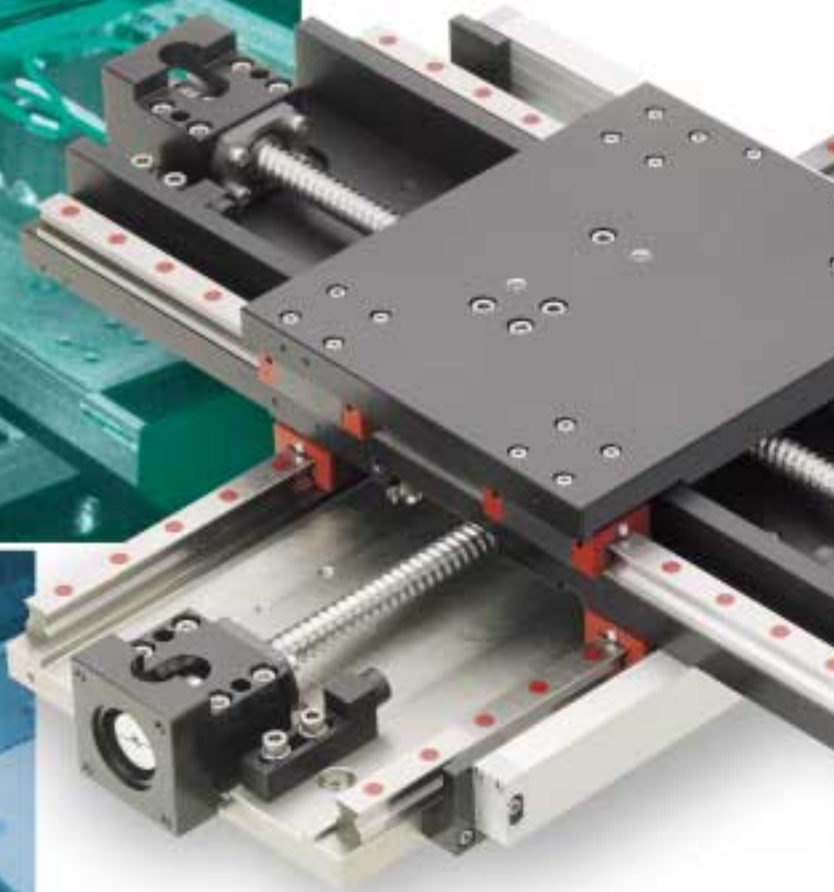# SCHNEEBERGER
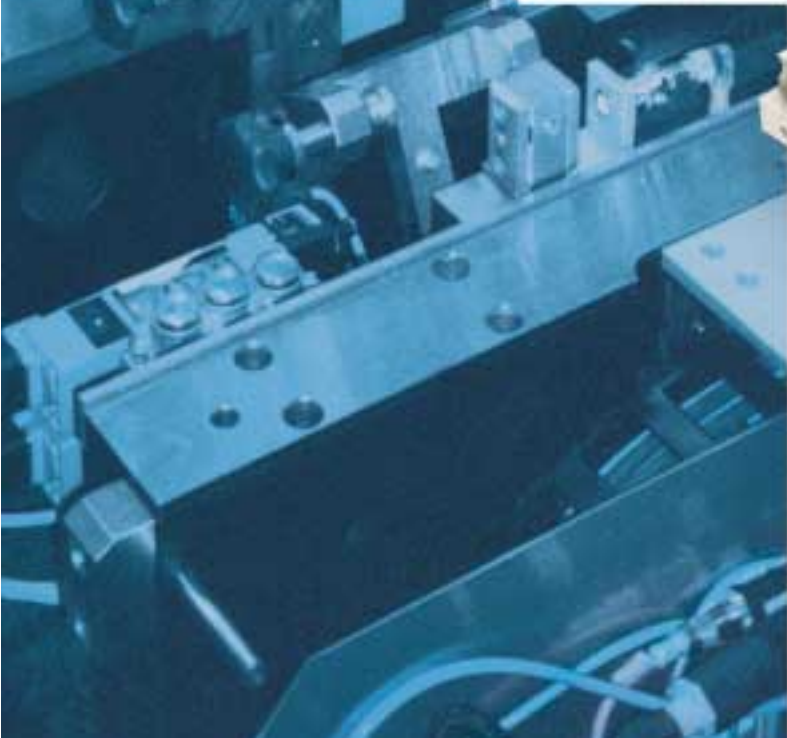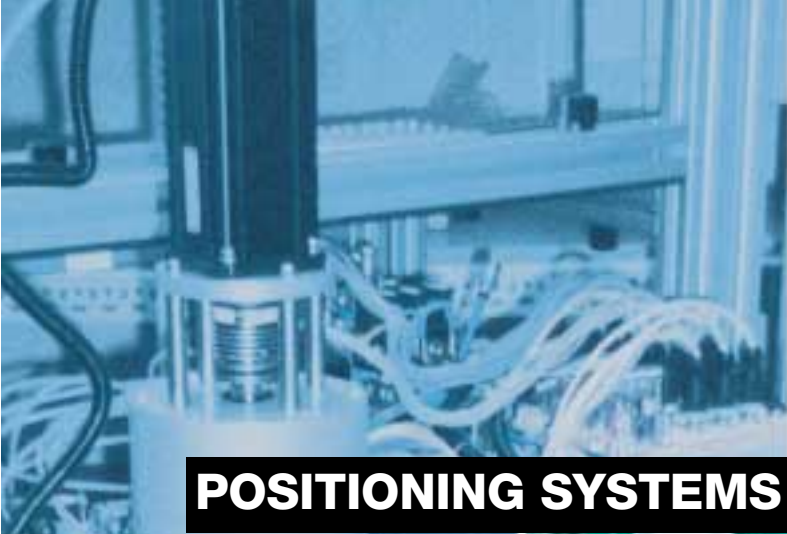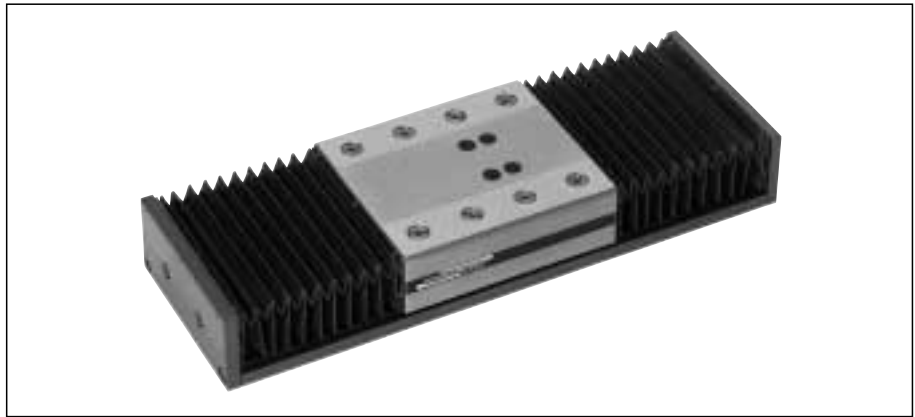### LINEAR TECHNOLOGY

POSITIONING SYSTEMS Standard

Frictionless Tables Type NCB

6.1 Frictionless Tables Type NCB

– 1 to multi-axis models; table components in aluminum
– Lengths up to 2000 mm
– Strokes up to 1500 mm
– With roller cages AC or ball or roller recirculating units
– With protective bellows

6.2 Material

Aluminum extruded section, anodized

6.3 Standard Model

Type NCB frictionless tables have a bending and torsion resistant high-strength profile. All surfaces contributing to the accuracy are machined. Bellows, as protection against the ingress of dirt, are standard equipment, as are standardized attaching holes in the upper and lower sections.
The upper section is available in standard sizes of 150, 200 and 300 mm and the lower section in standard increments of 100 mm between 300 and 2000 mm. Please consult us for lengths over 2000 mm.
There are 3 different anti-friction guideway systems available:
– Type R 6 linear bearings with type AC protruding roller cages
– Type R 6 linear bearings with type SKD 6 ball recirculating units
– Type R 6 linear bearings with type SR 6 roller recirculating units.
Type NCB frictionless tables can also be equipped with full assortment of accessories and can be combined to form multi-axis systems. In the model using recirculating units and a timing belt drive, feed speeds of 80 m/min are possible. The effective achievable speed is dependent on the load, stroke, the permissible belt pull load capacity and the torque characteristic of the driving motor.

Anti-friction Guideway Systems

R 6 Linear bearings with protruding cages; preferable for strokes < 400 mm
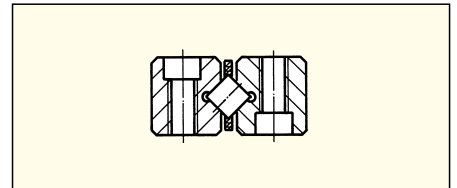
SR 6 Roller recirculating units; preferable for strokes > 400 mm and vertical mounting
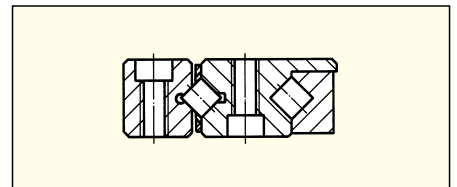
SKD 6 Ball recirculating units; preferable for strokes > 400 mm and vertical mounting; for reduced sensitivity to dirt and lower load carrying capacity
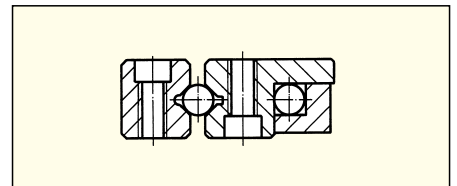
6.4   Overview Options

Ball screw (–K2)

Timing Belt Drive (–J)

Limit switches (–N)
inductive (PNP normally closed)

Reference and limit switches (–N1)
inductive (PNP normally closed)

Motor Flange and coupling (–LS)
for customized motor

6.5   Special Model

On request the upper section can be supplied with M 6 threaded inserts.

