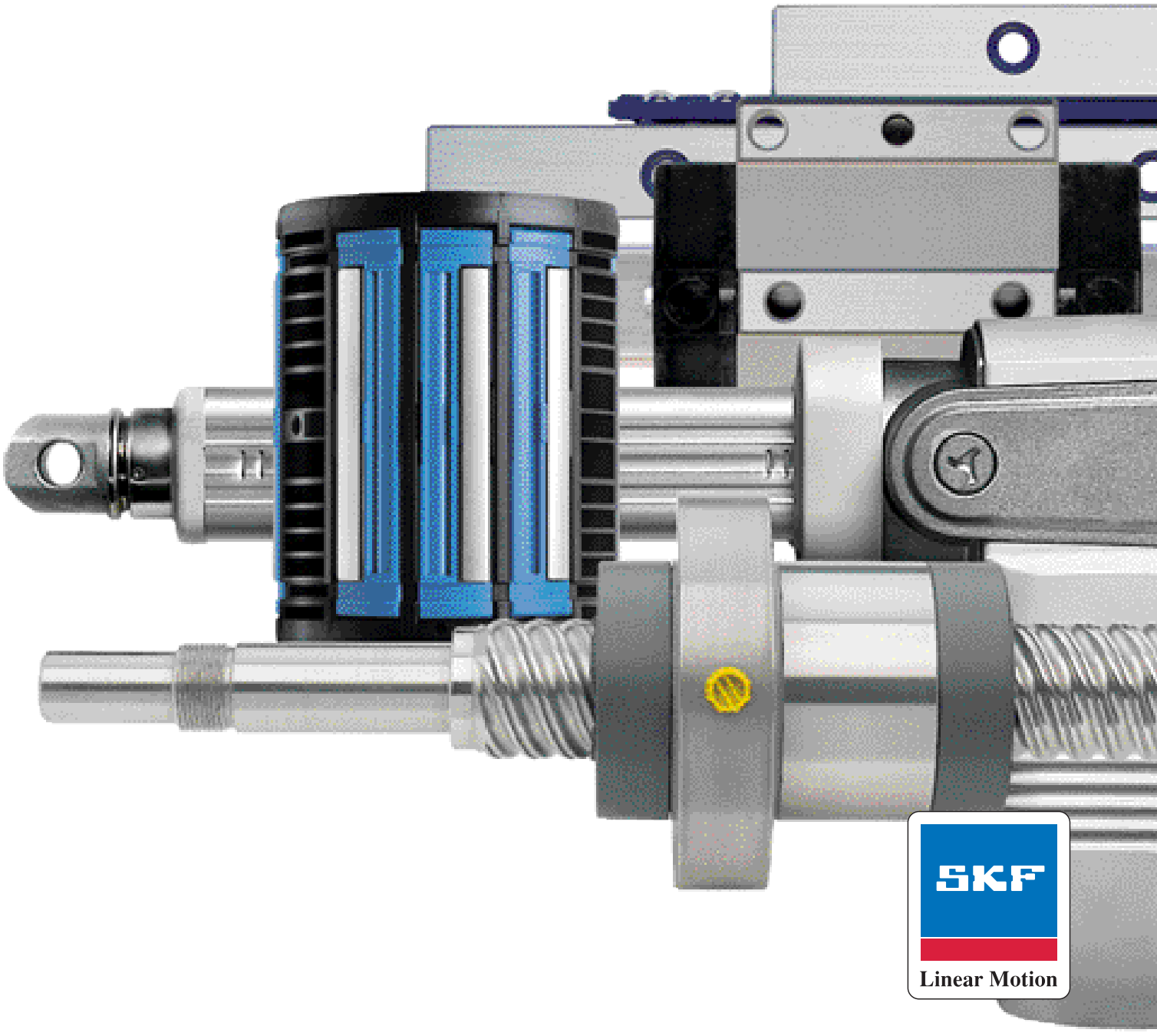
SKF

Product range



SKF
Linear Motion

Made by SKF® stands for excellence. It symbolises our consistent endeavour to achieve total quality in everything we do. For those who use our products, “Made by SKF” implies three main benefits:

Reliability – based on modern, efficient products, our worldwide application know-how, optimised materials, forward-looking designs and the most advanced production techniques.

Cost effectiveness – resulting from the favourable ratio between our product quality plus service facilities, and the purchase price of the product.

Market lead – which you can achieve by taking advantage of our products and services. Increased operating time and reduced downtime, as well as improved output and product quality are the keys to a successful partnership.

Contents

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General

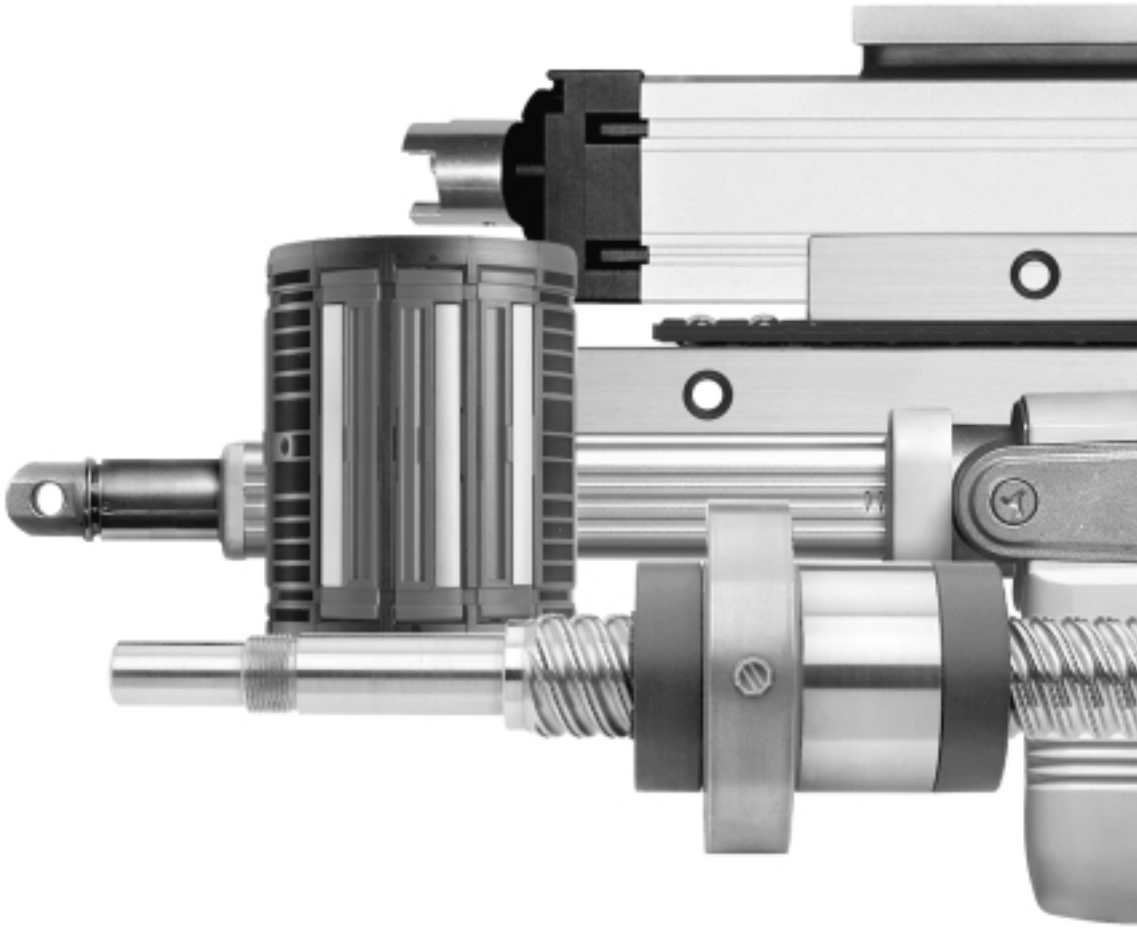
SKF Group

The SKF Group is an international industrial corporation owned by SKF Sweden AB. Founded in 1907, the company has some 39 000 employees, 80 manufacturing sites and a sales network via its own sales companies, distributors and dealers covering 150 countries around the world. SKF is the world leader in the rolling bearing business.

SKF Linear Motion

SKF Linear Motion belongs to the SKF Group and is specialised in the manufacturing and sales of a wide range of high precision components, units and systems for linear movements, providing solutions for guiding, driving, actuation and positioning tasks.

SKF Linear Motion comprises 4 product lines with 10 specialised sales companies in Europe and North America; additionally, product availability and product application support is provided world-wide by the international sales network of the SKF Group.



Product information

Information on our products is available in three forms:

Printed Matters

The Product Range catalogue presents a comprehensive range of standard linear products, offering clearly structured tables helping the customer to select the right product or arrangement.

Furthermore, special catalogues and engineering manuals are available covering different areas of application and special products.

CD-ROM

The “pdf catalogue” contains all linear engineering publications in electronic form (pdf files), sorted by country and language.

The electronic price list gives more efficiency to the designing, compiling and pricing of the desired solution.

Online

On the Internet you will find the entire SKF Linear Motion product and service range:

www.linearmotion.skf.com

This website also contains a large number of application schemes, comprehensive CAD support as well as the possibility to download information.

Furthermore, the SKF Endorsia linear webshop **www.endorsia.com** helps you reduce your purchasing costs thanks to one-stop shopping.

How to handle

This publication consists of 4 chapters divided as follows:

Guiding systems
Driving systems
Actuation systems
Positioning systems

The chapters are arranged from the most simple, the guiding, through to the most complex, the positioning, which consists of parts of the other components.

Each linear solution is introduced by a overview, which makes it easy to select the right product.

The different subjects are contained in the separate chapters, starting with a brief general description followed by the specific ordering key and the drawings with the data tables.

If a subject is divided into several sections, the corresponding ordering key is located at the beginning of each section, followed by the pages with tables and pictures of that section (for example, on page 20 and on page 26 there are two ordering keys for the Linear ball bearings but they belong to different families: compact series and standard series).

The composition of the ordering keys is not univocal, due to the structural difference of the products, instead it follows the type of the individual product.

The procedure to determine the product code to be indicated on the order is as follows:

After identifying the type of product required by examining the relevant pages containing the main data, it is necessary to prepare the code for the order. This may consist of pre-set options, ordering key boxes already filled in (for example: type, colour, etc.) and options that can be selected from several items, empty boxes (for example: design, bearing, nut type, stroke, length, etc.)

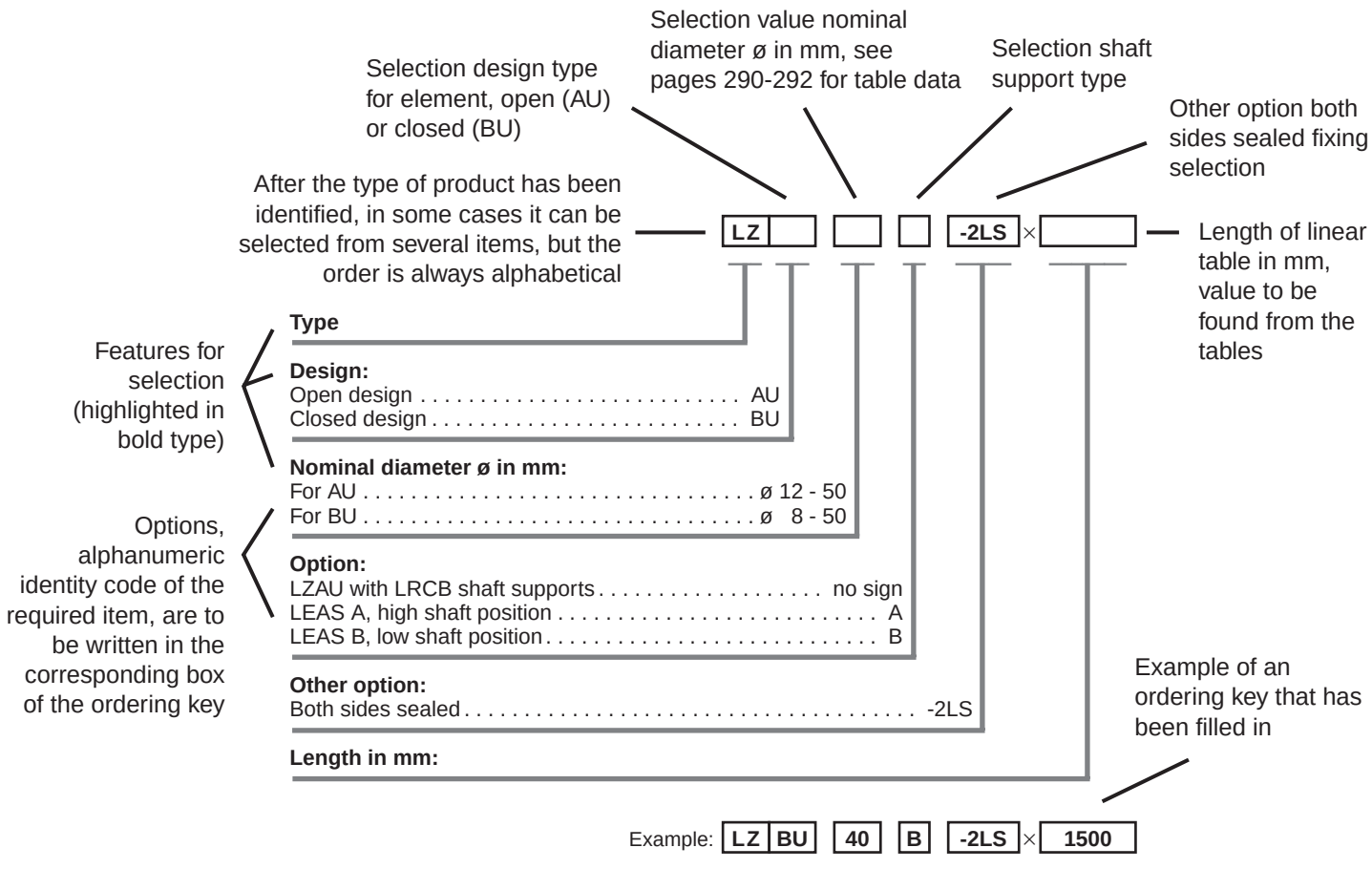
In the ordering key the options are set out under the associated subjects, with the indication of the code or the information to be entered (with the measurement restrictions contained in the associated table), the sequence of the ordering key is defined by the thin guiding lines that select the corresponding box.

The individual ordering key may contain indications or special notes.

Examples to show how to fill in are given at the end of each ordering key.

In the chapter for the actuators the selection of the items dynamic load/ speed, motor option, is through a further table with several options, located above the ordering key.

An example is given below to show how to prepare the order code for an LZ long linear table.



Notes

Guiding systems

Fig 1

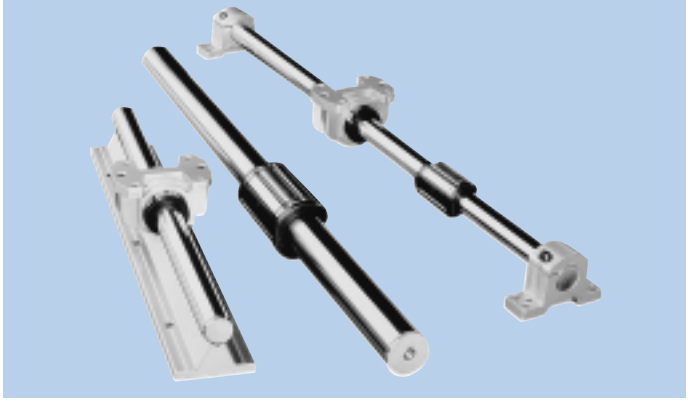


Fig 2

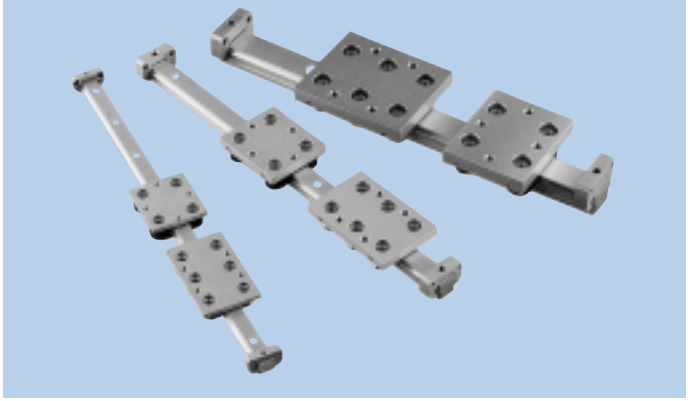


Fig 3

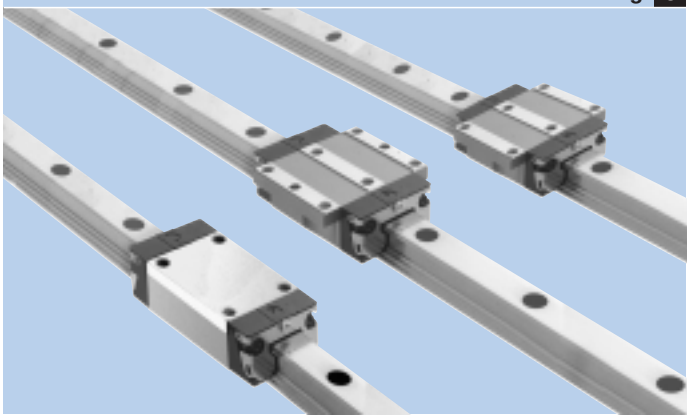
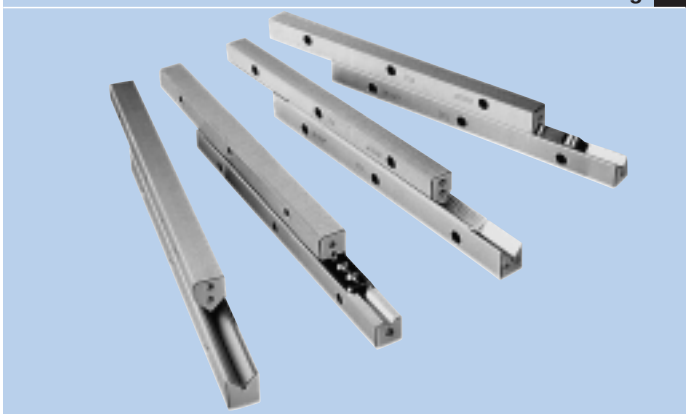


Fig 4



Linear ball bearings (➔ **fig** 1): industry standard, cam roller guides (Speedi-Roll) (➔ **fig** 2), profile rail guides (➔ **fig** 3), precision rail guides (➔ **fig** 4): limited stroke, very high precision and performance capabilities.

Operating precision (➔ **table** 1)

Comparison of the different positioning components and systems.

Table 1

Operating precision (µm)	Guiding systems	Driving systems	Actuation systems	Positioning systems
0.1 – 1	Precision rail guides	Roller screws		Standard drives or linear motors with all guiding systems
1 – 10	Linear ball bearings, Profile rail guides, Standard slides	Ball screws, Linear motors		
10 – 100	Speedi-Roll		Electro-mechanical actuators	
100 – 1000				

Linear ball bearings

Linear ball bearings (➔ **figs 5, 6 and 7**) are bushings with recirculating ball tracks which provide low friction movement and the possibility of unlimited stroke. With the range of linear ball bearings, plain bearings and accessories it is possible to design and build economical and simple linear guiding systems to suit a wide range of applications. The bearings are available in two size ranges: the compact ISO 1 series and the heavy duty ISO 3 series (➔ **Table 2**).

Fig 5

Fig 6

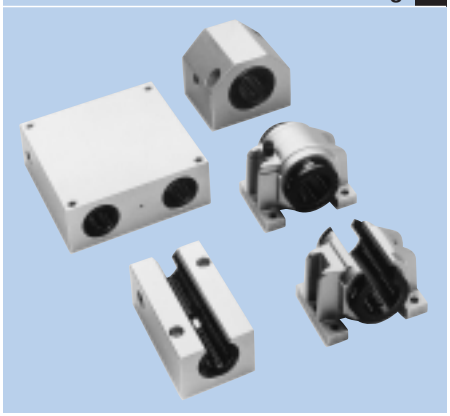


Fig 7

Table 2

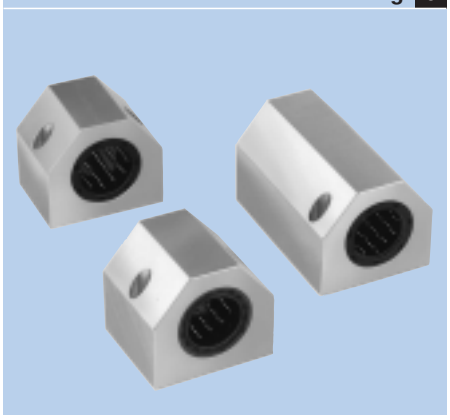
	Type	Basic dynamic load rating	Stiffness	Speed	Precision
Linear ball bearings					
Compact	LBBR				
Standard	LBCR				
	LBCD				
	LBCT				
	LBCF				
	LBHT				
Linear plain bearings					
Compact	LPBR				
Standard	LPAR				
	LPAT				
Shafts					
	LJM	Standard CF 53			
	LJMH	Hard chromium-plated			
	LJMR	Corrosion resistant			
	LJT	Hollow			
	LJMS	Corrosion resistant			

Compact range

Fig 8

LBBR
Compact linear ball bearings available in standard or corrosion resistant versions

Fig 9



LUHR / LUJR
Linear ball bearing units with either integral seals or G-type seals mounted in the housing

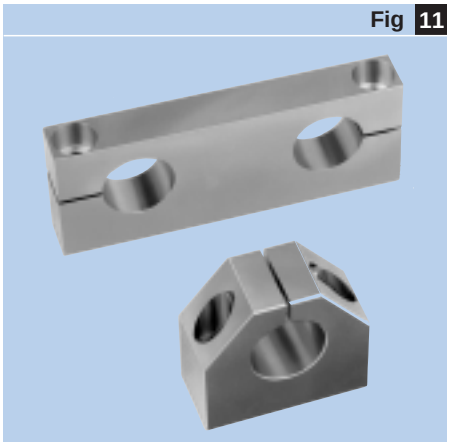
LTBR
Tandem linear ball bearing units with seals

Fig 10

LTDR
Duo linear ball bearing units with seals

LQBR
Quadro linear ball bearing units with seals

Fig 11



LSHS
Shaft blocks for compact series

LEBS
Tandem shaft blocks suitable for LQBR and LTDR

Standard range

NB.:
All LBC and LBH Linear ball bearings available in corrosion resistant!

Fig 12

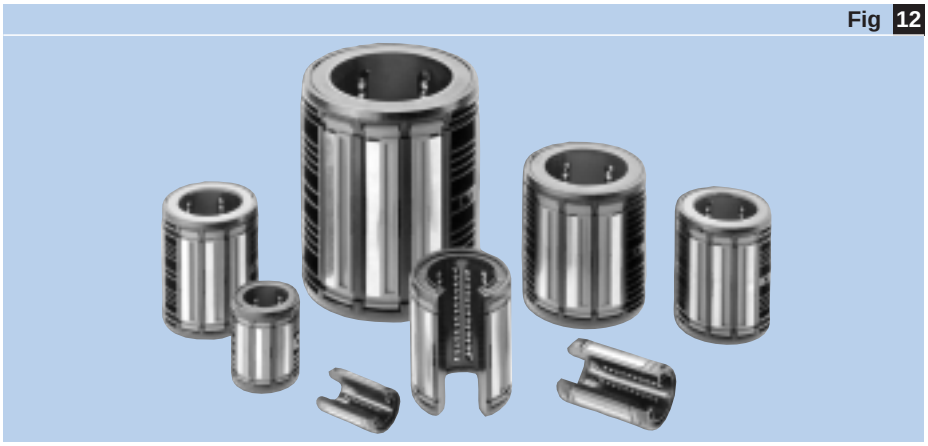
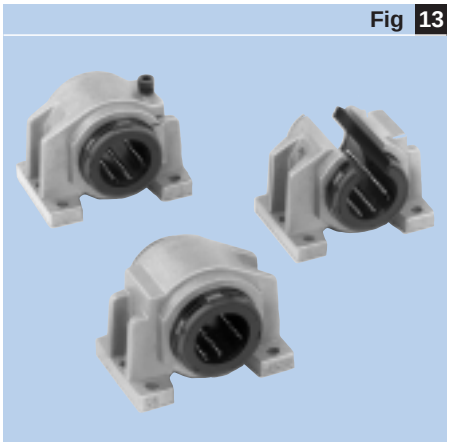


Fig 13



LBCR
Closed linear ball bearings without self-aligning feature

LBCT
Open linear ball bearings, not self-aligning

LBHT
Heavy-load linear ball bearings, open type

LBCD
Self-aligning linear ball bearings, closed type

LBCF
Self-aligning linear ball bearings, open type

LUCD / LUCE
Self-aligning linear ball bearing units with adjustable preload

LUCF
Open self-aligning linear ball bearing units with adjustable preload

Fig 14

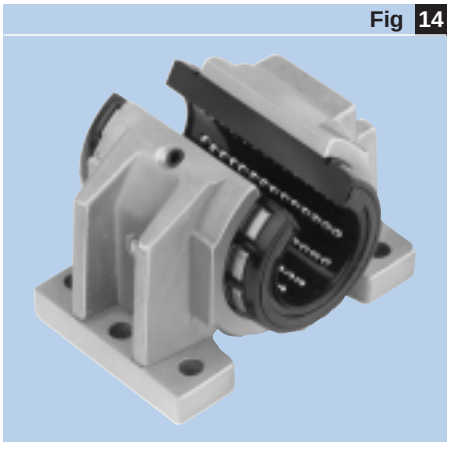
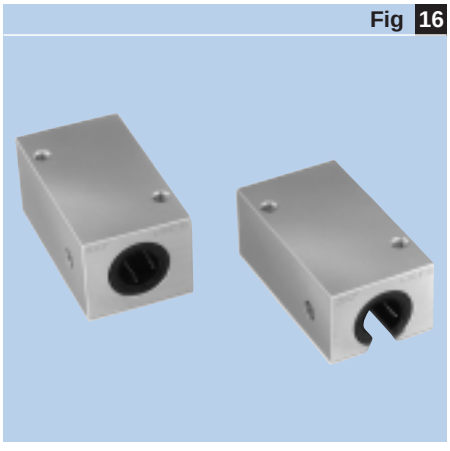


Fig 15

Fig 16



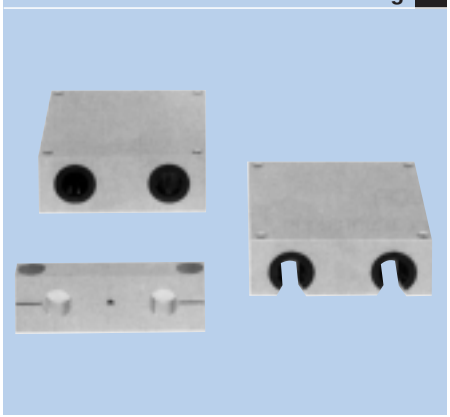
LUCT / BH
Heavy-load linear ball bearing units with adjustable preload

LUND / LUNE
Self-aligning linear ball bearing units with adjustable preload

LUNF
Self-aligning linear ball bearing units, open type with adjustable preload

LTCD / LTCF
Open or closed self-aligning tandem linear ball bearing units

Fig 17

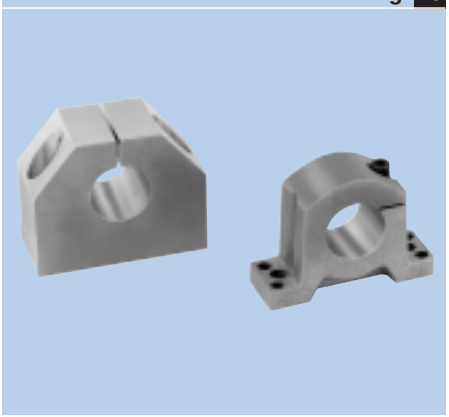


LQCD / LQCF
Open or closed self-aligning quadro linear ball bearing units

Fig 18

LVCR
Flanged linear ball bearing units

Fig 19



LSCS
Standard shaft blocks suitable for use with all linear bearing units

LSNS
Shaft blocks suitable for use with all linear bearing units

Product overview in **Table** 3

Linear ball bearings / Linear ball bearing units

Table 3

Designation	ISO series 1 Compact		ISO series 3 Standard							
Type	LBBR	LPBR	LBCD	LBCF	LBHT	LBCR	LBCT	LPAR	LPAT	LBCR Ø5 and 8
Linear bearing units	LUHR LUJR	LUHR PB	LUCD LUCE LUND LUNE	LUCF LUNF	LUCT BH	LUCR LUCS	LUCT	LUCR PA	LUCT PA	– LUCR LUCS
	LUBR LUER	LUBR PB								
Flanged units	–	–	LVCD	–	–	LVCR	–		–	LVCR
Tandem units **Duo units**	LTBR LTDR		LTCD	LTCF		LTCR	LTCT			
Quadro units	LQBR		LQCD	LQCF		LQCR	LQCT			LQCR
Shaft blocks	LSHS	LSHS	LSCS LSNS	– –	– –	LSCS LSNS	– –	LSCS LSNS	– –	LSCS –
Tandem shaft block	LEBS	–	LEAS	–	–	LEAS	–	–	–	LEAS
Shaft supports	– –	– –	– –	LRCB LRCC	LRCB LRCC	– –	LRCB LRCC	– –	LRCB LRCC	– –

Standard: available from stock (changes reserved)

Non-standard: price and delivery time on request

2 Guiding systems
Linear ball bearings - compact series

Ordering key

Type

Bearing, units, shaft blocks

Plain bearing	P
Ball bearing	B
Single unit, closed design	U
Tandem or duo unit	T
Quadro unit	Q
Shaft block	S
Tandem shaft block	E

Design (for seals on side see table at end page):

For P	(12 - 50)	BR
For B	Closed design (3 - 50)	BR
For U	Non standard (12 - 50)	BR
	Non standard (12 - 50)	ER
	Standard (12 - 50)	HR
	With shaft seals (12 - 50)	JR
	Self-aligning, clearance adjustable, closed design, relubricatable (12 - 50)	CE
	Self-aligning, closed design, relubricatable (12 - 50)	ND
	Self-aligning, clearance adjustable, closed design, relubricatable (12 - 50)	NE
For T	(12 - 50); tandem unit	BR
	(12 - 50); duo unit	DR
For Q	(12 - 50)	BR
For S	(12 - 50)	HS
For E	(12 - 50)	BS

Nominal diameter:
ø in mm

Option(s):

Without seals	no sign
One side sealed	-LS
Both sides sealed	2-LS
Only valid for LBBR:	
Without seals, corrosion resistant	/HV6
One side sealed, corrosion resistant	-LS/HV6
Both sides sealed, corrosion resistant	2-LS/HV6
Only valid for LUBR, LUHR	PB
Only valid for LEBS	A

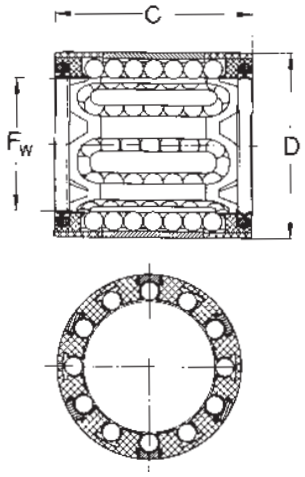
Only valid for LBBR:
Cassettes of 4 pieces for LBBR ø 3 - 5 only! (CAS4)

Example: L B BR | 4 -2LS/HV6 | (CAS4)

Seals on … side(s)	LPBR	LBBR	LUBR	LUER	LUHR	LUJR	LUCE	LUND	LUNE	LTBR	LTDR	LQBR	LSHS	LEBS
No	X	X	X	X	X	X	X	X	X	X	X	X	X	X
One	–	X	X	X	X	X	X	X	X	X	X	X	–	–
Both	–	X	X	X	X	X	X	X	X	X	X	X	–	–
Other options	–	/HV6	PB	–	PB	–	–	–	–	–	–	–	–	A

LBBR ..

Compact series 1
Linear ball bearings
LBBR (without seals)
-LS with one seal
-2LS with two seals



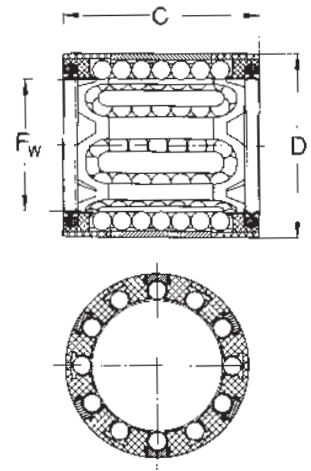
Designations	Dimensions			Basic load ratings dynamic	static
	F_w	D	C	C	C_0
	mm			N	
LBBR 3 (CAS4)*	3	7	10	60	44
LBBR 4 (CAS4)*	4	8	12	75	60
LBBR 5 (CAS4)*	5	10	15	170	129
LBBR 6A	6	12	22[1)]	335	270
LBBR 8	8	15	24	490	355
LBBR 10	10	17	26	585	415
LBBR 12	12	19	28	695	510
LBBR 14	14	21	28	710	530
LBBR 16	16	24	30	930	630
LBBR 20	20	28	30	1160	800
LBBR 25	25	35	40	2120	1560
LBBR 30	30	40	50	3150	2700
LBBR 40	40	52	60	5500	4500
LBBR 50	50	62	70	6950	6300

Example:
LBBR 4 (CAS4)
LBBR 20-LS
LBBR 50-2LS

* Without seal, 4 pieces, packed in cassette (only valid for sizes 3, 4, 5)
[1)] Width 22 does not correspond to series 1 in ISO standard 10285

LBBR .. /HV6

Compact series 1
Corrosion resistant bearings
/HV6 without seals
-2LS/HV6 with two seals



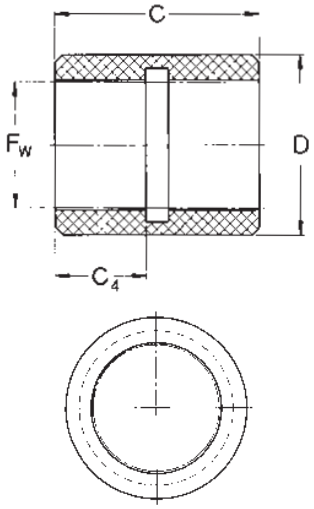
Designations	Dimensions			Basic load ratings dynamic	static
	F_w	D	C	C	C_0
	mm			N	
LBBR 3 (CAS 4)*	3	7	10	60	44
LBBR 4 (CAS 4)*	4	8	12	75	60
LBBR 5 (CAS 4)*	5	10	15	170	129
LBBR 6A	6	12	22[1)]	335	270
LBBR 8	8	15	24	490	355
LBBR 10	10	17	26	585	415
LBBR 12	12	19	28	695	510
LBBR 14	14	21	28	710	530
LBBR 16	16	24	30	930	630
LBBR 20	20	28	30	1160	800
LBBR 25	25	35	40	2120	1560
LBBR 30	30	40	50	3150	2700
LBBR 40	40	52	60	5500	4500
LBBR 50	50	62	70	6950	6300

Example:
LBBR 4/HV6 (CAS4)
LBBR 50-2LS/HV6

* Without seal, 4 pieces, packed in cassette (only valid for sizes 3, 4, 5)
[1)] Width 22 does not correspond to series 1 in ISO standard 10285

LPBR

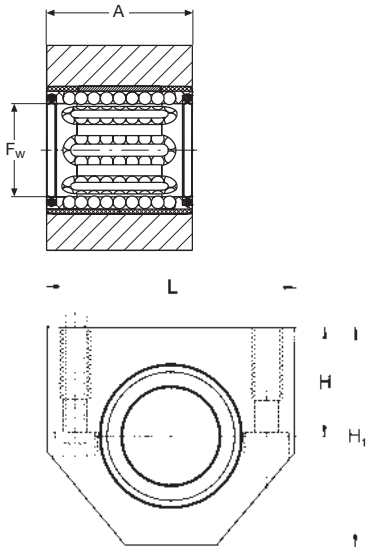
Linear plain bearings



Designations	Dimensions				Basic load ratings dynamic		static
	F_w	D	C	C_4	C 0.1 m/s	C 4 m/s	C_0
	mm				N		
LPBR 12	12	19.19	28	10	965	24	3350
LPBR 16	16	24.23	30	12	1530	38	5400
LPBR 20	20	28.24	30	13	2080	52	7350
LPBR 25	25	35.25	40	17	3400	85	12000
LPBR 30	30	40.27	50	20	4800	120	17000
LPBR 40	40	52.32	60	24	7650	193	27000
LPBR 50	50	62.35	70	27	10800	270	38000

LUHR ..

Linear ball bearing units
LUHR (without seals)
-2LS with 2 seals

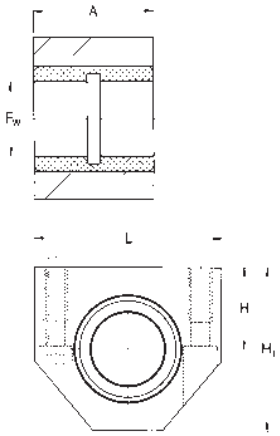


Designations	Dimensions					Basic load ratings dynamic	static
	F_w	A	H ± 0.01	H_1	L	C	C_0
	mm					N	
LUHR 12	12	28	17	33	40	695	510
LUHR 16	16	30	19	38	45	930	630
LUHR 20	20	30	23	45	53	1160	800
LUHR 25	25	40	27	54	62	2120	1560
LUHR 30	30	50	30	60	67	3150	2700
LUHR 40	40	60	39	76	87	5500	4500
LUHR 50	50	70	47	92	103	6950	6300

Example:
LUHR 16
LUHR 30-2LS

LUHR .. PB

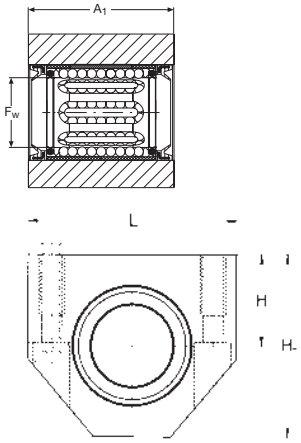
Linear plain bearing units without seals



Designations	Dimensions					Basic load ratings dynamic		static
	F_w	A	H ± 0.01	H_1	L	C 0.1 m/s	C 4 m/s	C_0
	mm					N		
LUHR 12 PB	12	28	17	33	40	965	24	3350
LUHR 16 PB	16	30	19	38	45	1530	38	5400
LUHR 20 PB	20	30	23	45	53	2080	52	7350
LUHR 25 PB	25	40	27	54	62	3400	85	12000
LUHR 30 PB	30	50	30	60	67	4800	120	17000
LUHR 40 PB	40	60	39	76	87	7650	193	27000
LUHR 50 PB	50	70	47	92	103	10800	270	38000

LUJR

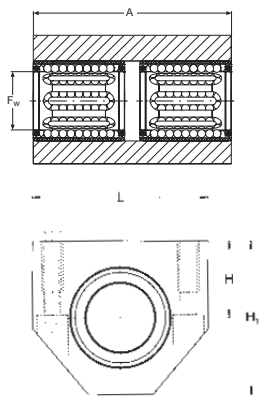
Linear ball bearing units with shaft seals



Designations	Dimensions					Basic load ratings dynamic	static
	F_w	A_1	H ± 0.01	H_1	L	C	C_0
	mm					N	
LUJR 12	12	35	17	33	40	695	510
LUJR 16	16	37	19	38	45	930	630
LUJR 20	20	39	23	45	53	1160	800
LUJR 25	25	49	27	54	62	2120	1560
LUJR 30	30	59	30	60	67	3150	2700
LUJR 40	40	71	39	76	87	5500	4500
LUJR 50	50	81	47	92	103	6950	6300

LTBR ..

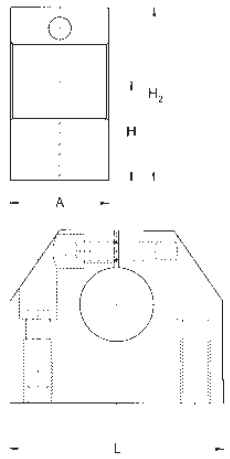
Tandem linear ball bearing units
LTBR (without seals)
-2LS with two seals



Designations	Dimensions						Basic load ratings dynamic	static
	F_w	A	H ± 0.01	H_1	L		C	C_0
	mm						N	
LTBR 12	12	60	17	33	40		1140	1020
LTBR 16	16	65	19	38	45		1530	1270
LTBR 20	20	65	23	45	53		1900	1600
LTBR 25	25	85	27	54	62		3450	3150
LTBR 30	30	105	30	60	67		5200	5400
LTBR 40	40	125	39	76	87		9000	9000
LTBR 50	50	145	47	92	103		11400	12700
Example:								
LTBR 16								
LTBR 30-2LS								

LSHS

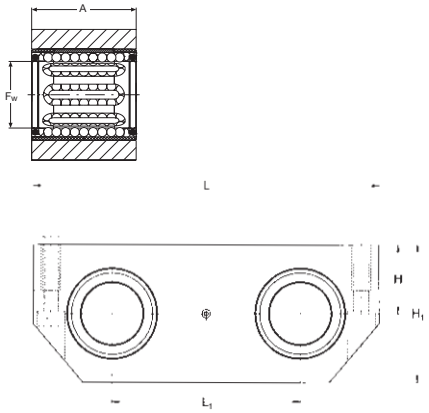
Shaft block for compact series



Designations	Dimensions				
	F_w	A	H ± 0.01	H_2	L
	mm				
LSHS 12	12	18	19	33	40
LSHS 16	16	20	22	38	45
LSHS 20	20	24	25	45	53
LSHS 25	25	28	31	54	62
LSHS 30	30	30	34	60	67
LSHS 40	40	40	42	76	87
LSHS 50	50	50	50	92	103

LTDR ..

Duo linear ball bearing units
LTDR (without seals)
-2LS with four seals

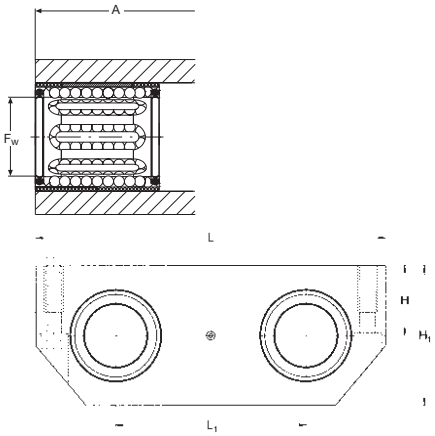


Designations	Dimensions						Basic load ratings dynamic	static
	F_w	A	H ± 0.01	H_1	L	L_1	C	C_0
	mm						N	
LTDR 12	12	28	15	30	80	40	1140	1020
LTDR 16	16	30	17.5	35	96	52	1530	1270
LTDR 20	20	30	20	40	115	63	1900	1600
LTDR 25	25	40	25	50	136	75	3450	3150
LTDR 30	30	50	28	56	146	80	5200	5400
LTDR 40	40	60	35	70	184	97	9000	9000
LTDR 50	50	70	40	80	210	107	11400	12700

Example:
LTDR 12
LTDR 25-2LS

LQBR ..

Quadro linear ball bearing units
LQBR (without seals)
-2LS with four seals

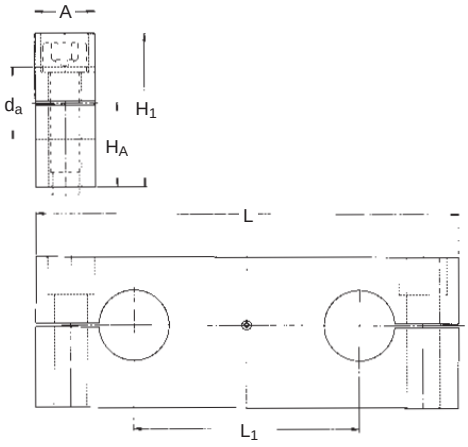


Designations	Dimensions						Basic load ratings dynamic	static
	F_w	A	H ± 0.01	H_1	L	L_1	C	C_0
	mm						N	
LQBR 12	12	70	15	30	80	40	1860	2040
LQBR 16	16	80	17.5	35	96	52	2500	2550
LQBR 20	20	85	20	40	115	63	3100	3200
LQBR 25	25	100	25	50	136	75	5600	6300
LQBR 30	30	130	28	56	146	80	8500	10800
LQBR 40	40	150	35	70	184	97	14600	18000
LQBR 50	50	175	40	80	210	107	18600	25500

Example:
LQBR 40
LQBR 30-2LS

LEBS

Tandem shaft blocks suitable for LQBR and LTDR



Designations	Dimensions					
	d_a	A	H_A ± 0.01	H_1	L	L_1
	mm					
LEBS 12 A	12	15	17	30	80	40
LEBS 16 A	16	15	19.5	35	96	52
LEBS 20 A	20	18	22	40	115	63
LEBS 25 A	25	20	27	50	136	75
LEBS 30 A	30	20	31	56	146	80
LEBS 40 A	40	25	38	70	184	97
LEBS 50 A	50	30	43	80	210	107

2 Guiding systems
Linear ball bearings - standard series

Ordering key

L | | | | |

Type

Bearings, units, components:

Plain bearing	P
Ball bearing	B
Single unit	U
Flanged unit	V
Tandem unit	T
Quadro unit	Q
Shaft block	S
Tandem shaft block	E
Shaft support	R

Design (for seals on side see table at end page):

For P	Closed design (5 - 80)	AR
	Open design (5 - 80)	AT
For B	Self-aligning, closed design (12 - 50)	CD
	Self-aligning, open design (12 - 50)	CF
	Closed design (5 - 80)	CR
	Open design (12 - 80)	CT
	Heavy load, open design (20 - 50)	HT
For U	Self-aligning, closed design, relubricatable (12 - 50)	CD
	Self-aligning, radial adjustable, slotted design, relubricatable (12 - 50)	CE
	Self-aligning, clearance adjustable, open design, relubricatable (12 - 50)	CF
	Closed design, (relubricatable) (8 - 80)	CR
	Clearance adjustable, closed design, relubricatable (8 - 80)	CS
	Clearance adjustable, open design, relubricatable (12 - 80)	CT
	Self-aligning, clearance adjustable, closed design, relubricatable (12 - 50)	ND
	Self-aligning, clearance adjustable, slotted design, relubricatable (12 - 50)	NE
	Self-aligning, clearance adjustable, open design, relubricatable (12 - 50)	NF

Nominal diameter:
ø in mm

Option(s):

Without seals	no sign
One side sealed	-LS
Both sides sealed	-2LS

Other option:

Only valid for LUCR, LUCT:	
With plain bearing, without seals	PA
Only valid for LUCT:	
With heavy-load bearing, without seals	BH
With heavy-load bearing, both sides sealed	BH-2LS
Only valid for LEAS:	
Tandem shaft block, high shaft position	A
Tandem shaft block, low shaft position	B

Example: L | U | CT | 30 | BH-2LS

Continued

Seals on … side(s)	LPAR	LPAT	LBCD	LBCF	LBCR	LBCT	LBHT	LUCD	LUCE	LUCF	LUCR	LUCS	LUCT	LUND	LUNE	LUNF
No	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
One	–	–	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Both	–	–	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Other options	–	–	–	–	–	–	–	–	–	–	PA	–	BH or PA	–	–	–

Ordering key *(Continued)*

Type

Bearings, units, components:

Plain bearing	P
Ball bearing	B
Single unit	U
Flanged unit	V
Tandem unit	T
Quadro unit	Q
Shaft block	S
Tandem shaft block	E
Shaft support	R

Design (for seals on side see table at end page):

For V	Self-aligning, closed design (12 - 50)	CD
	Closed design (12 - 80)	CR
For T	Self-aligning, closed design, relubricatable (12 - 50)	CD
	Self-aligning, open design, relubricatable (12 - 50)	CF
	Closed design, relubricatable (12 - 50)	CR
	Open design, relubricatable (12 - 50)	CT
For Q	Self-aligning, closed design, relubricatable (12 - 50)	CD
	Self-aligning, open design, relubricatable (12 - 50)	CF
	Closed design, relubricatable (8 - 50)	CR
	Open design, relubricatable (12 - 50)	CT
For S	(8 - 80)	CS
	(12 - 50)	NS
For E	(8 - 50)	AS
For R	Without bore holes (12 - 80)	CB
	With bore holes (12 - 80)	CC

Nominal diameter:
ø in mm

Option(s):

Without seals	no sign
One side sealed	-LS
Both sides sealed	-2LS

Other option:

Only valid for LUCR, LUCT:	
With plain bearing, without seals	PA
Only valid for LUCT:	
With heavy-load bearing, without seals	BH
With heavy-load bearing, both sides sealed	BH-2LS
Only valid for LEAS:	
Tandem shaft block, high shaft position	A
Tandem shaft block, low shaft position	B

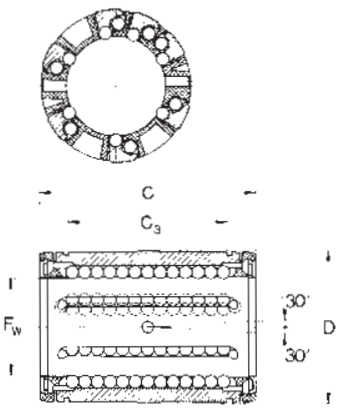
Example: L Q CR 16 -2LS

Seals on ... side(s)	LVCD	LVCR	LTCD	LTCF	LTCR	LTCT	LQCD	LQCF	LQCR	LQCT	LSCS	LSNS	LEAS	LRCB	LRCC
No	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
One	X	X	X	X	X	X	X	X	X	X	–	–	–	–	–
Both	X	X	X	X	X	X	X	X	X	X	–	–	–	–	–
Other options	–	–	–	–	–	–	–	–	–	–	–	–	B or A	–	–

LBCD ..

Standard series 3

Linear ball bearings self-aligning, closed type
LBCD (without seals)
-LS with one seal
-2LS with two seals



Designations	Dimensions				Basic load ratings dynamic	static
	F_w	D	C	C_3	C	C_0
	mm				N	
LBCD 12	12	22	32	20	1080	815
LBCD 16	16	26	36	22	1320	865
LBCD 20	20	32	45	28	2000	1370
LBCD 25	25	40	58	40	2900	2040
LBCD 30	30	47	68	48	4650	3250
LBCD 40	40	62	80	56	7800	5200
LBCD 50	50	75	100	72	11200	6950

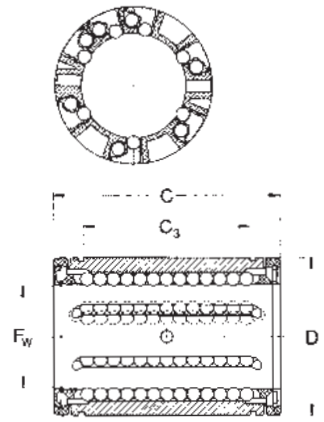
Example:
LBCD 25
LBCD 16-LS
LBCD 40-2LS

In the course of the year 2003, the LBC series is to be replaced by a revised version. This will be easily interchangeable with the former LBC linear ball bearings and all competitor products. Furthermore, the new series will offer additional technological advantages.

LBCR ..

Standard series 3

Linear ball bearings, closed type
LBCR (without seals)
-LS with one seal
-2LS with two seals



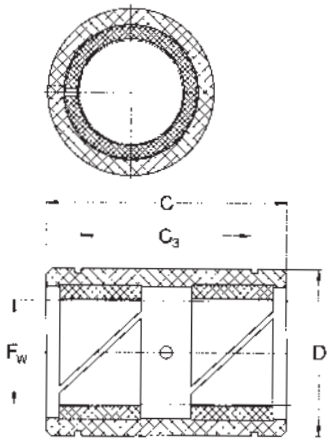
Designations	Dimensions				Basic load ratings dynamic	static
	F_w	D	C	C_3	C	C_0
	mm				N	
LBCR 5	5	12	22	12	212	170
LBCR 8	8	16	25	14	365	285
LBCR 12	12	22	32	20	1160	980
LBCR 16	16	26	36	22	1500	1290
LBCR 20	20	32	45	28	2240	2040
LBCR 25	25	40	58	40	3350	3350
LBCR 30	30	47	68	48	5600	5700
LBCR 40	40	62	80	56	9000	8150
LBCR 50	50	75	100	72	13400	12200
LBCR 60	60	90	125	95	20400	18000
LBCR 80	80	120	165	125	37500	32000

Example:
LBCR 30
LBCR 80-LS
LBCR 60-2LS

In the course of the year 2003, the LBC series is to be replaced by a revised version. This will be easily interchangeable with the former LBC linear ball bearings and all competitor products. Furthermore, the new series will offer additional technological advantages.

LPAR

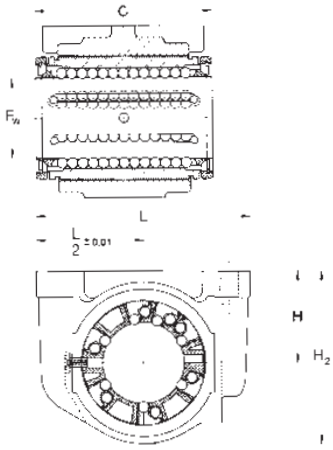
Linear plain bearings without seals, closed type



Designations	Dimensions				Basic load ratings dynamic		static
	F_w	D	C	C_3	C 0.1 m/s	C 4 m/s	C_0
	mm				N		
LPAR 5	5	12	22	12	280	7	980
LPAR 8	8	16	25	14	510	13	1800
LPAR 12	12	22	32	20	965	24	3350
LPAR 16	16	26	36	22	1530	38	5400
LPAR 20	20	32	45	28	2400	60	8300
LPAR 25	25	40	58	40	4000	100	14000
LPAR 30	30	47	68	48	5500	137	19300
LPAR 40	40	62	80	56	8000	200	28000
LPAR 50	50	75	100	72	12000	300	41500
LPAR 60	60	90	125	95	16600	415	60000
LPAR 80	80	120	165	125	29000	720	100000

LUCD ..

Single units, self-aligning, closed type, relubricatable
LUCD (without seals)
-2LS with two seals

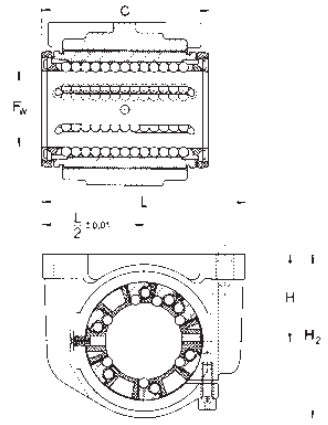


Designations	Dimensions					Basic load ratings dynamic	static
	F_w	C	H ± 0.01	H_2	L	C	C_0
	mm					N	
LUCD 12	12	32	18	34.5	52	1080	815
LUCD 16	16	36	22	40.5	56	1320	865
LUCD 20	20	45	25	48	70	2000	1370
LUCD 25	25	58	30	58	80	2900	2040
LUCD 30	30	68	35	67	88	4650	3250
LUCD 40	40	80	45	85	108	7800	5200
LUCD 50	50	100	50	99	135	11200	6950

Example:
LUCD 40
LUCD 12-2LS

LUCE ..

Single units, self-aligning, clearance adjustable, closed type, relubricatable
LUCE (without seals)
-2LS with two seals

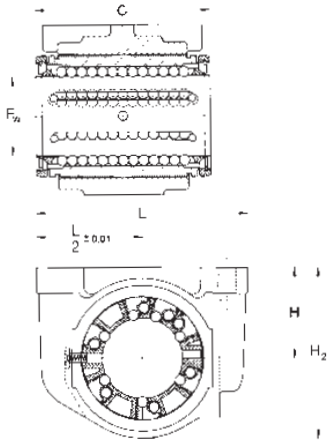


Designations	Dimensions					Basic load ratings dynamic	static
	F_w	C	H ± 0.01	H_2	L	C	C_0
	mm					N	
LUCE 12	12	32	18	34.5	52	1080	815
LUCE 16	16	36	22	40.5	56	1320	865
LUCE 20	20	45	25	48	70	2000	1370
LUCE 25	25	58	30	58	80	2900	2040
LUCE 30	30	68	35	67	88	4650	3250
LUCE 40	40	80	45	85	108	7800	5200
LUCE 50	50	100	50	99	135	11200	6950

Example:
LUCE 25
LUCE 50-2LS

LUCR ..

Single units, closed type, relubricatable
LUCR (without seals)
-2LS with two seals



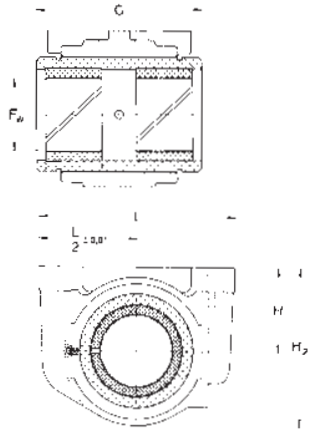
Designations	Dimensions					Basic load ratings dynamic	static
	F_w	C	H ± 0.01	H_2	L	C	C_0
	mm					N	
LUCR 8 *	8	25	15	28	45	365	285
LUCR 12	12	32	18	34.5	52	1080	815
LUCR 16	16	36	22	40.5	56	1320	865
LUCR 20	20	45	25	48	70	2000	1370
LUCR 25	25	58	30	58	80	2900	2040
LUCR 30	30	68	35	67	88	4650	3250
LUCR 40	40	80	45	85	108	7800	5200
LUCR 50	50	100	50	99	135	11200	6950
LUCR 60	60	125	60	118	160	20400	18000
LUCR 80	80	165	80	158	205	37500	32000

Example:
LUCR 80
LUCR 8-2LS

* Linear ball bearings fitted to these units are secured with snap rings according to DIN 471 and cannot be relubricated.

LUCR ..PA

Single plain bearing units without seals, closed type

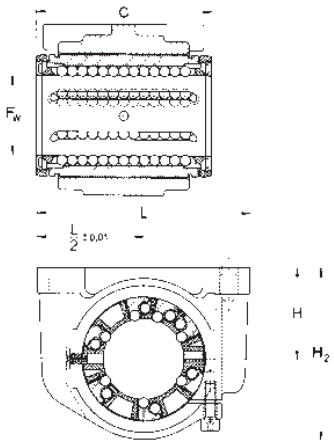


Designations	Dimensions					Basic load ratings dynamic		static
	F_w	C	H	H_2	L	C 0.1 m/s	C 4 m/s	C_0
	mm					N		
LUCR 8 PA	8	25	15	28	45	510	13	1800
LUCR 12 PA	12	32	18	34.5	52	965	24	3350
LUCR 16 PA	16	36	22	40.5	56	1530	38	5400
LUCR 20 PA	20	45	25	48	70	2400	60	8300
LUCR 25 PA	25	58	30	58	80	4000	100	14000
LUCR 30 PA	30	68	35	67	88	5500	137	19300
LUCR 40 PA	40	80	45	85	108	8000	200	28000
LUCR 50 PA	50	100	50	99	135	12000	300	41500
LUCR 60 PA	60	125	60	118	160	16600	415	60000
LUCR 80 PA	80	165	80	158	205	29000	720	100000

Delivery time on request

LUCS ..

Single units, clearance adjustable, closed type, relubricatable
LUCS (without seals)
-2LS with two seals



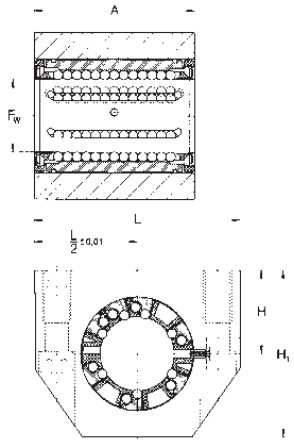
Designations	Dimensions					Basic load ratings dynamic	static
	F_w	C	H	H_2	L	C	C_0
	mm					N	
LUCS 8 *	8	25	15	28	45	365	285
LUCS 12	12	32	18	34.5	52	1080	815
LUCS 16	16	36	22	40.5	56	1320	865
LUCS 20	20	45	25	48	70	2000	1370
LUCS 25	25	58	30	58	80	2900	2040
LUCS 30	30	68	35	67	88	4650	3250
LUCS 40	40	80	45	85	108	7800	5200
LUCS 50	50	100	50	99	135	11200	6950
LUCS 60	60	125	60	118	160	20400	18000
LUCS 80	80	165	80	158	205	37500	32000

Example:
LUCS 50
LUCS 60-2LS

* Linear ball bearings fitted to these units are secured with snap rings according to DIN 471 and cannot be relubricated.

LUND ..

Single units, self-aligning, closed type, relubricatable
LUND (without seals)
-2LS with two seals

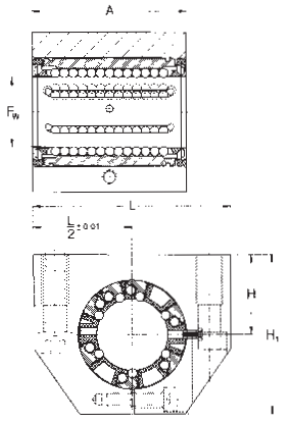


Designations	Dimensions					Basic load ratings dynamic	static
	F_w	A	H ± 0.01	H_1	L	C	C_0
	mm					N	
LUND 12	12	32	18	35	43	1080	815
LUND 16	16	37	22	42	53	1320	865
LUND 20	20	45	25	50	60	2000	1370
LUND 25	25	58	30	61	78	2900	2040
LUND 30	30	68	35	70	87	4650	3250
LUND 40	40	80	45	90	108	7800	5200
LUND 50	50	100	50	105	132	11200	6950

Example:
LUND 12
LUND 30-2LS

LUNE ..

Single units, self-aligning, clearance adjustable, closed type, relubricatable
LUNE (without seals)
-2LS with two seals

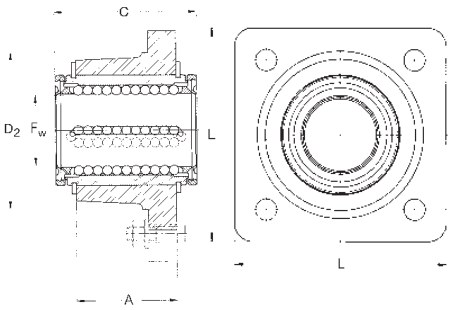


Designations	Dimensions					Basic load ratings dynamic	static
	F_w	A	H ± 0.01	H_1	L	C	C_0
	mm					N	
LUNE 12	12	32	18	35	43	1080	815
LUNE 16	16	37	22	42	53	1320	865
LUNE 20	20	45	25	50	60	2000	1370
LUNE 25	25	58	30	61	78	2900	2040
LUNE 30	30	68	35	70	87	4650	3250
LUNE 40	40	80	45	90	108	7800	5200
LUNE 50	50	100	50	105	132	11200	6950

Example:
LUNE 40
LUNE 16-2LS

LVCD ..

Flanged self-aligning units
LVCD (without seals)
-2LS with two seals

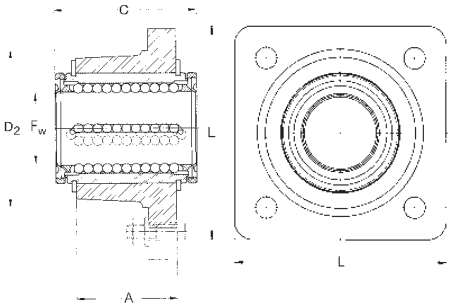


Designations	Dimensions					Basic load ratings dynamic	static
	F_w	A	C	L	D_2	C	C_0
	mm					N	
LVCD 12	12	20	32	42	32	1080	815
LVCD 16	16	22	36	50	38	1320	865
LVCD 20	20	28	45	60	46	2000	1370
LVCD 25	25	40	58	74	58	2900	2040
LVCD 30	30	48	68	84	66	4650	3250
LVCD 40	40	56	80	108	90	7800	5200
LVCD 50	50	72	100	130	110	11200	6950

Example:
LVCD 12
LVCD 30-2LS

LVCR ..

Flanged units
LVCR (without seals)
-2LS with two seals



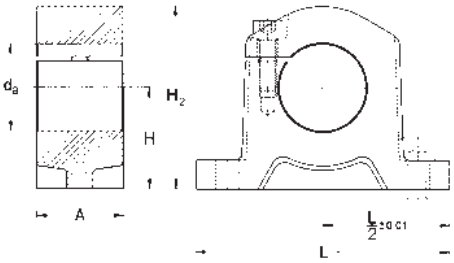
Designations	Dimensions					Basic load ratings dynamic	static
	F_w	A	C	L	D_2	C	C_0
	mm					N	
LVCR 12	12	20	32	42	32	1160	980
LVCR 16	16	22	36	50	38	1500	1290
LVCR 20	20	28	45	60	46	2240	2040
LVCR 25	25	40	58	74	58	3350	3350
LVCR 30	30	48	68	84	66	5600	5700
LVCR 40	40	56	80	108	90	9000	8150
LVCR 50	50	72	100	130	110	13400	12200
LVCR 60	60	95	125	160	135	20400	18000
LVCR 80	80	125	165	200	180	37500	32000

Example:
LVCR 20
LVCR 60-2LS

Delivery time on request

LSCS

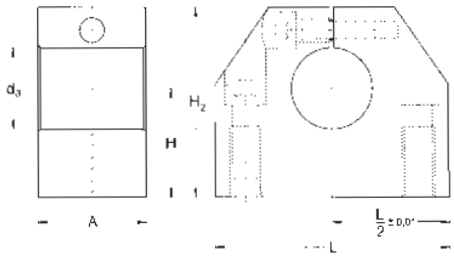
Shaft blocks



Designations	Dimensions				
	d_a	A	H ± 0.01	H_2	L
	mm				
LSCS 8	8	10	15	25	45
LSCS 12	12	12	20	32.5	52
LSCS 16	16	15	20	35.5	56
LSCS 20	20	20	25	43.5	70
LSCS 25	25	28	30	53	80
LSCS 30	30	30	35	63	88
LSCS 40	40	36	45	81	108
LSCS 50	50	49	50	92.5	135
LSCS 60	60	62	60	112	160
LSCS 80	80	85	80	147.5	205

LSNS

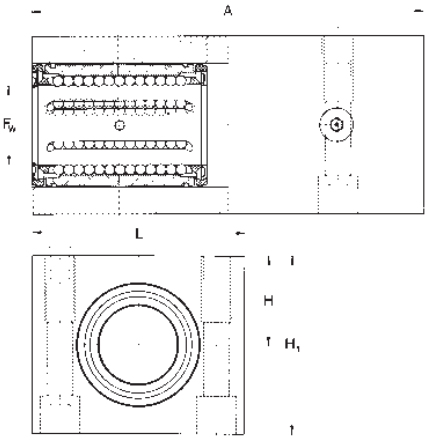
Shaft blocks



Designations	Dimensions				
	d_a	A	H ± 0.01	H_2	L
	mm				
LSNS 12	12	20	20	35	43
LSNS 16	16	24	25	42	53
LSNS 20	20	30	30	50	60
LSNS 25	25	38	35	61	78
LSNS 30	30	40	40	70	87
LSNS 40	40	48	50	90	108
LSNS 50	50	58	60	105	132

LTCD ..

Tandem units, self-aligning, closed type, relubricatable
LTCD (without seals)
-2LS with two seals

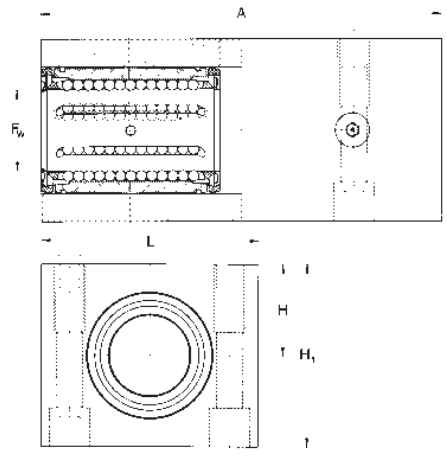


Designations	Dimensions					Basic load ratings dynamic	static
	F_w	A	H ± 0.01	H_1	L	C	C_0
	mm					N	
LTCD 12	12	76	18	35	42	1760	1630
LTCD 16	16	84	22	41.5	50	2160	1730
LTCD 20	20	104	25	49.5	60	3200	2750
LTCD 25	25	130	30	59.5	74	4750	4150
LTCD 30	30	152	35	69.5	84	7500	6550
LTCD 40	40	176	45	89.5	108	12700	10400
LTCD 50	50	224	50	99.5	130	18300	14000

Example:
LTCD 30
LTCD 12-2LS

LTCR ..

Tandem units, closed type, relubricatable
LTCR (without seals)
-2LS with two seals

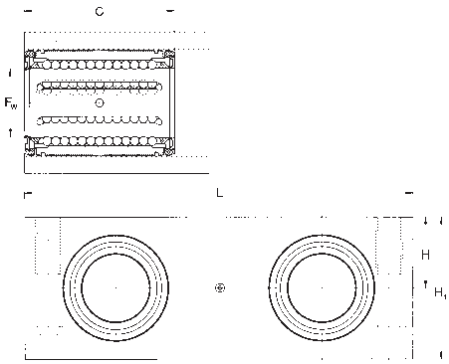


Designations	Dimensions					Basic load ratings dynamic	static
	F_w	A	H ± 0.01	H_1	L	C	C_0
	mm					N	
LTCR 12	12	76	18	35	42	1900	1960
LTCR 16	16	84	22	41.5	50	2450	2600
LTCR 20	20	104	25	49.5	60	3650	4150
LTCR 25	25	130	30	59.5	74	5500	6700
LTCR 30	30	152	35	69.5	84	9150	11400
LTCR 40	40	176	45	89.5	108	15000	16300
LTCR 50	50	224	50	99.5	130	22000	24500

Example:
LTCR 50
LTCR 20-2LS

LQCD ..

Quadro units, self-aligning, closed type, relubricatable
LQCD (without seals)
-2LS with four seals

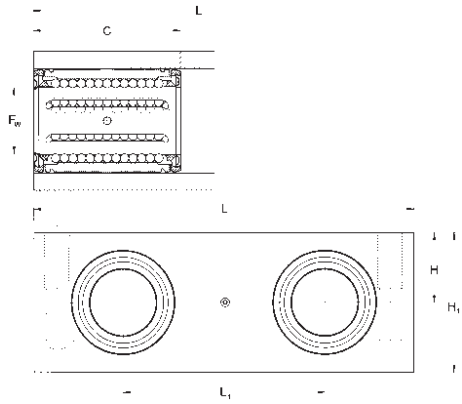


Designations	Dimensions					Basic load ratings dynamic	static
	F_w	C	H ± 0.01	H_1	L	C	C_0
	mm					N	
LQCD 12	12	32	16	32	85	2850	3250
LQCD 16	16	36	18	36	100	3450	3450
LQCD 20	20	45	23	46	130	5200	5500
LQCD 25	25	58	28	56	160	7650	8150
LQCD 30	30	68	32	64	180	12200	12900
LQCD 40	40	80	40	80	230	20800	20800
LQCD 50	50	100	48	96	280	30000	28000

Example:
LQCD 40
LQCD 16-2LS

LQCR ..

Quadro units, closed type, relubricatable
LQCR (without seals)
-2LS with four seals

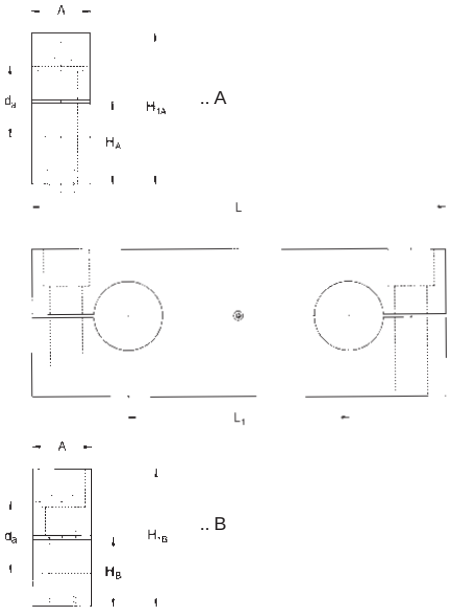


Designations	Dimensions						Basic load ratings dynamic	static
	F_w	C	H ± 0.01	H_1	L	L_1	C	C_0
	mm						N	
LQCR 8	8	25	11.5	23	65	32	965	1140
LQCR 12	12	32	16	32	85	42	3100	4000
LQCR 16	16	36	18	36	100	54	4000	5200
LQCR 20	20	45	23	46	130	72	6000	8300
LQCR 25	25	58	28	56	160	88	9000	13400
LQCR 30	30	68	32	64	180	96	15000	22800
LQCR 40	40	80	40	80	230	122	24000	33500
LQCR 50	50	100	48	96	280	152	35500	49000

Example:
LQCR 25
LQCR 12-2LS

LEAS ..

Tandem shaft blocks, closed type, suitable for LQCD / LQCR
LEAS ..A high shaft position
LEAS ..B low shaft position

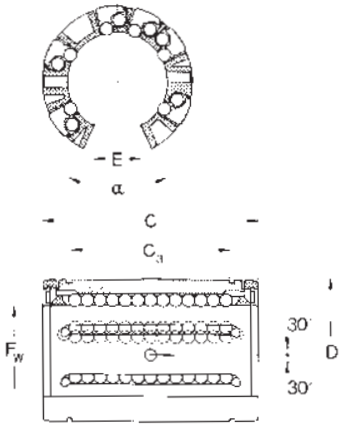


Designations	Dimensions for types A and B				for type A		for type B	
	d_a	A	L	L_1	H_A ± 0.015	H_{1A}	H_B ± 0.015	H_{1B}
	mm							
LEAS 8	8	12	65	32	12.5	23	11	22
LEAS 12	12	15	85	42	18	32	14	28
LEAS 16	16	18	100	54	20	37	17	34
LEAS 20	20	20	130	72	25	46	21	42
LEAS 25	25	25	160	88	30	56	26	52
LEAS 30	30	25	180	96	35	64	29	58
LEAS 40	40	30	230	122	44	80	36	72
LEAS 50	50	30	280	152	52	96	44	88

Example:
LEAS 50 A
LEAS 30 B

LBCF ..
Standard series 3

Linear ball bearings, self-aligning, open type
LBCF (without seals)
-LS with one seal
-2LS with two seals



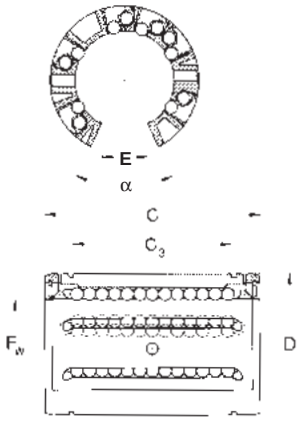
Designations	Dimensions						Basic load ratings dynamic	static
	F_w	D	C	C_3	E	α	C	C_0
	mm					deg.	N	
LBCF 12	12	22	32	20	7.6	78	1080	815
LBCF 16	16	26	36	22	10.4	78	1320	865
LBCF 20	20	32	45	28	10.8	60	2000	1370
LBCF 25	25	40	58	40	13.2	60	2900	2040
LBCF 30	30	47	68	48	14.2	50	4650	3250
LBCF 40	40	62	80	56	18.7	50	7800	5200
LBCF 50	50	75	100	72	23.6	50	11200	6950

Example:
LBCF 40
LBCF 25-LS
LBCF 16-2LS

In the course of the year 2003, the LBC series is to be replaced by a revised version. This will be easily interchangeable with the former LBC linear ball bearings and all competitor products. Furthermore, the new series will offer additional technological advantages.

LBCT ..
Standard series 3

Linear ball bearings, open type
LBCT (without seals)
-LS with one seal
-2LS with two seals



Designations	Dimensions						Basic load ratings dynamic	static
	F_w	D	C	C_3	E	α	C	C_0
	mm					deg.	N	
LBCT 12	12	22	32	20	7.6	78	1160	980
LBCT 16	16	26	36	22	10.4	78	1500	1290
LBCT 20	20	32	45	28	10.8	60	2240	2040
LBCT 25	25	40	58	40	13.2	60	3350	3350
LBCT 30	30	47	68	48	14.2	50	5600	5700
LBCT 40	40	62	80	56	18.7	50	9000	8150
LBCT 50	50	75	100	72	23.6	50	13400	12220
LBCT 60	60	90	125	95	29.6	54	20400	18000
LBCT 80	80	120	165	125	38.4	54	37500	32000

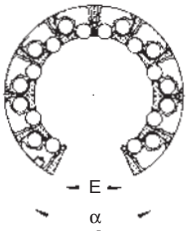
Example:
LBCT 20
LBCT 80-LS
LBCT 50-2LS

In the course of the year 2003, the LBC series is to be replaced by a revised version. This will be easily interchangeable with the former LBC linear ball bearings and all competitor products. Furthermore, the new series will offer additional technological advantages.

LBHT ..

Standard series 3

Heavy-load linear ball bearings, open type
LBHT (without seals)
-LS with one seal
-2LS with two seals



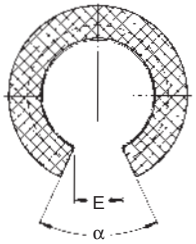
Designations	Dimensions						Basic load ratings dynamic	static
	F_w	D	C	C_3	E	α	C	C_0
	mm					deg.	N	
LBHT 20	20	32	45	28	10.8	60	2650	2650
LBHT 25	25	40	58	40	13.2	60	4900	5100
LBHT 30	30	47	68	48	14.2	50	7200	8000
LBHT 40	40	62	80	56	18.7	50	11600	11400
LBHT 50	50	75	100	72	23.6	50	17300	17000

Example:
LBHT 40
LBHT 25-LS
LBHT 20-2LS

In the course of the year 2003, the LBC series is to be replaced by a revised version. This will be easily interchangeable with the former LBC linear ball bearings and all competitor products. Furthermore, the new series will offer additional technological advantages.

LPAT

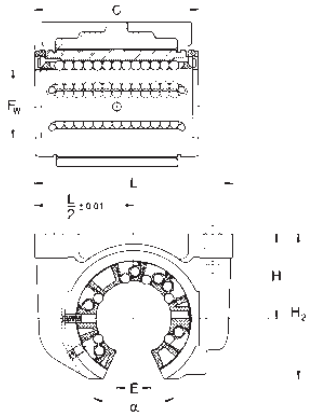
Linear plain bearings, without seals, open design



Designations	Dimensions						Basic load ratings dynamic		static
	F_w	D	C	C_3	E	α	C 0.1 m/s	C 4 m/s	C_0
	mm					deg.	N		
LPAT 12	12	22	32	20	7.6	78	965	24	3350
LPAT 16	16	26	36	22	10.4	78	1530	38	5400
LPAT 20	20	32	45	28	10.8	60	2400	60	8300
LPAT 25	25	40	58	40	13.2	60	4000	100	14000
LPAT 30	30	47	68	48	14.2	50	5500	137	19300
LPAT 40	40	62	80	56	18.7	50	8000	200	28000
LPAT 50	50	75	100	72	23.6	50	12000	300	41500
LPAT 60	60	90	125	95	29.6	54	16600	415	60000
LPAT 80	80	120	165	125	38.4	54	29000	720	100000

LUCF ..

Single units, self-aligning, clearance adjustable, open type, relubricatable
LUCF (without seals)
-2LS with two seals

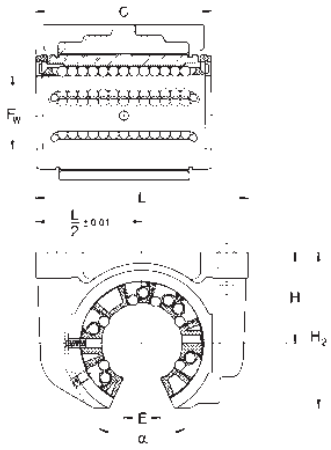


Designations	Dimensions							Basic load ratings dynamic	static
	F_w	C	H ± 0.01	H_2	L	E	α	C	C_0
	mm						deg.	N	
LUCF 12	12	32	18	28	52	7.6	78	1080	815
LUCF 16	16	36	22	35	56	10.4	78	1320	865
LUCF 20	20	45	25	42	70	10.8	60	2000	1370
LUCF 25	25	58	30	51	80	13.2	60	2900	2040
LUCF 30	30	68	35	60	88	14.2	50	4650	3250
LUCF 40	40	80	45	77	108	18.7	50	7800	5200
LUCF 50	50	100	50	88	135	23.6	50	11200	6950

Example:
LUCF 16
LUCF 30-2LS

LUCT ..

Single units, clearance adjustable, open type, relubricatable
LUCT (without seals)
-2LS with two seals

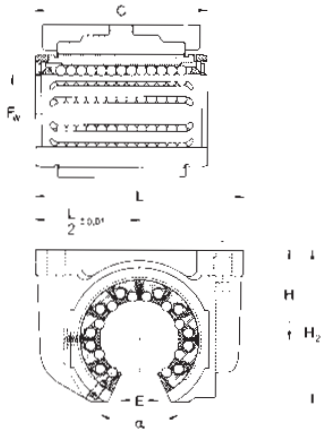


Designations	Dimensions							Basic load ratings dynamic	static
	F_w	C	H	H_2	L	E	α	C	C_0
	mm						deg.	N	
LUCT 12	12	32	18	28	52	7.6	78	1080	815
LUCT 16	16	36	22	35	56	10.4	78	1320	865
LUCT 20	20	45	25	42	70	10.8	60	2000	1370
LUCT 25	25	58	30	51	80	13.2	60	2900	2040
LUCT 30	30	68	35	60	88	14.2	50	4650	3250
LUCT 40	40	80	45	77	108	18.7	50	7800	5200
LUCT 50	50	100	50	88	135	23.6	50	11200	6950
LUCT 60	60	125	60	105	160	29.6	54	20400	18000
LUCT 80	80	165	80	140	205	38.4	54	37500	32000

Example:
LUCT 60
LUCT 80-2LS

LUCT ..BH

Single heavy load units, clearance adjustable, open type, relubricatable
LUCT ..BH (without seals)
-2LS with two seals

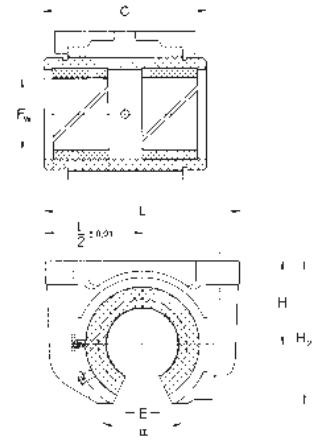


Designations	Dimensions							Basic load ratings dynamic	static
	F_w	C	H ± 0.01	H_2	L	E	α	C	C_0
	mm						deg.	N	
LUCT 20 BH	20	45	25	42	70	10.8	60	2650	2650
LUCT 25 BH	25	58	30	51	80	13.2	60	4900	5100
LUCT 30 BH	30	68	35	60	88	14.2	50	7200	8000
LUCT 40 BH	40	80	45	77	108	18.7	50	11600	11400
LUCT 50 BH	50	100	50	88	135	23.6	50	17300	17000

Example:
LUCT BH 30
LUCT BH 20-2LS

LUCT ..PA

Single units without seals, open type

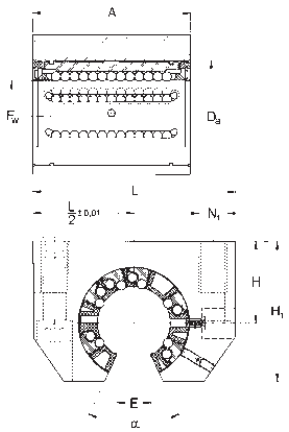


Designations	Dimensions							Basic load ratings dynamic		static
	F_w	C	H	H_2	L	E	α	C 0.1 m/s	C 4 m/s	C_0
	mm						deg.	N		
LUCT 12 PA	12	32	18	28	52	7.6	78	965	24	3350
LUCT 16 PA	16	36	22	35	56	10.4	78	1530	38	5400
LUCT 20 PA	20	45	25	42	70	10.8	60	2400	60	8300
LUCT 25 PA	25	58	30	51	80	13.2	60	4000	100	14000
LUCT 30 PA	30	68	35	60	88	14.2	50	5500	137	19300
LUCT 40 PA	40	80	45	77	108	18.7	50	8000	200	28000
LUCT 50 PA	50	100	50	88	135	23.6	50	12000	300	41500
LUCT 60 PA	60	125	60	105	160	29.6	54	16600	415	60000
LUCT 80 PA	80	16‡5	80	140	205	38.4	54	29000	720	100000

Delivery time on request

LUNF ..

Single units, self-aligning, clearance adjustable, open type, relubricatable
LUNF (without seals)
-2LS with two seals

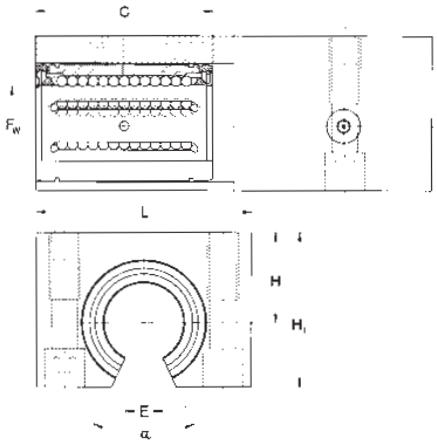


Designations	Dimensions							Basic load ratings dynamic	static
	F_w	A	H ± 0.01	H_1	L	E	α	C	C_0
	mm						deg.	N	
LUNF 12	12	32	18	35	43	7.6	78	1080	815
LUNF 16	16	37	22	42	53	10.4	78	1320	865
LUNF 20	20	45	25	50	60	10.8	60	2000	1370
LUNF 25	25	58	30	61	78	13.2	60	2900	2040
LUNF 30	30	68	35	70	87	14.2	50	4650	3250
LUNF 40	40	80	45	90	108	18.7	50	7800	5200
LUNF 50	50	100	50	105	132	23.6	50	11200	6950

Example:
LUNF 20
LUNF 16-2LS

LTCF ..

Tandem units, self-aligning, open type, relubricatable
LTCF (without seals)
-2LS with two seals

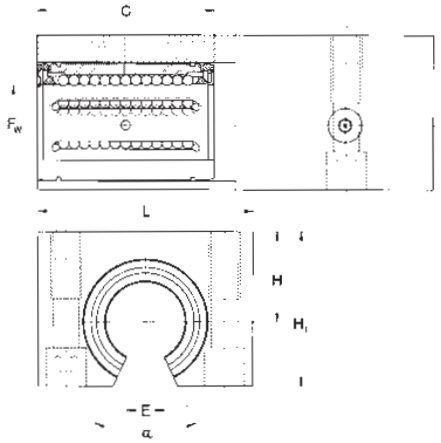


Designations	Dimensions							Basic load ratings dynamic	static
	F_w	C	H ± 0.01	H_1	L	E	α	C	C_0
	mm						deg.	N	
LTCF 12	12	76	18	29	42	7.6	78	1760	1630
LTCF 16	16	84	22	35	50	10.4	78	2160	1730
LTCF 20	20	104	25	42	60	10.8	60	3200	2750
LTCF 25	25	130	30	51	74	13.2	60	4750	4150
LTCF 30	30	152	35	60	84	14.2	50	7500	6550
LTCF 40	40	176	45	77	108	18.7	50	12700	10400
LTCF 50	50	224	50	88	130	23.6	50	18300	14000

Example:
LTCF 50
LTCF 12-2LS

LTCT ..

Tandem units, open type, relubricatable
LTCT (without seals)
-2LS with two seals

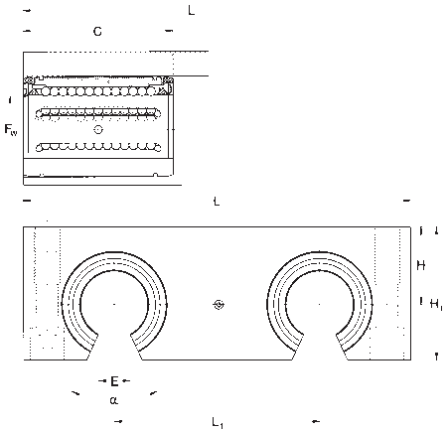


Designations	Dimensions							Basic load ratings dynamic	static
	F_w	A	H	H_1	L	E	α	C	C_0
	mm						deg.	N	
LTCT 12	12	76	18	29	42	7.6	78	1900	1960
LTCT 16	16	84	22	35	50	10.4	78	2450	2600
LTCT 20	20	104	25	42	60	10.8	60	3650	4150
LTCT 25	25	130	30	51	74	13.2	60	5500	6700
LTCT 30	30	152	35	60	84	14.2	50	9150	11400
LTCT 40	40	176	45	77	108	18.7	50	15000	16300
LTCT 50	50	224	50	88	130	23.6	50	22000	24500

Example:
LTCT 16
LTCT 30-2LS

LQCF ..

Quadro units, self-aligning, open type, relubricatable
LQCF (without seals)
-2LS with four seals

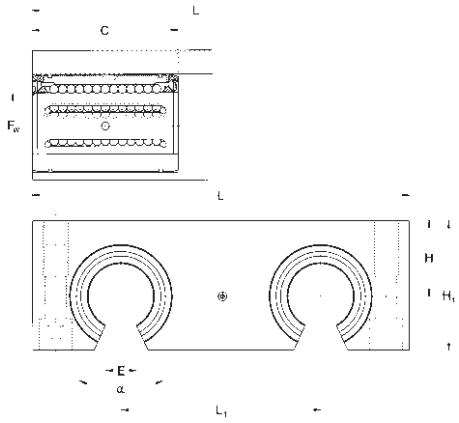


Designations	Dimensions								Basic load ratings dynamic	static
	F_w	C	H ± 0.01	H_1	L	L_1	E	α	C	C_0
	mm							deg.	N	
LQCF 12	12	32	18	30	85	42	7.6	78	2850	3250
LQCF 16	16	36	22	35	100	54	10.4	78	3450	3450
LQCF 20	20	45	25	42	130	72	10.8	60	5200	5500
LQCF 25	25	58	30	51	160	88	13.2	60	7650	8150
LQCF 30	30	68	35	60	180	96	14.2	50	12200	12900
LQCF 40	40	80	45	77	230	122	18.7	50	20800	20800
LQCF 50	50	100	55	93	280	152	23.6	50	30000	28000

Example:
LQCF 12
LQCF 40-2LS

LQCT ..

Quadro units, open type, relubricatable
LQCT (without seals)
-2LS with four seals

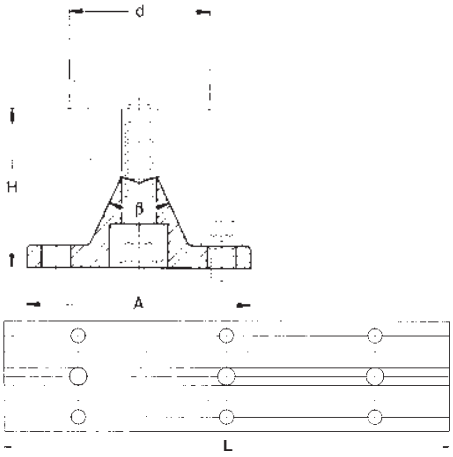


Designations	Dimensions								Basic load ratings dynamic	static
	F_w	C	H ± 0.01	H1	L	L1	E	α	C	C_0
	mm							deg.	N	
LQCT 12	12	32	18	30	85	42	7.6	78	3100	4000
LQCT 16	16	36	22	35	100	54	10.4	78	4000	5200
LQCT 20	20	45	25	42	130	72	10.8	60	6000	8300
LQCT 25	25	58	30	51	160	88	13.2	60	9000	13400
LQCT 30	30	68	35	60	180	96	14.2	50	15000	22800
LQCT 40	40	80	45	77	230	122	18.7	50	24000	33500
LQCT 50	50	100	55	93	280	152	23.6	50	35500	49000

Example:
LQCT 42
LQCT 16-2LS

LRCB/LRCC

Shaft supports
LRCB with bore holes
LRCC without bore holes



Designations		Dimensions			
		d	A	H ± 0.02	L
		mm			
LRCB 12	**LRCC 12**	12	40	22	600
LRCB 16	**LRCC 16**	16	45	26	600
LRCB 20	**LRCC 20**	20	52	32	600
LRCB 25	**LRCC 25**	25	57	36	600
LRCB 30	**LRCC 30**	30	69	42	600
LRCB 40	**LRCC 40**	40	73	50	600
LRCB 50	**LRCC 50**	50	84	60	600
LRCB 60	**LRCC 60**	60	94	68	600
LRCB 80	**LRCC 80**	80	116	86	600

Example:
LRCB 80
LRCC 80

Notes

Precision shafts

SKF precision shafts (→ **fig** 20) can be supplied either as solid or hollow shafts. The solid shafts are available in all dimensions required to fit SKF linear ball bearings; the hollow shafts have a minimum outside diameter of 16 mm.

They are induction hardened and ground (see table on next page). SKF shafts have exceptionally high dimensional stability and long service life.

Yet at the end of shafts of normal production length, deviations of hardness and dimensional stability can occur.

For special applications, solid shafts of stainless steel or hard chromium plated shafts having a chromium layer approximately 10 µm thick can be supplied. When using stainless steel shafts, it must be taken into account that the surface is not as hard as that of shafts made of high-grade steel. The case depth may also be greater than indicated in **Table** 5 and this may have an influence on the machinability of the shafts.

Because of the benefits they offer, SKF precision shafts are not only used in combination with SKF linear ball bearings for linear guides, but also for other purposes, for instance axles or column sleeves.

Tolerances

SKF precision steel shafts are available as standard with a diameter machined to tolerance h6 or h7. Other tolerances on request. Shafts cut to special lengths have a length tolerance to DIN 7168 “medium”. The relevant values are given in **Table** 4.

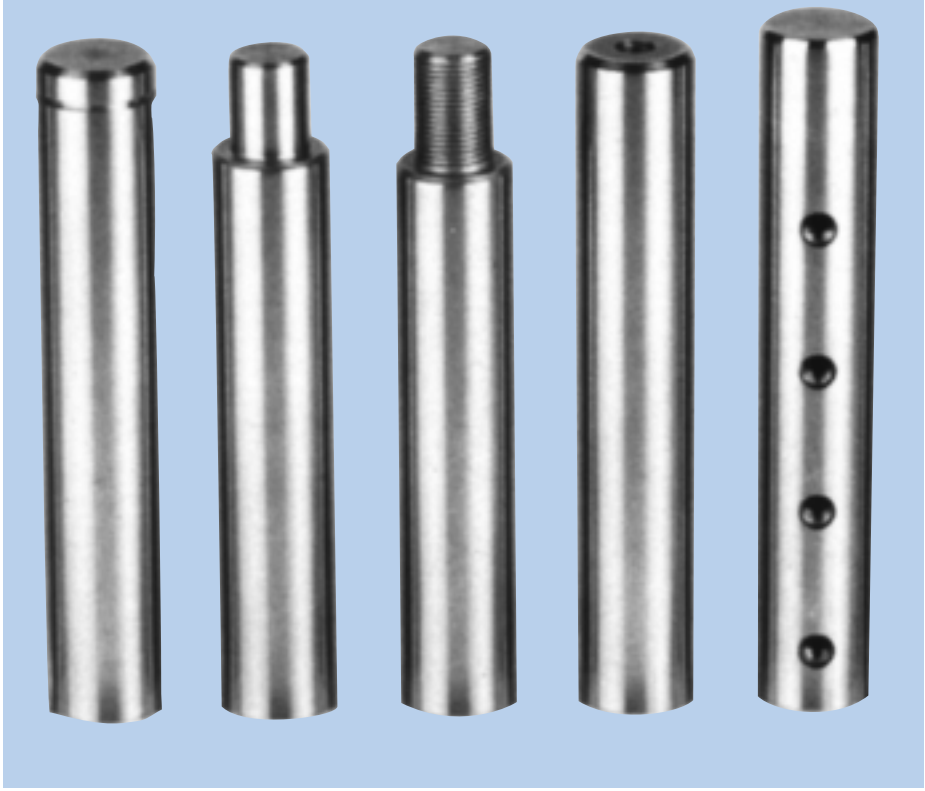
Shafts with radial holes

For linear guides requiring support, shafts with threaded radial holes are needed. These can be supplied by SKF. The radial holes can be positioned either in a way that they accommodate SKF shaft supports or as specified in the customer drawing.

Composite shafts

Composite shafts can be supplied to customer drawings, either with screwed joints or with “plug and socket” joints, depending on the application.

Fig 20



Length tolerances for shafts to DIN 7168, medium series.

Table 4

Nominal length		Deviation
over	incl.	
mm	mm	
–	120	± 0.3
120	400	± 0.5
400	1000	± 0.8
1000	2000	± 1.2
2000	4000	± 2
4000	8000	± 3

Case depth of SKF shafts.

Table 5

Shaft diameter		Case depth
over	incl.	min
mm		mm
–	10	0.5
10	18	0.8
18	30	1.2
30	50	1.5
50	80	2.2
80	100	3.0

Accurately centred trunnions and sockets guarantee smooth transitions at the butt joint. To ensure correct assembly, the relative positions of the shaft sections and of the shaft ends are marked. Composite shafts should be fastened to a support at the butt joints, particularly when these are of the “plug and socket” type. The radial holes should be positioned as closely to the joint as possible and the shaft length selected in a way that bending of the shaft will not result in a gap forming at the joint.

SKF precision steel shafts are available as shown in **Tables 6 and 7**.

Table 6

Designation	Type
LJM	Precision shaft, steel Ck53/Cf53, 60-64HRC, h6
LJMH	Hard chromium plated precision shaft, steel Ck53/Cf53, min. 60HRC, h7
LJMR	Precision shaft, corrosion resistant, X90CrMoV18, 54-58HRC, h6
LJMS	Precision shaft, corrosion resistant, X46Cr13, 54-58HRC, h6
LJT	Hollow shaft, high-grade steel, C60, 60-66HRC, h6

Table 7

Shaft diameter	Standard length*			
	LJM	LJMH	LJMR LJMS	LJT
mm	mm			
3/4**	100			
	200			
	300			
	400			
	500			
5	2800 - 4100			
6	2800 - 4100			
8	2800 - 4100	3500 - 4100	3500 - 4100	
10	2800 - 4100	3500 - 4100	3500 - 4100	
12	5100 - 6200	5100 - 6200	3500 - 4100	
14	5100 - 6200	5100 - 6200		
16	5100 - 6200	5100 - 6200	3500 - 4100	5100 - 6200
20	5100 - 6200	5100 - 6200	3500 - 4100	5100 - 6200
25	5100 - 6200	5100 - 6200	3500 - 4100	5100 - 6200
30	5100 - 6200	5100 - 6200	3500 - 4100	5100 - 6200
40	5100 - 6200	5100 - 6200	3500 - 4100	5100 - 6200
50	5100 - 6200	5100 - 6200	on request	5100 - 6200
60	5100 - 6200	5100 - 6200	on request	on request
80	5100 - 6200	5100 - 6200	on request	on request

* Different diameters and lengths on request
** Only available as ESSC 2

Standard shaft lengths

Ordering key

Type

Designation type:
Precision shaft, steel Ck53/Cf53, 60-64HRC, h6 . . . . . M
Hard chromium plated precision shaft, steel Ck53/Cf53, min. 60HRC, h7 . . . . . MH
Precision shaft, corrosion resistant X90CrMoV18, 54-58HRC, h6. . . . . MR
Precision shaft, corrosion resistant, X46Cr13, 54-58HRC, h6 . . . . . MS
Hollow shaft, high-grade steel, C60, 60-66HRC, h6 . . . . . T

Nominal diameter ø [mm]:
See table 7, page 47

Length [mm]:
See table 7, page 47

End finishing:
ESSC (1-10), see pages 49-51

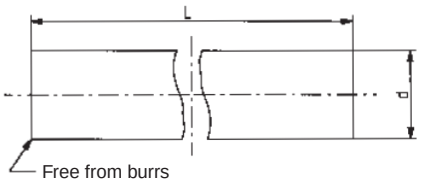
For ESSC 4 - 5: Front side axial thread × depth
For ESSC 6 - 9: Distance between end face and first radial thread

For ESSC 5: Front side axial thread × depth
For ESSC 6 - 9: Distance between the radial threads

Example 1:	LJ	MR	40	1200	ESSC 1			
Example 2:	LJ	MR	40	1200	ESSC 2			
Example 3:	LJ	MR	40	1200	ESSC 3			
Example 4:	LJ	MR	40	1200	ESSC 4	M14×40		
Example 5:	LJ	MR	40	1200	ESSC 5	M14×40	/	M16×50
Example 6:	LJ	MR	40	1200	ESSC 6	100	/	200
Example 7:	LJ	MR	40	1200	ESSC 7	125	/	250
Example 8:	LJ	MR	40	1200	ESSC 8	100	/	200
Example 9:	LJ	MR	40	1200	ESSC 9	125	/	250
Example 10:	LJ	MR	40	1200	ESSC 10			

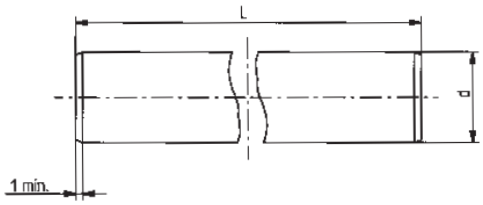
ESSC 1

Cut, without chamfer, only deburred
Length tolerance according to
DIN 7168 medium range



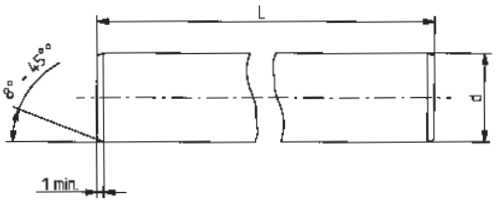
ESSC 2

Cut, with chamfer
Length tolerance as ESSC 1



ESSC 3

Cut, 25° machined chamfer, end faces cut at right angles for limited length tolerance or chamfered according to customer specification
Length tolerance +/– 0.1 mm to a total length of 3000 mm



ESSC 4

Cut, 25° machined chamfer, end faces cut at right angles, one front-side (axial) hole
Length tolerance as ESSC 3
(see Table 8)

Table 8

Diameter	Thread	Depth
Ø	G	L_5
mm		
5		
8	M4	10
10	M4	10
12	M5	12.5
14	M5	12.5
16	M6	15
20	M8	20
25	M10	25
30	M10	25
40	M12	30
50	M16	40
60	M20	50
80	M24	60

ESSC 5

As ESSC 4 with two front side (axial) holes
(see Table 9)

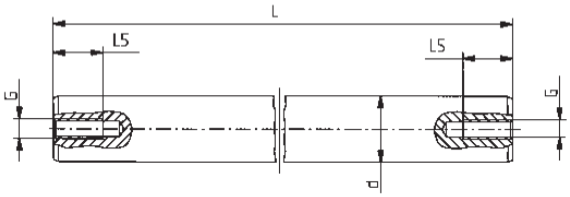


Table 9

Diameter	Thread	Depth
Ø	G	L_5
mm		
5		
8	M4	10
10	M4	10
12	M5	12.5
14	M5	12.5
16	M6	15
20	M8	20
25	M10	25
30	M10	25
40	M12	30
50	M16	40
60	M20	50
80	M24	60

ESSC 6

Cut and chamfered as ESSC 2
- with radial holes for LRCB
- first radial hole at Jx = J/2
- H_1 according to hardening depth

(see Table 10)

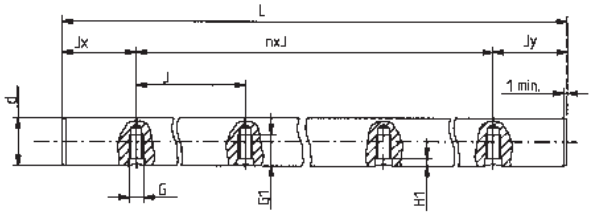


Table 10

Ø	Thread	G	G_1	J	J_X
mm		mm			
5	–	–	–	–	–
8	–	–	–	–	–
12	M4	5	8	75	37.5
16	M5	6	9.5	100	50
20	M6	7	13	100	50
25	M8	9	14	120	60
30	M10	11	18	150	75
40	M10	11	20	200	100
50	M12	13	23	200	100
60	M14	15	28	300	150
80	M16	16	33	300	150

ESSC 7

As ESSC 6
- radial holes with J and Jx according to customer specification

(see Table 11)

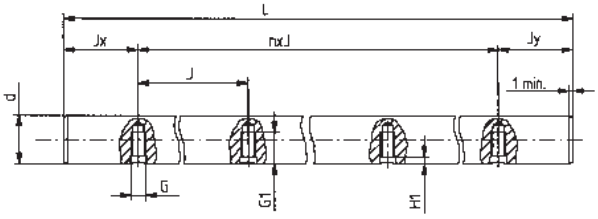


Table 11

Ø	Thread	G	G_1	J	J_X
mm		mm			
5	–	–	–	–	–
8	–	–	–	–	–
12	M4	5	8	–	–
16	M5	6	9.5	–	–
20	M6	7	13	–	–
25	M8	9	14	–	–
30	M10	11	18	–	–
40	M10	11	20	–	–
50	M12	13	23	–	–
60	M14	15	28	–	–
80	M16	16	33	–	–

ESSC 8

Cut and chamfer as ESSC 2
- shaft mounted on LRCB
- first radial hole with Jx = J/2
- H_1 according to hardness depth

(see Table 12)

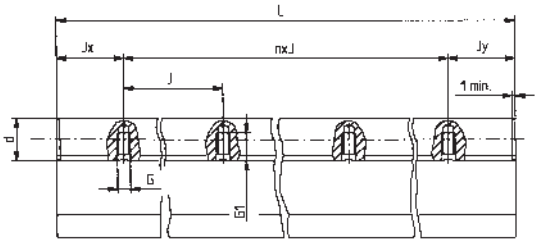


Table 12

Ø	Thread	G	G_1	J	J_X
mm		mm			
5	–	–	–	–	–
8	–	–	–	–	–
12	M4	5	8	75	37.5
16	M5	6	9.5	100	50
20	M6	7	13	100	50
25	M8	9	14	120	60
30	M10	11	18	150	75
40	M10	11	20	200	100
50	M12	13	23	200	100
60	M14	15	28	300	150
80	M16	16	33	300	150

ESSC 9

As ESSC 8
- shaft mounted on LRCC
- radial holes with J and Jx according to customer specification

(see Table 13)

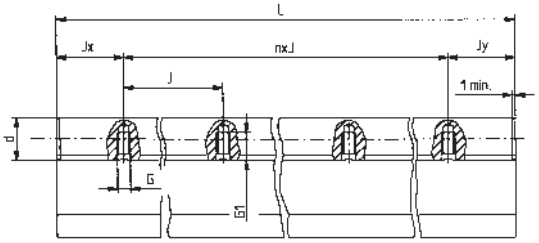


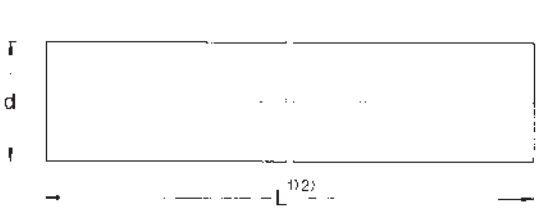
Table 13

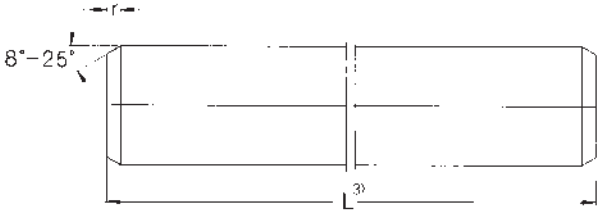
Ø	Thread	G	G_1	J	J_X
mm		mm			
5	–	–	–	–	–
8	–	–	–	–	–
12	M4	5	8	–	–
16	M5	6	9.5	–	–
20	M6	7	13	–	–
25	M8	9	14	–	–
30	M10	11	18	–	–
40	M10	11	20	–	–
50	M12	13	23	–	–
60	M14	15	28	–	–
80	M16	16	33	–	–

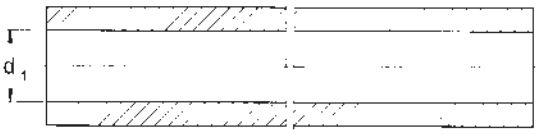
ESSC 10

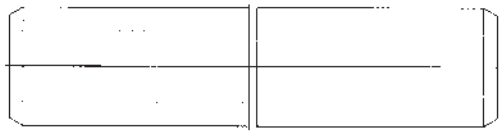
Shaft according to customer specification
- manufacture only according to customer drawing

2 Guiding systems
Precision shafts









Standard designs
Designs for fixed length without chamfer

Designs for fixed length with chamfer

Table 14 shows basic data for the various models for the precision shafts.

