

*Our Franke-4-point-contact-system  
for antifriction bearings and linear guide systems*

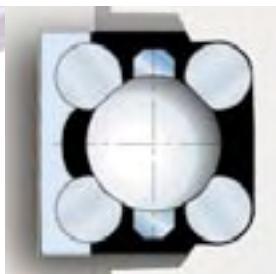


*Competence  
for moving*

- 4-point-contact for equal loads from all directions
- Free material selection of the mating structure
- Customized solutions to meet the individual requirements of your application numerous variants
- 65% less weight due to aluminium guide system with embedded running bars
- Best cost-performance-ratio



*... an invention prevails*



*4 race rings,  
1 ball cage with  
retained balls  
... Franke anti-  
friction bearings*

#### *Antifriction wire race bearings – maximum performance*

The balls run on four wire race rings made of hardened spring steel or non corrosive steel.

The wire race rings are open and fit exactly to the mating structure free from clearance. Tolerances of the mating structure will be evaluated which guarantees a very high accuracy of the bearing even with large diameters.

Our specialists invented a unique grinding procedure for the wire race rings. According to the ball diameter and the load situation at your application the race rings are given a special design to guide the balls perfectly in order to reach high load capacity and perfect running. Due to the application requirements the race rings can be provided with special coatings for the surface or made of special material.



*the guided roller  
... Franke  
Linear guide  
systems*

#### *Linear guide systems – patented innovations*

The guided roller of our dynamic guide system guarantees smooth and silent running even with high speed up to 10m/s and more. The rollers are provided with a gap that fits exactly to the running bar. There is no axial movement of the rollers and no contact to the housing part of the cassettes.

The result of this system: smooth and easy running in any load situation, long lifetime and silent performance. The profiled and hardened raceways of the rails also stand for long lifetime and best performance. The rollers run on needle bearings and are arranged crosswise in the cassettes.

Due to this 4-point-geometry the guide systems can take equal loads from all directions. Guides and rails can be mounted in any position you like.



# Bearing assemblies

## ... low noise bearing

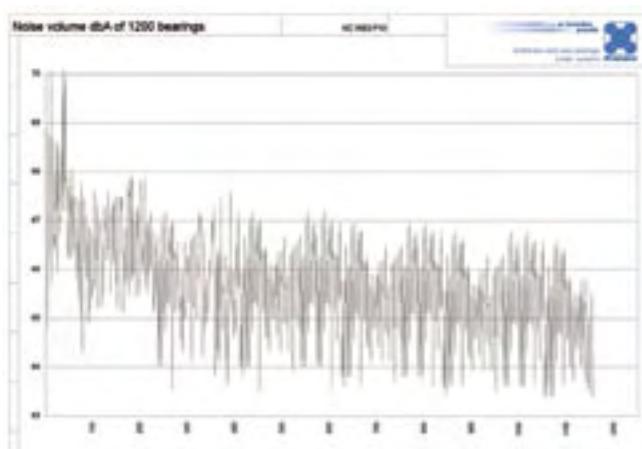


# FlüsterLAGER®

All the famous manufacturers from this branch have realised 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.



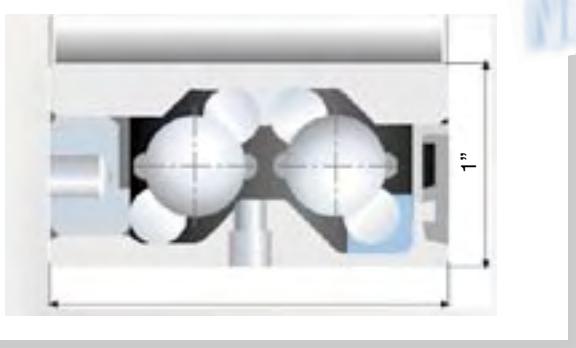
The elastomer is used in the stationary ring. The inner ring is electrically isolated against the outer ring.

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.



### Angular ball bearing Series LDH

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 (see page 37).

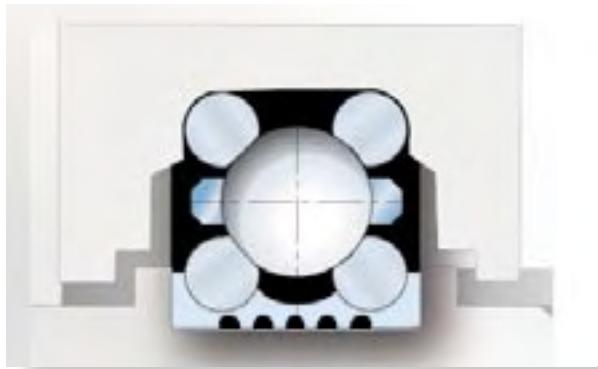
# Bearing assemblies for special demands



## 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.

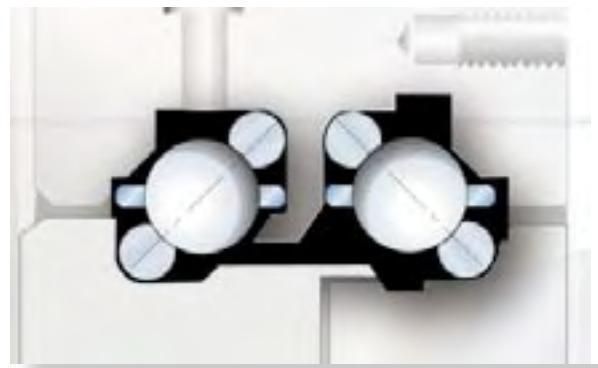
The hybrid bearing is mainly used in cases where high loads and moments are to be sustained. The inner ring is electrically isolated against the outer ring.



## Angular ball bearing standard

The double row angular ball bearing was developed for CT-scanners 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 precision and low running noise.



## Angular ball bearing with elastomer inlay

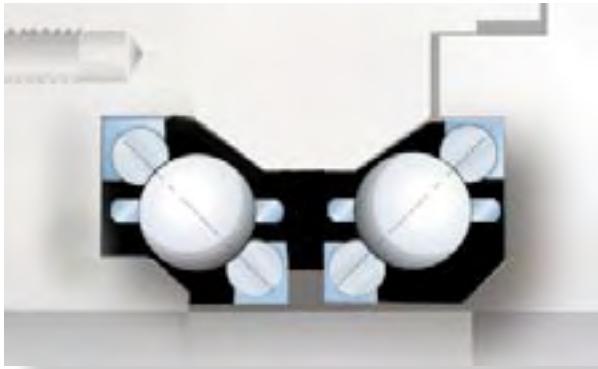
We made good experience with the elastomer inlay from which we want to benefit also for the angular ball bearing. The loudness level was even more reduced by the elastomer, the same is true for the structure-borne noise.



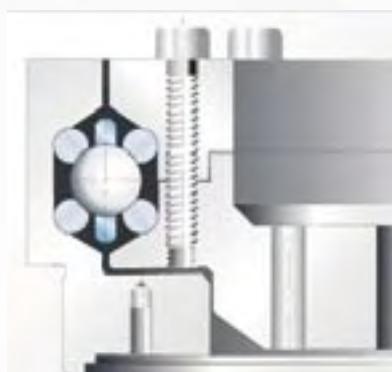
## Angular ball bearing with double elastomer inlay

The best solution for silent running. Due to the elastomer inlay on each side of the bearing the noise will be reduced to the limit.

This kind of bearing fulfills the highest requests for silence.



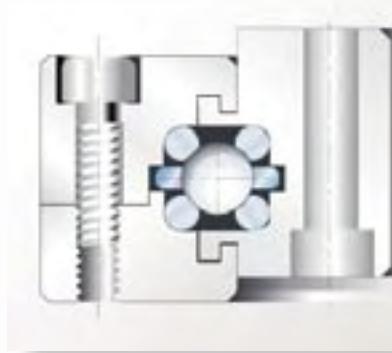
# *Particular requirements ... ... need particular designs*



## *1. Franke 4-point contact bearing assembly with a contact 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 the application. The material for the enclosing structure can be chosen freely and has no influence on the load rating (steel, aluminium, non-corrosive steel, bronze casting, plastic).

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.

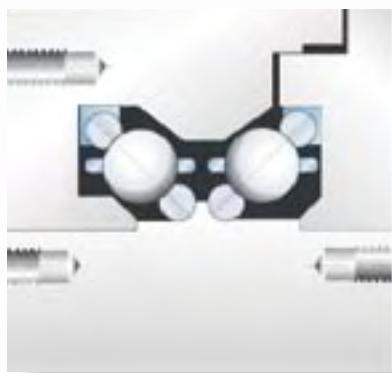


## *2. Franke 4-point contact bearing assembly with a contact angle of 30° for radial loads*

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.

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.



## *3. Franke double row angular bearings for high rotational speed and very high precision*

Double row angular 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.

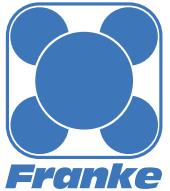
## *4. Franke double row 3-point contact bearing with 3 race rings*

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.

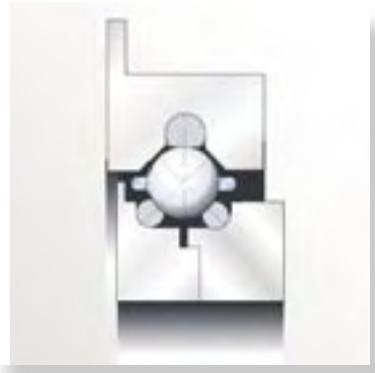


## *Bearing solutions which are individually adapted ... to any case of application*



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

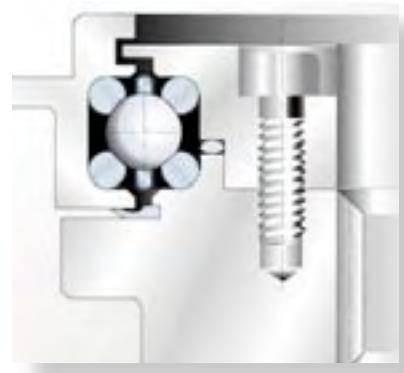
This type is optimally suited for the realisation of a movable bearing and has similar features as a 4-point contact bearing. Even the most demanding requirements can be met by its combination with a 4-point contact bearing.



### *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 unrivaled regarding stiffness and compactness. Here the positive effect of the integrated Franke system with the inserted race rings is obvious.



## Application examples antifriction bearings



### Medical technical

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.



### Medical technical

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



### Medical technical

Franke aluminium recirculating roller guides are perfectly suitable for moving patient beds. The double-row-arrangement of the rollers take high loads from all directions. The non-magnetic version of the guide system can be used without disturbing magnetic fields of medical instruments.

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.



### Robotics

Concept case of a new robot generation.

Franke antifriction bearing elements are chosen for the rotating parts. Due to the small mounting space and the taking of loads from all directions Franke bearing elements are the best choice for this application. An other benefit is the free selection of the material of the mating structure.

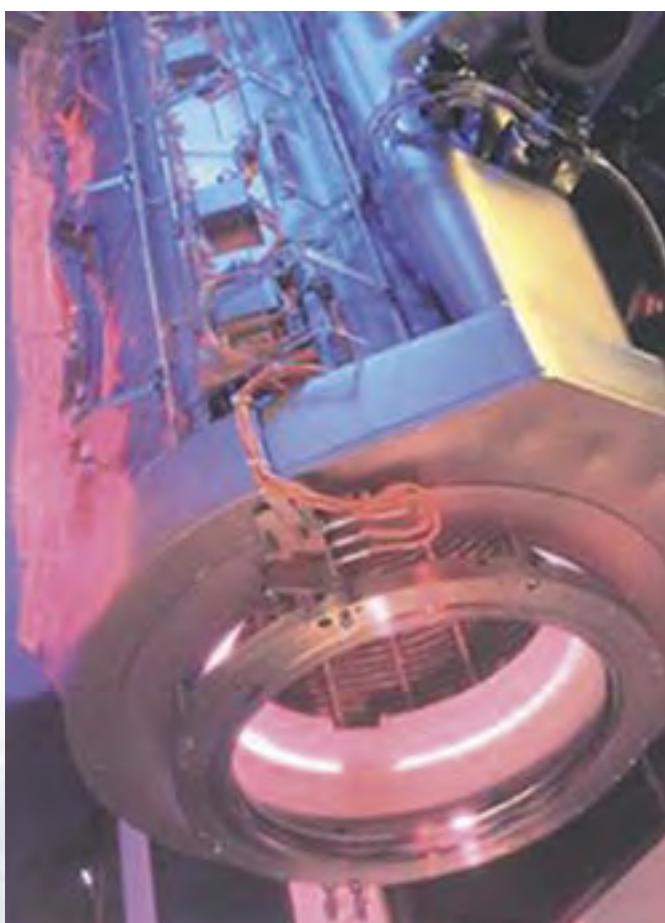


## *At home in many branches*



### *Clean room*

Franke bearing assemblies used for the illumination optics of a wafer stepper. For the manufacturing of precise chip structures an exact radial and axial accuracy as well as high stiffness of the bearing are required. Special materials of the bearing assure the demanded suitability for clean rooms.



### *Clean room*

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.



