

# X-ray Inspection System

Discover What You've Been Missing...

**DETECTION PERFECTION**



HD  
Ultra HD  
DUAL X

# Proven... **TRUSTED**



Anritsu's commitment to innovation and security assures the safety and quality of our food and pharmaceutical products today and into the future.

**2000**

**KD72 series**

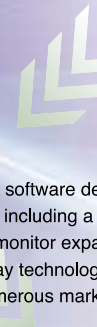
The KD 72's revolutionary compact design, reliability and accuracy set the standard for contaminant detection.



**2002**

**KD73 series**

Operation and software detection improvements including a large touch screen monitor expands the viability of x-ray technology globally and within numerous markets.



**2006**

**KD74 series**

0.4mm HD resolution and faster processing power improves contaminant detection and allows for the introduction of missing component, shape, count and Virtual Weighing quality inspection features.

**2008**

**KD74-h series, KD74-f series**

Contaminant detection accuracy is further enhanced with the introduction of 0.2mm UltraHD resolution and KD74-h high accuracy models. The KD74-f entry models are introduced.



**2011**  
**DUAL X**

Going beyond metal detection, dual energy technology significantly enhances the detection of low density contaminants.

## Striving for Perfection

Anritsu designs and develops all its products in-house to support every solution with 100% confidence. These products include x-ray control units and signal-processing circuits.

Our solutions have earned global recognition for their outstanding performance, capability and credibility.

The cumulative sales of our x-ray inspection systems have reached 7,000 units.



# Over 7,000 installed

## Best-in-class inspection capability — 0.2mm diameter metal



### Discover What You've Been Missing!

Anritsu UltraHD technology can detect down to 0.2mm diameter ferrous, non-ferrous and stainless steel sphere at production line speeds. Anritsu HD systems typically detect metal contaminants as small as 0.4mm diameter and 1.0mm to 2.0mm diameter glass and stones.

Anritsu's ability to detect contaminants with high accuracy, sensitivity and repeatability is unmatched in the industry.

Simultaneous to contaminant detection, 'Virtual Weighing', shape analysis, product voids, missing items and package integrity issues can be closely monitored to assure overall product quality.

(Refer to the following pages for details.)

## Safety and Security



### Commitment to Safety

All Anritsu x-ray inspection systems are designed to fully satisfy every safety standard established by organizations around the world.

We test all x-ray inspection systems for leakage levels prior to shipment and on site during installation to ensure that they are 1  $\mu$ Sv/h or lower.

Please contact your local distributor or Anritsu office for details on registration and operations of Anritsu cabinet x-ray systems in your area.



Anritsu first checkweigher in 1964

## Over a century Over 100,000 installed

Anritsu's predecessor was Sekisansha, which was founded in 1895 as a manufacturer of wire communication equipment.

In early 1964, it developed its first Checkweigher, based on highly sensitive sensors that evolved from our measurement components. Since then, Anritsu has expanded its products, designing and manufacturing Automatic checkweighers, Metal detectors and X-ray inspection systems, with sales totaling more than 100,000 units.





## Discover What You've Been Missing ...

# DETECTION PERFECTION

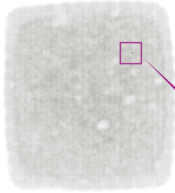
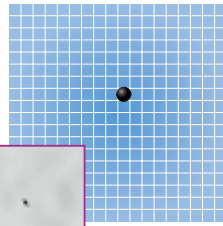
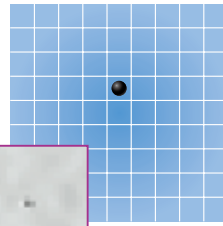
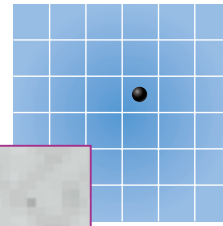
Our state-of-the-art technologies deliver superior contaminant detection and product integrity inspection to protect your brand and ensure your customer's safety.