Table 14

Dimension			Mass		Moment of inertia		Cross sectional area		Designations				
			Solid shaft	Hollow shaft	Solid shaft	Hollow shaft	Solid shaft	Hollow shaft	Solid shaft of precision steel	Solid shaft of stainless steel X90CrMoV18	X46Cr13	Solid shaft with high grade steel chromium plated	Hollow shaft high grade steel
d	d_1	r_{min}											
mm			kg/m		cm^4		mm^2						
3	–	0.4	0.06	–	0.0004	–	7.1	–	LJM 3				
4	–	0.4	0.1	–	0.0013	–	12.6	–	LJM 4				
5	–	0.8	0.15	–	0.0031	–	19.6	–	LJM 5				
6		0.8	0.22	–	0.0064	–	28.3	–	LJM 6				
8	–	0.8	0.39	–	0.020	–	50.3	–	LJM 8	LJMR 8	LJMS 8	LJMH 8	
10	–	0.8	0.62	–	0.049	–	78.5	–	LJM 10	LJMR 10	LJMS 10	LJMH 10	
12	–	1	0.89	–	0.102	–	113	–	LJM 12	LJMR 12	LJMS 12	LJMH 12	
14	–	1	1.21	–	0.189	–	154	–	LJM 14			LJMH 14	
16	7	1	1.57	1.28	0.322	0.310	201	163	LJM 16	LJMR 16	LJMS 16	LJMH 16	LJT 16
20	12	1.5	2.45	1.26	0.785	0.597	314	160	LJM 20	LJMR 20	LJMS 20	LJMH 20	LJT 20
25	14	1.5	3.83	2.40	1.92	1.64	491	305	LJM 25	LJMR 25	LJMS 25	LJMH 25	LJT 25
30	19	1.5	5.51	3.55	3.98	3.46	707	453	LJM 30	LJMR 30	LJMS 30	LJMH 30	LJT 30
40	26	2	9.80	5.40	12.6	9.96	1260	685	LJM 40	LJMR 40	LJMS 40	LJMH 40	LJT 40
50	35	2	15.3	10.6	30.7	27.7	1960	1350	LJM 50	LJMR 50	LJMS 50	LJMH 50	LJT 50
60	36	2.5	22.1	15.1	63.6	57.1	2830	1920	LJM 60			LJMH 60	LJT 60
80	53	2.5	39.2	20.1	201	153	5030	2565	LJM 80			LJMH 80	LJT 80

Attention:
d_1 can deviate from the value quoted. Please enquire if necessary.
Different shaft diameters and types on request.
The static load capacity has to be decreased by 8% and the dynamic load capacity by 18% when using the non-rusting types (HV6) in conjunction with precision steel shafts made of stainless steel.

Shafts cut to special length with flat turned ends. The length tolerance of these shafts corresponds to DIN 7168, medium. The designation for a shaft with 20 mm diameter cut to a length of 1.5 m is, for example, LJM 20×1500.

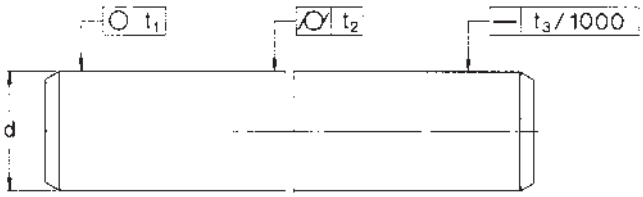


Table 15 shows basic data for the various models for the precision shafts of high-grade steel.

Table 15

Shaft	**Accuracy of dimension and form**									
Nominal diameter	Shafts to tolerance h6 Diameter deviation		Circularity	Cylindricity	Straight-ness[1)]	Shafts to tolerance h7 Diameter deviation		Circularity	Cylindricity	Straight-ness[1)]
d	high	low	t_1	t_2	t_3	high	low	t_1	t_2	t_3
mm	µm									
3	0	– 6	3	4	300	0	– 10	4	6	300
4	0	– 8	4	5	300	0	– 12	5	8	300
5	0	– 8	4	5	300	0	– 12	5	8	300
6	0	– 8	4	5	300	0	– 12	5	8	300
8	0	– 9	4	6	300	0	– 15	6	9	300
10	0	– 9	5	7	300	0	– 15	7	10	300
12	0	– 11	5	8	200	0	– 18	8	11	200
14	0	– 11	5	8	200	0	– 18	8	11	200
16	0	– 11	5	8	200	0	– 18	8	11	200
20	0	– 13	6	9	100	0	– 21	9	13	100
25	0	– 13	6	9	100	0	– 21	9	13	100
30	0	– 13	6	9	100	0	– 21	9	13	100
40	0	– 16	7	11	100	0	– 25	11	16	100
50	0	– 16	7	11	100	0	– 25	11	16	100
60	0	– 19	8	13	100	0	– 30	13	19	100
80	0	– 19	8	13	100	0	– 30	13	19	100

[1)] Shafts with straightness 50 mm/1000 mm to order

Linear guiding system Speedi-Roll

To complement its versatile range of linear motion products, SKF has introduced the LLE linear guiding system (→ **fig** 21), a highly efficient unit marketed under the name “Speedi-Roll”. In response to current market demands, this product was developed giving high priority to lightweight construction and ease of installation.

Speedi-Roll is a linear guiding system with high load-carrying capacity, rigidity and torque resistance, consisting of a guide rail and a carriage with either four or six rollers. The rail consists of a drawn and anodised aluminium profile with hardened steel angle raceways fitted to both sides.

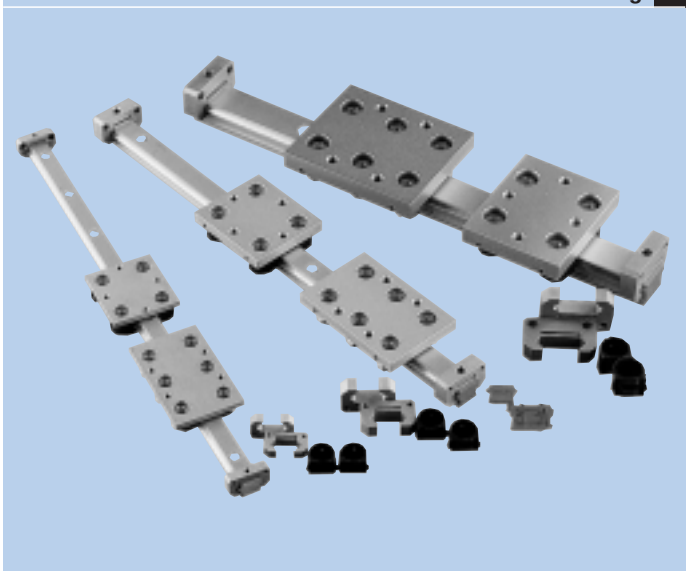
The aluminium base plate of the carriage, which is also anodised, houses the factory-fitted rollers. A special feature of this roller design is the presence of elastic elements around the threaded bolt adjusting the rollers and fixing them in the base plate. This unique patented system avoids the risk of mounting errors, thus contributing to a more efficient and cost effective installation.

As standard, the units are supplied with light preload. In order to cover a wide range of applications, SKF offers three sizes: LLE 15, 25 and 35. This allows flexibility when selecting a system to meet the design parameters.

Speedi-Roll guides operate effortlessly and quietly. The high linear speed rating permits shorter cycle times, and the low friction between rail and rollers allows less power input for driving the system. The hollow centre of size 25 and 35 rails helps to reduce the mass of the entire system. In addition, these “bores” can serve as wire or cable channels. The rollers are lubricated for life, greatly reducing the need for service.

Roller covers and end stops are available to complete the product range. It is possible to produce customer specific configurations using the standard rollers and steel angle raceways in addition to the catalogue range.

Fig 21



Ordering key

Type

Guide rail type:
H

System key:
Guide rail and carriage (system) S
Carriage C
Guide rail R
Roller E
Roller cover X
End stop M

Size:
(18 mm) 15
(23 mm) 25
(36 mm) 35

Carriage type:
Standard (4 rollers) H
Long (6 rollers) L

Sealing:
Without roller covers Z
With roller covers C

Number of carriages per guide rail

Length of guide rail [mm]

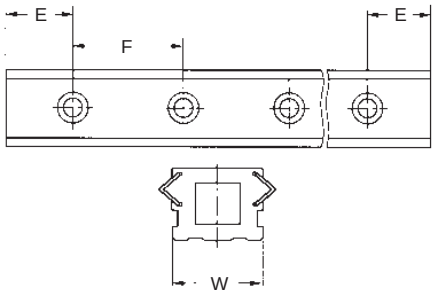
Special design:
Joint rail A
Guide rails as specified D
System with one end stop M1
System with two end stops M2
Hard chromium plated H

Distance between end face and the first hole [mm]:
Symmetric holes as standard E = 0

Example: 

LLEHR ..

Rails in standard length

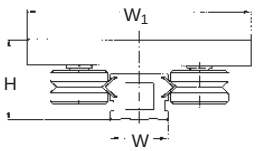


Designations	Dimensions		
	W	F	E
	mm		
LLEHR 15	18	62.5	31.25
LLEHR 25	23	125.0	62.5
LLEHR 35	36	250.0	125.0

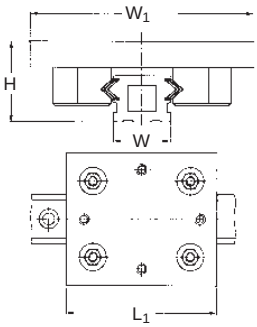
LLEHC ..HZ / ..HC

Standard carriages
LLEHC ..HZ without roller covers
LLEHC ..HC with roller covers

HZ



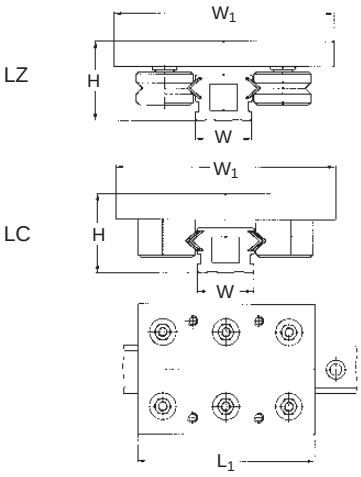
HC



Designations	Dimensions			
	W	W_1	H	L_1
	mm			
LLEHR 15 HZ HC	18	65	25.0	70
LLEHR 25 HZ HC	23	80	35.5	90
LLEHR 35 HZ HC	36	120	54.3	100

LLEHC ..LZ / ..LC

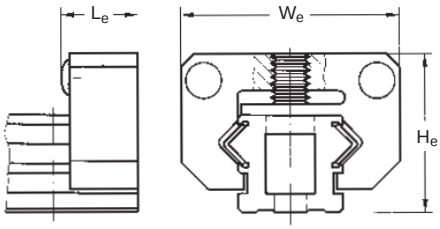
Long carriages
LLEHC ..LZ without roller covers
LLEHC ..LC with roller covers



Designations	Dimensions			
	W	W_1	H	L_1
	mm			
LLEHC 15 LZ LC	18	65	25.0	105
LLEHC 25 LZ LC	23	80	35.5	120
LLEHC 35 LZ LC	36	120	54.3	140

LLEHM

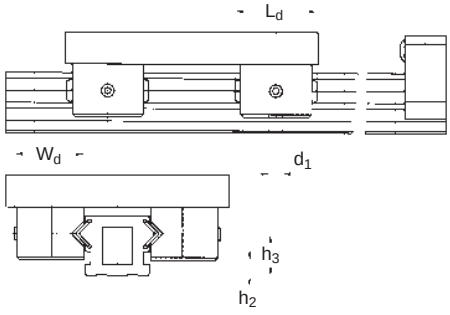
End stops



Designations	Dimensions		
	W_e	H_e	L_e
	mm		
LLEHM 15	38	24.5	11.1
LLEHM 25	48	34.1	16.6
LLEHM 35	65	52.0	16.6

LLEHX

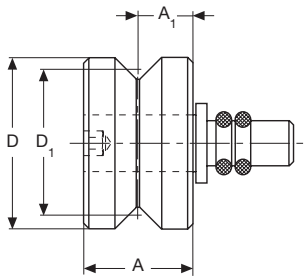
Roller covers



Designations	Dimensions				
	L_d	W_d	h_2	h_3	d_1
	mm				
LLEHX 15	29.2	25.1	1.65	10.75	2
LLEHX 25	29.2	25.1	5.60	14.70	2
LLEHX 35	31.8	27.8	10.95	22.75	2

LLEHE ..Z

Rollers



Designations	Dimensions			
	D	D_1	A	A_1
	mm			
LLEHE 15 Z	20.5	17.75	14.00	8.2
LLEHE 25 Z	22.0	19.25	14.00	9.0
LLEHE 35 Z	24.5	21.75	20.25	12.1

System with	Designations	Basic load ratings dynamic	static*
		C	C_0
		N	
Standard carriage	**LLEHS 15 H**	2000	1200
Long carriage	**LLEHS 15 L**	2600	1800
Roller only	**LLEHE 15**	2850	1400
Standard carriage	**LLEHS 25 H**	4000	2700
Long carriage	**LLEHS 25 L**	5200	4000
Roller only	**LLEHE 25**	2850	1400
Standard carriage	**LLEHS 35 H**	6000	4250
Long carriage	**LLEHS 35 L**	8000	6350
Roller only	**LLEHE 35**	4400	2200

* Data for radial direction, load angle 90° or 270°, with load centrally applied to the carriage

Notes

Profile rail guides

Profile rail guides from SKF are modern machine components used in the production of linear guiding systems with unlimited travel (→ **fig** 22). They usually consist of a profile rail with four precision-ground raceways and a slide unit with four ball circulation paths. This design offers numerous benefits. The square configuration of the raceways results in a guidance system with good rigidity, capable of withstanding moment loads in all directions. The load-carrying capacity is equal in all four directions (→ **fig** 23). Ready-to-mount units guarantee economy and simplicity of mounting. Installation and adjustment procedures are reduced to a minimum. The design of the system is such that inaccuracies of the adjacent components can be accommodated. SKF profile rail guides are noted for their ease of maintenance and reliability. As standard, they are provided with grease nipple and seals on all sides. The two-point contact of the rolling elements with the raceways permits high operational speeds with quiet running and a low coefficient of friction. Good running accuracy is assured throughout the operational life of the system. Guides with specific preload can be supplied for special requirements. This is achieved through selection. Preload selection depends on the load and stiffness specifications.

Fig 22

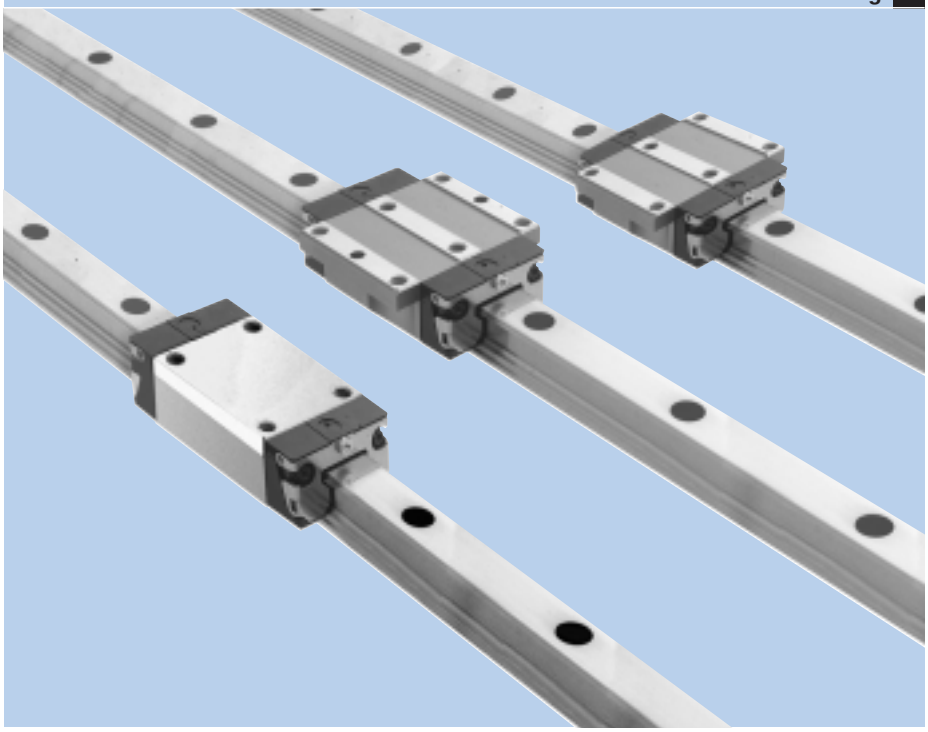
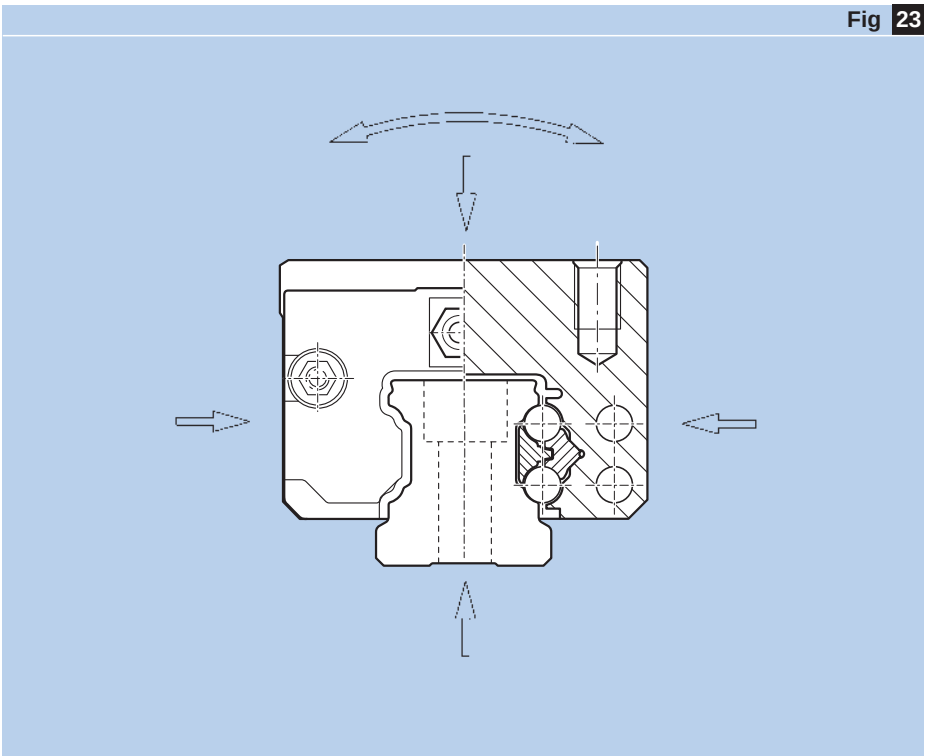


Fig 23



Ordering key

Type

Product code:
Designation for a system . . . . . HS
Carriage only . . . . . HC
Rail only . . . . . HR

Size in mm:
. . . . . 15, 20, 25, 30, 35, 45**, 55*, 65*

Carriage type:
Carriage, standard width . . . . . A
Carriage, standard width, short . . . . . SA
Carriage, standard width, long . . . . . LA
Carriage, slim line . . . . . U
Carriage, slim line, short . . . . . SU
Carriage, slim line, long . . . . . LU
Carriage, slim line, high . . . . . R
Carriage, slim line, high, long . . . . . LR

Ball retainer:
Carriage with ball retainer . . . . . B
Carriage without ball retainer . . . . . no sign

Number of carriages per rail track

Preload classes:
Light preload T0
Medium preload T1
Heavy preload T2*
Heavy preload T3*

Rail length in mm

Precision class [for carriage and rail]
Lowest precision P5
Low precision P3
Medium precision P1
High precision P01
Highest precision P001

Number of parallel rail tracks

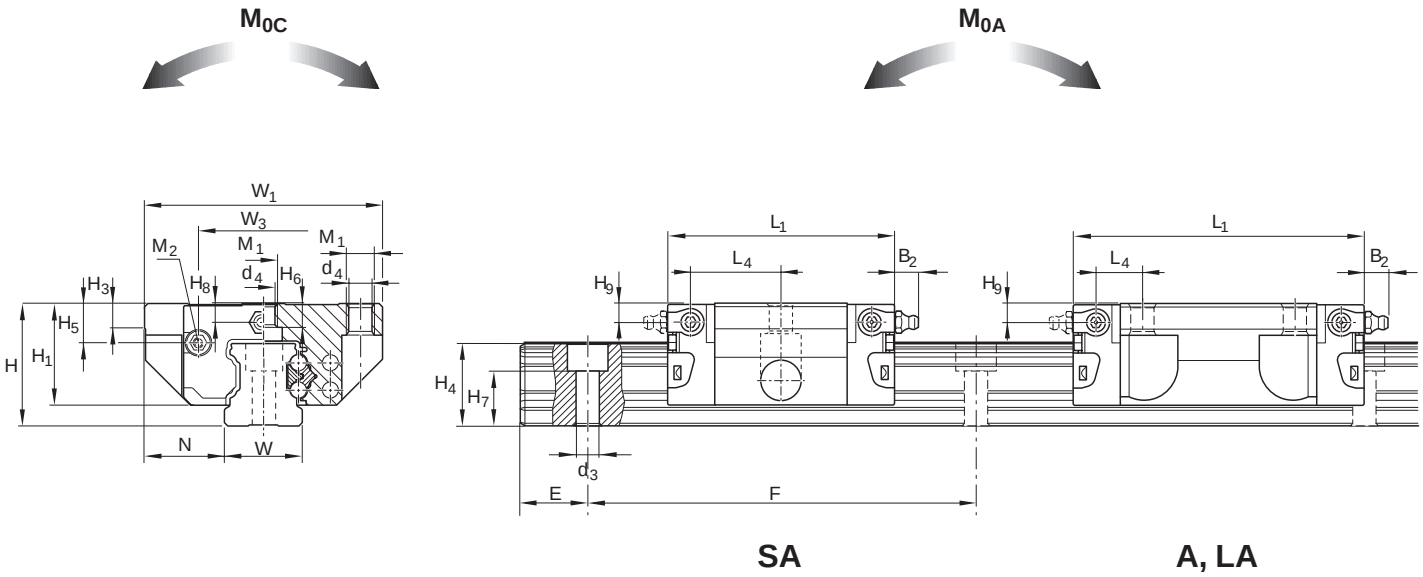
Accessories & Option symbols:
Joint rail track . . . . . A
Bellows* . . . . . B
Rail seal mounting hole cover strip C
Rail according to drawing (e.g. customised E dimension, see drawings) . . . . . D
Scraper plate . . . . . F
Lubrication plate* . . . . . G
Zinc-iron coating with yellow chromating [only for P5 accuracy]* . . . . . H
Carriage mounted on rail . . . . . M
Two piece front seal V

Distance between end face and the first hole [mm]:
Symmetric holes as standard . . . . . E = 0

* On request
** In preparation

Example: LLR HS | 30 | LA B | 2 | T0 - 3820 | P3 | W2 / A | E=0

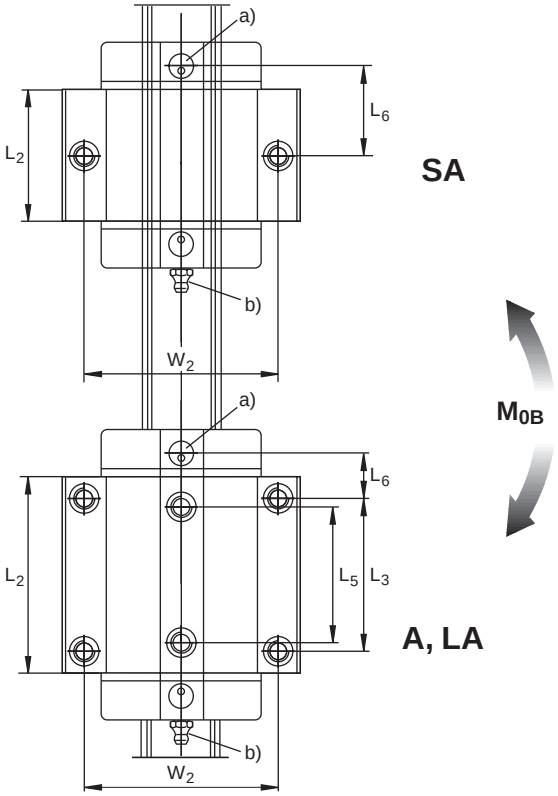
LLRHS .. SA
LLRHS .. A
LLRHS .. LA



SA **A, LA**

Designations	Dimensions																		
	W_1	W	N	L_1	L_2	H	H_1	H_4 [1]	H_4 [2]	H_3	W_2	L_3	L_5	W_3	H_5	L_6	L_4	H_8	H_9
	mm																		
LLRHS 15 SA	47	15	16.0	44.7	25.7	24	19.90	16.30	16.20	5.0	38	–	–	24.55	6.70	16.25	17.85	3.20	3.20
LLRHS 15 A	47	15	16.0	58.2	39.2	24	19.90	16.30	16.20	5.0	38	30	26	24.55	6.70	8.00	9.60	3.20	3.20
LLRHS 15 LA	47	15	16.0	72.6	53.6	24	19.90	16.30	16.20	5.0	38	30	26	24.55	6.70	15.20	16.80	3.20	3.20
LLRHS 20 SA	63	20	21.5	57.3	31.9	30	25.35	20.75	20.55	6.0	53	–	–	32.50	7.30	22.95	22.95	3.35	3.35
LLRHS 20 A	63	20	21.5	75.0	49.6	30	25.35	20.75	20.55	6.0	53	40	35	32.50	7.30	11.80	11.80	3.35	3.35
LLRHS 20 LA	63	20	21.5	91.0	65.6	30	25.35	20.75	20.55	6.0	53	40	35	32.50	7.30	19.80	19.80	3.35	3.35
LLRHS 25 SA	70	23	23.5	66.4	38.6	36	29.90	24.45	24.25	7.5	57	–	–	38.30	11.50	25.35	26.50	5.50	5.50
LLRHS 25 A	70	23	23.5	85.6	57.8	36	29.90	24.45	24.25	7.5	57	45	40	38.30	11.50	12.45	13.60	5.50	5.50
LLRHS 25 LA	70	23	23.5	107.3	79.5	36	29.90	24.45	24.25	7.5	57	45	40	38.30	11.50	23.30	24.45	5.50	5.50
LLRHS 30 SA	90	28	31.0	74.8	45.0	42	35.35	28.55	28.35	7.0	72	–	–	48.40	14.60	28.80	30.50	6.05	6.05
LLRHS 30 A	90	28	31.0	97.2	67.4	42	35.35	28.55	28.35	7.0	72	52	44	48.40	14.60	14.00	15.70	6.05	6.05
LLRHS 30 LA	90	28	31.0	119.2	89.4	42	35.35	28.55	28.35	7.0	72	52	44	48.40	14.60	25.00	26.70	6.05	6.05
LLRHS 35 SA	100	34	33.0	84.4	51.4	48	40.40	32.15	31.85	8.0	82	–	–	58.00	17.35	32.70	34.20	6.90	6.90
LLRHS 35 A	100	34	33.0	110.0	77.0	48	40.40	32.15	31.85	8.0	82	62	52	58.00	17.35	14.50	16.00	6.90	6.90
LLRHS 35 LA	100	34	33.0	138.5	105.5	48	40.40	32.15	31.85	8.0	82	62	52	58.00	17.35	28.75	30.25	6.90	6.90
LLRHS 45 A*	120	45	37.5	137.6	97.0	60	50.30	40.15	39.85	10.0	100	80	60	69.80	20.90	17.30	19.30	8.20	8.20
LLRHS 45 LA*	120	45	37.5	174.1	133.5	60	50.30	40.15	39.85	10.0	100	80	60	69.80	20.90	35.50	37.50	8.20	8.20

[1] With rail cover strip
[2] Without rail cover strip
* In preparation

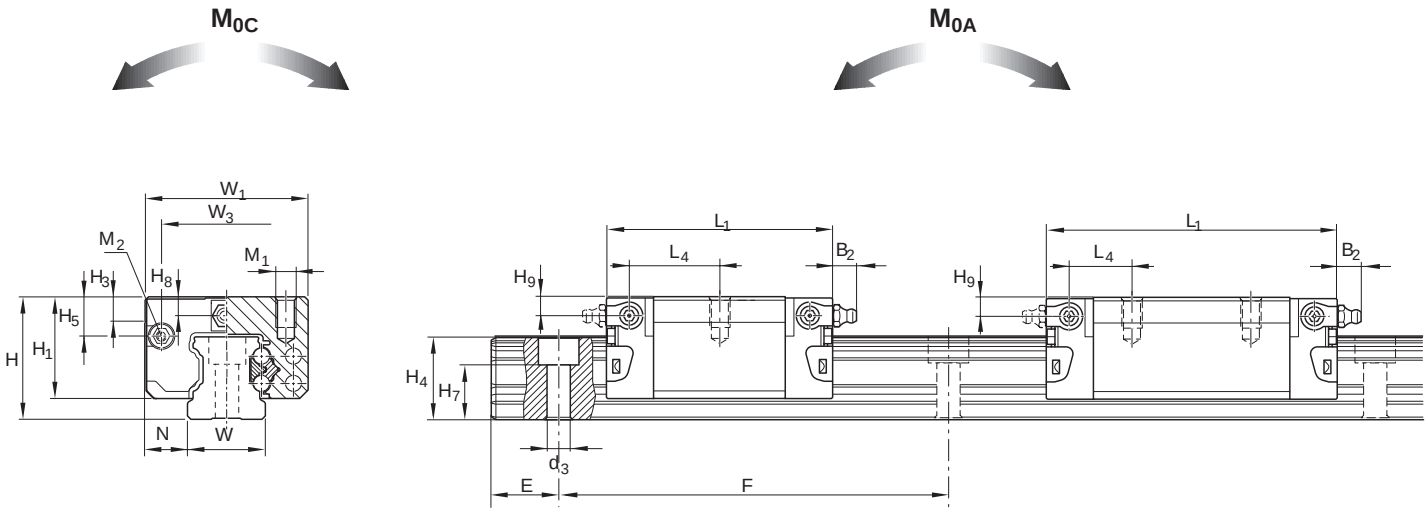


Legend:
a) For O-ring
Size 15: Ø4×1.0 (mm)
Size 20 - 35: Ø5×1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Lube nipple, size 15 and 20:
Funnel-type nipple
Type A – Thread size M3, DIN 3405
B_2 = 1.6 mm
Size 25 to 35: AM 6 DIN 71412
B_2 = 9.5 mm
Connection possible at all sides.

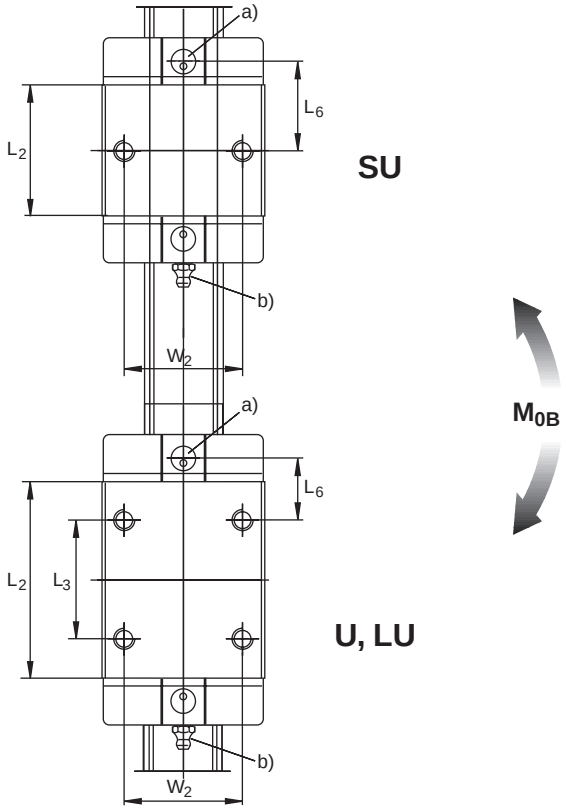
Designations	Dimensions								Basic load ratings				Mass
	H_6	H_7	d_4	M_1	d_3	M_2	E_{min}	F	C	C_0	$M_{0A/0B}$	M_{0C}	
	mm								N		Nm		kg
LLRHS 15 SA	–	10.65	4.3	M5×5.2	4.4	M2.5 - 3.5 deep	10	60	5400	8100	28	80	0.15
LLRHS 15 A	4.4	10.65	4.3	M5×5.2	4.4	M2.5 - 3.5 deep	10	60	7800	13500	71	130	0.20
LLRHS 15 LA	4.4	10.65	4.3	M5×5.2	4.4	M2.5 - 3.5 deep	10	60	10000	20000	150	190	0.40
LLRHS 20 SA	–	13.35	5.3	M6×7.7	6.0	M3 - 5 deep	10	60	12400	13600	58	170	0.40
LLRHS 20 A	5.2	13.35	5.3	M6×7.7	6.0	M3 - 5 deep	10	60	18800	24400	165	310	0.60
LLRHS 20 LA	5.2	13.35	5.3	M6×7.7	6.0	M3 - 5 deep	10	60	24400	35200	330	450	0.80
LLRHS 25 SA	–	15.55	6.7	M8×9.3	7.0	M3 - 5 deep	10	60	15900	18200	94	260	0.60
LLRHS 25 A	7.0	15.55	6.7	M8×9.3	7.0	M3 - 5 deep	10	60	22800	30400	240	430	0.80
LLRHS 25 LA	7.0	15.55	6.7	M8×9.3	7.0	M3 - 5 deep	10	60	30400	45500	510	650	1.15
LLRHS 30 SA	–	17.35	8.5	M10×11.0	9.0	M3 - 5 deep	12	80	22100	24800	150	430	0.95
LLRHS 30 A	7.9	17.35	8.5	M10×11.0	9.0	M3 - 5 deep	12	80	31700	41300	380	720	1.20
LLRHS 30 LA	7.9	17.35	8.5	M10×11.0	9.0	M3 - 5 deep	12	80	40000	57800	715	1000	1.70
LLRHS 35 SA	–	20.85	8.5	M10×12.0	9.0	M3 - 5 deep	12	80	29300	32400	220	700	1.40
LLRHS 35 A	10.2	20.85	8.5	M10×12.0	9.0	M3 - 5 deep	12	80	41900	54000	565	1160	1.75
LLRHS 35 LA	10.2	28.85	8.5	M10×12.0	9.0	M3 - 5 deep	12	80	55600	81000	1215	1740	2.55
LLRHS 45 A*	14.4	23.5	10.4	M12×15.0	14.0	M4 - 7 deep	16	105	68100	85700	1130	2310	3.00
LLRHS 45 LA*	12.4	23.5	10.4	M12×15.0	14.0	M4 - 7 deep	16	105	90400	128500	2425	3470	4.30

LLRHS .. SU
LLRHS .. U
LLRHS .. LU



Designations	Dimensions																	
	W_1	W	N	L_1	L_2	H	H_1	H_4[1]	H_4[2]	H_3	W_2	L_3	W_3	H_5	L_6	L_4	H_8	H_9
	mm																	
LLRHS 15 SU	34	15	9.5	44.7	25.7	24	19.90	16.30	16.20	5.0	26	-	24.55	6.70	16.25	17.85	3.20	3.20
LLRHS 15 U	34	15	9.5	58.2	39.2	24	19.90	16.30	16.20	5.0	26	26	24.55	6.70	10.00	11.60	3.20	3.20
LLRHS 15 LU	34	15	9.5	72.6	53.6	24	19.90	16.30	16.20	5.0	26	26	24.55	6.70	17.20	18.80	3.20	3.20
LLRHS 20 SU	44	20	12.0	57.3	31.9	30	25.35	20.75	20.55	6.0	32	-	32.50	7.30	22.95	22.95	3.35	3.35
LLRHS 20 U	44	20	12.0	75.0	49.6	30	25.35	20.75	20.55	6.0	32	36	32.50	7.30	13.80	13.80	3.35	3.35
LLRHS 20 LU	44	20	12.0	91.0	65.6	30	25.35	20.75	20.55	6.0	32	50	32.50	7.30	14.80	14.80	3.35	3.35
LLRHS 25 SU	48	23	12.5	66.4	38.6	36	29.90	24.45	24.25	7.5	35	-	38.30	11.50	25.35	26.50	5.50	5.50
LLRHS 25 U	48	23	12.5	85.6	57.8	36	29.90	24.45	24.25	7.5	35	35	38.30	11.50	17.45	18.60	5.50	5.50
LLRHS 25 LU	48	23	12.5	107.3	79.5	36	29.90	24.45	24.25	7.5	35	50	38.30	11.50	20.80	21.95	5.50	5.50
LLRHS 30 SU	60	28	16.0	74.8	45.0	42	35.35	28.55	28.35	7.0	40	-	48.40	14.60	28.80	30.50	6.05	6.05
LLRHS 30 U	60	28	16.0	97.2	67.4	42	35.35	28.55	28.35	7.0	40	40	48.40	14.60	20.00	21.70	6.05	6.05
LLRHS 30 LU	60	28	16.0	119.2	89.4	42	35.35	28.55	28.35	7.0	40	60	48.40	14.60	21.00	22.70	6.05	6.05
LLRHS 35 SU	70	34	18.0	84.4	51.4	48	40.40	32.15	31.85	8.0	50	-	58.00	17.35	32.70	34.20	6.90	6.90
LLRHS 35 U	70	34	18.0	110.0	77.0	48	40.40	32.15	31.85	8.0	50	50	58.00	17.35	20.50	22.00	6.90	6.90
LLRHS 35 LU	70	34	18.0	138.5	105.5	48	40.40	32.15	31.85	8.0	50	72	58.00	17.35	23.75	25.25	6.90	6.90
LLRHS 45 U*	86	45	20.5	137.6	97.0	60	50.30	40.15	39.85	10.0	60	60	69.80	20.90	27.30	29.30	8.20	8.20
LLRHS 45 LU*	86	45	20.5	174.1	133.5	60	50.30	40.15	39.85	10.0	60	80	69.80	20.90	35.50	37.50	8.20	8.20

[1] With rail cover strip
[2] Without rail cover strip
* In preparation



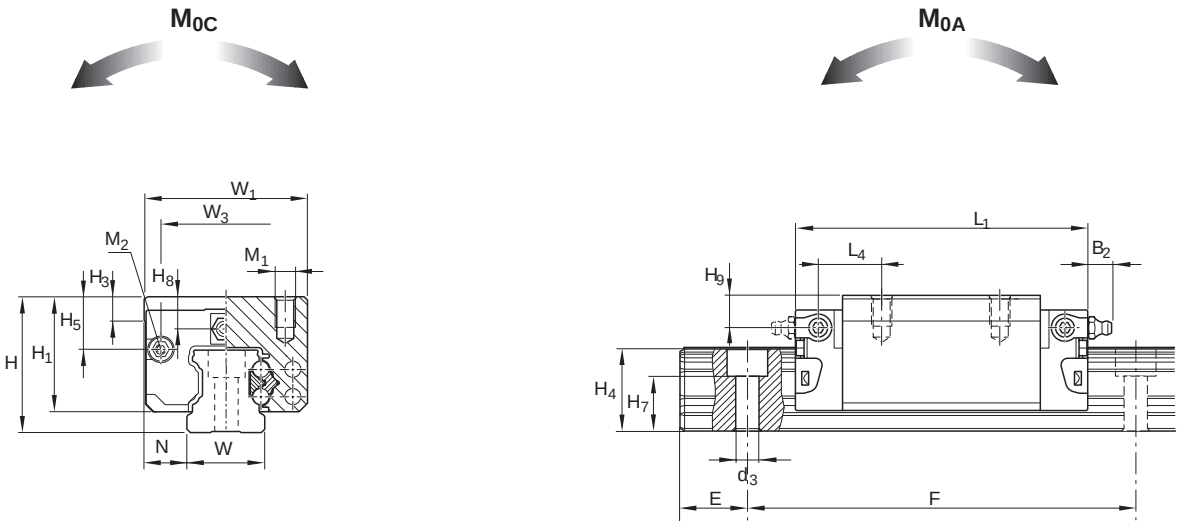
Legend:

a) For O-ring
- Size 15: Ø4×1.0 (mm)
- Size 20 - 35: Ø5×1.0 (mm)
- Open lube bore as required.
- See Accessories:
- Mounting lubrication adapter.

b) Lube nipple, size 15 and 20:
- Funnel-type nipple
- Type A – Thread size M3, DIN 3405
- B_2 = 1.6 mm
- Size 25 to 35: AM 6 DIN 71412
- B_2 = 9.5 mm
- Connection possible at all sides.

Designations	Dimensions						Basic load ratings				Mass
	H_7	M_1	d_3	M_2	E_{min}	F	C	C_0	$M_{0A/0B}$	M_{0C}	
	mm						N		Nm		kg
LLRHS 15 SU	10.65	M4×6.0	4.4	M2.5 - 3.5 deep	10	60	5400	8100	28	80	0.10
LLRHS 15 U	10.65	M4×6.0	4.4	M2.5 - 3.5 deep	10	60	7800	13500	71	130	0.15
LLRHS 15 LU	10.65	M4×6.0	4.4	M2.5 - 3.5 deep	10	60	10000	20000	150	190	0.20
LLRHS 20 SU	13.35	M5×7.5	6.0	M3 - 5 deep	10	60	12400	13600	58	170	0.40
LLRHS 20 U	13.35	M5×7.5	6.0	M3 - 5 deep	10	60	18800	24400	165	310	0.50
LLRHS 20 LU	13.35	M5×7.5	6.0	M3 - 5 deep	10	60	24400	35200	330	450	0.65
LLRHS 25 SU	15.55	M6×9.0	7.0	M3 - 5 deep	10	60	15900	18200	94	260	0.55
LLRHS 25 U	15.55	M6×9.0	7.0	M3 - 5 deep	10	60	22800	30400	240	430	0.70
LLRHS 25 LU	15.55	M6×9.0	7.0	M3 - 5 deep	10	60	30400	45500	510	650	0.90
LLRHS 30 SU	17.35	M8×12.0	9.0	M3 - 5 deep	12	80	22100	24800	150	430	0.75
LLRHS 30 U	17.35	M8×12.0	9.0	M3 - 5 deep	12	80	31700	41300	380	720	1.00
LLRHS 30 LU	17.35	M8×12.0	9.0	M3 - 5 deep	12	80	40000	57800	715	1000	1.30
LLRHS 35 SU	20.85	M8×13.0	9.0	M3 - 5 deep	12	80	29300	32400	220	700	1.10
LLRHS 35 U	20.85	M8×13.0	9.0	M3 - 5 deep	12	80	41900	54000	565	1160	1.40
LLRHS 35 LU	28.85	M8×13.0	9.0	M3 - 5 deep	12	80	55600	81000	1215	1740	2.00
LLRHS 45 U*	23.5	M10×18.0	14.0	M4 - 7 deep	16	105	68100	85700	1130	2310	2.40
LLRHS 45 LU*	23.5	M10×18.0	14.0	M4 - 7 deep	16	105	90400	128500	2425	3470	3.20

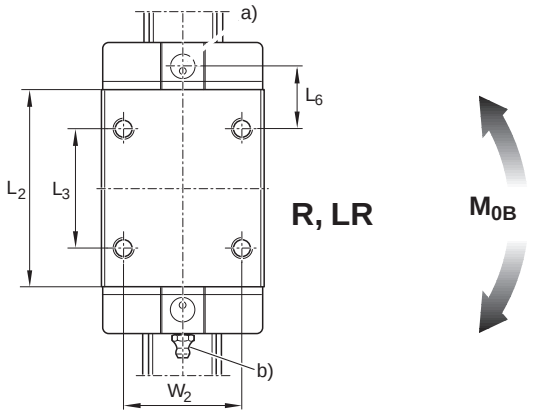
LLRHS .. R
LLRHS .. LR



R, LR

Designations	Dimensions																	
	W_1	W	N	L_1	L_2	H	H_1	H_4 [1]	H_4 [2]	H_3	W_2	L_3	W_3	H_5	L_6	L_4	H_8	H_9
	mm																	
LLRHS 15 R	34	15	9.5	58.2	39.2	28	23.90	16.30	16.20	5.0	26	26	24.55	10.70	10.00	11.60	7.20	7.20
LLRHS 25 R	48	23	12.5	85.6	57.8	40	33.90	24.45	24.25	7.5	35	35	38.30	15.50	17.45	18.60	9.50	9.50
LLRHS 25 LR	48	23	12.5	107.3	79.5	40	33.90	24.45	24.25	7.5	35	50	38.30	15.50	20.80	21.95	9.50	9.50
LLRHS 30 R	60	28	16.0	97.2	67.4	45	38.35	28.55	28.35	7.0	40	40	48.40	17.60	20.00	21.70	9.05	9.05
LLRHS 30 LR	60	28	16.0	119.2	89.4	45	38.35	28.55	28.35	7.0	40	60	48.40	17.60	21.00	22.70	9.05	9.05
LLRHS 35 R	70	34	18.0	110.0	77.0	55	47.40	32.15	31.85	8.0	50	50	58.00	24.35	20.50	22.00	13.90	13.90
LLRHS 35 LR	70	34	18.0	138.5	105.5	55	47.40	32.15	31.85	8.0	50	72	58.00	24.35	23.75	25.25	13.90	13.90
LLRHS 45 R*	86	45	20.5	137.6	97.0	70	60.30	40.15	39.85	10.0	50	60	69.80	30.90	27.30	29.30	18.20	18.20
LLRHS 45 LR*	86	45	20.5	174.1	133.5	70	60.30	40.15	39.85	10.0	60	80	69.80	30.90	35.50	37.50	18.20	18.20

[1] With rail cover strip
[2] Without rail cover strip
* In preparation



Legend:
a) For O-ring
Size 15: Ø4×1.0 (mm)
Size 20 - 35: Ø5×1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Lube nipple, size 15 and 20:
Funnel-type nipple
Type A – Thread size M3, DIN 3405
B_2 = 1.6 mm
Size 25 to 35: AM 6 DIN 71412
B_2 = 9.5 mm
Connection possible at all sides.

Designations	Dimensions						Basic load ratings				Mass
	H_7	M_1	d_3	M_2	E_{min}	F	C	C_0	$M_{0A/0B}$	M_{0C}	
	mm						N		Nm		kg
LLRHS 15 R	10.65	M4×6.0	4.4	M2.5 - 3.5 deep	10	60	7800	13500	71	130	0.20
LLRHS 25 R	15.55	M6×9.0	7.0	M3 - 5 deep	10	60	22800	30400	240	430	0.75
LLRHS 25 LR	15.55	M6×9.0	7.0	M3 - 5 deep	10	60	30400	45500	510	650	1.00
LLRHS 30 R	17.35	M8×12.0	9.0	M3 - 5 deep	12	80	31700	41300	380	720	1.10
LLRHS 30 LR	17.35	M8×12.0	9.0	M3 - 5 deep	12	80	40000	57800	715	1000	1.45
LLRHS 35 R	20.85	M8×13.0	9.0	M3 - 5 deep	12	80	41900	54000	565	1160	1.70
LLRHS 35 LR	28.85	M8×13.0	9.0	M3 - 5 deep	12	80	55600	81000	1215	1740	2.40
LLRHS 45 R*	23.5	M10×18.0	14.0	M4 - 7 deep	16	105	68100	85700	1130	2310	3.00
LLRHS 45 LR*	23.5	M10×18.0	14.0	M4 - 7 deep	16	105	90400	128500	2425	3470	4.10

Miniature profile rail guides

In response to the market trend for increased performance with a minimum of mounting space, SKF has extended its product range by miniature profile rail guides (→ **fig** 24).

These newly developed linear guides are designed above all for applications in precision mechanics, medical engineering, microassembly and the optics industry.
The close co-operation with numerous customers combined with SKF's experience has resulted in a range of miniature rail guides that sets new standards: especially when the mounting space is limited, SKF miniature profile rail guides are an excellent choice, as they have a high load-carrying capacity combined with a compact design.

SKF offers its customers an excellent technical advisory service on the spot as well as a vast modular range for the performance increase of machines and installations.

SKF Linear Motion offers these profile rail guides in four sizes (7, 9, 12 and 15 mm) and various slide options to cover most application requirements.

Compact design: Thanks to their simple structure, miniature profile rail guides are compact and favourable in price. This small and lightweight product is very suitable for high-speed linear motion up to 3 m/sec.

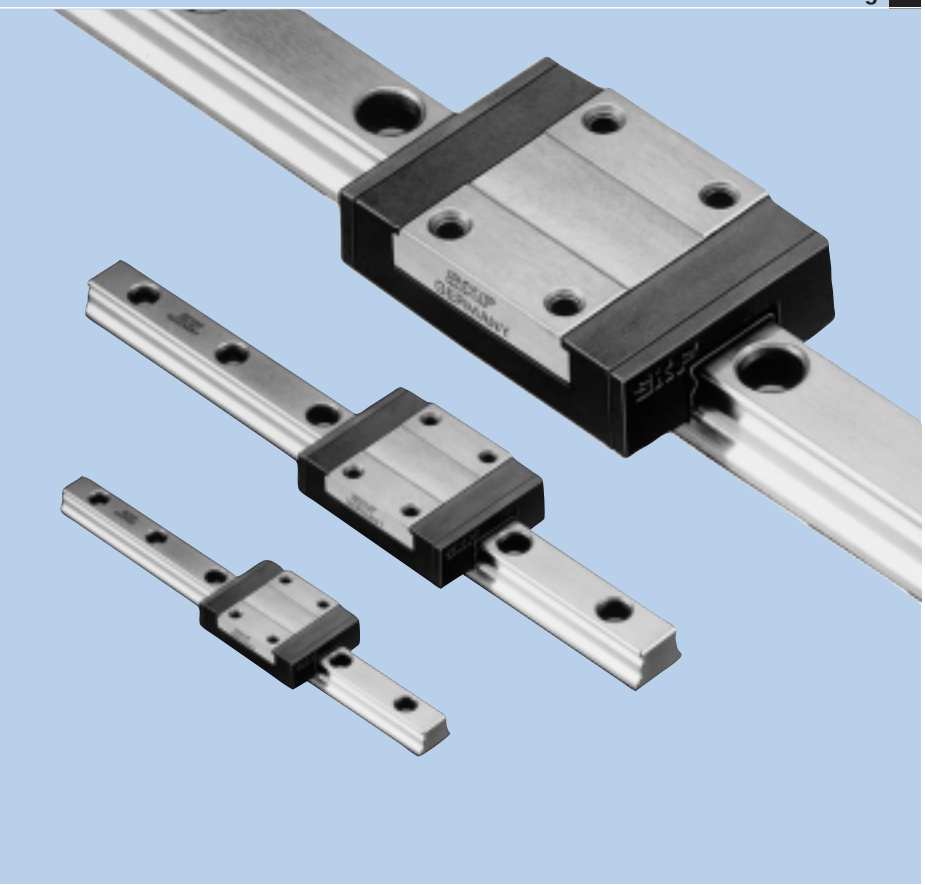
Long-life: gothic arch grooves at the raceway contacts enable the slide to sustain loads and moments from any direction.

The raceway shape offers a large load capacity and a long-life time due to the contact between the raceways and the balls.

Corrosion resistant: all parts of the system are made of stainless steel or plastic material and are thus resistant to corrosion.

Easy to maintain: oil holes in the end caps of the carriage make it easy to relubricate the system.

Fig 24



Structure: Four-point contact ball recirculation system with identical load angles and 2 ball recirculation paths per carriage for unlimited stroke.

Range: Four different types (7, 9, 12, 15) comprising different widths and carriage lengths (→ **fig** 25).

The preload possibilities for carriage are given in **Table** 16, and the technical data in **Table** 17.

Fig 25

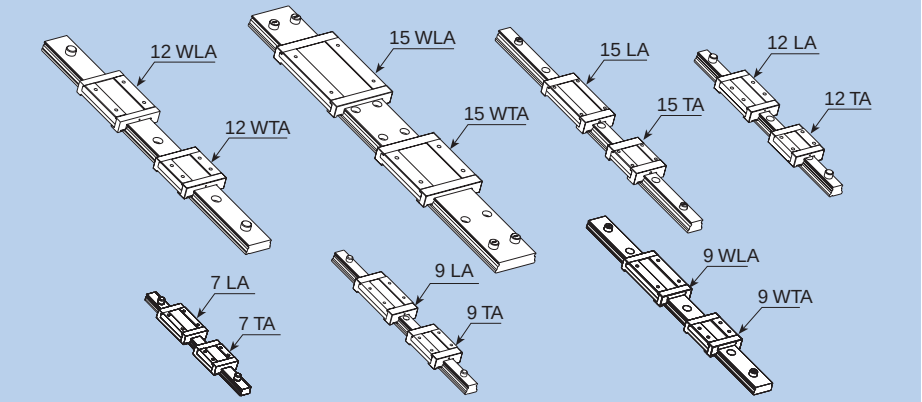
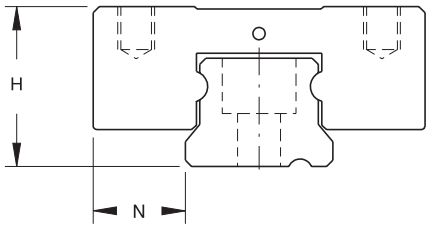


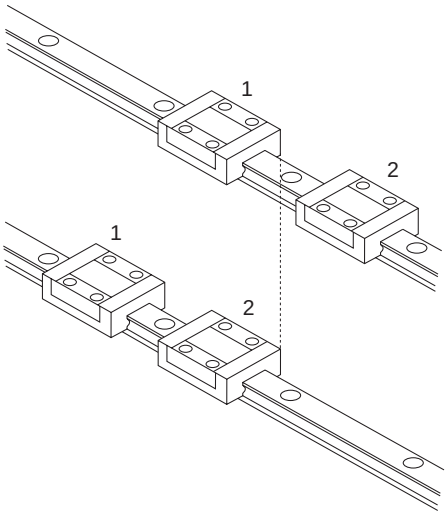
Table 16

	T0*	T1*	T2*
TA	×	×	×
LA	×	×	×
TA R	×	×	×
LA R	×	×	×

* T0 = standard - light preload
* T1 = medium preload
* T2 = heavy preload

Preload possibilities for carriage





The running parallelism accuracy in operation of paired systems are given in **Table 19**.
The positioning (distance) tolerance of rail attachment holes can be seen from **fig 26**.

Table 17

Rail material:	Stainless steel 1.4037
Carriage material:	Stainless steel 1.4037 with return zones of POM
Ball material:	Stainless steel 1.4037
Sealing material:	Desmopan
Temperature range:	from – 20 °C up to + 80 °C
Speed:	up to 3 m/s max.
Acceleration:	up to 80 m/s^2 max.

Technical data

The system accuracy and the system tolerance of different guidance system are given in **Table 18**.

System accuracy and tolerance of different guidance systems

Table 18

Dimension		Class P1	P5
		µm	µm
H*	Dimension tolerance	± 10	± 20
N*	Dimension tolerance	± 15	± 25
ΔH_1)**	Maximum tolerance for paired systems or carriages at identical rail position	± 7	± 15
ΔN**	Maximum tolerance for paired systems or carriages at identical rail position	± 7	± 15

* The tolerances apply over the entire guide length for any combination of carriage and rail.
** The dimensions ΔH and ΔN relate to the ideal centre of the carriage. Each dimension is derived from the mean value of two measured points with identical centre distance.

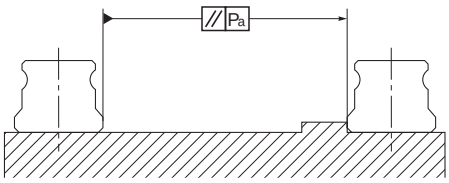
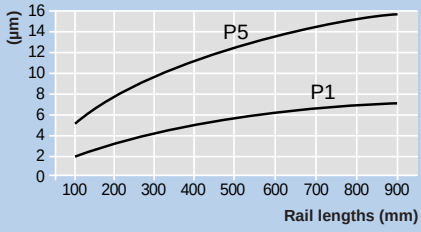
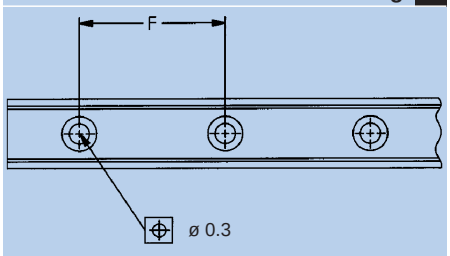


Table 19



Running parallelism accuracy

Fig 26



Ordering key

Type

Rail type:
Standard rail . . . . . H
Wide rail . . . . . W

Product code:
System (rail + carriage) . . . . . S
Carriage C
Rail . . . . . R

Size:
. . . . . (7, 9, 12, 15)

Carriage types:
Standard carriage . . . . . TA
Long carriage . . . . . LA

Option:
Carriage with seals . . . . . R
Carriage without seal . . . . . no sign

Number of carriages

Preload:
Light preload (standard) T0
Medium preload T1
Heavy preload T2

Length of rail track:
Max 1000 mm

Precision class:
Low precision P5
High precision P1

Number of rail track used in parallel:
One rail alone W1
Two rails in parallel W2

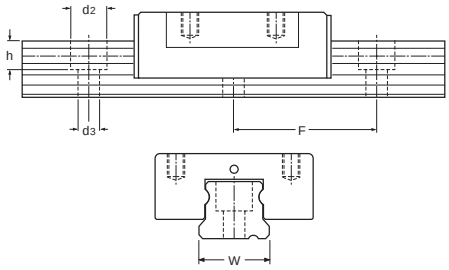
Auxiliary symbols:
Plastic end-stop . . . . . no sign
Steel end-stop . . . . . M

Distance between end face and the first hole [mm]:
Symmetric holes standard . . . . . E = 0

Example: LLM H S | 12 | TA R | 2 | T0 - 700 | P1 | W2 / M | E=0

LLMHR

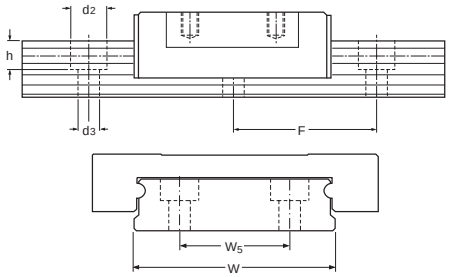
Standard rails



Designations	Dimensions					Max. length
	W	F	d_2	d_3	h	
	mm					mm
LLMHR 7	7	15	4.5	2.5	2.5	1000
LLMHR 9	9	20	6	3.5	3.5	1000
LLMHR 12	12	25	6	3.5	4.5	1000
LLMHR 15	15	40	6	3.5	4.5	1000

LLMWR

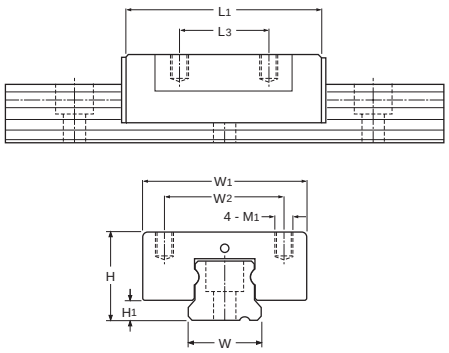
Wide rails



Designations	Dimensions						Max. length
	W	W_5	F	d_2	d_3	h	
	mm						mm
LLMWR 9	18	0	30	6	3.5	4.5	1000
LLMWR 12	24	0	40	8	4.5	4.5	1000
LLMWR 15	42	23	40	8	4.5	4.5	1000

LLMHC ..TA R

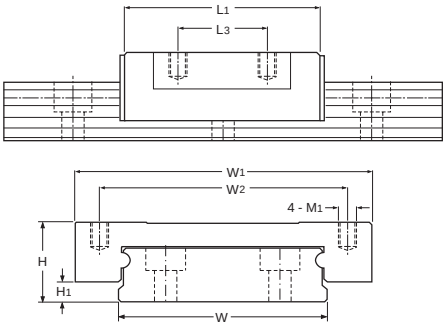
Standard carriages



Designations	Dimensions								Load-carrying capacities dynamic	static
	W	W_1	W_2	H	L_1	L_3	M_1	H_1	C	C_0
	mm								N	
LLMHC 7 TA R	7	17	12	8	22	8	M2×2.5	1.5	860	1670
LLMHC 9 TA R	9	20	15	10	30	10	M3×3	2	1850	3130
LLMHC 12 TA R	12	27	20	13	33	15	M3×3.5	3	2550	4000
LLMHC 15 TA R	15	32	25	16	41.5	20	M3×4	4	2880	5390

LLMWC ..TA R

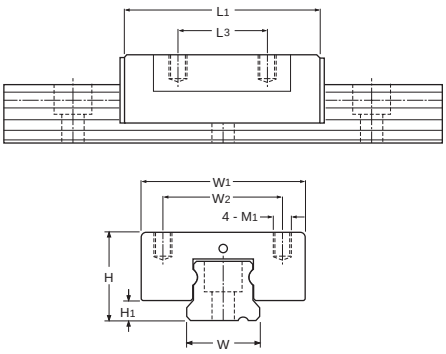
Carriages for wide rails



Designations	Dimensions								Load-carrying capacities dynamic	static
	W	W_1	W_2	H	L_1	L_3	M_1	H_1	C	C_0
	mm								N	
LLMWC 9 TA R	18	30	21	12	36.5	12	M3×3	2	1785	3330
LLMWC 12 TA R	24	40	28	14	42.5	15	M3×3.5	3	3300	5780
LLMWC 15 TA R	42	60	45	16	51.2	20	M4×4.5	4	3890	7060

LLMHC ..LA R

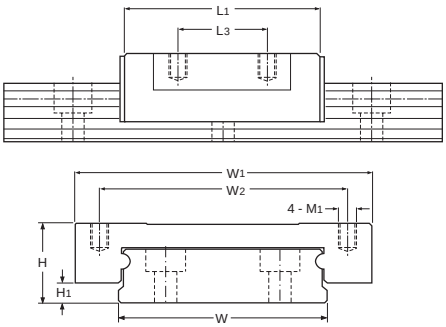
Standard carriages



Designations	Dimensions								Load-carrying capacities dynamic	static
	W	W_1	W_2	H	L_1	L_3	M_1	H_1	C	C_0
	mm								N	
LLMHC 7 LA R	7	17	12	8	29.5	12	M2×2.5	1.5	1400	2700
LLMHC 9 LA R	9	20	15	10	38.5	15	M3×3	2	2295	4270
LLMHC 12 LA R	12	27	20	13	45	20	M3×3.5	3	3470	6225
LLMHC 15 LA R	15	32	25	16	57.5	25	M3×4	4	4670	8720

LLMWC ..LA R

Long carriages for wide rails



Designations	Dimensions								Load-carrying capacities dynamic	static
	W	W_1	W_2	H	L_1	L_3	M_1	H_1	C	C_0
	mm								N	
LLMWC 9 LA R	18	30	23	12	48.5	24	M3×3	2	2640	4900
LLMWC 12 LA R	24	40	28	14	56	28	M3×3.5	3	4150	8000
LLMWC 15 LA R	42	60	45	16	70.5	35	M4×4.5	4	5830	10600

Precision rail guides

Modular range rail guides

The modular range (➔ **fig** 27) consists of a matrix range of rail guide modules which enable an individual choice of combinations of rails and rolling element assemblies. Different requirements for the guides do not call for changes in the design or mechanical environment. Selection of the right rail guide is made depending on the mechanical conditions of the application in question.

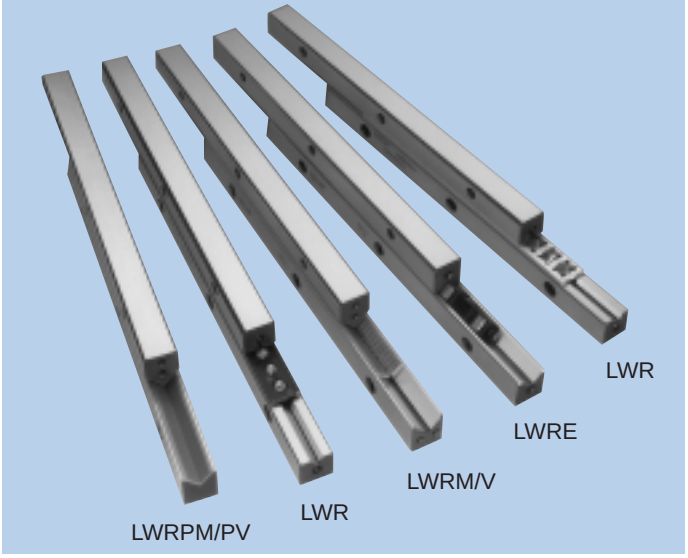
The operating requirements are covered by five different models which may be defined as rail guides with:

– crossed roller cage assemblies of the standard LWR series
– ball cage assemblies of the LWR series
– crossed roller cage assemblies of the optimised LWRE series
– needle roller cage assemblies of the LWRM/LWRV series
– slideway liners of the LWRPM/LWRPV series.

Precision rail guides are suitable for applications with limited strokes requiring high stiffness and positioning accuracy.

The modular range series of rails makes it possible to select internal design and/or rolling assemblies to suit application requirements without changing the envelope dimensions of the rails.

Fig 27



Anti-creeping systems (ACS systems)

The ACS system prevents cage creeping (➔ **fig** 28). It is available for any product from the LWRE range.

The modular rail range, which is completely interchangeable, is given in **Table** 20. This range is suitable for applications with limited strokes requiring high stiffness and positioning accuracy.

Fig 28

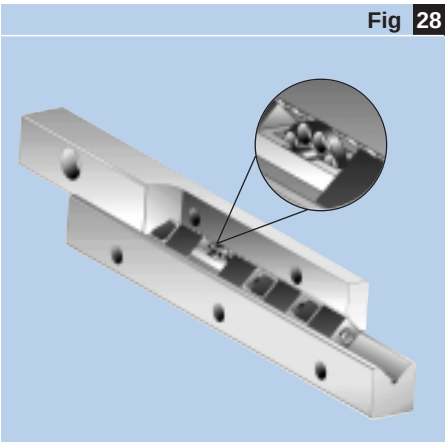


Table 20

Modular range: interchangeable rail programme	Basic load rating	Speed	Noise	Stiffness	Precision
Crossed rollers LWR					
Crossed rollers LWRE					
Needle rollers					
Sliding liners					

Ordering key

LW					

Type

Designation type:

Rail guide (modular range) (sizes: 1/2/3/6/9/12/15/18/24) . . . . . R
Plastic ball-retaining cage (sizes: 1/2/3/6/9/12) . . . . . JK
Brass ball cage (sizes: 1/2/3/6/9/12/15/18/24) . . . . . JJ
Crossed rollers in plastic cage (sizes: 1/2/3) . . . . . AK
Crossed rollers in aluminium cage (sizes: 6/9/12) . . . . . AL
Crossed rollers in brass cage (sizes: 3/6/9/12/15/18/24) . . . . . DD
Crossed rollers in steel cage (sizes: 3/15) . . . . . AA
End piece for low load and horizontal mounting (sizes: 1/2/3/6/9/12/15/18/24) . . . . . ERA
End piece for high load and vertical mounting (sizes: 1/2/3/6/9/12/15/18/24) . . . . . ERB
End piece with a felt wiper with a sealing lip (sizes: 3/6/9/12/15/18/24) . . . . . ERC
Special attachment screw (sizes: 3/4/6/9/12/15/18/24) . . . . . GD

Rail guide (modular range) (sizes old designation: 3/4/6/9) . . . . . RE*
Rail guide (modular range) (sizes new designation: 1808/2211/2512/3115/4422) . . . . . RE*
Flexible crossed roller plastic cages (sizes: 3/4/6/9/221) . . . . . AKE
End piece for general use (sizes: 3/4/6/9/2211) . . . . . ERE
End piece with plastic wiper (sizes: 4/6/9) . . . . . EREC
Special attachment screw (sizes: 3/4/6/9/2211) . . . . . GD

Rail guide for needle roller assemblies (modular range) (sizes: 6/9) . . . . . RM
Rail guide for needle roller assemblies (modular range) (sizes: 6/9) . . . . . RV
Needle rollers in plastic cage (sizes: 6/9) . . . . . HV
Needle rollers in aluminium cage (sizes: 6/9) . . . . . HW
End piece for general use (sizes: 6/9) . . . . . ERM
End piece for general use (sizes: 6/9) . . . . . ERV
End piece with plastic wiper for general use (sizes: 6/9) . . . . . EARM
End piece with plastic wiper for general use (sizes: 6/9) . . . . . EARV
Special attachment screw (sizes: 6/9) . . . . . GD

Size:**
Specific values are reported on designation type

Length rail guide [mm]:

For R . . . . . 20 - 1000
For RE* . . . . . 50 - 1000
For RM . . . . . 100 - 1000
For RV . . . . . 100 - 1000

Option:

For R { for size 3/6/9 . . . . . KIT
For RE { for size 3/4/6/9 . . . . . KIT
For RE { anti-creeping system . . . . . ACS
For RE { for size 3/4/6/9 . . . . . ACS-KIT

Continued

*

Designation		Length	
New	Old	A	B
RE 1808	RE 3	18	08
RE 2211	—	22	11
RE 2512	RE 4	25	12
RE 3115	RE 6	31	15
RE 4422	RE 9	44	22

** Sizes 3 (1808), 2211; 4 (2512); 6 (3115) = 3 digits
for length of rail; example: . . . 050
. 100
. . . .

Size 9 (4422) = 4 digits
for length of rail; example: . . . 0050
. 0100
. . . .
. 1000

Example 1, rail guide: LW | RE | 6 | 350 | ACS

Example 2, cage: LW | AKE | 6 | 350

Example 3, end piece: LW | ERE | 6 × 24

Example 4, screws: LW | GD | 6

Ordering key *(Continued)*

Type

Designation type:

Rail guide with dry sliding liner (modular range) (sizes: 3/6/9)	RPM
Rail guide with dry sliding liner (modular range) (sizes: 3/6/9)	RPV
Special attachment screw (sizes: 3/6/9)	GD
Rail guide (sizes: 3015/4020/5025/6030/7040/8050)	M
Rail guide (sizes: 3015/4020/5025/6030/7040/8050)	V
Needle rollers in plastic cage (sizes: 10/15/20/25/30)	HV
Needle rollers in aluminium cage (sizes: 10/15/20/25/30)	HW
End piece for general use (sizes: 3015/4020/5025/6030/7040/8050)	EM
End piece for general use (sizes: 3015/4020/5025/6030/7040/8050)	EV
End piece with wiper for general use (sizes: 3015/4020/5025/6030/7040/8050)	EAM
End piece with wiper for general use (sizes: 3015/4020/5025/6030/7040/8050) DIN 84 Attachment screw (sizes: M3/M5/M6)	EAV
Rail guide (sizes: 2025/2535/3045/3555)	N
Rail guide (sizes: 2025/2535/3045/3555)	O
Needle rollers in plastic cage (sizes: 15/20/25/30)	HV
Needle rollers in aluminium cage (sizes: 15/20/25/30)	HW
End piece for general use (sizes: 2025/2535/3045/3555)	EN
End piece for general use (sizes: 2025/2535/3045/3555)	EV
End piece with wiper for general use (sizes: 2025/2535/3045/3555)	EAN
End piece with wiper for general use (sizes: 2025/2535/3045/3555)	EAV
Special attachment screw (sizes: 2025/2535/3045/3555)	GD
Rail guide (sizes: non standard)	ML
Rail guide (sizes: 412/612/624/1024/1434)	F
Rail guide (sizes: 412/612/624/1024/1434)	G

Size:**
Specific values are reported on designation type

Length rail guide [mm]:

For RPM	50-1000
For RPV	50-1000
For M	100-1000
For V	100-1000
For N	200-500
For O	200-500
For F	200-600
For G	200-600

Option:
No option with these designations

** Size 3015 3 digits for length of rail;
example: . . . 3015100
. 3015150
. . . .

bigger sizes 4 digits for length of rail!;
example: . . . 25350100
. . . .

LWR ..

LWR rail guides are well-proven, limited-travel, linear guides used in numerous applications. They consist of two identical rails between which crossed roller assemblies or ball assemblies are inserted, depending on the application.

LWR rail guides with crossed roller assembly are robust linear bearings with high load-carrying capacity. Their special characteristics make them suitable for a large proportion of linear bearing arrangements with limited travel.

LWR rail guides with ball assembly can be used to advantage where loads are light and easy running is required.

Rails longer than 1200 mm are supplied in sections.

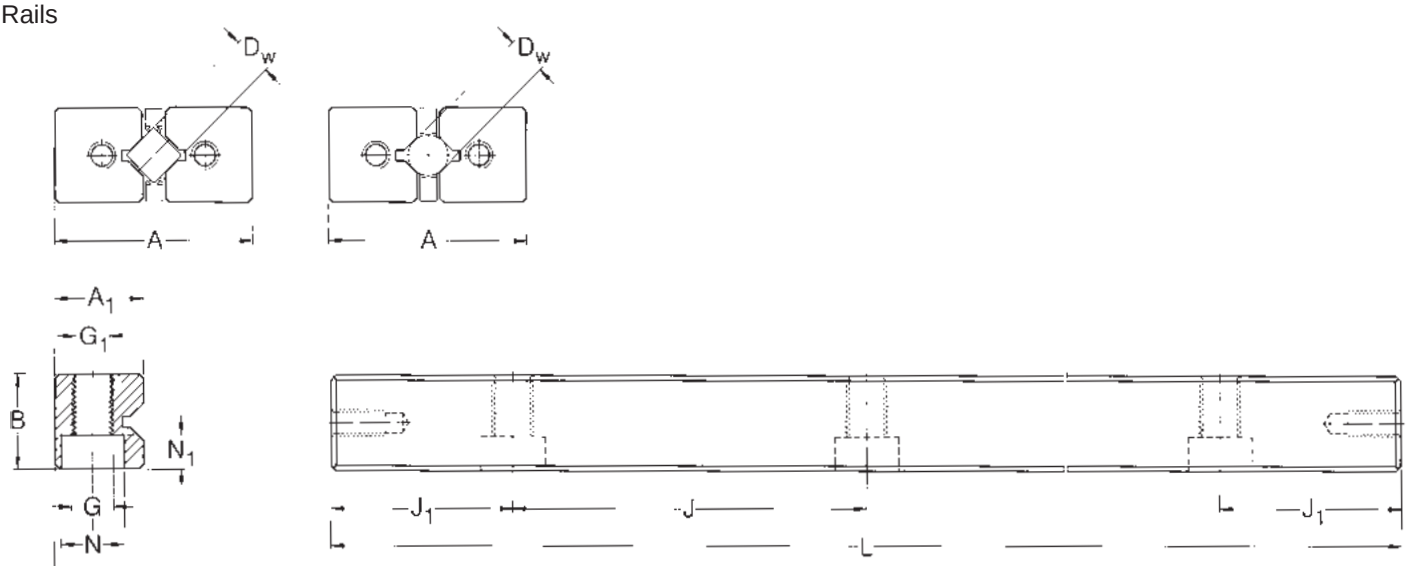
Each part of an LWR rail guide system must be ordered separately, because of the large number of possible combinations of

4 rails LWR
2 crossed roller cage assemblies LWAL
8 end pieces LWERB.

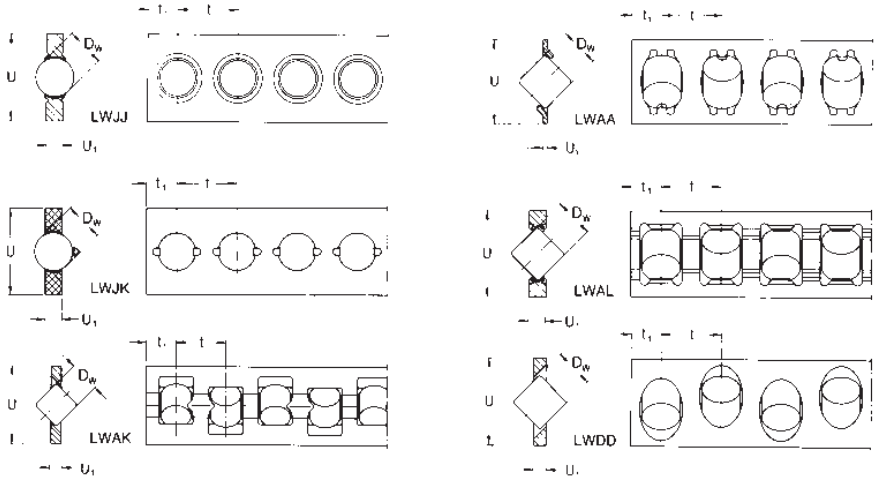
LWR .. KIT

The KIT package for the modular range is a unique service provided only by SKF.

Rails

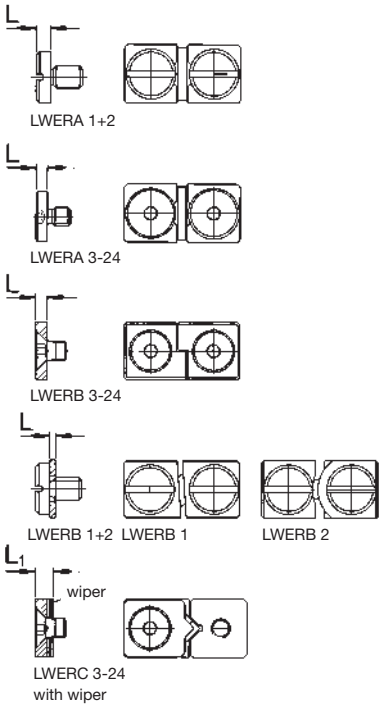


Ball and crossed roller assemblies



Special attachment screw

End pieces



LWR 3/6/9 .. KIT

4 rail guides LWR
2 crossed roller cage assemblies LWAL/LWAK
8 end pieces LWERA

Designations	Load ratings* dynamic	static	Stroke		Rail designations	Cage designations
	C	C_0	min.	max.		
	N		mm			
LWR 3050 KIT	999	1120	26	33	LWR 3050	LWAK 3×7
LWR 3075 KIT	1422	1760	36	50	LWR 3075	LWAK 3×11
LWR 3100 KIT	1811	2400	46	67	LWR 3100	LWAK 3×15
LWR 3125 KIT	2088	2880	66	83	LWR 3125	LWAK 3×18
LWR 3150 KIT	2442	3520	76	100	LWR 3150	LWAK 3×22
LWR 3175 KIT	2781	4160	86	117	LWR 3175	LWAK 3×26
LWR 3200 KIT	3110	4800	96	133	LWR 3200	LWAK 3×30

* Load ratings for 10 rolling elements
Including 8 end stops LWERA 3

See page 76 for drawing

Designations	Load ratings* dynamic	static	Stroke		Rail designations	Cage designations
	C	C_0	min.	max.		
	N		mm			
LWR 6100 KIT	4915	5440	50	67	LWR 6100	LWAL 6×8
LWR 6150 KIT	6744	8160	78	100	LWR 6150	LWAL 6×12
LWR 6200 KIT	8441	10880	106	133	LWR 6200	LWAL 6×16
LWR 6250 KIT	10045	13600	134	167	LWR 6250	LWAL 6×20
LWR 6300 KIT	11955	17000	144	200	LWR 6300	LWAL 6×25
LWR 6350 KIT	13422	19720	172	233	LWR 6350	LWAL 6×29
LWR 6400 KIT	14846	22440	200	267	LWR 6400	LWAL 6×33
LWR 6450 KIT	16231	25160	228	300	LWR 6450	LWAL 6×37
LWR 6500 KIT	17537	27880	256	333	LWR 6500	LWAL 6×41

* Load ratings for 10 rolling elements
Including 8 end stops LWERA 6

See page 76 for drawing

Designations	Load ratings* dynamic	static	Stroke		Rail designations	Cage designations
	C	C_0	min.	max.		
	N		mm			
LWR 90200 KIT	17000	18300	110	133	LWR 90200	LWAL 9×10
LWR 90300 KIT	24528	29280	142	200	LWR 90300	LWAL 9×16
LWR 90400 KIT	30324	38430	202	267	LWR 90400	LWAL 9×21
LWR 90500 KIT	35820	47580	262	333	LWR 90500	LWAL 9×26

* Load ratings for 10 rolling elements
Including 8 end stops LWERA 3

See page 76 for drawing

LWR 1

Designations	Dimensions															Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	U	U_1	t	C	C_0
	mm															N	
Rails																	
LWR 1020	8.5	4	20		10	5	M2	1.7	3	1.4	3.9						
LWR 1030	8.5	4	30		10	5	M2	1.7	3	1.4	3.9						
LWR 1040	8.5	4	40		10	5	M2	1.7	3	1.4	3.9						
LWR 1050	8.5	4	50		10	5	M2	1.7	3	1.4	3.9						
LWR 1060	8.5	4	60		10	5	M2	1.7	3	1.4	3.9						
Roller assemblies																	
LWAK 1												1.5	3.75	0.5	3	365	585
LWJK 1												1.5	3.5	0.5	2.2	305	170
End pieces																	
LWERB 1			0.5	–													
LWERA 1			1	–													

See page 76 for drawing

* Load ratings for 10 rolling elements

LWR 2

Designations	Dimensions															Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	U	U_1	t	C	C_0
	mm															N	
Rails																	
LWR 2030	12	6	30		15	7.5	M3	2.6	4.4	2	5.5						
LWR 2045	12	6	45		15	7.5	M3	2.6	4.4	2	5.5						
LWR 2060	12	6	60		15	7.5	M3	2.6	4.4	2	5.5						
LWR 2075	12	6	75		15	7.5	M3	2.6	4.4	2	5.5						
LWR 2090	12	6	90		15	7.5	M3	2.6	4.4	2	5.5						
LWR 2105	12	6	105		15	7.5	M3	2.6	4.4	2	5.5						
LWR 2120	12	6	120		15	7.5	M3	2.6	4.4	2	5.5						
Roller assemblies																	
LWAK 2												2	5.5	0.7	4	540	680
LWJK 2												2	5	0.7	3.9	570	300
End pieces																	
LWERB 2			0.5	–													
LWERA 2			1.5	–													

See page 76 for drawing

* Load ratings for 10 rolling elements

LWR 3

Designations	Dimensions														Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	U	U_1	t	C	C_0
	mm															N	
Rails																	
LWR 3050	18	8	50		25	13	M4	3.3	6	3.2	8.2						
LWR 3075	18	8	75		25	13	M4	3.3	6	3.2	8.2						
LWR 3100	18	8	100		25	13	M4	3.3	6	3.2	8.2						
LWR 3125	18	8	125		25	13	M4	3.3	6	3.2	8.2						
LWR 3150	18	8	150		25	13	M4	3.3	6	3.2	8.2						
LWR 3175	18	8	175		25	13	M4	3.3	6	3.2	8.2						
LWR 3200	18	8	200		25	13	M4	3.3	6	3.2	8.2						
LWR 3250	18	8	250		25	13	M4	3.3	6	3.2	8.2						
LWR 3300	18	8	300		25	13	M4	3.3	6	3.2	8.2						
Roller assemblies																	
LWAK 3												3	7.5	1	5	1320	1600
LWJK 3												3	7	1	4.2	1340	680
LWAA 3												3	7	0.5	5	1320	1600
End pieces																	
LWERA 3			2.5	–													
LWERB 3			2	–													
LWERC 3			2	5													
Special attachment screw																	
LWGD 3																	

* Load ratings for 10 rolling elements

See page 76 for drawing

LWR 6

Designations	Dimensions														Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	U	U_1	t	C	C_0
	mm															N	
Rails																	
LWR 6100	31	15	100		50	25	M6	5.2	9.5	5.2	14						
LWR 6150	31	15	150		50	25	M6	5.2	9.5	5.2	14						
LWR 6200	31	15	200		50	25	M6	5.2	9.5	5.2	14						
LWR 6250	31	15	250		50	25	M6	5.2	9.5	5.2	14						
LWR 6300	31	15	300		50	25	M6	5.2	9.5	5.2	14						
LWR 6350	31	15	350		50	25	M6	5.2	9.5	5.2	14						
LWR 6400	31	15	400		50	25	M6	5.2	9.5	5.2	14						
LWR 6450	31	15	450		50	25	M6	5.2	9.5	5.2	14						
LWR 6500	31	15	500		50	25	M6	5.2	9.5	5.2	14						
Roller assemblies																	
LWAL 6												6	14.8	2.7	9	5850	6800
LWJK 6												6	14	2.5	9	5850	2700
End pieces																	
LWERA 6			3	–													
LWERB 6			3	–													
LWERC 6			3	6													
Special attachment screw																	
LWGD 6																	

* Load ratings for 10 rolling elements

See page 76 for drawing

LWR 9

Designations	Dimensions														Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	U	U_1	t	C	C_0
	mm															N	
Rails																	
LWR 90200	44	22	200		100	50	M8	6.8	11	6.2	20						
LWR 90300	44	22	300		100	50	M8	6.8	11	6.2	20						
LWR 90400	44	22	400		100	50	M8	6.8	11	6.2	20						
LWR 90500	44	22	500		100	50	M8	6.8	11	6.2	20						
LWR 90600	44	22	600		100	50	M8	6.8	11	6.2	20						
LWR 90700	44	22	700		100	50	M8	6.8	11	6.2	20						
Roller assemblies																	
LWAL 9												9	20	4	14	17000	18300
LWJK 9												9	20	3.5	14	14000	6100
End pieces																	
LWERA 9			4	–													
LWERB 9			4	–													
LWERC 9			4	7													
Special attachment screw																	
LWGD 9																	

See page 76 for drawing

* Load ratings for 10 rolling elements

LWR 12

Designations	Dimensions														Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	U	U_1	t	C	C_0
	mm															N	
Rails																	
LWR 120300	58	28	300		100	50	M10	8.5	14	8.2	26						
LWR 120400	58	28	400		100	50	M10	8.5	14	8.2	26						
LWR 120500	58	28	500		100	50	M10	8.5	14	8.2	26						
LWR 120600	58	28	600		100	50	M10	8.5	14	8.2	26						
Roller assemblies																	
LWAL 12												12	25	5	18	30000	30500
LWJK 12												12	20	4	15.5	25000	10800
End pieces																	
LWERA 12			5	–													
LWERB 12			5	–													
LWERC 12			5	8													
Special attachment screw																	
LWGD 12																	

See page 76 for drawing

* Load ratings for 10 rolling elements

LWRE ..

LWRE rail guides are a logical development of the proven LWR rail guides.

Within the modular range system the LWRE rail guides offer an outstanding price/performance ratio.

Alongside the familiar characteristics of the LWR series, the new LWRE rail guides offer the advantages of a fivefold increase in load-carrying capacity and a doubling of the stiffness, achieved through optimised internal geometry in conjunction with larger roller diameters.

LWRE rail guides offer a greatly increased safety margin, thus a very much smaller LWRE rail guide can be used in a given design space, maintaining the same load-carrying capacity as the LWR.

The mounting and attachment dimensions of the LWRE 3, 6, 9 rail guides conform to those of all SKF modular range rail guides presented in this catalogue.

It is recommended to make rail guides longer than 1200 mm up of sections.

LWRE rail guides are optimised with large rollers and improved internal geometry providing high load-carrying capacity and stiffness. They are available with ACS.

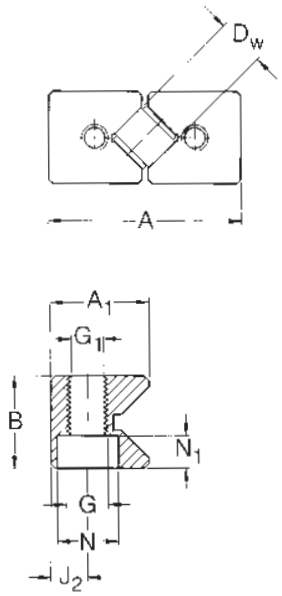
Each part of a LWRE rail guide system must be ordered separately, because of the large number of possible combinations of:

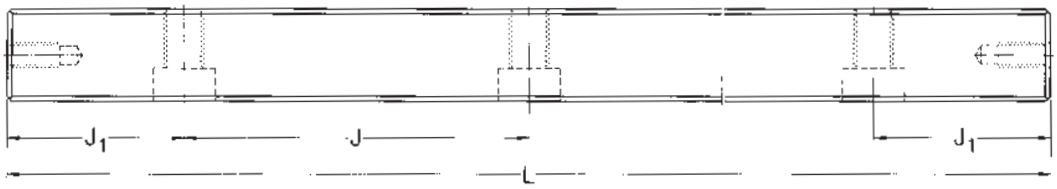
4 rail guides LWRE
2 crossed roller assemblies LWAKE
8 end pieces LWERE

LWRE .. KIT

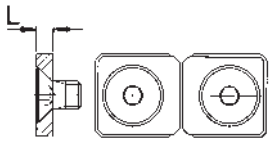
The KIT package for the modular range is a unique service provided only by SKF.

Rails

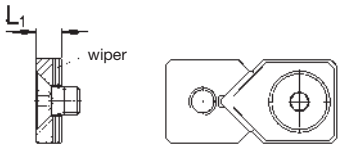




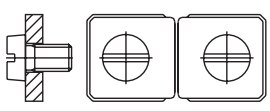
End pieces



LWERE 3, 6, 9



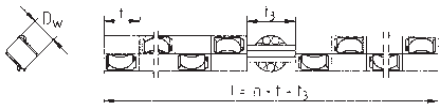
LWEREC 3, 6, 9
with wiper



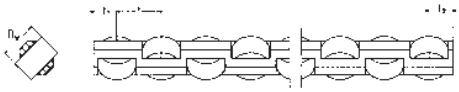
LWERE 4

Crossed roller assemblies

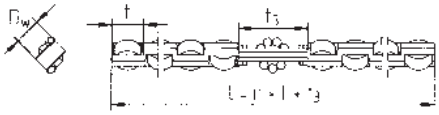
LWAKE 3, 6, 9



LWAKE 3, 6, 9 ACS



LWAKE 4



LWAKE 4 ACS

Special attachment screw

LWGD

LWRE 3/4/6/9 .. KIT

4 rail guides LWRE
2 crossed roller assemblies LWAKE
8 end pieces LWERE

Designations	Load ratings* dynamic C	static C_0	Stroke min.	max.	Rail designations	Cage designations
	N		mm			
LWRE 3050 KIT	4230	5100	25	33	LWRE 3050	LWAKE 3×6
LWRE 3075 KIT	5803	7650	38	50	LWRE 3075	LWAKE 3×9
LWRE 3100 KIT	7263	10200	50	67	LWRE 3100	LWAKE 3×12
LWRE 3125 KIT	8644	12750	63	83	LWRE 3125	LWAKE 3×15
LWRE 3150 KIT	9964	15300	75	100	LWRE 3150	LWAKE 3×18
LWRE 3175 KIT	11238	17850	88	117	LWRE 3175	LWAKE 3×21
LWRE 3200 KIT	12471	20400	100	133	LWRE 3200	LWAKE 3×24

* Load ratings for 10 rolling elements
Including 8 end stops LWERE 3

See page 81 for drawing

Designations	Load ratings* dynamic C	static C_0	Stroke min.	max.	Rail designations	Cage designations
	N		mm			
LWRE 4100 KIT	17300	20800	39	67	LWRE 4100	LWAKE 4×10
LWRE 4150 KIT	23735	31200	62	100	LWRE 4150	LWAKE 4×15
LWRE 4200 KIT	28541	39520	95	133	LWRE 4200	LWAKE 4×19
LWRE 4250 KIT	34246	49920	118	167	LWRE 4250	LWAKE 4×24
LWRE 4300 KIT	38622	58240	152	200	LWRE 4300	LWAKE 4×28
LWRE 4350 KIT	43902	68640	169	233	LWRE 4350	LWAKE 4×33
LWRE 4400 KIT	49009	79040	192	267	LWRE 4400	LWAKE 4×38

* Load ratings for 10 rolling elements
Including 8 end stops LWERE 4

See page 81 for drawing

Designations	Load ratings* dynamic C	static C_0	Stroke min.	max.	Rail designations	Cage designations
	N		mm			
LWRE 6100 KIT	25743	27300	46	67	LWRE 6100	LWAKE 6×7
LWRE 6150 KIT	34000	39000	80	100	LWRE 6150	LWAKE 6×10
LWRE 6200 KIT	44204	54600	92	133	LWRE 6200	LWAKE 6×14
LWRE 6250 KIT	51431	66300	126	167	LWRE 6250	LWAKE 6×17
LWRE 6300 KIT	58382	78000	160	200	LWRE 6300	LWAKE 6×20
LWRE 6350 KIT	67304	93600	172	233	LWRE 6350	LWAKE 6×24
LWRE 6400 KIT	73781	105300	208	267	LWRE 6400	LWAKE 6×27

* Load ratings for 10 rolling elements
Including 8 end stops LWERE 6

See page 81 for drawing

Designations	Load ratings* dynamic C	static C_0	Stroke min.	max.	Rail designations	Cage designations
	N		mm			
LWRE 90200 KIT	78000	78000	80	133	LWRE 90200	LWAKE 9×10
LWRE 90300 KIT	112540	124800	88	200	LWRE 90300	LWAKE 9×16
LWRE 90400 KIT	139132	163800	128	267	LWRE 90400	LWAKE 9×21

* Load ratings for 10 rolling elements
Including 8 end stops LWERE 9

See page 81 for drawing

LWRE 3/4/6/9 .. ACS - KIT

4 rail guides LWRE ACS
2 crossed roller assemblies LWAKE
8 end pieces LWERE

Designations	Load ratings* dynamic	static	Stroke		Rail designations	Cage designations
	C	C_0	min.	max.		
	N		mm			
LWRE 3050 ACS-KIT	4230	5100	20	33	LWRE 3050 ACS	LWAKE 3×6 ACS-C
LWRE 3075 ACS-KIT	5294	6800	30	50	LWRE 3075 ACS	LWAKE 3×6 ACS
LWRE 3100 ACS-KIT	6300	8500	45	67	LWRE 3100 ACS	LWAKE 3×10 ACS
LWRE 3125 ACS-KIT	7731	11050	62	83	LWRE 3125 ACS	LWAKE 3×13 ACS
LWRE 3150 ACS-KIT	9090	13600	79	100	LWRE 3150 ACS	LWAKE 3×16 ACS
LWRE 3175 ACS-KIT	9964	15300	94	117	LWRE 3175 ACS	LWAKE 3×18 ACS
LWRE 3200 ACS-KIT	11653	18700	100	133	LWRE 3200 ACS	LWAKE 3×22 ACS

* Load ratings for 10 rolling elements
Including 8 end stops LWERE 3

See page 81 for drawing

Designations	Load ratings* dynamic	static	Stroke		Rail designations	Cage designations
	C	C_0	min.	max.		
	N		mm			
LWRE 4100 ACS-KIT	14536	16640	40	67	LWRE 4100 ACS	LWAKE 4×8 ACS
LWRE 4150 ACS-KIT	19944	24960	79	100	LWRE 4150 ACS	LWAKE 4×12 ACS
LWRE 4200 ACS-KIT	26170	35360	96	133	LWRE 4200 ACS	LWAKE 4×17 ACS
LWRE 4250 ACS-KIT	30859	43680	129	167	LWRE 4250 ACS	LWAKE 4×21 ACS
LWRE 4300 ACS-KIT	36452	54080	152	200	LWRE 4300 ACS	LWAKE 4×26 ACS
LWRE 4350 ACS-KIT	41813	64480	175	233	LWRE 4350 ACS	LWAKE 4×31 ACS
LWRE 4400 ACS-KIT	45964	72800	203	267	LWRE 4400 ACS	LWAKE 4×35 ACS

* Load ratings for 10 rolling elements
Including 8 end stops LWERE 4

See page 81 for drawing

Designations	Load ratings* dynamic	static	Stroke		Rail designations	Cage designations
	C	C_0	min.	max.		
	N		mm			
LWRE 6100 ACS-KIT	22826	23400	37	67	LWRE 6100 ACS	LWAKE 6×6 ACS
LWRE 6150 ACS-KIT	31318	35100	71	100	LWRE 6150 ACS	LWAKE 6×9 ACS
LWRE 6200 ACS-KIT	39196	46800	105	133	LWRE 6200 ACS	LWAKE 6×12 ACS
LWRE 6250 ACS-KIT	49056	62400	117	167	LWRE 6250 ACS	LWAKE 6×16 ACS
LWRE 6300 ACS-KIT	56093	74100	151	200	LWRE 6300 ACS	LWAKE 6×19 ACS
LWRE 6350 ACS-KIT	65107	89700	163	233	LWRE 6350 ACS	LWAKE 6×23 ACS
LWRE 6400 ACS-KIT	71640	101400	197	267	LWRE 6400 ACS	LWAKE 6×36 ACS

* Load ratings for 10 rolling elements
Including 8 end stops LWERE 6

See page 81 for drawing

Designations	Load ratings* dynamic	static	Stroke		Rail designations	Cage designations
	C	C_0	min.	max.		
	N		mm			
LWRE 90200 ACS-KIT	65540	62400	100	133	LWRE 90200 ACS	LWAKE 6×8 ACS
LWRE 90300 ACS-KIT	95713	101400	140	200	LWRE 90300 ACS	LWAKE 6×13 ACS
LWRE 90400 ACS-KIT	123369	140400	180	267	LWRE 90400 ACS	LWAKE 6×18 ACS

* Load ratings for 10 rolling elements
Including 8 end stops LWERE 9

See page 81 for drawing

LWRE 3

Designations	Dimensions													Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	t	C	C_0
	mm													N	
Rails															
LWRE 3050	18	8	50		25	13	M4	3.3	6	3.2	8.7				
LWRE 3075	18	8	75		25	13	M4	3.3	6	3.2	8.7				
LWRE 3100	18	8	100		25	13	M4	3.3	6	3.2	8.7				
LWRE 3125	18	8	125		25	13	M4	3.3	6	3.2	8.7				
LWRE 3150	18	8	150		25	13	M4	3.3	6	3.2	8.7				
LWRE 3175	18	8	175		25	13	M4	3.3	6	3.2	8.7				
LWRE 3200	18	8	200		25	13	M4	3.3	6	3.2	8.7				
Crossed roller assemblies															
LWAKE 3												4	6.25	6300	8500
End pieces															
LWERE 3			2	–											
LWEREC 3			–	4											
Special attachment screw															
LWGD 3															

See page 81 for drawing

* Load ratings for 10 rolling elements

LWRE 2211

Designations	Dimensions															Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	t	t_1	t_2	C	C_0
	mm															N	
Rails																	
LWRE 22110080	22	11	80		40	20	M5	4.3	7.5	4.1	11	4	6.25	2.65	3.6	6300	8500
LWRE 22110120	22	11	120		40	20	M5	4.3	7.5	4.1	11	4	6.25	2.65	3.6	6300	8500
LWRE 22110160	22	11	160		40	20	M5	4.3	7.5	4.1	11	4	6.25	2.65	3.6	6300	8500
LWRE 22110200	22	11	200		40	20	M5	4.3	7.5	4.1	11	4	6.25	2.65	3.6	6300	8500
LWRE 22110240	22	11	240		40	20	M5	4.3	7.5	4.1	11	4	6.25	2.65	3.6	6300	8500
LWRE 22110280	22	11	280		40	20	M5	4.3	7.5	4.1	11	4	6.25	2.65	3.6	6300	8500
LWRE 22110320	22	11	320		40	20	M5	4.3	7.5	4.1	11	4	6.25	2.65	3.6	6300	8500
LWRE 22110360	22	11	360		40	20	M5	4.3	7.5	4.1	11	4	6.25	2.65	3.6	6300	8500
LWRE 22110400	22	11	400		40	20	M5	4.3	7.5	4.1	11	4	6.25	2.65	3.6	6300	8500
Crossed roller assemblies																	
LWAKE 3												4	6.25			6300	8500
End pieces																	
LWERE 3			2	–													
LWEREC 3			–	4													

See page 81 for drawing

* Load ratings for 10 rolling elements

LWRE 4

Designations	Dimensions												Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	t	C	C_0
	mm													N	
Rails															
LWRE 4100	25	12	100		25	13	M4	3.3	6	3.2	12				
LWRE 4150	25	12	150		25	13	M4	3.3	6	3.2	12				
LWRE 4200	25	12	200		25	13	M4	3.3	6	3.2	12				
LWRE 4250	25	12	250		25	13	M4	3.3	6	3.2	12				
LWRE 4300	25	12	300		25	13	M4	3.3	6	3.2	12				
LWRE 4400	25	12	400		25	13	M4	3.3	6	3.2	12				
Crossed roller assemblies															
LWAKE 4												6.5	8	17300	20800
End pieces															
LWERE 4			4	–											
Special attachment screw															
LWGD 4															

* Load ratings for 10 rolling elements

See page 81 for drawing

LWRE 6

Designations	Dimensions												Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	t	C	C_0
	mm													N	
Rails															
LWRE 6100	31	15	100		50	25	M6	5.2	9.5	5.2	15				
LWRE 6150	31	15	150		50	25	M6	5.2	9.5	5.2	15				
LWRE 6200	31	15	200		50	25	M6	5.2	9.5	5.2	15				
LWRE 6250	31	15	250		50	25	M6	5.2	9.5	5.2	15				
LWRE 6300	31	15	300		50	25	M6	5.2	9.5	5.2	15				
LWRE 6400	31	15	400		50	25	M6	5.2	9.5	5.2	15				
Crossed roller assemblies															
LWAKE 6												8	11	34000	39000
End pieces															
LWERE 6			3	–											
LWEREC 6			–	5											
Special attachment screw															
LWGD 6															

* Load ratings for 10 rolling elements

See page 81 for drawing

LWRE 9

Designations	Dimensions												Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W t	C	C_0
	mm												N	
Rails														
LWRE 90200	44	22	200		100	50	M8	6.8	11	6.2	22			
LWRE 90300	44	22	300		100	50	M8	6.8	11	6.2	22			
LWRE 90400	44	22	400		100	50	M8	6.8	11	6.2	22			
LWRE 90500	44	22	500		100	50	M8	6.8	11	6.2	22			
LWRE 90600	44	22	600		100	50	M8	6.8	11	6.2	22			
LWRE 90700	44	22	700		100	50	M8	6.8	11	6.2	22			
Crossed roller assemblies														
LWAKE 9												12 16	78000	78000
End pieces														
LWERE 9			3	–										
LWEREC 9			–	6										
Special attachment screw														
LWGD 9														

* Load rating for 10 rolling elements

See page 81 for drawing

LWRE 3 ACS

Designations	Dimensions													Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W t	t_3	C	C_0
	mm													N	
Rails															
LWRE 3050 ACS	18	8	50		25	13	M4	3.3	6	3.2	8.7		9		
LWRE 3075 ACS	18	8	75		25	13	M4	3.3	6	3.2	8.7		9		
LWRE 3100 ACS	18	8	100		25	13	M4	3.3	6	3.2	8.7		9		
LWRE 3125 ACS	18	8	125		25	13	M4	3.3	6	3.2	8.7		9		
LWRE 3150 ACS	18	8	150		25	13	M4	3.3	6	3.2	8.7		9		
LWRE 3175 ACS	18	8	175		25	13	M4	3.3	6	3.2	8.7		9		
LWRE 3200 ACS	18	8	200		25	13	M4	3.3	6	3.2	8.7		9		
Crossed roller assemblies															
LWAKE 3 ACS												4 6.25		6300	8500
End pieces															
LWERE 3			2	–											
LWEREC 3			–	4											
Special attachment screw															
LWGD 3															

* Load rating for 10 rolling elements

See page 81 for drawing

LWRE 2211 ACS

Designations	Dimensions													Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	t	t_3	C	C_0
	mm														N	
Rails																
LWRE 22110080 ACS	22	11	80		40	20	M5	4.3	7.5	4.1	11			9		
LWRE 22110120 ACS	22	11	120		40	20	M5	4.3	7.5	4.1	11			9		
LWRE 22110160 ACS	22	11	160		40	20	M5	4.3	7.5	4.1	11			9		
LWRE 22110200 ACS	22	11	200		40	20	M5	4.3	7.5	4.1	11			9		
LWRE 22110240 ACS	22	11	240		40	20	M5	4.3	7.5	4.1	11			9		
LWRE 22110280 ACS	22	11	280		40	20	M5	4.3	7.5	4.1	11			9		
LWRE 22110320 ACS	22	11	320		40	20	M5	4.3	7.5	4.1	11			9		
LWRE 22110360 ACS	22	11	360		40	20	M5	4.3	7.5	4.1	11			9		
LWRE 22110400 ACS	22	11	400		40	20	M5	4.3	7.5	4.1	11			9		
Crossed roller assemblies																
LWAKE 3 ACS												4	6.25		6300	8500
End pieces																
LWERE 3. LWEREC 3																

See page 81 for drawing

* Load ratings for 10 rolling elements

LWRE 4 ACS

Designations	Dimensions													Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	t	t_3	C	C_0
	mm														N	
Rails																
LWRE 4100 ACS	25	12	100		25	13	M4	3.3	6	3.2	12			17		
LWRE 4150 ACS	25	12	150		25	13	M4	3.3	6	3.2	12			17		
LWRE 4200 ACS	25	12	200		25	13	M4	3.3	6	3.2	12			17		
LWRE 4250 ACS	25	12	250		25	13	M4	3.3	6	3.2	12			17		
LWRE 4300 ACS	25	12	300		25	13	M4	3.3	6	3.2	12			17		
LWRE 4350 ACS	25	12	350		25	13	M4	3.3	6	3.2	12			17		
LWRE 4400 ACS	25	12	400		25	13	M4	3.3	6	3.2	12			17		
Crossed roller assemblies																
LWAKE 4 ACS												6.5	8		17300	20800
End pieces																
LWERE 4			4	–												
Special attachment screw																
LWGD 4																

See page 81 for drawing

* Load ratings for 10 rolling elements

LWRE 6 ACS

Designations	Dimensions													Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	t	t_3	C	C_0
	mm														N	
Rails																
LWRE 6100 ACS	31	15	100		50	25	M6	5.2	9.5	5.2	15			15.3		
LWRE 6150 ACS	31	15	150		50	25	M6	5.2	9.5	5.2	15			15.3		
LWRE 6200 ACS	31	15	200		50	25	M6	5.2	9.5	5.2	15			15.3		
LWRE 6250 ACS	31	15	250		50	25	M6	5.2	9.5	5.2	15			15.3		
LWRE 6300 ACS	31	15	300		50	25	M6	5.2	9.5	5.2	15			15.3		
LWRE 6400 ACS	31	15	400		50	25	M6	5.2	9.5	5.2	15			15.3		
Crossed roller assemblies																
LWAKE 6 ACS												8	11		34000	39000
End pieces																
LWERE 6			3	–												
LWEREC 6			–	5												
Special attachment screw																
LWGD 6																

* Load ratings for 10 rolling elements

See page 81 for drawing

LWRE 9 ACS

Designations	Dimensions													Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	D_W	t	t_3	C	C_0
	mm														N	
Rails																
LWRE 90200 ACS	44	22	200		100	50	M8	6.8	11	6.2	22			22		
LWRE 90300 ACS	44	22	300		100	50	M8	6.8	11	6.2	22			22		
LWRE 90400 ACS	44	22	400		100	50	M8	6.8	11	6.2	22			22		
LWRE 90500 ACS	44	22	500		100	50	M8	6.8	11	6.2	22			22		
LWRE 90600 ACS	44	22	600		100	50	M8	6.8	11	6.2	22			22		
LWRE 90700 ACS	44	22	700		100	50	M8	6.8	11	6.2	22			22		
Crossed roller assemblies																
LWAKE 9 ACS												12	16		78000	78000
End pieces																
LWERE 9			3	–												
LWEREC 9			–	6												
Special attachment screw																
LWGD 9																

* Load ratings for 10 rolling elements

See page 81 for drawing

LWRM .. / LWRV ..

