

microscope objective / lens positioning system

MIPOS 100

- 100µm focusing range
- compact design
- high resonant frequency
- easy to attach on microscopes
- flexible use by Flex-Adapter
- optionally feedback sensor

applications:

- surface scanning and analysis
- AFM microscopy
- biotechnology (e.g. cell scanning)
- beam focusing for printing processes
- semiconductor test equipment



fig.: MIPOS 100 SG

Concept

The systems of the series MIPOS 100 are available in two different variations. The MIPOS 100 offer a nano positioning and scanning range up to 100µm in open loop operation, and 80µm in closed loop. The MIPOS 100 offers a compact size, and an outstanding resonant frequency of 890Hz. The series MIPOS 100 PL shows a travel range up to 140µm in open loop mode and 80 µm in closed loop mode. They can be assembled with objectives that have a diameter of up to 40mm.

Both systems are well suited for high precision positioning applications with nanometer resolution.

The successful parallelogram design of **piezosystem jena** guarantees high parallel motion without influencing the optical path.

The positioning repeatability can be guaranteed by an integrated measurement system.

The design with integrated pre-load of the actuator offers the following advantages:

- high resonant frequency
- highly parallel motion

Based on these features, fast scanning applications can be accurately realized with the shortest settling times.

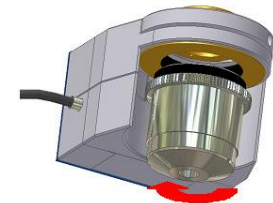
Specials

Adapter thread rings for the nose piece are available separately. They allow for fast mounting and exchanging of the MIPOS system on the microscope. Other objectives no longer need to be removed.

These Flex-Adapters are available for all standard microscopes, and allow the MIPOS 100 series to be universally applicable.

Parfocal tube extensions for each threading type are available as an accessory.

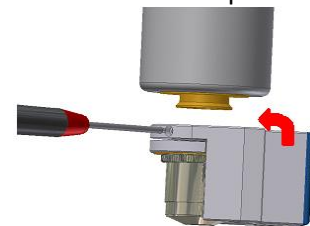
Mounting/Installation



1. Screw the objective into the MIPOS



2. Screw the Flex-Adapter into the microscope



3. Clamp the MIPOS on the Flex-Adapter using the attachment screw



Spacer rings to compensate the extended optical path are available and flex adapters for all common threads.

technical datas:

series MIPOS		unit	MIPOS 100	MIPOS 100 UD	MIPOS 100 SG	MIPOS 100 SG UD
part no. for thread ...	M25x0.75	-	O-303-00	O-313-00	O-303-01	O-313-01
	W0.8x1/36" (RMS)	-	O-304-00	O-314-00	O-304-01	O-314-01
	M26x0.75	-	O-305-00	O-315-00	O-305-01	O-315-01
	M27x0.75	-	O-306-00	O-316-00	O-306-01	O-316-01
axis	-	z				
motion open loop ($\pm 10\%$)*	μm	100				
motion closed loop ($\pm 0,2\%$)*	μm	-	-	80		
capacitance ($\pm 20\%$)**	μF	7.2				
integrated measurement system	-	-	-	strain gage		
resolution open loop***	nm	0.2				
resolution closed loop***	nm	-	-	2		
typ. repeatability	nm	-	-	6	5	
resonant frequency	Hz	890				
additional load = 80g	Hz	390				
additional load = 105g	Hz	330				
additional load = 300g	Hz	240				
stiffness	N/ μm	1.4				
rotational error (full motion)	μrad	<20				
voltage range	V	-20...+130				
connector****	voltage	-	LEMO 0S.302			
	sensor	-	-	-	LEMO 0S.304-	
cable length	m	1		1.2		
min. bend radius of cable	mm	>15				
material	-	stainless steel				
dimensions (l x w x h)	mm	48x40x16.5		48x40x29		
weight	g	105		150		
max. lens diameter	mm	30				
max. lens weight	g	300				
option for standard microscopes	-	yes	no	yes	no	
option for inverse microscopes	-	no	yes	no	yes	

* typical value measured with NV 40/3 amplifier (closed loop: NV 40/3 CLE amplifier)

** typical value for small electrical field strength

*** The resolution is only limited by the noise of the power amplifier and metrology.

**** in combination with a digital controller unit the system comes with a Sub-D 15 connector.
The part number is extended by the suffix "D".

recommended configuration:

actuator	MIPOS 100 SG	O-303-01E
amplifier/controller	NV 40/1 CLE	E-101-73

**The series of micro lens and objective positioning systems MIPOS offers a travel range from 20 μm up to 500 μm in z-axis. Available for standard and inverted microscopes
More details under „z-axis-lens-positioning“ www.piezojena.com .**

Additional microscopy stages for XY axes available under “series-PXY-AP” www.piezojena.com

