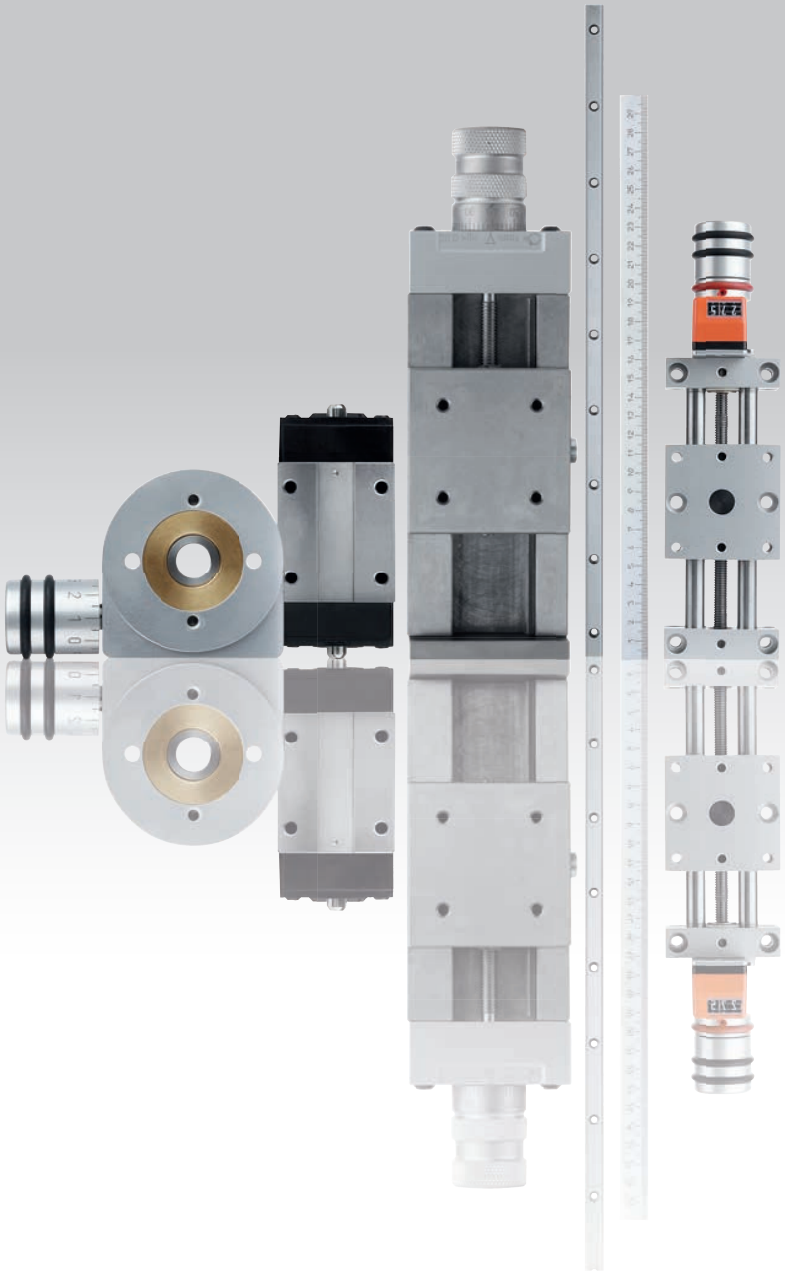
21000

Slides
Guide rails
Positioning tables
Linear guides systems
Position indicators



Dovetail slides

with spindle and knurled micrometer knob

Material:
Aluminium EN AW-6063

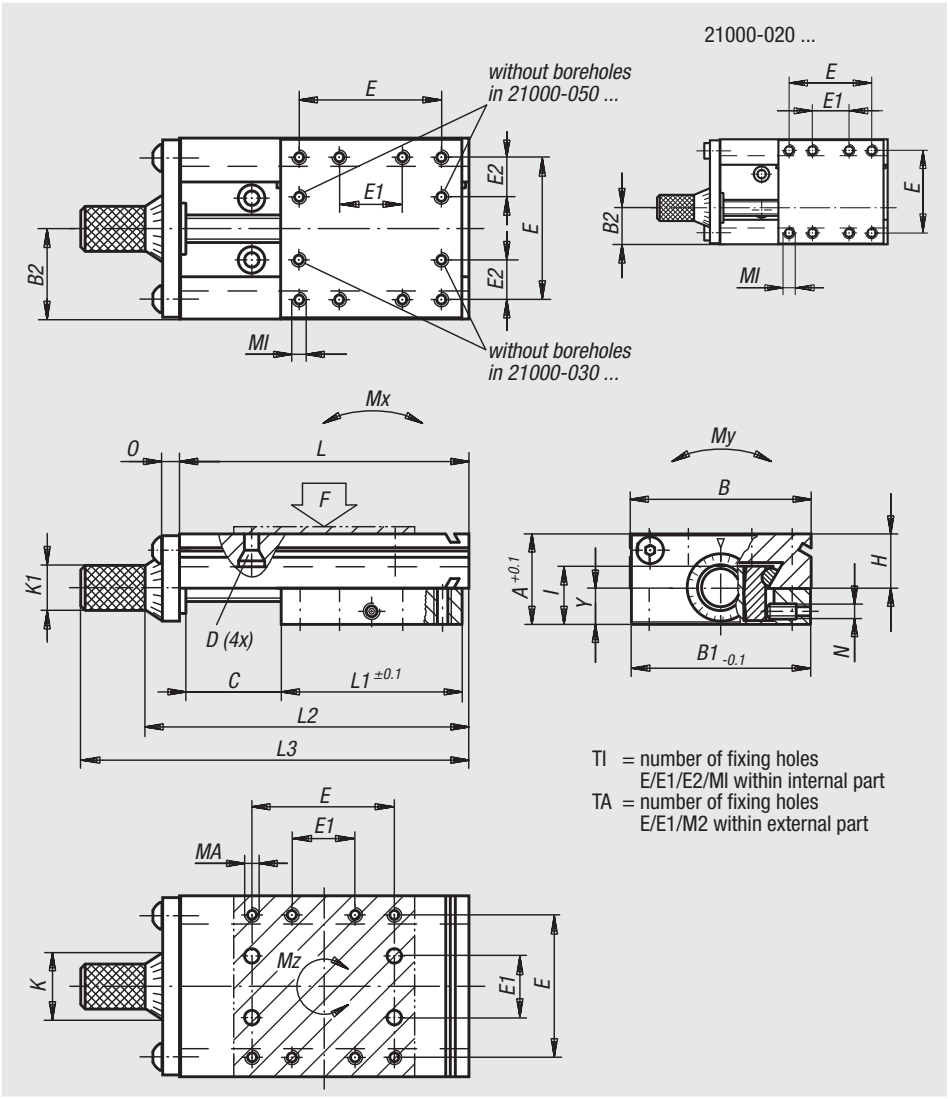
Sample order:
nlm 21000-050105

Note:
These accurate slides are used, among other things, in the construction of machines, devices and measuring equipment, as well as in the optical and precision mechanics industry.
The stated permissible load value (F) is designed for static load.
The torque values only apply if the dovetail slides are centred.

M1 = counterbore for screw.

Advantages:
- Innovative and safe clamping system that has no height or lateral displacement.
- Guides have no play.
- Quick and retrofit combination in the X, Y and Z axes.

Applications:
- Adjustment of machining units, measuring cameras, mirors, microscopes and laser heads (including the machining of surgical needles).
- Fine adjustment of brazing, plasma and welding heads.
- Focussing of flame nozzles.



TI = number of fixing holes E/E1/E2/Ml within internal part
TA = number of fixing holes E/E1/M2 within external part

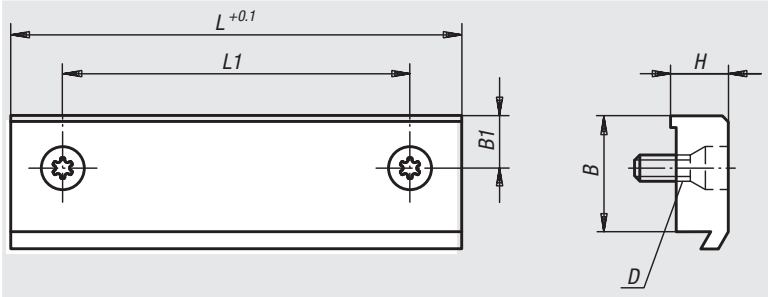
Dovetail slides

with spindle and knurled micrometer knob

Order No.	A	B	B1	B2	C stroke	D for screw	E	E1	E2	TI	TA	H	I	K	K1
21000-020030	13	20 -0,3	19,5	8,1	5	M2	12	6	-	8	8	8	8,3	10	6,3
21000-020035	13	20 -0,3	19,5	8,1	10	M2	12	6	-	8	8	8	8,3	10	6,3
21000-020045	13	20 -0,3	19,5	8,1	20	M2	12	6	-	8	8	8	8,3	10	6,3
21000-030040	15	30 -0,3	29,5	13	5	M3	23	8	7,5	10	8	9,8	9,8	10	6,3
21000-030045	15	30 -0,3	29,5	13	10	M3	23	8	7,5	10	8	9,8	9,8	10	6,3
21000-030055	15	30 -0,3	29,5	13	20	M3	23	8	7,5	10	8	9,8	9,8	10	6,3
21000-050067	23	50 -0,3	49,5	25	12	M4	38	16	11	10	8	14,5	15,6	22	14,3
21000-050080	23	50 -0,3	49,5	25	25	M4	38	16	11	10	8	14,5	15,6	22	14,3
21000-050105	23	50 -0,3	49,5	25	50	M4	38	16	11	10	8	14,5	15,6	22	14,3
21000-080110	34	80 -0,5	79,5	40	25	M5	60	34	13	12	8	23	22,5	26	14,3
21000-080135	34	80 -0,5	79,5	40	50	M5	60	34	13	12	8	23	22,5	26	14,3
21000-080160	34	80 -0,5	79,5	40	75	M5	60	34	13	12	8	23	22,5	26	14,3
21000-080185	34	80 -0,5	79,5	40	100	M5	60	34	13	12	8	23	22,5	26	14,3
21000-120150	45	120 -0,5	119	60	25	M5	90	40	25	12	8	30	29	26	14,3
21000-120175	45	120 -0,5	119	60	50	M5	90	40	25	12	8	30	29	26	14,3
21000-120200	45	120 -0,5	119	60	75	M5	90	40	25	12	8	30	29	26	14,3
21000-120225	45	120 -0,5	119	60	100	M5	90	40	25	12	8	30	29	26	14,3

Order No.	L	L1	L2	L3	MI	MA	N	O	Y	Spindle	F (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21000-020030	30	20	38,2	48,2	M2x3	M2x3	M3	3	5,2	M5 x 0,5	180	0,45	2	0,3	0,026
21000-020035	35	20	43,2	53,2	M2x3	M2x3	M3	3	5,2	M5 x 0,5	180	0,45	2	0,3	0,028
21000-020045	45	20	53,2	63,2	M2x3	M2x3	M3	3	5,2	M5 x 0,5	180	0,45	2	0,3	0,033
21000-030040	40	30	48,2	58,2	M3x4,5	M3x4,5	M4	3	5,8	M5 x 0,5	350	1,1	4	1	0,052
21000-030045	45	30	53,2	63,2	M3x4,5	M3x4,5	M4	3	5,8	M5 x 0,5	350	1,1	4	1	0,055
21000-030055	55	30	63,2	73,2	M3x4,5	M3x4,5	M4	3	5,8	M5 x 0,5	350	1,1	4	1	0,063
21000-050067	67	50	78,2	98,2	M4x6	M4x8	M4	5	11,5	M5 x 0,5	540	2,5	8	2,3	0,223
21000-050080	80	50	91,2	111,2	M4x6	M4x8	M4	5	11,5	M5 x 0,5	540	2,5	8	2,3	0,242
21000-050105	105	50	116,2	136,2	M4x6	M4x8	M4	5	11,5	M5 x 0,5	540	2,5	8	2,3	0,279
21000-080110	110	80	128,3	148,3	M5x7,5	M5x10	M6	8	14	M10 x 1	750	8	22	7	0,805
21000-080135	135	80	153,3	173,3	M5x7,5	M5x10	M6	8	14	M10 x 1	750	8	22	7	0,906
21000-080160	160	80	178,3	198,3	M5x7,5	M5x10	M6	8	14	M10 x 1	750	8	22	7	1,007
21000-080185	185	80	203,3	223,3	M5x7,5	M5x10	M6	8	14	M10 x 1	750	8	22	7	1,108
21000-120150	150	120	172,3	192,3	M5x10	M5x10	M6	12	18,5	M10 x 1	1500	30	45	18	2,146
21000-120175	175	120	197,3	217,3	M5x10	M5x10	M6	12	18,5	M10 x 1	1500	30	45	18	2,331
21000-120200	200	120	222,3	242,3	M5x10	M5x10	M6	12	18,5	M10 x 1	1500	30	45	18	2,516
21000-120225	225	120	247,3	267,3	M5x10	M5x10	M6	12	18,5	M10 x 1	1500	30	45	18	2,701

Straps



Material:
Aluminium EN AW-6063

Sample order:
nlm 21000-020 (1 strap with clamping screw)

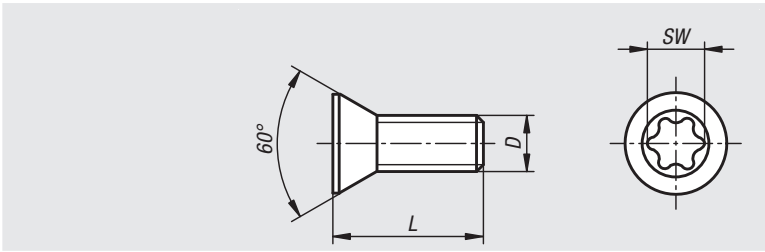
Note:
The straps are used to clamp the dovetail slides in the X, Y and Z axes and to fix the slide unit in the machine.
The lifting operation will be reduced if the strap is used on the surface.

Order No.	B	B1	D for screw	H	L	L1	Stroke reduction	suitable for sliding table
21000-020	5,7	3,7	M2	3,5	19,5	12	3,5	21000-020 ...
21000-030	5,7	2,85	M3	3,5	29,5	23	3,5	21000-030 ...
21000-050	11,5	5,25	M4	8	49,3	38	8	21000-050 ...
21000-080	11,5	6	M5	8	78,9	60	8	21000-080 ...
21000-120	15	10	M5	10	118,4	90	10	21000-120 ...

21000

Fastening screws

for cross table mounting



Material:
Steel

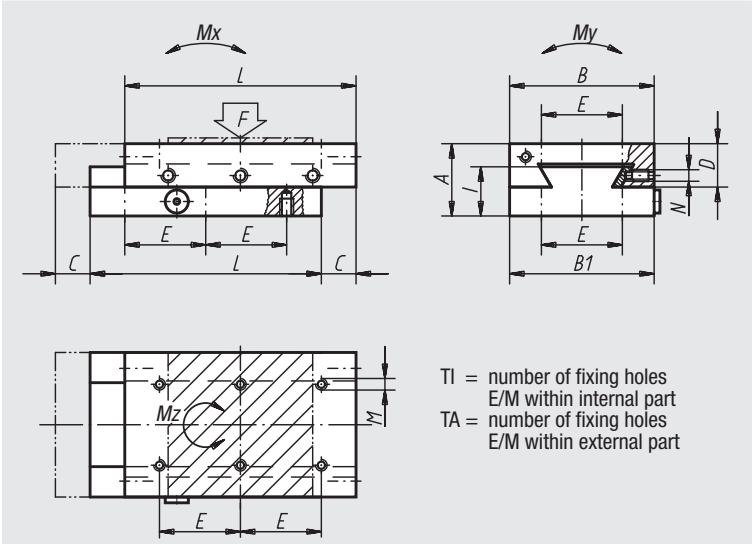
Version:
tempered.

Sample order:
nlm 21000-02055
(Supplied in sets of four)

Note:
Installation kit for setting up a compound table. Consisting of four fixing screws.

Order No.	D	L	SW	suitable for sliding table	Approx. weight g
21000-02055	M2	5,5	Torx T7	21000-020...	0,3
21000-03070	M3	7	Torx T9	21000-030 ...	0,5
21000-04100	M4	10	Torx T15	21000-050 ...	0,8
21000-05140	M5	17	Torx T20	21000-080 ... / 21000-120 ...	1,5

Dovetail slides



Material:
GJL 250.

Version:
Natural finish, ground

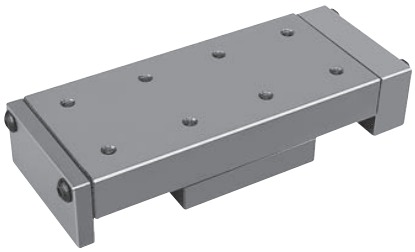
Sample order:
nlm 21030-050105

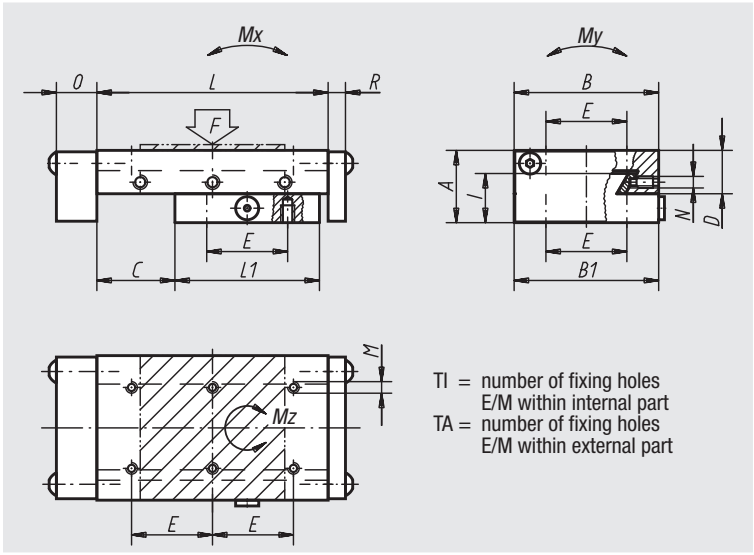
Note:
These high-precision dovetail slides are particulary used to build machines and mechanical systems, metrology devices for the optical industry and in precision mechanical engineering. The central adjustment screw „N“ can also be replaced by a clamp lever part no. 06460.
The stated permissible load values (F) are designed for dynamic stress with a lifespan of 1 million lifting operations.
For static stress the permissible load is equal to 10 times the value F.
The torque values apply only if the dovetail slides are centred.

Order No.	A	B	B1	C	D	E	TI	TA	I	L	M	N	F (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21030-050080	25	50	49,5	15	15	28	6	6	17,6	80	M4	M5	72	4	6	5	0,710
21030-050105	25	50	49,5	20	15	28	8	8	17,6	105	M4	M5	95	7	7	8	0,930
21030-050130	25	50	49,5	25	15	28	10	10	17,6	130	M4	M5	117	10	9	12	1,150
21030-075105	32	75	74,5	20	19,5	62	4	4	22,5	105	M5	M5	128	9	15	10	1,770
21030-075130	32	75	74,5	25	19,5	62	4	4	22,5	130	M5	M5	159	14	18	15	2,190
21030-100110	40	100	99,5	20	24	86	4	4	27,5	110	M6	M6	156	11	26	12	3,120
21030-100135	40	100	99,5	25	24	86	4	4	27,5	135	M6	M6	192	17	32	19	3,820
21030-100160	40	100	99,5	30	24	86	4	4	27,5	160	M6	M6	227	24	37	26	4,530

Dovetail slides

with end plates





Material:
GJL 250.

Version:
Natural finish, ground

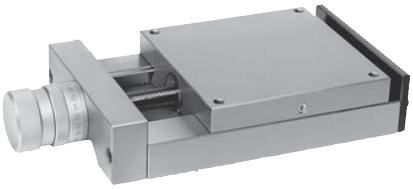
Sample order:
nlm 21031-100135

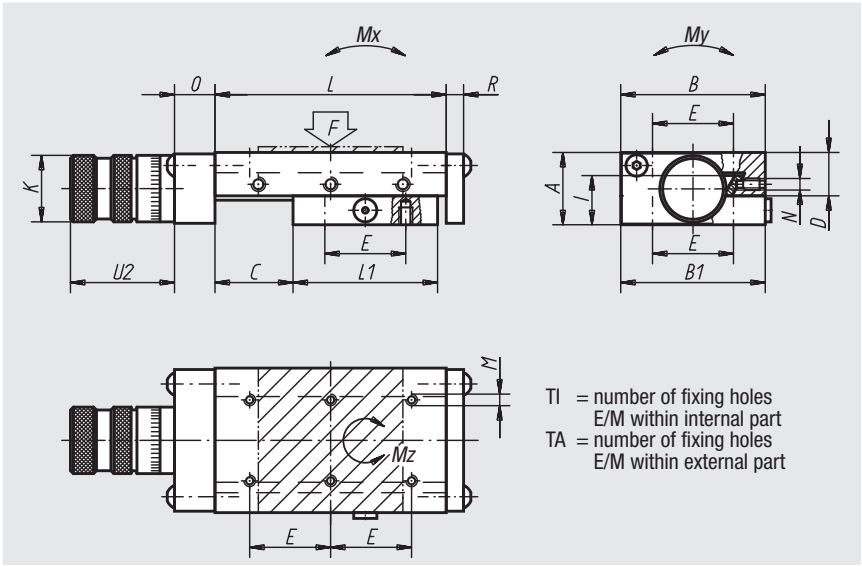
Note:
The central adjustment screw „N“ can also be replaced by a clamp lever part no. 06460.
The stated permissible load values (F) are designed for dynamic stress with a lifespan of 1 million lifting operations.
For static stress the permissible load is equal to 10 times the value F.
The torque values apply only if the dovetail slides are centred.

Order No.	A	B	B1	C	D	E	TI	TA	I	L	L1	M	N	O	R	F (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21031-050080	25	50	49,5	25	15	28	4	6	17,6	80	50	M4	M5	14	6	109	2	6	2	0,720
21031-050105	25	50	49,5	50	15	28	4	8	17,6	105	50	M4	M5	14	6	61	2	6	2	0,830
21031-075105	32	75	74,5	25	19,5	62	4	4	22,5	105	75	M5	M5	15	6	290	5	19	6	1,910
21031-075130	32	75	74,5	50	19,5	62	4	4	22,5	130	75	M5	M5	15	6	168	5	19	6	2,130
21031-100135	40	100	99,5	25	24	86	4	4	27,5	135	100	M6	M6	15	6	586	11	43	12	4,040
21031-100160	40	100	99,5	50	24	86	4	4	27,5	160	100	M6	M6	15	6	351	11	43	12	4,380
21031-100260	40	100	99,5	100	24	86	4	6	27,5	260	150	M6	M6	15	6	395	23	63	26	6,460

Dovetail slides

with spindle and knurled micrometer knob





Material:
GJL 250.

Version:
Natural finish, ground

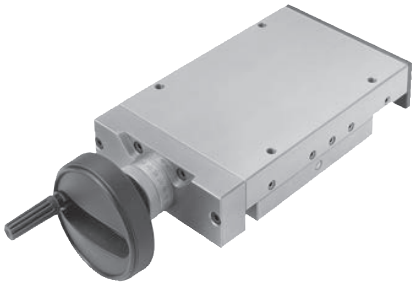
Sample order:
nlm 21032-075130

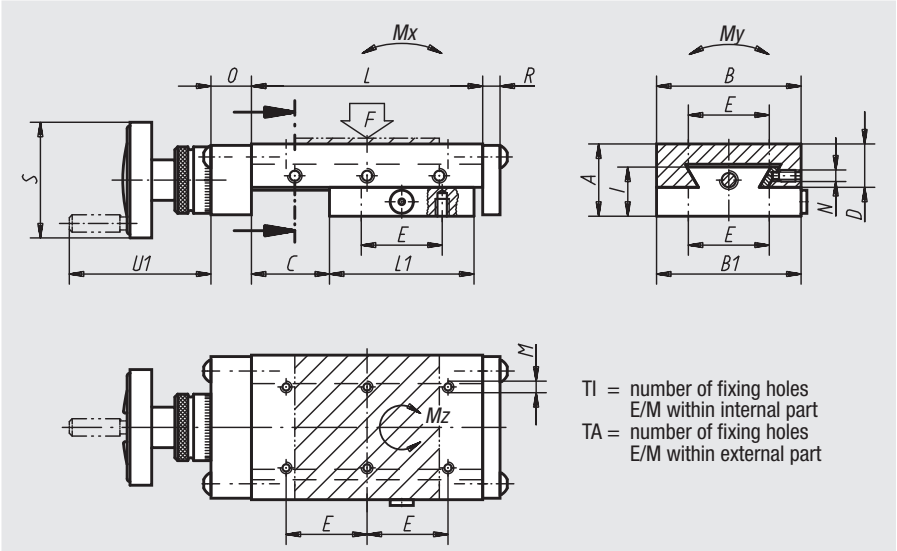
Note:
The central adjustment screw „N“ can also be replaced by a clamp lever part no. 06460. The micrometer screw is graduated in 0.02 mm increments. Other graduations are available on request.
The stated permissible load values (F) are designed for dynamic stress with a lifespan of 1 million lifting operations.
For static stress the permissible load is equal to 10 times the value F.
The torque values apply only if the dovetail sildes are centred.

Order No.	A	B	B1	C	D	E	TI	TA	I	K	L	L1	M	N	O	R	U2	Spindle	F (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21032-050080	25	50	49,5	25	15	28	4	6	17,6	23	80	50	M4	M5	19	6	31	M6x1	109	2	6	2	0,720
21032-050105	25	50	49,5	50	15	28	4	8	17,6	23	105	50	M4	M5	19	6	31	M6x1	61	4	9	4	0,830
21032-050205	25	50	49,5	100	15	28	8	16	17,6	23	205	100	M4	M5	19	6	31	M6x1	114	7	12	8	1,490
21032-075105	32	75	74,5	25	19,5	62	4	4	22,5	30	105	75	M5	M5	21	6	38	M10x1	290	5	19	6	1,910
21032-075130	32	75	74,5	50	19,5	62	4	4	22,5	30	130	75	M5	M5	21	6	38	M10x1	168	5	19	6	2,130
21032-075155	32	75	74,5	75	19,5	62	4	4	22,5	30	155	75	M5	M5	21	6	38	M10x1	118	5	19	6	2,340
21032-100135	40	100	99,5	25	24	86	4	4	27,5	30	135	100	M6	M6	21	6	38	M10x1	586	11	43	12	4,040
21032-100160	40	100	99,5	50	24	86	4	4	27,5	30	160	100	M6	M6	21	6	38	M10x1	351	11	43	12	4,380
21032-100260	40	100	99,5	100	24	86	4	6	27,5	30	260	150	M6	M6	21	6	38	M10x1	395	23	63	26	6,460
21032-200310	60	200	199	100	37	170	4	4	41,5	47	310	200	M8	M8	28	8	53	Tr16x2	1078	66	283	71	24,700

Dovetail slides

with spindle and knurled micrometer knob and handwheel





Material:
GJL 250.

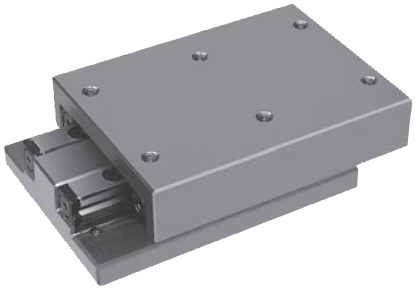
Version:
Natural finish, ground

Sample order:
nlm 21033-150310

Note:
The central adjustment screw „N“ can also be replaced by a clamp lever part no. 06460. The micrometer screw is graduated in 0.02 mm increments. Other graduations are available on request. The rotary handle of the wheel can be folded.
The stated permissible load values (F) are designed for dynamic stress with a lifespan of 1 million lifting operations.
For static stress the permissible load is equal to 10 times the value F.
The torque values apply only if the dovetail slides are centred.

Order No.	A	B	B1	C	D	E	TI	TA	I	L	L1	M	N	O	R	S	U1	Spindle	F (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21033-150210	50	150	149	50	29,5	130	4	4	35,5	210	150	M8	M8	28	8	80	100	Tr16x2	917	31	128	33	11,500
21033-150310	50	150	149	100	29,5	130	4	6	35,5	310	200	M8	M8	28	8	80	100	Tr16x2	868	53	169	58	15,300

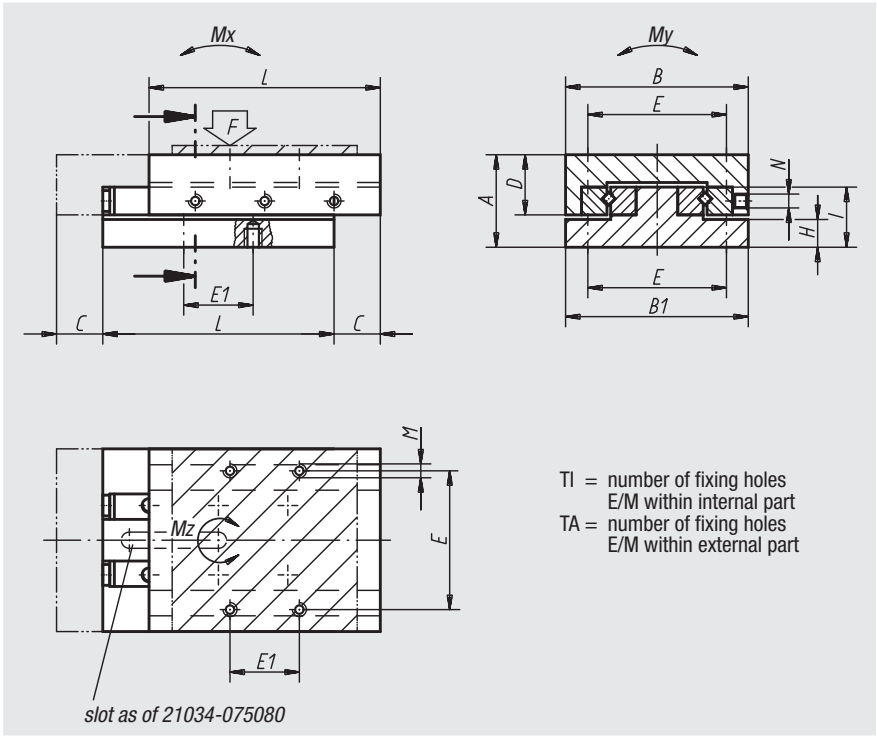
Precision roller sliders



Material:
GJL 250 ground

Sample order:
nlm 21034-050105

Note:
Optional: adherence clamping system on the side edge, with no load on the guiding geometry.
F = permissible load for dynamic and static use.
The stated permissible load values (F) are designed for a lifespan of 1 million lifting operations.
The torque values apply only if the dovetail slides are centred.
On request, also available in crossed table versions.



TI = number of fixing holes E/M within internal part
TA = number of fixing holes E/M within external part

Order No.	Type	A	B	B1	C	D	E	E1	TI	TA	H	I	L	M	N	F (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21034-040050	RON	20	40	39,5	10	13	30	15	4	4	6,5	13	50	M3	M3	206	1	4	3	0,300
21034-0400501	ROL	20	40	39,5	17,5	13	30	15	4	4	6,5	13	50	M3	M3	85	1	3	2	0,300
21034-040065	ROL	20	40	39,5	25	13	30	15	6	6	6,5	13	65	M3	M3	114	1	4	3	0,380
21034-040080	ROL	20	40	39,5	32,5	13	30	15	8	8	6,5	13	80	M3	M3	143	3	5	5	0,470
21034-050055	RON	25	50	49,5	10	17	28	28	4	4	7,5	18	55	M4	M3	283	4	7	6	0,440
21034-050080	ROL	25	50	49,5	30	17	28	28	6	6	7,5	18	80	M4	M3	189	3	9	7	0,640
21034-050105	ROL	25	50	49,5	40	17	28	28	8	8	7,5	18	105	M4	M3	301	10	11	15	0,840
21034-050155	ROL	25	50	49,5	60	17	28	28	12	12	7,5	18	155	M4	M3	476	23	19	33	1,250
21034-060055	RON	25	60	59,5	10	17	34	34	4	4	7,5	18	55	M4	M3	288	4	8	6	0,530
21034-060080	ROL	25	60	59,5	30	17	34	34	6	6	7,5	18	80	M4	M3	192	3	11	7	0,770
21034-060105	ROL	25	60	59,5	40	17	34	34	6	6	7,5	18	105	M4	M4	305	10	14	15	1,020
21034-060155	ROL	25	60	59,5	60	17	34	34	10	10	7,5	18	155	M4	M4	483	23	23	34	1,500
21034-075080	RON	32	75	74,5	15	21	62	62	4	4	10,5	23	80	M5	M5	487	10	18	15	1,230
21034-075105	RON	32	75	74,5	20	21	62	62	4	4	10,5	23	105	M5	M5	690	18	26	27	1,610
21034-075130	RON	32	75	74,5	25	21	62	62	4	4	10,5	23	130	M5	M5	895	29	33	42	2,000
21034-100110	RON	40	100	99,5	15	27,5	86	86	4	4	12	28	110	M6	M6	1284	43	59	63	2,920
21034-100160	ROL	40	100	99,5	52,5	27,5	86	86	4	4	12	28	160	M6	M6	946	37	79	68	4,280
21034-100210	ROL	40	100	99,5	80	27,5	86	86	6	6	12	28	210	M6	M6	1066	60	99	105	5,650
21034-100260	ROL	40	100	99,5	105	27,5	86	86	6	6	12	28	260	M6	M6	1228	89	119	151	7,000

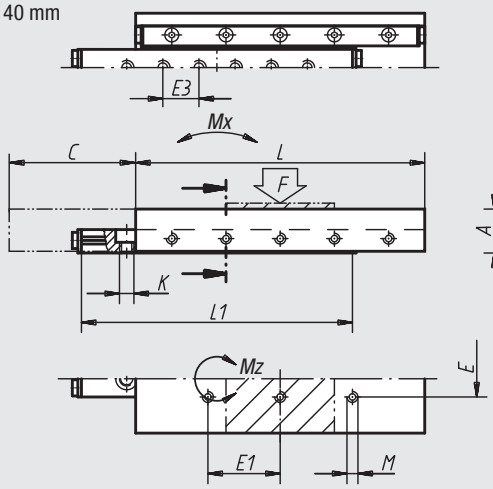
Miniature roller sliders

Material, version:
Outer casing made of black anodized aluminium. Ground steel carriage and bearing support. Internal part hardened.

Sample order:
nlm 21035-030080

Note:
Roller sliders that are pre-stressed and adjusted with „N“ adjustment screws slide freely and effortlessly.
The fixing holes „K“ can also be used as threaded holes or transit holes.
F = permissible load for dynamic and static use.
The stated permissible load values (F) are designed for a lifespan of 1 million lifting operations.
The torque values apply only if the dovetail slides are centred.

Width variants
B = 30 + 40 mm



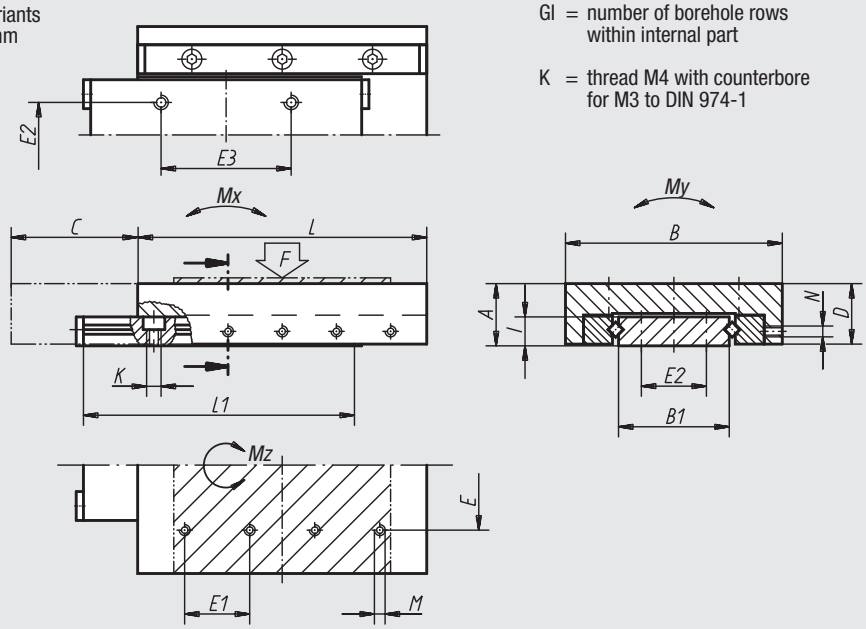
TI = number of fixing holes E3/K within internal part

TA = number of fixing holes E1/M within external part

GI = number of borehole rows within internal part

K = thread M4 with counterbore for M3 to DIN 974-1

Width variants
B = 60 mm



Order No.	Type	A	B	B1	C	D	E	E1	E2	E3	TI	TA	GI	I	K	L	L1	M	N	F (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21035-030035	MRON	12	30	10	12	11,7	10	10	-	10	2	6	1	6,3	M4	35	30	M3	M3	168	1	1,9	2	0,060
21035-030050	MRON	12	30	10	18	11,7	10	10	-	10	2	6	1	6,3	M4	50	45	M3	M3	245	3,5	2,6	5,2	0,080
21035-030065	MRON	12	30	10	24	11,7	10	20	-	10	4	6	1	6,3	M4	65	60	M3	M3	361	4,7	3,9	7,9	0,100
21035-0300501	MROL	12	30	10	34	11,7	10	10	-	10	2	6	1	6,3	M4	50	45	M3	M3	131	2,2	1,9	3,3	0,080
21035-0300651	MROL	12	30	10	48	11,7	10	20	-	10	4	6	1	6,3	M4	65	60	M3	M3	161	3,5	2,6	5,2	0,100
21035-030080	MRON	12	30	10	30	11,7	10	20	-	10	6	6	1	6,3	M4	80	75	M3	M3	432	9,1	4,5	13,3	0,130
21035-030095	MRON	12	30	10	40	11,7	10	20	-	10	8	10	1	6,3	M4	95	90	M3	M3	466	11,6	5,1	16,9	0,150
21035-040055	MRON	15	40	14,4	20	14,7	20	20	-	20	2	6	1	8,3	M4	55	50	M3	M3	231	4,6	4,6	6,8	0,140
21035-040080	MRON	15	40	14,4	30	14,7	20	20	-	20	2	6	1	8,3	M4	80	75	M3	M3	487	10,3	7,6	15,3	0,200
21035-040105	MRON	15	40	14,4	40	14,7	20	20	-	20	4	10	1	8,3	M4	105	100	M3	M3	689	18,6	10,6	27,3	0,270
21035-040155	MROL	15	40	14,4	120	14,7	20	20	-	20	6	14	1	8,3	M4	155	150	M3	M3	489	23,7	12,2	34,8	0,410
21035-060055	MRON	17	60	30,6	20	16,7	36	18	18	18	4	4	2	8,3	M4	55	50	M3	M4	294	4,6	7	6,9	0,660
21035-060080	MRON	17	60	30,6	30	16,7	36	18	18	36	4	8	2	8,3	M4	80	75	M3	M4	492	10,4	11,6	15,5	0,800
21035-060105	MRON	17	60	30,6	40	16,7	36	18	18	36	4	12	2	8,3	M4	105	100	M3	M4	697	18,8	16,2	27,6	0,930

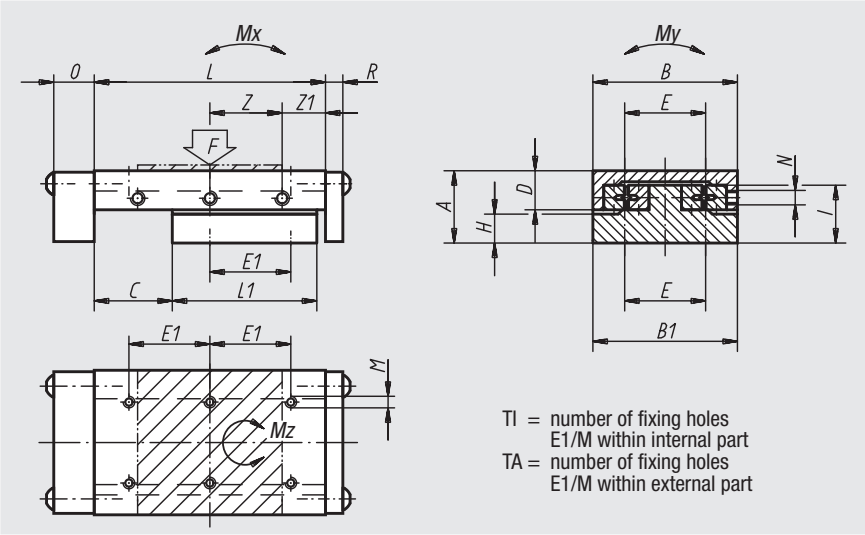
Precision roller sliders

with end plates

Material:
GJL 250 ground

Sample order:
nlm 21038-040090

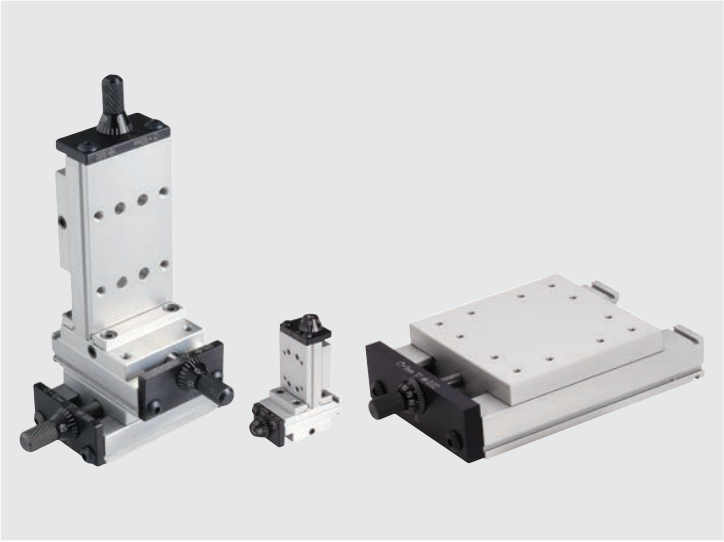
Note:
Table available in aluminium on request.
F = permissible load for dynamic and static use.
The stated permissible load values (F) are designed for a lifespan of 1 million lifting operations.
The torque values apply only if the dovetail slides are centred.



