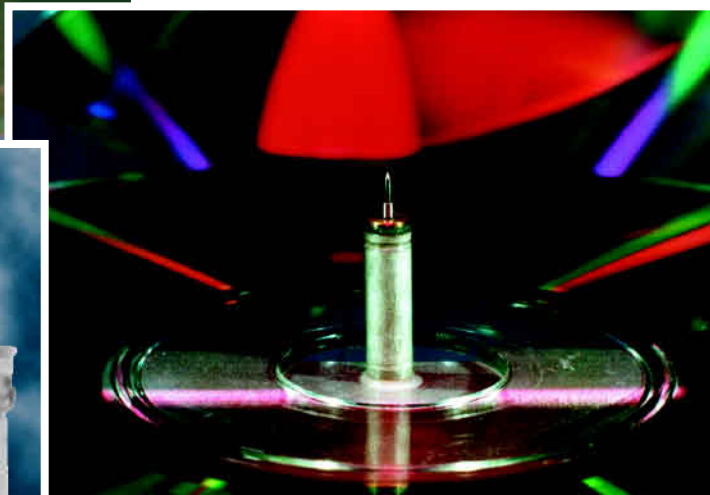
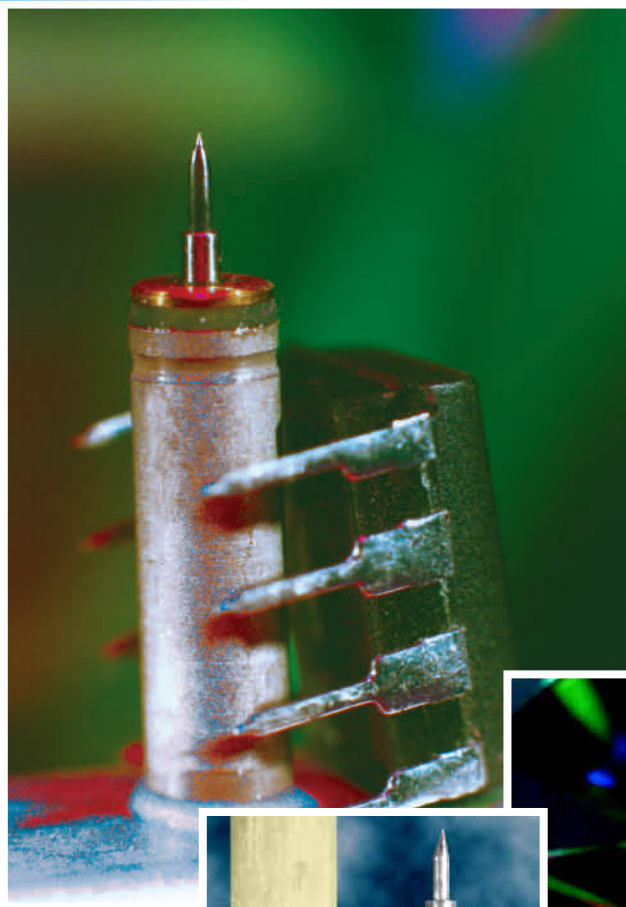


# THE NANOMOTOR

MOTION FROM THE  
NANOSCALE WORLD

- *atomic resolution*
- *up to 2 centimeter positioning stroke*
- *driving force up to 25 grams against gravity*
- *speed up to 2 mm/s*
- *very small dimensions*
- *suitable for ultra high vacuum, very low temperature and even underwater applications*



# THE NANOMOTOR

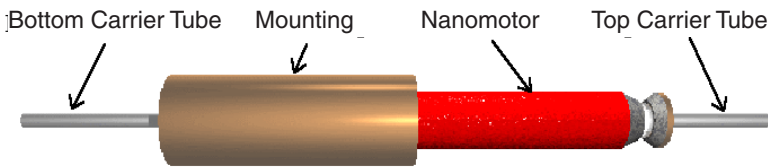


Fig. 1: The different parts of the Nanomotor

The Nanomotor is available in three different versions, dependent on the size of the actual Nanomotor without the mounting. Table 1 lists the properties of the three types.

The properties of the Nanomotor are used to generate a type code. The generation of this type code is explained in table 2.

