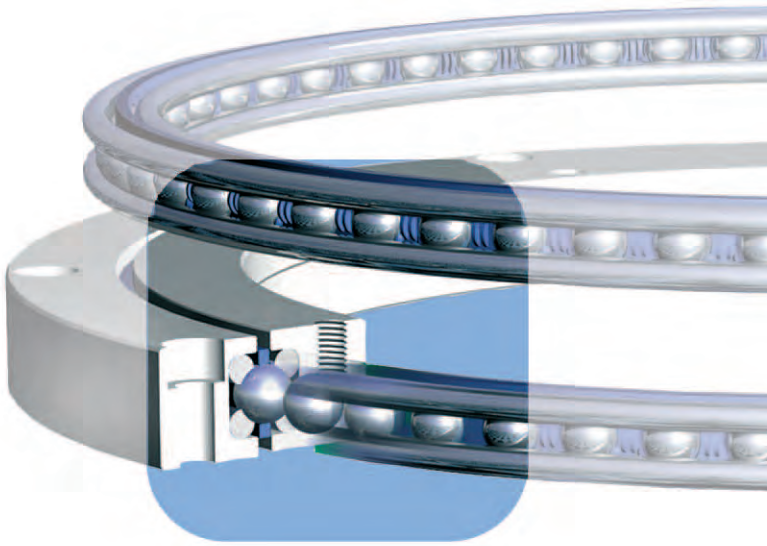
Franke

... an invention prevails



Antifriction
wire race bearings

Linear guides

Positioning systems

GK10E
5/04

TÜV CERT

There are many antifriction bearings ...
....but the Franke bearing is unique

...either bearing elements

1. They sustain forces from whatever direction due to their 4-point geometry

The rolling elements run on four race rings from spring steel or non-corrosive steel.
Open race rings have the advantage that they fit themselves tightly into the bearing rings of the mating structure and compensate machining tolerances. With this technology high precision even with large bearing diameters is achieved.

2. Ground or drawn race rings for easy run and high economical efficiency

Franke developed a special grinding method for the race rings aimed at producing defined race ways which are perfectly adapted to the ball diameter and the planned application. This way the balls are optimally guided, the load rating is increased and the running behaviour is improved.

Depending on the case of application the race rings are supplied in particular surface qualities. Thus the load, the capacity, and precision of the bearing elements are increased and they are better adapted to particular demands.

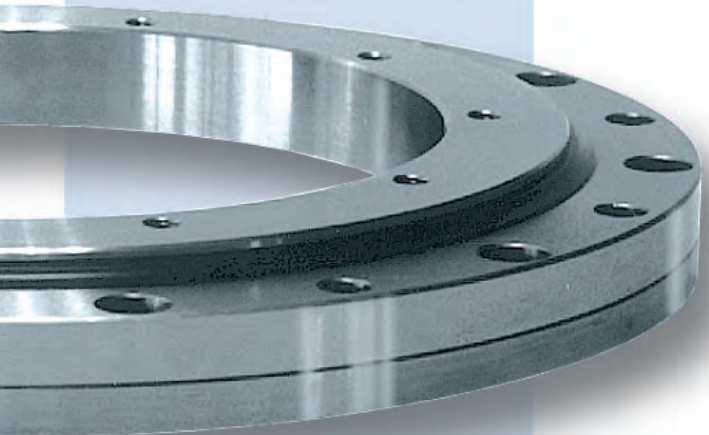
3. Ball cage with retained balls for maximum precision with very low frictional resistance

The ball cage with retained balls keeps the rolling elements in their defined position and facilitates mounting. This way friction is reduced thus improving the running behaviour and reducing the lubricant consumption of the bearing.
This cage type, the so-called ball chain, has been successfully used for many years with bearing assemblies and re-circulating ball elements.

...or complete bearing assemblies

4. Shape and material of the enclosing structure can be freely chosen

Franke bearing assemblies are ready-to-be installed complete bearings with integrated bearing elements. The outer geometrical dimensions are adapted to your requirements hence tolerances and cost of your design are reduced.



5. Many different types make the individual adaptation to a special application possible

Bearing assemblies are available in manifold variants. Owing to years of experience we are able to produce custom-made special bearings which are adapted to any specific application.

Our preferential series LDV provides the cheapest and fastest solution for many applications.

...Specific solutions for optimum performance in particular branches

Machine building

Franke bearing elements are veritable small space wonders. They adapt themselves even to the most limited space conditions and allow you a high degree of freedom in the design of the enclosing structure.
We plan the optimum bearing arrangement for your machine parts depending on your load and speed indications. Herewith the precise adaptation of the cross section, the osculation, or the angular position of the race ways are the decisive parameters for longevity and safe functioning.

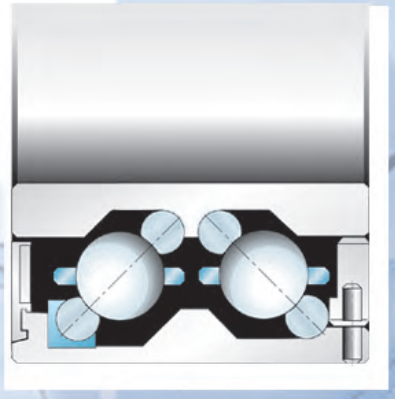
Franke bearing elements are proven components in circular indexing tables.

compact
torsion-free
easy assembly

Medical technology

Franke CT bearings are suited for very high speeds of revolution and can be re-adjusted without clearance even after a long period of operation.
Extreme running silence is reached by the fact that the components rest in an elastomer envelope. The elastomer reduces the bearing noise and provides the electrical insulation of the housing parts. Specific features of theses bearings are uniform run, low rotational resistance, and low structure-borne noise.
You have the choice between many different series which can be adapted to your specific wishes. The design including cross section, bearing seat, drilling configuration can be freely chosen. Adaptation is possible even to the degree that we supply complete modules.

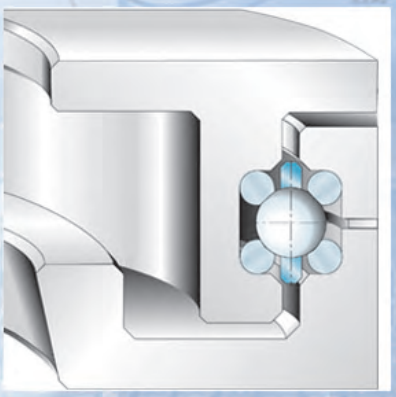
More than 10.000 Franke bearing assemblies of series SDS are in practical service worldwide.



silent
precise
high-speed

Textile machines

Franke bearing elements are compact, sturdy and have a long life. Therefore they are ideally suited for the use in textile machines. Their high economical efficiency has convinced designers of all branches. The race rings are inserted directly into the enclosing structure. There is the choice between rings from spring steel, con-corrosive steel, or antimagnetic steel.
Until now more than 100.000 knitting machines worldwide have been equipped with Franke bearings.



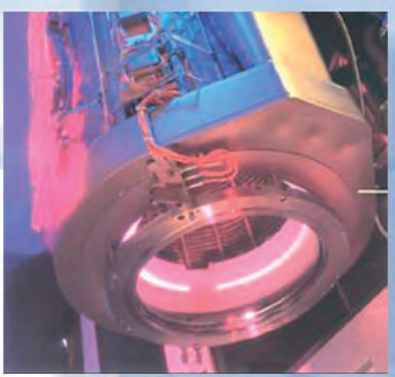
compact
high load
economical

Food industry / packaging industry

The fact that there are numerous variants of Franke bearings whose materials can be freely chosen makes them also suitable for the special requirements of the food and packaging technology. Here we offer washable components from non-corrosive steel or aluminium, or components which are suited for special lubricants, or for lubricant-free applications. Maintenance and cleaning of Franke bearings are facilitated by easy dismantling. Their longevity makes them economically very efficient.

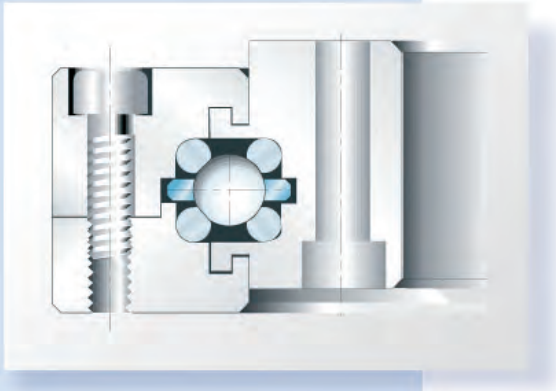
Clean room

Franke antifriction bearings are ideally suited for particular applications such as under clean room, high temperature, or vacuum conditions. Even the most demanding requirements can be met by the use of special materials like ceramics or Teflon. The design and the mating dimensions can be individually planned. Types with very low rotational resistance or lubricant-free versions are possible. There are almost no limits in the realisation of your motive needs.



clean
neutral
long-lived

Particular requirements ...
...need particular designs ...

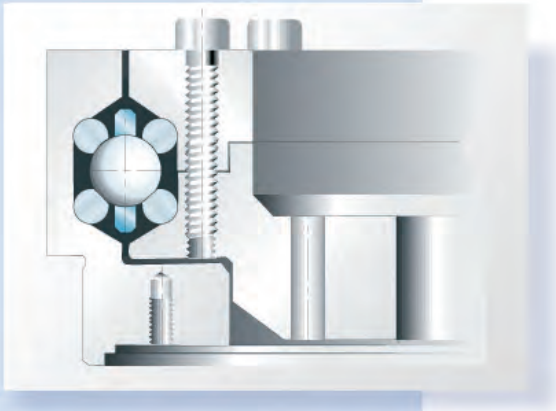


They all are called antifriction bearings but there is a difference

1. Franke 4-point contact bearing assembly with a carrying angle of 45°

The race ways are arranged with an angle of 45° thus enabling an optimum carrying capacity for loads from whatever direction. The bearings are adjusted without clearance; the rotational resistance is adapted to their application. The material for the enclosing structure can be freely chosen and has no influence on the load rating (steel, aluminium non-corrosive steel, bronze casting, plastic).

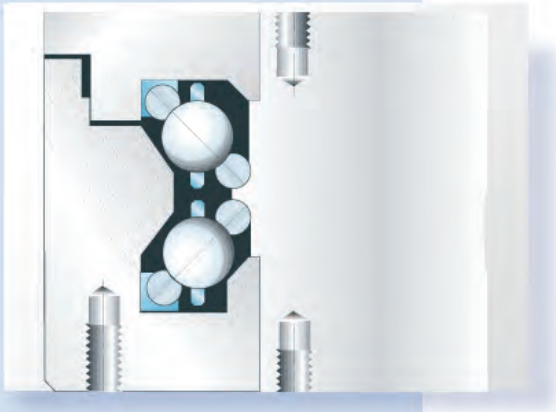
There are numerous variants of seals as for instance the labyrinth seal which is shown in the picture. We find out the appropriate variant for your special application.



2. Franke 4-point contact bearing assembly with a carrying angle of 30° for radial loads

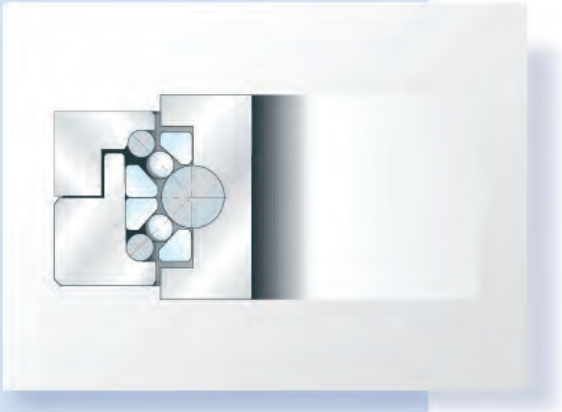
A traditional 4-point contact bearing assembly can be transformed to a radial/axial bearing by adapting its carrying angle. The bearing features can be suited to your individual needs.
The inserted race rings from spring steel provide a high carrying capacity which is independent from whether the mating structure is made of aluminium or any other material.

Very high stiffness is obtained by adjustment of the corresponding preload. The bearing runs without clearance even with relatively high loads. There are different kinds of toothing: e.g. spur toothing, helical gearing, worm gearing, toothed belt.



3. Franke double row inclined bearings for high rotational speed and very high precision

Double row inclined bearings combine the carrying capacity for loads from whatever direction with the running silence and precision which are typical for axial or radial bearings.
The defined rolling motion of both ball rows provides low friction and consequently an especially easy and silent run.
Numerous design variants have been realised, e.g. a particularly compact bearing for baggage scanning devices, which rotates at very high RPMs and at a circumferential speed of 16m/s.
Material combinations as e.g. an outer ring from steel and an inner ring from aluminium are possible. Adjustment and re-adjustment is made by means of a threaded ring.



4. Franke double row 3-point contact bearing with 3 race rings

Double row 3-point contact bearings are flexible bearings with low rotational resistance and a very good running behaviour. The bearing compensates elastic tension and deformation without any negative influence on the bearing function.
These bearings are recommended for applications where the mating structures and operating conditions produce relatively high torsion.

...Bearing solutions which are individually adapted ... to any case of application

... and they are all-rounders

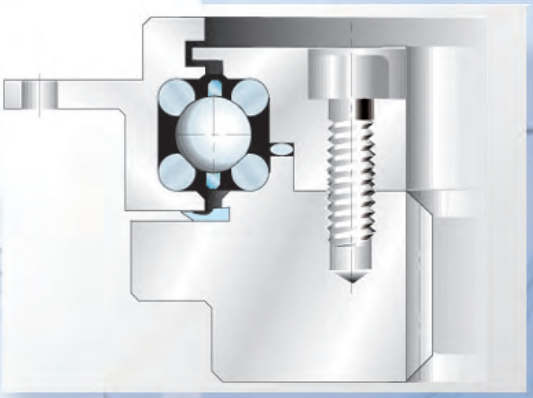
5. Franke 3-point contact bearing as movable bearing with 3 race rings

This type is optimally suited for the realisation of a movable bearing and has similar features as a 4-point contact bearing. Even the most demanding requirements can be met by its combination with a 4-point contact bearing.

6. Franke 4-point contact bearing with seal

There are many possibilities to seal Franke bearing assemblies. Sealing by an O-ring as it is shown in the picture is as well possible as a lip seal or a labyrinth seal.

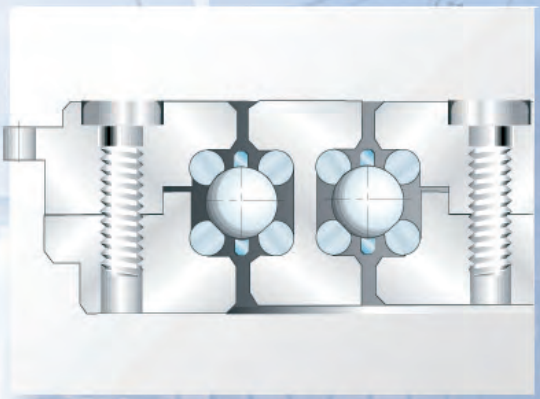
Franke bearing assemblies are complete structural units and are dimensioned according to your design. Herewith machining tolerances are reduced and mounting is simplified.



7. Franke double bearings for particular applications

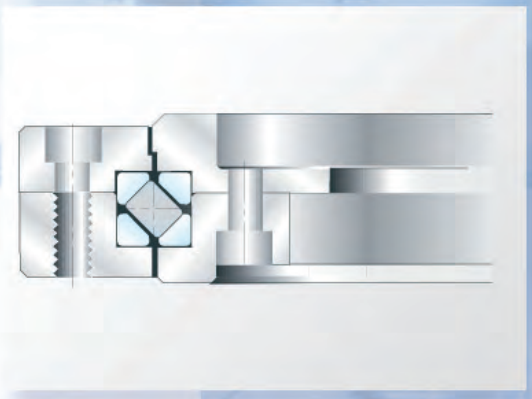
Each ring can be moved individually and be turned in different directions. The number of rings is not limited and the structural shape can be individually adapted.

Double bearings are one example in many others showing the way how custom-designed bearings provide structural advantages for the user.



8. Franke bearing assemblies as cylindrical roller bearings

Cylindrical roller bearings are unrivalled regarding stiffness and compactness. Here the positive effect of the integrated Franke system with the inserted race rings is obvious.

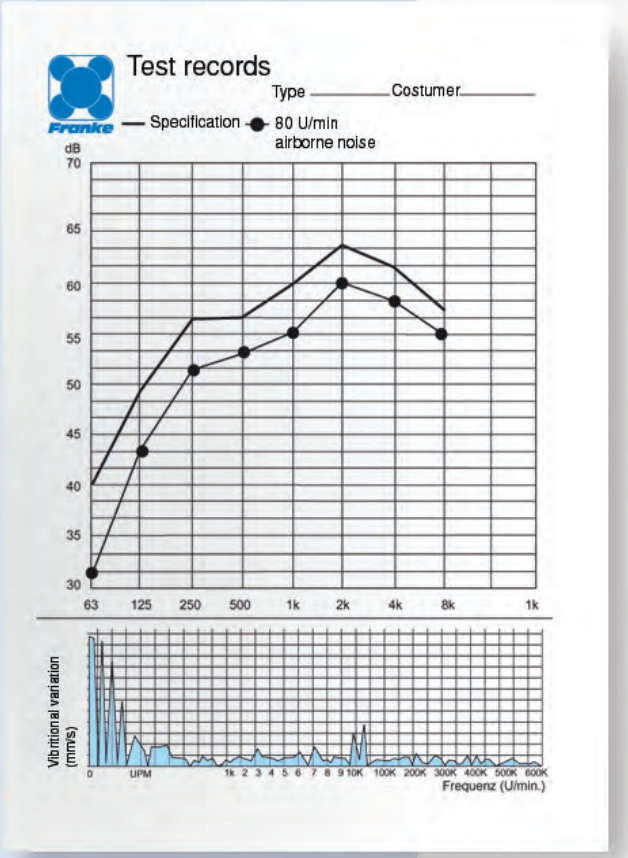


Bearing assemblies as low noise bearing

Bearing assemblies of the low noise type and double row angular bearings are bearings which are ready for installation meeting even the highest requirements concerning easy run, low noise and precision.
In the last few years we have supplied more than 5000 central bearings for computer tomographs worldwide. All the famous manufacturers from this branch have realized the advantages of the Franke system and are using them consequently.

Here we can give you only a short survey on the different bearing types. The application possibilities are too versatile, the desires are too different.

All dimensions (height, width, bore configuration, etc.) are determined according to the customer's desires and requirements. We produce antifriction bearings of these types in the diameters from 500 - 1600 mm.



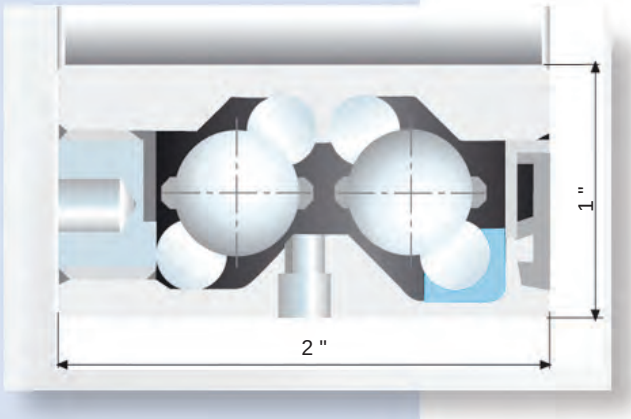
The elastomer is used in the stationary ring.The inner ring is electrically insulated against the outer ring.

We supply all data according to specification. RPMs, radial and axial accuracy as well as airborne and structure-borne noise can be documented and supplied with each bearing.

On request our bearings are tested in longtime run, here stiffness against tilt and lifetime are investigated.

In addition we make detailed calculations.

Please benefit from our 50 years of experience in the production of antifriction bearings.



New

Angular ball bearing Series LDS

Especially for small mounting space we recommend our new compact angular ball bearing. With a cross section of 1x2 inches it meets the dimensions of standard bearings and combines high stiffness and precision with silent running even with high RPMs.

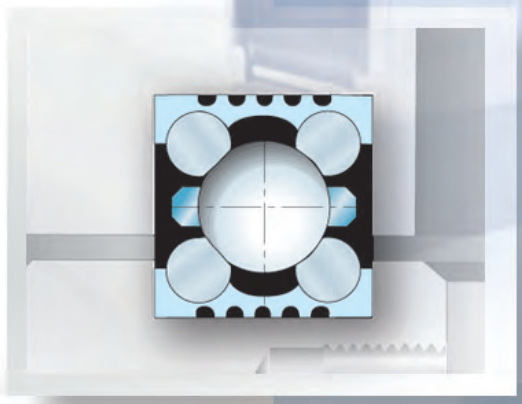
In all applications where two bearings are usually required to take the loads and moments our new compact bearings can replace them both.

Bearing assemblies for special demands

Two-sided elastomer bearing

This bearing was developed for particularly silent run and low structure borne noise. This aim was reached by race rings of high-surface quality which are embedded into elastomer. The rotational resistance is adjusted according to the application. This invention was patented.

The bearing proved to be successful in the range of computer tomographs. It is suitable for speeds up to 6 m/s. Inner and outer ring are electrically insulated against each other.

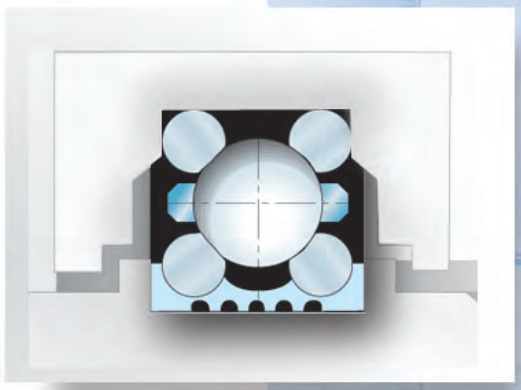


High load capacity silent running

One-sided elastomer bearing (hybrid bearing)

This bearing was developed on the basis of the low-noise bearing but it differs from that by its additional stiffness. Regarding smooth and silent run both bearings are nearly equal.

The hybrid bearing is mainly used in cases where high loads and moments are to be sustained. The inner ring is electrically insulated against the outer ring.

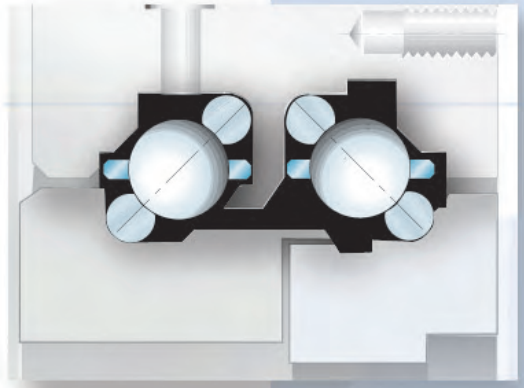


Low structure-borne noise
Free selection of dimensions

Angular ball bearing standard

The double row angular ball bearing was developed for CTs with high RPMs. Here two rows of balls are running in a defined way. The friction conditions are especially favourable and the bearings are particularly stiff and free from clearance even in the tilted condition.

This bearing type meets very high demands for precison and low running noise.



Choice of different versions

Angular ball bearing with elastomer inlay

We made good experience with the elastomer inlay from which we want to benefit also for the angular ball bearing. The loudness level was even more reduced by the elastomer, the same is true for the structure-borne noise.

The elastomer is used in the stationary ring. The inner ring is electrically isolated against the outer ring.

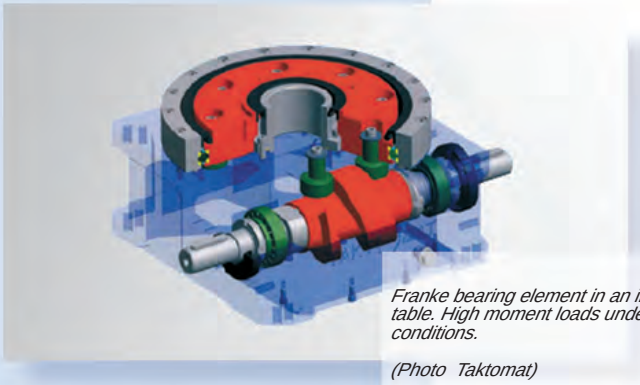
Application examples antifriction bearings

The computer tomograph is equipped with a low-noise Franke bearing. This patented bearing was developed particularly for this purpose; its special merits are very smooth and silent running, low current consumption, and high precision.

(Photo Siemens)

Circular knitting machine. The Franke bearing assembly has an excellent adaptability to changing thermal conditions, thus allowing high speeds with low energy consumption.

(Photo Mayer & Cie.)



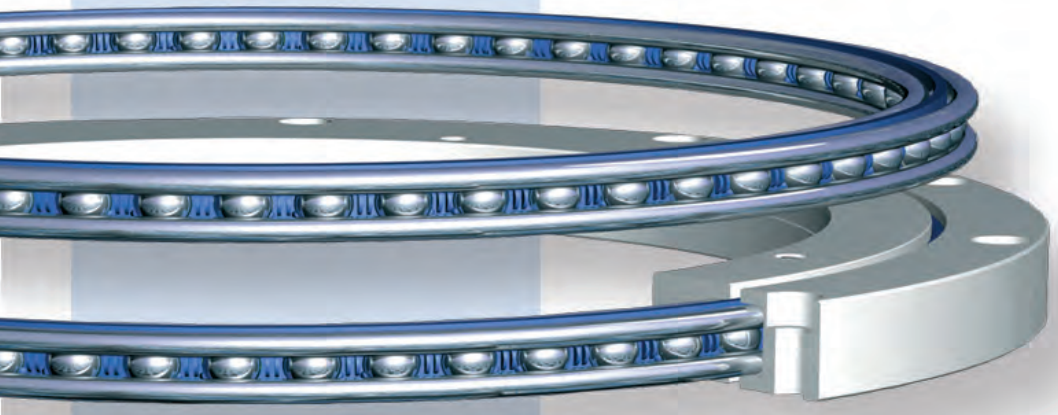
Franke bearing element in an indexing table. High moment loads under rough conditions.

(Photo Taktomat)

Franke bearings are proven in daily operation in numerous applications and markets.
In all cases where the Franke bearing system is incorporated consequently into the design, cost effective solutions result.

The special advantages of the bearings are the space saving design together with high load capacities for loads from whatever direction. The balls run on tough rings from spring steel which are embedded in the mating structure. Load capacity and running behaviour are therefore independent from the material of the mating structure, giving the designer a wide range of materials from which to choose.

Numerous series provide a wide selection range from the LowCost version to slim bearings and special solutions such as our angular ball bearings for CT-scanners.



... visit our website
www.franke-gmbh.com
www.franke-bearings.com

Franke bearing elements in a vacuum-filler in food industries. Due to the space saving design and low price the vacuum-filler is small and economical.

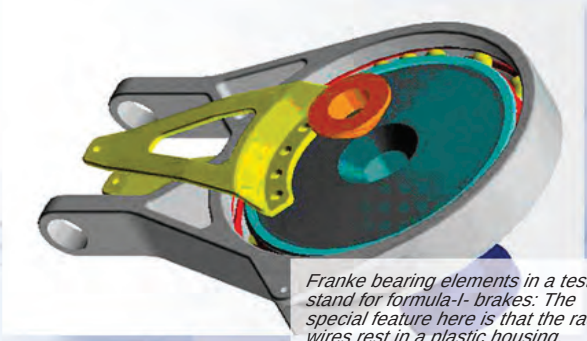
(Photo SCHNELL)

Franke angular bearing in a luggage scanner: High RPMs and the smooth and easy run produce very good results.

(Photo INVISION)

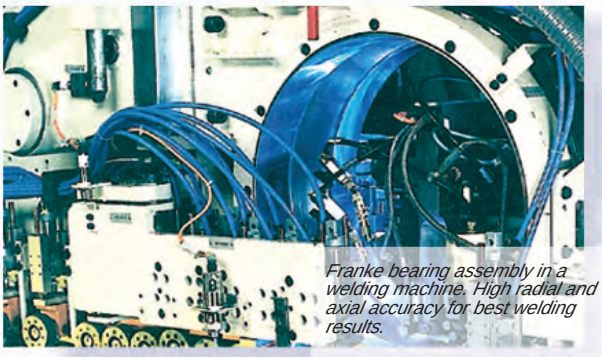
Franke bearing elements in dental x-ray equipment: High precision and easy run produce perfect pictures.

(Photo SIRONA)



Franke bearing elements in a test stand for formula-I- brakes: The special feature here is that the race wires rest in a plastic housing.

(Photo UNI STUTTGART)

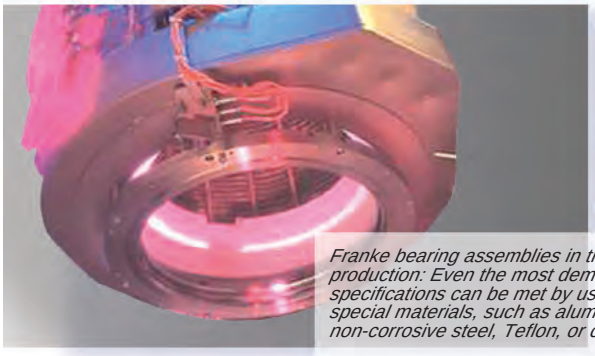


Franke bearing assembly in a welding machine. High radial and axial accuracy for best welding results.

(Photo NOTHELFER)

Franke bearings assemblies with gear, pinion, and drive: We supply bearing assemblies individually with drive according to your demands.

(Photo PTB)



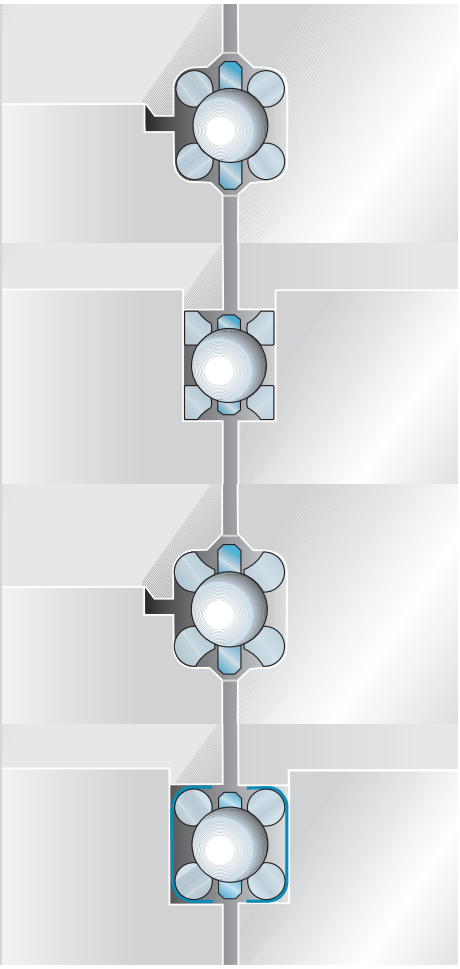
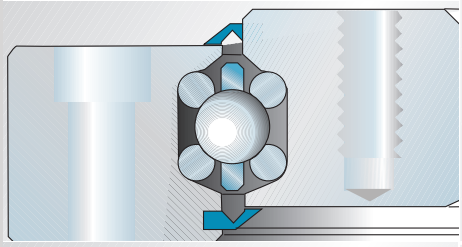
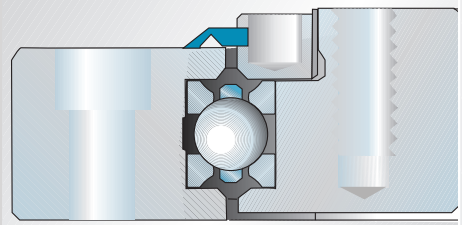
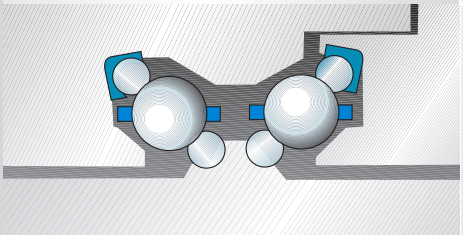
Franke bearing assemblies in the chip production: Even the most demanding specifications can be met by using special materials, such as aluminium, non-corrosive steel, Teflon, or ceramics

(Photo ASML)

Franke bearing elements in a tree harvesting machine: The 4-point system enables these compact bearings to sustain very high leverages.

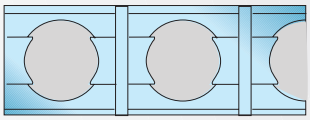
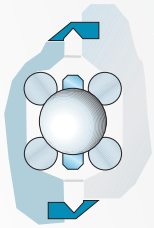
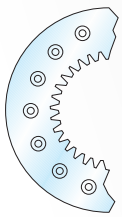
(Photo LOGMAX)

Survey antifriction bearings

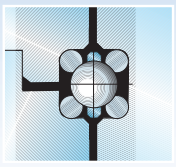
Series	Features	Running accuracy	Circumferential speed	Radial and axial accuracy	Rotational resistance
Bearing elements					
					
LEL Ground races	*the universal* Ground raceways made of spring steel for highest loads and accuracy.	●	◔	●	◔
LER Rectangular profile	*the economical* Rectangular profile with drawn raceways for easy machining of the mating structure and low price.	◔	◔	◑	◑
LED Double profile	*the double profiled* Either ground or drawn raceways for high loads and precision, very cost-effective.	◔	◔	◔	◔
LDD Slim bearing	*the easy-to-mount* Slim bearings with metal sleeves for easy mounting in one piece. Ground raceways for high loads and high precision.	◔	◑	◔	◔
Bearing assemblies					
					
LDL Steel Alu-minium	*the ready-to-use* Complete bearing assembly with seal on both sides, ground raceways for high loads and precision.	●	◑	●	◔
					
LDV Preferential series	*the preferential* Complete bearing assembly with seal on top and rectangular raceways with drawn surface, very cost-effective.	◔	◑	◑	◑
					
LDH Angular ball bearing	*the high dynamic* Complete bearing assembly in customized design to match the special requests of the customer such as noise reduction, high RPMs, high accuracy.	●	●	●	●

● top ◔ very good ◑ good ◔ sufficient

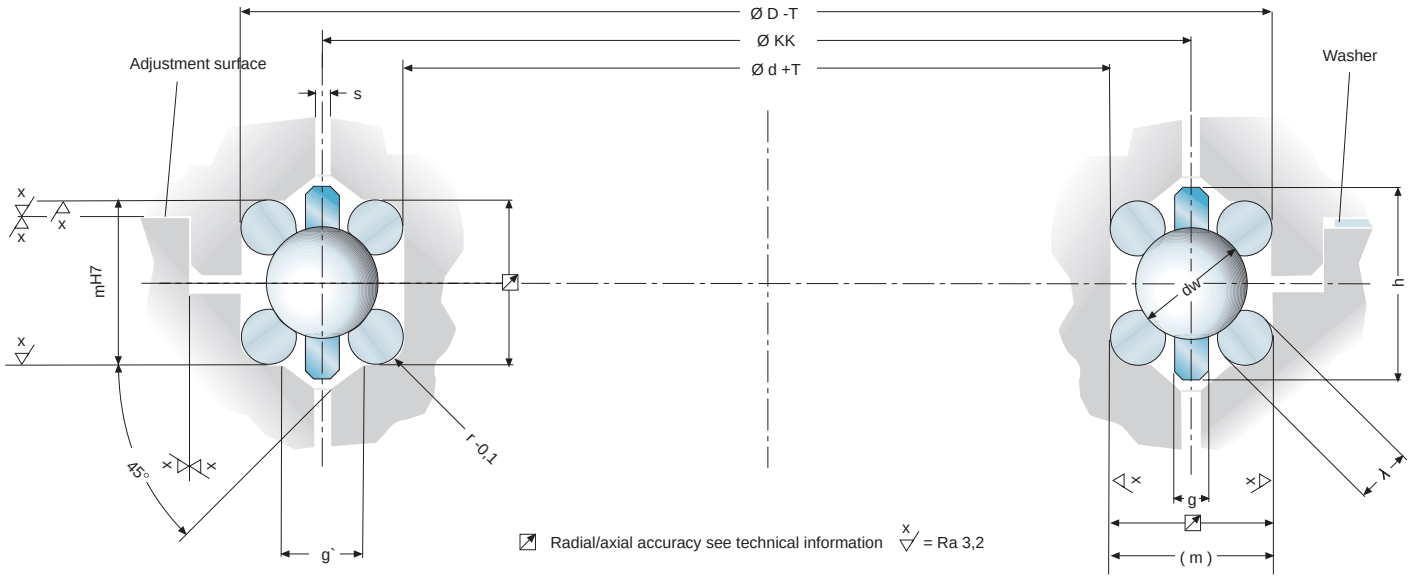
Diameter [mm]	Cross section [mm] 0 100 300 500 1000 1500 2000	Load rating range [mm] 0 10 50 100 200 500 1000	Page
5,9 x 5,9 7,4 x 7,4 9,2 x 9,2 10,6 x 10,6 14,1 x 14,1 18,4 x 18,4 22,6 x 22,6			16-17
11 x 13			18-19
12,86 x 12,86 12,95 x 12,95 13,19 x 13,19 14,61 x 14,61			20-21
9,525 x 9,525 12,700 x 12,700 19,050 x 19,050 25,400 x 25,400			22-23
			24-27
			28
on request		on request	29

Accessories	Page
Strip cage 	30
Washers 	31
Seal 	31
With gear 	27
Alternative materials	
Solutions with motor	

Bearing elements
with ground raceways



Series LEL



Ø KK	d_w	λ	m	r	g	h	g'	s	Tolerance T
70 - 145	5	1,5	5,9	0,65	1,5	7,6	-	2,6	KK Ø ≤ 500 mm T = (IT6*) KK Ø ≥ 500 mm T = (IT7*)
150 - 220	6	2,0	7,4	0,90	1,6	8,6	-	2,6	
225 - 295	8	2,5	9,2	1,15	2,0	10,6	4,0	1,4	
300 - 390	9	3,0	10,6	1,40	2,5	11,6	3,6	1,6	
400 - 790	12	4,0	14,1	1,90	2,5	15,0	4,5	2,0	
800 - 1180	16	5,0	18,4	2,40	3,0	19,6	5,5	2,0	
1200 - 1500	20	6,0	22,6	2,90	3,5	24,2	6,5	3,0	

Dimensions [mm], * DIN ISO 286

Consist of:
- Four ball race rings with ground raceways
- Segmented strip cage with retained balls

Features:
- Direct integration into your mating structure
- Free selection of ball pitch
- Smallest mounting space and high precision
- Best radial and axial accuracy
- Calculation programme to find the most suitable bearing
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the bearing size for you

Ball race rings:
- Standard diameters from 1,5 to 6mm
- Special diameters up to 22 mm
  For special applications other race ring diameters or race rings without raceways are also available. Please consult us.

Rolling elements:
- Steel balls DIN5401, class III

Strip cage:
- Ball guided polyamide ball cage divided into segments
  The segmented strip cage runs very smoothly and silently and compensates length differences caused by high temperatures. The number of segments refers to the ball pitch diameter. For special applications and temperatures higher than 120° C we recommend ball cages made of non-corrosive steel or brass.

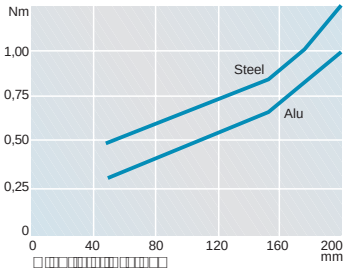
Lubrication:
- with ball bearing grease. For more information see page 34.

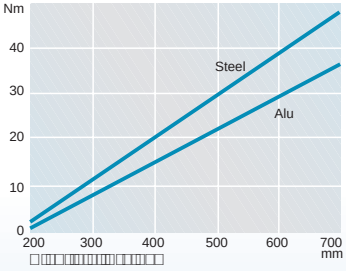
Temperature:
- Continuous operation: -40° C to +100° C, short time operation max. 120° C
- Other temperatures on request

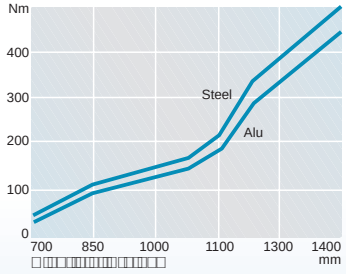
Adjustment:
- By plane surface
- By washers (see page 31)
  The preload is adjusted correctly when the rotational resistance without seal corresponds to table 1 (temperature range -40° C to +100° C).

Circumferrential speed:
- with grease lubrication max. 10 m/s
- with oil lubrication max. 12 m/s

	Ball race ring	Balls	Strip cage
Standard	54SlCr6	100Cr6	PA12
Special	X12CrNi177 X7CrNiAl177 Duratherm	X45Cr13 Oxidkeramik POM	Niro Bronze Brass hard plastics

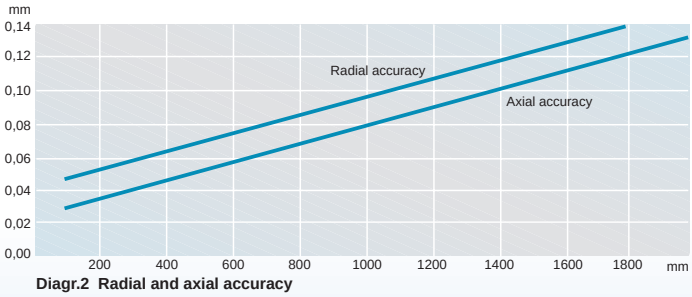






intermediate diameters on request

Ball pitch Ø KK [mm]	Load rating C [KN]	Co [KN]	Weight [kg]	Order number
70	4	5	0,03	71001A
75	4	5	0,03	71003A
80	4	6	0,03	71005A
85	4	6	0,03	71007A
90	4	6	0,04	71009A
95	4	7	0,04	71011A
100	4	7	0,04	71013A
105	4	7	0,04	71015A
110	4	8	0,04	71017A
115	4	8	0,04	71019A
120	4	9	0,04	71021A
125	4	9	0,05	71023A
130	5	9	0,05	71025A
135	5	10	0,05	71027A
140	5	10	0,05	71029A
145	5	10	0,06	71031A
150	9	19	0,09	71033A
155	9	19	0,09	71035A
160	10	20	0,09	71037A
165	10	20	0,09	71039A
170	10	21	0,10	71041A
175	10	22	0,10	71043A
180	10	23	0,10	71045A
185	10	23	0,10	71047A
190	10	24	0,11	71049A
195	10	24	0,11	71051A
200	10	25	0,12	71053A
205	10	26	0,12	71055A
210	10	26	0,12	71057A
215	11	27	0,13	71059A
220	11	28	0,14	71061A
225	16	49	0,22	71063A
230	16	51	0,22	71065A
235	16	52	0,22	71067A
240	16	53	0,22	71069A
245	17	54	0,22	71071A
250	17	55	0,23	71073A
255	17	56	0,23	71075A
260	17	58	0,23	71077A
265	17	59	0,24	71079A
270	17	59	0,24	71081A
275	17	60	0,25	71083A
280	17	62	0,25	71085A
285	17	63	0,26	71087A
290	18	64	0,27	71089A
295	18	66	0,29	71091A
300	23	93	0,42	71093A
310	23	97	0,50	71095A
320	24	100	0,50	71097A
330	24	104	0,50	71099A
340	24	106	0,60	71101A
350	25	109	0,60	71103A
360	25	113	0,70	71105A
370	25	116	0,70	71107A
380	25	119	0,80	71109A
390	26	122	0,90	71111A
400	43	161	1,00	71113A
410	44	165	1,02	71115A
420	44	170	1,00	71117A
430	44	174	1,10	71119A
440	45	178	1,10	71121A
450	45	182	1,10	71123A



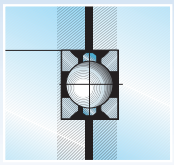
Diagr.2 Radial and axial accuracy

Ball pitch Ø KK [mm]	Load rating C [KN]	Co [KN]	Weight [kg]	Order number
460	46	186	1,10	71125A
470	46	191	1,10	71127A
480	46	195	1,20	71129A
490	47	199	1,20	71131A
500	47	203	1,20	71133A
510	47	207	1,20	71135A
520	48	211	1,30	71137A
530	48	216	1,30	71139A
540	49	220	1,30	71141A
550	49	222	1,30	71143A
560	49	226	1,40	71145A
570	49	230	1,40	71147A
580	50	234	1,40	71149A
590	50	239	1,50	71151A
600	50	243	1,50	71153A
610	51	245	1,50	71155A
620	51	251	1,50	71157A
630	51	255	1,60	71159A
640	51	259	1,60	71161A
650	52	264	1,60	71163A
660	52	268	1,70	71165A
670	52	272	1,70	71167A
680	53	276	1,70	71169A
690	53	280	1,80	71171A
700	53	285	1,80	71173A
710	54	289	1,80	71175A
720	54	293	1,90	71177A
730	54	297	1,90	71179A
740	54	301	2,00	71181A
750	55	305	2,00	71183A
760	55	310	2,00	71185A
770	55	314	2,10	71187A
780	56	318	2,10	71189A
790	56	322	2,10	71191A
800	83	426	3,40	71193A
810	83	433	3,50	71195A
820	84	437	3,50	71197A
830	84	444	3,60	71199A
840	84	447	3,60	71201A
850	85	454	3,70	71203A
860	85	461	3,80	71205A
870	85	464	3,80	71207A
880	86	471	3,90	71209A
890	86	474	4,00	71211A
900	87	481	4,00	71213A
920	87	492	4,10	71215A
940	88	502	4,20	71217A
960	89	512	4,20	71219A
980	89	523	4,30	71221A
1000	90	536	4,40	71223A
1020	91	547	4,50	71225A
1040	91	557	4,50	71227A
1060	92	567	4,60	71229A
1080	93	578	4,70	71231A
1100	93	588	4,80	71233A
1120	94	598	4,80	71235A
1140	95	612	4,90	71237A
1160	95	622	5,00	71239A
1180	96	633	5,00	71241A
1200	121	748	7,50	71243A
1220	122	764	7,60	71245A
1240	123	774	7,80	71247A
1260	124	790	7,90	71249A
1280	124	800	8,00	71251A
1300	125	816	8,20	71253A
1320	126	826	8,30	71255A
1340	126	837	8,50	71257A
1360	127	852	8,60	71259A
1380	128	863	8,80	71261A
1400	129	878	8,90	71263A
1420	129	889	9,10	71265A
1440	130	899	9,20	71267A
1460	130	915	9,40	71269A
1480	131	926	9,60	71271A
1500	132	941	9,60	71273A

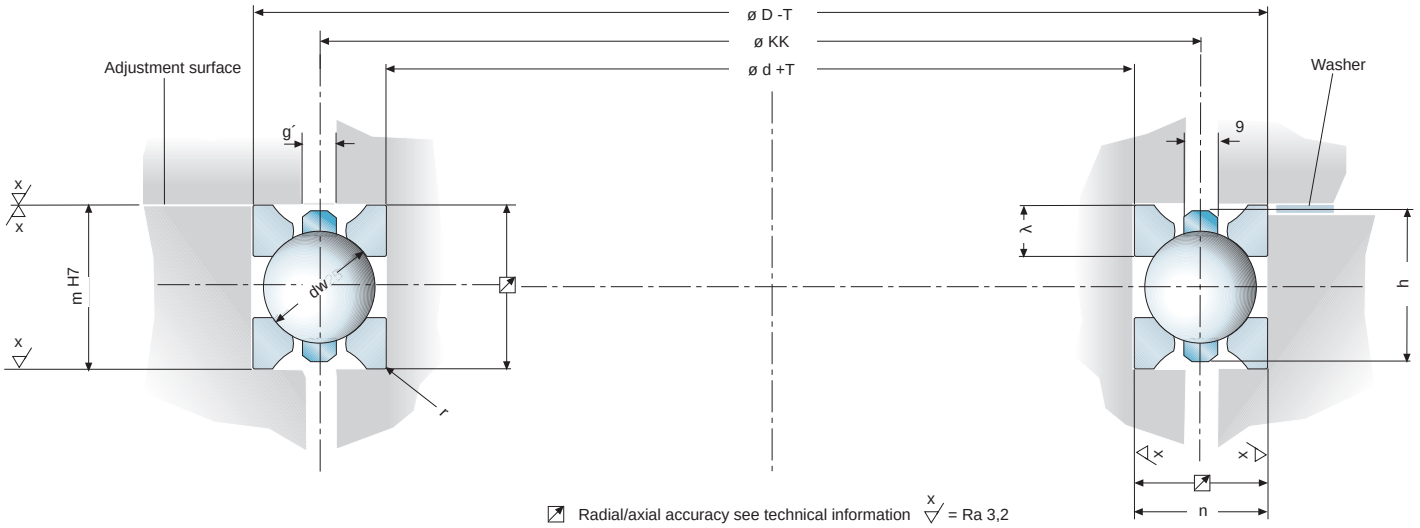
max. Ø 7000 mm

Bearing elements

Rectangular profile with drawn races



Series LER



Ø KK	dw	λ	m	n	r max	g	h	g`	Tolerance
100 - 1500	9,525	4 x 3	13	11	0,3	2,5	12,6	3	KK Ø ≤ 500 mm T = IT6* KK Ø > 500 mm T = IT7*

Dimensions [mm], * DIN ISO 286

Consist of:
- Four ball race rings with drawn raceways
- Segmented strip cage with retained balls

Features:
- Direct integration into your mating structure
- Free selection of ball pitch
- Small mounting space and high precision
- Easy machining of the mating structure
- Calculation programme to find the most suitable bearing
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the bearing size for you

Ball race rings:
- Rectangular profile 4 x 3 mm
- Drawn raceways
  For special applications other race ring diameters are also available. Please consult us.

Rolling elements:
- Steel balls DIN5401, class III

Strip cage:
- Ball guided polyamide ball cage divided into segments
  The segmented strip cage runs very smoothly and silently and compensates length differences caused by high temperatures. The number of segments refers to the ball pitch diameter. For special applications and temperatures higher than 120° C we recommend ball cages made of non-corrosive steel or brass.

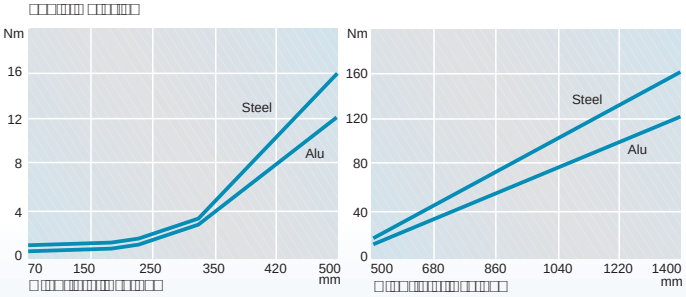
Lubrication:
- with ball bearing grease. For more information see page 34.

Temperature:
- Continuous operation: -40° C to +100° C, short time operation max. 120° C
- Other temperatures on request

Adjustment:
- By plane surface
- By washers (see page 31)
  The preload is adjusted correctly when the rotational resistance without seal corresponds to table 1 (temperature range -40° C to +100° C).

Circumferrential speed:
- with grease lubrication max. 10 m/s
- with oil lubrication max. 12 m/s

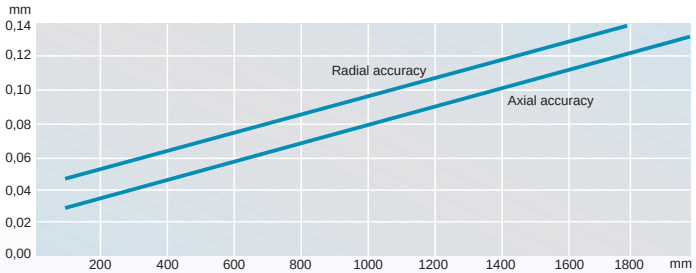
	Ball race ring	Balls	Strip cage
Standard	54SICr6	100Cr6	PA12
Special	Corrotec ATC-Beschichtung	Messing-Flachkäfig	X45Cr13



intermediate diameters on request

Ball pitch Ø KK [mm]	Load rating C [KN]	Co [KN]	Weight [kg]	Order number
100	17	25	0,20	68460A
105	17	26	0,20	68461A
110	18	28	0,20	68462A
115	18	29	0,20	68463A
120	18	30	0,20	68464A
125	19	33	0,20	68465A
130	19	34	0,20	68466A
135	20	35	0,20	68467A
140	20	36	0,20	68468A
145	20	37	0,20	68469A
150	20	39	0,30	74060A
155	20	40	0,30	74061A
160	20	41	0,30	74062A
165	21	43	0,30	74063A
170	21	45	0,30	74064A
175	21	46	0,30	74065A
180	22	47	0,30	74066A
185	22	48	0,30	74067A
190	22	49	0,30	74068A
195	22	51	0,30	74069A
200	23	52	0,30	74070A
205	23	54	0,30	74071A
210	23	55	0,30	74072A
215	23	57	0,30	74073A
220	24	58	0,40	74074A
225	24	59	0,40	74075A
230	24	60	0,40	74076A
235	24	61	0,40	74077A
240	24	63	0,40	74078A
245	24	64	0,40	74079A
250	25	66	0,40	74080A
255	25	67	0,40	74081A
260	25	69	0,40	74082A
265	25	70	0,40	74083A
270	25	71	0,40	74084A
275	26	72	0,50	74085A
280	26	73	0,50	74086A
285	26	75	0,50	74087A
290	26	77	0,50	74088A
295	26	78	0,50	74089A
300	27	79	0,50	74090A
310	27	82	0,50	74091A
320	27	84	0,50	74092A
330	28	88	0,60	74093A
340	28	90	0,60	74094A
350	28	92	0,60	74095A
360	28	95	0,60	74096A
370	29	98	0,60	74097A
380	29	100	0,60	74098A
390	29	103	0,60	74099A
400	29	106	0,70	74100A
410	30	109	0,70	74101A
420	30	112	0,70	74102A
430	30	114	0,70	74103A
440	31	116	0,70	74104A
450	31	119	0,70	74105A
460	31	122	0,80	74106A
470	31	125	0,80	74107A
480	32	127	0,80	74108A
490	32	130	0,80	74109A
500	32	133	0,80	74110A

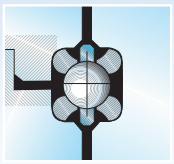
Ball pitch Ø KK [mm]	Load rating C [KN]	Co [KN]	Weight [kg]	Order number
510	32	136	0,80	74111A
520	33	138	0,90	74112A
530	33	140	0,90	74113A
540	33	144	0,90	74114A
550	33	146	0,90	74115A
560	33	149	1,00	74116A
570	34	151	1,00	74117A
580	34	155	1,00	74118A
590	34	157	1,00	74119A
600	34	159	1,10	74120A
610	34	162	1,10	74121A
620	35	165	1,10	74122A
630	35	168	1,10	74123A
640	35	170	1,20	74124A
650	35	173	1,20	74125A
660	36	176	1,20	74126A
670	36	179	1,20	74127A
680	36	181	1,30	74128A
690	36	183	1,30	74129A
700	36	187	1,30	74130A
710	36	189	1,40	74131A
720	37	192	1,40	74132A
730	37	194	1,40	74133A
740	37	198	1,50	74134A
750	37	200	1,50	74135A
760	37	203	1,50	74136A
770	38	205	1,50	74137A
780	38	209	1,60	74138A
790	38	211	1,60	74139A
800	38	213	1,60	74140A
810	38	216	1,60	74141A
820	39	219	1,70	74142A
830	39	222	1,70	74143A
840	39	224	1,70	74144A
850	39	226	1,70	74145A
860	39	229	1,80	74146A
870	39	232	1,80	74147A
880	40	235	1,80	74148A
890	40	237	1,90	74149A
900	40	240	1,90	74150A
920	40	246	1,90	74151A
940	40	250	1,90	74152A
960	41	256	2,00	74153A
980	41	261	2,00	74154A
1000	41	267	2,00	74155A
1020	42	272	2,10	74156A
1040	42	278	2,10	74157A
1060	42	283	2,10	74158A
1080	43	289	2,20	74159A
1100	43	293	2,20	74160A
1120	43	299	2,20	74161A
1140	43	304	2,30	74162A
1160	44	310	2,30	74163A
1180	44	315	2,40	74164A
1200	44	321	2,40	74165A
1220	45	326	2,40	74166A
1240	45	332	2,50	74167A
1260	45	337	2,50	74168A
1280	45	343	2,50	74169A
1300	46	347	2,60	74170A
1320	46	353	2,60	74171A
1340	46	358	2,70	74172A
1360	46	364	2,70	74173A
1380	47	369	2,80	74174A
1400	47	375	2,80	74175A
1420	47	377	2,80	74176A
1440	47	386	2,90	74177A
1460	48	390	2,90	74178A
1480	48	396	3,00	74179A
1500	48	401	3,00	74180A



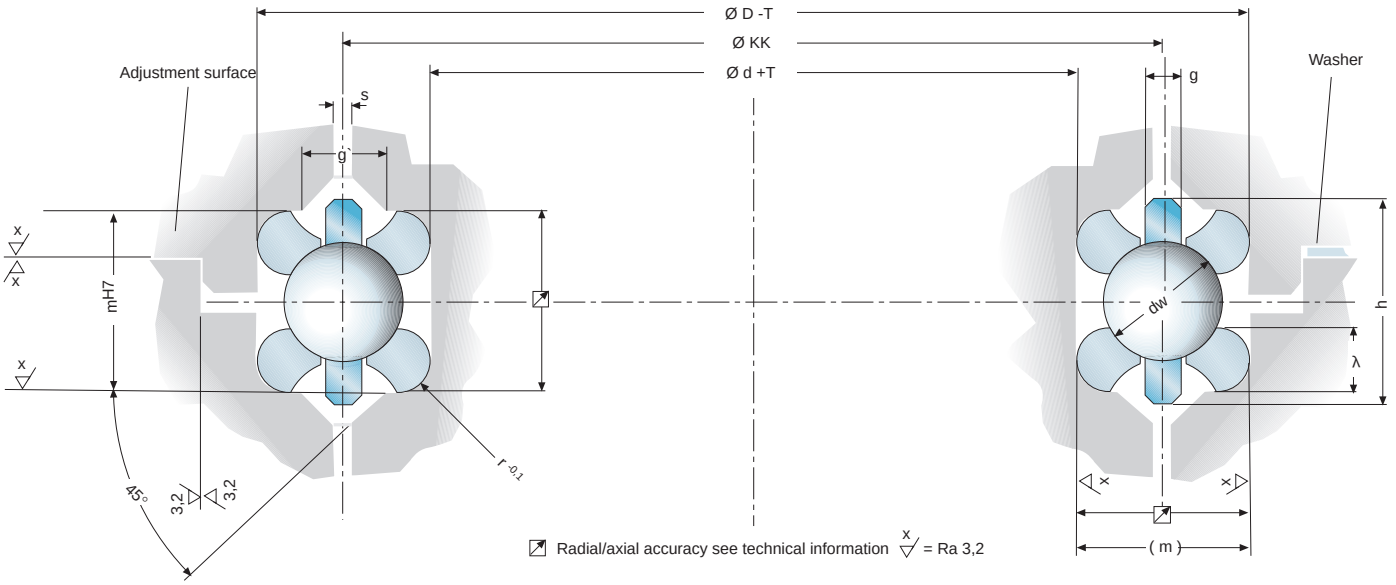
Diagr.2 Radial and axial accuracy

Bearing elements

Double profile with ground resp. drawn races



Series LED



Version	Ø KK		d_w	λ	m	r	g	h	g`	s	Tolerance T
A	100 - 1500	drawn	9,525	4	12,86	1,9	2,5	12,6	3,5	1,6	
B	100 - 1500	ground	9,525	4	12,95	1,9	2,5	12,6	3,5	1,6	KK Ø ≤ 500 mm T = IT6*
C	100 - 1500	ground	10,000	4	13,19	1,9	2,5	13,2	4,0	1,6	KK Ø > 500 mm T = IT7*
D	100 - 1500	ground	12,000	4	14,61	1,9	2,5	15,0	4,5	2,0	

Dimensions [mm], * DIN ISO 286

Consist of:
- Four ball race rings with ground resp. drawn raceways
- Segmented strip cage with retained balls

Features:
- Direct integration into your mating structure
- Free selection of ball pitch
- Small mounting space and high precision
- High radial and axial accuracy with best cost/performance ratio
- Calculation programme to find the most suitable bearing
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the bearing size for you.

