to start the motors.
- ➔ The error is acknowledged, and the motors and conveyors are running again.

Acknowledging an error with password

To acknowledge an error with password, proceed as follows:

- 1 Choose your user name.
 - 2 Enter your personal password.
 - 3 Confirm with **OK**.
 - 4 Press the start button at the terminal or touch **Start** on the touchscreen to start the motors.
- ➔ The error is acknowledged, and the motors and conveyors are running again.

7.17 Emergency Stop

In case of emergency or malfunction, press the E-stop.

When you push the E-stop, all hazardous energies (electrical and pneumatic energy supplies) are cut off.

Note Be aware that the system interrupts the compressed air supply when you stop the production using the E-stop.

To restart operation, proceed as follows:

- Make sure that your supervisor has checked that all safety devices (for example guards) are installed and operational.
- 1 Turn the E-stop in the direction of arrows to release it.
Note You must release all activated E-stops.
 - 2 Press the reset button if it is illuminated blue.
Note It will take a brief moment until the system is operational again.
 - 3 Press the start button at the terminal to turn on the conveyors.
-or-
Touch **[Start]** at the touchscreen of the terminal to turn on the conveyors.
- ➔ The conveyors run and the system is operating.

7.18 Restarting after a Power Failure

The conveyors remain stopped after a power failure and do not start automatically when the power is restored. After power is restored, press the reset button if necessary and follow the steps as described in [Starting the Equipment ► Page 86].

Note Before you restart the system, make sure that your supervisor and/or qualified personnel checked the safety devices of the system to ensure they are operating correctly.

8 Package Handling

The following sections describe the handling of packages.

8.1 Conducting a Package Changeover

The following sections describe how to conduct a package changeover. Please make sure that you consult the information that applies to your equipment.

NOTICE

Risk of property damage

The equipment can be damaged if product handling devices are not adjusted to the new package size upon package changeover.

- Adjust the product handling devices to the actual package size.

Note Your equipment may not have all options installed. Please check which instruction steps apply to your equipment.

8.1.1 Package Changeover - Standard

To conduct a package changeover, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Package Maintenance > Package Changeover**.
 - ➔ The screen **Package Changeover** opens.
 - ➔ The active package is highlighted in yellow.
- 3 Touch the package to which you want to change over.
 - ➔ The color of the selected package changes to yellow.
- 4 Confirm with **Changeover**.
 - ➔ The home screen appears, the counters are updated and the data of the new package appears on the home screen.
 - ➔ The new package is now active.

Note Make sure that your supervisor has measured the noise emission of the operating equipment after the package changeover and has taken appropriate safety steps.

8.1.2 Package Changeover - FreeWeigh

This software function is optional. Depending on the configuration of your system, some functions may not be available.

The FreeWeigh software makes it possible to search and load any package from the FreeWeigh database.

There are the following ways to conduct a package changeover using FreeWeigh:

- Conducting a package changeover if the package is not loaded (1)
- Conducting a package changeover if the package is not loaded (2)

Conducting a Package Changeover if the Package Is Not Loaded (1)

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Package Maintenance > Package Changeover**.
 - ➔ The screen **Package Changeover** opens.
- 3 Touch **Change to List View**.
- 4 Enter the name of the package in the field and touch **Search Package**.
- 5 Touch **Load Package from Host**.
 - ➔ The home screen appears, the counters are updated and the data of the new package appears on the home screen.
 - ➔ The new package is now active.

Note Make sure that your supervisor has measured the noise emission of the operating equipment after the package changeover and has taken appropriate safety steps.

Conducting a Package Changeover if the Package Is Not Loaded (2)

- 1 Touch **Menu**.
- 2 Select the menu items **Actions > Load Package from Host**.
 - ➔ The screen **Package Changeover** opens.
- 3 Change to the list view.
- 4 Enter the name of the package in the field.
 - or -
 - Search the package using **Search Package**.
- 5 Touch **Load Package from Host**.
 - ➔ The home screen appears, the counters are updated and the data of the new package appears on the home screen.
 - ➔ The new package is now active.

Note Make sure that your supervisor has measured the noise emission of the operating equipment after the package changeover and has taken appropriate safety steps.

8.1.3 Package Changeover - ProdX

This software function is optional. Depending on the configuration of your system, some functions may not be available.

The ProdX software makes it possible to search and load any package from a ProdX database. A package changeover can be conducted with the ProdX software on the customer's PC, or with the METTLER TOLEDO equipment.

There are the following ways to conduct a package changeover using ProdX:

- Conducting a package changeover if the package is not loaded (1)
- Conducting a package changeover if the package is not loaded (2)

Conducting a Package Changeover if the Package Is Not Loaded (1)

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Package Maintenance > Package Changeover**.
 - ➔ The screen **Package Changeover** opens.
- 3 Touch **ProdX tableau**.
 - ➔ The screen **ProdX** opens up.
- 4 Select the package that you want to download.
- 5 Confirm with **Download**.
 - ➔ The last screen you were on appears.
 - ➔ The name and the code of the new package appears in the upper left hand corner of the home screen.
 - ➔ The new package is now active.

Note Make sure that your supervisor has measured the noise emission of the operating equipment after the package changeover and has taken appropriate safety steps.

Conducting a Package Changeover if the Package Is Not Loaded (2)

- 1 Touch **Menu**.
- 2 Select the menu items **Actions > Download Product from ProdX**.
 - ➔ An on-screen keyboard opens up.
- 3 Enter the package code in the field **download-code**.

4 Confirm with **OK**.

➔ The last screen you were on appears.

➔ The name and the code of the new package appears in the upper left hand corner of the home screen.

➔ The new package is now active.

Note Make sure that your supervisor has measured the noise emission of the operating equipment after the package changeover and has taken appropriate safety steps.

8.2 Configuring the Active Package

The following sections describe how to edit the settings of a package. You have to be authorized to edit the settings.

The data of the active package is categorized in several screens, for example:

- Main Package Setup
- Additional Package Setup
- Limit Setup
- Statistical Limits
- Interval Setup

These screens are described in the following sections.

In addition to these screens, optional software functions are available and shown on separate screens.

Note Depending on the configuration of your system, some functions are not available.

8.2.1 Package Setup First Steps

This screen is the first of several screens that shows the data of the package and allows the user to assign parameters to a specific package that has to be weighed.

To set up the package, proceed as follows:

1 Touch **Menu**.

2 Select the menu items **Packages > Active Package > Main Package Setup**.

➔ The screen **Main Package Setup** appears.

3 Edit the data. For more information, see table below.

4 Confirm with **Apply**.

➔ The package is set up.

➔ The changes are saved.

Explanation of the Fields

Field	Description
Name	Name of the package Recommendation: each name must only exist once
Target Weight / Target	Target weight of the package
Tare Weight / Tare	Mean tare weight of the package that is considered during every dynamic weighing process.
Target Throughput	The target throughput specifies the number of products to be weighed per minute. The checkweigher calculates the belt speed that is needed to reach the target throughput. This speed will be set automatically when the modification is applied.
Unit	Optional. Additional units for the package, such as count and volume.
Unit of Measurement	Unit of measurement for the dimensions of the package.
Statistics?	☒ : General statistics activated for this package. ☐ : General statistics not activated. Checkbox not available if Counter Statistics is activated.
Statistics?	If checked, the general statistics for this package are activated.

8.2.2 Additional Package Setup

In this menu, you can edit additional parameters of the package.

To edit additional parameters, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > Add. Package Setup**.
 - ➔ The screen **Add. Package Setup** opens up.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
 - ➔ The additional package parameters are set up or changed.
 - ➔ The settings are saved.

Explanation of the Field

Field	Description
Description	Description of the package (optional)
Number of Zones	Quantity of weight zones. For specification of parameters see the screen Zone Limit Setup.
Tolerance System (Option in the General Statistics)	Selection of the tolerance system EC-, FREE, US, Australian, IPEM 20, or IPEM 80, see section [Tolerance System ▶ Page 104].
Indiv. Corr. Factor	Package specific correction factor The individual correction factor is typically used at extremely high belt speeds. The weight value may be displaced relative to the weight value determined during static weighing operations. This effect is compensated by automatic multiplication of the dynamically determined weight value and the individual correction factor. Note In the case of calibrated checkweighers, the individual correction factor setting is read-only and cannot be changed by the operator.
Product Length	Package length in mm. The package length determines the inhibit time of the weigh light barrier for packages which do not block the weigh light barrier continuously such as egg cartons and bags. Note Not relevant for the Product Length Test.
IIR Level	If configured in the load cell setup. Filter level of the load cell. High values increase the repeat accuracy.
Successive Errors	Number of faulty packages in a row. Faulty packages are rejected from the checkweigher.
'Product picture'	You can add a product picture to each product. Touch the checkbox to assign a picture to the product. To add pictures, they must be uploaded to the following folder: D:\HMI\packages

8.2.3 Adjusting the Rejectors

The delay offset and duration offset for individual packages can be adjusted in the screen Rejector Adjustment.

Note These settings are specific for the current package.

To adjust the rejectors, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > Rejector Adjustment**.
 - ➔ The screen **Rejector Adjustment** opens up.
- 3 Select the rejector of which you want to adjust the settings.
- 4 Edit the data. For more information, see table below.

- 5 Confirm with **Apply**.
- ➔ The rejectors are adjusted.
- ➔ The settings are saved.

Explanation of the Field

Field	Description
Offset of delay	Dynamic checkweigher: tolerance to compensate the lag of the rejector. Intermittent checkweigher: fine adjustment between two weighing cycles. The global sorting distance is the reference.
Offset of duration	Change in the pulse duration, to adapt the rejector to the product weight.

8.2.4 Assigning the CW Package to an X-Ray Package

This software function is optional. Depending on the configuration of your system, some functions may not be available.

Packages must be created on both the checkweigher and the X-ray inspection systems. Following the creation, each checkweigher package has to be assigned to an X-ray package in the screen X-ray: Product assignment.

To assign the checkweigher package to the X-ray package, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > X-ray: Product assignment**.
➔ The screen **X-ray: Product assignment** opens.
- 3 In the field **Related X-ray product**, select the X-ray package this checkweigher package has to be assigned to.
- 4 Confirm with **OK**.
- 5 Confirm with **Apply**.
➔ The checkweigher package is assigned to the X-ray package.
➔ The settings are saved.

Explanation of the screen

Field	Description
Related X-ray product	List of all X-ray packages. An X-ray package must be selected in this package list. One X-ray package can be assigned to several checkweigher packages. When the selection is confirmed, the checkweigher package is assigned to the X-ray package. Now the package data is transferred and the checkweigher adopts the conveyor speed configured in the X-ray package.
Std: x m/min Max: x m/min	Static speed display. <ul style="list-style-type: none"> Conveyor speed configured in X-ray package. Std. = suggested target speed of the checkweigher. Maximum conveyor speed: Std. + X-ray package offset. Std.: xx m/min: Conveyor speed configured in assigned X-ray product. Std. = suggested target speed of the checkweigher. Max.: xx m/min: Maximum permissible speed of the conveyors. $\text{Max. [m/min]} = \text{Std. [m/min]} + (\text{Std.} \times \text{Speedheadroom}[\%])$

Explanation of the buttons

Button	Description
Update product list	Requests or updates the X-ray package list.

8.2.5 Changing the Tare Weight

The tare weight of a package is the weight of the package without content, for example an empty carton.

To change the tare weight, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Actions > Tare Weight/Tare**.
➔ An on-screen keyboard opens up.
- 3 Enter the new tare weight.
- 4 Confirm with **OK**.
➔ The new tare weight is now changed and displayed in the home screen.

8.2.6 Feedback Control

This software function is optional. Depending on the configuration of your system, some functions may not be available.

The function Feedback Control adjusts the fillheads of a filling machine. The checkweigher determines the mean weight of the products and checks if the weight deviates. If the weight deviates and violates the tolerance range (green area), then the checkweigher sends a signal to the filling machine, so that the filling machine adjusts the fillheads accordingly.

To set up the feedback control, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > Feedback Setup**
➔ The screen **Feedback Setup** appears.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
➔ The feedback control is set up.
➔ The settings are saved.

This screen consists of 2 sections, which are both explained in the following table.

Explanation of the Field

Field	Description
Upper Limit Lower Limit	Product weights above the upper limit and below the lower limit are not included in the mean value calculation.
Tolerance + Tolerance -	If the mean value lies between Tolerance + and Tolerance -, no feedback activity is carried out. If the mean value lies between Tolerance + and the upper limit or between Tolerance - and the lower limit, feedback activity is carried out.
Target	The target weight of the product that should be achieved with feedback control. This weight may deviate from the nominal (target) weight.
Start Phase	This value specifies the number of products that are not used for the calculation of the mean weight after the checkweigher has been switched on.
On	If checked, the feedback setup is turned on.
Control Factor	Control factor to adjust the filling machine in accordance with the filling machine specification. Numerical input.
Neutral	Number of products that are located on the (neutral) section between the filling machine and weighing conveyor and can therefore no longer be detected by the feedback setup.
Qty for MV	Specifies the number of products of which the weights are to be used continuously for the calculation of the mean value of the feedback control.

8.2.7 General Statistics

This software function is optional. Depending on the configuration of your system, some functions may not be available.

8.2.7.1 Activating the General Statistics

The function General Statistics can be activated individually for every package.

To activate the General Statistics, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Packages > Active Package > Main Package Setup**.
 - 3 Touch the field next to **Statistics?**.
 - 4 Edit the data. For more information, see table below.
 - 5 Confirm with **Apply**.
- ➔ The general statistics are activated.

Explanation of the Fields

Field	Description
Statistics?	☒ : General statistics activated for this package. ☐ : General statistics not activated. Checkbox not available if Counter Statistics is activated.

8.2.7.2 Interval Statistics and Batch Statistics

This software function is optional. Depending on the configuration of your system, some functions may not be available.

The Interval Statistics and the Batch Statistics are part of the option General Statistics. The option General Statistics needs to be active.

The evaluation of an interval can be done either after a specified time or after a specified number of items.

The evaluation of a batch can be carried out after entering a new batch ID.

To display the menu of the interval setup and batches, proceed as follows:

- The option General Statistics is activated.
- 1 Touch **Menu**.
 - 2 Select the menu items **Packages > Active Package > Interval Setup**.
 - ➔ The screen **Interval Setup** opens up.
 - 3 Touch the field/parameter that you want to specify.
 - 4 Edit the data. For more information, see table below.
 - 5 Confirm with **Apply**.
- ➔ The settings are saved.

Explanation of the screen

Parameter	Description
Interval Type	Pieces: Stores a printout of the interval statistics after a specific number of products. Time: Stores a printout of the interval statistics after a specific time of production.
End at	Defines the end of the interval either in pieces or in minutes.
Auto Interval Printout	☒ Activation of the automatic print of the results at the end of an interval.
Batch	The batch ID Note If you enter and confirm a new batch ID, then the previously active batch ends automatically.
Auto Batch Printout	☒ Activation of the automatic print of the results by a change of a batch.

8.2.8 Product Collection Area Full

The function Product Collection Area Full alerts the operator when the catch bin or collection area is full. Products can be removed manually.

The message is either set up by the manufacturer during production in the factory or installed on-site by a technically-qualified person. The actual product collection area can be a catch bin attached to the outfeed conveyor or a second conveyor that serves as a collection area. The checkweigher uses a sensor to detect when the collection area is full. By default, the conveyors will stop and the operator can remove the products.

To edit the bin-full allowance, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > Bin-Full Allowance**.
➔ The screen **Bin-Full Allowance** opens up.
- 3 In the field **Remaining space for ... items**, enter the amount of packages that the product collection area can hold above the sensor.
- 4 Confirm with **Apply**.
➔ The bin-full allowance is edited.

8.2.9 Statistical Limits

To set up the statistical limits and parameters, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > Statistical Limits Setup**.
➔ The screen **Statistical Limits Setup** opens up.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
➔ The parameters are saved and the statistical limits are activated.

Area of Tolerance	TU Limit System	Rejector Settings
EC-	TU1 Limit	95,5
	TU1 Percentage	2,0
	TU2 Limit	91,0
	10,000 Pcs Rule	✓
	Auto Printout	✓
		Mean Value Control
		Hour Statistics
		Rej1
		Skip (pcs)

The input fields depend on the chosen kind of tolerance system.

Following table explains the parameters of the statistical limits for the tolerance systems FREE, EC-, and **Australian**.

Explanation of the screen

Parameter	Description
TU1 Limit	All items that weigh less than this limit are rejected, as long as the limit of TU1 Percentage is exceeded
TU1 Percentage	<p>Enter the maximum TU1 limit for the production process according to the regulations for pre-fabricated packages.</p> <p>NOTICE Consider your national regulations</p> <p>For example Germany:</p> <p>If the production is in accordance with the regulations for pre-fabricated packages, a maximum of 2 % of the items is allowed to be between the limits TU1 and TU2.</p> <p>International:</p> <p>Consider your national regulations for pre-fabricated packages before you enter a value.</p>
TU2 Limit	All items that weigh less than this value are rejected.
10,000 Pcs Rule	The hour of production is completed automatically after 60 minutes or earlier, if 10000 accepted products were weighed.
Auto Printout	<p>If your system is equipped with a printer, you can choose if the results are printed automatically at the end of an production hour.</p> <p>Note Only completed intervals will be printed automatically.</p>
Rejector Settings	<p>Select a rejector for the tolerance limits TU1 and TU2.</p> <p>The rejection of products can only be deactivated when the statistics system FREE is selected, see [Additional Package Setup ► Page 96].</p>
Mean Value Control, top field	<p>Select the basis for the calculation of the mean value control:</p> <ul style="list-style-type: none"> Off: the mean value control is deactivated Hour Statistics: the mean value control is based on the Hour Statistics, that is, during the current hour of production. Total Statistics: the mean value control is based on the Total Statistics, that is, since beginning of production. <p>Note The statistics functions monitors the mean value of the products. If is higher than the target weight. Therefore, the mean value of the product weight is always higher than the target weight.</p>
Mean Value Control, bottom field	<p>Only visible if Hour Statistics or Total Statistics selected. Select a rejector from the list:</p> <ul style="list-style-type: none"> NO: no rejector is assigned Rej. 1, Rej. 2, ...: Rejector is assigned
Skip (pcs)	Optional. Only visible if Hour Statistics or Total Statistics selected. Number of skipped products in the starting phase of the equipment. These product weights are not considered in the calculation of the mean value.

Following table explains the parameters of the statistical limits for the tolerance system US.

Explanation of the Fields

Field	Description
Upper Limit	Define the upper limit of the area of tolerance
Lower Limit	Define the lower limit of the area of tolerance
Stat Limit Tracking	Considers the American legislation

Information about the Tolerance Limits TU1 and TU2

The software automatically calculates a limit for both tolerance limits (TU1 and TU2), in accordance with the requirements of the regulations for pre-fabricated packages. This limit is displayed automatically on the screen.

The limits of both tolerance limits appears on the printouts and on the screens of the Statistics.

The recalculation is carried out in accordance with the respective setting of the tolerance systems.

8.2.10 Statistical Process Control (SPC)

This software function is optional. Depending on the configuration of your system, some functions may not be available.

The function Statistical Process Control (SPC) allows you to observe the production process based on simple mathematical or statistical results. Any trend can be identified within the tolerance limits so that corrective action can be taken before rejection.

In short sample intervals, the SPC calculates and displays the following values:

- Mean value
- Standard deviation
- Area Min-Max
- Cp (process capability index)
- CpK (critical process capability index)

To edit the SPC interval settings, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > SPC Interval Setup**.
➔ The screen **SPC Interval Setup** opens.
- 3 Edit the data. For more information, see table below.
➔ **Note** The parameters depend on each other.
- 4 Confirm with **Apply**.
➔ The SPC interval settings are edited.

Explanation of the screen

Parameter	Description
Sample Size	Amount of packages in sequence used for the sample in the calculation of the trend data
Interval Type	<ul style="list-style-type: none">• Time: The data is calculated after a certain period of time• Pieces: The data is calculated after a certain amount of products
Interval	Specifies the interval that has to be over before the calculation of the trend data
UAL / UA Limit	Upper action limit. If exceeded, take correctional actions!
UCL / UC Limit	Upper control limit. If exceeded, METTLER TOLEDO recommends to take correctional actions.
LCL / LC Limit	Lower control limit. If exceeded, METTLER TOLEDO recommends to take correctional actions.
LAL / LA Limit	Lower action limit. If exceeded, take correctional actions!

8.2.11 Successive Errors Detection

The function Successive Errors Detection determines if a preset number of packages is rejected by the equipment in a row (Successive Errors Detection) or if a preset number of packages out of a greater number of packages is rejected (Successive Errors Detection, X out of Y). When a preset number of packages was rejected the equipment displays the message 'Successive errors detected' in the message section of the screen.

8.2.11.1 Editing the Parameters of the Successive Errors, X out of Y

This software function is optional. Depending on the configuration of your system, some functions may not be available.

For this functionality you may need additional user rights.

Successive errors, X out of Y are a preset number of faulty packages within a greater amount of packages. The faulty packages do not have to be in a row. Faulty packages are rejected from the checkweigher.

To edit the parameters of the successive errors, X out of Y, proceed as follows:

- Make sure the amount of the successive errors X is defined. See [Additional Package Setup ► Page 96].
- 1 Touch **Menu**.
- 2 Select the menu items **Setup > System > Functions > Function Allocations**.
 - ➔ The screen **Function Allocations** opens up.
- 3 In the list of functions, select 'Successive Errors'.
- 4 Touch **Edit**.
 - ➔ The screen **Successive Errors** opens up.
- 5 Touch the field below the box 'Parameters'.
- 6 Enter the amount Y.
- 7 Confirm with **OK**.
 - ➔ The parameter Y of the successive errors, X out of Y is edited.
 - ➔ The settings are saved.
 - ➔ If activated in the function allocations, the amount of the detected successive errors is displayed on the screen **Zone Classification**.

Explanation of the screen

Parameter	Description
X	Number of faulty packages. Package-specific. Imperative value for detecting successive errors.
Y	Amount of packages which is checked for faulty packages. General value for all packages. Must be higher than X. Note: Optional value. Only needed for detecting amount X of successive errors in amount Y.

8.2.11.2 Editing the Amount of the Successive Errors

Successive errors are a preset number of faulty packages in a row. Faulty packages are rejected.

To edit the amount of the successive errors, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > Add. Package Setup**.
 - ➔ The screen **Add. Package Setup** opens up.
- 3 Enter the amount of the successive errors in the field 'Successive Errors'.
- 4 Confirm with **Apply**.
 - ➔ The amount of the successive errors is edited.
 - ➔ The settings are saved.
 - ➔ If activated in the function allocations, the amount of the detected successive errors is displayed on the screen **Zone Classification**.

8.2.11.3 Allocating Error Types to Successive Errors Detection Groups

For this functionality you may need additional user rights.

Successive errors detection groups are groups of error types. They can be allocated to weight zones and rejected accordingly to the weight zone.

To allocate error types to the Successive Errors Detection Groups, proceed as follows:

- Make sure that the function Extended Successive Error is allocated in the function allocations.
- Make sure that all zones have rejectors. See [Weight Zones ► Page 105].
- 1 Touch **Menu**.

- 2 Select the menu items **Setup > System > Functions > Succ. Error Groups**.
➔ The screen **Succ. Error Groups** opens up.
- 3 In the list of functions, select the error type.
- 4 In the box 'Underload ('Rej1')', check the box of the group to which you want to allocate the error type.
- 5 Repeat until you allocated all error types.
➔ The error types are allocated to the successive errors detection groups.
➔ The settings are saved.

8.2.11.4 Editing the Successive Errors Detection Groups

For this functionality you may need additional user rights.

To edit the Successive Errors Detection Groups, proceed as follows:

- Make sure that the function Extended Successive Error is activated in the function allocations.
 - Make sure that all zones have rejectors. See [Weight Zones ▶ Page 105].
- 1 Touch **Menu**.
 - 2 Select the menu items **Packages > Active Package > Extended Succ. Error**.
➔ The screen **Extended Succ. Error** opens up.
 - 3 Set a checkmark ☒ next to **Count X** to activate the successive errors detection.
➔ A list of the weight zones with group selection opens up.
 - 4 Select a group for each weight zone.
Note The selection field for weight zones without rejector are greyed out and inactive.
 - 5 Confirm with **Apply**.
➔ The groups of the successive errors detection are edited.
➔ The settings are saved.

Explanation of the Fields

Field	Description
Count X	The limit when a successive error is recognized. Amount of consecutive errors after which a successive error is recognized.
☒ or ☐	The function can be activated for each product individually.
Count Y	The quantity of products that are considered for the calculation of successive errors. A successive error situation exists if X of Y products were rejected.
☒ or ☐	The function can be activated for each product individually.
Zone	If the Succ. Error Groups function is active: Assignment of the individual zones to the six groups (standard group or group 1 – 5). The group is grayed out for zones without a rejector. The assignment to the groups 1 – 5 can be done in the Succ. Error Groups screen. All zones are set to 'Standardgroup', only if the Succ. Error Groups option is not required.

8.2.12 Tolerance System

The tolerance system is the regulation on which the weighing of the package is based.

To select the tolerance system, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > Add. Package Setup**.
- 3 Touch the field **Tolerance System**.
➔ The screen **Tolerance System** opens.
- 4 Select a tolerance system. For more information, see the table below.

