

## special systems

### Series MICI 80 • 180 • 200

- motion up to 250µm
- high precision adjustment of linear positioner
- motion without mechanical play
- precise adjustment of heavy loads
- MICI 180 compatible with micrometers drives series SM13 from “NEWPORT“
- MICI 80 and 200 are compatible with micrometer drives 152-401, 152-402 and 197-101 from “Mitutoyo“



fig.: MICI 180 with micrometer screw

#### applications:

- quality control
- automation
- fine adjustment of optical components
- micro assembly

#### Concept

The elements of the series MICI are well suited for improving the positioning accuracy of linear stages. They are piezo electrical actuators which, in combination with micrometer screws, are mounted onto a linear stage. Pre-adjustment is done by the measuring screw and the final fine adjustment is made by the MICI element. Typically, the piezo driven system generates forces up to 200N. The resolution is down to the sub-nm range.

The major advantage of the MICI system is they can be installed into an existing system easily. Your system can be upgraded to achieve sub-nm resolution.

The MICI 80 and MICI 200 elements are compatible with micrometer drives model 152-401, 152-402 and 197-101 from “Mitutoyo and MICI 180 elements are compatible with “NEWPORT” micrometer drives model SM13.

#### Specials

In the design and resonant frequency the new systems offer outstanding features: The piezo electrical driven systems of the MICI series have been developed in a small and compact design, they offer a range of motion from 80µm (MICI 80), 180µm (MICI 180) up to 250µm (MICI 200) in open loop. Based on their sophisticated flexure hinge design, the resonant frequencies go up to 990Hz for the MICI 80.

Additionally, the MICI 80 is designed for moving high load masses. A load of up to 20kg can be adjusted with precision.

As an option, a positioning sensor guarantees extremely high positioning stability and reproducibility.

Piezo actuators also function in cryogenic environments, with a decreasing extension behavior.

#### Mounting/Installation:

Typically, the MICI unit mounts between the micrometer screw drive and the linear positioning stage as described below:

1. Remove micrometer screw
2. Mount MICI unit on the linear stage using one of the two tapped holes
3. Screw micrometer screw in MICI. Please make sure that the travel range of the micrometer screw isn't longer than the travel range of the linear stage.

Please note the total manual travel range of the Mitutoyo screw in combination with the MICI 80 or MICI 200 will be reduced around 19.5mm.

The pre-adjustment of the position is done by the micrometer screw; the final fine adjustment is made by the MICI unit with the highest achievable accuracy.

## Technical data's

series MICI	unit	MICI 80	MICI 180	MICI 200
part no.	-	S-702-00	S-704-00	S-703-00
axis	-	x		
motion open loop ( $\pm 10\%$ )*	$\mu\text{m}$	80	180	250
capacitance ( $\pm 20\%$ )**	$\mu\text{F}$	1.8	2.6	7.2
resolution open loop***	nm	0.1	0.4	0.56
resonant frequency (w/o micrometer drive)	Hz	990	580	332
resonant frequency with 50g load	Hz	-	-	235
stiffness	N/ $\mu\text{m}$	1.8	0.61	0.46
max. push forces	N	216	144	110
max. pull forces	N	22	14	11
voltage range	V	-20...+130		
connectors	standard version	-	LEMO 0S.302	
	digital version	-	D-Sub 15	
cable length	m	1		
min. bend radius of cable	mm	>15		
material	-	stainless steel		
dimensions (l x w x h)	mm <sup>3</sup>	64x27x33.5	64x27x35.4	85x28x36.5
weight (w/o micrometer drive)	g	180	165	280

series MICI with integrated strain gage feedback sensor		MICI 80 SG	MICI 180 SG	MICI 200 SG
part no.	-	S-702-01	S-704-01	S-703-01
motion closed loop ( $\pm 0,2\%$ )*	$\mu\text{m}$	64	144	200
Integrated measurement system	-	strain gage		
resolution closed loop***	nm	2	4	6
typ. repeatability*	nm	8	18	15
connector sensor	standard version	LEMO 0S.304		
	external amplifier box	ODU 4pin		
	digital version	(integrated into voltage connector D-Sub15)		
cable length	m	1.2	1.2	2
dimensions (l x w x h)	mm <sup>3</sup>	64x27x33.5	64x27x35.4	85x28x36.5
weight	g	185	170	280
max. push forces	N	22	14	11

