Anritsu

Operation Manual

X-ray Inspection System

XR75 Series

13th Edition

This manual covers the software versions V1.58 or later.

* Actual products may differ from photographs / pictures / illustrations in this manual.
* Content current as of April 2018.
*
* The contents of this manual may be changed without prior notice.

For safety and warning information, please read this manual before attempting to use the equipment.
Keep this manual with the equipment.

To Our Valued Customers

Thank you for choosing Anritsu Infivis X-ray Inspection System (XR75 Series)

X-ray Inspection System is an efficient and essential tool in detecting contaminants in products. The system has been carefully designed for safety and has been manufactured and shipped in accordance with the ISO9001 quality control standards. However, to ensure that it is used with maximum safety, please observe the following rules.

(1) Perform pre-work and periodic inspections and keep good maintenance records.

(2) NEVER disassemble or modify the main unit of the X-ray Inspection System or attached upstream and downstream equipment.

NEVER remove or modify the safety covers, and safety interlocks.

(3) Perform periodic measurement of leakage X-ray dose and keep the measurement records.

(4) Monitor the operator work hours, provide periodic health checks (normal checks) and keep good records.

For other items, read the operation manual carefully and pay sufficient attention to safety management.

To ensure continued high-level safety, Anritsu Infivis offers comprehensive after-sales support programs, including extended warranties, periodic inspection services, leakage X-ray dose measurement, etc. Contact your nearest sales representative for further details.

Anritsu Infivis Co., Ltd.

X-ray Inspection System

KXS7522AWCLE/AVCLE/CWCLE/CVCLE
KXS7534AWCLE/AVCLE/CWCLE/CVCLE

Operation Manual

13th Edition

This manual covers the software versions V1.58 or later.

Read this manual before using the equipment.
Keep the manual with the equipment.

ANRITSU INFIVIS CO., LTD.

Document No.: 84W265865-13

Original instructions

Introduction

Read the operation manual thoroughly before using the checkweigher. Keep the operation manual with the product for easy reference.

Estimated Average Life Expectancy of X-ray Sensor and X-ray Tank

The estimated average life expectancy of the X-ray sensor and X-ray tank varies depending on the operating environment (temperature, humidity, etc.) and the conveyance conditions (product temperature, processing capacity, etc.) of the inspected product to be inspected. The system wears out significantly when the internal temperature is high. Clean the air filter once a week.
When inspecting an inspected product over 40°C, consult with the support of the supplier.

(1) Manual Contents

This manual explains the installation, operation, maintenance and inspection of the X-ray Inspection System. The basic operation method is explained in Section 1 Basic Operations.

X-ray Inspection Capability

This X-ray Inspection System may not detect all kinds of contaminants.
The Minimum size of contaminant that the system can detect depends primarily on the type of inspected product (dimensions, shape, components, etc.), the kind of contaminant (material and shape), and the installation conditions.
In addition, used algorithms and each limit set value may reduce the sensitivity for detecting large contaminants rather than that for detecting small contaminants. Before stating operation, always check the sensitivity using each size contaminants.
For the actual detection sensitivity, refer to the delivery specifications or the standard values recorded at acceptance inspection.

(2) Checking X-ray Inspection System and Components

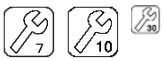
Check the following when the X-ray Inspection System is delivered:

- No damage to any parts
- All components described in "Checking the Package Contents"

If there is any damage to the system, contact the shipping company and Anritsu Infivis immediately.

(3) Symbol used in the text

In this document, the following symbols are used.

Symbol	Discription
☞	Indicates another page for reference.
ℹ	Indicates supplementary notes and related information.
	Indicates the type of spanner for the work 7: 7-mm spanner for M4 hexagonal bolts 10: 10-mm spanner for M6 hexagonal bolts 30: 30-mm spanner for M20 hexagonal bolts
	Phillips head screwdriver
	Flat-bladed screwdriver
	Special screwdriver (accessory)

(4) Before Use

This X-ray Inspection System uses the Microsoft Windows Operating Systems (Windows OS). Under the terms of the End User License Agreement for Embedded Systems, the following Attachment must be supplied at purchase of product using the licensed OS. Read the Attachment and contact Microsoft Corporation if you have any questions.

Anritsu Infivis does not accept any liability for any problems with the embedded Microsoft OS used in this system.

☞ P. 371 Copyright, etc.

Contents

Safety Symbols

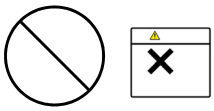
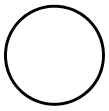
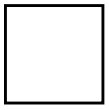
To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Infivis Co., Ltd. (Anritsu Infivis) uses the following safety symbols to indicate safety-related information. Insure that you clearly understand the meanings of the symbols BEFORE using the equipment. Some or all of the symbols may not be used on this equipment. In addition, when drawings are included in this manual, labels on the equipment may not be shown on them.

Safety Symbols Used in Manual

DANGER	This indicates a very dangerous procedure that could result in death or serious injury if not performed properly.
WARNING	This indicates a hazardous procedure that could result in death or serious injury if not performed properly.
CAUTION	This indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

Safety Symbols Used on Equipment and/or in Manual

The following safety symbols are used inside or on the equipment near operation locations, and/or in manual to provide information about safety items and operation precautions. Insure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

	This indicates a prohibited operation. The prohibited operation is indicated in or near the barred circle.
	This indicates an obligatory safety precaution. The obligatory operation is indicated in or near the circle.
	This indicates an obligatory safety precaution. The obligatory operation is indicated in or near the triangle.
	This indicates a note. The contents are described in the box.
	These indicate that the marked part should be recycled, or be disposed in accordance with local laws.

For Safety

DANGER ⚠	
	There is a high voltage part indicating the left mark in this equipment. Take sufficient care in servicing around the part.

WARNING ⚠	
	1. ALWAYS refer to the operation manual when working near locations at which the alert mark shown on the left is attached. If the operation, etc., is performed without heeding the advice in the operation manual, there is a risk of personal injury. In addition, the equipment performance may be reduced. Moreover, this alert mark is sometimes used with other marks and descriptions indicating other dangers.
 P E	2. When supplying power to this equipment, ground the green/yellow wire to a ground terminal at the installation place. If power is supplied without grounding the equipment, there is a risk of receiving a severe or fatal electric shock.
	3. The symbol on the left is the X-ray radiation hazard marking. Never work on or touch a location that has this symbol. If you do, there is a risk of exposure to X-ray radiation.
	4. The symbol on the left is used to indicate the presence of X-rays at the conveyor entrance. Never put your hands into parts indicated by this marking.
	5. Exposure to X-rays can cause serious injury; NEVER cut, modify or remove shield curtains. In addition, NEVER use the equipment with damaged or deformed shield curtains.
	6. This symbol indicates a dangerous part which may entangle your fingers or hand to injury. Keep a distance from this part and do not touch in operation.
	7. This symbol indicates a circuit breaker. A separate power switch on the switchboard should be installed when the power is turned on/off frequently.
	8. This symbol indicates high temperatures. Do not touch or come close to these parts while the inspection system is running or immediately after it has stopped. 9. The surface of the motor is heated during operation and is still hot immediately after it has stopped. Avoid careless contact otherwise you may get burnt.

WARNING ⚠	
Repair	10. This equipment cannot be repaired by the user. DO NOT attempt to open the cabinet or to disassemble internal parts. Only service personnel trained by Anritsu Infivis or staff from your sales representative with a knowledge of electrical fire and shock hazards should service this equipment. There are high-voltaged parts in this equipment that could present a risk of severe injury or fatal electric shock to untrained personnel. In addition, there is a risk of damage to precision parts. 11. NEVER disassemble or modify the main unit of the X-ray Inspection System or attached upstream and downstream equipment. NEVER remove or modify the safety covers, and safety interlocks. If modification* is required; consult Anritsu Infivis.
Cautions if an inspected product is food	12. The KXS7522AxCLE, KXS7534AxCLE use a shield curtain containing lead to protect against X-ray leakage. Consequently, always inspect packaged food. If unpackaged food comes into contact with the leaded shield curtain, there could be a health hazard. If you need to inspect unpackaged food, special modification* is required; consult Anritsu Infivis. **Removing shield curtain and installing upstream and downstream conveyors with X-ray leakage protection covers* 13. This equipment is not explosion-proof. Do not use it in explosive atmospheres.
Caution in using the product guide	14. X-ray leak amount may increase locally by the gap generated between the curtain and the guide when you use the product guide. Never look inside the curtain. If you find the gap too big, adjust the width of the product guide to decrease it.

CAUTION ⚠	
Cleaning	1. Clean the power inlet regularly. If dust accumulates around the power pins, there is a risk of fire.
Changing memory back-up battery 	2. This equipment uses a lithium battery to back-up the memory. This battery must be replaced by a service engineer when it has reached the end of its useful life; contact the Anritsu Infivis sales section or your nearest representative. *Note: The battery used in this equipment has a maximum useful life of 5 years.*

CAUTION ⚠	
	3. Follow the laws or local regulations when disposing of this equipment. (1) This system uses X-ray shielding that contains lead (X-ray source, detector, and shield curtains). Follow the laws or local regulations regarding hazardous wastes when disposing of the system. (2) This system uses a beryllium X-ray source. Follow the laws or local regulations regarding hazardous wastes when disposing of the system. (3) This system uses cooling oil (containing highly refined petroleum oil and mineral oil as constituents) to cool the X-ray source. Follow the laws or local regulations regarding hazardous wastes when disposing the system.
Cautions if inspected products have jammed	4. When the inspected product is a food product, “if the food jammed inside the conveyor section for some reason, there is a possibility that it will receive an excess dose X-rays.” Always dispose of any food that jammed inside the system. However, Anritsu Infivis will not accept responsibility for any losses incurred. BEFORE removing jammed food from the conveyor, ALWAYS press the Stop button or the Emergency Stop button to stop the X-ray radiation. If jammed food is removed while X-rays are being radiated, there is a high risk of serious injury. NEVER attempt to remove objects while the system is running. 5. Inspected products hotter than 40°C may accelerate the deterioration of consumables, such as the conveyor belt and shield curtains.
Cautions on touch panel operation	6. When operating the touch panel, do not press two or more points simultaneously. Pressing two or more points simultaneously is recognized as pressing the middle point between them. If the recognized point is on a button, the button is activated.

Notice ⚠	
Operating Environment	1. If the shield curtain is used in an environment where the following inspected products are processed, it may deform prematurely, and X-ray leakage to the outside of the system may exceed the specified value of Anritsu. Do not use it. - Pickled plum - Pickled mackerel, Octopus - Pickled ginger - Vinegared rice - Pickles - Other foods containing vinegar When using the equipment in an environment producing any of the inspected products above, consult with the support of the supplier. 2. This equipment supports the conveyance of inspected products from -20 to 40°C. When using the equipment in an environment producing inspected products other than those specified above, consult with the support of the supplier.

Notice ⚠	
Periodic Inspection	To ensure long-term stable operation, Anritsu Infivis recommends inspection at periodic intervals. Periodic inspection can be performed by the branch offices described in the back of the operation manual; contact a branch office, sales representative or agent to request inspection.
Information for FCC Compliance	This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the operation manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Modifying the equipment without Anritsu Infivis' written authorization may result in the equipment no longer complying with FCC requirements for Class A digital devices. In that event, your right to use the equipment may be limited by FCC regulations.

For Safety

Safety of inspected products

The WHO concluded in 1980 that irradiation up to 10 kGy introduces no special toxicological, nutritional or microbiological problems in foods.

→

A product inspected by this system receives a maximum dose of 0.002 Gy, which is much lower than the value designated by WHO.

Even if a product stops inside the system, X-ray irradiation is stopped to prevent the dose from exceeding 0.1 Gy.

Note: When the function to detect a product stopping inside operates properly.

Safety of personnel

We are always exposed to radiation; in the natural world, we receive radiation of 1100 μSv a year on average, and 300 μSv from a chest X-ray. (The unit μSv [micro Sievert] indicates the radiation level of X-rays.)

→

The X-ray leakage from our X-ray Inspection Systems is 1μSv/h or less.

Example:

(Working conditions of 10 h/day x 5 days/week and 3 months calculated as 13 weeks)

<X-ray leakage dose for 3 months>

(1 μSv/h) x (10 h) x (5 days) x 13 weeks

= 0.65 mSv/3 months

In accordance with Japanese regulations, the following symbol is attached to the front side of the system for the use in Japan.

The inside of this inspection system is a controlled area.
ALWAYS stop the operation before working inside.

IMPORTANT ⚠

Follow the local laws and regulations regarding the installation and use of the X-ray Inspection System.

Equipment Certificate

Anritsu Infivis guarantees that this equipment was inspected at shipment and meets the published specifications.

Anritsu Infivis Warranty

Anritsu Infivis will repair this equipment free-of-charge if a malfunction occurs within 1 year after shipment due to a manufacturing fault, under the condition that this warranty is void when:

- The fault is outside the scope of the warranty conditions described in the operation manual.
- The fault is due to mishandling, misuse, or unauthorized modification or repair of the equipment by the customer.
- The fault is due to severe usage clearly exceeding normal usage.
- The fault is due to improper or insufficient maintenance by the customer.
- The fault is due to natural disaster including fire, flooding, earthquake, etc.
- The fault is due to use of non-specified peripheral equipment, peripheral parts, consumables, etc.
- The fault is due to use of a non-specified power supply or in a non-specified installation condition.

In addition, this warranty is valid only for the original equipment purchaser. It is not transferable if the equipment is resold.
Anritsu Infivis shall assume no liability for injury or financial loss of the customer due to the use of or a failure caused by this equipment.

Maintenance Period after Production Discontinuation

Anritsu Infivis will provide service and spares for this equipment for 7 years after it is no longer manufactured.

Anritsu Infivis Contact

If this equipment develops a fault, contact Anritsu Infivis or its representatives.

Charged Work Estimates

Charges will be estimated when the customer requests Anritsu Infivis or its representatives to perform the work procedures described in this manual.

Notes on Export Management

1. This equipment and manuals may require an Export License/Approval by the government of the country of origin for re-export from your country.
2. Before re-exporting the equipment and manuals, please contact us to confirm whether they are export-controlled items or not. When disposing of export-controlled items, the equipment/manuals must be destroyed / shredded to prevent illegal use, such as military applications.

Crossed-out Wheeled Bin Symbol

Equipment marked with the Crossed-out Wheeled Bin Symbol complies with EU directive 2002/96/EC (WEEE Directive).

When equipment sold by Anritsu Infivis in the EU after 13 August 2005 reaches the end of its useful life, contact your local representative for Anritsu Infivis to arrange safe disposal in accordance with your purchase contract and local laws.

CE Conformity Marking

The CE conformity marking is affixed to Anritsu Infivis products to indicate that they conform to the MD, LVD, EMC, and RoHS directives of the European Union (EU).

CE marking

Check the following to see whether your equipment meets the Council Directive or not.

- The CE conformity marking on the product
- Attached ‘CE Declaration of Conformity’

The following directives are applied:

Directive 2006/42/EC	**Machinery Directive (MD)**
Directive 2014/35/EU	**Low Voltage Directive (LVD)**
Directive 2014/30/EU	**EMC Directive (EMC)**
Directive 2011/65/EU	**RoHS Directive(RoHS)**

The following standards are applied:

EN 60204-1: 2006/A1:2009	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 61000-6-4: 2007/A1:2011	Electromagnetic compatibility (EMC) Part 6-4: Generic standards - Emission Standards for industrial environments
EN 61000-6-2: 2005	Electromagnetic compatibility (EMC) Part 6-2: Generic standards - Immunity for industrial environments
EN50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

For Safety

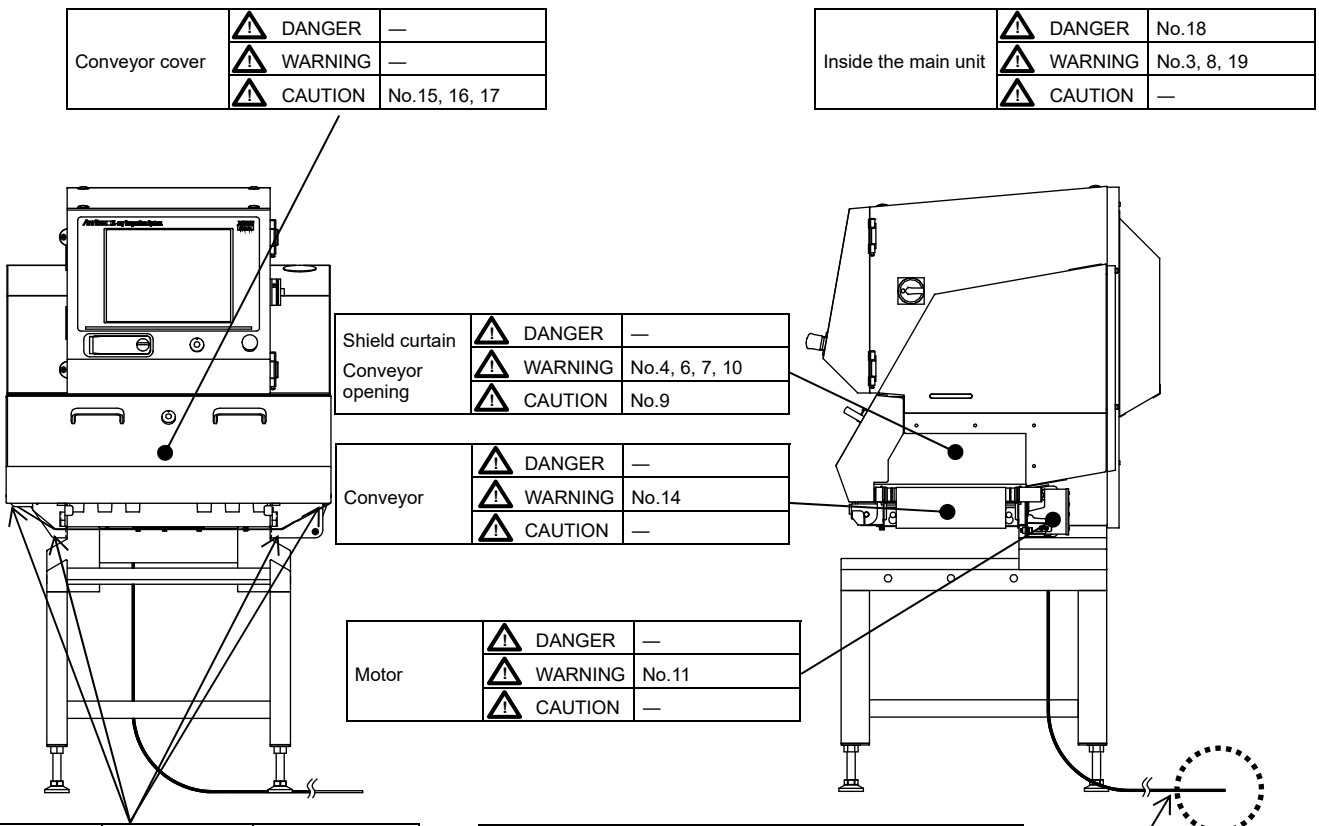
Read and understand the operation manual before using the equipment. This document only serves as a reference material for the main operation manual. Do not only rely on the descriptions in this document when using the equipment.

The residual risks are classified and described according to the following definitions:

- ⚠ Danger: This indicates a very dangerous procedure that is likely to result in death or serious injury if protective measures are not taken.
- ⚠ Warning: This indicates a very dangerous procedure that could result in death or serious injury if protective measures are not taken.
- ⚠ Caution: This indicates a procedure that could result in minor injury, if proper precautions are not taken.

Symbols and numbers in the figures correspond to the symbols and numbers described in the "List of residual risks for which protective measures must be taken by machinery users."
For details about each residual risk, refer to the "List of residual risks for which protective measures must be taken by machinery users."

- XS7522AVCLE/AWCLE
- XS7534AVCLE/AWCLE



Conveyor cover	⚠ DANGER	—
	⚠ WARNING	—
	⚠ CAUTION	No.15, 16, 17

Inside the main unit	⚠ DANGER	No.18
	⚠ WARNING	No.3, 8, 19
	⚠ CAUTION	—

Shield curtain Conveyor opening	⚠ DANGER	—
	⚠ WARNING	No.4, 6, 7, 10
	⚠ CAUTION	No.9

Conveyor	⚠ DANGER	—
	⚠ WARNING	No.14
	⚠ CAUTION	—

Motor	⚠ DANGER	—
	⚠ WARNING	No.11
	⚠ CAUTION	—

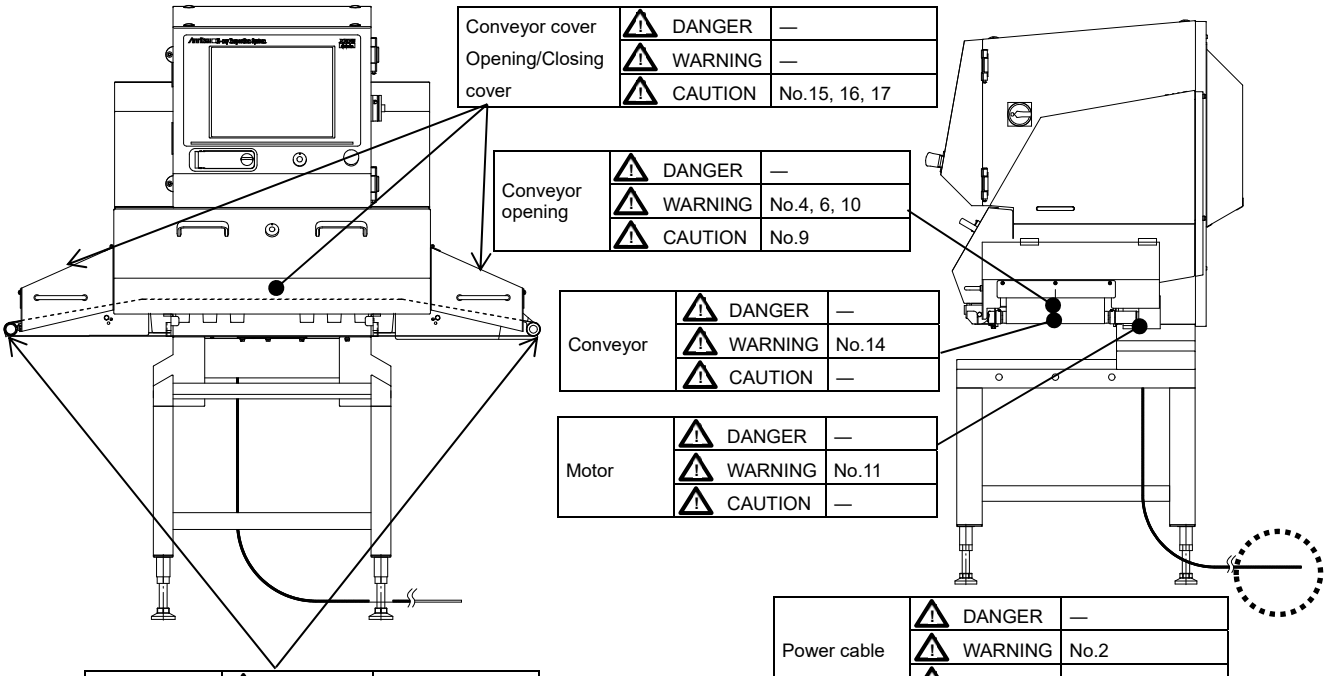
Driving roller Driven roller Free roller	⚠ DANGER	—
	⚠ WARNING	No.11
	⚠ CAUTION	No.5

Residual risks not related to a specific location on the equipment	⚠ DANGER	—
	⚠ WARNING	No.1, 12
	⚠ CAUTION	—

Power cable	⚠ DANGER	—
	⚠ WARNING	No.2
	⚠ CAUTION	No.13

- XS7522CVCLE/CWCLE
- XS7534CVCLE/CWCLE

Inside the main unit	DANGER	No.18
	WARNING	No.3, 8, 19
	CAUTION	—



Conveyor cover Opening/Closing cover	DANGER	—
	WARNING	—
	CAUTION	No.15, 16, 17

Conveyor opening	DANGER	—
	WARNING	No.4, 6, 10
	CAUTION	No.9

Conveyor	DANGER	—
	WARNING	No.14
	CAUTION	—

Motor	DANGER	—
	WARNING	No.11
	CAUTION	—

Power cable	DANGER	—
	WARNING	No.2
	CAUTION	No.13

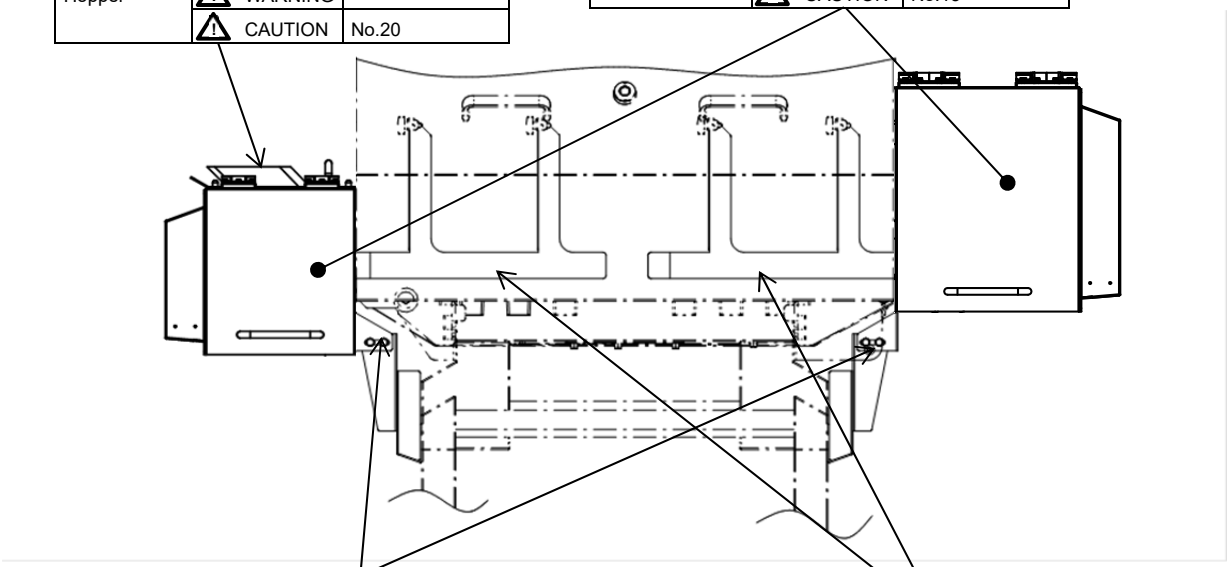
Driving roller Driven roller	DANGER	—
	WARNING	—
	CAUTION	No.5

Residual risks not related to a specific location on the equipment	DANGER	—
	WARNING	No.1, 12
	CAUTION	—

- Residual risk map when an option is installed

Hopper	DANGER	—
	WARNING	—
	CAUTION	No.20

Opening/Closing cover	DANGER	—
	WARNING	—
	CAUTION	No.15



Scraper Delivery plate Delivery roller	DANGER	—
	WARNING	—
	CAUTION	No.5

Product guide	DANGER	—
	WARNING	No.4
	CAUTION	No.5

For Safety

Read and understand the operation manual before using the equipment. This document only serves as a reference material for the main operation manual. Do not only rely on the descriptions in this document when using the equipment.

No.	Phase of operation	Work	License and training required for work	Location on the machinery (*2)	Residual risk (*1)	Description of risk /risk event	Protective measure taken by user	Page in the operation manual
1	Preparation	Relocating and transporting the main unit	Training on handling	Not identified	Warning	The unit might fall over if it is dragged during relocation or transportation, or if it is moved forcibly by using a forklift, resulting in injury.	Take care in handling devices during relocation and transportation	Section 3: Selecting Installation Location and Transportation
2	Preparation	Power cable connection	Maintenance training	Power cable External power panel	Warning	Connection to a distribution board outside the scope of the specifications or incorrect ground wiring might cause electric shock or fire.	Check power supply voltage specifications. Connect a dedicated power wiring cable and make sure it is grounded.	Section 3: Connecting Power Supply and Grounding, Turning On the Power
3	Preparation	Connection with external devices	Training on handling	Inside the main unit	Warning	A short circuit or current leakage caused by contact between terminals and the unit during operation or conductive material entering the equipment might cause electric shock or fire.	Check the power supply voltage specifications. Check the connectors. Take care when touching peripheral parts.	Section 3: Installation/connection Connection with external devices
4	Preparation	Inspection before starting operation	Training on handling	Shield curtain Product guide	Warning	An excessive amount of radiation might leak due to the use of a degraded or damaged curtain (shield board) or the curtain being caught by the product guide, resulting in radiation exposure.	Make a daily inspection and check for damage, flaws and deformation on the specified shield curtain, and replace it periodically Check the conditions of the product guide and curtain.	Section 4: Maintenance Daily Inspection Items
5	Operation	Contacting the operating conveyor by mistake	Training on handling	Driving roller Driven roller	Caution	Hands or fingers might get caught in the driving roller and conveyor, causing injury.	Take care when handling the roller and conveyor.	Introduction: For Safety Section 4: Maintenance Daily maintenance
6	Operation	Inserting hands into the opening of the conveyor during operation	Training on handling	Conveyor opening	Warning	Inserting hands into the conveyor opening might lead to excessive radiation exposure.	Do not insert your hands into the conveyor opening. Prevent people touching the conveyor opening by using a conveyor cover.	Introduction: For Safety Names and functions
7	Operation	Looking inside the curtain	Training on handling	Shield curtain	Warning	Pulling back the curtain and looking inside during irradiation might lead to excessive exposure to radiation.	Never open the curtain during operation.	Introduction For Safety Names and Functions

No.	Phase of operation	Work	License and training required for work	Location on the machinery (*2)	Residual risk (*1)	Description of risk /risk event	Protective measure taken by user	Page in the operation manual
8	Operation	Operation with blocked filter	Training on handling	Internal parts	Warning	The filter might be clogged, preventing heat from being properly dissipated and causing the internal temperature to rise. This could cause a fire.	Always keep the filter clean. Ensure there is sufficient air flow through the vent.	Section 4: Maintenance Weekly inspection items
9	Operation	Removing clogged products on the conveyor	Training on handling	Conveyor opening	Caution	Inserting hands in a clogged conveyor opening without stopping the equipment might lead to excessive ration exposure.	Do not insert your hands when removing a jammed product.	Introduction For Safety Names and Functions
10	Operation	Modifying the shield curtain to allow products to flow more easily	Training on handling	Conveyor opening Shield curtain	Warning	Modifying the shield curtain by cutting it might lead to leakage of radiation leakage, resulting in excessive exposure.	Do no modify the shield curtain.	Section 3: Selecting Installation Location and Transportation
11	Operation	Touching the motor by mistake during operation or immediately after it has stopped	Training on handling	Motor	Warning	Touching the heated motor surface for an extended period might result in a burn.	Take care when touching the motor	Introduction: For Safety
12	Operation	Using the equipment in an explosion-proof environment outside the specifications	Training on handling	Not identified	Warning	The equipment might be damaged and injury might occur if the equipment is used in an explosion-proof environment.	Do not use the equipment in an explosion-proof environment.	Introduction: For Safety
13	Operation	Daily maintenance	Training on handling	Power outlet	Caution	Dirt and dust accumulated on the outlet might cause a fire.	Clean the power outlet periodically as part of daily maintenance.	Introduction: For Safety
14	Emergency	Forcibly operating the conveyor when the equipment is faulty	Maintenance education	Conveyor	Warning	Touching a conveyor that has been set to operate when the power switch is turned on in an emergency might lead to injury.	Receive training for how to perform forced operation.	Section 4: Maintenance Setting Forced Operation
15	Maintenance	Opening/ Closing the cover	Training on handling	Conveyor cover Opening/ Closing cover	Caution	Roughly opening and closing the cover might lead to injury.	Receive training to open/close the cover slowly.	Section 4: Maintenance Installing/Removing the conveyor cover Section 4: Maintenance Removing and installing the carrying belt

No.	Phase of operation	Work	License and training required for work	Location on the machinery (*2)	Residual risk (*1)	Description of risk /risk event	Protective measure taken by user	Page in the operation manual
16	Maintenance	Removing the conveyor cover	Training on handling	Conveyor cover	Caution	Dropping the conveyor cover while attaching, detaching, and moving it might result in a foot injury.	Grip the handle when carrying the conveyor cover and slowly open and close it.	Section 4: Maintenance Installing/Removing the conveyor cover
17	Maintenance	Removing the conveyor	Training on handling	Conveyor cover	Caution	Dropping the conveyor or roller support plate might result in a foot injury.	Handle heavy loads with care.	Section 4: Maintenance Installing/ Removing the drive/driving part
18	Maintenance	Starting maintenance work	Maintenance training	Inside the front and the back doors	Danger	Coming into contact with a high voltage area inside the equipment might result in electric shock.	Turn off the power supply switch before opening the front or back door. Do not modify the equipment.	Introduction For safety use
19	Maintenance	Action taken when battery exhaustion alarm occurs (A020)	Maintenance training	Lithium battery for memory backup inside the back door	Warning	A degraded battery might leak, resulting in electric shock.	Ask the battery manufacturer to replace the battery. Do not touch the battery.	Section 4: Maintenance Replace the backup battery.
20	Maintenance	When removing the hopper	Training on handling	Hopper	Caution	Crushing of foot and others due to the fall of the hopper	Conducting the training and education for handling the hopper by holding the handle	Section 4: Maintenance Removing and installing the carrying belt

*1) The residual risks are classified and described according to the following definitions:

- Danger: This indicates a very dangerous procedure is likely to result in death or serious injury if protective measures are not taken.
- Warning: This indicates a very dangerous procedure that could result in death or serious injury if protective measures are not taken.
- Caution: This indicates a procedure that could result in minor injury if proper precautions are not taken.

*2) The symbols in the “Location on the machinery” column correspond to the symbols shown on the “Residual risk map” in this document.

See the “Residual risk map” for the location of each point.

X-ray Inspection System

This X-ray Inspection System uses low-energy X-rays to detect contaminants in foods and sends a rejection signal to a rejecter.

Detectable contaminants

Metal, glass, stone, hard bone, natural rubber, high-density plastics However, those may not be detectable depending on physical properties of inspected products.

Non-detectable contaminants

Hair, bugs, cartilage, wood, paper, textiles, low-density plastics

See Appendix D for the detection area (inspected product size).

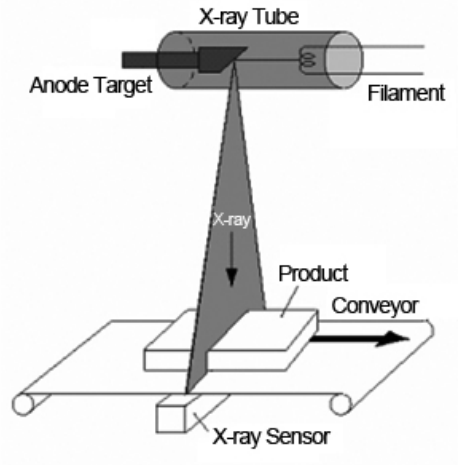
☞ P. 367 Specifications

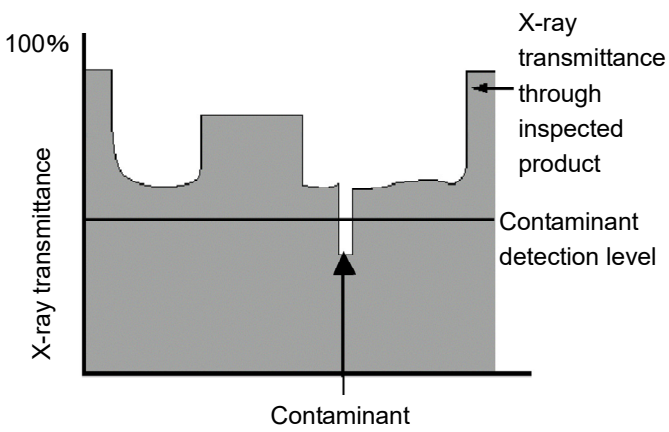
Features

1. This inspection system can detect contaminants in packaged inspected products as well as in aluminum retort pouches, aluminum sealed containers and aluminum cans.
2. This inspection system detects contaminants with the belt speed of 90 m/minute (when applicable).
3. The contaminant location can be confirmed on the inspection screen.

Principles of Detection

A narrow beam of X-rays radiated from an X-ray tube is radiated through the inspected products carried on a conveyor to an X-ray detector. The X-ray beam passes through the inspected products and the number of transmitted X-rays is measured by an X-ray detector installed under the conveyor. The amount of X-ray transmission becomes lower if the inspected products are carried on the conveyor, while it becomes higher if no inspected product is on the conveyor. In the case of a contaminant in an inspected product, the amount becomes much lower.





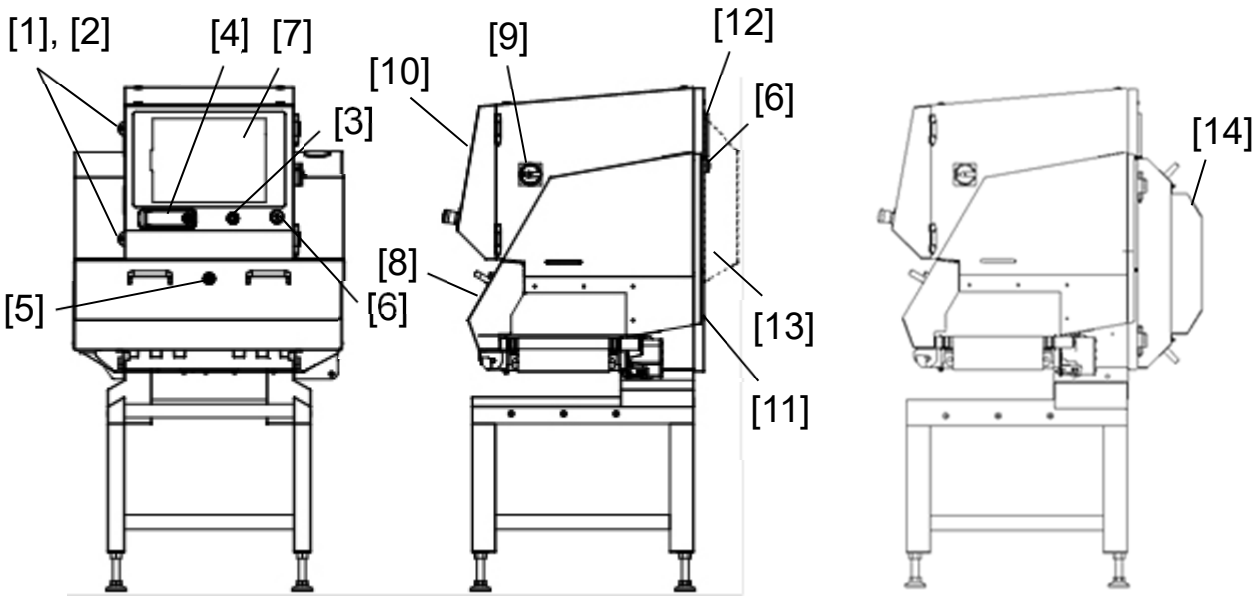
Make sure that all of the following items are present. If any item is damaged or missing, please contact us.

- ☐ Main Unit 1
- ☑ Operation Manual 1
- ☐ Accessories 1
  - ☐ Operation key 1
  - ☐ Special screwdriver 1

- ☐ Spare parts 1
  - ☐ Filter for fan 1

Note: Test pieces and eye bolts are options. They are not included in the standard component.

● Main Unit



[1] Front door locking screws
Locking screws for front door

[2] Back cover locking screw (back)
Locking screws for back cover

[3] Operation key
Switches X-ray radiation ON/OFF

[4] USB memory port
Port for USB memory

[5] Cover open/close key
Key for opening/closing conveyor cover

[6] Emergency stop switch
Immediately stops X-ray radiation and conveyor operation in an emergency.

[7] Operation screen
Displays screens for setting, operation, and image of product inspected.

[8] Conveyor cover
Blocks leakage of X-rays

[9] Power switch
Switch for tuning power on and off

[10] Front door

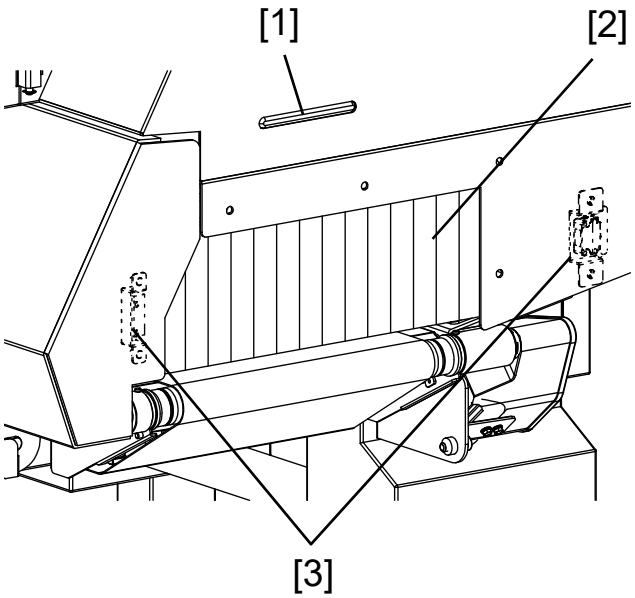
[11] Back cover

[12] Filter cover
For the KXS75xxxWCLE only

[13] Duct/filter cover
For the KXS75xxxVCLE only

[14] Rear-mount air conditioner (option)
KXS75xxxWCLE only

WARNING ⚠	Do not modify this machine by drilling holes, etc., nor disassemble it, otherwise harmful X-rays may leak outside.



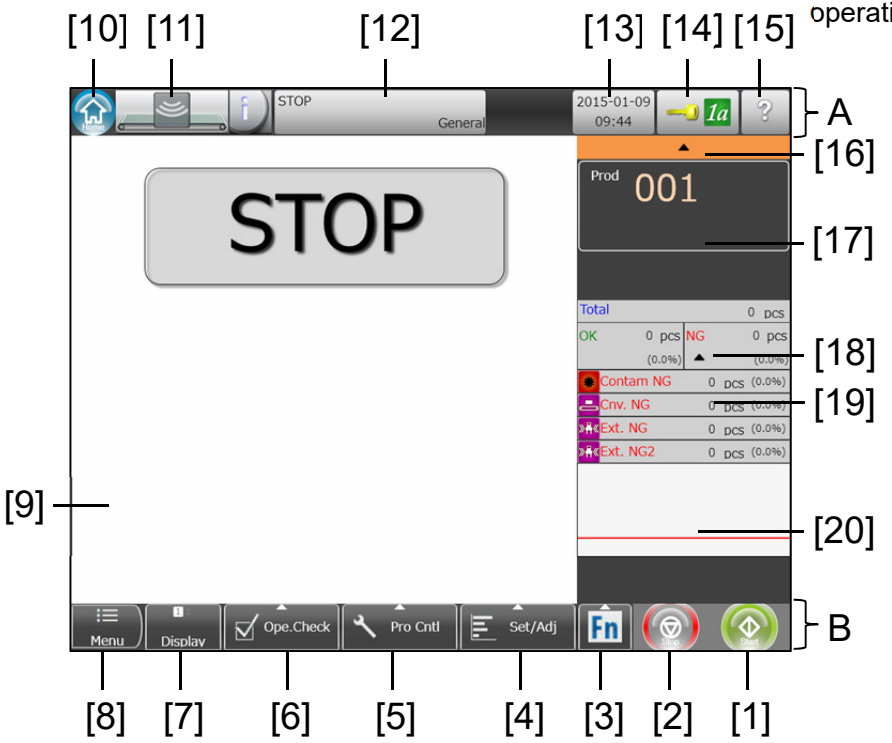
[1] X-ray radiation indicator
Lights at both sides when X-rays being radiated.

[2] Shield curtain
Blocks leakage of X-rays.

[3] Hand insertion detection photocells
Stops X-ray radiation upon detecting an object inserted into conveyor, such as hand.
With the standard setting, X-ray radiation is stopped if hand insertion detection photocells are blocked for four seconds.

WARNING ⚠	To avoid the risk of radiation exposure, never put your hands into the system during the operation.

● Operation Screen



Screen displayed when the machine is stopped

【Touch screen type color LCD display operation panel】

A [Status] bar
Display main information regarding the system status.

B [Control] bar
Calls up the functions used in the displayed screen

[1] [Start] button
Start the operation of the X-ray Inspection System. Edge of the start button illuminates in green when the X-ray Inspection System is operating.

[2] [Stop] button
Stops the operation. Edge of the stop button illuminates in red when the X-ray Inspection System is stopped.

[3] [Fn] button
Switch indication mark (List of menu varies from screen display)

[4] [Set/Adj] button
Calls the setting and adjustment menu.

[5] [Pro Cntl] button
Calls the product control menu.

[6] [Ope. Check] button
Calls the operation check menu.

[7] [Display] button
Switches screens.

[8] [Menu] button
Opens the setting menu.

[9] [X-ray image display]
Displays the X-ray image of the inspected product.

[10] [Home] button
Displays the Basic screen.

[11] [X-ray radiation state display]
Displays the X-ray radiation state. Displayed in red when X-rays are irradiated.

[12] [Operation mode/Product display]
Displays the current operation mode of the X-ray Inspection System or current product (switches according to the screen type).

[13] [Date and Time] button
Displays the current date and time. Press the button to set the internal clock.

[14] [Access Level] button
Displays the level of authority to operate. Press the button to change the access level.

[15] [Help] button
Displays supplementary menu.

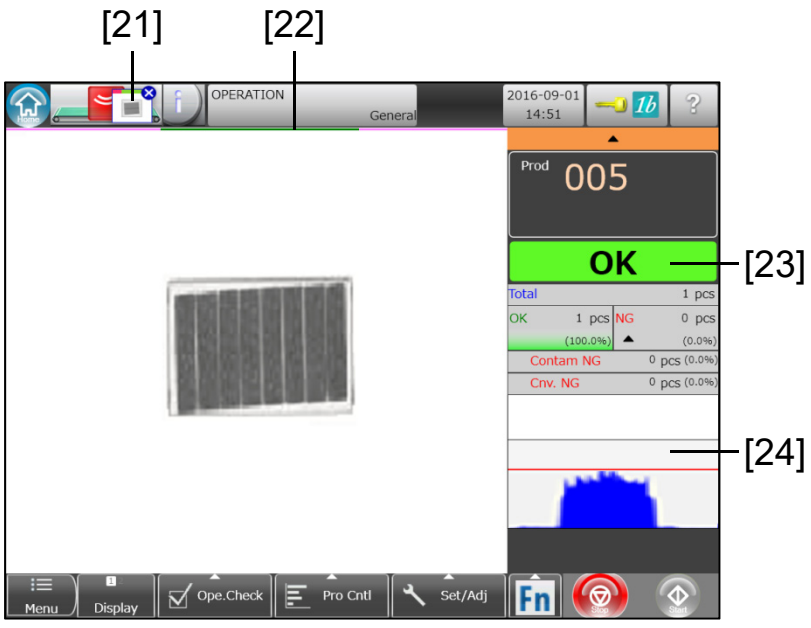
[16] [Full Screen Display] button
Displays the X-ray image full-screen without displaying statistics.

[17] [Current Product Display]
Displays the product number and product name of the current product.

[18] [Statistics Display]
Displays the statistics of each inspection result.

[19] [Detailed Statistics Display] button
Changes to display or hide NG Statistics Detail.

[20] [Still Image Display] area
Displays the projection of the gray-scale image of the product displayed in the [X-ray Image Display] area.



Screen displayed when the machine is running

[21] [Release Display] button
Releases freezing of the image.

[22] [Work Detect Display] line
Green: A line appears in green for the part with the work detect executed.
Pink: A line appears in pink for the part with no work detect executed.

[23] [Evaluation Result]
Displays the inspection result of a conveyed product.

[24] [Product Gray-scale Image Projection] monitor
Red: Standard line of the product effect value (Default: 170)
Blue: Projection of the product effect value

● Operation Screen

The display screen of the XR75 series X-ray Inspection System can be changed according to purpose.

Press the [Display] button at the bottom of the screen to display the list of selectable screens. You can select the screen from the [General], [Contaminant Detection], [Missing Inspection], [Shape inspection], [Virtual weight check], and [Sealing check display] screens.

The screen of the unused inspection item does not appear.

GENERAL

This is the basic screen of the X-ray Inspection System.

You can check the product information, statistics information, and X-ray image on the screen.

This screen is displayed when the [Home] button is pressed.

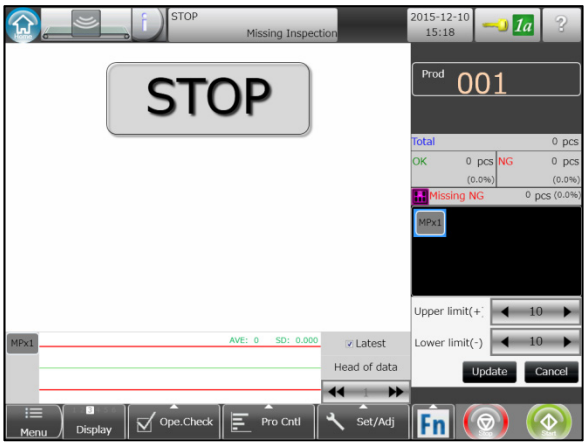
☞ P.140 General screen

COTAMINANT DETECTION

The [Contaminant Detection] screen allows you to adjust the contaminant detection sensitivity by looking at the image displayed in the X-ray Image Display area and the Projection Monitor displayed at the bottom of the screen.

☞ P.141 Display and Adjustment by Contaminant Detection Screen

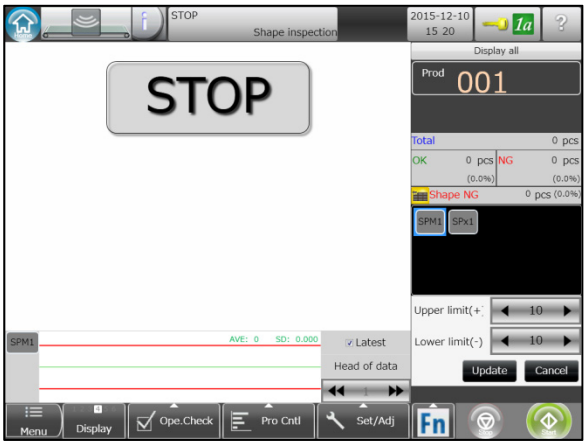
MISSING INSPECTION



The [Missing Inspection] screen allows you to adjust the upper and lower missing inspection limit values while checking the screen displayed in the transmittance image display area and the product effect screen displayed beneath the area. The missing inspection is classified into 3 types: "Quantity total detection", "Quantity partial detection", and "Count detection".

☞ P. 153 Displaying and Adjusting Missing Product Detection

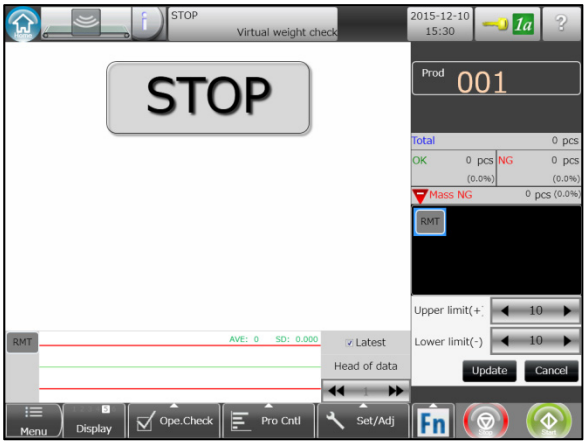
SHAPE INSPECTION



The [Shape inspection] screen allows you to adjust the upper and lower shape inspection limit values while checking the screen displayed in the transmittance image display area and the product effect screen displayed beneath the area. The missing inspection is classified into 2 types: "Crack detection"and "Chip detection".

☞ P. 160 Displaying Shape Inspection and Adjustment

VIRTUAL WEIGHT CHECK



The [Virtual weight check] screen allows you to adjust the upper and lower weight check limit values while checking the screen displayed in the transmittance image display area and the product effect screen displayed beneath the area.

☞ P. 168 Displaying and Adjusting Relative Virtual Weight Measurement

SEALING CHECK DISPLAY

The [Sealing check display] screen allows you to adjust the limit of the weight check limit of the sealing level in the inspection area while checking the screen displayed in the transmittance image display area and the projection screen and product effect screen displayed beneath the area. The sealing inspection is classified into 2 types: "Shape detection" and "Peripheral detection".

☞ P. 148 Display and Adjustment by Sealing Check Screen

● Evaluation mark

The inspection result can be seen by looking at the evaluation mark shown in the Statistics Display area in addition to the OK/NG display in the X-ray Image Display area.

Evaluation mark	Mark name	Result
	OK mark	No problem found with the inspection results.
	NG mark	Problem found with the inspection results.
	Contaminant NG mark	A contaminant was detected. The contaminant inspection result exceeded the threshold value of the contaminant detection limit.
	Sealing NG mark	Sealing NG was detected. The product effect value in the sealing check area has exceeded the inspection limit.
	Missing NG mark	A missing product was detected. The threshold of the amount in the missing product detection or the limit for components count inspection has been exceeded.
	Shape NG mark	Shape anomaly was detected. The threshold of the broken part detection in the shape inspection or the limit for missing part detection has been exceeded.
	Overweight NG mark	An overweight product was detected. The result of the relative virtual weight measurement exceeded the threshold of the over weight limit.
	Underweight NG mark	An underweight product was detected. The result of the relative virtual weight measurement has exceeded the threshold of under weight limit.

Evaluation mark	Mark name	Result
	External NG mark	An NG signal was received from external equipment. The product was evaluated as no good. ☞ P. 193 Setting External I/O Signals
	Conveyance NG CV NG mark	The evaluation could not be completed because the product was not conveyed properly. The reason of the conveyor error can be checked with the alarm displayed at the top of the screen. ☞ P. 316 Error Messages and Solutions

Up to two external NGs can be registered. If two external NGs are registered, the statistics of those two NGs are displayed separately on the screen.

● Operation and input method

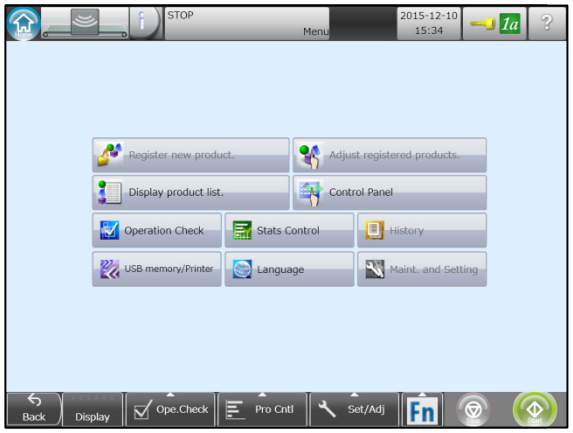
■ Touch screens buttons

When the button is pressed, the corresponding function starts.

EXAMPLE 1 [Menu]

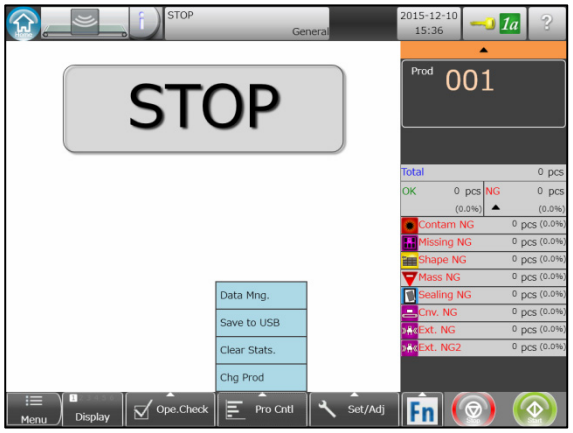
The first layer of the setting menu is called.

When a button is pressed, the detailed setting menu is displayed.



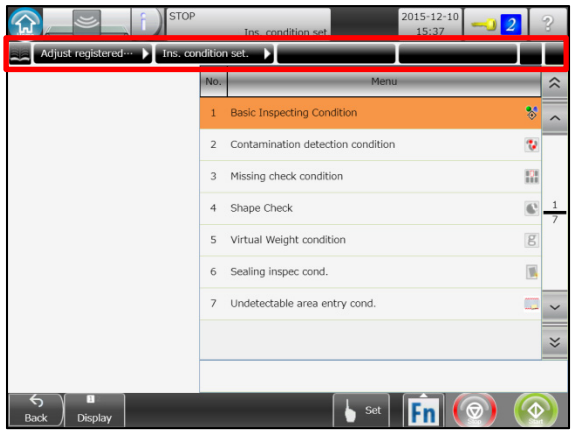
EXAMPLE 2 [Ope.Check], [Pro Cntl], [Set/Adj]

When a button is pressed, the submenu is displayed above the button. When an item is pressed, the function is called directly without opening another menu.



■ Address bar

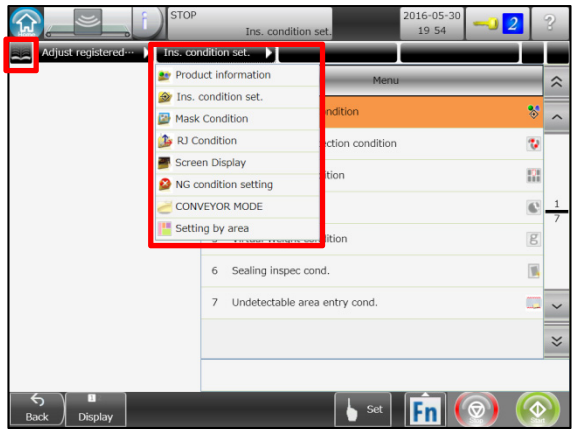
When the first layer is called with the [Menu] button and the setting menu is selected, the Address bar is displayed to indicate which layer for screen is currently displayed.



When the ▶ mark in the right side of the screen name is pressed, a list of setting menus in the same layer is displayed.

When a setting item is selected from the list, the selected setting screen is displayed.

When the leftmost button is pressed, the first layer menu screen is displayed.



When moving to another screen using the address bar, press the “Back” button on the left bottom of the screen to return to the previous screen.

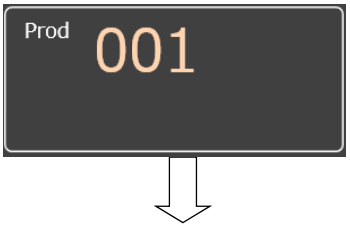
■ Information display area of the touch panel

When the information display area in the frame is pressed, the related settings and display screens are called.

☞ P. 140 Viewing Inspection Data

EXAMPLE

When the product number is pressed, the Product List screen is displayed.

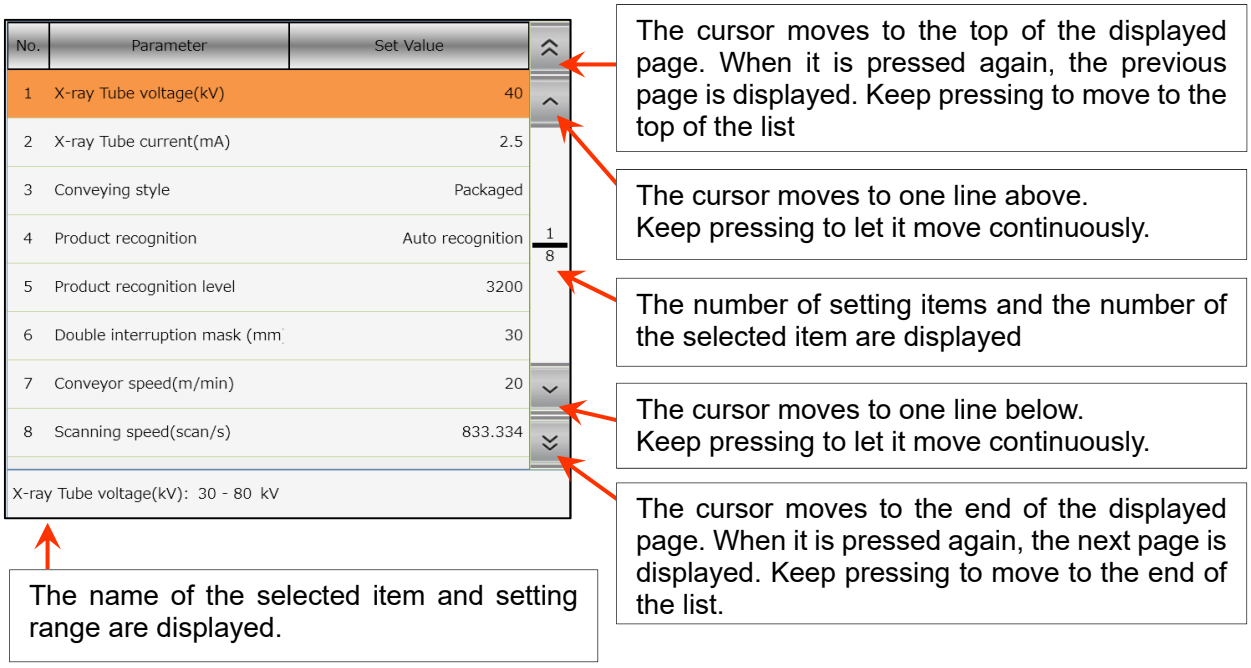


Prod Change screen

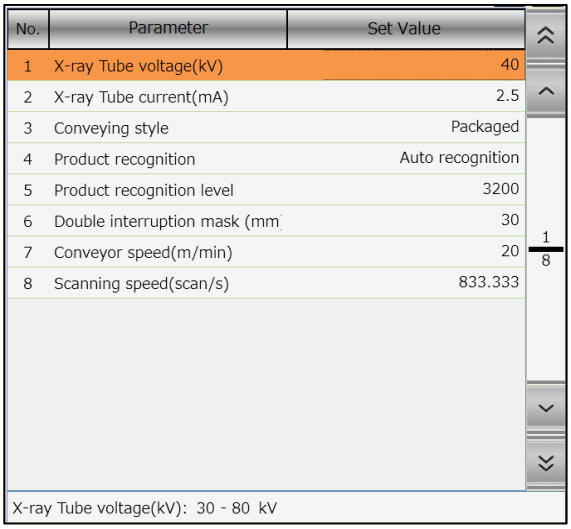
■ Setting screen (menu)

Inspection conditions for the product and X-ray Inspection System operation are set.

When an item in the list is pressed, the setting input screen or a setting list of deeper layer is displayed.



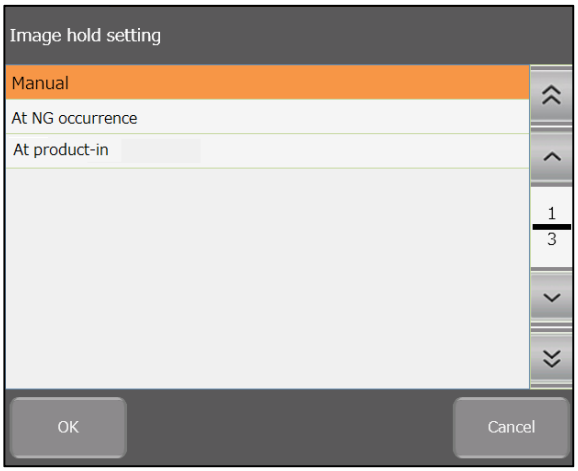
When the [Display] button in the lower left of the screen is pressed, the display grid is changed. The number of items to be displayed can be switched between 8 or 14.



■ Setting selection

When a setting is to be selected from the provided options, a list screen containing the options is displayed.

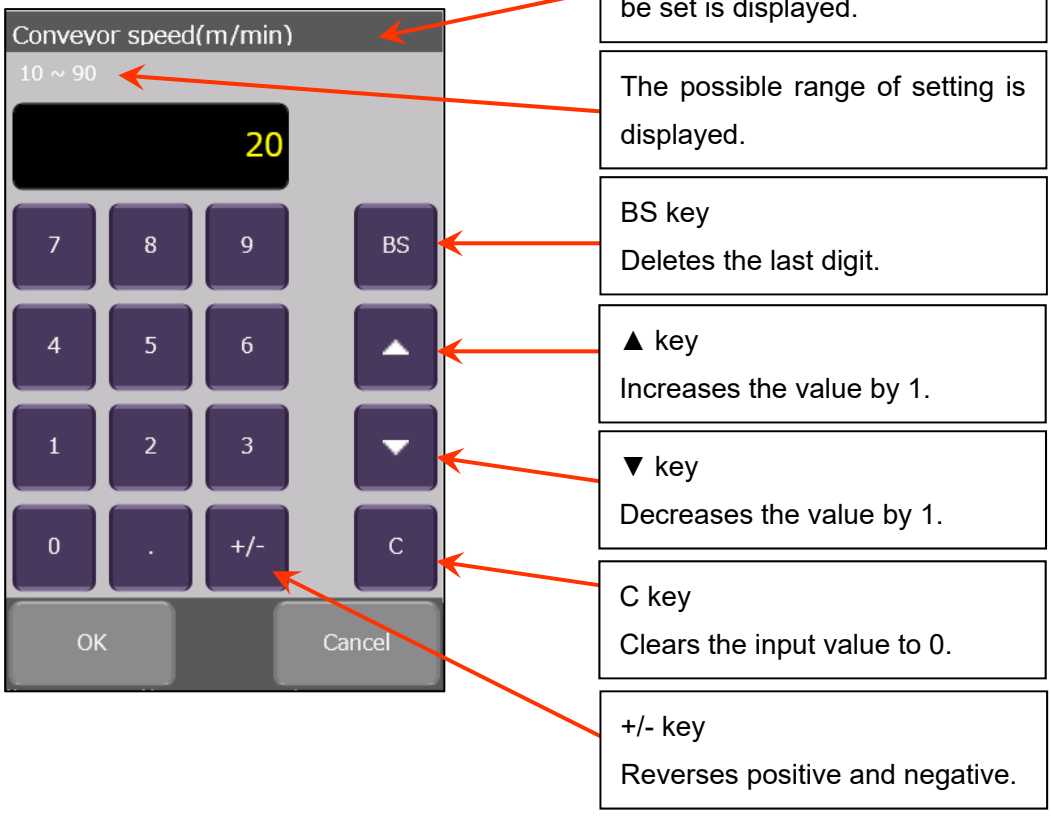
Select an option (the selected option is highlighted) and press the [OK] button to specify the option.



■ Software keypad

When a numeric value is to be entered, the keypad is displayed.

Enter a number and press the [OK] button to set the value.

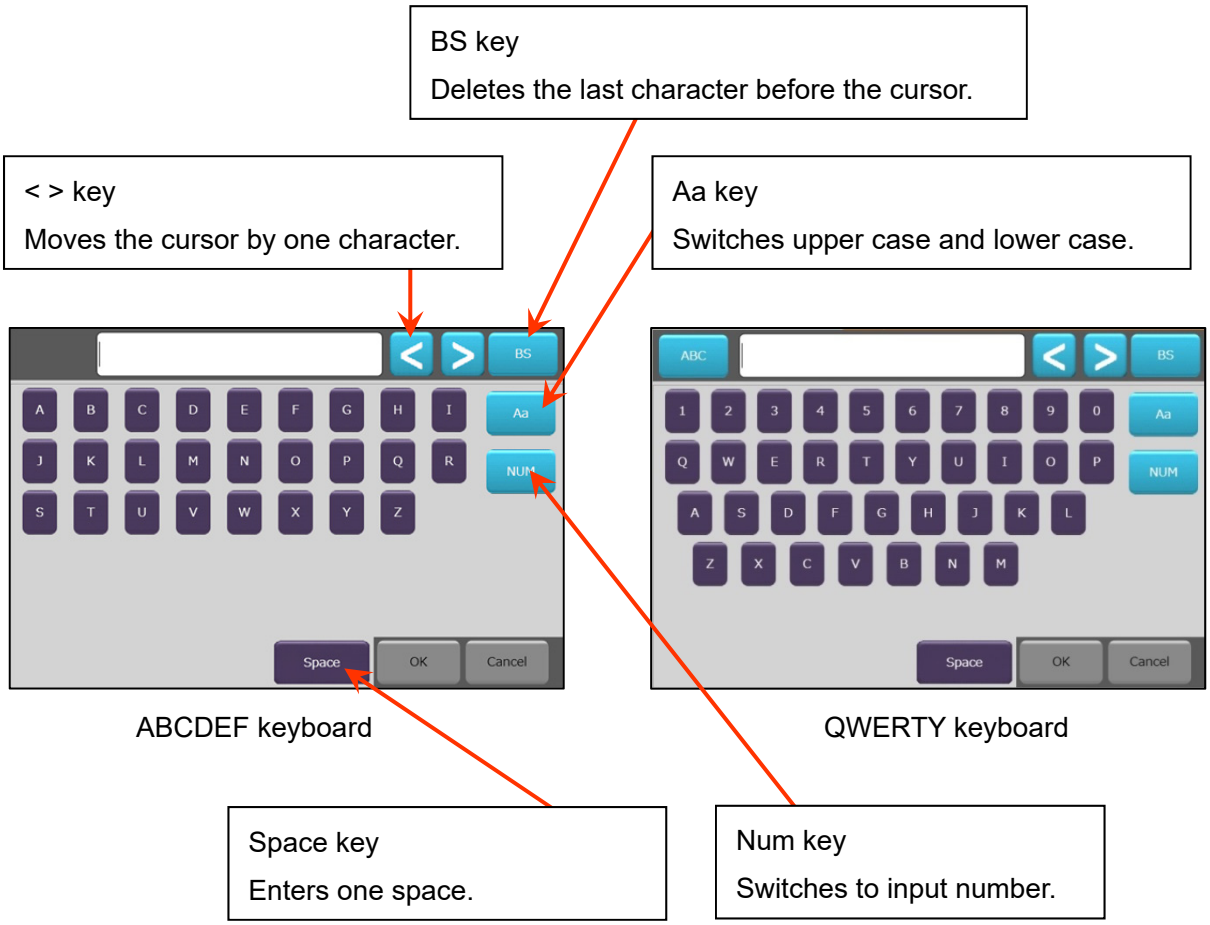


To change the limit value of the inspection items, product level value, and others while a still image is displayed, the image is automatically replayed after changing the value with the numeric keypad and waiting for 1 second.

■ Software Keyboard

When characters are to be entered, the software keyboard is displayed.

Enter characters and press the [OK] button to set the characters.

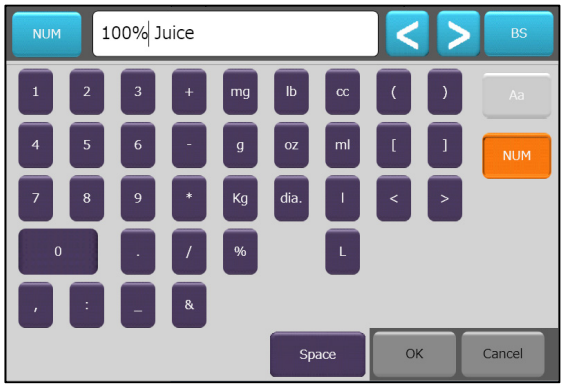


Select the alphabetical keyboard layout from the ABCDEF keyboard or QWERTY keyboard.

☞ P. 228 Keyboard Layout

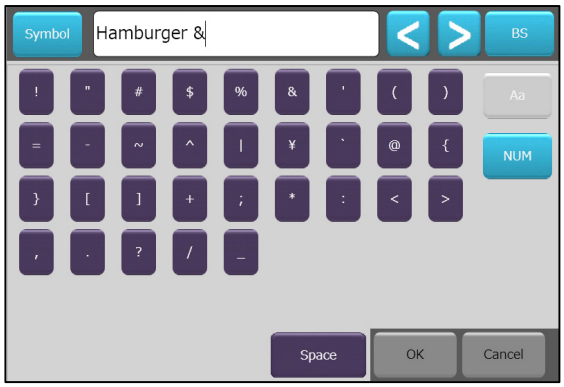
Entering numbers

In addition to numbers, frequently used units and symbols can be entered.



Entering symbols

Other symbols can be entered.



Memo

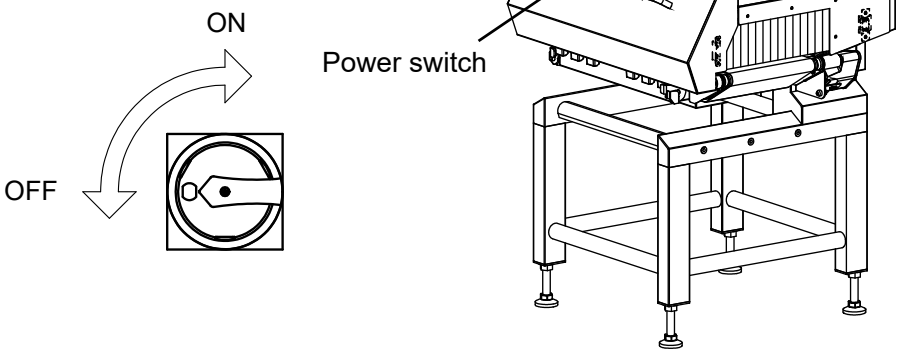
1 Basic Operations

This chapter describes the basic operations.

> Turning On/Off Power

Caution ⚠	After power-off, wait at least 1 minute before supplying power again. The power unit inside may not run normally.

To turn on the power, turn the power switch clockwise.
To turn off the power, turn it counterclockwise.



Caution ⚠	Make sure to turn off the power on the Home screen while the system is not in operation. If the power is turned off on any other screen, stored parameters and statistics counters may be damaged.

> Changing Access Level

The Access level can be changed to change the range of operation according to the level of the operator.
This machine has 4 access levels. Level 3 is only for Anritsu service engineers and not available for general use. The following 3 levels can be used:

Level 1a : Operator Level 1
Only basic operations such as running, stopping, changing the product, Operation Check, and Clear Statistics are allowed.

Level 1b : Operator Level 2
In addition to the operations permitted by Level 1a, registration of new products and adjustment of registered products are allowed.

Level 2 : Manager Level
This level is for manager of the product. In addition to the operations permitted by Level 1b, managers are allowed to set production conditions.

1 Tapping the key icon at the upper right part of the “Main” screen displays the “Access Level Change” screen.

2 Select the Manager Level radio button and click [OK]. The password input screen is displayed.

3 Enter the password “7777” and tap [OK] to change the access level to Manager Level.

To change the level from Level 1a to Level 1b or Level 2, or from Level 1b to Level 2, enter the password.
The password to Level 1b is “5555”.
The password to Level 2 is “7777”.

It is also possible to access the “Access Level Change” screen by selecting the “Menu” screen → “Control Panel” → “Access Level Change”.

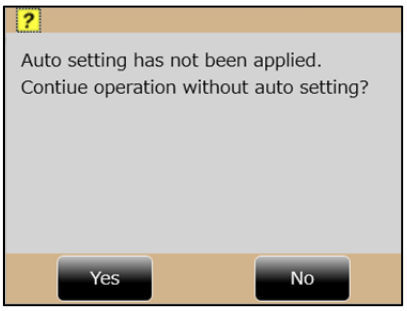
> Operation and Stopping

For the stable inspection, perform the operation for 20 minutes or more, stop the operation once, execute the sensitivity adjustment immediately, and then restart the operation while X-rays are irradiated (recommended).

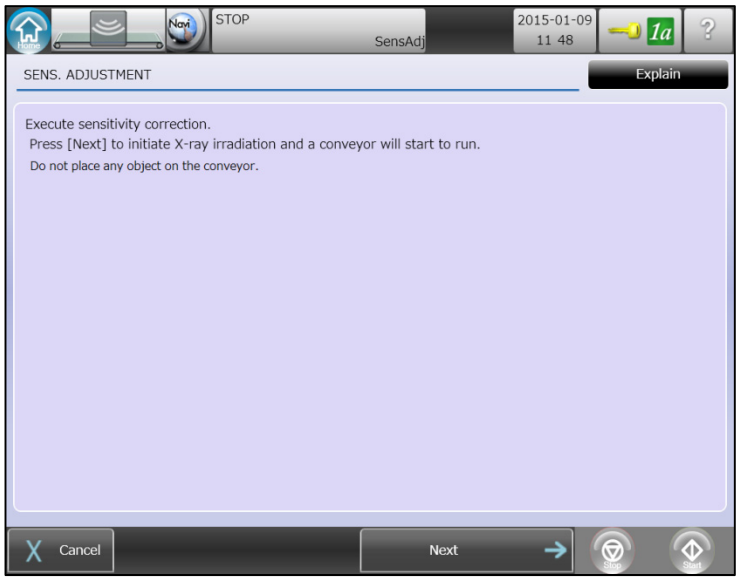
■ Operating

Press [Start] to display the sensitivity correction screen. If the product type is not registered, the "Auto setting has not been applied" message appears. Select [Yes] to start the operation without applying the auto setting.

☞ P. 44 Registering a New Product



When sensitivity correction has been completed, the general screen is displayed again and the conveyor starts for operation. The periphery of the [Start] button lights up in green.



At initial operation after turning the power on and changing the product type, sensitivity adjustment is securely performed. At the start of the operation for the second time or more, if the sensitivity adjustment timing (Maint. and Setting → Functions → SENS. ADJUSTMENT) is set to "Condition Change" and the X-ray Voltage/X-ray Current/Belt Speed settings remain unchanged, the sensitivity adjustment is not executed. To execute the sensitivity adjustment in every operation, set the sensitivity adjustment timing to "Every Time".

■ Stopping

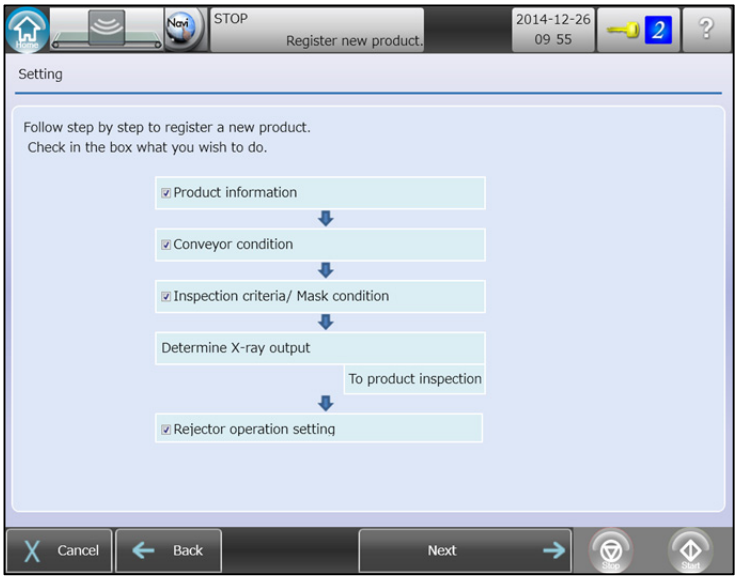
Press [Stop]. The conveyor stops, and the periphery of the [Stop] button lights up in red.

> Registering a New Product

In this equipment, parameters of up to 200 products can be registered.
Registering products allows you to perform production control properly and operate the equipment effectively.
When “Register new product” is tapped in the “Menu” screen, the “Product Registration Start” screen is displayed. Input and set a product and its parameters by following the on-screen instructions.

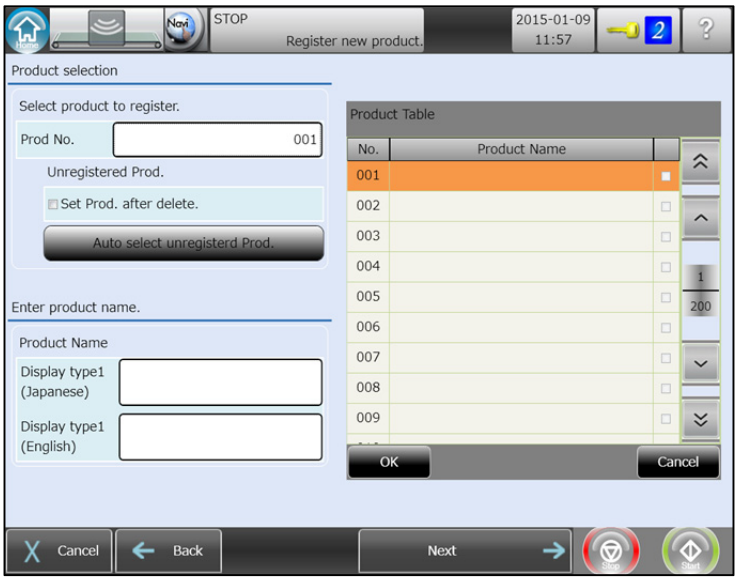
1 To take into account product variations in the setting, prepare multiple master products (that have equivalent dimensions, weight, components, and package state as the products to be conveyed on the normal line), and press the [Next].

2 When the [Next] is pressed, the following screen is displayed. Follow the instructions on the screen to complete "Product information", "Conveyor condition", "Inspection criteria/Mask condition", "X-ray output", and "Rejector operation setting" to complete the necessary settings.
An unnecessary setting item can be omitted by clearing the check box.



Check the items to set, and press the [Next].

3 Select the product to register. When the selected product number area is pressed, the following screen is displayed. Select the product to register, and press the [OK].



The product No. with the product type information unregistered is automatically selected on the initially displayed screen.

You can also select the following registration methods.

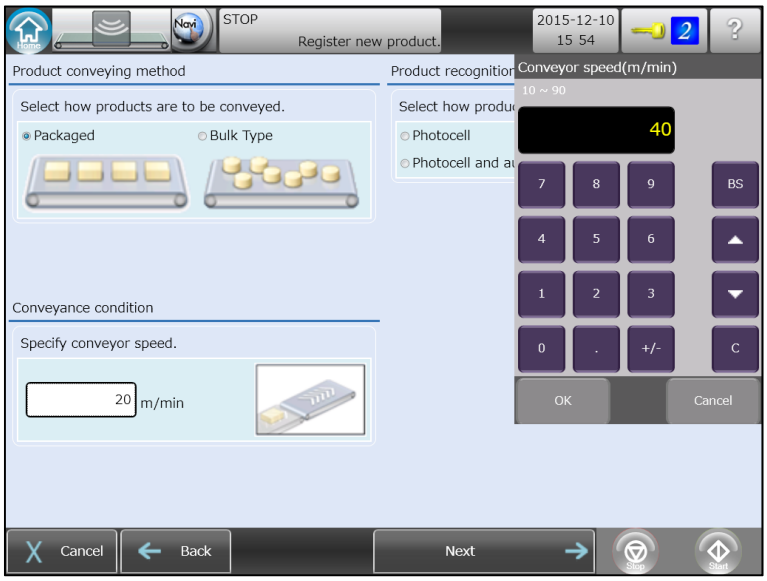
- If [Set Prod. after delete.] is checked, the information on the product type being selected is deleted once, and then newly registered. If it is unchecked, only the changed information on the product type being selected is overwritten.
- If [Auto select unregistered Prod.] is pressed, the unregistered product type is automatically selected from the top of the product type list.

Next, enter the product name. When the product name display area is pressed, the software keyboard is displayed. Enter the product name, and press the [Next].

You can enter the product name in another language in the display type 2 area.

☞ P. 37 Software Keyboard

4 Set the conveyor speed and product recognition method. Select Packaged or Bulk Type for the product conveying method. Additionally, the software numeric keypad appears when the conveyor speed display area is pressed. Enter the main unit conveyor speed, and press [OK].



Next, select a product recognition method, and press the [Next].

Product recognition	Description
Photocell	Detects products with a photocell for inspection.
Auto recognition	Detects products based on the gray-scale level of products for inspection.
Both photocell and auto recognition	Detects products by using a photocell and the gray-scale level of products for inspection.

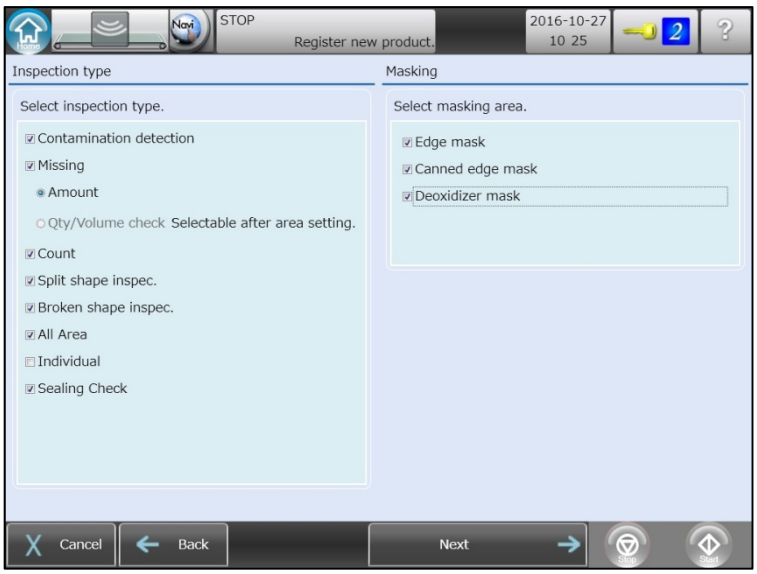
☞ P. 77 Product Recognition by Work Detect Signal

If [Bulk Type] is selected as the product conveying method, selection of the product recognition method is not required.

5 Select the inspection items and masking items to be used, and press [Next].

If the target product shape is Packaged, select Edge mask. For the metal-verge columnar-shape-like cans, select Canned edge mask. The use cases when Edge mask, Canned edge mask, and Deoxidizer mask are selected respectively for the contaminant detection, quantity total detection, split shape inspection, broken shape inspection, relative weight total detection, and sealing check are described hereafter.

An unnecessary item can be omitted by clearing the check box.



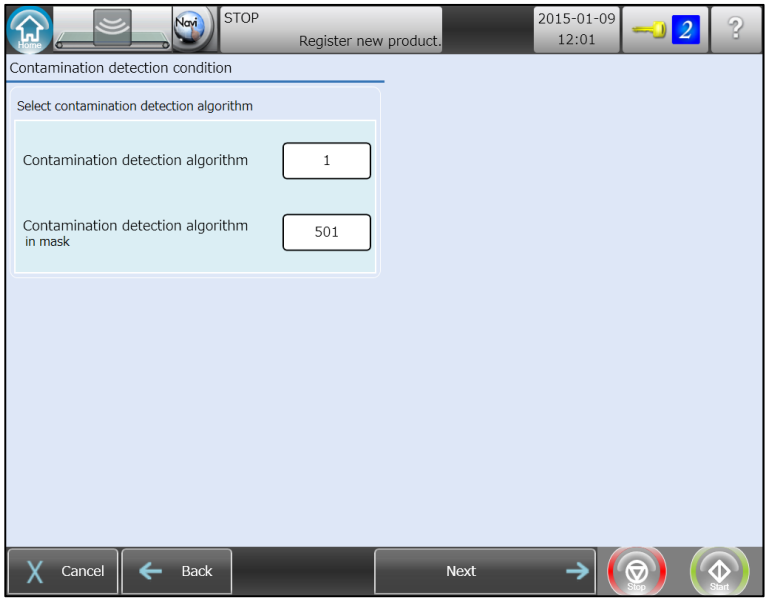
(1) If [Bulk Type] is specified as the product conveying method, [Missing Inspection], [Count detection], [Relative Mass Total Detection], [Sealing check], and [Masking setting] cannot be set.

(2) To select [Quantity partial detection], the area to be inspected must be specified in advance.

☞ P. 112 Creating the Area for Inspection and Masking

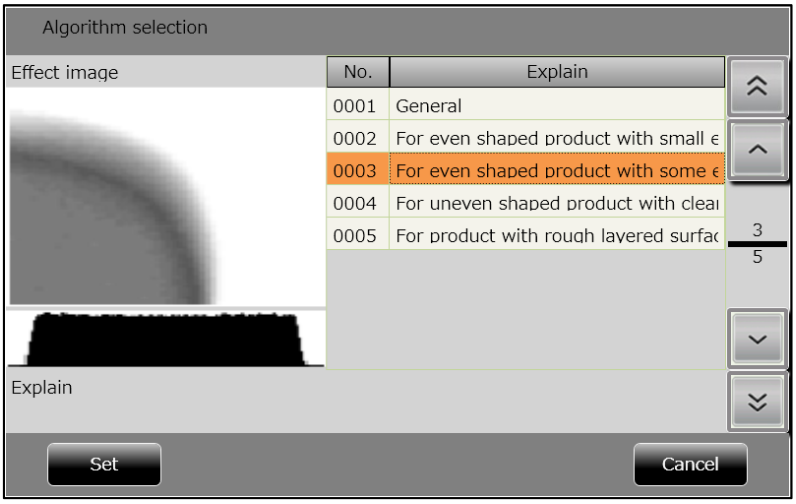
6 Select the contamination detection algorithm and contamination detection algorithm in mask, and press [Next]. For how to select, refer to List of contaminant detection algorithms.

If no mask setting item is selected in Step 5, no selection item for contamination detecting algorithm in the mask is displayed.



When the contaminant detection algorithm number display area is pressed, the following screen is displayed. Select a contaminant detection algorithm suitable for the product by referring to the description and the effect image displayed to the left. The contaminant detection algorithms 2 through 5 are specialized for product shapes and features.
For contamination detecting algorithm in the mask, use No. 501.

Select a contaminant detection algorithm and contamination detecting algorithm in the mask, and press the [Select] button, press the [Next].



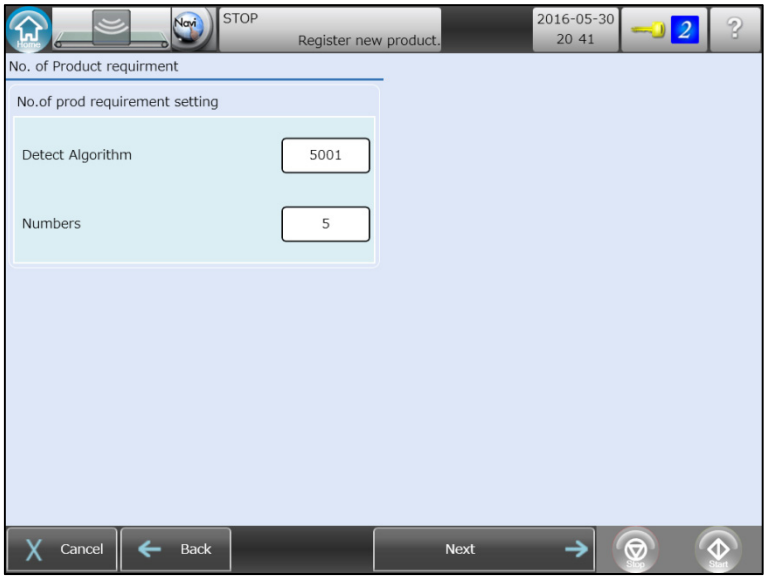
▼ List of contaminant detection algorithms

Algorithm No.	Description
0001	Equivalent to the general algorithm used in the old machine model. Allows adjustment of the contaminant detection sensitivity comparatively easily regardless of lower contaminant detection sensitivity than the algorithm numbers 2 to 5.
0002	Suitable for uniform shaped product with small edge effect or with corrugated surface.
0003	Suitable for uniform products with the edge effect.
0004	Suitable for products with an uneven product shape clearly with granular or linear shape.
0005	Suitable for uneven products with unevenness due to overlapping, etc.

▼ Contamination detecting algorithm in the mask

Algorithm No.	Description
0501	Algorithm used for contaminant detection in the mask. This cannot be changed.

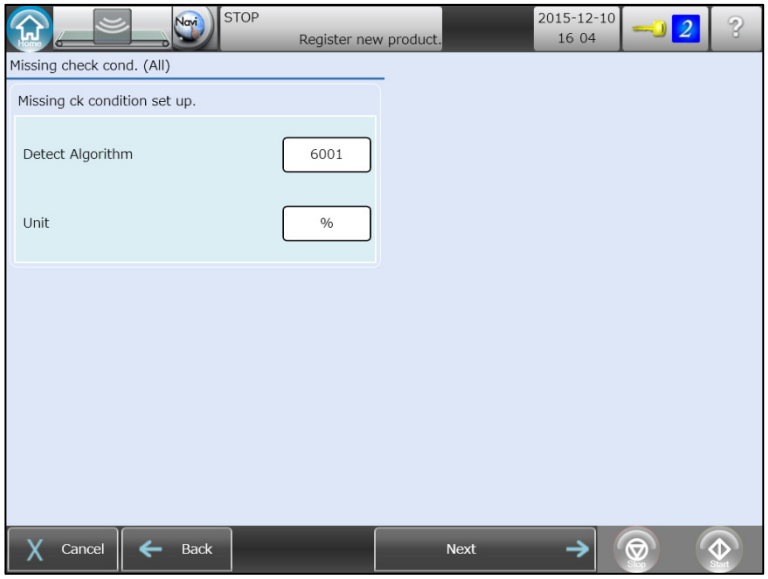
7 If [Missing Inspection], [Count detection], [Split shape inspec.] or [Broken shape inspec.] is selected on the preceding [Inspection type] screen, the following screen appears. Set [Numbers] in the product. After specifying, press [Next].



▼ No. of product detection algorithms

Algorithm No.	Description
5001	For products that are not touching: Target products are inspected products that are not touching.
5002	For products that are touching, Pattern 1: Target products are inspected products that are partially touching.
5003	For products that are touching, Pattern 2: Target products are inspected products that are 30 mm or larger and partially touching.

8 If [Missing check cond. (All)] is selected on the preceding [Inspection type] screen, the following screen appears. Select [%] or [None] for [Unit]. After specifying, press [Next].



▼ Missing check cond. (All) algorithm

Algorithm No.	Description
6001	This algorithm is used to check for missing products amongst all inputs. Cannot be changed.