- 5 Confirm with **OK**.
- 6 Confirm with **Apply**.
- ➔ The tolerance system is selected.
- ➔ The settings are saved.

Explanation of the screen

Parameter	Description
FREE	The limits of the tolerance system can be modified arbitrarily, such as production is not in accordance with the pre-packaged goods legislation. If the limits of TU1 and TU2 are exceeded, the affected product does not have to be sorted. If no sorting is needed, see select NO in the screen Statistical Limits Setup.
EC-	Complies with EU production directives. The limits of the tolerance system can only be changed by approaching the limits towards the target weight. If the limits of TU1 and TU2 are exceeded, the product is sorted. Note If EC- is the tolerance system, the sorting devices need to be assigned to the zones TU1 and TU2. The number of sorting devices may not be set to zero.
US	Products are neither sorted nor rejected by the statistics program. The products are weighed to check whether their weight is within the area of tolerance specified in the screen Statistical Limits Setup. The mean value that is displayed in the screens in Production Data is only calculated from products that are in the tolerance area.
IPEM 20	Complies with Brazilian directives.
IPEM 80	Complies with Brazilian directives.
Australian	Complies with Australian directives.

8.2.13 Weight Zones

The limits of the individual weight zones can be edited, so that the weighed products can be classified into different weight zones. The number of weight zones can be specified in the screen Add. Package Setup.

To set the limits of the weight zones, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > Zone Limit Setup**.
➔ The screen **Zone Limit Setup** opens.
- 3 Touch the weight zone that you want to specify.
- 4 Edit the data. For more information, see table below.
- 5 Confirm with **Apply**.
- ➔ The settings are saved.

Explanation of the Field

Field	Description
Zone Name	Name of the weight zone. Note The names of the weight zones are used in the home screen and in printouts.
Upper Limit	Upper tolerance limit of the weight zone
Lower Limit	Lower tolerance limit of the weight zone
☒ "Accepted"	Specifies for every weight zone, whether the weight is accepted or not accepted in terms of the Statistics option. (This is for the Statistics option only)
☐ "Not accepted"	
(White text field)	Shows the allocated actions for every weight zone.

8.2.14 Metal Detector Settings

This software function is optional. Depending on the configuration of your system, some functions may not be available.

Some of the basic settings of the metal detector can be changed at the checkweigher HMI.

To set up the metal detector, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > Metal Detector Setup**
➔ The screen **Metal Detector Setup** opens.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
➔ The metal detector is set up.
➔ The settings are saved.

Explanation of the buttons

Button	Description
Scan!	

Explanation of the Field

Field	Description
Metal Detector Product Name	Number of the package memory under which the following settings are stored in the metal detector. If a package is not yet stored in the metal detector, first enter the corresponding settings manually there or let a product run through the metal detector in learn mode (see the operating instructions of the metal detector).
Sensitivity	Default factory setting that the metal detector may change automatically while a package is being "learned". A manual entry input is possible.
Phase	Default factory setting that the metal detector may change automatically while a package is being "learned". A manual entry input is possible.
Only Changeover	If checked, only the stored product number is sent to the metal detector when the package is changed. Individual values such as the sensitivity or phase are not sent.
Mode	The following modes are available: <ul style="list-style-type: none">• Active Activation of the normal detection mode. Detection of metallic impurities/foreign matter.• Inverted Activation of the invert mode. The metal detector searches for "missing" metal, for example screw caps.• Not Active Deactivation of the detection mode. The metal detector does not examine the products for metallic impurities/foreign matter.
Timer Group	Dependent on the metal detector version. Selection the timer group to adjust the signal behavior to different product sizes.
Sensitivity	
Operating Frequency	Select the operating frequency to adjust the search coil to the product types.

8.2.15 Digital Position Indicators

The device 'Digital Position Indicator' displays the actual value and the target value of the distance/breadth between two conveyors, such as 'Top & Bottom Conveyor' or 'Sidegrip conveyors'. The digital position indicator is connected to the checkweigher control and receives the settings of the current package from it. The target value depends on the settings of the current package. The actual value needs to be manually adjusted to the target value.

To enter the parameters of a package, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Active Package > Digital Position Indicators**.
 - ➔ The screen **Digital Position Indicators** opens up.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
 - ➔ The parameters of the Digital Position Indicators are edited.
 - ➔ The settings are saved.

Note When you create a new package, the parameters of the package that is currently active will be used for the new package.

Explanation of the Fields

Field	Description
LCD	Color-coded status of the connected digital position indicator in the HMI: <ul style="list-style-type: none">• Gray: the analog position indicator or the "Cyclic Check" is not active• Green: the current value is within the tolerance• Red: the current value is outside the tolerance
 	Analog position indicators are active. Digital position indicators are active.
Name	Assign a name for the digital position indicator. If required, then you can enter a different name for each package.
Current	Current value of the indicator in mm.
[All] →	Learning: reads out actual values from all connected position indicators and stores those values as new setpoints.
→	Learning: reads out the actual value from the corresponding connected position indicators and stores this value as new setpoint.
Target value	Setpoint of the position indicator Digital position indicator: this value is a specification. Analog position indicator: this value is only an information.
Tolerance	Tolerance window, that is individual for each indicator. As long as Cyclic Check is active, the tolerance is checked.
Cyclic Check	 : Cyclic tolerance check for digital position indicators is activated. As soon as a digital position indicator does not lie within the tolerance zone, the start of the motors can be prevented by a corresponding configuration. This configuration is as follows: Setpoint / Target value $\pm$ Tolerance.

8.3 Packages: Creation and Maintenance

NOTICE

Risk of software failure and system malfunctions

Conducting a package changeover at the HMI of the X-ray inspection equipment causes malfunctions of the whole system.

- Always conduct the package changeover at the HMI of the checkweigher.

The following sections describe how to create and maintain a package.

8.3.1 Creating a New Package

NOTICE

Risk of property damage

The equipment can be damaged if product handling devices are not adjusted to the new package size upon package changeover.

- Adjust the product handling devices to the actual package size.

To create a new package, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Package Maintenance > Create New Package**.
 - ➔ A new screen opens up.
- 3 Select a free package memory location and touch **Create Now**.
Note The yellow rectangles represent package memory locations that are not occupied yet. You can use [←] or [→] to scroll page by page.
 - ➔ The screen **Main Package Setup** opens.
- 4 Define the initial parameters of the new package.
Note The parameters of a new package are preset and based on the parameters and settings of the package that is currently active. For information about the parameters, see the sections following [Configuring the Active Package ▶ Page 95].
- 5 Touch **Continue...** to open up other screens where you can set other parameters of the new package.
Note You can see all other screens where you can set other parameters in the box at the top right hand corner. The screens open up consecutively when you touch **Continue...**
- 6 Modify the parameters if needed.
Note Screens that have already been edited are marked with a green checkmark at the top right hand corner.
- 7 Confirm with **Apply**.
 - ➔ The new package is created.

8.3.2 Editing the Package Data of Each Package

Note If ProdX is activated, this functionality is not available.

- 1 Touch **Menu**.
 - ➔ A new screen opens up.
- 2 To navigate to the package that you want to edit, touch the arrow buttons.
 - ➔ The screen **Main Package Setup** opens.
- 3 Confirm with **Apply**.
 - ➔ The window **Apply?** opens.
- 4 Confirm with **Yes**.
 - ➔ The parameters are changed.
 - ➔ The first screen opens again.

8.3.3 Deleting a Package

To delete a package and all its data, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Package Maintenance > Delete Package**.
Touch the arrow buttons to navigate to the package that you want to delete.
 - ➔ The screen **Delete Package** opens up.
- 3 To navigate to the package that you want to delete, touch the arrow buttons.

- 4 Touch the package that you want to delete.
 - 5 Touch **Delete Now**.
 - 6 Confirm with **Yes**.
- ➔ The package and all corresponding data is deleted.

8.3.4 Copying the Package Data

If the data and parameters of a new package are similar to the data and parameters of a package that already exists, then the data can be copied and adapted.

To copy a package, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Packages > Package Maintenance > Copy Package**
 - ➔ A new screen opens up.
 - 3 Select the package that you want to copy and confirm with **Copy**.
 - ➔ A new screen opens up.
 - 4 Touch a free yellow rectangle to select a free package memory location and confirm with **Copy**.
 - ➔ The screen **Main Package Setup** opens.
 - ➔ The parameters of the copied package are adopted for the new package.
- ➔ The package data is copied.
- To change the parameters and names, touch the corresponding field and proceed as described in [Editing the Package Data of Each Package ► Page 108].

8.3.5 Exporting and Importing Package Data

Package data can be exported and imported by using a USB stick. The package data is stored on the USB stick in a folder that is labeled after the serial number of the equipment. If you operate several systems, you can import the package data to each system accordingly.

Export

To export package data, proceed as follows:

- 1 Insert a USB stick into the USB port.
- 2 Touch **Menu**.
- 3 Select the menu items **Packages > Packages Export and Import**.
 - ➔ The screen **Packages Export and Import** opens up.
- 4 Touch **Export**.
 - ➔ The data is stored on the USB stick.

Note The upper field states the number of packages to be exported. The package data can only be exported all in one.

Import

To import package data, proceed as follows:

- Before you import data, perform a backup of the configuration data. For more information, refer to Backup and Restore.
 - All names of the imported package data need to be unique. If the same name is used twice, the package data cannot be imported.
- 1 Insert a USB stick that contains necessary data into the USB port.
 - 2 Touch **Menu**.
 - 3 Select the menu items **Packages > Packages Export and Import**.
 - ➔ The screen **Packages Export and Import** opens up.
 - 4 Touch **Import**.

- 5 Confirm with **Yes**.
 - 6 Select a file and confirm with **OK**.
Example path: .../<SerialNumber>/Transfer/ExportPackages.XML
- ➔ The system imports the package data.



8.3.6 Printing the Package Data

This software function is optional. Depending on the configuration of your system, some functions may not be available.

To control and verify the entered data of the package, you can print the data.

To print the package data, proceed as follows:

- Make sure that the printer function is activated.
- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Package Maintenance > Print Package**.
➔ The screen **Print Package** opens up.
- 3 Select the package of which you want to print the data.
- 4 Confirm with **Print**.
➔ The data is printed or optionally you get a preview of the data that you can print.

Note For security reasons, not all the data available is printed immediately on an external printer. However, data that is not printed is available at **MENU > Information > Stored Printouts** and can be printed from this menu.

8.3.7 Recalculating of the Weight Zones

This menu allows to configure the automatic recalculation of the weight zones whenever the target weight of a package is changed. You can also set the basic method of calculation.

To recalculate the weight zones, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Zone Calculation Setup**.
➔ The screen **Zone Calculation Setup** opens.
- 3 Edit the data. For more information, see table below.
- 4 Confirm with **Apply**.
➔ The weight zones are recalculated.

Explanation of the Field

Field	Description
Recalculate Zones After Target Weight Change	<p>Green checkmark (✓) The zone limits of a package are recalculated after any modification of the target weight. The basis for the recalculation is the selected calculation method.</p> <p>Red minus (-) The zone limits of a package stay the same after the modification of the target weight.</p>
Calculation Method	<p>FPVO Calculation of the weight zones according to the pre-packaged goods legislation with preset values.</p> <p>Absolute Offset Offset of the individual weight zones in g. The offsets are added to the target weight. The absolute offset is valid for all packages.</p> <ul style="list-style-type: none"> • Offset Plus 1: positive offset in g • Offset Minus 1: negative offset in g <p>Example:</p> <ul style="list-style-type: none"> • Offset Plus 1: 5 g • Offset Minus 1: -5 g • Target weight: 150 g • Target weight: 150 g + positive offset + negative offset = 145 g - 155 g <p>Relative Offset Enter the offset as a percentage. The offsets are added to the target weight. The relative offset is valid for all packages.</p> <ul style="list-style-type: none"> • Offset Plus 1: positive offset in % • Offset Minus 1: negative offset in % <p>Example:</p> <ul style="list-style-type: none"> • Offset Plus 1: +5 % • Offset Minus 1: -5 % • Target weight: 150 g • Target weight: 150 g + positive offset + negative offset = 142.5 g - 157.5 g <p>Keep the offsets After the modification of the target weight, the offset values stay the same for the current package. The offset values have to be set for every package individually.</p>

8.3.8 Comparing Package Data for Verification

The function Article Data Verification supports the verification of the package data correctness. With this function, the current and the previous package data can be compared and analyzed. The differences between the current and the previous package data are shown in a list. The package data can be reset to the previous package data, that is, the old values can be reactivated.

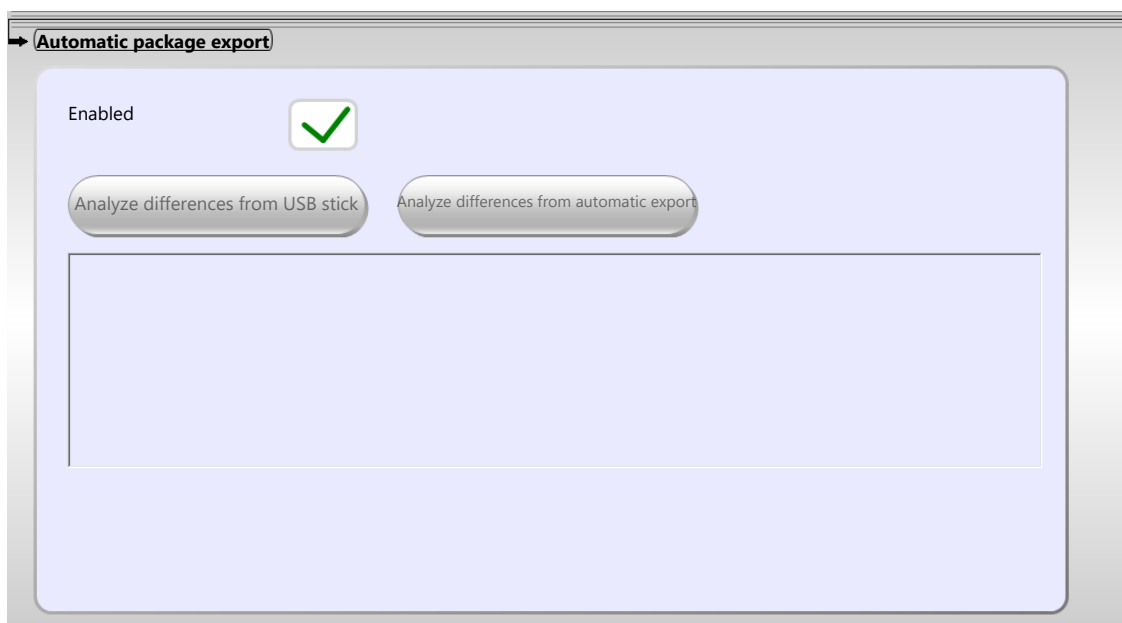
By activating the function Automatic Package Export, the current package data is automatically stored in the equipment's memory each time a change in the package data is detected during logout from the equipment.

The current package data can also be compared with previous package data exported to a USB stick, see [Exporting and Importing Package Data ► Page 109].

To compare package data, proceed as follows:

- Make sure that the function Local Audit Trail is activated, see Activating the Local Audit Trail (optional).
- 1 Touch **Menu**.
- 2 Select the menu items **Packages > Packages Export and Import**.
 - ➔ The screen **Packages Export and Import** opens up.

- 3 Touch **More....**
 - ➔ The screen **Automatic package export** opens up.
- 4 Edit the data. For more information, see table below.
- 5 Select either **Analyze differences from USB stick** or **Analyze differences from automatic export**.
 - ➔ The differences between the current package data in the database and the previous package data are listed.
- 6 To apply the detected changes and reset to previous state, touch **{0} changes detected. Continue? Restore?**.
 - ➔ The database is reset to the previous state, that is, the previous package data is used.
- 7 To keep the current package data, exit the screen by touching the arrow directing to the left.
 - ➔ The database keeps its current package data, that is, the current package data is used.



Explanation of the Fields

Field	Description
Enable	Activates or de-activates the automatic package export. ☒ The automatic package export is activated. ☐ The automatic package export is de-activated.

Explanation of the buttons

Button	Description
Analyze differences from USB stick	Always available. Comparison of current package data with previous package data on a USB stick.
Analyze differences from automatic export	Only available if the automatic package export is activated. Comparison of current package data with previous package data automatically saved in the equipment's memory.
{0} changes detected. Continue? Restore?	Shows the number of detected changes in the package data. Resets the internal article database to the imported (previous) state.

9 Displaying and Printing

The following sections describe how to display and print information about the products and the equipment.

9.1 Displaying Product Information

The following sections describe how to display information about the product. Additionally, it describes how to configure the display of the product information.

9.1.1 Weight Zone Classification

The screen of the Weight Zone Classification displays the following information for the defined weight zones:

- The amount of products
- The mean value
- The total weight of the products

To display the weight zones, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Production Data > Zone Classification**.
➔ The screen **Zone Classification** appears.

Explanation of the screen

Parameter	Description
Zone	Weight zone
Limits	Upper and lower limits of the weight zone
Counter	Optional. Quantity of products that belong to the weight zone
Total Wgt.	Total weight of the products
%	Shows the percentage of the weighed products that belong to a weight zone
Extra	Total amount of products which could not be weighed
Metal Detection	Exemplary option. Quantity of metal contaminated products (Subset of Extra)
Countercheck	Exemplary option. Quantity of products that have been detected by the countercheck function (Subset of Extra)
Total	Total amount of all products, total mean value, total weight

Explanation of the buttons

Button	Description
Final Evaluation	To perform a final evaluation If the option General Statistics is configured, then this button is displayed instead of Delete Counters
Delete	To delete the counters If the option General Statistics is not configured, then this button is displayed instead of Final Evaluation
Setup	Opens up the screen Zone Limit Setup
Print	To print the information on the screen

9.1.2 General Statistics

This software function allows you to record, analyze, interpret and present the data of products and production flows. If the function General Statistics is enabled for the current package, the following statistics can be displayed:

- Total statistics: overview of the entire production flow of packages

- Hour statistics: evaluation of the data for the current hour of the production
- Interval statistics: evaluation of the current interval
- Batch statistics: evaluation of the current batch
- Records Table or Records Graphics: overview of completed final evaluations and statistics

Before recording the General Statistics, set up the interval type and the batch size in the Package Setup menu, and the global printer settings in the printer setup. These settings may only be configured by users that are authorized to do so.

9.1.2.1 General Statistics: Explanation of the screen

Following tables explain the screens displayed in the following chapters.

Button	Function
Final Evaluation	To perform a final evaluation
Print	To print the information on the screen
Hour Statistics	Shows the screen Hour Statistics
Total Statistics	Shows the screen Total Statistics
Batch End	Shows the screen Batch End

Explanation of the screen

#	Description	Meaning
1	Total Checked	Sum of all products that were checked, beginning at Start Time
2	Sorted	Amount of products that were sorted
	TU1	Amount of products of which the weight is in the limits of TU1 but exceed TU1 Max%
	TU2	Amount of sorted products of which the weight was in the limits of TU2
	Mean Value	Amount of sorted products of which the weight is below the mean value. Only available if the function Mean Value Control in the screen Statistical Limits Setup is activated. Else a '0' is displayed.
	Else	Sum of products of which the weight is outside of the weight zones that were marked Accepted in the screen Limit Setup/Limits.
	Not Weighed	Sum of all products of which the weight could not be determined (such as metal contaminated products, distance errors).
3	Accepted	Sum of all accepted products
	TU1	Amount of products of which the weight was in the limits of TU1 and meets the requirements of TU1 Max%
	TU2	Amount of products of which the weight was in the limits of TU2
	Mean Value	Mean weight of the accepted products
	Std. Dev.	Standard deviation of all accepted products
	Min.	The smallest product weight since start time
	Max.	The largest product weight since start time

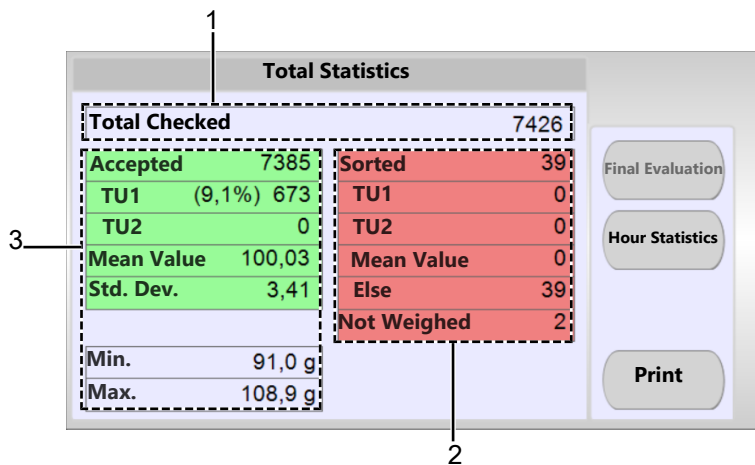
9.1.2.2 Total Statistics

This menu shows an overview of the entire production flow for the package.

To display the Total Statistics, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Production Data > Statistics > Total Statistics**.
- ➔ The **Total Statistics** are displayed.

See [General Statistics: Explanation of the screen ► Page 114].



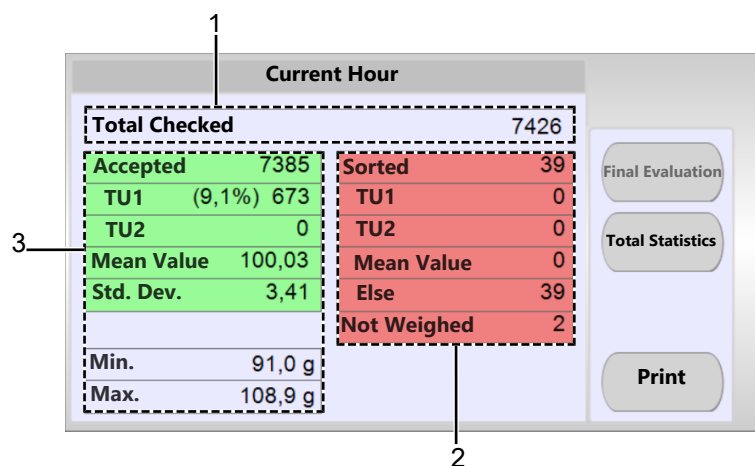
9.1.2.3 Current Hour Statistics

The information of the Current Hour Statistics refers to the current hour of production. The current hour of production stops after 60 minutes have passed, or earlier if 10,000 products have been weighed and classified as "good".

To show the current hour statistics, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Production Data > Statistics > Current Hour**.
- ➔ The **Current Hour** statistics are displayed.

See [General Statistics: Explanation of the screen ► Page 114].



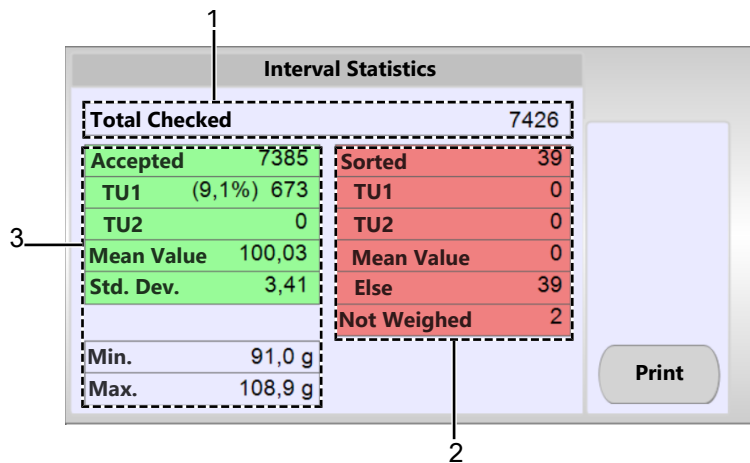
9.1.2.4 Interval Statistics

The information of the Interval Statistics refers to the current interval that is not completed yet. The interval can be defined in the package data.

To show the Interval Statistics, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Production Data > Statistics > Interval Statistics**.
- ➔ The **Interval Statistics** are displayed.

See [General Statistics: Explanation of the screen ► Page 114].



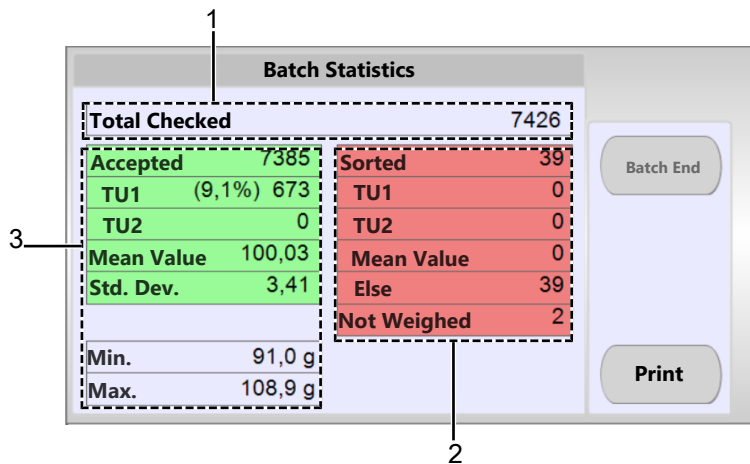
9.1.2.5 Batch Statistics

The information of the Batch Statistics refers to the period of production since the last entry of a batch ID. This way, you can see if a batch has been completed, before you enter the ID of the next batch.