### *Clean room*

Handling of LCD display plates. The bearing is used as the basis of a rotating handling unit with rectangular base plate. Maximum moment loads act on the bearing. A precise axial and radial accuracy are necessary to handle the display plates for LCD monitors of 1 mm. Additionally the bearing should be suitable for the clean room.



### *Food industries*

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.

## Application examples antifriction bearings



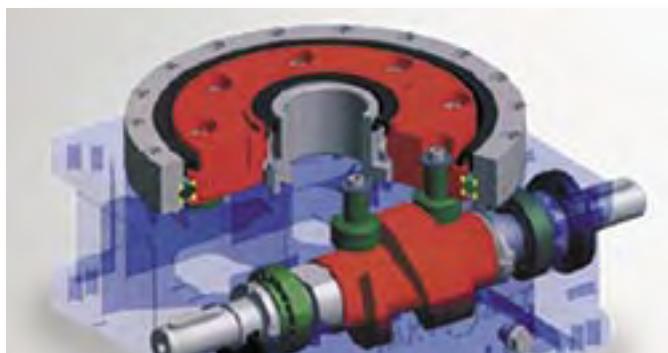
### Machinery

Franke bearing assembly in a circular table with horizontal-installation rotary unit. Maximum accuracy and high rigidity. Best integration of the bearing into the design of the indexing table. Franke bearing assemblies have proven successful in many applications in tooling and machinery all over the world.



### Machinery

Franke antifriction bearing elements in indexing tables. The used Franke bearing elements LEZ are exactly adjusted for the several loads and guarantee the required smooth and shock-free motion of the indexing drives. The bearings take all occurring loads without any problems.



### Machinery

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

The balls run on hardened wire races, which are embedded into 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.



### Security technique

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



## At home in many branches

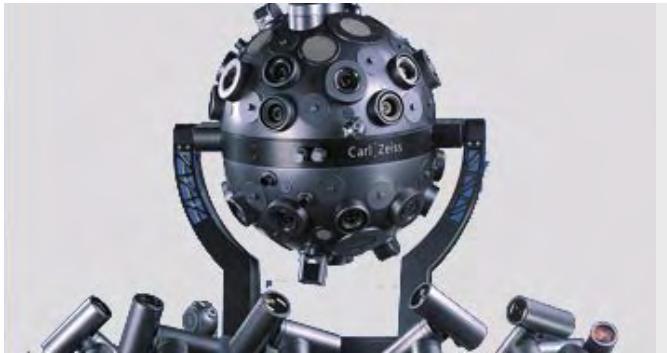


### Textile machines

*Circular knitting machine. The Franke bearing assembly has an excellent adaptability to changing thermal conditions, thus allowing high speeds with low energy consumption. The requested speed is about 60 RPM.*



*A ground bearing element of series LEL made of chrome-silicon with a diameter of 400-1500mm. This provides a uniformly, silent running combined with a small mounting space. High axial and radial accuracy of the bearing (< 0,03mm), as well as a high surface finish of the race wires provide the high quality.*



### Optics

*For the main axis a bearing element LE-900 is used. A bearing element LE-600 in ground version is used for the rotation of the sky. The bearing for the main axis stands out for a very silent running behaviour and a high accuracy. The second bearing for the rotation of the sky has an especially low-noise running behaviour combined with high precision und a small mounting space*



### Machinery

*Franke bearing elements in a winding machine. The bearing has to be dimensioned for the high loads which appear in combination with high revolutions. The bearing has to be resistant against aggressive media.*



### Wood industries

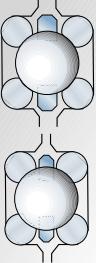
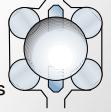
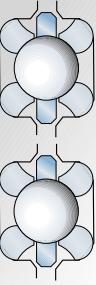
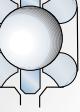
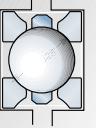
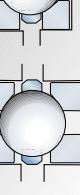
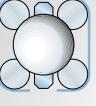
*In this application tree trunks with a diameter of 8mm up to 80mm are debarked. There are tough environmental conditions along with contaminations. During the working process highest loads act on the bearing.*



### Packaging machine

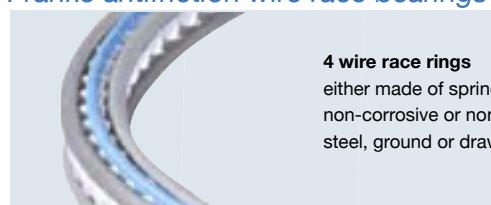
*The main bearing of the wrapping machine has to support the load of the film coils and move it at high speed in order to envelope the long aluminium profiles. A bearing element series LER was integrated into an aluminium mating structure. Smooth and silent running behaviour up to 300rpm for a circumferential speed higher than 6m/s.*

# Survey of antifriction bearings

	Series	Features	Running behaviour	Circumferential speed	Radial and axial accuracy	Preload	Stiffness
 45°-design for equal load capacity from all directions	LEL Ground races	High performance series for highest loads. Ground raceways for maximum precision and running behaviour.	●	●	●	●	●
 30°-design for loads either from axial or radial directions		Application: all applications, especially in medical technique	●	●	●	●	●
 ground races	LED Double profile	High performance series (double profile). Ground or drawn raceways, profiled spring steel.	●	●	●	●	●
 drawn races		Application: Bearing element to a favourable price especially for serial applications, knitting machines, etc. LowCost-Alternative for LEL-9,525	●	●	●	●	●
 Cross section of the race ring 4 x 3 mm	LER 3 Rectangular profile	Heavy duty series (rectangular profile). Drawn raceways with rectangular profile.	●	●	●	●	●
 Cross section of the race ring 4 x 3,5 mm for loads either from axial or radial directions	LER 3,5 Rectangular profile	Heavy duty series (rectangular profile). Drawn raceways with rectangular profile. Application: Knitting machines, general machinery	●	●	●	●	●
 Several race ring designs for loads from all directions	LDD Slim bearing	Heavy duty slim bearing for easy mounting. Ground raceways made of spring steel, inner and outer sleeve made of steel.	●	●	●	●	●

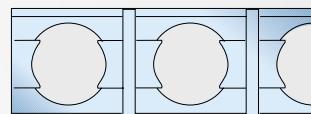
 top  
  very good  
  good  
  sufficient

## Franke antifriction wire race bearings

	<b>4 wire race rings</b> either made of spring steel, non-corrosive or non-magnetic steel, ground or drawn raceways		<b>Series LED</b> Profiled wire race rings in double profile or rectangular profile
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**Accessories**

Strip cage



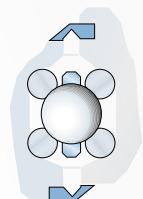
Page 41

Washers



Page 42

Seal



Page 42



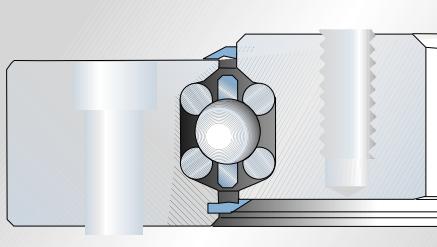
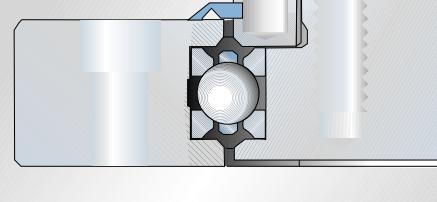
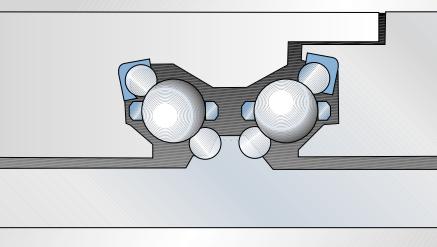
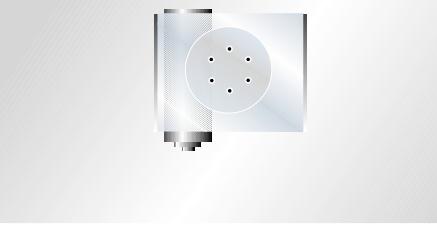
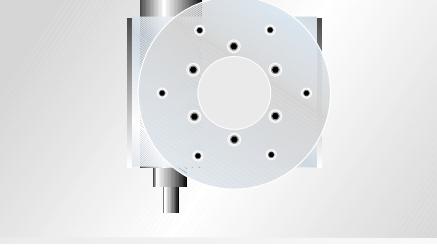
**Polyamide strip cage**  
with retained balls.  
Special cages for special applications on request.



**Balls**  
Made of steel, non-corrosive steel,  
non-magnetic steel, ceramics, etc.

## Survey of bearing assemblies / Rotary tables

Running behaviour  
Circumferential speed  
Radial and axial accuracy  
Rotational resistance  
Stiffness

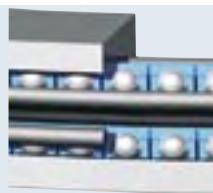
Series	Features	Running behaviour	Circumferential speed	Radial and axial accuracy	Rotational resistance	Stiffness
 <b>LDL</b> Steel Aluminium	Complete bearing assembly with seal on both sides, ground raceways for high loads and precision.	●	●	●	●	●
 <b>LDV</b> Preferential series	Complete bearing assembly with seal on top and rectangular raceways with drawn surface, very cost-effective.	●	●	●	●	●
 <b>LDH</b> Angular ball bearing	Complete bearing assembly in customized design to match the special requests of the customer such as noise reduction, high RPMs, high accuracy.	●	●	●	●	●
 <b>LTA</b> Rotary tables Standard	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.	●	●	●	●	●
 <b>LTB</b> <b>LTC</b> Rotary tables	Franke rotary tables with high precision or splash-proof sealing of the housing parts.	●	●	●	●	●

● top   ● very good   ● good   ● sufficient

### Franke bearing assemblies



**Heavy duty inner and outer rings**  
2-ring or 3-ring design, free material selection e.g. steel, aluminum, cast iron, bronze, non-corrosive steel, polyamide, etc.



Ball cages with retained balls are available e. g. in polyamide, non-corrosive steel, brass, etc.

Bearing diameter [mm]	Load rating [kN]	Page	Accessories	Page
0 100 300 500 1000 1500 2000	0 10 50 200 500 1000 1500	32 - 35	<b>With gear</b>	
		36	Inner gear	35
		37	Outer gear	35
The dimensions of the wire races and balls are selected according to the bearing diameter and the load situation.		38	<b>Seal</b>	42
		39 - 40	Lip seal	
			Labyrinth seal	
			<b>Motors</b> <b>CNC controls</b>	96

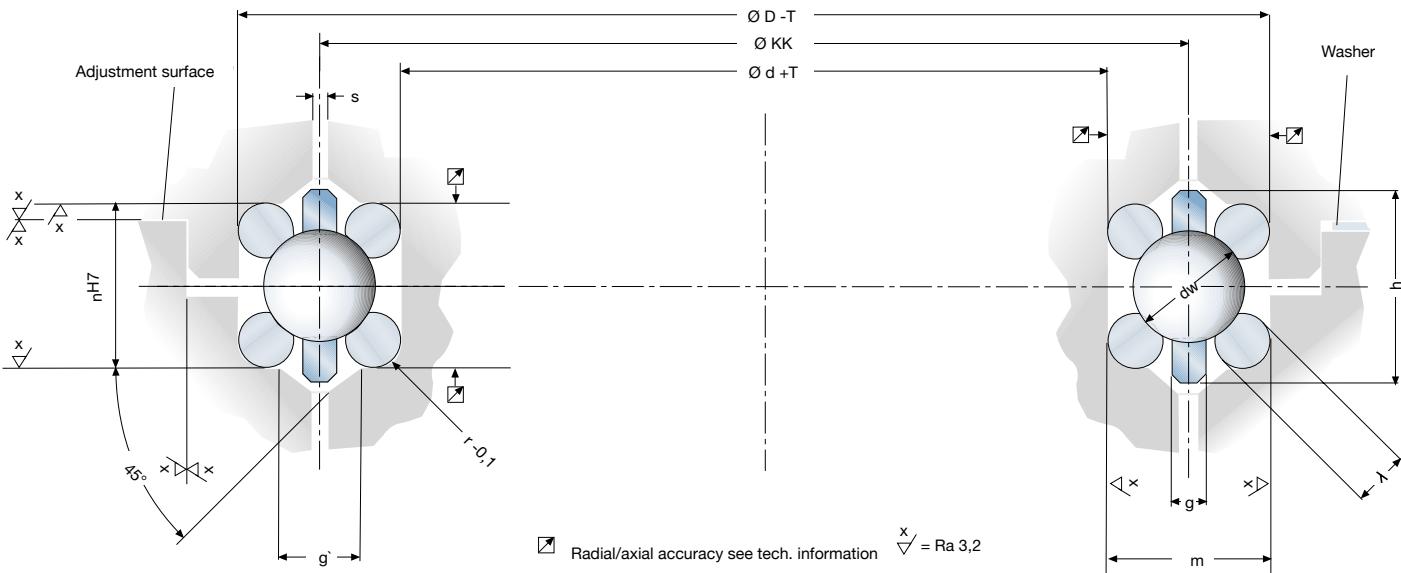


#### Accessories

Spezial seals, washers, inner or outer gear, elastomer-backing of the raceways, etc. Please consult us.