6.6   Dimensions

Frictionless Tables Type NCB 76

Δ Attaching holes for spindle nut

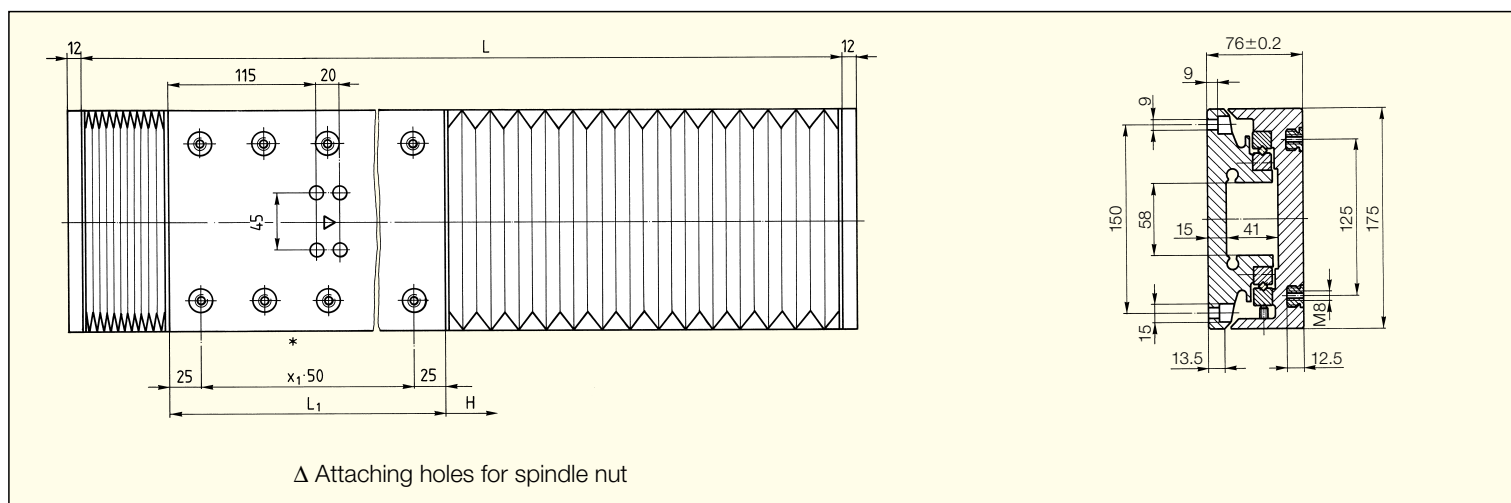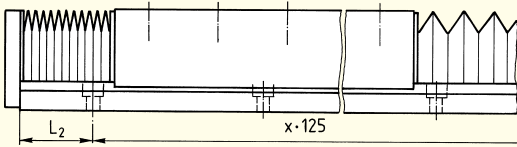| L	H_{max} by $L_1 = 150$; $x_1 = 2$	H_{max} by $L_1 = 200$; $x_1 = 3$	H_{max} by $L_1 = 300$; $x_1 = 5$	x	L_2	Weight of the base plate (kg)
300	85	40	–	2	25	4.5
400	185	140	40	2	75	6
500	260	240	140	3	62.5	7.5
600	360	310	240	4	50	9
700	435	385	310	5	37.5	10.5
800	490	485	385	6	25	12
900	590	540	485	6	75	13.5
1000	690	640	540	7	62.5	15
1100	750	730	640	8	50	16.5
1200	850	800	730	9	37.5	18
1300	930	900	800	10	25	19.5
1400	1010	980	900	10	75	21
1500	1110	1060	980	11	62.5	22.5
1600	1180	1130	1060	12	50	24
1700	1240	1230	1130	13	37.5	25.5
1800	1340	1290	1230	14	25	27
1900	1440	1390	1290	14	75	28.5
2000	1510	1490	1390	15	62.5	30

According to the traversing speed, the useful stroke may be reduced by the endswitch: $H = H_{max} - 2$ (5 to 35 mm)

* Adjusting side

L₁	R6 C (N)	M_L (Nm)	M_Q (Nm)	SR6 C (N)	M_L (Nm)	M_Q (Nm)	SKD6 C (N)	M_L (Nm)	M_Q (Nm)	Weight of the moving part (kg)
150	7950	143	443	7500	187	405	2200	112	114	2.1
200	10070	180	543	8600	215	464	2600	143	139	2.8
300	16430	286	887	15000	562	810	4400	351	227	4.2

6.7	Options

Ballscrew (–K2)
Playfree preloaded; rolled version diameter 16 mm; pitch 5 mm; lead accuracy 0.05 mm over 300 mm thread length. Motor flange acts as heat insulator; without motor and coupling.

NCB 76
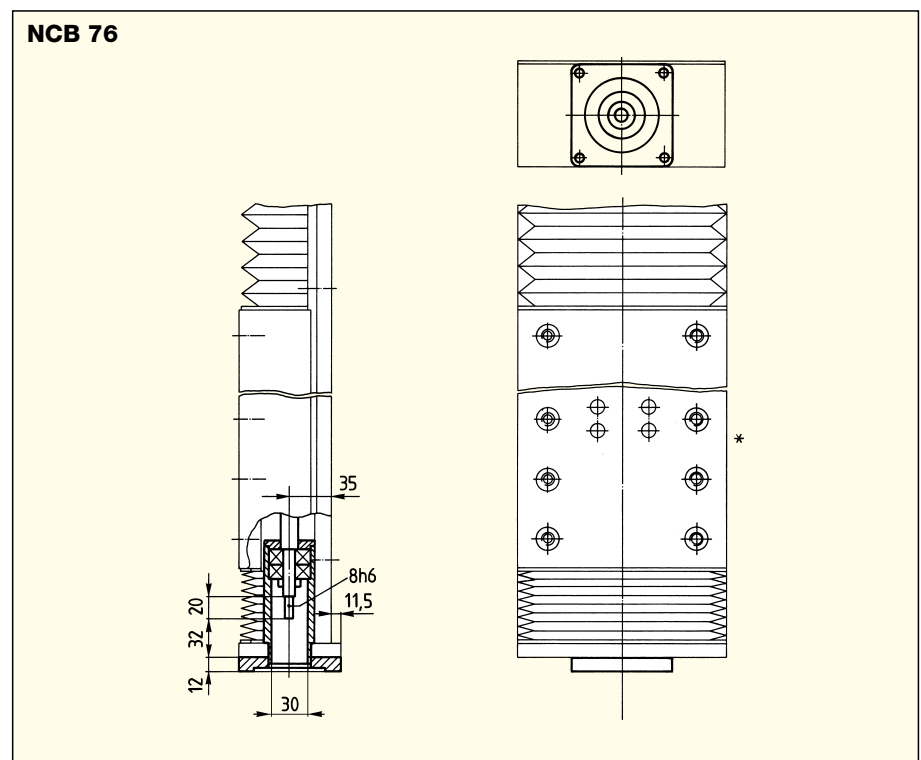
Permissible Speeds for Ball Screw

*   Adjusting side

Timing Belt Drive (–J)
Preloaded; with direct drive for 80 mm feed per motor revolution; without motor.

NCB 76
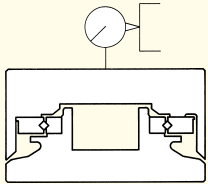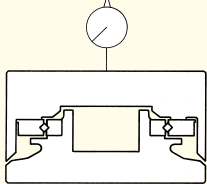
*   Adjusting side
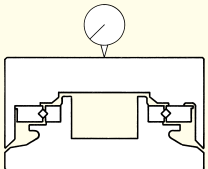
6.8 Acceptance Tolerances
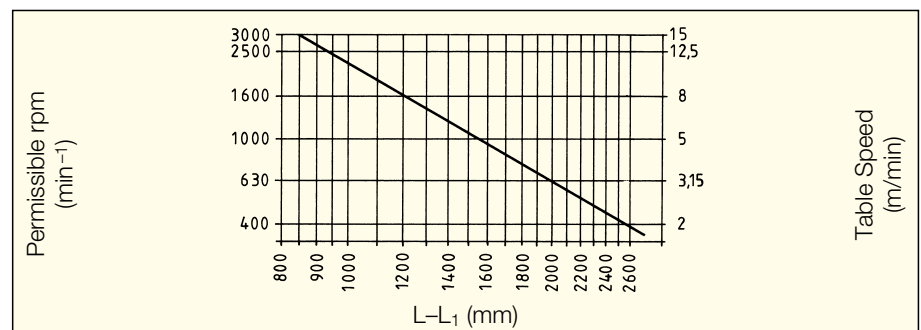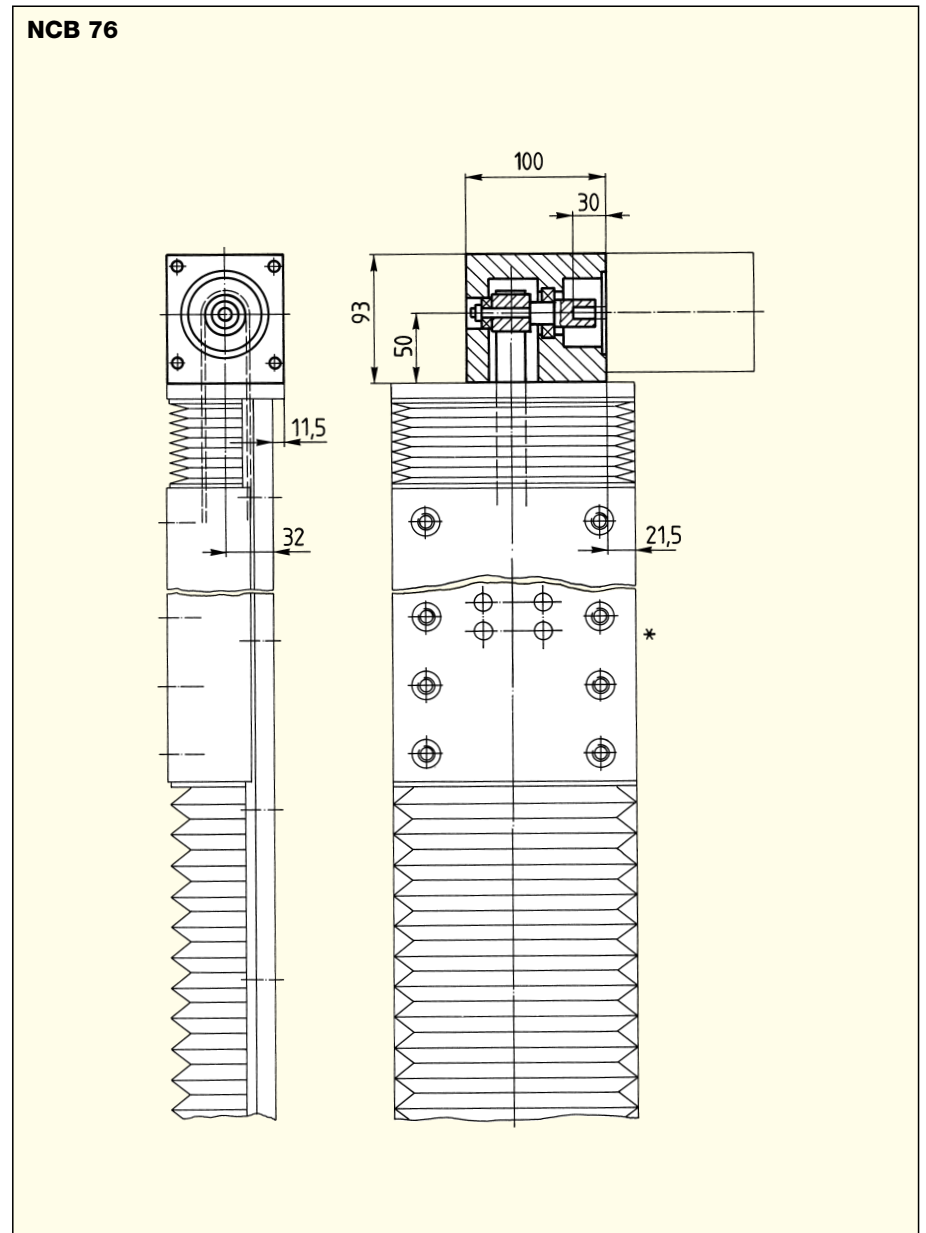
All SCHNEEBERGER frictionless tables are manufactured as standard with the accuracies indicated in the tables. Measurement is in the unloaded state on a flat surface.
The tolerance values are shown in the table as mentioned before. We can supply, as an extra cost option, tables with **acceptance certificates** with regard to angular devia-tion in the individual axes (ROLL, PITCH, YAW).
All SCHNEEBERGER tables are also available in higher accuracy, special quality executions or in customer specific acceptance tolerances.