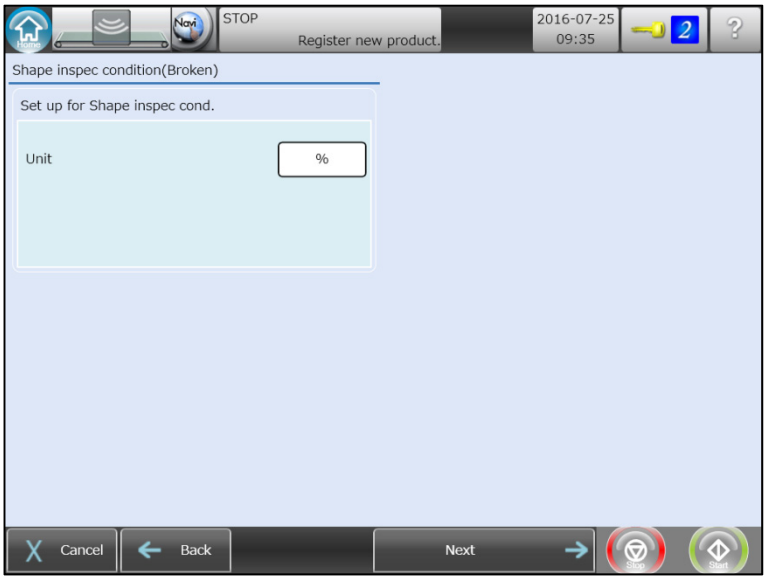
If [Missing check cond. (All)] is specified, [Detect Algorithm] is fixed at 6051.
If [Count detection] is specified, select the algorithm from the following table.

Algorithm No.	Description
5001	For products that are not touching: Target products are inspected products that are not touching.
5002	For products that are touching, pattern 1: Target products are inspected products that are partially touching.
5003	For products that are touching, pattern 2: Target products are inspected products that are 30 mm or larger and partially touching.

▼ Unit

Name	Setting (Default: _)	Description	
Display Unit	<u>%</u> None	%	The area value of the calculated acceptable product is set as the reference value (100%). Set this unit to manage the upper- and lower-limit values in % units.
		None	For the area value exceeding the product level, set this to manage the upper- and lower-limit values directly with numeric values.

9 If [Split shape inspec.] or [Broken shape inspec.] is selected on the preceding [Inspection type] screen, the following screen appears. Specify [Unit]. After specifying, press [Next].

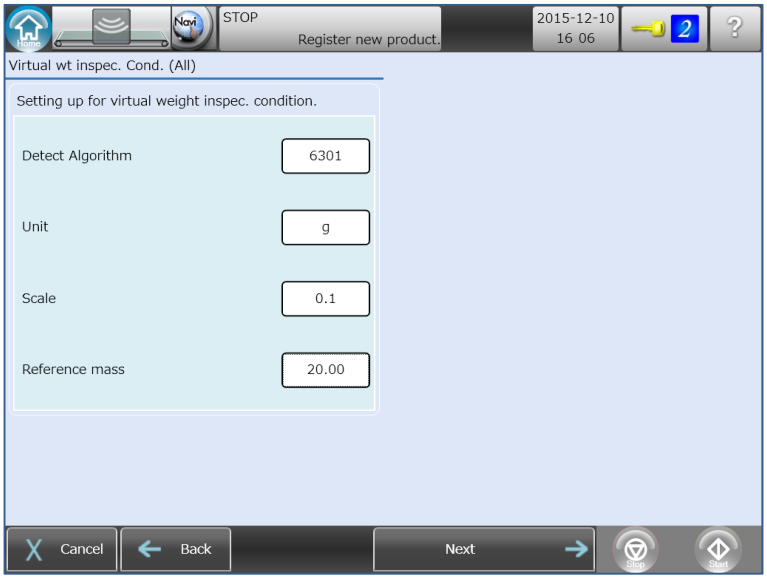


▼ Unit

Name	Setting (Default: _)	Description	
Unit	% None	%	The area value of the calculated acceptable product is set as the reference value (100%). Set this unit to manage the upper- and lower-limit values in % units.
		None	For an area value outside the product level, set this to manage the upper- and lower-limit values directly with numeric values.

When both [Split shape inspec.] and [Broken shape inspec.] are used, the setting screens for cracks and chips are displayed. Perform setting for each of them.

10 If [Virtual wt inspec. Cond. (All)] is selected on the preceding [Inspection type] screen, the following screen appears. Select [%], [g], [lb], [oz] or [None] for [Unit]. If [Unit] is [g], specify [Scale] and [Reference mass]. After specifying, press [Next].



▼ Virtual wt inspec. Cond. (All) algorithm

Algorithm No.	Description
6301	Algorithm used for relative weight total detection Cannot be changed.

If [Virtual wt inspec. Cond. (Individual)] is specified, [Detect Algorithm] is not displayed.

▼ Unit

Name	Setting (Default: _)	Description	
Display unit	% g lb oz None	%	The volume value of the acceptable-weight product (PASS) is set as the reference value (100%). Set this unit to manage the upper- and lower-limit values in % units.
		g	The volume value of the acceptable-weight product (PASS) is converted to the reference weight value. Set this unit to manage the upper- and lower-limit values in g/lb/oz units.
		lb	
		oz	
		None	Specify this unit to manage the upper- and lower-limit values directly with the volume value.

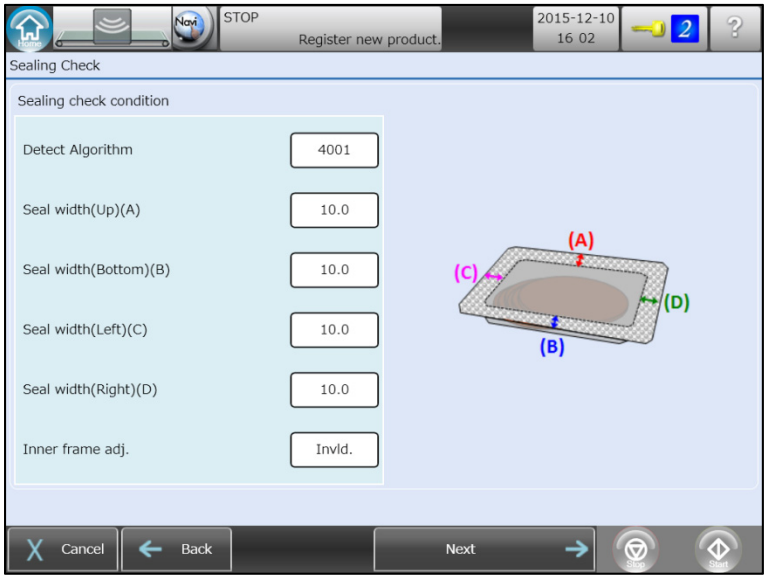
▼ Scale

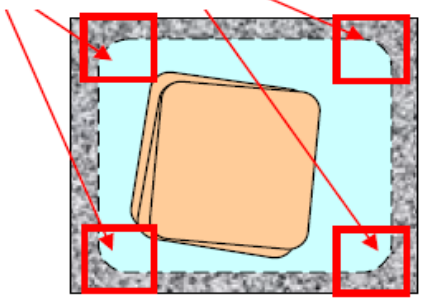
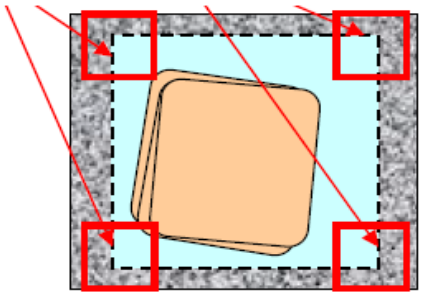
Name	Setting (Default: _)	Description
Scale	1 10 0.1	Set this unit when the unit is [g] [lb] [oz]. Specifies the weight range of the value to be measured.

▼ Reference mass

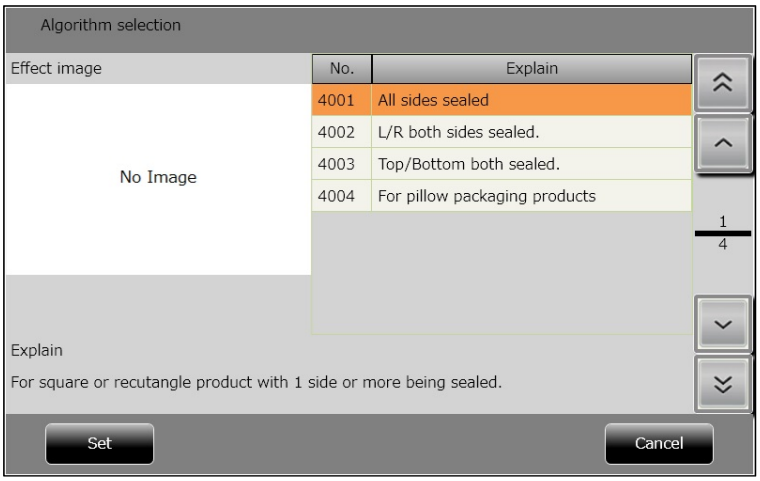
Name	Setting (Default: _)	Description
Reference mass	Scale: 1 0.0 to 5000.0 Scale: 10 0 to 50000 Scale: 0.1 0.00 to 500.00	Set this unit when the unit is [g] [lb] [oz]. Set the weight to be managed as acceptable weight.

11 If [Sealing Check] is selected on the preceding [Inspection type] screen, the following screen appears. Select the seal width of the edge to be inspected in millimeter units. Enable [Inner frame adj.] for the sealing the inner ring with 4 round corners. After specifying, press [Next].



Round corners: Enable [Inner frame adj.].	Square corners: Disable [Inner frame adj.].
	

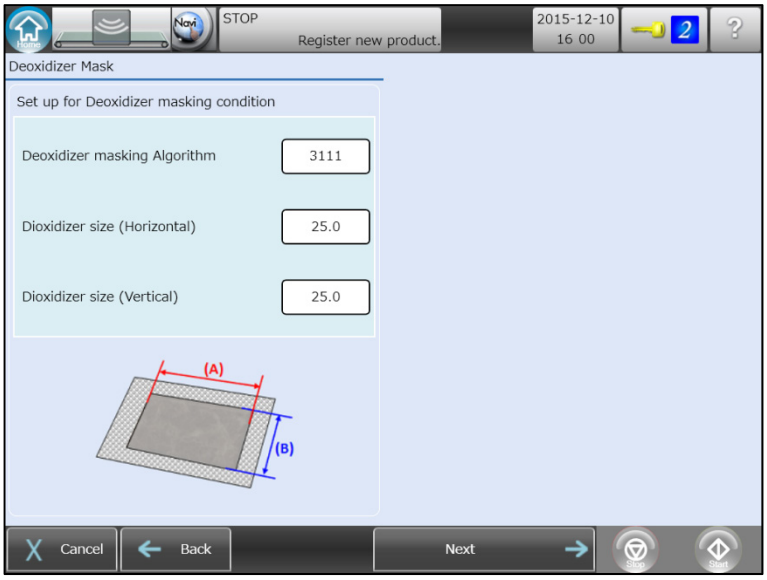
Change the [Algorithm selection] depending on the position of the edge to be inspected.



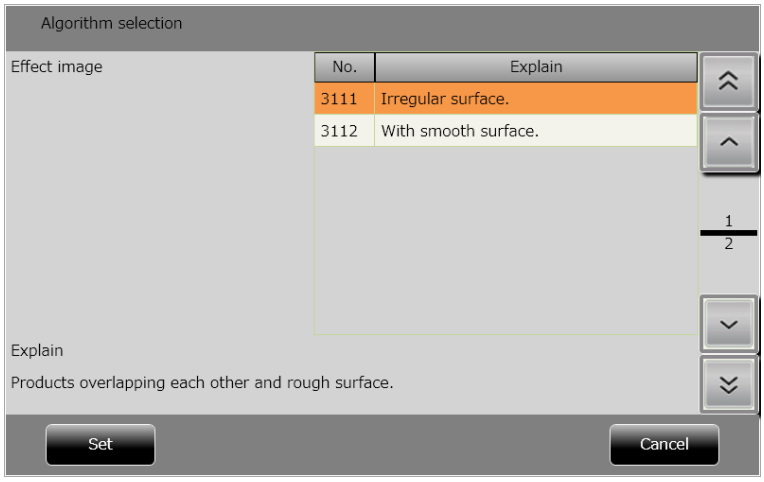
▼ Sealing check algorithm

Algorithm No.	Description
4001	For a 4-side sealing product: The target product is a square or rectangular product that has one sealed side or two or more sealed sides.
4002	For a 2-side (right and left) sealing product: The target product is a square or rectangular product that has one (right or left) sealed side or two (right and left) sealed sides in the flow direction.
4003	For a 2-side (top and bottom) sealing product: The target product is a square or rectangular product that has one (top or bottom) sealed side or two (top and bottom) sealed sides in the flow direction.
4004	For a 2-side (right and left) sealing product: The target product is a square or rectangular product that has one (right or left) sealed side or two (right and left) sealed sides in the flow direction.

12 If [Deoxidizer mask] is selected on the preceding [Inspection type] screen, the following screen appears. Specify the deoxidizer size in millimeter units.



Change the [Deoxidizer masking Algorithm] setting depending on the overlapping or irregularity of the product shape.

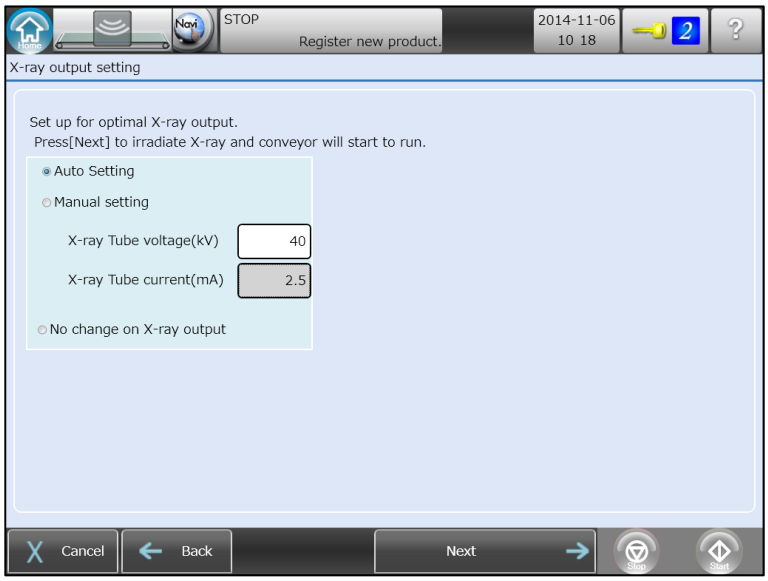


▼ Deoxidizer masking algorithm

Algorithm No.	Description
3111	For products with irregularity: For overlapped products of products with irregularity due to the product shape
3112	For products without irregularity: For products with even shape and without irregularity

13 Select the X-ray output best suited to the product. Select "Auto Setting", and press the [Next] button. The belt starts to drive after sensitivity correction is completed.

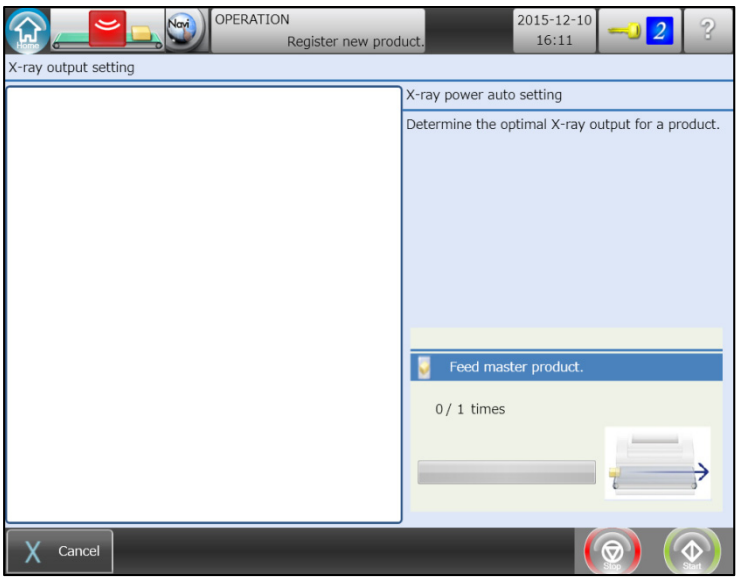
If "Auto Setting" is selected, feed one product to set the X-ray output.
If "Manual Setting" or "No change on X-ray output" is selected, perform product registration from Step 9.



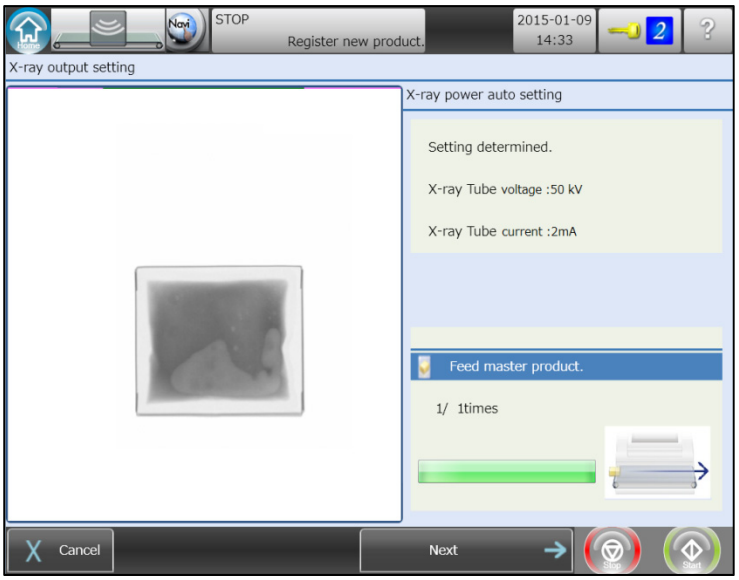
▼ X-ray output setting method

Setting method	Description
Auto Setting	The optimal X-ray output is set automatically when one product is fed. Feed the thickest product among the multiple master samples provided.
Manual Setting	Auto setting is implemented by manually set X-ray tube voltage. For X-ray tube current, the optimal current value is automatically entered when the X-ray tube voltage is entered. The software numeric keypad appears by pressing the input area of the X-ray tube voltage. Enter the value within the range from 30 kV to 80 kV.
No change on X-ray output	The auto set is performed with the X-ray output set in the current product No. (The currently set X-ray output is displayed in the manual setting column when displaying the screen.)

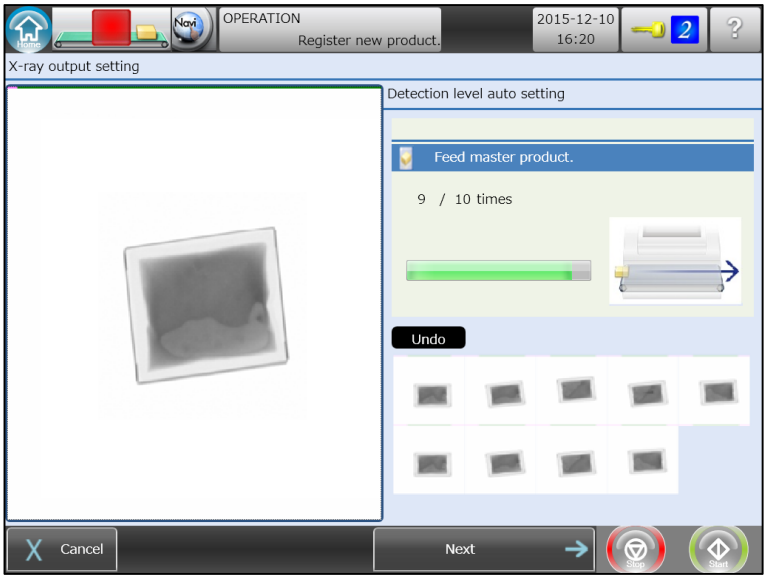
14 The screen to automatically set the X-ray output used for inspection. Feed the thickest product of more than one prepared master product according to the directions on the screen. After the product is fed and the X-ray output is determined, the screen is switched, and then the screen to automatically set the detection level appears.



Feed one product.



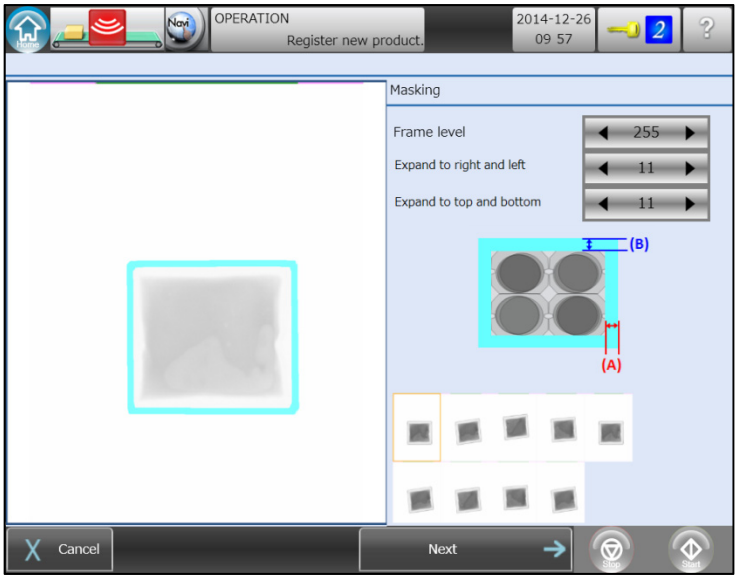
15 Perform auto setting of detection level. Feed the prepared master product (OK product) 10 times. When the product is fed, the product image data is displayed in the lower right. When the product is fed once, the [Next] is displayed to proceed to the next setting. Taking product variations into account, it is recommended feeding it 10 times.



If the products is fed 10 times and more, the older products becomes out of the auto setting target.

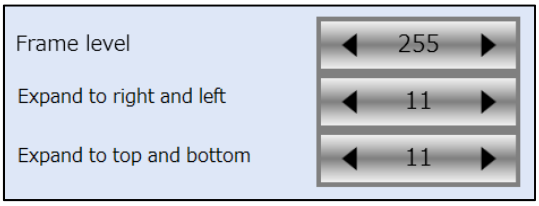
If unexpected images are accumulated when feeding the products, these images can be deleted. For example, if 4th fed product has the contamination test piece, select the image of the 4th product, and press [Cancel]. When feeding products is finished, press [Next].

16 If [Edge mask] is selected on the preceding [Inspection type] screen, the set parameter of the edge mask can be automatically adjusted by using the accumulated images. During this adjustment, the character [Replay] blinks at the center of the screen. After completion of adjustment, the image with the edges masked appears.
If the masked edges are not required, proceed with the product type registration from step 16.



17 When auto setting of the edge masking has been completed, check whether masking of all the accumulated images has been completed correctly. Select the thumbnail image at the lower right-hand corner to display the image with the edges masked. During the processing, the character [Relay] appears.

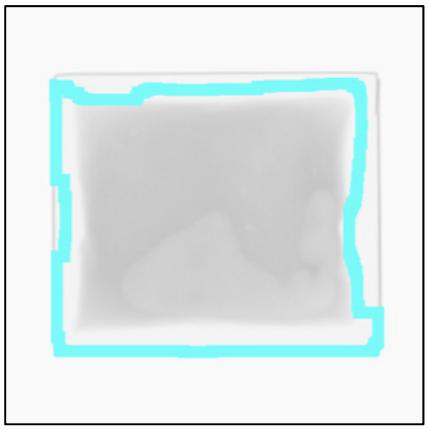
For adjusting the parameter, press the ◄ or ► mark on the right- or left-hand side of the set value, or press the numeric value area to enter with the software numeric keypad. For each press of the ◄ or ► mark, the value increases or decreases one by one.



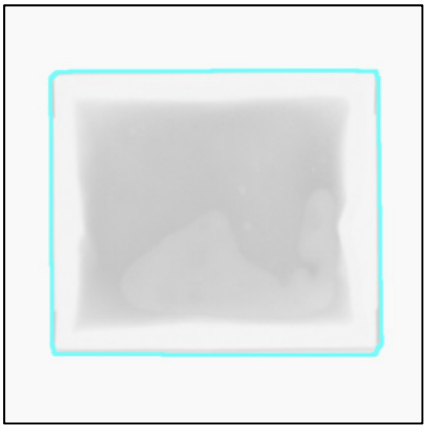
If the masking is not performed correctly, adjust [Frame level].

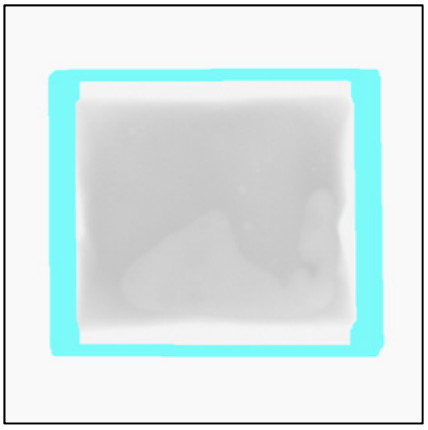
(1) The images to be adjusted are displayed darker than the normal image.
(2) The images displayed when adjusting the frame level are displayed with the overall product edges masked.
Adjust the level so that the product inside is filled.
(3) If the edge of the product is protruded from the edge even after adjustment of the edge masking, also use the partial masking function.

If the mask enters inside the product as the result image shown the in the lower left-hand figure, decrease the [Frame level] value. By setting to the extremely smaller value, masking can be avoided as shown in the right-hand figure. If the masking is not performed as shown in the lower right-hand figure, increase the [Frame level] value.



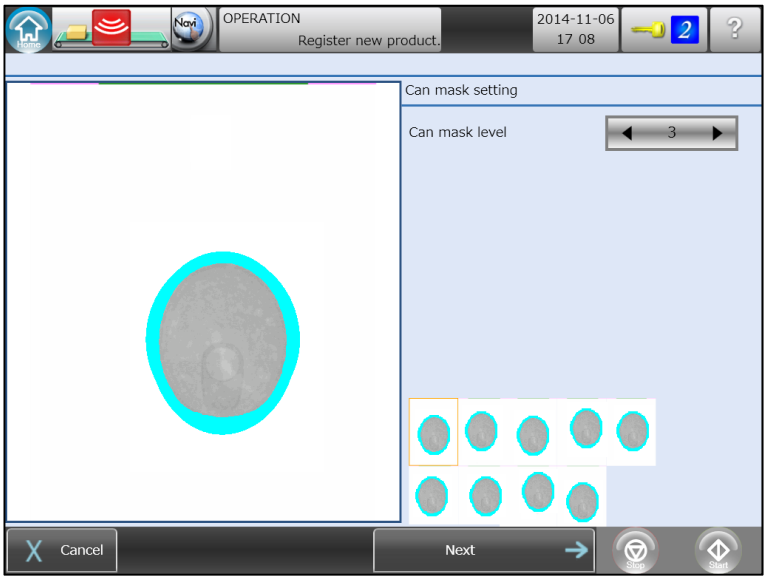
If the masking width is extremely thinner or thicker, adjust [Expand to right and left] or [Expand to top and bottom]. The masking width becomes thicker by increasing the expansion width value, while thinner by decreasing the value. "To right and left" means the lateral direction on the operation screen, while "To top and bottom" means the vertical direction on the operation screen.





18 When edge masking adjustment has been completed, press [Next]. If [Canned edge mask] is selected on the preceding [Inspection type] screen, the set parameter of the canned edge mask can be automatically adjusted by using the accumulated images. After completion of adjustment, the image with the can edges masked appears.

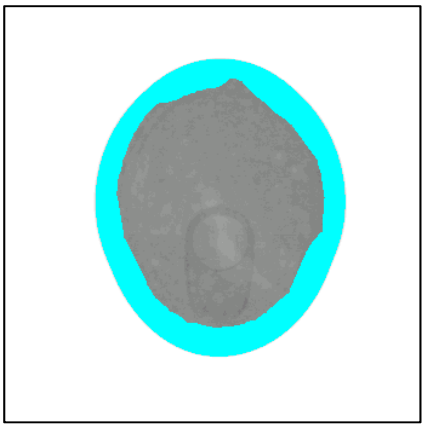
If the canned edge mask function is not required, proceed with the product type registration from step 18.

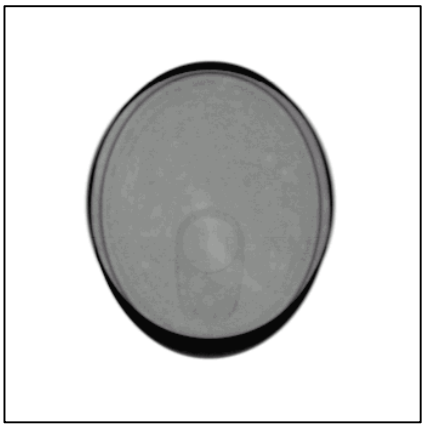


19 When auto setting of the canned edge mask has been completed, check whether masking of all the accumulated images have been completed correctly. Select the thumbnail image at the lower right-hand corner to display the image with the canned edge masked.

If the masking is not performed correctly, adjust [Can mask level].

If the mask enters inside the can edge as the result image shown in the lower left-hand figure, increase the [Can mask level] value. By setting to the extremely larger value, masking can be avoided as shown in the right-hand figure. If the masking is not performed as shown in the lower right-hand figure, decrease the [Can mask level] value.

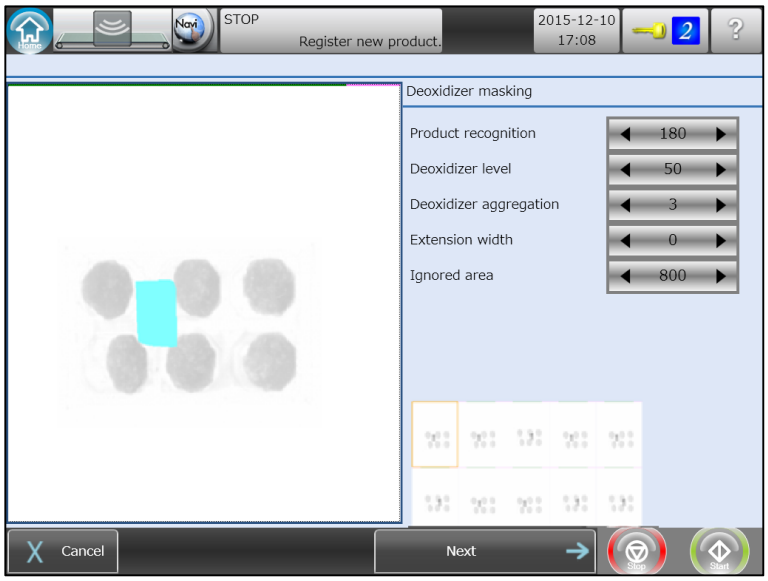




When canned edge masking adjustment has been completed, press [Next].

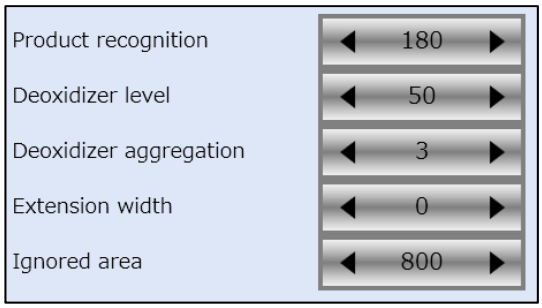
20 If [Deoxidizer mask] is selected on the preceding [Inspection type] screen, the set parameter of the deoxidizer mask can be automatically adjusted by using the accumulated images. After completion of adjustment, the image with the deoxidizers masked appears.

If the deoxidizer mask function is not required, proceed with the product type registration from step 20.



21 When auto setting of the deoxidizer mask has been completed, check whether masking of all the accumulated images have been completed correctly. Select the thumbnail image at the lower right-hand corner to display the image with the deoxidizers masked.

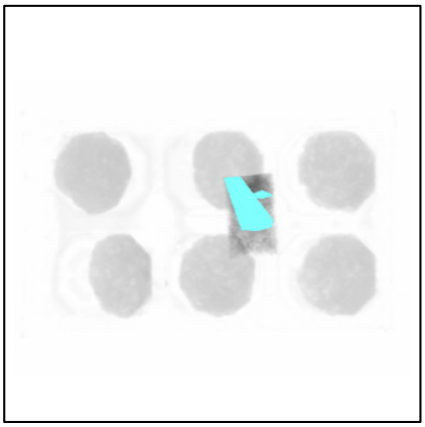
If the masking is not performed correctly, adjust [Product recognition], [Deoxidizer level], [Deoxidizer aggregation], [Extension width], and [Ignored area].

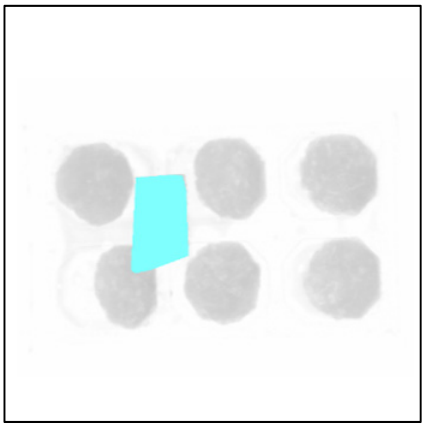


▼ Deoxidizer masking

Name	Setting (Default: _)	Description
Product recognition	1 to 180 to 255	Set the border values of the deoxidizer and product transmittance image gray-scale level.
Deoxidizer level	1 to 5 to 255	Adjusts the particle condition level inside the deoxidizer. In normal circumstances, changing this item is not required.
Deoxidant aggregation	1 to 3 to 10	If the area to be masked inside the deoxidizer is split, increase the deoxidizer aggregation level value and adjust to combine the split areas.
Extension width	0 to 5 to 15	The masking size expands in units of dots. If the extracted deoxidizer area is smaller than the masking area, increase the extension width value.
Ignored area	0 to 800 to 1000	If an area smaller other than the deoxidizer is masked, increase the ignored-area value to remove the unnecessary masking area. For inspected products with less irregularity, adjust this value according to the mask-shaping level. For inspected products with more irregularity, adjust this value according to the noise-removing level.

If the deoxidizer is not masked partially as the result image shown the in the lower left-hand figure, decrease the [Product recognition] value. By specifying a much smaller value, the masking expands to the product area as shown in the right-hand figure.

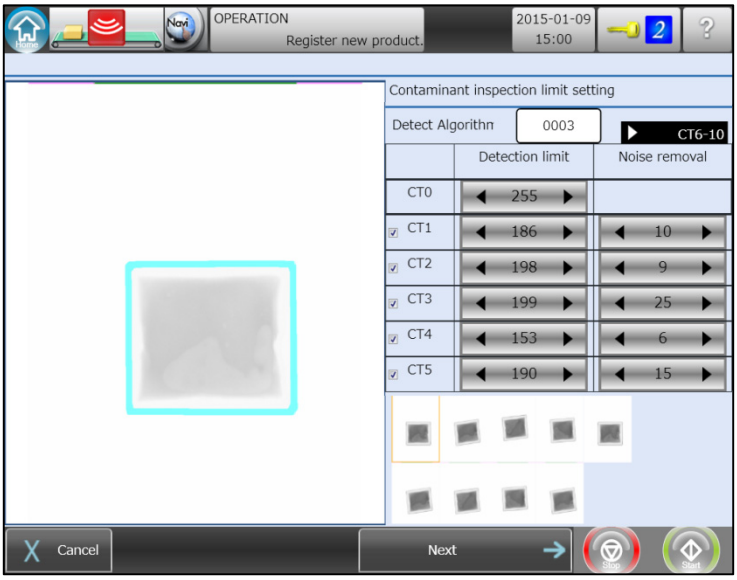




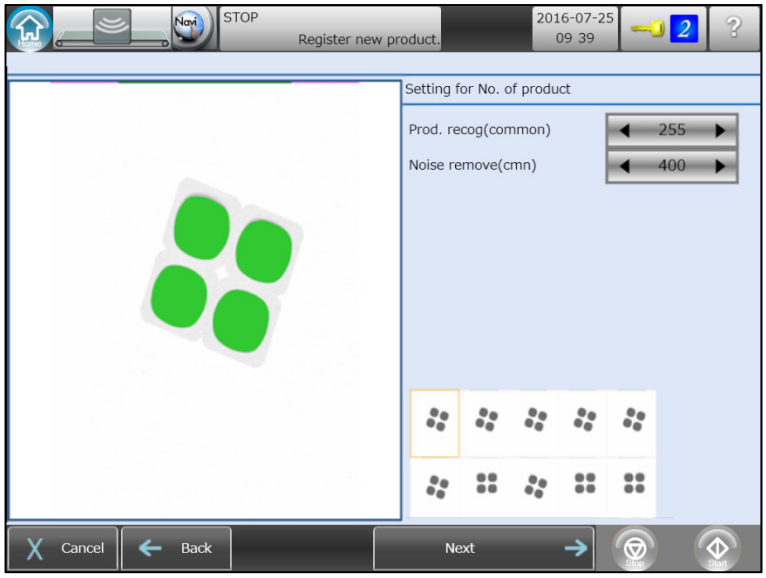
If the deoxidizer edge is partially protruding from the deoxidizer edges while the deoxidizer area is masked, increase the [Extension width] value to simply extend the masking area. If the area to be masked inside the deoxidizer is split, increase the deoxidizer aggregation level value and adjust to combine the split areas. If fine particles are wrongly masked in products other than the deoxidizer, increase the [Ignored area] value to remove the noise elements.

When deoxidizer masking adjustment has been completed, press [Next].

22 The contaminant inspection limit is automatically adjusted by using the accumulated images. During this adjustment, the character [Replay] blinks at the center of the screen. After adjustment has been completed, the blinking character [Replay] disappears, and the list of adjusted parameters appears. By pressing [CT6-10] next to the detection algorithm, the limit after adjustment can be checked in the order of [CT6-10], [CT11-CT14], and [CT0-5]. After checking the settings using the thumbnail screen at the lower right-hand corner of the screen, press [Next].



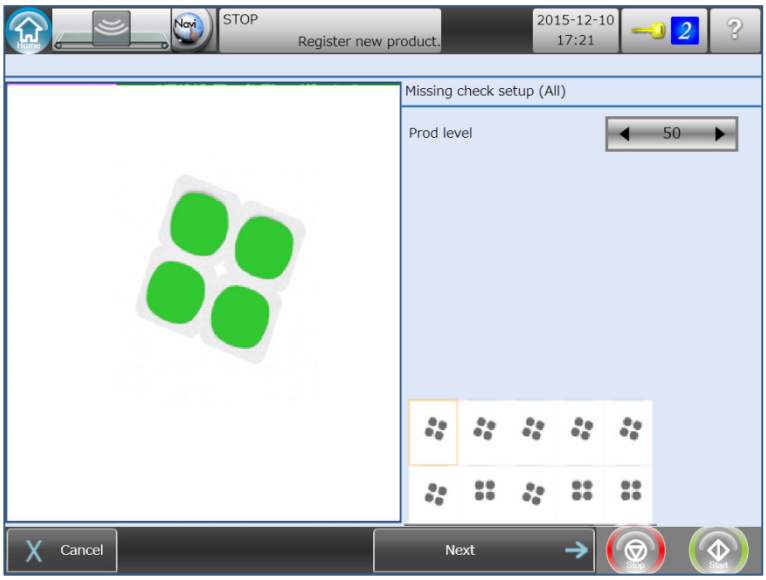
23 Then, the product level for [Missing Inspection], [Count detection], [Split shape inspec.] or [Broken shape inspec.] is automatically calculated. During the calculation, the character [Replay] blinks at the center of the screen. After adjustment has been completed, the blinking character [Replay] disappears, and the calculated [Product level (common)] and [Noise removal (common)] appear. If the target product is not filled in in green, adjust [Product level (common)] and [Noise removal (common)] manually. After checking using the thumbnail screen at the lower right-hand corner of the screen, press [Next].



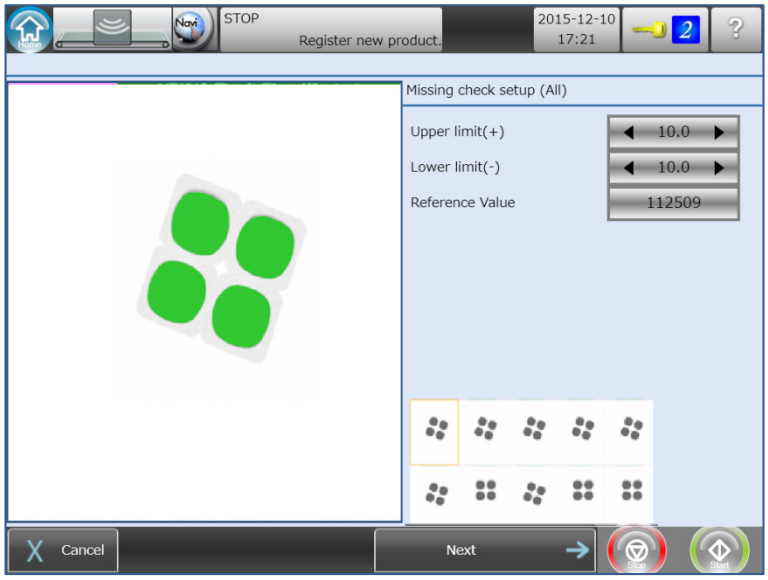
▼ Product count recognition setting

Name	Setting (Default: _)	Description
Product level (common)	10 to 255	Set the gray scale level for the detection targets to be extracted. This value is also used for the missing inspection, count detection, split shape inspection, and broken shape inspection.
Noise removal (common)	0 to 400 to 800	Set the degree of removing noise components other than the detection targets to be extracted. This value is also used for the missing inspection, count detection, split shape inspection, and broken shape inspection.

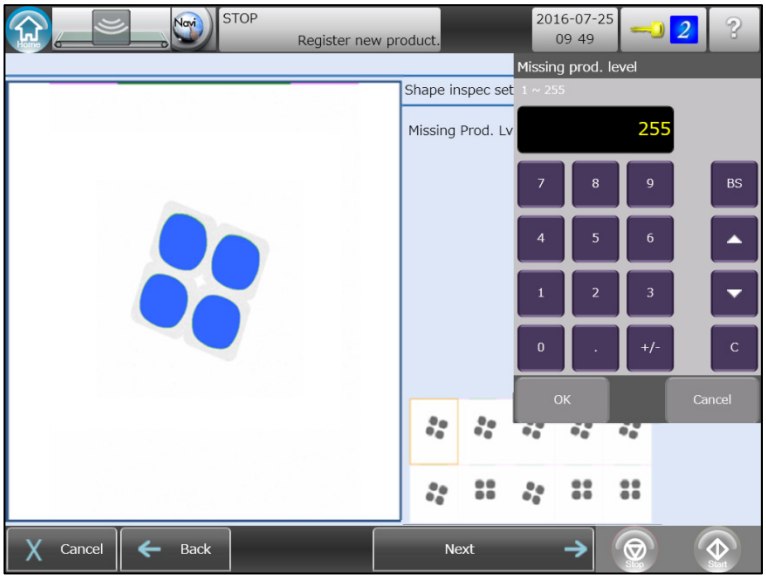
24 The product level used for the quantity total detection is automatically adjusted by using the accumulated images. During this adjustment, the character [Replay] blinks at the center of the screen. After adjustment has been completed, the blinking character [Replay] disappears, and the adjusted product level appears. If the missing target product is not filled in in green, adjust the product level manually. After checking using the thumbnail screen at the lower right-hand corner of the screen, press [Next].



25 Then, the reference value of the area for Missing check setup (All) is automatically calculated. During the calculation, the character [Replay] blinks at the center of the screen. After adjustment has been completed, the blinking character [Replay] disappears, and the calculated [Reference Value] appears. Based on this calculated [Reference Value], set the upper- and lower-limit values used for the quantity total detection. When setting has been completed, press [Next].

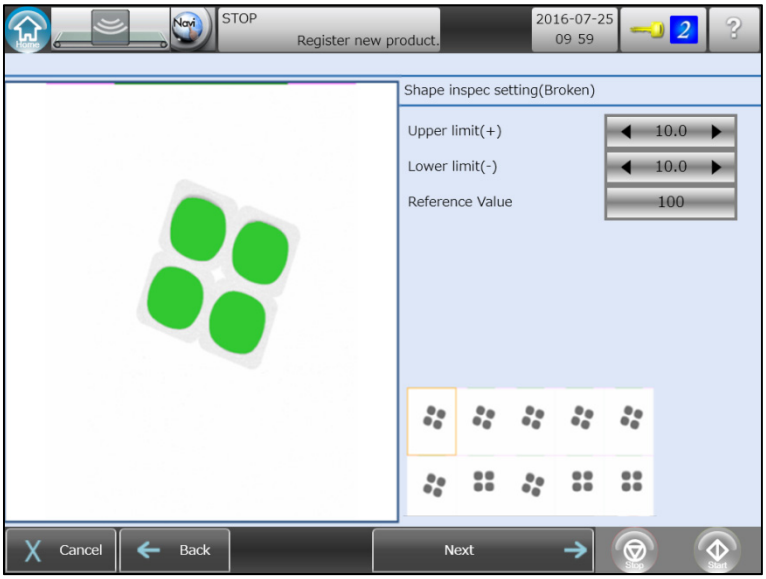


26 The broken level or missing product level used for the shape inspection is automatically adjusted by using the accumulated images. During this adjustment, the character [Replay] blinks at the center of the screen. After adjustment has been completed, the blinking character [Replay] disappears, and the adjusted broken level or missing product level appears. If the target product for shape inspection is not filled in in blue, adjust the [Broken level] or [Missing Prod. Lv] manually. After checking using the thumbnail screen at the lower right-hand corner of the screen, press [Next].



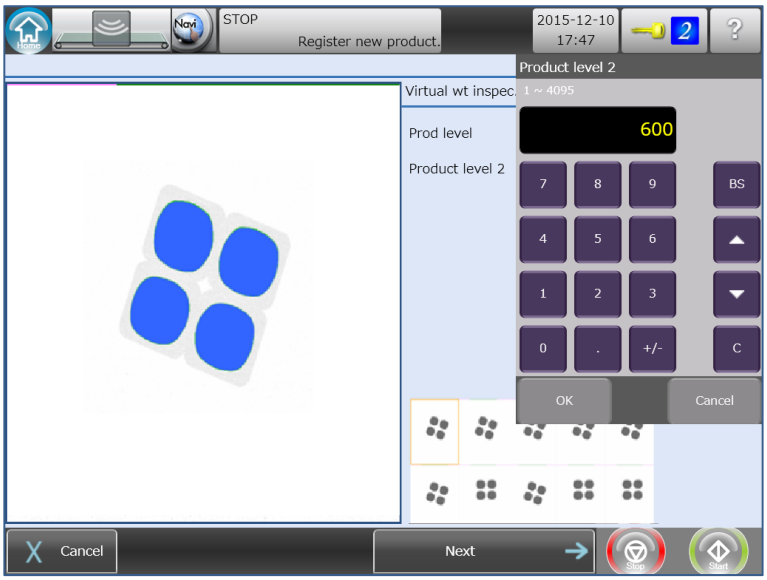
Name	Setting (Default: _)	Description
Broken level	1 to 255	Set the gray-scale level of the target product for broken detection.
Missing Prod. Lv	1 to 255	Set the gray-scale level of the target product for missing detection.

27 Then, the reference value of the shape for shape inspection is automatically calculated. During the calculation, the character [Replay] blinks at the center of the screen. After adjustment has been completed, the blinking character [Replay] disappears, and the calculated [Reference Value] appears. Based on this calculated [Reference Value], set the upper- and lower-limit values used for the shape inspection. When setting has been completed, press [Next].



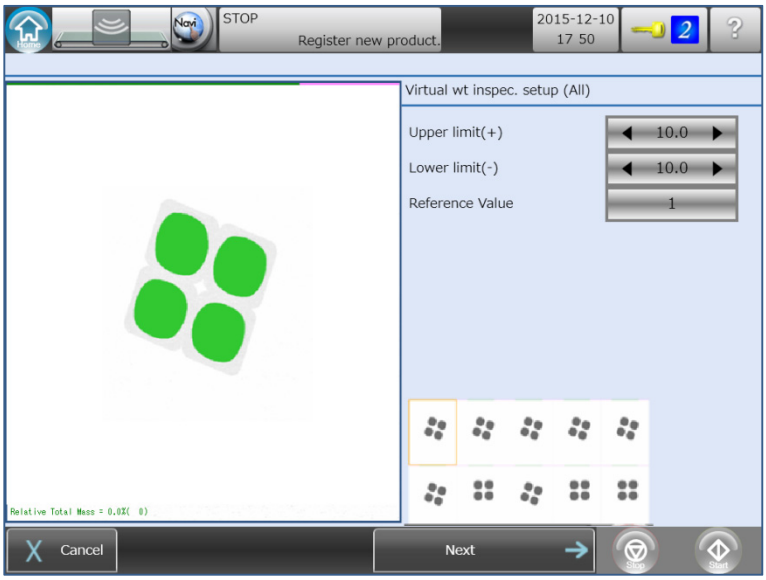
When the display unit is set as "None", [Reference Value] is not displayed.

28 The [product level] and [product level 2] used for relative weight total detection are automatically adjusted by using the accumulated images. During this adjustment, the character [Replay] blinks at the center of the screen. After adjustment has been completed, the blinking character [Replay] disappears, and the adjusted product level appears. If the target product for weight detection is not filled in in green, adjust the product level manually. After checking using the thumbnail screen at the lower right-hand corner of the screen, press [Next].

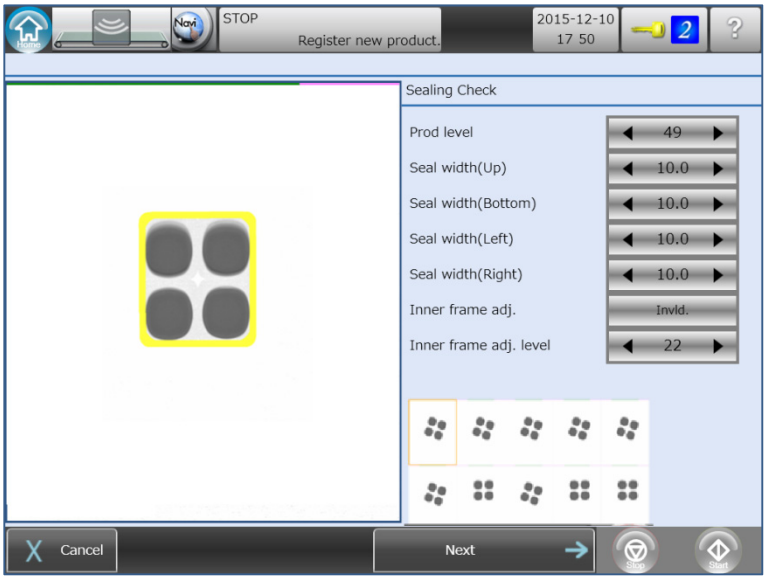


Name	Setting (Default: _)	Description
Prod level	1 to 4095	Set the gray-scale level of the target product for the relative weight detection. In relative weight detection, gray-scale values in the area exceeding [Prod level] and the sum of areas are candidates for weight conversion. Adjust the value so that the corresponding part of the product becomes green.
Product level 2	1 to 4095	Adjust [Product level 2] when you want to eliminate components that you do not want to convert to weight values such as belt surface noise in the green areas extracted by adjusting [Prod level]. Adjust it so that only the parts you ultimately want to measure as relative weight become blue. Also, set a value greater than [Prod level].

29 Then, the reference value of the volume for Virtual wt inspec. Cond. (All) is automatically calculated. During the calculation, the character [Replay] blinks at the center of the screen. After adjustment has been completed, the blinking character [Replay] disappears, and the calculated [Reference Value] appears. Based on this calculated [Reference Value], set the upper- and lower-limit values used for relative weight detection. When setting has been completed, press [Next].

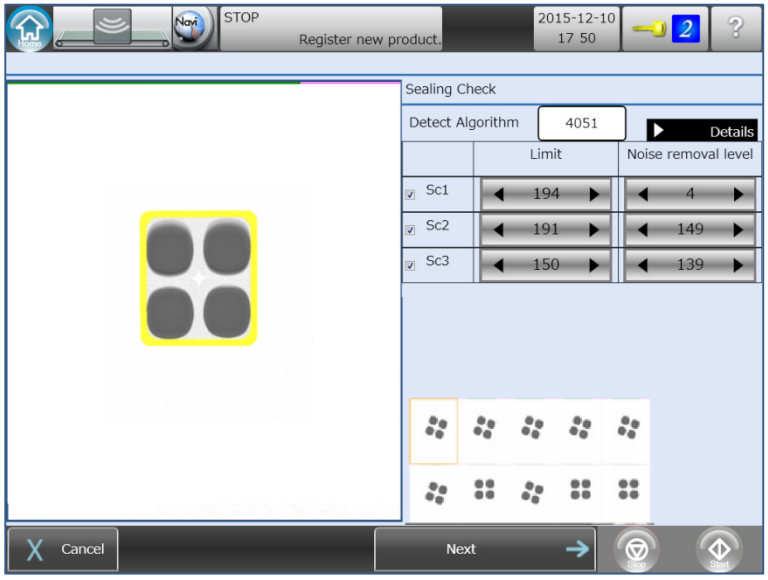


30 The product level used for Sealing Check is automatically adjusted by using the accumulated images. During this adjustment, the character [Replay] blinks at the center of the screen. After adjustment has been completed, the blinking character [Replay] disappears, and the adjusted product level appears. If the sealing check target area is not filled in in yellow, adjust the product level manually. After checking using the thumbnail screen at the lower right-hand corner of the screen, press [Next].



Name	Setting (Default: _)	Description
Prod level	1 to 255	Sets the gray-scale level for identification of the entire product including the sheet and of the belt surface. The area higher than the product level is displayed in yellow when the software numeric keypad for adjustment is displayed. Adjust to the value so that the entire product is displayed in yellow.
Seal width (top, bottom, right and left)	0.0 to 30.0	Set width of each side for which the sealing check is performed.
Inner frame adj.	1 to 33	Set the roundness of the inner frame with the numeric value. The roundness degree increases as the value increases.

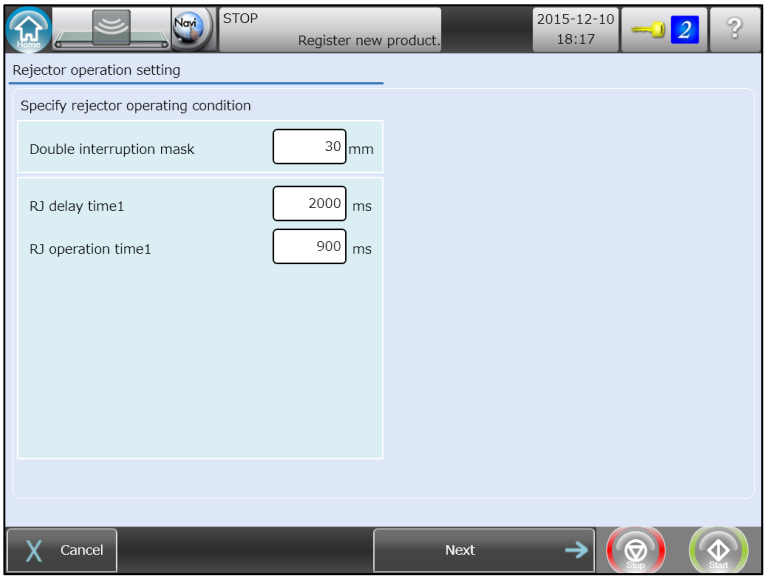
31 Then, the sealing detection limit is automatically adjusted in the sealing target area. During this adjustment, the character [Replay] blinks at the center of the screen. After adjustment has been completed, the blinking character [Replay] disappears, and the list of adjusted parameters appears. By pressing [Details] next to the detection algorithm, [Ignored area] can be adjusted. After checking the settings using the thumbnail screen at the lower right-hand corner of the screen, press [Next].



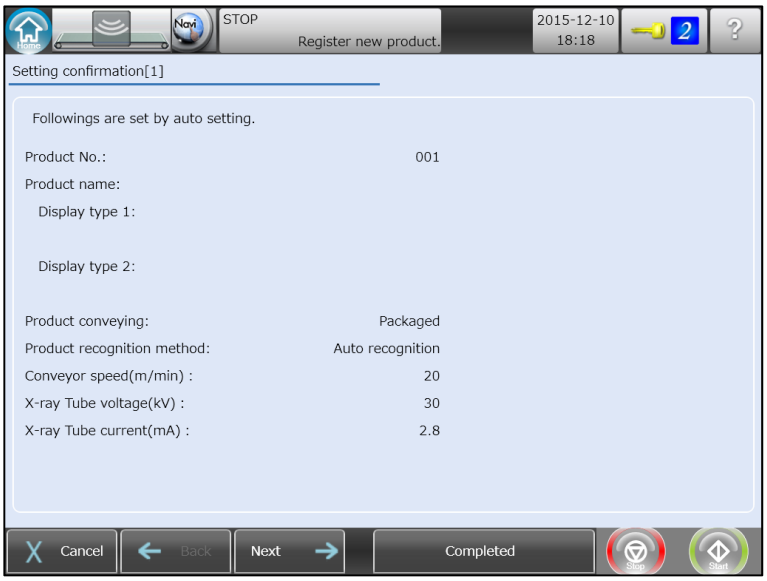
Name	Setting (Default: _)	Description
Algorithm	4051 (Fix)	Fix the value to 4051.

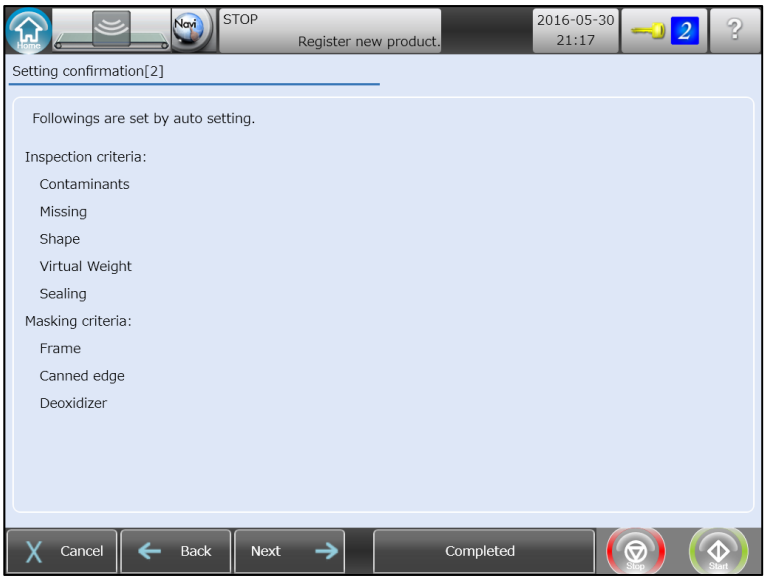
Name	Setting (Default: _)	Description
Sealing check limit	Limit 1 to 255	If the effect value in the specified seal area exceeds the detection limit, this is evaluated as the sealing NG. The sealed area is painted in pink. By pressing **SC (1 to 3)**, this setting can be disabled.
	Noise removal 1 to 255	Removes the effect due to the noise element of the product.
	Ignored area 1 to 255	Adjust this value if the element that cannot be removed by the noise removal function remains.

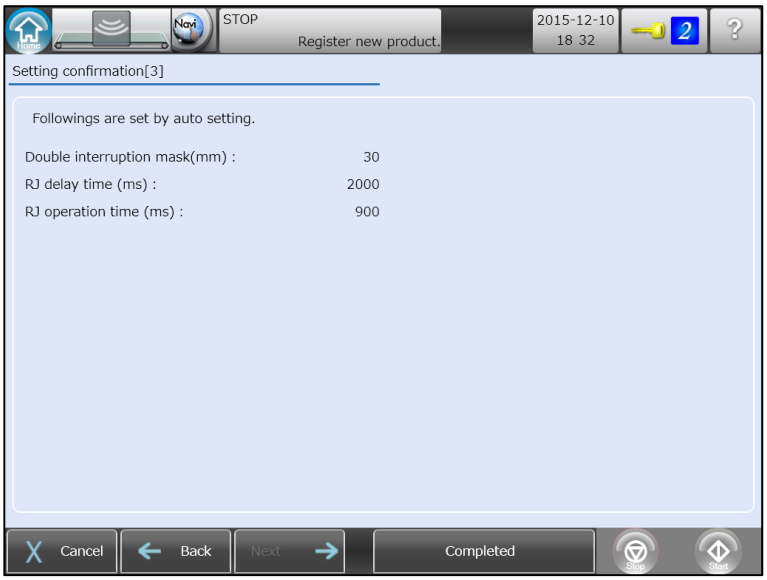
32 Set the rejection conditions [Double interruption mask], [RJ delay time], and [RJ operation time].



33 After all the settings have been completed, the list of parameters adjusted for the product type registration appears. Press [Next], check the specified settings. Press [Complete] to complete product type registration.







Product type registration has been completed.

Start the operation, feed the product, and check that the inspection items can be evaluated correctly and that the product is rejected correctly.
Select [Eval./RJ Confirm] from [Operation Check] to check that the inspection can be performed correctly.

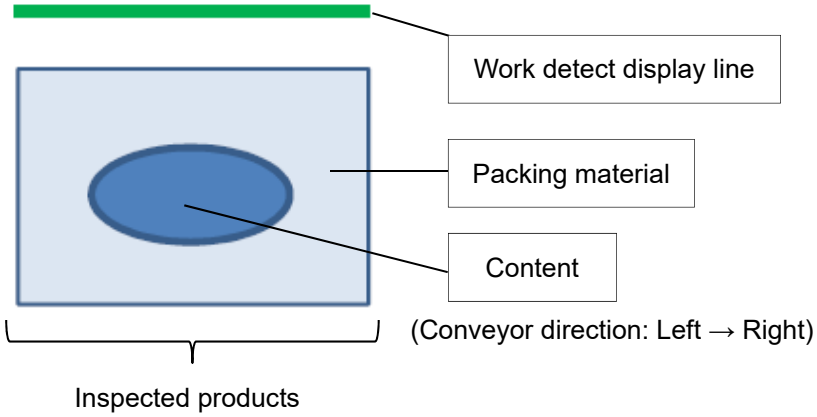
If the inspection items cannot be evaluated correctly or if the product cannot be rejected correctly, set the related inspection items again from [Adjust registered products].

☞ P. 88 Adjusting Registered Product

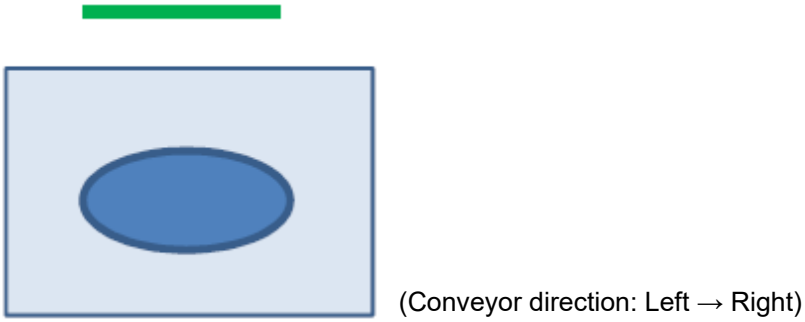
> Product Recognition by Work Detect Signal

The work detect signal recognizes the product to be inspected as a reference. If the work detect signal cannot recognize the product correctly, the appropriate inspection cannot be provided. Adjust the work detect signal appropriately according to the double interruption mask distance setting, rejection delay time setting, product recognition (photocell, auto recognition, or combination of photocell and auto recognition), product recognition level setting, etc.

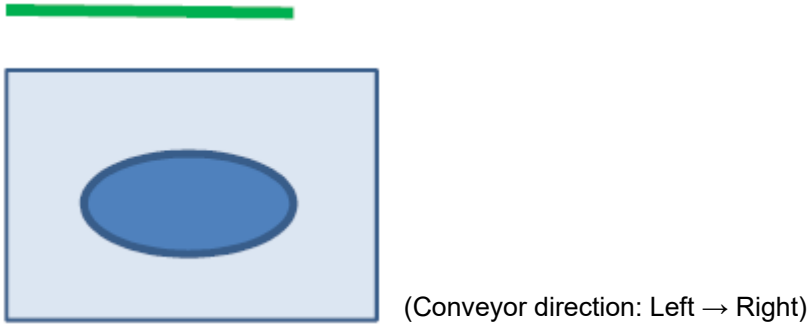
(1) When the inspected products are recognized entirely



(2) When the contents of the inspected products are recognized



(3) When the double interruption mask distance from the edge of the inspected product contents is recognized

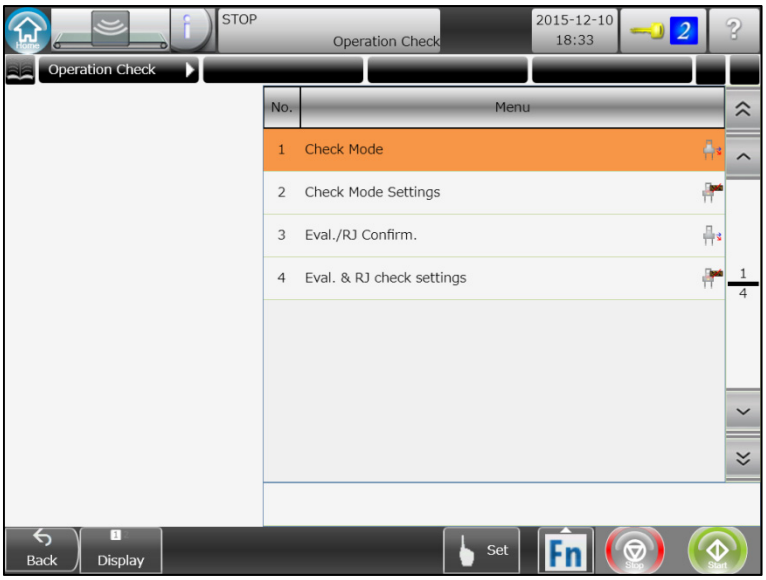


To enable the drift correction function, perform the adjustment so that the work detect display line is (1). If the adjustment is difficult, contact the service engineer.

☞ P. 89 Double interruption mask
☞ P. 89 Product recognition
☞ P. 90 Drift adjustment function

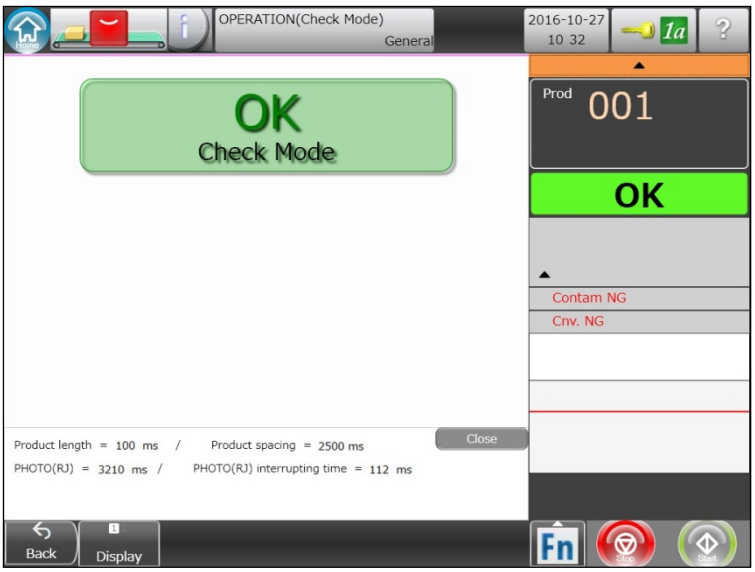
> Checking Operations

Operation check is a function to check if the equipment is operating correctly.
By checking the equipment is operating normally at the beginning and at the end of production of a day, or at the beginning and end of a lot, operational reliability can be guaranteed indirectly.
When “Ope. Check” is tapped in the “Menu” screen, the following screen is displayed.



■ Operation check by Check Mode

To feed a test piece or NG sample product during normal operation and check the device operation, [Check Mode] can prevent the currently confirmed data from being included in the statistics count. Press [Operation Check] in the control bar and select [Check Mode] to enter the mode where the statistics count is not performed. Also, by selecting [Check Mode] from [Ope. Check] of the "Menu", check mode can be used. By pressing the [Fn] button to set [Timing Display], the product length, product interval, detection signal, and blocking time are displayed at the bottom of the screen. To return to normal mode, press [Back].



■ Checking Evaluation/Rejection

This function checks if the X-ray Inspection System performs evaluation and rejection correctly. Use products that are actually produced for evaluation and rejection check. By setting the following parameter, the procedure for Eval./RJ Confirmation can be changed as desired, and the test pieces to be used for contaminant NG check can be set.

(Adjust registered varieties → Ope. check condition → Eval. & RJ check settings)

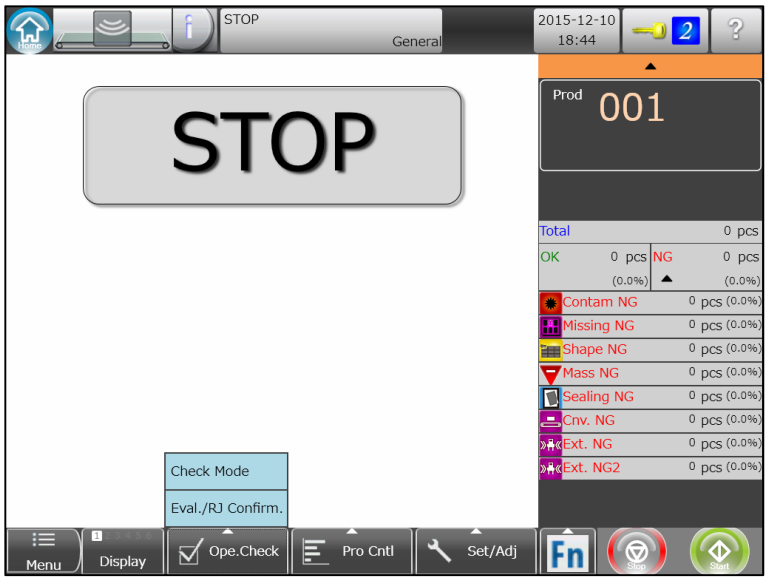
Name	Setting (Default: _)	Description	
Manage.STD setting	<u>No</u> Yes	No	Checks PASS and contaminant NG products only without using test piece settings.
		Yes	Allows setting of the procedure for Eval./RJ Confirmation as desired. In addition to PASS product check, the contaminant NG check is performed for each test piece according to test piece settings.

The following 14 types of test pieces are available when the management standard setting is enabled.

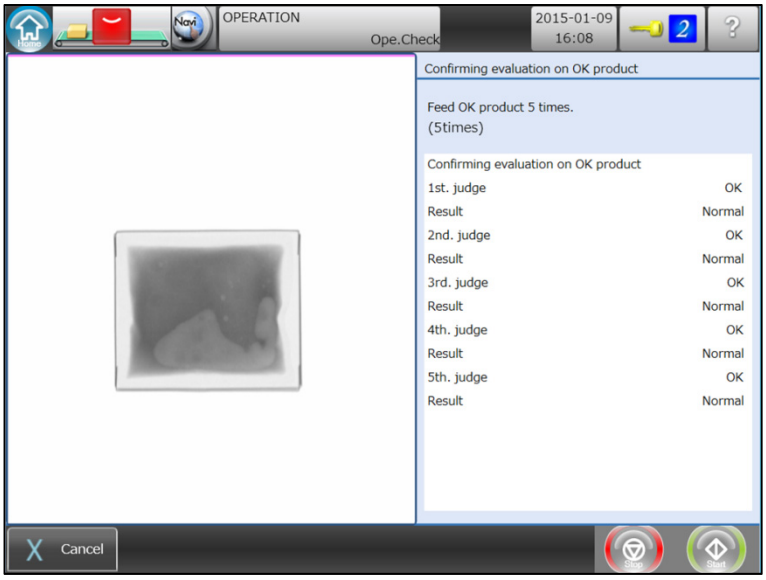
Name	Remarks
Fe	This test piece is common to the metal detector.
SUS	This test piece is common to the metal detector.
Free piece 1	The desired name can be set.
Free piece 2	The desired name can be set.
SUS wire	–
SUS ball	–
Ceramic ball	–
Glass ball	–
EPDN rubber ball	–
Sillicon rubber ball	–
Nylon ball	–
PTFE ball	–
Polycarbonate ball	–
Aluminum ball	–

■ Eval./RJ Confirmation without using the management standard settings

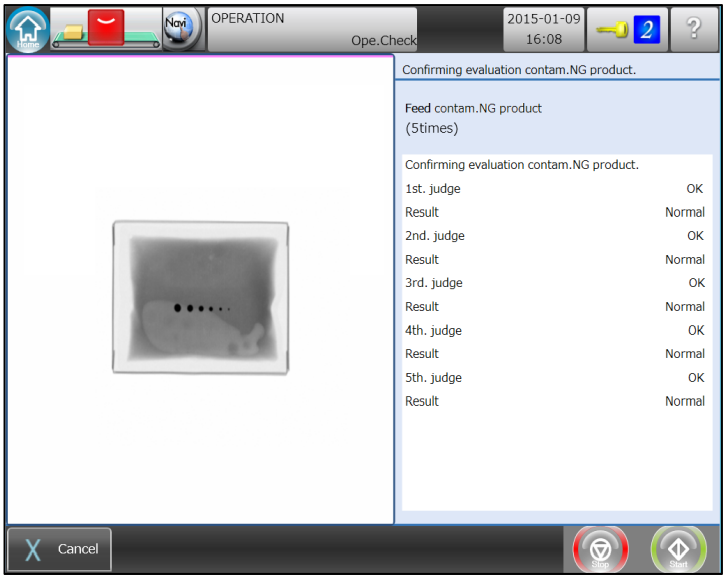
1 Check the product No. and press [Operation Check] in the control bar to select [Eval./RJ Confirm.]. Also, by pressing [Eval./RJ Confirm.] from [Ope. Check] in the "Menu", operation check can be started.



2 On the screen to start operation check, press the [Next]. After sensitivity correction is complete, the "Confirming evaluation on OK product" screen is displayed. Follow the instruction on the screen and feed an OK product up to 5 times. When the OK product is fed, the evaluation result with the current settings is displayed. If it is evaluated as OK, "Normal" is displayed as the confirmation result. If it is not evaluated as OK, "Error" is displayed. When operation check for OK product is complete, press the [Next].

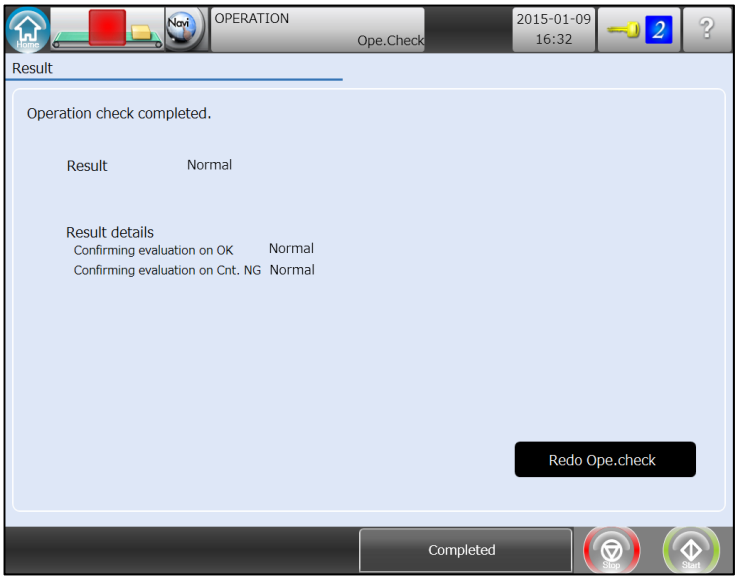


3 The "Confirming evaluation on contaminant NG product" screen is displayed. Follow the instruction on the screen and feed a contaminant NG product up to 5 times. If it is evaluated as Contaminant NG, "Normal" is displayed as the confirmation result. If it is not evaluated as Contaminant NG, "Error" is displayed. When operation check for the contaminant NG product is complete, press the [Next].

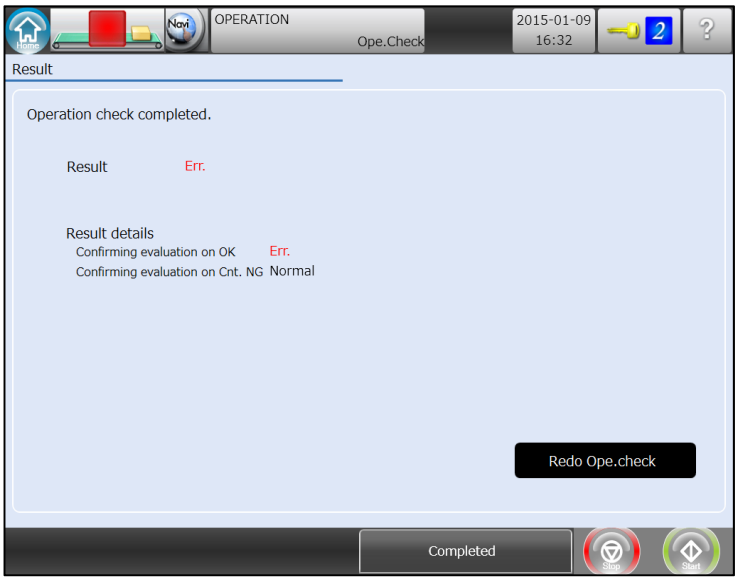


The rejector operates when it is connected. Be careful of its movement.

4 The evaluation result of operation check is displayed. After checking the result is "Normal", press the [Completed] to finish operation check.

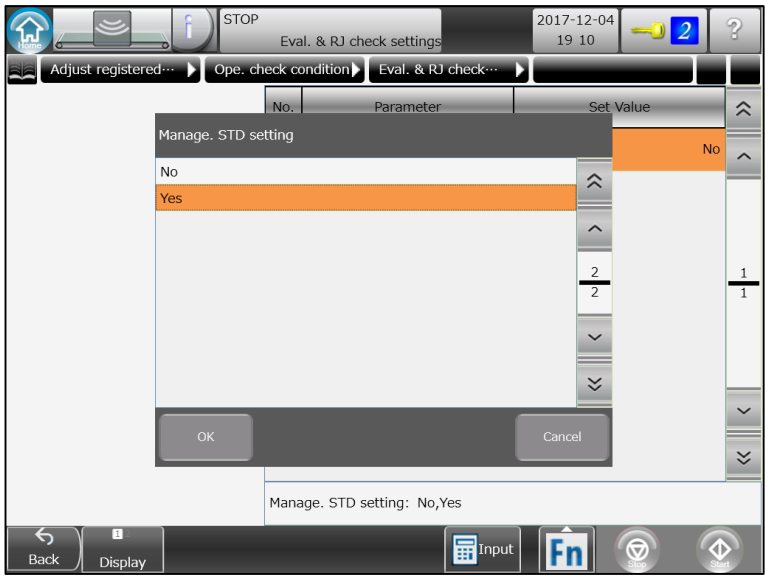


If any of Confirming evaluation on OK product or Confirming evaluation on contaminant NG product is evaluated as "Error", the operation check result is "Error". In the case of an error, redo the operation check by pressing the [Redo Ope. check], or press the [Completed] to complete operation check, readjust contaminant detection limits, and perform operation check again.



■ Eval./RJ Confirmation using the management standard settings

1 Check the product No., select [Adjust registered varieties] → [Operation Check Setting] → [Eval. & RJ check settings] on the “Menu” screen, and set [Manage. STD setting] to [Yes].



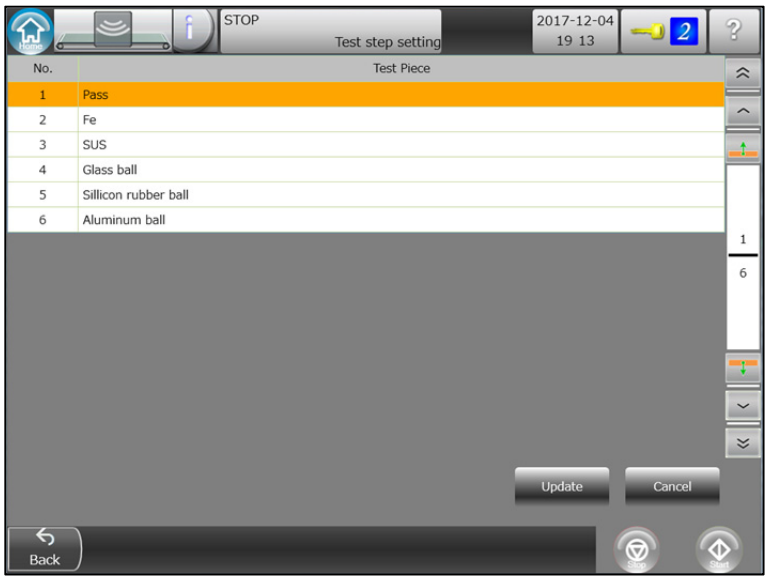
2 Set the following parameter in [Adjust registered varieties] → [Operation Check Setting] → [Eval. & RJ check settings] on the “Menu” screen.

Name	Setting (Default: _)	Description	
Test count setting	Invld. Valid	Set whether to specify the count to feed products during Eval./RJ Confirmation.	
		Invld.	For each inspection item, products can be fed up to 1 to 5 times as required.
		Valid	The counts to feed products can be specified for each inspection item. To specify test count, products for the specified counts must be fed.
OK test count	1 to 5 to 10	If [OK test count] is enabled, the count to feed PASS products can be specified.	

3 Select [Adjust registered varieties] → [Operation Check Setting] → [Eval. & RJ check settings] → [Test piece setting], and set the following parameter for each test piece.

Name	Setting (Default: _)	Description
Mng. Standard	Disable Enable	Set whether to use the test piece for Eval./RJ Confirmation.
Name	Regardless of Japanese (full width) or alphanumeric characters Up to 8 characters	This is a test piece name. Only Free piece 1 and Free piece 2 can be set.
Size	0.00 to 1.00 to 20.00	Set the standard sensitivity of the test piece to be used. The set value appears on the screen in Eval./RJ Confirmation. 0.00 means blank, and the size is hidden in Eval./RJ Confirmation.
Number of tests	1 to 5 to 10	This value indicates the count to carry test pieces. If the specified test count is enabled, test pieces for this count value must be fed.

4 Select [Adjust registered varieties] → [Operation Check Setting] → [Eval. & RJ check settings] → [Test step setting], the right-hand screen appears. Set the order to use the test pieces for Eval./RJ Confirmation by using the button on the right side of the screen.



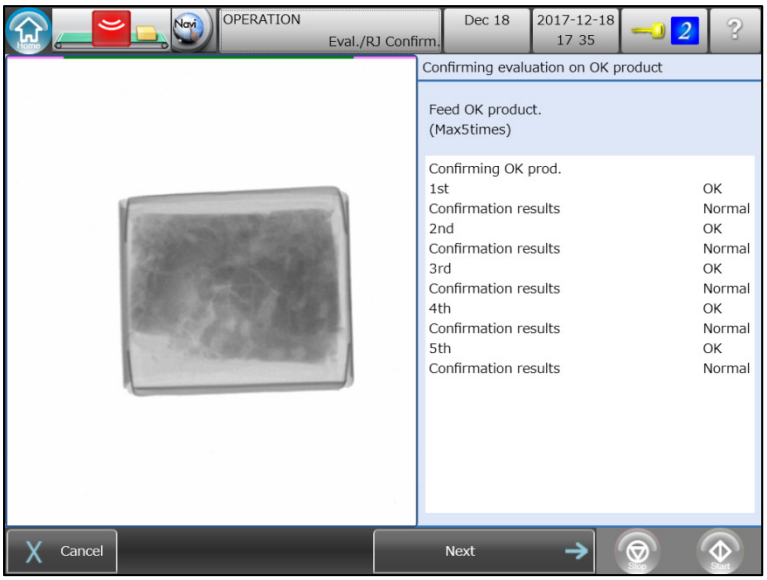
To change the test order, select the test piece to change the order, and select the test piece by using the following button.

Button	Description
	Switches the order between the selected test piece and the above test piece.
	Switches the order between the selected test piece and the test piece just below it.

The test order is initially set according to the order of the test pieces that were set to [Use] in [Test piece setting].

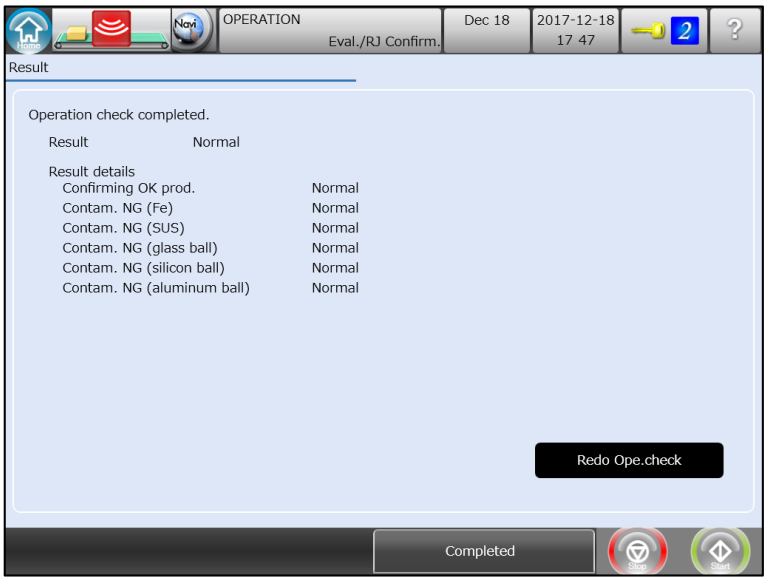
5 Press [Ope.Check] in the control bar, and select [Eval./RJ Confirm.]. Also, by pressing [Eval./RJ Confirm.] from [OPERATION CHECK] in the "Menu", operation check can be started.

6 Press [Next] on the screen where the operation check starts. After the sensitivity correction, the confirmation screen for each test piece appears in the specified test order. Feed the PASS products or products to which the specified test pieces are attached according to the instructions on the screen. The count to feed products is the count specified for each test piece if [Test count setting] is enabled, but the count is up to five if this setting is disabled. If a product is fed, the evaluation result in accordance with the current settings appears. If the operation check is completed, press [Next]. If [Test count setting] is enabled, the next screen appears right after the products for the count specified for each test piece are fed.

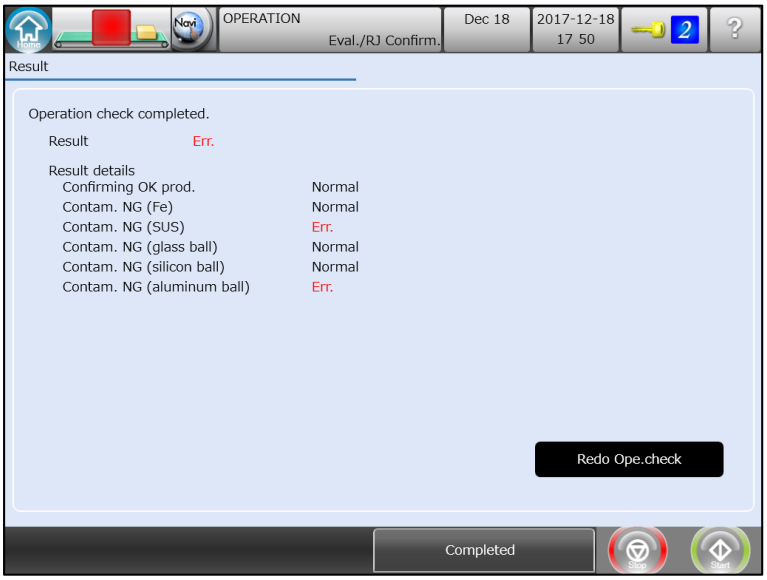


If the rejector is connected, the rejector is activated. Pay attention to the rejecting operation.

7 The operation check result appears. Check the result is [OK], and press [Completed] to exit the operation check.

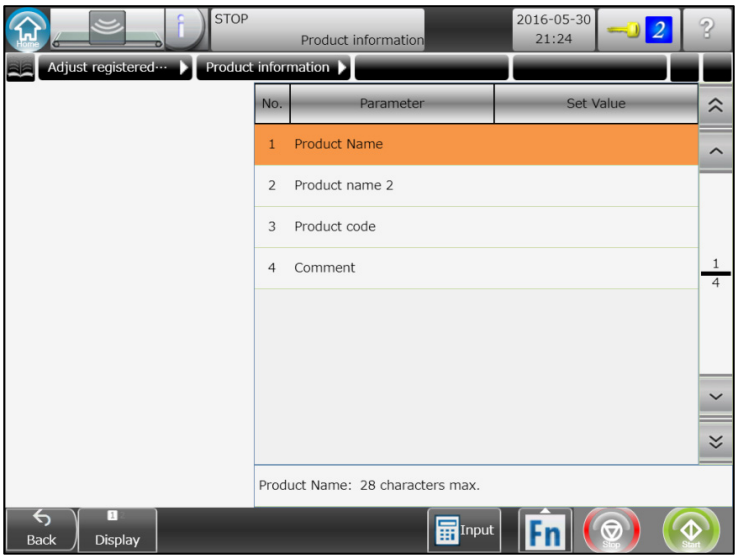


If any evaluation results in [Err.], the operation check result shows [Err.]. If the result is an error, press [Redo Ope.check] to restart the operation check, or press [Completed] to exit the operation check and restart the operation check after readjusting the contamination inspection limit.



> Adjusting Registered Product

This procedure is used to change the conditions specified for a registered product. Also, settings omitted in the product registration navigation can be entered.
Select the “Menu” screen → “Adjust registered products” → “Product information”. The following screen is displayed.



Set and adjust each item by referring to the tables below.

■ Product information

(Adjust registered products → Product information)

Name	Setting (Default: _)	Description
Product Name	(Max. 14 characters in Japanese) (Max. 28 characters in alphabet)	Sets the product name.
Product Name 2	(Max. 28 characters)	Sets the product name. Can leave as blank.
Product code	(Max. 14 characters in Japanese) (Max. 28 characters in alphabet)	Sets the product code.
Comment	(Max. 32 characters in Japanese) (Max. 64 characters in alphabet)	Any information related to the product can be entered.

■ Basic inspecting conditions

(Adjust registered products → Ins. condition set. → Basic inspecting conditions)

Name	Setting (Default: _)	Description	
X-ray Tube voltage	30 to 40 to 80 [kV]	The image contrast and detection sensitivity are better at lower voltages. However a low X-ray voltage may be inadequate if the product is thick and has less penetrability of X-rays, or the belt speed is fast. In this case, set a higher X-ray voltage. Basically the recommended values are set by auto setting. X-ray output (voltage X current) is limited to 100 W.	
X-ray Tube current	0.4 to 2.5 to 3.3 [mA]	Basically the recommended values are set by auto setting. X-ray output (voltage X current) is limited to 100 W.	
Product conveying form	Box Bulk	Box	The photocell and X-ray transmission amount detects entry of the product, and inspection for each product is performed.
		Bulk	Performs the inspection in spite of the presence or absence of a product. Only NG products are counted as the statistics.
Product recognition	Photocell Auto recognition Both photocell and auto recognition	Photocell	Detects products with a photocell for inspection.
		Auto recognition	Detects products based on the gray-scale level of products for inspection.
		Both photocell and auto recognition	Detects products by using a photocell and the gray-scale level of products for inspection.
Product recognition level	0 to 3200 to 4095	Sets the threshold value for determining as a product if the product recognition method is "Auto recognition".	
Double interruption mask	0 to 30 to 300 [mm]	This mask prevents one product from being recognized as multiple items due to chattering produced during product recognition process by photocell or gray-scale. (by photocell or auto recognition) After detecting the product end, products detected within this "Double interruption mask" are recognized as one product, including them.	
Conveyor speed	10 to 20 to 90 [m/min]	Sets the main unit conveyor belt speed.	

Name	Setting (Default: _)	Description
Scan speed	416.667 to 833.334 to 1666.667 [scan/s]	Scan speed is chosen according to belt speed and operation status. No need to change.

■ Drift adjustment function

(Adjust registered products. → Ins. condition set. → Basic inspecting conditions → Drift adjustment function)

Name	Setting (Default: _)	Description
Drift adjustment	Invalid Valid	Enable or disable the drift adjustment. Set this function if the X-ray image deteriorates due to a change in the temperature in the installation environment.

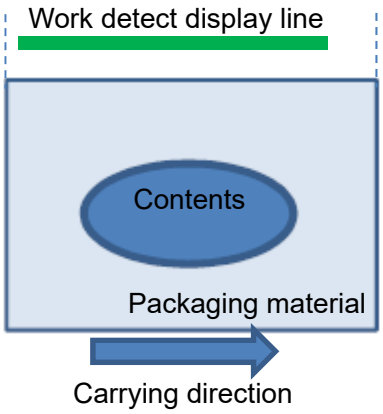
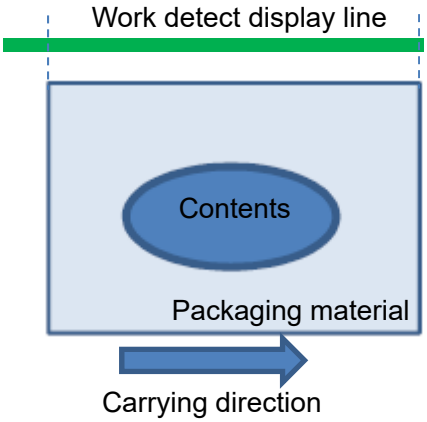
■ Drift adjustment setting

(Adjust registered products. → Ins. condition set. → Basic inspecting conditions → Drift adjustment function → Drift adjustment setting)

Name	Setting (Default: _)	Description
Lines before product reached	0 to 160	Set the product interval required for the drift adjustment. The drift adjustment accuracy is improved as the set value is larger. If the product interval is narrow, a product is affected from the neighboring product and the drift adjustment cannot be performed.

The drift correction function is enabled only if the following use conditions are met.