To display the batch statistics, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Production Data** > **Statistics** > **Batch Statistics**.
- ➔ The **Batch Statistics** are displayed.

See [General Statistics: Explanation of the screen ► Page 114].



9.1.2.6 Batch ID for Batch Statistics

When the function General Statistics is activated, the system will automatically collect batch statistics, which will accumulate until the batch ID changes. When the batch ID is changed a new set of batch statistics will begin. Accordingly, the batch ID identifies the batch. It can be either a number or a name.

You can print the batch data before changing the batch ID. The current batch data of a completed batch is deleted after changing the batch ID, but is considered in the Total Statistics. If the batch ID is changed while the system is running, the current batch statistics is completed automatically. If you enter and save a new batch ID, then the recording of the batch statistics restarts.

Printing the Batch Data

To print the batch ID, proceed as follows:

- A printer is available.
- 1 Touch **Menu**.

- 2 Select the menu items **Production Data > Statistics > Batch Statistics**.
 - ➔ The screen **Batch Statistics** opens.
- 3 Touch **Print** and confirm with **Yes**.
 - ➔ The preview window opens.
- 4 Touch **Print**.
 - ➔ The batch data is printed.

Changing the Batch ID

To change the batch ID, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Actions > Batch**.
 - ➔ An on-screen keyboard opens up.
- 3 Enter the new batch ID and confirm with **OK**.
 - ➔ The batch ID is changed.

To return to the home screen, touch the **HOME** button.

Note You can change the batch ID during package setup and during operation in the following screens:

- Packages > Active Package > Interval Setup
- Production Data > Statistics > Batch Statistics
- Actions > Batch

9.1.2.7 Box Statistics

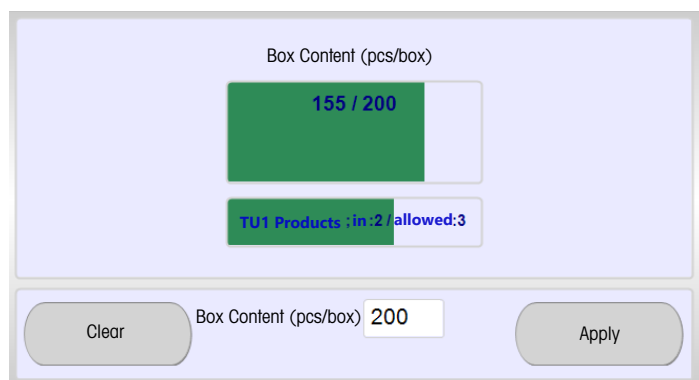
The function Box Statistics monitors the maximum percentage of underweight products in a box. All underweight products are sorted once the upper limit is met.

The large bar in the screen Box Statistics shows the current number and the maximum number of pieces in the box. The small bar shows the number of allowed and actual underweight products (TU1 pieces) in the box. The number of the allowed TU1 pieces is calculated automatically using the value set in [Statistical Limits ▶ Page 100].

The counters are set to zero after a final evaluation or a product changeover.

To display the box statistics, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Production Data > Statistics > Box Statistics**.
 - ➔ The screen **Box Statistics** opens up.
- 3 Enter the number of pieces in a box in the field **Box Content (pcs/box)**.
- 4 Confirm with **Apply**.
- 5 To clear the screen, touch **Clear**.
 - ➔ The **Box Statistics** are displayed.



Explanation of the buttons

Button	Description
Clear	Clears the screen and sets the counters of the box statistics to zero when a box is only partially filled at maximum TU1 pieces.
Apply	Applies the entered number of pieces in the statistics.

Explanation of the Fields

Field	Description
Box Content (pcs/box)	Number of pieces in a box. Minimum: 50; maximum: 999

9.1.3 Information about an Hour of Production

Information about all completed hours of production can be displayed in following screens:

- Records table: displays the information in form of a table
- Records Graphics: displays the information in a diagram

An hour of production is 60 minutes or less if 10,000 packages are processed within an hour. Only the minutes during active production are counted. If the motor is stopped the production hour is paused. One production hour can take more than one real-time hour if production is paused. Only a final evaluation completes a production hour. Each line is one production hour.

9.1.3.1 Hour of Production Table

The records table shows data about all completed hours of production in the screen Records table.

To show the table, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Production Data > Statistics > Records table**.
- ➔ The **Records table** is displayed.

Explanation of the buttons

Button	Description
Print	To print the information on the screen
Delete All Rows	To delete all rows
Delete Marked Rows	To delete the marked rows
Graphics	To open up the screen Records Graphics. Shows the data about the packages in a diagram.

Explanation of the Fields

Field	Description
Date	End date of production
01/01/2020*	The production hour started on an earlier day, specified by the number in brackets in column 'Start'. Example: The production hour started on 12/22/2019.
Start	Start time of production
2:12 PM (-9)	The production hour started at 2:12 PM nine days earlier.
End	End time of production
Accepted	Sum of all accepted products
Mean value	Mean weight of the accepted products
TU1 percentage	Percentage of the items that met the requirements of TU1

9.1.3.2 Hour of Production Diagram

The information about the last completed hours of production can be displayed graphically and in chronological order in a diagram in the screen Records Graphics.

To display the information in a diagram, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Production Data > Statistics > Records Graphics**.
- ➔ The records are displayed graphically.

Explanation of the buttons

Button	Description
Accepted	Number of accepted items
Mean Value	Mean value of all items of the package
TU1 Percentage	Percentage of the items that met the requirements of TU1

9.1.4 Feedback Control Chart

The screen Feedback shows the current activity of the function Feedback Control.

To display the feedback chart, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Production Data > Charts > Feedback**.
- ➔ The feedback control chart is displayed.

9.1.5 Weight of Single Items

This screen displays the individual weight of every single item in a graph.

Based on a fixed amount of products that were weighed, four wizard functions support the calculation:

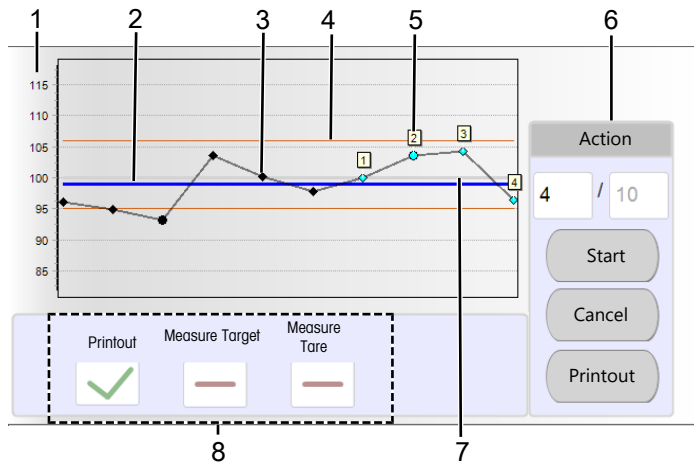
- Printout
Checks the production period and prints the data
- Measure target
Checks the production period in order to calculate and adopt the target weight
- Measure tare
Checks the production period in order to calculate and adopt the tare weight of empty packages
- Sample rejector (OPTION)
Checks the production period, rejects the samples and prints the data

To display the screen, proceed as follows:

Touch the field View Individual Weights on the home screen.

- or -

- 1 Touch **Menu**.
 - 2 Select the menu items **Production Data > Charts > Items**.
- ➔ The weights of single items are displayed.



Explanation of the screen

#	Explanation
1	Axis that shows the weight
2	Mean value (blue line)
3	Point of measurement for every single item
4	Limits of the weight zones (white lines)
5	Points of measurement for the item which data was recorded
6	Field that shows the action you want to be carried out Only one action can be selected at any time
7	Target weight (gray line)
8	Buttons to control the wizard function

9.1.5.1 Printing Individual Values

To print out individual values of an item, proceed as follows:

- 1 Activate the field **Printout** ☒.
- 2 To define the amount of measurements that you want to print out, enter the amount into the field on the right side of the slash.
- 3 Touch **Start** .
 - ➔ The recording of individual values starts.
 - ➔ If no printer is available, the values are displayed.
 - ➔ If a printer is available, the window 'Printout Saved' opens up. Touch **Yes** if you want to preview the data, touch **No** if you do not want to preview the data.

To save the data on a USB stick or print the data directly, touch No.

To open up the window with the preview of the data, touch Yes.

To save the data, touch OK.

To print the data, touch Print.

9.1.5.2 Calculating the Target Weight

This function calculates the mean target weight of the package while the packages run along the conveyor belt. To calculate the mean target weight of the package, proceed as follows:

- Make sure that you are authorized to operate this function.
 - Make sure that packages with the desired target weight are running along the conveyor belts.
 - Make sure that the screen **Items** is open.
- 1 Activate the field **Measure Target**.
 - ➔ The field **Measure Target** is marked with a green checkmark ☒.
 - ➔ The section **Measure Target** is active.

- 2 Enter the number of packages that are the base for the calculation in the field before the slash.
- 3 Touch **Start** to start the calculation.
 - ➔ The conveyors start to run and the calculation begins.
 - ➔ A new window opens up at the end of the calculation.
- 4 Touch **No** if you do not want to accept the calculated mean target weight and start the calculation again.
-or-
Touch **Yes** to accept the calculated target weight.
Note If the option **Statistics** is activated, the execution of the final evaluation must be accepted in order to accept the target weight. If you do not accept the execution of the final evaluation, then the target weight is not accepted.
- ➔ The target weight is accepted and the updated target weight of the package is changed. The data of the current package is displayed on the home screen.

9.1.5.3 Calculating the Tare Weight

This function calculates the mean tare weight of the package while the empty packages run along the conveyor belt. To calculate the mean tare weight of the empty package, proceed as follows:

- Make sure that you are authorized to operate this function.
 - Make sure that empty packages are running over the conveyors.
 - Make sure that the screen **Items** is open.
- 1 Activate the field **Measure Tare**.
 - ➔ The field **Measure Tare** is marked with a green checkmark .
 - ➔ The section **Measure Tare** is active.
 - 2 Enter the number of packages that are the base for the calculation in the field before the slash.
 - 3 Touch **Start** to start the calculation.
 - ➔ The conveyors start to run and the calculation begins.
 - ➔ A new window opens up at the end of the calculation.
 - 4 Touch **No** if you do not want to accept the calculated tare weight and start the calculation again.
-or-
Touch **Yes** to accept the calculated mean tare weight.
 - ➔ The tare weight is accepted and the updated mean tare weight of the package is changed. The data of the current package is displayed on the home screen.

9.2 Displaying Equipment Information

The following sections describe how to display information about the system and events. Additionally, it describes how to configure the display of the product information.

9.2.1 Error Messages

Information about the system is displayed in the lower section of the screen. Find an overview of the most common messages here: Messages.

The messages are stored, as long as the system is powered. To display the stored messages, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Information > Messages**.
 - ➔ The screen **Messages** opens.
- 3 Edit the data. For more information, see table below.

Explanation of the buttons

Button	Description
↓ and ↑	Arrows to scroll down and up.
Print	To print the information on the screen
Clear All Messages	To delete all messages

Button	Description
Proceed listing	<p>To display or print older messages, you can interrupt the recording of messages.</p> <p>: Messages are recorded.</p> <p>: New messages are not recorded anymore. You can now print or check older messages.</p> <p>Note When you leave the screen, the recording of messages is reactivated automatically.</p>

9.2.2 PackML Machine Status

The screen displays information about the current state of the system, for example STARTING, STOPPED, EXECUTE. The upper field shows the current state of the system. The lower field shows information about any other step.

Displaying the PackML Machine Status information

To display the PackML machine status, proceed as follows:

Shortcut: Touch the field Status in the home screen.

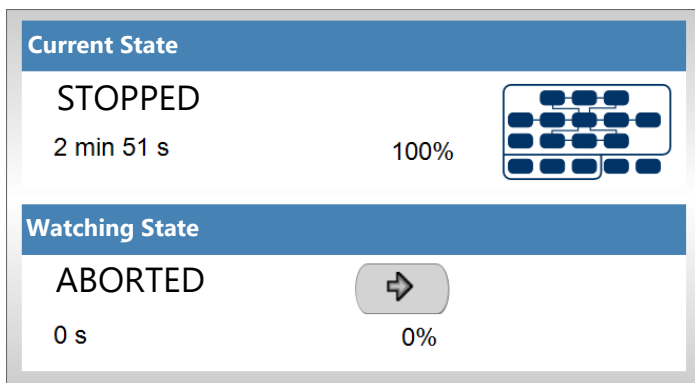
-or-

- 1 Touch **Menu**.
 - 2 Select the menu items **Information > State > PackML Machine Status**.
- ➔ The screen with the PackML machine status information opens up.

Displaying Information about the PackML Machine States

To display information about the machine states, proceed as follows:

- In the field **Watching State**, touch the arrow until the wanted state appears.
- ➔ The information about the PackML machine states is displayed in the field **Watching State**.



Explanation of the Fields

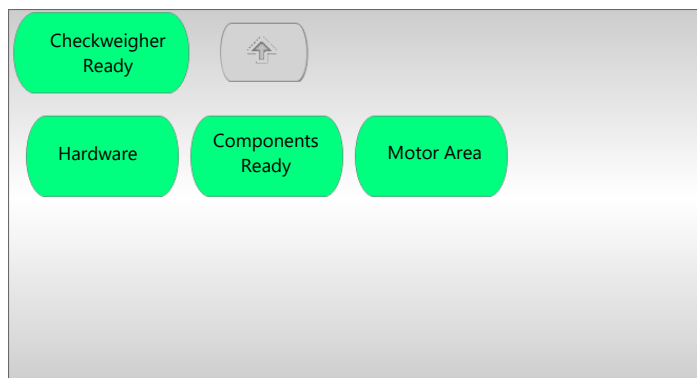
Field	Description
Current State	Current state of the machine
Watching State	Displays information about selected status field in flow chart

9.2.3 Components Status

The screen Components Status shows information about the current state of the components of the equipment, such as motors, load cell, light barriers.

To display the component status, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Information > State > Components Status**.
- ➔ The screen **Components Status** opens up.



The hardware and the components are displayed as command buttons:

- GREEN: the component is OK
- RED: the component or a sub-component is not OK. Components which are not OK are always displayed at the top.

Displaying Defective Components

To display which component or sub-component is defective, proceed as follows:

- 1 Touch the red command button until the defective component is determined.
 - ➔ The defective component is determined.
- 2 Call technically qualified personnel and/or your supervisor to repair the defective component.

9.2.4 Output / Input Information

For this functionality you may need additional user rights.

The screens Output Info and Input Info show the functional allocation of outputs and inputs.

To display the output information or the input information, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Information > State > Output Info**.
 - or -
 - Select the menu items **Information > State > Input Info**.
- ➔ The screen **Output Info** opens up.
- or -
- The screen **Input Info** opens up.
- ➔ You can navigate through the information of outputs and inputs.

9.2.5 Positions of the Components

The distance from the components to the weigh light barrier is displayed in the screen Positions. To display the distance, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Information > State > Positions**.
- ➔ The screen **Positions** opens up.

The distance from the component to the weigh light barrier is displayed in the field at the right hand side. The distance is specified in millimeters (mm).

9.2.6 XRTC Information

The XRTC screens display log information about the real time controller activities. The logs can be used for error analysis.

9.2.6.1 XRTC Log Selection

For this functionality you may need additional user rights.

The screen XRTC: Log Selection displays check lists of information that can be displayed in the screen XRTC: Log Message.

NOTICE

Risk of system malfunction

Too many enabled log messages can lead to system malfunction.

- Usually, the screen is only used for a system analysis in consultation with MT Service. Consult METTLER TOLEDO Service before operating the screen XRTC: Log Selection.

To display the XRTC Log Selection, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Information > XRTC > XRTC: Log Selection**.
➔ The screen **XRTC: Log Selection** opens up.
- 3 In the list **Select Information**, select the information group that you want to display.
- 4 In the list on the right side, select the message types that you want to display.
➔ **Note** You can choose several information groups and message types for one log message display.
- 5 Confirm with **OK**.
- 6 The screen **XRTC: Log Message** opens up.

Explanation of the Field

Field	Description
Select Information...	Information group
'List on the right side'	Message type. Information about a sub-group

Explanation of the buttons

Button	Description
Unselect All	Deletes checkmarks in all rows
Mark Selected Row	Checks all items highlighted in blue
OK	Saves selection and leads to the screen XRTC: Log Message.

9.2.6.2 XRTC Log Messages

The screen XRTC: Log Message displays the messages about the information groups chosen in the screen XRTC: Log Selection.

To display the XRTC Log Message, proceed as follows:

- Messages to be displayed are selected in the screen **XRTC: Log Selection**.
- 1 Touch **Menu**.
 - 2 Select the menu items **Information > XRTC > XRTC: Log Message**.
➔ The screen **XRTC: Log Message** opens up.
 - 3 Touch **Start**.

- ➔ The message logging starts.

4 Edit the data. For more information, see table below.

Explanation of the buttons

Button	Description
Control Logging	
Start/Stop/Wait	Starts/Stops the message logging.
Selection	Leads to the screen XRTC: Log Selection.
Clear All Messages	Deletes all messages from the log.
Save	
Save Now	Saves the last 1000 messages. The directory is displayed in the message section.
Start File Logging	Saves all messages.

9.2.6.3 Motor Start Chain Conditions and Inputs/Outputs

This screen displays the status of the conditions which have to be fulfilled for a conveyor run and the status of inputs and outputs. The image displays the status of the components indicated on the controller.

To display the XRTC motor and inputs and outputs, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Information > XRTC > XRTC: Motor and IO**.
➔ The screen **XRTC: Motor and IO** opens up.
- 3 Touch **Start**.
- 4 Edit the data. For more information, see table below.

Explanation of the Field

Field	Description
Motor Start Chain	Displays the status of the equipment motor start chain conditions. Active conditions in the motor chain marked by red circles.
Start alternatives:	a), b) OR c) need to be activated. The start relay closes shortly and opens up again.
a) Start	a) Hardware button on the equipment
b) Soft start	b) Start button in the HMI
c) Customer start	c) Start triggered by the customer equipment
Motor run	The motor runs if a), b) or c) was activated and no stop condition is set.
Equipment status alternatives:	The software is ready for operation when the relay is closed.
a) Soft released	a) OR b) need to be activated.
b) Emergency run mode	a) Equipment ready. b) Conveyor runs in emergency mode.
!Emergency stop	Emergency stop.
Interlock	Cover hatch/door.
Drive error	Motor error.
Stop	Hardware button on the equipment.
Customer stop	Stop triggered by the customer equipment
Conveyor run	Red: The conveyor is stopped. Green: The conveyor runs.
Inputs	Displays all inputs of the equipment.
Inp x	Inputs related to the functions.
Input WLB	Input of the weigh light barrier/product sensor.

Field	Description
Metal sync input	Input of the metal detector synchronization light barrier.
Metall detect	Input of the metal detector.
Outputs	Displays all outputs of the equipment.
Outp x	Inputs related to the functions and zones.
Ticks	Amount of motor pulses.

Explanation of the buttons

Button	Description
Oscilloscope	Leads to screen XRTC: Oscilloscope
Start /Stop	Starts/Stops the motor chain monitoring.

9.2.6.4 XRTC Oscilloscope

The XRTC oscilloscope graphically displays electrical signal voltages of inputs and outputs of the system controller over time. The inputs and outputs are usually connected to peripheral devices.

To display the XRTC oscilloscope, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Information > XRTC > XRTC: Oscilloscope**.
➔ The screen **XRTC: Oscilloscope** opens up.
- 3 Edit the data. For more information, see table below.

Explanation of the Field

Field	Description
Time (sec)	Sets oscilloscope interval.

Explanation of the buttons

Button	Description
Selection	Selects inputs, outputs and software events to be displayed.
Save Now	Saves data.
Stop	Stops display.

9.2.7 Testing the Outputs

This chapter describes how to test outputs and their corresponding peripheral devices (actuators such as product sorting devices, customer equipment).



⚠ CAUTION

Impact by moving parts

The equipment moves automatically, intermittently and without notice. Do not place hands or any other body parts on or near the equipment while the system is running. The following are examples of moving parts: conveyor belts and rollers, product sorting devices, motors and gearboxes, sidegrip conveyors, automatic position adjusters.

- Before stating the testing, make sure that the area of the moving parts is cleared of persons.

To test the outputs, proceed as follows:

- The screen **XRTC: Motor and IO** is opened up.
- 1 Touch the section **Outputs**.
 - ➔ The window **Activate XRTC Output** opens up.
- 2 Select an output.
- 3 Edit the data. For more information, see table below.

Explanation of the Field

Field	Description
High Level	Depending on the relay position the pulse that triggers an output can be positive or negative. <ul style="list-style-type: none">• : A positive pulse is triggered.• : A negative pulse is triggered.
Frequency	Activates the field 'Frequency [Hz]'
Impulse [ms]	Length of the pulse in milliseconds
Frequency [Hz]	Frequency of the pulse in Hz

Explanation of the buttons

Button	Description
OK	Activates the pulse to test the output
Cancel	Closes the window Activate XRTC Output

9.2.8 System Information

This menu displays information about the system:

- Versions: operating system, software, controller and others
- Metrology
- Network
- Active Options
- Dongle Login
- CPU
- Motor
- Verification Setup
- EULA

Note The scope of information depends on the configuration of your system.

To display the system information, proceed as follows:

- 1 Touch **Menu**.
 - 2 Select the menu items **Information > System Information**.
 - 3 Use **[↑]** and **[↓]** to show the different types of information.
 - or -
 - Touch the type of information that you want to see.
- ➔ The corresponding screen appears.

9.2.9 Digital Position Indicators Information

This software function is optional. Depending on the configuration of your system, some functions may not be available.

To display information about the status of the Digital Position Indicators and the list of target values, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Information > Digital Position Indicators Info**.
➔ The screen **Digital Position Indicators Info** opens.

Note If the background of the screen is orange, then at least one of the monitored Digital Position Indicators is not in the tolerance zone.

9.2.10 Performance Verification Information

Dates for the next preventive maintenance (PM) and performance verification (PV) can be stored and managed in the form of reminders.

To see information about the performance verification and preventive maintenance, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Information > System Information**.
➔ The screen **System Information** opens up.
- 3 Touch **Verification Setup**.
➔ The dates of the last and the next preventive maintenance and performance verification are shown, as well as the phone number of the METTLER TOLEDO Service contact.

To configure the dates and settings of the performance verification, see [Performance Verification Settings ▶ Page 78].

9.2.11 Metal Detector Information

This software function is optional. Depending on the configuration of your system, some functions may not be available.

The screen Metal Detector displays information and parameters of the metal detector.

Note For more information, see the Metal Detector manual.

To display the information of the metal detector, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Setup > General > Metal Detector**.
➔ The screen **Metal Detector** opens up.

Note Additionally, the screen Zone Classification displays information about the quantity of metal contaminated products.

Explanation of the Fields

Field	Description
'Metal detection signal box'	Blinks when metal is detected.
'Detection bar'	<ul style="list-style-type: none">• Green: No metal detected, product not contaminated.• Red: Metal detected, product contaminated.
'Message section'	Displays parameter information about the metal detector combination system and the inspected packages
Checkmark	 : Regular update of the detection bar.  : Update of the detection bar is deactivated. Metal detection is still active.

9.3 Printing

This software function is optional. Depending on the configuration of your system, some functions may not be available.

The system stores printout files that have been printed out or stored locally. The printout files can be displayed, printed again, or deleted.

Note The memory for stored printout files is limited to 400. Further printout files are not stored.

Note Printed data is not deleted automatically.

9.3.1 Displaying Stored Printout Files

To display the stored printout files, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Information > Stored Printouts**.
➔ The screen **Stored Printouts** opens up.

9.3.2 Displaying the Preview of a Printout

To display the preview of a printout, proceed as follows:

- 1 Select a line with [↓] or [↑].
➔ The selected line is highlighted in blue.
- 2 Touch **Preview**.
➔ The preview of the printout appears.
- 3 To print the preview, touch **Print**.
-or-
To close the preview, touch **OK**.
➔ The preview of the printout is displayed.

9.3.3 Printing Printouts

To print printout files, proceed as follows:

- If you are using a ticket printer with paper roll, make sure that the printer cover is open. See [Printing With the Ticket Printer ▶ Page 130].
 - If you are using a PrintStick, make sure that the PrintStick is connected to the USB port at the HMI.
- 1 Select a line with [↓] or [↑].
➔ The selected line is highlighted in blue.
 - 2 Touch **Mark Selected Row**.
➔ The checkbox at the beginning of the line is activated.
 - 3 To select more printout files, proceed as described above.
-or-
To activate all printout files at the same time, touch **Mark All Rows**.
 - 4 Touch **Print Marked Rows/Print** to print all activated printout files.
➔ The printout files are printed.

Note Printed data is not deleted automatically.

9.3.4 Deleting Printouts

To delete printout files, proceed as follows:

- 1 Select a line with [↓] or [↑].
➔ The selected line is highlighted in blue.
- 2 Touch **Mark Selected Row**.
➔ The checkbox at the beginning of the line is activated.
- 3 To select more printout files, proceed as described above.
-or-
To activate all printout files at the same time, touch **Mark All Rows**.