## HD and UltraHD Imaging

Detection accuracy and performance stability begins with the core technology inherent with HD and UltraHD imaging. Anritsu KD74 series x-ray systems create x-ray images with the highest resolution the market offers as standard. Higher resolution provides better imaging and better digital data for analysis resulting in significantly improved performance that allows you to ... [Discover What You've Been Missing!](#)

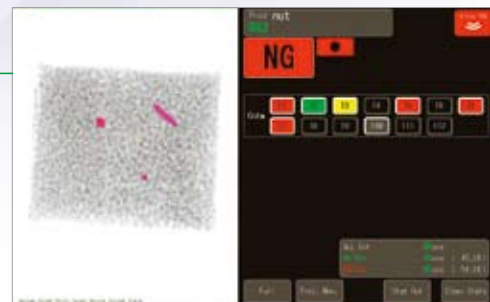
**Smaller is better**

Detector Resolution Differences

	ANRITSU: 0.4mm	0.8mm	1.2mm
 <p>The smaller detector size allows for improved detection of small and low density contaminants.</p>	 <p>0.5mm metal detected with 0.4mm diodes</p>	 <p>0.5mm metal not easily detected with 0.8mm diodes</p>	 <p>0.5mm metal not detected with 1.2mm diodes</p>

## Multi-View Software

Anritsu has developed 70+ algorithms available for optimal detection within different applications. From bulk to cased products, Anritsu has a solution tailored for the best inspection possible. All Anritsu x-ray systems share the same fully featured software, and are ready for any x-ray inspection application.



### Software features:

- Simultaneous inspection for all types and sizes of contaminants including wire, glass, stone and bone
- Optimized settings per application, 70+ unique algorithms
- Dynamic filters greatly enhance detection with reduction of possible false rejects
- Full auto-learn process — all x-ray settings are learned at the touch of a button
- Password protected — once set the system can be locked out from changes by production staff
- Allows multiple reject criteria including contaminant, virtual weight, count, missing and more
- Full production counters separated by reject type
- Full reject log and image capture capability with time/day stamps for all rejected products
- Built-in multi-lane system capability — 1 to 4 lanes
- Stable, repeatable performance
- Full auditing capability through Anritsu's Operation Check for HACCP compliance

# Go Beyond Contaminant Detection ... SIMULTANEOUSLY

## Missing Product Detection

Checks product count in package, mass and fill level for missing products.

### Count Detection

Inspects the number of pieces per pack of vertically packed biscuits or cookies.



Boxed cookies of four packs of three pieces

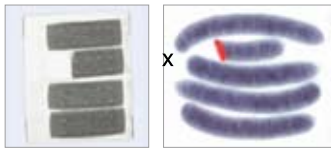
### Missing Product Area Detection

Inspects complete product presence by checking the density of product in specific area within a pack.



## Shape Detection

The shape, area and mass are analyzed from x-ray images to find irregularities including breaks and chips. Missing fillings can also be spotted.



Chipped biscuit    Chipped sausage

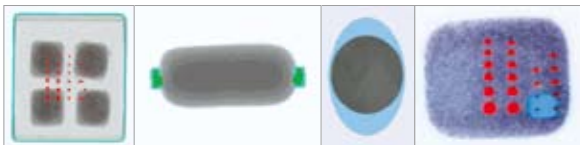
## Virtual Weighing

A virtual weight is calculated based on a known density criteria established via the Auto-Set function.



## Mask Functions

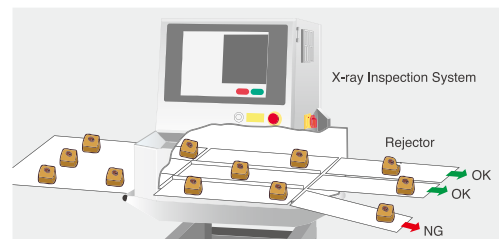
Detection sensitivity is improved by masking according to product characteristics such as forms and shapes.