- This function is enabled when the product conveying form is set to Box (disabled if it is set to Bulk).
- Check the belt for attachment such as a water droplet or condensation. If anything attaches to the belt, the inspection NG may occur.
- Adjust both edges of a product so that the edges are within the scope of the work detect signal during the inspection (refer to the following figures).

If the drift correction cannot be performed correctly	If the drift correction can be performed correctly
The top edge or rear edge is out of the scope of the work detect signal.  	The top edge or rear edge is within the scope of the work detect signal. 

Even if the drift correction is enabled, perform the sensitivity adjustment once every eight hours basically

■ Contamination detection condition

(Adjust registered products → Ins. condition set. → Contamination detection condition)

Name	Setting (Default: _)	Description
Contaminant detection	Disabled Enabled	Enable or disable the contaminant detection function.
Contaminant detection setting		
Contaminant detection algorithm	1 to 5	Select a contaminant detection algorithm suitable for the product by referring to the description and the sample image. ☞ P. 49 List of contaminant detection algorithms
Contaminant detection limit	Detection limit 1 to 50 to 255	If the effect value after image processing is outside the detection limit, it is evaluated as a contaminant. If this setting is not used for contaminant detection, press **CT (1-10)** to disable the settings. However, **CT0** cannot disable the setting.
	Noise removal 1 to 255	The limit for noise removal can remove the effect of the product.

Name	Setting (Default: _)	Description
Contaminant detection under mask	Disabled Enabled	Enable or disable the contaminant detection function in the mask.
Contaminant detection limit in mask		
Contaminant detection algorithm in mask	501	This is automatically selected when the masking function is enabled. Only the masked area is inspected.
Contaminant detection limit in mask	Detection limit 1 to 50 to 255	If the effect value after image processing is outside the detection limit, it is evaluated as a contaminant. If this setting is not used for contamination detection, press **CT (11-14)** to disable the settings.

■ Missing product detection condition

(Adjust registered products → Ins. condition set. → Missing product detection condition)

<table>
<tr><th>Name</th><th colspan="2">Setting
(Default: <u>_</u>)</th><th colspan="2">Description</th></tr>
<tr><td>Quantity total detection</td><td colspan="2"><u>Disabled</u>
Enabled</td><td colspan="2">Enable or disable the quantity total detection function. The area with a gray-scale value outside the product level is calculated to inspect whether the contents (quantity) included in the product are within the specified range. If the product is detected as NG, it is counted as Missing NG. This function cannot be used at the same time as the quantity partial detection.</td></tr>
<tr><td colspan="5">Quantity total detection setting</td></tr>
<tr><td>Algorithm</td><td colspan="2"><u>6001</u></td><td colspan="2">This is automatically selected when the quantity total detection function is enabled. Fix the value to 6001.</td></tr>
<tr><td>Product level</td><td colspan="2">1 to <u>50</u> to 255</td><td colspan="2">Set the gray-scale level of the area for quantity detection. The area outside the product level shall be the criterion in quantity total detection.</td></tr>
<tr><td rowspan="2">Unit</td><td colspan="2" rowspan="2"><u>%</u>
None</td><td>%</td><td>The area value of the calculated acceptable product is set as the reference value (100%). Set this unit to manage the upper- and lower-limit values in % units.</td></tr>
<tr><td>None</td><td>For an area value outside the product level, set this to manage the upper- and lower-limit values directly with numeric values.</td></tr>
<tr><td rowspan="2">Upper limit (+)</td><td>%</td><td>0.1 to <u>10.0</u> to 300.0</td><td colspan="2" rowspan="4">Set the upper and lower limits that cause quantity NG. When the display unit is [%], set a relative value with 100% as the reference value. When the display unit is set as "None", set an area value directly because there is no reference value. In that case, note that the value is not relative.
If you do not want to use the upper or lower limit, press the Upper limit or Lower limit to disable it.</td></tr>
<tr><td>None</td><td>1 to <u>10</u> to 1000000</td></tr>
<tr><td rowspan="2">Lower limit (-)</td><td>%</td><td>0.1 to <u>10.0</u> to 100.0</td></tr>
<tr><td>None</td><td>1 to <u>10</u> to 1000000</td></tr>
<tr><td>Reference value</td><td colspan="2">1 to <u>1,000</u> to 1000000</td><td colspan="2">Set this unit when the display unit is "%". The area value set as the reference value is 100%.</td></tr>
</table>

Name	Setting (Default: _)		Description	
Quantity partial detection	Disabled Enabled		Enable or disable the quantity partial detection function. Set the inspection area in advance and calculate the area with a gray-scale value outside the product level to inspect whether the contents (quantity) included in the product are within the specified range. Up to 30 areas can be registered. If the product is detected as NG, it is counted as Missing NG. This function cannot be used at the same time as the quantity total detection.	
Quantity partial detection setting				
Algorithm	6051		This is automatically selected when the quantity partial detection function is enabled. Fix the value to 6051.	
Product level	1 to 50 to 255		Set the gray-scale level of the area for quantity detection. The area (element count) outside the product level shall be the criterion in quantity partial detection.	
Measurement method	Area measurement Volume measurement		Select the standard for evaluation in the quantity detection; measuring the area (element count) at the product level or higher or measuring the volume (accumulated value of the gray scale values for each element).	
Unit	% None		%	Set the value to manage the lower- and upper-limit values in percentage (%) units, assuming the element count set in [Reference Value] to be 100%.
			None	For an element count outside the product level, set this to manage the upper- and lower-limit values directly with numeric values.
Upper limit (+)	%	0.1 to 10.0 to 300.0	Set the upper- and lower-limit values to detect as NG for each specified area. When the display unit is [%], set a relative value with 100% as the reference value. When the display unit is set as "None", set an area value directly because there is no reference value. In that case, note that the value is not relative. If you do not want to use the upper or lower limit, press the **Upper limit** or **Lower limit** to disable it.	
	None	1 to 1000000		
Lower limit (-)	%	0.1 to 10.0 to 100.0		
	None	1 to 1000000		
Reference value	1 to 1000000		Set the value when the display unit is “%”. The area value set as the reference value is 100%.	

Name	Setting (Default: _)	Description	
Count detection	Disabled Enabled	Enable or disable the quantity detection function. The number of areas to extract is counted to inspect whether the count included in the product is within the specified range. If the product is detected as NG, it is counted as Missing NG.	
Count detection setting			
Algorithm	5001 to 5003	5001	The target of this setting is the case where the interval between products is longer.
		5002	The target of this setting is the case where products are partially closed.
		5003	The target of this setting is the case where products are partially closed. If the interval between products is shorter than the target products of 5002
Product level (common)	1 to 50 to 255	Set the gray-scale level for detection targets to extract. This value is also used for parameters with the same name in shape detection.	
Noise removal (common)	0 to 400 to 800	Set the degree of removal of noise components other than the detection targets to extract. This value is also used for parameters with the same name in shape detection.	
Count	1 to 200	Set the number of the inspection targets included in a PASS product.	

☞ P. 112 Creating the Area for Inspection and Masking

■ Shape inspection condition

(Adjust registered products → Ins. condition set. →Shape inspecting condition)

Name	Setting (Default: _)	Description	
Broken detection	Disabled Enabled	Enable or disable the broken detection function. Broken detection uses the shape of a PASS product as the reference score to which values are compared, and judges the product as NG when it is outside the upper or lower limit value. If the product is detected as NG, it is counted as shape NG.	
Broken detection setting			
Algorithm	5001 to 5003	5001	The target of this setting is the case where the interval between products is longer.
		5002	The target of this setting is the case where products are partially closed.
		5003	The target of this setting is the case where products are partially closed. If the interval between products is shorter than the target products of 5002
Product level (common)	1 to 50 to 255	Set the gray-scale level for detection targets to extract. This value is also used for parameters with the same name in missing product count detection and missing part inspection.	
Noise removal (common)	0 to 400 to 800	Set the degree of removal of noise components other than the detection targets to extract. This value is also used for parameters with the same name in missing product count detection.	
Broken level	1 to 50 to 255	Set the gray-scale level of the target product for broken detection.	
Unit	% None	%	The calculated score of the acceptable product is set as the reference value (100%). Set this unit to manage the upper- and lower-limit values in % units.
		None	For a score outside the product level, set this to manage the upper- and lower-limit values directly with numeric values.

Name	Setting (Default: _)		Description
Upper limit (+)	%	0.1 to 300.0	Set the upper and lower limits that cause crack NG. When the display unit is [%], set a relative value with 100% as the reference value. When the display unit is set as "None", set a score directly because there is no reference value. In that case, note that the value is not relative. If you do not want to use the upper or lower limit, press the **Upper limit** or **Lower limit** to disable it.
	None	1 to 10000	
Lower limit (-)	%	0.1 to 100.0	
	None	1 to 10000	
Reference value	1 to 10,000		Set this unit when the display unit is "%". The score value set as the reference value is 100%.

Name	Setting (Default: _)		Description
Missing part inspection	Disabled Enabled		Enable or disable the missing part inspection function. Missing part inspection uses the shape of a PASS product as the reference score to which values are compared, and judges the product as NG when it is outside the upper or lower limit value. If the product is detected as NG, it is counted as shape NG.
Missing part inspection setting			
Algorithm	5001 to 5003	5001	The target of this setting is the case where the interval between products is longer.
		5002	The target of this setting is the case where products are partially closed.
		5003	The target of this setting is the case where products are partially closed. If the interval between products is shorter than the target products of 5002
Product level (common)	1 to 50 to 255		Set the gray-scale level for detection targets to extract. This value is also used for parameters with the same name in missing product count detection and broken detection.
Noise removal (common)	0 to 400 to 800		Set the degree of removal of noise components other than the detection targets to extract. This value is also used for parameters with the same name in missing product count detection.
Missing Prod. Lv	1 to 50 to 255		Set the gray-scale level of the target product for missing part inspection.

Name	Setting (Default: _)		Description	
Unit	<u>%</u> None		%	The calculated score of the acceptable product is set as the reference value (100%). Set this unit to manage the upper- and lower-limit values in % units.
			None	For a score outside the product level, set this to manage the upper- and lower-limit values directly with numeric values.
Upper limit (+)	%	0.1 to 300.0	Set the upper and lower limits that cause chip NG. When the display unit is [%], set a relative value with 100% as the reference value. When the display unit is set as "None", set a score directly because there is no reference value. In that case, note that the value is not relative. If you do not want to use the upper or lower limit, press the **Upper limit** or **Lower limit** to disable it.	
	None	1 to 1000000		
Lower limit (-)	%	0.1 to 100.0		
	None	1 to 1000000		
Reference value	1 to 1000000		Set this unit when the display unit is "%". The score value set as the reference value is 100%.	

■ Relative virtual weight measurement condition

(Adjust registered products → Ins. condition set. → Relative virtual weight measurement condition)

Name	Setting (Default: _)	Description
Relative weight total detection	<u>Disabled</u> Enabled	Enable or disable the relative weight total detection function. Compares gray-scale values over the product level and the sum of areas (volume value) with the acceptable-weight product to detect the relative weight of the entire product. If the product is detected as NG, it is counted as weight NG.
Relative weight total detection setting		
Algorithm	<u>6301</u>	This is automatically selected when the relative weight detection function is enabled. Fix the value to 6301.
Product level	1 to 320 to 4095	Set the gray-scale level of the target product for the relative weight detection. In relative weight detection, gray-scale values in the area outside [Product level] and the sum of areas are candidates for weight conversion. Adjust the value so that the corresponding part of the product becomes green.

Name	Setting (Default: _)	Description	
Product level 2	1 to 600 to 4095	Adjust [Product level 2] when you want to eliminate components that you do not want to convert to weight values such as belt surface noise in the green areas extracted by adjusting [Product level]. Adjust it so that only the parts you ultimately want to measure as relative weight become yellow. Also, set a value greater than [Product level].	
Unit	% g lb oz None	%	The volume value of the acceptable-weight product (PASS) is set as the reference value (100%). Set this unit to manage the upper- and lower-limit values in % units.
		g	The volume value of the acceptable-weight product (PASS) is converted to the reference measured value. Set this unit to manage the upper- and lower-limit values in g units.
		lb	The volume value of the acceptable-weight product (PASS) is converted to the reference weight value. Set this unit to manage the upper- and lower-limit values in lb units.
		oz	The volume value of the acceptable-weight product (PASS) is converted to the reference weight value. Set this unit to manage the upper- and lower-limit values in oz units.
		None	Specify this unit to manage the upper- and lower-limit values directly with the volume value.
Scale	1 10 0.1	Set this unit when the unit is [g] [lb] [oz]. Specifies the weight range of the value to be measured.	

<table>
<tr><th>Name</th><th colspan="2">Setting
(Default: _)</th><th>Description</th></tr>
<tr><td rowspan="4">Upper limit (+)</td><td>%</td><td>0.1 to 300.0</td><td rowspan="8">Set the upper and lower limits that cause weight NG. When the display unit is [%], set a relative value with 100% as the reference value. When the display unit is set as "None", set a score directly because there is no reference value. In that case, note that the value is not relative.
If you do not want to use the upper or lower limit, press the Upper limit or Lower limit to disable it.</td></tr>
<tr><td>g
lb
oz</td><td>Scale: 1
0.0 to 5000.0
Scale: 10
0 to 50000
Scale: 0.1
0.00 to 500.00</td></tr>
<tr><td>None</td><td>1 to 1000000000</td></tr>
<tr><td rowspan="3">Lower limit (-)</td><td>%</td><td>0.1 to 100.0</td></tr>
<tr><td>g
lb
oz</td><td>Scale: 1
0.0 to 5000.0
Scale: 10
0 to 50000
Scale: 0.1
0.00 to 500.00</td></tr>
<tr><td>None</td><td>1 to 1000000000</td></tr>
<tr><td>Reference value</td><td colspan="2">1 to 1,000,000,000</td><td>Set this unit when the unit is [%] or [g] [lb] [oz]. Set the volume value of the acceptable-weight product.</td></tr>
<tr><td>Reference weight value</td><td colspan="2">Scale: 1
1.0 to 5000.0
Scale: 10
10 to 50000
Scale: 0.1
0.10 to 500.00</td><td>Set this unit when the unit is [g] [lb] [oz]. Set the weight to be managed as acceptable weight.</td></tr>
</table>

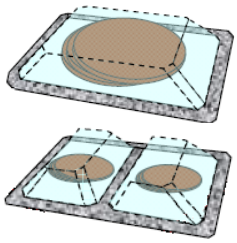
Name	Setting (Default: _)	Description	
Relative weight individual detection	Disabled Enabled	Enable or disable the relative weight individual detection function. Detects the relative weight of the individual objects contained in the product. If the product is detected as NG, it is counted as weight NG.	
Relative weight individual detection setting			
Algorithm	5001 to 5003	5001	The target of this setting is the case where the interval between products is longer.
		5002	The target of this setting is the case where products are partially closed.
		5003	The target of this setting is the case where products are partially closed. If the interval between products is shorter than the target products of 5002
Product level (common)	1 to 50 to 255	Set the gray-scale level for detection targets to extract. This value is also used for parameters with the same name in missing product count detection and shape detection.	
Noise removal (common)	0 to 400 to 800	Set the degree of removal of noise components other than the detection targets to extract. This value is also used for parameters with the same name in missing product count detection and shape detection.	

Name	Setting (Default: _)	Description	
Unit	% g lb oz None	%	The volume value of the acceptable-weight product (PASS) is set as the reference value (100%). Set this unit to manage the upper- and lower-limit values in % units.
		g	The volume value of the acceptable-weight product (PASS) is converted to the reference measured value. Set this unit to manage the upper- and lower-limit values in g units.
		lb	The volume value of the acceptable-weight product (PASS) is converted to the reference weight value. Set this unit to manage the upper- and lower-limit values in lb units.
		oz	The volume value of the acceptable-weight product (PASS) is converted to the reference weight value. Set this unit to manage the upper- and lower-limit values in oz units.
		None	Specify this unit to manage the upper- and lower-limit values directly with the volume value.
Scale	1 10 0.1	Set this unit when the unit is [g]. Specifies the weight range of the value to be measured.	

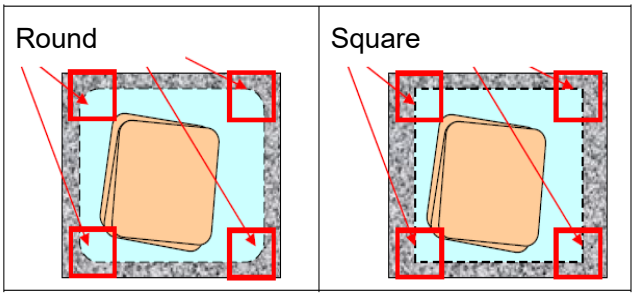
<table>
<tr><th>Name</th><th colspan="2">Setting
(Default: _)</th><th>Description</th></tr>
<tr><td rowspan="3">Upper limit (+)</td><td>%</td><td>0.1 to 300.0</td><td rowspan="6">Set the upper and lower limits that cause weight NG. When the display unit is [%], set a relative value with 100% as the reference value. When the display unit is set as "None", set a score directly because there is no reference value. In that case, note that the value is not relative.
If you do not want to use the upper or lower limit, press the Upper limit or Lower limit to disable it.</td></tr>
<tr><td>g
lb
oz</td><td>Scale: 1
0.0 to 5000.0
Scale: 10
0 to 50000
Scale: 0.1
0.00 to 500.00</td></tr>
<tr><td>None</td><td>1 to 1000000000</td></tr>
<tr><td rowspan="3">Lower limit (-)</td><td>%</td><td>0.1 to 100.0</td></tr>
<tr><td>g
lb
oz</td><td>Scale: 1
0.0 to 5000.0
Scale: 10
0 to 50000
Scale: 0.1
0.00 to 500.00</td></tr>
<tr><td>None</td><td>1 to 1000000000</td></tr>
<tr><td>Reference value</td><td colspan="2">1 to 1,000,000,000</td><td>Set this unit when the unit is [%] or [g] [lb] [oz]. Set the volume value of the acceptable-weight product.</td></tr>
<tr><td>Reference weight value</td><td colspan="2">Scale: 1
1.0 to 5000.0
Scale: 10
10 to 50000
Scale: 0.1
010 to 500.00</td><td>Set this unit when the unit is [g]. Set the weight to be managed as acceptable weight.</td></tr>
</table>

■ Sealing check condition

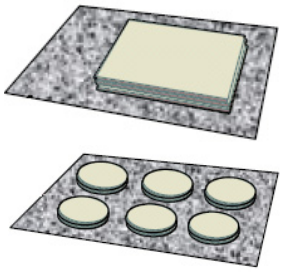
(Adjust registered products → Ins. condition set. → Sealing check condition)

Name	Setting (Default: _)	Description
Sealing peripheral detection	Disabled Enabled	Enable or disable the sealing inspection function with the peripheral detection. If the product shape is square or rectangular, the seal part on the edges or of another desired part of the product is specified as the inspection area, and then if the sealing part of the product is bitten, it is evaluated as an NG product. If the product is detected as NG, it is counted as sealing NG.  ☞ P. 149 How to Set Sealing Inspection with Peripheral Detection

Name	Setting (Default: _)	Description	
Sealing peripheral detection setting			
Algorithm	4001 to 40044	This algorithm detects the product edges.	
		4001	For a 4-side sealing product: The target product is a square or rectangular product that has one sealed side or two or more sealed sides.
		4002	For a 2-side (right and left) sealing product: The target product is a square or rectangular product that has one (right or left) sealed side or two (right and left) sealed sides in the flow direction.
		4003	For a 2-side (top and bottom) sealing product: The target product is a square or rectangular product that has one (top or bottom) sealed side or two (top and bottom) sealed sides in the flow direction.
		4004	For pillow type packaging products: The suitable product is a square or rectangular product with the packaging material that easily becomes one-sided and that has the smaller X-ray transmission density. The seal can be captured more easily than Algorithm 4002.
Product level	1 to 50 to 255	Sets the gray-scale level for identification of the entire product including the sheet and of the belt surface. The area higher than the product level is displayed in yellow when the software numeric keypad for adjustment is displayed. Adjust to the value so that the entire product is displayed in yellow.	
Seal width (top, bottom, right and left)	0.0 to 10.0 to 30.0	Set the width of the seal inspection target area around the product for each direction. If 0.0 is specified, inspection is not performed.	

Name	Setting (Default: _)	Description	
Inner frame adjustment	Disabled Enabled	Enable this for the sealing inner ring with 4 round corners. 	
Inner frame adjustment level	1 to 22 to 33	Set the roundness of the inner frame with the numeric value. The roundness degree increases as the value increases.	
Inspection area	Periphery only Peripheral and creation area	Set the sealing check target area.	
		Periphery only	The target area is the product periphery only.
		Peripheral and creation area	The target area is the area created as required in addition to the product periphery.

Name	Setting (Default: _)	Description	
Seal the check limit (SC1 to SC3).		Press Details ▸ to display.	
Seal check algorithm	4051 to 4052	This algorithm detects the product bitten in the sealing check area.	
		4051	The target is the product with the seal that is free from wrinkles or folds, and a product bitten in the sealing check area is detected.
		4052	The target is the product with the seal that is free from wrinkles or folds, and a product bitten in the sealing check area is detected. This algorithm detects a product bitten smaller than Algorithm 4051.
Sealing check limit	Detection limit 1 to 255	If the effect value in the specified seal area is outside the detection limit, this is evaluated as the sealing NG. The sealed area is painted in pink. By pressing **SC (1 to 3)**, this setting can be disabled.	
	Noise removal 1 to 255	Removes the effect due to the noise element of the product.	

Name	Setting (Default: _)	Description
Sealing shape detection	Disabled Enabled	The products whose content is molded and that are sealed according to the content are the inspection target, and the shape of the content is memorized. If a difference from the content shape is detected, the product is evaluated as NG. If the product is detected as NG, it is counted as sealing NG.  ☞ P. 150 How to Set Sealing Inspection with Shape Detection
Sealing shape detection setting		
Algorithm	4301	This algorithm extracts the area for sealing inspection (shape inspection). This is automatically selected when the sealing inspection function (shape inspection) is enabled. Fix the value to 4301.
Product level	1 to 30 to 255	Set the gray-scale level of the seal part to be detected. The area outside the product level is displayed in green when the software numeric keypad for adjustment is displayed. Adjust the value so that the corresponding seal part becomes green.
Product level 2	1 to 50 to 255	Set the gray-scale level to recognize the product shape in the normal state without sealing. Specify a larger value than [Product level] since the difference from the product level is set as the seal detection area. Adjust the value so that the extracted product is displayed in blue when the software numeric keypad for adjustment is displayed.
Product count	Single Multiple	Select single when the area count is judged as 1. If more than one product is arranged at a much longer interval in the area, select a number greater than one.
Area removal	0 to 400 to 800	Adjust the value if the noise element cannot be removed completely by the adjustment of Product level and Product level 2.
Wrinkle removal	Disabled Enabled	Enable this if many wrinkles occur at the joint and false detection frequently occurs for a product with sheets overlapped and with content put between them.

Name	Setting (Default: _)	Description
Wrinkle removal level	1 to 10 to 255	Set the degree of removing a wrinkle. Increase this value to remove a larger wrinkle.
Sealing check limit (USC1 to USC2)		Press Details ▸ to display.
Seal check algorithm	4351	This algorithm detects a product bitten in the sealing check area. This is automatically selected when the function is enabled. Fix the value to 4351.
Sealing check limit	Detection limit 1 to 255	If the effect value in the specified seal area is outside the detection limit, this is evaluated as the sealing NG. The sealed area is painted in pink.
	Noise removal 1 to 255	Removes the effect due to the noise element of the product.

☞ P. 112 Creating the Area for Inspection and Masking

■ Frame mask

(Adjust registered products → Mask condition → Frame mask)

Name	Setting (Default: _)	Description
Frame mask	Disabled Enabled	Enable or disable the frame mask function.
Frame mask condition		
Frame mask algorithm	3001	This is automatically selected when the frame mask function is enabled.
Edge level	1 to 50 to 255	Set the gray-scale level of the product edge. The area determined as the product edge is masked.
Transverse expansion width	0 to 11 to 33	Adjust the masking width in the transverse directions on the operation screen.
Longitudinal expansion width	0 to 11 to 33	Adjust the masking width in the longitudinal directions on the operation screen.

■ Can mask condition

(Adjust registered products → Mask condition → Can mask condition)

Name	Setting (Default: _)	Description
Can mask	Disabled Enabled	Enable or disable the can mask function.
Can mask condition		
Can mask algorithm	3101	This is automatically selected when the can mask function is enabled. Fix the value to 3101.
Can mask level	0 to 255	Set the gray-scale level of the can edge. The area determined as the product edge is masked.

■ Partial masking condition

(Adjust registered products → Mask condition → Partial masking condition)

Name	Setting (Default: _)	Description
Partial masking	Disabled Enabled	Enable or disable the partial masking function.
Partial masking condition		
☞ P. 112 Creating the Area for Inspection and Masking		

■ Deoxidizer masking condition

(Adjust registered products → Mask condition → Deoxidizer masking condition)

Name	Setting (Default: _)	Description	
Deoxidizer masking	Disabled Enabled	Enable or disable the deoxidizer masking function.	
Deoxidizer masking condition			
Deoxidizer masking Algorithm	3111 3112	3111	Deoxidizer masking algorithm for products with irregularity.
		3112	Deoxidizer masking algorithm for products without irregularities.
Product level	1 to 180 to 255	Set the border values of the deoxidizer and product transmittance image gray-scale level.	
Deoxidizer level	1 to 5 to 255	Adjusts the particle condition level inside the deoxidizer. In normal circumstances, changing this item is not required.	
Deoxidizer aggregation	1 to 3 to 10	If the area to be masked inside the deoxidizer is split, increase the deoxidizer aggregation level value and adjust to combine the split areas.	
Extension width	0 to 5 to 15	The masking size expands in units of dots. If the extracted deoxidizer area is smaller than the masking area, increase the extension width value.	
Ignored area	0 to 800 to 1000	If an area smaller other than the deoxidizer is masked, increase the ignored-area value to remove the unnecessary masking area. For inspected products with less irregularity, adjust this value according to the mask-shaping level. For inspected products with more irregularity, adjust this value according to the noise-removal level.	
		Press Details▸ to display.	
Deoxidizer count detection	Disabled Enabled	Detects whether the specified number of deoxidants are contained in the product. If the product is detected as NG, it is counted as Missing NG.	
Deoxidant count	1 to 255	Set the specified number of deoxidants contained in the product.	
Deoxidant quantity detection	Disabled Enabled	Detects whether deoxidants for the specified area are contained in the product. If the product is detected as NG, it is counted as Missing NG.	

<table>
<tr><th>Name</th><th colspan="2">Setting
(Default: <u>%</u>)</th><th>Description</th></tr>
<tr><td rowspan="3">Unit</td><td colspan="2" rowspan="3"><u>%</u>
None</td><td colspan="2">Set this when deoxidant quantity detection is performed.</td></tr>
<tr><td>%</td><td>The calculated score of the acceptable product is set as the reference value (100%). Set this unit to manage the upper- and lower-limit values in % units.</td></tr>
<tr><td>None</td><td>For a score outside the product level, set this to manage the upper- and lower-limit values directly with numeric values.</td></tr>
<tr><td rowspan="2">Upper limit (+)</td><td>%</td><td>0.1 to 300.0</td><td rowspan="4" colspan="2">Set the upper and lower limits that cause deoxidant quantity NG. When the display unit is [%], set a relative value with 100% as the reference value. When the display unit is set as "None", set a score directly because there is no reference value. In that case, note that the value is not relative.
If you do not want to use the upper or lower limit, press the Upper limit or Lower limit to disable it.</td></tr>
<tr><td>None</td><td>1 to 1000000</td></tr>
<tr><td rowspan="2">Lower limit (-)</td><td>%</td><td>0.1 to 100.0</td></tr>
<tr><td>None</td><td>1 to 1000000</td></tr>
<tr><td>Reference value</td><td colspan="2">1 to 1,000 to 1000000</td><td colspan="2">Set this unit when the display unit is "%". The score value set as the reference value is 100%.</td></tr>
</table>

> Creating the Area for Inspection and Masking

If the area to be inspected and the area not to be inspected are mixed, set or register each area in advance to improve the inspection accuracy. The regions can be set for the following functions:

(1) Quantity partial detection

If there are products out of the specified quantity range in the previously specified area, they are judged as NG.

From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Missing detection condition] to display the [Missing detection limit] screen, and set this function from [Area setting].

To perform quantity partial detection by the product type registration navigation, be sure to create the area in advance of the inspection. Otherwise, the correct set value cannot be calculated.

(2) Sealing inspection with peripheral detection

If there are seal products in the previously specified area, they are judged as sealing NG.

From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Sealing detection condition] to display the [Package perimeter check setting] screen, and set this function from [Area setting].

(3) Partial masking

Perform the masking processing of the previously specified area.

From the "Menu" screen, select [Adjust registered products] → [Masking condition] to display the [Partial masking] screen, and set this function from [Area setting].

(4) Inspection by area

Set multiple areas in one product and specify different inspection conditions for each area to improve inspection accuracy. It can be used for quantity total detection, quantity partial detection, count detection, split shape inspection, broken shape inspection, relative weight total detection, and relative weight individual detection.

From the "Menu" screen, select [Adjust registered products] → [Setting by area] to specify the areas.

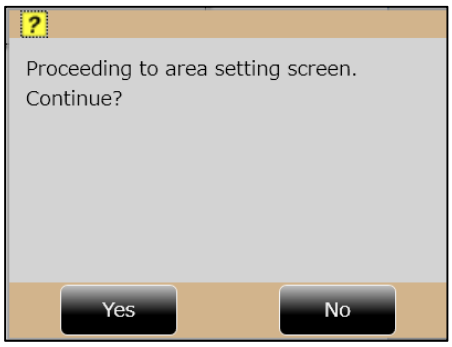
By using the area tracking function for the specified area position to track the product conveyance position actually, restriction of the conveyance position by using the product guide is not required.

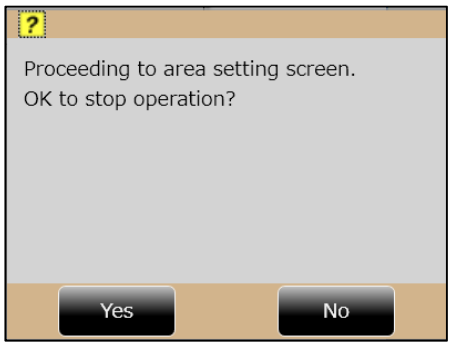
If the area tracking function is enabled, the time required for rejection may become more necessary than normal operation. Note that the rejection time depends on the positional relationship with the downstream rejector or other devices and on the product length. Check that the rejection time is appropriate even if this function is enabled.

The procedure for creating the area is described using the partial masking function as example.

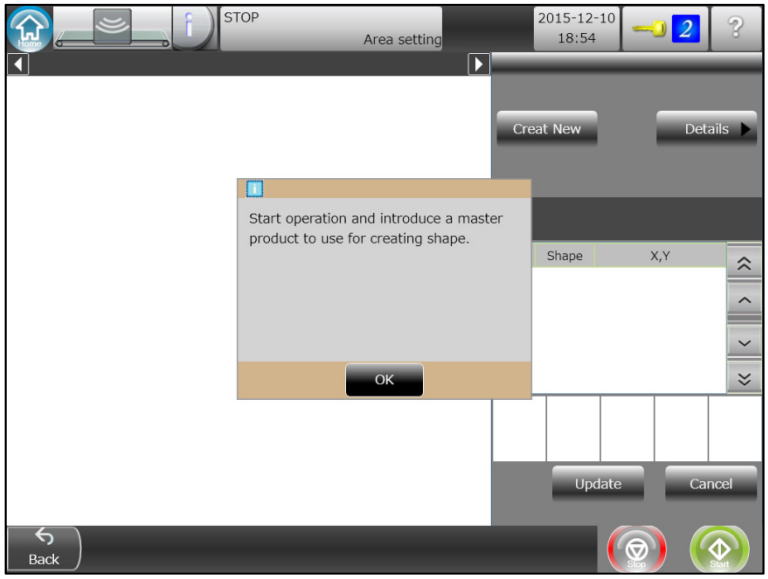
■ Procedure for creating the area

1 Press [Area setting] on the [Partial masking] screen. The message to move to the area setting screen appears if the operation stops. The message to stop the operation and move to the area setting screen appears during the operation. Press [Yes] for each message to move to the area setting screen. During the operation, it stops.

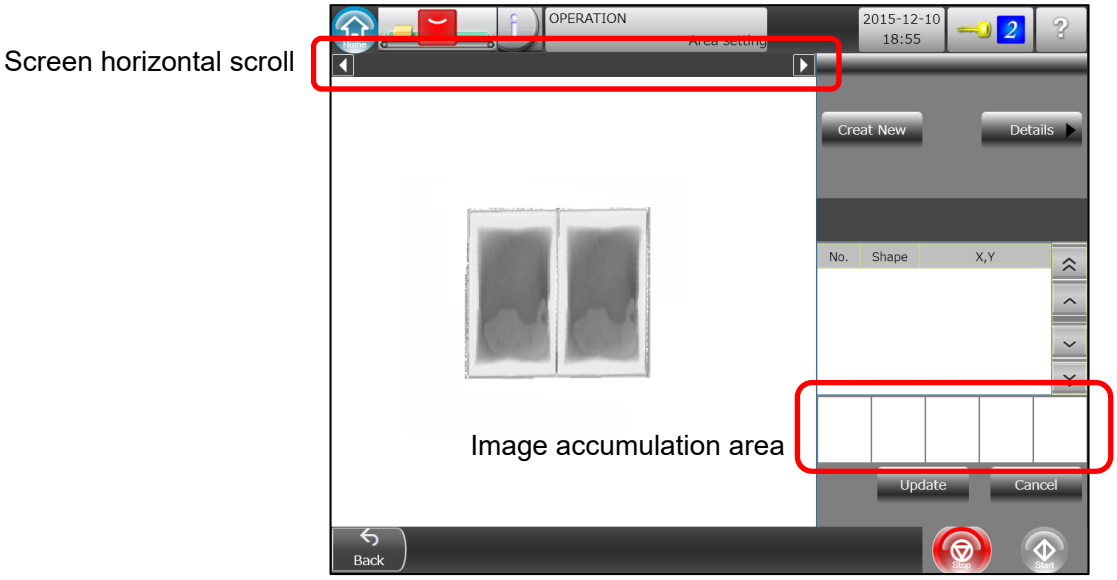




2 To set the area, the master product must be conveyed to the device. Press [OK] for the confirmation message, and press [Start].

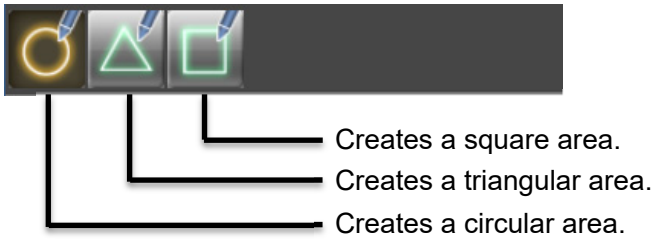


3 After X-rays are radiated and the conveyor is driven, convey the master product of the target product to the device. A transmittance image of the product appears on the screen. Up to 5 product images can be accumulated. Select the desired image to display it on the screen.

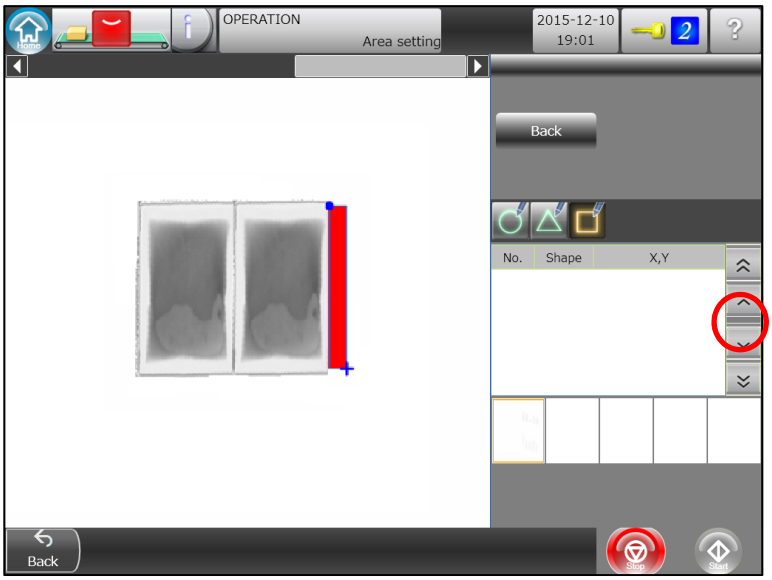


If the image protrudes from the screen, slide the scroll bar at the top of the image display area horizontally to display the overall image from the product top to the rear edge.

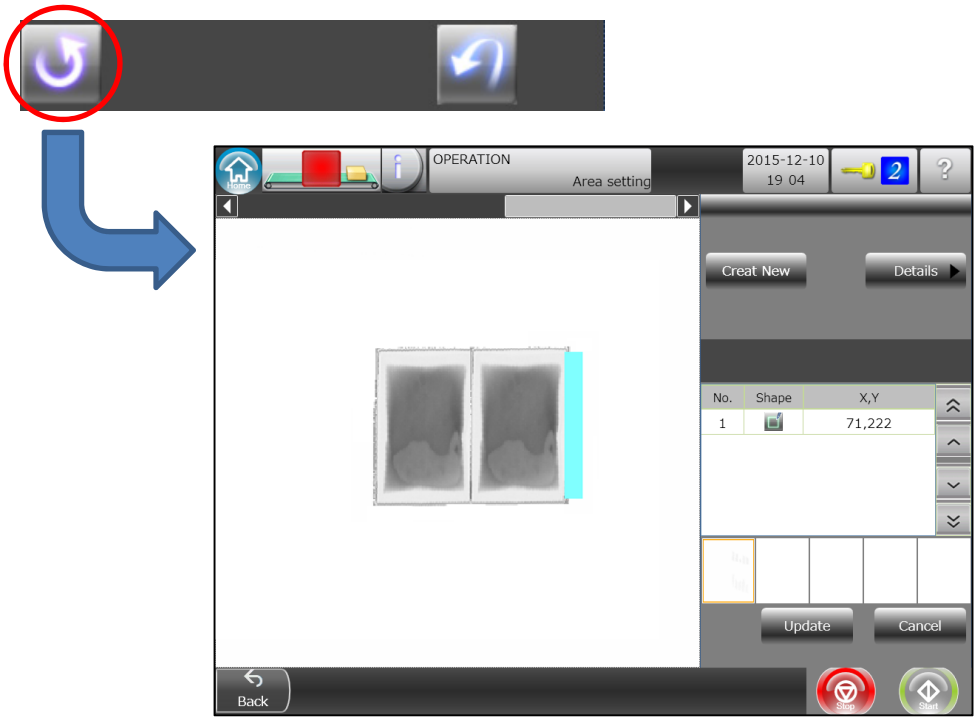
4 Press [Create New] to enable area registration. Select the button of almost the same shape as the area to be registered.



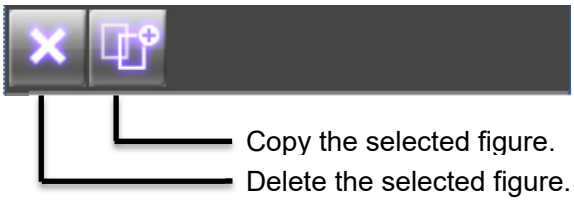
5 Specify the starting point (upper left-hand corner of the externally placed rectangle) of the figure to be registered on the transmittance image. A blue cross-shaped mark appears at the point to be specified. Press  to determine the specified position. Specify the ending point and press  to create the figure. If the points are wrongly specified, press  to cancel the specified points.



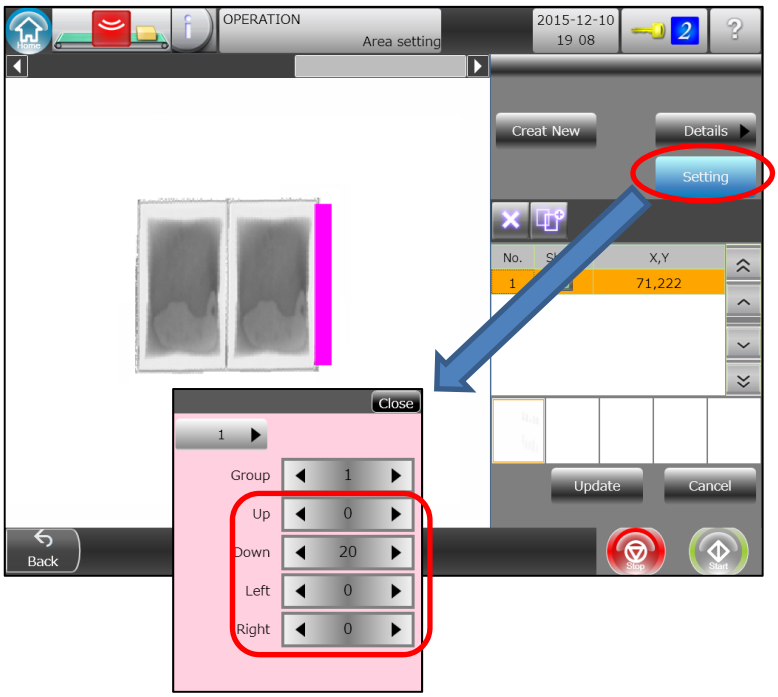
6 Press  to register the designed figure. The registered figure turns blue, and the X-width and Y-width are listed.



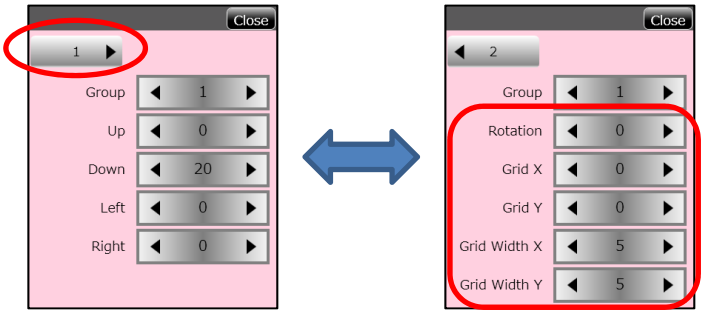
7 The corresponding figure can be moved, copied, and deleted. To move the corresponding figure, move the figure to the desired position while pressing the figure on the transmittance image display area with your finger, and then remove your finger from the display. To copy or delete the figure, select the corresponding figure from the transmittance image display area or the list (the selected figure turns pink), and press the following button.

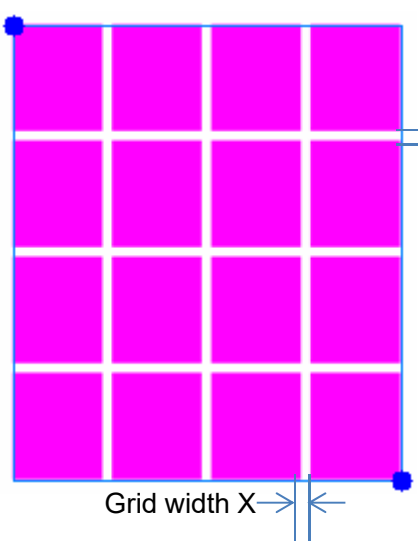


8 The position of the corresponding figure can be adjusted again vertically and horizontally. After selecting the figure, press [Setting] to adjust the position in the following screen.

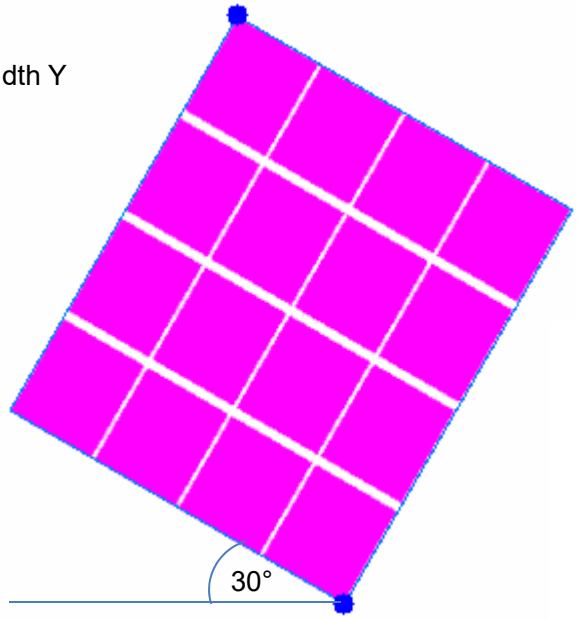


9 Additionally, the corresponding figure can be rotated and gridironed. Press [Setting] and press [1 ▶] on the following screen to switch the display and set the rotation angle and number of the grid.





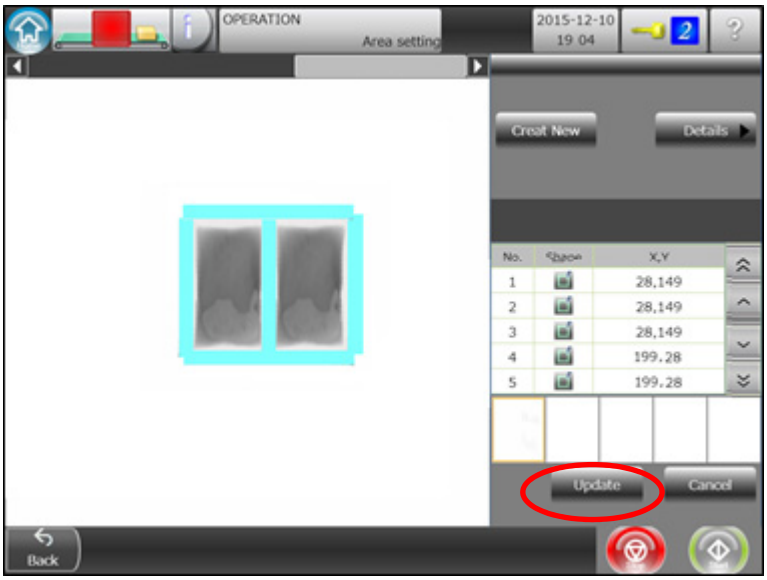
Example: Grid number X: 3, Grid number Y: 3



Example: Grid number X: 3, Grid number Y: 3, Rotation: 30 (angle in degrees)

The [Group] setting is specified when area-divided inspection is used. The same inspection conditions can be set for multiple areas by grouping them.

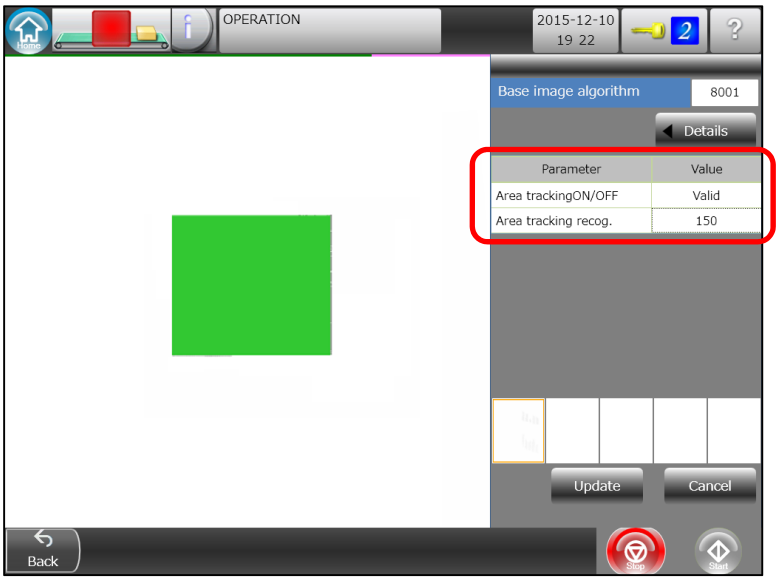
10 After editing of the figure has been completed, select the previously accumulated images or convey another product for displaying a new image to check that the area position is correctly specified. After checking has been completed, press [Update] to reflect the registered figure.



The [Partial masking] function was used as example for the above description of the procedure for creating areas. Create the areas used in [Quantity partial detection] and [Sealing Check] (Peripheral inspection) according to the same procedure.

■ To use the area tracking function

You can allow the registered figure to track the product conveyance posture. Press [Details] to enable [Area tracking ON/OFF] on the displayed screen, and specify the gray-scale level to a border between the conveyed product and belt surface to [Area tracking recog.]. The area higher than the specified gray-scale level is displayed in green when the software numeric keypad for adjustment is displayed. After setting has been completed, press [Update].

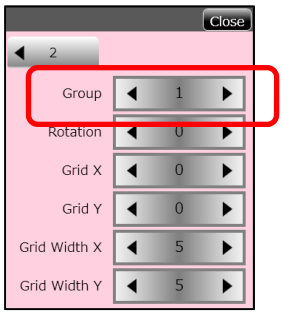


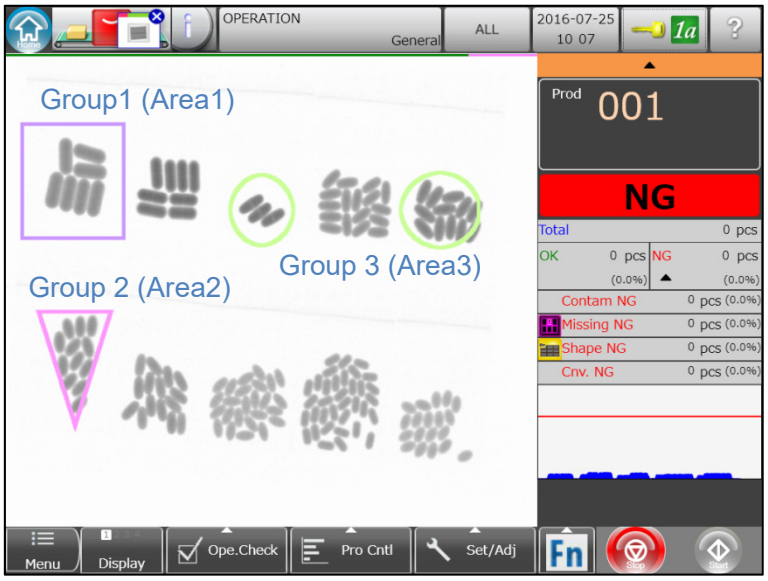
(1) The area track function can be used only for apparently square products
(2) The tilt can be tracked within the product posture range of ±30°.

■ Performing inspection by changing settings for different areas

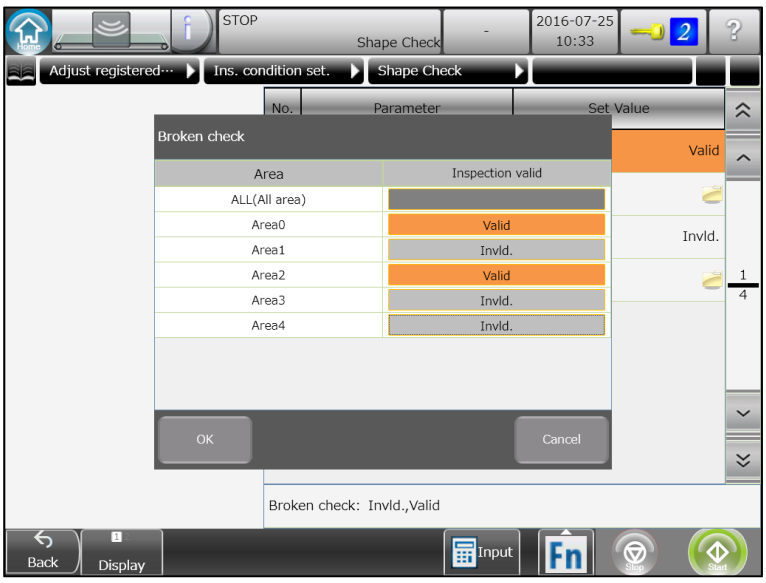
For quantity total detection, quantity partial detection, count detection, split shape inspection, broken shape inspection, relative weight total detection, and relative weight individual detection, inspection can be performed with different limit values by changing the setting values for each of the registered areas.

1 Specify the group for which the same setting value is used when setting the area as described above. Up to 4 groups can be registered. Areas with no group specified will become "Area0".





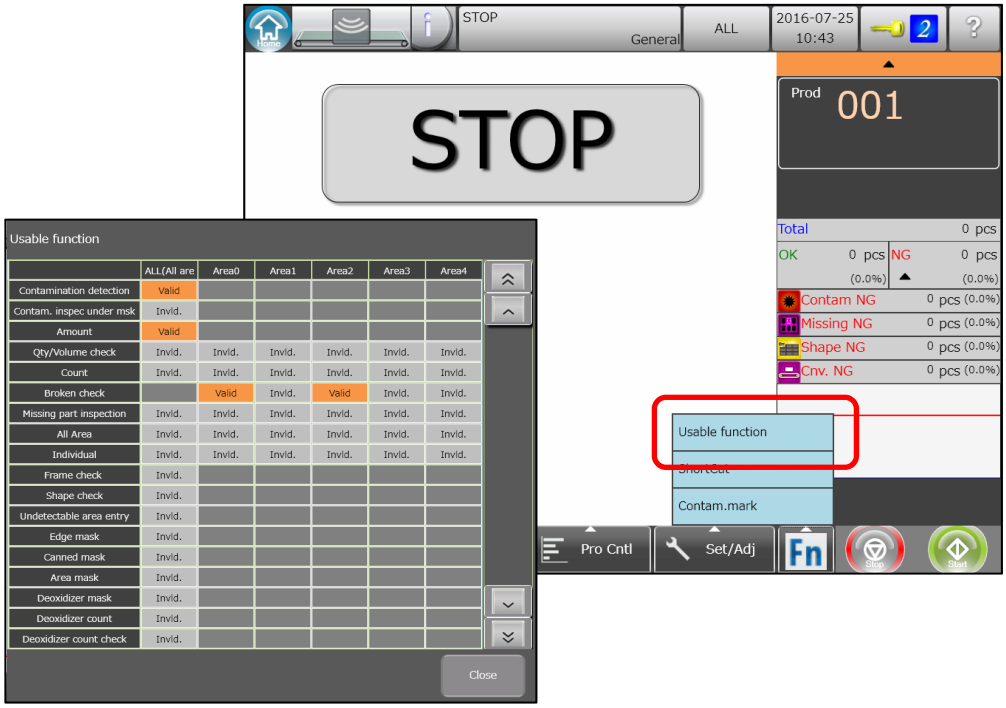
2 From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting], and select quantity total detection, quantity partial detection, count detection, split shape inspection, broken shape inspection, relative weight total detection, and relative weight individual detection. The following screen is displayed. Select the areas (Group: Area) you want to set. (Multiple areas can be selected.)



To specify no area, set [ALL] to [Enabled].

3 On each of the inspection setting screens, press the [Area (0 to 4)] button at the top of the screen to select the area you want to set. Then, the specified parameters become the setting values of the specified area.

4 When [Function Used] is selected from [Fn] of the production screen, the currently set areas can be viewed.



■ RJ condition

(Adjust registered products → RJ condition)

Name	Setting (Default: _)	Description
Rejector conveyor speed	10 to 20 to 120 [m/min]	Sets RJ conveyor speed.
T3(Rejection delay time)	1 to 2000 to 30000 [ms]	Sets the time after the product is detected by [Product recognition] (Photocell or Auto recognition) until rejection operation starts.
T4(RJ operation time)	5 to 900 to 30000 [ms]	Sets the time from the start to the end of rejection operation.

■ Colored Mark display

(Adjust registered products → Screen display→ Colored Mark)

Name	Setting (Default: _)	Description	
Contaminant detection	▪ Filling ▪ Mark (Large) ▪ Frame of mark	Filling	The contamination detection area is filled.
		Mark (Large)	The contamination detection area is marked and expanded to display the detection position clearly.
		Frame of mark	The region where contaminant is detected is enclosed.
Sealing check			
Inspection part	▪ Filling ▪ Mark (Large)	Filling	The area where sealing is detected is filled.
		Mark (Large)	The area where sealing is detected is marked and expanded to display the detection position clearly.
Sealed part	▪ Filling ▪ Frame of mark	Filling	The detection area around the product is filled for the package check (peripheral inspection).
		Frame of mark	The detection area around the product is marked by surrounding the sealing check (peripheral inspection).

Name	Setting (Default: _)	Description	
Missing Inspection			
Product part	▪ Filling ▪ Frame of mark	Filling	The detected product area is filled.
		Frame of mark	The detected product area is marked by surrounding it.
Range	▪ Filling ▪ Frame of mark	Filling	The area created in [Missing part inspection] is filled.
		Frame of mark	The area created in the missing part inspection is marked by surrounding it.
Relative mass measure			
Product part	▪ No ▪ Filling	No	The area is not colored.
		Filling	The detected product area is filled.
Shape inspection			
Product part	▪ No ▪ Filling	No	The area is not colored.
		Filling	The detected product area is filled.
Undetectable area entry			
Inspected part	▪ Filling ▪ Frame of mark	Filling	The product area that entered the uninspected area is filled.
		Frame of mark	The product area that entered the uninspected area is marked by surrounding it.
Mask			
Masking part	▪ Filling ▪ Frame of mark	Filling	The created masking area is filled.
		Frame of mark	The created masking area is marked by surrounding it.

■ Image displaying

(Adjust registered products → Screen display→ Image displaying)

Name	Setting (Default: _)	Description
Image hold condition	▪ Manual ▪ At NG occurrence ▪ All	Set the conditions to hold the transmittance image of the product. [Manual] holds the image by touching the transmittance image display area when the product is displayed. By [At NG occurrence], the image is automatically held in case of NG evaluation. By [All], the image is automatically held every time the product passes.
How to release image paused	▪ Eval. ▪ Time	Set the method to release a still transmittance image of the product. When [Time] is specified, the still image is automatically released after the time specified in [Image hold retention time (sec)].
Image holding time (sec)	0.5 to 8 to 25.5	Specify the image hold retention time when [Image hold release method] is specified as [Time].

■ Hazard level monitoring

(Adjust registered products → NG condition → Hazard level monitoring)

Name	Setting (Default: _)	Description
Hazard level monitoring	Disabled Enabled	Specify whether to enable or disable the hazard level monitoring function.
Operation at hazard level detection	Alarm Error	Set whether to set the device condition as the alarm or error if a hazardous object is detected.

■ Hazard level

(Adjust registered products → NG condition → Hazard level monitoring → Hazard level)

Name	Setting (Default: _)	Description
Hazard level (CT0 to CT10)		
Hazard level	1 to 255	Determines that a hazardous material has been detected if the effect value after image processing exceeds the hazard level. Set a value greater than the contaminant detection limit in normal CT0 to 10. Press **CT (0-10)** to disable the hazard level.
Detection size (Only for CT0)	0 to 1,000,000	Press Details to display. Determines that a hazardous material has been detected if the region where contamination was detected in CT0 is larger for one product. Specify the region size with the element count. Press **CT (0)** to disable the hazard level.

■ Hazard level in the mask

(Adjust registered products → NG condition → Hazard level monitoring → Hazard level in the mask)

Name	Setting (Default: _)	Description
Hazard level (CT11 to CT14)		
Hazard level	1 to 255	Determines that a hazardous material has been detected if the effect value after image processing exceeds the hazard level. Set a value greater than the contaminant detection limit in normal CT11 to 14. Press **CT (11-14)** to disable the hazard level.

■ Full detection

(Adjust registered products → NG condition → Full detection)

Name	Setting (Default: _)	Description	
Box full quantity	0 to 9999	Specify the number of products allowed to be conveyed until the status changes to “error” after the full detection alarm is issued. 0: Stops immediately with an error without displaying an alarm. 9999: Continues to display an alarm without stopping with an error.	
Full detection target	PASS product NG product	Set the target of full quantity count.	
		PASS product	Counts PASS products only.
		NG product	Counts NG products only.

If [Bulk Type] is specified as the product conveying method, the target is "NG product" only.

■ NG rate NG

(Adjust registered products → NG condition → NG rate NG)

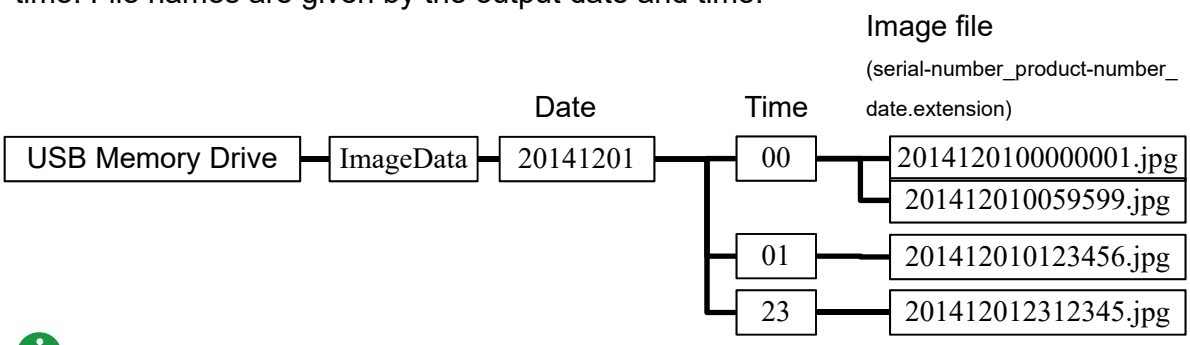
Name	Setting (Default: _)	Description
NG rate	0 to 100 (%)	Set the NG rate as the condition of NG rate NG. When the NG rate is 0%, no NG rate is calculated.
NG Rate Batch	0 to 100	Set the NG rate batch. An alarm (or an error) is displayed if the NG rate in the NG rate batch is above the specified value (NG rate) during NG rate NG evaluation.
NG rate target	Other than OK Contaminant NG Missing NG Shape NG Sealing NG External NG2 External NG Carrying NG Weight NG	Set the target products for monitoring of NG rate NG.

■ Saving image USB setting

(USB → Saving image to USB)

Name	Setting (Default: _)	Description
Registered image type	▪ Display image ▪ Unprocessed image	Set an image type to be saved in the USB memory. Set “Display image” to save the image displayed on the screen.
Image saving timing	▪ Manual ▪ All ▪ NG	Set a timing to save the inspected product image in the USB memory. When you touch the transparent image display area while the moving image of the product is displayed in “Manual”, the still image is automatically saved in the USB memory. When [Image automatic saving in USB] is set to [Valid], [All] is not displayed.
Image automatic saving in USB	▪ Invalid ▪ Valid	Set “Valid” to automatically save the image displayed on the screen in the USB memory.
Image file format	▪ JPEG ▪ TIFF ▪ PNG	Set a format of the image file to be saved in the USB memory.

Image files recorded by this equipment are stored in folders separated by date and time. File names are given by the output date and time.



If the equipment produces 150 or more products per minute, it may not save all image files.

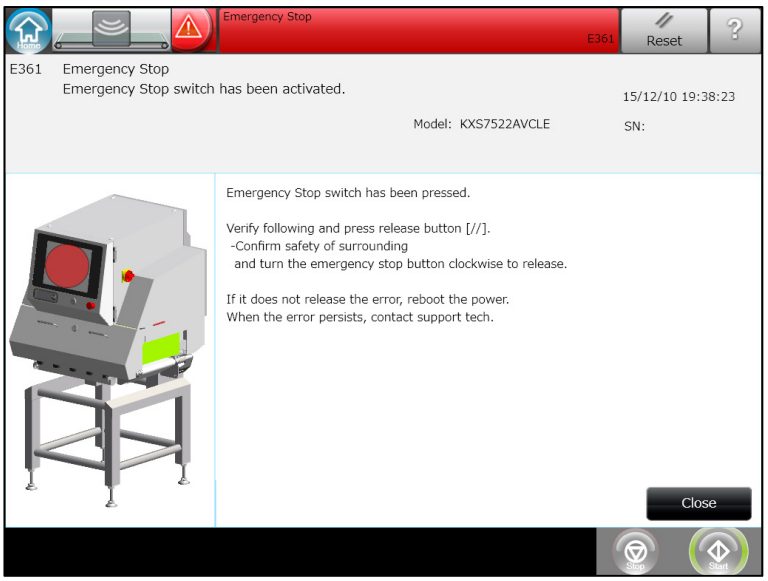
> Handling Errors and Alarms

If the device detects any abnormality, the error message or alarm message is displayed on the screen.

If an error occurs, the error screen shows the occurrence date, model, serial number, and detailed explanation. If an alarm is issued, press [Help (?)] at the upper right corner of the screen to display the same information as the error.

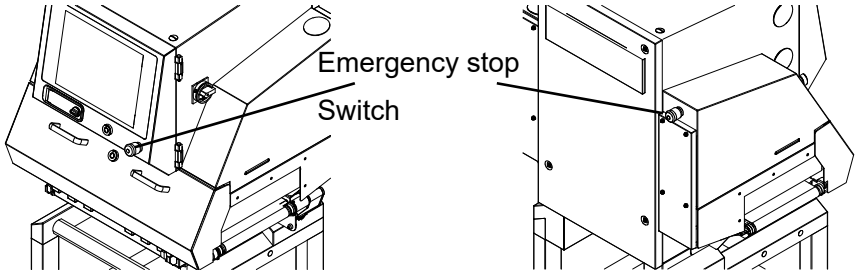
The device cannot be operated if an error is displayed.

You can run the device even when an alarm is issued. The parameter setting allows stopping of the device when an alarm is displayed. Set the parameter depending on the production line conditions.



Warning

(1) In an emergency, press the Emergency stop switch to stop the X-ray Inspection system. An error message (E361) is displayed on the screen.



Releasing Emergency Stop Switch and recovery method

(a) Release Emergency Stop Switch. Turn the head of the switch in the marked direction.

(b) Use the Reset button to reset the error.
Tap the Reset [//] button displayed on the screen.

(c) Address the cause of the emergency stop, remove the product on the conveyor and rejctor, and restart operations.

(2) For safety, NEVER touch any moving part during operation.

(3) For safety, NEVER operate the X-ray Inspection System when it is partly disassembled.

(4) For safety, ALWAYS ensure that the operator is clear from any moving part before operating the X-ray Inspection System by remote control.

> Daily operation according to the Smart guide

■ Using Smart Guide

Smart Guide makes the checkweigher display on-screen instructions to follow for daily operations to prevent incorrect operations or the omission of steps.

☞ P. 272 Using Smart Guide

■ Setting when using the Smart guide

(Maint.and Setting → Functions → Smart guide)

Name	Setting (Default: _)	Description	
Smart guide	No Standard	Select the Smart guide function to be used.	
		No	Does not use the Smart guide function.
		Standard	Uses the standard Smart guide function.
Phase2: Register brand	No 1a 1b 2	Select the access level to display the “Register new product.” button in the Smart guide phase 2.	
		No	Does not display the “Register new product.” button.
		1a to 2	Displays the “Register new product.” button at the access level higher than the selected level.
Phase2: Adjust detection cap	No 1a 1b 2	Select the access level to display the “Adjust detection cap” button in the Smart guide phase 2.	
		No	Does not display the “Adjust detection cap” button.
		1a to 2	Displays the “Adjust detection cap” button at the access level higher than the selected level.
Phase4: Validate production	No 1a 1b 2	Select the access level to display the “During Prod. Check” button in the Smart guide phase 4.	
		No	Does not display the “During Prod. Check” button.
		1a to 2	Displays the “During Prod. Check” button at the access level higher than the selected level.
Verify post-pro validations	1 to 5 to 10	Set the count of the operation check after the production finishes. The operation check after the production finishes at more than the specified count is not allowed.	

■ Workflow in accordance with the Smart guide

The following describes the standard flow of operations when using Smart Guide.

1 Perform an inspection before starting operations.

Checking for contact with other devices Check that the X-ray inspection system does not come into contact with the upstream/downstream conveyor or peripheral equipment.

- Cleaning around the conveyor
- Clean the checkweigher for correct measurement and equipment maintenance.
- Checking the conveyor belt
  Replace the belt if there is any fraying.

2 Turn the power on.

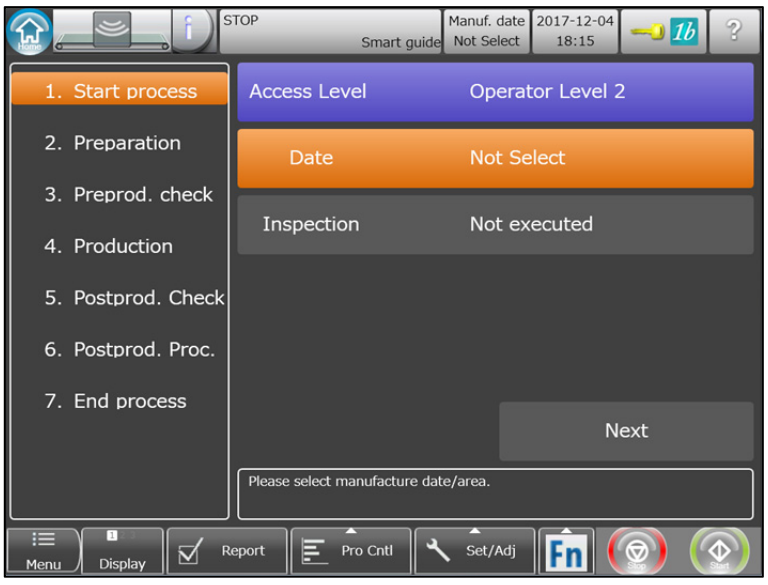
☞ P. 41 Turning On/Off Power

3 Perform an inspection and check before starting production.

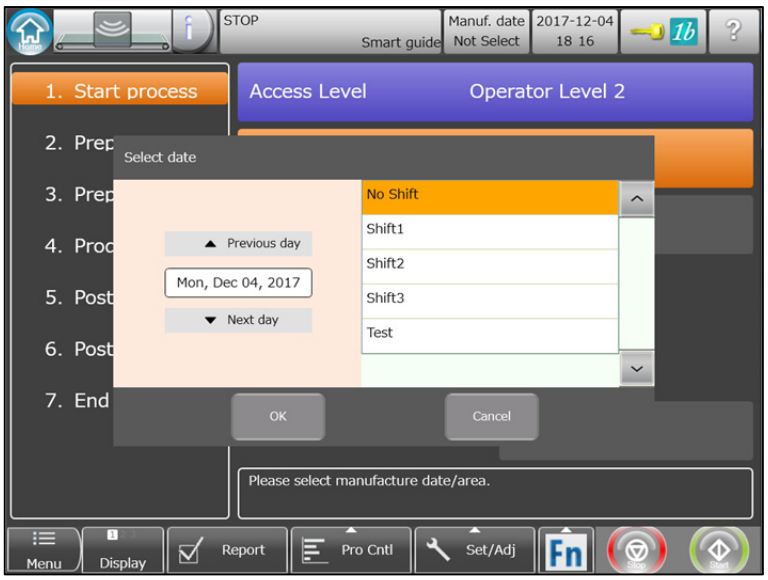
Perform the following operations by following the on-screen instructions.

- Selecting an access level
  Press [Access Level] to set the access level according to the work type.

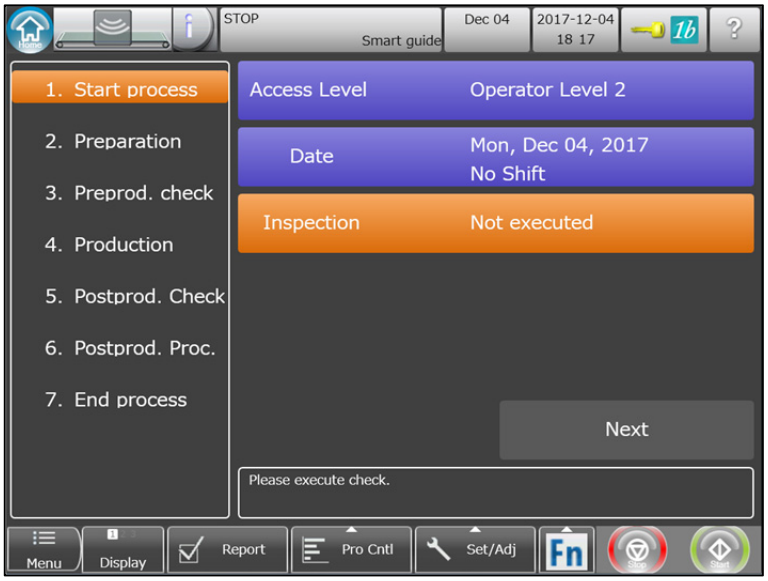
☞ P. 41 Changing Access Level



- Selecting the manufacture date and manufacture unit
  Press [Date] to set the production date and production segment.



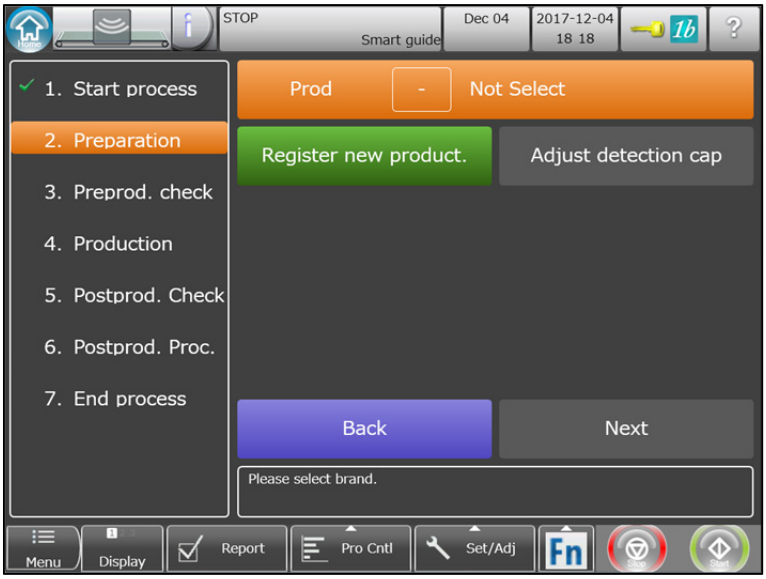
- Inspection before starting production
  Press [Inspection] to display the inspection items on the screen. Press [Yes] after checking. Press [Next] to proceed to the product type selection.



- Selecting a product

  Press [Prod] to check and select the target product type, and press [Prod.Chg.]. Press [Next] after checking the product type.

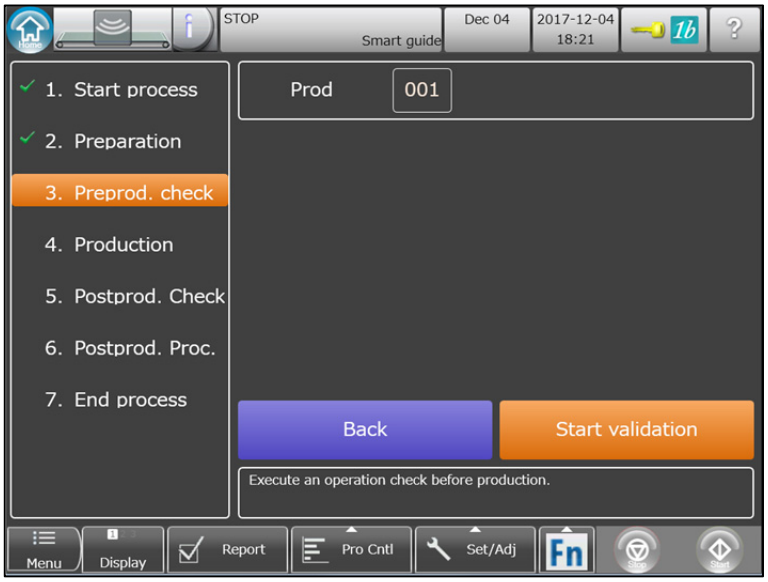
  To register a new product, tap [Register new product] and set it.



If the product registration is not completed, proceeding to the next process is not allowed. Check that the product parameter setting is completed.
Press [Adjust detection cat] to move to the general screen and to operate in the check mode. Carry a product and adjust the detection limit on this screen if required.

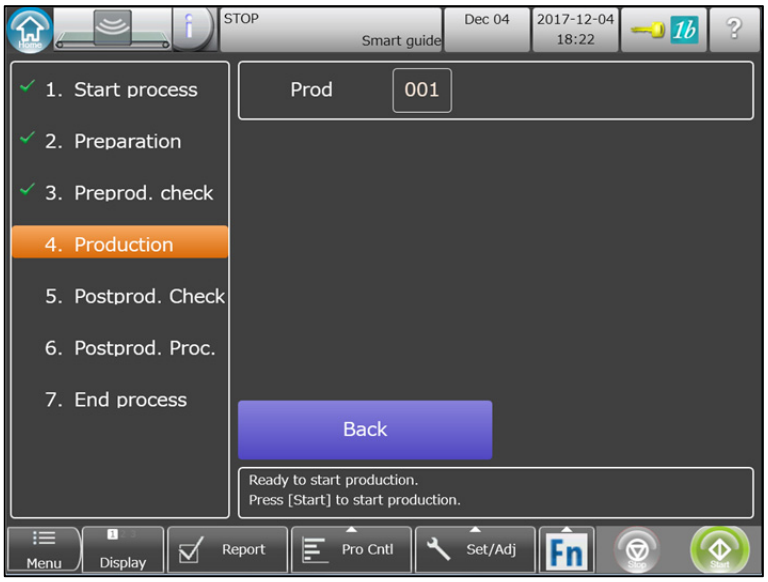
- Operation check before production

  Press [Start validation] to check operation before production. After the operation check is completed, press [Completed] to exit the operation check. If the operation check result is abnormal, perform the operation check again, or press the [Back] button to select the product type again, adjust the contamination inspection limit again, and then perform the operation check again.



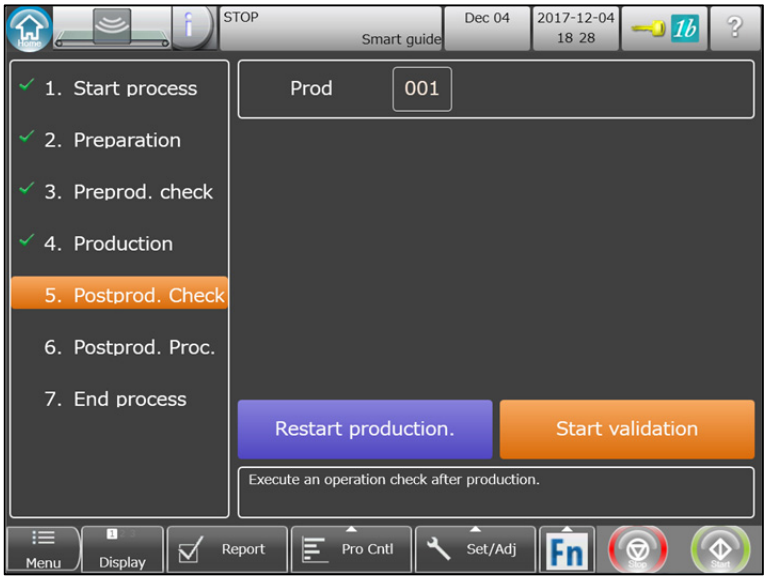
4 Start production.

If the operation check before production is normal, press [Completed] to display the following screen, and press the start button to start production. To check how the production progresses, press the [Display] button to move to the general screen.



5 Perform a check at production completion.

Select [Stop Production] while operation stops to display the following screen.
To finish, tap [Start validation] to perform an operation check at production completion.



Follow the on-screen instructions to perform the operation check that was performed before starting production again.

If the operation check is successful, operation during production can be determined as normal.

Check that there is no problem with the operation check result, and press [Completed]. If the operation check is abnormal, check the operation again, or terminate the operation forcibly.

☞ P. 275 Terminating a process forcibly

6 Perform the next production.

After checking the production statistics, press [Next] to display the following screen. To produce the next product continuously, select [Add production].

7 Execute end process.

Press [Inspection], and perform inspection according to the instructions on the screen. After the inspection finishes, press [Complete current process.] to exit.

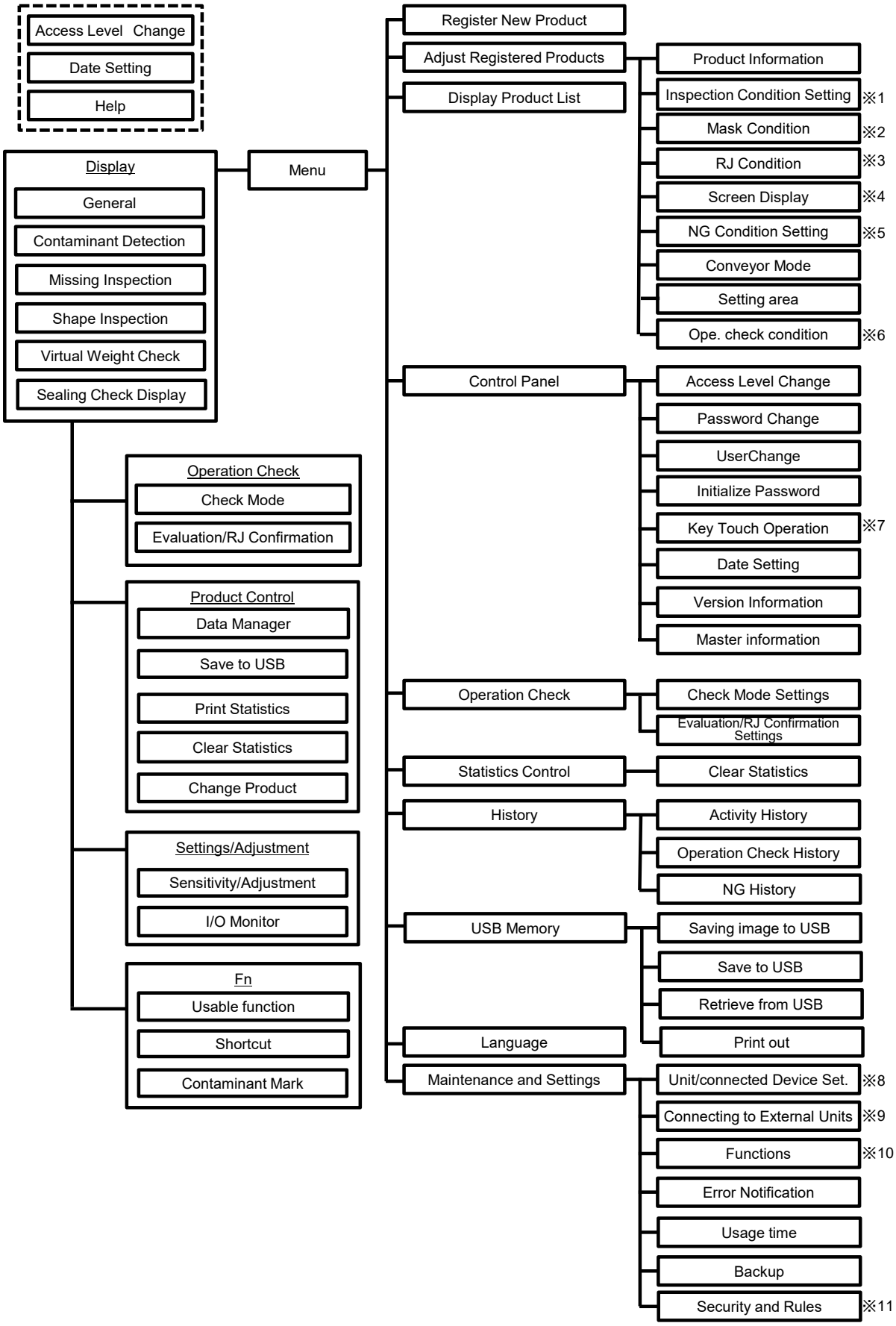
After turning off the power, be sure to:

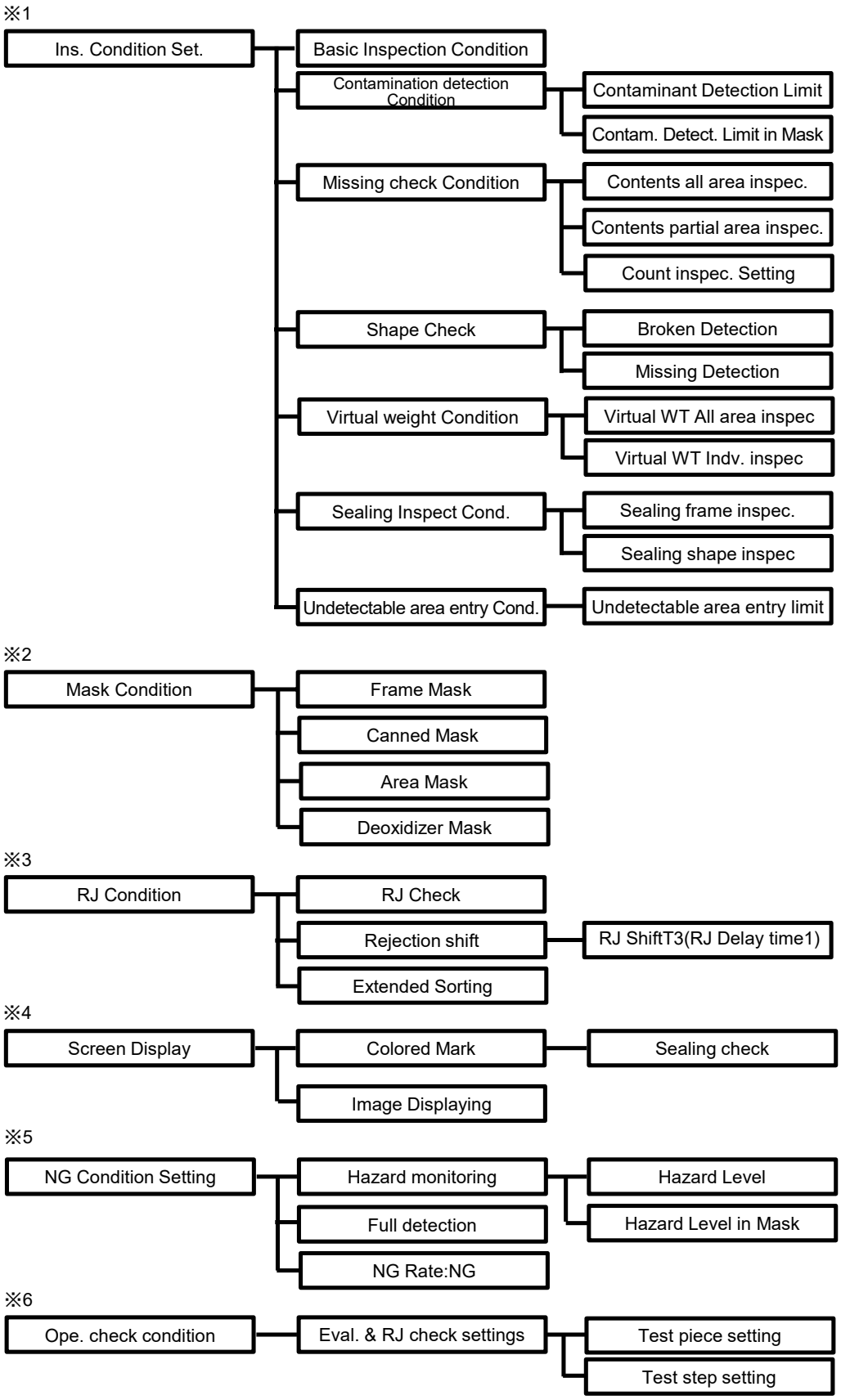
- Clean the belt top and back surfaces.
- Clean the device.

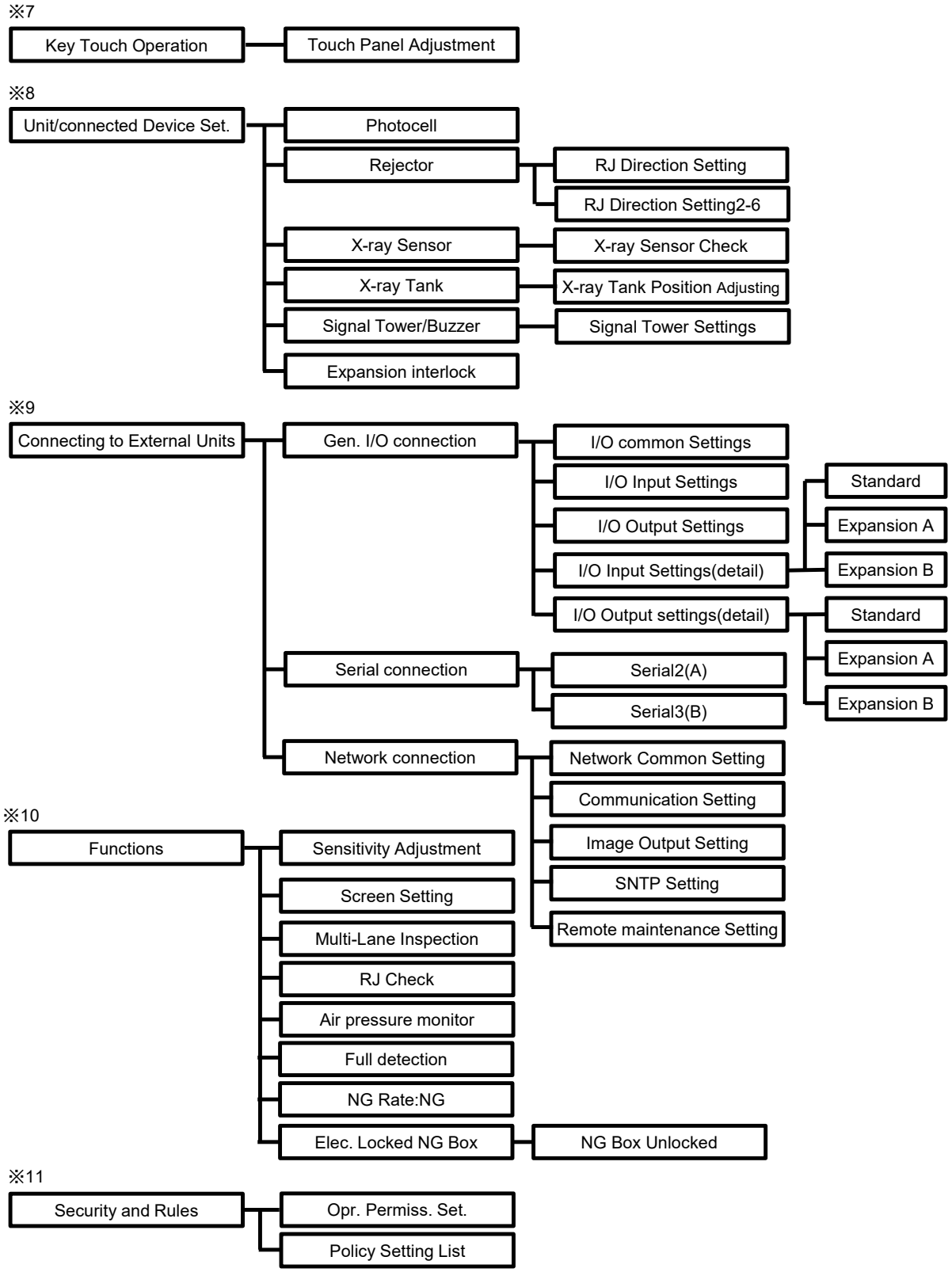
2 Advanced Operations

This chapter describes the operations according to the purpose.

The screen system of this machine is as follows.




※1
Ins. Condition Set.
Basic Inspection Condition
Contamination detection Condition
Contaminant Detection Limit
Contam. Detect. Limit in Mask
Missing check Condition
Contents all area inspec.
Contents partial area inspec.
Count inspec. Setting
Shape Check
Broken Detection
Missing Detection
Virtual weight Condition
Virtual WT All area inspec
Virtual WT Indv. inspec
Sealing Inspect Cond.
Sealing frame inspec.
Sealing shape inspec
Undetectable area entry Cond.
Undetectable area entry limit
※2
Mask Condition
Frame Mask
Canned Mask
Area Mask
Deoxidizer Mask
※3
RJ Condition
RJ Check
Rejection shift
RJ ShiftT3(RJ Delay time1)
Extended Sorting
※4
Screen Display
Colored Mark
Sealing check
Image Displaying
※5
NG Condition Setting
Hazard monitoring
Hazard Level
Hazard Level in Mask
Full detection
NG Rate:NG
※6
Ope. check condition
Eval. & RJ check settings
Test piece setting
Test step setting


※7
Key Touch Operation
Touch Panel Adjustment
※8
Unit/connected Device Set.
Photocell
Rejector
RJ Direction Setting
RJ Direction Setting2-6
X-ray Sensor
X-ray Sensor Check
X-ray Tank
X-ray Tank Position Adjusting
Signal Tower/Buzzer
Signal Tower Settings
Expansion interlock
※9
Connecting to External Units
Gen. I/O connection
I/O common Settings
I/O Input Settings
I/O Output Settings
I/O Input Settings(detail)
I/O Output settings(detail)
Standard
Expansion A
Expansion B
Standard
Expansion A
Expansion B
Serial connection
Serial2(A)
Serial3(B)
Network connection
Network Common Setting
Communication Setting
Image Output Setting
SNTP Setting
Remote maintenance Setting
※10
Functions
Sensitivity Adjustment
Screen Setting
Multi-Lane Inspection
RJ Check
Air pressure monitor
Full detection
NG Rate:NG
Elec. Locked NG Box
NG Box Unlocked
※11
Security and Rules
Opr. Permiss. Set.
Policy Setting List

> General screen

When the system starts up, the "General" screen is displayed. On this screen, you can check the statistics of each product (total count and OK/NG counts), state of the system, and inspection result images.

If multiple NGs are found, high priority NG items are counted according to the table below for statistical values on the General screen.