- 4 Touch **Delete Marked Rows** to delete all the activated printout files.
- ➔ The printout files are deleted.

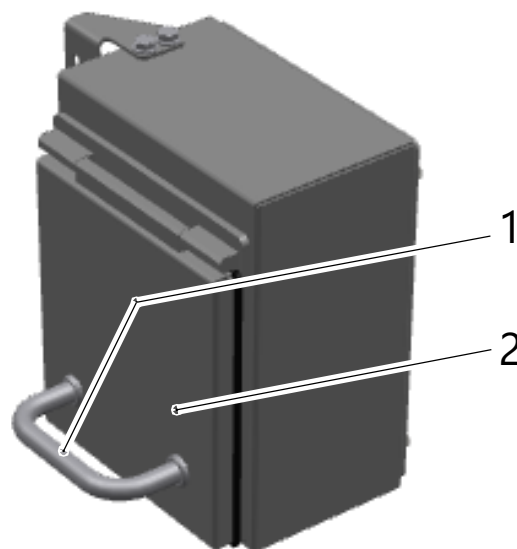
9.3.5 Printing With the Ticket Printer

While printing, the cover of the ticket printer must be open to allow the printout to leave the ticket printer housing.

To print printout files, proceed as follows:

- 1 Pull the handle (1) until the lock opens.
- 2 Slightly open the printer cover (2).
- 3 Start printing as described in [Printing Printouts ► Page 129].
- 4 When the printout is completely printed, tear it off by pulling it along the cutting edge on the ticket printer.
- 5 When printing is done, gently push the printer cover (2) shut until the lock clicks into place.

Note The printer cover protects the printer from the ingress of dust and dirt. METTLER TOLEDO recommends closing the printer cover when the printer is not printing. However, if the software is configured to print printouts automatically at intervals, you may decide to leave the printer cover partially open at your own risk.



10 Optional Software Functions

The following sections provide information about optional software functions.

10.1 Fieldbus Interface

The Fieldbus Interface facilitates communication between a C-Series system control module with other automation equipment such as a programmable logic controller (PLC) within a Fieldbus network. The customer must provide the network connection between the checkweigher and the peripheral device. The Fieldbus Interface allows the system to access the Fieldbus network and is configured as an adaptive device communicating with the user's master device.

The information that can be accessed includes:

1. Line integration (Checkweigher Ready, Checkweigher Running, Emergency Stop, Emergency Run, Remote Start and Remote Stop)
2. Individual weights and production summary transfer
3. Remote package changeover

For more detailed information on the Fieldbus Interface, please see the Fieldbus Interface Manual.

10.2 Gareco

Gareco (Garvens Remote Control) is a bidirectional protocol for communication between external PC or PLC and the MT equipment. It is a detailed set of rules and specifications which software programs must follow to communicate with the MT equipment.

Gareco enables the checkweigher to send relevant data including:

1. Product data (zone settings, statistic settings, feedback settings, gliding limits, and mean value monitoring) depending on the checkweigher configuration.
2. Production data (counter values and statistic data).
3. Product changeover.

For more detailed information please see the separate manual.

10.3 Weight Data Transmission

This software function is optional. Depending on the configuration of your system, some functions may not be available.

The system continuously transmits current weight data to the customer PC or other data collection systems. The weight data can be used for documenting, evaluating and optimizing production line performance. The weight data can be transmitted in serial format (RS232, RS422, CL20) or Ethernet TCP/IP.

For weight data output formats, see [Weight Data Output Formats ► Page 131].

10.4 Weight Data Output Formats

There are eight weight data output formats that can be selected in the interface configuration. The weight data output formats also differ depending on single-line or multi-line operation.

For the weight data output formats 5 through 8, the weight classification zones are defined as follows:

- OK
"Accepted" zone (meaning "good" products)
- -
First (inner) underweight zone
- +
First (inner) overweight zone
- - -
For 5 classification zones: Second (outer) underweight zone
- ++
For 5 classification zones: Second (outer) overweight zone

10.4.1 Single-line Operation

The following tables represent the standard data output formats that are available for single-line operation:

Format 1: (STX...ETX) with package name

The string consists of the following characters:

Start	Package Name	Weight	Unit	End
(STX)	XXXXXXXXXX	XXXXXXX	XXX	(ETX)

Field	Description
Start (STX)	1 character: (hex)02
Package name	10-20 characters, left justified
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
End (ETX)	1 character, (hex)03
Example:	(STX)COFFEE-----500.00g--(ETX)

Format 2: (STX)...(ETX) without package name

The string consists of the following characters:

Start	Weight	Unit	End
(STX)	XXXXXXX	XXX	(ETX)

Field	Description
Start (STX)	1 character: (hex)02
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
End (ETX)	1 character, (hex)03
Example:	(STX)---0.512kg--(ETX)

Format 3: (CR)(LF) with package name

The string consists of the following characters:

Package Name	Weight	Unit	End
XXXXXXXXXX	XXXXXXX	XXX	(CR)(LF)

Field	Description
Package name	10-20 characters, left justified
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
End (CR)(LF)	2 characters, (hex)_0D, 0A
Example:	COFFEE-----1.2g--(CR)(LF)

Format 4: (CR)(LF) without package name

The string consists of the following characters:

Weight	Unit	End
XXXXXXX	XXX	(CR)(LF)

Field	Description
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
End (CR)(LF)	2 characters, (hex)_OD, OA
Example:	~~~~~50g~~(CR)(LF)

Format 5: (STX)...(ETX) with package name and zone classification

The string consists of the following characters:

Start	Package Name	Weight	Unit	Zone Classification	End
(STX)	XXXXXXXXXX	XXXXXXX	XXX	XX	(ETX)

Field	Description
Start (STX)	1 character: (hex)02
Package name	10-20 characters, left justified
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
Zone Classification	2 characters, right justified and with leading spaces (OK, -, +, --, ++)
End (ETX)	1 character, (hex)03
Example:	STX)COFFEE~~~~~500.00g~~OK(ETX)

Format 6: (STX)...(ETX) without package name, with zone classification

The string consists of the following characters:

Start	Weight	Unit	Zone Classification	End
(STX)	XXXXXXX	XXX	XX	(ETX)

Field	Description
Start (STX)	1 character: (hex)02
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
Zone Classification	2 characters, right justified and with leading spaces (OK, -, +, --, ++)
End (ETX)	1 character, (hex)03
Example:	(STX)~~0.512g~~~+(ETX)

Format 7: (CR)(LF) with package name and zone classification

The string consists of the following characters:

Package Name	Weight	Unit	Zone Classification	End
XXXXXXXXXX	XXXXXXX	XXX	XX	(CR)(LF)

Field	Description
Package name	10-20 characters, left justified
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces

Field	Description
Unit	3 characters, left justified (g/kg/oz/lb)
Zone Classification	2 characters, right justified and with leading spaces (OK, -, +, --, ++)
End (CR)(LF)	2 characters, (hex)_OD, OA
Example:	COFFEE-----1.2g---(CR)(LF)

Format 8: (CR)(LF) without package name, with zone classification

The string consists of the following characters:

Weight	Unit	Zone Classification	End
XXXXXXX	XXX	XX	(CR)(LF)

Field	Description
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
Zone Classification	2 characters, right justified and with leading spaces (OK, -, +, --, ++)
End (CR)(LF)	2 characters, (hex)_OD, OA
Example:	-----50g---+(CR)(LF)

10.4.2 Multi-line Operation

If the checkweigher is designed as a multiple-line weighing system, the number of the line (1, 2, ...) is included in the character string. This ensures that the weight values are allocated clearly to the respective production line from which it originates.

The following tables represent the standard data output formats that are available for multi-line operation:

Format 1: (STX...ETX) with package name

The string consists of the following characters:

Start	Line	Package Name	Weight	Unit	End
(STX)	X	XXXXXXXXXX	XXXXXXX	XXX	(ETX)

Field	Description
Start (STX)	1 character: (hex)02
Line	1 character for the number of the production line
Package name	10-20 characters, left justified
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
End (ETX)	1 character, (hex)03
Example:	(STX)2COFFEE-----500.00g---(ETX)

Format 2: (STX)...(ETX) without package name

The string consists of the following characters:

Start	Line	Weight	Unit	End
(STX)	X	XXXXXXX	XXX	(ETX)

Field	Description
Start (STX)	1 character: (hex)02
Line	1 character for the number of the production line
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
End (ETX)	1 character, (hex)03
Example:	(STX)2--0.512kg--(ETX)

Format 3: (CR)(LF) with package name

The string consists of the following characters:

Line	Package Name	Weight	Unit	End
X	XXXXXXXXXX	XXXXXXX	XXX	(CR)(LF)

Field	Description
Line	1 character for the number of the production line
Package name	10-20 characters, left justified
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
End (CR)(LF)	2 characters, (hex)_OD, OA
Example:	2COFFEE-----1.2g--(CR)(LF)

Format 4: (CR)(LF) without package name

The string consists of the following characters:

Line	Weight	Unit	End
X	XXXXXXX	XXX	(CR)(LF)

Field	Description
Line	1 character for the number of the production line
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
End (CR)(LF)	2 characters, (hex)_OD, OA
Example:	2-----50g--(CR)(LF)

Format 5: (STX)...(ETX) with package name and zone classification

The string consists of the following characters:

Start	Line	Package Name	Weight	Unit	Zone Classification	End
(STX)	X	XXXXXXXXX X	XXXXXXX	XXX	XX	(ETX)

Field	Description
Start (STX)	1 character: (hex)02
Line	1 character for the number of the production line

Field	Description
Package name	10-20 characters, left justified
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
Zone Classification	2 characters, right justified and with leading spaces (OK, -, +, --, ++)
End (ETX)	1 character, (hex)03
Example:	STX)2COFFEE-----500.00g--OK(ETX)

Format 6: (STX)...(ETX) without package name, with zone classification

The string consists of the following characters:

Start	Line	Weight	Unit	Zone Classification	End
(STX)	X	XXXXXXX	XXX	XX	(ETX)

Field	Description
Start (STX)	1 character: (hex)02
Line	1 character for the number of the production line
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
Zone Classification	2 characters, right justified and with leading spaces (OK, -, +, --, ++)
End (ETX)	1 character, (hex)03
Example:	(STX)2--0.512g---+(ETX)

Format 7: (CR)(LF) with package name and zone classification

The string consists of the following characters:

Line	Package Name	Weight	Unit	Zone Classification	End
X	XXXXXXXXXX	XXXXXXX	XXX	XX	(CR)(LF)

Field	Description
Line	1 character for the number of the production line
Package name	10-20 characters, left justified
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
Zone Classification	2 characters, right justified and with leading spaces (OK, -, +, --, ++)
End (CR)(LF)	2 characters, (hex)_OD, 0A
Example:	2COFFEE-----1.2g---(CR)(LF)

Format 8: (CR)(LF) without package name, with zone classification

The string consists of the following characters:

Line	Weight	Unit	Zone Classification	End
X	XXXXXXX	XXX	XX	(CR)(LF)

Field	Description
Line	1 character for the number of the production line

Field	Description
Weight	7 characters, number of subsequent decimal places depending on the configuration (0, 1, 2 or 3), no decimal point if there are no decimal places behind it, right justified and with leading spaces
Unit	3 characters, left justified (g/kg/oz/lb)
Zone Classification	2 characters, right justified and with leading spaces (OK, -, +, --, ++)
End (CR)(LF)	2 characters, (hex)_0D, 0A
Example:	2-----50g---+(CR)(LF)

11 Equipment Maintenance

This chapter provides a standard maintenance plan and information on maintenance and replacement of equipment components.

The maintenance work described in this chapter can be performed by the customer's qualified service technician. All maintenance work that is not described here must be performed by a METTLER TOLEDO service technician only.



DANGER

Danger to life for personnel with cardiac pacemakers

The electromagnetic fields inside and directly outside the aperture of metal detectors can affect the operation of cardiac pacemakers and other active or passive medical devices (implanted or external).

- Keep personnel fitted with these types of devices away from the proximity of the aperture (at least 200 mm distance) until they have confirmed that they are safe at a magnetic field strength of 1 A/m.



CAUTION

Burning by direct contact with hot components

During production, moving components, such as motors can become hot. You can burn skin or limbs if you touch these components while they are still hot.

- Before you start to inspect or clean the equipment or to disassemble parts, wait until moving components, such as motors, are totally cooled down.



CAUTION

Crushing by falling or moving objects

The equipment and its components are heavy. They can cause injuries when they drop, tip over or move during maintenance.

- 1 Always wear safety gloves and safety shoes with steel-protected caps when handling equipment and equipment components.
- 2 When closing a guard door, do not place hands underneath the guard door.



CAUTION

Cutting by sharp-edged metal parts

Some equipment components may have sharp edges which can cause cutting injuries.

- Always wear protective gloves when maintaining or cleaning the equipment.



CAUTION

Excessive physical load due to heavy guards, covers, catch bins or reject tunnels

Guards, covers, catch bins, and reject tunnels may be heavy. Lifting them can lead to excessive physical load.

- If guards, covers, catch bins, or reject tunnels must be removed, have at least two people lift them.

11.1 Securing the Equipment for Maintenance

This section describes how to secure the equipment for maintenance work.



DANGER

Death by electric shock

Work on the electric system of the equipment has to be carried out by an electrician or equally qualified personnel.

After disconnection of the equipment from power supply, dangerous voltage may still be present within the equipment and at the connector terminals.

Before you start working on the electric system of the equipment:

- 1 Switch the equipment off and wait 10 minutes until the equipment is completely de-energized.
- 2 Use a suitable measuring instrument to ensure that the equipment is de-energized.



DANGER

Serious injuries due to line integration

Due to line integration, power might be supplied directly to the equipment drive system. If this is the case, the equipment cannot be switched off and secured as described in this manual. The integrator is responsible for providing risk assessment and instructions for securing the equipment for maintenance.

- 1 Check the wiring diagrams of the equipment and the production line for details.
- 2 Obey all relevant instructions and safety procedures of the plant.

11.1.1 Securing the Disconnect Switch

To secure the equipment for maintenance with the disconnect switch, proceed as follows:

- 1 Turn the disconnect switch into the off position.
 - ➔ The power supply is de-energized.
- 2 Pull out the movable part of the switch.
- 3 Secure the position of the switch with a lock.
 - ➔ The disconnect switch is secured.
- 4 Disconnect the compressed air supply from the pneumatic maintenance unit as described below.



11.1.2 Securing the Disconnect Switch

The illustration below shows an example of a lockable disconnect switch.

To secure the equipment for maintenance with the disconnect switch, proceed as follows:

- 1 Turn the disconnect switch into the off position.
 - ➔ The power supply is de-energized.
- 2 Pull out the movable part of the switch.
- 3 Secure the position of the switch with a lock.
 - ➔ The disconnect switch is secured.



11.1.3 Securing the Compressed Air Supply

To lock the closed position of the shut-off valve, proceed as follows:

- 1 There is an arrow on the cap (1) pointing towards "-".
Turn the cap in the direction of that arrow as far as it will go.
➔ The air supply is interrupted.
- 2 Push the cap (1) down until it clicks into place.
- 3 Push out the center part (2) of the cap.
- 4 Secure the position of the center part (2) with a lock.
➔ The shut-off valve is secured and you can start with the maintenance or cleaning procedure.



11.1.4 Securing the Disconnect Switch

The illustration below shows an example of a lockable disconnect switch.

To secure the equipment for maintenance with the disconnect switch, proceed as follows:

- 1 Turn the disconnect switch into the off position.
➔ The power supply is de-energized.
- 2 Pull out the movable part of the switch.
- 3 Secure the position of the switch with a lock.
➔ The disconnect switch is secured.



11.2 Maintenance Plan

Maintenance Task	Daily or Each Shift	Weekly	Monthly	Quarterly	Annually
Conveyors					
Check the conveyor belt tension. If necessary, retension the belt as described in [Retensioning a Conveyor Belt ► Page 150].	X				
Check if the conveyor belts are in good condition. If a belt is damaged, replace it as described in the respective sections of this chapter.	X				
Check if all conveyor belts are clean. If necessary, clean them as described in the Operator Manual.	X				
Check if all conveyor belts run straight as described in [Conveyor Belt Tensioning and Tracking ► Page 148].	X				
Check if the product transfer to external conveyors is smooth. If necessary, adjust the leveling feet of the equipment or the height of the external conveyors.	X				

Maintenance Task	Daily or Each Shift	Weekly	Monthly	Quarterly	Annually
Check if all timing belts are in good condition. If a timing belt is damaged, replace it as described in the respective section for this belt type in [Conveyors ▶ Page 142].			X		
Load cell					
Static scale test with test weights	X				
Dynamic scale test with original products	X				
Weigh light barrier					
Check that products are detected correctly: Count the products that pass the weigh light barrier and compare the number with the counted products shown on the HMI. If the numbers do not correspond, read the troubleshooting steps in [Product Sorting Devices ▶ Page 184].	X				
Check that "good" products are not sorted out as "bad". Otherwise, read the troubleshooting steps in section [Product Sorting Devices ▶ Page 184].	X				
Check if "bad" products are sorted out. If not, read the troubleshooting steps in section [Product Sorting Devices ▶ Page 184].	X				
Compressed air					
Check if the compressed air level at the pneumatic maintenance unit corresponds to the requirement given in chapter Technical Data. If not, read the troubleshooting steps in section [Product Sorting Devices ▶ Page 184].	X				
Check if there is liquid in the pneumatic maintenance unit. If so, remove the liquid.		X			
Check if all hoses are in good condition. If air is leaking, replace them.		X			
Safety components					
Check all fixed guards to make sure they are properly secured in place. Retighten if necessary.		X			
Check the safety labels to make sure they are present and are legible. If they are damaged or lost, contact METTLER TOLEDO Service to order new safety labels.		X			
Check if the emergency stop pushbutton works properly by following the steps in section [Testing the E-Stop Function ▶ Page 161].		X			
Others					
Check if all cables and connectors are in good condition. If a cable is damaged, have an electrician or equally qualified person replace it.		X			
Check the safety interlock door function of the catch bins as described in [Testing the Safety Interlock Door Function ▶ Page 161].			X		
Check the transmission of the motor for oil leakage. If oil is leaking, check the seals and replace them if necessary.			X		
Check if all seals are in good condition. Replace them if necessary.	X				

In addition to the maintenance tasks listed in the table, METTLER TOLEDO recommends to have the following tasks carried out by an MT service technician:

- Quarterly performance verification and calibration,
- Annual preventative maintenance.

If you have any questions, contact your local METTLER TOLEDO representative.

11.3 Conveyors

The following sections describe the replacement steps for conveyors.



DANGER

Serious injuries during cleaning, inspection, and maintenance

The following hazards can occur:

- electrocution by dangerous voltage applied to the electric system,
- serious injuries by unintended and sudden movement of components such as conveyor belts and product sorting devices.

- 1 Before working on the equipment, secure it as described in [Securing the Equipment for Maintenance ► Page 138].
- 2 Make sure that all energy supplies (electrical and pneumatic) are switched off and secured against being switched on again.

NOTICE

Risk of damaging the conveyor belt

The conveyor belt can be damaged in case of improper use.

- 1 Handle the conveyor belt with care.
- 2 Do not use tools to remove it.
- 3 Wear gloves to protect the surface of the conveyor belt.
- 4 Do not twist or stretch the conveyor belt, it may lose its tension.

In general, C3 equipment consists of an infeed conveyor, a weigh conveyor and an outfeed conveyor.

11.3.1 Conveyor, Dry Design

The following sections describe the replacement steps for conveyors in dry design as well as conveyor belt tensioning and tracking.

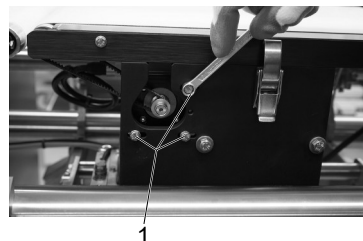
11.3.1.1 Replacing a Conveyor Belt

To replace a conveyor belt, proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Unscrew the mounting bolt of the timing belt guard and remove mounting bolt and guard.



- 3 Loosen the motor screws (1) until the motor can be moved but is still connected to the conveyor.



- 4 Move the motor to take away the tension of the timing belt.



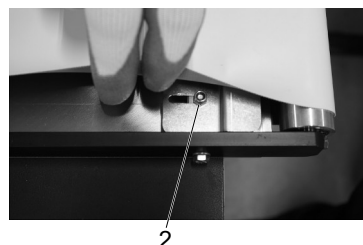
- 5 Release the front and rear latches.



- 6 Lift the conveyor vertically upwards and remove the timing belt from the motor pulley. Lay the conveyor on a scratch-resistant surface. **Note** Do not bend, twist or fold the timing belt.



- 7 Lift the conveyor belt. Loosen the screws of the protection plate (2) until you can move it. Do the same on the other side of the conveyor belt.



- 8 Loosen the belt tensioning screw until the conveyor belt becomes noticeably slack.



- 9 Place the conveyor upright on the side and carefully pull off the conveyor belt. **Note** The rollers are not fixed to the conveyor frame. Support them with your hand when you take off the conveyor belt.

- 10 Put the timing belt on the drive roller and insert the rollers.

- 11 Slide on a new conveyor belt and undo the steps above in reverse order to reassemble the conveyor.



- 12 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.**
Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.
- ➔ The conveyor belt is replaced. The equipment can be restarted.
- Note** Make sure that the conveyor belt runs straight and centrally on the conveyor body.

11.3.1.2 Replacing a Timing Belt

To replace a timing belt, proceed as follows:

NOTICE

Risk of damaging the timing belt

The timing belt can be damaged in case of improper use.

- 1 Do not bend or fold the timing belt.
- 2 Do not use tools to remove it.
- 3 Do not twist or stretch the timing belt.

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Unscrew the mounting bolt of the timing belt guard and remove mounting bolt and guard.



- 3 Loosen the motor screws (1) until the motor can be moved but is still connected to the conveyor.



- 4 Move the motor to take away the tension of the timing belt.



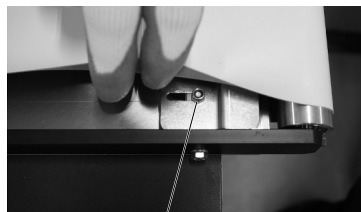
- 5 Release the front and rear latches.



- 6 Lift the conveyor vertically upwards and remove the timing belt from the motor pulley. Lay the conveyor on a scratch-resistant surface. **Note** Do not bend, twist or fold the timing belt.



- 7 Lift the conveyor belt. Loosen the screws of the protection plate (2) until you can move it. Do the same on the other side of the conveyor belt.



2

- 8 Loosen the belt tensioning screw until the conveyor belt becomes noticeably slack.



- 9 Place the conveyor upright on the side and carefully pull off the conveyor belt. **Note** The rollers are not fixed to the conveyor frame. Support them with your hand when you take off the conveyor belt.

- 10 Put a new timing belt on the drive roller and insert the rollers.

- 11 Slide on the conveyor belt.

- 12 Slide on the new conveyor belt.

- 13 Reassemble the conveyor by following the steps in reverse.

- 14 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.** Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.

➔ The timing belt is replaced. The equipment can be restarted.



11.3.1.3 Replacing a Motor

To replace a motor, proceed as follows:

NOTICE

Risk of damaging the timing belt

The timing belt can be damaged in case of improper use.

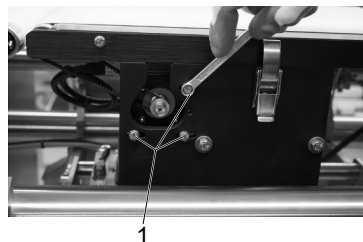
- 1 Do not bend or fold the timing belt.
- 2 Do not use tools to remove it.
- 3 Do not twist or stretch the timing belt.

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].

- 2 Unscrew the mounting bolt of the timing belt guard and remove mounting bolt and guard.



- 3 Loosen the motor screws (1) until the motor can be moved but is still connected to the conveyor.



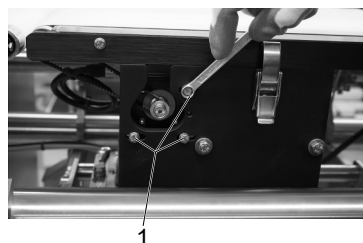
- 4 Move the motor to take away the tension of the timing belt.



- 5 Unplug the motor cable.



- 6 Loosen the motor mounting bolts (1). Support the motor with one hand while removing the mounting bolts.



- 7 If the replacement motor does not have a mounting plate, remove the mounting plate (2) and mount it on the replacement motor.

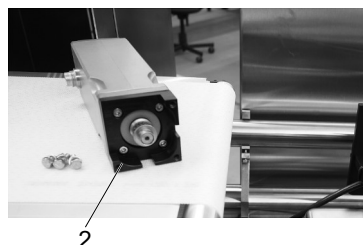
- 8 Install the replacement motor. Use one hand to support the motor while fastening the mounting bolts. Do not fasten the mounting bolt of the timing belt guard.

- 9 Connect the motor cable.

- 10 Reassemble the conveyor by following the steps in reverse.

- 11 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.** Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.

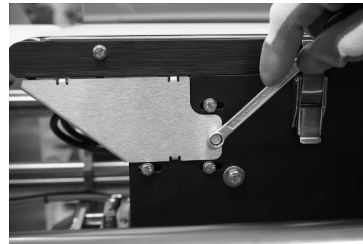
- ➔ The motor is replaced. The equipment can be restarted.



