

FMD

LINEAR STAGE UNIT

KONRAD KOSUGE

329150



1 Project Data

a[mm]	b[mm]	L[mm]	F[N]	F1[N]	F2[N]
50	30	15	45	5	10

2 Spacer

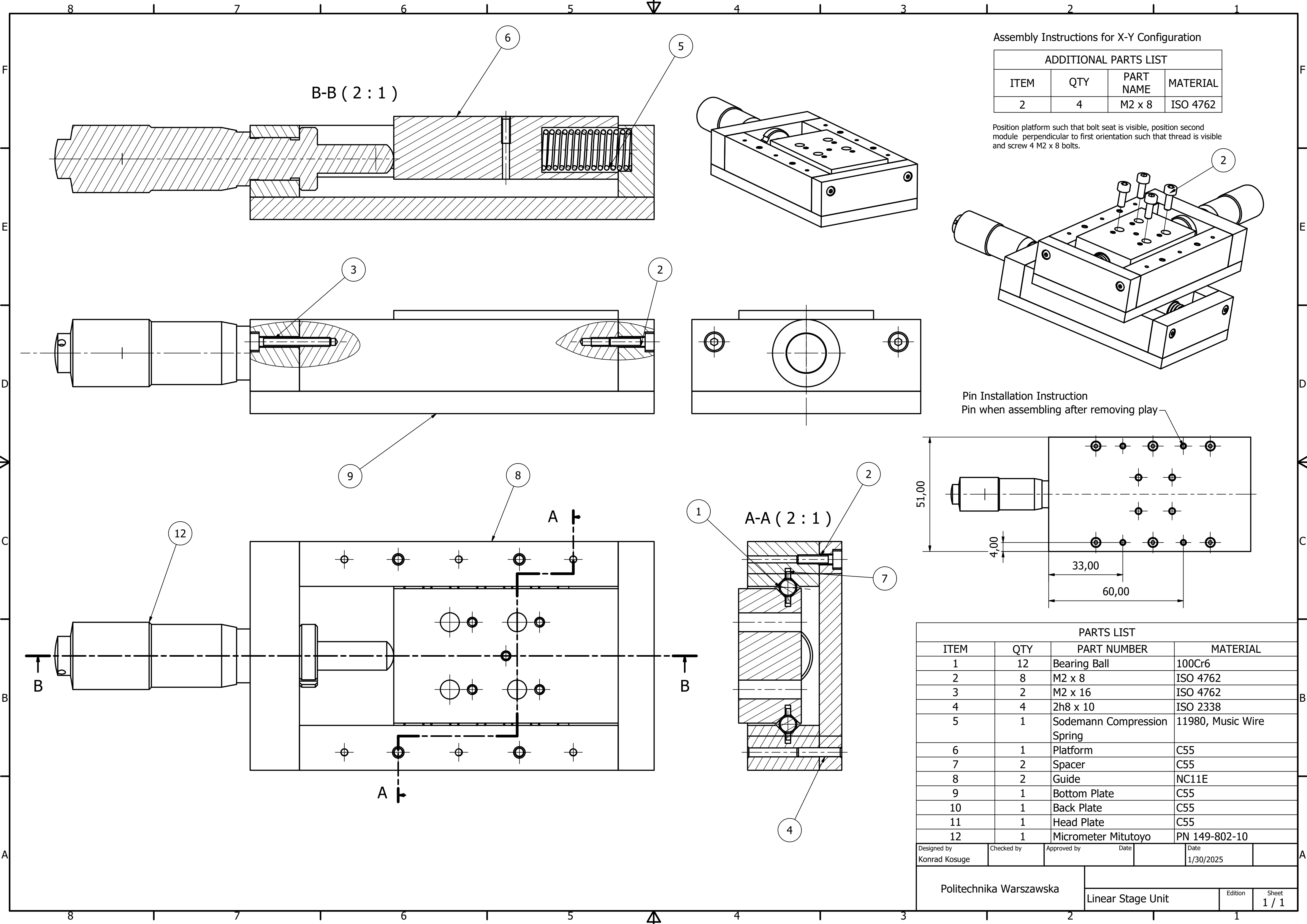
S[mm]	n	d(b)[mm]	k[mm]	p[mm]
39	6	4	6	4.5

3 Forces

Loads	F[N]	F1[N]	F2[N]	Fz[N]	Fy[N]	Fw[N]
	45	5	10	45	45	22.5
Friction	μ	T1[N]	T2[N]	Tw[N]	Tz[N]	Ty[N]
	0.01	0.318	0.3182	0.636	0.636	0.6364
Friction_tot	T_tot(z)[N]	T_tot(y)[N]	T_tot(y,z)[N]			
	1.27	1.27	2.54			
Ball_load	F(max)[N]	Fj(max)[N]				
	47.73	7.95				
S(Hmax)	1722Mpa		NC11E material			

