ALAT UJI
Products, Solution, Services

CONVEYER TYPE NEEDLE DETECTOR

APA-6800

INSTRUCTION MANUAL

Office: Jl. Radin Inten II No. 62 Duren Sawit, Jakarta 13440 - Indonesia
Workshop: Jl. Pahlawan Revolusi No. 22B, Jakarta 13430 - Indonesia
Phone: 021-8690 6777 (Hunting)
Mobile: +62 816 1740 8925
Fax: 021-8690 6771

Before Use

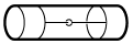
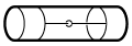
◎ This instruction manual for NEEDLE DETECTOR describes how to use this machine safely, hygienically, and long time.

◎ If you have not used this machine, read this instruction manual before operation.

◎ If you have used this machine, and have unclear points, read this instruction manual again.

Accessories

Before use this machine, make sure that the accessories below has been attached.

- Instruction Manual (this document)
- Specification
- Test Piece
  (Fe/iron) :two pieces
- Test Piece Stand
- Stand raising platform
  （Accessorized for passing height 140mm）
- Brief guidance of Stand
- Fuse
  1.25A  :one piece
  3.15A  :one piece

Composition

This instruction manual has been made up from the contents below.

Caution

★Instructions here describe to prevent damage to operators, this machine, and property.

To mention the extent of harm or damage that may happen if this machine is incorrectly used, ⚠Warning and ⚠ Caution are used here.

⚠ Warning	If this machine is incorrectly used, it may cause of death, serious injury to operator(s).
⚠ Caution	If this machine is incorrectly used, it may cause of injury to operator(s), or damage to this machine or property.

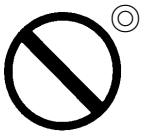
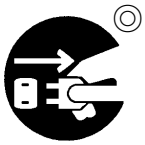
To mention the extent of harm or damage that may happen if this machine is incorrectly used, △(Caution), ⃠(Ban) and ●(Compulsion) are used here.

△ In the symbol, concrete caution is mentioned.	Example ⚠ General danger, warning and caution are noticed.
⃠ Ban is mentioned.	Example ⃠ General ban is noticed.
● Compulsion is mentioned.	Example ❗ General action is instructed.

Caution

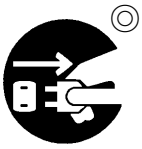
Please follow below to prevent accidents,
especially when installation, cleaning or inspection of this machine is done.

⚠ Warning

 ◎ Wearing no watch, rings etc. and tying your hair etc. is needed, in order to they do not reach to the conveyor belt. If your hair, tie, necklace, bracelet, or watch band is gone into the rotating part, it will be caught in this machine, and it is dangerous.	 ◎ Unplug the power cable, when cleaning or inspection to prevent pushing the conveyor button without notice and things you wear is caught in the machine. ※ If a sorting machine is used, stop the air.
 ◎ Electrical engineers are only allowed to inspect and adjust the inner parts of this machine. The inner parts may have parts that to be a cause of electric shock.	 ◎ This machine must be installed on a level floor. And keep the environment clean and hygienic. If this machine falls down, it may cause of injury, by the weight of this machine.
 ◎ Do not bring a ring, ballpoint pen, tool etc. close to the detection part, regardless of the conveyor running or stopping, of this machine. A sorting machine will start without notice, and may cause of pinching fingers, or hitting etc. ※A sorting machine is option.	 ◎ Do not touch the conveyor belt, when the conveyor belt is driven, to prevent to be caught.
 ◎ When the power cable is unplugged, hands must be dry, to prevent electric shock.	 ◎ Before use, make sure the power source voltage is correct. Do not connect many electrical cords to a single socket/outlet, to prevent fire or electric shock.
 ◎ Do not remodel this machine, to prevent fire or electric shock.	 ◎ Do not damage or remodel the power cable. And do not put a heavy thing on the power cable. And do not pull or bent forcibly the power cable to prevent fire or electric shock.
 ◎ If unusual state, such as generation of heat or smoke, is noticed, unplug the power cable immediately and contact our company.	 ◎ If foreign body (piece of metal, water or liquid) goes into the control part of this machine, unplug the power cable and contact our company. Continue to use the machine may cause of fire or electric shock.
 ◎ Do not pour water on this machine, to prevent fire or electric shock.	 ◎ If the machine has to have earth/ ground connection, earth/ground before use this machine to prevent fire or electric shock when a short circuit happens.

Caution

⚠ Caution

 ◎ Do not put your hand(s) on the conveyor belt. Do not lift the conveyor belt and drag or push this machine.	 ◎ Do not disassemble this machine, to prevent breakdown.
 ◎ Do not install this machine on unstable place to prevent to fall down and injury.	 ◎ The power cable should be connected to a socket/outlet that other device which makes noise (such as a large motor, packing machine, or invertor etc.) has not been connected.
 ◎ Do not contact the conveyor frame of this machine with a device that turns on electricity (such as a steel table of other machine) to prevent noise.	 ◎ Do not leave a container of water etc. on the control part of this machine, to prevent spilling contain, fire or electric shock.
 ◎ Do not install this machine in a damp or dusty place, to prevent fire or electric shock, and for hygiene reason.	 ◎ When the power cable is unplugged, hold the plug. Do not hold the cable, to prevent damage of the cable, and fire or electric shock.
 ◎ When this machine is moved, unplugged the power cable, to prevent damage of the cable and fire or electric shock.	 ◎ Do not bundle the power cable, to prevent fire by generating heat.
 ◎ Make sure that the power cable has been certainly connected, to prevent breakdown.	 ◎ Do not put a heavy object on this machine. Do not give this machine a shock, to prevent to fall down and injury.
 ◎ Do not change a sensitivity while products are being checked. Noise may happen and it may cause of mistaken detection.	 ◎ The axis and height of the photo sensor should be adjusted correctly, in order to correct detection or sorting.
 ◎ The touch screen is operated by touching the screen with your finger. Do not touch the screen with a sharp object, to prevent damage.	

Contents

Contents

Contents

Choice of Installation Place

⚠ Caution

If this needle detector is installed near another metal detector, interference and incorrect actions may happen, therefore contact our company.

- Install this machine at a place without vibration, or with little vibration.
- Install this machine at a place where the temperature is stable.
  Surrounding temperature of installation place (No condensation is required)
  Temperature [0 - 40°C / 32 - 104°F]　Humidity ［30 - 85%］
  (Avoiding direct sunlight, generation of heat, such as a stove or a heater, is required)
- Install this machine at a place without dust, or with little dust.
- Install this machine at a place without volatile combustible, or corrosive gas.
  (Volatile combustible may cause of catching fire by a spark at a relay contact etc.)
- Install this machine at a place without movable metal near the detection part. (Except a sorting machine of our company)
- Install this machine at a place without a device that makes electric sparks, such as a welding machine.

⚠ Warning

When this machine is moved / lifted, doing it by four people and over is required, to prevent falling down and injury or hurting your back.

⚠ Caution

- Do not put your hand(s) on the conveyor belt. Do not lift the conveyor belt and drag or push this machine, to prevent breakdown.
- If a construction, such as a drilling or welding is done near this machine, avoiding that metal sticks to the conveyor belt is required, to prevent damage of the conveyor belt or incorrect actions.
- Do not contact the conveyor frames of this machine with a device that turns on electricity (such as a steel table of other machine) to prevent noise.
- The power cable should be connected to a socket/outlet that other devices to prevent noise.

Installation

Way of Installation

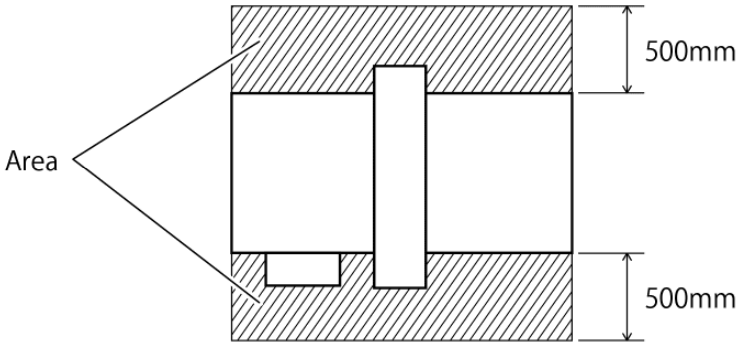
Procedure 1; Adjust the height of the 4 adjusters in order to all of them reach a floor.

Procedure 2; Make sure that this machine is level, and then lock the locknuts of the adjusters.

※If this machine is not level, it may cause of incorrect action or falling down of this machine.

Area of Installation

The area below is required for operation, adjustment, maintenance, and cleaning.



Power

- Supply each proper power to each machine.
- Avoid a sudden change of power and voltage.
- If there is/are (an) inverter(s) or servomotor(s) on surrounding areas, supply power through a noise filter.

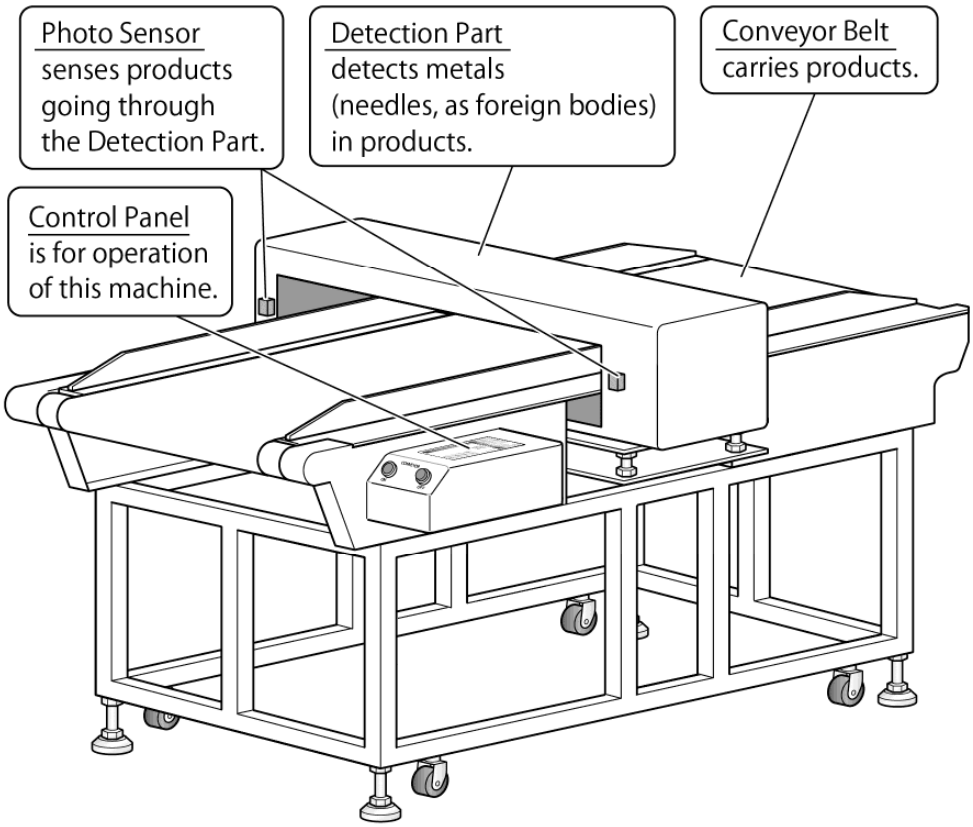
Reinstallation

- If this machine is re-installed, follow the Installation above, for a correct re-installation. After re-installation, make sure the way of operation by the procedure of "1. Every Day Operation" in "Basic Operation" (page 11). If errors happen, contact our company.