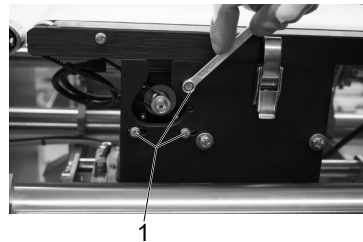
11.3.1.4 Replacing a Roller

To replace a roller, proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Unscrew the mounting bolt of the timing belt guard and remove mounting bolt and guard.



- 3 Loosen the motor screws (1) until the motor can be moved but is still connected to the conveyor.



- 4 Move the motor to take away the tension of the timing belt.



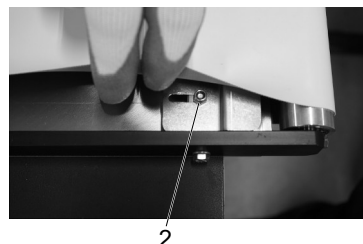
- 5 Release the front and rear latches.



- 6 Lift the conveyor vertically upwards and remove the timing belt from the motor pulley. Lay the conveyor on a scratch-resistant surface. **Note** Do not bend, twist or fold the timing belt.



- 7 Lift the conveyor belt. Loosen the screws of the protection plate (2) until you can move it. Do the same on the other side of the conveyor belt.



- 8 Loosen the belt tensioning screw until the conveyor belt becomes noticeably slack.



- 9 Place the conveyor upright on the side and carefully pull off the conveyor belt. **Note** The rollers are not fixed to the conveyor frame. Support them with your hand when you take off the conveyor belt.
- 10 Put the timing belt on the new drive roller and insert the new roller.
- 11 Reassemble the conveyor by following the steps in reverse.



- ➔ The roller is replaced. The equipment can be restarted.

Note Make sure that the conveyor belt runs straight and centrally on the conveyor body.

11.3.2 Conveyor Belt Tensioning and Tracking

The following sections provide information on conveyor belt tensioning and tracking. They apply to standard dry conveyors only.



CAUTION

Crushing by rotating equipment parts

Hands and fingers can be entangled and crushed when touching rotating equipment parts.

- 1 Do not touch rollers or conveyor belts while you are adjusting the tensioning screws.
- 2 Do not wear gloves.

NOTICE

Risk of damaging the conveyor by excessive belt tensioning

Too much tensioning will cause rapid wear to conveyor belt and roller bearings.

- 1 Carefully check the conveyor belt tension **and** tracking before you decide if the belt needs retensioning or aligning.
- 2 Tension conveyor belts only as much as necessary to stop them from slipping.
- 3 Increase the belt tension in small amounts at a time to avoid too much tension.

11.3.2.1 Initial Tensioning of a Conveyor Belt

This section describes how to tension a newly installed and/or untensioned conveyor belt.

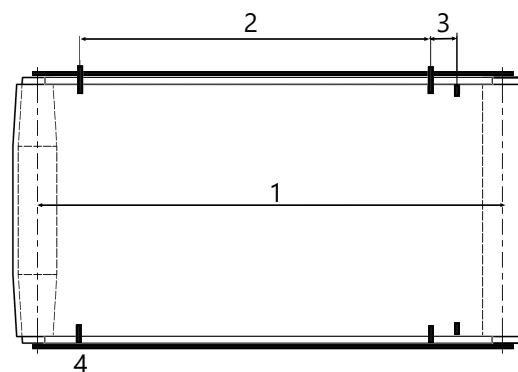
1 Distance between Axles [mm]	2 Reference Distance [mm]	3 Target Difference [mm]
200	150	0.5
250	200	0.6
300	250	0.8
400	350	1.1
500	450	1.4
600	550	1.7
800	750	2.3
1000	750	2.3
1200	750	2.3

1 Distance between Axles [mm]	2 Reference Distance [mm]	3 Target Difference [mm]
1500	750	2.3
1800	750	2.3

To tension a conveyor belt, proceed as follows:

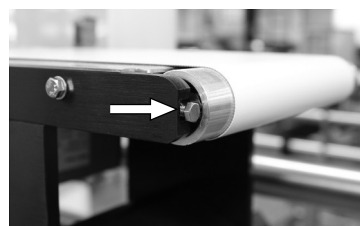
- 1 Measure the distance between the conveyor axles (1).
- 2 In the table above look up which reference distance (2) is recommended for the distance between axles (1) of your equipment.
- 3 Use a measuring tape to determine and mark the reference distance on the conveyor belt. Each mark must extend from the conveyor belt onto the glide plate, as shown in the figure.

Note The conveyor belt splice must not be in between the two marks. Make sure that the conveyor belt lies flat on the glide plate.



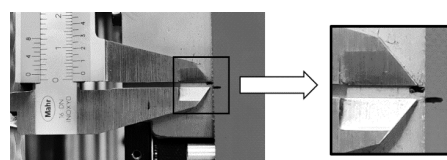
Measuring Distances on the Conveyor Belt

- 4 Tension the conveyor belt until the recommended target difference (3) between the mark on the conveyor belt and the mark on the glide plate is reached.

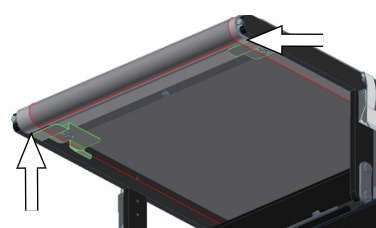


Tensioning Screw

- 5 To check this dimension, first align the marks on the left side (4) and adjust the jaws of a caliper to the target difference (3) given in the table. Now compare the distance of the jaws to the target difference (3) on the conveyor belt and the glide plate. Adjust the belt-tensioning screws, until the distance of the jaws and the target difference (3) are the same.
- 6 Check the gap between entanglement protection and idler roller. Correct each gap to max. 5 mm and tighten the screws.
- 7 If necessary, reconnect the equipment to power supply.
- 8 Start the motor and let the belt run for approx. 15 minutes. Observe the belt. If it shifts to one side, adjust it as described in section [Aligning a Conveyor Belt ► Page 150].



Using a Caliper



Gap between Entanglement Protection and Idler Roller

Note Depending on usage and ambient conditions, a new conveyor belt may stretch during first use. After installing a new conveyor belt, frequently check the conveyor belt tension as described in section [Checking Conveyor Belt Tension and Tracking ► Page 149].

11.3.2.2 Checking Conveyor Belt Tension and Tracking

To check conveyor belt tension and tracking, proceed as follows:

- 1 Switch on the equipment.
- 2 Start the conveyor at normal speed and let a few products pass the equipment.

- 3 Observe if the belt slips. If it slips, the belt tension may be insufficient. In this case follow the instructions in section [Retensioning a Conveyor Belt ► Page 150].
- 4 Observe if the belt runs straight and centrally on the drive roller. If it runs off to one side, it has to be aligned. In this case follow the instructions in section [Aligning a Conveyor Belt ► Page 150].

11.3.2.3 Aligning a Conveyor Belt

NOTICE

Risk of damaging the conveyor belt during alignment

The conveyor belt will be damaged if it runs off to one side and touches other equipment parts.

- Reduce the motor speed for alignment if necessary and allowed.

This section describes how to align a conveyor belt so that it runs straight and centrally on the drive roller.

To align a conveyor belt, proceed as follows:

- 1 Move the conveyor belt by hand until it is located centrally on the drive roller.
- 2 Start the conveyor.
- 3 Let the conveyor belt run until it is clear to see that it shifts to one side. **Note** It may take some time until the result of the adjustment shows.
- 4 Stop the conveyor.
- 5 On the side the conveyor belt shifts toward: Turn the tensioning screw slightly clockwise to increase belt tension.
On the opposite side, turn the tensioning screw slightly counterclockwise to decrease belt tension.
Note To avoid changing the average belt tension, turn both tensioning screws the same amount.
- 6 Repeat steps 1-5 until the conveyor belt runs straight. Turn the belt-tensioning screws by smaller amounts when the belt gets close to the center of the drive roller.
- 7 Check belt alignment as described in section [Checking Conveyor Belt Tension and Tracking ► Page 149].
- 8 Repeat the aligning procedure if necessary.

In some cases, even the repeated aligning procedure does not have the required result. If this is the case, it may be necessary to completely relax the conveyor belt and then tension it again. In this case proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Turn the tensioning screws counterclockwise until the conveyor belt is completely relaxed.
- 3 Continue with the steps described in section [Initial Tensioning of a Conveyor Belt ► Page 148].

11.3.2.4 Retensioning a Conveyor Belt

NOTICE

Risk of damaging the conveyor belt by bad alignment

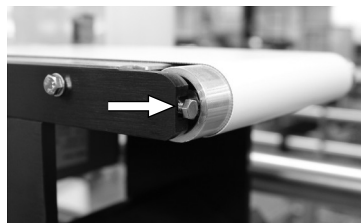
The conveyor belt will be damaged if it does not run straight and centrally on the drive roller.

- When retensioning the conveyor belt, be sure to adjust both tensioning screws the same amount.

To retension the conveyor belt, proceed as follows:

- 1 Switch on the equipment.
- 2 Start the conveyor.

- 3 Slowly turn the two tensioning screws clockwise the same amount. Begin with a quarter turn of each tensioning screw.
- 4 Check belt tension and alignment as described in section [Checking Conveyor Belt Tension and Tracking ► Page 149].
- 5 Repeat this procedure if necessary.



11.3.3 Conveyor, Waterprotected Design

The following sections describe the replacement steps for conveyors in waterprotected design.

11.3.3.1 Replacing a Conveyor Belt

To replace a conveyor belt, proceed as follows:



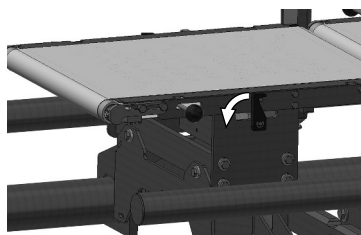
CAUTION

Crushing the fingers at the conveyor body

When pressing the unlocking latch, the conveyor body flips automatically down and may crush you fingers.

- Do not place fingers between the conveyor body and the conveyor support.

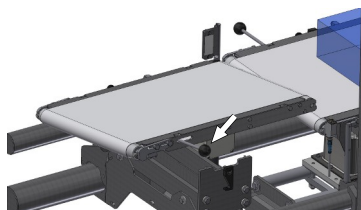
- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Unlock the locking elements on each side of the conveyor.



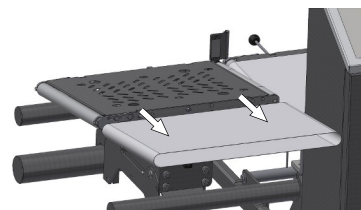
- 3 Lift up the operator side of the conveyor body until it locks in place.



- 4 Pull out the clamping lever on the operator side of the conveyor to loosen the idler roller.



- 5 Slide off the conveyor belt.
 - 6 Slide on a new conveyor belt and undo the steps above in reverse order to reassemble the conveyor.
 - 7 Make sure that the conveyor body is completely locked in place.
- ➔ The conveyor belt is replaced. The equipment can be restarted.



Note Make sure that the conveyor belt runs straight and centrally on the conveyor body.

11.3.4 Small Sidegrip Conveyor

The following sections describe the replacement steps for a small sidegrip conveyor.

11.3.4.1 Replacing a Conveyor Belt

To replace a conveyor belt, proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
 - 2 Unscrew the M10 hexagonal nuts from the conveyor body.
 - 3 Unplug the motor cable.
 - 4 Unscrew the M5 belt tensioning screw and remove the conveyor belt.
 - 5 Slide on a new conveyor belt and undo the steps above in reverse order to reassemble the conveyor.
 - 6 Adjust the internal hexagonal screw located in the middle of the side axle mounting frame until the conveyor belt is running straight.
- ➔ The conveyor belt is replaced. The equipment can be restarted.
- Note** Make sure that the conveyor belt runs straight and centrally on the conveyor body. Align if necessary.

11.3.4.2 Replacing a Timing Belt

To replace a timing belt, proceed as follows:

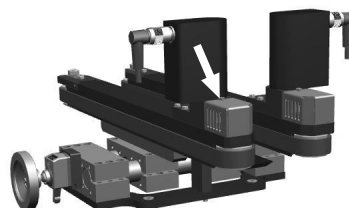
NOTICE

Risk of damaging the timing belt

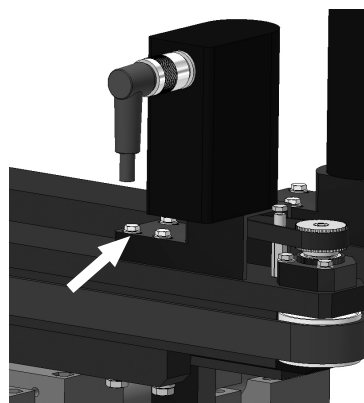
The timing belt can be damaged in case of improper use.

- 1 Do not bend or fold the timing belt.
- 2 Do not use tools to remove it.
- 3 Do not twist or stretch the timing belt.

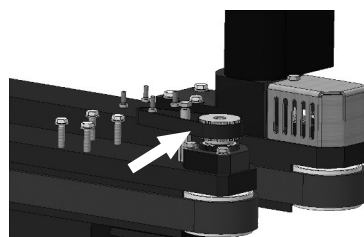
- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Remove the timing belt guard shown in the figure.



- 3 Unscrew the screws on the second timing belt guard shown in the figure.
- 4 Unplug the motor cable.
- 5 Remove the second timing belt guard together with the motor and the timing belt.



- 6 Insert a new timing belt and undo the steps above in reverse order to reassemble.
- 7 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.** Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.



- 8 **⚠ CAUTION: Risk of drawing-in between timing belt and motor pulley when operating the equipment without timing belt guard.**
Make sure that the timing belt guard is correctly mounted.
➡ The timing belt is replaced. The equipment can be restarted.

11.3.4.3 Replacing a Motor

To replace a motor, proceed as follows:

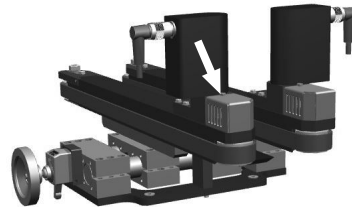
NOTICE

Risk of damaging the timing belt

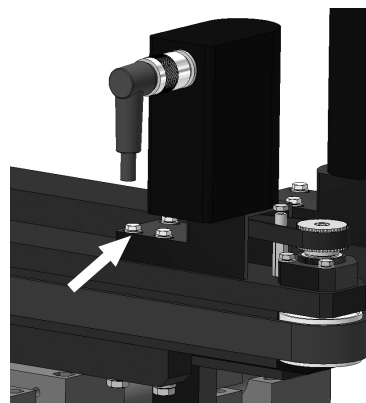
The timing belt can be damaged in case of improper use.

- 1 Do not bend or fold the timing belt.
- 2 Do not use tools to remove it.
- 3 Do not twist or stretch the timing belt.

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Remove the timing belt guard shown in the figure.



- 3 Unscrew the screws on the second timing belt guard shown in the figure.
- 4 Unplug the motor cable.
- 5 Remove the second timing belt guard together with the motor and the timing belt.
- 6 Loosen the guard from the motor and connect it to the replacement motor.
- 7 Mount the guard with the replacement motor and carry out the steps in reverse order to reassemble.
- 8 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.** Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.



- 9 **⚠ CAUTION: Risk of drawing-in between timing belt and motor pulley when operating the equipment without timing belt guard.**
Make sure that the timing belt guard is correctly mounted.
➡ The motor is replaced. The equipment can be restarted.

11.3.5 Large Sidegrip Conveyor

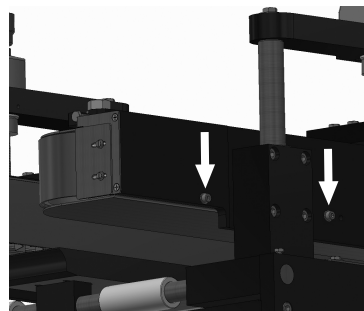
The following sections describe the replacement steps for a large sidegrip conveyor.

11.3.5.1 Replacing a Conveyor Belt

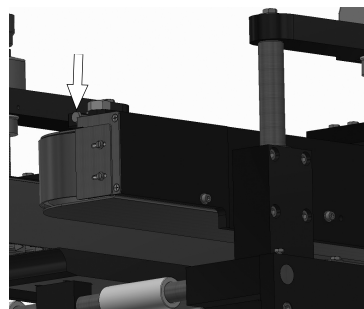
To replace a conveyor belt, proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].

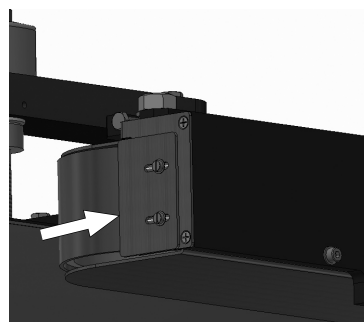
- 2 Loosen all screws of the side cover and remove the side cover.



- 3 Loosen the belt tensioning screw.
- 4 Slide the conveyor belt off by pulling it downwards.
- 5 Slide on a new conveyor belt and undo the steps above in reverse order to reassemble the conveyor.



- 6 **⚠ CAUTION: Risk of crushing during operation between moving conveyor belt and fixed guard.**
Adjust the fixed guard so that the distance between conveyor belt and fixed guard is less than 5 mm.
- ➔ The conveyor belt is replaced. The equipment can be restarted.
- Note** Make sure that the conveyor belt runs straight and centrally on the conveyor body. Align if necessary.



11.3.5.2 Replacing a Timing Belt

To replace a timing belt, proceed as follows:

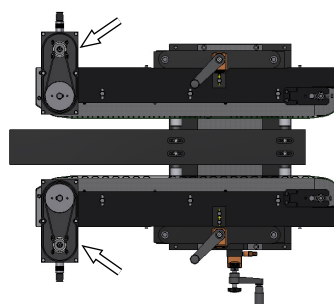
NOTICE

Risk of damaging the timing belt

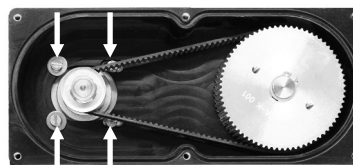
The timing belt can be damaged in case of improper use.

- 1 Do not bend or fold the timing belt.
- 2 Do not use tools to remove it.
- 3 Do not twist or stretch the timing belt.

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Unscrew the timing belt guard and remove it.



- 3 Loosen the motor screws a bit in order to slacken the timing belt.
- 4 Remove the timing belt.
- 5 Insert a new timing belt and undo the steps above in reverse order to reassemble.



- 6 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.**
Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.
 - 7 **⚠ CAUTION: Risk of drawing-in between timing belt and motor pulley when operating the equipment without timing belt guard.**
Make sure that the timing belt guard is correctly mounted.
- ➔ The timing belt is replaced. The equipment can be restarted.

11.3.5.3 Replacing a Motor

To replace a motor, proceed as follows:

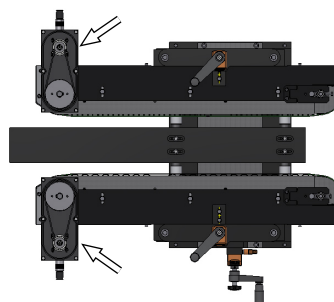
NOTICE

Risk of damaging the timing belt

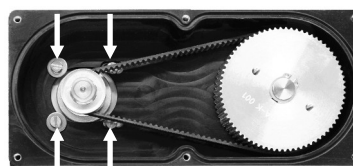
The timing belt can be damaged in case of improper use.

- 1 Do not bend or fold the timing belt.
- 2 Do not use tools to remove it.
- 3 Do not twist or stretch the timing belt.

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ▶ Page 138].
- 2 Unscrew the timing belt guard and remove it.



- 3 Loosen the motor screws a bit in order to slacken the timing belt.
- 4 Remove the motor screws in order to loosen the motor and the timing belt. **Note** Hold on to the motor, otherwise it may fall down.



- 5 Remove the timing belt from the motor pulley.
 - 6 Install a new motor and undo the steps above in reverse order to reassemble.
 - 7 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.**
Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.
 - 8 **⚠ CAUTION: Risk of drawing-in between timing belt and motor pulley when operating the equipment without timing belt guard.**
Make sure that the timing belt guard is correctly mounted.
- ➔ The motor is replaced. The equipment can be restarted.

11.4 Product Handling Devices

The following sections describe the replacement steps for product handling devices.



DANGER

Serious injuries during cleaning, inspection, and maintenance

The following hazards can occur:

- electrocution by dangerous voltage applied to the electric system,
- serious injuries by unintended and sudden movement of components such as conveyor belts and product sorting devices.

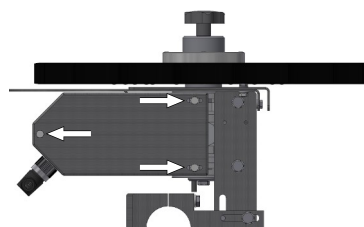
- 1 Before working on the equipment, secure it as described in [Securing the Equipment for Maintenance ► Page 138].
- 2 Make sure that all energy supplies (electrical and pneumatic) are switched off and secured against being switched on again.

11.4.1 Infeed Timing/Spacing Starwheel, Dry Design

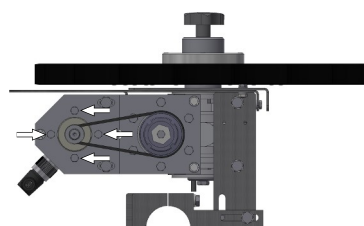
11.4.1.1 Replacing a Timing Belt

To replace a timing belt, proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Unscrew the timing belt guard and remove it.



- 3 Slightly loosen the screws on the motor plate.
- 4 Remove the timing belt.
- 5 Insert a new timing belt and undo the steps above in reverse order to reassemble.
- 6 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.** Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.



- 7  **CAUTION: Risk of drawing-in between timing belt and motor pulley when operating the equipment without timing belt guard.**

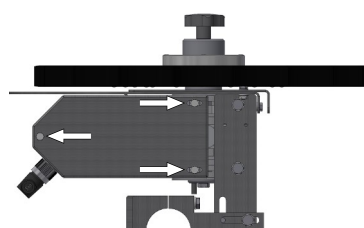
Make sure that the timing belt guard is correctly mounted.

- ➔ The timing belt is replaced. The equipment can be restarted.

11.4.1.2 Replacing a Motor

To replace a motor, proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Unscrew the timing belt guard and remove it.



3 Slightly loosen the screws on the motor plate.

4 Remove the timing belt.

- 5 **⚠ CAUTION: Risk of injury and property damage.**
The motor can fall down when the screws are loosened. Support the motor with one hand while unscrewing and removing the screws.

Unscrew the screws at the motor plate and remove the motor by pulling it upwards.

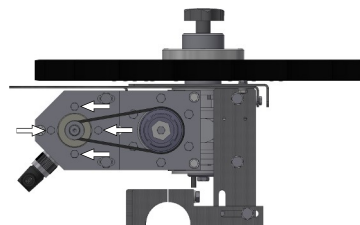
6 Install a new motor and undo the steps above in reverse order to reassemble.

- 7 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.**
Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.

- 8 **⚠ CAUTION: Risk of drawing-in between timing belt and motor pulley when operating the equipment without timing belt guard.**

Make sure that the timing belt guard is correctly mounted.

➔ The motor is replaced. The equipment can be restarted.

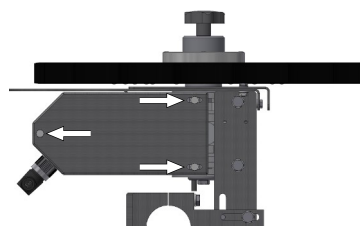


11.4.1.3 Adjusting the Safety Coupling

The coupling of the motor is already adjusted to the customer requirements. However, in some cases it may be required to readjust the coupling in order to modify the disengagement torque.

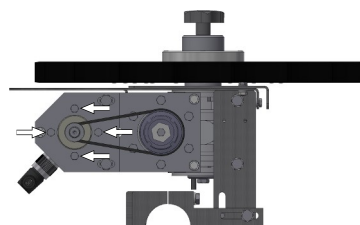
To adjust the coupling, proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ▶ Page 138].
- 2 Unscrew the timing belt guard and remove it.



3 Slightly loosen the screws on the motor plate.

4 Remove the timing belt.



5 Remove the screw at the side of the nut (3).

- 6 Use a C-wrench to turn the nut in the allowed setting range (1): Turn the nut clockwise to lower the torque or counterclockwise to increase the torque.

Note Do not go below the MIN mark (4) or beyond the MAX mark (2), otherwise the coupling may not work properly.

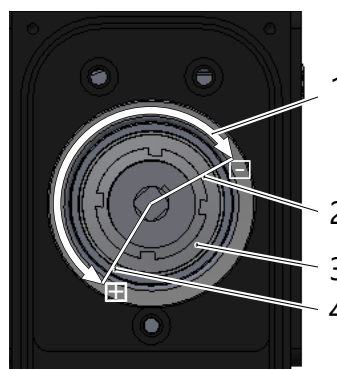
7 Carry out the steps 1-6 in reverse order to reassemble.

- 8 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.**
Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.

- 9 **⚠ CAUTION: Risk of drawing-in between timing belt and motor pulley when operating the equipment without timing belt guard.**

Make sure that the timing belt guard is correctly mounted.

➔ The coupling is adjusted. The equipment can be restarted.

