



PINHOLE INSPECTOR

NIKKA DENSOK CATALOG

Pinhole Inspector

High Voltage Leak Detection System

General Catalog



NIKKA DENSOK LIMITED

Nikka Densok Limited is a manufacturer of inspection machinery to improve safety in life.

Since the establishment of the Tokyo based company in 1955, Nikka Densok has developed and produced many types of inspection machinery while keeping high quality and performance at the top of their design criteria.

The Nikka Densok Pinhole Inspector has utilized the high voltage technology to support both the Pharmaceutical and Food Manufactures to eliminate any chance of pinhole or product leakage. Within the last 40 years the development of the high voltage technology has contributed to more than 1000 units sold worldwide.

This catalog is intended to describe the general scope and the capabilities of the of Nikka Densok Pinhole Inspector and High Voltage Leak Detection System and to introduce each model to meet your leak detection requirements where quality and reliability must be ensured.

PINHOLE INSPECTOR LINE-UP

Pinhole Inspector for Pharmaceutical Product

Product		HDB-II AST/AS3 HDB-202/204 HDB-III	HDB-300 HDR-	HDI-	HDC-	HDK
Material	Type					
Glass	Ampoule / Vial	○				
Plastic	Large Bottle				○	
	Small Bottle		○			
	BFS CARD			○		
	Soft Bag					○

Pinhole Inspector for Food Product

Product		HSE-621 HSE-622	HSE-601 HSE-602	HSE-821
Material	Type			
Plastic	Pouch / Cup	○		○
	Sausage / Ham		○	

Tabletop and Potable type

Product		HDT	HSE-701	PDLL
Material	Type			
Glass	Ampoule / Vial	○		
Plastic	Bag / Bottle / Strip	○	○	○
	Cap / Empty Container			○

Built-in Pinhole Tester for Material

Product		PDKN	PDMM	SPAB
Material	Type			
Plastic	Empty Container / Cap		○	
	Film Sheet	○		
	Cable			○

- The features and shapes of the machines shown in the following pages are not everything of each model.
- If you have any requirement or question for your application, please feel free to have a contact with us.
- The pictures shown here may not be exactly same in your machine.

SCOPE OF NIKKA DENSOK PINHOLE INSPECTOR

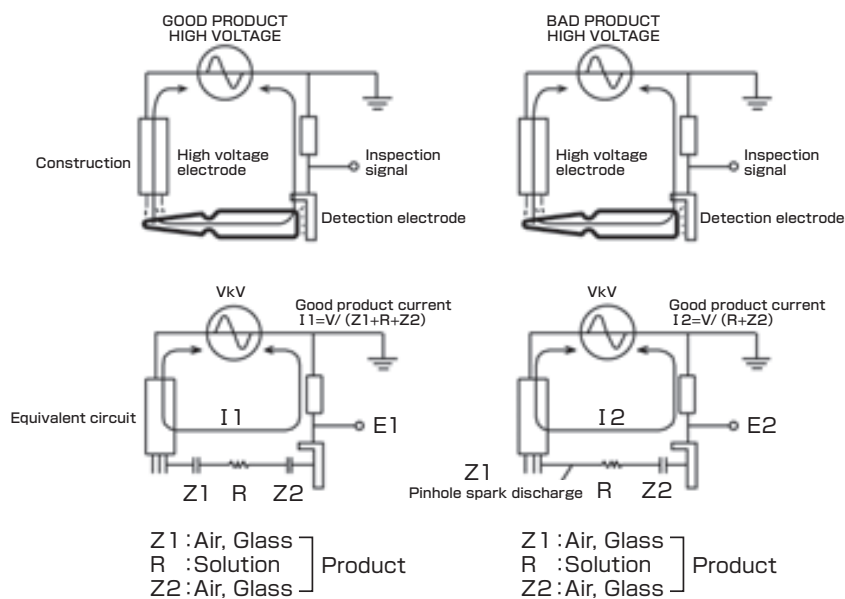
Advantage of High Voltage Inspection Method

There are a variety of methods widely used within the pharmaceutical industry for the detection of pinholes, cracks and defective seals in various pharmaceutical packaging. These tests range from vacuum or pressure decay tests, to submerging the entire container into a dye solution under pressure and visually inspecting the container for the presents of dye or more advanced vision systems to inspect for certain defects in the container. High Voltage Leak Detection System (HVLD) is the most reliable, repeatable and productive inspection method having the following advantages.