Ball race rings:
- Standard diameters 4 mm
- Ground or drawn raceways
- For special applications other race ring diameters or race rings without raceways are also available. Please consult us.

Rolling elements:
- Steel balls DIN5401, class III

Strip cage:
- Ball guided polyamide ball cage divided into segments
  The segmented strip cage runs very smoothly and silently and compensates length differences caused by high temperatures. The number of segments refers to the ball pitch diameter. For special applications and temperatures higher than 120° C we recommend ball cages made of non-corrosive steel or brass.

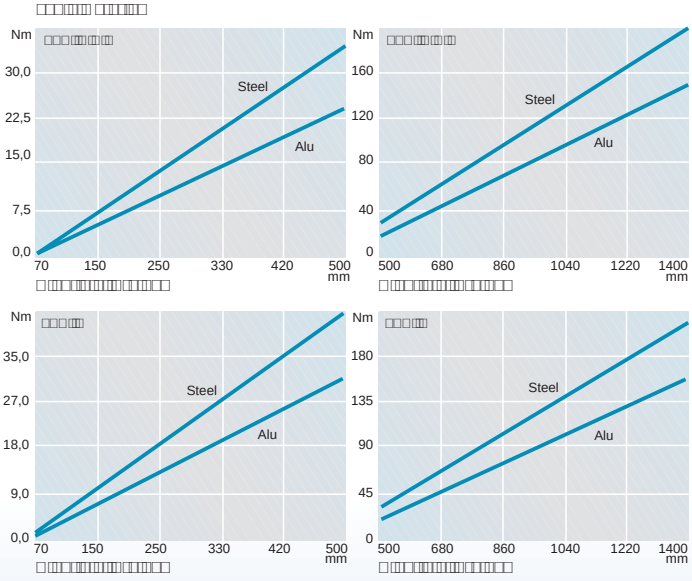
Lubrication:
- with ball bearing grease. For more information see page 34.

Temperature:
- Continuous operation: -40° C to +100° C, short time operation max. 120° C
- Other temperatures on request

Adjustment:
- By plane surface
- By washers (see page 31)
  The preload is adjusted correctly when the rotational resistance without seal corresponds to table 1 (temperature range -40° C to +100°C).

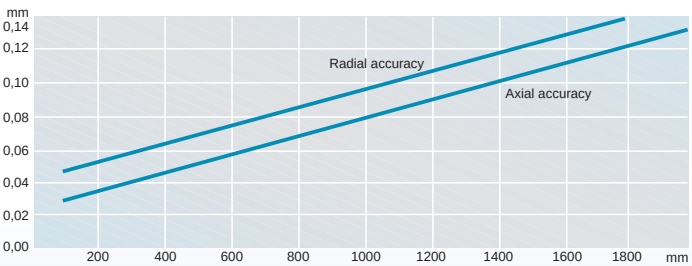
Circumferrential speed:
- with grease lubrication max. 10 m/s
- with oil lubrication max. 12 m/s

	Ball race ring	Balls	Stripe cage
Standard	54SICr6	100Cr6	PA12
Special	Corrotec ATC-covered	X45Cr13	Brass flat cage



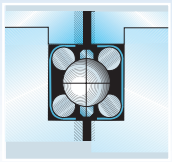
intermediate diameters on request

Ball pitch Ø KK	Load rating A,B C		Load rating C C		Load rating D C		Weight	Order number Version B drawn	Order number Version A ground	Order number Version C drawn	Order number Version D ground
[mm]	[KN]	Co [KN]	[KN]	Co [KN]	[KN]	Co [KN]	[kg]				
100	17	25	22	28	24	30	0,26	68310B	68310A	68310C	68310D
105	17	26	23	30	25	31	0,27	68311B	68311A	68311C	68311D
110	18	28	23	31	26	33	0,27	68312B	68312A	68312C	68312D
115	18	29	24	33	26	35	0,28	68313B	68313A	68313C	68313D
120	18	30	24	34	26	36	0,28	68314B	68314A	68314C	68314D
125	19	33	24	35	27	38	0,29	68315B	68315A	68315C	68315D
130	19	34	25	37	27	39	0,30	68316B	68316A	68316C	68316D
135	20	35	25	38	28	41	0,30	68317B	68317A	68317C	68317D
140	20	36	26	41	28	42	0,31	68318B	68318A	68318C	68318D
145	20	37	26	42	29	45	0,31	68319B	68319A	68319C	68319D
150	20	39	27	43	30	47	0,32	77200B	77200A	77200C	77200D
155	20	40	27	45	30	49	0,33	77201B	77201A	77201C	77201D
160	20	41	27	46	30	50	0,34	77202B	77202A	77202C	77202D
165	21	43	27	47	31	52	0,34	77203B	77203A	77203C	77203D
170	21	45	28	49	31	53	0,35	77204B	77204A	77204C	77204D
175	21	46	28	50	31	53	0,36	77205B	77205A	77205C	77205D
180	22	47	28	51	32	56	0,37	77206B	77206A	77206C	77206D
185	22	48	29	54	32	58	0,37	77207B	77207A	77207C	77207D
190	22	49	29	55	32	59	0,38	77208B	77208A	77208C	77208D
195	22	51	29	57	33	61	0,39	77209B	77209A	77209C	77209D
200	23	52	30	58	33	63	0,40	77210B	77210A	77210C	77210D
205	23	54	30	59	33	64	0,41	77211B	77211A	77211C	77211D
210	23	55	30	61	34	66	0,42	77212B	77212A	77212C	77212D
215	23	57	30	62	34	67	0,42	77213B	77213A	77213C	77213D
220	24	58	31	63	34	69	0,43	77214B	77214A	77214C	77214D
225	24	59	31	66	34	70	0,44	77215B	77215A	77215C	77215D
230	24	60	31	67	35	72	0,45	77216B	77216A	77216C	77216D
235	24	61	32	69	35	73	0,46	77217B	77217A	77217C	77217D
240	24	63	32	70	35	75	0,47	77218B	77218A	77218C	77218D
245	24	64	32	71	36	77	0,48	77219B	77219A	77219C	77219D
250	25	66	32	73	36	78	0,49	77220B	77220A	77220C	77220D
255	25	67	32	74	36	80	0,50	77221B	77221A	77221C	77221D
260	25	69	33	75	36	81	0,51	77222B	77222A	77222C	77222D
265	25	70	33	77	37	84	0,52	77223B	77223A	77223C	77223D
270	25	71	33	80	37	86	0,54	77224B	77224A	77224C	77224D
275	26	72	34	81	38	87	0,55	77225B	77225A	77225C	77225D
280	26	73	34	82	38	89	0,56	77226B	77226A	77226C	77226D
285	26	75	34	84	38	91	0,57	77227B	77227A	77227C	77227D
290	26	77	34	85	38	92	0,58	77228B	77228A	77228C	77228D
295	26	78	34	86	38	94	0,60	77229B	77229A	77229C	77229D
300	27	79	35	88	39	95	0,61	77230B	77230A	77230C	77230D
310	27	82	35	90	39	98	0,62	77231B	77231A	77231C	77231D
320	27	84	36	94	40	101	0,64	77232B	77232A	77232C	77232D
330	28	88	36	97	40	105	0,65	77233B	77233A	77233C	77233D
340	28	90	36	100	40	108	0,66	77234B	77234A	77234C	77234D
350	28	92	37	102	41	111	0,68	77235B	77235A	77235C	77235D
360	28	95	37	106	41	114	0,69	77236B	77236A	77236C	77236D
370	29	98	38	109	42	117	0,71	77237B	77237A	77237C	77237D
380	29	100	38	112	42	120	0,72	77238B	77238A	77238C	77238D
390	29	103	38	114	43	125	0,74	77239B	77239A	77239C	77239D
400	29	106	39	118	43	128	0,75	77240B	77240A	77240C	77240D
410	30	109	39	121	44	131	0,77	77241B	77241A	77241C	77241D
420	30	112	39	124	44	134	0,79	77242B	77242A	77242C	77242D
430	30	114	40	126	44	137	0,80	77243B	77243A	77243C	77243D
440	31	116	40	130	45	140	0,82	77244B	77244A	77244C	77244D
450	31	119	40	133	45	143	0,84	77245B	77245A	77245C	77245D
460	31	122	41	136	45	147	0,86	77246B	77246A	77246C	77246D
470	31	125	41	139	46	150	0,87	77247B	77247A	77247C	77247D
480	32	127	41	141	46	153	0,89	77248B	77248A	77248C	77248D
490	32	130	42	145	46	156	0,91	77249B	77249A	77249C	77249D
500	32	133	42	148	47	159	0,93	77250B	77250A	77250C	77250D
510	32	136	42	151	47	164	0,95	77251B	77251A	77251C	77251D
520	33	138	43	153	48	167	0,97	77252B	77252A	77252C	77252D
530	33	140	43	157	48	170	0,99	77253B	77253A	77253C	77253D
540	33	144	43	160	48	173	1,01	77254B	77254A	77254C	77254D
550	33	146	43	163	49	176	1,04	77255B	77255A	77255C	77255D
560	33	149	44	165	49	179	1,06	77256B	77256A	77256C	77256D
570	34	151	44	169	49	182	1,08	77257B	77257A	77257C	77257D
580	34	155	44	172	49	185	1,10	77258B	77258A	77258C	77258D
590	34	157	45	175	50	189	1,13	77259B	77259A	77259C	77259D
600	34	159	45	147	50	192	1,15	77260B	77260A	77260C	77260D
610	34	162	45	180	50	195	1,18	77261B	77261A	77261C	77261D
620	35	165	45	184	51	189	1,20	77262B	77262A	77262C	77262D
630	35	168	46	187	51	201	1,23	77263B	77263A	77263C	77263D
640	35	170	46	189	51	206	1,25	77264B	77264A	77264C	77264D
650	35	173	46	192	52	209	1,28	77265B	77265A	77265C	77265D
660	36	176	47	196	52	212	1,31	77266B	77266A	77266C	77266D
670	36	179	47	199	52	215	1,34	77267B	77267A	77267C	77267D
680	36	181	47	202	53	218	1,37	77268B	77268A	77268C	77268D
690	36	183	47	204	53	221	1,40	77269B	77269A	77269C	77269D
700	36	187	48	208	53	224	1,43	77270B	77270A	77270C	77270D
710	36	189	48	211	53	228	1,46	77271B	77271A	77271C	77271D
720	37	192	48	214	54	231	1,49	77272B	77272A	77272C	77272D
730	37	194	48	216	54	234	1,52	77273B	77273A	77273C	77273D
740	37	198	48	219	54	237	1,55	77274B	77274A	77274C	77274D
750	37	200	49	223	55	242	1,59	77275B	77275A	77275C	77275D
760	37	203	49	226	55	245	1,62	77276B	77276A	77276C	77276D
770	38	205	49	228	55	248	1,65	77277B	77277A	77277C	77277D
780	38	209	49	231	55	251	1,69	77278B	77278A	77278C	77278D
790	38	211	50	235	56	254	1,73	77279B	77279A	77279C	77279D
800	38	213	50	238	56	257	1,76	77280B	77280A	77280C	77280D
810	38	216	50	240	56	260	1,80	77281B	77281A	77281C	77281D
820	39	219	50	243	56	263	1,84	77282B	77282A	77282C	77282D
830	39	222	51	246	57	266	1,88	77283B	77283A	77283C	77283D
840	39	224	51	250	57	270	1,92	77284B	77284A	77284C	77284D
850	39	226	51	253	57	273	1,96	77285B	77285A	77285C	77285D
860	39	229	51	255	57	276	2,00	77286B	77286A	77286C	77286D
870	39	232	51	258	58	280	2,05	77287B	77287A	77287C	77287D
880	40	235	52	62	58	284	2,09	77288B	77288A	77288C	77288D
890	40	237	52	265	58	287	2,14	77289B	77289A	77289C	77289D
900	40	240	52	267	58	290	2,18	77290B	77290A	77290C	77290D
920	40	246	53	274	59	296	2,23	77291B	77291A	77291C	77291D
940	40	250	53	279	59	302	2,28	77292B	77292A	77292C	77292D
960	41	256	54	286	60	308	2,33	77293B	77293A	77293C	77293D
980	41	261	54	291	60	315	2,38	77294B	77294A	77294C	77294D
1000	41	267	54	297	60	321	2,43	77295B	77295A	77295C	77295D
1020	42	272	55	304	61	329	2,48	77296B	77296A	77296C	77296D
1040	42	278	55	309	61	335	2,53	77297B	77297A	77297C	77297D
1060	42	283	55	316	62	341	2,59	77298B	77298A	77298C	77298D
1080	43	289	56	321	62	347	2,64	77299B	77299A	77299C	77299D
1100	43	293	56	328	63	354	2,70	77300B	77300A	77300C	77300D
1120	43	299	57	333	63	360	2,76	77301B	77301A	77301C	77301D
1140	43	304	57	340	64	368	2,82	77302B	77302A	77302C	77302D
1160	44	310	57	345	64	374	2,88	77303B	77303A	77303C	77303D
1180	44	315	58	350	64	380	2,94	77304B	77304A	77304C	77304D
1200	44	321	58	357	65	386	3,00	77305B	77305A	77305C	77305D
1220	45	326	58	363	65	393	3,07	77306B	77306A	77306C	77306D
1240	45	332	59	369	65	399	3,13	77307B	77307A	77307C	77307D
1260	45	337	59	375	66	407	3,20	77308B	77308A	77308C	77308D
1280	45	343	59	381	66	413	3,27	77309B	77309A	77309C	77309D
1300	46	347	60	387	67	419	3,34	77310B	77310A	77310C	77310D
1320	46	353	60	393	67	425	3,41	77311B	77311A	77311C	77311D
1340	46	358	60	399	67	431	3,48	77312B	77312A	77312C	77312D
1360	46	364	61	405	68	438	3,56	77313B	77313A	77313C	77313D
1380	47	369	61	411	68	445	3,64	77314B	77314A	77314C	77314D
1400	47	375	61	418	69	452	3,71	77315B	77315A	77315C	77315D
1420	47	400	62	423	69	458	3,79	77316B	77316A	77316C	77316D
1440	47	386	62	430	69	464	3,87	77317B	77317A	77317C	77317D
1460	48	390	62	435	70	470	3,96	77318B	77318A	77318C	77318D
1480	48	396	63	442	70	478	4,00	77319B	77319A	77319C	77319D
1500	48	401	63	447	70	484	4,00	77320B	77320A	77320C	77320D

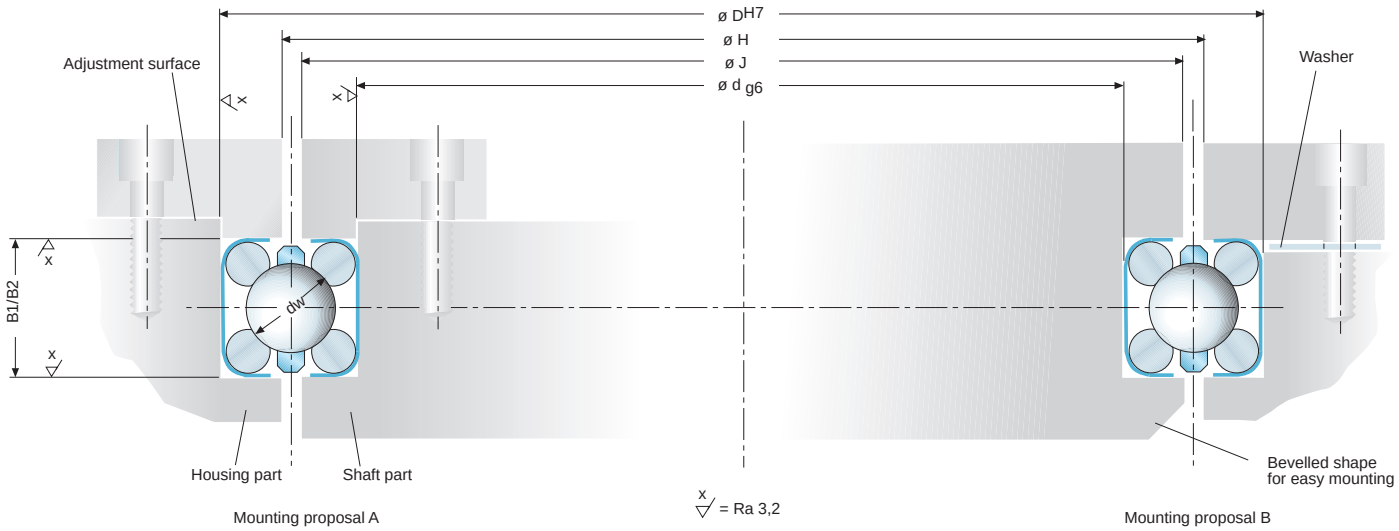


Diagr.2 Radial and axial accuracy

Slim bearings



Series LDD



Cross section	Diameter D	Nominal dim. B	Ball Ø d_w	Mounting dim. class PL1 B1	Starting torque	Mounting dim. class PL2 B2	Starting torque
3/8"	139 - 654	9,525	6	9,57 - 0,02	3 + 2,0	9,53 - 0,02	5 + 2,5
1/2"	177 - 660	12,700	8	12,76 - 0,03	4 + 2,5	12,72 - 0,03	6 + 3,0
3/4"	215 - 673	19,050	15	19,12 - 0,03	5 + 2,5	19,07 - 0,03	7 + 3,0
1"	254 - 685	25,400	20	25,48 - 0,03	6 + 2,5	25,42 - 0,03	8 + 3,0

Dimensions [mm], Moments [Nm]

Consist of:
- Two metal sleeves that hold the bearing
- Four ball race rings with ground raceways
- Segmented strip cage with retained balls

Features:
- Direct integration into your mating structure
- Easy mounting of the machine structure
- Small mounting space and high precision
- Calculation programme to find the most suitable bearing
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the bearing size for you

Sleeves:
- Ready-to-mount bearing elements with inner and outer sleeve

Rolling elements:
- Steel balls DIN5401, class III

Strip cage:
- Ball guided polyamide ball cage divided into segments
  The segmented strip cage runs very smoothly and silently and compensates length differences caused by high temperatures. The number of segments refers to the ball pitch diameter. For special applications and temperatures higher than 120°C we recommend ball cages made of non-corrosive steel or brass.

Lubrication:
- With ball bearing grease. For more information see page 34.

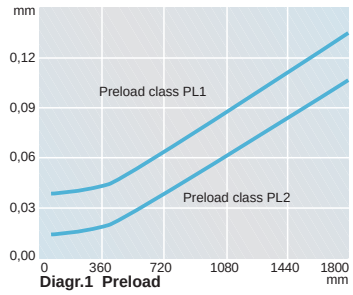
Temperature:
- Continuous operation: -10°C to +70°C, short time operation max. 120° C
- Other temperatures on request

Adjustment:
- By plane surface
- By washers (see page 31)
  The preload is adjusted correctly when the rotational resistance without seal corresponds to table 1 (temperature range -40° C to +100° C).

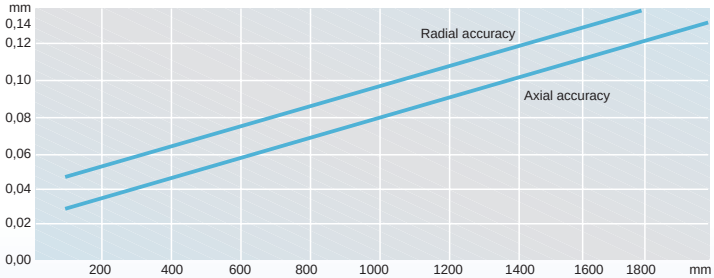
Circumferrential speed:
- with grease lubrication max. 10 m/s
- with oil lubrication max. 12 m/s

	Sleeve	Ball race ring	Balls	Stripe cage
Standard	Ck55	54SiCr6	100Cr6	PA12
Special				Niro Bronce Brass Hard plastics

Tab.1 Material



Diagr.1 Preload

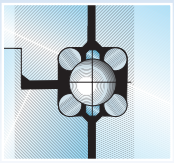


Diagr.2 Radial and axial accuracy

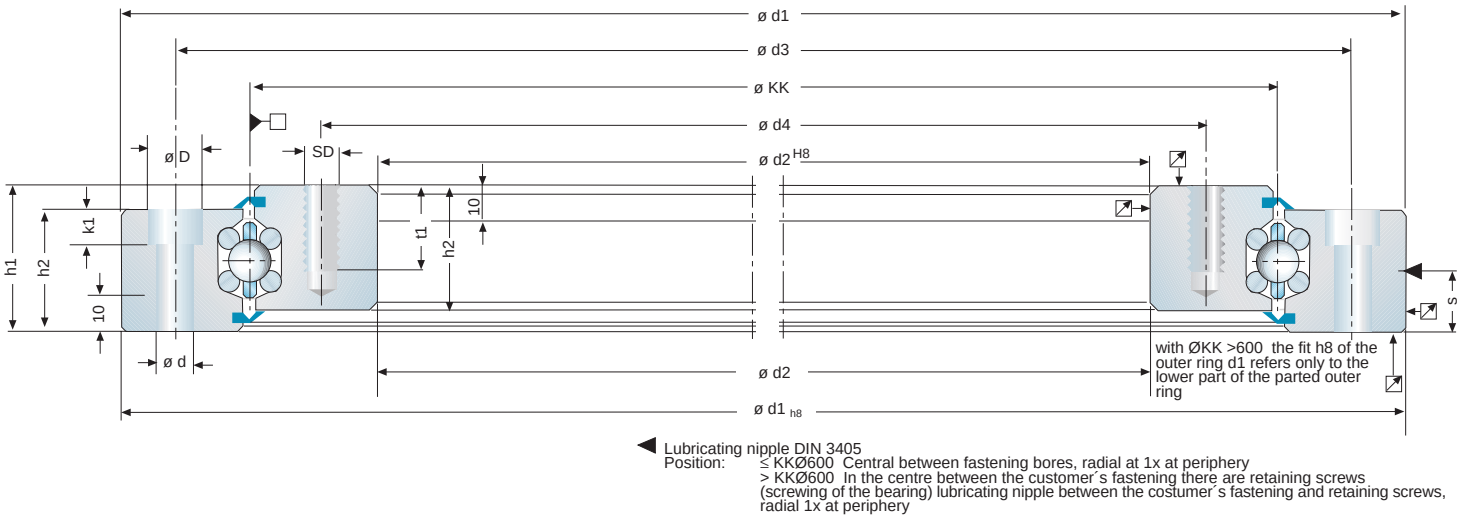
		Dimensions						Load rating		Weight	Order number
		d [inch]	D [inch]	d [mm]	D [mm]	H (min.) [mm]	J (max.) [mm]	dyn. C [KN]	stat. C_0 [KN]	ca. [kg]	
Cross section	**3/8"**	4,75	5,50	120,65	139,70	132	128	15	24	0,15	**75067A**
		5	5,75	127,00	146,05	139	134	16	25	0,16	**75068A**
		5,5	6,25	139,70	158,75	151	147	16	28	0,18	**75069A**
		6	6,75	152,40	171,45	164	159	17	30	0,19	**75070A**
		6,5	7,25	165,10	184,15	177	172	17	33	0,21	**75071A**
		7	7,75	177,80	196,85	189	185	18	35	0,22	**75072A**
		7,5	8,25	190,50	209,55	202	197	18	37	0,24	**75073A**
		8	8,75	203,20	222,25	215	210	19	40	0,25	**75074A**
		9	9,75	228,60	247,65	240	236	20	45	0,29	**75075A**
		10	10,75	254,00	273,05	266	261	20	50	0,32	**75076A**
		11	11,75	279,40	298,45	291	286	21	54	0,35	**75077A**
		12	12,75	304,80	323,85	316	312	22	59	0,38	**75078A**
		14	14,75	355,60	374,65	367	363	23	69	0,44	**75079A**
		16	16,75	406,40	425,45	418	413	24	78	0,50	**75080A**
		18	18,75	457,20	476,25	469	464	25	88	0,56	**75081A**
		20	20,75	508,00	527,05	520	515	26	98	0,63	**75082A**
		25	25,75	635,00	654,05	647	642	28	122	0,78	**75083A**
Cross section	**1/2"**	6	7,00	152,40	177,80	168	162	27	33	0,34	**75010A**
		6,5	7,50	165,10	190,50	181	174	28	35	0,36	**75011A**
		7	8,00	177,80	203,20	193	187	29	37	0,39	**75012A**
		7,5	8,50	190,50	215,90	206	200	30	41	0,42	**75013A**
		8	9,00	203,20	228,60	219	213	30	43	0,45	**75014A**
		9	10,00	228,60	254,00	244	238	31	48	0,50	**75015A**
		10	11,00	254,00	279,40	270	263	32	53	0,56	**75016A**
		11	12,00	279,40	304,80	295	289	34	58	0,61	**75017A**
		12	13,00	304,80	330,20	320	314	35	64	0,66	**75018A**
		14	15,00	355,60	381,00	371	365	37	74	0,77	**75019A**
		16	17,00	406,40	431,80	422	416	39	84	0,88	**75020A**
		18	19,00	457,20	482,60	473	467	40	95	0,99	**75021A**
		20	21,00	508,00	533,40	524	517	42	105	1,09	**75022A**
		25	26,00	635,00	660,40	651	644	45	131	1,36	**75023A**
Cross section	**3/4"**	7	8,50	177,80	215,90	201	192	73	73	0,89	**75032A**
		7,5	9,00	190,50	228,60	214	205	75	78	0,95	**75033A**
		8	9,50	203,20	241,30	227	217	77	82	1,01	**75034A**
		9	10,50	228,60	266,70	252	243	80	92	1,13	**75035A**
		10	11,50	254,00	292,10	278	268	84	103	1,26	**75036A**
		11	12,50	279,40	317,50	303	293	87	112	1,38	**75037A**
		12	13,50	304,80	342,90	328	319	89	121	1,49	**75038A**
		14	15,50	355,60	393,70	379	370	95	142	1,74	**75039A**
		16	17,50	406,40	444,50	430	420	100	160	1,97	**75040A**
		18	19,50	457,20	495,30	481	471	103	180	2,22	**75041A**
		20	21,50	508,00	546,10	532	522	108	201	2,47	**75042A**
		25	26,50	635,00	673,10	659	649	116	249	3,07	**75043A**
Cross section	**1"**	8	10,00	203,20	254,00	235	222	118	127	1,81	**75054A**
		9	11,00	228,60	279,40	260	247	124	141	2,01	**75055A**
		10	12,00	254,00	304,80	286	273	128	156	2,26	**75056A**
		11	13,00	279,40	330,20	311	298	133	170	2,47	**75057A**
		12	14,00	304,80	355,60	336	324	137	184	2,67	**75058A**
		14	16,00	355,60	406,40	387	374	146	218	3,09	**75059A**
		16	18,00	406,40	457,20	438	425	154	247	3,54	**75060A**
		18	20,00	457,20	508,00	489	476	160	276	3,96	**75061A**
		20	22,00	508,00	558,80	540	527	166	305	4,41	**75062A**
		25	27,00	635,00	685,80	667	654	179	378	5,45	**75063A**

Bearing assemblies

Steel version

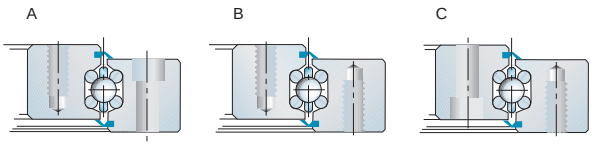


Series LDL



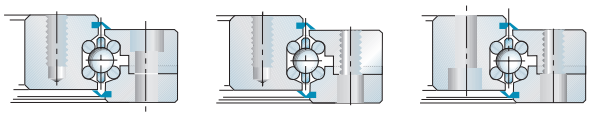
Lubricating nipple DIN 3405
Position: ≤ KKØ600 Central between fastening bores, radial at 1x at periphery
> KKØ600 In the centre between the customer´s fastening there are retaining screws (screwing of the bearing) lubricating nipple between the costumer´s fastening and retaining screws, radial 1x at periphery

Bore shape:



Ø KK 100 - 600 | Ø KK 100 - 600 | Ø KK 100 - 600

Ring design:



Ø KK > 600 | Ø KK > 600 | Ø KK > 600

Consist of:
- Inner and outer ring of steel
- Bearing element with ground raceways
- Seal on both sides of the bearing
- Optional with inner or outer gear

Features:
- Ready-to-mount bearing assembly
- Free selection of material and coating
- Free selection of bearing geometry
- Free selection of bore shape
- Free selection of gear from 60 to 1500mm
- Highest radial and axial accuracy with max. stiffness
- Specified rotational resistance ex works
- Rotational resistance adjustable from clearance to preload
- Calculation programme to find the most suitable bearing
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the bearing size for you

Lubrication:
- With ball bearing grease. For more information see page 34.

Temperature:
- Standard:Continuous operation: -30°C to +80°C, short time operation max. 100°C
- Optional: Continous operation -30°C to +180°C
  Please consult us

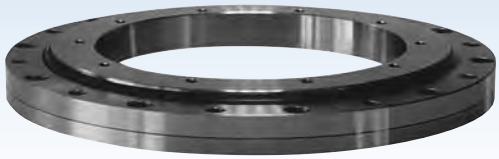
Adjustment:
- Preload ex works (see diagram 1)

Circumferential speed:
- with seal max. 5m/s
- without seal max. 10 m/s

Gear:
- Standard see page 27
- Optional: toothed belt gear, worm gear, angular gear, etc.
  Please consult us.

	Inner outer ring	Race ways	Antifriction bearing	Strip cage	Seal
Standard	C45N	54SiCr6	100Cr6	PA12	NBR
	Teeth:42CrMo4V				
Special	Alu AlZnMgCu05 Brass CuSn12 Niro X5CrNi18.10 Plastic Magneszum	Niro X12CrNi177 X7CrNi177 Duratherm 600F1450 Corrotec, ATC coating	Niro X45Cr13 Oxydkeramik POM	Niro Bronce Hard plastics Brass	Viton Teflon Labyrinth Wave seal Metal seal

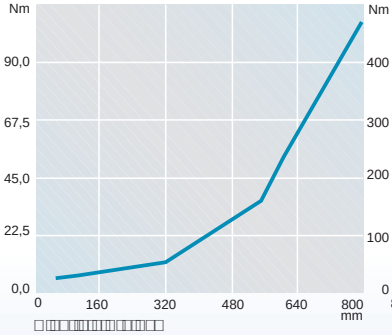
Tab.1 Material

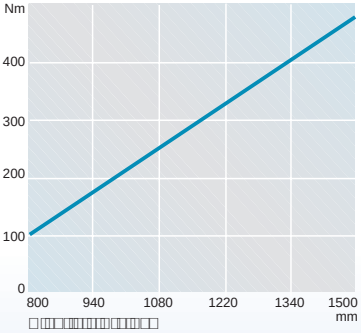


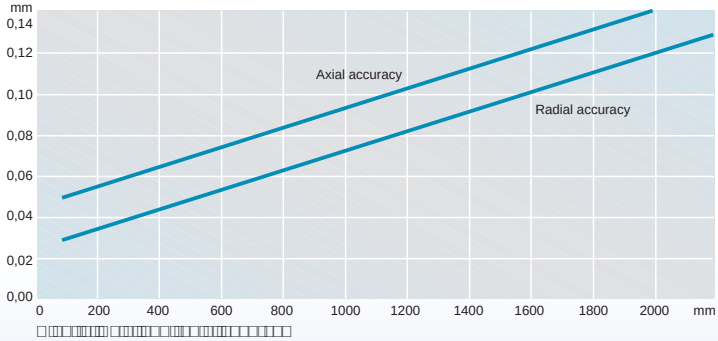
intermediate diameters on request

Diameter			Height		Fastening							Number		Load rating		Weight	Order number		
KK	d1 [mm]	d2 [mm]	h1 [mm]	h2 [mm]	d3 [mm]	d4 [mm]	D [mm]	d [mm]	k1 [mm]	SD [mm]	t1 [mm]	a [Num.]	s	C [kN]	Co [kN]	[kg]	A	B	C
100	150	50	30	24	135	65	11	6,6	6,8	M6	15	6x	15,0	17	25	2,5	66401Y	66402Y	66403Y
150	200	100	30	24	185	115	11	6,6	6,8	M6	15	6x	15,0	18	40	3,7	73000Y	73001Y	73002Y
160	210	110	30	24	195	125	11	6,6	6,8	M6	15	6x	15,0	18	43	4,0	73003Y	73004Y	73005Y
170	220	120	30	24	205	135	11	6,6	6,8	M6	15	6x	15,0	19	46	4,2	73006Y	73007Y	73008Y
180	230	130	30	24	215	145	11	6,6	6,8	M6	15	8x	15,0	19	49	4,5	73009Y	73010Y	73011Y
190	240	140	30	24	225	155	11	6,6	6,8	M6	15	8x	15,0	20	51	4,7	73012Y	73013Y	73014Y
200	250	150	30	24	235	165	11	6,6	6,8	M6	15	8x	15,0	20	54	5,0	73015Y	73016Y	73017Y
210	260	160	30	24	245	175	11	6,6	6,8	M6	15	8x	15,0	21	57	5,2	73018Y	73019Y	73020Y
220	270	170	30	24	255	185	11	6,6	6,8	M6	15	8x	15,0	21	60	5,5	73021Y	73022Y	73023Y
230	290	170	34	27	270	190	15	9,0	9,0	M8	20	8x	17,5	24	64	7,7	73024Y	73025Y	73026Y
240	300	180	34	27	280	200	15	9,0	9,0	M8	20	8x	17,5	24	67	8,1	73027Y	73028Y	73029Y
250	310	190	34	27	290	210	15	9,0	9,0	M8	20	10x	17,5	25	70	8,4	73030Y	73031Y	73032Y
260	320	200	34	27	300	220	15	9,0	9,0	M8	20	10x	17,5	25	73	8,8	73033Y	73034Y	73035Y
270	330	210	34	27	310	230	15	9,0	9,0	M8	20	10x	17,5	25	76	9,1	73036Y	73037Y	73038Y
280	340	220	34	27	320	240	15	9,0	9,0	M8	20	10x	17,5	26	78	9,4	73039Y	73040Y	73041Y
290	350	230	34	27	330	250	15	9,0	9,0	M8	20	10x	17,5	26	82	9,8	73042Y	73043Y	73044Y
300	360	240	38	31	340	260	15	9,0	9,0	M8	20	12x	19,5	27	84	11,6	73045Y	73046Y	73047Y
310	370	250	38	31	350	270	15	9,0	9,0	M8	20	12x	19,5	27	87	12,0	73048Y	73049Y	73050Y
320	380	260	38	31	360	280	15	9,0	9,0	M8	20	12x	19,5	27	90	12,4	73051Y	73052Y	73053Y
330	390	270	38	31	370	290	15	9,0	9,0	M8	20	14x	19,5	28	93	12,8	73054Y	73055Y	73056Y
340	400	280	38	31	380	300	15	9,0	9,0	M8	20	14x	19,5	28	96	13,2	73057Y	73058Y	73059Y
350	410	290	38	31	390	310	15	9,0	9,0	M8	20	14x	19,5	28	98	13,5	73060Y	73061Y	73062Y
360	420	300	38	31	400	320	15	9,0	9,0	M8	20	14x	19,5	28	101	13,9	73063Y	73064Y	73065Y
370	430	310	38	31	410	330	15	9,0	9,0	M8	20	14x	19,5	29	105	14,3	73066Y	73067Y	73068Y
380	440	320	38	31	420	340	15	9,0	9,0	M8	20	14x	19,5	29	107	14,7	73069Y	73070Y	73071Y
390	450	330	38	31	430	350	15	9,0	9,0	M8	20	14x	19,5	29	110	15,1	73072Y	73073Y	73074Y
400	470	330	44	37	445	355	18	11,0	11,0	M10	25	14x	22,5	28	128	21,6	73075Y	73076Y	73077Y
410	480	340	44	37	455	365	18	11,0	11,0	M10	25	14x	22,5	28	133	22,1	73078Y	73079Y	73080Y
420	490	350	44	37	465	375	18	11,0	11,0	M10	25	14x	22,5	28	136	22,7	73081Y	73082Y	73083Y
430	500	360	44	37	475	385	18	11,0	11,0	M10	25	14x	22,5	29	139	23,2	73084Y	73085Y	73086Y
440	510	370	44	37	485	395	18	11,0	11,0	M10	25	14x	22,5	29	142	23,7	73087Y	73088Y	73089Y
450	520	380	44	37	495	405	18	11.0	11,0	M10	25	14x	22,5	29	144	24,3	73090Y	73091Y	73092Y
460	530	390	44	37	505	415	18	11,0	11,0	M10	25	14x	22,5	29	149	24,8	73093Y	73094Y	73095Y
470	540	400	44	37	515	425	18	11,0	11,0	M10	25	14x	22,5	29	152	25,4	73096Y	73097Y	73098Y
480	550	410	44	37	525	435	18	11,0	11,0	M10	25	14x	22,5	30	155	25,9	73099Y	73100Y	73101Y
490	560	420	44	37	535	445	18	11,0	11,0	M10	25	14x	22,5	30	158	26,4	73102Y	73103Y	73104Y
500	580	420	49	42	550	450	20	14,0	13,0	M12	30	14x	25,0	30	162	35,0	73105Y	73106Y	73107Y
510	590	430	49	42	560	460	20	14,0	13,0	M12	30	14x	25,0	30	165	35,7	73108Y	73109Y	73110Y
520	600	440	49	42	570	470	20	14,0	13,0	M12	30	14x	25,0	31	168	36,4	73111Y	73112Y	73113Y
530	610	450	49	42	580	480	20	14,0	13,0	M12	30	16x	25,0	31	171	37,1	73114Y	73115Y	73116Y
540	620	460	49	42	590	490	20	14,0	13,0	M12	30	16x	25,0	31	175	37,8	73117Y	73118Y	73119Y
550	630	470	49	42	600	500	20	14,0	13,0	M12	30	16x	25,0	31	178	38,5	73120Y	73121Y	73122Y
560	640	480	49	42	610	510	20	14,0	13,0	M12	30	16x	25,0	31	181	39,2	73123Y	73124Y	73125Y
570	650	490	49	42	620	520	20	14,0	13,0	M12	30	16x	25,0	32	184	39,9	73126Y	73127Y	73128Y
580	660	500	49	42	630	530	20	14,0	13,0	M12	30	16x	25,0	32	188	40,6	73129Y	73130Y	73131Y
590	670	510	49	42	640	540	20	14,0	13,0	M12	30	16x	25,0	32	191	41,3	73132Y	73133Y	73134Y
600	680	520	49	42	650	550	20	14,0	13,0	M12	30	16x	25,0	32	194	42,0	73135Y	73136Y	73137Y
620	710	530	53	45	670	570	20	14,0	13,0	M12	30	22x	29,0	75	330	56,9	66141A	66142A	66143A
640	730	550	53	45	690	590	20	14,0	13,0	M12	30	22x	29,0	76	341	58,8	66144A	66145A	66146A
660	750	570	53	45	710	610	20	14,0	13,0	M12	30	22x	29,0	77	351	60,7	66147A	66148A	66149A
680	770	590	53	45	730	630	20	14,0	13,0	M12	30	22x	29,0	78	361	62,5	66150A	66151A	66152A
700	790	610	53	45	750	650	20	14,0	13,0	M12	30	22x	29,0	79	371	64,4	66153A	66154A	66155A
720	810	630	53	45	770	670	20	14,0	13,0	M12	30	22x	29,0	80	385	66,3	66156A	66157A	66158A
740	830	650	53	45	790	690	20	14,0	13,0	M12	30	24x	29,0	81	396	68,0	66159A	66160A	66161A
760	850	670	53	45	810	710	20	14,0	13,0	M12	30	24x	29,0	81	406	69,9	66162A	66163A	66164A
780	870	690	53	45	830	730	20	14,0	13,0	M12	30	24x	29,0	82	416	71,8	66156A	66157A	66158A
800	900	700	60	52	865	735	26	18,0	17,5	M16	35	24x	33,0	104	497	93,9	66168A	66169A	66170A
820	920	720	60	52	885	755	26	18,0	17,5	M16	35	24x	33,0	106	513	96,3	66171A	66172A	66173A
840	940	740	60	52	905	775	26	18,0	17,5	M16	35	24x	33,0	106	523	98,7	66174A	66175A	66176A
860	960	760	60	52	925	795	26	18,0	17,5	M16	35	24x	33,0	107	534	101,1	66177A	66178A	66179A
880	980	780	60	52	945	815	26	18,0	17,5	M16	35	24x	33,0	108	549	103,5	66180A	66181A	66182A
900	1000	800	60	52	965	835	26	18,0	17,5	M16	35	24x	33,0	109	560	105,9	66183A	66184A	66185A
920	1020	820	60	52	985	855	26	18,0	17,5	M16	35	24x	33,0	110	575	108,4	66186A	66187A	66188A
940	1040	840	60	52	1005	875	26	18,0	17,5	M16	35	24x	33,0	111	586	110,8	66189A	66190A	66191A
960	1060	860	60	52	1025	895	26	18,0	17,5	M16	35	26x	33,0	112	596	113,0	66192A	66193A	66194A
980	1080	880	60	52	1045	915	26	18,0	17,5	M16	35	26x	33,0	113	612	115,4	66195A	66196A	66197A
1000	1100	900	60	52	1065	935	26	18,0	17,5	M16	35	26x	33,0	113	623	117,8	66198A	66199A	66200A
1100	1200	1000	60	52	1165	1035	26	18,0	17,5	M16	35	30x	33,0	115	664	129,6	66386A	66387A	66388A
1200	1300	1100	60	52	1265	1135	26	18,0	17,5	M16	35	30x	33,0	121	747	141,6	66389A	66390A	66391A
1300	1400	1200	60	52	1365	1235	26	18,0	17,5	M16	35	36x	33,0	124	799	153,1	66392A	66393A	66394A
1400	1500	1300	60	52	1465	1335	26	18,0	17,5	M16	35	36x	33,0	128	872	165,1	66395A	66396A	66397A
1500	1600	1400	60	52	1565	1435	26	18,0	17,5	M16	35	40x	33,0	129	914	177,7	66398A	66399A	66400A

Other versions on request

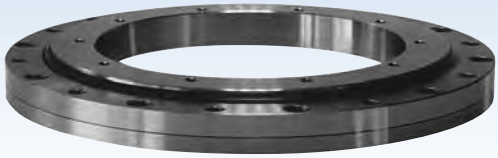






Bearing assemblies

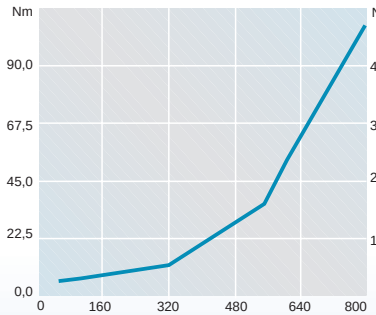
Series LDL Aluminium version



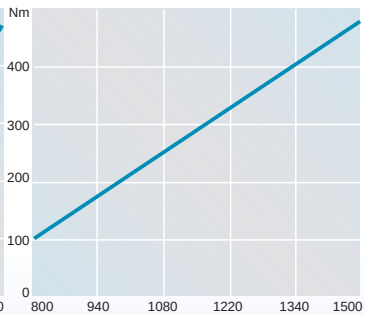
intermediate diameters on request

Diameter			Height		Fastening							Number	Load rating		Weight	Order number		
KK	d1 [mm]	d2 [mm]	h1 [mm]	h2 [mm]	d3 [mm]	d4 [mm]	D [mm]	d [mm]	k1 [mm]	SD [mm]	t1 [mm]	a [Stück]	C [kN]	Co [kN]	[kg]	Bore shape A	B	C
100	150	50	30	24	135	65	11	6,6	6,8	M6	15	6x	17	25	1,00	66401L	66402L	66403L
150	200	100	30	24	185	115	11	6,6	6,8	M6	15	6x	18	40	1,48	73000L	73001L	73002L
160	210	110	30	24	195	125	11	6,6	6,8	M6	15	6x	18	43	1,60	73003L	73004L	73005L
170	220	120	30	24	205	135	11	6,6	6,8	M6	15	6x	19	46	1,68	73006L	73007L	73008L
180	230	130	30	24	215	145	11	6,6	6,8	M6	15	8x	19	49	1,80	73009L	73010L	73011L
190	240	140	30	24	225	155	11	6,6	6,8	M6	15	8x	20	51	1,88	73012L	73013L	73014L
200	250	150	30	24	235	165	11	6,6	6,8	M6	15	8x	20	54	2,00	73015L	73016L	73017L
210	260	160	30	24	245	175	11	6,6	6,8	M6	15	8x	21	57	2,08	73018L	73019L	73020L
220	270	170	30	24	255	185	11	6,6	6,8	M6	15	8x	21	60	2,20	73021L	73022L	73023L
230	290	170	34	27	270	190	15	9,0	9,0	M8	20	8x	24	64	2,96	73024L	73025L	73026L
240	300	180	34	27	280	200	15	9,0	9,0	M8	20	8x	24	67	3,12	73027L	73028L	73029L
250	310	190	34	27	290	210	15	9,0	9,0	M8	20	10x	25	70	3,23	73030L	73031L	73032L
260	320	200	34	27	300	220	15	9,0	9,0	M8	20	10x	25	73	3,38	73033L	73034L	73035L
270	330	210	34	27	310	230	15	9,0	9,0	M8	20	10x	25	76	3,50	73036L	73037L	73038L
280	340	220	34	27	320	240	15	9,0	9,0	M8	20	10x	26	78	3,62	73039L	73040L	73041L
290	350	230	34	27	330	250	15	9,0	9,0	M8	20	10x	26	82	3,77	73042L	73043L	73044L
300	360	240	38	31	340	260	15	9,0	9,0	M8	20	12x	27	84	4,46	73045L	73046L	73047L
310	370	250	38	31	350	270	15	9,0	9,0	M8	20	12x	27	87	4,62	73048L	73049L	73050L
320	380	260	38	31	360	280	15	9,0	9,0	M8	20	12x	27	90	4,77	73051L	73052L	73053L
330	390	270	38	31	370	290	15	9,0	9,0	M8	20	14x	28	93	4,92	73054L	73055L	73056L
340	400	280	38	31	380	300	15	9,0	9,0	M8	20	14x	28	96	5,08	73057L	73058L	73059L
350	410	290	38	31	390	310	15	9,0	9,0	M8	20	14x	28	98	5,19	73060L	73061L	73062L
360	420	300	38	31	400	320	15	9,0	9,0	M8	20	14x	28	101	5,35	73063L	73064L	73065L
370	430	310	38	31	410	330	15	9,0	9,0	M8	20	14x	29	105	5,50	73066L	73067L	73068L
380	440	320	38	31	420	340	15	9,0	9,0	M8	20	14x	29	107	5,65	73069L	73070L	73071L
390	450	330	38	31	430	350	15	9,0	9,0	M8	20	14x	29	110	5,81	73072L	73073L	73074L
400	470	330	44	37	445	355	18	11,0	11,0	M10	25	14x	28	128	8,00	73075L	73076L	73077L
410	480	340	44	37	455	365	18	11,0	11,0	M10	25	14x	28	133	8,19	73078L	73079L	73080L
420	490	350	44	37	465	375	18	11,0	11,0	M10	25	14x	28	136	8,41	73081L	73082L	73083L
430	500	360	44	37	475	385	18	11,0	11,0	M10	25	14x	29	139	8,59	73084L	73085L	73086L
440	510	370	44	37	485	395	18	11,0	11,0	M10	25	14x	29	142	8,78	73087L	73088L	73089L
450	520	380	44	37	495	405	18	11,0	11,0	M10	25	14x	29	144	9,00	73090L	73091L	73092L
460	530	390	44	37	505	415	18	11,0	11,0	M10	25	14x	29	149	9,19	73093L	73094L	73095L
470	540	400	44	37	515	425	18	11,0	11,0	M10	25	14x	29	152	9,41	73096L	73097L	73098L
480	550	410	44	37	525	435	18	11,0	11,0	M10	25	14x	30	155	9,59	73099L	73100L	73101L
490	560	420	44	37	535	445	18	11,0	11,0	M10	25	14x	30	158	9,78	73102L	73103L	73104L
500	580	420	49	42	550	450	20	14,0	13,0	M12	30	14x	30	162	12,96	73105L	73106L	73107L
510	590	430	49	42	560	460	20	14,0	13,0	M12	30	14x	30	165	13,22	73108L	73109L	73110L
520	600	440	49	42	570	470	20	14,0	13,0	M12	30	14x	31	168	13,48	73111L	73112L	73113L
530	610	450	49	42	580	480	20	14,0	13,0	M12	30	16x	31	171	13,74	73114L	73115L	73116L
540	620	460	49	42	590	490	20	14,0	13,0	M12	30	16x	31	175	14,00	73117L	73118L	73119L
550	630	470	49	42	600	500	20	14,0	13,0	M12	30	16x	31	178	14,26	73120L	73121L	73122L
560	640	480	49	42	610	510	20	14,0	13,0	M12	30	16x	31	181	14,52	73123L	73124L	73125L
570	650	490	49	42	620	520	20	14,0	13,0	M12	30	16x	32	184	14,78	73126L	73127L	73128L
580	660	500	49	42	630	530	20	14,0	13,0	M12	30	16x	32	188	15,04	73129L	73130L	73131L
590	670	510	49	42	640	540	20	14,0	13,0	M12	30	16x	32	191	15,30	73132L	73133L	73134L
600	680	520	49	42	650	550	20	14,0	13,0	M12	30	16x	32	194	15,56	73135L	73136L	73137L
620	710	530	53	45	670	570	20	14,0	13,0	M12	30	22x	75	330	21,07	66141L	66142L	66143L
640	730	550	53	45	690	590	20	14,0	13,0	M12	30	22x	76	341	21,78	66144L	66145L	66146L
660	750	570	53	45	710	610	20	14,0	13,0	M12	30	22x	77	351	22,48	66147L	66148L	66149L
680	770	590	53	45	730	630	20	14,0	13,0	M12	30	22x	78	361	23,15	66150L	66151L	66152L
700	790	610	53	45	750	650	20	14,0	13,0	M12	30	22x	79	371	23,85	66153L	66154L	66155L
720	810	630	53	45	770	670	20	14,0	13,0	M12	30	22x	80	385	24,56	66156L	66157L	66158L
740	830	650	53	45	790	690	20	14,0	13,0	M12	30	24x	81	396	25,19	66159L	66160L	66161L
760	850	670	53	45	810	710	20	14,0	13,0	M12	30	24x	81	406	25,89	66162L	66163L	66164L
780	870	690	53	45	830	730	20	14,0	13,0	M12	30	24x	82	416	26,59	66156L	66157L	66158L
800	900	700	60	52	865	735	26	18,0	17,5	M16	35	24x	104	497	36,12	66168L	66169L	66170L
820	920	720	60	52	885	755	26	18,0	17,5	M16	35	24x	106	513	37,04	66171L	66172L	66173L
840	940	740	60	52	905	775	26	18,0	17,5	M16	35	24x	106	523	37,96	66174L	66175L	66176L
860	960	760	60	52	925	795	26	18,0	17,5	M16	35	24x	107	534	38,88	66177L	66178L	66179L
880	980	780	60	52	945	815	26	18,0	17,5	M16	35	24x	108	549	39,81	66180L	66181L	66182L
900	1000	800	60	52	965	835	26	18,0	17,5	M16	35	24x	109	560	40,73	66183L	66184L	66185L
920	1020	820	60	52	985	855	26	18,0	17,5	M16	35	24x	110	575	41,69	66186L	66187L	66188L
940	1040	840	60	52	1005	875	26	18,0	17,5	M16	35	24x	111	586	42,62	66189L	66190L	66191L
960	1060	860	60	52	1025	895	26	18,0	17,5	M16	35	26x	112	596	43,46	66192L	66193L	66194L
980	1080	880	60	52	1045	915	26	18,0	17,5	M16	35	26x	113	612	44,38	66195L	66196L	66197L
1000	1100	900	60	52	1065	935	26	18,0	17,5	M16	35	26x	113	623	45,31	66198L	66199L	66200L
1100	1200	1000	60	52	1165	1035	26	18,0	17,5	M16	35	30x	115	664	49,85	66386L	66387L	66388L
1200	1300	1100	60	52	1265	1135	26	18,0	17,5	M16	35	30x	121	747	54,46	66389L	66390L	66391L
1300	1400	1200	60	52	1365	1235	26	18,0	17,5	M16	35	36x	124	799	58,88	66392L	66393L	66394L
1400	1500	1300	60	52	1465	1335	26	18,0	17,5	M16	35	36x	128	872	63,50	66395L	66396L	66397L
1500	1600	1400	60	52	1565	1435	26	18,0	17,5	M16	35	40x	129	914	68,35	66398L	66399L	66400L

Other versions on request



Diagr.1.1 Preload



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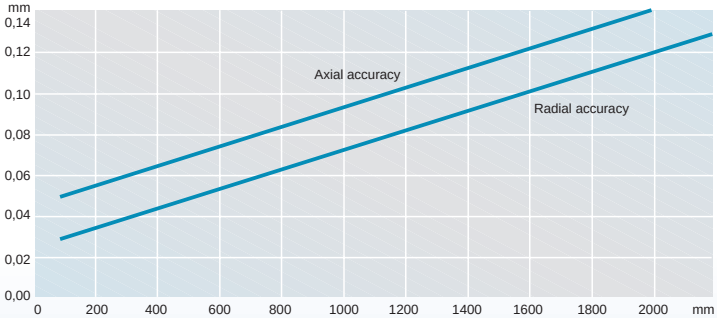
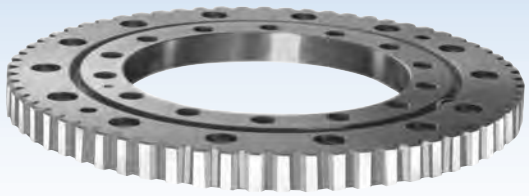


