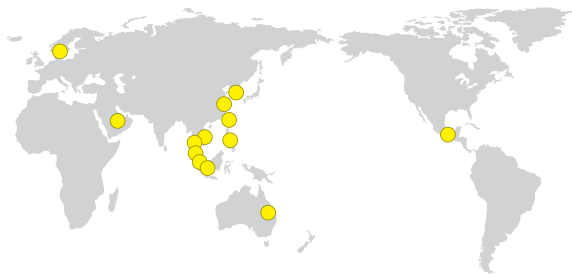
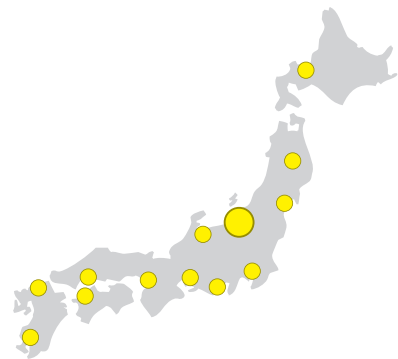


X-ray Seal Inspection System Seal Inspection System

General Catalog



Agents



Japan office

For more information, contact our office listed below.

The contents of the specifications are subject to change without prior notice due to continual improvement.



Head Office / Head Plant
157, Kanawa, Kitamati, Nagaoka-shi, Niigata-ken, 940-2121, Japan
TEL +81-258-47-1377 FAX +81-258-47-0161

Korea • Taiwan • China • Philippines • Thailand • Singapore • Australia
Europe • United Arab Emirates • Malaysia • Indonesia • Vietnam • Mexico

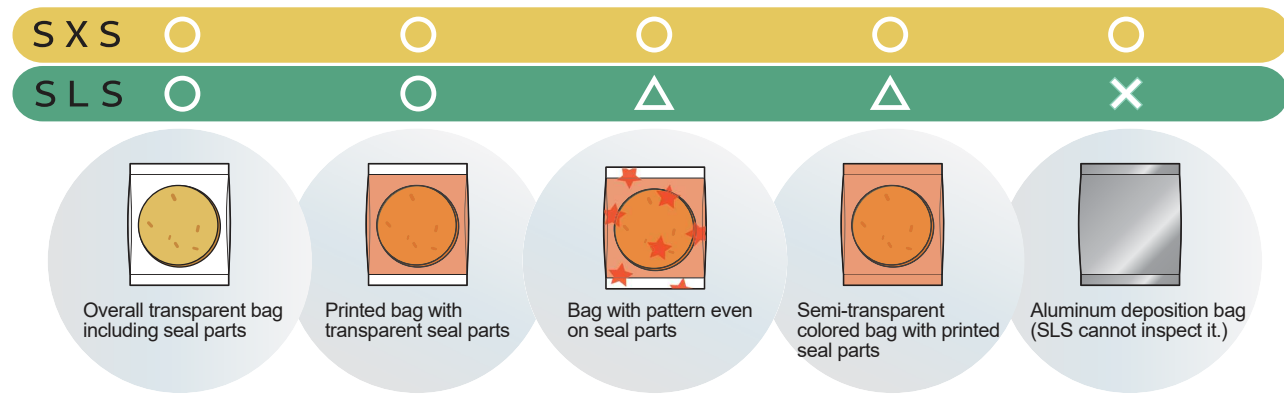
Japan office
Sapporo • Iwate • Sendai • Niigata • Tokyo • Shizuoka • Toyama • Nagoya
Kansai • Hiroshima • Shikoku • Fukuoka • Kagoshima

www.system-square.com



What you can do with the X-ray seal inspection system and seal inspection system.

Packing materials and applicable models



Jam NG detection examples



Packing material
Jam

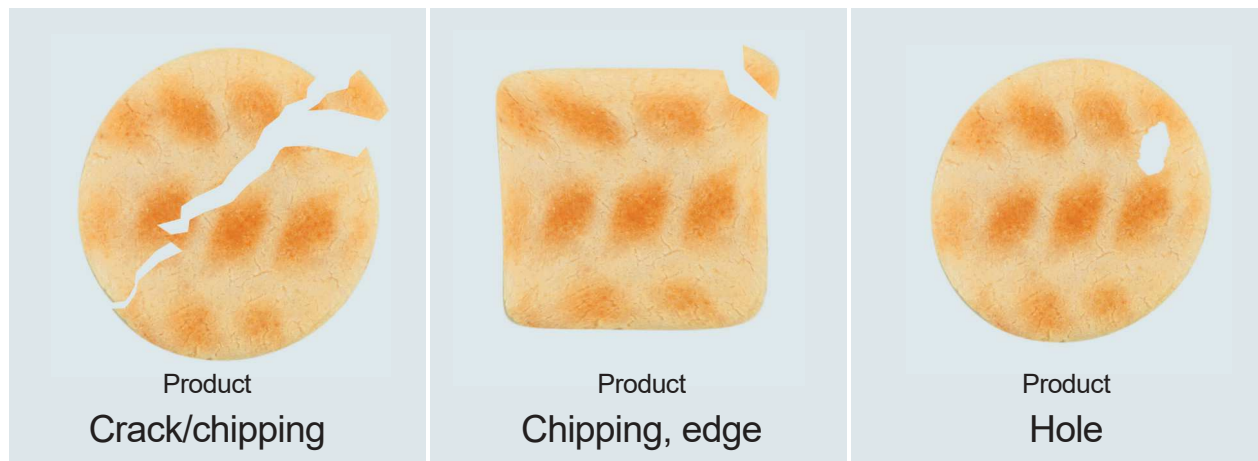
Fragments, broken pieces, or seal faults of the seal parts are detected to reject the product.

Packing material and product
Foreign object
(with metal detector and SXS)

The inspection system equipped with the metal detector can detect metal foreign objects. The SXS inspection system can detect foreign objects, such as metal, bone, glass, and stone.

Product
Weight (SXS)

Relative weight inspection based on X-ray images. The weight is measured using the X-ray.



Product
Crack/chipping

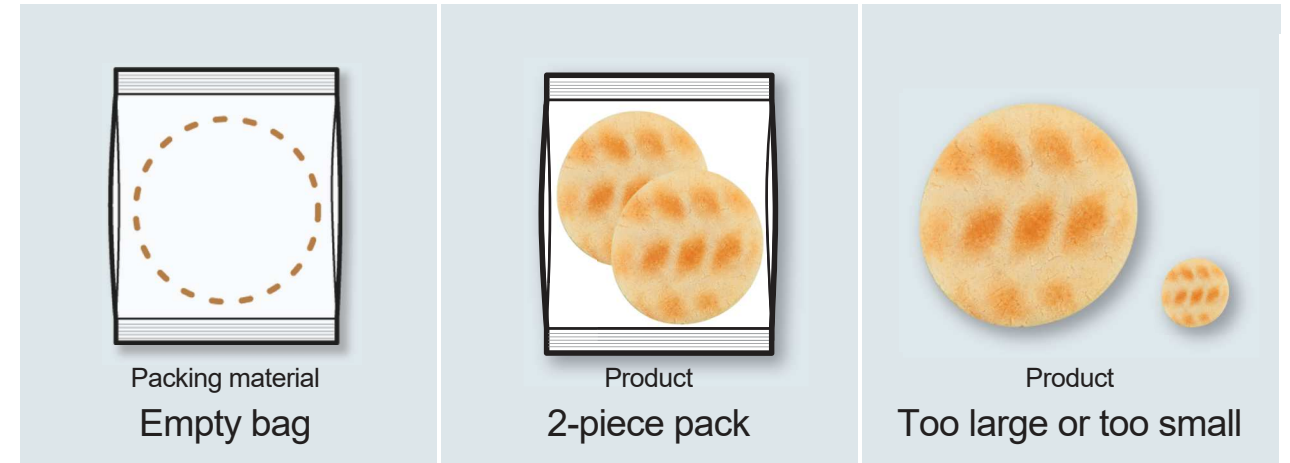
Faults such as product fracture, chipping, or crack from the outer periphery can be detected.