Type	Size	Straightness of Travel in µm over Stroke Lengths; Laterally	Flatness of Travel in µm over Stroke Lengths; at Top
NCB	76	Basic Tolerance 10 µm + 2 µm per 100 mm Stroke	Basic Tolerance 10 µm + 2 µm per 100 mm Stroke

Type	Size	L₁	Parallelism in µm of Table Surfaces; frictionless Table in Middle Position
NCB	76	150	25
		200	30
		300	40

6.9   Ordering information

Ordering Code

Type   Anti-friction   L   L₁   Acces-
              guideway system   sories

NCB 76   –   [   ]   –   [   ]   /   [   ]   –   [   ]

                          R 6
                          SR 6
                          SKD 6

              Length lower section

                 Length upper section

                                    Ballscrew (–K2)
                                 Timing belt drive (–J)
                                   Limit switches (–N)
                    Reference and limit switches (–N1)
                            Motor flange and coupling
                           for customized motor (–LS)
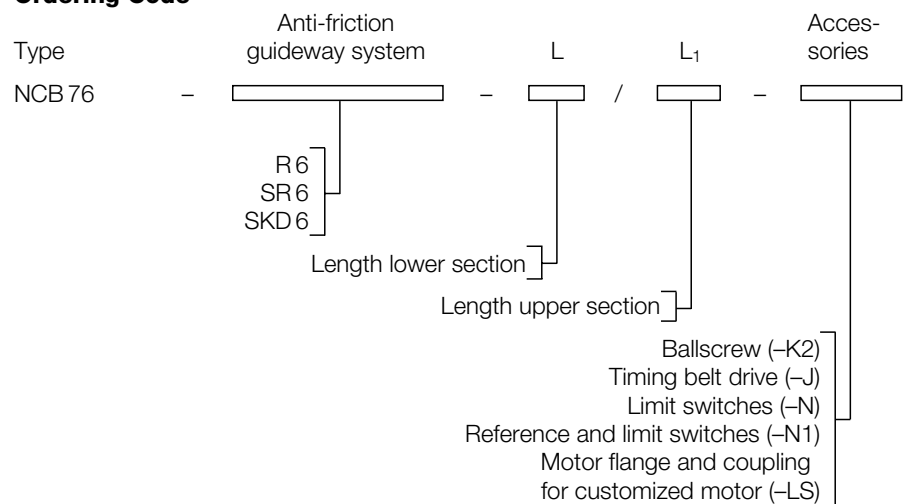
Ordering example

1 Frictionless table NCB 76; upper section 300 mm; with SR-recirculating units; stroke 400 mm; ball spindle and limit switches:

1 × NCB 76–SR 6–900/300–K2–N

7.1   Frictionless Tables Type NCF

– 1 to multi-axis models; table components in cast-iron
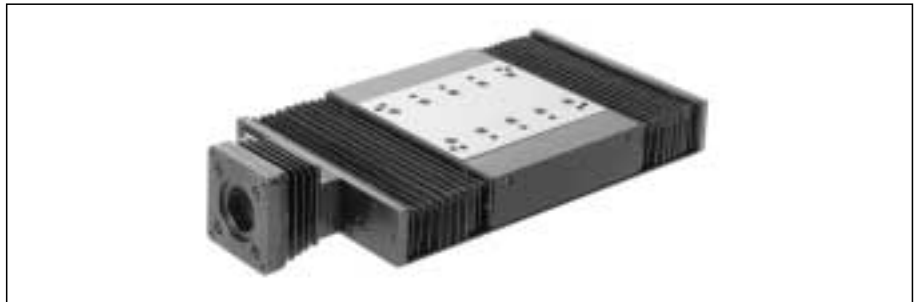– Low and light design
– 2 Sizes
– Lengths from 212 to 470 mm
– Strokes from 25 to 150 mm
– With roller cages AC
– With protective bellows

7.2   Material

Cast-iron

7.3   Standard Model

Type NCF frictionless tables are designed on the modular construction principle and can, therefore, be joined to form 2 or multi-axis systems. Within the series all models can be joined to form any desirable combination. Thus care must be taken with multi-axis systems that the lower frictionless table is at least as large as the upper axes, in order to avoid overloading.

Connection to a frictionless table is with an intermediate plate; with a 3-axis system by means of an intermediate plate and assembly bracket. These additional parts need not be quoted when ordering 2 or 3 axis systems, they will be supplied automatically. All sizes can be used in two ways ie, with the short table section at the top (Form 22), or the long table section at the top (Form 11), whereby with the second option the space requirement is greater.

Design features of NCF models:
– Low and light construction
– Upper and lower sections of unequal length
– Type R linear bearings with type AC protruding roller cages
– Roller spindle with playfree, preloaded nut; various pitches; lead accuracy 0.03 mm over 300 mm thread length
– Protective bellows
– Threaded attaching holes in both table sections to mount the table or for the attachment of customer's components
– Lateral guards to protect accessories such as linear encoders or endswitches

The mature design of these SCHNEEBERGER frictionless tables permits the highest degree of accuracy; long operational life; economical prices and flexible solutions.

7.4	Overview Options	**Limit switches (–N)** inductive (PNP normally closed)

Reference and limit switches (–N1)
inductive (PNP normally closed) and safety endswitch

Linear Encoder (–Q)
measuring steps 0.001 mm

Motor Flange (–L)

Motor Flange and coupling for (–LS)
customized motor

Base Plate Type GPF

Assembly Bracket Type MWF

7.5	Special Model	On request

7.6   Dimensions
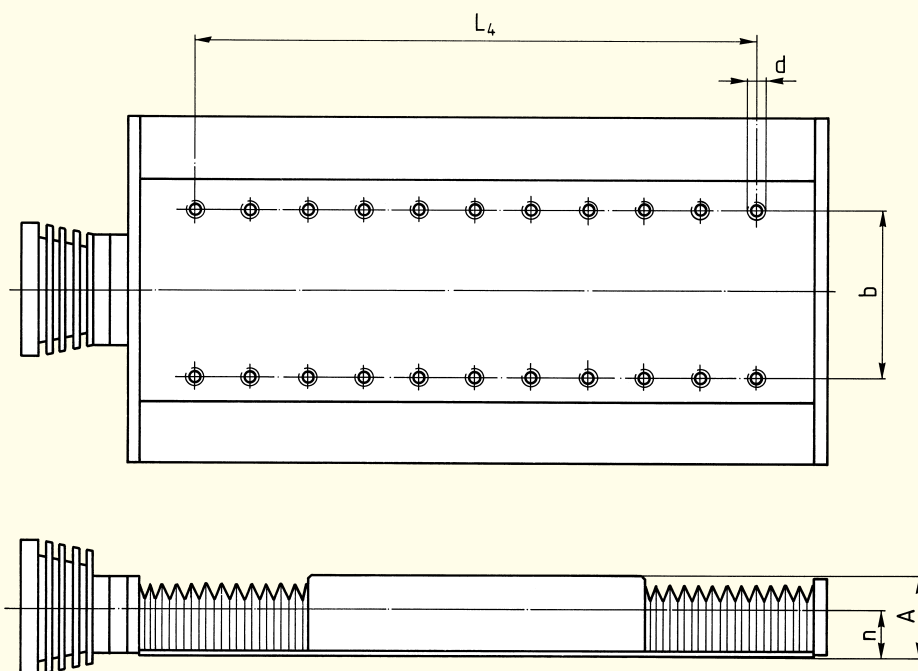
Order No.	A	B	B₁	H	H_max	L	L₁	L₂	L₃	L₄	L₅
NCF 33–200/125–K1				**25**	35	200	125	212	4 × 25	6 × 25	
NCF 33–250/125–K1	36	100	155	**50**	65	250	125	262	4 × 25	8 × 25	15
NCF 33–300/150–K1				**75**	90	300	150	312	5 × 25	10 × 25	
NCF 33–350/150–K1				**100**	115	350	150	362	5 × 25	11 × 25	
NCF 46–250/150–K1				**50**	60	250	150	270		7 × 25	
NCF 46–350/150–K1	50	150	230	**100**	130	350	150	370	5 × 25	9 × 25	25
NCF 46–450/150–K1				**150**	190	450	150	470		11 × 25	
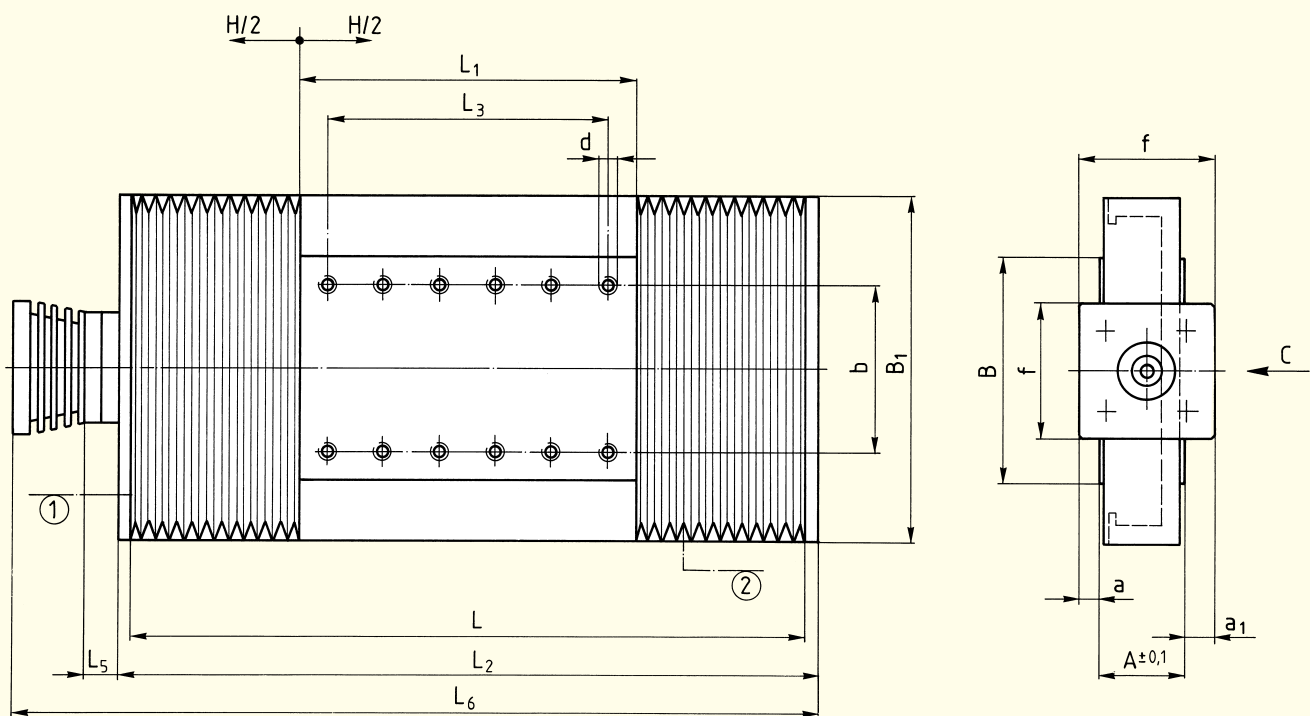
L_6	a	a_1	b	d	f	n	C in N	M_L in Nm	M_Q in Nm	Weight in kg
267							2860	27.3	91.52	5
317	9	15	75	M 5	60	21	2860	27.3	91.52	6
367							3510	33.8	112.32	7
417							3510	33.8	112.32	8
361							7950	133.56	393.53	12
461	13.5	21.5	125	M 6	85	29	7950	133.56	393.53	14.5
561							7950	133.56	393.53	17

