

Chip Part Outer Appearance (4-surface/6-surface) Inspection Machines

**OVS-6410 (4-surface)/OVS-6610 (6-surface)**

Achievement from 20 years of development:  
System configuration and stability for the manufacturing sites



As to **the chip parts** used in such devices as vehicles, industrial machines, smart phones, wearable devices and medical machines, **it is getting more important to improve the quality due to requirements for higher added values.**

Directly imaging each surface of a workpiece at the right angle, Okano's machines can perform accurate outer appearance inspection while giving no damage to the workpiece. **Our concept of machine development focused on "stable inspection", which is our foundation.**

For 4-surface and 6-surface inspection, we offer a rich line of options to further enhance the stable inspection including the two-light systems, the color cameras and the backlight systems.

**OKANO**  
ELECTRIC CO.,LTD.

# Machine Overview

Using 6 (or 4) cameras, this chip outer appearance inspection machine provides high-speed inspection of 6 surfaces (or 4 surfaces) of each chip part fed from the part feeder. Those parts that are damaged or have erroneous dimensions are discharged separately from good parts. We offer various options to respond to customers' diversifying needs.

## Ten Features of OVS

### (1) Stably inspects workpiece corners, edges and rear surfaces.

Since the machine inspects the rear surface of the workpiece directly, not through a glass, the inspection result is very stable, with just a few grays/retests. Employs a special feeding system that enhances workpiece edges, which are difficult to inspect.

### (2) Positions the workpiece, the camera and the light on one axis.

Optimizes the imaging conditions for stability and reproducibility.

### (3) Enable to employs a 2-shutter and 2-light system as a option.

The two-light system can be used and switched for one surface for higher detection of defective parts. This feature enables defective part detection by enhancing the part surface.

\*A backlight system is available for measurement of side/rear dimensions. Uses one light for edges.

### (4) Special part feeding

Feeds workpieces with no load, different from the mechanical chuck method and the static electricity chuck method. Within the machine, the workpieces are never deformed and never undergo electrical damages.

### (5) Employs various lighting systems to detect every defect.

From our various lighting systems including the backlight system for measurement of side/rear dimensions, the no-shadow system and the infrared system, the user can choose the optimum lighting system.

### (6) Okano's unique detection algorithm

The special detection algorithm developed by Okano has improved the yield and attained a high inspection accuracy.

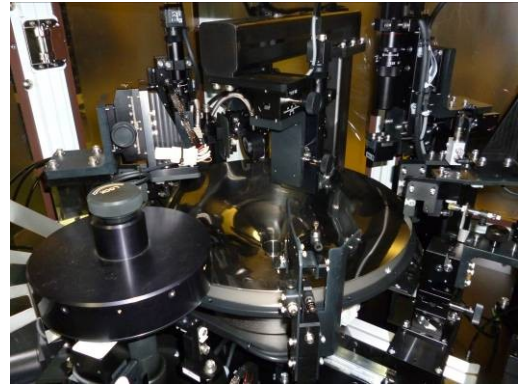
As Okano's original software, it can respond to various types.

### (7) Inspects even array-type parts

Since the inspection conditions can be set arbitrarily, the machine can respond to no-electrode, two-electrode, long electrode, and combined chips.

### (8) Responds to inspection of different shape appearances including coil bobbins and LED-PKG

Parts other than angular chips are also acceptable.  
(Limited to those that can be fed from the part feeder.)



Machine inside

## (9) NG box distinguishes severe defects from light defects.

Analyses of defects contribute feedbacks to the facility in the upstream process.

## (10) Reliability based on many worldwide achievements

Since the first development in 1997, the OVS series have been chosen by customers in the world. Thanks to the lessons learned during this period, the series feature user-friendly operation screens and setting methods, considering usefulness in the manufacturing sites.



