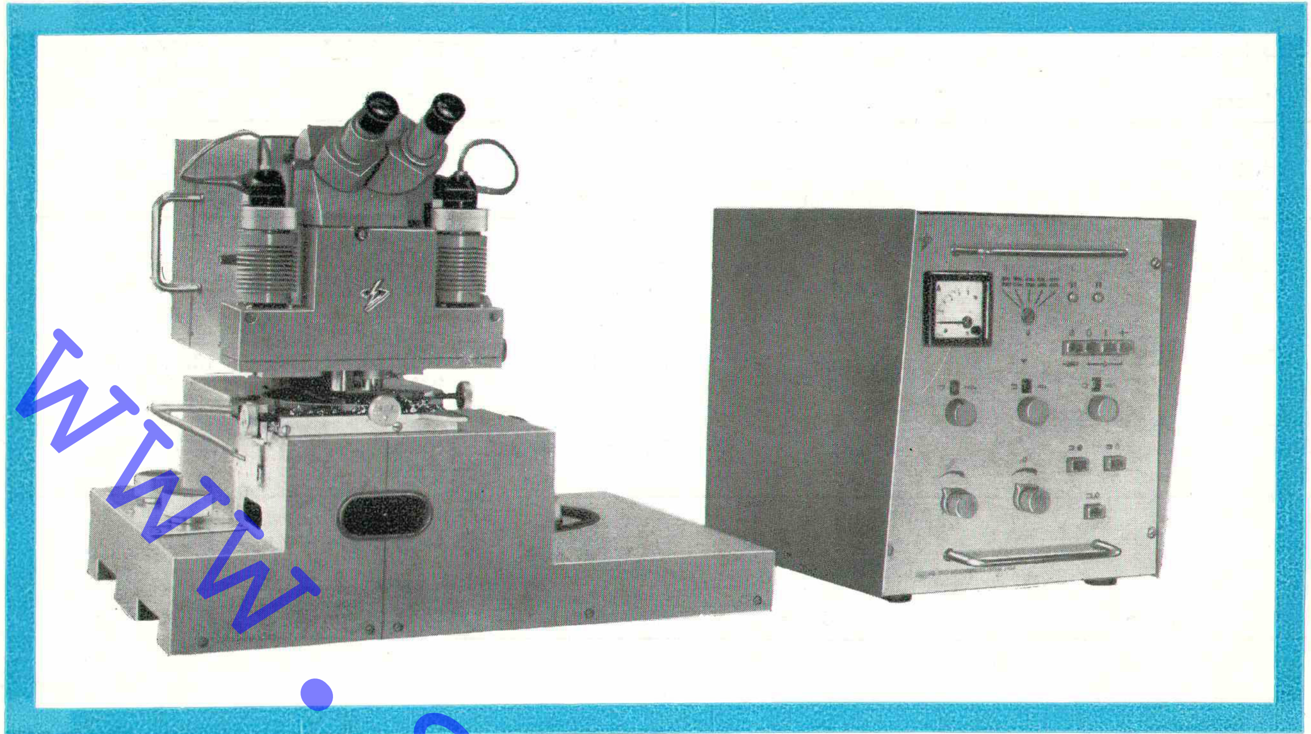
IV-A-2

information



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ADJUSTMENT AND EXPOSURE SYSTEM TYPE 2104

The adjustment and exposure system consists of the basic design JuB 2104.00 and the modifications 2104.01, 2104.02, and 2104.03.
By means of these precision instruments a semiconductor slice covered with photo-sensitive lacquer film can be adjusted with high accuracy to the mask. This slice can be subsequently exposed being in contact with the mask.