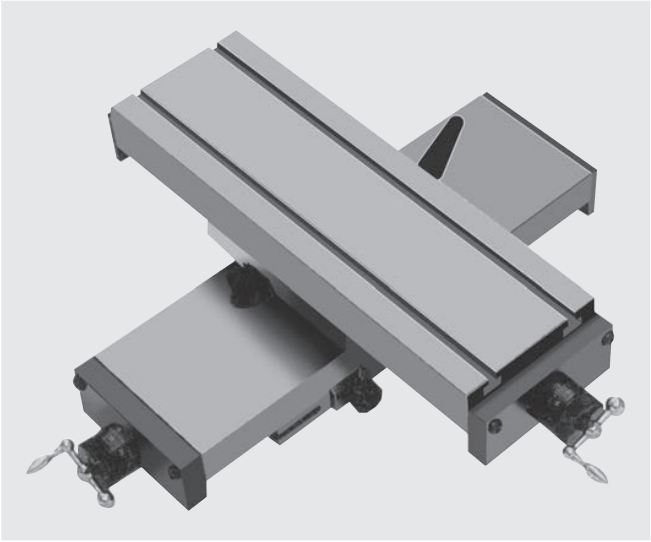
TI = number of fixing holes E1/M within internal part
TA = number of fixing holes E1/M within external part

Order No.	A	B	B1	C	D	E	E1	TI	TA	H	I	L	L1	M	N	O	R	Z	Z1	F (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21038-040090	20	40	39,5	40	13	30	15	6	8	6,5	13	90	45	M3	M3	12	3	15x2	30	77	1	3	2	0,500
21038-050105	25	50	49,5	25	17	28	28	6	8	7,5	18	105	75	M4	M3	14	6	25x2	27,5	623	9	14	15	1,020
21038-060180	25	60	59,5	75	17	34	34	6	12	7,5	18	180	100	M4	M4	14	6	25x3	52,5	349	9	17	16	1,660
21038-100260	40	100	99,5	100	27,5	86	86	4	6	12	28	260	150	M6	M6	15	6	50x2	80	990	37	80	69	6,130

Application: dovatail slide



Application: dovatail slide manual cross table



Precision roller sliders

with spindle and knurled micrometer knob

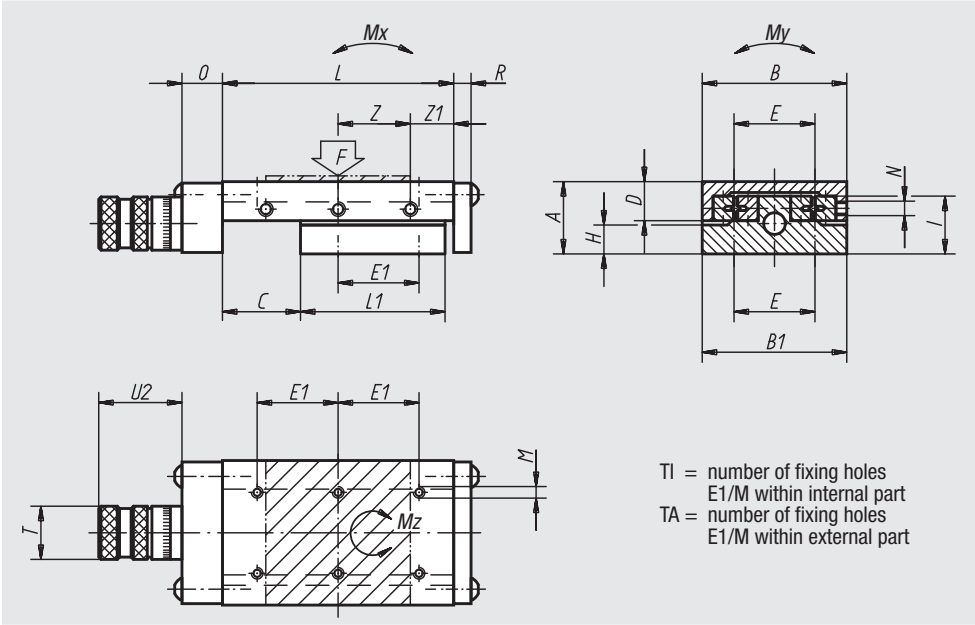
Material:
GJL 250

Version:
Natural finish, ground

Sample order:
nlm 21040-040045

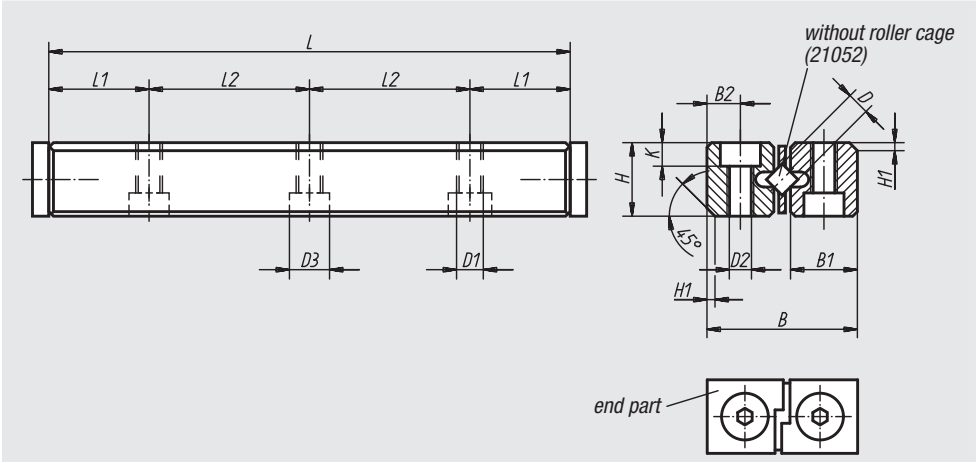
Note:
Slides available in aluminium on request.
The micrometer screw is graduated in 0.02 mm increments. The version 21040-040045 is graduated in 0.01 mm increments. Other graduations are available on request.
F = permissible load for dynamic and static use.
The stated permissible load values (F) are designed for dynamic stress with a lifespan of 1 million lifting operations.
The torque values apply only if the dovetail slides are centred.

* Spacing of the fixing holes in the outer part = 25 mm.



Order No.	A	B	B1	C	D	E	E1	TI	TA	H	I	L	L1	M	N	O	R	T	U2	Z	Z1	Spindle	F (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21040-040045	20	40	39,5	10	13	30	15*	4	4	6,5	13	45	30	M3	M3	12	3	16	25	15x1	15	M5x0,5	183	1	3	2	0,340
21040-050075	25	50	49,5	20	17	28	28	4	6	7,5	18	75	50	M4	M3	14	6	23	36	25x1	25	M6x1	286	4	7	6	0,840
21040-060075	25	60	59,5	20	17	34	34	4	4	7,5	18	75	50	M4	M4	14	6	23	36	25x1	25	M6x1	289	4	8	6	0,980
21040-100360	40	100	99,5	150	27,5	86	86	6	8	12	28	360	200	M6	M6	15	6	30	44	50x3	105	M10x1	1130	61	100	107	8,040

Cross roller guide rails



Material:
Guide rail in tool steel 1.2842; end pieces in 1.0531

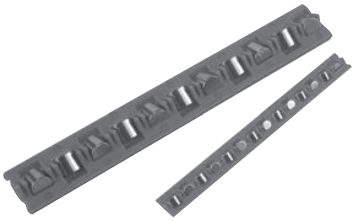
Version:
Ground hardened steel guide rails (60–62 HRC); end piece black oxide finish

Sample order:
nlm 21050-02030 (1 guide rail, without roller cages)

Note:
See 21052 for the appropriate roller cage. The guide rails are built into the dovetail slides (21034, 21035, 21038 and 21040). They can therefore also be used as spare parts.

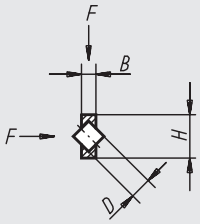
Order No.	D	L	L1	L2	B	B1	B2	H	H1	K	D1	D2	D3	Approx. weight g per rail
21050-02030	2	30	7,5	1x15	12	5,5	2,5	6	1	2,2	M3	2,55	4,4	8
21050-02045	2	45	7,5	2x15	12	5,5	2,5	6	1	2,2	M3	2,55	4,4	11
21050-02060	2	60	7,5	3x15	12	5,5	2,5	6	1	2,2	M3	2,55	4,4	14
21050-03050	3	50	12,5	1x25	18	8,3	3,5	8	1	3,2	M4	3,4	6	23
21050-03075	3	75	12,5	2x25	18	8,3	3,5	8	1	3,2	M4	3,4	6	34
21050-03100	3	100	12,5	3x25	18	8,3	3,5	8	1	3,2	M4	3,4	6	45
21050-03125	3	125	12,5	4x25	18	8,3	3,5	8	1	3,2	M4	3,4	6	56
21050-03150	3	150	12,5	5x25	18	8,3	3,5	8	1	3,2	M4	3,4	6	67
21050-06100	6	100	25	1x50	31	13,9	6	15	1,8	5,2	M6	5,4	10	145
21050-06150	6	150	25	2x50	31	13,9	6	15	1,8	5,2	M6	5,4	10	220
21050-06200	6	200	25	3x50	31	13,9	6	15	1,8	5,2	M6	5,4	10	295
21050-06250	6	250	25	4x50	31	13,9	6	15	1,8	5,2	M6	5,4	10	370
21050-06300	6	300	25	5x50	31	13,9	6	15	1,8	5,2	M6	5,4	10	445
21050-06350	6	350	25	6x50	31	13,9	6	15	1,8	5,2	M6	5,4	10	520

Roller cages



Dimensioning formula:

$$\text{number of rollers in the cage} = \frac{\text{length of Guide Rails - ½ stroke}}{\text{division T}}$$

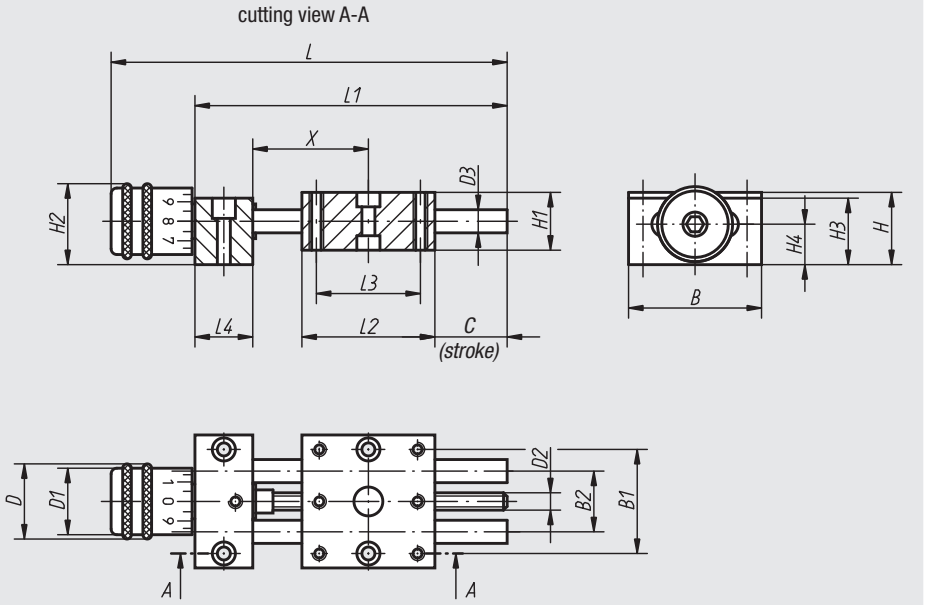


Material:
Plastic cage, tool steel rollers 1.2842

Sample order:
nlm 21052-02010 with indication of the number of rollers in the cage (010 = 10 rollers). Dimensioning formula, see right.

Order No.	D	Number of rollers	B	H	T (Division)	Load F in N/roller
21052-02* **	2	2-200	0,5	4,5	4	60
21052-03* **	3	2-200	1	7,5	5	100
21052-06* **	6	2-200	2,4	15	9	400

Short positioning tables



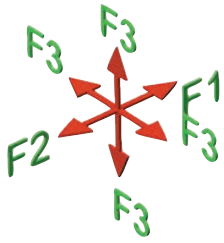
all counterbores to DIN 974-1 (D4),
all threads M (D4)

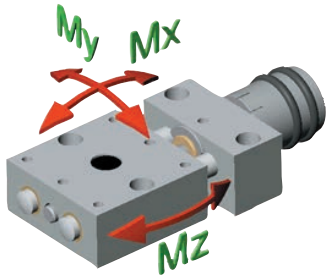
Material:
Support bearing and carriage made of anodized aluminium alloy. Ground stainless steel guiding columns. Stainless steel screw with rolled thread. Guiding: smooth maintenance-free bearings

Version:
Specifications: Radial guidance play < 0.02 mm, no axial play. Self-locking screw with additional locking system.

Sample order:
nlm 21100-04

Note:
The guiding system is practically free of play and there is absolutely no play in the screw. That is why no adjustment of the screw is required.
5 or 10 graduation scale. Each graduation represents a 0.1 mm displacement.
Because of it's modular design, the positioning table can be easily combined with the accessories of it's category.

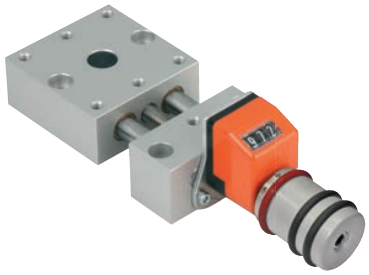




Order No.	B	B1	B2	C	D	D1	D2	D3	D4	H	H1	H2	H3	H4	L	L1	L2	L3	L4	F1 (N)	F2 (N)	F3 (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21100-04	29	22	12	11	13	11,5	M3x0,5	4	3	14	12	14,5	13	8	64,5	50	29	22	10	70	70	X = 28 (10)	0,25	0,11	0,25	0,045
21100-08	46	36	21	14	26	23	M6x1	8	4	24	20	27	23	14	108,5	80	46	36	20	200	200	X = 39 (50)	1,9	0,9	1,9	0,254
21100-12	75	60	38	25	26	23	M6x1	12	6	28	25	29	27	15,5	162	133	75	60	30	300	300	X = 58 (100)	5,5	3	5,5	0,746

Short positioning tables

with position indicator



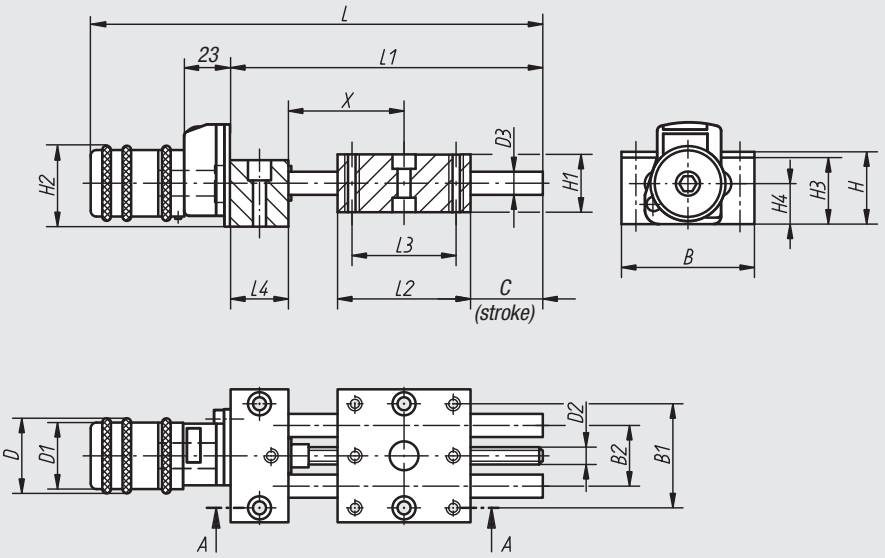
Material:
Support bearing and carriage made of anodized aluminium alloy. Ground stainless steel guiding columns. Stainless steel screw with rolled thread. Guiding: smooth maintenance-free bearings.
Position indicator in plastic

Version:
Specifications: Radial guidance play < 0.02 mm, no axial play. Self-locking screw with additional locking system

Sample order:
nlm 21102-08

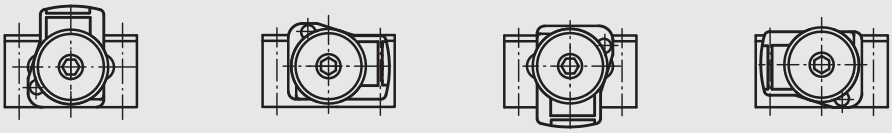
Note:
Owing to the virtually play-free guides and the absolutely play-free spindle, no loosening and clamping is required upon disassembly.
Digital position indicators with 0.1 mm indication accuracy, numbers ascending upon rightward rotation. The indication value of the digital position indicator can be adjusted by turning the red actuator ring without tool. The assembly position of the position indicator can be set in 4 positions by means of a screw.
Because of it's modular design, the positioning table can be easily combined with the accessories of it's category.

cutting view A-A

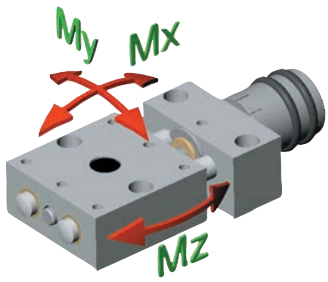


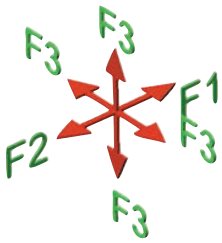
all counterbores to DIN 974-1 (D4),
all threads M (D4)

Assembly position of position indicator



above (standard) | right | down | left





Order No.	B	B1	B2	C	D	D1	D2	D3	D4	H	H1	H2	H3	H4	L	L1	L2	L3	L4	F1 (N)	F2 (N)	F3 (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21102-08	46	36	21	14	26	23	M6x1	8	4	24	20	27	23	14	135	80	46	36	20	200	200	X = 39 (50)	1,9	0,9	1,9	0,288
21102-12	75	60	38	25	26	23	M6x1	12	6	28	25	29	27	15,5	187,5	133	75	60	30	300	300	X = 58 (100)	5,5	3	5,5	0,767

Long positioning tables

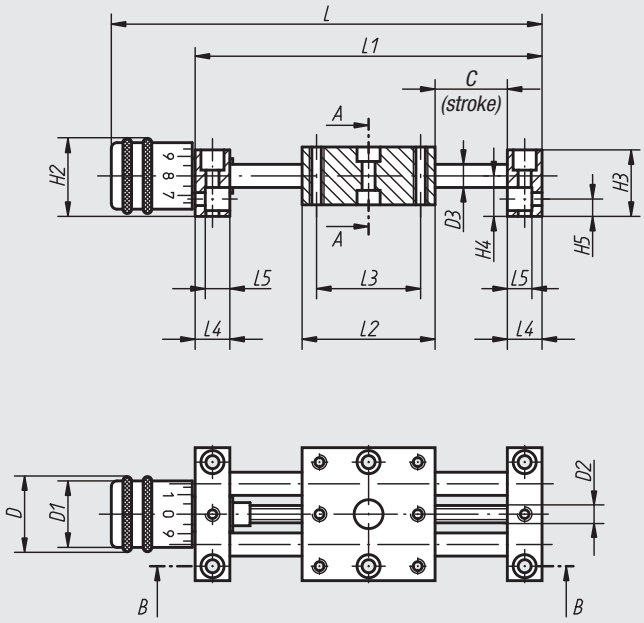
Material:
Support bearing and carriage made of anodized aluminium alloy. Ground stainless steel guiding columns. Stainless steel screw with rolled thread. Guiding: smooth maintenance-free bearings

Version:
Specifications: Radial guidance play < 0.02 mm, no axial play. Self-locking screw with additional locking system.

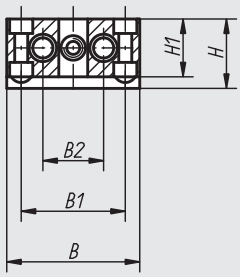
Sample order:
nlm 21120-04

Note:
The guiding system is practically free of play and there is absolutely no play in the screw. That is why no adjustment of the screw is required.
5 or 10 graduation scale. Each graduation represents a 0.1 mm displacement.
Because of it's modular design, the positioning table can be easily combined with the accessories of it's category.

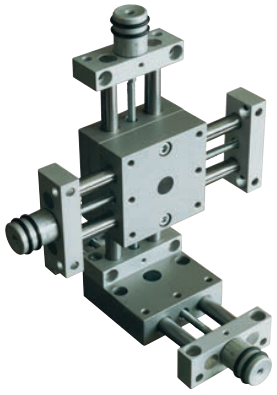
cutting view B-B

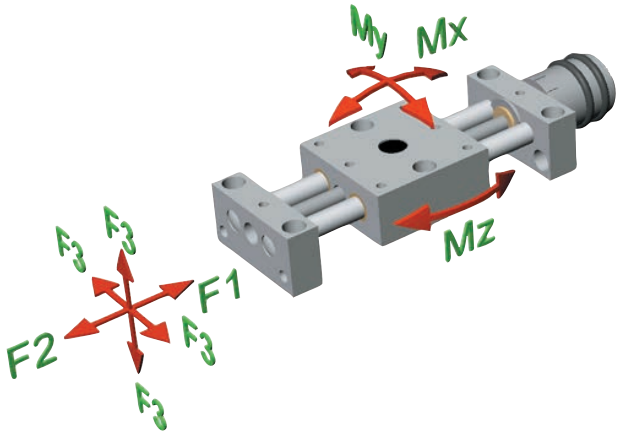


cutting view A-A



all counterbores to DIN 974-1 (D4),
all threads M (D4)

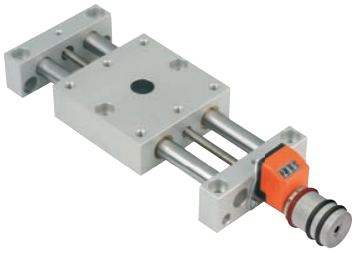




Order No.	B	B1	B2	C	D	D1	D2	D3	D4	H	H1	H2	H3	H4	H5	L	L1	L2	L3	L4	L5	F1 (N)	F2 (N)	F3 (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21120-04	29	22	12	23	13	12	M3x0,5	4	3	14	12	14,5	13	8	4	84,5	70	29	22	8	6	70	70	70	0,77	0,77	0,77	0,046
21120-08	46	36	21	48	26	23	M6x1	8	4	24	20	27	23	14	6	148,5	120	46	36	12	8,5	200	200	200	3,6	3,6	3,6	0,248
21120-12	75	60	38	73	26	23	M6x1	12	6	28	25	28,5	27	15,5	7	209	180	75	60	15	11	300	300	300	18	18	18	0,803
21120-25	150	130	90	86	52	46	M16x2	25	10	53	50	54	52	28	13	347	290	150	130	25	18	1000	1000	1000	65	65	65	6,080

Long positioning tables

with position indicator



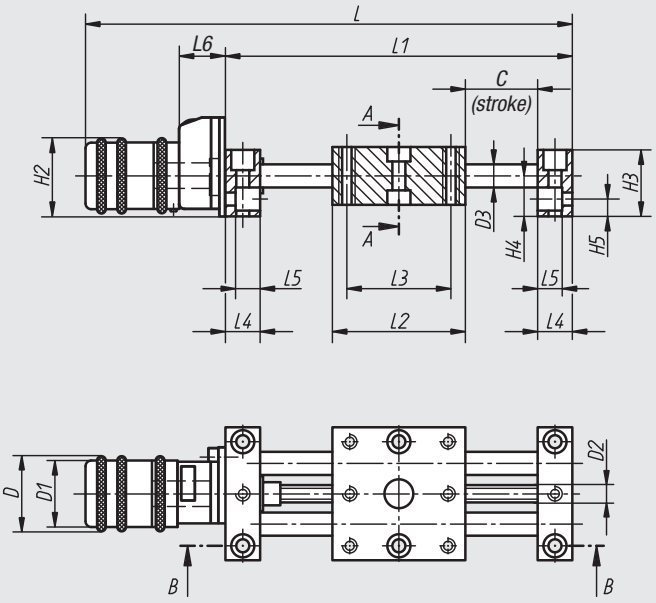
Material:
Support bearing and carriage made of anodized aluminium alloy. Ground stainless steel guiding columns. Stainless steel screw with rolled thread. Guiding: smooth maintenance-free bearings. Position indicator in plastic

Version:
Specifications: Radial guidance play < 0.02 mm, no axial play. Self-locking screw with additional locking system.

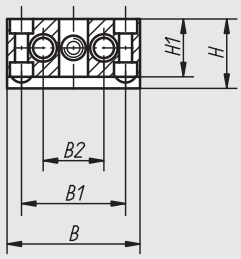
Sample order:
nlm 21122-08

Note:
Owing to the virtually play-free guides and the absolutely play-free spindle, no loosening and clamping is required upon disassembly.
Digital position indicators with 0.1 mm indication accuracy, numbers ascending upon rightward rotation. The indication value of the digital position indicator can be adjusted by turning the red actuator ring without tool. The assembly position of the position indicator can be set in 4 positions by means of a screw. With category 25 are 3 positions (above, right and left) possible.
Because of it's modular design, the positioning table can be easily combined with the accessories of it's category.

cutting view B-B

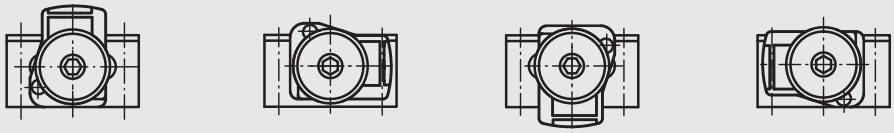


cutting view A-A

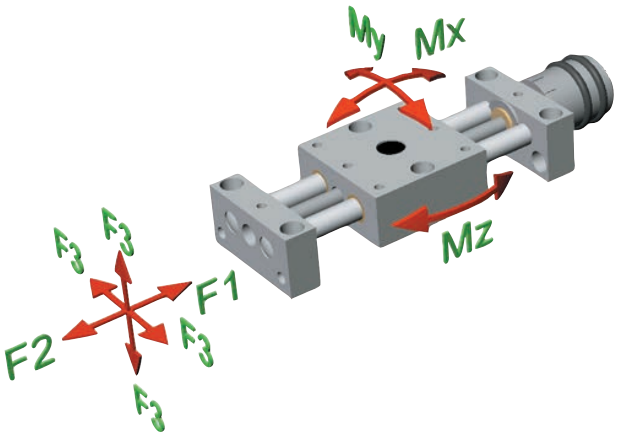


all counterbores to DIN 974-1 (D4),
all threads M (D4)

Assembly position of position indicator



above (standard) | right | down | left



Order No.	B	B1	B2	C	D	D1	D2	D3	D4	H	H1	H2	H3	H4	H5	L	L1	L2	L3	L4	L5	L6	F1 (N)	F2 (N)	F3 (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21122-08	46	36	21	48	26	23	M6x1	8	4	24	20	27	23	14	6	175	120	46	36	12	8,5	23	200	200	200	3,6	3,6	3,6	0,324
21122-12	75	60	38	73	26	23	M6x1	12	6	28	25	28,5	27	15,5	7	235	180	75	60	15	11	23	300	300	300	18	18	18	0,839
21122-25	150	130	90	86	52	46	M16x2	25	10	53	50	54	52	28	13	388	290	150	130	25	18	36	1000	1000	1000	65	65	18	6,300

Lift tables

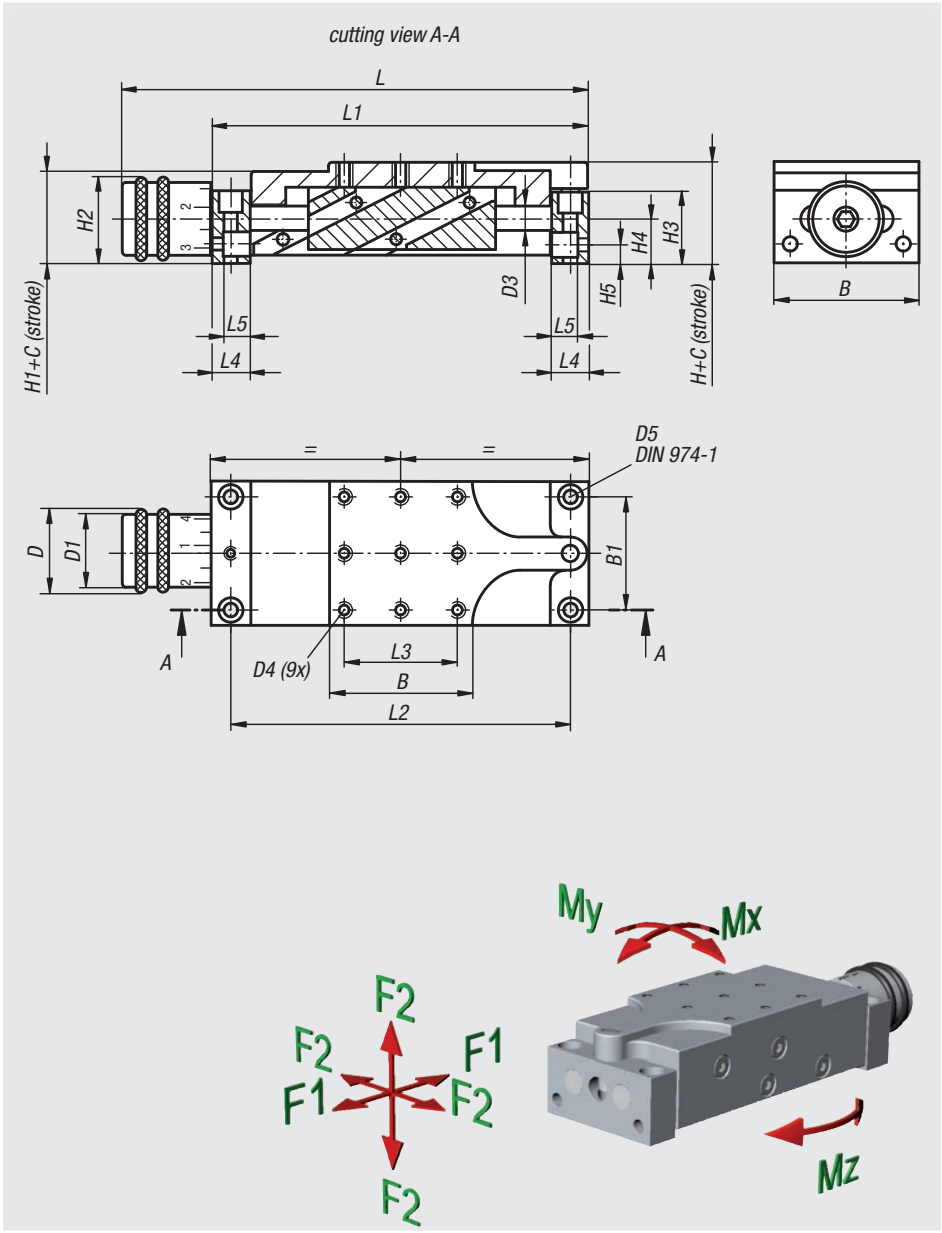
Material:
Lift table, bearing blocks and scale knob Al alloy, anodized;
guiding columns stainless steel, polished;
spindle stainless steel, rolled thread;
guide, slide bearing, maintenance-free

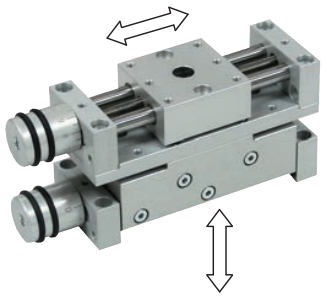
Version:
Backlash of the guide less than 0.05 mm;
spindle self-locking, additionally clampable

Sample order:
nlm 21140-04

Note:
For height-positioning of components and assemblies of all types (e.g., stops, sensors, limit switches, tables, cameras, entire assemblies, etc.). The lift table is height-adjustable by turning the scale knob manually. One graduation line of the scale knob corresponds to 0.1 mm of lifting motion.

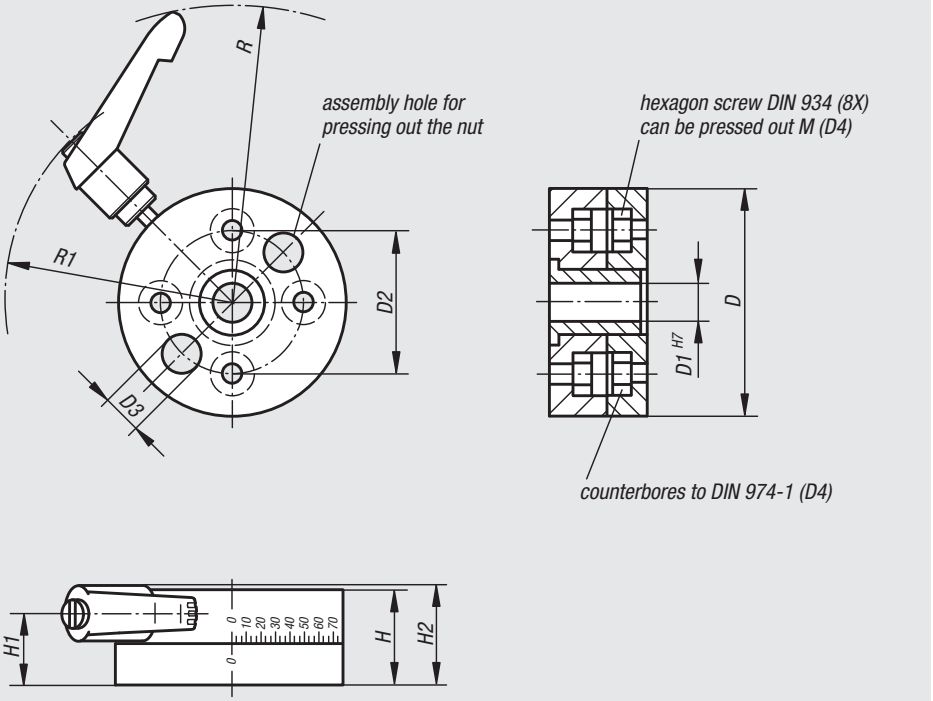
Because of it's modular design, the lift table can be easily combined with the accessories of it's category.





Order No.	B	B1	C	D	D1	D3	D4	D5	H	H1	H2	H3	H4	H5	L	L1	L2	L3	L4	L5	F1 (N)	F2 (N)	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21140-04	29	22	4	13	12	4	M3	3	19	17	14	13	8	4	84,5	70	62	22	8	6	30	50	0,5	0,5	2	0,091
21140-08	46	36	8	26	23	8	M4	4	32	29	27	23	14	6	148,5	120	108	36	12	8,5	80	100	2,5	2,5	5	0,462
21140-12	75	60	12	26	23	12	M6	4	38	36	28,5	27	15,5	7	209	180	165	60	15	11	150	200	10	10	20	1,360
21140-25	150	130	25	52	46	25	M10	6	68	64	54	52	28	13	347	290	265	130	25	18	500	700	50	50	100	7,900

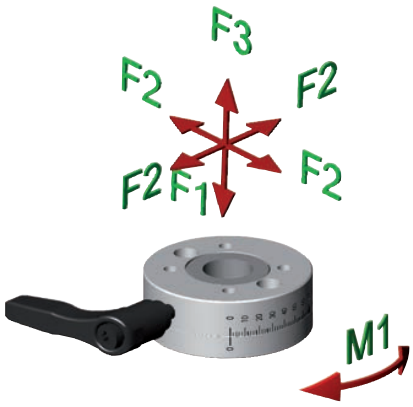
Turning devices



Material, version:
Base and turning device made of anodised aluminium alloy.
Shaft in stainless steel.

Sample order:
nlm 21150-04

Note:
By loosening the clamp levers, the turning device can be rotated on the base. Revolving at 360°. The turning device catches every 90° (21150-25 every 45°). The catching derives from a ball pressure piece which can be easily disconnected.
A 2° precise graduation serves as the angularity.
Because of it's modular design, the turning device can be easily combined with the accessories of it's category.



Order No.	D	D1	D2	D3	D4	H	H1	H2	R	R1	F1 (N)	F2 (N)	F3 (N)	M1 Nm	Approx. weight kg
21150-04	35	6	22	6	3	15	9,5	16,5	64	44	200	200	100	2	0,070
21150-08	54	16	36	8	4	20	13,5	20,5	73	56	500	500	200	10	0,160
21150-12	80	25	60	13	6	25	17,5	24,5	85	69	500	500	200	15	0,420
21150-25	150	55	130	18,5	10	40	26	35,5	139	110	1000	500	500	50	2,320

Circular positioning tables

Material:
Base and circular table made of anodized aluminium alloy.
Spindle in steel.
Spindle bearing: slide bearing, maintenance-free

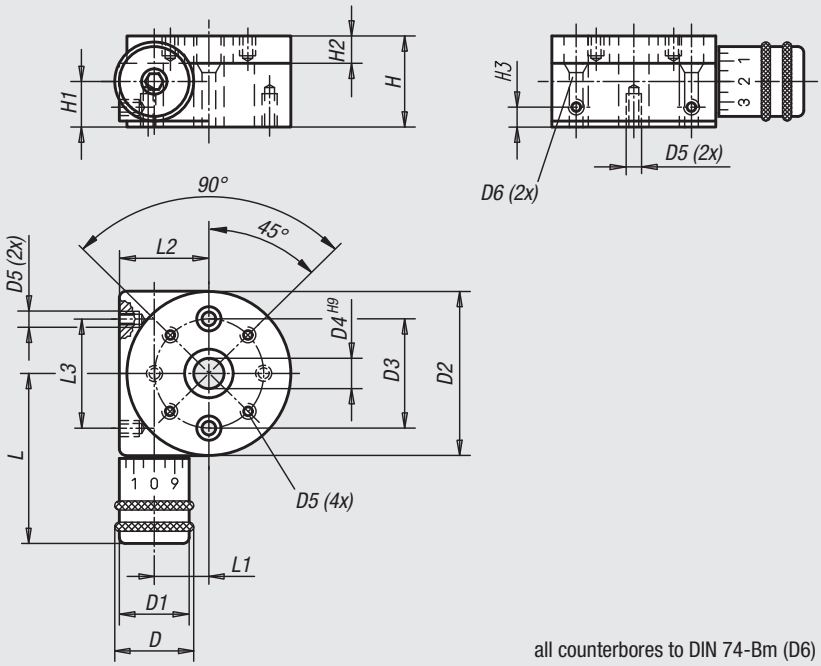
Version:
Radial play of the rotary shaft < 0,015 mm,
axial play of the rotary shaft < 0,02 mm,
repeating accuracy < 0,05°.
Self-locking spindle.

Sample order:
nlm 21160-08

Note:
360° adjustment with no end stop.
10-graduation scale.
Transmission ratio:
21160-08 = 50:1
21160-12 = 55:1
21160-25 = 50:1

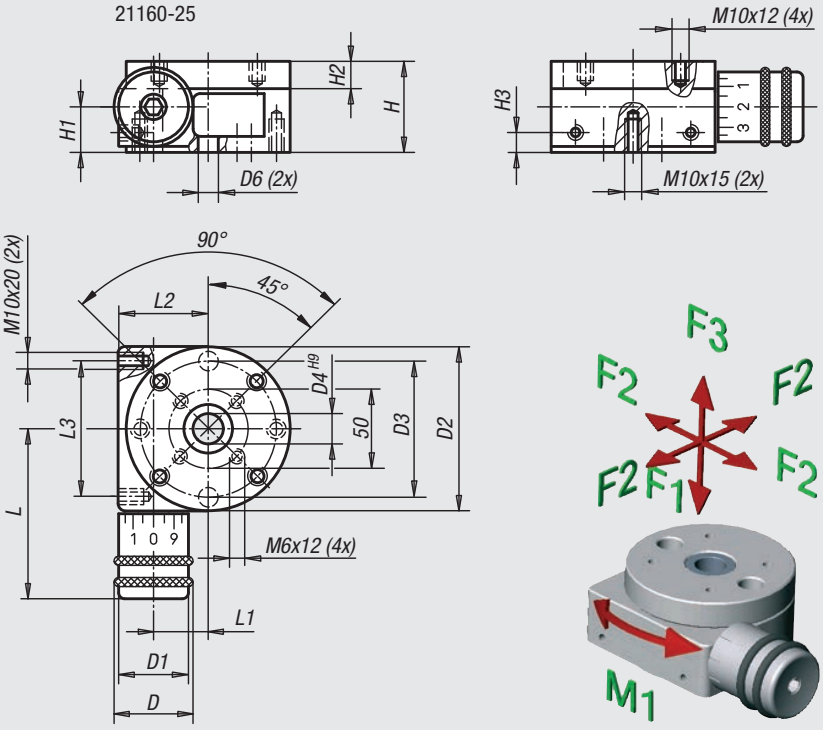
Because of its modular design, the circular positioning table can be easily combined with the accessories of its category.

21160-08 to 21160-12



all counterbores to DIN 74-Bm (D6)

21160-25



Order No.	D	D1	D2	D3	D4	D5	D6	H	H1	H2	H3	L	L1	L2	L3	F1 (N)	F2 (N)	F3 (N)	M1 Nm	Approx. weight kg
21160-08	26	23	54	36	10	M4x6	4	30	14	9	6	56	17	29	36	500	500	200	3	0,260
21160-12	26	23	80	60	15	M6x9	6	40	17,5	12	6	69	31	43	60	500	500	200	5	0,760
21160-25	51	46	150	130	40	-	10,2	75	35	18	12	134	53	80	130	1000	1000	500	10	4,350

Circular positioning tables

with position indicators

Material:
Base and circular table made of anodized aluminium alloy;
spindle in steel, case-hardened;
spindle bearing: slide bearing, maintenance-free;
position indicator: plastic

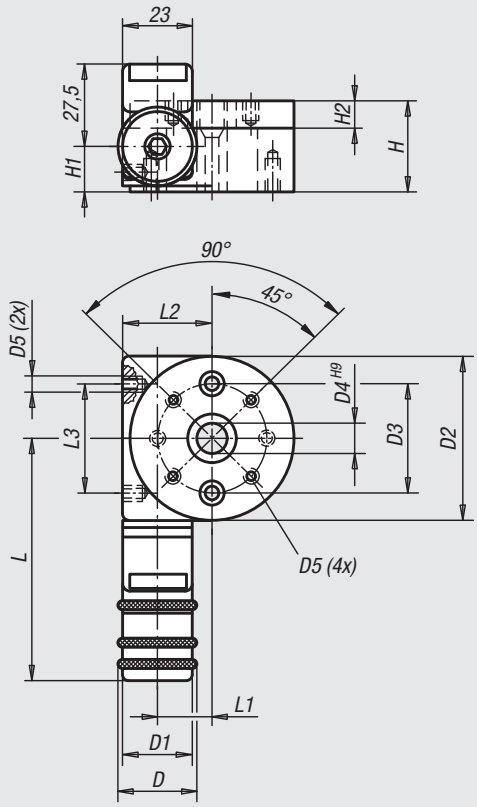
Version:
Radial play of the rotary shaft < 0.015 mm,
axial play of the rotary shaft < 0.02 mm,
repeating accuracy < 0.05°.
Self-locking spindle.

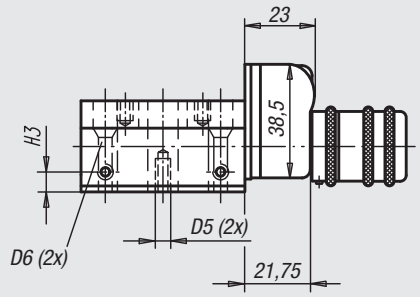
Sample order:
nlm 21161-08

Note:
360° adjustment with no end stop.
The position indicator counts in steps of 0.1° clockwise in ascending order from 0.0° to 9.9°.
The circular table is rotating counter clockwise.
A scale on the perimeter of the circular table indicates 10° steps.
The assembly position of the position indicator can be set in 4 positions by means of a screw.

Transmission ratio:
21161-08 = 50:1
21161-12 = 55:1

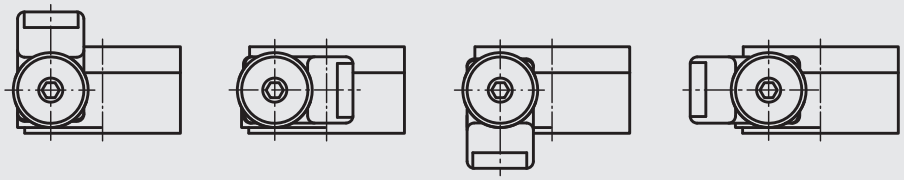
Because of its modular design, the circular positioning table can be easily combined with the accessories of its category.





all counterbores to DIN 74-Bm (D6)

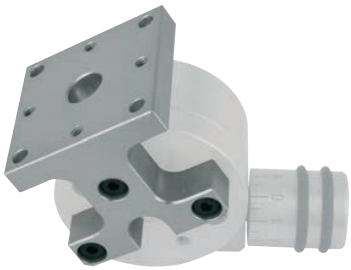
Assembly position of position indicator



above (standard) | right | down | left

Order No.	D	D1	D2	D3	D4	D5	D6	H	H1	H2	H3	L	L1	L2	L3	F1 (N)	F2 (N)	F3 (N)	M1 Nm	Approx. weight kg
21161-08	26	23	54	36	10	M4x6	4	30	14	9	6	80	18	29	36	500	500	200	3	0,340
21161-12	26	23	80	60	15	M6x9	6	40	17,5	12	6	93	31	43	60	500	500	200	11	0,960

Swivel angle

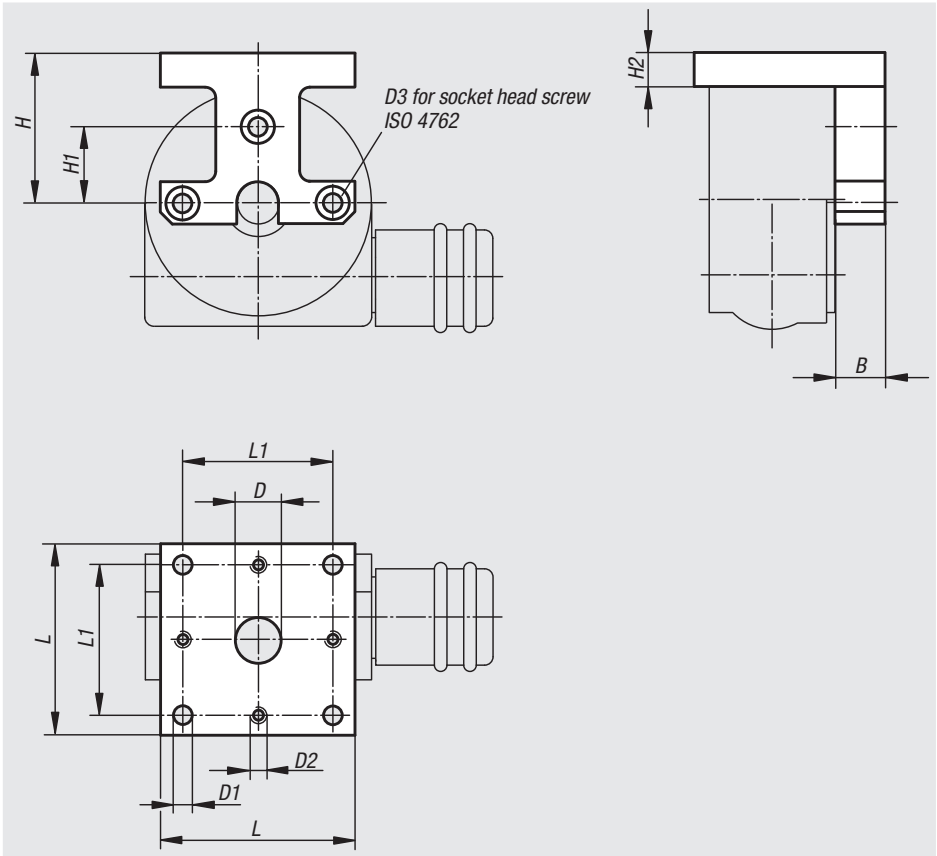


Material:
Aluminium alloy

Version:
Milled and anodized

Sample order:
nlm 21162-04

Note:
The swivelling angle is assembled at the positioning round table and hence offers enhanced possibilities for assembly.
Suitable for 21160 in the respective size.