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technical datas

series MIPOS 100 PL		unit	MIPOS 100 PL	MIPOS 100 PL SG	MIPOS 100 PL CAP
part no. for thread	M25x0.75		O-323-00	O-323-01	O-323-06
	W0.8x1/36" (RMS)		O-324-00	O-324-01	O-324-06
	M26x0.75		O-325-00	O-325-01	O-325-06
	M27x0.75		O-326-00	O-326-01	O-326-06
	M32x0.75		O-327-00	O-327-01	O-327-06
axis	-	z			
motion open loop ($\pm 10\%$)*	μm	140			
motion closed loop ($\pm 0,2\%$)*	μm	-	100		
capacitance ($\pm 20\%$)**	μF	3.4			
integrated measurement system	-	-	strain gage	capacitive	
resolution open loop***	nm	0.3			
resolution closed loop***	nm	-	4	1	
typ. repeatability	nm	-	7	6	
resonant frequency	Hz	410			
additional load = 80g	Hz	300			
additional load = 105g	Hz	270			
additional load = 300g	Hz	210			
stiffness	N/ μm	1.2			
rotational error (full motion)	μrad	<4			
voltage range	V	-20...+130			
connector****	voltage	LEMO 0S.302			
	sensor	-	-	LEMO 0S.304	LEMO 0S.650
cable length	m	1	1.2	1.6	
min. bend radius of cable	mm	>15			
material	-	stainless steel			
dimensions (l x w x h)	mm	60.7x50x23.5	60.5x50x35.3	60.2x50x34.5	
weight	g	105	150	210	
max. lens diameter	mm	40			
max. lens weight	g	500			
option for standard microscopes	-	yes	yes	yes	
option for inverse microscopes	-	yes	yes	yes	

* typical value measured with NV 40/3 amplifier (closed loop: NV 40/3 CLE amplifier)

** typical value for small electrical field strength

*** The resolution is only limited by the noise of the power amplifier and metrology.

**** in combination with a digital controller unit the system comes with a Sub-D 15 connector.
The part number is extended by the suffix "D".

recommended configuration:

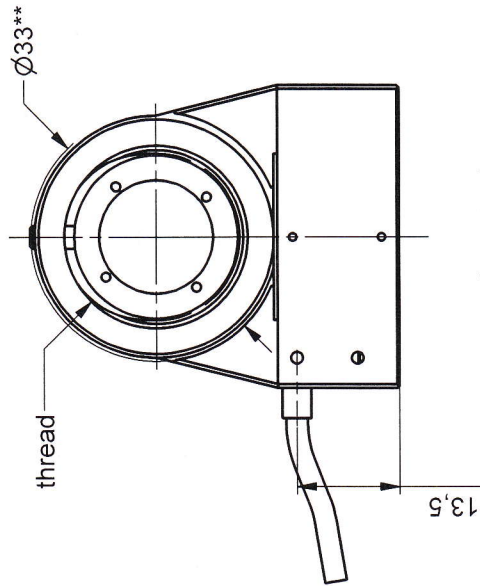
actuator	MIPOS 100 PL SG	O-323-01E
amplifier/controller	NV 40/1 CLE	E-101-73

The series of micro lens and objective positioning systems MIPOS offers a travel range up to 500 μm in z-axis. Available for standard and inverted microscopes
More details under „z-axis-lens-positioning“ www.piezojena.com .

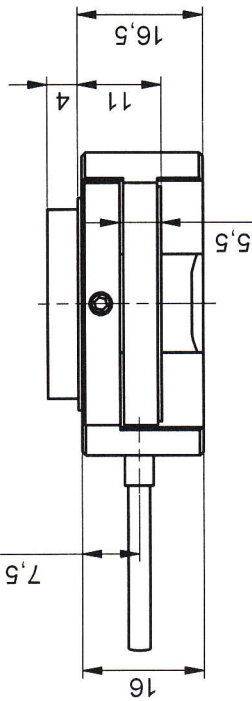
Additional microscopy stages for XY axes available under “series-PXY-AP” www.piezojena.com

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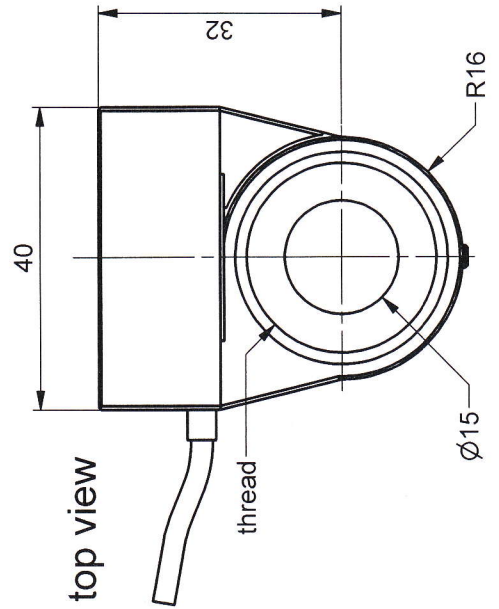
bottom view