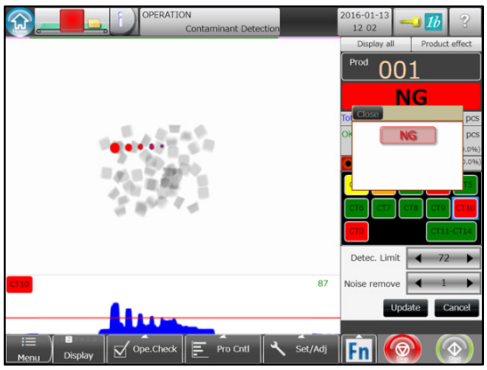
Priority of evaluation result

High	Conveyance NG
	Contaminant NG
	Sealing NG
	Missing product NG
	Shape NG
	External NG2
	External NG
	Mass NG
Low	OK

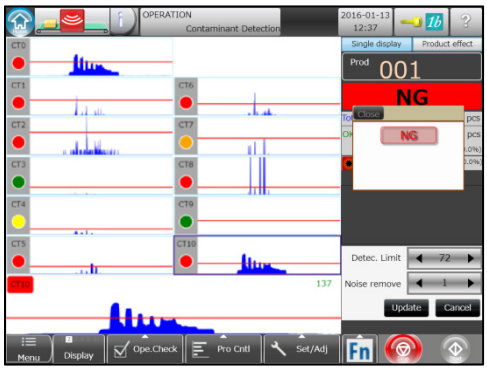
> Display and Adjustment by Contaminant Detection Screen

Press [Display] to select the "Contaminant Detection" screen. This screen allows you to display only on contaminant detection and set the functions. You can adjust the contaminant detection limit or noise removal limit while checking the projection waveform or previously inspected product effect value for the product image.

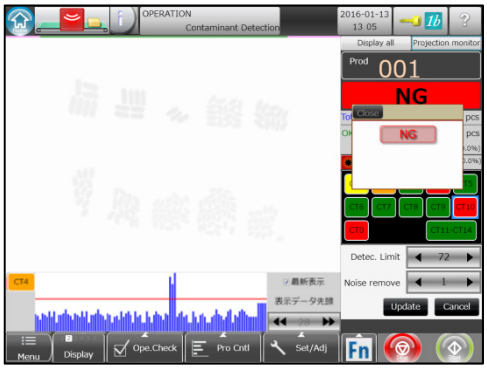
Press "Product effect" or "Projection monitor" at the upper right of the area that shows the product No. to change the display between [Product effect] or [Projection monitor]. Press "Single Display" or "Display all" to change the display only of the specified limit or of all limits.



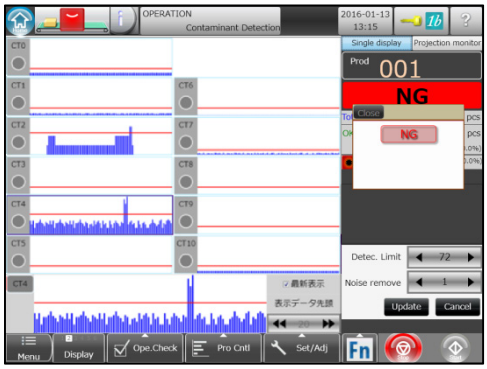
Single-display projection monitor



All-display projection monitor

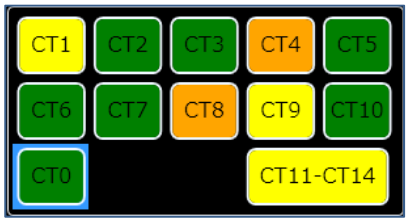


Single-display product effect monitor



All-display product effect monitor

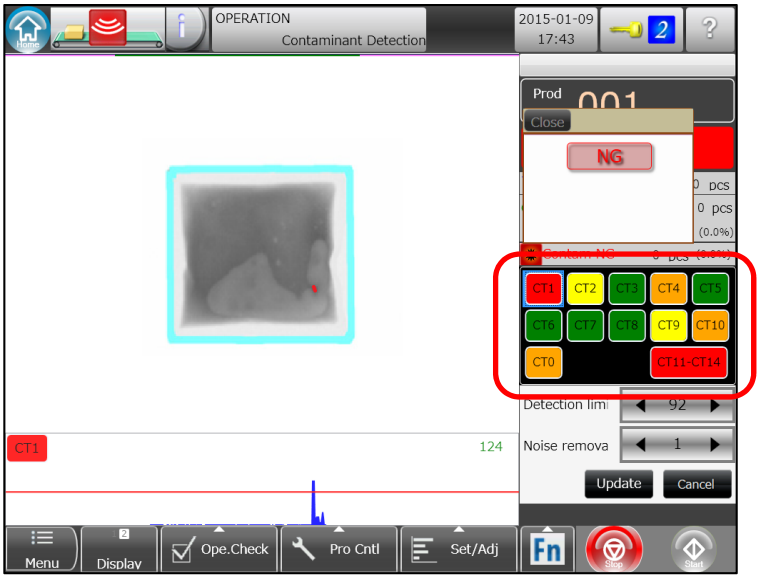
When [Single Display] is selected, change the contaminant detection limit of [Projection Monitor] or [Product effect] to be displayed on the lower part of the screen with the CT0 to CT14 buttons. To hide [Projection Monitor] or [Product effect], press the same button as the selected CT.



When [Display all] is selected, select the area from the CT0 to CT14 buttons and change the contaminant detection limit of [Projection Monitor] or [Product effect] to be displayed on the lower part of the screen.

When the product type is changed or the device is rebooted, [Product effect] is reset. For resetting during operation, perform [Prod Effect Clear] from Fn.

▼ Determining based on button colors

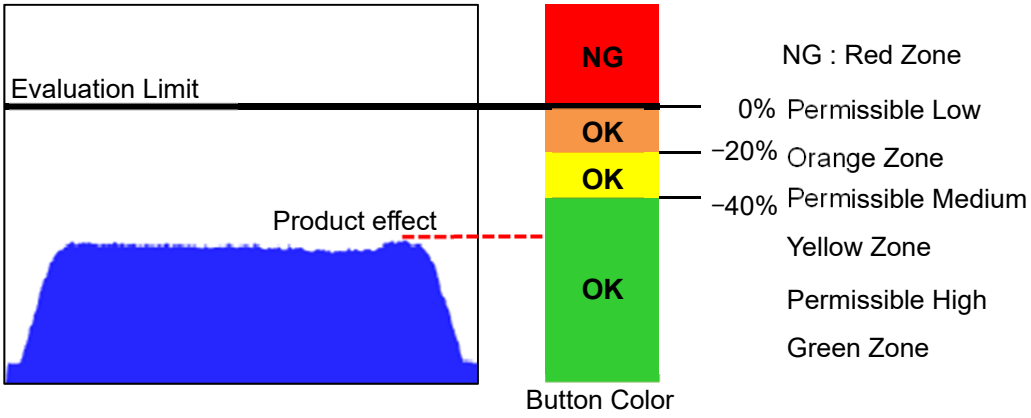


One of the methods used to adjust the contaminant detection limit is to check the colors of the buttons CT0 to CT14. The button colors are determined based on the maximum value (product effect value) after image processing every time a product is fed. The product effect value is displayed in the upper right corner of the projection monitor display area displayed under the X-ray image.

As shown below, if the detection limit is at 100%, the range up to 20% below is the orange zone, the range up to 40% below is the yellow zone, and the range greater than 40% below is the green zone. The button color helps you to visually determine the margin for product variations.

On the screen above, assuming that an OK product is fed, CT2 and CT9 have a low margin, and CT4, CT10 and CT0 have no margin with a high possibility of false detection. For CT1, the detection limit must be set above 124.

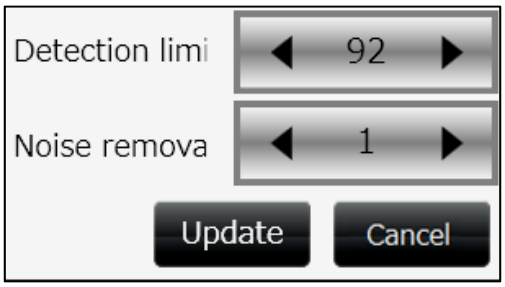
During image capture, the colors of the buttons CT0 to CT14 are according to the image displayed. The evaluation result display above indicates the latest state.



▼ Adjusting a contaminant detection limit

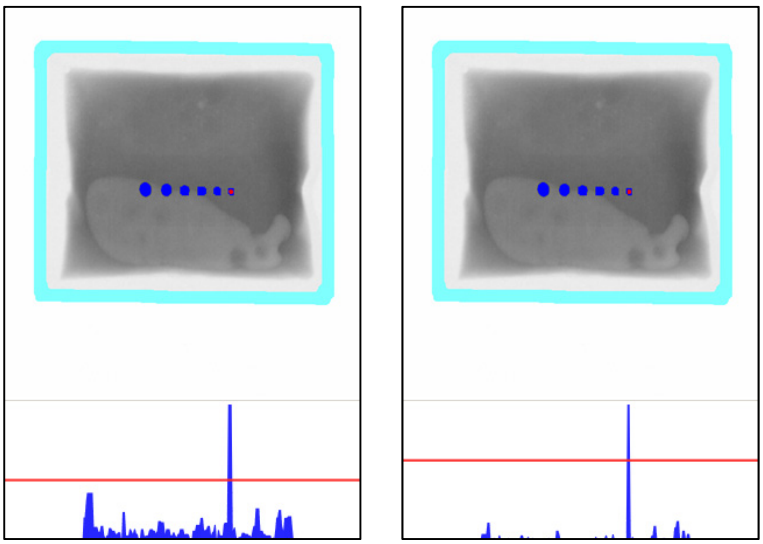
Press the CT1 to CT14 buttons to display the projection monitor corresponding to the selected CT1 to CT14 beneath the transmittance image. The projection monitor position is aligned with the product image in the flow direction. The adjustment method is described using the following projection monitor screen.

The detection limit and noise removal parameters of the selected contaminant detection limit (CT0 to CT14) are displayed at the lower right-hand corner of the screen. Each push of the ◄ or ► mark on both sides increase or decrease the number one by one. Press the numeric value area to display the software numeric keypad and enter the value. To reflect the changed value, press [Update].

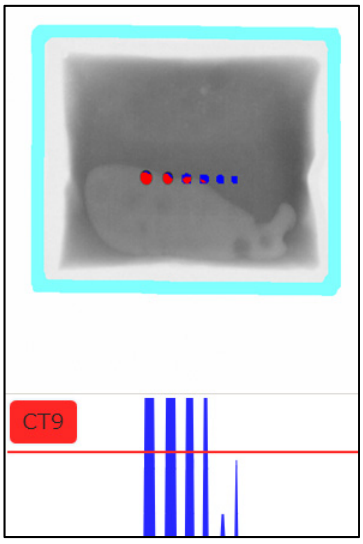


Value adjustment is enabled also by pressing the red line of the contaminant detection limit displayed on the projection monitor or product effect monitor with your finger and moving the line vertically while pressing it.

For the left screen before limit adjustment, there is little margin because of the high product effect and low detection limit. In this case, noise removal can be increased to re-adjust the detection limit (right screen) to lower the product effect so that contaminants can be detected with a greater margin.



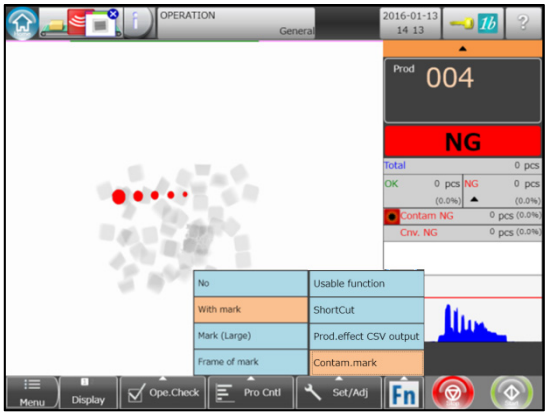
The contaminant detection result (detection part) displayed in the "Contaminant Detection" screen is displayed in two colors (red and blue). When a contaminant detection limit (CT0-CT14) is selected, the parts detected with the selected contaminant detection limit are displayed in red.
In the example shown to the right, the four dots from the left are displayed in red, indicating that those four were detected with CT9. The dots displayed in blue were detected with limits other than CT9.

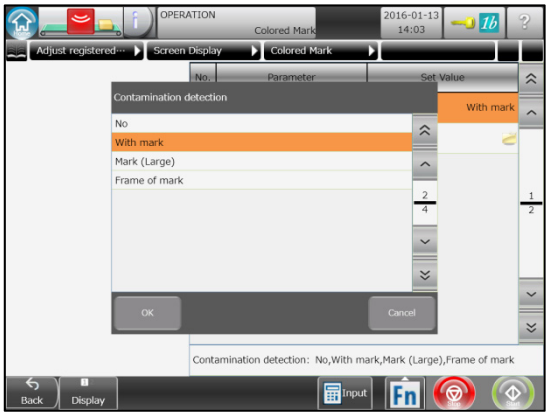


▼ Change the contaminant detection mark

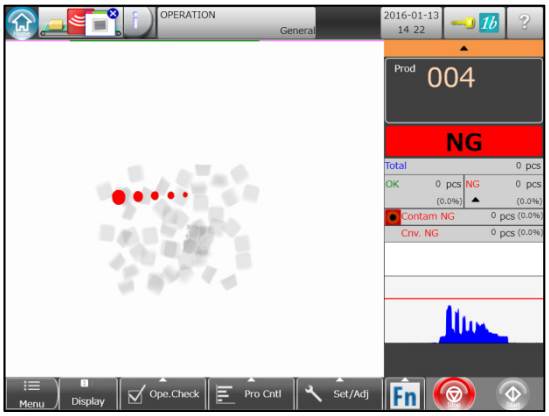
On the "Contaminant Detection" screen or "General" screen, you can change the display format of the mark that shows the position of the detected contamination. By changing the mark display format, it can be utilized for various operations such as emphasizing the detection position or checking the gray scale of the actual contamination by sight.

Press the [Fn] button in the control bar, and select [Contam. mark] to display [No], [With mark], [Mark (Large)], and [Frame of mark] to be selected. You can change the mark by selecting from the "Menu" screen → [Adjust registered products] → [Screen display] → [Colored Mark] → [Contamination Detection].

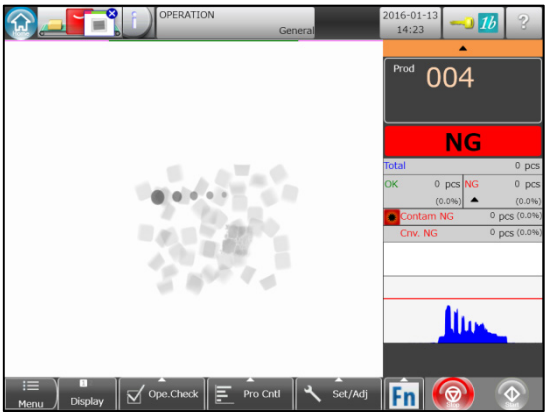




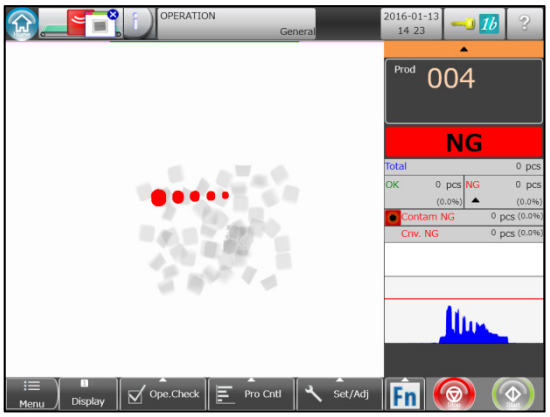
The contamination mark display varies depending on the selected item as shown below:



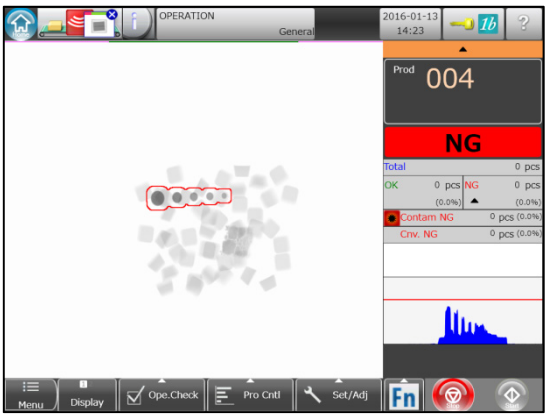
Contamination mark display: Standard



Contamination mark display: None



Contamination mark display: Emphasis

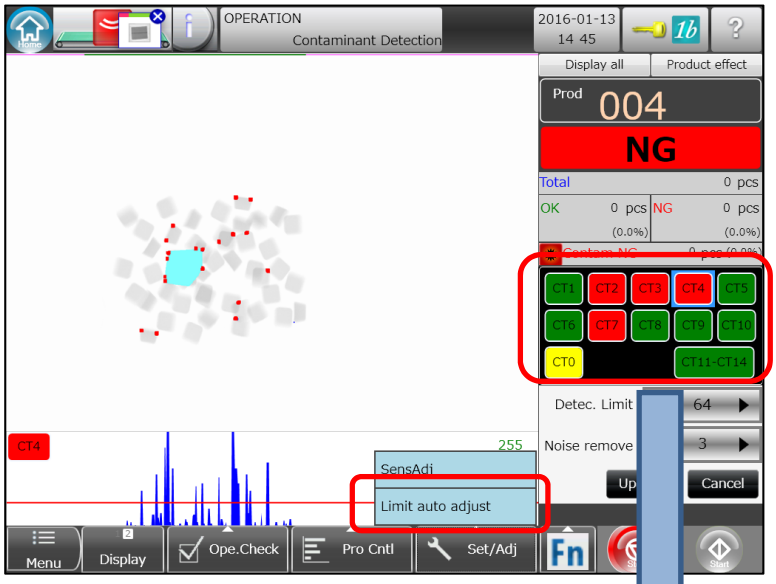


Contamination mark display: Surrounding

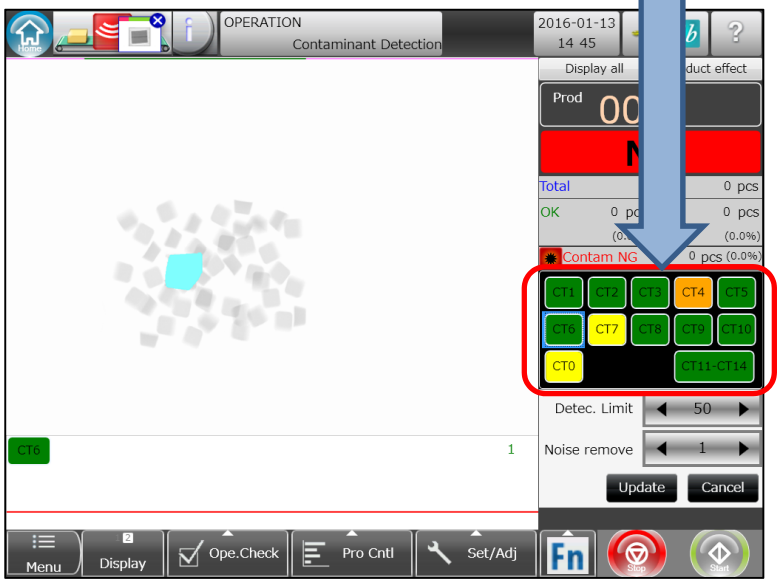
▼ Adjust the whole limits based on the still images.

On the contaminant detection screen, the contaminant detection limits CT0 to CT14 can be adjusted as a whole to evaluate the still image screens as OK. For example, if one of the OK products is inspected and wrong detection occurs in more than one contaminant detection limit, this function enables the wrongly detected limits to be evaluated OK as a whole. Select [Limit auto adjust] from [Set/Adj], and press [Update] after adjustment.

☞ P. 215 Set Transmittance Image Hold Condition



CT3 to CT9 detected the products wrongly.



Adjustment has been completed so that all CTs can be evaluated as OK.

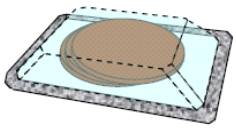
If this function is enabled even for contaminated products, the contamination that must be detected will be passed. Be sure to perform this setting only for OK products.

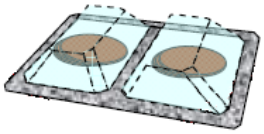
> Display and Adjustment by Sealing Check Screen

The sealing check is the inspection of the compressed part (hereafter, referred to as a seal) of the compressed product whether the content is bitten or whether the product shape has collapsed due to biting. If the compressed seal part enters the product, fresh air enters the product, the product content leaks outside, the product is disfigured, and it undergoes other impacts. These products are identified as unacceptable products, and evaluated as NG products.

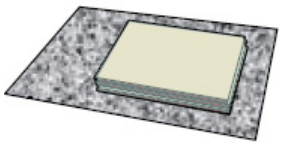
There are 2 types of inspection methods for the sealing check.

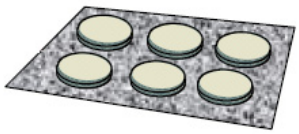
(1) To inspect whether the product peripheral seal or the seal of the specified area is bitten: Peripheral inspection





(2) To inspect whether the product peripheral seal is bitten based on the shaped product or content: Shape inspection





From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Sealing check condition] to set the inspection method.

(1) [Peripheral inspection] and [Shape inspection] cannot be specified simultaneously.
(2) The sealing check cannot be performed if "Product conveying form" is set to "Bulk".

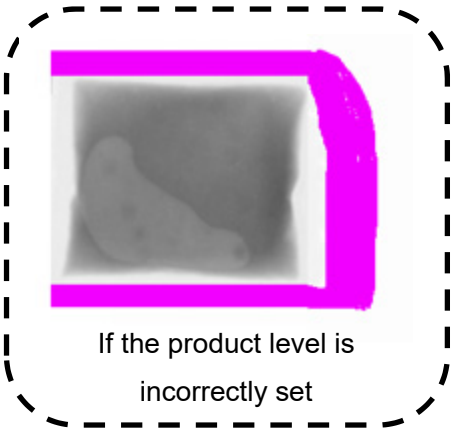
▼ How to Set Sealing Inspection with Peripheral Detection

1 From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Sealing check condition] to set [Sealing peripheral detection] to [Enabled].

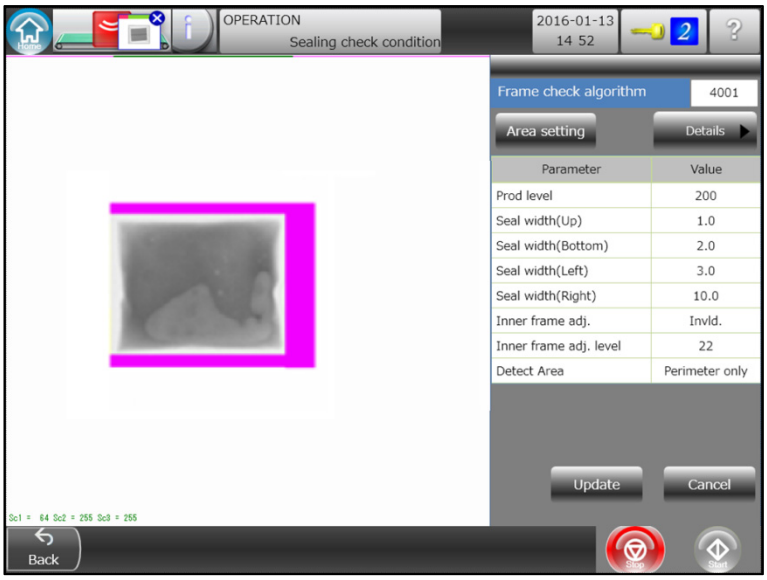
2 When [Sealing peripheral detection setting] is selected, the sealing peripheral detection setting screen is displayed.

[Framel check] cannot be changed during operation.

3 When operation is started from the sealing check condition screen and the products are conveyed, surroundings of the area higher than [Product level] turn pink. When adjusting [Prod level] and [Seal width (top, bottom, right and left)] by using the software numeric keypad, align the yellow frame with the product seal.



If the product level is incorrectly set



(1) When the software numeric keypad is displayed, the sealing check target area turns yellow.
(2) If the seal width is set to 0.0, sealing check is not performed for the product edge.

4 If the seal inner frame is rounded, enable [Inner frame adjustment]. To adjust the roundness, adjust the value of [Inner frame adjustment level]. The roundness degree increases as the value increases.

5 After seal setting has been completed, press [Details] and adjust the limits of SC1 to SC3. Adjust the [Detection limit] and [Noise removal] values to extract products with seals bitten. The area where the bitten seal is detected turns pink. Adjustment of these values can be performed on the "Sealing check display" screen while checking the projection monitor.

6 After setting, press [Update] to reflect the changed setting.

(1) The product type for the sealing check (peripheral inspection) can be created from "Menu" screen → [Adjust registered products].
(2) To set the seal area to be inspected or enable the created range to track the conveyed product, register the range according to the procedure in "Creating the Area for Inspection and Masking" (P. 112).

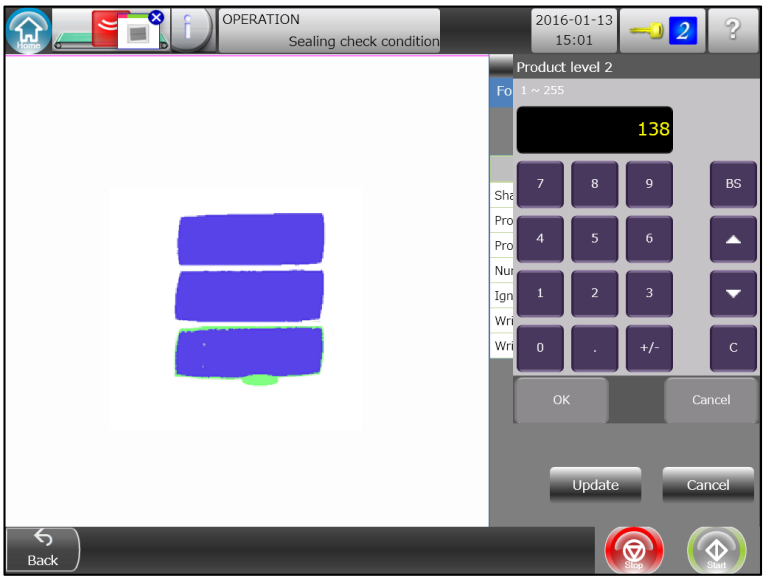
▼ How to Set Sealing Inspection with Shape Detection

1 From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Sealing check condition] to set [Sealing shape detection] to [Enabled].

2 When [Sealing shape detection setting] is selected, the sealing shape detection setting screen is displayed.

[Shape check] cannot be changed during operation.

3 Start the operation from the sealing detection condition screen, and convey the bitten product. Display the software numeric keypad of [Product level 2] and adjust the value so that the normal product part turns blue. Display the software numeric keypad of [Product level] and adjust the value so that the part including the bitten area turns green. The area displayed in green is the target of the sealing check. Set the [Product level 2] value greater than the [Product level] value.



4 If the difference between the [Product level 2] and [Product level] values is not created even by adjusting the [Product level 2] value due to the impact of the smaller-area product, increase the [Ignored area] value to decrease the product area.

5 If a wrinkle is included in the compressed seal and this wrinkle is wrongly evaluated as biting, enable [Wrinkle removal] and increase the [Wrinkle removal level] value so that the impact of the wrinkle is removed.

6 If the products are separated into the several groups, set [Product count] to [Multiple].

7 After seal setting has been completed, press [Details] and adjust the limits of SC1 to SC2. Adjust the [Detection limit] and [Noise removal] values to extract products with seals bitten. Adjustment of these values can be performed on the "Sealing check display" screen while checking the projection monitor. The characteristics of the SC1 and SC2 limits are described below:

Limit	Characteristics
SC1	Limit to inspect biting due to close contact with the product
SC2	Limit to inspect biting of products at an interval.

8 After setting, press [Update] to reflect the changed setting.

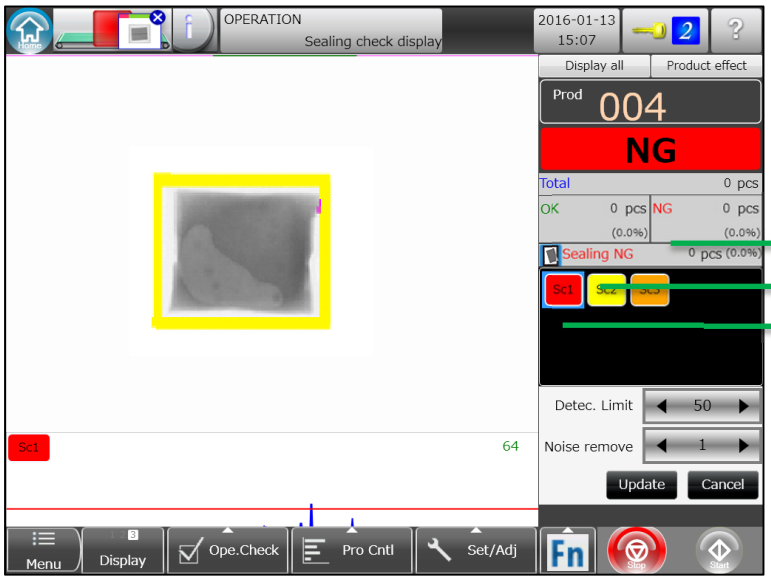
▼ How to adjust the limit on the sealing check display screen

Press [Display] to select the "Sealing check display" screen. This screen enables you to check the projection monitor of the biting area in addition to the information that can be checked on the "General" screen.

You can check the sealing check limit or noise removal limit while checking the product image and projection monitor simultaneously.

On the "Sealing check display" screen, the transmittance image and projection monitor of the selected sealing check limit are displayed. The button colors of the sealing check limits SC1 to SC3 on the screen are the same as the contaminant detection limits: red, orange, yellow, and green. These colors indicate the margins of the actual effect value and specified limit. Refer to them for adjustment.

Additionally, the operation to adjust the detection limit and noise removal of SC1 to SC3 is the same as the contaminant detection limit. After adjustment has been completed, press [Update].



SC3 secures only 20% or less of the margin.

SC2 secures 20 to 40% of the margin.

SC1 detects the bitten part.

The yellow frame is the sealing check area.
(For peripheral inspection specifications)

The same as the contaminant detection screen, [Product effect], [Display all], [Limit auto adjust] and other functions are also enabled on the sealing check display screen.

> Displaying and Adjusting Missing Product Detection

Inspect whether the content (amount) or quantity (count) in a product is within the specified limit in missing product detection. For example, a product whose content is one half of the specified amount, or a product whose content is 9 out of 10 (specified quantity) is evaluated as NG.

There are 3 types of inspection methods for missing inspection.

[1] To inspect the content (amount): Total amount inspection
[2] To check the content (quantity) in the previously registered area: Quantity partial detection
[3] To inspect quantity (count): Components count inspection

Select [Adjust registered products] → [Ins. Condition set.] → [Missing product detection condition] on the “Menu” screen and set the inspection method to [Missing product detection type].

(1) You cannot use “Total amount inspection” and “Components count inspection” together.
(2) Missing product detection is not available when “Product conveyance mode” is “Bulk”.

▼ Setting amount inspection

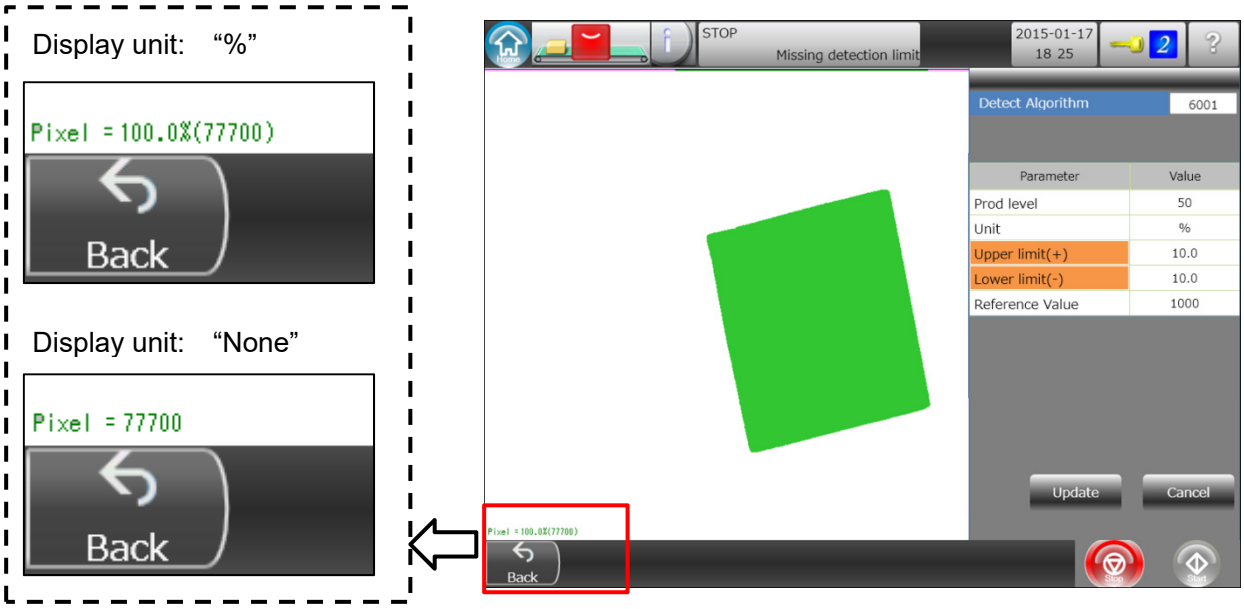
1 From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Missing detection condition] to set [Quantity total detection] or [Quantity partial detection] to [Enabled].

2 When [Quantity total detection] or [Quantity partial detection] is selected, the quantity detection setting screen is displayed.

(1) [Quantity total detection] cannot be changed during operation.
(2) To set the missing quantity area to be inspected or enable the created range to track the conveyed product, register the range according to the procedure in "Creating the Area for Inspection and Masking" (P. 112).

3 When operation is started from the missing detection limit screen and the products are conveyed, the area higher than [Product level] turns green. If a still image is displayed, the area value of the inspection target appears at the lower left-hand corner of the screen. Adjust [Product level] so that the inspection target area is displayed in green when OK products are fed.

Expression of the area value displayed on the lower part of the screen varies depending on the "Display unit" setting.



4 If [Unit] is set to [%], set [Reference Value] (Example: 77700 on the screen) and set the upper- and lower-limit values to be used as criteria by referring to the value enclosed in parentheses at the lower left-hand corner when feeding OK products.

If [Unit] is set to [None], set the upper- and lower-limit values to be used as criteria by referring to the value at the lower left-hand corner of the screen.

When "Display unit" is set to "%", set as shown below to manage the control criteria in the ±20% range.
Upper limit(+): 20
Lower limit(-): 20
When "Display unit" is set to "None", set as shown below to manage the control criteria likewise, assuming the figure shown lower left on the screen is 10000.
Upper limit: 12000
Lower limit: 8000

5 Press [Upper limit(+)] or [Lower limit(-)]. The background color turns grey and evaluation is disabled. This is useful when you use either the upper limit or the lower limit.

Unit	%
Upper limit(+)	10.0
Lower limit(-)	10.0
Reference Value	77700

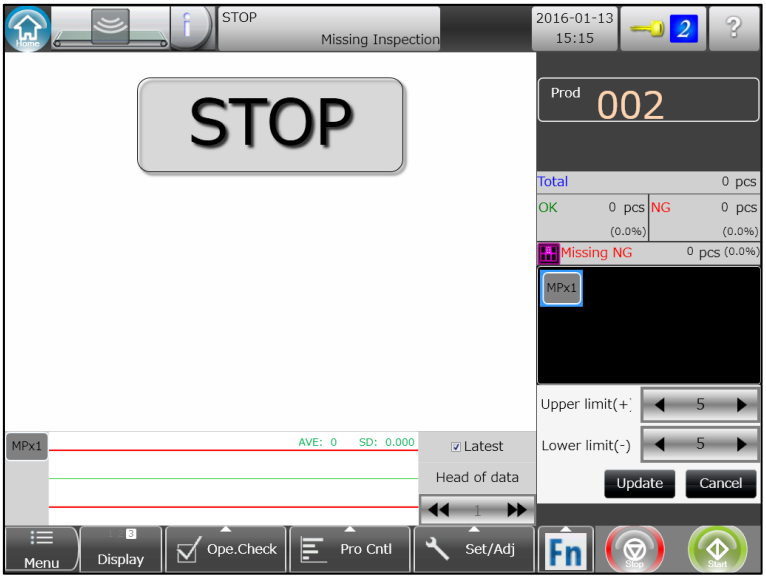
⇨ Upper limit Invalid

Unit	%
Upper limit(+)	10.0
Lower limit(-)	10.0
Reference Value	77700

6 Then, press the [Update] to reflect the change.

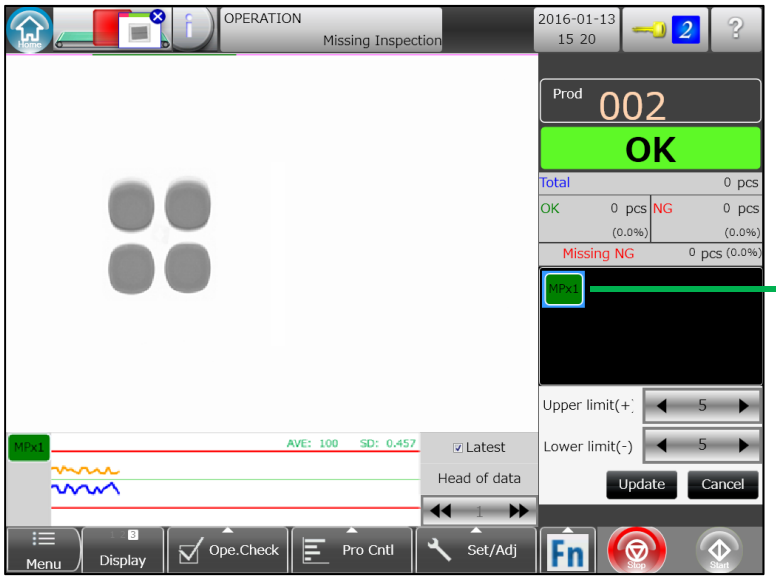
▼ How to adjust the limit on the quantity detection display screen

Press [Display] to select the "Missing inspection" screen. This screen enables you to check the product image and missing product effect monitor in addition to the information that can be checked on the "General" screen.



The "Missing inspection" screen displays the product effect monitor that shows the transmittance image and trend of the previously measured values. The colors of the missing detection limits MPx on the screen are the same as the contaminant detection limits: red, orange, yellow, and green. These colors indicate the margins of the actually measured area value and upper and lower missing detection limit values. Refer to them for adjustment.

Additionally, the operation to adjust the upper and lower missing detection limit values of MPx is the same as the contaminant detection limit. After adjustment has been completed, press [Update].



40% or more of the margin is secured.

If quantity partial missing detection is selected, the product effect monitor graphically displays 2 trends of the area value (yellow) of the largest area and the value (blue) of the smallest area from the created areas.

▼ Setting components count inspection

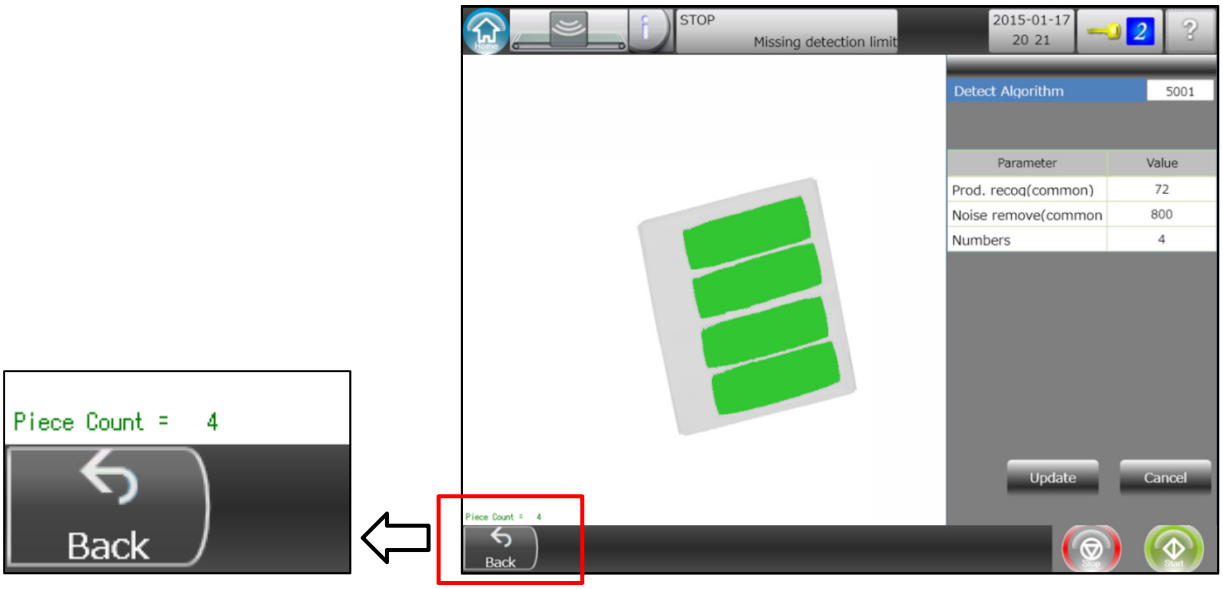
1 From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Missing detection condition] to set [Count detection] to [Enabled].

2 When [Count detection setting] is selected, the count inspection setting screen is displayed.

You cannot change [Count] during operation.

3 Set the quantity of OK products to [Numbers].

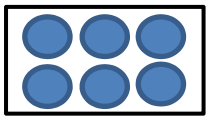
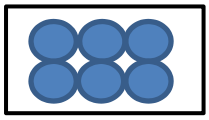
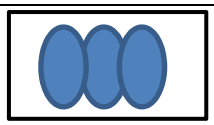
4 When you start operation on the missing detection limit screen, the region higher than the “Prod. recog(common)” is displayed in green. When you display a still image, the quantity of detected products is displayed on the lower left of the screen.



5 Adjust “Prod. recog(common)” so that the region for inspection will turn green when OK products are fed.

6 When areas other than those for inspection such as taint on the belt turn green, increase the “Noise remove(common)” value so that only products for inspection will turn green.

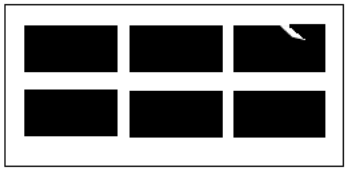
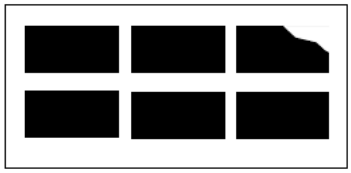
7 If the inspected products are closely placed and they cannot be correctly separated even by adjusting [Product level (common)] or [Noise removal (common)], change the algorithm and perform adjustment again according to steps **4 to 6**. The characteristics of [Algorithm] are described below:

Algorithm No.	Characteristics
5001	Products are separated. 
5002	Products are partially closed. 
5003	Products are in close contact with each other. 

8 Then, press the [Update] to reflect the change.

> Displaying Shape Inspection and Adjustment

Inspect a broken product and missing part in shape inspection. “Broken product” and “Missing part” are shown below.

“Broken product” status	“Missing part“ status
A product is broken, but not separated and partly appressed. Note that it is not detected as broken when the product is split.	A product is partly missing or concave.
	
	

Shape inspection includes two inspection methods.

[1] To detect broken product: Broken detection

[2] To detect missing part: Missing part detection

From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Shape detection condition] to set the inspection method.

If products contact with each other or overlap, OK products may be evaluated as Shape NG products.

▼ Setting broken detection

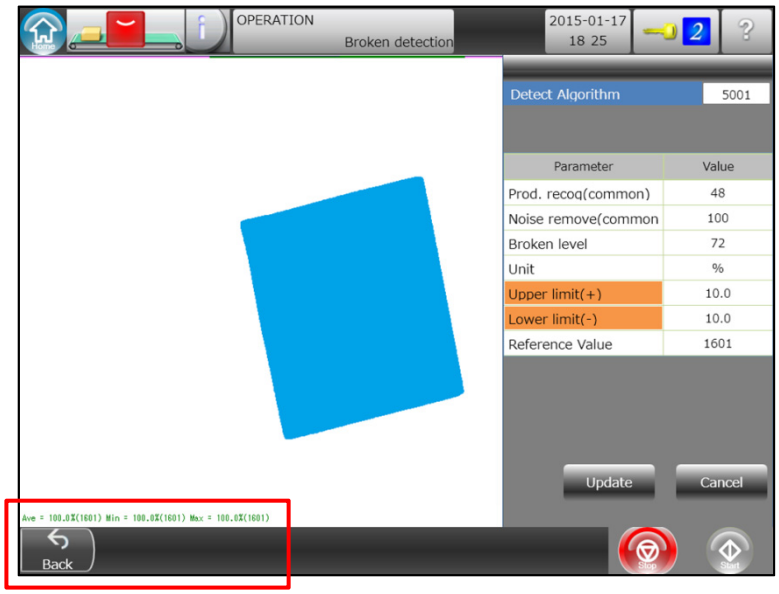
1 From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Shape detection condition] to set [Broken detection] to [Enabled].

2 When [Broken detection setting] is selected, the broken detection setting screen is displayed.

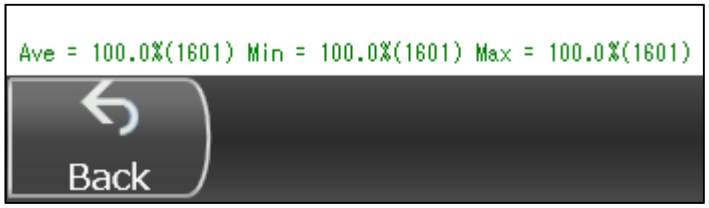
You cannot change “Broken check” during operation.

3 When you start operation on the broken detection limit screen, the region higher than the “Prod. recog(common)” is displayed in gleen. When you display a still image, the area value for inspection is displayed on the lower left of the screen. When a product is evaluated as NG, a red x-mark is added to the end of the product image.

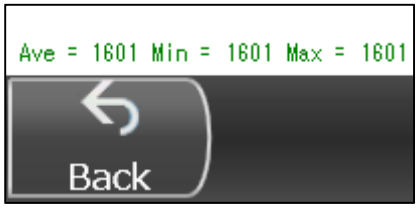
Expression of the area value displayed on the lower part of the screen varies depending on the “Display unit” setting.



Display unit: "%"



Display unit: “None”



4 Adjust [Crack level] so that the inspection target area is displayed in blue when OK products are fed.

5 When “Display unit” is set to “%”, set “Reference Value” (screen example: 1601) and the lower and upper limits for the criteria using examples from the figure in parentheses shown lower left when OK products are fed. When “Display unit” is set to “None”, set the lower and upper limits for the criteria using examples from the figure shown lower left.

When “Display unit” is set to “%”, set as shown below to manage the control criteria in the ±20% range.
Upper limit(+): 20
Lower limit(-): 20
When “Display unit” is set to “None”, set as shown below to manage the control criteria likewise, assuming the figure shown lower left on the screen is 10000.
Upper limit: 12000
Lower limit: 8000

6 Press [Upper limit(+)] or [Lower limit(-)]. The background color turns grey and evaluation is disabled. This is useful when you use either the upper limit or the lower limit.

Unit	%
Upper limit(+)	10.0
Lower limit(-)	10.0
Reference Value	77700

Upper limit Invalid

Unit	%
Upper limit(+)	10.0
Lower limit(-)	10.0
Reference Value	77700

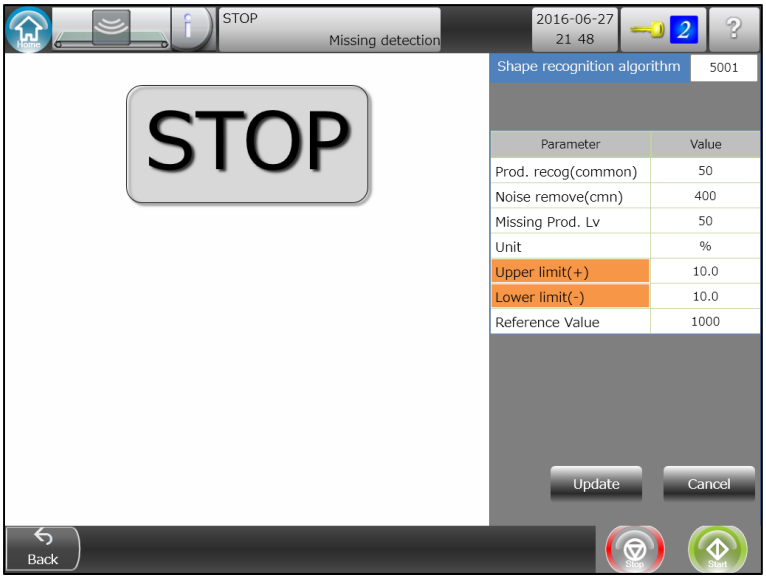
7 When areas other than those for inspection such as taint on the belt turn green, increase the “Noise remove(cmn)” value so that only products for inspection will turn green.

8 Then, press the [Update] to reflect the change.

▼ Setting missing part detection

1 From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Shape detection condition] to set [Missing detection] to [Enabled].

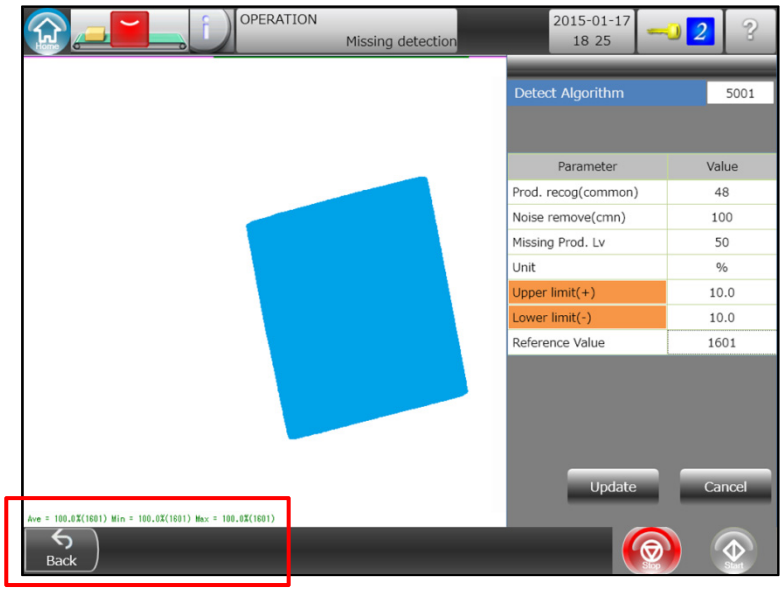
2 When [Missing detection setting] is selected, the missing detection setting screen is displayed.



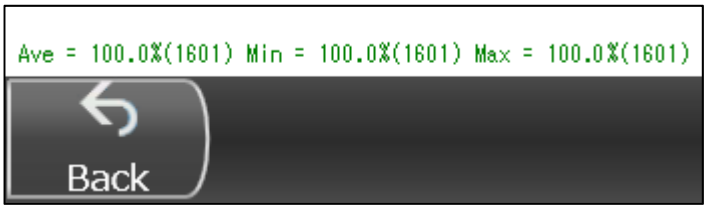
You cannot change “Missing part inspection” during operation.

3 When you start operation on the missing part detection limit screen, the region higher than the “Prod. recog(common)” is displayed in gleen. When you display a still image, the area value for inspection is displayed on the lower left of the screen. When a product is judged as NG, a red square mark is added to the end of the product image.

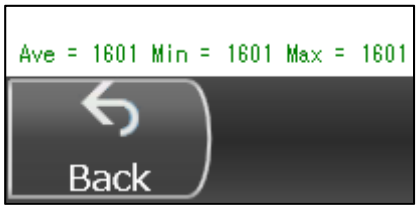
Expression of the area value displayed on the lower part of the screen varies depending on the “Unit” setting.



Display unit: “%”



Display unit: “None”



4 Adjust [Chip level] so that the inspection target area is displayed in blue when OK products are fed.

5 When “Display unit” is set to “%”, set “Reference Value” (screen example: 1601) and the lower and upper limits for the criteria using examples from the figure in parentheses shown lower left when OK products are fed.

When “Display unit” is set to “None”, set the lower and upper limits for the criteria using examples from the figure shown lower left on the screen.

When “Display unit” is set to “%”, set as shown below to manage the control criteria in the ±20% range.
Upper limit(+): 20
Lower limit(-): 20
When “Display unit” is set to “None”, set as shown below to manage the control criteria likewise assuming the figure shown lower left on the screen is 10000.
Upper limit: 12000
Lower limit: 8000

6 Press [Upper limit(+)] or [Lower limit(-)]. The background color turns grey and evaluation is disabled. This is useful when you use either the upper limit or the lower limit.

Unit	%
Upper limit(+)	10.0
Lower limit(-)	10.0
Reference Value	77700

⇨ Upper limit Invalid

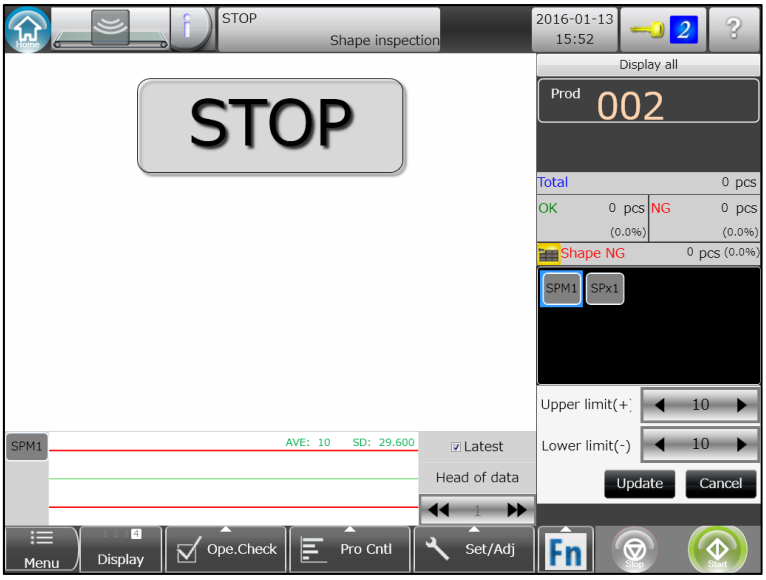
Unit	%
Upper limit(+)	10.0
Lower limit(-)	10.0
Reference Value	77700

7 When areas other than those for inspection such as taint on the belt turn green, increase the “Noise remove(cmn)” value so that only products for inspection will turn green.

8 Then, press the [Update] to reflect the change.

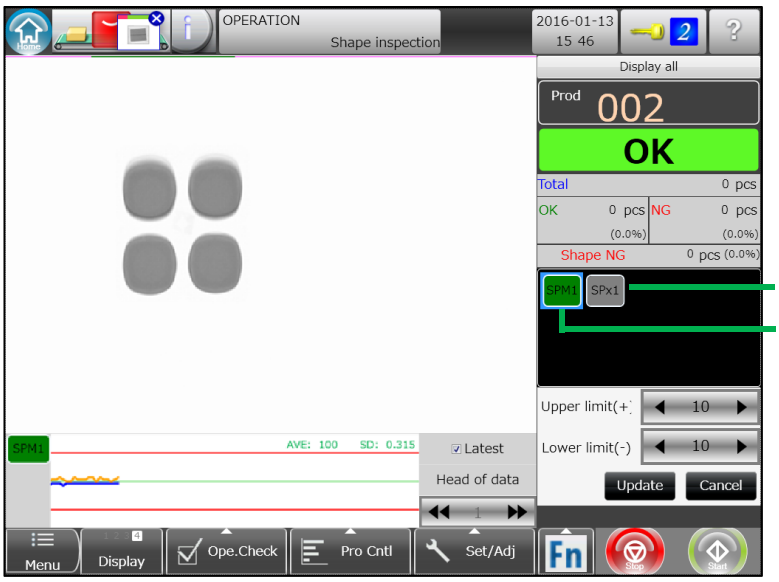
▼ How to adjust the limit on the shape inspection display screen

Press [Display] to select the "Shape inspection" screen. This screen enables you to check the product image and shape product effect monitor in addition to the information that can be checked on the "General" screen.



The "Shape inspection" screen displays the product effect monitor that shows the transmittance image and trend of the previously measured values. The button colors of the shape inspection crack limit SPM1 and chip limit SPx1 on the screen are the same as the contaminant detection limits: red, orange, yellow, and green. These colors indicate the margins of the scores of the actually measured crack and chip values and upper and lower shape inspection limit values. Refer to them for adjustment.

Additionally, the operation to adjust the upper and lower shape inspection limit values of SPM1 or SPx1 is the same as the contaminant detection limit. After adjustment has been completed, press [Update].



The chip inspection limit is unused.

The crack inspection limit secures 40% or more of the margin.

For the products shaped in more than one area, the product effect monitor graphically displays 2 trends of the score (yellow) of the greatest crack and chip values and the score (blue) of the smallest crack and chip values from the recognized areas.

> Displaying and Adjusting Relative Virtual Weight Measurement

Relative virtual weight measurement allows you to measure the sum of product effect value by X-ray dosage (hereinafter called as “volume value”) and measure the relative virtual weight from the ratio of the volume value (volume ratio) between the inspected products and the reference master product. You can set an NG limit for the relative virtual weight and determine whether the virtual weight of the inspected product is excessive or deficient.
This function converts the content of an inspected product to the mass instead of the area and can detect NG for the product for which missing product detection failed to determine its excess or deficiency.

Relative virtual weight measurement includes two measurement methods.

[1] To measure the mass (volume) of the entire product: Total inspection
[2] To measure individual content in the product: Individual inspection

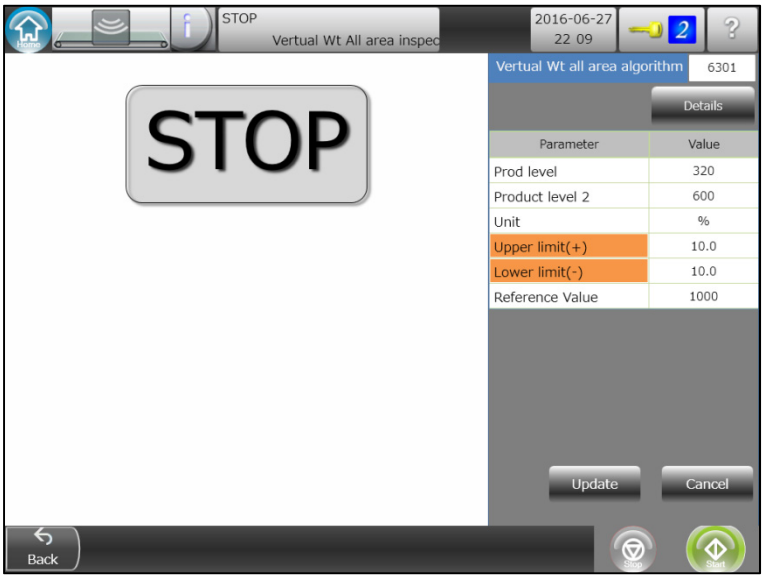
Select [Adjust registered products] → [Ins. Condition set.] → [Relative virtual weight measurement condition] on the “Menu” screen and set the inspection method.

(1) Total inspection is not available when “Product delivery mode” is “Bulk”.
(2) If products contact with each other or overlap OK products may be evaluated as NG products in “Individual inspection”.

▼ Setting total inspection

1 From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Relative weight detection condition] to set [Relative weight total detection] to [Enabled].

2 When [Relative weight total detection setting] is selected, the relative weight total detection setting screen is displayed.

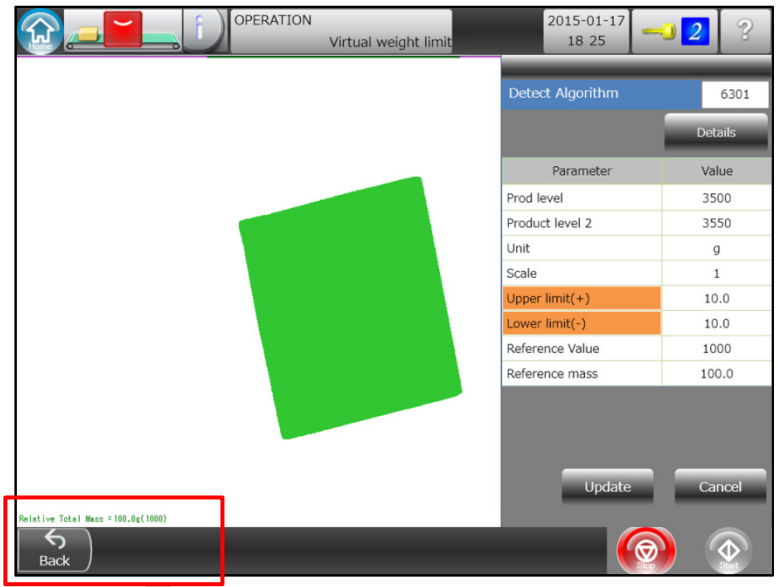


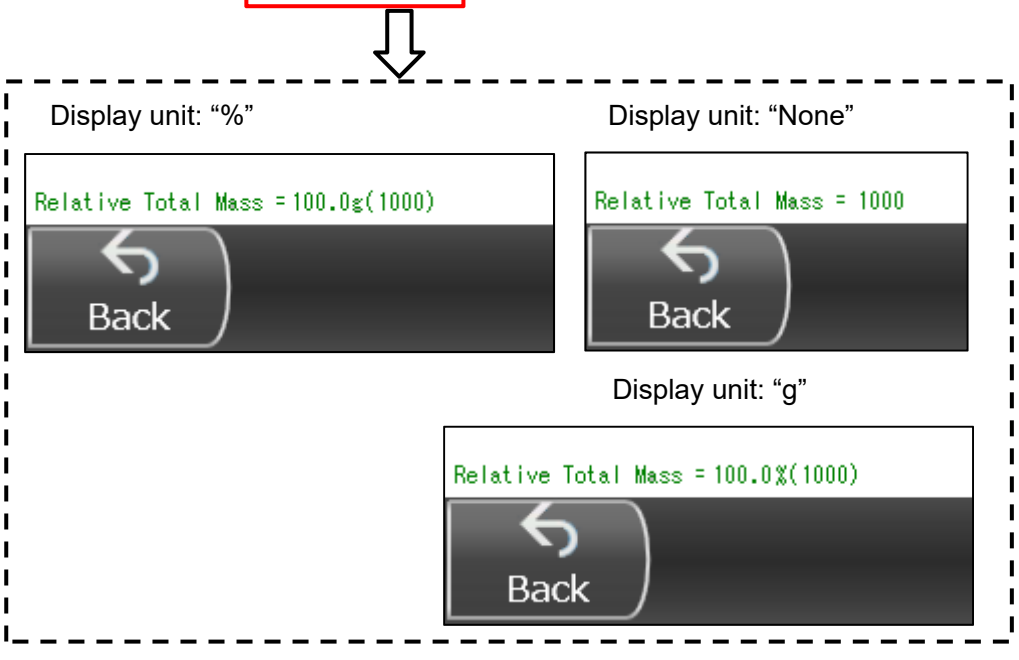
You cannot change “All Area” during operation.

3 When you start operation on the relative virtual weight limit screen, the region higher than the “Prod level” and “Product level 2” is displayed in green. When you display a still image, the volume value for inspection is displayed on the lower left of the screen.

(1) Expression of the volume value displayed on the lower part of the screen varies depending on the “Unit” setting.

(2) The target of the virtual weight check is the area (displayed in green during adjustment) higher than [Product level], and the area (displayed in blue during adjustment) higher than [Product level 2] must be included. For example, even if there is more than one area higher than [Product level] of the products other than the target products, only the area of the target product is inspected when the area of the products other than the target products is lower than [Product level 2]. To use this method, a greater value must be set for [Product level 2] than [Product level 1].





4 Adjust “Prod level” and “Product level 2” so that the region for inspection will turn green when OK products are fed.

5 When “Display unit” is set to “%” or “g”, set “Reference Value” (screen example: 1000) and the lower and upper limits for the criteria using examples from the figure in parentheses shown lower left when OK products are fed. When “Display unit” is set to “None”, set the lower and upper limits for the criteria using examples from the figure shown lower left.

When “Display unit” is set to “%” or “g”, set as shown below to manage the control criteria in the ±20% range.
Upper limit(+): 20
Lower limit(-): 20
When “Display unit” is set to “None”, set as shown below to manage the control criteria likewise, assuming the figure shown lower left on the screen is 10000.
Upper limit: 12000
Lower limit: 8000

6 When “Display unit” is set to “g”, set the mass value converted from “Reference value” to “Reference mass value”.

7 Press [Upper limit(+)] or [Lower limit(-)]. The background color turns grey and evaluation is disabled. This is useful when you use either the upper limit or the lower limit.

Unit	%
Upper limit(+)	10.0
Lower limit(-)	10.0
Reference Value	77700

⇨ Upper limit Invalid

Unit	%
Upper limit(+)	10.0
Lower limit(-)	10.0
Reference Value	77700

8 Change “Scale” to change the measurement range and the precision after the decimal point.

9 Then, press the [Update] to reflect the change.

▼ Setting individual inspection

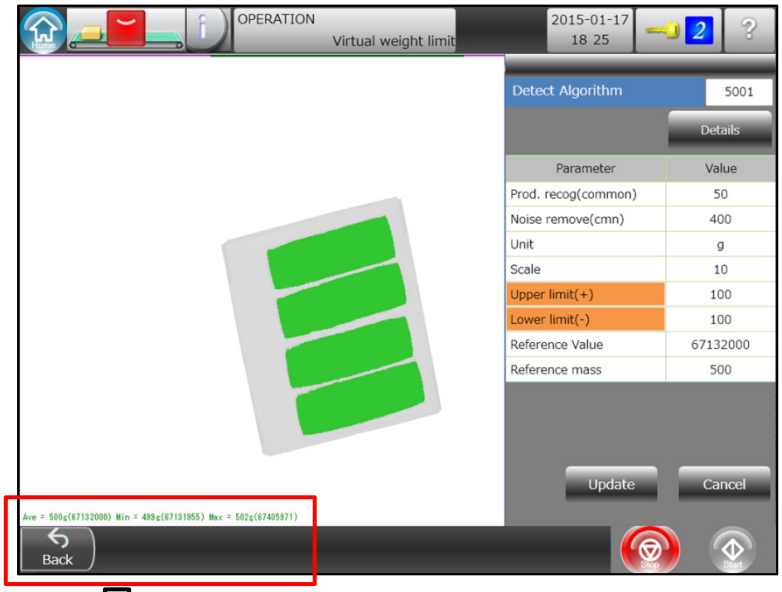
1 From the "Menu" screen, select [Adjust registered products] → [Inspection condition setting] → [Relative weight detection condition] to set [Relative weight individual detection] to [Enabled].

2 When [Relative weight individual detection setting] is selected, the relative weight individual detection setting screen is displayed.

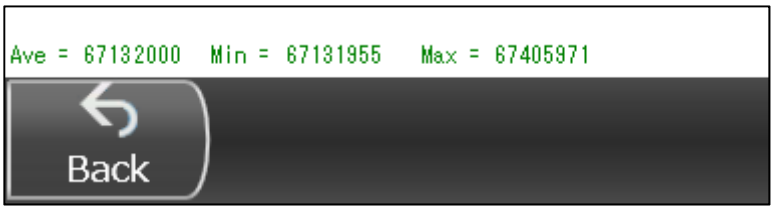
You cannot change “Individual” during operation.

3 When you start operation on the relative virtual weight limit screen, the region higher than the “Prod. recog(common)” is displayed in green. When you display a still image, the volume value for inspection is displayed on the lower left of the screen.

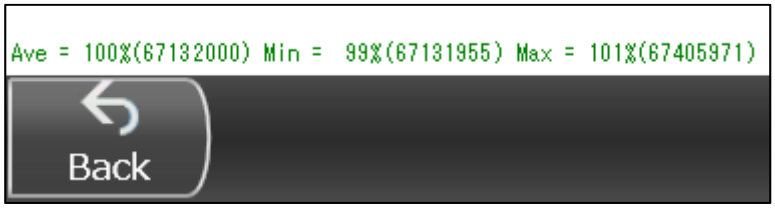
Expression of the volume value displayed on the lower part of the screen varies depending on the “Unit” setting.



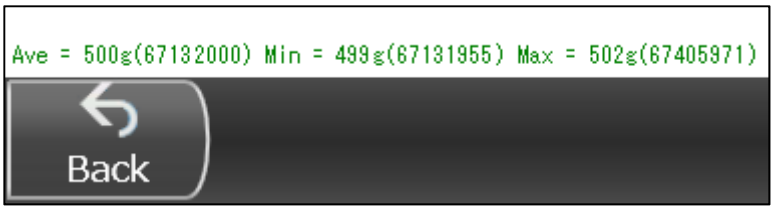
Display unit: “None”



Display unit: “%”



Display unit: “g”



4 Adjust “Product level” so that the region for inspection will turn green when OK products are fed.

5 When “Display unit” is set to “%” or “g”, set “Reference Value” (screen example: 67131955) and the lower and upper limits for the criteria using examples from the figure in parentheses shown lower left when OK products are fed.

When “Display unit” is set to “None”, set the lower and upper limits for the criteria using examples from the figure shown lower left.

When “Display unit” is set to “%” or “g”, set as shown below to manage the control criteria in the ±20% range.
Upper limit(+): 20
Lower limit(-): 20
When “Display unit” is set to “None”, set as shown below to manage the control criteria likewise assuming the figure shown lower left on the screen is 10000.
Upper limit: 12000
Lower limit: 8000

6 When “Display unit” is set to “g”, set the mass value converted from “Reference Value” to “Reference mass”.

7 Press [Upper limit(+)] or [Lower limit(-)]. The background color turns grey and evaluation is disabled. This is useful when you use either the upper limit or the lower limit.

Unit	%
Upper limit(+)	10.0
Lower limit(-)	10.0
Reference Value	77700

Upper limit Invalid

Unit	%
Upper limit(+)	10.0
Lower limit(-)	10.0
Reference Value	77700

8 When areas other than those for inspection such as taint on the belt turn green, increase and adjust the “Noise remove(cmn)” value so that only products for inspection will turn green.

9 Change “Scale” to change the measurement range and the precision after the decimal point.

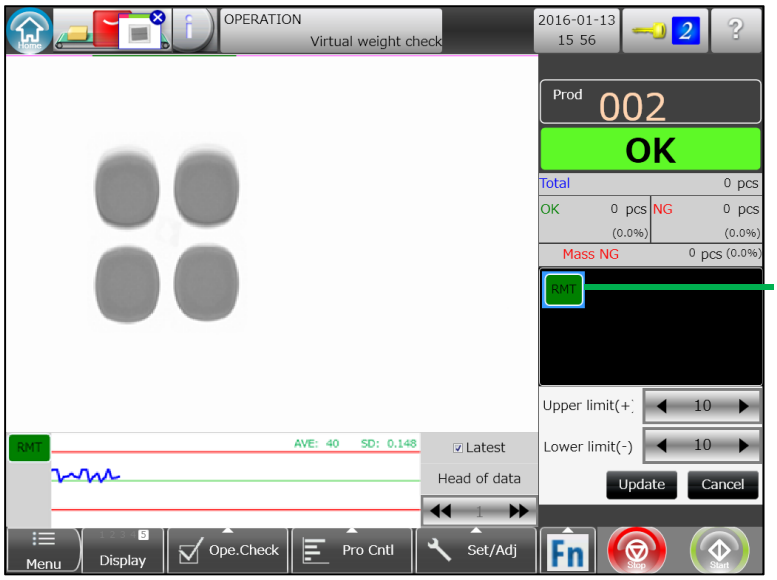
10 Then, press the [Update] button to reflect the change.

▼ How to adjust the limit on the virtual weight check display screen

Press [Display] to select the "Virtual weight check" screen. This screen enables you to check the product image and virtual weight product effect monitor in addition to the information that can be checked on the "General" screen. You can adjust the reference value if [Display unit] is [None] for full inspection.

The "Virtual weight check" screen displays the product effect monitor that shows the transmittance image and trend of the previously measured values. The button colors of the relative weight detection limits RMT on the screen are the same as the contaminant detection limits: red, orange, yellow, and green. These colors indicate the margins of the actually measured weight value and upper and lower virtual weight check limit values. Refer to them for adjustment.

Additionally, the operation to adjust the upper and lower virtual weight check limit values of RMT is the same as the contaminant detection limit. After adjustment has been completed, press [Update].

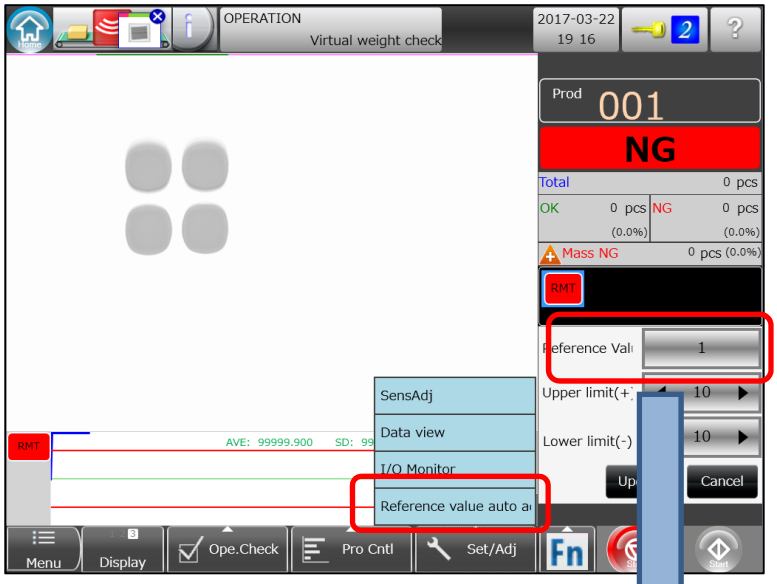


The virtual weight check limit secures 40% or more of the margin.

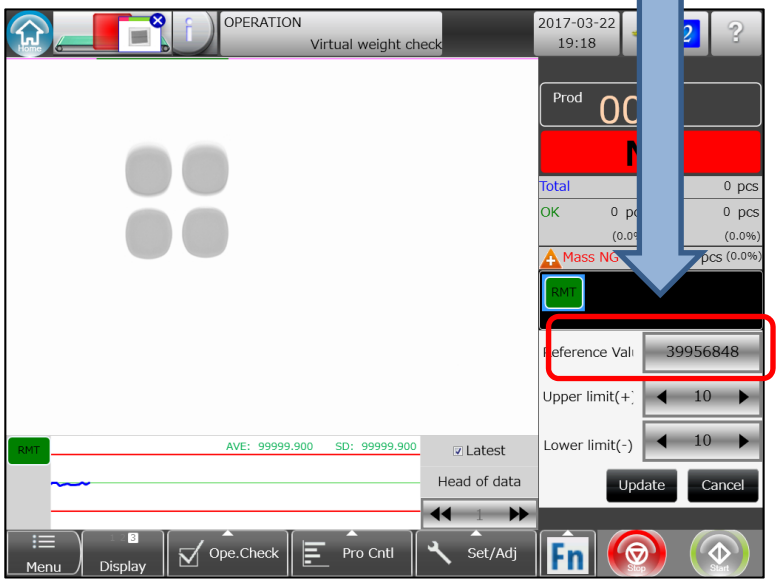
▼ Automatically setting the reference value with reference to still images

You can set the volume value of the still display image when [Display unit] is other than [None] on the [Weight check display] screen for full inspection. Select [Set/Adjust] and [Automatic setting reference value] and then press [Update].

☞ P. 215 Set Transmittance Image Hold Condition



Reference value not set



Reference value set

If you execute this function for a product whose internal capacity exceeds or is under the limit, the weight of the specimen is incorrectly evaluated. Make sure you use the function for OK products.

> Check the transmittance images of previously inspected products

Up to 200 transmittance images of products previously inspected during production can be registered on the data management screen. Select all or NG in [Saving image USB setting] for the images to be registered.

☞ P. 126 Saving image USB setting

▼ How to display the data management screen

1 Press [Product statistics] in the control bar, and select [Data management screen].

2 The data management screen appears, and data registered during production is listed in chronological order. This screen enables you to check the registration date or evaluation results.

3 Select the data to be checked from the data list. More than one data item can be selected. To cancel the selection, select the same data again. Press [SelectAll/release] to select or cancel all data.

4 Press [Display] to display an image of the selected data.

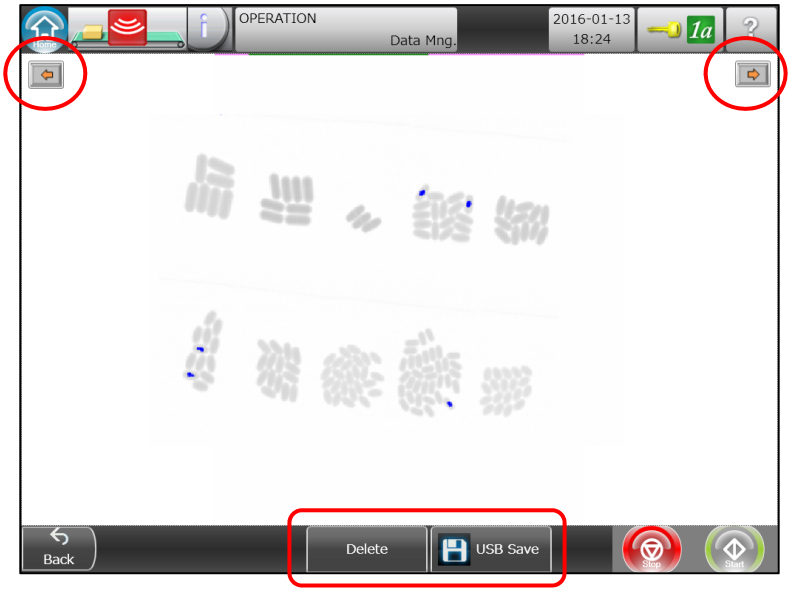
5 Press  or  at the upper right and left to change the image to the one selected in the previous step sequentially and display it.

6 To save the displayed image in the USB memory, press [USB Save] in the control bar.

7 To delete the displayed image, press [Delete] in the control bar.

8 Press [Return] to return to the screen that shows the previous data list.

9 Press [ChgScreen] to move to the screen that shows a thumbnail of the registered image and detailed record data. Also, on this screen, each selected image can be displayed by pressing [Display].



10 Press [ChgScreen] to move to the screen that shows the thumbnails only. Also, on this screen, each selected image can be displayed by pressing [Display].

11 Press [ChgScreen] to return to the initial data list display.

12 Press [USB Save] or [Delete] on the screen that shows the data list or thumbnails to save or delete the more than one selected data item.

13 To refer to the images save in the USB memory, press [USB Mem] to change the display.
The images saved in the USB memory are displayed in the data list or on the thumbnail screen. The procedure is the same as the procedure for referring to the image in [Int. Mem].

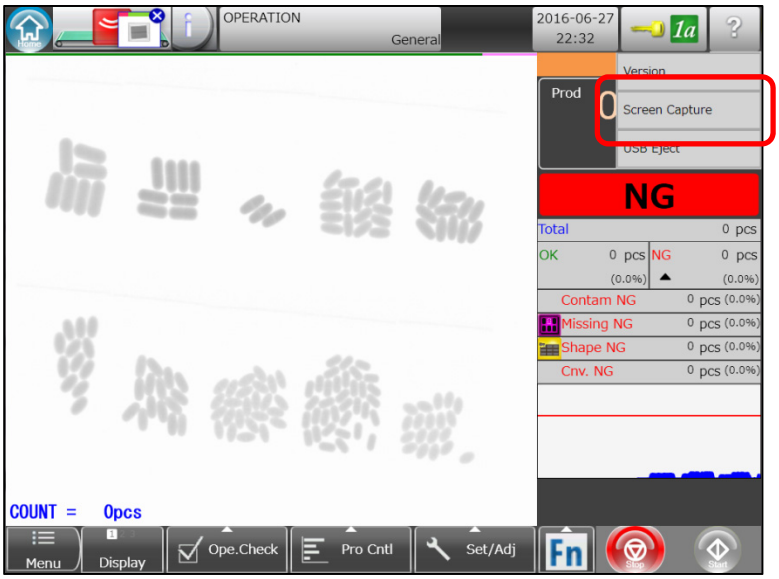
14 To change the display to the memory in the device, press [Int. Mem].

(1) To save the inspection images in the USB memory automatically without using the data management screen, use the [Image USB automatic save] function. In this case, this function cannot be used at the same time as the image registration in the memory in the device.
(2) The images registered in the internal memory are cleared completely by turning the device power off. Be sure to save the necessary images in the USB memory.

☞ P. 126 Saving image USB setting

> Saving a screen capture to USB memory

You can save the displayed screen to the USB memory as an image file. Press the "?" button at the upper right corner of the screen, and select [Screen Capture].
A file "(YYYYMMDDhhmmss+100ms).png" with the date and time saved as the file name is saved to the USB memory.



> Saving Data in USB Memory

You can save the following information in the USB memory mounted on this equipment.

- Product statistics
- Activity history (operation, parameter, alarm)
- Operation Check History
- NG History
- Parameters set on this equipment (parameters by product, common parameters)

The data recorded in the USB memory are CSV format. You can easily edit the data with a spreadsheet application such as Microsoft Excel.

The specification of USB memory is shown below.

Item	Description
File system	FAT16/FAT32
USB memory maximum capacity	Up to 2 GB
Number of image files that can be saved	Assuming that the general image file size is about 50 kB based on the inspection conditions, about 40,000 images can be saved.
Recommended USB memory	Swissbit industrial USB flash memory Product name: SFU22048E3BP2TO-I-MS-121-STD Data retention period: >10 years Rewritable count: >2,000,000 times Supported OS: Windows 7/8/Vista/XP/2000/Me

Caution ⚠	Be sure to close the cap after removing the USB memory. Otherwise, foreign matter and water may enter the equipment due to cleaning and cause a failure and an electric shock. The USB cap is the flip-top type to prevent the terminal from being exposed.

(1) Using a USB memory

Do not save the data other than files created by this equipment in a USB memory. The equipment may recognize files in a USB memory incorrectly, destroy the data, and fail to record the data.

(2) Taking out/Putting in a USB memory

You can take out/put in a USB memory when the power is turned on. Remove a USB memory after the writing indicator LED of the USB memory has turned off. If you remove the USB memory while the LED is blinking, you may destroy the data and be unable to read it (the same thing happens when the power is turned off suddenly while the LED is blinking).

Do not put in the USB memory immediately after you take it out. The equipment may not recognize that it has been inserted again.

(3) Behavior when a USB memory is not inserted

Alarm occurs when a USB memory is not inserted but the equipment is operable as usual. However, you cannot record the data when you haven't inserted a USB memory.

(4) Behavior when USB memory capacity is exceeded

Alarm occurs when USB memory capacity is exceeded.

You cannot record the data in the USB memory after an alarm occurred. Move the data to your PC periodically to avoid exceeding the capacity.

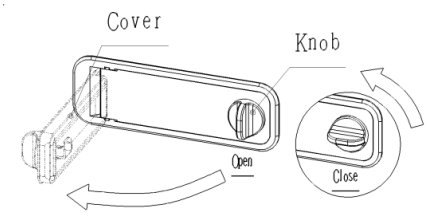
(5) Using a recommended USB memory

Use a recommended USB memory. We do not guarantee the operation of other USB memories than those recommended.

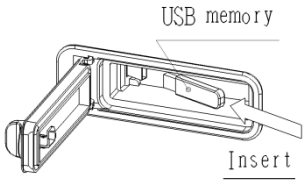
■ Installing a USB memory

This section describes how to install a USB memory.

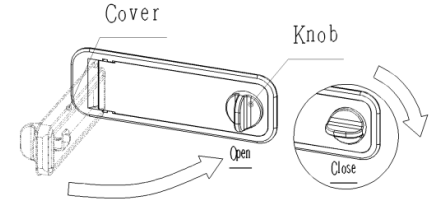
1 Turn the knob to open the cover of the USB memory unit.



2 Install the USB memory to the equipment paying attention to the insertion direction.



3 Close the cover and turn the knob.

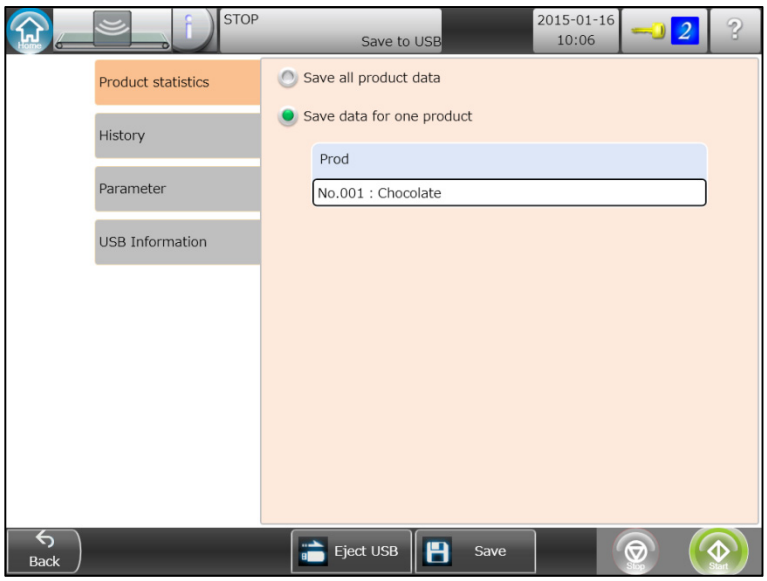


■ Removing a USB memory

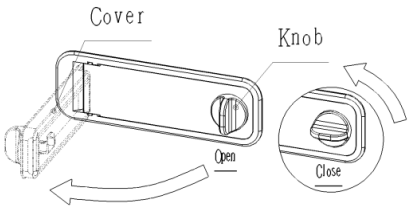
This section describes how to remove a USB memory.

Be sure to perform “Eject” operation on this equipment to safely remove the USB memory.

1 On the "Home screen", Select [Product statistics] → [Save to USB], and press [Eject USB] at the bottom of the screen or select [USB Eject] from [?] at the upper right-hand corner of the screen.



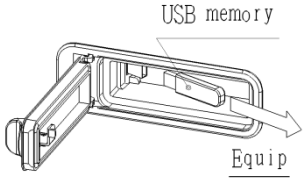
2 Turn the knob to open the cover of USB memory unit.



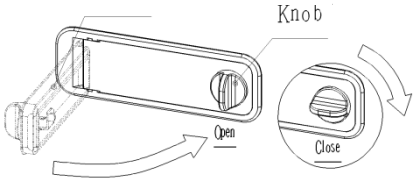
3 Check that the LED mounted on the USB memory is not blinking.

If you remove the USB memory during recording of the data, you may destroy the data and be unable to read. Be sure to check if the LED is not blinking before removing the USB memory.

4 Remove the USB memory from the equipment.



5 Close the cover and turn the knob.

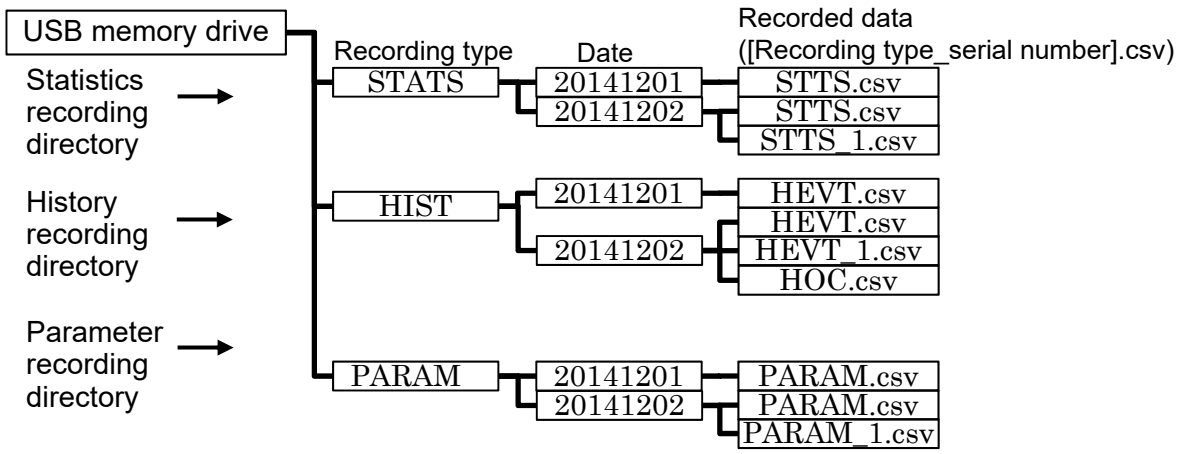


■ Folder/file structure of USB memory

The data recorded by this equipment are stored in folders separated by date.
“Recording type” and “Serial number” are automatically added to the file name. The serial number is incremented in the following cases to create a new file. The serial number is cleared when the date changes. Note that the serial number 0 is not added to the file name.

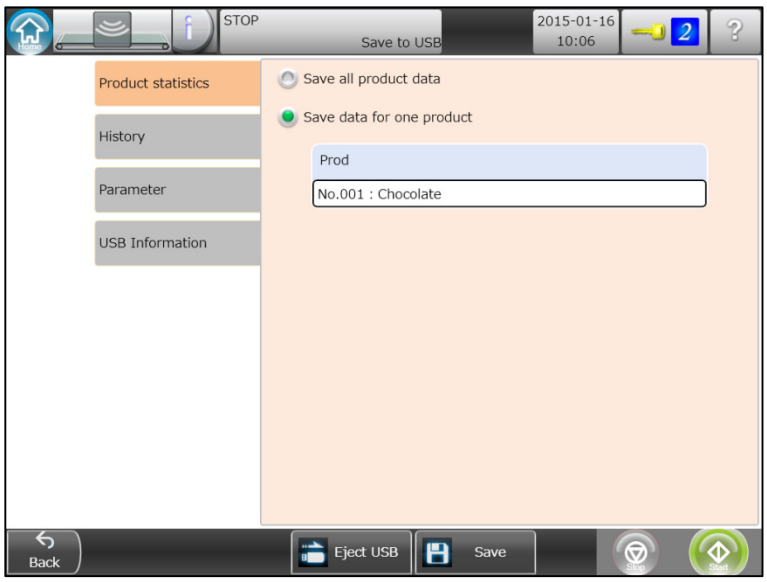
- When the data size of a file exceeds 1 Mbyte
- When a USB memory is installed
- When the power is turned on again

Example of folders generated automatically



■ Saving product statistics data

Select ”USB memory” and [Save to USB] on the “Menu” screen. Select “Product statistics” from the list shown far left and press [Save].
Select “Save all product data” to save all registered product data.



(1) Folder and file name

Statistics data is saved in a file "STTS_△△.csv" (△△ indicates a serial number) in the date folder under "STATS".

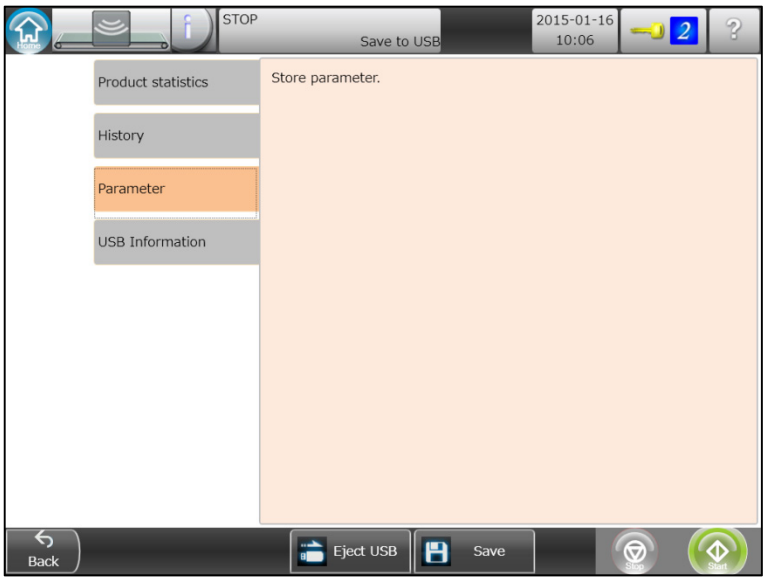
(2) Recording format

The data are recorded in USB memory in CSV format (separated by a comma) in the order corresponding to the items shown below.

Item	Description
Statistics type	Type of statistics
Line	Line No.
Output date	Date when the activity history was output (YYYY/MM/DD HH:MM:SS)
Product number	Product No.
Product name	Product name
Start date	Date to start collecting statistics data
End date	Date to stop collecting statistics data
Total	Total inspection quantity (only in box)
OK quantity	OK quantity and % data (two decimal places)
NG quantity	NG quantity and % data (two decimal places)
NG quantity by inspection	NG quantity and % data (two decimal places) in each inspection item

■ Saving parameter data

Select [Parameter] and press [Save] in the same manner.



(1) Folder and file name

Parameter data is saved in a file "PARAM_△△.csv" (△△ indicates a serial number) in the date folder under "PARAM".