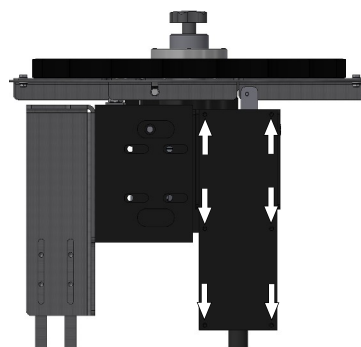


11.4.2 Infeed Timing/Spacing Starwheel, Waterprotected Design

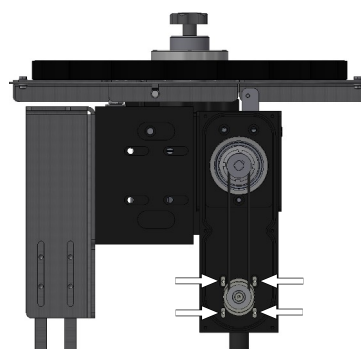
11.4.2.1 Replacing a Timing Belt

To replace a timing belt, proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Unscrew the timing belt guard and remove it.



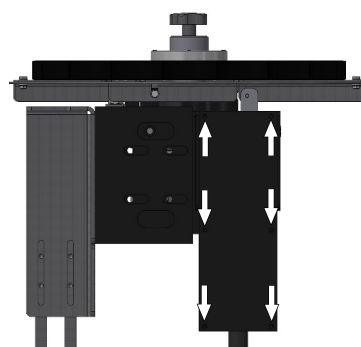
- 3 Slightly loosen the screws on the motor plate.
- 4 Remove the timing belt.
- 5 Insert a new timing belt and undo the steps above in reverse order to reassemble.
- 6 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.** Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.
- 7 **⚠ CAUTION: Risk of drawing-in between timing belt and motor pulley when operating the equipment without timing belt guard.** Make sure that the timing belt guard is correctly mounted.
➔ The timing belt is replaced. The equipment can be restarted.



11.4.2.2 Replacing a Motor

To replace a motor, proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Unscrew the timing belt guard and remove it.



3 Slightly loosen the screws on the motor plate.

4 Remove the timing belt.

5 **⚠ CAUTION: Risk of injury and property damage.**
The motor can fall down when the screws are loosened. Support the motor with one hand while unscrewing and removing the screws.

Unscrew the screws at the motor plate and remove the motor by pulling it upwards.

6 Install a new motor and undo the steps above in reverse order to reassemble.

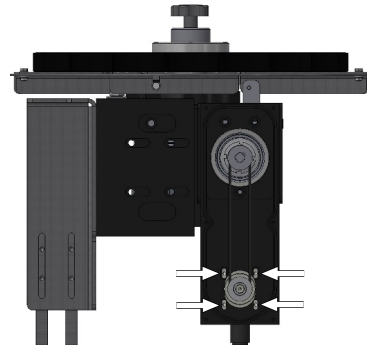
7 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.**

Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.

8 **⚠ CAUTION: Risk of drawing-in between timing belt and motor pulley when operating the equipment without timing belt guard.**

Make sure that the timing belt guard is correctly mounted.

➔ The motor is replaced. The equipment can be restarted.



11.4.3 Adjusting the Coupling of an Infeed Timing/Spacing Starwheel

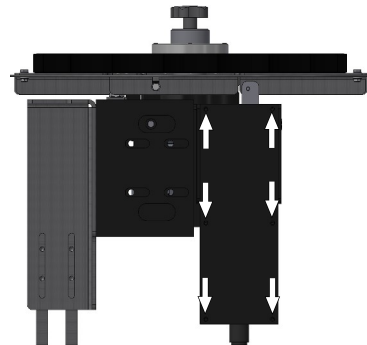
The coupling of the motor is already adjusted to the customer requirements. However, in some cases it may be required to readjust the coupling in order to modify the disengagement torque.

Note This section describes the adjustment using the example of the waterprotected design. However, the procedure applies to the dry design as well.

To adjust the coupling, proceed as follows:

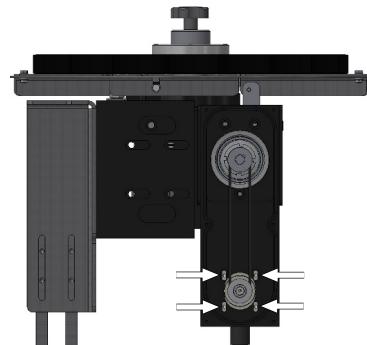
1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ▶ Page 138].

2 Unscrew the timing belt guard and remove it.



3 Slightly loosen the screws on the motor plate.

4 Remove the timing belt.

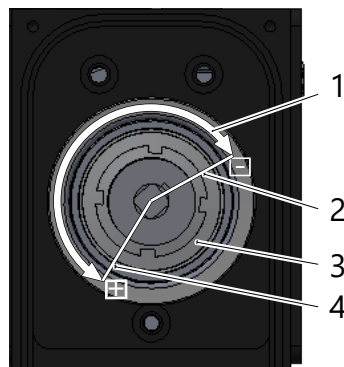


- 5 Remove the screw at the side of the nut (3).
- 6 Use a C-wrench to turn the nut in the allowed setting range (1): Turn the nut clockwise to lower the torque or counterclockwise to increase the torque.

Note Do not go below the MIN mark (4) or beyond the MAX mark (2), otherwise the coupling may not work properly.

- 7 Carry out the steps 1-6 in reverse order to reassemble.

- 8 **NOTICE: Do not tighten the timing belt too much. It should be tightened just enough to prevent slipping.** Make sure that the timing belt is properly tensioned. It may neither be slack nor too tight.



- 9 **⚠ CAUTION: Risk of drawing-in between timing belt and motor pulley when operating the equipment without timing belt guard.**

Make sure that the timing belt guard is correctly mounted.

- ➔ The coupling is adjusted. The equipment can be restarted.

11.5 Light Barriers

The following sections describe the replacement steps for light barriers.



⚠ DANGER

Serious injuries during cleaning, inspection, and maintenance

The following hazards can occur:

- electrocution by dangerous voltage applied to the electric system,
- serious injuries by unintended and sudden movement of components such as conveyor belts and product sorting devices.

- 1 Before working on the equipment, secure it as described in [Securing the Equipment for Maintenance ► Page 138].
- 2 Make sure that all energy supplies (electrical and pneumatic) are switched off and secured against being switched on again.

11.5.1 Replacing a Sensor



⚠ DANGER

Death by electric shock

Work on the electric system of the equipment has to be carried out by an electrician or equally qualified personnel.

After disconnection of the equipment from power supply, dangerous voltage may still be present within the equipment and at the connector terminals.

Before you start working on the electric system of the equipment:

- 1 Switch the equipment off and wait 10 minutes until the equipment is completely de-energized.
- 2 Use a suitable measuring instrument to ensure that the equipment is de-energized.

A sensor which does not work anymore, must be replaced.

Note If you replace a sensor, use only original spare parts. The voltage must be 24 V DC. Make sure that you replace the sensor only by an identical one. For details, see the wiring diagram and the spare parts list supplied with the equipment.

11.6 Safety Components

This section describes how to check the safety components of the equipment.

11.6.1 Testing the Safety Interlock Door Function

To test the safety interlock door or catch bin door function, proceed as follows:

- 1 Make sure all interlock doors are closed. If using a CAT-3 safety circuit, press the reset button (blue). With the equipment switched on, open an interlock door. Verify that the following occurs:
 - ➔ The message **Hatch CW: open** appears on the screen.
 - ➔ All power is dropped to motors and compressed air is dumped from the product sorting devices and other pneumatic devices.
- 2 Close the interlock door and restart the system.
- 3 Repeat the above steps for each interlock door.

If opening the interlock bin door does not function as described above, proceed to [Checking the Function of the Emergency Stop Relay ► Page 161].

11.6.1.1 Checking the Function of the Emergency Stop Relay

To check the function of the emergency stop relay, proceed as follows:

- 1 Disconnect the equipment from power supply as described in section [Securing the Equipment for Maintenance ► Page 138].
- 2 Replace the emergency stop relay.
- 3 Switch the equipment on again and check the function of the emergency stop pushbutton as described above.

11.6.1.2 Checking the Function of the On/Off Valve

To check the function of the on/off valve of the pneumatic maintenance unit, proceed as follows:

- 1 Check the LED of the on/off valve of the pneumatic maintenance unit:
 - If it is illuminated, but no compressed air is supplied to the system, then the valve is faulty.
 - If the LED is not illuminated, but compressed air is supplied to the system, the valve is faulty.
- 2 If the valve is faulty, it must be replaced. To replace it, disconnect the equipment from power supply as described in section [Securing the Equipment for Maintenance ► Page 138].
- 3 Replace the on/off valve. Switch the equipment on again and check the function of the emergency stop pushbutton as described above.

11.6.2 Testing the E-Stop Function

- 1 Make sure the E-stop pushbuttons are reset (pulled out). If using a CAT-3 safety circuit, press the safety circuit reset pushbutton (blue). Activate the E-stop pushbutton. Verify that the following occurs:
 - ➔ The message **Hatch CW: open** appears on the screen.
 - ➔ All power is dropped to motors and compressed air is dumped from rejectors and other pneumatic devices.
- 2 Replace the E-stop assembly if it is faulty. Be sure to turn off and disconnect the equipment before performing any work. Follow the company lockout tagout procedures.
- 3 Reset the E-stop and press the safety reset button if required.
- 4 Repeat the above steps for each E-stop assembly.

11.7 Passivating Stainless Steel Components



DANGER

Serious injuries during cleaning, inspection, and maintenance

The following hazards can occur:

- electrocution by dangerous voltage applied to the electric system,
- serious injuries by unintended and sudden movement of components such as conveyor belts and product sorting devices.

- 1 Before working on the equipment, secure it as described in [Securing the Equipment for Maintenance ► Page 138].
- 2 Make sure that all energy supplies (electrical and pneumatic) are switched off and secured against being switched on again.

NOTICE

Property damage due to harsh environments

Harsh environments such as high concentrations of salt, chlorine, or ammonia in the air can damage equipment components.

- Make sure that you apply proper cleaning procedures for equipment in harsh environments.

Stainless steel is protected against corrosion by a passive layer. After being damaged, for example by scratches, the passive layer can regenerate. To ensure quick and high quality regeneration, METTLER TOLEDO recommends to passivate stainless steel surfaces using citric acid, for example CitriSurf®. The citric acid removes free iron from the surface of stainless steel products and forms a passive layer which has a higher quality than the naturally built passive layer.

Passivating the stainless steel components of the equipment is recommended to minimize the risk of corrosion:

- every time after corrosion removal,
- in regular intervals if the equipment shows flash rust due to harsh environmental conditions.

To passivate a stainless steel component, proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
 - 2 Clean the stainless steel surface.
 - 3 Use the passivation solution as recommended by its manufacturer.
 - 4 After passivation, thoroughly remove the passivation solution from the treated surfaces.
 - 5 Make sure that all safety labels are readable.
- ➔ The passivation is completed. The equipment can be restarted.

Note The frequency of cleaning and passivation must be adapted to your individual environment conditions. In extremely harsh environments, it can be necessary to perform cleaning and passivation more frequently.

Contact METTLER TOLEDO Service if you would like to order CitriSurf®: ► <http://www.mt.com/contact>

12 Software Maintenance

The following sections describe how to maintain the equipment's software.

Backup/Restoration and Recovery

Device	Content
Internal storage device	Configuration and HMI Software such as user data and package data. See [Backup to the Internal Storage Device ► Page 163].
USB storage device (stick preferred)	Configuration and HMI Software such as user data and package data. See [Backup to a USB Storage Device ► Page 164].
Shared Folder	Configuration and HMI Software such as user data and package data. The data is stored in a shared folder on the checkweigher and can be accessed by the customer via network. Ask your Mettler Toledo service technician.
System Recovery Tool Stick	Optional. Image Recovery: operating system (Windows), configuration, and HMI Software. See [System Recovery with System Recovery Tool Stick ► Page 165].
CFast card	Optional. Image Recovery: operating system (Windows), configuration, and HMI Software. See [System Recovery with CFast Card ► Page 169].

12.1 Backing up and Restoring the Configuration and the HMI Software

Note Before performing a backup or restoration, proceed as described in [Securing the Equipment for Maintenance ► Page 138].

Note Perform a backup of the configuration and the HMI software regularly in accordance with your company's safety and security guidelines and before every change to the system, such as a change to the product data.

Production data, such as statistics and counters, is not backed up.

During both the backup to a USB stick and to an internal storage device, the last three backups are stored in the folders A, B and C, respectively. A new backup is always stored in folder A. Older backups are moved to the folders B and C. The oldest backup is deleted from folder C and is replaced by the backup from folder B.

12.1.1 Backup to the Internal Storage Device

The internal backup stores the data on an internal storage device of the equipment.

To perform a backup to the internal storage device, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Maintenance > Data Backup > Backup Internally**.
 - ➔ The screen **Backup Internally** opens.
- 3 Activate the checkbox **Setup** to store the configuration data.
- 4 Touch **Backup**.
 - ➔ **Note** Do not switch off the equipment while copying the data.
 - ➔ The data is stored on the internal storage device.

Explanation of the Fields

Field	Description
Setup	Stores a copy of the configuration with current data such as active functions, package data, and user profiles on the internal storage device.
Software	Stores a copy of the software with HMI software and external software components. Not needed for a regular backup!

12.1.2 Restoration from Internal Storage Device

To restore the configuration from the internal storage device, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Maintenance > Data Backup > Restore Internally**.
 - ➔ The system backups that were stored last are shown.
- 3 Touch **Restore from Backup** of the corresponding system backup and confirm the prompt **Restore?** with **Yes**.

- 4 A window opens and shows the list of files that are being restored.
 - ➔ The restoration is finished when the window shows the message **Ready!**.
- 5 To restart the system with the restored configuration, touch **Back to HMI**.
 - ➔ The configuration is restored.

12.1.3 Backup to a USB Storage Device

This backup stores the data on a USB storage device, preferably on a USB stick.
To perform a backup to a USB storage device, proceed as follows:

- 1 Insert a USB stick into the USB port.
- 2 Touch **Menu**.
- 3 Select the menu items **Maintenance > Data Backup > Backup to USB Stick**.
 - ➔ The screen **Backup to USB Stick** opens.
- 4 To check the proper connection to the USB storage device, touch **Check USB Stick**.
- 5 Activate the checkbox **Setup** to store the configuration data.
- 6 Touch **Backup**.
 - ➔ **Note** Do not switch off the equipment while copying the data.
 - ➔ The data is stored on the USB stick.
 - ➔ **Note** Make sure to update the backup data if you stored it on further external storage devices.

Explanation of the Fields

Field	Description
Setup	Stores a copy of the configuration with current data such as active functions, package data, and user profiles on the internal storage device.
Software	Stores a copy of the software with HMI software and external software components. Not needed for a regular backup!

12.1.4 Restoration from a USB Stick

To restore the configuration, proceed as follows:

- 1 Insert a USB stick that contains necessary data into the USB port.
- 2 Touch **Menu**.
- 3 Select the menu items **Maintenance > Data Backup > Restore from USB Stick**.
 - ➔ The screen **Restore from USB Stick** opens.
- 4 Select the folder that contains the backup data and confirm with **OK**.
 - ➔ The system backups that were stored last are shown.
- 5 Touch **Restore from Backup** of the corresponding system backup and confirm the prompt **Restore?** with **Yes**.
 - ➔ The restoration is finished when the window shows the message **Ready!**.
- 6 To restart the system with the restored configuration, touch **Back to HMI**.
 - ➔ The configuration is restored.

12.2 System Recovery - First Step: Identifying the Method of System Recovery

Each equipment type is allocated to one of two recovery methods. Before performing a system recovery, you need to identify your specific component as mentioned in the list below.

To identify your component, proceed as follows:

- 1 Find the spare part list of your equipment. If you don't know where it is, ask your superior or quality manager.
- 2 Check which of the components mentioned in the table is listed in the spare parts list of your equipment.
- 3 Proceed with the method stated in the table.

Material Number	Method
30849583: Terminal CW7in lic. Win10 LTSB(SP)	[System Recovery with System Recovery Tool Stick ▶ Page 166]
24301110: Operating terminal, 7in C2130 spare part	[System Recovery with CFast Card ▶ Page 169]
24301111: Operating terminal, 7in C2330 spare part	
24301113: Operating terminal, 7in C3130 spare part	
24301114: Operating terminal, 7in C3330 spare part	
30588703: HMI PPC2200 7in W10 LTSB 2019 MTGA (SP)	

Alternative procedure if the spare part list not at hand



DANGER

Death by electric shock due to maintenance in the control enclosure

Energized components within the control enclosure can cause fatal injuries.

- 1 The control enclosure must only be opened in presence of an electrician or equally qualified personnel.
- 2 Make sure that all electrical energy supplies are switched off and secured against being switched on again in accordance with your local safety standards and regulations.
- 3 Make sure that the equipment is de-energized by using a suitable measuring instrument.
- 4 Observe the wiring diagrams when reconnecting.

If the spare parts list of your equipment is not at hand, proceed as follows:

- 1 Switch the equipment off using the disconnect switch. See [Stopping the Equipment ▶ Page 86].
- 2 Unlock the control enclosure door with the corresponding key and open it.
- 3 Find the name plate of the terminal/IPC. To find the name plate of the 7" and 12" HMI, look into the control enclosure, up and to the center right.
Note Alternatively, you can use a smartphone to take a photo.
 ➔ You will find one of the labels stated in the table.
- 4 Close the control enclosure door and lock it with the corresponding key.
- 5 Proceed with the method stated in the table.

Type	Method
• HMI_CW7	[System Recovery with System Recovery Tool Stick ▶ Page 166]
• Panel PC	[System Recovery with CFast Card ▶ Page 169]



12.3 System Recovery with System Recovery Tool Stick

This software function is optional. Depending on the configuration of your system, some functions may not be available.

The scope of this function includes a System Recovery Tool Stick (USB 3.0) and a SG-Lock® dongle (blue).

To check if your equipment has the corresponding HMI, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Information > System Information > Versions**.
- ➔ If the letters 'MTC' or 'MXE' are part of a string in the information, your equipment has the corresponding HMI.

Note Only recover the software if the system does not start! The configuration and the HMI software data in the recovered software image can be older than the last regular backup. Changes to the configuration and the HMI software that were made after the last image backup cannot be recovered with this image. Restore the configuration and HMI software data as described in [Backing up and Restoring the Configuration and the HMI Software ▶ Page 163].

12.3.1 Starting the BIOS



DANGER

Death by electric shock due to maintenance in the control enclosure

Energized components within the control enclosure can cause fatal injuries.

- 1 The control enclosure must only be opened in presence of an electrician or equally qualified personnel.
- 2 Make sure that all electrical energy supplies are switched off and secured against being switched on again in accordance with your local safety standards and regulations.
- 3 Make sure that the equipment is de-energized by using a suitable measuring instrument.
- 4 Observe the wiring diagrams when reconnecting.

To be able to boot from the System Recovery Tool Stick, you need to edit the BIOS.

To start the BIOS, proceed as follows:

- The SG-Lock® dongle is connected to the IPC. Do not remove the SG-Lock® dongle!
 - Make sure that the equipment is switched off. See Stopping the Equipment.
- 1 Switch off the equipment according to your local operating procedure.
 - 2 Unlock the control enclosure door with the corresponding key and open it.
 - 3 Locate the IPC module. See IPC Module.
 - 4 Insert the System Recovery Tool Stick into the blue USB port in the IPC (USB 3.0).
 - 5 Connect an external keyboard with the IPC.
 - 6 Switch on the equipment. At the same time, press the keyboard button DEL several times in a row as soon as the screen shows the company logo.
- ➔ The BIOS menu is open.

12.3.2 Changing the 'Secure Boot' Status

To change the 'secure boot' status, proceed as follows:

- The BIOS menu is open.
- 1 Use the keyboard: in the tab **Security**, select **Secure Boot Menu > Secure Boot/Secure Boot Control**.
 - 2 To boot from the System Recovery Tool Stick, select the menu items **Secure Boot/Secure Boot Control > Disabled**.
Or:
To boot from the hard drive, select the menu items **Secure Boot/Secure Boot Control > Enabled**.
For more information, see table below.
 - 3 Touch the keyboard button **ESC** to go to the tab **Boot**.
- ➔ The 'secure boot' status is changed. To select the boot source, see [Selecting the Boot Source in the BIOS ▶ Page 167].
- ➔ **Note** When the backup and restoration are completed, make sure that the 'secure boot' status is set to **Enabled**.

Explanation of the Screen

Field	Description
Disabled	The equipment boots from the System Recovery Tool Stick without comparing the signatures. When the System Recovery Tool Stick is stored safely and the data was not modified, the data on is trustworthy as it is an exact copy of the equipment data.
Secure Boot Violation: Invalid signature detected. Check Secure Boot Policy in Setup.	Prompt: The System Recovery Tool Stick tried to boot while Secure Boot/Secure Boot Control: Enabled was selected.
Enabled	The equipment tries to verify the signature of the System Recovery Tool Stick while booting. As the System Recovery Tool Stick does not have a signature, the equipment boots from the hard drive. No restoration possible.

12.3.3 Selecting the Boot Source in the BIOS

To select the boot source in the BIOS, proceed as follows:

- The BIOS menu is open.
- 1 Use the keyboard: In the tab **Boot**, select **Boot Option #1**.
- 2 To change the boot source to the System Recovery Tool Stick, select the first item in the list.
 - ➔ **Note** You will have to change the boot source back after making the backup or the restoration. Write down the standard boot source (Hard Disk) so you know which boot source to select.
- 3 Select 'UEFI USB Device: UEFI 8.07 Partition 2' or 'Hard Disk : Boot Manager (PO: acon)' (System Recovery Tool Stick).
- 4 To save and exit the BIOS, press the keyboard button F4.
 - ➔ The operating system boots from the selected boot source.
- 5 Confirm the EULA agreement with **OK**.
 - ➔ The system recovery tool opens.
- 6 Proceed with [Backup to the System Recovery Tool Stick ▶ Page 167] or [Recovery from the System Recovery Tool Stick ▶ Page 168].
- ➔ **Note** When the backup and restoration are completed, set the BIOS back to the standard boot source, which is the hard disk (UEFI Hard Disk: Windows Boot Manager).

12.3.4 Backup to the System Recovery Tool Stick

- You have selected the boot source. See [Selecting the Boot Source in the BIOS ▶ Page 167].
- The system recovery tool is open.
- A keyboard is connected to the IPC.
- The storage device has at least 7GB capacity.
- 1 In the system recovery tool, select the tab **Backup**.
- 2 Edit the data. For more information, see table below.
- 3 Touch **Backup** and confirm the prompt with **Yes**.
 - ➔ **Note** The backup might take up to one hour. The screen indicates that it is working but it does not indicate the remaining time or show a loading bar. When the backup is complete, a prompt indicating the backup duration pops up.
- 4 Confirm with **OK**.
- 5 Close the system recovery tool and switch off the equipment.
- 6 Change the boot source back to the hard disk. See [Selecting the Boot Source in the BIOS ▶ Page 167]
- 7 Change the 'secure boot' status back to **Enabled**. See [Changing the 'Secure Boot' Status ▶ Page 166]
 - ➔ The operating system re-boots from the hard drive.
- 8 Remove the system recovery tool stick.

- ➔ **Note** Do not remove the SG-Lock® dongle.
- ➔ The backup is complete. You can operate the equipment as usual.
Note METTLER TOLEDO recommends you save the backup on at least one other server.
- ➔ **Note** Make sure to update the backup data if you stored it on further external storage devices.

Explanation of the Screen

Field	Description
Destination	Directory where the image is stored. Always the System Recovery Tool Stick or a customer USB storage device.
Reload	Update of the destinations in the drop down list.
Name	By default, a name for the backup is suggested in this order: ImageBackupYYYYMMDD, for example: ImageBackup20220815.
Description	Reasons and specifications of image backup
Backup	Starts the image backup
Backup failed!	Prompt: Backup failed. Check if storage device has enough capacity.

12.3.5 Recovery from the System Recovery Tool Stick

Note Only recover the software if the system does not start! The configuration and the HMI software data in the recovered software image can be older than the last regular backup. Changes to the configuration and the HMI software that were made after the last image backup cannot be recovered with this image. Restore the configuration and HMI software data as described in [Backing up and Restoring the Configuration and the HMI Software ▶ Page 163].

To recover the software from the System Recovery Tool Stick, proceed as follows.

- You have selected the boot source. See [Selecting the Boot Source in the BIOS ▶ Page 167].
 - The system recovery tool is open.
 - A keyboard is connected to the IPC.
- 1 In the system recovery tool, select the tab **Restore**.
 - 2 Edit the data. For more information, see table below.
 - 3 Select the backup directory which is always the System Recovery Tool Stick or a customer USB storage device.
 - 4 In the list **Name**, select the image which you want to recover on the equipment.
 - ➔ The checksum is checked which might take several minutes.
 - 5 Touch **Restore**.
 - ➔ The data recovery takes up to one hour.
 - 6 Confirm with **OK**.
 - 7 Close the system recovery tool and switch off the equipment.
 - 8 Change the 'secure boot' status back to **Enabled**. See [Changing the 'Secure Boot' Status ▶ Page 166]
 - ➔ The equipment starts with the state at the time of the image backup. It is recommended to restore the last configuration backed up by the customer separately in another step.
 - 9 Remove the system recovery tool stick.
 - ➔ **Note** Do not remove the SG-Lock® dongle.
- ➔ The data recovery is complete and the home screen opens.
 - ➔ **Note** If you made changes to the configuration and the HMI software after the last backup with the system recovery tool, restore the configuration and the HMI software, see [Restoration from a USB Stick ▶ Page 164] or [Restoration from Internal Storage Device ▶ Page 163].