Diagr.2 Axial and radial accuracy

Bearing assemblies

Series LDL with gear



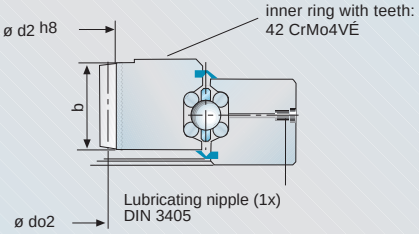
intermediate diameters on request

KK Ø	Wide b [mm]	Module m [mm]	Ball pitch d02 [mm]	Teeth number Z [Number]	Ø d2 [mm]	Order number Bore shape A	B	C
100	19	2	40	20	50	66401W	66402W	66403W
150	19	2	90	45	100	73000W	73001W	73002W
160	19	2	100	50	110	73003W	73004W	73005W
170	19	2	110	55	120	73006W	73007W	73008W
180	19	2	120	60	130	73009W	73010W	73011W
190	19	2	130	65	140	73012W	73013W	73014W
200	19	2	140	70	150	73015W	73016W	73017W
210	19	2	150	75	160	73018W	73019W	73020W
220	19	2	160	80	170	73021W	73022W	73023W
230	22	2	160	80	170	73024W	73025W	73026W
240	22	2	170	85	180	73027W	73028W	73029W
250	22	2	180	90	190	73030W	73031W	73032W
260	22	2	190	95	200	73033W	73034W	73035W
270	22	2	200	100	210	73036W	73037W	73038W
280	22	2	210	105	220	73039W	73040W	73041W
290	22	2	220	110	230	73042W	73043W	73044W
300	26	3	228	76	240	73045W	73046W	73047W
310	26	3	237	79	250	73048W	73049W	73050W
320	26	3	249	83	260	73051W	73052W	73053W
330	26	3	258	86	270	73054W	73055W	73056W
340	26	3	264	88	280	73057W	73058W	73059W
350	26	3	276	92	290	73060W	73061W	73062W
360	26	3	288	96	300	73063W	73064W	73065W
370	26	3	297	99	310	73066W	73067W	73068W
380	26	3	306	102	320	73069W	73070W	73071W
390	26	3	318	106	330	73072W	73073W	73074W
400	32	3	318	106	330	73075W	73076W	73077W
410	32	3	324	108	340	73078W	73079W	73080W
420	32	3	336	112	350	73081W	73082W	73083W
430	32	3	348	116	360	73084W	73085W	73086W
440	32	3	357	119	370	73087W	73088W	73089W
450	32	3	366	122	380	73090W	73091W	73092W
460	32	3	378	126	390	73093W	73094W	73095W
470	32	3	387	129	400	73096W	73097W	73098W
480	32	3	396	123	410	73099W	73100W	73101W
490	32	3	408	136	420	73102W	73103W	73104W
500	35	3	408	136	420	73105W	73106W	73107W
510	35	3	414	138	430	73108W	73109W	73110W
520	35	3	426	142	440	73111W	73112W	73113W
530	35	3	438	146	450	73114W	73115W	73116W
540	35	3	444	148	460	73117W	73118W	73119W
550	35	3	456	152	470	73120W	73121W	73122W
560	35	3	468	156	480	73123W	73124W	73125W
570	35	3	477	159	490	73126W	73127W	73128W
580	35	3	486	162	500	73129W	73130W	73131W
590	35	3	498	166	510	73132W	73133W	73134W
600	35	3	507	169	520	73135W	73136W	73137W
620	38	4	512	128	530	66141W	66142W	66143W
640	38	4	532	133	550	66144W	66145W	66146W
660	38	4	552	138	570	66147W	66148W	66149W
680	38	4	572	143	590	66150W	66151W	66152W
700	38	4	592	148	610	66153W	66154W	66155W
720	38	4	612	153	630	66156W	66157W	66158W
740	38	4	632	158	650	66159W	66160W	66161W
760	38	4	648	162	670	66162W	66163W	66164W
780	38	4	672	168	690	66156W	66157W	66158W
800	45	5	680	136	700	66168W	66169W	66170W
820	45	5	700	140	720	66171W	66172W	66173W
840	45	5	720	144	740	66174W	66175W	66176W
860	45	5	740	148	760	66177W	66178W	66179W
880	45	5	760	152	780	66180W	66181W	66182W
900	45	5	780	156	800	66183W	66184W	66185W
920	45	5	800	160	820	66186W	66187W	66188W
940	45	5	820	164	840	66189W	66190W	66191W
960	45	5	840	168	860	66192W	66193W	66194W
980	45	5	860	172	880	66195W	66196W	66197W
1000	45	5	880	176	900	66198W	66199W	66200W
1100	45	5	980	196	1000	66386W	66387W	66388W
1200	45	5	1080	216	1100	66389W	66390W	66391W
1300	45	5	1180	236	1200	66392W	66393W	66394W
1400	45	5	1280	256	1300	66395W	66396W	66397W
1500	45	5	1380	276	1400	66398W	66399W	66400W

Other version on request

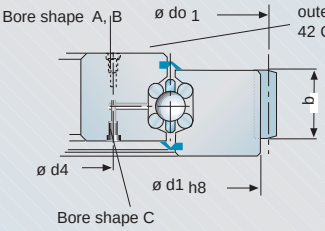
Ball pitch Ø d01 [mm]	Teeth number Z [Number]	Ø d1 [mm]	Order number Bore shape A	B	C
160	80	150	66401V	66402V	66403V
210	105	200	73000V	73001V	73002V
220	110	210	73003V	73004V	73005V
230	115	220	73006V	73007V	73008V
240	120	230	73009V	73010V	73011V
250	125	240	73012V	73013V	73014V
260	130	250	73015V	73016V	73017V
270	135	260	73018V	73019V	73020V
280	140	270	73021V	73022V	73023V
300	150	290	73024V	73025V	73026V
310	155	300	73027V	73028V	73029V
320	160	310	73030V	73031V	73032V
330	165	320	73033V	73034V	73035V
340	170	330	73036V	73037V	73038V
350	175	340	73039V	73040V	73041V
360	180	350	73042V	73043V	73044V
372	124	360	73045V	73046V	73047V
384	128	370	73048V	73049V	73050V
396	132	380	73051V	73052V	73053V
402	134	390	73054V	73055V	73056V
414	138	400	73057V	73058V	73059V
423	141	410	73060V	73061V	73062V
432	144	420	73063V	73064V	73065V
444	148	430	73066V	73067V	73068V
456	152	440	73069V	73070V	73071V
462	154	450	73072V	73073V	73074V
483	161	470	73075V	73076V	73077V
492	164	480	73078V	73079V	73080V
504	168	490	73081V	73082V	73083V
513	171	500	73084V	73085V	73086V
522	174	510	73087V	73088V	73089V
534	178	520	73090V	73091V	73092V
546	182	530	73093V	73094V	73095V
552	184	540	73096V	73097V	73098V
564	188	550	73099V	73100V	73101V
576	192	560	73102V	73103V	73104V
594	189	580	73105V	73106V	73107V
603	201	590	73108V	73109V	73110V
612	204	600	73111V	73112V	73113V
624	208	610	73114V	73115V	73116V
636	212	620	73117V	73118V	73119V
642	214	630	73120V	73121V	73122V
654	218	640	73123V	73124V	73125V
663	221	650	73126V	73127V	73128V
672	224	660	73129V	73130V	73131V
684	228	670	73132V	73133V	73134V
693	231	680	73135V	73136V	73137V
728	182	710	66141V	66142V	66143V
748	187	730	66144V	66145V	66146V
768	192	750	66147V	66148V	66149V
792	198	770	66150V	66151V	66152V
808	202	790	66153V	66154V	66155V
828	207	810	66156V	66157V	66158V
848	212	830	66159V	66160V	66161V
868	217	850	66162V	66163V	66164V
888	222	870	66156V	66157V	66158V
920	184	900	66168V	66169V	66170V
940	188	920	66171V	66172V	66173V
960	192	940	66174V	66175V	66176V
980	196	960	66177V	66178V	66179V
1000	200	980	66180V	66181V	66182V
1020	204	1000	66183V	66184V	66185V
1040	208	1020	66186V	66187V	66188V
1060	212	1040	66189V	66190V	66191V
1080	216	1060	66192V	66193V	66194V
1100	220	1080	66195V	66196V	66197V
1120	224	1100	66198V	66199V	66200V
1220	244	1200	66386V	66387V	66388V
1320	264	1300	66389V	66390V	66391V
1420	284	1400	66392V	66393V	66394V
1520	304	1500	66395V	66396V	66397V
1620	324	1600	66398V	66399V	66400V

Teeth DIN 3967
quality 8e25
reference profile
DIN 867



Inner gear

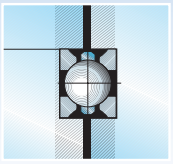
Teeth DIN 3967
quality 8e25
reference profile
DIN 867

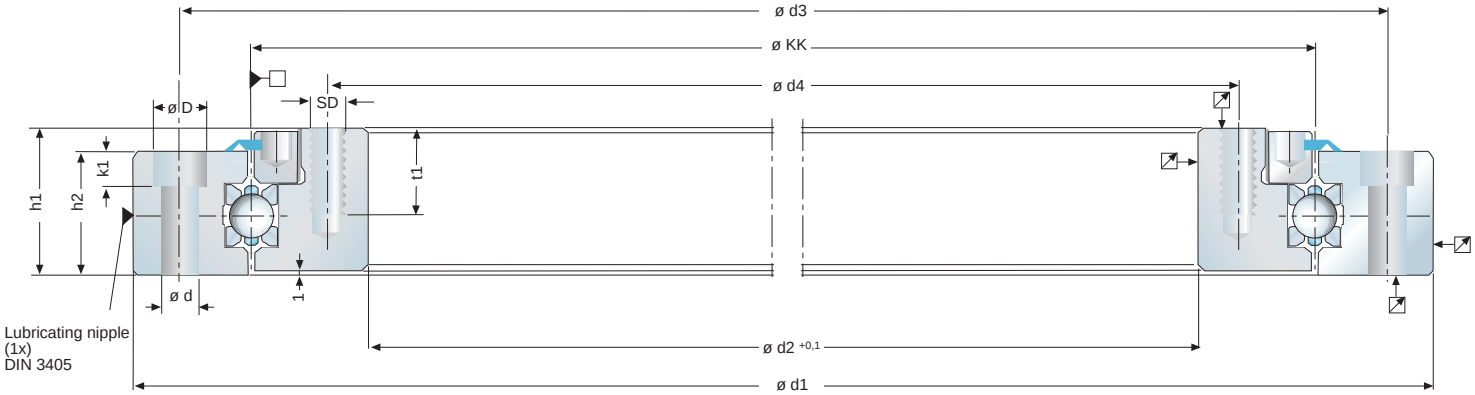


Outer gear

Bearing assemblies

Series LDV, preferential series





Diameter					Height		Fastening						Load rating		Weight	Order number
KK	D	d	d1	d2	h1	h2	d3	d4	Screws per ring	k1	SD	t1	C	Co		
200	11	6,6	250 $_{-0,1}$	150	30$^{\pm0,3}$	24	235	165	8xM6	6,8	M6	15	18	50	5,0	66276A
300	15	9,0	360 $_{-0,1}$	240	38$^{\pm0,4}$	31	340	260	12xM8	9,0	M8	20	21	78	11,6	66277A
400	18	11,0	470 $_{-0,15}$	330	44$^{\pm0,5}$	37	445	355	14xM10	11,0	M10	25	24	105	21,6	66278A

Dimensions [mm], Weight [kg] * DIN ISO 286

Consist of:
- Inner and outer ring of steel
- Bearing element series LER
- Seal on upper side of the bearing

Features:
- Ready-to-mount bearing assembly
- Three diameters available from stock
- Standard bore shape
- Highest stiffness
- Cost effective
- With serial request also available in other diameters
- With serial request also available in other material
- Calculation programme to find the most suitable bearing
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the bearing size for you.

Lubrication:
- with ball bearing grease. For more information see page 34.

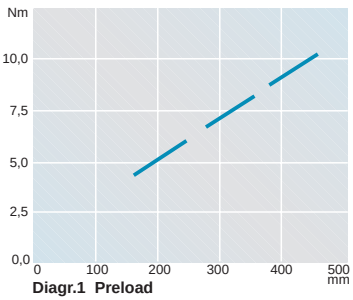
Temperature:
- Standard:Continuous operation: -30°C to +80°C, short time operation max. 100°C

Adjustment:
- Preload ex works (see diagram 1) via thread ring

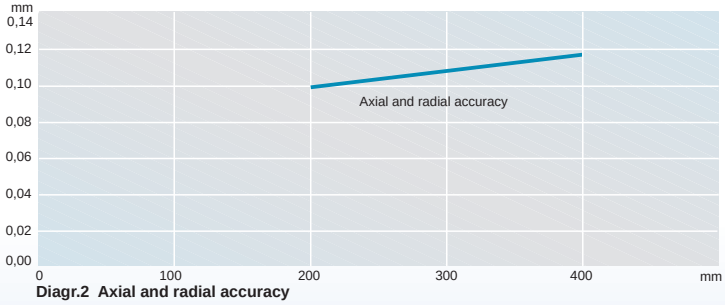
Circumferential speed:
- With seal max. 5 m/s
- Without seal max. 10 m/s

	Inner outer ring	Race ways	Antifric-tion bearing	Strip cage	Seal
Standard	C45N	54SiCr6	100Cr6	PA12	NBR
Special					

Tab.1 Material



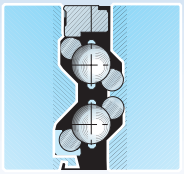
Diagr.1 Preload

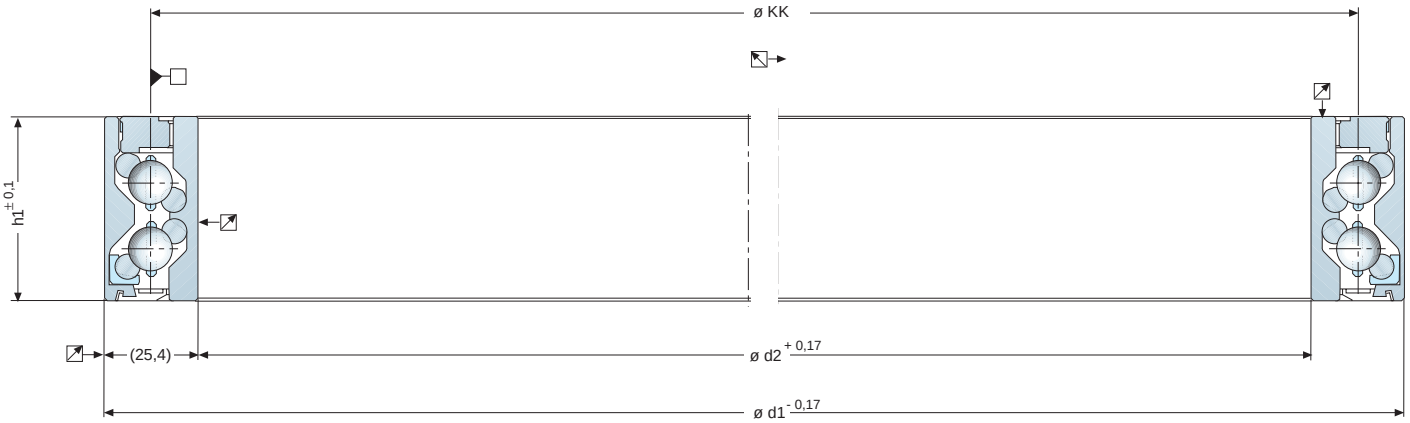


Diagr.2 Axial and radial accuracy

Bearing assemblies

Series LDH, highly dynamical





Special and metrical dimensions on request

Ø KK		d1		d2		h1		Load rating		Weight	Order number
[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	C [mm]	Co [KN]	[KN]	[kg]	
21	533,4	22	558,8	20	508	2	50,8	57	335	11,5	66602A
26	660,4	27	685,8	25	635	2	50,8	61	413	14,0	66603A
31	787,4	32	812,8	30	762	2	50,8	65	494	16,5	66604A
36	914,4	37	939,8	35	889	2	50,8	69	575	19,0	66605A
41	1041,4	42	1066,8	40	1016	2	50,8	73	656	21,5	66606A

Dimensions [mm]

Components:
- Inner and outer ring
- Special bearing element with ground raceways
- Elastomer insert reduces oscillation

Features:
- Bearing assembly ready to mount
- Low noise with high RPMs
- Material combinations respectively coatings can freely be chosen
- The geometry can freely be chosen (gearing and drilling configuration possible)
- Maximum radial and axial running accuracy with maximum stiffness
- Rotational resistance is adjusted in our works
- Intermediate sizes and particular dimensions possible (inch/metrical system possible)
- Custom-made solutions are possible.

Lubrication:
- With ball bearing grease. Further information on page 34

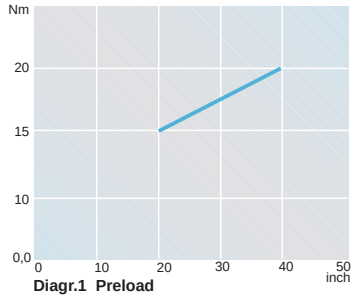
Temperature range:
- In permanent operation: -30°C up to +80°C

Adjustment
- Adjusted by threaded ring in our works
- Rotational resistance see diagram 1

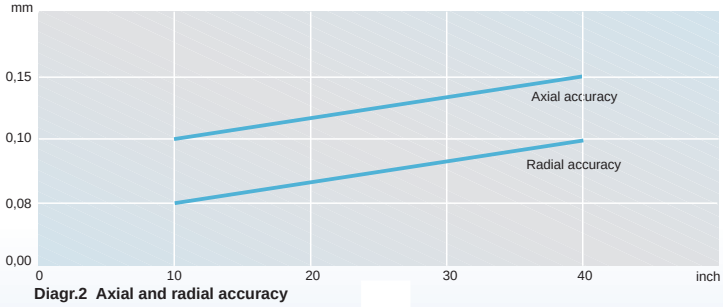
Further information:
Until now we have supplied more that 10.000 central bearings for computer tomographs worldwide. Many manufacturers of this branch became aware of the advantages of the Franke system and have been using them consequently in the core of their products.

	Inner outer ring	Race ways	Antifriction bearing	Cage
Standard	C45N	54SiCr6	100Cr6	PA12
Special				

Tab.1 Material



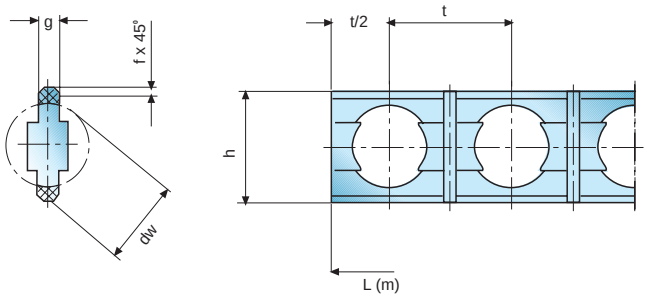
Diagr.1 Preload



Diagr.2 Axial and radial accuracy

Stripe cages

Series LKB



Cage Size	dw mm	dw Zoll	h	g	t	f	Order number (per meter)
LKB5	5,0	3/16	7,6	1,5	7,5	0,4	78916A
LKB6	6,0		8,6	1,6	8,8	0,4	78917A
LKB8	8,0	5/16	10,6	2,0	12,0	0,6	78918A
LKB9,5	9,5	3/8	12,6	2,5	14,0	0,7	78920A
LKB10	10,0		13,2	2,5	14,0	0,7	78921A
LKB11	11,0		13,7	2,5	14,0	0,7	78922A
LKB12	12,0		15,0	2,5	16,0	0,7	78923A
LKB15	15,0		18,6	3,0	18,6	0,7	78924A
LKB16	16,0		19,6	3,0	20,0	0,7	78925A
LKB20	20,0	25/32	24,2	3,5	26,0	0,7	78926A

Material: PA12 Dimensions [mm]

The strip cage consists of wear resistant HD polyamide. It is suitable for high circumferential speeds for bearings with horizontal and vertical axis of rotation. We supply strip cages ready for installation equipped with balls. The required number of balls is calculated as follows:

$$Z = \left[\frac{ØKK \cdot \pi}{t} \right] - 1$$

Z = Number of balls
KK Ø = Ball pitch diameter
t = Ball spacing

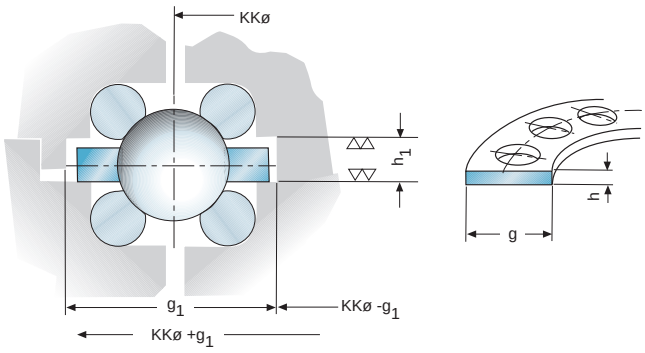
The number of segments depends on the diameter of the bearing and on the ball size. The reference values are:

KKØ	< 200	200-399	400-799	800-1500
Number of segments	3-4	4-6	6-8	8-12

For special applications the cage can be delivered in one piece.

Cage (Special)

Series FK



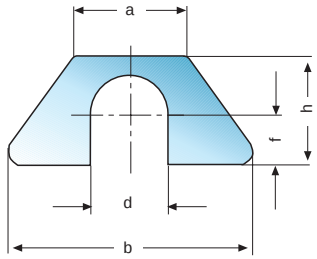
dw	h x g	h1 x g1	Order number
5,0	2 x 10	2,7 x 13	on request
6,0	2 x 12	2,7 x 15	on request
8.0	2 x 15	4,0 x 18	on request
9,0	3 x 16	4,0 x 18	on request
12,0	4 x 20	5,5 x 23	on request
16,0	5 x 26	6,5 x 30	on request
20,0	6 x 31	7,5 x 35	on request
25,0	8 x 38	10,0 x 43	on request
30,0	8 x 45	10,0 x 50	on request
40,0	12 x 56	14,0 x 61	on request
50,0	15 x 80	17,5 x 88	on request

Material: fabric-base laminate, brass, Niro Dimensions [mm]

Tolerances
DIN 7168

Flat cages have to be used with temperatures over 100°C and ball diameters bigger than 20 mm. Special solutions like complete corrosion-protection or radiation-resistance are possible.

Washers



Size	a	b	d	f	h
M6	11,0	24,4	7	5	11,0
M8	14,7	34,2	9	6	13,5
M10	16,4	42,3	11	7	16,0
M12	20,3	46,0	13	8	18,0
M16	25,4	54,0	17	11	24,0

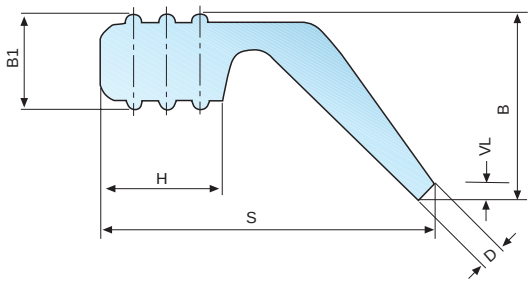
Dimensions [mm]

	Order number							
Dicke	0,025	0,1	0,15	0,2	0,25	0,3	0,5	1,0
M6	79015A	79034A	79035A	79036A	79037A	79038A	79039A	79040A
M8	79041A	79023A	79042A	79000A	79026A	79043A	79044A	79045A
M10	79046A	79012A	79010A	79011A	79047A	79048A	79049A	79050A
M12	79118A	79051A	79052A	79053A	79054A	79055A	79056A	79065A
M16	79119A	79024A	79066A	79057A	79058A	79059A	79060A	79061A

Dimensions [mm]

With large bearing diameters adjustment is simplified by inserting washers between the parted inner or outer rings. The washers are made of non-corrosive steel sheet.

Seal



Profile S$^{\pm 0,5}$	H	B$^{\pm 0,3}$	B1$^{\pm 0,2}$	D	Material			Preload VL[1]	Weight	Order No.
10	4,2	5,3	3,0	0,8	Perbunan 170	NBR/221	Viton	0,5...1,5	0,026	09080
15	5,5	8,5	4,3	1,0	Perbunan 170	NBR/221		0,5...2,0	0,051	09190

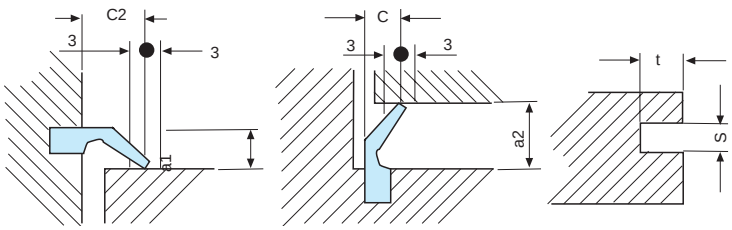
1) Depending on the required rotational resistance (approx. 1 Nm/m seal)

Dimensions [mm], Preload [Nm/mm], Weight [kg/m]

Franke bearing assemblies are equipped with the S10-seal.

Temperatue -30°C - +80°C. Max. circumferential speed 5 m/s.

To use seal with bearing elements you may order the seal by meter. To glue the seal ends we recommend Loctite 401®.



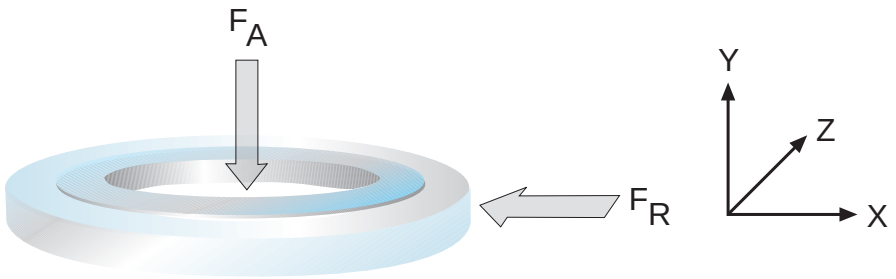
Profile S	Dimensions c	c2	a1	a2	Groove dimensions t$^{+0,2}$	s$^{+0,1}$
10$^{\pm 0,5}$	5+1	5,5^{+1}	3,6...4,6	4,3...5,3	4,2	3,0
15$^{\pm 0,5}$	8+1,5	9,0$^{+1,5}$	6,3...7,7	7,5...9,0	5,5	3,9

Dimensions [mm]

Technical data for the determination of antifriction bearings

Bearing elements, slim bearing, bearing assemblies

Company: **Name:** **Department:** **Address:** **Phone:** **Telefax:** **Email:** **Branch:**	**Intended application:** short description



Application: Series _____ Material _____ Order number _____

Force: Load Lever (x,y,z)

				Static	Dynamic
+ or -	F_A + or -X - coordinates (+ or -)	Z - coordinates	(+ or -)	☐	☐
+ or -	F_R + or -Y - coordinates (+ or -)	Z - coordinates	(+ or -)	☐	☐

Example: + F_A = 100 N + x = 30 mm ☒ ☐

The loads resulting of accelerations have to be calculated by $F_A = m \cdot 9{,}81\ m/s^2$

Dynamic: Revolution n = _____ $min.^{-1}$

Torque MD = _____ Nm (that might effect a gear)

Gear: Drive moment _____ Nm

Diameter Ø _____ mm

Module _____ mm

Tooth width _____ mm

Material _____

☐ Transmission ☐ Negative Transmission

Mounting position: ☐ Horizontal ☐ Vertikal

Environment: ☐ Humidity ☐ High temperature

☐ Dirty environment ☐ Shock impact

Please return the filled copy

1. How to chose a bearing element or a bearing assembly

The selection respectively dimensioning of the bearing should be made before the beginning of the design work.

Parameters for the choice:
- Permissible dimension and requirements to the material of the bearing
- Loading with collective loads and pertinent time shares in %
- Number of revolutions respectively number of slewing motions and slewing angle per time unit
- Circumferential forces which are to be transferred by the gear
- Any other operating conditions such as temperature, vacuum, clean-room, humidity

(Please use the form on page 32.)

The catalogue serves to make an approximate selection of the bearing. All the necessary data are found on the corresponding page of the respective series.

1.2 Static and dynamical load capacity, calculation

The indications concerning static and dynamical load capacity given in the catalogue should be used for the pre-dimensioning. They are not sufficient for the precise final dimensioning. The given load rating applies to radial loads. For optimal dimensioning you need the static, axial, radial, and moment load rating, respectively the dynamical, axial, and radial load rating.
The axial values normally are higher by the factor 2. We recommend you to use the Franke calculation programme or to have the calculation made by us.

2. Assembly and adjustment of bearing elements.

Bearing elements are composed of two inner and two outer race rings and a multipart segmented cage with balls. The race rings are open and therefore their cross section can be elastically adapted when mounting.

The quality class of the balls is 3 (DIN5401). Only the balls which are contained in the Franke consignment are allowed to be used. If balls get lost all the balls have to be replaced.
The adjustment with preload is an important condition for longevity. It guarantees that all races carry load and that the balls run optimally in their defined track.

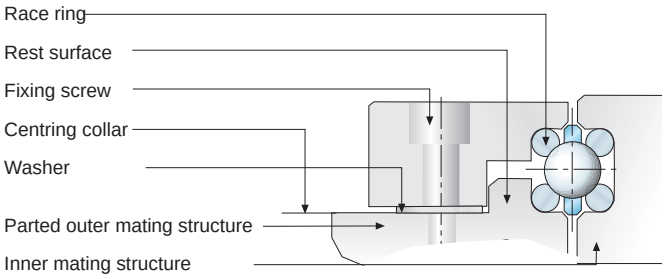
2.1 Adjustment by means of washers

Adjustment by means of washers is the most flexible and economically most efficient way of adjustment because it allows the user to change the rotational resistance subsequently. Washers can be ordered in different thicknesses depending on the screw diameter (see accessories on page 31).

Condition:

- Inner and outer structure have to be parted
- The height “mH7” on the side of the parted mating structure must be by 0.3 to 0.5mm smaller. The gap serves to take the washer.
- The parted side of the mating structure should be fixed by a centring collar to guarantee the parallelism of the races.

Mounting and adjustment



The race rings are inserted into the mating structure. The race ring beds can be coated with grease in order to keep the rings in their position during the mounting process. The joints of the race rings which are on the opposite side of the same part are turned by 180°. Afterwards the parted side of the mating structure is put into its provided position*. Then the cage segments with the balls are inserted and the bearing element is greased (see page 34: lubrication). Before the mating structure of the parted side is closed the washers are put on the holes for the fixing screws. Their thickness depends on the gap which is provided for them (see above). After tightening of the screws (see screws) the bearing assembly is turned 2 to 3 times by 360° and the rotational resistance is checked. If the measured value differs by more than 5-10% the thickness of the washers has to be changed and the procedure has to be repeated.

(* Applies to both adjustment methods 2.1 and 2.2)

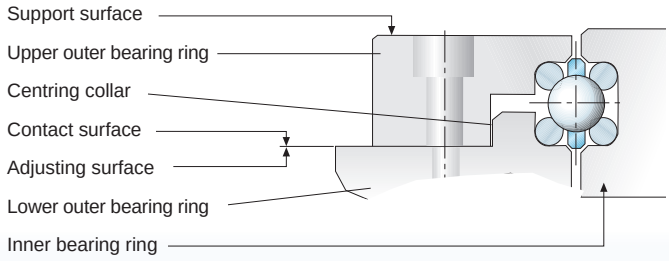
2.2 Massive adjustment

With the massive adjustment the dimensional determination of the adjustment surface is obtained by grinding. With this method the highest precision is reached because the separating surface of the parted side is form-fit and no tension bridges can be produced.

Condition:

- Inner and outer structure has to be parted.
- An appropriate surface grinding machine has to be at disposal
- The dimension “mH7” on the side of the parted mating structure must be by 0,1 mm higher. This over measure is needed for adjustment.
- The parted side of the mating structure should be fixed by a centring collar which determines the parallelism of the raceways.

Mounting and adjustment
Procedure as described under 2.1) until *.



Afterwards the cage segments with the balls are inserted and the bearing assembly is closed with the second parted side of the mating structure (adjustment ring). The clearance should be measured by means of a dial gauge after securing of the screws according to the instructions (see under “screws”) and after turning of the bearing assembly two to three times by a full rotation of 360°. Now the adjustment ring is again detached and the measured value plus additional 0,02 to 0,03 mm is ground off by means of a flat grinding machine. (In order to guarantee the parallelism between this surface and the rest surface of the raceway the designer should provide a suitable rest surface beforehand!)
After the grinding dust has carefully been cleaned off the ring is mounted again as described, and the bearing is moved. Now the rotational resistance is measured. If this value differs by more than 5-10% the procedure has to be repeated. Finally the bearing assembly is greased via the provided lubrication holes (see “lubrication”).

Hint:

We recommend you to adjust a preload because tolerances which have to be compensated are always to be encountered, even with optimum machining

3. Mounting and installation of bearing assemblies

Franke bearing assemblies are completed bearings and ready for installation, no matter whether it is a standard bearing from the catalogue or a custom-made specific version. The defined running accuracy, the rotational resistance, the stiffness and the general features depend on the mating structure and the correctness of the data indicated when ordering. So please pay attention to this aspect.

3.1 Lubrication and maintenance

The bearing should always be provided with sufficient lubricant in order to keep the friction low and to avoid corrosion. All lubricants undergo an ageing process which limits the durability. The best durability is reached by fully synthetic lubricants. For the first lubrication of our bearings we use ISOFLEX TOAS NCA 52 (Special grease of the firm Klüber, designation according to DIN 51502: KHC2N-50). The durability of this lubricant is about 3 years. We recommend this grease also for our bearing elements.

As an alternative you can also use high-grade lithium soap greases on the basis of poly-alpha-olefin or greases on the basis of mineral oil, according to DIN 51825-K2K-40. Any questions regarding specific features e.g. miscibility, aggressiveness, extreme temperatures, disposal, or application fields of a lubricant should be cleared up with the lubricant producer.

3.2 First lubrication

The quantity of lubricant needed by an antifriction bearing is relatively low and adapts itself to the RPM. In cases where too much lubricant is used the flexing work increases the temperatures and consequently the lubricity could be reduced or completely lost.
This way the increased wear of the bearing reduces its longevity. The quantity of lubricant is determined according to the free space inside the bearing assembly. 20 to 30% of the calculated volume has to be filled with lubricant. With slewing bearings we recommend 30-40%.

3.3 Re-lubrication and lubrication periods

The lubricity decreases as a consequence of wear and ageing. Therefore it is necessary to complete lubricant or to exchange the total lubricant quantity (e.g. in case of heavy contamination). During the re-lubrication process the bearing has to be turned, the temperature should be the normal operating temperature.

The re-lubrication quantity is calculated as follows:
M = KKØ x h2/3 x X

h2 = height of bearing ring n mm (see page 20 resp. 24)
KK^{-} = Ball pitch diameter in mm
m = Re-lubrication quantity
X = Factor according to table 1 in mm $^{-1}$

Re-lubrication periods:

The precise determination of the periods has to be based on the specific application and should therefore be defined by experiments. Approximate values are found in table 1. The factor X (table 2) is determined by the time value in relation to the operation time provided for your application.

Table 1:

Vu [m/s]	Interval [h]
0 bis < 3	5000
3 bis < 5	1000
5 bis < 8	600
3 bis <10	200

Table 2:

interval	weekly	monthly	annually	2-3 years
X	0,002	0,003	0,004	0,005

Hint:

With standard bearings it is sufficient to attach one re-lubrication facility because the lubricant is evenly applied by the bearing motion. With slewing bearings you should provide at least 3 re-lubrication facilities (3X120¡). Generally it is possible to install a circular oil lubrication system. Please consult the lubricant supplier. For special applications (e.g. clean room or ultra high vacuum) we can manufacture lubricant-free bearings.

Calculation example:

Bearing assembly LDL, KKØ 500 mm, order no. 73105Y, circumferential speed 3m/s

Operation time approximately 16 hours per day

The re-lubrication period for 3m/s is 1000 hours (see table 1)
= 1000 (h) /16 (h/day) = 63 days ~ three months with an operation time of 16 hours per day.

Re-lubrication should be made every 3 months hence the factor X (table 2) is rounded and amounts to 0.0003. The dimension h2 is 42 mm (according to page 25 in this catalogue).

m = 500mm x 42/3mm x 0.003g = 21 g

Hence the quantity for re-lubrication amounts to 21g ISOFLEX TOPAS NCA52; it should be applied every 3 months. The durability of the lubricant is 3 years.

3.4 Lubrication and lubrication periods for the gear

We recommend an automatic lubrication device for the gear. With manual lubrication gear and pinion have to be sufficiently greased before being set to work. The lubrication period depends on the design and the circumferential speed and therefore it has to be considered individually.

3.5 Screws

Principally the number and diameter of screws to be used for fixing the bearing to the mating structure has to be checked. The fastening screws should be tightened crosswise by means of a moment key. The moment depends on the screw quality. (See table 3).

Table 3

	Quality	
	8.8 [Nm]	12.9 [Nm]
M6	10	17
M8	25	41
M10	49	83
M12	86	145
M16	210	355

To compensate settling effects the screws have to be re-tightened with the prescribed tightening moment. During the re-tightening process no other forces should be exerted on the screws. The control has to be made after 100 and after 600 operating hours. Where particular conditions occur (e.g. heavy vibrations) this period should be considerably reduced.

3.6 Rotational resistance

The preload of a bearing determines the rotational resistance. The preload depends on the respective series and on the ball pitch diameter (See respective diagrams). However these values are not irreversible but they can be adjusted individually according the application.
The stiffness of a bearing depends indirectly on the rotational resistance. The following thumb rule applies: the higher the rotational resistance the higher the stiffness.

The increase of the rotational resistance caused by the seal S10 (see accessories) is approx. 1Nm/m circumference per seal. This value can vary due to dry run or and depends also on the surface quality.

3.7 Gear

Normally we supply the straight-tooth type (material 42CrMo4V) unhardened without offset profile. Material, type and quality can be changed on request at any time.

The definition of the permissible circumferential forces in the catalogue is based on the permissible bending stress at the tooth root. The maximum forces are related to extreme loads which are to be encountered e.g. with short time shock loads which occur during starting and stopping. These are approximate values which can only be defined by a gear calculation on the basis of the data given for both components (bearing assembly and pinion).

3.8 Tolerances and precision

All tolerances and precision values are given on the respective catalogue pages. The highest possible precision is obtained, where the enclosing structural parts are designed in such a manner that all diameters and surfaces which correspond to each other can be machined in one chucking.

The running precision indicated in the catalogue refers to maximum values and can be improved by reducing of the tolerances.

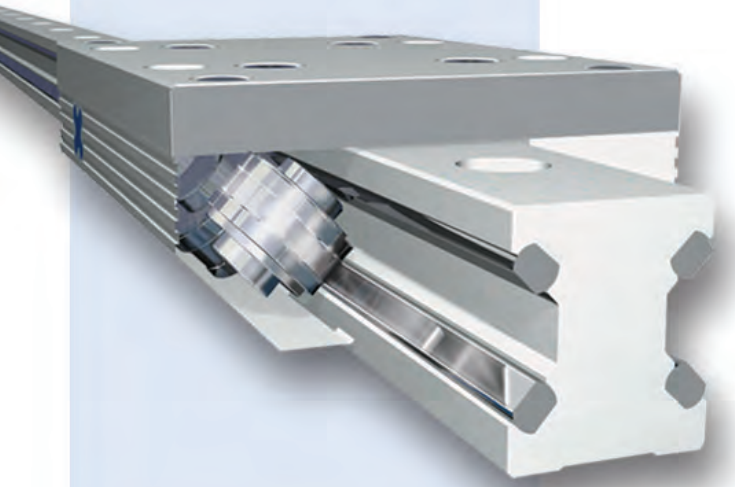
The tolerance indication T=IT6 or T = IT7 is referred to the basic tolerances depending on the bearing diameter according to DIM ISO 286
(see table 4).

Table 4

Nominal dimensional range ..up to [mm]	Basic tolerances	
	[µm]	[µm]
80... 120	22	35
120... 180	25	40
180... 250	29	46
250... 315	32	52
315... 400	36	57
400... 500	40	63
500... 630	44	70
630... 800	50	80
800... 1000	56	90
1000... 1250	66	105
1250... 1600	78	125

DIN ISO 286 T1 (11.90)

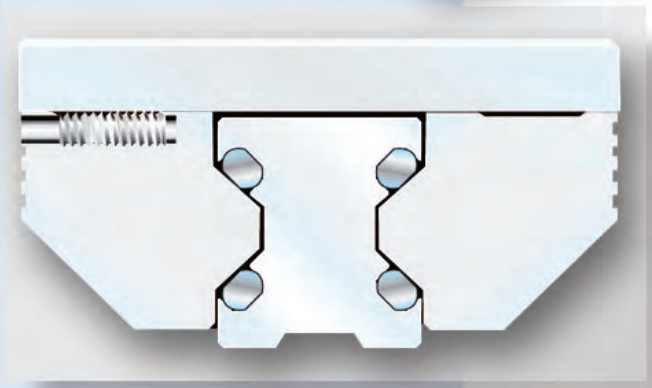
There are many linear guides ....the aluminium roller guide is unique



Either aluminium roller guides ...

1. The guided roller: patented technology for uniform and smooth run under whatever condition.

This Franke system is able to run very smoothly and silently even at speeds of 10m/s.The rollers are provided with a groove which is adapted exactly to the raceway profile thus keeping them exactly in their provided track.
The result is uniform and smooth run, longevity, and low noise independent of the load. Profiled, hardened, and polished races provide high running accuracy and longevity. The rollers rest on needle bearings and are arranged in the roller shoes. They are offset by 90° each. They are especially dimensioned for high load rating. Their rest principle is also the 4-point geometry. This enables them to sustain equally high forces from whatever direction. Their mounting position is optional.



2. Clearance/preload adjustable and re-adjustable for continuous adaptation to a specific load situation.

Franke aluminium roller guides are adjustable and re-adjustable. One of the two roller shoes is moved relative to the cassette plate by a simple adjustment screw until the desired value of preload is obtained. This adjustment can be changed at any time when the load conditions of your application are changed.

3. A clean thing:
Re-lubrication is not necessary

Covered bearings prevent the lubricant from coming out. So the outer surfaces of the guide remain clean. Franke aluminium roller guides are also suited for hygienically sensitive sectors as e.g. the medical and food technology, as well as the construction of packing machines. For particular applications we supply lubricant-free guides. Please consult us.

... or the re-circulating ball guide from aluminium

4. Light, strong, sturdy

Aluminium components with the Franke technology.
The re-circulating ball elements from aluminium owe their load capacity and precision to the inserted races from non-corrosive steel. Light weight aluminium components are the best choise, especially with big robots and handling portals. Their inner elasticity is able to compensate errors in the substructure of the portals or vibrations of the fundaments. This type combines light own weight with high load capacity and precision.

They can be modified to reach the suitability for cleanliness class 1.

...specifically branch-made solutions for optimum performance

Machine building

Franke aluminium roller guides can be used in many different fields of machine building. The 4-point system is able to adopt loads from whatever direction. The integrated adjusting mechanism allows continuous adaptation of the adjustment from clearance to preload which depends on the individual load condition. Later re-adjustment is possible at any time. We supply many different variants. Accessories such as clamping devices, bellows, and metal wipers complete our programme.

compact
sturdy
long-lived

Medical technology

Franke aluminium roller guides are used in the medical technology, e.g. in bearing locations of patient couches, as well as in feeding devices of surgical and intensive care equipment. The patented guided roller produces a uniform slide resistance. We supply a special type of Franke aluminium roller guides with antimagnetic structure which neutralizes the effect of magnetic fields; this way the measuring results are not influenced. The design of roller shoes and cassettes can be adapted to particular load situations. Please consult us.

Pick and place/robots/clean room

The large rollers convince the customers by their excellent responsiveness with high acceleration. Stick-slip effects are not produced and the full performance of the guide system is reached immediately after starting up. Speeds of 10m/s are possible. The low weight of these components is the reason why high speeds are reached even with low driving energy.
The guide system is mounted on profiled aluminium carriers thus bimetal effects are avoided and weight is reduced. The rails can be coupled to obtain endless lengths. Franke aluminium roller guides got the certificate of the air cleanliness class 10.000; they can be modified to reach class 1.

silent,
precise
high speed

High dynamism with linear motors

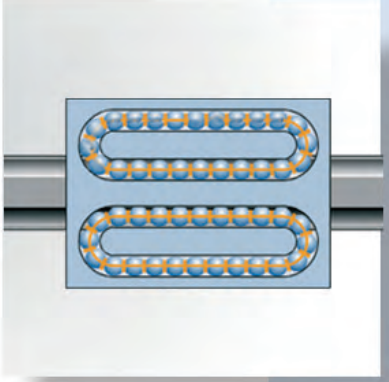
Individual rails and roller shoes are very variable. Due to the fact that the distance between the rails can freely be chosen, a linear motor which is guided by two compact roller shoes can be attached in between. A wide rail basis contributes also to a high moment load capacity. Both examples show the manifoldness of applications for the aluminium roller guide.

Food industry/Packaging industry

Franke aluminium roller guides are light, silent, and clean, they provide quick packing in whatever kind of receptacle. All hygienic requirements are met which is proved by a clean room certification. All components of the non-corrosive steel version are washable. Even aggressive media like salt, whey, and acid cannot damage the guide system.

Portal robots

Franke re-circulating ball guides from aluminium are used in conveyors, transfer equipment and portal robots. They are light and sturdy and form a perfect symbiosis with aluminium carriers. We developed a special system to obtain long stroke distances by endless coupling of rails. The Franke re-circulating ball system which has been used for 20 years presents very high load capacity and silent run.



clean
neutral
long-lived

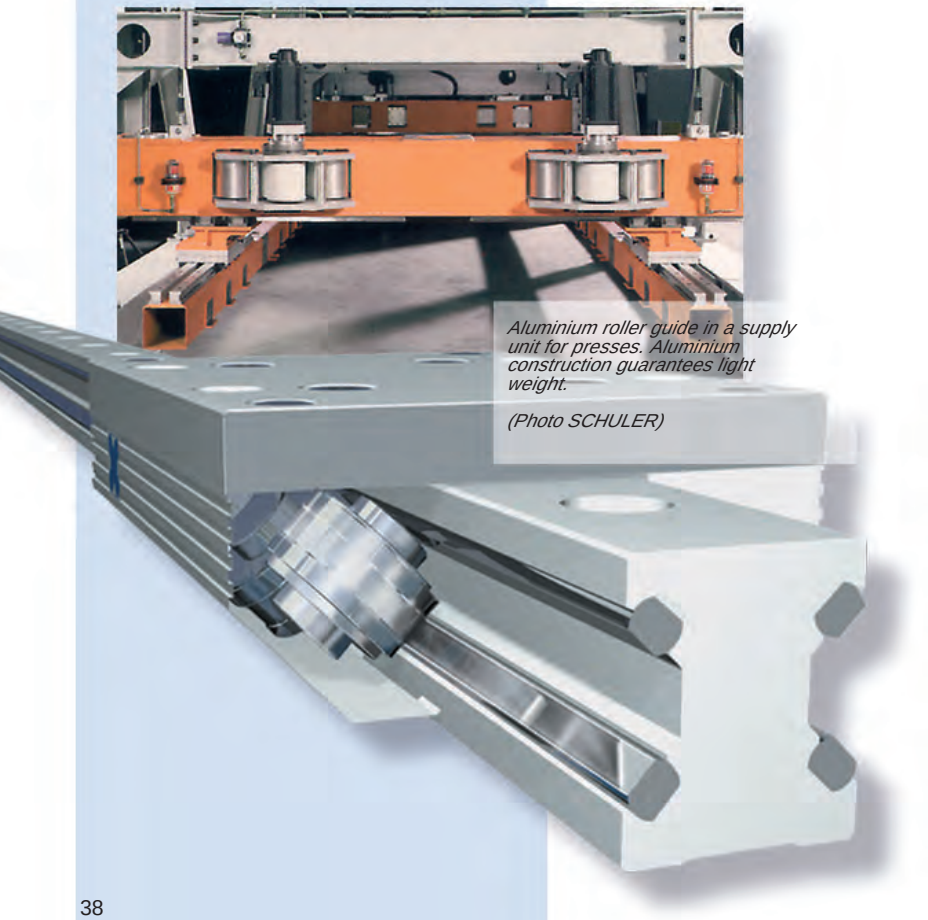
Application examples Linear Guides

Aluminium roller guide in food industries. Non-corrosive components make the guide system suitable for food and packaging.

(Photo VOLPAK)

Aluminium roller guide in a filter folding machine. Very short strokes and high frequencies are possible because of the big dimensi-oned rollers of the guide.

(Photo RABOFSKY)



Aluminium roller guide in a supply unit for presses. Aluminium construction guarantees light weight.

(Photo SCHULER)

Aluminium roller guides are available in various series. You can select the series that suits your application best.

Due to the modular design the components of the different series can be combined individually.

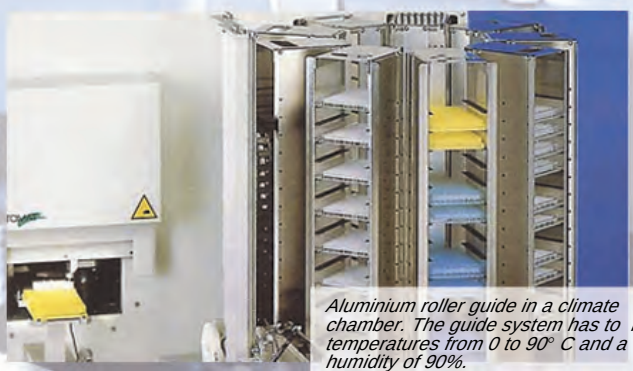
With serial request we also offer customized cassettes.

All series and sizes are available as double rails with cassettes or as single rails with roller shoes.

... visit our website
www.franke-gmbh.com
www.franke-linearguides.com

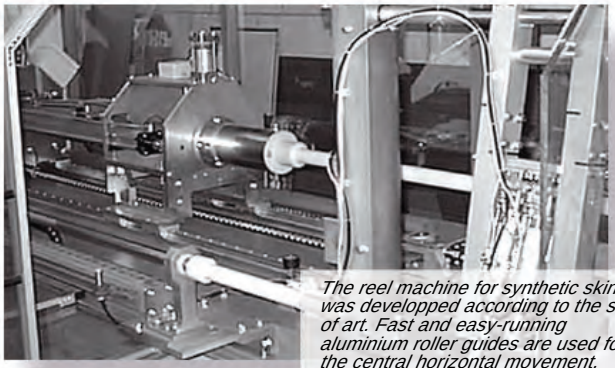
Franke aluminium roller guide and linear module used for quick and high-precision linear movements in a bitumen machine.

(Photo RÜMMER)



Aluminium roller guide in a climate chamber. The guide system has to face temperatures from 0 to 90° C and a humidity of 90%.

(Photo KENDRO)



The reel machine for synthetic skins was developped according to the state of art. Fast and easy-running aluminium roller guides are used for the central horizontal movement. The large-dimensioned running rollers rest on needle bearings and sustain loads from any direction.

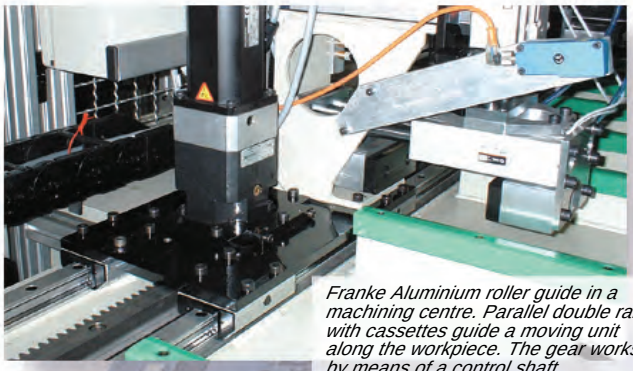
(Photo SMB)

Aluminium roller guide in a rock saw. The rails are in one piece of 5 meter length.

(Photo KOLB)

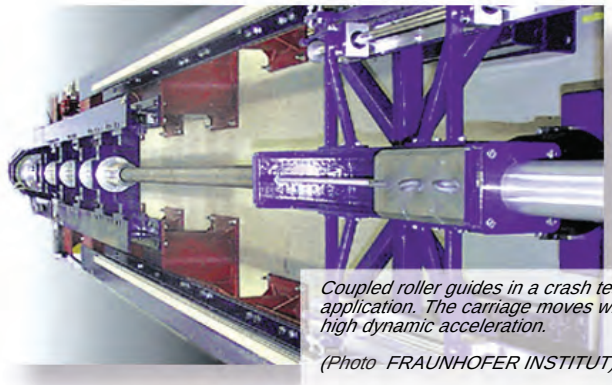
Aluminium roller guide in a portal robot. Cassettes are equipped with central lubrication.

(Photo RANGER)



Franke Aluminium roller guide in a machining centre. Parallel double rails with cassettes guide a moving unit along the workpiece. The gear works by means of a control shaft.

(Photo KOSOMA)



Coupled roller guides in a crash test application. The carriage moves with high dynamic acceleration.

(Photo FRAUNHOFER INSTITUT)

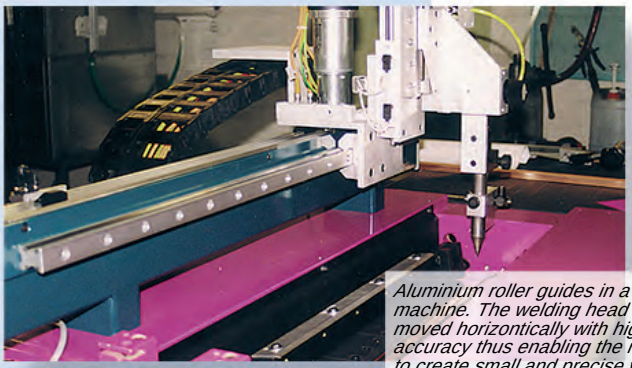
Aluminium roller guide for transfer systems. The rails are coupled, single machine parts can be easily connected or disconnected.

(Photo SCHULER)

Application examples Linear Guides

Multiaxis positioning unit for a welding machine. Tools and the material can be moved individually by aluminium roller guides.

(Photo SCHNELLDORFER)



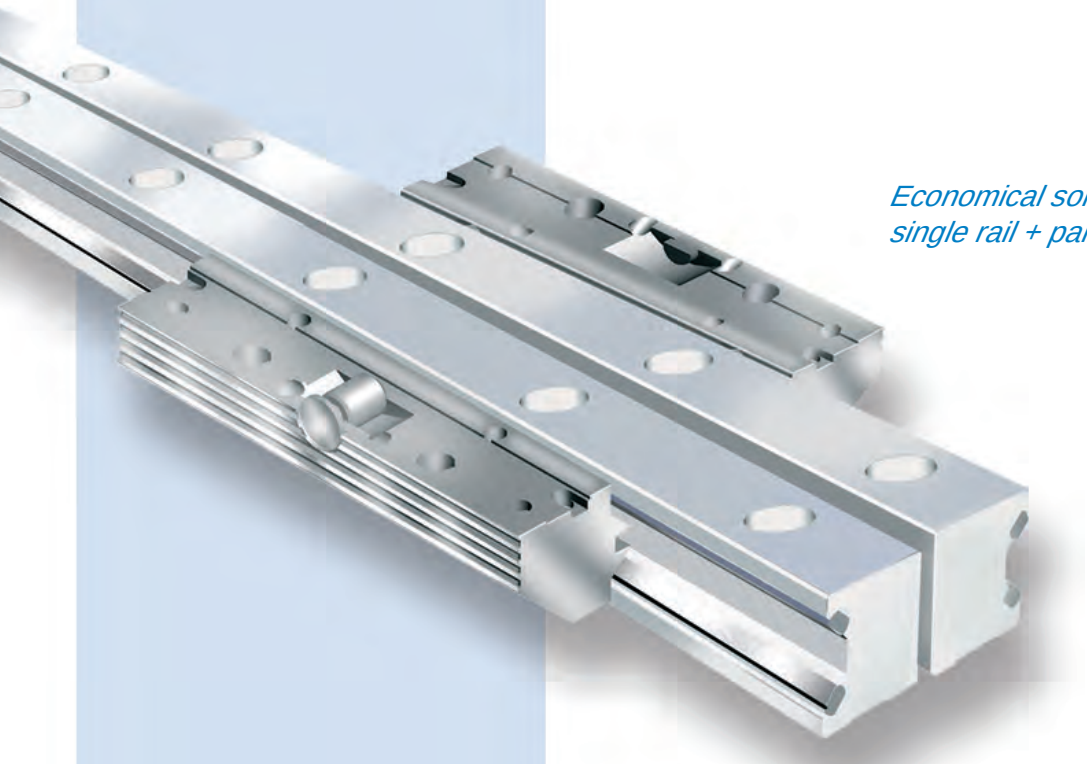
Aluminium roller guides in a welding machine. The welding head is moved horizontically with high accuracy thus enabling the machine to create small and precise welding marks.

(Photo SCHNELLDORFER)

Aluminium roller guides have been sucessful in various branches and applications.

They are reliable components in machinery, packaging, food industries, handling, roboting and transport.

Take advantage of the performance and universality of Franke guide systems. We are gladly prepared to make a quotation for your special application.