① Socket to connect limit switches
② Cables outlet for measuring system

7.7   Options

Spindle Pitches

Type	Suffix	Pitch in mm	Spindle-Ø	[1] Dyn. Load Carrying Capacity in N	[2] Minimum Torque in Ncm
NCF 33	–V1	1	8	3 100	7
	–V2	2		6 200	8
	–V5	5		15 200	10
NCF 46	–V2	2	12	4 900	13
	–V4	4		9 700	14
	–V5	5		12 100	15

Motor Flange (–L)
Semi-finished; holes for motor attachment can be drilled by customer
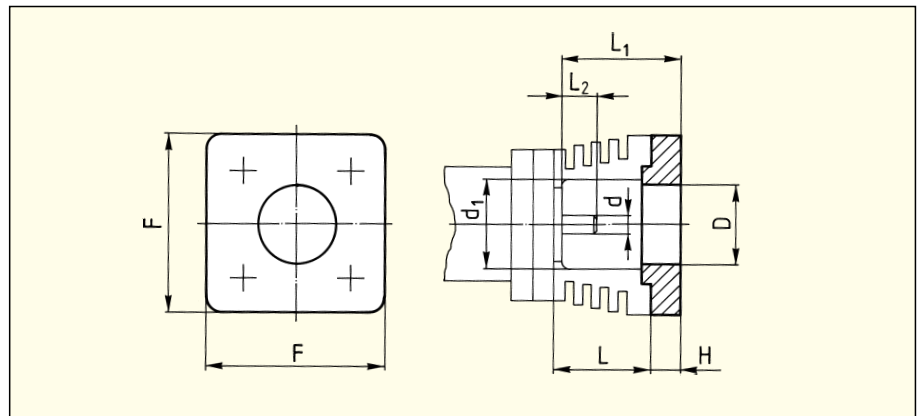
Type	Suffix	D	F	H	L	L_1	L_2	d	d_1
NCF 33	–L	30	60	8	36	41	8.5	5 h 6	28
NCF 46	–L	30	85	10	61	61	14	8 h 6	35

[1] Dynamic load carrying capacity of the spindle with a calculated operational life of 10^6 revolutions

[2] Minimum spindle torque needed with the table unloaded and with a horizontal, uniform motion

NCF 33/46 Motor Flange and Coupling for Customized Motor (–LS)

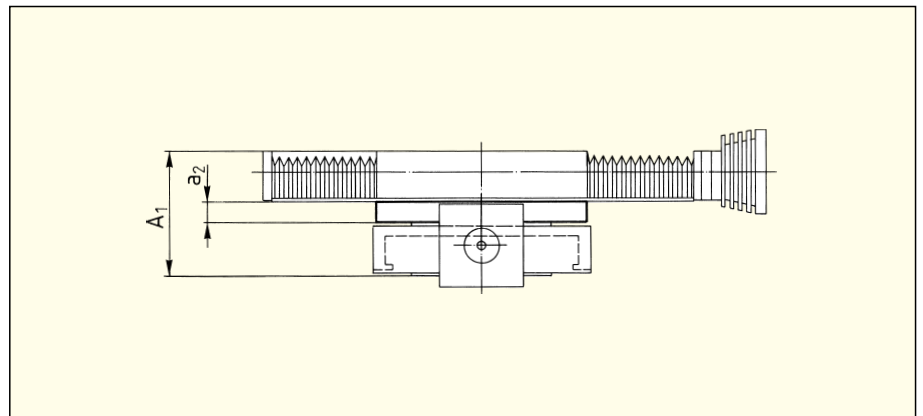| Type	D_1 (motor side)
NCF 33	$\varnothing$ 3–12.5 H 7
NCF 46	$\varnothing$ 5–16 H 7
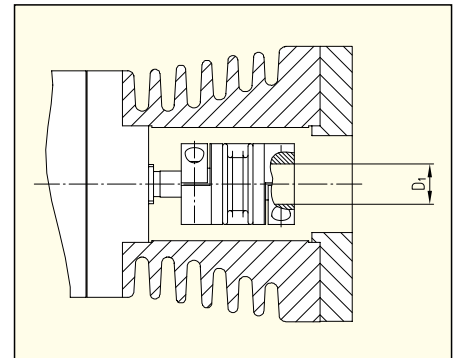
Intermediate Plate

Type	a_2	A_1
NCF 33	8	80
NCF 46	10	110

Assembly Bracket
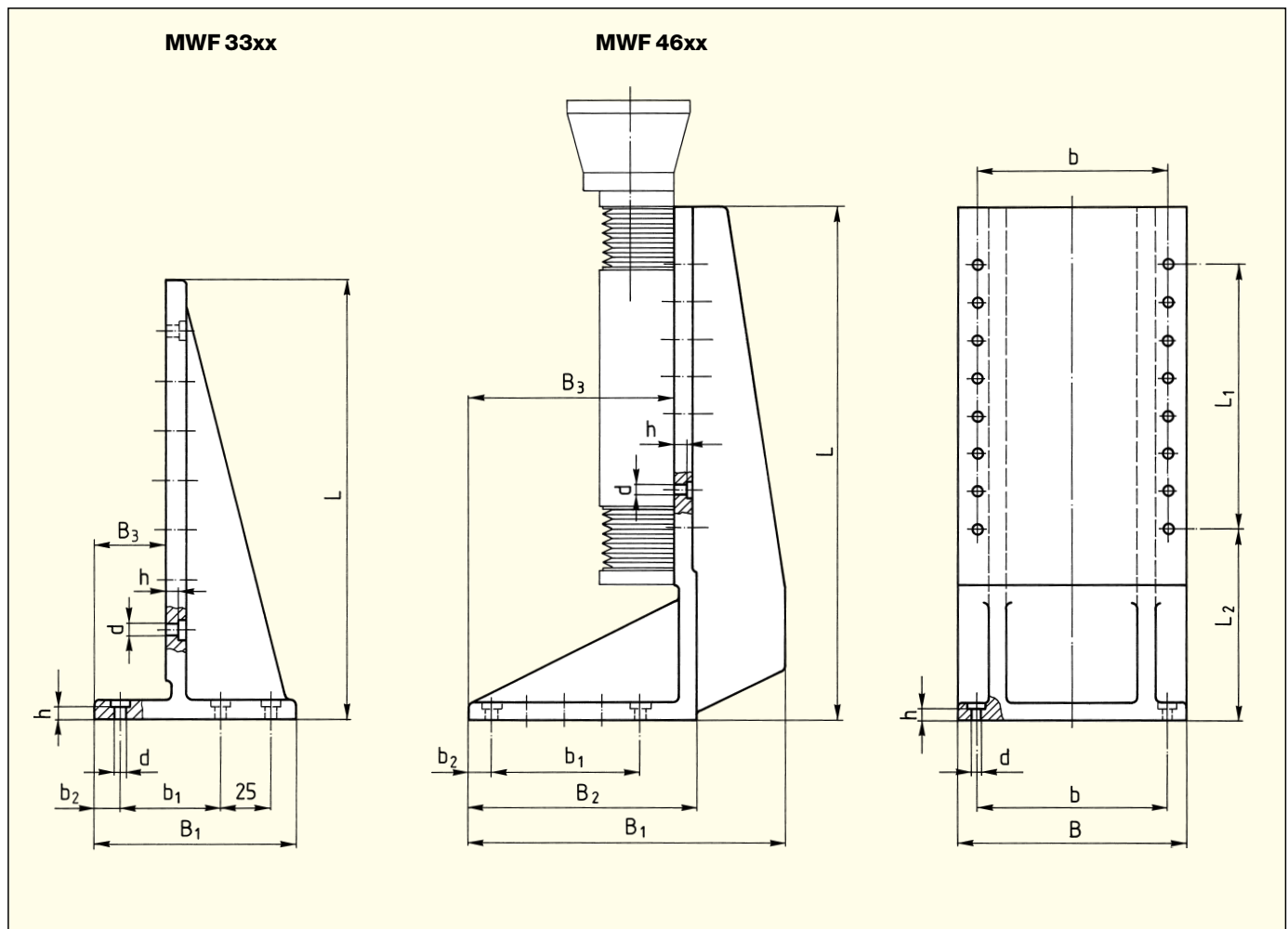
Type	Order No.	B	B₁	B₂	B₃	L	L₁	L₂	b	b₁	b₂	d	h
NCF 33	MWF 3301	100	100	–	35	220	6 × 25	45	75	50	12.5	6	6.5
	MWF 3302					270	8 × 25	45					
	MWF 3303					320	10 × 25	45					
	MWF 3304					370	11 × 25	56					
NCF 46	MWF 4601	150	210	150	135	340	7 × 25	128	125	4 × 25	13	7	10.5
	MWF 4602					415	9 × 25	153					

Ordering example: 1 Assembly bracket MWF 3301

7.8   Ordering information

Ordering example:
1 Frictionless table NCF 33-250/150–K1–V2–N1 or
1 Frictionless table comprising:
1 Frictionless table NCF 46–350/150–K1–V4–N–L–Form 22
1 Frictionless table NCF 46–250/150–K1–V4–N–L–Form 22

7.9 Acceptance Tolerances

All SCHNEEBERGER frictionless tables are manufactured as standard with the accuracies indicated in the tables. Measurement is in the unloaded state on a flat surface.
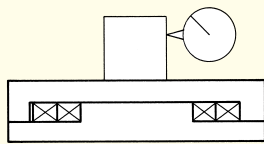
The tolerance values are shown in the table as mentioned before. We can supply, as an extra cost option, tables with **acceptance certificates** with regard to angular deviation in the individual axes (ROLL, PITCH, YAW).