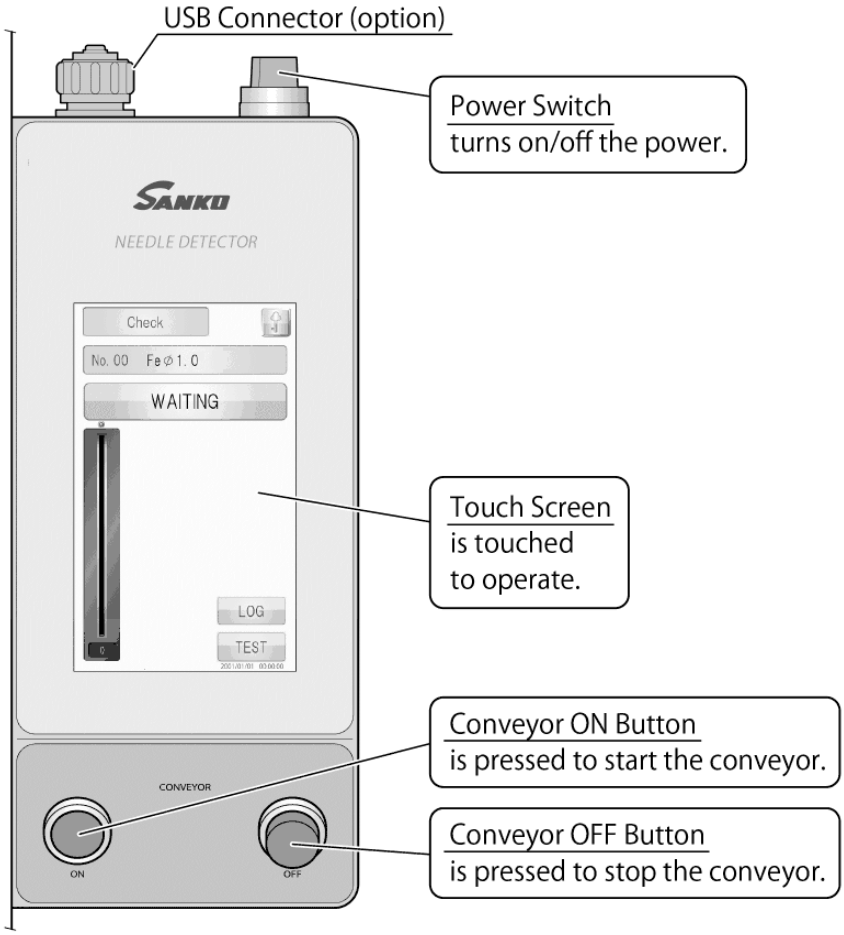
USB Option

- Recommended USB flash drive is below.
  Buffalo RUF3-C8GA

Each Part Name



Each Part of the Control Panel



1. Every Day Operation

Carry out “1.1 Making sure of sensitivity and setting” (page 11～12).

↓

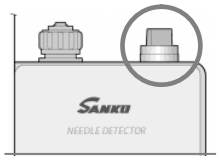
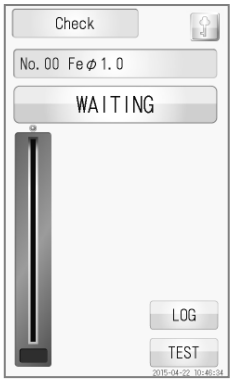
Carry out “1.2 Test: Detection Test at【Test】screen” (page 12～13).

↓

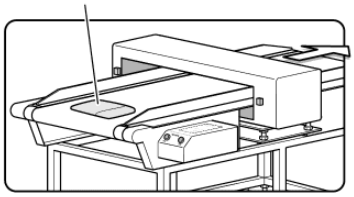
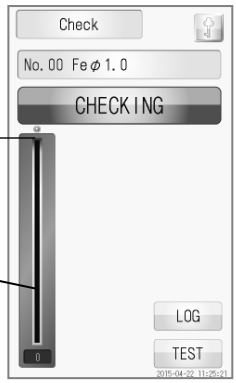
Carry out “1.3 Regular Operation” (page 14).

1.1 Making sure of sensitivity and setting

Making sure that there are sensitivities suitable for the products to be inspected.

Proce-dure	Operation, Confirmation Point	Display, Result	Notes
1	◎Turn on the power. Turn [Power Switch] to ON side. 	After the start screen is displayed, 【Check】 screen is displayed. 	※ The screen display somewhat in specifications and equipment setting. ※This unit starts up at password level 1 when power switch is ON.
2	◎Make sure of sensitivity. Make sure that sensitivity is for product to be checked.	Sens. 	
3	◎Start the conveyor. Press [Conveyor ON Button]. 	The conveyor starts.	

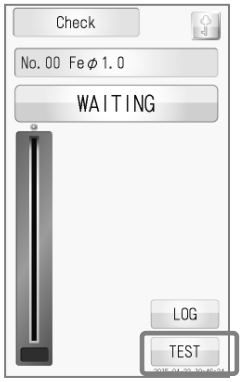
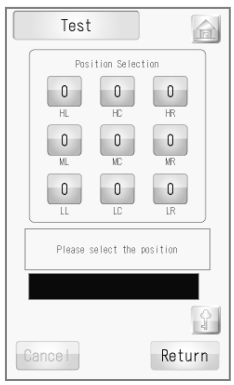
○ If sensitivity is not of product to be checked, change it.
Refer to “2. Change Sens.” (page 15).

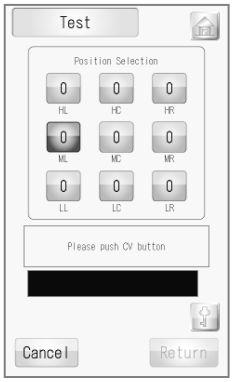
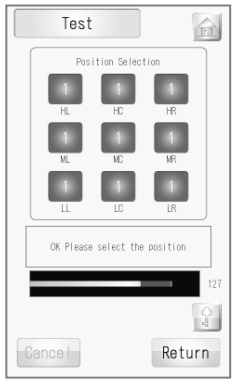
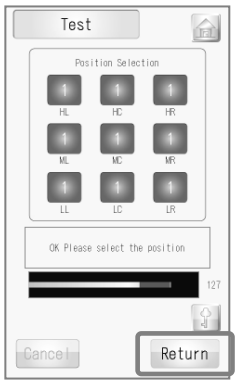
Proce-dure	Operation, Confirmation Point	Display, Result	Notes
4	◎Make sure that the setting is correct Run《a product for test several times》, and make sure that the product is not detected. Product 	Detection Level Meter does not reach Detection Level. Detection Level Detection Level Meter 	A product for test should be one that has average quality (such as measurements, weight and materials).
5	◎Stop the conveyor. Press [Conveyor OFF Button]. 	The conveyor stops.	

1.2 Test: Detection Test at【Test】screen

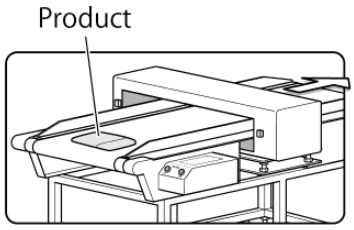
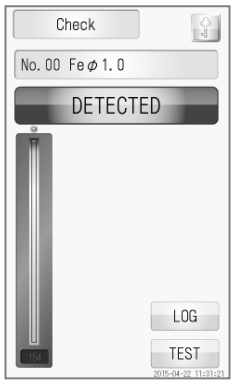
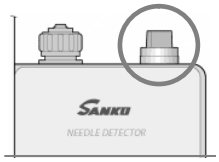
Making sure that the metal with a setting sensitivity can be detected by using the test piece.

Tested data can be left on record by using【Test】screen.

Proce-dure	Operation, Confirmation Point	Display, Result	Notes
6	◎Display【Test】screen. Touch [Test] button on 【Check】screen.		
7	◎ Execute detection test by using the test piece. Execute a detection test by following the instructions on 【Test】screen.		**※Refer to Brief guidance when using the Test Piece Stand.**

Proce-dure	Operation, Confirmation Point	Display, Result	Notes
	①Set a passing position. (Touch one of the 9 buttons of the Position Selection, for example 「ML」.)		「Position Selection」 shows heights and positions inside the detecting part. CV : Conveyor
	②Press [Conveyor ON Button]. 	↓ The conveyor starts. ↓ “Waiting” ↓ “Please flow a test piece” is displayed.	※When Photo Sensor is OFF, “Executing sampling” is indicated on the display.
	③Run the test piece. (Place the test piece on the 「ML」 position to run.)	↓ When reaching to a detecting level, a number in the selected position changes from 「0」 to 「1」.	※During a test, if Belt Return is selected, the conveyor returns (except when photo sensor is OFF).
	④After detecting repeat operating processes ①～③. (It is possible to set 9 each of the passing positions.)	↓ 	※Testing points are at your discretion. ※It is possible to check the same positions plural times (0～99).
8	◎Finish testing. Touching the [Return] button returns the display to【Check】screen.		

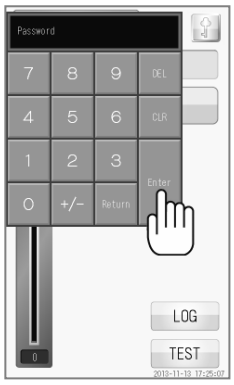
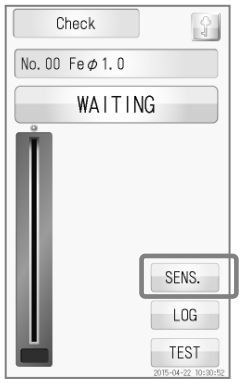
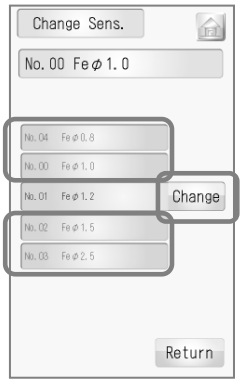
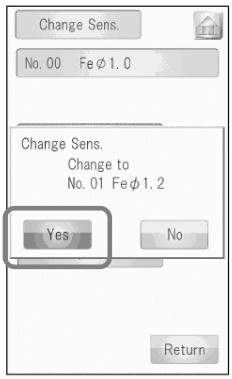
1.3 Regular Operation

Proce-dure	Operation, Confirmation Point	Display, Result	Notes
9	◎Start regular operation. Start the conveyor. Press [Conveyor ON Button]. 	The conveyor starts.	
10	◎Check the products. Run the products. 	When needles, snapping needles, etc. are detected, the unit indicates 「DETECTED」and beeps the buzzer and at the same time the conveyer operates backward (CV Control : in case of BR). 	※CV Control : in case of CS, the conveyer stops when detecting. ※CV control : in case of NONE, the conveyer keeps running even after detecting. (Refer to page 27.)
11	◎Stop regular operation. Stop the conveyor. Press [Conveyor OFF Button]. 	The conveyor stops.	
12	◎Turn off the power. Turn [Power Switch] to OFF side. 	The power turns off.	

