

Zyvex NanoEffector[®] Microgrippers

Micromachined silicon end-effectors for Zyvex Nanomanipulator Systems

Patent # 6,398,280

Features and Benefits

Zyvex's patented microgripper systems are active, micromachined silicon structures for micro- and nanoscale research, development, and production applications. With up to 50 μm of tip actuation available, these grippers are capable of manipulating micro-components with features from 1 μm to 500 μm in size. Low voltage analog control permits the most delicate of micro-assembly operations to be performed.

Zyvex Microgrippers are available in a range of in-stock tip openings and thicknesses. Actuation of the gripper arms is available with power-on opening motion and power-on closing motion. These grippers are ideal for handling delicate microscale components and operate in both vacuum and ambient conditions. Refer to the Zyvex Instruments' Applications Package datasheet for information on the integrated software control.

Applications

- Pick and place sub-micron structures
- Bundle separation
- Device fabrication
- Sample preparation
- Sample anchoring
- Sample sorting
- Microassembly
- Application notes are available at www.zyvex.com

Technical Specifications

	BB Microgrippers	SM-BB Microgrippers
Thickness	50 \pm 0.5 μm	5 μm \pm 0.5 μm
Max gripping force	0.55 mN	0.21 mN
Max mechanical potential	6.9 $\times 10^{-9}$ Joules	4.9 $\times 10^{-10}$ Joules
Allowable in-plane deflection	55 μm	9 μm
Out-of-plane stiffness	122 $\mu\text{N}/\mu\text{m}$	2.2 $\mu\text{N}/\mu\text{m}$
Allowable out-of-plane deflection	15 μm	25 μm
In-plane gripper arm stiffness	22 $\mu\text{N}/\mu\text{m}$	27 $\mu\text{N}/\mu\text{m}$

Order Lead Time

- Up to 4 microgrippers 6 weeks
- More than 4 microgrippers Call for lead time

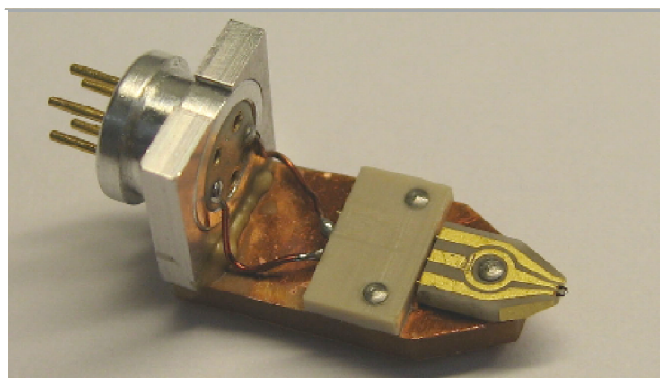
Note: There is a minimum order quantity of 4 microgrippers.

To place an order, call us toll-free at 1.877.ZYVEX99 (1.877.998.3999) ext. 271 or direct at 972.792.1671. For the most up-to-date information, please visit our web site at www.zyvex.com or email sales@zyvex.com.

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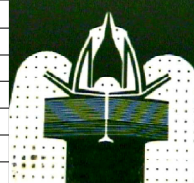
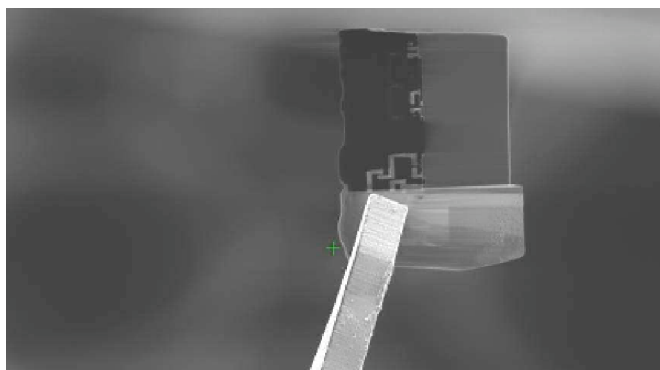


Zyvex Microgripper end-effector. If necessary, end-effectors can be returned to Zyvex Instruments for refurbishing at a discounted price.



NanoEffector Microgrippers grasping a carbon nanotube bundle.

Model Number	Inside Opening (\pm 2 microns)	Powered	Outside Opening (\pm 2 microns)
SM-BB-0	0	open	12
SM-BB-5	5	close	17
BB-10	10	open	60
BB-50	50	open	110
BB-100	100	open	150
BB-150	150	open	200
BB-500	500	open	550

Zyvex Microgrippers can grasp thin lamellas and other larger structures with thin aspect ratios.