Guiding systems with high load carrying capacity and maximum stiffness

Needle roller assemblies for LWRM/LWRV rail guides

LWHV needle roller assemblies consisting of a plastic cage with retained needle rollers, are available for rail guides of sizes 6 and 9. The elastic connection between the two cage sections for the two roller rows enables the cage to bend at any angle.

LWHW needle roller assemblies have aluminium cages which provide retention of the needle rollers. They are available for size 9 units.

When ordering, the appropriate cage length in mm must be stated after the cage designation, e. g: LWHV 10 × 225.

End pieces for LWRM/LWRV rail guides.

End pieces serve to restrict the drift of the needle roller assemblies from the loaded zone.

LWERM and LWERV end pieces are suitable for both horizontal and vertical applications.

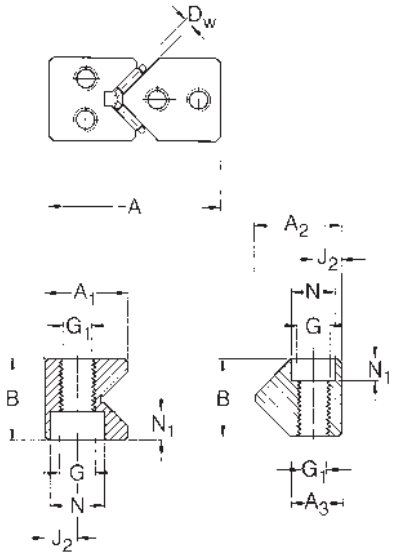
LWEARM and LWEARV end pieces are fitted with a plastic wiper with a sealing lip serving to reduce the risk of contamination of the raceways.

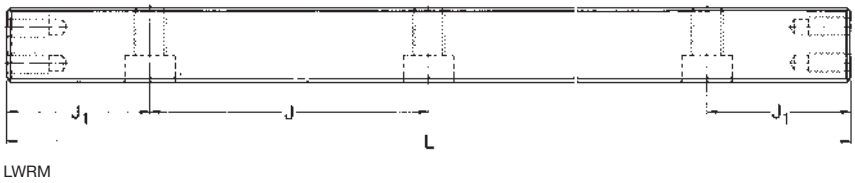
All end pieces are supplied with the necessary attachment screws.

The mounting and attachment dimensions of the LWRM/LWRV rail guides conform to those of the other SKF modular range rail guides included in this catalogue.
Because of the large number of possible combinations, all components of LWRM/ LWRV rail guides must be ordered separately, e.g.:

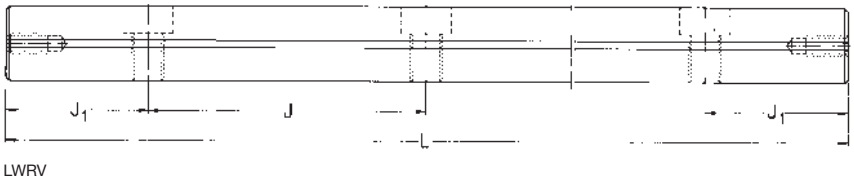
2 rail guides LWRM
2 rail guides LWRV
2 needle roller assemblies LWHW
2 end pieces LWERM.

Rails



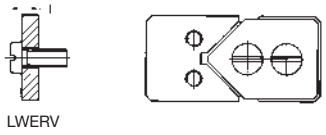


LWRM

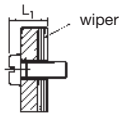


LWRV

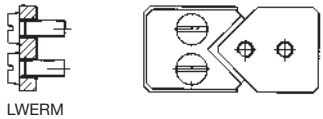
End pieces



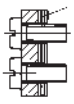
LWERV



LWEARV
with wiper

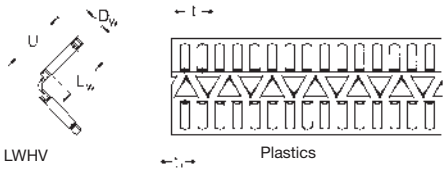


LWERM



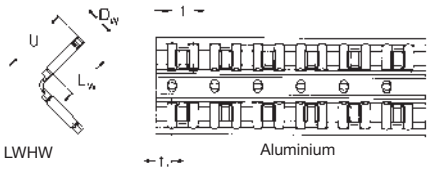
LWEARM
with wiper

Rolling element assemblies



LWHV

Plastics



LWHW

Aluminium

Special attachment screw

LWGD

LWRM 6 / LWRV 6

Designations	Dimensions															Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	A_2	A_3	D_W	U	t	C	C_0
	mm																N	
Rails																		
LWRM/LWRV 6100	31	15	100		50	25	M6	5.2	9.5	5.2	17	18	11					
LWRM/LWRV 6150	31	15	150		50	25	M6	5.2	9.5	5.2	17	18	11					
LWRM/LWRV 6200	31	15	200		50	25	M6	5.2	9.5	5.2	17	18	11					
LWRM/LWRV 6250	31	15	250		50	25	M6	5.2	9.5	5.2	17	18	11					
LWRM/LWRV 6300	31	15	300		50	25	M6	5.2	9.5	5.2	17	18	11					
LWRM/LWRV 6400	31	15	400		50	25	M6	5.2	9.5	5.2	17	18	11					
Needle roller assemblies																		
LWHV 10														2	10	3.75	10400	25500
End pieces																		
LWERM 6			4	–														
LWEARM 6			–	6														
LWERV 6			4	–														
LWEARV 6			–	6														
Special attachment screw																		
LWGD 6																		

* For 10 needle rollers per row

See page 89 for drawing

LWRM 9 / LWRV 9

Designations	Dimensions															Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	G_1	N	N_1	A_1	A_2	A_3	D_W	U	t	C	C_0
	mm																N	
Rails																		
LWRM/LWRV 90200	44	22	200		100	50	M8	6.8	11	6.2	23.1	27	17					
LWRM/LWRV 90300	44	22	300		100	50	M8	6.8	11	6.2	23.1	27	17					
LWRM/LWRV 90400	44	22	400		100	50	M8	6.8	11	6.2	23.1	27	17					
LWRM/LWRV 90500	44	22	500		100	50	M8	6.8	11	6.2	23.1	27	17					
Needle roller assemblies																		
LWHW 15														2	15	4.5	16300	4500
LWHV 15														2	15	3.75	16300	4500
End pieces																		
LWERM 9			6.3	–														
LWEARM 9			–	8.3														
LWERV 9			6.3	–														
LWEARV 9			–	8.3														
Special attachment screw																		
LWGD 9																		

* For 10 needle rollers per row

See page 89 for drawing

LWRPM .. / LWRPV ..

Linear rail guides for limited travel, with slideway liners made of Turcite-B®1).

This material, based on PTFE, is self-lubricating and possesses excellent sliding properties.

The dry sliding liner is attached to the unhardened LWRPM rail with adhesive, and the surface is then ground.

In order to avoid damage to the sliding surface, the leading edges of the LWRPV rails are slightly rounded.

The dimensions of these rails are the same as those of the LWRV series.

LWRPM/LWRPV rail guides are the best choice where, because of external influences, rail guides incorporating rolling element assemblies are unsuitable.

Such applications include those where high shock loads occur which could cause indentation of the rolling elements in the raceways, or where extremely short strokes are required.

The unfavourable tribological conditions produced by such operating conditions would give rise to raceway pitting in a rolling element rail guide.

The mounting and attachment dimensions of the LWRPM/LWRPV rail guides conform to those of the SKF modular range rail guides included in this catalogue.

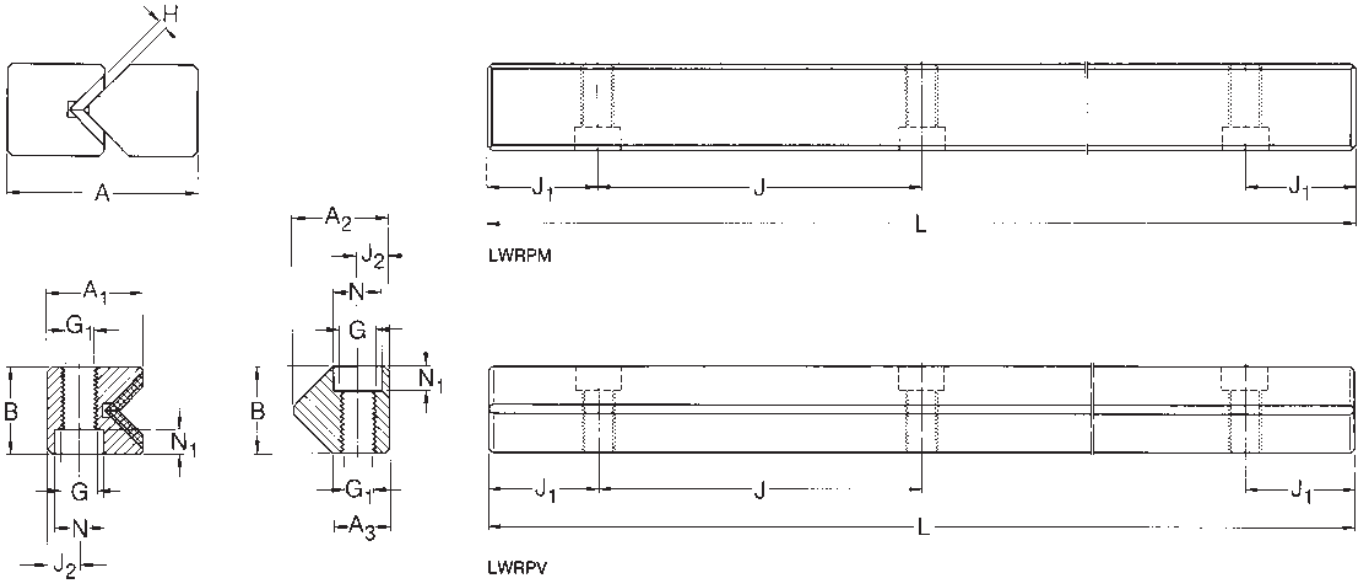
LWRPM/LWRPV rail guides are characterised by:
– stick-slip-free operation
– smooth running
– good emergency running properties
– low wear and high reliability
– insensitivity to contamination
– very good vibration damping properties.

When ordering, the individual components of the rail guides must be specified, e. g:

2 rails LWRPM 6300
2 rails LWRPV 6300

1) Turcite-B® is a registered trademark of Busak & Shamban GmbH.

Rails



End pieces

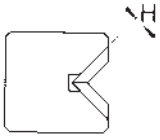
Because of their design, rail guides of these series do not normally require end pieces.

Slide liners

The raceways of LWRPM rail guides are provided with liners which are attached using adhesive and subsequently ground to size.
No special instructions are required for ordering the liner material.

Special attachment screw

LWGD



LWRPM 3

Designations	Dimensions													Dynamic load-carrying capacities*
	A	B	L	H	J	J_1	G	G_1	N	N_1	A_1	A_2	A_3	C
	mm													N
Rails														
LWRPM 3050	18	8	50	0.7	25	13	M4	3.3	6	3.2	9.5	9.6	6.5	300 N / 100 mm
LWRPM 3075	18	8	75	0.7	25	13	M4	3.3	6	3.2	9.5	9.6	6.5	
LWRPM 3100	18	8	100	0.7	25	13	M4	3.3	6	3.2	9.5	9.6	6.5	
LWRPM 3125	18	8	125	0.7	25	13	M4	3.3	6	3.2	9.5	9.6	6.5	
LWRPM 3150	18	8	150	0.7	25	13	M4	3.3	6	3.2	9.5	9.6	6.5	
LWRPM 3175	18	8	150	0.7	25	13	M4	3.3	6	3.2	9.5	9.6	6.5	
LWRPM 3200	18	8	200	0.7	25	13	M4	3.3	6	3.2	9.5	9.6	6.5	
Special attachment screw														
LWGD 3														

See page 91 for drawing

* For a surface loading of approx. 1 N/mm^2 (momentary loads of up to 6 N/mm^2 are permissible)

LWRPV 3

Designations	Dimensions											
	A	B	L	J	J_1	G	G_1	N	N_1	A_1	A_2	A_3
	mm											
Rails												
LWRPV 3050	18	8	50	25	13	M4	3.3	6	3.2	9.5	9.6	6.5
LWRPV 3075	18	8	75	25	13	M4	3.3	6	3.2	9.5	9.6	6.5
LWRPV 3100	18	8	100	25	13	M4	3.3	6	3.2	9.5	9.6	6.5
LWRPV 3125	18	8	125	25	13	M4	3.3	6	3.2	9.5	9.6	6.5
LWRPV 3150	18	8	150	25	13	M4	3.3	6	3.2	9.5	9.6	6.5
LWRPV 3175	18	8	175	25	13	M4	3.3	6	3.2	9.5	9.6	6.5
LWRPV 3200	18	8	200	25	13	M4	3.3	6	3.2	9.5	9.6	6.5
Special attachment screw												
LWGD 3												

See page 91 for drawing

LWRPM 6

Designations	Dimensions													Dynamic load-carrying capacities*
	A	B	L	H	J	J_1	G	G_1	N	N_1	A_1	A_2	A_3	C
	mm													N
Rails														
LWRPM 6100	31	15	100	1.7	50	25	M6	5.2	9.5	5.2	17	18	11	700 N / 100 mm
LWRPM 6150	31	15	150	1.7	50	25	M6	5.2	9.5	5.2	17	18	11	
LWRPM 6200	31	15	200	1.7	50	25	M6	5.2	9.5	5.2	17	18	11	
LWRPM 6250	31	15	250	1.7	50	25	M6	5.2	9.5	5.2	17	18	11	
LWRPM 6300	31	15	300	1.7	50	25	M6	5.2	9.5	5.2	17	18	11	
LWRPM 6400	31	15	400	1.7	50	25	M6	5.2	9.5	5.2	17	18	11	
LWRPM 6500	31	15	500	1.7	50	25	M6	5.2	9.5	5.2	17	18	11	
Special attachment screw														
LWGD 6														

See page 91 for drawing

* For a surface loading of approx. 1 N/mm^2 (momentary loads of up to 6 N/mm^2 are permissible)

LWRPV 6

Designations	Dimensions											
	A	B	L	J	J_1	G	G_1	N	N_1	A_1	A_2	A_3
	mm											
Rails												
LWRPV 6100	31	15	100	50	25	M6	5.2	9.5	5.2	17	18	11
LWRPV 6150	31	15	150	50	25	M6	5.2	9.5	5.2	17	18	11
LWRPV 6200	31	15	200	50	25	M6	5.2	9.5	5.2	17	18	11
LWRPV 6250	31	15	250	50	25	M6	5.2	9.5	5.2	17	18	11
LWRPV 6300	31	15	300	50	25	M6	5.2	9.5	5.2	17	18	11
LWRPV 6400	31	15	400	50	25	M6	5.2	9.5	5.2	17	18	11
LWRPV 6500	31	15	500	50	25	M6	5.2	9.5	5.2	17	18	11
Special attachment screw												
LWGD 6												

See page 91 for drawing

LWRPM 9

Designations	Dimensions													Dynamic load-carrying capacities*
	A	B	L	H	J	J_1	G	G_1	N	N_1	A_1	A_2	A_3	C
	mm													N
Rails														
LWRPM 90200	44	22	200	1.7	100	50	M8	6.8	11	6.2	23	27	17	1200 N / 100 mm
LWRPM 90300	44	22	300	1.7	100	50	M8	6.8	11	6.2	23	27	17	
LWRPM 90400	44	22	400	1.7	100	50	M8	6.8	11	6.2	23	27	17	
LWRPM 90500	44	22	500	1.7	100	50	M8	6.8	11	6.2	23	27	17	
Special attachment screw														
LWGD 9														

See page 91 for drawing

* For a surface loading of approx. 1 N/mm^2 (momentary loads of up to 6 N/mm^2 are permissible)

LWRPV 9

Designations	Dimensions											
	A	B	L	J	J_1	G	G_1	N	N_1	A_1	A_2	A_3
	mm											
Rails												
LWRPV 90200	44	22	200	100	50	M8	6.8	11	6.2	23	27	17
LWRPV 90300	44	22	300	100	50	M8	6.8	11	6.2	23	27	17
LWRPV 90400	44	22	400	100	50	M8	6.8	11	6.2	23	27	17
LWRPV 90500	44	22	500	100	50	M8	6.8	11	6.2	23	27	17
Special attachment screw												
LWGD 9												

See page 91 for drawing

LWM .. / LWV ..

These rail guides enable the design of linear guiding systems for heavy loads with maximum stiffness. The internal geometry is identical with that of the modular range rails of the LWRM/LWRV series. As the same needle roller assembly is used, the load bearing characteristics are identical. The external dimensions of the LWM/LWV rail guides, however, differ slightly from those of the LWRM/LWRV modular range dimensions.

LWM/LWV rail guides are widely used in machine tools. LWM/LWV rail guides have as standard attachment hole type 15, i.e. through hole with countersinking.

If attachment hole type 13 is ordered, corresponding threaded inserts are supplied along with the guide.

For new designs the choice of LWRM/LWRV rail guides is recommended. These offer the advantage of being interchangeable with other rail guides of the modular range.

Needle roller assemblies for LWM/LWV rail guides

LWHV needle roller assemblies have a plastic cage with retained needle rollers. The elastic connection between the two cage sections for the two roller rows enables the cage to bend at any angle.

LWHW needle roller assemblies comprise an aluminium cage with needle rollers arranged at right angles to each other. The needle rollers are retained by the cage.

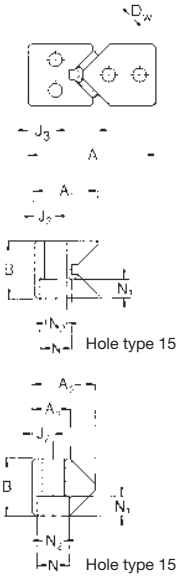
End pieces for LWM/LWV rail guides

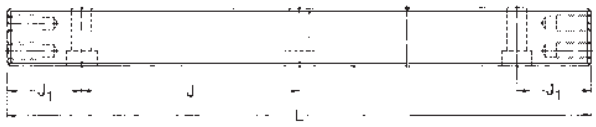
End pieces serve to prevent drift of the cage from the loaded zone. LWEM and LWEV end pieces are suitable for horizontally and vertically mounted rail guides.

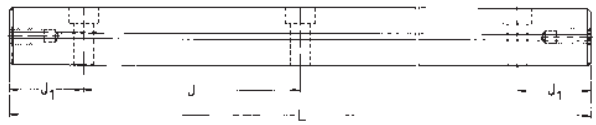
In addition, LWEAM and LWEAV end pieces are fitted with a plastic wiper with sealing lip which serves to keep the track free from dirt.

All end pieces are supplied together with attachment screws. It is recommended that rail guides longer than 1200 mm should be made up of sections. If, for design reasons, single-piece rails are required, these can be supplied to special order.

Rails

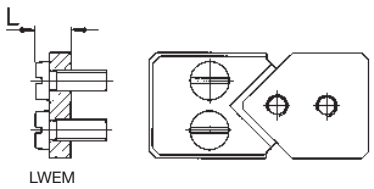


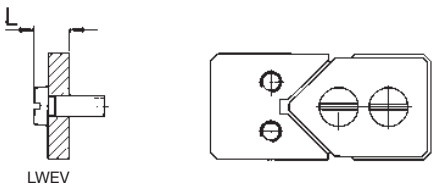


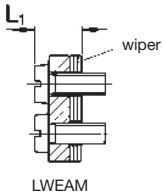


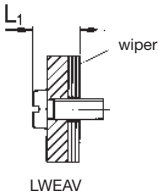
Special attachment screw

End pieces

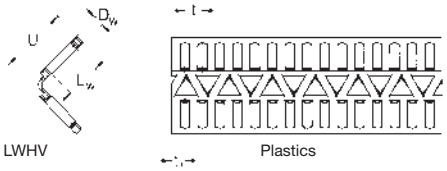


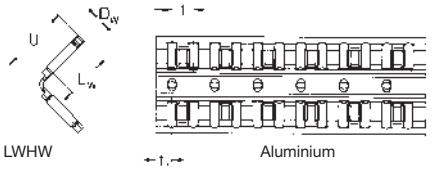






Rolling element assemblies





LWM 3015 / LWV 3015

Designations	Dimensions															Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	N	N_1	N_2	A_1	A_2	A_3	D_W	U	t	C	C_0
	mm																N	
Rails																		
LWM/LWV 3015100	30	15	100		40	15	M4	8.5	4.5	5.3	16	17	11					
LWM/LWV 3015150	30	15	150		40	15	M4	8.5	4.5	5.3	16	17	11					
LWM/LWV 3015200	30	15	200		40	15	M4	8.5	4.5	5.3	16	17	11					
LWM/LWV 3015300	30	15	300		40	15	M4	8.5	4.5	5.3	16	17	11					
Needle roller assemblies																		
LWHV10														2	10	3.75	10400	25500
End pieces																		
LWEM 3015				4	–													
LWEAM 3015				–	6													
LWEV 3015				4	–													
LWEAV 3015				–	6													
Appropriate attachment screw																		
M3 DIN 84																		

* For 10 needle rollers per row

See page 94 for drawing

LWM 4020 / LWV 4020

Designations	Dimensions															Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	N	N_1	N_2	A_1	A_2	A_3	D_W	U	t	C	C_0
	mm																N	
Rails																		
LWM/LWV 4020100	40	20	100		80	15	M6	12	6.8	7.5	22	22	14					
LWM/LWV 4020150	40	20	150		80	15	M6	12	6.8	7.5	22	22	14					
LWM/LWV 4020200	40	20	200		80	15	M6	12	6.8	7.5	22	22	14					
LWM/LWV 4020300	40	20	300		80	15	M6	12	6.8	7.5	22	22	14					
LWM/LWV 4020400	40	20	400		80	15	M6	12	6.8	7.5	22	22	14					
Needle roller assemblies																		
LWHW 15														2	15	4.5	16300	45000
LWHV 15														2	15	3.75	16300	45000
End pieces																		
LWEM 4020				6.3	–													
LWEAM 4020				–	8.3													
LWEV 4020				6.3	–													
LWEAV 4020				–	8.3													
Appropriate attachment screw																		
M5 DIN 84																		

* For 10 needle rollers per row

See page 94 for drawing

LWM 5025 / LWV 5025

Designations	Dimensions														Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	N	N_1	N_2	A_1	A_2	A_3	D_W	U	t	C	C_0
	mm																N	
Rails																		
LWM/LWV 50250100	50	25	100		80	20	M6	12	6.8	7.5	28	28	17					
LWM/LWV 50250200	50	25	200		80	20	M6	12	6.8	7.5	28	28	17					
LWM/LWV 50250300	50	25	300		80	20	M6	12	6.8	7.5	28	28	17					
LWM/LWV 50250400	50	25	400		80	20	M6	12	6.8	7.5	28	28	17					
LWM/LWV 50250500	50	25	500		80	20	M6	12	6.8	7.5	28	28	17					
Needle roller assemblies																		
LWHW 15														2	15	4.5	16300	45000
LWHV 15														2	15	3.75	16300	45000
End pieces																		
LWEM 5025				6.9	–													
LWEAM 5025				–	8.9													
LWEV 5025				6.9	–													
LWEAV 5025				–	8.9													
Appropriate attachment screw																		
M6 DIN 84																		

See page 94 for drawing

* For 10 needle rollers per row

LWM 6035 / LWV 6035

(On request)

Designations	Dimensions														Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	N	N_1	N_2	A_1	A_2	A_3	D_W	U	t	C	C_0
	mm																N	
Rails																		
LWM/LWV 60350200	60	35	200		100	20	M8	15	9	10	36	36	20					
LWM/LWV 60350300	60	35	300		100	20	M8	15	9	10	36	36	20					
LWM/LWV 60350400	60	35	400		100	20	M8	15	9	10	36	36	20					
LWM/LWV 60350500	60	35	500		100	20	M8	15	9	10	36	36	20					
LWM/LWV 60350600	60	35	600		100	20	M8	15	9	10	36	36	20					
LWM/LWV 60350700	60	35	700		100	20	M8	15	9	10	36	36	20					
LWM/LWV 60350800	60	35	800		100	20	M8	15	9	10	36	36	20					
LWM/LWV 60350900	60	35	900		100	20	M8	15	9	10	36	36	20					
LWM/LWV 60351000	60	35	1000		100	20	M8	15	9	10	36	36	20					
Needle roller assemblies																		
LWHW 20														2.5	20	5.5	32000	88000
LWHV 20														2.5	20	5	32000	88000
End pieces																		
LWEM 6035				6.9	–													
LWEAM 6035				–	8.9													
LWEV 6035				6.9	–													
LWEAV 6035				–	8.9													
Appropriate attachment screw																		
M6 DIN 84																		

See page 94 for drawing

* For 10 needle rollers per row

LWM 7040 / LWV 7040

(On request)

Designations	Dimensions															Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	N	N_1	N_2	A_1	A_2	A_3	D_W	U	t	C	C_0
	mm																N	
Rails																		
LWM/LWV 70400200	70	40	200		100	20	M10	19	11	13	40	42	24					
LWM/LWV 70400300	70	40	300		100	20	M10	19	11	13	40	42	24					
LWM/LWV 70400400	70	40	400		100	20	M10	19	11	13	40	42	24					
LWM/LWV 70400500	70	40	500		100	20	M10	19	11	13	40	42	24					
LWM/LWV 70400600	70	40	600		100	20	M10	19	11	13	40	42	24					
LWM/LWV 70400700	70	40	700		100	20	M10	19	11	13	40	42	24					
LWM/LWV 70400800	70	40	800		100	20	M10	19	11	13	40	42	24					
LWM/LWV 70400900	70	40	900		100	20	M10	19	11	13	40	42	24					
LWM/LWV 70401000	70	40	1000		100	20	M10	19	11	13	40	42	24					
Needle roller assemblies																		
LWHW 25														3	25	6	52000	143000
End pieces																		
LWEM 7040				6.9	–													
LWEAM 7040				–	8.9													
LWEV 7040				6.9	–													
LWEAV 7040				–	8.9													
Appropriate attachment screw																		
M6 DIN 84																		

* For 10 needle rollers per row

See page 94 for drawing

LWM 8050 / LWV 8050

(On request)

Designations	Dimensions															Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	N	N_1	N_2	A_1	A_2	A_3	D_W	U	t	C	C_0
	mm																N	
Rails																		
LWM/LWV 80500200	80	50	200		100	20	M12	20	13	14	45	49	26					
LWM/LWV 80500300	80	50	300		100	20	M12	20	13	14	45	49	26					
LWM/LWV 80500400	80	50	400		100	20	M12	20	13	14	45	49	26					
LWM/LWV 80500500	80	50	500		100	20	M12	20	13	14	45	49	26					
LWM/LWV 80500600	80	50	600		100	20	M12	20	13	14	45	49	26					
LWM/LWV 80500700	80	50	700		100	20	M12	20	13	14	45	49	26					
LWM/LWV 80500800	80	50	800		100	20	M12	20	13	14	45	49	26					
LWM/LWV 80500900	80	50	900		100	20	M12	20	13	14	45	49	26					
LWM/LWV 80501000	80	50	1000		100	20	M12	20	13	14	45	49	26					
Needle roller assemblies																		
LWHW 30														3.5	30	7	76500	212000
End pieces																		
LWEM 8050				6.9	–													
LWEAM 8050				–	8.9													
LWEV 8050				6.9	–													
LWEAV 8050				–	8.9													
Appropriate attachment screw																		
M6 DIN 84																		

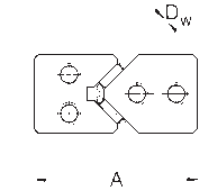
* For 10 needle rollers per row

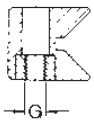
See page 94 for drawing

LWN .. / LWO ..

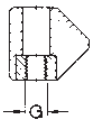
Differ from the LWM/LWV rail guides only in height, width and attachment holes. The internal geometry of the two series is the same and their load ratings are identical.
LWN/LWO rail guides are supplied to tolerance P10, P5 and P2 to order.

Rails

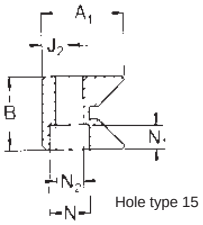




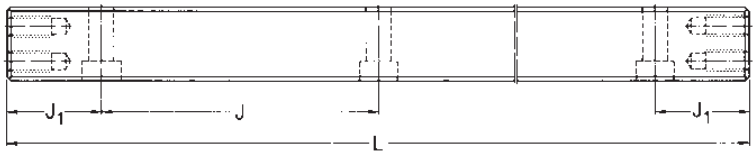
Hole type 13



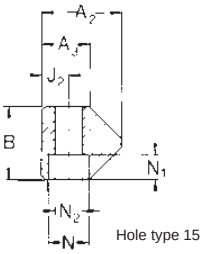
Hole type 13



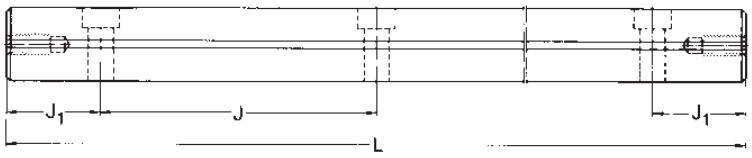
Hole type 15



LWN rail

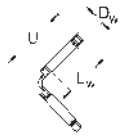


Hole type 15

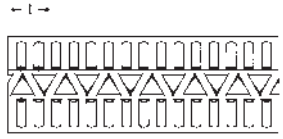


LWO rail

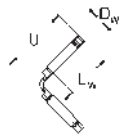
Rolling element assemblies



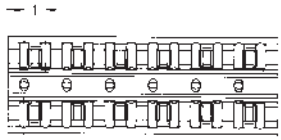
LWHV



Plastics

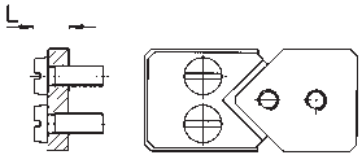


LWHW

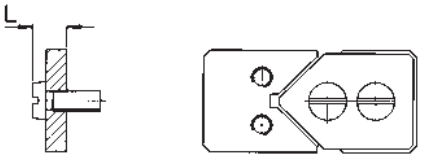


Aluminium

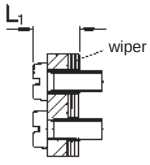
End pieces



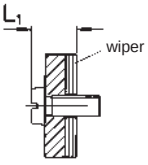
LWEN



LWEO



LWEAN
with wiper



LWEAO
with wiper

Special assembly screw

LWGD

LWN 2025 / LWO 2025
(On request)

Designations	Dimensions*															Load ratings* dynamic	static
	A	B	L	L_1	J	J_1	G	N	N_1	N_2	A_1	A_2	A_3	D_W	U	t	C	C_0
	mm																N	
Rails																		
LWN/LWO 20250200	52	25	200		1×100	50	M10	14	8.2	8.5	28	29	18					
LWN/LWO 20250300	52	25	300		1×100	50	M10	14	8.2	8.5	28	29	18					
LWN/LWO 20250400	52	25	400		1×100	50	M10	14	8.2	8.5	28	29	18					
LWN/LWO 20250500	52	25	500		1×100	50	M10	14	8.2	8.5	28	29	18					
Needle roller assemblies																		
LWHW 15														2	15	4.5	16300	45000
LWHV 15														2	15	3.75	16300	45000
End pieces																		
LWEN 2025	31	24		5.5														
LWEAN 2025	31	24		8.5														
LWEO 2025	30	24		5.5														
LWEAO 2025	30	24		8.5														
Special attachment screw																		
LWGD 2025																		

* For 10 needle rollers per row

See page 98
for drawing

For information on the following products please contact our customer service:

- LWN / LWO (sizes 2535-, 3045- and 3555-)

- LWML series

- LWF / LWG series (sizes 412-, 612-, 624-, 1024- and 1434- on request)

Notes

Driving systems

Ball and roller screw

SKF ball & roller screw assemblies are high-quality products, suitable for a wide range of applications where precision driving systems are needed (➔ **figs 1 and 2**).

The high efficiency screw affords the opportunity to displace loads by transforming rotary action into linear motion. The high efficiency screw has rolling elements, balls or rollers, between the nut and the screw shaft.

In all types of ball screws, the load is transmitted from the screw shaft to the nut through each ball: several recirculating systems are available. To improve positioning accuracy, backlash can be reduced or eliminated (➔ **fig 3**).

Two non-competing designs to cover requirements beyond ball screw limitations. Load transfer from the nut to the screw shaft through a number of threaded or grooved rollers: resulting in a large number of strong contact points (➔ **fig 4**).

Operating precision (➔ **table 1**)
Comparison of the different positioning components and systems.

Fig 1

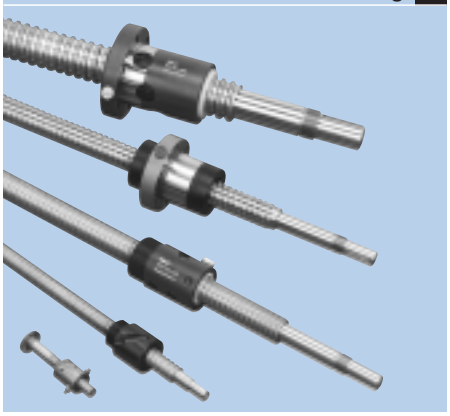


Fig 2

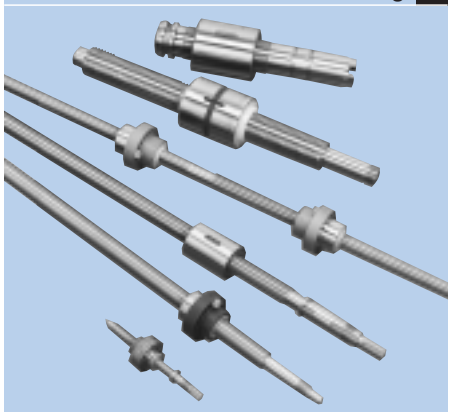


Fig 3

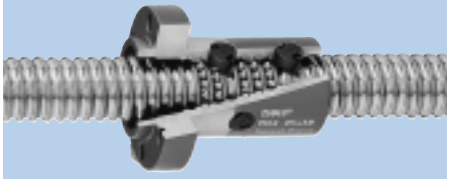


Fig 4

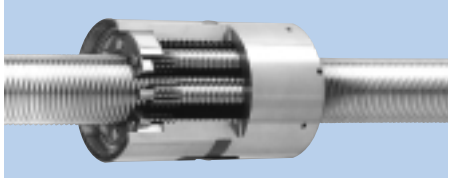


Table 1

Operating precision (µm)	Guiding systems	Driving systems	Actuation systems	Positioning systems
0.1 – 1	Precision rail guides	Roller screws		Standard drives or linear motors with all guiding systems
1 – 10	Linear ball bearings, Profile rail guides, Standard slides	Ball screws, Linear motors		
10 – 100	Speedi-Roll		Electro-mechanical actuators	
100 – 1000				

How to orientate your choice

In our wide range, you are sure to find the product which fits exactly your requirements:

- The miniature ball screws (➔ **fig** 5), either with ball recirculation by integrated tube or with inserts, are very compact. Backdriving makes them highly efficient.
- The large ball screws (➔ **fig** 6) enable you to select the right level of requirement: simple transport screws, very fast screws with long lead, or preloaded screws for more precision.
- Ground ball screws for more rigidity and precision (➔ **fig** 7)
- Roller screws (➔ **fig** 8) which are far beyond the limits of any ball screws as for heavy loads, ultimate precision and rigidity, high speed and acceleration and very difficult environments.

Table 2 will guide you in your first approach

Fig 5

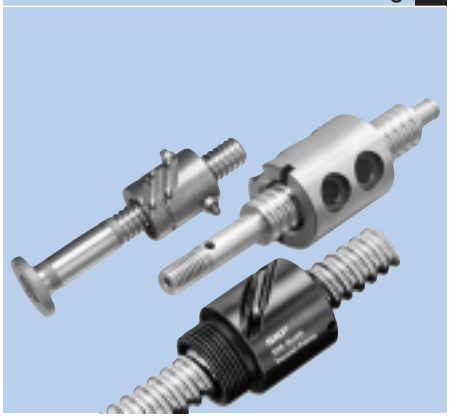


Fig 6

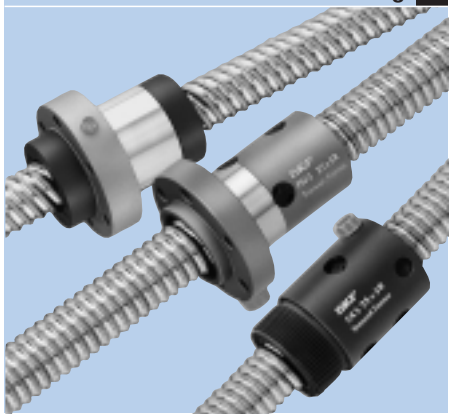


Fig 7

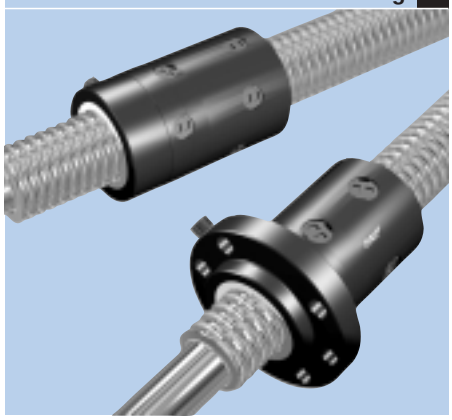


Fig 8

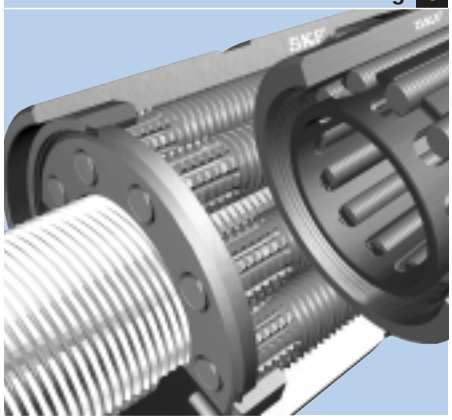
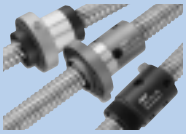
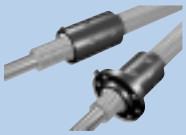


Table 2

Type	Details	Basic dynamic load rating	Precision Ep (µ) on 300 mm	High duty cycles	Adverse environment (Spec. steel, pollution)
	**SH series** Diameter Ø 6 to 16	Up to 5.2 kN	G9 (130 µ) to G5 (23 µ)		good
	**SX, SL/TL, SN/TN/PN** Din standard Ø 16 to 63	Up to 80 kN	G9 (130 µ) to G5 (23 µ)		satisfactory
	**PGFJ, PGFL, PGFE, PGCL** Ø 16 to 125	Up to 270 kN	G5 (23 µ) to G1 (6 µ)		satisfactory
	**SRC, SRF, TRK/PRK, SVC, PVK** Ø to 210	Up to 2235 kN	G5 (23 µ) to G1 (6 µ)		exceptional

Ball screws

Rolled ball screws

(➔ **figs** 9**,** 10**,** 11 **and** 12).
SKF ball screw assemblies are high-quality products, suitable for a wide range of applications where precision driving systems are needed.

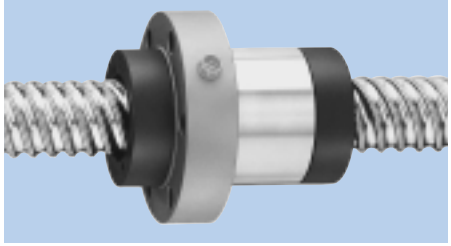
SKF rolled thread ball screws are available in four designs to cover most requirements.

Fig 9

Fig 10

Fig 11

Fig 12



Complete assemblies

For reduced quantities and for all types of nuts, SKF provides complete assemblies with customised screw shaft.

A complete range of accessories is available and can be delivered completely assembled. Just ask when ordering (➔ **fig** 13).

Fig 13

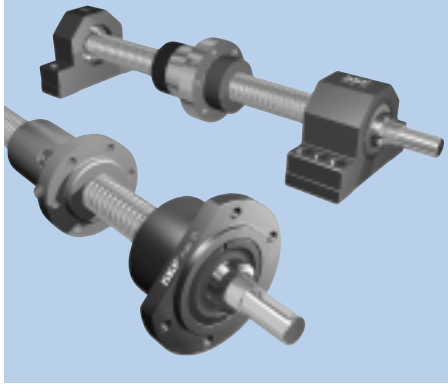


Table 3

Diameters	Leads	Nut types	Precision classes	Accessories
From 6 to 63 mm	From 2 to 50 mm	Cylindrical and flanged with axial play, backlash elimination or preload, SKF & DIN standards	G5 - G7 - G9	For screw shafts and nuts

Ordering key

Nut type:
Miniature screw, axial play . . . . . SH
Universal screw, axial play . . . . . SX
Precision screw, axial play . . . . . SN
Precision screw, preloaded for backlash elimination . . TN
Precision screw, preloaded for optimum rigidity . . . . PN
Precision screw, backlash elimination, DIN nut . . . TND
Precision screw for optimum rigidity, DIN nut . . . . . PND
Long lead screw, axial play . . . . . SL
Long lead screw, axial play, DIN nut . . . . . SLD
Long lead screw, backlash elimination. . . . . TL
Long lead screw, backlash elimination, DIN nut . . . TLD
Rotating nut with axial play . . . . . SLT
Rotating nut with backlash elimination . . . . . TLT

Nominal diameter × Lead [mm]

Hand:
Right . . . . . R
Left (on request) L

Threaded length / Total length [mm]

Lead precision:
. . . . . G9, G7, G5

Nut orientation:
Threaded side or flange of nut towards shorter (S) or longer (L) machined end of shaft.
In case of same end machining (–)

Machined end combination:
See page 114-117

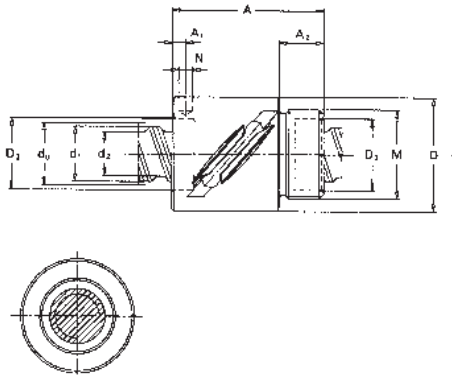
Required lengths only allowed for A; S; SA; UA:
See page 114 . . . . . **/**

Wipers:
With wipers . . . . . WPR
Without wipers . . . . . NOWPR

Example: **PND** **32×5** **R** **330** / **445** **G7** **L** - **SA** **+K** **25** / **20** **NOWPR**

SH - Miniature ball screws

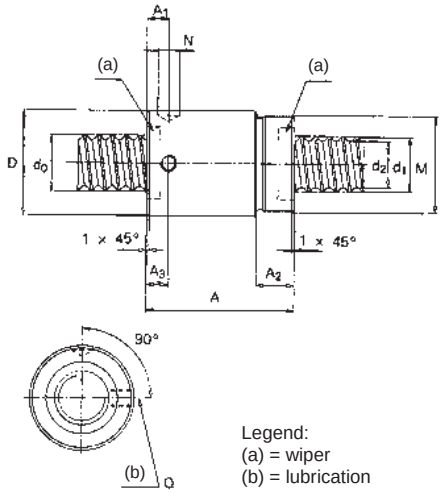
Ball recirculation in tube inside the nut, threaded end for easy mounting



Designations	Dimensions								Lead	Basic load ratings dynamic	static
	d_0	d_1	d_2	L Max	A	A_2	D h10	M 6g	P_h	C_a	C_{oa}
	mm									kN	
SH 6x2 R	6	6.2	4.6	1050	20	7.5	16.5	M14×1	2	1.2	1.5
SH 8x2.5 R	8	7.6	6.3	1050	23.5	7.5	17.5	M15×1	2.5	1.6	2.5
SH 10x2 R	10	9.5	8.3	1050	22	7.5	19.5	M17×1	2	1.8	3.2
SH 10x3 R	10	9.9	7.8	1050	29	9.0	21	M18×1	3	2.3	3.5
SH 12x4 R	12	11.3	9.4	2100	34	10.0	25.5	M20×1	4	3.7	6.2
SH 12x5 R	12	11.8	9.3	2100	39	10.0	25.5	M20×1	5	4.1	7.1
SH 12.7x12.7 R	12.7	13.0	10.2	2100	50	12.0	29.5	M25×1.5	12.7	5.25	9.0
SH 16x2 R	16	15.6	14.3	2100	27	12.0	29.5	M25×1.5	2	2	4.4
SH 16x5 R	16	15.2	12.7	2100	42	12.0	32.5	M26×1.5	5	5.7	10.1

SX - Universal ball screws

Ball recirculation in composite inserts, threaded end for easy mounting, accessories see pages 121 - 123. Steel inserts optional



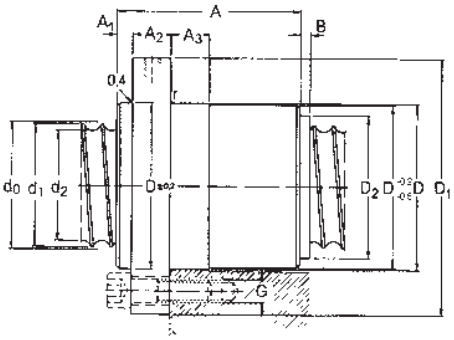
Legend:
(a) = wiper
(b) = lubrication

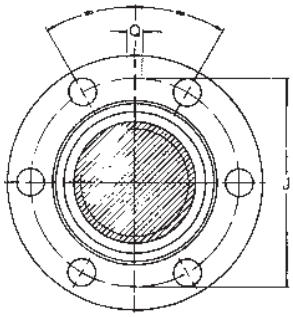
Designations	Dimensions								Lead	Basic load ratings dynamic	static
	d_0	d_1	d_2	L Max	A	A_2	D js13	M 6g	P_h	C_a	C_{oa}
	mm									kN	
SX 20x5 R	20	19.4	16.7	5000	54	14	38	M35×1.5	5	11.7	24.4
SX 25x5 R	25	24.6	21.7	5000	69	19	43	M40×1.5	5	15.6	37.8
SX 25x10 R	25	24.6	20.5	5000	87	19	43	M40×1.5	10	20.8	43.9
SX 32x5 R	32	31.6	28.7	5750	69	19	52	M48×1.5	10	17.8	50.4
SX 32x10 R	32	32	27.8	5750	95	19	54	M48×1.5	5	22.1	54.5
SX 40x5 R	40	39.6	36.7	5750	69	19	60	M56×1.5	5	19.5	63.1
SX 40x10	40	39.4	34.0	5750	110	24	65	M60×2	10	51.3	127.2
SX 50x10 R	50	49.7	44.0	5750	135	29	78	M72×2	10	66.1	189
SX 63x10 R	63	62.8	57.0	5750	135	29	93	M85×2	10	74	243.2

Symbols = see page 149

SN - Precision ball screws

Ball recirculation in composite inserts, nut with axial play. Steel insert optional

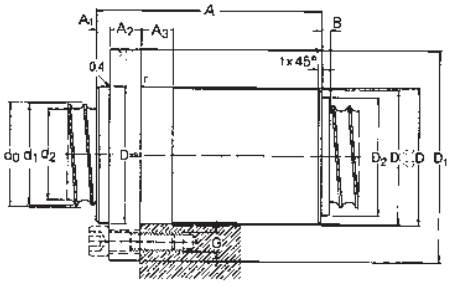


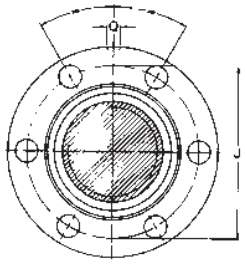


Designations	Dimensions										Lead	Basic load ratings dynamic	static
	d_0	d_1	d_2	L Max	A	A_2	D g9	D_1	J js12	G 6×	P_h	C_a	C_{oa}
	mm											kN	
SN 16x5 R	16	15.2	12.7	2100	50.5	10	28	48	38	M5	5	6.8	12.4
SN 20x5 R	20	19.4	16.7	5000	52.5	12	33	57	45	M6	5	9.1	18.3
SN 25x5 R	25	24.6	21.7	5000	52.5	12	38	62	50	M6	5	10.1	22.6
SN 25x10 R	25	24.6	20.5	5000	85.0	12	43	67	55	M6	10	18.8	39.0
SN 32x5 R	32	31.6	28.7	5750	57.5	12	45	70	58	M6	5	14.7	40.2
SN 32x10 R	32	32	27.8	5750	79.0	16	54	87	70	M8	10	17.3	40.7
SN 40x5 R	40	39.6	36.7	5750	64.5	14	53	80	68	M6	5	19.4	63.0
SN 40x10 R	40	39.4	34.0	5750	99.0	16	63	95	78	M8	10	51.3	126.8
SN 50x10 R	50	49.7	44.0	5750	99.0	16	72	110	90	M10	10	56.4	157.1
SN 63x10 R	63	62.8	57.0	5750	103.0	20	85	125	105	M10	10	63.1	202.1

TN - Precision ball screws

Ball recirculation in composite inserts, backlash elimination. Steel insert optional



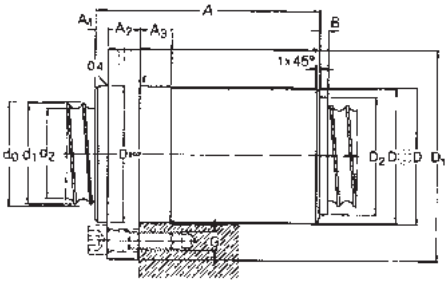


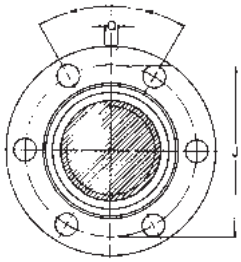
Designations	Dimensions										Lead	Basic load ratings dynamic	static
	d_0	d_1	d_2	L Max	A	A_2	D g9	D_1	J js12	G 6×	P_h	C_a	C_{oa}
	mm											kN	
TN 16x5 R	16	15.2	12.7	2100	52	10	28	48	38	M5	5	4.8	8.3
TN 20x5 R	20	19.4	16.7	5000	58	12	33	57	45	M6	5	6.4	12.2
TN 25x5 R	25	24.6	21.7	5000	70	12	38	62	50	M6	5	10.1	22.6
TN 25x10 R	25	24.6	20.5	5000	85	12	43	67	55	M6	10	10.4	19.5
TN 32x5 R	32	31.6	28.7	5750	80	12	45	70	58	M6	5	14.7	40.2
TN 32x10 R	32	32	27.8	5750	113	16	54	87	70	M8	10	17.3	40.7
TN 40x5 R	40	39.6	36.7	5750	94	14	53	80	68	M6	5	19.4	63.0
TN 40x10 R	40	39.4	34.0	5750	134	16	63	95	78	M8	10	42.3	101.4
TN 50x10 R	50	49.7	44.0	5750	157	16	72	110	90	M10	10	56.4	157.1
TN 63x10 R	63	62.8	57.0	5750	161	20	85	125	105	M10	10	63.1	202.1

Symbols = see page 149

PN - Precision ball screws

Ball recirculation in composite inserts, preloaded for optimum rigidity. Steel inserts optional

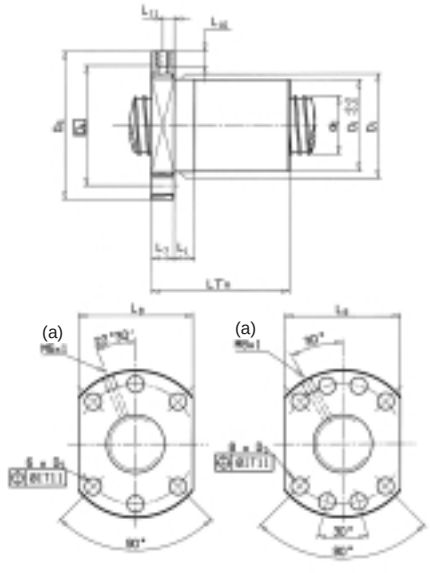




Designations	Dimensions										Lead	Basic load ratings dynamic	static
	d_0	d_1	d_2	L Max	A	A_2	D g9	D_1	J js12	G 6×	P_h	C_a	C_{oa}
	mm											kN	
PN 16x5 R	16	15.2	12.7	2100	52	10	28	48	38	M5	5	4.8	8.3
PN 20x5 R	20	19.4	16.7	5000	58	12	33	57	45	M6	5	6.4	12.2
PN 25x5 R	25	24.6	21.7	5000	70	12	38	62	50	M6	5	10.1	22.6
PN 25x10 R	25	24.6	20.5	5000	85	12	43	67	55	M6	10	10.4	19.5
PN 32x5 R	32	31.6	28.7	5750	80	12	45	70	58	M6	5	14.7	40.2
PN 32x10 R	32	32	27.8	5750	113	16	54	87	70	M8	10	17.3	40.7
PN 40x5 R	40	39.6	36.7	5750	94	14	53	80	68	M6	5	19.4	63.0
PN 40x10 R	40	39.4	34.0	5750	134	16	63	95	78	M8	10	42.3	101.4
PN 50x10 R	50	49.7	44.0	5750	157	16	72	110	90	M10	10	56.4	157.1
PN 63x10 R	63	62.8	57.0	5750	161	20	85	125	105	M10	10	63.1	202.1

TND - Precision ball screws

Ball recirculation in composite inserts, nut to DIN standard, backlash elimination. Steel inserts optional



Design 1 Design 2

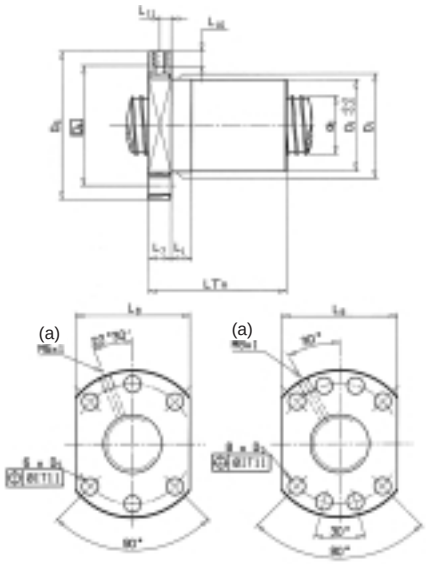
Designations	Dimensions								Lead	Basic load ratings dynamic	static	Design
	d_0	L Max	D_1 g6	D_4	D_5 H13	D_6 h13	L_8 h13	L_{tn}	P_h	C_a	C_{oa}	
	mm									kN		n°
TND 16x5 R	16	2100	28	38	5.5	48	40	50	5	4.8	8.3	1
TND 20x5 R	20	5000	36	47	6.6	58	44	50	5	6.4	12.2	1
TND 25x5 R	25	5000	40	51	6.6	62	48	62	5	10.1	22.6	1
TND 25x10 R	25	5000	40	51	6.6	62	48	75	10	10.4	19.5	1
TND 32x5 R	32	5750	50	65	9	80	62	74	5	14.7	40.2	1
TND 32x10 R	32	5750	50	65	9	80	62	102	10	17.3	40.7	1
TND 40x5 R	40	5750	63	78	9	93	70	88	5	19.4	63.0	2
TND 40x10 R	40	5750	63	78	9	93	70	130	10	42.3	101.4	2
TND 50x10 R	50	5750	75	93	11	110	85	155	10	56.4	157.1	2
TND 63x10 R	63	5750	90	108	11	125	95	157	10	63.1	202.1	2

Legend:
(a) = lubrication hole

Symbols = see page 149

PND - Precision ball screws

Ball recirculation in composite inserts, nut to DIN standard, preloaded for optimum rigidity. Steel inserts optional



Design 1 Design 2

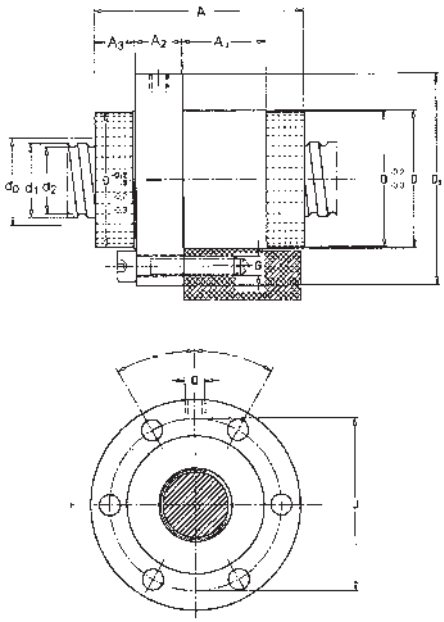
Designations	Dimensions								Lead	Basic load ratings dynamic	static	Design
	d_0	L Max	D_1 g6	D_4	D_5 H13	D_6 h13	L_8 h13	L_{tn}	P_h	C_a	C_{oa}	
	mm									kN		n°
PND 16x5 R	16	2100	28	38	5.5	48	40	50	5	4.8	8.3	1
PND 20x5 R	20	5000	36	47	6.6	58	44	50	5	6.4	12.2	1
PND 25x5 R	25	5000	40	51	6.6	62	48	62	5	10.1	22.6	1
PND 25x10 R	25	5000	40	51	6.6	62	48	75	10	10.4	19.5	1
PND 32x5 R	32	5750	50	65	9	80	62	74	5	14.7	40.2	1
PND 32x10 R	32	5750	50	65	9	80	62	102	10	17.3	40.7	1
PND 40x5 R	40	5750	63	78	9	93	70	88	5	19.4	63.0	2
PND 40x10 R	40	5750	63	78	9	93	70	130	10	42.3	101.4	2
PND 50x10 R	50	5750	75	93	11	110	85	155	10	56.4	157.1	2
PND 63x10 R	63	5750	90	108	11	125	95	157	10	63.1	202.1	2

Legend:
(a) = lubrication hole

Symbols = see page 149

SL - Long lead ball screws

Ball recirculation via end face, nut with axial play

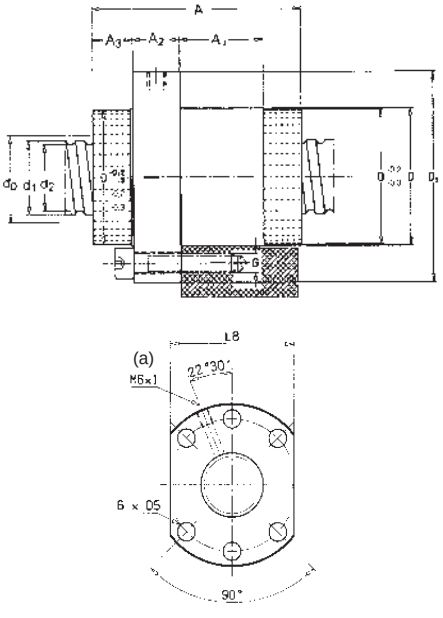


Designations	Dimensions										Lead	Basic load ratings dynamic	static
	d_0	d_1	d_2	L Max	A	A_2	D g9	D_1	J js12	G 6×	P_h	C_a	C_{oa}
	mm											kN	
SL 25x20 R	25	24.3	21.7	4750	66.4	15	48	73	60	M6	20	19.4	54.3
SL 25x25 R	25	24.4	21.5	4750	77.9	15	48	73	60	M6	25	19.1	54.6
SL 32x20 R	32	30.0	27.5	5750	66.4	15	56	80	68	M6	20	21.7	68.0
SL 32x32 R	32	31.1	28.4	5750	80.3	15	56	80	68	M8	32	20.8	68.3
SL 32x40 R	32	29.6	26.9	5750	55.0	15	53*	80	68	M6	40	12.6	38.7
SL 40x20 R	40	37.7	35.2	5750	86.8	15	63	95	78	M8	20	35.3	133.8
SL 40x40 R	40	38.3	34.2	5750	110.3	25	72	110	90	M10	40	43.8	137.8
SL 50x50 R	50	49.1	43.5	5750	134.0	25	85	125	105	M10	50	80.0	254.6

* Tolerance g6

SLD - Long lead ball screws

Ball recirculation via end face, nut with axial play, to DIN standard



Design 1

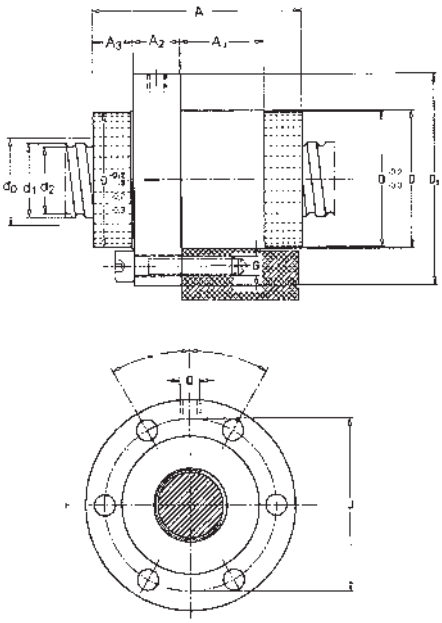
Legend:
(a) = lubrication hole

Designations	Dimensions										Lead	Basic load ratings dyn.	static	Design
	d_0	d_1	d_2	L Max	A	A_2	D g6	D_1	J js12	G 6×	Ph	C_a	C_{oa}	
	mm											kN		n°
SLD 32x32 R	32	31,1	28,4	5750	80.3	15	50	80	65	M8	32	20.8	68.3	1

Symbols = see page 149

TL - Long lead ball screws

Ball recirculation via end face, backlash elimination

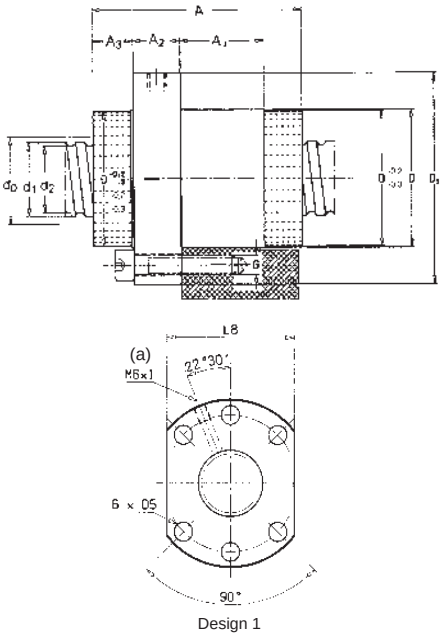


Designations	Dimensions										Lead	Basic load ratings dynamic	static
	d_0	d_1	d_2	L Max	A	A_2	D g9	D_1	J js12	G 6×	P_h	C_a	C_{oa}
	mm											kN	
TL 25x20 R	25	24.3	21.7	4750	66.4	15	48	73	60	M6	20	10.7	27.2
TL 25x25 R	25	24.4	21.5	4750	77.9	15	48	73	60	M6	25	10.5	27.3
TL 32x20 R	32	30.0	27.5	5750	66.4	15	56	80	68	M6	20	11.9	34.0
TL 32x32 R	32	31.1	28.4	5750	80.3	15	56	80	68	M6	32	11.4	34.1
TL 32x40 R	32	29.6	26.9	5750	55.0	15	53*	80	68	M6	40	7.0	19.4
TL 40x20 R	40	37.7	35.2	5750	86.8	15	63	95	78	M8	20	19.4	66.9
TL 40x40 R	40	38.3	34.2	5750	110.3	25	72	110	90	M10	40	24.1	68.9
TL 50x50 R	50	49.1	43.5	5750	134.0	25	85	125	105	M10	50	44.1	127.3

* Tolerance g6

TLD - Long lead ball screws

Ball recirculation via end face, nut to DIN standard with backlash elimination



Design 1

Legend:
(a) = lubrication hole

Designations	Dimensions										Lead	Basic load ratings dyn.	static	Design
	d_0	d_1	d_2	L Max	A	A_2	D g6	D_1	J js12	G 6×	Ph	C_a	C_{oa}	
	mm											kN		n°
TLD 32x32 R	32	31.1	28.4	5750	80.3	15	50	80	65	M8	32	11.4	34.1	1

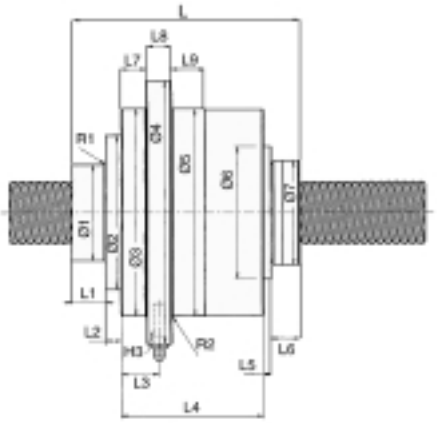
Symbols = see page 149

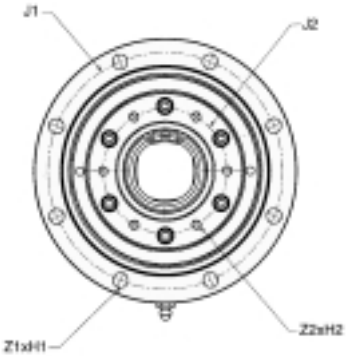
Notes

Rotating nut

The nut rotates inside bearings and moves along the fixed long lead screw shaft.

The drive motor moves with the nut, so inertia and critical speed problems, associated with a long rotating shaft, are minimised (→ **figs** 14**, and** 15).





Size	SL ball screw capacities dynamic C_a	SL ball screw capacities static C_{oa}	TL ball screw capacities dynamic C_a	TL ball screw capacities static C_{oa}
	kN			
25 × 20	31.6	96.6	17.4	48.3
25 × 25	26.8	80.5	14.8	40.2
32 × 20	39.9	141.2	22.0	70.6
32 × 32	25.7	87.3	14.1	43.7
32 × 40	24.0	81.7	13.2	40.8
40 × 20	43.7	176.7	24.1	88.3
40 × 40	42.6	133.8	23.5	66.9
50 × 50	75.8	238.2	41.8	119.1

Rotating nut inertia

Size	Inertia Pulley support in steel	in aluminium
	kgmm^2	
25 × 20	1012	707
25 × 25	1023	718
32 × 20	1935	1478
32 × 32	1919	1462
32 × 40	1949	1492
40 × 20	3095	2252
40 × 40	3784	2947
50 × 50	11482	8799

Rotating nut capacities

Size	Max transmissible torque	Max transmissible axial load
	Nm	kN
25 × 20	180	68.3
25 × 25	180	68.3
32 × 20	209	107
32 × 32	209	87.3
32 × 40	209	81.7
40 × 20	240	116
40 × 40	246	93.3
50 × 50	803	162

Symbols = see page 149

Fig 14

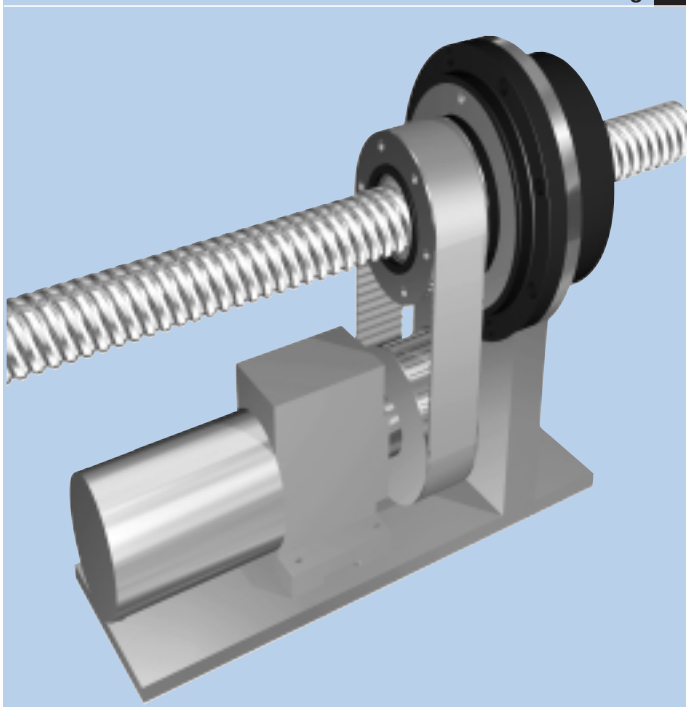
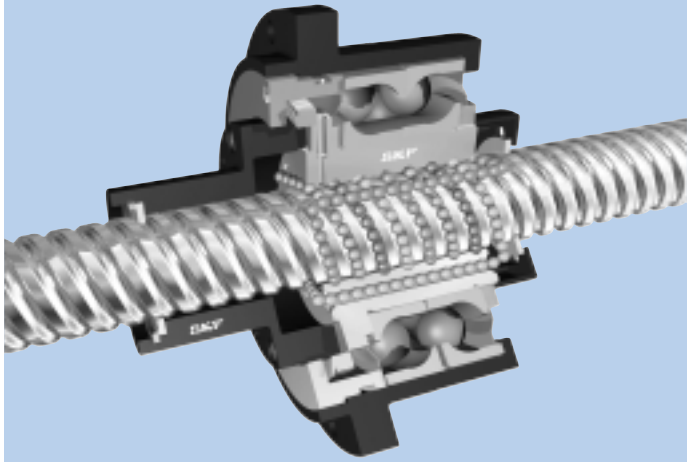


Fig 15



Designations	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	L	L1	R1	R2	J1	J2	Z1×H1	Z2×H2× useful length	H3
	h8				g6					max	max				mm	
SLT/TLT 25×20	40	72.5	100	133	100	65	48	121.0	15	0.8	0.8	116	55	6×ø9	6×M6×20	M6×1
SLT/TLT 25×25	40	72.5	100	133	100	65	48	126.2	15	0.8	0.8	116	55	6×ø9	6×M6×20	M6×1
SLT/TLT 32×20	50	82	119.5	150	120	76	56	132.4	20	0.8	0.8	135	68	6×ø9	6×M6×20	M6×1
SLT/TLT 32×32	50	82	119.5	150	120	76	50	126.8	20	0.8	0.8	135	68	6×ø9	6×M6×20	M6×1
SLT/TLT 32×40	50	82	119.5	150	120	76	53	125.7	20	0.8	0.8	135	68	6×ø9	6×M6×20	M6×1
SLT/TLT 40×20	58	93	125	159	125	80	63	136.4	20	0.8	0.8	142	75	8×ø9	6×M6×20	M8×1
SLT/TLT 40×40	60	93	137	168	137	102	72	159.3	47	1.6	1.6	153	80	8×ø9	6×M6×20	M8×1
SLT/TLT 50×50	70	120	170	210	170	110	85	163.3	20	1.6	1.6	190	106	8×ø11	6×M8×30	M8×1

All tolerances js13 if not specified

Symbols = see page 149

Shaft end combinations for rolled ball screws

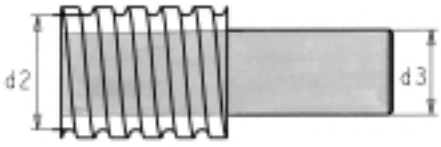
In the order code, shaft end machining is defined by:
– one letter for Ø < 16 mm
– two letters for Ø ≥16 mm

resulting from the combination of two machined ends (see designation page 104).

Machined ends are represented in detail on page 115 for Ø < 16 mm and page 116-117 for Ø ≥ 16 mm

Ø < 16 mm		Ø ≥ 16 mm	
Order code	**Two machined ends**	**Order code**	**Two machined ends**
A (without length indication)	cut only	AA (without length indication)	cut only
A (+ length)	cut + annealed		
B	1 + 2	BA	1A + 2A
F*	2 + 2	FA*	2A + 2A
G*	2 + 3	GA*	2A + 3A
H	2 + 4	HA	2A + 4A
J	2 + 5	JA	2A + 5A
M	3 + 5	MA	3A + 5A
S (+ length)	Ends to root diameter, any possible lengths.	SA (+ length)	Ends to root diameter d_2, any possible lengths.
		UA■ (+ length)	End machined to diameter d_3 under induction hardening, any possible lengths.
K	Keyway	K	Keyway
Z	To customer's drawing	Z	To customer's drawing

* Attention! This mounting requires the greatest precautions. Please contact us.



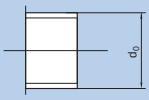
■ UA: end machined to diameter d_3 under induction hardening, any possible lengths.

Dimensions	Ø d_2	Ø d_3	Dimensions	Ø d_2	Ø d_3
	mm			mm	
16 × 5	12.7	9	**32 × 32**	28.4	26
20 × 5	16.7	14	**32 × 40**	26.9	24
25 × 5	21.7	19	**40 × 5**	36.7	34
25 × 10	20.5	18	**40 × 10**	34	31
25 × 20	21.7	19	**40 × 20**	35.2	32
25 × 25	21.5	18	**40 × 40**	34.2	31
32 × 5	28.7	26	**50 × 10**	44	41
32 × 10 DIN	27.8	25	**50 × 50**	43.5	40
32 × 10	26	23	**63 × 10**	57	54
32 × 20	27.5	24			

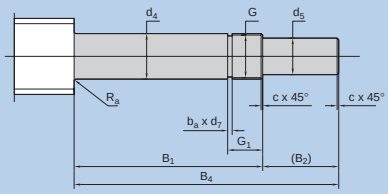
Symbols = see page 149

Standard end machining for nominal diameter < 16 mm
Special ends are machined to customer drawing on request

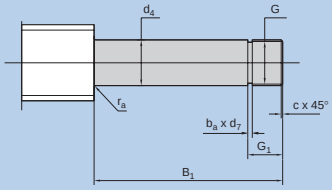
1



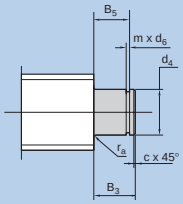
2



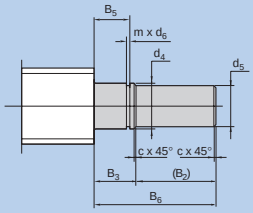
3



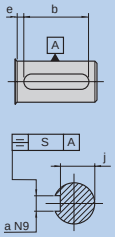
4



5



Keyway only for cases 2 or 5



End length

Symbols = see page 149

Size d_0	d_5	d_4	B_1	B_2	B_3	B_4	B_5	B_6	G	G_1	m	d_6	c	b_a	d_7	r_a	a	b	e	j	S	Keyway
d_0	h7	js7	js12		js12	js12	H11	js12	6g		+0.14 0	h11/h12			h11	maxi	N9	+0.5 0				DIN 6885
6	3	4	22	10	7	32	5.4	17	M4×0.7	7	0.5	3.8	0.5	1.2	2.9							
8	4	5	24	12	7	36	5.6	19	M5×0.8	7.2	0.7	4.8	0.5	1.2	3.7	0.3						
10	5	6	26	12	9	38	6.7	21	M6×1	7.5	0.8	5.7	0.5	1.5	4.5	0.3						
12/12.7	6	8	38	12	10	50	7.8	22	M8×1	12.5	0.9	7.6	0.5	1.5	6.5	0.3	2	8	3	4.8	0,1	A2×2×8

Standard end machining for nominal diameter ≥ 16 mm

Standard shaft ends for ball screws, nominal diameter ≥ 16 mm, have been developed to suit the SKF thrust bearings FLBU, PLBU and BUF. These standard ends are the same for all screw types.

However, for the "SL/TL" long lead screw, an additional shoulder, part of the threaded length, will be machined to protect the wiper and nut thread during assembly (both sides). Apart from this, the end itself is the same for all screw types.

For SH, SX, SN/TN/PN, TND/PND

Dimensions (mm) Size d_0	d_5	d_4	d_{10}	d_{11}	d_{12}	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_9	d_8	G	G_1	m	d_6	c	c_1	b_a	d_7	r_a	Keyway to DIN 6885 a^{N9} xi xb	
	h7	h6		h6	h7	js12		js12	js12	H11	js12				6g		+0.14 +0	h11[5] h12[6]				h11		fixed end (type 2A)	free end (type 5A)
16	8	10	/	10	8	53	16	13	69	10	29	2	0	12.5	M10×0.75	17	1.1	9.6	0.5	0.5	1,2	8,8	0,4	A2×2×12	A2×2×12
20	10	12	/	10	8	58	17	13	75	10	29	2	0	14.5	M12×1	18	1.1	9.6	0.5	0.5	1,5	10,5	0,8 0,4[7]	A3×3×12	A2×2×12
25	15	17	/	17	15	66	30	16	96	13	46	4.5	0	20	M17×1	22	1.1	16.2	0.5	0.5	1,5	15,5	0,8 0,4[7]	A5×5×25	A5×5×25
32	17	20	/	17	15	69	30	16	99	13	46	4.5	0	21.7	M20×1	22	1.1	16.2	0.5	0.5	1,5	18,5	1,2 0,8[7]	A5×5×25	A5×5×25
40	25	30	/	30	25	76	45	22	121	17.5	67	4.5	0	33.5	M30×1.5	25	1.6	28.6	1	0.5	2,3	27,8	0,8 0,4[7]	A8×7×40	A8×7×40
50	30	35	/	30	25	84	55	22	139	17.5	67	4.5	0	35.5	M35×1.5	27	1.6	28.6	1	0.5	2,3	32,8	1,2 0,8[7]	A8×7×45	A8×7×40
63	40	50	/	45	40	114	65	28	179	20.75	93	3	0	54	M50×1.5	32	1.85	42.5	1.5	1	2,3	47,8	1,2 0,8[7]	A12×8×50	A12×8×50

[5] For screw d_0 16 to d_0 32; [6] For screw d_0 40 to d_0 63; [7] For ends 4A or 5A; 0 No shoulder; / No shoulder

For SL/TL only

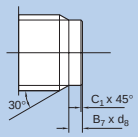
Symbols = see page 149

Dimensions (mm) Size d_0	d_5	d_4	d_{10}	d_{11}	d_{12}	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_9	d_8	G	G_1	m	d_6	c	c_1	b_a	d_7	r_a	Keyway to DIN 6885 a^{N9} xi xb	
	h7	h6		h6	h7	js12		js12	js12	H11	js12				6g		+0.14 +0	h11[5] h12[6]				h11		fixed end (type 2A)	free end (type 5A)
	mm																								
25	15	17	/	17	15	66	30	16	96	13	46	4.5	0	21.7[4] 21.5[3]	M17×1	22	1.1	16.2	0.5	0.5	1,5	15,5	0,8	A5×5×25	A5×5×25
32	17	20	21.5	17	15	69	30	16	99	13	46	4.5	2	27.4	M20×1	22	1.1	16.2	0.5	0.5	1,5	18,5	1,2 0,8[7]	A5×5×25	A5×5×25
40	25	30	/	30	25	76	45	22	121	17.5	67	4.5	0	35.2[2] 34.2[1]	M30×1.5	25	1.6	28.6	1	0.5	2,3	27,8	0,8	A8×7×40	A8×7×40
50	30	35	37	30	25	84	55	22	139	17.5	67	4.5	3	43.4	M35×1.5	27	1.6	28.6	1	0.5	2,3	32,8	1,2 0,8[7]	A8×7×45	A8×7×40

[1] For SL/TL 40×40 only; [2] For SL/TL 40×20 only; [3] For SL/TL 25×25 only; [4] For SL/TL 25×20 only; [5] For screw d_0 16 to d_0 32; [6] For screw d_0 40 to d_0 63; [7] For ends 4A or 5A; 0 No shoulder; / No shoulder

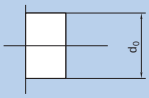
Standard machined ends for nominal diameter ≥ 16 mm
Threaded length = total length - end length

For SL/TL only

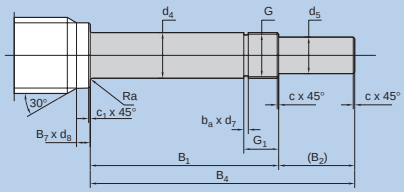


1A

For other types

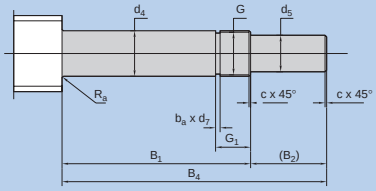


For SL/TL only

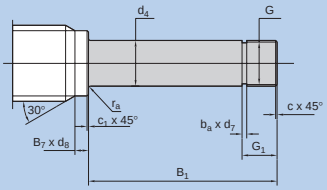


2A

For other types

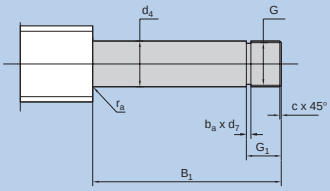


For SL/TL only

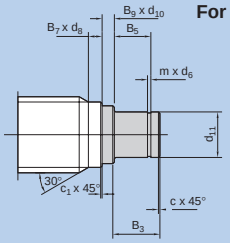


3A

For other types

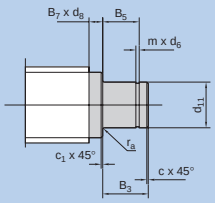


For SL/TL only

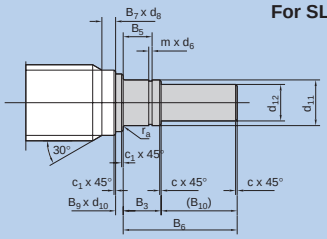


4A

For other types

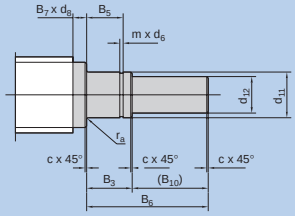


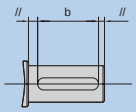
For SL/TL only



5A

For other types





Keyway

End length

Symbols = see page 149

Ground ball screws (→ fig 16)

SKF offers a wide range of ground ball screws to cover all requirements

– Flanged nut with internal preload, DIN standard
– Double preloaded flanged nut, DIN standard
– Double cylindrical preloaded nut

Fig 16

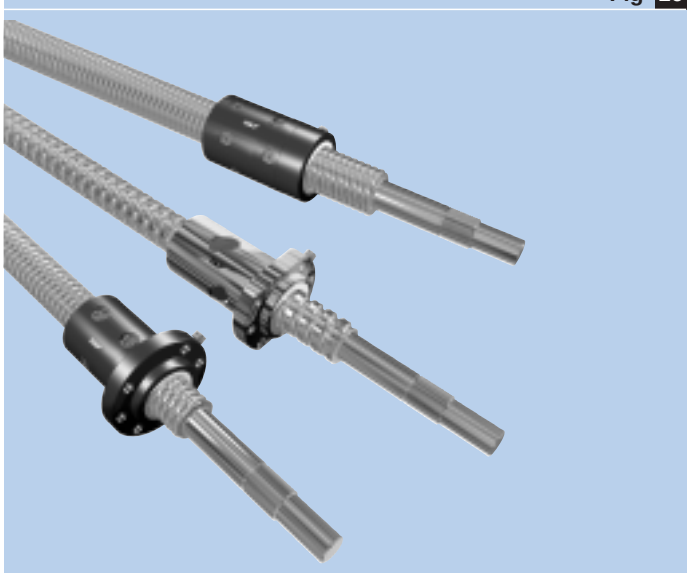
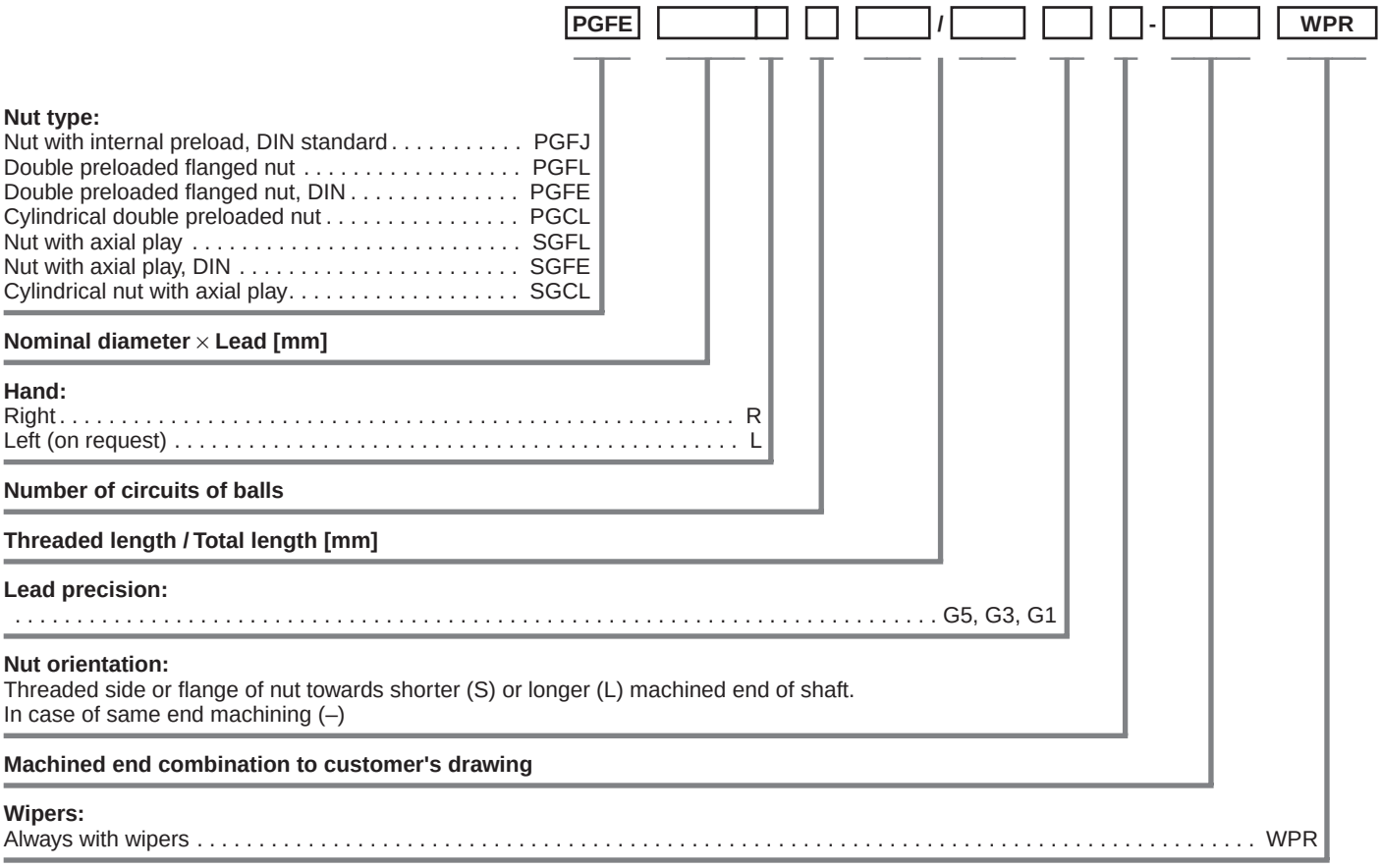


Table 4

Diameters	Leads	Nut types	Precision classes
From 16 to 125 mm	From 2 to 50 mm	Cylindrical or flanged nuts with preload or axial play	G1 - G3 - G5

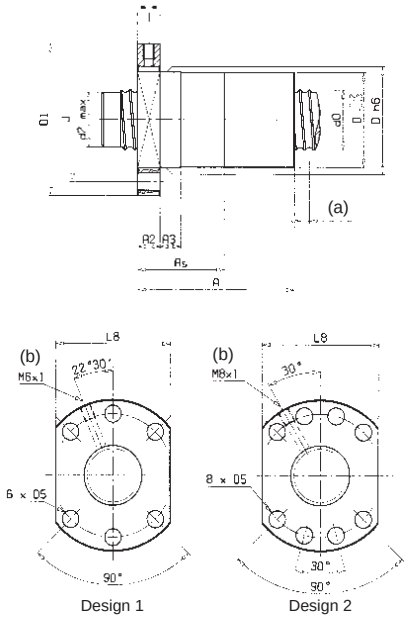
Ordering key



Example: PGFE 32×5 R 5 330 / 445 G1 L - HA +K WPR

PGFE - Ground ball screws

Double flanged nut, preloaded,
DIN standard

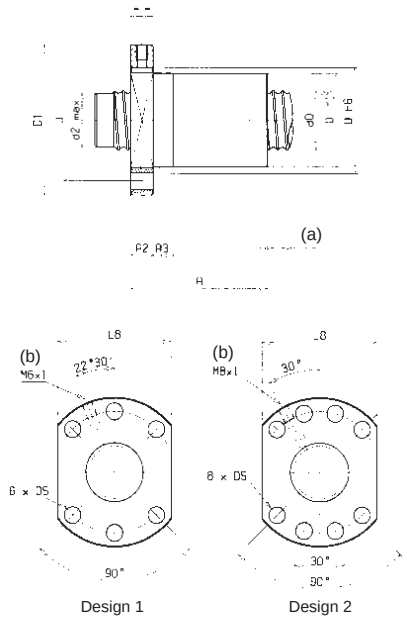


Legend:
(a) = lead
(b) = lubrication hole

Designations	Dimensions							Lead	Basic load ratings dynamic	static	Design
	d_0	D h6	D_1	J	A	A_2	L_8	Ph	C_a	C_{oa}	
	mm								kN		n°
PGFE 20x5 R	20	36	58	47	79	12	44	5	13.4	24.5	1
PGFE 25x5 R	25	40	62	51	88	14	48	5	15.6	33.6	1
PGFE 25x10 R	25	40	62	51	123	15	48	10	20.2	39.5	1
PGFE 32x5R3	32	50	80	65	89	15	62	5	17.3	42.8	1
PGFE 32x10 R	32	50	80	65	146	18	62	10	42.2	80	1
PGFE 40x5 R	40	63	93	78	100	16	70	5	24.6	73	2
PGFE 40x10 R	40	63	93	78	146	18	70	10	46.5	98	2
PGFE 50x10 R	50	75	110	93	168	20	85	10	68	170	2
PGFE 63x10 R	63	90	125	108	170	22	95	10	77.5	227	2

PGFJ - Ground ball screws

Flanged nut with internal preload,
DIN standard

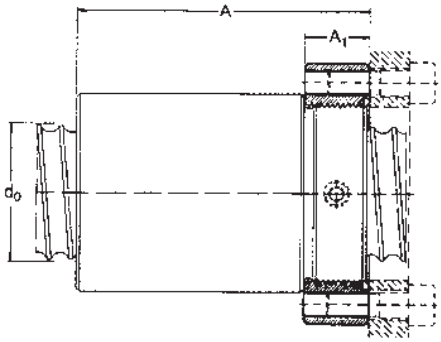


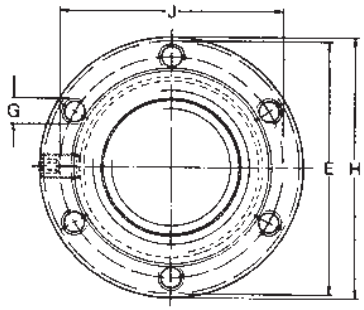
Legend:
(a) = lead
(b) = lubrication hole

Designations	Dimensions							Lead	Basic load ratings dynamic	static	Design
	d_0	D h6	D_1	J	A	A_2	L_8	Ph	C_a	C_{oa}	
	mm								kN		n°
PGFJ 20x5 R	20	36	58	47	65	12	44	5	13.4	24.5	1
PGFJ 25x5 R	25	40	62	51	68	14	48	5	15.6	33.6	1
PGFJ 25x10 R	25	40	62	51	104	15	48	10	20.2	39.5	1
PGFJ 32x5 R	32	50	80	65	81	15	62	5	22.1	57	1
PGFJ 32x10 R	32	50	80	65	117	18	62	10	42.2	80	1
PGFJ 40x5 R	40	63	93	78	82	16	70	5	24.6	73	2
PGFJ 40x10 R	40	63	93	78	142	18	70	10	59.6	130	2
PGFJ 50x10 R	50	75	110	93	144	20	85	10	68	170	2
PGFJ 63x10 R	63	90	125	108	147	22	95	10	30	120	2

FHRF

Round flanges (for SX nuts only)

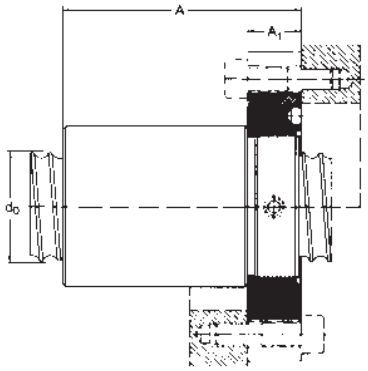


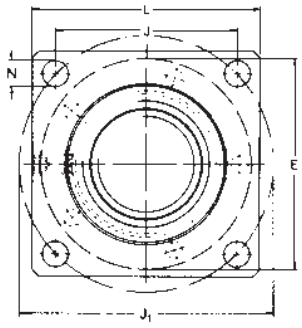


Designations	Dimensions			
	d_0	A_1 h14	J JS12	H h12
	mm			
FHRF 20	20	15	44	52
FHRF 25	25	20	50	60
FHRF 32	32	20	59	69
FHRF 40x5	40	20	69	82
FHRF 40x10	40	25	76	92
FHRF 50	50	30	91	110
FHRF 63	63	30	106	125

FHSF

Square flanges (for SX nuts only)



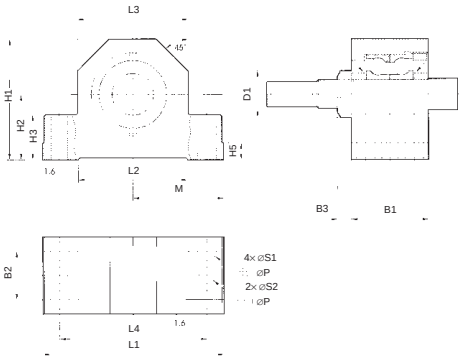


Designations	Dimensions			
	d_0	A_1 h14	J JS12	H h12
	mm			
FHSF 20	20	15	45	60
FHSF 25	25	20	52	70
FHSF 32	32	20	60	80
FHSF 40x5	40	20	70	90
FHSF 40x10	40	25	78	100
FHSF 50	50	30	94	120
FHSF 63	63	30	104	130

Symbols = see page 149

PLBU

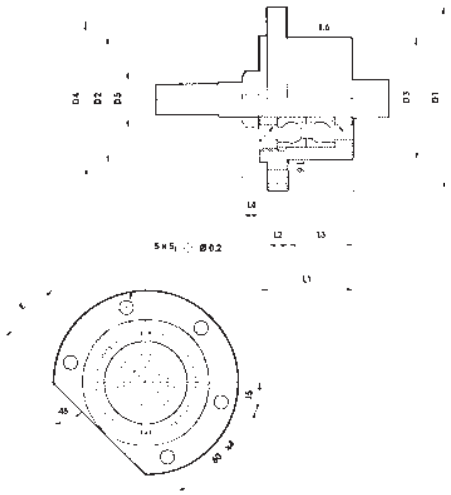
Accessories for screw shaft, plummer bearing units:
End bearings, fixed plummer housing with angular contact ball bearings (back-to-back arrangement).
Designed for standard end machining 2A or 3A



Designations	Dimensions								Basic load ratings dynamic	static
	d_0	B_1	B_2	H_1	H_2 JS7	L_1	L_4	S_1 H12	C_a	C_{oa}
	mm								kN	
PLBU 16	16	37	23	58	32	86	68	9	12.2	12.8
PLBU 20	20	42	25	64	34	94	77	9	13.3	14.7
PLBU 25	25	46	29	72	39	108	88	11	27.9	31.9
PLBU 32	32	49	29	77	45	112	92	11	24.6	31.9
PLBU 40	40	53	32	98	58	126	105	13	41.9	59.6
PLBU 50	50	59	35	112	65	144	118	13	54.5	79.8
PLBU 63	63	85	40	130	65	190	160	13	128	196.1

FLBU

Accessories for screw shaft, flanged bearing units:
End bearings, axially locating flanged housing with angular contact ball bearings (back-to-back arrangement).
Designed for standard end machining 2A or 3A

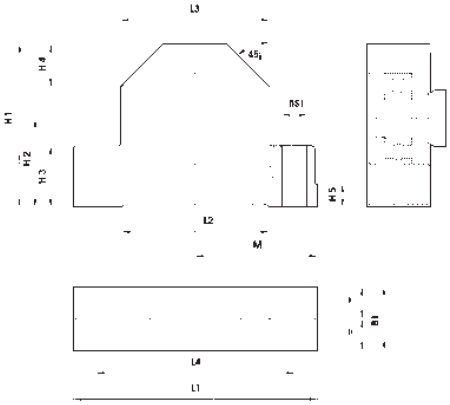


Designations	Dimensions							Basic load ratings dynamic	static
	d_0	D_1	D_3 h7	D_4	L_1	L_3	S_1 H13	C_a	C_{oa}
	mm							kN	
FLBU 16	16	76	47	63	37	22	6.6	12.2	12.8
FLBU 20	20	76	47	63	42	25	6.6	13.3	14.7
FLBU 25	25	90	60	76	46	32	6.6	27.9	31.9
FLBU 32	32	90	60	74	49	32	9	24.6	31.9
FLBU 40	40	120	80	100	53	32	11	41.9	59.6
FLBU 50	50	130	90	110	59	32	13	54.5	79.8
FLBU 63	63	165	124	146	85	43.5	13	128	196.1

Symbols = see page 149

BUF - Plummer bearings

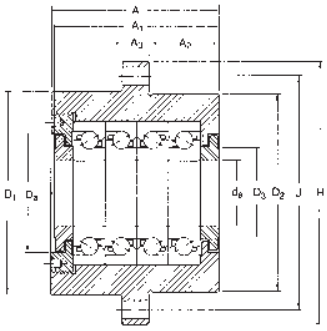
End bearings, axially free plummer housing with deep-groove ball bearing. Designed for standard end machining 4A or 5A



Designations	Dimensions							Basic load ratings dynamic	static
	d_0	B_1	H_1	H_2 JS7	L_1	L_4	S_1 H12	C_a	C_{oa}
	mm							kN	
BUF 16	16	24	58	32	86	68	9	5.07	2.36
BUF 20	20	26	64	34	94	77	9	5.07	2.36
BUF 25	25	28	72	39	108	88	11	9.56	4.75
BUF 32	32	34	77	45	112	92	11	9.56	4.75
BUF 40	40	38	98	58	126	105	13	19.5	11.2
BUF 50	50	39	112	65	144	118	13	19.5	11.2
BUF 63	63	38	130	65	190	160	13	33.2	21.6

FBS – Q

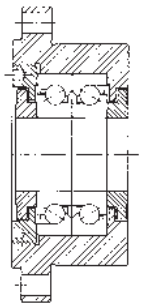
Accessories for ground shaft, flanged bearing units:
End bearings, axially locating flanged housing with high precision angular contact ball bearings (back-to-back arrangement, 4 matched in set)



Designations	Dimensions								Basic load ratings dynamic	static
	d_a	A	A_2	A_3	D_1	D_2	H	J	C	C_o
	mm								kN	
FBS 204/QXXX	20	77	32	13	64	60	90	76	34.5	71
FBS 25/QXXX	25	82	32	15	88	80	120	102	53	116
FBS 30/QXXX	30	82	32	15	88	80	120	102	45.5	108
FBS 35/QXXX	35	82	32	15	98	90	130	113	57	143
FBS 40/QXXX	40	106	43.5	17	128	124	165	146	100	245
FBS 45/QXXX	45	106	43.5	17	128	124	165	146	129	320
FBS 50/QXXX	50	106	43.5	17	128	124	165	146	129	320

FBS – D

Accessories for ground shaft, flanged bearing units:
End bearings, axially locating flanged housing with high precision angular contact ball bearings (back-to-back arrangement, 2 matched in set)



Designations	Dimensions								Basic load ratings dynamic	static
	d_a	A	A_2	A_3	D_1	D_2	H	J	C	C_o
	mm								kN	
FBS 204/DXXX	20	47	32	13	64	60	90	76	21.2	35.5
FBS 25/DXXX	25	52	32	15	88	80	120	102	32.5	58.5
FBS 30/DXXX	30	52	32	15	88	80	120	102	28.1	54
FBS 35/DXXX	35	52	32	15	98	90	130	113	35.1	71
FBS 40/DXXX	40	66	43.5	17	128	124	165	146	61.8	122
FBS 45/DXXX	45	66	43.5	17	128	124	165	146	79.3	160
FBS 50/DXXX	50	66	43.5	17	128	124	165	146	79.3	160

Symbols = see page 149

Roller screws

Two non-competing designs to cover requirements beyond ball screw limitations. Load transfer from the nut to the screw shaft through a number of threaded or grooved rollers: the resulting large number of contact points ensures a much higher load carrying capacity and a much longer life than ball screws of similar size.