2. Change Sens.

This operation is to change a sensitivity to another entered sensitivity.

Do not change a sensitivity while products are being checked. Noise may happen and it may cause of mistaken detection.

Proce-dure	Operation, Confirmation Point	Display, Result	Notes
1	◎Unlock by password level2 (Lv2) or level 3 (Lv3). Input password to the numeric keypad displayed by touching  on【Check】screen, and touch the [Enter] key.		For changes of the password refer to page 19.
2	◎Display【Change Sens.】screen. Touch [SENS.] button on【Check】screen.		
3	◎Select one of the sensitivities. After displaying a desired sensitivity in the center of the screen, touch「Change」button.		If one of 2 upper and lower sensitivities is touched, the sens. is moved to the middle.
4	◎Change sensitivity. Touch [Yes] button on【Change Sens.】window. The sensitivity changes and the display returns to【Check】screen.		

3. Sorting by Conveyor Stop

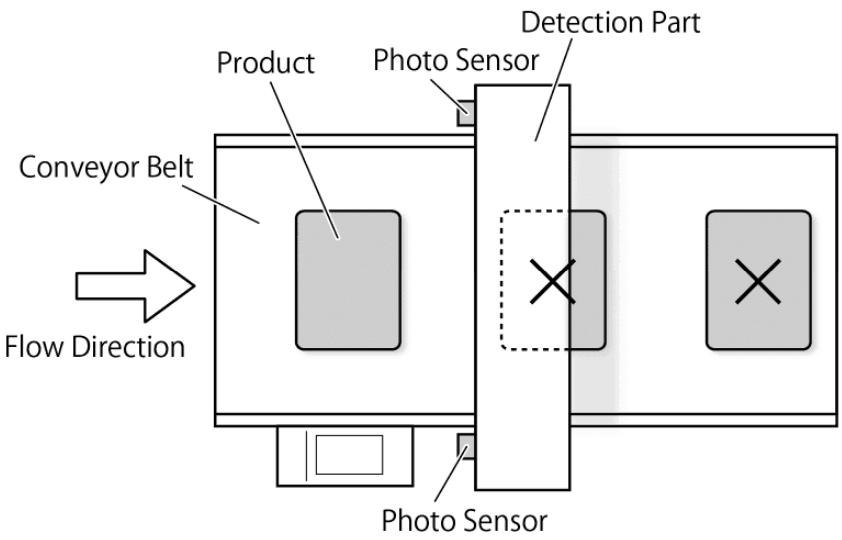
In case of a sorting by conveyor stop, the conveyor stops when detected. Remove nearby products, because a position of stop is a little changed by the factors below.

The factor

◎ Conveyor speed
◎ Conveyor overrun
◎ Slide of products
◎ Size of products
◎ Size of (a)detected metal(s).

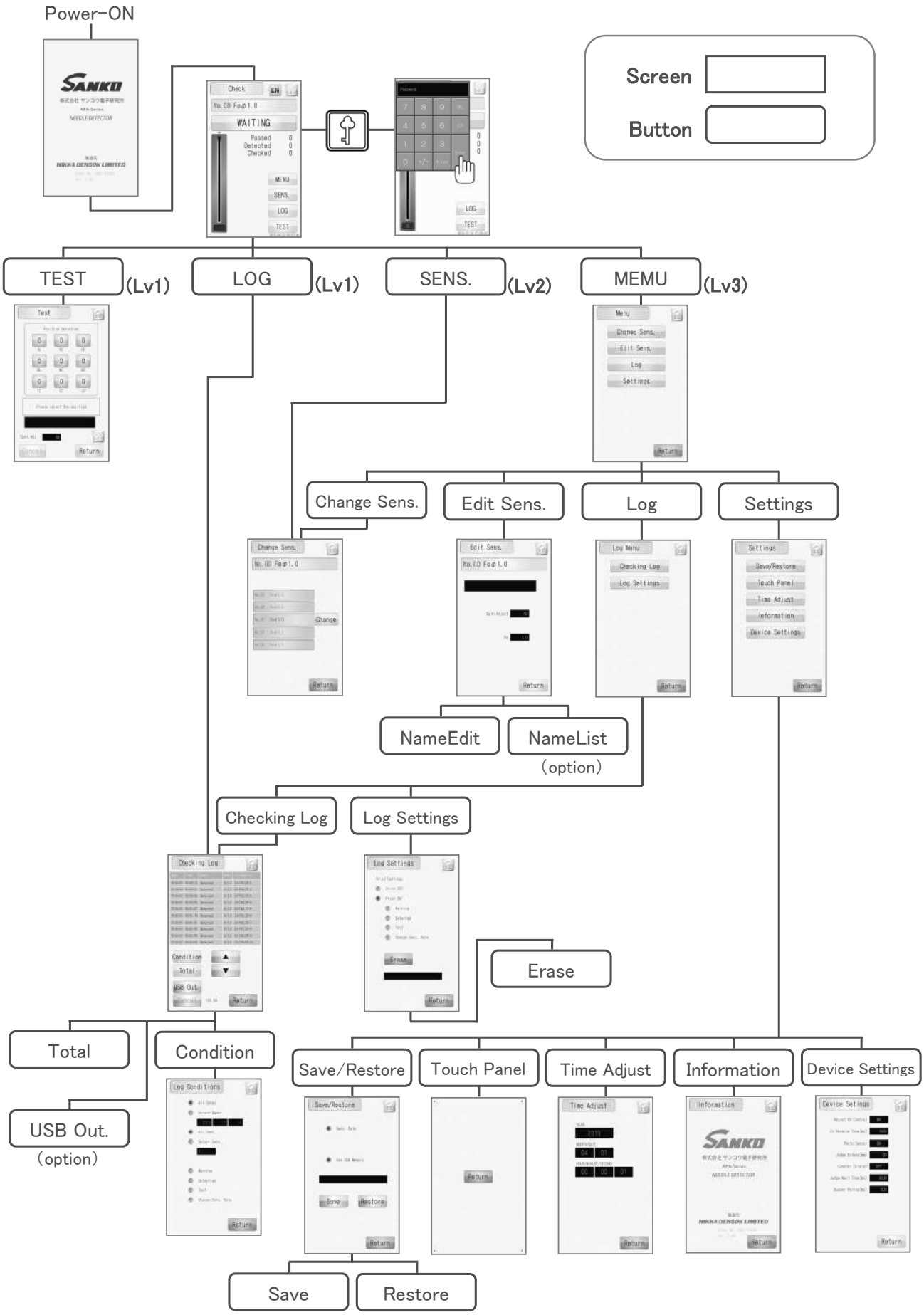
Example

In case of below, remove products marked ×.



Contents

Screen Tree


Power-ON
Screen
Button
TEST (Lv1)
LOG (Lv1)
SENS. (Lv2)
MEMU (Lv3)
Change Sens.
Edit Sens.
Log
Settings
NameEdit
NameList
(option)
Checking Log
Log Settings
Erase
Total
Condition
USB Out.
(option)
Save/Restore
Touch Panel
Time Adjust
Information
Device Settings
Save
Restore

Password

Password Level controls a kind of display of the screens.

Password Level 1（Lv1）
Screen of Lv1 can be displayed.
Password : 1000

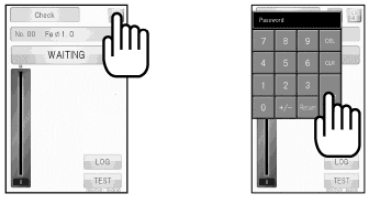
Password Level 2（Lv2）
Screen of Lv1 and Lv2 can be displayed.
Password : 2000

Password Level 3（Lv3）
Screen of Lv1, Lv2, and Lv3 can be displayed.
Password : 9000

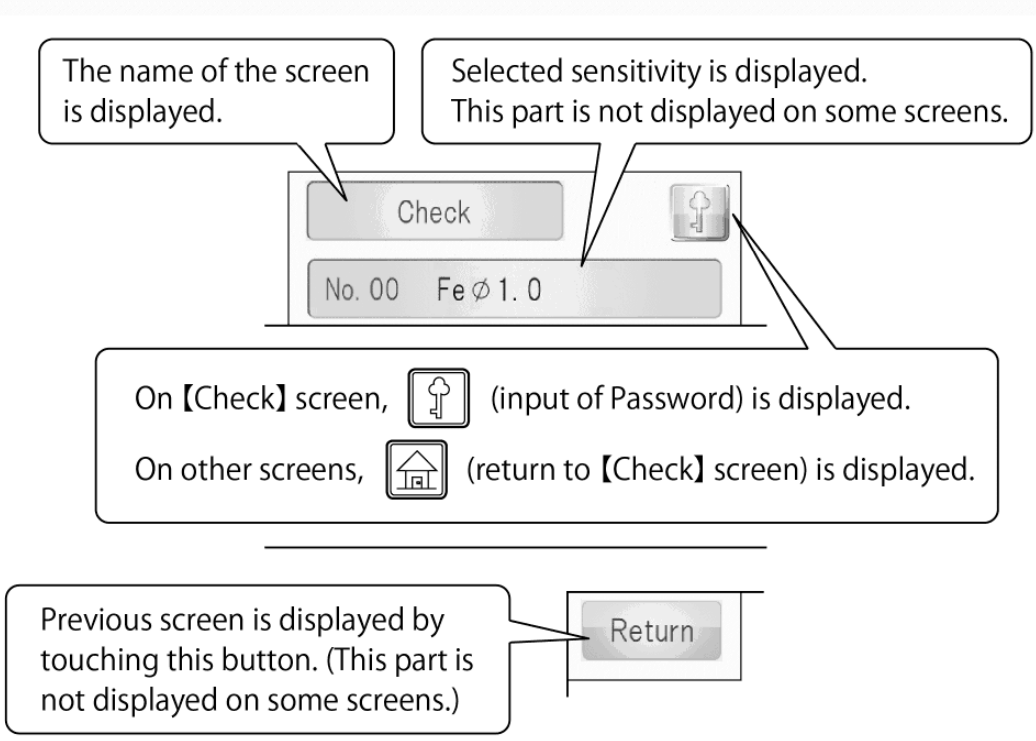
This machine starts at the password level 1 after turning off the power.