# Bearing elements

Series LEL, with ground raceways



Load rating													
LEL	KKØ	Cr	Cor	dw	λ	m	n	r	g	h	g'	s	Tolerance
1,5/5	70-150	6,1-8,3	6,2-14,0	5,000	1,5	5,90	5,90	0,65	1,5	7,6	2,6		
2,5/8	160-300	16,8-21,4	33,7-65,4	8,000	2,5	9,20	9,20	1,15	2,0	10,6	3,4	1,4	
4,9,525	200-1500	22,5-47,8	22,5-397,1	9,525	4,0	12,86	12,86	1,90	2,5	12,6	3,5	2,0	KK Ø < 500 mm T = IT6*
5/12	220-1500	31,9-65,8	31,9-733,1	12,000	5,0	15,50	15,50	2,40	2,5	15,0	3,5	2,0	KK Ø > 500 mm T = IT7*
7/16	330-2000	52,3-102,6	52,3-1237,3	16,000	7,0	20,90	20,90	3,40	3,0	19,6	3,5	2,0	

\* see page 45

Dimensions [mm], Load rating [kN]

## 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](http://www.franke-gmbh.com). We are gladly prepared to calculate the bearing size for you

## Ball race rings:

- Standard diameters from 1,5 to 12mm
- 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 44.

## 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 42)
- The preload is adjusted correctly when the rotational resistance without seal corresponds to table 1 (temperature range -40° C to +100° C).

## Rotational resistance:

- The first adjustment of the rotational resistance should be 30% higher than the requested value (see page 45). Due to tolerances of the material the rotational resistance will decline after a short running time.

## Radial and axial accuracy:

- Corresponding to the accuracy of the housing part the values of diagr. 1 can be reached.

## Circumferential speed:

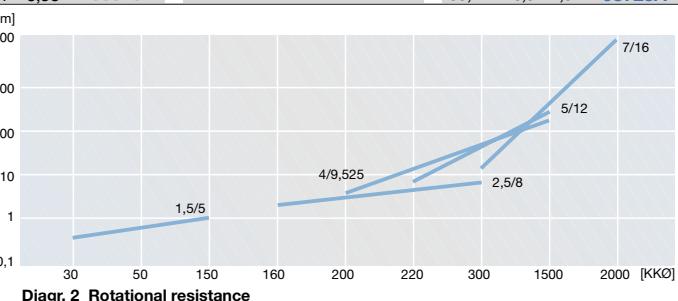
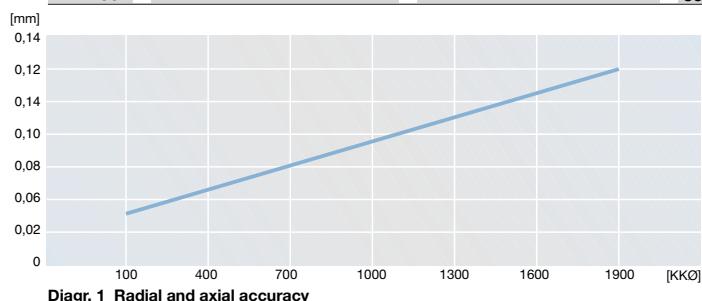
- with grease lubrication max. 10 m/s
- with oil lubrication max. 12 m/s

	Ball race ring	Balls	Strip cage
Standard	54SiCr6	100Cr6	PA12
Special	X12CrNi177 X7CrNiAl177 Duratherm	X45Cr13 Oxideramik POM	Niro Bronze Brass hard plastics

Tab.1 Material

## *Bearing elements*

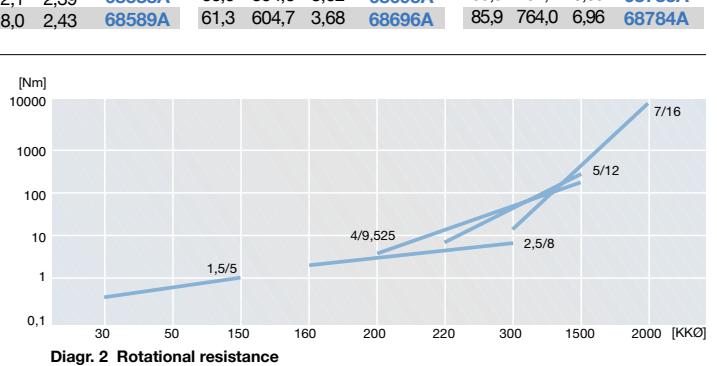
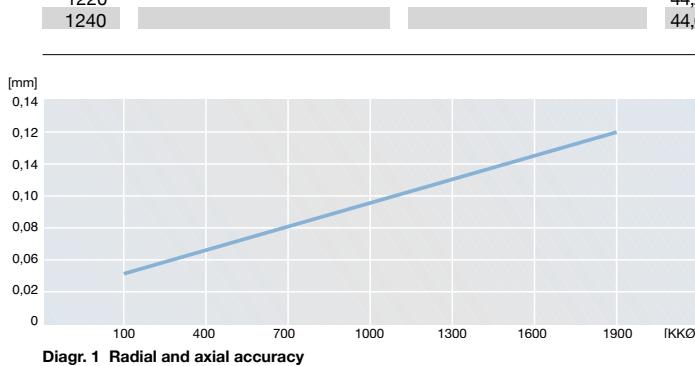
Series LEL, with ground raceways



# Bearing elements

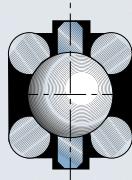
Series LEL, with ground raceways

Ø KK	LEL 1,5/5			LEL 2,5/8			LEL 4/9,525			LEL 5/12			LEL 7/16				
	dyn. Cr	stat. Cor	kg	dyn. Cr	stat. Cor	kg	dyn. Cr	stat. Cor	kg	dyn. Cr	stat. Cor	kg	dyn. Cr	stat. Cor	kg		
470							31,1	131,9	0,92	68529A	42,8	227,1	1,39	68636A	60,0	286,9	2,64
480							31,3	134,5	0,94	68530A	43,1	232,1	1,42	68637A	60,1	290,9	2,68
490							31,7	138,3	0,96	68531A	43,5	237,1	1,45	68638A	60,8	298,8	2,75
500							31,9	140,9	0,98	68532A	43,8	242,2	1,48	68639A	61,0	302,8	2,79
510							32,0	143,4	1,00	68533A	44,2	247,2	1,51	68640A	61,7	310,7	2,86
520							32,2	146,0	1,02	68534A	44,5	252,2	1,54	68641A	62,4	318,8	2,92
530							32,6	139,7	1,04	68535A	44,8	257,3	1,57	68642A	62,5	322,7	2,97
540							32,8	142,1	1,06	68536A	45,2	262,3	1,60	68643A	63,2	330,6	3,03
550							32,9	144,5	1,08	68537A	45,5	267,3	1,63	68644A	63,4	334,6	3,08
560							33,2	146,9	1,10	68538A	45,8	272,4	1,66	68645A	64,0	342,5	3,14
570							33,5	150,5	1,12	68539A	46,1	277,4	1,69	68646A	64,2	346,5	3,19
580							33,7	152,8	1,14	68540A	46,4	282,4	1,73	68647A	67,8	354,5	3,25
590							33,9	155,2	1,16	68541A	46,7	287,5	1,76	68648A	65,4	362,4	3,32
600							34,0	157,6	1,17	68542A	47,0	292,5	1,79	68649A	65,6	366,4	3,36
610							34,2	160,0	1,19	68543A	47,1	295,0	1,81	68650A	66,2	374,3	3,43
620							34,5	163,6	1,22	68544A	47,4	300,1	1,84	68651A	66,3	378,3	3,47
630							34,7	165,9	1,23	68545A	47,7	305,1	1,87	68652A	66,9	386,3	3,54
640							34,9	168,3	1,25	68546A	47,9	310,1	1,90	68653A	67,1	390,3	3,58
650							35,0	170,7	1,27	68547A	48,3	315,2	1,93	68654A	67,7	398,2	3,65
660							35,4	174,3	1,29	68548A	48,6	320,2	1,96	68655A	67,7	402,2	3,69
670							35,5	176,7	1,31	68549A	48,8	325,2	1,99	68656A	68,4	410,1	3,76
680							35,7	179,1	1,33	68550A	49,1	330,3	2,02	68657A	68,9	418,1	3,82
690							35,8	181,4	1,35	68551A	49,4	335,3	2,05	68658A	69,1	422,1	3,87
700							36,1	185,0	1,37	68552A	49,7	340,4	2,08	68659A	69,6	430,0	3,93
710							36,3	187,4	1,39	68553A	49,9	345,4	2,11	68660A	69,8	434,0	3,98
720							36,5	189,8	1,41	68554A	50,2	350,4	2,14	68661A	70,3	441,9	4,04
730							36,6	192,2	1,43	68555A	50,5	355,4	2,17	68662A	70,4	445,9	4,09
740							36,8	194,6	1,45	68556A	50,8	360,5	2,20	68663A	71,0	453,9	4,15
750							37,1	198,1	1,47	68557A	51,0	365,5	2,23	68664A	71,5	461,8	4,22
760							37,2	200,5	1,49	68558A	51,3	370,5	2,26	68665A	71,6	465,8	4,26
770							37,4	202,9	1,51	68559A	51,5	375,6	2,29	68666A	72,2	473,7	4,33
780							37,5	205,3	1,53	68560A	51,8	380,6	2,32	68667A	72,3	477,7	4,37
790							37,8	208,8	1,55	68561A	52,1	385,7	2,35	68668A	72,8	485,7	4,44
800							37,9	211,2	1,57	68562A	52,3	390,7	2,38	68669A	72,9	489,7	4,48
810							38,1	213,6	1,59	68563A	52,6	395,6	2,41	68670A	73,4	497,6	4,55
820							38,2	216,0	1,61	68564A	52,8	400,8	2,44	68671A	73,9	505,6	4,61
830							38,3	218,4	1,62	68565A	52,8	403,3	2,46	68672A	74,1	509,5	4,66
840							38,6	221,9	1,65	68566A	53,1	408,3	2,49	68673A	74,6	517,5	4,72
850							38,8	224,3	1,67	68567A	53,3	413,4	2,52	68674A	74,7	521,5	4,77
860							38,9	226,7	1,68	68568A	53,6	418,4	2,55	68675A	75,2	529,4	4,83
870							39,0	229,0	1,70	68569A	53,8	423,4	2,58	68676A	75,3	533,4	4,88
880							39,3	232,7	1,73	68570A	54,0	428,5	2,61	68677A	75,8	541,4	4,94
890							39,4	235,1	1,74	68571A	54,3	433,5	2,64	68678A	75,9	545,3	4,99
900							39,6	237,5	1,76	68572A	54,5	438,5	2,67	68679A	76,3	553,3	5,05
920							39,9	243,4	1,80	68573A	55,0	448,6	2,73	68680A	76,9	565,2	5,16
940							40,2	248,2	1,84	68574A	55,4	458,7	2,79	68681A	77,5	577,2	5,27
960							40,6	254,1	1,88	68575A	55,9	468,7	2,86	68682A	78,1	589,1	5,38
980							40,9	258,9	1,92	68576A	56,3	478,8	2,92	68683A	78,6	601,0	5,49
1000							41,1	263,6	1,96	68577A	56,6	486,4	2,97	68684A	79,2	612,9	5,60
1020							41,5	269,6	2,00	68578A	57,0	496,4	3,03	68685A	80,1	628,9	5,73
1040							41,7	274,4	2,04	68579A	57,5	506,5	3,09	68686A	80,6	640,8	5,84
1060							42,1	280,3	2,08	68580A	57,9	516,6	3,15	68687A	81,1	652,7	5,95
1080							42,3	285,1	2,12	68581A	58,3	526,6	3,21	68688A	81,6	664,6	6,06
1100							42,6	291,1	2,16	68582A	58,7	536,7	3,27	68689A	82,2	676,6	6,17
1120							42,9	295,8	2,19	68583A	59,1	546,8	3,33	68690A	82,7	688,5	6,28
1140							43,3	301,8	2,24	68584A	59,5	556,8	3,39	68691A	83,2	700,4	6,39
1160							43,5	306,6	2,27	68585A	59,9	566,9	3,45	68692A	84,0	716,3	6,52
1180							43,7	311,3	2,31	68586A	60,3	577,0	3,51	68693A	84,5	728,2	6,63
1200							44,0	317,3	2,35	68587A	60,5	584,5	3,56	68694A	85,0	740,2	6,74
1220							44,2	322,1	2,39	68588A	60,9	594,6	3,62	68695A	85,5	752,1	6,85
1240							44,6	328,0	2,43	68589A	61,3	604,7	3,68	68696A	85,9	764,0	6,96



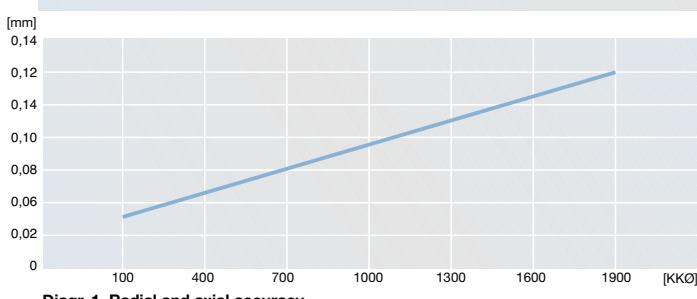
# Bearing elements

Series LEL, with ground raceways

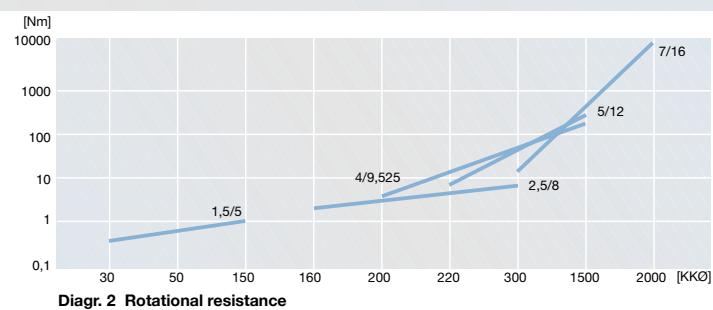


*Our modern CNC-controlled grinding machines are made to shape the wire races in any way we want to, giving us the possibility to modify the arrangement of the wires, the*

position and diameter of the raceway and many other parameters to meet the requirements of your application. Enjoy the great freedom in designing your mating structure with Franke bearing elements.