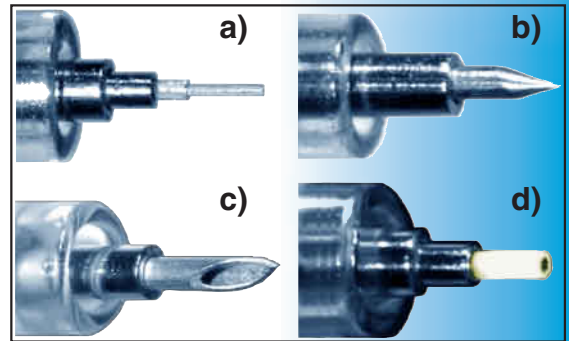


Fig. 2: Different tool tips can be mounted inside the carrier tube. a) fiber b) needle c) cannula d) hose

Tab. 1: Technical Data of the Nanomotor®:

Version	S = „Small“	L = „Long“	B = „Big“
Length of Nanomotor (5 mm vanish in mounting)	18.1 mm	31.4 mm	31.6 mm
Length of standard mounting	13 mm	13 mm	13 mm
Length of Nanomotor incl. standard mounting	26.1 mm	39.4 mm	39.6 mm
Diameter of Nanomotor	3.3 mm	3.3 mm	6.5 mm
Diameter of standard mounting	5 mm	5 mm	10 mm
Positioning stroke	5.7 mm	15 mm	10 mm
Fine positioning stroke	10 nm/V	20 nm/V	20 nm/V
Resolution	atomic	atomic	atomic
Repeatability per direction (at constant load)	about 1%	about 1%	about 1%
Driving force	0.03 N (3 grams)	0.03 N (3 grams)	0.25 N (25 grams)
Maximum load orthogonal to positioning direction	0.5 N (50 grams)	0.5 N (50 grams)	1 N (100 grams)
Free axial hole, minimum diameter	0.35 mm	0.35 mm	1.3 mm
Max. positioning speed	2 mm/s	5 mm/s	5 mm/s
Mass including standard mounting	2.20 grams	2.63 grams	9.77 grams
Min. operation voltage, bipolar & symmetric	+/-15 volts	+/-15 volts	+/-15 volts

Tab. 2: The type code of the Nanomotor. All properties of the motor can be seen from this code.

Part Numbers	NMvBxxTyy - LxxDyyMatUhv
(grey: recommended, white: optional)	
<b>NM</b> classifies the Product as Single Nanomotor v = S,L,B Version	
<b>B</b> Bottom Carrier Tube length xx = 0 no Carrier Tube xx = 1..50 max. length below mounting in [mm]	
<b>T</b> Top Carrier Tube length yy = 0 no Carrier Tube yy = 1..50 max. length outside in [mm]	
<b>L</b> Length of mounting xx = 13 mm or bigger (13 mm = Standard)	
<b>D</b> Diameter of mounting yy = 5 mm or bigger for v= S, T ( 5 mm = Standard) yy = 10 mm or bigger for v= B (10 mm = Standard)	
<b>Mat</b> Material of mounting Mat = <b>Br</b> Brass (= Standard) Mat = <b>Cu</b> Copper (e.g. for Vacuum)	
<b>Uhv</b> Version compatible to Ultra High Vacuum (optional)	

The Nanomotor is always equipped with a mounting. Parameters on white background are optional for changes in dimension. Examples:

**NMS B0 T5** „Small“ version:

No bottom Carrier Tube, length of top Carrier Tube = 5 mm. Driven to the top end of stroke the visible length is 5 mm. Driven to the bottom end of stroke the visible length is zero. Length of mounting = 13 mm, diameter of mounting = 5 mm. Material of mounting is Brass.

**NML B0 T19** „Long“ version:

Only a top Carrier Tube, L = 19 mm. Driven to the top end of stroke the visible length is 19 mm. Driven to the bottom end of stroke the visible length is zero. Brass mounting, L = 13 mm, D= 5 mm.

**NMB B0 T10** „Big“ version:

Only a top Carrier Tube, L = 10 mm. The big Nanomotor needs another mounting: L = 13 mm, D = 10 mm.

Precision  
made in Aachen:

Klocke  
Nanotechnik