From the left: Edge Mask, Clip Mask, Can Edge Mask and Deoxidizer Mask

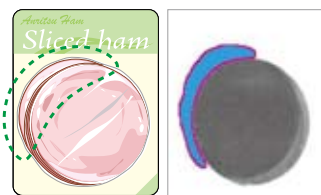
## Multi-Lane Inspection

Allows a single machine to inspect a multi-flow line, maximizing overall line efficiency.



## Package Check

Packages of sliced ham, etc., are checked to ensure none of the contents is caught in sealed parts.



Example of ham caught in seal

## Void Check

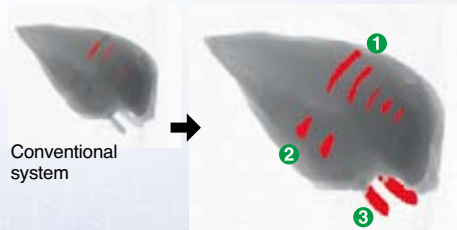
Inspects voids and air bubbles entrapped in retort food, cheese or butter for maintaining freshness.



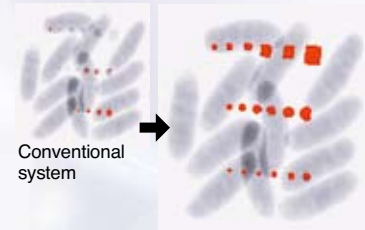
10cc air bubbles in retort foods and 2mm dia. voids in solid products are detectable.

## DualX X-Ray Inspection Technology

The DualX Inspection Technology identifies low-density materials with unbeatable accuracy. Bone fragments within meat and poultry can be detectable without effects of product overlapping or uneven thicknesses.



X-ray image of chicken breast. Wish bones 1, fan bones 2 and scapula bones 3 are detected.



X-ray image of sausages. The effects of overlapping parts are eliminated and contaminants show up.

## Simple maintenance

### Tool free belt removal

The conveyor belt and rollers can be easily removed/attached without tools, allowing easy cleaning and sanitation.



### Sanitary Model

A sanitary model (KD7416AM/ACM) is able to withstand harsh wash down environments with the IP69K rated enclosure.



IP69K



## Information management

### Ethernet/USB interface

Industry-standard Ethernet is used to manage live production data. The operational status can be assessed remotely using software such as Remote Desktop. The USB interface can save images to USB media for managing information.



USB port included (with wash down cover) for local storage of images and statistical data\*.

\* Anritsu recommends using genuine Anritsu USB memory sticks.

## Safety in design

Anritsu believes customer safety is of utmost importance.

### Anritsu safety mechanism



#### X-ray ON/OFF key

Turning the key to OFF stops x-ray radiation completely.

#### Emergency stop switch

Cuts power to x-ray and drive circuits, stops the conveyor and x-ray radiation.

#### X-ray irradiation display

The lamp is lit during x-ray radiation.

#### X-ray shield cover open/close sensor

Opening the cover stops x-ray radiation.

#### Hand insertion sensor

Interrupting the sensor for a certain period of time stops x-ray radiation.

#### Leakage prevention curtain

Prevents x-ray leakage. For unpackaged or bulk products, the standard lead impregnated curtains are replaced with SUS plates and covers – preventing direct food contact with the curtains.

#### X-ray shield cover

Opened/Closed using x-ray Irradiation ON/OFF Key.

Opening the cover stops x-ray radiation due to the x-ray Shield Cover Open/Close Sensor.

### Safety management

X-ray Inspection System has been designed to fully satisfy the safe operation. However, to ensure even higher safety, use the safety procedures outlined below.

- ① **Periodic measurement and recording of x-ray leakage data**
- ② **Management of operator working hours**
- ③ **Additional safety measures**  
Covers may need to be mounted on upstream and downstream conveyors instead of the shield curtains, depending on the shape, weight, and package of products.
- ④ **No disassembly or modification**  
NEVER modify or disassemble the main unit, covers, x-ray leakage prevention curtains, safety covers, safety interlocks, etc., otherwise the x-ray leak-proof design may no longer be functional.