- Detectability of 1 micro meter or smaller
- Non-destructive Inspection Method
- No secondary contamination to the product
- 100 percent inspection at higher production speeds with increased reliability

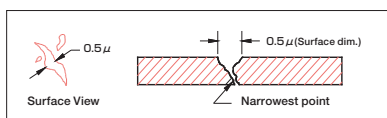
Principle of Inspection

High voltage is applied to a hermetically sealed container made of non-conductive material. If pinhole or crack is present on the ampoule, the discharge current flows into the ampoule through the pinhole or crack. The defective ampoule is detected by the differential of the current flow as measured in the intact ampoule.

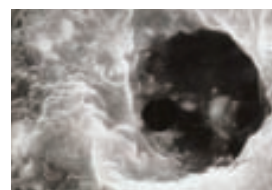


Detection Performance Capability

The HVLD system is capable of consistently detecting micro leaks of as shown in the example. Please note, the electron microscope actually views the defect at its outside surface dimension but may be actually narrower at the point of contact with the product (solution) inside the container as shown below.



Because the detection takes place at the narrowest point of the defect, the HVLD system is capable of detecting container defects considerable smaller than 0.5 micron in size.



An example of hole detected by Nikka Densok HVLD system = Microscope picture of 0.5μ

Advantage of Nikka Densok Pinhole Inspector

- **Easy Access to internal components of the machine for ease of cleaning, exchange of size parts and periodical maintenance.**



Wide covers provide easy access to all size change parts and inspection area.

HDB-II-AST

- **Operation and Data Acquisition through Touch Panel (Upgrade Optional)**

M1 PRODUCTION DATA		DATE	2004-08-30 16:07
INPUT No.	0-00	WORKING TIME	0:00
STRENGTH		IDLE TIME	0:00
PRODUCT NAME		START TIME	0000-00-00 00:00
LOT NUMBER		STOP TIME	0000-00-00 00:00
MACHINE NUMBER	Machine #001	EFFICIENCY	0.0
OPERATOR NAME	System Administrator	TOTAL COUNT	0
GOOD	0	REJECT	0
		REJECT (%)	0.00
	CH1	CH2	CH3
DETECT	0	0	0
HIGH VOLTAGE	0	0	0
UPPER REF.	0.00	0.00	0.00
LOWER REF.	0.00	0.00	0.00
SIGNAL AVE	0.00	0.00	0.00
SENSITIVITY	0	0	0
	CH4	CAPACITY	0 P/M
		VIBRATOR	0 RPM
		VIBRATOR LDMIT	0 RPM
		LOWER REFERENCE	ON
		INTERLOCK	OFF
		VIBRATOR	OFF
MENU	PRINT	VERSION	2.13
		DATE	2004-07-26

Main Screen for Batch Control in HDB-II-AS3



Graphical Signal Bar for Inspection in HDB-II-AST

- **High Production Capacity with Inline Application**
Nikka Densok can suggest optional configurations to meet your production requirements.
- **Lower Consumable Parts - Low Yearly Maintenance Cost**
A minimal number of consumable parts provides for lower yearly maintenance costs.

HDB-II-AS SERIES FOR GLASS AMPOULE/VIAL

	Product Size	Capacity	Electrical Supply	Compressed Air	Machine Weight
HDB-II AST/AS3	(Ampoule/Vial) 10~13mm dia. 13~18mm dia. 18~23mm dia.	24,000pcs/hour 18,000pcs/hour 12,000pcs/hour	200~480VAC, 50/60Hz, 3phase 2KVA	0.5Mpa, 200lit./min	1,200kgs~ 1,400kgs
HDB- 202V-AS+DL 204V-AS+DL	(Vial) 10~18mm dia. 18~27mm dia. 27~36mm dia.	24,000pcs/hour 18,000pcs/hour 12,000pcs/hour	200~480VAC, 50/60Hz, 3phase 2KVA	0.5Mpa, 200lit./min	1,200kgs~ 1,400kgs