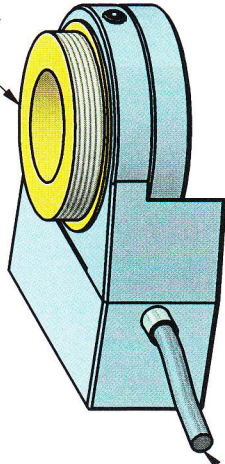
front view



top view

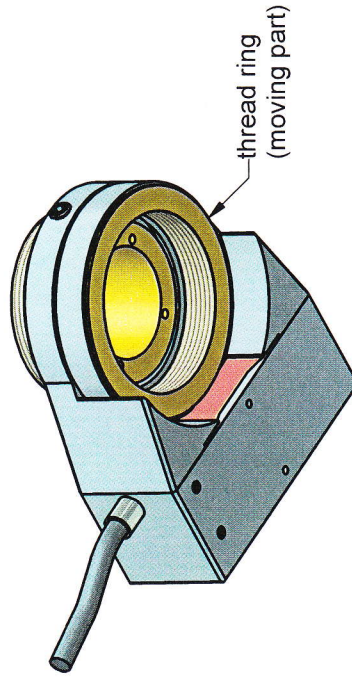
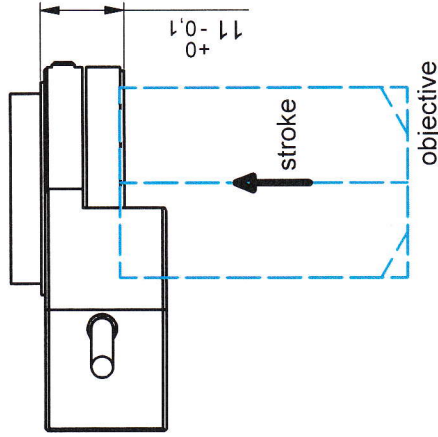


flex adapter
(fix point)



voltage cable

side view



ORIGINAL

** : max. objective- ϕ 32 mm
standard cable length 1 m

part.-no.	O-30x-00	part.-name	MIPOS 100
file name	PO30x00	OK: date/sign.	19. AUG. 2011
		scale	1:1
			customers drawing piezosystem jena

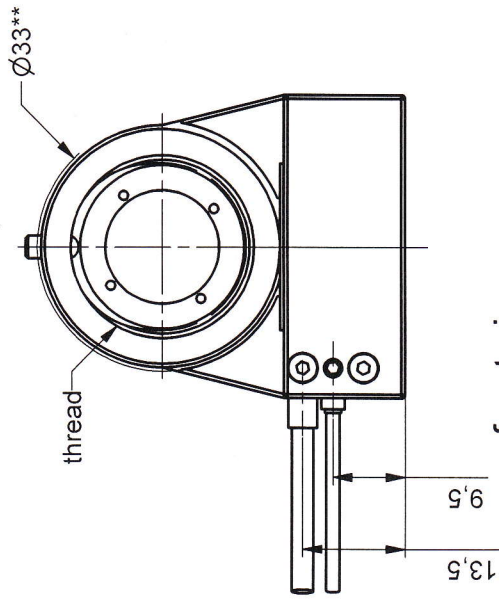
part-no.

- O-303-00
- O-304-00
- O-305-00
- O-306-00
- O-307-00

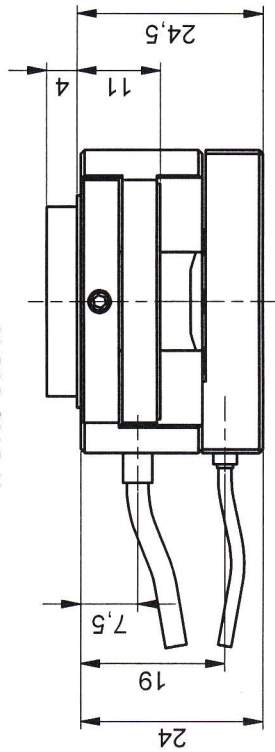
sorts of threads

- M25x0.75
- RMS
- M26x0.75
- M27x0.75
- M26x1/36"

