

## PIFOC Objective Scanner with Long Travel Range

High-precision Positioner / Scanner for Microscope Objectives



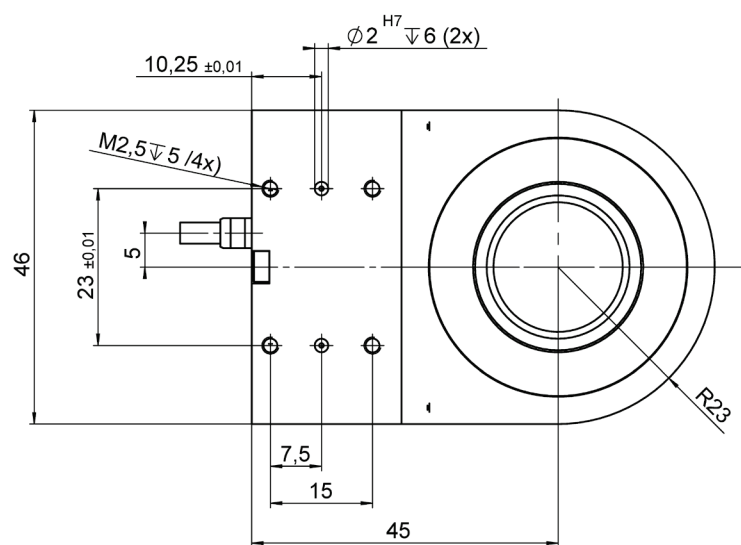
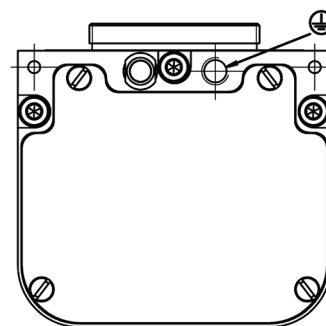
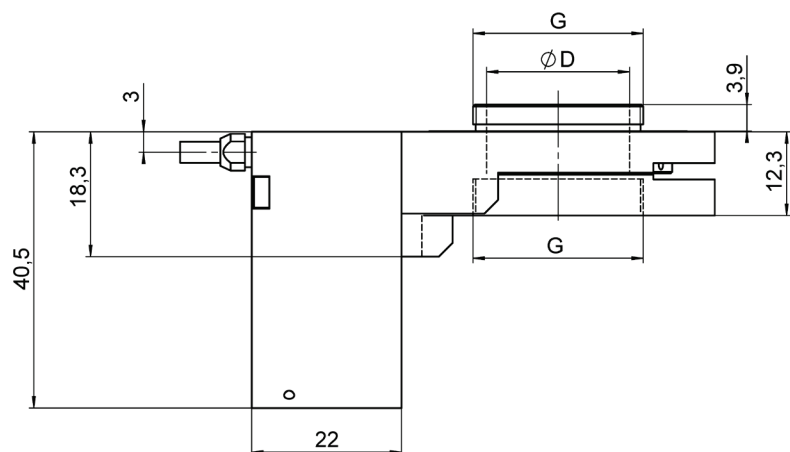
### P-725

- Travel ranges to 460  $\mu\text{m}$
- Significantly faster response and higher lifetime than motorized drives
- Fine positioning of objectives with sub-nm resolution
- Direct metrology with capacitive sensors: Highest linearity
- Zero-play, high-precision flexure guide system for better focus stability
- Compatible with MetaMorph imaging software
- Outstanding lifetime due to PICMA<sup>®</sup> piezo actuators
- QuickLock thread adapter for easy attachment
- Clear aperture up to  $\varnothing$  29 mm

