

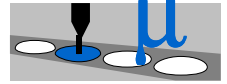
# IP-520 CELL

## MULTIFUNCTION POSITIONING- AND ASSEMBLY CELL

---

**MACHINES**

---

**5.104**

---

**APPLICATION: MICRO-ASSEMBLY**

---

---

**ZEVAC-LINE: IP**

---

The complete IP product line  
documentation is composed of the  
following data sheets:

---

**MACHINES** 5.101 - 5.104

---

---

**ACCESSORIES**

---

---

**OPTIONS**

---



**GENERAL**

THE IP-520 IS AN EXTREMELY FLEXIBLE MULTIFUNCTION POSITIONING AND ASSEMBLY CELL.

DETECTION, PICK-UP, ALIGNMENT AND PLACING OF COMPONENTS AS WELL AS DISPENSING OR STAMPING LIQUIDS IS JUST A PART OF THE POSSIBLE RANGE OF PROCESSES. HANDLING AND PROCESSING OF COMPONENTS IN THE FIELD OF MICROMECHANICS, MICRO-OPTICS OR MICROELECTRONICS WITH SMALLEST DIMENSIONS IS NOT A MAJOR CHALLENGE OF THE SYSTEM.

THE MAIN RANGE OF APPLICATIONS IS: MEDIUM TO LARGE SERIAL PRODUCTION WITH FOCUS ON THROUGHPUT, PRECISION AND FLEXIBILITY. THE IP-520 PRODUCTION CELL IS BASED ON A CARTESIAN POSITION SYSTEM WHICH CAN BE EQUIPPED WITH A WIDE RANGE OF STANDARD AND APPLICATION SPECIFIC OPTIONS TO OPTIMIZE YOUR APPLICATION PROCESS.

**RANGES OF APPLICATION**

A simple and quick configuration of the in-line capable IP-520 allows the following process steps:

- pick-up, align and place with accurate force control
- joining and bonding
- dispensing, stamping, dipping
- screwing
- measuring and inspecting
- controlling and regulating
- curing and soldering
- cognition and detection of absolute or relative positions and orientations

and lots more in technologies such as

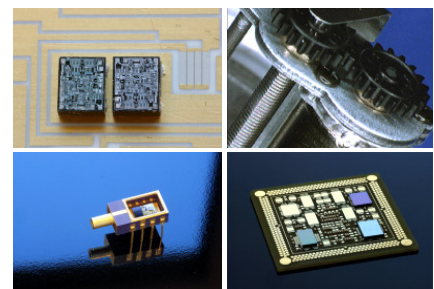
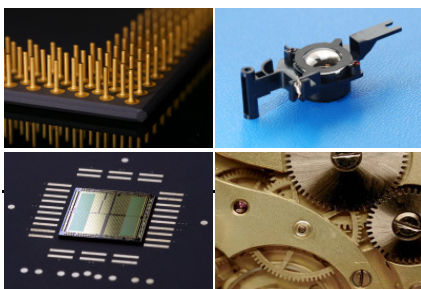
- electronics / microelectronics
- sensors
- semiconductors
- MEMS / MOEMS
- biotechnology
- optics / optronics
- photonics
- micromechanics
- mechatronics

**COMPONENTS**

With the innovative technology of the IP-520 components such as

- Gearwheels
- Injection moulding micro parts
- Apertures
- Lenses
- Laser diodes / VCSEL
- Flip chip
- $\mu$ BGA / CSP

can be easily handled.



---

## MECHANICAL STRUCTURE

The mechanical base structure is in-line capable, modular and can be equipped with application specific options and peripherals.

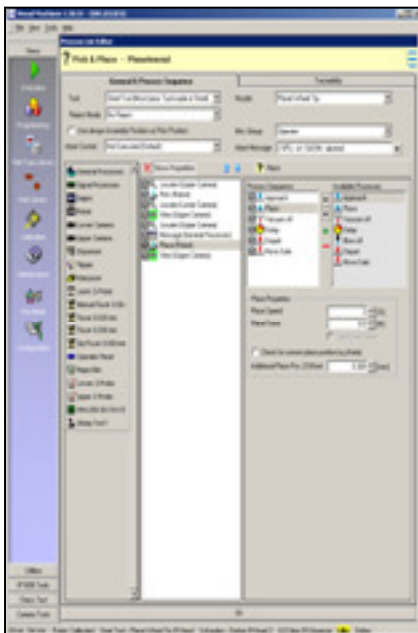
For flexible and precise automation processes with repeatable results, the structure consists of

- Base frame composed of welded steel cage
- Base plate made from nickel-plated aluminium
- Cartesian X/Y robot system with maintenance free linear motors and linear encoders. The Robot head can be supplemented with Z- and theta axis, pick&place tools, dispensers, and other modules.
- Closed loop controls for all machine components
- Aesthetic safety casing



---

## SOFTWARE AND PROGRAMMING



All parameters, functions and configuration data of the IP-520 are controlled via the user-friendly software VisualMachines™. It's a object-oriented, open and modular in-house software solution.