### Diagr. 1 Radial and axial accuracy



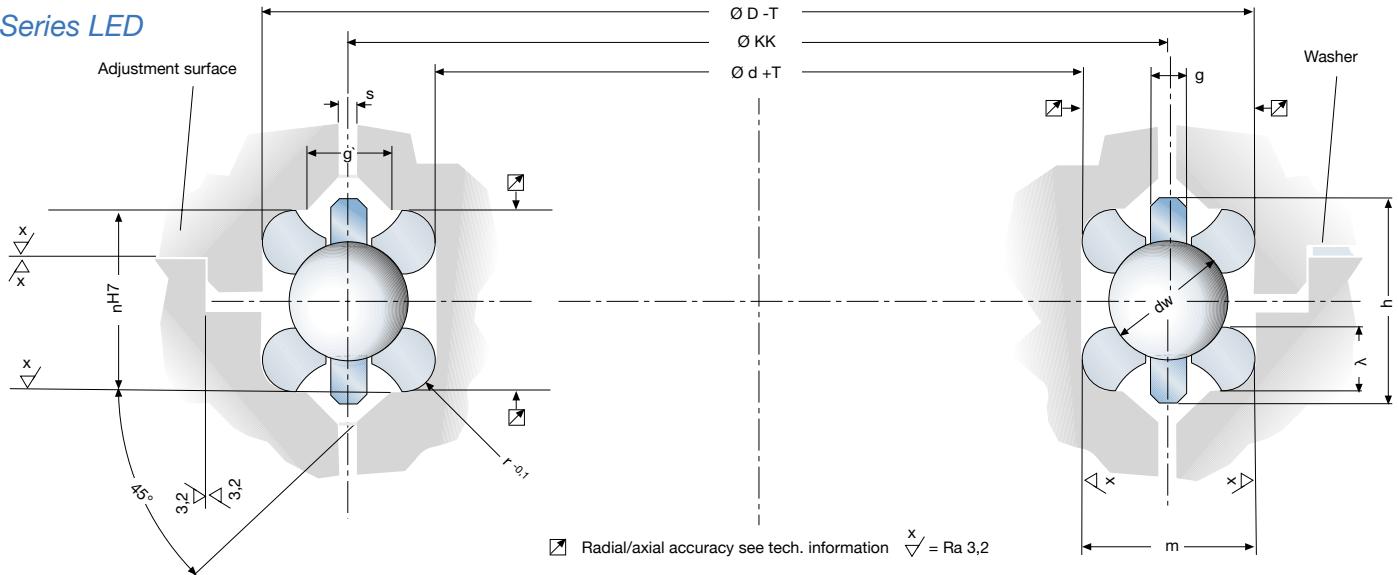
Diagr. 2 Rotational resistance

# Bearing elements

Double profile with ground resp. drawn races



## Series LED



Version	Ø KK	Cr	Cor	$d_w$	$\lambda$	m	n	r	g	h	$g'$	s	Tolerance T
A	100 - 1500	17-48	25-401	ground	9,525	4	12,86	12,86	1,9	2,5	12,6	3,5	1,6
B	100 - 1500	17-48	25-401	drawn	9,525	4	12,95	12,95	1,9	2,5	12,6	3,5	1,6
C	100 - 1500	22-63	28-447	ground	10,000	4	13,19	13,19	1,9	2,5	13,2	4,0	1,6
D	100 - 1500	24-70	30-484	ground	12,000	4	14,61	14,61	1,9	2,5	15,0	4,5	2,0

\* see page 45

Dimensions [mm], Load rating [kN]

### 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](http://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 44.

### 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 42)

The preload is adjusted correctly when the rotational resistance without seal corresponds to table 1 (temperature range -40° C to +100° C).

### Rotational resistance:

- The first adjustment of the rotational resistance should be 30% higher than the requested value (see page 45). Due to tolerances of the material the rotational resistance will decline after a short running time.

### Radial and axial accuracy:

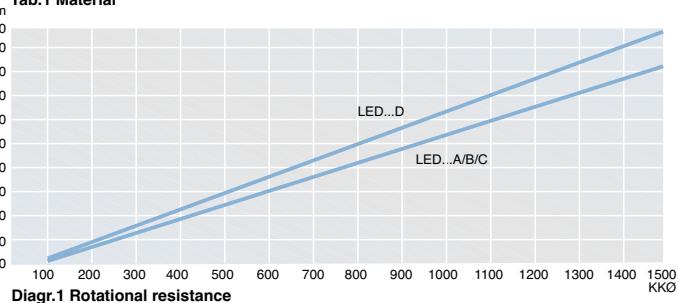
- Corresponding to the accuracy of the housing part the values of diagr. 1 can be reached.

### Circumferential speed:

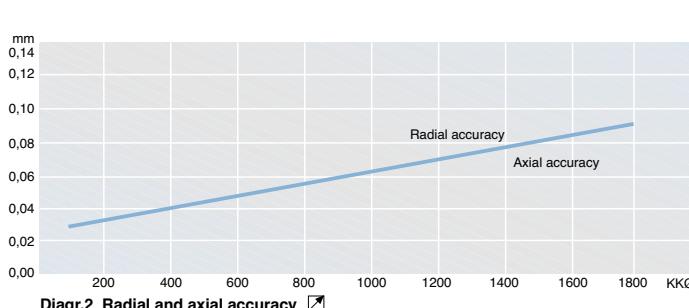
- with grease lubrication max. 10 m/s
- with oil lubrication max. 12 m/s

Standard	Ball race ring	Balls	Strip cage
54SiCr6	100Cr6	PA12	
Corrotect ATC-covered	X45Cr13	non corrosive, teflon, brass flat cage	

Tab.1 Material



Ball pitch ØKK [mm]	Load rating								Weight			Order number		
	A,B		C		D					Version B drawn	A	C	D	
	Co [kN]	Cor [kN]	Co [kN]	Cor [kN]	Co [kN]	Cor [kN]	[kg]							
100	17	25	22	28	24	30	0,26	68310B	....A	....C	....D			
105	17	26	23	30	25	31	0,27	68311B	....A	....C	....D			
110	18	28	23	31	26	33	0,27	68312B	....A	....C	....D			
115	18	29	24	33	26	35	0,28	68313B	....A	....C	....D			
120	18	30	24	34	26	36	0,28	68314B	....A	....C	....D			
125	19	33	24	35	27	38	0,29	68315B	....A	....C	....D			
130	19	34	25	37	27	39	0,30	68316B	....A	....C	....D			
135	20	35	25	38	28	41	0,30	68317B	....A	....C	....D			
140	20	36	26	41	28	42	0,31	68318B	....A	....C	....D			
145	20	37	26	42	29	45	0,31	68319B	....A	....C	....D			
150	20	39	27	43	30	47	0,32	77200B	....A	....C	....D			
155	20	40	27	45	30	49	0,33	77201B	....A	....C	....D			
160	20	41	27	46	30	50	0,34	77202B	....A	....C	....D			
165	21	43	27	47	31	52	0,34	77203B	....A	....C	....D			
170	21	45	28	49	31	53	0,35	77204B	....A	....C	....D			
175	21	46	28	50	31	53	0,36	77205B	....A	....C	....D			
180	22	47	28	51	32	56	0,37	77206B	....A	....C	....D			
185	22	48	29	54	32	58	0,37	77207B	....A	....C	....D			
190	22	49	29	55	32	59	0,38	77208B	....A	....C	....D			
195	22	51	29	57	33	61	0,39	77209B	....A	....C	....D			
200	23	52	30	58	33	63	0,40	77210B	....A	....C	....D			
205	23	54	30	59	33	64	0,41	77211B	....A	....C	....D			
210	23	55	30	61	34	66	0,42	77212B	....A	....C	....D			
215	23	57	30	62	34	67	0,42	77213B	....A	....C	....D			
220	24	58	31	63	34	69	0,43	77214B	....A	....C	....D			
225	24	59	31	66	34	70	0,44	77215B	....A	....C	....D			
230	24	60	31	67	35	72	0,45	77216B	....A	....C	....D			
235	24	61	32	69	35	73	0,46	77217B	....A	....C	....D			
240	24	63	32	70	35	75	0,47	77218B	....A	....C	....D			
245	24	64	32	71	36	77	0,48	77219B	....A	....C	....D			
250	25	66	32	73	36	78	0,49	77220B	....A	....C	....D			
255	25	67	32	74	36	80	0,50	77221B	....A	....C	....D			
260	25	69	33	75	36	81	0,51	77222B	....A	....C	....D			
265	25	70	33	77	37	84	0,52	77223B	....A	....C	....D			
270	25	71	33	80	37	86	0,54	77224B	....A	....C	....D			
275	26	72	34	81	38	87	0,55	77225B	....A	....C	....D			
280	26	73	34	82	38	89	0,56	77226B	....A	....C	....D			
285	26	75	34	84	38	91	0,57	77227B	....A	....C	....D			
290	26	77	34	85	38	92	0,58	77228B	....A	....C	....D			
295	26	78	34	86	38	94	0,60	77229B	....A	....C	....D			
300	27	79	35	88	39	95	0,61	77230B	....A	....C	....D			
310	27	82	35	90	39	98	0,62	77231B	....A	....C	....D			
320	27	84	36	94	40	101	0,64	77232B	....A	....C	....D			
330	28	88	36	97	40	105	0,65	77233B	....A	....C	....D			
340	28	90	36	100	40	108	0,66	77234B	....A	....C	....D			
350	28	92	37	102	41	111	0,68	77235B	....A	....C	....D			
360	28	95	37	106	41	114	0,69	77236B	....A	....C	....D			
370	29	98	38	109	42	117	0,71	77237B	....A	....C	....D			
380	29	100	38	112	42	120	0,72	77238B	....A	....C	....D			
390	29	103	38	114	43	125	0,74	77239B	....A	....C	....D			
400	29	106	39	118	43	128	0,75	77240B	....A	....C	....D			
410	30	109	39	121	44	131	0,77	77241B	....A	....C	....D			
420	30	112	39	124	44	134	0,79	77242B	....A	....C	....D			
430	30	114	40	126	44	137	0,80	77243B	....A	....C	....D			
440	31	116	40	130	45	140	0,82	77244B	....A	....C	....D			
450	31	119	40	133	45	143	0,84	77245B	....A	....C	....D			
460	31	122	41	136	45	147	0,86	77246B	....A	....C	....D			
470	31	125	41	139	46	150	0,87	77247B	....A	....C	....D			
480	32	127	41	141	46	153	0,89	77248B	....A	....C	....D			
490	32	130	42	145	46	156	0,91	77249B	....A	....C	....D			
500	32	133	42	148	47	159	0,93	77250B	....A	....C	....D			