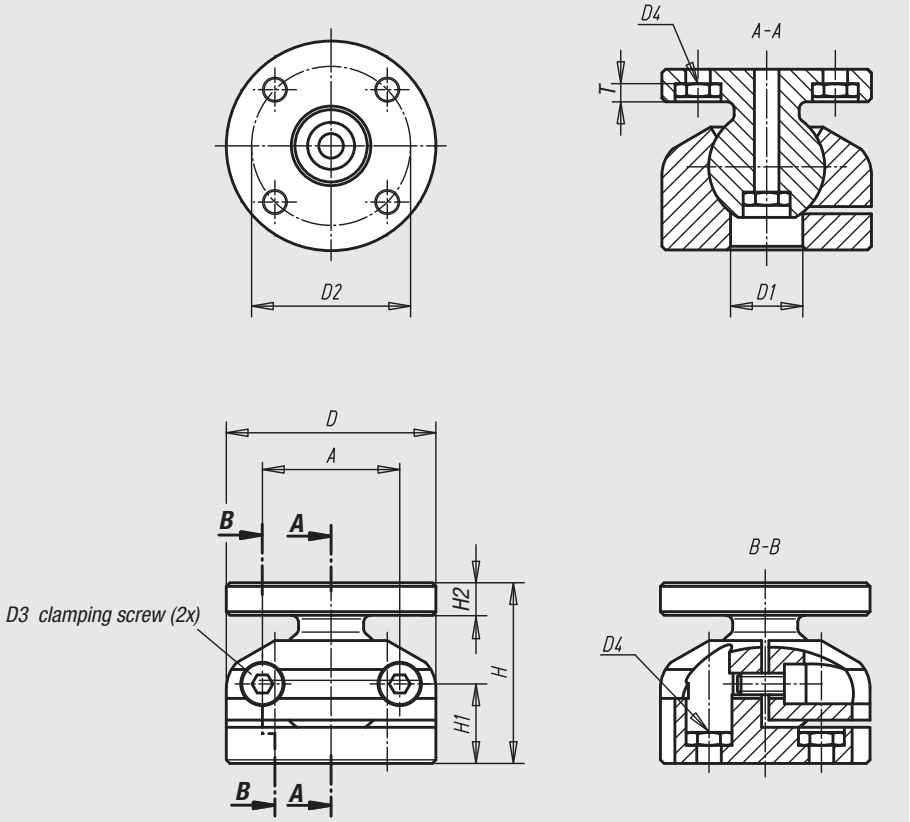
Order No.	B	D	D1	D2	D3	H	H1	H2	L	L1	Approx. weight kg
21162-04	7	6	3,3	M3	M3	22	11	6	29	22	0,017
21162-08	12	11	4,5	M4	M4	36	18	8	46	36	0,064
21162-12	20	16	6,5	M6	M6	51	30	10	75	60	0,237
21162-25	25	40	11	M10	M10	98	65	20	150	130	1,746

Swiveling tables inclination 30°

Material, version:
Anodized aluminium alloy

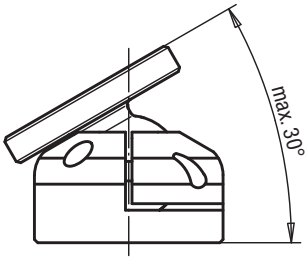
Sample order:
nlm 21170-12

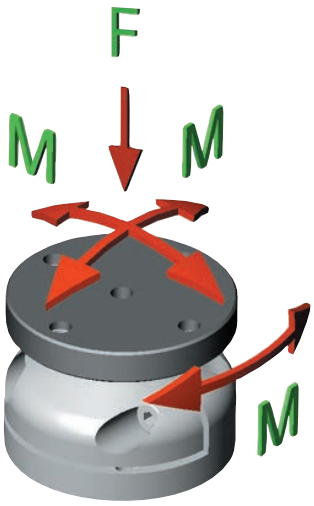
Note:
Suitable for 21100, 21102, 21120, 21122, 21150, 21160, 21162 and 21180.



all (9x) counterbores to DIN 974-1 (D4),
all (9x) nuts DIN 934 M (D4)

The nuts can be removed and replaced with hexagon socket screws. So both mounting variations are possible.





Order No.	A	D	D1	D2	D3	D4	H	H1	H2	T	F N	M Nm	Tightening torque of clamping screws (Nm)	Approx. weight kg
21170-04	19	29	10	22	M3	3	25	11	5,5	3,5	300	3	1,11	0,040
21170-08	30	46	13	36	M4	4	35	15,5	7	4,5	700	8	2,55	0,120
21170-12	46	75	24	60	M6	6	54	23	11	6,6	2200	30	8,6	0,410
21170-25	92	150	40	130	M10	10	105	49	20	11	9000	150	42	3,500

21180

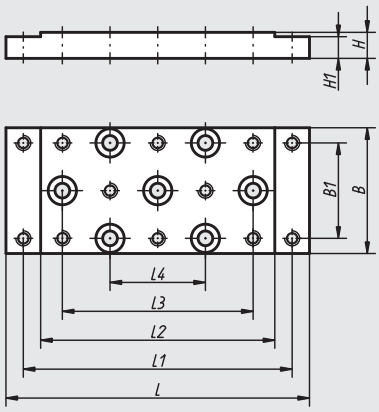
Base plates

Material, version:
Anodized aluminium alloy

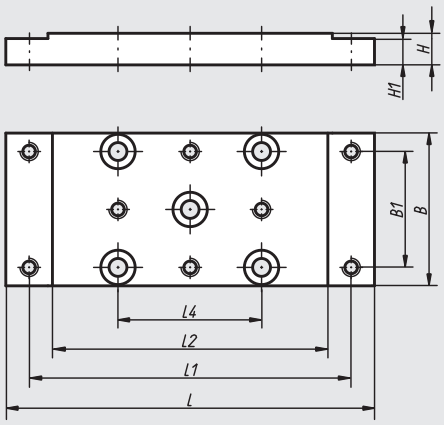
Sample order:
nlm 21180-04

Note:
Suitable for 21100, 21102, 21120, 21122, 21150, 21160, 21162 and 21190 in the respective size.

21180-04 to 21180-12



21180-25



all counterbores to DIN 974-1 (D),
all threads M (D)

Order No.	B	B1	D	H	H1	L	L1	L2	L3	L4	Approx. weight kg
21180-04	29	22	3	6	5	70	62	54	44	22	0,027
21180-08	46	36	4	8	6	120	108	96	72	36	0,103
21180-12	75	60	6	12	10	180	165	150	120	60	0,410
21180-25	150	130	10	20	18	290	265	240	-	130	2,180

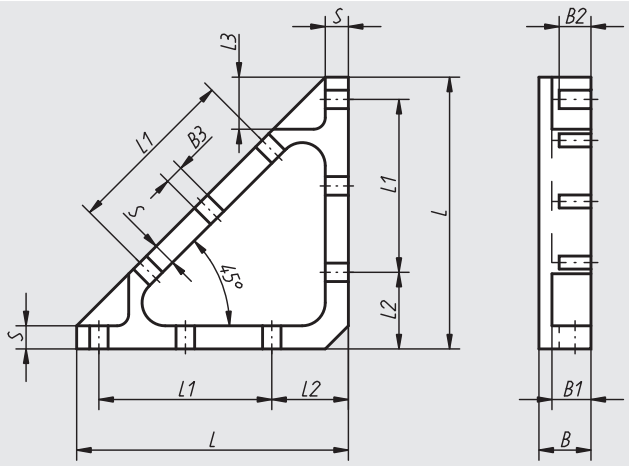
21190

Angle plates

Material, version:
Milled anodized aluminium alloy

Sample order:
nlm 21190-04

Note:
Suitable for 21100, 21102, 21120, 21122, 21150, 21160, 21162 and 21180 in the respective size.



Order No.	B	B1	B2	B3	L	L1	L2	L3	S	Approx. weight kg
21190-04	8	6	4,5	3,3	40	22	14,5	8	3	0,010
21190-08	12	10	8	4,5	58	36	17	11	4	0,025
21190-12	18	13,5	10,8	6,6	94	60	26,5	17,5	8	0,126
21190-25	25	20	15,5	11	180	130	35	31	15	0,591

Technical data for sliding guides

Eccentric forces
The following recommendations are to be heeded for the successful use of maintenance-free DryLin® linear bearings.

A greater drive force is to be expected as a result of the friction value, which is higher in comparison with ball-bearing guides. The greatest possible gaps between bearings on a rail and lowest possible torque stress due to the drive and earth have a positive effect on the running and wear properties of the guide.

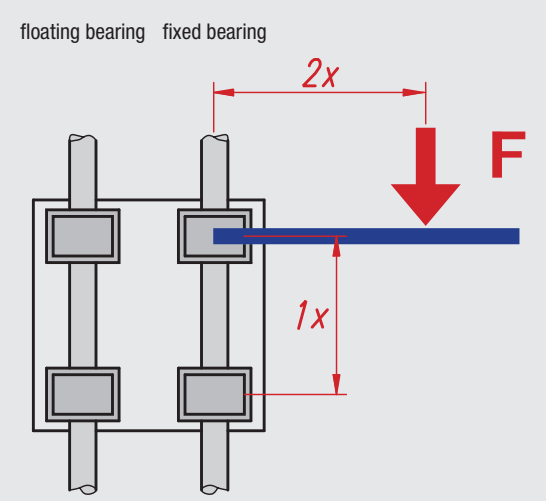
Quiet running
Plastic bearings, which run on ground shafts or profiled rails, hardly cause any noise. Contrary to conventional ball-bearing guides, the noise level does not increase as the speed increases.

Design notes:
When using system with two parallel rails, one side must be designed as the floating bearing. For every fitting position, whether horizontal, vertical or lateral, there is the correct fixed-floating bearing solution. This method of fitting prevents difficulty of access or jamming of the guide in the case of differences in the parallel between the rails.

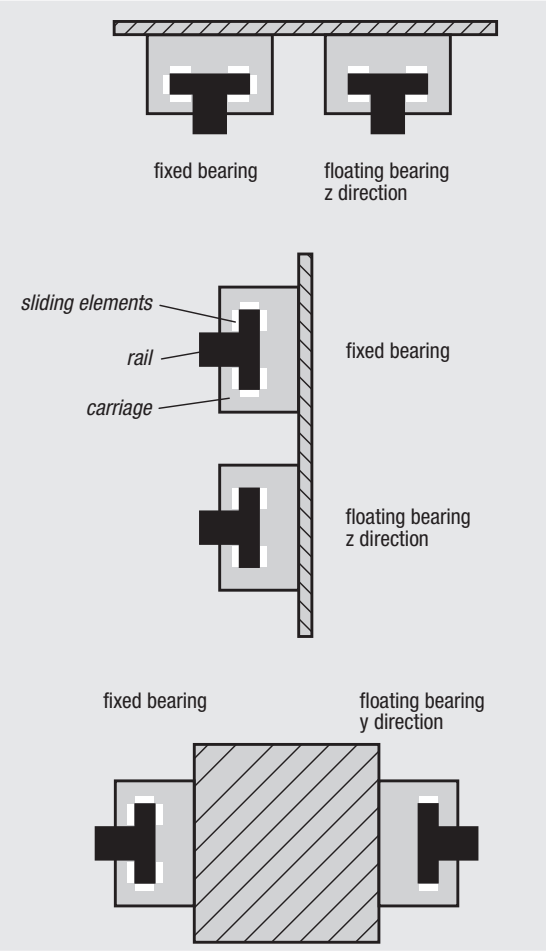
The floating bearing is produced by removing the statically attuned sliding elements. Therefore an additional degree of freedom occurs on a rail in the direction of the expected error in parallel.

In the case of a fixed-floating bearing errors in parallel between the mounted rails can be compensated up to a maximum range of 0.5 mm. When fitting them, ensure that the floating bearing has an equal amount of play in both directions. You can see the layout of the fixed floating bearing system we recommend from the adjacent images.

The connection surfaces for the rails and guide carriage should have a good evenness (e.g. milled surface), in order to avoid warping in the system. Small amounts of unevenness in the connection surfaces can be individually compensated up to a certain dimension (0.5 mm), by increasing the play. Adjusting the play is only effective in the unstressed state.



The 2:1 Rule
If the 2:1 rule is not followed when using linear slider bearings, uneven movements may occur or the system may even jam. Help can often be provided by relatively easy changes. The principle does not depend on the stress or the drive force. It is a product of friction and always relates to the fixed bearing. The farther away the drive is from the guide bearing, the greater will be the wear and the drive force required. If the distance between the driving force and the fixed bearing is more than double the distance between the bearings (2:1 rule), the guide will jam in theory at coefficient of adhesion of 0.25.



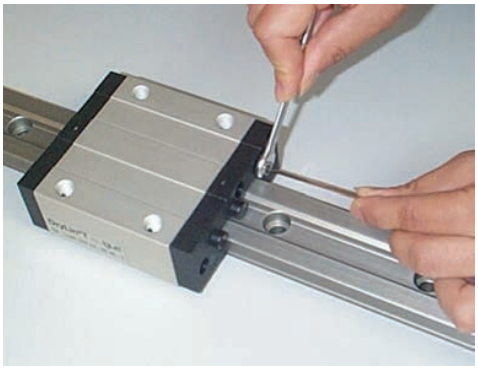
Horizontal variant with the floating bearing in the z-direction

Lateral variant with the floating bearing in the z-direction

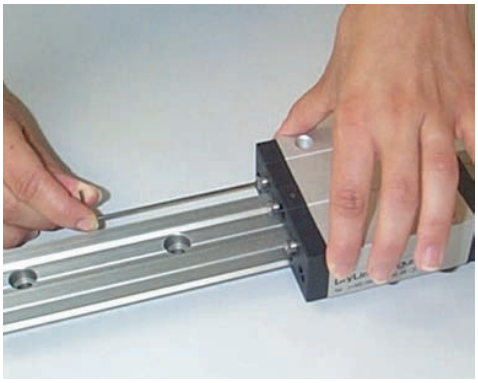
Horizontal variant with lateral positioned guide carriage and floating bearing in the y-direction

Technical data for sliding guides

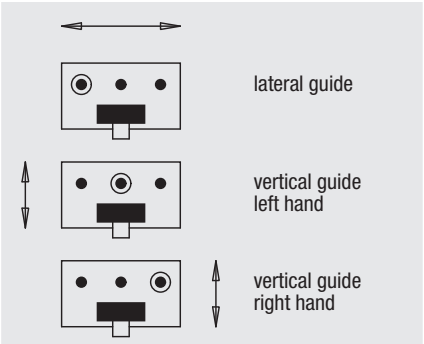
DryLin® T - play adjustment
DryLin a minimum amount of play between the slide and rail. They are supplied ready to use with the play pre-set. If you have special requirements please state whether you require a particularly small or particularly large amount of play. The play in the bearing of the guide slidings can be adjusted later if necessary. This should always be done without additional load.

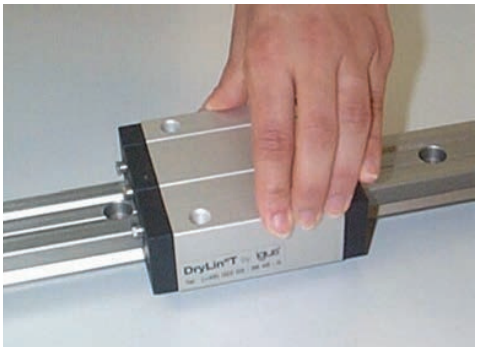


1. Loosen the counter-nuts after removing the protective caps.
   Spanner size:
   SS 5 for standard 21200-15..
   SS 5 for standard 21200-20..
   SS 7 for standard 21200-25..
   SS 7 for standard 21200-30..

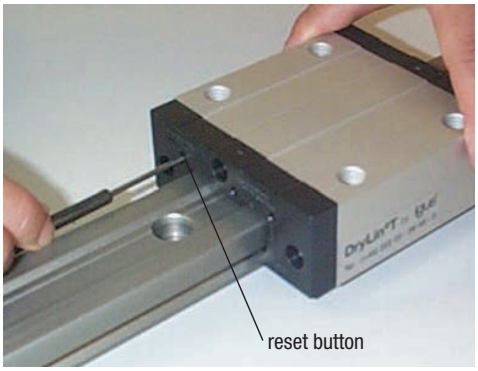


2. Readjust the bearing play for the three guide points with an Allan key.
   Spanner size:
   1.5 mm for standard 21200-15..
   1.5 mm for standard 21200-20..
   2.0 mm for standard 21200-25..
   2.0 mm for standard 21200-30..



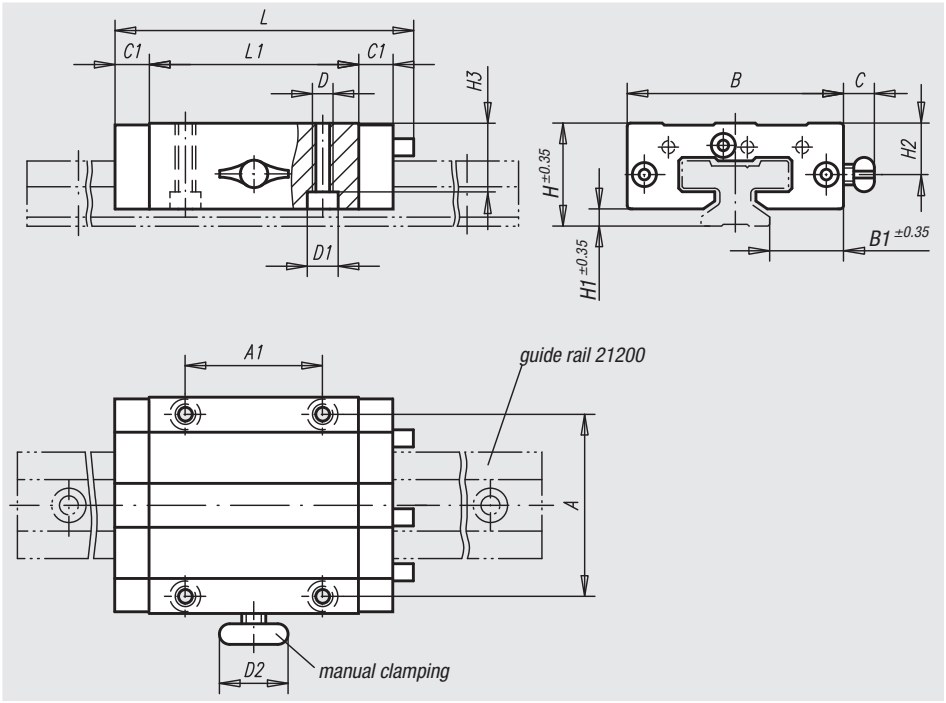


3. Check the play in the guide slidings after adjustment. If it is sufficient, tighten the counter-nuts and replace the protective caps.



4. If the play has been set too narrow so that the guide sliding jams, it is not enough just to return the Allan bolt to its previous position. After screwing it back, press the reset button on the side opposite the bolt in order to release the sliding elements again. To do this, use a pin of the following size:
   2.5 mm for standard 21200-15..
   2.5 mm for standard 21200-20..
   3.0 mm for standard 21200-25..
   3.0 mm for standard 21200-30..

Carriages DryLin® T

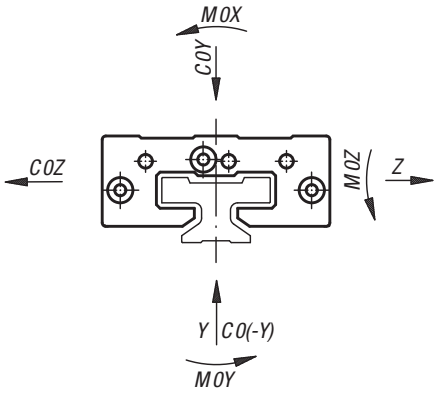


Material:
Sliding carriage: Base structure in extruded section, aluminium EN AW-6060.
Sliding elements: Maintenance free plain bearing iglidur® J.
Cap: Thermoplastic

Version:
Eloxal-coated E6/EV1. Black thermoplastic

Sample order:
nlm 21200-1500

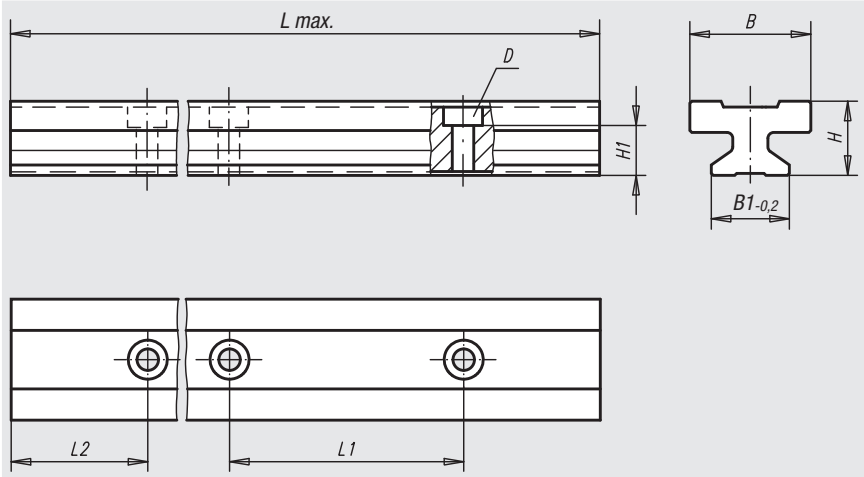
Note:
With a low rate of inerita, high accelerations and short term extreme speeds up to 30 m/s are possible. DryLin® T linear slider guides are resistant to dirt and corrosion. They are maintenance-free, adjustable and quiet.
Application temperature max. 80 °C.
Recommended for use in food, medical, and clean room technologies, since no lubricants are present.
Manual clamping was developed for simple functions. A clamped polymer has a tendency to creep, which causes a decrease in clamping force over time (up to 70%). Therefore, applications for DryLin® T with clamp are restricted.
Suitable Guide Rails see 21200.



Order No. fixed bearing standard	Order No. fixed bearing with manual clamping	Order No. floating bearing in y direction	Order No. floating bearing in z direction	Size	C0Y kN	C0(-Y) kN	C0Z kN	M0X Nm	M0Y Nm	M0Z Nm	A	A1	B	B1
21200-1500	21200-1510	21200-1520	21200-1530	15	4	4	2	32	25	25	38	30	47	16
21200-2000	21200-2010	21200-2020	21200-2030	20	7,4	7,4	3,7	85	45	45	53	40	63	21,5
21200-2500	21200-2510	21200-2520	21200-2530	25	10	10	5	125	65	65	57	45	70	23,5
21200-3000	21200-3010	21200-3020	21200-3030	30	14	14	7	200	100	100	72	52	90	31

Order No. fixed bearing standard	Order No. fixed bearing with manual clamping	Order No. floating bearing in y direction	Order No. floating bearing in z direction	C	C1	D	D1 for screw to DIN 912	D2	H	H1	H2	H3	L	L1	Thread of the hand-operated clamp	Approx. weight kg
21200-1500	21200-1510	21200-1520	21200-1530	-/19/-/-	9	M5	M4	-/20/-/-	24	4	-/11,5/-/-	16	74	50	-/M6/-/-	0,110
21200-2000	21200-2010	21200-2020	21200-2030	-/18/-/-	10	M6	M5	-/28/-/-	30	5	-/15/-/-	19,8	87	61	-/M8/-/-	0,190
21200-2500	21200-2510	21200-2520	21200-2530	-/17/-/-	11	M8	M6	-/28/-/-	36	5	-/19/-/-	24,8	96	68	-/M8/-/-	0,290
21200-3000	21200-3010	21200-3020	21200-3030	-/20/-/-	12	M10	M8	-/28/-/-	42	6,5	-/21,5/-/-	27	109	79	-/M8/-/-	0,500

Guide rails DryLin® T



Material:
Extruded section, aluminium EN AW-6060.

Version:
Hard anodized aluminium, 50 µm. Hardness 500 HV.

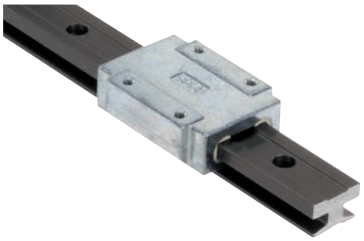
Sample order:
nlm 21200-1530X3960 (L max.)
21200-1520X500 (per customer request: guide rail size 15)
** please indicate dimension L2 = 20 mm
* please indicate dimension L = 500 mm
L2 and L dimensions can only be stated in complete mm.

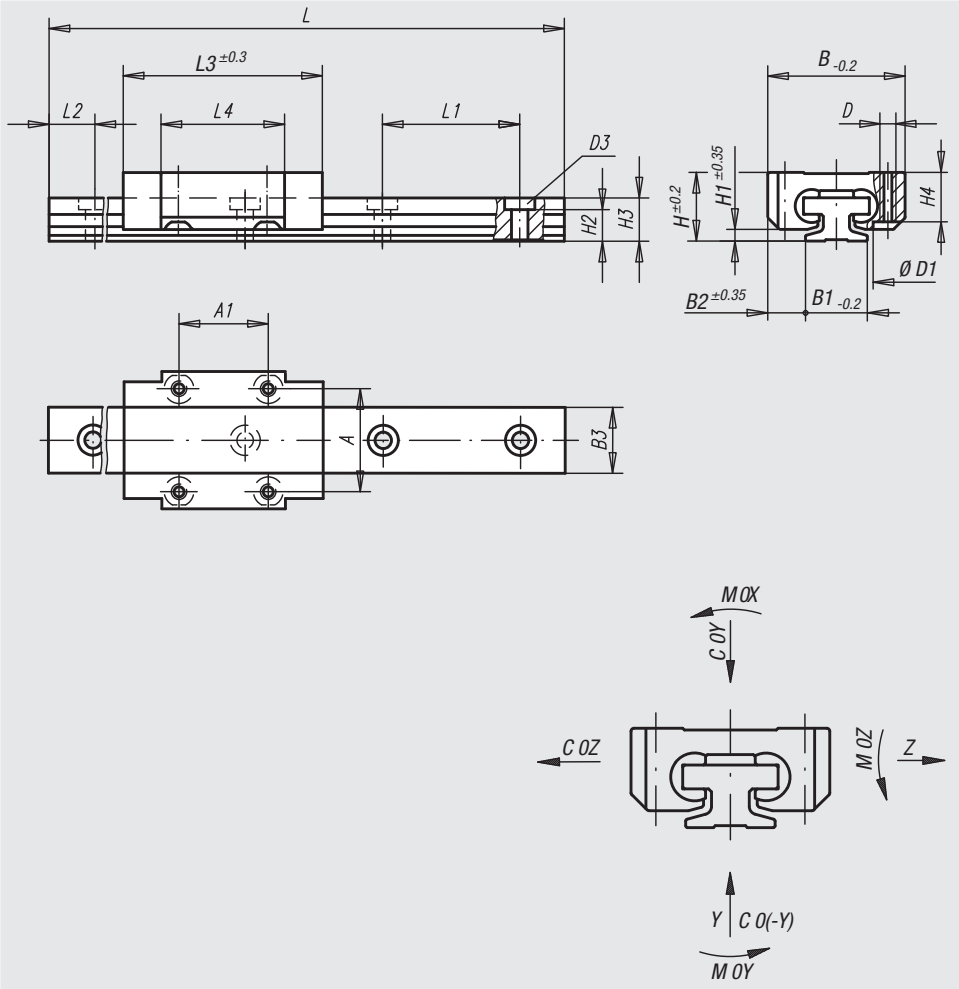
Note:
The aluminium guide rail has good thermal conductivity and importantly heats only at continuously very high speeds.

Order No.	Version	Size	L max.	L2	B	B1	D for screw DIN 912	H	H1	L1	Approx. weight kg/m
21200-1530X3960	L max.	15	3960	30	22	15	M4	15,5	10	60	0,600
21200-2030X3960	L max.	20	3960	30	31	20	M5	19	12,3	60	1,000
21200-2530X3960	L max.	25	3960	30	34	23	M6	21,5	13,8	60	1,300
21200-3020X3960	L max.	30	3960	20	40	28	M8	26	15,8	80	1,900

Order No.	Version	Size	L max.	L	L2	L2 min.	L2 max.	B	B1	D for screw DIN 912	H	H1	L1	Approx. weight kg/m
21200-15X***	L2 and L customer specific	15	3960	*	**	20	49	22	15	M4	15,5	10	60	0,600
21200-20X***	L2 and L customer specific	20	3960	*	**	20	49	31	20	M5	19	12,3	60	1,000
21200-25X***	L2 and L customer specific	25	3960	*	**	20	49	34	23	M6	21,5	13,8	60	1,300
21200-30X***	L2 and L customer specific	30	3960	*	**	20	49	40	28	M8	26	15,8	60	1,900

Miniature linear guide system DryLin® T





Material:
Sliding carriage: Base structure in die cast zinc. Sliding elements: Maintenance free plain bearing iglidur® J.
Guide rail in extruded section, aluminium EN AW-6060

Version:
Hard anodized aluminium, 50 µm.
Hardness 500 HV.

Sample order:
nlm 21210-0900 (Carriages)

Ordering example guide rail:
nlm 21210-1212X0800 (L max.)
nlm 21210-1512X500 (per customer request: guide rail size 15)
** please indicate dimension L2 = 12 mm
* please indicate dimension L = 500 mm
L2 and L dimensions can only be stated in complete mm.

Note:
Due to their ability to run dry and their resistance to corrosion, miniature linear guides are completely maintenance-free. The slider components in iglidur® J are wear-resistant and replaceable. Can be use in a temperature range up to max. 80 °C. The small dimensions are a major advantage of these miniature linear guides.

Miniature linear guide system DryLin® T

Carriages

Order No. fixed bearing standard	Order No. floating bearing in y direction	Order No. floating bearing in z direction	Size	C0Y N	C0(-Y) N	C0Z N	M0X Nm	M0Y Nm	M0Z Nm
21210-0900	**21210-0920**	**21210-0930**	09	480	480	240	3,4	1,8	1,8
21210-1200	**21210-1220**	**21210-1230**	12	960	960	480	9,2	4,4	4,4
21210-1500	**21210-1520**	**21210-1530**	15	1400	1400	700	17	8	8

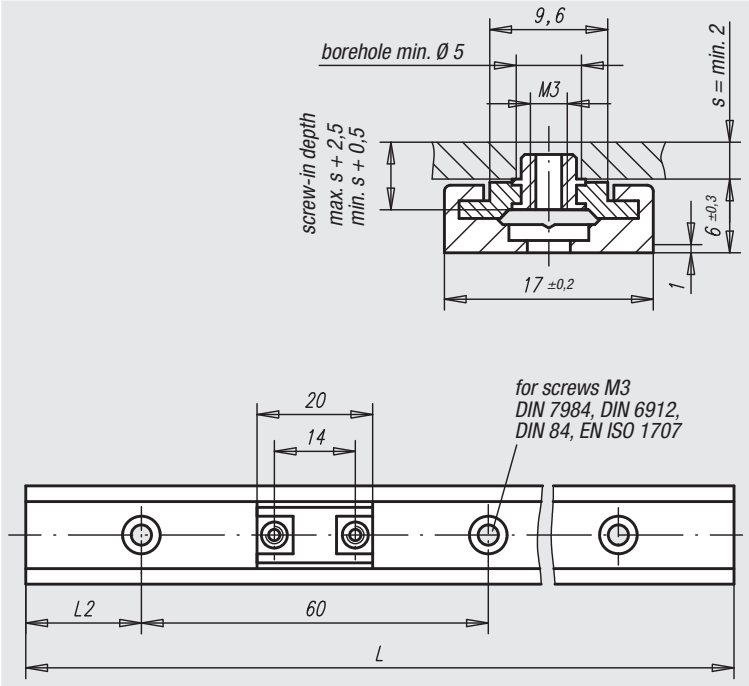
Order No. fixed bearing standard	Order No. floating bearing in y direction	Order No. floating bearing in z direction	Size	A	A1	B	B2	D	D1	H	H1	H4	L3	L4	Approx. weight kg
21210-0900	**21210-0920**	**21210-0930**	09	15	13	20	5,5	M2	4,4	10	1,7	7,2	29	18	0,017
21210-1200	**21210-1220**	**21210-1230**	12	20	15	27	7,5	M3	6,5	13	2,2	9,5	34	22	0,034
21210-1500	**21210-1520**	**21210-1530**	15	25	20	32	8,5	M3	6,5	16	2,8	11	42	31	0,061

Guide rails

Order No.	Version	Size	L max.	L2	B1	B3	D3 for screw to DIN 912	H2	H3	L1	Approx. weight kg/m
21210-0910X0800	L max.	09	800	10	9	9,6	M2	4,6	6,3	20	0,110
21210-1212X0800	L max.	12	800	12,5	12	13	M3	5,9	8,6	25	0,200
21210-1520X3000	L max.	15	3000	20	15	17	M3	7	10,8	40	0,330

Order No.	Version	Size	L	L2	L2 min.	L2 max.	B1	B3	D3 for screw to DIN 912	H2	H3	L1	Approx. weight kg/m
21210-09X***	L2 and L customer specific	9	*	**	5	14,5	6	9,6	M2	4,6	6,3	20	0,110
21210-12X***	L2 and L customer specific	12	*	**	5	19,5	12	13	M3	5,9	8,6	25	0,200
21210-15X***	L2 and L customer specific	15	*	**	10	29,5	15	17	M3	7	10,8	40	0,330

Low profile linear guide systems DryLin® N



Material:
Base of the car: slider-bearing zinc iglidur® J;
rails of anodized aluminium

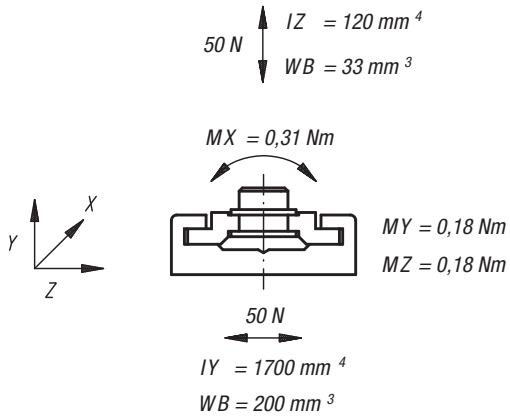
Version:
Guide rail natural colour anodized. Fixation thread of the guide car in brass

Sample order:
nlm 21320-1700 (Guide car, fixed bearing)

Ordering example guide rail:
nlm 21230-1720X1960 (L max.)
21230-1720X500 (per customer request: guide rail)
** please indicate dimension L2 = 20 mm
* please indicate dimension L = 500 mm
L2 and L dimensions can only be stated in complete mm.

Note:
Low-profile miniature guide systems are maintenance-free and corrosion-resistant. Very high speeds and accelerations are possible as a result of their low weight. Can be used in a temperature range of up to 80 °C.
Low-profile guide systems are insensitive to dust and are ideally suited to running dry.

static load capacity and geometrical moment of inertia



Carriage

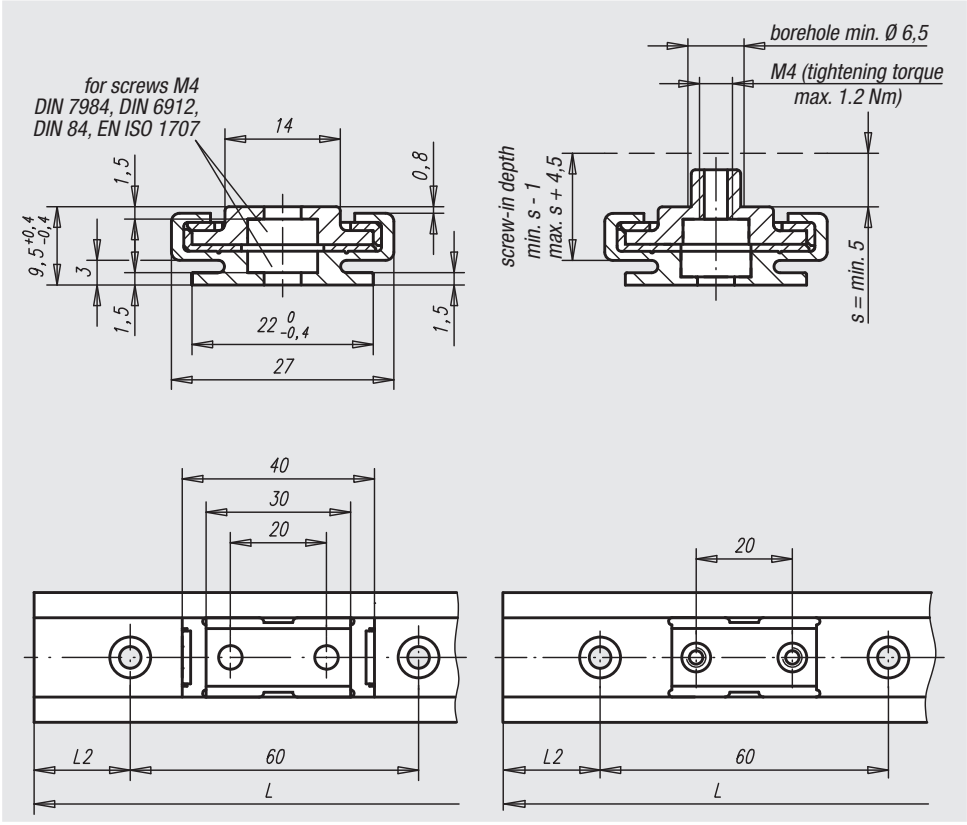
Order No.	Version	Approx. weight g guide car
21230-1700	fixed bearing	1,7
21230-1710	floating bearing	1,7

Guide rails

Order No.	Version	L max.	L2	Approx. weight g/m guide rail
21230-1720X1960	L max.	1960	20	150

Order No.	Version	L2	L2 min.	L2 max.	Approx. weight g/m guide rail
21230-17X***	L2 and L customer specific	**	20	49	150

Low profile linear guide systems DryLin® N



Material:
Carriage base: zinc; plastic slider bearing: iglidur® J.
Rails: anodized aluminium

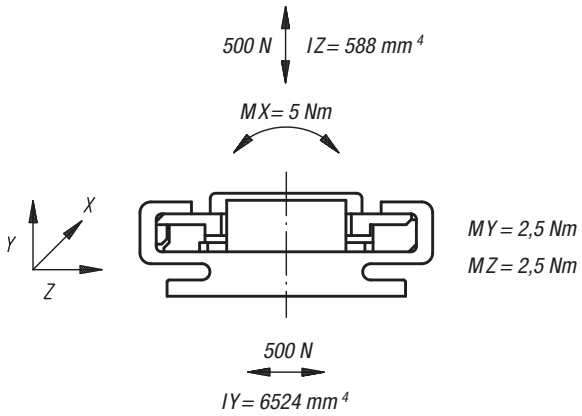
Version:
Base structure chromated. Guide rail anodized natural.

Sample order:
nlm 21320-2700 (guide carriage with transit hole, fixed bearing)

Ordering example guide rail:
nlm 21230-2730X3000 (L max.)
21230-2730X1000 (per customer request: guide rail)
** please indicate dimension L2 = 30 mm
* please indicate dimension L = 1000 mm
L2 and L dimensions can only be stated in complete mm.

Note:
Low-profile miniature guide systems are maintenance-free and corrosion-resistant. Very high speeds and accelerations are possible as a result of their low weight. Can be used in a temperature range of up to 80 °C.
Low-profile guide systems are insensitive to dust and are ideally suited to running dry.

static load capacity and geometrical moment of inertia



Carriage

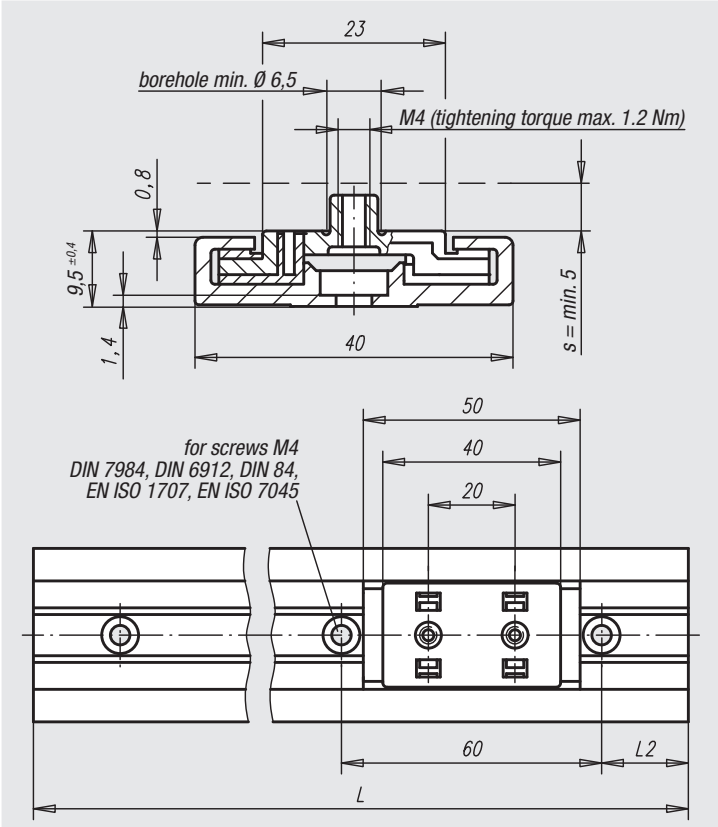
Order No. fixed bearing	Order No. floating bearing	Version	Approx. weight g guide car
21230-2700	**21230-2701**	Carriages with through hole	10,8
21230-2710	**21230-2711**	Carriages with threaded hole	12,5

Guide rails

Order No.	Version	L max.	L2	Approx. weight g/m guide rail
21230-2730X3000	L max.	3000	30	290

Order No.	Version	L2	L2 min.	L2 max.	Approx. weight g/m guide rail
21230-27X***	L2 and L customer specific	**	20	49	290

Low profile linear guide systems DryLin® N



Material:
Sliding carriage: Base structure in die cast zink. Sliding elements: Maintenance free plain bearing iglidur® J.
Linear guide in extruded anodized aluminium.

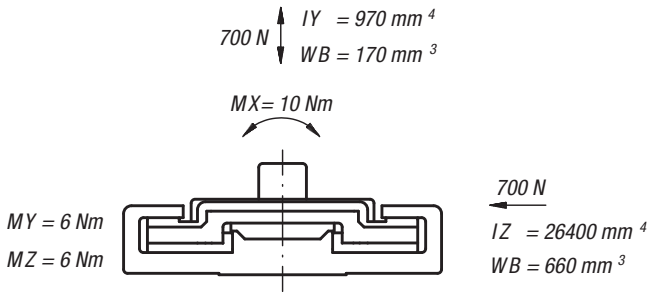
Version:
Base structure chromated. Guide rail anodized natural.

Sample order:
nlm 21230-4000 (carriage, fixed bearing)

Ordering example guide rail:
nlm 21230-4030X3000 (L max.)
21230-4030X1000 (per customer request: guide rail)
** please indicate dimension L2 = 30 mm
* please indicate dimension L = 1000 mm
L2 and L dimensions can only be stated in complete mm.