## Specifications

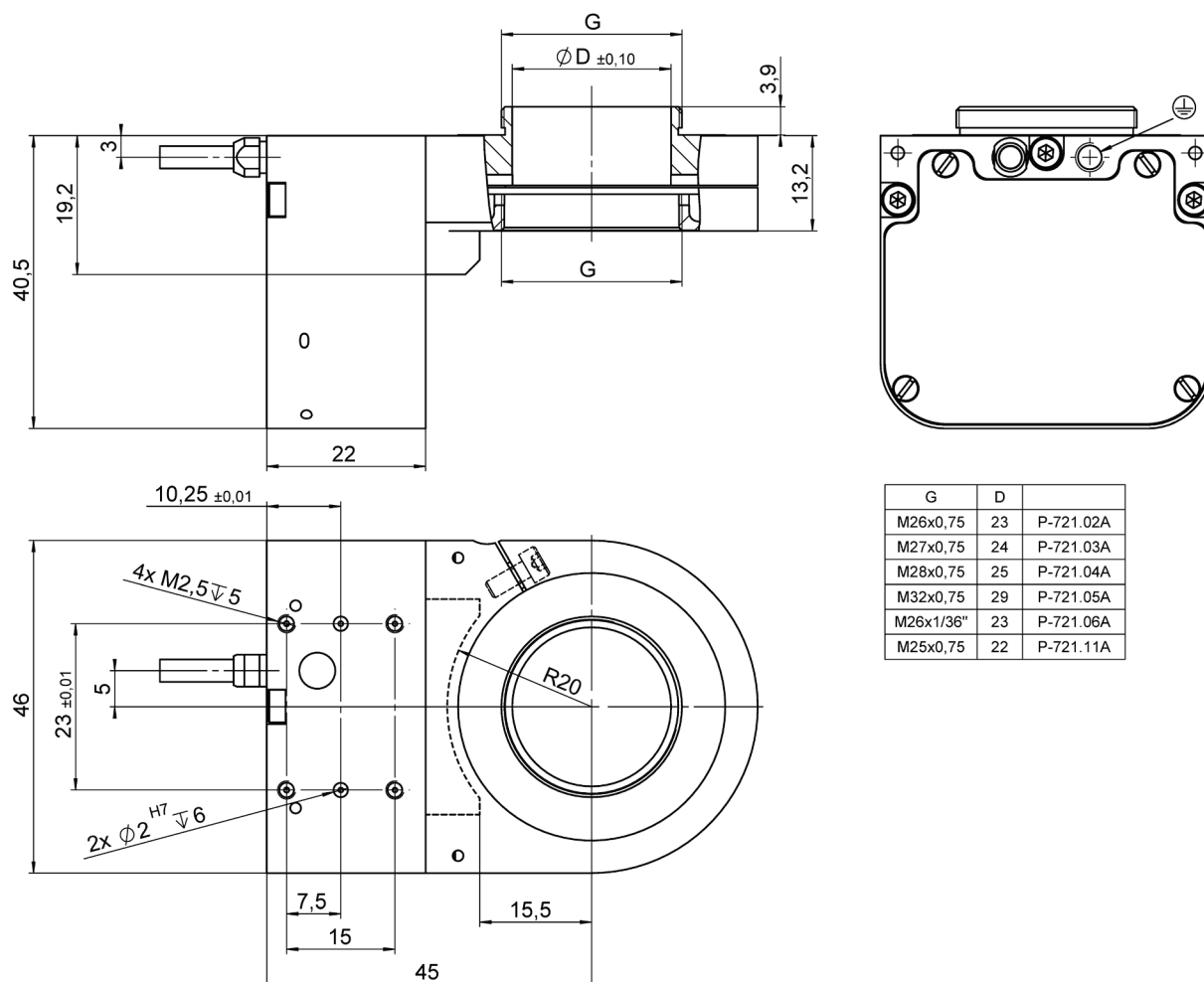
	P-725.1CL P-725.1CD P-725.1CA	P-725.2CL P-725.2CD P-725.2CA	P-725.4CL P-725.4CD P-725.4CA	P-725.x0L open-loop version	Unit	Tolerance
Active axes	Z	Z	Z	Z		
<b>Motion and positioning</b>						
Integrated sensor	Capacitive	Capacitive	Capacitive	-		
Travel range at -20 to +120 V, open loop	150	330	460	as P-725.xCL	µm	min. (+20 %/-0 %)
Closed-loop travel range	100	250	400	-	µm	
Open-loop resolution	0.3	0.4	0.5	as P-725.xCL	nm	typ.
Closed-loop resolution	0.65	0.75	1.25	-	nm	typ.
Linearity, closed-loop	0.03	0.03	0.03	-	%	typ.
Repeatability	±5	±5	±5	-	nm	typ.
Tilt θ <sub>x</sub>	1	6	10	as P-725.xCL	µrad	typ.
Tilt θ <sub>y</sub>	20	45	45	as P-725.xCL	µrad	typ.
Crosstalk in X	20	20	60	as P-725.xCL	nm	typ.
Crosstalk in Y	20	40	60	as P-725.xCL	nm	typ.
<b>Mechanical properties</b>						
Stiffness in motion direction	0.23	0.17	0.12	as P-725.xCL	N/µm	±20 %
Resonant frequency, no load	470	330	230	as P-725.xCL	Hz	±20 %
Resonant frequency under load, 150 g	185	140	120	as P-725.xCL	Hz	±20 %
Compressive/tensile stress capacity in motion direction	100 / 20	100 / 20	100 / 20	as P-725.xCL	N	max.
<b>Drive properties</b>						
Ceramic type	PICMA® P-885	PICMA® P-885	PICMA® P-885	as P-725.xCL		
Electrical capacitance	4.2	6.2	6.2	as P-725.xCL	µF	±20 %
Dynamic operating current coefficient	5.2	3.1	1.9	as P-725.xCL	µA / (Hz × µm)	±20 %
<b>Miscellaneous</b>						
Operating temperature range	-20 to 80	-20 to 80	-20 to 80	-20 to 80	°C	
Material	Aluminum	Aluminum	Aluminum	Aluminum		
Objective diameter	39	39	39	39	mm	max.
Mass	0.215	0.23	0.23	as P-725.xCL	kg	±5 %
Sensor/voltage connection	CL version: LEMO Other: Sub-D 7W2 (m)	CL version: LEMO Other: Sub-D 7W2 (m)	CL version: LEMO Other: Sub-D 7W2 (m)	LEMO (no sensor)		