Explanation of the Screen

Field	Description
Source Drive	Drive where the image is stored
Reload	Update of the destinations in the drop down list.
Image	Drop down list with all available images
Restore	Starts the restoration.

Field	Description
Image is corrupt!	Image is corrupt! The file cannot be recovered. Reasons: <ul style="list-style-type: none"> the checksum is not correct the ID stored in the SG-Lock® dongle does not match the ID stored in the image.
Calculating checksum ..	Checks that image is not corrupt. Calculating the checksum might take several minutes.
Dongle not found!	Message. Dongle not found! The SG-Lock® dongle is not connected to the equipment. Connect the SG-Lock® dongle.

12.4 System Recovery with CFast Card



DANGER

Death by electric shock due to maintenance in the control enclosure

Energized components within the control enclosure can cause fatal injuries.

- 1 The control enclosure must only be opened in presence of an electrician or equally qualified personnel.
- 2 Make sure that all electrical energy supplies are switched off and secured against being switched on again in accordance with your local safety standards and regulations.
- 3 Make sure that the equipment is de-energized by using a suitable measuring instrument.
- 4 Observe the wiring diagrams when reconnecting.

The scope of this function includes a CFast card and an SG-Lock® dongle (blue).

Note Perform a backup of the configuration and the HMI software regularly in accordance with your company's safety and security guidelines and before every change to the system, such as a change to the product data.

Note Follow the steps below exactly.

To recover the system with the CFast card, proceed as follows.

- The SG-Lock® dongle is connected to the IPC. Do not remove the SG-Lock® dongle!
 - Make sure that the equipment is switched off. See Stopping the Equipment.
- 1 Unlock the control enclosure door with the corresponding key and open it.
 - 2 Locate the IPC module. See IPC Module.
 - 3 For easier access to the CFast card slot, remove the network cable 'ETH2'.
 - 4 Remove the small metal sheet by loosening the screw with a TX 10 screwdriver.
Or:
Lift the rubber sheet to access the CFast card slot.
 - 5 Press the pushbutton next to the CFast card slot.
 - ➔ The CFast card protrudes.
 - 6 Carefully remove the CFast card from the slot. Use both hands.
 - 7 Carefully insert the new backup CFast card 'Backup [serial number]'.
 - ➔ The pushbutton next to the slot protrudes.
 - 8 Screw the small metal sheet back onto the slot.
Or:
Press the rubber sheet lightly back onto the slot.
 - 9 Re-insert the network cable 'ETH2'.
 - 10 Close the control enclosure door and lock it with the corresponding key.
 - 11 Switch the equipment on. See [Starting the Equipment ► Page 86].
 - ➔ The CFast card is exchanged and the system recovered.
 - ➔ **Note** The product data on the equipment is now an exact image of the product data ex works. If you changed the product data in the meantime, restore the product data. See [Restoration from a USB Stick ► Page 164].

12.5 Operating System Software Updates

The following sections describe how to update operating system software, disable operating system software updates, and how to identify the operating system.

12.5.1 Identifying the Operating System

This menu identifies the operating system and its version:

To display the information about the operating system, proceed as follows:

- 1 Touch **Menu**.
- 2 Select the menu items **Information > System Information**.
- 3 In the table **Select Information**, select **Versions**.
- ➔ The corresponding screen appears.

12.5.2 Logging in for Service Functions / Requesting the Challenge Code

Note Purpose of this login is to give the operator access to the function Operating System Update.

- 1 Touch **Menu**.
- 2 Select the menu items **Action > Login**.
➔ The screen **Login** opens up.
- 3 Touch **Name**, select **Supervisor** and confirm with **OK**.
- 4 Touch **Password**, enter the password '@service' and confirm with **OK**.
- 5 Confirm with **OK**.
➔ The screen **Service Login** with the challenge code opens up.
- 6 To request the response code, call your METTLER TOLEDO service representative. Have the challenge code and the serial number at hand.
- 7 Enter the provided response code.
- ➔ You have access to the required functions for 10 days / 240 hours.

12.5.3 Downloading and Installing the Operating System Update Patches

Downloading the Update Patches

To download the update patches, proceed as follows:

- 1 Go to www.mt.com/PI-patches and download the zip file with the update patches.
- 2 Extract the zip file into one of the following directories:
➔ USB stick (standard): [F:\CSeries\OSUpdates\Win10-2019](#)
➔ Shared folder on the MT equipment (if configured): [TransferUpdates](#)

Installing the Update Patches

Note The OS update may take several hours. The system may reboot several times during the update. Plan downtime accordingly before proceeding with the procedure described below.

To install the update patches, proceed as follows:

- 1 If the update patches were downloaded to a USB stick, insert the USB stick into the USB port at the equipment.
- 2 Touch **Menu**.
- 3 Select the menu items **Maintenance > Operating System Update**.
➔ The screen **Operating System Update** opens.
- 4 Touch **Check folder** or **Check USB Stick**.
➔ The available update files are displayed in the corresponding folder.
- 5 Touch **Install OS Update**.
➔ The prompt **Operating System Update** opens.
- 6 Confirm with **Yes**.

- ➔ The computer shuts down and reboots to install the updates.
- ➔ **Note** The user interface is not active during the update.
- ➔ The updates currently being installed are listed in the lower part of the screen.
- ➔ When the update is finalized, the computer shuts down and reboots again.
- ➔ The equipment is ready for operation.

Explanation of the Fields

Field	Description
Check USB Stick	Update files available on the USB stick: F:\CSeries\OSUpdates\Win10-2019 . If they are already installed, they are displayed in the list Installed OS Updates.
Check folder	Update files available in the shared folder on the MT equipment: TransferUpdates . If they are already installed, they are displayed in the list Installed OS Updates.
Install OS Update	Installs the OS updates displayed in the list.
No update file found	Message displayed if no updates are available in the folders. Check for new updates on www.mt.com/PI-patches .
Installed OS Updates	Displays all OS updates installed on the equipment. It might take a while until the list is completely loaded.

12.6 Exporting Data for Service

12.6.1 Exporting Log Files

You can export log files to a USB stick to provide additional information to METTLER TOLEDO service for further troubleshooting or system analytics. To store a log file, proceed as follows:

- 1 Insert a USB stick into the USB port.
 - 2 Touch **Menu**.
 - 3 Select the menu items **Maintenance > File Copy**
 - 4 Touch **Source**.
 - 5 Select the data to be analyzed from the list of sources and confirm with **OK**.
 - ➔ The system shows a list with all available logs. It is recommended to export all for troubleshooting.
 - 6 Touch **Mark All Rows** to select all rows.
 - 7 Touch **Copy**.
- ➔ The system stores all selected log files on the USB stick. The files are stored in a folder that is labeled after the serial number. All exported log files that were stored to a USB stick are deleted from the system.

12.6.2 Exporting Support Data

You can export support data to a USB stick to provide additional information to METTLER TOLEDO service for further troubleshooting or system analytics. This function collects all data (databases, configurations, log files etc.) that is needed to analyze the behavior of a device and packs it into a zip file. The function requires a USB stick to store the zip file. This function complements and optimizes Mettler Toledo's service support processes. To export support data, proceed as follows:

- 1 Insert a USB stick into the USB port.
 - 2 Touch **Menu**.
 - 3 Select the menu items **Maintenance > Export Support Data**
 - ➔ The message **DO NOT POWER DOWN!** appears.
 - 4 Do not power down the equipment.
 - 5 Wait until the export is finalized.
 - ➔ The window **Export Support Data** opens.
 - 6 Confirm with **OK**.
- ➔ The support data is exported to the USB stick. It can now be provided to the METTLER TOLEDO Service.

12.7 SMC Data Maintenance

The following sections describe how to maintain the SMC products. You should perform the SMC product backup regularly after modifying or adding data, in accordance with your company's safety guidelines and before sensor replacement. You can store the backup on the internal IPC-CFast card and on a USB stick.

13 Troubleshooting



DANGER

Danger to life by electrocution

Before working on the equipment, make sure that the equipment is switched off and the lockout / tagout procedure is applied.



DANGER

Death by electric shock

Work on the electric system of the equipment has to be carried out by an electrician or equally qualified personnel.

After disconnection of the equipment from power supply, dangerous voltage may still be present within the equipment and at the connector terminals.

Before you start working on the electric system of the equipment:

- 1 Switch the equipment off and wait 10 minutes until the equipment is completely de-energized.
- 2 Use a suitable measuring instrument to ensure that the equipment is de-energized.



Important Safety Message

Risk of injury

Before attempting to fix the equipment, be sure that you read the entire manual. Do not fix anything that is denoted with "technically qualified personal" if you do not have proper qualification.

This chapter contains information about possible failures of the system and the most common troubleshooting steps to resolve the problem. The failures described below can occur when the system is operated normally for production.

If the failure still exists after having tried to resolve the problem, call METTLER TOLEDO Service.

13.1 System

The symptoms described below concern the failure of the whole system.

Problem	Possible reason	Actions
System turns off without warning.	Power failure.	Wait until power is restored.

Problem	Possible reason	Actions
One or more conveyors do not start.	Power is off.	Check if the disconnect switch is turned on.
	Emergency stop pushbutton is pressed.	Lift the emergency stop pushbutton and press the reset button.
	Conveyor not started.	Press the conveyor start button.
	Line stopped, external stop, prime or backup sensor conditions that are supplied to the system.	Wait until the whole line is running again.
	Debris on or in the belt is causing a jam.	Clean the belt thoroughly.
	Motor drives do not work.	Call technically qualified personnel.
	Motor failure.	<ol style="list-style-type: none"> 1. Check power to the motor and driver. 2. Check motor connection and cabling. 3. Replace defective motor.
	The belt has been stopped by too much pressure.	Remove weight from the conveyor and restart.
	Drive failure.	Call technically qualified personnel.

13.2 System Messages

The tables below show messages that can appear on the home screen during production.

In most cases, the messages do not require intervention by the operator.

Conventions

Column	Meaning
Message	Error message that appears on screen in the message section
Type	Indicates the type of error message. See table below.
Cause	What is causing the message
Troubleshooting	How to resolve the failure

Message Types

Initial	Meaning
I	Information
P	Product fault
S	Service
T	Test
W	Warning

System Messages

Message	Type	Cause	Troubleshooting
***	P	Indicates that the weight could not be determined.	Check info box in the lower section of the screen for more information.

Catch Bin

Message	Type	Cause	Troubleshooting
Catch bin almost full	W	The catch bin is almost full. Activated by the function 'Bin-Full Allowance'.	Empty the catch bin.
Catch bin full	W	The catch bin is full. Activated by the function 'Bin-Full Allowance'.	Empty the catch bin.
Catch bin OK	I	The catch bin has sufficient capacity.	None

Message	Type	Cause	Troubleshooting
Catch bin '+/-'	W	Catch bin +/- unlocked. Catch bin can be opened. Activated by the function 'Unlock Bins'.	None
Catch bin '+/-' almost full	W	The catch bin is almost full. Activated by the function 'Bin-Full Allowance'.	Empty the catch bin.
Catch bin '+/-' full	W	The catch bin is full. Activated by the function 'Bin-Full Allowance'.	Empty the catch bin.
Catch bin '+/-' OK	I	The catch bin has sufficient capacity.	None
Catch bin 'metal'	W	Catch bin metal unlocked. Catch bin can be opened. Activated by the function 'Unlock Bins'.	None
Catch bin 'metal' almost full	W	The catch bin is almost full. Activated by the function 'Bin-Full Allowance'.	Empty the catch bin.
Catch bin 'metal' full	W	The catch bin is full. Activated by the function 'Bin-Full Allowance'.	Empty the catch bin.
Catch bin 'metal' OK	I	The catch bin has sufficient capacity.	None
Catch bin 'askew' almost full	W	The catch bin is almost full. Activated by the function 'Bin-Full Allowance'.	Empty the catch bin.
Catch bin 'askew' full	W	The catch bin is full. Activated by the function 'Bin-Full Allowance'.	Empty the catch bin.
Catch bin 'askew' OK	I	The catch bin has sufficient capacity.	None

Compressed Air

Message	Type	Cause	Troubleshooting
Compressed air: failure	W	The compressed air supply in the pneumatic system is insufficient or interrupted.	Call technically qualified personnel and/or your supervisor.
Compressed air: OK	I	Compressed air supply is ok.	None

Countercheck

Message	Type	Cause	Troubleshooting
Countercheck: "good" product missing	P	A product that meets all requirements is missing. The product may have been sorted out or has been removed.	None
Countercheck infeed: "good" product missing	P	A product that meets all requirements is missing. The product may have been sorted out or has been removed.	None
Countercheck infeed: sorting failure	P	A bad product has not been sorted out. This may have several causes: <ul style="list-style-type: none"> • Lack of compressed air • The product sorting device is defective • The product sorting device is in a bad position • An incorrect offset has been entered 	Call technically qualified personnel and/or your supervisor.
Countercheck: sorting failure	P	A bad product has not been sorted out. This may have several causes: <ul style="list-style-type: none"> • Lack of compressed air • The product sorting device is defective • The product sorting device is in a bad position • An incorrect offset has been entered 	Call technically qualified personnel and/or your supervisor.

Emergency Run / Emergency Stop

Message	Type	Cause	Troubleshooting
Emergency run	I	The equipment runs without inspecting the products. The products are neither classified nor sorted out.	None
Emergency run deactivated	I	Emergency run mode is deactivated. The equipment runs in normal mode.	None
Emergency stop	W	The emergency stop pushbutton was pushed.	Resolve the critical situation, then reset the emergency stop pushbutton.
Emergency stop reset	I	Emergency stop mode is deactivated.	None

External Presorting

Message	Type	Cause	Troubleshooting
External presorting	I	The function 'External Presorting' is active. The customer equipment sorts products upstream of the MT equipment.	None

Fillhead

Message	Type	Cause	Troubleshooting
Fillhead: mean value too high	W	One or more filling heads fill too much.	Reduce filling quantity
Fillhead: mean value too low	W	One or more filling heads fill too little.	Increase filling quantity
Fillhead: range too high	W	The filling range is exceeded.	Reduce filling range
Fillhead: standard deviation too high	W	Too much weight variation.	Reduce weight variation

Gliding Limits

Message	Type	Cause	Troubleshooting
Gliding limits: upper limit exceeded	I	The upper gliding limit of the filling level is exceeded.	Reduce filling quantity
Gliding limits: lower limit exceeded	I	The lower gliding limit of the filling level is exceeded.	Increase filling quantity

Infeed Timing Device

Message	Type	Cause	Troubleshooting
Infeed timing device: product queue pressure too small	W	Not enough products in line to reliably fit into the timing device.	Wait until enough products are lined up to fit in the timing device
Infeed timing device: product queue pressure OK	I	Enough products in line to fit in the timing device.	None
Infeed timing device: blocked	W	The infeed timing device is blocked.	Call technically qualified personnel and/or your supervisor.
Delay or distance for output signal: insufficient	W	No output signal was emitted.	Re-set signalling distance/increase signal interval.

Light Barrier

Message	Type	Cause	Troubleshooting
Light barrier: obstructed	I	An object obstructs the weigh light barrier/product sensor.	<ul style="list-style-type: none">Remove obstructing object.Clean the weigh light barrier/product sensor.Call technically qualified personnel.Align weigh light barrier/product sensor and light barrier reflector.
Light barrier: not obstructed	I	The weigh light barrier/product sensor is not obstructed.	None

Load Cell

Message	Type	Cause	Troubleshooting
Load cell: fault	S/W	Error of the load cell or in the load cell communication.	Call technically qualified personnel and/or your supervisor to contact the after-sales service.
Load cell: connected	I	The load cell is connected.	None
Load cell: not connected	W	The load cell is not connected.	Call technically qualified personnel and/or your supervisor to connect the load cell.
Load cell: ready	I	The load cell is ready and the equipment can be operated.	None
Load cell: reconnected	I	The load cell has been reconnected.	None
Load cell: timeout	S/W	The response time of the load cell has been exceeded.	If this message appears often, then call technically qualified personnel and/or your supervisor to contact the after-sales service.
Load cell: underload	P	The minimum load of the load cell is not achieved.	Call technically qualified personnel and/or your supervisor.
Load cell: overload	P	The maximum load of the load cell is exceeded.	Call technically qualified personnel and/or your supervisor.

Login Password

Message	Type	Cause	Troubleshooting
Password will expire in {0} days		The password will expire soon.	Update your password.
Password has expired		The password is too old.	Update your password.
Password or name is incorrect		You typed in your name or password incorrectly.	Type in your name or password correctly.

Mean Value Trend

Message	Type	Cause	Troubleshooting
Mean value trend: high	I/W	Mean value trend is too high and reaches the upper limit	Re-set limits, or reduce and align product types
Mean value trend: low	I/W	Mean value trend is too low and reaches the lower limit	Re-set limits, or reduce and align product types

Metal Detection

Message	Type	Cause	Troubleshooting
Metal detected	P	Metal detector indicates contaminated product.	None: The product will be rejected.
Metal monitoring: product missing	P	Weigh light barrier indicates less products than counted by the metal detector infeed light barrier.	The reaction of the system depends on the configuration.
Metal monitoring: too many products	P	Weigh light barrier indicates more products than counted by the metal detector infeed light barrier.	The reaction of the system depends on the configuration.
Metal detector: product mismatch MD/CW	P	The product name is used twice in the metal detector.	<ul style="list-style-type: none"> Call technically qualified personnel and/or your supervisor. Choose unique name.
Metal detector: unknown product selected	P	The product in the metal detector is obsolete.	<ul style="list-style-type: none"> Call technically qualified personnel and/or your supervisor. Create new product in the metal detector and allocate to product in the Checkweigher.

Motor Energy-Saving Mode

Message	Type	Cause	Troubleshooting
Motor energy-saving mode activated	I	The function 'Motor Slumber' is activated.	None
Motor energy-saving mode deactivated	I	The function 'Motor Slumber' is deactivated.	None

Multi-Evaluation

Message	Type	Cause	Troubleshooting
Multi-Evaluation: delay on product data loading	I	Package memory changeover delay. Changeover completed successfully.	None
Multi-Evaluation: no response from IPC	S/W	The IPC (option) does not respond.	Call technically qualified personnel and/or your supervisor. If this message appears often, then contact the after-sales service.
Multi-Evaluation: wrong code	W	Package memory changeover is not carried out.	Check if the scanner can read the code. -or- Check if the code corresponds to the product and exists in the package memory.
Multi-Evaluation: code OK	I	ID identified, changeover possible	None

Open Flap Detection

Message	Type	Cause	Troubleshooting
Open flap detected	P	A package that is open has been detected.	The product will be rejected.
Open flap detected in infeed area	P	A package that is open has been detected at the infeed conveyor.	The product will be rejected.

Product Backup

Message	Type	Cause	Troubleshooting
Product backup: motor stop	I	Motor stop due to product backed up.	None
Product backup cleared: motor start	W	The product backup is cleared.	Start the motors.
Product backup	P	The system has detected a product backup.	Remove the products that cause the backup. -or- Call technically qualified personnel and/or your supervisor.
Product backup cleared	I	The product backup is cleared.	Start the motors.

Product Spacing / Product Length

Message	Type	Cause	Troubleshooting
Product spacing: too small	P	The products are placed too close to each other.	None: The products are sorted.
Product spacing infeed: too small	P	The products are placed too close to each other.	None: The products are sorted.

Message	Type	Cause	Troubleshooting
Product length: too long	P	<p>The weight light barrier/product sensor has detected a product that is too long. This may have several causes:</p> <ul style="list-style-type: none"> • A product is longer than the weigh conveyor. • The real product length is longer than the value that has been entered by a user. • Two subsequent products had no gap between each other. 	None: Check the product length and the gap between the products.

ProdX: Offline Backups

Message	Type	Cause	Troubleshooting
WARNING: Offline Backups	I	Data is stored due to interrupted ProdX connection. 50 % storage capacity.	Reconnect ProdX.
Offline Backups	I	<p>Data is stored due to interrupted ProdX connection. 0 % storage capacity.</p> <p>Note No more data can be stored once 0 % capacity is reached.</p>	Reconnect ProdX.

Reject Verification

Message	Type	Cause	Troubleshooting
Reject verification: rejection error	P	The system has detected that a bad product was not sorted out.	Remove the error causing or all products from the stopped conveyors.
Reject verification '+/-'	I	The function 'Reject Verification' is active. Activated by the function 'Reject Verify'.	None
Reject verification 'metal'	I	The function 'Reject Verification' is active. Activated by the function 'Reject Verify'.	None
Reject verification 'askew'	I	The function 'Reject Verification' is active. Activated by the function 'Reject Verify'.	None

Product Sorting Device Distance

Message	Type	Cause	Troubleshooting
Sorting device distance: too small	W	A bad product has not been sorted out.	Increase distance between sorter and weigh light barrier/product sensor to reduce measuring time, or move evaluation point towards weigh light barrier/product sensor which might affect the inspection results.

Successive Errors

Message	Type	Cause	Troubleshooting
Successive errors detected	P	The system has detected the same error in a preset number of packages.	The reaction of the system depends on the configuration.

Tare-Gross Weigher

Message	Type	Cause	Troubleshooting
Gross queue: empty	W	Normal startup, or communication lost.	Confirm that weights are reaching the gross using the Large-Weight Screen
Gross queue: lower limit exceeded	W	End of production run, or communication lost.	Confirm queue size matches number of products.

Message	Type	Cause	Troubleshooting
Gross queue: upper limit exceeded	W	Upper limit too small, or products falling.	Evaluate line and adjust upper limit if necessary.
Tare queue: upper limit exceeded	W	Upper limit too small, or communication lost.	Check queue size at gross weigher to confirm communication; adjust tare limit if necessary.

Test Messages

Message	Type	Cause	Troubleshooting
Test: air pressure monitor	T	The test 'Air Pressure Monitor' is running. Activated by the function 'Peripherals Control Function'.	None
Test: catch bin full	T	The test 'Catch bin full' is running. Activated by the function 'Peripherals Control Function'.	None
Test: countercheck sensor	T	The sensor of the function 'Countercheck' is being tested.	None
Test: reject verification	T	The test 'Reject Confirmation' is running. Activated by the function 'Peripherals Control Function'.	None
Test: reject inhibit	T	The test 'Reject Inhibit' is running. Activated by the function 'Peripherals Control Function'.	None
Test: infeed sensor	T	The test 'Infeed Sensor' is running. Activated by the function 'Peripherals Control Function'.	None

Zero Setting

Message	Type	Cause	Troubleshooting
Zero setting successful	I	The zero setting was successful.	None
Zero setting range exceeded	W	The weighing platform is loaded.	Call technically qualified personnel and/or your supervisor.
Zero setting needed	W	The load cell has not been set to zero.	Clean the conveyors. -or- Call technically qualified personnel and/or your supervisor.
External zero setting	I	External zero setting successful.	None

Access Door CW

Message	Type	Cause	Troubleshooting
Access door: open	I	The access door is unlocked. Conveyor can be accessed. Activated by the function 'Unlock Bins'.	Close the access door.

Askew Product

Message	Type	Cause	Troubleshooting
Askew package detected	P	A product lies askew on the conveyor.	None: The product will be rejected.
Askew package detected in infeed area	P	A product lies askew on the infeed conveyor.	None: The product will be rejected.

Clearing Conveyors

Message	Type	Cause	Troubleshooting
Clearing conveyors	I	Informs that the function to remove products from the conveyors is active.	None

Message	Type	Cause	Troubleshooting
Clear up started	I	The function Clear Conveyor is active. All products on the conveyor are sorted.	None
Clear up completed	I	The function Clear Conveyor is finalized.	None

Conformity assessment not finished

Message	Type	Cause	Troubleshooting
Conformity assessment not finished!	W	MID step2 was not performed	Call technically qualified personnel and/or your supervisor to contact the after-sales service.