Change of password level（=Unlock）

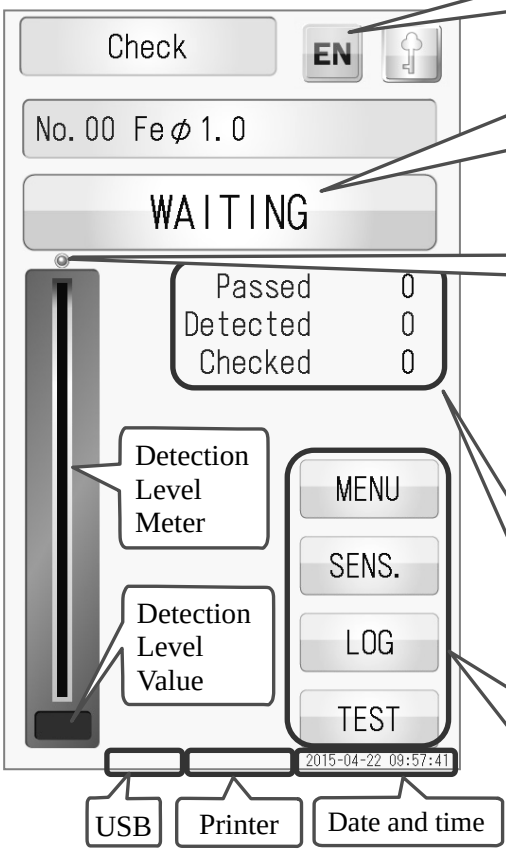
Touch on【Check】screen to display the numeric keypad, then input password and touch [Enter] key.



Common Part



【Check】screen



Language Change (Japanese・English・Chinese)
: Unlock by password level 3.

The state of this unit, such as CHECKING, DETECTED, WAITING are displayed.
PHOTO SW ON are displayed when the photo sensor is shielded.

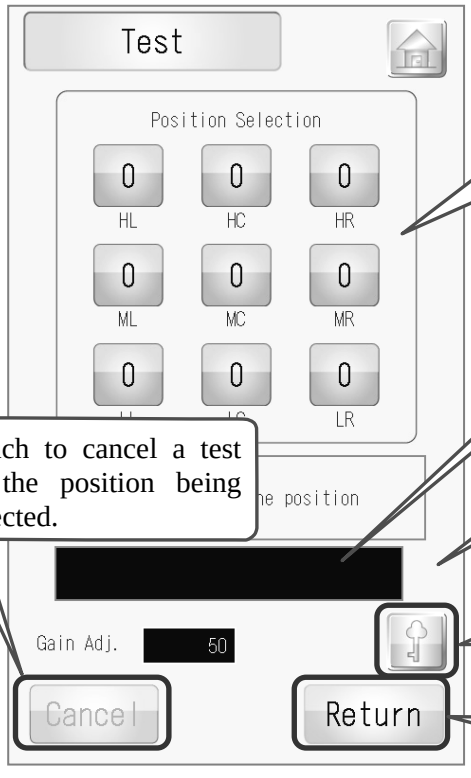
Checking period display lamp: turns green after a product passes the photo sensor, and returns to gray when the checking period finishes. If the photo sensor is OFF, the lamp turns green after the judge wait time is finished. The setting whether the photo sensor is used or not can be done at【Device Settings】screen (page 27).

These indications are displayed when the counter display is ON. Setting can be operated with 【Device Settings】screen (page 27). (When on delivery the counter display is OFF.)

Touch one of the buttons to display the screen.
[SENS.] is displayed at level 2, [MENU] at level 3.

※ While [WAITING] is displayed, be careful that objects are not checked.
※ When the counter display is ON, when the photo sensor is OFF (refer to page 27), [Detected] only is displayed.
※ The counter is available only when certain conditions are satisfied.
※ [USB] (option) : The state of USB is displayed. If error happens, the background color here will be red.
※ [Printer] (option) : The state of printer is displayed. If a printer has not been connected, the background color here will be red.

【Test】screen



1. Touch one of the buttons to turn its color blue and to be the state of test.
2. The number of test (0-99) is displayed on each button.
3. When a test of the position is finished, the color of the button turns gray.

Touch to cancel a test of the position being selected.

Detection Level Meter

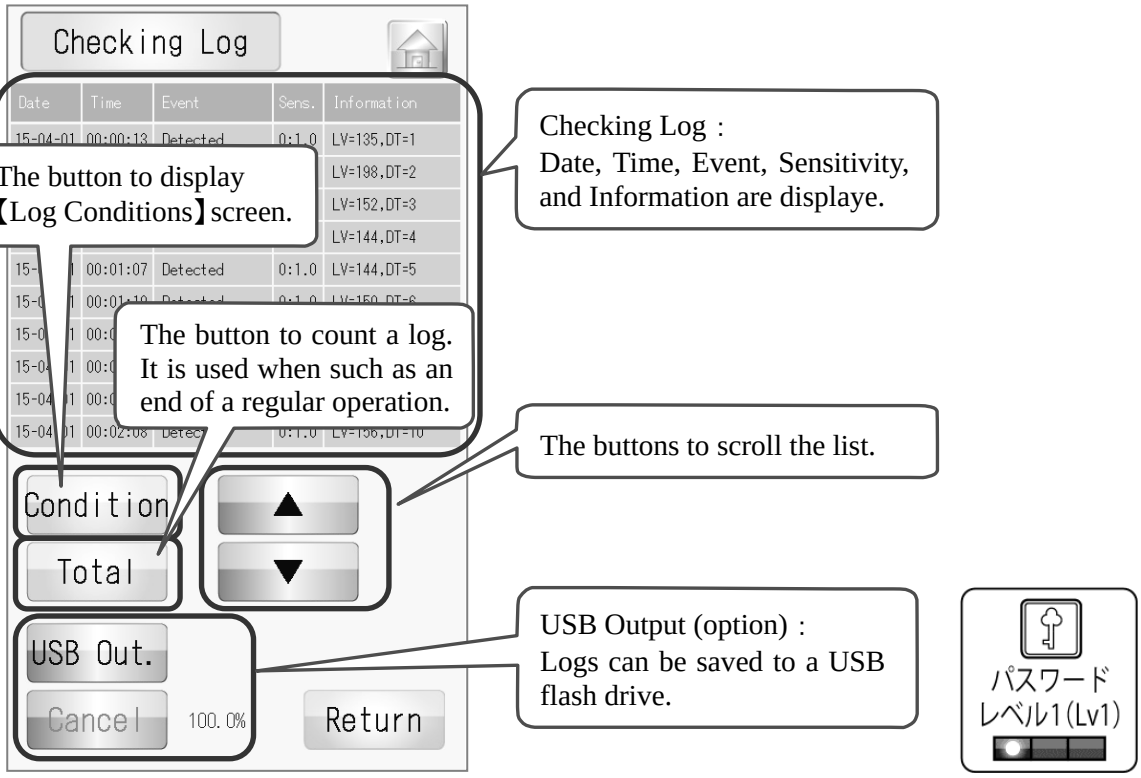
Detection Level Value

When adjusting sensitivities, unlock by password level 3 to edit.

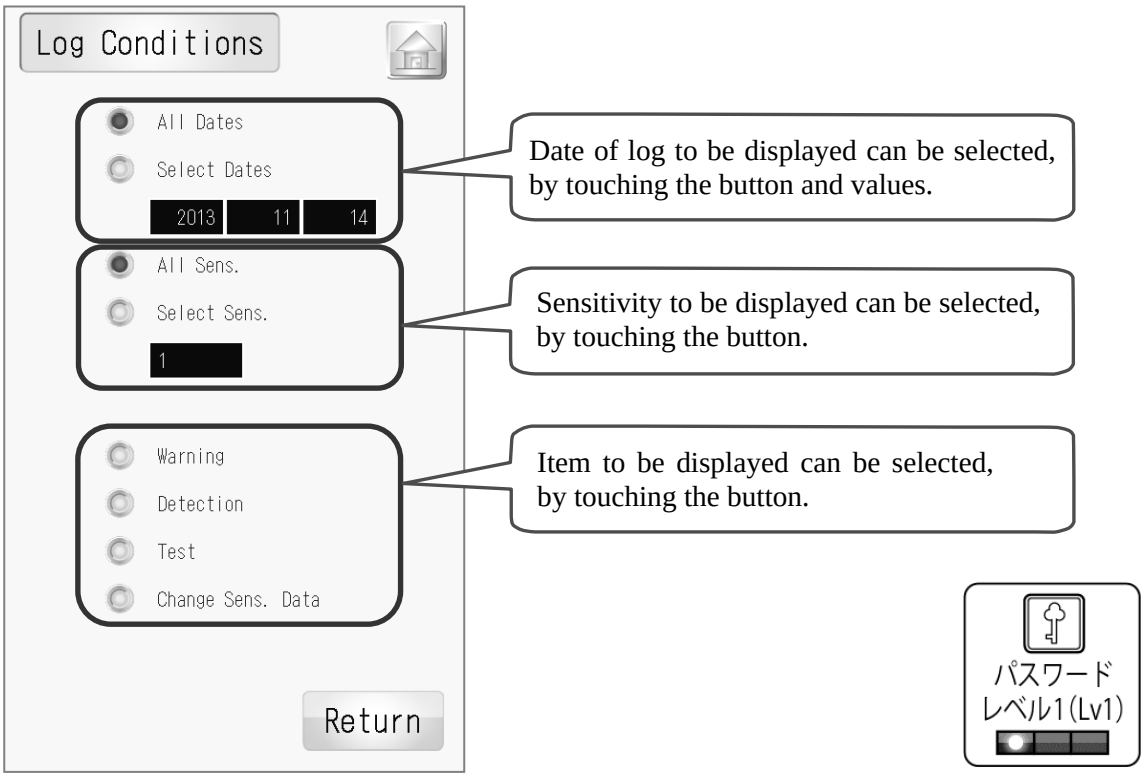
Touch to end a Test.

※ While testing, when one of the Position Selection buttons has been turned blue, other some buttons do not work.