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

\*\* typical value for small electrical field strength

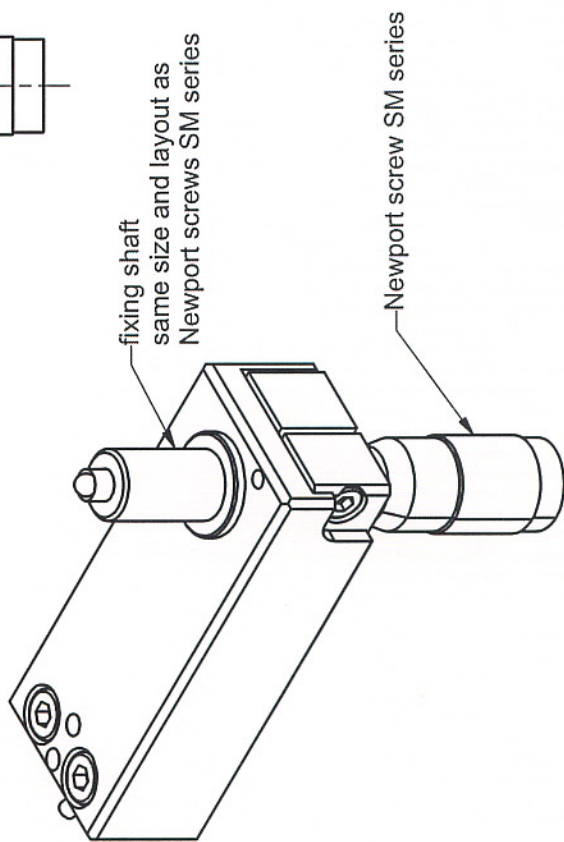
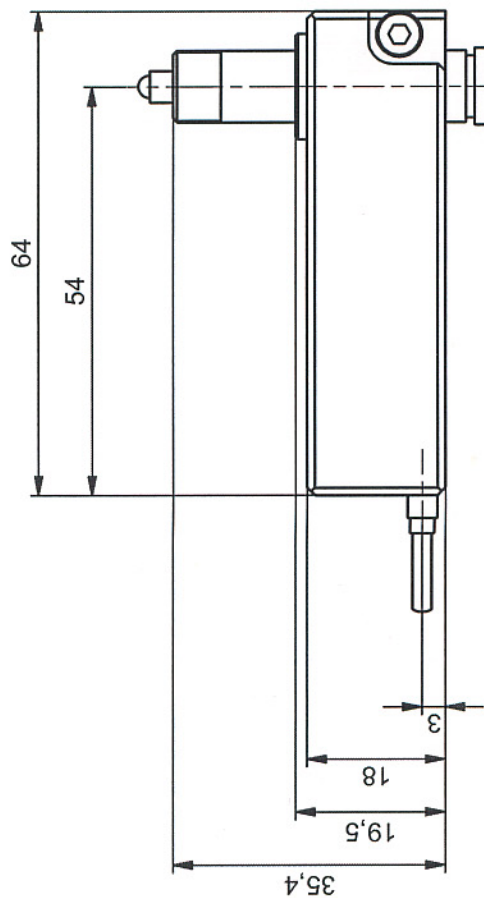
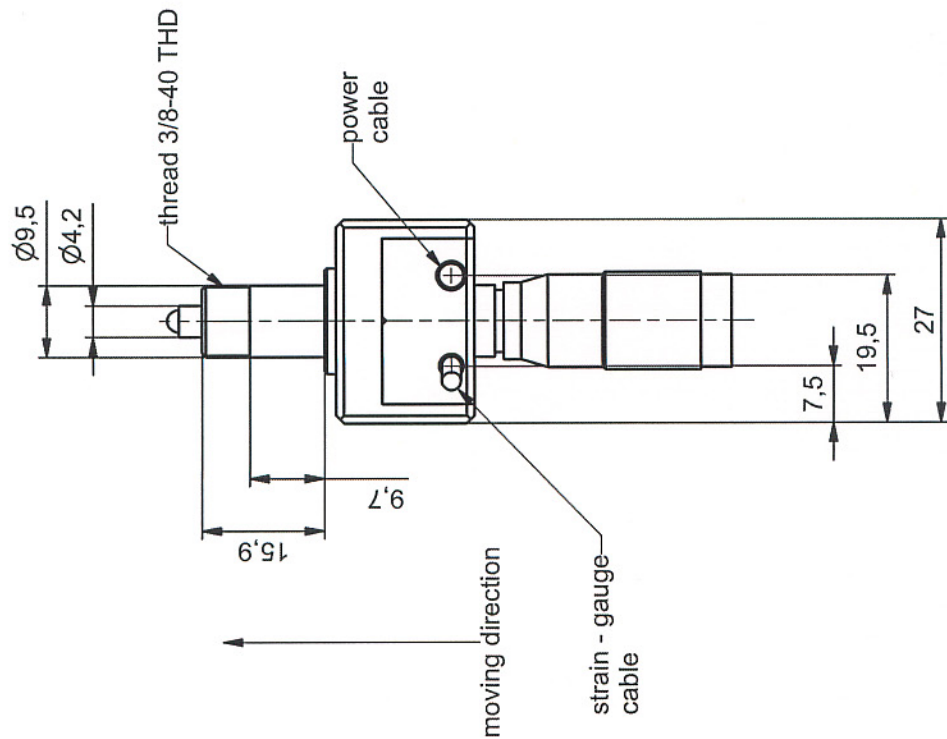
\*\*\* The resolution is only limited by the noise of the power amplifier and metrology.

### additional variations

Product name	Description	Specials	Part. No.
MICI xxx SG <b>D</b> igital	Version for digital controller series d-Drive and the analogue controller of the series NV 40/3CLE in combination with additional functionalities: Interchange ability, ASI, ASC	Connector Sub-D 15	S-XXX-01 <b>D</b>
MICI xxx SG <b>E</b> xtern	Version with sensor pre-amplifier for the use of additional functionalities: Interchange ability, ASI	Connector sensor ODU 4pin	S-XXX-01 <b>E</b>
MICI xxx Vacuum	Compatible for vacuum application down to 10 <sup>-7</sup> hPa****	60cm cable length vacuum side; 2m cable length air side	S-XXX-02

\*\*\*\* UHV version after request

Rights reserved to change specifications as progress occurs without notice!



delivery without Newport screw

part.-no.	S-704-00/ S-704-01	part.-name	MICI 180/ MICI 180 SG
file name	S 704 00.idw	OK: date/sign.	19. Okt. 2006
		scale	M 1:1
		customers drawing	piezosystem jena

**ORIGINAL**