Note:
Low-profile miniature guide systems are maintenance-free and corrosion-resistant. Very high speeds and accelerations are possible as a result of their low weight. Can be used in a temperature range of up to 80 °C.
Low-profile guide systems are insensitive to dust and are ideally suited to running dry.

static load capacity and geometrical moment of inertia



Carriage

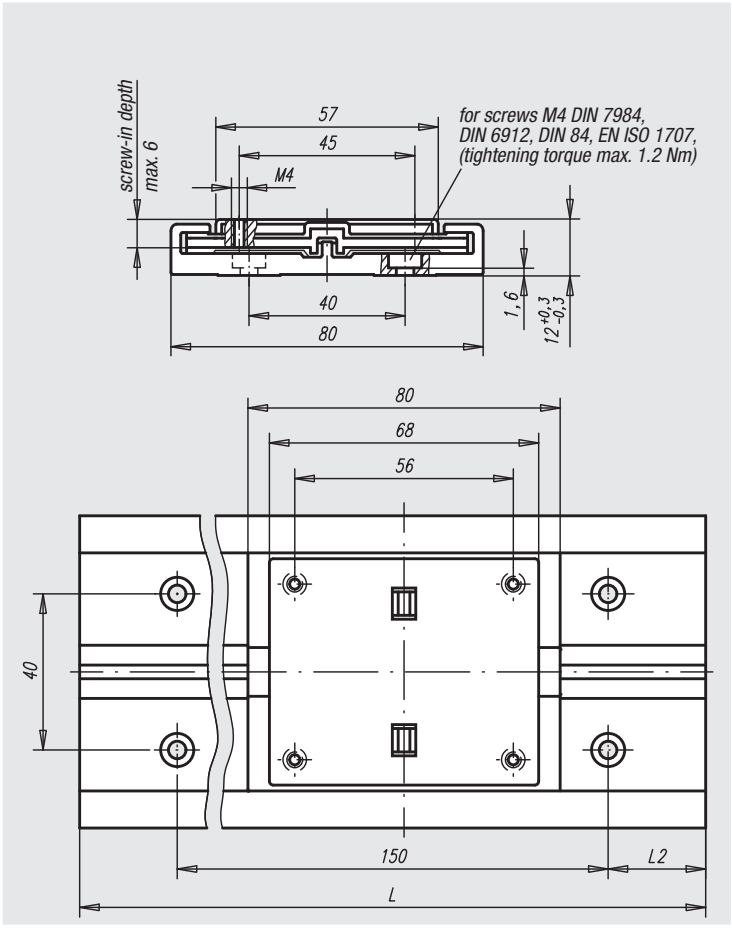
Order No.	Version	Approx. weight g guide car
21230-4000	fixed bearing	30
21230-4010	floating bearing	30

Guide rails

Order No.	Version	L max.	L2	L2 min.	L2 max.	Approx. weight g/m guide rail
21230-4030X3000	L max.	3000	30	-	-	450

Order No.	Version	L2	L2 min.	L2 max.	Approx. weight g/m guide rail
21230-40X***	L2 and L customer specific	**	20	49	450

Low profile linear guide systems DryLin® N



Material:
Sliding carriage: Base structure in die cast zink. Sliding elements: Maintenance free plain bearing iglidur® J.
Linear guide in extruded anodized aluminium.

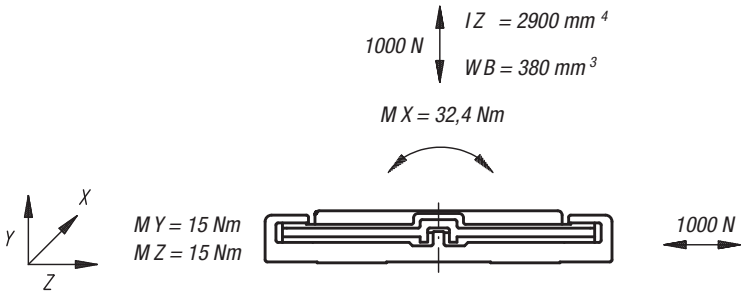
Version:
Base structure chromated. Guide rail anodized natural.

Sample order:
nlm 21230-8000 (Carriage, Fixed Bearing)

Ordering example guide rail:
nlm 21230-8030X3960 (L max.)
21230-8030X1000 (per customer request: guide rail)
** please indicate dimension L2 = 30 mm
* please indicate dimension L = 1000 mm
L2 and L dimensions can only be stated in complete mm.

Note:
Low-profile miniature guide systems are maintenance-free and corrosion-resistant. Very high speeds and accelerations are possible as a result of their low weight. Can be used in a temperature range of up to 80 °C.
Low-profile guide systems are insensitive to dust and are ideally suited to running dry.

static load capacity and geometrical moment of inertia



Carriage

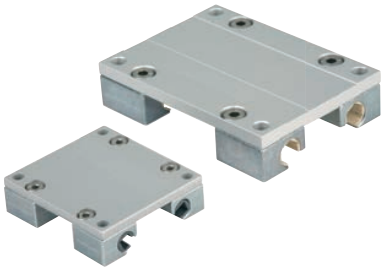
Order No.	Version	Approx. weight g guide car
21230-8000	fixed bearing	100
21230-8010	floating bearing	100

Guide rails

Order No.	Version	L max.	L2	Approx. weight g/m guide rail
21230-8030X3960	L max.	3960	30	1140

Order No.	Version	L2	L2 min.	L2 max.	Approx. weight g/m guide rail
21230-80X***	L2 and L customer specific	**	25	100	1140

Carriages DryLin® W



Material:
Sliding carriage in die cast zinc;
mounting plate in aluminium;
plain bearing in iglidur® J

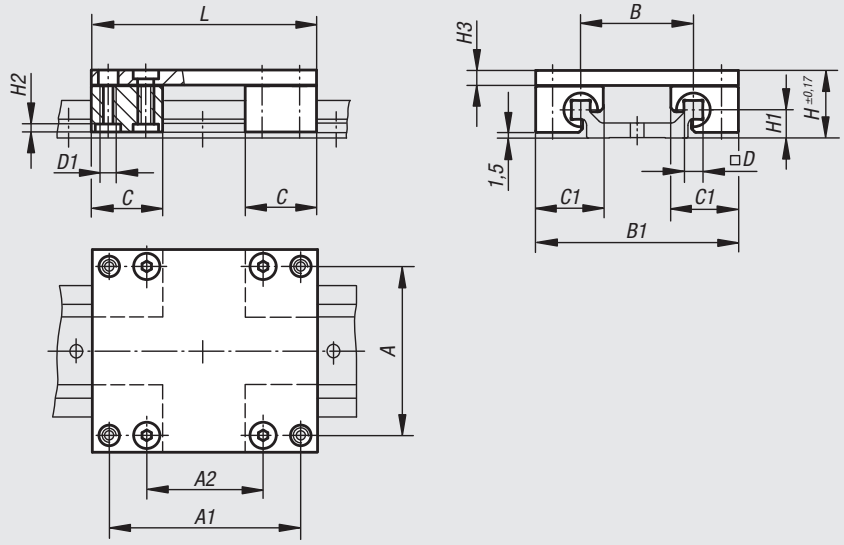
Version:
Sliding carriage chromated;
mounting plate anodized

Sample order:
nlm 21240-0600060

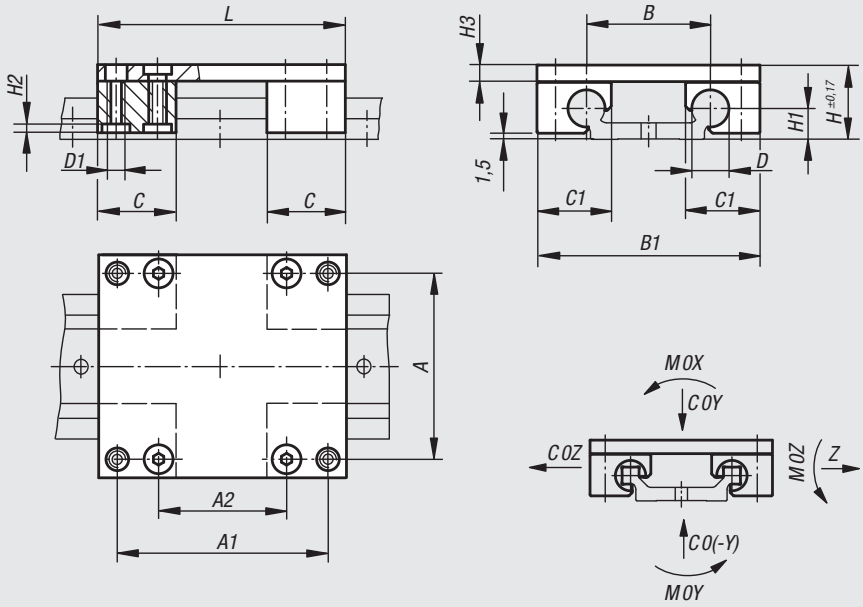
Note:
DryLin® W carriages are maintenance-free and corrosion-resistant. Lacking the need of lubrication makes the system highly dirt resistant. Low friction coefficients in the dry running condition and very quiet run. Owing to the flat and broad design, it is possible to support high torques. Speeds up to 15 m/s.
Can be used in a temperature range of -40 °C up to 90 °C.

Accessory:
Guide rails, dual 21240.

size 06



sizes 10-20



Order No.	Size	A	A1	A2	B	B1	C	C1	D	D1	H	H1	H2	H3	L	C0Y kN	C0(-Y) kN	C0Z kN	M0X Nm	M0Y Nm	M0Z Nm	Approx. weight kg
21240-0600060	06	45	51	31	30	54	19	18	5	M4	18	7,5	2	4	60	1,68	1,68	1,68	25	34	34	0,100
21240-0600080	06	45	71	51	30	54	19	18	5	M4	18	7,5	2	4	80	1,68	1,68	1,68	25	51	51	0,110
21240-0600100	06	45	91	71	30	54	19	18	5	M4	18	7,5	2	4	100	1,68	1,68	1,68	25	68	68	0,120
21240-1000100	10	60	87	55	40	73	29	26	10	M6	24	9	3,5	6	100	4,8	4,8	4,8	96	170	170	0,290
21240-1000150	10	60	137	105	40	73	29	26	10	M6	24	9	3,5	6	150	4,8	4,8	4,8	96	290	290	0,340
21240-1000200	10	60	187	155	40	73	29	26	10	M6	24	9	3,5	6	200	4,8	4,8	4,8	96	410	410	0,400
21240-1600100	16	86	82	46	58	104	36	34,5	16	M8	35	14	4	8	100	8,4	8,4	8,4	240	270	270	0,710
21240-1600150	16	86	132	96	58	104	36	34,5	16	M8	35	14	4	8	150	8,4	8,4	8,4	240	480	480	0,840
21240-1600200	16	86	182	146	58	104	36	34,5	16	M8	35	14	4	8	200	8,4	8,4	8,4	240	690	690	0,970
21240-2000150	20	116	132	78	82	134	45	42,5	20	M8	44	20	4	8	150	12,8	12,8	12,8	525	670	670	1,200
21240-2000200	20	116	182	128	82	134	45	42,5	20	M8	44	20	4	8	200	12,8	12,8	12,8	525	990	990	1,300
21240-2000250	20	116	232	178	82	134	45	42,5	20	M8	44	20	4	8	250	12,8	12,8	12,8	525	1250	1250	1,500

Sliding carriages DryLin® W

Material:
Die cast zinc;
plain bearing in iglidur® J

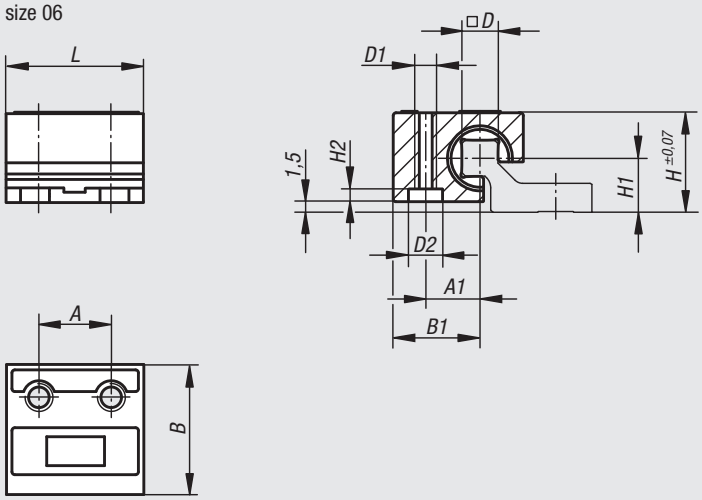
Version:
Chromated

Sample order:
nlm 21240-0600

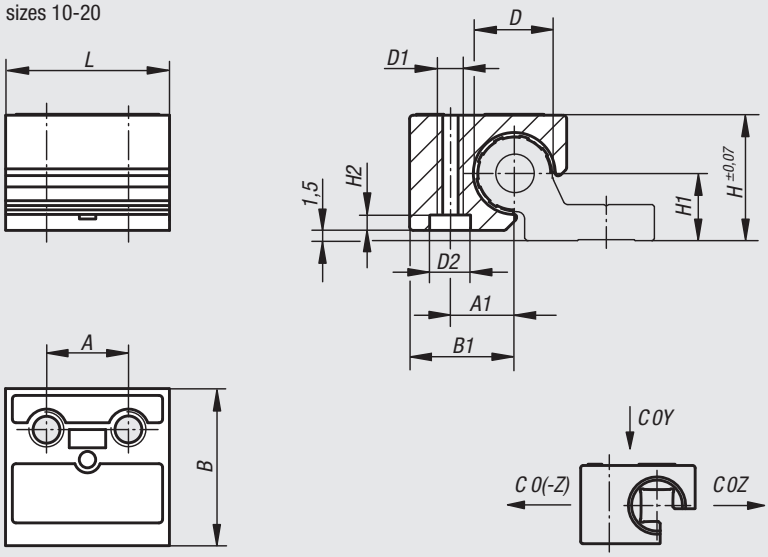
Note:
DryLin® W guide carriages are maintenance-free and corrosion-resistant. Lacking the need of lubrication makes the system highly dirt resistant. Low friction coefficients in the dry running condition and very quiet run. Ideally suited for single or dual guide rails. Speeds up to 15 m/s.
Can be used in a temperature range of -40 °C up to 90 °C.

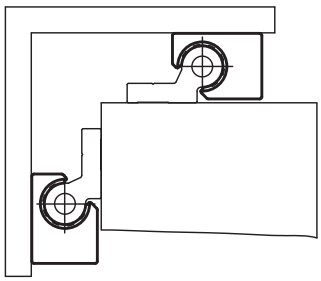
Accessory:
Guide Rails 21240

size 06



sizes 10-20





Order No.	Version	Size	A	A1	B	B1	D	D1	D2	H	H1	H2	L	C0Y kN	C0Z kN	C0(-Z) kN	Approx. weight kg
21240-0600	fixed bearing standard	06	10	7,5	18	12	5	M4	7	14	7,5	2	19	0,42	0,42	0,14	0,016
21240-0620	floating bearing in y direction	06	10	7,5	18	12	5	M4	7	14	7,5	2	19	0,42	0,42	0,14	0,016
21240-0630	floating bearing in z direction	06	10	7,5	18	12	5	M4	7	14	7,5	2	19	0,42	0,42	0,14	0,016
21240-1000	fixed bearing standard	10	16	10	26	16,5	10	M6	9,5	18	9	3,5	29	1,2	1,2	0,25	0,041
21240-1020	floating bearing	10	16	10	26	16,5	10	M6	9,5	18	9	3,5	29	1,2	1,2	0,25	0,041
21240-1600	fixed bearing standard	16	18	14	34,5	23	16	M8	11,5	27	14	4	36	2,1	2,1	0,4	0,100
21240-2000	fixed bearing standard	20	27	17	42,5	26	20	M8	11,5	36	20	4	45	3,2	3,2	0,5	0,190
21240-2020	floating bearing	20	27	17	42,5	26	20	M8	11,5	36	20	4	45	3,2	3,2	0,5	0,190

Guide rails DryLin® W

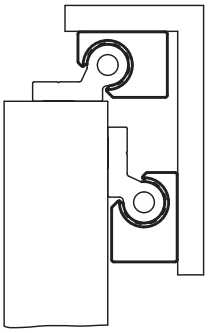
single

Material:
Aluminium

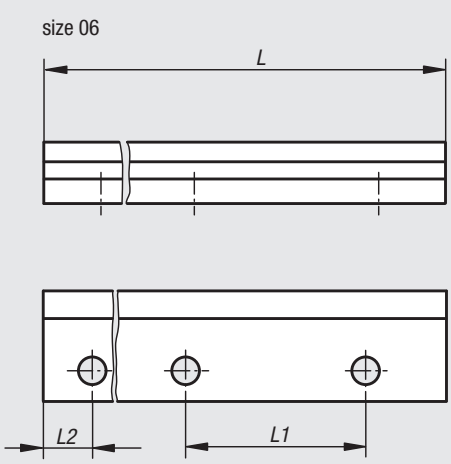
Version:
Hard-anodized, layer thickness 50 µm.
Hardness 500 HV

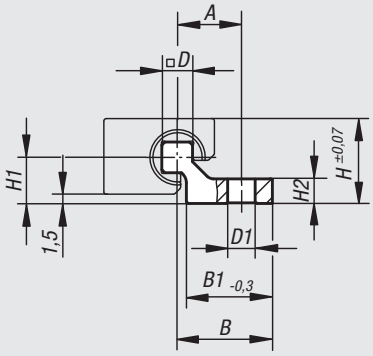
Sample order:
nlm 21240-10630X3000 (L max.)
21240-10620X500 (per customer request: guide rail size 06)
** please indicate dimension L2 = 20 mm
* please indicate dimension L = 500 mm
L2 and L dimensions can only be stated in complete mm.

Note:
The single guide rail enables the highest flexibility during construction, as well as easy mounting. Applicable for the comparison of differences in height. Hard-anodised aluminium is used as the material for the guide rails and makes for best friction and locking results. Robust and dirt resistant, even heavy loads can be transported on them, securely and maintenance free.

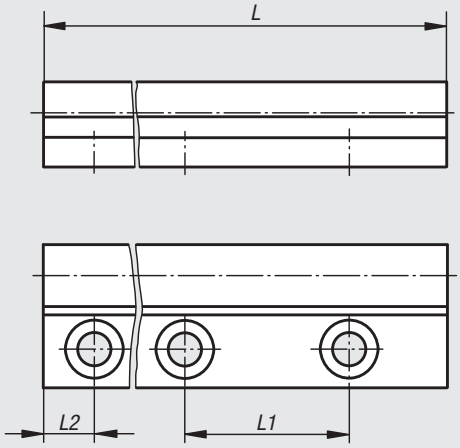


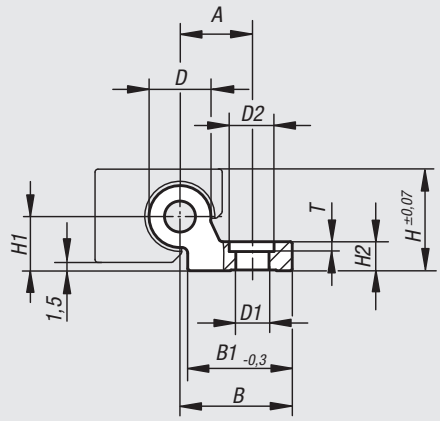
size 06





sizes 10-20



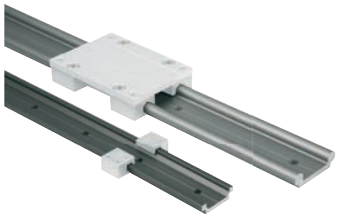


Order No.	Version	Size	L max.	L2	A	B	B1	D	D1	D2	H	H1	H2	L1	T	Approx. weight kg/m
21240-10630X3000	L max.	06	3000	30	10,5	15,5	14	5	4,5	-	14	7,5	4	60	-	0,230
21240-11030X4000	L max.	10	4000	30	17	27	27	10	6,6	-	18	9	5,5	120	-	0,620
21240-11630X4000	L max.	16	4000	30	19	29	27	16	9	15	27	14	7,5	120	4	0,980
21240-12030X4000	L max.	20	4000	30	21	31	27	20	9	15	36	20	9,5	120	5	1,320

Order No.	Version	Size	L max.	L2	L2 min.	L2 max.	A	B	B1	D	D1	D2	H	H1	H2	L1	T	Approx. weight kg/m
21240-106X***	L2 and L customer specific	06	*	**	20	49,5	10,5	15,5	14	5	4,5	-	14	7,5	4	60	-	0,230
21240-110X***	L2 and L per customer request	10	*	**	20	79,5	17	27	27	10	6,6	-	18	9	5,5	120	-	0,620
21240-116X***	L2 and L customer specific	16	*	**	20	79,5	19	29	27	16	9	15	27	14	7,5	120	4	0,980
21240-120X***	L2 and L customer specific	20	*	**	20	79,5	21	31	27	20	9	15	36	20	9,5	120	5	1,320

Guide rails DryLin® W

double

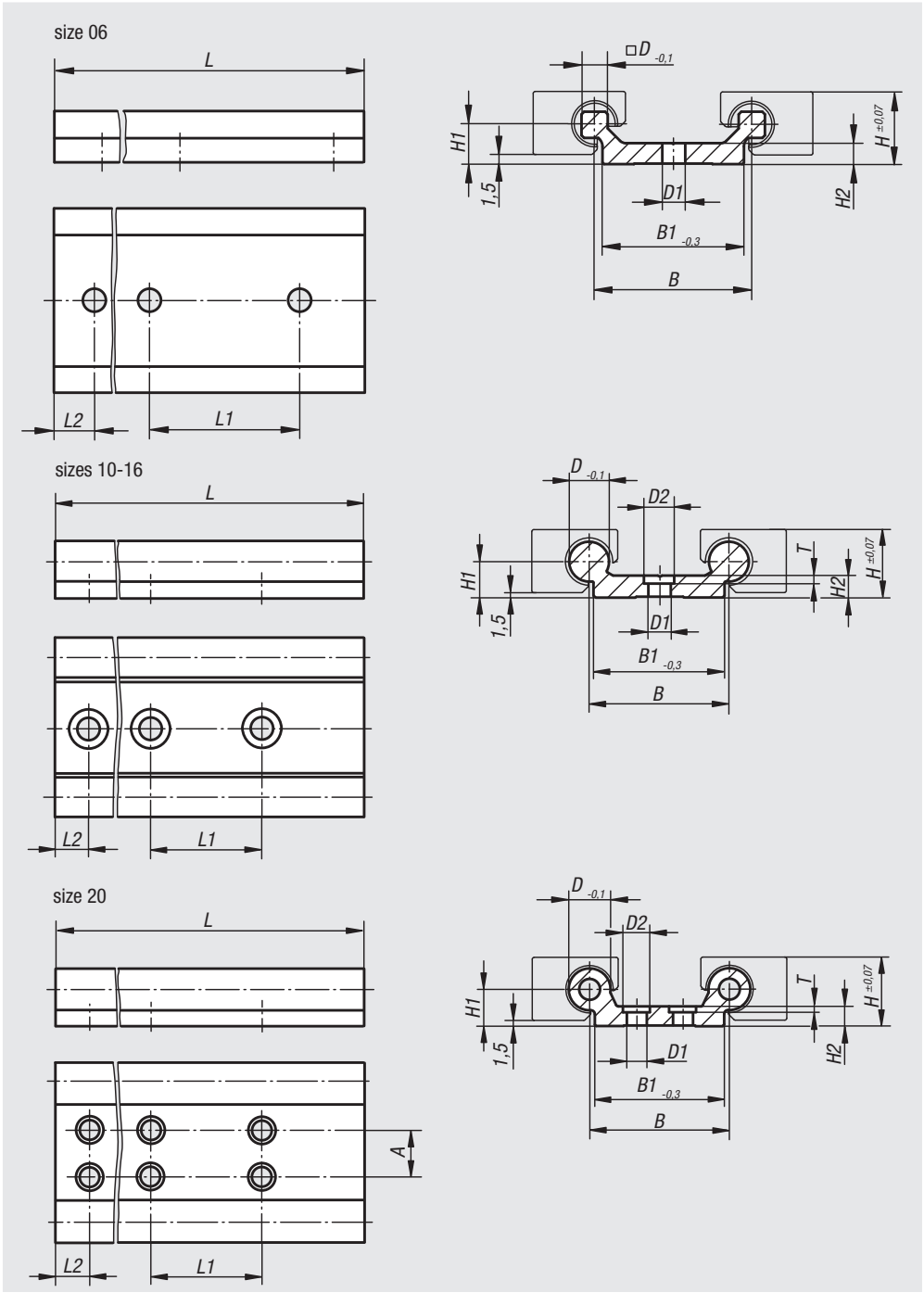


Material:
Aluminium

Version:
Hard-anodized, layer thickness 50 µm.
Hardness 500 HV

Sample order:
nlm 21240-20630X3000 (L max.)
21240-20620X500 (per customer request: guide rail size 06)
** please indicate dimension L2 = 20 mm
* please indicate dimension L = 500 mm
L2 and L dimensions can only be stated in complete mm.

Note:
Extremely flat guide rails with wide guides reaching to the edge for optimal support of high torque. Robust and dirt resistant, even heavy loads can be moved on them, securely and maintenance free.



Order No.	Version	Size	L max.	L2	L2 min.	L2 max.	A	B	B1	D	D1	D2	H	H1	H2	L1	T	Approx. weight kg/m
21240-20630X3000	L max.	06	3000	30	-	-	-	30	27	5	4,5	-	14	7,5	4	60	-	0,450
21240-21030X4000	L max.	10	4000	30	-	-	-	40	40	10	6,6	-	18	9	5,5	120	-	1,000
21240-21630X4000	L max.	16	4000	30	-	-	-	58	54	16	9	15	27	14	7,5	120	4	1,960
21240-22030X4000	L max.	20	4000	30	-	-	40	82	74	20	9	15	36	20	9,5	120	5	3,300
21240-206X***	L2 and L per customer request	06	*	**	20	49,5	-	30	27	5	4,5	-	14	7,5	4	60	-	0,450
21240-210X***	L2 and L customer specific	10	*	**	20	79,5	-	40	40	10	6,6	-	18	9	5,5	120	-	1,000
21240-216X***	L2 and L per customer request	16	*	**	20	79,5	-	58	54	16	9	15	27	14	7,5	120	4	1,960
21240-220X***	L2 and L per customer request	20	*	**	20	79,5	40	82	74	20	9	15	36	20	9,5	120	5	3,300

Roller carriages

compact and heavy-duty version

Material:
Steel

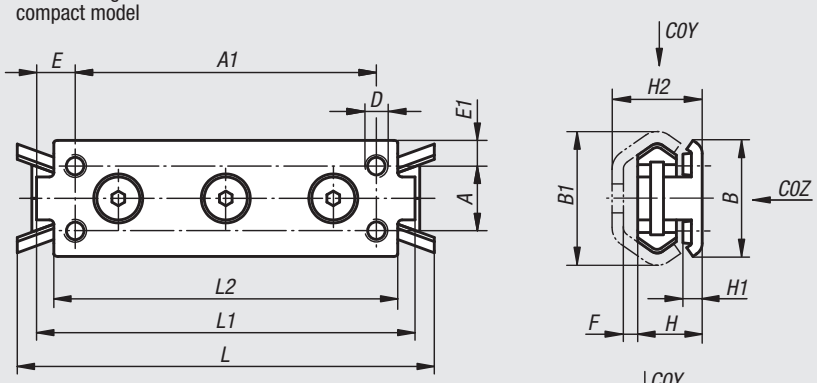
Version:
Galvanized

Sample order:
nlm 21320-120080

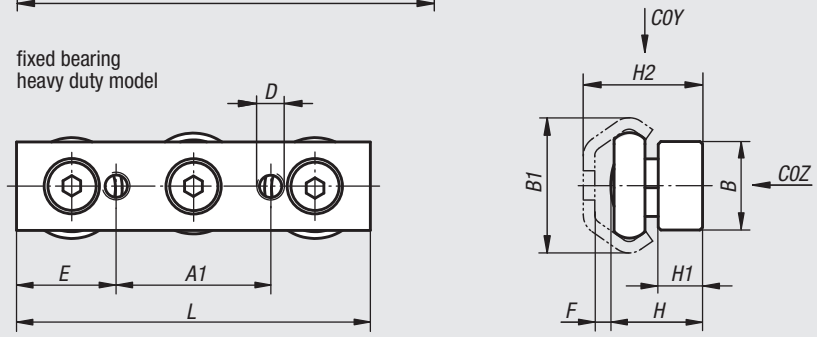
Note:
Roller carriage with low coefficient of friction, therefore very free-running. The roller journals are lifetime-lubricated and have a 2Z (dust cover) seal. By simply moving the centre cam roller, the roller carriage can adjusted to be play-free or under the desired initial tension in the rail. The compact version has a plastic stripper for cleaning the tracks.

Application temperature -30 °C to +120 °C.

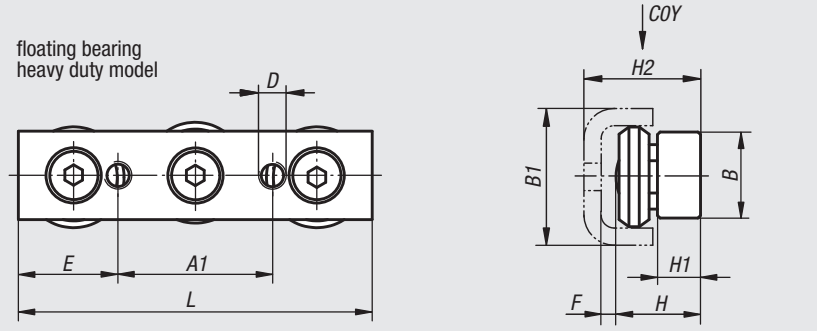
fixed bearing
compact model



fixed bearing
heavy duty model



floating bearing
heavy duty model



Fixed bearing, compact version

Order No.	Size	A	A1	B	B1	D	E	E1	F	H	H1	H2	L	L1	L2	C0Y N	C0Z N	Approx. weight kg
21320-120080	20	-	60	18	19,2	M5	10	9	3	11,5	5,5	16	90	80	71	300	170	0,050
21320-130088	30	15	70	27	29,5	M5	5	6	4	15	4,5	20,5	97	88	80	800	400	0,110
21320-145150	45	23	120	40	46,4	M6	7,5	8,5	5	22	4	31	160	150	135	1600	860	0,400

Fixed bearing, heavy-duty version

Order No.	Size	A1	B	B1	D	E	F	H	H1	H2	L	C0Y N	C0Z N	Approx. weight kg
21320-220060	20	20	10	19,2	M5	20	2,6	13	6	17,8	60	326	185	0,040
21320-230080	30	35	20	29,5	M6	22,5	3,3	20,7	10	26,5	80	870	435	0,170
21320-245120	45	55	25	46,4	M8	32,5	5,1	28,9	12	38	120	1740	935	0,470

Floating bearing, heavy-duty version

Order No.	Size	A1	B	B1	D	E	F	H	H1	H2	L	C0Y N	Approx. weight kg
21320-320060	20	20	10	20,5	M5	20	2,5	11,55	6	18,25 ±0,6	60	300	0,040
21320-330080	30	35	20	31,8	M6	22,5	3,5	19,2	10	27,95 ±1,0	80	800	0,160
21320-345120	45	55	25	44,8	M8	32,5	5	25,5	12	37,25 ±1,75	120	1600	0,450

Roller guide rails

Material:
Steel

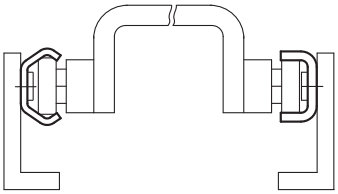
Version:
Galvanized

Sample order:
nlm 21320-120X0800 (please also indicate dimension L)

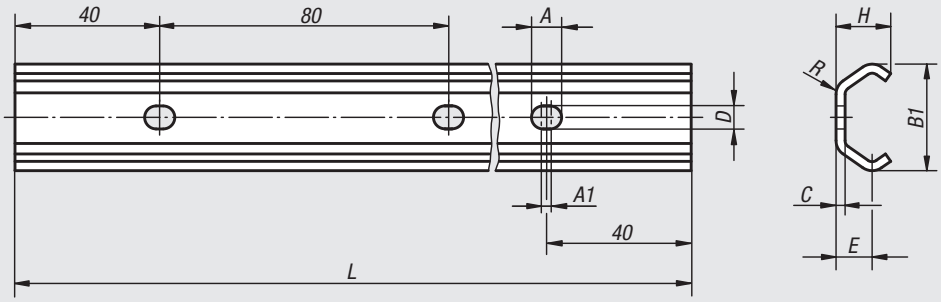
Note:
Stamped and rolled guide rails.

The fixed bearing rail is the main absorber of radial and axial forces. The floating bearing rail serves to absorb the load of radial forces and, in combination with the fixed bearing rail, as a support bearing for absorbing torques that occur. In the connection of the fixed and the floating bearings, the floating bearing rail compensates for parallelism errors and tolerances.

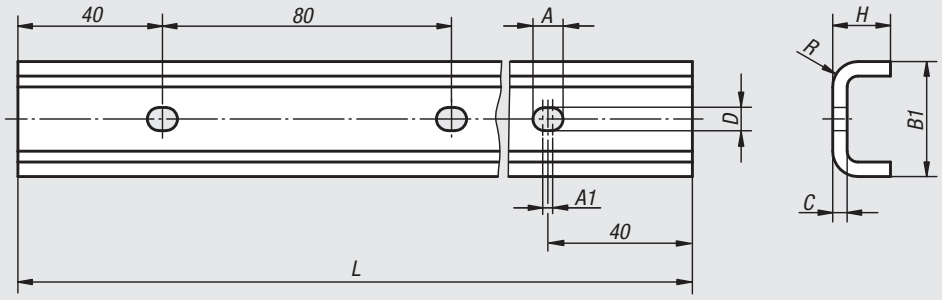
On request:
Lengths up to a max. 3120 mm.



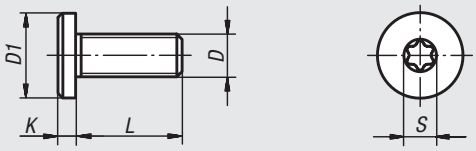
roller guide rail for fixed bearing



roller guide rail for floating bearing



fastening screw



Roller guide rails for fixed bearing

Order No.	Size	A	A1	B1	C	D	E	H	L	R	Approx. weight kg/m
21320-120X	20	7	2	19,2	2	5	7	10	800/1040/2080/3120	3	0,470
21320-130X	30	8,4	2	29,5	2,5	6,4	10	15	800/1040/2080/3120	4,5	0,900
21320-145X	45	11	2	46,4	4	9	15,5	24	800/1040/2080/3120	6,5	2,290

Roller guide rails for floating bearing

Order No.	Size	A	A1	B1	C	D	H	L	R	Approx. weight kg/m
21320-220X	20	7	2	20,5	3	5	11	800/1040/2080/3120	5,5	0,770
21320-230X	30	8,4	2	31,8	4	6,4	16	800/1040/2080/3120	7	1,390
21320-245X	45	11	2	44,8	4,5	9	24,5	800/1040/2080/3120	9,5	2,790

Fastening screws

Order No.	D	D1	K	L	S	Suitable for	Tightening torque Nm
21320-0408	M4	8	2	8	T20	size 20	4
21320-0510	M5	10	2	10	T25	size 30	9
21320-0816	M8	16	3	16	T40	size 45	22

Roller carriages

steel

Material:
Slide body, steel;
stripper, modified polyamide;
rollers, steel type 1.3505

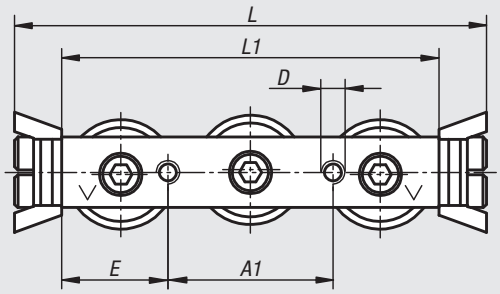
Version:
Slide body, galvanized

Sample order:
nlm 21322-1128080

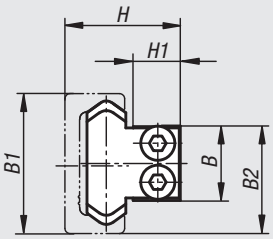
Note:
Roller carriage with lifetime-lubricated roller bearings and polyamide strippers that protect the tracks from contamination.
By simply moving the centre cam roller, the roller carriage can adjusted to be play-free or under the desired initial tension in the rail.
High traversing speeds up to 7 m/s and extremely low-noise (faster and quieter than systems with ball-bearing guides).

Application temperature -30 °C to +120 °C.

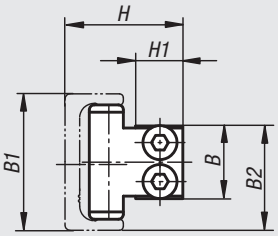
On request:
Roller carriage with 4 or 5 rollers.

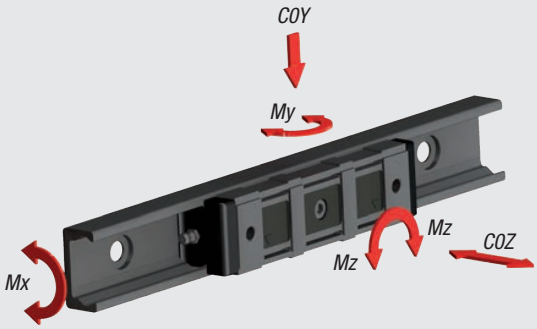


fixed bearing



floating bearing





Fixed bearing

Order No.	Size	A1	B	B1	B2	D	E	H	H1	L	L1	C dynamic N	C0Y N	C0Z N	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21322-1128080	28	35	14,9	28	21,7	M5	22,5	23,9	9,7	100	80	4260	2170	640	6,2	16	27,2	0,155
21322-1143120	43	55	24,9	43	34,3	M8	32,5	37	14,5	140	120	12280	5500	1570	23,6	60	104,5	0,530

Floating bearing

Order No.	Size	A1	B	B1	B2	D	E	H min.	H max.	H1	L	L1	C dynamic N	C0Y N	Mz Nm	Approx. weight kg
21322-1228080	28	35	14,9	28	21,7	M5	22,5	23,3	25,2	9,7	100	80	4260	2170	27,2	0,155
21322-1243120	43	55	24,9	43	34,3	M8	32,5	35,6	39,5	14,5	140	120	12280	5500	104,5	0,530

Roller carriages

aluminium

Material:
Slide body, pressure-cast aluminium; heads polyester, strippers modified polyamide;
longitudinal sealing lips rubber;
rollers, steel type 1.3505

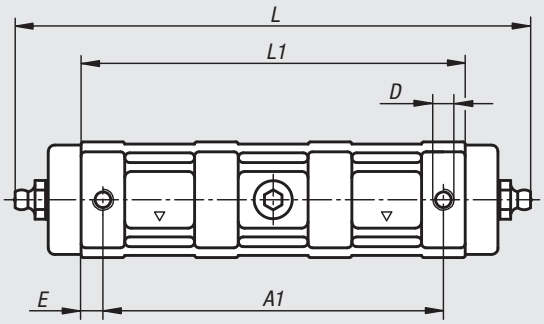
Version:
Slide body nickel-plated

Sample order:
nlm 21322-2128088

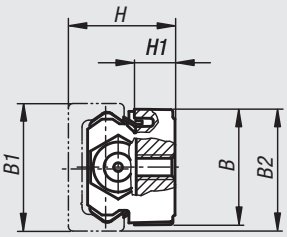
Note:
Roller carriage with lifetime-lubricated roller bearing and patented stripper technology, by which the system is lubricated while in motion.
By simply moving the centre cam roller, the roller carriage can adjusted to be play-free or under the desired initial tension in the rail.
High traversing speeds up to 7 m/s and extremely low-noise (faster and quieter than systems with ball-bearing guides).

Application temperature
-30 °C to +120 °C.

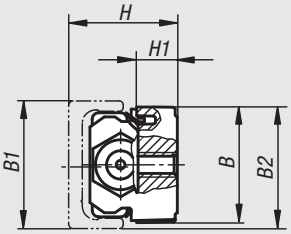
On request:
Roller carriage with 4 or 5 rollers.

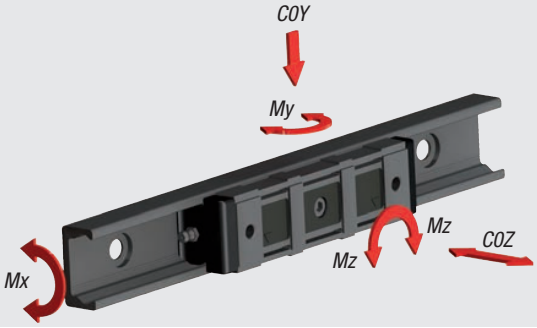


fixed bearing



floating bearing





Fixed bearing

Order No.	Size	A1	B	B1	B2	D	E	H	H1	L	L1	C dynamic N	C0Y N	C0Z N	Mx Nm	My Nm	Mz Nm	Approx. weight kg
21322-2128088	28	78	26,5	28	28	M5	5	24	9,3	124	88	4260	2170	640	6,2	16	27,2	0,115
21322-2143134	43	114	41	43	42,7	M8	10	37	13,7	170	134	12280	5500	1570	23,6	60	104,5	0,385

Floating bearing

Order No.	Size	A1	B	B1	B2	D	E	H min.	H max.	H1	L	L1	C dynamic N	C0Y N	Mz Nm	Approx. weight kg
21322-2228088	28	78	26,5	28	28	M5	5	24	25,3	9,3	124	88	4260	2170	27,2	0,115
21322-2243134	43	114	41	43	42,7	M8	10	37	39,5	13,7	170	134	12280	5500	104,5	0,385

Roller guide rails

Material:
Roller bearing steel

Version:
Galvanized; tracks inductively hardened and ground

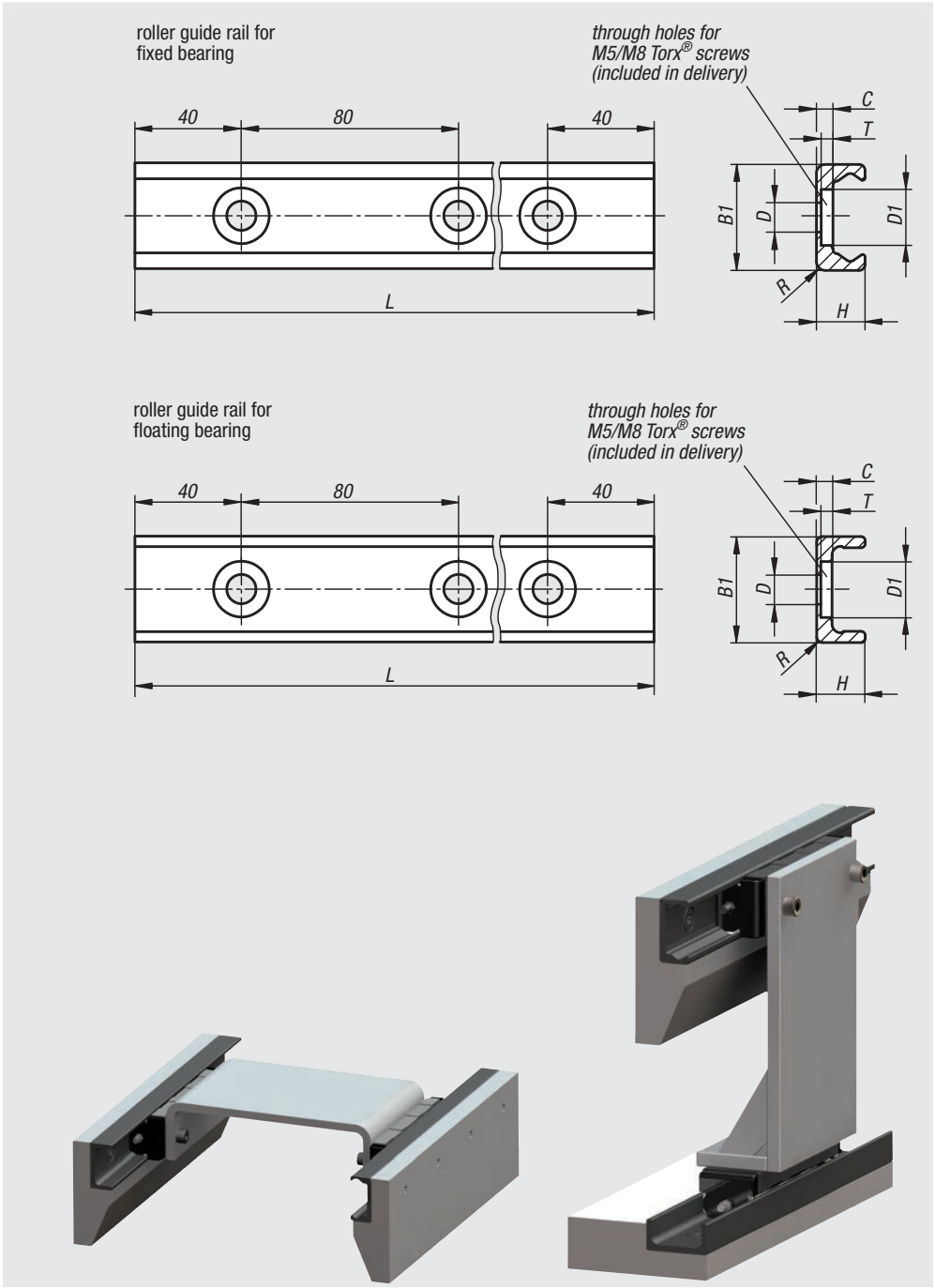
Sample order:
nlm 21322-128X0400 (please also indicate dimension L)

Note:
Compact C-profile guide rails with internal hardened tracks. The system runs with low noise even under heavy loads.