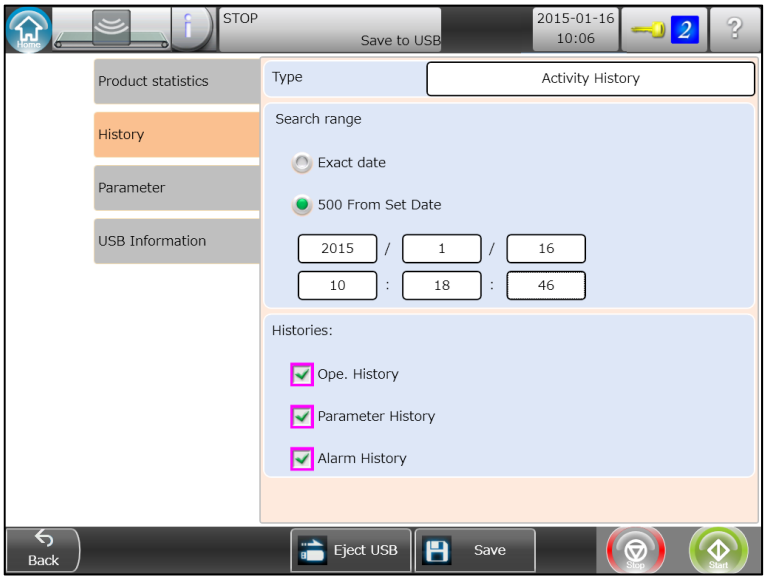
(2) Recording format

Record the data in USB memory in CSV format (separated by a comma) in the order corresponding to the items shown below.

Item	Description
Main unit information	Main unit serial number
Object version	Software version
Parameter type	Equipment parameter
Name	Parameter name
ID	Parameter ID
Set value	Parameter value
Parameter type	Product parameter
Product number	Product number
Name	Parameter name
ID	Parameter ID
Set value	Parameter value (product 1 to 200)

■ Saving history data

Select [History] and press [Save] in the same manner.



Name	Setting (Default; _)	Description	
Type	Event history Operation Check History NG history	Selects the types of events to be saved.	
Specify range:	All Data Set Day Only 500 From Set Date	All Data	Saves all the registered histories.
		Set Day Only	Saves the history registered at the specified day.
		500 From Set Date	Saves 500 items of histories starting from the specified date.
History type	Operation History Parameter History Alarm History	Selects the type of the history to be output.	

(1) Folder and file name

History data are recorded under the folder “HIST” as “HEVT_**.csv” file.

The operation check history data file is named as “HOC_ΔΔ.csv”, and recorded in the folder named with the date under the folder “HIST”. The NG history data is recorded under "HIST" as the file name "HNG_ΔΔ.csv" (ΔΔ indicates the serial number).

(2) Recording format

The data are recorded in USB memory in CSV format (separated by a comma) in the order corresponding to the items shown below.

[Activity History]

Item	Description
History type	History type
Line	Line No.
Output date	Date when the history was output (YYYY/MM/DD HH:MM:SS)
History type	History type to be output (Activity history, parameter history, alarm history)
Product	Product No.
History output No.	Serial number of the history
Date and time	Date on which the event occurred (YYYY/MM/DD HH:MM:SS)
Event	Occurred event
Description	Description

[Operation Check History]

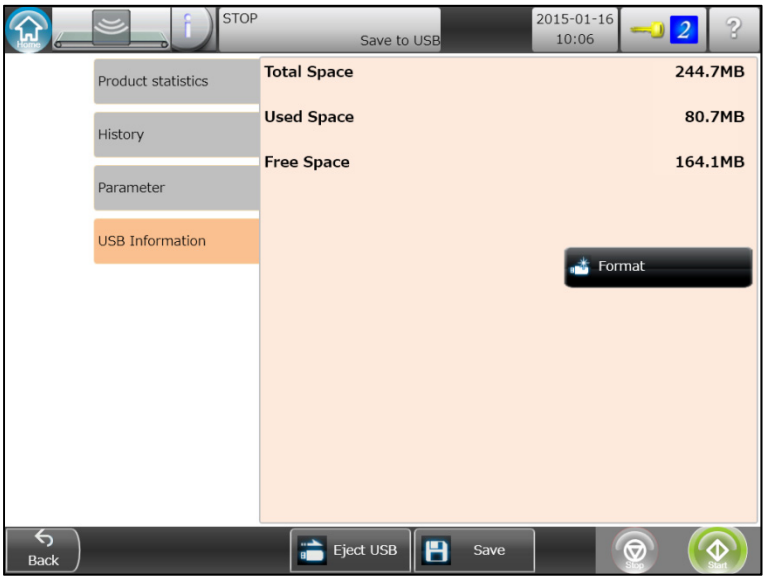
Item	Description
History type	History type
Output date	Date when the history was output (YYYY/MM/DD HH:MM:SS)
Product	Product No.
History output No.	History serial number
Date and time	Date on which the operation check is completed (YYYY/MM/DD HH:MM:SS)
Access Level	Access level at checking the operation
User Name	User at checking the operation (displayed when the user management function is enabled)
Event	Operation check type
Result	Operation check results
Manage. STD setting	Enabling/Disabling the management standard setting parameter
Nth operation check name	Detailed evaluation of the operation check items
Nth operation check result	Results of the operation check items

[NG History]

Item	Description
History type	History type
Line	Line No.
Output date	Date when the history was output (YYYY/MM/DD HH:MM:SS)
Product	Product No.
Lane No.	Enabled only for multiple-lane setting. Fixes 1 for single-lane setting.
History output No.	Serial number of the history
Date and time	Date on which the event occurred (YYYY/MM/DD HH:MM:SS)
NG type	Type of NG evaluation (All types are output for NG evaluation of more than one inspection item.)
Details	Limit that caused the NG evaluation and measured value

■ Displaying USB information

(1) Displaying USB memory information



Total Space: The total space of the USB memory is displayed.
Used Space: The used space of the USB memory is displayed.
Free Space: The free space of the USB memory is displayed.

"- - -" is displayed when no USB memory is inserted.

(2) Formatting

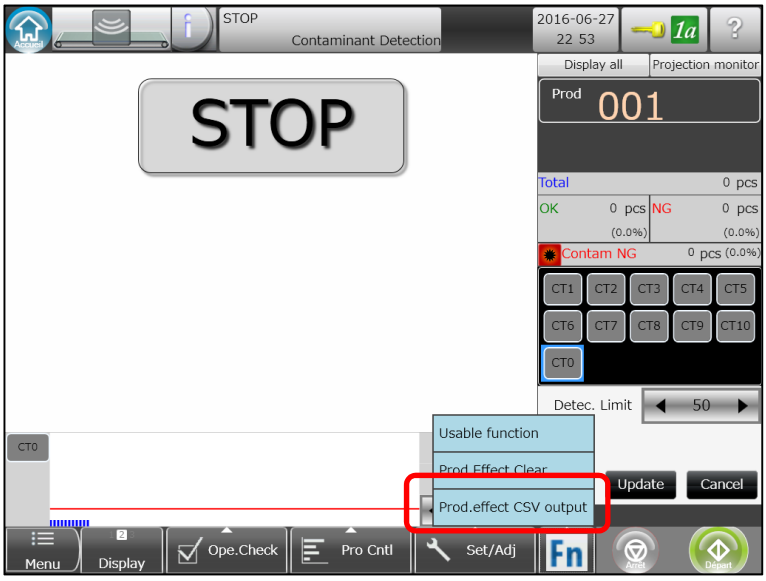
Press the [Format] to format a USB memory.
When you are unable to record data to a USB memory, you need to format it.
You can format a USB memory on this equipment or on your PC.

When you format a USB memory, all data will be erased. Once the data is erased, it will not be recovered.

■ Saving product effect values of the past 10,000 products

From the "Menu" screen, select [USB Memory] → [Save to the USB memory]. From the list to the left, select items of [Product statistics], and press [Save].
To save all registered product data, select [Save all product data] and save.

You can save the product effect values of the 10,000 products inspected in the past to the USB memory in the CSV file format. Press the [Fn] button of the production screen other than the General screen, and select [Prod. effect CSV output].



(1) Folder and file name

Product effect values are saved in a file "PROD_ΔΔ.csv" (ΔΔ indicates a serial number) in the date folder under "PROD".

(2) Recording format

The data in CSV format (separated with commas ",") is recorded in the USB memory stick.

Item	Explanation
[1] File type	PROD ALL
[2] Output date	Date when the CSV was output (YYYY/MM/DD HH:MM:SS)
[3] Product	Product No.
[4] Lane No.	Lane No.
(Line feed)	
[5] Output No.	Serial number of effect value data
[6] to [20] Contaminant detection effect values	CT0-CT14

Item	Explanation
[21] to [23] Missing product quantity	MPx1_Ave, MPx1_Min, MPx1_Max
[24] Missing product count	MNP
[25] to [27] Shape crack effect values	SPM1_Ave, SPM1_Min, SPM1_Max
[28] to [30] Shape chip effect values	SPx1_Ave, SPx1_Min, SPx1_Max
[31] Weight measured value	RMT
[32] to [34] Partial weight measured values	RMI_Ave, RMI_Min, RMI_Max
[35] to [37] Sealing effect values	SC1, SC2, SC3

(CSV output example)

[1] **PROD ALL**

[2]	**Output date**	**2015/3/30 14:38**
[3]	**Product No**	**199**
[4]	**Lane No.**	**2**

[5]	[6]		[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]
No.	CT0	…	CT14	MPx1_Ave	MPx1_Min	MPx1_Max	MNP	SPM1_Ave,	SPM1_Min,	SPM1_Max	SPx1_Ave,	SPx1_Min,	SPx1_Max	RMT	RMI_Ave	RMI_Min,	RMI_Max	SC1	SC2	SC3
1																				
2																				
3																				
4																				
5																				

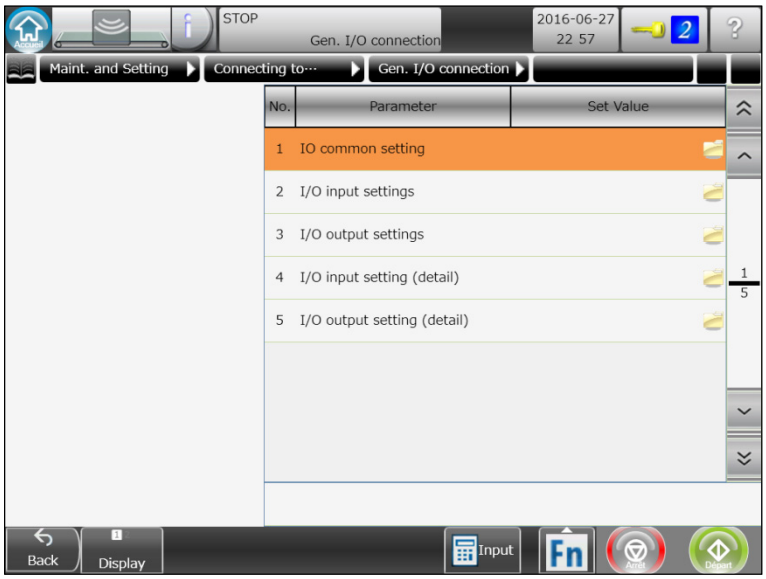
•
•
•

> Setting External I/O Signals

This section describes input and output signals for external control.
This system has 2 points of contact I/O as standard. If you add the option KCU2504A, you can add 8 additional points. See the table below for a summary of I/O setting.

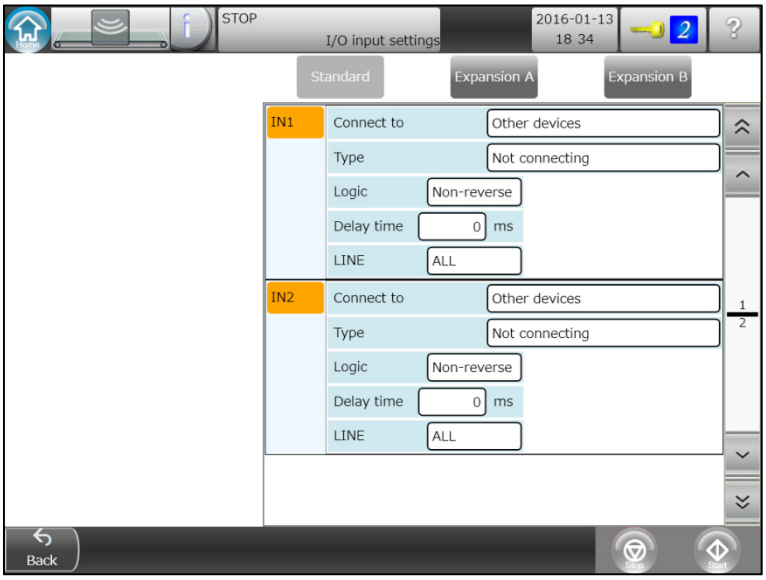
Destination	I/O Input Setting	I/O Output Setting
Standard I/O	IN1	OUT1
	IN2	OUT2
KCU2504A Expansion A I/O (optional)	INA1, INA2, INA3, INA4, INA5, INA6, INA7, INA8	OUTA1, OUTA2, OUTA3, OUTA4, OUTA5, OUTA6, OUTA7, OUTA8
KCU2504A Expansion B I/O (optional)	INB1, INB2, INB3, INB4, INB5, INB6, INB7, INB8	OUTB1, OUTB2, OUTB3, OUTB4, OUTB5, OUTB6, OUTB7, OUTB8

1 From the "Menu" screen, select [Maint. And setting] → [Connecting to external unit] → [Gen. IO connection].



2 In [I/O common setting], select whether to make the standard port or Expansion A port common among all products or product-type specific.

3 Select [I/O input settings], and perform I/O input setting.



When [Connect to] is selected and [Type]/[Logic]/[Delay time] is pressed, the input screen is displayed. Assign settings according to the table below.

Types of input signals

Type	Description
Not connecting	No signal input.
Mot. ON/OFF (Momentary)	Input for switching Run/Stop. Run and Stop are toggled each time this signal input goes ON for at least 500 ms.
Mot. ON/OFF (Alternate)	Input for switching Run/Stop. The motor runs while this input signal is ON. Set the input ON/OFF time to 500 ms or higher.
Mot. OFF (LateInPriority)	When this input signal is ON, the conveyor motor is stopped forcefully. After that, operation can be restarted by panel operation even if the signal is ON.
Mot. OFF (Par. Priority)	The operation stops when the input signal setting changes from OFF to ON. The operation cannot be enabled when the signal is set to ON.
Error reset	Input for releasing errors and alarms.
Clear stats	Clears the statistics data.
External device error	E864 External device error occurs when an error signal is turned ON from the external device.
Air pressure monitoring	E082 Air pressure low error occurs when the air pressure error signal is ON continuously for the air pressure error monitoring time.

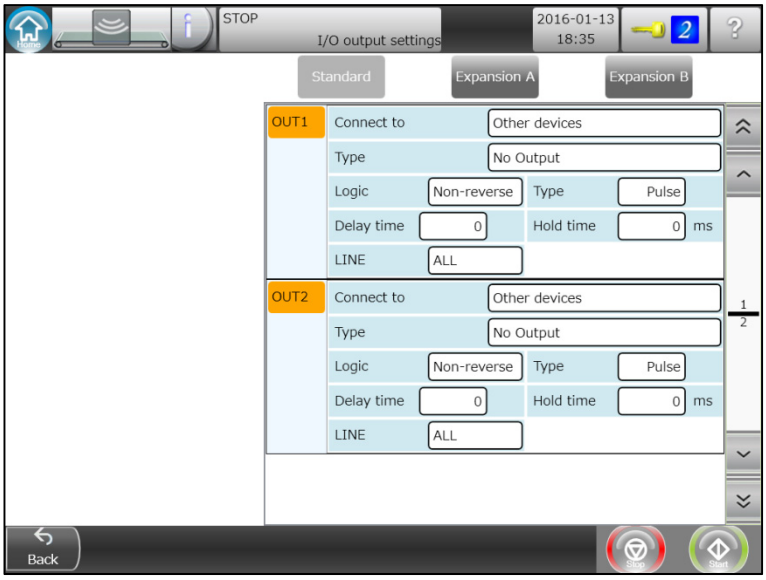
Type	Description
NG box full	A865 Box Full and E865 Box Full occur when the NG box full signal is ON continuously for the full detection monitoring time.
Release image capture	The external signal releases the still X-ray Image on the screen.
External NG (Sync)	Input for ejecting products to the External NG direction regardless of the inspection result in the system. The rejection gate operates in the same timing as other NGs. ☞ P. 366 Timing Chart
External NG (Sync2)	This is an input to discharge products to the external NG direction regardless of the inspection result in the equipment. The RJ gate operates when the signal input turns on.
External NG2 (Sync)	Input for ejecting products to the External NG2 direction regardless of the inspection result in the system. The rejection gate operates in the same timing as other NGs. ☞ P. 366 Timing Chart External NG2 can be used with External NG and its judgment has higher priority.
External NG2 (Sync2)	This is an input to discharge products to the external NG2 direction regardless of the inspection result in the equipment. The RJ gate operates when the signal input turns on.
NGBOX RJ1/2/4/5	This signal is used as the unlock signal input for each NG Box when the electronic locked NG Box (option) is used. When this signal is set to ON, theNG Box is regarded as unlocked and an alarm occurs if this remains for 5 seconds or more.
NG Box Door Status	This signal is set to ON if the door of the NG Box opens, while it is OFF if this door is closed.

Logic and Delay Time

Name	Setting (Default; _)	Description
Logic	Not Reverse Reverse	Output signal logic can be set.
Delay Time	0 to 9999 [ms]	Set the delay time from the terminal input.
Line	ALL (L1 to L6)	If [External NG (Sync)] or [External NG2 (Sync)] is selected in [Type], the lane No. can be specified according to the multiple-lane specifications.

☞ P. 253 Setting Multiple Rows for Conveying Products to Inspect Them

4 Select [I/O output settings], and perform I/O output setting.



When [Connect to] is selected and the input area of [Type]/[Logic]/[Type]/[Delay time]/[Hold time] is pressed, the input screen is displayed. Assign settings according to the table below.

Types of output signals

Type	Output Type Setting	Description
Not Output	—	No signal output.
Auto Setting	Standard	Outputs ON when the system is performing auto setting in the Product Registration Navi.
Checking Operation	Standard	Outputs ON when the system is performing operation check.
Motor ON	Standard Pulse	Outputs ON when the conveyor is rolling such as in operation, operation check, or setting operation of the Product Registration Navi, etc. Does not output ON when the conveyor is rolling based on the hardware switch or conveyor inching input signal.
Err.	Standard Pulse Hold2	Outputs ON when the system is in an error state.
Buzzer		Outputs ON when the buzzer sounds in the signal tower (optional).
Measurable	Standard	Outputs ON when the system is in a measurable state in operation (except for the conveyor mode) or operation check.

Type		Output Type Setting	Description
Evalation output	OK	Pulse Hold1 Hold2 RJ sync	Outputs ON when the evaluation result is "OK".
	Contam. NG		Outputs ON when the evaluation result is "Contaminant NG".
	Missing NG		Outputs ON when the evaluation result is "Missing NG".
	Shape NG		Outputs ON when the evaluation result is "Shape NG".
	Mass -NG		Outputs ON when the evaluation result is "Mass NG (under)".
	Mass +NG		Outputs ON when the evaluation result is "Mass NG (over)".
	Sealing NG		Outputs ON when the evaluation result is "Sealing NG".
	Exernal NG		Outputs ON when the evaluation result is "External NG".
	External NG2		Outputs ON when the evaluation result is "External NG2".
	Conv. NG		Outputs ON when the evaluation result is "Conveyance NG".
Rank Output (NG)			Outputs ON when the evaluation result is other than "OK".
Rank Output Timing		Pulse	Outputs ON when the evaluation result is determined. Normally used in combination with the Rank Output signal above.
Product Detection		Pulse	Outputs ON while a product is being detected. Set pattern to "Pulse". Does not output ON when the conveyor is rolling based on the hardware switch or conveyor inching input signal.
REDAY		Standard	Outputs ON when the system enters the ready state after the power is turned on and initial setting is completed.
Output at full		Standard	Outputs ON when the NG box full signal is ON continuously for the full detection monitoring time.
NG Rate		Standard Pulse	Outputs ON when the NG rate (NG product rate) is outside the specified value (NG rate). Press the [//Reset] button to reset.
RJ check error		Standard Pulse Hold1 Hold2	Outputs ON when an RJ Check error occurs when the RJ check function (optional) is used. Press the [//Reset] button to reset.
Product Jam		Pulse	Outputs ON when an E011 product detection sensor error or E730 (right)/E731 (left) hand insertion detection error occurs.

Type	Output Type Setting	Description
Hazard monitoring	Pulse Hold1 Rejection synchronization	Outputs ON in case of highly hazardous contamination of the products
NGBOX OPEN RJ 1/2/4/5	Standard	This signal is used as the unlock enable signal output for each NG Box when the electronic locked NG Box (option) is used. This signal is set to ON when unlocking the NG Box and opening of the NG Box is enabled. This signal is not output if this signal is selected while the electronic locked NG Box is unused.

If the output types that are not listed in the table are selected, the operation is not assured.

For the connection terminals, refer to [Annex: External I/O specifications and timing chart].

☞ P. 358 External I/O Specifications, P. 366 Timing Chart

Logic, Type, Delay Time, and Hold Time settings

Name	Setting (Default; _)	Description	
Logic	Not Reverse Reverse	Output signal logic can be set as follows:	
		Not Reverse	Signal not reversed.
		Reverse	Signal reversed.
Type*	Pulse Hold1 Hold2 RJ sync Standard	The operation is not assured when selecting a type that is not shown in the table on the above.	
		Pulse	ON only for set Hold time
		Hold1	ON until end of evaluation of next product.
		Hold2	Reset ON until the button is pressed or the error reset input signal is received
		RJ sync	ON only during rejector gate operation time(T4 interval)
		Standard	The logic of output signal can be set.
Delay Time	0 to 9999 [ms]	Sets the output ON delay time.	
Hold Time	0 to 9999 [ms]	Sets the signal hold time. Effective only if Pulse is selected in the Output Type Setting.	
Line	ALL (L1 to L6)	The lane No. can be specified according to the multiple-lane specifications when the item related to evaluation output such as [Evaluation output (Contam. NG) is selected in [Type].	

☞ P. 253 Setting Multiple Rows for Conveying Products to Inspect Them

■ General I/O detail setting

Normally, use "I/O input setting" and "I/O output setting". Use "I/O input setting (Details)" and "I/O output setting (Details)" when using logical connections of signals.

IO input setting (Details)

(Maint. and Setting → External device connection setting → Gen. IO connection → I/O input setting (Details))

* Select the port to specify from [Standard], [Expansion A], and [Expansion B].

Name	Setting (Default: _)	Description
Type	Not connected (Select from [Type] on the "I/O input setting" screen)	The same parameter as [Type] on the "I/O input setting" screen.
Input Terminal No. 1	0 to 255	Set the terminal name of the input terminal block.
Input Logic 1	Not Reverse Reverse	Specifies the logic of the input signal from the selected terminal.
Delay Time 1	0 to 9999 [ms]	Specifies the delay time of the input signal from the selected terminal.
Signal Connection 1	None/And/Or	Specifies the logical connection of the signals input from the input terminal No. n and [n+1].
Input Terminal No. 2	0 to 255	Set the terminal name of the input terminal block.
Input Logic 2	Not Reverse Reverse	Specifies the logic of the input signal from the selected terminal.
Delay Time 2	0 to 9999 [ms]	Specifies the delay time of the input signal from the selected terminal.
Signal Connection 2	None/And/Or	Specifies the logical connection of the signals input from the input terminal No. n and [n+1].
Input Terminal No. 3	0 to 255	Set the terminal name of the input terminal block.
Input Logic 3	Not Reverse Reverse	Specifies the logic of the input signal from the selected terminal.
Delay Time 3	0 to 9999 [ms]	Specifies the delay time of the input signal from the selected terminal.
Signal Connection 3	None/And/Or	Specifies the logical connection of the signals input from the input terminal No. n and [n+1].

Name	Setting (Default: _)	Description
Line	ALL	The lane No. can be specified according to the multiple-lane specifications when the item related to evaluation output such as [Evaluation output (Contam. NG) is selected in [Type].
Destination	Other inspection system Rejecor Conveyor Checkweigher Metal detector X-ray inspect. system Weigher Packager Labeler	Sets the connection of input signal.

IO output setting (Details)

(Maint. and Setting → External device connection setting → Gen. IO connection → I/O output setting (Details))

* Select the port to specify from [Standard], [Expansion A], and [Expansion B].

Name	Setting (Default: _)	Description
Output Terminal No.	0 to 255	Set the terminal name of the output terminal block.
Type 1	No output (Select from [Type] on the "I/O output settings" screen)	The same parameter as [Type] on the "I/O output settings" screen.
Output Type 1	Pulse Hold1 Rejection synchronization Standard	Specifies the format of the signal output from the output terminal block.
Output Logic 1	Not Reverse Reverse	Specifies the logic of the signal output from the output terminal block.
Delay Time 1	0 to 9999 [ms]	Specifies the delay time of the signal output from the output terminal block.
Hold Time 1	0 to 9999 [ms]	Specifies the delay time of the signal output from the output terminal block.

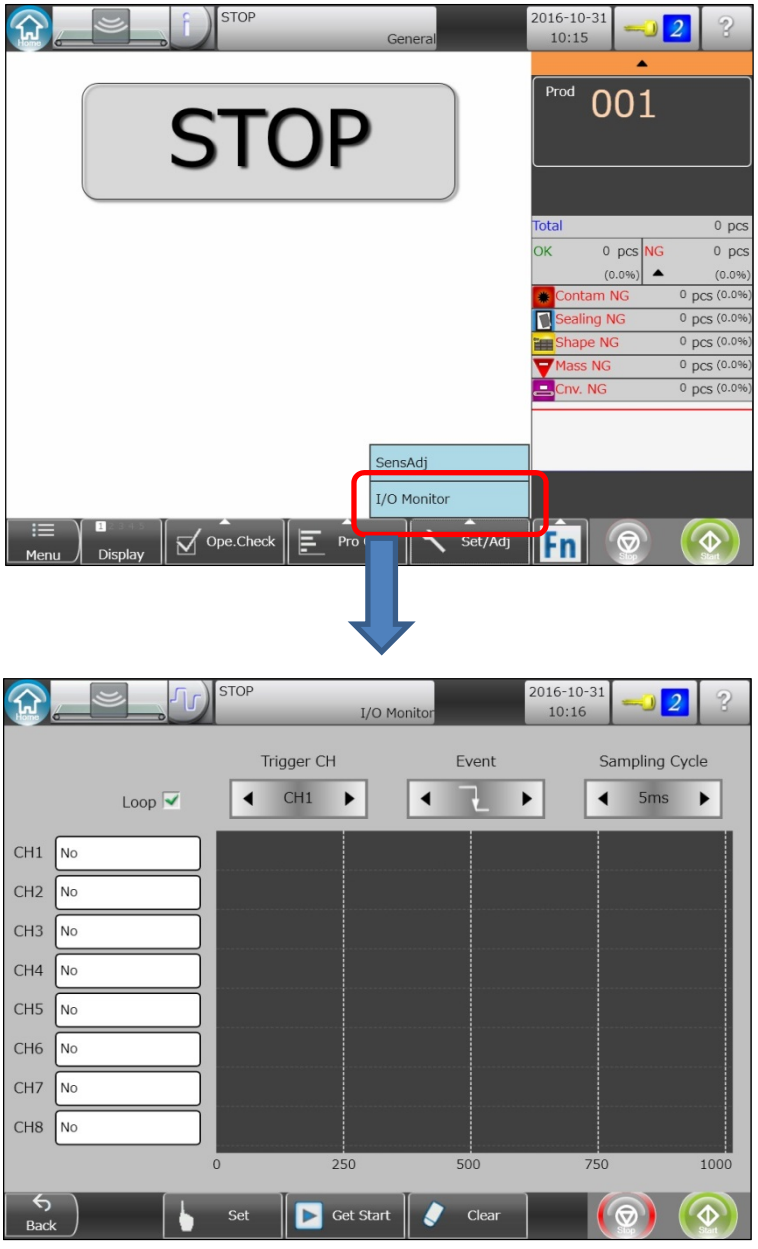
Name	Setting (Default: _)	Description
Signal Connection 1	None/And/Or	Specifies the logical connection of the signals output from the output terminal No. n and [n+1].
Type 2	No output (Select from [Type] on the "I/O output settings" screen)	The same parameter as [Type] on the "I/O output settings" screen.
Output Type 2	Pulse Hold1 Rejection synchronization Standard	Specifies the format of the signal output from the output terminal block.
Output Logic 2	Not Reverse Reverse	Specifies the logic of the signal output from the output terminal block.
Delay Time 2	0 to 9999 [ms]	Specifies the delay time of the signal output from the output terminal block.
Hold Time 2	0 to 9999 [ms]	Specifies the delay time of the signal output from the output terminal block.
Signal Connection 2	None/And/Or	Specifies the logical connection of the signals output from the output terminal No. n and [n+1].
Type 3	No output (Select from [Type] on the "I/O output settings" screen)	The same parameter as [Type] on the "I/O output settings" screen.
Output Type 3	Pulse Hold1 Rejection synchronization Standard	Specifies the format of the signal output from the output terminal block.
Output Logic 3	Not Reverse Reverse	Specifies the logic of the signal output from the output terminal block.
Delay Time 3	0 to 9999 [ms]	Specifies the delay time of the signal output from the output terminal block.
Hold Time 3	0 to 9999 [ms]	Specifies the delay time of the signal output from the output terminal block.
Signal Connection 3	None/And/Or	Specifies the logical connection of the signals output from the output terminal No. n and [n+1].
Line	ALL	The lane No. can be specified according to the multiple-lane specifications when the item related to evaluation output such as [Evaluation output (Contam. NG) is selected in [Type].

Name	Setting (Default: _)	Description
Destination	Other inspection system Rejector Conveyor Checkweigher Metal detector X-ray inspect. system Weigher Packager Labeler	Sets the connection of output signal.

■ Monitoring the internal signal or general input/output (I/O) signal

You can view the signal in the device and the waveform of the general I/O signal for the external control. For the signals for which the timing verification or adjustment is required, perform monitoring while viewing the "I/O Monitor" screen.

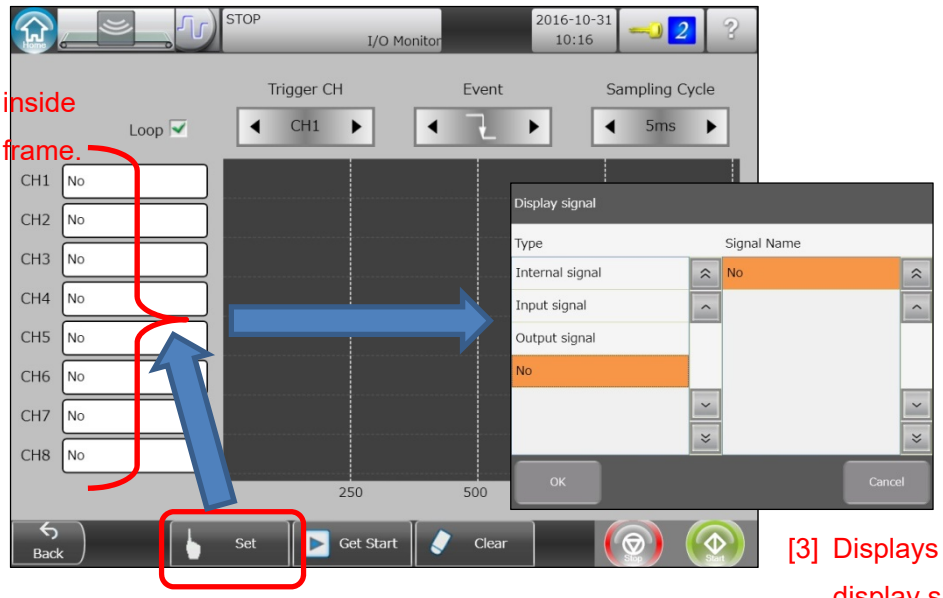
1 Press the [Set/Adj] button on the production screen to select the [I/O Monitor]. The I/O monitor screen is displayed.



The descriptions on each item of the I/O monitor screen are described below

Name	Setting (Default; _)	Description
Trigger CH	CH1 CH2 to 8	Sets the channels to detect the triggers set in the event.
Event	DOWN UP No	Sets the trigger detection method. DOWN: Detects changing from H to L. UP: Detects changing from L to H. No: No event is detected.
Sampling Cycle	5 ms 10, 20, 50, 100	Sets the cycle to collect the sample of the signal wave form.
Loop Display	Yes None	Sets whether to update the display of the wave form in the cycle unit.
CH1 to 8	(Refer to the following items.)	Selects the signal to be monitored.
Select/Input button	Select Input	The button name changes between [Select] and [Input] every time the button is pressed. When the button name is [Select], the "Display Signal" screen appears by pressing the inside of the frame of [CH1 to 8]. When the button name is [Input], the set value of the selected signal can be changed directly by pressing the inside of the frame of the already-set [CH1 to 8].
Get St./Get Stop button	Get St. Get Stop	The button name changes between [Get St.] and [Get Stop] every time the button is pressed. When the button name is [Get St.], monitoring of the wave form starts according to the settings by pressing the button. When the button name is [Get Stop], monitoring of the wave form stops.
Clear	–	Clears the monitor wave form of the displayed signal.

2 Check that the Select/Input button name is [Select], and press the inside of the frame of [CH1 to 8]. The "Display Signal" screen is displayed.



3 Set the signal to be monitored on the "Display Signal" screen. By selecting the inside of the frames of CH1 to CH8, the "Display Signal" screen appears. Select the signal whose wave form is monitored from the following table.

Type	Signal name	Description
Internal signal	PHOTO (W1 to 6)	This is the optical signal for product detection. This signal is specified for each line.
	PHOTO (RJ1/3/5)	This is the optical signal for rejection check. This signal is specified for each rejection direction.
	RJ (1/2/4/5)	This is the rejection output signal. This signal is specified for each rejection direction.
	T3 (1 to 6)	This is the rejection delay time T3 signal. This signal is specified for each line.
	T4 (1 to 6)	This is the rejection operation time T4 signal. This signal is specified for each line.
	T7 (1 to 6)	This is the rejection check delay time T7 signal. This signal is specified for each line.
	T7_Gate (1 to 6)	This is the RJ1 gate check delay time T7 signal. This signal is specified for each line.
	T7_Gate5 (1 to 6)	This is the RJ5 gate check delay time T7 signal. This signal is specified for each line.
	T9 (1 to 6)	This is the rejection check operation time T9 signal. This signal is specified for each line.
	T9_Gate (1 to 6)	This is the gate check delay time T9 signal. This signal is specified for each line.

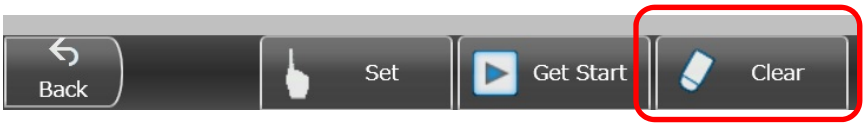
Type	Signal name	Description
Input signal	IO IN1 to 2	This is the input signal for the standard general I/O.
	IO INA1 to 8	This is the input signal for the expansion A general I/O.
	IO INB1 to 8	This is the input signal for the expansion B general I/O.
	MRJ (2) IN 1 to 16	This is the I/O input signal of the MRJ unit.
Output signal	IO OUT1 to 2	This is the output signal for the standard general I/O.
	IO OUTA1 to 8	This is the output signal for the expansion A general I/O.
	IO OUTB1 to 8	This is the output signal for the expansion B general I/O.
	MRJ (2) OUT 1 to 32	This is the I/O output signal of the MRJ unit.

4 By pressing the Select/Input button to set the button name to [Input] and then pressing the inside of the frames [CH1 to 8], the set value allocated to the signal can be changed directly.

5 Set CH to be the trigger, drawing the start method of the wave form for an event, and sampling cycle to [Trigger CH], [Event], and [Sampling Cycle] respectively, and then press the [Get Start] button at the bottom of the screen. Hereafter, drawing starts when the event to be the trigger occurs.

6 To stop monitoring the wave form, press the [Get Stop] button at the bottom of the screen. Hereafter, drawing starts when the event to be the trigger occurs.

7 To delete the displayed wave form, press the [Clear] button at the bottom of the screen



> Setting Data Communication by Serial Connection

This section explains the settings for the data input/output by the serial connection to the external devices.

Serial output setting

([Maint. And setting] → [Connecting to external units] → [Serial output])

* Setting items of “Serial 2(A)” and those of “Serial 3(B)” are the same.

Name	Setting (Default: _)	Description	
Serial A (B) connection	None Anritsu Product	Selects a connection method of serial input/output.	
		None	No connection with external devices
		External device	Connection with external devices
		Anritsu Product	Connection with Anritsu devices
Serial A (B) transmission method	RS-232C Current loop	Sets a communication standards (transmission method).	
Serial A (B) transmission speed	9600 1200 2400 4800	Sets a transmission speed for serial communication.	
Serial A (B) parity	None EVEN ODD	Selects parity for serial input/output.	
Serial A (B) flow control	RTS None	Sets a flow control method for serial communication.	

Name	Setting (Default: _)	Description	
Serial A (B) interlock type	Product/operation Only product Only operation Product/operation (expand) Only product (expand)	Product/ operation	Follows the interlock instruction for product and operation from the connected device. The corresponding product is within the product number range from 1 to 100.
		Only product	Follows the interlock instruction for product from the connected device. The corresponding product is within the product number range from 1 to 100.
		Only operation	Follows the interlock instruction for operation from the connected device.
		Product/ operation (expand)	Follows the interlock instruction for product and operation from the connected device. The corresponding product is within the product number range from 1 to 200.
		Only product (expand)	Follows the interlock instruction for the product of the connected device. The corresponding product is within the product number range from 1 to 200.
Serial A (B) interlock device	None CW MD	Sets the device to be interlocked. CW: ANRITSU checkweigher MD: ANRITSU metal detector	
Serial A (B) interlock parent/child setting	Child Parent	Sets the parent device for the instruction source or child device for the instruction destination to interlock other models.	
Serial A (B) Evaluation result output	None Standard Expansion Easy expansion	Selects the telegraph format in which the evaluation result is output to serial A (B). For details of the format, refer to the Online specifications.	
		None	Does not output the evaluation result.
		Standard	Outputs the evaluation result only.
		Expansion	Outputs the evaluation result and product effect value.
		Easy expansion	Outputs the evaluation result by the easy expansion telegraph.

Name	Setting (Default: _)	Description	
Serial A (B) Status change output	None Available Status	Selects whether to output a change in the device status (power ON, operation, stop) to serial A (B). For details of the format, refer to the Online specifications.	
		None	Does not output the status change.
		Available	Outputs the status change.
		Status	Outputs the response telegraph in the case of the status change.
Serial A (B) Output in Operation Check	None Available	Selects whether to output the operation check result to serial A (B). For details of the format, refer to the Online specifications.	
		None	None
		Available	Available
Serial A (B) Error/Alarm output	None Available Status	Selects whether to output the abnormality that occurred in the device to serial A (B). For details of the format, refer to the Online specifications.	
		None	Does not output even if an abnormality in the device occurs.
		Available	Outputs the information to notify of an abnormality that occurred in the device.
		Status	Outputs the status response telegraph if an abnormality in the device occurs.

> Connecting to Ethernet (LAN)

To connect to the network via Ethernet, refer to the following table for setting.

If the settings related to the network have been changed, a message to prompt you to reboot the device appears. Reboot the device according to the instructions on the screen.

Network common setting

(Maint. and Setting → External device connection setting → Network connection → Network common setting)

Name	Setting (Default; _)	Description
Network connection	Disabled QUICCA	Sets whether to connect the network to QUICCA.
IP address	0.0.0.0 255.255.255.255	Sets IP address of this device.
Subnet mask	0.0.0.0 255.255.255.255	Sets the subnet mask of this device.
Default gateway	0.0.0.0 255.255.255.255	Sets the default gateway of this device.
Remote server port	50001 to 65535	Inputs the port No. to access from the network.
DNS server	0.0.0.0 255.255.255.255	Sets DNS server of this device.
Product group	Up to 14 characters	Sets the product group of this device.
Processing during no connection	None Alarm Error	Sets the processing in case of detection of a disconnected network.
Device name	Up to 14 characters	Input the name of the device on the network. This name enables you to search the device through the PC.

Setting communication contents

(Maint. and Setting → External device connection setting → Network connection → Communication settings)

Name	Setting (Default; _)	Description
Individual data output to the PC	Disabled Enabled	Sets the data output to the PC on the network.
PC IP address	0.0.0.0 255.255.255.255	Inputs the IP address of the PC in which the data is saved.
PC port number	5001 to 50000 to 65535	Inputs the port No. of the PC in which the data is saved.
Remote product change	Disabled Enabled	Sets whether to change the product type via the network.
Remote operation	Disabled Enabled	Sets whether to run or stop the device via the network.
Send parameter history trail	Disabled Enabled	The parameter change information is output spontaneously to a network. Use this normally in [Disabled].
Individual detail format	Format 2 Format 4	Use this normally in [Format 2].
AI header transmission process	Disabled Enabled	Use this normally in [Disabled].
Output on validation	Disabled Enabled	Sets the operation check result output to the PC on the network.

Image output setting

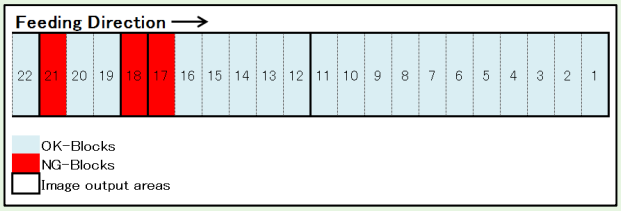
(Maint. and Setting → External device connection setting → Network connection → Image output setting)

Name	Setting (Default; _)	Description
Image output to the PC	Disabled Enabled	Sets whether to output images to the PC.
Image output server name	Up to 64 characters	Inputs the server name used for FTP.
Output folder	Up to 16 characters	Inputs the folder name used for FTP.
Output login name	Up to 16 characters	Inputs the login name used for FTP.
Output password	Up to 16 characters	Inputs the password used for FTP.

Name	Setting (Default; _)	Description
FTP connecting port count	1 to 5 to 10	Sets the number of the ports to be connected to the FTP server in which images are saved. Add the number of the connected port to save the image in the high-capacity condition. *Note: The upper limit of the FTP port counts varies depending on the connected PC. Set the number so that the simultaneous connecting count does not exceed the upper limit.* Example) To connect 2 units of X-ray devices to the PC with Windows 7 (maximum FTP connecting count: 10), the setting for each device is 5.
Image output condition	None NG only All	Sets the transmittance image output to the PC on the network.
Saving image blocks (option)	3 to 11	Set the image size output to a network when [Image output condition] is [All] and [Product delivery type] is [Bulk]. The smaller the value, the image marked off in a smaller unit is output.

[Saving image blocks] is intended for a sequence of blocks that were evaluated as OK. When an NG block is detected, the images of blocks (OK blocks accumulated until the NG block detected + 1) are output.

Example: Image output example: When [Saving image blocks] is set to 11



[1] Blocks 1 to 11 are output in an image as OK products.
[2] Blocks 12 to 17 are output in an image as NG products.
[3] Block 18 is output in an image as NG products.
[4] Blocks 19 to 21 are output in an image as NG products.

SNTP setting

(Maint. and Setting → External device connection setting → Network connection → SNTP setting)

Name	Setting (Default; _)	Description
SNTP time adjustment	Disabled Enabled	Selects whether to synchronize the time with the external time server by using SNTP.
SNTP server	Up to 64 characters	Sets the IP address of the SNTP server.
SNTP connection interval (min)	0 to 10 to 60	Sets the intervals for SNTP time synchronization.
SNTP connection interval (sec)	0 to 59	
SNTP time difference adjustment (+/-)	+ -	Set the time difference from Greenwich Mean Time at the installation location of the device.
SNTP time difference adjustment (hour)	0 to 9 to 12	
SNTP time difference adjustment (min)	0 to 59	

Remote maintenance setting

(Maint. and Setting → External connection setting → Network connection → Remote maintenance setting)

Name	Setting (Default; _)	Description
Remote maintenance setting	Disabled Enabled	Enables the remote maintenance function.
IP address	0.0.0.0 255.255.255.255	Sets the IP address of the ports that perform the remote maintenance of this machine.
Subnet mask	0.0.0.0 255.255.255.255	Sets the subnet mask of the ports that perform the remote maintenance of this machine.
Default gateway	0.0.0.0 255.255.255.255	Sets the default gateway of the ports that perform the remote maintenance of this machine.
Port for remote maintenance	5001 to 65535	Enters the port number for access to the PC that performs the remote maintenance.
PC IP address	0.0.0.0 255.255.255.255	Enters the IP address of the PC that performs the remote maintenance.

> Set Transmittance Image Hold Condition

You can change the conditions to hold the product transmittance images displayed in the transmittance image display area during production. From the "Menu" screen, select [Adjust registered products] → [Screen display condition] → [Image display].

■ Screen display condition

Name	Setting (Default; _)	Description	
Image hold condition	Manual When NG occurs When a product is fed	Sets the conditions to hold the product transmittance images displayed on the device screen.	
		Manual	Holds the image as soon as a finger touches the transmittance image hold area in spite of the presence or absence of a product.
		When NG occurs	Holds the image as soon as an NG-evaluated product is detected during production.
		When a product is fed	Holds the image as soon as the product is conveyed during production.
Image hold release method	Evaluate Time	Sets the method to release a still image. [Evaluate] releases a still image as soon as the following still image conditions are met. [Time] releases a still image as soon as the condition set in [Image hold condition] occurs after the time set in [Image hold retention time (sec)].  To release a still image in the middle, press the following button on the status bar at the top of the screen.	
Image hold retention time (sec)	0.5 to 25.5	Sets the time to retain a still image display in seconds when [Image hold release method] is specified as [Time].	

(1) Set the parameters related to the screen display condition for each product type.
(2) When the sub window is displayed, [Image hold release method] and [Image hold retention time (sec)] are ignored.

> Checking a still image and moving image in the sub window

You can display a moving image in the sub window while a still image is displayed on the screen. You can change a still image to a moving image displayed in the sub window.

Sub window

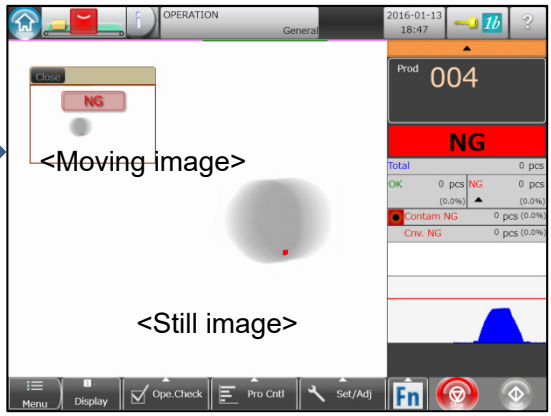
(Maint. and Setting → Function → Screen setting)

Name	Setting (Default; _)	Description
Sub window	Hide Display	Changes to display or hide the sub window.

The operation of the sub window is described below:

(1) Contaminant NG occurs.

(2) When the image hold condition is set to [When NG occurs], the sub window appears to display a moving image, and the transmittance image display area shows a still image.



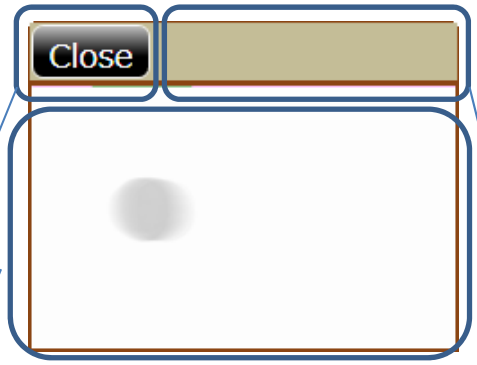
Tap the sub window to change the display contents.

(3) The sub window changes to a still image, and the transmittance image display area changes to a moving image.

Press [Close] on the sub window.

(4) The sub window is hidden.

The basic operation of the sub window is described below:



When a still image is displayed in the transmittance image display area, tap the transmittance image display area and move it horizontally to move the displayed transmittance image together in the same direction.

> Set Enlarge Display of Device Condition

To check the device condition remotely, "STOP", "RUN", evaluation results "OK", "NG", and the inspection mode "Conveyor mode" and "Check mode" can be enlarged to display them. If they are overlapped with the transmittance display and it is difficult to check the image, select [Maint. and Setting] on the "Menu" screen → [Function] → [Screen setting], and disable [Zoom Device Status] to hide these enlarged displays.

Zoom Device Status: Enabled

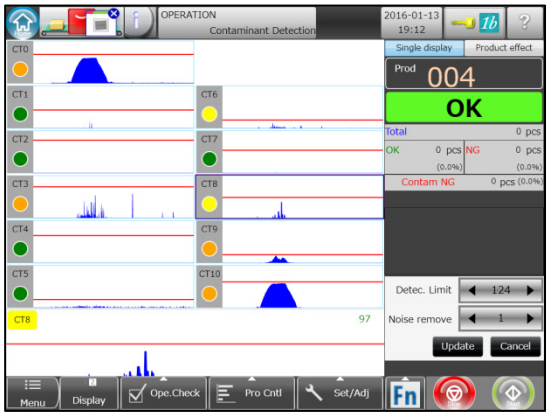
Zoom Device Status: Disabled

> Change Display Setting of Projection Monitor or Product Effect Monitor

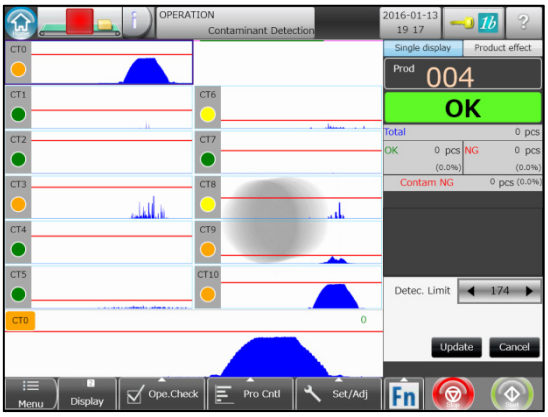
You can change the display setting of the positions or overlapping of the projection monitor, product effect monitor, or transmittance image display area

(Maint. and Setting → Function → Screen setting)

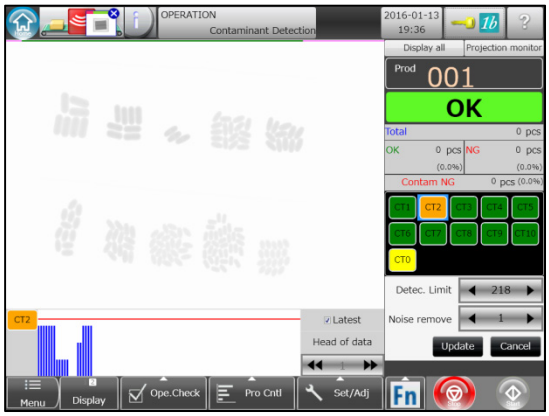
Name	Setting (Default; _)	Description
Graph area background	Not transparent Transparent	When the projection monitor or product effect monitor is displayed, the transmittance image of the product being produced can be displayed as the background of each monitor.
Projection display format	Arrange to display Display on transmittance image	When the projection monitor or product effect monitor is displayed, you can change the display methods between image size reduction to arrange and display the images on the monitor and same-size display. When a same-size image is displayed, the area overlapped with the monitor is hidden.



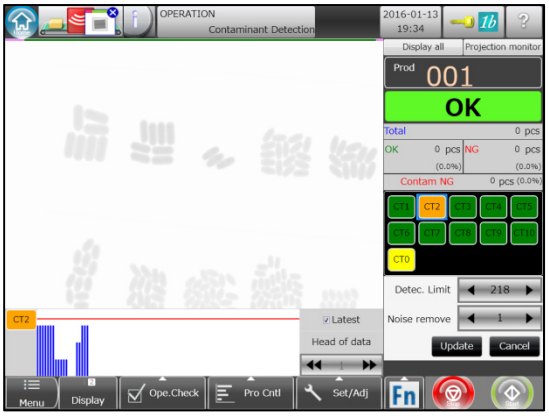
Graph area background: Not transparent



Graph area background: Transparent



Projection display format:
Arrange to display

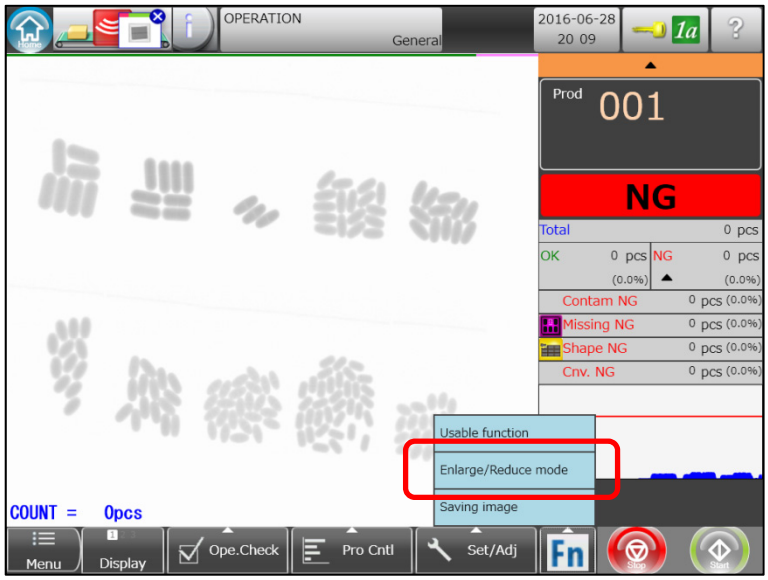


Projection display format:
Display on transmittance image

> Changing the display magnification of a still image

You can change the display magnification of a still image.

1 Display a still image on the production screen. Press the [Fn] button and select [Enlarge/Reduce mode].



2 The screen changes to the Enlarge/Reduce mode, and the enlarge/reduce bar is displayed at the bottom of the screen. Press the [Zoom Out] or [Zoom In] button to adjust the image to the desired size.

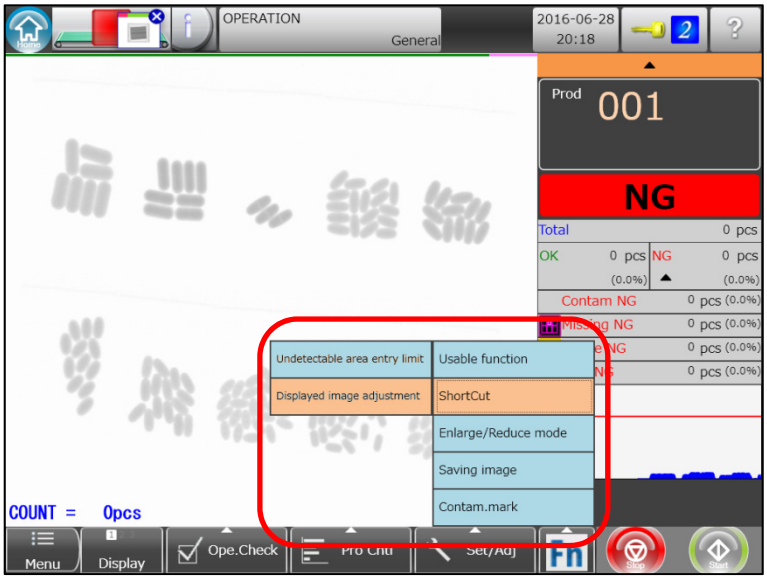
3 After adjusting, press the [Fn] button and select [Enlarge/Reduce mode] to return to the normal mode.

The screen also returns from the Enlarge/Reduce mode to the normal mode when a still image is released or a different screen is displayed.

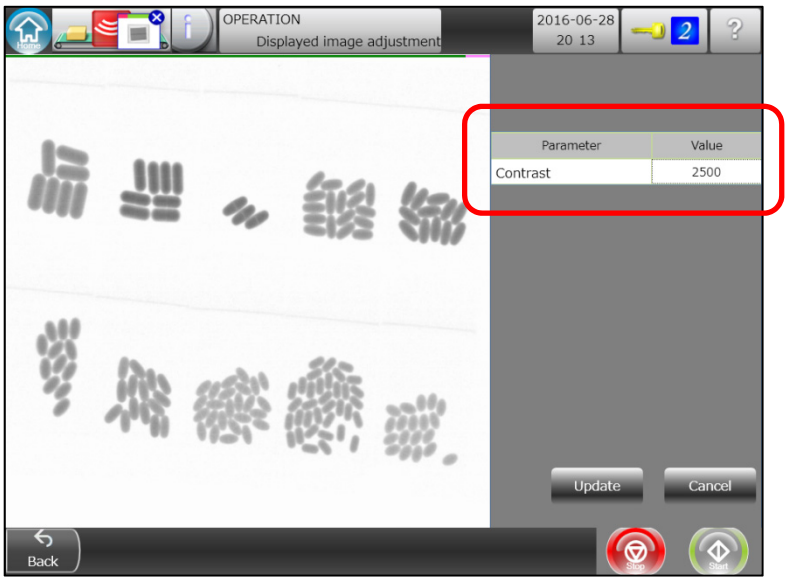
> Changing the contrast of a displayed image

You can change the gray-scale contrast of a still image.

1 Display a still image on the production screen. Press the [Fn] button and select [Display image adjustment] from [Shortcut].



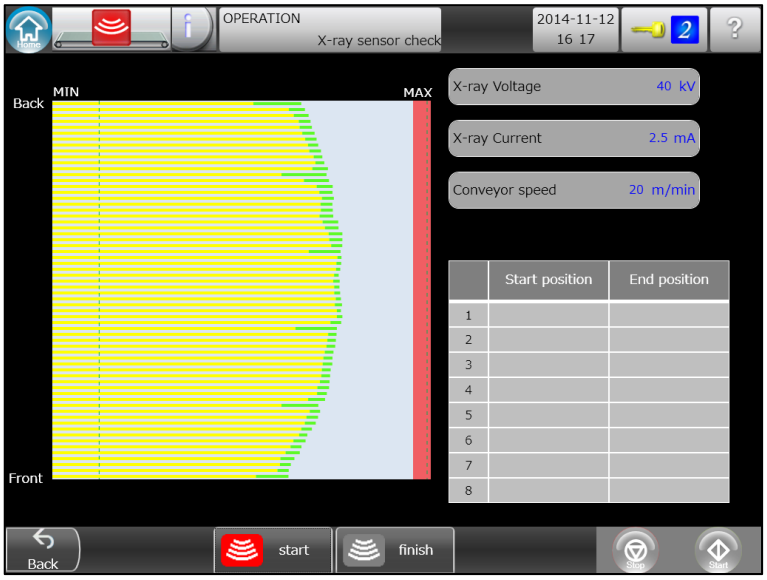
2 The display image adjustment screen is displayed. Adjust [Contrast] to the desired gray-scale contrast. The higher the value, the darker the image becomes.



3 After setting, press [Update] to reflect the changed setting. Press [Back] to return to the production screen. The screen with the data list is displayed.

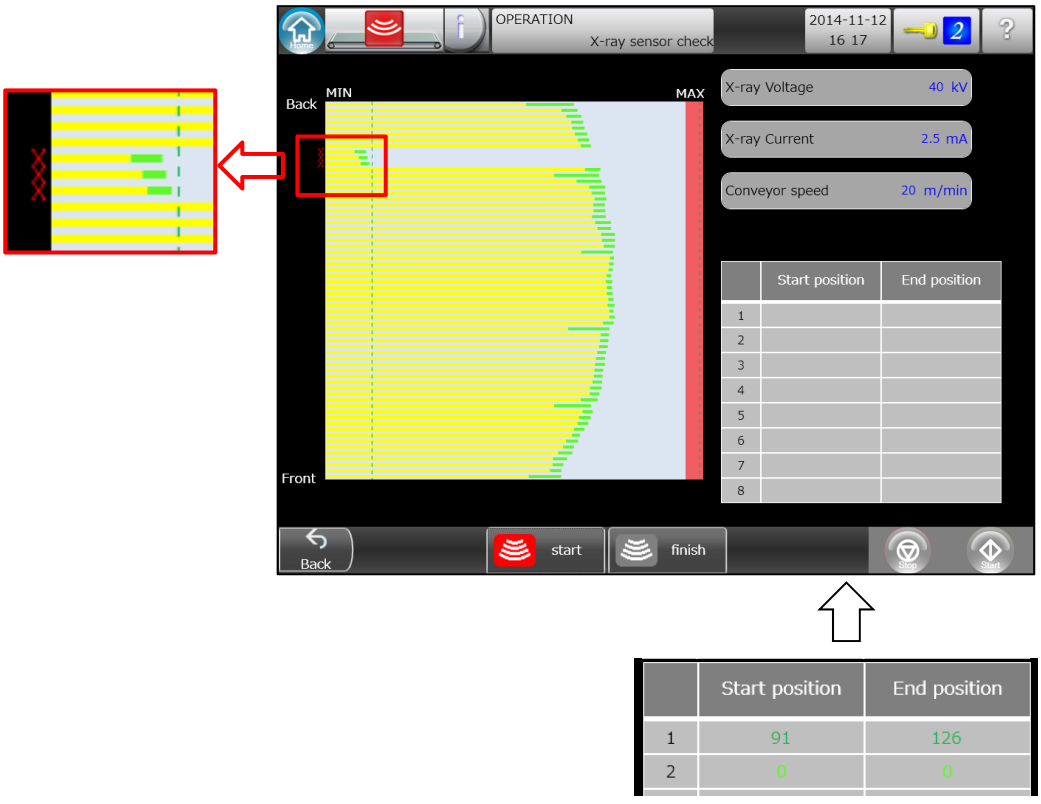
> Checking the X-ray sensor

You can check that there is no problem with the X-ray sensor elements. Select [Unit/connected device setting] on the "Menu" screen → [X-ray sensor] → [X-ray sensor check].



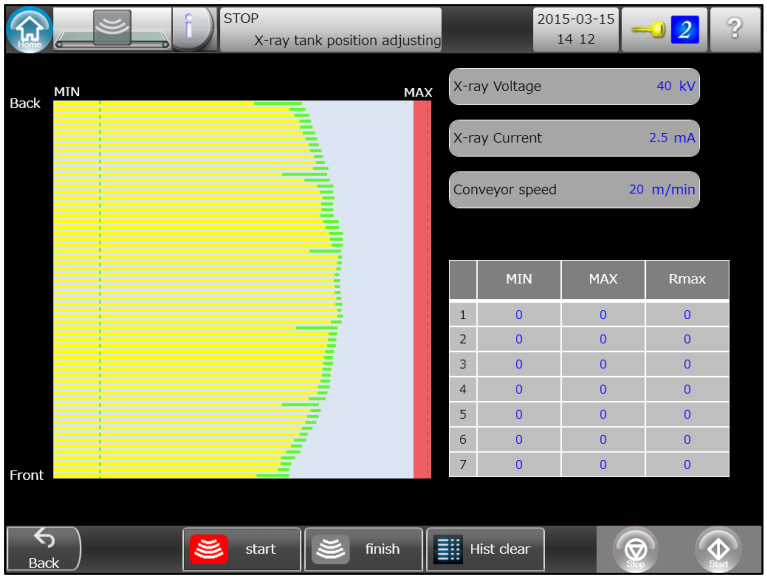
When the [start] is pressed, X-ray irradiation starts with the output conditions of the current product, and the screen displays the reception level of the detector sensor in a graph. When finished, press the [finish] to stop X-ray irradiation.

When NG Pixels are detected as a result of inspection, a red x-mark is added to the far left of the graph.



> Checking the X-ray tank

You can check that there is no problem with the X-ray tank position adjustment. Select [Unit/connected device setting] on the "Menu" screen → [X-ray tank] → [X-ray tank position adjusting].

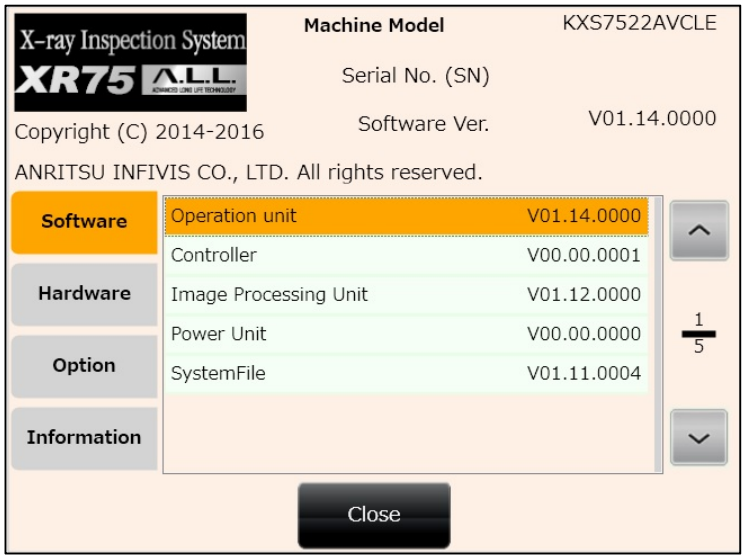


When the [start] is pressed, X-ray irradiation starts with the output conditions of the current product, and the screen displays the reception level of the detector sensor in a graph. When finished, press the [finish] to stop X-ray irradiation. The values of [MIN], [MAX], and [Rmax] in the table are updated on the screen when the [finish] is pressed.

> Checking Version Info

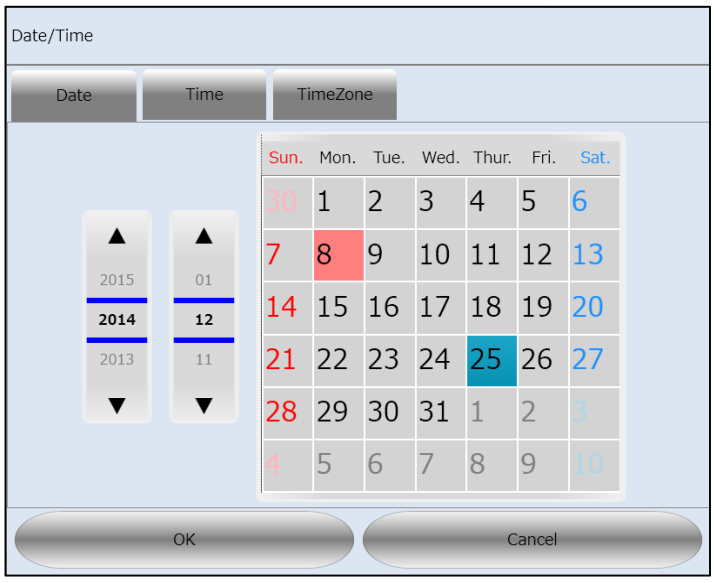
When the [? (Help)] in the upper right corner of the screen is pressed and "Version Information" is selected, the following information is displayed.

- Model of the main unit
- Serial No.
- Software version information
- Hardware version information
- Information about options
- Other information

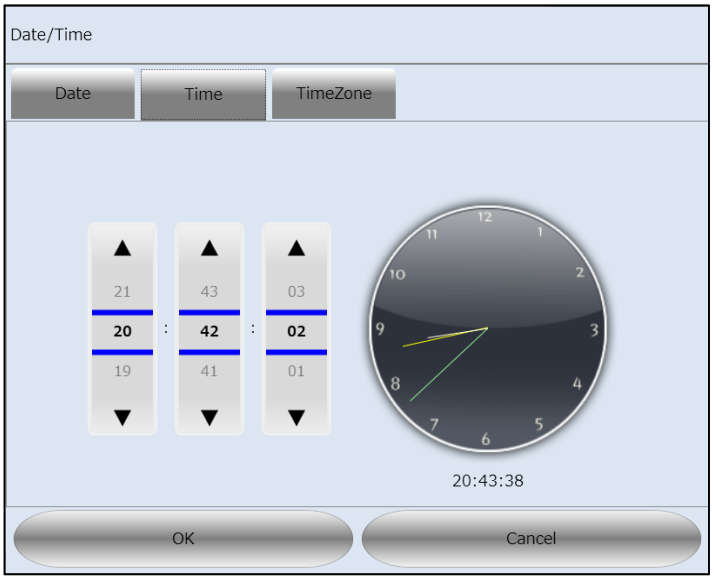


> Setting the Data and Time

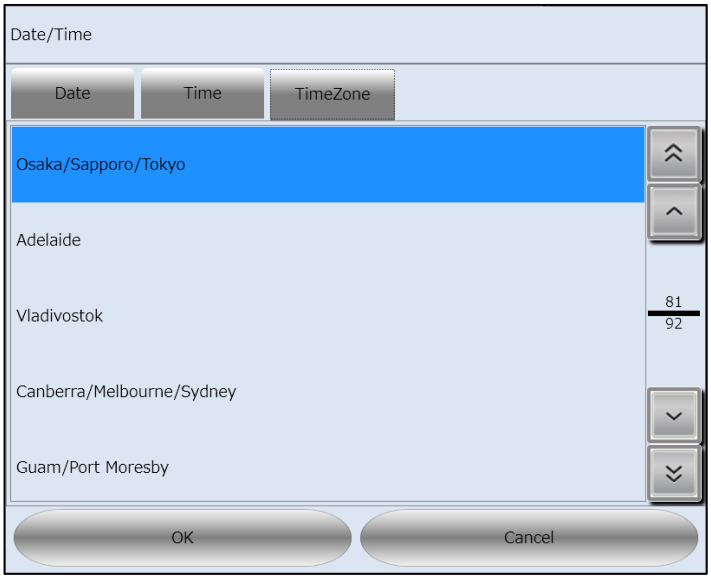
1 Press the date display area at the upper right-hand corner of the screen, or select [Control Panel] on the "Menu" screen → [Date/Time] to display the setup screen. Enter the current time on the Date, Time, and TimeZone tabs.
Change the year and month using the ▲ and ▼ marks, and select the date from the calendar. Next, move to the Time tab.



2 Set the Hour, Minute, and Second by using the ▲ and ▼ marks. Lastly, proceed to the Time Zone tab.



3 Select an area that corresponds to the time zone.



When date, time, and time zone have been set, press the [OK] to finish.

To display the "Date/Time" setup screen, a message to prompt you to reboot the device appears. Reboot the device according to the instructions on the screen.

> Setting Conveyor Speed

This is to set the conveyor speed of the main unit.

Set main conveyor

(Adjust registered products → Inspection condition setting → Basic inspecting conditions)

Name	Setting (Default; _)	Description
Conveyor speed	10 to 20 to 90 [m/min]	Sets conveyor speed for each product.

> Monitoring Function

■ Photocell monitoring

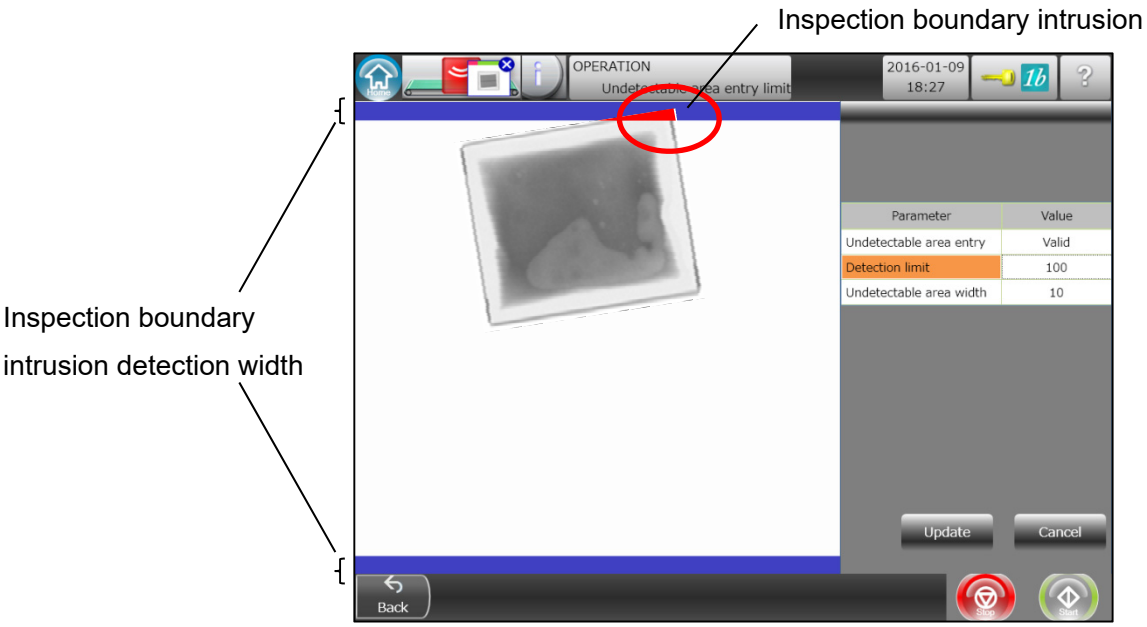
(Maint. and setting → Unit/connected device set. → Photocell)

Name	Setting (Default; _)	Description	
Photocell monitoring	Invld. Valid	Selects Valid/Invalid of product detection sensor error.	
		Valid	Product detection sensor error occurs when the product blocks the photocell for the time specified in "Monitoring time for photocell error".
		Invld.	No error occurs even when the product keeps blocking the photocell.
Monitoring time for photocell error	500 to 2000 to 10000 [ms]	Enter the monitoring time for photocell error. Product detection sensor error occurs when the optical axis of the photocell is blocked continuously for the time specified here. The initial value is 2000 milliseconds. If it is too long, make it shorter. If it is less than the time for which the product blocks the photocell when it passes, an error occurs every time a product passes. Therefore, the setting must be longer than that time.	

■ Inspection boundary intrusion detection

(Adjust registered products → Inspection condition setting → Inspection boundary intrusion detection condition → Inspection boundary intrusion detection)

Name	Setting (Default; _)	Description
Inspection boundary intrusion detection	Disabled Enabled	Sets whether to determine as Carrying NG or ignore when a product partially passes the non-inspection area on the front or rear side of the belt. For multiple-lane setting, a product passing the lane border area is determined as Carrying NG.
Detection limit	1 to 100 to 255	Sets the product effect value to determine that a product has entered the area specified in [Inspection boundary intrusion detection width].
Inspection boundary intrusion detection width (mm)	0 to 1 to 10	Sets the area width to determine that a product has entered the inspection border area.



■ Air pressure monitoring

Devices that operate with air pressure such as a rejector can be monitored for an error. E082 Air pressure low error occurs when this input signal is ON continuously for the air pressure error monitoring time.

(Maint. and setting → Function → Air pressure monitoring)

Name	Setting (Default; _)	Description
Air Press.Err. Monitoring Time	1 to 10 [sec]	Set the monitoring time until an error occurs after the air pressure error signal is detected.

> Setting Key Touch Operation

This is to specfy the key touch operation.

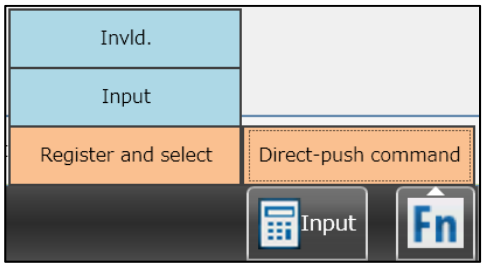
■ Key touch operation

(Control Panel → Key Touch Operation)

Name	Setting (Default; _)	Description	
Direct-push command	Disabled Input Input and Select	Invld.	Select the line, and press [Input] or [Select] at the bottom of the screen to determine.
		Input	When entering the parameter only, you can determine only by selecting the line.
		Register and select	Determines the line when it is selected on the screen displaying the menu list.
Keyboard layout	Auto QWERTY ABCDEF	Auto	The ABCDEF keyboard appears when the language is set to "Japanese", while the QWERTY keyboard appears when "Languages other than Japanese" is set.
		QWERTY	Displays the QWERTY keyboard.
		ABCDEF	Displays the ABCDEF keyboard.
Touch panel adjustment	—	Starts touch panel adjustment.	

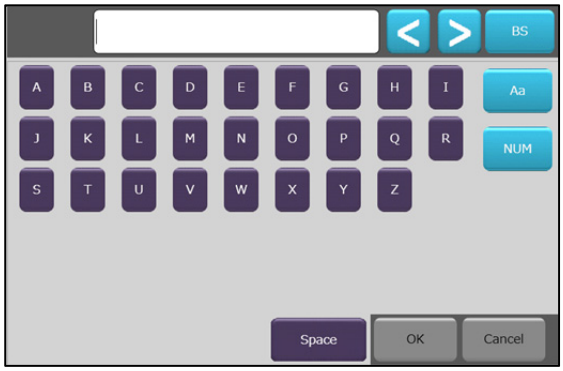
■ Direct-push command

Set the determination operation to select the specified line on the screen where the menu list is displayed. This setting is enabled also from the [Direct-push command] displayed by pressing the [Fn] button at the lower right of the screen where the menu list is displayed.



■ Keyboard layout

Select the layout of the alphabetical keyboard used when entering the product name or the password used when changing the access level.



ABCDEF keyboard

QWERTY keyboar

■ Touch panel adjustment

(Control Panel → Key Touch Operation → Touch Panel Adjustment)

When Touch Panel Adjustment is selected, touch panel adjustment starts. Touch the center of the cross displayed on the screen. The cross mark is displayed in the upper left, lower left, upper right, and lower right in this order. When complete, the cross mark changes to a check mark (✓). When adjustment in the lower right is complete, the menu screen of key touch operation is displayed.

You can start touch panel adjustment by holding down the screen displaying the [XR75] logo at the startup of the equipment. Turn on the power and hold down the screen until the scale of the progress bar on the bottom of the screen moves to 5 or more.

(1) When touch panel adjustment is complete, a message is displayed to prompt you to shut down the system. Follow the instruction on the screen to restart the system.
(2) When the screen is pressed and held down while the “XR75” logo is being displayed after the system starts up, the touch panel adjustment screen is displayed after the startup.

> Setting error processing

■ When the NGBOX door is open

Monitor if the NGBOX door is open or not. Turning on this input generates an A868 box status alarm or an E868 box status error.

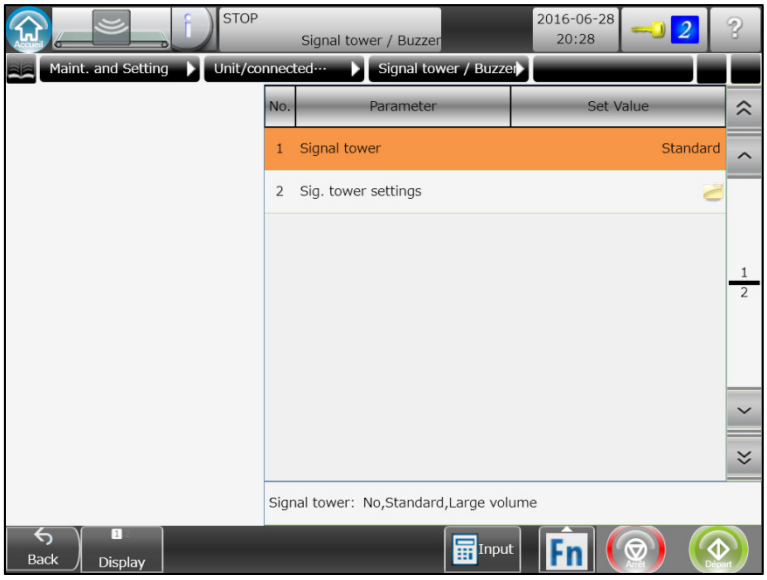
(Maintenance/installation → Error processing → when the NGBOX door is open)

Name	Setting (Default; _)	Description
When the NGBOX door is open	Alarm Error	Set an error/alarm generated when the NG Box Door Status signal turns on.

> Setting Signal Tower/Buzzer (Optional)

If you have an optional signal tower or buzzer mounted on the equipment, set them according to the following steps.

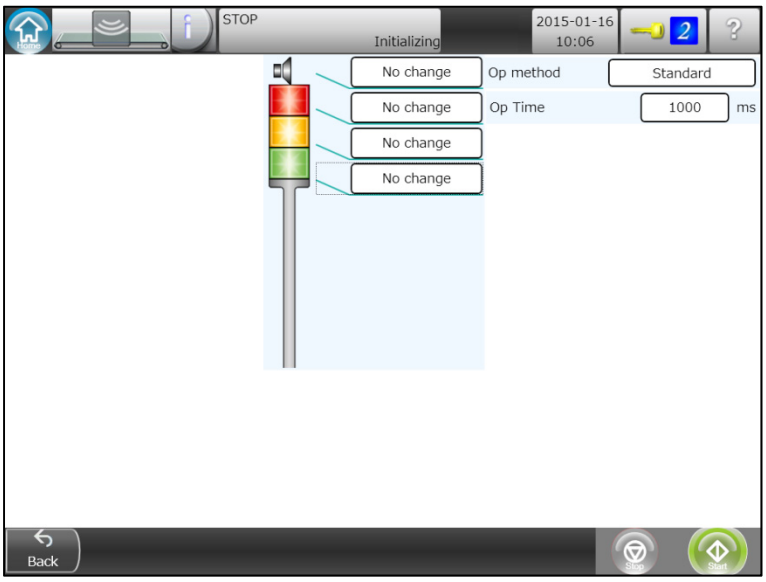
1 Select [Maint. and Setting] → [Unit/connected device set.] → [Signal tower/Buzzer] on the “Menu” screen and set “Signal tower” to “Standard”.



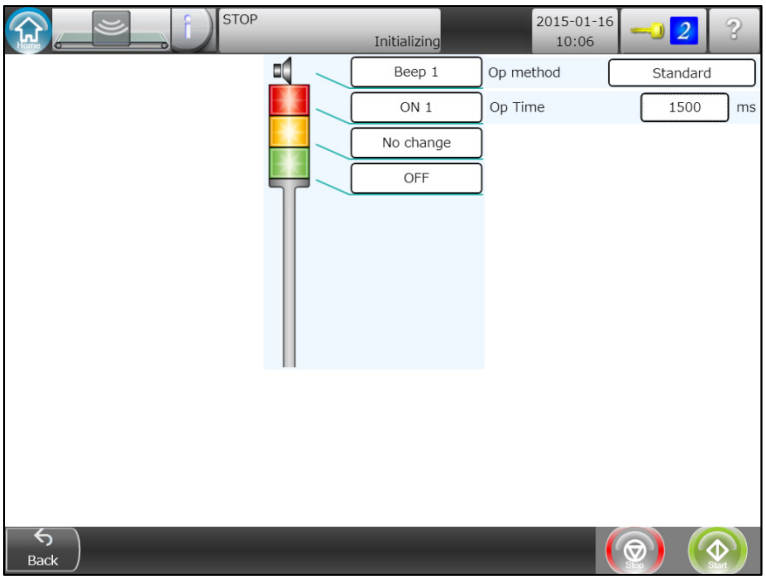
Select [Large volume] if the signal tower connected is a large volume signal tower.

2 Select [Maint. and Setting] → [Unit/connected device set.] → [Signal tower/Buzzer] → [Sig. tower settings].

3 Select an item to operate the signal tower and press [Set].



4 Set the operation pattern, “Op method” (Operation method) and “Op time” (Operation time) of the buzzer and the lamp (red, yellow, green).



■ Sounding method

Press the hierarchical box on the top of the tower to display the input screen.

Sounding method	Description
Mute	The sound is turned off.
No change	The buzzer sound remains the same.
Sound 1	The buzzer beeps rapidly.
Sound 2	The buzzer beeps slowly.

■ Lighting method

Press the hierarchical box on the tower to display the input screen.

Lighting method	Description
Light off	Light goes out.
No change	The light remains the same.
On	Light turns on.
Blink	The light is turned on and off repeatedly.

■ Operation method

Press the “Operation method” box to display the input screen.

Operation method	Description
Pulse	The operation is performed only for the specified time.
Standard	The operation described in "Event" is performed.
Hold1	The operation continues evaluation of the next item is complete.
Hold2	Beeping continues until the [//Reset] button at the upper right corner of the screen is pressed.

■ Operating time

Press the [Operation time] box to display the numeric keyboard input screen. This indicates the time to operate the signal tower when the [Operation method] is set to “Pulse”.

Name	Setting range (Default: _)
Operation time	0 to 1000 to 60000

> Output Statistical Value to the Printer (Option)

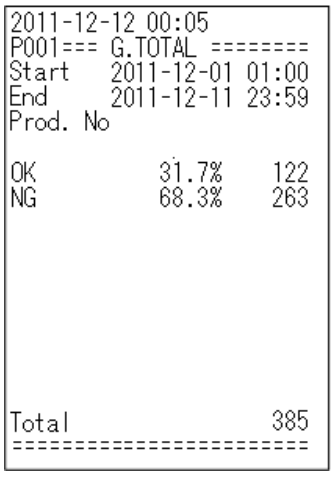
For printing by using the optional printer, enable the following settings.

■ Printer output

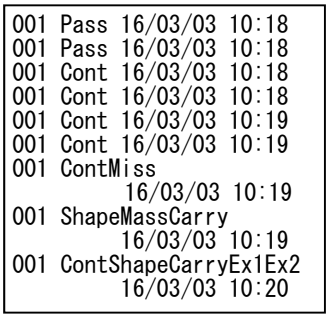
(USB Memory/Printer → Printer output)

Name	Setting (Default: _)	Description
Printing direction	Forward Reverse	Sets the printing direction.
Print at operation check end	Disabled Enabled	Prints the result at the timing of the operation check end if this setting is enabled.
Individual Print	None All Only NG	Sets the conditions to print the inspection result for each product.

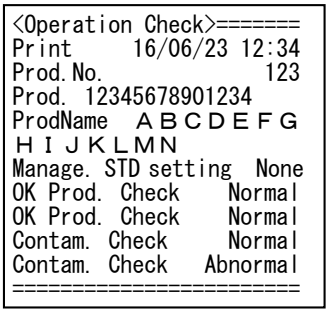
The following sample shows the print direction (forward or reverse) and print type.



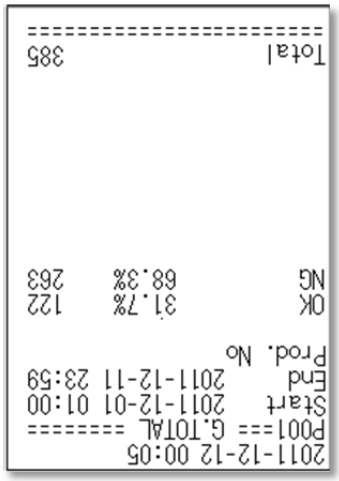
Printing direction: Reverse



Individual Print: Reverse



Operational check print: Reverse



Printing direction: Forward

■ Output TOTAL PRINT

1 Stop the operation, and select [TOTAL PRINT] from [Product statistics] in the control bar.

2 The "Execute TOTAL PRINT?" message appears. Press [Yes] to print.

3 To feed unprinted paper, press [FEED].

> Setting Rejector

This is to make detailed settings for the rejector.

Rejector setting

(Maint. and Setting → Unit/connected device set. → Rejector)

Name	Setting (Default; _)	Description	
Rejection output type	Pulse Hold	Sets signal-type output to the rejector.	
No Product RJ Direction	OK NG	Sets the RJ direction with no product conveyed based on the evaluation results.	
RJ Direction Count	Blank 2 directions 3 directions	Defines the rejection direction that can be set during the multi-line (2 lines) inspection.	
		Blank	Line 1 is fixed to RJ5 and RJ3, and line 2 is fixed to RJ1 and RJ3.
		2 directions	RJ1 and RJ3 or RJ5 and RJ3 can be set for each line.
		3 directions	RJ1, RJ5, and RJ3 can be set for each line.

Rejector direction setting

(Maint. and Setting → Unit/connected device set. → Rejector → Rejector direction setting or Rejector direction setting 2)

(1) [Rejector direction setting (2-6)] appears for multiple-lane setting.
(2) In [Rejector direction setting 2], RJ1 and RJ5 of the default values are placed in reverse order in the following table.
(3) When the conveyor flows from right to left, RJ1 and RJ5 of the default values are placed in reverse order in the following table.

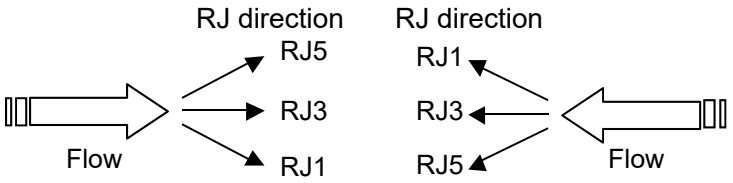
Name	Setting (Default; _)	Description
Alarm_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction if an alarm is issued.
Carrying NG_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction for Carrying NG.

Name	Setting (Default; _)	Description
Contaminant NG_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction for Contaminant NG.
Sealing NG_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction for sealing NG.
Missing NG_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction for missing NG.
Shape NG_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction for shape NG.
Weight -NG_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction for weight NG (underweight).
Weight +NG_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction for weight NG (overweight).
External NG_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction for external NG.
External NG 2_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction for external NG2.
OK_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the RJ direction for OK.
Forcible_1 (-6)	RJ1, RJ2, RJ3, RJ4, RJ5	Sets the direction in which the rejector runs under the following device conditions. ▪ During sensitivity correction ▪ During automatic setting ▪ During area setting

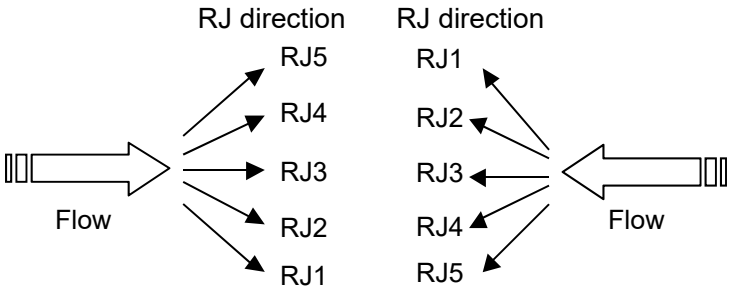
The initial setting of the rejecting direction varies depending on the connected rejector.

■ Rejecting Direction

3-way classification (STD) (Top view)

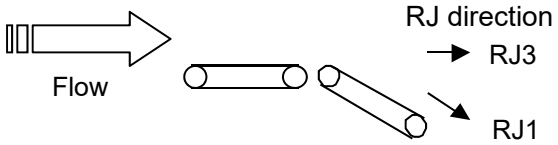


5-way classification (STD) (Top view)

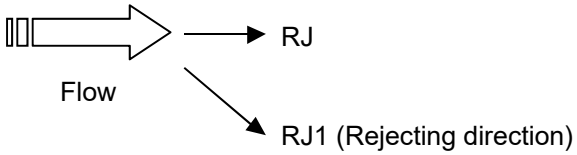


2-way classification (STD)

Dropout (Side view)



Air jet (Top view)



> Using the User Management function

If the User Master with the user information described is registered, users can be switched effectively. If the access level (1a, 1b, 2) and language information (Japanese, English, etc.) are registered in advance for each user, the access level and language can be set properly at the same time as user switching. The User Master is created by using the QUICCA tool.

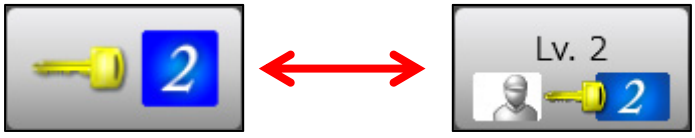
The user management function is an option.
QUICCA is required for creation of the User Master. For details, refer to the QUICCA Operation Manual.

■ Enabling the user administration functions

(Maint. And Setting → Security and Rules → User management settings)

Name	Setting (Default; _)	Description	
User management	Invld. Valid	Enables or disables the User Management function.	
Direct user change	No User No. User code	Set whether to select the user from the user list when switching users or to specify the User No. or user code.	
		No	Select the logon user from the user list.
		User No.	Specify the logon user with the User No.
		User code	Specify the logon user with the user code.
Auto log off time	0 to 60 [min]	☞ P. 268 Setting the access level to 1a after non-operation time has elapsed	
User after auto log off time	1a Not Select	Sets the access level after the automatic logoff.	
		1a	Sets the access level to 1a without changing a user.
		Not selected	Logs off so that there is no user selected. Operation equivalent to the access level 1a is enabled while no user is selected.

When this function is enabled, the Access Level Change button changes to the User Change button.



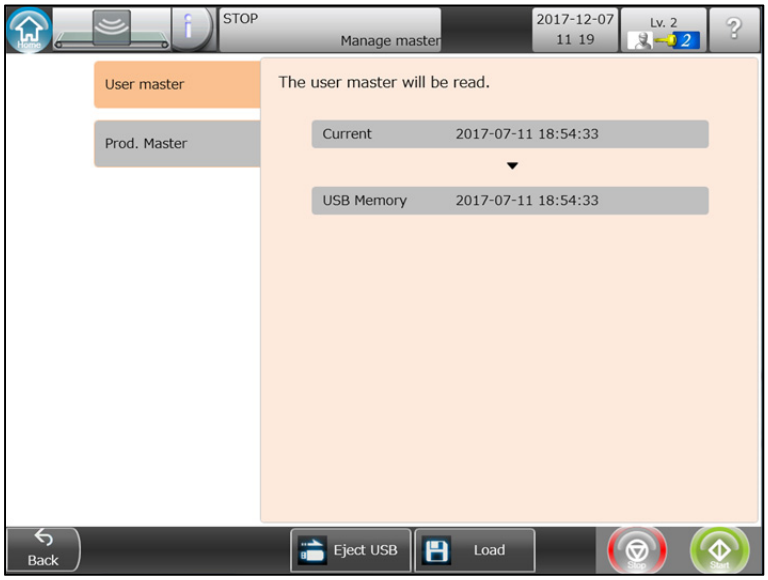
This function Invld. Valid

■ Registering the User Master

To use this function, the User Master must be registered in the device in advance.

1 Store the User Master created by the QUICCA tool in the USB memory stick, and insert this stick into the device.

2 Select [Control Panel] → [Master Information] on the [Menu] screen. Select the “User master” tab, and press the [Load] button to start reading the User Master.



The User Master can be registered directly from QUICCA via Network.