"SR" Planetary roller screws
(→ **fig 17**)

Non-recirculating rollers yield high speed and acceleration capabilities, exceptional reliability and resistance to adverse environments.

"SV" Recirculating roller screws
(→ **fig 18**)

Very fine lead of thread (1 mm) allows high positioning accuracy, repeatability and exceptional rigidity

Fig 17

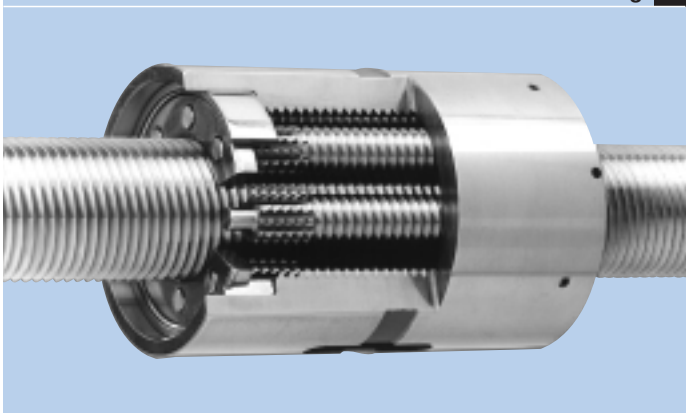
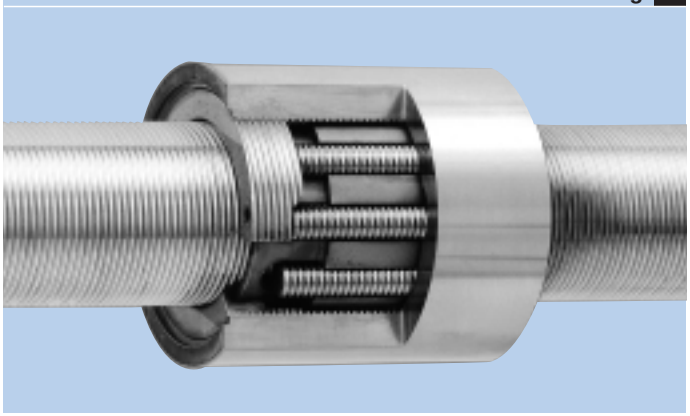


Fig 18



Ten reasons for using roller screws

- High load ratings (SR-SV)
- Very high rotational speed (SR)
- High acceleration and deceleration rates (SR)
- Long life at high cycle rates (SR)
- High reliability (SR-SV)
- Resistance to hostile surroundings (SR)
- Ability to accommodate shock loads (SR)
- Small displacements with very good repeatability (SV)
- Nut rotation when speed becomes critical (SR)
- Frequent removal of the nut from the screw shaft (SR, most SV)

Features

Type	Features
SR SV	Higher static load up to 1000 tons
SR SV	Higher dynamic load up to 200 tons
SR	Higher rotational speed - Ø 48 at over 3000 rpm
SR	Higher acceleration over 7000 rad/sec^2
SR	Shock loads
SR	Adverse environments (dust, ice, sand)
SV	1 mm lead
SR SV	Stainless steel

Complete assemblies (→ fig 19)

Selected roller screws, both planetary and recirculating roller screws, are available within reduced delivery times, with customised screw shafts from premachined stocked units: see pages 130-131 for planetary and 142-143 for recirculating roller screws.
The nuts are preloaded with oversize rollers, thus of load capacity as with the “split” nuts.
Lead precision G5 to ISO standard.

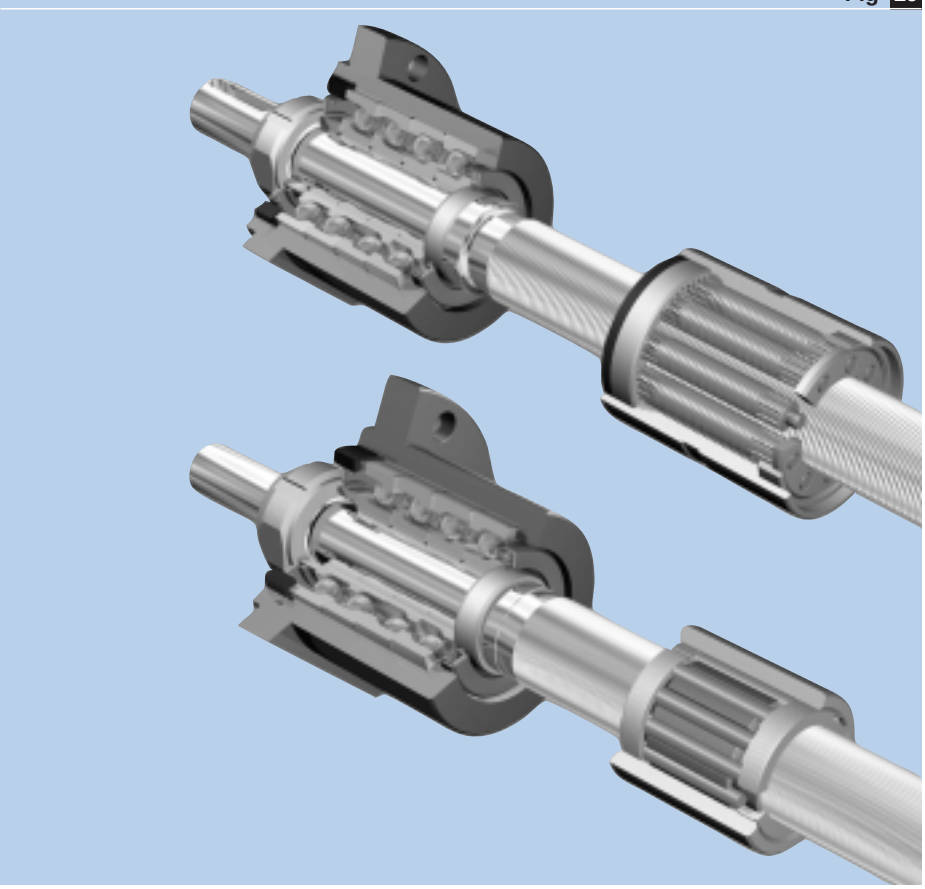
Ready for use
Roller screw and thrust bearing are delivered greased with SKF LGEP2. (Temperature range: –20° / +120°C)

Maximum speed
For screw assembly BR + FLRBU or BV + FLRBU, the maximum speed is defined by the product $n \times d_1$.

$n \times d_1$ < 140 000 for BR
< 20 000 for BV

(n = rotational speed
d_1 = outside diameter of screw shaft)

Fig 19

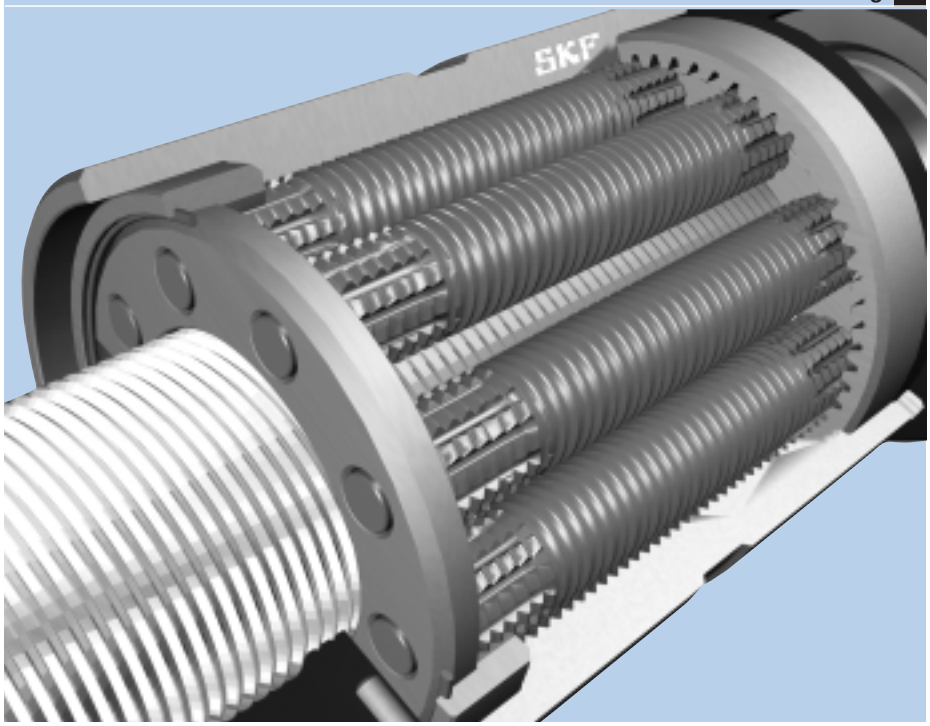


Planetary roller screws
(→ **fig** 20)

Features
– Many strong contact surfaces
– Non-recirculating rollers
– No weak point in the nut

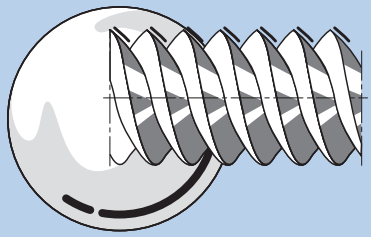
Benefits
– Long life: high load carrying capacity
– Robust and shock resistant
– Exceptional reliability
– High speed & acceleration capabilities

Fig 20



Threaded rollers are the basis of SR/BR/TR/PR planetary roller screws.
(→ **fig** 21)

Fig 21



Typical applications

The capacity to carry heavy loads for thousands of hours in the most arduous conditions makes planetary roller screws suitable for the most demanding applications. The robust nut can withstand shock loads and the timing mechanism ensures reliability even in harsh environments and at high accelerations; the long lead and the symmetrical design of the nut permit high linear speeds.

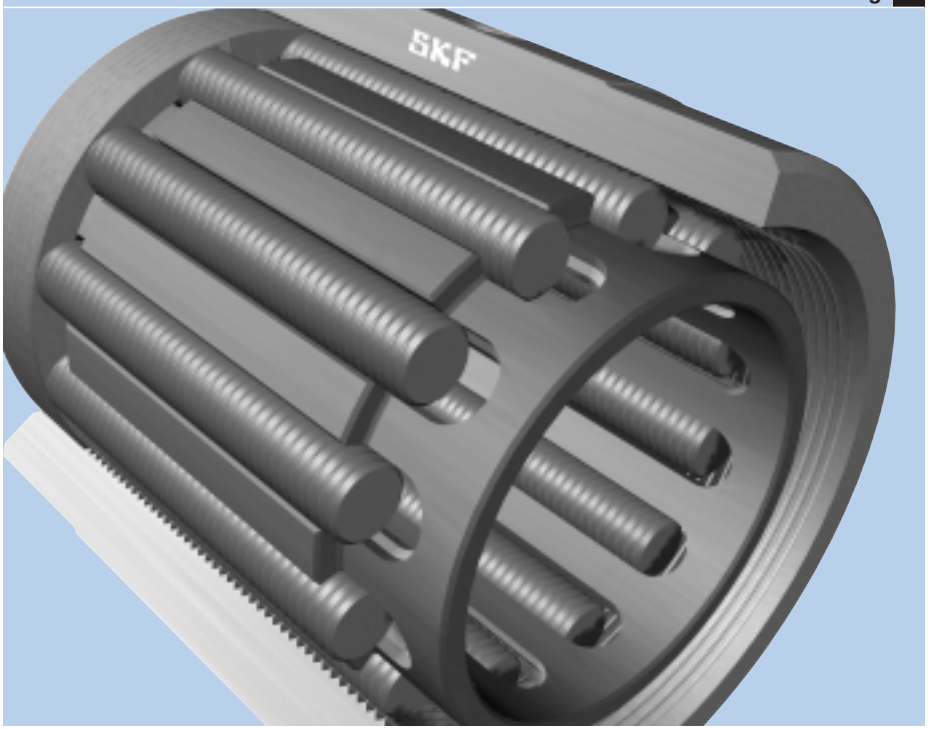
Examples:
- Machine tools
- Steel industry
- Tyre industry
- Automatic handling
- Military aircraft, tanks, rocket launchers, radar, ships and submarines
- Nuclear industry

Recirculating roller screws
(→ **fig** 22)

Features
– Many strong contact points
– Very small leads (1 mm)
– No miniature parts

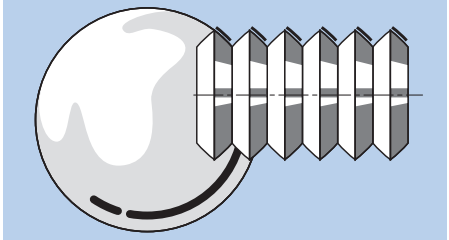
Benefits
– Long life: high load carrying capacity
– High positioning accuracy: fine resolution
– Exceptional reliability

Fig 22



Grooved rollers are the basis of SV/PV recirculating roller screws. (→ **fig** 23)

Fig 23



Typical applications

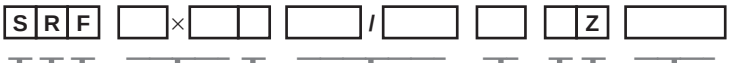
Ultimate positioning accuracy can be obtained using the fine lead of SV/BV/PV recirculating roller screws.

Their great mechanical advantage minimised input torque and increases resolution. They can simplify a complete transmission and improve its rigidity. They are often used in applications of advancing technology where reliable optimum performance is vital.

Examples:
- Grinding machines
- Laboratory equipment
- Hospital equipment
- Paper-making
- Printing industry
- Telescopes
- Satellites

Notes

Ordering key



Play or preload:
Axial play (standard range) . . . . . S
Axial play (Ultra Power range) . . . . . H
Preload by rollers to eliminate backlash . . . . . B
Nut preloaded for backlash elimination . . . . . T
Nut preloaded for optimum rigidity . . . . . P

Product:
Planetary roller screw . . . . . R
Recirculating roller screw V

Nut type:
Cylindrical nut C
Nut with central flange . . . . . F
Nut with non-central flange . . . . . P
Preloaded cylindrical nut . . . . . U
Preloaded nut with central flange . . . . . K

Nominal diameter × Lead [mm]

Hand:
Right . . . . . R
Left L

Threaded length, total length [mm]

Lead precision:
. . . . . G1 - G3 - G5

Nut orientation:
(this only applies to flanged nuts SRF, SRP, TRK, PRK, PRP, PVK, PVP, HRP, HRF):
For cylindrical nut . . . . . –
Shorter machined end, g6 side of nut towards . . . . . S
Longer machined end, g6 side of nut towards L

Shaft ends:
To customer's drawing . . . . . Z

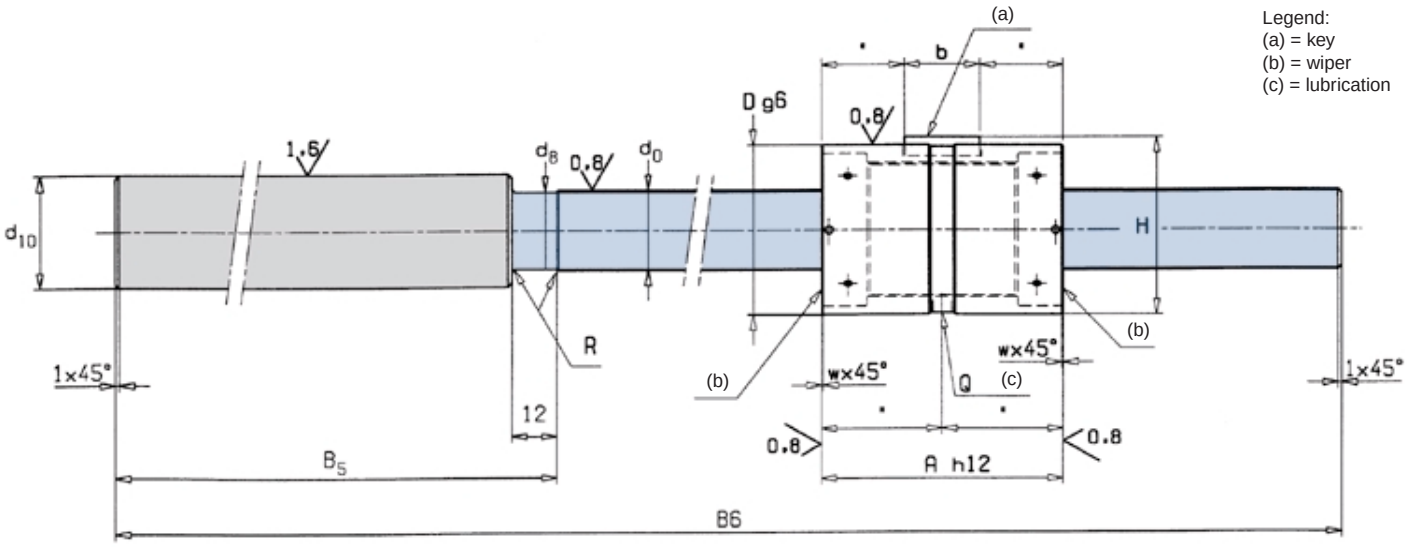
Wipers:
Wipers in the nut: mounted for SR, delivered separately for SVC . . . . . WPR
Without wipers . . . . . NOWPR
Nut without wiper recesses (non standard SR only) X

Example: **S R F 39 × 20 R 425 / 590 G1 Z WPR**

Example: **S R F 39 × 20 R 425 / 590 G5 L Z NOWPR**

Planetary roller screws

BRC – Range



Planetary roller screws without end machining, lead precision G5 according to ISO standard.
Nut preloaded by rollers for backlash elimination.

End can be machined to customer requirements

Maximum threaded length: Can be cut and machined to customer requirements

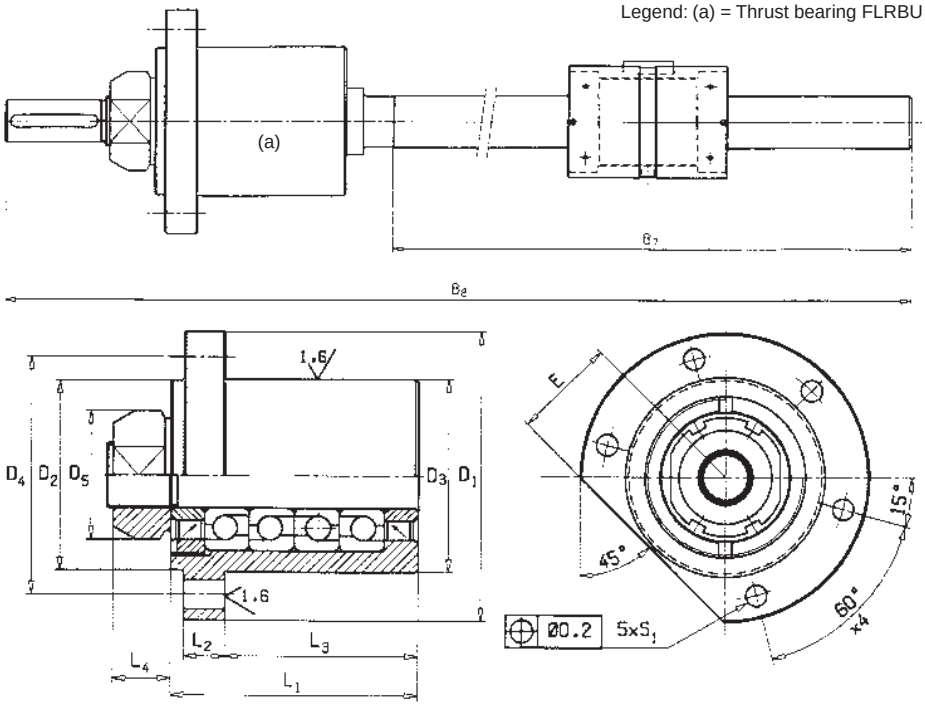
Designations	Dimensions						Basic load ratings dynamic	static
	d_0	B_6	d_{10}	B_5	D	A	C_a	C_{oa}
	mm						kN	
BRC 15 x 5-R5	15	400	25	115	35	50	21.2	36.3
BRC 21 x 5-R5	21	550	30	158	45	64	41.3	68.3
BRC 30 x 5-R5	30	800	50	213	64	85	75.2	148.6
BRC 39 x 5-R5	39	1000	50	213	80	100	105.6	224.1

Symbols = see page 149

FLRBU / BRC – Range

Planetary roller screw with thrust bearing unit

Legend: (a) = Thrust bearing FLRBU

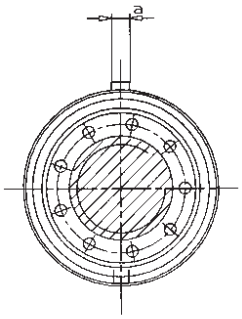


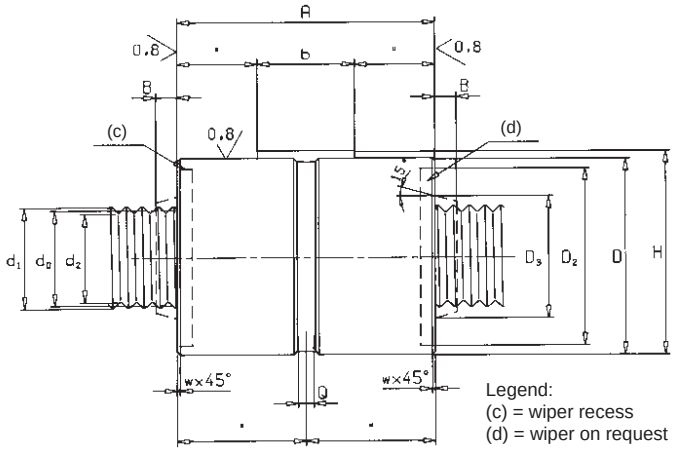
Designations	Dimensions										Basic load ratings dynamic	static
	d_0	B_7	B_8	L_1	L_2	L_3	D_1	D_3	D_4	E	C_a	C_{oa}
	mm										kN	
FLRBU2 / BRC 15 x 5-R5	15	285	398	46	10	32	90	60	76	32	27.9	31.9
FLRBU3 / BRC 21 x 5-R5	21	392	548	77	13	60	90	60	74	32	40.1	63.8
FLRBU5 / BRC 30 x 5-R5	30	587	798	89	16	68	120	80	100	44	74.2	119.2
FLRBU5 / BRC 39 x 5-R5	39	787	998	110	20	82	140	100	120	54	109.4	188.4

Symbols = see page 149

SRC - Range

Cylindrical nut with axial play



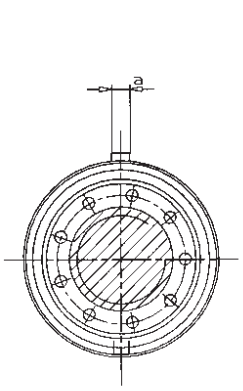


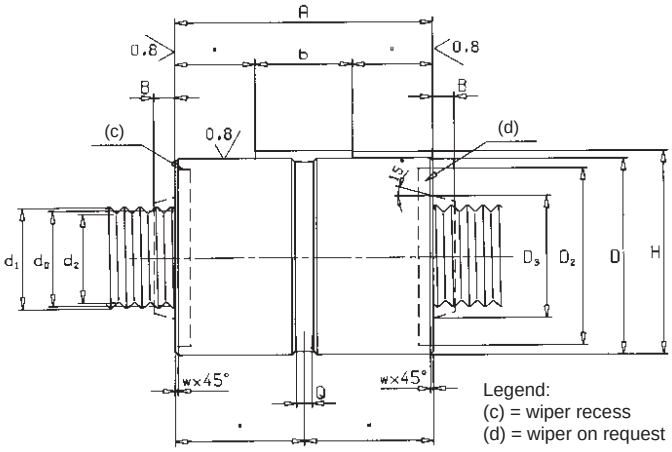
Legend:
(c) = wiper recess
(d) = wiper on request

Designations	Dimensions												Basic load ratings dynamic	static
	d_0	P_h	l_{tp}	s_{ap}	d_1	d_2	D g6/H7	A h12	a h9	b	H	Q	C_a	C_{oa}
	mm												kN	
SRC 8x4	8	4	500	0.02	8.4	7.3	25	44	4	12	26.5	5	9.19	16.3
SRC 12x5	12	5	750	0.02	12.4	11.3	30	44	4	12	31.5	5	14.5	22.3
SRC 15x5	15	5	975	0.02	15.4	14.3	35	50	4	16	36.5	5	21.2	36.3
SRC 15x8	15	8	975	0.02	15.5	14.0	35	50	4	16	36.5	5	22.4	33.9
SRC 20x6	20	6	1300	0.02	20.4	19.3	40	50	4	16	41.5	5	21.9	37.4
SRC 21x5	21	5	1400	0.02	21.4	20.3	45	64	5	20	47.0	5	41.3	68.3
SRC 21x6	21	6	1400	0.02	21.4	20.3	45	64	5	20	47.0	5	41.6	64.7
SRC 21x8	21	8	1400	0.02	21.5	20.0	45	64	5	20	47.0	5	44.5	65.0
SRC 21x10	21	10	1400	0.04	21.8	19.7	45	64	5	20	47.0	5	48.4	69.2
SRC 24x6	24	6	1600	0.02	24.4	23.3	48	58	5	20	50.0	5	34.6	54.3
SRC 24x12	24	12	1600	0.04	24.8	22.7	48	58	5	20	50.0	5	39.0	52.0
SRC 25x5	25	5	1650	0.02	25.4	24.3	53	78	6	25	55.5	5	51.7	90.2
SRC 25x10	25	10	1650	0.04	25.8	23.7	53	78	6	25	55.5	5	59.4	87.8
SRC 25x15	25	15	1650	0.07	26.2	23.1	53	78	6	25	55.5	5	64.7	88.7
SRC 30x5	30	5	2000	0.02	30.4	29.3	64	85	6	32	66.5	5	75.2	148.6
SRC 30x6	30	6	2000	0.02	30.4	29.3	64	85	6	32	66.5	5	77.6	146.1
SRC 30x10	30	10	2000	0.04	30.8	28.7	64	85	6	32	66.5	5	86.9	145.3
SRC 30x20	30	20	2000	0.07	31.5	27.5	64	85	6	32	66.5	5	100.8	147.7
SRC 36x6	36	6	2400	0.02	36.4	35.3	68	80	5	25	70.0	5	74.0	149.5
SRC 36x9	36	9	2400	0.02	36.5	35.1	68	80	5	25	70.0	5	79.7	145.0
SRC 36x12	36	12	2400	0.04	36.8	34.7	68	80	5	25	70.0	5	87.2	150.9
SRC 36x18	36	18	2400	0.07	37.2	34.1	68	80	5	25	70.0	5	93.3	147.1
SRC 36x24	36	24	2400	0.07	37.5	33.5	68	80	5	25	70.0	5	101.1	153.7
SRC 39x5	39	5	2650	0.02	39.4	38.3	80	100	8	40	83.0	7	105.6	224.1
SRC 39x10	39	10	2650	0.04	39.8	37.7	80	100	8	40	83.0	7	124.8	225.8
SRC 39x15	39	15	2650	0.07	40.2	37.1	80	100	8	40	83.0	7	137.1	227.4
SRC 39x20	39	20	2650	0.07	40.5	36.5	80	100	8	40	83.0	7	141.3	217.4
SRC 39x25	39	25	2650	0.07	40.9	35.9	80	100	8	40	83.0	7	142.9	207.5
SRC 44x8	44	8	3000	0.04	44.4	43.2	80	90	6	32	82.5	7	109.2	226.3
SRC 44x12	44	12	3000	0.04	44.8	42.7	80	90	6	32	82.5	7	117.5	219.1
SRC 44x18	44	18	3000	0.07	45.2	42.1	80	90	6	32	82.5	7	129.0	220.8
SRC 44x24	44	24	3000	0.07	45.5	41.5	80	90	6	32	82.5	7	137.2	222.5
SRC 44x30	44	30	3000	0.07	45.9	40.9	80	90	6	32	82.5	7	135.6	205.4

Continued

Symbols = see page 149





Legend:
(c) = wiper recess
(d) = wiper on request

3

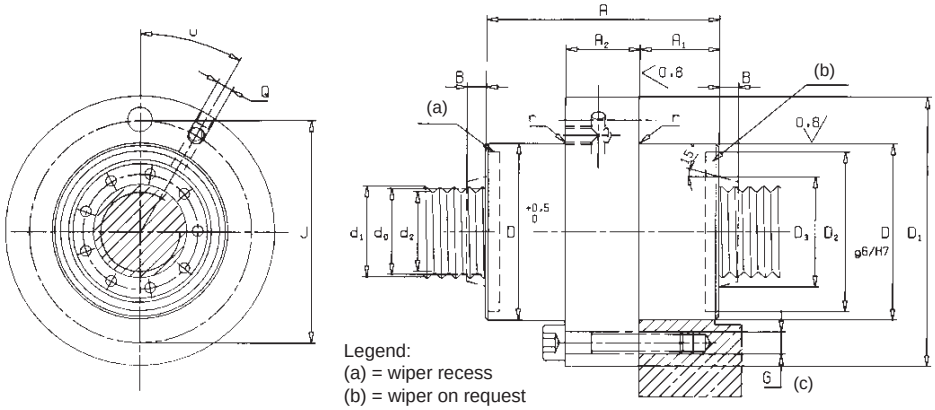
Continued

Designations	Dimensions												Basic load ratings dynamic	static
	d_0	P_h	l_{tp}	s_{ap}	d_1	d_2	D g6/H7	A h12	a h9	b	H	Q	C_a	C_{oa}
	mm												kN	
SRC 48x5	48	5	3300	0.02	48.4	47.3	100	127	8	45	103.0	7	161.9	401.3
SRC 48x8	48	8	3300	0.04	48.6	47.1	100	127	8	45	103.0	7	178.6	392.2
SRC 48x10	48	10	3300	0.04	48.8	46.7	100	127	8	45	103.0	7	189.3	395.9
SRC 48x15	48	15	3300	0.07	49.2	46.1	100	127	8	45	103.0	7	210.7	405.3
SRC 48x20	48	20	3300	0.07	49.5	45.5	100	127	8	45	103.0	7	217.2	385.2
SRC 48x25	48	25	3300	0.07	49.9	44.9	100	127	8	45	103.0	7	236.1	409.2
SRC 56x12	56	12	4000	0.04	56.8	54.7	100	112	8	40	103.0	7	173.5	360.9
SRC 56x24	56	24	4000	0.07	57.5	53.5	100	112	8	40	103.0	7	198.0	349.3
SRC 56x36	56	36	4000	0.07	58.3	52.3	100	112	8	40	103.0	7	215.4	353.5
SRC 60x10	60	10	4250	0.04	60.8	58.7	122	152	10	45	125.0	10.5	276.8	649.7
SRC 60x15	60	15	4250	0.07	61.2	58.1	122	152	10	45	125.0	10.5	305.0	652.2
SRC 60x20	60	20	4250	0.07	61.5	57.5	122	152	10	45	125.0	10.5	326.2	654.7
SRC 64x12	64	12	4600	0.04	64.8	62.7	115	129	8	45	118.0	7	242.3	636.1
SRC 64x18	64	18	4600	0.07	65.2	62.1	115	129	8	45	118.0	7	258.9	604.6
SRC 64x24	64	24	4600	0.07	65.5	61.5	115	129	8	45	118.0	7	268.9	574.7
SRC 64x30	64	30	4600	0.07	65.9	60.9	115	129	8	45	118.0	7	262.8	516.5
SRC 64x36	64	36	4600	0.07	66.3	60.3	115	129	8	45	118.0	7	262.1	491.2
SRC 75x10	75	10	5500	0.04	75.8	73.7	150	191	10	63	153.0	10.5	412.7	1239.0
SRC 75x15	75	15	5500	0.07	76.2	73.1	150	191	10	63	153.0	10.5	458.9	1243.0
SRC 75x20	75	20	5500	0.07	76.5	72.5	150	191	10	63	153.0	10.5	485.2	1247.0
SRC 80x12	80	12	6000	0.04	80.8	78.7	140	156	10	63	143.0	10.5	335.4	969.3
SRC 80x18	80	18	6000	0.07	81.2	78.1	140	156	10	63	143.0	10.5	372.8	973.0
SRC 80x24	80	24	6000	0.07	81.5	77.5	140	156	10	63	143.0	10.5	401.2	976.7
SRC 80x36	80	36	6000	0.07	82.3	76.3	140	156	10	63	143.0	10.5	375.5	832.6
SRC 80x42	80	42	6000	0.07	82.7	75.7	140	156	10	63	143.0	10.5	360.9	777.5
SRC 99x20	99	20	7500	0.07	100.5	96.5	200	260	16	100	204.0	15	784.2	2575.0
SRC 100x24	100	24	8000	0.07	101.5	97.5	180	195	10	63	183.0	10.5	556.1	1522.0
SRC 120x24	120	24	8000	0.07	121.5	117.5	220	240	16	100	224.0	15	775.8	2523.0
SRC 120x25	120	25	8000	0.07	121.9	116.9	240	280	16	100	244.0	15	955.9	3365.0
SRC 150x36	150	36	8000	0.07	152.3	146.3	280	305	16	100	284.0	15	980.9	3423.0
SRC 150x25	150	25	8000	0.07	151.9	146.9	320	400	32	160	327.0	15	1354.0	5680.0
SRC 180x30	180	30	8000	0.07	182.3	176.3	420	515	32	160	427.0	20	1664.0	7558.0
SRC 210x30	210	30	8000	0.07	212.3	206.3	480	550	40	200	489.0	20	1946.0	9479.0

Symbols = see page 149

SRF - Range

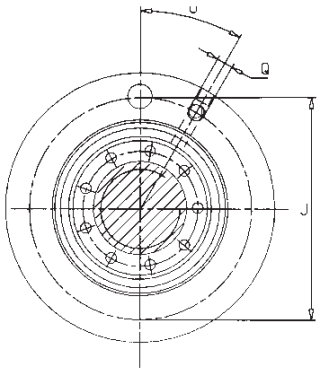
Flanged nut with axial play

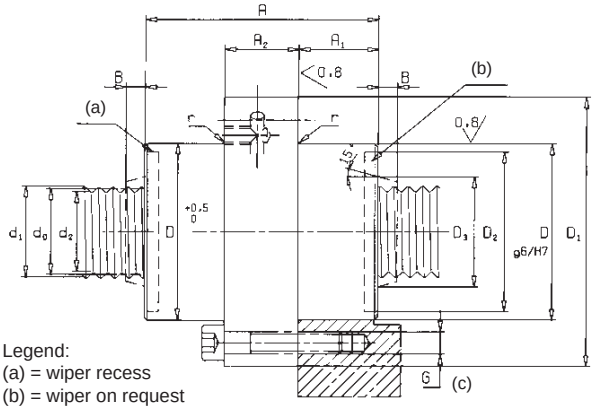


Designations	Dimensions													Basic load ratings dynamic	static
	d_0	P_h	l_{tp}	s_{ap}	d_1	d_2	D	A h12	D_1	J js12	G	Q	u	C_a	C_{oa}
	mm												[°]	kN	
SRF 8x4	8	4	500	0.02	8.4	7.3	25	44	46	36	6×M4	M6	30	9.19	16.3
SRF 12x5	12	5	750	0.02	12.4	11.3	30	44	51	41	6×M4	M6	30	14.5	22.3
SRF 15x5	15	5	975	0.02	15.4	14.3	35	50	58	46	6×M5	M6	30	21.2	36.3
SRF 15x8	15	8	975	0.02	15.5	14	35	50	58	46	6×M5	M6	30	22.4	33.9
SRF 20x6	20	6	1300	0.02	20.4	19.3	40	50	63	51	6×M5	M6	30	21.9	37.4
SRF 21x5	21	5	1400	0.02	21.4	20.3	45	64	68	56	6×M5	M6	30	41.3	68.3
SRF 21x6	21	6	1400	0.02	21.4	20.3	45	64	68	56	6×M5	M6	30	41.6	64.7
SRF 21x8	21	8	1400	0.02	21.5	20	45	64	68	56	6×M5	M6	30	44.5	65.0
SRF 21x10	21	10	1400	0.04	21.8	19.7	45	64	68	56	6×M5	M6	30	48.4	69.2
SRF 24x6	24	6	1600	0.02	24.4	23.3	48	58	71	59	6×M5	M6	30	34.6	54.3
SRF 24x12	24	12	1600	0.04	24.8	22.7	48	58	71	59	6×M5	M6	30	39.0	52.0
SRF 25x5	25	5	1650	0.02	25.4	24.3	56	78	84	70	6×M6	M6	30	51.7	90.2
SRF 25x10	25	10	1650	0.04	25.8	23.7	56	78	84	70	6×M6	M6	30	59.4	87.8
SRF 25x15	25	15	1650	0.07	26.2	23.1	56	78	84	70	6×M6	M6	30	64.7	88.7
SRF 30x5	30	5	2000	0.02	30.4	29.3	64	85	97	81	6×M8	M6	30	75.2	148.6
SRF 30x6	30	6	2000	0.02	30.4	29.3	64	85	97	81	6×M6	M6	30	77.6	146.1
SRF 30x10	30	10	2000	0.04	30.8	28.7	64	85	97	81	6×M8	M6	30	86.9	145.3
SRF 30x20	30	20	2000	0.07	31.5	27.5	64	85	97	81	6×M8	M6	30	100.8	147.7
SRF 36x6	36	6	2400	0.02	36.4	35.3	68	80	102	85	6×M8	M6	30	74.0	149.5
SRF 36x9	36	9	2400	0.02	36.5	35.1	68	80	102	85	6×M8	M6	30	79.7	145.0
SRF 36x12	36	12	2400	0.04	36.8	34.7	68	80	102	85	6×M8	M6	30	87.2	150.9
SRF 36x18	36	18	2400	0.07	37.2	34.1	68	80	102	85	6×M8	M6	30	93.3	147.1
SRF 36x24	36	24	2400	0.07	37.5	33.5	68	80	102	85	6×M8	M6	30	101.1	153.7
SRF 39x5	39	5	2650	0.02	39.4	38.3	82	100	124	102	6×M10	M6	30	105.6	224.1
SRF 39x10	39	10	2650	0.04	39.8	37.7	82	100	124	102	6×M10	M6	30	124.8	225.8
SRF 39x15	39	15	2650	0.07	40.2	37.1	82	100	124	102	6×M10	M6	30	137.1	227.4
SRF 39x20	39	20	2650	0.07	40.5	36.5	82	100	124	102	6×M10	M6	30	141.3	217.4
SRF 39x25	39	25	2650	0.07	40.9	35.9	82	100	124	102	6×M10	M6	30	142.9	207.5
SRF 44x8	44	8	3000	0.04	44.4	43.2	82	90	124	102	6×M10	M6	30	109.2	226.3
SRF 44x12	44	12	3000	0.04	44.8	42.7	82	90	124	102	6×M10	M6	30	117.5	219.1
SRF 44x18	44	18	3000	0.07	45.2	42.1	82	90	124	102	6×M10	M6	30	129.0	220.8
SRF 44x24	44	24	3000	0.07	45.5	41.5	82	90	124	102	6×M10	M6	30	137.2	222.5
SRF 44x30	44	30	3000	0.07	45.9	40.9	82	90	124	102	6×M10	M6	30	135.6	205.4

Continued

Symbols = see page 149





Legend:
(a) = wiper recess
(b) = wiper on request
(c) = equidistant

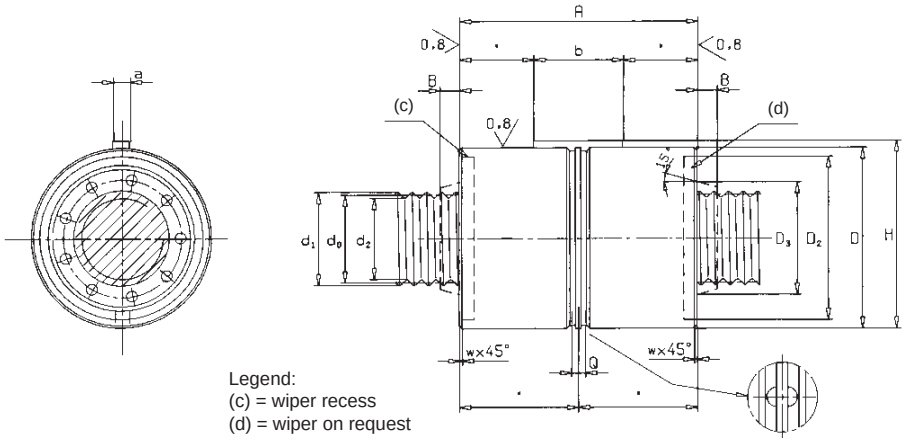
Continued

Designations	Dimensions													Basic load ratings dynamic	static
	d_0	P_h	l_{tp}	s_{ap}	d_1	d_2	D	A h12	D_1	J js12	G	Q	u	C_a	C_{oa}
	mm												[°]	kN	
SRF 48x5	48	5	3300	0.02	48.4	47.3	105	127	150	127	6×M12	M8×1	30	161.9	401.3
SRF 48x8	48	8	3300	0.04	48.6	47.1	105	127	150	127	6×M12	M8×1	30	178.6	392.2
SRF 48x10	48	10	3300	0.04	48.8	46.7	105	127	150	127	6×M12	M8×1	30	189.3	395.9
SRF 48x15	48	15	3300	0.07	49.2	46.1	105	127	150	127	6×M12	M8×1	30	210.7	405.3
SRF 48x20	48	20	3300	0.07	49.5	45.5	105	127	150	127	6×M12	M8×1	30	217.2	385.2
SRF 48x25	48	25	3300	0.07	49.9	44.9	105	127	150	127	6×M12	M8×1	30	236.1	409.2
SRF 56x12	56	12	4000	0.04	56.8	54.7	105	112	150	127	6×M12	M8×1	30	173.5	360.9
SRF 56x24	56	24	4000	0.07	57.5	53.5	105	112	150	127	6×M12	M8×1	30	198.0	349.3
SRF 56x36	56	36	4000	0.07	58.3	52.3	105	112	150	127	6×M12	M8×1	30	215.4	353.5
SRF 60x10	60	10	4250	0.04	60.8	58.7	122	152	180	150	6×M16	M8×1	30	276.8	649.7
SRF 60x15	60	15	4250	0.07	61.2	58.1	122	152	180	150	6×M16	M8×1	30	305.0	652.2
SRF 60x20	60	20	4250	0.07	61.5	57.5	122	152	180	150	6×M16	M8×1	30	326.2	654.7
SRF 64x12	64	12	4600	0.04	64.8	62.7	120	129	180	150	6×M16	M8×1	30	242.3	636.1
SRF 64x18	64	18	4600	0.07	65.2	62.1	120	129	180	150	6×M16	M8×1	30	258.9	604.6
SRF 64x24	64	24	4600	0.07	65.5	61.5	120	129	180	150	6×M16	M8×1	30	268.9	574.7
SRF 64x30	64	30	4600	0.07	65.9	60.9	120	129	180	150	6×M16	M8×1	30	262.8	516.5
SRF 64x36	64	36	4600	0.07	66.3	60.3	120	129	180	150	6×M16	M8×1	30	262.1	491.2
SRF 75x10	75	10	5500	0.04	75.8	73.7	150	191	210	180	8×M16	M8×1	22°30	412.7	1239.0
SRF 75x15	75	15	5500	0.07	76.2	73.1	150	191	210	180	8×M16	M8×1	22°30	458.9	1243.0
SRF 75x20	75	20	5500	0.07	76.5	72.5	150	191	210	180	8×M16	M8×1	22°30	485.2	1247.0
SRF 80x12	80	12	6000	0.04	80.8	78.7	150	156	210	180	8×M16	M8×1	22°30	335.4	969.3
SRF 80x18	80	18	6000	0.07	81.2	78.1	150	156	210	180	8×M16	M8×1	22°30	372.8	973.0
SRF 80x24	80	24	6000	0.07	81.5	77.5	150	156	210	180	8×M16	M8×1	22°30	401.2	976.7
SRF 80x36	80	36	6000	0.07	82.3	76.3	150	156	210	180	8×M16	M8×1	22°30	375.5	832.6
SRF 80x42	80	42	6000	0.07	82.7	75.7	150	156	210	180	8×M16	M8×1	22°30	360.9	777.5
SRF 99x20	99	20	7500	0.07	100.5	96.5	200	260	275	245	12×M16	M8×1	15	784.2	2575.0
SRF 100x24	100	24	8000	0.07	101.5	97.5	180	195	255	220	12×M16	M8×1	15	556.1	1522.0
SRF 120x24	120	24	8000	0.07	121.5	117.5	220	240	295	260	12×M16	M8×1	15	775.8	2523.0
SRF 120x25	120	25	8000	0.07	121.9	116.9	260	280	340	305	12×M16	M12	15	955.9	3365.0
SRF 150x36	150	36	8000	0.07	152.3	146.3	280	305			Consult SKF			980.9	3423.0
SRF 150x25	150	25	8000	0.07	151.9	146.9	320	400			Consult SKF			1354.0	5680.0
SRF 180x30	180	30	8000	0.07	182.3	176.3	420	515			Consult SKF			1664.0	7558.0
SRF 210x30	210	30	8000	0.07	212.3	206.3	480	550			Consult SKF			1946.0	9479.0

Symbols = see page 149

TRU / PRU - Range

Cylindrical nut with backlash elimination (TRU) or preloaded for optimum rigidity (PRU)

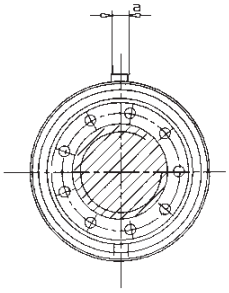


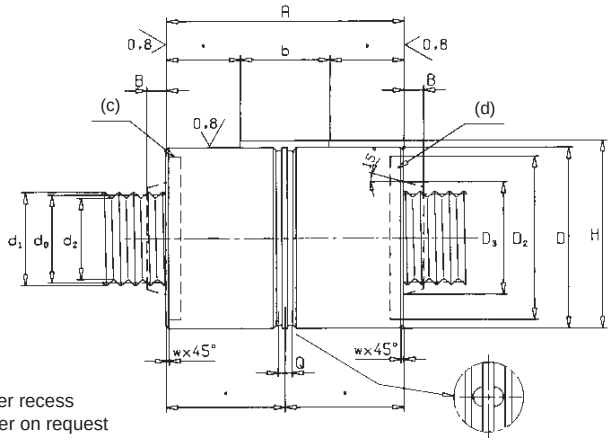
Legend:
(c) = wiper recess
(d) = wiper on request

Designations	Dimensions											Basic load ratings dynamic	static	Preload torque	
	d_0	P_h	l_{tp}	d_1	d_2	D g6/H7	A h12	a h9	b	H	Q	C_a	C_{oa}	T_{pe}	T_{pr}
	mm										[°]	kN		Nm	
TRU 8x4	8	4	400	8.4	7.3	25	44	4	12	26.5	5	5.06	8.16	0.07	
PRU 8x4	8	4	400	8.4	7.3	25	44	4	12	26.5	5	5.06	8.16		0.06 - 0.13
TRU 12x5	12	5	600	12.4	11.3	30	44	4	12	31.5	5	7.98	11.1	0.13	
PRU 12x5	12	5	600	12.4	11.3	30	44	4	12	31.5	5	7.98	11.1		0.12 - 0.25
TRU 15x5	15	5	750	15.4	14.3	35	50	4	16	36.5	5	11.7	18.2	0.19	
PRU 15x5	15	5	750	15.4	14.3	35	50	4	16	36.5	5	11.7	18.2		0.18 - 0.36
TRU 15x8	15	8	750	15.5	14	35	50	4	16	36.5	5	12.4	16.9	0.19	
PRU 15x8	15	8	750	15.5	14	35	50	4	16	36.5	5	12.4	16.9		0.18 - 0.36
TRU 20x6	20	6	1050	20.4	19.3	40	50	4	16	41.5	5	12.1	18.7	0.30	
PRU 20x6	20	6	1050	20.4	19.3	40	50	4	16	41.5	5	12.1	18.7		0.26 - 0.58
TRU 21x5	21	5	1100	21.4	20.3	45	64	5	20	47.0	5	22.8	34.2	0.33	
PRU 21x5	21	5	1100	21.4	20.3	45	64	5	20	47.0	5	22.8	34.2		0.31 - 0.63
TRU 21x6	21	6	1100	21.4	20.3	45	64	5	20	47.0	5	22.9	32.3	0.33	
PRU 21x6	21	6	1100	21.4	20.3	45	64	5	20	47.0	5	22.9	32.3		0.31 - 0.63
TRU 21x8	21	8	1100	21.5	20	45	64	5	20	47.0	5	24.5	32.5	0.33	
PRU 21x8	21	8	1100	21.5	20	45	64	5	20	47.0	5	24.5	32.5		0.31 - 0.63
TRU 21x10	21	10	1100	21.8	19.7	45	64	5	20	47.0	5	26.7	34.6	0.33	
PRU 21x10	21	10	1100	21.8	19.7	45	64	5	20	47.0	5	26.7	34.6		0.31 - 0.63
TRU 24x6	24	6	1250	24.4	23.3	48	58	5	20	50.0	5	19.0	27.2	0.41	
PRU 24x6	24	6	1250	24.4	23.3	48	58	5	20	50.0	5	19.0	27.2		0.39 - 0.78
TRU 24x12	24	12	1250	24.8	22.7	48	58	5	20	50.0	5	21.5	26.0	0.41	
PRU 24x12	24	12	1250	24.8	22.7	48	58	5	20	50.0	5	21.5	26.0		0.39 - 0.78
TRU 25x5	25	5	1300	25.4	24.3	53	78	6	25	55.5	5	28.5	45.1	0.44	
PRU 25x5	25	5	1300	25.4	24.3	53	78	6	25	55.5	5	28.5	45.1		0.42 - 0.84
TRU 25x10	25	10	1300	25.8	23.7	53	78	6	25	55.5	5	32.7	43.9	0.44	
PRU 25x10	25	10	1300	25.8	23.7	53	78	6	25	55.5	5	32.7	43.9		0.42 - 0.84
TRU 25x15	25	15	1300	26.2	23.1	53	78	6	25	55.5	5	35.6	44.3	0.44	
PRU 25x15	25	15	1300	26.2	23.1	53	78	6	25	55.5	5	35.6	44.3		0.42 - 0.84
TRU 30x5	30	5	1600	30.4	29.3	64	85	6	32	66.5	5	41.4	74.3	0.59	
PRU 30x5	30	5	1600	30.4	29.3	64	85	6	32	66.5	5	41.4	74.3		0.57 - 1.13
TRU 30x6	30	6	1600	30.4	29.3	64	85	6	32	66.5	5	42.8	73.0	0.59	
PRU 30x6	30	6	1600	30.4	29.3	64	85	6	32	66.5	5	42.8	73.0		0.57 - 1.13
TRU 30x10	30	10	1600	30.8	28.7	64	85	6	32	66.5	5	47.9	72.6	0.59	
PRU 30x10	30	10	1600	30.8	28.7	64	85	6	32	66.5	5	47.9	72.6		0.57 - 1.13
TRU 30x20	30	20	1600	31.5	27.5	64	85	6	32	66.5	5	55.5	73.9	0.59	
PRU 30x20	30	20	1600	31.5	27.5	64	85	6	32	66.5	5	55.5	73.9		0.85 - 1.41

Continued

Symbols = see page 149





Legend:
(c) = wiper recess
(d) = wiper on request

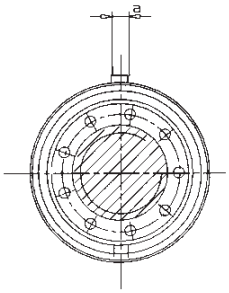
Continued

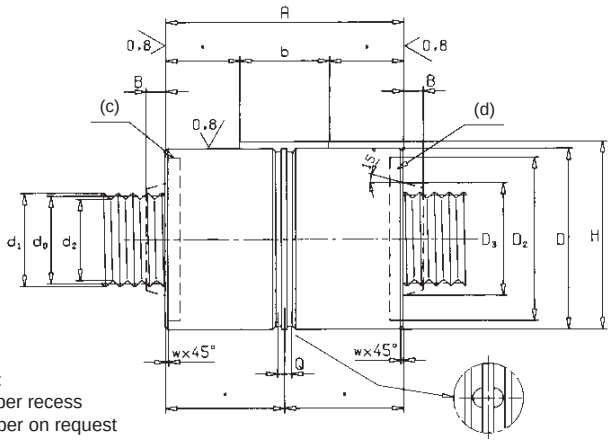
Designations	Dimensions											Basic load ratings dynamic	static	Preload torque	
	d_0	P_h	l_{tp}	d_1	d_2	D g6/H7	A h12	a h9	b	H	Q	C_a	C_{oa}	T_{pe}	T_{pr}
	mm										[°]	kN		Nm	
TRU 36x6	36	6	1900	36.4	35.3	68	80	5	25	70.0	5	40.7	74.7	0.80	
PRU 36x6	36	6	1900	36.4	35.3	68	80	5	25	70.0	5	40.7	74.7		0.77 - 1.53
TRU 36x9	36	9	1900	36.5	35.1	68	80	5	25	70.0	5	43.9	72.5	0.80	
PRU 36x9	36	9	1900	36.5	35.1	68	80	5	25	70.0	5	43.9	72.5		0.77 - 1.53
TRU 36x12	36	12	1900	36.8	34.7	68	80	5	25	70.0	5	48.0	75.5	0.80	
PRU 36x12	36	12	1900	36.8	34.7	68	80	5	25	70.0	5	48.0	75.5		0.77 - 1.53
TRU 36x18	36	18	1900	37.2	34.1	68	80	5	25	70.0	5	51.5	73.5	0.80	
PRU 36x18	36	18	1900	37.2	34.1	68	80	5	25	70.0	5	51.5	73.5		0.77 - 1.53
TRU 36x24	36	24	1900	37.5	33.5	68	80	5	25	70.0	5	55.7	76.8	0.80	
PRU 36x24	36	24	1900	37.5	33.5	68	80	5	25	70.0	5	55.7	76.8		1.15 - 1.91
TRU 39x5	39	5	2100	39.4	38.3	80	100	8	40	83.0	7	58.2	112.1	0.92	
PRU 39x5	39	5	2100	39.4	38.3	80	100	8	40	83.0	7	58.2	112.1		0.88 - 1.75
TRU 39x10	39	10	2100	39.8	37.7	80	100	8	40	83.0	7	68.7	112.9	0.92	
PRU 39x10	39	10	2100	39.8	37.7	80	100	8	40	83.0	7	75.5	113.7		0.88 - 1.75
TRU 39x15	39	15	2100	40.2	37.1	80	100	8	40	83.0	7	75.5	113.7	0.92	
PRU 39x15	39	15	2100	40.2	37.1	80	100	8	40	83.0	7	75.5	113.7		0.88 - 1.75
TRU 39x20	39	20	2100	40.5	36.5	80	100	8	40	83.0	7	77.8	108.7	0.92	
PRU 39x20	39	20	2100	40.5	36.5	80	100	8	40	83.0	7	77.8	108.7		0.88 - 1.75
TRU 39x25	39	25	2100	40.9	35.9	80	100	8	40	83.0	7	78.7	103.8	0.92	
PRU 39x25	39	25	2100	40.9	35.9	80	100	8	40	83.0	7	78.7	103.8		1.31 - 2.19
TRU 44x8	44	8	2400	44.4	43.2	80	90	6	32	82.5	7	60.2	113.2	1.12	
PRU 44x8	44	8	2400	44.4	43.2	80	90	6	32	82.5	7	60.2	113.2		1.07 - 2.14
TRU 44x12	44	12	2400	44.8	42.7	80	90	6	32	82.5	7	64.7	109.5	1.12	
PRU 44x12	44	12	2400	44.8	42.7	80	90	6	32	82.5	7	64.7	109.5		1.07 - 2.14
TRU 44x18	44	18	2400	45.2	42.1	80	90	6	32	82.5	7	71.0	110.4	1.12	
PRU 44x18	44	18	2400	45.2	42.1	80	90	6	32	82.5	7	71.0	110.4		1.07 - 2.14
TRU 44x24	44	24	2400	45.5	41.5	80	90	6	32	82.5	7	75.6	111.2	1.12	
PRU 44x24	44	24	2400	45.5	41.5	80	90	6	32	82.5	7	75.6	111.2		1.07 - 21.4
TRU 44x30	44	30	2400	45.9	40.9	80	90	6	32	82.5	7	74.7	102.7	1.12	
PRU 44x30	44	30	2400	45.9	40.9	80	90	6	32	82.5	7	74.7	102.7		1.60 - 2.68
TRU 48x5	48	5	2600	48.4	47.3	100	127	8	45	103.0	7	89.2	200.6	1.30	
PRU 48x5	48	5	2600	48.4	47.3	100	127	8	45	103.0	7	89.2	200.6		1.24 - 2.47
TRU 48x8	48	8	2600	48.6	47.1	100	127	8	45	103.0	7	98.4	196.0	1.30	
PRU 48x8	48	8	2600	48.6	47.1	100	127	8	45	103.0	7	98.4	196.0		1.24 - 2.47
TRU 48x10	48	10	2600	48.8	46.7	100	127	8	45	103.0	7	104.3	198.0	1.30	
PRU 48x10	48	10	2600	48.8	46.7	100	127	8	45	103.0	7	104.3	198.0		1.24 - 2.47
TRU 48x15	48	15	2600	49.2	46.1	100	127	8	45	103.0	7	116.1	202.7	1.30	
PRU 48x15	48	15	2600	49.2	46.1	100	127	8	45	103.0	7	116.1	202.7		1.24 - 2.47
TRU 48x20	48	20	2600	49.5	45.5	100	127	8	45	103.0	7	119.7	192.7	1.30	
PRU 48x20	48	20	2600	49.5	45.5	100	127	8	45	103.0	7	119.7	192.7		1.24 - 2.47
TRU 48x25	48	25	2600	49.9	44.9	100	127	8	45	103.0	7	130.0	204.6	1.30	
PRU 48x25	48	25	2600	49.9	44.9	100	127	8	45	103.0	7	130.0	204.6		1.24 - 2.47

Continued

Symbols = see page 149

TRU / PRU - Range
(Continued)





Legend:
(c) = wiper recess
(d) = wiper on request

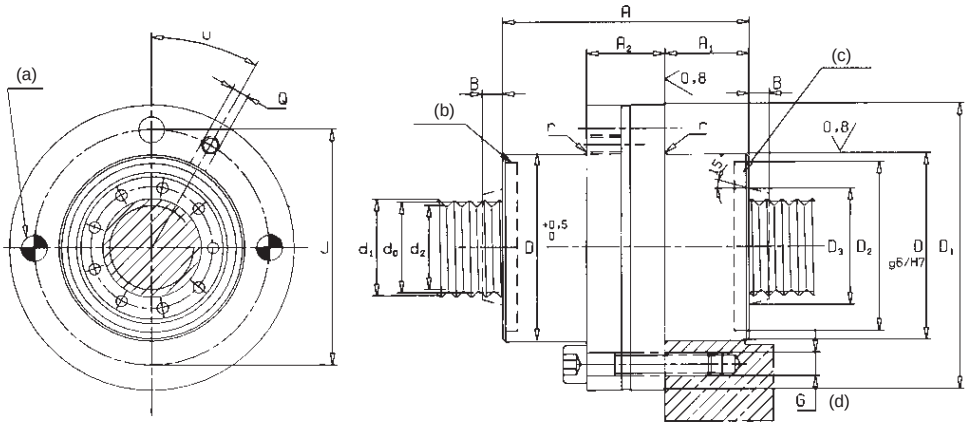
Continued

Designations	Dimensions											Basic load ratings dynamic	static	Preload torque	
	d_0	P_h	l_{tp}	d_1	d_2	D g6/H7	A h12	a h9	b	H	Q	C_a	C_{oa}	T_{pe}	T_{pr}
	mm										[°]	kN		Nm	
TRU 56x12	56	12	3100	56.8	54.7	100	112	8	40	103.0	7	95.6	180.5	1.68	
PRU 56x12	56	12	3100	56.8	54.7	100	112	8	40	103.0	7	95.6	180.5		1.60 - 3.19
TRU 56x24	56	24	3100	57.5	53.5	100	112	8	40	103.0	7	109.1	174.7	1.68	
PRU 56x24	56	24	3100	57.5	53.5	100	112	8	40	103.0	7	109.1	174.7		1.60 - 3.19
TRU 56x36	56	36	3100	58.3	52.3	100	112	8	40	103.0	7	118.7	176.8	1.68	
PRU 56x36	56	36	3100	58.3	52.3	100	112	8	40	103.0	7	118.7	176.8		2.39 - 3.99
TRU 60x10	60	10	3400	60.8	58.7	122	152	10	45	125.0	10.5	152.5	324.9	1.88	
PRU 60x10	60	10	3400	60.8	58.7	122	152	10	45	125.0	10.5	152.5	324.9		1.79 - 3.58
TRU 60x15	60	15	3400	61.2	58.1	122	152	10	45	125.0	10.5	168.0	326.2	1.88	
PRU 60x15	60	15	3400	61.2	58.1	122	152	10	45	125.0	10.5	168.0	326.2		1.79 - 3.58
TRU 60x20	60	20	3400	61.5	57.5	122	152	10	45	125.0	10.5	179.8	327.4	1.88	
PRU 60x20	60	20	3400	61.5	57.5	122	152	10	45	125.0	10.5	179.8	327.4		1.79 - 3.58
TRU 64x12	64	12	3650	64.8	62.7	115	129	8	45	118.0	7	135.4	318.0	2.09	
PRU 64x12	64	12	3650	64.8	62.7	115	129	8	45	118.0	7	135.4	318.0		1.99 - 3.98
TRU 64x18	64	18	3650	65.2	62.1	115	129	8	45	118.0	7	144.6	302.4	2.09	
PRU 64x18	64	18	3650	65.2	62.1	115	129	8	45	118.0	7	144.6	302.4		1.99 - 3.98
TRU 64x24	64	24	3650	65.5	61.5	115	129	8	45	118.0	7	150.3	287.4	2.09	
PRU 64x24	64	24	3650	65.5	61.5	115	129	8	45	118.0	7	150.3	287.4		1.99 - 3.98
TRU 64x30	64	30	3650	65.9	60.9	115	129	8	45	118.0	7	146.8	258.3	2.09	
PRU 64x30	64	30	3650	65.9	60.9	115	129	8	45	118.0	7	146.8	258.3		1.99 - 3.98
TRU 64x36	64	36	3650	66.3	60.3	115	129	8	45	118.0	7	146.4	245.6	2.09	
PRU 64x36	64	36	3650	66.3	60.3	115	129	8	45	118.0	7	146.4	245.6		1.99 - 3.98

Symbols = see page 149

TRK / PRK - Range

Flanged nut with backlash elimination (TRK) or preloaded for optimum rigidity (PRK)



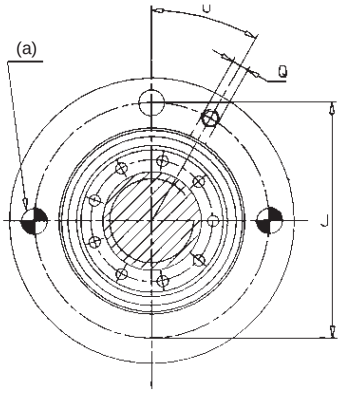
Legend:
(a) = dowel pins to hold preload
(b) = wiper recess
(c) = wiper on request
(d) = equidistant

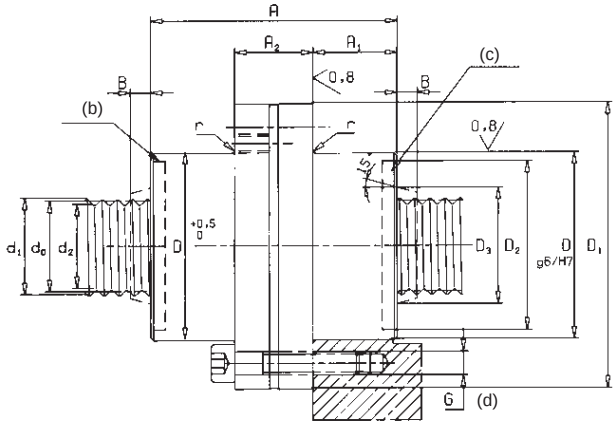
Designations	Dimensions													Basic load ratings dynamic	static	Preload torque	
	d_0	P_h	l_{tp}	d_1	d_2	D	A h12	D_1	J js12	G	Q	u		C_a	C_{oa}	T_{pe}	T_{pr}
	mm											[°]		kN		Nm	
TRK 8x4	8	4	400	8.4	7.3	25	44	46	36	6×M4	M6	30		5.06	8.16	0.07	
PRK 8x4	8	4	400	8.4	7.3	25	44	46	36	6×M4	M6	30		5.06	8.16		0.06 - 0.13
TRK 12x5	12	5	600	12.4	11.3	30	44	51	41	6×M4	M6	30		7.98	11.1	0.13	
PRK 12x5	12	5	600	12.4	11.3	30	44	51	41	6×M4	M6	30		7.98	11.1		0.12 - 0.25
TRK 15x5	15	5	750	15.4	14.3	35	50	58	46	6×M5	M6	30		11.7	18.2	0.19	
PRK 15x5	15	5	750	15.4	14.3	35	50	58	46	6×M5	M6	30		11.7	18.2		0.18 - 0.36
TRK 15x8	15	8	750	15.5	14	35	50	58	46	6×M5	M6	30		12.4	16.9	0.19	
PRK 15x8	15	8	750	15.5	14	35	50	58	46	6×M5	M6	30		12.4	16.9		0.18 - 0.36
TRK 20x6	20	6	1050	20.4	19.3	40	50	63	51	6×M5	M6	30		12.1	18.7	0.30	
PRK 20x6	20	6	1050	20.4	19.3	40	50	63	51	6×M5	M6	30		12.1	18.7		0.26 - 0.58
TRK 21x5	21	5	1100	21.0	20.3	45	64	68	56	6×M5	M6	30		22.8	34.2	0.33	
PRK 21x5	21	5	1100	21.0	20.3	45	64	68	56	6×M5	M6	30		22.8	34.2		0.31 - 0.63
TRK 21x6	21	6	1100	21.0	21.4	45	64	68	56	6×M5	M6	30		22.9	32.3	0.33	
PRK 21x6	21	6	1100	21.0	21.4	45	64	68	56	6×M5	M6	30		22.9	32.3		0.31 - 0.63
TRK 21x8	21	8	1100	21.0	21.5	45	64	68	56	6×M5	M6	30		24.5	32.5	0.33	
PRK 21x8	21	8	1100	21.0	21.5	45	64	68	56	6×M5	M6	30		24.5	32.5		0.31 - 0.63
TRK 21x10	21	10	1100	21.8	19.7	45	64	68	56	6×M5	M6	30		26.7	34.6	0.33	
PRK 21x10	21	10	1100	21.8	19.7	45	64	68	56	6×M5	M6	30		26.7	34.6		0.31 - 0.63
TRK 24x6	24	6	1250	24.4	23.3	48	58	71	59	6×M5	M6	30		19.0	27.2	0.41	
PRK 24x6	24	6	1250	24.4	23.3	48	58	71	59	6×M5	M6	30		19.0	27.2		0.39 - 0.78
TRK 24x12	24	12	1250	24.8	22.7	48	58	71	59	6×M5	M6	30		21.5	26.0	0.41	
PRK 24x12	24	12	1250	24.8	22.7	48	58	71	59	6×M5	M6	30		21.5	26.0		0.39 - 0.78
TRK 25x5	25	5	1300	25.4	24.3	56	78	84	70	6×M6	M6	30		28.5	45.1	0.44	
PRK 25x5	25	5	1300	25.4	24.3	56	78	84	70	6×M6	M6	30		28.5	45.1		0.42 - 0.84
TRK 25x10	25	10	1300	25.8	23.7	56	78	84	70	6×M6	M6	30		32.7	43.9	0.44	
PRK 25x10	25	10	1300	25.8	23.7	56	78	84	70	6×M6	M6	30		32.7	43.9		0.42 - 0.84
TRK 25x15	25	15	1300	26.2	23.1	56	78	84	70	6×M6	M6	30		35.6	44.3	0.44	
PRK 25x15	25	15	1300	26.2	23.1	56	78	84	70	6×M6	M6	30		35.6	44.3		0.42 - 0.84
TRK 30x5	30	5	1600	30.8	29.3	64	85	98	81	6×M8	M6	30		41.4	74.3	0.59	
PRK 30x5	30	5	1600	30.8	29.3	64	85	98	81	6×M8	M6	30		41.4	74.3		0.57 - 1.13
TRK 30x6	30	6	1600	30.4	29.3	64	85	98	81	6×M8	M6	30		42.8	73	0.59	
PRK 30x6	30	6	1600	30.4	29.3	64	85	98	81	6×M8	M6	30		42.8	73		0.57 - 1.13
TRK 30x10	30	10	1600	31.8	28.7	64	85	98	81	6×M8	M6	30		47.9	72.6	0.59	
PRK 30x10	30	10	1600	31.8	28.7	64	85	98	81	6×M8	M6	30		47.9	72.6		0.57 - 1.13
TRK 30x20	30	20	1600	31.5	27.5	64	85	98	81	6×M8	M6	30		55.5	73.9	0.59	
PRK 30x20	30	20	1600	31.5	27.5	64	85	98	81	6×M8	M6	30		55.5	73.9		0.85 - 1.41

Continued

Symbols = see page 149

TRK / PRK - Range
(Continued)





Legend:
(a) = dowel pins to hold preload
(b) = wiper recess
(c) = wiper on request
(d) = equidistant

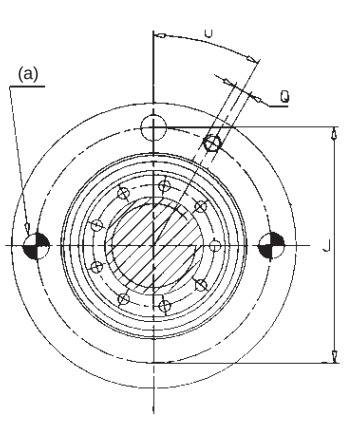
Symbols = see page 149

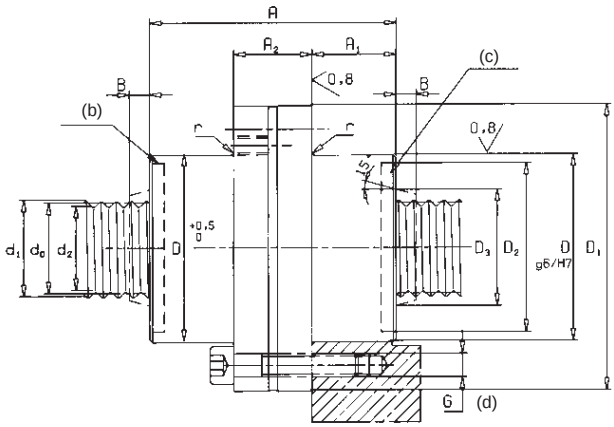
Continued

Designations	Dimensions												Basic load ratings dynamic	static	Preload torque	
	d_0	P_h	l_{tp}	d_1	d_2	D	A h12	D_1	J js12	G	Q	u	C_a	C_{oa}	T_{pe}	T_{pr}
	mm											[°]	kN		Nm	
TRK 36x6	36	6	1900	36.4	35.3	68	80	102	85	6×M8	M6	30	40.7	74.7	0.80	
PRK 36x6	36	6	1900	36.4	35.3	68	80	102	85	6×M8	M6	30	40.7	74.7		0.77 - 1.53
TRK 36x9	36	9	1900	36.5	35.1	68	80	102	85	6×M8	M6	30	43.9	72.5	0.80	
PRK 36x9	36	9	1900	36.5	35.1	68	80	102	85	6×M8	M6	30	43.9	72.5		0.77 - 1.53
TRK 36x12	36	12	1900	36.8	34.7	68	80	102	85	6×M8	M6	30	48.0	75.6	0.80	
PRK 36x12	36	12	1900	36.8	34.7	68	80	102	85	6×M8	M6	30	48.0	75.6		0.77 - 1.53
TRK 36x18	36	18	1900	37.2	34.1	68	80	102	85	6×M8	M6	30	51.5	73.5	0.80	
PRK 36x18	36	18	1900	37.2	34.1	68	80	102	85	6×M8	M6	30	51.5	73.5		0.77 - 1.53
TRK 36x24	36	24	1900	37.5	33.5	68	80	102	85	6×M8	M6	30	55.7	76.8	0.80	
PRK 36x24	36	24	1900	37.5	33.5	68	80	102	85	6×M8	M6	30	55.7	76.8		1.15 - 1.91
TRK 39x5	39	5	2100	39.4	38.3	82	100	124	102	6×M10	M6	30	58.2	112.1	0.92	
PRK 39x5	39	5	2100	39.4	38.3	82	100	124	102	6×M10	M6	30	58.2	112.1		0.88 - 1.75
TRK 39x10	39	10	2100	39.8	37.7	82	100	124	102	6×M10	M6	30	68.7	112.9	0.92	
PRK 39x10	39	10	2100	39.8	37.7	82	100	124	102	6×M10	M6	30	68.7	112.9		0.88 - 1.75
TRK 39x15	39	15	2100	40.2	37.1	82	100	124	102	6×M10	M6	30	75.5	113.7	0.92	
PRK 39x15	39	15	2100	40.2	37.1	82	100	124	102	6×M10	M6	30	75.5	113.7		0.88 - 1.75
TRK 39x20	39	20	2100	40.5	36.5	82	100	124	102	6×M10	M6	30	77.8	108.7	0.92	
PRK 39x20	39	20	2100	40.5	36.5	82	100	124	102	6×M10	M6	30	77.8	108.7		0.88 - 1.75
TRK 39x25	39	25	2100	40.9	35.9	82	100	124	102	6×M10	M6	30	78.7	103.8	0.92	
PRK 39x25	39	25	2100	40.9	35.9	82	100	124	102	6×M10	M6	30	78.7	103.8		1.31 - 2.19
TRK 44x8	44	8	2400	44.4	43.2	82	90	124	102	6×M10	M6	30	60.2	113.2	1.12	
PRK 44x8	44	8	2400	44.4	43.2	82	90	124	102	6×M10	M6	30	60.2	113.2		1.07 - 2.14
TRK 44x12	44	12	2400	44.8	42.7	82	90	124	102	6×M10	M6	30	64.7	109.5	1.12	
PRK 44x12	44	12	2400	44.8	42.7	82	90	124	102	6×M10	M6	30	64.7	109.5		1.07 - 2.14
TRK 44x18	44	18	2400	45.2	42.1	82	90	124	102	6×M10	M6	30	71.0	110.4	1.12	
PRK 44x18	44	18	2400	45.2	42.1	82	90	124	102	6×M10	M6	30	71.0	110.4		1.07 - 2.14
TRK 44x24	44	24	2400	45.5	41.5	82	90	124	102	6×M10	M6	30	75.6	111.2	1.12	
PRK 44x24	44	24	2400	45.5	41.5	82	90	124	102	6×M10	M6	30	75.6	111.2		1.07 - 2.14
TRK 44x30	44	30	2400	45.9	40.9	82	90	124	102	6×M10	M6	30	74.7	102.7	1.12	
PRK 44x30	44	30	2400	45.9	40.9	82	90	124	102	6×M10	M6	30	74.7	102.7		1.60 - 2.68
TRK 48x5	48	5	2600	48.4	47.3	105	127	150	127	6×M12	M8×1	30	89.2	200.6	1.30	
PRK 48x5	48	5	2600	48.4	47.3	105	127	150	127	6×M12	M8×1	30	89.2	200.6		1.24 - 2.47
TRK 48x8	48	8	2600	48.6	47.1	105	127	150	127	6×M12	M8×1	30	98.4	196.0	1.30	
PRK 48x8	48	8	2600	48.6	47.1	105	127	150	127	6×M12	M8×1	30	98.4	196.0		1.24 - 2.47
TRK 48x10	48	10	2600	48.8	46.7	105	127	150	127	6×M12	M8×1	30	104.3	198.0	1.30	
PRK 48x10	48	10	2600	48.8	46.7	105	127	150	127	6×M12	M8×1	30	104.3	198.0		1.24 - 2.47
TRK 48x15	48	15	2600	49.2	46.1	105	127	150	127	6×M12	M8×1	30	116.1	202.7	1.30	
PRK 48x15	48	15	2600	49.2	46.1	105	127	150	127	6×M12	M8×1	30	116.1	202.7		1.24 - 2.47
TRK 48x20	48	20	2600	49.5	45.5	105	127	150	127	6×M12	M8×1	30	119.7	192.7	1.30	
PRK 48x20	48	20	2600	49.5	45.5	105	127	150	127	6×M12	M8×1	30	119.7	192.7		1.24 - 2.47
TRK 48x25	48	25	2600	49.9	44.9	105	127	150	127	6×M12	M8×1	30	130.0	204.6	1.30	
PRK 48x25	48	25	2600	49.9	44.9	105	127	150	127	6×M12	M8×1	30	130.0	204.6		1.24 - 2.47

Continued

TRK / PRK - Range
(Continued)





Legend:
(a) = dowel pins to hold preload
(b) = wiper recess
(c) = wiper on request
(d) = equidistant

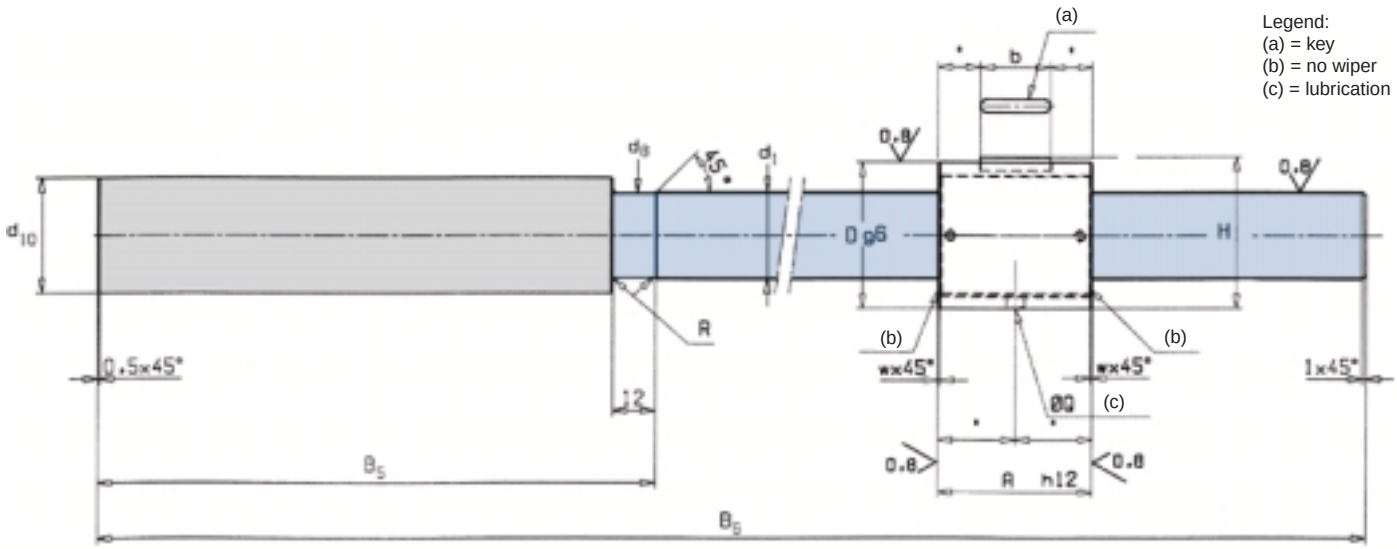
Continued

Designations	Dimensions												Basic load ratings dynamic		Preload torque	
	d_0	P_h	l_{tp}	d_1	d_2	D	A h12	D_1	J js12	G	Q	u	C_a	C_{oa}	T_{pe}	T_{pr}
	mm											[°]	kN		Nm	
TRK 56x12	56	12	3100	56.8	54.7	105	112	150	127	6×M12	M8×1	30	95.6	180.5	1.68	
PRK 56x12	56	12	3100	56.8	54.7	105	112	150	127	6×M12	M8×1	30	95.6	180.5		1.60 - 3.19
TRK 56x24	56	24	3100	57.5	53.5	105	112	150	127	6×M12	M8×1	30	109.1	174.7	1.68	
PRK 56x24	56	24	3100	57.5	53.5	105	112	150	127	6×M12	M8×1	30	109.1	174.7		1.60 - 3.19
TRK 56x36	56	36	3100	58.3	52.3	105	112	150	127	6×M12	M8×1	30	118.7	176.8	1.68	
PRK 56x36	56	36	3100	58.3	52.3	105	112	150	127	6×M12	M8×1	30	118.7	176.8		2.39 - 3.99
TRK 60x10	60	10	3400	60.8	58.7	122	152	180	150	6×M16	M8×1	30	152.5	324.9	1.88	
PRK 60x10	60	10	3400	60.8	58.7	122	152	180	150	6×M16	M8×1	30	152.5	324.9		1.79 - 3.58
TRK 60x15	60	15	3400	61.2	58.1	122	152	180	150	6×M16	M8×1	30	168.0	326.2	1.88	
PRK 60x15	60	15	3400	61.2	58.1	122	152	180	150	6×M16	M8×1	30	168.0	326.2		1.79 - 3.58
TRK 60x20	60	20	3400	61.5	57.5	122	152	180	150	6×M16	M8×1	30	179.8	327.4	1.88	
PRK 60x20	60	20	3400	61.5	57.5	122	152	180	150	6×M16	M8×1	30	179.8	327.4		1.79 - 3.58
TRK 64x12	64	12	3650	64.8	62.7	120	129	180	150	6×M16	M8×1	30	135.4	318.0	2.09	
PRK 64x12	64	12	3650	64.8	62.7	120	129	180	150	6×M16	M8×1	30	135.4	318.0		1.99 - 3.98
TRK 64x18	64	18	3650	65.2	62.1	120	129	180	150	6×M16	M8×1	30	144.6	302.4	2.09	
PRK 64x18	64	18	3650	65.2	62.1	120	129	180	150	6×M16	M8×1	30	144.6	302.4		1.99 - 3.98
TRK 64x24	64	24	3650	65.5	61.5	120	129	180	150	6×M16	M8×1	30	150.3	287.4	2.09	
PRK 64x24	64	24	3650	65.5	61.5	120	129	180	150	6×M16	M8×1	30	150.3	287.4		1.99 - 3.98
TRK 64x30	64	30	3650	65.9	60.9	120	129	180	150	6×M16	M8×1	30	146.8	258.3	2.09	
PRK 64x30	64	30	3650	65.9	60.9	120	129	180	150	6×M16	M8×1	30	146.8	258.3		1.99 - 3.98
TRK 64x36	64	36	3650	66.3	60.3	120	129	180	150	6×M16	M8×1	30	146.4	245.8	2.09	
PRK 64x36	64	36	3650	66.3	60.3	120	129	180	150	6×M16	M8×1	30	146.4	245.8		1.99 - 3.98

Symbols = see page 149

Recirculating roller screws

BVC - Range



Recirculating roller screws without end machining, lead precision G5 according to ISO standard.
Nut preloaded by rollers for backlash elimination.

End which can be machined to customer requirements

Maximum threaded length: Can be cut and machined to customer requirements

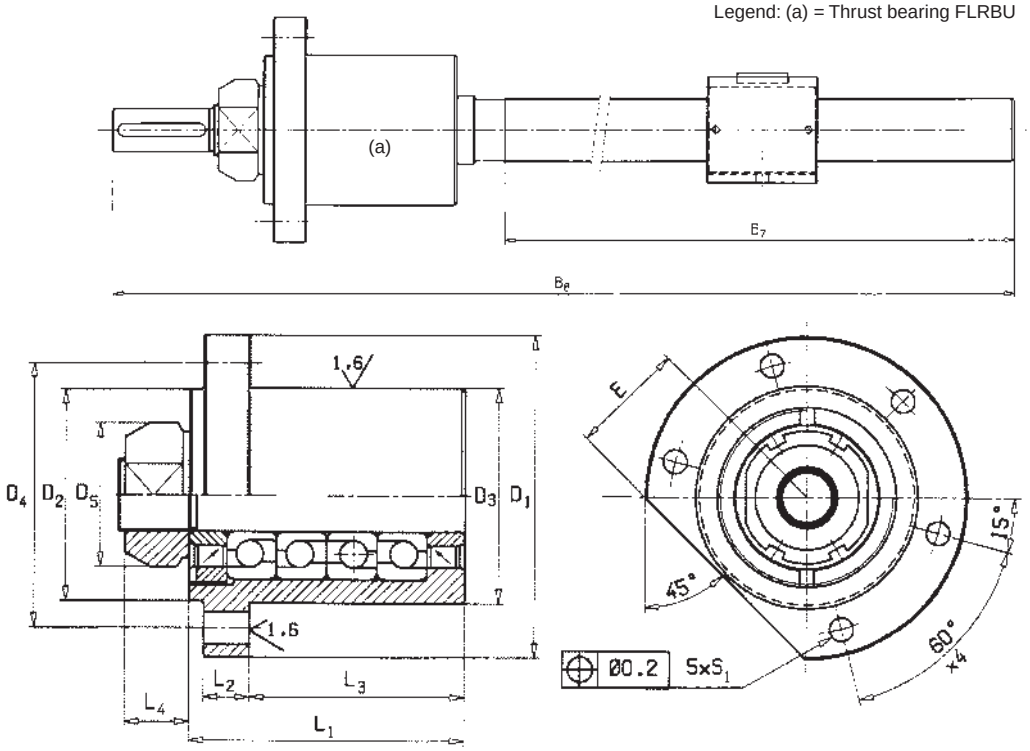
Designations	Dimensions						Basic load ratings dynamic	static
	d_0	B_6	d_{10}	B_5	D	A	C_a	C_{oa}
	mm						kN	
BVC 20 x 1-R1	20	400	28	116	34	37	18.5	36.6
BVC 25 x 1-R1	25	500	33	159	42	44	32.9	68.4
BVC 32 x 1-R1	32	500	40	179	54	57	64.3	159.2

Symbols = see page 149

FLRBU / BVC

Recirculating roller screw with thrust bearing unit

Legend: (a) = Thrust bearing FLRBU

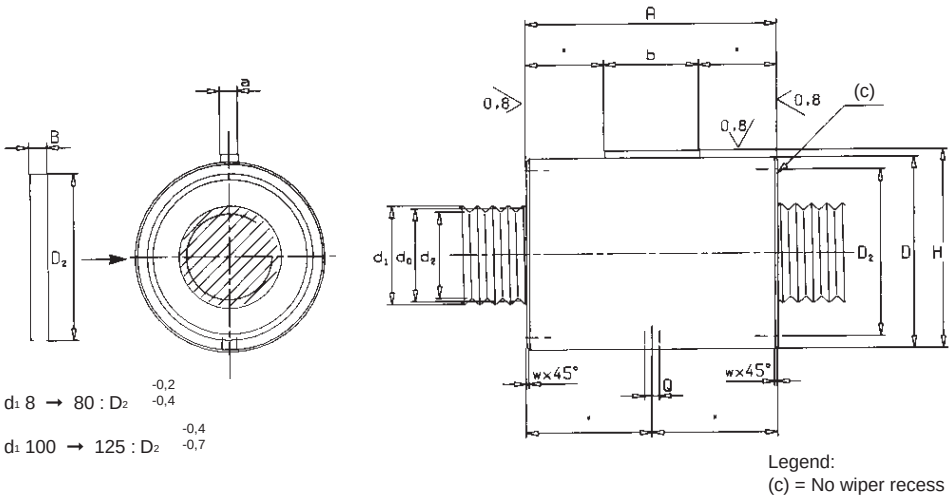


Designations	Dimensions										Basic load ratings dynamic	static
	d_0	B_7	B_8	L_1	L_2	L_3	D_1	D_3	D_4	E	C_a	C_{oa}
	mm										kN	
FLRBU2 / BVC 20 x 1-R1	20	284	397	46	10	32	90	60	76	32	27.9	31.9
FLRBU3 / BVC 25 x 1-R1	25	341	497	77	13	60	90	60	74	32	40.1	63.8
FLRBU4 / BVC 32 x 1-R1	32	321	497	89	16	68	120	80	100	44	74.2	119.2

Symbols = see page 149

SVC - Range

Cylindrical nut with axial play, nut without wiper recesses



d_1 8 → 80 : D_2 $^{-0,2}_{-0,4}$

d_1 100 → 125 : D_2 $^{-0,4}_{-0,7}$

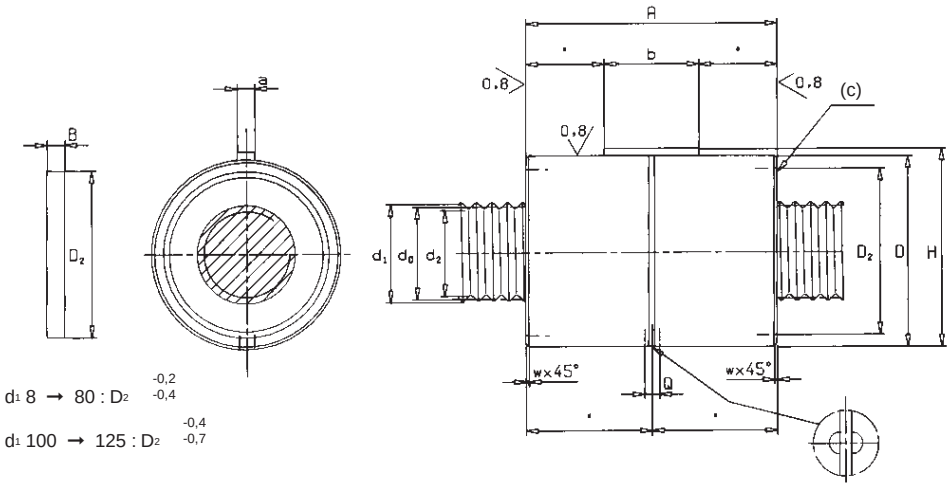
Legend:
(c) = No wiper recess

Designations	Dimensions												Basic load ratings dynamic	static
	d_1	P_h	l_{tp}	s_{ap}	d_0	d_2	D g6/H7	A h12	a h9	b	H	Q	C_a	C_{oa}
	mm												kN	
SVC 8x1	8	1	500	0.02	7.7	7.1	20	31	2	12	20.8	5	8.4	11.0
SVC 10x1	10	1	650	0.02	9.7	9.1	22	31	2	12	22.8	5	8.9	11.4
SVC 10x2	10	2	650	0.02	9.7	9.1	22	31	2	12	22.8	5	8.9	11.4
SVC 12x1	12	1	750	0.02	11.7	11.1	24	31	2	12	24.8	5	10.3	14.0
SVC 12x2	12	2	750	0.02	11.7	11.1	24	31	2	12	24.8	5	10.3	14.0
SVC 16x1	16	1	1050	0.02	15.7	15.1	29	31	3	12	30.2	5	11.5	16.8
SVC 16x2	16	2	1050	0.02	15.7	15.1	29	31	3	12	30.2	5	11.5	16.8
SVC 20x1	20	1	1300	0.02	19.7	19.1	34	37	3	16	35.2	5	18.5	36.6
SVC 20x2	20	2	1300	0.02	19.7	19.1	34	37	3	16	35.2	5	18.5	36.6
SVC 25x1	25	1	1650	0.02	24.7	24.1	42	44	4	20	43.5	5	32.9	68.4
SVC 25x2	25	2	1650	0.02	24.7	24.1	42	44	4	20	43.5	5	32.9	68.4
SVC 32x1	32	1	2150	0.02	31.7	31.1	54	57	4	25	55.5	5	64.3	159.2
SVC 32x2	32	2	2150	0.02	31.7	31.1	54	57	4	25	55.5	5	64.3	159.2
SVC 40x1	40	1	2700	0.02	39.7	39.1	68	63	5	32	70.0	5	79.1	231.6
SVC 40x2	40	2	2700	0.04	39.3	38.2	68	72	5	32	70.0	5	49.9	117.2
SVC 50x1	50	1	3500	0.02	49.7	49.1	82	85	6	32	84.5	8	189.8	544.3
SVC 50x2	50	2	3500	0.04	49.3	48.7	82	85	6	32	84.5	8	98.1	249.4
SVC 50x3	50	3	3500	0.04	49.5	48.6	82	92	6	35	84.5	8	153.0	443.3
SVC 50x4	50	4	3500	0.04	49.3	48.2	82	85	6	32	84.5	8	98.1	249.4
SVC 63x2	63	2	4500	0.04	62.3	61.2	103	104	6	40	105.5	8	185.8	533.5
SVC 63x4	63	4	4500	0.04	62.3	61.2	103	104	6	40	105.5	8	185.8	533.5
SVC 80x4	80	4	6000	0.07	78.6	76.4	141	175	8	63	144.0	10	324.9	887.7
SVC 100x5	100	5	8000	0.07	98.3	95.5	175	205	10	80	178.0	10	468.5	1376.3
SVC 125x5	125	5	8000	0.07	123.3	120.5	220	250	12	100	223.0	12	756.0	2270.0

Symbols = see page 149

PVU - Range

Cylindrical nut, preloaded for optimum rigidity, nut without wiper recesses



d_1 8 → 80 : D_2 $^{-0,2}_{-0,4}$

d_1 100 → 125 : D_2 $^{-0,4}_{-0,7}$

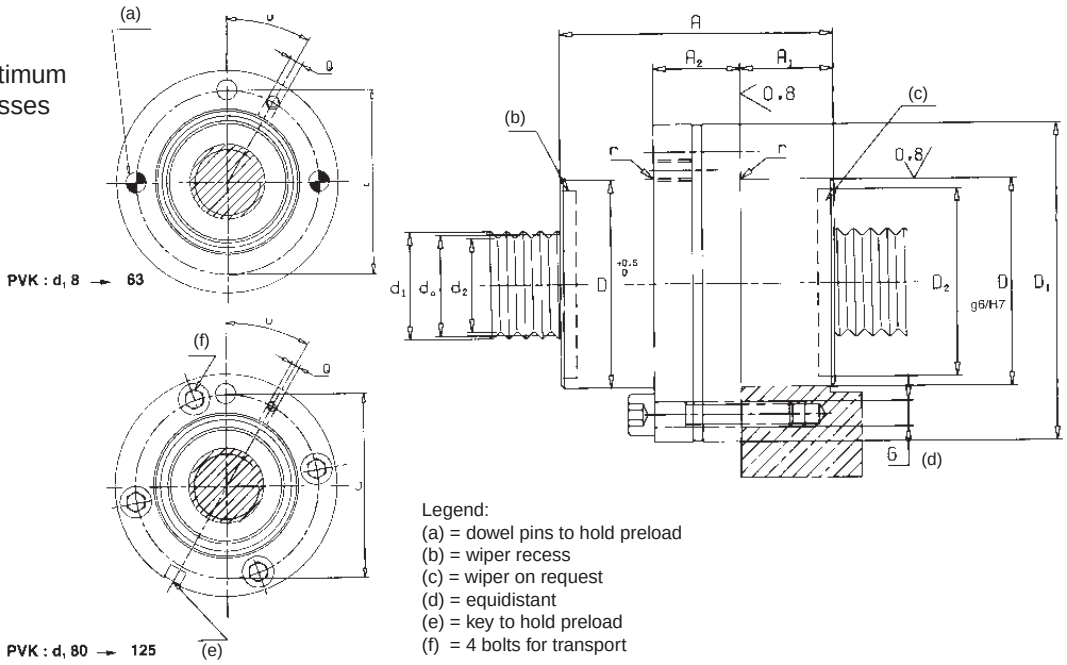
Legend:
(c) = No wiper recess

Designations	Dimensions										Basic load ratings dynamic	static	Preload torque
	d_1	p_h	l_{tp}	d_0	d_2	D g6/H7	A h12	a h9	b	Q	C_a	C_{oa}	T_{pr}
	mm										kN		Nm
PVU 8x1	8	1	400	7.7	7.1	20	31	2	12	5	4.8	5.5	0.02 - 0.08
PVU 10x1	10	1	500	9.7	9.1	22	31	2	12	5	5.1	5.7	0.03 - 0.10
PVU 10x2	10	2	500	9.7	9.1	22	31	2	12	5	5.1	5.7	0.03 - 0.10
PVU 12x1	12	1	600	11.7	11.1	24	31	2	12	5	5.9	7.0	0.05 - 0.15
PVU 12x2	12	2	600	11.7	11.1	24	31	2	12	5	5.9	7.0	0.05 - 0.15
PVU 16x1	16	1	825	15.7	15.1	29	31	3	12	5	6.6	8.4	0.10 - 0.20
PVU 16x2	16	2	825	15.7	15.1	29	31	3	12	5	6.6	8.4	0.10 - 0.20
PVU 20x1	20	1	1050	19.7	19.1	34	37	3	16	5	10.6	18.3	0.18 - 0.32
PVU 20x2	20	2	1050	19.7	19.1	34	37	3	16	5	10.6	18.3	0.20 - 0.35
PVU 25x1	25	1	1300	24.7	24.1	42	44	4	20	5	18.9	34.2	0.35 - 0.65
PVU 25x2	25	2	1300	24.7	24.1	42	44	4	20	5	18.9	34.2	0.40 - 0.70
PVU 32x1	32	1	1700	31.7	31.1	54	57	4	25	5	36.9	79.6	0.50 - 0.95
PVU 32x2	32	2	1700	31.7	31.1	54	57	4	25	5	36.9	79.6	0.50 - 0.95
PVU 40x1	40	1	2150	39.7	39.1	68	63	5	32	5	45.4	115.8	0.70 - 1.40
PVU 40x2	40	2	2150	39.3	38.2	68	72	5	32	5	28.7	58.6	0.70 - 1.40
PVU 50x1	50	1	2800	49.7	49.1	82	85	6	32	8	109.0	272.2	1.20 - 2.50
PVU 50x2	50	2	2800	49.3	48.7	82	85	6	32	8	56.3	124.7	1.20 - 2.50
PVU 50x3	50	3	2800	49.5	48.6	82	92	6	35	8	88.0	221.7	1.20 - 2.50
PVU 50x4	50	4	2800	49.3	48.2	82	85	6	32	8	56.3	124.7	1.20 - 2.50
PVU 63x2	63	2	3600	62.3	61.2	103	104	6	40	8	106.7	266.8	1.80 - 3.20
PVU 63x4	63	4	3600	62.3	61.2	103	104	6	40	8	106.7	266.8	2.00 - 3.50
PVU 80x4	80	4	4000	78.6	76.4	141	175	8	63	10	186.6	443.9	3.00 - 5.50
PVU 100x5	100	5	4000	98.4	95.5	175	205	10	80	10	269.1	688.2	4.50 - 7.50
PVU 125x5	125	5	4000	123.3	120.5	220	250	12	100	12	434.0	1385.0	7.00 - 10.00

Symbols = see page 149

PVK - Range

Flanged nut, preloaded for optimum rigidity, nut without wiper recesses



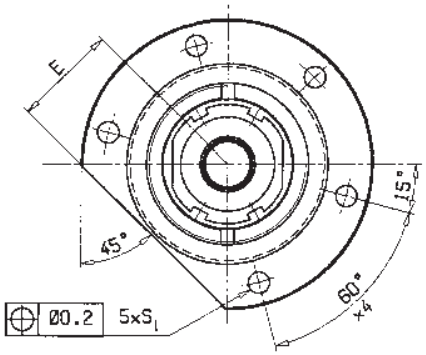
Legend:
(a) = dowel pins to hold preload
(b) = wiper recess
(c) = wiper on request
(d) = equidistant
(e) = key to hold preload
(f) = 4 bolts for transport

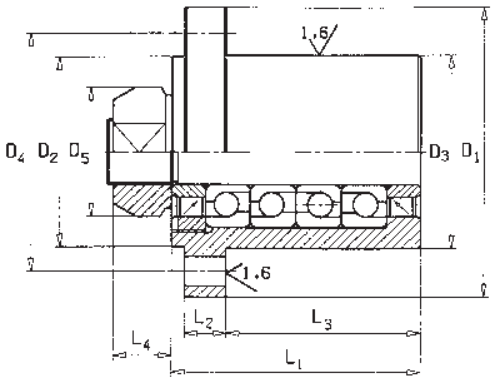
Symbols = see page 149

Designations	Dimensions												Basic load ratings dynamic	static	Preload torque
	d_1	P_h	l_{tp}	d_0	d_2	D	A h12	D_1	J js12	G	Q	u	C_a	C_{oa}	T_{pr}
	mm											[°]	kN		Nm
PVK 8x1	8	1	400	7.7	7.1	22	40	43	33	6 × M4	M6	30	4.8	5.5	0.02 - 0.08
PVK 10x1	10	1	500	9.7	9.1	22	40	43	33	6 × M4	M6	30	5.1	5.7	0.03 - 0.10
PVK 10x2	10	2	500	9.7	9.1	22	40	43	33	6 × M4	M6	30	5.1	5.7	0.03 - 0.10
PVK 12x1	12	1	600	11.7	11.1	25	40	46	36	6 × M4	M6	30	5.9	7.0	0.05 - 0.15
PVK 12x2	12	2	600	11.7	11.1	25	40	46	36	6 × M4	M6	30	5.9	7.0	0.05 - 0.15
PVK 16x1	16	1	825	15.7	15.1	30	40	51	41	6 × M4	M6	30	6.6	8.4	0.10 - 0.20
PVK 16x2	16	2	825	15.7	15.1	30	40	51	41	6 × M4	M6	30	6.6	8.4	0.10 - 0.20
PVK 20x1	20	1	1050	19.7	19.1	35	45	58	46	6 × M5	M6	30	10.6	18.3	0.18 - 0.32
PVK 20x2	20	2	1050	19.7	19.1	35	45	58	46	6 × M5	M6	30	10.6	18.3	0.20 - 0.35
PVK 25x1	25	1	1300	24.7	24.1	45	54	68	56	6 × M5	M6	30	18.9	34.2	0.35 - 0.65
PVK 25x2	25	2	1300	24.7	24.1	45	54	68	56	6 × M5	M6	30	18.9	34.2	0.40 - 0.70
PVK 32x1	32	1	1700	31.7	31.1	56	67	84	70	6 × M6	M6	30	36.9	79.6	0.50 - 0.95
PVK 32x2	32	2	1700	31.7	31.1	56	67	84	70	6 × M6	M6	30	36.9	79.6	0.50 - 0.95
PVK 40x1	40	1	2150	39.7	39.1	68	75	102	85	6 × M8	M6	30	45.4	115.8	0.70 - 1.40
PVK 40x2	40	2	2150	39.3	38.2	68	84	102	85	6 × M8	M6	30	28.7	58.6	0.70 - 1.40
PVK 50x1	50	1	2800	49.7	49.1	82	101	124	102	6 × M10	M6	30	109.0	272.2	1.20 - 2.50
PVK 50x2	50	2	2800	49.3	48.7	82	101	124	102	6 × M10	M6	30	56.3	124.7	1.20 - 2.50
PVK 50x3	50	3	2800	49.5	48.6	82	108	124	102	6 × M10	M6	30	88.0	221.7	1.20 - 2.50
PVK 50x4	50	4	2800	49.3	48.2	82	101	124	102	6 × M10	M6	30	56.3	124.7	1.20 - 2.50
PVK 63x2	63	2	3600	62.3	61.2	105	120	150	127	6 × M12	M8 × 1	30	106.7	266.8	1.80 - 3.20
PVK 63x4	63	4	3600	62.3	61.2	105	120	150	127	6 × M12	M8 × 1	30	106.7	266.8	2.00 - 3.50
PVK 80x4	80	4	4000	78.6	76.4	140	197	200	170	8 × M16	M8 × 1	22°30	186.6	443.9	3.00 - 5.50
PVK 100x5	100	5	4000	98.4	95.5	180	237	240	210	10 × M16	M8 × 1	15	269.1	688.2	4.50 - 7.50
PVK 125x5	125	5	4000	123.3	120.5	220	282	310	270	12 × M18	M8 × 1	15	434.0	1385.0	7.00 - 10.0

FLRBU - Accessories for roller screws

Accessories for screw shaft, flanged thrust bearing units: FLRBU





Desig-nations	Dimensions										Attachment screw	Angular contact	Basic load ratings		Max preload torque at 50 rpm	Axial rigidity	Tilt rigidity
	L_1	L_2	L_3	L_4	D_1	D_2	D_3 h7	D_4	D_5	S_1 H13		E	C_a	C_{oa}			
	mm											[°]	kN		Nm	N/µm	Nm/mrad
FLRBU2	46	10	32	18	90	62	60	76	37	6.6	M6 × 25	32	27.9	31.9	0.25	190	51
FLRBU3	77	13	60	18	90	59	60	74	40	9.0	M8 × 25	32	40.1	63.8	0.25	400	140
FLRBU4	89	16	68	20	120	80	80	100	44	11.0	M10 × 30	44	74.2	119.2	1.1	450	160
FLRBU5	110	20	82	22	140	99	100	120	54	13.0	M12 × 40	54	109.4	188.4	1.1	600	715
FLRBU6	140	25	98.5	25	171	130	130	152	75	13.0	M12 × 40	67	208.8	392.3	1.5	750	1000

Flanged bearing unit designations	Bearing designations	Quantity of bearings
FLRBU2	**7303 BEGBP**	2
FLRBU3	**7204 BEGBP**	4
FLRBU4	**7305 BEGBP**	4
FLRBU5	**7307 BEGBP**	4
FLRBU6	**7310 BEGBP**	4

Symbols = see page 149

Thrust bearing units for the standard roller screw range

Flanged thrust bearing	Suitable for SRC & SRF	Suitable for PRU & PRK
FLRBU2	SR 15×5 - R5 SR 15×8 - R5 SR 20×6 - R6	PR 20×6 - R6 PR 21×5 - R5 – PR 21×6 - R5 – PR 21×8 - R5 PR 21×10 - R5 PR 24×6 - R6 – PR 24×12 - R6
FLRBU3	SR 21×5 - R5 – SR 21×6 - R5 – SR 21×8 - R5 SR 21×10 - R5 SR 24×6 - R6 – SR 24×12 - R6	PR 25×5 - R5 – PR 25×10 - R5 – PR 25×15 - R5 PR 30×5 - R5 – PR 30×6 - R5 PR 36×6 - R6
FLRBU4	SR 25×5 - R5 SR 25×10 - R5 SR 25×15 - R5	PR 30×10 - R5 – PR 30×20 - R5 PR 36×9 - R6 – PR 36×12 - R6 – PR 36×18 - R6 PR 36×24 - R6 PR 39×5 - R5 – PR 39×10 - R5 – PR 39×15 - R5 PR 44×12 - R6 – PR 44×18 - R6 – PR 44×24 - R6 PR 44×30 - R6
FLRBU5	SR 30×5 - R5 – SR 30×6 - R5 – SR 30×10 - R5 SR 30×20 - R5 SR 36×6 - R6 – SR 36×9 - R6 – SR 36×12 - R6 SR 36×18 - R6 – SR 36×24 - R6 SR 39×5 - R5 SR 44×8 - R6	PR 39×20 - R5 – PR 39×25 - R5 PR 48×5 - R5 – PR 48×8 - R5 – PR 48×10 - R5 PR 56×12 - R6 – PR 56×24 - R6
FLRBU6	SR 39×10 - R5 – SR 39×15 - R5 SR 39×20 - R5 – SR 39×25 - R5 SR 44×12 - R6 – SR 44×18 - R6 SR 44×24 - R6 – SR 44×30 - R6 SR 48×5 - R5 – SR 48×10 - R5 SR 48×15 - R5 SR 56×12 - R6 – SR 56×18 - R6 SR 56×24 - R6 – SR 56×30 - R6	PR 60×10 - R5 – PR 60×15 - R5 PR 60×20 - R5 – PR 60×25 - R5 PR 60×30 - R5 PR 64×12 - R6 – PR 64×18 - R6 PR 64×24 - R6 – PR 64×30 - R6 PR 64×36 - R6 PR 80×12 - R6 PR 80×18 - R6

Flanged thrust bearing	Suitable for SVC	Suitable for PVU & PVK
FLRBU2	SV 16×1 - R1 – SV 16×2 - R2 SV 20×1 - R1 and SV 20×2 - R2	PV 16×1 - R1 – PV 16×2 - R2 PV 20×1 - R1 – PV 20×2 - R2 PV 25×1 - R1 – PV 25×2 - R2
FLRBU3	SV 25×1 - R1 – SV 25×2 - R2	PV 32×1 - R1 – PV 32×2 - R2 PV 40×2 - R1
FLRBU4	SV 32×1 - R1 – SV 32×2 - R2 SV 40×2 - R1	PV 40×1 - R1 PV 50×2 - R1 – PV 50×4 - R2
FLRBU5	SV 40×1 - R1 SV 50×2 - R1 – SV 50×4 - R2	PV 50×1 - R1 – PV 50×3 - R2 PV 63×2 - R1 – PV 63×4 - R2
FLRBU6	SV 50×1 - R1 – SV 50×3 - R2 SV 63×2 - R1 – SV 63×4 - R2	PV 80×4 - R1

Symbols = see page 149

Symbols

C_{req}	N	Required load rating
C_a	kN	The dynamic load rating (L_{10} life) is such that 90 % of a sufficiently large sample of identical screws can be expected to attain or exceed 1 million revolutions under this constant and centrally acting pure axial load without fatigue (flaking).
C_{oa}	kN	The static load rating is that axial constant centrally acting load which produces a total permanent deformation of one raceway and roller of 0,0001 of the diameter of the curved surface of the roller.
F	N	Axial load
F_c	N	Compression load
F_m	N	Constant mean axial load
F_{pr}	N	The preload force between a nut half (or nut) and the shaft
F_q	N	The squeeze load applied to two nut halves (or nuts) by the housing or fixing bolts
H_v	–	Vickers hardness
I	kgm^2	Inertia
I_L	kgm^2	Inertia of load
I_M	kgm^2	Inertia of motor
I_{nn}	kgm^2	Inertia of nut when turning nut
I_{ns}	kgm^2	Inertia of rollers when turning shaft
I_s	$kgmm^2/m$	Inertia of screw shaft per metre
L	10^6 revs	Life
L_{10}	10^6 revs	Basic life rating, millions of revolutions
L_{10h}	hours	Basic life rating, operating hours
M	µm	Maximum difference between mean travels of screws in a matched set
N	–	Number of thread starts on the screw shaft
P	watts	Power
P_h	mm	Lead
R	N/µm	Rigidity
R_n	N/µm	Nut rigidity } including deflection of:
R_{ng}	N/µm	Minimum guaranteed nut rigidity } • the nut body • rollers/nut contact • rollers/screw shaft contact • length of screw shaft in contact with rollers
R_{nr}	N/µm	Reference nut rigidity }
R_s	N/µm	Screw shaft rigidity
R_t	N/µm	Total rigidity
T	Nm	Torque
T_B	Nm	Brake torque
T_{dt}	Nm	Total torque at constant speed
T_f	Nm	Torque from friction in support bearings, motor, seals, etc.
T_{pe}	Nm	Torque for play elimination
T_{pr}	Nm	Preload torque
T_{st}	Nm	Starting torque
T_t	Nm	Total torque
U	mm	Stroke length } life calculation
V	hr^{-1}	Strokes per hour } life calculation
W	hr/day	Hours per day } life calculation
X	days/year	Days per year } life calculation
Y	years	Years } life calculation
Z_s	cc	Grease quantity for screw shaft
Z_n	cc	Grease quantity for nut
c	µm	Travel compensation - the difference between the specified travel and the nominal travel. Its value is always defined by the customer: if not specified it will be assumed to be zero. (The specified travel can also be defined by the specified lead multiplied by the number of revolutions).
d_o	mm	Nominal } diameter of screw shaft
d_1	mm	Outside } diameter of screw shaft
d_2	mm	Root } diameter of screw shaft
d_b	mm	Bore } diameter of screw shaft
e_p	µm	Tolerance of actual mean travel, l_m relative to specified travel l_s
f	–	Factors
g	m/s^2	Acceleration of gravity: 9,8
l	mm	Length
l_o	mm	Nominal travel – the nominal lead multiplied by the number of revolutions
l_1	mm	Threaded length
l_e	mm	Excess travel - at each end of the threaded length a distance l_e is subtracted to leave l_u, the useful travel. The specified lead precision does not apply to the lengths l_e. $l_u = l_1 - 2\,l_e$
l_m	mm	Actual mean travel. The curve is the result of measurements at 20 °C of the screw shaft. l_m is the line which fits the curve by the method of least squares.
l_s	mm	Specified travel
l_{tp}	mm	Maximum total length
l_u	mm	Useful travel – the length of thread which is subject to the specified lead precision
m	kg	Mass
m_L	kg	Mass of the load
m_n	kg	Mass of the nut
m_s	kg/m	Mass of the screw shaft per metre
n	rpm	Rotational speed
n_{cr}	rpm	Critical speed
n_p	rpm	Maximum permissible speed
s_{ap}	mm	Maximum axial play
t	µm	Manufacturing tolerance
v	µm	Travel variation – the band width or the distance between the two straight lines parallel to the actual mean travel which enclose the curve
v_{300}	µm	The bandwidth over any 300 mm section of the useful travel. v_{300a} and v_{300p} are actual and permissible values
v_u	µm	The bandwidth over the useful travel. v_{ua} and v_{up} are actual and permissible values
δ	µm	Deflection
Ø	°	Helix angle of the screw shaft thread
λ	°	Friction angle } $\tan\lambda = \mu$
µ	–	Coefficient of friction } $\tan\lambda = \mu$
μ_{st}	–	Coefficient of friction when starting
μ_F	–	Coefficient of friction for bearing
σ	Mpa	Nominal axial stress
σ_p	Mpa	Real axial stress
σ_t	Mpa	Total stress
τ	Mpa	Nominal shear stress
τ_p	Mpa	Real shear stress
η	–	Theoretical direct efficiency
η′	–	Theoretical indirect efficiency
η_p	–	Real direct efficiency
η'_p	–	Real indirect efficiency
θ	°	Angle of twist
ω	rad/s^2	Angular acceleration
Ω	mm x rpm	Speed quotient, $n_p \times d_o$

Notes

Actuation systems

About actuation systems

Linear drive applications often require superior performance from the actuator. They must exhibit this in terms of speed, temperature stability, accuracy and noise levels. SKF produces a complete range of actuator products designed to satisfy the most demanding requirements. The assortment includes telescopic pillars (➔ **fig 1**), linear (➔ **fig 2**) and rotary actuators (➔ **fig 3**) as well as control units (➔ **fig 4**), providing a total system solution for various applications.