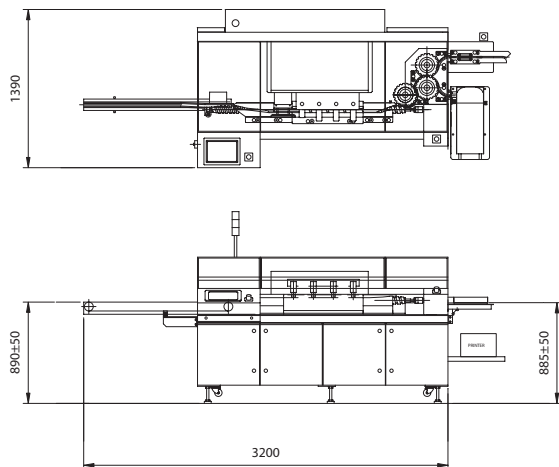
- Production Capacity = Maximum 24,000pcs as per above chart
- Auto Sensitivity = AS for High Productive Inspection
- Applications for both In-line by line conveyor and Off-line by Accumulation Conveyor



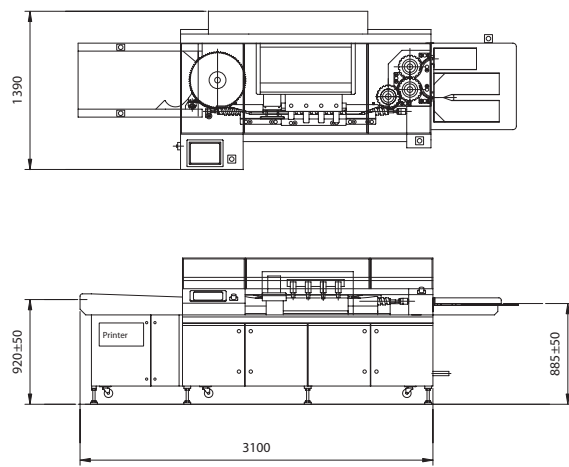
Inspection Electrode



HDB-204V for Vial Inline Layout Example



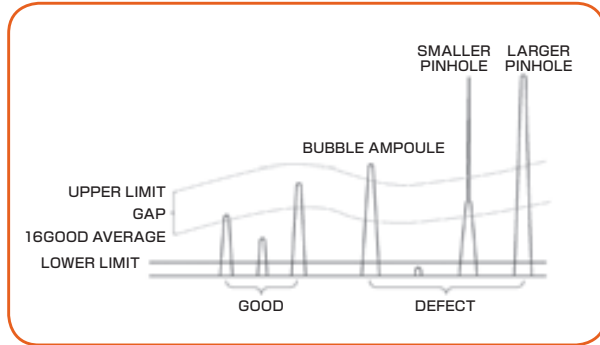
HDB-II-AST for Ampoule Off-line Layout Example





Features of HDB-II-AS Series

● Automatic Sensitivity = AS Function



In HDB-II-AS series, the system automatically calculates the signal upper limit threshold of leak detection based on the good signal average. Initial setting prior to the production and continuous updates during the production ensures the stability of the inspection results without the necessity of inspection parameter changes during production.

Nikka Densok is a pioneer of Auto Sensitivity (AS) function which automatically adjusts the inspection parameter setting and updating of inspection signals. This is a standard feature on the HDB-II-AS Series.

● Ensuring Vial Cap Closure Integrity

The system is capable of detecting closure seal defects that cause non-sterile vials

● High Level Data Acquisition and Access Control (PC Control in HDB-II-AS3) 21CFR Part 11 compliant designed with Wonderware InTouch software.