Product
Chipping, edge

The inspection system equipped with the metal detector can detect metal foreign objects. The SXS inspection system can detect foreign objects, such as metal, bone, glass, and stone.

Product
Hole

Small holes made during production of rice confectioneries or baked confectioneries can be detected.



Packing material
Empty bag

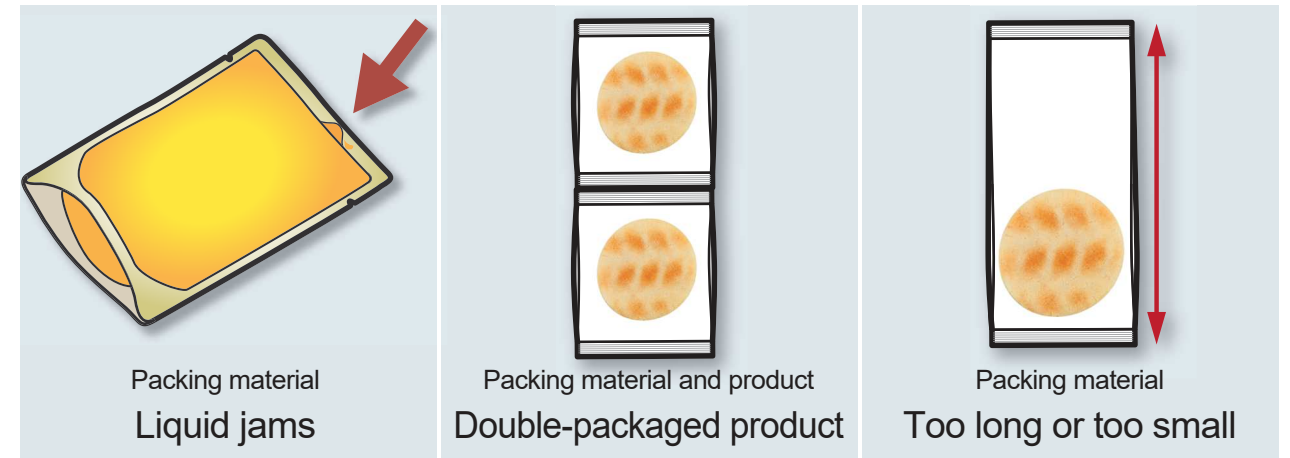
Empty bag containing no product can be detected to reject the product.

Product
2-piece pack

1-piece pack bag product containing a quantity more than the specified level can be detected to reject the product.

Product
Too large or too small

Area, width, and length of the product are measured to detect and reject the product not satisfying the specified size.



Packing material
Liquid jams

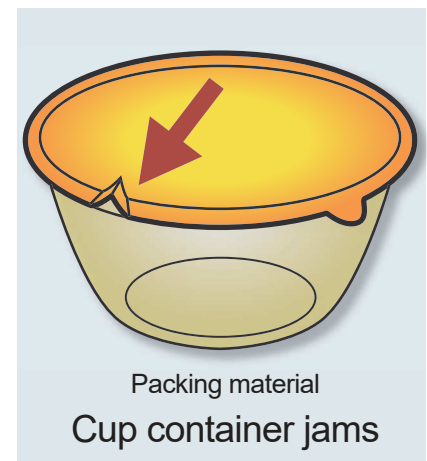
Various jams from liquid to semi-solid in the seal parts can be detected to reject the product.

Packing material and product
Double-packaged product

Connected packages due to package separation failure can be detected to reject the product.

Packing material
Too long or too small

Package with an abnormal size due to packing machine failure can be detected to reject the product.



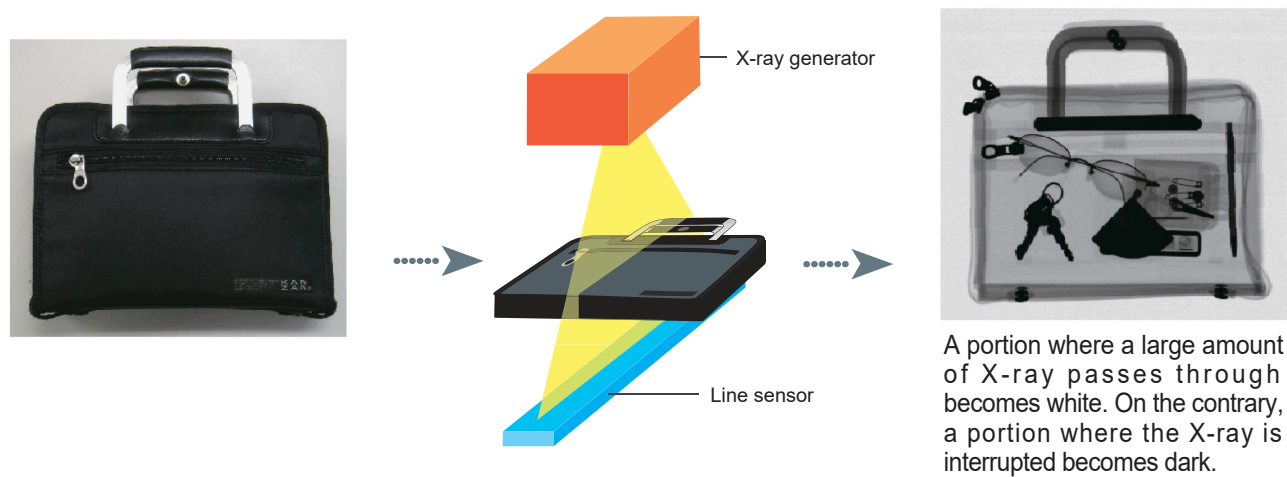
Packing material
Cup container jams

Jam, seal fault, or package fault that occurs in the seal part around the cup container can be detected to reject the product

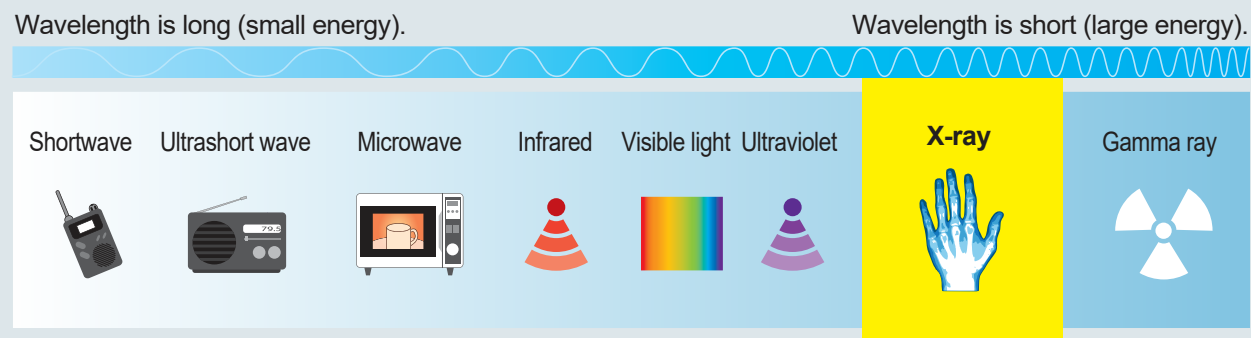


Individually packed snacks, packed hams, poultices, packed spices, disposable warmers, and instant noodles, etc.