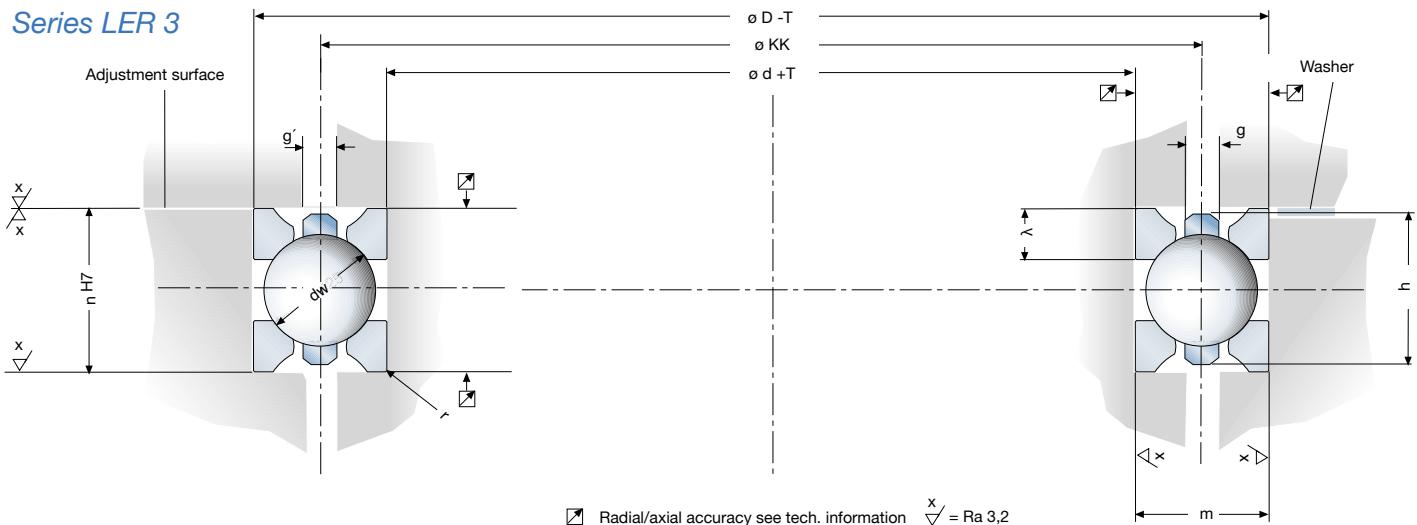
Ball pitch ØKK [mm]	Load rating								Weight			Order number		
	A,B		C		D					Version B drawn	A	C	D	
	Co [kN]	Cor [kN]	Co [kN]	Cor [kN]	Co [kN]	Cor [kN]	[kg]							
510	32	136	42	151	47	164	0,95	77251B	....A	....C	....D			
520	33	138	43	153	48	167	0,97	77252B	....A	....C	....D			
530	33	140	43	157	48	170	0,99	77253B	....A	....C	....D			
540	33	144	43	160	48	173	1,01	77254B	....A	....C	....D			
550	33	146	43	163	49	176	1,04	77255B	....A	....C	....D			
560	33	149	44	165	49	179	1,06	77256B	....A	....C	....D			
570	34	151	44	169	49	182	1,08	77257B	....A	....C	....D			
580	34	155	44	172	49	185	1,10	77258B	....A	....C	....D			
590	34	157	45	175	50	189	1,13	77259B	....A	....C	....D			
600	34	159	45	177	50	192	1,15	77260B	....A	....C	....D			
610	34	162	45	180	50	195	1,18	77261B	....A	....C	....D			
620	35	165	45	184	51	189	1,20	77262B	....A	....C	....D			
630	35	168	46	187	51	201	1,23	77263B	....A	....C	....D			
640	35	170	46	189	51	206	1,25	77264B	....A	....C	....D			
650	35	173	46	192	52	209	1,28	77265B	....A	....C	....D			
660	36	176	47	196	52	212	1,31	77266B	....A	....C	....D			
670	36	179	47	199	52	215	1,34	77267B	....A	....C	....D			
680	36	181	47	202	53	218	1,37	77268B	....A	....C	....D			
690	36	183	47	204	53	221	1,40	77269B	....A	....C	....D			
700	36	187	48	208	53	224	1,43	77270B	....A					

# Bearing elements

## Rectangular profile with drawn races



### Series LER 3



Cross-section	Load rating										Tolerance
	$\varnothing KK$	$Cr$	$Cor$	$dw$	$\lambda$	$m$	$n$	$r_{max}$	$g$	$h$	
4 x 3	100 - 1500	17-48	25-396	9,525	4 x 3	11	13	0,3	2,5	12,6	3

\* see page 45

Dimensions [mm], Load rating [kN]

#### 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](http://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 44.

#### 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 42)

The preload is adjusted correctly when the rotational resistance without seal corresponds to table 1 (temperature range -40° C to +100° C).

#### Rotational resistance:

- The first adjustment of the rotational resistance should be 30% higher than the requested value (see page 45). Due to tolerances of the material the rotational resistance will decline after a short running time.

#### Radial and axial accuracy:

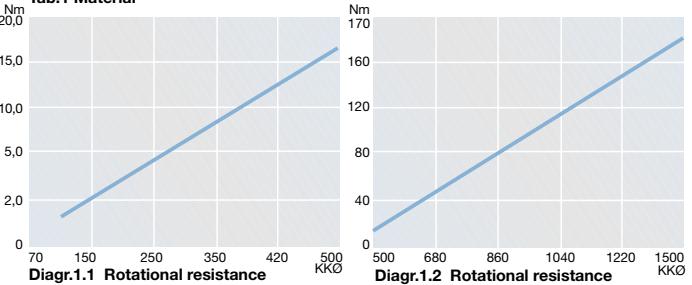
- Corresponding to the accuracy of the housing part the values of diagr. 1 can be reached.

#### Circumferential speed:

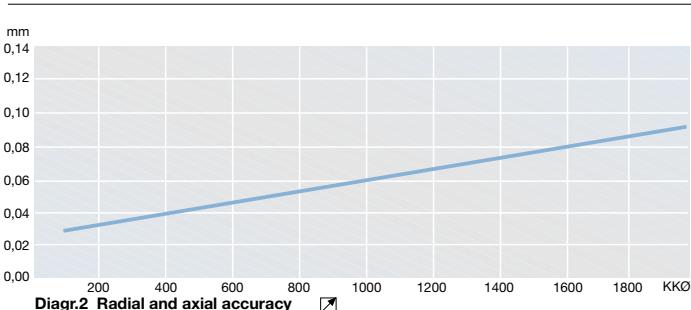
- with grease lubrication max. 10 m/s
- with oil lubrication max. 12 m/s

	Ball race ring	Balls	Strip cage
Standard	54SiCr6	100Cr6	PA12
Special	Corrotec ATC-Beschichtung	X45Cr13	Niro, Messing, hart plastics, Teflon

Tab.1 Material



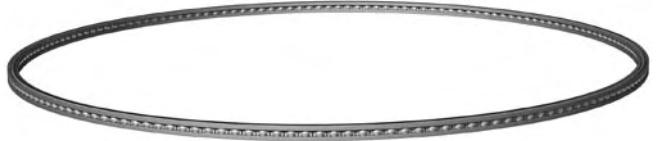
Ball pitch	Load rating		Weight	Order number	Ball pitch	Load rating		Weight	Order number
Ø KK [mm]	Cr [kN]	Cor [kN]	[kg]		Ø KK [mm]	Cr [kN]	Cor [kN]	[kg]	
100	17	25	0,20	68460A	510	32	136	0,80	74111A
105	17	26	0,20	68461A	520	33	138	0,90	74112A
110	18	28	0,20	68462A	530	33	140	0,90	74113A
115	18	29	0,20	68463A	540	33	144	0,90	74114A
120	18	30	0,20	68464A	550	33	146	0,90	74115A
125	19	33	0,20	68465A	560	33	149	1,00	74116A
130	19	34	0,20	68466A	570	34	151	1,00	74117A
135	20	35	0,20	68467A	580	34	155	1,00	74118A
140	20	36	0,20	68468A	590	34	157	1,00	74119A
145	20	37	0,20	68469A	600	34	159	1,10	74120A
150	20	39	0,20	74060A	610	34	162	1,10	74121A
155	20	40	0,30	74061A	620	35	165	1,10	74122A
160	20	41	0,30	74062A	630	35	168	1,10	74123A
165	21	43	0,30	74063A	640	35	170	1,20	74124A
170	21	45	0,30	74064A	650	35	173	1,20	74125A
175	21	46	0,30	74065A	660	36	176	1,20	74126A
180	22	47	0,30	74066A	670	36	179	1,20	74127A
185	22	48	0,30	74067A	680	36	181	1,30	74128A
190	22	49	0,30	74068A	690	36	183	1,30	74129A
195	22	51	0,30	74069A	700	36	187	1,30	74130A
200	23	52	0,30	74070A	710	36	189	1,40	74131A
205	23	54	0,30	74071A	720	37	192	1,40	74132A
210	23	55	0,30	74072A	730	37	194	1,40	74133A
215	23	57	0,30	74073A	740	37	198	1,50	74134A
220	24	58	0,40	74074A	750	37	200	1,50	74135A
225	24	59	0,40	74075A	760	37	203	1,50	74136A
230	24	60	0,40	74076A	770	38	205	1,50	74137A
235	24	61	0,40	74077A	780	38	209	1,60	74138A
240	24	63	0,40	74078A	790	38	211	1,60	74139A
245	24	64	0,40	74079A	800	38	213	1,60	74140A
250	25	66	0,40	74080A	810	38	216	1,60	74141A
255	25	67	0,40	74081A	820	39	219	1,70	74142A
260	25	69	0,40	74082A	830	39	222	1,70	74143A
265	25	70	0,40	74083A	840	39	224	1,70	74144A
270	25	71	0,40	74084A	850	39	226	1,70	74145A
275	26	72	0,40	74085A	860	39	229	1,80	74146A
280	26	73	0,40	74086A	870	39	232	1,80	74147A
285	26	75	0,40	74087A	880	40	235	1,80	74148A
290	26	77	0,40	74088A	890	40	237	1,90	74149A
295	26	78	0,40	74089A	900	40	240	1,90	74150A
300	27	79	0,50	74090A	920	40	246	1,90	74151A
310	27	82	0,50	74091A	940	40	250	2,00	74152A
320	27	84	0,50	74092A	960	41	256	2,00	74153A
330	28	88	0,50	74093A	980	41	261	2,00	74154A
340	28	90	0,50	74094A	1000	41	267	2,10	74155A
350	28	92	0,50	74095A	1020	42	272	2,10	74156A
360	28	95	0,50	74096A	1040	42	278	2,10	74157A
370	29	98	0,50	74097A	1060	42	283	2,20	74158A
380	29	100	0,50	74098A	1080	43	289	2,20	74159A
390	29	103	0,50	74099A	1100	43	293	2,20	74160A
400	29	106	0,70	74100A	1120	43	299	2,30	74161A
410	30	109	0,70	74101A	1140	43	304	2,30	74162A
420	30	112	0,70	74102A	1160	44	310	2,40	74163A
430	30	114	0,70	74103A	1180	44	315	2,40	74164A
440	31	116	0,70	74104A	1200	44	321	2,40	74165A
450	31	119	0,70	74105A	1220	45	326	2,50	74166A
460	31	122	0,70	74106A	1240	45	332	2,50	74167A
470	31	125	0,70	74107A	1260	45	337	2,50	74168A
480	32	127	0,70	74108A	1280	45	343	2,60	74169A
490	32	130	0,70	74109A	1300	46	347	2,60	74170A
500	32	133	0,80	74110A	1320	46	353	2,70	74171A



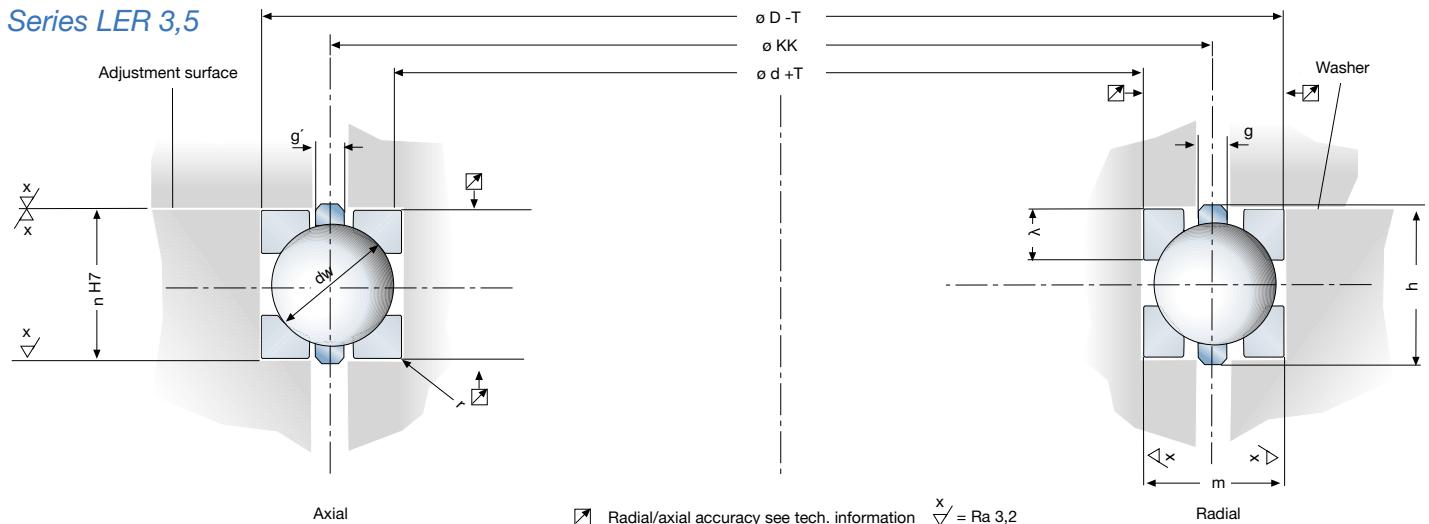
Other versions on request !