### Safety of inspected products

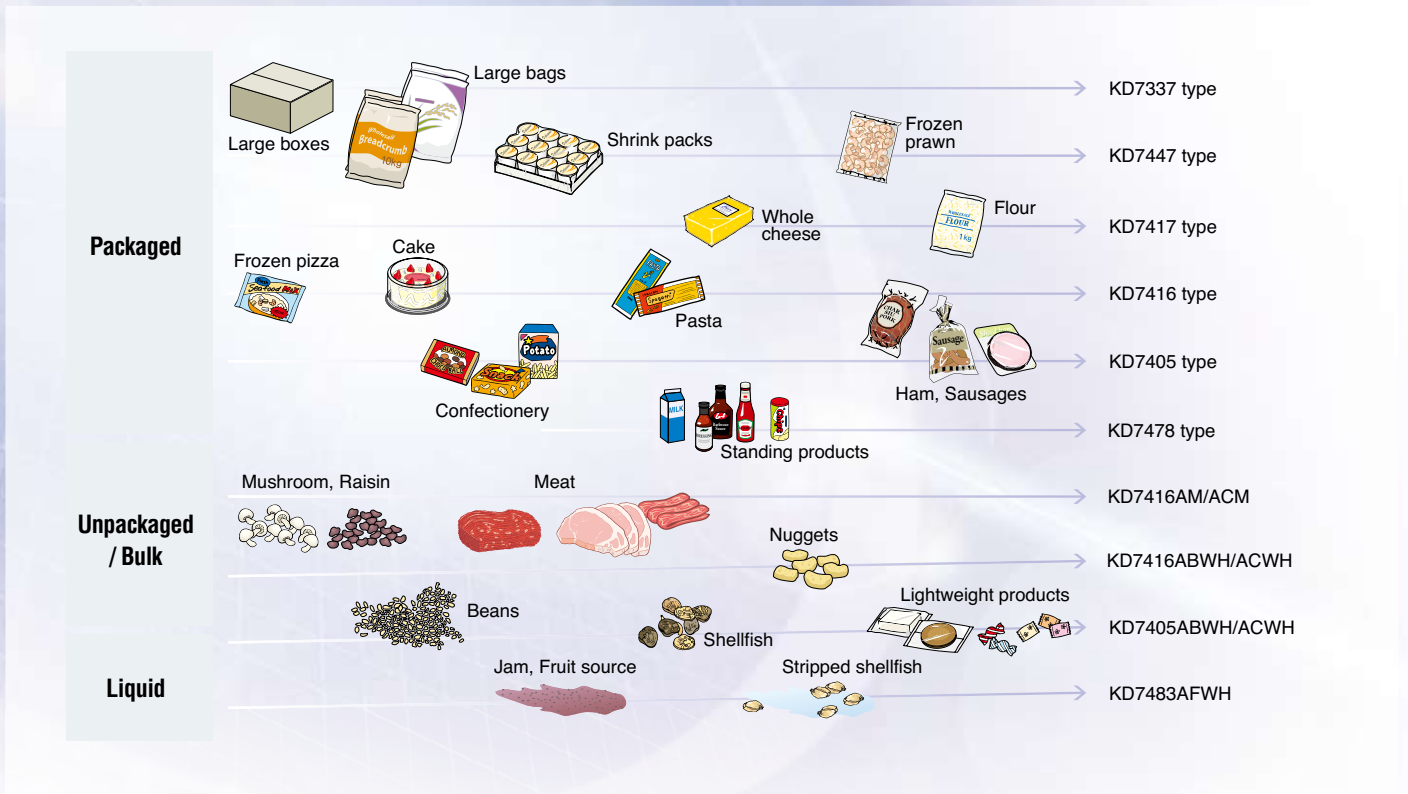
WHO concluded in 1980 that the “irradiation of any food commodity up to an overall average dose of 10 kGy presents no toxicological hazard and introduces no special nutritional or microbiological problems.”