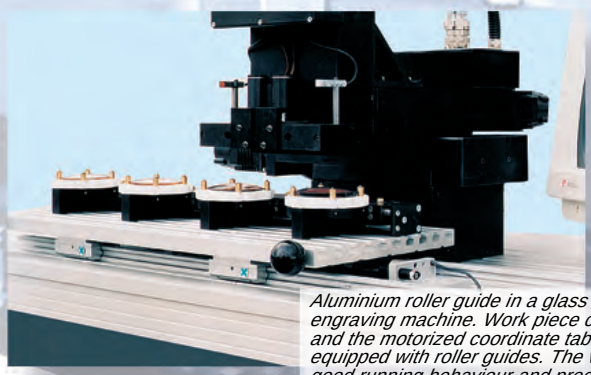


Economical solution for series demand single rail + pair of roller shoes

... visit our website
www.franke-gmbh.com
www.franke-linearguides.com

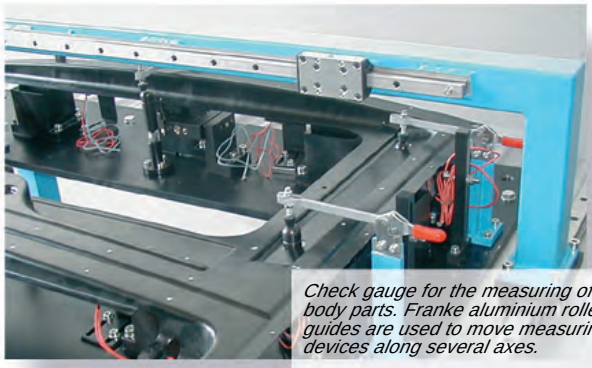
Aluminium roller guide in a welding machine. High accuracy and low weight for perfect welding.

(Photo HTC)



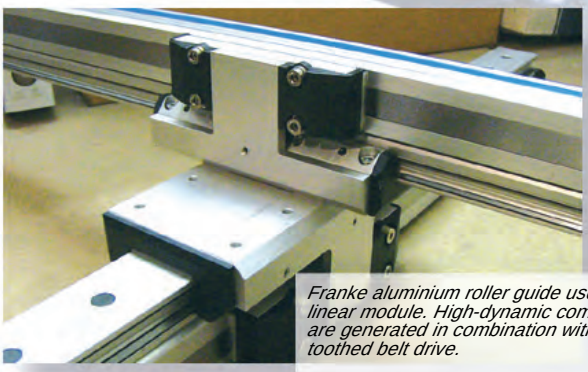
Aluminium roller guide in a glass engraving machine. Work piece carrier and the motorized coordinate tables are equipped with roller guides. The very good running behaviour and precision of the installation allows extremely fine engraving.

(PhotoKasch)



Check gauge for the measuring of car body parts. Franke aluminium roller guides are used to move measuring devices along several axes.

(Photo HTC)

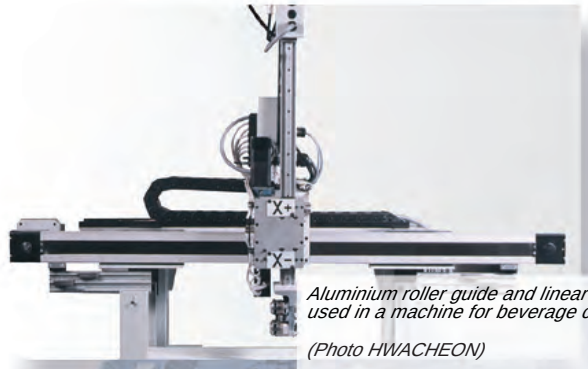


Franke aluminium roller guide used in a linear module. High-dynamic components are generated in combination with a toothed belt drive.

(Photo FRANKE)

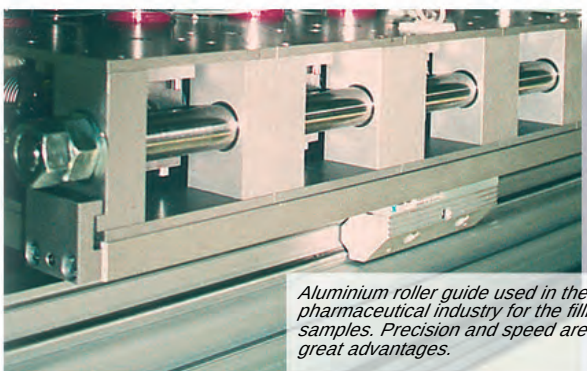
Aluminium roller guide in the carriage of a cable producing machine. The projecting arm of the unit is safely guided by means of two double rails with two roller cassettes each. Due to the easy run of the guide it can be moved manually with low energy .

(Photo KABELMAT)



Aluminium roller guide and linear module used in a machine for beverage cans.

(Photo HWACHEON)



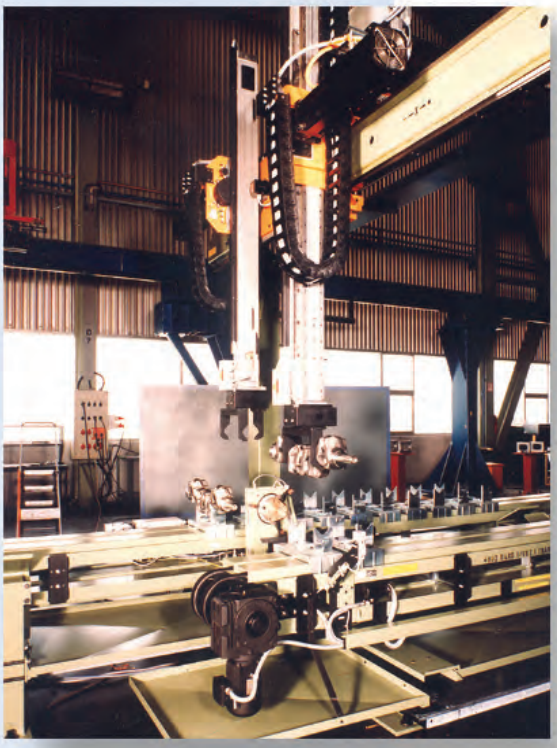
Aluminium roller guide used in the pharmaceutical industry for the filling of samples. Precision and speed are the great advantages.

(Photo KNOSKE)

Franke aluminium roller guide in an ink jet printer. The main requirements are high respective accuracy with easy and silent run.

(Photo HTC)

Linear guides with recirculating elements



Low weight with guide rails made of aluminium

High osculation, high load capacity, high safety

Suitable for rough conditions, takes shocks and impacts

High stiffness due to optimized profiles and ground raceways made of spring steel

No bi-metal-effect when mounted on aluminium mating structure

Can take equal loads from all directions

All rails can be coupled to endless stroke lengths

Raceways can be exchanged without dismantling of the rails, low maintenance cost

... visit our website
www.franke-gmbh.com
www.franke-linearguides.com

... Aluminium linear guides
Components for innovative constructions

Franke linear guides with recirculating elements are perfectly suited for various applications in machinery, robots, portals and transport.

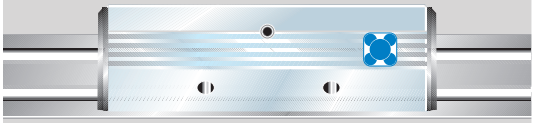
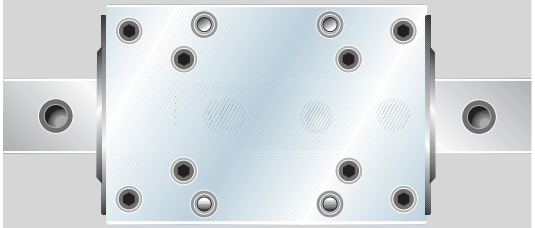
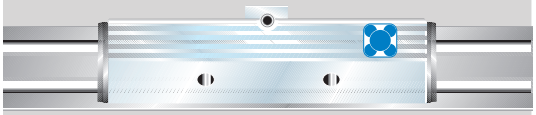
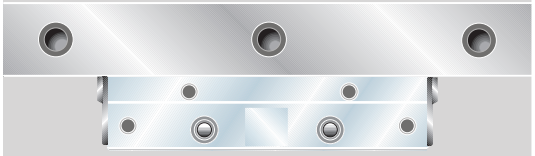
The technical features and economical benefits of Franke aluminium linear guides will convince you.

Please consult us for further information.

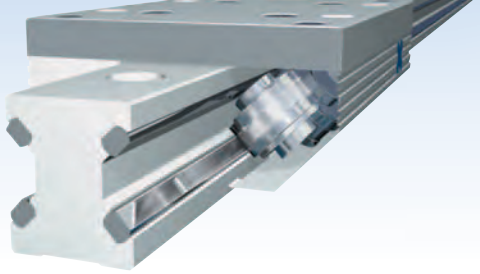
Technical details:

Seal:	the recirculating elements are equipped with wipers.
Acceleration:	max. 30 m/s²
Traverse speed:	max. 2 m/s
Length:	in one piece up to 4m, for longer strokes the rails can be coupled endlessly.
Friction coefficient:	0,02. With well mounted race tracks the coefficient can be reduced after 50 working hours to 0,01.
Lubrication:	with ball bearing grease lubrication through lubrication nipples.
Material:	Rails: aluminium Raceway: high alloy spring steel Re-circulating elements: basic body from steel, housing from zinc die-casting

Survey of Franke Aluminium roller guides

	Series	Features	Speed	Running	Accuracy	Strength	Stiffness	Page
Aluminium Cassette								
	**FDA / FEA Standard**	For medium loads with stroke speed of up to 10m/s. Light-weight aluminium components and compact dimensions.	●	●	◔	◔	◔	46-47
	**FDB / FEB LowCost**	For light loads and particularly economical solutions.	●	●	◑	◑	◑	48-49
	**FDC / FEC Non-corrosive Standard**	The resistant with economical advantages. For applications in humid or aggressive environment e.g. liquids. Economically favourable.	●	◔	◔	◔	◔	50-51
Aluminium roller shoes								
	**FDD / FED Antimagnetic**	For all applications where magnetic material could have a disturbing influence on the production process and on its results.	◔	◔	●	◔	◔	52-53
	**FDE / FEE Grease free**	For all applications with extreme hygienic requirements as e.g. in the food-producing industry or in clean room (e.g. in the chip production)	◑	◑	●	◑	●	54-55
	FDG / FEG Niro LowCost	For application in humid or aggressive environment e.g. in liquids.	●	●	◔	◑	◑	56-57
	**FDH / FEH dynamic**	For applications with high acceleration	●	●	◔	◔	◑	58-59
Linear guides with re-circulating elements								
	**FEC**		◑	◔	◔	●	●	68-69

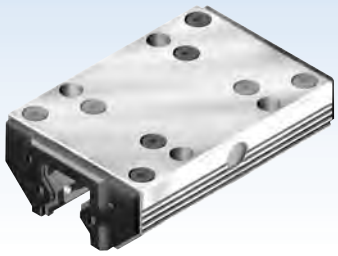
● top ◔ very good ◑ good ◕ sufficient



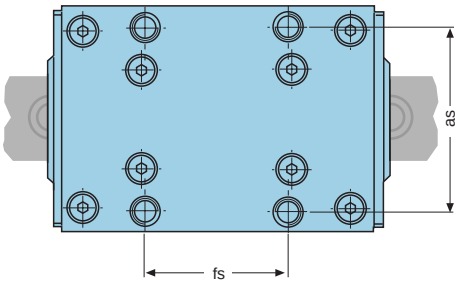
Load range [kN]	Series	one piece rail [mm]	Tech.details	Page	Accessories	Page
0 10 20 30 40 50 60 80		0 500 1500 2000 3000 4000 6000 (coupled rails for endless strokes)				
C_o C	**Double rail Pair of single rails** **FDA**	12 15 20 25 35 45	Race ways of spring steel	62-63		
C_o C	**FEA**	12 15 20 25 35 45			**Metal-wipers**	70
C_o C	**FDC FEC**	FD + FE 15 20 25 35 45	Race ways of non corrosive steel	64-65		
C_o C	**FDD FED**	FD + FE 25	Race ways of non magnetic steel	66-67	**Stop screws**	70
C_o C						
C_o C	**FDC FEC**	FD + FE 15 20 25 35 45	Race ways of non corrosive steel	64-65	**Bellows**	70
C_o C					**Coupled rails**	70
C_o C	**Single rail FEC**	10 13	Race ways of spring steel			71

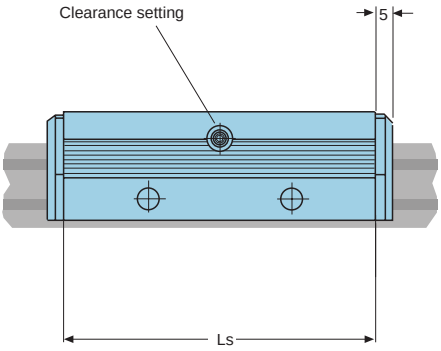
Aluminium Cassette

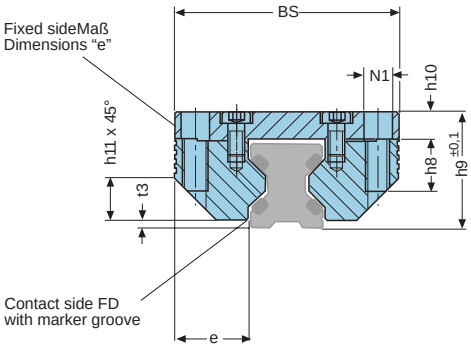
Standard



Series FDA







Size	Load rating		Moment load rating				Dimensions			other dimensions cassette								Weight	Order number
	C	Co	Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	Bs	h9	as	fs	e	h8	h10	h11	t3	N1	Cassette	Cassette
12	2800	3000	27	25	43	40	64	37	19	30	25	12,50	8	4,0	6	1,4	M4	0,1	**84494A**
15	4200	3400	37	45	58	72	78	47	24	38	30	15,75	10	5,0	8	2,0	M5	0,3	**84396A**
20	5400	5400	76	76	111	111	92	63	30	53	40	21,00	12	7,0	11	2,0	M6	0,4	**84441A**
25	9000	10100	158	142	222	198	98	70	36	57	45	23,50	16	8,5	13	2,5	M8	0,6	**84363A**
35	12500	18000	423	294	559	388	135	100	48	82	62	34,00	20	10,5	20	3,5	M10	1,5	**84364A**
45	21200	25900	827	678	983	806	165	120	60	100	80	37,50	24	13,5	22	4,0	M12	2,9	**84365A**

Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

Technical information cassettes and roller shoes (RSP)

Consist of:
- Aluminium body
- 8 rollers in needle bearings
- Plastic plate on both front sides with felt seal (metal wipers optional, see page 70)

Features:
- Maximum load capacity, smooth and silent run
- 45° - position of the rollers for loads from all directions
- Clip-on wipers with felt seal (metal wipers optional)
- Adjustable preload
- High dynamic load capacity
- Endless stroke lengths by coupling of rails (see page 71)
- Calculation programme to find the most suitable guide size
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the guide size for you.

Traverse speed:
- Traverse speed up to 10 m/s
- Acceleration up to 40 m/s²

Temperature range:
- - 20° up to +100°C, short time operation +120°C

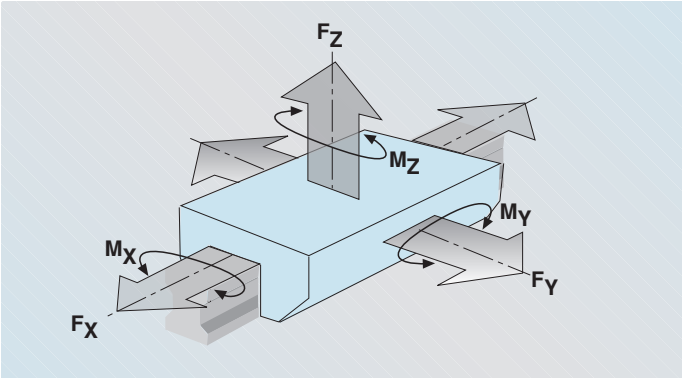
Lubrication:
- Maintenance-free due to lifetime-lubrication with grease Shell Retinax LX2

Fastening:
- with screws quality 8.8,
  tightening torques see technical information (page 74)
- Cassette with 4 fastening screws
- Pair of roller shoes with 12 fastening screws

Adjustment/Preload:
- Easy adjustment by threaded pin on the adjusting side of the cassette. Adjustment of pair of roller shoes by included adjustment plate and threaded pin. Recommended slide resistance see diagr. 1.
- The adjustment should always be made without wipers.

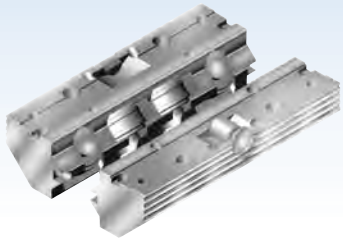
Running accuracy:
- The running accuracy in diagr. 3 refers to a rail length of one meter.

Stiffness:
- With pairs of single rails the stiffness refers to one pair of single rails with one pair of roller shoes (see diagr. 2).

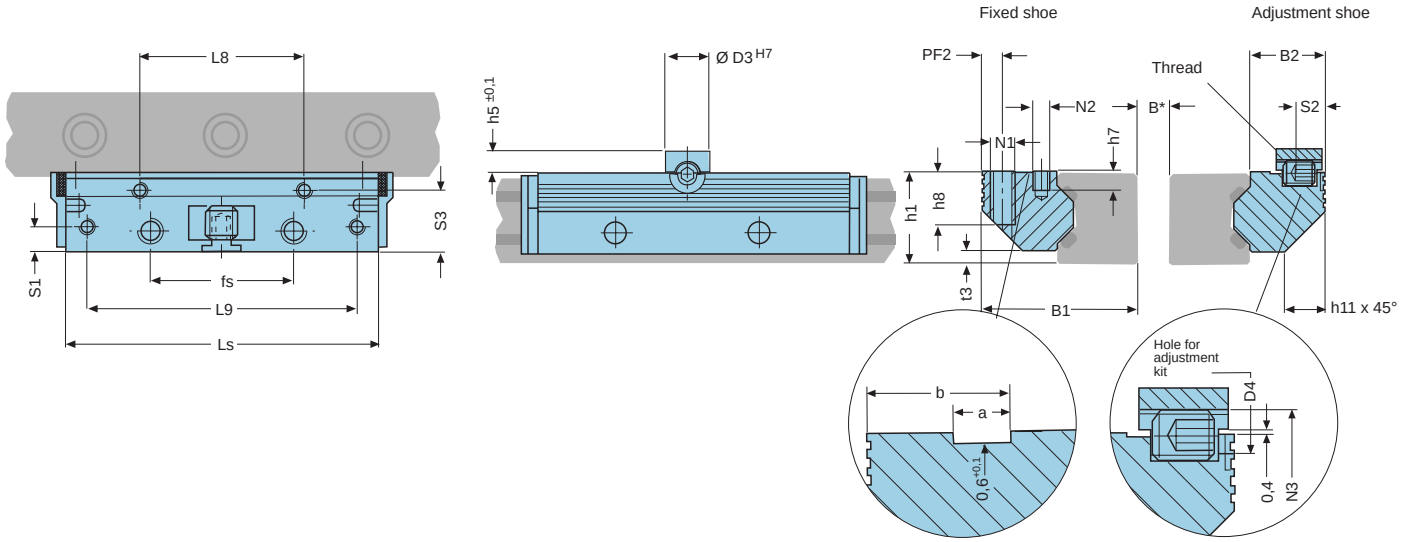


Aluminium roller shoes

Standard



Series FEA

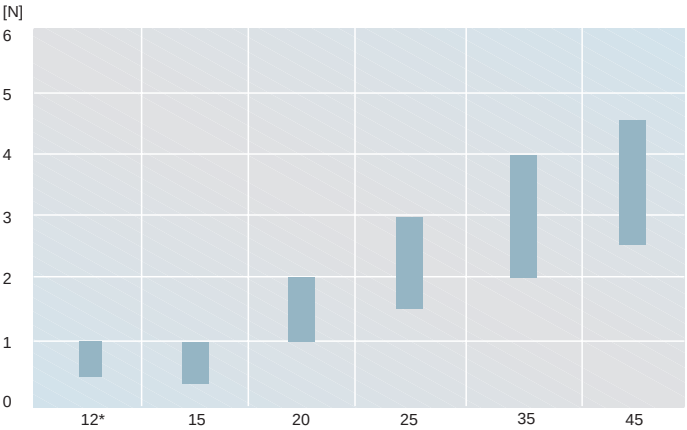


Moment load rating RSP				Dimensions			other dimensions RSP															Weight	Order number
Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	B1	h1	h5	PF2	fs	B2	D3	D4	h7	h8	L8	L9	N1	N2	N3	S1	S2	S3	RSP	RSP
1,5(B+30,3)	1,4(B+30,3)	43	40	64	24,4	15,0	4	3,4	25	11,9	8	3	6,0	8	29	57	M4	M3	M4	3,4	4,9	9,7	0,06	84495A
1,7(B+36,5)	2,1(B+36,5)	58	72	78	30,9	19,0	5	4,4	30	15,2	10	4	7,5	10	34	68	M5	M4	M6	4,9	5,9	12,4	0,20	84395A
2,7(B+47,0)	2,7(B+47,0)	111	111	92	40,9	23,0	5	4,9	40	20,4	10	4	8,0	12	42	80	M6	M5	M6	5,9	5,9	16,9	0,30	84442A
5,0(B+58,4)	4,5(B+58,4)	222	198	98	48,4	27,5	7	6,4	45	22,9	14	6	5,0	16	48	84	M8	M5	M8	7,4	8,9	19,4	0,50	84367A
9,0(B+85,0)	6,3(B+85,0)	559	388	135	68,9	37,5	7	8,9	62	32,9	14	6	7,5	20	67	117	M10	M6	M8	8,9	8,9	28,4	1,40	84368A
12,9(B+109,0)	10,6(B+109,0)	983	806	165	82,4	46,5	7	9,9	80	36,4	14	6	9,5	24	83	146	M12	M8	M8	9,9	8,9	30,9	2,80	84369A

Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

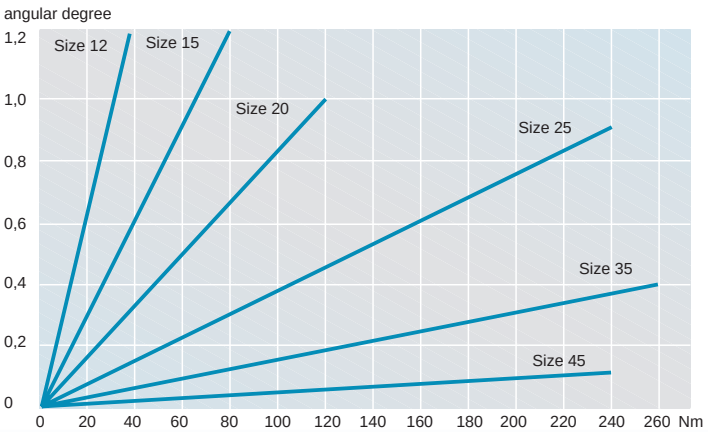
Standard	Basic body	Rollers	Wipers
	anodized Aluminium AlMg Si0,5 F28	Bearing steel 100 Cr 6	Plastic plate PA6 with felt wipers

Material

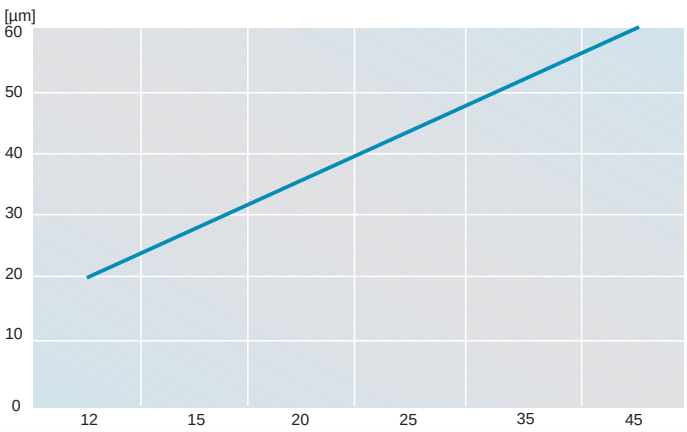


Diagr. 1 Adjustment of slide resistance

* without guided rollers



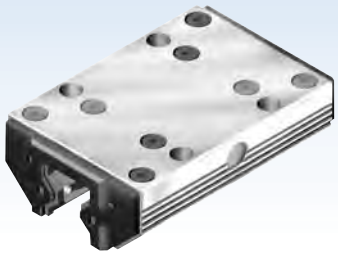
Diagr. 2 Stiffness



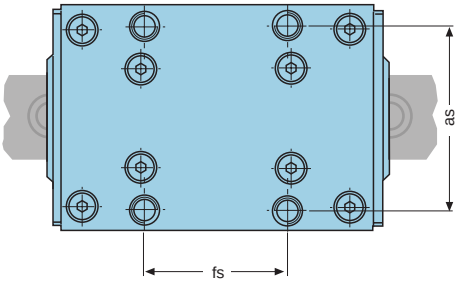
Diagr. 3 Running accuracy

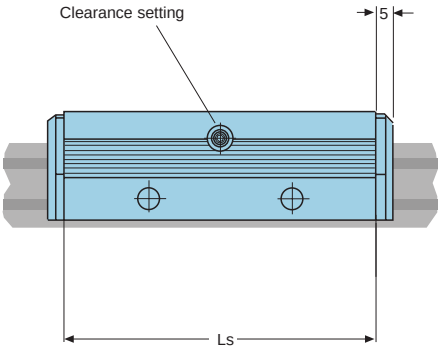
Aluminium Cassette

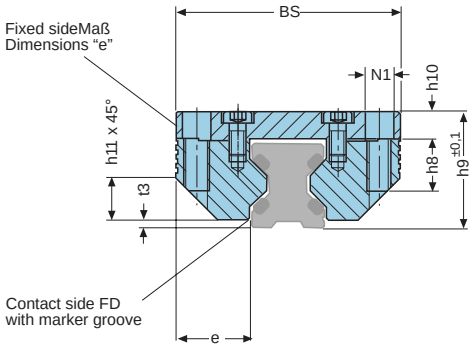
Low Cost



Series FDB







Size	Load rating		Moment load rating				Dimensions			other dimensions cassette								Weight	Order number
	C	Co	Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	Bs	h9	as	fs	e	h8	h10	h11	t3	N1	Kassette	Kassette
12	620	170	1,6	5,7	2,4	8,9	64	37	19	30	25	12,50	8	4,0	6	1,4	M4	0,1	**84494L**
15	700	230	2,5	7,5	4,0	12,0	78	47	24	38	30	15,75	10	5,0	8	2,0	M5	0,3	**84396L**
20	940	300	4,0	13,0	6,0	19,0	92	63	30	53	40	21,00	12	7,0	11	2,0	M6	0,4	**84441L**
25	1500	700	11,0	23,0	15,0	32,0	98	70	36	57	45	23,50	16	8,5	13	2,5	M8	0,6	**84363L**
35	3100	1400	32,0	72,0	42,0	95,0	135	100	48	82	62	34,00	20	10,5	20	3,5	M10	1,5	**84364L**
45	6300	2700	86,0	200,0	103,0	238,0	165	120	60	100	80	37,50	24	13,5	22	4,0	M12	2,9	**84365L**

Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

Technical information cassettes and roller shoes (RSP)

Consist of:
- Aluminium body
- 8 rollers in ball bearings
- Plastic plate on both front sides with felt seal (metal wipers optional, see page 60)

Features:
- Medium load capacity, smooth and silent run
- 45° - position of the rollers for loads from all directions
- Clip-on wipers with felt seal (metal wipers optional)
- Adjustable preload
- Endless stroke lengths by coupling of rails (see page 74)
- Calculation programme to find the most suitable guide size
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the guide size for you.

Traverse speed:
- Traverse speed up to 10 m/s
- Acceleration up to 40 m/s²

Temperature range:
- - 20° up to +100°C, short time operation +120°C

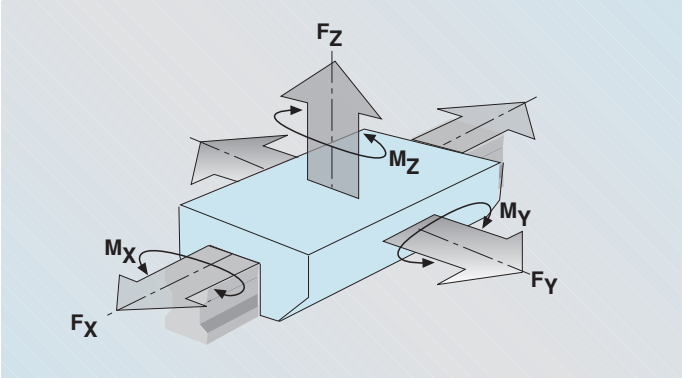
Lubrication:
- Maintenance-free due to lifetime-lubrication with grease Shell Retinax LX2

Fastening:
- with screws quality 8.8,
  tightening torques see technical information (page 74)
- Cassette with 4 fastening screws
- Pair of roller shoes with 12 fastening screws

Adjustment/Preload:
- Easy adjustment by threaded pin on the adjusting side of the cassette. Adjustment of pair of roller shoes by included adjustment plate and threaded pin. Recommended slide resistance see diagr. 1.
- The adjustment should always be made without wipers.

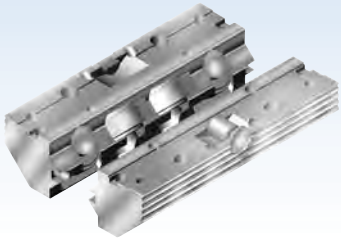
Running accuracy:
- The running accuracy in diagr. 3 refers to a rail length of one meter.

Stiffness:
- With pairs of single rails the stiffness refers to one pair of single rails with one pair of roller shoes (see diagr. 2).

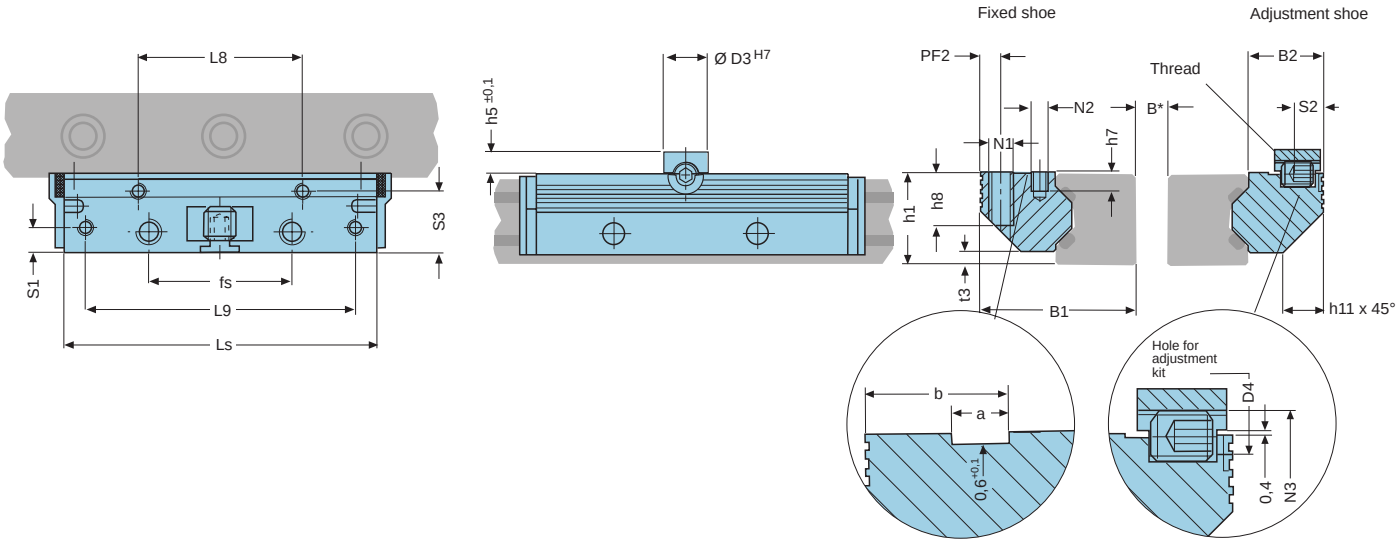


Aluminium roller shoes

Low Cost



Series FEB

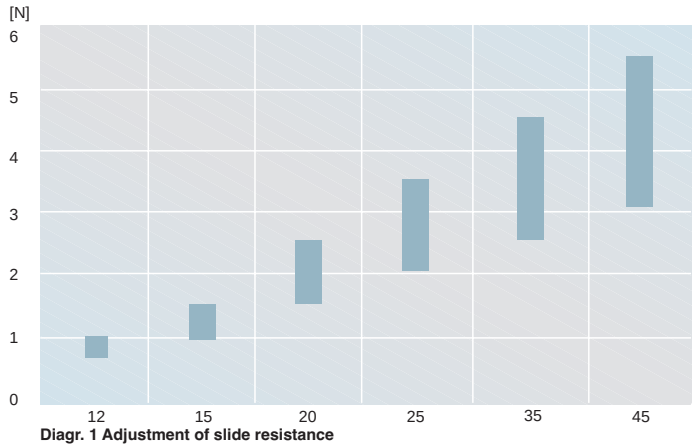


Moment load rating RSP				Dimensions			other dimensions RSP															Weight	Order number
Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	B1	h1	h5	PF2	fs	B2	D3	D4	h7	h8	L8	L9	N1	N2	N3	S1	S2	S3	RSP	RSP
0,08(B+30,3)	0,30(B+30,3)	2,4	8,9	64	24,4	15,0	4	3,4	25	11,9	8	3	6,0	8	29	57	M4	M3	M4	3,4	4,9	9,7	0,06	84495L
0,10(B+36,5)	0,35(B+36,5)	4,0	12,0	78	30,9	19,0	5	4,4	30	15,2	10	4	7,5	10	34	68	M5	M4	M6	4,9	5,9	12,4	0,20	84395L
0,15(B+47,0)	0,50(B+47,0)	6,0	19,0	92	40,9	23,0	5	4,9	40	20,4	10	4	8,0	12	42	80	M6	M5	M6	5,9	5,9	16,9	0,30	84442L
0,35(B+58,4)	0,70(B+58,4)	15,0	32,0	98	48,4	27,5	7	6,4	45	22,9	14	6	5,0	16	48	84	M8	M5	M8	7,4	8,9	19,4	0,50	84367L
0,70(B+85,0)	1,50(B+85,0)	42,0	95,0	135	68,9	37,5	7	8,9	62	32,9	14	6	7,5	20	67	117	M10	M6	M8	8,9	8,9	28,4	1,40	84368L
1,40(B+109,0)	3,10(B+109,0)	103,0	238,0	165	82,4	46,5	7	9,9	80	36,4	14	6	9,5	24	83	146	M12	M8	M8	9,9	8,9	30,9	2,80	84369L

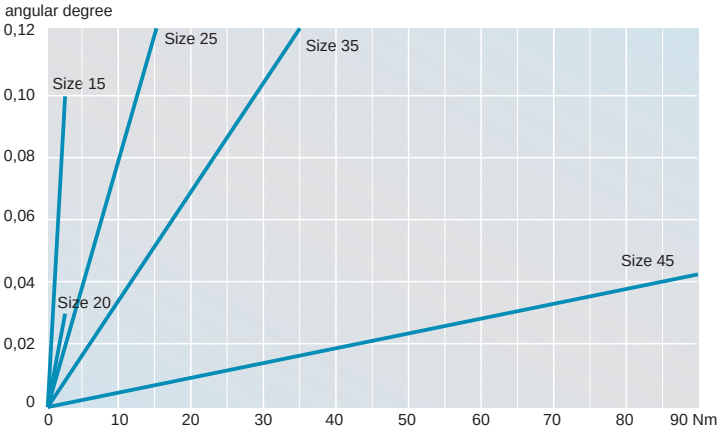
Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

	Basic body	Rollers	Wipers
Standard	anodized Aluminium AlMg Si0,5 F28	Bearing steel 100 Cr 6	Plastic plate PA6 with felt wipers

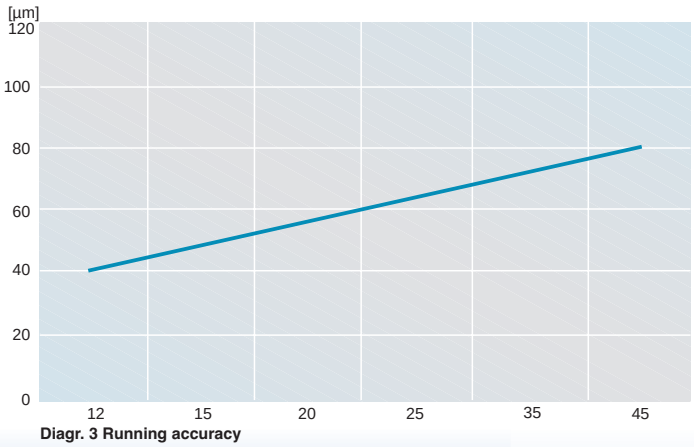
Material



Diagr. 1 Adjustment of slide resistance



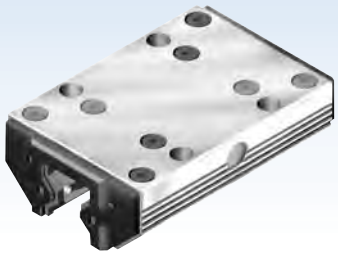
Diagr. 2 Stiffness double rail with cassette



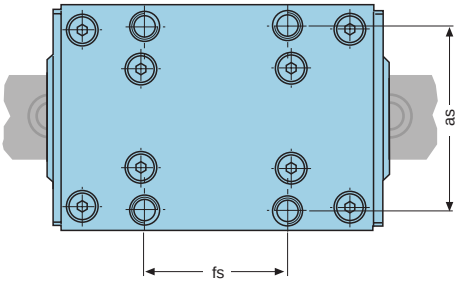
Diagr. 3 Running accuracy

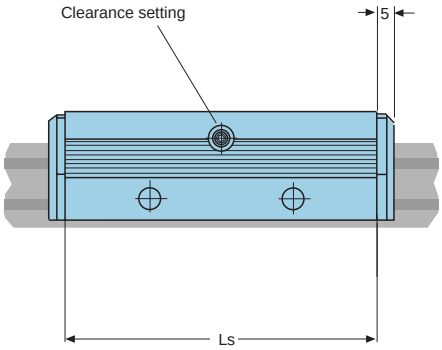
Aluminium Cassette

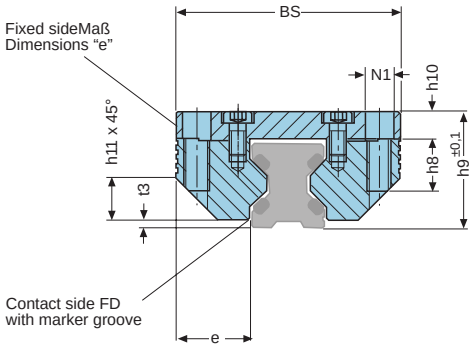
Non-corrosive



Series FDC







Size	Load rating		Moment load rating				Dimensions			other dimensions cassette								Weight	Order number
	C	Co	Mocx	McxMocy/Mocz		Mcy/Mcz	Ls	Bs	h9	as	fs	e	h8	h10	h11	t3	N1	Kassette	Kassette
12	1100	1200	11	10	17	16	64	37	19	30	25	12,50	8	4,0	6	1,4	M4	0,1	on request
15	1800	2200	23	19	37	30	78	47	24	38	30	15,75	10	5,0	8	2,0	M5	0,3	84396AN
20	2000	2500	35	28	52	41	92	63	30	53	40	21,00	12	7,0	11	2,0	M6	0,4	84441AN
25	3400	4700	75	53	105	75	98	70	36	57	45	23,50	16	8,5	13	2,5	M8	0,6	84363AN
35	5600	7400	173	131	229	174	135	100	48	82	62	34,00	20	10,5	20	3,5	M10	1,5	84364AN
45	13100	16500	526	420	626	500	165	120	60	100	80	37,50	24	13,5	22	4,0	M12	2,9	84365AN

Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

Technical information cassettes and roller shoes (RSP)

Consist of:
- Aluminium body
- 8 rollers in needle bearings stainless steel
- Plastic plate on both front sides with felt seal (metal wipers optional, see page 60)

Features:
- Maximum load capacity, smooth and silent run
- 45° - position of the rollers for loads from all directions
- Clip-on wipers with felt seal (metal wipers optional)
- Adjustable preload
- High dynamic load capacity
- Endless stroke lengths by coupling of rails (see page 71)
- Calculation programme to find the most suitable guide size
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the guide size for you.

Traverse speed:
- Traverse speed up to 10 m/s
- Acceleration up to 40 m/s²

Temperature range:
- - 20° up to +100°C, short time operation +120°C

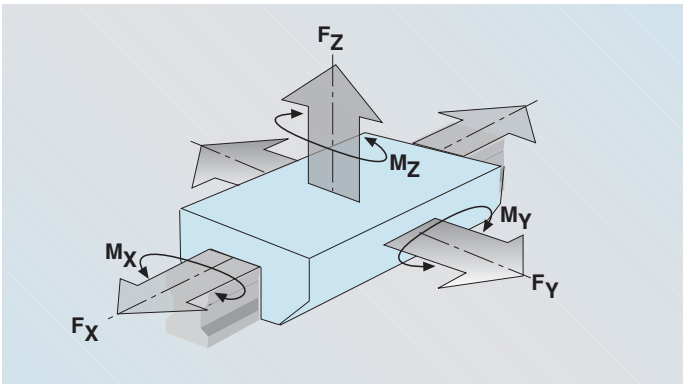
Lubrication:
- Maintenance-free due to lifetime-lubrication with grease Shell Retinax LX2

Fastening:
- With screws quality 8.8,
  tightening torques see technical information (page 74)
- Cassette with 4 fastening screws
- Pair of roller shoes with 12 fastening screws

Adjustment/Preload:
- Easy adjustment by threaded pin on the adjusting side of the cassette. Adjustment of pair of roller shoes by included adjustment plate and threaded pin. Recommended slide resistance see diagr. 1.
- The adjustment should always be made without wipers.

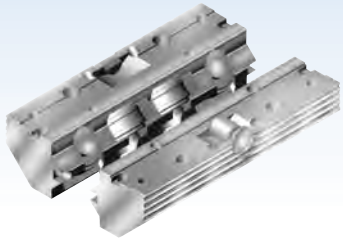
Running accuracy:
- The running accuracy in diagr. 3 refers to a rail length of one meter.

Stiffness:
- With pairs of single rails the stiffness refers to one pair of single rails with one pair of roller shoes (see diagr. 2).

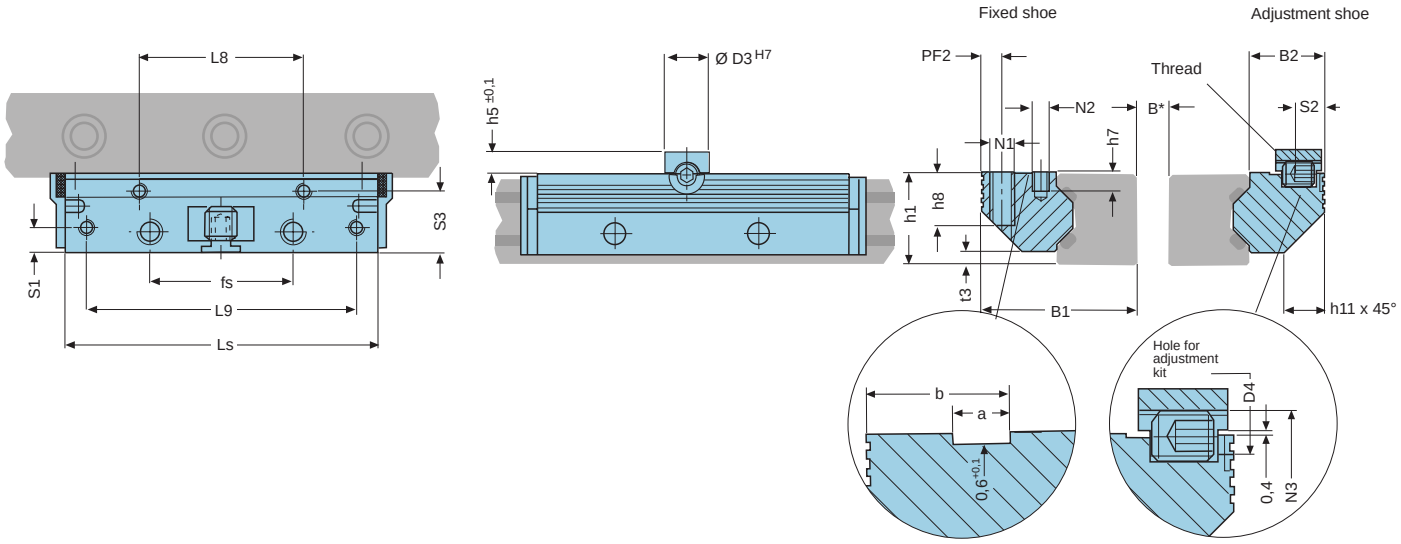


Aluminium roller shoes

Non-corrosive



Series FEC

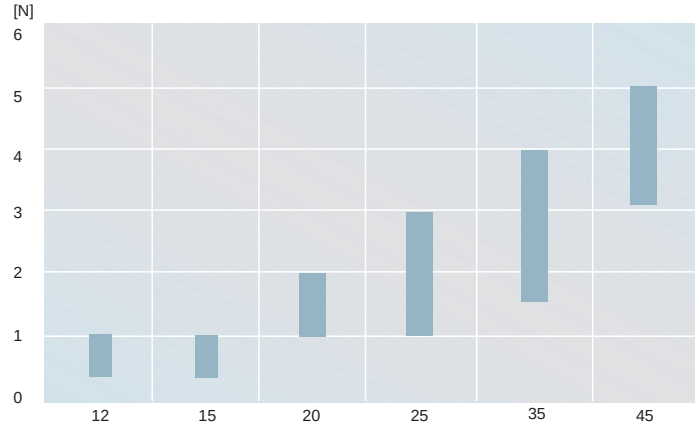


Moment load rating RSP				Dimensions			other dimensions RSP															Weight	Order number
Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	B1	h1	h5	PF2	fs	B2	D3	D4	h7	h8	L8	L9	N1	N2	N3	S1	S2	S3	RSP	RSP
0,6(B+30,3)	0,6(B+30,3)	17	16	64	24,4	15,0	4	3,4	25	11,9	8	3	6,0	8	29	57	M4	M3	M4	3,4	4,9	9,7	0,06	on request
1,1(B+36,5)	0,9(B+36,5)	37	30	78	30,9	19,0	5	4,4	30	15,2	10	4	7,5	10	34	68	M5	M4	M6	4,9	5,9	12,4	0,20	84395AN
1,3(B+47,0)	1,0(B+47,0)	52	41	92	40,9	23,0	5	4,9	40	20,4	10	4	8,0	12	42	80	M6	M5	M6	5,9	5,9	16,9	0,30	84442AN
2,4(B+58,4)	1,7(B+58,4)	105	75	98	48,4	27,5	7	6,4	45	22,9	14	6	5,0	16	48	84	M8	M5	M8	7,4	8,9	19,4	0,50	84367AN
3,7(B+85,0)	2,8(B+85,0)	229	174	135	68,9	37,5	7	8,9	62	32,9	14	6	7,5	20	67	117	M10	M6	M8	8,9	8,9	28,4	1,40	84368AN
8,2(B+109,0)	6,6(B+109,0)	626	500	165	82,4	46,5	7	9,9	80	36,4	14	6	9,5	24	83	146	M12	M8	M8	9,9	8,9	30,9	2,80	84369AN

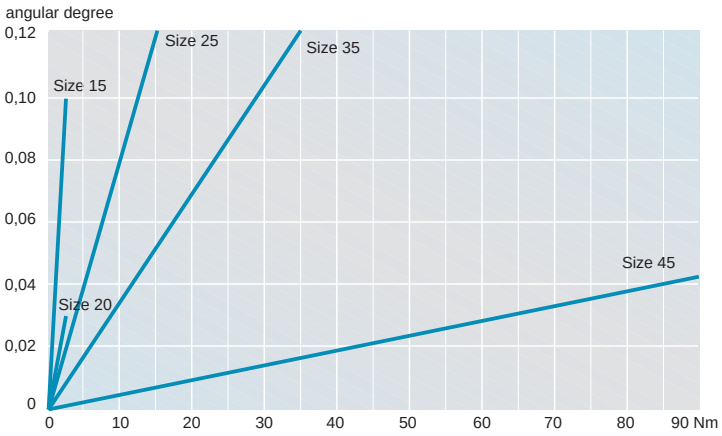
Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

	Basic body	Rollers	Wipers
Standard	anodized Aluminium AlMg Si0,5 F28	Ball bearings Non-corrosive steel x65Cr13	Plastic plate PA6 with felt wipers

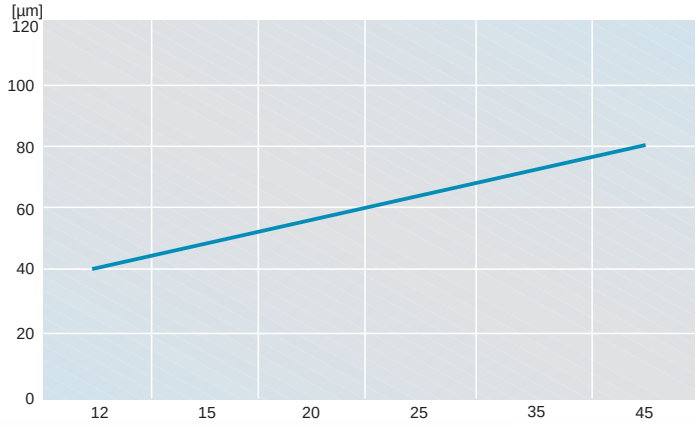
Material



Diagr. 1 Adjustment of slide resistance



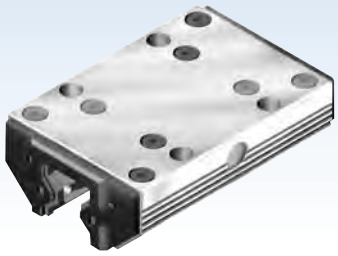
Diagr. 2 Stiffness double rail with cassette



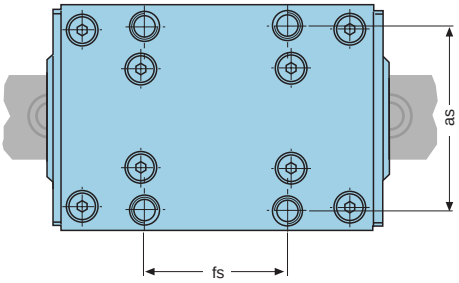
Diagr. 3 Running accuracy

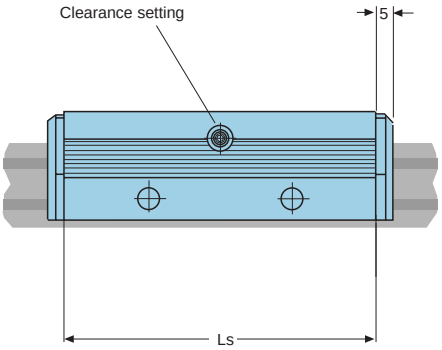
Aluminium Cassette

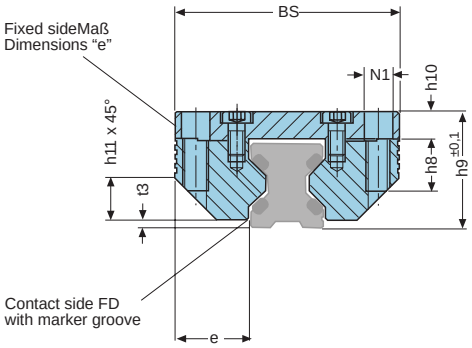
Anti-magnetic



Series FDD







Size	Load rating		Moment load rating				Dimensions			other dimensions cassette								Weight	Order number
	C	Co	Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	Bs	h9	as	fs	e	h8	h10	h11	t3	N1	Cassette	Cassette
25	1200	1600	25	18	35	25	98	70	36	57	45	23,50	16	8,5	13	2,5	M8	0,6	84363P

Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

Technical information cassettes and roller shoes (RSP)

Consist of:
- Aluminium body
- 8 rollers in needle bearings, anti-magnetic
- Plastic plate on both front sides with felt seal

Features:
- Maximum load capacity, smooth and silent run
- 45° - position of the rollers for loads from all directions
- Clip-on wipers with felt seal (metal wipers optional)
- Adjustable preload
- Endless stroke lengths by coupling of rails (see page 71)
- Calculation programme to find the most suitable guide size
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the guide size for you.

Traverse speed:
- Traverse speed up to 2 m/s
- Acceleration up to 10 m/s²

Temperature range:
- - 20° up to +100°C, short time operation +120°C

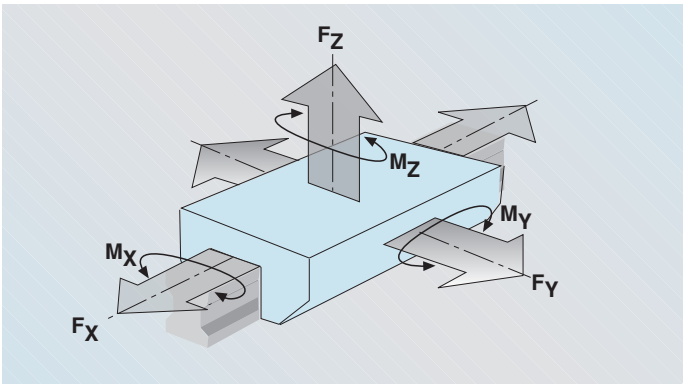
Lubrication:
- Maintenance-free due to lifetime-lubrication with grease Shell Retinax LX2

Fastening:
- With screws quality 8.8,
  tightening torques see technical information (page 74)
- Cassette with 4 fastening screws
- Pair of roller shoes with 12 fastening screws

Adjustment/Preload:
- Easy adjustment by threaded pin on the adjusting side of the cassette. Adjustment of pair of roller shoes by included adjustment plate and threaded pin. Recommended slide resistance see diagr. 1.
- The adjustment should always be made without wipers.

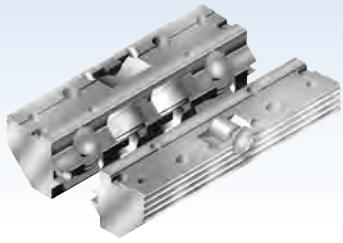
Running accuracy:
- The running accuracy in diagr. 3 refers to a rail length of one meter.

Stiffness:
- With pairs of single rails the stiffness refers to one pair of single rails with one pair of roller shoes (see diagr. 2).