The rail can be aligned during assembly because of a play of the screw in the borehole.

In order to achieve the desired running properties, there must always be a film of lubricant between track and roller, which also provides corrosion protection for the polished tracks.

On request:
Lengths up to a max. 4080 mm.



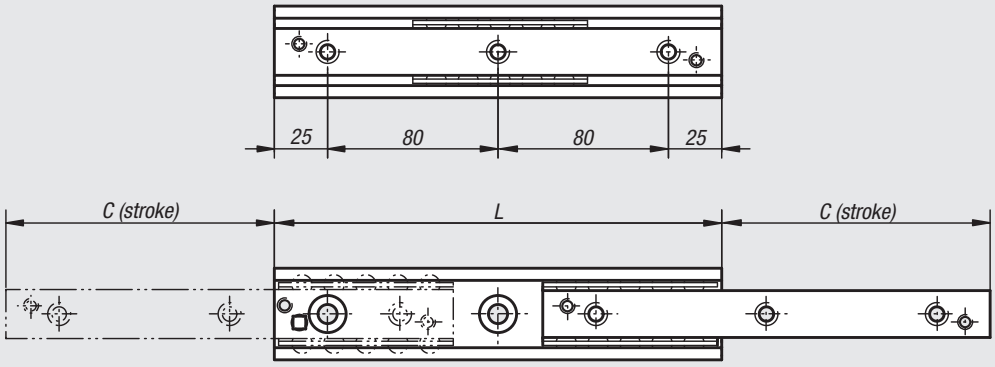
Roller guide rails for fixed bearing

Order No.	Size	B1	C	D	D1	H	L	R	T	Approx. weight kg/m
21322-128X	28	28	3	6,4	11	12,25	400/560/800/1040/1200	1	2	1,000
21322-143X	43	43	4,5	10,5	18	21	400/560/800/1040/1200	2,5	3,1	2,600

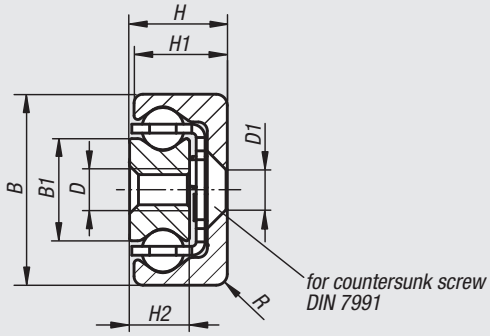
Roller guide rails for floating bearing

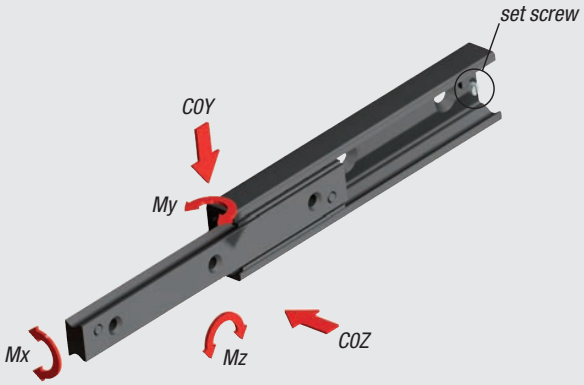
Order No.	Size	B1	C	D	D1	H	L	R	T	Approx. weight kg/m
21322-228X	28	28	3	6,4	11	12	400/560/800/1040/1200	1	2	1,000
21322-243X	43	43	4,5	10,5	18	21	400/560/800/1040/1200	1	3,1	2,600

Telescoping rails



profile cross-section





Material:
Roller and slide, roller bearing steel;
balls, roller bearing steel

Version:
Roller and slide galvanized;
tracks inductively hardened;
balls hardened

Sample order:
nlm 21340-280290

Note:
Partial extension consisting of a fixed guide rail and a movable slider. The slide can move somewhat more than half the length of the rail (C stroke). By removing the locking screw, a partial extension with the stroke length C is possible on both sides. The total stroke is thus 2C (stroke).
This compact and simple construction allows very high load ratings.
The maximum traversing speed is 0.8 m/s.

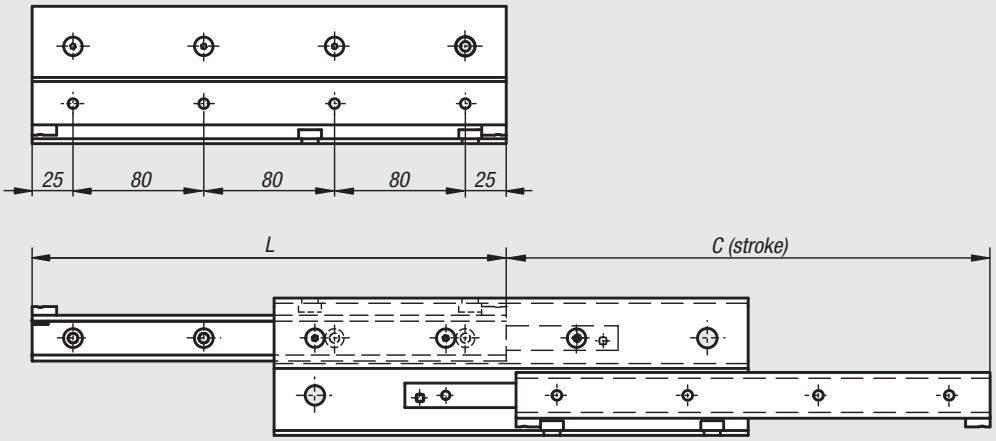
Application temperature
-30 °C to +170 °C.

On request:
Other lengths (pitch 80 mm).
Size 28 up to a max. 1170 mm.
Size 35 up to a max. 1490 mm.
Size 43 up to a max. 1970 mm.

Order No.	Size	B	B1	C (stroke)	D	D1	H	H1	H2	L	R	COY N	COZ N	Mx Nm	My Nm	Mz Nm	Number of holes	Approx. weight kg/m
21340-280290	28	28	15	148	M5	M5	13	12,25	7,5	290	1	1934	1345	39,6	132	188	4	2,020
21340-280370	28	28	15	190	M5	M5	13	12,25	7,5	370	1	2445	1711	50,4	213	305	5	2,020
21340-280450	28	28	15	232	M5	M5	13	12,25	7,5	450	1	2955	2069	61,2	314	449	6	2,020
21340-280530	28	28	15	274	M5	M5	13	12,25	7,5	530	1	3466	2426	72	435	621	7	2,020
21340-280610	28	28	15	315	M5	M5	13	12,25	7,5	610	1	3986	2790	82,8	575	821	8	2,020
21340-350290	35	35	15,8	159	M6	M6	17	16	10	290	2	2060	1442	46,9	146	208	4	3,050
21340-350370	35	35	15,8	203	M6	M6	17	16	10	370	2	2638	1847	59,9	238	340	5	3,050
21340-350450	35	35	15,8	247	M6	M6	17	16	10	450	2	3217	2252	73	345	505	6	3,050
21340-350530	35	35	15,8	279	M6	M6	17	16	10	530	2	4282	2997	90,4	543	775	7	3,050
21340-350610	35	35	15,8	323	M6	M6	17	16	10	610	2	4858	3401	103,5	711	1015	8	3,050
21340-430290	43	43	23	158	M8	M8	22	21	13,5	290	2,5	2872	2010	93,8	201	288	4	5,250
21340-430370	43	43	23	208	M8	M8	22	21	13,5	370	2,5	3377	2364	115,9	308	440	5	5,250
21340-430450	43	43	23	243	M8	M8	22	21	13,5	450	2,5	4690	3283	149,2	509	728	6	5,250
21340-430530	43	43	23	278	M8	M8	22	21	13,5	530	2,5	6039	4227	182,4	762	1088	7	5,250
21340-430610	43	43	23	313	M8	M8	22	21	13,5	610	2,5	7411	5188	215,6	1064	1521	8	5,250

Telescoping rails

S-shape



Material:
Roller and slide, roller bearing steel;
balls, roller bearing steel

Version:
Roller and slide galvanized;
tracks inductively hardened;
balls hardened

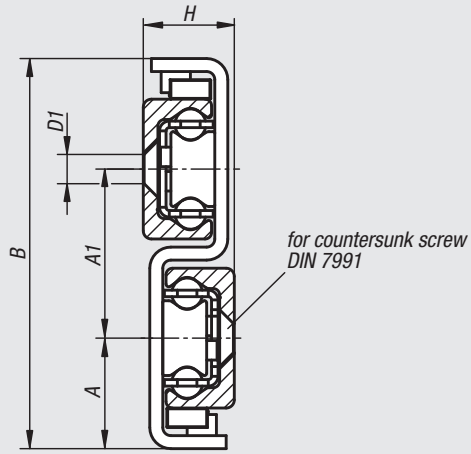
Sample order:
nlm 21342-280290

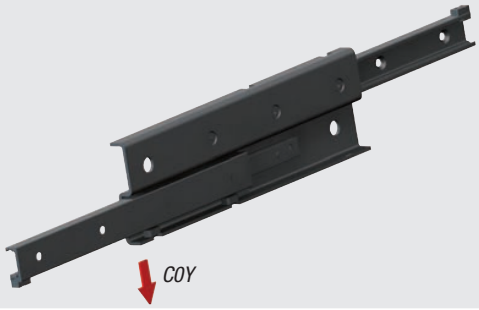
Note:
Full extension consisting of two guide rails as fixed and moving elements and an S-shaped intermediate element. The latter has a high axial angular impulse and high rigidity with a slim construction. This results in a high load rating with a low amount of bending in the extended state. The maximum stroke is greater than the closed length of the telescoping rail.
The maximum traversing speed is 0.8 m/s.

Application temperature
-30 °C to +110 °C.

On request:
Other lengths (pitch 80 mm).
Size 28 up to a max. 1490 mm.
Size 43 up to a max. 1970 mm.

profile cross-section





Order No.	Size	A	A1	B	C (stroke)	D1	H	L	C0Y N	Number of holes	Approx. weight kg/m
21342-280290	28	24,5	36	85	296	M5	17	290	570	4 (3 accessible)	6,400
21342-280370	28	24,5	36	85	380	M5	17	370	769	5 (4 accessible)	6,400
21342-280450	28	24,5	36	85	464	M5	17	450	969	6 (4 accessible)	6,400
21342-280530	28	24,5	36	85	548	M5	17	530	1170	7 (6 accessible)	6,400
21342-280610	28	24,5	36	85	630	M5	17	610	1376	8 (6 accessible)	6,400
21342-430530	43	34	52	120	556	M8	28	530	2061	7 (6 accessible)	14,600
21342-430610	43	34	52	120	626	M8	28	610	2603	8 (6 accessible)	14,600
21342-430690	43	34	52	120	726	M8	28	690	2775	9 (7 accessible)	14,600
21342-430770	43	34	52	120	796	M8	28	770	3319	10 (7 accessible)	14,600
21342-430850	43	34	52	120	866	M8	28	850	3873	11 (9 accessible)	14,600

Technical Information for profile guide rails

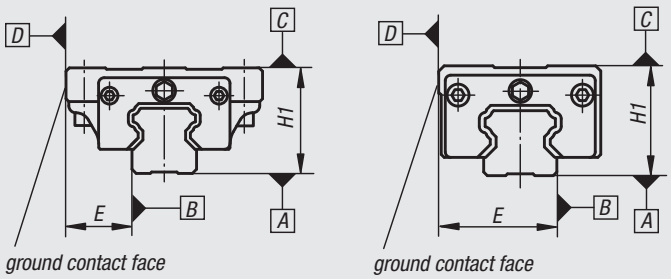
A profile guide rail makes a linear motion with the aid of balls possible. Through the use of balls between rails and run carriages, a profile guide rail can attain an extremely precise linear motion. Compared to a conventional slip-in guide, the coefficient of friction achieved in so doing adds up to just a fiftieth.

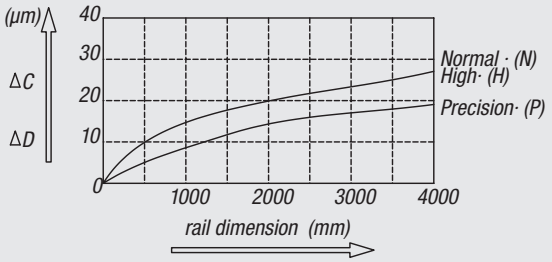
Because of the ball array alignment based on two-point contact with four ball arrays always at a 45° contact angle, the profile guide rail has consistent load ratings in all primary directions of load with excellent antifrictional qualities. The profile guide rail can thus be employed in various assembly positions for the most diverse applications.

Profile guide rails of the same size are exchangeable among one another. As a result, individual carriages or rails can be exchanged or added to at any time. Our profile guide rails correspond to the market standard and can replace linear guides of the same design by other manufacturers.

Accuracy Classes

Profile guide rails are available in three accuracy classes. The maximum relative tolerance of each accuracy class is specified.





		Accuracy Class		
		Normal (N)	High(H)	Precision (P)
maximum deviation for systems with one carriage	height tolerance H1	±0,1	±0,04	-0,04
	tolerances of lengths E	±0,1	±0,04	-0,04
maximum deviation for systems with several carriages	Δ H1	0,03	0,02	0,01
	Δ E	0,03	0,02	0,01
run parallelism of the surface C in terms of the surface A		see diagram		
run parallelism of the surface D in terms of the surface B		see diagram		

Pretensioning Classes

In view of the diverse needs of the user, profile guide rails are available in four different pretensioning classes. A higher pretensioning improves the rigidity and reduces the elastic deformation upon load alternations.

Class	Pretensioning	Pretensioning force	Application with	Application Examples
Z0	without pretensioning	0	- constant direction of load - imprecise assembly surfaces	- linear motion slides - sliding and pulling devices
Z1	light pretensioning	0,02 C (C = dynamic load rating)	- constant direction of load - minor jolts and vibrations - minor loads	- graving machines - packaging machines - industrial handling
Z2	average pretensioning	0,05 C (C = dynamic load rating)	- high accuracy required - torque load	- positioning units - fast feeding units - metrology
Z3	average pretensioning	0,07 C (C = dynamic load rating)	- high requisite rigidity - jolts and vibrations - heavy loads	- processing centres - grinders - large horizontal boring machines

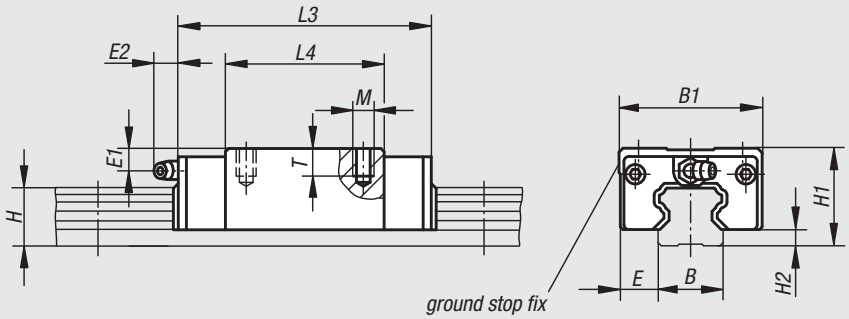
Calculating the lifespan

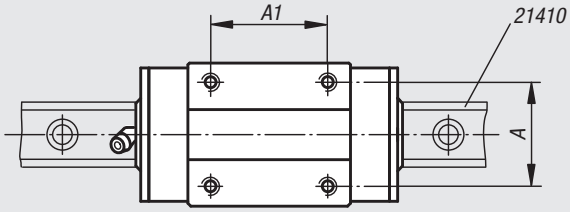
The nominal lifespan L can be calculated using the following formula:

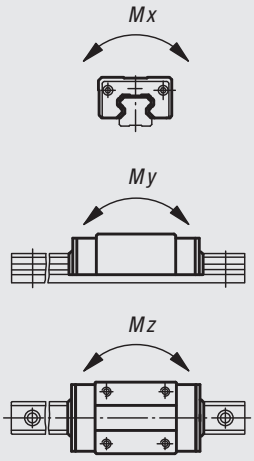
$$L = \left(\frac{C_{dyn}}{P}\right)^3 \cdot 50000 \text{ m}$$

L = nominal lifespan (m)
C_{dyn} = dynamic load rating (N)
P = dynamically equivalent load (N)

Carriages







Material:
Body in tempered steel
Balls, roller bearing steel.
Diverters, plastic.

Version:
Natural finish

Sample order:
nlm 21400-15106601

Note:
Standard carriage with revolving ball guidance according to accuracy N without pre-stressing (Z0). With double-sided close-off seal. 4-row versions with round arch profile. The tracks of the profile guide rails are set below an angle of 45° and thus can carry loads from all directions.

High dynamic values: v = 5 m/s.

Application temperature in continuous operation at max. 80 °C.

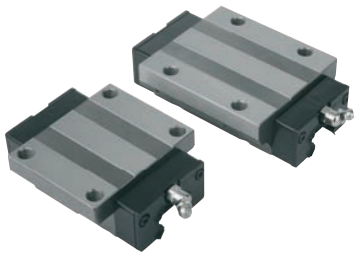
On request:
Various accuracies and pre-stressing classes available.

Order No.	Version	Size	Mx Nm	My Nm	Mz Nm	Dynamic base loads N	Static base loads N	Lubrication hole
21400-15106601	standard	15	70	50	50	6850	12700	Ø3
21400-20107801	standard	20	220	180	180	14500	25600	M6x1
21400-25108801	standard	25	360	320	310	21400	40000	M6x1
21400-30110901	standard	30	600	500	490	29800	54900	M6x1
21400-25211001	long	25	504	448	434	29960	56000	M6x1
21400-30213101	long	30	785	650	650	39000	71900	M6x1

Order No.	Version	Size	A	A1	B	B1	E	E1	E2	H	H1	H2	L3	L4	M	T	Approx. weight kg
21400-15106601	standard	15	26	26	15	34	9,5	8,3	5	14	28	4,6	66	40	M4	6,4	0,210
21400-20107801	standard	20	32	36	20	44	12	7	13,5	18	30	5	77,8	48,8	M5	8	0,310
21400-25108801	standard	25	35	35	23	48	12,5	11	13,5	22	40	7	88	57	M6	9,6	0,450
21400-30110901	standard	30	40	40	28	60	16	10	13	26	45	9	109	72	M8	12,8	0,910
21400-25211001	long	25	35	50	23	48	12,5	11	13,5	22	40	7	110,1	79,1	M6	9,6	0,560
21400-30213101	long	30	40	60	28	60	16	10	13	26	45	9	131,3	94,3	M8	12,8	1,200

Carriages

with flange



Material:
Body in tempered steel
Balls, roller bearing steel.
Diverters, plastic.

Version:
Natural finish

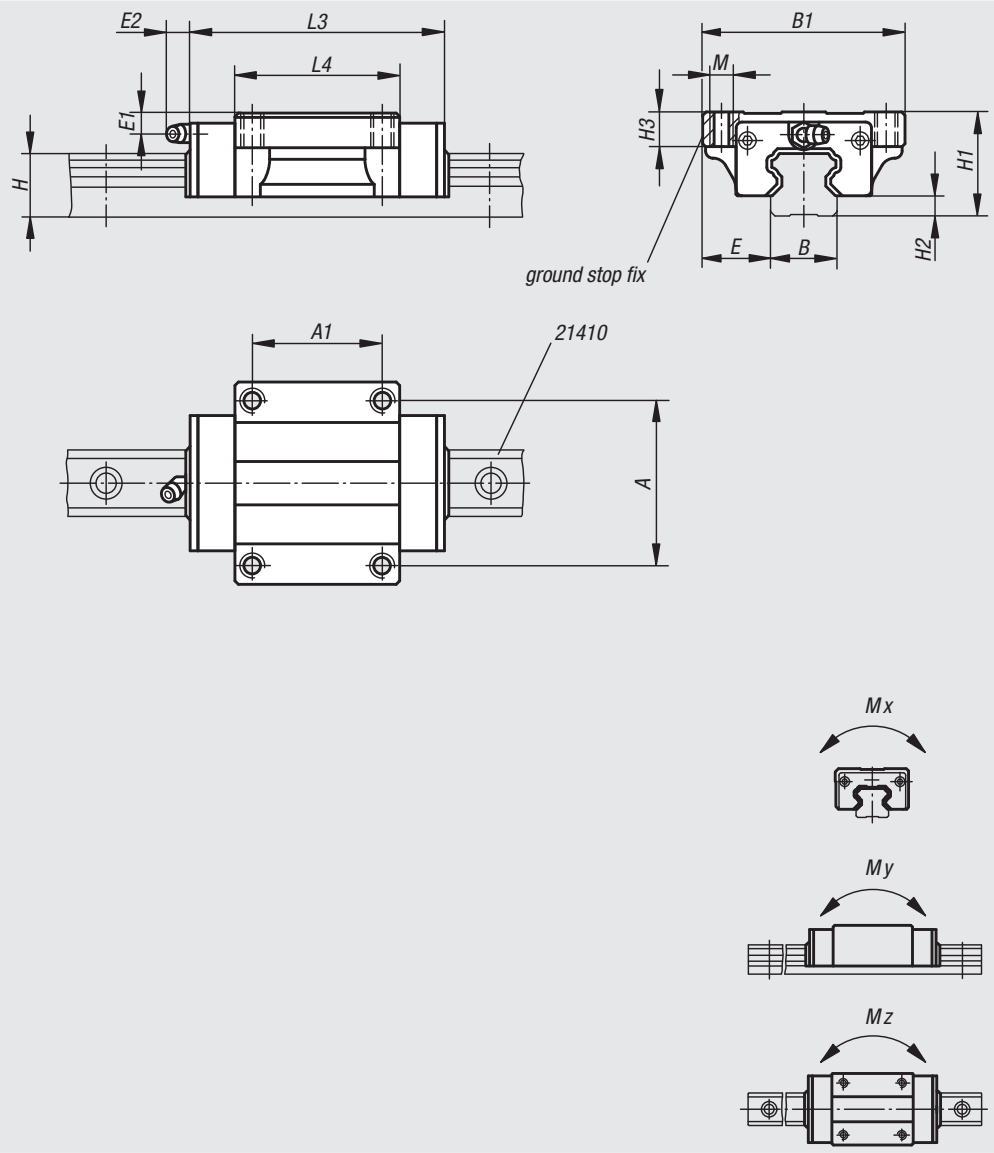
Sample order:
nlm 21402-15106601

Note:
Standard carriage with flange with revolving ball guidance according to accuracy N without pre-stressing (Z0). With double-sided close-off seal. 4-row versions with round arch profile. The tracks of the profile guide rails are set below an angle of 45° and thus can carry loads from all directions.

High dynamic values: v = 5 m/s.

Application temperature in continuous operation at max. 80 °C.

On request:
Various accuracies and pre-stressing classes available.

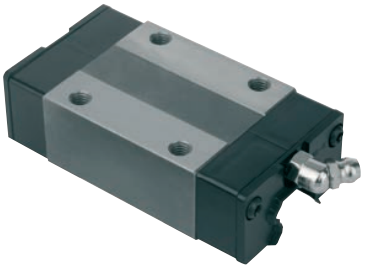


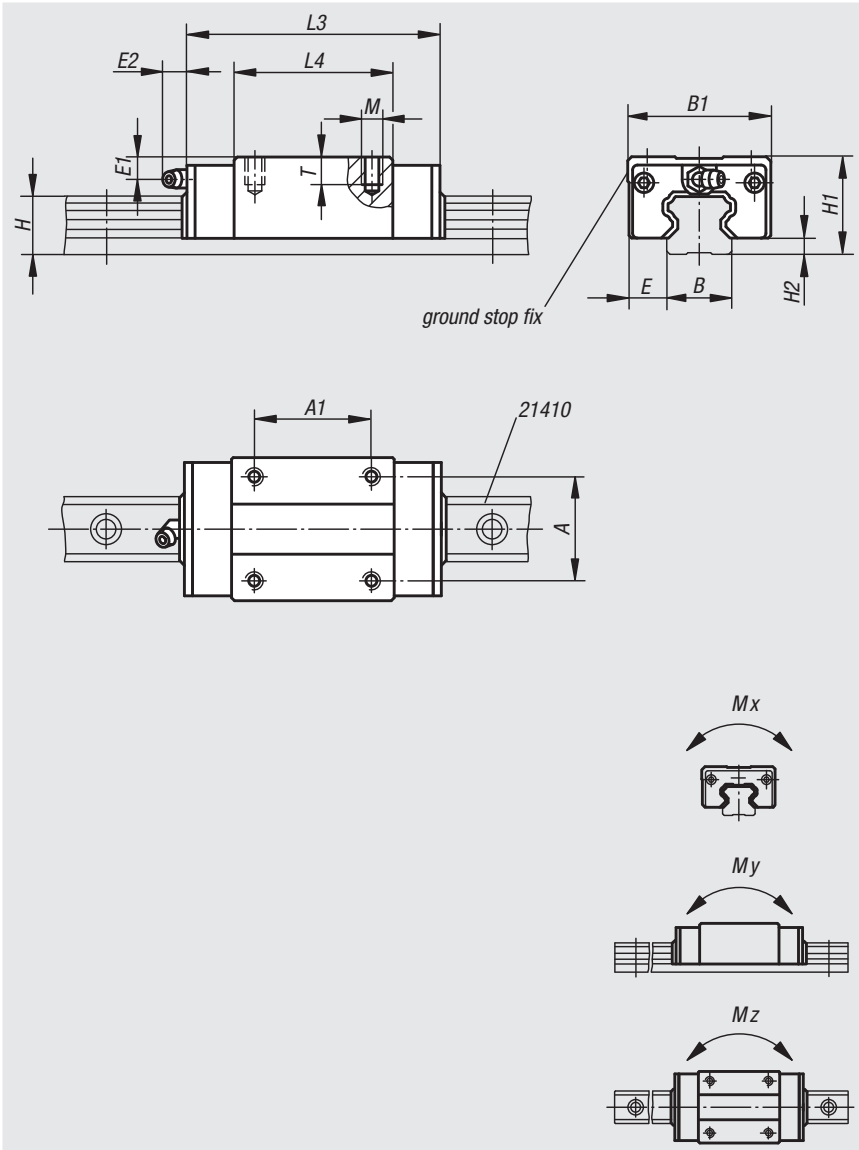
Order No.	Version	Size	Mx Nm	My Nm	Mz Nm	Dynamic base loads N	Static base loads N	Lubrication hole
21402-15106601	standard	15	70	50	50	6850	12700	Ø3
21402-20107801	standard	20	220	180	180	14500	25600	M6x1
21402-25108801	standard	25	360	320	310	21400	40000	M6x1
21402-30110901	standard	30	600	500	490	29800	54900	M6x1
21402-25211001	long	25	504	448	434	29960	56000	M6x1
21402-30213101	long	30	785	650	650	39000	71900	M6x1

Order No.	Version	Size	A	A1	B	B1	E	E1	E2	H	H1	H2	H3	L3	L4	M	Approx. weight kg
21402-15106601	standard	15	38	30	15	47	16	4,3	5	14	24	4,6	8	66	40	M5	0,190
21402-20107801	standard	20	53	40	20	63	21,5	5	13,5	18	30	5	9	77,8	48,8	M6	0,400
21402-25108801	standard	25	57	45	23	70	23,5	5	13,5	22	36	7	12	88	57	M8	0,570
21402-30110901	standard	30	72	52	28	90	31	7	13	26	42	9	12	109	72	M10	1,100
21402-25211001	long	25	57	45	23	70	23,5	5	13,5	22	36	7	12	110,1	79,1	M8	0,720
21402-30213101	long	30	72	52	28	90	31	7	13	26	42	9	12	131,3	94,3	M10	1,400

Carriages

compact





Material:
Body in tempered steel
Balls, roller bearing steel.
Diverters, plastic.

Version:
Natural finish

Sample order:
nlm 21404-15106601

Note:
Standard carriage with revolving ball guidance according to accuracy N without pre-stressing (Z0). With double-sided close-off seal. 4-row versions with round arch profile. The tracks of the profile guide rails are set below an angle of 45° and thus can carry loads from all directions.

High dynamic values: v = 5 m/s.

Application temperature in continuous operation at max. 80 °C.

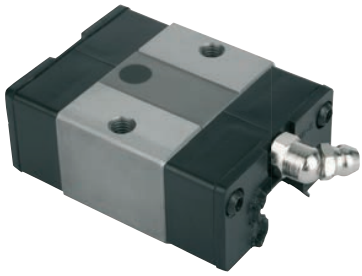
On request:
Various accuracies and pre-stressing classes available.

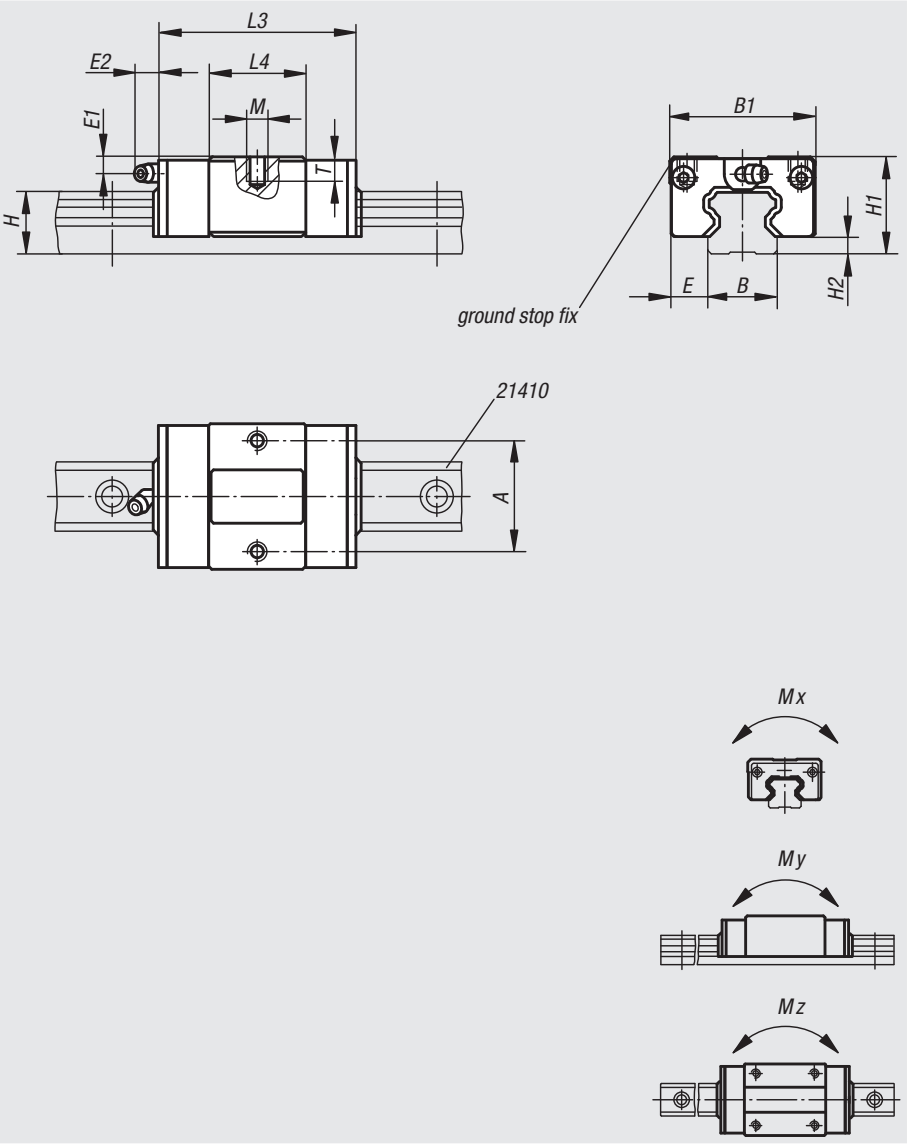
Order No.	Size	Mx Nm	My Nm	Mz Nm	Dynamic base loads N	Static base loads N	Lubrication hole
21404-15106601	15	70	50	50	6850	12700	Ø3
21404-20107801	20	220	180	180	14500	25600	M6x1
21404-25108801	25	360	320	310	21400	40000	M6x1
21404-30110901	30	600	500	490	29800	54900	M6x1

Order No.	Size	A	A1	B	B1	E	E1	E2	H	H1	H2	L3	L4	M	T	Approx. weight kg
21404-15106601	15	26	26	15	34	9,5	4,3	5	14	24	4,6	66	40	M4	5,6	0,170
21404-20107801	20	32	32	20	42	11	5	13,5	18	28	5	77,8	48,8	M5	7	0,260
21404-25108801	25	35	35	23	48	12,5	4,8	13,5	22	33	7	88	57	M6	8,4	0,380
21404-30110901	30	40	40	28	60	16	7	13	26	42	9	109	72	M8	11,2	0,810

Carriages

compact, short





Material:
Body in tempered steel
Balls, roller bearing steel.
Diverters, plastic.

Version:
Natural finish

Sample order:
nlm 21406-15004801

Note:
Standard carriage tight, with revolving ball guidance according to accuracy N without pre-stressing (Z0). With double-sided close-off seal. 4-row versions with round arch profile. The tracks of the profile guide rails are set below an angle of 45° and thus can carry loads from all directions.

High dynamic values: v = 5 m/s.

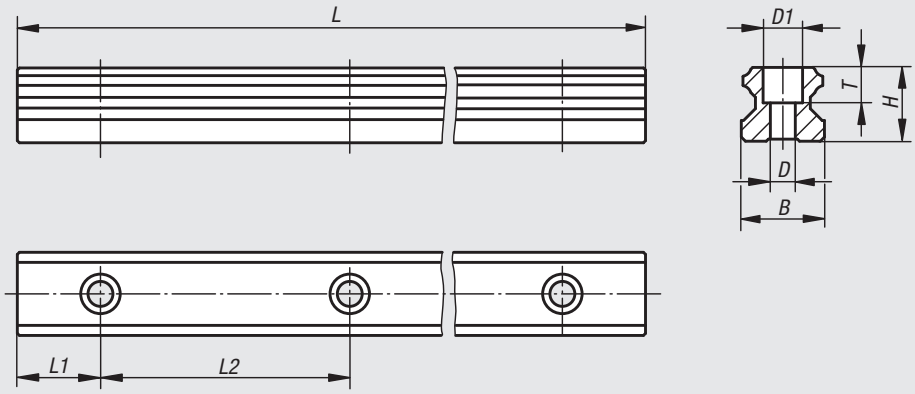
Application temperature in continuous operation at max. 80 °C.

On request:
Various accuracies and pre-stressing classes available.

Order No.	Size	Mx Nm	My Nm	Mz Nm	Dynamic base loads N	Static base loads N	Lubrication hole
21406-15004801	15	40	28	28	3900	7250	Ø3
21406-20005801	20	126	103	103	8300	14700	M6x1
21406-25006301	25	200	175	172	11900	22300	M6x1
21406-30007601	30	320	270	270	15950	29400	M6x1

Order No.	Size	A	B	B1	E	E1	E2	H	H1	H2	L3	L4	M	T	Approx. weight kg
21406-15004801	15	26	15	34	9,5	4,3	5	14	24	4,6	47,6	21,6	M4	5,6	0,100
21406-20005801	20	32	20	42	11	5	13,5	18	28	5	58	28	M5	7	0,170
21406-25006301	25	35	23	48	12,5	4,8	13,5	22	33	7	62,5	31,5	M6	8,4	0,210
21406-30007601	30	40	28	60	16	7	13	26	42	9	75,6	38,6	M8	11,2	0,480

Profile guide rails



Material:
Steel

Version:
Tracks inductively hardened and ground.

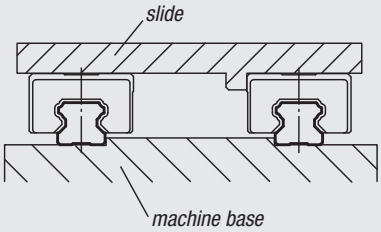
Sample order:
nlm 21410-1520X0520

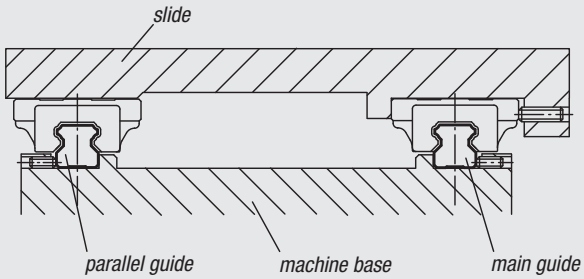
Note:
Profile guide rails can be screwed on from above. The profile guide rails are available in four sizes and one or more carriages can be assembled on them. 4-row versions with round arch profile. The tracks of the profile guide rails are set below an angle of 45° and thus can carry loads from all directions.

The profile guide rails correspond to the market standard and can replace linear guides of the same design by other manufacturers.

On request:
Lengths up to a max. 3960 mm.

Application example:
makes it possible to arrange the profile guide rails with carriages as a guiding system

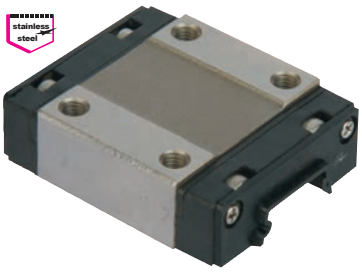


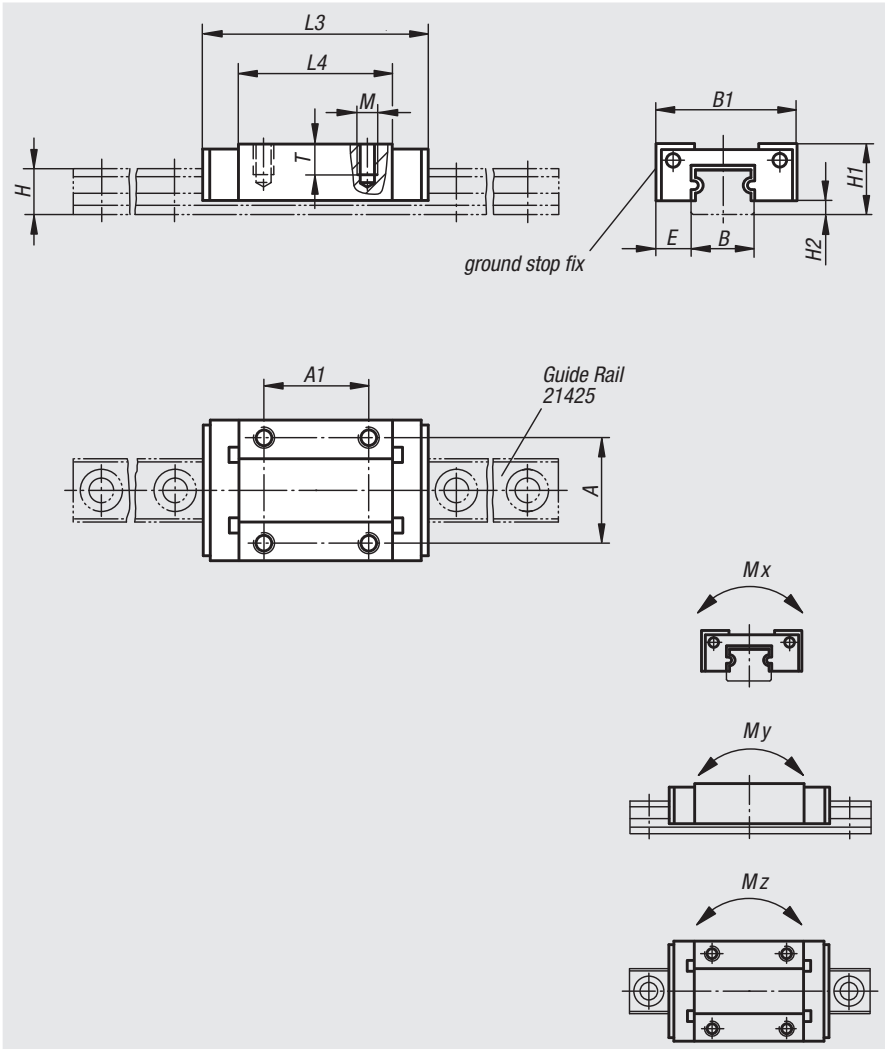


Order No.	Size	B	D	D1	H	L	L1	L2	T	Approx. weight kg/m
21410-1520X0520	15	15	4,5	7,5	14	520	20	60	5,3	1,400
21410-2020X0520	20	20	6	9,5	18	520	20	60	8,5	2,600
21410-2520X0520	25	23	7	11	22	520	20	60	9	3,600
21410-3020X0520	30	28	9	14	26	520	20	80	12	5,200

Miniature carriages

stainless steel





Material:
Body, stainless steel type 1.4034;
balls, stainless steel type 1.4034;
transfer sections, plastic

Version:
Natural finish

Sample order:
nlm 21420-07102301

Note:
Standard miniature carriage with ball bearing guide of precision N without initial tension (Z0). With end seal on both sides.
4-point ball bearing system with identical load angles and 2 ball bearings per carriage. Thus loads can be uniformly absorbed from all sides.

Max. acceleration: 80 m/s².
Maximum traversing speed 3 m/s.
Application temperature -20 °C to +80 °C.

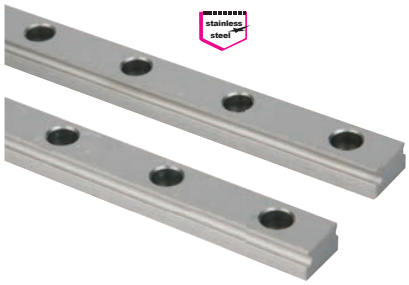
Attention:
Always use the supplied mounting rail, as otherwise the the ball holder in the carriage is not guaranteed.

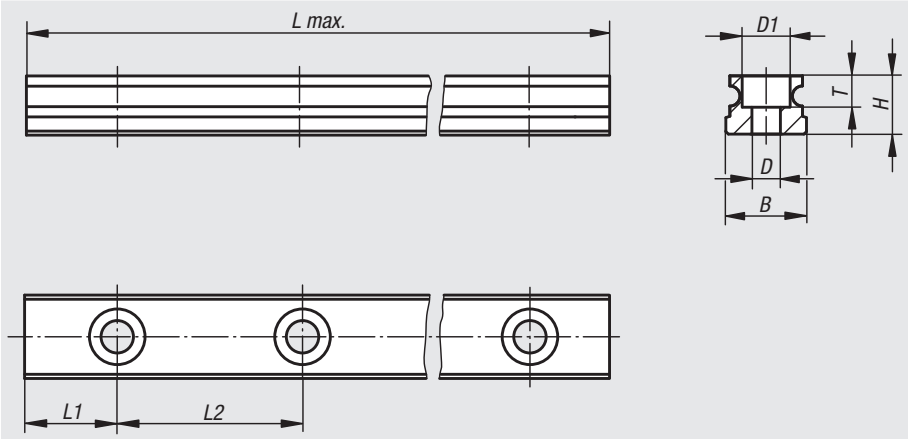
Order No.	Version	Size	Mx Nm	My Nm	Mz Nm	Dynamic base loads N	Static base loads N
21420-07102301	standard	7	5,1	2,55	2,55	880	1370
21420-09103101	standard	9	10,4	5,1	5,1	1470	2250
21420-12103501	standard	12	14,7	8,04	8,72	2665	4020
21420-15104301	standard	15	30,2	16,5	17,9	4410	6570

Order No.	Version	Size	A	A1	B	B1	E	H	H1	H2	L3	L4	M	T	Approx. weight kg
21420-07102301	standard	7	12	8	7	17	5	4,7	8	1,5	23,5	13,5	M2	2,5	0,013
21420-09103101	standard	9	15	10	9	20	5,5	5,5	10	2,2	31	20	M3	3	0,018
21420-12103501	standard	12	20	15	12	27	7,5	7,5	13	3	35	20,8	M3	3,5	0,037
21420-15104301	standard	15	25	20	15	32	8,5	9,5	16	4	43	25,7	M3	4	0,069

Miniature profile guide rails

stainless steel





Material:
Stainless steel 1.4034

Version:
Natural finish

Sample order:
nlm 21425-0705X0240

Note:
Profile guide rails can be screwed on from above. The profile rails, on which one or more carriages can be mounted, are available in four miniature sizes.
4-point ball bearing system with identical load angles and 2 ball bearings per carriage. Thus loads can be uniformly absorbed from all sides.