All SCHNEEBERGER tables are also available in higher accuracy, special quality executions or in customer specific acceptance tolerances.

Form 11

Form 22

Type	Size
NCF	33–200/125-K1
	33–250/125-K1
	33–300/150-K1
	33–350/150-K1
NCF	46–250/150-K1
	46–350/150-K1
	46–450/150-K1

Form 11

Form 22

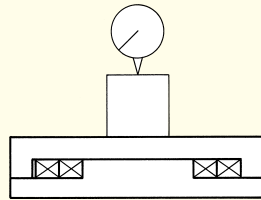| Type	Size
NCF	33–200/125-K1
	33–250/125-K1
	33–300/150-K1
	33–350/150-K1
NCF	46–250/150-K1
	46–350/150-K1
	46–450/150-K1

Table 1

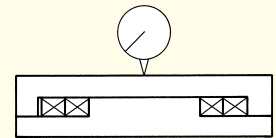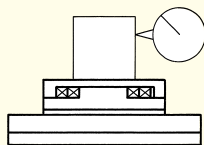| Straightness of Travel in μm over Stroke Length; Laterally		Flatness of Travel in μm over Stroke Length; at Top		Parallelism in μm of Table Surfaces; frictionless Table in Middle Position	
Form 11	Form 22	Form 11	Form 22	Form 11	Form 22
3	3	3	2	20	15
3	3	3	2	20	15
3	3	3	2	20	15
4	4	4	3	25	15
3	3	3	2	20	15
4	4	4	3	25	15
4	4	4	3	25	15

Table 2

Straightness of Travel in μm over Stroke Length; Laterally				Straightness of Travel in μm over Stroke Length; at Top				Squareness in μm of both Motions; over Stroke Length		Parallelism in μm of Table Surfaces; in Middle Position	
Form 11 Axis		Form 22 Axis		Form 11 Axis		Form 22 Axis		Form 11 Axis	Form 22 Axis	Form 11	Form 22
X	Y	X	Y	X	Y	X	Y	X and Y	X and Y		
4	3	4	3	5	4	3	2	5	5	30	22
4	3	4	3	5	4	3	2	5	5	30	22
4	3	4	3	5	4	3	2	5	5	30	22
5	4	5	4	6	5	3	3	10	10	35	22
4	3	4	3	5	4	3	2	10	10	30	22
5	4	5	4	6	5	3	3	10	10	35	22
5	4	5	4	6	5	3	3	10	10	35	22
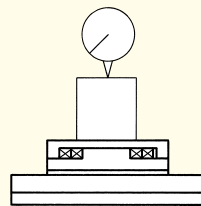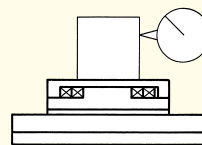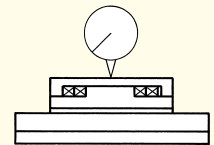
8.1 Frictionless Tables Type MAT

– 1 to multi-axis models, table components in steel or aluminum
– 2 Sizes
– Lengths from 300 to 3000 mm
– Strokes up to 2500 mm
– Linear Bearings Type MONORAIL

8.2 Material

Available in either steel or aluminum versions

8.3 Standard Model

MAT is available in sizes MAT 15 and 25 and includes the corresponding profile guideway. Generally they differ in their maximum and minimum dimensions and in their various load ratings.
The basic version comprises:
– Moving part
– Base plate
– Linear Guideway Type MONORAIL

8.4 Overview Options

– Ballscrew in various pitches and precision classes
– Bellow covers with or without protective steel plates
– Inductive limit switches and reference switches
– Linear measuring system, measuring steps 1 µm or 0.5 µm
– Central lubrication for carriages and ballscrew nut
– Coupling housing and coupling for customer specific motor

8.5 Special Model

Mounting holes in the upper table are made to user requirements.

8.6   Specifications MAT 15

Dimensions

The length L1 and the width B of the upper part (or overall length) can be selected by the user himself in 10 mm steps. The smallest and largest possible dimensions are listed in the table on the right. For the total height A, the listed sizes are available.

Oil port Size
M 8 × 1

Connection on the right side = standard
(Connection on the left side on request)
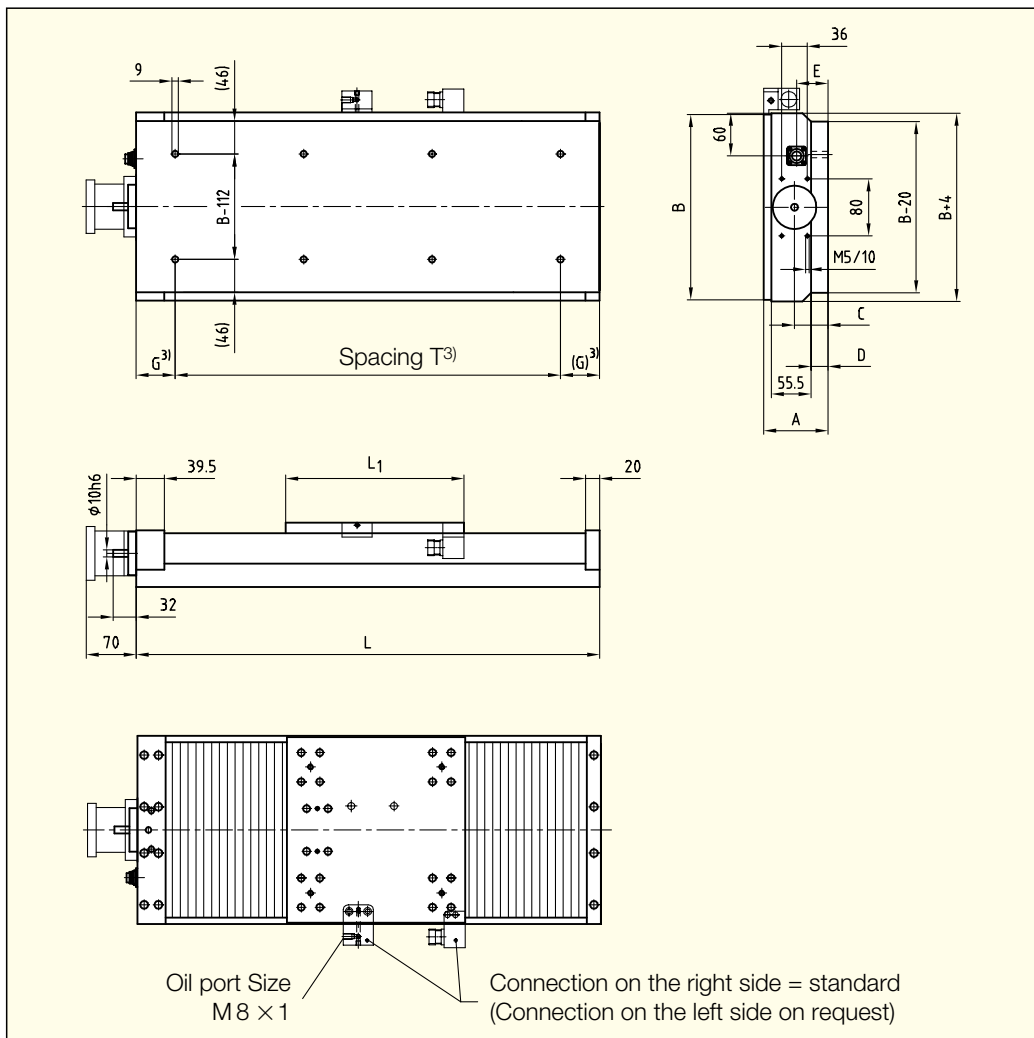
Limits MAT 15

Stroke	Length L	min. length of the moving part L₁	
Up to 2500	300–3000	without measuring system	140
		with measuring system	180
		with central lubrication	200
		with central lubrication and measuring system	200

All data in mm

[1] Only with an effective stroke of ≤ 180 mm
[2] 4 × M 8 connection threads (different hole pattern on request)
[3] Dimensions dependent on the length

Moving part

Version with measuring system

Version with central lubrication system

min. width of the moving part B		Total height A ± 0.2	base plate	moving part	C	D	E
without ballscrew	180	75	30	25	37	14	34
with ballscrew	250	80	30*	30*	37	14	34
with linear encoder LS 406	250	90	35*	35*	42	19	39
with linear encoder LS 476/LS 486	270						

*other versions on request

8.7 Specifications MAT 25

Dimensions

The length L1 and the width B of the upper part (or overall lenght) can be selected by the user himself in 10 mm steps. The smallest and largest possible dimensions are listed in the table on the right. For the total height, the listed sizes are available.

Spacing T[3]

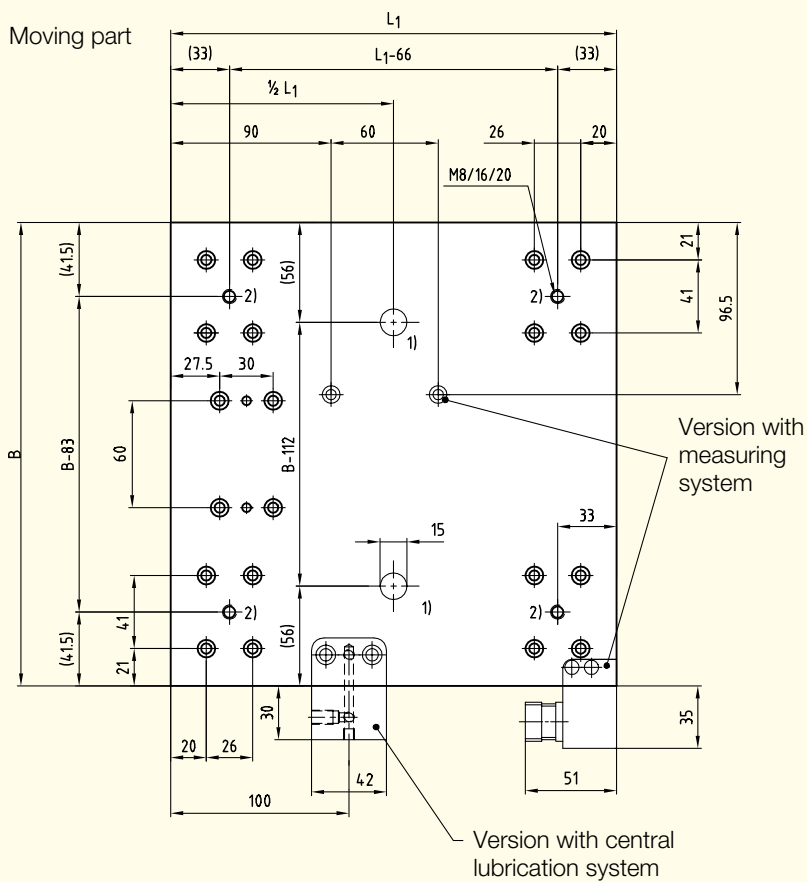Oil port Size
M 8 × 1

Connection on the right side = standard
(Connection on the left side on request)