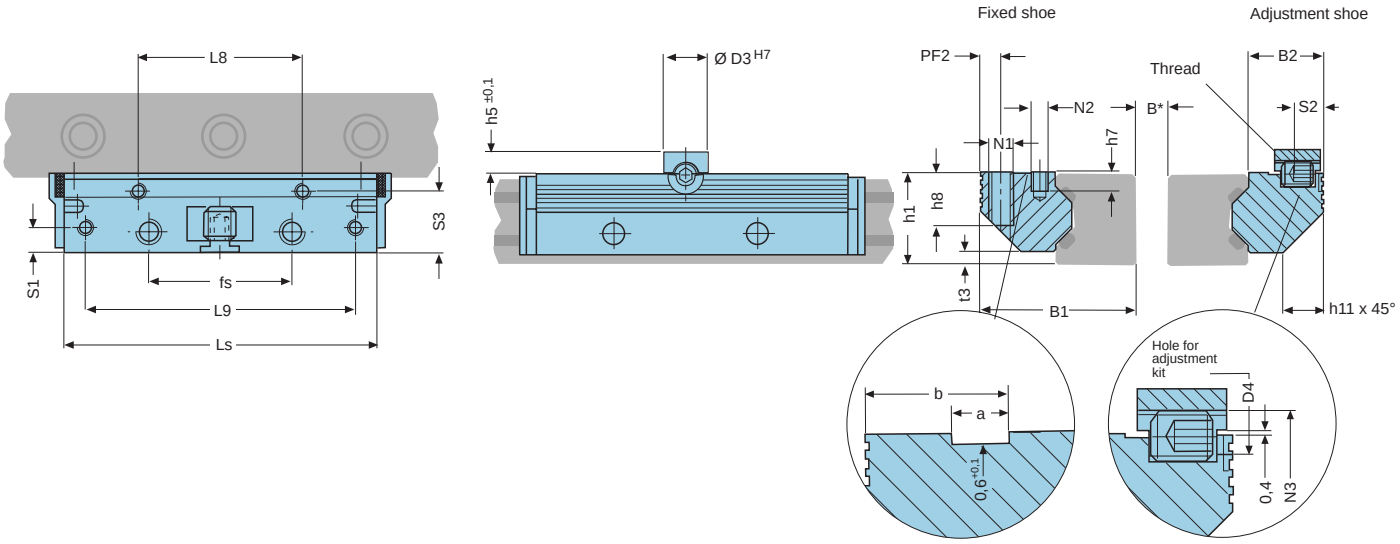


Aluminium roller shoes

Anti-magnetic



Series FED



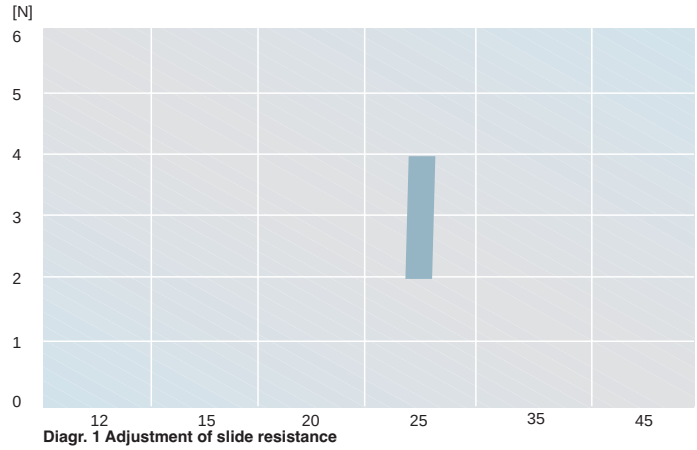
Moment load rating RSP				Dimensions				other dimensions RSP													Weight	Order number
Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	B1	h1	h5	PF2	fs	B2	D3	D4	h7	h8	L8	L9	N1	N2	N3	S1	S2	S3	RSP	RSP
0,8(B+58,4)	0,6(B+58,4)	222	198	98	48,4	27,5	7	6,4	45	22,9	14	6	5,0	16	48	84	M8	M5	M8	7,4	8,9	19,4	0,50	84367P

Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

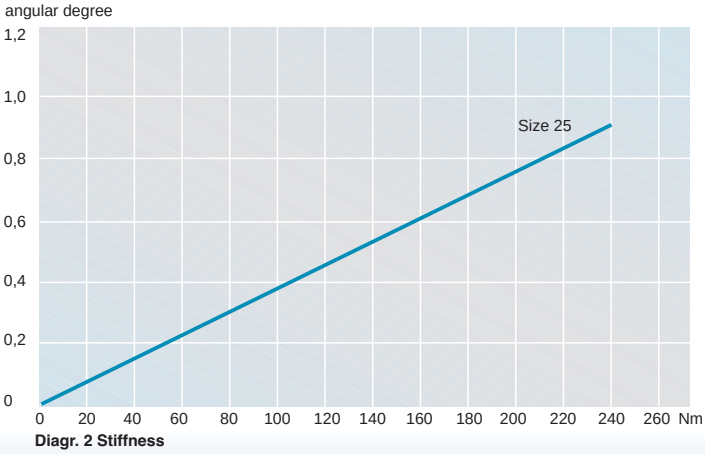
Basic body	Rollers	Wipers
anodized Aluminium AlMg Si0,5 F28	Anti-magnetic steel with special coating	Plastic plate PA6 with felt wipers

Standard

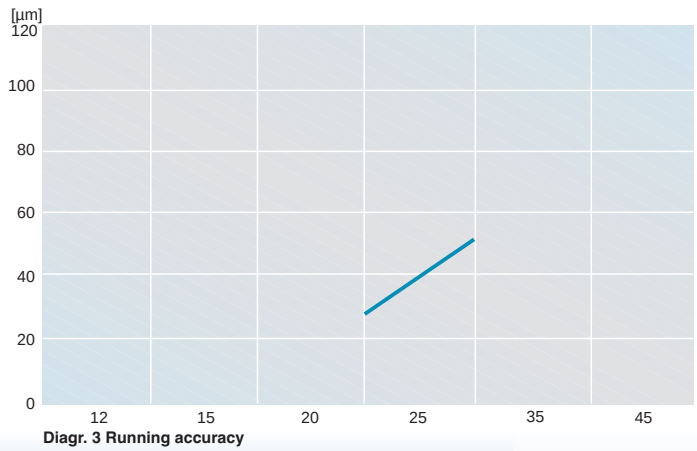
Material



Diagr. 1 Adjustment of slide resistance



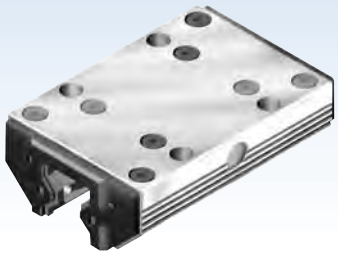
Diagr. 2 Stiffness



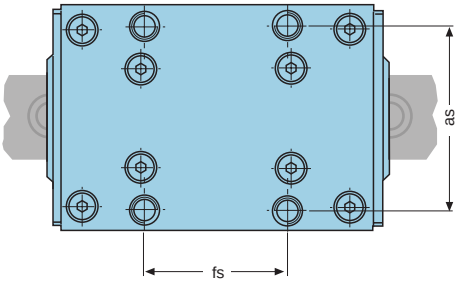
Diagr. 3 Running accuracy

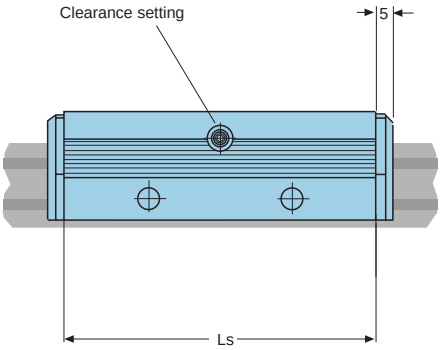
Aluminium Cassette

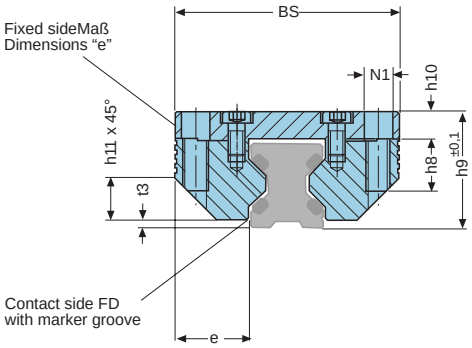
without lubricant



Series FDE







Size	Load rating		Moment load rating				Dimensions			other dimensions cassette								Weight	Order number
	C	Co	Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	Bs	h9	as	fs	e	h8	h10	h11	t3	N1	Cassette	Cassette
12	350	400	4	3	6	5	64	37	19	30	25	12,50	8	4,0	6	1,4	M4	0,1	**84494T**
15	600	700	8	6	12	10	78	47	24	38	30	15,75	10	5,0	8	2,0	M5	0,3	**84396T**
20	700	900	12	9	17	14	92	63	30	53	40	21,00	12	7,0	11	2,0	M6	0,4	**84441T**
25	1200	1600	25	18	35	25	98	70	36	57	45	23,50	16	8,5	13	2,5	M8	0,6	**84363T**
35	2000	2500	58	44	76	58	135	100	48	82	62	34,00	20	10,5	20	3,5	M10	1,5	**84364T**
45	4400	5500	180	140	210	170	165	120	60	100	80	37,50	24	13,5	22	4,0	M12	2,9	**84365T**

Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

Technical information cassettes and roller shoes (RSP)

Consist of:
- Aluminium body
- 8 rollers in needle bearings
- Plastic plate on both front sides with felt seal (metal wipers optional, see page 70)

Features:
- Maximum load capacity, smooth and silent run
- 45° - position of the rollers for loads from all directions
- Clip-on wipers with felt seal (metal wipers optional)
- Adjustable preload
- Endless stroke lengths by coupling of rails (see page 71)
- Calculation programme to find the most suitable guide size
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the guide size for you.

Traverse speed:
- Traverse speed up to 1 m/s
- Acceleration up to 10 m/s^2

Temperature range:
- - 20° up to +100°C, short time operation +120°C

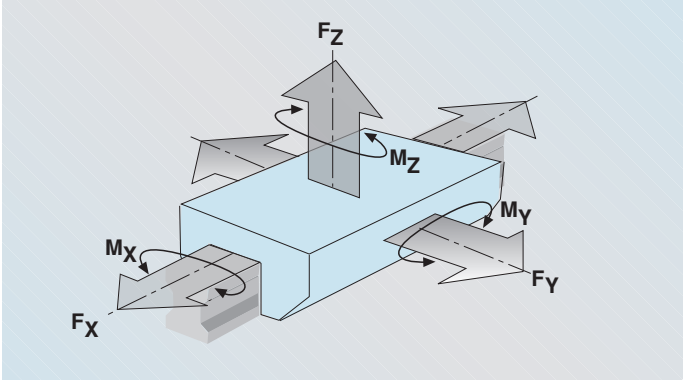
Lubrication:
- Lubricant-free

Fastening:
- With screws quality 8.8,
  tightening torques see technical information (page 74)
- Cassette with 4 fastening screws
- Pair of roller shoes with 12 fastening screws

Adjustment/Preload:
- Easy adjustment by threaded pin on the adjusting side of the cassette. Adjustment of pair of roller shoes by included adjustment plate and threaded pin. Recommended slide resistance see diagr. 1.
- The adjustment should always be made without wipers.

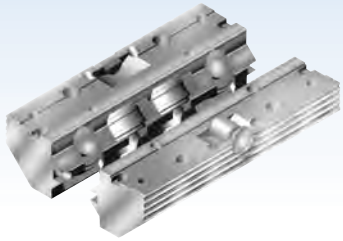
Running accuracy:
- The running accuracy in diagr. 3 refers to a rail length of one meter.

Stiffness:
- With pairs of single rails the stiffness refers to one pair of single rails with one pair of roller shoes (see diagr. 2).

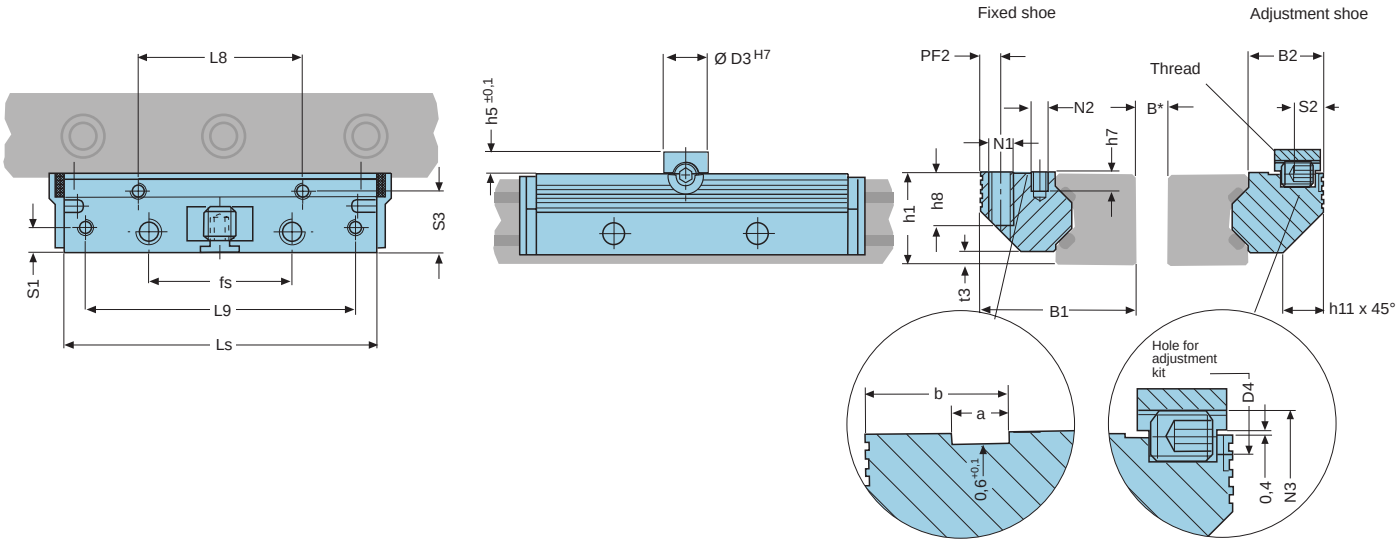


Aluminium roller shoes

without lubricant



Series FEE

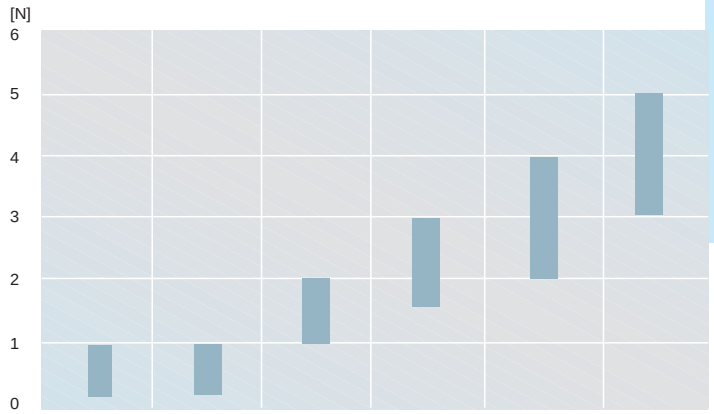


Moment load rating RSP				Dimensions				other dimensions RSP													Weight	Order number
Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	B1	h1	h5	PF2	fs	B2	D3	D4	h7	h8	L8	L9	N1	N2	N3	S1	S2	S3	RSP	RSP
0,20(B+30,3)	0,20(B+30,3)	6	5	64	24,4	15,0	4	3,4	25	11,9	8	3	6,0	8	29	57	M4	M3	M4	3,4	4,9	9,7	0,06	84495T
0,35(B+36,5)	0,30(B+36,5)	12	10	78	30,9	19,0	5	4,4	30	15,2	10	4	7,5	10	34	68	M5	M4	M6	4,9	5,9	12,4	0,20	84395T
0,40(B+47,0)	0,33(B+47,0)	17	14	92	40,9	23,0	5	4,9	40	20,4	10	4	8,0	12	42	80	M6	M5	M6	5,9	5,9	16,9	0,30	84442T
0,80(B+58,4)	0,60(B+58,4)	35	25	98	48,4	27,5	7	6,4	45	22,9	14	6	5,0	16	48	84	M8	M5	M8	7,4	8,9	19,4	0,50	84367T
1,20(B+85,0)	0,90(B+85,0)	76	58	135	68,9	37,5	7	8,9	62	32,9	14	6	7,5	20	67	117	M10	M6	M8	8,9	8,9	28,4	1,40	84368T
2,70(B+109,0)	2,20(B+109,0)	21	17	165	82,4	46,5	7	9,9	80	36,4	14	6	9,5	24	83	146	M12	M8	M8	9,9	8,9	30,9	2,80	84369T

Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

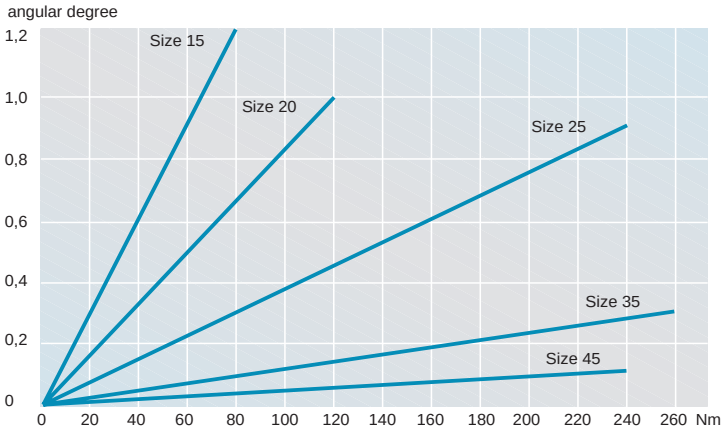
	Basic body	Rollers	Wipers
Standard	anodized Aluminium AlMg Si0,5 F28	Bearing steel 100 Cr6	Plastic plate PA6 with felt wipers

Material

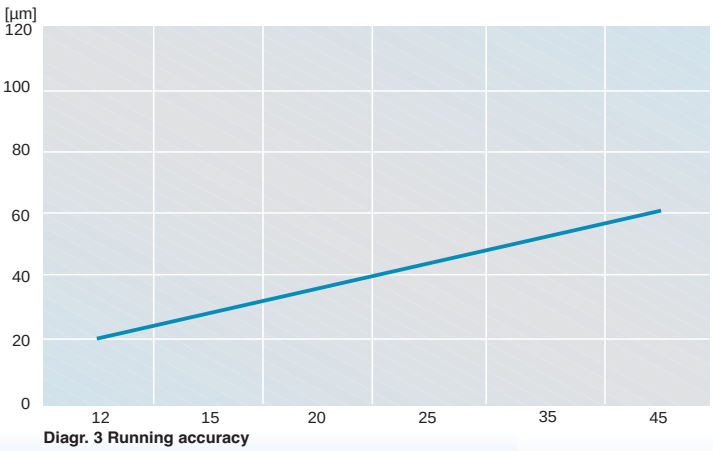


Diagr. 1 Adjustment of slide resistance

* without guided roller



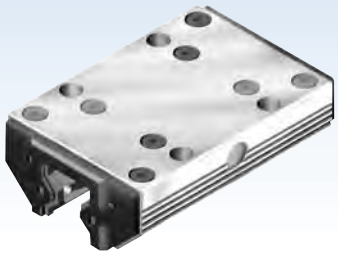
Diagr. 2 Stiffness



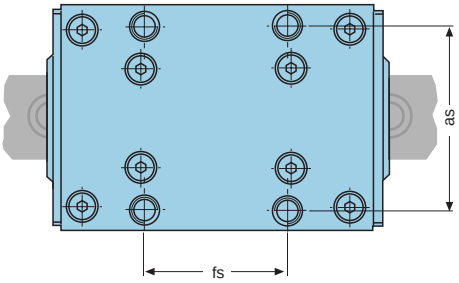
Diagr. 3 Running accuracy

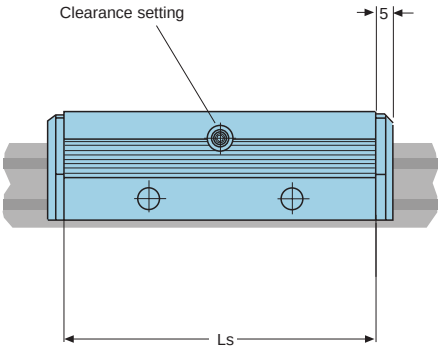
Aluminium Cassette

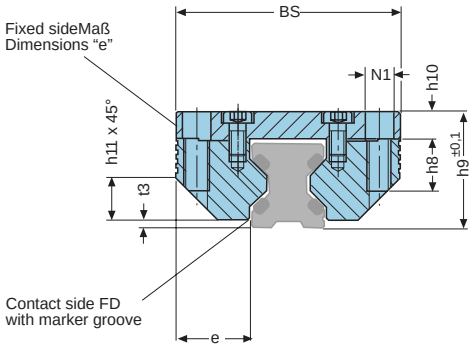
Non-corrosive Low Cost



Series FDG







Size	Load rating		Moment load rating				Dimensions			other dimensions cassette								Weight	Order number
	C	Co	Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	Bs	h9	as	fs	e	h8	h10	h11	t3	N1	Cassette	Cassette
12	620	170	1,6	5,7	2,4	8,9	64	37	19	30	25	12,50	8	4,0	6	1,4	M4	0,1	84494LN
15	700	230	2,5	7,5	4,0	12,0	78	47	24	38	30	15,75	10	5,0	8	2,0	M5	0,3	84396LN
20	940	300	4,0	13,0	6,0	19,0	92	63	30	53	40	21,00	12	7,0	11	2,0	M6	0,4	84441LN
25	1500	700	11,0	23,0	15,0	32,0	98	70	36	57	45	23,50	16	8,5	13	2,5	M8	0,6	84363LN
35	3100	1400	32,0	72,0	42,0	95,0	135	100	48	82	62	34,00	20	10,5	20	3,5	M10	1,5	84364LN
45	6300	2700	86,0	200,0	103,0	238,0	165	120	60	100	80	37,50	24	13,5	22	4,0	M12	2,9	84365LN

Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

Technical information cassettes and roller shoes (RSP)

Consist of:
- Aluminium body
- 8 rollers in ball bearings
- Plastic plate on both front sides with felt seal (metal wipers optional, see page 70)

Features:
- Medium load capacity, smooth and silent run
- 45° - position of the rollers for loads from all directions
- Clip-on wipers with felt seal (metal wipers optional)
- Adjustable preload
- Endless stroke lengths by coupling of rails (see page 71)
- Calculation programme to find the most suitable guide size
  Our calculation programme can be found in the download area of our homepage www.franke-gmbh.com. We are gladly prepared to calculate the guide size for you.

Traverse speed:
- Traverse speed up to 10 m/s
- Acceleration up to 40 m/s²

Temperature range:
- - 20° up to +100°C, short time operation +120°C

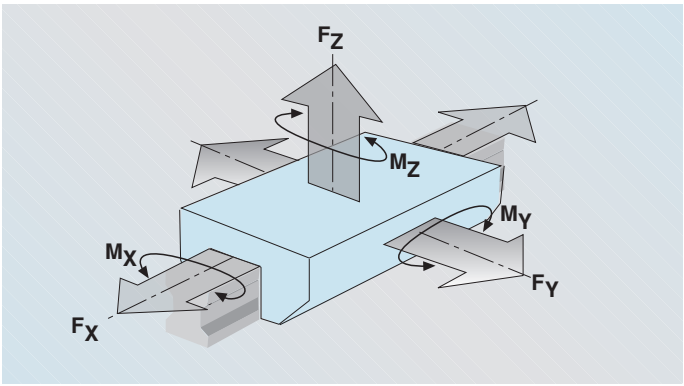
Lubrication:
- Maintenance-free due to lifetime-lubrication with grease Shell Retinax LX2

Fastening:
- With screws quality 8.8,
  tightening torques see technical information (page 74)
- Cassette with 4 fastening screws
- Pair of roller shoes with 12 fastening screws

Adjustment/Preload:
- Easy adjustment by threaded pin on the adjusting side of the cassette. Adjustment of pair of roller shoes by included adjustment plate and threaded pin. Recommended slide resistance see diagr. 1.
- The adjustment should always be made without wipers.

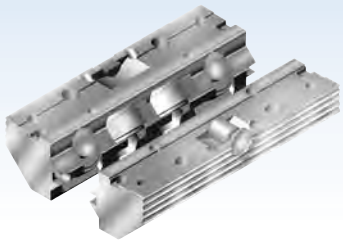
Running accuracy:
- The running accuracy in diagr. 3 refers to a rail length of one meter.

Stiffness:
- With pairs of single rails the stiffness refers to one pair of single rails with one pair of roller shoes (see diagr. 2).

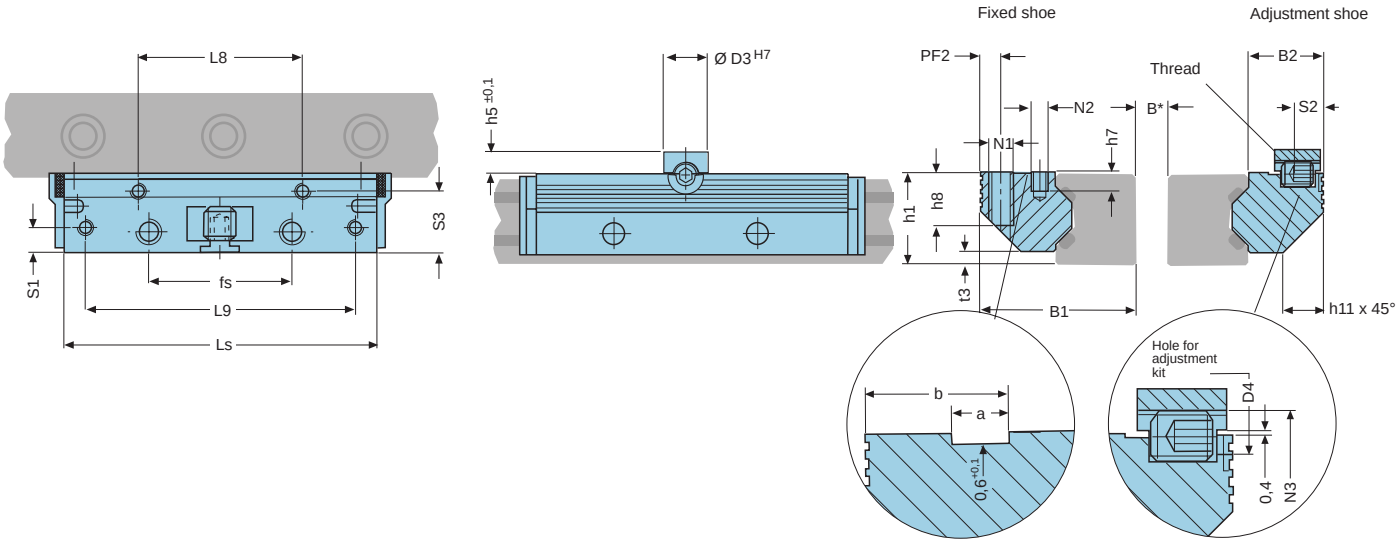


Aluminium roller shoes

Non-corrosive Low Cost



Series FEG

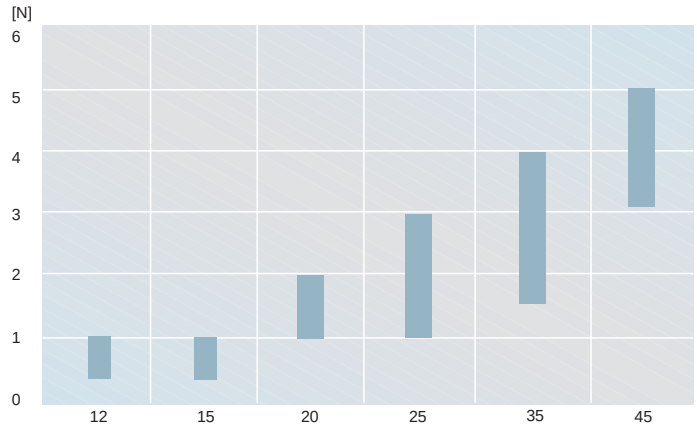


Moment load rating RSP				Dimensions				other dimensions RSP														Weight	Order number
Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	B1	h1	h5	PF2	fs	B2	D3	D4	h7	h8	L8	L9	N1	N2	N3	S1	S2	S3	RSP	RSP
0,08(B+30,3)	0,30(B+30,3)	2,4	8,9	64	24,4	15,0	4	3,4	25	11,9	8	3	6,0	8	29	57	M4	M3	M4	3,4	4,9	9,7	0,06	84495LN
0,10(B+36,5)	0,35(B+36,5)	4,0	12,0	78	30,9	19,0	5	4,4	30	15,2	10	4	7,5	10	34	68	M5	M4	M6	4,9	5,9	12,4	0,20	84395LN
0,15(B+47,0)	0,50(B+47,0)	6,0	19,0	92	40,9	23,0	5	4,9	40	20,4	10	4	8,0	12	42	80	M6	M5	M6	5,9	5,9	16,9	0,30	84442LN
0,35(B+58,4)	0,70(B+58,4)	15,0	32,0	98	48,4	27,5	7	6,4	45	22,9	14	6	5,0	16	48	84	M8	M5	M8	7,4	8,9	19,4	0,50	84367LN
0,70(B+85,0)	1,50(B+85,0)	42,0	95,0	135	68,9	37,5	7	8,9	62	32,9	14	6	7,5	20	67	117	M10	M6	M8	8,9	8,9	28,4	1,40	84368LN
1,40(B+109,0)	3,10(B+109,0)	103,0	238,0	165	82,4	46,5	7	9,9	80	36,4	14	6	9,5	24	83	146	M12	M8	M8	9,9	8,9	30,9	2,80	84369LN

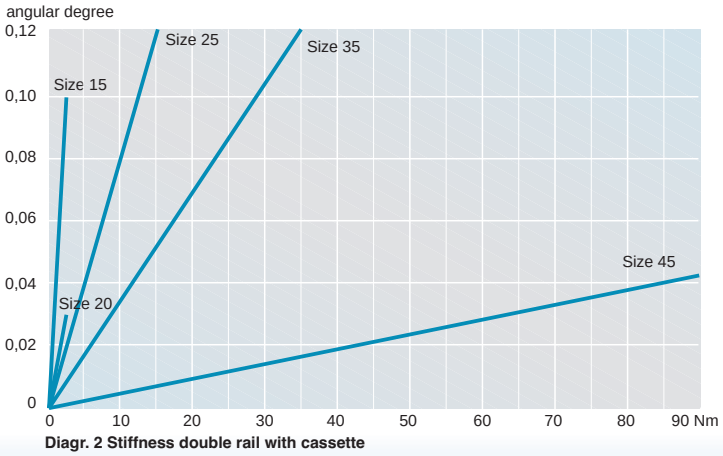
Dimensions [mm], Load rating, Moments [Nm], Weight [kg]

	Basic body	Rollers	Wipers
Standard	anodized Aluminium AlMg Si0,5 F28	Ball bearings Non-corrosive steel x65Cr13	Plastic plate PA6 with felt wipers

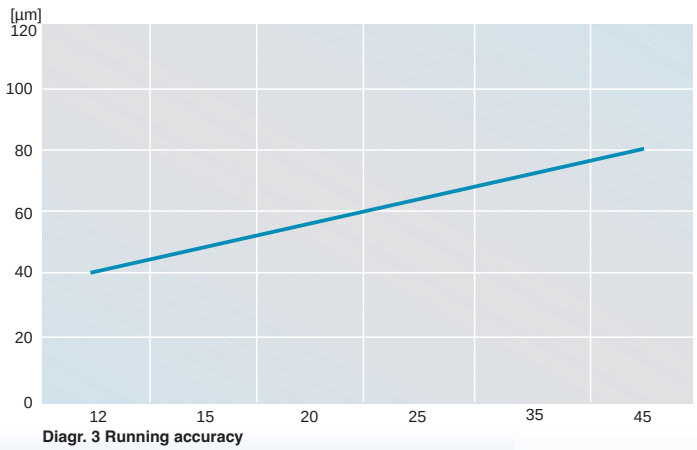
Material



Diagr. 1 Adjustment of slide resistance



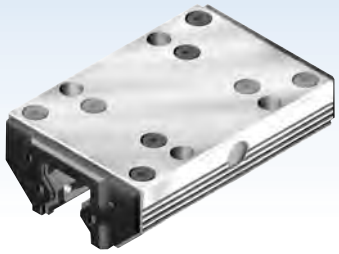
Diagr. 2 Stiffness double rail with cassette



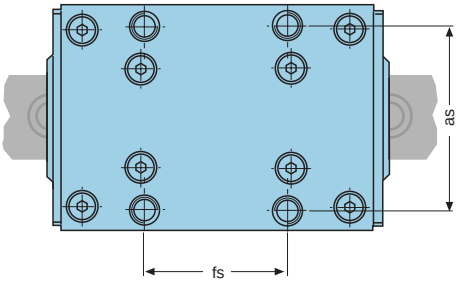
Diagr. 3 Running accuracy

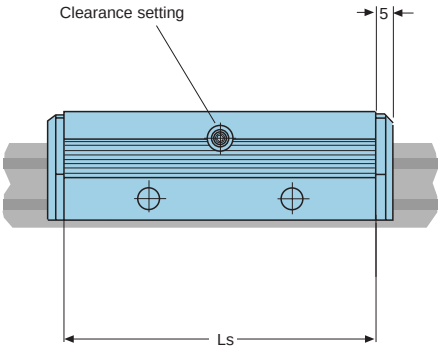
Aluminium Cassette

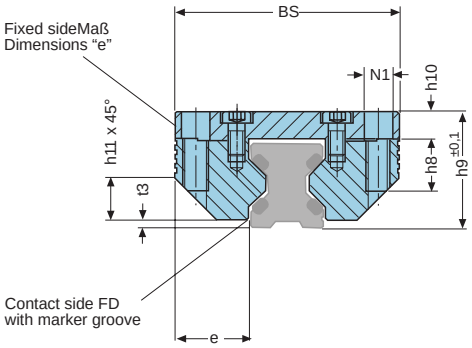
Angular ball bearing



Series FDH







Size	Load rating		Moment load rating				Dimensions			Other dimensions of cassette							Weight	Order no.
	C	Co	Mocx	Mcx	Mocy/Mocz	Mcy/Mcz	Ls	Bs	h9	as	fs	e	h8	h10	h11	t3	N1	Cassette	Cassette
25	7500	3700	58	118	81	165	98	70	36	57	45	23,50	16	8,5	13	2,5	M8	0,6	84363S
35	13400	8100	189	315	250	416	135	100	48	82	62	34,00	20	10,5	20	10,5	M10	1,6	84364S
45	24300	14400	461	777	548	924	165	120	60	100	80	37,50	24	13,5	22	4,0	M12	2,9	84365S

Dimension [mm], Load rating [N], Moment load rating [Nm], Weight [kg]

Technical information cassettes and roller shoes (RSP)

Components:
- Aluminium basic body
- Eight double row ball bearings
- Plastic plate with felt wiper on front side (as option metal reamer see accessories on page 70).

Features:
- Ideal for highly dynamical application
- Rollers are arranged at an angle of 45° and sustain loads from whatever direction
- Clipped wipers with felt inlay (metal wipers optional)
- Adjustable preload
- Long stroke distances (rails can be joined endless, see page 71)
- Comfortable dimensioning via our calculation programme. The calculation programme is free you will find it in the download area of our homepage www.franke-gmbh.de. We shall be glad to make the calculation for you.

Dynamics:
- Speed of displacement up to 10 m/s
- Acceleration up to 40 m/s^2

Temperature range:
- - 20°C up to 100°C, for a short time up to +120°C

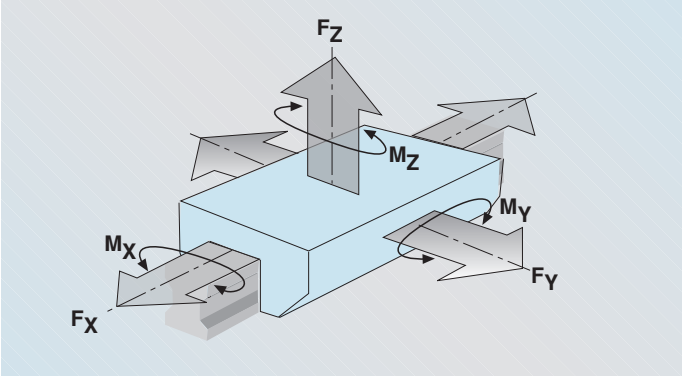
Lubrication:
- Free from maintenance due to lifetime lubrication with ball bearing grease

Fastening:
- With screws quality 8.8, tightening torques see technical information
- Cassette with 4 fastening screws
- Pair of roller shoes with 12 fastening screws

Adjustment/preload:
- Comfortable adjustment from outside. The cassette is adjusted by means of laterally integrated threaded pin; pair of roller shoes is adjusted by threaded piece and threaded pin which come with the consignment. Recommended adjustment values see diagram1.
- Adjustment is made without wipers

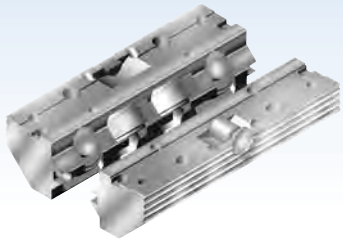
Running accuracy:
- The running accuracy of the guide system is given for the rail length of 1 m (see diagram3).

Stiffness:
- With single rails the stiffness is referred to a pair of single rails with a pair of roller shoes (see diagram 2).

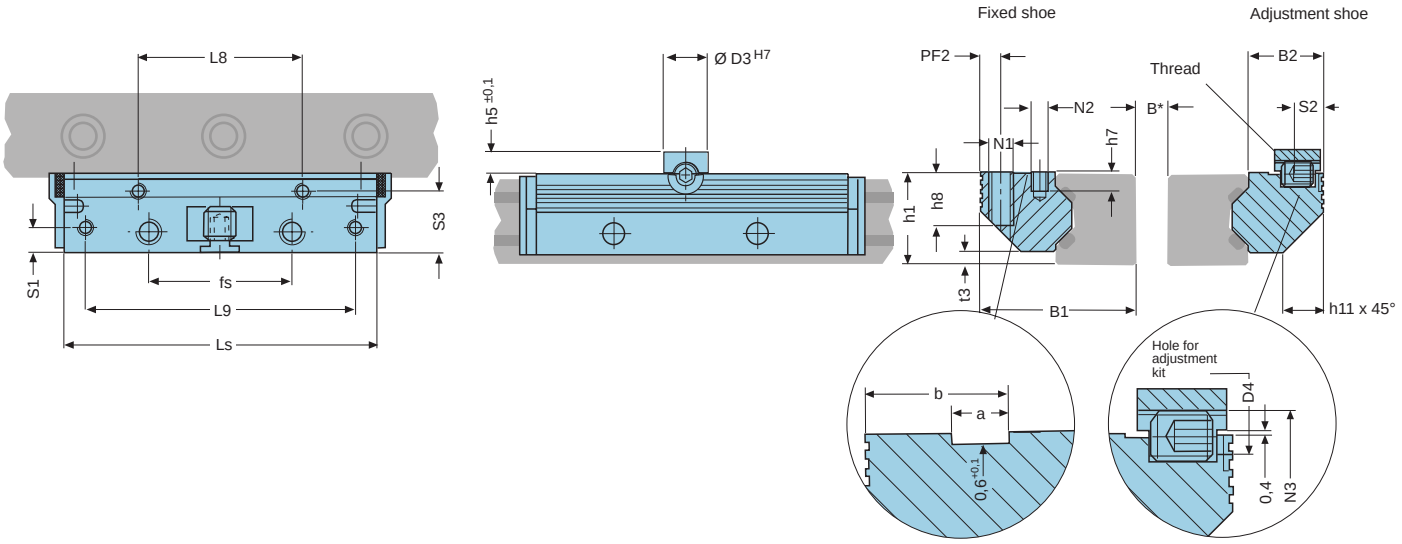


Aluminium roller shoes

Angular ball bearing



Series FEH



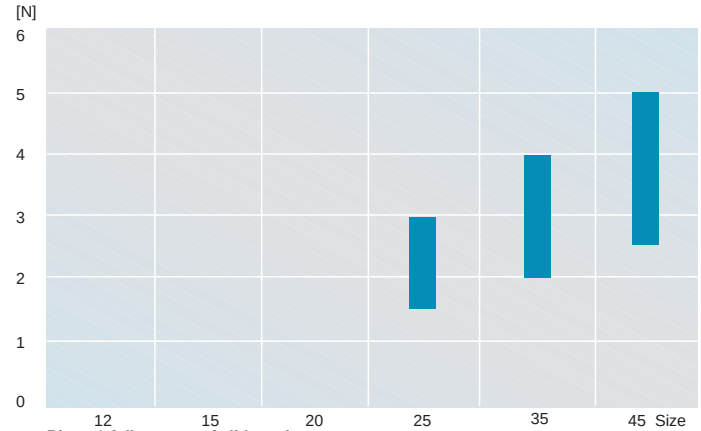
Moment load rating RSP				Dimensions						Other dimensions RSP														Weight	Order no.
Mocx	Mcx	Mocy Mocz	Mcy Mcz	Ls	B1	h1	a	b	h5	PF2	fs	B2	D3	D4	h7	h8	L8	L9	N1	N2	N3	S1	S2	S3	RSP	RSP
1,8 (B+58,4)	3,7 (B+58,4)	81	165	98	48,4	27,5	10,5	17,5	7	6,4	45	22,9	14	6	5,0	16	48	84	M8	M5	M8	7,4	8,9	19,4	0,50	84367S
4,0 (B+85,0)	6,7 (B+85,0)	250	416	135	68,9	37,5	12,5	26,0	7	8,9	62	32,9	14	6	7,5	20	67	117	M10	M6	M8	8,9	8,9	28,4	1,40	84368S
7,2 (B+109,0)	12,2 (B+109,0)	548	548	165	82,4	46,5	15,5	31,0	7	9,9	80	36,4	14	6	9,5	24	83	146	M12	M8	M8	9,9	8,9	30,9	2,80	84369S

* B = variable guide width

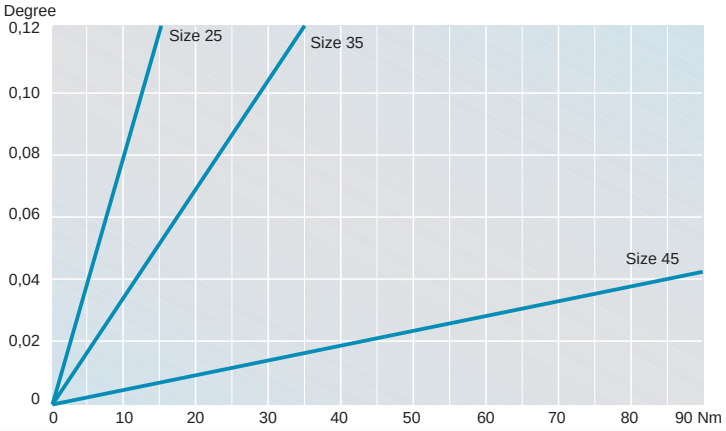
Dimension [mm], Load rating [N], Moment load rating [Nm], Weight [kg]

	Basic body	Rollers	Wipers
Standard	High strength anodized aluminium AlMg Si0,5 F28	Double row Ball bearing steel 100Cr6	Plastic plate PA6 with felt wiper

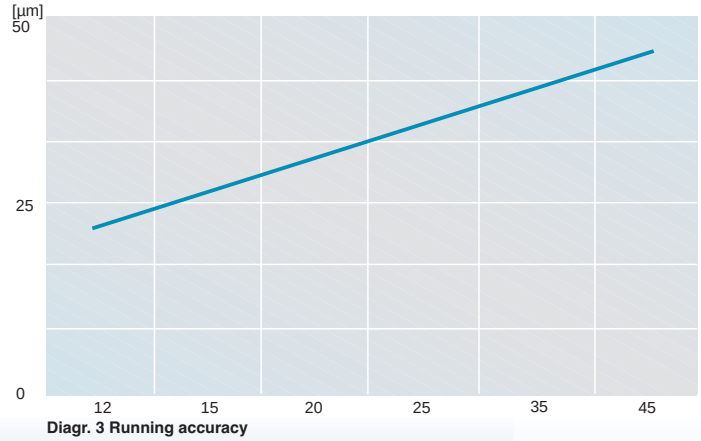
Materials



Diagr. 1 Adjustment of slide resistance



Diagr. 2 Stiffness of double rail with cassette



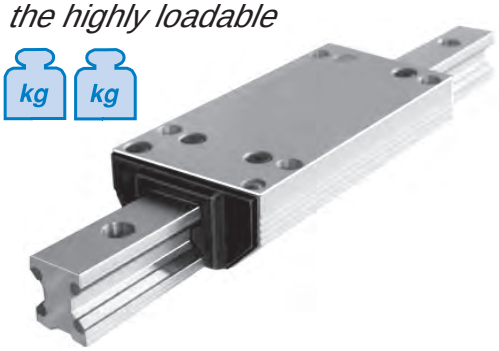
Diagr. 3 Running accuracy

Aluminium Cassette / Aluminium roller shoes

Special version

Special types

the highly loadable



Size	Order number cassette	Order number Roller shoes
12	on request	on request
15		
20		
25		
35		
45		

Dimensions [mm]

Aluminium roller guides are very variable. Depending on the case of application we supply e.g.:

- Cassettes with overlength for higher loads
- Cassettes for fastening from below

Please consult us.

Clamping devices

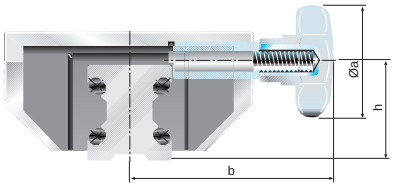
the manually fixable

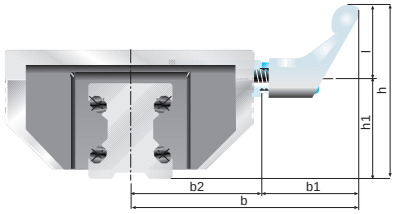
Size	Ø a	b	h	Lock force	Order nu. Star grip
15	25	41	19,0	200	84396AK
20	25	49	23,0	250	84441AK
25	32	56	28,0	250	84363AK
35	50	83	38,5	350	84364AK
45	63	101	48,0	750	84365AK

Dimensions [mm], Force [N] with normal power
at the moment only the standard version available

Size	b	b1	b2	h	h1	l Thread	Order nu. Lever clamp
15	59,5	35	24,5	64,0	19,0	45 M5	84396AH
20	67,5	35	32,5	68,0	23,0	45 M5	84441AH
25	71,0	35	36,0	73,0	28,0	45 M6	84363AH
35	96,0	45	51,0	101,5	38,5	63 M8	84364AH
45	116,0	55	61,0	126,0	48,0	78 M10	84365AH

Dimensions [mm], Force [N] with normal power
at the moment only the standard version available



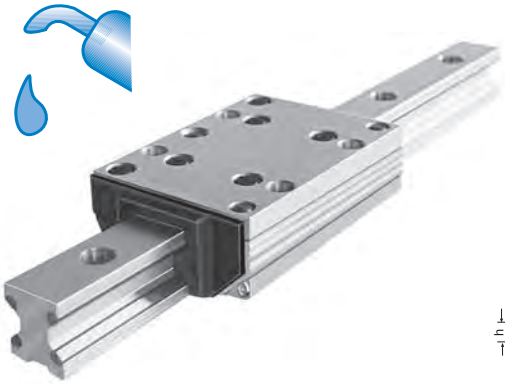


The cassette with star grip can be fixed at any optional place along the guide path. The clamping device does not exert forces on the guide system.

The clamping device is used in fixtures which are movable manually, clamping and stop ledgers, feeding of tools and work pieces. Also available with clamping lever. Please consult us.

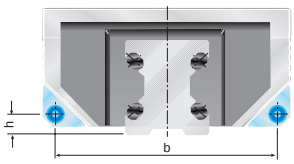
Central lubrication

the re-lubricatable



Size	b	h	Lubricating nipple DIN3405	Order number
15	42,0	4,4	D1AØ3,5	84396AF
20	56,3	5,2	D1AØ4,0	84441AF
25	61,8	6,6	D1AØ4,0	84363AF
35	87,9	9,4	D1AØ6,0	84364AF
45	106,0	11,0	D1AØ6,0	84365AF

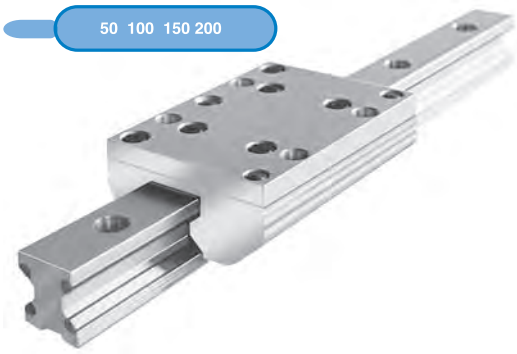
Dimensions [mm]



For long running periods and especially long life we recommend to use cassettes and roller shoes with relubrication facility. Relubrication in mounted condition becomes easy by the lubricating nipples on the front side.

High temperature

the heat-resistant



Size	Order number	
	Cassette	Roller shoes
12	on request	on request
15		
20		
25		
35		
45		

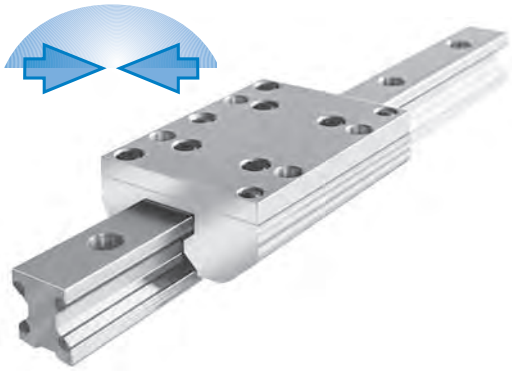
For applications in high temperature environment.

The cassette can be used with temperatures up to 200° C.

Please consult us.

Vacuum

the vacuum-fit



Size	Order number	
	Cassette	Roller shoes
12	on request	on request
15		
20		
25		
35		
45		

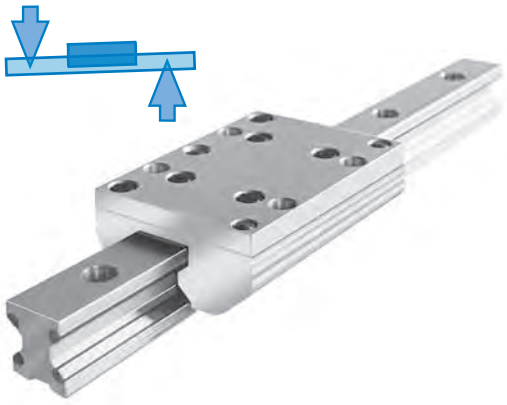
For applications in vacuum fields.

Special bore shapes and grease for high vacuum.

Please consult us.

Elastic roller

the equalizer

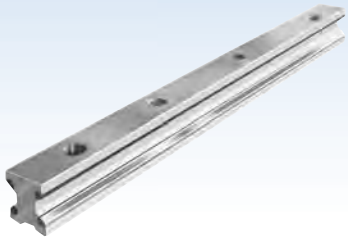


Size	Order number	
	Cassette	Roller shoes
25	84363E	84367E
45	84365E	84369E

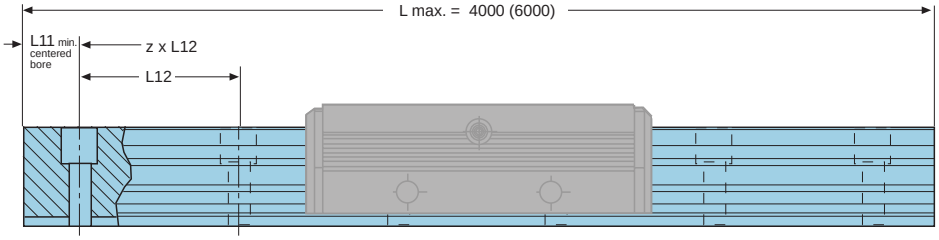
Cassette with 8 elastically supported rollers for special absorbability. Maximum loads, especially silent and easy running behaviour. Electrically insulated.

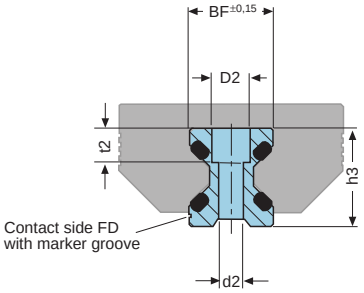
Aluminium double rail

Standard



Series FDA





Size	BF	D2	d2	h3	L11* = min	L12	t2	Weight
12	12,00	6	3,4	14,7	10	40	5,5	0,4
15	15,50	8	4,5	18,7	10	60	6,0	0,8
20	21,00	10	5,5	22,6	10	60	7,0	0,9
25	23,00	11	6,6	27,0	10	60	10,0	1,8
35	32,00	15	9,0	37,0	12	80	11,5	3,2
45	45,00	18	11,0	46,0	16	105	14,5	5,5

Dimensions [mm], Weight [kg/m]

Technical information double rail

Consists of:
- Aluminium body
- 4 raceways made of high alloy spring steel
- Plastic covers for bore holes

Features:
- Fastening screw holes centered due to rail length
- Other bore shapes on request. Please consult us.

Length:
- In one piece for all catalogue lengths and intermediate lengths
- For endless strokes the rails can be coupled

Fastening:
- With screws quality 8.8 and washers DIN433

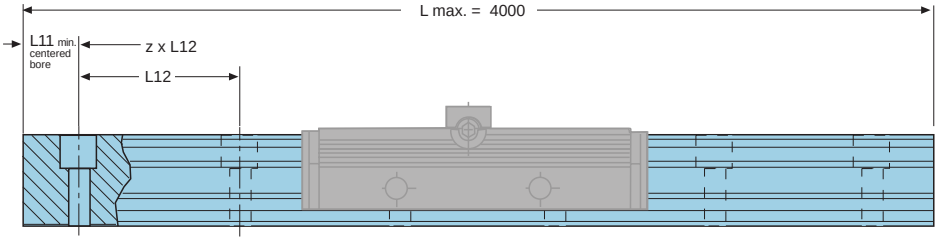
Rail body	Raceways	Fastening bores
high density anodised aluminium	high alloy spring steel	centered due to rail length

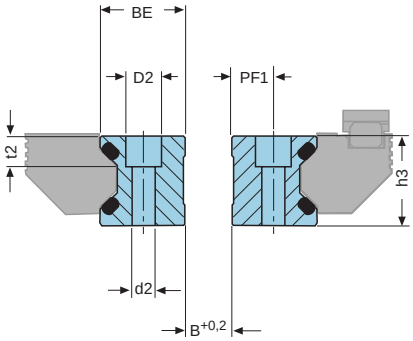
Length L [mm]	Order number Double rail for cassettes Gr. 12	15	20	25	35	45
200	64912A	63167A	69062A	62554A		
250	64913A	63168A	69063A	62555A		
300	64914A	63169A	69064A	62556A	62587A	62622A
350	64915A	63170A	69065A	62557A	62588A	62623A
400	64916A	63171A	69066A	62558A	62589A	62624A
450	64917A	63172A	69067A	62559A	62590A	62625A
500	64918A	63173A	69068A	62560A	62591A	62626A
550	64919A	63174A	69069A	62561A	62592A	62627A
600	64920A	63175A	69070A	62562A	62593A	62628A
650	64921A	63176A	69071A	62563A	62594A	62629A
700	64922A	63177A	69072A	62564A	62595A	62630A
750	64923A	63178A	69073A	62565A	62596A	62631A
800	64924A	63179A	69074A	62566A	62597A	62632A
850	64925A	63180A	69075A	62567A	62598A	62633A
900	64926A	63181A	69076A	62568A	62599A	62634A
950	64927A	63182A	69077A	62569A	62600A	62635A
1000	64928A	63183A	69078A	62570A	62601A	62636A
1100	64929A	63184A	69079A	62571A	62602A	62637A
1200	64930A	63185A	69080A	62572A	62603A	62638A
1300	64931A	63186A	69081A	62573A	62604A	62639A
1400	64932A	63187A	69082A	62574A	62605A	62640A
1500	64933A	63188A	69083A	62575A	62606A	62641A
1600	64934A	63189A	69084A	62576A	62607A	62642A
1700	64935A	63190A	69085A	62577A	62608A	62643A
1800	64936A	63191A	69086A	62578A	62609A	62644A
1900	64937A	63192A	69087A	62579A	62610A	62645A
2000	64938A	63193A	69088A	62580A	62611A	62646A
2100	64939A	63194A	69089A	62581A	62612A	62647A
2200	64940A	63195A	69090A	62582A	62613A	62648A
2300	64941A	63196A	69091A	62583A	62614A	62649A
2400	64942A	63197A	69092A	62584A	62615A	62650A
2500	64943A	63198A	69093A	62585A	62616A	62651A
2600	64944A	69052A	69094A	63132A	62617A	62652A
2700	64945A	69053A	69095A	63133A	62618A	62653A
2800	64946A	69054A	69096A	63134A	62619A	62654A
2900	64947A	69055A	69097A	63135A	62620A	62655A
3000	64948A	69056A	69098A	63136A	62621A	62656A
3200	64949A	69057A	69099A	63137A	63142A	62657A
3400	64950A	69058A	69100A	63138A	63143A	62658A
3600	64951A	69059A	69101A	63139A	63144A	62659A
3800	64952A	69060A	69102A	63140A	63145A	62660A
4000	64953A	69061A	69103A	63141A	63146A	62661A
4200				69138A	69148A	
4400				69139A	69149A	
4600				69140A	69150A	
4800				69141A	69151A	
5000				69142A	69152A	
5200				69143A	69153A	
5400				69144A	69154A	
5600				69145A	69155A	
5800				69146A	69156A	
6000				69147A	69157A	

Pair of Aluminium single rails

Standard

Series FEA





Size	BE	D2	d2	h3	L11	L12	PF1	t2	Weight
12	12,00	6	3,4	14,7	10	40	5,5	5,5	0,8
15	15,25	8	4,5	18,7	10	60	7,0	6,0	1,6
20	20,00	10	5,5	22,6	10	60	9,5	7,0	2,0
25	25,00	11	6,6	27,0	10	60	12,0	10,0	3,8
35	35,00	15	9,0	37,0	12	80	17,0	11,5	7,0
45	45,00	18	11,0	46,0	16	105	22,0	14,5	11,2

* B = variable guide width

Dimensions [mm], Weight [kg/m]

Length L [mm]	Order number Pair of rails Gr. 12	15	20	25	35	45
200	64954A	63199A	69010A	62701A		
250	64955A	63200A	69011A	62702A		
300	64956A	63201A	69012A	62703A	62734A	62769A
350	64957A	63202A	69013A	62704A	62735A	62770A
400	64958A	63203A	69014A	62705A	62736A	62771A
450	64959A	63204A	69015A	62706A	62737A	62772A
500	64960A	63205A	69016A	62707A	62738A	62773A
550	64961A	63206A	69017A	62708A	62739A	62774A
600	64962A	63207A	69018A	62709A	62740A	62775A
650	64963A	63208A	69019A	62710A	62741A	62776A
700	64964A	63209A	69020A	62711A	62742A	62777A
750	64965A	63210A	69021A	62712A	62743A	62778A
800	64966A	63211A	69022A	62713A	62744A	62779A
850	64967A	63212A	69023A	62714A	62745A	62780A
900	64968A	63213A	69024A	62715A	62746A	62781A
950	64969A	63214A	69025A	62716A	62747A	62782A
1000	64970A	63215A	69026A	62717A	62748A	62783A
1100	64971A	63216A	69027A	62718A	62749A	62784A
1200	64972A	63217A	69028A	62719A	62750A	62785A
1300	64973A	63218A	69029A	62720A	62751A	62786A
1400	64974A	63219A	69030A	62721A	62752A	62787A
1500	64975A	63220A	69031A	62722A	62753A	62788A
1600	64976A	63221A	69032A	62723A	62754A	62789A
1700	64977A	63222A	69033A	62724A	62755A	62790A
1800	64978A	63223A	69034A	62725A	62756A	62791A
1900	64979A	63224A	69035A	62726A	62757A	62792A
2000	64980A	63225A	69036A	62727A	62758A	62793A
2100	64981A	63226A	69037A	62728A	62759A	62794A
2200	64982A	63227A	69038A	62729A	62760A	62795A
2300	64983A	63228A	69039A	62730A	62761A	62796A
2400	64984A	63229A	69040A	62731A	62762A	62797A
2500	64985A	63230A	69041A	62732A	62763A	62798A
2600	64986A	69000A	69042A	63147A	62764A	62799A
2700	64987A	69001A	69043A	63148A	62765A	62800A
2800	64988A	69002A	69044A	63149A	62766A	62801A
2900	64989A	69003A	69045A	63150A	62767A	62802A
3000	64990A	69004A	69046A	63151A	62768A	62803A
3200	64991A	69005A	69047A	69052A	69157A	69804A
3400	64992A	69006A	69048A	69053A	69158A	69805A
3600	64993A	69007A	69049A	63154A	63159A	62659A
3800	64994A	69008A	69050A	63155A	63160A	62807A
4000	64995A	69009A	69051A	63156A	63161A	62808A

Technical information pair of single rails

Consists of:
- Aluminium body
- 4 raceways made of high alloy spring steel
- Plastic covers for bore holes

Features:
- Free selection of guide width
- The roller shoes can be placed in between or outside the rail pair

Length:
- In one piece for all catalogue lengths and intermediate lengths
- For endless strokes the rails can be coupled

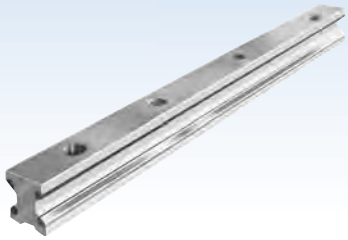
Fastening:
- With screws quality 8.8 and washers DIN433

Rail body	Raceways	Fastening bores
high density anodised aluminium	high alloy spring steel	centered due to rail length

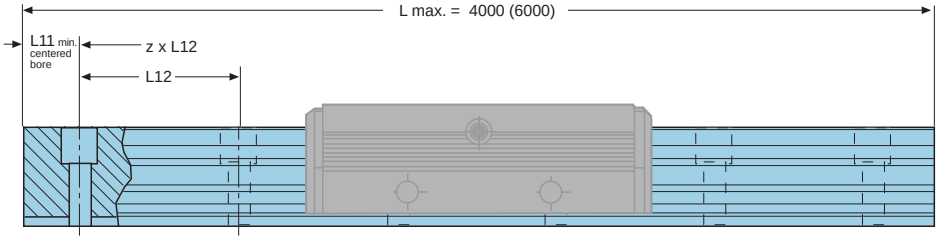
Standard

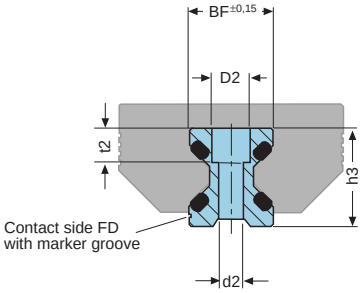
Aluminium double rail

Non-corrosive



Series FDC





Size	BF	D2	d2	h3	L11* = min	L12	t2	Weight
12	12,00	6	3,4	14,7	10	40	5,5	0,4
15	15,50	8	4,5	18,7	10	60	6,0	0,8
20	21,00	10	5,5	22,6	10	60	7,0	0,9
25	23,00	11	6,6	27,0	10	60	10,0	1,8
35	32,00	15	9,0	37,0	12	80	11,5	3,2
45	45,00	18	11,0	46,0	16	105	14,5	5,5

Dimensions [mm], Weight [kg/m]

Technical information double rail

Consists of:
- Aluminium body
- 4 raceways made of non corrosive steel
- Plastic covers for bore holes

Features:
- Fastening screw holes centered due to rail length
- Other bore shapes on request. Please consult us.