The maximum dose of x-ray irradiation to the products to be inspected by our x-ray inspection systems is 0.002 Gy, which is much lower than the value described above. Even if a product stops inside, the x-ray dose is always kept to 0.1 Gy or less.

Note: Follow the local laws and regulations regarding the installation and use of the x-ray inspection systems.

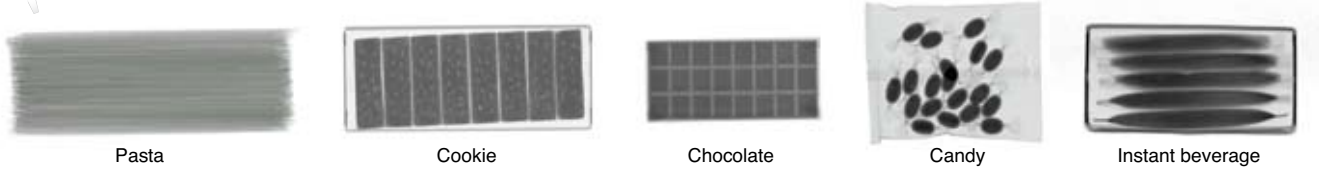


# Model Selection

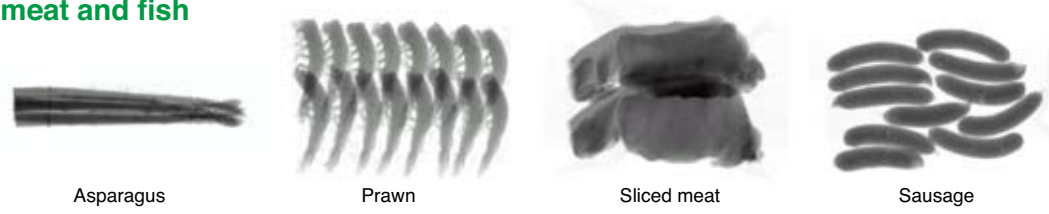


# Application example

## Confectionery and grain products



## Fresh meat and fish



## Products in bottles, jars, and cups



## Industrial goods



**i** We offer sample testing services. Contact us for details.



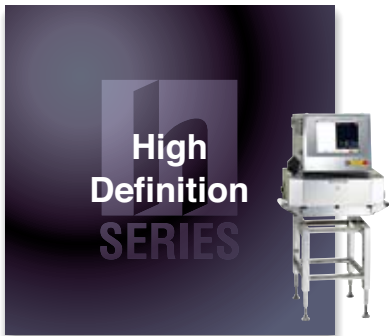
# Lineup



## KD74 series **Z**

Highly versatile system with a proven track record suits a wide range of packaged products. Simultaneous inspection including shape analysis, missing item and package integrity inspection are available.

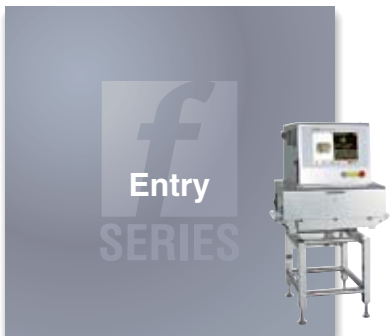
Products	<input checked="" type="checkbox"/> Dry products	<input checked="" type="checkbox"/> Wet products
Protection class	<input type="checkbox"/> IP40	<input checked="" type="checkbox"/> IP66
X-ray output	<input type="checkbox"/> Low (max. 100W)	<input checked="" type="checkbox"/> Middle to High (max. 210W) <input type="checkbox"/> High (max. 350W)
Product range	<input checked="" type="checkbox"/> Size variations	



## KD74-h series **h**

High accuracy detection technology detects a 0.2 diameter metal sphere. Suitable for soft contaminants that are of low-density, such as bone and plastics, as well as for minute metal particles.