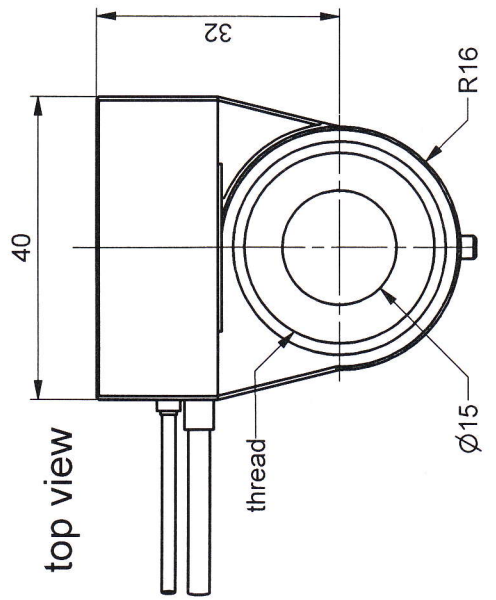
bottom view



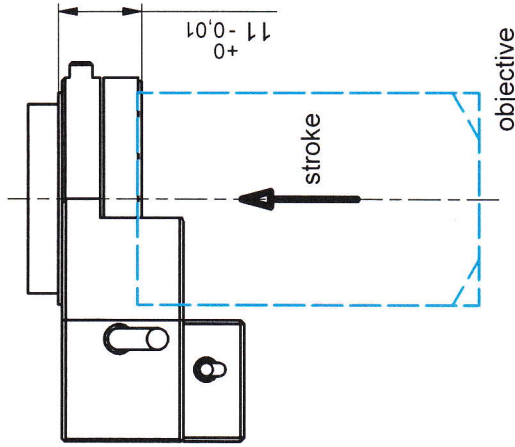
front view



top view



side view



part-no. O-303-01

sorts of threads M25x0.75

RMS

M26x0.75

M27x0.75

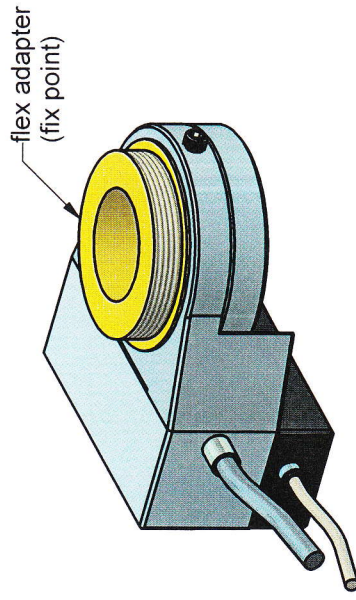
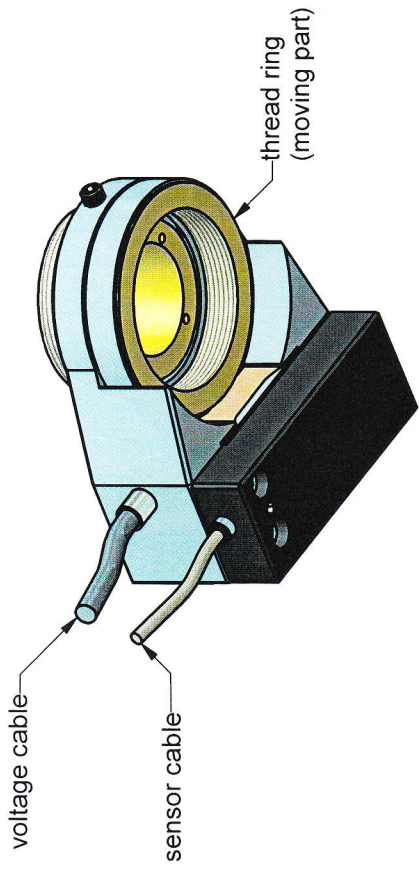
M26x1/36"