Length:
- In one piece at all catalogue lengths and intermediate lengths
- For endless strokes the rails can be coupled

Fastening:
- With screws quality 8.8 and washers DIN433

Rail body	Raceways	Fastening bores
high density anodised aluminium	non corrosive steel X65 Cr13	centered due to rail length

Standard

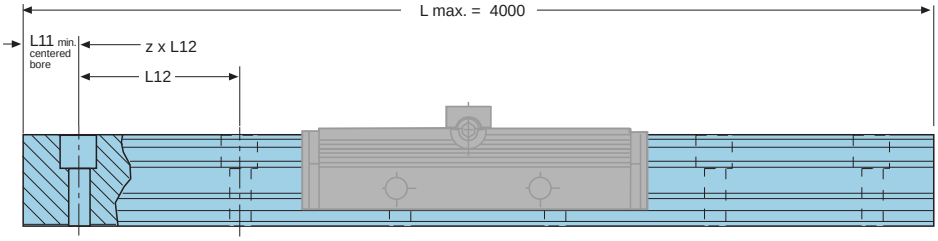
Material

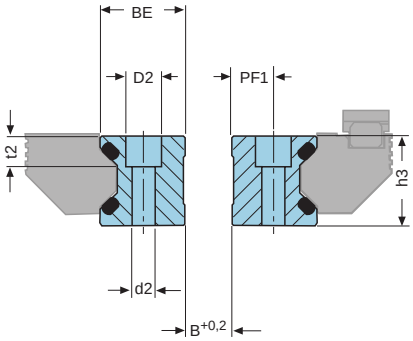
Length L [mm]	Order number Double rail for cassettes Gr. 12	15	20	25	35	45
200	on request	63167N	69062N	62554N		
250		63168N	69063N	62555N		
300		63169N	69064N	62556N	62587N	62622N
350		63170N	69065N	62557N	62588N	62623N
400		63171N	69066N	62558N	62589N	62624N
450		63172N	69067N	62559N	62590N	62625N
500		63173N	69068N	62560N	62591N	62626N
550		63174N	69069N	62561N	62592N	62627N
600		63175N	69070N	62562N	62593N	62628N
650		63176N	69071N	62563N	62594N	62629N
700		63177N	69072N	62564N	62595N	62630N
750		63178N	69073N	62565N	62596N	62631N
800		63179N	69074N	62566N	62597N	62632N
850		63180N	69075N	62567N	62598N	62633N
900		63181N	69076N	62568N	62599N	62634N
950		63182N	69077N	62569N	62600N	62635N
1000		63183N	69078N	62570N	62601N	62636N
1100		63184N	69079N	62571N	62602N	62637N
1200		63185N	69080N	62572N	62603N	62638N
1300		63186N	69081N	62573N	62604N	62639N
1400		63187N	69082N	62574N	62605N	62640N
1500		63188N	69083N	62575N	62606N	62641N
1600		63189N	69084N	62576N	62607N	62642N
1700		63190N	69085N	62577N	62608N	62643N
1800		63191N	69086N	62578N	62609N	62644N
1900		63192N	69087N	62579N	62610N	62645N
2000		63193N	69088N	62580N	62611N	62646N
2100		63194N	69089N	62581N	62612N	62647N
2200		63195N	69090N	62582N	62613N	62648N
2300		63196N	69091N	62583N	62614N	62649N
2400		63197N	69092N	62584N	62615N	62650N
2500		63198N	69093N	62585N	62616N	62651N
2600		69052N	69094N	63132N	62617N	62652N
2700		69053N	69095N	63133N	62618N	62653N
2800		69054N	69096N	63134N	62619N	62654N
2900		69055N	69097N	63135N	62620N	62655N
3000		80277N	69098N	63136N	62621N	62656N
3200		80278N	69099N	63137N	63142N	62657N
3400		80279N	69100N	63138N	63143N	62658N
3600		80280N	69101N	63139N	63144N	62659N
3800		80281N	69102N	63140N	63145N	62660N
4000		80282N	69103N	63141N	63146N	62661N

Pair of Aluminium single rails

Non-corrosive

Series FEC





Size	BE	D2	d2	h3	L11	L12	PF1	t2	Weight
12	12,00	6	3,4	14,7	10	40	5,5	5,5	0,8
15	15,25	8	4,5	18,7	10	60	7,0	6,0	1,6
20	20,00	10	5,5	22,6	10	60	9,5	7,0	2,0
25	25,00	11	6,6	27,0	10	60	12,0	10,0	3,8
35	35,00	15	9,0	37,0	12	80	17,0	11,5	7,0
45	45,00	18	11,0	46,0	16	105	22,0	14,5	11,2

* B = variable guide width

Dimensions [mm], Weight [kg/m]

Length L [mm]	Pair of rails Gr. 12	Order number 15	20	25	35	45
200	on request	63199N	69010N	62701N		
250		63200N	69011N	62702N		
300		63201N	69012N	62703N	62734N	62769N
350		63202N	69013N	62704N	62735N	62770N
400		63203N	69014N	62705N	62736N	62771N
450		63204N	69015N	62706N	62737N	62772N
500		63205N	69016N	62707N	62738N	62773N
550		63206N	69017N	62708N	62739N	62774N
600		63207N	69018N	62709N	62740N	62775N
650		63208N	69019N	62710N	62741N	62776N
700		63209N	69020N	62711N	62742N	62777N
750		63210N	69021N	62712N	62743N	62778N
800		63211N	69022N	62713N	62744N	62779N
850		63212N	69023N	62714N	62745N	62780N
900		63213N	69024N	62715N	62746N	62781N
950		63214N	69025N	62716N	62747N	62782N
1000		63215N	69026N	62717N	62748N	62783N
1100		63216N	69027N	62718N	62749N	62784N
1200		63217N	69028N	62719N	62750N	62785N
1300		63218N	69029N	62720N	62751N	62786N
1400		63219N	69030N	62721N	62752N	62787N
1500		63220N	69031N	62722N	62753N	62788N
1600		63221N	69032N	62723N	62754N	62789N
1700		63222N	69033N	62724N	62755N	62790N
1800		63223N	69034N	62725N	62756N	62791N
1900		63224N	69035N	62726N	62757N	62792N
2000		63225N	69036N	62727N	62758N	62793N
2100		63226N	69037N	62728N	62759N	62794N
2200		63227N	69038N	62729N	62760N	62795N
2300		63228N	69039N	62730N	62761N	62796N
2400		63229N	69040N	62731N	62762N	62797N
2500		63230N	69041N	62732N	62763N	62798N
2600		69000N	69042N	63147N	62764N	62799N
2700		69001N	69043N	63148N	62765N	62800N
2800		69002N	69044N	63149N	62766N	62801N
2900		80267N	69045N	63150N	62767N	62802N
3000		80268N	69046N	63151N	62768N	62803N
3200		80269N	69047N	63152N	63157N	62804N
3400		80271N	69048N	63153N	63158N	62805N
3600		80272N	69049N	63154N	63159N	62659N
3800		80273N	69050N	63155N	63160N	62807N
4000		80276N	69051N	63156N	63161N	62808N

Technical information pair of single rails

Consists of:
- Aluminium body
- 4 raceways made of non-corrosive steel
- Plastic covers for bore holes

Features:
- Free selection of guide width
- The roller shoes can be placed in between or outside the rail pair

Length:
- In one piece at all catalogue lengths and intermediate lengths
- For endless strokes the rails can be coupled

Fastening:
- With screws quality 8.8 and washers DIN433

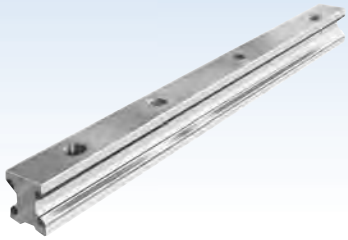
Standard

Rail body	Raceways	Fastening bores
high density anodised aluminium	non corrosive steel X65 Cr13	centered due to rail length

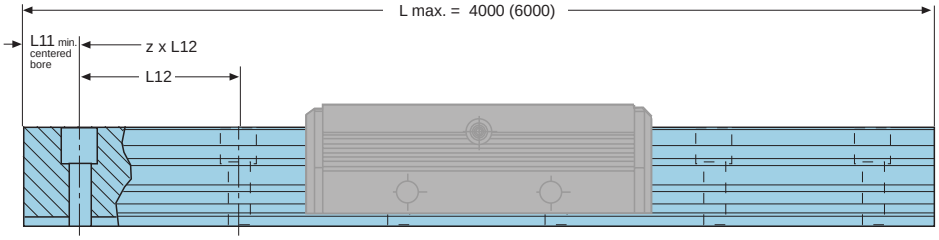
Material

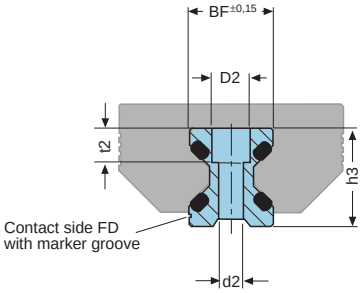
Aluminium double rail

Antimagnetic



Series FDD





Size	BF	D2	d2	h3	L11* = min	L12	t2	Weight
12	12,00	6	3,4	14,7	10	40	5,5	0,4
15	15,50	8	4,5	18,7	10	60	6,0	0,8
20	21,00	10	5,5	22,6	10	60	7,0	0,9
25	23,00	11	6,6	27,0	10	60	10,0	1,8
35	32,00	15	9,0	37,0	12	80	11,5	3,2
45	45,00	18	11,0	46,0	16	105	14,5	5,5

Dimensions [mm], Weight [kg/m]

Technical information double rail

Consists of:
- Aluminium body
- 4 raceways made of antimagnetic steel
- Plastic covers for bore holes

Features:
- Fastening screw holes centered due to rail length
- Other bore shapes on request, please consult us.

Length:
- In one piece for all catalogue lengths and intermediate lengths
- For endless strokes the rails can be coupled

Fastening:
- With screws quality 8.8 and washers DIN433

Rail body	Raceways	Fastening bores
high density anodised aluminium AlMgSi0,5F28	Duratherm	centered due to rail length

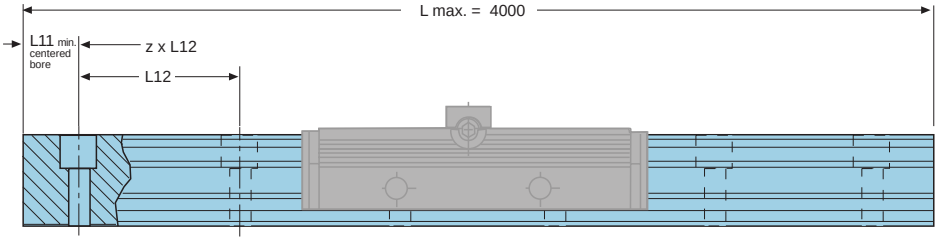
Length L [mm]	Order number Double rail for cassettes Gr. 12	15	20	25	35	45
200	on request			62554P	on request	
250				62555P		
300				62556P		
350				62557P		
400				62558P		
450				62559P		
500				62560P		
550				62561P		
600				62562P		
650				62563P		
700				62564P		
750				62565P		
800				62566P		
850				62567P		
900				62568P		
950				62569P		
1000				62570P		
1100				62571P		
1200				62572P		
1300				62573P		
1400				62574P		
1500				62575P		
1600				62576P		
1700				62577P		
1800				62578P		
1900				62579P		
2000				62580P		
2100				62581P		
2200				62582P		
2300				62583P		
2400				62584P		
2500				62585P		
2600				63132P		
2700				63133P		
2800				63134P		
2900				63135P		
3000				63136P		
3200				63137P		
3400				63138P		
3600				63139P		
3800				63140P		
4000				63141P		

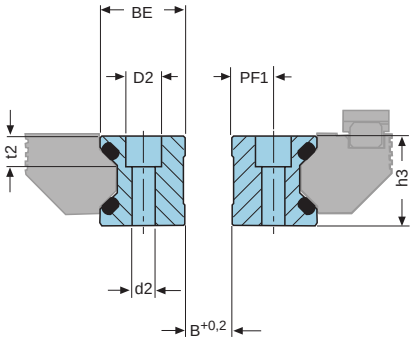
Standard

Pair of Aluminium single rails

Antimagnetic

Series FED





Size	BE	D2	d2	h3	L11	L12	PF1	t2	Weight
12	12,00	6	3,4	14,7	10	40	5,5	5,5	0,8
15	15,25	8	4,5	18,7	10	60	7,0	6,0	1,6
20	20,00	10	5,5	22,6	10	60	9,5	7,0	2,0
25	25,00	11	6,6	27,0	10	60	12,0	10,0	3,8
35	35,00	15	9,0	37,0	12	80	17,0	11,5	7,0
45	45,00	18	11,0	46,0	16	105	22,0	14,5	11,2

* B = variable guide width

Dimensions [mm], Weight [kg/m]

Length L [mm]	Order number Pair of rails Gr. 12	15	20	25	35	45
200		on request		62701P	on request	
250				62702P		
300				62703P		
350				62704P		
400				62705P		
450				62706P		
500				62707P		
550				62708P		
600				62709P		
650				62710P		
700				62711P		
750				62712P		
800				62713P		
850				62714P		
900				62715P		
950				62716P		
1000				62717P		
1100				62718P		
1200				62719P		
1300				62720P		
1400				62721P		
1500				62722P		
1600				62723P		
1700				62724P		
1800				62725P		
1900				62726P		
2000				62727P		
2100				62728P		
2200				62729P		
2300				62730P		
2400				62731P		
2500				62732P		
2600				63147P		
2700				63148P		
2800				63149P		
2900				63150P		
3000				63151P		
3200				63152P		
3400				63153P		
3600				63154P		
3800				63155P		
4000				63156P		

Technical information pair of single rails

Consists of:
- Aluminium body
- 4 raceways made of antimagnetic steel
- Plastic covers for bore holes

Features:
- Free selection of guide width
- The roller shoes can be placed in between or outside the rail pair

Length:
- In one piece for all catalogue lengths and intermediate lengths
- For endless strokes the rails can be coupled

Fastening:
- With screws quality 8.8 and washers DIN433

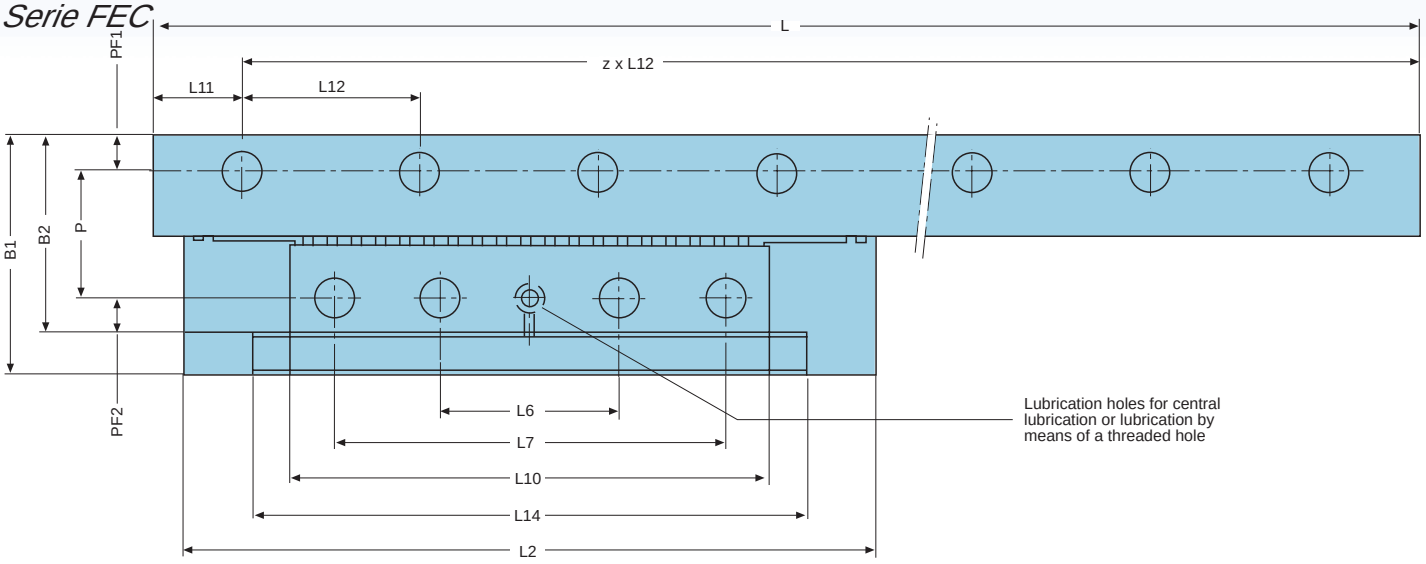
Standard

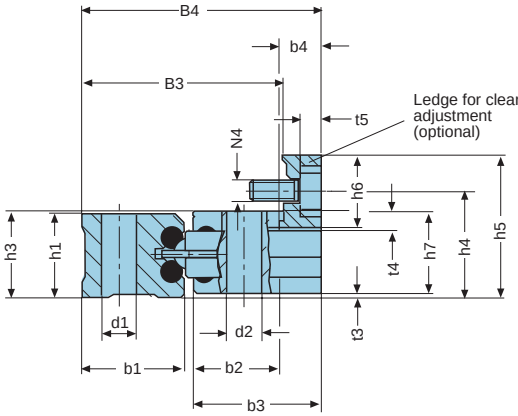
Rail body	Raceways	Fastening bores
high density anodised aluminium AlMgSi0,5F28	Duratherm	centered due to rail length

Linear guides with re-circulating elements

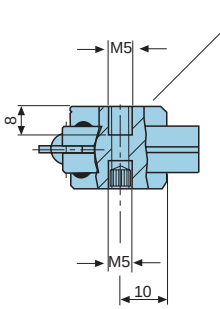
Aluminium

Serie FEC

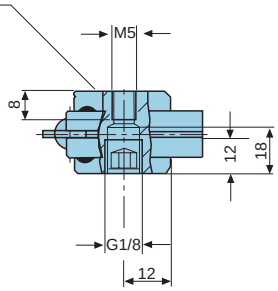




Series FEC10 / FEC13



Lubrication holes FEC10



Lubrication holes FEC13

Serie	Weight	Wide						Height				Length					
	Meter	B1	B2	B3	B4	b1	d1	h1	h3	h4	h5	Lmax.	L11	L12	P	PF1	t3
FEC10	1,9	63,0	51,4	51,4	62,9	24,4	9,0	23,8	25,0	29,4	39,4	4000	50	100	31,4	10,0	1,0
FEC13	2,9	79,5	65,1	65,1	80,1	31,6	12,0	31,2	33,0	37,2	48,7	4000	50	100	41,1	12,0	1,2

Re-circulating element, adjusting ledge

Series	Load rating 2 recir. elem. C	Weight Piece	b2	b3	b4	h6	h7	L2	L6	L7	L10	L14	d2	N4	PF2	t4	t5
FUV10	50000	0,8	24,4	36,0	11,5	20,0	22,8	194	50	110	134,2	155	9	M6	10	5,4	6,0
FUV13	81000	1,7	31,6	46,0	15,0	23,0	30,0	242	60	140	169,0	178	11	M8	12	7,6	8,0

Dimensions [mm], Load rating [N], Moments [Nm], Weight [kg]

Seal: The re-circulating elements are equipped with wipers.

Running accuracy: Best running accuracy and uniform run are achieved if the tolerances regarding parallelism and evenness of the support and the contact shoulder are within the tolerances which are determined for our guide system.

Fastening: with scews quality 8.8 washers DIN125

Load capacity: Load rating see table. We are gladly prepared to calculate load capacity and lifetime for you.

Traverse speed: Traverse speed up to 3 m/s
Acceleration up to 30 m/s≤

Mounting position: Optional

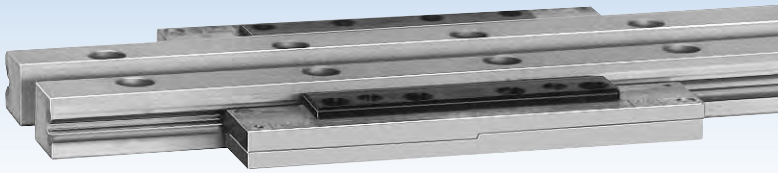
Lengths: We supply one-piece guide rails in the lengths which are given in the table as well as any intermediary length.

Friction coefficient: 0,02. With well mounted race tracks the coefficient can be reduced after 50 working hours to 0,01.

Lubrication: with bearing lubrication through lubrication nipples.
We supply re-circulating elements with lubrication bores which are closed towards the screw-on surface. If you put in the closing screws for a second time please use an appropriate sealing mean.

Material:

Rails:	aluminium
raceways:	high alloy spring steel
Re-circulating elements:	steel and zinc-diecasting body

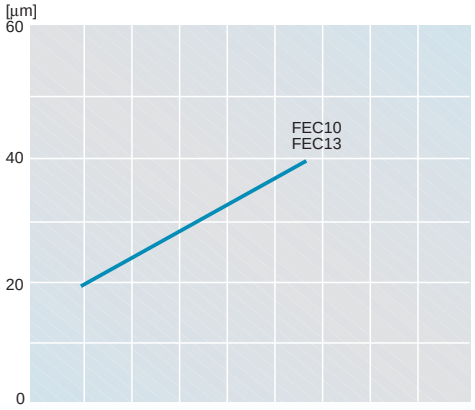


	Length [mm]	Order number Aluminium FEC10	Aluminium FEC13
Single rail			
	300	83533C	
	350	83534C	83573C
	400	83535C	83574C
	450	83536C	83575C
	500	83537C	83576C
	550	83538C	83577C
	600	83539C	83578C
	650	83540C	83579C
	700	83541C	83580C
	750	83542C	83581C
	800	83543C	83582C
	850	83544C	83583C
	900	83545C	83584C
	950	83546C	83585C
	1000	83547C	83586C
	1100	83548C	83587C
	1200	83549C	83588C
	1300	83550C	83589C
	1400	83551C	83590C
	1500	83552C	83591C
	1600	83553C	83592C
	1700	83554C	83593C
	1800	83555C	83594C
	1900	83556C	83595C
	2000	83557C	83596C
	2100	83558C	83597C
	2200	83559C	83598C
	2300	83560C	83599C
	2400	83561C	83600C
	2500	83562C	83601C
	2600	83563C	83602C
	2700	83564C	83603C
	2800	83565C	83604C
	2900	83566C	83605C
	3000	83567C	83606C
	3200	83568C	83607C
	3400	83569C	83608C
	3600	83570C	83609C
	3800	83571C	83610C
	4000	83572C	83611C
Weight	kg/m	1,9	2,9
Series		FUV10	FUV13
Recircul. elem.		84019A	84018A
Weight	kg/each	0,4	0,8
Ledge		89367A	89368A

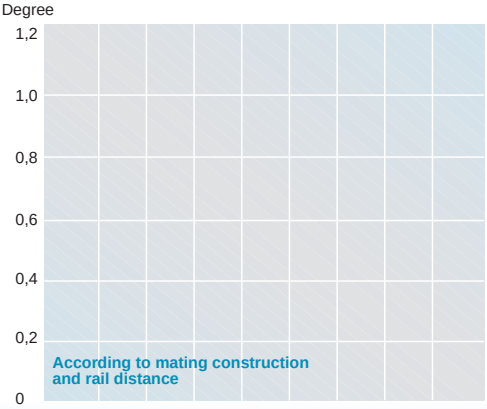
Standard

Basic body	Rollers	Wipers
Anodized aluminium AlMgSi0,5F28	100Cr6	Felt

Material



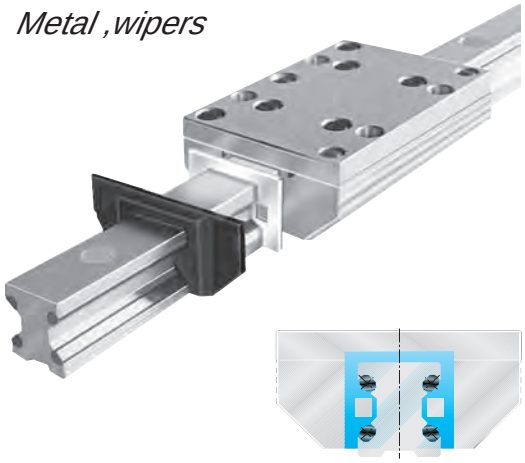
Running accuracy



Stiffness

Aluminium Roller guides

Metal ,wipers

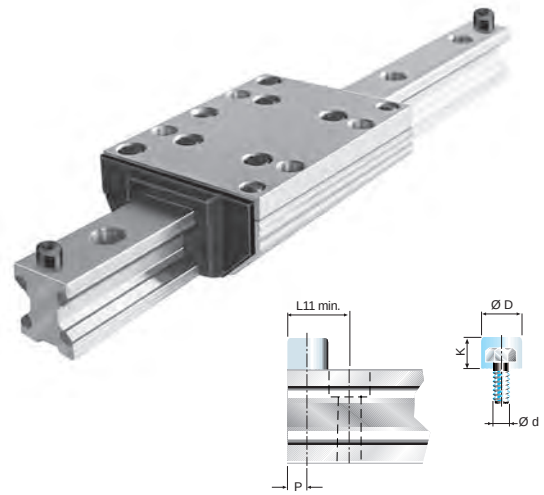


Size	Order number
12	69126A
15	69127A
20	69128A
25	69129A
35	69130A
45	69131A

Dimension [mm]

The metal wipers can be inserted into the plastic cover in addition to the standard felt wiper. They prevent the guide system from rough dirt in welding or wood working applications.

Stop screws



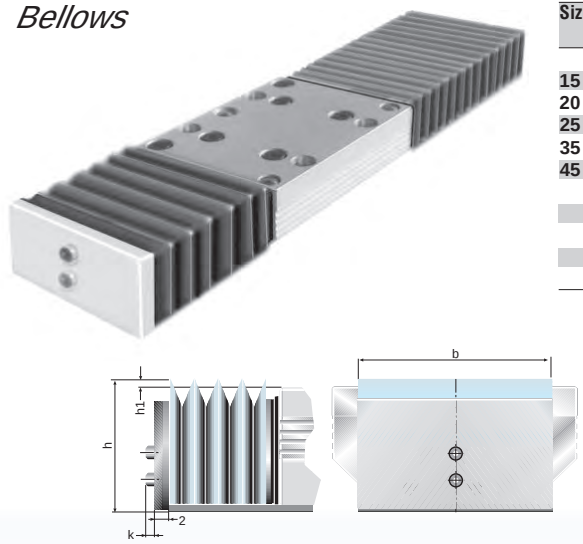
Size	d	D	K	L11 min.	P	Order number
12	M5	12	8	15,0	6,0	63504A
15	M5	12	8	16,0	6,0	63504A
20	M5	12	8	17,0	6,0	63504A
25	M6	15	10	20,5	7,5	63505A
35	M8	19	13	26,5	9,5	63506A
45	M10	24	16	33,0	12,0	63507A

Dimension [mm]

The stop screws are screwed into threads (option) on the guide rails. The stopping energy is reduced by a rubber cap. We offset the bore shape by the amount of half a bore hole spacing, with guide rails where the initial bore distances are less than L11 min.

Material: Chloroprene caoutchouc, black

Bellows



Size	b	h	h1	k	Order number
15	42	31,0	7,0	2,8	on request
20	47	35,0	5,0	2,8	on request
25	55	42,5	6,5	2,8	on request
35	68	55,0	7,0	3,5	on request
45	87	67,0	7,0	3,5	on request

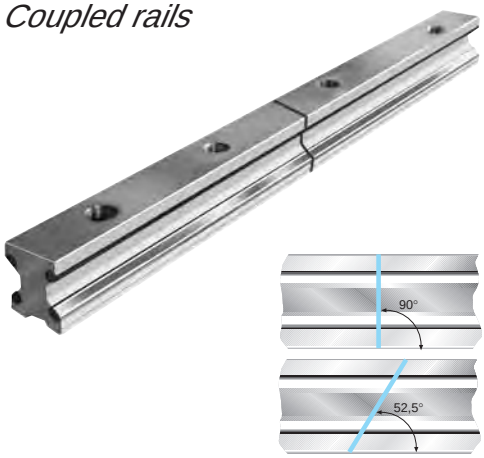
Dimension [mm]

Our bellows for aluminium roller guides protect the guide system from coarse contamination. The length is optional. Fixing on the cassette and end plate is effected by a bonded burdock zip.

Material: Synthetic fabric with polyurethane coating on one side.

Temperature: Contact warmth + 80°C radiation warmth +120°C

Coupled rails



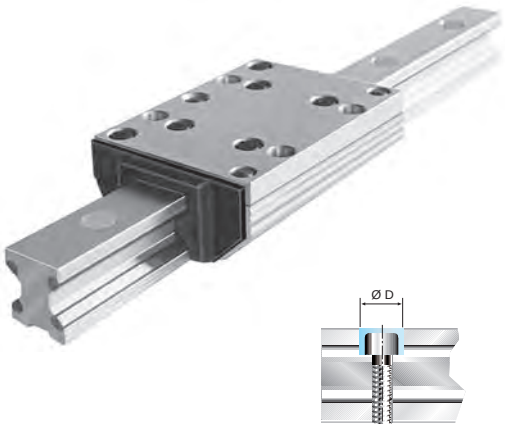
Size	Order number
12	on request
15	on request
20	on request
25	on request
35	on request
45	on request

For long strokes our rails can be coupled. The bores will be centered due to the overall rail length.

For smoother running the rail ends can be cutted with a 52,5° angle on request.

Please consult us.

Covers



Size	Cylindric srew DIN912	D	Order number
12	M3	6	87752A
15	M4	8	87753A
20	M5	10	87754A
25	M6	11	87755A
35	M8	15	87756A
45	M10	18	87757A

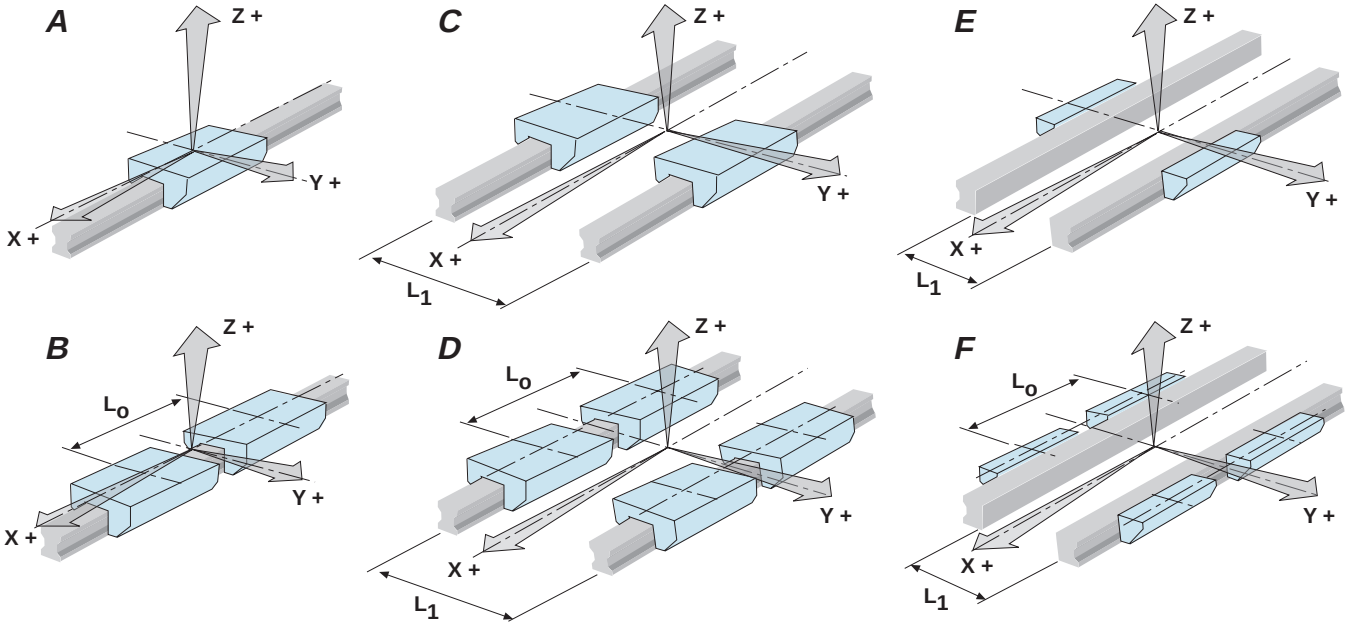
Material: To have the wipers work properly the fastening screws of the rails have to be covered.

Mounting: Put the covers into the mounting holes of the rail. Cover the rail by means of a plastic plate and hammer the covers evenly into the rails with a plastic mallet, remove the burrs. The covers are supplied together with the rails.

Wear resistant plastics,resistant to oil and ageing.

Your application

Company:	**Application:** short description:
Name:	
Department:	
Address:	
Telefon:	
Telefax:	
Email:	
Branch:	



Arrangement: A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ Series: _____

Length: L_o and L_1 L_O = L_1 =

Forces: always from the cassette plate (centre of coordinate system)

		Static	Dynamic
+ or -	F_X + or -Y - coordinates (+ or -)Z - coordinates (+ or -)	☐	☐
+ or -	F_Y + or -X - coordinates (+ or -)Z - coordinates (+ or -)	☐	☐
+ or -	F_Z + or -X - coordinates (+ or -)Y - coordinates (+ or -)	☐	☐

Example: + F_X = 100 N + x = 100 mm -y = 500 mm ☒ ☐

The loads resulting from accelerations have to be calculated by $F_A = m \cdot 9{,}81\ m/s^2$

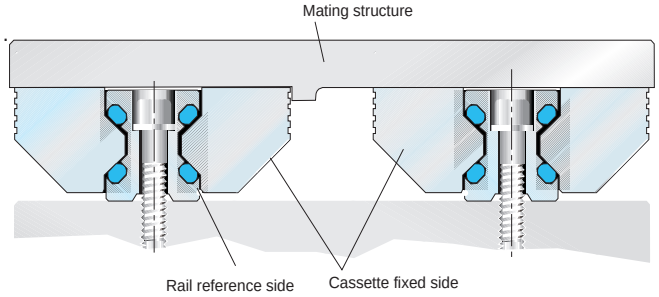
Mounting position: ☐ Horizontal ☐ Vertical

Environment: ☐ Humidity ☐ High temperature ☐ Rough dirt ☐ Impact

Please return the filled copy

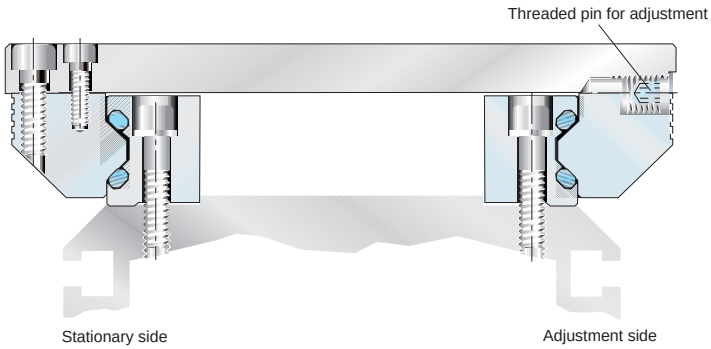
1. Construction hints

1.1 Double rail and cassette



With double track arrangement precise alignment in terms of parallelism and height is necessary.

1.2 Single rail and roller shoes



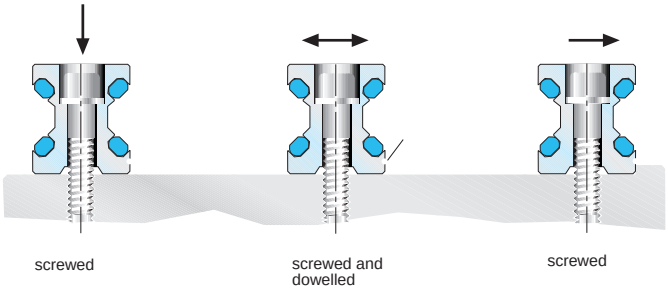
Aluminium roller guides consisting of single rails and roller shoes can be varied in the guide width. They are excellently suitable for assembly on profiled aluminium carriers, because their corrosion and temperature behaviour is homogenous.

2. Mounting instructions

The usable load capacity is influenced by the connection between the guide elements and the mating structure.

2.1 Double rails and cassettes

Depending on the load situation double rails should either be screwed or screwed and dowelled, resp. be put into grooves or against a shoulder.



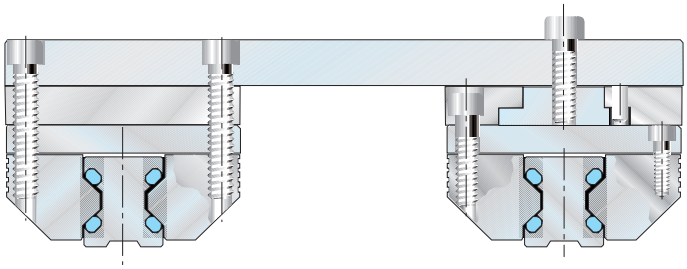
The rails rest against shoulders and are screwed resp. screwed and dowelled to the mating structure. After final checking of the linearity resp. parallelism the screws are tightened alternately from the centre outwards with the given torque.

Afterwards the total stroke distance is passed with the cassette. If it runs in uniform motion the mounting process can go on.

2.2 Stationary and movable rest side

With multitrack arrangement we recommend you to define a stationary and a movable side of the guide.This way tolerances in parallelism can be compensated best.

The example shows how this setup can be arranged.
Afterwards the slider is moved along the guide path. When the movement is uniform you can proceed with mounting.



With this multitrack arrangement the movable side of the bearing is equipped with driver and locking device. The floating slider plate has a stationary and a movable rest side. The stationary side has the guiding function the movable side compensates tolerances in parallelism and height.

We recommend you to place the drive immediately near the guiding side because this side has to sustain the driving torque.

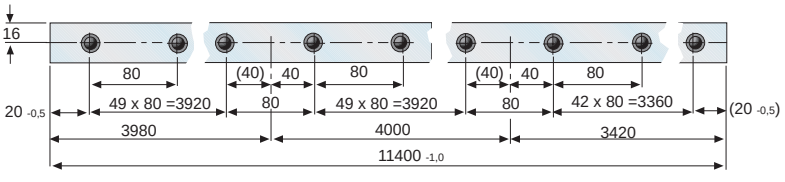
2.3 Single rails and roller shoes

Where single rails and roller shoes are used the mating structure takes the function of the slider.
The guide rails are put against the contact shoulder and screwed resp. screwed and dowelled. After the final control of linearity resp. parallelism the screws are tightened alternately starting from the centre outwards. Afterwards the slider is moved along the guide path. When the movement is uniform you can proced with mounting.

2.4 Spacing

Coupled rails with a length over L=4000mm resp. 6000mm are coupled together according to the Franke standard. Spacing according to the Franke standard guarantees an uniform bore shape over the whole guide length and its optimum utilisation.

Spacing according to Franke standard e.g. FDK35 - 11400



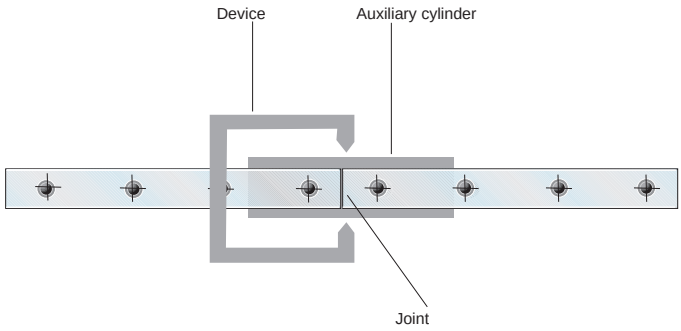
For further mounting proceed as described under point 2.1.

2.5 Mounting

Clean contact and rest surfaces then put the rails lose on the guide path one behind the other one. With this the correct sequence of the production numbers has to be kept. (e.g. ....1....2....3.....4 etc.) The marking groove on the lower surface of the rail has always to be on the same side.

Now the complete guide path is aligned without gap and slightly fastened. The joints are to be aligned exactly. This is effected best by means of two auxiliary cylinders (length 200 mm). They are inserted into the raceway at the joints and clamped with a device.

For further mounting proceed as described under point 10.1.



Size	Auxiliary cylinder Ø mm
12	11
15	11
20	14
25	16
35	27
45	35

3. Guide selection / Adjustment

3.1 Size of the guide system

To select the right guide size first the moments and forces acting on the bearing have to be determined. The guide size can be calculated with our calculation programme which you can download from our homepage.

Recommended safety (with screws quality 8.8):
Thrust load S > 1,2
Tensile load S > 2,5
Moment load S > 4,0

Generally the first decision has to be whether the guide system should be built with double rails and cassettes, or whether individual rails with roller shoes are to be used. Hereby there are a number of variants.

3.2 Screwed connections

The units are fixed to the mating structure by the bore holes in the rails and the guides. Hereby the srew quality should be 8.8, washers DIN433.

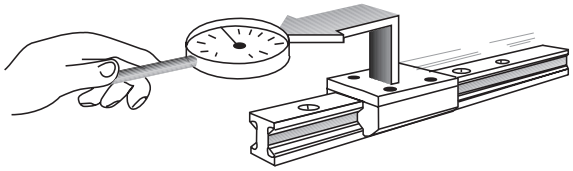
To secure the screwed connections we recommend you to use suitable locking means.

Tightening moments:

	Quality 8.8 [Nm]
M3	1,1
M4	2,5
M5	5,0
M6	8,5
M8	21,0
M10	41,0
M12	71,0

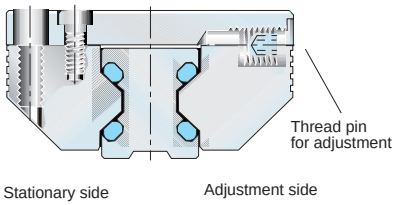
3.3 Slide resistance / adjustment

Aluminium roller guides are adjusted in such a way that the required stiffness under load is obtained. We recommend you to measure the slide resistance as shown below. However, before doing so the mating structure should be checked for dimensional accuracy and flatness.



The cassettes which are mounted on the rails are adjusted clearance-free ex works. This adjusting mode refers to the point on the rail where the cassette moves most smoothly. Adjustment is effected in the non-loaded condition. The adjustment forces are shown in the diagramms on the product pages in this catalogue.

3.4 Double rail and roller shoes



With multitrack arrangement the movable side of the bearing is equipped with driver and locking device. The floating slider plate has a stationary and a movable rest side. The stationary side has the guiding function, the movable side compensates tolerances in parallelism and height.

We recommend to place the drive closely near the guiding side because this side has to sustain the driving torque.

3.5 Single rails and roller shoes

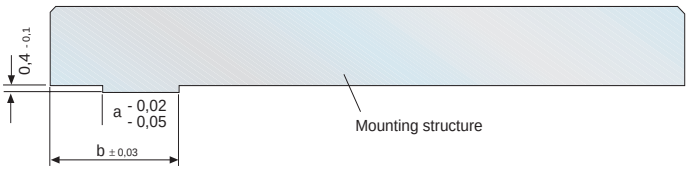
Where single rails and roller shoes are used the mating structure takes the function of the slider.

The guide rails are put against the contact shoulder and screwed resp. screwed and dowelled. After final control of linearity resp. parallelism the screws are tightened alternately starting from the center outwards. Afterwards the slider is moved along the guide path. When the movement is uniform you can proceed with mounting.

Principally clearance setting is effected in unloaded condition.

Centering groove on the stationary side

The roller shoes are provided with centering grooves for better alignment during mounting. If you want to use it you need centering shoulders according to the data given below.



Size	a	b
12	4,5	9,6
15	5,0	12,6
20	7,5	16,1
25	10,5	17,6
35	12,5	26,1
45	15,5	31,1

3.6 Running accuracy

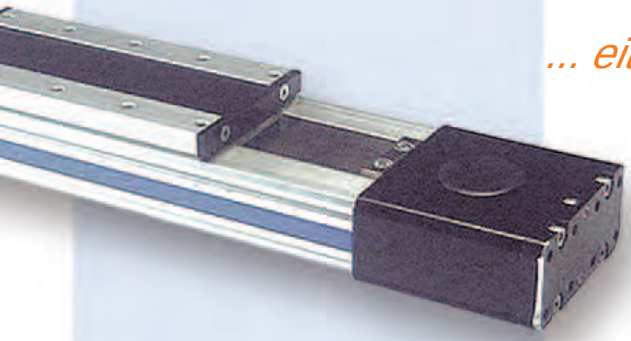
The running accuracy is measured from the screw-on-surface of the cassette to the ideal straight line of stroke. It is 0,06 mm along the whole stroke length.

3.7 Contact and support surfaces

The contact and support surfaces exert an substantial influence on functioning and precision of linear guides. Depending on the functional requirements of the system the mating structure has to be machined with the corresponding degree of precision, because machining errors on the mating structure are added to the running errors of the guide system. In order to guarantee troublefree functioning we recommend to observe a max. accumulated deviation of < 0.1 mm per running meter of the guide distance on the mating structure.

There are many positioning systems ... but the Franke system is the most versatile

... either linear tables or linear modules



1. Positioning, automation, production with the innovative Franke technology

Franke linear modules of the series TLH and TLP are equipped with the proven components of the aluminium roller guide and combine high transfer speeds with low weight and compact design.
The drive is produced either by means of a toothed belt or by a spindle. Stroke lengths up to 7 m and many accessories make Franke linear modules very versatile and competitive motion units.

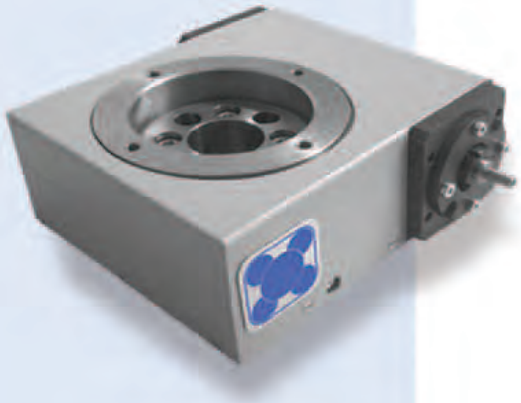
2. Linear modules of series TLP

Optionally with toothed belt or spindle drive
Franke linear modules of series TLP are based on the proven Franke aluminium roller guide. The cassette rests on a closed aluminium profile and can be driven either by a spindle or a toothed belt. The drive unit is totally encased. The two versions are available in stroke lengths up to 3400mm and are convince the customers by their favourable price.

3. Compact, strong and totally encased:

Linear tables of series TSA with re-circulating ball guide
These are the power units of our programme: the new linear tables of series TSA with Franke re-circulating ball guide from aluminium. High precision and load capacity are the outstanding features of these tables which are mainly used e.g. in positioning and machining of work pieces.
The programme is completed by other series of linear tables which are found on the following pages. All series can be combined with each other thus producing multi-axis units.

... or rotary tables



4. Franke rotary tables for precise rotations

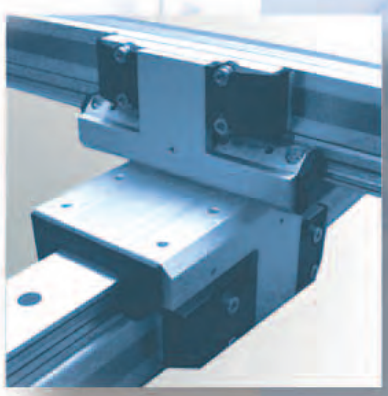
Franke antifriction bearings are integrated in our high-grade rotary tables. There are several series comprising a wide range of tables e.g. high-precision tables for measuring and testing tasks, or splash-proof variants for rough operating conditions, or a very compact, economically favourable table for high RPMs.
All tables can be equipped with motors; and if you use our special adapting and mounting plates they fit perfectly into the Franke positioning kit. Franke positioning systems are freely programmable motion units and are mainly used in the construction of machines and equipment.

...specific solutions for optimum performance in particular branches

Machine building

The feeding of grinding discs or the application of sealing material on complicated contours are application examples where Franke linear and rotary tables perform at a high level. Bearing and guide systems are well protected against environmental influences by metal covers or bellows.

The movable parts rest on the 4-point bearing system thus providing high load capacity for loads from whatever direction.



Pick & Place / Robots

compact
light
modular

The modular design of linear tables enables them to be adapted perfectly to any application. Numerous adapter parts and accessories complete the products to a kit. Particularly our modules of series TLH impress the customers by their versatility and their compact mounting dimensions.

Even long stroke distances are bridged without problems and work pieces or tools are quickly put to the desired place. Strong toothed belts provide quick propulsion. The light aluminium basic bodies together with the large rollers and the guide units accelerate very quickly in an energy-saving way.

Portal robots

fast
versatile
performing

Franke linear modules are also used in light robot portals for quick machining work. They are light and sturdy and form a perfect symbiosis with the aluminium carriers. If you use them together with a centre support which is available as accessory, they take the function of a girder.

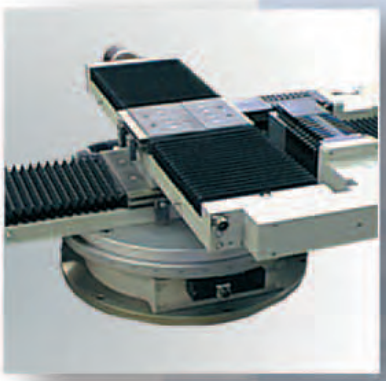
The integrated aluminium roller guide guarantees trouble-free running and maintenance-free operation during the whole lifetime.

Institutes and Research

high-precision
combinable
ready-to-use

In the research sector Franke positioning systems are well-known products. There are many applications for Franke components in spectrometers, climate chambers, laser positioning, and the orientation of samples.

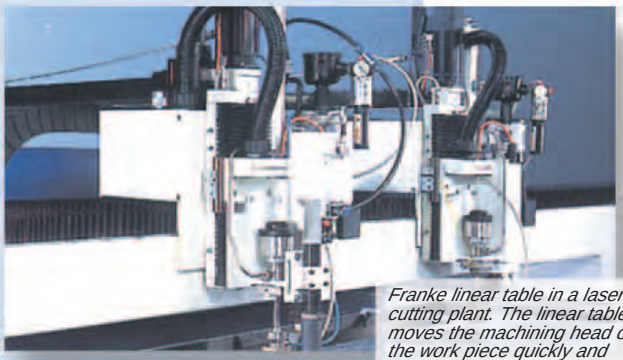
Linear and rotary tables can be adapted individually to the requirements. Where they are combined with electronic systems, software, and accessories the designer obtains complete units which are ready for use in research and experimentation.
Famous universities range among the users of Franke systems.



Measuring and testing technique

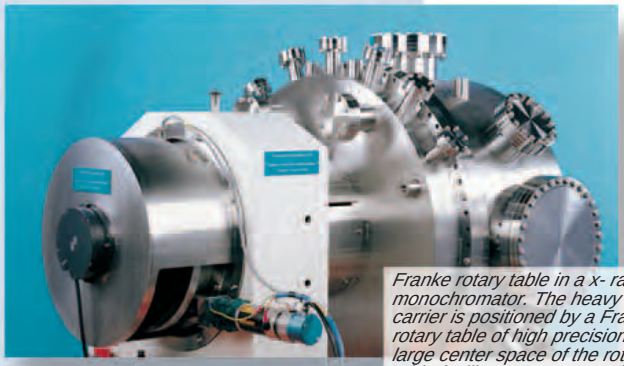
Measuring and testing of material samples often demand multi-axis setups with very high positioning accuracy. Our systems are used for example in 3 dimensional computer tomographs and laser applications. With Franke positioning systems the volume data of samples and work pieces are analysed in an easy and economically favourable way.

Application examples Positioning systems



Franke linear table in a laser cutting plant. The linear table moves the machining head over the work piece quickly and precisely. The positioning accuracy is about 0.01 mm.