Limits MAT 25

Stroke	Length L	min. length of the moving part L₁	
Up to 2500	300–3000	without measuring system	200
		with measuring system	300
		with central lubrication	300
		with central lubrication and measuring system	300

All data in mm

[1] Only with an effective stroke of ≤ 180 mm
[2] 4 × M 10 connection threads (different hole pattern on request)
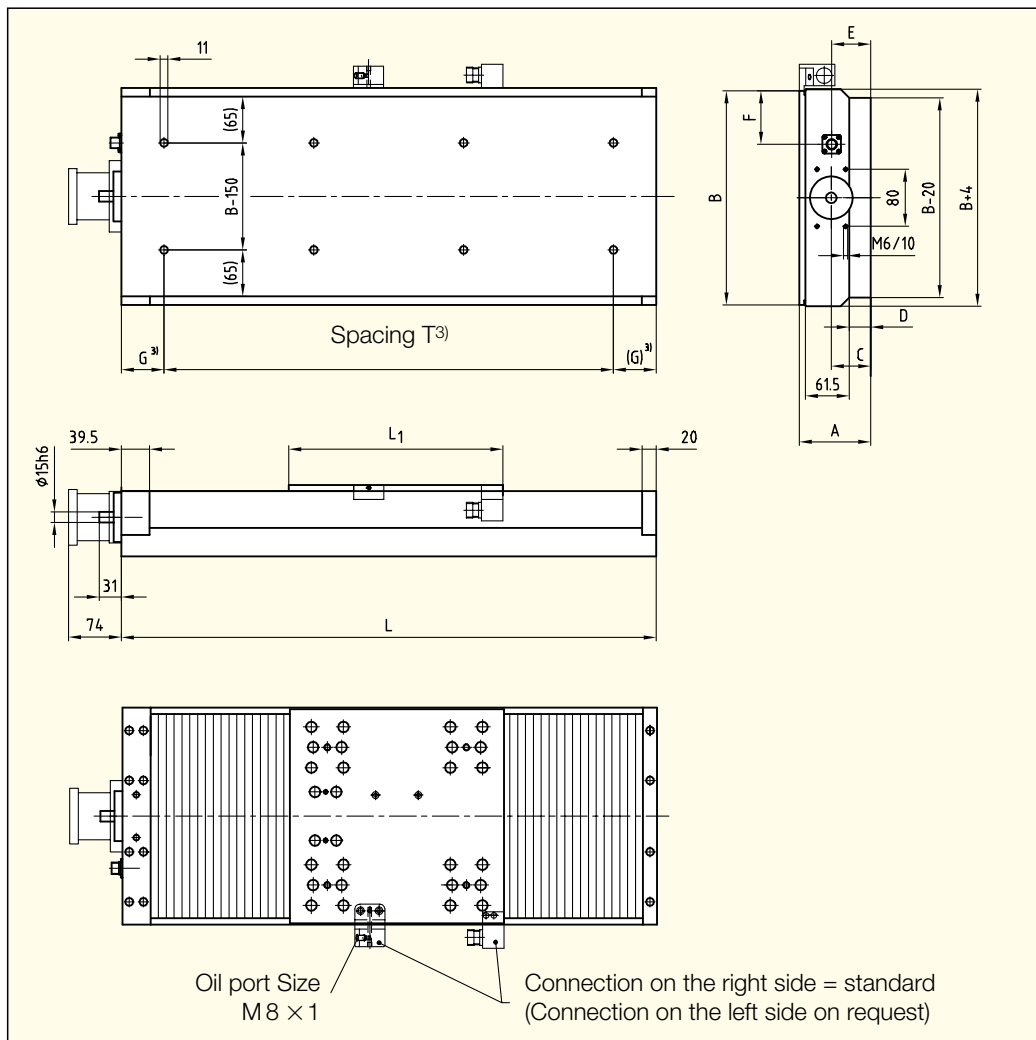[3] Dimensions dependent on the length

Moving part

L₁

(52.5)   L₁–105   (52.5)

1/2 L₁

120   60   45   30

M10/20/25

25
28.5
57
120.5

(75)

2)
1)

(53.5)

B

B-107

68

35   30

B-150

Version with
measuring
system

18

1)

2.5

2)

(53.5)

(75)

2)

57
28.5
25
35

30

51

30   45

91   42

Version with
central lubrication system

min. width of the moving part B	
without ballscrew	220
with ballscrew	300
with linear encoder LS 406	300
with linear encoder LS 476/LS 486	320

Total height A ± 0.2	base plate	moving part	C	D	E	width B	F
90	30	30	45	20	40	≤340	75
100	30*	40*	45	20	40	>340	90
110	40*	40*	55	30	50		
120	40*	50*	55	30	50		

*other versions on request

8.8 Options

Ballscrew

The tables are driven by playfree preloaded ballscrew and nut assemblies with single nut. The screw and nut assemblies are available in pitches of 5, 10 and 20 mm. The standard precision classes are 10 and 50 µm (micron), measured on a length of 300 mm.

Size	Ballscrew
MAT 15	⌀ 20 mm
MAT 25	⌀ 25 mm

Measuring system

Type	Output signals/Signal period	Measuring steps
Heidenhain LS 406	~11 µA$_{pp}$/20 µm	*1 µm and 0.5 µm
Heidenhain LS 476	⊓⊔ TTL/5-fold-interpolation: 4 µm	1 µm
	10-fold-interpolation: 2 µm	0.5 µm
Heidenhain LS 486	1 V$_{ss}$/20 µm	*1 µm and 0.5 µm

8.9 Load rating and speed

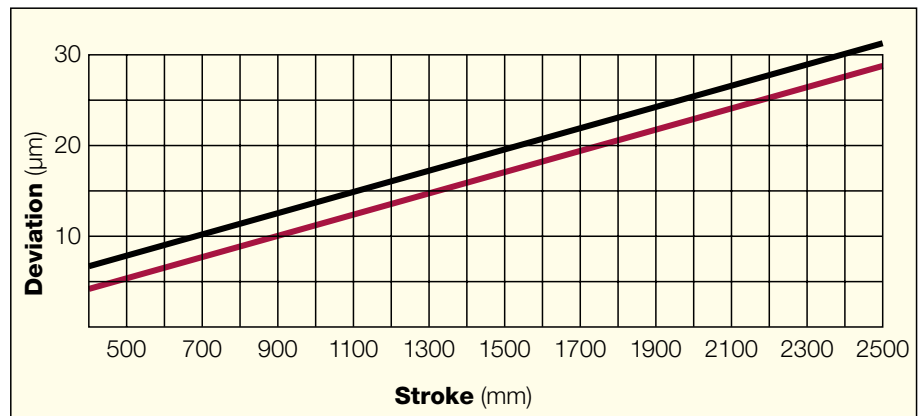| Size	Load ratings (N) C_0 (static load rating)	C (dynamic load rating)
MAT 15	40 000	20 000
MAT 25	180 000	80 000

Load ratings for central load

Speed
– maximum 3 m/s (limitations through screw drive and position sensors may apply)

*the Interpolation electronic (EXE) will not be supplied

8.10   Acceptance Tolerances

■ steel   ■ aluminum
Horizontal and vertical straightness of stroke, measured in the center of the table.

8.11   MAT calculation program

Fit your MAT individually to your requirements and send us your inquiry by e-mail.
The calculation program can be used on our Homepage
www.schneeberger.com, menu SERVICES.

User name: mat
Password: table

Or send us your inquiry with the following supplementary sheet.

8.12 Supplementary sheet for MAT 15 and 25

Date:

Company:

Name:

Address:

Project no.:

Required delivery time: weeks

Dimensions

☐ MAT 15   ☐ MAT 25   Usable stroke:
                                                        ☐ mm

Length of **L1**:   ☐ mm

Moving part **B**:   ☐ mm   Height **A**: ☐ mm   Quantity: ☐

Reference- and limit switches

☐ None
☐ Two limit switches
☐ One reference switch and two limit switches

Measuring System

☐ None
☐ LS 406/~11 μA_{pp}/20 µm
☐ LS 476/TTL with 5-fold-interpolation: 4 µm
☐ LS 476/TTL with 10-fold-interpolation: 2 µm

Cover

☐ None
☐ Bellow
☐ Bellow with protective steel plates

Material

☐ Steel
☐ Aluminum

Ballscrew

Pitch   ☐ None
                         ☐ 5 mm
                         ☐ 10 mm
                         ☐ 20 mm
Precision class   ☐ 10 µm
300 mm   ☐ 50 µm

Lubrication

☐ Directly to carriage and ball screw nut
☐ Central

Attaching holes

☐ Standard hole pattern in the upper table
☐ Holes in the upper table according to the enclosed drawing

Mounting position:
☐

Additional options

☐ Coupling housing and coupling for customized motor according to the enclosed drawing
☐ Reference face at the lower base

Application:
☐

Remarks:

9.1 Frictionless Tables Type UCT

– 1 to multi-axis models; table components in steel or aluminum
– 2 Sizes
– Lengths from 300 to 3000 mm
– Strokes up to 2000 mm
– Linear Bearings Type MONORAIL
– With protective bellows

9.2 Material

Available in either steel or aluminum version

9.3 Standard Model

The UCT is available in the sizes UCT 15 and 25 and includes the corresponding profile guideway. In essence, they differ with respect to their maximum dimensions and by their different load ratings. The UCT is only available with a U-bellows cover.