HDB-III FOR GLASS AMPOULE LOWER CAPACITY USE

	Product Size	Capacity	Electrical Supply	Compressed Air	Machine Weight
HDB-III	10~13mm dia. 13~18mm dia. 18~23mm dia.	12,000pcs/hour 9,000pcs/hour 6,000pcs/hour	200~480VAC, 50/60Hz, 3 phase 2KVA	0.5Mpa, 200lit./min	1,200kgs~ 1,400kgs

- Less number of Inspection Stations (locations)
- 100percent inspection of critical area such Head (Tip) Sealing and Ampoule Base Inspection

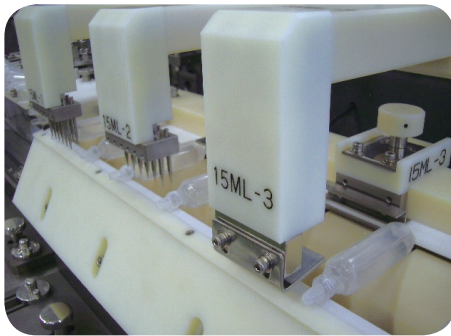




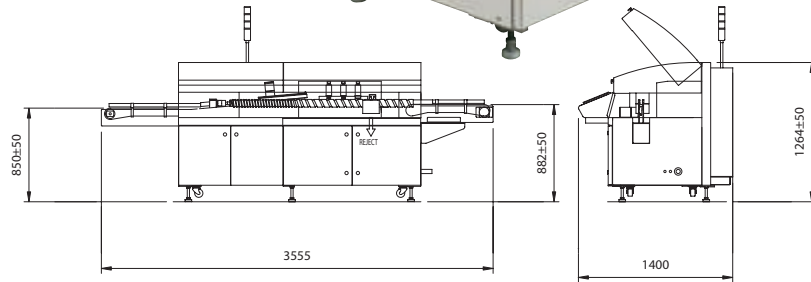
HDB-300 SERIES FOR SMALL VOLUME PLASTIC BOTTLE

	Size	Capacity	Electrical Supply	Compressed Air	Machine Weight
HDB-312 HDB-313	10~36mm dia.	7,000pcs/hour	200~480VAC, 50/60Hz, 3 phase 2KVA	0.5Mpa, 200 lit./min	1,000kgs

- Optimum system for Plastic Bottle (Eye Drop)
- Direct Inline Connection from Production System



Inspection Section

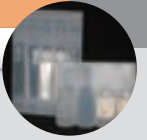


HDR SERIES FOR SMALL VOLUME PLASTIC BOTTLE HIGH CAPACITY USE

	Size	Capacity	Electrical Supply	Compressed Air	Machine Weight
HDR-	20mm dia.	14,400pcs/hour	200~480VAC, 50/60Hz, 3 phase 2.5KVA	0.5Mpa, 200 lit./min	1,500kgs

- High Capacity for Plastic Bottle Inspection
- Applicable for both round and oval bottles





HDI SERIES FOR PLASTIC CARD

	Size	Capacity	Electrical Supply	Compressed Air	Machine Weight
HDI	Width < 100m Width > 100m	4,200card /hour 2,100card /hour	200~480VAC, 50/60Hz, 3 phase 2KVA	0.5Mpa, 200 lit./min	1,000kgs

- Optimum System for Plastic Blow Fill Seal Applications
- Inspection Electrode Configuration for Your Product Type and Size



Inspection Section

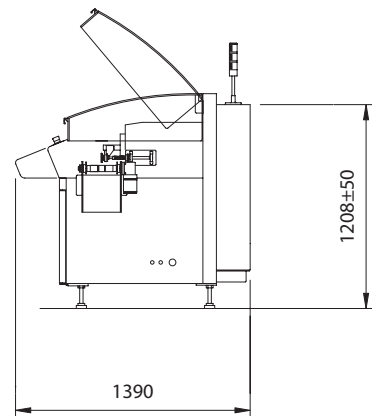
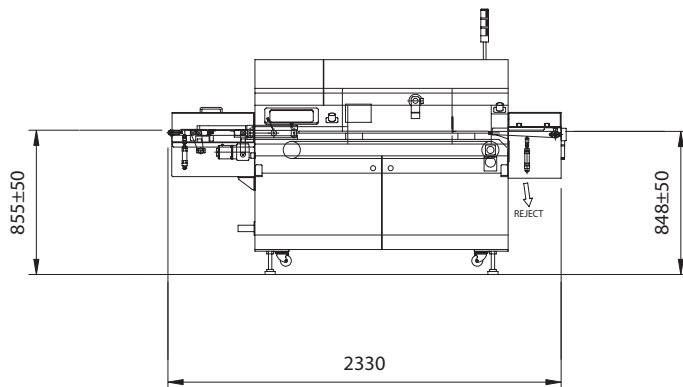


AUTOLOADER UNIT IN HDI-11



● Autoloader System

The Autoloader System is an optional feature to integrate the feeding of an upstream conveyor directly to inspection conveyor of the HDI system for a continuous uninterrupted production line.