Max. acceleration: 80 m/s².
Maximum traversing speed 3 m/s.
Application temperature -20 °C to +80 °C.

Combination of the rails is possible.

Order No.	Size	D	D1	H	L max.	L1	L2	B	T	Approx. weight kg/m
21425-0705X0240	7	2,4	4,2	4,7	240	7,5	15	7	2,3	0,230
21425-0907X0495	9	3,5	6	5,5	495	7,5	20	9	3,3	0,320
21425-1210X0570	12	3,5	6	7,5	570	10	25	12	4,5	0,580
21425-1515X0790	15	3,5	6	9,5	790	15	40	15	4,5	0,925

Linear ball bearings

with plastic cage

Material:
Outer cover, roller bearing steel.
Plastic cage.
Balls, steel.

Sample order:
nlm 21500-1202

Note:
The linear ball bearings correspond to series 3 of ISO 10285. With double-sided seal. The linear ball bearings are equipped with a plastic cage. This makes for an quiet run and outstanding run quality. In the case of application temperatures above +80 °C, linear ball bearings with steel cage are recommended. The linear ball bearing is held in place by a retaining ring acc. to DIN 471/472.

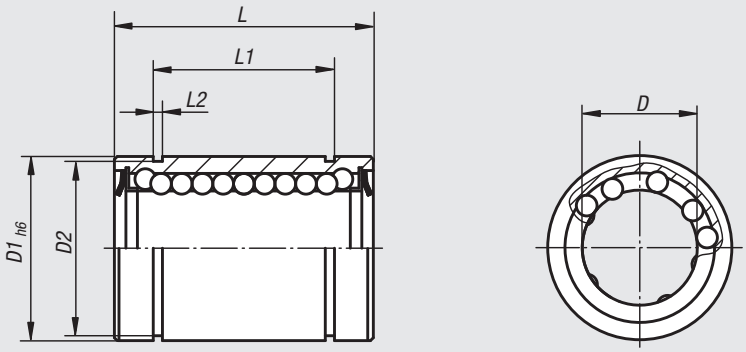
Recommended tolerances:
Shaft: h6
Housing: H7

Linear ball bearings with double-sided seal should be lubricated before installation.

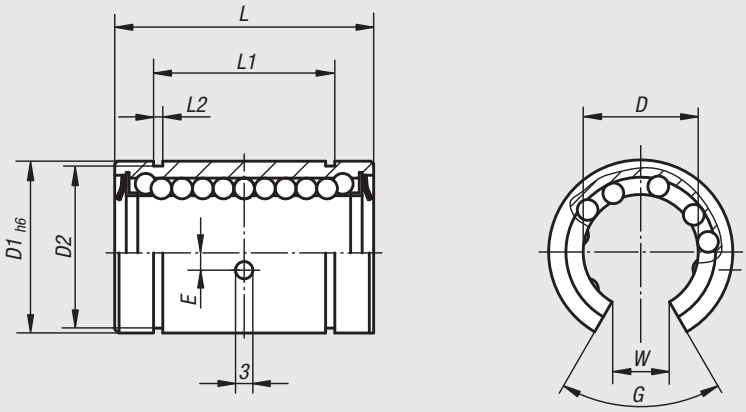
The specified basic load ratings apply upon insertion of hardened and ground shafts.

Temperature range:
-20 °C up to +80 °C.

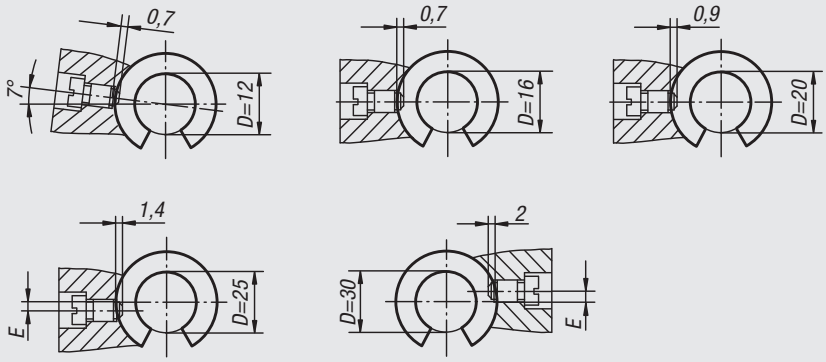
Model, closed



Model, opened



Position of the radial and axial fixation



Order No. closed	Order No. open	D	D1	D2	E	G	L	L1	L2	W	Dynamic base loads N	Static base loads N	Approx. weight kg
21500-1202	**-**	12	22	21	-	-	32 -0,2	22,9 -0,2	1,3	-	520	800	0,040
21500-1602	**21500-1612**	16	26	24,9	-/0	-/78°	36 -0,2	24,9 -0,2	1,3	-/10	590	910	0,060
21500-2002	**21500-2012**	20	32	30,3	-/0	-/60°	45 -0,2	31,5 -0,2	1,6	-/10	880	1400	0,090
21500-2502	**21500-2512**	25	40	37,5	-/1,5	-/60°	58 -0,3	44,1 -0,3	1,85	-/12,5	1000	1600	0,210
21500-3002	**21500-3012**	30	47	44,5	-/2	-/50°	68 -0,3	52,1 -0,3	1,85	-/12,5	1600	2800	0,320

Linear ball bearings

with steel cage

Material:
Outer cover, roller bearing steel.
Steel cage.
Balls, steel.

Sample order:
nlm 21505-1202

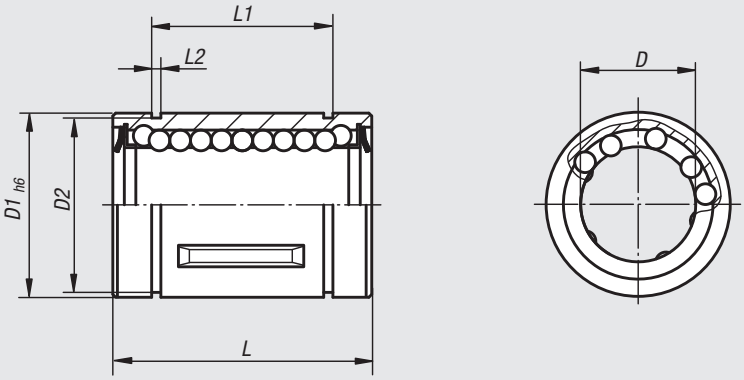
Note:
The linear ball bearings correspond to series 3 of ISO 10285. With double-sided seal. The linear ball bearings are equipped with a steel cage. The linear ball bearing is held in place by a retaining ring acc. to DIN 471/472.

Recommended tolerances:
Shaft: h6
Housing: H7

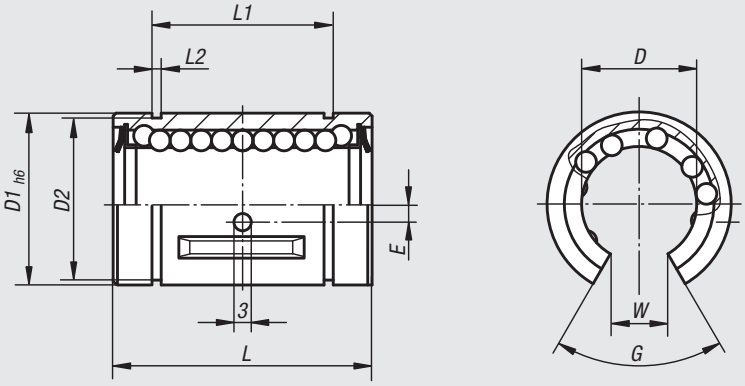
Linear ball bearings with double-sided seal should be lubricated before installation.

The specified basic load ratings apply upon insertion of hardened and ground shafts.

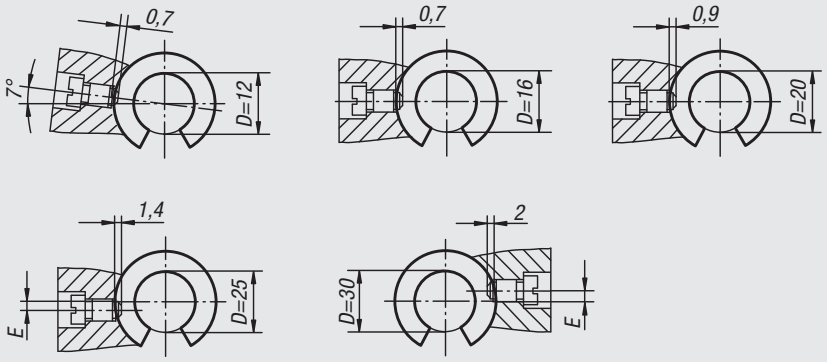
Model, closed



Model, opened



Position of the radial and axial fixation



Order No. closed	Order No. open	D	D1	D2	E	G	L	L1	L2	W	Dynamic base loads N	Static base loads N	Approx. weight kg
21505-1202	**21505-1212**	12	22	21	-/1,35	-/78°	32 -0,2	22,9 -0,2	1,3	-/7,5	420	714	0,050
21505-1602	**21505-1612**	16	26	24,9	-/0	-/78°	36 -0,2	24,9 -0,2	1,3	-/10	686	1092	0,080
21505-2002	**21505-2012**	20	32	30,3	-/0	-/60°	45 -0,2	31,5 -0,2	1,6	-/10	924	1610	0,110
21505-2502	**21505-2512**	25	40	37,5	-/1,5	-/60°	58 -0,3	44,1 -0,3	1,85	-/12,5	1470	2590	0,220
21505-3002	**21505-3012**	30	47	44,5	-/2	-/50°	68 -0,3	52,1 -0,3	1,85	-/12,5	2100	3920	0,290

Linear ball bearings

with angle error adjustment

Material:
Housing, plastic
Track plates, roller bearing steel.
Balls, steel.

Sample order:
nlm 21510-1202

Note:
The linear ball bearings correspond to series 3 of ISO 10285 with automatic angle error adjustment. With double-sided seal. These bearings comprise a highly precise die-cast plastic truss in which the clipped-on track plates of roller bearing steel are installed. The plastic truss serves at the same time as return and seal retainer. The seal consists of a special polyamide material with a low friction coefficient. The linear ball bearing is held in place by a retaining ring acc. to DIN 471/472.

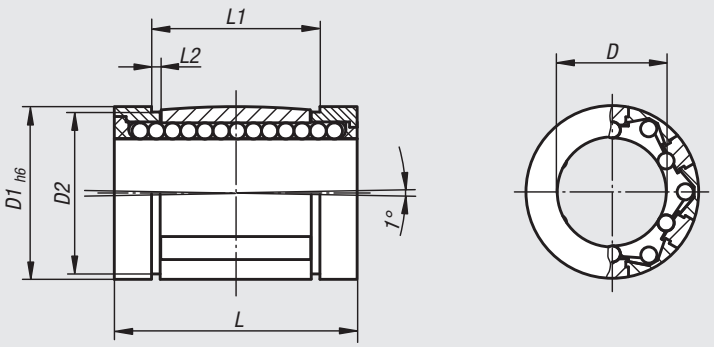
Recommended tolerances:
Shaft: h6
Housing: H7

Linear ball bearings with double-sided seal should be lubricated before installation.

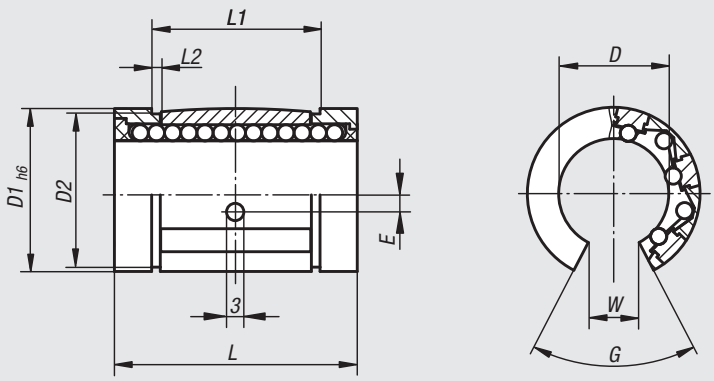
The specified basic load ratings apply upon insertion of hardened and ground shafts.

Temperature range:
-20 °C up to +80 °C.

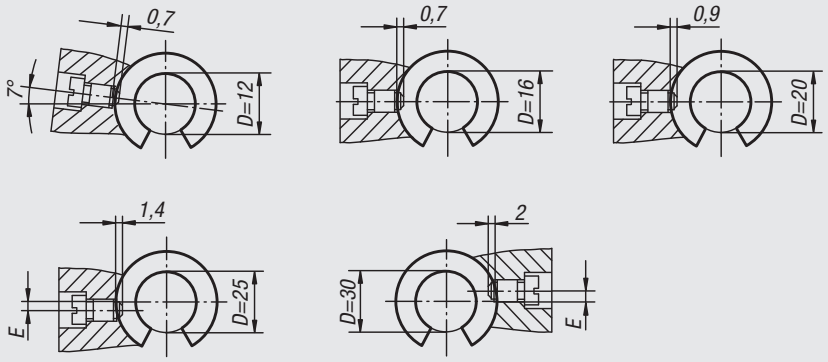
Model, closed



Model, opened



Position of the radial and axial fixation



Order No. closed	Order No. open	D	D1	D2	E	G	L	L1	L2	W	Dynamic base loads N	Static base loads N	Approx. weight kg
21510-1202	**21510-1212**	12	22	21	-/1,35	-/66°	32 -0,2	22,9 -0,2	1,3	-/6,5	650	520	0,023
21510-1602	**21510-1612**	16	26	24,9	-/0	-/68°	36 -0,2	24,9 -0,2	1,3	-/9	800	630	0,028
21510-2002	**21510-2012**	20	32	30,3	-/0	-/55°	45 -0,2	31,5 -0,2	1,6	-/9	1500	1250	0,061
21510-2502	**21510-2512**	25	40	37,5	-/1,5	-/57°	58 -0,3	44,1 -0,3	1,85	-/11,5	2500	2200	0,122
21510-3002	**21510-3012**	30	47	44,5	-/2	-/57°	68 -0,3	52,1 -0,3	1,85	-/14	3200	2800	0,185

Linear ball bearings

with angle error adjustment, high basic load rating

Material:
Housing, plastic
Press plates, roller bearing steel.
Balls, steel.

Sample order:
nlm 21515-1202

Note:
The linear ball bearings correspond to series 3 of ISO 10285. With double-sided double-lip seal. These bearings excel in comparison with a standard linear ball bearing owing to the double load-carrying capacity or eightfold travel life. By means of the angle error adjustment, misalignments of housing drill holes or shaft bowing under load are adjusted, the load distribution optimised and the uniform load of all the balls across the entire bearing length assured. The linear ball bearing is held in place by a retaining ring acc. to DIN 471/472.

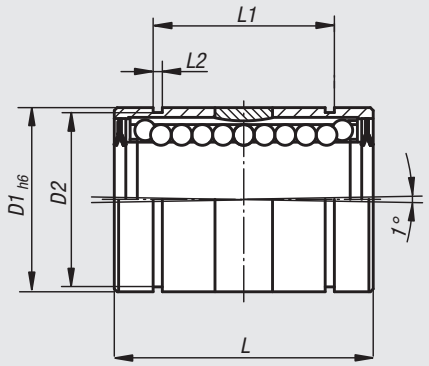
Recommended tolerances:
Shaft: h6
Housing: H7

Linear ball bearings with double-sided seal should be lubricated before installation.

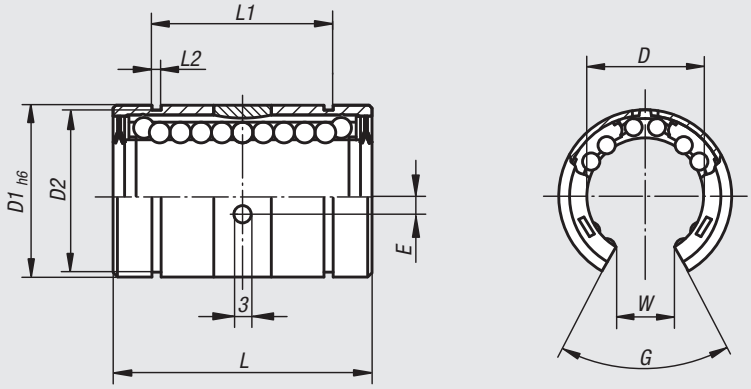
The specified basic load ratings apply upon insertion of hardened and ground shafts.

Temperature range:
-20 °C up to +80 °C.

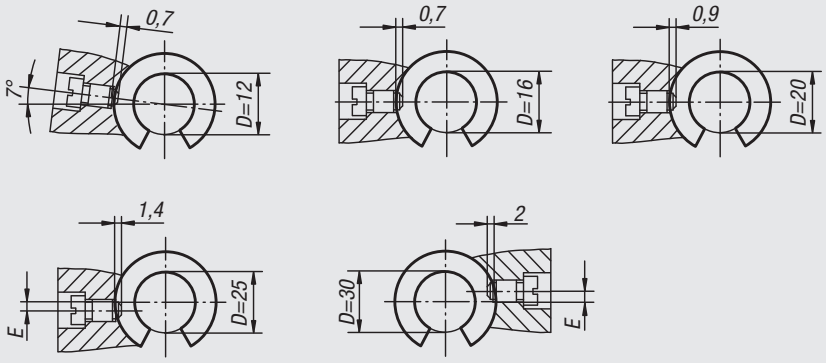
Model, closed



Model, opened



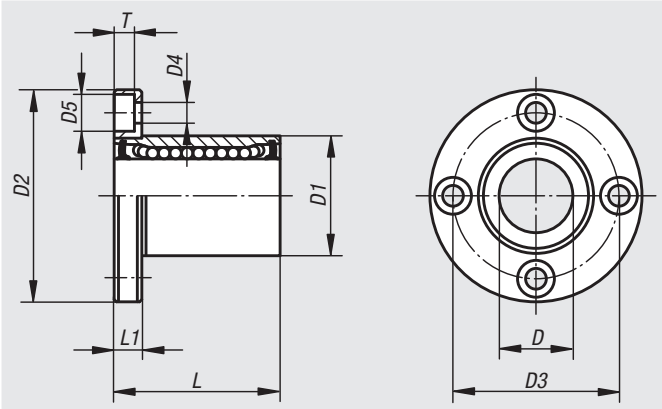
Position of the radial and axial fixation



Order No. closed	Order No. open	D	D1	D2	E	G	L	L1	L2	W	Dynamic base loads N	Static base loads N	Approx. weight kg
21515-1202	**21515-1212**	12	22	21	-/1,35	-/70°	32 -0,2	22,6 -0,2	1,3	-/7	750	825	0,023
21515-1602	**21515-1612**	16	26	24,9	-/0	-/70°	36 -0,2	24,6 -0,2	1,3	-/9,4	2200	2400	0,030
21515-2002	**21515-2012**	20	32	30,3	-/0	-/60°	45 -0,2	31,2 -0,2	1,6	-/10,2	4000	4400	0,066
21515-2502	**21515-2512**	25	40	37,5	-/1,5	-/60°	58 -0,3	43,7 -0,3	1,85	-/14,4	6700	7300	0,133
21515-3002	**21515-3012**	30	47	44,5	-/2	-/55°	68 -0,3	51,7 -0,3	1,85	-/13,9	8300	9100	0,202

Linear ball bearings

with flange



Material:
Housing, steel.
Plastic cage.
Balls, steel.

Sample order:
nlm 21518-1202

Note:
The linear ball bearings correspond to series 3 of ISO 10285. With double-sided seal. The linear ball bearings are equipped with a plastic cage. This makes for an quiet run and outstanding run quality. With flange for direct mounting on the housing.

Recommended tolerances:
Shaft: h6
Housing: H7

Linear ball bearings with double-sided seal should be lubricated before installation.

The specified basic load ratings apply upon insertion of hardened and ground shafts.

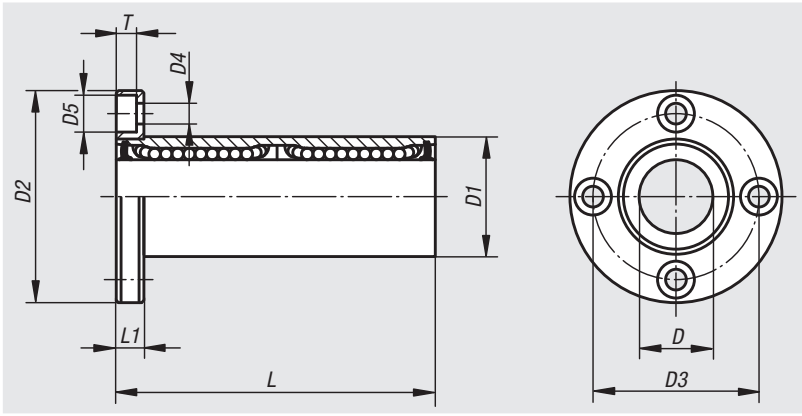
Temperature range:
-20 °C up to +80 °C.

Accessory:
Precision guide shafts 21595.
Fastening screws 07160.

Order No.	D	D1	D2	D3	D4	D5	L	L1	T	Dynamic base loads N	Static base loads N	Approx. weight kg
21518-1202	12	22	42	32	4,5	7,5	32	6	4,1	520	790	0,090
21518-1602	16	26	46	36	4,5	7,5	36	6	4,1	590	910	0,120
21518-2002	20	32	54	43	5,5	9	45	8	5,1	880	1400	0,190
21518-2502	25	40	62	51	5,5	9	58	8	5,1	1000	1600	0,340
21518-3002	30	47	76	62	6,6	11	68	10	6,1	1600	2800	0,550

Linear ball bearings

with flange, double bearing



Material:
Housing, steel.
Plastic cage.
Balls, steel.

Sample order:
nlm 21520-1202

Note:
The linear ball bearings correspond to series 3 of ISO 10285. With double-sided seal. The linear ball bearings are equipped with a plastic cage. This makes for an quiet run and outstanding run quality. With flange for direct mounting on the housing. Version as double bearing for insertion under torque load.

Recommended tolerances:
Shaft: h6
Housing: H7

Linear ball bearings with double-sided seal should be lubricated before installation.

The specified basic load ratings apply upon insertion of hardened and ground shafts.

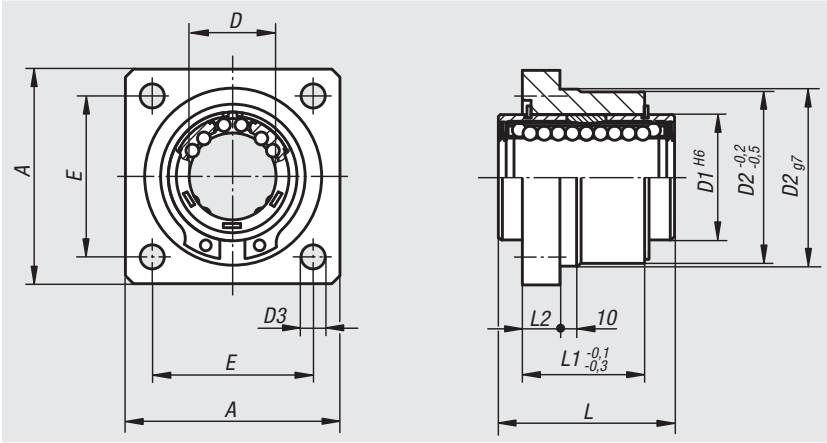
Temperature range:
-20 °C up to +80 °C.

Accessory:
Precision guide shafts 21595.
Fastening screws 07160.

Order No.	D	D1	D2	D3	D4	D5	L	L1	T	Dynamic base loads N	Static base loads N	Approx. weight kg
21520-1202	12	22	42	32	4,5	7,5	57	6	4,1	657	1200	0,100
21520-1602	16	26	46	36	4,5	7,5	68	6	4,1	1230	2350	0,190
21520-2002	20	32	54	43	5,5	9	80	8	5,1	1400	2750	0,260
21520-2502	25	40	62	51	5,5	9	112	8	5,1	1560	3140	0,520
21520-3002	30	47	76	62	6,6	11	123	10	6,1	2490	5490	0,670

Linear housing units

with flange



Material:
Housing in aluminium

Version:
Housing natural finish

Sample order:
nlm 21522-121002

Note:
The ready-to-install linear housing units consist of an extruded aluminium housing, installed linear ball bearings with angle error adjustment 21510 and double-sided seal. Mounting of the bearings within the housing with circlips DIN 472.

Recommended shaft tolerance: h6.

Basic load ratings according to specification of the linear ball bearings.

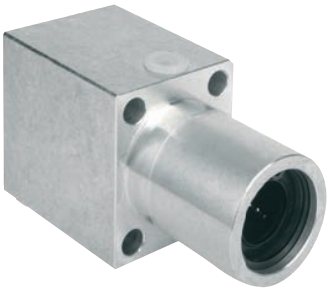
On request:
Linear housing units can be equipped with all of the linear ball bearings presented in this catalogue.

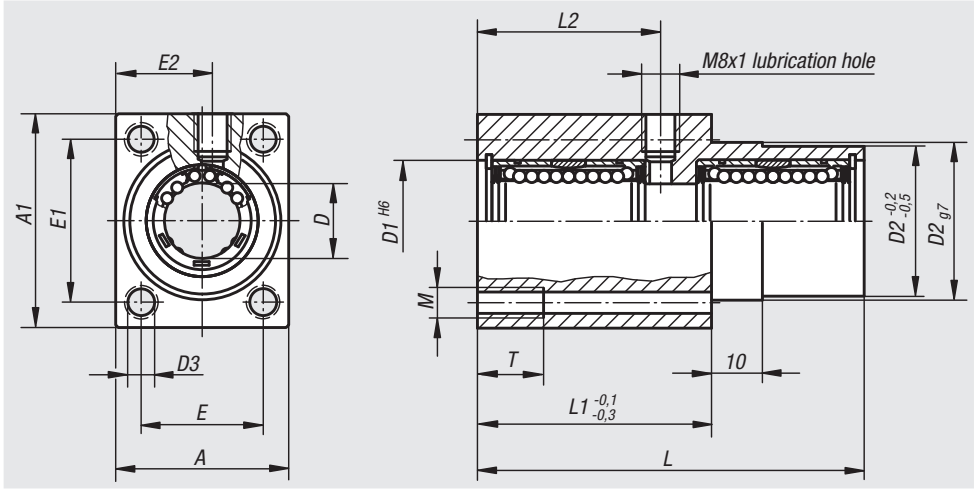
Accessory:
Precision guide shafts 21595.
Fastening screws 07160 or 07161.

Order No.	A	D	D1	D2	D3	E	L	L1	L2	Approx. weight kg
21522-121002	40	12	22	32	5,5	30	32	22	6	0,120
21522-161002	50	16	26	38	5,5	35	36	24	8	0,170
21522-201002	60	20	32	46	6,6	42	45	30	10	0,330
21522-251002	70	25	40	58	6,6	54	58	42	12	0,680
21522-301002	80	30	47	66	9	60	68	50	14	1,030

Linear housing units

with flange, tandem





Material:
Housing in aluminium

Version:
Housing natural finish

Sample order:
nlm 21524-121002

Note:
The ready-to-install linear housing units consist of an extruded aluminium housing, two linear ball bearings with angle error adjustment 21510 and double-sided seal. Mounting of the bearings within the housing with circlips DIN 472.

Recommended shaft tolerance: h6.

Basic load ratings according to specification of the linear ball bearings (x2).

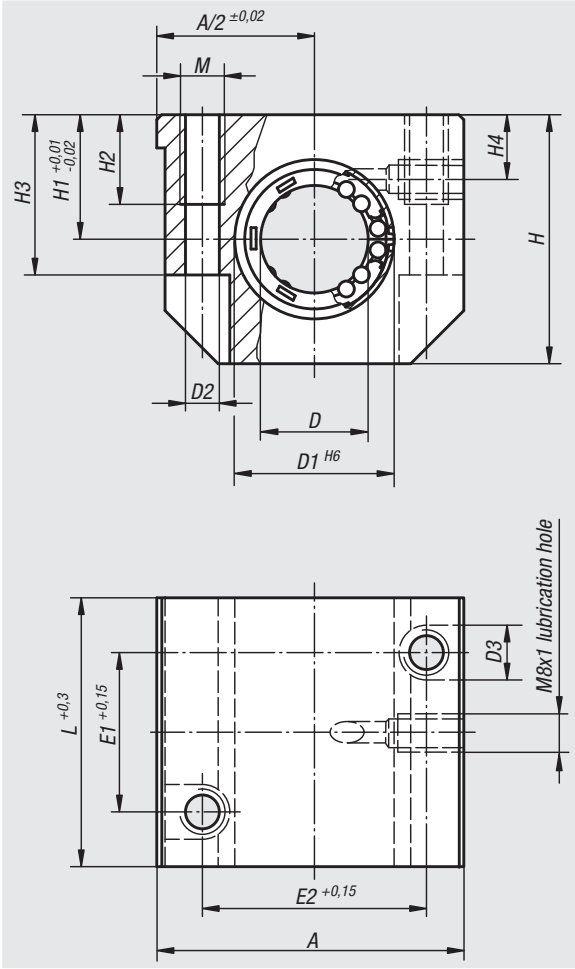
On request:
Linear housing units can be equipped with all of the linear ball bearings presented in this catalogue.

Accessory:
Attachment Seals 21560.
Precision guide shafts 21595.
Fastening screws 07160 or 07161.

Order No.	A	A1	D	D1	D2	D3	E	E1	E2	L	L1	L2	M	T	Approx. weight kg
21524-121002	34	42	12	22	30	5,3	24	32	19	76	46	36	M6	13	0,200
21524-161002	40	50	16	26	35	6,6	28	38	22	84	50	40	M8	18	0,320
21524-201002	50	60	20	32	42	8,4	35	45	27	104	60	50	M10	22	0,550
21524-251002	60	74	25	40	52	10,5	42	56	32	130	73	63	M12	26	1,170
21524-301002	70	84	30	47	61	13,5	50	64	37	152	82	74	M16	34	1,500

Linear housing units

individual, closed



Material:
Housing in aluminium

Version:
Housing natural finish

Sample order:
nlm 21530-121002

Note:
The ready-to-install linear housing units consist of an extruded aluminium housing, installed linear ball bearings with angle error adjustment 21510 and double-sided seal. Mounting of the bearings within the housing with circlips DIN 472.

Recommended shaft tolerance: h6.

Basic load ratings according to specification of the linear ball bearings.

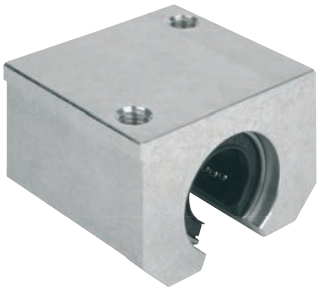
On request:
Linear housing units can be equipped with all of the linear ball bearings presented in this catalogue.

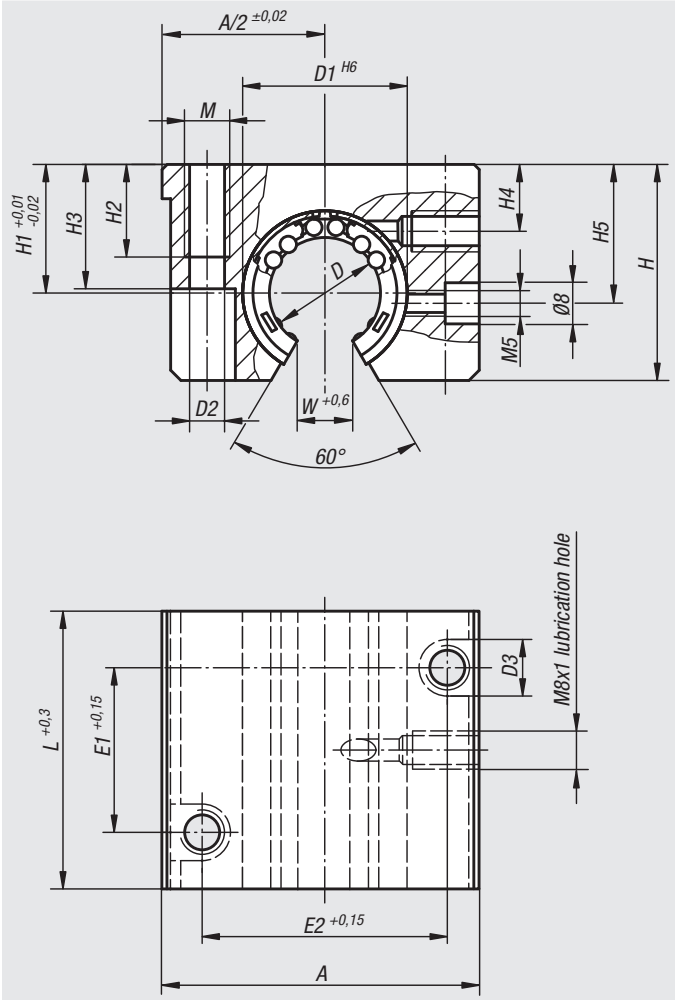
Accessory:
Attachment seals 21560.
Precision guide shafts 21595.
Fastening screws 07160 or 07161.

Order No.	A	D	D1	D2	D3	E1	E2	H	H1	H2	H3	H4	L	M	Approx. weight kg
21530-121002	43	12	22	4,2	8	23	32	35	18	13	25	10	39	M5	0,130
21530-161002	53	16	26	5,2	10	26	40	42	22	13	30	12	43	M6	0,200
21530-201002	60	20	32	6,8	11	32	45	50	25	18	34	13	54	M8	0,340
21530-251002	78	25	40	8,6	15	40	60	60	30	22	40	15	67	M10	0,650
21530-301002	87	30	47	8,6	15	45	68	70	35	22	48	16	79	M10	0,970

Linear housing units

individual, open





Material:
Housing in aluminium

Version:
Housing natural finish

Sample order:
nlm 21535-121012

Note:
The ready-to-install linear housing units consist of an extruded aluminium housing, installed linear ball bearings with angle error adjustment 21510 and double-sided seal. Mounting of the bearings within the housing with socket head screws.

Recommended shaft tolerance: h6.

Basic load ratings according to specification of the linear ball bearings.

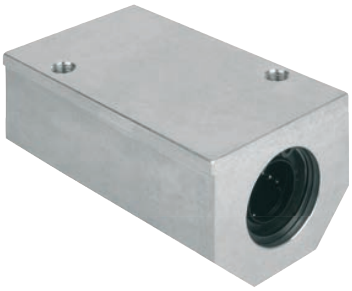
On request:
Linear housing units can be equipped with all of the linear ball bearings presented in this catalogue.

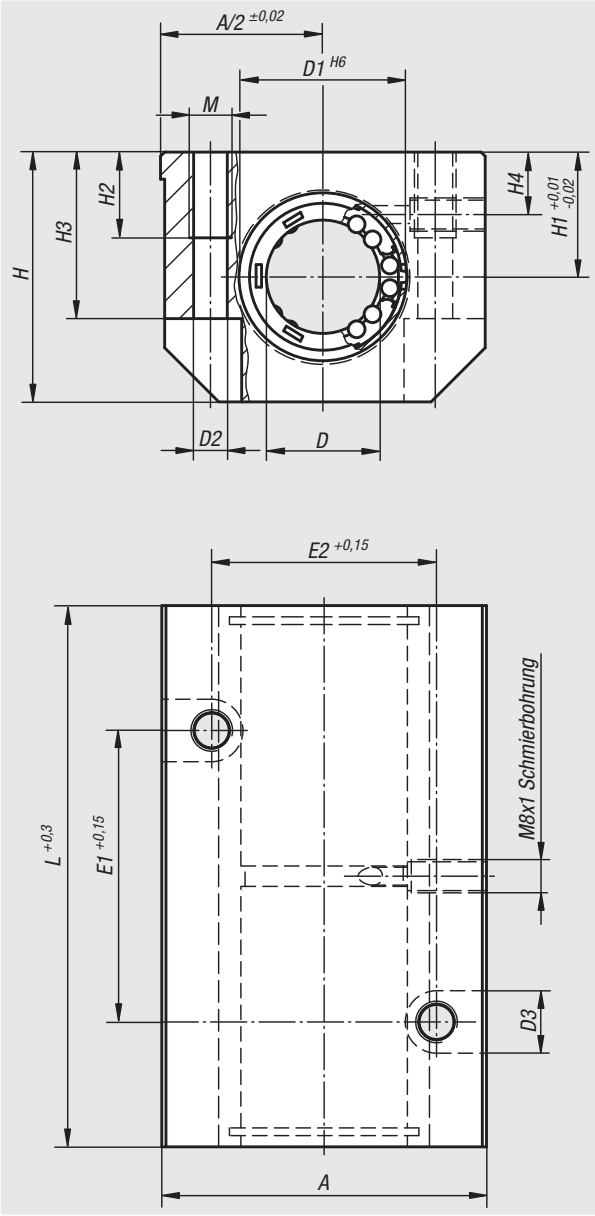
Accessory:
Attachment seals 21560.
Precision guide shafts 21590 or 21595.
Fastening screws 07160 or 07161.

Order No.	A	D	D1	D2	D3	E1	E2	H	H1	H2	H3	H4	H5	L	M	W	Approx. weight kg
21535-121012	43	12	22	4,2	8	23	32	28	18	11	23,5	8	16,65	39	M5	7	0,110
21535-161012	53	16	26	5,2	10	26	40	35	22	13	30	12	22	43	M6	9,4	0,170
21535-201012	60	20	32	6,8	11	32	45	42	25	18	34	13	25	54	M8	10,2	0,300
21535-251012	78	25	40	8,6	15	40	60	51	30	22	40	15	31,5	67	M10	12,5	0,570
21535-301012	87	30	47	8,6	15	45	68	60	35	22	48	16	33	79	M10	13,9	0,860

Linear housing units

tandem, closed





Material:
Housing in aluminium

Version:
Housing natural finish

Sample order:
nlm 21540-121002

Note:
The ready-to-install linear housing units consist of an extruded aluminium housing, two installed linear ball bearings with angle error adjustment 21510 and double-sided seal. Mounting of the bearings within the housing with circlips DIN 472.

Recommended shaft tolerance: h6.

Basic load ratings according to specification of the linear ball bearings (x2).

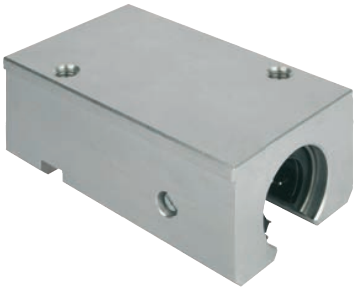
On request:
Linear housing units can be equipped with all of the linear ball bearings presented in this catalogue.

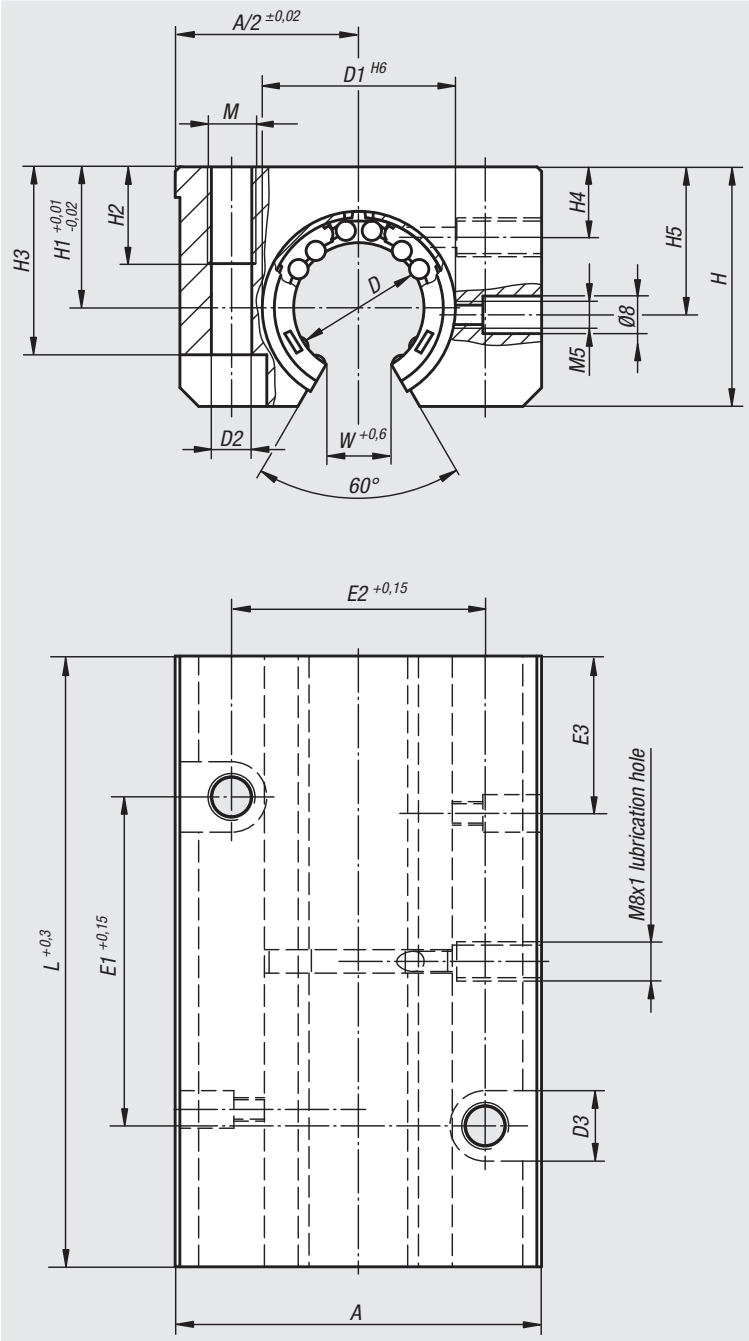
Accessory:
Attachment seals 21560.
Precision guide shafts 21595.
Fastening screws 07160 or 07161.

Order No.	A	D	D1	D2	D3	E1	E2	H	H1	H2	H3	H4	L	M	Approx. weight kg
21540-121002	43	12	22	5,2	10	40	30	35	18	13	25	10	76	M6	0,270
21540-161002	53	16	26	5,2	10	45	36	42	22	13	30	12	84	M6	0,410
21540-201002	60	20	32	6,8	11	55	45	50	25	18	34	13	104	M8	0,720
21540-251002	78	25	40	8,6	15	70	54	60	30	22	40	15	130	M10	1,350
21540-301002	87	30	47	10,3	18	85	62	70	35	26	48	16	152	M12	2,010

Linear housing units

tandem, open





Material:
Housing in aluminium

Version:
Housing natural finish

Sample order:
nlm 21545-121012

Note:
The ready-to-install linear housing units consist of an extruded aluminium housing, four installed linear ball bearings with angle error adjustment 21510 and double-sided seal. Mounting of the bearings within the housing with socket head screws.

Recommended shaft tolerance: h6.

Basic load ratings according to specification of the linear ball bearings (x2).

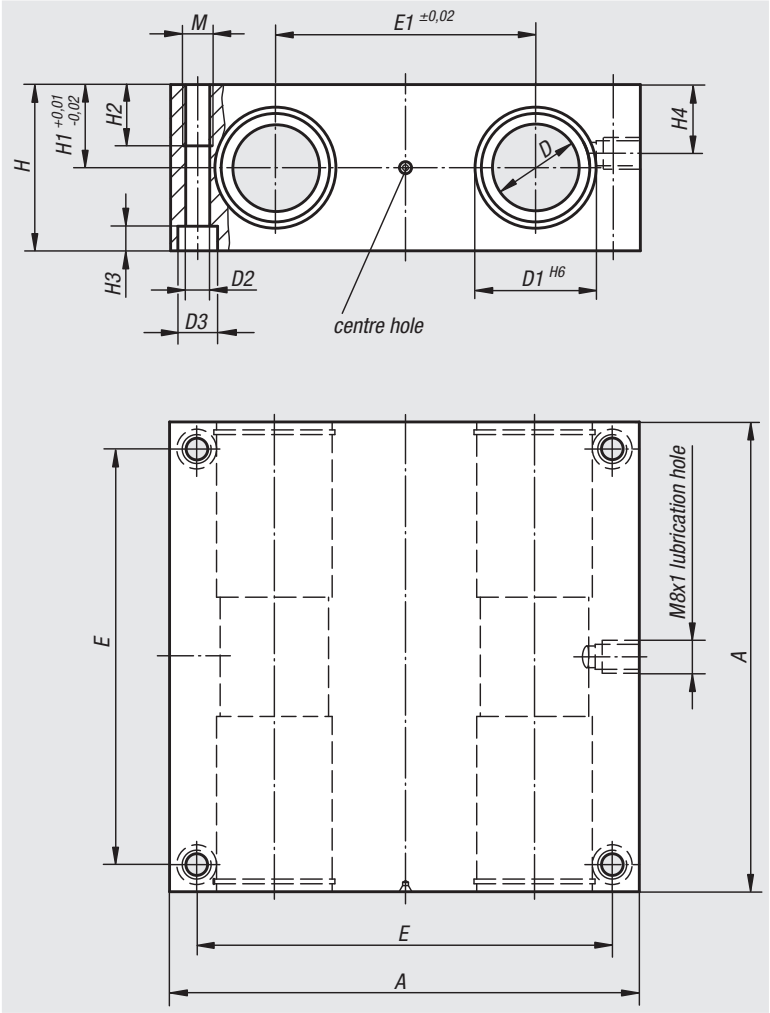
On request:
Linear housing units can be equipped with all of the linear ball bearings presented in this catalogue.