9.4 Overview Options

– Ballscrews in various pitches and precision classes
– Inductive limit switches and reference switches
– Linear measuring system, measuring steps 1 µm or 0.5 µm
– Central lubrication for carriages and ballscrew nut
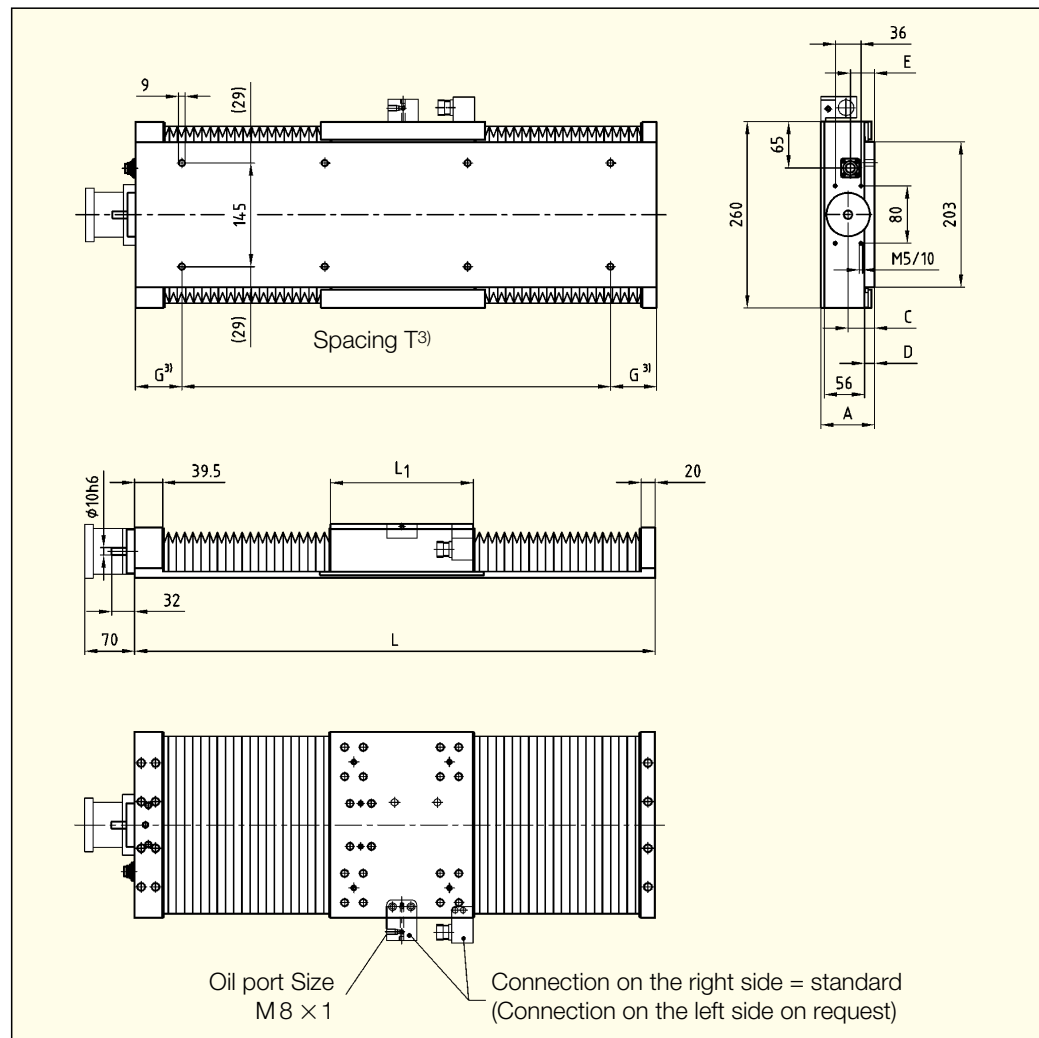– Coupling housing and coupling for customer specific motor

9.5 Special Model

Mounting holes in the upper table are made to user requirements.

9.6   Specifications UCT 15

Dimensions

The length L1 and the width B of the upper part (or overall length) can be selected by the user himself in 10 mm steps. The smallest and largest possible dimensions are listed in the table on the right. For the total height A, the listed sizes are available.


Oil port Size
M 8 × 1

Connection on the right side = standard
(Connection on the left side on request)

Limits UCT 15

Stroke	Length L	min. length of the moving part L$_1$	
Up to 2500	300–3000	without measuring system	140
		with measuring system	180
		with central lubrication	200
		with central lubrication and measuring system	200

All data in mm

[1] Only with an effective stroke of ≤ 180 mm
[2] 4 × M 8 connection threads (different hole pattern on request)
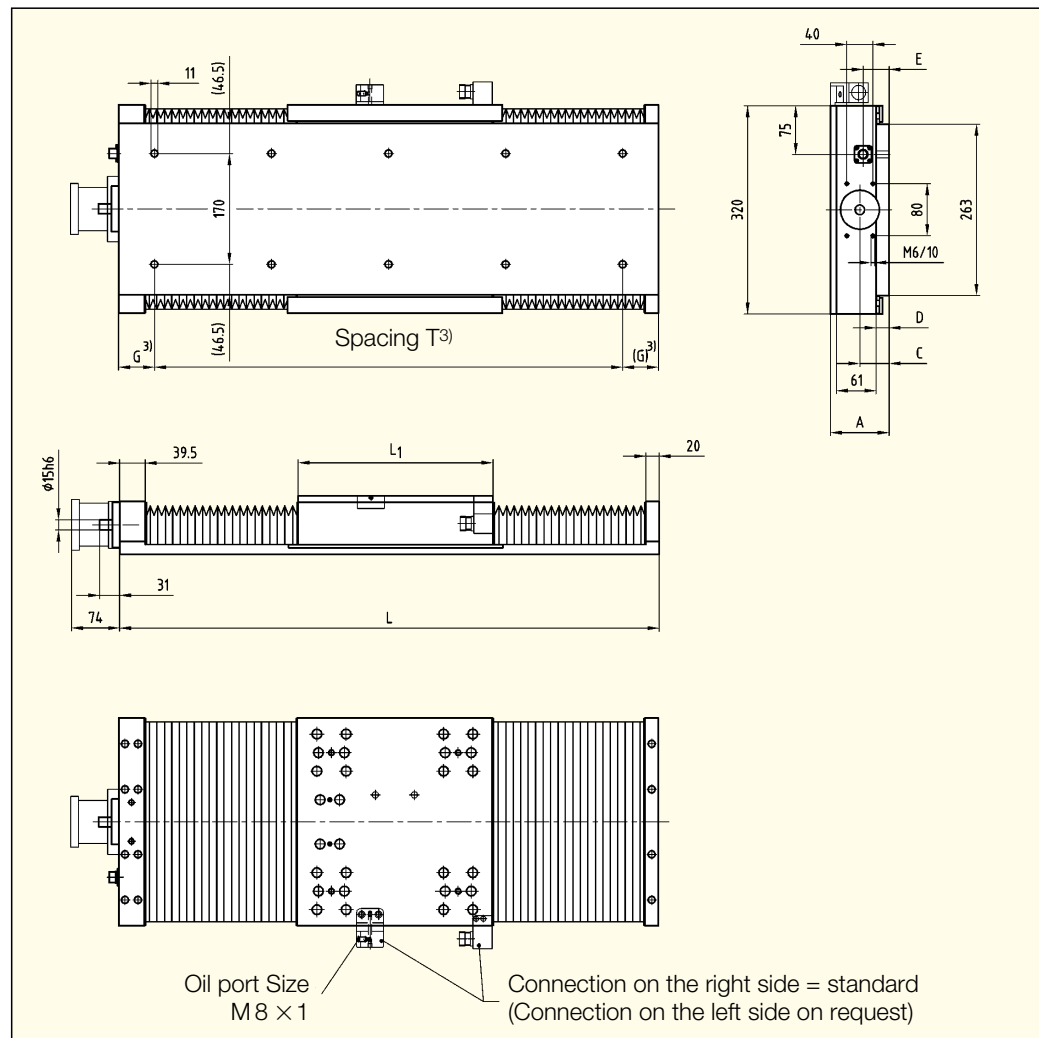[3] Dimensions dependent on the length

Moving part

Version with measuring system

Version with central lubrication system
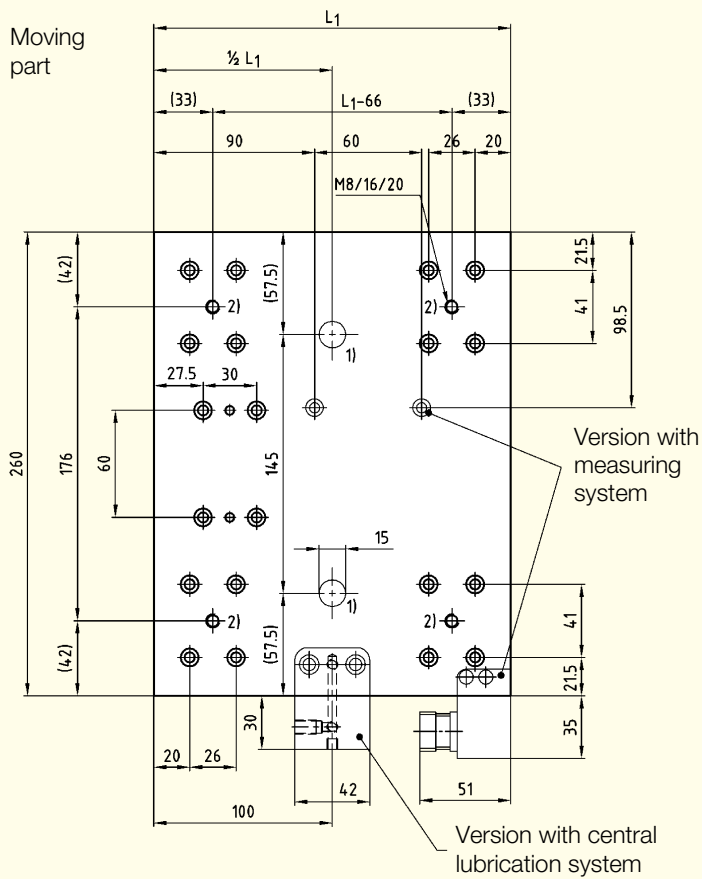
width of the moving part B
260

Total height A ± 0.2	base plate	moving part	C	D	E
75	30	25	37	14	34
80	30*	30*	37	14	34
90	35*	35*	42	19	39

*other versions on request

9.7   Specifications UCT 25

Dimensions

The length L1 and the width B of the upper part (or overall length) can be selected by the user himself in 10 mm steps. The smallest and largest possible dimensions are listed in the table on the right. For the total height A, the listed sizes are available.
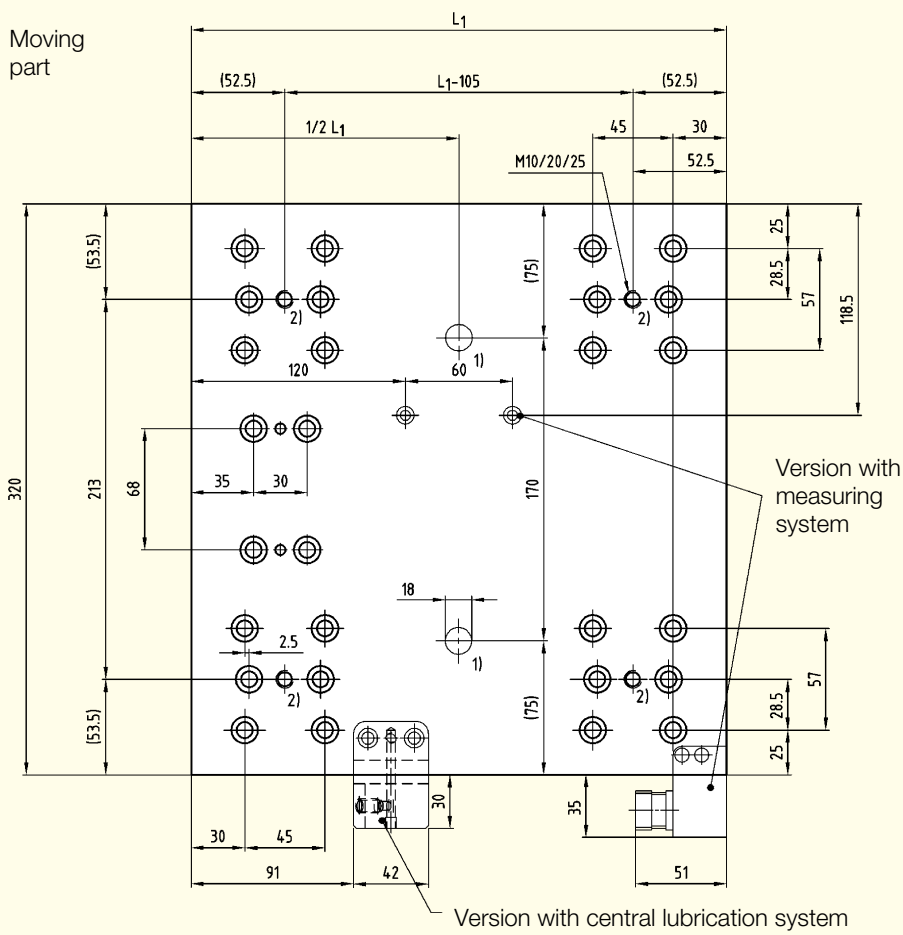