About X-ray inspection system

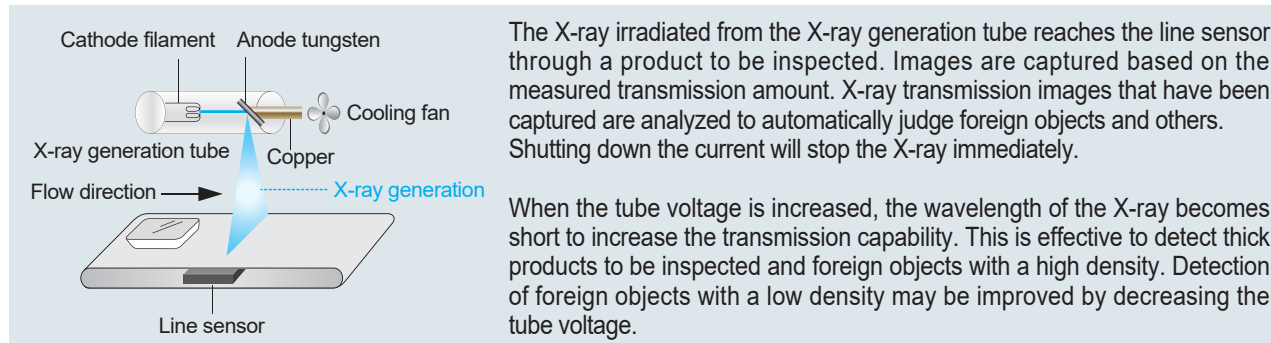


X-ray belongs to electromagnetic waves

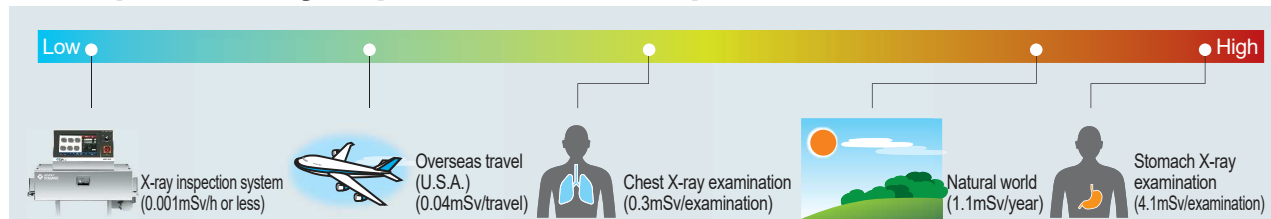


The X-ray inspection system is so designed that the inside of an article can be seen clearly by utilizing the principles that are basically the same as the X-ray radiography. Soft X-ray with small energy among X-rays is used for the X-ray inspection.

Mechanism of X-ray generation



Example of X-ray exposure level comparisons

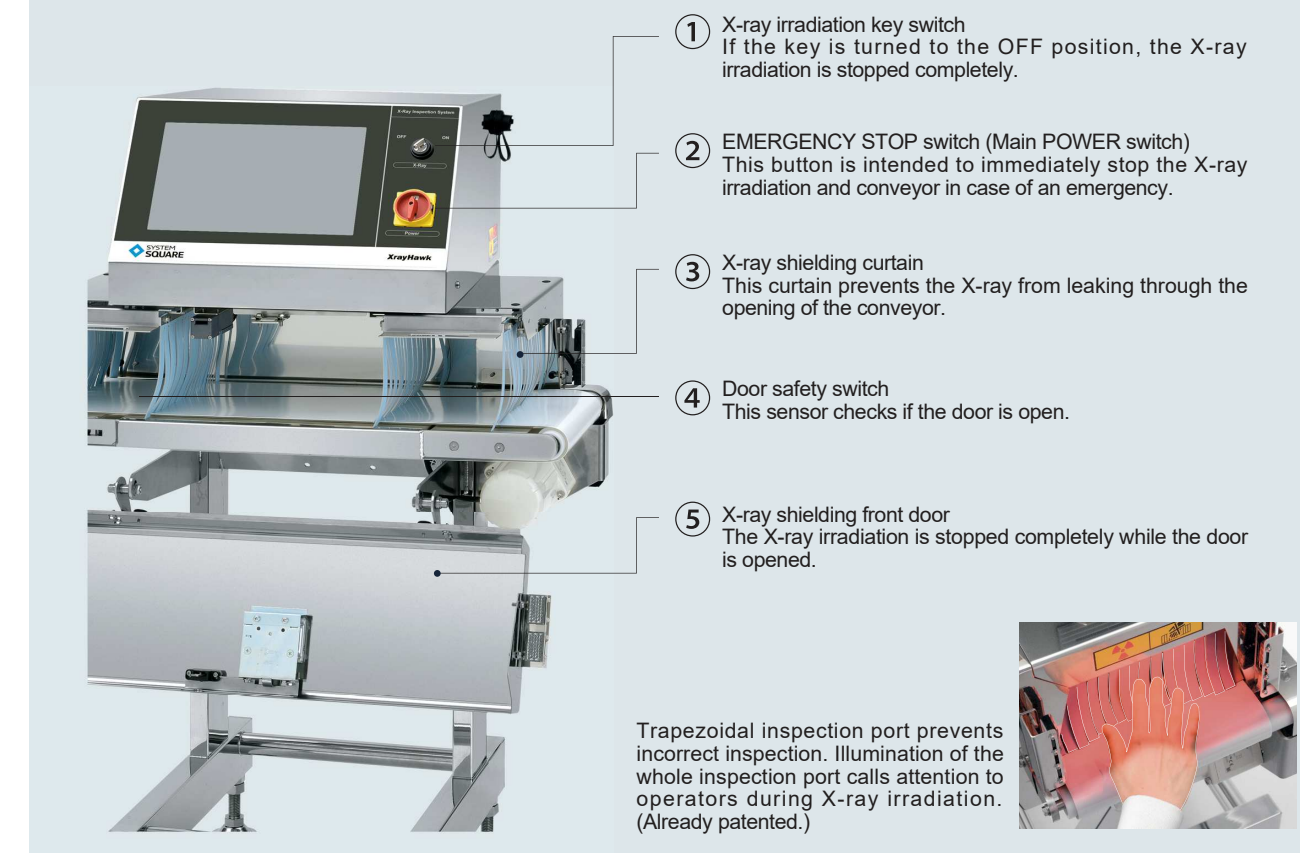


For assuring safety



Hazardous work is prevented.

Various safety measures are taken by considering work personnel's safety. The system can be operated safely even without special qualification about X-ray.