Products	<input checked="" type="checkbox"/> Dry products	<input checked="" type="checkbox"/> Wet products
Protection class	<input type="checkbox"/> IP40	<input checked="" type="checkbox"/> IP66
X-ray output	<input type="checkbox"/> Low (max. 100W)	<input type="checkbox"/> Middle to High (max. 210W) <input checked="" type="checkbox"/> High (max. 350W)
Product range	<input checked="" type="checkbox"/> For metal particle <input checked="" type="checkbox"/> For low density contaminants <input checked="" type="checkbox"/> Size variations	



## KD74-f series **f**

With low X-ray output and simple construction, this series are suitable for dry products.

Products	<input checked="" type="checkbox"/> Dry products	<input type="checkbox"/> Wet products
Protection class	<input checked="" type="checkbox"/> IP40	<input type="checkbox"/> IP66
X-ray output	<input checked="" type="checkbox"/> Low (max. 100W)	<input type="checkbox"/> Middle to High (max. 210W) <input type="checkbox"/> High (max. 350W)
Product range	<input checked="" type="checkbox"/> Size variations	



## DualX **DUAL ENERGY**

Analyzing two different x-ray energy signals, it clearly distinguishes contaminants from products. Performs accurate inspection of low density bones in meat and overlapping products.

Products	<input checked="" type="checkbox"/> Dry products	<input checked="" type="checkbox"/> Wet products
Protection class	<input type="checkbox"/> IP40	<input checked="" type="checkbox"/> IP66
X-ray output	<input type="checkbox"/> Low (max. 100W)	<input checked="" type="checkbox"/> Middle to High (max. 210W) <input checked="" type="checkbox"/> High (max. 350W)
Product range	<input checked="" type="checkbox"/> High power <input checked="" type="checkbox"/> Low power	



## For Specific Applications **Sp**

- ✓ Large bags and cartons
- ✓ Tall products
- ✓ Sanitary design
- ✓ Pipe type



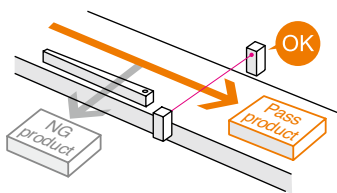
# Rejector

With a variety of models and diverse functions, Anritsu rejectors meet various needs for higher efficiency and reliability.

## The standardization of functions on the rejector ensures reliability and safety.

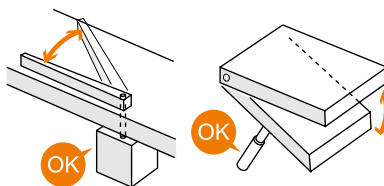
### Rejection Confirmation

To ensure products are classified properly, a sensor has been mounted on the Pass-product side of the rejector.



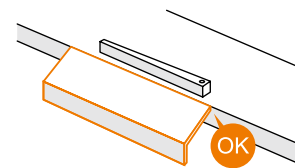
### Rejection Operation Check

The sensor mounted on the rejector actuator monitors the rejector gate and the conveyor are working properly. Other items that can be monitored include: failures of internal units, such as actuators; problems with air supply; etc.



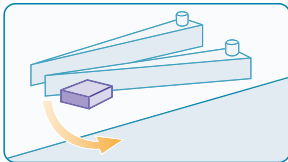
### Chute Attachment/ Detachment Check

To ensure system safety and to prevent improper discharge of products, the attachment/detachment status of the chute of flipper rejectors is constantly monitored.