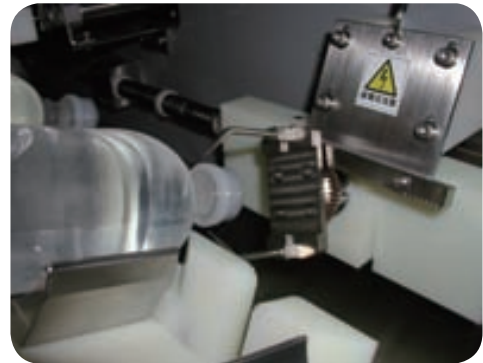




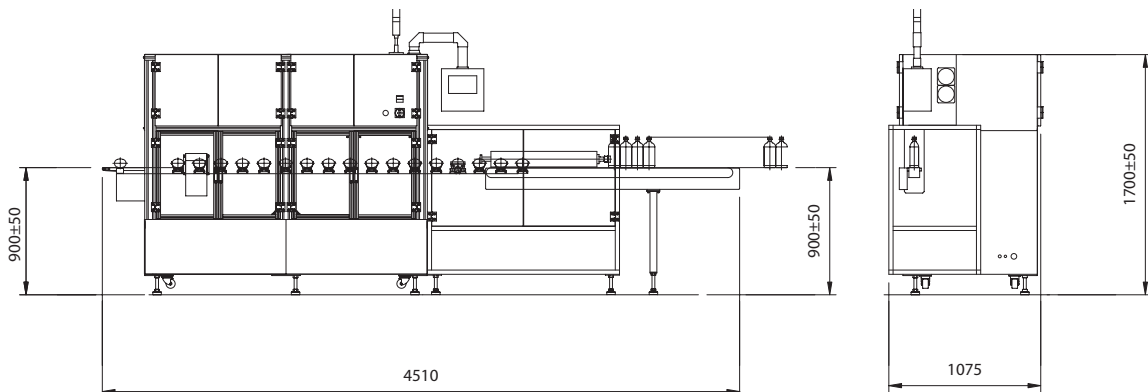
HDC SERIES FOR LARGE VOLUME PLASTIC BOTTLE

	Size	Capacity	Electrical Supply	Compressed Air	Machine Weight
HDC-3	100~1,000ml	6,000 Bottles/hour	200~480VAC, 50/60Hz, 3 phase 2KVA	0.5Mpa, 200 lit./min	1,000kgs

- Multiple Inspection Station Capability primarily for Cap and Bottom Sealing
- Optional upgrades include Infeed and Discharge Units for in-line applications