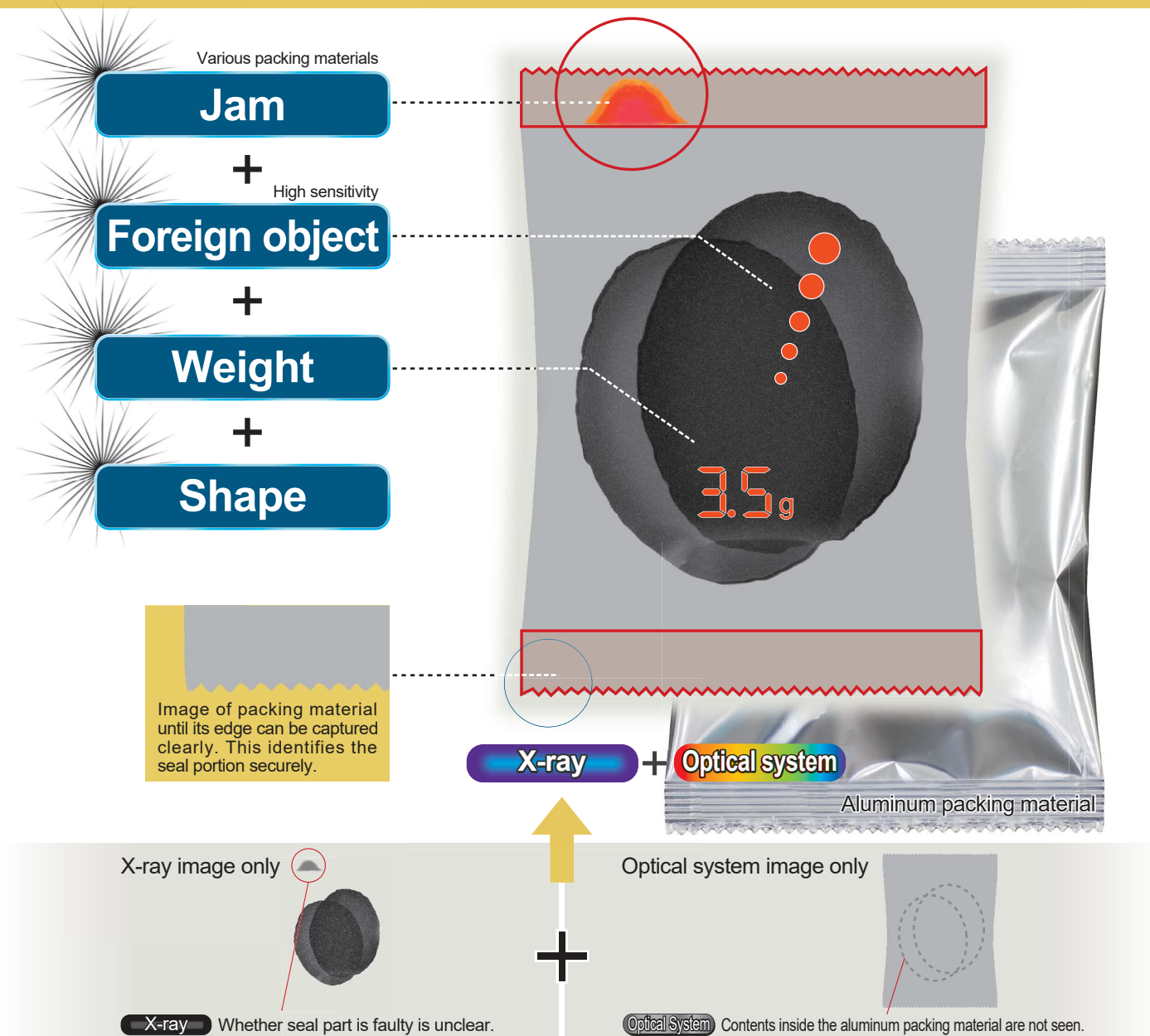
● Sufficient safety measures for work personnel are taken based on "Ministerial Ordinance for Prevention of Hazards from Ionizing Radiation". According to these rules, when the X-ray leak does not exceed 1.3mSv within 3 months, it is not necessary to assign the supervisor in charge of work. The X-ray leak of this system is 1μSv/h or less. Therefore, if the same operator works, 1μSv/h x 16 hrs./day x 6 days/week x 13 weeks (3 months) = 1.25mSv/3 months. This value is within the specified range. The X-ray irradiation amount of this system is 0.1Gy or less based on "Food Sanitation Act". This level has no problem from a view point of toxicity, nutrition, and microbiology.

● Company that will use the inspection system must submit the plan to the Chief of the Labor Standards Inspection Office in relevant region at least 30 days prior to the installation work of the X-ray inspection system.

X-ray Seal Inspection System



For packaged products SXS1554C1D / SXS2154C1D / SXS3474C1D



Features of hybrid inspection

X-ray inspection and inspection with optical camera are performed at the same time to achieve merits that are not available conventionally.

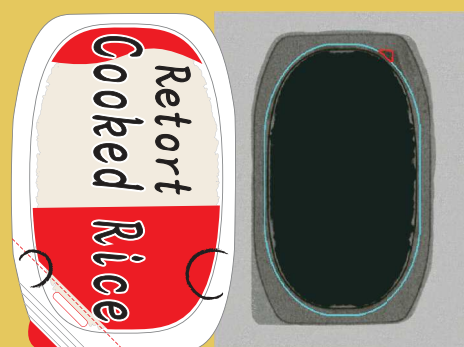
- All of jam, foreign object, and weight can be inspected with a high sensitivity!
- Jam inspection of various packing materials including aluminum packing material is achieved!
- Packing seal part can be identified securely!



Deep drawing package



Tray package



4-side sealed package



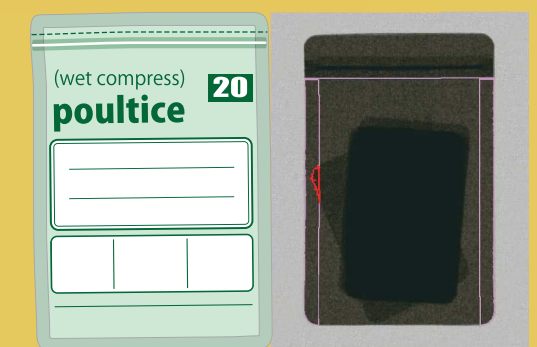
Pillow package



Pillow package



Package with zip



Conventional seal inspection system

Visual inspection

Uncertainty of the inspection is high.
Missing occurs and judgment criteria are ambiguous.

Sensor (contact/non-contact)

It is difficult to detect soft packing materials.
Difference in small jam cannot be detected.

X-ray inspection system

Packing materials cannot be detected.
Jam fault cannot be detected since seal parts cannot be detected.

Optical inspection system

This system is limited to transparent packing materials.
Aluminum packing materials with pattern cannot be detected.

Infrared ray thermography

This system is limited to detection immediately after sealing.
The system cannot perform the detection if the temperature decreases.

X-ray Seal Inspection System

SXS 2154C1D/SXS 3474C1D



SXS1554C1D

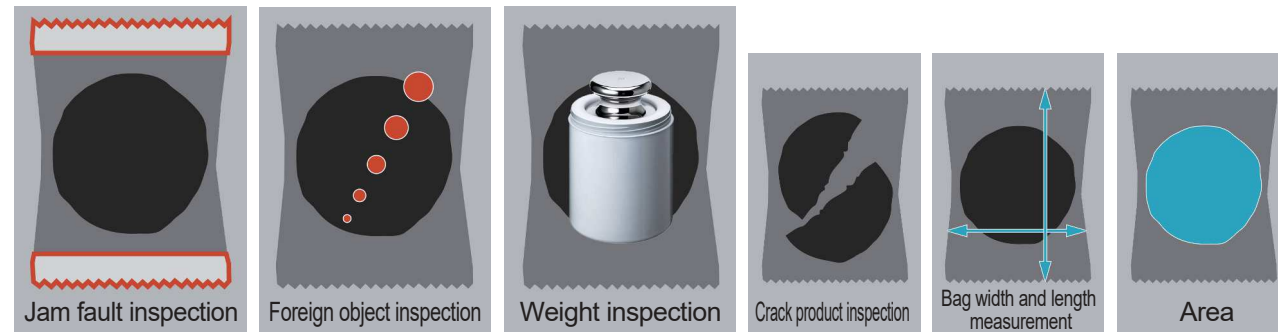
SXS3474C1D

SXS2154C1D



Various inspection problems are solved.

Unlike the X-ray inspection system, all of jam, foreign object, and weight can be inspected with a high sensitivity.