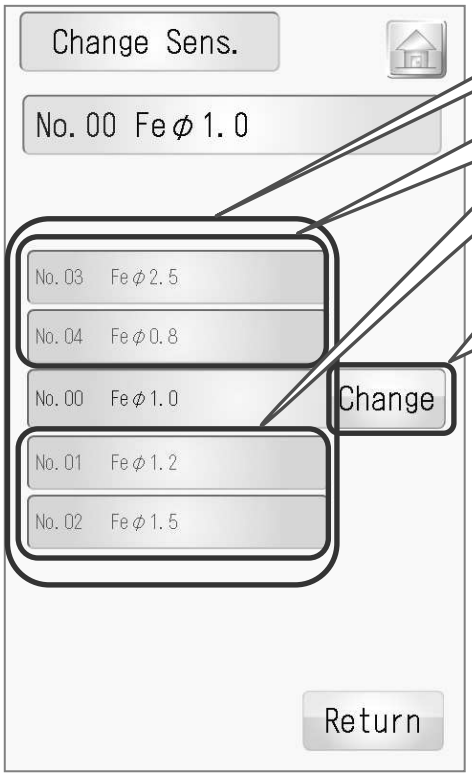
【Checking Log】screen



【Log Conditions】screen



【Change Sens.】screen



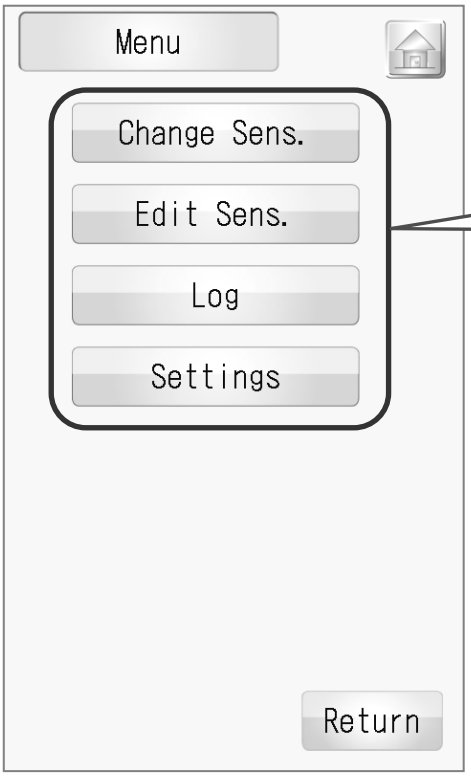
Sensitivities are displayed.

If one of 2 upper and lower sensitivities is touched, the sens. is moved to the middle.

After displaying the sensitivity to be changed in the center of the screen, touching the [Change] button displays 【Change Sens.】window and touching [Yes] changes the sensitivity.

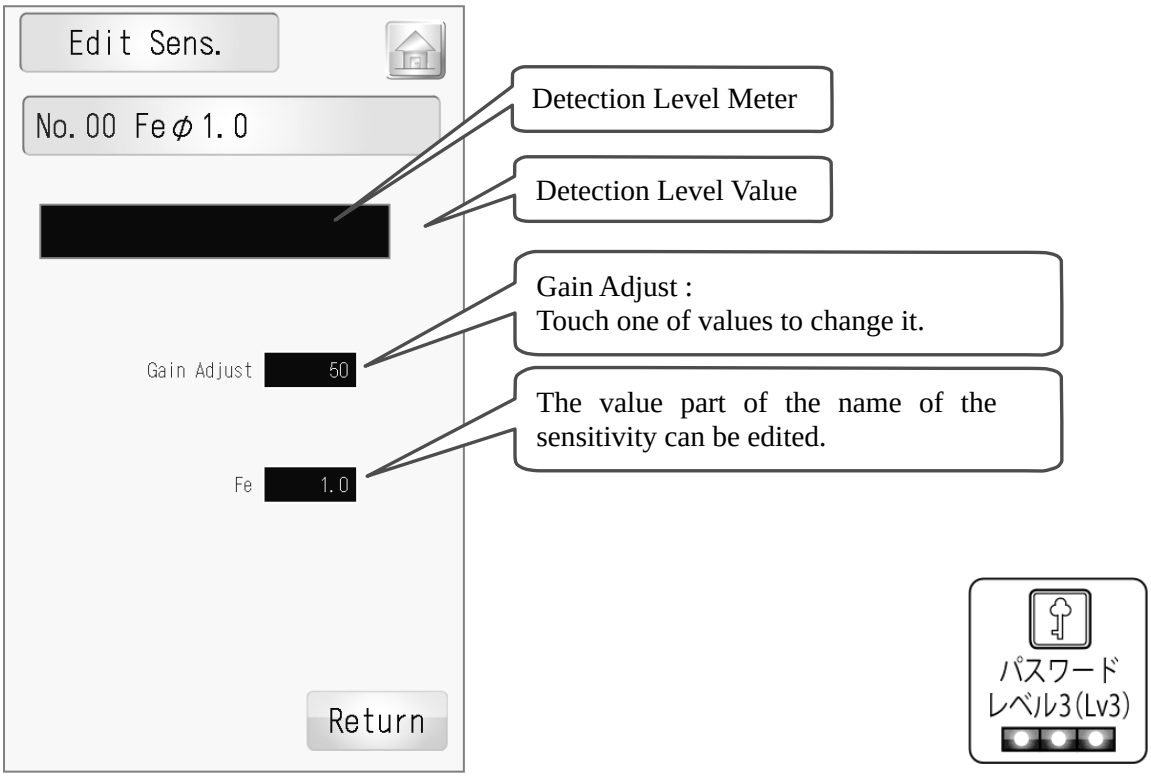
※ When on delivery, in case of a passing height with 100mm, sensitivities of Feφ0.8, φ1.0, φ1.2, φ2.5 are recorded. In case of a passing height with 140mm, sensitivities of Feφ1.0, φ1.2, φ1.5, φ2.5 are recorded.

【Menu】screen

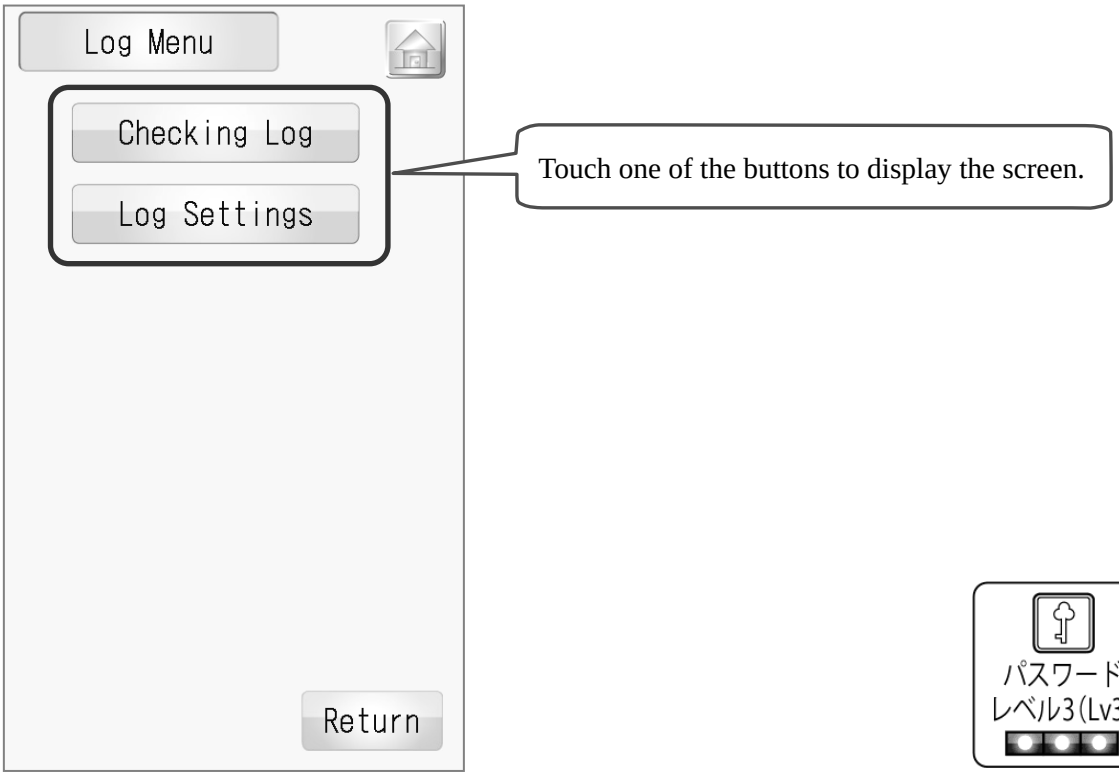


Touch one of the buttons to display the screen.