O-304-01

O-305-01

O-306-01

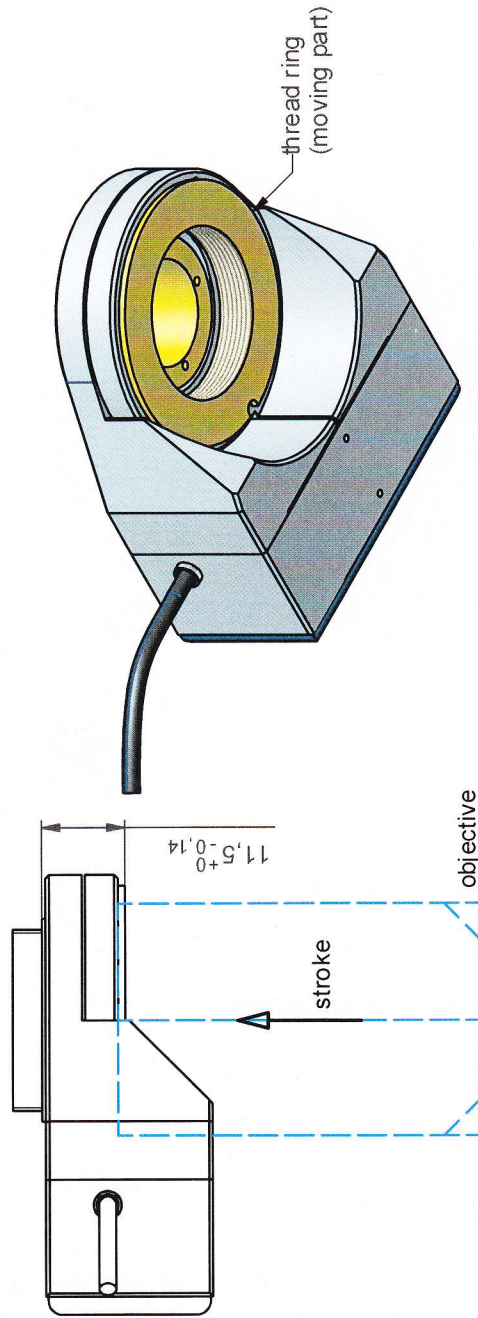
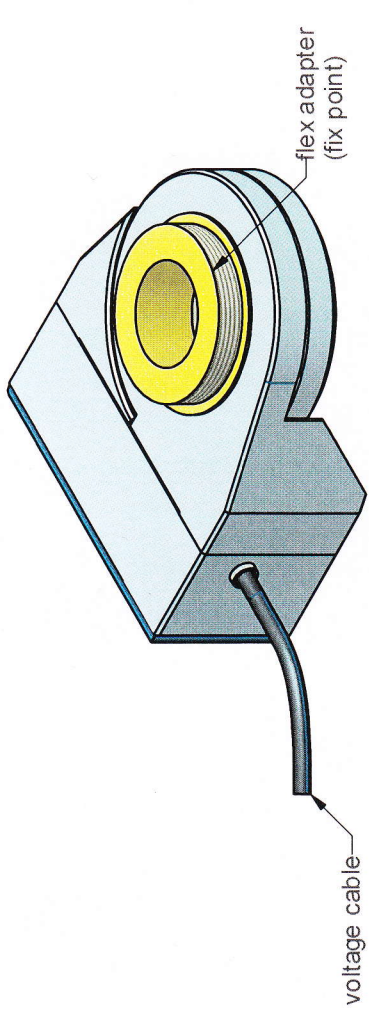
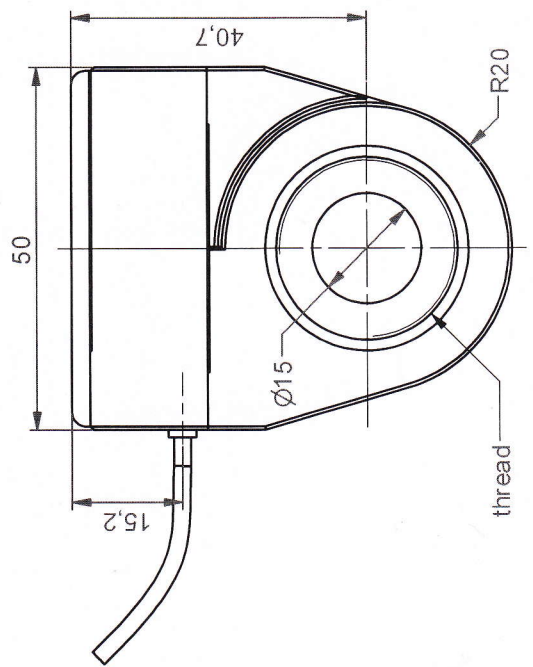
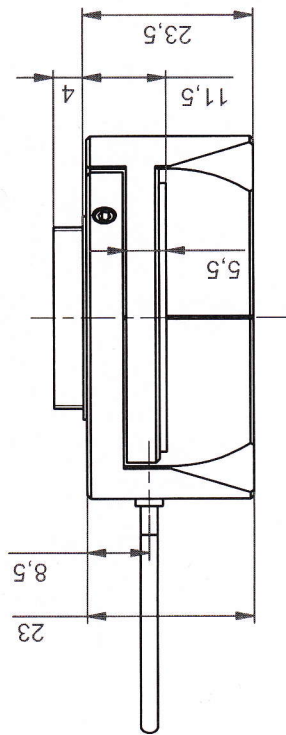
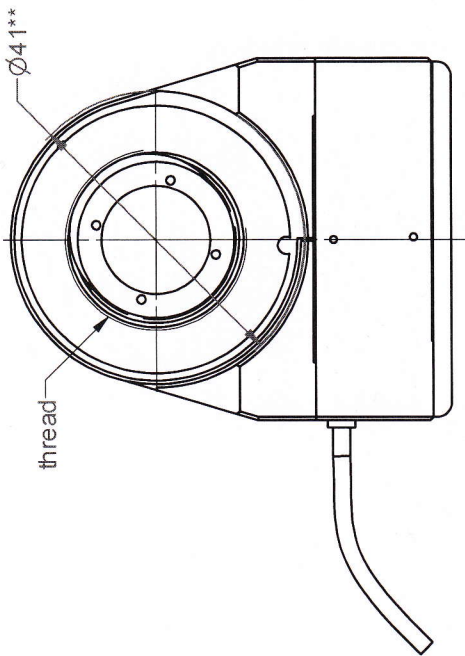
O-307-01