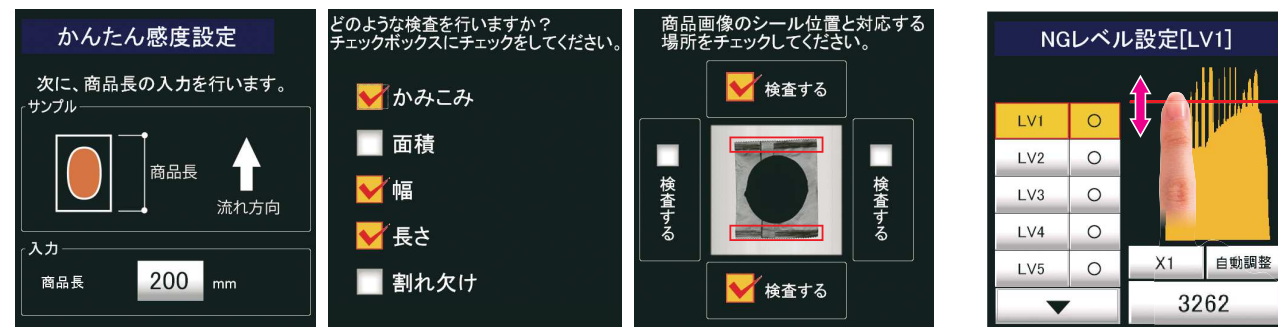
Inclination correction during transportation ensures a high sensitivity.

Inclination correction during transportation achieves accurate inspection.



Everyone can set an inspection range easily.

Everyone can easily set an inspection range that was difficult to set by following the system displays.



Inspection range setting screen on the jam side

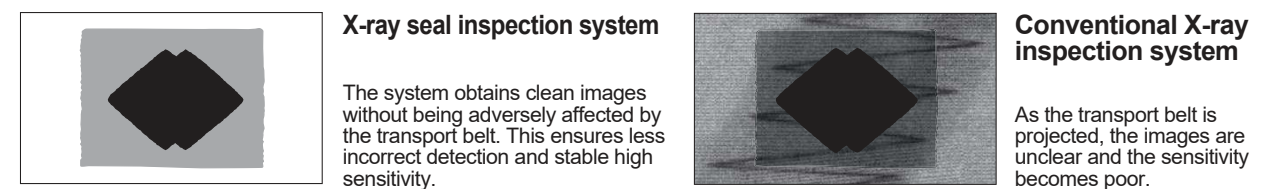
Inspection range setting screen on the X-ray side

Differences in sensitivity by packing bag

Even aluminum evaporation packing bags or packing bags with patterns that were conventionally difficult to inspect are inspected with a high sensitivity.

	Aluminum deposition			Transparent packing material		
	Jam	Foreign object	Weight	Jam	Foreign object	Weight
X-ray seal inspection system (SXS) X-ray + Optical system	○	○	○	○	○	○
X-ray inspection system X-ray	△	○	○	×	○	○
Seal inspection system (SLS) Optical system	×	×	×	○	×	×

Clean images and high sensitivity



Jam inspection examples

Example of aluminum packing material jammed product



Example of poultice jamming



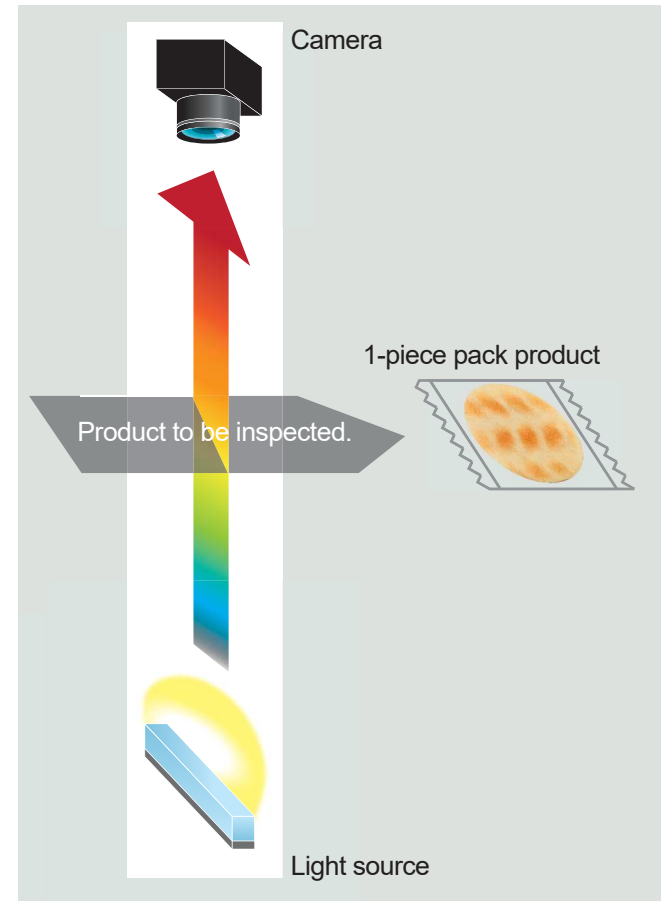
Seal inspection system

VisionHawk SLS1000-C2



Inspection with a set of camera and light source

Light source and optical camera for the inspection are used to perform the inspection by passing the light through the product from the lower surface.



Inspection of 1-piece pack product

"Jam" and "shape" of the 1-piece pack product can be inspected. "Jam" of the 2-piece pack product can be inspected.



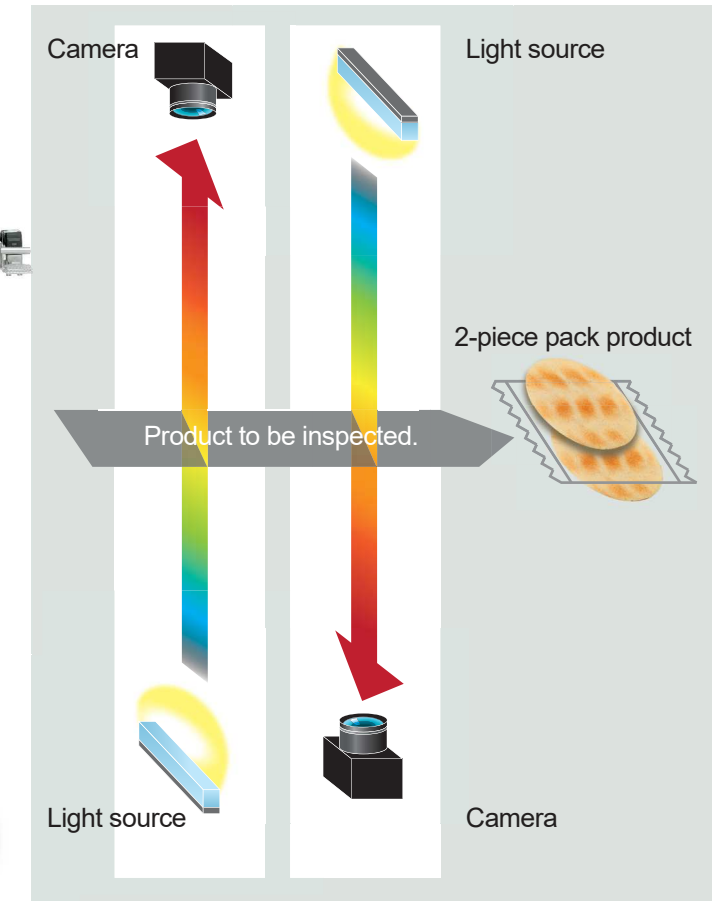
Seal inspection system

VisionHawk SLS1000-C3



Inspection with two sets of cameras and light sources

Two sets of light sources and optical cameras for the inspection of the upper and lower sides are installed. Top and bottom of the 2-piece pack product can be inspected.