Inspection Electrode

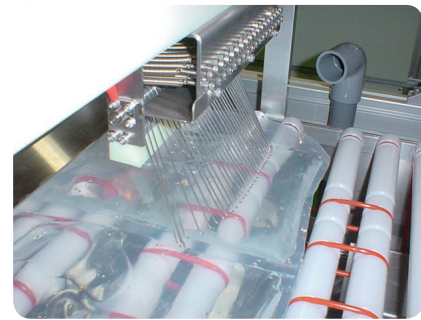
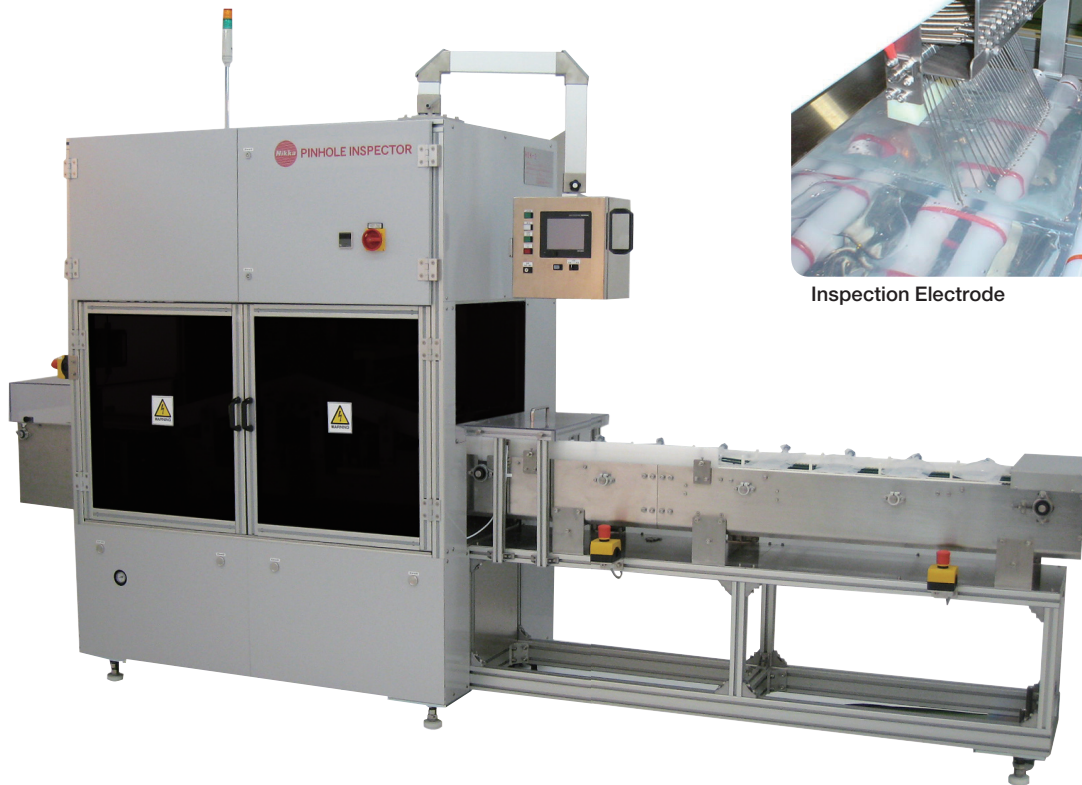




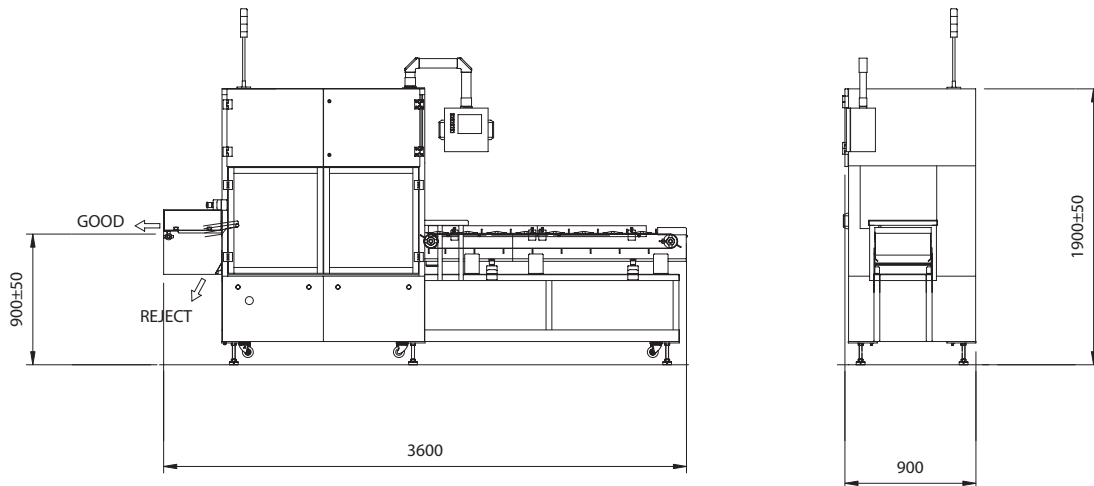
HDK SERIES FOR FLEXIBLE BAG

	Size	Capacity	Electrical Supply	Compressed Air	Machine Weight
HDK-2	100~1,000ml	6,000bags/hour	200~480VAC, 50/60Hz, 3 phase 2KVA	0.5Mpa, 200 lit./min	1,200kgs