## Drawings and Images

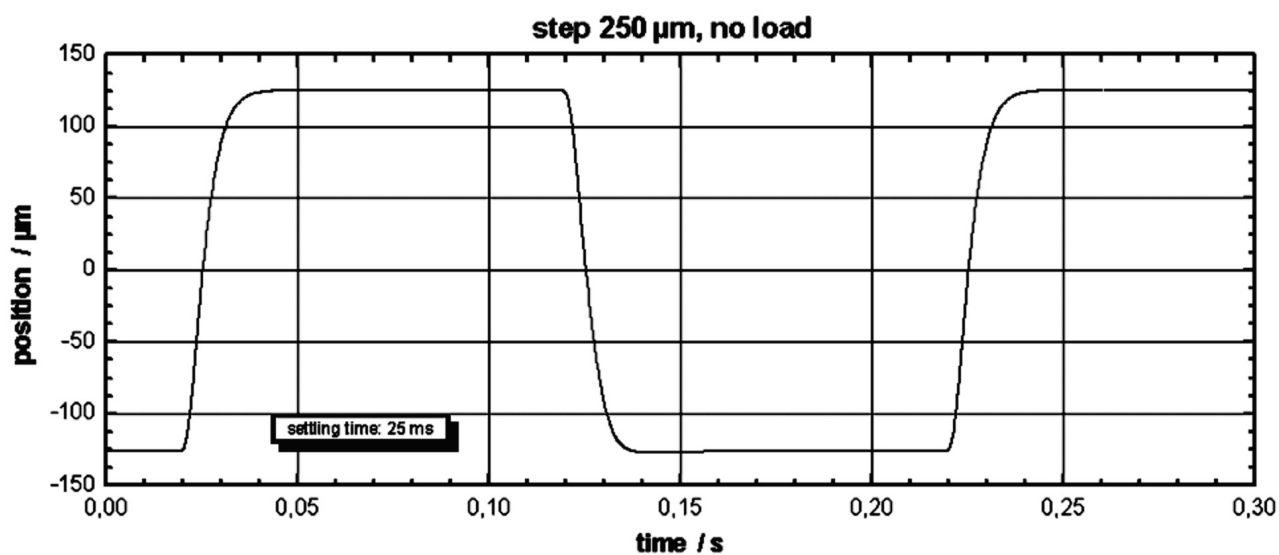


	G	D
P-721.02Q	M26x0,75	21
P-721.03Q	M27x0,75	21
P-721.04Q	M28x0,75	21
P-721.05Q	M32x0,75	21
P-721.06Q	M26x1/36"	21
P-721.08Q	M19x0,75	14
P-721.11Q	M25x0,75	21
P-721.12Q	W0,8x1/36"	14

P-725.xCD/.xCL, dimensions in mm (please order adapter separately)



P-725.xCA, dimensions in mm (please order adapter separately)



Fast step-and-settle: Due to its stiff design, the P-725.2CL PIFOC can perform a 250 µm step to 1% accuracy in only 25 ms (no load; 50 ms with a load of 150 g; with E-665.CR controller).

## Ordering Information

### **P-725.1CD**

PIFOC piezo nanofocusing system for long travel ranges, 100  $\mu\text{m}$ , capacitive sensors, Sub-D connector, for QuickLock adapter

### **P-725.2CD**

PIFOC piezo nanofocusing system for long travel ranges, 250  $\mu\text{m}$ , capacitive sensors, Sub-D connector, for QuickLock adapter

### **P-725.4CD**

PIFOC piezo nanofocusing system for long travel ranges, 400  $\mu\text{m}$ , capacitive sensors, Sub-D connector, for QuickLock adapter

### **P-725.1CL**

PIFOC piezo nanofocusing system for long travel ranges, 100  $\mu\text{m}$ , capacitive sensors, LEMO connector, for QuickLock adapter

### **P-725.2CL**

PIFOC piezo nanofocusing system for long travel ranges, 250  $\mu\text{m}$ , capacitive sensors, LEMO connector, for QuickLock adapter

### **P-725.4CL**

PIFOC piezo nanofocusing system for long travel ranges, 400  $\mu\text{m}$ , capacitive sensors, LEMO connector, for QuickLock adapter

### **P-725.1CA**

PIFOC piezo nanofocusing system for long travel ranges, 100  $\mu\text{m}$ , capacitive sensors, Sub-D connector, for QuickLock adapter with large aperture

### **P-725.2CA**

PIFOC piezo nanofocusing system for long travel ranges, 250  $\mu\text{m}$ , capacitive sensors, Sub-D connector, for QuickLock adapter with large aperture

### **P-725.4CA**

PIFOC piezo nanofocusing system for long travel ranges, 400  $\mu\text{m}$ , capacitive sensors, Sub-D connector, for QuickLock adapter with large aperture

### **P-725.10L**

PIFOC piezo nanofocusing system for long travel ranges, 150  $\mu\text{m}$ , open loop, LEMO connector, for QuickLock adapter

### **P-725.20L**

PIFOC piezo nanofocusing system for long travel ranges, 330  $\mu\text{m}$ , open loop, LEMO connector, for QuickLock adapter

### **P-725.40L**

PIFOC piezo nanofocusing system for long travel ranges, 460  $\mu\text{m}$ , open loop, LEMO connector, for QuickLock adapter