Inspection of 2-piece pack product



Features of seal inspection system

Inspection images are clear.

SLS1000-series

No exposure of external light! Color is even and clear!

The SLS1000-series uses an originally developed system to ensure the inspection with clear images. Misoperation is also reduced!

Other system

Images are disturbed due to exposure of fluorescent light.

Color is not even and is dirty.

Other system cannot perform the inspection with clear images due to effects of illumination at site, causing misoperation to increase.

Examples of inspection images

Example of jam fault

Enlarged photo of actual product

Example of crack fault

Photo of actual product

Sensitivity varies depending on the packing bag.

- ... Overall transparent bag including seal parts
- ... Printed bag with transparent seal parts
- ... Semi-transparent colored bag with printed seal parts
- ... Aluminum deposition bag

The sensitivity may vary depending on the packing material. For details, contact System Square.

Sensitivity varies depending on the packing bag.

Color touch panel



Operation can be made intuitively with the touch panel.

Easy sensitivity setting



Difficult sensitivity setting can be performed by following the instructions that appear on the screen.

Processing amount is large.



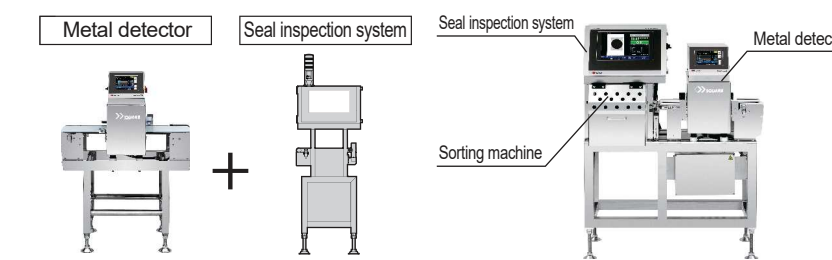
Up to 700 pcs./min. can be inspected. (This processing amount may vary depending on the inspection product and operating environment.)

Automatic sorting



Example of air sorting machine

It is also possible to integrate with the foreign object inspection machine.

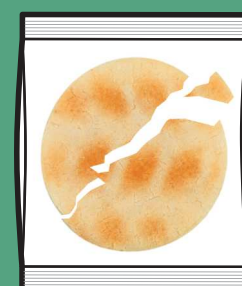


Example of integration of the seal inspection system with the metal detector that detects metal foreign objects, such as screws or rusts

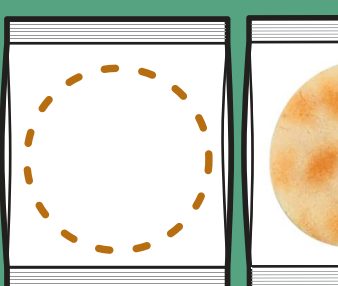
Jam fault product is rejected. (Except for back affixing portion)



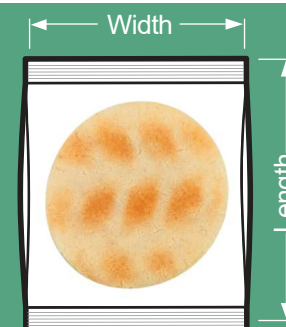
Cracked or chipped product is rejected.



Product without contents is rejected.



Bag width and length measurement



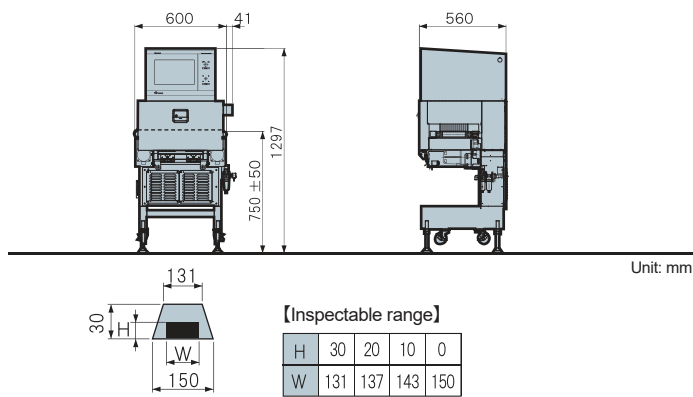
Foreign object is found. (Integration with the foreign object inspection system)

- Individually packed snacks
- Packed spices
- Packed hams
- Disposable warmers

Inspection can be used for bags shown above.

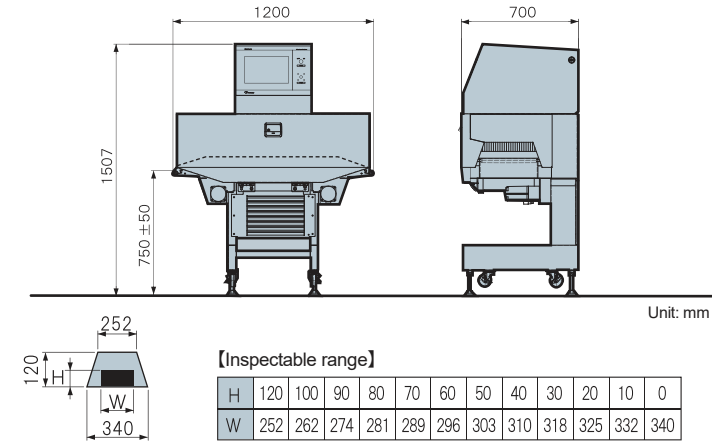
Dimensional Drawings and Specifications

SXS1554C1D



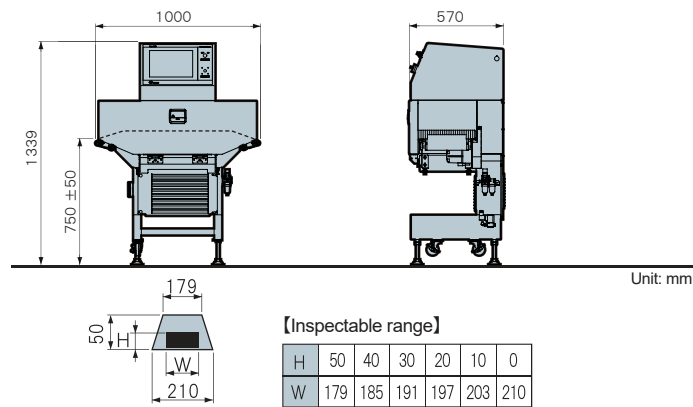
Model	SXS1554C1D
Dimension of inspection product *1	Maximum passage width 150mm, Maximum passage height 30mm
Transport weight	1kg ※2
Transport belt speed	20~60m/min ※3
Belt width	170mm (without improper tracking-less function)(170mm with improper tracking-less function is optional)
Detection sensitivity	φ0.3mm iron or stainless ball, stone, glass, hard bone, and high density plastic pieces, etc. *4
Display unit	12.1-inch wide TFT color LCD (with touch panel)
Structure	Main unit/Base: All-stainless (SUS304) Waterproof structure (Main unit): IP63
Pass line	750 ± 50mm
Max. X-ray output	Tube voltage: 50kV, Tube current: 5mA (150W)
Operating environment	Temperature: 0 to 35°C, Humidity: 30 to 85%, No dew condensation allowed. (It is necessary to clean the filter periodically.)
Weight	135kg
Power supply	AC100V ± 10% / AC200V ± 10% 1.0kVA 50/60Hz

SXS3474C1D(Trapezoid)