SKF holds a leading position in the industrial field where actuators are used in many different applications. SKF supplies a wide range of actuators but also offers extensive knowledge and experience in application engineering. This background has developed through long-standing partnership with leading companies in many industrial sectors.

Operating precision (➔ **table 1**)

Comparison of the different positioning components and systems.

Fig 1

Fig 2

Fig 3

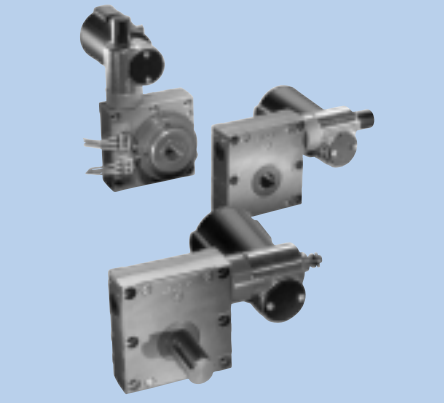


Fig 4

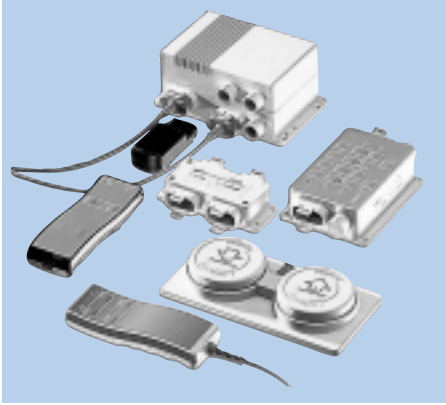


Table 1

Operating precision (µm)	Guiding systems	Driving systems	Actuation systems	Positioning systems
0.1 – 1	Precision rail guides	Roller screws		Standard drives or linear motors with all guiding systems
1 – 10	Linear ball bearings, Profile rail guides, Standard slides	Ball screws, Linear motors		
10 – 100	Speedi-Roll		Electro-mechanical actuators	
100 – 1000				

Selection guide

Selecting actuators, made easy
Finding the right electric actuator for an application usually requires knowing many application details and making several calculations.

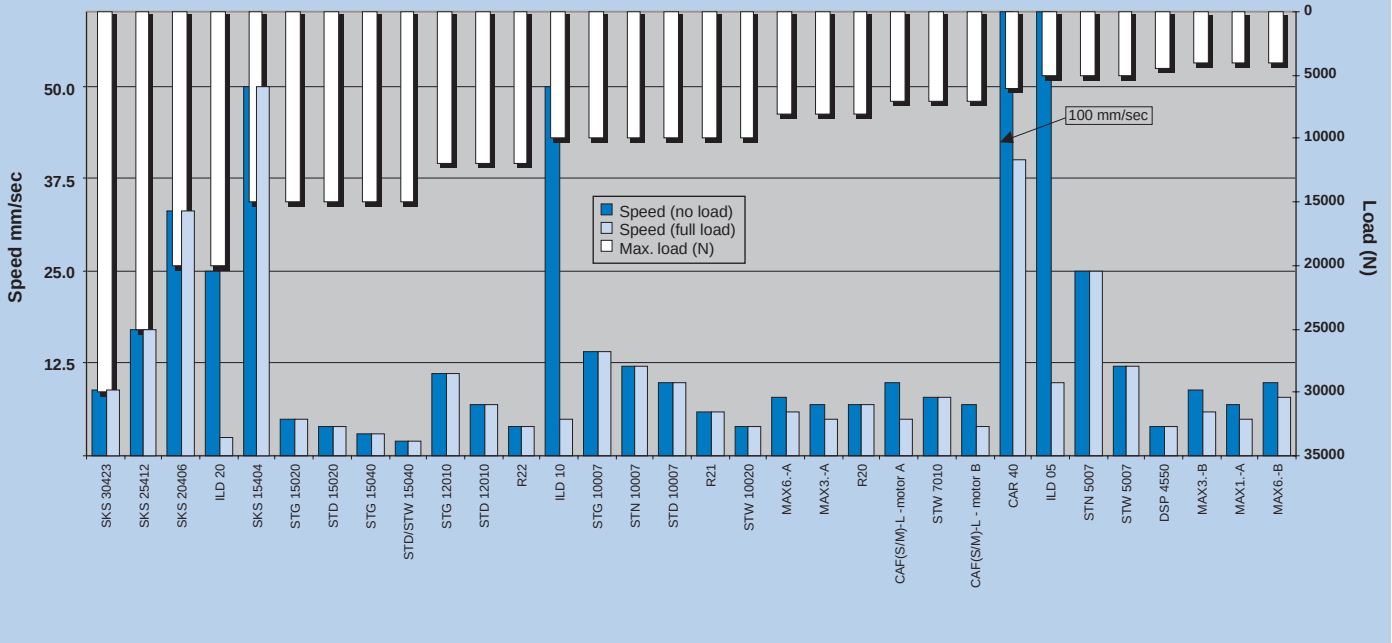
However, there are ways to narrow the selection to one or two safe approximations first. Using the bar chart (graph) you may easily find those actuators that meet your first criteria of load and speed. This is normally the most important first step to carry out.

On the following pages 154-158 you will find more and detailed important information about the basics of actuation systems sorted by maximum load capacity. On the following pages 159-268 you will find detailed information and type (ordering) keys of each individual actuator.

In case you need more explanation on technical terminology (glossary) and important considerations in selecting the right actuator for your applications, pages 270-273 may be useful.

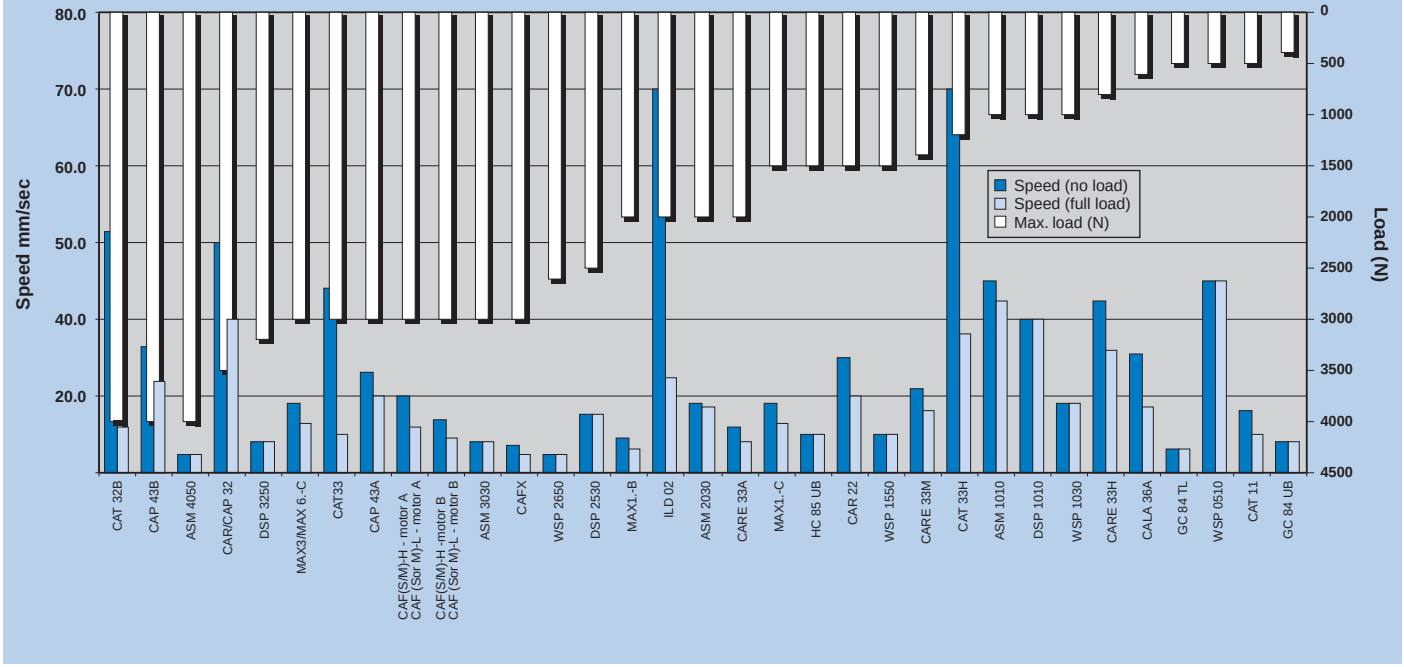
Linear actuators

Diagram 1



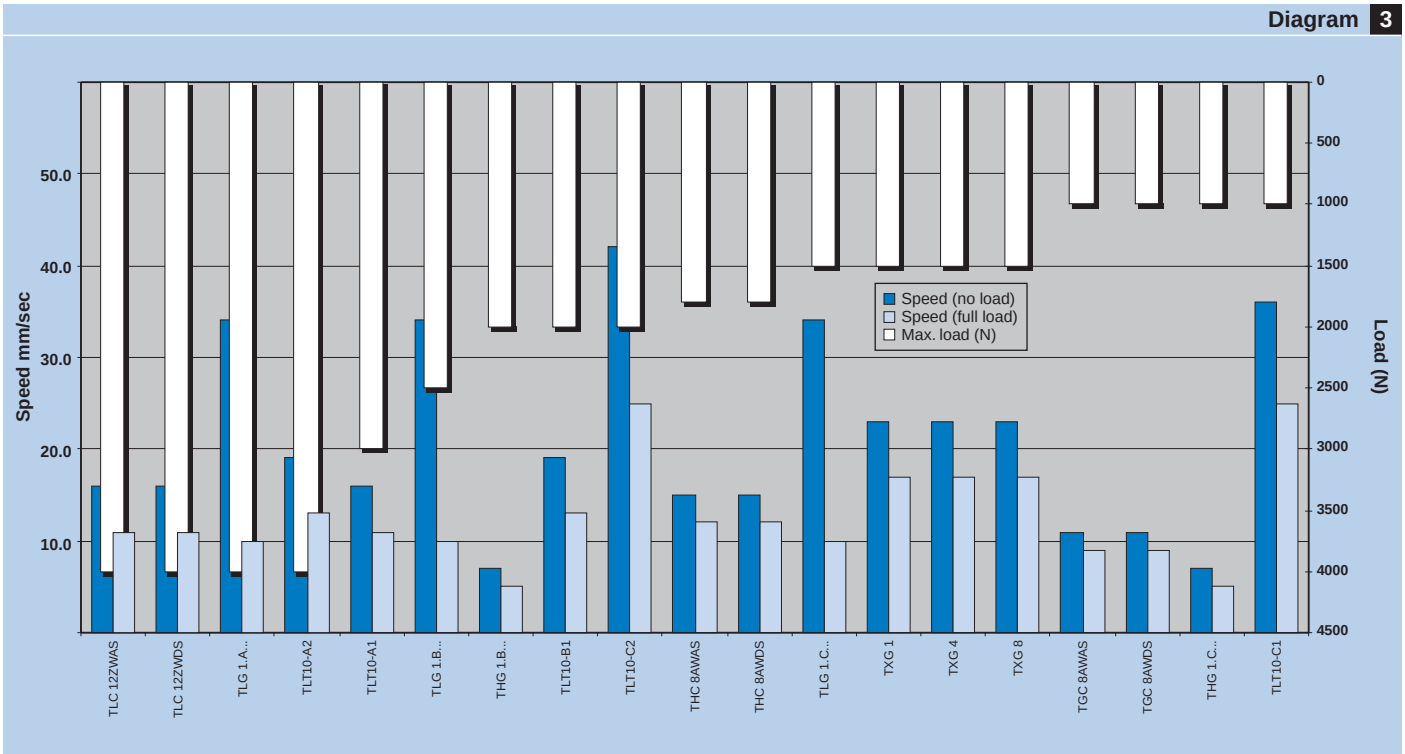
Linear actuators

Diagram 2



Telescopic pillars

Diagram 3



Selection guide (continued)

Table 2

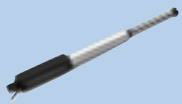
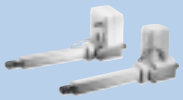
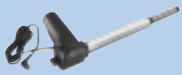
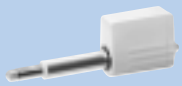
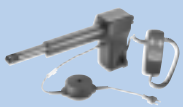
Telescopic pillars	Type	Max. force push	Max. force pull	Speed no load	Speed full load	Stroke (S)	Features	Page
		N		mm/sec		mm		No.
TELEMAG 	TLC	4000	4000	16	11	200 - 700	Robust	163
	TLG	4000	0	34	10	200 - 700	Robust	164
	TLT	4000	0	42	11	300 - 700	Compact	165
	THG	2000	0	7	5	200 - 700	Robust	162
	THC	1800	1800	15	12	200 - 700	Robust	161
	TGC	1000	1000	11	9	200 - 700	Robust	160
TELESMART 	TXG	1500	0	23	17	200 - 600	Plug & play	166

Table 3

Linear actuator	Type	Max. force push	Max. force pull	Speed no load	Speed full load	Stroke (S)	Features	Page
		N		mm/sec		mm		No.
CAT 	CAT 32B	4000	4000	63	12	50 - 700	Flexible	170
	CAP 43	4000	4000	33	24	50 - 700	Flexible	178
	CAT 33	3000	3000	48	10	100 - 400	Flexible	172
	CAT 33H	1200	1200	174	36	100 - 400	Flexible	174
	CAT 11	500	500	16	10	50 - 300	Flexible	169
MAGFORCE 	SKS	30000	30000	9	9	100 - 700	Powerful	192
	STD	15000	15000	2	2	100 - 700	Powerful	187
	STG	15000	15000	3	3	100 - 700	Powerful	189
	STW	15000	15000	2	2	100 - 700	Powerful	188
	SKD	15000	15000	25	25	100 - 700	Powerful	190
	SKG	15000	15000	55	55	100 - 700	Powerful	191
	DSP	4500	4500	4	4	100 - 700	Powerful	186
	ASM	4000	4000	5	5	100 - 700	Powerful	185
	WSP	2600	2600	5	5	100 - 700	Powerful	184
CAR 	CAR 40	6000	6000	60	40	100 - 700	High duty factor	196
	CARN 32	3500	3500	N/A	N/A	N/A	No motor	198
	CAP 32	3500	3500	60	40	50 - 700	High duty factor	197
	CCBR 32	3500	3500	N/A	N/A	N/A	No motor	199
	CAR 32	3500	3500	60	40	50 - 700	High duty factor	195
	CAR 22	1500	1500	30	20	50 - 300	High duty factor	194

Continued

Continued **Table 3**

Linear actuator	Type	Max. force push	Max. force pull	Speed no load	Speed full load	Stroke (S)	Features	Page
		N		mm/sec		mm		No.
ILD 	ILD 20	20000	20000	25	3	100 - 700	Fast & controllable	200
	ILD 10	10000	10000	50	5	100 - 700	Fast & controllable	200
	ILD 05	5000	5000	100	10	100 - 700	Fast & controllable	200
	ILD 02	2000	2000	200	25	100 - 1500	Fast & controllable	200
CALA 36 	CALA 36A	600	600	31	17	50 - 200	In-line	202
MATRIX 	MAX1.-A	4000	4000	7	5	50 - 700	Silent operation	205
	MAX3.-A	8000	6000	7	5	50 - 700	Silent operation	206
	MAX6.-A	8000	6000	8	6	50 - 700	Plug & play	207
CARE 	CARE 33A	2000	2000	12	8	100 - 300	Silent operation	208
	CARE 33M	1400	1400	22	16	100 - 500	Silent operation	209
	CARE 33H	800	800	45	32	100 - 500	Silent operation	209
RUNNER 	R22	12000	8000	4	4	100 - 700	High push force	212
	R21	10000	8000	6	6	100 - 700	High push force	212
	R20	8000	8000	7	7	100 - 700	High push force	212
CAFM 	CAFM-L-motor A	7000	3000	10	5	50 - 300	Powerful	218
	CAFM-L-motor B	7000	3000	7	4	50 - 300	Powerful & silent	218
	CAFM-H-motor A	3000	3000	20	12	50 - 300	High speed	218
	CAFM-H-motor B	3000	3000	14	9	50 - 300	High speed & silent	218
CAFS 	CAFS-L-motor A	7000	3000	10	5	50 - 300	Powerful	216
	CAFS-L-motor B	7000	3000	7	4	50 - 300	Powerful & silent	216
	CAFS-H-motor A	3000	3000	20	12	50 - 300	High speed	216
	CAFS-H-motor B	3000	3000	14	9	50 - 300	High speed & silent	216
CAFX 	CAFX	3000	3000	7	5	90 - 200	Compact	215
MAGPUSH 	HC 85 UB	1500	1500	10	10	260	Silent operation	221
	GC 84 TL	500	500	6	6	200 - 300	Silent operation	222
	GC 84 UB	400	400	8	8	210	Silent operation	223

4

4 Actuation systems
Selection guide

Table 4

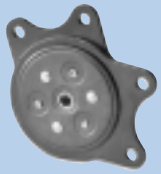
Rotary actuators	Type	Torque	Speed	Size	Features	Page
		Nm	rpm	mm		No.
CRAB 17 	CRAB 17	105	20	125	Compact	225
	CRAB 17	70	8	125	Compact	225
CRAB 05 	CRAB 05	100	3	86	Compact	228

Table 5

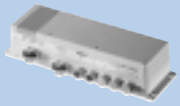
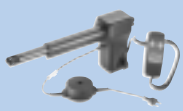
Control units	Type	Control	Max. motor connections	Input	Output	Page
				Va.c.	Vd.c. / A	No.
KOM 	KOM 1	Standard	4	230 / 120	24 / 6	233
	KOM 2	Microprocessor	5	230 / 120	24 / 12	234
	KOM 3	Standard	3	230 / 120	24 / 6	235
	KOM 3T	Standard	2	230 / 120	24 / 9	235
	KOM 6	Microprocessor	4	230 / 120	24 / 12	236
MCU 	MCU	Standard	2	230 / 120	24 / 6	237
LD 	LD	Microprocessor	4	230 / 120	24 / 12	238
CAFC 04 	M1	Micro controller	1	230 / 120	40 / 6	239
	M2	Micro controller	2	230 / 120	40 / 6	239
	M3	Micro controller	3	230 / 120	40 / 6	239
CAFM 	M1	Micro controller	0	230 / 120	40 / 6	241
	M2	Micro controller	1	230 / 120	40 / 6	241
	M3	Micro controller	2	230 / 120	40 / 6	241
	M4	Micro controller	3	230 / 120	40 / 6	241
CAFX 	M1	Micro controller	1	230 / 120	40 / 6	215

Table 6

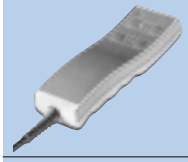
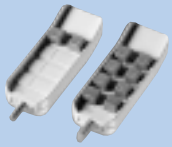
Hand switch	Type	Operating power	Max. operating motors	Prot. class IP	Colour	Page
		Vd.c. / mA				No.
EHA 	EHA 1	12 / 50	4	67	Grey	243
	EHA 2	12 / 50	5	67	Grey	244
EHE 	EHE 1	38 / 50	4	X7	Grey / black	245
	EHE 6	38 / 50	4	X7	Grey	246
PHC 	PHC	–	4	66	Anthracite	247
CAFH 	M1	40 / 50	1	X4	Black	247
	M2	40 / 50	2	X4	Black	247
	M3	40 / 50	3	X4	Black	247
	M4	40 / 50	4	X4	Black	247

Table 7

Foot switches	Type	Operating Power	Max. operating motors	Prot. class IP	Colour	Page
		Vd.c. / mA				No.
ST 	ST	12 / 50	3	X5	Blue or anthracite	249
PFP 	PFP	–	1	21	Grey or anthracite	250
CAFHF 	F1-DIN5	40 / 50	1	X4	Anthracite	250
	F1-DIN7	40 / 50	1	X4	Anthracite	250

Table 8

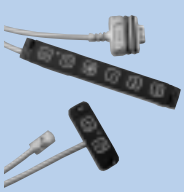
Desk switch	Type	Operating Power	Max. operating motors	Prot. class IP	Colour	Page
		Vd.c. / mA				No.
ST 	ST	12 / 50	3	X0	Black	252
LD 	LD	5 / 50	2	32	Black	253
CAFH 	T1 T2	40 / 50 40 / 50	1 2	X4 X4	Grey or black Grey or black	254 254

Table 9

Junction box	Type	Operating Power	Max. motor connections	Prot. class IP	Colour	Page
		Vd.c. / mA				No.
CAFR 	DIN5 DIN7	40 / 50 40 / 50	N/A N/A	X4 X4	grey grey	256 256

Table 10

Easy3	Type	Max. force push	Max. force pull	Speed no load	Speed full load	Stroke (S)	Features	Page
		N		mm/sec		mm		No.
Easy3 	01	500	500	16	10	50 - 300	Flexible	258
	02	600	600	31	17	50 - 200	In-line	258
	03	2000	2000	12	8	100 - 300	Silent operation	259
	04	2000	2000	12	8	100 - 300	Silent operation	259
	05	2000	2000	12	8	100 - 300	Silent operation	260
	10	7000	3000	10	5	100 - 200	Powerful & silent	260
	11	7000	3000	10	5	100 - 200	Powerful & silent	261
	12	7000	3000	10	5	100 - 200	Powerful & silent	261
	13	7000	3000	10	5	100 - 200	Powerful & silent	262

Actuators

Telescopic pillars

TELEMAG

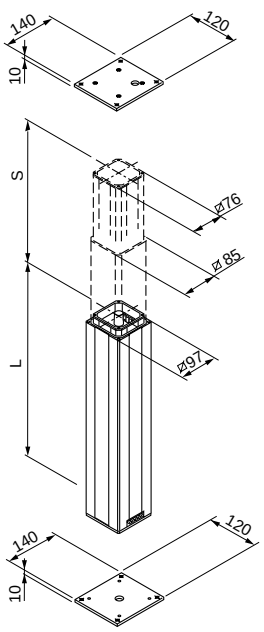
The TELEMAG line of telescopic lifting columns features the best combination of minimum retracted height and large stroke length (→ **fig** 5). They are used wherever robust and safe guiding systems are needed. The attractive design allows the TELEMAG to often become part of the overall design of the equipment. The line of TELEMAG actuators is complemented by the KOM control units, which allow a flexible and application focused system control.

Benefits:
- High offset load
- Quiet
- Robust
- Long life time

Fig 5

Telescopic pillars	Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
TELEMAG	TLT10-A2	4000	0	19	13	300 - 700	0.5×stroke + 240	24 DC	40	15 - 30
	TLG 1.A...	4000	0	14	10	200 - 700	stroke + 180	24 DC	30	15 - 30
	TLC 12ZWDS	4000	4000	16	11	255 - 700	stroke + 60	120/230 AC	30	18.3 - 30.5
	TLC 12ZWAS	4000	4000	16	11	200 - 700	stroke + 175	120/230 AC	30	15.2 - 24.5
	TLT10-A1	3000	0	16	11	300 - 700	0.5×stroke + 170	24 DC	40	15 - 30
	TLG 1.B...	2500	0	17	13	200 - 700	stroke + 180	24 DC	30	15 - 30
	TLT10-C2	2000	0	42	25	300 - 700	0.5×stroke + 240	24 DC	40	15 - 30
	TLT10-B1	2000	0	19	13	300 - 700	0.5×stroke + 170	24 DC	40	15 - 30
	THG 1.B...	2000	0	7	5	200 - 700	stroke + 270	24 DC	30	8 - 14
	THC 8AWDS	1800	1800	15	12	230 - 700	stroke + 60	120/230 AC	30	8.6 - 17.5
	THC 8AWAS	1800	1800	15	12	200 - 700	stroke + 155	120/230 AC	30	7.9 - 13.5
	TLG 1.C...	1500	0	33	25	200 - 700	stroke + 180	24 DC	30	15 - 30
	TLT10-C1	1000	0	36	25	300 - 700	0.5×stroke + 170	24 DC	40	15 - 30
	THG 1.C...	1000	0	7	5	200 - 700	stroke + 270	24 DC	30	8 - 14
	TGC 8AWDS	1000	1000	11	9	300 - 700	stroke + 45	120/230 AC	30	5.9 - 9.5
	TGC 8AWAS	1000	1000	11	9	200 - 700	stroke + 145	120/230 AC	30	4.5 - 7.5

TELEMAG TGC



Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
TGC 8AWAS	1000	1000	11	9	200 + x	S + 145	120/230 AC	30	4.5 - 7.5
TGC 8AWDS	1000	1000	11	9	300 + x	S + 45	120/230 AC	30	5.9 - 9.5

x = 100 mm, max. = 700 mm

Ordering code for accessories

Accessories	Order N°
Top mounting plate for 2× tube set	964280
Bottom mounting plate for 2× tube set	964281
Top mounting plate for 3× tube set	964280
Bottom mounting plate for 3× tube set	965121
Screw (4/plate) (not available for 3× tube set, bottom plate)	510751
Screw (4/plate) only for 3× tube set, bottom plate	510709
Lock washer (4/plate), only for 2× tube set	510024

Ordering key

TGC 8AW [ ] [ ] [ ] - [ ] 0 [ ] 0

Type

Load / Speed:
1000 N / 11 - 9 mm/sec. . . . . A

Tube set:
Tube set 2× (retracted length stroke + 145 mm) . . . . . A
Tube set 3× (retracted length stroke + 45 mm) . . . . . D

Control:
Electrical control . . . . . S
Pneumatic control . . . . . K

Motor voltage:
230 Va.c. . . . . – –
120 Va.c. 2U

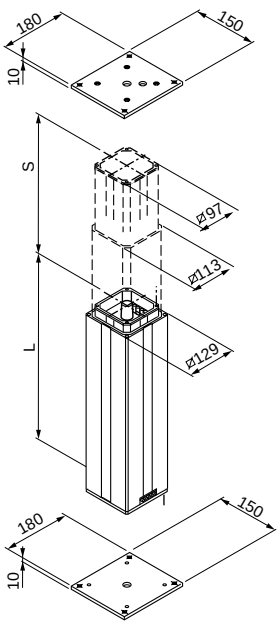
Construction:
Push 0
Pull. 3

Colour:
Colourless anodised 0

Stroke:
200 mm (not available by tube set 3×) 2
300 mm 3
400 mm 4
500 mm 5
600 mm 6
700 mm 7

Example: TGC 8AW A S – – - 0 0 5 0

TELEMAG THC



Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
THC 8AWAS	1800	1800	15	12	200 - 700	S + 155	120 230 AC	30	7.9 - 13.5
THC 8AWDS	1800	1800	15	12	230 - 700	S + 60	120 230 AC	30	8.6 - 17.5

Ordering code for accessories

Accessories	Order N°
Top mounting plate for 2× tube set	264265
Bottom mounting plate for 2× tube set	264363
Top mounting plate for 3× tube set	264265
Bottom mounting plate for 3× tube set	264237
Screw (4/plate) for top mounting plate	510671
Screw (4/plate) for bottom mounting plate	510709

4

Ordering key

THC | 8AW | | | | - | | 0 | | 0

Type

Load / Speed:
1800 N / 15 - 12 mm/sec . . . . . A

Tube set:
Tube set 2× (retracted length stroke + 155 mm) . . . . . A
Tube set 3× (retracted length stroke + 60 mm) . . . . . D

Control:
Electrical control . . . . . S
Pneumatic control . . . . . K

Motor voltage:
230 Va.c. . . . . – –
120 Va.c. 2U

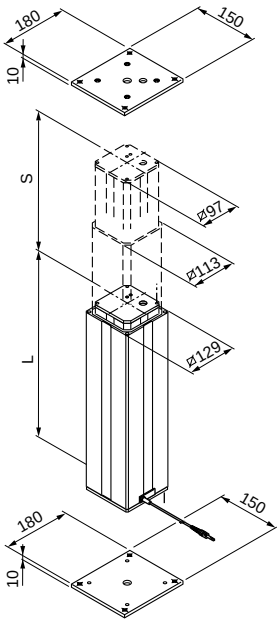
Construction:
Push 0
Pull 3

Colour:
Colourless anodised 0

Stroke:
200 mm (not available by tube set 3×) 2
300 mm 3
400 mm 4
500 mm 5
600 mm 6
700 mm 7

Example: THC | 8AW | D | S | – – | - | 0 | 0 | 4 | 0

TELEMAG THG



Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
THG 1.B...	2000	0	7	5	200-700	S+270	24 DC	30	8-14
THG 1.C...	1000	0	7	5	200-700	S+270	24 DC	30	8-14

Ordering code for accessories

Accessories	Order N°
Top mounting plate for 2× tube set	264265
Bottom mounting plate for 2× tube set	264363
Top mounting plate for 3× tube set	264265
Bottom mounting plate for 3× tube set	264237
Screw (4/plate) for mounting plate 2× tube set	510709
Screw (4/plate) for mounting plate 3× tube set	510707

Ordering key

THG 10 - [ ][ ][ ] 2 A - 000

Type

Motor voltage:
24 Vd.c. 0

Load/Speed:
2000 N (push) / 7-5 mm/sec . . . . . B
1000 N (push) / 7-5 mm/sec C

Tube set:
Tube set 2× (retracted length stroke+270 mm) . . . . . A
Tube set 3× (retracted length stroke+180 mm) . . . . . D

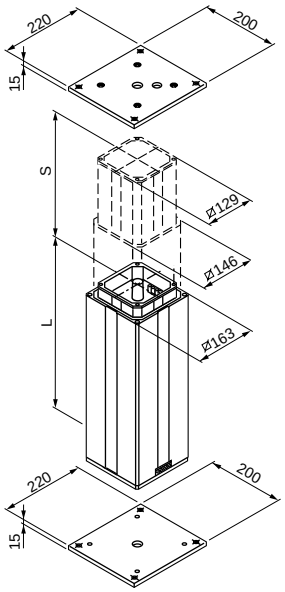
Stroke:
200 mm 2
300 mm 3
400 mm 4
500 mm 5
600 mm 6
700 mm 7

Cable/connecting plug:
Straight cable with stereo jack plug, length 2,3 m 2

Option:
Encoder, 8 pulses/revolution . . . . . A

Example: THG 10 - BA32A - 000

TELEMAG TLC



Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
TLC 12ZWAS	4000	4000	16	11	200 - 700	S + 175	120/230 AC	30	15.2 - 24.5
TLC 12ZWDS	4000	4000	16	11	255 - 700	S + 60	120/230 AC	30	18.3 - 30.5

Ordering code for accessories

Accessories	Order N°
Top mounting plate for 2× tube set	290268
Bottom mounting plate for 2× tube set	290351
Top mounting plate for 3× tube set	290268
Bottom mounting plate for 3× tube set	290265
Screw (4/plate) for mounting plate	510707

4

Ordering key

TLC | 12ZW | | | | - | | 0 | | 0

Type

Load / Speed:
4000 N / 16 - 11 mm/sec . . . . . Z

Tube set:
Tube set 2× (retracted length stroke + 175 mm) . . . . . A
Tube set 3× (retracted length stroke + 60 mm) . . . . . D

Control:
Electrical control . . . . . S
Pneumatic control . . . . . K

Motor voltage:
230 Va.c. . . . . – –
120 Va.c. 2U

Construction:
Push 0
Pull 3

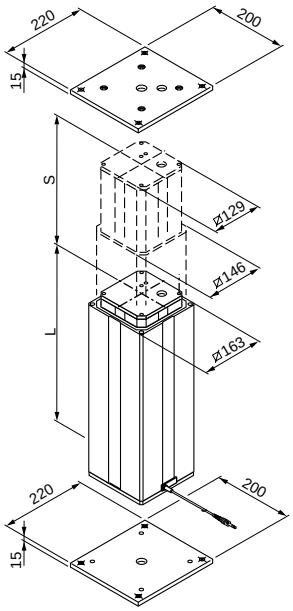
Colour:
Colourless anodised 0

Stroke:
200 mm (not available by tube set 3×) 2
300 mm 3
400 mm 4
500 mm 5
600 mm 6
700 mm 7

Example: TLC | 12ZW | D | K | – – | - | 0 | 0 | 7 | 0

Telescopic pillars

TELEMAG TLG



Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
TLG 1.A...	4000	0	14	10	200 - 700	S + 180	24 DC	30	15 - 30
TLG 1.B...	2500	0	17	13	200 - 700	S + 180	24 DC	30	15 - 30
TLG 1.C...	1500	0	33	25	200 - 700	S + 180	24 DC	30	15 - 30

Ordering code for accessories

Accessories	Order N°
Top mounting plate for 2× tube set	290268
Bottom mounting plate for 2× tube set	290351
Top mounting plate for 3× tube set	290268
Bottom mounting plate for 3× tube set	290265
Screw (4/plate) for mounting plate	510707

Ordering key

TLG 10 - [ ][ ][ ] 2 A - 000

Type

Motor voltage:
24 Vd.c. 10

Load / Speed:
4000 N (push) / 14 - 10 mm/sec . . . . . A
2500 N (push) / 17 - 13 mm/sec . . . . . B
1500 N (push) / 34 - 25 mm/sec C

Tube set:
Tube set 2× (retracted length stroke + 180 mm) . . . . . A
Tube set 3× (retracted length stroke + 180 mm) . . . . . D

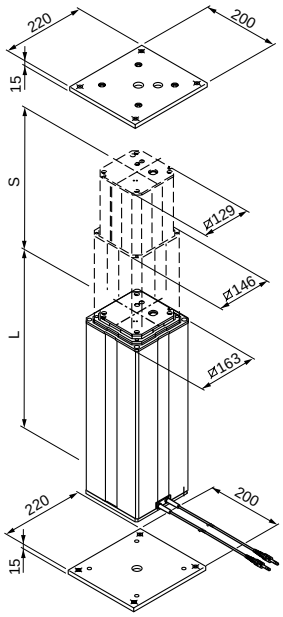
Stroke:
200 mm 2
300 mm 3
400 mm 4
500 mm 5
600 mm 6
700 mm 7

Cable / connecting plug:
Straight cable with stereo jack plug, length 2.3 m 2

Option:
Encoder, 8 pulses / revolution . . . . . A

Example: TLG 10 - C A 6 2 A - 000

TELEMAG TLT



Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
TLT10-A1	3000	0	16	11	300 - 700	0,5×S+170	24 DC	40	15 - 30
TLT10-A2	4000	0	19	13	300 - 700	0,5×S+240	24 DC	40	15 - 30
TLT10-B1	2000	0	19	13	300 - 700	0,5×S+170	24 DC	40	15 - 30
TLT10-C1	1000	0	36	25	300 - 700	0,5×S+170	24 DC	40	15 - 30
TLT10-C2	2000	0	42	25	300 - 700	0,5×S+240	24 DC	40	15 - 30

Ordering code for accessories

Accessories	Order N°
Top mounting plate for 2× tube set	264265
Bottom mounting plate for 2× tube set	264363
Top mounting plate for 3× tube set	264265
Bottom mounting plate for 3× tube set	264237
Screw (4/plate) for mounting plate 2× tube set	510709
Screw (4/plate) for mounting plate 3× tube set	510707

4

Ordering key

TLT | 10 | - | | | 2 | A | - | 000

Type

Motor voltage:
24 Vd.c. 10

Load / Speed / Retracted length:
4000 N (push) / 19 - 13 mm/sec /stroke/2 + 240 mm A2
3000 N (push) / 16 - 11 mm/sec /stroke/2 + 170 mm A1
2000 N (push) / 19 - 13 mm/sec /stroke/2 + 170 mm B1
2000 N (push) / 45 - 25 mm/sec /stroke/2 + 240 mm C2
1000 N (push) / 36 - 25 mm/sec /stroke/2 + 170 mm C1

Stroke:
300 mm 3
400 mm 4
500 mm 5
600 mm 6
700 mm 7

Cable / connecting plug:
Straight cable with stereo jack plug, length 2.3 m 2

Option:
Encoder, 8 pulses / revolution . . . . . A

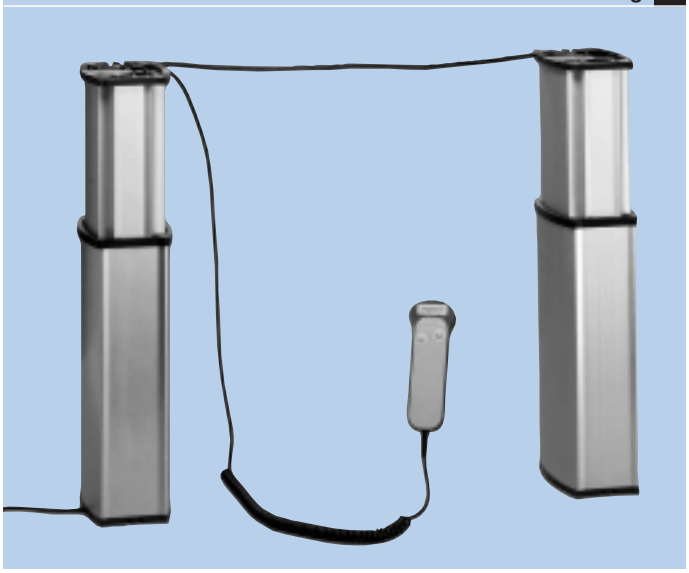
Example: TLT | 10 | - | B1 | 3 | 2 | A | - | 000

TELESMART

This cost effective telescopic pillar offers an attractive design for height adjustable desks, tables, chairs and lightweight industrial workstations (→ **fig** 6). These powerful and fast pillars combine the advantages of AC and DC-power. The control unit for the TELESMART TXG is already integrated in the actuator. The pillars can be controlled by using desk, hand or foot switches.

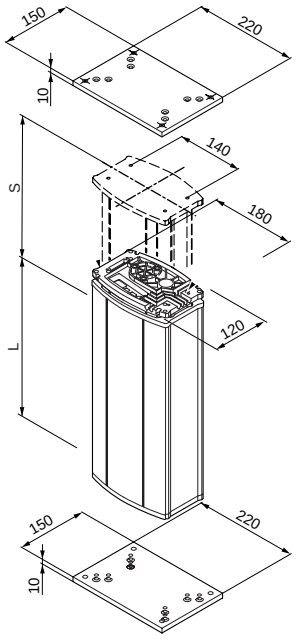
Benefits:
- Easy plug and play system
- Powerful and fast lifting
- Attractive design
- Cost effective

Fig 6



Telescopic pillars	**Type**	**Force** push	pull	**Speed** no load	full load	**Stroke** (S)	**Retr. Length** (L)	**Voltage**	**Protection**	**Weight**
		N		mm/s		mm	mm	V	IP	kg
TELESMART	TXG 1	1500	0	23	17	200 - 600	stroke + 180	24 DC	30	9 - 14
	TXG 4	1500	0	23	17	200 - 600	stroke + 180	120 AC	30	9 - 14
	TXG 8	1500	0	23	17	200 - 600	stroke + 180	230 AC	30	9 - 14

TELESMART TXG



Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
TXG 1	1500	0	23	17	200 - 600	S + 180	24 DC	30	9 - 14
TXG 4	1500	0	23	17	200 - 600	S + 180	120 AC	30	9 - 14
TXG 8	1500	0	23	17	200 - 600	S + 180	230 AC	30	9 - 14

Ordering code for accessories

Mains cable	Plug	Country	Order number	Comment
Straight cable 3.5	Euro	general	304330	2-poles
Straight cable 3.5	Schuko	DE	304331	2-poles
Straight cable 3.5	UL	USA	304332	2-poles
Straight cable 3.5	British standard	UK	304333	2-poles
Top or bottom mounting plate			304320	

4

Ordering key

TXG [ ][ ] - 00 5 [ ] - [ ] 00

Type

Motor voltage:
24 Vd.c. 1
120 Va.c. 4
230 Va.c. 8

Output for an additional DC-Motor:
Not used 0
24 Vd.c. (not available for TXG1) 1

Cable/connecting plug:
not used 00

Colour:
Colourless anodised 5

Options:
Not used 000
With programmable memory positions (not available for TXG1 or with additional output) 2CA
Parallel run with programmable memory positions (only used with additional output) 4AL
Encoder, 14 pulses/revolution (necessary for TXG1) . . . . . EYS

Stroke:
200 mm 200
300 mm 300
400 mm 400
500 mm 500
600 mm 600

Example: TXG 8 0 - 00 5 2CA - 400 00

Linear actuators

CAT

The CAT (→ **fig 7**) modular design concept makes it easy to interchange critical components such as motors, gears, screws, attachments, etc. Custom built actuators are easily and cost efficiently built from standard parts. The CAT range flexibility makes it suitable for an infinite number of applications.

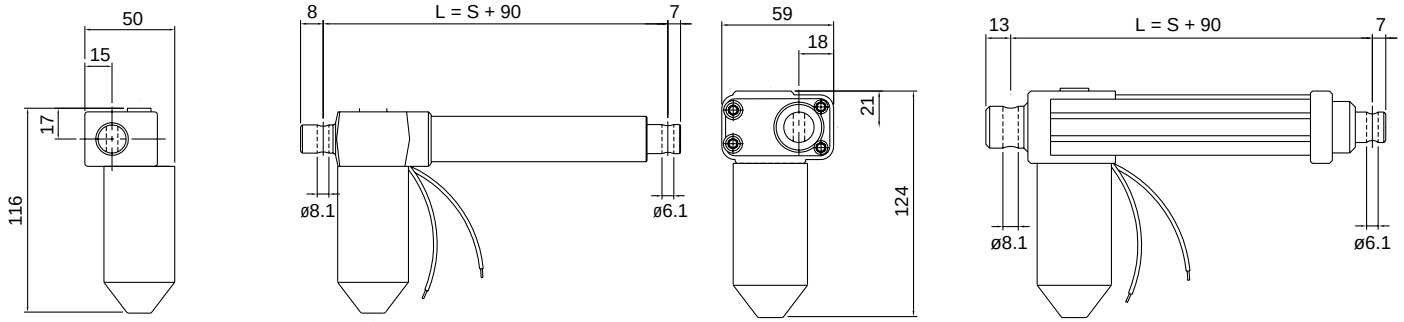
Benefits:
- Small
- Robust
- Highly efficient
- Maintenance-free

Fig 7

Linear actuators	Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length* (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
CAT	CAT 11	500	500	16	10	50 - 300	S + 90	12/24V DC	54	1.5 - 2
	CAT 32B	4000	4000	63	12	50 - 700	S + 167/175/206	12/24 DC or 120/240/400 AC	44/54/65	2 - 3.5
	CAT 33	3000	3000	48	10	100 - 400	S + 150/158/189	12/24 DC or 120/240/400 AC	44/54/65	2 - 2.7
	CAT 33H	1200	1200	174	36	100 - 400	S + 150/158/189	12/24 V DC or 120/240/400 AC	44/54/65	2 - 2.7
	CAP 43A	3000	3000	26	20	50 - 400	S + 150/158/189	24 DC	65	2 - 2.7
	CAP 43B	4000	4000	33	24	50 - 700	S + 167/175/206	24 DC	65	2 - 3.5

* Dimension depends on selected front attachment.

CAT 11



No limit switches

With limit switches

Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAT 11	500	500	16	10	50 - 300	S + 90	12/24 DC	54	1.5 - 2

Ordering key

CAT [ ] [11] [ ] × [ ] / [ ] [ ] [ ]

Type

Motor assembly:
Right (as drawing) . . . . . R
Left L

Load(N)/Speed(mm/sec):
500/16 - 10 . . . . . A
250/32 - 25 . . . . . H

Stroke:
50 mm 50
100 mm 100
200 mm 200
300 mm 300

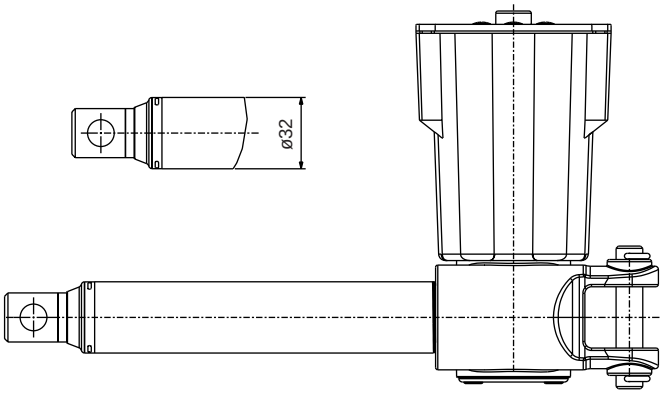
Motor voltage:
12 Vd.c. 12
24 Vd.c. 24

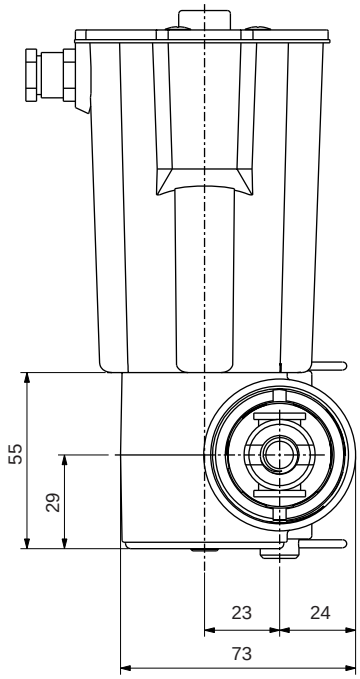
Options:
No limit switch . . . . . N
Limit switch with cables . . . . . M
Limit switch with diodes (internally connected) . . . . . D

Rear attachments:
Hole, ø 8,1 mm (orientation as drawing) 0
Hole, ø 8,1 mm (orientation 90°) 9

Example: CAT R 11 H × 200 / 12 N 0

CAT32B





See drawings of front and rear attachments and motor options on page 176

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAT 32B	4000	4000	63	12	50 - 700	S + 167/175/206	12/24 DC or 120/240/400 AC	44/54/65	2 - 3.5

Ordering key

Dynamic load (N) / Speed (mm/sec)			Motor options	
4000/xx	2500/xx	1500/xx	No motor	«0000
4000/17 - 12	2500/32 - 25	1500/63 - 48	12 Vd.c.	C12C
3000/17 - 11	2000/34 - 19	1000/67 - 43	12 Vd.c.	D12C
4000/17 - 13	2500/33 - 24	1500/65 - 50	24 Vd.c.	C24C
4000/9 - 5	2500/18 - 10	1500/34 - 24	24 Vd.c.	C24CW
4000/17 - 13	2500/33 - 24	1500/65 - 50	24 Vd.c.	D24C
4000/17 - 13	2500/33 - 24	1500/65 - 50	24 Vd.c./Brake	D24CB
4000/17 - 13	2500/33 - 24	1500/65 - 50	24 Vd.c./Shaft	D24CS
4000/9 - 5	2500/18 - 10	1500/34 - 24	24 Vd.c.	D24CW
3500/8	2100/16	1300/32	110 Va.c./60 Hz	E110C
3500/8	2100/16	1300/32	110 Va.c./60 Hz/Brake	E110CB
3500/6,5	3500/13	1300/26	220 Va.c./50 Hz	E220C
3500/6,5	3500/13	1300/26	220 Va.c./50 Hz/Brake	E220CB
3500/6,5	3500/13	1300/26	380 Va.c./50 Hz	E380C
1	2	4		

CAT [ ] 32B × [ ] × [ ] [ ] [ ] [ ] / [ ] [ ]

Type

Motor assembly:
Right . . . . . R
Left L

Stroke:
50 mm 50
100 mm 100
200 mm 200
300 mm 300
400 mm 400
500 mm 500
700 mm 700

Rear attachment (see page 176):
Fork ear, ø 12.0 mm A1
Fork ear, ø 12.7 mm A2
Single ear, ø 12.0 mm K1
Single ear, ø 12.7 mm K2

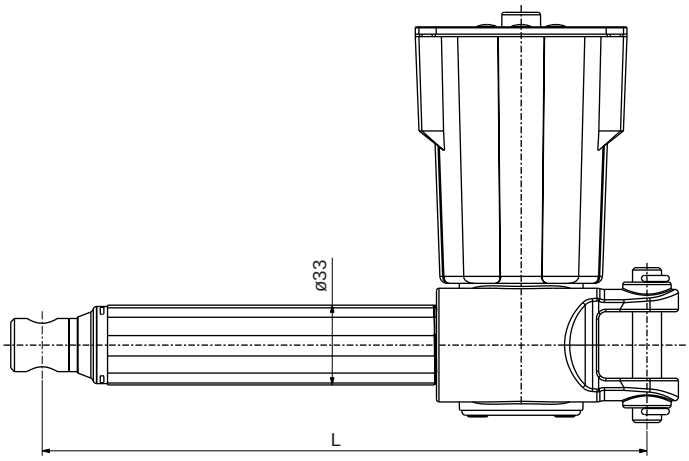
Front attachment (see page 176):
Hole, ø 12.0 mm G1
Hole, ø 12.7 mm G2
Male thread, M12×1.75 . . . . . G3
Female thread, M12×1.75 . . . . . G4
Fork ear, ø 12.7 mm G5

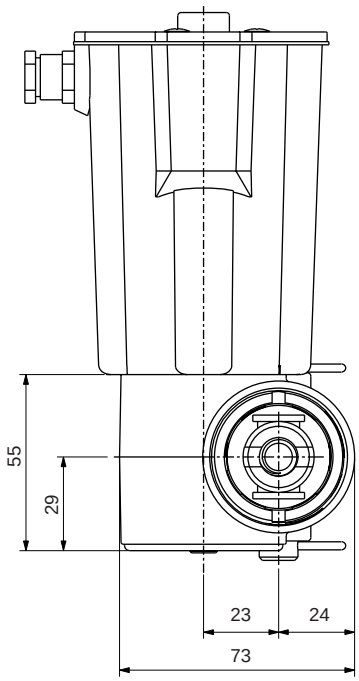
Options:
Friction clutch . . . . . F
No friction clutch . . . . . Z
Back-up ball nut . . . . . S

Options for CxxC motors:
No cable . . . . . U
EMC filter . . . . . M
Encoder . . . . . E
Motor without cover . . . . . N
IP 65 I
Cable 2 m T2
Cable with plug 2 m T2P

Example: CAT L 32B × 400 × 2 K1 G3 F / C24C T2P

CAT 33





Legend: L = retracted length

See drawings of front and rear attachments and motor options on page 176

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAT33	3000	3000	48	10	100 - 400	S + 150/158/189	12/24 DC or 120/240/400 AC	44/54/65	2 - 2.7

Ordering key

Dynamic load (N) / Speed (mm/sec)			Motor options	
3000/xx	2000/xx	1000/xx	No motor	«0000
3000/13 - 10	2000/24 - 20	1000/48 - 38	12 Vd.c.	C12C
2400/7 - 5	1600/21 - 15	800/39 - 21	12 Vd.c.	D12C
3000/13 - 10	2000/26 - 20	1000/48 - 35	24 Vd.c.	C24C
3000/7 - 5	2000/13 - 8	1000/26 - 19	24 Vd.c.	C24CW
3000/13 - 10	2000/26 - 20	1000/48 - 35	24 Vd.c.	D24C
3000/13 - 10	2000/26 - 20	1000/48 - 35	24 Vd.c./Extended shaft	D24CS
3000/7 - 5	2000/13 - 8	1000/26 - 19	24 Vd.c.	D24CW
2400/6	1600/12	800/24	110 Va.c./60 Hz	E110C
3000/5	2000/10	1000/20	220 Va.c./50 Hz	E220C
3000/5	2000/10	1000/20	380 Va.c./50 Hz	E380C
1	2	4		

CAT □ 33 × □ × □□□□ / □□

Type

Motor assembly:
Right . . . . . R
Left L

Stroke:
100 mm. 100
200 mm. 200
300 mm. 300
400 mm. 400

Rear attachment (see page 176):
Fork ear, ø 12.0 mm A1
Fork ear, ø 12.7 mm A2
Single ear, ø 12.0 mm K1
Single ear, ø 12.7 mm K2

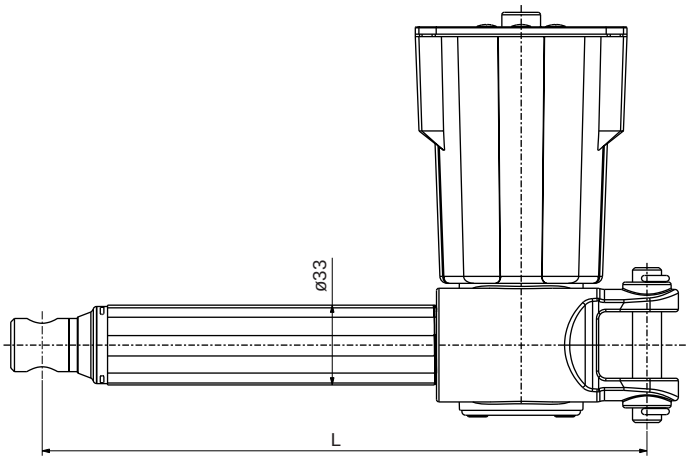
Front attachment (see page 176):
Hole, ø 12.0 mm G1
Hole, ø 12.7 mm G2
Male thread, M12×1.75 . . . . . G3
Female thread, M12×1.75 . . . . . G4
Fork ear, ø 12.7 mm G5

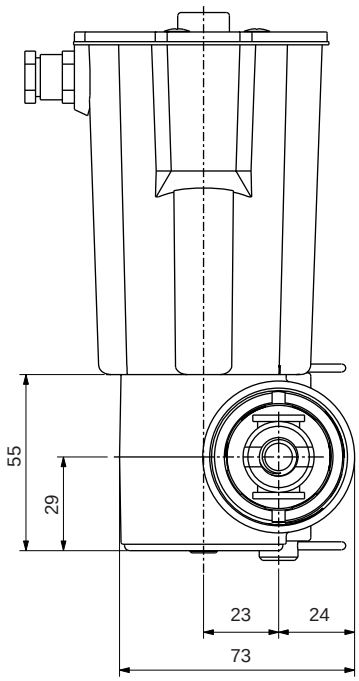
Options:
Friction clutch . . . . . F
No friction clutch. . . . . Z

Options for CxxC motors:
No cable . . . . . U
EMC filter . . . . . M
Encoder. . . . . E
Motor without cover. . . . . N
IP 65 I
Cable 2 m T2
Cable with plug 2 m T2P

Example: CAT L 33 × 200 × 1 A1 G1 Z / C24C T2P

CAT33H





Legend: L = retracted length

See drawings of front and rear attachments and motor options on page 176

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAT 33H	1200	1200	174	36	100 - 400	S + 150/158/189	12/24 DC or 120/240/400 AC	44/54/65	2 - 2.7

Ordering key

Dynamic load (N) / Speed (mm/sec)			Motor options	
1200/xx	900/xx	600/xx	No motor	«0000
1000/50 - 38	600/100 - 80	400/174 - 150	12 Vd.c.	C12C
1000/50 - 38	600/100 - 80	400/174 - 150	12 Vd.c.	D12C
1200/56 - 36	900/113 - 79	500/174 - 140	24 Vd.c.	C24C
1200/27 - 17	800/60 - 35	500/100 - 69	24 Vd.c.	C24CW
1200/56 - 36	900/113 - 79	500/174 - 140	24 Vd.c.	D24C
1200/56 - 36	900/113 - 79	500/174 - 140	24 Vd.c./Brake	D24CB
1200/56 - 36	900/113 - 79	500/174 - 140	24 Vd.c./Shaft	D24CS
1200/27 - 17	800/60 - 35	500/100 - 69	24 Vd.c.	D24CW
1200/25 - 20	900/50 - 37	600/100 - 90	220 Va.c./50 Hz	E220C
1200/25 - 20	900/50 - 37	600/100 - 90	220 Va.c./50 Hz/Brake	E220CB
1	2	4		

CAT [ ] 33H × [ ] × [ ] [ ] [ ] [ ] / [ ] [ ]

Type

Motor assembly:
Right . . . . . R
Left L

Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400

Rear attachment (see page 176):
Fork ear, ø 12.0 mm A1
Fork ear, ø 12.7 mm A2
Single ear, ø 12.0 mm K1
Single ear, ø 12.7 mm K2

Front attachment (see page 176):
Hole, ø 12.0 mm G1
Hole, ø 12.7 mm G2
Male thread, M12×1.75 . . . . . G3
Female thread, M12×1.75 . . . . . G4
Fork ear, ø 12.7 mm G5

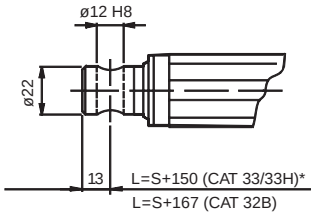
Options:
Friction clutch . . . . . F
No friction clutch . . . . . Z

Options for CxxC motors:
No cable . . . . . U
EMC filter . . . . . M
Encoder . . . . . E
Motor without cover . . . . . N
IP 65 I
Cable 2 m T2
Cable with plug 2 m T2P

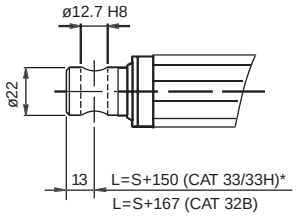
Example: CAT L 33H × 400 × 4 A1 G5 F / C24C T2P

Page with all detailed drawings of CAT 32B, CAT 33 and CAT 33H

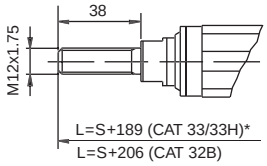
Front attachments and retracted length



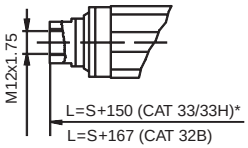
G1



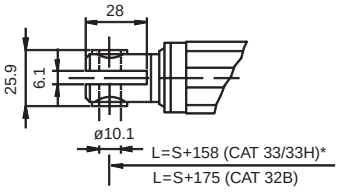
G2



G3



G4

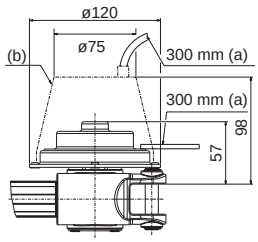


G5

Legend:
S = stroke
L = retracted length

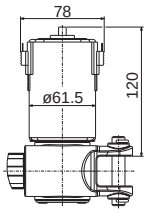
* If S 400 add 50 mm to retracted length

Motors

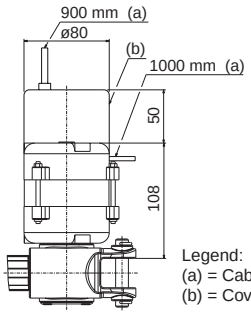


Legend:
(a) = Cable length
(b) = Cover for brake

D12C, D24C, D24CB, D24CS, D24CW

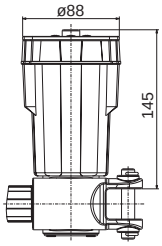


C12CN, C24CN, C24CWN

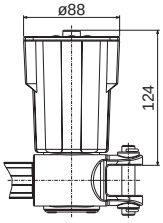


Legend:
(a) = Cable length
(b) = Cover for brake

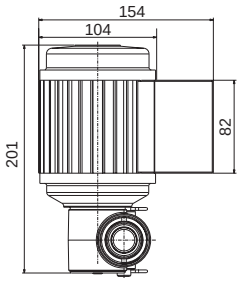
E110C, E110CB, E220C, E220CB



C12CM, C12CME, C24CM, C24CME, C24CWM, C24CWME

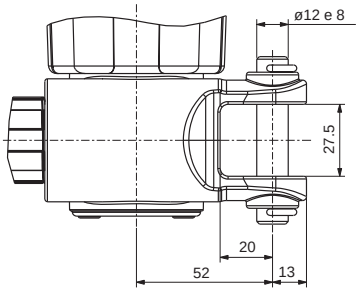


C12C, C24C, C24CW

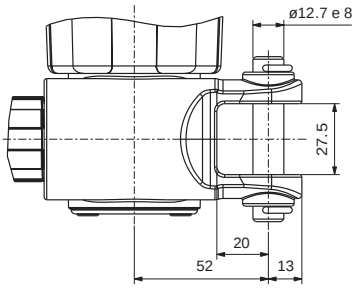


E380C

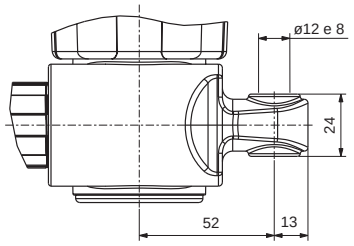
Rear attachments



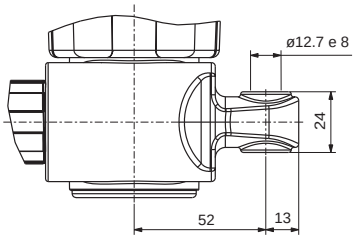
A1



A2



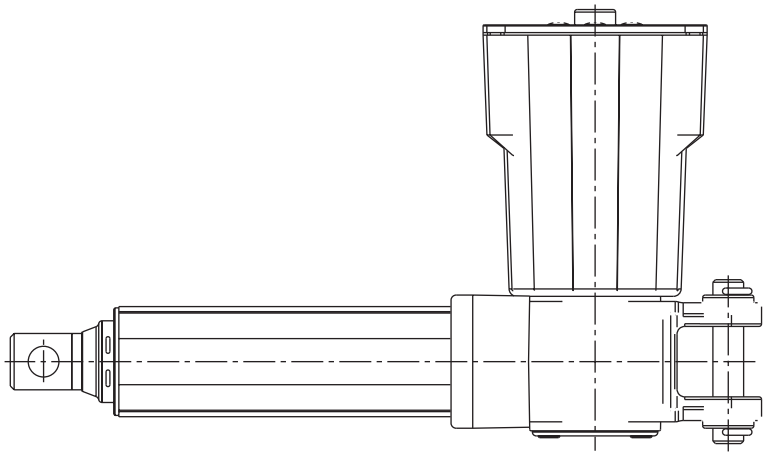
K1

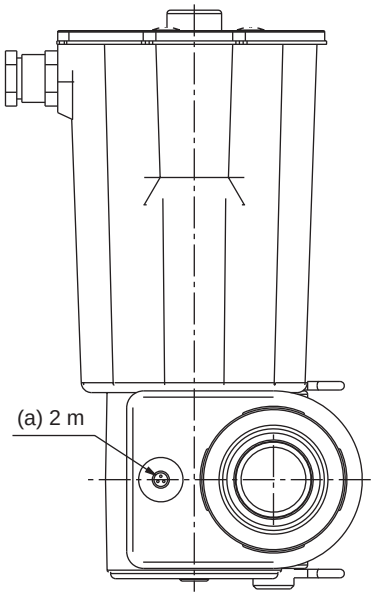


K2

Notes

CAP 43A





Legend:
(a) = cable length

See drawings of front and rear attachments and motor options on page 182

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAP 43A	3000	3000	26	20	50 - 400	S + 150/158/189	24 DC	65	2 - 2.7

Ordering key

Dynamic load (N) / Speed (mm/sec)			Motor options	
3000/xx	2000/xx	1000/xx	No motor	«0000
3000/7 - 5	2000/13 - 8	1000/26 - 19	24 Vd.c.	C24CW
3000/7 - 5	2000/13 - 8	1000/26 - 19	24 Vd.c.	D24CW
3000/13 - 10	2000/26 - 20	1000/48 - 35	24 Vd.c.	C24C
3000/13 - 10	2000/26 - 20	1000/48 - 35	24 Vd.c.	D24C
1	2	4		

CAP [ ] 43A × [ ] × [ ][ ][ ][ ] / [ ][ ][ ][ ]

Type

Motor assembly:
Right . . . . . R
Left L

Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400

Rear attachment (see page 182):
Fork ear, ø 12.0 mm A1
Fork ear, ø 12.7 mm A2
Single ear, ø 12.0 mm K1
Single ear, ø 12.7 mm K2

Front attachment (see page 182):
Hole, ø 12.0 mm G1
Hole, ø 12.7 mm G2
Male thread, M12×1.75 . . . . . G3
Female thread, M12×1.75 . . . . . G4
Fork ear, ø 12.7 mm G5

Options:
Friction clutch . . . . . F
Back-up nut . . . . . S

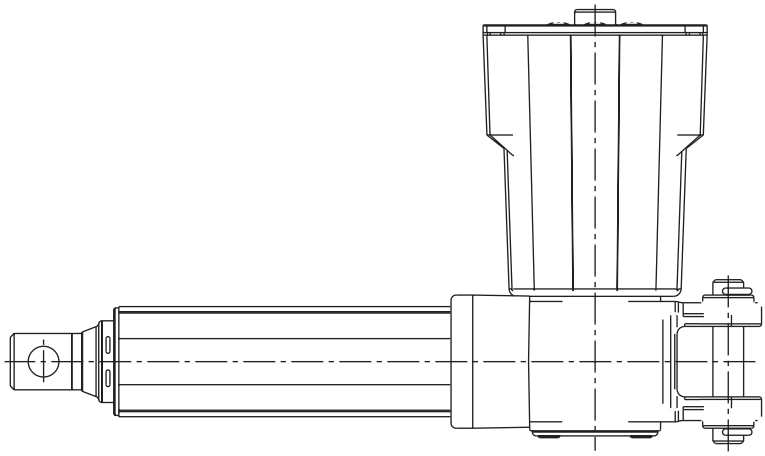
Cable options for C24C(W) motors:
No cable . . . . . U
Cable 2 m T2

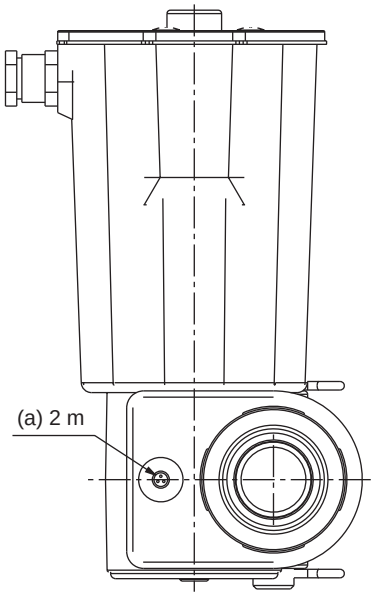
Options for motor:
EMC filter . . . . . M

Options motor protection:
Motor without cover . . . . . N
Protection class IP 65 (always order motor cable when selecting IP65) I

Example: CAP R 43A × 300 × 1 A1 G2 S / C24CW T2 M N

CAP 43B





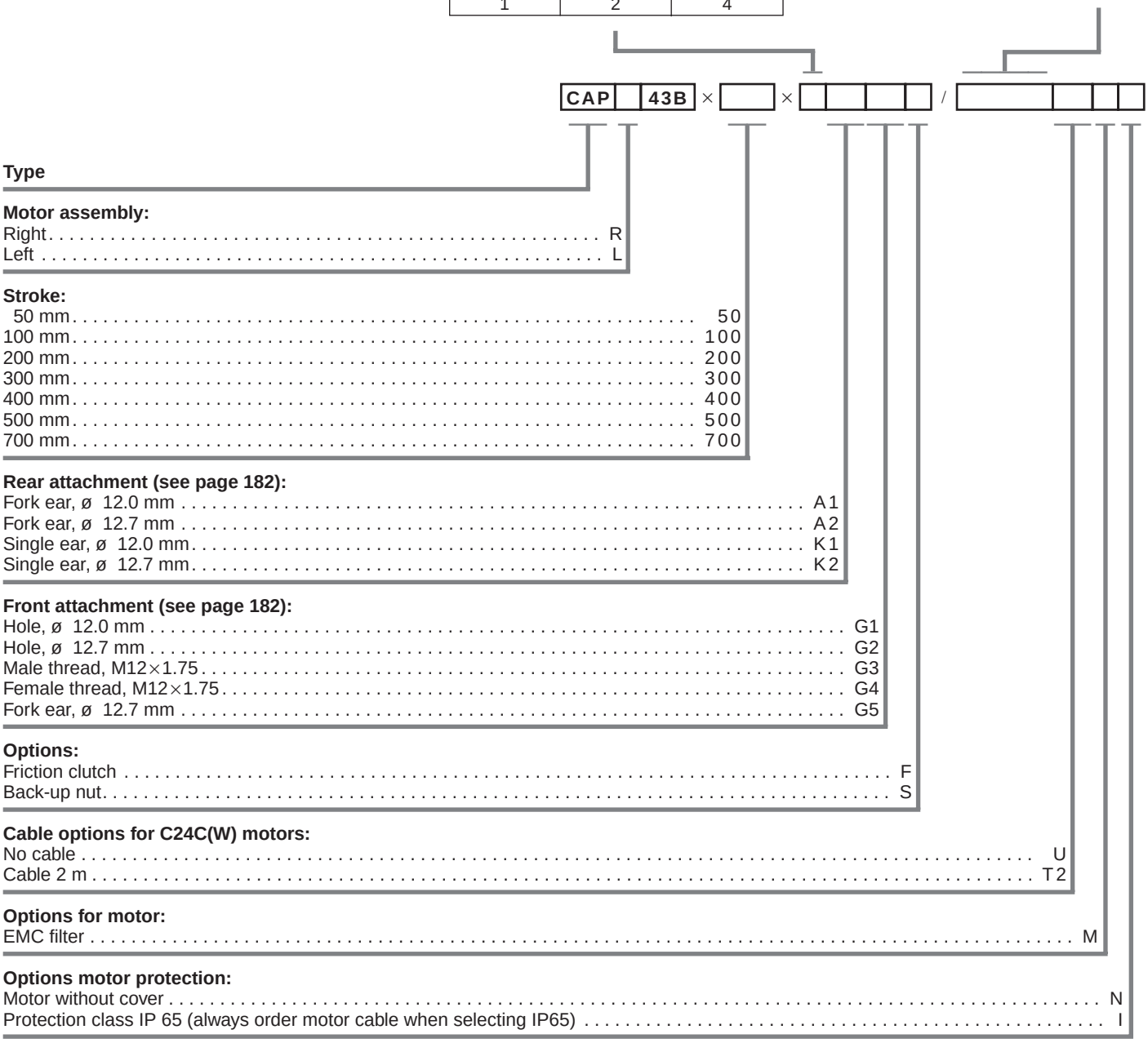
Legend:
(a) = cable length

See drawings of front and rear attachments and motor options on page 182

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAP 43B	4000	4000	33	24	50 - 700	S + 167/175/206	24 DC	65	2 - 3.5

Ordering key

Dynamic load (N) / Speed (mm / sec)			24 VDC-motor, flat or cylindrical	
4000/xx	2500/xx	1500/xx	No motor	«0000
4000/17 - 13	2500/33 - 24	1500/65 - 50	Cylindrical motor	C24C
4000/9 - 5	2500/18 - 10	1500/34 - 24	Cylindrical motor, low speed	C24CW
4000/17 - 13	2500/33 - 24	1500/65 - 50	Flat motor	D24C
4000/9 - 5	2500/18 - 10	1500/34 - 24	Flat motor, low speed	D24CW
1	2	4		

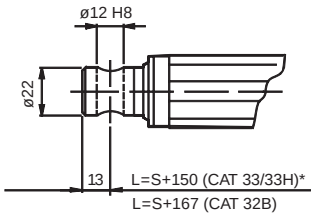


Example: CAP L 43B × 50 × 2 A1 G2 S / D24CW T2 M I

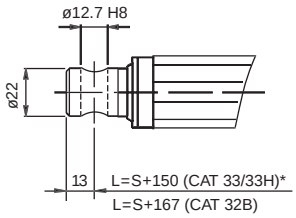
4

Page with all detailed drawings of CAP 43A and CAP 43B

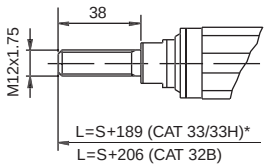
Front attachments and retracted length



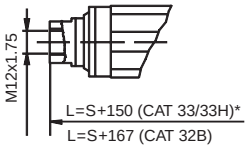
G1



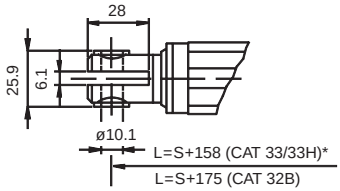
G2



G3

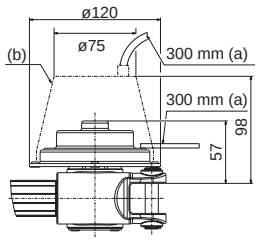


G4

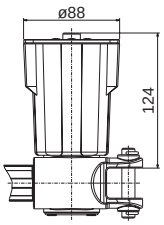


G5

Motors

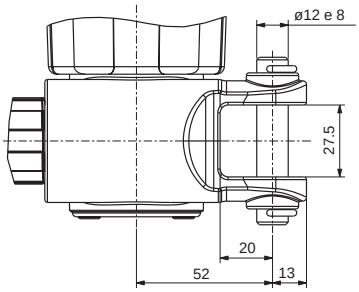


D12C, D24C, D24CB, D24CS, D24CW

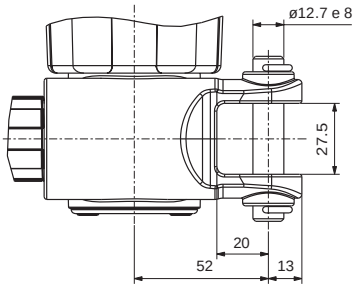


C12C, C24C, C24CW

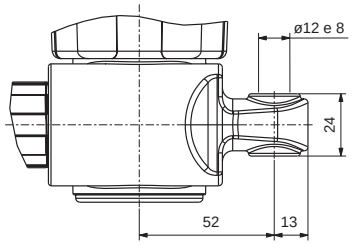
Rear attachments



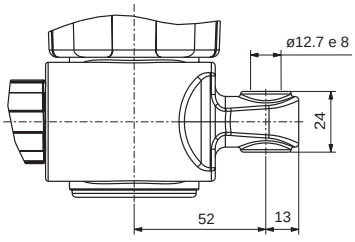
A1



A2



K1



K2

Legend:
S = stroke
L = retracted length

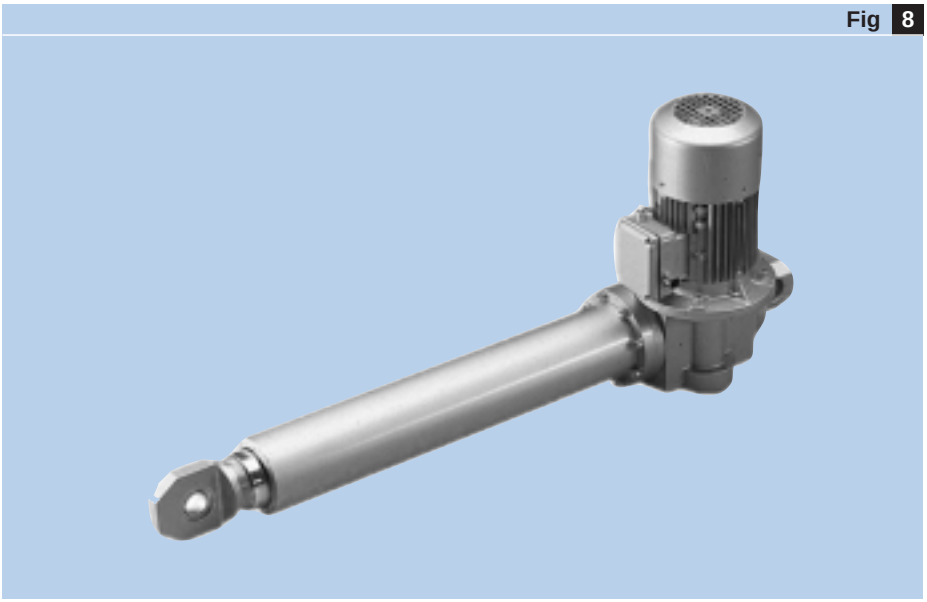
* If S 400 add 50 mm to retracted length

MAGFORCE

The MAGFORCE line consists of spindle lifting drives with worm gears (→ **fig 8**). They fulfil the highest demands for industrial and other applications. The drives are available in several different motor versions. MAGFORCE offers strong, fast and quiet movements with high safety and duty cycle. The drives include many interface options as hall encoder, end switch, extended shaft etc.

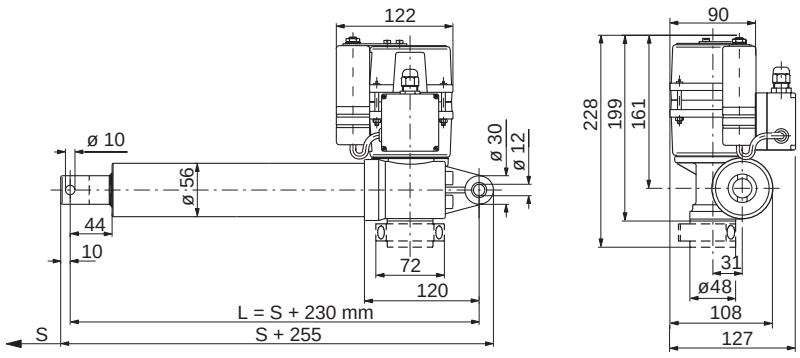
Benefits:
- Ideal for heavy load applications
- Wide speed/force range
- Robust design

Fig 8



Linear actuators	Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
MAGFORCE										
	SKS 30423	30000	30000	9	9	100 - 700	S + 165	400 AC	54	30.0
	SKS 25412	25000	25000	17	17	100 - 700	S + 165	400 AC	54	30.0
	SKS 20406	20000	20000	33	33	100 - 700	S + 165	400 AC	54	30.0
	SKS 15404	15000	15000	50	50	100 - 700	S + 165	400 AC	54	30.0
	STD 15020	15000	15000	4	4	100 - 700	S + 273	400 AC	54	16.3
	STD 15040	15000	15000	2	2	100 - 700	S + 273	400 AC	54	16.3
	STG 15020	15000	15000	5	5	100 - 700	S + 273	24 DC	54	14.6
	STG 15040	15000	15000	3	3	100 - 700	S + 273	24 DC	54	14.6
	STW 15040	15000	15000	2	2	100 - 700	S + 273	230 AC	54	14.6
	SKD 15040	15000	15000	5	5	100 - 700	S + 273	3×400 AC	54	14.6
	SKD 15020	15000	15000	11	11	100 - 700	S + 273	3×400 AC	54	14.6
	SKG 15040	15000	15000	8	8	100 - 700	S + 273	24 DC	54	14.6
	SKG 13020	13000	13000	15	15	100 - 700	S + 273	24 DC	54	14.6
	STD 12010	12000	12000	7	7	100 - 700	S + 273	400 AC	54	16.3
	STG 12010	12000	12000	11	11	100 - 700	S + 273	24 DC	54	14.6
	SKD 12010	12000	12000	21	21	100 - 700	S + 273	3×400 AC	54	14.6
	SKD 10007	10000	10000	25	25	100 - 700	S + 273	3×400 AC	54	14.6
	SKG 10010	10000	10000	30	30	100 - 700	S + 273	24 DC	54	14.6
	STD 10007	10000	10000	10	10	100 - 700	S + 273	400 AC	54	16.3
	STG 10007	10000	10000	14	14	100 - 700	S + 273	24 DC	54	14.6
	STW 10020	10000	10000	4	4	100 - 700	S + 273	230 AC	54	14.6
	STW 7010	7000	7000	8	8	100 - 700	S + 273	230 AC	54	14.6
	SKG 6005	6000	6000	55	55	100 - 700	S + 273	24 DC	54	14.6
	STW 5007	5000	5000	12	12	100 - 700	S + 273	230 AC	54	14.6
	DSP 4550	4500	4500	5	5	100 - 700	S + 230	400 AC	54	5.6
	ASM 4050	4000	4000	5	5	100 - 700	S + 230	12/24 DC	44	5.0
	DSP 3250	3200	3200	8	8	100 - 700	S + 230	400 AC	54	5.6
	ASM 3030	3000	3000	8	8	100 - 700	S + 230	12/24 DC	44	5.0
	WSP 2650	2600	2000	5	5	100 - 700	S + 230	230 AC	54	5.7
	DSP 2530	2500	2500	15	15	100 - 700	S + 230	400 AC	54	5.6
	ASM 2030	2000	2000	18	17	100 - 700	S + 230	12/24 DC	44	5.0
	WSP 1550	1500	1500	10	10	100 - 700	S + 230	230 AC	54	5.7
	ASM 1010	1000	1000	50	45	100 - 700	S + 230	12/24 DC	44	5.0
	DSP 1010	1000	1000	40	40	100 - 700	S + 230	400 AC	54	5.6
	WSP 1030	1000	1000	18	18	100 - 700	S + 230	230 AC	54	5.7
	WSP 0510	500	500	50	50	100 - 700	S + 230	230 AC	54	5.7

Magforce WSP



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
WSP 0510	500	500	50	50	100 - 700	S + 230	120/230 AC	54	5.7
WSP 1030	1000	1000	18	18	100 - 700	S + 230	120/230 AC	54	5.7
WSP 1550	1500	1500	10	10	100 - 700	S + 230	120/230 AC	54	5.7
WSP 2650	2600	2600	5	5	100 - 700	S + 230	120/230 AC	54	5.7

Ordering key

WSP [ ] - [ ] - [ ]

Type

Load / Speed / Motor voltage:

500 N / 57 mm/sec / 230 Va.c.	0510
1000 N / 19 mm/sec / 230 Va.c.	1030
1500 N / 11 mm/sec / 230 Va.c.	1550
2600 N / 5,4 mm/sec / 230 Va.c.	2650

Stroke:

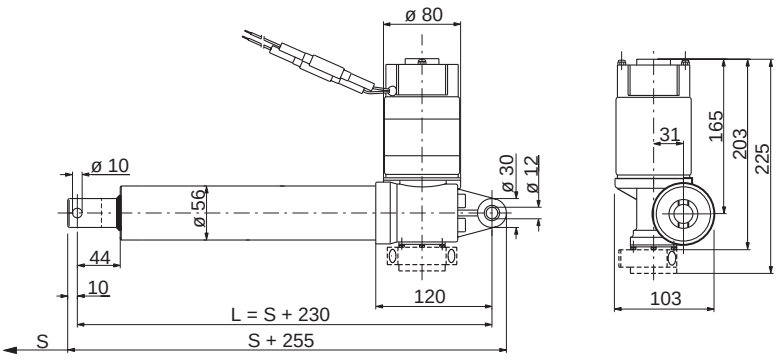
100 mm	100
200 mm	200
300 mm	300
400 mm	400
500 mm	500
600 mm	600
700 mm	700

Customer options:

Standard	01
Brake for self-locking on push	03
Extended shaft	16
Brake for self-locking on pull	24
Bronze nut / Low temperature grease / Extended shaft	81

Example: WSP 2650 - 400 - 81

Magforce ASM



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
ASM 1010	1000	1000	50	45	100 - 700	S + 230	12/24 DC	44	5.0
ASM 2030	2000	2000	18	17	100 - 700	S + 230	12/24 DC	44	5.0
ASM 3030	3000	3000	8	8	100 - 700	S + 230	12/24 DC	44	5.0
ASM 4050	4000	4000	5	5	100 - 700	S + 230	12/24 DC	44	5.0

4

Ordering key

ASM [ ] - [ ] - [ ]

Type

Load / Speed:
1000 N / 48 mm/sec 1010
2000 N / 18 mm/sec 2030
3000 N / 8 mm/sec 3030
4000 N / 5 mm/sec 4050

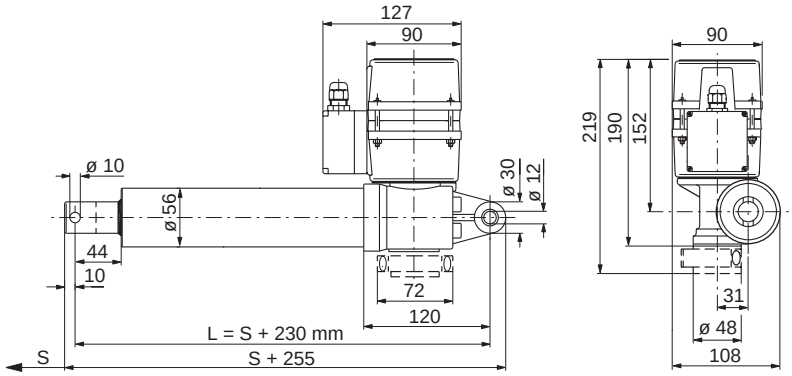
Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400
500 mm 500
600 mm 600
700 mm 700

Customer options:
Standard 01
24 Vd.c. 02
24V DC / Brake for self-locking on push 06
24V DC / Bronze nut / Low temperature grease 07
24V DC / Brake for self-locking on push and pull 09
24V DC / Brake for self-locking on push and pull / Low temperature grease 13
24V DC / Low temperature grease 14
24V DC / Extended shaft 16

Example: ASM 3030 - 700 - 02

4 Actuation systems
Linear actuators

Magforce DSP



Legend:
S = stroke
L = retracted length

Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
DSP 1010	1000	1000	40	40	100 - 700	S + 230	400 AC	54	5.6
DSP 2530	2500	2500	15	15	100 - 700	S + 230	400 AC	54	5.6
DSP 3250	3200	3200	8	8	100 - 700	S + 230	400 AC	54	5.6
DSP 4550	4500	4500	5	5	100 - 700	S + 230	400 AC	54	5.6

Ordering key

DSP [ ] - [ ] - [ ]

Type

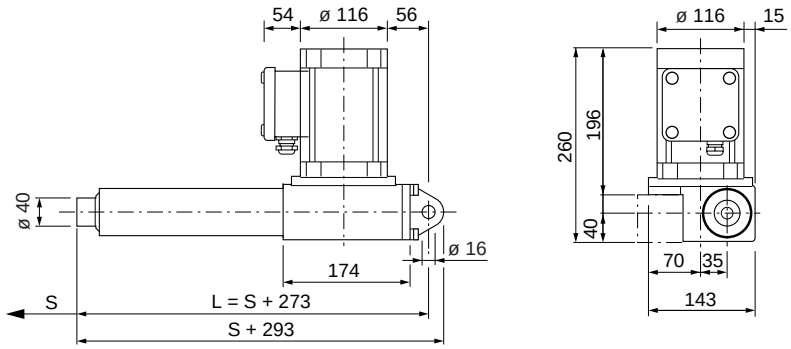
Load / Speed / Motor voltage:
1000 N / 52 mm/sec / 3×400 Va.c. 1010
2500 N / 17 mm/sec / 3×400 Va.c. 2530
3200 N / 10 mm/sec / 3×400 Va.c. 3250
4500 N / 5 mm/sec / 3×400 Va.c. 4550

Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400
500 mm 500
600 mm 600
700 mm 700

Customer options:
Standard 01
Brake for self-locking on push 03
Bronze nut / Low temperature grease 08
Brake for self-locking on pull 10
Bronze nut / Brake for self-locking on push 12
Brake for self-locking on push and pull 17
Low temperature grease 30
Low temperature grease / Bronze nut 111
Extended shaft 122
Brake for self-locking on push and pull 123
Low temperature grease 126

Example: DSP 3250 - 700 - 122

Magforce STD



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
STD 10007	10000	10000	10	10	100 - 700	S + 273	400 AC	54	16.3
STD 12010	12000	12000	7	7	100 - 700	S + 273	400 AC	54	16.3
STD 15020	15000	15000	4	4	100 - 700	S + 273	400 AC	54	16.3
STD 15040	15000	15000	2	2	100 - 700	S + 273	400 AC	54	16.3

4

Ordering key

STD [ ] - [ ] - [ ]

Type

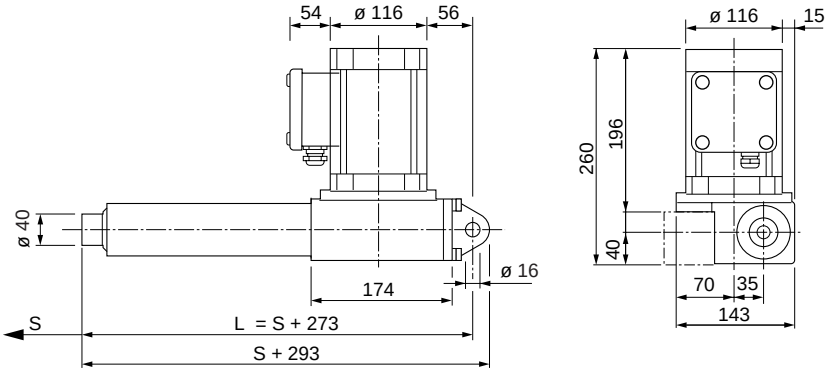
Load / Speed / Motor voltage:
10 000 N / 10 mm/sec / 3×400 Va.c. 10007
12 000 N / 7,5 mm/sec / 3×400 Va.c. 12010
15 000 N / 4 mm/sec / 3×400 Va.c. 15020
15 000 N / 2,2 mm/sec / 3×400 Va.c. 15040

Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400
500 mm 500
600 mm 600
700 mm 700

Customer options:
Standard 01
Extended shaft 11
Safety nut on push 13
Low temperature grease 19
Safety nut on push and pull 34

Example: STD 15020 - 700 - 01

Magforce STW



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
STW 5007	5000	5000	12	12	100 - 700	S + 273	120/230 AC	54	14.6
STW 7010	7000	7000	8	8	100 - 700	S + 273	120/230 AC	54	14.6
STW 10020	10000	10000	4	4	100 - 700	S + 273	120/230 AC	54	14.6
STW 15040	15000	15000	2	2	100 - 700	S + 273	120/230 AC	54	14.6

Ordering key

STW [ ] - [ ] - [ ]

Type

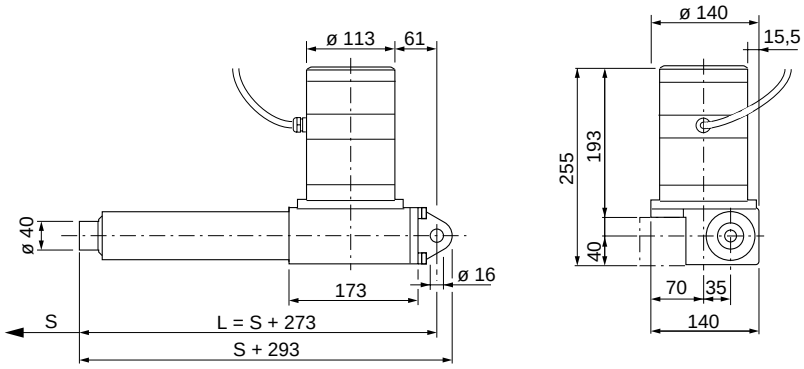
Load / Speed / Motor voltage:
5 000 N / 12 mm/sec / 230 Va.c. . . . . –5007
7 000 N / 8 mm/sec / 230 Va.c. . . . . –7010
10 000 N / 4.3 mm/sec / 230 Va.c. 10020
15 000 N / 2 mm/sec / 230 Va.c. 15040

Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400
500 mm 500
600 mm 600
700 mm 700

Customer options:
Standard 01
Limit switch 05
Low temperature grease 08

Example: STW –7010 - 500 - 01

Magforce STG



Legend:
S = stroke
L = retracted length

Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
STG 10007	10000	10000	14	14	100-700	S+273	24 DC	54	14.6
STG 12010	12000	12000	11	11	100-700	S+273	24 DC	54	14.6
STG 15020	15000	15000	5	5	100-700	S+273	24 DC	54	14.6
STG 15040	15000	15000	3	3	100-700	S+273	24 DC	54	14.6

4

Ordering key

STG [ ] - [ ] - 01

Type

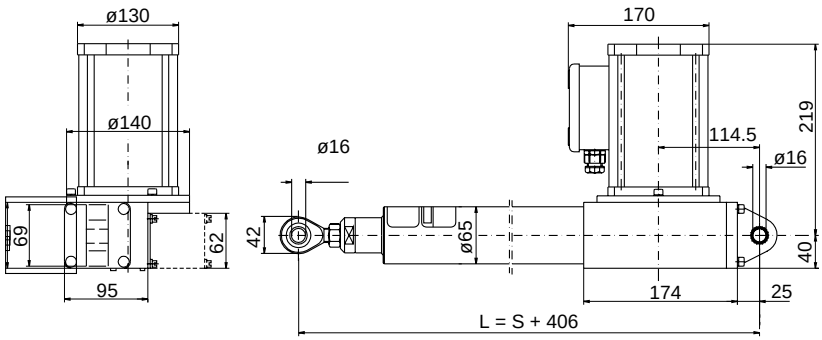
Load/Speed/Motor voltage:
10000 N / 14 mm/sec / 24 Vd.c. 10007
12000 N / 11 mm/sec / 24 Vd.c. 12010
15000 N / 5 mm/sec / 24 Vd.c. 15020
15000 N / 3 mm/sec / 24 Vd.c. 15040

Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400
500 mm 500
600 mm 600
700 mm 700

Customer options:
Standard 01

Example: STG 15020 - 600 - 01

Magforce SKD



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
SKD 15040	15000	15000	5	5	100 - 700	S + 273	3×400 AC	54	14.6
SKD 15020	15000	15000	11	11	100 - 700	S + 273	3×400 AC	54	14.6
SKD 12010	12000	12000	21	21	100 - 700	S + 273	3×400 AC	54	14.6
SKD 10007	10000	10000	25	25	100 - 700	S + 273	3×400 AC	54	14.6

Ordering key

SKD [ ] - [ ] - 01

Type

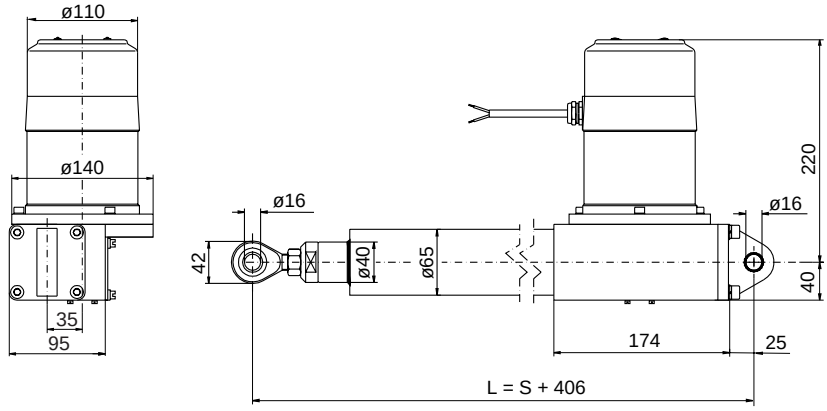
Load / Speed / Motor voltage:
10 000 N / 25 mm/sec / 3×400 Va.c. . . . . –5007
12 000 N / 21 mm/sec / 3×400 Va.c. . . . . –7010
15 000 N / 11 mm/sec / 3×400 Va.c. 10020
15 000 N / 5.3 mm/sec / 3×400 Va.c. 15040

Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400
500 mm 500
600 mm 600
700 mm 700

Customer options:
Standard 01

Example: SKD –7010 - 500 - 01

Magforce SKG



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
SKG 15040	15000	15000	8	8	100 - 700	S + 273	24 DC	54	14.6
SKG 13020	13000	13000	15	15	100 - 700	S + 273	24 DC	54	14.6
SKG 10010	10000	10000	30	30	100 - 700	S + 273	24 DC	54	14.6
SKG 6005	6000	6000	55	55	100 - 700	S + 273	24 DC	54	14.6

4

Ordering key

SKG [ ] - [ ] - 01

Type

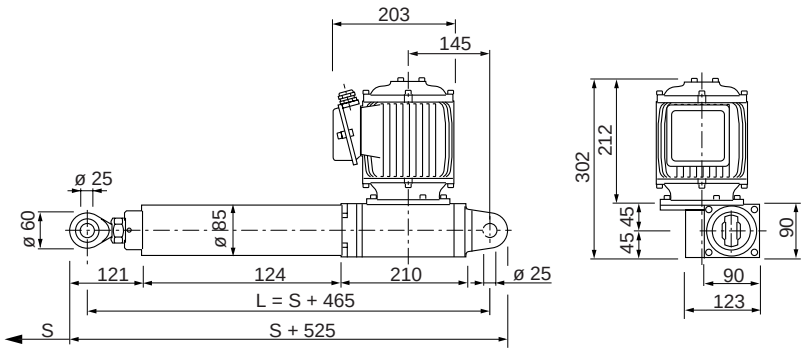
Load / Speed / Motor voltage:
6 000 N / 55 mm/sec / 24 Vd.c. 06005
10 000 N / 30 mm/sec / 24 Vd.c. 10010
13 000 N / 15 mm/sec / 24 Vd.c. 13020
15 000 N / 8 mm/sec / 24 Vd.c. 15040

Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400
500 mm 500
600 mm 600
700 mm 700

Customer options:
Standard 01

Example: SKG 06005 - 500 - 01

Magforce SKS



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
SKS 15404	15000	15000	50	50	100 - 700	S + 165	400 AC	54	30.0
SKS 20406	20000	20000	33	33	100 - 700	S + 165	400 AC	54	30.0
SKS 25412	25000	25000	17	17	100 - 700	S + 165	400 AC	54	30.0
SKS 30423	30000	30000	9	9	100 - 700	S + 165	400 AC	54	30.0

Ordering key

SK [ ] [ ] - [ ] - 01

Type

Option:
No option . . . . . S
With limit switches . . . . . A

Load / Speed / Motor voltage:
15 000 N / 45 mm/sec / 3×400 Va.c. 15404
20 000 N / 34 mm/sec / 3×400 Va.c. 20406
25 000 N / 17 mm/sec / 3×400 Va.c. 25412
30 000 N / 9.7 mm/sec / 3×400 Va.c. 30423

Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400
500 mm 500
600 mm 600
700 mm 700

Customer options:
Standard 01

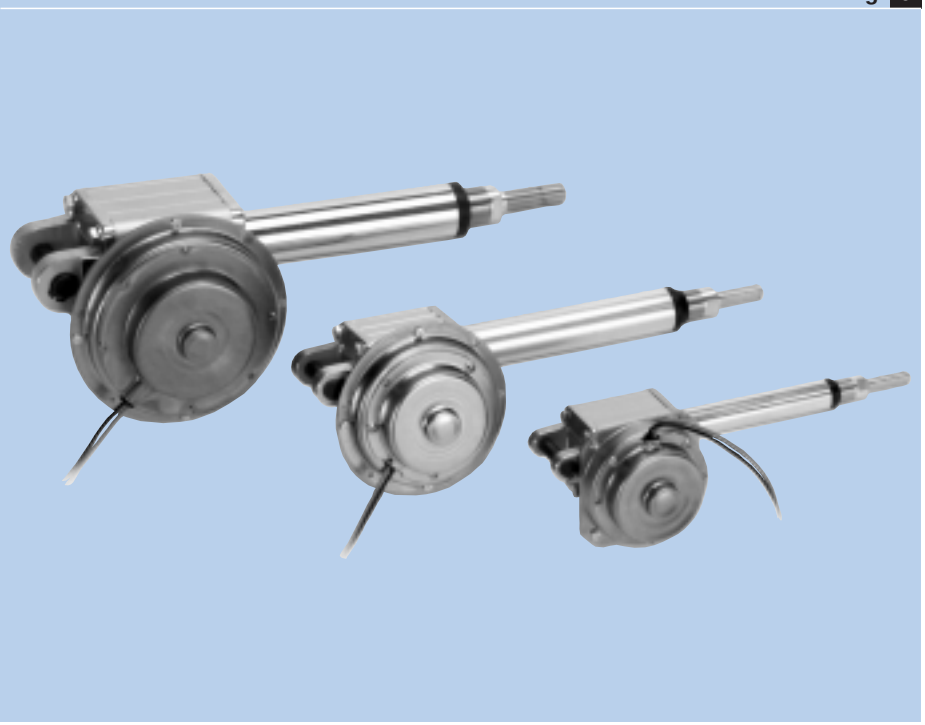
Example: SK S 25412 - 400 - 01

CAR

The CAR range (→ **fig** 9) of industrial type actuators offers a unique standard of performance, durability, and reliability. The compact design incorporates well proven parts, like the SKF high efficiency ball screw, a sturdy gearbox assembly, and high quality DC and AC-motors. All to give the best performance possible with unsurpassed operational life. Individual application requirements can easily be matched thanks to the modular design concept. A vast number of motors, gear ratios, and other options can be combined to give the actuator the characteristics required. The CAR range is available in three sizes, CAR 22, CAR 32 and CAR 40.
The CAR 32 actuator is available in three special variants:
CAP 32, with integrated position feedback potentiometer.
CARN 32, with gearbox input shaft for external drive source.
CCBR 32, without motor and gearbox (direct drive on the ball screw).