- Entire Body Inspection Possible
- Original Electrode Design to inspect critical area such as sealing and port welding



Inspection Electrode



HSE-6 Series For CUP/POUCH/SAUSAGE/HAM

	Product	Processing Speed	Electrical Supply	Compressed Air	Machine Weight
HSE-622	Pouch Soft-bag	100pcs/min	100VAC 50/60Hz 500VA	0.5Mpa, 200 lit./min	500kgs
HSE-621	Cup	120pcs/min			550kgs
HSE-601	Sausage	220pcs/min	200VAC 50/60Hz 500VA		500kgs
HSE-602	Ham / Sausage	220pcs/min			550kgs
HSE-612	Sausage	450pcs/min	200VAC 50/60Hz 1KVA		1,400kgs

- Easy Setup for Different Sizes
- Easy Size Change by Adjustment Dial and Exchange of Parts

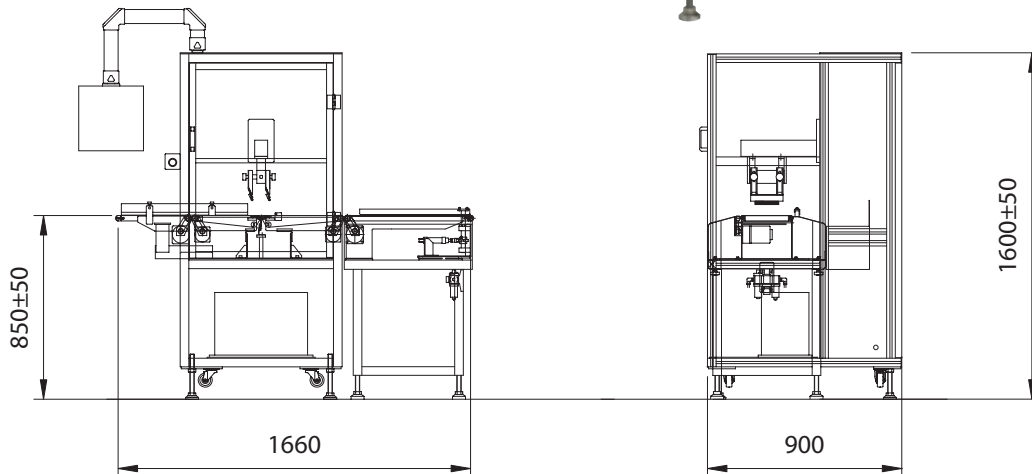
■ Inspection Electrode



HSE-622 for Pouch



HSE-601 for Sausage



For Food Application



HSE-8 SERIE CUP/POUCH

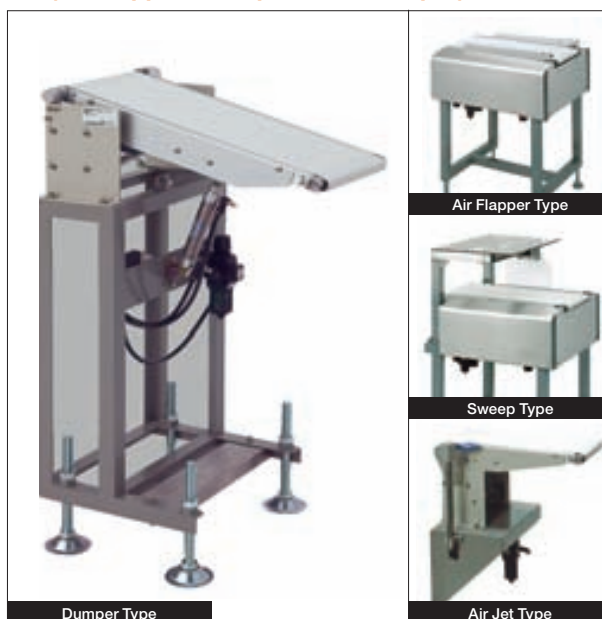
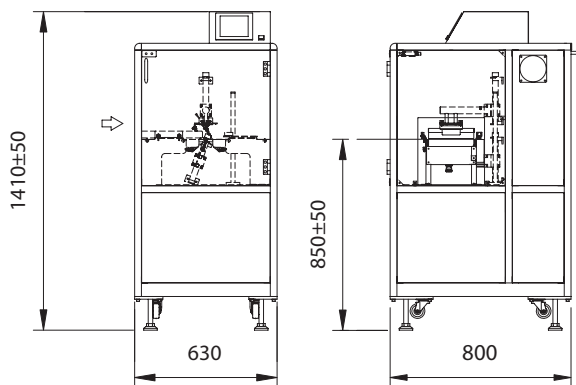
	Product	Capacity	Electrical Supply	Compressed Air	Machine Weight
HSE-821	CUP /POUCH	Max. 220pcs/min	100VAC 50/60Hz 500VA	To be decided	300 kgs