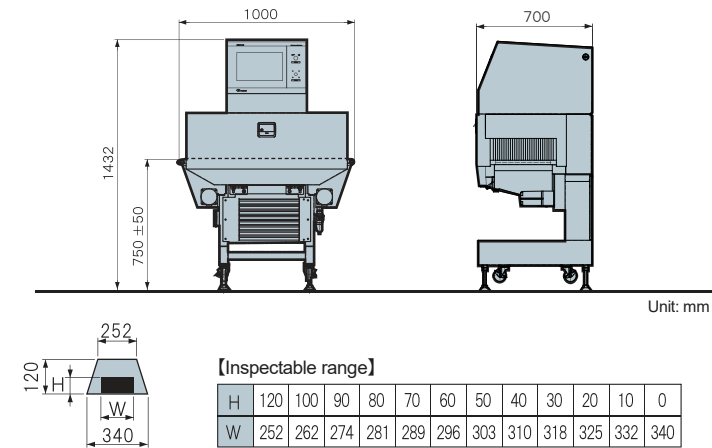
Model	SXS3474C1D
Dimension of inspection product *1	Maximum passage width 340mm, Maximum passage height 120mm (40mm no curtain type)
Transport weight	1kg *2
Transport belt speed	20~60m/min ※3
Belt width	350mm
Detection sensitivity	φ0.3mm iron or stainless ball, stone, glass, hard bone, and high density plastic pieces, etc. *4
Display unit	12.1-inch wide TFT color LCD (with touch panel)
Structure	Main unit/Base: All-stainless (SUS304) Waterproof structure (Main unit): IP63
Pass line	750 ± 50mm
Max. X-ray output	Tube voltage: 75kV, Tube current: 8.0mA (300W)
Operating environment	Temperature: 0 to 35°C, Humidity: 30 to 85%, No dew condensation allowed. (It is necessary to clean the filter periodically.)
Weight	190kg
Power supply	AC100V ± 10% / AC200V ± 10% 1.5kVA 50/60Hz

SXS2154C1D(Trapezoid)



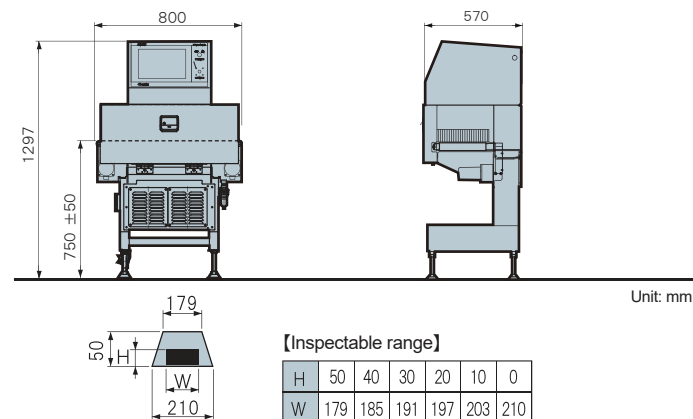
Model	SXS2154C1D
Dimension of inspection product *1	Maximum passage width 210mm, Maximum passage height 50mm (25mm no curtain type)
Transport weight	1kg ※2
Transport belt speed	20~60m/min ※3
Belt width	240mm
Detection sensitivity	φ0.3mm iron or stainless ball, stone, glass, hard bone, and high density plastic pieces, etc. *4
Display unit	12.1-inch wide TFT color LCD (with touch panel)
Structure	Main unit/Base: All-stainless (SUS304) Waterproof structure (Main unit): IP63
Pass line	750 ± 50mm
Max. X-ray output	Tube voltage: 50kV, Tube current: 5.0mA (150W)
Operating environment	Temperature: 0 to 35°C, Humidity: 30 to 85%, No dew condensation allowed. (It is necessary to clean the filter periodically.)
Weight	150kg
Power supply	AC100V ± 10% / AC200V ± 10% 1.0kVA 50/60Hz

SXS3474C1D

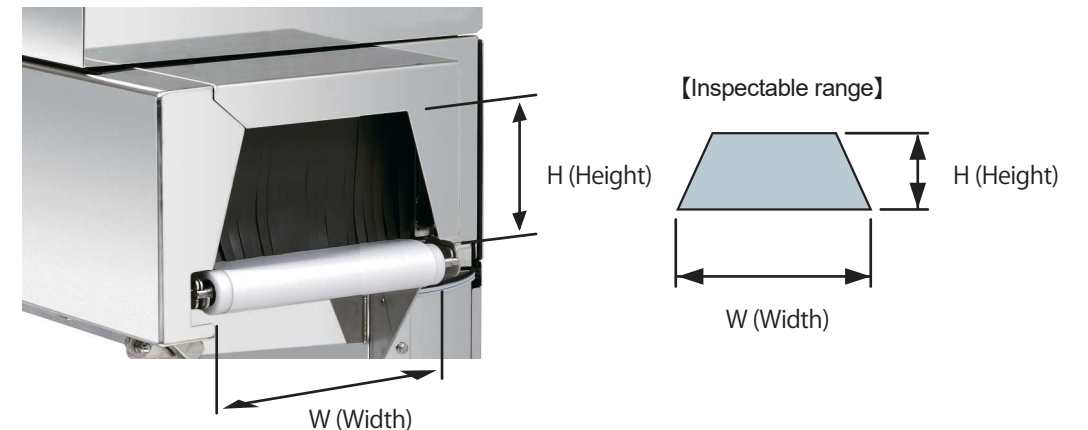


Model	SXS3474C1D
Dimension of inspection product *1	Maximum passage width 340mm, Maximum passage height 120mm
Transport weight	1kg *2
Transport belt speed	20~60m/min ※3
Belt width	350mm
Detection sensitivity	φ0.3mm iron or stainless ball, stone, glass, hard bone, and high density plastic pieces, etc. *4
Display unit	12.1-inch wide TFT color LCD (with touch panel)
Structure	Main unit/Base: All-stainless (SUS304) Waterproof structure (Main unit): IP63
Pass line	750 ± 50mm
Max. X-ray output	Tube voltage: 75kV, Tube current: 8.0mA (300W)
Operating environment	Temperature: 0 to 35°C, Humidity: 30 to 85%, No dew condensation allowed. (It is necessary to clean the filter periodically.)
Weight	190kg
Power supply	AC100V ± 10% / AC200V ± 10% 1.5kVA 50/60Hz

SXS2154C1D



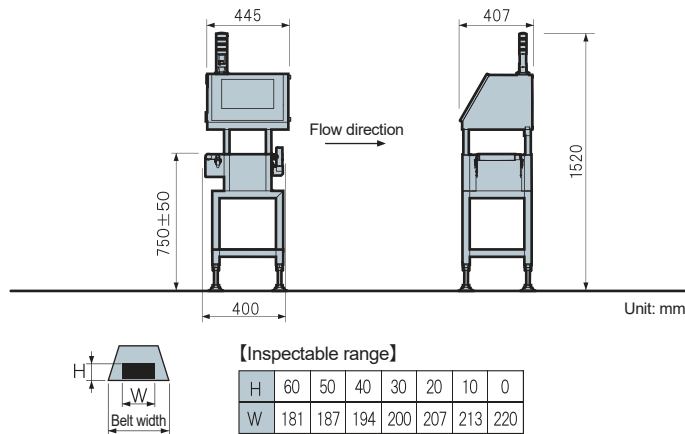
Model	SXS2154C1D
Dimension of inspection product *1	Maximum passage width 210mm, Maximum passage height 50mm
Transport weight	1kg ※2
Transport belt speed	20~60m/min ※3
Belt width	240mm
Detection sensitivity	φ0.3mm iron or stainless ball, stone, glass, hard bone, and high density plastic pieces, etc. *4
Display unit	12.1-inch wide TFT color LCD (with touch panel)
Structure	Main unit/Base: All-stainless (SUS304) Waterproof structure (Main unit): IP63
Pass line	750 ± 50mm
Max. X-ray output	Tube voltage: 50kV, Tube current: 5.0mA (150W)
Operating environment	Temperature: 0 to 35°C, Humidity: 30 to 85%, No dew condensation allowed. (It is necessary to clean the filter periodically.)
Weight	150kg
Power supply	AC100V ± 10% / AC200V ± 10% 1.0kVA 50/60Hz



*1 For details, see the drawing of the possible inspection range.
 *2 For other weight levels, contact System Square.
 *3 For other transport speed models, contact System Square.
 *4 The detection capacity may vary depending on the type of inspection product and the operating environment.
 * The detection sensitivity to be used actually may vary depending on the physical properties (contents and shape, etc.) of product to be inspected and/or the operating environment.
 * The cover to prevent the X-ray leak may be required at the inlet and outlet according to the length of inspection product.

