

## **GRIPHI TYPE A PIEZOELECTRIC MICROGRIPPER**

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### **ABSTRACT**

The DS describes the main features of the GriPhi Type A piezoelectric microgripper. It includes technical data and drawings.

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### **REVISION HISTORY**

List of changes from original release to current revision.

*NOTE: Page numbers for previous revisions may differ from page numbers in the current version.*

#### **CHANGES FROM REV. A**

Page 5: grippers stroke corrected for Types B and C

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## 1. Features

- Gripper stroke – Up to 0.70 mm
- Clamping force – Up to 2 N
- Dimensions – 57 x 22 x 11 mm
- Initial opening – Adjustable by grub screw
- Shape – Available on request
- High vacuum version – Available on request
- Position sensor – Available on request
- Closed-loop control – Available on request

## 2. Applications

- Micro optics manipulation
- Fiber optics connection
- Fiber bundle positioning
- Precision mounting and adjusting
- Biological sample manipulation
- High-dynamic applications

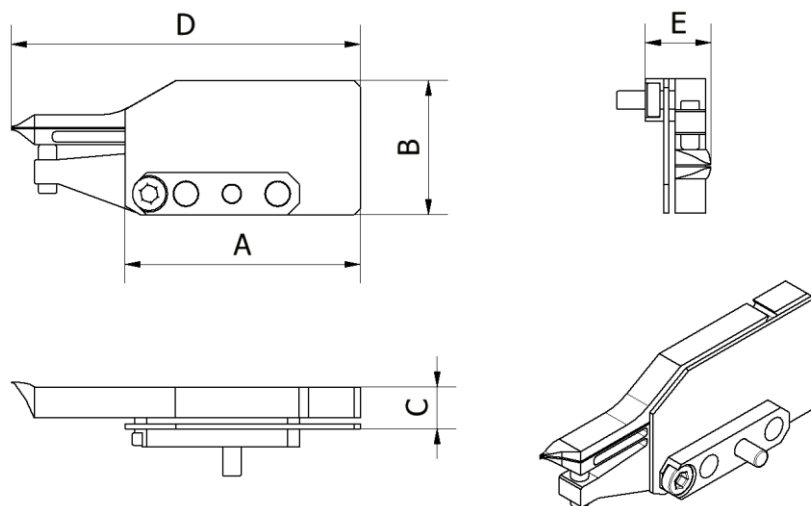
## 3. Description

The GriPhi Type A piezoelectric microgripper can handle very small samples whose size arrives down to 20  $\mu\text{m}$ . Thanks to its low inertia, it is suitable for high-dynamic applications. The mechanism which transforms the piezo stroke into the gripper stroke is designed by means of FEM (Finite Elements Method) analysis. This makes it possible to tune the opening and strength levels as desired by the customer.

The GriPhi Type A system is fully compatible with the GriPhi Driver devices provided by Phi Drive. Even if the GriPhi Type A system is highly customizable, this DS refers to the standard version of the microgripper.