Benefits:
- Robust and reliable
- Long lifetime
- Wide component range
- Right-hand and left-hand versions

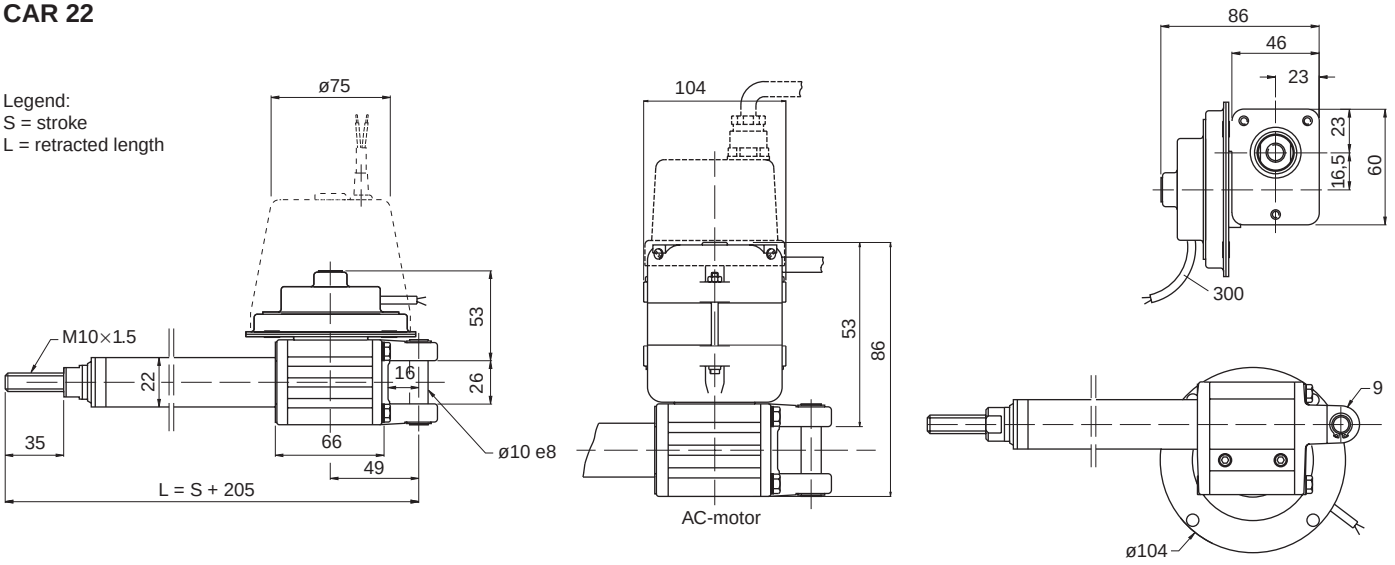
Fig 9



4

Linear actuators	Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
CAR	CAR 22	1500	1500	30	20	50 - 300	S + 205	12/24 DC	44	1.2 - 1.6
	CAR 32	3500	3500	60	40	50 - 700	S + 218	12/24 DC or 120/230 AC	44/54	2.1 - 3.7
	CAR 40	6000	6000	60	40	100 - 700	S + 263	12/24 DC or 120/230 AC	44/54	5.8 - 8.4
	CAP 32	3500	3500	60	40	50 - 700	S + 218	12/24 DC or 120/230 AC	44/54	2.1 - 3.7
	CARN 32	3500	3500	N/A	N/A	N/A	S + 218	N/A	N/A	2.0 - 3.6
	CCBR 32	3500	3500	N/A	N/A	N/A	S + 218	N/A	N/A	1.1 - 1.5

CAR 22



Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAR 22	1500	1500	30	20	50 - 300	S + 205	12/24 DC	44	1.2 - 1.6

Ordering key

Dynamic load (N) / Speed (mm/sec)		Motor options	
1500/xx	1000/xx	No motor	0000
1500/15 - 10	1000/30 - 20	12 Vd.c., flat motor, IP44	D12B
1500/15 - 10	1000/30 - 20	24 Vd.c., flat motor, IP44	D24B
1	2		

CAR [ ] 22 × [ ] × [ ] / F [ ]

Type

Motor assembly:
Right . . . . . R
Left L

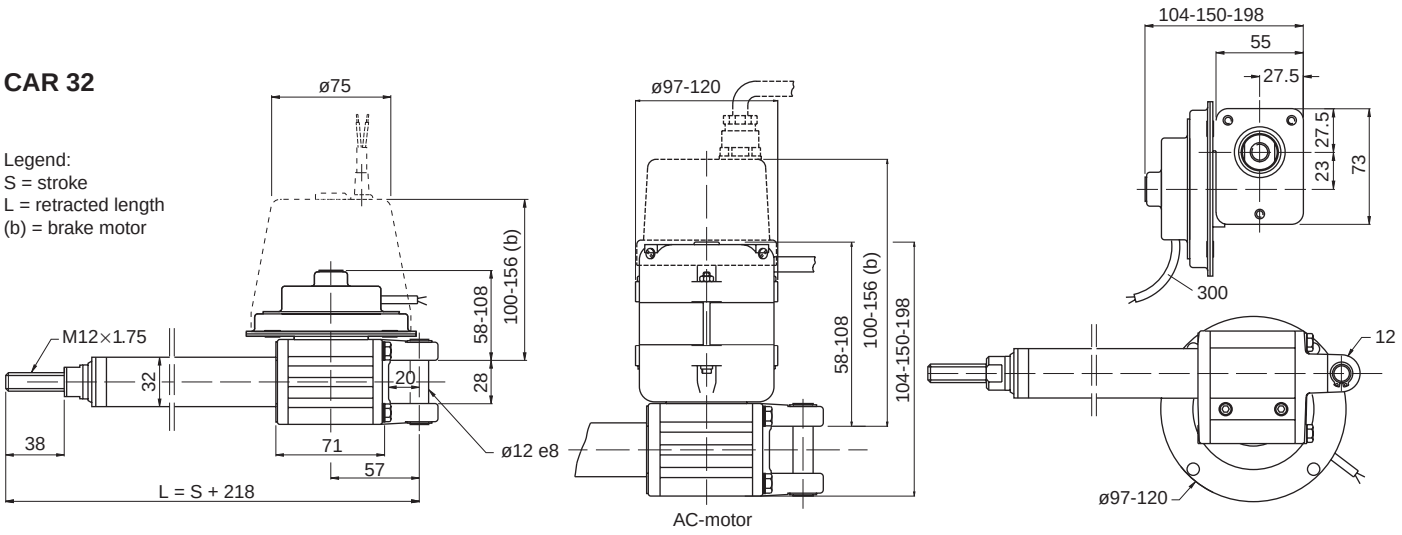
Stroke:
50 mm 50
100 mm 100
200 mm 200
300 mm 300

Options:
Friction clutch . . . . . F

Example: CAR L 22 × 50 × 1 / F D24B

CAR 32

Legend:
S = stroke
L = retracted length
(b) = brake motor



Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAR 32	3500	3500	60	40	50 - 700	S + 218	12/24 DC or 120/230 AC	44/54	2.1 - 3.7

4

Ordering key

Dynamic load / Speed (N) / (mm/sec)			Motor options	
3500/xx	2500/xx	1500/xx	No motor	0000
2500/15 - 10	2000/30 - 20	1000/60 - 40	12 Vd.c., flat motor, IP44	D12C
3500/15 - 10	2500/30 - 20	1500/60 - 40	24 Vd.c., flat motor, IP44	D24C
3500/9 - 5	2500/18 - 10	1500/34 - 24	24 Vd.c., flat motor, low speed, IP44	D24CW
3500/15 - 10	2500/30 - 20	1500/60 - 40	24 Vd.c., flat motor, extended shaft, IP44	D24CS
3500/15 - 10	2500/30 - 20	1500/60 - 40	24 Vd.c., flat motor, brake, IP20	D24CB
3500/8	2500/16	1500/32	110 Va.c./60Hz, single phase, IP54	E110C
3500/8	2500/16	1500/32	110 Va.c./60Hz, single phase, brake, IP20	E110CB
3500/6	2500/13	1500/26	220 Va.c./50Hz, single phase, IP54	E220C
3500/6	2500/13	1500/26	220 Va.c./50Hz, single phase, brake, IP20	E220CB
1	2	4		

CAR [ ] 32 × [ ] × [ ] / [ ] [ ]

Type

Motor assembly:
Right . . . . . R
Left L

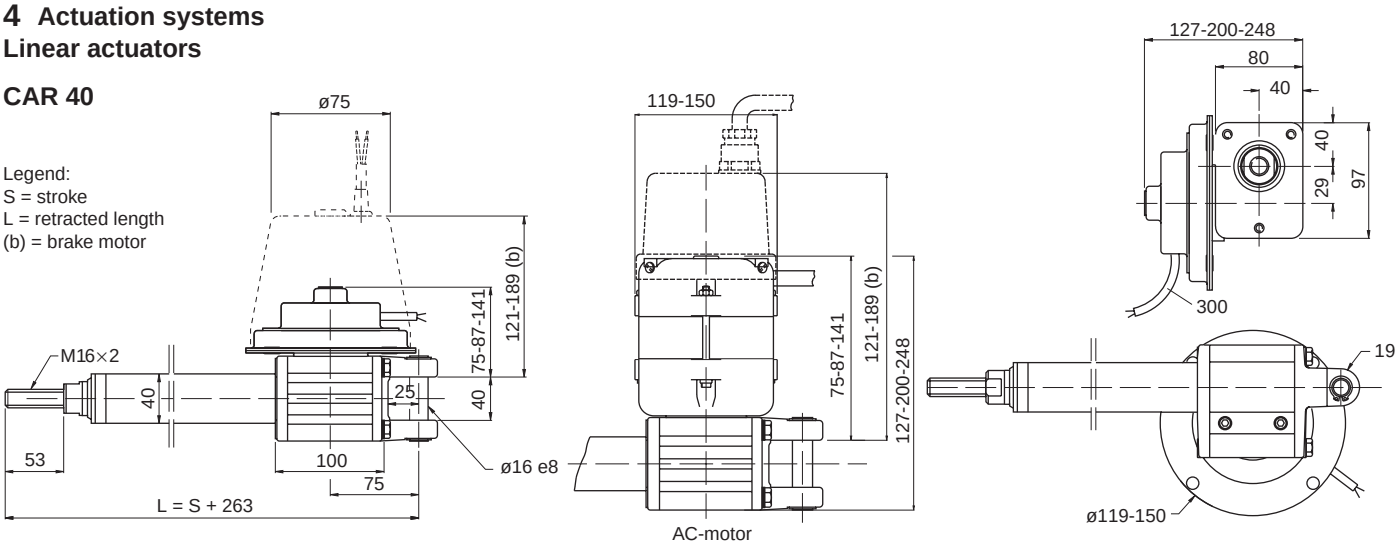
Stroke:
50 mm 50
100 mm 100
200 mm 200
300 mm 300
500 mm 500
700 mm 700

Options:
Friction clutch . . . . . F
Back-up nut . . . . . S

Example: CAR R 32 × 500 × 2 / F E220CB

Linear actuators

CAR 40



Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAR 40	6000	6000	60	40	100 - 700	S + 263	12/24 DC or 120/230 AC	44/54	5.8 - 8.4

Ordering key

Dynamic load / Speed (N) / (mm/sec)			Motor options	
6000/xx	4000/xx	2000/xx	No motor	0000
6000/15 - 10	4000/30 - 20	2000/60 - 40	24 Vd.c., flat motor, IP44	D24D
6000/15 - 10	4000/30 - 20	2000/60 - 40	24 Vd.c., flat motor, extended shaft, IP44	D24DS
6000/15 - 10	4000/30 - 20	2000/60 - 40	24 Vd.c., flat motor, brake, IP20	D24DB
6000/10	4000/20	2000/40	110 Va.c./60Hz, single phase, IP54	E110D
6000/10	4000/20	2000/40	110 Va.c./60Hz, single phase, brake, IP20	E110DB
6000/9	4000/17	2000/34	220 Va.c./50Hz, single phase, IP54	E220D
6000/9	4000/17	2000/34	220 Va.c./50Hz, single phase, brake, IP20	E220DB
1	2	4		

CAR | | 40 × | | × | / | |

Type

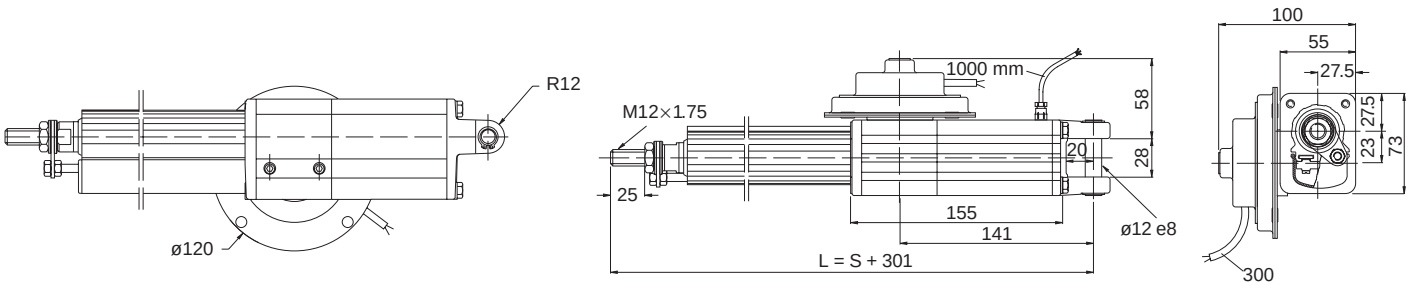
Motor assembly:
Right . . . . . R
Left L

Stroke:
100 mm 100
300 mm 300
500 mm 500
700 mm 700

Options:
Friction clutch . . . . . F
Back-up nut . . . . . S

Example: CAR R 40 × 700 × 2 / F D24CB

CAP 32



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAP 32	3500	3500	60	40	50 - 700	S + 301	12/24 DC or 120/230 AC	44/54	2.1-3.7

Ordering key

Dynamic load / Speed (N) / (mm/sec)			Motor options	
3500/xx	2500/xx	1500/xx	No motor	0000
2500/15 - 10	2000/30 - 20	1000/60 - 40	12 Vd.c., flat motor, IP44	D12C
3500/15 - 10	2500/30 - 20	1500/60 - 40	24 Vd.c., flat motor, IP44	D24C
3500/9 - 5	2500/18 - 10	1500/34 - 24	24 Vd.c., flat motor, low speed, IP44	D24CW
3500/15 - 10	2500/30 - 20	1500/60 - 40	24 Vd.c., flat motor, extended shaft, IP44	D24CS
3500/15 - 10	2500/30 - 20	1500/60 - 40	24 Vd.c., flat motor, brake, IP20	D24CB
3500/8	2500/16	1500/32	110 Va.c./60Hz, single phase, IP54	E110C
3500/8	2500/16	1500/32	110 Va.c./60Hz, single phase, brake, IP20	E110CB
3500/6	2500/13	1500/26	220 Va.c./50Hz, single phase, IP54	E220C
3500/6	2500/13	1500/26	220 Va.c./50Hz, single phase, brake, IP20	E220CB
1	2	4		

CAP [ ] [32] × [ ] × [ ] / [ ] [ ]

Type

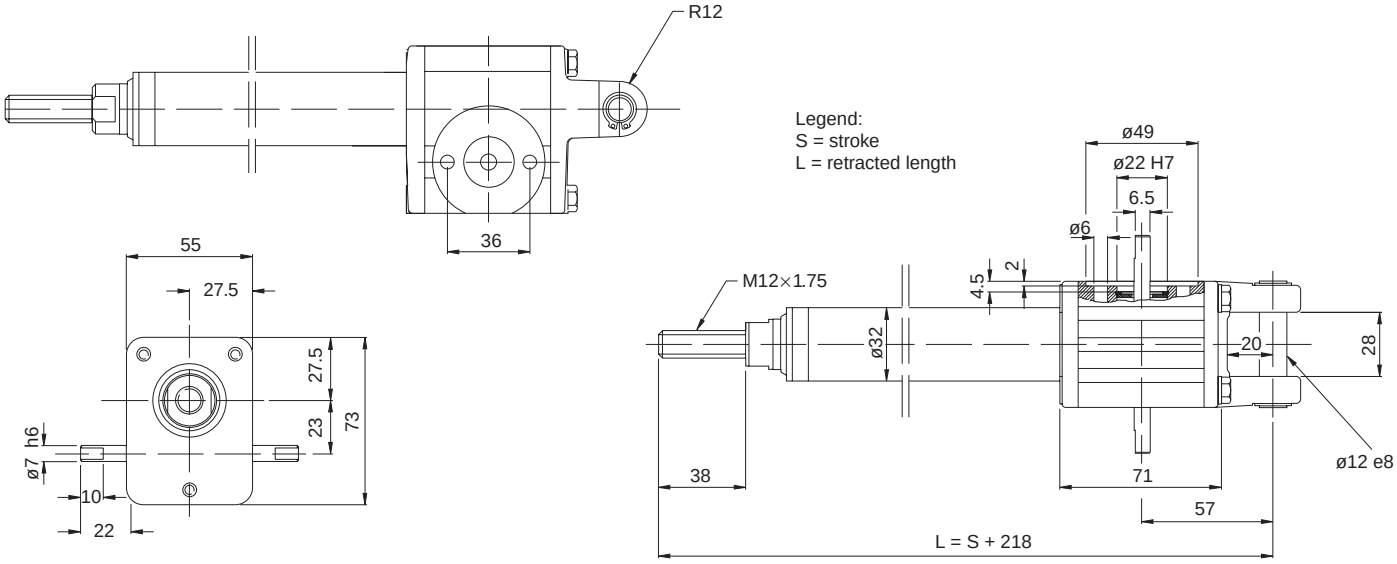
Motor assembly:
Right . . . . . R
Left L

Stroke:
50 mm 50
100 mm 100
200 mm 200
300 mm 300
500 mm 500
700 mm 700

Options:
Friction clutch . . . . . F
Back-up nut . . . . . S

Example: CAP R 32 × 500 × 2 / S E220CB

CARN 32



Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CARN 32	3500	3500	N/A	N/A	50 - 700	S + 218	N/A	N/A	2.0-3.6

Ordering key

CARN 32 × ☐ × ☐ / ☐

Type

Stroke:

50 mm	50
100 mm	100
200 mm	200
300 mm	300
500 mm	500
700 mm	700

Gear ratio:

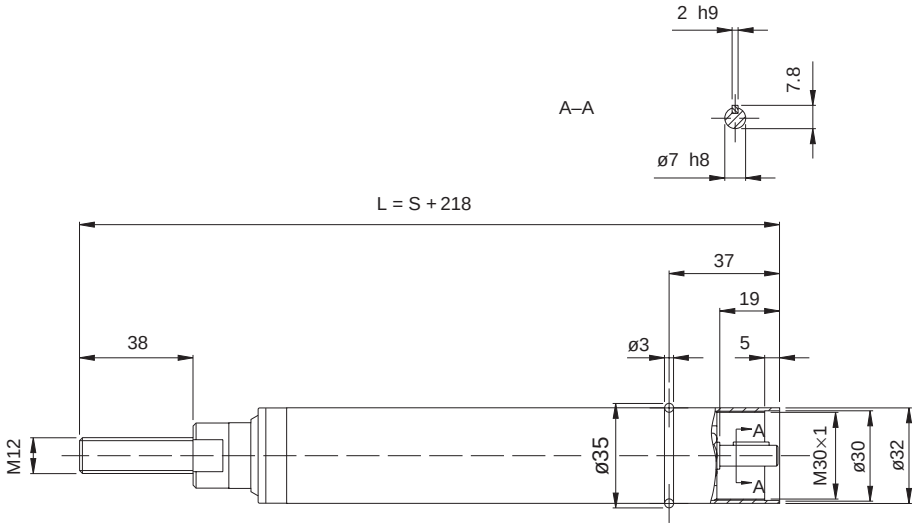
1:25.00	1
1:12.50	2
1:6.25	4

Options:

Friction clutch	F
Back-up nut	S

Example: CARN 32 × 200 × 2 / S

CCBR 32



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CCBR 32	3500	3500	N/A	N/A	50 - 300	S + 218	N/A	N/A	1.1-1.5

Ordering key

CCBR 32 × ☐

Type

Stroke:

50 mm	50
100 mm	100
200 mm	200
300 mm	300

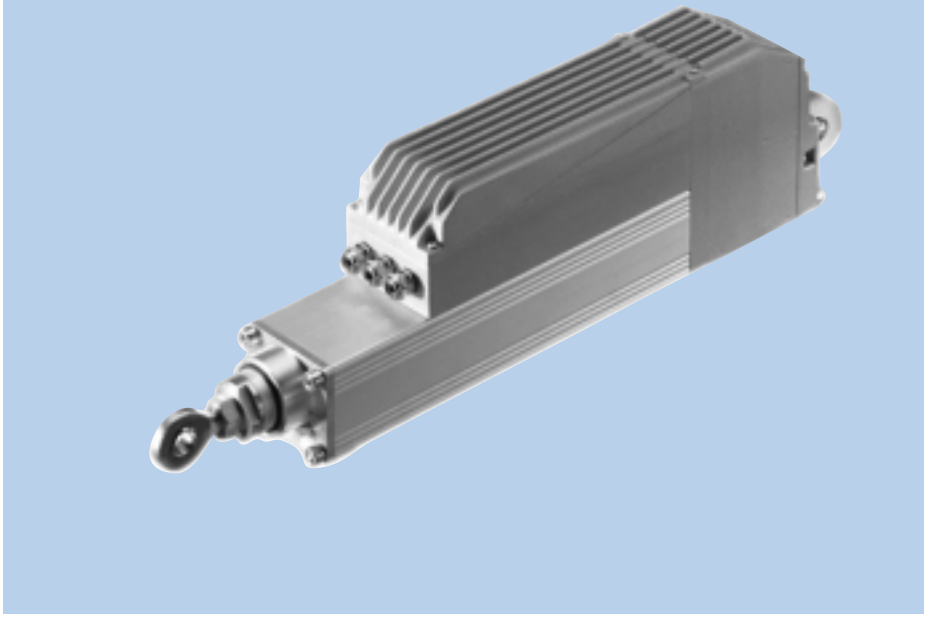
Example: CCBR 32 × 200

ILD

ILD stands for “Intelligent Linear Drive” (→ **fig** 10) and features electronic microprocessor technology for flexible, powerful and durable automation. The concept of the compact ILD actuator consists of a linear drive with an electrically communicated and regulated motor to achieve a linear motion. A powerful micro-controller allows the control of position, speed and direction of the drive. ILD actuators are especially suitable for industrial applications with heavy loads.

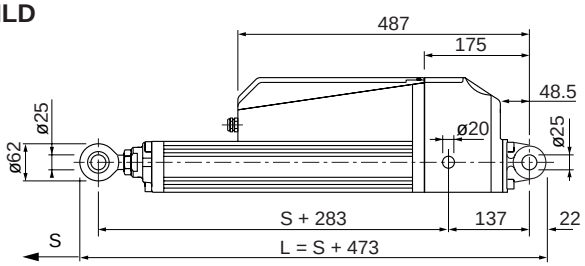
Benefits:
- Programmable by PC
- Speed and position regulated
- Start-stop- ramp
- Easy to install

Fig 10



Linear actuators	Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
ILD	ILD 20	20000	20000	25	3	100 - 700	S + 420	230 AC	54	20.0
	ILD 10	10000	10000	50	5	100 - 700	S + 420	230 AC	54	20.0
	ILD 05	5000	5000	100	10	100 - 700	S + 420	230 AC	54	20.0
	ILD 02	2000	2000	200	25	100 - 1500	S + 420	230 AC	54	20.0

ILD



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
ILD 02	2000	2000	200	25	100 - 1500	S + 420	230 AC	54	20.0
ILD 05	5000	5000	100	10	100 - 700	S + 420	230 AC	54	20.0
ILD 10	10000	10000	50	5	100 - 700	S + 420	230 AC	54	20.0
ILD 20	20000	20000	25	3	100 - 700	S + 420	230 AC	54	20.0

4

Ordering key

ILD						E		XX	02

Type

Load / Speed / Motor voltage:
2000 N / 200 mm/sec / 230 Va.c. 02
5000 N / 100 mm/sec / 230 Va.c. 05
10000 N / 50 mm/sec / 230 Va.c. 10
20000 N / 25 mm/sec / 230 Va.c. 20

Positioning options:
Speed control (standard) . . . . . S
Positioning control . . . . . P
Interface card C

Stroke:
100 mm 100
200 mm 200
300 mm 300
400 mm 400
500 mm 500
600 mm 600
700 mm 700

Limit switches:
Sensor for limit of travel . . . . . E
Sensor for limit of travel and safety switch . . . . . S
Sensor for limit of travel and customer switch . . . . . A
Sensor for limit of travel, safety switch and customer switch . . . . . B

Electrical options:
230 V / 50 Hz . . . . . E

Back-up nuts:
Without back-up nuts (standard) X
With back-up nuts . . . . . S

Mechanical options:
No options XX

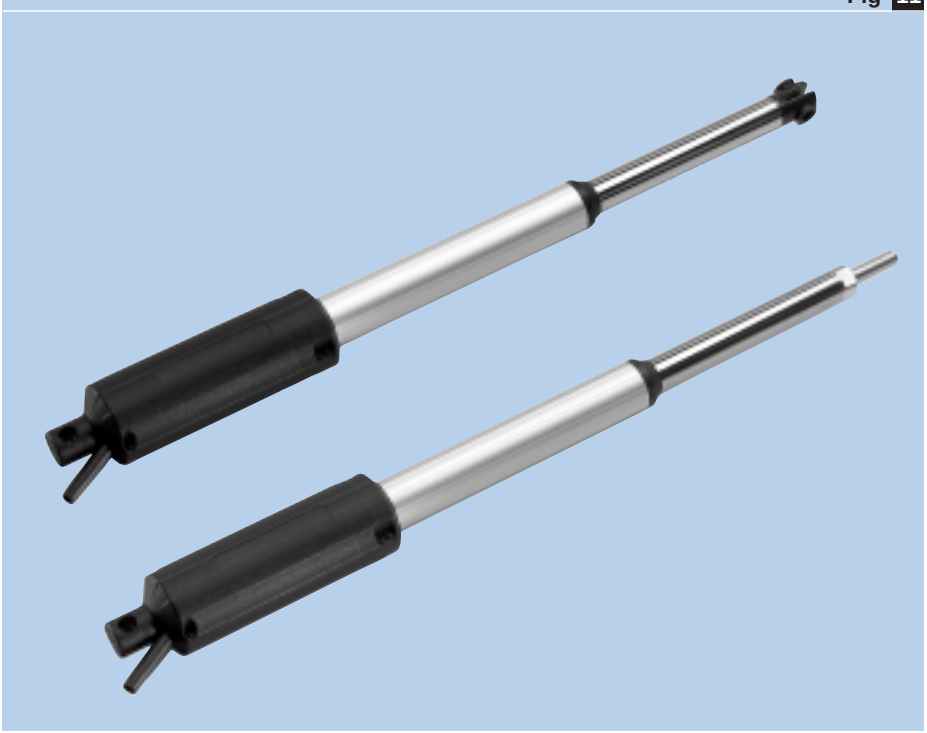
Example: ILD | 05 | P | 400 | S | E | X | XX | 02

CALA 36

CALA 36 (→ **fig** 11) is a compact 12 or 24 Vd.c. actuator, intended for industrial use. The motor and drive spindle are connected in-line through a planetary gear assembly. This makes the compact design suitable in applications where space is restricted. A comprehensive range of suitable SKF control systems is available.

Benefits:
- In-line layout
- Aesthetic design
- High operating reliability

Fig 11

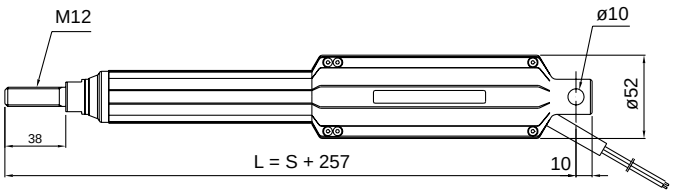


Linear actuators	Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length* (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
CALA 36	CALA 36A	600	600	31	17	50 - 200**	S + 215/226/257	12/24 DC	44	0.9 - 1.5

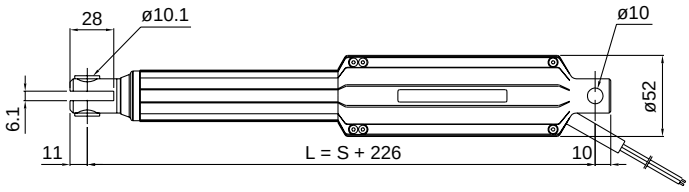
* Dimension depends on selected front attachment
** Linear speed of 21 to 14 mm/s for stroke 200 mm

CALA 36A

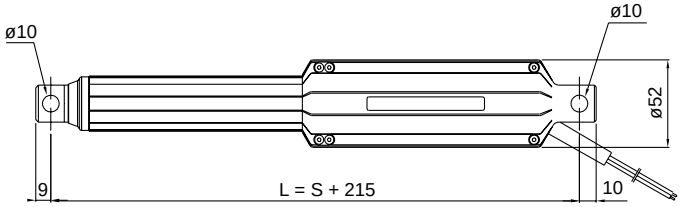
G3



G5



G6



Legend:
S = stroke
L = retracted length

4

Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length* (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CALA 36A	600	600	31	17	50 - 200**	S + 215/226/257	12/24 DC	44	0.9-1.5

* Dimension depends on selected front attachment
** Linear speed of 21 to 14 mm/s for stroke 200 mm

Ordering key

CALA 36 A × [ ] × 4 [ ] / [ ] [ ]

Type

Load/Speed:
600 N/33-17 mm/sec. . . . . A

Stroke:
50 mm 50
100 mm 100
150 mm 150
200 mm 200

Front attachment:
Male thread, M12×7.5 . . . . . G3
Fork end, ø 10.0 mm. G5
Hole, ø 10.0 mm G6

Motor voltage:
12 Vd.c. D12
24 Vd.c. D24

Cable:
250 mm, no plug, straight . . . . . U
1.9 m, phono plug, straight T2
1.9 m, no phono plug, straight T2P

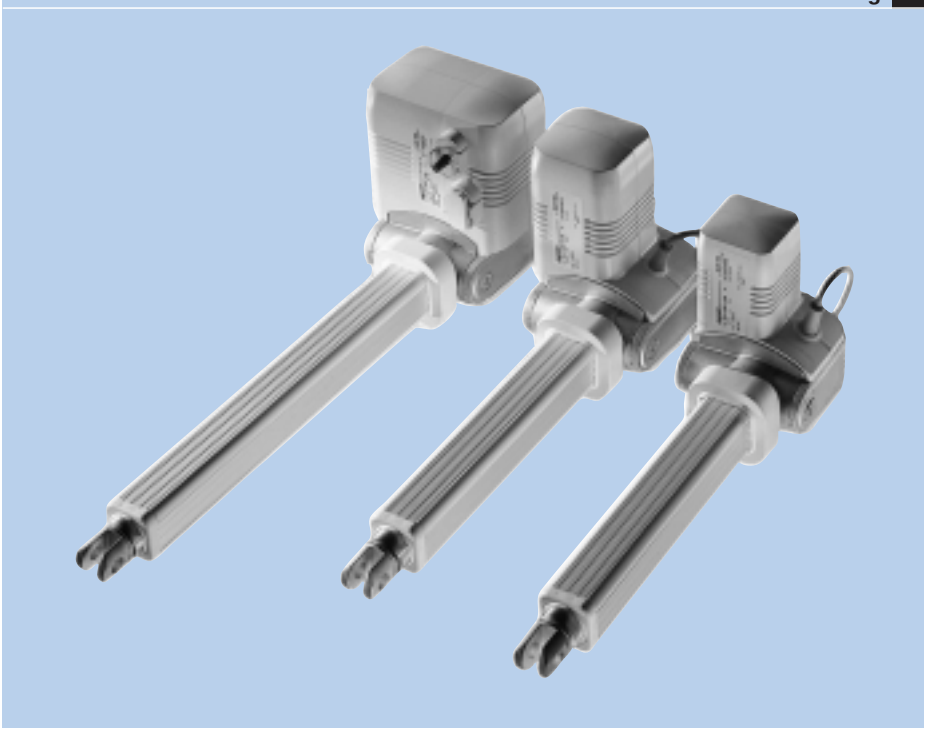
Example: CALA 36 A × 150 × 4 G5 / D12 T2P

MATRIX

The MATRIX series (→ **fig** 12) includes powerful AC and DC-actuators. They run very quietly, take up little space and can be installed at virtually every angle in vertical or horizontal position. The MATRIX series is complemented by the KOM control units, which allow a flexible and application focused system control.

Benefits:
- Long lifetime
- Quiet
- Full system with control, operating units and accessories

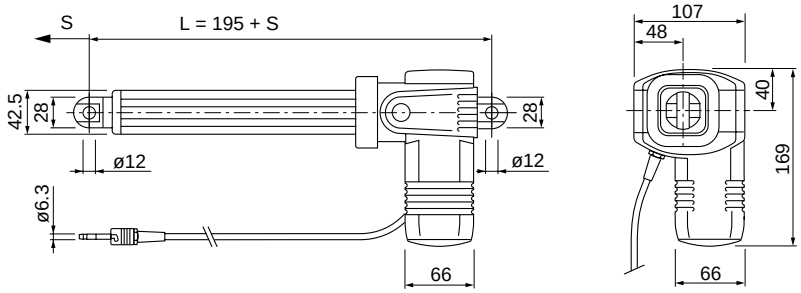
Fig 12



Linear actuators	Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
MATRIX	MAX3.-A	8000	6000	7	5	50 - 700	S + 215**	24 DC	66	4.5
	MAX6.-A	8000	6000	8	6	50 - 700	S + 215**	120/230 AC	66	5.5
	MAX1.-A	4000	4000	7	5	50 - 700	S + 195*	24 DC	66	3.5
	MAX3.-B	4000	4000	9	6	50 - 700	S + 215**	24 DC	66	4.0
	MAX6.-B	4000	4000	10	8	50 - 700	S + 215**	120/230 AC	66	5.0
	MAX3.-C	3000	3000	18	13	50 - 700	S + 215**	24 DC	66	4.0
	MAX6.-C	3000	3000	18	13	50 - 700	S + 215**	120/230 AC	66	5.0
	MAX1.-B	2000	2000	9	6	50 - 700	S + 195*	24 DC	66	3.0
	MAX1.-C	1500	1500	18	13	50 - 700	S + 195*	24 DC	66	3.0

* stroke > 350 mm retr. Length stroke + 260 mm
** stroke > 350 mm retr. Length stroke + 280 mm

MAX1



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
MAX1.-A	4000	4000	7	5	50 - 700	S + 195*	24 DC	66	3.5
MAX1.-B	2000	2000	9	6	50 - 700	S + 195*	24 DC	66	3.0
MAX1.-C	1500	1500	18	13	50 - 700	S + 195*	24 DC	66	3.0

* stroke > 350 mm retr. Length stroke + 260 mm

4

Ordering key

MAX1 0 - [ ][ ][ ] A 25 1 [ ] A - 000

Type

Motor voltage:
24 Vd.c. 0

Load / Speed:
4000 N (push and pull) / 7 - 5 mm/sec . . . . . A
2000 N (push) / 9 - 6 mm/sec. . . . . B
1500 N (push) / 18 - 13 mm/sec C

Stroke:

50 mm	050 245
100 mm	100 295
200 mm	200 395
300 mm	300 495
400 mm	400 660
500 mm	500 760
600 mm	600 860
700 mm	700 960

Colour:
Grey RAL 7035 . . . . . A

Cable / Connecting plug:
Straight cable with stereo jack plug, length 2.5 m 25

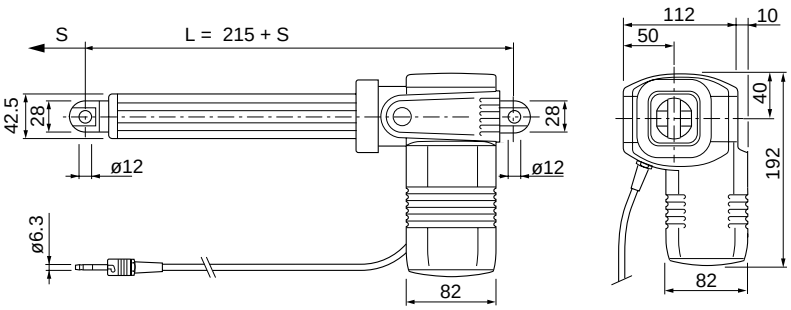
Orientation of rear attachment:
0 (standard) 1

Options 1:
No options, only valid for actuator A (see load) 0
Motor direction push, only valid for actuator B and C (see load) . . . . . M

Options 2:
Encoder, 8 pulses / revolution . . . . . A

Example: MAX1 0 - B 400 660 A 25 1 M A - 000

MAX3



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
MAX3.-A	8000	6000	7	5	50 - 700	S + 215*	24 DC	66	4.5
MAX3.-B	4000	4000	9	6	50 - 700	S + 215*	24 DC	66	4.0
MAX3.-C	3000	3000	18	13	50 - 700	S + 215*	24 DC	66	4.0

* stroke > 350 mm retr. Length stroke + 280 mm

Ordering key

MAX3 0 - _ _ _ A 25 1 _ A - 000

Type

Motor voltage:
24 Vd.c. 0

Load / Speed:
8000 N (push and pull) / 7 - 5 mm/sec . . . . . A
4000 N (push) / 9 - 6 mm/sec . . . . . B
3000 N (push) / 18 - 13 mm/sec C

Stroke:
50 mm 050 265
100 mm 100 315
200 mm 200 415
300 mm 300 515
400 mm 400 680
500 mm 500 780
600 mm 600 880
700 mm 700 980

Colour:
Grey RAL 7035 . . . . . A

Cable / Connecting plug:
Straight cable with stereo jack plug, length 2.5 m 25

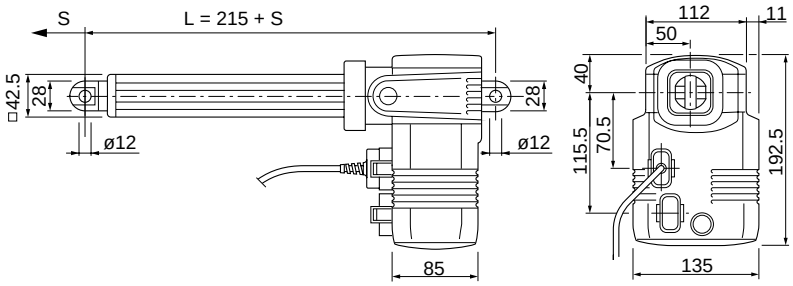
Orientation of rear attachment:
0 (standard) 1

Options 1:
No options, only valid for actuator A (see load) 0
Motor direction push, only valid for actuator B and C (see load) . . . . . M

Options 2:
Encoder, 8 pulses / revolution . . . . . A

Example: MAX3 0 - A 600 880 A 25 1 0 A - 000

MAX6



Legend:
S = stroke
L = retracted length

Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
MAX6.-A	8000	6000	8	6	50 - 700	S + 215*	120/230 AC	66	5.5
MAX6.-B	4000	4000	10	8	50 - 700	S + 215*	120/230 AC	66	5.0
MAX6.-C	3000	3000	18	13	50 - 700	S + 215*	120/230 AC	66	5.0

* stroke > 350 mm retr. Length stroke + 280 mm

4

Ordering key

MAX6 [ ] - [ ] [ ] [ ] A01 [ ] 0 - 000

Type

Motor voltage:
Integrated pneumatic control 230 Va.c. 0
Integrated pneumatic control 120 Va.c. 1
Integrated low voltage control 230 Va.c. w. add. output 2
Integrated low voltage control 120 Va.c. w. add. output 3
Integrated low voltage control 230 Va.c. 4
Integrated low voltage control 120 Va.c. 5

Load / Speed:
8000 N (push and pull) / 7 - 5 mm/sec . . . . . A
4000 N (push) / 9 - 6 mm/sec . . . . . B
3000 N (push) / 18 - 13 mm/sec C

Stroke:
50 mm 050 265
100 mm 100 315
200 mm 200 415
300 mm 300 515
400 mm 400 680
500 mm 500 780
600 mm 600 880
700 mm 700 980

Colour:
Grey RAL 7035 . . . . . A

Cable / Connecting plug:
Without cable 0

Orientation of rear attachment:
0 (standard) 1

Options 1:
No options, only valid for actuator A (see load) 0
Motor direction push, only valid for actuator B and C (see load) . . . . . M

Options 2:
No option. 0

Example: MAX6 3 - A 600 880 A01 M 0 - 000

Accessories

Mains cable	Plug	Country	Order number	Comment
Straight cable 3.5	Schuko	DE	140306	
Straight cable 3.5	SEV	CH	140316	
Straight cable 3.5	UL	USA	140355	
Straight cable 3.5	Hospital grade	USA	140360	
Straight cable 3.5	British standard	UK	140350	
Coiled cable 1.2 m / 2.2 m	Schuko	DE	140342	
Coiled cable 1.2 m / 2.2 m	SEV	CH	140378	
Straight cable 3.5	SEV	CH	140422-3500	Polyurethane cable
Straight cable 3.5	Schuko	DE	140426-3500	Polyurethane cable
Strain relief for mains cable			ZBE-952253	
Operating unit adapter			140420	
Tool for plugs (Jack/D-Sub/Mains)			140375	

CARE 33

Efficient design provides the CARE 33 actuators (→ **fig** 13) with a high dynamic load capacity, silent operation and low current consumption. The safety features of the design make it particularly suitable for solving a large number of positioning needs in equipment for ergonomic and/or industrial applications. The gearbox floats so that the load path passes directly through a support bearing located in the rear attachment. This design offers a long operational life and minimised the transmitted noise level.

Benefits:
- Silent
- Multiple speed/load variants
- Easy to adjust limit switches
- Different attachment options

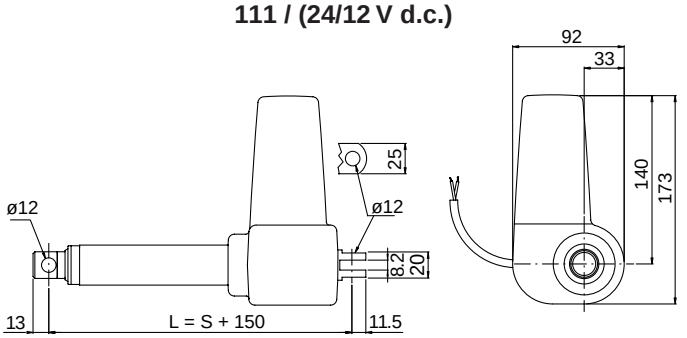
Fig 13

Linear actuators	Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length* (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
CARE	CARE 33A	2000	2000	12	8	100 - 300	S + 150/162/193	12/24 DC	44/65	1.5 - 2.0
	CARE 33M	1400	1400	22	16	100 - 500	S + 150/162/193	12/24 DC	44/65	1.5 - 2.4
	CARE 33H	800	800	45	32	100 - 500	S + 150/162/193	12/24 DC	44/65	1.5 - 2.4

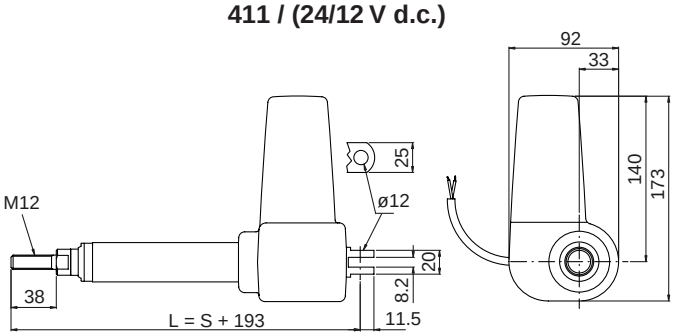
* Dimension depends on selected front attachment

CARE 33

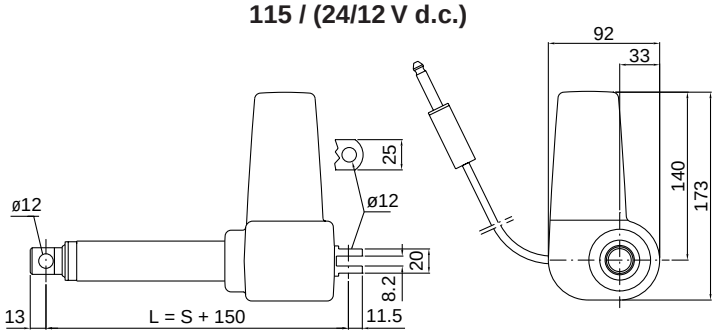
111 / (24/12 V d.c.)



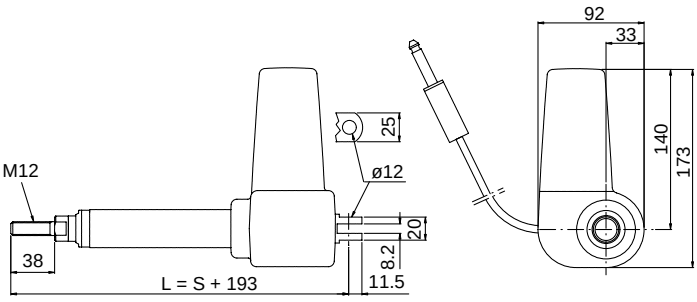
411 / (24/12 V d.c.)



115 / (24/12 V d.c.)



415 / (24/12 V d.c.)



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length* (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CARE 33A	2000	2000	12	8	100 - 300	S + 150/162/193	12/24 DC	44/65	1.5 - 2.0
CARE 33M	1400	1400	22	16	100 - 500	S + 150/162/193	12/24 DC	44/65	1.5 - 2.4
CARE 33H	800	800	45	32	100 - 500	S + 150/162/193	12/24 DC	44/65	1.5 - 2.4

* Dimension depends on selected front attachment

Ordering key

CARE	33											

Type

Load (N)/Speed (mm/sec):

2000/12-8	A
1400/22-16	M
800/45-32	H

Stroke (CARE33A max 300 mm):

50 mm	050
100 mm	100
150 mm	150
200 mm	200
300 mm	300
400 mm	400
500 mm	500

Front attachment:

Hole, ø = 12.0 mm	1
Hole, ø = 12.7 mm	2
Hole, ø = 8.0 mm	3
Hole, ø = 10.0 mm	4

Rear attachment:

Hole, ø = 12.0 mm	1
Hole, ø = 12.7 mm	2
Hole, ø = 8.0 mm	3
Hole, ø = 10.0 mm	4

Protection class:

IP65	1
IP44	2

Feed back:

No option	0
Encoder	1

Cable/Connection plug:

Straight, no connector	1
Coiled, phono plug	2
Straight, no connector (6 lead cable for 2-channel encoder)	3
Straight, phono plug	5
Straight, DIN 8-pole plug (for 1-channel encoder)	6
Straight, DIN 8-pole plug	7

Orientation of rear attachment:

0°	000
15° clockwise	015
30° clockwise	030
45° clockwise	045
60° clockwise	060
75° clockwise	075
90° clockwise	090
105° clockwise	105
120° clockwise	120
135° clockwise	135
150° clockwise	150
165° clockwise	165

Motor voltage:

24 Vd.c.	24
12 Vd.c.	12

Self locking feature (necessary when selecting screw type “H” or “M”):

No self locking required	0
Self locking for pulling load	1
Self locking for pushing load	2

Example:

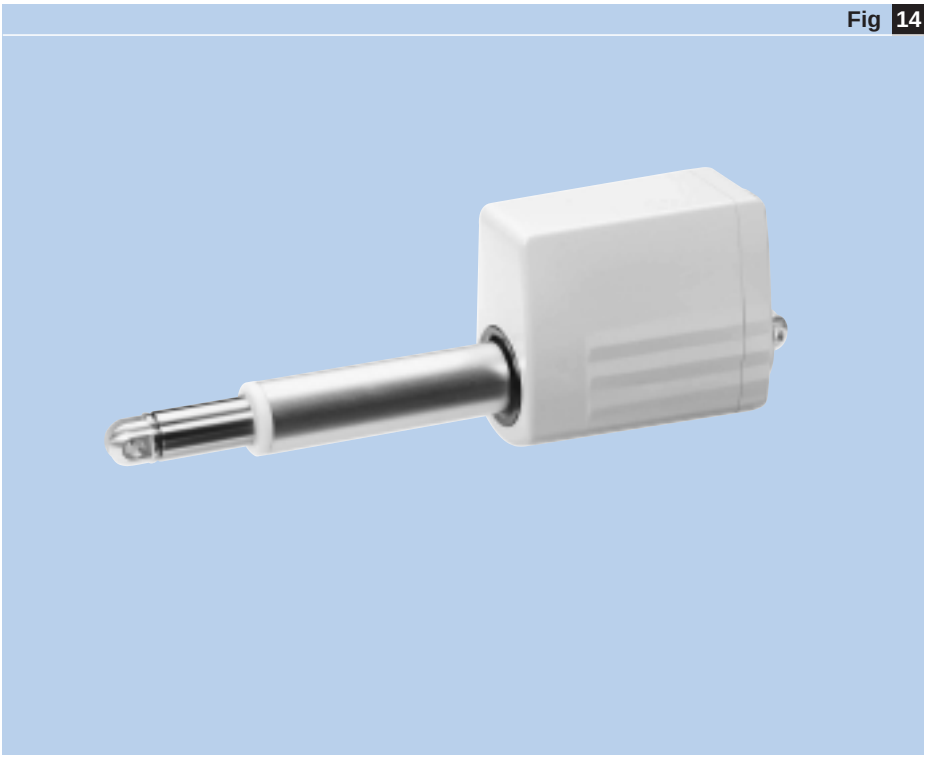
CARE	33	M	300	2	2	1	0	5	135	24	1

RUNNER

The RUNNER (→ **fig** 14) is a very compact, high performance actuator combining maximum load and maximum speed. The system includes a single fault safe control unit for up to 3 actuators as well as corresponding accessories. The RUNNER system is compatible with the TELEMAG DC series.

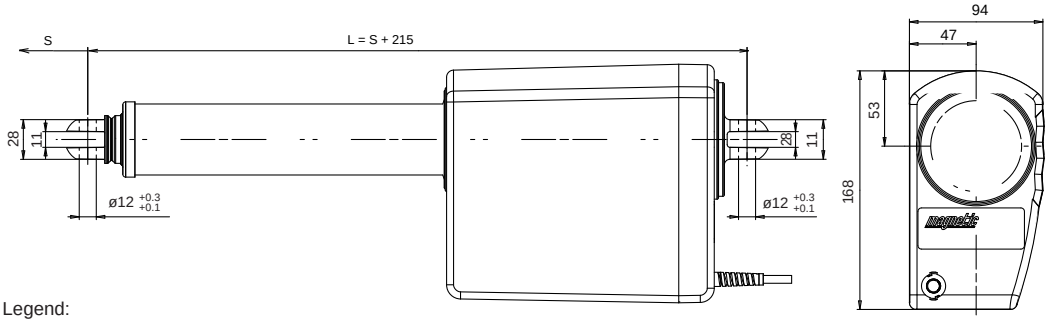
Benefits:
- High offset load
- High push/pull force
- Compact design
- Quiet
- Long lifetime

Fig 14



Linear actuators	Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
RUNNER	R22	12000	8000	4	4	100 - 700	S + 215	24 DC	X4/X6	5.7
	R21	10000	8000	6	6	100 - 700	S + 215	24 DC	X4/X6	5.7
	R20	8000	8000	7	7	100 - 700	S + 215	24 DC	X4/X6	5.7

R22 / R21 / R20



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
R22	12000	8000	4	4	100 - 700	S + 215	24 DC	X4/X6	5,7
R21	10000	8000	6	6	100 - 700	S + 215	24 DC	X4/X6	5.7
R20	8000	8000	7	7	100 - 700	S + 215	24 DC	X4/X6	5.7

Ordering key

R [ ] 1 0 - W R 3 [ ] [ ] [ ] - 0 0 0

Load/Speed:
12000/8000N/4.5-6.5 mm/sec 2 2
10000/8000N/6.0-8.5 mm/sec 2 1
8000/8000N/7.5-10.5 mm/sec 2 0

Voltage:
24 V 1

Construction piggy back:
Standard (no fixing for control box on actuator) 0

Motor cable:
1.5 m straight jack plug . . . . . W R

Colour:
Grey RAL 7035 3

Options:
No options 0 0 0
Electrical anti-pinching, motor direction pull . . . . . E Y W
Electrical anti-pinching, motor direction push . . . . . E Y U
IPX6 . . . . . M C H
Emergency lowering . . . . . M A V

Stroke:
100 mm 1 0 0
200 mm 2 0 0
300 mm 3 0 0
400 mm 4 0 0
500 mm 5 0 0
600 mm 6 0 0
700 mm 7 0 0

Orientation of rear attachment:
0° . . . . . A 0
90° . . . . . A 4

Example: R 2 1 1 0 - W R 3 E Y U 4 0 0 A 0 - 0 0 0

CAF

The CAF Linear Actuators (➔ **fig** 15) has been primarily designed and developed for a large range of applications. The CAF system consists either of one master control unit (control with a built-in actuator) or one control unit connected to one or more (up to 3) individual actuators. The standard CAF actuator system offers a selection of extra features such as power saving, overload protection, toroidal transformer. It also offers a range of panel controls with handsets, table handset and foot pedals.

Efficient design allows the CAFS actuator to have a high dynamic load capacity on low current consumption and noise level. The standard design includes built-in limit switches and flexible orientation of attachments. Design options are available to optimise safety in applications. The CAFX (CAFRelax) is a compact and silent actuator with integrated electronics. The external transformer on the main power cable provides low voltage to the actuator to avoid the 230 V to the equipment. The high reliability and safety result from the mechanical and electrical design with a robust and “non relay solution”.

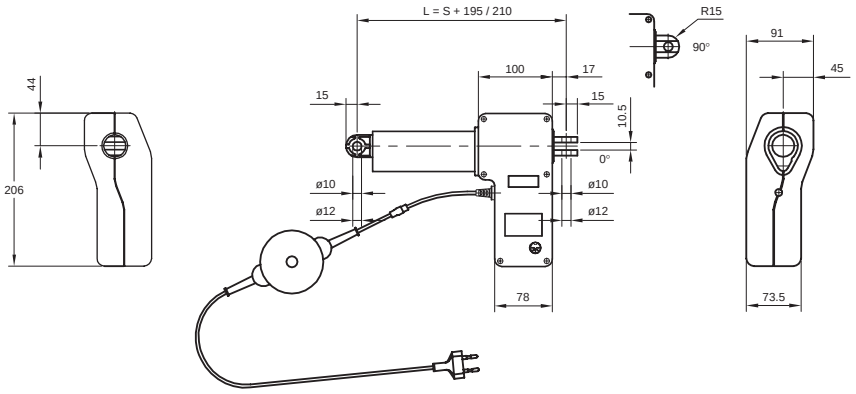
Fig 15

Benefits:

- Complete solutions
- Integrated or stand-alone control system
- Dedicated functions by micro controller
- Long service life (> 50000 start/stop, 10000 double stroke)

Linear actuators	Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
CAF	CAFM-L -motor A	7000	3000	10	5	60 - 300	S + 190/220	120/230 AC	51/X4/66	4.5
	CAFM-L - motor B	7000	3000	7	4	60 - 300	S + 190/220	120/230 AC	51/X4/66	4.5
	CAFS-L - motor A	7000	3000	10	5	60 - 300	S + 190/220	12/24 DC	51/X4/66	3.5
	CAFS-L - motor B	7000	3000	7	4	60 - 300	S + 190/220	12/24 DC	51/X4/66	3.5
	CAFM-H - motor A	3000	3000	20	12	60 - 300	S + 190/220	120/230 AC	51/X4/66	4.5
	CAFM-H - motor B	3000	3000	14	9	60 - 300	S + 190/220	120/230 AC	51/X4/66	4.5
	CAFS-H - motor A	3000	3000	20	12	60 - 300	S + 190/220	12/24 DC	51/X4/66	3.5
	CAFS-H - motor B	3000	3000	14	9	60 - 300	S + 190/220	12/24 DC	51/X4/66	3.5
	CAFX	3000	3000	7	5	90 - 200	S + 195/210	120/230 AC	xx	4.5

CAFX



Legend:
S = stroke
L = retracted length

Type	Force push	Force pull	Speed no load	Speed full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAFX	3000	3000	7	5	90 - 200	S + 195/210	120/230 AC	xx	4.5

Ordering key

Dynamic load (N) / Speed (mm/sec)		Motor*	
3000/20 - 13	7000/10 - 5	24 V high speed motor	A
H	L	* Overload protection is standard	

CAFX 1 _ 1 × _ _ × _ _ _ B A _ 0 0

Type:
Electronics inside 1

Tube:
Plastic, fixed 1

Stroke:
90 - 285 mm 090 285
140 - 335 mm 140 335
200 - 410 mm 200 410

Rear attachment:
Hole ø = 10.0 mm plastic . . . . . A
Hole ø = 12.0 mm plastic . . . . . B

Orientation of rear attachment:
0° 0
90° 9

Tube attachment:
U-fork end with hole ø10.0 mm C
U-fork end with hole ø12.0 mm . . . . . D

Colour:
Black . . . . . B

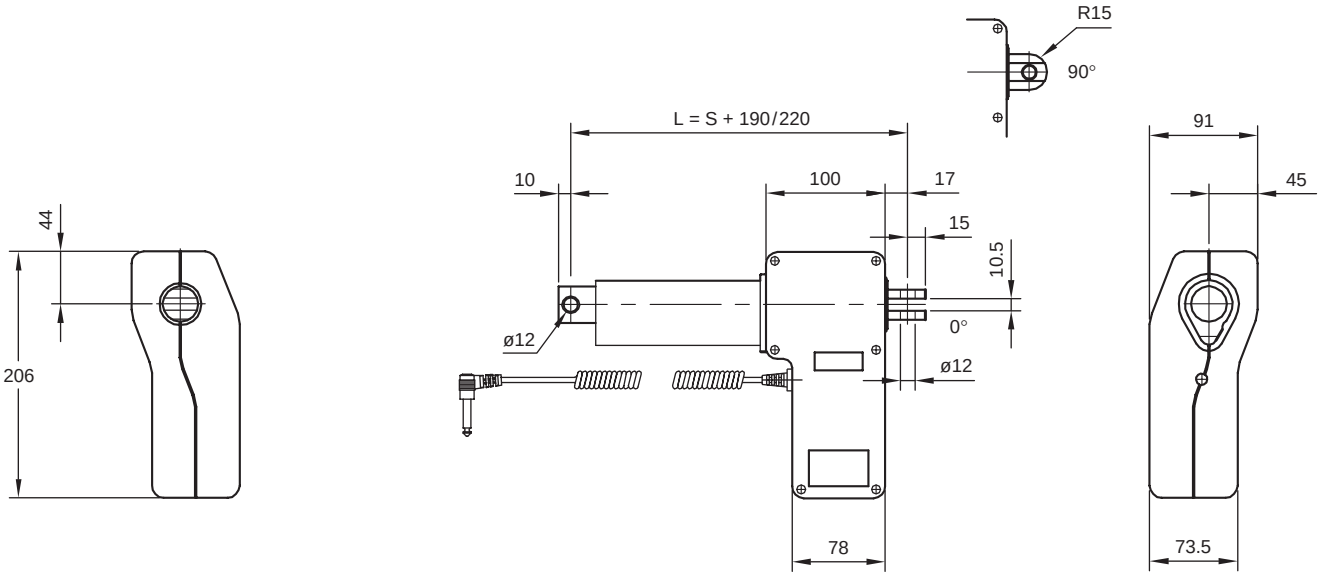
Transformer & mains cable (PVC cable, class II):
230 V 3.0 m, black, EU-plug, straight . . . . . A
120 V 3.0 m, black, US-plug, straight . . . . . B
240 V 3.0 m, grey, UK-plug, straight C

Battery:
No 0

Protection class:
IP 0

Example: CAFX 1 H 1 × 200 410 × A 0 C B A A 0 0

CAFS



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAFS-L - motor A	7000	3000	10	5	60 - 300	S + 190/220	12/24 DC	51/X4/66	3.5
CAFS-L - motor B	7000	3000	7	4	60 - 300	S + 190/220	12/24 DC	51/X4/66	3.5
CAFS-H - motor A	3000	3000	20	12	60 - 300	S + 190/220	12/24 DC	51/X4/66	3.5
CAFS-H - motor B	3000	3000	14	9	60 - 300	S + 190/220	12/24 DC	51/X4/66	3.5

Ordering key

Dynamic load (N)	Speed (mm/sec)	Motor options	
3000/20 - 13 3000/14 - 9 3000/8.5 - 5.5*	7000/10 - 5 7000/7 - 4 7000/4.5 - 2*	24 V high speed motor 24 V standard speed motor 12 V standard speed motor	A B C
H	L	* Speed at 12 V	

CAFS [ ] 3 × [ ] [ ] × [ ] [ ] [ ] 0 B 0 / [ ] 0 A [ ]

Type

Extension tube:
Steel tube, fixed 3

Stroke / Retracted length:

60 - 280 mm	0 6 0 2 8 0
100 - 290 mm	1 0 0 2 9 0
150 - 340 mm	1 5 0 3 4 0
200 - 410 mm	2 0 0 4 1 0
250 - 460 mm	2 5 0 4 6 0
300 - 490 mm	3 0 0 4 9 0

Rear attachment:

ø 12,0 mm, aluminium	D
ø 10,0 mm, plastic natural high load	E
ø 12,0 mm, plastic natural high load	F

Orientation of rear attachment:

0°	0
90°	9

Tube attachment:

Hole, ø 12.0 mm with bushing 12 - 14	E
Hole, ø 10.0 mm with bushing 10 - 12	F

Back-up nut:
no 0

Colour:
black . . . . . B

Quick release:
no 0

Encoder:
no 0

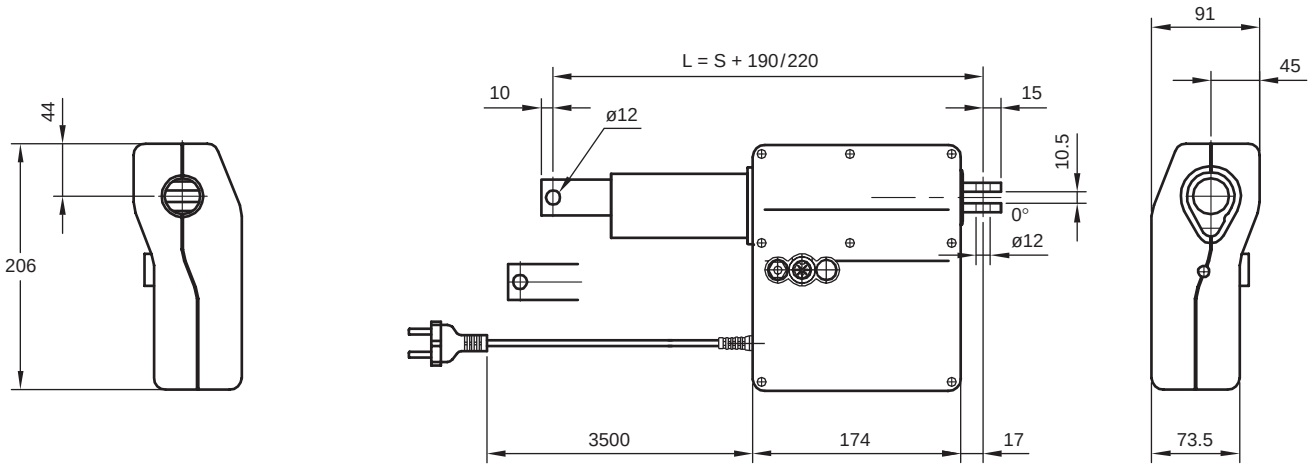
Cable:
2.5 mm, grey, phono plug, spiral . . . . . A

Protection class:

IP51	5 1
IPX4	X 4
IP66	6 6

Example: CAFS L 3 × 200 410 × E 0 F 0 B 0 / B 0 A 51

CAFM



Legend:
S = stroke
L = retracted length

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
CAFM-L -motor A	7000	3000	10	5	60 - 300	S + 190/220	120/230 AC	51/X4/66	4,5
CAFM-L - motor B	7000	3000	7	4	60 - 300	S + 190/220	120/230 AC	51/X4/66	4.5
CAFM-H - motor A	3000	3000	20	12	60 - 300	S + 190/220	120/230 AC	51/X4/66	4.5
CAFM-H - motor B	3000	3000	14	9	60 - 300	S + 190/220	120/230 AC	51/X4/66	4.5

Accessories

Item / Product	CAFM M1	CAFM M2	CAFM M3	CAFM M4
Cable handset	CAFH M1/S118C CAFH M1/S118CE CAFH M1/S746C CAFH M1/S746CE	CAFH M2/S116C CAFH M2/S116CE CAFH M2/S784C CAFH M2/S784CE	CAFH M3/S120C CAFH M3/S120CE CAFH M3/S822C CAFH M3/S822CE	CAFH M4/S473C CAFH M4/S473CE
Foot switch	CAFH F1/S401D CAFH F1/S403D	CAFH F1/S401D CAFH F1/S403D	CAFH F1/S402D CAFH F1/S404D	CAFH F1/S402D CAFH F1/S404D
Table handset	CAFH T1/S457D	CAFH T2/S458D		
Battery	CAFB/S693D	CAFB/S693D	CAFB/S693D	CAFB/S693D
Junction box	CAFR/S238D	CAFR/S238D	CAFR/S239D	

Ordering key

Dynamic load (N) / Speed (mm/sec)		Motor* options	
3000/20 - 13 3000/14 - 9	7000/10 - 5 7000/7 - 4	24 V high speed motor 24 V standard speed motor	A B
H	L	* Overload protection is standard	

CAFM [ ][ ] 3 × [ ][ ] × [ ][ ][ ] 0 B 0 / [ ] 1 [ ][ ][ ]

Type

Actuator connections:
1 additional actuator 1
2 additional actuators 2
3 additional actuators 3
4 additional actuators 4

Tube:
Steel, fixed 3

Stroke/Retracted length:
60 - 280 mm 0 6 0 2 8 0
100 - 290 mm 1 0 0 2 9 0
150 - 340 mm 1 5 0 3 4 0
200 - 410 mm 2 0 0 4 1 0
250 - 460 mm 2 5 0 4 6 0
300 - 490 mm 3 0 0 4 9 0

Rear attachment length:
Hole ø 12.0 mm, aluminium . . . . . D
Hole ø 10.0 mm, plastic natural, high load . . . . . E
Hole ø 12.0 mm, plastic natural, high load . . . . . F

Orientation of rear attachment:
0° 0
90° 9

Tube attachment:
Hole ø 12.0 mm, with bushing 12 - 14 (only for steel tube) . . . . . E
Hole ø 10.0 mm, with bushing 10 - 12 (only for steel tube) . . . . . F

Back-up nut:
No 0

Colour:
Black . . . . . B

Quick release:
No 0

Transformer & mains cable (PVC cable, class II):
230 V, 3.0 m, black, EU-plug, straight . . . . . B
120 V, 3.0 m, grey, US-plug, straight . . . . . H
240 V, 3.0 m, grey, UK-plug, straight I

Battery:
No battery 0
Battery connection (available for M1, M2 and M3 versions) 2
External switch (available for M1, M2 and M3 versions) 3

Protection class:
IP51 51
IPX4 . . . . . X4
IP66 66

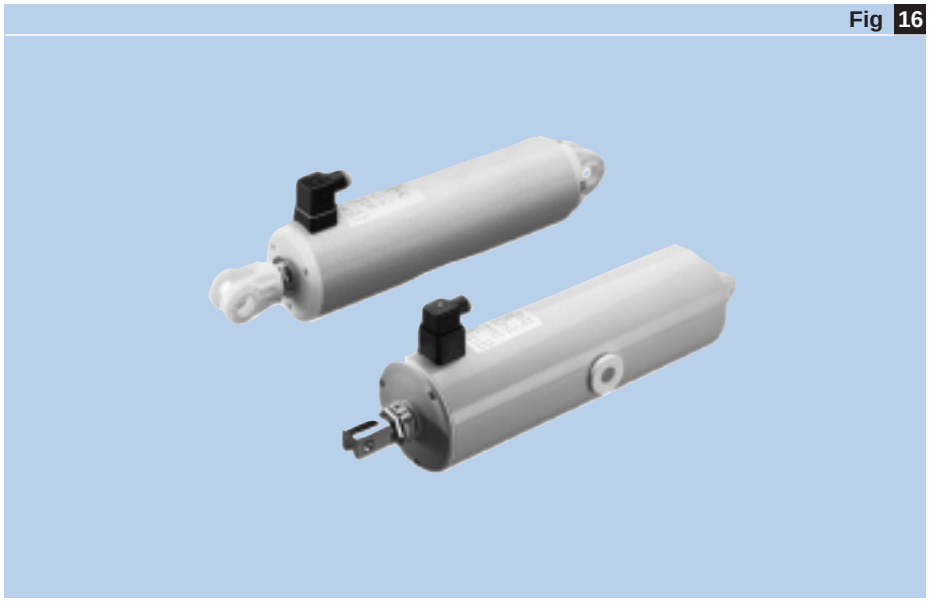
Example: CAFM 2 H 3 × 100 290 × E 0 F 0 B 0 / B 1 B 2 X 4

MAGPUSH

MAGPUSH linear actuators (→ **fig** 16) are extremely quiet and smooth running. They take up little space, are maintenance-free and can be installed vertically or horizontally or at an intermediate angle. The MAGPUSH actuators are very robust and work in many applications. They are ideally suited for raising and lowering large loads.

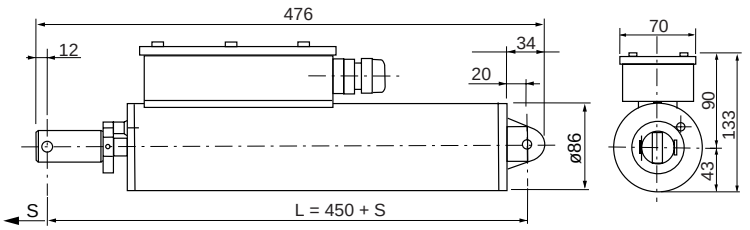
Benefits:
- Big stroke by a short assembly dimension
- Long lifetime
- Quiet
- Robust

Fig 16



Linear actuators	Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
		N		mm/s		mm	mm	V	IP	kg
MAGPUSH	HC 85 UB	1500	1500	10	10	260	S + 190	230 AC	55	6.0
	GC 84 TL	500	500	6	6	200 - 300	S + 123	230 AC	54	2.3 - 2.4
	GC 84 UB	400	400	8	8	210	S + 170	230 AC	55	3.0

MAGPUSH HC 85 UB



Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
HC 85 UB	1500	1500	10	10	260	S + 190	230 AC	55	6.0

4

Ordering key

HC85UB - [ ] 01

Type

Option:
No option . . . . . –
Potentiometer 1000 Ohm 3

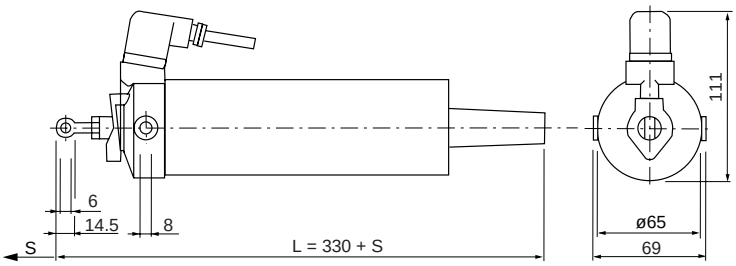
Load/Speed/Stroke:
1500 N (push) / 10 mm/sec / 260 mm 01

Example: HC85UB - 3 01

Accessories for MAGPUSH HC 85 UB

Accessories	Order N°
Relay-set	261289

MAGPUSH GC 84 TL



Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
GC 84 TL	500	500	6	6	200 - 300	S + 123	230 AC	54	2.3 - 2.4

Ordering key

GC84TL - [ ][ ]

Type

Load/Speed/Stroke:
500 N (push) 300 N (pull) / 6 mm/sec / 200 mm 20
500 N (push) 300 N (pull) / 6 mm/sec / 300 mm 30

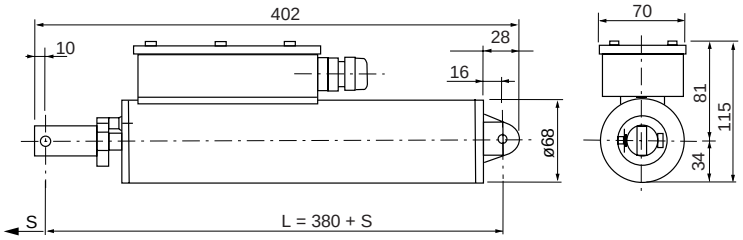
Option:
No option 01
With integrated relais 02

Example: GC84TL - 2001

Accessories for MAGPUSH GC 84 TL

Accessories	Order N°
Fixing bracket	940303
Pivot screws, alone	940306
Pull adapter	939185
Rear hinge, short	940646
Rear hinge, long	940611

MAGPUSH GC 84 UB



Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage	Protection	Weight
	N		mm/s		mm	mm	V	IP	kg
GC 84 UB	400	400	8	8	210	S + 170	230 AC	55	3.0

4

Ordering key

GC84UB - 01

Type

Load/Speed/Stroke:
400 N (push) / 8 mm/sec / 210 mm 01

Example: GC84UB - 01

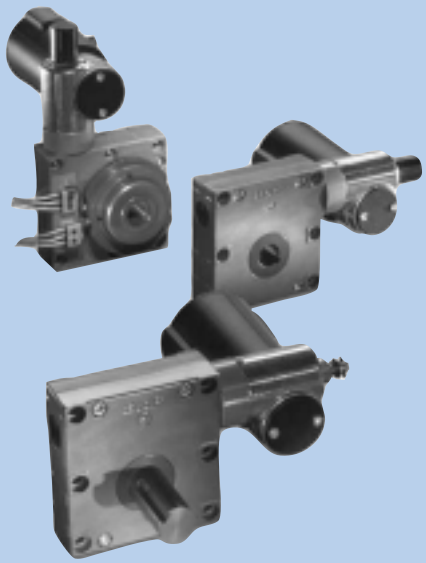
Accessories for MAGPUSH GC 84 UB

Accessories	Order N°
Relay-set	261289

Notes

Rotary actuators

Fig 17



CRAB 17

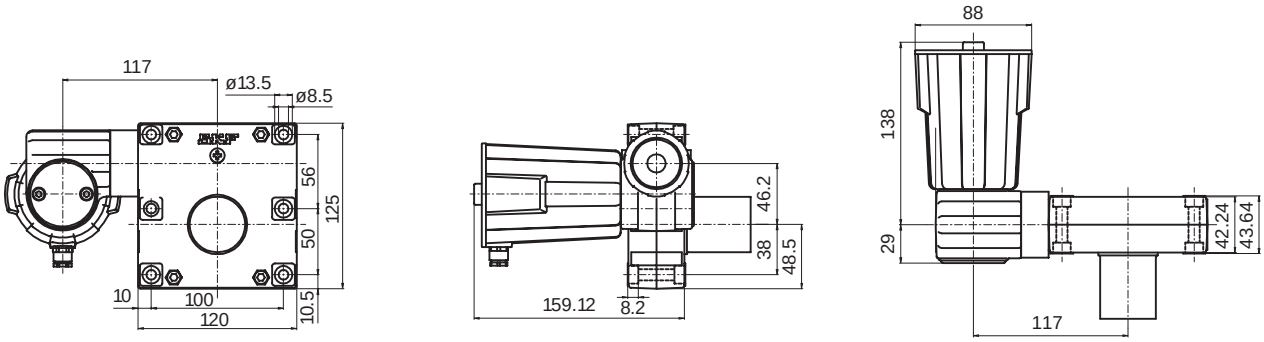
The CRAB 17 (→ **fig** 17) rotary actuator is modular so that critical components can be interchanged to meet the needs of a special design priority. The purpose with CRAB 17 is designed to be small and compact but still be able to produce high torque. As the actuator can withstand high loads it can also serve as a load-bearing element of your design. Special bearings arrangements are not usually required.

Benefits:
- Multiple output shafts
- Multiple motor options
- Small and compact

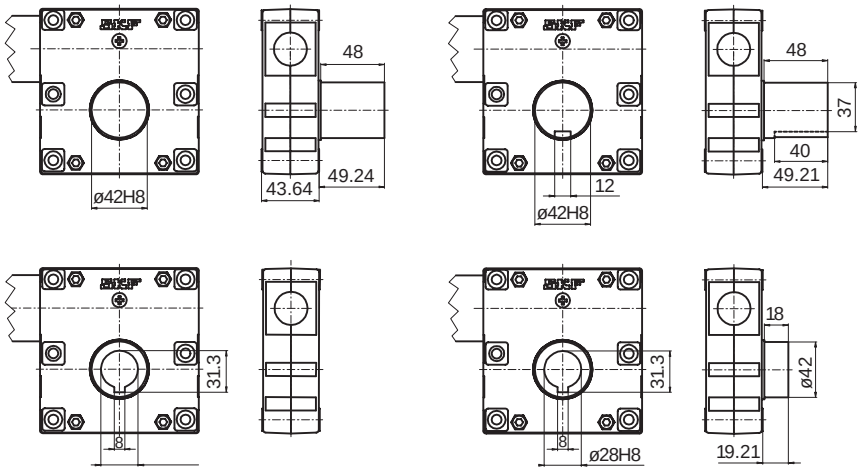
Rotary actuators	Type	Torque	Speed	Size	Working range	Voltage	Protection	Weight
		Nm	rpm	mm	degrees	V	IP	kg
CRAB 17	CRAB 17	105	20	125	multi turn	12/24/90 DC	54	3
	CRAB 17	70	8	125	multi turn	120/230 AC	54	3

CRAB17

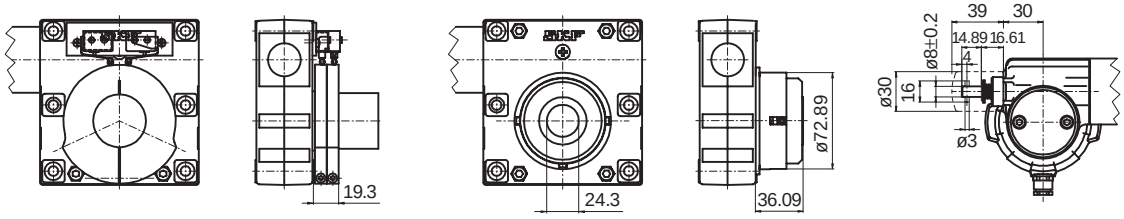
Main Measurements



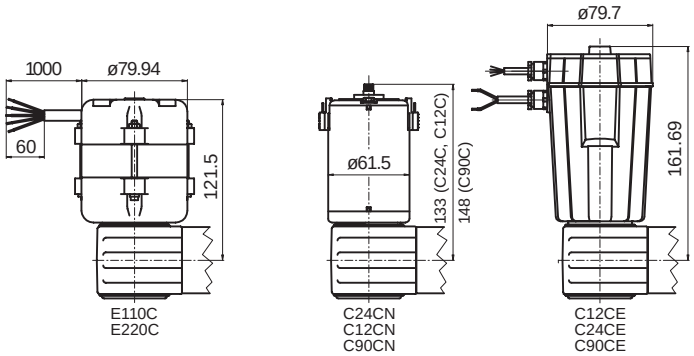
Standard shaft design



Accessories



Motor options



Type	Torque	Speed	Size	Working range	Voltage	Protection	Weight
	Nm	rpm	mm	degrees	V	IP	kg
CRAB 17	105	20	125	multi turn	12/24/90 DC	54	3
CRAB 17	70	8	125	multi turn	120/230 AC	54	3

Ordering key

Dynamic load / Speed (N) / (mm/sec)			Motor options	
60/30	38/58	19/110	12 Vd.c.	C12C
60/30	38/58	19/110	24 Vd.c.	C24C
105/30	53/55	38/110	90 Vd.c.	C90C
70/13	40/27	22/52	110 Va.c.	E110C
55/13	34/27	18/52	220 Va.c.	E220C
1	2	4		

CRAB17 × □□ × □□ × □□ / □□□□

Type

Manual override:
None . . . . . –
Hand crank . . . . . A
Release on shaft . . . . . B

Shaft design:
Solid 1
Solid / keyway 2
Hollow / keyway 3
Hollow / keyway for limit switch 4
Hollow / splines (with override for shaft type “B”) 5

Limit switch:
No . . . . . –
Yes (fits shaft N° 1, 2, 4 and 5) . . . . . S

Motor orientation:
Rear . . . . . R
Upwards . . . . . U
Front . . . . . F
Downwards . . . . . D

Motor assembly:
Right . . . . . R
Left L

Options for CxxC motors:
No cable . . . . . –
Encoder . . . . . E
Motor without cover . . . . . N
EMC filter . . . . . M
Cable 2 m . . . . . T 2
Cable with plug 1 m . . . . . T 1 P
Cable with plug 2 m . . . . . T 2 P

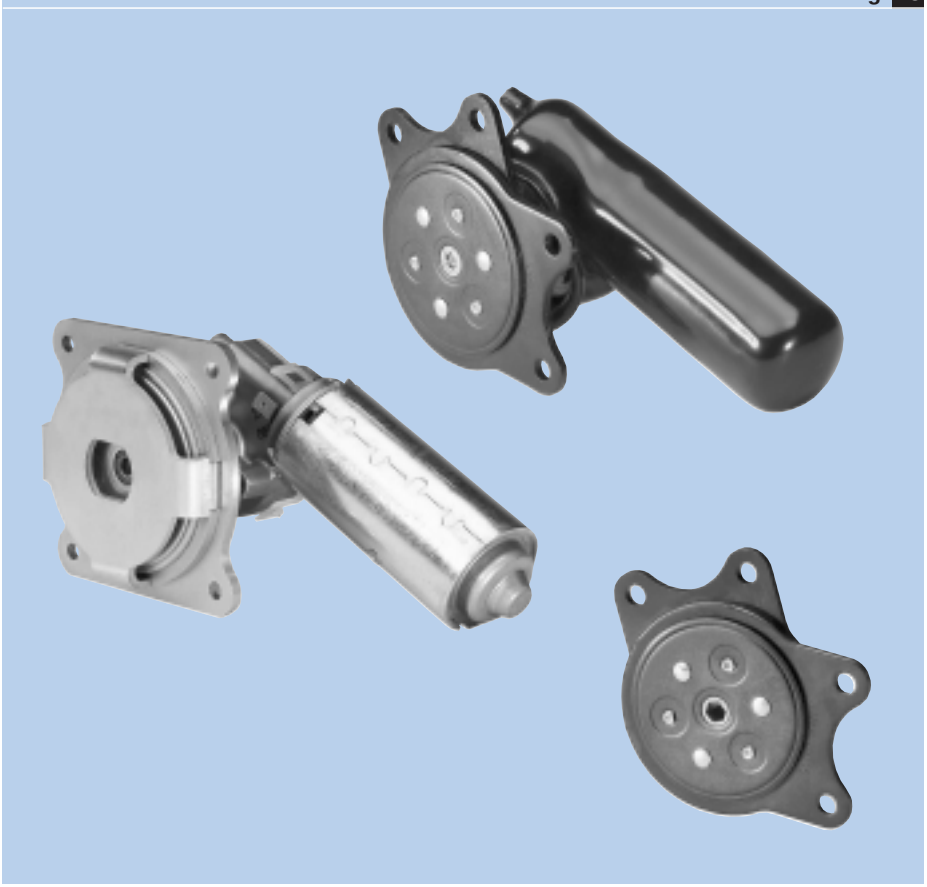
Example: CRAB17 × 4A × 1S × RL / C24C T2P

CRAB 05

The design of the CRAB 05 rotary actuator series (➔ **fig** 18) has been developed from a completely new recliner technology. This recliner technology is a new patent and has been successfully used in the automotive industry for car seat applications. Car seat applications demand low cost, high impact strength and ease of operation, electrically or manually, when adjusting the seat. This design makes it possible to build low cost and space saving solutions in application where dynamic force demands are below 100 Nm.

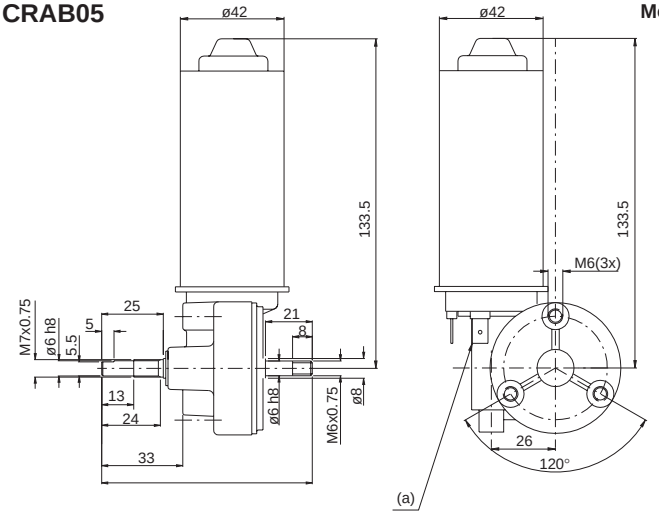
Benefits:
- Recliner
- Multiple motor options
- Thin and small

Fig 18



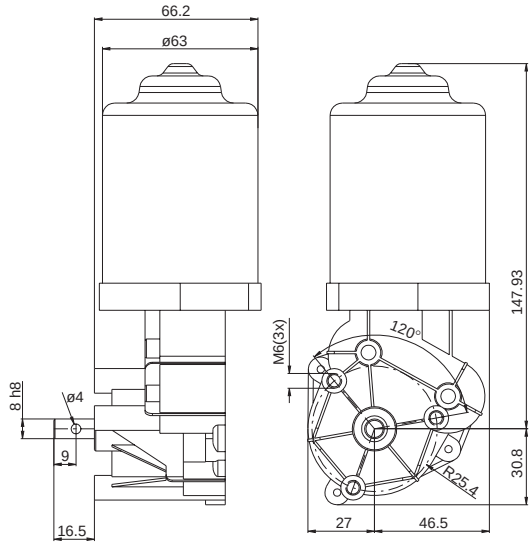
Rotary actuators	Type	Torque	Speed	Size	Working range	Voltage	Protection	Weight
		Nm	rpm	mm	degrees	V	IP	kg
CRAB 05	CRAB 05	100	3	86	multi turn	24 DC	20	0,5

CRAB05



Motor MH

Legend:
(a) = Blade terminal 6.3×0.8 DIN 46244
(b) = Drive cross not fixed to gear. Hardened 45HRC



Motor MD

Fig. A

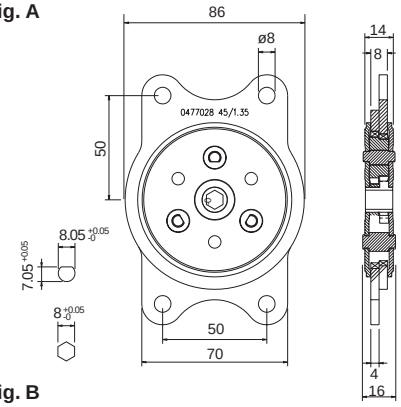
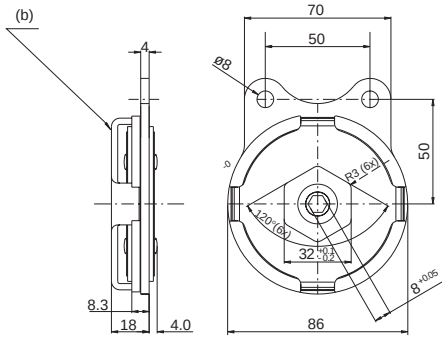
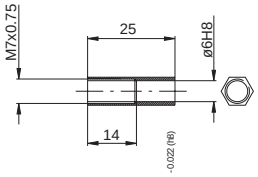


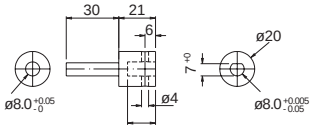
Fig. B



Connecting shaft SH



Connecting shaft SD



Ordering key

CRAB05						

Type

Coating:
Black chromium-plated . . . . . B
Natural chromium-plated C

Motor shaft connection:
D-hole . . . . . D
Hexagonal hole . . . . . H

Attachment/connection:
Outer connection ears (see Fig. A) . . . . . E
Centre connection hexagonal 32 mm (see Fig. B only option “C” and “H”) . . . . . S

Motors:
No motor 0 0
24 Vd.c. for motor shaft connection “D” . . . . . M D
24 Vd.c. for motor shaft connection “H” . . . . . M H

Connection shaft:
No shaft 0 0
D-shaft . . . . . S D
Hexagonal shaft . . . . . S H

Example:

CRAB05	C	D	E	MD	SH

Combinations of actuators, control units and operating units

Are you looking for a complete system including actuators, control units and operating units?

A selection of control units and hand sets is available for most actuators in this catalogue.

		Control units																
		CAED 3-24R	CAED 5-24R	CAED 9-24R	CAEN 10R	CAEV 110/220	CAFC04 M1	CAFC04 M3	CAFM M1	CAFM M2	KOM1	KOM2	KOM3	KOM3T	KOM6	MCU1	LD-014 (TXG)	LD-015 (TXG)
Actuators	TGC (pneum.)																	
	THC (pneum.)																	
	TLC (pneum.)																	
	THG										X	X	X		X	X		
	TLG										X	X	X		X	X		
	TLT													X				
	TXG																X	X
	CAT11	X																
	CAT33				X	X	X											
	CAT32				X	X	X											
	CARR 22			X	X													
	CAR32				X	X	X											
	CAR40							(No control units are available)										
	CALA36	X																
	MAX1										X	X	X		X	X		
	MAX3										X	X	X		X	X		
	MAX60 / MAX61																	
	MAX62 / MAX65																	
	CARE33	X																
	Easy3 01	incl.																
	Easy3 02	incl.																
	Easy3 03	incl.																
	Easy3 04						incl.											
	Easy3 05							incl.										
	Easy3 10								incl.									
	Easy3 11									incl.								
	Easy3 12						incl.											
	Easy3 13							incl.										
Operating units	EHA1 (DSUB)										X		X	X		X		
	EHA2 (DSUB)											X						
	EHE6 (DSUB)														X			
	STA (DSUB)										X		X	X		X		
	STC (DSUB)											X						
	STF (DSUB)										X		X	X		X		
	STG (DSUB)											X						
	STH (DSUB)														X			
	LD-011 (DIN)																X	X

	Operating units														
	CAES 31C	CAES 31B	CAES 3X Series	CAFH T1	CAFH T2	EHA1 (DSUB)	EHE1 (FCC)	STA (DSUB)	STA (FCC)	STF (DSUB)	STF (FCC)	LD-011 (FCC)	PHC	PFP
													X	X
													X	X
													X	X
							X		X		X	X		
	X													
	(CAED/CAEV) X	(CAEN) X												
	(CAED/CAEV) X	(CAEN) X												
	(CAED/CAEV) X	(CAEN) X												
	X													
													X	X
						X		X		X				
	X													
	incl.													
	incl.													
	incl.													
			incl.											
			incl.											
				incl.										
					incl.									
				incl.										
					incl.									