■ Selecting a user

Users can be selected by either of the following buttons.

[1] “User” button of the smart guide phase 1

☞ P. 129 Daily operation according to the Smart guide

[2] UserChange button in the status bar

[3] [Menu] → [Control Panel] → [User change]

When you have not yet selected any user (e.g., immediately after the startup of the checkweigher), "No Select” is displayed on the [User Change] button on the status bar at the top of the screen. Select the user at this time.

No user is selected. 

The access level can be changed only to 2 (manager level). If you have changed the access level to 2, your user name is Lv.2. Password input is requested in the same manner as disabling this function. Then, input it.

■ Switching users

Users can be switching by either of the following methods.

[1] Selecting from the user list

Users can be selected while checking details of the user information displayed in the list. In addition, the access level can be changed by pressing [Fn] → [Access Level Change].

[2] Inputting the User No.

Input the number (up to 3 digits) allocated for each user.

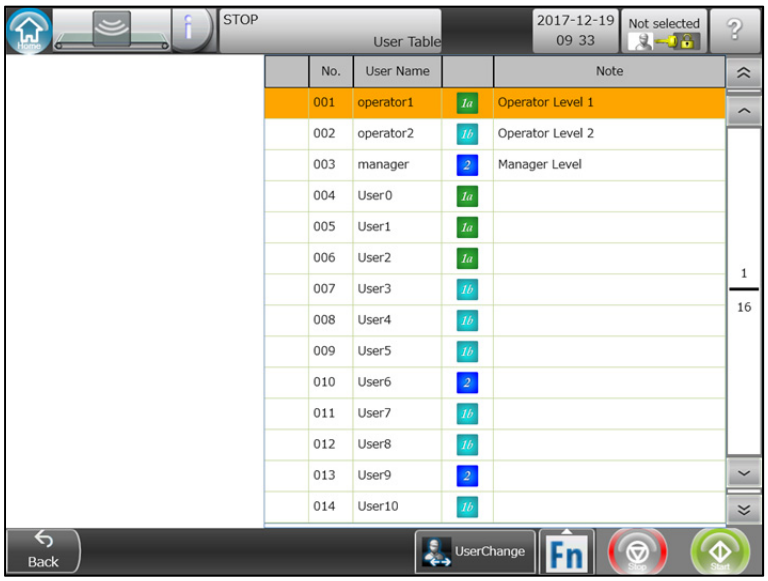
[3] Inputting the user code

Input the character code (staff number, etc.) allocated for each user by using a keypad.

Each setting method is described below.

[1] Selecting from the user list

1 Select a user from the list, and press the [User change] button.



2 Input the password when the password is set.

[2] Inputting the User No.

1 Input the User No., and then press [OK].
If there is a corresponding user, the user name and remarks are displayed at the lower right corner of the screen.

2 Input the password when the password is set.

[3] Inputting the user code

1 Input the user code, and then press [OK].
If there is a corresponding user, the user name and remarks are displayed at the lower right corner of the screen.

2 Input the password when the password is set.

If the data is not registered in the Users Master and users cannot be switched, change the access level for operation by the temporary user (access level 2), or disable the user management function tentatively.

■ Switching from the manager level to operator level

If you have changed to a user at the manager level (Access Level 2), the User Change button on the status bar continues to blink in yellow. This is in order to prompt you to log off from the manager level after the completion of manager-level work. If the user change button blinking in yellow is pressed, no user is selected.

> Using the Prod. Master management function

If more than one device is used, the product master enables you to unify the product type information. The product master means the database containing the product type information, and this is created by using QUICCA. The product master is registered in the device in advance, and the product type information is called out of the product master to register the product type.

The product master management function is an option.
For details of the product master creation, refer to the QUICCA Operation Manual.

■ Enabling the product administration functions

(Maint.and Setting → Security and Rules → Prod.management settings)

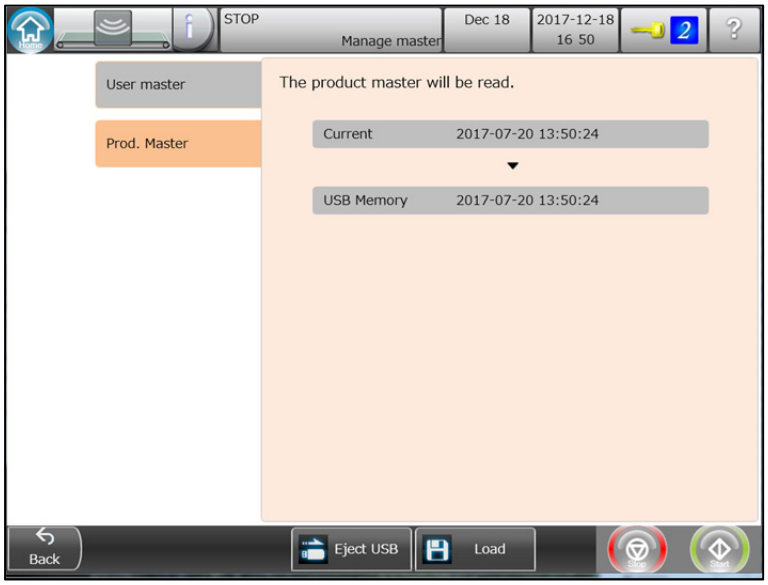
Name	Setting (Default; _)	Description
Prod.Master management	Invld Valid	Enables or disables the product master management function.

■ Registering the Prod. Master

To use this function, the Prod. Master must be registered in the device in advance. The Prod. Master is created by using the QUICCA tool.

1 Store the Prod. Master created by QUICCA in the USB memory stick, and insert this stick into the device.

2 Select [Control] → [Master information] on the [Menu] screen. Select the “Prod. Master” tab, and press the [Load] button to start reading the Prod. Master.



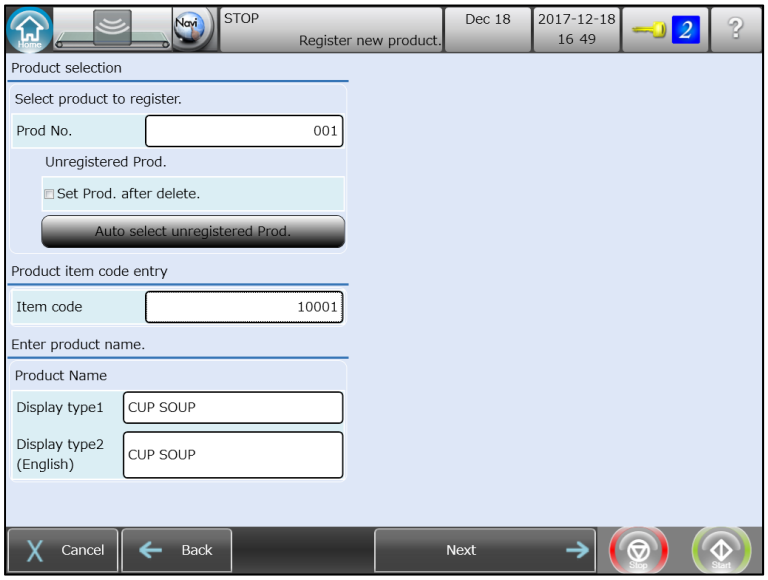
The User Master can be registered directly from QUICCA via the Network.

■ Registering the product type by using the Prod. Master

1 Press [Register new product] on the [Menu] screen to start registering the product type. When the preparation for the product type registration has been made, press [Next].

2 Check the setting items, and press [Next].

3 Select the product type to be registered, and input “Item code”. If the product master includes the item code that was input, Disp Type1 and Disp Type2 that were acquired from the product master are displayed.



4 Press [Next] to display contents registered in the master. If there is no problem, follow the instructions on the screen to progress the product type registration.

☞ P. 44 Registering a New Product

■ Performing the product synchronization

(Adjust registered products. → Product information)

Name	Setting (Default; _)	Description
Product synchronization	<u>Invld</u> Valid	Set whether to reflect the updated contents when updating the product master. The product synchronization is enabled only when the product type corresponding to the item code exists in the product master. The product synchronization is performed at the timing described below. ▪ When changing the product type ▪ When operation stops and the product master is updated ▪ When starting up ▪ When operation stops

> Displaying Product Table

When "Display Product Table" is pressed on the "Menu" screen, the product names of each of the registered products are displayed in a list.

- A mark indicating the setting state of the product is displayed.

Mark	Description
☑	Inspection is available. Minimum settings required for inspection (X-ray output) have been completed.
☐	Not registered. Sufficient inspection cannot be conducted because the product has not been registered.

For products with ☐ displayed, start inspection after product registration.

☞ P. 44 Registering a New Product

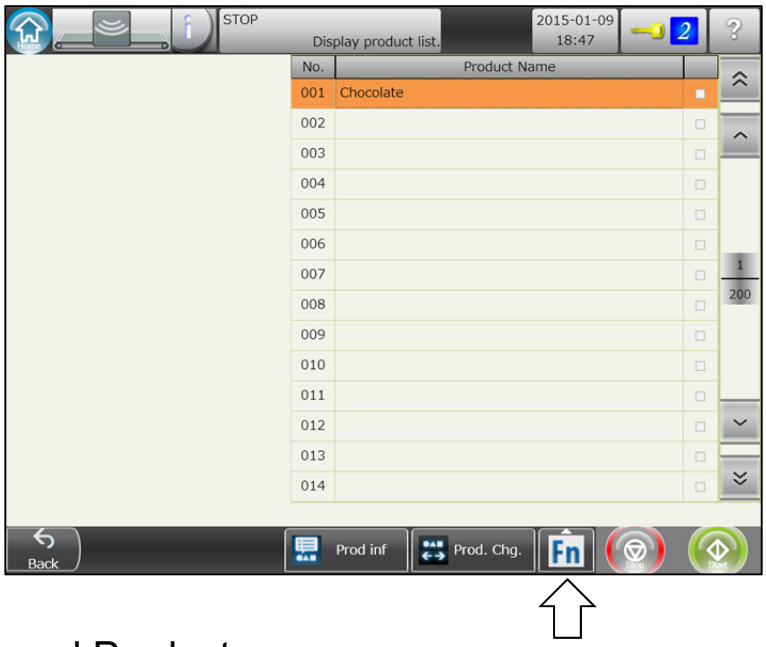
- For product change-over, select the product to change and press the [Change Product].
- The "Display Product Table" screen is also displayed when the "Product" area is pressed on the "General" screen.

> Deleting Registered Product

■ Delete from Product List screen

1 Select the product to delete.

2 Press [Fn] button and press “delete”. When the “Confirm delete” screen is displayed, press [Yes] button.



> Copying/Pasting Registered Product

■ Copying product information from the product list screen and pasting it to other product

1 Select a target product to be copied.

2 Press the [Fn] button lower right on the screen and select “Copy”. The product No. and the product name of the selected product change to bold face.

3 Select a destination product to which the selected product is copied.

4 Press the [Fn] button to select “Paste”. The product information of the source product is copied to the destination product information.

5 You can repeat copying the source product information. However, if you change the product list screen to another screen, the source information is reset.

> Changing the Product Name of the Registered Product

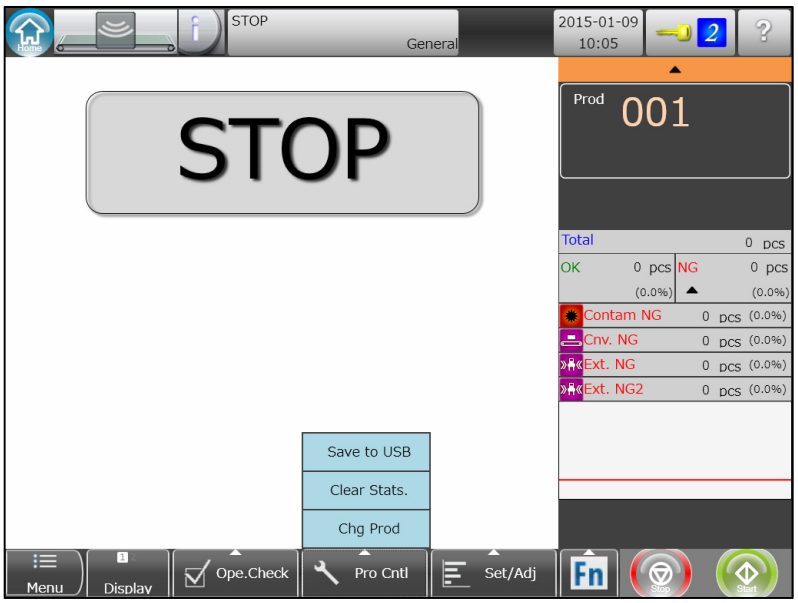
■ Changing the product name from the product list screen

1 Select a target product to be changed.

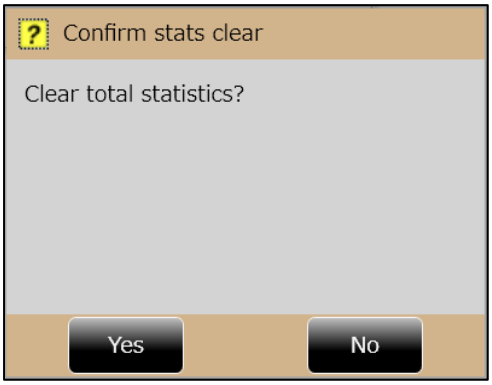
2 Press the [Fn] button lower right on the screen and select “Change product” to change the product name.

> Clearing Statistics

1 Select “Pro Ctrl” → ”Clear Stats”.



2 When [yes] button pressed, only the statistics related to the currently selected product are cleared.
This example is in the “General” screen, but the statistics data is cleared in other screens.

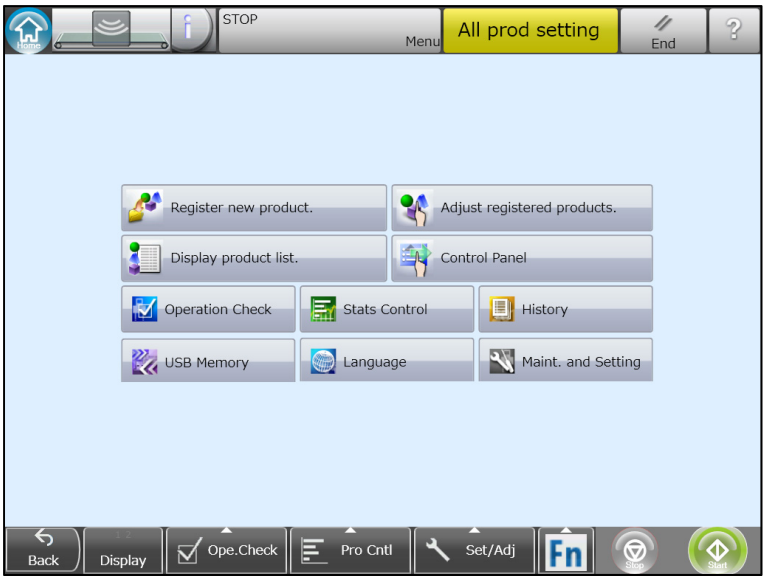


> Setting All Products

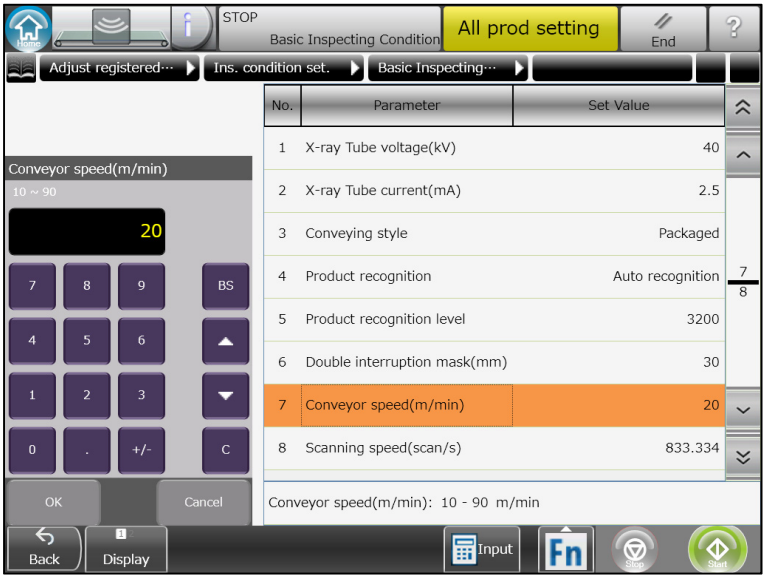
Use this function to set parameters of all products en bloc.
Using this function improves the working efficiency if many products have been registered.

1 Move to the “Menu” screen, press the [Fn] button at the lower right of the screen and select [All prod setting].

2 “All prod setting” is displayed on the upper part of the screen.



3 Move to the parameter setting screen, enter values and press [OK].



4 Change in parameters are reflected to all products. It takes time to finish this processing. Do not turn off the power until the processing is complete.

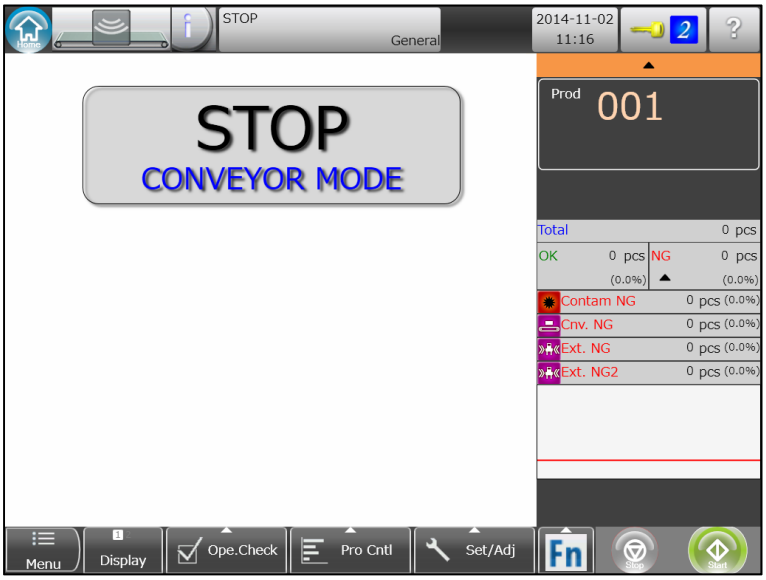
5 Press the [//End] on the top of the screen to return to the usual screen.

> Using in Conveyor Mode

Use this to feed products without performing an inspection.

The equipment is operated in the conditions as shown below in the conveyor mode.

- The “CONVEYOR MODE” message is displayed under “STOP” and “RUN” on the screen.



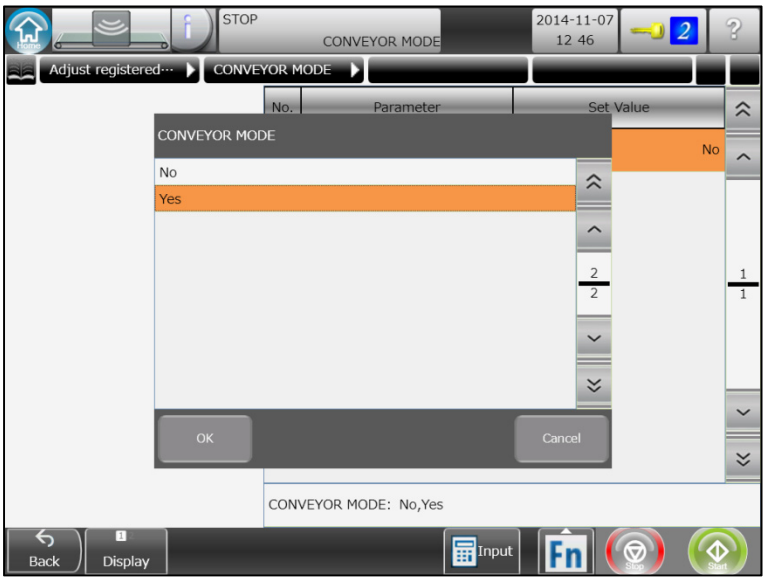
- When products are fed, they are not evaluated. The statistics quantity is not counted.
- The [X-ray radiation state display] area does not turn red while products are being fed.

- Functions such as sensitivity correction, X-ray sensor inspection, X-ray tank position adjustment, operation check and new product registration are not available.

Conveyed products are not inspected and fed to the subsequent stage if the equipment is used in the conveyor mode.

■ Setting conveyor mode

1 Select [Adjust registered products] on the "Menu" screen → [CONVEYOR MODE], select [Yes] in [CONVEYOR MODE], and press [OK].



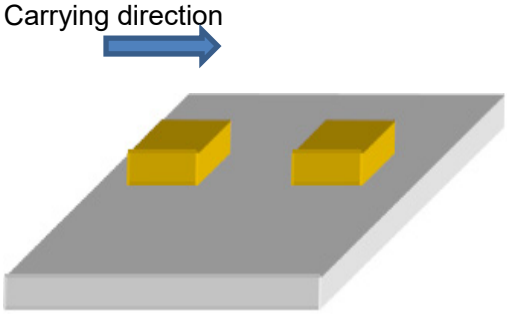
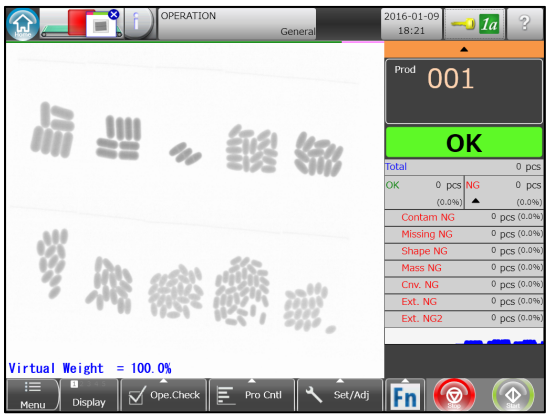
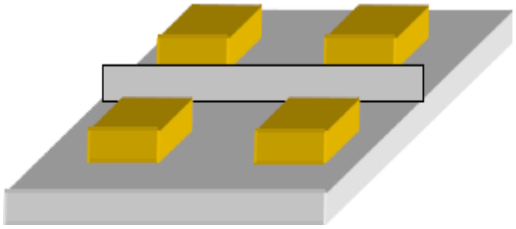
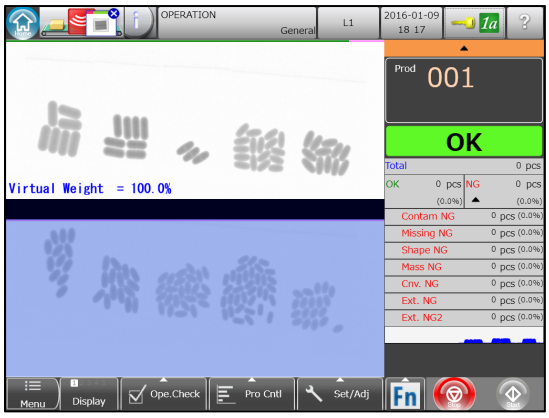
2 Press [Start] to start the conveyor, and [Stop] to stop it.

3 Select [Adjust registered products] → [Inspection condition] → [Basic inspection condition] → [Conveyor speed setting] to change the conveyor speed. Press [Input], enter a value on the numeric keyboard and press [OK].

Even if you change the conveyor mode from “Yes” to “No”, the belt speed does not change.

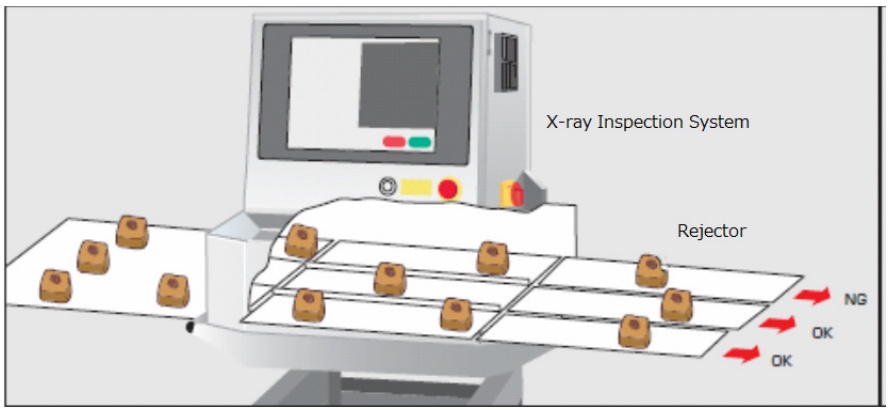
> Setting Multiple Rows for Conveying Products to Inspect Them

The multiple-lane inspection function divides the carrying width into the desired inspection area width for inspecting. The difference between "Single-lane carrying" and "Multiple-lane carrying" is described below:

	Carrying state	Operation screen
Single lane	Carrying direction 	
Multiple lane	Carrying direction 	

For the multiple-lane setting, up to 6 lanes can be set as the standard. Setting of more than 7 lanes is optional.

The rejectors are installed to each divided lane per device.

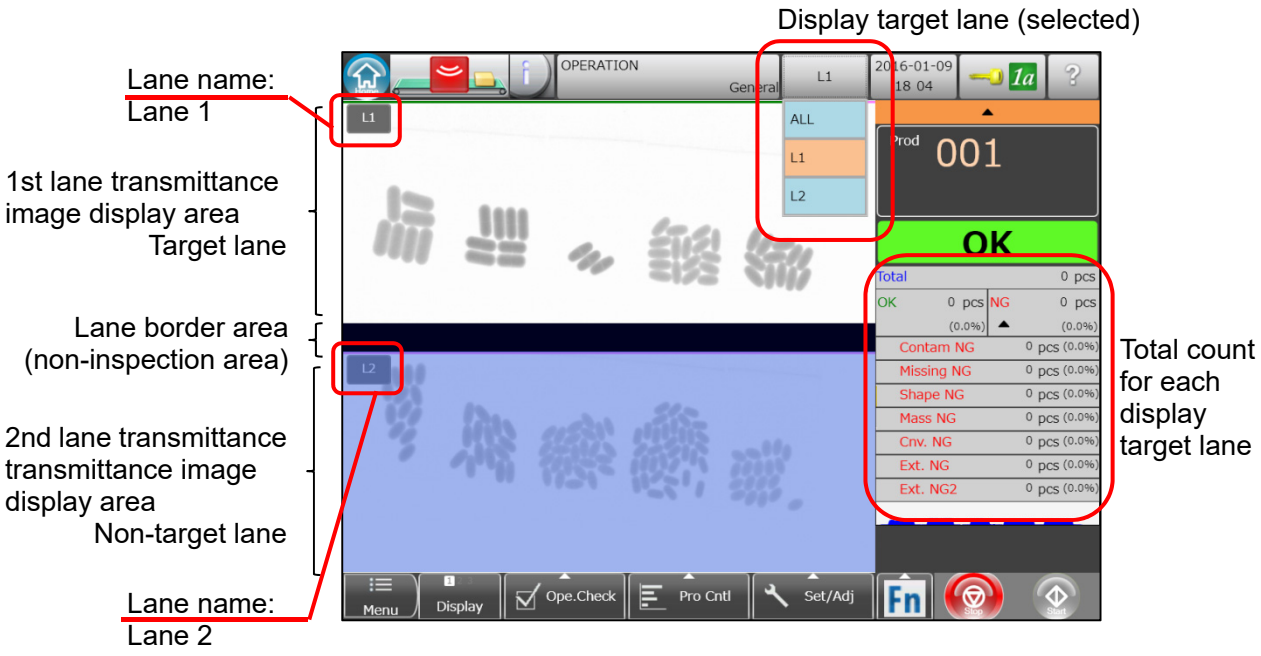


■ Multiple-lane inspection specifications

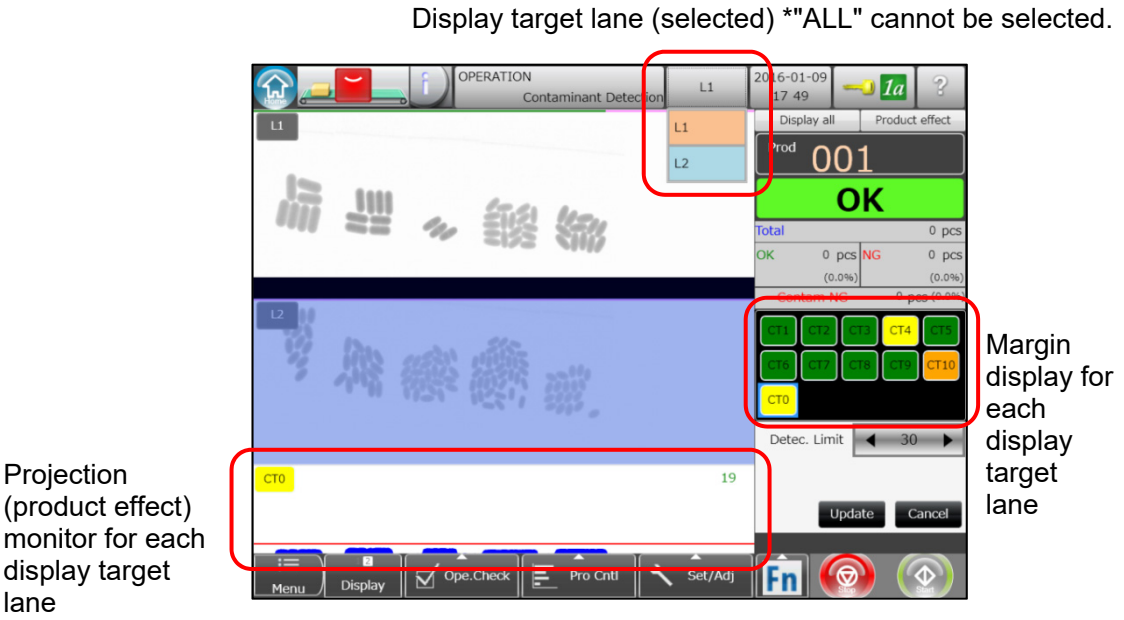
Lighting method	Description
Set lane count	1 to 6 lanes
Evaluation method	Evaluates for each inspection lane.
RJ output	RJ output for each inspection lane
RJ output count	Up to 6 RJ outputs in total for all inspection lanes
Inspection area	Each inspection width can be set as desired.
Inspection boundary intrusion target	The borders between the lane are the target.
Rejection confirmation	Not allowed
Maximum inspection speed	Up to 1000 products per minute in total of all inspection rows

■ Screen structure for multiple-lane setting

The screen structure for the multiple-lane inspection setting is shown below:



[Contaminant detection screen (same as the other dedicated screens)]



■ Multiple-lane inspection setting

(Maint. and Setting → Function → Multiple-lane inspection)

Name	Setting (Default; _)	Description
Lane name display	Disabled When running and stopping only when stopping	Sets the timing to display the lane name on the screen.
Number of lanes	1 to 6	Set the number of the divided lanes.
Lane 1 start position (mm)	0 to 256:KXS7522 0 to 409:KXS7534	Sets the inspection area start position of the 1st lane.
Lane 1 end position (mm)	0 to 120 to 256:KXS7522 0 to 196 to 409:KXS7534	Sets the inspection area end position of the 1st lane.
Lane 2 start position (mm)	0 to 136 to 256:KXS7522 0 to 213 to 409:KXS7534	Sets the inspection area start position of the n lane.
Lane 2 end position (mm)	0 to 256:KXS7522 0 to 409:KXS7534	Sets the inspection area end position of the n lane.

(1) The default values and setting range of the lane start position and end position vary depending on the model.

(2) Feed the product on the lane 1 side during product type registration navigation.

☞ P. 44 Registering a New Product

(3) Feed the product on the lane 1 side during operation check.

☞ P. 78 Checking Operations

(4) To set the RJ direction of lane 2, use [Rejector direction setting 2].

☞ P. 236 Setting Rejector

(5) Set the external NG input or evaluation output for each lane by the "Line" item on the IO input setup screen or IO output setup screen.

☞ P. 193 Setting External I/O Signals

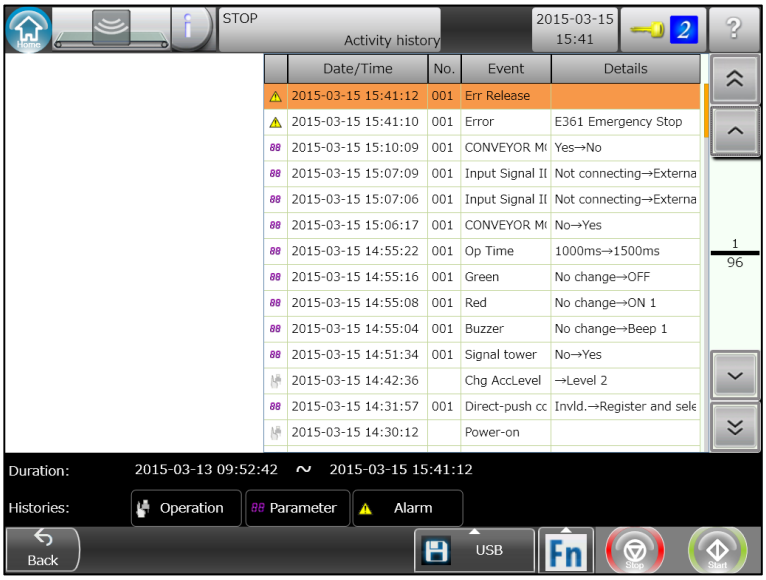
(6) When using the Smart guide function, the display target lane (select) button appears when pressing the “Date” button at the top of the screen.

> Viewing Activity History

Press [History] on the “Menu” screen to view the status of the equipment and production status. You can record events that occurred in the past such as errors and operation history.

■ Activity History

Histories of events that occurred in the equipment are displayed. Up to 10,000 records can be recorded.



 “Operation”: Records the event that causes a status change and the changed status every time the status is changed by an event such as power on, access level change, and operation start.

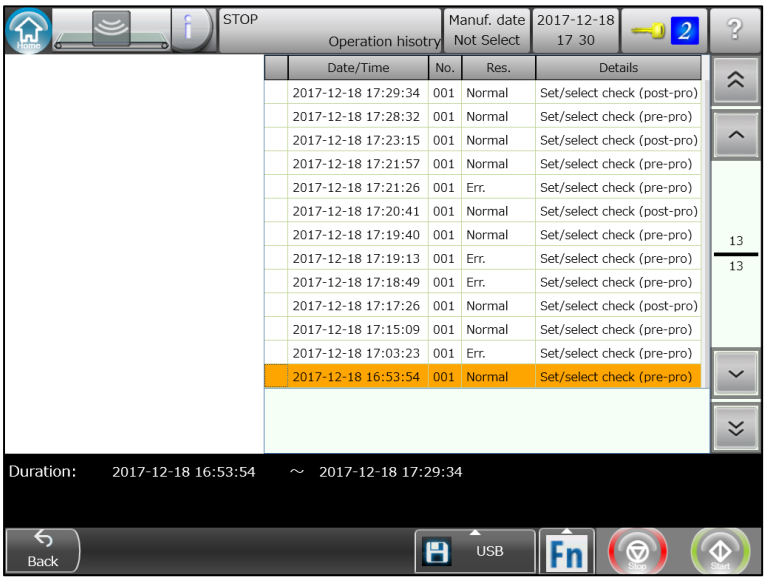
 “Parameter”: Records the product number, parameter type, and changed information every time a parameter such as a product name, main unit conveyor speed, and all product setting is changed.

 “Alarm”: Records the error number and the error name every time an alarm is triggered by an event such as an emergency stop, hand insertion error, or error release.

To display each activity history on the screen, press [Operation], [Parameter], or [Alarm] at the bottom of the screen to hide the unnecessary type.

■ Operation check history

The result history of Eval./RJ Confirmation is displayed in chronological order. Up to 10,000 records can be recorded.

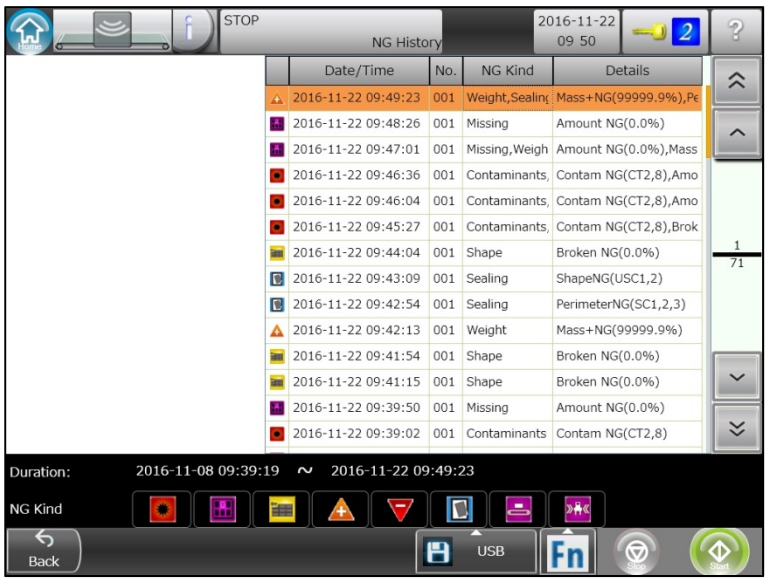


Select the history whose details must be checked, press the [Fn] button, and select [Detail] to display the detailed history data.

Item	Description
Date/Time	Displays the date and time when the operation check has been completed.
No.	Displays the product No. for which the operation check was performed.
Prod.Name	Displays the name of the product for which the operation check was performed.
Access Level	Displays the access level when the operation check was performed.
User Name	Displays the name of the user who performed the operation check. * This item is displayed only when the user management function is enabled.
Event	Displays the operation check type.
Res.	Displays the operation check result.
Manage. STD setting	Displays whether to enable or disable the management standard setting.
Ope. check result	Displays the result of each evaluation such as PASS or contaminant. * Displays the operation check contents for the items.

■ NG History

The histories of NG evaluation are displayed in chronological order. Up to 1,000 items can be recorded.

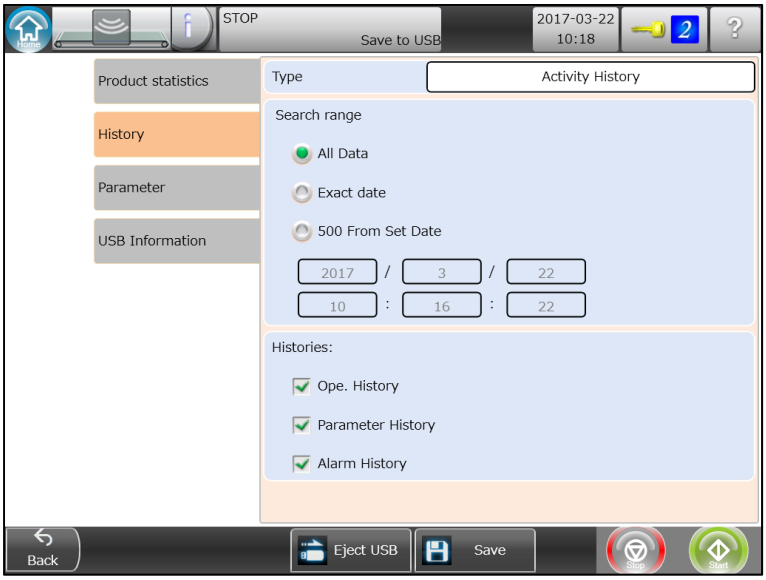


To narrow down the items for each history and display them on the screen, press the NG type icon at the bottom of the screen to hide the unnecessary type.

NG type	Mark name	NG type	Mark name
	Contaminant NG		Overweight NG
	Sealing NG		Underweight NG
	Missing NG		External NG
	Shape NG		Carrying NG

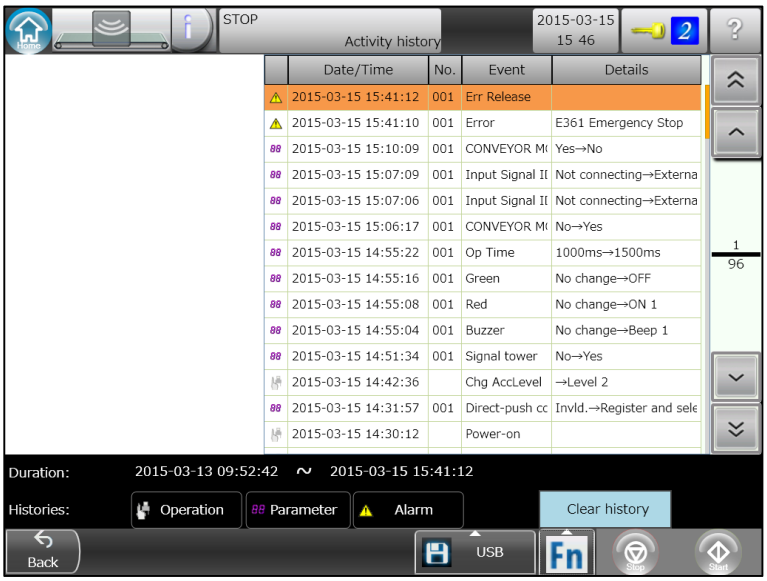
■ Saving histories

To save the history data in the USB memory, press [Save to USB] in the control bar beneath each history screen to output the data from the USB memory save screen. Specify the type (Activity History, Operation Check History, NG History), search the range to be output and the history type on the [History] tab, and press [Save].



■ Clearing histories

Press the [Fn] button in the control bar beneath each history screen and select [Clear history] to clear the history data on the displayed history screen completely.



> Setting the warm-up operation function

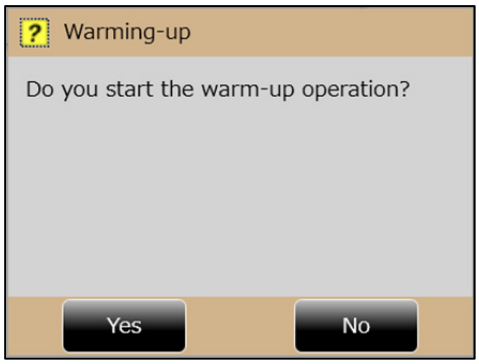
The warm-up operation prior to the inspection start provides more stable inspection. Set this operation according to the installation environment, etc.

(Maint.and Setting → Functions → Warming-up)

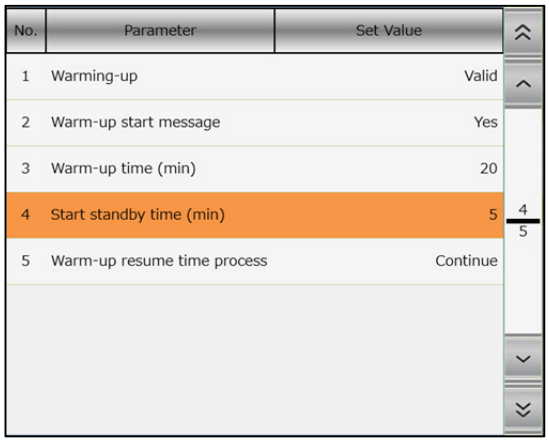
Name	Setting (Default; _)	Description	
Worming-up	Invld. Valid	Enables or disables the warm-up operation function.	
Warm-up start message	No Yes	Enables or disables the message confirmation whether to perform the warm-up operation or not.	
Warm-up time(min)	1 to 20 to 120	Set the time when the warm-up operation starts.	
Start standby time(min)	1 to 5 to 10	Set the allowable time when the operation can start again without warm-up operation after the X-ray radiation stops.	
Warm-up resume time process	From start Continue	Set the warm-up operation after terminating the warm-up operation and then resuming the warm-up operation.	
		From start	When resuming the warm-up operation, the warm-up operation starts from the beginning.
		Continue	When resuming the warm-up operation, the warm-up operation lasts for the time subtracting the warm-up time that has passed.

■ Performing the warm-up operation

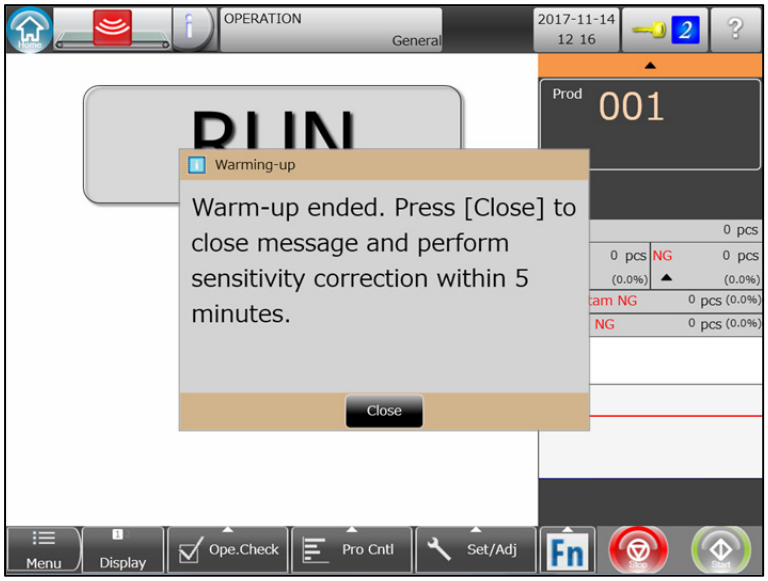
1 If [Warm-up start message] is set to [No] when pressing [Start], the home screen appears and the warm-up operation starts. If [Warm-up start message] is set to [Yes], the warm-up operation message appears, and the home screen appears when [Yes] is selected to start the warm-up operation. If selecting [No], the sensitivity correction screen appears.



2 By pressing [Cancel] in the message during the warm-up operation, you can terminate the warm-up operation in the middle. To resume the operation after the warm-up operation is terminated and [Start standby time(min)] has passed, the warm-up operation starts from the beginning. To resume the operation before [Start standby time(min)] after terminating, whether to start the warm-up operation from beginning ([From Start]) or to perform the warm-up operation for the time subtracting the warm-up time that has passed ([Continue]).



3 When the warm-up operation finishes completely, the warm-up operation finish message appears. Press [Close] to exit the warm-up operation. After pressing [Close], perform the sensitivity correction before [Start standby time(min)]. If the sensitivity correction is not performed before [Start standby time(min)], the warm-up operation starts again from the beginning.



> Setting Operation Time of Sensitivity Adjustment

Set the timing of the sensitivity adjustment and request messages for the sensitivity adjustment.

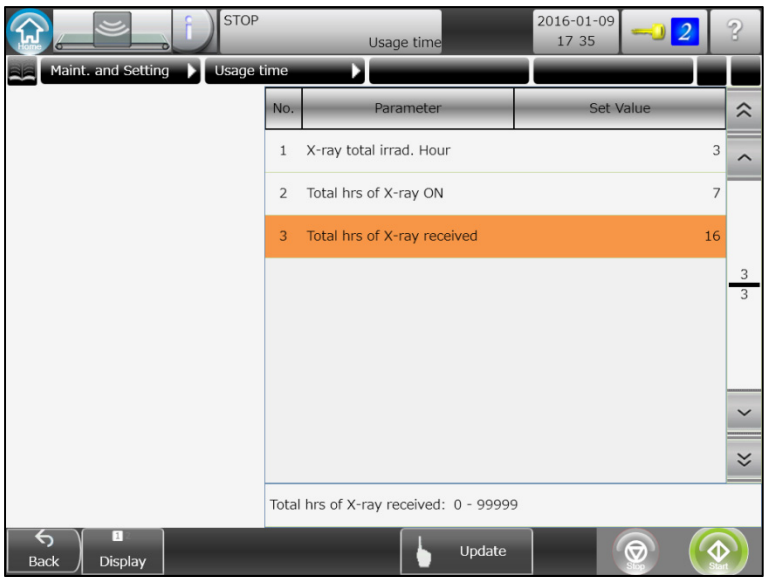
Sens. Adjust

(Maint. and Setting → Functions → Sens. Adjust)

Name	Setting (Default; _)	Description	
Sensitivity adjustment operation time	When changing conditions Every time	Sets the timing of the sensitivity adjustment.	
		When changing conditions	Performs the sensitivity adjustment at the start of the initial operation after the device startup or after changing the X-ray output and the main conveyor speed.
		Every time	Performs the sensitivity adjustment every time the operation starts.
Correction request alarm	Disabled Enabled	After the previous sensitivity adjustment, an alarm appears if the sensitivity adjustment is not performed after the time set in [Interval at Sens. Adjust].	
Interval at Sens. Adjust	1 to 8 to 10,000 [Hour]	Sets the time interval for displaying [Correction request alarm].	
Operation for the sensitivity correction request	Alarm Error	Select whether to display an alarm or error for the sensitivity correction request.	
RJ direction at the sensitivity correction request	Evaluation result Alarm direction	Set this item when the correction request operation is [Alarm]. Specifies the RJ direction if a correction request alarm is issued.	
		Evaluation results	Rejects products according to the evaluation result.
		Alarm direction	Rejects products in the alarm direction. The statistics and account are added to [Cnv. NG].

> Checking Device Usage Time

To check the device usage time, select [Maint. and Setting] on the "Menu" screen → [Usage time]. Each usage time of "X-ray radiation time cumulative total", "X-ray tank radiation cumulative time", and "X-ray sensor light reception cumulative time" is displayed.

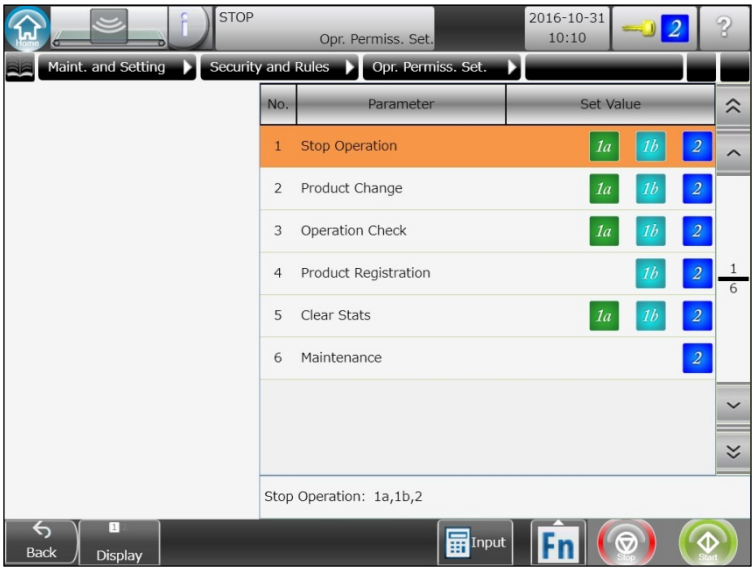


The values cannot be changed.

> Setting Access Level per Function

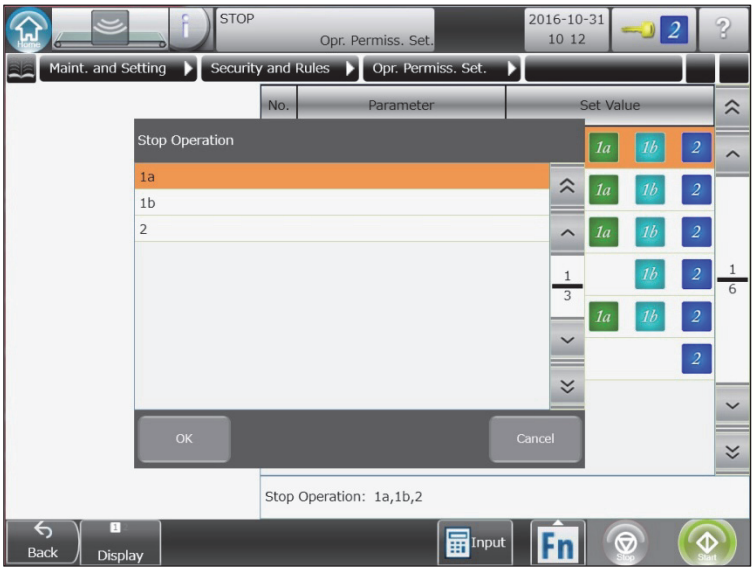
Set the access level for each function to prevent unnecessary operation of this machine.

1 Select [Maint. and Setting] → [Security and rules] → [Set Access Authority] on the “Menu” screen. The access levels that can be operated are displayed for each function.



2 Select the related function.

3 Select the lower-limit level for the access authority, and press [OK] to complete the setting.

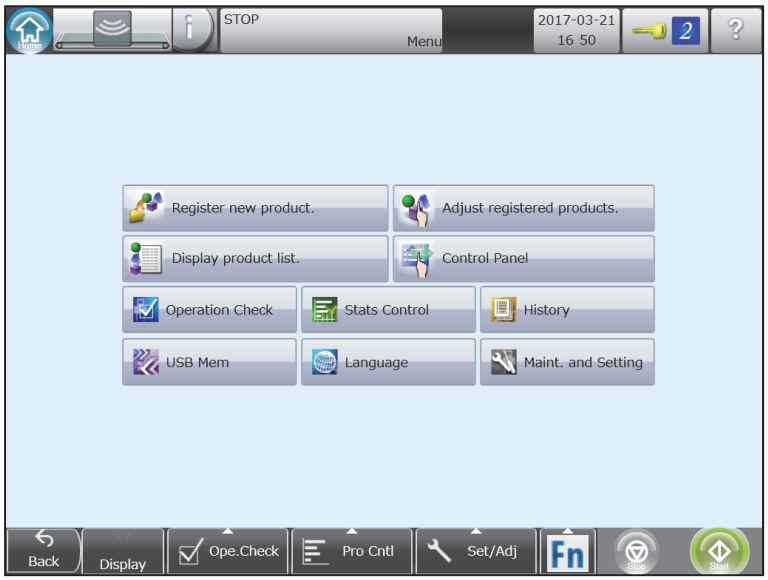


If "1b" is set, operation by the operators at the Operator level 2 (Level 1b) and higher Manager level (Level 2) is permitted

The operation restriction that can be changed in each item is described below.

Name	Setting (Default; _)	Description
Operation stop	1a/1b/2	This is the operation restriction for operating and stopping this machine.
Change product	1a/1b/2	This is the operation restriction for product change.
Operation check	1a/1b/2	This indicates the authorization to determine the evaluation and rejection. This does not impact on the operation authority in confirmation mode. (Fixed to 1a)
Product registration	1a/1b/2	This is the operation restriction for product registration to determine the product inspection method and the product parameter change.
Clear statistics	1a/1b/2	This is the operation restriction for clearing statistics.

Name	Setting (Default; _)	Description
Maintenance	1a/1b/2	This is the operation restriction for changing parameters related to the basic operation of the device. This has an impact on the following operations. ▪ Parameter change in the maintenance/installation menu ▪ Browsing the historical trail (Clearing the historical trail is fixed to 2.) ▪ Saving the historical trail and parameters in a USB memory ▪ Reading USB memory



This does not have an impact on remote operations such as general-purpose IO, network and serial communication.

> Setting the access level to 1a after non-operation time has elapsed

You can have the screen automatically return to the Home screen and set the access level to 1a when you leave the inspection machine unattended for a certain period by setting the automatic logoff time. This allows you to prevent an inadvertent operation.

■ Automatic logoff time

(Maintenance and Settings → Security and Rules → Policy Setting List)

Name	Setting (Default; _)	Description
Automatic logoff time	0 to 60 [minute]	Set automatic logoff time. Set 0 for the set value to disable the automatic logoff function.

The screen will be automatically logged off according to the following operations when the inspection machine cannot return to the Home screen after the automatic logoff time has elapsed.

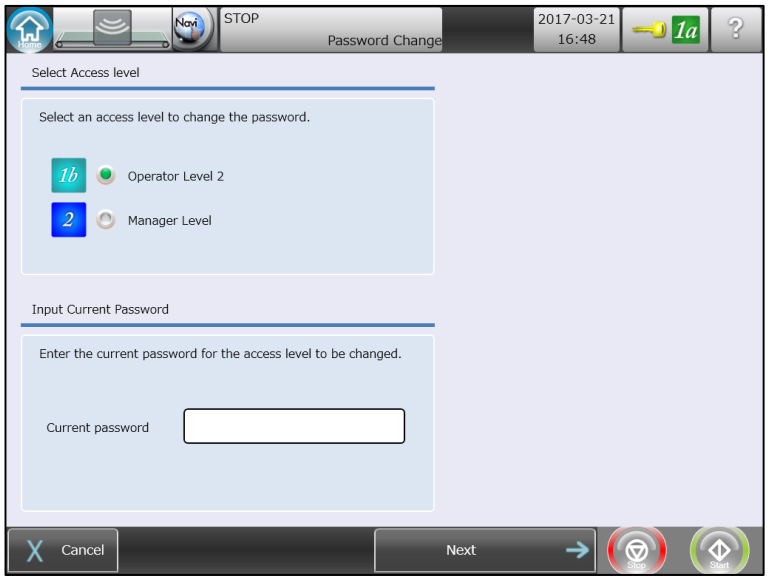
Operation	Description
Move the screen.	Cancel the screen transition operation to move to the Home screen. Set the access level to 1a after transition.
Close the dialog box.	Close the dialog box to move to the Home screen. Set the access level to 1a after transition.
Cancel the error.	Cancel the generated error to move to the Home screen. Set the access level to 1a after transition.

> Changing/Initializing the password of the access level

This is the function to change the password set for the access level. You can initialize the password changed using this function.

■ Password Change

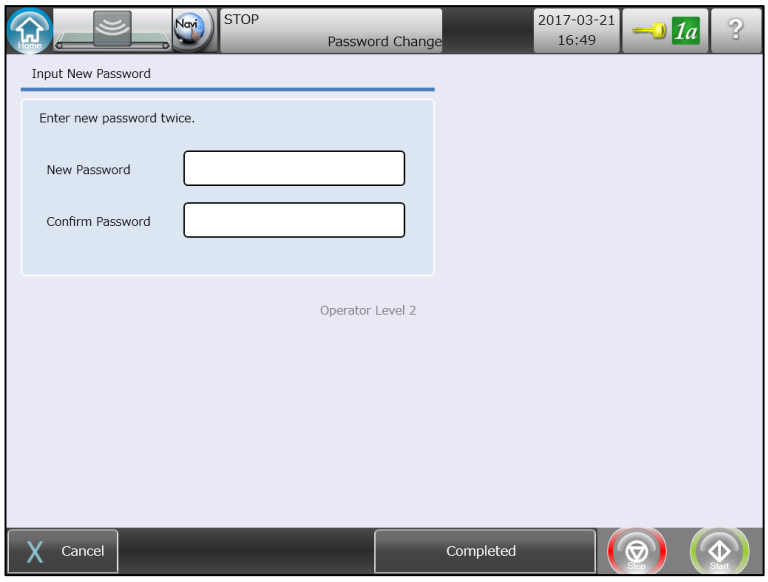
1 Select [Control Panel] and [Password Change] on the “Menu” screen.



2 Select the access level to change the password.

3 Enter the current password of the access level selected above and press [Next].

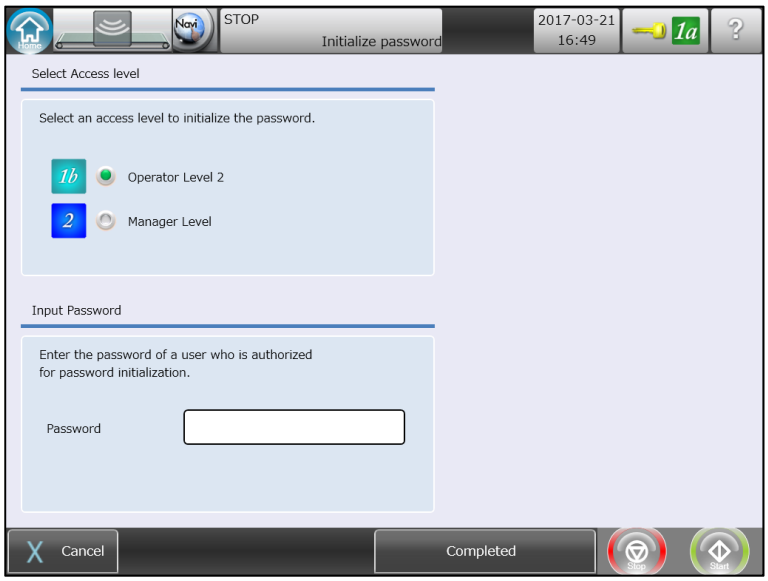
4 Enter a new password twice and press [Finish] to complete password change.



A confirmation dialog box appears when you set a space (no password) for the new password. Select “Yes” to set a space (no password) for the password.

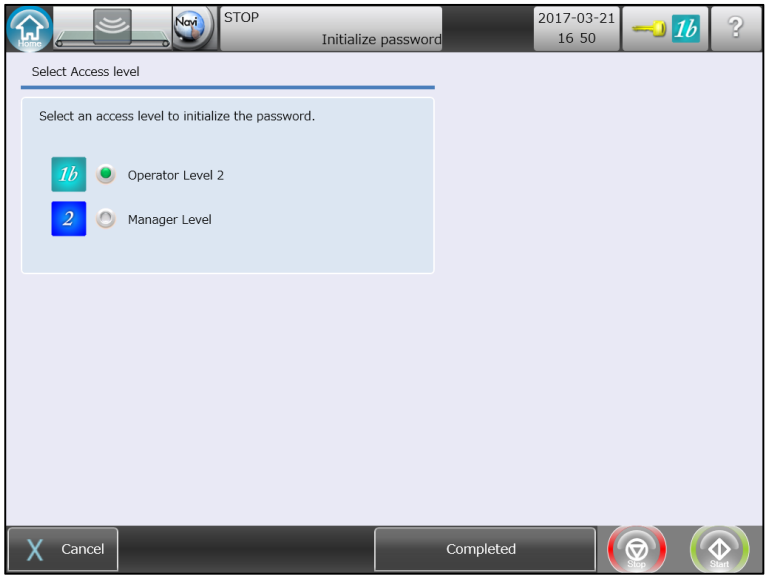
■ Initialize Password

1 Select [Control Panel] on the “Menu” screen and [Initialize Password].



2 Select the access level to initialize the password.

3 Enter a password of the higher authorization access level than that selected above. You can omit password entry if the current access level is higher than that to initialize the password.



4 Press [Finish] to display the dialog box to confirm initialization. Select “Yes” to finish intializing the password.

> Limiting the operation to reset errors/alarms

You can set a password to reset an error/alarm and limit the reset operation.

Policy Setting List

(Maintenance and Settings → Security and Rules → Policy Setting List)

Name	Setting (Default; _)	Description	
Password to be set	Error and alarm Error	Select an error/alarm to limit the reset operation by the password.	
		Error and alarm	Both errors and alarms
		Error	Only errors
Alarm Reset Password	Up to 18 characters (Alphanumeric)	Set a password used to reset errors/alarms. This function is enabled when the password is not blank.	

Reset errors/alarms according to the following steps if the password is enabled.

1 Press the reset [//] button.

2 Enter an alarm/reset password and press [OK] to reset errors/alarms.

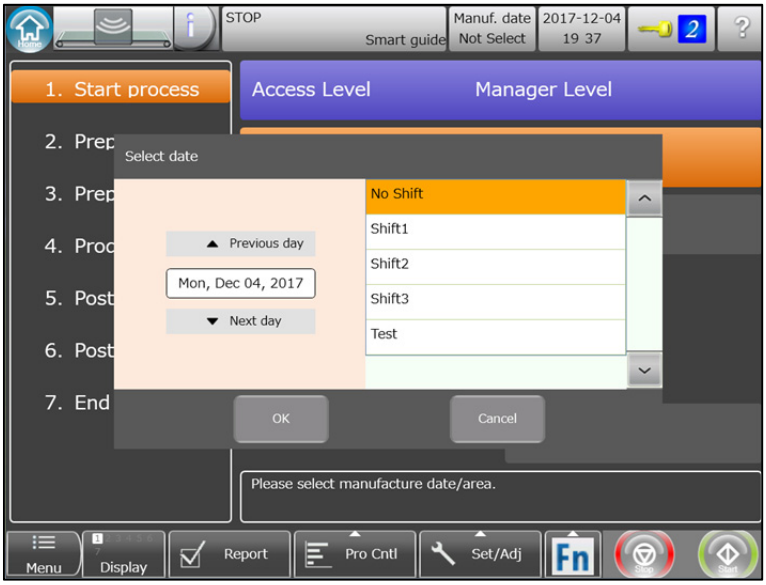
When you turn off the power of the equipment without resetting displayed errors/alarms, the message “E053 Errors/alarms have not been reset” is displayed at restart.

> Using Smart Guide

Follow the instructions shown on the Smart Guide screen to prevent incorrect operation or omission of steps.

■ Selecting the manufacture date and manufacture unit

Select the manufacture date and manufacture unit by using the Smart Guide. By selecting the manufacture date and manufacture unit, production can be performed based on date, time, and user. Press the “Date” button of the Smart guide phase 1, and select the Date and Shift on the following screen.



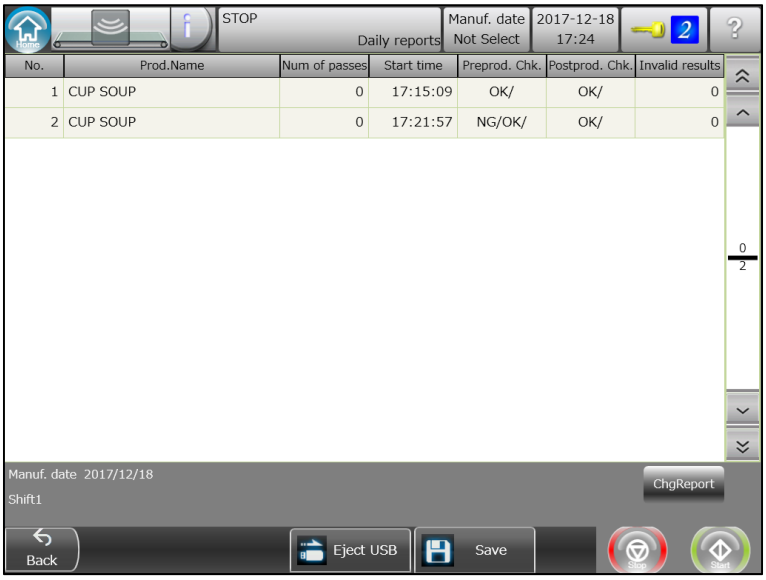
- Select [No Shift] if you do not want to set a production unit.
- Select [Test] if you want to perform a confirmation check before starting production.

■ Displaying a daily report

Information about production performed by using the Smart Guide can be displayed on the Smart Guide in the form of a daily report.

The screen can be switched to the daily report screen by tapping the [Report] button at the bottom of the screen.

The daily report displays information about the production of the manufacture unit selected on the "Phase 1" screen of the Smart Guide, performed on the manufacture date selected on the initial screen of the Smart Guide.



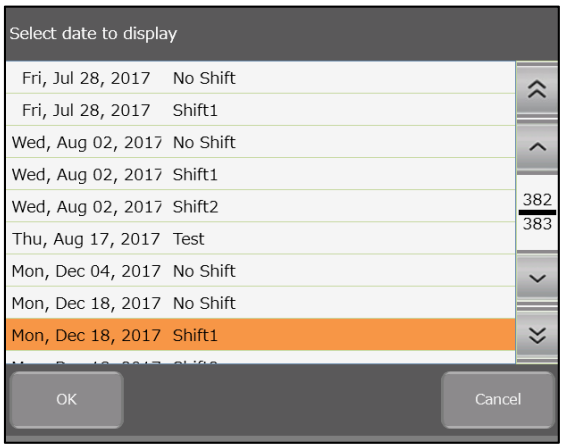
The meanings of the symbols in the pre-production/post production operation check results displayed in the daily report are as follows:

Symbols	Description
○	The operation check result is normal.
×	The operation check result is abnormal.
Not implemented	Not implemented
–	Canceled
*	Forcibly terminated

■ Selecting the daily report to display

The daily report to display on the daily report screen can be selected by tapping the [ChgReport] button at the bottom of the daily report screen.

Changing the daily report to display on the daily report selection screen does not change the manufacture date or manufacture unit selected on the "Phase 1" screen of the Smart Guide. The latest 400 daily reports can be displayed.



■ Saving daily report data

The data of the daily report showing the information of the selected manufacture date and manufacture unit can be saved to a USB flash drive by tapping the [Save] button on the bottom of the daily report screen. The daily report data file is named as “HDR_YYYYMMDD_X_△△.csv” in the folder divided for each date under the folder [HIST] (YYYY/MM/DD indicates the manufacturing date, X indicates the shift, and △△ indicates the serial number).

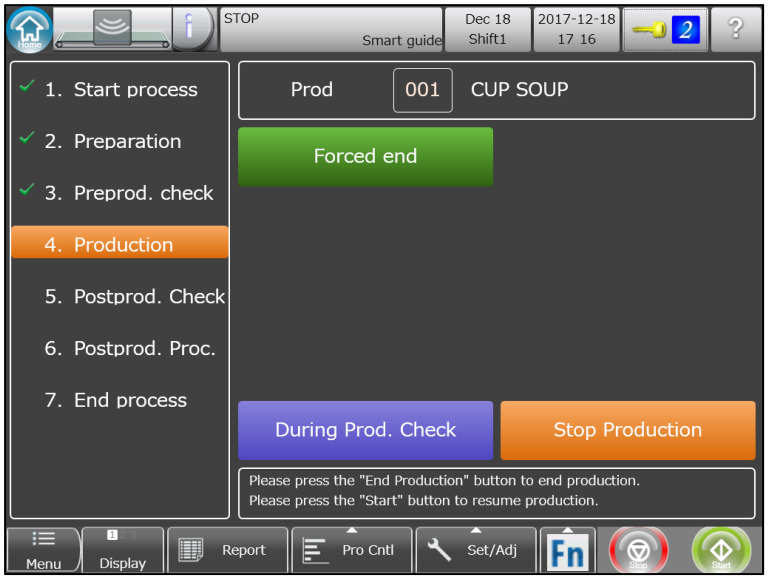
Data is recorded to the USB flash drive in CSV format in the following order, with each item delimited by a comma.

Item	Description
No.	Serial number of the daily report for production at the specified date and in the specified shift.
Prod. No	Product type No.
Prod. Name	Product name
Start time	The time when the pre-production operation check has succeeded first (YYYY/MM/DD HH:MM:SS)
End Time	The time when the post-production operation check has succeeded first (YYYY/MM/DD HH:MM:SS)
Start validation result	Results of the pre-production operation check for the latest three times
Start validation Access Level	Access level when the pre-production operation check
Start validation User	User who checked the operation before production (Only when the optional user management function is used)
End validation result	Results of the post-production operation check for the latest three times
End validation Access Level	Access level when the post-production operation check

Item	Description
End validation User	User who checked the operation after production (Only when the optional user management function is used)
Total count	Fed count
OK count	OK count
NG count	NG count
Contaminant NG count	Contaminant NG count
Sealing NG count	Sealing NG count
Missing NG count	Missing NG count
Shape NG count	Shape NG count
Weight +NG count	Weight +NG count
Weight -NG count	Weight -NG count
External NG count	External NG count
EXNG2 count	EXNG2 count
Cnv. NG count	Cnv. NG count

■ Terminating a process forcibly

You can shift to the work that was performed at operation start during the Smart guide production or the post-production operation check. The confirmation message appears when pressing the [Forced end] button on the Smart guide screen. Select [Yes] to return to phase 1.



(1) The manager or higher user can terminate the process forcibly.
(2) The production work can be terminated forcibly only in the Operate/Stop mode.

> Selecting the Product Change Method

■ Setting the product change method

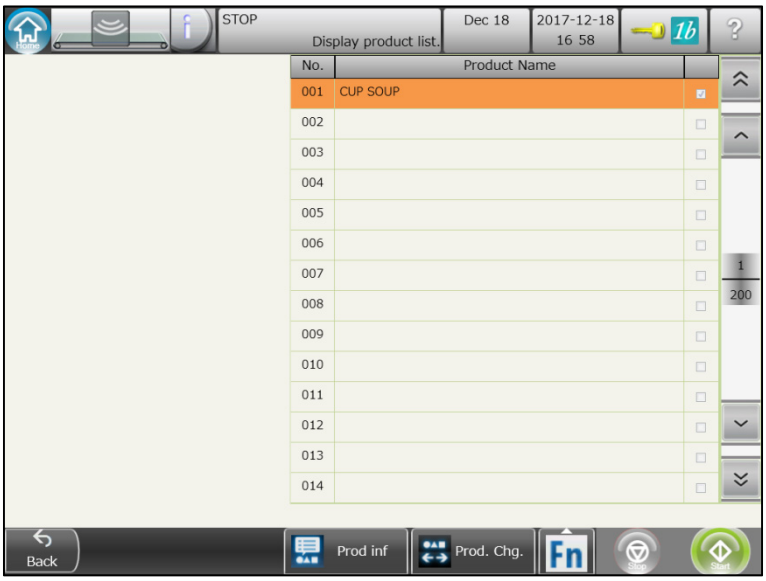
(Maint.and Setting → Security and Rules → Prod.management settings)

Name	Setting (Default; _)	Description	
Direct product change	No Prod.No. Item code	Set whether to select the product from the product list when changing the product or specify the product No. or item code.	
		No	Select the product type from the product list.
		Prod.No.	Input the product No., and specify the product type.
		Item code	Input the item code, and specify the product type.

■ Product change operation

[1] Selecting from the product list

Select the product type from the product list, and press [Prod.Chg.].



[2] Inputting the product No.

Input the product No., and press [OK].

If there is a corresponding product type, the product names 1 and 2 are displayed at the lower right corner of the screen.

[3] Inputting the item code

1 Input the item code, and press [OK].

If there is a corresponding product type, the product names 1 and 2 are displayed at the lower right corner of the screen.

2 For more than one product type that has the same item code, the corresponding product list appears. Select the product type from the list, and press [OK].

3 Installation and Connection

This chapter describes the method of installation and connection with external equipment.

■ Installation Conditions

Install this X-ray Inspection System in a location satisfying the following conditions:

- A location where the ambient temperature ranges from 0 to 35°C (or from 0 to 40°C when installing the optional rear-mount air conditioner)

☞ P. 367 Specifications

- Where the relative humidity is within 30% to 85% with no condensation.
- Where there is no direct sunlight
- Where there is no heating equipment such as a stove or heater nearby
- Where the power supply fluctuation is less than ±10%
- Where there is little or no vibration. Where vibration is not easily generated.
- Where the air is clean and dust free.
- Where there are no flammable, active gases or salt sprays.

■ Installation Cautions

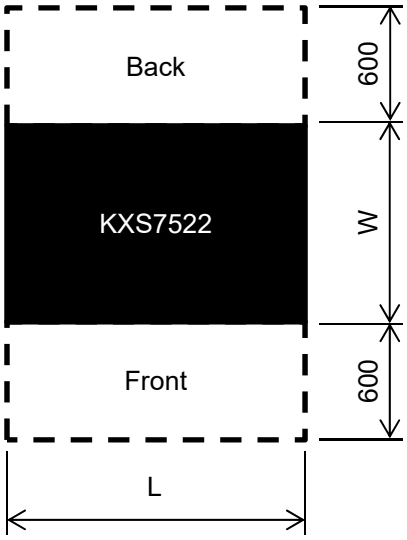
- Isolate the power supply for other noise-generating equipment such as large electric motors or packaging machinery. Supply power from a nearby power outlet without using a long power cord.
- Do not use several power cords on one power outlet and do not put heavy objects on the power cord, otherwise there is a risk of fire or electric shock. If the supplied power cord is damaged, contact your sales representative or Anritsu Infivis for a replacement.
- Keep the power cord well away from heaters, etc. When pulling the power cord out of the power outlet, always switch off the power switch first and pull by holding the plug.
- There is a risk of false operation if this system is connected (in continuity) with other machines (upstream or downstream conveyors). Connect the system to its own power outlet and ground.
- Exposure to X-rays can cause serious injury; Never modify this machine by drilling holes, etc., nor disassemble it.
- Exposure to X-rays can cause serious injury; Never cut, modify, or remove the shield curtain.
- NEVER disassemble or modify the main unit of the X-ray Inspection System or attached upstream and downstream equipment. NEVER remove or modify the safety covers, and safety interlocks.
  If any modification is required, contact the support of the supplier.

- If the power voltage in the environment varies outside ±10% of the rated voltage, use the AC regulated power supply or automatic voltage regulator (AVR) or constant voltage power supply so that the power voltage variation is within ±10% of the rated voltage.
- This system contains glass tubes. Take care not to apply any strong physical shock exceeding 24.5 m/s2 (2.5 G).
- The noise level of the X-ray Inspection System is 75 dB or less.
- Install this equipment and others so that inspected products can be fed into the inspection range.

■ Installation Space

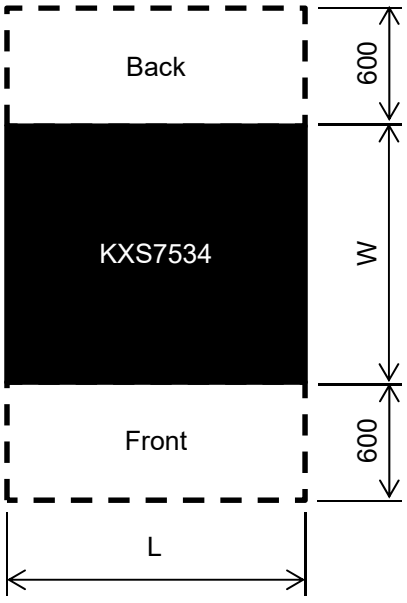
- To allow for easy operation, daily inspection, and maintenance, leave the clear space shown in the following figure around the system.

Units: mm



	L	W
KXS7522AWCLE	800	730 / 920*
KXS7522AWCLE (For bulk flow of unpacked flesh food)	1480	730 / 920*
KXS7522AVCLE	800	830
KXS7522AVCLE (For bulk flow of unpacked flesh food)	1480	830
KXS7522CWCLE	1355	730 / 920*
KXS7522CVCLE	1355	830

* When the optional rear-mount air conditioner is installed



	L	W
KXS7534AWCLE	800	880 / 1070*
KXS7534AWCLE (For bulk flow of unpacked flesh food)	1480	880 / 1070*
KXS7534AVCLE	800	980
KXS7534AVCLE (For bulk flow of unpacked flesh food)	1480	980
KXS7534CWCLE	1355	880 / 1070*
KXS7534CVCLE	1355	980

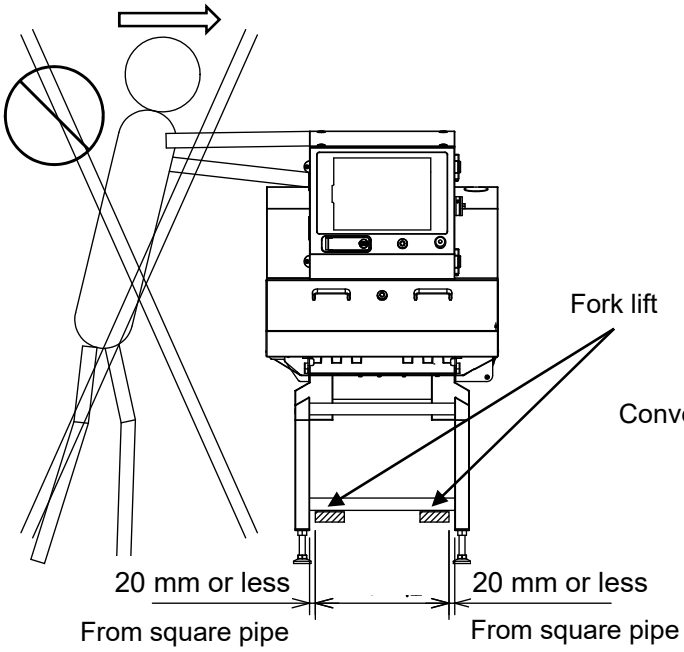
* When the optional rear-mount air conditioner is installed

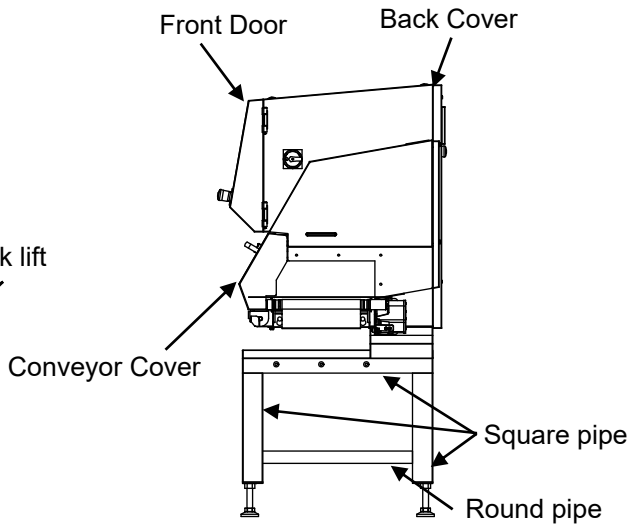
■ Cautions on transportation

Warning ⚠	For transporting the X-ray Inspection System, ensure to keep entire unit within 3 degrees of tilt in any direction to prevent it from falling.

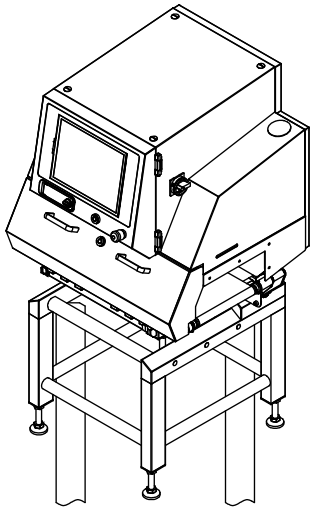
Caution ⚠	▪ Do not drag this inspection system when moving it. ▪ To prevent damage, always use a forklift, etc., to lift and move it. ▪ Insert the forks under the round pipes. ▪ Do not insert the forks from the side of the main unit. ▪ Use soft cloth as cushion between lifter and the unit for preventing scratch or damage at transportation. ▪ When lifting it from the ground, keep the forks horizontal. ▪ Move it slowly. ▪ Do not leave the front door or conveyor cover open when transporting the system.

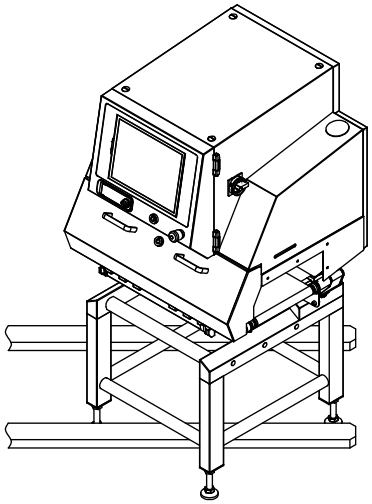
▪ Using a forklift for transportation

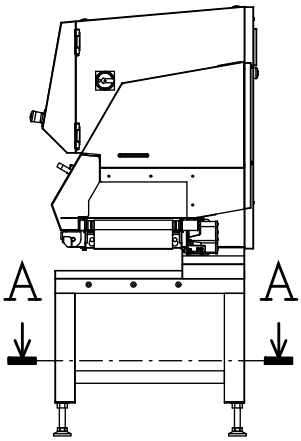


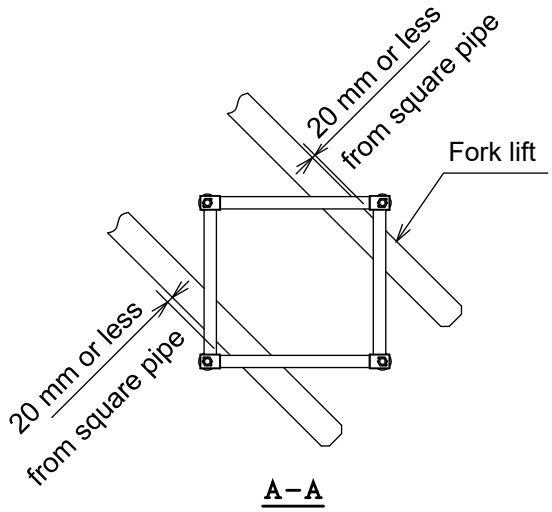


As shown below When the distance between the forks is wider, insert the forks at an angle as shown in the following diagram.

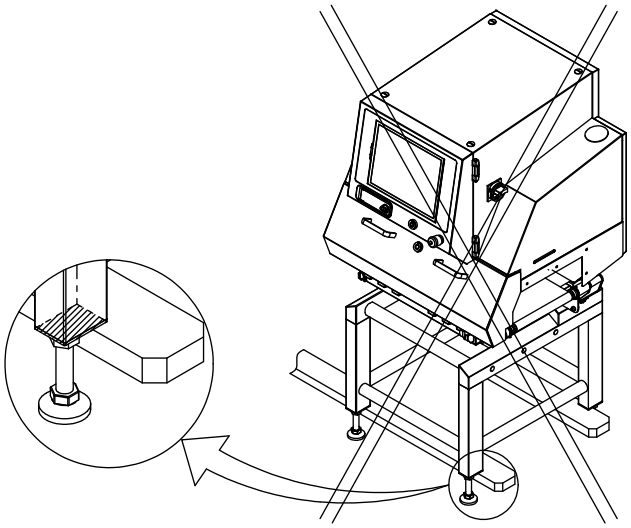


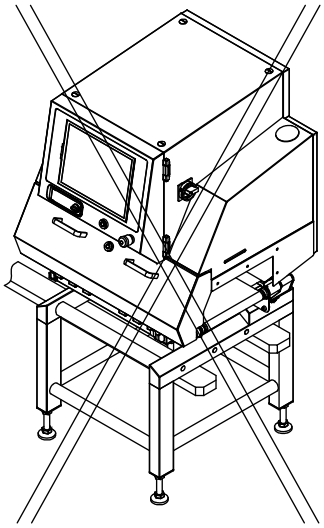






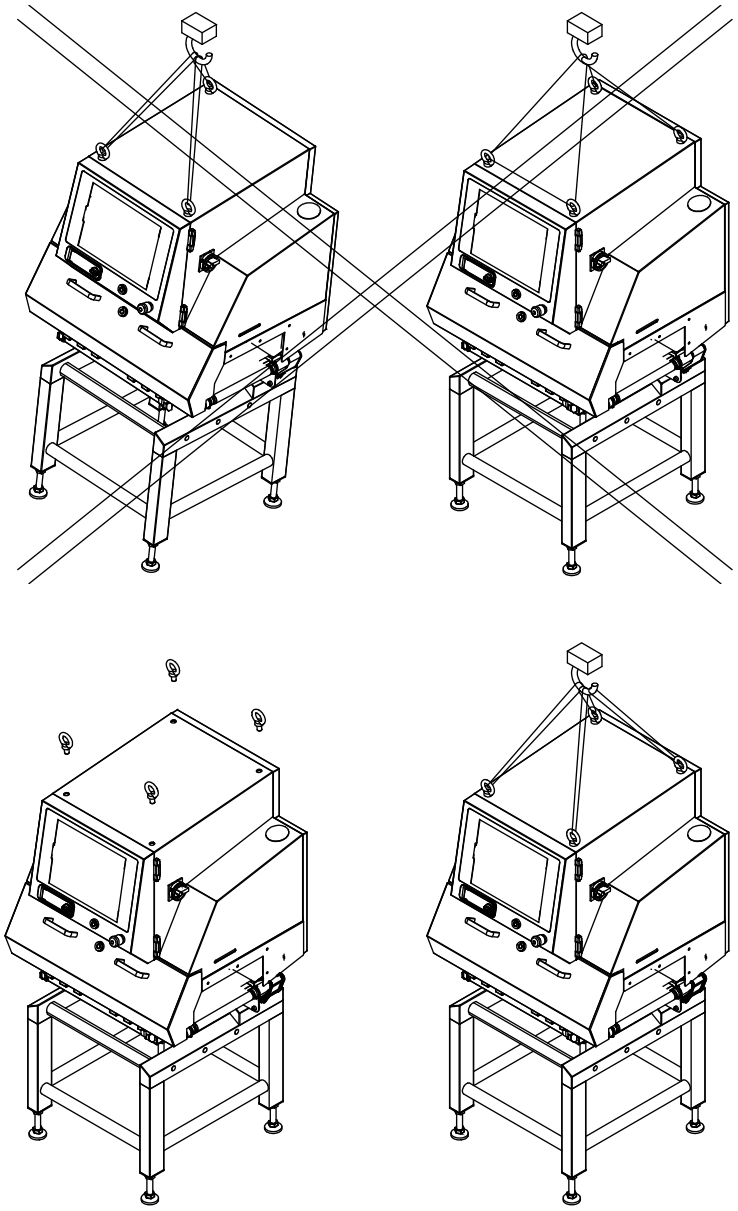
Caution	Do not insert the forks under the square pipes of the stand.



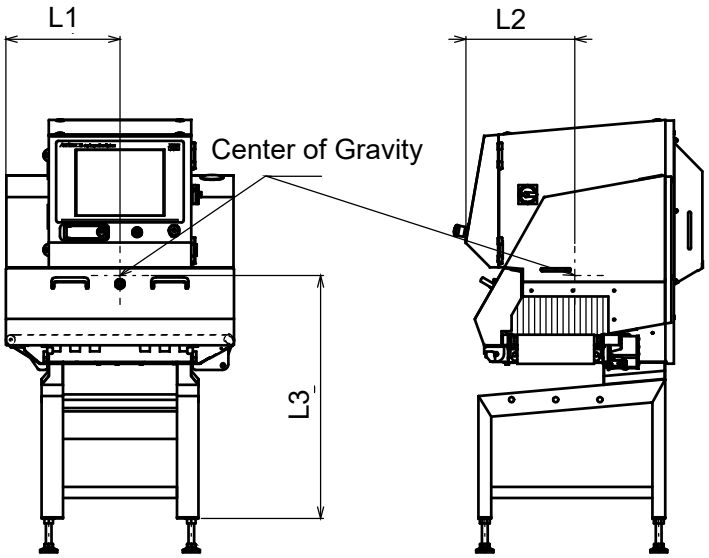


- Using a crane to hoist the unit for transportation

Caution ⚠	
	▪ Do not move the main unit on an angle and when using ropes to the eyebolts (see below) do not run a single rope through all the eyebolts. ▪ When using a hoist to move the inspection system, attach the four supplied eyebolts to the top of the inspection system and run a rope from each eyebolt separately to the hoist hook. After moving the inspection system, remove the eyebolts and refit the caps into the bolt holes.



<Reference> Main unit mass and Center of Gravity



The values in the following table differ depending on the specifications at the time of shipment.

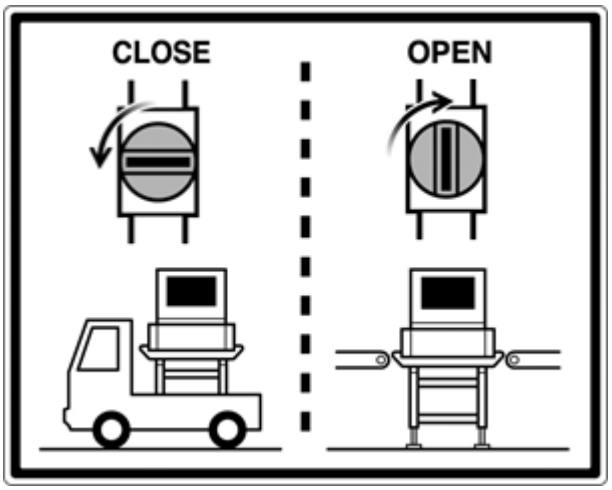
	Main unit mass (kg)	L1(mm)	L2(mm)	L3(mm)
KXS7522AWCLE	245	405	378	838
KXS7522AWCLE (For bulk flow of unpacked flesh food)	275	401	375	822
KXS7522AVCLE	250	404	387	842
KXS7522AVCLE (For bulk flow of unpacked flesh food)	280	401	383	826
KXS7522CWCLE	270	408	375	813
KXS7522CVCLE	275	408	383	818
KXS7534AWCLE	300	404	464	925
KXS7534AWCLE (For bulk flow of unpacked flesh food)	345	406	461	900
KXS7534AVCLE	305	403	473	930
KXS7534AVCLE (For bulk flow of unpacked flesh food)	350	406	468	905
KXS7534CWCLE	340	406	458	887
KXS7534CVCLE	345	406	466	892

When the optional rear-mount air conditioner is installed

	Main unit mass (kg)	L1(mm)	L2(mm)	L3(mm)
KXS7522AWCLE	255	407	404	832
KXS7522AWCLE (For bulk flow of unpacked flesh food)	290	403	398	817
KXS7522CWCLE	280	410	398	809
KXS7534AWCLE	310	405	490	918
KXS7534AWCLE (For bulk flow of unpacked flesh food)	360	407	483	895
KXS7534CWCLE	350	407	481	882

■ Opening and Closing the air valve

Caution

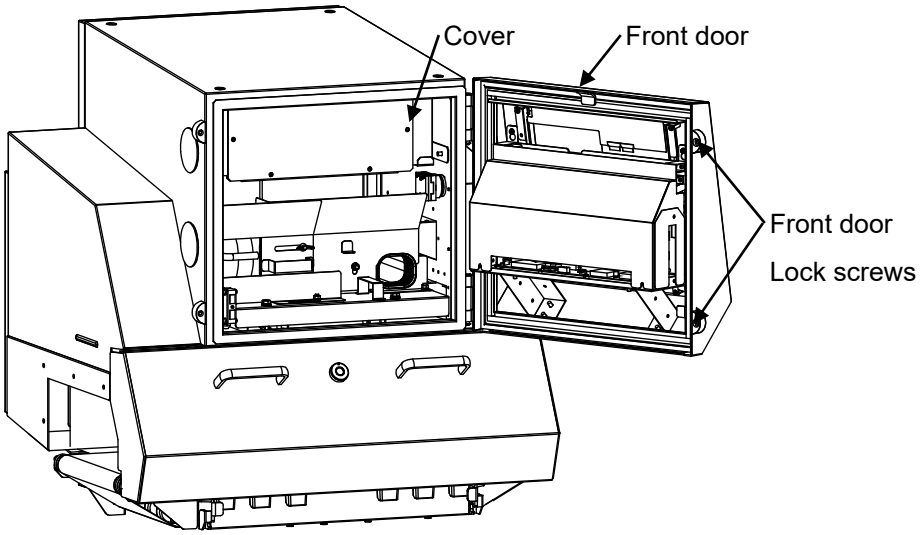


- Confirm that the air valve is open before starting installation or operation. If the system is operated with the valve closed, the X-ray source tank might deform due to the heat generated during operation.
- Be sure to close the air valve during transportation. If the system is transported with the valve open, the oil in the X-ray source tank might leak into the air bag.