## 4. Dimensions

**Fig. 1:** Main dimensions of the microgripper

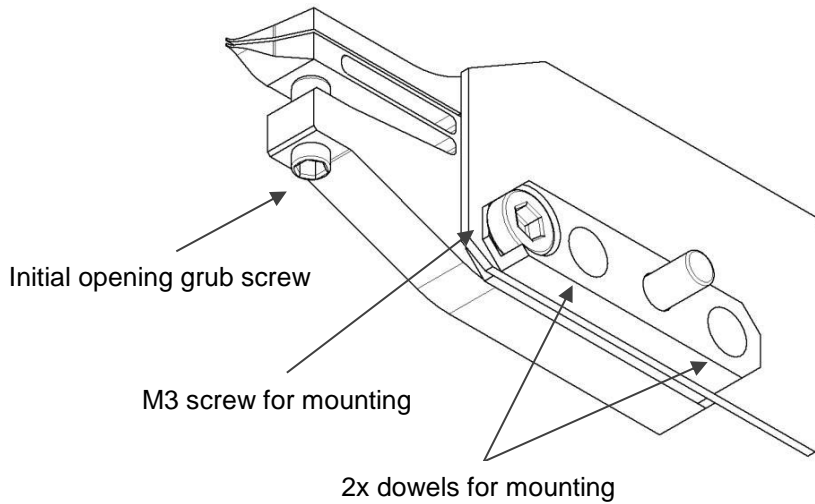


**Tab. 1:** Main dimensions of the microgripper

A		B		C		D		E	
38.4	mm	22.0	mm	6.80	mm	57.0	mm	10.6	mm

## 5. Mounting

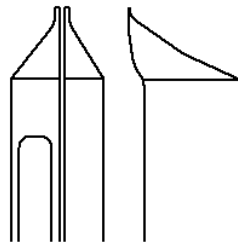
**Fig. 2:** Mechanical interfaces



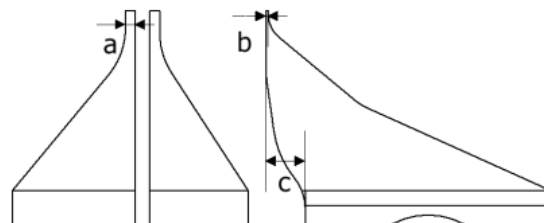
## 6. Jaws

The standard jaws for the GriPhi Type A piezoelectric microgripper are specifically designed to fully exploit the capabilities of the system. However, they can be customized as desired to meet specific needs.

**Fig. 3:** Top and side views of the standard jaws



**Fig. 4:** Main dimensions of the standard jaws



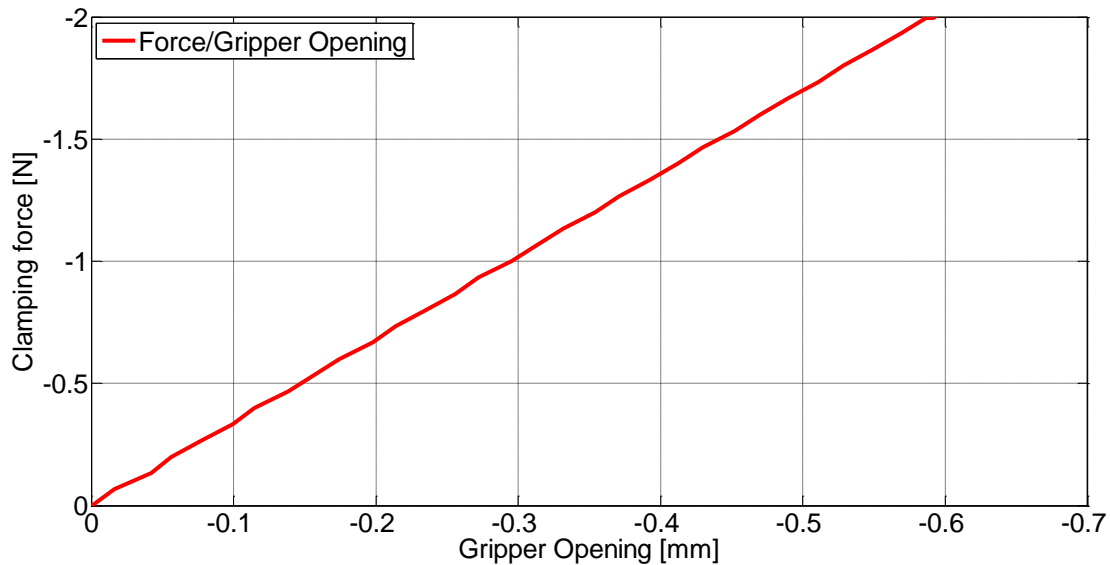
**Tab. 2:** Main dimensions of the standard jaws

<b>a</b>		<b>b</b>		<b>c</b>	
0.5	mm	0.6	mm	1.0	mm

## 7. Technical data

### 7.1. Force-opening performance

Fig. 5: Standard Type A force-opening performance



### 7.2. Mechanical specifications

Tab. 3: Mechanical specifications of the GriPhi microgrippers

	Type A	Type B	Type C	Unit
Axis of motion	X	X	X	
Gripping stroke	0.8	1.0	1.2	mm
	800	700	500	µm
Clamping force at ½ stroke	2	2	2	N
Opening/closing time	<50	<50	<50	ms
Resolution*	<100	<100	<80	nm
Speed	10	14	8	mm/s
Initial gap**	0.0-0.3	Up to 1.5	Up to 4.0	mm
Availability of the HV (High Vacuum) version	YES	YES	YES	
Rated opening-closing cycles	>40 million	>40 million	>40 million	

\*Equipped with GriPhi Driver

\*\*Customizable and adjustable via grub screw

### 7.3. Electrical specifications

Tab. 4: Electrical specifications of the GriPhi microgrippers

	Type A	Type B	Type C	Unit
Voltage	150	150	150	V
Capacitance	1.44	1.44	1.44	µF

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**NOTES:**

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