## Types of Rejectors

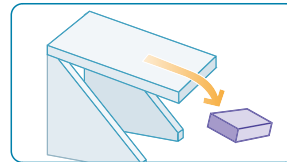
### Flipper



Highly versatile

- Boxes
- Thick bags

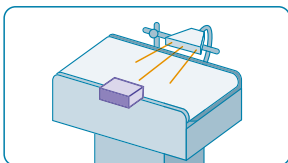
### Dropout



For thin products

- Thin bags
- Sheets

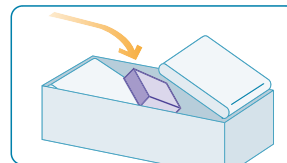
### Air Jet



High speed

- Light individual-packaged products

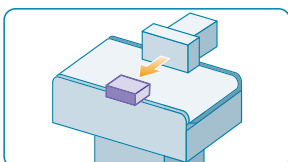
### Up and Out



For thin products

- Thin bags
- Sheets

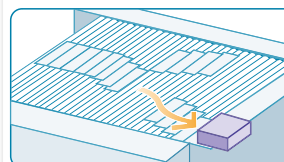
### Pusher



For tall products

- Boxes

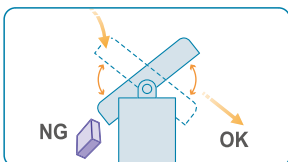
### Carrier



For open-topped containers

- Cans
- Boxes

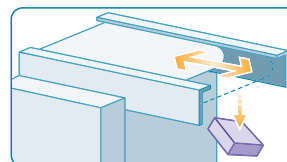
### Chute



For relatively light weight bulk products

- Light bulk products

### Shuttle



For sticky products

- Unpackaged
- Meat
- Fish

# Option

※ Contact our sales representatives for details.

- Tower light  
(with buzzer alarm)  
Supports remote monitoring.
- Data printer  
Prints inspection results.
- Product guide  
Provides accurate product positioning on conveyors.
- Cross plate  
Provides smooth product transitions which prevent product accumulation.
- Cross roller  
Provides smooth product transitions which prevent product accumulation.
- CE&FCC marking
- Air conditioner (on back panel)  
Prevents ambient air from entering into the cabinet and cools the internal air in an environment with high temperature (35 °C or higher) or a lot of dust.
- Non-lead shield curtain  
Does not contain lead.  
Features high elasticity.
- Scraper  
Removes product residue from conveyors.
- Line height change  
Line height is adjustable by changing screw legs.
- Plate for anchor  
Secures units firmly in position.

# Test Pieces



Manufacture: Japan Inspection Instruments Manufacturer's Association

SUS sphere	1	FSB6-01	Dia.0.3 to 0.8 mm
	2	FSB6-02	Dia.0.6 to 1.5 mm
	3	FSB6-03	Dia. 1.0 to 3.0 mm
SUS wire	4	FSW6-02	Dia.0.2 x 2 to Dia.0.7 x 2 mm
	5	FSW6-05	Dia.0.2 x 5 to Dia.0.7 x 5 mm

Rubber sphere (EPDM)	6	FEB6-01	Dia.3.0 to 8.0 mm
Ceramics sphere (Alumina)	7	FAB6-02	Dia. 1.0 to 5.0 mm
PTFE sphere	8	FTB6-02	Dia. 1.6 to 5.0 mm
Nylon sphere	9	FNB6-01	Dia.3.2 to 8.0 mm
Aluminum sphere	10	FALB6-03	Dia. 1.5 to 6.0 mm
Glass sphere	11	FGB6-02	Dia. 1.0 to 5.0 mm
Polycarbonate sphere	12	FPB6-01	Dia.3.2 to 8.0 mm
Silicon Rubber sphere	13	FSRB6-01	Dia.3.0 to 8.0 mm

Anritsu Industrial Solutions Co., Ltd is a member of the Japan Inspection Instruments Manufacturers' Association (JIMA).

Note: Single test pieces are also available.

# Anritsu

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ISO 9001 CERTIFICATE No.JQA-0566  
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- In addition to daily inspection, an annual maintenance check should be carried out.
- To ensure proper operation, read the Operation Manual before using the machine.

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