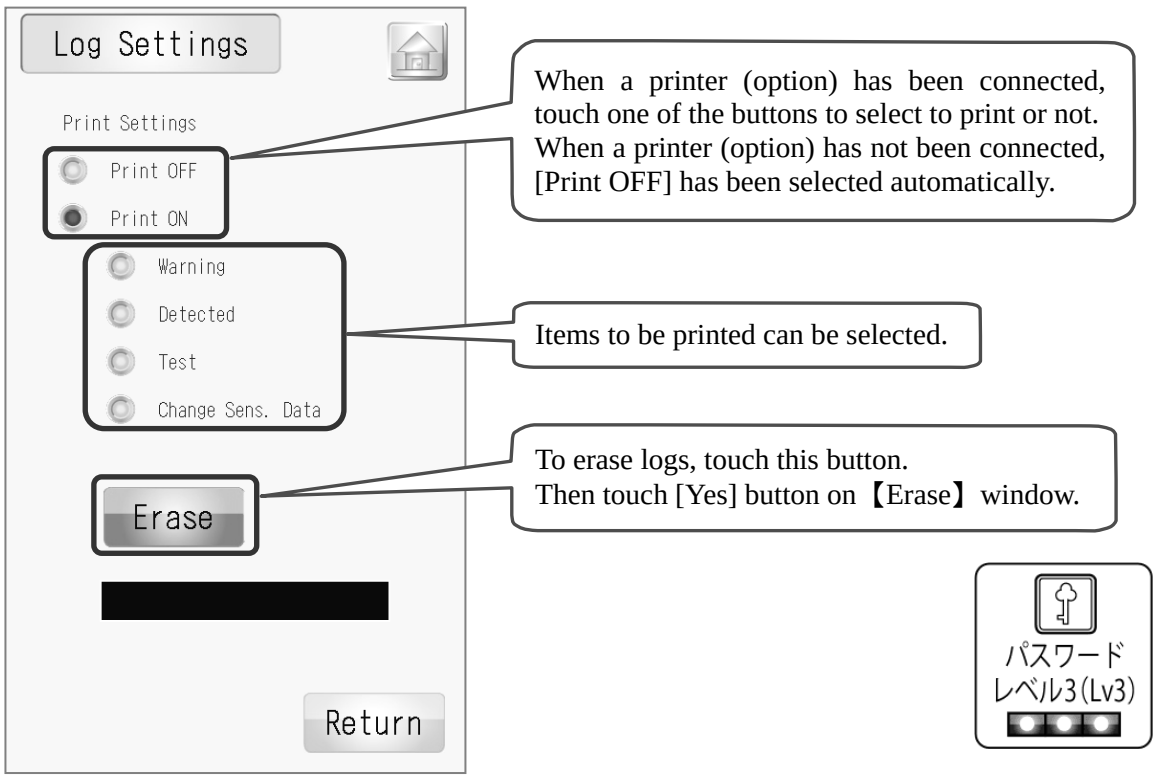
【Edit Sens.】screen



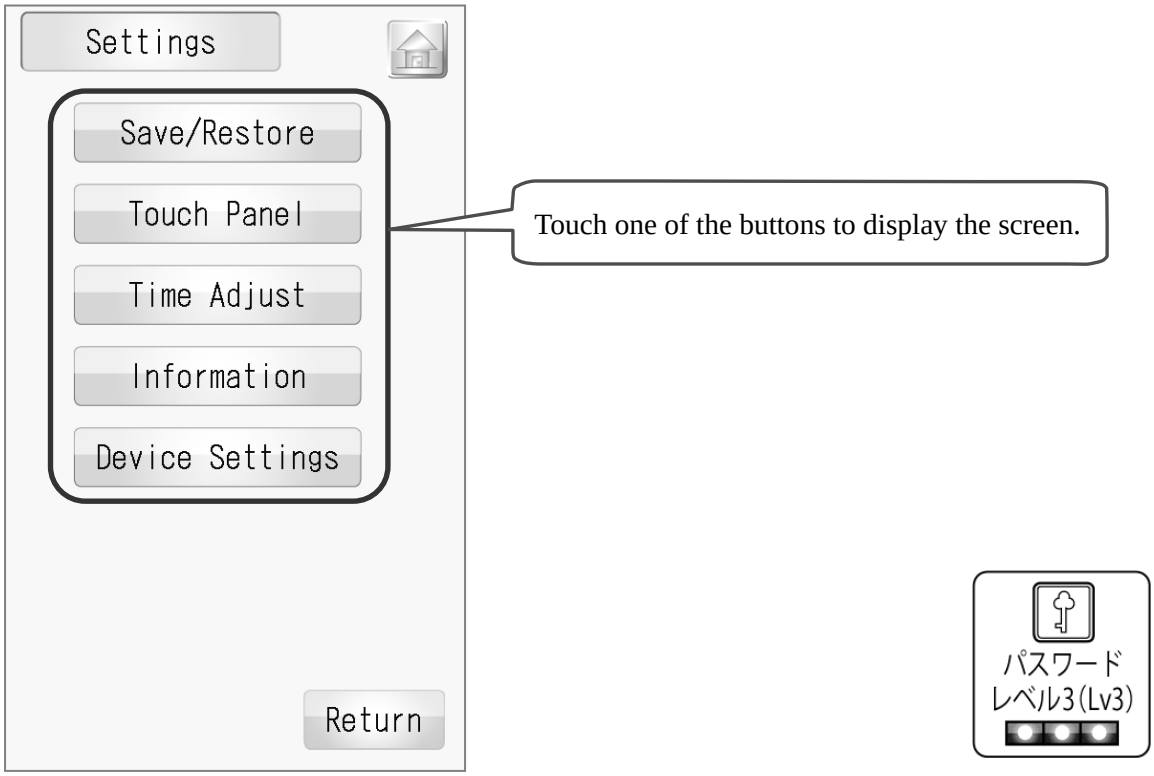
【Log Menu】screen



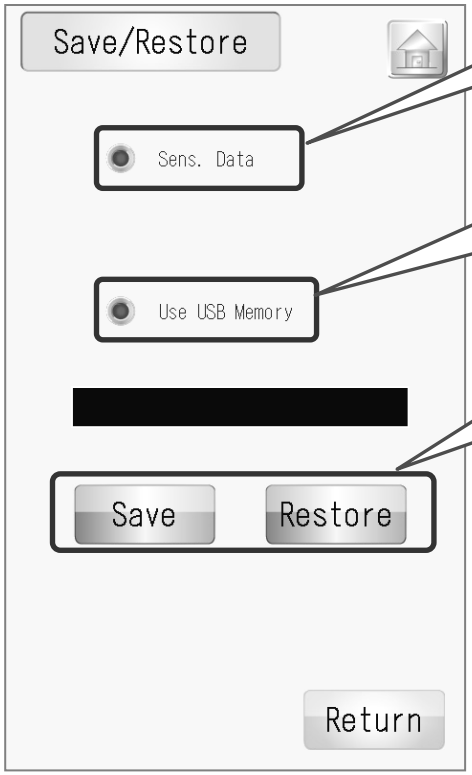
【Log Settings】screen



【Settings】screen



【Save/Restore】screen



Select whether sensitivity date is save/restore.

Touching the button after the sensitivity data goes on, it makes it possible to save/restore sensitivity data taken by using USB (option).

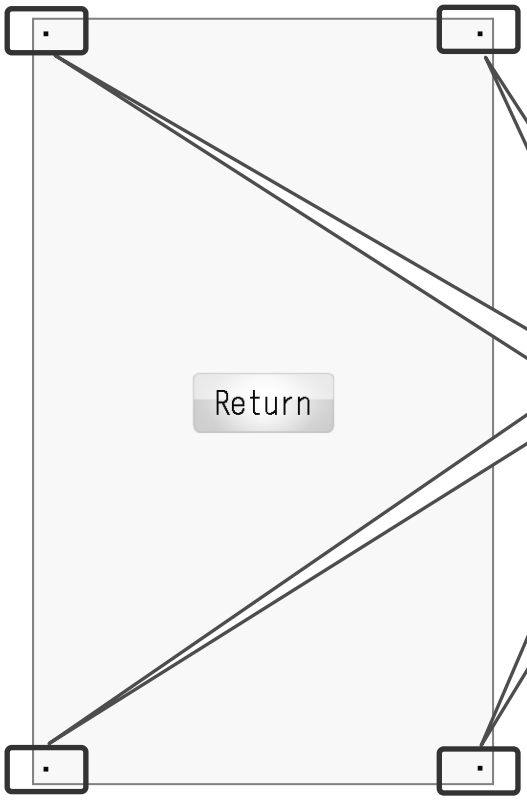
Touch one of the buttons to save/restore.
Then touch [Yes] button on a conformation window.

パスワード
レベル3(Lv3)

Save : Values set at【Edit Sens.】and【Device Settings】screens are saved to a memory of this machine.

Restore : If Save has been done, value of it is restored.

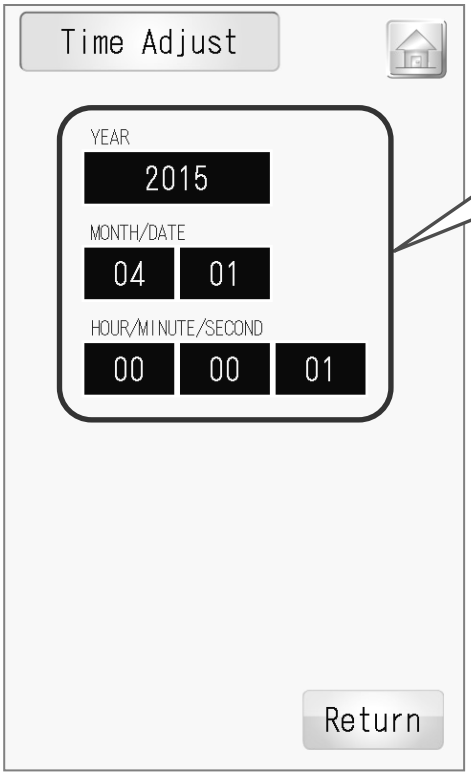
【Touch Panel】screen



To correct the position of the display of the touch panel, touch the 4 points one by one.

パスワード
レベル3(Lv3)

Time Adjust】screen



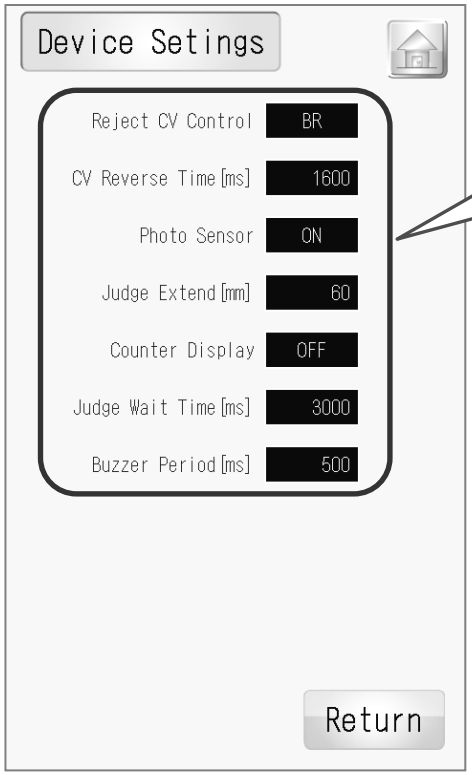
By touching one of values,
the numeric keypad is displayed.
Date and time can be set.

※ If this unit is not used for a long period, the date and time is initialized. So, reset the date and time.
(The date and time of data stored in record is not initialized.)

【Information】screen

Order No. etc. are displayed.

【Device Settings】screen



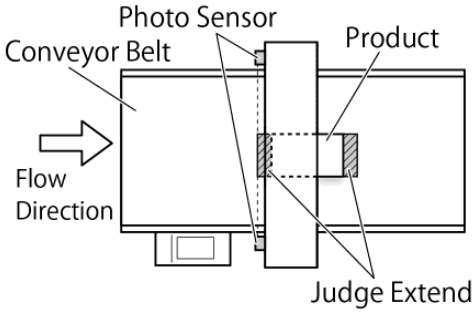
Touch one of values to change it.
At some items, the numeric keypad is displayed to input.

Reject CV Control:
[BR] Belt Return (When a product is detected, the conveyor belt reverses.)
[NONE] (When a product is detected, the conveyor belt does not stop.)
[CS] Conveyor Stop (When a product is detected, the conveyor belt stops.)

CV Reverse Time [ms]:
Belt Return time can be set.

Photo Sensor:
[OFF] Not using the photo sensor
[ON] Using the photo sensor

Judge Extend [mm]:
A value to extend a detecting distance of the photo sensor to prevent not checking front/rear parts etc. of a product where is/are thin or has/have not enough width/widths. Halves of the input value are added to the front and rear of a product, as a Judge Extend [mm]. For instance, when input 60mm, 30mm/30mm are added to the front and rear of a product.



Counter Display:
[OFF] The counters (Passed, Detected, and Checked) on【Check】screen are not displayed.
[ON] The counters (Passed, Detected, and Checked) on【Check】screen are displayed. (Passed and Checked are not displayed when Photo Sensor is set to OFF.)