4 Spring

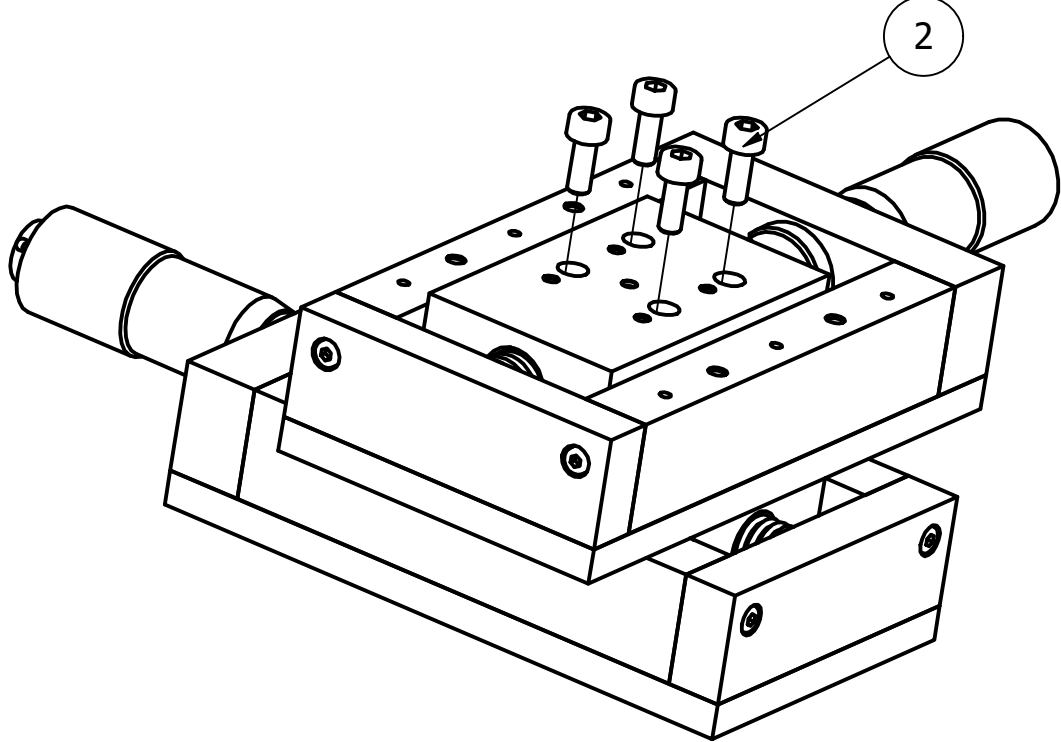
Spring	d[mm]	De[mm]	Di[mm]	L0[mm]	Ln[mm]	Sn[mm]	Fn[N]	R[n/mm]
	1	9	7	40.5	19.9	20.6	33.15	1.59
Preload	mm	Fp[N]	Lnf[N]	L[mm]	F_min[N]	Fp-Fmin		
	5.5	8.745	33.15	15	8.18	0.565		
Spring	c	k	λ	ν				
	8	1.171875	5.0625	37.03704				