- Easy Size Adjustment by Positioning Dial
- Cost and Space Saving

■ Inspection Electrode



- Optional Rejection Unit Available (Air Flapper/Sweep/Air Jet/Dumper)

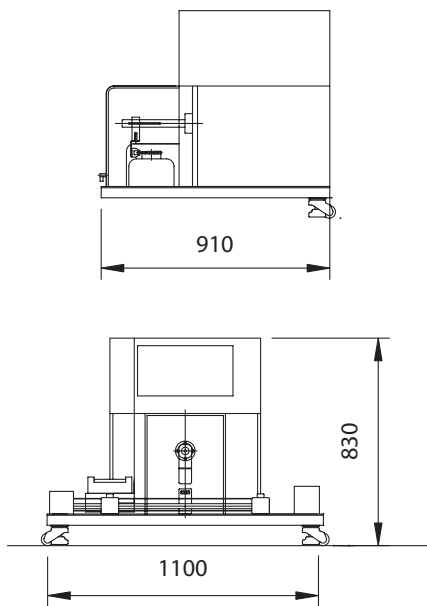


HDT TABLE TOP UNIT

	Processing Speed	Electrical Supply
HDT-1	3.6 sec/one way	200~480VAC, 50/60Hz, 1 phase 500VA

Manual Loading and Operation

- An operator places a container onto the container fixture of the machine and presses the start buttons.
- The container on the fixture passes through the inspection station where container is inspected by the high voltage principle.
- “Faulty” container detection is indicated with the lamp and buzzer.





TEST KIT FOR SYSTEM VERIFICATION

- Test kit set is to be made according to the customer's product shape and weight to simulate good and bad signals at each inspection zone. It is used for daily validation of the machine to test the inspection performance of each inspection electrode as well as the general functionality of the system.






Test Ampoule Set

PORTABLE TYPE

	Processing Speed	Electrical Supply	Machine Weight	
HSE-701	High Voltage adjust range: 0~13kV	100VAC 50/60Hz 300VA	20kgs	
PDLL	High Voltage adjust range: 0~25kV	100VAC 50/60Hz 150VA	10kgs	

BUILT-IN PINHOLE TESTER FOR MATERIAL

Models	Specifications	Photographs
PDKN	High Voltage adjust range: 0~5kV/10 Electrical Supply: 100VAC 50/60Hz 150VA Product: Film Sheet width 1000~2000mm Size other than this range to be discussed.	
PDMM	High Voltage adjust range: 10~25kV Electrical Supply: 100VAC 50/60Hz 300VA Product: Cap / Empty Container	
SPAB	High Voltage adjust range: 3~15kV Electrical Supply: 100VAC 50/60Hz 300VA Product: Cable (Size ϕ 1~20mm) Line speed 50~640mm/min.	

Main products handled by Nikka Densok

- Metal detector
- X-ray Inspection System
- Magnetic iron removal equipment
- Checkweigher
- Pinhole inspector
- Security-related equipment
- Other various measuring machine, automatic rejector

<http://www.nikka-densok.co.jp>

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