(Photo Trumpf/SWS)



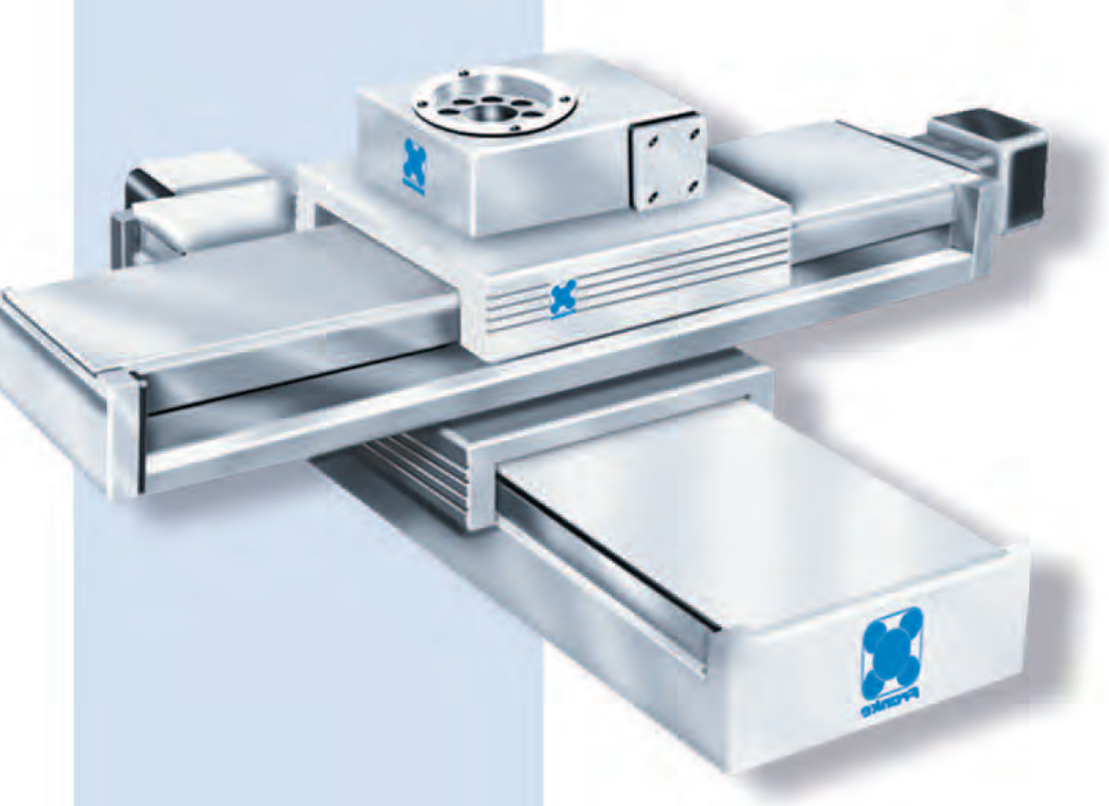
Franke rotary table in a x- ray monochromator. The heavy sample carrier is positioned by a Franke rotary table of high precision. The large center space of the rotary table facilitates easy centering of the x-ray.

(Photo Vacuum Gener.)

Franke positioining systems comprise several series of linear modules, linear tables and rotary tables. In addition we supply precision roller tables for manual displacement. Sturdy guide blocks with or without pneumatic drive complete our programme.

The modular design of the components facilitates the set-up of multi-axis positioning systems.

Well-performing CNC control systems complete our programme offering ready-to-use units completely mounted and well adapted to the intended application.

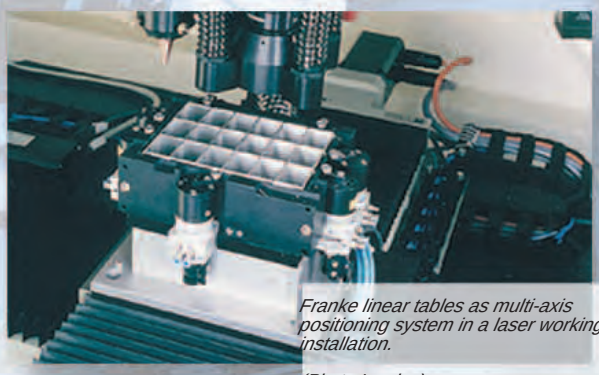


... visit our website

www.franke-gmbh.com

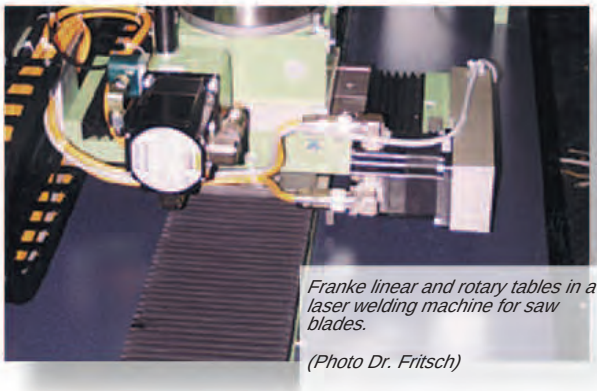
Franke linear tables in a pin-mounting machine. The metal cover of the tables protect the guide system against pins that fall down from the mounting plate.

(Photo Autosplice)



Franke linear tables as multi-axis positioning system in a laser working installation.

(Photo Innolas)

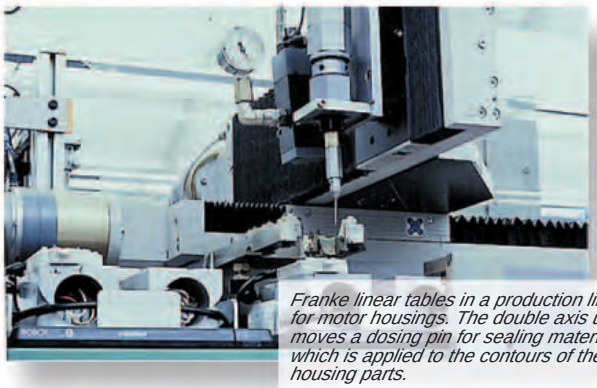


Franke linear and rotary tables in a laser welding machine for saw blades.

(Photo Dr. Fritsch)

Franke rotary tables for positioning climatic chambers. The investigation chamber is moved along 2 axes. The silent vibration-free run guarantees troublefree measuring results.

(Photo Litef)



Franke linear tables in a production line for motor housings. The double axis unit moves a dosing pin for sealing material which is applied to the contours of the housing parts.

(Photo SWF)

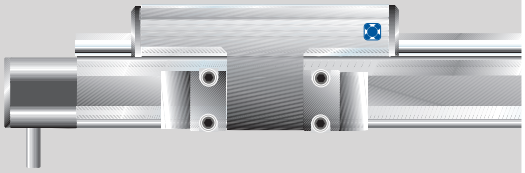
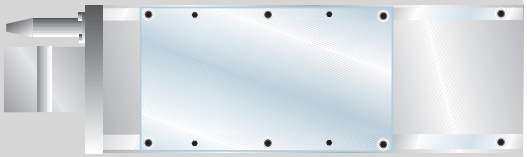
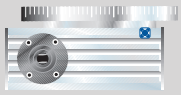
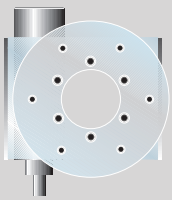
Franke linear modules of series TLPin a water torch. The cutting head is displaced by means of the modules according to the shape instructions.

(Photo MARBACH)

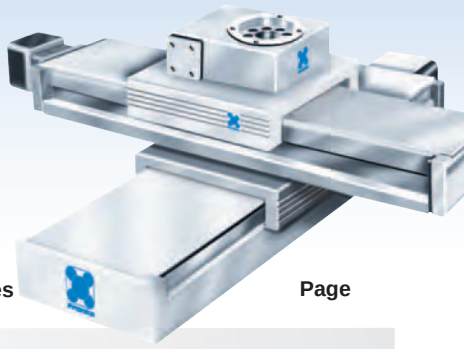
Franke linear table in a laser portal for versatile machining tasks. Due to the clearance-free adjustment the displacement is accurate to the spot.

(Photo SITEC)

Survey of Franke Positioning systems

	Series	Features	Capacity	Precision	Speed	Flexibility
Linear modules						
	**Linear module TLP**	*the flexible* Linear modules with toothed belt or spindle drive and outer aluminium roller guide for highly dynamical applications up to 5m/s with light and medium loads. Very smooth and silent run.	◐	◔	●	◔
	**Linear module TLH**	*the powerful* Compact linear modules with integrated aluminium roller guides and toothed belt drive. Suitable for high speed up to 10m/s, dynamic acceleration up to 40m/s^2.	◔	◔	●	●
Linear tables						
	**Linear table TLA light series**	*the economical* Compact linear modules with integrated roller guide and spindle drive. Aluminium body with metal cover. For light and medium loads with high requirements for positioning and repetitive accuracy.	◔	◔	◑	●
	**Linear table TSA Heavy duty**	*the heavy-duty* Linear tables with recirculating elements and spindle, aluminium body and bellows. For maximum loads and very high requirements for positioning and repetitive accuracy.	●	●	◑	◔
Rotary tables						
	**Rotary tables TSD**	*the rotating* Franke 4-point-contact-bearings in aluminium housings with worm gear and transmission from 18:1 to 360:1. Either for high loads or high RPMs. Splash-proof versions, high precision.	●	●	◑	◔
						
CNC-control system						
	**CNC-control system**	*the controlling* CNC/SPS-control units for 1 to 8 axes. Wide selection range and individual design of the technical features. Hard- and software especially for your application, ready-to-use with Franke positioning systems such as linear modules and tables.				

● top ◔ very good ◐ good ◕ soph



Toothed belt
Linear motor
Spindle
Worm gear

Stroke/resp. diameter [mm]
0 200 500 1000 2000 4000 7000

Load rating [kN]
5 10 15 20 25 30 35

Page

82- 83

84 - 85

86 - 87

88 - 89

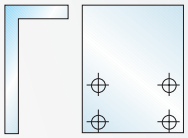
90 - 92

93 - 95

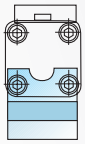
Accessories

Page

Mounting angle



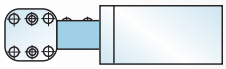
Central support



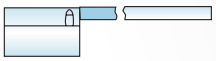
Connection shaft

96 - 100

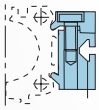
Motor fastening



Elec. connection



T-groove connection

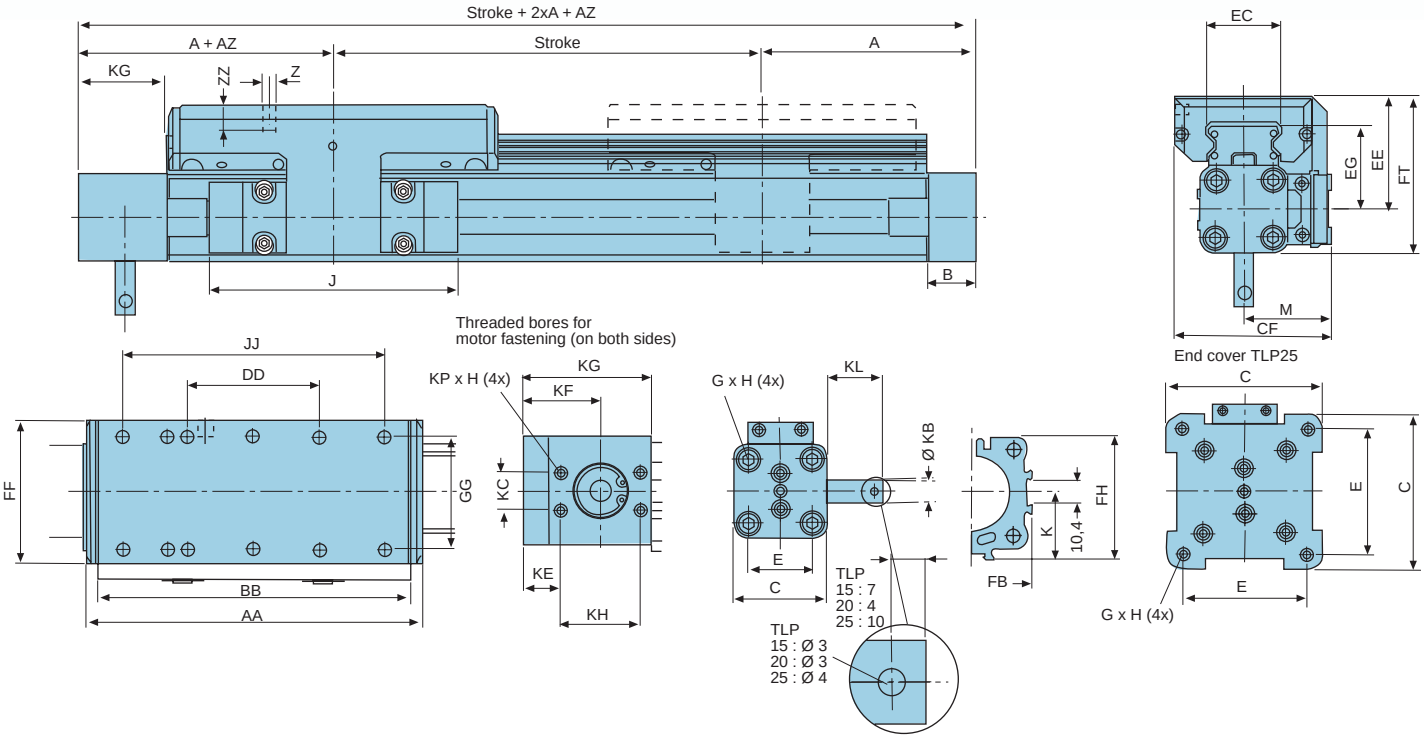


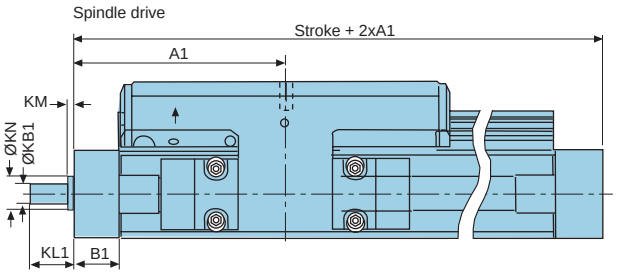
isted

Linear modules

The Flexible

Series TLP15R-25R with toothed belt drive





Series	A	A1	B	B1	C	E	G	H	J	K	M	Z
TLP15	125	100	22	22,0	41	27	M5	10	117	21,5	40,5	M6
TLP20	150	125	25	25,5	52	36	M6	12	152	28,5	49,0	M6
TLP25	200	175	25	33,0	87	70	M6	12	200	43	62	M6

Series	Load rating		AA	AZ	BB	DD	CF	EC	EE	EG	FB	FF	FH	FT	GG	JJ	KB	KB1 ^{h7}	KC	KE	KF	KG	KH	KL	KL1	KM	KN	KP	ZZ
	Co	C																											
TLP15	7500	5900	154	10	144	60	72,5	32,5	53	39	40	64	39,5	73,5	50	120	10_{j6}	6	15	22,0	37,0	57	30	24	17	2	13	M5	12
TLP20	8500	6700	197	11	187	80	91,0	42,0	62	48	52	84	51,7	88,0	64	160	10_{j6}	10	18	17,5	36,5	61	38	26	31	2	20	M6	12
TLP25	23700	16900	276	24	266	120	117,0	63,0	75	57	76	110	77,0	118,5	90	240	16_{j6}	15	32	23,5	48,5	85	50	34	43	3	28	M8	16

Dimensions [mm]

Consist of:
- Anodized Aluminium body
- External Aluminium roller guide
- Integrated toothed belt

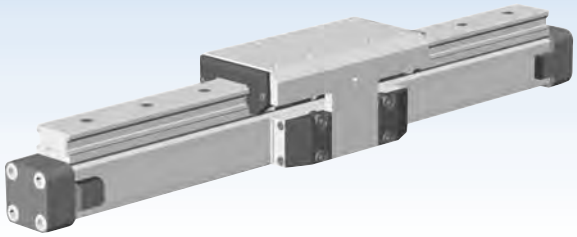
Features:
- Fast and dynamic movements
- Light and compact design
- Cassettes with felt seal
- Strokes up to 3400 mm
- Toothed belt inside aluminium housing with steel cover
- Temperature range -30°C up to 80°C
- Low maintenance due to lifetime lubrication

Load capacity:
- See survey on page 80-81
- We are gladly prepared to calculate the loads in your application

Options:
- Motor-/gear assembly by hollow shaft
- Custom specified Motor-/gear assemblies
- With stepper- or servomotors
- Counterwise actuating direction (1) or bi-parting version (2 carriers)
- Unit switches fixed at dovetail grooves
- Multi axis assemblies including intermediate drive shafts, adapter plates and profile mountings
- Solutions for integrated Automation applications including
- Franke CNC/PLC-controller (1-8 axis)

Material: Grooved profiled tube from aluminium, anodized, toothed belt from polyurethane steel cord fabric, belt wheels from aluminium, cover tape from corrosion-free tempering steel, roller guide, and slider from anodized aluminium, rolling elements from ball bearing steel 100 Cr 6, carrying rail from anodized aluminium and steel.

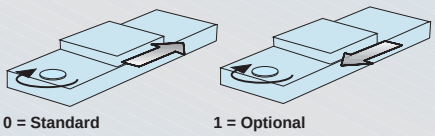
Further Informations: accessories, technical information page 99-101

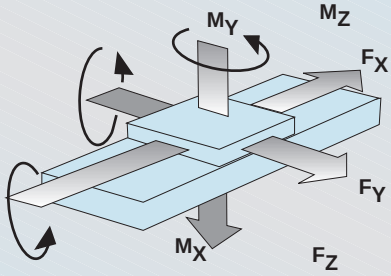


		Stroke [mm]	Order number TLP15 with tooth belt	TLP15 with spindle	TLP20 with tooth belt	TLP20 with spindle	TLP25 with tooth belt	TLP25 with spindle
Linear modules		100	92700A	92700S	92734A	92734S	92768A	92768S
total length: Stroke + 2 x A + AZ		200	92701A	92701S	92735A	92735S	92769A	92769S
		300	92702A	92702S	92736A	92736S	92770A	92770S
		400	92703A	92703S	92737A	92737S	92771A	92771S
		500	92704A	92704S	92738A	92738S	92772A	92772S
		600	92705A	92705S	92739A	92739S	92773A	92773S
		700	92706A	92706S	92740A	92740S	92774A	92774S
		800	92707A	92707S	92741A	92741S	92775A	92775S
		900	92708A	92708S	92742A	92742S	92776A	92776S
		1000	92709A	92709S	92743A	92743S	92777A	92777S
		1100	92710A	92710S	92744A	92744S	92778A	92778S
		1200	92711A		92745A	92745S	92779A	92779S
		1300	92712A		92746A	92746S	92780A	92780S
		1400	92713A		92747A	92747SB	92781A	92781S
		1500	92714A		92748A	92748S	92782A	92782S
		1600	92715A		92749A	92749S	92783A	92783S
		1700	92716A		92750A	92750S	92784A	92784S
		1800	92717A		92751A	92751S	92785A	92785S
		1900	92718A		92752A	92752S	92786A	92786S
		2000	92719A		92753A	92753S	92787A	92787S
		2100	92720A		92754A		92788A	92788S
		2200	92721A		92755A		92789A	92789S
		2300	92722A		92756A		92790A	92790S
		2400	92723A		92757A		92791A	92791S
		2500	92724A		92758A		92792A	92792S
		2600	92725A		92759A		92793A	92793S
		2700	92726A		92760A		92794A	92794S
		2800	92727A		92761A		92795A	92795S
		2900	92728A		92762A		92796A	92796S
		3000	92729A		92763A		92797A	92797S
		3100	92730A		92764A		92798A	92798S
		3200	92731A		92765A		92799A	92799S
		3300	92732A		92766A		92800A	92800S
		3400	92733A		92767A			
Performance:								
Max. exerted force (N)		F_z / F_y		857		1171		3111
Max. moment (Nm)		M_y, M_z / M_x		55/18		91/36		313/139
Load rating: stat. / dyn.		Co / C		3400/4200		5400/5400		15100/13500
Max speed		(m/s)	2	0,25	3	0,25/0,5	5	0,25/0,5/1,25/2,5
Linear way per revolution of motor		(mm)	60	5	60	5/10	100	5/10/25/50
Max. RPM of drive axis		(min $^{-1}$)		2000		3000		3000
Max. acting force F_x	< 1 m/s	(N)	55	250		600		1500
at speed	1-2 m/s	(N)	50	250	150	600	425	1500
	> 2 m/s	(N)	-	-	120	-	375	-
Max.permissible driving moment	< 1 m/s	(Nm)	0,9	-	100	1,5/2,8	300	4,2/7,5/20/20
at speed	1-2 m/s	(Nm)	0,9	0,6	2,3	-	10,0	-
	> 2 m/s	(Nm)	-	-	2,0	-	9,5	-
Max. acceleration / retardation		(m/s^2)	10	10	1,8	10	7,5	10
Repetitive accuracy		(mm/m)		±0,05	10	±0,05	10	±0,05
Positioning accuracy*		(mm/m)		±0,15		±0,15		±0,15
Running accuracy		(mm)		±0,03		±0,03		±0,03
Mass (stroke Ø) / add. per 100mm / carriage		(kg)		18/0,43/0,75	1,9/0,36/0,75	3,7/0,7/1,18	8,2/1,32/2,5	8,8/1,01/2,5

* depending on several factors

Running direction

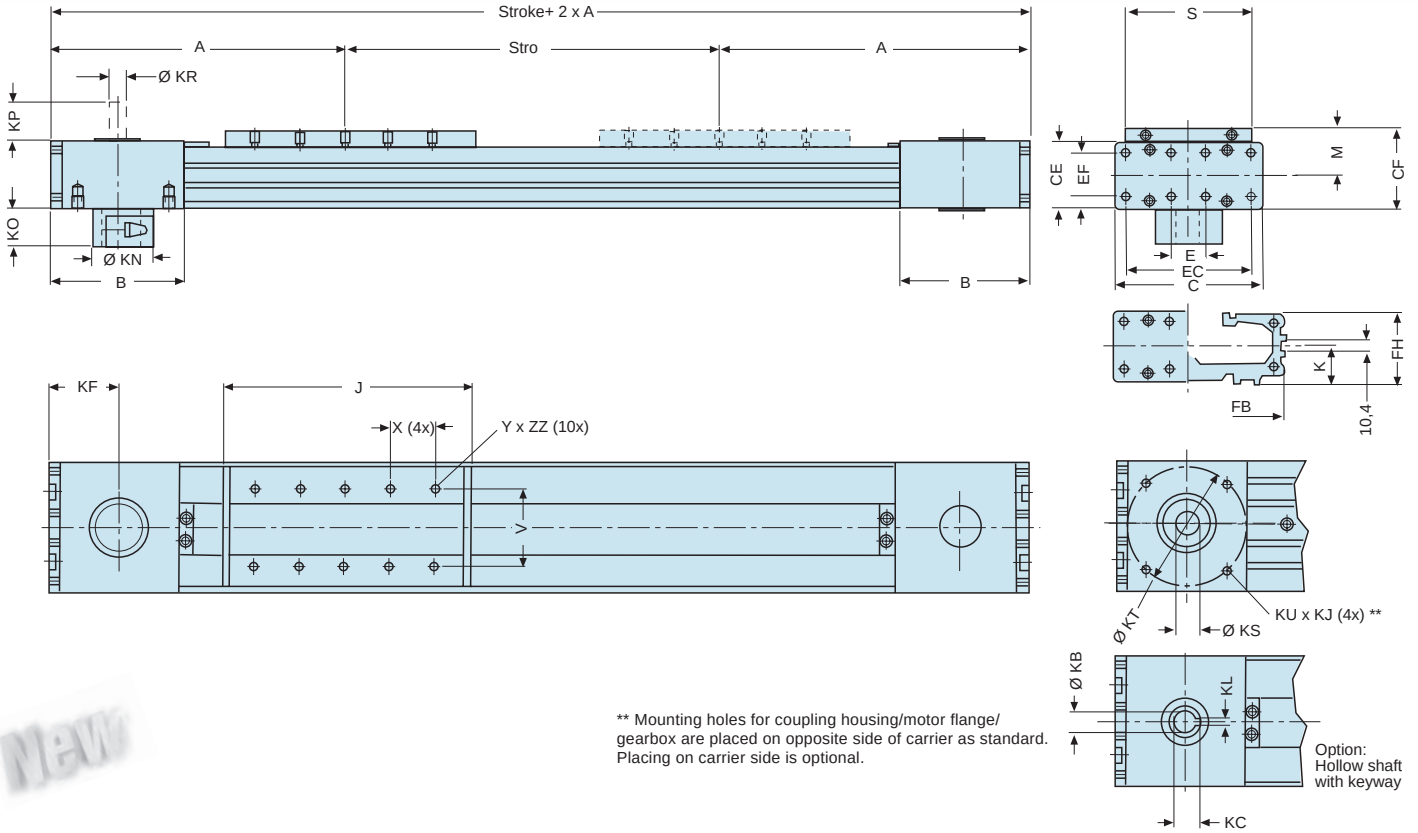




Linear modules

The Powerful

Series TLH15 - 35



New

** Mounting holes for coupling housing/motor flange/ gearbox are placed on opposite side of carrier as standard. Placing on carrier side is optional.

Series	Dimensions																												
	A	B	C	E	G	H	J	K	M	S	V	X	Y	CE	CF	EC	EF	FB	FH	KF	KB*	KC	KL	KJ	KN	KO	KP	KR	KS*	KT	KU	ZZ
15	218	88	93	25	M5	10	178	21,5	31	85	64	40	M6	42	52,5	79	27	92	39,5	49,0	16^{H7}	18,3	5	8	34	21,7	30	16^{h7}	16^{H7}	82	M8	8
20	262	112	116	28	M6	12	218	28,5	38	100	64	40	M6	56	66,5	100	36	116	51,7	62,0	22^{H7}	24,8	6	12	53	30,0	30	22^{h7}	22^{H7}	106	M10	10
35	347	147	175	18	M6	12	263	43,0	49	124	90	60	M6	87	92,5	158	70	164	77,0	79,5	32^{H7}	35,3	10	19	75	41,0	35	32^{h7}	32^{H7}	144	M12	10

Dimensions [mm] * other dimensions for KS andKB on request

Components:
- Slotted profile with dovetail grooves
- Integrated aluminium roller guide
- Integrated toothed belt drive

Characteristics:
- High speed and accelerations
- Compact design
- Strokes up to 7000 mm
- Ideal for multi-axis applications
- Aluminium roller guide and toothed belt-drive in slotted profile integrated and covered with stainless steel sealing band
- Ambient temperature range: -30°C up to 80°C

Loadings:
- See performance overview
  Use our technical service for calculations

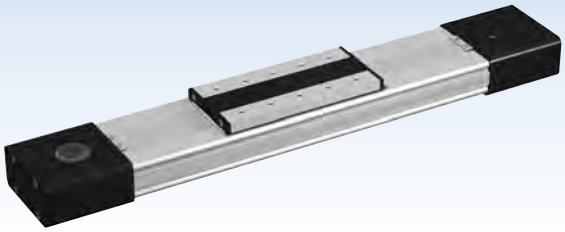
Mounting position:
- Optional. For vertical movements we recommend a brake
- Speed up to 10 m/s
- Acceleration up to 40 m/s^2

Maintenance:
- Low maintenance due to lifetime lubrication

Options:
- Integrated planetery gearbox
- Motor-/gear assembly by hollow shaft with keyway
- Custom specified motor-/gear assemblies
- With stepper- or servomotors
- Counterwice actuating direction (1) or bi-parting version (2 carriers)
- Unit switches fixed at dovetail grooves
- Multi axis assemblies including intermediate drive shafts, adapter plates and profile mountings
- Solutions for integrated automation applications including Franke CNC/PLC-controller (1-8 axis)

Material: Grooved profiled tube from aluminium, anodized, toothed belt from polyurethane steel cord fabric, belt wheels from aluminium, cover from corrosion-free tempering steel, roller guide and slider from anodized aluminium, rolling elements from ball bearing steel 100 Cr 6, carrying rail from anodized aluminium and steel, temperature range.

Further informations: accessories, technical information page 99-101.



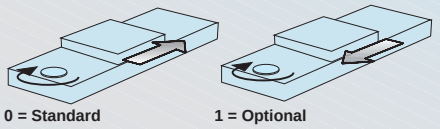
Stroke [mm]	Order number TLH15 without motor	TLH20 without motor	TLH35 without motor
100	92900A	92925A	92950A
200	92901A	92926A	92951A
300	92902A	92927A	92952A
400	92903A	92928A	92953A
500	92904A	92929A	92954A
600	92905A	92930A	92955A
700	92906A	92931A	92956A
800	92907A	92932A	92957A
900	92908A	92933A	92958A
1000	92909A	92934A	92959A
1200	92910A	92935A	92960A
1400	92911A	92936A	92961A
1600	92912A	92937A	92962A
1800	92913A	92938A	92963A
2000	92914A	92939A	92964A
2500	92915A	92940A	92965A
3000	92916A	92941A	92966A
3500	92917A	92942A	92967A
4000	92918A	92943A	92968A
4500	92919A	92944A	92969A
5000	92920A	92945A	92970A
5500	92921A	92946A	92971A
6000	92922A	92947A	92972A
6500	92923A	92948A	92973A
7000	92924A	92949A	92974A

Performance:

			TLH15	TLH20	TLH35
Load rating: stat. / dyn.		Co / C	3400 / 4200	5400 / 5400	18000 / 12500
Max. moment (Nm)		M_x, M_y, M_z	45 / 274	76 / 460	294 / 1233
Max speed		(m /s)	10	10	10
Max. acceleration / retardation		(m/s^2)	40	40	40
Max. acting force F_x	< 1m/s	(N)	1070	1870	3120
at speed	1-3 m/s	(N)	890	1560	2660
	> 3 m/s		550	1030	1940
Driving moment(without load)		(Nm)	1,2	2,2	3,2
Mass (stroke 0) / add per m / carriage		(kg)	3,8 / 4,3 / 1,0	7,7 / 6,7 / 1,9	22,6 / 15,2 / 4,7
Max.permissible driving moment	< 1 m/s	(Nm)	31	71	174
at speed	1-3 m/s	(Nm)	25	60	148
	> 3 m/s	(Nm)	16	39	108
Max. acceleration / retardation		(mm)	180	240	350
Max. speed at shaft (rpm)		(min $^{-1}$)	3000	2500	1700
Repetitive accuracy		(mm/m)	+/-0,05	+/-0,05	+/-0,05
Positioning accuracy*		(mm/m)	+/-0,15	+/-0,15	+/-0,15
Running accuracy		(mm)	+/-0,03 / 300	+/-0,03 / 300	+/-0,03 / 300

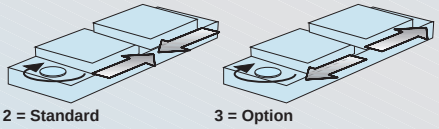
* depending on several factors

Running direction

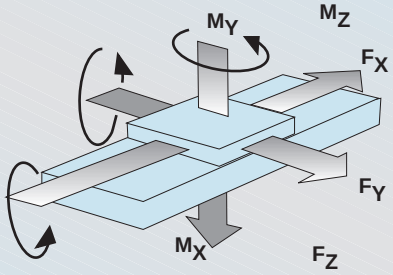


0 = Standard 1 = Optional

Bi-direct. Application



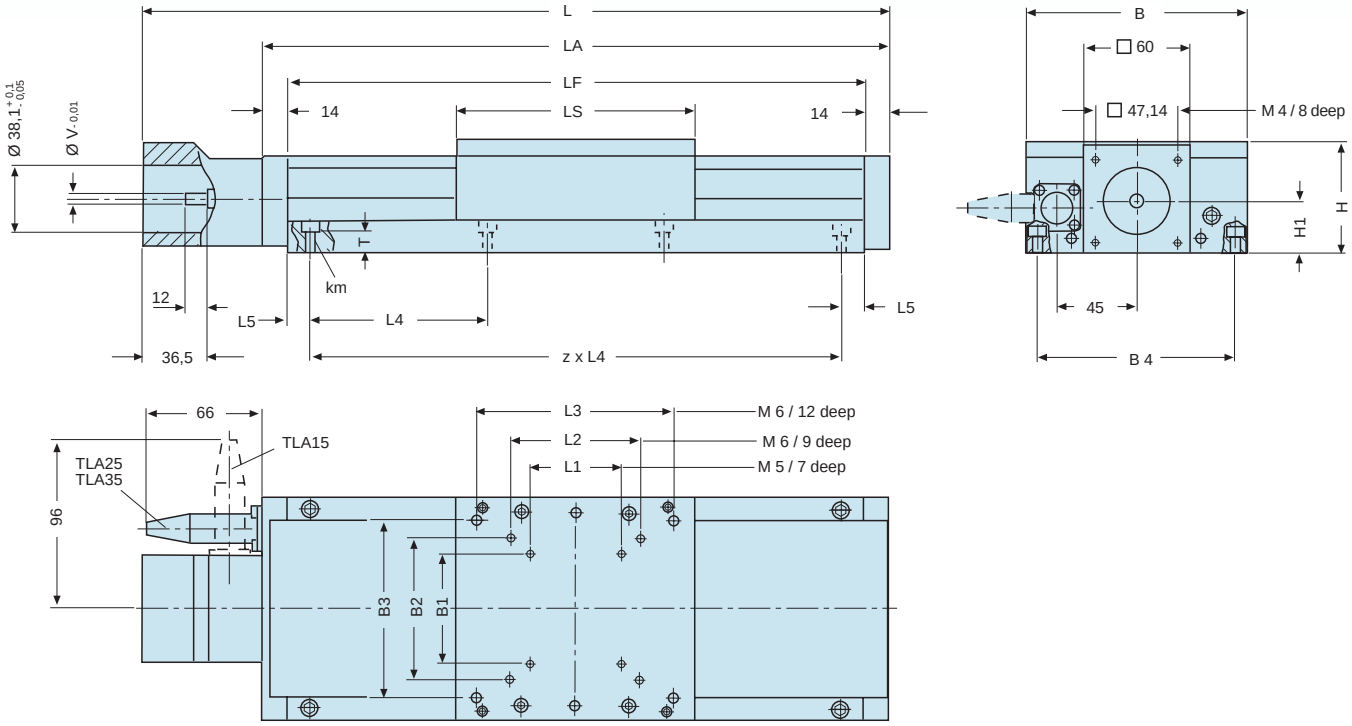
2 = Standard 3 = Option



Linear tables

The Economical with metal cover

Series TLA15 - 35



Size	Main dimensions				Bore configuration										Mount. dim. motor	
	L	LS	B	H	B1	B2	B3	B4	L1	L2	L3	L4	km DIN74	T	H1	ØV
15	352-952	135	125	63	100	-	-	112	112	-	-	100	5	6	29,0	6
25	392-992	175	165	75	100	120	-	150	112	150	-	120	6	6	31,0	6
35	452-1048	230	220	90	100	120	160	200	112	150	200	160	6	6	32,5	6

Dimensions [mm]

Consist of:
- Anodized body
- Integrated Aluminium roller guide
- Recirculating ball screw spindle drive

Features:
- Light and compact design
- Smooth and silent running
- Metal cover, metal strip
- Strokes up to 700mm

Spindle:
- Preloaded ball screw spindle, 5mm pitch
- Other spindles on request

Mounting position:
- Optional, with vertical position we recommend a brake

Positioning accuracy:
- Due to spindle pitch +/-0,05/300mm
- Other accuracies on request

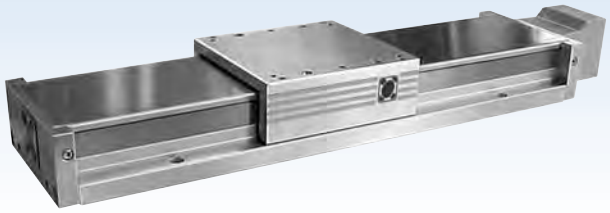
Repetitive accuracy:
- ≤ 0,01mm

Lubrication:
- Lifetime lubrication with bearing grease (see page 102)

Load capacity:
- See table (loads, moments)
- With loads without acceleration or moment loads static safety S≥3. with dynamic moments S ≥6. We are gladly prepared to calculate the static safety and lifetime in your application.

Operation temperature:
- -10°C to +75°C (other temperatures on request)

Options:
- Limit switches integrated inside the table
- Reference switches
- Adapting plates for motors of your choice
- Other motors
- Complete positioning systems including Franke CNC-control units and software (1-8 axes), see page 94-95.
- Please consult us.



TLA15

Stroke	Load rating C [N]	Moments Mcx [Nm]	Moments Mcy,Mcz [Nm]	Length L5	Length L	Length LA	Length LF	Length Z [Anzahl]	Traverse speed max. [m/min.]	RPM Spindle max. [min.-1]	Spindle-Ø x -pitch	Fast. screw DIN912 with wash. DIN433 [Anz.x Gr.]	Weight [kg]	Order number
100	3000	187	228	78	352	284	256	1	15	3000	12x5	4xM5	3,0	92600A
200	3000	187	228	28	452	384	356	3	15	3000	12x5	8xM5	3,8	92601A
300	3000	187	228	78	552	484	456	3	15	3000	12x5	8xM5	4,8	92602A
400	3000	187	228	28	652	584	556	5	15	3000	12x5	12xM5	5,6	92603A
500	3000	187	228	78	752	684	656	5	11	2200	12x5	12xM5	6,4	92604A
600	3000	187	228	28	852	784	756	7	11	2200	12x5	16xM5	7,4	92605A
700	3000	187	228	78	952	884	856	7	10	2000	12x5	16xM5	8,5	92606A

Dimensions [mm], Load rating [N], Moments [Nm]

TLA25

Stroke	Load rating C [N]	Moments Mcx [Nm]	Moments Mcy,Mcz [Nm]	Length L5	Length L	Length LA	Length LF	Length Z [Anzahl]	Traverse speed max. [m/min.]	RPM Spindle max. [min.-1]	Spindle-Ø x -pitch	Fast. screw DIN912 with wash. DIN433 [Anz.x Gr.]	Weight [kg]	Order number
100	6000	433	551	88	392	324	296	1	15	3000	12x5	4xM6	5,8	92607A
200	6000	433	551	18	492	424	396	3	15	3000	12x5	8xM6	7,0	92608A
300	6000	433	551	68	592	524	496	3	15	3000	12x5	8xM6	8,2	92609A
400	6000	433	551	118	692	624	596	3	15	3000	12x5	8xM6	9,4	92610A
500	6000	433	551	48	792	724	696	5	11	2200	12x5	12xM6	10,6	92611A
600	6000	433	551	98	892	824	796	5	11	2200	12x5	12xM6	11,8	92612A
700	6000	433	551	28	992	924	896	7	10	2000	12x5	16xM6	12,0	92613A

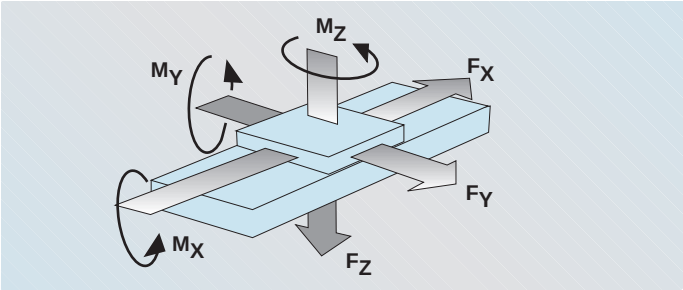
Dimensions [mm], Load rating [N], Moments [Nm]

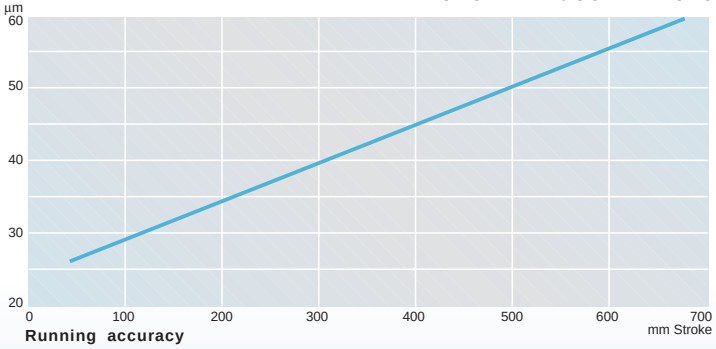
TLA35

New

Stroke	Load rating C [N]	Moments Mcx [Nm]	Moments Mcy,Mcz [Nm]	Length L5	Length L	Length LA	Length LF	Length Z [Anzahl]	Traverse speed max. [m/min.]	RPM Spindle max. [min.-1]	Spindle-Ø x -steig.	Fast. screw DIN912 with wash. DIN433 [Anz.x Gr.]	Weight [kg]	Order number
100	9000	995	1308	98	452	384	356	1	15	3000	12x5	4xM6	17,0	92614A
200	9000	995	1308	148	552	484	456	1	15	3000	12x5	4xM6	19,1	92615A
300	9000	995	1308	38	652	584	556	3	15	3000	12x5	8xM6	21,2	92616A
400	9000	995	1308	88	752	684	656	3	11	2200	12x5	8xM6	23,3	92617A
500	9000	995	1308	138	852	784	756	3	11	2200	12x5	8xM6	25,4	92618A
600	9000	995	1308	28	952	884	856	5	10	2000	12x5	12xM6	27,5	92619A
700	9000	995	1308	76	1048	980	952	5	10	2000	12x5	12xM6	29,6	92620A

Dimensions [mm], Load rating [N], Moments [Nm]

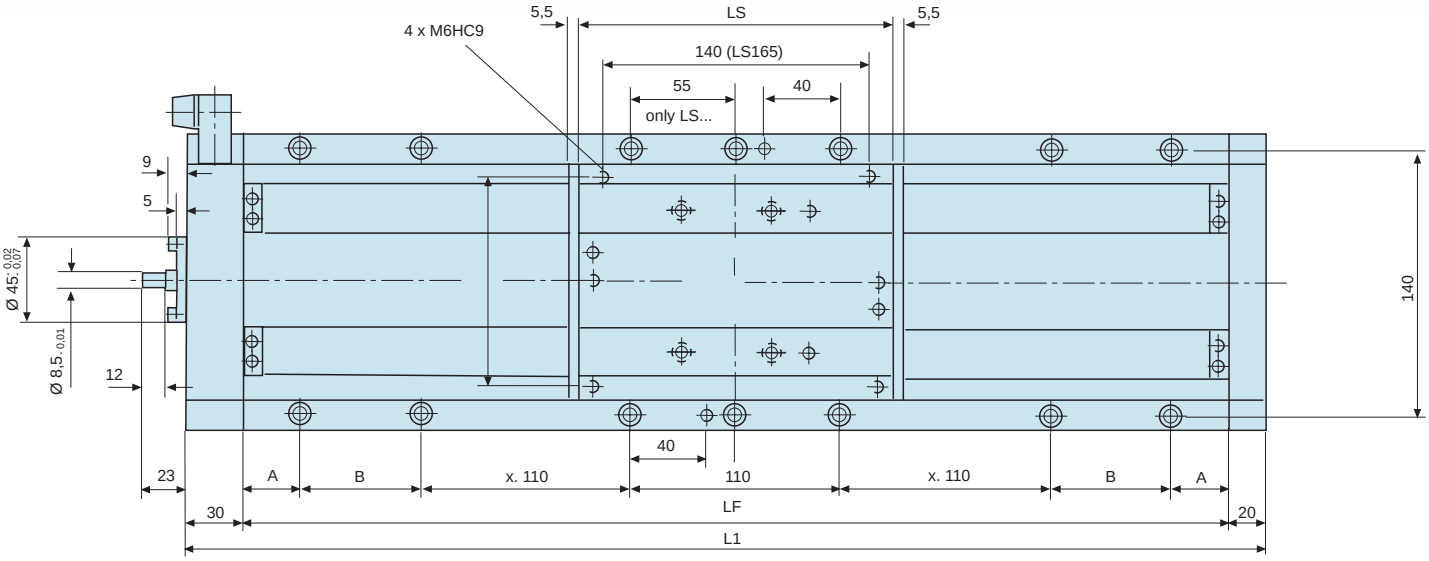


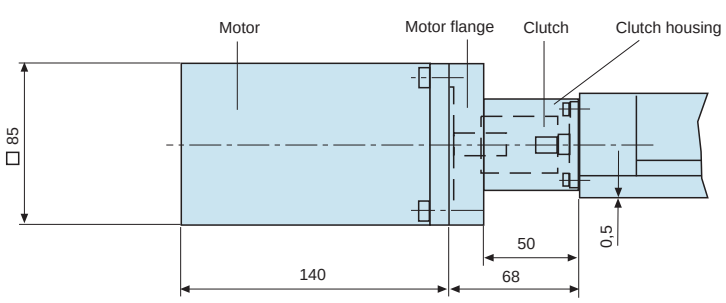


Linear tables

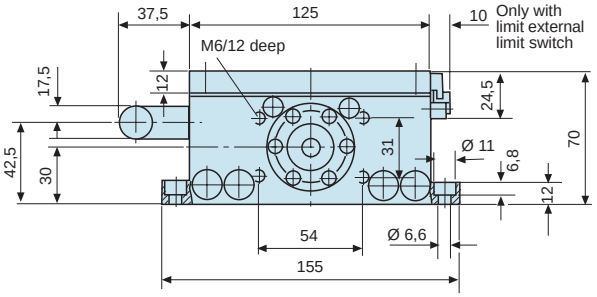
The Heavy-duty with metal cover

Series TSA06





Example: VRDM3910



Components:
- Anodized aluminium basic body
- Integrated re-circulating guide system from aluminium
- Ball screw

Features:
- Light and compact
- Smooth and silent run
- Metal cover, lateral cover by metal tape for perfect all-around protection
- Strokes up to 1500 mm

Spindle:
- Preloaded ball screw, pitch 5mm
- Other spindles respectively other pitches on request

Mounting position:
- Optional, for vertical operation we recommend a stop respectively a brake

Positioning accuracy:
- According to the spindle and pitch precision +/- 0.025/300 mm.
- Other precision on request

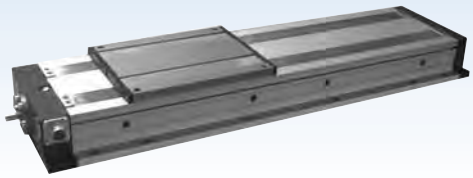
Repetitive accuracy:
- ≤ 0.01 mm

Lubrication:
- Lifetime lubrication with ball bearing grease (see also page 102)

Load capacity: see table (load rating, moments)
- With simple load without acceleration or moment loads
- Safety S≥ 3. With dynamic moment loads we recommend S≥6.

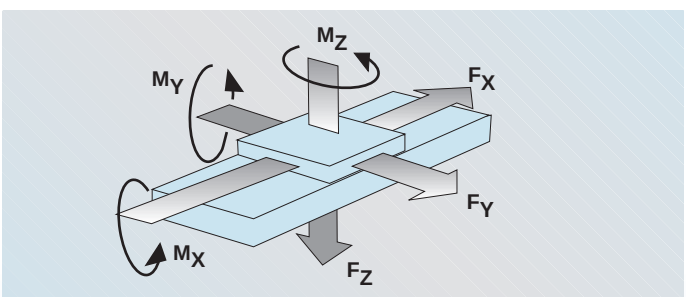
Operating temperature:
- -10 up to +75°C (enlarged temperature range on request).

Options:
- Inductive proximity switch integrated inside the table, adjusted to stroke end position
- Reference switch
- Attachment sets for motors according to the customer's demand
- Motors according to application, either stepping or AC motors
- Attachment of measuring systems (linear scale or shaft encoder)
- Complete automation units including Franke CNC/SPS control systems (1-8 axes) see page 94-95. Please consult us.

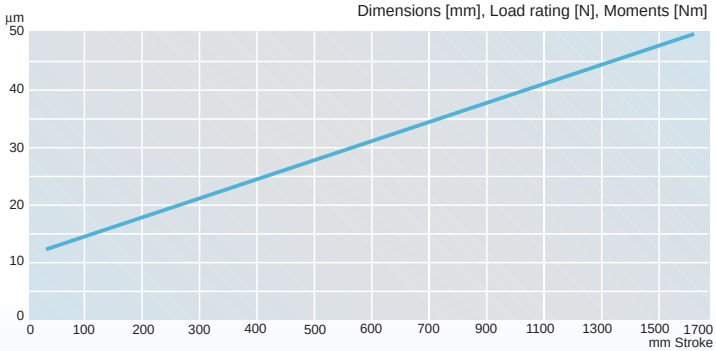


TSA06

Stroke	Load rating	Moments		Dimensions						Spindle		Speed of displ. (m/min.)		Spindle RPM (min^{-1})		Fastening Screws DIN912	Weight	Order No.
	C	Mcx	Mcy, Mcz	A	B	LS	LF$_{-0,3}$	L1	(Number) X x 110	Ø	Steig.	Stand.	max.	Stand.	max.	(No.xSiz.)		
100	15000	670	1220	30,0	72,5	165	315	365	3 x 110	16	5	8	15	1600	3000	8 x M6	6,4	92621A
200	15000	670	1220	42,5		165	415	465	3 x 110	16	5	8	15	1600	3000	8 x M6	7,5	92622A
300	15000	670	1220	92,5		165	515	565	3 x 110	16	5	8	15	1600	3000	8 x M6	8,6	92623A
400	15000	670	1220	32,5		165	615	665	5 x 110	16	5	8	15	1600	3000	12 x M6	9,7	92624A
500	15000	670	1220	82,5		165	715	765	5 x 110	16	5	8	15	1600	3000	12 x M6	10,8	92625A
700	15000	670	1220	22,5		165	915	965	7 x 110	16	5	6	14	1200	2800	16 x M6	13,0	92626A
1000	15000	670	1220	97,5		165	1215	1265	7 x 110	16	10	12	25	1200	2500	16 x M6	16,3	92627A
1200	15000	670	1220	17,5		165	1415	1465	13 x 110	16	10	8	12	800	1200	28 x M6	18,5	92629A
1500	15000	670	1220	32,5		165	1715	1765	15 x 110	16	10	6	8	600	800	32 x M6	21,8	92629A
100	30000	1380	1930			280	430	480	3 x 110	16	5	8	15	1600	3000	8 x M6	7,5	92630A
200	30000	1380	1930			280	530	580	3 x 110	16	5	8	15	1600	3000	8 x M6	8,6	92631A
300	30000	1380	1930			280	630	680	5 x 110	16	5	8	15	1600	3000	12 x M6	9,7	92632A
400	30000	1380	1930			280	730	780	5 x 110	16	5	8	15	1600	3000	12 x M6	10,8	92633A
500	30000	1380	1930			280	830	880	7 x 110	16	5	8	15	1600	3000	16 x M6	11,9	92634A
700	30000	1380	1930			280	1030	1080	9 x 110	16	5	6	14	1200	2800	20 x M6	14,1	92635A
1000	30000	1380	1930			280	1330	1380	11 x 110	16	10	12	25	1200	2500	24 x M6	17,4	92636A
1200	30000	1380	1930			280	1530	1580	13 x 110	16	10	8	12	800	1200	28 x M6	19,6	92637A
1500	30000	1380	1930			280	1830	1880	15 x 110	16	10	6	8	600	800	32 x M6	22,9	92638A



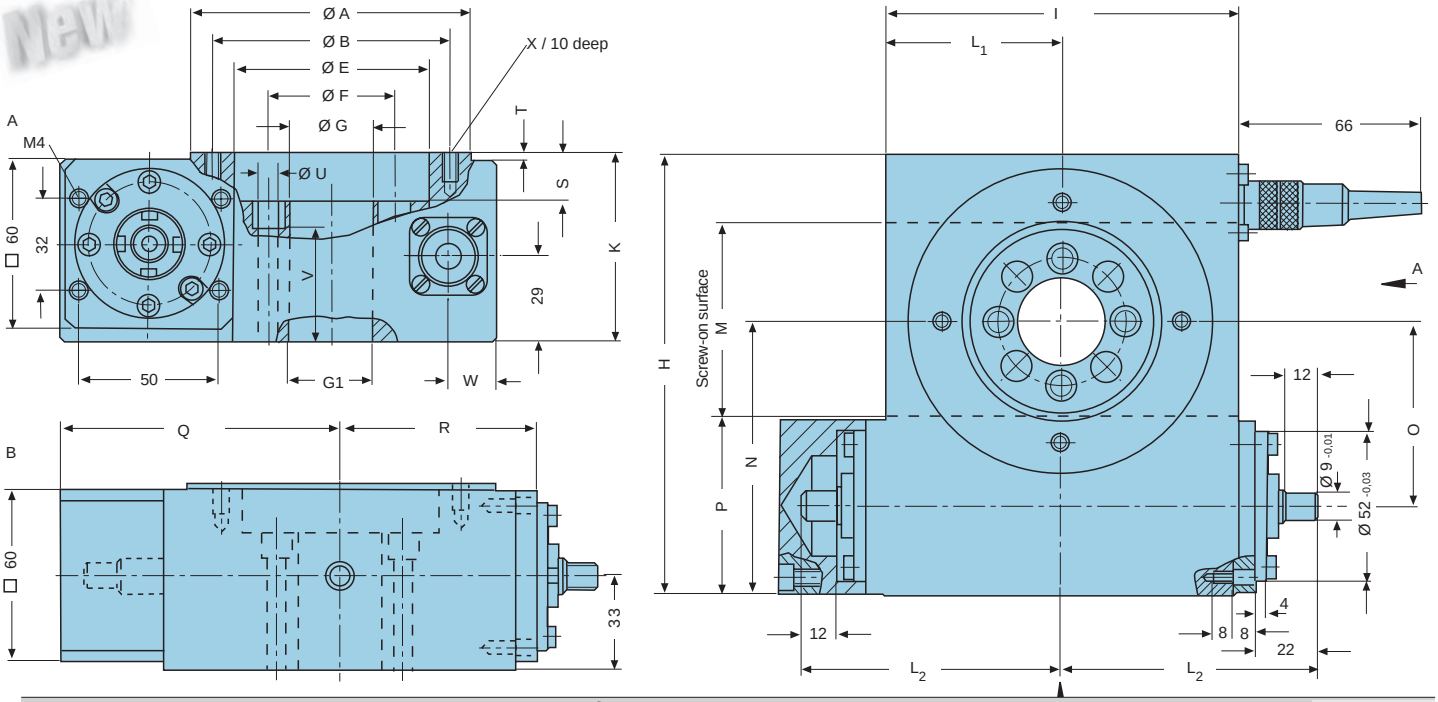
Dimensions [mm], Load rating [N], Moments [Nm]



Rotary tables

Series TSD...A

New



Nom. Ø	Load rating		Load moment	RPM input	Gear down	RPM output	max. input torque RPM	max. output torque RPM	Weight	Order no.
	C_0 (KN)	C(KN)	M_{C0} (Nm)	$N_{1\,max}$ C	i	$N_{2\,max}$ (Nm)	$M_{1\,max}$ (Nm)	$M_{2\,max}$ (Nm)	(kg)	
100	17,5	9	289	1800	18	100	5	54	5,5	91800A
200	43,0	18	433	2200	36	61	5	108	10,0	91801A

Nom. Ø																						
A	B	ØE$^{H7}/_{10\,tief}$	ØF	ØG	Ø$G_1{}^{H7}/_{12\,tief}$	H	I	K	L_1	L_2	M	N	O	P	Q	R	S	T	U	V	W	X
100	85	70	45	30	30	155	125	65	62,5	91,5	70	96,0	65,0	61	99,5	69,5	17	2	4xØ6,6	39	17	4xM6
200	175	160	130	110	110	255	220	70	110,0	139,0	165	145,5	114,5	63	147,0	117,0	22	7	6xØ6,6	39	22	4xM6

			Ø100	Ø200
Radial/axial accuracy	µm		30	30
Positioning accuracy	"	+/-	60	40
Repititive accuracy	"	+/-	10	7

Dimensions [mm]

Consist of:
- Aluminium body with metal cover of non-corrosive steel
- Integrated Franke bearing with worm gear
- Big dimensioned worm drive for long lifetime

Features:
- Light and compact design
- Suitable for high revolutions
- High load capacity
- Centre-free construction

Load capacity:
- See load rating in the table
- Static safety without levers and moments S ≥3, static safety with levers and moments S ≥6.
- We are gladly prepared to calculate the loads and lifetime for your application.

Operation temperature:
- -10°C to +80°C
- Other temperatures on request

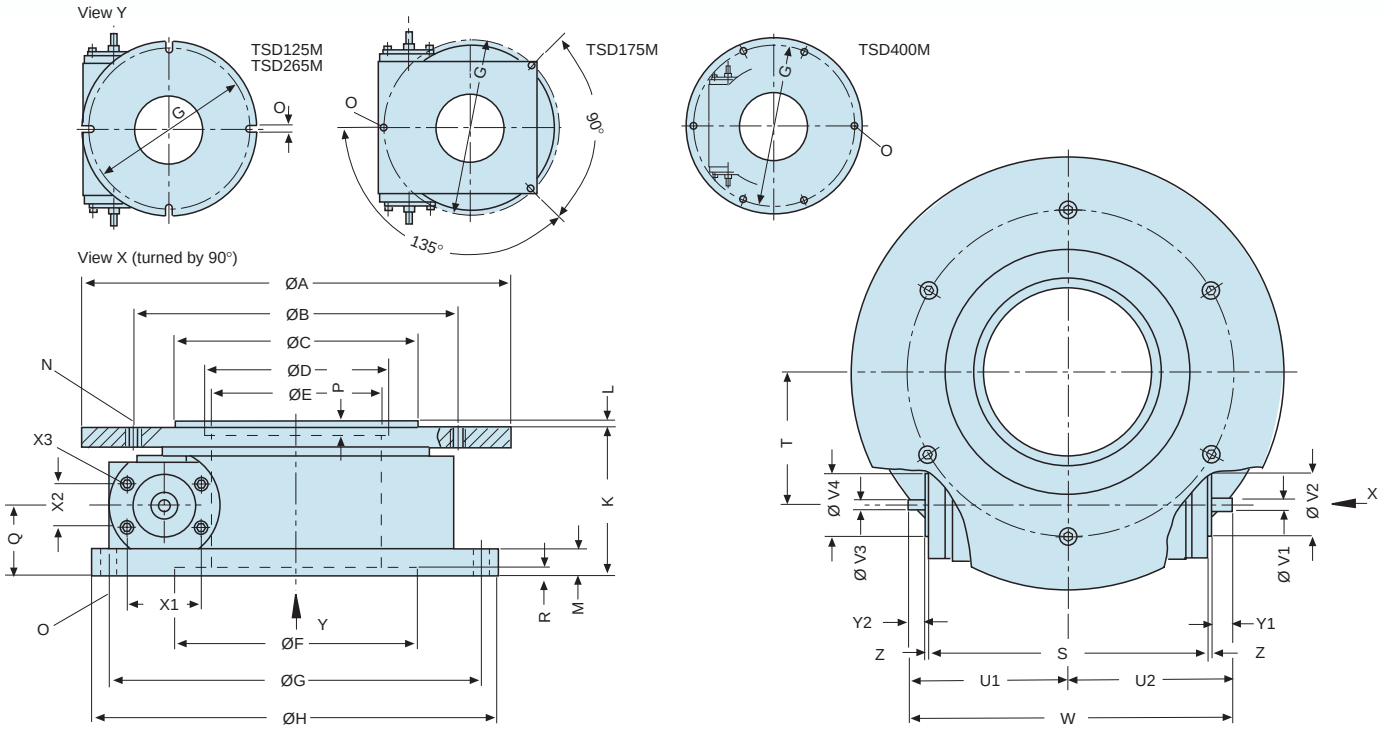
Options:
- 1 or 2 limit switches inside the table body with freely adjustable control cams
- Mounting flanges for special motors
- Stepping or servo motors according to your application
- Shaft encoder placed on the other end of the gear shaft
- Complete positioning systems including Franke CNC-control unit and software (1-8 axes), see page 94-95. Please consult us.