# Bearing elements

## Rectangular profile with drawn races



### Series LER 3,5



Version	Cross section	Load rating												Tolerance	
		Ø KK	Ca	Cr	Coa	Cor	dw	λ	m	n	r max	g	h	g'	
Axial	4 x 3,5	100 -1500	22-61	-	65-1009	-	9,525	4 x 3,5	11	12	0,3	2,5	12,6	3	KK Ø ≤ 500 mm T = IT6*
Radial	4 x 3,5	100 -1500	-	25-55		30-475	9,525	4 x 3,5	12	11	0,3	2,5	12,6	3	KK Ø > 500 mm T = IT7*

\* see page 45

Dimensions [mm], Load rating [kN]

#### 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](http://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 44.

#### 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 42)  
The preload is adjusted correctly when the rotational resistance without seal corresponds to table 1 (temperature range -40° C to +100° C).

#### Rotational resistance:

- The first adjustment of the rotational resistance should be 30% higher than the requested value (see page 45). Due to tolerances of the material the rotational resistance will decline after a short running time.

#### Radial and axial accuracy:

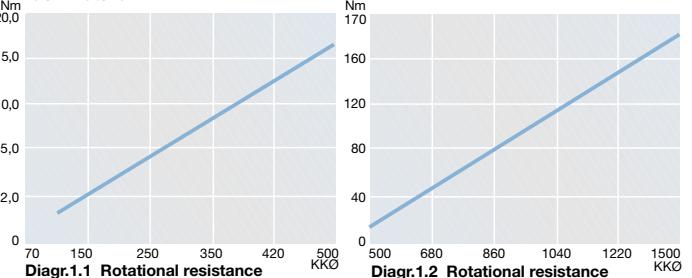
- Corresponding to the accuracy of the housing part the values of diagr. 1 can be reached.

#### Circumferential speed:

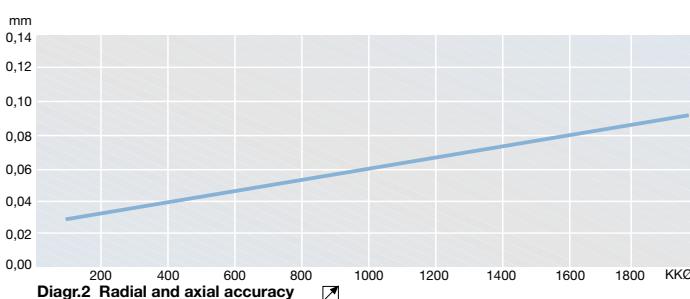
- with grease lubrication max. 10 m/s
- with oil lubrication max. 12 m/s

	Ball race ring	Balls	Strip cage
Standard	54SiCr6	100Cr6	PA12
Special	Corrotec ATC-Beschichtung	X45Cr13	Niro, Messing, hart plastics, Teflon

Tab.1 Material



Ball pitch Ø KK [mm]	Load rating				Weight [kg]	Order number
	axial Ca [kN]	Coa [kN]	radial Cr [kN]	Cor [kN]		
100	22	65	20	30	0,20	69569A
105	22	68	20	32	0,20	69570A
110	23	71	20	33	0,20	69571A
115	23	74	21	34	0,20	69572A
120	23	77	21	36	0,20	69573A
125	24	80	21	37	0,20	69574A
130	24	83	22	39	0,20	69575A
135	24	86	22	40	0,20	69576A
140	25	92	22	43	0,20	69577A
145	25	95	23	44	0,20	69578A
150	26	98	23	46	0,30	69579A
155	26	101	24	47	0,30	69580A
160	26	104	24	49	0,30	69581A
165	27	107	24	50	0,30	69582A
170	27	110	24	52	0,30	69583A
175	27	113	24	53	0,30	69584A
180	27	116	25	54	0,30	69585A
185	28	122	25	57	0,30	69586A
190	28	125	26	59	0,30	69587A
195	28	128	26	60	0,30	69588A
200	29	131	26	61	0,40	69589A
205	29	134	26	63	0,40	69590A
210	29	137	26	64	0,40	69591A
215	29	140	27	66	0,40	69592A
220	30	143	27	67	0,40	69593A
225	30	149	27	70	0,40	69594A
230	30	152	28	71	0,40	69595A
235	31	155	28	73	0,40	69596A
240	31	159	28	74	0,40	69597A
245	31	162	28	76	0,40	69598A
250	31	165	28	77	0,50	69599A
255	31	168	29	79	0,50	69600A
260	32	171	29	80	0,50	69601A
265	32	174	29	81	0,50	69602A
270	32	179	29	84	0,50	69603A
275	33	183	30	86	0,50	69604A
280	33	186	30	87	0,50	69605A
285	33	189	30	89	0,50	69606A
290	33	192	30	90	0,50	69607A
295	33	195	30	91	0,50	69608A
300	33	198	30	93	0,60	69609A
310	34	204	31	96	0,60	69610A
320	34	213	31	100	0,60	69611A
330	35	219	32	103	0,60	69612A
340	35	225	32	106	0,60	69613A
350	35	231	32	109	0,60	69614A
360	36	240	33	112	0,60	69615A
370	36	246	33	116	0,60	69616A
380	37	252	33	118	0,60	69617A
390	37	258	33	121	0,60	69618A
400	37	267	34	126	0,70	69619A
410	38	274	34	128	0,70	69620A
420	38	280	35	131	0,70	69621A
430	38	286	35	134	0,70	69622A
440	39	294	35	138	0,70	69623A
450	39	301	36	141	0,70	69624A
460	39	307	36	144	0,70	69625A
470	40	313	36	147	0,70	69626A
480	40	319	36	150	0,70	69627A
490	40	328	37	154	0,70	69628A
500	41	334	37	157	0,80	69629A



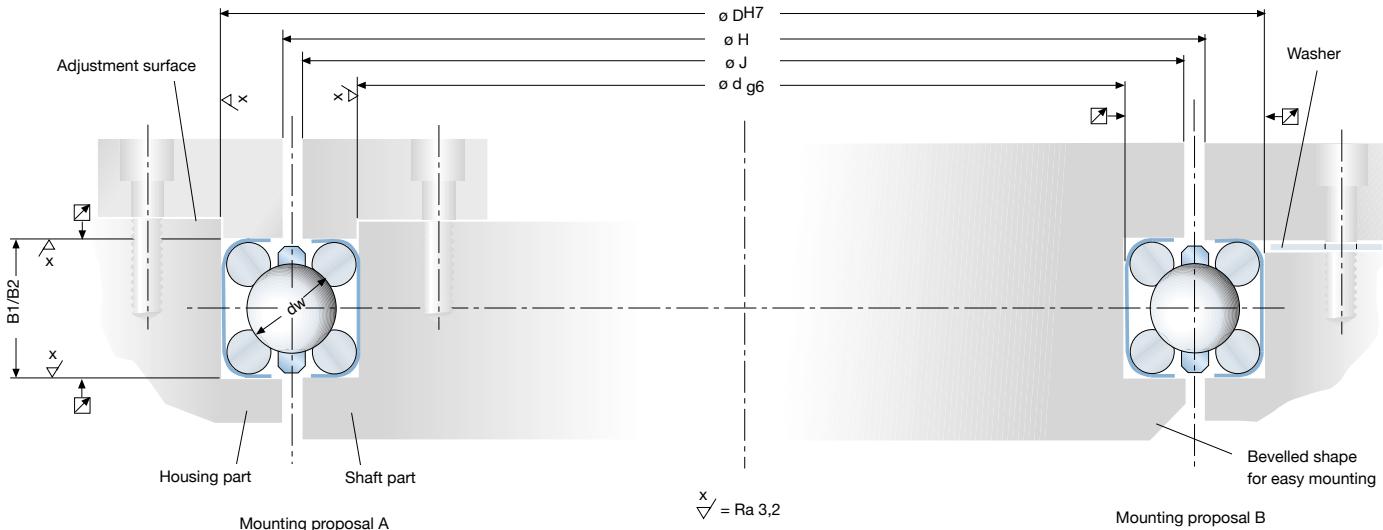
Ball pitch Ø KK [mm]	Load rating				Weight [kg]	Order number
	axial Ca [kN]	Coa [kN]	radial Cr [kN]	Cor [kN]		
510	41	340	37	160	0,80	69630A
520	41	346	37	163	0,90	69631A
530	42	355	38	167	0,90	69632A
540	42	361	38	170	0,90	69633A
550	42	367	38	173	0,90	69634A
560	42	374	38	175	1,00	69635A
570	43	382	39	180	1,00	69636A
580	43	389	39	183	1,00	69637A
590	43	395	39	185	1,00	69638A
600	43	401	39	188	1,10	69639A
610	44	407	40	191	1,10	69640A
620	44	416	40	195	1,10	69641A
630	44	422	40	198	1,10	69642A
640	44	428	40	201	1,20	69643A
650	45	434	41	204	1,20	69644A
660	45	443	41	208	1,20	69645A
670	45	449	41	211	1,20	69646A
680	45	455	41	214	1,30	69647A
690	46	461	42	217	1,30	69648A
700	46	470	42	221	1,30	69649A
710	46	476	42	224	1,40	69650A
720	46	482	42	227	1,40	69651A
730	47	489	42	230	1,40	69652A
740	47	495	43	232	1,50	69653A
750	47	504	43	234	1,50	69654A
760	47	510	43	239	1,50	69655A
770	48	516	43	242	1,50	69656A
780	48	522	43	245	1,60	69657A
790	48	531	44	249	1,60	69658A
800	48	537	44	252	1,60	69659A
810	49	543	44	255	1,60	69660A
820	49	549	44	258	1,70	69661A
830	49	555	44	261	1,70	69662A
840	49	564	45	265	1,70	69663A
850	49	570	45	268	1,70	69664A
860	50	576	45	271	1,80	69665A
870	50	582	45	274	1,80	69666A
880	50	591	46	278	1,80	69667A
890	50	597	46	281	1,90	69668A
900	50	604	46	284	1,90	69669A
920	51	619	46	291	1,90	69670A
940	51	631	47	296	1,90	69671A
960	52	646	47	304	2,00	69672A
980	52	658	47	309	2,00	69673A
1000	52	670	48	315	2,00	69674A
1020	53	685	48	322	2,10	69675A
1040	53	697	48	328	2,10	69676A
1060	54	712	49	335	2,10	69677A
1080	54	725	49	341	2,20	69678A
1100	54	740	49	348	2,20	69679A
1120	55	752	50	353	2,20	69680A
1140	55	767	50	361	2,30	69681A
1160	55	779	50	366	2,30	69672A
1180	56	791	51	372	2,40	69683A
1200	56	806	51	379	2,40	69684A
1220	56	818	51	385	2,40	69685A
1240	57	834	52	392	2,50	69686A
1260	57	846	52	398	2,50	69687A
1280	57	861	52	405	2,50	69688A
1300	58	873	52	410	2,60	69689A
1320	58	888	53	418	2,60	69690A
1340	58	900	53	423	2,70	69691A
1360	59	915	53	430	2,70	69692A
1380	59	927	54	436	2,80	69693A
1400	59	943	54	443	2,80	69694A
1420	60	955	54	449	2,80	69695A
1440	60	970	55	456	2,90	69696A
1460	60	982	55	462	2,90	69697A
1480	61	997	55	469	3,00	69698A
1500	61	1009	55	475	3,00	69699A

Other versions on request !

# Slim bearings



## Series LDD



Cross section	Diameter		Load rating		Nominal dim. B	Ball Ø $d_w$	Mounting dim. class PL1 B1	Starting torque	Mounting dim. class PL2 B2	Starting torque
	D	Cr	Cor							
3/8"	139 - 654	15	24	9,525	6	9,57 - 0,02	3 + 2,0	9,53 - 0,02	5 + 2,5	
1/2"	177 - 660	27	33	12,700	8	12,76 - 0,03	4 + 2,5	12,72 - 0,03	6 + 3,0	
3/4"	215 - 673	73	73	19,050	15	19,12 - 0,03	5 + 2,5	19,07 - 0,03	7 + 3,0	
1"	254 - 685	118	127	25,400	20	25,48 - 0,03	6 + 2,5	25,42 - 0,03	8 + 3,0	

Dimensions [mm], Load rating [kN]

### 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](http://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 44.