Accessory:
Attachment seals 21560.
Precision guide shafts 21590 or 21595.
Fastening screws 07160 or 07161.

Order No.	A	D	D1	D2	D3	E1	E2	E3	H	H1	H2	H3	H4	H5	L	M	W	Approx. weight kg
21545-121012	43	12	22	5,2	10	40	30	19,5	30	18	13	25	8	16,65	76	M6	7	0,220
21545-161012	53	16	26	5,2	10	45	36	21,5	35	22	13	30	12	22	84	M6	9,4	0,340
21545-201012	60	20	32	6,8	11	55	45	27	42	25	18	34	13	25	104	M8	10,2	0,620
21545-251012	78	25	40	8,6	15	70	54	33,5	51	30	22	40	15	31,5	130	M10	12,9	1,170
21545-301012	87	30	47	10,3	18	85	62	39,5	60	35	26	48	16	33	152	M12	14,4	1,680

Linear housing units

quadro, closed



Material:
Housing in aluminium

Version:
Housing natural finish

Sample order:
nlm 21550-121002

Note:
The ready-to-install linear housing units consist of an extruded aluminium housing, four installed linear ball bearings with angle error adjustment 21510 and double-sided seal. Mounting of the bearings within the housing with circlips DIN 472.

Recommended shaft tolerance: h6.

Basic load ratings according to specification of the linear ball bearings (x4).

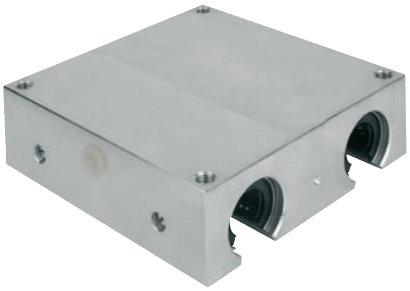
On request:
Linear housing units can be equipped with all of the linear ball bearings presented in this catalogue.

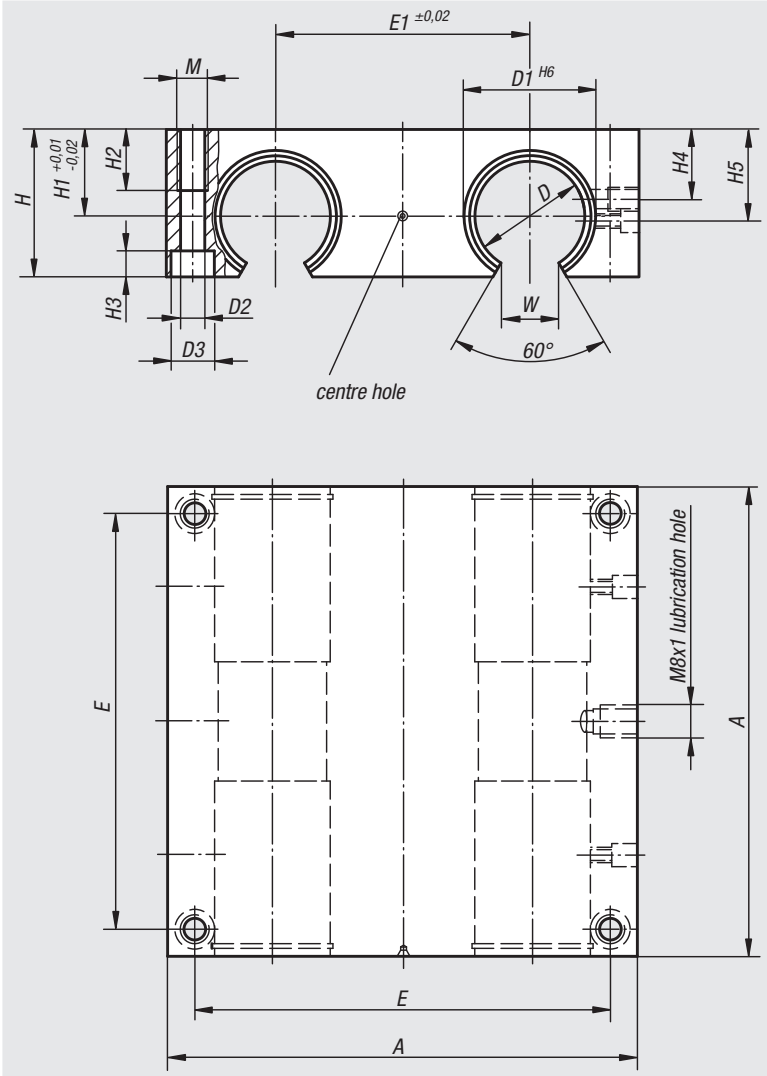
Accessory:
Attachment seals 21560.
Precision guide shafts 21595.
Fastening screws 07160 or 07161.

Order No.	A	D	D1	D2	D3	E	E1	H	H1	H2	H3	H4	M	Approx. weight kg
21550-121002	85	12	22	5,3	10	73	42	32	16	13	5,4	13	M6	0,520
21550-161002	100	16	26	5,3	10	88	54	36	18	13	5,4	15	M6	0,780
21550-201002	130	20	32	6,8	11	115	72	46	23	18	6,4	19	M8	1,740
21550-251002	160	25	40	9	15	140	88	56	28	22	8,6	24	M10	3,130
21550-301002	180	30	47	10,5	18	158	96	64	32	26	10,6	27	M12	4,430

Linear housing units

quadro, open





Material:
Housing in aluminium

Version:
Housing natural finish

Sample order:
nlm 21555-121012

Note:
The ready-to-install linear housing units consist of an extruded aluminium housing, four installed linear ball bearings with angle error adjustment 21510 and double-sided seal. Mounting of the bearings within the housing with socket head screws.

Recommended shaft tolerance: h6.

Basic load ratings according to specification of the linear ball bearings (x4).

On request:
Linear housing units can be equipped with all of the linear ball bearings presented in this catalogue.

Accessory:
Attachment seals 21560.
Precision guide shafts 21590 or 21595.
Fastening screws 07160 or 07161.

Order No.	A	D	D1	D2	D3	E	E1	H	H1	H2	H3	H4	H5	M	W	Approx. weight kg
21555-121012	85	12	22	5,3	10	73	42	30	18	13	5,4	10	16,65	M6	7	0,450
21555-161012	100	16	26	5,3	10	88	54	35	22	13	5,4	12	22	M6	9,4	0,730
21555-201012	130	20	32	6,8	11	115	72	42	25	18	6,4	13	25	M8	10,2	1,480
21555-251012	160	25	40	9	15	140	88	51	30	22	8,6	15	31,5	M10	12,9	2,680
21555-301012	180	30	47	10,5	18	158	96	60	35	26	10,6	16	33	M12	13,9	3,950

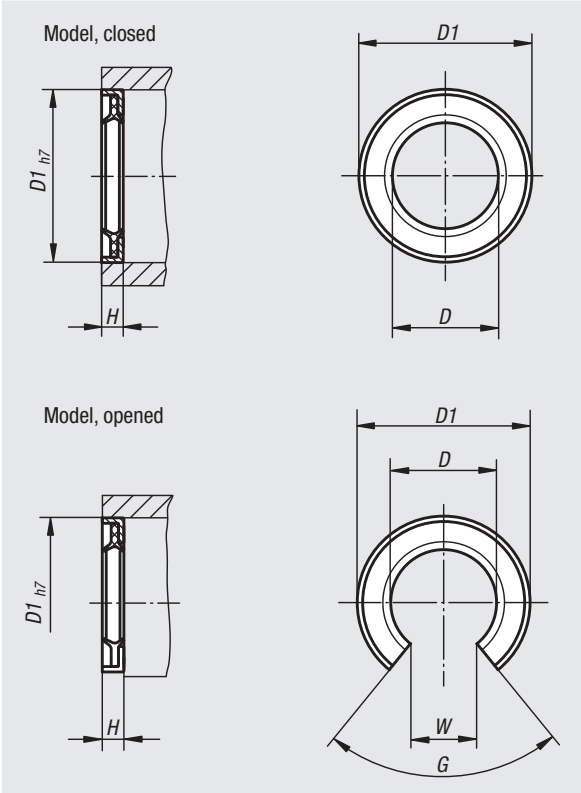
Attachment seals

double-lip sealing rings

Material, version:
Ring in steel;
rubber NBR

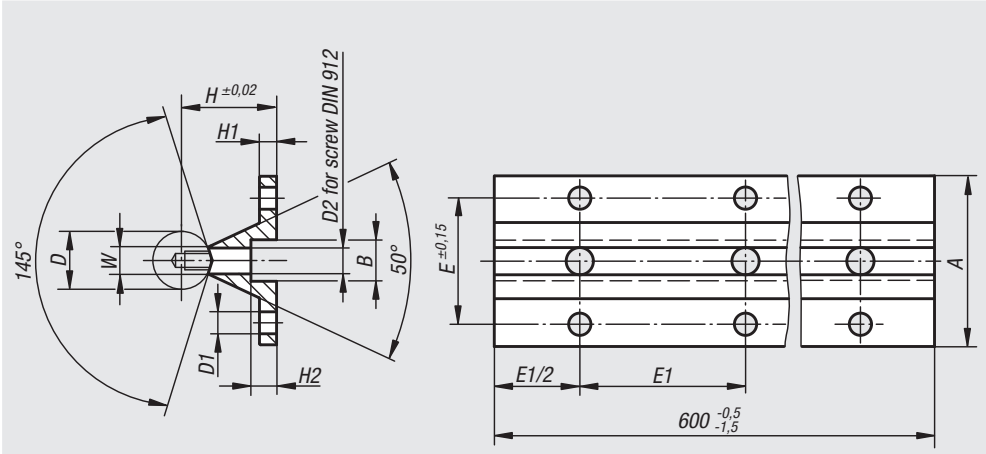
Sample order:
nlm 21560-120

Note:
In addition to the standard seals, attachment seals for linear ball linings are available. With these attachment seals, considerably improved dirt and dust protection is achieved.
The seals are inserted into the housing dill holes (tolerance H7) prior to the ball linings and secured with glue.



Order No. closed	Order No. open	D	D1	H	G	W
21560-120	**21560-121**	12	22	3	-/78°	-/7,5
21560-160	**21560-161**	16	26	3	-/78°	-/10
21560-200	**21560-201**	20	32	4	-/60°	-/10
21560-250	**21560-251**	25	40	4	-/60°	-/12,5
21560-300	**21560-301**	30	47	5	-/50°	-/12,5

Shaft supports



Material, version:
Aluminium, natural finish

Sample order:
nlm 21565-12375X0600

Note:
These shaft supports are required to support shafts in conjunction with linear ball bearings of an open design. Continuously supported shafts enable particularly firm bearings; however, in many cases support in sections suffices. The standard length of our shaft supports is 600 mm. These pieces are composed of short or, optionally, long supports.

Accessory:
Precision guide shafts with installation drill holes 21590.
Fastening screws 07160.

Order No.	Size	A	B	D	D1	D2	E	E1	H	H1	H2	W	Approx. weight kg
21565-12375X0600	12	40	8	12	4,5	M4x16	29	75	22	5	5	5,8	0,520
21565-16500X0600	16	45	9,5	16	5,5	M5x20	33	100	26	5	6	7	0,640
21565-20500X0600	20	52	11	20	6,6	M6x25	37	100	32	6	6,5	8,3	0,900
21565-25600X0600	25	57	14	25	6,6	M8x25	42	120	36	6	8,5	10,8	1,080
21565-30750X0600	30	69	17	30	9	M10x30	51	150	42	7	10,5	11	1,430

Traverses fixed

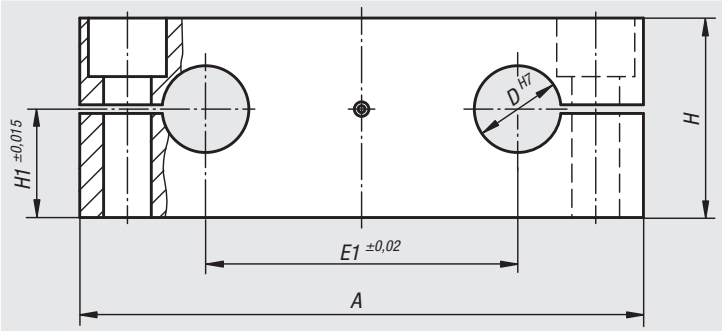
Material, version:
Aluminium, natural finish

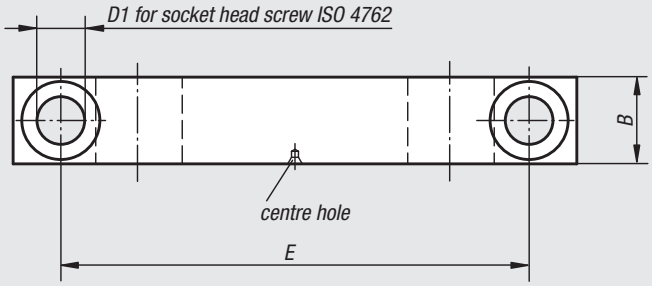
Sample order:
nlm 21575-12

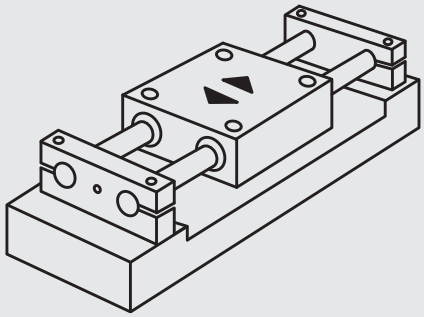
Note:
Traverse with two location holes for easy and secure clamping and installation of the guide shafts. For the assembly of prefabricated table units with our Quadro 21550 or 21555 linear housing units.

This version permits the axial motion of the linear bearing unit. That is, the shafts are installed with the traverses fixed on the machine base.

Accessory:
Precision guide shafts 21595.
Fastening screws 07160 or 07161.

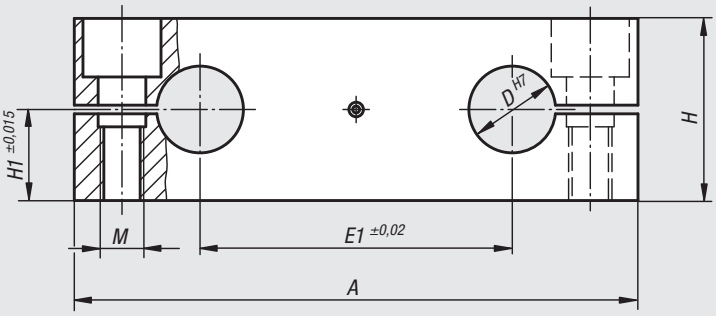


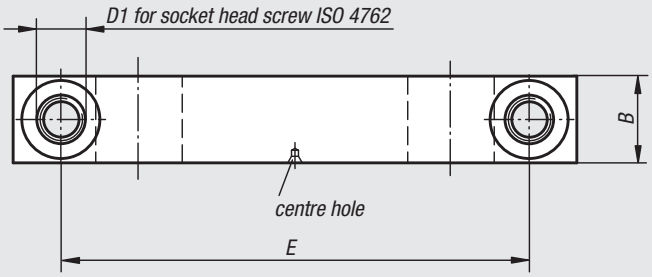


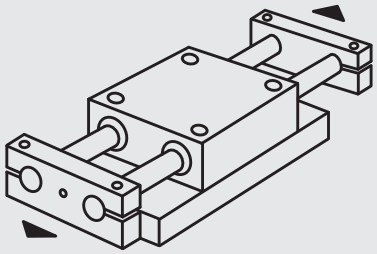


Order No.	A	B	D	D1	E	E1	H	H1	Approx. weight kg
21575-12	85	14	12	6,6	70	42	32	18	0,090
21575-16	100	18	16	9	82	54	36	20	0,140
21575-20	130	20	20	11	108	72	46	25	0,250
21575-25	160	25	25	13,5	132	88	56	30	0,470
21575-30	180	25	30	13,5	150	96	64	35	0,620

Traverses moveable







Material, version:
Aluminium, natural finish

Sample order:
nlm 21577-12

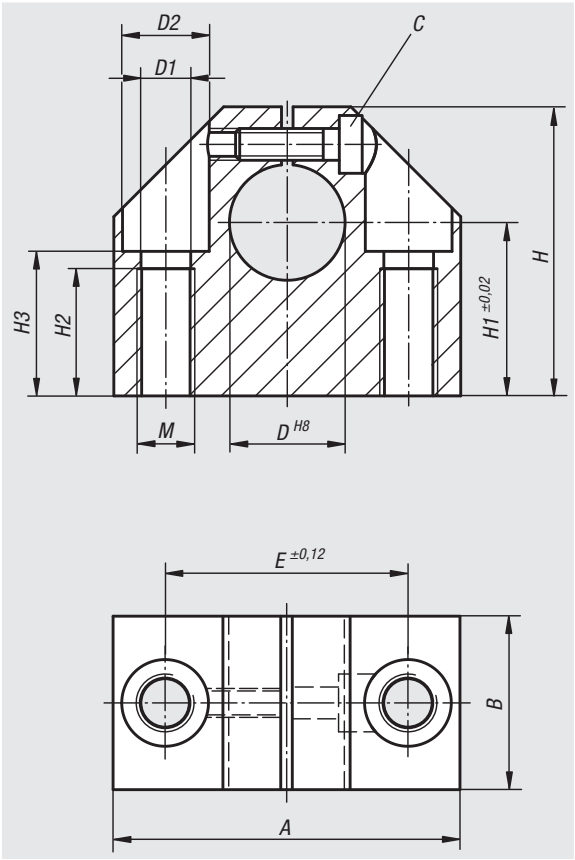
Note:
Traverse with two location holes for easy and secure clamping and installation of the guide shafts. For the assembly of prefabricated table units with our Quadro 21550 or 21555 linear housing units.

In the case of a firmly installed linear bearing unit, this version permits a operation of the shafts with the traverses.

Accessory:
Precision guide shafts 21595.
Fastening screws 07160 or 07161.

Order No.	A	B	D	D1	E	E1	H	H1	M	Approx. weight kg
21577-12	85	14	12	6,6	70	42	28	14	M6	0,070
21577-16	100	18	16	9	82	54	32	16	M8	0,130
21577-20	130	20	20	11	108	72	42	21	M10	0,220
21577-25	160	25	25	13,5	132	88	52	26	M12	0,440
21577-30	180	25	30	13,5	150	96	58	29	M12	0,560

Shaft bents



Material, version:
Aluminium, natural finish

Sample order:
nlm 21580-12

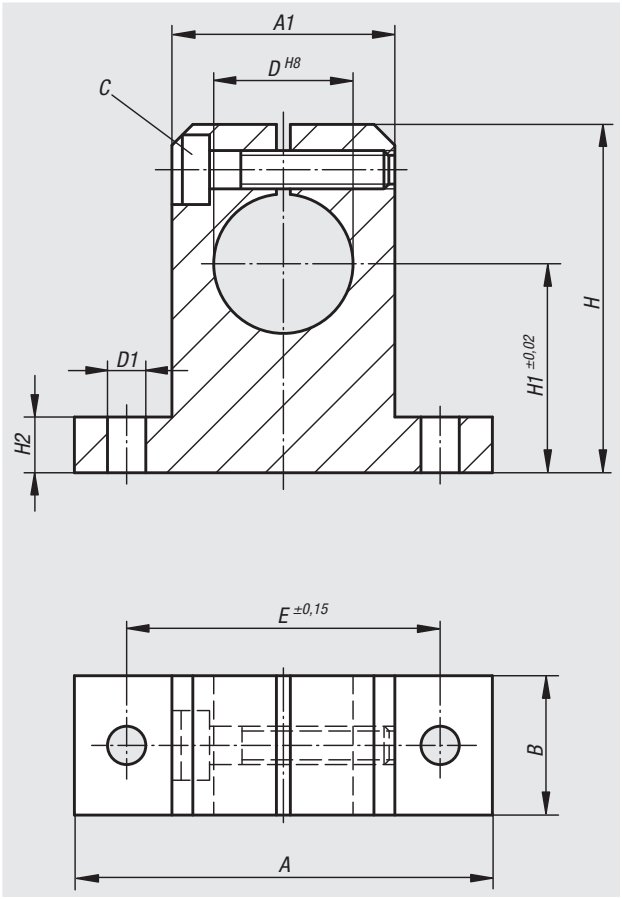
Note:
Shaft bents with receiving hole for easy and secure clamping and installation of guide shafts.

Accessory:
Precision guide shafts 21595.
Fastening screws 07160 or 07161.

Order No.	A	B	D	D1	D2	E	H	H1	H2	H3	M	C (DIN 912)	Approx. weight kg
21580-12	43	20	12	5,2	10	30	35	20	13	16,5	M6	M4	0,100
21580-16	53	24	16	6,8	11	38	42	25	18	21	M8	M5	0,150
21580-20	60	30 -0,6	20	8,6	15	42	50 -0,6	30	22	25	M10	M6	0,230
21580-25	78	38	25	10,3	18	56	60	35	26	30	M12	M8	0,410
21580-30	87	40 -0,6	30	10,3	18	64	70 -0,6	40	26	34	M12	M8	0,530

Shaft bents

standard



Material, version:
Aluminium, natural finish

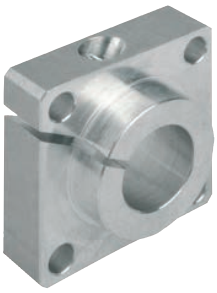
Sample order:
nlm 21582-12

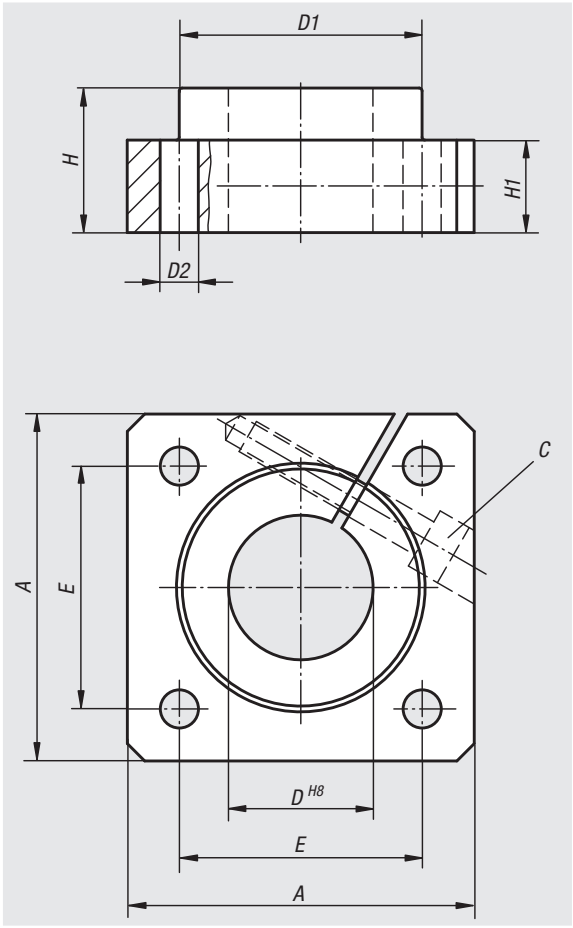
Note:
Shaft bents with receiving hole for easy and secure clamping and installation of guide shafts.

Accessory:
Precision guide shafts 21595.
Fastening screws 07160 or 07161.

Order No.	A	A1	B	D	D1	E	H	H1	H2	C (DIN 912)	Approx. weight kg
21582-12	42	20	12	12	5,5	32	35	20	5,5	M4	0,020
21582-16	50	26	16	16	5,5	40	42	25	6,5	M4	0,030
21582-20	60	32	20	20	5,5	45	50	30	8	M4	0,070
21582-25	74	38	25	25	6,6	60	58	35	9	M5	0,140
21582-30	84	45	28	30	9	68	68	40	10	M6	0,200

Flange shaft bents





Material, version:
Aluminium, natural finish

Sample order:
nlm 21585-12

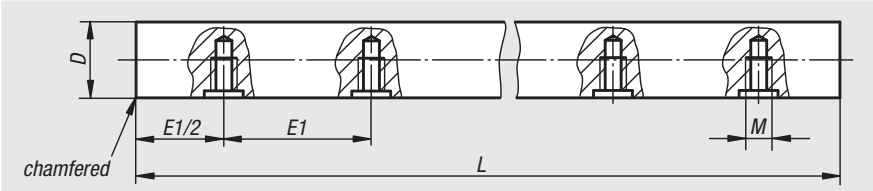
Note:
Flange shaft bents with receiving hole for easy and secure clamping and installation of guide shafts.

Accessory:
Precision guide shafts 21595.
Fastening screws 07160 or 07161.

Order No.	A	D	D1	D2	E	H	H1	C (DIN 912)	Approx. weight kg
21585-12	40	12	23,5	5,5	30 ±0,12	20	12	M4	0,060
21585-16	50	16	27,5	5,5	35 ±0,12	20	12	M4	0,080
21585-20	50	20	33,5	6,6	38 ±0,15	23	14	M5	0,100
21585-25	60	25	42	6,6	42 ±0,15	25	16	M6	0,150
21585-30	70	30	49,5	9	54 ±0,25	30	19	M8	0,300

Precision guide shafts

with installation drill holes



Material:
Steel 1.1213.
stainless steel 1.4034.

Version:
Steel, ground.
Steel, ground and proportionally hard-chrome plated, chrome layer 5 - 10 µm.
Stainless steel, ground.

The precision steel shafts are in general inductively surface-hardened.

Sample order:
nlm 21590-012375X0600

Note:
The surface value obtained during the inductive hardening process guarantees high surface wear resistance.

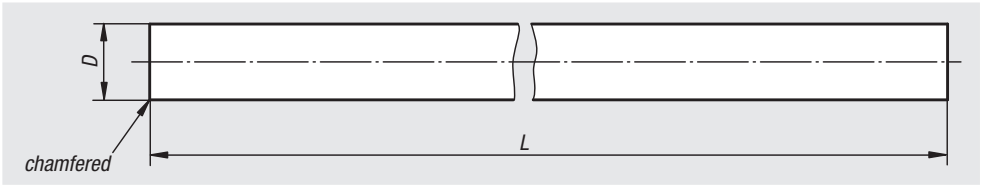
Suitable for shaft supports 21565.

On request:
Lengths up to a max. 4000 mm.

Accessory:
Shaft supports 21565.

Order No.	Material	D	E1	L	M	Hardness penetration depth max.	Surface hardness HRC	Approx. weight kg/m
21590-012375X0600	steel	12 h6	75	600	M4	1,3	62 ±2	0,888
21590-016500X0600	steel	16 h6	100	600	M5	1,6	62 ±2	1,578
21590-020500X0600	steel	20 h6	100	600	M6	1,6	62 ±2	2,466
21590-025600X0600	steel	25 h6	120	600	M8	1,8	62 ±2	3,853
21590-030750X0600	steel	30 h6	150	600	M10	2	62 ±2	5,549
21590-112375X0600	steel hard-chrome plated	12 h7	75	600	M4	1,3	65 – 70	0,888
21590-116500X0600	steel hard-chrome plated	16 h7	100	600	M5	1,6	65 – 70	1,578
21590-120500X0600	steel hard-chrome plated	20 h7	100	600	M6	1,6	65 – 70	2,466
21590-125600X0600	steel hard-chrome plated	25 h7	120	600	M8	1,8	65 – 70	3,853
21590-130750X0600	steel hard-chrome plated	30 h7	150	600	M10	2	65 – 70	5,549
21590-212375X0600	stainless steel	12 h6	75	600	M4	1,3	51 – 55	0,888
21590-216500X0600	stainless steel	16 h6	100	600	M5	1,6	51 – 55	1,578
21590-220500X0600	stainless steel	20 h6	100	600	M6	1,8	51 – 55	2,466
21590-225600X0600	stainless steel	25 h6	120	600	M8	2	51 – 55	3,853
21590-230750X0600	stainless steel	30 h6	150	600	M10	2,4	51 – 55	5,549

Precision guide shafts



Material:
Steel 1.1213;
stainless steel 1.4034.

Version:
Steel, ground.
Steel, ground and proportionally hard-chrome plated, chrome layer 5 - 10 µm.
Stainless steel, ground.

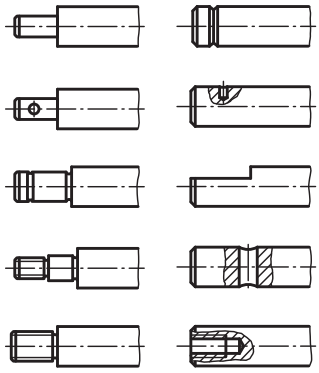
The precision steel shafts are in general inductively surface-hardened.

Sample order:
nlm 21595-012X1000

Note:
The surface value obtained during the inductive hardening process guarantees high surface wear resistance.

On request:
Processing of the ends and cylindrical lateral areas according to customer design.
Lengths up to a max. 4000 mm.

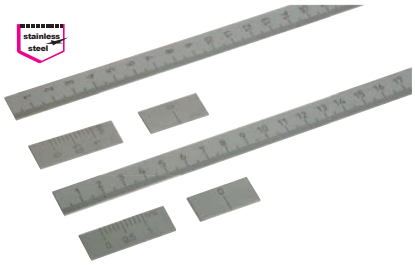
Machining examples:



Order No.	Material	D	L	Hardness penetration depth max.	Surface hardness HRC	Approx. weight kg/m
21595-012X1000	steel	12 h6	1000	1,3	62 ±2	0,888
21595-016X1000	steel	16 h6	1000	1,6	62 ±2	1,578
21595-020X1000	steel	20 h6	1000	1,6	62 ±2	2,466
21595-025X1000	steel	25 h6	1000	1,8	62 ±2	3,853
21595-030X1000	steel	30 h6	1000	2	62 ±2	5,549
21595-112X1000	steel hard-chrome plated	12 h7	1000	1,3	65 – 70	0,888
21595-116X1000	steel hard-chrome plated	16 h7	1000	1,6	65 – 70	1,578
21595-120X1000	steel hard-chrome plated	20 h7	1000	1,6	65 – 70	2,466
21595-125X1000	steel hard-chrome plated	25 h7	1000	1,8	65 – 70	3,853
21595-130X1000	steel hard-chrome plated	30 h7	1000	2	65 – 70	5,549
21595-212X1000	stainless steel	12 h6	1000	1,3	51 – 55	0,888
21595-216X1000	stainless steel	16 h6	1000	1,6	51 – 55	1,578
21595-220X1000	stainless steel	20 h6	1000	1,8	51 – 55	2,466
21595-225X1000	stainless steel	25 h6	1000	2	51 – 55	3,853
21595-230X1000	stainless steel	30 h6	1000	2,4	51 – 55	5,549

Scales in stainless steel

self-adhesive



Material:
Stainless steel 1.4310

Version:
Natural finish

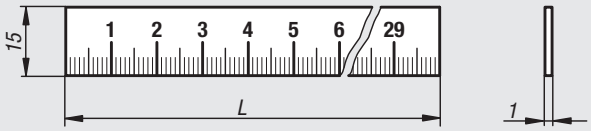
Sample order:
nlm 21880-000010X0300 (please also indicate dimension L)

Note:
Rigid design stainless steel linear scales with self-adhesive back.
Cross section 15 x 1 mm.

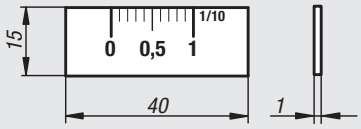
Matt surface and black high contrast graduations. The graduations are deep lasered.

On request:
– Zero mark lower right or centre
– Graduations upper right or both sides
– Other lengths

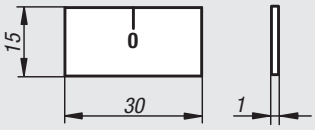
horizontal assembly position



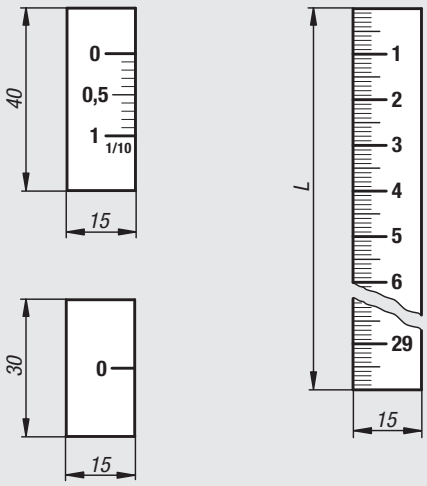
nonius



zero reference mark



vertical assembly position



Stainless steel linear scales, self-adhesive

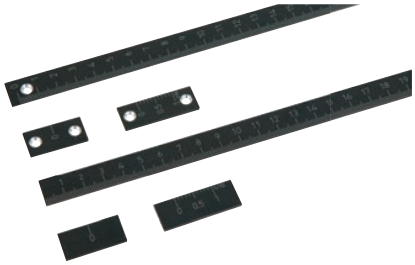
Order No.	Version	Assembly position	Zero point	Division	Graduations	L
21880-000010X	scale	horizontal	left	1 mm	lower	300/500/700/1000
21880-010010X	scale	vertical	upper	1 mm	left	300/500/700/1000

Vernier scale and zero reference, stainless steel, self-adhesive

Order No.	Version	Assembly position	Zero point	Graduations
21880-0001	Vernier scale	horizontal	left	upper
21880-0101	Vernier scale	vertical	upper	right
21880-00	zero mark	horizontal	-	-
21880-01	zero mark	vertical	-	-

Scales in aluminium

self-adhesive or with holes



Material:
Aluminium

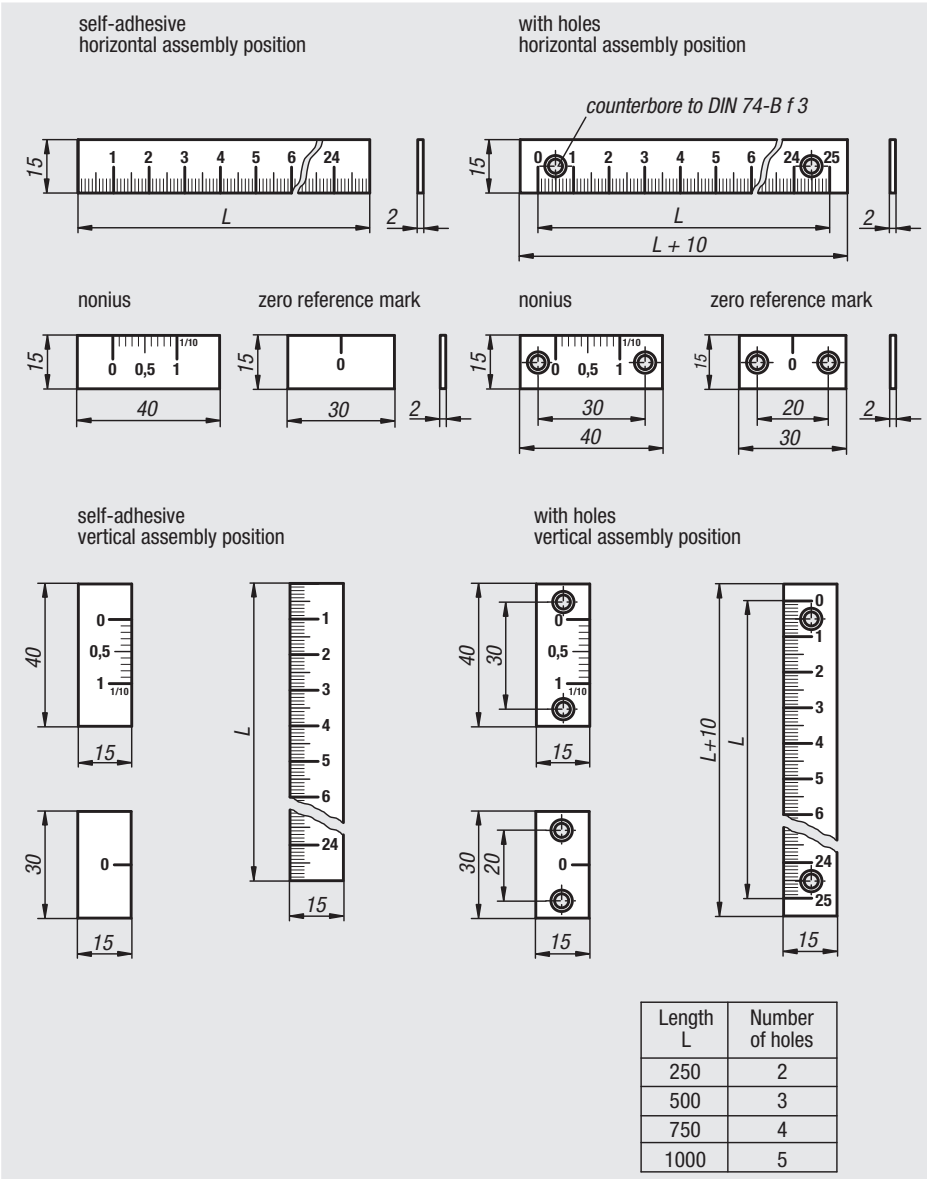
Version:
Black anodized

Sample order:
nlm 21882-000010X0250 (please also indicate dimension L)

Note:
Rigid design aluminium linear scales with self-adhesive back or with screw holes.
Cross section 15 x 2 mm.

Black anodized surface and high contrast graduations for ligibility without shading. The graduations are deep lasered.

On request:
– Zero mark lower right or centre
– Graduations upper right or both sides
– Other lengths



Length L	Number of holes
250	2
500	3
750	4
1000	5

Aluminium liniear scales, self adhesive or with screw holes

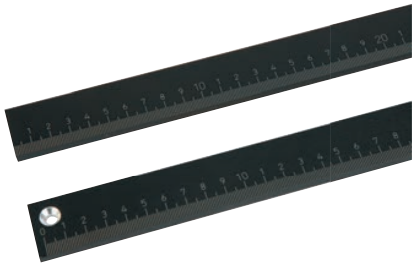
Order No. self adhesive	Order No. with holes	Version	Assembly position	Zero point	Division	Graduations	L
21882-000010X	**21882-100010X**	scale	horizontal	left	1 mm	lower	250/500/750/1000
21882-010010X	**21882-110010X**	scale	vertical	upper	1 mm	left	250/500/750/1000

Vernier scale and zero reference, aluminium, self adhesive or with holes

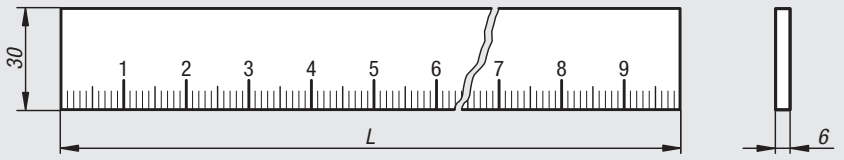
Order No. self adhesive	Order No. with holes	Version	Assembly position	Zero point	Graduations
21882-0001	**21882-1001**	Vernier scale	horizontal	left	upper
21882-0101	**21882-1101**	Vernier scale	vertical	upper	right
21882-00	**21882-10**	zero mark	horizontal	-	-
21882-01	**21882-11**	zero mark	vertical	-	-

Scales in aluminium

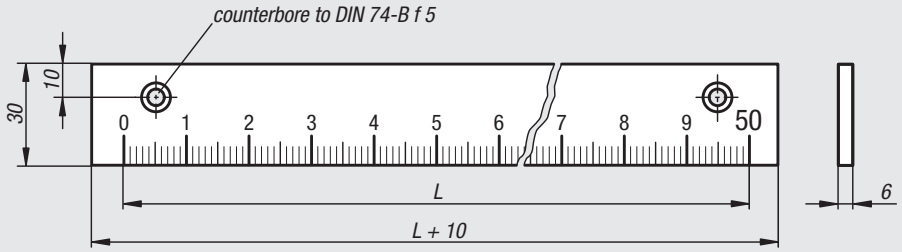
self-adhesive or with holes



self-adhesive



with holes



Length L	Number of holes
500	2
1000	3

Material:
Aluminium

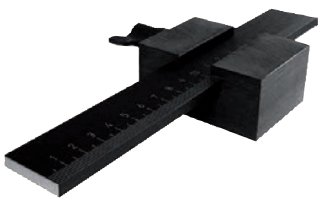
Version:
Scale surface ground and black anodized

Sample order:
nlm 21884-000010X0500 (please also indicate dimension L)

Note:
Rigid, heavy-duty design aluminium linear scales.
Cross section 30 x 6 mm.

Black anodized surface and high contrast graduations for ligibility without shading.
The graduations are deep lasered.

On request:
– Zero mark right or centre
– Graduations top or both sides
– Other lengths



Order No. self adhesive	Order No. with holes	Assembly position	Zero point	Division	Graduations	L
21884-000010X	**21884-100010X**	horizontal	left	1 mm	bottom	500/1000

Digital position indicators

Material, version:
Housing polyamide 6, impact-resistant.
Hollow shaft in steel, black oxide finish.
Viewing window plastic.
Grub screw steel, black.
Counter dials black, figures white.

Sample order:
nlm 21901-01001111
(Position indicator with 1 mm pitch, decimal point in first position from the right, assembly position 1, direction of count ascending clockwise, colour orange)

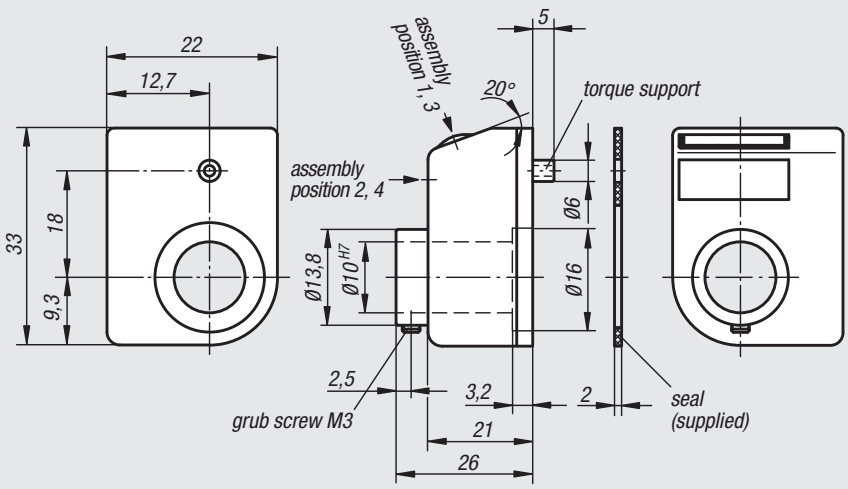
Note:
Digital position indicators allow direct reading off of input measurement values at a glance.
In addition, the value indicated per spindle rotation (corresponding spindle pitch) can be selected and the various indicator values can be operated by a transmission gear. The position indicators are distinguished by their small construction with very clear display.
They are especially suitable for small spindle distances and small shaft diameters and they have a torque support that is located in a drillhole on the other side.

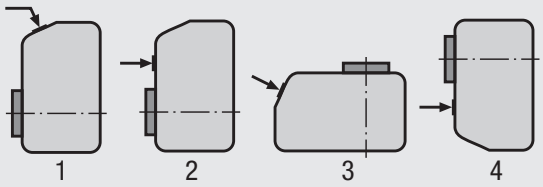
** At the 1st asterisk give assembly position and at the 2nd asterisk give the count direction (see sample order „assembly position, count direction“).