ORIGINAL

***: max. objective- ϕ 32 mm
standard cable length 1.2m (EXT/DIG 2m)


part.-no.	O-30x-01	part.-name	MIPOS 100 SG
file name	PO30x01	OK: date/sign.	19. AUG. 2011
		Scale	1:1
			customers drawing piezosystem jena

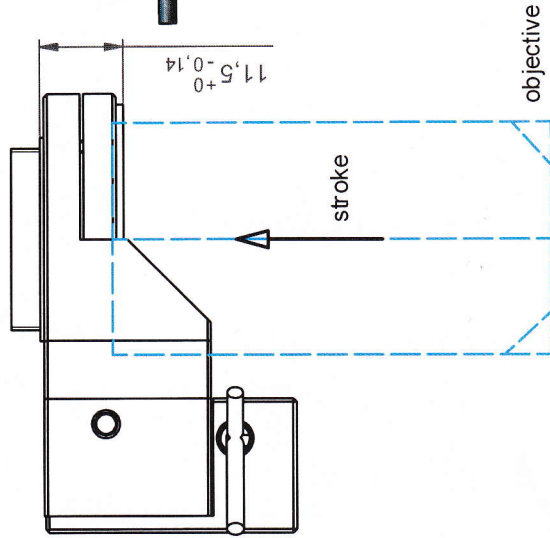
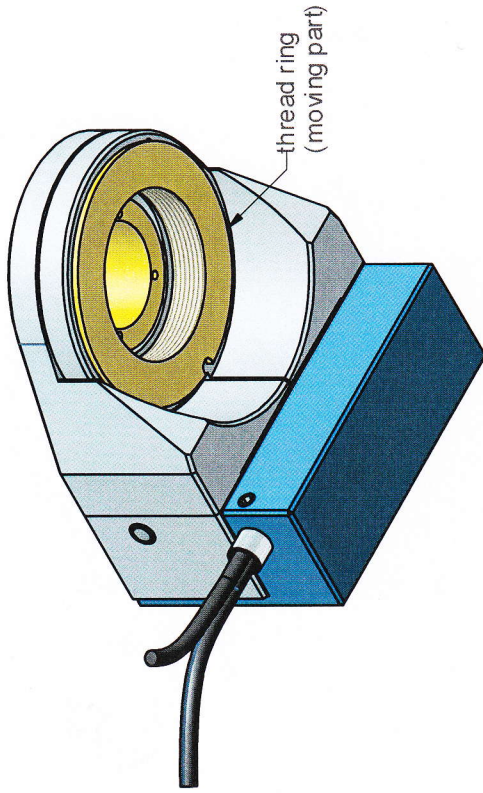
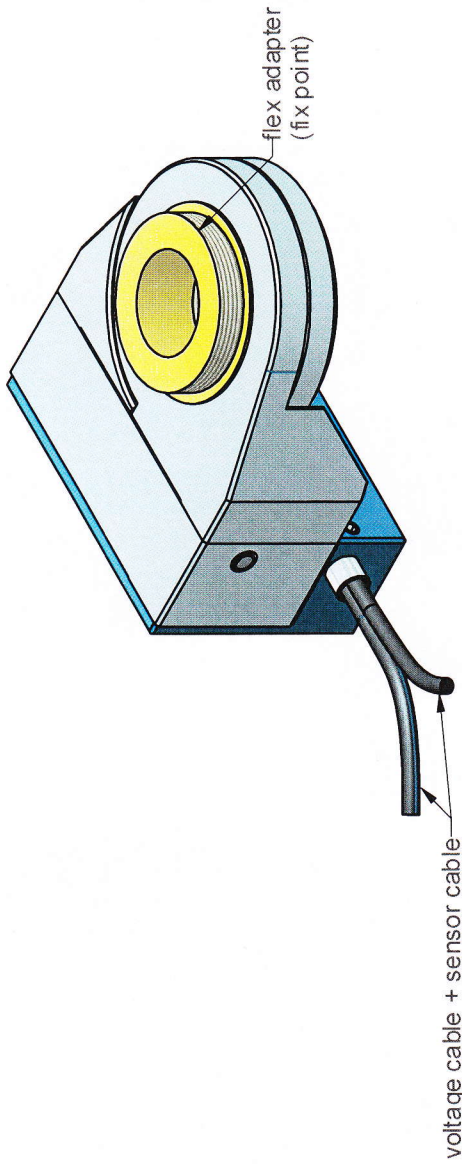
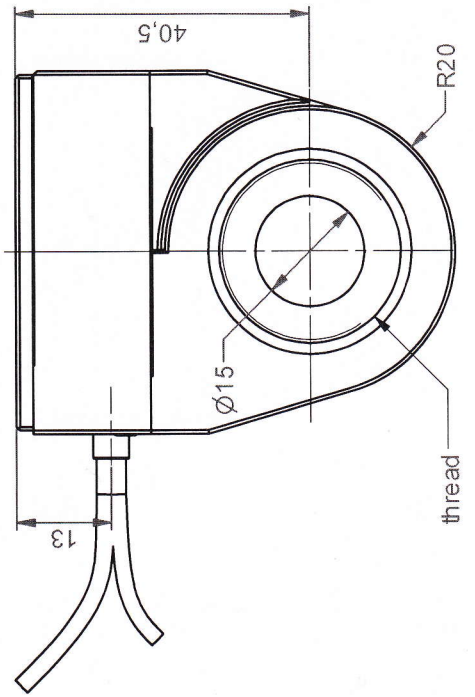
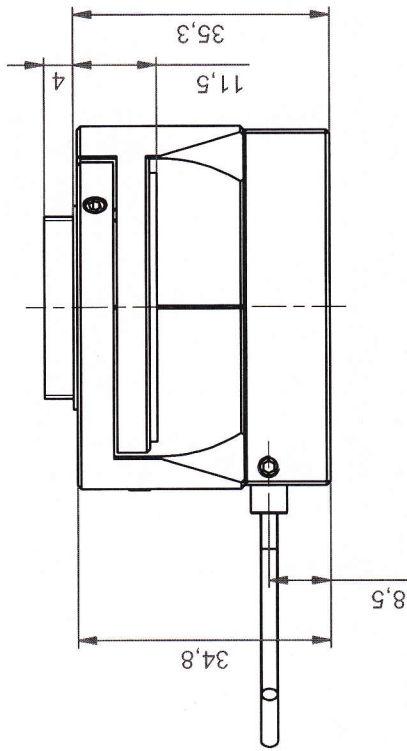
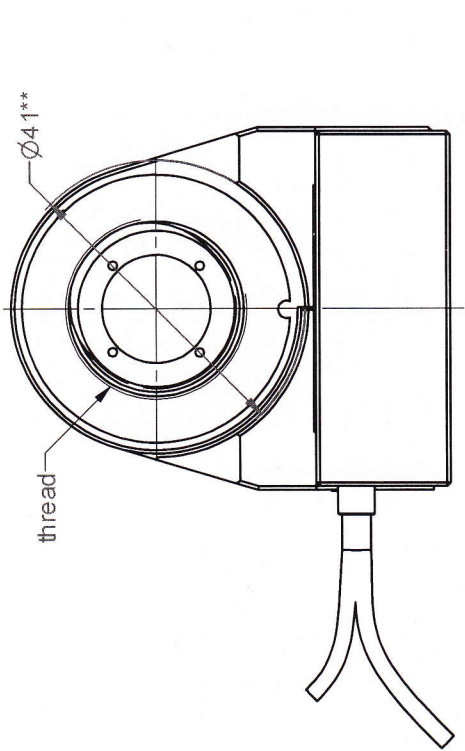