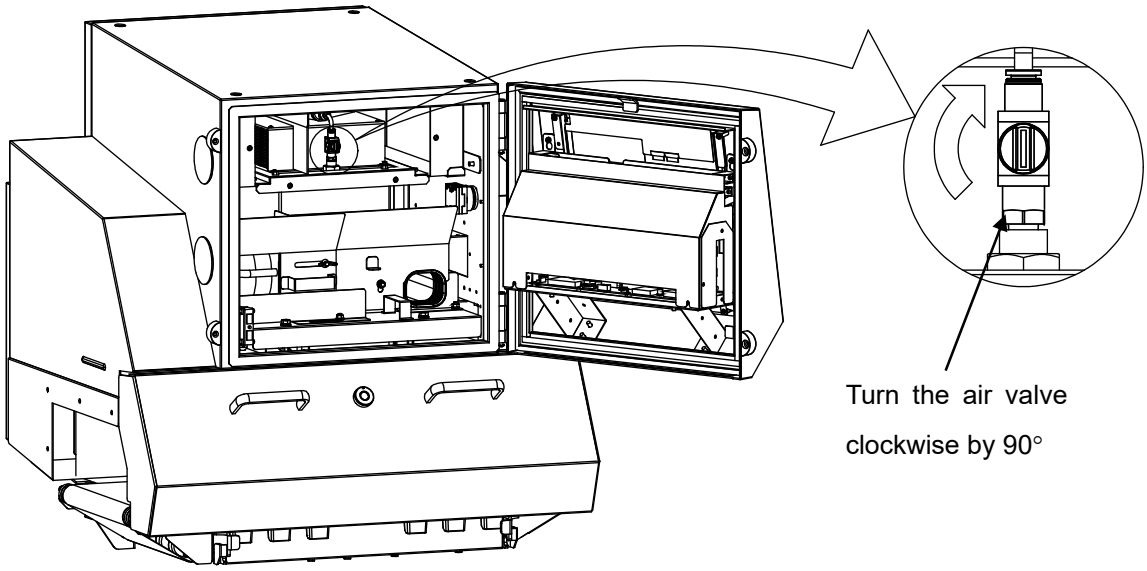
When installing the X-ray Inspection System, open the air valve by the following procedure.

1 Loosen the front door lock screws using the supplied screwdriver, then open the front door.

2 Loosen the bolts (6 places) of the cover using the spanner for M6 hexagonal bolts, and remove the cover.



3 Turn the air valve clockwise by 90° to open it.

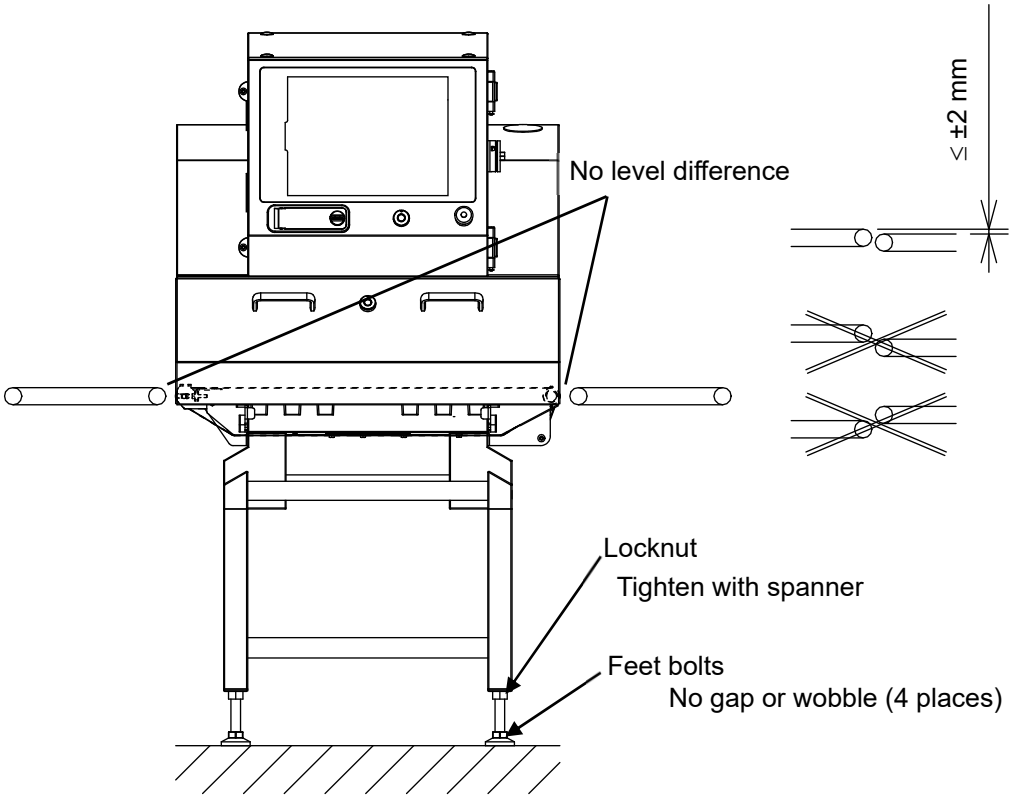


4 Install the cover in the reverse order, and close the front door.

■ Aligning Conveyor Belt Height with Upstream and Downstream Equipment

Caution	
	▪ There is a glass tube inside of X-ray Inspection System. Be extremely careful with possibilities of applying any shock that is exceeding 2.5G (24.5 m/s2). ▪ Do not tilt the X-ray Inspection System to angles exceeding 3° from horizontal. ▪ Use a spirit level to install the system within 3° of levelness.

Align the height of the conveyor belt with the hights of the upstream and downstream equipment. After aligning the height, adjust the foot bolts so that there is no gap between the feet and the floor, and then use a spanner to fix the locknuts in place.



Connect I/O and external devices.
See “External I/O specifications” for appropriate cables and I/O specification.
☞ P. 358 External I/O Specifications

See the instruction manual of the rejector for connection.

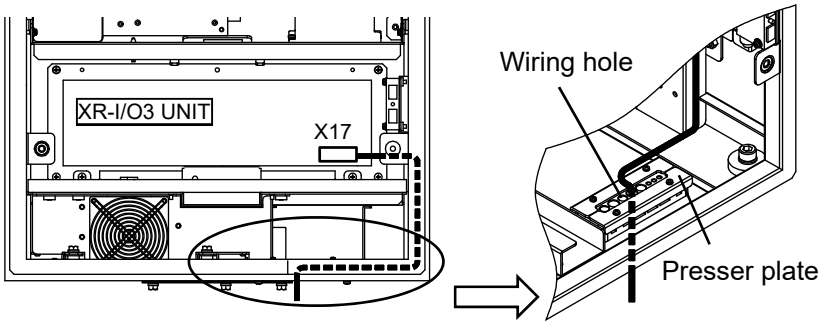
Warning ⚠	Do not connect the power supply plug to an outlet until the work is completed. Otherwise, you may receive an electric shock and damage electronic parts. Perform connecting work according to the description shown below. Otherwise, the system may not be able to maintain waterproof and dustproof performance.

Caution ⚠	Take extra care when removing or installing the back cover. Dropping the device may incur injury or damaged parts.

Turn on the power and set I/O signals after the connection work.
☞ P. 193 Setting External I/O Signals

1 Remove the back cover.

2 Remove the presser plate using a cross slot screwdriver.



3 Run the cable through the wiring hole.

Caution ⚠	Run the cable through the wiring hole that fits the cable diameter. If the cable diameter is not aligned with the hole diameter, the system may not be able to maintain waterproof and dustproof performance.

4 Connect the cable to the connector and connect the connector to X17 of XR-I/O3 UNIT.

☞ P. 358 External I/O Specifications

5 Install the presser plate in the reverse order of (1 and 2) above and install the back cover.

■ Connecting Power

Warning	▪ Check power supply voltage To prevent risk of electrical fire, check that the voltage of the power supply is within the specified range. If it is out of range, there is a risk of high voltages damaging the system. ▪ Check wiring Prepare designated power supply source and wiring. If the power supply is shared with other equipment, the circuit breaker may drop and affect the operation. ▪ Grounding Always ground the power cable to prevent risk of an electric shock and secure safe operation of the machine. The ground line must have a soft copper core diameter of at least 1.6 mm and a ground resistance of not more than 100 Ω.

1 Check on the supplied power voltage* meets the specification which is written on a nameplate above main power switch.

Warning	DO NOT allow water, liquids, or metal to enter the Indicator, otherwise a fire or malfunction may occur.

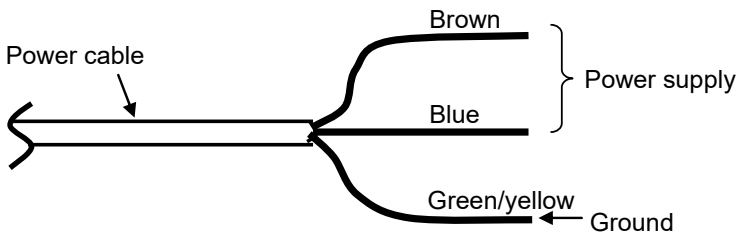
2 Turn off the circuit breaker on the distribution board.

3 Check the grounding. (With the power cable disconnected)

If the power outlet is not grounded, ground the earth terminal marked PE on the side panel of the cabinet.

4 Attach crimping terminals* or a connector* to connect.

*Crimping terminals, etc. are not attached to the cable end.



4 Maintenance

This chapter describes the maintenance and troubleshooting.

Caution	When performing an inspection while running the carrying belt, take care not to touch the roller or belt. When operating the conveyor with the separate controller unit (optional), make sure that there is no one around the conveyor.

> Daily Inspection Items

(1) Before starting operation

Perform the following inspections before starting operation.

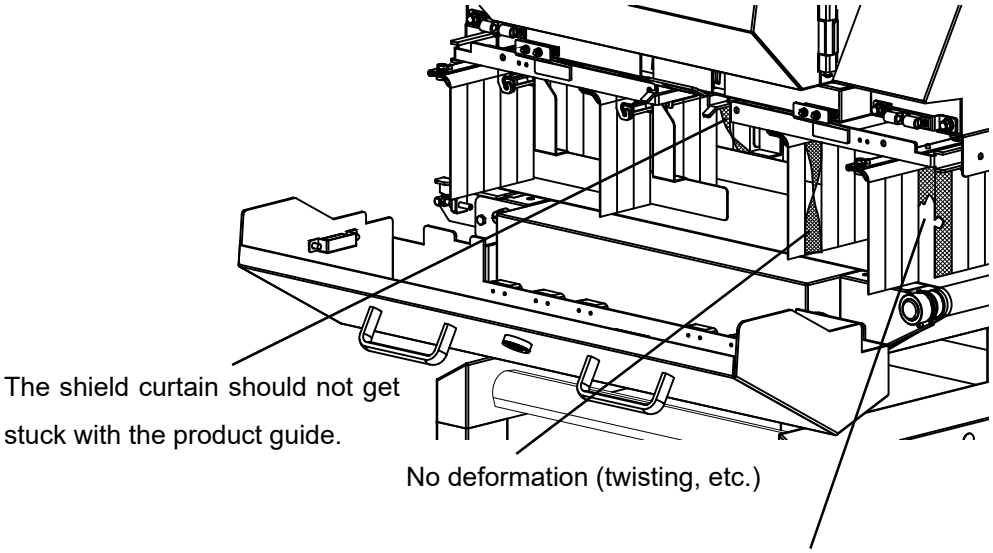
- Checking the operation of the emergency stop switch
  Check that X-ray irradiation stops when the emergency stop switch is operated.
- Checking for contact
  Check for any contact with the upstream or downstream conveyor.
- Meandering of the carrying belt
  Check for any meandering.
- Checking the shield curtain state

Warning	The shield curtain must have no damage or deformation. If the shield curtain is used with damage or deformation, X-ray exposure may occur.

Open the conveyor cover, and check all shield curtains for any damage such as tear, chip, or abrasion*, or deformation such as twist. If the shield curtain has any damage or deformation, contact a service engineer of Anritsu or representative immediately for replacement.

Check that the curtain does not get stuck with the product guide when the product guide (optional) is used.

For abrasion, replace the curtain when the green coating on the surface becomes thin and the black part inside is visible.



- Checking the detection sensitivity
  Feed a master product only. Next, feed the master product with a test piece (if no test piece is available, feed an NG master product). Check that they are “detected” and “not detected”, respectively.
  Before operation, check that the specified detection sensitivity is obtained and rejection is performed reliably.

Check that the items above are satisfied in all possible locations where inspected products may pass through.

(2) After finishing operation

- Cleaning the detection unit under the carrying belt at the conveyor center
  Remove the carrying belt, and remove dust with a soft cloth to prevent scratching the resin cover at the center of the conveyor surface.
- Cleaning the carrying belt and area under it
  Wipe off the stain with a damp cloth.
- Cleaning the curtain
  Wipe off the stain with a damp cloth.

> Weekly Inspection Items

Perform the following inspections once per week.

- Carrying belt
  Remove the carrying belt and check for any fraying or peeling on the edges.
  If the carrying belt is stained, wipe it off with a damp cloth, etc.
- Motor, roller, and carrying belt
  Run the conveyor and check for any abnormal sound or meandering of the carrying belt. Also check if the tension of the carrying belt is too high.

<When the optional rear-mount air conditioner is installed>

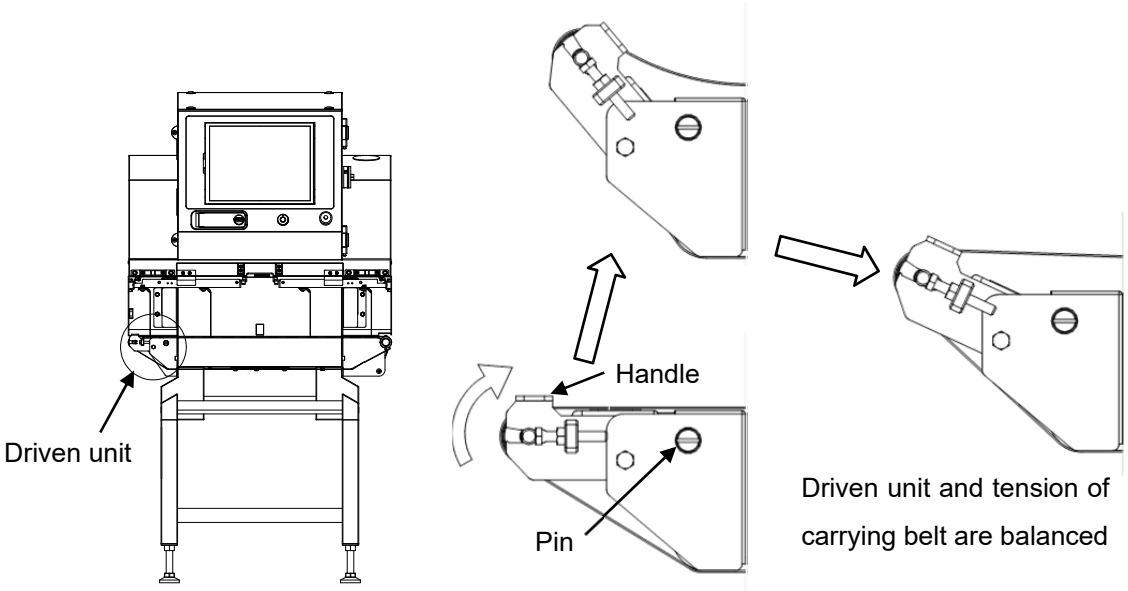
- External-air-side fan of the air conditioner unit
  Check that there is no abnormal noise under the operating status.

Checking the tension of the carrying belt

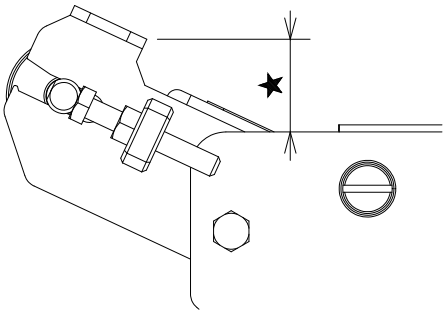
1 Stop the conveyor, and open the conveyor cover.

☞ P. 303 Removing and installing the conveyor cover

2 While pulling the pin toward you, lightly lift the handle of the driven unit in the direction of the arrow, and release it to balance the driven unit and the tension of the carrying belt.



3 While the driven unit and the tension of the carrying belt are balanced as in 2, check that the length of ★ in the figure below is 26 mm or less.



If the length of ★ exceeds 26 mm, loosen the adjusting bolt to reduce the tension of the carrying belt.

Caution

▪ Adjusting the tension of the carrying belt

Limit the tension of the carrying belt in the range in which maximum operating mass can be conveyed. Do not make the tension too high. (Otherwise the rollers may be damaged.)

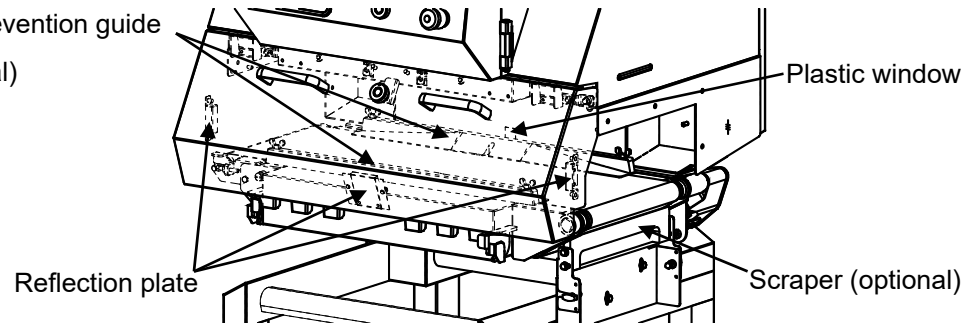
The carrying belt may shrink due to humidity or moisture, etc.

As part of daily inspection, adjust the tension of the carrying belt periodically.

☞ P. 307 Adjusting meandering of the carrying belt

▪ Conveyor unit

Check that the parts shown below are not dirty nor cracked.



- Cleaning the air filter

  Remove the filter, and remove dirt on the filter with a vacuum cleaner or water. Install the filter when it is completely dry.

<When the optional rear-mount air conditioner is installed>

- Cleaning the external-air-side heatsink

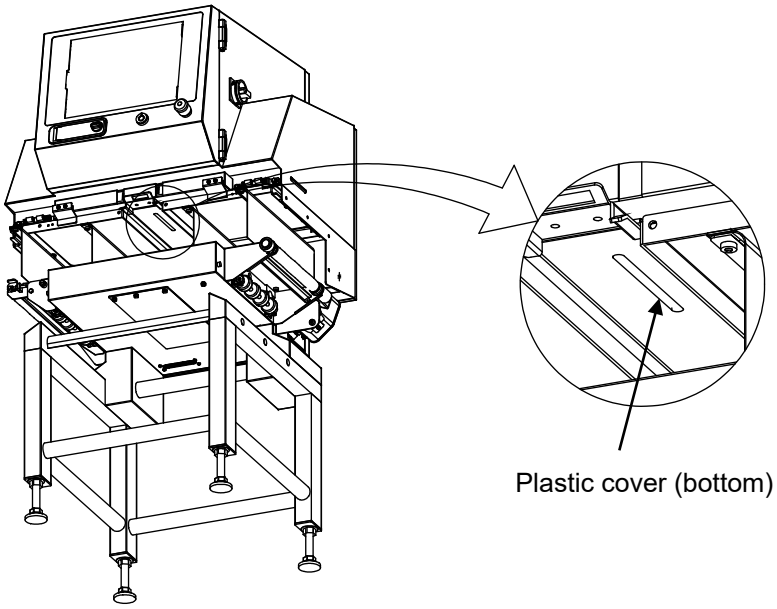
  Remove the exterior cover of the air conditioner unit, and remove dust and dirt of the heatsink with a vacuum cleaner and others.

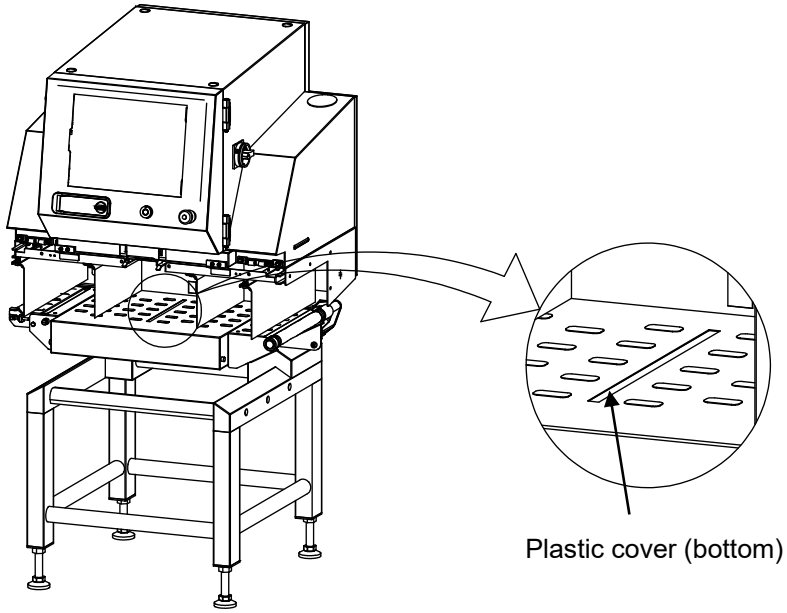
☞ P. 302 Cleaning the external-air-side heatsink
<When the optional rear-mount air conditioner is installed>

> Monthly Inspection Items

Perform the following inspections once per month.

- Cleaning the conveyor rollers
  Loosen the carrying belt, and wipe off any residue on the rollers with a damp cloth, etc.
- Checking the resin cover
  In this system, a resin cover is used where X-rays penetrate through. (Under the carrying belt and on the top part opposing it)
  The resin may deteriorate depending on the use of the system, resulting in a chip falling inside the conveyor. Check for any crack or scratch.



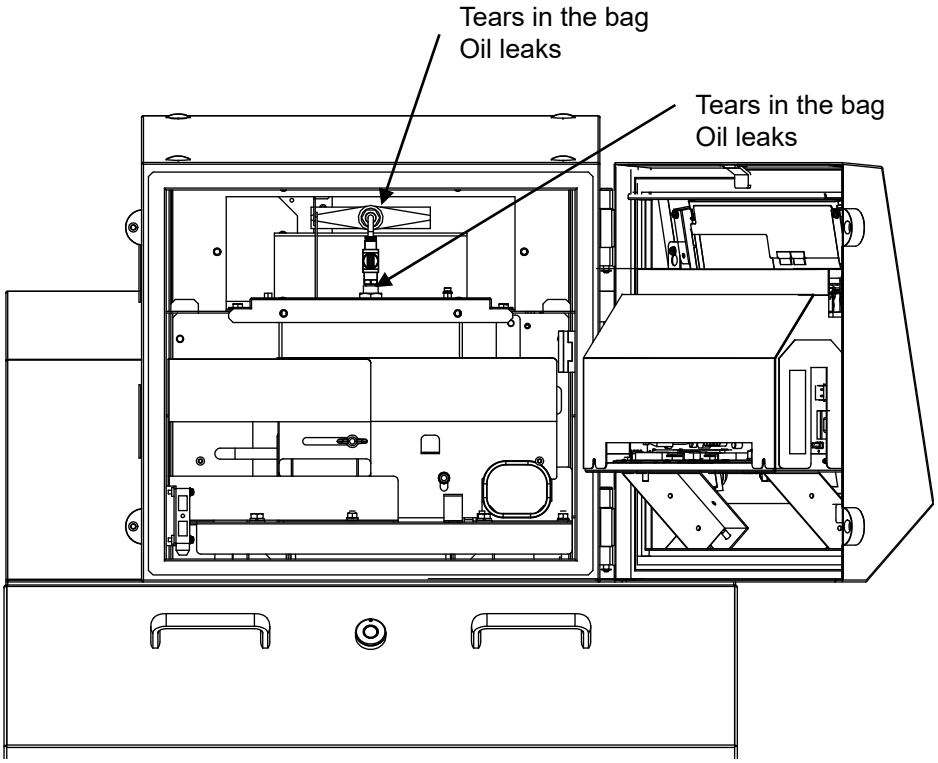


> Inspection Items Every 6 Months

- Checking if X-ray leakage is below the specified value
  Measure X-ray leakage of all the surfaces of the system to check if it is below the specified value.
- Checking the air bag of the X-ray generator
  Open the front door, remove the cover, and check the air bag installed on the X-ray generator for the following points.

☞ P. 285 Opening and Closing the air valve

- Tear of the bag
- Intrusion of oil
- Disconnection of the tube connecting with the X-ray generator



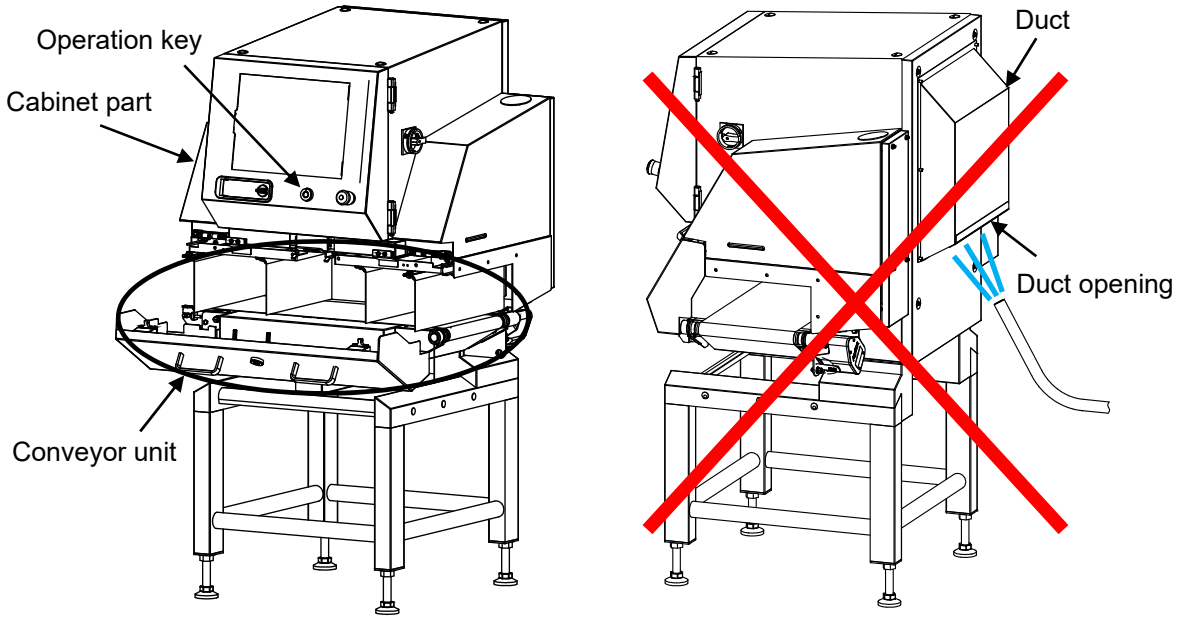
- Rubber legs of the conveyor cover
  Check for any crack on the rubber legs installed under the conveyor cover.

> Cleaning the cabinet part

Only the KXS75xxxVCLE has the IP66 specification for the entire unit.
The KXS75xxxWCLE has the IP66 specification only for the conveyor unit.

What is IP66?
IP66 prevents ingress of dust and water into the interior.
It can withstand water of 100 liters per minute sprayed through a nozzle with an inner diameter of 12.5mm from a distance of 2.5 to 3 meters from all directions. (JIS C 0920)

Warning	Make sure the power is turned off before cleaning. Cleaning it with the power turned on may cause an electric shock.



Caution	▪ KXS75xxxWCLE The cabinet part cannot be washed with water. ▪ KXS75xxxVCLE When washing the cabinet part with water, do not spray water upward to the duct opening on the back of the cabinet. Remove the key from the operation key before cleaning. Use water below 40°C.

- Make sure the power is turned off before cleaning.
- Use soft cloth for wiping off the unit. Never use a metal brush.
- Use neutral detergent or ethanol alcohol as cleaning solution. Do not use organic solvent such as paint thinner or toluene.

- After using a cleaning solution such as neutral detergent or ethanol, rinse it well with water. If the system is used with any residual cleaning solution, the packing may deteriorate prematurely, causing problems in operation of the device.

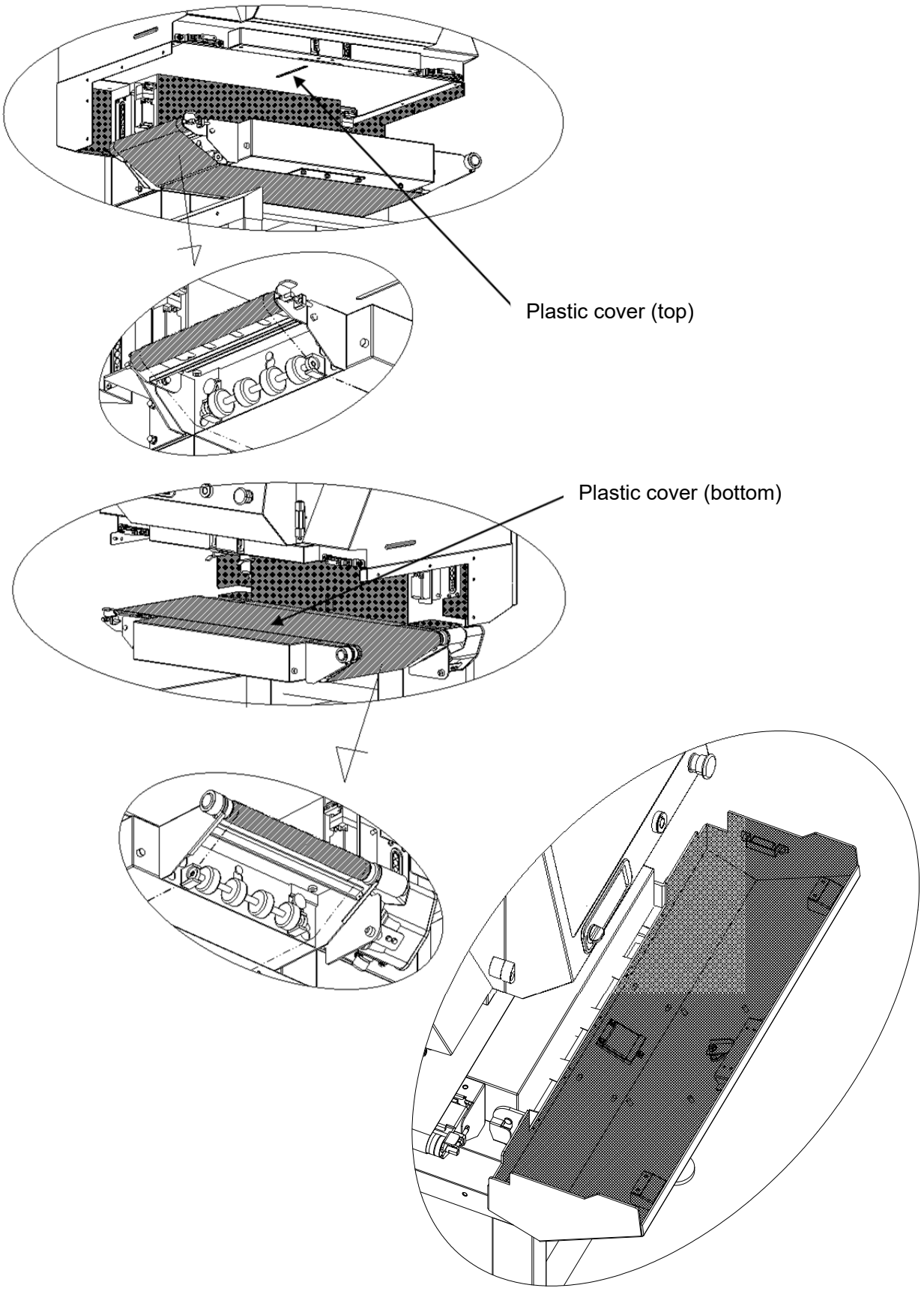
> Cleaning the conveyor unit

- Make sure the power is turned off before cleaning.
- Use soft cloth for wiping off the unit. Never use a metal brush.
- Use neutral detergent or ethanol as a cleaning solution. Do not use organic solvent such as paint thinner or toluene.
- After using a cleaning solution such as a neutral detergent or ethanol, rinse it well with water. If the system is used with any residual cleaning solution, the packing may deteriorate prematurely, causing problems in operation of the device.
- Detachable rollers can be sterilized in boiling water. The estimated life expectancy when it is regularly sterilized in boiling water is as follows.

Condition:	Soak it in boiling water at about 100°C for 5 minutes once a day.
Estimated life of the roller unit:	1 year

Consider the life as a guideline because it varies depending on the operating environment.

Caution ⚠	At cleaning, check there is no residual food or cleaning solution on the shaded area as shown. It may contaminate inspected products.



> Cleaning the air filter

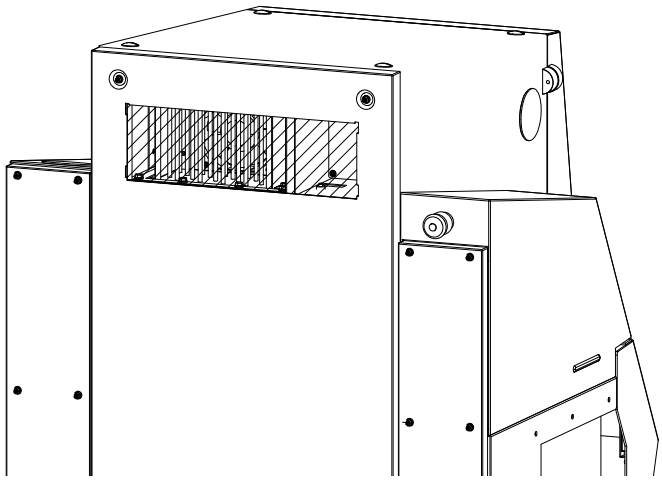
Caution ⚠	▪ Clean the air filter once a week. Otherwise the air filter becomes clogged and the temperature in the cabinet will rise, causing X-ray irradiation to stop. ▪ Remove the air filter before cleaning it. ▪ Do not operate the system without installing the air filter. Running the system without filter installed may cause system failure.

- For cleaning, remove the air filter by opening the cover on the back of the cabinet (or the duct on the back of the cabinet for KXS75xxxVCLE).

☞ P. 311 Removing and installing the air filter

- Use a vacuum cleaner to remove dust, or wash it with water.
- After removing the air filter, also clean the shaded area in the figure below by wiping with a wiping cloth. (KXS75xxxWCLE only)
- After washing it with water, let it dry before installing it. Avoid exposure to UV rays (such as direct sunlight).

Near the grinding process in the upstream of the raw material line, powder filling process, or cardboard packaging process, a large amount of airborne particles may accumulate on the fins of the heat exchanger, which may significantly decrease cooling capacity. In such a dusty environment, frequently clean the air filter and the shaded area in the figure below.



> Cleaning the curtain

Caution ⚠	Do not soak and wash the curtain. The curtain is made of lead and may deteriorate.

Clean the curtain with a sponge or wiping cloth. As washing curtains, make sure to wash under running water. Avoid using high pressure water that may damage the curtain.

☞ P. 312 Removing the detachable curtain

> Maintaining Stainless Steel

Stainless steel is not prone to rust, but it is not completely rust proof. Stain or rust may occur depending on the operating conditions and environment. Therefore, periodic cleaning is required.

In the case of stain or rust, clean it as described below. After cleaning, wipe it well with a damp cloth to remove any residual detergent.

Situation	Cleaning method
Finger marks or fingerprints	Wipe it off with a sponge or cloth dampened in neutral detergent or soapy water. If the stain persists, wipe it off with a sponge or cloth dampened in organic solvent (ethanol, benzine, acetone, etc.).
Rust (Rust stains caused by iron powder, rust caused by salt)	Wipe it off with a sponge or cloth dampened in neutral detergent or soapy water.

> Cleaning the external-air-side heatsink <When the optional rear-mount air conditioner is installed>

Caution ⚠	Clean the external-air-side heatsink on a weekly basis. Otherwise, the original cooling performance of the air conditioner unit cannot be exhibited resulting in the temperature rise in the frame, and then X-ray radiation may stop.

- Be sure to perform the cleaning under the state that the power is turned OFF.
- Remove the exterior cover, and vacuum dust and dirt with a vacuum cleaner and others.

ⓘ The excellent corrosion-proof treatment is applied to the external-air-side heatsink; however, the effect may vary depending on the use environment.

> Removing and installing the conveyor cover

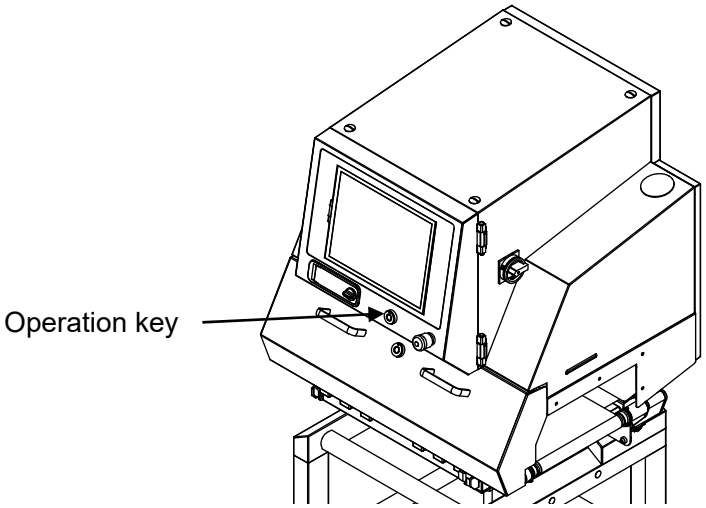
Warning ⚠	Make sure the power switch is turned OFF before performing the operation.

Caution ⚠

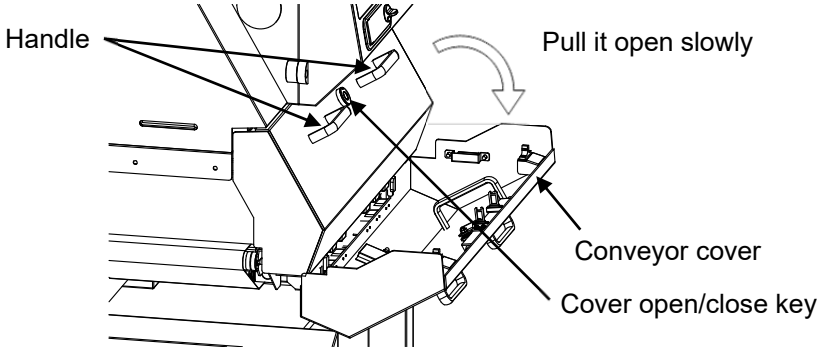
- When opening the conveyor cover, hold the handle of the conveyor cover with both hands, and slowly open it by hand until the rubber stopper on the bottom of the conveyor cover touches the cabinet. If the conveyor cover is pulled forcefully or you release your hands in the midst of opening it, it may fall to the ground.
  The conveyor cover has the following label attached to it.

- Use caution not to get your hand caught by the rubber stopper on the bottom of the conveyor cover.
- The conveyor cover of the KXS7522xxxxx weighs about 12 kg, and that of the KXS7534xxxxx weighs about 16 kg. Extreme caution must be taken to handle the conveyor cover after removing it.
- When you close the cover, ensure the key is in unlocked position. The lock plate of the conveyor cover may be damaged by hitting a hinge if it is in locked position. When closing the conveyor cover, unlock the lock.

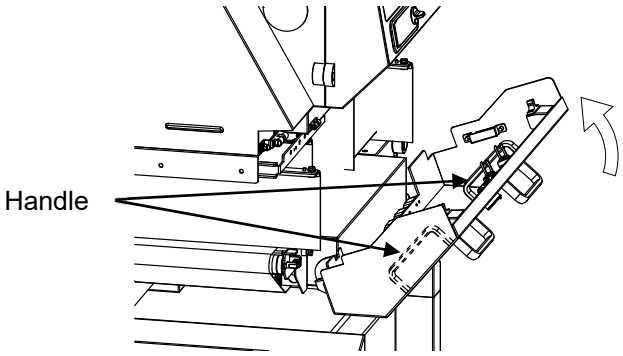
1 Turn the [Run] key OFF, and remove the key.



2 Unlock the cover open/close key with the removed key. While holding the handle, open the conveyor cover toward you.



3 Close the conveyor cover by 20 degrees from the fully opened position. Hold the handle inside the conveyor cover, and lift it up to remove it.



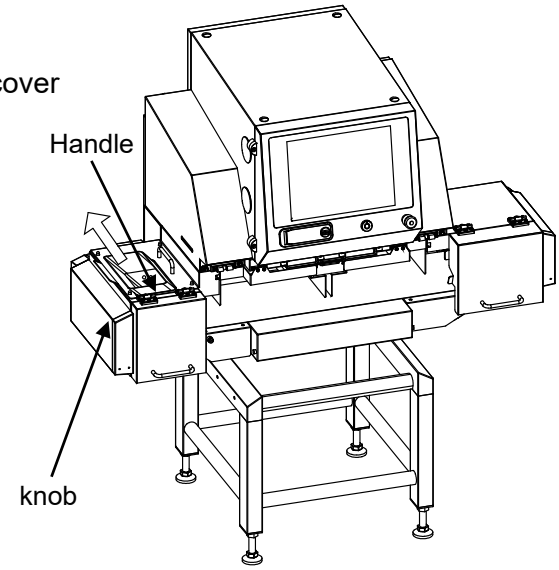
4 After cleaning, install the conveyor cover in the reverse order of Steps 1 to 3 above.

> Removing and installing the carrying belt

1 Remove the conveyor cover.

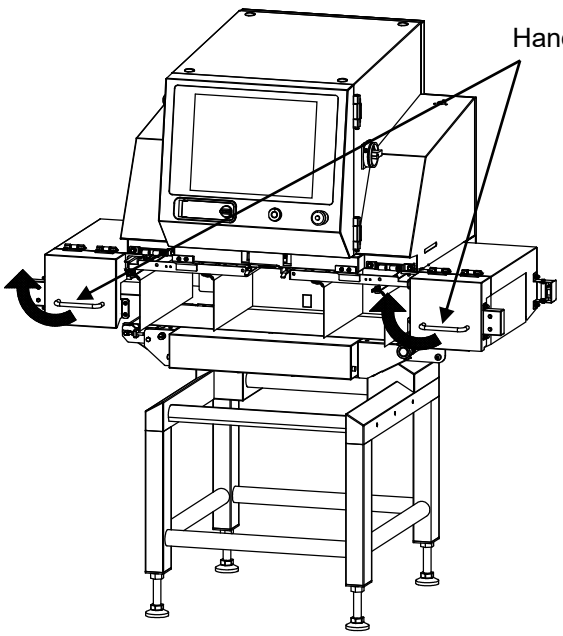
☞ P. 303 Removing and installing the conveyor cover

2 Remove the hopper in the direction of the arrow by holding the handle and knob when bulk flow of unpacked flesh food is applied.

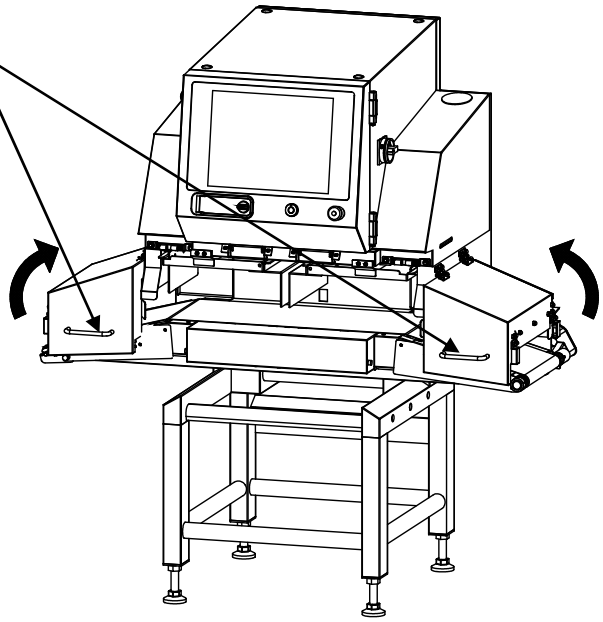


Caution ⚠	Take extreme care when removing the hopper. Falling of the hopper may cause personal injury or parts damage.

3 When using the optional extension cover, or applying bulk flow of unpacked flesh food, or in the case of KXS75xxCxCLE, hold the knob, and open the covers on both sides in the direction of the arrow.



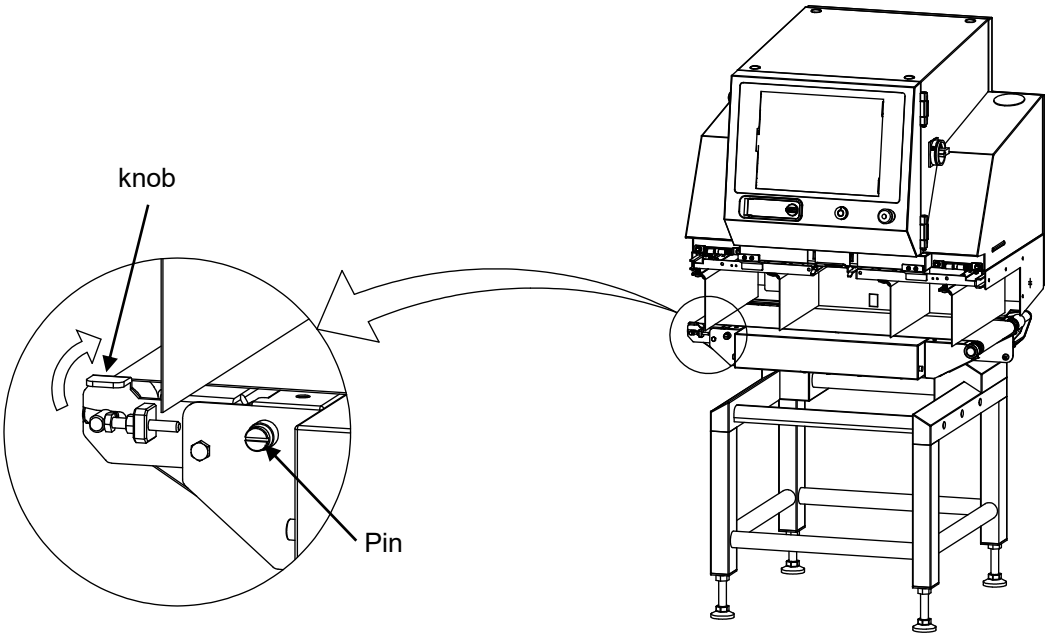
When using the extension cover



KXS75xxCxCLE

Caution ⚠	▪ Do not open or close the cover too quickly. Otherwise, fingers might get caught and result in injury. ▪ Be careful not to hit your head on the cover when the cover opens.

4 While pulling the pin to your side, lightly raise the driven part knob in the direction of the arrow to loosen the conveyor belt tension.



Caution ⚠	Do not leave it for a long time with the driven unit lifted. The curtain may become curled.

5 Pull the carrying belt toward you to remove it.

6 After cleaning, install the carrying belt in the original position. Make sure that the arrow on the back of the carrying belt matches the rotation direction. Also, when installing the carrying belt, make sure that the centers of the carrying belt and roller are aligned.

> Adjusting meandering of the carrying belt

Meandering of the carrying belt has been adjusted with no load before shipment. When water or oil accumulates on the carrying belt surface (especially when wet products are fed), additional adjustment of meandering may be required depending on the degree of accumulation. Meandering occurs due to the change of friction condition of the carrying belt and rollers.

If the carrying belt meanders during operation due to accumulation of water or oil, adjust it as follows.

- When the flow direction is left to right

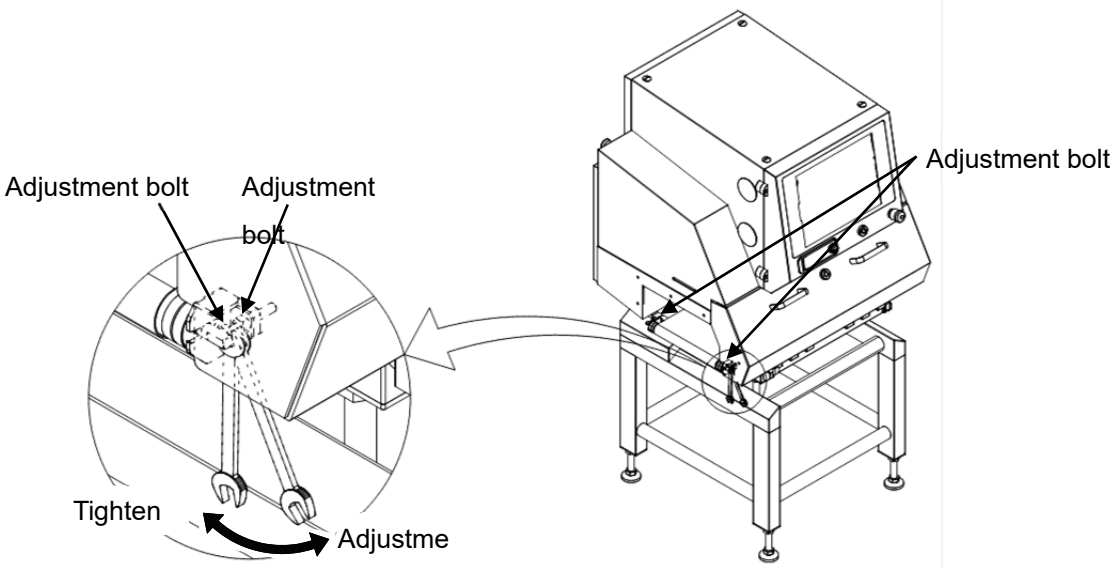
  If the carrying belt meanders toward the near side, tighten the adjusting bolt of the near side by half a turn, or loosen the adjusting bolt of the far side by half a turn.

  If the carrying belt meanders toward the far side, tighten the adjusting bolt of the far side by half a turn, or loosen the adjusting bolt of the near side by half a turn.

- When the flow direction is right to left

  If the carrying belt meanders toward the near side, tighten the adjusting bolt of the far side by half a turn, or loosen the adjusting bolt of the near side by half a turn.

  If the carrying belt meanders toward the far side, tighten the adjusting bolt of the near side by half a turn, or loosen the adjusting bolt of the far side by half a turn.



Be careful not to overly increase the tension of the carrying belt. If meandering is caused by tape wound around or attached to the roller or supporting plate, it may not be eliminated by the adjustment above. In this case, remove the object and perform cleaning.

> Removing and installing the conveyor unit rollers

Warning ⚠	Make sure the power switch is turned OFF before performing the operation.

Caution ⚠	When removing and installing the conveyor unit rollers, be extremely careful. Dropping may cause an injury or damage of the part.

Removing

1 Remove the conveyor cover.

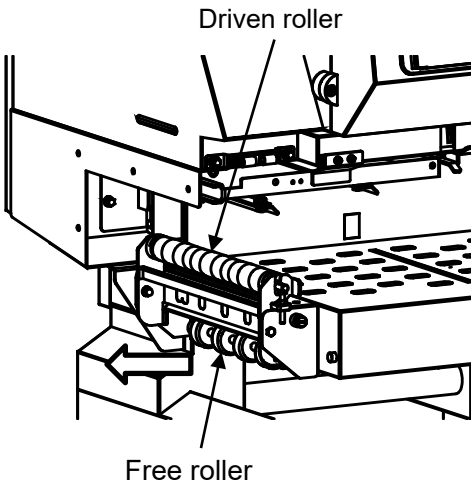
☞ P. 303 Removing and installing the conveyor cover

2 Remove the carrying belt.

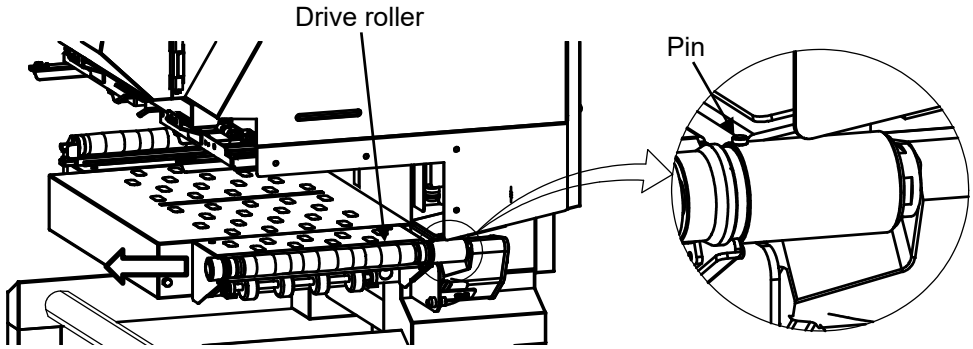
☞ P. 305 Removing and installing the carrying belt

3 Lift the driven roller up to remove it.

4 Pull the free roller in the direction of the arrow to remove it.



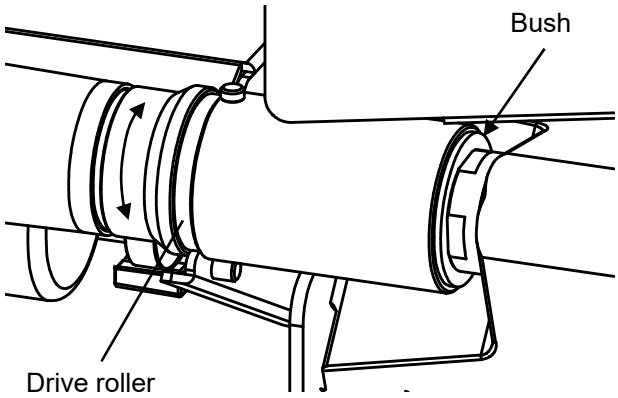
5 Rotate the drive roller by hand so that the pin of the drive roller is at the top. Pull the left side of the drive roller as shown in the figure in the direction of the arrow while tilting slightly upward. (The roller becomes stuck and cannot be removed if the pin is at the bottom.)



Installing

Caution ⚠	▪ If the installation position of the drive roller is not correct, products may not be conveyed normally such as the drive roller falling off. ▪ If the system is used without bushing, the motor or drive roller may be damaged due to increased vibration caused by backlash at the connection between the drive roller and motor.

1 Install the drive roller.
Check that the positioning bushing is installed at the connection between the drive roller and motor, and install it while aligning the teeth of the drive roller with the support of both sides of the drive unit.



2 Install the free roller, driven roller, and carrying belt to the original positions in the reverse order of removal.

> Removing and installing the driven unit and drive unit

Caution ⚠	When removing and installing the driven unit and drive unit, be extremely careful. Dropping may cause an injury or damage of the part.

1 Remove the conveyor cover.

☞ P. 303 Removing and installing the conveyor cover

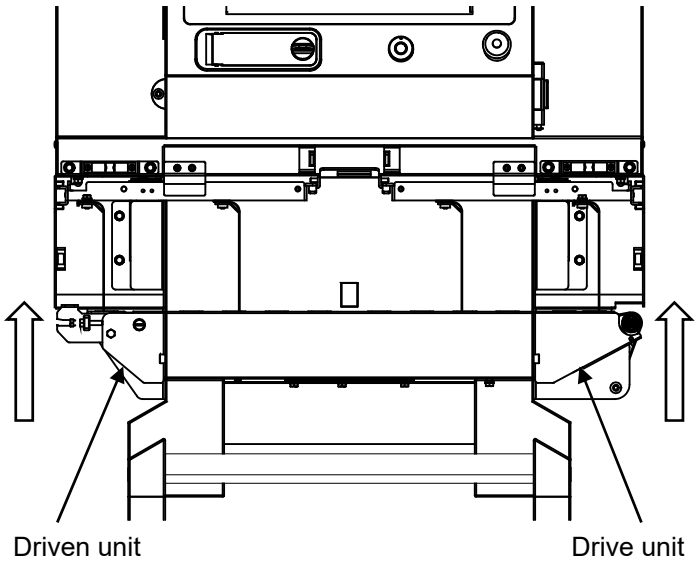
2 Remove the carrying belt of the conveyor.

☞ P. 305 Removing and installing the carrying belt

3 Remove all the rollers of the conveyor.

☞ P. 308 Removing and installing the conveyor unit rollers

4 Lift the driven unit and drive unit in the direction of the arrow to remove them. The conveyor cover, free roller and drive roller should be previously removed.



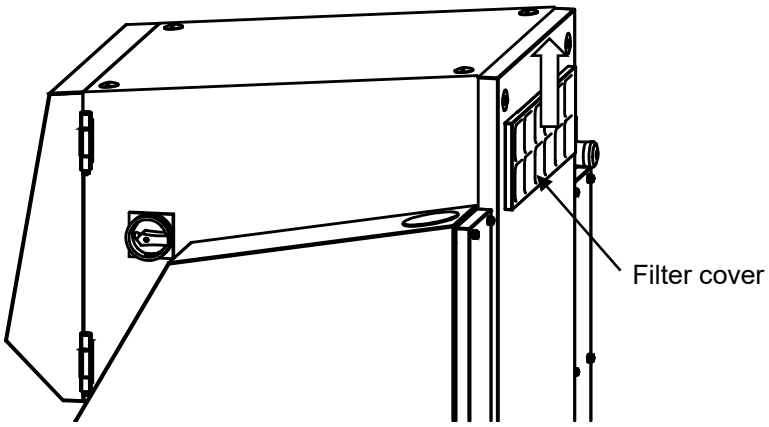
> Removing and installing the air filter

Warning	Make sure the power switch is turned OFF before performing the operation.

Caution	Remove the air filter before cleaning it.

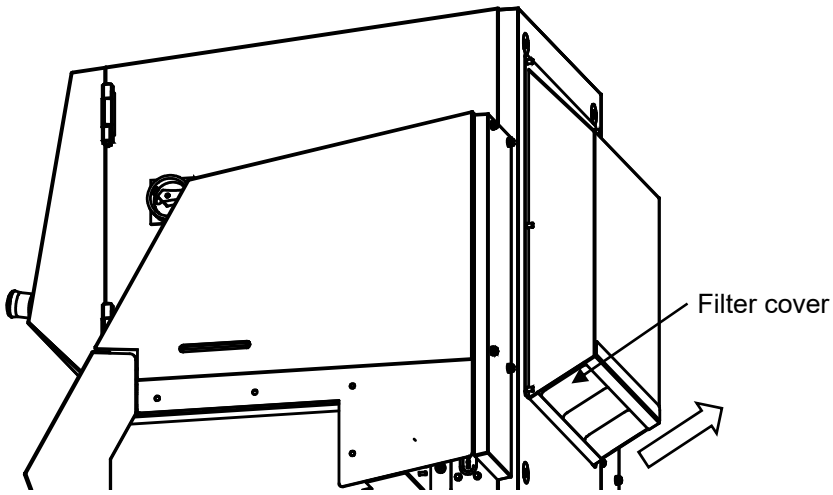
■ KXS75xxxWCLE

1 Push the filter cover up and remove it.



■ KXS75xxxVCLE

1 Pull the filter cover diagonally upward to draw it out.



2 After cleaning, install it in the original position.

> Removing the detachable curtain

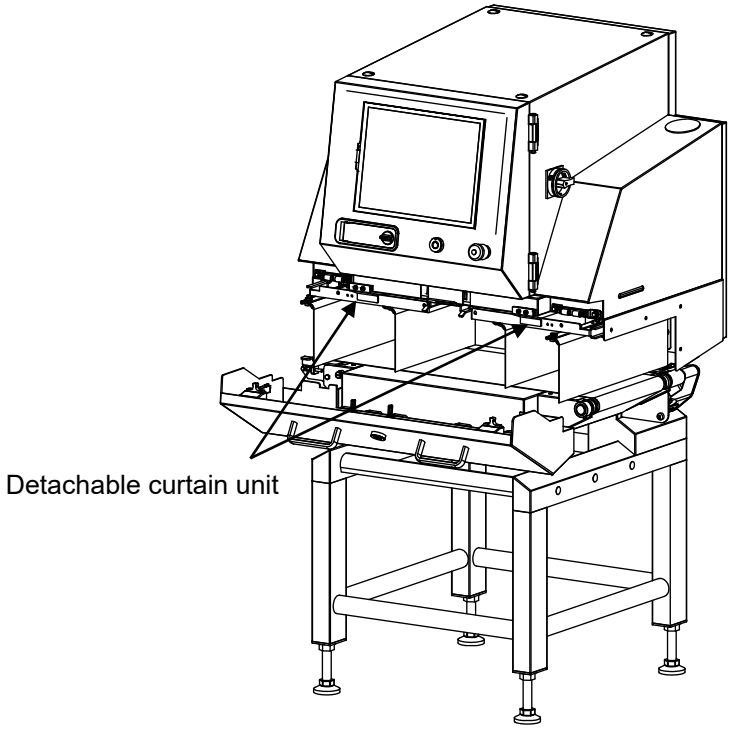
Remove it as required upon cleaning.

Warning ⚠	Make sure the power switch is turned OFF before performing the operation.

1 Open the conveyor cover.

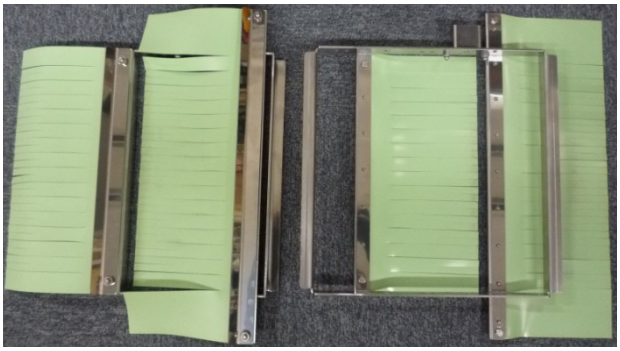
☞ P. 303 Removing and installing the conveyor cover

2 Pull the detachable curtain unit toward you and remove it.



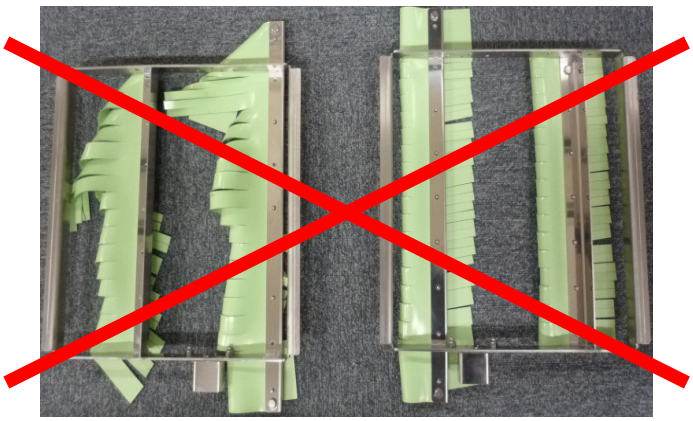
Do not leave the removed detachable curtain unit in the vertical position (Example 2) or curtain side down (Example 3) for an extended period of time. The curtain may become curled.

(Example 1) Correct



(Example 2) Wrong (vertical position)

(Example 3) Wrong (curtain side down)



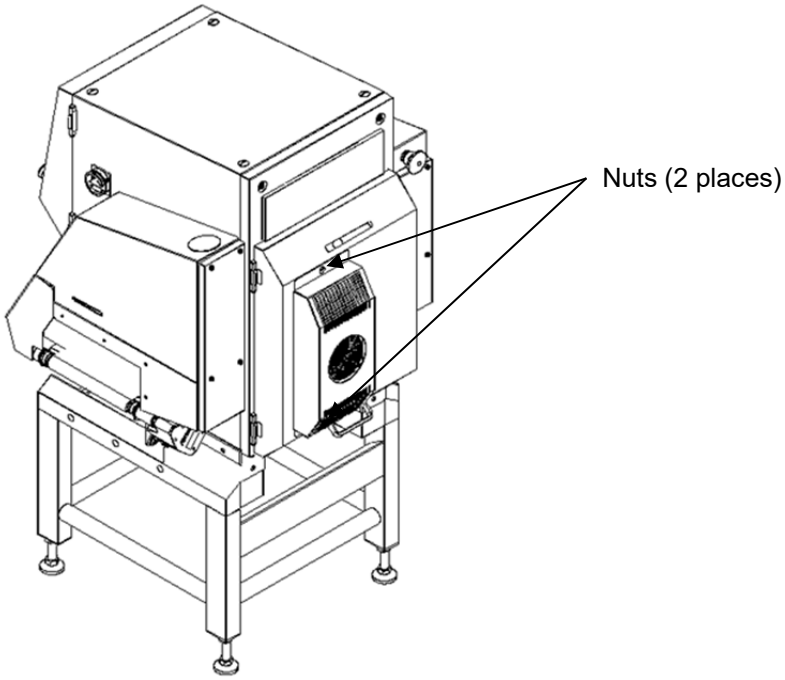
3 After cleaning, install it in the original position by checking the orientation so that the key of the interlock switch is on the far side.

Caution ⚠	If the removable curtain is not installed or it is installed incorrectly, an error message appears since X-ray may leak unexpectedly and a serious accident may occur. If the error message appears, recheck the curtain installation.

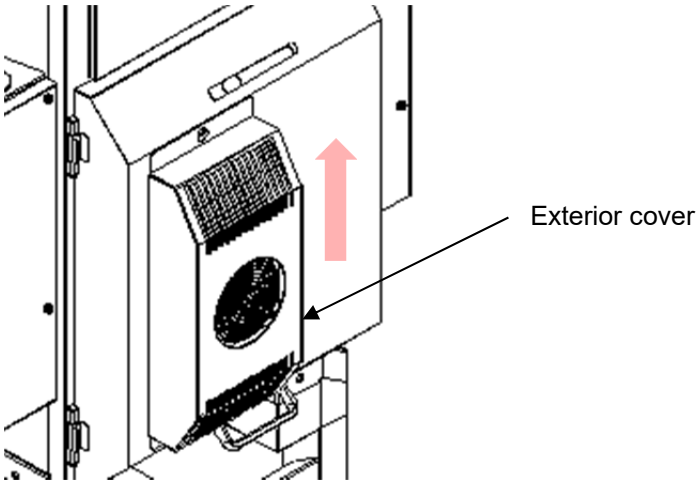
> Removing/installing the exterior cover

<When the optional rear-mount air conditioner is installed>

1 Loosen the nuts that fix the exterior cover (2 places).



2 Push up the exterior cover to remove it.



3 Install the exterior cover in the reverse order of the procedure.

(1) Before checking the failing part, check the following.

- Correct settings based on this document
- Poor contact of switches or connectors
- Disconnection or removal of cords or wiring
- Missing or loose screws or parts
- Damage, burn, abnormal heat, discoloration, deformation, or wear in a portion or parts of the system
- Rust or stain that may cause problems

(2) After inspection, install the connectors and parts removed for inspection in the original positions correctly.

(3) If the direct cause of the accident is a sudden change of environment, power abnormality such as lightning strike or abnormal voltage, dropping of the equipment, physical shock, or use different from normal use, total inspection is required.

(4) In the case of failure of the operation unit or control unit, forced operation as a conveyor can be performed.

☞ P. 344 Setting Forced Operation

For information on how to reset errors and alarms.

☞ P. 127 Handling Errors and Alarms

E:Error, A:Alarm

Error/ Alarm code	Error Display	Remedy
E001	An error occurred in XR-MAIN UNIT.	Reboot the power. If the error persists, contact support tech.
E010	The NG ratio has been exceeded.	The ratio of NG products is increasing. After checking the following, press the [//Reset] button in the upper right-hand part. - Check for problems with the device at the front stage. - Perform sensitivity correction.
E011	Product recognition photocell is being interrupted.	After checking the following, press the [//Reset] button in the upper right-hand part. [1] Check for obstacles between the product detection sensor and reflection plate. [2] Clean the belt surface and adjust [Product recognition level]. (When the product form is "Automatic recognition") [3] Set the photocell monitoring time to the corresponding time to the product by referring to [Other Settings ad Adjustments] in 2. Advanced Operations. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E023	Communication failed between XR-MAIN unit and XR-PC unit.	Turn the power supply on again. If this error occurs frequently, call Anritsu or its distributor for service
E053	The power of the equipment was turned off without resetting an error/alarm.	Reset the error [//]. You can check the detail of errors/alarms that occurred before the power shutdown of the equipment on the event historical trail screen.
E063	The CPU load of XR-MAIN UNIT is increasing.	The CPU load of XR-MAIN UNIT is increasing. Widen the product interval.
E082	The air pressure is decreasing.	Check the air pressure of the filter regulator. After checking the air pressure, turn the motor ON/OFF, and turn the main power on again. Contact the service engineer if it does not recover.

Error/ Alarm code	Error Display	Remedy
E158	Conveyor motor error on a main unit has been detected.	After checking the following, press the [//Reset] button in the upper right-hand part. [1] Check for overload applied to the main unit carrying motor. [2] Check for an error of the rejector. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E159	Rejector error or Rejector conveyor motor error was detected.	After checking the following, press the [//Reset] button in the upper right-hand part. [1] Check for overload applied to the rejector. [2] Check the connection to the motor driver. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E350	The rejection confirmation sensor is always blocked.	The rejection confirmation sensor is always blocked. After checking the following, press the [//Reset] button in the upper right-hand part. - Check for obstacles between the rejection confirmation sensor and reflection plate. - Adjust the optical axis. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E351	A rejection error has occurred on the PASS side.	An OK product has not passed the sensor on the PASS side yet. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.

Error/ Alarm code	Error Display	Remedy
E352	A rejection error has occurred on the PASS side.	An NG product has passed the sensor on the PASS side. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E353	A rejection error has occurred on the PASS side.	A product not evaluated yet has passed the sensor on the PASS side. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E354	A rejection error has occurred on the NG side.	An NG product has not passed the sensor on the NG side yet. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.

Error/ Alarm code	Error Display	Remedy
E355	A rejection error has occurred on the NG side.	An OK product has passed the sensor on the NG side. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E356	A rejection error has occurred on the NG side.	A product not evaluated yet has passed the sensor on the NG side. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E357	A rejection error has occurred.	A rejection error has occurred. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The optical axis of the rejection confirmation sensor installed to the rejector is misaligned. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E361	The emergency stop switch is being pressed.	After checking the following, press the [//Reset] button in the upper right-hand part. [1] Check the safety, and turn the emergency stop switch to the right to return it. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.

Error/ Alarm code	Error Display	Remedy
E701	Device internal temperature is rising.	After checking the following, press the [//Reset] button in the upper right-hand part. Check the surroundings, and eliminate the cause of the temperature increase. Cause of the temperature increase of the main unit [1] Clogged air filter [2] Surroundings of the air ventilation hole [3] Ambient temperature out of the specification range <When an optional rear-side air conditioner is installed> When an optional rear-side air conditioner is installed, check the following items. [4] Malfunction of the rear-side air conditioner fan [5] Dirty heat sink of the rear-side air conditioner fan If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E702 to E708	XR-MAIN UNIT internal voltage error has been detected.	Reboot the power. If the error repeatedly occur, contact support tech.
E709	XR-MAIN UNIT internal voltage error has been detected.	Reboot the power. If the error repeatedly occur, contact support tech.
E710	XR-MAIN UNIT internal voltage error has been detected.	Reboot the power. If the error repeatedly occur, contact support tech.

Error/ Alarm code	Error Display	Remedy
E713	Device internal temperature is rising.	After checking the following, press the [//Reset] button in the upper right-hand part. Check the surroundings, and eliminate the cause of the temperature increase. Cause of the temperature increase of the main unit [1] Clogged air filter [2] Surroundings of the air ventilation hole [3] Ambient temperature out of the specification range <When an optional rear-side air conditioner is installed> When an optional rear-side air conditioner is installed, check the following items. [4] Malfunction of the rear-side air conditioner fan [5] Dirty heat sink of the rear-side air conditioner fan If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E714 to E719	XR-I/O UNIT internal voltage error has been detected.	Reboot the power. If the error repeatedly occur, contact support tech.
E721	XR-I/O UNIT internal voltage error has been detected.	After checking the following, press the [//Reset] button in the upper right-hand part. [1] Check for overload applied to the main unit carrying motor. [2] Check the conveyor belt for forward or backward deviation due to belt misalignment when carrying products. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E722 E723	XR-I/O UNIT internal input voltage error has been detected.	Reboot the power. If the error repeatedly occur, contact support tech.
E725	Operation key is turned OFF.	Confirm the following and press reset button [//]. Turn operation key ON. If it does not restore, reboot the power. When the error persists, contact support tech.
E726 E727	Conveyor cover has been left open.	Conveyor cover is left open. Confirm the following and press reset button [//]. [1] Close the conveyor cover. If it does not restore, reboot the power. When the error persists, contact support tech.

Error/ Alarm code	Error Display	Remedy
E728	Front door has been left open.	Confirm the following and press reset button [//]. [1] Close the front door. If it does not restore, reboot the power. When the error persists, contact support tech.
E729	Back cover has been left open.	Confirm the following and press reset button [//]. [1] Close the back cover. If it does not restore, reboot the power. When the error persists, contact support tech.
E730	Hand insertion sensor on the right side of X-ray system is being interrupted.	Check the followings and press reset button [//]. [1] Ensure there is no object blocking the sensor axis. [2] Adjust sensor axis. If it does not restore the error, reboot the power. The error still persists, contact support tech.
E731	Hand insertion sensor on the left side of X-ray system is being interrupted.	Check the followings and press reset button [//]. [1] Ensure there is no object blocking the sensor axis. [2] Adjust sensor axis. If it does not restore the error, reboot the power. The error still persists, contact support tech.
E732	X-ray tank is not installed in proper position.	Contact support tech.
E734 E735	The buzzer of the signal tower is not connected.	Call Anritsu or its distributor for service.
E736	Expansion interlock switch 1 activated.	Confirm the following and press reset button [//]. [1] Close the extension interlock switch. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E737	The extension interlock switch 2 has operated.	After checking the following, press the [//Reset] button in the upper right-hand part. [1] Close the extension interlock switch. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.

Error/ Alarm code	Error Display	Remedy
E738	The extension interlock switch 3 has operated.	After checking the following, press the [//Reset] button in the upper right-hand part. [1]Close the extension interlock switch. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E739	The extension interlock switch 4 has operated.	After checking the following, press the [//Reset] button in the upper right-hand part. [1] Close the extension interlock switch. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E740	The extension interlock switch 5 has operated.	After checking the following, press the [//Reset] button in the upper right-hand part. [1] Close the extension interlock switch. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E741	The right side shield curtain is installed incorrectly.	Check the followings and press reset[//]. [1] Confirm installation of the right side shield curtain. If it does not restore the error, reboot the power. When the error persists, contact support tech.
E742	The left side shield curtain is installed incorrectly.	Check the followings and press reset [//]. [1] Confirm installation of the left side shield curtain. If it does not restore the error, reboot the power. When the error persists, contact support tech.
E743	Unable to confirm connection with XR-POWER UNIT.	Reboot the power. When the error repeatedly occurs, contact support tech.
E744	Unable to confirm response from XR-POWER UNIT.	Reboot the power. When the error repeatedly occurs, contact support tech.
E745	Communication error has been occurred between XR-MAIN UNIT and XR-POWER UNIT.	Reboot the power. When the error repeatedly occurs, contact support tech.

Error/ Alarm code	Error Display	Remedy
E746	Device internal temperature is rising.	After checking the following, press the [//Reset] button in the upper right-hand part. Check the surroundings, and eliminate the cause of the temperature increase. Cause of the temperature increase of the main unit [1] Clogged air filter [2] Surroundings of the air ventilation hole [3] Ambient temperature out of the specification range <When an optional rear-side air conditioner is installed> When an optional rear-side air conditioner is installed, check the following items. [4] Malfunction of the rear-side air conditioner fan [5] Dirty heat sink of the rear-side air conditioner fan If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E747	XR-POWER UNIT internal input voltage error has been detected.	After checking that none of the interlocks is activated, press the emergency stop switch, and turn it to the right to return it. Then, press the [//Reset] button in the upper right-hand part. If the system does not recover, turn off the power and turn it on again. If this error occurs frequently, call Anritsu or its distributor for service
E748	A failure in the XR-POWER UNIT input voltage has been detected.	Turn the power supply on again. If this error occurs frequently, call Anritsu or its distributor for service
E749	Incompatible XR-POWER UNIT is connected.	Reboot the power. When the error repeatedly occurs, contact support tech.
E750	A cooling fan for XR-POWER UNIT is OFF.	Reboot the power. When the error repeatedly occurs, contact support tech.
E751	XR-POWER UNIT internal voltage error has been detected.	Reboot the power. When the error repeatedly occurs, contact support tech.
E756	X-ray tank NO output detected	When the error repeatedly occurs, contact support tech. Conveyor mode is operable.
E757	Broken filament detected.	When the error repeatedly occurs, contact support tech. Conveyor mode is operable.

Error/ Alarm code	Error Display	Remedy
E758	X-ray tank deterioration has been detected.	If this error occurs frequently, call Anritsu or its distributor for service Operation in CONVEYOR MODE can be performed.
E759	Fluctuation of X-ray output is detected.	When the error repeatedly occurs, contact support tech. Conveyor mode is operable.
E760	System internal temperature is rising.	After checking the following, press the [//Reset] button in the upper right-hand part. Check the surroundings, and eliminate the cause of the temperature increase. Cause of the temperature increase of the main unit [1] Clogged air filter [2] Surroundings of the air ventilation hole [3] Ambient temperature out of the specification range <When an optional rear-side air conditioner is installed> When an optional rear-side air conditioner is installed, check the following items. [4] Malfunction of the rear-side air conditioner fan [5] Dirty heat sink of the rear-side air conditioner fan If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
E761	Incompatible X-ray tank is connected.	If it does not restore, reboot the power. When the error persists, contact support tech.
E766	There is communication error between XR-MAIN UNIT and X-ray Sensor.	If it does not restore, reboot the power. When the error persists, contact support tech.
E767	Unable to confirm a response from X-ray sensor.	If it does not restore, reboot the power. When the error persists, contact support tech.
E768	Incompatible X-ray sensor is being connected.	If it does not restore, reboot the power. When the error persists, contact support tech.
E769	An error has occurred with Image signal between XR-MAIN and X-ray sensor.	If it does not restore, reboot the power. When the error persists, contact support tech.

Error/ Alarm code	Error Display	Remedy
E770	Unable to confirm Image signal from X-ray sensor.	If it does not restore, reboot the power. When the error persists, contact support tech.
E777 to E779	XR-B/P UNIT internal voltage error has been detected.	If it does not restore, reboot the power. When the error persists, contact support tech.
E786	Incompatible type of XR-PC UNIT is connected.	Reboot the power. When the error persists, contact support tech.
E787	Software setting error is detected.	Check the following and press reset button [//]. [1] Undo the setting that was just been changed prior to the error occurrence. If it does not restore, reboot the power. When the error persists, contact support tech.
E788	A video signal is not being output from the PC unit.	Turn the power supply on again. This message appears after stylus adjustment, network settings, and time adjustment are complete. It also appears if power is not being supplied to the XR-PC board or if the XR-PC board is not connected to the XR-MAIN board.
E801	Failed to initiate the control unit.	XR-Main unit is in operation with incomplete status. Check connection with peripheral devices.
E811	Highly hazardous contamination has been detected.	Contaminants with much higher effect values or larger contaminants have been detected in contaminant detection. Remove all the remaining products from the conveyor.
E816	An error has occurred during an image transfer.	Reboot the power. If the error persists, contact support tech.
E818	Number of statistics are exceeding over a million.	Individual statistics count has reached at maximum capacity. Unable to keep any more individual statistics. Clear statistics.
E820	The software version does not correspond to the system.	Call Anritsu or its distributor for service.
E857	The signal tower lamp lighting up in red was not checked.	Call Anritsu or its distributor for service.
E858	The signal tower lamp lighting up in yellow was not checked.	Call Anritsu or its distributor for service.

Error/ Alarm code	Error Display	Remedy
E859	The signal tower lamp lighting up in green was not checked.	Call Anritsu or its distributor for service.
E865	A full product box has been detected.	A full product box has been detected. After checking the following, press the [//Reset] button in the upper right-hand part. - Remove the products from the box. - Adjust the optical axis.
E868	Opening of the product box has been detected.	Close the door of the product box and press the upper right [//Reset] button.
E876	X-ray Initialization has failed.	Reboot the power. If the error persists, contact support tech.
E877	Failed to start inspection.	Press the [//Reset] button in the upper right-hand part, and perform the operation again. If this error occurs frequently, call Anritsu or its distributor for service
E878	Failed to set up operation for sensitivity correction.	Perform sensitivity correction again. If this error occurs frequently, call Anritsu or its distributor for service
E879	Failed to initialize sensitivity correction data.	Try sensitivity correction again. If the error persists, contact support tech.
E880	Sensitivity correction has been failed.	Execute sensitivity correction again. If the error persists, contact support tech.
E881	Sensitivity correction has been failed.	Implement the following countermeasures. [1] Clean conveyor belt. [2] Re-enter product registration as a new product. If the error persists, contact support tech.
E882	Failed to collect X-ray Intensity data.	Reboot the power. If the error persists, contact support tech.
E883	Failed to cancel monitoring X-ray sensor.	Reboot the power. If the error persists, contact support tech.
E884	Failed to set up X-ray sensor operation.	Reboot the power. If the error persists, contact support tech.
E885	An error has been detected on X-ray sensor operation.	Reboot the power. If the error persists, contact support tech.

Error/ Alarm code	Error Display	Remedy
E886	The tube current during X-ray radiation is being lowered to less than 1/2 of the set value.	The tube current during X-ray radiation is being lowered less than the set value. Call Anritsu or its distributor for service. Operation in CONVEYOR MODE can be performed.
E887	The tube current during X-ray radiation is being lowered to less than 1/3 of the set value.	The tube current during X-ray radiation is being lowered less than the set value. Call Anritsu or its distributor for service. Operation in CONVEYOR MODE can be performed.
A001	Double product alarm is activated.	This alarm is issued if 5 or more products are fed once. Take the following countermeasures. [1] Feed the product at a sufficient interval. [2] Set the longer double interrupt mask distance.
A003	The controller backup battery is abnormal.	The controller backup battery is abnormal. The backup battery must be replaced if there is no recovery even by turning the power supply ON or OFF. Call Anritsu or its distributor for service. In case of emergency, the backup battery can be used by specifying the set values after pressing the error clear key. However, the set value disappears after a few hours when turning the power off. Use the battery without turning the power off.
A006	Statistics total count exceeded 1 million.	Statistics total count exceeded over 1 million. Unable to continue collecting data. Clear statistics.
A007	The NG ratio has been exceeded.	The ratio of NG products is increasing. After checking the following, press the [//Reset] button in the upper right-hand part. - Check for problems with the device at the front stage. - Perform sensitivity correction.
A012	Exceed the accumulable number of inspection result.	The evaluation result accumulated count that can be recorded has been exceeded. This alarm occurs when evaluation results of the products more than the specified number are accumulated until rejection starts after the product is evaluated. Widen the product interval.
A014	The XR-MAIN UNIT backup power battery voltage is being lowered.	Replace the battery. Although setting can be saved for several days after the alarm activated, do not turn the power off completely for just in case until replacing to a new backup battery.

Error/ Alarm code	Error Display	Remedy
A053	The capacity has been exceeded during evaluation.	The capacity has been exceeded during evaluation. This error occurs if a product exceeding the capacity is fed during T3. Widen the product interval.
A054	The capacity has been exceeded during rejection.	The capacity has been exceeded during rejection. This error occurs if a product exceeding the capacity is fed during T4. This error occurs if a product exceeding the capacity is fed during T7 when the rejection confirmation function (option) is used. Widen the product interval.
A061	The statistics were not calculated since the processing capacity is not appropriate.	The statistics were not processed since the processing capacity is not appropriate. Widen the product interval.
A062	The inspection result was not output since the processing capacity is not appropriate.	The inspection result was not output since the processing capacity is not appropriate. Widen the product interval.
A063	The CPU load of XR-MAIN UNIT is increasing.	The CPU load of XR-MAIN UNIT is increasing. If a high load is continuously applied, inspection may not be performed correctly. Widen the product interval.
A152	The printer recording paper has run out.	The printer recording paper has run out. Add recording paper.
A153	A printer error has been detected.	The printer is abnormal. Turn the main power off and turn it on again. If the system does not recover, contact the support of the supplier.
A154	Exceeded print buffer of the printer has been detected.	The print buffer of the printer has been exceeded. This error occurs if you try to print when the printing capacity is not appropriate, printing cannot be performed due to an error, etc. Widen the printing interval by widening the statistics batch, etc.

Error/ Alarm code	Error Display	Remedy
A155	A printer error has been detected.	An error in the temperature or voltage has occurred due to paper jam, or the recording paper has run out. Remove the jammed paper or add the recording paper. Turn the main power off and turn it on again. If the system does not recover, contact the support of the supplier.
A156	The printer is not connected.	Connection to the printer is abnormal. Check the connection to the printer. Turn the main power off and turn it on again. If the system does not recover, contact the support of the supplier.
A310	A serial communication alarm has been issued.	Communication of the serial input/output A and B is abnormal. Turn the main power off and turn it on again. If the system does not recover, contact the service engineer.
A350	The rejection confirmation sensor is always blocked.	The rejection confirmation is always blocked. After checking the following, press the [//Reset] button in the upper right-hand part. - Check for obstacles between the rejection confirmation sensor and reflection plate. - Adjust the optical axis. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
A351	A rejection error has occurred on the PASS side.	An OK product has not passed the sensor on the PASS side yet. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.

Error/ Alarm code	Error Display	Remedy
A352	A rejection error has occurred on the PASS side.	An NG product has passed the sensor on the PASS side. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
A353	A rejection error has occurred on the PASS side.	A product not evaluated yet has passed the sensor on the PASS side. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
A354	A rejection error has occurred on the NG side.	An NG product has not passed the sensor on the NG side yet. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
A355	A rejection error has occurred on the NG side.	An OK product has passed the sensor on the NG side. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.

Error/ Alarm code	Error Display	Remedy
A356	A rejection error has occurred on the NG side.	A product not evaluated yet has passed the sensor on the NG side. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
A357	A rejection error has occurred.	A rejection error has occurred. After checking the following, press the [//Reset] button in the upper right-hand part. - The rejection timing does not correspond to the carrying speed or product length. - The optical axis of the rejection confirmation sensor installed to the rejector is misaligned. - The connection cable connected to the rejector is disconnected or broken. If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.
A370	An error in the USB memory access has occurred.	Access to the USB memory has not been allowed due to a failure. Check that the USB memory is securely inserted or check for a failure in the USB memory. Turn the main power on again. If the system does not recover, contact the service engineer.
A430	Time synchronization with the SNTP server has failed.	Time synchronization with the SNTP server has failed. - Check the connection of the LAN cable and hub. - Check that the SNTP server power is on. - Check the network setting.

Error/ Alarm code	Error Display	Remedy
A620	We could not change the product from an external device.	We could not change the product from an external device. Terminate the following statuses and change the product. Equipment statuses in which you cannot change the product - In operation - In conveyor mode - Automatic setting - Correcting the sensitivity - Setting the area - Checking the operation
A706	Highly hazardous contamination has been detected.	Contaminants with much higher effect values or larger contaminants have been detected in contaminant detection.
A707	The main unit carrying motor speed is different from the set value.	The following causes can be considered: [1] Overload applied to the carrying system [2] Sliding of the belt and carrying roller [3] Failure in the motor coefficient setting
A708	Cooling fan is not working.	Without a cooling fan, System internal temperature may rise rapidly and affect proper operation. Stop the operation and reboot the power. When the error persists, contact support tech.
A711 A714	System internal temperature is rising.	After checking the following, press the [//Reset] button in the upper right-hand part. Check the surroundings, and eliminate the cause of the temperature increase. Cause of the temperature increase of the main unit [1] Clogged air filter [2] Surroundings of the air ventilation hole [3] Ambient temperature out of the specification range <When an optional rear-side air conditioner is installed> When an optional rear-side air conditioner is installed, check the following items. [4] Malfunction of the rear-side air conditioner fan [5] Dirty heat sink of the rear-side air conditioner fan If the system does not recover, turn off the power and turn it on again. If the system does not recover, contact the support of the supplier.

Error/ Alarm code	Error Display	Remedy
A724	An error in the X-ray warning lamp has been detected.	An error in the X-ray warning lamp has been detected. Call Anritsu or its distributor for service.
A812	Evaluation result could not be output before RJ start time.	After checking the following, press the [//Reset] button in the upper right-hand part. Eliminate the following causes. [1] Linked products were fed. An unexpectedly long product was fed. [2] The rejection delay time (T3) was set shorter. [3] The double interrupt mask distance was set longer. If the rejection cannot catch up, the rejector must be installed remotely from the main unit.
A813	Unable to output evaluation results. Excess products for the processing speed.	After checking the following, press the [//Reset] button in the upper right-hand part. Eliminate the following causes. [1] Products were fed continuously at a shorter interval. [2] The double interrupt mask distance was set shorter.
A814	The product detection sensor has not detected the products correctly.	The product detection sensor has not detected the products correctly. - Set a longer double interrupt mask distance. - If the photocell cannot detect the products correctly, set the product recognition method to auto recognition. - If the product recognition method is set to auto recognition, adjust the product recognition level.
A865	A full product box has been detected.	A full product box has been detected. After checking the following, press the [//Reset] button in the upper right-hand part. - Remove the products from the box. - Adjust the optical axis.
A866	Recording of the history information has failed.	The information to be recorded as the history has lacked. If this condition is kept, the subsequent information may not be recorded as the history. Stop the operation, and reboot the device. If this error occurs frequently even after turning the power off and on, call Anritsu or its distributor for service
A868	Opening of the product box has been detected.	Close the door of the product box and press the upper right [//Reset] button.

Error/ Alarm code	Error Display	Remedy
A932	The network communication has been cut off.	The network communication has been cut off. - Check whether the network cable or hub is connected. - Check that the monitoring software is activated. - Check that the PC where the monitoring software is installed is activated.
A933	The connection to the output folder has been cut off.	The connection to the output folder has been cut off since images cannot be saved in the output folder. Check the condition of the connected PC.
A935	The LAN cable is not correctly connected.	The LAN cable is not connected or is connected to an invalid LAN port. Connect the LAN cable if it is not connected. Insert the LAN cable into another LAN port if it is connected. Connect the LAN cable, start operation and check if the network is available.
A936	The network setting of OS is not correct.	The network setting is not correctly reflected on OS. Set network parameters again in the following steps. [1] Connect the LAN cable if it is not connected. [2] Select Menu, Maintenance/installation, Setting connection with external devices and Network connection. Check the following menu and enter values of parameters displayed in red. [3] Press the return button to shut down the equipment. Restart the equipment after shutdown.
A937	The IP address is a duplication with that of another device.	The IP address is a duplication with that of another network connection device. Select Menu, Maintenance/installation, Setting connection with external devices and Network connection. Open the network common setting screen and set a unique IP address.

■ Changing Backup Battery

(Call a service engineer to change the battery.)

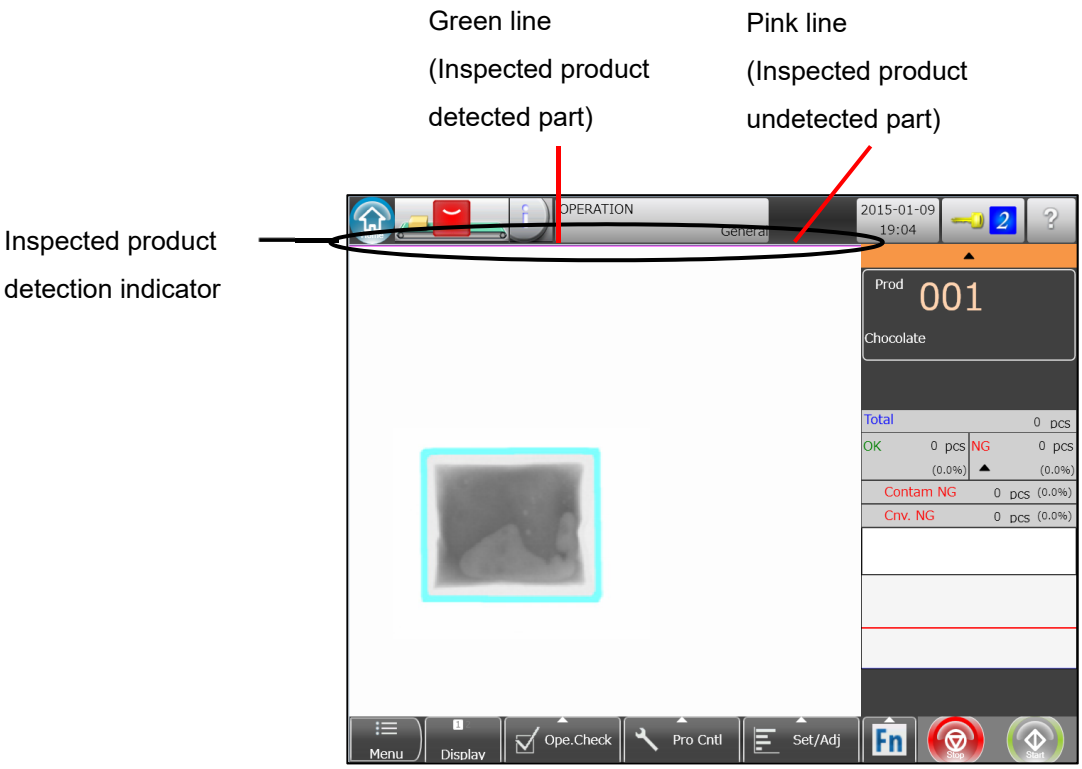
Warning ⚠	The backup battery must be changed by the service engineer. Operates MUST NOT change the backup battery due to the risk of receiving an electric shock. The power for memory backup is supplied by a Poly-carbon-mono-fluoride Lithium Battery. This battery should only be replaced by a battery of the same type; however, since replacement can only be made by Anritsu Infivis, contact the nearest Anritsu Infivis representative when replacement is required. Do not dispose the battery in a fire. It will explode.