### Temperature:

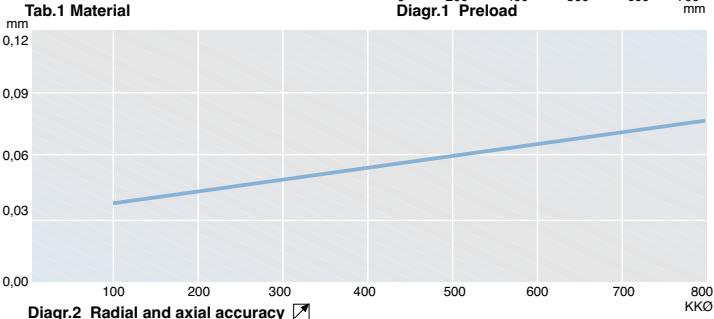
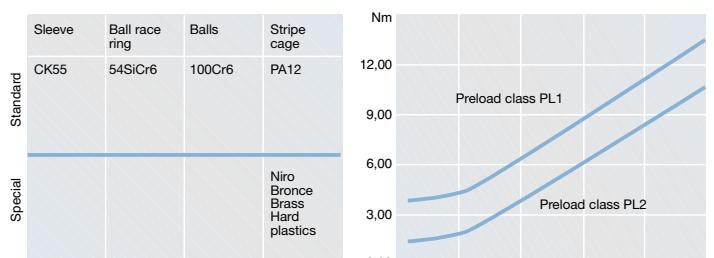
- Continuous operation: -10°C to +70°C, short time operation max. 120°C
- Other temperatures on request

### Adjustment:

- By plane surface
  - By washers (see page 42)
- The preload is adjusted correctly when the rotational resistance without seal corresponds to table 1 (temperature range -40° C to +100° C).

### Circumferential speed:

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

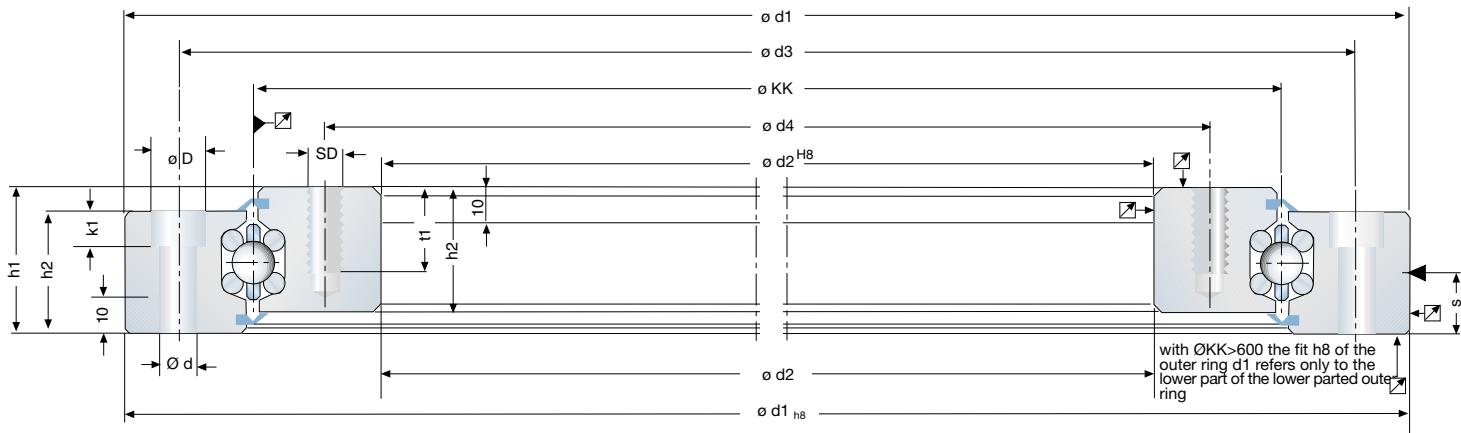




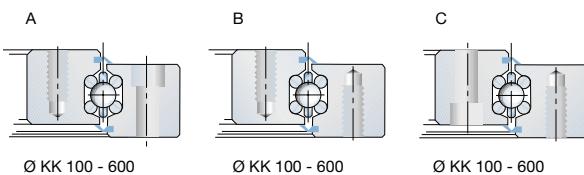
Cross section [inch]	Dimensions						Load rating		Weight	Order number
	d [inch]	D [inch]	d [mm]	D [mm]	H (min.) [mm]	J (max.) [mm]	dyn. Co [kN]	stat. Cro [kN]	ca. [kg]	
3/8"	4,75	5,50	120,65	139,70	132	128	15	24	0,15	75067A
	5	5,75	127,00	146,05	139	134	16	25	0,16	75068A
	5,5	6,25	139,70	158,75	151	147	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
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
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
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

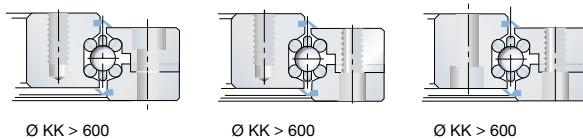
Series LDL Steel version



Bore shapes:



Ring design:



## 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
  - Customized version with integrated bearing element of request
  - 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](http://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 44.

## Temperature:

- Standard: Continuous operation: -30°C to +80°C, short time operation max. 100°C
  - Optional: Continuous 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 35
- 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
Gear: 42CrMo4V					
Special	Alu AlZnMgCu05 Brass CuSn12 NiCrX5CrNi18.10 Plastic Magnesizum	Niro X12CrNi177 X7CrNi177 Duratherm 600F1450 Corrotec, ATC	Niro X45Cr13 Oxydkeramik POM	Niro Bronze 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 [mm]	d1 [mm]	d2 [mm]	h1 [mm]	h2 [mm]	d3 [mm]	d4 [mm]	D [mm]	d [mm]	k1 [mm]	SD [mm]	t1 [mm]	a [Stück]	s	Cr [kN]	Cor [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	66143Y
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	66165A	66166A	66167A
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	M									

Intermediate diameters  
on request

## Bearing assemblies

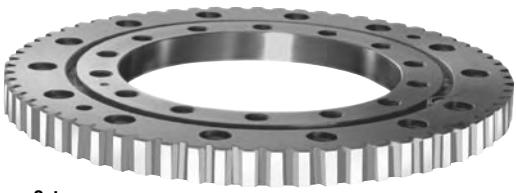
Series LDL Aluminium version (anodised)



Diameter		Height					Fastening					Number			Load rating		Weight		Order number		
KK [mm]	d1 [mm]	d2 [mm]	h1 [mm]	h2 [mm]	d3 [mm]	d4 [mm]	D [mm]	d [mm]	k1 [mm]	SD [mm]	t1 [mm]	[Stück]	a	s	Cr [kN]	Cor [kN]	[kg]	A	B	C	
100	150	50	30	24	135	65	11	6,6	6,8	M6	15	6x	15,0	17	25	1,0	66401L	66402L	66403L		
150	200	100	30	24	185	115	11	6,6	6,8	M6	15	6x	15,0	18	40	1,5	73000L	73001L	73002L		
160	210	110	30	24	195	125	11	6,6	6,8	M6	15	6x	15,0	19	46	1,7	73003L	73004L	73005L		
170	220	120	30	24	205	135	11	6,6	6,8	M6	15	6x	15,0	19	49	1,8	73006L	73007L	73008L		
180	230	130	30	24	215	145	11	6,6	6,8	M6	15	8x	15,0	19	49	1,8	73009L	73010L	73011L		
190	240	140	30	24	225	155	11	6,6	6,8	M6	15	8x	15,0	20	51	1,9	73012L	73013L	73014L		
200	250	150	30	24	235	165	11	6,6	6,8	M6	15	8x	15,0	20	54	2,0	73015L	73016L	73017L		
210	260	160	30	24	245	175	11	6,6	6,8	M6	15	8x	15,0	21	57	2,1	73018L	73019L	73020L		
220	270	170	30	24	255	185	11	6,6	6,8	M6	15	8x	15,0	21	60	2,2	73021L	73022L	73023L		
230	290	170	34	27	270	190	15	9,0	9,0	M8	20	8x	17,5	24	64	3,0	73024L	73025L	73026L		
240	300	180	34	27	280	200	15	9,0	9,0	M8	20	8x	17,5	24	67	3,1	73027L	73028L	73029L		
250	310	190	34	27	290	210	15	9,0	9,0	M8	20	10x	17,5	25	70	3,2	73030L	73031L	73032L		
260	320	200	34	27	300	220	15	9,0	9,0	M8	20	10x	17,5	25	73	3,4	73033L	73034L	73035L		
270	330	210	34	27	310	230	15	9,0	9,0	M8	20	10x	17,5	25	76	3,5	73036L	73037L	73038L		
280	340	220	34	27	320	240	15	9,0	9,0	M8	20	10x	17,5	26	78	3,6	73039L	73040L	73041L		
290	350	230	34	27	330	250	15	9,0	9,0	M8	20	10x	17,5	26	82	3,8	73042L	73043L	73044L		
300	360	240	38	31	340	260	15	9,0	9,0	M8	20	12x	19,5	27	84	4,5	73045L	73046L	73047L		
310	370	250	38	31	350	270	15	9,0	9,0	M8	20	12x	19,5	27	87	4,6	73048L	73049L	73050L		
320	380	260	38	31	360	280	15	9,0	9,0	M8	20	12x	19,5	27	90	4,8	73051L	73052L	73053L		
330	390	270	38	31	370	290	15	9,0	9,0	M8	20	14x	19,5	28	93	4,9	73054L	73055L	73056L		
340	400	280	38	31	380	300	15	9,0	9,0	M8	20	14x	19,5	28	96	5,1	73057L	73058L	73059L		
350	410	290	38	31	390	310	15	9,0	9,0	M8	20	14x	19,5	28	98	5,2	73060L	73061L	73062L		
360	420	300	38	31	400	320	15	9,0	9,0	M8	20	14x	19,5	28	101	5,4	73063L	73064L	73065L		
370	430	310	38	31	410	330	15	9,0	9,0	M8	20	14x	19,5	29	105	5,5	73066L	73067L	73068L		
380	440	320	38	31	420	340	15	9,0	9,0	M8	20	14x	19,5	29	107	5,7	73069L	73070L	73071L		
390	450	330	38	31	430	350	15	9,0	9,0	M8	20	14x	19,5	29	110	5,8	73072L	73073L	73074L		
400	470	330	44	37	445	355	18	11,0	11,0	M10	25	14x	22,5	28	128	8,0	73075L	73076L	73077L		
410	480	340	44	37	455	365	18	11,0	11,0	M10	25	14x	22,5	28	133	8,2	73078L	73079L	73080L		
420	490	350	44	37	465	375	18	11,0	11,0	M10	25	14x	22,5	28	136	8,4	73081L	73082L	73083L		
430	500	360	44	37	475	385	18	11,0	11,0	M10	25	14x	22,5	29	139	8,6	73084L	73085L	73086L		
440	510	370	44	37	485	395	18	11,0	11,0	M10	25	14x	22,5	29	142	8,8	73087L	73088L	73089L		
450	520	380	44	37	495	405	18	11,0	11,0	M10	25	14x	22,5	29	144	9,0	73090L	73091L	73092L		
460	530	390	44	37	505	415	18	11,0	11,0	M10	25	14x	22,5	29	149	9,2	73093L	73094L	73095L		
470	540	400	44	37	515	425	18	11,0	11,0	M10	25	14x	22,5	29	152	9,4	73096L	73097L	73098L		
480	550	410	44	37	525	435	18	11,0	11,0	M10	25	14x	22,5	30	155	9,6	73099L	73100L	73101L		
490	560	420	44	37	535	445	18	11,0	11,0	M10	25	14x	22,5	30	158	9,8	73102L	73103L	73104L		
500	580	420	49	42	550	450	20	14,0	13,0	M12	30	14x	25,0	30	162	13,0	73105L	73106L	73107L		
510	590	430	49	42	560	460	20	14,0	13,0	M12	30	14x	25,0	30	165	13,2	73108L	73109L	73110L		
520	600	440	49	42	570	470	20	14,0	13,0	M12	30	14x	25,0	31	168	13,5	73111L	73112L	73113L		
530	610	450	49	42	580	480	20	14,0	13,0	M12	30	16x	25,0	31	171	13,7	73114L	73115L	73116L		
540	620	460	49	42	590	490	20	14,0	13,0	M12	30	16x	25,0	31	175	14,0	73117L	73118L	73119L		
550	630	470	49	42	600	500	20	14,0	13,0	M12	30	16x	25,0	31	178	14,3	73120L	73121L	73122L		
560	640	480	49	42	610	510	20	14,0	13,0	M12	30	16x	25,0	31	181	14,5	73123L	73124L	73125L		
570	650	490	49	42	620	520	20	14,0	13,0	M12	30	16x	25,0	32	184	14,8	73126L	73127L	73128L		
580	660	500	49	42	630	530	20	14,0	13,0	M12	30	16x	25,0	32	188	15,0	73129L	73130L	73131L		
590	670	510	49	42	640	540	20	14,0	13,0	M12	30	16x	25,0	32	191	15,3	73132L	73133L	73134L		
600	680	520	49	42	650	550	20	14,0	13,0	M12	30	16x	25,0	32	194	15,6	73135L	73136L	73137L		
620	710	530	53	45	670	570	20	14,0	13,0	M12	30	22x	29,0	75	330	21,1	66171L	66142L	66143L		
640	730	550	53	45	690	590	20	14,0	13,0	M12	30	22x	29,0	76	341	21,8	66144L	66145L	66146L		
660	750	570	53	45	710	610	20	14,0	13,0	M12	30	22x	29,0	77	351	22,5	66147L	66148L	66149L		
680	770	590	53	45	730	630	20	14,0	13,0	M12	30	22x	29,0	78	361	23,2	66150L	66151L	66152L		
700	790	610	53	45	750	650	20	14,0	13,0	M12	30	22x	29,0	79	371	23,9	66153L	66154L	66155L		
720	810	630	53	45	770	670	20	14,0	13,0	M12	30	22x	29,0	80	385	24,6	66156L	66157L	66158L		
740	830	650	53	45	790	690	20	14,0	13,0	M12	30	24x	29,0	81	396	25,2	66159L	66160L	66171L		
760	850	670	53	45	810	710	20	14,0	13,0	M12	30	24x	29,0	81	406	25,9	66162L	66163L	66174L		
780	870	690	53	45	830	730	20	14,0	13,0	M12	30	24x	29,0	82	416	26,6	66165L	66166L	66167L		
800	900	700	60	52	865	735	26	18,0	17,5	M16	35	24x	33,0	104	497	36,1	66183L	66184L	66185L		
820	920	720	60	52	885	755	26	18,0	17,5	M16	35	24x	33,0	106	513	37,0	66171L	66172L	66173L		
840	940	740	60	52	905	775	26	18,0	17,5	M16	35	24x	33,0	106	523	38,0	66174L	66175L	66176L		
860	960	760	60	52	925	795	26	18,0	17,5	M16	35	24x	33,0	107	534	38,9	66177L	66178L</td			