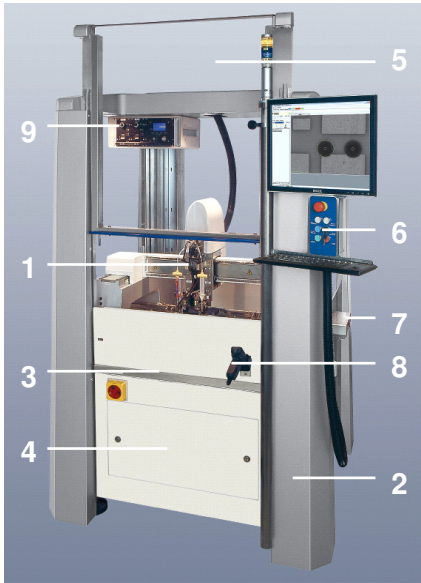
The single process steps are presented as small boxes which can be easily inserted in the process flow by „drag-and-drop“. That way the process sequence can be comfortably developed and optimized without any knowledge of a programming language. The user gets to the detailed information and parameters by clicking on the desired process box.

Furthermore, VisualMachines™ supports working with part type libraries with that predefined process lists can be stored and linked with the component in the software database. In this manner, components or part types can be accessed in variable applications without any limitation.

As an option, VisualMachines™ provides interfaces to import CAD data and to export traceability data in order to support any quality management system.

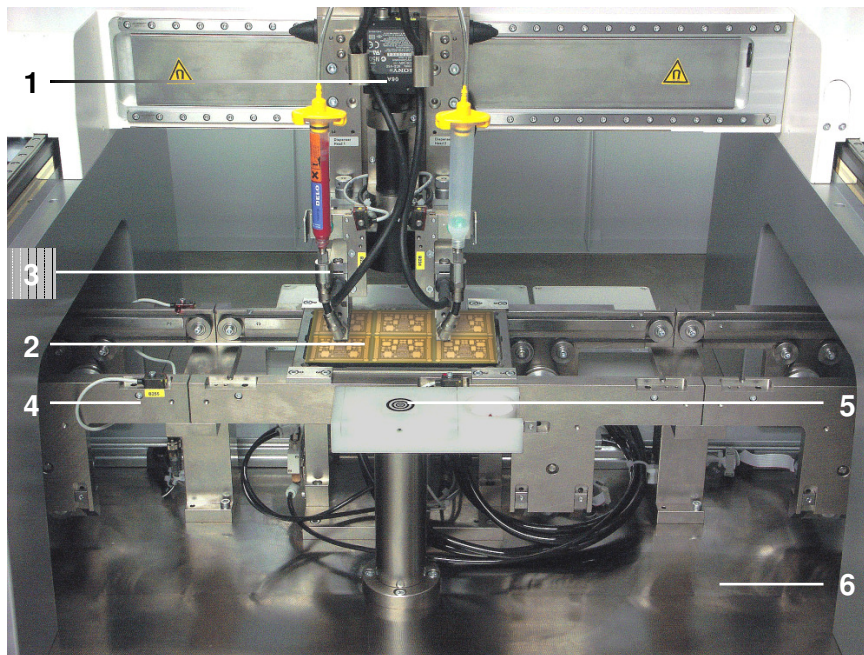
---





**IP-520 ASSEMBLY CELL**

- 1 Robot head with flying camera
- 2 Rugged steel cell frame, welded
- 3 Application steel plate, 30 mm
- 4 Electric and pneumatic control cabinet, computer
- 5 Sliding door with safety switches
- 6 Integrated console
- 7 Internal conveyor system
- 8 Bar code reader
- 9 Dispenser controller