Assembly Instructions for X-Y Configuration

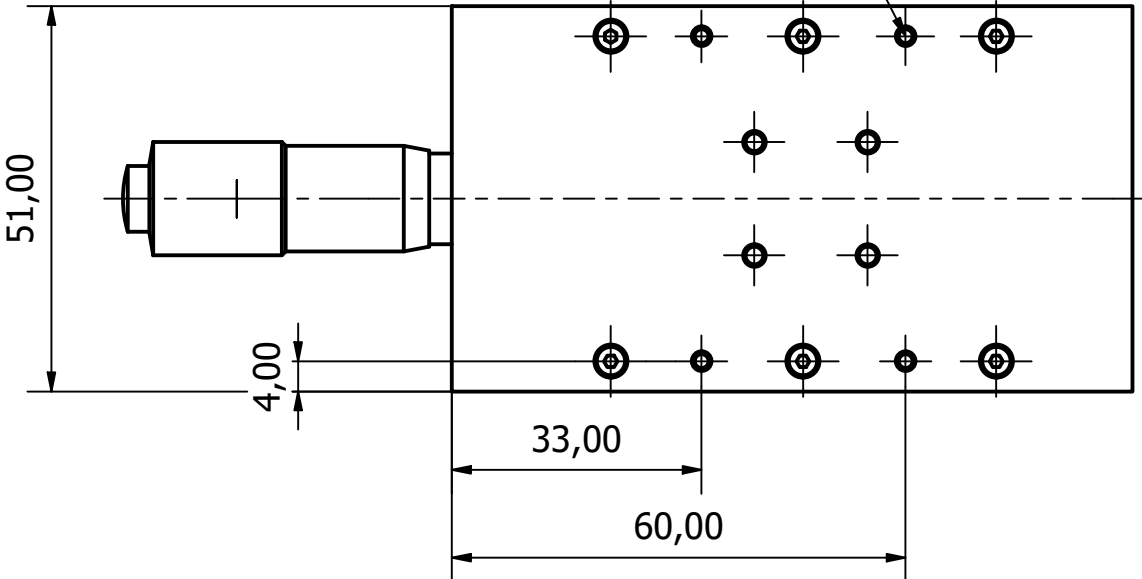
ADDITIONAL PARTS LIST			
ITEM	QTY	PART NAME	MATERIAL
2	4	M2 x 8	ISO 4762

Position platform such that bolt seat is visible, position second module perpendicular to first orientation such that thread is visible and screw 4 M2 x 8 bolts.



Pin Installation Instruction

Pin when assembling after removing play



PARTS LIST			
ITEM	QTY	PART NUMBER	MATERIAL
1	12	Bearing Ball	100Cr6
2	8	M2 x 8	ISO 4762
3	2	M2 x 16	ISO 4762
4	4	2h8 x 10	ISO 2338
5	1	Sodemann Compression Spring	11980, Music Wire
6	1	Platform	C55
7	2	Spacer	C55
8	2	Guide	NC11E
9	1	Bottom Plate	C55
10	1	Back Plate	C55
11	1	Head Plate	C55
12	1	Micrometer Mitutoyo	PN 149-802-10

Designed by Konrad Kosuge	Checked by	Approved by	Date 1/30/2025	
Politechnika Warszawska		Linear Stage Unit		Edition Sheet 1 / 1



Micrometer Head, Carbide Tipped Spindle

Item number: 149-802-10

Images



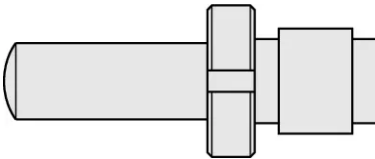
Description

A small, standard, non-digital MA small, standard, non-digital Mitutoyo micrometer head with M9.5 clamp-nut stem and spherically radiused tungsten-carbide spindle tip.

Features

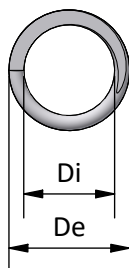
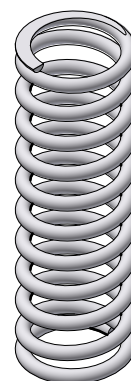
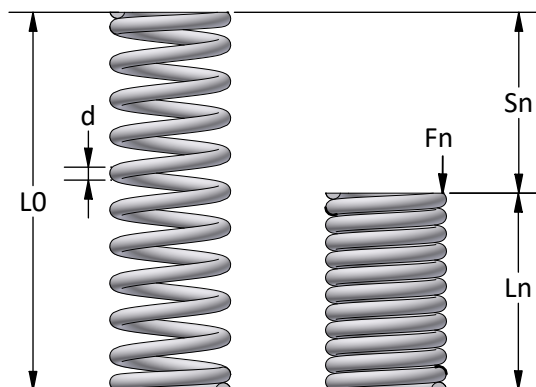
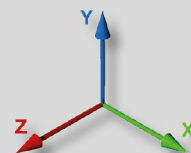
Digital/Analog:	Analog
Delivered:	In a paper box with spanner 200168
Inch-Metric:	Metric
Range:	0 - 15 mm
Graduation:	0,01mm
Max. Permissible Error J MPE:	±2 µm
Spindle end:	Spherical (SR4)
Spindle pitch:	0.5 mm
Stem Ø:	9.5 mm
Stem:	w/ clamp nut
Fixture thickness for clamp nut:	11.5 mm
Measuring face:	Carbide tipped (>90 HRA)
Mass:	60 g

Dimensions



Accessories

Optional accessories:



11980

Product Attribute:	Value
Spring type	Comp. spring
Material	Music wire
d - Wire diameter (mm)	1,00
De - External diameter (mm)	9,00
Di - Internal diameter (mm)	7,00
L0 - Unloaded length (mm)	40,50
Ln - Max. loaded length (mm)	19,90
Sn - Maximum travel (mm)	20,60
Fn - Maximum load at Ln (N)	33,15
R - Spring constant (N/mm)	1,59
Ends	Closed, ground
Weight (g)	2,22
HS code	7320208100
Origin	DK, DE, IT, UK, US

This is a standard item. All dimensions are indicative.

Created: 04/02/2025

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