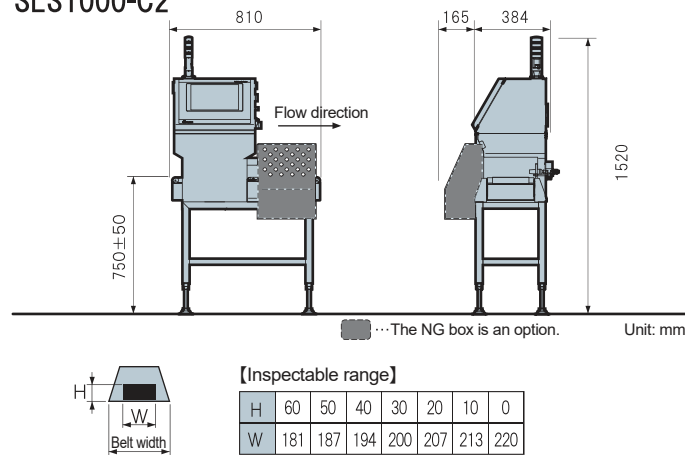
Dimensional Drawings and Specifications

SLS1000-C1



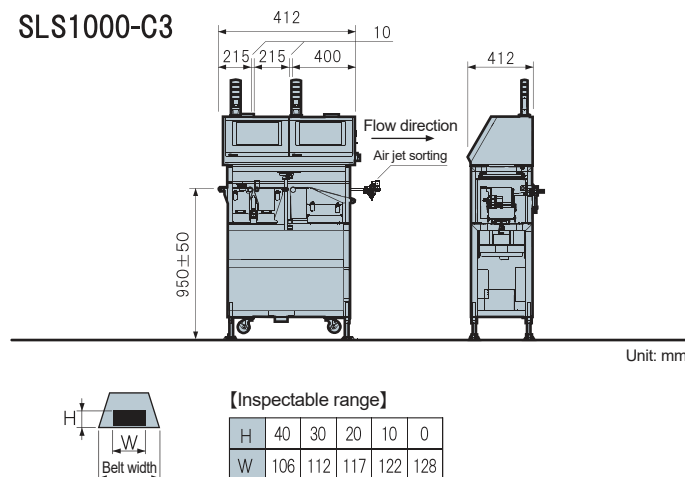
Model	SLS1000-C1
Dimension of inspection product *1	Maximum passage width 220mm, Maximum passage height 60mm
Transport weight	1kg ※2
Transport belt speed	20~60m/min ※3
Belt width	200mm
Camera	Monochrome CCD camera
Display unit	12.1-inch wide TFT color LCD (with touch panel)
Structure	Main unit/Base: All-stainless (SUS304) Dust-proof structure IP5*
Pass line	750±50mm
Min. resolution	0.2mm
Operating environment	Temperature: 0 to 35°C, Humidity: 30 to 85%, No dew condensation allowed.
Weight	50kg
Conveyor length	Upstream side 400 mm
Illumination lighting surface	315 × 19mm
Power supply	AC100 ~ 240V 250VA 50/60Hz

SLS1000-C2



Model	SLS1000-C2
Dimension of inspection product *1	Maximum passage width 220mm, Maximum passage height 60mm
Transport weight	1kg ※2
Transport belt speed	20~60m/min ※3
Belt width	200mm
Camera	Monochrome CCD camera
Display unit	12.1-inch wide TFT color LCD (with touch panel)
Structure	Main unit/Base: All-stainless (SUS304) Dust-proof structure IP5*
Pass line	750±50mm
Min. resolution	0.2mm
Operating environment	Temperature: 0 to 35°C, Humidity: 30 to 85%, No dew condensation allowed.
Weight	80kg
Conveyor length	Upstream side 215 mm, Downstream side 400 mm
Illumination lighting surface	315 × 19mm
Power supply	AC100 ~ 240V 350VA 50/60Hz

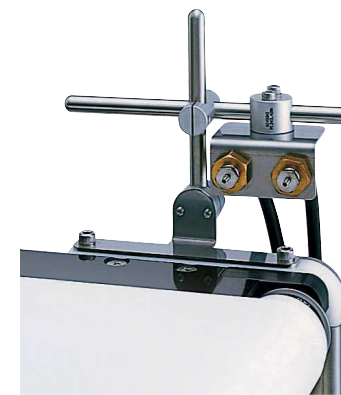
SLS1000-C3



Model	SLS1000-C3
Dimension of inspection product *1	Maximum passage width 126mm, Maximum passage height 40mm
Transport weight	1kg ※2
Transport belt speed	20~60m/min ※3
Belt width	126mm
Camera	Monochrome CCD camera
Display unit	12.1-inch wide TFT color LCD (with touch panel)
Structure	Main unit/Base: All-stainless (SUS304) Dust-proof structure IP5*
Pass line	850±50mm
Min. resolution	0.2mm
Operating environment	Temperature: 0 to 35°C, Humidity: 30 to 85%, No dew condensation allowed.
Weight	140kg
Conveyor length	Upstream side 215 mm, Midstream side 215 mm, Downstream side 400 mm
Illumination lighting surface	315 × 19mm
Power supply	AC100 ~ 240V 450VA 50/60Hz

Sorting machines

Air jet system



Wide type

Narrow type

NG product

Model	AR001
Sorting direction	2 directions
Transport weight	0.3kg at Max.
Compressed air source	0.5Mpa~0.85Mpa
Air consumption	16L/time (ANR)
Mass	3kg

Dropout system (with belt)

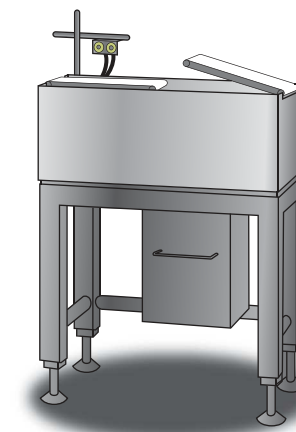


NG product

	DV250W	DV400W
A	250	400
B	350	500
C	350	500
D	750±50	750±50
E	25°	30°
F	133	230

Model	DV250W	DV400W	DV540W
Sorting direction	2 directions		
Transport weight	5kg at Max.		
Compressed air source	0.5Mpa~0.7Mpa		
Air consumption	1.0L/time (ANR)		
Mass	22kg	28kg	37kg
Dimension	W350×L350	W500×L500	W660×L650

Multi-sorting system



NG rejection 1

NG rejection 2

NG product

NG products can be sorted in multiple directions. Compact line can be configured since NG products can be rejected to a portion under this machine. For details, contact System Square.

*1 For details, see the drawing of the possible inspection range. *2 For other weight levels, contact System Square. *3 For other transport speed models, contact System Square.
* The detection sensitivity to be used actually may vary depending on the physical properties (contents and shape, etc.) of product to be inspected and/or the operating environment.