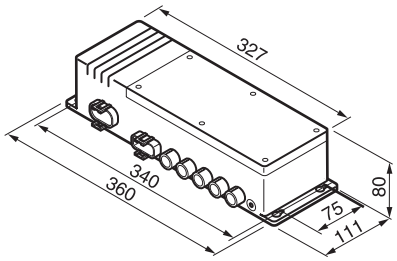
Control units

A large variety of control units is available to operate the linear drives and telescopic pillars. They allow the connection of up to 5 actuators or several external options. There is also a version to operate battery powered DC-actuators. For combinations of actuators and control units please see the matrix on page 230

Benefits:
- Application focused system control
- Operation of up to 5 actuators
- Connections for foot, hand or desk switches
- Standard or microprocessor versions

Control units	Type	Control	Max. motor connections	Input	Output power
			n°	VAC	VDC/A
KOM	KOM 1	Standard	4	230/120	24/6
	KOM 2	Microprocessor	5	230/120	24/12
	KOM 3	Standard	3	230/120	24/6
	KOM 3T	Standard	2	230/120	24/9
	KOM 6	Microprocessor	4	230/120	24/12
MCU	MCU	Standard	2	230/120	24/6
LD	LD	Microprocessor	4	230/120	24/12
CAFC 04	M1	Micro controller	1	230/120	40/6
	M2	Micro controller	2	230/120	40/6
	M3	Micro controller	3	30/120	40/6

KOM1



Type	Control	Max. motor connections	Input	Output power
		n°	VAC	VDC/A
KOM 1	Standard	4	230/120	24/6

Ordering key

KOM1 [ ] - 0 [ ] 0A - 000

Type

Number of channels:
1 channel 1
2 channels 2
3 channels 3
4 channels 4

Battery option:
Without battery 0

Voltage:
230 Va.c. 1
120 Va.c. 2

Cable/Connecting plug:
Without cable 0

Colour:
Grey RAL 7035 . . . . . A

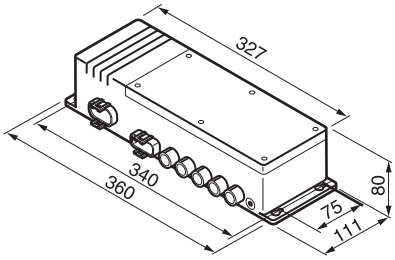
Example: KOM1 2 - 0 1 0A - 000

Accessories

Item	Plug	Country	Order number	Comment
Straight cable 3.5	Schuko	DE	140306	
Straight cable 3.5	SEV	CH	140316	
Straight cable 3.5	UL	USA	140355	
Straight cable 3.5	Hospital grade	USA	140360	
Straight cable 3.5	British standard	UK	140350	
Coiled cable 1.2 m/2.2 m	Schuko	DE	140342	
Coiled cable 1.2 m/2.2 m	SEV	CH	140378	
Straight cable 3.5	SEV	CH	140422-3500	Polyurethane cable
Straight cable 3.5	Schuko	DE	140426-3500	Polyurethane cable
Tool for plugs (Jack/D-Sub/Mains)			140375	

Control units

KOM2



Type	Control	Max. motor connections	Input	Output power
		n°	VAC	VDC/A
KOM 2	Microprocessor	5	230/120	24/12

Ordering key

KOM2 [ ] - [0] [ ] [0A] [ ] - [000]

Type

Number of channels:
1 channel (not available with parallel option) 1
2 channels. 2
3 channels. 3
4 channels (not available with memory option) 4

Battery option:
Without battery 0

Voltage:
230 Va.c. 4
120 Va.c. 5

Cable/Connecting plug:
Without cable 0

Colour:
Grey RAL 7035. . . . . A

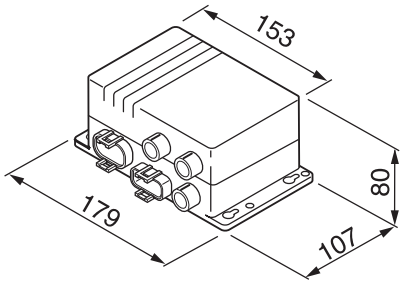
Software options:
Parallel operation of actuators (all connected actuators move together) . . . . . P
3 free programmable memory positions. . . . . M

Example: KOM2 3 - 0 4 0A P - 000

Accessories

Item	Plug	Country	Order number	Comment
Straight cable 3.5	Schuko	DE	140306	
Straight cable 3.5	SEV	CH	140316	
Straight cable 3.5	UL	USA	140355	
Straight cable 3.5	Hospital grade	USA	140360	
Straight cable 3.5	British standard	UK	140350	
Coiled cable 1.2 m/2.2 m	Schuko	DE	140342	
Coiled cable 1.2 m/2.2 m	SEV	CH	140378	
Straight cable 3.5	SEV	CH	140422-3500	Polyurethane cable
Straight cable 3.5	Schuko	DE	140426-3500	Polyurethane cable
Tool for plugs (Jack/D-Sub/Mains)			140375	

KOM3



Type	Control	Max. motor connections	Input	Output power
		n°	VAC	VDC/A
KOM 3	Standard	3	230/120	24/6
KOM 3T	Standard	2	230/120	24/9

Ordering key

KOM3 [ ] - [ ] [0A] - [000]

Type

Number of channels:
1 channel 1
2 channels 2
3 channels 3
2 channels (only for TLT-Telemag) . . . . . T

Voltage:
230 Va.c. 0
120 Va.c. 1

Cable/Connecting plug:
Without cable 0

Colour:
Grey RAL 7035 . . . . . A

Example: KOM3 [T] - [1] [0A] - [000]

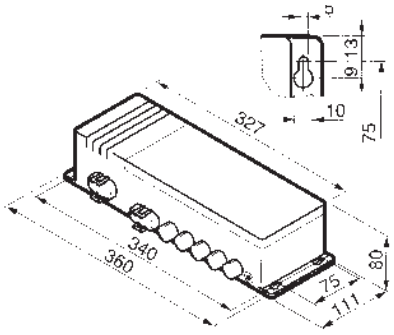
4

Accessories

Item	Plug	Country	Order number	Comment
Straight cable 3.5	Schuko	DE	140306	
Straight cable 3.5	SEV	CH	140316	
Straight cable 3.5	UL	USA	140355	
Straight cable 3.5	Hospital grade	USA	140360	
Straight cable 3.5	British standard	UK	140350	
Coiled cable 1.2 m/2.2 m	Schuko	DE	140342	
Coiled cable 1.2 m/2.2 m	SEV	CH	140378	
Straight cable 3.5	SEV	CH	140422-3500	Polyurethane cable
Straight cable 3.5	Schuko	DE	140426-3500	Polyurethane cable
Tool for plugs (Jack/D-Sub/Mains)			140375	

4 Actuation systems
Control units

KOM6



Type	Control	Max. motor connections	Input	Output power
		n°	VAC	VDC/A
KOM 6	Microprocessor	4	230/120	24/12

Ordering key

KOM6 ☐ - 0 ☐ 0A ☐ - 000

Type

Number of channels:
1 channel (not available with parallel option) . . . 1
2 channels . . . 2
3 channels . . . 3
4 channels (not available with memory option) . . . 4

Battery option:
Without battery . . . 0

Voltage:
230 Va.c. . . . 4
120 Va.c. . . . 5

Cable/Connecting plug:
Without cable . . . 0

Colour:
Grey RAL 7035 . . . A

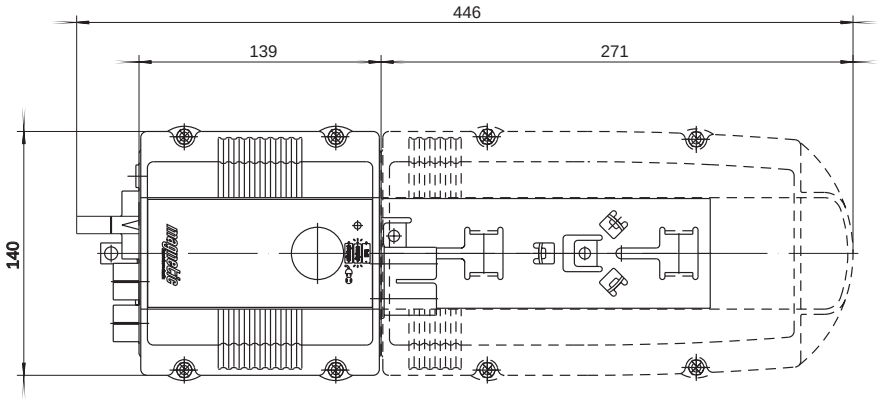
Software options:
Parallel operation of actuators (all connected actuators move together), incl. 3 memory positions . . . M
3 free programmable memory positions . . . N

Example: KOM6 2 - 0 5 0A N - 000

Accessories

Item	Plug	Country	Order number	Comment
Straight cable 3.5	Schuko	D	140306	
Straight cable 3.5	SEV	CH	140316	
Straight cable 3.5	UL	USA	140355	
Straight cable 3.5	Hospital grade	USA	140360	
Straight cable 3.5	British standard	GB	140350	
Coiled cable 1.2 m/2.2 m	Schuko	D	140342	
Coiled cable 1.2 m/2.2 m	SEV	CH	140378	
Straight cable 3.5	SEV	CH	140422-3500	Polyurethane cable
Straight cable 3.5	Schuko	D	140426-3500	Polyurethane cable
Tool for plugs (Jack/D-Sub/Mains)			140375	

MCU



Type	Control	Max. motor connections	Input	Output power
		n°	VAC	VDC/A
MCU	Standard	2	230/120	24/6

4

Ordering key

MCU1 [ ] - 003 [ ] - 0000

Type

Voltage:
24 Vd.c. 1

Number of channels:
1 channel 1
2 channels 2

Cable/Connecting plug:
Without cable. 00

Colour:
Grey 3

Options:
No options 000
Electrical emergency off, channel 1 . . . . . EYE

Not used 00

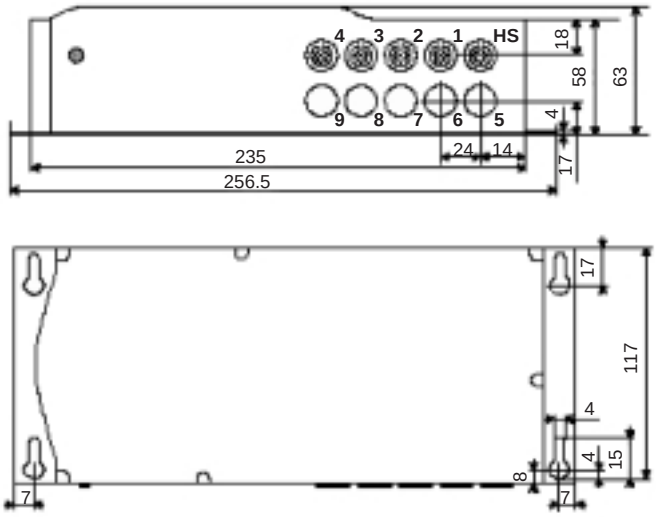
Example: MCU1 1 - 003 EYE - 0000

Accessories

Item	Data	Plug	Order number
Battery unit	4.5 Ah		ZBA-142211
Mains adapter	230 V	Euro plug	ZDV-142331
Mains adapter	120 V	UL plug	ZDV-142332
Wall charging station			ZLA-142221
Tool for plugs (Jack/D-Sub/Mains)			140375

Control units

LD



Type	Control	Max. motor connections	Input	Output power
		n°	VAC	VDC/A
LD	Microprocessor	4	230/120	24/12

Ordering key

LD - [ ] - [ ]

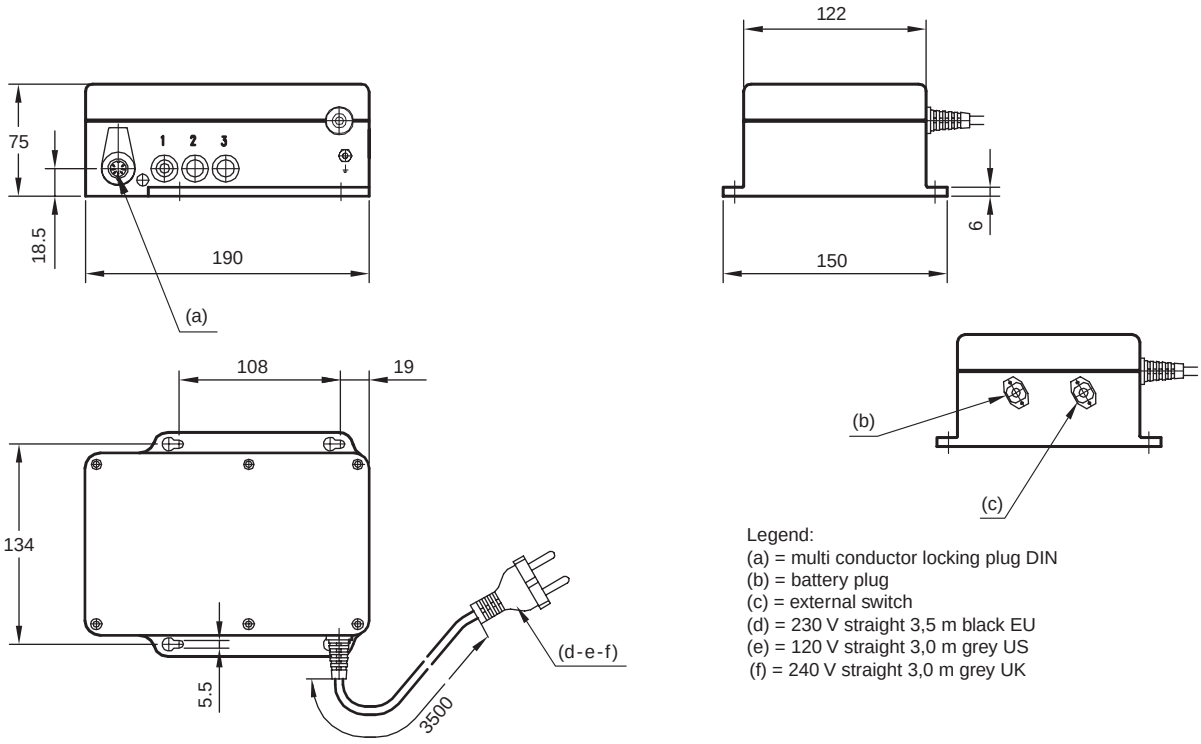
Type

Number of channels:
2 channels for TELESMART TXG 015-005
3 channels for TELESMART TXG 014-026
4 channels for TELESMART TXG 014-005

Voltage:
230 Va.c. 000
120 Va.c. 001

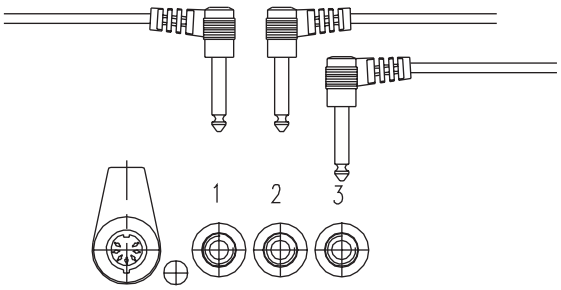
Example: LD - 015-005 - 000

CAFC 04

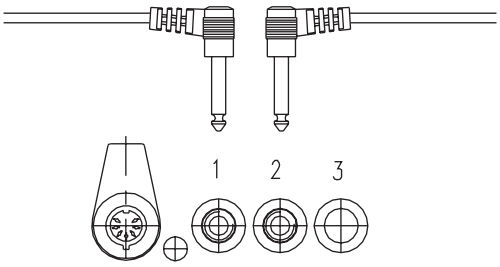


Legend:
(a) = multi conductor locking plug DIN
(b) = battery plug
(c) = external switch
(d) = 230 V straight 3,5 m black EU
(e) = 120 V straight 3,0 m grey US
(f) = 240 V straight 3,0 m grey UK

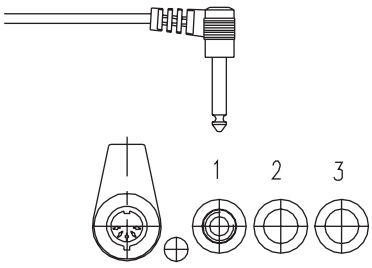
Connection detail



Version control box CAFC M3



Version control box CAFC M2



Version control box CAFC M1

Continued

Control units

CAFC 04
(continued)

Type	Control	Max. motor connections	Input	Output power
		n°	VAC	VDC/A
M1	Micro controller	1	230/120	40/6
M2	Micro controller	2	230/120	40/6
M3	Micro controller	3	30/120	40/6

Ordering key

CAFC04 × M□ × □1 / □□G

Type

Number of actuators:
1 actuator . . . 1
2 actuators . . . 2
3 actuators . . . 3

Mains cable (PVC cable class II):
230 V, 3.2 m, black, EU-plug, straight . . . B
120 V, 3.0 m, grey, US-plug, straight . . . H
240 V, 3.0 m, grey, UK-plug, straight . . . I

Overload protection (factory pre-set):
Yes . . . 1

Protection class:
IP51 . . . 51
IPX4 . . . X4

Battery options:
No battery . . . 0
Battery plug . . . 2
External switch . . . 3

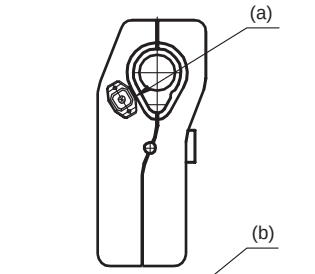
Colour:
RAL 7035, grey . . . G

Example: CAFC04 × M1 × B1 / 512G

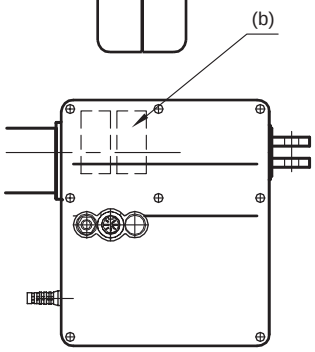
Accessories

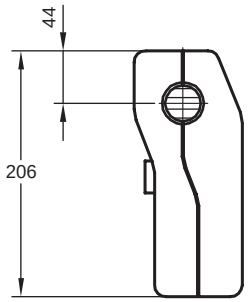
Item / Product	CAF C04 M1	CAF C04 M2	CAF C04 M3
Cable handset	CAFH M1/S118C CAFH M1/S118CE CAFH M1/S746C CAFH M1/S746CE	CAFH M2/S116C CAFH M2/S116CE CAFH M2/S784C CAFH M2/S784CE	CAFH M3/S120C CAFH M3/S120CE CAFH M3/S822C CAFH M31/S822CE
Foot switch	CAFH F1/S401D CAFH F1/S403D	CAFH F1/S401D CAFH F1/S403D	CAFH F1/S402D CAFH F1/S404D
Table handset	CAFH T1/S457D	CAFH T2/S458D	
Battery	CAFB/S693D	CAFB/S693D	CAFB/S693D
Junction box	CAFR/S238D	CAFR/S238D	CAFR/S239D

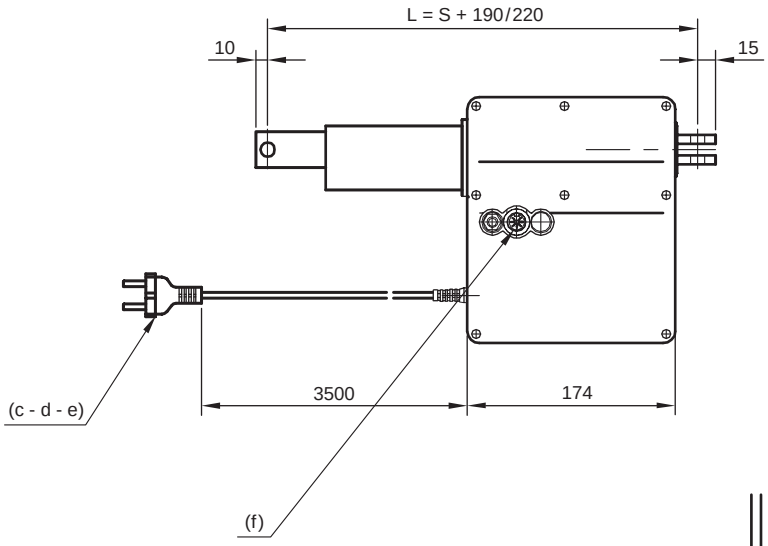
CAFM



Legend:
(a) = battery connection or external switch
(b) = internal battery
(c) = 230 V straight 3,5 m black EU
(d) = 120 V straight 3,0 m grey US
(e) = 240 V straight 3,0 m grey UK
(f) = multi conductor locking plug DIN
S = stroke
L = retracted length

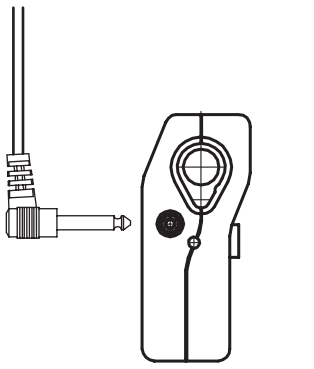




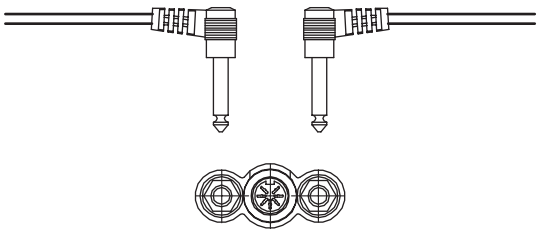


Connection detail

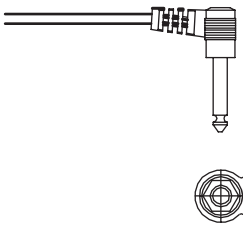
Version actuator CAFM1



Version actuator CAFM4



Version actuator CAFM3



Version actuator CAFM2

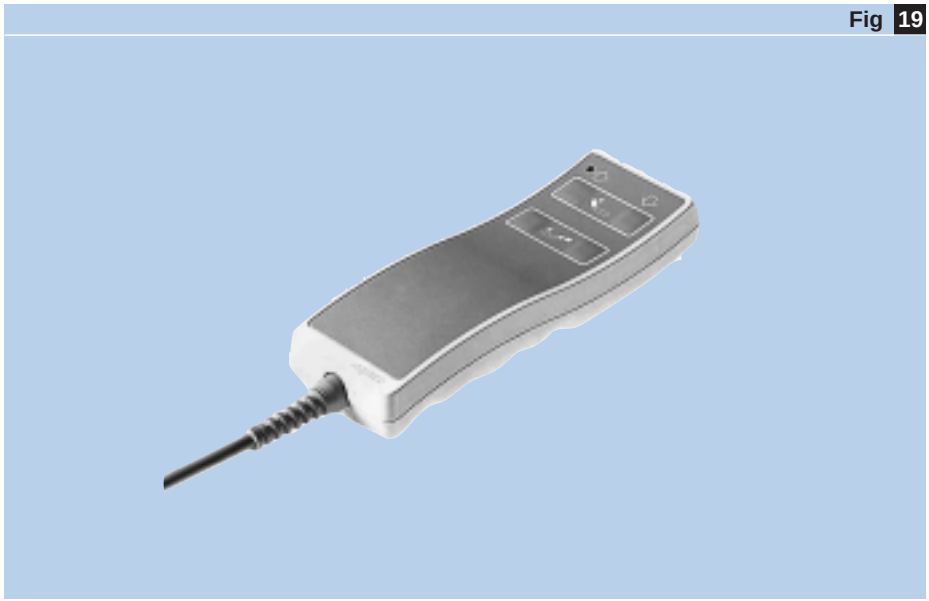
See ordering key for CAFM on page 218

Hand switches

The hand switches (→ **fig** 19) serve for operating one or several actuators. With the pushbuttons field on the front panel the movements of the actuators can be controlled easily and precisely. The hand switches are available with different plug options. There is also an infrared version for more flexibility in remote operating.

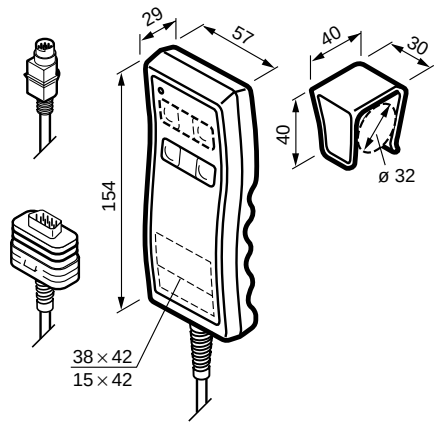
Benefits:
- easy and precise
- flexible and remote operation
- ergonomic design
- different plug options

Fig 19



Hand switches	Type	Operating power	Max. operating motors	Prot. class	Colour
		VDC / mA	n°	IP	
EHA	EHA 1	12 / 50	4	67	grey
	EHA 2	12 / 50	5	67	grey
EHE	EHE 1	38 / 50	4	X7	grey / black
	EHE 6	38 / 50	4	X7	grey
PHC	PHC	–	4	66	anthracite
CAFH	M1	40 / 50	1	X4	black
	M2	40 / 50	2	X4	black
	M3	40 / 50	3	X4	black
	M4	40 / 50	4	X4	black

EHA1



Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
EHA 1	12 / 50	4	67	grey

4

Ordering key

EHA1 3 - 01 _ _ N - 000

Type

Number of channels:
1 channel 1
2 channels 2
3 channels 3
4 channels 4

Mounting bracket:
Without hook 0

Colour:
Grey RAL 7035 1

Cable/Connecting plug:
Straight cable with Dsub plug, 2.5 m . . . . . A
Coiled cable with Dsub plug, 2.5 m/3.5 m . . . . . F

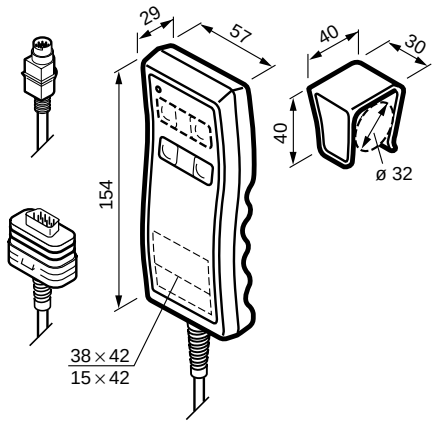
Symbols:
1 channel: arrow up/down 10
2 channels: arrow up/down 20
3 channels: arrow up/down 30
4 channels: arrow up/down 40

Example: EHA1 3 - 01 F 20 N - 000

Accessories

Item	Order number
Hook with sticker	145361-0001

EHA2



Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
EHA 2	12 / 50	5	67	grey

Ordering key

EHA2 [ ] - 01 [ ] [ ] N - 000

Type

Number of channels:
1 channel . . . 1
2 channels . . . 2
3 channels . . . 3
4 channels . . . 4
5 channels . . . 5
1 channel with 3 memory functions . . . A
2 channels with 3 memory functions . . . B
3 channels with 3 memory functions . . . C

Mounting bracket:
Without hook . . . 0

Colour:
Grey RAL 7035 . . . 1

Cable/Connecting plug:
Straight cable with Dsub plug, 2.5 m . . . A
Coiled cable with Dsub plug, 2.5 m/3.5 m . . . F

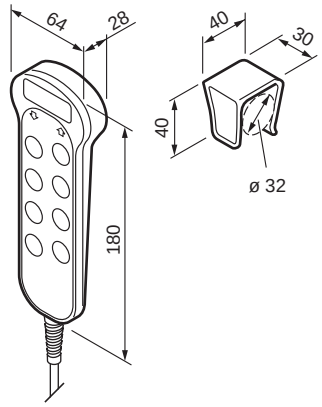
Symbols:
1 channel: arrow up/down . . . 1 0
2 channels: arrow up/down . . . 2 0
3 channels: arrow up/down . . . 3 0
4 channels: arrow up/down . . . 4 0

Example: EHA2 B - 01 F 30 N - 000

Accessories

Item	Order number
Hook with sticker	145361-0001

EHE1



Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
EHE 1	38 / 50	4	X7	grey / black

Ordering key

EHE1 [ ] - [1] [ ] [0] [ ] [N] - [000]

Type

Number of channels:
1 channel 1
2 channels 2
3 channels 3
4 channels 4
1 channel with 3 memory functions (only for TXG) . . . . . A

System of protection:
IPX7 1

Colour:
Black . . . . . A
Grey RAL 7035 . . . . . B

Mounting bracket:
Without hook. 0

Symbols:
1 channel: arrow up/down. 10
2 channels: arrow up/down. 20
3 channels: arrow up/down. 30
4 channels: arrow up/down. 40

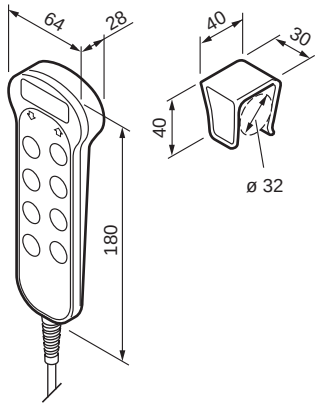
Example: EHE1 4 - 1 B 0 30 N - 000

Accessories

Item	Colour	Order number
Hook with sticker	grey	145361-0001
Hook with sticker	black	145361-0003

Hand switches

EHE6



Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
EHE 6	38 / 50	4	X7	grey

Ordering key

EHE6 [ ] - [1] [B] [0] [ ] [N] - [000]

Type

Number of channels:
1 channel 1
2 channels 2
3 channels 3
4 channels 4
5 channels 5
1 channel with 3 memory functions . . . . . A
2 channels with 3 memory functions . . . . . B
3 channels with 3 memory functions C

System of protection:
IPX7 1

Colour:
Grey RAL 7035 . . . . . B

Mounting bracket:
Without hook 0

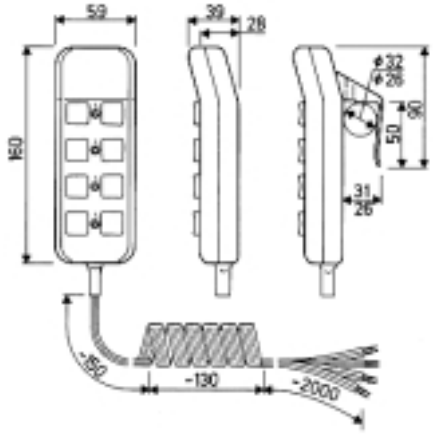
Symbols:
1 channel: arrow up/down 10
2 channels: arrow up/down 20
3 channels: arrow up/down 30
4 channels: arrow up/down 40
5 channels: arrow up/down 50

Example: EHE6 B - 1 B 0 40 N - 000

Accessories

Item	Colour	Order number
Hook with sticker	grey	145361-0001
Hook with sticker	black	145361-0003

PHC



Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
PHC	–	4	66	anthracite

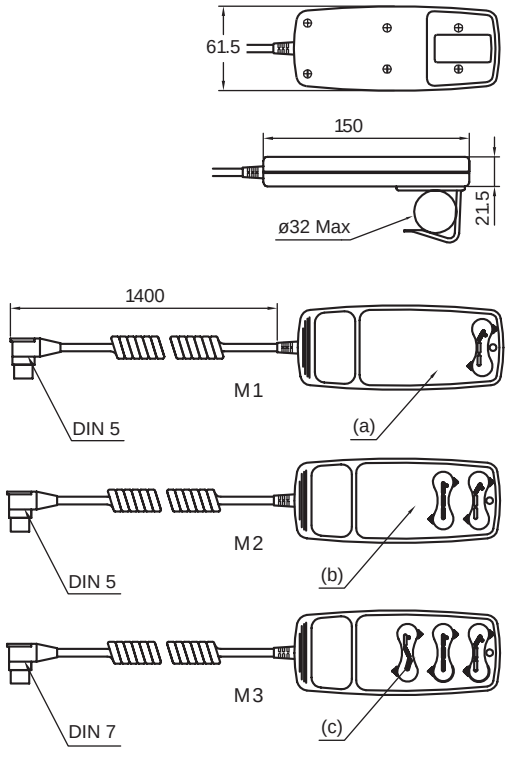
Ordering key

PHC	1	-	1	3	0	4	8	1

Pneum. hand switch

4

CAFH



Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
M1	40/50	1	X4	black
M2	40 / 50	2	X4	black
M3	40 / 50	3	X4	black
M4	40 / 50	4	X4	black

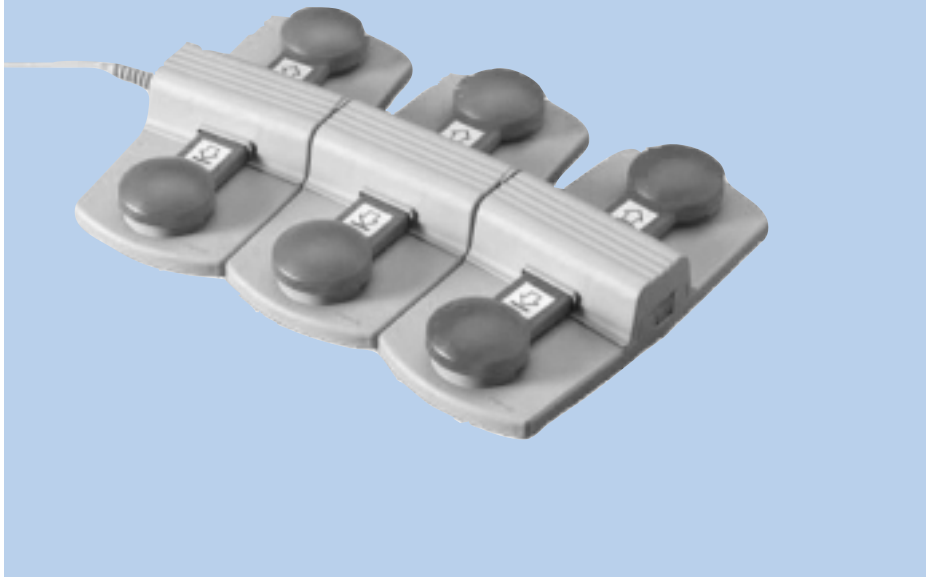
Legend:
(a) = 2 keys
(b) = 4 keys
(c) = 6 keys

Foot switches

With the electrical foot switches (➔ **fig** 20) direct current actuators can be operated. The large-size buttons enable an easy and precise control of the actuators. Depending on the plug the foot switches can be used on different control units.

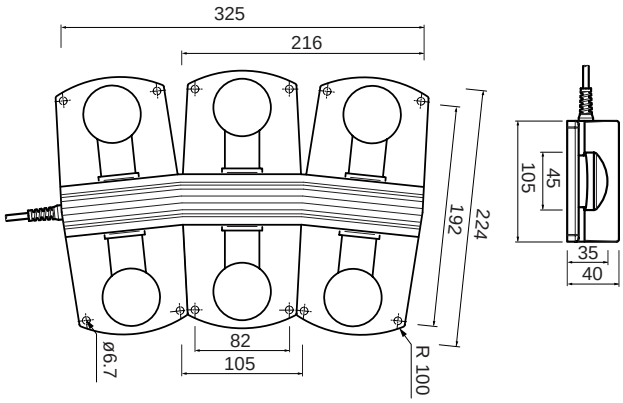
Benefits:
- easy and precise
- flexible and remote operation
- ergonomic design
- different plug options

Fig 20



Foot switches	Type	Operating power	Max. operating motors	Prot. class	Colour
		VDC / mA	n°	IP	
ST	ST	12 / 50	3	X5	blue / anthracite
PFP	PFP	–	1	21	grey / anthracite
CAFHF	F1-DIN5 F1-DIN7	40 / 50 40 / 50	1 1	X4 X4	anthracite anthracite

ST



Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
ST	12 / 50	3	X5	blue / anthracite

Ordering key

ST | | 0 | | - | | | 000 | - | | 00

Type

Product group:
Standard . . . . . F
For microprocessor units (only for KOM2) . . . . . G
For first failure safety units (only for KOM6) . . . . . H

Voltage:
Not used 0

Number of channels:
1 channel 1
2 channels 2
3 channels 3

Cable/Connecting plug:
Straight cable with Dsub plug, 2.5 m 0U
Coiled cable with Dsub plug, 2,5 m . . . . . LU
Straight cable with FCC plug, 2.5 m 0V

Colour:
Charcoal 1
Blue 4

Options:
No options 000

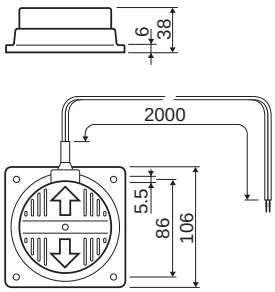
Symbols:
Without symbols 0 0
1-3 channels: arrow up/down (on each pair of keys) . . . . . X 1
3 channels: arrow up/down, M/1, 2/3 (3 memory keys) 3 7

Example: ST | F | 0 | 2 | - | LU | 4 | 000 | - | 37 | 00

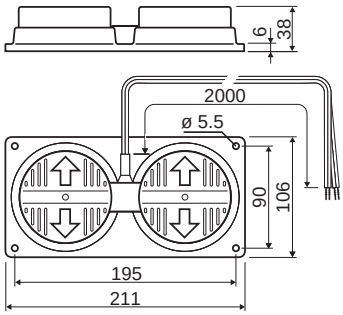
Accessories

Item	Symbol	Order number	Item	Symbol	Order number
Rubber feet		ZBE-135310	Symbol sticker	level down	135309-0008
Threaded expansion inserts		ZBE-521122	Symbol sticker	head up	135309-0009
Symbol sticker	arrow up	135309-0001	Symbol sticker	head down	135309-0010
Symbol sticker	arrow down	135309-0002	Symbol sticker	foot up	135309-0011
Symbol sticker	level up	135309-0007	Symbol sticker	foot down	135309-0012

PFP



PFP 1-130



PFP 2-130

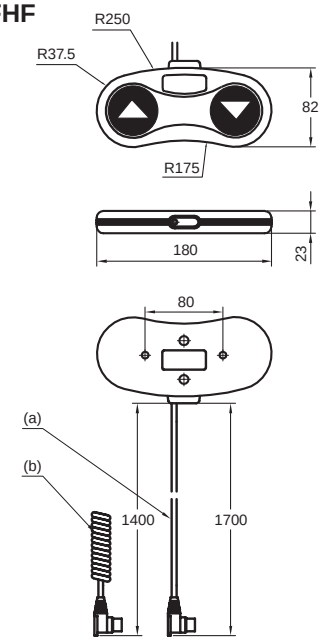
Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
PFP	–	1	21	grey / anthracite

Ordering key

PFP	1	-	1	2	1	5	4	5

Pneum. hand switch

CAFHF



Type	Operating power	Max. operating motors	Prot. class	Colour	Suitable for
	Vd.c. / mA	n°	IP		
F1-DIN 5	40 / 50	1	X4	anthracite	CAFM M1/M2 and CAFC04 M1/M2
F1-DIN 7	40 / 50	1	X4	anthracite	CAFM M3 and CAFC04 M3

Legend:
(a) = straight cable DIN5 or DIN7-pole-plug
(b) = coiled cable DIN5 or DIN7-pole-plug

Ordering key

CAFHF	F1-DIN	

Type

Selection:
F1-DIN 5 5
F1-DIN 7 7

Example: CAFHF F1-DIN 5

Desk switches

The desk switches (➔ **fig** 21) serve for adjusting actuators in desks, chairs, couches and other adjustable furniture. They allow to operate up to 3 actuator functions, also with memory positions, and can easily be fitted to furniture without compromising the design.

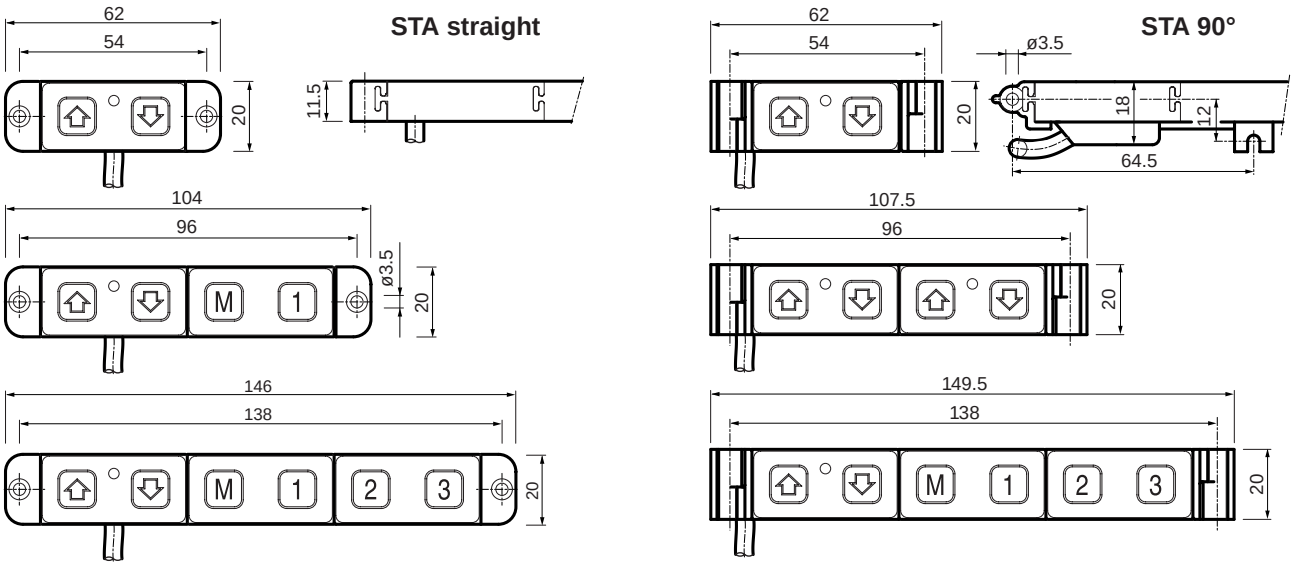
Benefits:
- easy and precise
- stylish design
- memory position

Fig 21

Desk switches	Type	Operating power	Max. operating motors	Prot. class	Colour
		VDC / mA	n°	IP	
ST	ST	12 / 50	3	X0	black
LD	LD	5 / 50	2	32	black
CAHT	T1 T2	40 / 50 40 / 50	1 2	X4 X4	black black

4 Actuation systems
Desk switches

ST



Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
ST	12/50	3	X0	black

Ordering key

ST | | 0 | | - | | 6 | | - | | 00

Type

Product group:
Standard . . . . . A
For microprocessor units (only for KOM2) C

Voltage:
Not used 0

Number of channels:
1 channel 1
2 channels 2
3 channels 3

Cable/Connecting plug:
Straight cable with Dsub plug, 2.5 m . . . . . 0 U
Straight cable with FCC plug, 1.5 m . . . . . WV

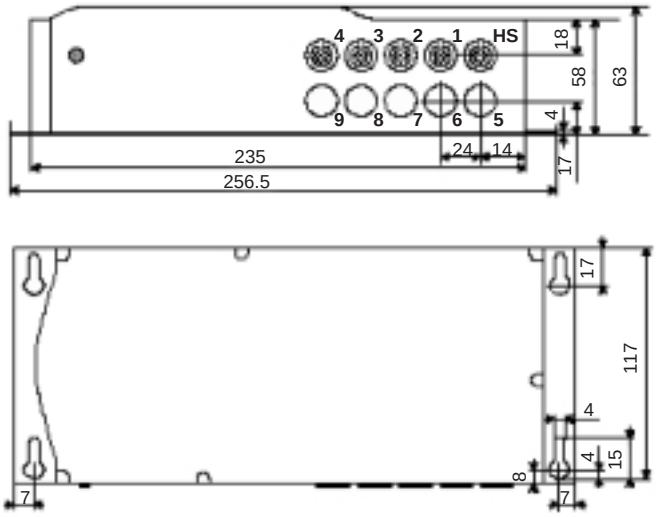
Colour:
Black 6

Options:
No options 0 0 0
Mounted on or underneath desktop, at a 90° angle . . . . . MAU

Symbols:
1-3 channels: arrow up/down (on each pair of keys) X1
3 channels: arrow up/down, M/1, 2/3 (3 memory keys) 3 7

Example: ST A 0 2 - WV 6 000 - X1 00

LD



Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
LD	5/50	2	32	black

Ordering key

LD - 011 - -

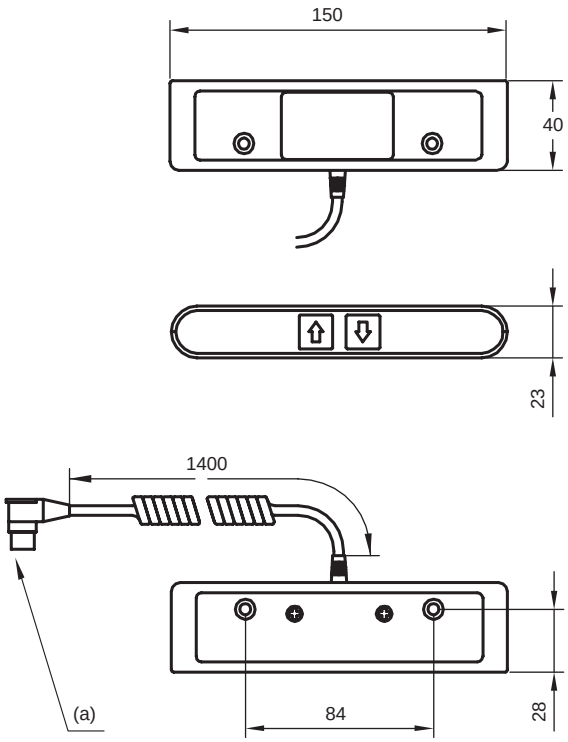
Type

Number of channels:

1-channel, without display, for LD control units . . . . . 001 - 005
1-channel, with memory keys, without display, for LD control units . . . . . 001 - 012
1-channel, with memory keys, with display, for LD control units with FCC plug . . . . . 002 - 016
1-channel, without memory and display, for TXG . . . . . 001 - 006
1-channel, with memory keys, without display, for TXG . . . . . 001 - 008
1-channel, with memory keys, with display, for TXG. . . . . 002 - 014

Example: LD - 011 - 002-016

CAFH



Legend:
(a) = DIN5 or DIN7

Type	Operating power	Max. operating motors	Prot. class	Colour
	Vd.c. / mA	n°	IP	
T1	40/50	1	X4	black
T2	40/50	2	X4	black

Ordering key

CAFHT ☐

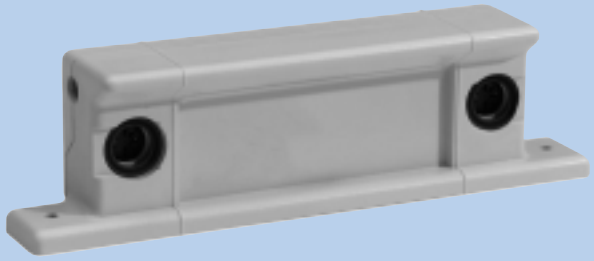
Type

Selection:
DIN 5 . . . . . T1
DIN 7 . . . . . T2

Example: CAFHT T1

Junction box (→ fig 22)

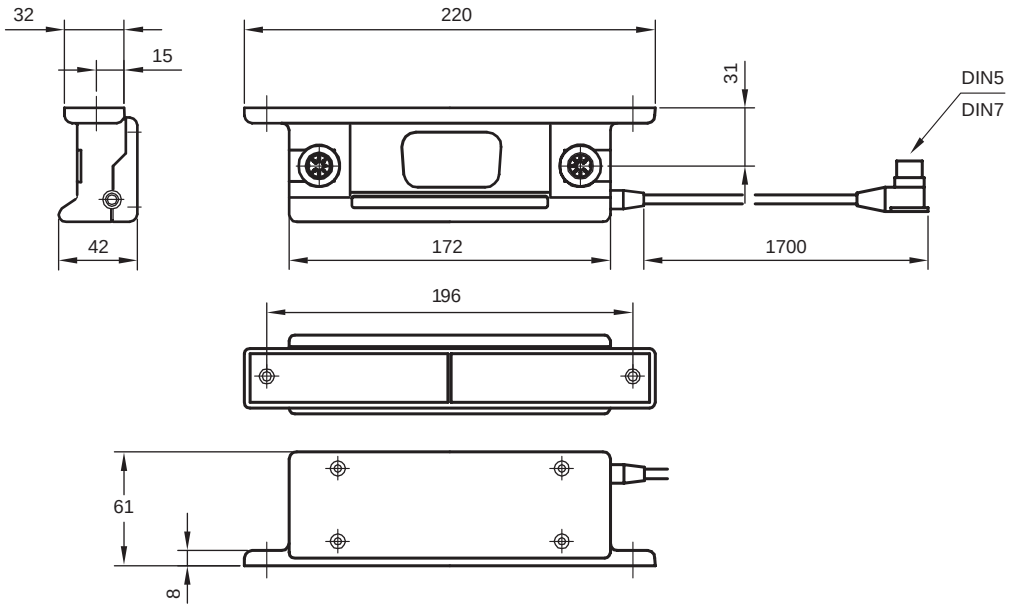
Fig 22



4

Junction box	Type	Operating power	Max. operating connections	Prot. class	Colour
		Vd.c. / mA	n°	IP	
CAFR	DIN5 DIN7	40/50 40/50	2 2	X4 X4	grey grey

CAFR



Type	Operating power	Max. operating motors	Prot. class	Colour	Suitable for
	Vd.c. / mA	n°	IP		
DIN5	40 / 50	2	X4	grey	CAFM M1/M2 and CAFC04 M1/M2
DIN7	40 / 50	2	X4	grey	CAFM M3 and CAFC04 M3

Ordering key

CAFR / ☐

Type

Selection:
For DIN 5-pole S238D
For DIN 7-pole S239D

Example: CAFR / S238D

Easy3

SKF has put together actuator systems with component parts that are integrated to give you optimal safety and unbeatable reliability. Just switch the power on and you are ready for operation. The system can handle the indicated load with ease, but we have taken the extra precaution of building in adjustable end limits and overload protection to safeguard the equipment from impact damage (➔ **fig** 23).

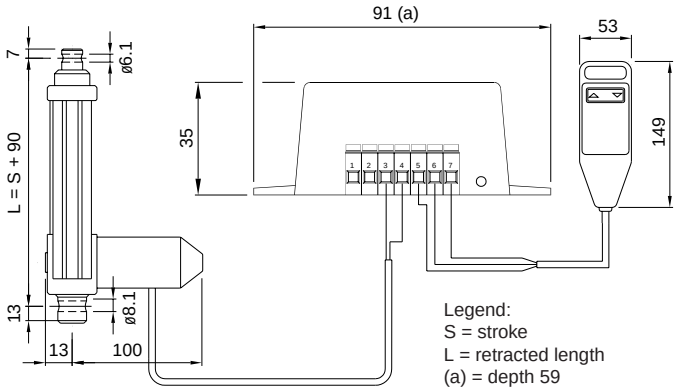
Benefits:
- Plug and play systems
- Easy to order
- Easy to install
- Easy to use

Fig 23

Type	Force push	pull	Speed no load	full load	Stroke (S)	Retr. Length (L)	Voltage
	N		mm/s		mm	mm	V
Easy3-01	500	500	16	10	50 - 200	S + 90	24 DC
Easy3-02	600	600	31	17	50 - 200	S + 215	24 DC
Easy3-03	2000	2000	12	8	100 - 300	S + 150	24 DC
Easy3-04	2000	2000	12	8	100 - 300	S + 150	230 AC
Easy3-05	2000	2000	12	8	100 - 300	S + 150	230 AC
Easy3-10	7000	3000	10	5	100 - 200	S + 190	230 AC
Easy3-11	7000	3000	10	5	100 - 200	S + 190	230 AC
Easy3-12	7000	3000	10	5	100 - 200	S + 190	230 AC
Easy3-13	7000	3000	10	5	100 - 200	S + 190	230 AC

Easy3

Easy3-01



Technical data	Stroke (S)	Linear speed	Max dynamic load	Supply voltage
	mm	mm/s	N	Vd.c.
EASY3-01	50 - 200	16 - 10	500	24

Ordering key

EASY3-01 × ☐

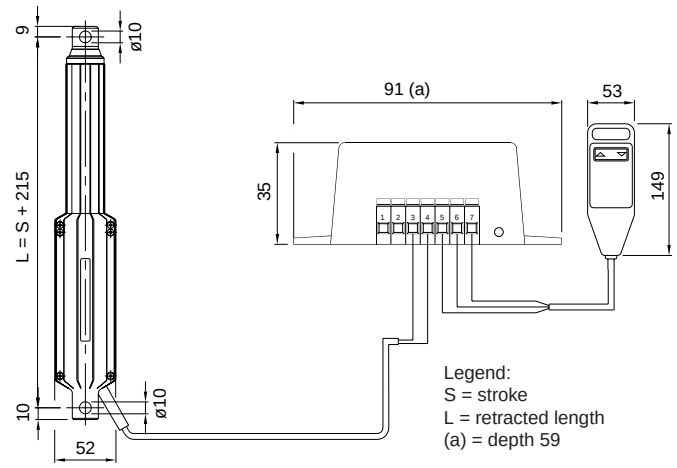
Kit type

Stroke:

50 mm	50
100 mm	100
200 mm	200

Example: **EASY3-01** × **100**

Easy3- 02



Technical data	Stroke (S)	Linear speed	Max dynamic load	Supply voltage
	mm	mm/s	N	Vd.c.
EASY3-02	50 - 200	31 - 17	600	24

Ordering key

EASY3-02 × ☐

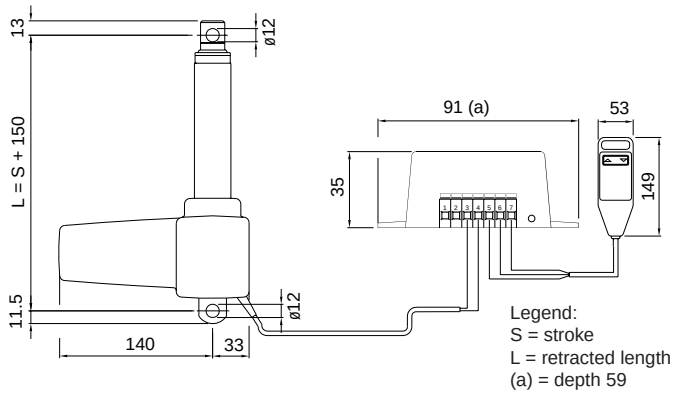
Kit type

Stroke:

50 mm	50
100 mm	100
200 mm	200

Example: **EASY3-02** × **100**

Easy3-03



Legend:
S = stroke
L = retracted length
(a) = depth 59

Technical data	Stroke (S)	Linear speed	Max dynamic load	Supply voltage
	mm	mm/s	N	Vd.c.
EASY3-03	100 - 300	12 - 8	2000	24

Ordering key

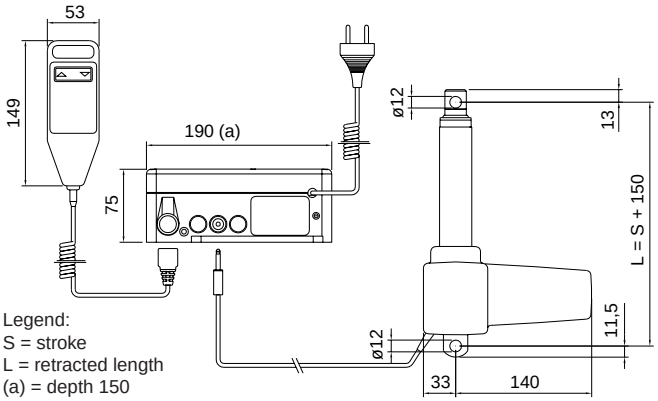
EASY3-03 × ☐

Kit type

Stroke:
100 mm 100
200 mm 200
300 mm 300

Example: **EASY3-03** × **200**

Easy3- 04



Legend:
S = stroke
L = retracted length
(a) = depth 150

Technical data	Stroke (S)	Linear speed	Max dynamic load	Supply voltage
	mm	mm/s	N	Va.c.
EASY3-04	100 - 300	12 - 8	2000	230

Ordering key

EASY3-04 × ☐

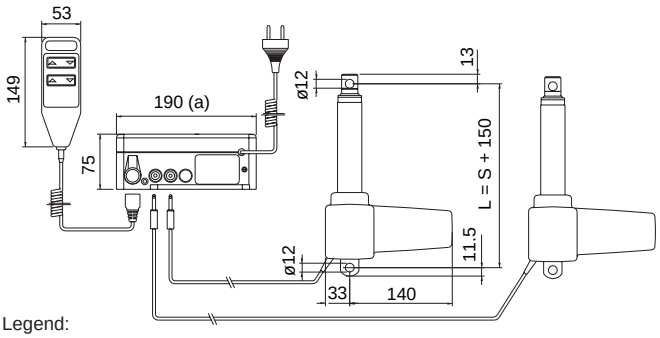
Kit type

Stroke:
100 mm 100
200 mm 200
300 mm 300

Example: **EASY3-04** × **300**

Easy3

Easy3-05



Legend:
S = stroke
L = retracted length
(a) = depth 150

Technical data	Stroke (S)	Linear speed	Max dynamic load	Supply voltage
	mm	mm/s	N	Va.c.
EASY3-05	100 - 300	12 - 8	2000	230

Ordering key

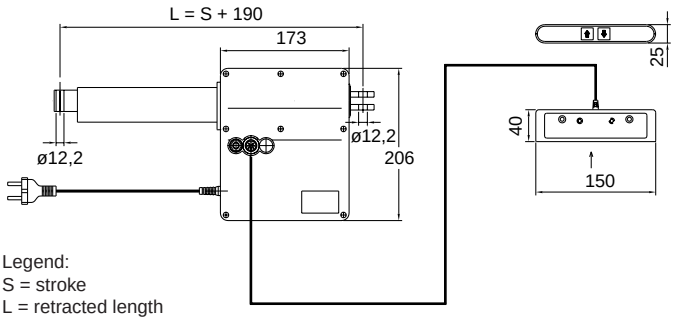
EASY3-05 × ☐

Kit type

Stroke:
100 mm 100
200 mm 200
300 mm 300

Example: **EASY3-05** × **200**

Easy3-10



Legend:
S = stroke
L = retracted length

Technical data	Stroke (S)	Linear speed	Max dynamic load push	Max dynamic load pull	Supply voltage
	mm	mm/s	N		Va.c.
EASY3-10	100 - 200	10 - 5	7000	3000	230

Ordering key

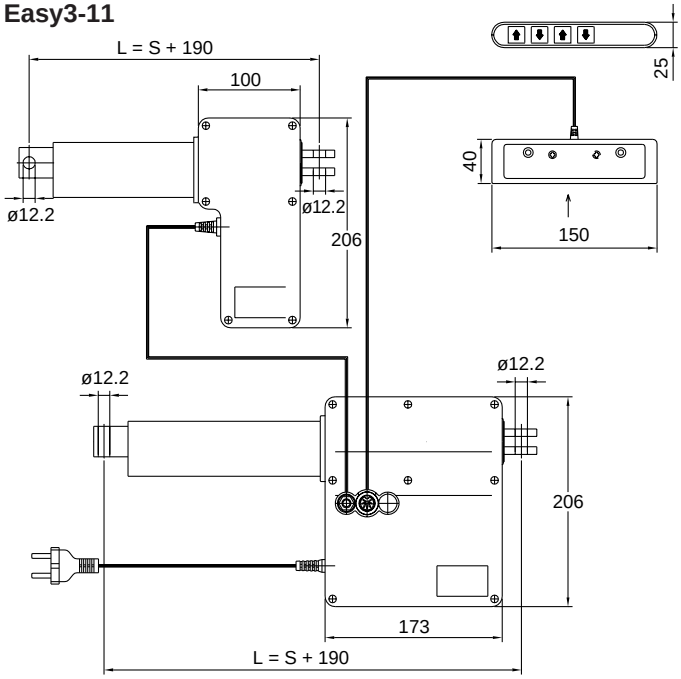
EASY3-10 × ☐

Kit type

Stroke:
100 mm 100
150 mm 150
200 mm 200

Example: **EASY3-10** × **200**

Easy3-11



Legend:
S = stroke
L = retracted length

Technical data	Stroke (S)	Linear speed	Max dynamic load push	pull	Supply voltage
	mm	mm/s	N		Va.c.
EASY3-11	100 - 200	10 - 5	7000	3000	230

Ordering key

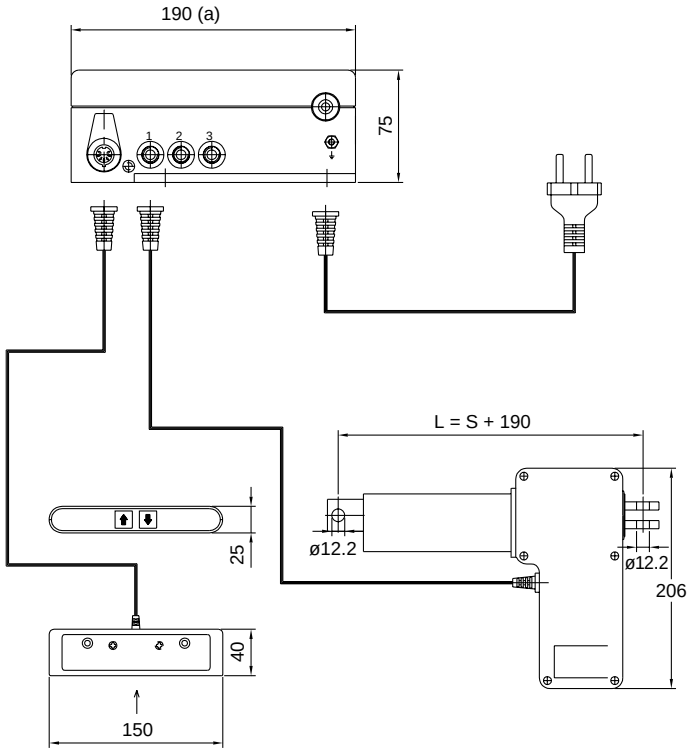
EASY3-11 × ☐

Kit type

Stroke:
100 mm 100
150 mm 150
200 mm 200

Example: EASY3-11 × 150

Easy3-12



Technical data	Stroke (S)	Linear speed	Max dynamic load push	pull	Supply voltage
	mm	mm/s	N		Va.c.
EASY3-12	100 - 200	10 - 5	7000	3000	230

Ordering key

EASY3-12 × ☐

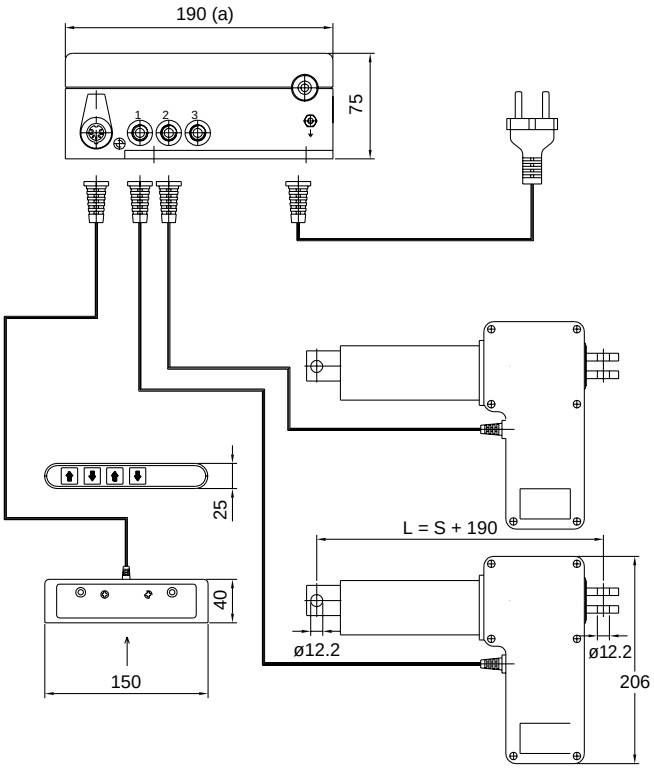
Kit type

Stroke:
100 mm 100
150 mm 150
200 mm 200

Example: EASY3-12 × 200

Legend:
S = stroke
L = retracted length
(a) = depth 150

Easy3-13



Technical data	Stroke (S)	Linear speed	Max dynamic load push	Max dynamic load pull	Supply voltage
	mm	mm/s	N		Va.c.
EASY3-13	100 - 200	10 - 5	7000	3000	230

Legend:
S = stroke
L = retracted length
(a) = depth 150

Ordering key

EASY3-13 × ☐

Kit type

Stroke:
100 mm 100
150 mm 150
200 mm 200

Example: **EASY3-13** × **100**

Spare parts

CAR 22 – Ordering codes for accessories and spare parts

Item	Code (Order number)	Drawings
12 V DC-motor	D12B	Page 194, 267
24 V DC-motor	D24B	Page 194, 267
Limit switch for stroke = 50 mm	CAXB 22×50	Page 266
Limit switch for stroke = 100 mm	CAXB 22×100	Page 266
Limit switch for stroke = 150 mm	CAXB 22×150	Page 266
Limit switch for stroke = 200 mm	CAXB 22×200	Page 266
Limit switch for stroke = 300 mm	CAXB 22×300	Page 266
Proximity switch for CAXB	CAXB Prox. Switch	
Front mounting attachments type Rod-end	575-22	Page 267
Front mounting attachments type Clevis	576-22	Page 267
Rear mounting attachments type Single ear bracket	580-22	Page 266
Rear mounting attachments type Ball-joint bracket	581-22	Page 266
Control unit	CAED 5-24R	
Handset	CAES 31C	

CAR 32 – Ordering codes for accessories and spare parts

Item	Code (Order number)	Drawings
12 V DC-motor	D12C	Page 195, 268
24 V DC-motor	D24C	Page 195, 268
220 V AC-motor	E220C	Page 195, 268
Capacitor value 3 µF, 4 µF, 6 µF, 8 µF, 12 µF	Capacitor xx µF	
Limit switch for stroke = 50 mm	CAXB 32×50	Page 266
Limit switch for stroke = 100 mm	CAXB 32×100	Page 266
Limit switch for stroke = 200 mm	CAXB 32×200	Page 266
Limit switch for stroke = 300 mm	CAXB 32×300	Page 266
Limit switch for stroke = 500 mm	CAXB 32×500	Page 266
Limit switch for stroke = 700 mm	CAXB 32×700	Page 266
Proximity switch for CAXB	CAXB Prox. Switch	
Front mounting attachments type Rod-end	575-32	Page 267
Front mounting attachments type Clevis	576-32	Page 267
Rear mounting attachments type Single ear bracket	580-32	Page 266
Rear mounting attachments type Universal joint	582-32	Page 266
Control unit	CAED 9-24R	
Control unit	CAEN 10R	
Control unit	CAEV 110/120	
Handset matched for CAEN unit	CAES 31B	
Handset matched for CAED or CAEV units	CAES 31C	

CAR 40 – Ordering codes for accessories and spare parts

Item	Code (Order number)	Drawings
24 V DC-motor	D24D	Page 196, 268
220 V AC-motor	E220D	Page 196, 268
Capacitor value 3 µF, 4 µF, 6 µF, 8 µF, 12 µF	Capacitor xx µF	
Limit switch for stroke = 100 mm	CAXB 40×100	Page 266
Limit switch for stroke = 300 mm	CAXB 40×300	Page 266
Limit switch for stroke = 500 mm	CAXB 40×500	Page 266
Limit switch for stroke = 700 mm	CAXB 40×700	Page 266
Proximity switch for CAXB	CAXB Prox. Switch	
Front mounting attachments type Rod-end	575-40	Page 267
Front mounting attachments type Clevis	576-40	Page 267
Rear mounting attachments type Single ear bracket	580-40	Page 266
Rear mounting attachments type Ball-joint bracket	581-40	Page 266

Spare parts

CAP 32 – Ordering codes for accessories and spare parts

Item	Code (Order number)	Drawings
12 V DC-motor	D12B	Page 197, 267
24 V DC-motor	D24B	Page 197, 267
220 V AC-motor	E220C	Page 197, 268
Capacitor value 3 µF, 4 µF, 6 µF, 8 µF, 12 µF	Capacitor xx µF	
Limit switch for stroke = 50 mm	CAXB 22×50	Page 266
Limit switch for stroke = 100 mm	CAXB 22×100	Page 266
Limit switch for stroke = 150 mm	CAXB 22×150	Page 266
Limit switch for stroke = 200 mm	CAXB 22×200	Page 266
Limit switch for stroke = 300 mm	CAXB 22×300	Page 266
Limit switch for stroke = 500 mm	CAXB 32×500	Page 266
Limit switch for stroke = 700 mm	CAXB 32×700	Page 266
Proximity switch for CAXB	CAXB Prox. Switch	
Front mounting attachments type Rod-end	575-22	Page 267
Front mounting attachments type Clevis	576-22	Page 267
Rear mounting attachments type Single ear bracket	580-22	Page 266
Rear mounting attachments type Universal joint	582-32	Page 266

CARN 32 – Ordering codes for accessories and spare parts

Item	Code (Order number)	Drawings
Limit switch for stroke = 50 mm	CAXB 32×50	Page 266
Limit switch for stroke = 100 mm	CAXB 32×100	Page 266
Limit switch for stroke = 200 mm	CAXB 32×200	Page 266
Limit switch for stroke = 300 mm	CAXB 32×300	Page 266
Limit switch for stroke = 500 mm	CAXB 32×500	Page 266
Limit switch for stroke = 700 mm	CAXB 32×700	Page 266
Proximity switch for CAXB	CAXB Prox. Switch	
Front mounting attachments type Rod-end	575-32	Page 267
Front mounting attachments type Clevis	576-32	Page 267
Rear mounting attachments type Single ear bracket	580-32	Page 266
Rear mounting attachments type Universal joint	582-32	Page 266

CCBR 32 – Ordering codes for accessories and spare parts

Item	Code (Order number)	Drawings
Limit switch for stroke = 50 mm	CAXB 32×50	Page 266
Limit switch for stroke = 100 mm	CAXB 32×100	Page 266
Limit switch for stroke = 200 mm	CAXB 32×200	Page 266
Limit switch for stroke = 300 mm	CAXB 40×300	Page 266
Limit switch for stroke = 500 mm	CAXB 40×500	Page 266
Limit switch for stroke = 700 mm	CAXB 40×700	Page 266
Proximity switch for CAXB	CAXB Prox. Switch	
Front mounting attachments type Rod-end	575-40	Page 267
Front mounting attachments type Clevis	576-40	Page 267

CAT 33 – Ordering codes for accessories and spare parts

Item	Code (Order number)	Drawings
12 V DC-motor (cylindrical motor)	C12C	Page 172, 176
24 V DC-motor (cylindrical motor)	C24C	Page 172, 176
12 V DC-motor (flat motor)	D12C	Page 172, 176, 268
24 V DC-motor (flat motor)	D24C	Page 172, 176, 268
220 V AC-motor (cylindrical motor)	E220C	Page 172, 176, 268
Capacitor value 3 µF, 4 µF, 6 µF, 8 µF, 12 µF	Capacitor xx µF	
Limit switch for any stroke	CAXC33	Page 267
Front mounting attachments type Rod-end	575-22	Page 176, 267
Front mounting attachments type Clevis	576-22	Page 176, 267
Rear mounting attachments type Single ear bracket	580-22	Page 176, 266
Rear mounting attachments type Universal joint	582-32	Page 176, 266

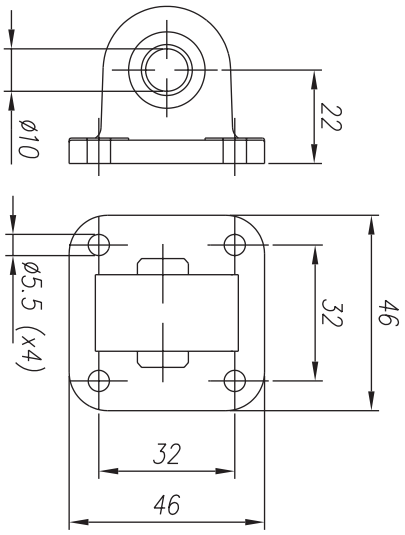
CAT 33H – Ordering codes for accessories and spare parts

Item	Code (Order number)	Drawings
12 V DC-motor (cylindrical motor)	C12C	Page 174, 176
24 V DC-motor (cylindrical motor)	C24C	Page 174, 176
12 V DC-motor (flat motor)	D12C	Page 174, 176, 268
24 V DC-motor (flat motor)	D24C	Page 174, 176, 268
220 V AC-motor (cylindrical motor)	E220C	Page 174, 176, 268
Capacitor value 3 µF, 4 µF, 6 µF, 8 µF, 12 µF	Capacitor xx µF	
Limit switch for any stroke	CAXC33	Page 267
Front mounting attachments type Rod-end	575-22	Page 176, 267
Front mounting attachments type Clevis	576-22	Page 176, 267
Rear mounting attachments type Single ear bracket	580-22	Page 176, 266
Rear mounting attachments type Universal joint	582-32	Page 176, 266

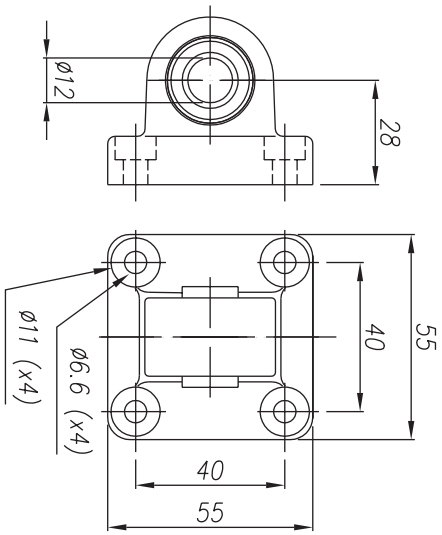
CAT 32B – Ordering codes for accessories and spare parts

Item	Code (Order number)	Drawings
12 V DC-motor (cylindrical motor)	C12C	Page 170, 176
24 V DC-motor (cylindrical motor)	C24C	Page 170, 176
12 V DC-motor (flat motor)	D12C	Page 170, 176, 268
24 V DC-motor (flat motor)	D24C	Page 170, 176, 268
220 V AC-motor (cylindrical motor)	E220C	Page 170, 176, 268
Capacitor value 3 µF, 4 µF, 6 µF, 8 µF, 12 µF	Capacitor xx µF	
Limit switch for stroke = 50 mm	CAXB 32×50	Page 266
Limit switch for stroke = 100 mm	CAXB 32×100	Page 266
Limit switch for stroke = 200 mm	CAXB 32×200	Page 266
Limit switch for stroke = 300mm	CAXB 40×300	Page 266
Limit switch for stroke = 500mm	CAXB 40×500	Page 266
Limit switch for stroke = 700mm	CAXB 40×700	Page 266
Proximity switch for CAXB	CAXB Prox. Switch	
Front mounting attachments type Rod-end	575-40	Page 176, 267
Front mounting attachments type Clevis	576-40	Page 176, 267
Rear mounting attachments type Single ear bracket	580-40	Page 176, 266
Rear mounting attachments type Universal joint	582-32	Page 176, 266

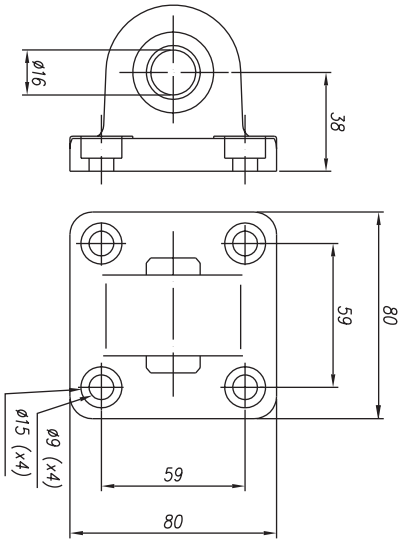
580-22



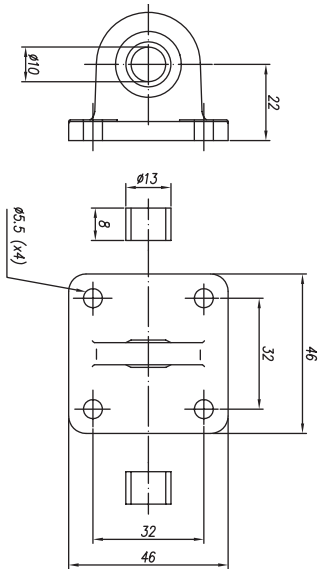
580-32



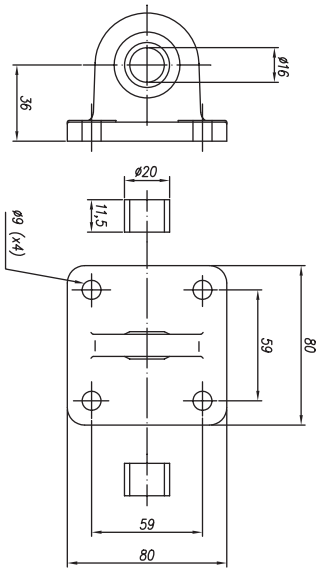
580-40



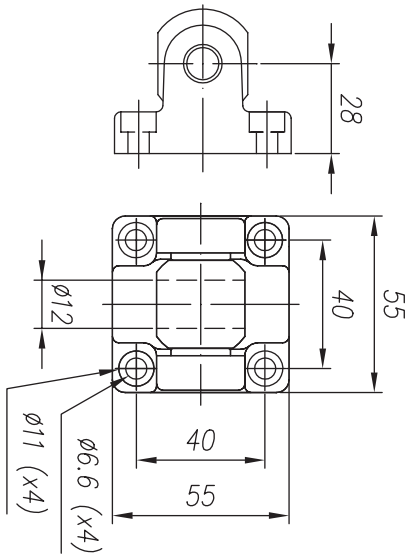
581-22



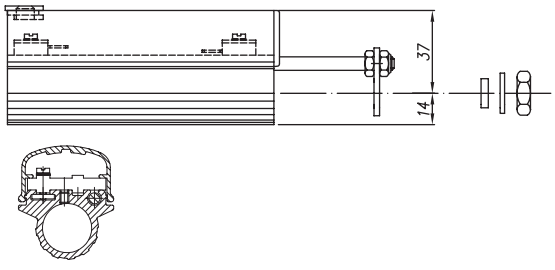
581-40



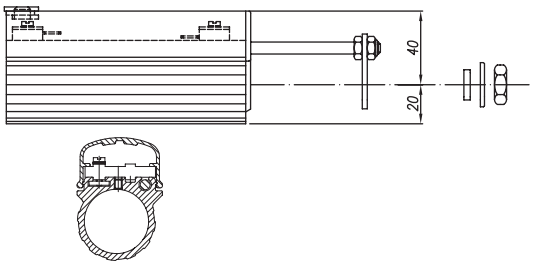
582-32



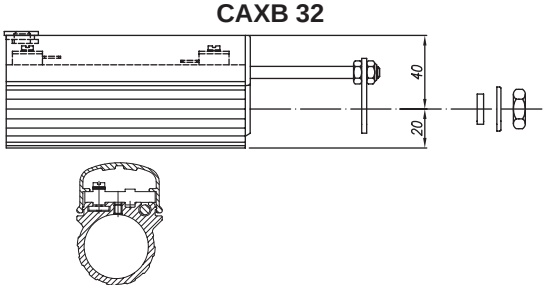
CAXB 22



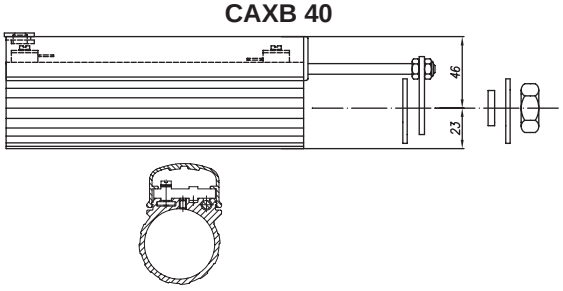
CAXB 32B



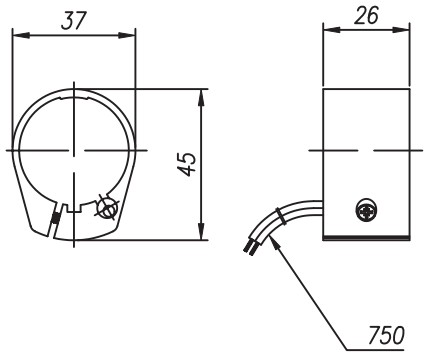
CAXB 32



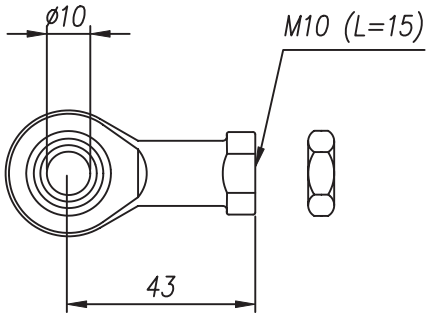
CAXB 40



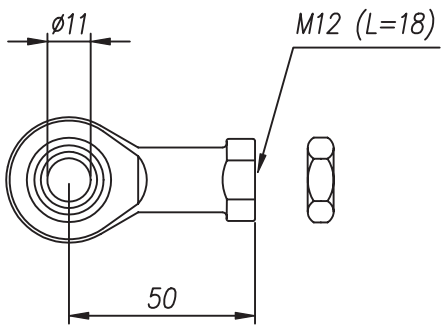
CAXC 33



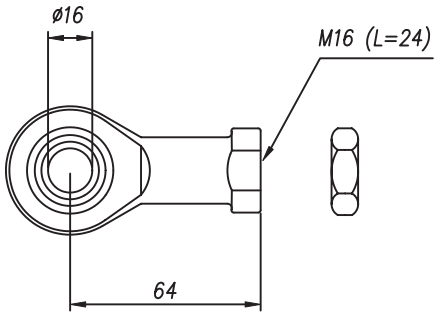
575-22



575-32



575-40



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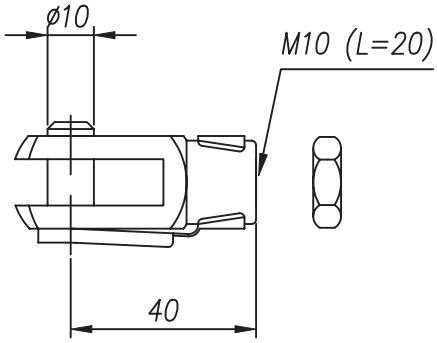

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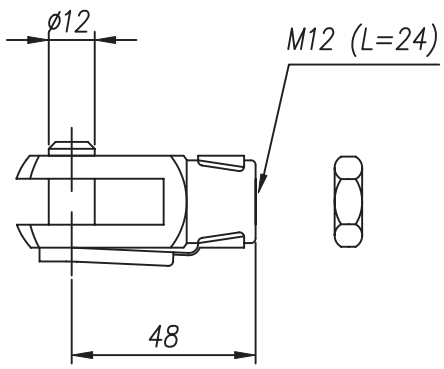

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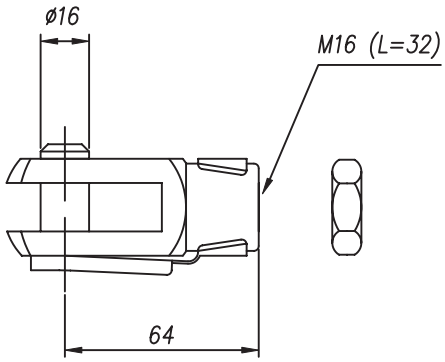

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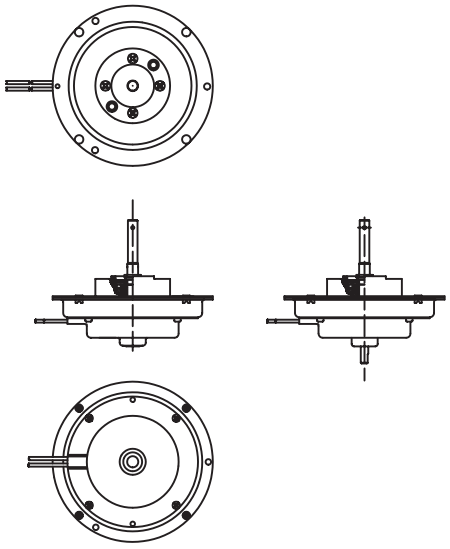
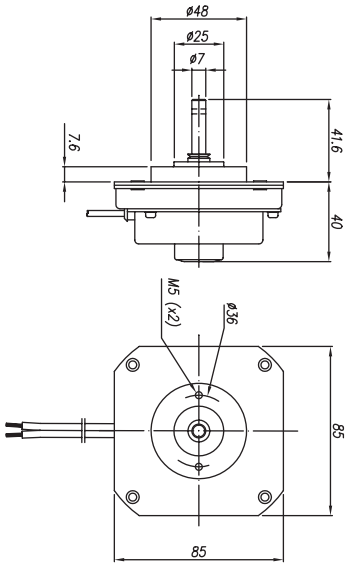


D12B/D24B



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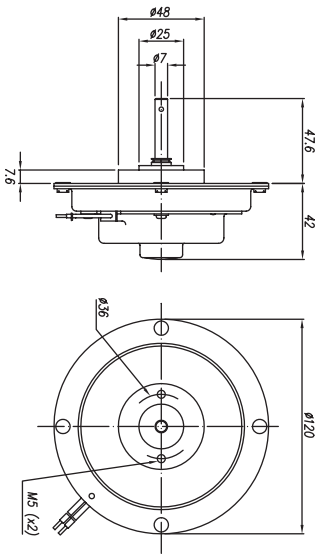

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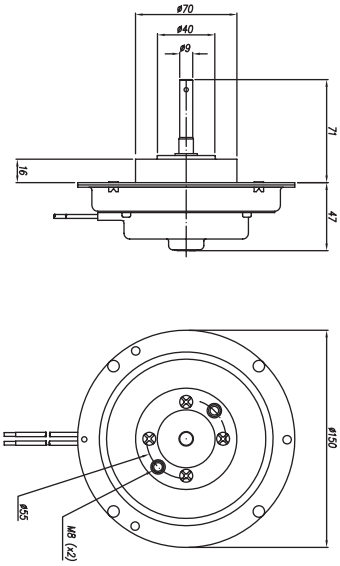

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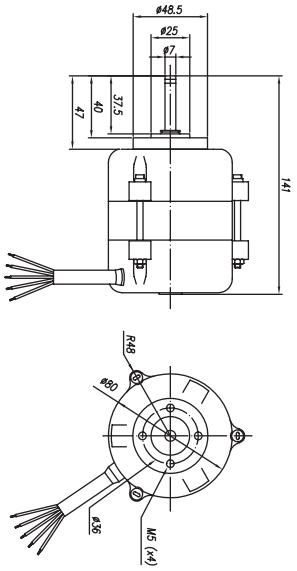

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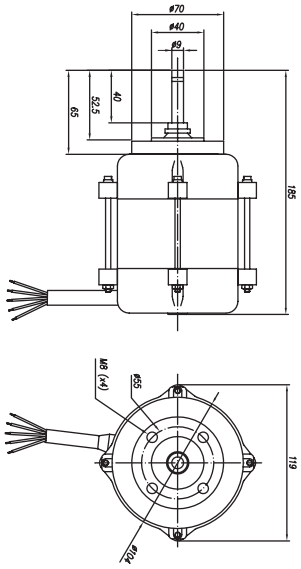
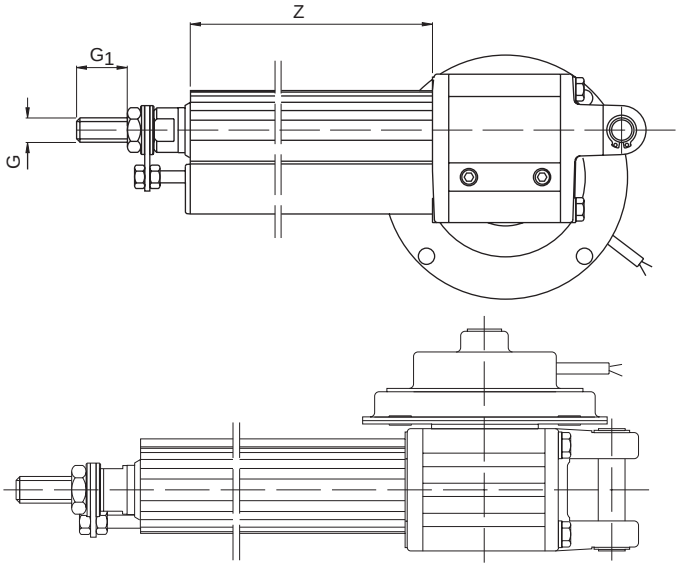


CAXB



Notes

Straighten things out

Linear speed
Linear speed is the term used when we talk about the distance, in millimetres, the tube in an actuator moves linearly over a given period of time (mm/sec.), moving a load from its starting point to a new position. The speed can vary in different ways, depending, for example, on the motor employed. Actuators with direct current (DC) motors have a speed variation directly proportional to the load on the device. That is to say, the larger the load, the lower the speed and vice versa. Actuators with alternating current (AC) motors move at a constant speed, which is not affected by the load on the actuator. Other factors affecting speed include ambient temperature and how well or poorly the actuator is integrated within an application. An actuator integrated in such a way that it is subject to uneven loads wears abnormally, which results in increased friction forces and decreased speed.

Dynamic load
Maximal dynamic load refers to the maximum total weight or mass the actuator can move. Often, the decisive factor for maximal load is the size of the motor and the gearing employed. When an actuator is subject to loads exceeding the maximum stated value, the device simply stops.
Certain actuator types have an integral mechanical safety device similar to a slip-clutch, designed to protect the motor and gears from damage. Electrical limit switches are another alternative. These protect the actuator from damage caused by excessive electrical current. All such safety devices are part of an operating system and it is important to be aware of them when using SKF actuators with other operating equipment.

Static load (value not available in this brochure)
Maximal static load refers to the weight or mass that an actuator can be subjected to when standing still without causing permanent damage or causing the actuator to start “going backwards”. Subjecting an actuator to loads in excess of stated values can risk permanent deformation to some part of the actuator. N.B. Remember that in many applications and installations, it is not the weight applied directly but rather the load caused by leverage or similar forces acting on the actuator that are the decisive factor. An actuator is strongest in its shortest position and weakest in its outermost, most extended position.

DC motors
An electric motor powered by direct current electricity (12-48V DC) that can be run on batteries. These motors are suitable for use in situations where you want to be able to move the product easily and do not want a cable in the way. The speed of a DC motor is directly proportional to the load, i.e., the motor moves slowly under maximum load and fastest when run with no load at all. In many applications the actuator works both pushing and pulling, which means that the load works to “assist” in one direction and “resist” in the other. Consequently, considerable speed variations can arise.

AC motors
An electric motor powered by alternating current electricity (230-400V AC), which requires an electrician for its connection. Start-up properties can be improved with various accessories and different methods of connection. There are many standard accessories available for control and regulation of an AC motor. An AC motor is best suited to non-mobile products, i.e., fixed installations, often in industrial environments. An actuator with an AC motor is less sensitive to load variations and maintains virtually the same speed regardless of load. The normal working temperature for this type of motor is 70 °C. An AC motor has few moving parts that wear and is consequently rugged and has a long life span.

Retracted length
“Retracted length” is an expression for the shortest distance between the two fixed points on an actuator when the actuator is in its innermost position. The dimensions given reflect a measurement from the centre of the mounting holes, which means that the actuator requires a few millimetres beyond the given “retracted length” in order to fit. Remember that very few actuators are symmetrical. Thus it is important to note other dimensions as well for optimum fit and integration of the actuator. An actuator should always be mounted, insofar as is possible, so that it works linearly over its entire working range.

Duty factors
A technical term expressing how long a motor can handle non-stop operation before it becomes overheated or otherwise damaged. It should be noted that “Duty Factor”, whether expressed as a percentage or time, varies depending on the working load for the motor. The duty-cycle tells how often an actuator will be in operation within an application and the amount of time between operations. Because of the power lost due to inefficiency dissipated as heat, the actuator component with the lowest allowable temperature – usually the motor – sets the duty-cycle limit for the complete actuator. Although, there is some heat loss from friction in the gearbox and by ball-screw and acme-screw drive systems. An example of a duty cycle calculation: assume an actuator runs for 10 seconds cumulatively, up and down, and then does not run for another 40 seconds. The duty cycle is 10/(40+10), or 20%.

Temperature
Ambient work site temperature can be highly significant when making a choice between different actuators. Extreme heat or cold can reduce the working capacity of the equipment. If the equipment is used in temperatures as low as about – 20°C, for instance, the lubricant can harden and impair the efficiency of the motor. If the temperatures climb up towards 50°C, for instance, the grease can melt so that it drains away from the screw system, resulting in reduced or eliminated lubricant effect and increasing the risk of overheating in the motor.

Power consumption
An expression of how much electricity the motor uses when working. For DC motors the power consumption is directly proportional to the load, and for AC motors the power consumption is constant. With alternating current, power consumption is low, so simple cabling and other inexpensive accessories suffice. Installation is easy and the components are readily available. With battery operation, it is often adequate to use a small, lightweight battery that does not require much space and is relatively inexpensive.

Supply voltage
Supply voltage is a measure of the voltage supplying a system, regardless of whether it employs AC or DC motors.

Properties of the sliding screw
Sliding screws are manufactured from rolled steel and the nut is made of plastic. This is a relatively cost effective design with favourable properties: plastic and metal work well together without binding. Also, actuators incorporating sliding screws usually offer a price advantage over those built around other types of screws. The sliding screw works very quietly, which means that it is well suited for office environments, hospitals, etc. Another significant advantage is the high friction coefficient in the sliding screw. This design is particularly well suited for actuators used in applications where they should be self locking, i.e., will not begin "moving backwards" under the weight of the load. For instance, when using the actuator to drive vertically adjustable tables, a sliding screw design allows you to put heavy loads on the surface of the table without changing its vertical position. In short, this means that no additional locking mechanism or brake will be necessary to keep the actuator in position when it is not in operation (however, e.g., in extreme vibrating application types additional arrangements may be needed to prevent back driving).

Properties of ball screws
The ball screws incorporated in SKF actuators are manufactured entirely of steel and equipped with a row of bearings located in a closed system between the nut and screw (→ **figs** 24 **and** 25). The design yields extremely low friction coefficients between the nut and the screw, because of the rolling contact between the balls, the nut and raceway (similar to ball bearings). Wear is significantly reduced compared with a sliding screw, which results in a life span 10 times longer for a ball screw under the same working conditions. The durability of the screw also means that it tolerates extreme loads as well as high duty cycles. Thanks to its low frictional resistance, the ball screw can maintain a very low operating temperature. As a consequence, the ball screw is particularly well suited in situations where it is required to operate over long periods at high speeds. High efficiency is one of the main characteristics of ball screws. Thanks to this high efficiency, it is possible to use a motor half the size compared to a sliding screw design. This means that, as a user, you obtain a more economical solution. An actuator based on a ball screw has minimal play, and consequently its precision is significantly higher in applications where positioning and repetitive precision are important.

Self-locking
This property of the actuator means that it will not continue to move under the weight of the load after it has been switched off. The self-locking ability depends on the total efficiency of the actuator. If an actuator is not self locking the function can be obtained by using a brake. On DC-motors, the motor has to be short circuited. Self-locking load can under certain circumstances not be completely ensured on all actuator models due to the type of application being run (e.g., high vibration levels)!

Alignment
It is important that the product is mounted properly from the beginning. If the actuator is improperly installed, normal operation may cause significant damage, which can in turn result in poor performance or even a complete breakdown. Remember, therefore, to carefully follow the accompanying mounting instructions. Naturally, you can turn to your supplier or distributor whenever you have questions about our products.

Fig 24

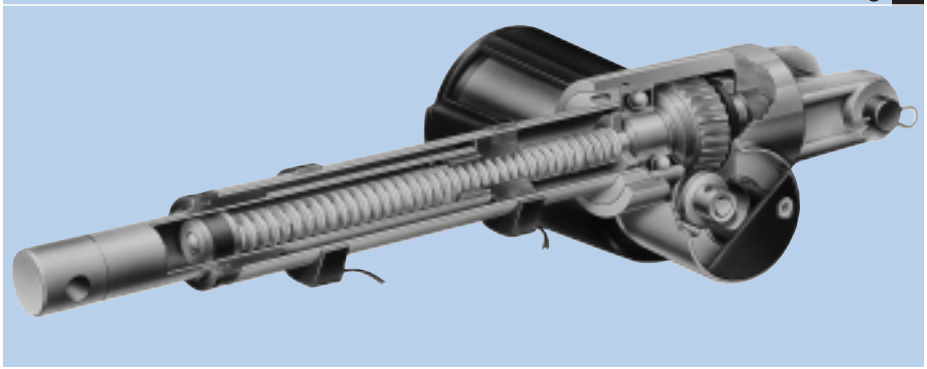
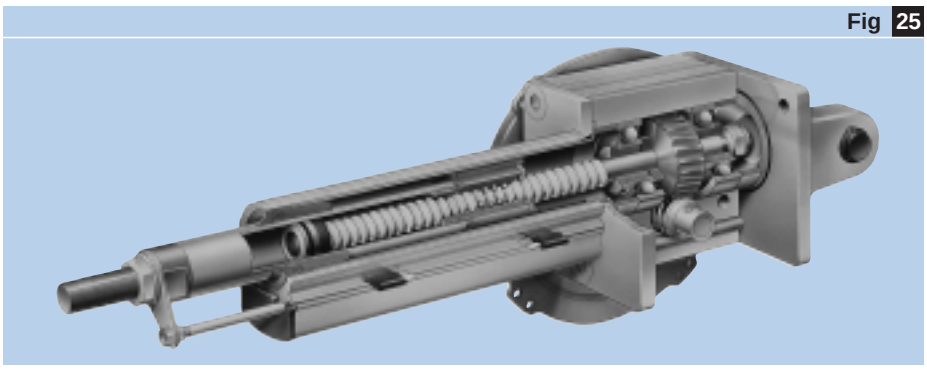


Fig 25



Important considerations

Installation and operation
A user instruction manual and electrical wiring diagram always accompany the actuator on delivery. Make sure that the instructions contained in the package are always carefully followed and do not hesitate to turn to your supplier or distributor should you have any questions.

Maintenance
An actuator does not require any special maintenance on the part of the user. The only thing you should remember to do regularly is to put a drop of oil on the extension tube. This should be done to maintain the seal between the protection tube and the extension tube. A well-functioning sealing washer protects the actuator from moisture and dust. By observing this simple measure, you considerably extend the life span of your actuator.

Safety
Many actuators have a back-up nut that comes into play and starts working should the regular nut rupture or break down. For reasons of safety, the actuator may never be subject to loads greater than those stated in our instructions. If overloaded, the actuator forces the motor to work harder, which can cause the motor to burn out in a short time. With extreme loads, the motor can be damaged after just a couple of minutes. Overloading can even cause mechanical defects, such as damage to the nut, screw and gears, which can later cause the device to fail to deliver its stated performance and reduce its life span.

Warning
The most important thing to remember when installing actuators is not to exceed the max. load values stated for the actuator in question. Actuators may never be subjected to radial forces. An actuator is frequently used under maximum capacity and poses a significant risk of injury by crushing in circumstances where safety equipment is not in place and where the actuator is unprotected and accessible. An actuator used improperly can be dangerous.

Troubleshooting
If the actuator does not function:
1a Measure the voltage between the actuator and the motor connection block.
1b If there is current and the motor is not running - the motor is faulty.
1c If there is no current - the control unit is faulty.
For further help and information, contact your dealer.

Glossary

Anti-pinching (electric)
A safety option that is available on certain SKF actuators. It shuts-off the motor when an external force is applied in the opposite direction to the direction of travel.

Anti-pinching (mechanical)
This safety mechanism allows the actuator to push but not pull or pull but not push. This feature is designed to prevent injury to persons due to being trapped by the force of the actuator.

Back up nut
A nut, usually metal, of greater anti-shear strength than the drive nut and which only makes contact with the threads of the spindle when the threads of the drive nut fail.

Emergency lowering
The emergency lowering safety feature enables the actuator to be lowered in the event of a power failure or malfunction. This option is used in most medical & care applications.

Encoder
A rotary or linear sensing device that, when connected to a control unit, can be used to determine the position of an electric linear actuator.

First failure safety
First Failure Safety is a control system utilising redundant micro processors in which one processor monitors the functions of the other and shuts down the system if a malfunction in the microprocessor occurs.

Hall sensor
A sensor whose output changes based on changes in magnetic flux. Typically used for RPM, position, or current measurement.

IP protection
This standard describes a system for classifying the degrees of protection required by the enclosures of electrical equipment. Developed by the European Committee for Electro-technical Standardization (CENELEC), these standards are designed to numerically rate an electrical product based on the level of protection its enclosure provides.

Limit switches
A switch used to limit motion or travel in a particular direction. Mechanical devices that when activated open or close an electrical contact. When the contact is closed voltage will flow through the switch, when open no voltage will flow through the switch. Limit switches come in various physical sizes and configurations and can be mounted internally or externally.

Potentiometer
The potentiometer is a displacement transducer. It incorporates the sensor and transducer function into one. A typical potentiometer consists of a uniform coil of wire of an element of high resistance such as carbon, platinum or conductive plastic. This uniform coil makes up the resistive element of the potentiometer whose resistance is proportional to its length.

Pull force
The maximum retracting force that an electric linear actuator can produce in Newton (N). Some SKF actuators do not produce equal push and pull forces and others do not permit pull force at all.

Push force
The maximum extending force that an electric linear actuator can produce in Newton (N). Some SKF actuators do not produce equal push and pull forces and others do not permit pull force at all.

Stroke length
Describes the length in millimetres that an electric linear actuator will extend or retract. Most standard products are available in increments of 50 mm or 100 mm. Customer specific lengths are available, minimum order quantities apply.

Thermal protection
Protects drives and control units from overheating. A device that signals when an electrical assembly becomes too hot. The signal usually causes the shut-off of the electrical device.

Notes

Positioning systems

General

Positioning systems are compact and economic complete solutions. The assortment ranges from compact slides without drives through to highly dynamic, multi-axis systems with linear motor drive. SKF offers the following positioning systems:
Miniature slides (→ **fig** 1);
Standard slides (→ **fig** 2);
Compact cross tables (→ **fig** 3);
Precision slides without drive (→ **fig** 4);
Dovetail slides (→ **fig** 5);
Linear ball bearing slides (→ **fig** 6);
Precision slides with drive (→ **fig** 7);
Profile rail slides (→ **fig** 8);
Complete systems (→ **fig** 9);

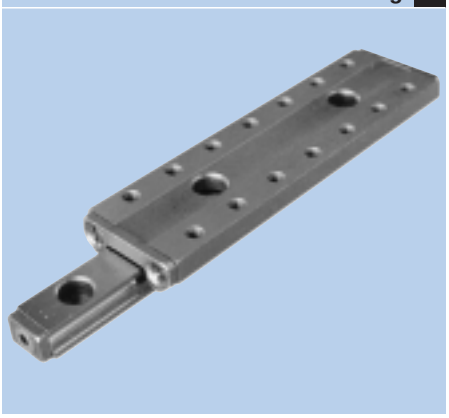
LZM miniature slides
With the new LZM miniature slide SKF offers the ideal solution for linear motion applications for short strokes and compact boundary dimensions.

The use of miniature slides has increased in medical applications, measurement technologies, pneumatics, micro mechanics and micro electronics assembly, semiconductor manufacturing and fibre optics. The different miniature slide components meet the highest precision standards; LZM miniature slides feature high running accuracy and smooth motion.

The LZM are manufactured with all stainless steel components. Optimised hardness enables long endurance life and high performance within compact boundary dimensions.

The miniature slides have been designed to ensure high system stiffness and precision guidance. Running accuracies of 2 µm over a stroke of 100 mm are attainable depending on the particular application. Ease of installation is another advantage of the LZM miniature slides. Unlike cross roller systems using 4 rails and cages to be assembled on the production floor, the LZM slide provides a complete slide that can simply be bolted into place without the use of precision devices to set preload.

Fig 1



Every application provides new challenges for the modern designer. SKF will modify existing designs to meet your specific technical requirements.

Advantages for LZM miniature slides:
- Compact design
- High carrying capacity
- Very good running accuracy
- Smooth running
- High stiffness
- Easy assembly

Dimensions see table on **page 281**

Operating precision (→ **table** 1)

Comparison of the different positioning components and systems.

Table 1

Operating precision (µm)	Guiding systems	Driving systems	Actuation systems	Positioning systems
0.1 – 1	Precision rail guides, Standard slides	Roller screws, Linear motors		Standard drives or linear motors with all guiding systems
1 – 10	Linear ball bearings, Profile rail guides	Ball screws, Linear motors		Standard drives or linear motors with all guiding systems
10 – 100	Profile rail guides, Speedi-Roll	Ball screws	Electro-mechanical actuators	
100 – 1000	Speedi-Roll		Electro-mechanical actuators	

GCL standard slides
Slide top and base of steel. The slides are provided with standard patterns of mounting holes. The slide top carries tapped holes, the base plate counterbored holes for cylindrical screws to DIN 912. The slides are fitted with SKF precision rail guides with crossed roller units. Internal stops serve as stroke limit.

Dimensions see table on **page 284**

GCLA standard slides
Slide top and base of black anodised aluminium. In other respects, the design corresponds to that of the GCL slides except that they are lower in height.

Dimensions see table on **page 286**

RM standard slides
Especially small design. Slide top of steel, guidance via SKF precision rails with double-sided centre rail and crossed roller units. Internal stops serve as stroke limits.

Dimensions see table on **page 288**

Fig 2

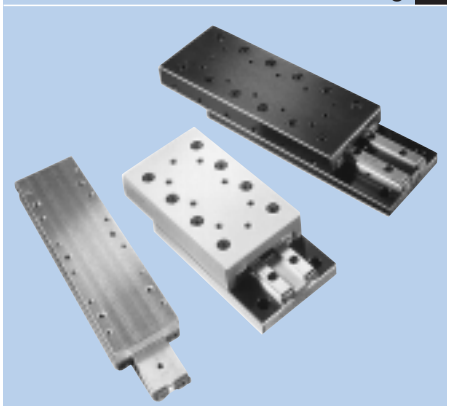
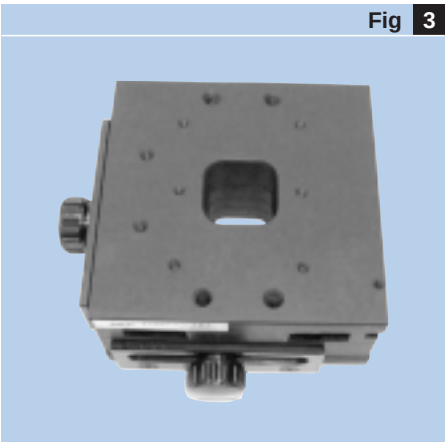


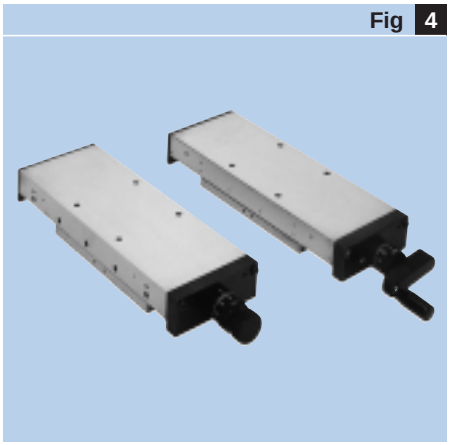
Fig 3



TO and TS compact cross tables
Table top, centre and base of black anodised aluminium with central viewing hole. The slides are fitted with SKF precision rail guides incorporating crossed roller units. The TO design does not have a drive but is provided with one lateral locking device per axis. The TS design has a micrometer attachment that is spring-loaded in one direction. In addition one lateral locking device is fitted per axis.

Dimensions see table on **page 304**

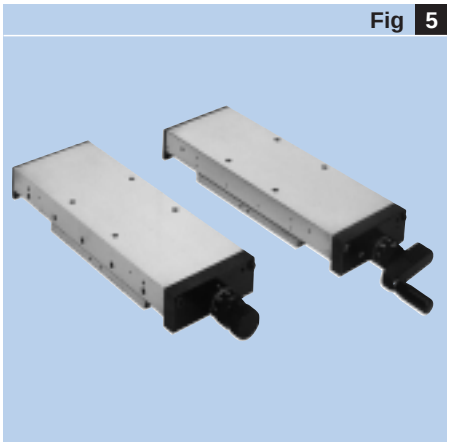
Fig 4



RSM and RSK precision slides
Slide top and base of grey cast iron. The slides are provided with standard patterns of mounting holes. The slide top carries tapped holes, the base plate counterbored holes for cylindrical screws to DIN 912. They are fitted with SKF precision rail guides incorporating crossed roller units. The slides have a lead screw drive. The RSM design has a micrometer knurl with a vernier ring, while the RSK design is fitted with a hand crank.