** : max. objective- \varnothing 40mm
 Standart cable length 1m

ORIGINAL

part.-no.	sorts of threads
O-323-00	M25x0.75
O-324-00	RMS
O-326-00	M27x0.75
O-327-00	M32x0.75
O-328-00	M26x1/36"

part.-no.	O-32x-00	part.-name	Mipos 100 PL
file name	PO32300	OK date/sign.	19. JAN. 2011
	rev. 02	customers drawing	piezosystem jena
	scale	1:1	



** : max. objective- \varnothing 40mm
 Standard cable length 1,2m (EXT/DIG 2m)

ORIGINAL

part.-no.	sorts of threads
O-323-01	M25x0.75
O-324-01	RMS
O-326-01	M27x0.75
O-327-01	M32x0.75
O-328-01	M26x1/36"

part.-no.	O-32x-01	part.-name	Mipos 100 PL SG
file name	PO32301	OK date/sign.	19. JAN. 2011
	scale	customers drawing	
	1:1	piezosystem jena	

accessories series MIPOS

quick objective-lens changing by FLEX-adapter

Screw the Flex-adapter into the microscope nosepiece. Put up the MIPOS onto the Flex-adapter and by fastening the screw the MIPOS is easy fixed.

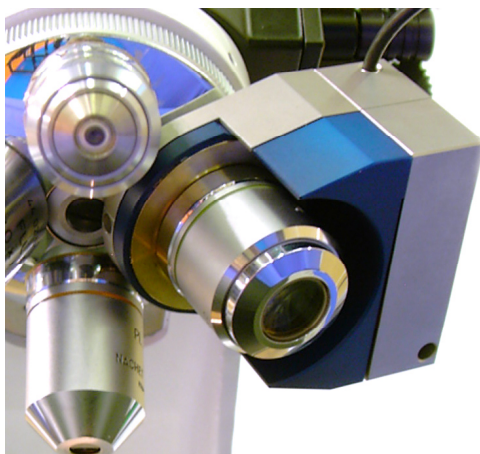
Mounting this system on the microscope is very easy. You screw the Flex-Adapter thread-ring into the microscope and mount the MIPOS on this ring with a clamping-screw.

Due to the small size, none of the other threads beside the MIPOS are blocked. The necessary screw driver and the handling instructions are included in the shipment.