**WORKSPACE**

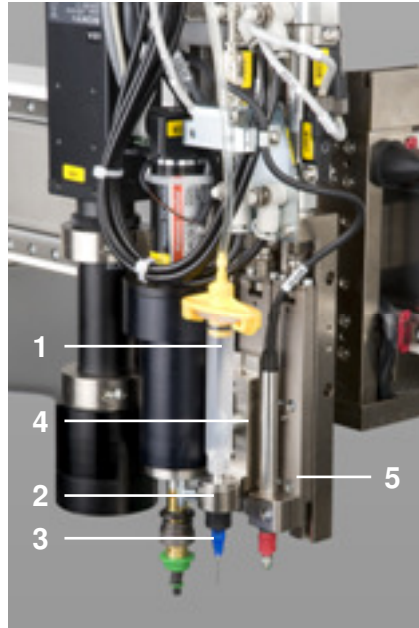
- 1 Digital camera with adjustable illumination
- 2 Centring station with substrate collet
- 3 Head-mounted options (here: dispense valves)
- 4 Smoothed motion conveyor
- 5 Camera calibration station
- 6 Application plate

## OPTIONS

---

### LIQUIDS DISPENSER

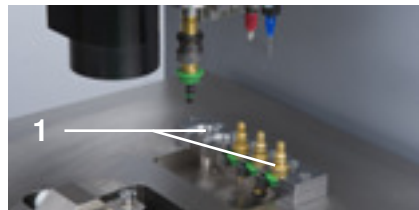
For dispensing of liquid media with various viscosity. Time/pressure, auger or piezo-electric systems are available, depending on the viscosity and the application requirements. All dispense parameters are accessible and controllable via the machine control software. Thus, the dispense process can be fully implemented in the application's main process list.



- 1 Cartridge with medium to dispense
- 2 Cartridge holder (time/pressure)
- 3 Dispense needle
- 4 Mechanical Z-adjustment

### TOOL CHANGER

For take-up of standard JUKI, Siemens or other vacuum tips, die collets, grippers. The standard tool changer has a capacity for six tools.



- 5 Tool pockets

### COMPONENT-FLIPPER

Is primarily used for die-bonding applications. The component edge dimension can vary from 0.2 mm up to 25.4 mm.



- 6 Interposer
- 7 Flipper-lever
- 8 Lift and rotate mechanism
- 9 Standard or application specific vacuum tip

### LINEAR DOCTOR BLADE STATION

The automatic linear doctor blade station is mainly used for stamping adhesives. The encapsulated liquids reservoir tops up the cavity plate with every slide movement.



- 10 Reservoir
- 11 Cavity plate
- 12 Slide mechanism

Tape feeder, die feeder and vibrating units as well as other application specific options on request.

---

## TECHNICAL DATA

<b>Cell</b>	Dimensions	width	1170 mm		
		depth	1170 mm		
		height (standard, without stacklight)	2403 mm		
		weight (standard)	900 kg		
		Transport height			
		Transport weight			
<b>Supply</b>	Electrical power		3 x 400 / 230 VAC 50 Hz		
			3 x 208 / 110 VAC 60 Hz		
	Compressed air		4 - 6 bar, 55 - 80 psi 10 Nm <sup>3</sup> /h		
<b>Robot</b>		X (linear drive)	Y (linear drive)	Z (servo drive)	φ <sub>Z</sub> (DC drive)
	Traverse path	400 mm	400 mm	66 mm	±360 °
	Axis acceleration (1)	6.0ms <sup>-2</sup> / 20ms <sup>-2</sup> (2)	5.0ms <sup>-2</sup> / 17ms <sup>-2</sup> (2)	6.0ms <sup>-2</sup>	60 rots <sup>-2</sup>
	Axis speed (1)	1.0ms <sup>-1</sup> / 2.0ms <sup>-1</sup> (2)	0.9ms <sup>-1</sup> / 1.5ms <sup>-1</sup> (2)	0.18ms <sup>-1</sup>	2.5 rots <sup>-1</sup>
	Axis resolution	0.001 mm	0.001 mm	0.001 mm	0.003 °
	Repeatability	± 0.004 mm	± 0.004 mm	± 0.004 mm	± 0.012 °
Process accuracy (3)	± 0.009 mm	± 0.009 mm	± 0.020 mm	± 0.020 °	
<b>Options</b>	Force sensor in Z	Range	0.1 – 50 N		
		Resolution	0.01 N		
	Pneumatic	Vacuum, vacuum sensor, process air, blow-off air			
<b>Safety</b>	Certificates	CE-certificated			
		UL-compatible			

(1) The power of the axes are application specifically configurable. For other values, please contact us.

(2) Two-side drive in Y

(3) Values are based on the glass-f lip-chip measurement method. A local accuracy of 5 µm can be obtained, depending of the machine configuration.

## ZEVAC-Agent

<b>ZEVAC Contacts</b>	ZEVAC AG	Telephone	+41 32 626 20 80
	Vogelherdstrasse 4	Fax	+41 32 626 20 90
	CH-4500 Solothurn/ Switzerland	E-Mail	info@zevac.ch
		Website	www.zevac.ch