Lubrication:
- With bearing grease according to our maintenance instructions

Material:
Basic body: aluminium
Raceways: high alloy spring steel
Balls: steel
Worm gear: steel-bronce
Worm shaft: CK45N, ground and hardened
Housing: non corrosive steel

High performance worm gear drive in compact design

Series TSD...M



Nom. Ø A	Load rating C_0	Tilting moment C_{0M}	A	B	C^{g6}	D^{H7}	E	F^{H7}	G	H	K	L	M	N	O	P	Q	R	S	T	U1	U2	V_1^{g6}	V_2^{g6}	V_3^{g6}	V_4^{g6}	W	Weight	Order number
125	1950	110	125	100	-	70	70	100	150	165	75	-	10	4xM5	4x7,0	5	34	14	112	60	67,5	67,5	6	22	6	22	135	3	91042A
175	2550	140	175	126	-	102	70	102	178	-	82	-	12	6xM6	3x6,6	4	31	4	152	63	98,0	98,0	6	52	6	52	196	6	91043A
265	4200	310	265	200	150	-	105	150	230	250	90	4	16	6xM10	4x10,0	-	43	4	171	81	95,0	98,0	8	38	6	38	193	10	91044A
400	14100	1780	400	340	300	200	190	270	380	400	100	4	16	6xM10	6x11,0	5	43	5	229	139	124,0	127,0	8	38	6	38	251	27	91045A

Size	X_1	X_2	X_3	Y_1	Y_2	Z	Transmission	N max. [U/min]
			2 x M4/ 8 deep					
125	21,8	26,0	2 x M4/16 deep	8,0	9,0	2,8	360 : 1	7
175	50,0	32,0	4 x M4/13 deep	18,0	18,0	4,0	360 : 1	7
265	45,0	26,0	4 x M5/24 deep	10,0	7,0	2,5	360 : 1	7
400	45,0	26,0	4 x M5/24deep	9,0	6,0	2,5	360 : 1	7

Nominal-Ø [mm]		125	175	265	400
Radial / axial accuracy	µm	20	20	20	30
Positioning accuracy	" +/-	40	40	35	25
Repititive accuracy	" +/-	8	7	5	4
Max. input torque	Nm	0,7	0,9	1,5	2
Max. output torque	Nm	70	75	160	290

Dimensions [mm], Weight [kg], Load rating [N], Moments [Nm]

Consists of:
- Aluminium body with metal cover
- High precision worm drive

Features:
- Light and compact design
- High stiffness
- High accuracy
- Centre-free construction

Load capacity:
- see load rating in the table. For best accuracy und lifetime we recommend a static safety of S ≥ 3. We are gladly prepared to calculate the load situation of your application for you.

Operating temperature: -10°C to 80°C, other temperatures on request.

Adjustment:
- Antifriction bearing and precision worm gear are adjusted without clearance.

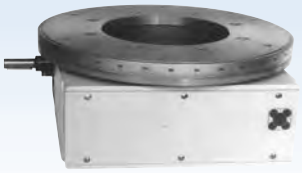
Lubrication:
- With bearing grease according to our maintenance instructions

Options:
- 1 or 2 limit switches inside the table body with freely adjustable control cams
- Mounting flanges for special motors
- Stepping or servo motors according to your application
- Shaft encoder placed on the other end of the gear shaft
- Complete positioning systems including Franke CNC-control units and software (1-8 axes), see page 94-95. Please consult us.

Material: Table body: aluminium
Raceways: high alloy spring steel
Balls: steel
Worm gear: steel-bronce
Vaccuum and partly non-magnetic version on request

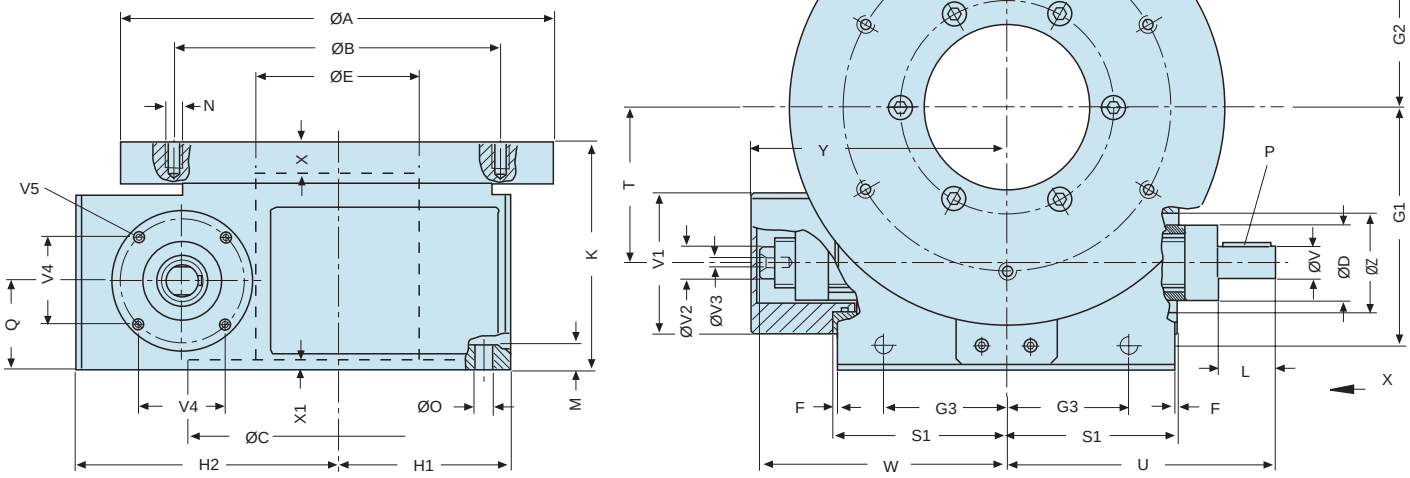
Rotary tables

robust, splash-proof



Series TSD...S

View X (turned by 90°)



Nom. Ø	Load rating	Tilting moments															Weight	Order number
A	C_{0A}	C_{0M}	A	B	C^{H7}	D	E^{H7}	F	G1	G2	G3	H1	H2	K	L	M	N		
175	2500	75	175	126	-	40	40	-	89	79	58	94	104	110	35	81*	M6,10 tief	9	91186A
265	7800	610	265	200	198	48	100	2	145	90	75	106	160	138	35	15	M10,15 tief	22	91187G
400	16000	2000	400	340	206	62	200	4	235	155	135	175	255	165	55	25	M10,15 tief	48	91214A

A	O		P	Q	S1	T	U**	V	V1	V2	V3	V4	V5	W**	X	X^1	Y	Z	
Ø	Ø							Ø	□	Ø	Ø								
175	9	DIN 6885 A4 x 4x28	47	68	53	127	12j6	80	10j6/12lg.	-	47	M6,11 tief	118	5	-	124	56^{H8}	91186A
265	11	DIN 6885 A6 x 6x30	54	105	95	164	19g6	85	19/ 9 lg. 6^{H7}/18lg.	53	M6,14 tief	151	20	6	156	60^{H7}	91187G
400	14	DIN 6885 A6 x 6x45	64	170	159	246	19j6	120	26/ 8 lg. 14^{H8}/20lg	96	M8,16 tief	220	8	12	227	90^{F8}	91214A

* Bore through housing ** Dim. U and W variables for clearance setting

Trans-mission *	N max. [U/min.]	Nominal-Ø [mm]			175	265	400
90 : 1	20 min^{-1}	Radial / axial accuracy	µm		30	40	40
		Positioning accuracy	"	+/-	50	45	40
		Repititive accuracy	"	+/-	8	7	6
		Max. input torque	Nm		1,4	4,6	8,5
		Max. output drive	Nm		70	270	580

* other transmissions on request

Dimensions [mm], Weight [kg], Load rating [N], Moments [Nm]

Consist of:
- Aluminium body with metal cover
- High precision worm drive

Features:
- Splash-proof
- High stiffness
- High accuracy
- Centre-free construction

Load capacity:
- See load rating in the table. For best accuracy und lifetime we recommend a static safety of S ≥ 3. We are gladly prepared to calculate the load situation of your application for you.

Operation temperature:
- -10°C up to +80° C. Other temperatures on request.

Adjustment:
- Antifriction bearing and precision worm gear are adjusted without clearance.

Lubrication:
- With bearing grease according to our maintenance instructions

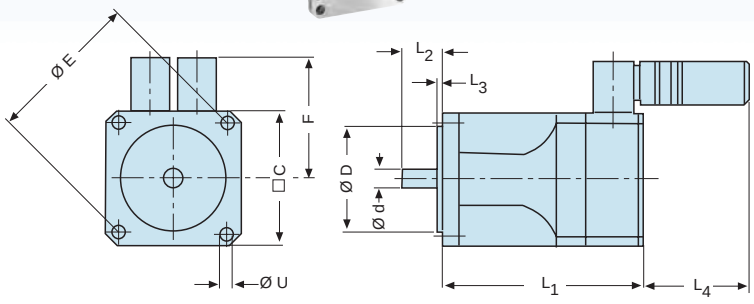
Options:
- 1 or 2 limit switches inside the table body with freely adjustable control cams
- Mounting flanges for special motors
- Stepping or servo motors according to your application
- Shaft encoder placed on the other end of the gear shaft
- Complete positioning systems including Franke CNC-control units and software (1-8 axes), see page 94-95. Please consult us.

Material: Table body: aluminium
Raceways: high alloy spring steel
Balls: steel
Worm gear: steel-bronce
Vaccuum-fit and partly non-magnetic version on request

Motors

AC-Servomotor Typ DBL.....

- Neodynium magnets for highly dynamic function
- Long life by virtue of brushless design
- Built-in resolver
- Low motor inertia
- Vibration class N according to DIN ISO 2373
- Insulation material class F according to DIN 57530
- Protection class IP 64
- Integrated sockets for resolver and power connections
- CE-conformity



Type	Main dimensions										
	C	D_{i6}	d_{k6}	E	F	L_1	L_1 (-G*)	L_2	L_3	L_4	U
..2H00040	50	40	9	63	62,5	122	155	24	2,5	75	5,8
..2H00080	50	40	9	63	62,5	152	185	24	2,5	75	5,8
..3N00130	74	60	11	90	69,5	134	167	23	2,5	75	5,8
..4N00260	97	95	19	115	81	155	190	40	3,0	75	5,8
..4N00530	97	95	19	115	81	185	220	40	3,0	75	9,0
..4N00750	97	95	19	115	81	230	265	40	3,0	75	9,0
..5N01050	127	130	24	165	-	186	229	50	3,5	-	11,0
..5N01700	127	130	24	165	-	237	280	50	3,5	-	11,0

*G = with brake

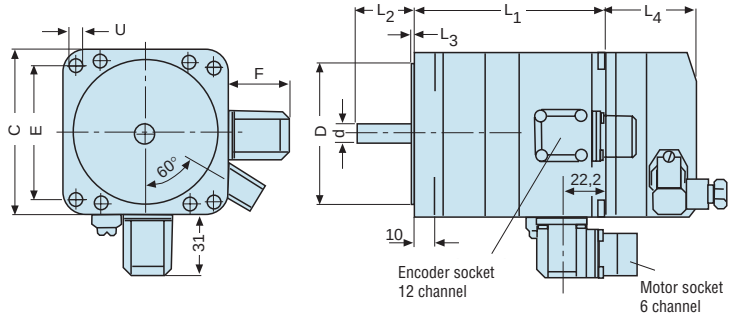
Dimensions [mm]

Rated speed	Cont. torque at stall	Motor inertia	Cont. current at stall	Peak current	Torque const.	Rated mains voltage	Holding torque*	Oper. volt.*	Nom. inertia	Weight	Order number	
n_N [min^{-1}]	M_o [Nm]	J [$kgcm^2$]	I_o [A]	I_{omax} [A]	K [Nm/A]	UN [V]	M [Nm]*	U [VDC]*	J [$kgcm^2$]*	G [kg]	Standard	incl. Brake
6000	0,4	0,08	0,93	4,30	0,43	400	1,2	24	0,07	1,1	E8022	E8023
6000	0,8	0,13	1,49	6,80	0,54	400	1,2	24	0,07	1,5	E8024	E8025
6000	1,3	0,80	1,30	7,50	0,74	400	2,5	24	0,38	2,3	E8026	E8027
3000	2,6	2,10	1,90	8,60	1,36	400	5,0	24	1,06	4,5	E8028	E8029
3000	5,3	2,80	3,20	15,00	1,65	400	5,0	24	1,06	5,7	E8030	E8031
3000	7,5	4,30	4,10	19,00	1,85	400	5,0	24	1,06	7,6	E8032	E8033
3000	10,5	8,10	6,50	30,00	1,60	400	12,0	24	3,60	9,8	E8034	E8035
3000	17,0	11,30	10,40	48,00	1,64	400	12,0	24	3,60	14,0	E8036	E8037

* Stopbrake

3-Phase stepper motor Type VDRM.....LWC

- Quiet and virtually resonance -free run
- Resolutions from 200 up to 1000 steps/rotation
- Micro-step-mode from 2000 up to 10000 steps/rotation
- Insulation material class F according to DIN 57530
- Protection class IP 56
- Integrated sockets for power connections
- CE-conformity



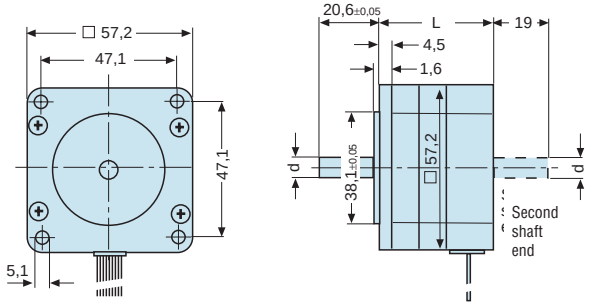
Type	Main dimensions									
	C	D_{i6}	d_{k6}	E	F	L_1	L_4	L2	L3	U
.... 368	57,2	38,1	8	47,14	31	110	41,0	21	2	5,2
.... 397	85,0	60,0	12	70,00	31	110	46,5	30	2	6,5
.... 3910	85,0	60,0	12	70,00	31	140	46,5	30	2	6,5
.... 3913	85,0	60,0	14	70,00	31	170	46,5	30	2	6,5
.... 31117	110,0	56,0	19	89,00	31	180	52,7	40	3	9,0
.... 31122	110,0	56,0	19	89,00	31	228	52,7	40	3	9,0

Dimensions [mm]

Peak torque	Cont. torque at stall	Motor inertia	max. start-frequency	Cont. current at stall	Rated mains voltage	Encoder-line count	Step count	Order number*	
M_{max} [Nm]	M_H [Nm]	J [$kgcm^2$]	F [KHz]	I_N [A]	U [V]			Standard	inc. Brake
150	174	0,38	6,0	0,8	325	1000	200/400/500 1000/2000/4000 5000/10000	E7769	E8040
200	226	1,10	5,3	1,8	325	1000		E7714	E8041
400	452	2,20	5,3	2,0	325	1000		E7593	E8042
600	678	3,30	5,3	2,3	325	1000		E7721	E8043
1200	1392	10,50	4,7	4,1	325	1000		E8038	E8044
1650	1914	16,00	4,7	4,8	325	1000		E8039	E8045

2-Phase stepper motor Type VDRM...../50-L4A

- High quality motor design
- Maintenance free, long life
- Resolution 200 or 400 steps/rotation
- Powerful technique
- Insulation material class B
- CE-conformity



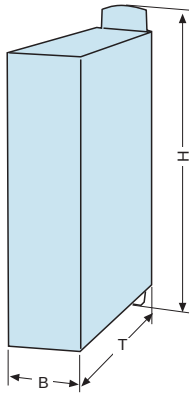
Type	Main dimensions	
	d	L
....264	6,35	41
....266	6,35	55
....268	8,00	77

Dimensions [mm]

Peak torque	Cont. torque at stall	Motor inertia	Weight	Step count	Rated mains voltage	Encoder line count	Order number
M_{max} [Nm]	M_H [Nm]	J [$kgcm^2$]	M [kg]		U [V]		
40	45	0,09	0,50	200/400	35	4	E7770
87	100	0,22	0,70	200/400	35	4	E7743
130	150	0,38	1,05	200/400	35	4	E8046

Single axis CNC-controller
Type TSC100-Servostar...

- Wide range of mains supply voltage
- Up to 20 Amps with integral mains filter
- All CE, UL and cUL conformities
- 2 analog inputs
- 6 digital in-/outputs
- Feedback from resolver or high resolution sin/cos encoder
- Integrated interface for stepper controllers
- CAN-Open integrated
- Fully programmable RS323 interface
- Integrated position controller with memory for 180 motion tasks
- Integrated interface for stepper controllers, master-slave, electrical gear, ...
- Extension soccets for PROFIBUS, I/O-extension, SERCOS, ... (optional)

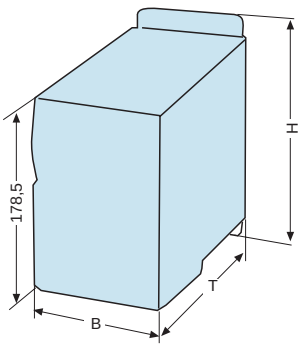


Type	Features	Rated supply voltage U_N [V]	Rated power supply (S1) P_N [kVA]	Rated output current I_N [A]	Peak output current I_{max} [A]	Dimensions H	B	T	Weight G	Order number
TSC100-Servostar 601	I_N = 1,5 A	3 x 230V$_{-10\%}$ ....480V$^{+10\%}$, 50 ...60Hz	1,0	1,5	3,0	275	70	265	4,0	**91699C**
TSC100-Servostar 603	I_N = 3,0 A		2,0	3,0	6,0	275	70	265	4,0	**91699B**
TSC100-Servostar 606	I_N = 6.0 A		4,0	6,0	12,0	275	70	265	4,0	**91699E**
TSC100-Servostar 610	I_N = 10,0 A		7,0	10,0	20,0	275	70	265	4,0	**91699F**
Optionen:										
Power supply LOGO power	24VDC / 1,3 A									**91703A**
Profibus	Profibus DP expansion cards									**91699G**
I/O-expansion card	14 dig. inputs, 8dig.outputs									**91699H**
Cable:										
Motor-/Resolver cable set	5m long, protected, with soccet									**91700A**
Motor-/Resolver cable set	10m long, protected, with soccet									**91700C**
Motor-/Resolver cable set	15m lang, protected, with soccet									**91700B**
Motor-/Resolver cable set	25m long, protected, with soccet									**91700D**
RS232-Cable	Interface cable PC-TSC100									**91702A**
Limit switch cable	5m long									**91701A**

Dimensions [mm], Weight [kg]

Single axis CNC-controller
Type TSC100-Twin Line...

- Integrated mains filters, cooler, ventilator
- CE, UL conformities
- Fully programmable RS323 interface for PC-connection optional: HMI-terminal plugable on frontside Programming system by IEC 1131
- Programming languages: KOP, FUP, AWL,...
- Integrated position controller with memory for 64 motion tasks
- Point to point mode, speed mode, electrical gear acceleration and deceleration ramps programmable integrated PLC functions
- Extension sockets for PROFIBUS, RS485... (optional)

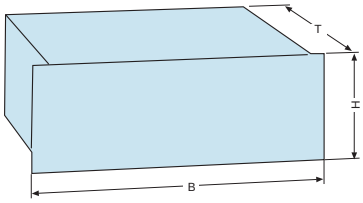


Type	Features	Rated supply voltage U_N [V]	Rated power supply P_N [kVA]	Rated supply current I [A]	Rated output current I_N [A]	Dimensions H	B	T	Weight G	Order number
TSC100-Twin Line TLC 611	I_N = 3,0 A	1 x 230V$_{+/-15\%}$ 47 ...63Hz	0,35	2,0	1,5	212,5	108	184,5	2,7	**91690A**
TSC100-Twin Line TLC 612	I_N = 7,0 A		0,75	5,0	3,0	212,5	108	184,5	2,7	**91690C**
Optionen:										
Power supply LOGO power	24VDC / 1,3 A									**91703A**
RS 485	RS485-Interface module									-
Profibus	Profibus DP -module									-
Control Tool CT	PC-programming-software									-
Cable:										
Motor cable	5m long, protected, with soccet									**91700E**
Motor cable	10m long, protected, with soccet									**91700F**
Motor cable	15m long, protected, with soccet									**91700G**
Motor cable	20m long, protected, with soccet									**91700H**
RS232- cable	interface cable PC-TSC100									**91702A**
Limit switch cable	5m long									**91701A**

Dimensions [mm], Weight [kg]

Continuous path control Type TSC320 (1-3 axis)

- Continuous path control unit to control 3 power amplifiers for stepper motors or servo motors
- Up to 3 integr. amplifiers for Servo- or stepper motors
- Integrated operating panel with foil keyboard, LCD display
- Emergency power off module
- menu driven user interface (multisignal)
- Command set for program flow control, register arithmetic, text display
- Axis management with linear-, circular- and helix-interpolation
- Integrated PLC device
- Encoder interface for incremental or absolute path measuring systems
- 20 opto decoupled inputs, 32 outputs, (24VDC max. 300mA)
- Analog voltage signal ± 10 V
- RS232 interface
- 19" design with integrated power supply



Type	Features	Dimensions			Weight	Order number
		Height (HE)	Width (")	Depth (mm)	(kg)	
TSC320-2x12/5/320R	2-axis Servo, 5A/320V	4	19	415	10	**91709A**
TSC320-3x12/5/320R	3-axis Servo, 5A/320V	4	19	415	12	**91710A**
TSC322-2x20/3/35	2-axis, 2PH-stepper motors, 3A/35V	4	19	415	10	**91711A**
TSC322-3x20/3/35	3-axis, 2PH-stepper motors, 3A/35V	4	19	415	12	**91712A**
TSC323-2x30/5.5/130	2-axis, 3PH-stepper motors, 5,5A/130V	4	19	415	10	**91713A**
TSC323-3x30/5.5/130	3-axis, 3PH-stepper motors, 5,5A/130V	4	19	415	12	**91714A**

Dimensions [mm]

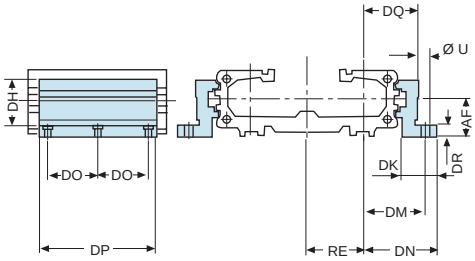
Continuous path control Type TSC400 (4-8 axis)

- Continuous path control unit to control 4 or 8 power amplifiers for stepper motors or servo motors
- Menu driven user interface with 7-inch screen or LCD-display
- Command set for program flow control, register arithmetic, text display, cutter compensation and engraving commands
- Axis management with linear-, circular- and helical-interpolation electrical gears and counter axis
- Program management on memory card 32kB to 256KB
- Integrated a PLC device (SM2) can be integrated
  Encoder interface for incremental path measuring systems
- 16 opto decoupled inputs and 8 relay outputs
- Expandable up to 64 inputs and 64 outputs
- Analog voltage signal ±10V DC
  Clock signal and direction signal up to 30 kHz
- RS232 interface
- 19" design with integrated power supply

Type	Features	Dimensions			Weight	Order number
		Height (HE)	Width (")	Depth (mm)	(kg)	
TSC420GT4-4x12/5/320R	4-axis Servo, 5A/320V	8	19	415	15	**91715A**
TSC422GT4-4x20/3/35	4-axis, 2PH-step.motor, 3A/35V	8	19	415	15	**91716C**
TSC423GT4-4x30/5.5/130	4-axis, 3PH-step.motor, 5,5A/130V	8	19	415	15	**91717A**
Software						
SM-Trans	comfortable data transfer PC to controller					**91685A**
SM-CAM	conversion program for DXF / HPGL into CNC program					**91685B**
Cable:						
Motor cable (2PH)	5m long, protected, with socket					**91700I**
Motor cable (3PH)	5m long, protected, with socket					**91700K**
Servomotor cable set	5m long, motor- und resolverkabel protected, with socket					**91700L**
Servomotor cable set	10m long, motor- und resolverkabel protected, with socket					**91700M**
RS232-cable	Interface cable PC-TSC					**91702A**
Limit switch cable	5m long					**E7703**

Dimensions [mm]

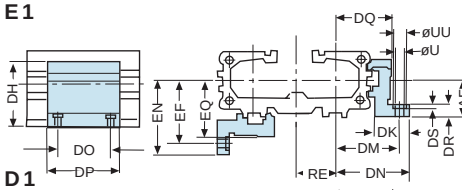
Intermediate drive shaft



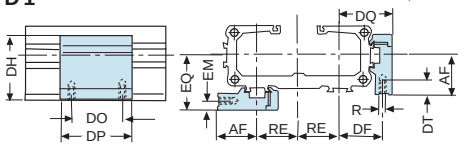
Series	Main dimensions																	Order number
	R	U	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DT	EF	EM	EN	EQ	RE	
MAE																			
15	M5	5,5	22	27	38	26	40	47,5	40	92	34,5	8	10	41,5	28,5	49	36	26	**92981A**
20	M5	5,5	30	33	46	27	46	54,5	40	92	40,5	10	10	48,5	35,5	57	43	32	**92982A**
35	M6	7,0	48	40	71	34	59	67,0	45	112	52,0	10	11	64,0	45,0	72	57	44	**92983A**

Proximity sensors profile-mounting

E1

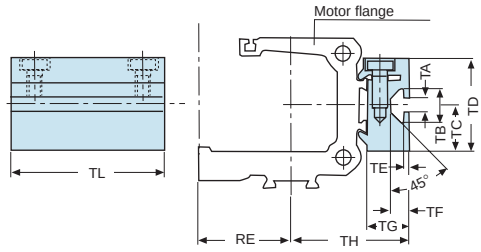


D1



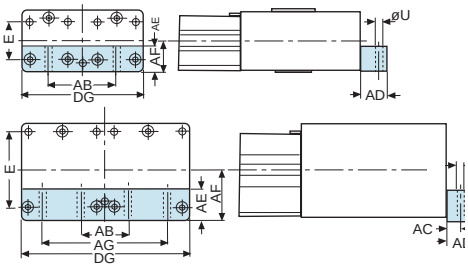
Series	Main dimensions																			Order number
	R	U	UU	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	DT	EF	EM	EN	EQ	RE	
E1																				
15	M5	5,5	10	22	27	38	26	40	47,5	36	50	34,5	8	5,7	10	41,5	28,5	49	36	26	**92821A**
20	M5	5,5	10	30	33	46	27	46	54,5	36	50	40,5	10	5,7	10	48,5	35,5	57	43	32	**92826A**
35	M6	7,0	-	48	40	71	34	59	67,0	45	60	52,0	10	-	11	64	45	72	57	44	**92831A**
D1																				
15	M5	5,5	10	22	27	38	26	40	47,5	36	50	34,5	8	5,7	10	41,5	28,5	49	36	26	**92820A**
20	M5	5,5	10	30	33	46	27	46	54,5	36	50	40,5	10	5,7	10	48,5	35,5	57	43	32	**92825A**
35	M6	7,0	-	48	40	71	34	59	67,0	45	60	52,0	10	-	11	64	45	72	57	44	**92830A**

T-nut profile



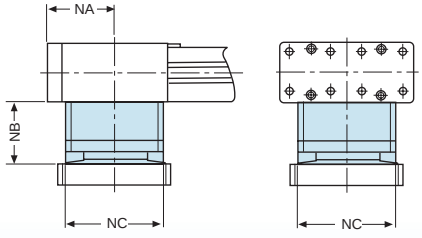
Series	Main dimensions									Order number
	RE	TA	TB	TC	TD	TE	TF	TG	TH	TL	
T											
15	26	5,0	11,5	16	32	1,8	6,4	14,5	34,5	50	**92835A**
20	32	5,0	11,5	16	32	1,8	6,4	14,5	40,5	50	**92836A**
35	44	8,2	20,0	20	43	4,5	12,3	20,0	58,0	80	**92837A**

End cap mounting



Series	Main Dimensions								Order number
	E	Ø U	AB	AC	AD	AE	AF	AG	DG	
C1										
15	27	6,6	52	16	25	25	22	-	91	**92978A**
20	36	9	64	18	25	25	30	-	114	**92979A**
35	70	9	48	12,5	30	30	48	128	174	**92980A**

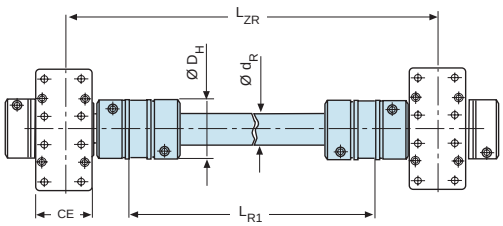
Integreated planetary gear box



Series	Gear reduction i	Base torque Nm	Efficiency R	Reversal clearance	Nom.-incoming RPM	Max. incoming RPM	Main dimensions NA	NB	NC	Weight	Order number
P											
15	3/5/10	< 0,14	> 97 %	< 12	3700	6000	49,0	43,0	76	2,6	**92994A/B/C**
20	3/5/10	< 0,51	> 97 %	< 12	3400	6000	62,0	47,0	92	4,9	**92995A/B/C**
35	3/5/10	< 1,50	> 97 %	< 12	2600	6000	79,5	49,5	121	9,6	**92996A/B/C**

Dimensions [mm], Weight [kg]

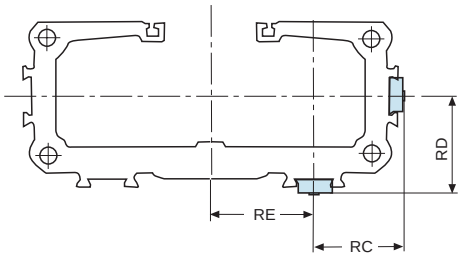
Connection shaft



Series	Max. Moments	Main dimensions						Order number
	[Nm]	DH	CE	LD	L_{ZR}	L_{R1}	d_R	(L_{R1} Length in mm)
W								
15	60	55	42	5	<3000	L_{ZR}-112	30x4.0	**92997...**
20	60	55	56	5	<3000	L_{ZR}-126	30x4.0	**92998...**
35	160	65	87	5	<3000	L_{ZR}-167	35x4.0	**92999...**

Dimensions [mm], Weight [kg]

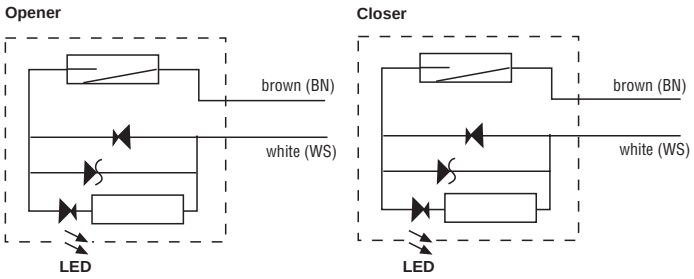
Mid section support



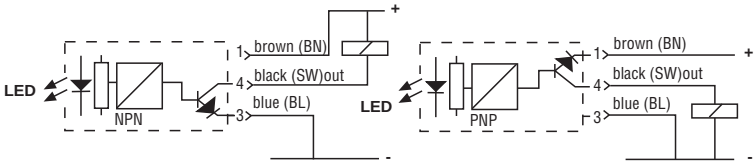
Series	Dimensions RC	RE	RD	Order number RS Reed Closer	RS Reed Opener	ES PNP Closer	ES NPN Closer
15	25	26	27	Typ:	Typ:	Typ:	Typ:
20	31	32	34	RS-K	RS-K	ES-S	ES-S
35	34	44	48	**92841A**	**92842A**	**92844A**	**92845A**
				RS-S	RS-S		
				92984A	**92843A**		
Connecting cable 5 m with plug and open end							
For signal trasmitter type Type ES-S/RS-S							**92846A**

Dimensions [mm]

Elect. connection Type RS

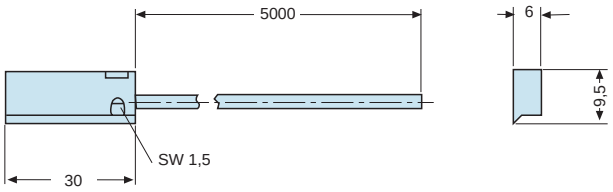


Elect. connection Typ ES



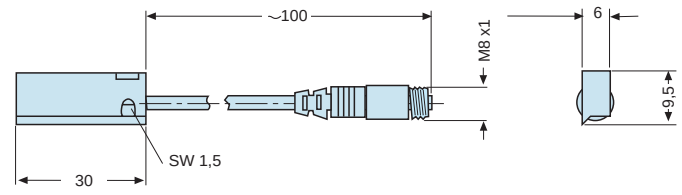
For electrical sensing of the carrier position, e.g. at the end positions, proximity sensors may be fitted.
Position sensing is contactless and is based on magnets fitted as standard to the carrier. A yellow LED indicates operating status.
Type RS: In the type RS contact is made by a mechanical reed switch encapsulated in glass. Direct connection with 2-pole cable, 5m long, open ended (Type RS-K). With 3-pole connector M8, cable length ca. 100mm (Type RS-S).
Type ES: In the type ES contact is made by an electronic switch - without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations. Connection is by 3-pole connector for easy disconnection. Fitted with connection cable 100mm long with connector.
A 5m cable with connector and open end can be ordered separatly.

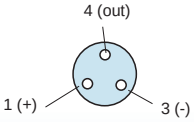
Dimensions Typ RS-K



Codes Electrical codes	Sign	Unit	Remark Typ RS	Type ES
Operating voltage	UB	V	10-244AC/DC(NO)	10-30DC
			10-150AC/DC(NC)	
			10-70AC/DC(DC)**	
Connecting technique			two wires	three wires
Exit function closer			normally open (NO)	PNP/Closer
Opener			normally closed (NC)	NPN/CloserMax.
perm. switching currentl.		mA	200	200
Max. switching capacity		VA (W)	10VA	-
Function display			LED, yellow	

Dimensions Typ ES-S / RS-S max 70 V





PIN (overview) DIN EN 50044

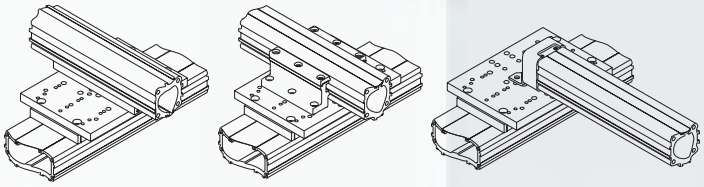
Electrical Service Life, protective measures: Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.
With resistive and capacitative loads with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths an voltages over 100V. In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

Application Examples Linear modules

Multi-axis-support

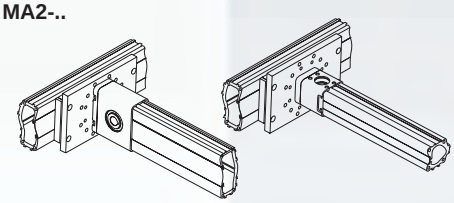
Adapting plate type MA1-..

for adapting of slider to slider,
slider to profile or slider to end cap



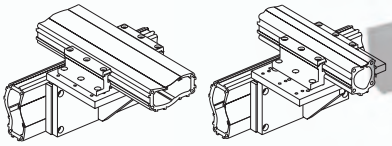
Adapting plate type MA2-..

for adapting of slider
to end cap

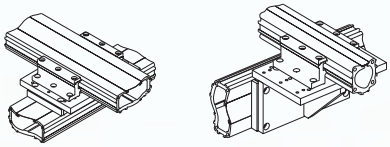


Adapting plate type MA3-..

for adapting of slider to profile
or slider to end cap with 90° degree angle

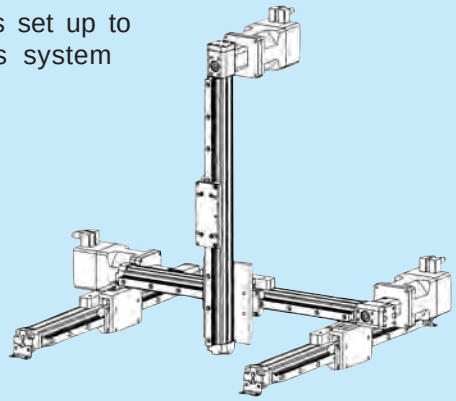


Profil mounting type MAE-..

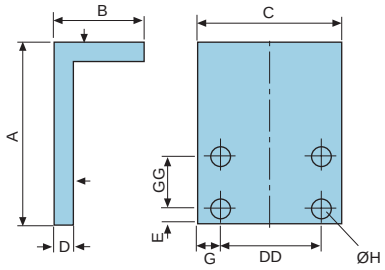


Linear modules, Series TLP15 - 25

Examples set up to multi-axis system



Mounting angle



Possible combinations

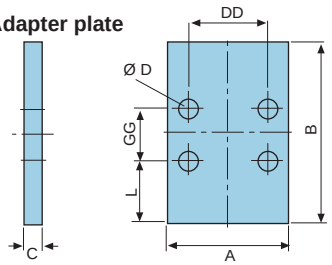
X-axisY-axis (straight)

Only with coverfastening from A2, C2; and central support from E2 without D1

Serie	A	B	C	D	E	GG	DD	G	ØH	Order number
TLP15	100	60	100	12	7	50	60	20	6,6	92801A
TLP20	120	70	110	12	10	64	80	15	6,6	92802A
TLP25	150	80	135	12	10	90	120	7,5	6,6	92803A

Dimensions [mm]

Adapter plate



Possible combinations

X-axis Z-axis

Only with coverfastening from A2, C2; and central support from E2 without D1

Serie	A	B	C	ØD	DD	GG	L	Order number
TLP15	100	325	12	6,6	60	50	112	92804A
TLP20	110	376	15	6,6	80	64	132	92805A
TLP25	135	463	20	6,6	120	90	164	92806A

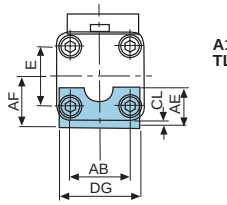
DD and GG for mounting to the y-axis

Dimensions [mm]

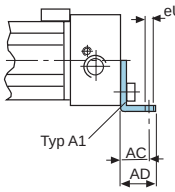
Cover fixtures, central support

At the end covers there are four inner threadings each in the front sides for fixation of the module. The distance between the holes is square so that fastening can be made either from the bottom, from top or laterally.

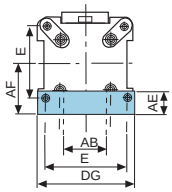
Material: The cover fixtures consist of galvanized steel, the central supports are made of aluminium.



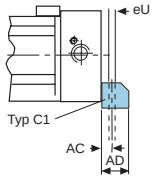
A1
TLP15-20

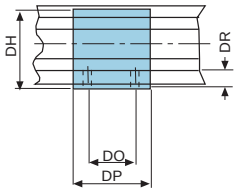


Cover fixtures

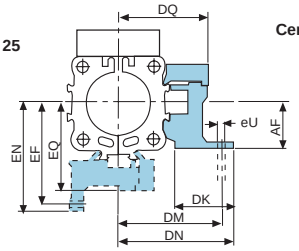


C1
TLP25

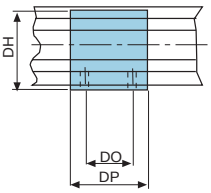




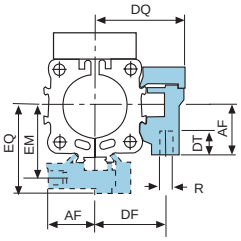
E1
TLP15, 20, 25



Central support



D1
TLP15, 20, 25



Type Series	Dim. AE A1	Dim. AE C1	Dim. DR E1	Dim. AF A1	Dim. AF C1	Dim. AF D1	Dim. AF E1
TLP15	18	-	8	22	-	22	22
TLP20	20	-	10	30	-	30	30
TLP25	-	30	10	-	48	48	48

Dim.	E	ØU	AB	AC	AD	CL	DG	R	U	DF	DH	DK	DM	DN	DD	DP	DQ	DT	EF	EM	EN	EQ
TLP15	27	5,8	27	16	22	2,5	39	M5	5,5	27	38	26	40	47,5	36	50	34,5	10	41,5	28,5	49	36
TLP20	36	6,6	36	18	26	3,0	50	M5	5,5	33	46	27	46	54,5	36	50	40,5	10	48,5	35,5	57	43
TLP25	70	9,0	40	12,5	24	-	86	M6	7	40	71	34	59	67	45	60	52,0	11	64	45,0	72	57

Dimensions (mm)

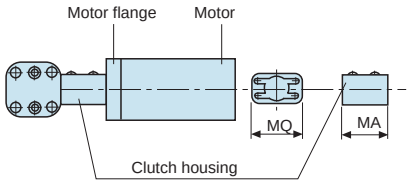
Cover fixtures Order number Typ	A1	C1	Central support Order number D1	E1
TLP15	92810A	-	92820A	92821A
TLP20	92813A	-	92825A	92826A
TLP25	-	92816A	92830A	92831A

Linear modules, Series TLP15 - 25

Motor fixtures, clutch housing

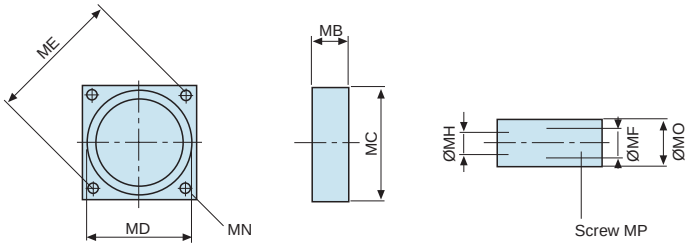
The the clutch housing is the basis for the assembly of the motor.
The following motor fixtures are designed for the available packets of acutators and stepping motors consisting of clutch housing, motor flange and clutch.

The motor flange can be optionally supplied without bore holes to allow any other bore configuration for other motors which might be desired by the customer.



Series	MA	MP	MQ	Order-number
TLP15	47	30	40	92460A
TLP20	49	38	49	92461A
TLP25	76	54	65	92462A

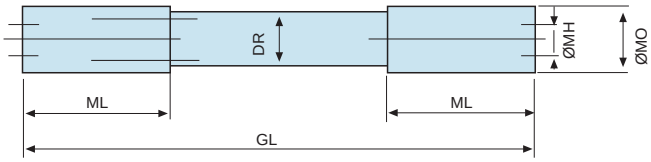
Dimensions [mm]



Series	Motor	MB	MC	MD	ME	MF Motor	MH	ML	MN	MO	MP	MT [Nm]	Motor Part Nr.	Order number Flange	Clutch
15	VRDM397	20	86	60	99	12	10	30	M6	22	M2,5	2,0	E7748	92467A	92470A
	3SM37L-4000	11	75	60	99	11	10	30	M5	20	M2,5	1,8	E7745	92467B	92470B
20	VRDM3910	18	86	60	99	12	10	35	M6	30	M3	4,0	E7727	92468A	92471A
	6SM47L-3000	15	92	80	100	14	10	35	M6	30	M3	3,0	E4746	92468B	92471B
35	VRDM3913	14	86	60	99	14	16	66	M6	40	M6	6,0	E7765	92469A	92472A
	6SM57M-3000	15	105	95	115	19	16	66	M8	40	M6	8,0	E7747	92469B	92472B

Dimensions [mm]

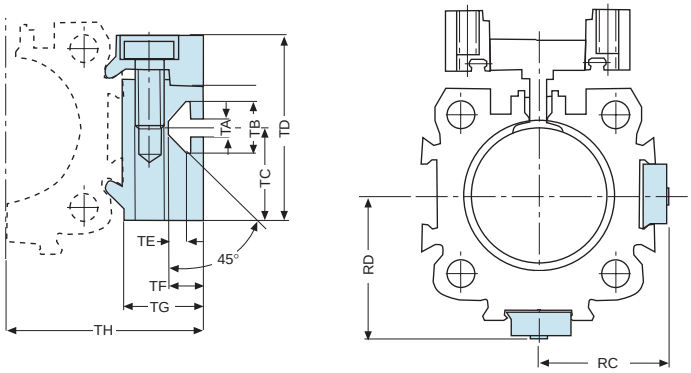
Connection shaft



Clutch (Rotex)

Series	ML	MO	MH	DR	GL*	ZR1 Clutch
TLP15	35	30	10	15	*GL due	14ZR1
TLP20	66	40	10	20	to	19/24ZR1
TLP25	78	55	16	25	specification	24/28ZR1

Dimensions [mm]



T-groove rail

Universal fastening facility of diverse elements by means of tenon blocks.

Series	TA	TB	TC	TD	TE	TF	TG	TH	TL	Order number Standard	Stainless
TLP15	5	11,5	16	32	1,8	6,4	14,5	34,5	50	92835A	92838A
TLP20	5	11,5	16	32	1,8	6,4	14,5	40,5	50	92836A	92839A
TLP25	8,2	20,0	20	43	4,5	12,3	20,0	58,0	80	92837A	92840A

Dimensions [mm]

Your application

Company:

Name:

Department:

Address:

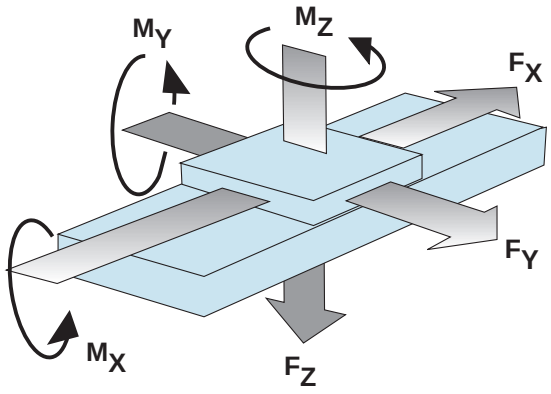
Phone:

Fax:

Email:

Branch:

Application:
short description



Order number:

Sketch:

Technical data:

Axes: _____ [Number]

Positioning accuracy: _____ [mm]

Repitive accuracy: _____ [mm]

Speed max: _____ [m/min.]

Life (desired): L _____ [km]

With multi-axis-units we need your loads data for each table.

Loads:

Forces Lever arms

F_X = _____ [N] _____ M_X= _____ [Nm]

F_Y = _____ [N] _____ M_Y= _____ [Nm]

F_Z= _____ [N] _____ M_Z= _____ [Nm]

Environment:
(Dirt, humidity ...)

Please return the filled copy

Technical Information

Linear tables, rotary tables

References switches, measuring system: The standard version of our linear tables is equipped with inductive limit and reference switches PNP-nc 10-30 VDC. Optionally PNP-no NPN-no and NPN-nc - switches are available.

The attachment / integration of a length-measuring system with sinusoidal or rectangular signals is possible on request. Encoders can be mounted on the motor. We will be glad to consult you in finding the appropriate system for your application.

Multi-axis units: Franke-linear and rotary tables can easily be combined to multiaxis units. The angles and adapterplates which are neccessary for the mounting of the units will be constructed according to your requirements. We deliver completely mounted units cabled and adjusted, on request with further accessories.

Motors: many types of stepping and servomotors can be connected with our linear and rotary tables. Flanges and clutches are to be modified respectively. The customer can contribute own motors as well.

Motor reversal, gear: In our standard version the motor is mounted in extension of the stroke axis. Motor reversal via toothed belt or reversal gear can be supplied for special applications e.g. with limited mounting space.

Maintenance, lubrication: It is indispensable to supervise the bearings in the linear and rotary tables for lubrication. Relubrication periods depend on the environmental conditions and are mainly influenced by the ageing properties of the lubricant. For longtime lubrication completely synthetic lubricants are to be preferred. In our works we use the completely synthetic special grease ISOFLEX TOPAS NCA 52 (make KLÜBER). As alternative we recommend high-grade greases of lithium soap based on of mineral oil.

Where lubricants are to be mixed up the consistency regarding kind of basic oil, thickener, basic oil viscosity and NLGI class has to be ensured. With extreme operating conditions (vacuum, radiation, high temperatures) we recommend you to consult us or a lubricant producer.

Franke linear tables: Franke linear tables are almost maintenance-free. Except for the ball screw our linear tables get a lifetime lubrication in our works. Under normal operating conditions the ageing resistance of the lubricant exceeds the lifetime of the table. Ex works the ball screw is provided with a grease filling which is not a lifetime lubrication. It is a fact that some grease will leak by the ball screw shaft, therefore relubrication is necessary depending on the application. We recommend you to relubricate with about 1-2g grease after about 700 operating hours. At the same time as the relubrication we recommend you to check the inner space of the table and the guide paths for contamination and to clean them if possible. With this we recommend you to apply some grease to the guide paths.

Franke rotary tables: Generally all standard roatary tables are provided with long time lubrication ex works. Depending on the application we recommend relubrication every 6 -12 months. The quantity for relubrication should be as follows (approximate values in g per lubricating point):

Lubrication	left	right	top	bottom	sidewise
TSD175S	1	1	3	2	-
TSD265S	1	1	3	2	-
TSD400S	1	1	4	3	-
TSD125M	-	-	-	-	3
TSD175M	-	-	-	-	3
TSD265M	-	-	-	-	3
TSD400M	-	-	-	-	1
TSD100A	-	-	-	-	1
TSD200A	-	-	-	-	1

1. Accurracy

Running accuracy: The running accuracy is defined by the highest possible deviation of an optional point on the moven table surface from the ideal straight line when traversing the total stroke distance (responding to the accuracy of the substructure). Positionning accuracy: The positioning accuracy is defined by the deviation from a pre-selected point which is approached by a previously defined reference (zero) point. Repetitive accuracy: The repetitive accuracy is defined by multiple exact approaches at a preselected point which has to be reached. For the exact repetitive approach at programmed coordinates a reliable measuring system with direct measurements is of importance. Resolution: The resolution is defined by the smallest possible traverse distance of a positioning unit. It is determined e.g. by the spindle pitch, transmission, stepping angle, division of the measuring system. By means of the resolution deviations in the positioning and repetitive accuracy can be neutralized. Therefore the resolution should always be higher than the deviation from the permissible positioning accuracy.

2. Linear tables

2.1 Design
Franke linear tables are designed for the application in automation for the measuring and testing sector as well as for rationalization in handling and mounting. The selection range includes strokes from 40 mm up to 1200 mm, the movement is effected by means of a spindle. The ribbed aluminium structure in combination with the Franke guide system allows high load rating and moment loads whereas the weight is extremely low.

2.2 Limit switch/reference points
Franke linear tables of series TSL06U-16M are equipped with a cam strip and continuous control cams on the outer side of the slider part. Setting of the cams according to the required reference points and changing of these points is possible without dismantling the table. The limit switches of the tables TLA and TLL are in a fixed position which is adjusted for full stroke length. Linear tables series TSL06L are equipped with moveable control cams which are placed at the right slider part underneath the side cover. To adjust the cams the side cover has to be dismounted. After adjusting the cams the fixing of the side cover fastens the cams.

3. Rotary Tables

Franke rotary tables are compact and have high load capacity. They are particlularly used for mounting, measuring, and testing operations. The high-grade wormgear guarantees high precision in permanent operation. All rotary tables are equipped with aluminium housings; the integrated Franke guide system makes them extremely resistant to tilt while their own weight is very low. Please make use of our mounting and maintenance instructions which come with every consigment.

Please observe the separate mounting and maintenance instructions which are enclosed to every consignment.

Linear modules, Series TLP15-25

Necessary torque

The size of the linear drive and the necessary torque can be determined by using the known mass, the mounting position and the desired acceleration according to the following diagrams. The mass on which the diagrams are based is composed of the external mass and the movable mass of the linear drive.

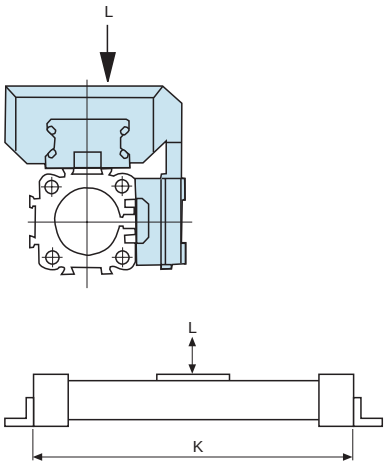
Please notice:
Where an additional guide is used the mass of the slider has to be taken into account.

Central supports

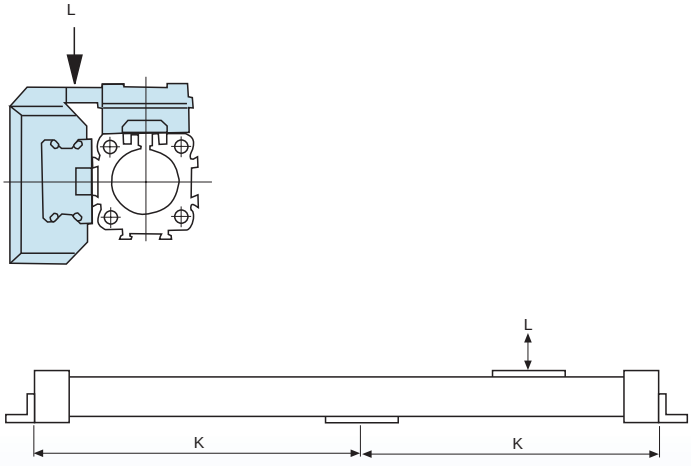
(Explanations see page 79)

From certain stroke lengths on central supports are necessary to avoid deflexion and vibrations caused by the drive. The diagrams show the max. support width responding to the load. We have to make a difference between load example 1 and load example 2. A deflexion of max. 0.5mm between the supports is permissible.

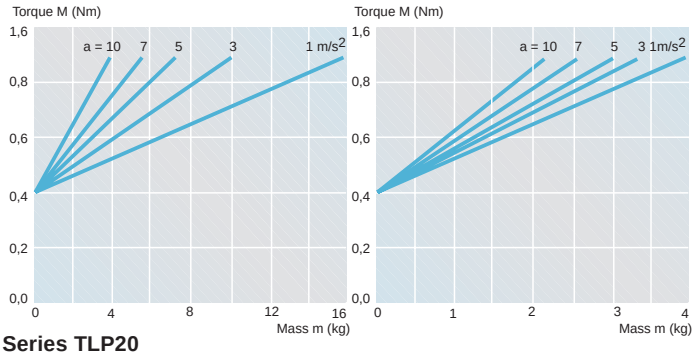
Load example 1



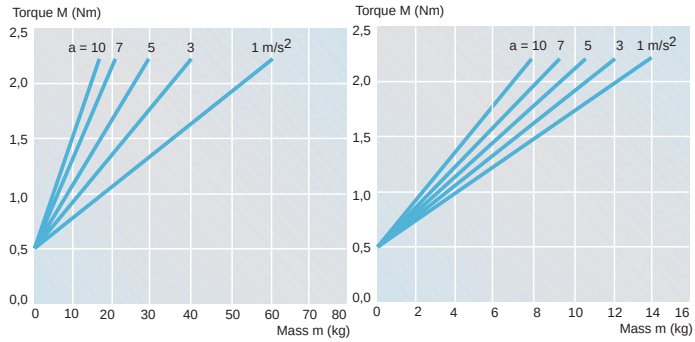
Load example 2



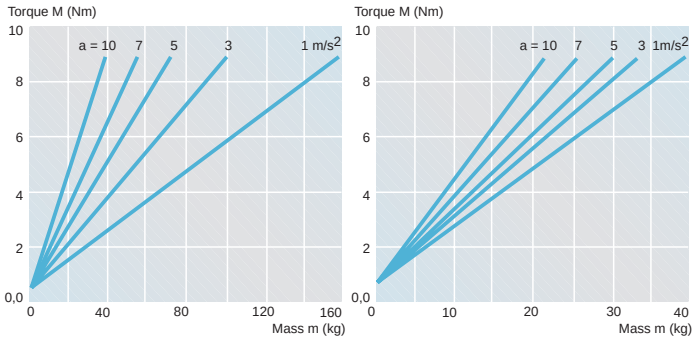
Series TLP15



Series TLP20



Series TLP25



Maximum support distance