Please note, the Flex-Adapter for the thread type of the MIPOS you ordered will be included in the shipment.



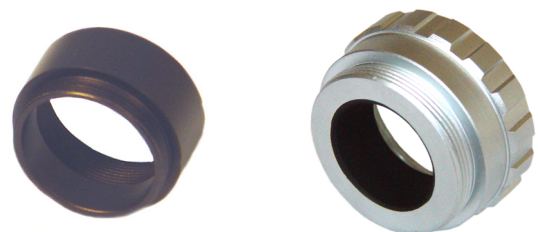
pic.: flex-adapter Art.Nr. O-30x-11
(x= thread type dependents)



pic.: MIPOS 5 mounted on a microscope

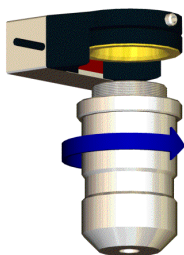
spacer ring

To eliminate the additional length by the different micro lenses caused by the MIPOS, piezosystem jena offers a wide range of spacer rings. By using the spacer ring all micro lenses working on the same level. No focus adjustment will be needed by turning the nosepiece. Spacer rings available in different threads sizes.

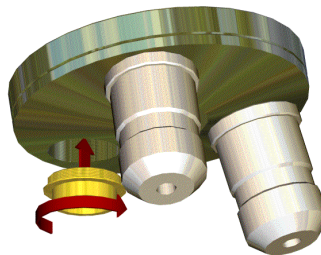


pic.: Spacer rings for micro lens
part.no. O-30x-21
(x= thread type dependents)

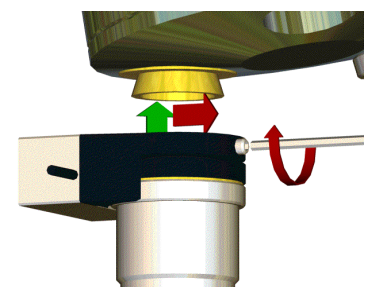
mounting instruction



1.) Screw your objective – lens into the MIPOS

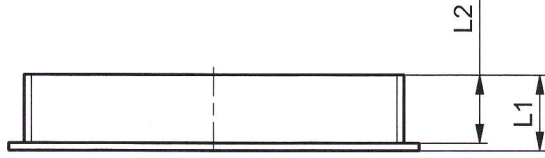
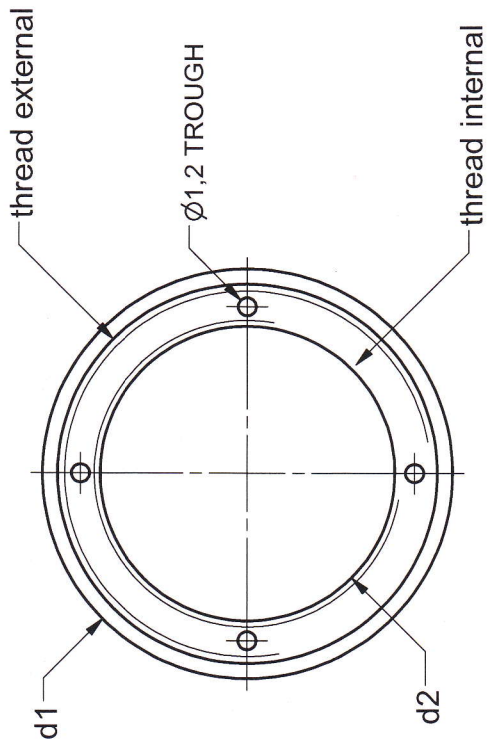


2.) Screw the Flex-Adapter in the nosepiece of your microscope



3.) Set up the MIPOS on the Flex-Adapter and fasten the screw

options adapter thread rings for series MIPOS



part. no.	thread external / thread internal	d1	d2	L1 [mm]	L2 [mm]
O-303-05	M26x0.75/W0.8x1/36" (RMS)	25	19,4	5	4,5
O-303-06	M26x1/W0.8x1/36" (RMS)	28	19,4	5	4,5
O-303-07	M32x0.75/M25x0.75	35	24	5,5	5
O-303-09	M27x0.75/W0.8x1/36" (RMS)	29	19,4	5	4,5
O-303-10	M25x0.75/W0.8x1/36" (RMS)	27	19,4	5	4,5
O-304-07	M32x0.75/W0.8x1/36" (RMS)	35	19,4	5,5	5
O-305-07	M32x0.75/M26x0.75	35	25	5,5	5
O-306-07	M32x0.75/M27x0.75	35	26	5,5	5
O-307-07	M32x0.75/M26x1/36"	35	25	5,5	5

all options listed **ORIGINAL**

part.-no.	O-30X-YZ	part.-name	adapter thread rings MIPOS
file name	PO30XYZ	OK: date/sign.	18. AUG. 2011
		scale	1:1
		customers drawing	piezosystem jena