Dimensions see table on **page 302**

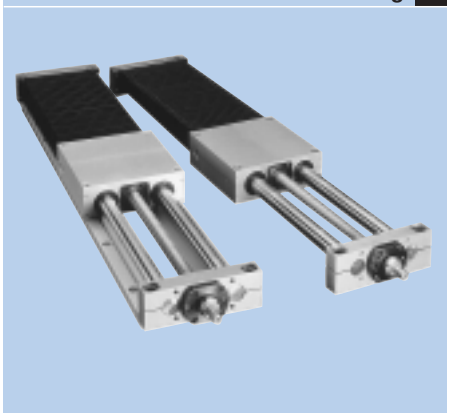
Fig 5



SSM and SSK dovetail slides
Slide top and base of grey cast iron. The slides are provided with standard patterns of mounting holes. Top and base plate both carry tapped holes. The slides have a lead screw drive. The SSM design has a micrometer knurl with vernier ring, while the SSK design is fitted with a hand crank. Both designs are fitted with a lateral locking device.

Dimensions see table on **page 297**

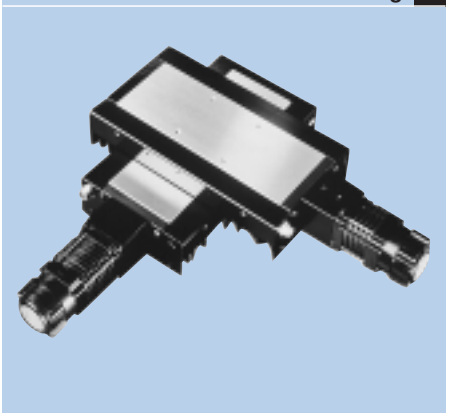
Fig 6



LZBB and LZAB linear ball bearing slides
The slides are fitted with SKF linear ball bearings of ISO series 3. They are driven via SKF rolled thread ball screws attached on both sides. The slides are protected by bellows. The LZBB design has a closed housing. Shafts are attached on both sides in shaft blocks which also incorporate the bolt holes for attaching the slide. The LZAB design has an open housing. Shafts are attached over the entire length by shaft supports to prevent shaft deflection with large strokes or high loads. The slide is attached via the bolt holes in the two shaft supports.

Principal dimensions see table on **page 294**

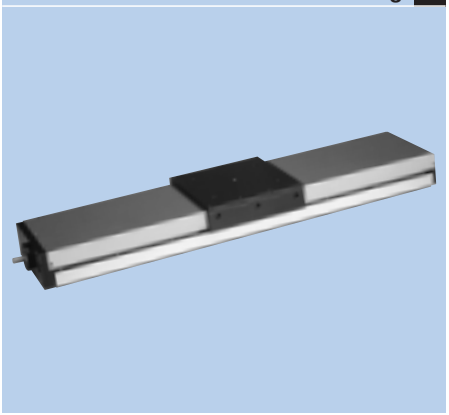
Fig 7



RSS precision slides
Slide top and base of grey cast iron. The slides are provided with standard patterns of mounting holes. The slide top carries tapped holes, the base plate counterbored holes for cylindrical screws to DIN 912. The slides are fitted with SKF precision rail guides incorporating crossed roller units. They are driven by pre-loaded planetary roller screws attached on one side. The slides are covered by bellows. Limit switches can be fitted under the lateral plate cover angles. The individual slides can be assembled in various ways to form cross tables or multi-axis systems.

Principal dimensions see table on **page 300**

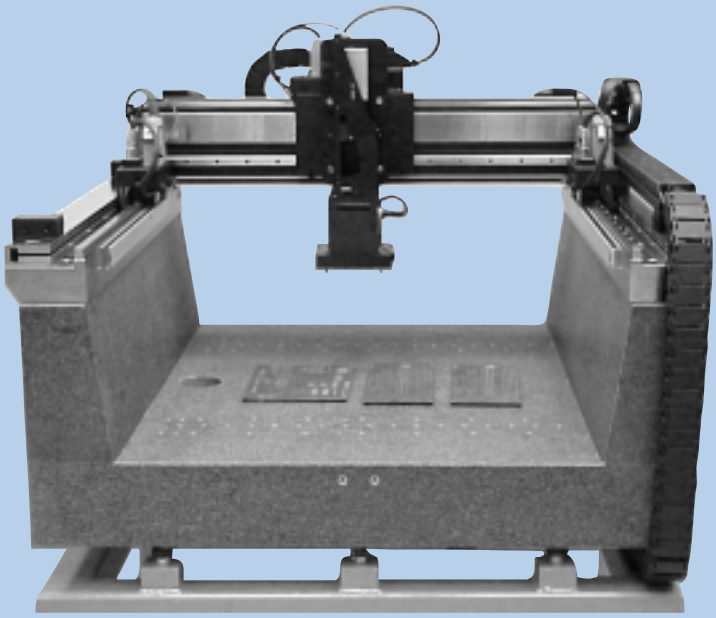
Fig 8



LTB profile rail slides
SKF profile rail slides are state-of-the-art systems that offer high load-carrying capacity and accuracy.
They are available
in five sizes: 110 – 170 – 235 – 320 – 400
with two drives: ball screws – linear motors
with three covers: without cover – with bellows – with steel cover

Principal dimensions see table on **page 306**

Fig 9



Complete systems
On special demand, SKF designs and manufactures complete systems, either from SKF standard components or special solutions that are exactly tailored to the respective application. Please demand the responsible SKF application engineer.

The different specifications are given in (→ **table 2**).

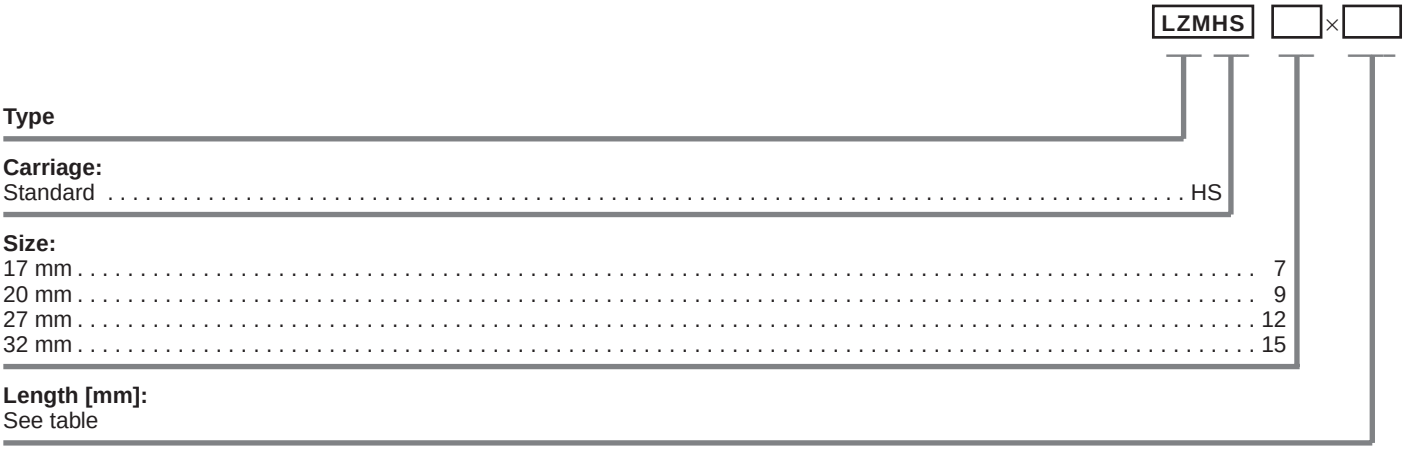
Table 2

Type	Precision	Load-carrying capacity	Dynamic capabilities	Speed
Miniature slides				
Standard slides				
Compact cross tables				
Precision slides without drive				
Dovetail slides				
Linear ball bearing slides				
Precision slides with drive				
Profile rail slides				
Complete systems				

Miniature slides

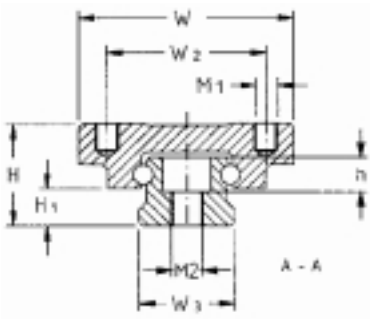
LZM

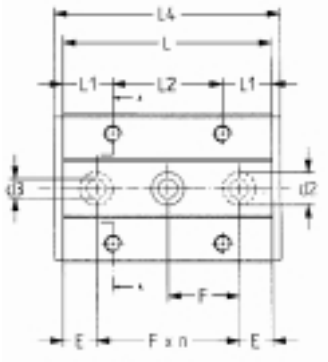
Ordering key

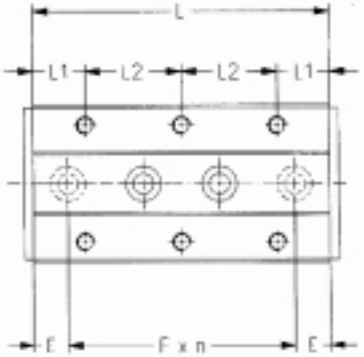


Example: **LZMHS** **15** × **165**

LZM







Main dimensions for miniature slide units

Designations	Dimensions									
	W	W_2	W_3	L_2	M_1×depth	d_3×d_2×h	H	H_1	M_2	F
	mm									
LZM HS 7	17	12	7	8	M2×2.5	2.5×4.5×2.5	8	2.35	M3	15
LZM HS 9	20	15	9	13	M3×3	3.5×6×3.5	10	3.55	M4	20
LZM HS 12	27	20	12	15	M3×3.5	3.5×6×4.5	13	4.7	M4	25
LZM HS 15	32	25	15	20	M3×4	3.5×6×4.5	16	6	M4	40

Designations	Dimensions				Max. stroke	Number of holes		Load-carrying capacities			
	L	L_4	E	L_1		Carriage	Rail	C	C_0	Ma/Mb	Mc
	mm					n	n	N	N	Nm	Nm
LZM HS 7	26	29	5.5	5	24	6	2	1000	1700	3.5	6
	34	37	9.5	5	34	8	2	1100	2100	5.5	7
	50	53	10	5	50	12	3	1500	3100	12	10
	66	69	10.5	5	66	16	4	1800	4100	21	14
LZM HS 9	32	35	8	9.5	28	4	2	1600	2700	7	12
	42	45	11	8	40	6	2	1900	3400	11	15
	55	58	7.5	8	54	8	3	2300	4300	18	19
	81	84	10.5	8	78	12	4	3000	6500	43	29
	94	97	7	8	92	14	5	3300	7400	57	33
LZM HS 12	37	40	6	11	32	4	2	2500	3800	11	21
	51	54	13	10.5	47	6	2	3100	5300	22	28
	66	69	8	10.5	62	8	3	3600	6700	36	36
	96	99	10.5	10.5	95	12	4	4700	9700	76	52
	126	129	13	10.5	122	16	6	5700	12600	131	68
LZM HS 15	52	56	6	12.5	50	4	2	3800	6200	25	42
	85	89	22.5	12.5	80	8	2	5400	10400	73	70
	105	109	12.5	12.5	102	10	3	6200	12500	106	84
	165	169	22.5	12.5	162	16	4	8400	19500	264	131

Notes

Standard slides

Ordering key

GCLA		

Type:
Standard slide with crossed roller assemblies of steel . . . . . GCL
Standard slide with crossed roller assemblies of aluminium . . . . . GCLA
Standard slide fitted with either cross roller guides or V-guided ball cages of steel . . . . . RM

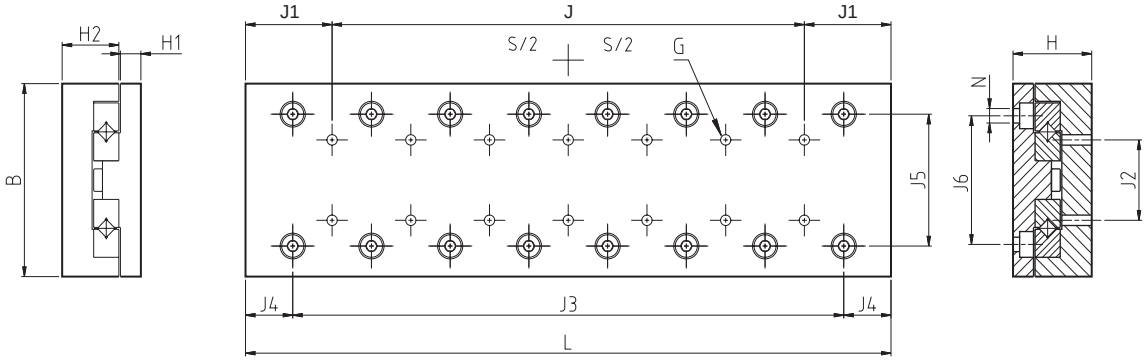
Size (see next tables):
20 mm width 1
40 mm width 2
60 mm width 3
100 mm width 6

Rail length [mm] (see next tables):
. . . . . 35 - 410

Example: **GCLA 6 400**

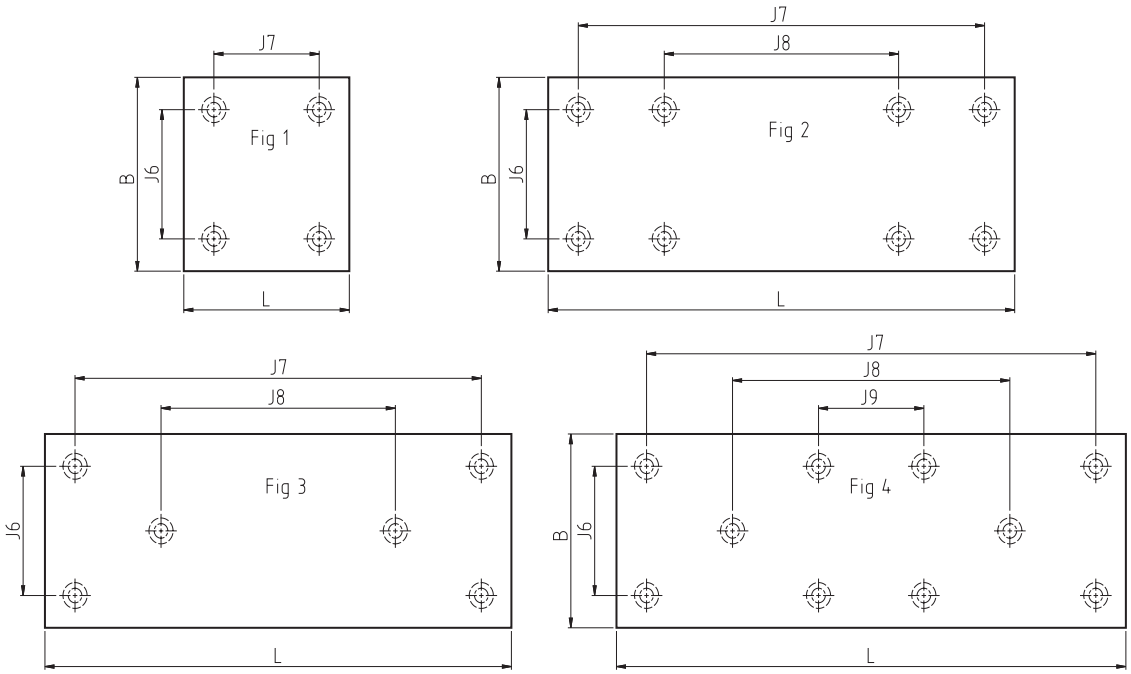
GCL

Standard slides with crossed roller assemblies, steel version, for manual positioning



Designations	Dimensions			Stroke									
	B	H	L	S_1 [1]	S_2 [1]	G	H_1	H_2	J	J_1	J_2	J_3	J_4	J_5
	mm													
GCL 2030	40	21	35	18	–	M3	6.5	14	–	17.5	15	1×15	10	25
GCL 2045	40	21	50	30	–	M3	6.5	14	1×15	17.5	15	2×15	10	25
GCL 2060	40	21	65	40	46	M3	6.5	14	2×15	17.5	15	3×15	10	25
GCL 2075	40	21	80	50	60	M3	6.5	14	3×15	17.5	15	4×15	10	25
GCL 2090	40	21	95	60	75	M3	6.5	14	4×15	17.5	15	5×15	10	25
GCL 2105	40	21	110	70	90	M3	6.5	14	5×15	17.5	15	6×15	10	25
GCL 2120	40	21	125	80	105	M3	6.5	14	6×15	17.5	15	7×15	10	25
GCL 3050	60	28	55	30	–	M4	9	18.5	–	27.5	25	1×25	15	39
GCL 3075	60	28	80	45	55	M4	9	18.5	1×25	27.5	25	2×25	15	39
GCL 3100	60	28	105	60	80	M4	9	18.5	2×25	27.5	25	3×25	15	39
GCL 3125	60	28	130	75	105	M4	9	18.5	3×25	27.5	25	4×25	15	39
GCL 3150	60	28	155	90	130	M4	9	18.5	4×25	27.5	25	5×25	15	39
GCL 3175	60	28	180	105	155	M4	9	18.5	5×25	27.5	25	6×25	15	39
GCL 3200	60	28	205	130	180	M4	9	18.5	6×25	27.5	25	7×25	15	39
GCL 6100	100	45	110	60	70	M6	13	31	–	55	50	1×50	30	64
GCL 6150	100	45	160	95	120	M6	13	31	1×50	55	50	2×50	30	64
GCL 6200	100	45	210	130	170	M6	13	31	2×50	55	50	3×50	30	64
GCL 6250	100	45	260	165	220	M6	13	31	3×50	55	50	4×50	30	64
GCL 6300	100	45	310	200	270	M6	13	31	4×50	55	50	5×50	30	64
GCL 6400	100	45	410	280	370	M6	13	31	6×50	55	50	7×50	30	64

1) S_1 Standard stroke order designation, e.g. GCL 2030
S_2 Extended stroke order designation, e.g. GCL 2030/L

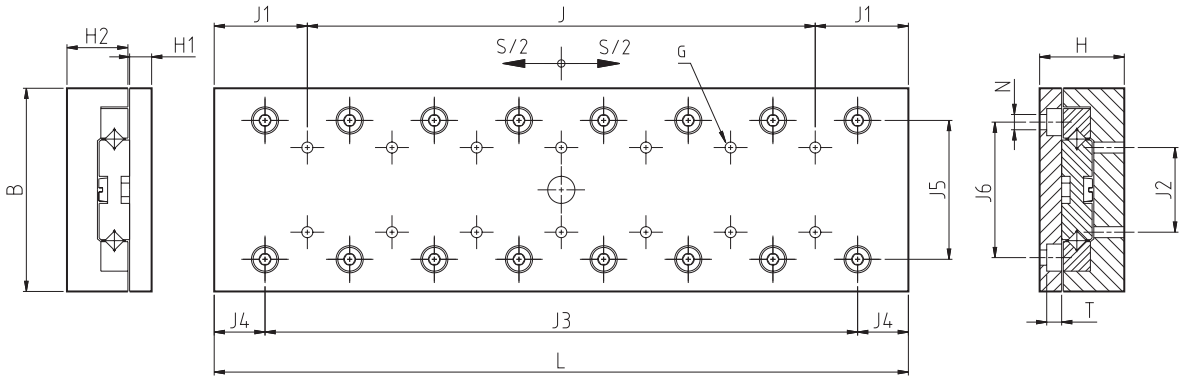


Designations	Dimensions						Load-carrying capacities with S_1	with S_2	Weight
	J_6	J_7	J_8	J_9	Fig	N	C_0	C_0	GS
	mm				N	N			kg
GCL 2030	30	25	–	–	1	3.4	270	–	0.18
GCL 2045	30	40	–	–	1	3.4	480	–	0.26
GCL 2060	30	55	–	–	1	3.4	610	540	0.34
GCL 2075	30	70	40	–	2	3.4	820	680	0.42
GCL 2090	30	85	55	–	2	3.4	950	820	0.50
GCL 2105	30	100	70	–	2	3.4	1160	950	0.58
GCL 2120	30	115	85	–	2	3.4	1290	1090	0.68
GCL 3050	40	35	–	–	1	4.5	960	–	0.57
GCL 3075	40	60	–	–	1	4.5	1600	1440	0.8
GCL 3100	40	85	–	–	1	4.5	2080	1760	1.0
GCL 3125	40	110	–	–	1	4.5	2720	2240	1.3
GCL 3150	40	135	85	–	3	4.5	3200	2560	1.5
GCL 3175	40	160	110	–	3	4.5	3840	3040	1.7
GCL 3200	40	185	135	85	4	4.5	4160	3360	2.0
GCL 6100	60	90	–	–	1	6.6	4760	4080	3.1
GCL 6150	60	140	–	–	1	6.6	7480	6120	4.5
GCL 6200	60	190	90	–	3	6.6	9520	8160	5.9
GCL 6250	60	240	140	–	3	6.6	12240	10200	7.2
GCL 6300	60	290	190	–	3	6.6	14280	12240	8.6
GCL 6400	60	390	290	190	4	6.6	15640	12240	11.4

GCLA

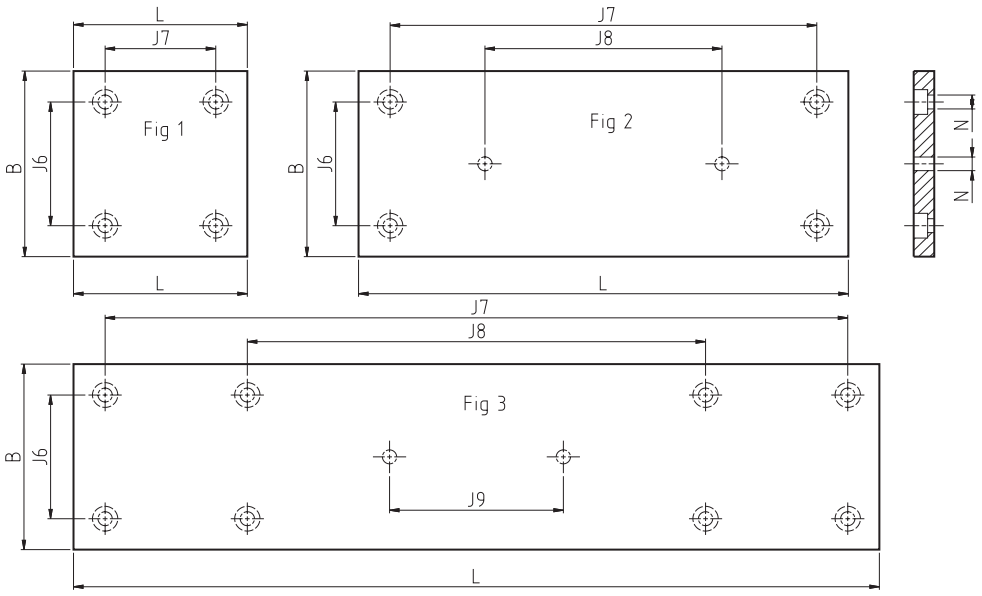
Standard slides with slide top and base made of black anodised aluminium, for manual positioning.

In other respects the design is similar to that of the GCL slides except for the slightly reduced height.



Designations	Dimensions			Stroke									
	B	H	L	S_1	S_2 [1]	G	H_1	H_2	J	J_1	J_2	J_3	J_4	J_5
	mm													
GCLA 2030	40	21	35	15	–	M3	7	13.75	–	17.5	15	1×15	10	25
GCLA 2045	40	21	50	22	30	M3	7	13.75	1×15	17.5	15	2×15	10	25
GCLA 2060	40	21	65	30	45	M3	7	13.75	2×15	17.5	15	3×15	10	25
GCLA 2075	40	21	80	37	60	M3	7	13.75	3×15	17.5	15	4×15	10	25
GCLA 2090	40	21	95	45	75	M3	7	13.75	4×15	17.5	15	5×15	10	25
GCLA 2105	40	21	110	52	90	M3	7	13.75	5×15	17.5	15	6×15	10	25
GCLA 2120	40	21	125	60	105	M3	7	13.75	6×15	17.5	15	7×15	10	25
GCLA 3050	60	25	55	–	30	M4	8.25	18	–	27.5	25	1×25	15	41
GCLA 3075	60	25	80	37	55	M4	8.25	18	1×25	27.5	25	2×25	15	41
GCLA 3100	60	25	105	50	80	M4	8.25	18	1×25	27.5	25	2×25	15	41
GCLA 3125	60	25	130	62	105	M4	8.25	18	1×25	27.5	25	2×25	15	41
GCLA 3150	60	25	155	75	130	M4	8.25	18	1×25	27.5	25	2×25	15	41
GCLA 3175	60	25	180	87	155	M4	8.25	18	1×25	27.5	25	2×25	15	41
GCLA 3200	60	25	205	100	180	M4	8.25	18	1×25	27.5	25	2×25	15	41
GCLA 6100	100	40	110	50	70	M6	12	30.5	–	55	50	1×50	30	65
GCLA 6150	100	40	160	75	120	M6	12	30.5	1×50	55	50	2×50	30	65
GCLA 6200	100	40	210	100	170	M6	12	30.5	2×50	55	50	3×50	30	65
GCLA 6250	100	40	260	125	220	M6	12	30.5	3×50	55	50	4×50	30	65
GCLA 6300	100	40	310	150	270	M6	12	30.5	4×50	55	50	5×50	30	65
GCLA 6350	100	40	360	175	320	M6	12	30.5	5×50	55	50	6×50	30	65
GCLA 6400	100	40	410	200	370	M6	12	30.5	6×50	55	50	7×50	30	65

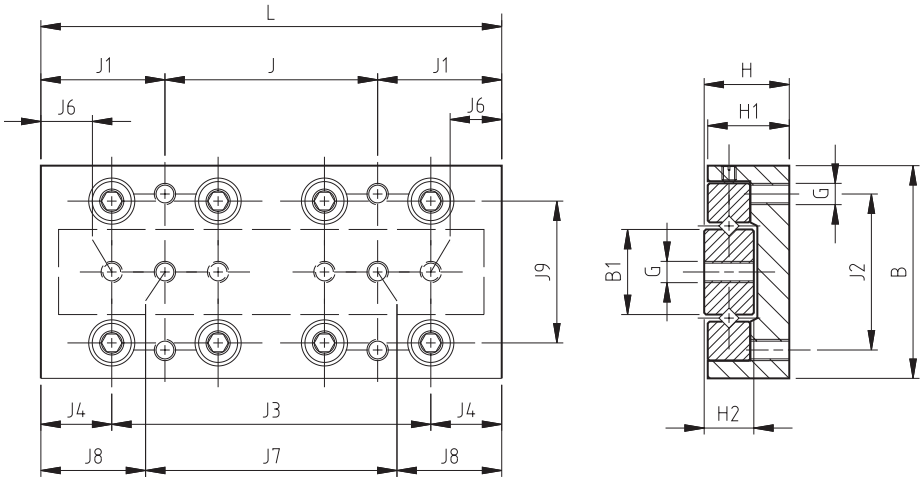
1) S_2 Extended stroke order designation, e.g. GCL 20/30/L



Designations	Dimensions						Load-carrying capacities with S_1	with S_2	Weight
	J_6	J_7	J_8	J_9	Fig	N	C_0	C_0	GA
	mm						N	N	kg
GCLA 2030	30	25	–	–	1	3.8	340	–	0.10
GCLA 2045	30	40	–	–	1	3.8	540	480	0.14
GCLA 2060	30	55	–	–	1	3.8	680	540	0.19
GCLA 2075	30	70	–	–	1	3.8	880	680	0.23
GCLA 2090	30	85	40	–	2	3.8	1090	820	0.28
GCLA 2105	30	100	55	–	2	3.8	1290	950	0.32
GCLA 2120	30	115	70	–	2	3.8	1500	1090	0.37
GCLA 3050	40	35	–	–	1	4.8	–	960	0.29
GCLA 3075	40	60	–	–	1	4.8	1600	1440	0.43
GCLA 3100	40	85	–	–	1	4.8	2240	1760	0.57
GCLA 3125	40	110	–	–	1	4.8	2880	2240	0.70
GCLA 3150	40	135	75	–	2	4.8	3520	2560	0.84
GCLA 3175	40	160	86	–	2	4.8	4000	3040	0.97
GCLA 3200	40	185	55	–	2	4.8	4640	3360	1.1
GCLA 6100	60	90	–	–	1	6.8	5440	4080	1.6
GCLA 6150	60	140	–	–	1	6.8	8160	6120	2.4
GCLA 6200	60	190	100	–	2	6.8	10880	8160	3.1
GCLA 6250	60	240	80	–	2	6.8	13600	10200	3.9
GCLA 6300	60	290	150	–	2	6.8	16320	12240	4.7
GCLA 6350	60	340	200	80	3	6.8	19040	13600	5.4
GCLA 6400	60	390	230	90	3	6.8	22440	15640	6.2

RM

Standard slides fitted with either cross roller rail guides or V-guided ball cages, for manual positioning; the opposing V-rails are screwed to a steel base plate. Slide top and bottom carry a standard pattern of mounting holes.



Designations	Dimensions			Stroke						
	B	H	L	S	B_1	G	H_1	H_2	J	J_1
	mm									
RM 1020	20	8	25	12	7	M2.5	7.5	5	1×18	3.5
RM 1030	20	8	35	18	7	M2.5	7.5	5	1×28	3.5
RM 1040	20	8	45	25	7	M2.5	7.5	5	1×20	12.5
RM 1050	20	8	55	32	7	M2.5	7.5	5	1×30	12.5
RM 2060	30	12	65	40	12	M3	11.5	7	1×30	17.5
RM 2075	30	12	80	50	12	M3	11.5	7	1×45	17.5
RM 2090	30	12	95	60	12	M3	11.5	7	2×30	17.5
RM 3100	40	16	105	60	16	M4	15.5	9	1×50	27.5
RM 3125	40	16	130	75	16	M4	15.5	9	1×75	27.5
RM 3150	40	16	155	90	16	M4	15.5	9	2×50	27.5

continued

continued

Designations	Dimensions								Load-carrying capacities	Weight
	J_2	J_3	J_4	J_5	J_6	J_7	J_8	J_9	C_0	GS
	mm								N	kg
RM 1020	14	1×10	7.5	2×7.5	5	1×18	3.5	12.6	208	0.025
RM 1030	14	2×10	7.5	2×10	7.5	1×20	7.5	12.6	364	0.025
RM 1040	14	3×10	7.5	3×10	7.5	1×28	8.5	12.6	464	0.025
RM 1050	14	4×10	7.5	4×10	7.5	1×30	12.5	12.6	572	0.025
RM 2060	22	3×15	10	3×15	10	–	–	20	860	0.16
RM 2075	22	4×15	10	4×15	10	–	–	20	1032	0.19
RM 2090	22	5×15	10	5×15	10	–	–	20	1290	0.23
RM 3100	30	3×25	15	3×25	15	–	–	28.5	1904	0.46
RM 3125	30	4×25	15	4×25	15	–	–	28.5	2312	0.58
RM 3150	30	5×25	15	5×25	15	–	–	28.5	2856	0.69

Linear ball bearing table without drive

Ordering key

Type

Design:
Open design . . . . . AU
Closed design . . . . . BU

Nominal diameter ø in mm:
For AU . . . . . ø 12 - 50
For BU . . . . . ø 8 - 50

Option:
LZAU with LRCB shaft supports . . . . . no sign
LEAS A, high shaft position . . . . . A
LEAS B, low shaft position . . . . . B

Other option:
Both sides sealed . . . . . -2LS

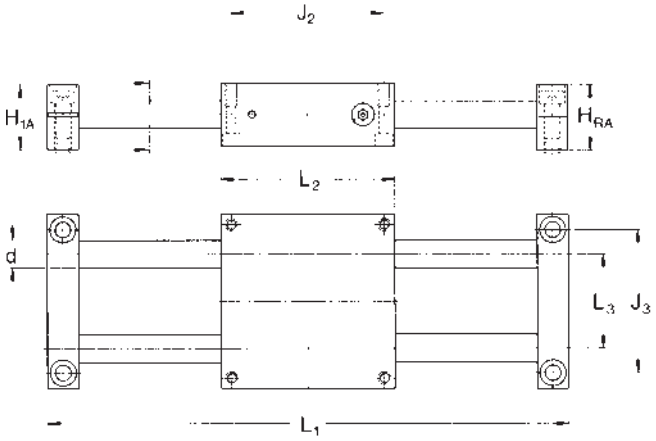
Length in mm:

Example: LZ BU 40 B -2LS × 1500

5

LZBU ..A-2LS

Quadro linear tables, consisting of LQCD, LEAS A and shafts

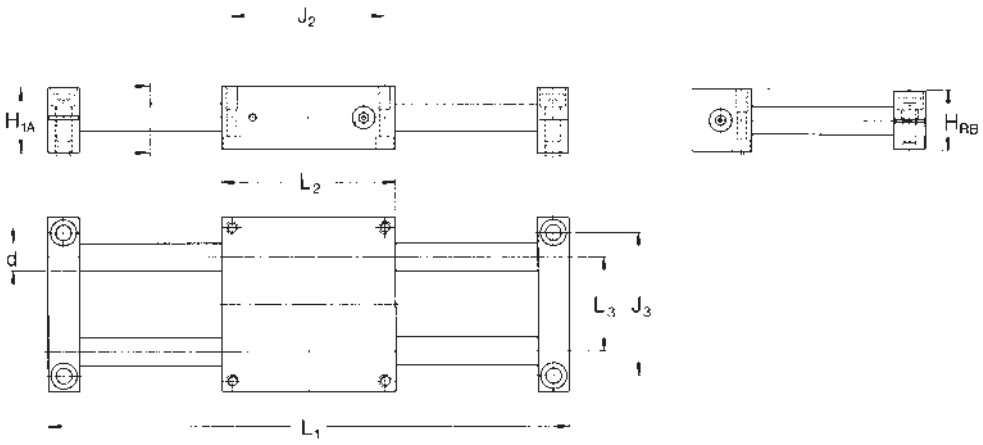


Designations	Dimensions								Basic load ratings dynamic	static
	d	H_{RA}	H_{1A}	L_1	L_2	L_3	J_2	J_3	C	C_0
	mm								N	
LZBU 8 A-2LS	8	24	23	600	65	32	55	52	965	1140
LZBU 12 A-2LS	12	34	32	900	85	42	73	70	2850	3250
LZBU 16 A-2LS	16	38	37	1500	100	54	88	82	3450	3450
LZBU 20 A-2LS	20	48	46	1800	130	72	115	108	5200	5500
LZBU 25 A-2LS	25	58	56	1800	160	88	140	132	7650	8150
LZBU 30 A-2LS	30	67	64	2400	180	96	158	150	12200	12900
LZBU 40 A-2LS	40	84	80	3000	230	122	202	190	20800	20800
LZBU 50 A-2LS	50	100	96	3000	280	152	250	240	30000	28000

Dimensions Standard length										
d	L									
mm	Length increments in mm									
8	300	600	900	–	–	–	–	–	–	–
12	300	600	900	1200	1500	1800	2100	2400	2700	3000
16	300	600	900	1200	1500	1800	2100	2400	2700	3000
20	300	600	900	1200	1500	1800	2100	2400	2700	3000
25	300	600	900	1200	1500	1800	2100	2400	2700	3000
30	300	600	900	1200	1500	1800	2100	2400	2700	3000
40	300	600	900	1200	1500	1800	2100	2400	2700	3000
50	—	600	900	1200	1500	1800	2100	2400	2700	3000

LZBU ..B-2LS

Quadro linear tables, consisting
of LQCD, LEAS B and shafts

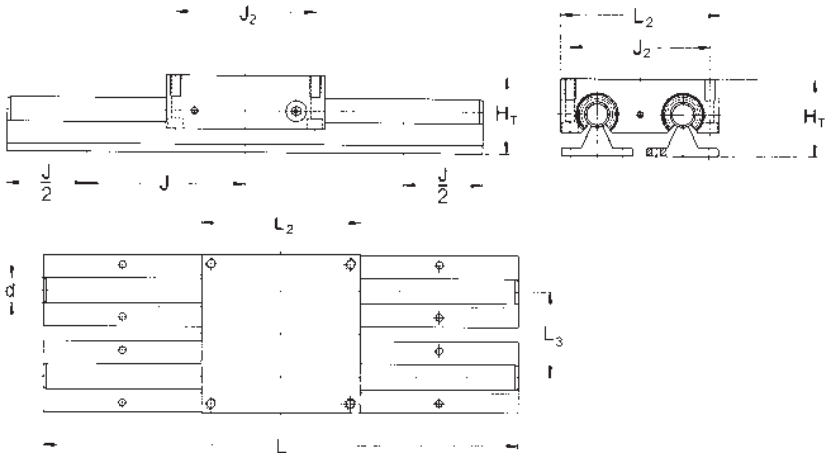


Designations	Dimensions								Basic load ratings dynamic	static
	d	H_{RB} ± 0.01	H_{1A}	L_1	L_2	L_3	J_2	J_3	C	C_0
			mm						N	
LZBU 8 B-2LS	8	22.5	22	600	65	32	55	52	965	1140
LZBU 12 B-2LS	12	30	28	900	85	42	73	70	2850	3250
LZBU 16 B-2LS	16	35	34	1500	100	54	88	82	3450	3450
LZBU 20 B-2LS	20	44	42	1800	130	72	115	108	5200	5200
LZBU 25 B-2LS	25	54	52	1800	160	88	140	132	7650	8150
LZBU 30 B-2LS	30	61	58	2400	180	96	158	150	12200	12900
LZBU 40 B-2LS	40	76	72	3000	230	122	202	190	20800	20800
LZBU 50 B-2LS	50	92	88	3000	280	152	250	240	30000	28000

Dimensions Standard length										
d	L									
mm	Length increments in mm									
8	300	600	900	–	–	–	–	–	–	–
12	300	600	900	1200	1500	1800	2100	2400	2700	3000
16	300	600	900	1200	1500	1800	2100	2400	2700	3000
20	300	600	900	1200	1500	1800	2100	2400	2700	3000
25	300	600	900	1200	1500	1800	2100	2400	2700	3000
30	300	600	900	1200	1500	1800	2100	2400	2700	3000
40	300	600	900	1200	1500	1800	2100	2400	2700	3000
50	—	600	900	1200	1500	1800	2100	2400	2700	3000

LZAU ..-2LS

Quadro linear tables, consisting of
LQCF and supported shafts

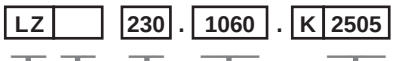


Designations	Dimensions							Basic load ratings dynamic	static
	d	H_T ±0.03	J ±0.015	L	L_2	L_3	J_2	C	C_0
	mm							N	
LZAU 12-2LS	12	40	75	900	85	42	73	2850	3250
LZAU 16-2LS	16	48	100	1500	100	54	88	3450	3450
LZAU 20-2LS	20	57	100	1800	130	72	115	5200	5500
LZAU 25-2LS	25	66	120	1800	160	88	140	7650	8150
LZAU 30-2LS	30	77	150	2400	180	96	158	12200	12900
LZAU 40-2LS	40	95	200	3000	230	122	202	20800	20800
LZAU 50-2LS	50	115	200	3000	280	152	250	30000	28000

Dimensions Standard length										
d	L									
mm	Length increments in mm									
8	300	600	900	–	–	–	–	–	–	–
12	300	600	900	1200	1500	1800	2100	2400	2700	3000
16	300	600	900	1200	1500	1800	2100	2400	2700	3000
20	300	600	900	1200	1500	1800	2100	2400	2700	3000
25	300	600	900	1200	1500	1800	2100	2400	2700	3000
30	300	600	900	1200	1500	1800	2100	2400	2700	3000
40	300	600	900	1200	1500	1800	2100	2400	2700	3000
50	—	600	900	1200	1500	1800	2100	2400	2700	3000

Linear ball bearing table with drive

Ordering key



Type

Design:
Open design . . . . . AB
Closed design . . . . . BB

Slide width B [mm]:
See next tables

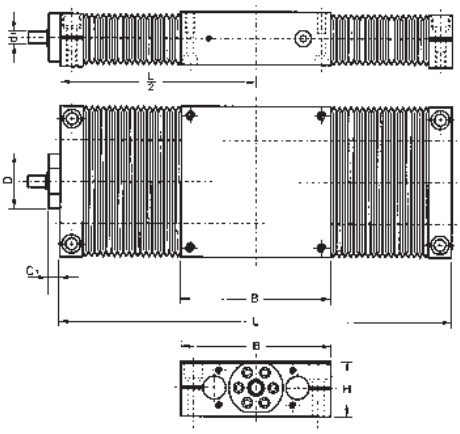
Total length of slide unit L [mm]:
See next tables

Screw Ø [mm] screw lead [mm]:
Screw Ø 12 - screw lead 05 1205
Screw Ø 16 - screw lead 05 1605
Screw Ø 20 - screw lead 05 2005
Screw Ø 25 - screw lead 05 2505
Screw Ø 25 - screw lead 10 2510

Example: LZ AB 230 . 1060 . K 2505

LZBB

Linear ball bearing slides with closed housing and ball screw

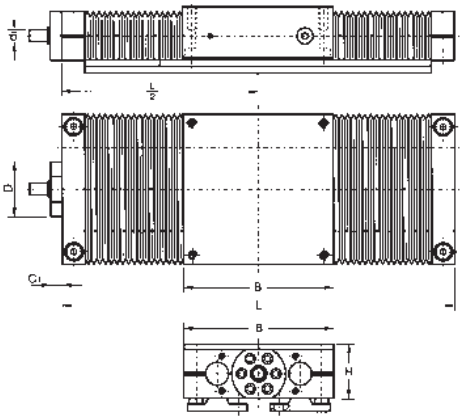


Designations	Dimensions			Nominal stroke*		Screw data			
	B	H	L	S_1	S_2	n_{max}	d_1	D	C_1
	mm					1/min	mm		
LZBB 100.336.K1205	100	38	336	120	195	5100	6	38	24
LZBB 100.636.K1205	100	38	636	310	495	3450	6	38	24
LZBB 100.936.K1205	100	38	936	495	795	1600	6	38	24
LZBB 100.1236.K1205	100	38	1236	685	1095	920	6	38	24
LZBB 100.1536.K1205	100	38	1536	875	1395	600	6	38	24
LZBB 130.340.K1605	130	48	340	115	165	3800	10	47	28
LZBB 130.640.K1605	130	48	640	330	465	3800	10	47	28
LZBB 130.940.K1605	130	48	940	545	765	2150	10	47	28
LZBB 130.1240.K1605	130	48	1240	755	1065	1250	10	47	28
LZBB 130.1540.K1605	130	48	1540	970	1365	800	10	47	28
LZBB 130.1840.K1605	130	48	1840	1185	1665	560	10	47	28
LZBB 160.410.K2005	160	58	410	145	195	3050	12	55	36
LZBB 160.650.K2005	160	58	650	325	435	3050	12	55	36
LZBB 160.1010.K2005	160	58	1010	595	795	2450	12	55	36
LZBB 160.1250.K2005	160	58	1250	780	1035	1600	12	55	36
LZBB 160.1610.K2005	160	58	1610	1050	1395	960	12	55	36
LZBB 160.1850.K2005	160	58	1850	1230	1635	730	12	55	36
LZBB 180.350.K2005	180	67	350	80	115	3050	12	55	36
LZBB 180.650.K2005	180	67	650	300	415	3050	12	55	36
LZBB 180.950.K2005	180	67	950	515	715	2800	12	55	36
LZBB 180.1250.K2005	180	67	1250	740	1015	1600	12	55	36
LZBB 180.1550.K2005	180	67	1550	960	1315	1050	12	55	36
LZBB 180.1850.K2005	180	67	1850	1175	1615	730	12	55	36
LZBB 180.2150.K2005	180	67	2150	1400	1915	540	12	55	36
LZBB 180.2450.K2005	180	67	2450	1620	2215	420	12	55	36
LZBB 230.460.K2505	230	84	460	120	165	2450	14	68	36
LZBB 230.660.K2505	230	84	660	275	365	2450	14	68	36
LZBB 230.1060.K2505	230	84	1060	580	765	2450	14	68	36
LZBB 230.1260.K2505	230	84	1260	730	965	2050	14	68	36
LZBB 230.1660.K2505	230	84	1660	1035	1365	1200	14	68	36
LZBB 230.1860.K2505	230	84	1860	1185	1565	940	14	68	36
LZBB 230.2260.K2505	230	84	2260	1490	1965	640	14	68	36
LZBB 230.2460.K2505	230	84	2460	1640	2165	540	14	68	36
LZBB 230.2860.K2505	230	84	2860	1945	2565	400	14	68	36
LZBB 230.460.K2510	230	84	460	120	165	2450	14	68	36
LZBB 230.660.K2510	230	84	660	275	365	2450	14	68	36
LZBB 230.1060.K2510	230	84	1060	580	765	2450	14	68	36
LZBB 230.1260.K2510	230	84	1260	730	965	2050	14	68	36
LZBB 230.1660.K2510	230	84	1660	1035	1365	1200	14	68	36
LZBB 230.1860.K2510	230	84	1860	1185	1565	940	14	68	36
LZBB 230.2260.K2510	230	84	2260	1490	1965	640	14	68	36
LZBB 230.2460.K2510	230	84	2460	1640	2165	540	14	68	36
LZBB 230.2860.K2510	230	84	2860	1945	2565	400	14	68	36

* Maximum stroke between end stops: S_1 with bellows (standard version); S_2 without bellows (special version)

LZAB

Linear ball bearing slides with open housing and ball screw



Designations	Dimensions			Nominal stroke*		Screw data			
	B	H	L	S_1	S_2	n_{max}	d_1	D	C_1
	mm					1/min	mm		
LZAB 100.336.K1205	100	48	336	115	195	5100	6	38	24
LZAB 100.636.K1205	100	48	636	295	495	3450	6	38	24
LZAB 100.936.K1205	100	48	936	475	795	1600	6	38	24
LZAB 100.1236.K1205	100	48	1236	655	1095	920	6	38	24
LZAB 100.1536.K1205	100	48	1536	835	1395	600	6	38	24
LZAB 130.340.K1605	130	57	340	110	165	3800	10	47	28
LZAB 130.640.K1605	130	57	640	320	465	3800	10	47	28
LZAB 130.940.K1605	130	57	940	530	765	2150	10	47	28
LZAB 130.1240.K1605	130	57	1240	740	1065	1250	10	47	28
LZAB 130.1540.K1605	130	57	1540	950	1365	800	10	47	28
LZAB 130.1840.K1605	130	57	1840	1155	1665	560	10	47	28
LZAB 160.410.K2005	160	66	410	140	195	3050	12	55	36
LZAB 160.650.K2005	160	66	650	320	435	3050	12	55	36
LZAB 160.1010.K2005	160	66	1010	585	795	2450	12	55	36
LZAB 160.1250.K2005	160	66	1250	765	1035	1600	12	55	36
LZAB 160.1610.K2005	160	66	1610	1035	1395	960	12	55	36
LZAB 160.1850.K2005	160	66	1850	1210	1635	730	12	55	36
LZAB 180.350.K2005	180	77	350	85	115	3050	12	55	36
LZAB 180.650.K2005	180	77	650	320	415	3050	12	55	36
LZAB 180.950.K2005	180	77	950	550	715	2800	12	55	36
LZAB 180.1250.K2005	180	77	1250	785	1015	1600	12	55	36
LZAB 180.1550.K2005	180	77	1550	1020	1315	1050	12	55	36
LZAB 180.1850.K2005	180	77	1850	1250	1615	730	12	55	36
LZAB 180.2150.K2005	180	77	2150	1485	1915	540	12	55	36
LZAB 180.2450.K2005	180	77	2450	1720	2215	420	12	55	36
LZAB 230.460.K2505	230	95	460	120	165	2450	14	68	36
LZAB 230.660.K2505	230	95	660	275	365	2450	14	68	36
LZAB 230.1060.K2505	230	95	1060	580	765	2450	14	68	36
LZAB 230.1260.K2505	230	95	1260	730	965	2050	14	68	36
LZAB 230.1660.K2505	230	95	1660	1035	1365	1200	14	68	36
LZAB 230.1860.K2505	230	95	1860	1185	1565	940	14	68	36
LZAB 230.2260.K2505	230	95	2260	1490	1965	640	14	68	36
LZAB 230.2460.K2505	230	95	2460	1640	2165	540	14	68	36
LZAB 230.2860.K2505	230	95	2860	1945	2565	400	14	68	36
LZAB 230.460.K2510	230	95	460	120	365	2450	14	68	36
LZAB 230.660.K2510	230	95	660	275	365	2450	14	68	36
LZAB 230.1060.K2510	230	95	1060	580	765	2450	14	68	36
LZAB 230.1260.K2510	230	95	1260	730	965	2050	14	68	36
LZAB 230.1660.K2510	230	95	1660	1035	1365	1200	14	68	36
LZAB 230.1860.K2510	230	95	1860	1185	1565	940	14	68	36
LZAB 230.2260.K2510	230	95	2260	1490	1965	640	14	68	36
LZAB 230.2460.K2510	230	95	2460	1640	2165	540	14	68	36
LZAB 230.2860.K2510	230	95	2860	1945	2565	400	14	68	36

* Maximum stroke between end stops: S_1 with bellows (standard version); S_2 without bellows (special version)

Slides, tables and compact cross tables

Ordering key

R SS [ ] - [ ] - [ ] - [ ] - [ ] [ ]

Type:
Precision slides with rail guide system, needle rollers . . . . . N
Precision slides with rail guide system, dry sliding liners . . . . . P
Precision slides with rail guide system, crossed rollers . . . . . R
Dovetail slides . . . . . S
Compact cross tables with rail guide system, crossed rollers . . . . . T

Versions:
Only valid for compact cross tables:
For manual operation, with micrometer knurl . . . . . SM
For motor drive . . . . . SS

Only valid for precision tables:
For manual operation, with hand crank . . . . . SK
For motor drive . . . . . SS

Only valid for dovetail tables:
For manual operation, with hand crank . . . . . SK
For manual operation, with micrometer knurl . . . . . SM

Table width B [mm] (see next tables)**:**
. . . . . 85 - 300

Length L_1 [mm]:
Dovetail and precision slides x
Not applicable to compact cross tables . . . . . –

Nominal stroke [mm]:
See next tables

Designation suffix if desired:
Slides or tables made of aluminium, black anodised. . . . . A
Slides with thick top: only for precision slides . . . . . D
Slides with thick top and T-slots: dovetail and precision slides . . . . . DT

Locking device for dovetail slides (standard) . . . . . AR 1
Locking device for precision slides and tables . . . . . AR 2
Locking device for compact cross tables (standard) . . . . . AR 3

For motor drive only:
Preloaded planetary roller screw . . . . . R

Screw diameter ø in mm:
Precision tables . . . . . 8 - 20

Screw lead:
1 - 5 mm . . . . . 01 - 05

Example 1: R SS 200 - 710 - 300 - [ ] - R 1202

Example 2: R SK 50 - 080 - 025

Example 3: S SM 300 - 010 - 500 - AR1

Example 4: S SK 50 - 080 - 025 - AR1

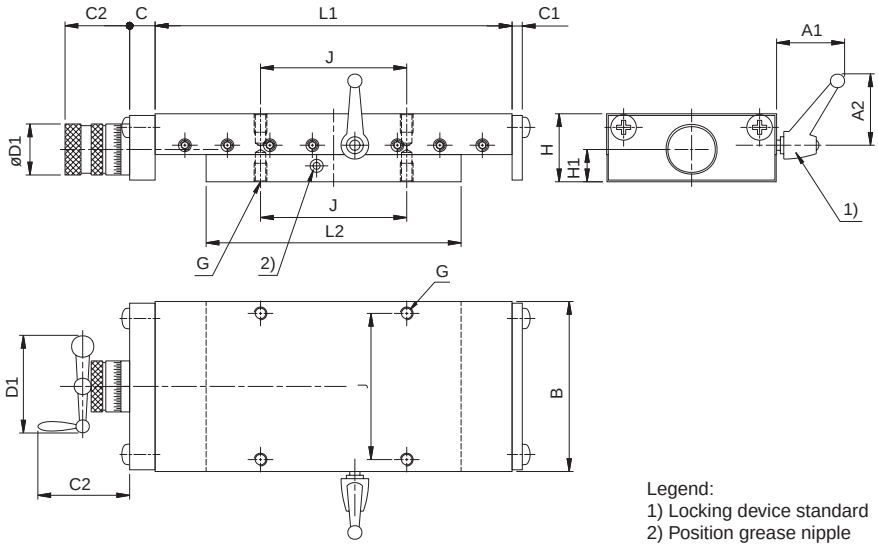
Example 4: T O 085 - 050 - [ ] - AR3

Dovetail slides

SSM / SSK

SSM – with micrometer knurl/Vernier ring with spring preloading, allowing easy turning. One division equals 0,02 mm.

SSK – as SSM, but instead of knurled screw equipped with crank handle.



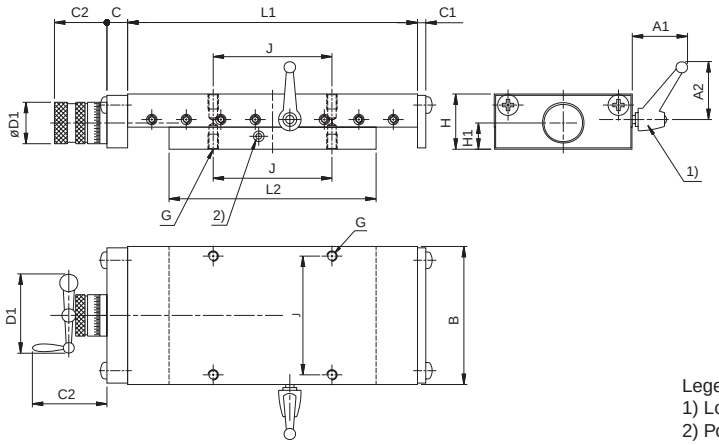
Legend:
1) Locking device standard
2) Position grease nipple

5

Designations	Dimensions				Stroke								Screw			Weight
	B	H	L_1	L_2	S	A_1	A_2	C	C_1	C_2	D_1	H_1	Ø	J	G	GG
	mm															kg
SSM-50.080.025	50	25	80	50	25	37	42	19	6	31	23.5	12.3	M6×1	37	M4	0.7
SSK- 50.080.025	50	25	80	25	25	37	42	19	6	51	47	12.3	M6×1	37	M4	0.7
SSM-50.130.025	50	25	130	25	25	37	42	19	6	31	23.5	12.3	M6×1	37	M4	1.2
SSK-50.130.025	50	25	130	25	25	37	42	19	6	51	47	12.3	M6×1	37	M4	1.2
SSM-50.130.050	50	25	130	50	50	37	42	19	6	31	23.5	12.3	M6×1	37	M4	1.0
SSK-50.130.050	50	25	130	50	50	37	42	19	6	51	47	12.3	M6×1	37	M4	1.0
SSM-50.155.050	50	25	155	50	50	37	42	19	6	31	23.5	12.3	M6×1	37	M4	1.3
SSK-50.155.050	50	25	155	50	50	37	42	19	6	51	47	12.3	M6×1	37	M4	1.3
SSM-50.155.075	50	25	155	75	75	37	42	19	6	31	23.5	12.3	M6×1	37	M4	1.2
SSK-50.155.075	50	25	155	75	75	37	42	19	6	51	47	12.3	M6×1	37	M4	1.2
SSM-50.180.075	50	25	180	75	75	37	42	19	6	31	23.5	12.3	M6×1	37	M4	1.4
SSK-50.180.075	50	25	180	75	75	37	42	19	6	51	47	12.3	M6×1	37	M4	1.4
SSM-50.205.100	50	25	205	100	100	37	42	19	6	31	23.5	12.3	M6×1	37	M4	1.7
SSK-50.205.100	50	25	205	100	100	37	42	19	6	51	47	12.3	M6×1	37	M4	1.7
SSM-75.105.025	75	32	105	75	25	38	42	21	6	38	30	15	M10×1	62	M5	1.9
SSK-75.105.025	75	32	105	75	25	38	42	21	6	54	47	15	M10×1	62	M5	1.9
SSM-75.155.050	75	32	155	100	50	38	42	21	6	38	30	15	M10×1	62	M5	2.6
SSK-75.155.050	75	32	155	100	50	38	42	21	6	54	47	15	M10×1	62	M5	2.6
SSM-75.205.050	75	32	205	150	50	38	42	21	6	38	30	15	M10×1	62	M5	3.4
SSK-75.205.050	75	32	205	150	50	38	42	21	6	54	47	15	M10×1	62	M5	3.4
SSM-75.155.075	75	32	155	75	75	38	42	21	6	38	30	15	M10×1	62	M5	2.3
SSK-75.155.075	75	32	155	75	75	38	42	21	6	54	47	15	M10×1	62	M5	2.3
SSM-75.180.075	75	32	180	100	75	38	42	21	6	38	30	15	M10×1	62	M5	2.8
SSK-75.180.075	75	32	180	100	75	38	42	21	6	54	47	15	M10×1	62	M5	2.8
SSM-75.205.100	75	32	205	100	100	38	42	21	6	38	30	15	M10×1	62	M5	3.0
SSK-75.205.100	75	32	205	100	100	38	42	21	6	54	47	15	M10×1	62	M5	3.0
SSM-75.255.100	75	32	255	150	100	38	42	21	6	38	30	15	M10×1	62	M5	3.8
SSK-75.255.100	75	32	255	150	100	38	42	21	6	54	47	15	M10×1	62	M5	3.8
SSM-75.305.150	75	32	305	150	150	38	42	21	6	38	30	15	M10×1	62	M5	4.2
SSK-75.305.150	75	32	305	150	150	38	42	21	6	54	47	15	M10×1	62	M5	4.2

Continued

SSM / SSK
(continued)



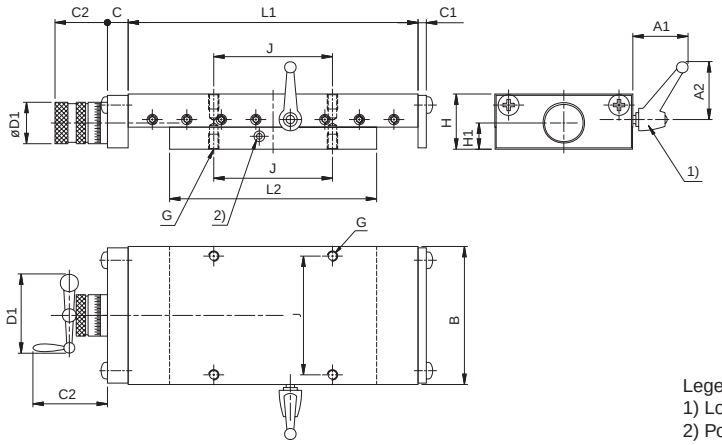
Legend:
1) Locking device standard
2) Position grease nipple

Continued

Designations	Dimensions				Stroke								Screw			Weight
	B	H	L_1	L_2	S	A_1	A_2	C	C_1	C_2	D_1	H_1	Ø	J	G	GG
	mm															kg
SSM-100.160.050	100	40	160	100	50	40	45	21	6	38	30	19	M10×1	74	M6	4.4
SSK-100.160.050	100	40	160	100	50	40	45	21	6	54	47	19	M10×1	74	M6	4.4
SSM-100.260.050	100	40	260	200	50	40	45	21	6	38	30	19	M10×1	74	M6	7.2
SSK-100.260.050	100	40	260	200	50	40	45	21	6	54	47	19	M10×1	74	M6	7.2
SSM-100.210.100	100	40	210	100	100	40	45	21	6	38	30	19	M10×1	74	M6	5.1
SSK-100.210.100	100	40	210	100	100	40	45	21	6	54	47	19	M10×1	74	M6	5.1
SSM-100.310.100	100	40	310	200	100	40	45	21	6	38	30	19	M10×1	74	M6	7.9
SSK-100.310.100	100	40	310	200	100	40	45	21	6	54	47	19	M10×1	74	M6	7.9
SSM-100.310.150	100	40	310	150	150	40	45	21	6	38	30	19	M10×1	74	M6	7.1
SSK-100.310.150	100	40	310	150	150	40	45	21	6	54	47	19	M10×1	74	M6	7.1
SSM-100.410.150	100	40	410	250	150	40	45	21	6	38	30	19	M10×1	74	M6	10.0
SSK-100.410.150	100	40	410	250	150	40	45	21	6	54	47	19	M10×1	74	M6	10.0
SSM-100.410.200	100	40	410	200	200	40	45	21	6	38	30	19	M10×1	74	M6	9.2
SSK-100.410.200	100	40	410	200	200	40	45	21	6	54	47	19	M10×1	74	M6	9.2
SSM-100.510.200	100	40	510	300	200	40	45	21	6	38	30	19	M10×1	74	M6	12.1
SSK-100.510.200	100	40	510	300	200	40	45	21	6	54	47	19	M10×1	74	M6	12.1
SSM-150.310.100	150	50	310	200	100	45	62	28	8	53	47	24	Tr16×2	130	M8	15.4
SSK-150.310.100	150	50	310	200	100	45	62	28	8	92	103	24	Tr16×2	130	M8	15.4
SSM-150.510.100	150	50	510	400	100	45	62	28	8	53	47	24	Tr16×2	130	M8	26.0
SSK-150.510.100	150	50	510	400	100	45	62	28	8	92	103	24	Tr16×2	130	M8	26.0
SSM-150.410.200	150	50	410	200	200	45	62	28	8	53	47	24	Tr16×2	130	M8	17.8
SSK-150.410.200	150	50	410	200	200	45	62	28	8	92	103	24	Tr16×2	130	M8	17.8
SSM-150.610.200	150	50	610	400	200	45	62	28	8	53	47	24	Tr16×2	130	M8	28.5
SSK-150.610.200	150	50	610	400	200	45	62	28	8	92	103	24	Tr16×2	130	M8	28.5
SSM-150.510.300	150	50	510	200	300	45	62	28	8	53	47	24	Tr16×2	130	M8	20.2
SSK-150.510.300	150	50	510	200	300	45	62	28	8	92	103	24	Tr16×2	130	M8	20.2
SSM-150.710.300	150	50	710	400	300	45	62	28	8	53	47	24	Tr16×2	130	M8	30.9
SSK-150.710.300	150	50	710	400	300	45	62	28	8	92	103	24	Tr16×2	130	M8	30.9
SSM-150.710.400	150	50	710	300	400	45	62	28	8	53	47	24	Tr16×2	130	M8	28.0
SSK-150.710.400	150	50	710	300	400	45	62	28	8	92	103	24	Tr16×2	130	M8	28.0
SSM-150.810.400	150	50	810	400	400	45	62	28	8	53	47	24	Tr16×2	130	M8	33.3
SSK-150.810.400	150	50	810	400	400	45	62	28	8	92	103	24	Tr16×2	130	M8	33.3

Continued

SSM / SSK
(continued)



Legend:
1) Locking device standard
2) Position grease nipple

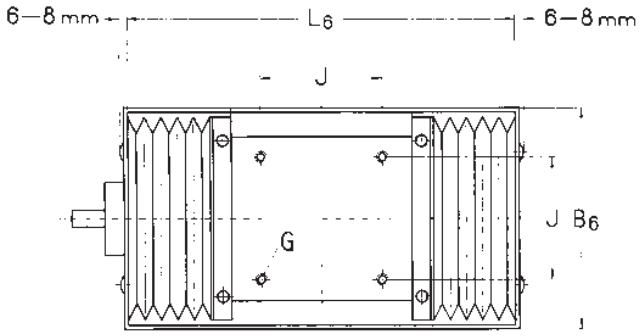
Continued

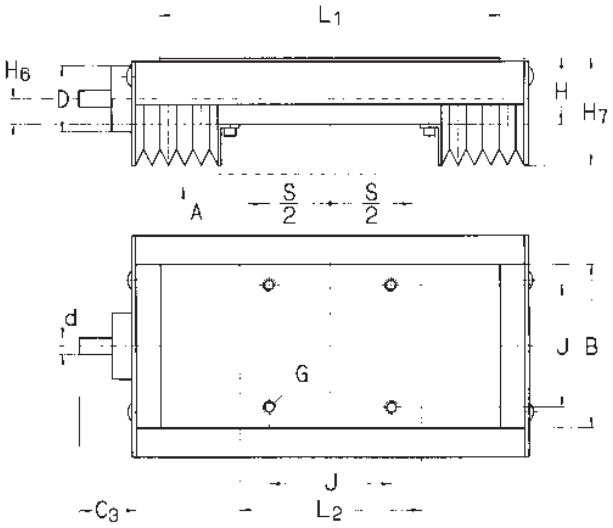
Designations	Dimensions				Stroke								Screw			Weight
	B	H	L_1	L_2	S	A_1	A_2	C	C_1	C_2	D_1	H_1	Ø	J	G	GG
	mm															kg
SSM-200.310.100	200	60	310	200	100	45	62	28	8	53	47	25	Tr16×2	170	M8	24.7
SSK-200.310.100	200	60	310	200	100	45	62	28	8	92	103	25	Tr16×2	170	M8	24.7
SSM-200.410.100	200	60	410	300	100	45	62	28	8	53	47	25	Tr16×2	170	M8	33.2
SSK-200.410.100	200	60	410	300	100	45	62	28	8	92	103	25	Tr16×2	170	M8	33.2
SSM-200.510.200	200	60	510	300	200	45	62	28	8	53	47	25	Tr16×2	170	M8	37.2
SSK-200.510.200	200	60	510	300	200	45	62	28	8	92	103	25	Tr16×2	170	M8	37.2
SSM-200.610.200	200	60	610	400	200	45	62	28	8	53	47	25	Tr16×2	170	M8	45.7
SSK-200.610.200	200	60	610	400	200	45	62	28	8	92	103	25	Tr16×2	170	M8	45.7
SSM-200.610.300	200	60	610	300	300	45	62	28	8	53	47	25	Tr16×2	170	M8	41.1
SSK-200.610.300	200	60	610	300	300	45	62	28	8	92	103	25	Tr16×2	170	M8	41.1
SSM-200.710.300	200	60	710	400	300	45	62	28	8	53	47	25	Tr16×2	170	M8	49.6
SSK-200.710.300	200	60	710	400	300	45	62	28	8	92	103	25	Tr16×2	170	M8	49.6
SSM-200.710.400	200	60	710	300	400	45	62	28	8	53	47	25	Tr16×2	170	M8	45.0
SSK-200.710.400	200	60	710	300	400	45	62	28	8	92	103	25	Tr16×2	170	M8	45.0
SSM-200.810.400	200	60	810	400	400	45	62	28	8	53	47	25	Tr16×2	170	M8	53.5
SSK-200.810.400	200	60	810	400	400	45	62	28	8	92	103	25	Tr16×2	170	M8	53.5
SSM-300.410.100	300	75	410	300	100	55	74	20	10	80	66	34.5	Tr20×4	260	M10	64.6
SSK-300.410.100	300	75	410	300	100	55	74	20	10	146	125	34.5	Tr20×4	260	M10	64.6
SSM-300.510.100	300	75	510	400	100	55	74	20	10	80	66	34.5	Tr20×4	260	M10	80.7
SSK-300.510.100	300	75	510	400	100	55	74	20	10	146	125	34.5	Tr20×4	260	M10	80.7
SSM-300.510.200	300	75	510	300	200	55	74	20	10	80	66	34.5	Tr20×4	260	M10	72.4
SSK-300.510.200	300	75	510	300	200	55	74	20	10	146	125	34.5	Tr20×4	260	M10	72.4
SSM-300.610.200	300	75	610	400	200	55	74	20	10	80	66	34.5	Tr20×4	260	M10	88.6
SSK-300.610.200	300	75	610	400	200	55	74	20	10	146	125	34.5	Tr20×4	260	M10	88.6
SSM-300.710.300	300	75	710	400	300	55	74	20	10	80	66	34.5	Tr20×4	260	M10	96.4
SSK-300.710.300	300	75	710	400	300	55	74	20	10	146	125	34.5	Tr20×4	260	M10	96.4
SSM-300.810.400	300	75	810	400	400	55	74	20	10	80	66	34.5	Tr20×4	260	M10	104.3
SSK-300.810.400	300	75	810	400	400	55	74	20	10	146	125	34.5	Tr20×4	260	M10	104.3
SSM-300.1010.500	300	75	1010	500	500	55	74	20	10	80	66	34.5	Tr20×4	260	M10	128.3
SSK-300.1010.500	300	75	1010	500	500	55	74	20	10	146	125	34.5	Tr20×4	260	M10	128.3

Precision slides

RSS

Precision slides with crossed roller units and pre-loaded planetary roller screws

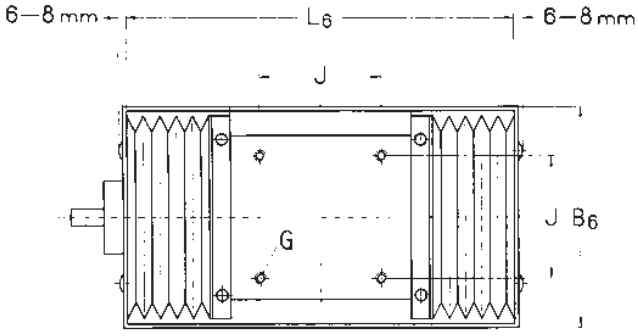


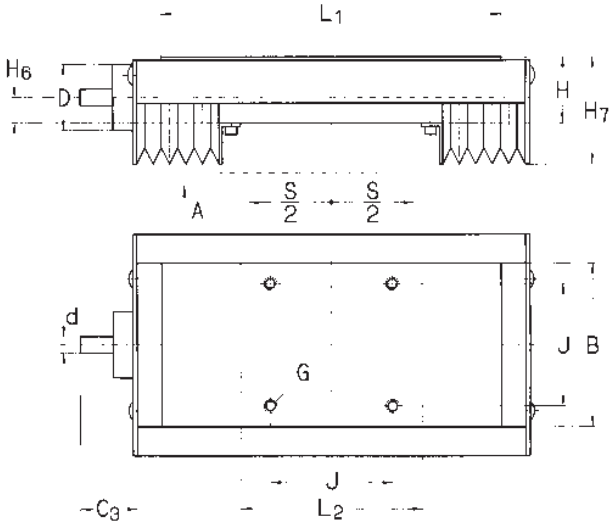


Designations	Dimensions				Stroke Maximum stroke between end stops											Load-carrying capacities
	B	H	L_1	L_2	S	B_6	C_3	d	D	H_6	H_7	J	L_6	G	N	C_0
		mm														kN
RSS100.260.050	100	40	260	210	50	164	19	5	30	15.5	65	74	290	M6	6.6	8.8
RSS100.310.050	100	40	310	260	50	164	19	5	30	15.5	65	74	340	M6	6.6	10.9
RSS100.360.050	100	40	360	310	50	164	19	5	30	15.5	65	74	390	M6	6.6	13
RSS100.310.100	100	40	310	210	100	164	19	5	30	15.5	65	74	340	M6	6.6	8.8
RSS100.360.100	100	40	360	260	100	164	19	5	30	15.5	65	74	390	M6	6.6	10.9
RSS100.410.100	100	40	410	310	100	164	19	5	30	15.5	65	74	440	M6	6.6	13
RSS100.360.150	100	40	360	210	150	164	19	5	30	15.5	65	74	390	M6	6.6	8.8
RSS100.410.150	100	40	410	260	150	164	19	5	30	15.5	65	74	440	M6	6.6	10.9
RSS100.460.150	100	40	460	310	150	164	19	5	30	15.5	65	74	490	M6	6.6	13
RSS100.460.200	100	40	460	260	200	164	19	5	30	15.5	65	74	490	M6	6.6	10.9
RSS150.410.100	150	50	410	310	100	214	30	10	47	24	75	116	450	M8	9	35
RSS150.510.100	150	50	510	410	100	214	30	10	47	24	75	116	550	M8	9	48.8
RSS150.610.100	150	50	610	510	100	214	30	10	47	24	75	116	650	M8	9	60.5
RSS150.510.200	150	50	510	310	200	214	30	10	47	24	75	116	550	M8	9	35
RSS150.610.200	150	50	610	410	200	214	30	10	47	24	75	116	650	M8	9	48.8
RSS150.710.200	150	50	710	510	200	214	30	10	47	24	75	116	750	M8	9	60.8
RSS150.610.300	150	50	610	310	300	214	30	10	47	24	75	116	650	M8	9	35
RSS150.710.300	150	50	710	410	300	214	30	10	47	24	75	116	750	M8	9	48.8
RSS150.810.300	150	50	810	510	300	214	30	10	47	24	75	116	850	M8	9	60.8
RSS150.810.400	150	50	810	410	400	214	30	10	47	24	75	116	850	M8	9	48.8

Continued

RSS
(continued)



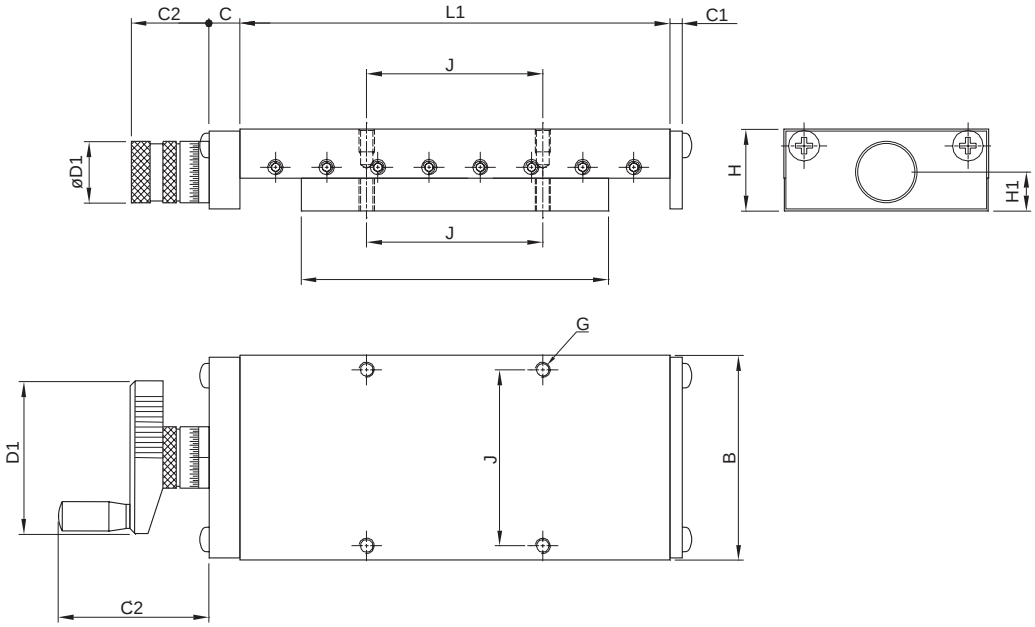


Continued

Designations	Dimensions				Stroke Maximum stroke between end stops											Load-carrying capacities
	B	H	L_1	L_2	S	B_6	C_3	d	D	H_6	H_7	J	L_6	G	N	C_0
		mm														kN
RSS200.410.100	200	60	410	310	100	264	30	10	47	25	85	154	450	M8	9	35
RSS200.510.100	200	60	510	410	100	264	30	10	47	25	85	154	550	M8	9	48.8
RSS200.610.100	200	60	610	510	100	264	30	10	47	25	85	154	650	M8	9	60.5
RSS200.510.200	200	60	510	310	200	264	30	10	47	25	85	154	550	M8	9	35
RSS200.610.200	200	60	610	410	200	264	30	10	47	25	85	154	650	M8	9	48.8
RSS200.710.200	200	60	710	510	200	264	30	10	47	25	85	154	750	M8	9	60.5
RSS200.610.300	200	60	610	310	300	264	30	10	47	25	85	154	650	M8	9	35
RSS200.710.300	200	60	710	410	300	264	30	10	47	25	85	154	750	M8	9	48.8
RSS200.810.300	200	60	810	510	300	264	30	10	47	25	85	154	850	M8	9	60.5
RSS200.810.400	200	60	810	410	400	264	30	10	47	25	85	154	850	M8	9	48.8
RSS200.910.400	200	60	910	510	400	264	30	10	47	25	85	154	950	M8	9	60.5
RSS300.515.100	300	75	515	415	100	364	36	10	55	28	100	245	559	M10	11	16.8
RSS300.615.100	300	75	615	515	100	364	36	10	55	28	100	245	659	M10	11	20.6
RSS300.515.200	300	75	515	315	200	364	36	10	55	28	100	245	559	M10	11	12.2
RSS300.615.200	300	75	615	415	200	364	36	10	55	28	100	245	659	M10	11	16.8
RSS300.715.200	300	75	715	515	200	364	36	10	55	28	100	245	759	M10	11	20.6
RSS300.615.300	300	75	615	315	300	364	36	10	55	28	100	245	659	M10	11	12.2
RSS300.715.300	300	75	715	415	300	364	36	10	55	28	100	245	759	M10	11	16.8
RSS300.815.300	300	75	815	515	300	364	36	10	55	28	100	245	859	M10	11	20.6
RSS300.815.400	300	75	815	415	400	364	36	10	55	28	100	245	859	M10	11	16.8
RSS300.915.400	300	75	915	515	400	364	36	10	55	28	100	245	959	M10	11	20.6

RSM / RSK

Precision tables for manual operation with micrometer knurl RSM, with hand crank RSK



Designations	Dimensions				Stroke				Screw						Load-carrying capacities	Weight
	B	H	L_1	L_2	S	C	C_1	C_2	D_1	H_1	Ø	J	G	N	C_0	GG
	mm														kN	kg
RSM50.080.025	50	25	80	55	25	14	5	37.5	23	12.3	M6×1	37	M4	4.5	1.7	0.7
RSM50.130.025	50	25	130	105	25	14	5	37.5	23	12.3	M6×1	37	M4	4.5	3.3	1.1
RSM50.130.050	50	25	130	80	50	14	5	37.5	23	12.3	M6×1	37	M4	4.5	2.5	1.0
RSM50.130.075	50	25	130	55	75	14	5	37.5	23	12.3	M6×1	37	M4	4.5	1.7	0.9
RSM50.180.075	50	25	180	105	75	14	5	37.5	23	12.3	M6×1	37	M4	4.5	3.3	1.3
RSM50.180.100	50	25	180	80	100	14	5	37.5	23	12.3	M6×1	37	M4	4.5	2.5	1.2
RSM75.130.025	75	32	130	105	25	15	6	46	30	15	M10×1	62	M4	4.5	3.4	2.2
RSK75.130.025	75	32	130	105	25	15	6	88	71	15	M10×1	62	M4	4.5	3.3	2.2
RSM75.180.050	75	32	180	130	50	15	6	46	30	15	M10×1	62	M4	4.5	5.1	3.0
RSK75.180.050	75	32	180	130	50	15	6	88	71	15	M10×1	62	M4	4.5	5.1	3.0
RSM75.180.025	75	32	180	150	50	15	6	46	30	15	M10×1	62	M4	4.5	4.25	2.8
RSK75.180.025	75	32	180	150	50	15	6	88	71	15	M10×1	62	M4	4.5	4.25	2.8
RSM75.180.075	75	32	180	105	75	15	6	46	30	15	M10×1	62	M4	4.5	3.4	2.6
RSK75.180.075	75	32	180	105	75	15	6	88	71	15	M10×1	62	M4	4.5	3.4	2.6
RSM75.230.075	75	32	230	155	75	15	6	46	30	15	M10×1	62	M4	4.5	5.1	3.4
RSK75.230.075	75	32	230	155	75	15	6	88	71	15	M10×1	62	M4	4.5	5.1	3.4
RSM75.230.075	75	32	230	130	100	15	6	46	30	15	M10×1	62	M4	4.5	4.25	3.3
RSK75.230.075	75	32	230	130	100	15	6	88	71	15	M10×1	62	M4	4.5	4.25	3.3
RSM75.230.075	75	32	230	105	125	15	6	46	30	15	M10×1	62	M4	4.5	3.4	3.1
RSK75.230.075	75	32	230	105	125	15	6	88	71	15	M10×1	62	M4	4.5	3.4	3.1

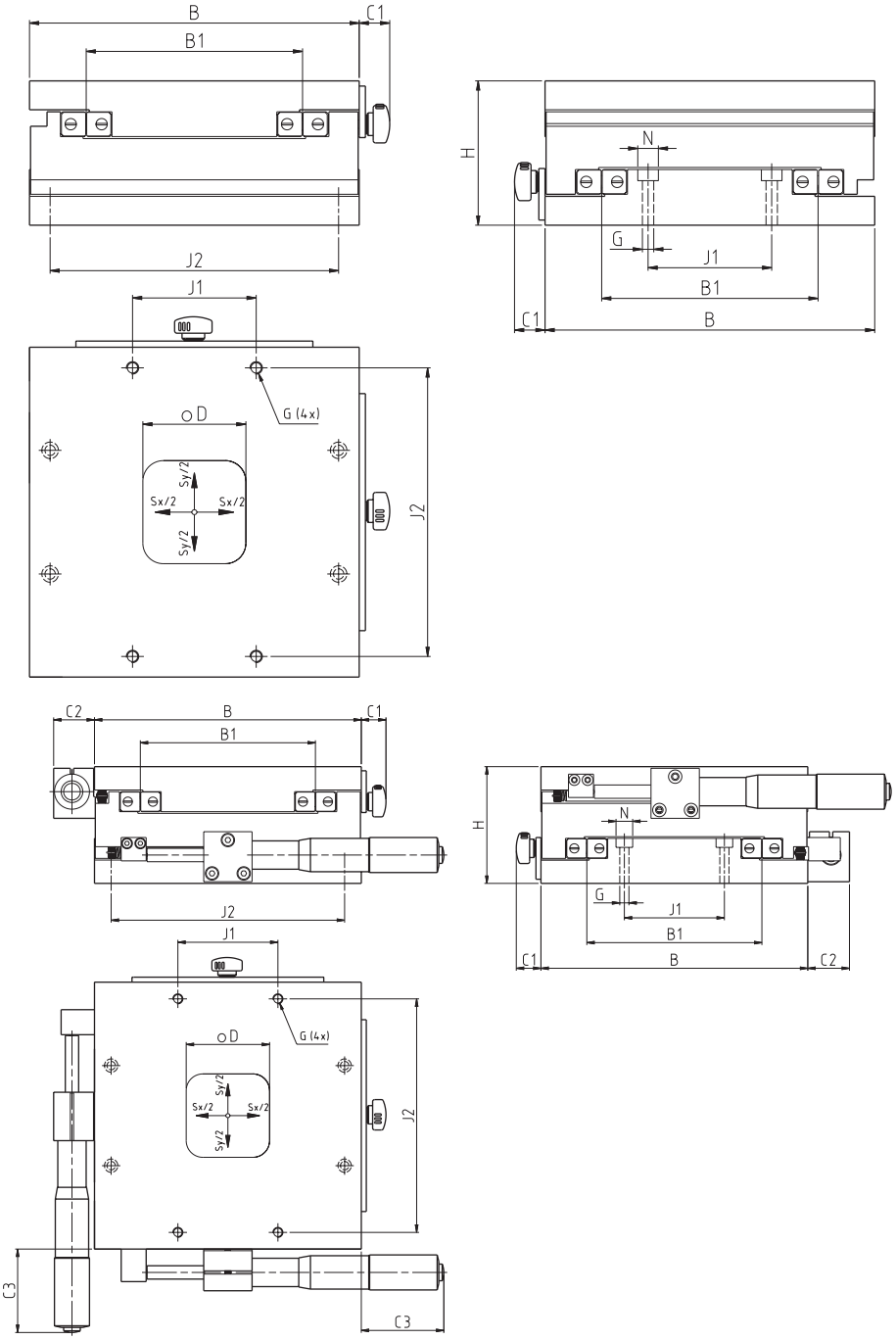
Continued

Continued

Designations	Dimensions				Stroke						Screw				Load-carrying capacities	Weight
	B	H	L_1	L_2	S	C	C_1	C_2	D_1	H_1	Ø	J	G	N	C_0	GG
	mm														kN	kg
RSM100.260.050	100	40	260	210	50	15	6	46	30	15.5	M10×1	74	M6	6.6	8.8	6.8
RSK100.260.050	100	40	260	210	50	15	6	88	71	15.5	M10×1	74	M6	6.6	8.8	6.8
RSM100.310.050	100	40	310	260	50	15	6	46	30	15.5	M10×1	74	M6	6.6	10.9	8.2
RSK100.310.050	100	40	310	260	50	15	6	88	71	15.5	M10×1	74	M6	6.6	10.9	8.2
RSM100.360.050	100	40	360	310	50	15	6	46	30	15.5	M10×1	74	M6	6.6	13	9.6
RSK100.360.050	100	40	360	310	50	15	6	88	71	15.5	M10×1	74	M6	6.6	13	9.6
RSM100.310.100	100	40	310	210	100	15	6	46	30	15.5	M10×1	74	M6	6.6	8.8	7.5
RSK100.310.100	100	40	310	210	100	15	6	88	71	15.5	M10×1	74	M6	6.6	8.8	7.5
RSM100.360.100	100	40	360	260	100	15	6	46	30	15.5	M10×1	74	M6	6.6	10.9	8.9
RSK100.360.100	100	40	360	260	100	15	6	88	71	15.5	M10×1	74	M6	6.6	10.9	8.9
RSM100.410.100	100	40	410	310	100	15	6	46	30	15.5	M10×1	74	M6	6.6	13	10
RSK100.410.100	100	40	410	310	100	15	6	88	71	15.5	M10×1	74	M6	6.6	13	10
RSM100.360.150	100	40	360	210	150	15	6	46	30	15.5	M10×1	74	M6	6.6	8.8	8.2
RSK100.360.150	100	40	360	210	150	15	6	88	71	15.5	M10×1	74	M6	6.6	8.8	8.2
RSM100.410.150	100	40	410	260	150	15	6	46	30	15.5	M10×1	74	M6	6.6	10.9	9.6
RSK100.410.150	100	40	410	260	150	15	6	88	71	15.5	M10×1	74	M6	6.6	10.9	9.6
RSM100.460.150	100	40	460	310	150	15	6	46	30	15.5	M10×1	74	M6	6.6	13	11
RSK100.460.150	100	40	460	310	150	15	6	88	71	15.5	M10×1	74	M6	6.6	13	11
RSM100.460.200	100	40	460	260	200	15	6	46	30	15.5	M10×1	74	M6	6.6	10.9	10
RSK100.460.200	100	40	460	260	200	15	6	88	71	15.5	M10×1	74	M6	6.6	10.9	10
RSM150.410.100	150	50	410	310	100	20	8	63	47	24	Tr16×2	116	M8	9	35	20
RSK150.410.100	150	50	410	310	100	20	8	122	102	24	Tr16×2	116	M8	9	35	20
RSM150.510.100	150	50	510	410	100	20	8	63	47	24	Tr16×2	116	M8	9	48.8	25
RSK150.510.100	150	50	510	410	100	20	8	122	102	24	Tr16×2	116	M8	9	48.8	25
RSM150.610.100	150	50	610	510	100	20	8	63	47	24	Tr16×2	116	M8	9	60.5	30
RSK150.610.100	150	50	610	510	100	20	8	122	102	24	Tr16×2	116	M8	9	60.5	30
RSM150.510.200	150	50	510	310	200	20	8	63	47	24	Tr16×2	116	M8	9	35	22
RSK150.510.200	150	50	510	310	200	20	8	122	102	24	Tr16×2	116	M8	9	35	22
RSM150.610.200	150	50	610	410	200	20	8	63	47	24	Tr16×2	116	M8	9	48.8	28
RSK150.610.200	150	50	610	410	200	20	8	122	102	24	Tr16×2	116	M8	9	48.8	28
RSM150.710.200	150	50	710	510	200	20	8	63	47	24	Tr16×2	116	M8	9	60.5	33
RSK150.710.200	150	50	710	510	200	20	8	122	102	24	Tr16×2	116	M8	9	60.5	33
RSM150.610.300	150	50	610	310	300	20	8	63	47	24	Tr16×2	116	M8	9	35	25
RSK150.610.300	150	50	610	310	300	20	8	122	102	24	Tr16×2	116	M8	9	35	25
RSM150.710.300	150	50	710	410	300	20	8	63	47	24	Tr16×2	116	M8	9	48.8	30
RSK150.710.300	150	50	710	410	300	20	8	122	102	24	Tr16×2	116	M8	9	48.8	30
RSM150.810.300	150	50	810	510	300	20	8	63	47	24	Tr16×2	116	M8	9	60.5	36
RSK150.810.300	150	50	810	510	300	20	8	122	102	24	Tr16×2	116	M8	9	60.5	36
RSM150.810.400	150	50	810	410	400	20	8	63	47	24	Tr16×2	116	M8	9	48.8	33
RSK150.810.400	150	50	810	410	400	20	8	122	102	24	Tr16×2	116	M8	9	48.8	33

Compact cross tables

TO / TS



Designations	Dimensions			Stroke								Load-carrying capacities	Weight
	B	H	Sx Sy	B_1	C_1	C_2	C_3	D	G	J_1	J_2	C_0	GA
	mm											N	kg
TO 085	85	40	50	48	16	–	–	22	M5	20	70	3 400	0.8
TS 085	85	40	25	48	16	22.5	33	22	M5	20	70	4 200	1.1
TO 160	160	70	100	105	15	–	–	50	M6	60	140	12 400	4.0
TS 160	160	70	50	105	15	25	50	50	M6	60	140	15 600	4.8

Ordering key

LTB [ ] . [ ] . [ ] [ ] [ ] [ ] - [ ] - [ ]

Type:

Width of table:
Width of bottom part (see dimension specifications) . . . . . 110 to 400

Length of table:
L_1 length of bottom part (see dimension specifications) . . . . . 150 to 2860

Two driving possibilities:

Ball screw	No preload	SH
	No preload	SX
	Preloaded	TN
	Preloaded	TL
Linear motor	Motor type	F
	Motor type	A

For ball screw	Screw diameter	12 to 40
For linear motor	Number of motor phases	2 - 3

For ball screw	Screw lead	05 to 40
For linear motor	Primary part length [cm]	09 - 40

For ball screw	Nothing	
For linear motor	Primary part width [cm]	06 - 14

Covers:

With bellows	BL
Without cover	–
With steel cover	SC

Precision class:

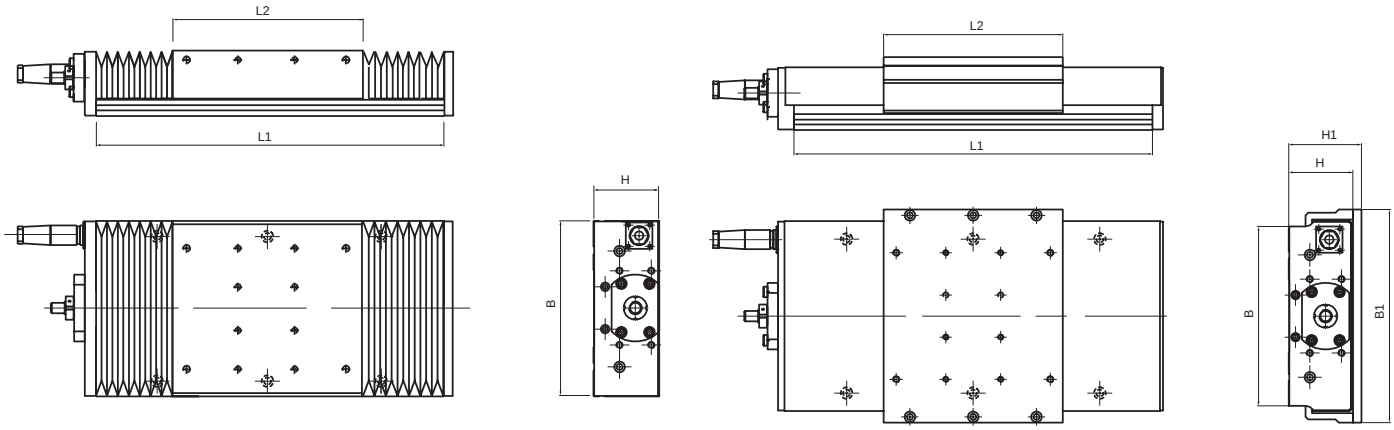
Low precision	P10
Medium precision	P5
High precision	P2
Highest precision	P1

Example: LTB 235 . 0880 . TN 05 14 - BL - P2/V

5

Profile rail guide slides

LTB with screw drive



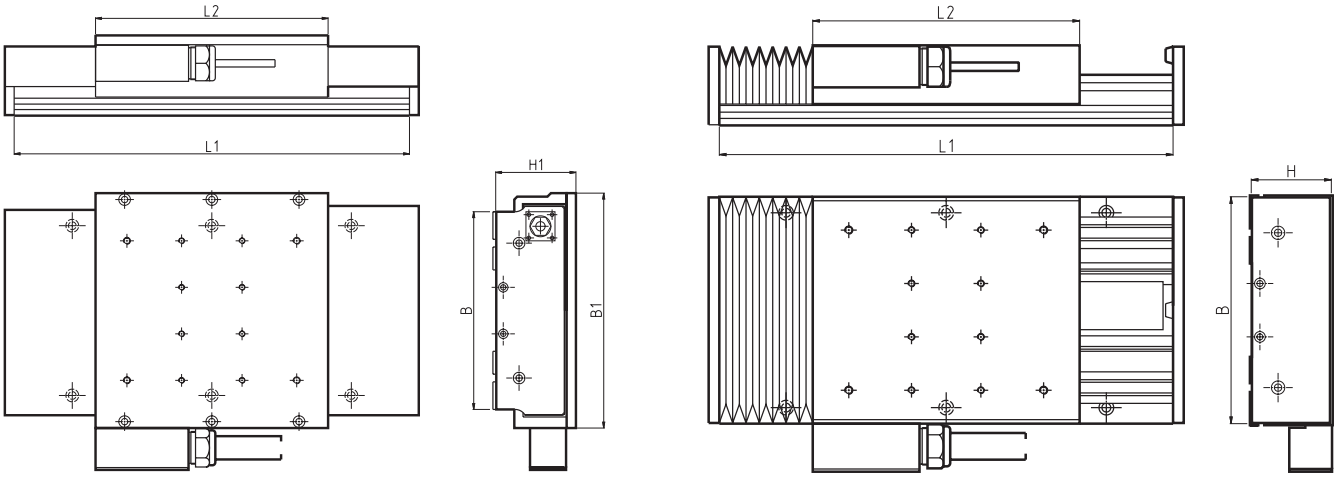
Designations	Dimensions						Stroke	1)	2)	Screw	Pitch	3)
	B	B_1	H	H_1	L_1	L_2	S_1	S_2	F_{oz}	Ø	p	C_{oa}
	mm								kN	mm		kN
LTB 110	110	122	40	47	150 … 950	110	20 … 505	30 … 830	19.6	12	5 … 10	3.6 … 7.1
LTB 170	170	202	60	69	220 … 1600	170	35 … 1085	40 … 1420	46.4	16	5 … 16	6.4 … 8.7
LTB 235	235	275	85	97	280 … 2860	235	35 … 2195	35 … 2615	83.2	25	5 … 25	19.5 … 31.0
LTB 320	320	365	115	133	580 … 2860	350	195 … 2180	220 … 2500	104	32	5 … 40	19.4 … 55.0
LTB 400	400	–	135	–	620 … 2860	450	145 … 2135	160 … 2400	186	40	5 … 40	63.0 … 64.0

1) Maximum stroke between end stops:
S_1 with bellows
S_2 without bellows or with steel cover

2) F_{oz} is the maximum static load per table

3) C_{oa} is the maximum static load per screw

LTB with linear motor drive



Designations	Dimensions						Stroke	1)	2)	Motor	3)
	B	B_1	H	H_1	L_1	L_2	S_1	S_2	F_{oz}	Size	F_p
	mm								kN		N
LTB 110	110	122	40	47	150 … 950	110	20 … 505	30 … 830	19.4	F20906	105
					230 … 950	190	20 … 455	30 … 750	19.2	F21806	210
					350 … 950	280	40 … 405	60 … 660	28.8	F22706	315
LTB 170	170	202	60	69	280 … 1600	200	55 … 1065	70 … 1390	46.0	F21806	210
					340 … 1600	280	40 … 1000	50 … 1310	45.8	F22706	315
LTB 235	235	275	85	97	340 … 2860	280	25 … 2195	25 … 2615	81.4	A32008	600
					400 … 2860		45 … 2125	45 … 2530	80.5	A33008	900
					520 … 2860		75 … 2050	75 … 2440	79.6	A34008	1200
LTB 320	320	365	110	133	580 … 2860	280	260 … 2235	265 … 2570	100.4	A32014	1200
					580 … 2860	320	225 … 2200	225 … 2530	98.6	A33014	1800
					580 … 2860	410	135 … 2125	135 … 2440	96.8	A34014	2400

1) Maximum stroke between end stops:
S_1 with bellows
S_2 without bellows or with steel cover

2) F_{oz} is the maximum static load per table

3) F_p is static maximum force (2 to 3s)

Notes

Notes

SKF Linear Motion in the SKF group – a worldwide corporation

SKF Linear Motion is an organisation within SKF which, as the name suggests, is dedicated to the manufacture, sales and service of linear motion products, high precision bearings and spindles.

Actuation systems
SKF Actuation Systems develops and markets systems, combining electro-mechanics and electronics to provide integrated solutions for its customers. Today actuation systems are used within a wide range of products and applications. Primary areas of operation are in medical technology, industrial and manufacturing technology, automation and robot engineering, conveying and domestic technology, health care, hospital and nursing home beds, rehabilitation, furniture and for workplace ergonomics.

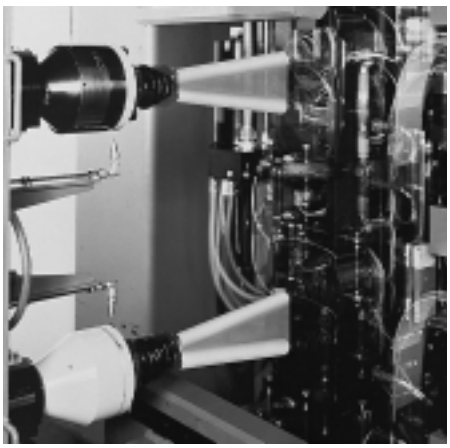
Actuation systems (linear and rotary actuators as well as telescopic pillars) are designed and produced in Switzerland, Germany, Sweden, France and USA.

Ball and roller screws
SKF produces rolled ball screws in two factories, one in Beaufort (for miniature ball screws), the other in Chambery, France. Rolled ball screws are used in a wide range of applications, for example missiles, machinery for cardboard production, aeroplane seats, and medical pumps. SKF is the market leader in roller screws. These screws, which are also produced in Chambery, offer ultimate performance, reliability and lifetime, in a compact design. Key applications include injection moulding, tilting trains, welding and riveting guns, and high performance actuators for tripod robots.

Industrial products
In addition to the range of products mentioned here, which are manufactured by SKF. Linear Motion also offers an extensive assortment of industrial products which are in total synergy to our linear motion products and therefore complete our solutions for customers.

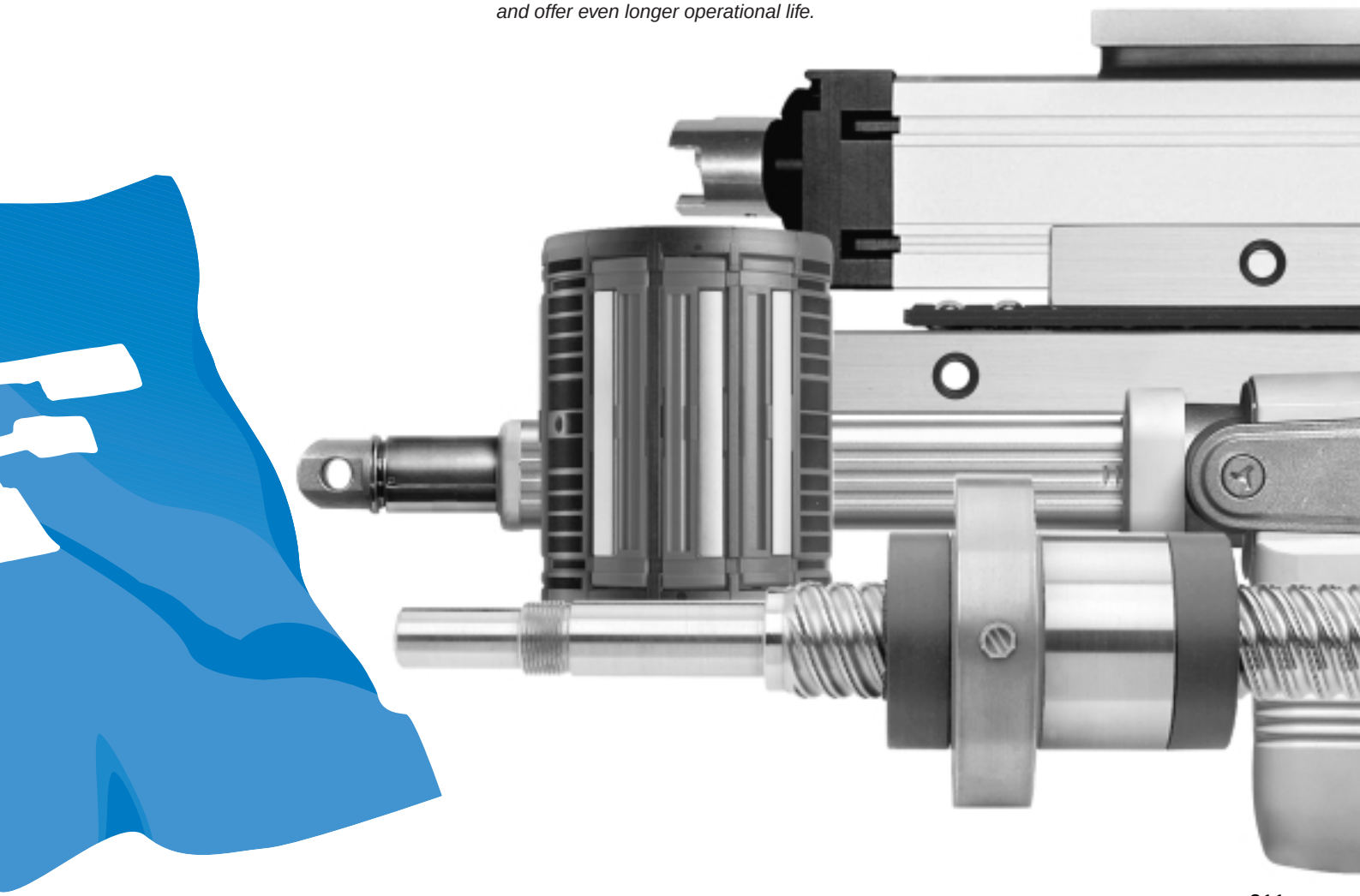
Linear guiding and positioning systems
This business line includes linear ball bearings and shafting, precision rail guides, profile rail guides and positioning systems. Production is located in Meckesheim and Schweinfurt, Germany. Key areas of application include factory automation, electronic component manufacturing, medical equipment.

The SKF Group is the first major bearing manufacturer to have been granted approval according to ISO 14001, the international standard for environmental management systems. The certificate is the most comprehensive of its kind and covers more than 60 SKF production units in 17 countries.



The SKF Engineering & Research Centre is situated just outside Utrecht in The Netherlands. In an area of 17 000 square metres (185 000 sq.ft) some 150 scientists, engineers and support staff are engaged in the further improvement of bearing performance. They are developing technologies aimed at achieving better materials, better designs, better lubricants and better seals – together leading to an even better understanding of the operation of a bearing in its application. This is also where the SKF Life Theory was evolved, enabling the design of bearings which are even more compact and offer even longer operational life.

SKF has developed the Channel concept in factories all over the world. This drastically reduces the lead time from raw material to end product as well as work in progress and finished goods in stock. The concept enables faster and smoother information flow, eliminates bottlenecks and bypasses unnecessary steps in production. The Channel team members have the knowledge and commitment needed to share the responsibility for fulfilling objectives in areas such as quality, delivery time, production flow etc.



Notes

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