Judge Wait Time [ms]:
Time from the start of the conveyor to time that checking can be started.
If this value is small, correct detection may not be done
caused by vibration at the start of the conveyor etc. Initial value: 3000ms

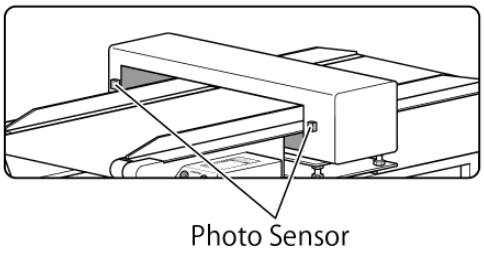
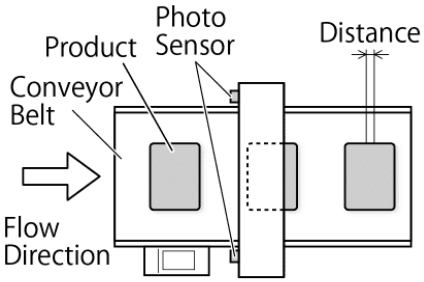
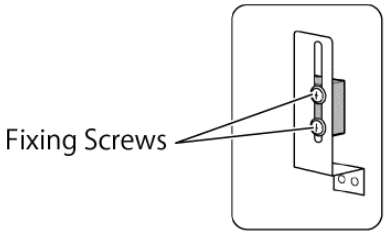
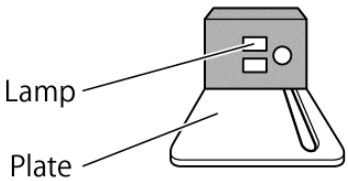
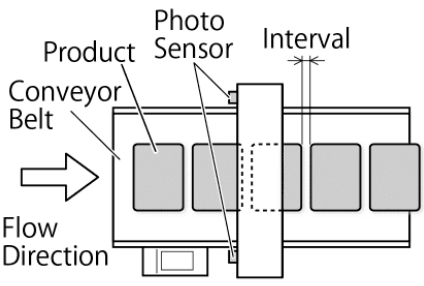
Buzzer Period [ms]:
Ringing time of the buzzer, which rings when detected, can be edited.
(Range of values:0～9999ms) If the buzzer period is set to 0, the setting of the buzzer is to be that when a product is detected the buzzer rings, and when the detection finishes the buzzer stops.

Contents

Adjustment of the Axis and Height of the Photo Sensor

⚠ Warning

Wearing no watch, rings etc. and tying your hair etc. is needed, in order to they do not reach to the conveyor belt.
If your hair, tie, necklace, bracelet, or watch band is gone into the rotating part, it will be caught in this machine, and it is dangerous.

Proce-dure	Purpose of Work / Detail of Work	Tool	Notes
Purpose	The photo sensor consists of Phototransmitter-Photoreceiver and Reflector (retroreflective model). Adjust height from the belt face of the two so that the light emitted from the Phototransmitter-Photoreceiver can reach the Reflector without fail and the reflected light can be received by the Phototransmitter-Photoreceiver. If it has been correctly adjusted, the lamp reacts (procedure 2). 		If the lens of the photo sensor is dirty, clean it. Refer to "Cleaning (including Disinfection)" (page 34). The type of the photo sensor should be that output is turned off when shielded. ※In case that packing form of products is same and Distance of Not shielding of a product is more than 50mm, please consult our company. 
1	Fix the photo sensor by sliding them up/down and tightening with phillips screws at the proper position. 	Phillips Screw driver	
2	The way to make sure the setting is below. While a product or the test piece passes the photo sensor, the lamp is turned off. 	Product to be checked Test Piece	※In case that packing form of products is same and Interval of products is narrow, please consult our company. 
3	If the setting is not correct, repeat the procedure 1 and 2 for the suitable position of the photo sensor.		

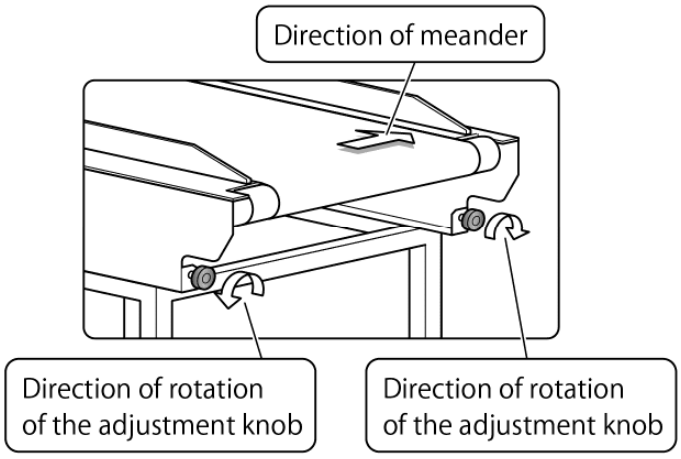
Meander correction of the Conveyor Belt

⚠ Warning

Wearing no watch, rings etc. and tying your hair etc. is needed, in order to they do not reach to the conveyor belt.
If your hair, tie, necklace, bracelet, or watch band is gone into the rotating part, it will be caught in this machine, and it is dangerous.

Proce-dure	Purpose of Work / Detail of Work	Tool	Notes
Purpose	To correct a meander of the conveyor belt that will occur caused by left-right asymmetry of the roller etc.		Stop the conveyor before turning the adjustment knobs. Do not tension the conveyor belt as the motor speed decreases.
1	Clean the roller part.		
2	Start the conveyor and see the direction of meander.		Do not lower tension of the conveyor belt as the conveyor belt idles.
3	Stop the conveyor, and turn the adjustment knob of the direction of meander to tension.		
4	Repeat procedure 2 and 3 and see there is no meander and fix the adjustment knobs.		
5	Start the conveyor and make sure stable running about five minutes to finish the correction.		

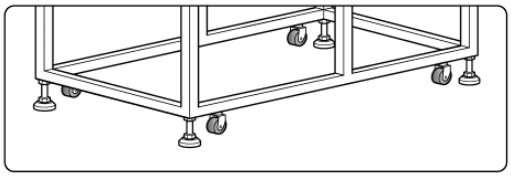
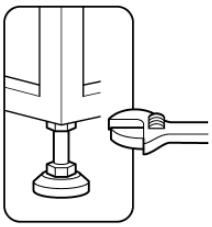
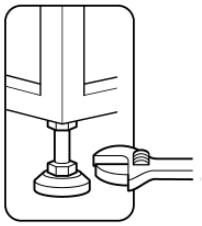
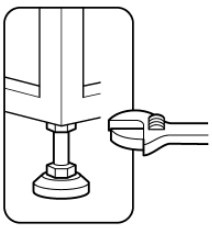
Correction part



Way to adjust the height of the conveyor level of this machine and the conveyor levels of a front and rear machines

⚠ Warning

Wearing no watch, rings etc. and tying your hair etc. is needed, in order to they do not reach to the conveyor belt.
If your hair, tie, necklace, bracelet, or watch band is gone into the rotating part, it will be caught in this machine, and it is dangerous.

Proce-dure	Purpose of Work / Detail of Work	Tool	Notes
Purpose	Smooth transfer of products from a front machine to this machine to a rear machine.		
1	Make sure the position of the adjusters. 		
2	Loosen the locknuts of the adjusters bolts. 	Wrench	
3	Adjust the adjuster bolts. 		
4	Make sure that a smooth transfer of products from a front machine to this machine to a rear machine. If the setting is not correct, repeat the procedure 2 and 3.		
	Tighten the locknuts. 		

Contents

Every Day Maintenance / Confirmation

When the Conveyor Stopping	
Confirmation Point	**Maintenance / Confirmation**
Confirmation of sensitivity	Before checking or changing sensitivity, see sensitivity.
Cleaning	If the surface of the conveyor belt is dirty, clean it. Refer to ”Cleaning (including Disinfection)” (page 34).
Smooth transfer	Make sure that transfer of products, from a front machine to this machine to a rear machine, is smooth.
When the Conveyor Running	
Unusual Sound	Make sure that there is no unusual sound from the rollers, gearhead, or motor. Noise may happen when the bearings of the rollers, gearhead, or motor are worn down.
Photo Sensor	Make sure that the photo sensor is shielded when a product passes it.
Sorting	Flow products several times and make sure that the products are not sorted / detected. Flow a product and the test piece, and make sure that the product is sorted / detected.

Every Month Maintenance / Confirmation

⚠ Warning

When maintain / confirm, unplug the power cable to prevent electric shock or injury.

When the Conveyor Stopping	
Confirmation Point	**Maintenance / Confirmation**
Wearing Down of the Conveyor Belt	Make sure that there is no fray of the side of the conveyor belt, a cutting or a deformation of the belt.
Tension of the Conveyor Belt	Make sure that the tension of the conveyor belt is correct. If tension is too stiff, the side of the conveyor belt will turn up. If tension is too low, the conveyor belt may not transfer product.
Wearing Down of the Timing Belt	Make sure that the timing belt has not been started to be cut. →If the timing belt is cut, the conveyor stops completely.
Tension of the Timing Belt	Make sure that the tension of the timing belt is correct. Correct tension is that when the timing belt is pressed by fingers, the conveyor belt yields between approx. 7mm and 10mm. If tension is too stiff, a wearing off of the timing belt progresses fast. If tension is too low, the conveyor belt may not transfer product.
Damage or Looseness of the Screws	Make sure that the screws have not been damaged or loosened.
The Photo Sensor	Make sure that the screws of the photo sensor have not been loosened. Make sure that the axis and height of the photo sensor is correct.

Cleaning (including Disinfection)

⚠ Warning

When cleaning, unplug the power cable to prevent electric shock or injury.

Place of Cleaning	Cleaning Method	Cycle
The surface of the Conveyor Belt	Wipe the surface of the conveyor belt by a well squeezed sponge or a well squeezed piece of cloth that after soaked in lukewarm water with neutral detergent. And then wipe the conveyor belt with a piece of cloth that soaked in 90% ethyl alcohol.	Every Day
The Rollers	Wipe the surface of the conveyor belt by a well squeezed piece of cloth that after soaked in lukewarm water. And then wipe the conveyor belt with a piece of cloth that soaked in 90% ethyl alcohol. If the rollers and shafts are very dirty, at first remove the conveyor unit and wipe the rollers by a well squeezed piece of cloth that after soaked in lukewarm water.	Every Day
The Control Part	Wipe by a well squeezed piece of cloth that after soaked in lukewarm water.	Every Month
The Detection Part	The Outside: Wipe by a well squeezed piece of cloth that after soaked in lukewarm water. The Inside (the tunnel that products pass): Wipe by a well squeezed piece of cloth that after soaked in lukewarm water, as well as the outside. And then wipe the tunnel by a piece of cloth that soaked in 90% ethyl alcohol.	Every Month
The Photo Sensor	Wipe all parts, including the floodlight side and the reflection board, by a piece of dry cloth.	Every Month
The Frame	Wipe by a well squeezed piece of cloth that after soaked in lukewarm water.	Every Month

The cycles are reference, therefore make sure of dirt depending on operation time and clean.