The life of the backup battery is about 5 years.

When the Memory battery discharged message is displayed, the backup battery must be changed. In this case, DO NOT switch OFF the power to the X-ray Inspection System until the battery is changed; otherwise the settings may be lost. Even if a battery error is displayed, work can continue normally until the power is switched off. When the power is switched off, operation cannot be started unless setting for each product are made.

■ Adjusting Photocell

The photocell and sensor are adjusted to the optimal position at factory shipment. (When an inspected product is fed through during operation, if a green line is displayed on the inspected product detection indicator at the top of the X-ray image display area, it indicates that the photocell is detecting the product.)



Use the following procedure when adjusting the optical axis to match the inspected products.

Caution ⚠	To prevent electrical malfunctions, do not handle with wet hands.

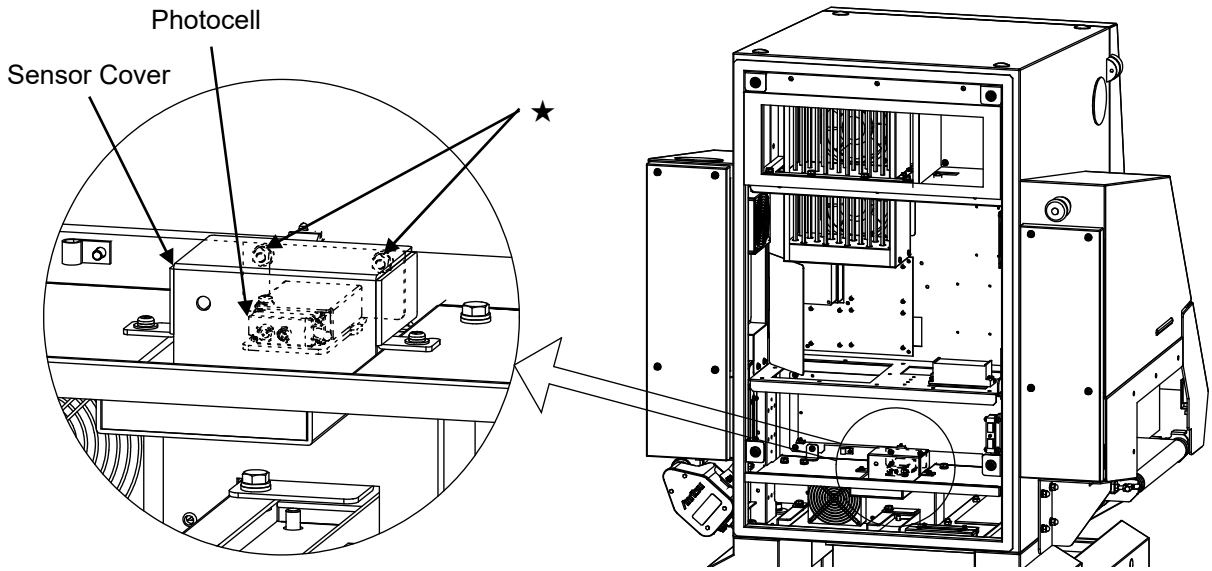
Caution ⚠	When removing and installing the back cover, be extremely careful. Dropping may cause an injury or damage of the part.

1 Remove the back cover.

2 Remove the sensor cover using a Phillips screwdriver.

3 Make sure that the conveyor cover is closed.

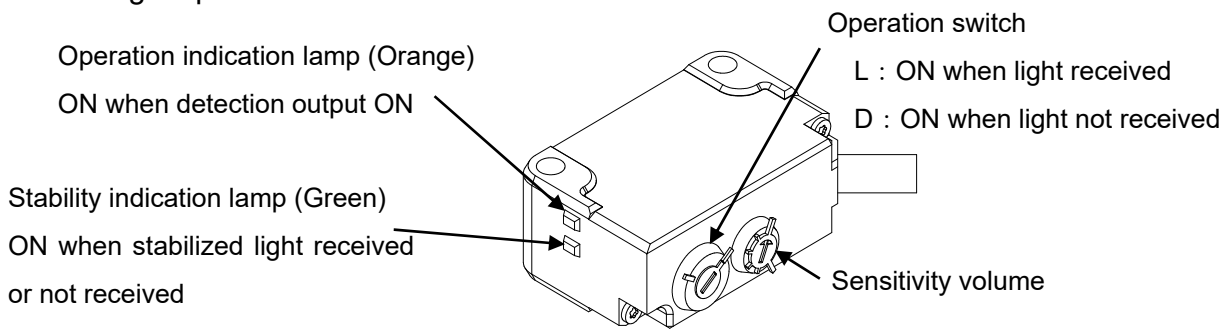
4 Check that both the operation indication lamp (orange) and stability indication lamp (green) illuminate when there is no product.
If not, loosen the two nuts indicated by the ★ mark with a spanner of 7mm width across flats (for M4) and adjust the photocell vertically until both of the indication lamps illuminate.
When the product blocks the optical axis stably, the operation indication lamp (orange) goes off and the stability indication lamp (green) illuminates.



5 After adjustment, install the sensor cover and back cover in the reverse order.

■ Adjusting the sensitivity volume when required

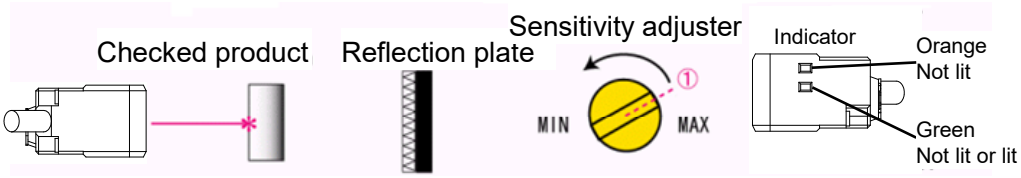
When the sensitivity volume needs to be adjusted for the product, adjust it according to the following steps.



The operation mode switch is set to "ON when light received". Do not touch it.

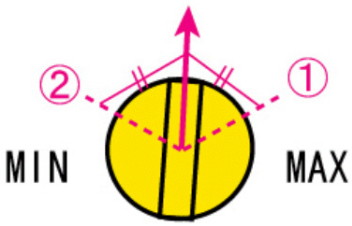
1 Place a product between the photocell and reflector (where it blocks the optical axis). Turn the volume counterclockwise from the MAX position, and stop where the output indication lamp (orange) goes off. (Call this position <1>.)

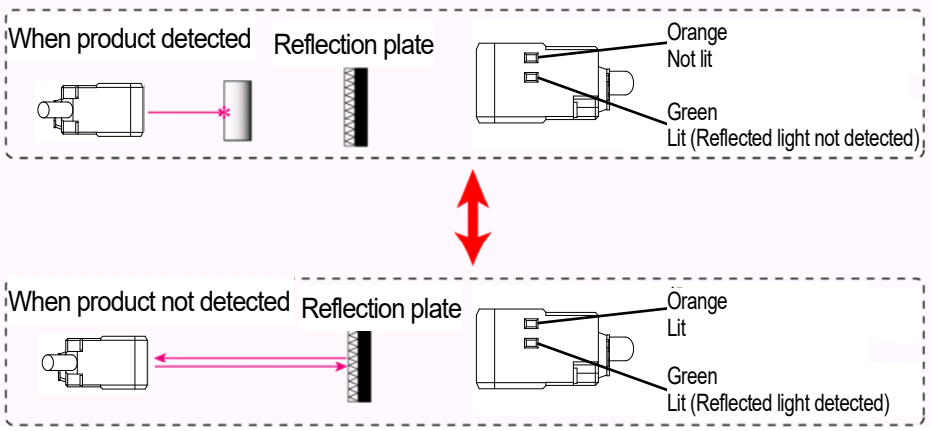
If the output indication lamp (orange) does not illuminate at the MAX position, the MAX position is <1>.



2 Without any product, turn the volume clockwise from the MIN position, and stop where the output indication lamp (orange) illuminates. (Call this position <2>.)

3 Set the volume position at the center between <1> and <2>. Adjustment is now complete.

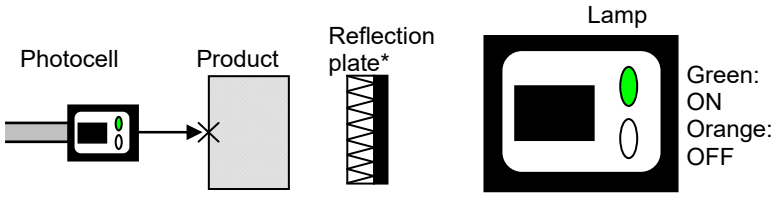
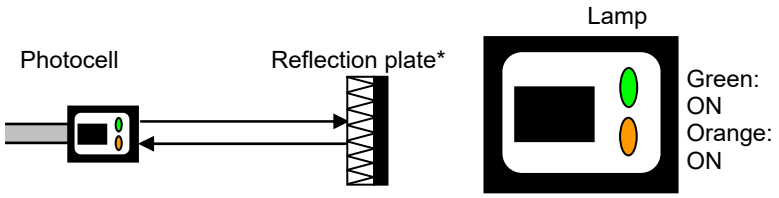


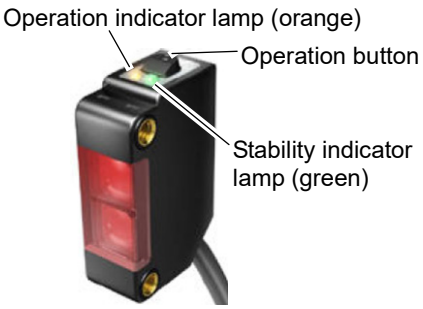


■ How to adjust the photocell sensitivity by pressing the button

The photocell does not need to be adjusted because it is adjusted to the appropriate position when shipped.

Its response when a product is detected and when it is not detected are as follows:

Detection state	Photocell state
Detection (the product is blocking optical axis) 	
No detection (no product exists) 	



*: Install the reflection plate and photocell parallel to each other.

- To perform fine-tuning according to the characteristics of a product, perform the "Advanced Adjustments".

☞ P. 343 Advanced Adjustments

- If the stability indicator lamp (green) is off, perform the "Adjustments When the Photocell Does Not Operate".

☞ P. 342 Adjustments When the Photocell Does Not Operate

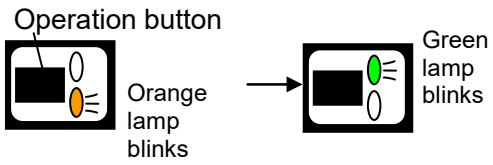
- If the operation indicator lamp (orange) is off while there are no products on the conveyor, align the phototransmitter and reflection plate so that they are parallel to each other.
- If both the stability indicator lamp (green) and operation indicator lamp (orange) are off while there are no product on the conveyor, the photocell may be defective, or the photocell cable connector may be disconnected. Contact Anritsu Infivis.

■ Adjustments When the Photocell Does Not Operate

1 Initialize the photocell.

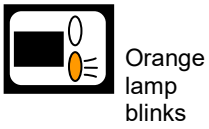
Press the operation button, and hold it until the stability indicator lamp (green) starts to blink.

⇒ The settings have been initialized.



2 Set the output state of the signal.

Press the operation button 5 times; the orange operation indicator lamp will start blinking.

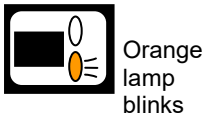


Photocell state	Setting
Orange lamp blinks	ON upon entrance of light
Green lamp blinks	ON upon blocking of light

Press the operation button 5 times to toggle the setting.

3 Adjust the sensitivity.

(1) Press the operation button, and hold it until the operation indicator lamp (orange) starts to blink.



(2) Press the operation button once.

⇒ After the operation indicator lamp (orange) and stability indicator lamp (green) turn off, the stability indicator lamp (green) and operation indicator lamp (orange) turns on.

4 Check the photocell operation.

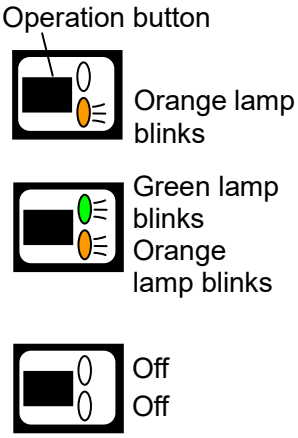
Make sure that the orange operation indicator lamp turns off when a product blocks the optical axis.

Confirm that the photocell operates correctly when the product is at the front, center, and back of the conveyor.

■ Advanced Adjustments

For shiny or highly transparent products, or when detection is unstable, make adjustments based on the characteristics of the products being measured.

1 Perform the settings.



(1) Press the operation button, and hold it until the operation indicator lamp (orange) starts to blink.

(2) Press the operation button, and hold it until both the operation indicator lamp (orange) and stability indicator lamp (green) start to blink.

(3) Block the photocell with the products, and press the operation button.

⇒ The operation indicator lamp (orange) and stability indicator lamp (green) turn off.

2 Check the photocell operation.

Make sure that the operation indicator lamp (orange) turns off when a product blocks the optical axis.

Confirm that the photocell operates correctly when the product is at the front, center, and back of the conveyor.

If the operation indicator lamp (orange) is blinking after the adjustment, perform the adjustment again as the detection is still unstable. If the situation cannot be improved by the adjustment, use of an area sensor or transparent body sensor (optional) is recommended. Contact Anritsu Infivis.

■ Using as an emergency carrying conveyor

Only the conveyor unit of X-ray Inspection System main unit can be operated by following the steps below.

Caution ⚠	Forced operation must be performed by a maintenance engineer.

Warning ⚠	Do not perform forced operation unless absolutely necessary until a repair is completed in the case of failure of the operation unit, etc. During forced operation, normal run/stop operations are disabled, and run/stop operations will be initiated by the power switch. ▪ The conveyor unit starts operating as soon as the power is turned on. ▪ The conveyor unit stops when the emergency stop switch is pressed. ▪ The conveyor unit starts operating as soon as the emergency stop switch is released.

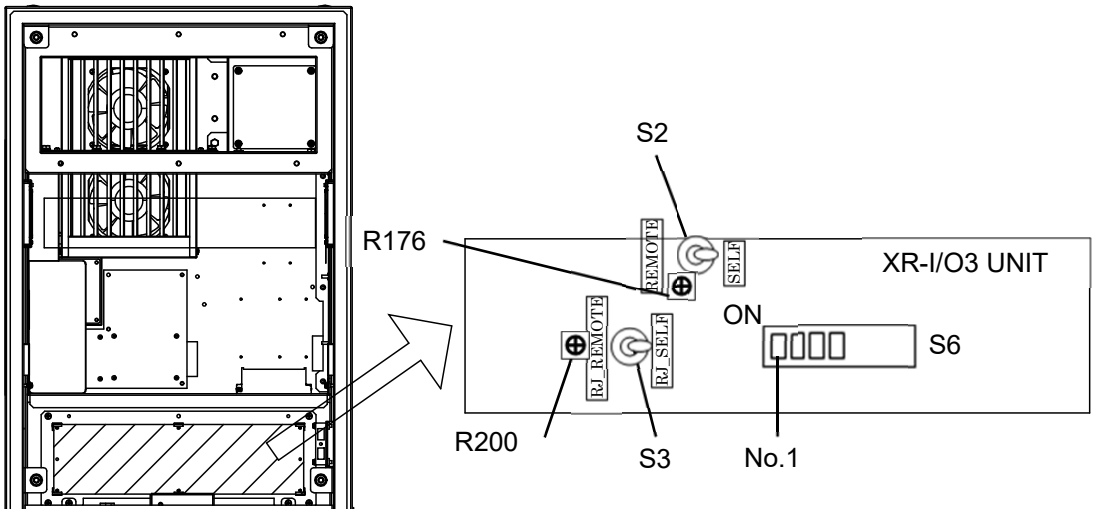
Caution ⚠	Do not leave the system while forced operation is in active. If you must leave the system, lock the power switch to the OFF position. This prevents the power switch from being used without recognizing the setting. When the power switch is set to the OFF position, there is a hole for locking the power switch. Use a commercially available padlock to lock the switch.

1 Turn off the power switch.

2 Remove the back cover.

Caution ⚠	When removing and installing the back cover, be extremely careful. Dropping may cause an injury or damage of the part.

3 Turn the toggle switch S2 of the printed circuit board XR-I/O3 to SELF, and turn S3 to RJ_SELF. Turn the volumes R176 “MT-SPD” and R200 “RJ-SPD” fully counterclockwise. (To release forced operation, set S2 to REMOTE and S3 to RJ_REMOTE.)



4 Set the conveyor rotation direction with S6 dip switch No.1.

The selection of the rotation direction is effective only for the conveyor unit of the main unit.

S6-No.1	Rotation direction
ON	Left to right
OFF (initial value)	Right to left

5 Turn on the power switch.

6 Turn the volume R176 clockwise. The main unit motor rotates and the main unit conveyor starts moving. Turn R176 to adjust the carrying belt speed. Similarly, turn the volume R200 clockwise. The rejector motor rotates and the rejector conveyor starts moving. Turn R200 to adjust the carrying belt speed.

7 Install the back cover in the original position.

■ Releasing the circuit protector operation

When overcurrent flows to the rejection output contact, the circuit protector for overcurrent protection trips and an error is displayed. Recover the circuit protector in the following steps.

Warning ⚠	Make sure the power switch is turned OFF before performing the operation.

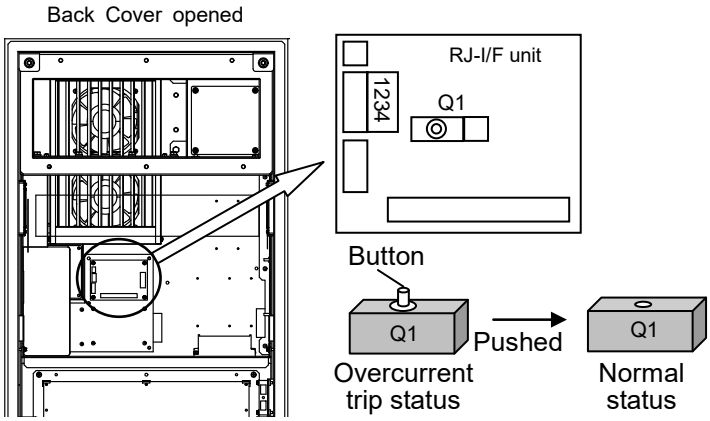
Caution ⚠	When removing and installing the back cover, be extremely careful. Dropping may cause an injury or damage of the part.

1 Remove the back cover.

2 Check the connection of the rejector, and check that the load of the rejection output contact is within the rated load.

☞ P. 362 RJ Output Specification

3 Press the button of the circuit protector Q1 on the RJ-I/F unit.
⇒ The circuit protector returns from the trip operation state.



4 Install the back cover.

5 Turn on the power switch.

6 Feed an OK item and NG item to check the rejection operation.
If rejection is not correct or rejection operation occurs even if rejection output is OFF, contact Anritsu.

Memo

5 Appendix

Use the Product number to place an order Product number.

■ KXS75xxAxCLE X-ray Inspection System Spare Part, Maintenance Parts Table

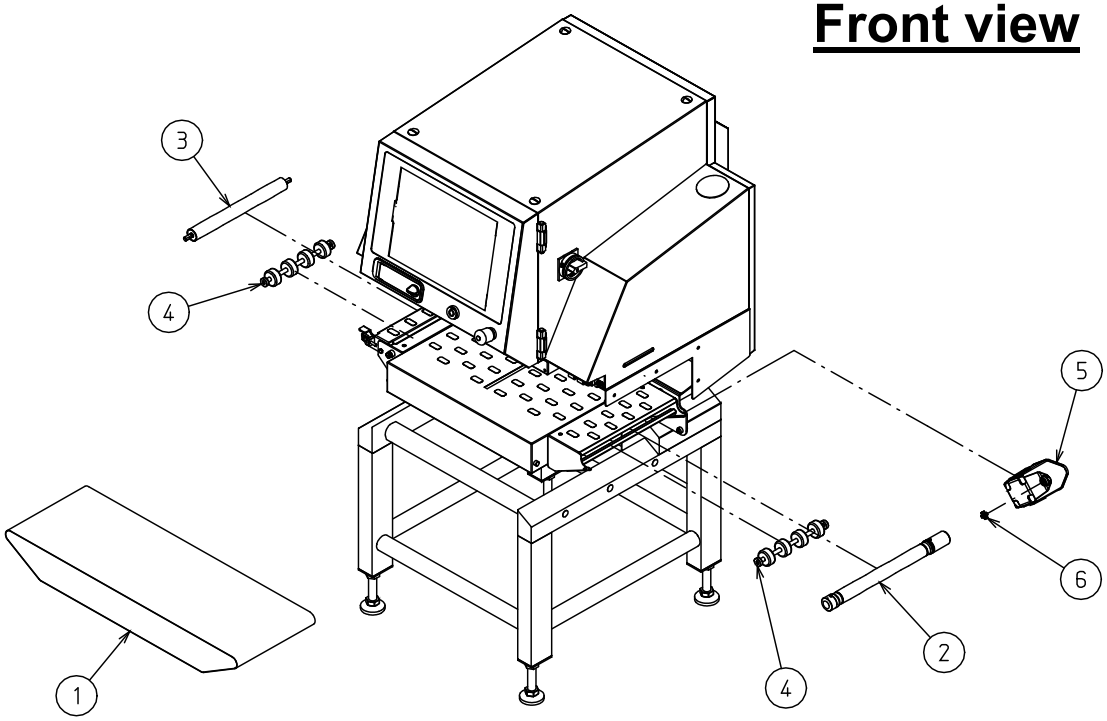
Parts No. with shade: Common parts for KD74 series

C: Consumables, S: Spare parts

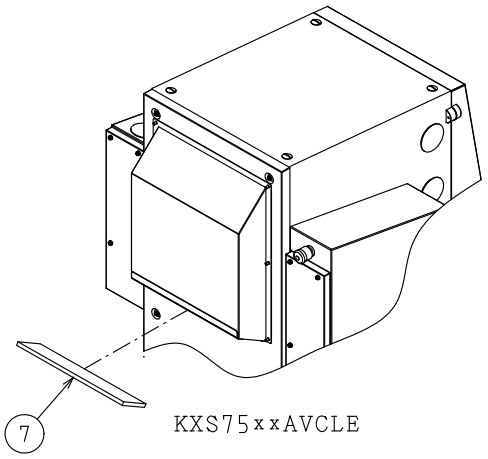
No.		Parts Name	Order No				Remark
			KXS7522AWCLE	KXS7522AVCLE	KXS7534AWCLE	KXS7534AVCLE	
1	C	CARRYING BELT*	84G175292G		84G175292J		Standard part
			84G175801		84G175801C		(Optional) High grip belt (green)
			84G182893		84G182893C		(Optional) High grip belt (white)
			84G182788		84G182788C		(Optional) Silicon belt
			84G190678G		84G190678J		(Optional) PTFE belt
			84G175945		84G175945C		(Optional) Belt for chicken meat
2	S	DRIVE ROLLER	839H184109		839H184109B		Standard part
			839H184109E		839H184109F		(Optional) Rubber lining drive roller
3	S	DRIVEN ROLLER	839H184111		839H184111B		
4	S	TENSION ROLLER	839H167675		839H167675B		
5	S	GEARED MOTOR	83G901433B		83G901433C		Standard part
			83G901433D		83G901433D		(Optional) High torque motor
6	S	TORQUE DISC	84Y170100B				
7	C	FILTER	84H265403B	84H265403	84H265403B	84H265403	
8	S	OPERATION KEY	84G265345				
9	S	SCREW DRIVER	84G184817				

* The product No. of the conveyor belt is provided for the standard machine length (machine length: 800 mm). When the machine length is changed, please contact the dealer where you purchased your product.

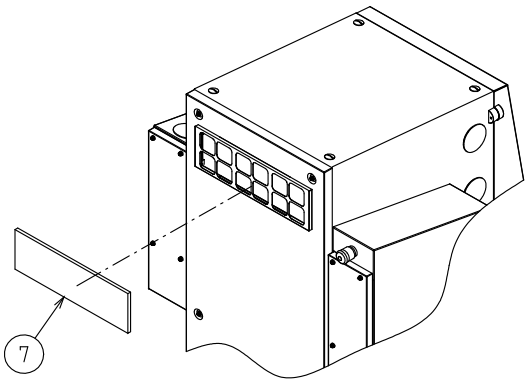
Front view



Rear view



KXS75xxAVCLE



KXS75xxAWCLE

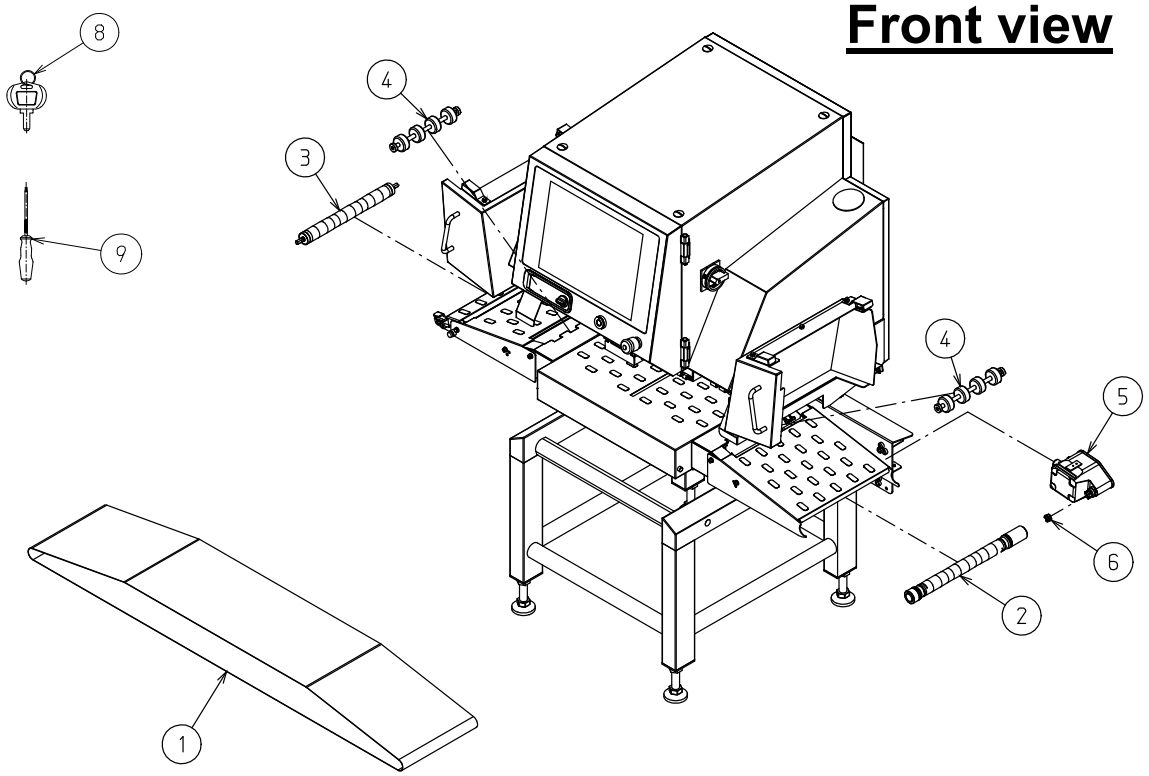
■ KXS75xxCxCLE X-ray Inspection System Spare Part, Maintenance Parts Table

Parts No. with shade: Common parts for KD74 series

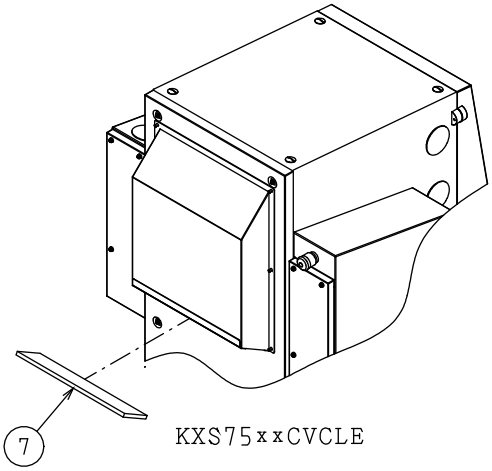
C: Consumables, S: Spare parts

No.		Parts Name	Order No				Remark
			KXS7522CWCLE	KXS7522CVCLE	KXS7534CWCLE	KXS7534CVCLE	
1	C	CARRYING BELT	84G175292E		84G175292F		Standard part
			84G175801E		84G175801F		(Optional) High grip belt (green)
			84G182893E		84G182893F		(Optional) High grip belt (white)
			84G182788E		84G182788F		(Optional) Silicon belt
			84G190678E		84G190678F		(Optional) PTFE belt
			84G175945E		84G175945F		(Optional) Belt for chicken meat
2	S	DRIVE ROLLER	839H184109		839H184109B		Standard part
			839H184109E		839H184109F		(Optional) Rubber lining drive roller
3	S	DRIVEN ROLLER	839H184111		839H184111B		
4	S	TENSION ROLLER	839H167675		839H167675B		
5	S	GEARED MOTOR	83G901433B		83G901433C		Standard part
			83G901433D		83G901433D		(Optional) High torque motor
6	S	TORQUE DISC	84Y170100B				
7	C	FILTER	84H265403B	84H265403	84H265403B	84H265403	
8	S	OPERATION KEY	84G265345				
9	S	SCREW DRIVER	84G184817				

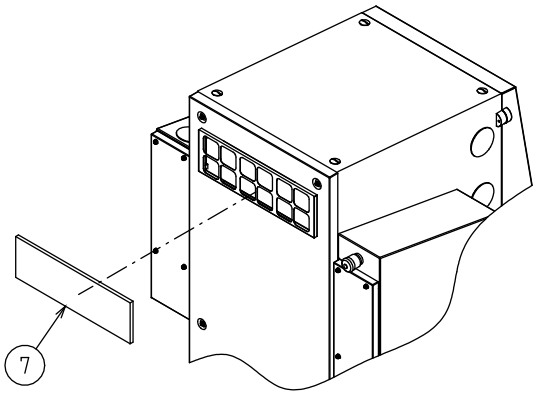
Front view



Rear view



KXS75xxCVCLE



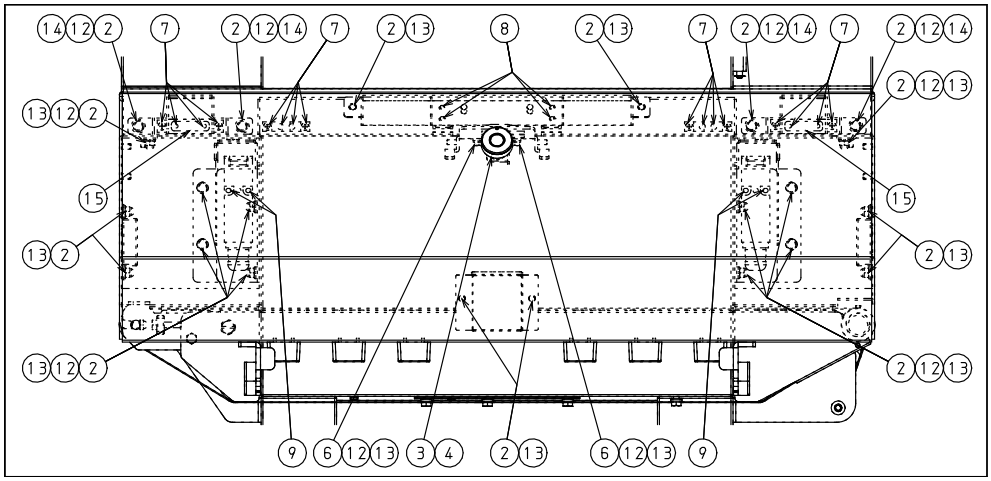
KXS75xxCWCLE

■ KXS7522AxCLE

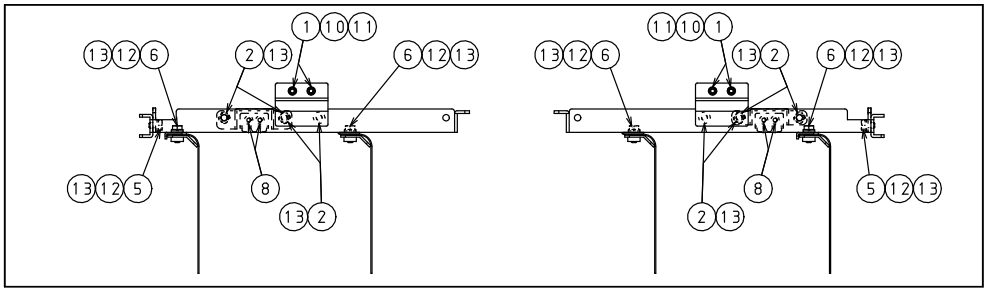
No.	Parts Name	QTY	Model Name	Remarks
1	Cap Type U Nuts (M4)	4	84G900471F	
2	Cap Type U Nuts (M6)	34	84G900471B	
3	M7 NUTS	1	C-89-12	
4	M19 NUTS	1	C-89-12	
5	6HS10SU	4	Z4B300014	
6	6HS14SU	10	Z4B300014	
7	4FPS10SU	16	Z4B300002	
8	4NPS10SU+SW	8	Z4B300006	
9	4NPS30SU	4	Z4B300001	
10	4SW SU	4	Z4B300020	
11	4WB SU	4	Z4B300021	
12	6SW SU	34	Z4B300020	
13	6WB SU	46	Z4B300021	
14	Bush	4	84H170020	
15	Nut plate	2	84H248294	

Note: U-nuts are used for all fastening screws above and the locking effect of U-nuts prevents screws, etc. from loosening and dropping.

Cabinet conveyor cover part



Detachable curtain part

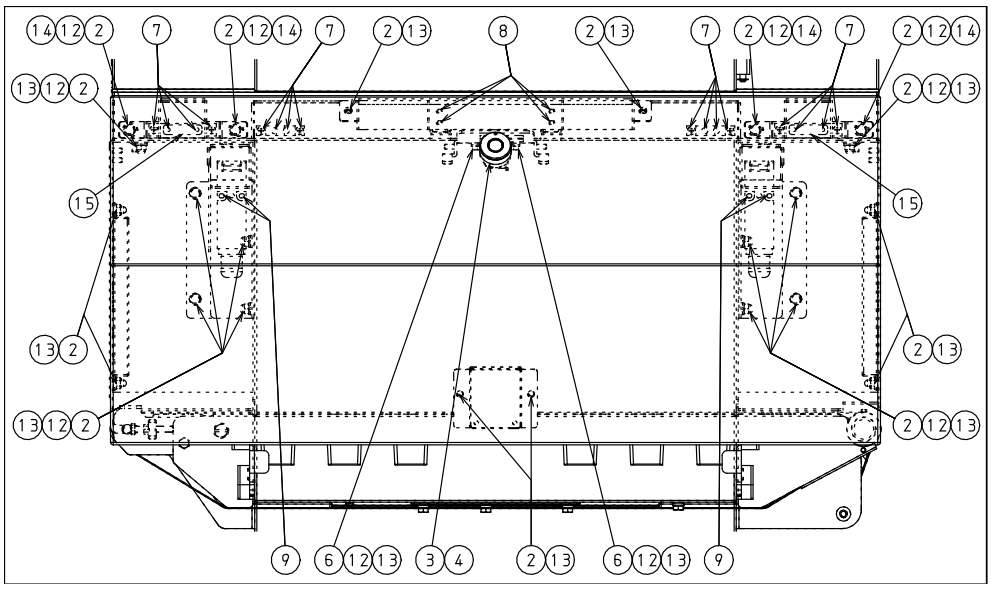


■ KXS7534AxCLE

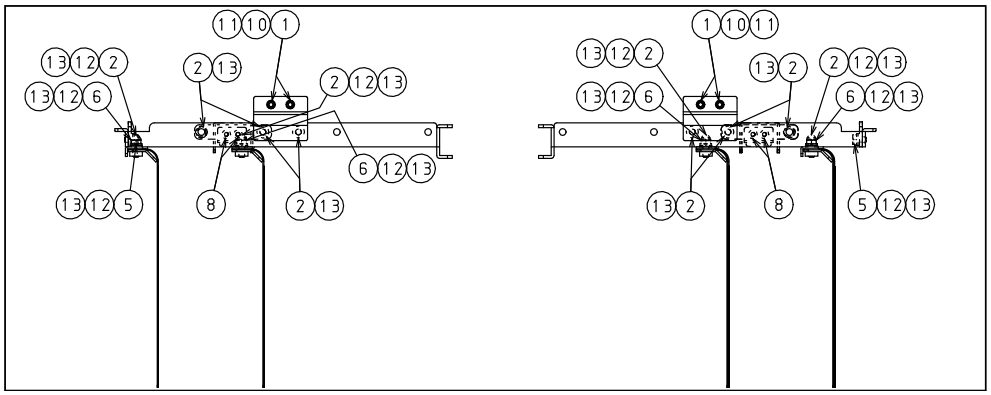
No.	Parts Name	QTY	Model Name	Remarks
1	Cap Type U Nuts (M4)	4	84G900471F	
2	Cap Type U Nuts (M6)	38	84G900471B	
3	M7 NUTS	1	C-89-12	
4	M19 NUTS	1	C-89-12	
5	6HS10SU	4	Z4B300014	
6	6HS14SU	10	Z4B300014	
7	4FPS10SU	16	Z4B300002	
8	4NPS10SU+SW	8	Z4B300006	
9	4NPS30SU	4	Z4B300001	
10	4SW SU	4	Z4B300020	
11	4WB SU	4	Z4B300021	
12	6SW SU	38	Z4B300020	
13	6WB SU	50	Z4B300021	
14	Bush	4	84H170020	
15	Nut plate	2	84H248294	

Note: U-nuts are used for all fastening screws above and the locking effect of U-nuts prevents screws, etc. from loosening and dropping.

Cabinet conveyor cover part



Detachable curtain part

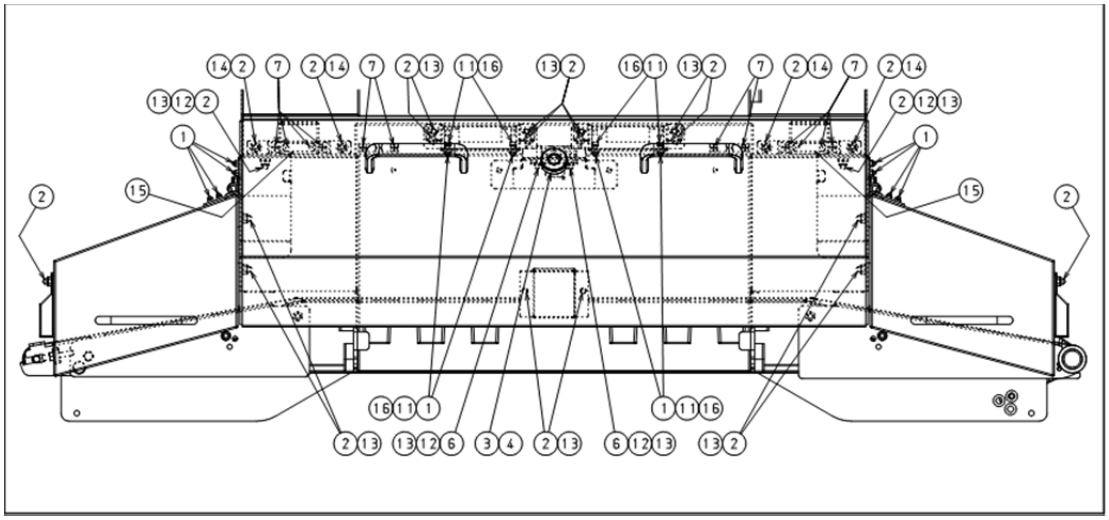


■ KXS7522CxCLE

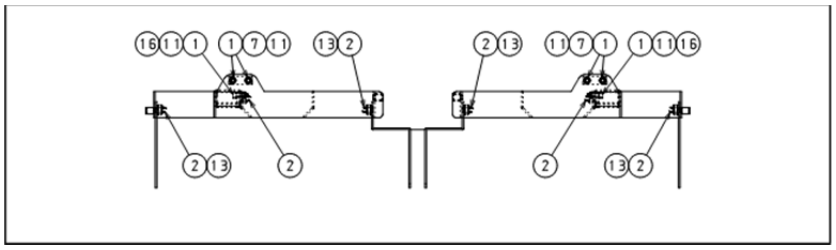
No.	Parts Name	QTY	Model Name	Remarks
1	Cap Type U Nuts (M4)	44	84G900471F	
2	Cap Type U Nuts (M6)	44	84G900471B	
3	M7 NUTS	1	C-89-12	
4	M19 NUTS	1	C-89-12	
6	6HS14SU	2	Z4B300014	
7	4FPS10SU	16	Z4B300002	
11	4WB SU	16	Z4B300021	
12	6SW SU	6	Z4B300020	
13	6WB SU	32	Z4B300021	
14	Bush	4	84H170020	
15	Nut plate	2	84H248294	
16	4HSB12SU	12	Z4B300015	

Note: U-nuts are used for all fastening screws above and the locking effect of U-nuts prevents screws, etc. from loosening and dropping.

Cabinet conveyor cover part



Detachable curtain part

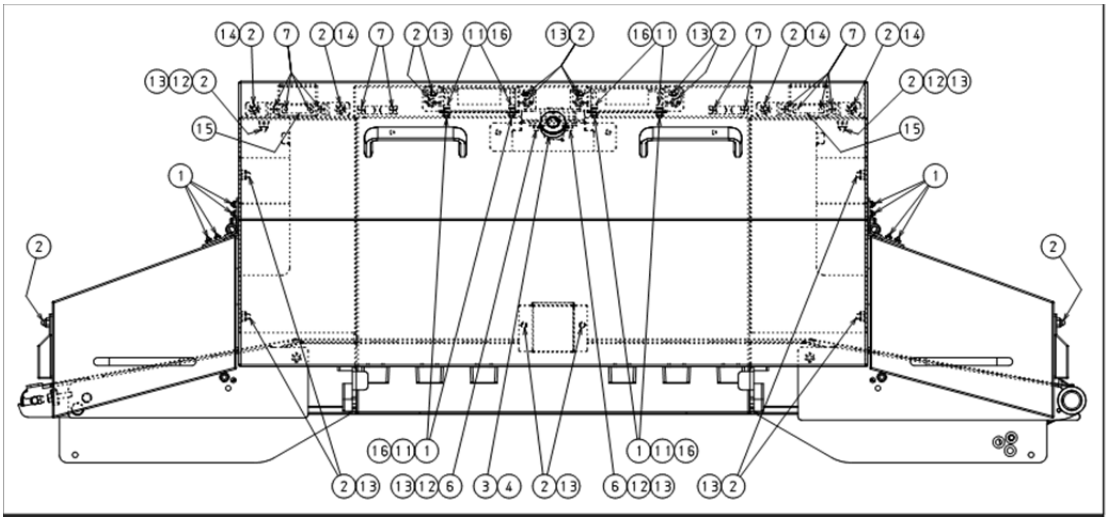


■ KXS7534CxCLE

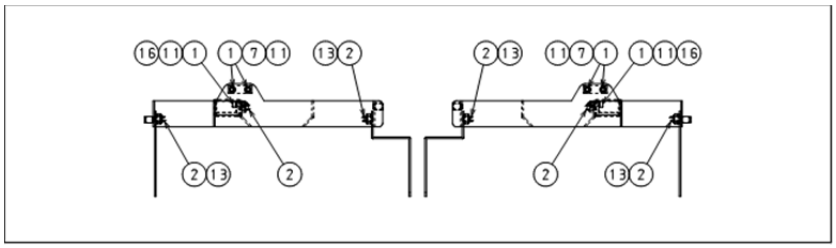
No.	Parts Name	QTY	Model Name	Remarks
1	Cap Type U Nuts (M4)	44	84G900471F	
2	Cap Type U Nuts (M6)	48	84G900471B	
3	M7 NUTS	1	C-89-12	
4	M19 NUTS	1	C-89-12	
6	6HS14SU	2	Z4B300014	
7	4FPS10SU	16	Z4B300002	
11	4WB SU	16	Z4B300021	
12	6SW SU	6	Z4B300020	
13	6WB SU	36	Z4B300021	
14	Bush	4	84H170020	
15	Nut plate	2	84H248294	
16	4HSB12SU	12	Z4B300015	

Note: U-nuts are used for all fastening screws above and the locking effect of U-nuts prevents screws, etc. from loosening and dropping.

Cabinet conveyor cover part



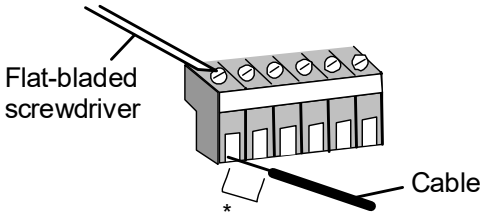
Detachable curtain part



When an external device or rejector would be connected, connect the cables to the terminal block connector and push-type terminal block as described below.

■ Terminal Block Connector

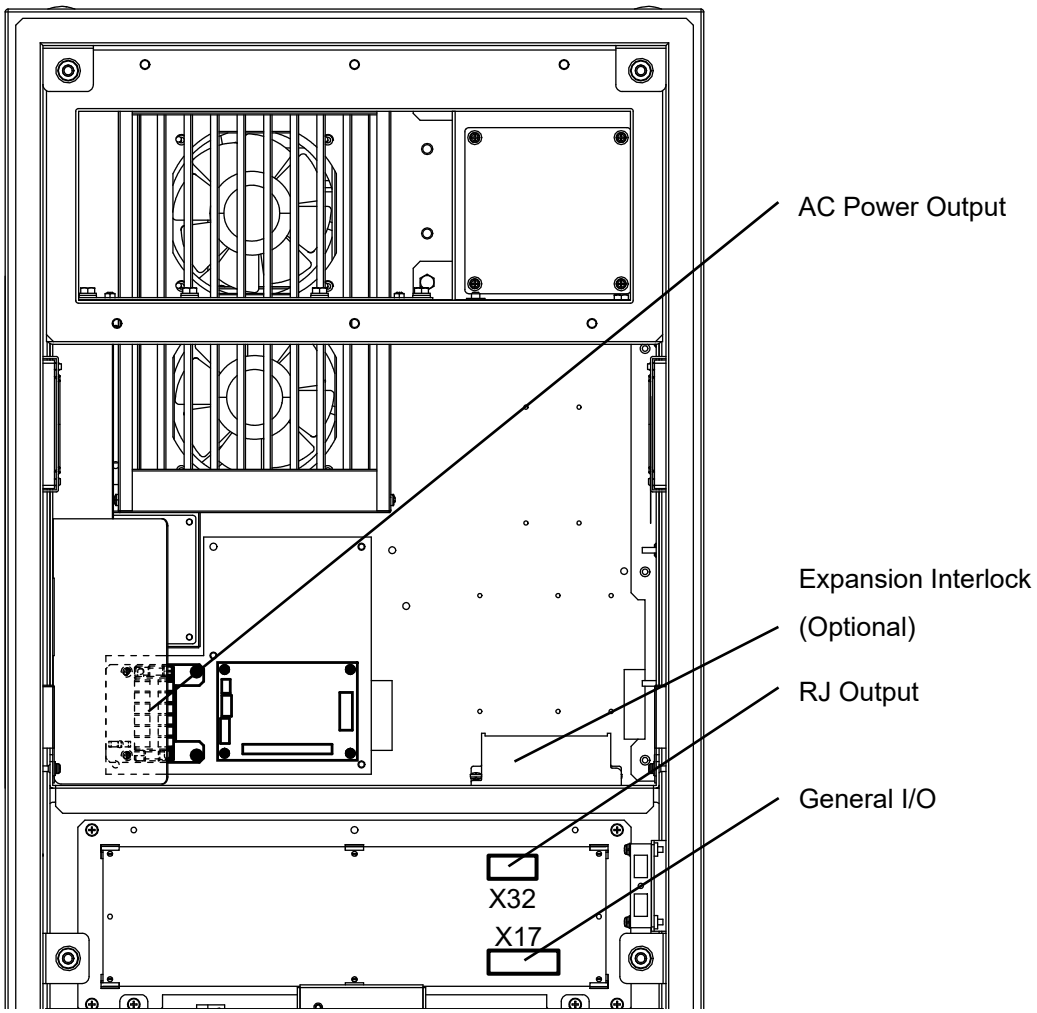
1. Remove the connector terminal block from the unit.
2. Loosen the screws with a flat-bladed screwdriver and insert the cable.
3. Tighten the screws.
4. Lightly pull the inserted cable to make sure it is secure.
5. Install the connector terminal block to the unit.



*: For connection, remove the cable covering material for the specified length.

1. I/O Connections

View from the back side with the central cover opened



2. I/O Points

The X-ray Inspection System can use external I/O control.

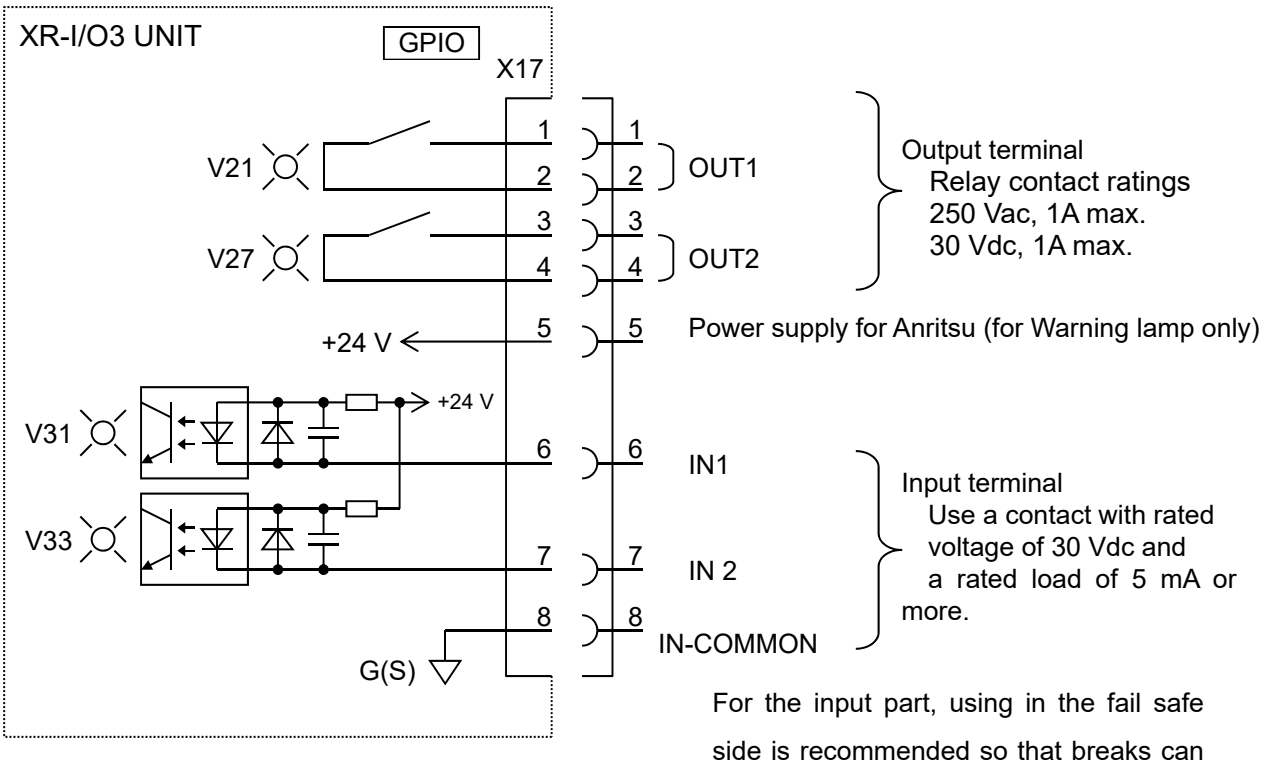
	Standard	Standard + KCU2504A expansion I/O (optional)
Input terminal	2	10
Output terminal	2	10

3. I/O Specifications

Applicable connector	Terminal block connector (Phoenix Contact MSTBT 2, 5/8-ST-5, 08)
Applicable cable	Conductor cross-sectional area of 0.2 to 2.5 mm^2 (AWG24 to 12) Remove 7 mm of the cable covering material when connecting to the terminal block connector.

For the procedure to connect to the X17 (terminal block connector), refer to "Connecting the Terminal Block Connector and Push-Type Terminal Block".

☞ P. 357 Connecting the Terminal Block Connector and Push-Type Terminal Block

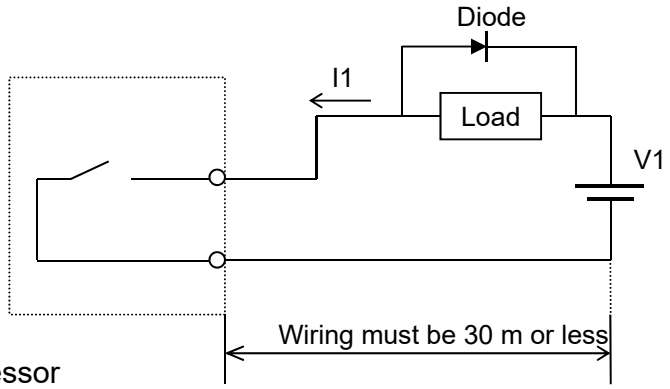


For the input part, using in the fail safe side is recommended so that breaks can be detected.

■ Output (OUT1/OUT2)

When used in a DC circuit

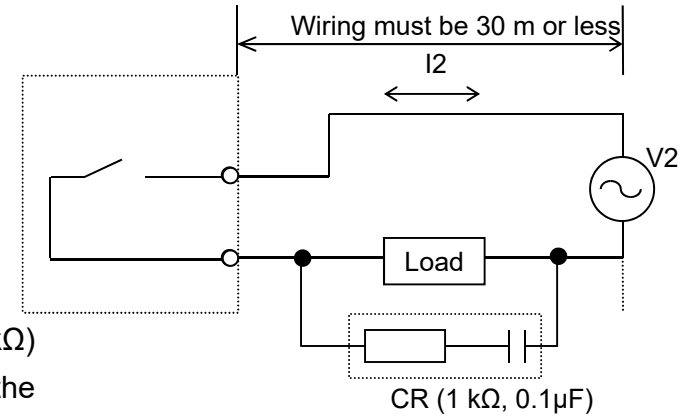
1. Reference circuit



2. Usage range
   Voltage: V1 ≤ DC 5 to 30 V
   Current: I1 ≤ 0.01 to 1 A
3. Precautions
   For a coil load, put a surge suppressor diode in parallel with the load.

When used in an AC circuit

1. Reference circuit

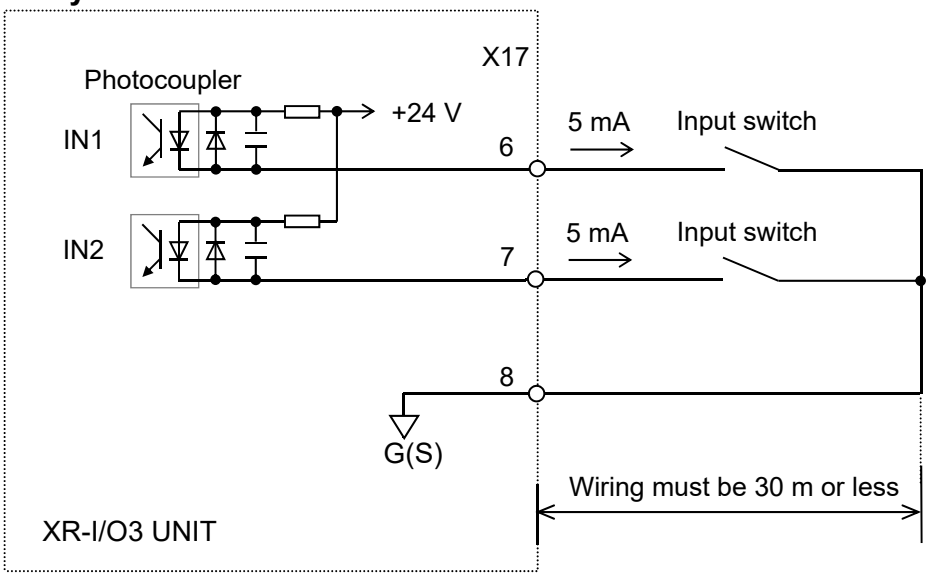


2. Usage range
   Voltage: V2 ≤ AC250 V
   Current: I2 ≤ 1 A
3. Precautions
   For a coil load, put a CR (0.1 μF, 1 kΩ) or surge absorber in parallel with the load.

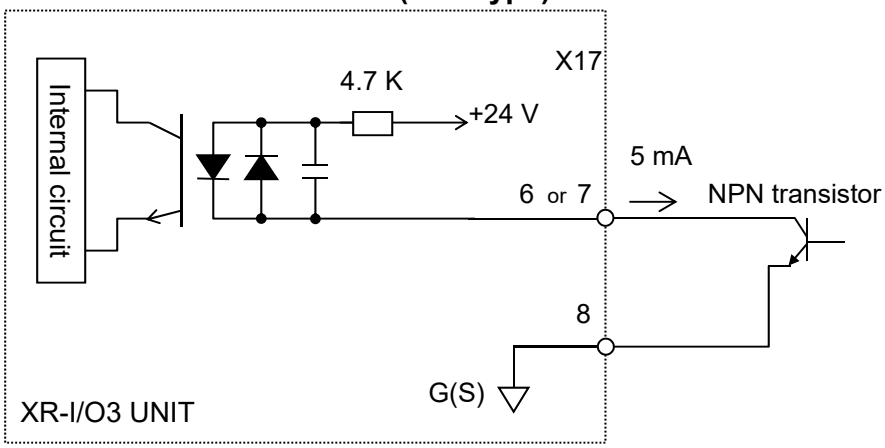
■ Input (IN1/IN2)

1. Reference circuit

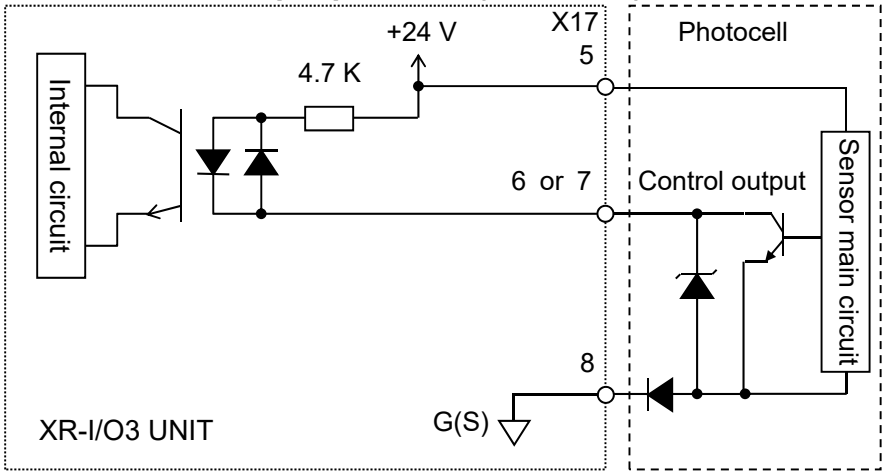
Relay contact



NPN transistor connection (sink type)



NPN transistor output photocell (three-wire) connection



PNP transistor connection (source type)

The input contact of the optional external I/O unit KCU2504A supports sink input and source input. Use the KCU2504A for connection.

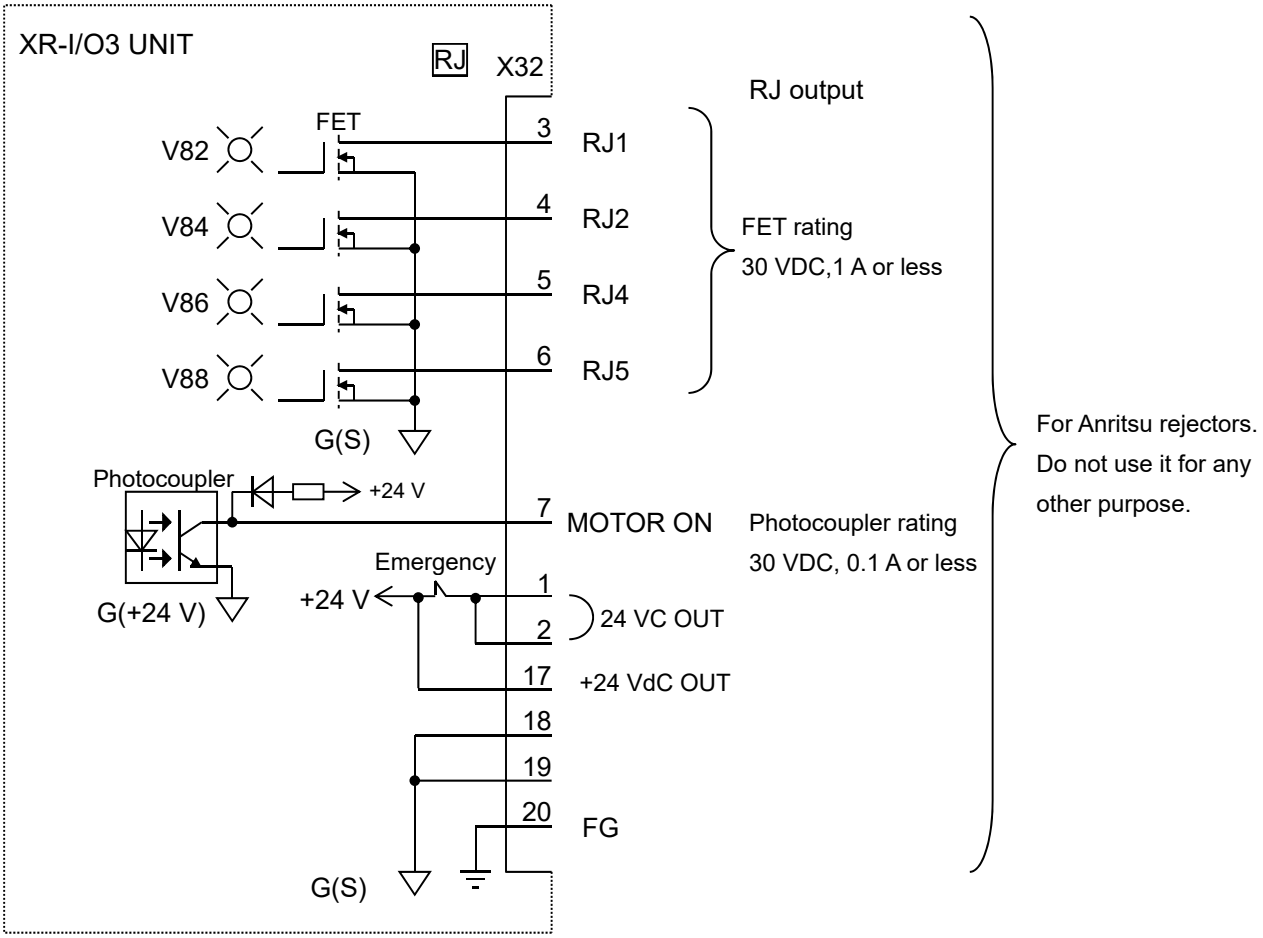
2. Precautions

Use the input switch and contact whose rated voltage is 30 VDC or higher and current is 5 mA or more.

It is used to connect to an Anritsu rejector with a 24 VDC interface.

■ Output Specifications

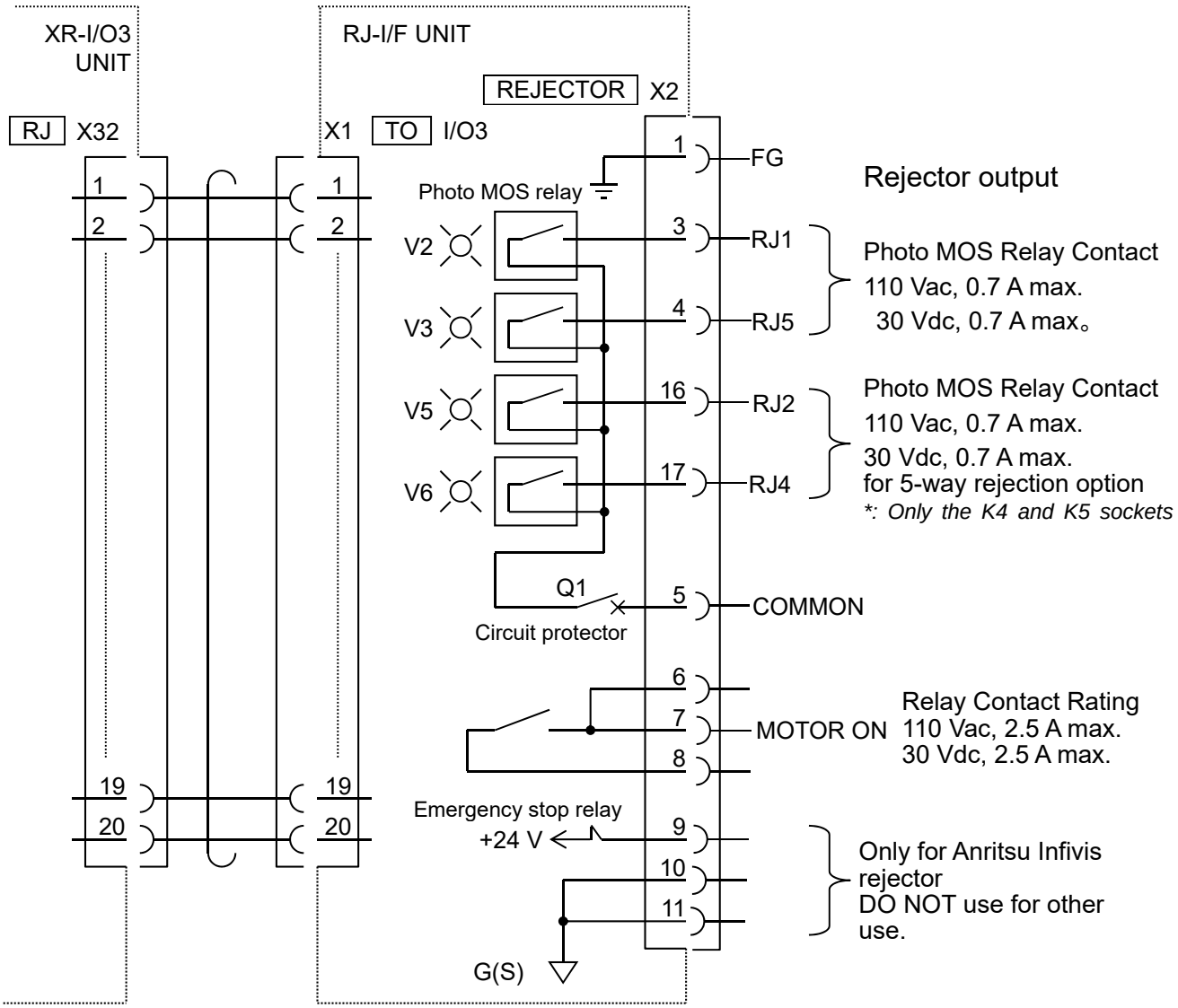
Applicable connector	Hirose Electric DF1B-20DS-2.5RC (not provided with this X-ray Inspection System)



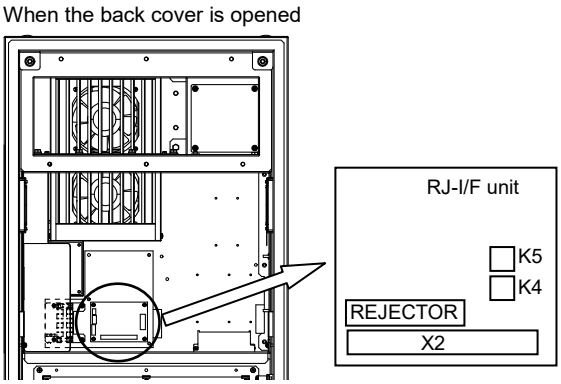
It is used to connect to an Anritsu rejector with a 100 VAC interface or a rejector of another manufacturer.

■ Output Specifications

Applicable connector	WIELAND 25.640.1853.0 (terminal block connector) Installed in the RJ-I/F unit.
Applicable cable	Conductor cross-sectional area of 0.14-1.5 mm^2 (AWG26-14) Remove 7 mm of the cable covering material when connecting to the terminal block connector.



1. RJ-I/F Unit Position

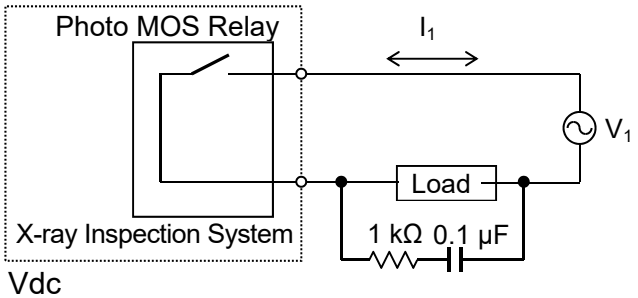


2. 100 VAC Output Specifications

■ Rejector output (RJ1 to RJ5)

1. Reference circuit

2. Usage range
   Voltage: V1 ≤ AC110 V
   Current: I1 ≤ 0.7 A (peak 1 A)

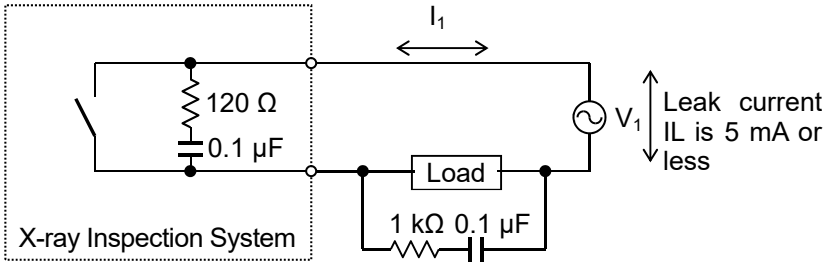


3. Precautions
   Install the CR for surge absorber.
   Use a capacitor with the rating of 600 Vdc or more.

■ Mot. ON Output

1. Reference circuit

2. Usage range
   Voltage: V1 ≤ AC110 V
   Current: I1 ≤ 2.5 A
   Leak current: IL ≤ 5 mA
   (AC100 V, 60 Hz)

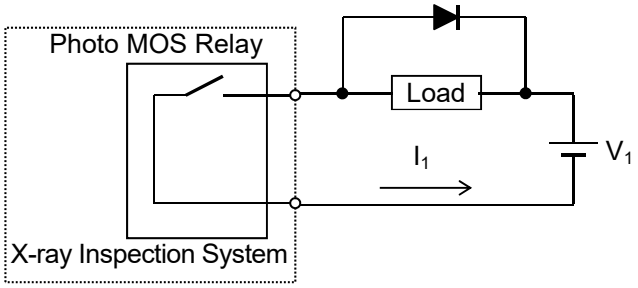


3. Precautions
   Install the CR for surge absorber.
   Use a capacitor with the rating of 600 Vdc or more.

3. 24 VDC Output Specifications

■ Rejector output (RJ1 to RJ5)

1. Reference circuit

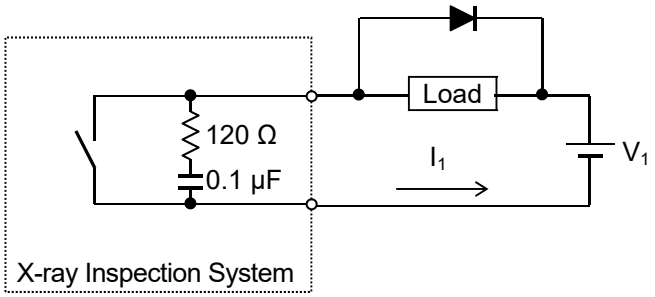


2. Usage range
   Voltage: V1 ≤ DC30 V
   Current: I1 ≤ 0.7 A (peak 1 A)

3. Precautions
   Install the diode for surge absorber.

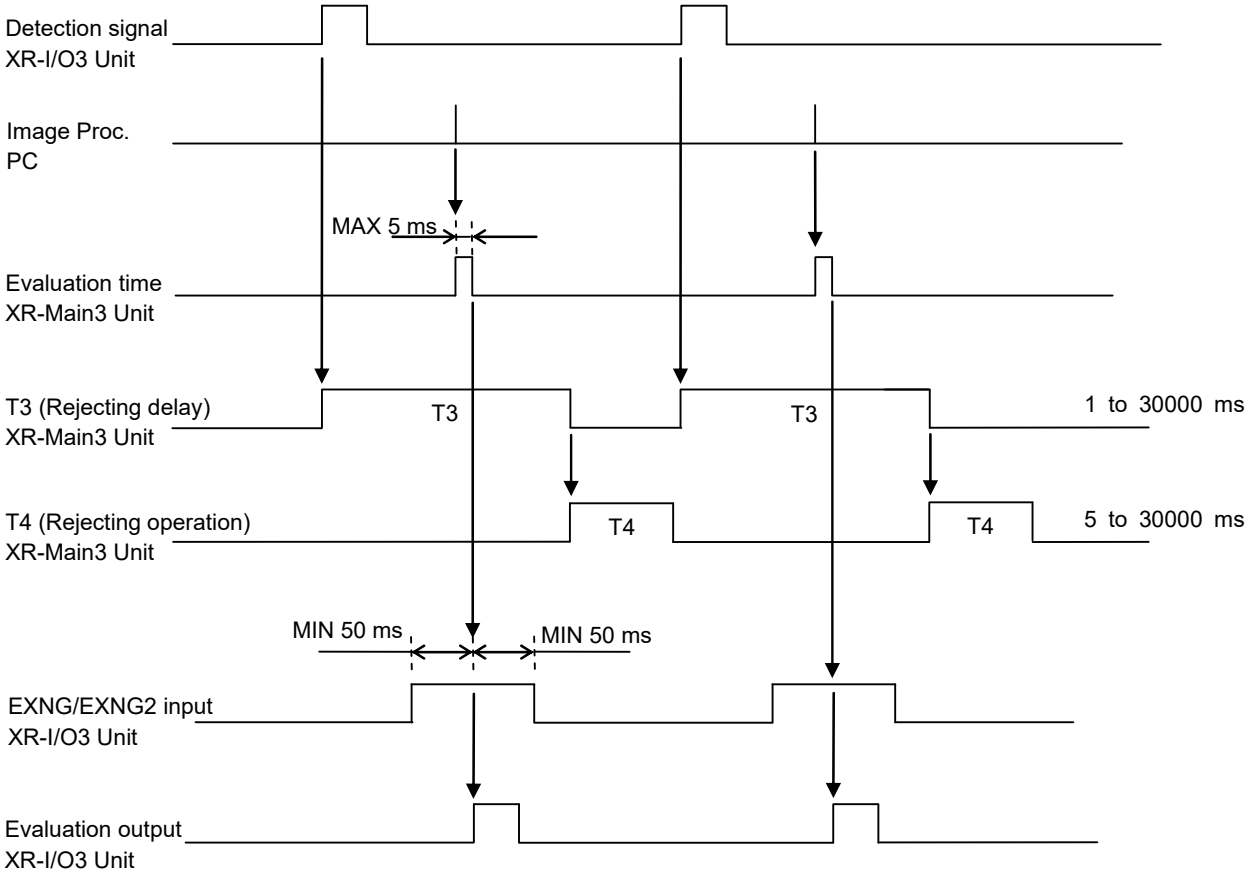
■ Mot. ON Output

1. Reference circuit

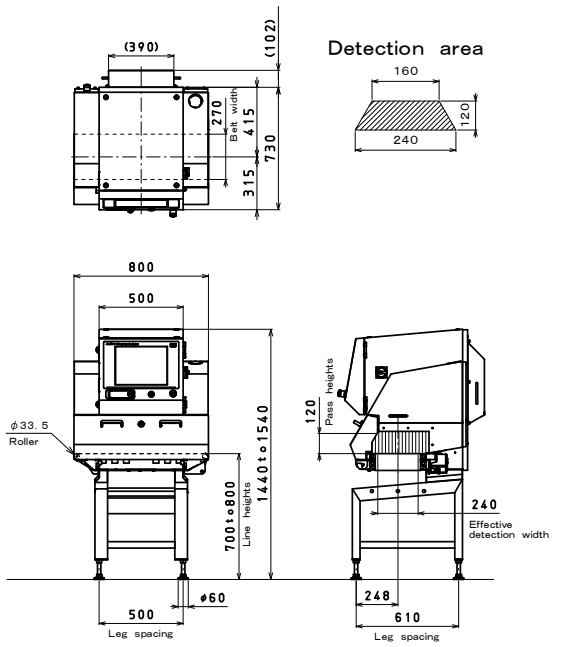


2. Usage range
   Voltage: V1 ≤ DC30 V
   Current: I1 ≤ 2.5 A

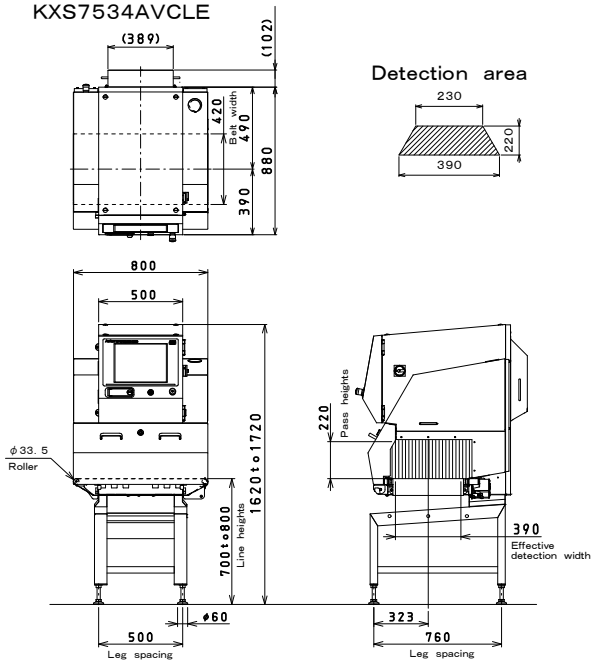
3. Precautions
   Install the diode for surge absorber.


Detection signal
XR-I/O3 Unit
Image Proc.
PC
MAX 5 ms
Evaluation time
XR-Main3 Unit
T3 (Rejecting delay)
XR-Main3 Unit
T3
T3
1 to 30000 ms
T4 (Rejecting operation)
XR-Main3 Unit
T4
T4
5 to 30000 ms
MIN 50 ms
MIN 50 ms
EXNG/EXNG2 input
XR-I/O3 Unit
Evaluation output
XR-I/O3 Unit

KXS7522AWCLE
KXS7522AVCLE



KXS7534AWCLE
KXS7534AVCLE

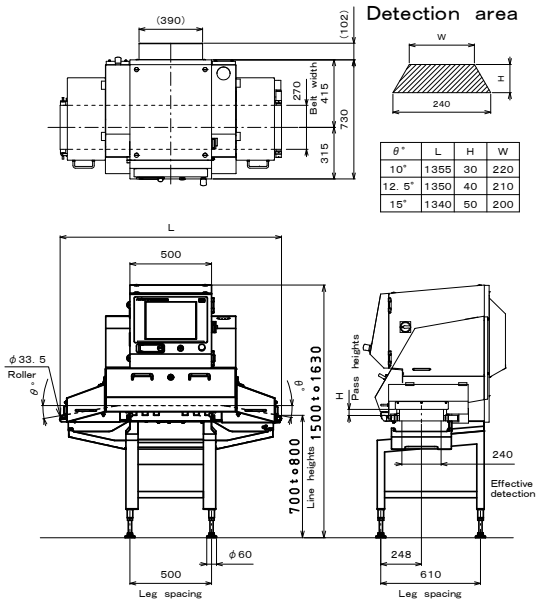


Dimensions in brackets are AVCLE type with waterproof on the entire surface. Units: mm

Model	KXS7522AWCLE	KXS7522AVCLE	KXS7534AWCLE	KXS7534AVCLE
X-ray output	Tube voltage 30 to 80 kV, tube current 0.4 to 3.3 mA, output 12 to 100 W			
Safety	Maximum 1.0 μSv/h or less, prevention of X-ray leakage by safety device			
Display	15-inch color TFT LCD			
Operation method	Touch panel (with touch buzzer)			
Product size[*1, *2]	Maximum width:240 mm, Maximum height:120 mm		Maximum width:390 mm, Maximum height:220 mm	
Belt width	270 mm		420 mm	
Preset memory	200			
Belt speed[*3]/Maximum product Weight[*4]	10 to 60 m/min,maximum 5 kg		10 to 60 m/min,maximum 5 kg	
	60 to 90 m/min, maximum 2 kg		—	
	10 to 40 m/min, maximum 10 kg (OP)		10 to 40 m/min, maximum 10 kg (OP)	
Power requirements[*5]	100 to 240 AC, single phase,50/60 Hz, 700 VA or less (standard)			
Mass[*6]	245 kg	250 kg	300 kg	305 kg
Environmental conditions[*7, *8]	Temperature: 0°C to 35°C, relative humidity: 30% to 85%, non-condensing			
Protection class	Conveyor : IP66 Other parts: IP40	Entire surface conforms to IP66	Conveyor : IP66 Other parts: IP40	Entire surface conforms to IP66
Casing material	Stainless steel (SUS304)			

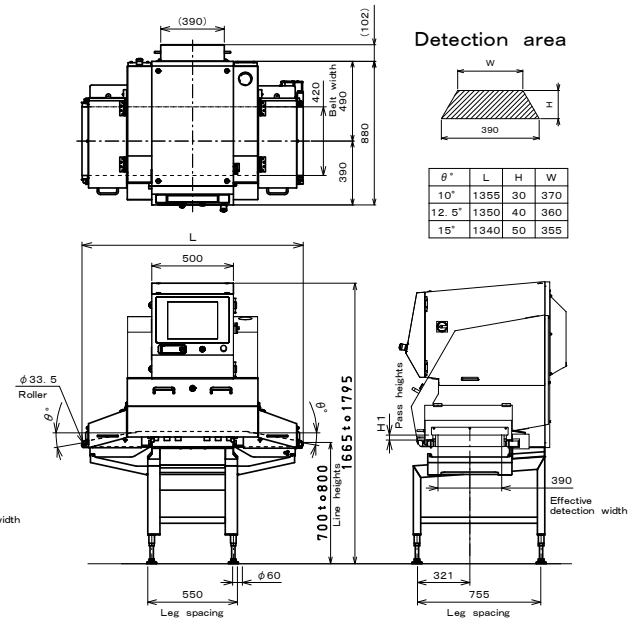
*1: The possible range of detection is as shown in the figure above.
*2: A cover may be required in the entrance and exit areas depending on the length of the inspected product.
*3: Speed can be adjustable for each product.
*4: Total mass of the inspected products on the conveyor.
*5: The allowable voltage fluctuation range is ±10% or less.
*6: Mass without any option
*7: Belt speed/conveying capacity is constrained under the ambient temperature ranging from 30 to 35°C (KXS7522AWCLE, KXS7522AVCLE only)
*8: When installing the optional air conditioner, temperature ranging from 0 to 40°C is allowed (AWCLE only).

KXS7522CWCLE
KXS7522CVCLE



θ°	L	H	W
10°	1355	30	220
12.5°	1350	40	210
15°	1340	50	200

KXS7534CWCLE
KXS7534CVCLE



θ°	L	H	W
10°	1355	30	370
12.5°	1350	40	360
15°	1340	50	355

Dimensions in brackets are CVCLE type with waterproof on the entire surface. Units: mm

Model	KXS7522CWCLE	KXS7522CVCLE	KXS7534CWCLE	KXS7534CVCLE
X-ray output	Tube voltage 30 to 60 kV, tube current 0.4 to 3.3 mA, output 12 to 100 W			
Safety	Maximum 1.0 μSv/h or less, prevention of X-ray leakage by safety device			
Display	15-inch color TFT LCD			
Operation method	Touch panel (with touch buzzer)			
Product size[*1, *2]	Maximum width:240 mm, Maximum height:50 mm		Maximum width:390 mm, Maximum height:50 mm	
Belt width	270 mm		420 mm	
Preset memory	200			
Belt speed[*3]/Maximum product Weight[*4]	5 to 50 m/min,maximum 5 kg			
	10 to 40 m/min, maximum 10 kg (OP)			
Power requirements[*5]	100 to 240 AC, single phase,50/60 Hz, 700 VA or less (standard)			
Mass[*6]	270 kg	275 kg	340 kg	345 kg
Environmental conditions[*7, *8]	Temperature: 0°C to 35°C, relative humidity: 30% to 85%, non-condensing			
Protection class	Conveyor : IP66 Other parts: IP40	Entire surface conforms to IP66	Conveyor : IP66 Other parts: IP40	Entire surface conforms to IP66
Casing material	Stainless steel (SUS304)			

*1: The possible range of detection is as shown in the figure above.
*2: A cover may be required in the entrance and exit areas depending on the length of the inspected product.
*3: Speed can be adjustable for each product.
*4: Total mass of the inspected products on the conveyor.
*5: The allowable voltage fluctuation range is ±10% or less.
*6: Mass without any option
*7: Belt speed/conveying capacity is constrained under the ambient temperature ranging from 30 to 35°C (KXS7522CWCLE, KXS7522CVCLE only)
*8: When installing the optional air conditioner, temperature ranging from 0 to 40°C is allowed (CWCLE only).

■ Microsoft OEM Customer License Agreement For Embedded Systems

A 122265

Attachment A

COMPANY shall sublicense the Licensed Product to end users by means of an End User License Agreement ("EULA"). COMPANY shall provide clear notice to Embedded System customers before or at the time of purchase that the Embedded System contains software that is subject to a license and that customer must agree to that license before it may use the Embedded System. Company shall distribute the EULA in a manner that forms a contract binding the end user to the EULA terms under applicable law. The EULA shall contain (A) the following terms, and (B) any additional EULA terms set forth by MS in the "additional provisions" on the Licensed Product package. COMPANY may include in the EULA additional notices or other provisions, so long as they are no less protective of MS than the terms set forth below. COMPANY shall substitute its name for the bracketed text [*COMPANY*] in the EULA text. If permitted by COMPANY's other software suppliers for a particular COMPANY Embedded System, COMPANY may substitute for the word "MS" the term "[*COMPANY's*] software suppliers".

- You have acquired an item ("DEVICE") that includes software licensed by [*COMPANY*] from Microsoft Licensing Inc. or its affiliates ("MS"). Those installed software products of MS origin, as well as associated media, printed materials, and "online" or electronic documentation ("SOFTWARE") are protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE is licensed, not sold.
  - [Approved alternative text if COMPANY does not mention MS in the EULA text: "You have acquired an item ("DEVICE") which includes software licensed by [*COMPANY*] from one or more software licensors ("[*COMPANY*]'s] Software Suppliers"). Such software products, as well as associated media, printed materials, and "online" or electronic documentation ("SOFTWARE") are protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties."]
- IF YOU DO NOT AGREE TO THIS END USER LICENSE AGREEMENT ("EULA"), DO NOT USE THE DEVICE OR COPY THE SOFTWARE. INSTEAD, PROMPTLY CONTACT [*COMPANY*] FOR INSTRUCTIONS ON RETURN OF THE UNUSED DEVICE(S) FOR A REFUND. **ANY USE OF THE SOFTWARE, INCLUDING BUT NOT LIMITED TO USE ON THE DEVICE, WILL CONSTITUTE YOUR AGREEMENT TO THIS EULA (OR RATIFICATION OF ANY PREVIOUS CONSENT).**
- **GRANT OF LICENSE.** The SOFTWARE is licensed, not sold. This EULA grants you the following rights to the SOFTWARE:
  - You may use the SOFTWARE only on the DEVICE.
  - **NOT FAULT TOLERANT.** THE SOFTWARE IS NOT FAULT TOLERANT. [*COMPANY*] HAS INDEPENDENTLY DETERMINED HOW TO USE THE SOFTWARE IN THE DEVICE, AND MS HAS RELIED UPON [*COMPANY*] TO CONDUCT SUFFICIENT TESTING TO DETERMINE THAT THE SOFTWARE IS SUITABLE FOR SUCH USE.
  - NO WARRANTIES FOR THE SOFTWARE. **THE SOFTWARE is provided "AS IS" and with all faults. THE ENTIRE RISK AS TO SATISFACTORY QUALITY, PERFORMANCE, ACCURACY, AND EFFORT (INCLUDING LACK OF NEGLIGENCE) IS WITH YOU. ALSO, THERE IS NO WARRANTY AGAINST INTERFERENCE WITH YOUR ENJOYMENT OF THE SOFTWARE OR AGAINST INFRINGEMENT.** IF YOU HAVE RECEIVED ANY WARRANTIES REGARDING THE DEVICE OR THE SOFTWARE, THOSE WARRANTIES DO NOT ORIGINATE FROM, AND ARE NOT BINDING ON, MS.
  - **Note on Java Support.** The SOFTWARE may contain support for programs written in Java. Java technology is not fault tolerant and is not designed, manufactured, or intended for use or resale as online control equipment in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines, or weapons systems, in which the failure of Java technology could lead directly to death, personal injury, or severe physical or environmental damage. Sun Microsystems, Inc. has contractually obligated MS to make this disclaimer.
  - No Liability for Certain Damages. **EXCEPT AS PROHIBITED BY LAW, MS SHALL HAVE NO LIABILITY FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING FROM OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE SOFTWARE. THIS LIMITATION SHALL APPLY EVEN IF ANY REMEDY FAILS OF ITS ESSENTIAL PURPOSE. IN NO EVENT SHALL MS BE LIABLE FOR ANY AMOUNT IN EXCESS OF U.S. TWO HUNDRED FIFTY DOLLARS (U.S.$250.00).**
  - **Limitations on Reverse Engineering, Decompilation, and Disassembly.** You may not reverse engineer, decompile, or disassemble the SOFTWARE, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation.
  - **SOFTWARE TRANSFER ALLOWED BUT WITH RESTRICTIONS.** You may permanently transfer rights under this EULA only as part of a permanent sale or transfer of the Device, and only if the recipient agrees to this EULA. If the SOFTWARE is an upgrade, any transfer must also include all prior versions of the SOFTWARE.
  - **EXPORT RESTRICTIONS.** If these licensing terms are not labeled "North America Only Version" and the SOFTWARE is not identified as "North America Only Version" on the SOFTWARE packaging or other written materials, then the following terms apply: Export of the SOFTWARE from the United States is regulated by the Export Administration Regulations (EAR, 15 CFR 730-744) of the U.S. Commerce Department, Bureau of Export Administration (BXA). You agree to comply with the EAR in the export or re-export of the SOFTWARE: (i) to any country to which the U.S. has embargoed or restricted the export of goods or services, which as of May 1999 include, but are not necessarily limited to Cuba, Iran, Iraq, Libya, North Korea, Sudan, Syria, and the Federal Republic of Yugoslavia (including Serbia, but not Montenegro), or to any national of any such country, wherever located, who intends to transmit or transport the SOFTWARE back to such country; (ii) to any person or entity who you know or have reason to know will utilize the SOFTWARE or portion thereof in the design, development or production of nuclear, chemical, or biological weapons; or (iii) to any person or entity who has been prohibited from participating in U.S. export transactions by any federal agency of the U.S. government. You warrant and represent that neither the BXA nor any other U.S. federal agency has suspended, revoked or denied your export privileges. For additional information see http://www.microsoft.com/exporting/.
    If the licensing terms are labeled "North America Only Versions" or if the SOFTWARE is labeled "North America Only Version" on the SOFTWARE packaging or other written materials, then the following applies: The SOFTWARE contains strong encryption features. The SOFTWARE may be distributed in the United States, its territories, possessions and dependencies, and Canada without an export license. Export of the SOFTWARE from the United States is regulated under "EI controls" of the Export Administration Regulations (EAR, 15 CFR 730-744) of the U.S. Commerce Department, Bureau of Export Administration (BXA). An export license or applicable license exception is required to export the SOFTWARE outside the United States or Canada. You agree that you will not directly or indirectly export or re export the SOFTWARE (or portions thereof) to any country, other than Canada, or to any person or entity subject to U.S. export restrictions without first obtaining a Commerce Department export license or determining that there is an applicable license exception. You warrant and represent that neither the BXA nor any other U.S. federal agency has suspended, revoked, or denied your export privileges. For additional information see http://www.microsoft.com/exporting/.

■ License Agreement For Open Source Computer Vision Library

By downloading, copying, installing or using the software you agree to this license.
If you do not agree to this license, do not download, install, copy or use the software.

License Agreement
For Open Source Computer Vision Library
(3-clause BSD License)

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

* Neither the names of the copyright holders nor the names of the contributors may be used to endorse or promote products derived from this software without specific prior written permission.

This software is provided by the copyright holders and contributors "as is" and any express or implied warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose are disclaimed.
In no event shall copyright holders or contributors be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services;
loss of use, data, or profits; or business interruption) however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of this software, even if advised of the possibility of such damage.

Memo

Anritsu

ANRITSU INFIVIS CO., LTD.

Document No.:
84W265865-13
April 2018 13th Edition
Printed on Recycled Paper.
Printed in Japan

Anritsu Operation Manual X-ray Inspection System XR75 Series