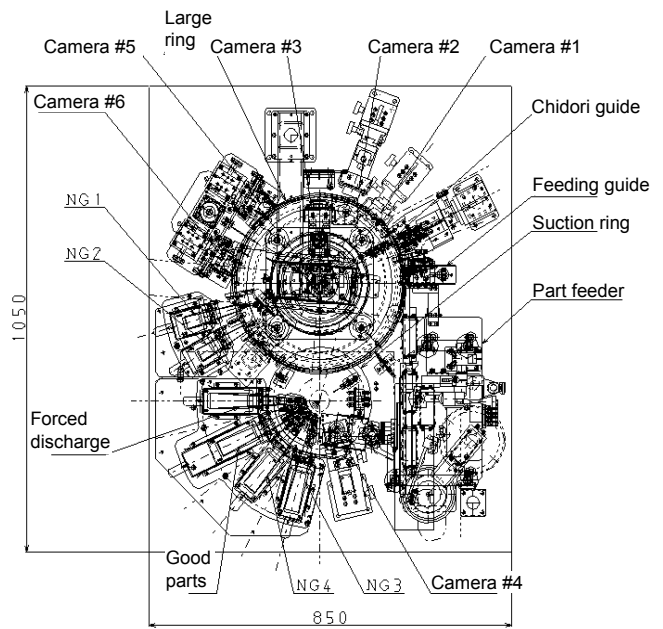
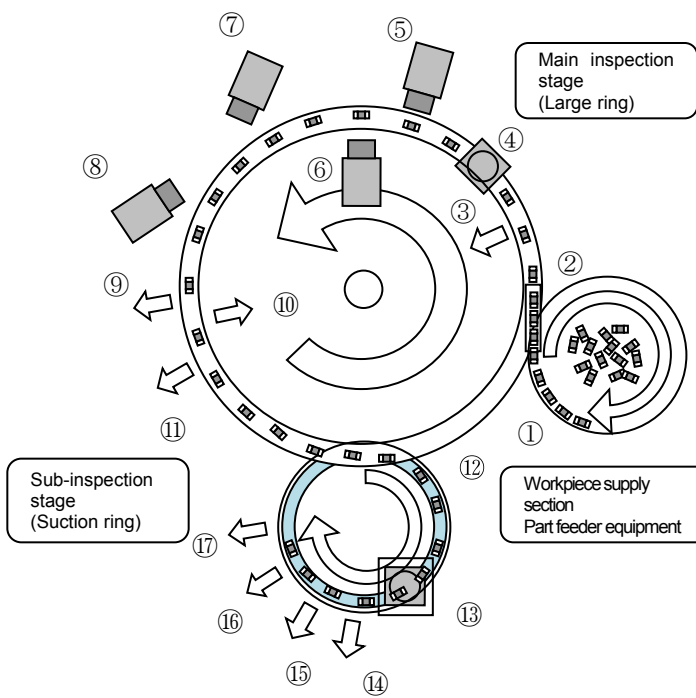
Feeding section




Collecting section

## Specifications

No	Item	Remarks
(1)	Used workpiece	Chip parts (0402 to 4532) * Please consult us for parts with other shapes.
(2)	Processing time	5,000 workpieces/minute at maximum (depending on conditions)
(3)	Inspection item	Detection of crack, chipping, damage, dirt and delamination, and dimension measurement
	Workpiece surface Electrode	
(4)	Image processing configuration	6 (4 to 8 at maximum) 3 (2 to 4 at maximum)
	No. of cameras No. of image processors	
(5)	Machine dimensions	<ul style="list-style-type: none"> <li>•Dimensions: Width: 850 mm; Depth: 1,050 mm; Height: Approx. 1,900 mm (Excluding warning lamp)</li> <li>•Weight: Approx. 700 Kg</li> </ul>
(6)	Utility	<ul style="list-style-type: none"> <li>•Power source: 200 VAC, 20 A, 3 phases, 50/60 Hz (or 100 VAC, single phase)</li> <li>•Air pressure: 0.4 Mpa (Vacuum source: Vacuum pump, optional)</li> </ul>



- ① After put in the hopper of the part feeder, the workpieces are sent to the large ring.
- ② While rotating, the large ring separates and aligns the workpieces.
- ③ If the distance between workpieces is too short, one of them is discharged to the re-test box.
- ④ The top surface (face 1) is inspected.
- ⑤ The first side surface (face 2) is inspected.
- ⑥ The second side surface (face 3) is inspected.
- ⑦ The trailing end surface (face 5) is inspected.
- ⑧ The leading end surface (face 6) is inspected.
- ⑨ The defective parts found on the main inspection stage are discharged (NG 1: Setting changeable).  
\* Separation by defect type is arbitrarily available including separation of top surface NG and side surface NG.
- ⑩ Abnormal angles are detected and workpieces not inspected are discharged to the collection box.  
→Collected to the re-test box.
- ⑪ The defective parts found on the main inspection stage are discharged (NG 2: Setting changeable).  
\* Separation by defect type is arbitrarily available including separation of top surface NG and side surface NG.
- ⑫ The workpieces are sucked and sent from the main inspection stage to the sub-inspection stage and the forth camera.
- ⑬ The bottom surface (face 4) is inspected.
- ⑭ The defective parts are discharged (NG 3: Setting changeable). The workpieces not inspected are also discharged.
- ⑮ The defective parts are discharged (NG 4: Setting changeable).
- ⑯ After inspection of six surfaces, all the good parts are discharged.
- ⑰ The workpieces not discharged erroneously are forcedly discharged. (No more workpiece is left ordinarily.)

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