Replacing Fuse

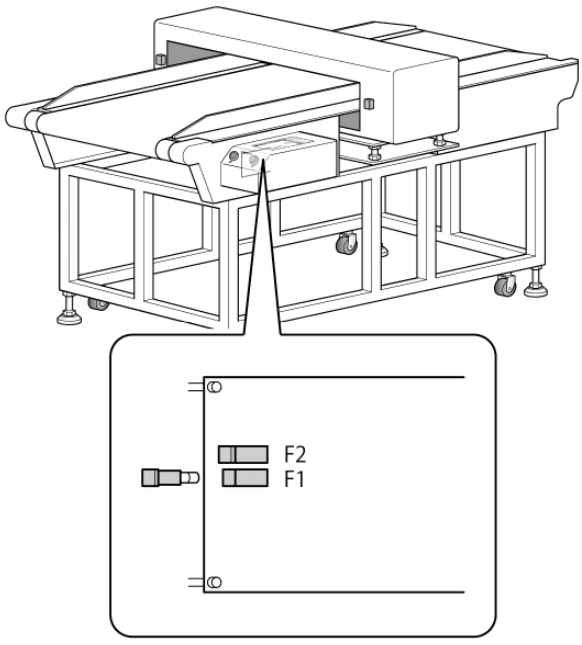
⚠ Warning

When replacing fuse, unplug the power cable to prevent electric shock or breakdown.

Name of the Fuse and the use	Phenomenon by blowing	Confirmation Point when Replacing
・F1 (rating = 1.25A) : for the Control Part Power ・F2 (rating = 3.15A) : for the Conveyor Drive Power	・Power is not turned on. ・The conveyor does not start.	Before replacing fuse and turn on the power, ①if the cause of the blowing is known, solve the problem, ②and make sure that the power breaker has been turned ON, and the connection of the power cable is correct. If a fuse is blown after replacing, contact our company.

Fuses have been installed in the fuse cases (F1 and F2) on the circuit board.

※Remove the cover of the control part.



1. Remove the cap from the fuse case.
2. Remove an old fuse.
3. Install a new fuse.
4. Mount the cap installed the fuse to the fuse case.

Keeping

- Keep this machine at a place where the temperature is stable.
  Surrounding temperature (No condensation is required.)
  Temperature [0 - 40°C / 32 - 104°F] Humidity ［30 - 85%］
- Keep this machine at a place without dust, or with little dust.
- Keep this machine at a place without a device that makes electric sparks, such as a welding machine.

⚠ Warning

●If a construction, such as a drilling or welding, is done near this machine, avoiding that metal sticks to the conveyor belt is required, to prevent to damage the conveyor belt or incorrect actions.

When emergency, using this machine as a carrying conveyor

Warning

Conveyor starts immediately, when this switch is turned on.

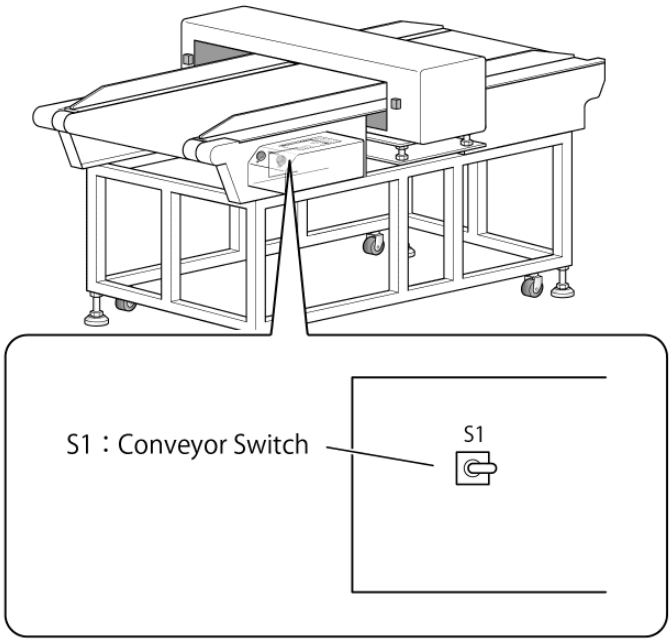
Warning

Do not touch the conveyor belt running, to prevent to be caught.

Proce-dure	Operation, Confirmation Point	Display, Result	Notes

The conveyor starts, when the Conveyor Switch (S1) is turned ON.
The conveyor stops, when the Conveyor Switch (S1) is turned OFF.

S1 is on the circuit board.



That's all for "When emergency, using this machine as a carrying conveyor".

If trouble cannot be solved by doing measures below, contact our company.

Phenomenon	Confirmation Point	Measure
[Power Switch] is turned to ON side, but the power does not turn on.	◎ Has the power cable been connected to a socket/outlet correctly?	← Connect the power cable to a socket/outlet correctly.
	⚠ Warning  **Unplug the power cable to prevent electric shock or breakdown.**	
	Remove the cover of the control part.	
	◎ Has the fuse (F1) blown?	← Replace the fuse (F1: 1.25A). (Refer to ”Replacing Fuse” (page 35) for the position of the fuse.)

Phenomenon	Confirmation Point	Measure
[Conveyor ON Button] is pressed, but the conveyor does not start.	**⚠ Warning**  **Unplug the power cable to prevent electric shock or breakdown.**	
	◎ Has the conveyor belt been stuck to the belt support?	← Push the conveyor belt softly by hand.
	◎ Is tension of the conveyor belt and the timing belt correct?	← Re-stretch the conveyor belt or the timing belt. Refer to “Every Month Maintenance / Confirmation” (page 33) for tension.
	Remove the cover of the control part.	
	◎ Has the fuse (F2) blown?	← Replace the fuse (F2 : 3.15A). (Refer to ”Replacing Fuse” (page 35) for the position of the fuse.)
Unusual sound happens when the conveyor starts.	**⚠ Warning**  **Stop the conveyor to prevent injury or accident.**  **Unplug the power cable to prevent electric shock or breakdown.**	
	◎ Has a foreign body been stuck to the belt?	← Remove a foreign body.
	◎ Is there a foreign body at the other side or inside of the belt?	← Remove a foreign body.
	◎ Is there looseness of the screws of the conveyor or motor?	← Tighten the screws of the conveyor or motor.
Detection happens when the conveyor starts.	**⚠ Warning**  **Stop the conveyor to prevent injury or accident.**  **Unplug the power cable to prevent electric shock or breakdown.**	
	◎ Is there metal on/nearby the conveyor belt?	← Remove metal and clean the conveyor belt by wiping it by a well squeezed piece of cloth after soaked in lukewarm water.
	◎ Is there looseness of the screws of the conveyor or motor?	← Tighten the screws of the conveyor or motor.

Phenomenon	Confirmation Point	Measure
Detection happens when run a product for test.	◎ Is the sensitivity for the kind of the product?	← Change sensitivity for the kind of product. (Refer to "2. Change Sens." (page 15).)
	◎ Has the way of run not been changed?	← Go back to normal way of run.
	◎ Has a quality (such as measurements, weight and materials) of product been changed?	← Go back a quality of product to normal.
Detection does not happen. Sorting does not happen.	◎ Is the sensitivity for the kind of the product?	← Change sensitivity for the kind of product. (Refer to "2. Change Sens." (page 15).)
	◎ Has the way of run not been changed?	← Go back to normal way of run.
	◎ Has a quality (such as measurements, weight, and materials) of product been changed?	← Go back a quality of product to normal.
	◎ Is test piece correct?	
	◎ Does a product pass the photo sensor?	← Adjust the axis and height of the photo sensor in order to a product passes the sensor. (Refer to "Adjustment of the Axis and Height of the Photo Sensor" (page 29).)

<table>
<tr><th>Phenomenon</th><th>Confirmation Point</th><th>Measure</th></tr>
<tr><td>[Conveyor OFF Button] is pressed, but the conveyor does not stop.</td><td colspan="2">⚠ Warning
 
Unplug the power cable
to prevent electric shock or breakdown.
Remove the cover of the control part.
◎ Has the switch (S1), on the alarm board, been turned OFF?
← Turn the switch (S1) to OFF, the upper side.
(Refer to ” When emergency, using this machine as a carrying conveyor” (page 37) for the position of the switch.)</td></tr>
<tr><td>The power cannot be turned off.</td><td>◎ Has [Power Switch] been turned OFF?</td><td>← Turn [Power Switch] to OFF.</td></tr>
</table>

<table>
<tr><th>Phenomenon</th><th>Confirmation Point</th><th>Measure</th></tr>
<tr><td>The conveyor does not start.</td><td colspan="2">Measure: Refer to procedure 3 of “1. Every Day Operation” (page 12).</td></tr>
<tr><td rowspan="2">The screen does not react, though products are ran.</td><td colspan="2">⚠ Warning
 
Stop the conveyor to prevent injury or accident.</td></tr>
<tr><td>◎ Do products pass the photo sensor?</td><td>← Adjust the axis and height of the photo sensor in order to a product passes the sensor. (Refer to “Adjustment of the Axis and Height of the Photo Sensor” (page 29).)</td></tr>
<tr><td>Detection happens when products are ran.</td><td colspan="2">Measure: Refer to procedure 4 of “1. Every Day Operation” (page 12).</td></tr>
<tr><td>Detection does not happen.
Sorting does not happen.</td><td colspan="2">Measure: Refer to procedure 7 of “1. Every Day Operation” (page 12).</td></tr>
<tr><td>The conveyor does not stop.</td><td colspan="2">Measure: Refer to procedure 11 of “1. Every Day Operation” (page 14).</td></tr>
</table>

Glossary

In this page, words used in this instruction manual are described.

- **Sensitivity**
  The settings of this needle detector for products are entered.
  5 sensitivities, registered and free, are available.

- **Detection**
  means that Detection Level Meter reaches Detection Level and a sorting is done.

- **Detection Level**
  is a boundary that selects a product of having a piece of metal and a product of not having a piece of metal.
  Detection Level is displayed as Detection Level Meter and Detection Level Value on【Check】and【Test】screens etc.

- **Reject Daley Time**
  is a time between a product passes the photo sensor and a moment of detecting a piece of metal.

- **Reject Keep Time**
  is a time between a moment of detecting a piece of metal and the end of a sorting.

- **Sorting**
  There are some kinds of movement according to a kind of sorting.
  ◎ Belt Return
  The conveyor reverses and the buzzer rings when detecting metal.
  ◎ Conveyor Stop
  The conveyor stops and the buzzer rings when detecting metal.
  ◎ A sorting machine (option)
  When detecting metal, the buzzer rings and the product of having (a) piece of metal(s) is discharged by a sorting machine.

- **Regular Operation**
  is to start checking by pressing [Conveyor ON Button] when【Check】screen has been displayed.

- **Product for Test**
  is a product that has average quality (such as measurements, weight, materials, and temperature) of products to be ran on a production line.