ID: Barcode

Message	Type	Cause	Troubleshooting
ID: mismatch	P	An ID mismatch occurs when an item's barcode does not match the specified barcode in the package definition.	Check product batch for wrong or missing product ID
ID: no read	P	An ID No Read event occurs when the scanner does not find a proper barcode on the package.	Check product batch for wrong or missing product ID
ID: timeout	P	An ID timeout occurs when an item is weighed before receiving the barcode information.	Check product batch for wrong or missing product ID, or incorrect product distance

IPEM Batch

Message	Type	Cause	Troubleshooting
IPEM batch started			
IPEM batch canceled (TU1)			
IPEM batch not approved			
IPEM batch approved			

Printer: Mark & Vision Messages

Message	Type	Cause	Troubleshooting
Printer deactivated	W	The printer in the mark&vision unit is not activated.	Switch the printer on.
Printer activated	I	The printer in the mark&vision unit is activated.	None
Printer: fault	W	The camera cannot read the code that has been printed on the product.	<ul style="list-style-type: none"> Check if the printing head is clean. Check if the code on the product is clean.
Printer not ready	I	The printer in the mark&vision unit is not ready.	None
Printer ready	I	The printer in the mark&vision unit is ready.	None

Scanner

Message	Type	Cause	Troubleshooting
Scanner: Overflow	W	Scanned code is longer than expected by the scanner	Check bar code or scanner settings

SMC Alias

Message	Type	Cause	Troubleshooting
SMC Alias {0} exists multiple times	W	Camera monitoring. The SMC alias is used in more than one SMC products assigned to the active package. The camera the SMC product is saved on is stated at the end of the message.	Deactivate one camera if possible. Check the setup of the SMC products to make sure that every common data field is used only once. Activate additional common data fields if necessary.
Invalid Reference Code for the Data Field linked to SMC Alias '{0}'	W	The camera does not recognize the reference data in the respective common data field, for example because a character in the data field is not part of the font the camera is working with.	Add new characters to the font or change the reference data.
SMC Alias '{0}': is not present in any SMC	W	A common data field is activated in the active package but not used in any control window of the assigned SMC product.	Link a control window of the assigned SMC product to the common data field. Make sure all SMC Aliases used in the assigned SMC product are spelled correctly. Deactivate the common data field in the active package.
SMC Alias: error	W	An SMC Alias error has been detected. The error is specified by a separate message.	See separate message below.
SMC Alias: OK	I	The SMC Alias error has been corrected.	Start production.
SMC Alias 'wgtid': {0} exists multiple times	W	The SMC Alias "wgtid" is used in more than one SMC products assigned to the active package.	Deactivate one camera if possible. Check the setup of the SMC products to make sure that "wgtid" is used only once.

SPC Trend

Message	Type	Cause	Troubleshooting
SPC Trend: high		The longer-term scattering behavior of the production process deteriorates	Optimize production process
SPC Trend: low		The longer-term scattering behavior of the production process improves	None

X-Ray

Message	Type	Cause	Troubleshooting
X-ray: connected	I	The equipment is connected with the X-ray component.	None
X-ray: deactive	I	The X-ray component is deactivated.	If needed, activate the X-ray.
X-ray: foreign body detected	W	The X-ray component has detected contamination.	The products will be rejected. And: Call technically qualified personnel and/or your supervisor.
X-ray: no response	W	The X-ray does not answer.	Call technically qualified personnel and/or your supervisor.

13.3 Screen

The symptoms described below concern the failure of the screen.

Problem	Possible reason	Actions
Black with power on.	Touchscreen failure.	1. Check touchscreen connection. 2. Replace defective connectors or cable. 3. Call technically qualified personnel.
	PC failure.	Replace PC.
	Power supply failure.	Check the system main fuse.
Color wrong.	Touchscreen failure.	1. Check the touchscreen connection. 2. Replace defective connectors or cable. 3. Call technically qualified personnel.
Touch is not working.	Touchscreen failure.	1. Recalibrate the touchscreen. 2. Check touchscreen connection. 3. Replace defective connectors or cable. 4. Call technically qualified personnel.

13.4 Conveyor Belts

The symptoms described below concern the failure of conveyor belts.

Problem	Possible reason	Actions
Belt damaged.	Belt damaged by an external source.	Replace the conveyor belt.
	Conveyor ends hitting each other.	Replace the conveyor belt.
	Belt type incorrect.	Call technically qualified personnel.
Belt edges frayed.	Belt drifts to the side.	Check and adjust the belt alignment.
	Belt misaligned.	Check and adjust the belt alignment.
Noise during running.	Belt drifts to the side.	Check and adjust the belt alignment.
	Belt misaligned.	Check and adjust the belt alignment.
	Conveyor clogged with debris.	Clean the conveyor belt thoroughly.
	Roller bearing damaged.	Replace roller.
	Timing belt pulleys defective.	Replace timing belt pulleys.
	Motor and/or drive defective.	Replace motor.
	Motor mountings are loose.	Tighten the motor mountings.

13.5 Product Sorting Devices

The symptoms described below concern the failure of the product sorting devices.

Problem	Possible reason	Actions
Too many products/ "good" products are sorted out.	Defective light barrier.	Check the light barriers and replace if necessary. Observe the information given in section [Replacing a Sensor ► Page 160].
	Incorrectly mounted light barrier.	Check the light barriers and adjust if necessary.
"Bad" products are not sorted out.	System is set to emergency run.	Return the system to normal operation.
	Air pressure valve failure.	Check the air pressure valve and replace if necessary.
	Product sorting device failure.	Check the product sorting device and replace if necessary.
Compressed air level is too high or too low.	Compressed air supply too high or too low.	Check the compressed air supply and adjust the pressure if necessary.
	Air pressure valve failure.	Check the air pressure valve and replace if necessary.
No compressed air is supplied to the system.	Compressed air supply not existing or too low.	Check the compressed air supply and adjust the pressure if necessary.
	On/off valve failure.	Check the on/off valve as described in [Checking the Function of the On/Off Valve ► Page 161]. Replace it if necessary.
The number of products passing the weigh light barrier does not correspond to the number of counted products displayed on the HMI.	Soiled weigh light barrier.	Clean the weigh light barrier according to the cleaning instructions given in this manual.
	Incorrectly mounted light barrier.	Check the light barriers and adjust if necessary.
	Defective weigh light barrier.	Replace the weigh light barrier, observe the information given in [Replacing a Sensor ► Page 160].

13.6 Motor Status Messages

The table below shows messages that can appear on the home screen during production. The messages refer to the motor status.

Message	Translation	Cause	Troubleshooting
CAN Bus OK!	CAN Bus OK!	Appears after the reset of the emergency stop pushbutton.	None
CAN Bus: Bus OFF!	CAN Bus: Bus OFF!	Appears after pushing the emergency stop button.	None
CAN_Network: Found X of Y motors!	CAN_Network: Found X of Y motors!	The system cannot find all the motors.	Call technically qualified personnel and/or your supervisor to check the connections.
CAN_Network: Motors are exchanged!	CAN_Network: Motors are exchanged!	Appears after the replacement of a motor when at least one motor has been replaced.	None
CAN_Network: Please check motor wiring and MCB!	CAN_Network: Please check motor wiring and MCB!	The motors are not connected correctly.	Call technically qualified personnel and/or your supervisor.
CAN_Network: Some motors are offline: M1, M2	CAN_Network: Some motors are offline: M1, M2	The system cannot find all the motors.	Call technically qualified personnel and/or your supervisor to check the connections.
CAN_Network: X motors found for position Y!	CAN_Network: X motors found for position Y!	The motors are not connected correctly.	Call technically qualified personnel and/or your supervisor to connect the motors correctly.
Config error in function <xxx>	Config error in function <xxx>	The distance of the product sorting device or the sensor of the function <xxx> is incorrect.	Call technically qualified personnel and/or your supervisor.
Feedback: Invalid number (X). Max=Y	Feedback: Invalid number (X). Max=Y	There is a wrong code at the feedback inputs.	Call technically qualified personnel and/or your supervisor to check the input signals.
Generic setup mode ON!	Generic setup mode ON!	Function step in the function "IPT".	None
Generic setup mode OFF!	Generic setup mode OFF!	Function step in the function "IPT".	None
Motor error <Error message>: Mx (Message #/xxxxx)	Motor error <Error message>: Mx (Message #/xxxxx)	There can be various causes. For detailed information, see the table below.	Call technically qualified personnel and/or your supervisor.
Loadcell: "message"	Loadcell: "message"	Load cell communication is disturbed. Specifies the reason for the message.	Call technically qualified personnel and/or your supervisor.
Loadcell config error! (Command failed)	Loadcell config error! (Command failed)	Error in the communication with the load cell.	Call technically qualified personnel and/or your supervisor to contact the after-sales service.
Loadcell config error (X)	Loadcell config error (X)	Load cell configuration error.	Call technically qualified personnel and/or your supervisor.

Message	Translation	Cause	Troubleshooting
Motor command "Save parameter" failed for motor Mx	Motor command "Save parameter" failed for motor Mx	The motor cannot receive any command or parameters. The cause can be an interrupted connection.	Call technically qualified personnel and/or your supervisor to check the connection.
Motor command "SetSpeed" failed for motor Mx	Motor command "SetSpeed" failed for motor Mx	The motor cannot receive any command or parameters. The cause can be an interrupted connection.	Call technically qualified personnel and/or your supervisor to check the connection.
Motor command "Start" failed for motor Mx	Motor command "Start" failed for motor Mx	The motor cannot receive any command or parameters. The cause can be an interrupted connection.	Call technically qualified personnel and/or your supervisor to check the connection.
Motor command "Stop" failed for motor Mx	Motor command "Stop" failed for motor Mx	The motor cannot receive any command or parameters. The cause can be an interrupted connection.	Call technically qualified personnel and/or your supervisor to check the connection.
Motor X: Could not set OPERATIONAL MODE!	Motor X: Could not set OPERATIONAL MODE!	Motor X cannot be configured. The message can only be displayed after the equipment has been turned on.	Call technically qualified personnel and/or your supervisor to check the connection.
MotorX Y is offline!	MotorX Y is offline!	Appears after the emergency stop pushbutton has been pushed.	None
MotorX Y is online!	MotorX Y is online!	Appears after the emergency stop pushbutton has been reset.	None
Multi evaluation: Code OK	Multi evaluation: Code OK	Package memory changeover completed successfully.	None
No pulses! Please check configuration and motors/encoder	No pulses! Please check configuration and motors/encoder	The motor cannot receive any command or parameters. The cause can be an interrupted connection.	Call technically qualified personnel and/or your supervisor to check the connection.
Please check delay of rejector x	Please check delay of rejector x	The total delay for the product sorting device x is too low.	Call technically qualified personnel and/or your supervisor.
Please check package pulse length of rejector x	Please check package pulse length of rejector x	The total pulse length for the product sorting device x is too low.	Call technically qualified personnel and/or your supervisor.
Please check rejector distance, motor speed, ... Item [x] not classified!	Please check rejector distance, motor speed, ... Item [x] not classified!	A product was not classified. The distance of the product sorting device may be too small or the motor speed too high.	Call technically qualified personnel and/or your supervisor.
Please check rejector distance, motor speed, ... Item [x] no attribute found by rejecter y!	Please check rejector distance, motor speed, ... Item [x] no attribute found by rejecter y!	A product was not classified. The distance of the product sorting device y may be too small or the motor speed too high.	Call technically qualified personnel and/or your supervisor.

Message	Translation	Cause	Troubleshooting
PutCond for abc failed in task xyz	PutCond for abc failed in task xyz	The system detected an internal software problem in the function "xyz".	Call technically qualified personnel and/or your supervisor to contact the after-sales service.
Pre-Selection	Pre-Selection	Informs that the pre-selection mode is active.	None: The product sorting device removes the respective products.
Rejector (1, 2, 3...): Insufficient distance!	Rejector (1, 2, 3...): Insufficient distance!	The product sorting device cannot react in time.	Reduce the speed of the conveyor. -or- Call technically qualified personnel and/or your supervisor.
Zero setting successful	Zero setting successful	The load cell has been set to zero.	None
Sample Input Active: Sample 1 Item	Sample Input Active: Sample 1 Item	Information message in the function "Sample rejector".	None
Sample Mode: Item x rejected	Sample Mode: Item x rejected	Information message in the function "Sample rejector".	None
Sample Mode: Start Sample of x Items	Sample Mode: Start Sample of x Items	Information message in the function "Sample rejector".	None
Sample Mode: Canceled, x NOT rejected	Sample Mode: Canceled, x NOT rejected	Information message in the function "Sample rejector".	None
Set tare value failed! (T max)	Set tare value failed! (T max)	The tare weight of the product is higher than the permitted tare weight.	Enter a correct value.
Set tare value failed! (T min)	Set tare value failed! (T min)	The tare weight of the product is lower than the permitted tare weight.	Enter a correct value.
Successive error: Value out of range! X > Y	Successive error: Value out of range! X > Y	Parameter X is too high.	Reduce the value for X.

13.7 Motor Error Messages

Motor errors are indicated by the message Motor error <Error message>: Mx (Message #/xxxxx).

The message in the info line shows:

- Time when the error occurred
- Error message and name of the corresponding motor
 - German in case of German operating language
 - Otherwise English
- First number (indicates the error group 500 – 510, see table below)
- Second number (not user-relevant)

Error groups for Motor error <Error message>: Mx (Message #/xxxxx)

Message #	Error Message	Translation	Cause
500	Over current	Over current	The motor is overloaded
501	Under voltage	Under voltage	The motor cable is damaged -or- The fuse is tripped
502	Over voltage	Over voltage	
503	Voltage	Voltage	Voltage (general)
504	Temperature	Temperature	The temperature is too high and the motor is overloaded
505	Device Hardware	Device hardware	Defective motor or controller
506	Device Software	Device software	If ongoing, then contact customer service
507	Monitoring	Monitoring	CAN Bus error
508	Protocol error	Protocol error	If ongoing, then contact customer service
509	Common error	Common error	If ongoing, then contact customer service
510	Other error	Other error	If ongoing, then contact customer service
default	Unknown	Unknown	

13.8 Safety Circuits

This section describes the status and the troubleshooting steps for the individual components in the safety circuit. It is important to know how to troubleshoot the safety circuit if there is a fault or a failure of an individual component.

13.8.1 Safety Relay

13.8.1.1 Allen Bradley 440R Safety Relay

METTLER TOLEDO typically uses this safety relay in the US market. It has two dual-channel inputs and two electromechanical relay outputs.

Safety Relay LED Indicators

LED Indicator	Purpose	Status
PWR / Fault	Power Indicator and diagnostics	Green - Power on Red or flashing red - Indicates specific faults (see table below)
IN1	Connected to the E-stop switch	Green - Input is connected, equipment ready to run Off - Not connected (E-stop actuated)

LED Indicator	Purpose	Status
IN2	Connected to the interlock switch	Green - Input is connected, machine is ready to run Off - Not connected (interlock doors are actuated)
Logic IN	Input from another safety relay (if configured)	Green - Input is connected Off - Not connected
OUT	Safety Relay output indicator	Green - Outputs on Flashing green - Outputs not switched on, safe mode (i.e. - waiting for reset) Off - Safety relay inputs not connected or switched off

Safety Relay Faults

PWR / Fault LED Indicator	Description	Troubleshooting Steps
Solid red	Internal system fault (power interruption, noise or short circuit)	Correct wiring errors, cycle power to safety relay
Flashing red (1 time)	Configuration mode	Continue with configuration process. Rotate switches to desired positions and cycle power.
Flashing red (2 times)	Invalid configuration	Return switches to proper settings and cycle power. Reconfigure safety relay.
Flashing red (3 times)	Invalid configuration	Reconfigure the relays for IN1 and IN2 (position 2, 4, 6 or 8).
Flashing red (4 times)	Cross-fault	Check wiring. Remove short circuit and cycle power.
Flashing red (5 times)	Output test failed on L11	Correct fault and cycle power.
Green with flashing red (2 times)	Configuration does not agree with EEPROM	Switches can be returned to normal position.
Green with flashing red (3 times)	B1-B2 connection	Remove connection, and fault is cleared automatically.



13.8.1.2 Schneider XPS-DMB Safety Relay

METTLER TOLEDO typically uses this safety relay in the European market. It has two input circuits and two output circuits for magnetic switches and monitors electronic safety switches.

Safety Relay LED Indicators

LED Indicator	Purpose	Status
Power A1 / A2	Power indicator	On - Power on Off - No power supply or power deactivated by fuse

LED Indicator	Purpose	Status
Fault	Diagnostics	On - Faulty relay or wiring Off - No fault
K1/K2	Indicates relays K1/K2	On - K1 and K2 energized Off - K1 and K2 de-energized

Safety Relay Faults

Fault indicator	Description	Troubleshooting Steps
All LEDs off	No power supply	Switch on power supply. Check for short circuit / ground fault.
"Fault" on	Faulty relay	Replace relay.
	Short circuit of an input to + 24 V	Correct short circuit.
	Supply voltage varies by more than 20 %	Check supply voltage.
"Fault" flashing long	Cross-circuit between two magnetic switches	Correct cross-circuit.
"Fault" flashing shortly at long intervals	Time period of 0.5 s between NC / NO contacts of a magnetic switch has been exceeded or magnetic switch is faulty	Activate switch again. Replace if necessary.



13.8.1.3 Pilz PNOZ S4 Safety Relay

METTLER TOLEDO typically uses this safety relay in the European market. It has two input circuits and three output circuits and works redundantly with built-in self-monitoring.

Safety Relay LED Indicators

LED Indicator	Purpose	Status
Power	Power indicator	On - Power on Flashing - Power supply not sufficient Off - No power supply
In1	Input circuit at S12	On - Input circuit at S12 is closed Flashing - Switch-on blocked due to short interruption at S12 or input circuits not activated at the same time
In2	Input circuits at S22	On - Input circuit at S22 is closed Flashing - Switch-on blocked due to short interruption at S22 or input circuits not activated at the same time

LED Indicator	Purpose	Status
Out	Safety contacts and semiconductor output Y32	On - Safety contacts are closed and semiconductor output Y32 provides high signal Off - Safety contacts are opened and semiconductor output Y32 provides low signal
Reset	Reset input	On - 24 V DC is connected to S34 Flashing - One rotary switch has an incorrect position or has been turned during operation
Fault	Diagnostics	On / flashing - Fault Off - No fault or power supply not sufficient

Safety Relay Faults

PWR / Fault LED Indicator	Description	Troubleshooting Steps
All LEDs off	Cross-circuit / ground short or relay deactivated	Correct cross-circuit / ground short. Switch off power supply for 1 min.
All LEDs on	Mode selector "mode" is in basic position (vertical position)	Switch off power supply and turn mode selector in order to select an operation mode.
"Fault" on	Terminator plug not connected	Connect terminator plug. Switch off power supply and switch on again.
"Fault" flashing	Internal error, relay faulty	Switch off power supply and switch on again. Replace relay if necessary.
"Power" flashing	Power supply not sufficient	Check power supply and increase if necessary.
"In1" and "In2" flashing alternately + "Fault" on	Faulty connection (line resistance too high) or cross-circuit between S12 and S22	Correct connection. Switch off power supply and switch on again.
"In1" flashing + "Fault" on	Switch-on blocked due to short interruption at S12 or input circuits not activated at the same time	Open both input circuits S12 and S22 at the same time and close them again.
"In2" flashing + "Fault" on	Switch-on blocked due to short interruption at S22 or input circuits not activated at the same time	Open both input circuits S12 and S22 at the same time and close them again.
"Reset" flashing + "Fault" on	One rotary switch has an incorrect position or has been turned during operation	Switch off power supply and switch on again.



13.8.2 Electronic Interlocks

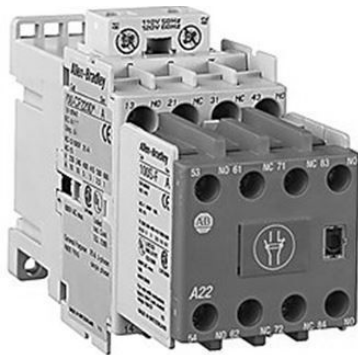
The electronic interlock consist of an actuator and a sensor that magnetically latch together with a sensing distance of 18mm. It has a device output LED with the following indicators:

Electronic Interlocks LED Indicators

LED Indicator	Status	Troubleshooting Steps
Off	Not Powered	NA
Red	Output OFF: safety outputs off (guard doors are open)	NA
Green	Output ON: safety outputs active (guard doors are closed)	NA
Flashing Green	Power-up Test: Safety inputs off	Check 24 V DC or OSSD inputs (yellow and red wires)
Flashing Red	Unit failure: 1 Hz - recoverable fault 4 Hz - Non-recoverable fault	For recoverable fault, check that the OSSD outputs are not shorted to GND, 24 V DC or to each other.
Flashing Amber	1 Hz - margin indicator safe, OSSD active	Sensor is approaching maximum sensing distance; realign sensor with actuator

13.8.3 Safety Control Relay

The safety control relay has positive opening force guided (and mechanically linked) contacts, and provides normally closed contacts linked to the main contacts allowing feedback to the safety relay reset circuit. This design allows detection of welded contacts and can be used for feedback to safety relay for diagnostics coverage. There is a mechanical indicator window for relay position (when button is out, the relay is off).



13.9 Emergency Run Mode

In case of a system malfunction, you can activate the emergency run.

This function can support a continuous product flow until the system malfunction is resolved.

Note If the emergency run is activated, products continue to move over the conveyors, but the products are neither weighed nor sorted.

If the metal detector detects a contaminated product during the emergency run mode, all conveyors are stopped.



⚠ DANGER

Danger to life by electrocution

Make sure that the control enclosure may only be accessed by authorized personnel.

To activate the emergency run, proceed as follows:

- 1 Open the control enclosure door.
- 2 Slightly turn the potentiometer at the main control module.
 - ➔ There may be a slight resistance at first. After you have overcome the resistance, you can turn the potentiometer continuously.
- 3 Press the conveyor start button.
- 4 Set the desired emergency run speed using the potentiometer.

To return to normal operation, proceed as follows:

- 1 Turn the potentiometer to the OFF position.
- 2  **DANGER: Make sure that the control enclosure may only be accessed by authorized personnel.**
Close the control enclosure door.

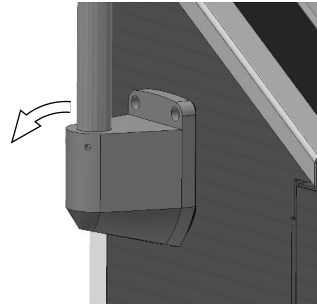
14 Uninstalling, Storing and Disposal

This chapter contains all information necessary after using the equipment, like uninstalling, storing, and disposal.

14.1 Disassembling the Signaling Device for Transportation

Before transporting the equipment, the signaling device must be disassembled to prevent damages. To disassemble the signaling device, proceed as follows:

- 1 Open the control enclosure and loosen the three screws of the signaling device base.
 - 2 Turn the signaling device upside down. **Note** Do not remove the cable.
- ➔ The equipment is now ready for transportation.



14.2 Uninstalling the Equipment



DANGER

Death by electric shock due to incorrect installation

Incorrect electrical installation or disassembly can cause fatal injuries.

- 1 The equipment must be connected to and disconnected from power supply by an electrician or equally qualified personnel.
- 2 Observe the wiring diagrams when connecting and disconnecting the equipment.
- 3 Ensure that the connection complies with the safety standards and regulations in your country.
- 4 Before connecting or disconnecting the equipment, de-energize the power supply cable and apply a lockout / tagout procedure and use a suitable measuring instrument to check if supply cable and equipment are de-energized.



DANGER

Death by electric shock

Work on the electric system of the equipment has to be carried out by an electrician or equally qualified personnel.

After disconnection of the equipment from power supply, dangerous voltage may still be present within the equipment and at the connector terminals.

Before you start working on the electric system of the equipment:

- 1 Switch the equipment off and wait 10 minutes until the equipment is completely de-energized.
- 2 Use a suitable measuring instrument to ensure that the equipment is de-energized.

To remove the equipment from the production line proceed as follows:

- 1 Switch off the equipment and apply a lockout / tagout procedure as described in section [Securing the Equipment for Maintenance ► Page 138].
 - 2 De-energize the supply cable and apply a lockout / tagout procedure.
 - 3 Disconnect the equipment from the power supply as shown in the wiring diagrams.
 - 4 Disconnect the air supply from the pneumatic assembly.
 - 5 Disconnect all electrical connections to external devices.
- ➔ The equipment is disconnected and can be removed from the production line.

14.3 Storing the Equipment

This section describes how to proceed if you want to store the equipment.

- Store the packed equipment with its components upright in its original crate or packaging film.
- Store the equipment with its components in a clean and dry room. This prevents the exposure of the system to dirt, dust and moisture. For temperature and humidity conditions see chapter Technical Data of the Operator Manual.

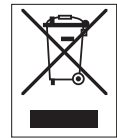
Follow also the following instructions if the equipment is already unpacked and installed:

- 1 Uninstall the equipment as described in [Uninstalling the Equipment ► Page 194].
- 2 Clean the equipment.
- 3 Make sure the equipment is dry.
- 4 If available, secure the load cell with transport locks.
- 5 Wrap the equipment in a packaging film or similar packaging material.
- 6 Add moisture-absorbing packages, such as desiccant (silica gel) inside the wrapped system.
- 7 Keep all electronic parts in the protective, anti-static pouches until they are used.

14.4 Disposal

In conformance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment. If you have any questions, please contact the responsible authority or the distributor from which you purchased this device. Should this device be passed on to other parties, the content of this regulation must also be related.



15 Technical Data

This chapter provides the technical data for a standard C3330/C3331/C3130/C3131.

For the exact technical data see the wiring diagrams and the nameplate on your equipment.

Environmental Conditions

Temperature	0 – 40 °C
Humidity	5 – 80 % relative air humidity, non-condensing

Weighframe

Electromagnetic environmental classification	E2
Mechanical environmental classification	M1
Operating temperature	0 – 40 °C
Noise emission	< 70 dB (A) (normal operation, without sorting)
Power connection	115/230V, N, PE, 50/60 Hz, single phase
Power consumption	Approximately 1.1 kVA

Weighing Functions

Main function	Dynamic weighing
Secondary function	Static weighing

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Subject to technical changes.

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