Essential advantages

- Possibility of application different dimensions of the substrate and the mask by using the modifications of the basic design
- Safe contact between substrate and mask by vacuum holding-down system
- Convenience of operation using an operating cycle by central switch and automatic exposure trigging
- Water cooled lamphouse with excess temperature protection using an electronic temperature control unit
- Control of the lamp current with an indicating instrument
- Electronic control of exposure time
- Equipment for rough positioning the substrate

Design and function

A solid base accomodates the positioning stage with micromanipulator, the swivel arm with the observing and exposure system and the central switch for the operating cycle control. The substrate can be inserted or the observing and exposure system can be set into operating position according to the rotation of the swivel arm.
The sub-assemblies of the electrical instrument equipment and the electronic control of the exposure equipment are combined in the switch device. The flexible connection with the basic device enables a convenient adaption using the device within system solutions.
The central switch, convenient to operate guarantees a correct distribution of the vacuum during one working cycle incl. automatic trigging of the exposure controlled electronically. The overlapping is observed by the double microscope with two optical systems thus enabling to observe two figures alternating or simultanecusly in a distance of 22 . . . 40 mm adjustable to substrate diameter.
The picture of the mask is exactly transmitted upon the semiconductor slice by a lightbeam of a highest – pressure – mercury vapour lamp.
The exposure time is controlled with high accuracy by an electronic time switch.

Technical specifications

Type	2104.00	2104.01	2104.02	2104.03
Dimensions of the mask:				
Outside dimensions	(70 × 70) mm $2^1/_2'' \times 2^1/_2''$	(70 × 70) mm $2^1/_2'' \times 2^1/_2''$	$2^1/_2'' \times 2^1/_2''$	(49 × 49) mm (70 × 70) mm
Thickness	$\leqq$ 3 mm	(3 . . . 12) mm	$\leqq$ 3 mm	$\leqq$ 3 mm
Dimensions of the substrate:				
Diameter	(28 . . . 51) mm	(28 . . . 51) mm	(28 . . . 51) mm	(28 . . . 38) mm
Thickness	$\leqq$ 0.5 mm	$\leqq$ 0.5 mm	$\leqq$ 0.5 mm	$\leqq$ 0.5 mm
Observation system:				
Diameter of the visual field	1.9 mm 1.6 mm 0.8 mm	4.0 mm 1.75 mm	1.9 mm 1.6 mm 0.8 mm	1.9 mm 1.6 mm 0.8 mm
Magnification	63-fold 125-fold 200-fold	50-fold 100-fold	63-fold 125-fold 200-fold	63-fold 125-fold 200-fold
Inaccuracy of positioning:				
Standard construction	0.4 μm	0.4 μm	0.4 μm	0.4 μm
Special construction	0.3 μm		0.3 μm	0.3 μm
Exposure system:				
Scource of light	HBO 200 or ДРШ 250	HBO 200 or ДРШ 250	HBO 200	HBO 200
Illuminated area in the object plane	$\varnothing \geqq$ 56 mm	$\varnothing \geqq$ 56 mm	$\varnothing \geqq$ 56 mm	$\varnothing \geqq$ 56 mm

Dimensions:	width × height × length
Basic device	650 × 580 × 500 mm
Switch device	320 × 400 × 375 mm
Weight with switch device	approx. 120 kg
Mains voltage	220 V ± 5 %
Energy intake	approx. 1 kVA
Auxiliary energy:	
Vacuum, pressure abs.	(70 . . . 100) Torr
Water	15 l/h entry temperature approx. 15 °C
Control of the exposure time:	electronic
Adjustment range in decades	(1 . . . 0.1 . . . 120) sec. and continous exposure
Reproducibility	± 2 %
Setting ranges:	
Mask	x-y-direction ± 2 mm rotation ± 5°
Substrate	x-y-direction within a circle of 5 mm diam. rotation ± 9°

Theoretical productivity (without exchange of the masks)

On first exposures:

Charging, discharging, and adjustment for exposure	$\leqq$ 28 sec.
Assumed exposure time	5 sec.
	$\leqq$ 33 sec.
	$\triangleq \geqq$ 109 substrates/h

On following exposures:

Charging, discharging and adjustment for exposure	$\leqq$ 28 sec.
Fine adjustment	$\leqq$ 35 sec.
Assumed exposure time	5 sec.
	$\leqq$ 68 sec.
	$\triangleq \geqq$ 53 substrates/h

We reserve the right for deviations from the technical data, illustrations and specifications mentioned for reasons of further technical development. In case of inquiries or repeat orders, please state the Serial No:

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