Oil port Size M8 × 1

Connection on the right side = standard
(Connection on the left side on request)

Limits UCT 25

Stroke	Length L	min. length of the moving part L1	
Up to 2500	300–3000	without measuring system	200
		with measuring system	300
		with central lubrication	300
		with central lubrication and measuring system	300

All data in mm

[1] Only with an effective stroke of ≤ 180 mm
[2] 4 × M10 connection threads (different hole pattern on request)
[3] Dimensions dependent on the length

Moving
part

Version with
measuring
system

Version with central lubrication system

width of the moving part B
320

Total height A ± 0.2	base plate	moving part	C	D	E
90	30	30	45	20	40
100	30*	40*	45	20	40
110	40*	40*	55	30	50
120	40*	50*	55	30	50

*other versions on request

9.8   Options

Ballscrew

The tables are driven by playfree preloaded ballscrew and nut assemblies with single nut. The screw and nut assemblies are available in pitches of 5, 10 and 20 mm. The standard precision classes are 10 and 50 μm (micron), measured on a length of 300 mm.

Size	Ballscrew
UCT 15	∅ 20 mm
UCT 25	∅ 25 mm

Measuring system

Construction size	Type	Output signal/Signal period	Measuring steps
UCT 15/25	Heidenhain LS 406	~11 μA$_{pp}$/20 μm	*1 μm and 0.5 μm
UCT 25	Heidenhain LS 476	⎍ TTL/5-fold-interpolation: 4 μm	1 μm
		10-fold-interpolation: 2 μm	0.5 μm
	Heidenhain LS 486	1 V$_{ss}$/20 μm	*1 μm and 0.5 μm

9.9   Load rating and speed

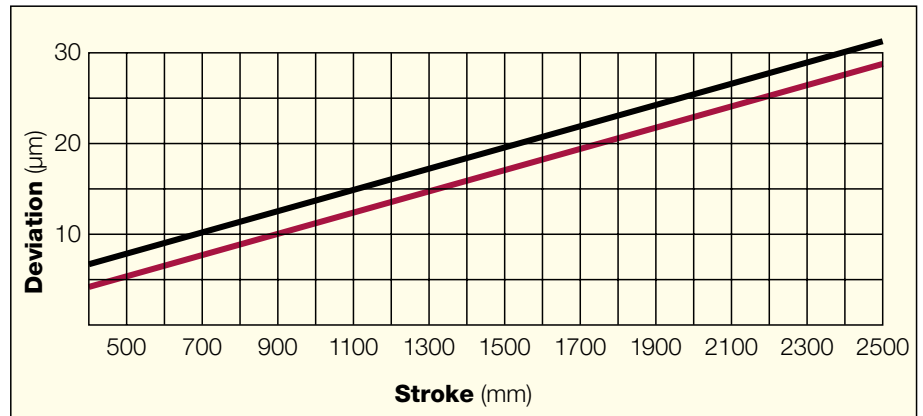| Size	Load ratings (N) C$_0$ (static load rating)	C (dynamic load rating)
UCT 15	40 000	20 000
UCT 25	180 000	80 000

Load ratings for central load

Speed
– maximum 3 m/s (limitations through screw drive and position sensors may apply)

*the Interpolation electronic (EXE) will not be supplied

9.10   Acceptance Tolerances

— steel   — aluminum (+ 2µm)
Horizontal and vertical straightness of stroke, measured in the center of the table.

9.11   UCT calculation program

Fit your UCT individually to your requirements and send us your inquiry by e-mail.
The calculation program can be used on our Homepage
www.schneeberger.com, menu SERVICES.

User name: mat
Password: table

Or send us your inquiry with the following supplementary sheet.

9.12 Supplementary sheet for UCT 15 and 25

Date:

Company:

Name:

Address:

Project no.:

Required delivery time: weeks

Dimensions

☐ UCT 15   ☐ UCT 25   Usable stroke: Quantity:

Length of **L1**:   [＿＿＿] mm   [＿＿＿] mm   [＿＿]

Moving part **A**:   [＿＿＿] mm

Reference- and limit switches

☐ None
☐ Two limit switches
☐ One reference switch and two limit switches

Measuring-System

☐ None
☐ LS 406/~11 μA_{pp}/20 µm
☐ LS 476/TTL with 5-fold-interpolation: 4 µm*
☐ LS 476/TTL with 10-fold-interpolation: 2 µm*
   *only UCT 25

Material

☐ Steel
☐ Aluminum

Lubrication

☐ Directly to carriage and ball screw nut
☐ Central

Ballscrew

Pitch   ☐ None
              ☐ 5 mm
              ☐ 10 mm
              ☐ 20 mm
Precision class   ☐ 10 µm
300 mm   ☐ 50 µm

Attaching holes

☐ Standard hole pattern in the upper table
☐ Holes in the upper table according to the enclosed drawing

Mounting position:
[＿＿＿＿＿＿＿＿＿]

Additional options

☐ Coupling housing and coupling for customized motor according to the enclosed drawing
☐ Reference face at the lower base

Application:
[＿＿＿＿＿＿＿＿＿]

Remarks:

10.1	**Horizontal and Vertical Fitting**	All applications where the direction of motion is horizontal are designated horizontal fitting. All applications where the direction of motion deviates from the horizontal are designated vertical fitting.
10.2	**Attaching Frictionless Tables**	SCHNEEBERGER frictionless tables are normally attached to the base structure with standardized through holes in the base. Various models have, additionally, threaded holes which permit alternate mounting.
10.3	**Preloading Frictionless Tables**	All SCHNEEBERGER frictionless tables have playfree, preloaded antifriction guideways and can, therefore, be used without any additional adjustment. Preloading is by means of adjusting screws or (for ballscrews) ball selection by diameter and needs no readjustment.
10.4	**Design of Base Unit**	The advantages of SCHNEEBERGER frictionless tables are best exploited on a rigid, low-deformation, accurately machined construction. The surface quality of the supporting surfaces has no direct influence on the operation and run-out behavior of the frictionless tables. We recommend however, that they should be manufactured with a surface roughness of between N5 and N7, in order to achieve the desired runout and parallelism tolerances.

11.1 Load Carrying Capacity and Operational Life

In applying frictionless tables, the primary consideration is the relationship of the applied load to the load carrying capacity. The elastic deformation (rigidity) must also be evaluated.

The load carrying capacities of the individual frictionless tables are based on the fundamentals established by ISO and DIN for the calculation of roller bearings (ISO 281, for NDN DIN 636, part 3). The load carrying capacity C is the load with which a nominal operational life of 100 000 m travel is achieved, given that the size and direction of the load remain unchanged and the line of application is vertical onto the frictionless table surface.

By definition, the latest research results have shown that the static load should not be greater than the dynamic load. The reason for this lies in the fatigue behavior which is always initiated at the highest loaded point. In the case of an absolutely constant load during standstill and in operation, the fatigue process will start at that point where the static load is present longest. The C-values given are used in the operational life equation to calculate the operational life resulting with a given load.

The operational life is the travel in meters which is made by a frictionless table before the first signs of metal fatigue appear on any of the anti-friction guideway components. The B_{10} operational life is achieved when 90% of a statistical sample of frictionless tables meet or exceed the prescribed amount of travel.

Dynamic loading capacity C
As previously mentioned, the load carrying capacity C is based on an operational life of 100 000 m. Some manufacturers use, for various reasons, a larger load carrying capacity with 50 000 meters operational life. The C_{50} values for SCHNEEBERGER frictionless tables are calculated as follows:
$C_{50} = C \cdot 1.23$ for frictionless tables with rollers (NB, NF, NCF, NCB with R 6 or SR 6)
$C_{50} = C \cdot 1.26$ for frictionless tables with balls (MAT, UCT, NCB with SKD 6)

Life Expectancy
According to the DIN and ISO standards, the load carrying capacities for roller bearings are given in such a manner that from the operational life equation a value results which, with 90% probability, will be exceeded. Should this probability not suffice, then the operational life must be shortened with the a_1 factor per the following tables:

Life Expectancy %	90	95	96	97	98	99
a_1	1	0.62	0.53	0.44	0.33	0.21

Operational life calculation

The operational life L, the dynamic load carrying capacity C (N) and the loading P (N) have the following relationship:

$$L = a_1 \left(\frac{C}{P} \right)^{10/3} \cdot 10^5 \text{ m for rollers and needles}$$
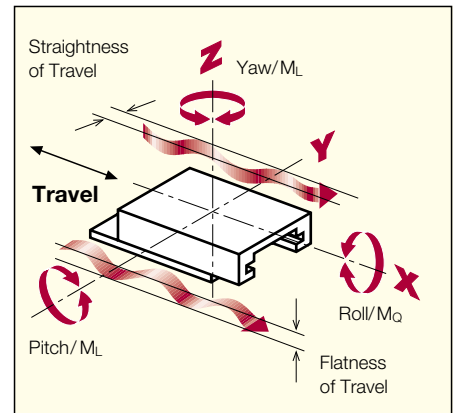
$$L = a_1 \left(\frac{C}{P} \right)^{3} \cdot 10^5 \text{ m for balls}$$

whereby a_1 is the probable life expectancy factor. The operational life in hours can be calculated when the single stroke H (m) and the time needed for it t (s) are known:

$$L_h = \frac{L \cdot t}{H \cdot 3600} \text{ in h}$$

11.2   Moment Loading

In addition to the load carrying capacity C, you will find in the tables of dimensions for the individual frictionless tables the permissible values for moment loading. M_L is the maximum possible torque lengthwise and M_Q the maximum possible torque crosswise.