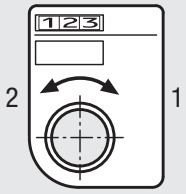
On request:
– Stainless steel driveshaft
– Indicator for inch

Accessory:
– Reducing bushes 21940

Technical data:
– Counter consisting of 3 10-position dials
– Height of figures about 4 mm
– Hollow shaft Ø 10 H7 mm
– Temperature resistant to 80 °C
– Oil and solvent resistant



Display after one rotation, with decimal point:	Assembly position (1 - 4):
	
e. g. 21901-**01001**111 **0100** = 1mm increments **1** = decimal places	e. g. 21901-0100**1**111 = assembly position **1**

Count direction (1 - 2):	Colour (1 - 2):
	
e. g. 21901-0100111**1** **1** = clockwise (ascending values) **2** = anticlockwise (ascending values)	e. g. 21901-0100111**1** **1** = orange **2** = black

Order No. orange	Order No. black	Pitch	Indicator after one rotation	Decimal point in position	Revolutions per minute max.	Approx. weight kg
21901-01001****1**	**21901-01001******2**	1	01,0	1	1500	0,020
21901-02001****1**	**21901-02001******2**	2	02,0	1	750	0,020
21901-02501****1**	**21901-02501******2**	2,5	02,5	1	600	0,020
21901-03001****1**	**21901-03001******2**	3	03,0	1	500	0,020
21901-04001****1**	**21901-04001******2**	4	04,0	1	375	0,020
21901-05001****1**	**21901-05001******2**	5	05,0	1	300	0,020
21901-06001****1**	**21901-06001******2**	6	06,0	1	250	0,020
21901-08001****1**	**21901-08001******2**	8	08,0	1	180	0,020
21901-10001****1**	**21901-10001******2**	10	10,0	1	150	0,020

Digital position indicators

Material, version:
Housing polyamide 6, impact-resistant.
Hollow shaft steel, black oxide finish.
Viewing window plastic.
Grub screw steel, black.
Counter dials black, figures white.

Sample order:
nlm 21902-01002111
(Position indicator with 1 mm pitch, decimal point in second position from the right, assembly position 1, direction of count ascending clockwise, colour orange)

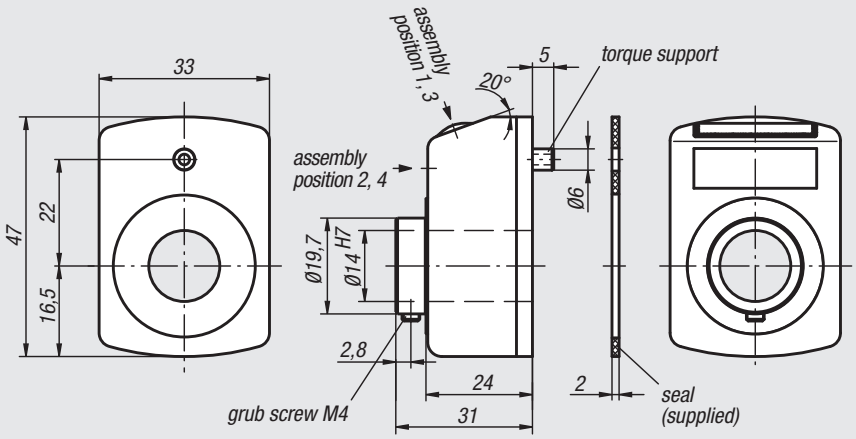
Note:
Digital position indicators allow direct reading off of input measurement values at a glance.
In addition, the value indicated per spindle rotation (corresponding spindle pitch) can be selected and the various indicator values can be operated by a transmission gear. The position indicators are distinguished by their small construction with very clear display and fine scale.
They are especially suitable for small spindle distances and small shaft diameters and they have a torque support that is located in a drillhole on the other side.

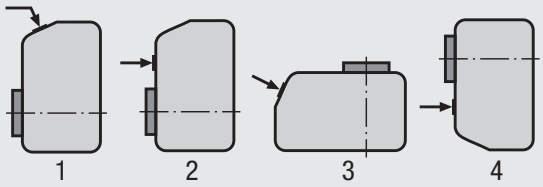
** At the 1st asterisk give assembly position and at the 2nd asterisk give the count direction (see sample order „assembly position, count direction“).

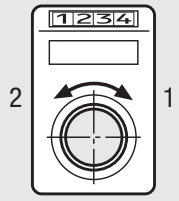
On request:
– Counter cover made of mineral glass
– Stainless steel driveshaft
– Axial sealing (dust-proof)
– Vibration protection

Accessory:
– Reducing bushes 21940
– Insert plate 21942
– Mounting plates 21944

Technical data:
– Counter consisting of 4 10-position dials + fine scale
– Height of figures about 6 mm
– Hollow shaft Ø 14 H7 mm
– Temperature resistant to 80 °C
– Oil and solvent resistant



Display after one rotation, with decimal point:	Assembly position (1 - 4):
	
e. g. 21902-**01002**111 **0100** = 1 mm increments **2** = decimal places	e. g. 21902-0100**2**111 = assembly position **1**

Count direction (1 - 2):	Colour (1 - 2):
	
e. g. 21902-0100211**1** **1** = clockwise (ascending values) **2** = anticlockwise (ascending values)	e. g. 21902-0100211**1** **1** = orange **2** = black

Order No. orange	Order No. black	Pitch	Indicator after one rotation	Decimal point in position	Revolutions per minute max.	Approx. weight kg
21902-010021**	**21902-01002**2**	1	00,10	2	1500	0,050
21902-010011**	**21902-01001**2**	1	001,0	1	1500	0,050
21902-012511**	**21902-01251**2**	1,25	001,2/5	1	1200	0,050
21902-015011**	**21902-01501**2**	1,5	001,5	1	1000	0,050
21902-020011**	**21902-02001**2**	2	002,0	1	750	0,050
21902-025011**	**21902-02501**2**	2,5	002,5	1	600	0,050
21902-030011**	**21902-03001**2**	3	003,0	1	500	0,050
21902-040011**	**21902-04001**2**	4	004,0	1	375	0,050
21902-050011**	**21902-05001**2**	5	005,0	1	300	0,050
21902-060011**	**21902-06001**2**	6	006,0	1	250	0,050
21902-080011**	**21902-08001**2**	8	008,0	1	180	0,050
21902-100011**	**21902-10001**2**	10	010,0	1	150	0,050

Digital position indicators

Material, version:
Housing polyamide 6, impact-resistant.
Hollow shaft steel, black oxide finish.
Viewing window plastic.
Grub screw steel, black.
Counter dials black, figures white.

Sample order:
nlm 21904-01002111
(Position indicator with 1 mm pitch, decimal point in second position from the right, assembly position 1, direction of count ascending clockwise, colour orange)

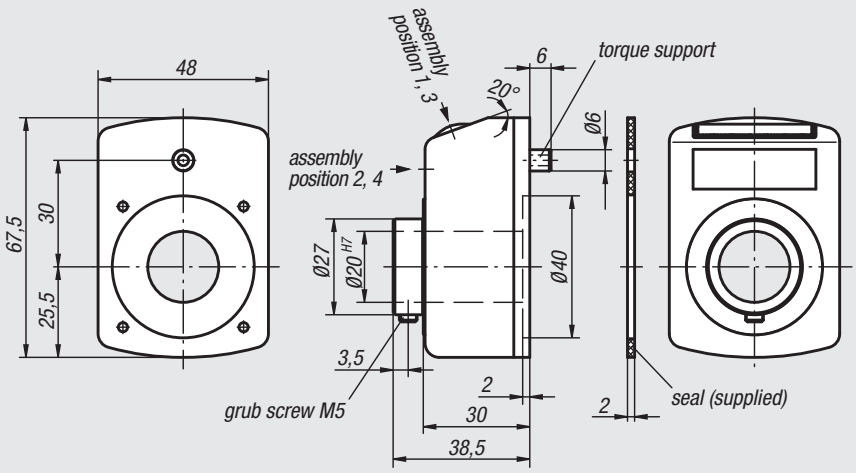
Note:
Digital position indicators allow direct reading off of input measurement values at a glance.
In addition the value indicated per spindle rotation (corresponding spindle pitch) can be selected and the various indicator values can be operated by a transmission gear.
The position indicators are distinguished by their very clear display and fine scale. They have a torque support that is located in a drillhole on the other side.

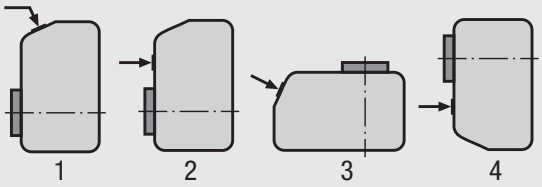
** At the 1st asterisk give assembly position and at the 2nd asterisk give the count direction (see sample order „assembly position, count direction“)

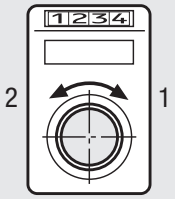
On request:
– Counter cover made of mineral glass
– Stainless steel driveshaft
– Axial sealing (dust-proof)
– Waterproof
– Vibration protection

Accessory:
– Reducing bushes 21940
– Insert plate 21942
– Mounting plates 21944

Technical data:
– Counter consisting of 5 10-position dials + fine scale
– Height of figures about 7 mm
– Hollow shaft Ø 20 H7 mm
– Temperature resistant to 80 °C
– Oil and solvent resistant
– Dust-proof



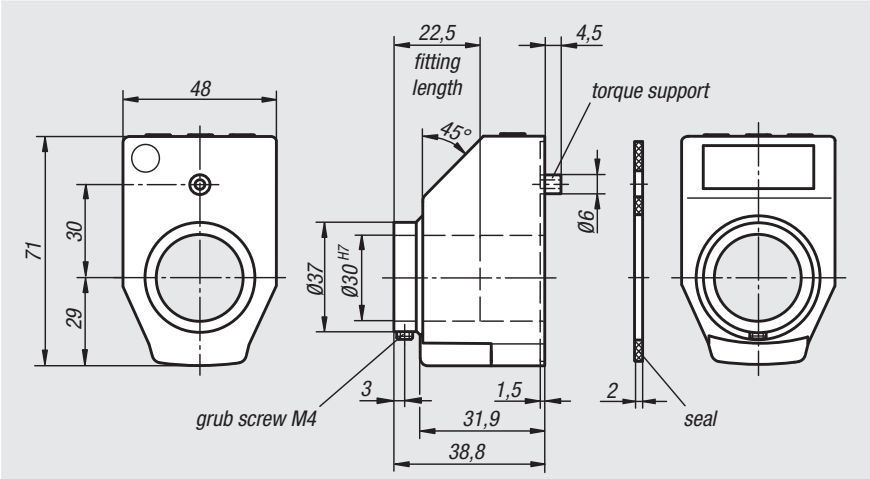
Display after one rotation, with decimal point:	Assembly position (1 - 4):
	
e. g. 21904-**01002**111 **0100** = 1 mm increments **2** = decimal places	e. g. 21904-0100**2**111 = assembly position **1**

Count direction (1 - 2):	Colour (1 - 2):
	
e. g. 21904-0100211**1** **1** = clockwise (ascending values) **2** = anticlockwise (ascending values)	e. g. 21904-0100211**1** **1** = orange **2** = black

Order No. orange	Order No. black	Pitch	Indicator after one rotation	Decimal point in position	Revolutions per minute max.	Approx. weight kg
21904-010021**	**21904-01002**2**	1	000,10	2	1500	0,100
21904-010011**	**21904-01001**2**	1	0001,0	1	1500	0,100
21904-015011**	**21904-01501**2**	1,5	0001,5	1	1000	0,100
21904-020011**	**21904-02001**2**	2	0002,0	1	750	0,100
21904-025011**	**21904-02501**2**	2,5	0002,5	1	600	0,100
21904-030011**	**21904-03001**2**	3	0003,0	1	500	0,100
21904-040011**	**21904-04001**2**	4	0004,0	1	450	0,100
21904-050011**	**21904-05001**2**	5	0005,0	1	300	0,100
21904-060011**	**21904-06001**2**	6	0006,0	1	250	0,100
21904-100011**	**21904-10001**2**	10	0010,0	1	150	0,100

Position indicators

freely programmable



Material, version:
Housing plastic.
Tubular shaft steel, black oxide finish.
View window, LCD display.
Grub screw steel, black.

Sample order not programmed:
nlm 21922-12
(Position indicator with assembly position 1, colour black)

Sample order programmed:
nlm 21922-0200021120
(see ordering example on the next page)

Note:
The electronic position indicators offer diverse opportunities compared to mechanical position indicators because they display angles as well as uncommon spindle pitches and record each fraction of spindle movement.

* Freely programmable parameters using the programming software 21922-09.

Characteristics:
– indicated value and decimal point freely programmable
– linear or angle mode
– function key for zero-point position
– function key for switching between the absolute dimension and chain dimension
– programming of an offset value directly at the device
– easy battery change

Accessory:
– reducing bushes 21940
– programming software 21922-09

Technical data:
– LCD Display with 5 digits
– Digit size approx. 11.5 mm
– Display range from -19999 ... 99999
– Tunular shaft Ø 30 H7 mm
– Operating temperature -10 °C to +60 °C
– Storage temperature -30 °C to +80 °C
– Revolution max. 600 rpm
– Lithium battery Button cell 3V, type CR 2032. service life approx. 6 years
– Vibration-resistance according to DIN IEC 68-2-6 10 g / (5 ... 150 Hz), 20 g / (100 ... 2000 Hz)
– Shock-resistance according to DIN IEC 68-2-27 30 g / 15 ms
– EMC DIN EN 61000-4-2; DIN EN 61000-4-4
– Type of protection IP 51

Position indicators programmed

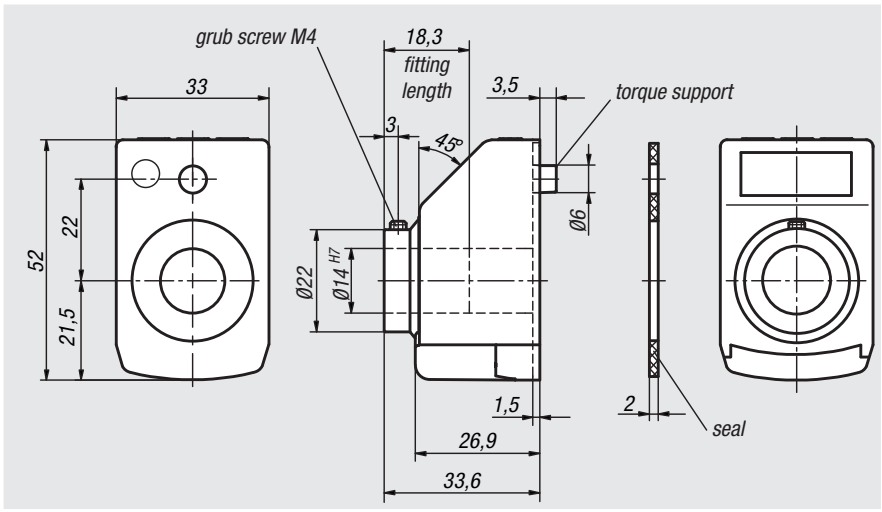
Order No.	Version
21922-	See sample order for Position Indicators, programmed

Position indicators not programmed*

Order No.	Colour	Assembly position	Pitch	Indicator after one rotation	Decimal point in position	Count direction	Zero-point position	Order No. software
21922-12	black	1	freely programmable	freely programmable	freely programmable	freely programmable	freely programmable	21922-09
21922-32	black	3	freely programmable	freely programmable	freely programmable	freely programmable	freely programmable	21922-09
21922-13	red	1	freely programmable	freely programmable	freely programmable	freely programmable	freely programmable	21922-09
21922-33	red	3	freely programmable	freely programmable	freely programmable	freely programmable	freely programmable	21922-09

Position indicators

freely programmable



Material, version:
Housing plastic.
Tubular shaft steel, black oxide finish.
View window, LCD display.
Grub screw steel, black.

Sample order not programmed:
nlm 21923-12
(Position indicator with mounted position 1, colour black)

Sample order programmed:
nlm 21923-0200021120
(see ordering example on the next page)

Note:
The electronic position indicators offer diverse opportunities compared to mechanical position indicators because they display angles as well as uncommon spindle pitches and record each fraction of spindle movement.

* Freely programmable parameters using the programming software 21922-09.

Characteristics:
– indicated value and decimal point freely programmable
– linear or angle mode
– function key for zero-point position
– function key for switching between the absolute dimension and chain dimension
– programming of an offset value directly at the device
– easy battery change

Accessory:
– reducing bushes 21940
– programming software 21922-09

Technical data:
– LCD Display with 5 digits
– Digit size approx. 8 mm
– Display range from -19999 ... 99999
– Hollow shaft Ø 14 H7 mm
– Operating temperature -10 °C to +60 °C
– Storage temperature -30 °C to +80 °C
– Revolution max. 600 rpm
– Lithium battery button cell 3V, type CR 2032. service life ca. 2 years
– Vibration-resistance acc. to DIN IEC 68-2-6 10 g / (5 ... 150 Hz), 20 g / (100 ... 2000 Hz)
– Shock-resistance acc. to DIN IEC 68-2-27 30 g / 15 ms
– EMC DIN EN 61000-4-2; DIN EN 61000-4-4
– Protection IP 51

Position indicators programmed

Order No.	Version
21923-	See sample order for Position Indicators, programmed

Position indicators not programmed*

Order No.	Colour	Assembly position	Pitch	Indicator after one rotation	Decimal point in position	Count direction	Zero-point position	Order No. software	Approx. weight kg
21923-11	orange	1	freely programmable	freely programmable	freely programmable	freely programmable	freely programmable	21922-09	0,052
21923-12	black	1	freely programmable	freely programmable	freely programmable	freely programmable	freely programmable	21922-09	0,052
21923-32	black	3	freely programmable	freely programmable	freely programmable	freely programmable	freely programmable	21922-09	0,052
21923-31	orange	3	freely programmable	freely programmable	freely programmable	freely programmable	freely programmable	21922-09	0,052

Sample order
for Position Indicators programmed 21922 and 21923

Order code:

21922- _ _ _ _ _ _ _ _ _ _ _ _

Indicator after one rotation:

e.g.
21922-**02000**21120
Please indicate here which value is to be displayed after one rotation (this is usually the spindle pitch).

Important:
Please note the decimal point position!

Angle mode:
(resolution 0.1°)
If you want the display to be in angle mode, enter 03600.

The display in angle mode is 03600 after one rotation and returns to 00000 for the next rotation.

Decimal point position:

e.g.
21922-0200**2**1120
Please indicate here how many decimal places you require.

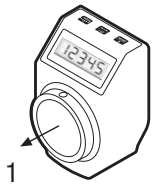
0 = 00000
1 = 0000.0
2 = 000.00
3 = 00.000

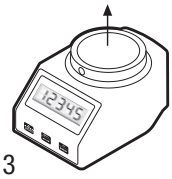
Angle mode:
If you want the display to be in angle mode, the decimal point is best put in position 1.

This means the display shows the value 0360.0 after one rotation.

Assembly position:

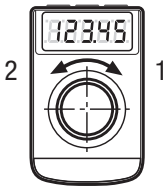
e.g.
21922-0200**2**1120
1 = Mounting position for horizontal spindle
3 = Mounting position for vertical spindle





Count direction:

e.g.
21922-0200021**1**20
1 = clockwise (ascending values)
2 = anticlockwise (ascending values)



Colour:

e.g.
21922-0200021**2**0
2 = black
3 = red

21923-
1

21922-
21923-
2

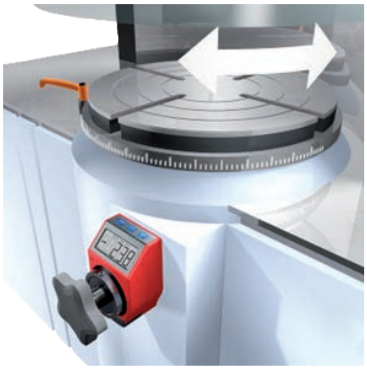
21922-
3

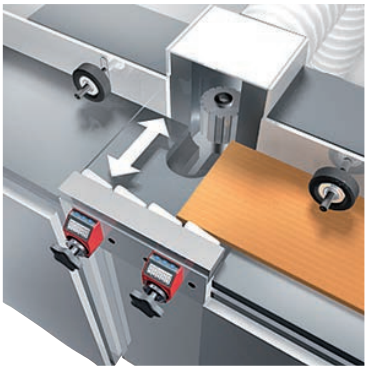
Zero-point position:

e.g.
21922-0200021120
0 = directly
5 = delayed by 5 sec.

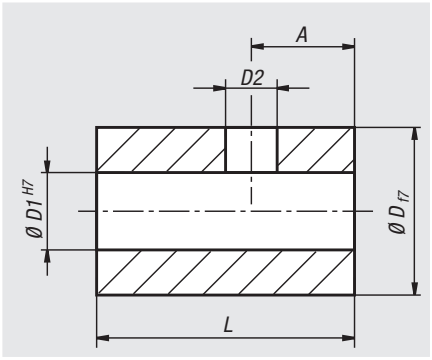
The Zero-point position can be delayed by 5 sec. by means of a parameter, in order to avoid accidental zero setting.

Application using position indicators





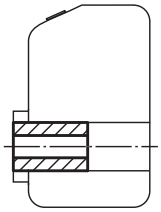
Reducing bushes



Material, version:
Steel, black oxide finish.

Sample order:
nlm 21940-1410

Note:
Reducing bushes are used for the adjustment of diameter between position indicator and displacement spindle.



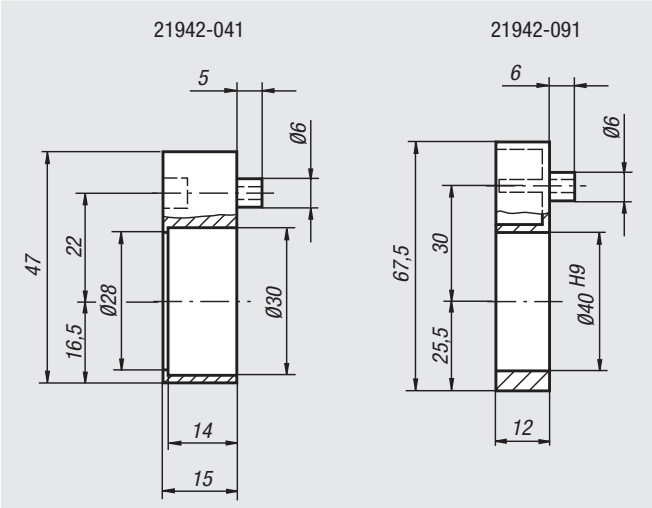
Order No.	A	D	D1	D2	L	Suitable for position indicator
21940-1006	2,5	10	6	3,2	14	21901
21940-1008	2,5	10	8	3,2	14	21901
21940-1406	3,5	14	6	4,2	17	21902, 21950, 21952
21940-1408	3,5	14	8	4,2	17	21902, 21950, 21952
21940-1410	3,5	14	10	4,2	17	21902, 21950, 21952
21940-1412	3,5	14	12	4,2	17	21902, 21950, 21952
21940-2012	4,5	20	12	5,5	20	21904
21940-2014	4,5	20	14	5,5	20	21904
21940-2016	4,5	20	16	5,5	20	21904
21940-2018	4,5	20	18	5,5	20	21904
21940-3012	4	30	12	5,5	30	21922
21940-3014	4	30	14	5,5	30	21922
21940-3016	4	30	16	5,5	30	21922
21940-3018	4	30	18	5,5	30	21922
21940-3020	4	30	20	5,5	30	21922
21940-3025	4	30	25	5,5	30	21922

Insert plates

Material, version:
Plastic.

Sample order:
nlm 21942-041

Note:
Insert plates are used for the attachment of adjusting rings and radial shaft seals.



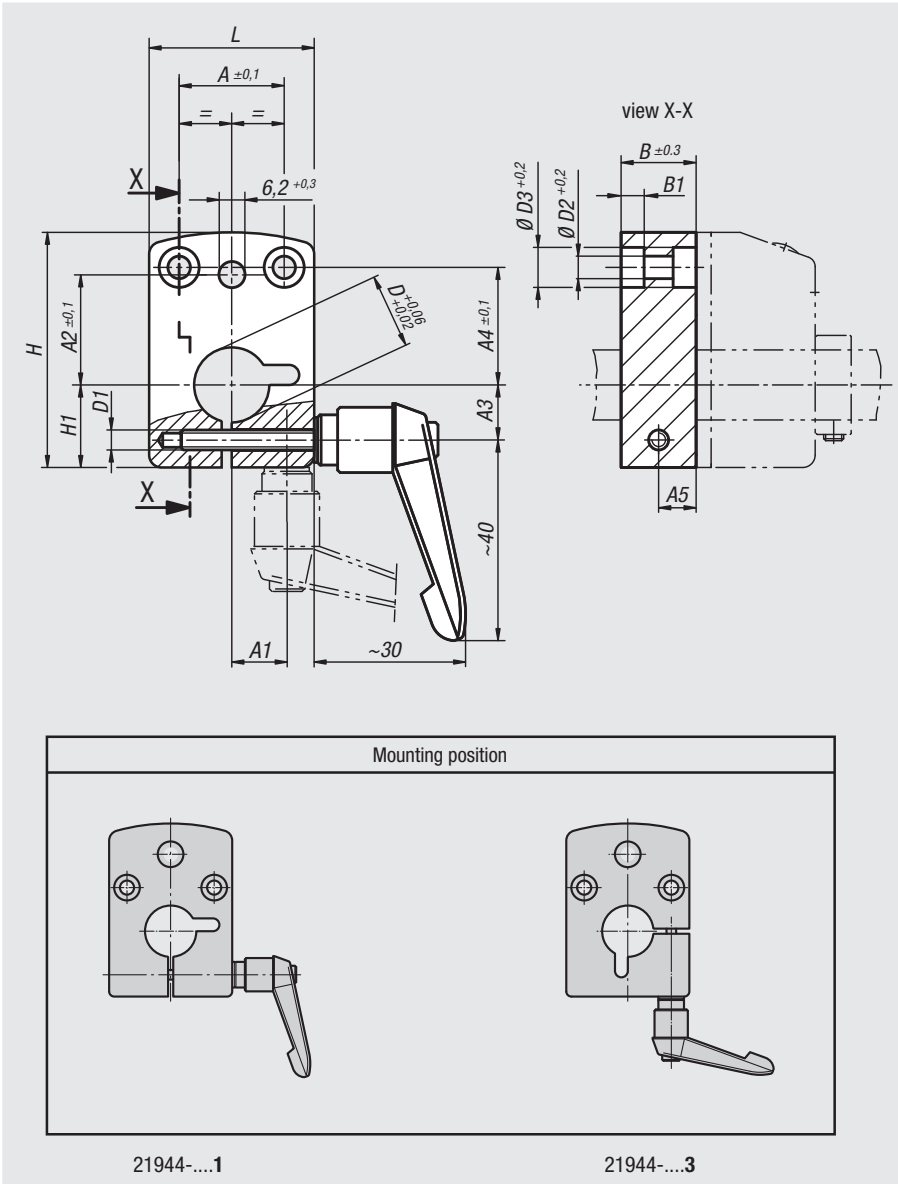
Order No.	Suitable for position indicator	Approx. weight kg
21942-041	21902, 21923	0,009
21942-091	21904, 21922	0,013

Mounting plates

Material, version:
Housing aluminium anodized.
Clamp lever in anthracite grey thermoplastic.

Sample order:
nlm 21944-09121

Note:
Mounting plates form a compact unit in combination with position indicators. They guarantee reliable spindle clamping without additional construction work.
Because of simple mounting as an insertion plate, the mounting plate is also very suitable for subsequent fitting out of existing equipment.



Order No. assembly position 1	Order No. assembly position 3	A	A1	A2	A3	A4	A5	B	B1	D	D1	D2	D3	H	H1	L	Suitable for position indicator
21944-04081	**21944-04083**	21	-/11	22	11/-	23,5	7,5	15	4,6	8	M4	4,5	8	47	16,5	33	21902
21944-04101	**21944-04103**	21	-/11	22	11/-	23,5	7,5	15	4,6	10	M4	4,5	8	47	16,5	33	21902
21944-04121	**21944-04123**	21	-/11	22	11/-	23,5	7,5	15	4,6	12	M4	4,5	8	47	16,5	33	21902
21944-04141	**21944-04143**	21	-/11	22	11/-	23,5	7,5	15	4,6	14	M4	4,5	8	47	16,5	33	21902
21944-09121	**21944-09123**	34	-/17	30	17/-	17	10	20	5,5	12	M5	5,5	10	67,5	25,5	48	21904
21944-09141	**21944-09143**	34	-/17	30	17/-	17	10	20	5,5	14	M5	5,5	10	67,5	25,5	48	21904
21944-09161	**21944-09163**	34	-/17	30	17/-	17	10	20	5,5	16	M5	5,5	10	67,5	25,5	48	21904
21944-09201	**21944-09203**	34	-/17	30	17/-	17	10	20	5,5	20	M5	5,5	10	67,5	25,5	48	21904

Adjusting knobs with position indicator

analogue display

Material, version:
Housing glass-fibre reinforced plastic;
hollow shaft steel, black oxide finish;
viewing window plastic

Sample order:
nlm 21950-02112
(Adjusting knob with transmission ratio 1:2, torque support at 270°, direction of count ascending clockwise, colour black)

Note:
Adjusting knobs with integrated position indicators allow direct readout of set measurement values such as lengths, flow rates, speeds, etc, at a glance. The torque support allows the use of the adjusting knobs in any assembly position, even in case of high vibrations.

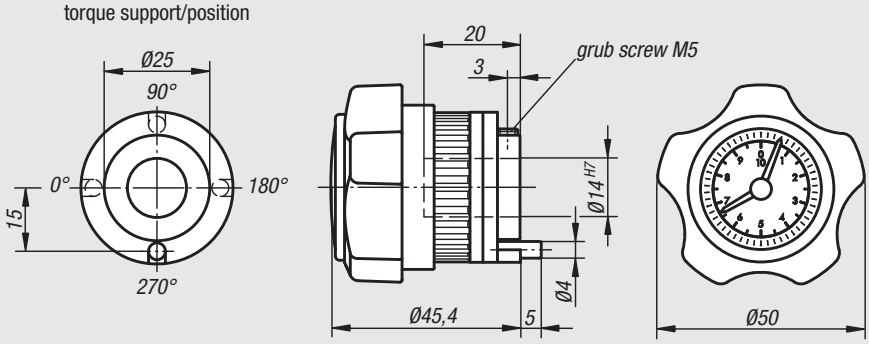
** At the 1st asterisk give torque support and at the 2nd asterisk give the count direction (see sample order „torque support, count direction“).

On request:
– Other transmission ratios

Accessory:
– Reducing bushes 21940

Technical data:
– Hollow shaft Ø 14 H7 mm
– Temperature resistant to 80 °C
– Oil and solvent resistant

torque support/position



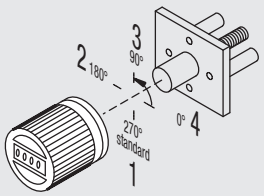
Transmission ratio:

order number	for transmission ratio
02	1:2
12	1:12
24	1:24
48	1:48

The transmission ratio indicates how many spindle rotations (black pointer) are necessary for one rotation of the smaller, red pointer (while the longer, black pointer indicates the rotational movement of the spindle 1:1, i.e., 1 spindle rotation = 1 pointer rotation, the smaller, red pointer carries out only a fraction, defined by the transmission ratio, of the rotational motion).

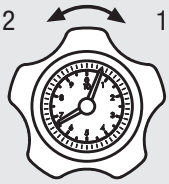
e.g. 21955-**02**112
02 = transmission ratio 1:2

torque support (1 - 4):



e.g. 21950-02**1**12
1 = 270° (standard)

count direction (1 - 2):



e.g. 21950-021**1**2
1 = clockwise (ascending values)
2 = anticlockwise (ascending values)

colour (1 - 2):

e.g. 21950-0211**2**
1 = red
2 = black

Order No. red	Order No. black	Transmission ratio	Approx. weight kg
21950-021**	**21950-02**2**	1:2	0,070
21950-121**	**21950-12**2**	1:12	0,070
21950-241**	**21950-24**2**	1:24	0,070
21950-481**	**21950-48**2**	1:48	0,070

Adjusting knobs with position indicator

digital display

Material, version:
Housing glass-fibre reinforced plastic;
hollow shaft steel, black oxide finish;
viewing window plastic

Sample order:
nlm 21952-01501112
(Adjusting knob with 1.5 mm pitch, decimal point in first position from the right, torque support at 270°, direction of count ascending clockwise, colour black)

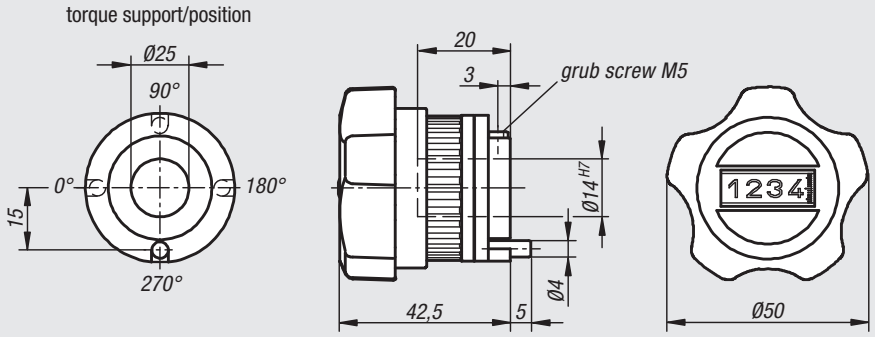
Note:
Adjusting knobs with integrated position indicators allow direct readout of set measurement values such as lengths, flow rates, speeds, etc, at a glance. In addition, the display value can be selected per spindle rotation (corresponding spindle pitch), with the different display values being realized by a variable ratio transmission. The torque support allows the use of the adjusting knobs in any assembly position, even in case of high vibrations.

** At the 1st asterisk give torque support and at the 2nd asterisk give the count direction (see sample order „torque support, count direction“).

On request:
– Other pitchs

Accessory:
– Reducing bushes 21940

Technical data:
– Counter consisting of 4 10-position dials + fine scale
– Height of figures about 6 mm
– Hollow shaft Ø 14 H7 mm
– Temperature resistant to 80 °C
– Oil and solvent resistant

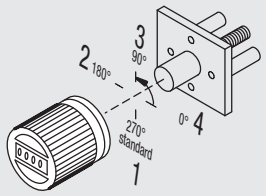


Indicator after one rotation, decimal point position:

order number	for pitch	display presentation
0150	1.5	001,5
0200	2	002,0
0400	4	004,0
0500	5	005,0
1000	10	010,0

e. g. 21952-**01501**112
0150 = 1.5 mm pitch
1 = decimal point at the 1st position from the right

Torque support (1 - 4):

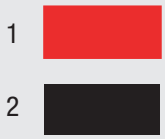


e.g. 21952-01501**1**12
1 = 270° (standard)

Count direction (1 - 2):

e.g. 21952-01501**1**12
1 = clockwise (ascending values)
2 = anticlockwise (ascending values)

Colour (1 - 2):



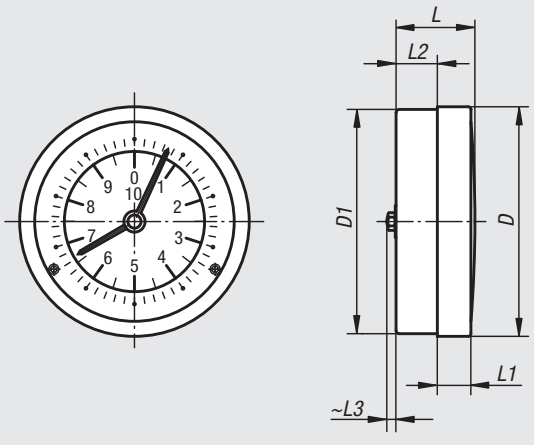
e.g. 21952-0150111**2**
1 = red
2 = black

Order No. red	Order No. black	Pitch	Indicator after one rotation	Decimal point in position	Approx. weight kg
21952-015011**	**21952-01501**2**	1,5	001,5	1	0,060
21952-020011**	**21952-02001**2**	2	002,0	1	0,060
21952-040011**	**21952-04001**2**	4	004,0	1	0,060
21952-050011**	**21952-05001**2**	5	005,0	1	0,060
21952-100011**	**21952-10001**2**	10	010,0	1	0,060

Position indicator for handwheels

analogue display

installation dimensions



Material, version:
Housing glass-fibre reinforced plastic, black; viewing window plastic, dust-proof

Sample order:
nlm 21960-500021

Note:
Position indicators are provided for installation in handwheels. They allow direct readout of set measurement values such as lengths, flow rates, speeds, etc, at a glance.
The measurement values are acquired according to the gravity principle. Conceived for use on horizontal spindles.

The transmission ratio indicates how many spindle rotations (black pointer) are necessary for one rotation of the smaller, red pointer (while the longer, black pointer indicates the rotational movement of the spindle 1:1, i.e., 1 spindle rotation = 1 pointer rotation, the smaller, red pointer carries out only a fraction, defined by the transmission ratio, of the rotational motion).

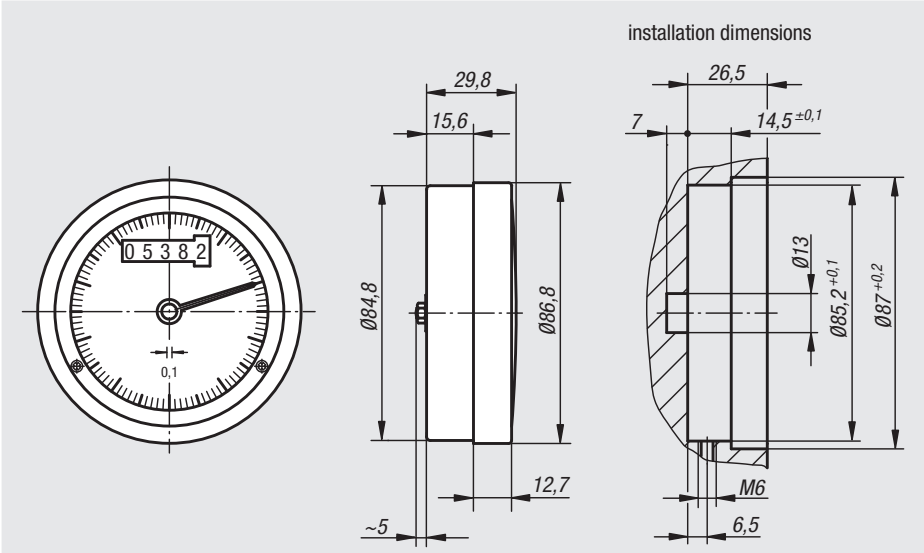
On request:
– Other transmission ratios

Accessory:
– Handwheels 21970 / 21972

Order No.	Size	Transmission ratio	D	D1	D2	D3	L	L1	L2	L3	T	T1	Suitable for	Approx. weight kg
21960-500021	50	1:2	51,7	50,2	52	50,5	29,2	11,5	14,7	4,2	24	12,3	handwheel size 50	0,100
21960-500121	50	1:12	51,7	50,2	52	50,5	29,2	11,5	14,7	4,2	24	12,3	handwheel size 50	0,100
21960-500241	50	1:24	51,7	50,2	52	50,5	29,2	11,5	14,7	4,2	24	12,3	handwheel size 50	0,100
21960-500481	50	1:48	51,7	50,2	52	50,5	29,2	11,5	14,7	4,2	24	12,3	handwheel size 50	0,100
21960-501001	50	1:100	51,7	50,2	52	50,5	29,2	11,5	14,7	4,2	24	12,3	handwheel size 50	0,100
21960-800021	80	1:2	86,8	84,8	87	85,2	29,8	12,7	15,6	5	26,5	14,5	handwheel size 80	0,100
21960-800121	80	1:12	86,8	84,8	87	85,2	29,8	12,7	15,6	5	26,5	14,5	handwheel size 80	0,100
21960-800241	80	1:24	86,8	84,8	87	85,2	29,8	12,7	15,6	5	26,5	14,5	handwheel size 80	0,100
21960-800481	80	1:48	86,8	84,8	87	85,2	29,8	12,7	15,6	5	26,5	14,5	handwheel size 80	0,100
21960-801001	80	1:100	86,8	84,8	87	85,2	29,8	12,7	15,6	5	26,5	14,5	handwheel size 80	0,100

Position indicators for handwheels

analogue-digital display



Material, version:
Housing glass-fibre reinforced plastic, black; viewing window plastic, dust-proof

Sample order:
nlm 21962-800201

Note:
Position indicators are provided for installation in handwheels. They allow direct readout of set measurement values such as lengths, flow rates, speeds, etc, at a glance.
The measurement values are acquired according to the gravity principle. Conceived for use on horizontal spindles.

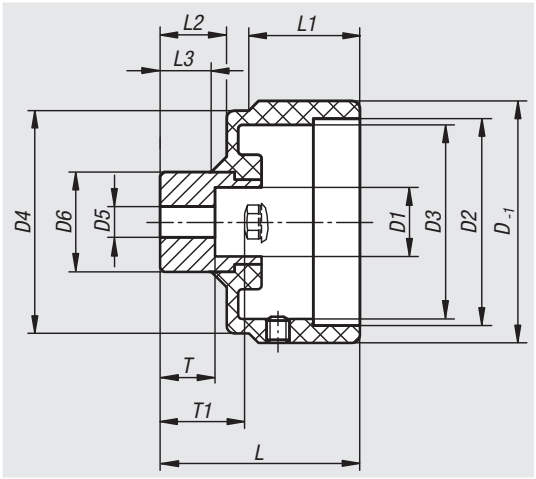
One revolution of the black pointer corresponds to one spindle rotation. In combination with the 5-place digital display, a very precise and easy read out of the position is thus obtained

On request:
– Other pitchs

Accessory:
– Handwheels 21970 / 21972

Order No.	Size	Pitch	Indicator after one rotation	Suitable for	Approx. weight kg
21962-800201	80	2	00002	handwheel size 80	0,200
21962-800301	80	3	00003	handwheel size 80	0,200
21962-800401	80	4	00004	handwheel size 80	0,200
21962-800501	80	5	00005	handwheel size 80	0,200
21962-801001	80	10	00010	handwheel size 80	0,200

Handwheels for position indicators



Material, version:
Housing glass-fibre reinforced plastic, black;
hub in aluminium

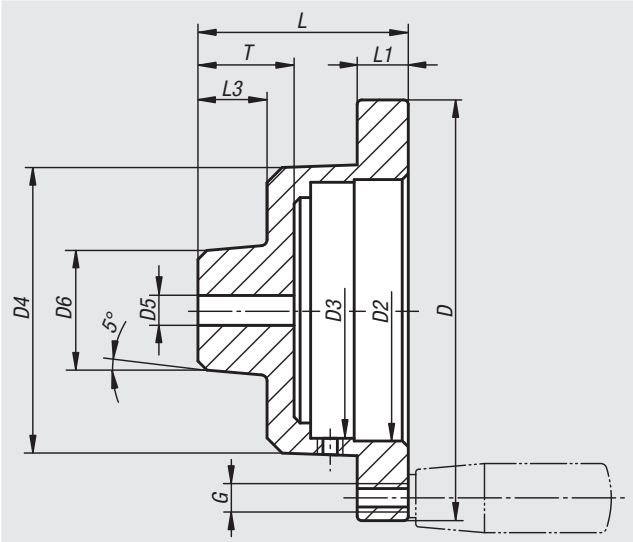
Sample order:
nlm 21970-500631

Note:
Compact handwheels with rounded edges for avoiding contamination. The handwheels have a recess for receiving position indicators.

Accessory:
– Position indicators 21960/21962

Order No.	Size	D	D1	D2	D3	D4	D5 predrilled	D6	L	L1	L2	L3	T	T1	Suitable for	Approx. weight kg
21970-500631	50	63	18	52	50,5	58	5,8	26	52	28,9	17,3	15	14,3	21	position indicator size 50	0,100
21970-800981	80	98	25,5	87	85,2	93	6,8	35	59	31,5	21,7	19	18	25,5	position indicator size 80	0,200

Handwheels for position indicators



Material, version:
Cast aluminium, natural finish

Sample order:
nlm 21972-500801

Note:
The handwheels have a recess for receiving position indicators.

Accessory:
– Position Indicators 21960/21962
– Handles 06290 – 06320

Order No.	Size	D	D2	D3	D4	D5 predrilled	D6	G	L	L1	L3	T	Suitable for	Approx. weight kg
21972-500801	50	80	52	50,5	60	5,8	26	M6	52	14	20	21	position indicator size 50	0,200
21972-801201	80	120	87	85,2	95	6,8	40	M6	64	15	23	30	position indicator size 80	0,500
21972-801401	80	140	87	85,2	95	6,8	40	M8	70	17	23	30	position indicator size 80	0,600