# Bearing assemblies

Intermediate diameters  
on request



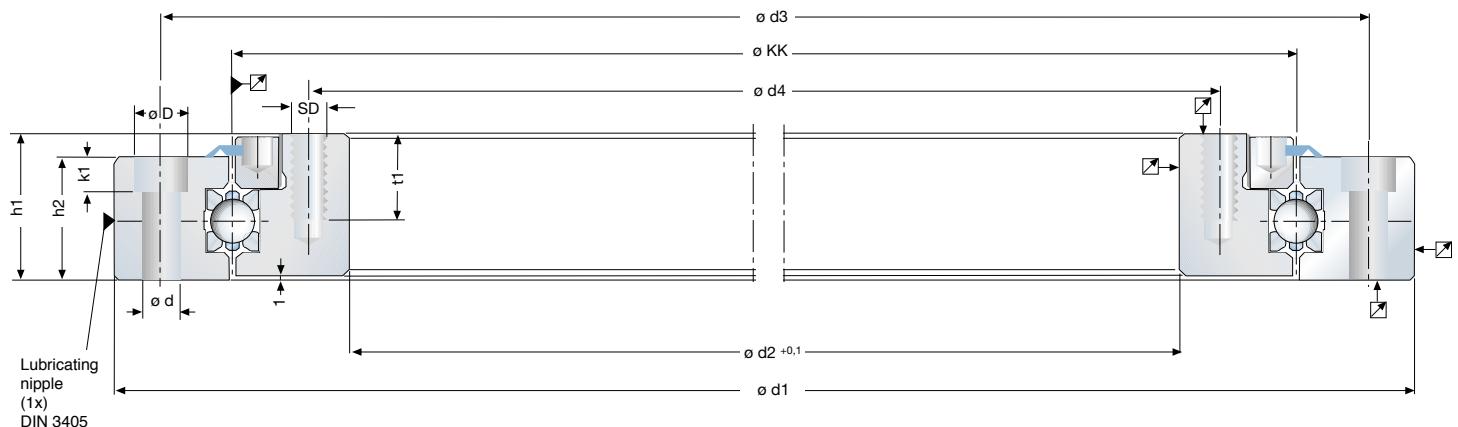
Series LDL Steel version with gear

KK	Wide Module	Ball pitch	Teeth number	Ø d	zuläss. Umfangskräfte	Inner gear			Outer gear Ball pitch Ø d	Teeth number	Ø d	zuläss. Umfangskräfte	Order number					
						Order number							Bore shape					
						d02	Z	d2	normal	max*	A	B	C	Number	[mm]	normal	max*	A
100	19	2	40	20	50	2,9	5,8	66401W	66402W	66403W	160	80	150	1,9	3,8	66401V	66402V	66403V
150	19	2	90	45	100	2,4	4,8	73000W	73001W	73002W	210	105	200	2,0	4,0	73000V	73001V	73002V
160	19	2	100	50	110	2,4	4,7	73003W	73004W	73005W	220	110	210	2,0	4,0	73003V	73004V	73005V
170	19	2	110	55	120	2,3	4,6	73006W	73007W	73008W	230	115	220	2,0	4,0	73006V	73007V	73008V
180	19	2	120	60	130	2,3	4,6	73009W	73010W	73011W	240	120	230	2,0	4,0	73009V	73010V	73011V
190	19	2	130	65	140	2,3	4,5	73012W	73013W	73014W	250	125	240	2,0	4,0	73012V	73013V	73014V
200	19	2	140	70	150	2,2	4,5	73015W	73016W	73017W	260	130	250	2,0	4,0	73015V	73016V	73017V
210	19	2	150	75	160	2,2	4,4	73018W	73019W	73020W	270	135	260	2,0	4,0	73018V	73019V	73020V
220	19	2	160	80	170	2,2	4,4	73021W	73022W	73023W	280	140	270	2,0	4,0	73021V	73022V	73023V
230	22	2	160	80	170	2,6	5,1	73024W	73025W	73026W	300	150	290	2,3	4,6	73024V	73025V	73026V
240	22	2	170	85	180	2,5	5,1	73027W	73028W	73029W	310	155	300	2,3	4,6	73027V	73028V	73029V
250	22	2	180	90	190	2,5	5,0	73030W	73031W	73032W	320	160	310	2,3	4,6	73030V	73031V	73032V
260	22	2	190	95	200	2,5	5,0	73033W	73034W	73035W	330	165	320	2,3	4,6	73033V	73034V	73035V
270	22	2	200	100	210	2,5	5,0	73036W	73037W	73038W	340	170	330	2,3	4,6	73036V	73037V	73038V
280	22	2	210	105	220	2,5	5,0	73039W	73040W	73041W	350	175	340	2,3	4,6	73039V	73040V	73041V
290	22	2	220	110	230	2,5	4,9	73042W	73043W	73044W	360	180	350	2,3	4,6	73042V	73043V	73044V
300	26	3	228	76	240	4,6	9,1	73045W	73046W	73047W	372	124	360	4,1	8,1	73045V	73046V	73047V
310	26	3	237	79	250	4,5	9,1	73048W	73049W	73050W	384	128	370	4,1	8,1	73048V	73049V	73050V
320	26	3	249	83	260	4,5	9,0	73051W	73052W	73053W	396	132	380	4,1	8,1	73051V	73052V	73053V
330	26	3	258	86	270	4,5	9,0	73054W	73055W	73056W	402	134	390	4,1	8,1	73054V	73055V	73056V
340	26	3	264	88	280	4,5	8,9	73057W	73058W	73059W	414	138	400	4,1	8,1	73057V	73058V	73059V
350	26	3	276	92	290	4,5	8,9	73060W	73061W	73062W	423	141	410	4,1	8,1	73060V	73061V	73062V
360	26	3	288	96	300	4,4	8,9	73063W	73064W	73065W	432	144	420	4,1	8,1	73063V	73064V	73065V
370	26	3	297	99	310	4,4	8,8	73066W	73067W	73068W	444	148	430	4,1	8,1	73066V	73067V	73068V
380	26	3	306	102	320	4,4	8,8	73069W	73070W	73071W	456	152	440	4,1	8,1	73069V	73070V	73071V
390	26	3	318	106	330	4,4	8,8	73072W	73073W	73074W	462	154	450	4,1	8,1	73072V	73073V	73074V
400	32	3	318	106	330	5,4	10,8	73075W	73076W	73077W	483	161	470	5,0	10,0	73075V	73076V	73077V
410	32	3	324	108	340	5,4	10,8	73078W	73079W	73080W	492	164	480	5,0	10,0	73078V	73079V	73080V
420	32	3	336	112	350	5,4	10,8	73081W	73082W	73083W	504	168	490	5,0	10,0	73081V	73082V	73083V
430	32	3	348	116	360	5,4	10,7	73084W	73085W	73086W	513	171	500	5,0	10,0	73084V	73085V	73086V
440	32	3	357	119	370	5,3	10,7	73087W	73088W	73089W	522	174	510	5,0	10,0	73087V	73088V	73089V
450	32	3	366	122	380	5,3	10,7	73090W	73091W	73092W	534	178	520	5,0	10,0	73090V	73091V	73092V
460	32	3	378	126	390	5,3	10,7	73093W	73094W	73095W	546	182	530	5,0	10,0	73093V	73094V	73095V
470	32	3	387	129	400	5,3	10,6	73096W	73097W	73098W	552	184	540	5,0	10,0	73096V	73097V	73098V
480	32	3	396	132	410	5,3	10,6	73099W	73100W	73101W	564	188	550	5,0	10,0	73099V	73100V	73101V
490	32	3	408	136	420	5,3	10,6	73102W	73103W	73104W	576	192	560	5,0	10,0	73102V	73103V	73104V
500	35	3	408	136	420	5,8	11,6	73105W	73106W	73107W	594	189	580	5,5	10,0	73105V	73106V	73107V
510	35	3	414	138	430	5,8	11,6	73108W	73109W	73110W	603	201	590	5,5	10,0	73108V	73109V	73110V
520	35	3	426	142	440	5,8	11,6	73111W	73112W	73113W	612	204	600	5,5	10,9	73111V	73112V	73113V
530	35	3	438	146	450	5,8	11,5	73114W	73115W	73116W	624	208	610	5,5	10,9	73114V	73115V	73116V
540	35	3	444	148	460	5,8	11,5	73117W	73118W	73119W	636	212	620	5,5	10,9	73117V	73118V	73119V
550	35	3	456	152	470	5,8	11,5	73120W	73121W	73122W	642	214	630	5,5	10,9	73120V	73121V	73122V
560	35	3	468	156	480	5,7	11,5	73123W	73124W	73125W	654	218	640	5,5	10,9	73123V	73124V	73125V
570	35	3	477	159	490	5,7	11,5	73126W	73127W	73128W	663	221	650	5,5	10,9	73126V	73127V	73128V
580	35	3	486	162	500	5,7	11,5	73129W	73130W	73131W	672	224	660	5,5	10,9	73129V	73130V	73131V
590	35	3	498	166	510	5,7	11,4	73132W	73133W	73134W	684	228	670	5,5	10,9	73132V	73133V	73134V
600	35	3	507	169	520	5,7	11,4	73135W	73136W	73137W	693	231	680	5,5	10,9	73135V	73136V	73137V
620	38	4	512	128	530	8,4	16,8	66141W	66142W	66143W	728	182	710	7,9	15,8	66141V	66142V	66143V
640	38	4	532	133	550	8,4	16,8	66144W	66145W	66146W	748	187	730	7,9	15,8	66144V	66145V	66146V
660	38	4	552	138	570	8,4	16,7	66147W	66148W	66149W	768	192	750	7,9	15,8	66147V	66148V	66149V
680	38	4	572	143	590	8,4	16,7	66150W	66152W	66152W	792	198	770	7,9	15,8	66150V	66151V	66152V
700	38	4	592	148	610	8,3	16,7	66153W	66154W	66155W	808	202	790	7,9	15,8	66153V	66154V	66155V
720	38	4	612	153	630	8,3	16,7	66156W	66157W	66158W	828	207	810	7,9	15,8	66156V	66157V	66158V
740	38	4	632	158	650	8,3	16,6	66159W	66160W	66161W	848	212	830	7,9	15,8	66159V	66160V	66161V
760	38	4	648	162	670	8,3	16,6	66162W	66163W	66164W	868	217	850	7,9	15,8	66162V	66163V	66164V
780	38	4	672	168	690	8,3	16,6	66165W	66166W	66167W	888	222	870	7,9	15,8	66166V	66167V	66168V
800	45	5	680	136	700	24,8	24,1	66168W	66169W	66170W	920	184	900	11,7	23,4	66168V	66169V	66170V
820	45	5	700	140	720	12,4	24,8	66171W	66172W	66173W	940	188	920	11,7	23,4	66171V	66	

# Bearing assemblies

Series LDV, preferential series

Available from stock



KK	Load rating			Diameter			Height		Fastening				Weight [kg]	Order number		
	Cr	Cor	D	d	d1	d2	h1	h2	d3	d4	Screws per ring	k1	SD	t1		
200	18	50	11	6,6	250 <sub>-0,1</sub>	150	30 <sub>±0,3</sub>	24	235	165	8 x M6	6,8	M 6	15	5,0	66276A
300	21	78	15	9,0	360 <sub>-0,1</sub>	240	38 <sub>±0,4</sub>	31	340	260	12 x M8	9,0	M 8	20	11,6	66277A
400	24	105	18	11,0	470 <sub>-0,15</sub>	330	44 <sub>±0,5</sub>	37	445	355	14 x M10	11,0	M10	25	21,6	66278A

Dimensions [mm], Load rating [kN]

## 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](http://www.franke-gmbh.com). We are gladly prepared to calculate the bearing size for you.

## Lubrication:

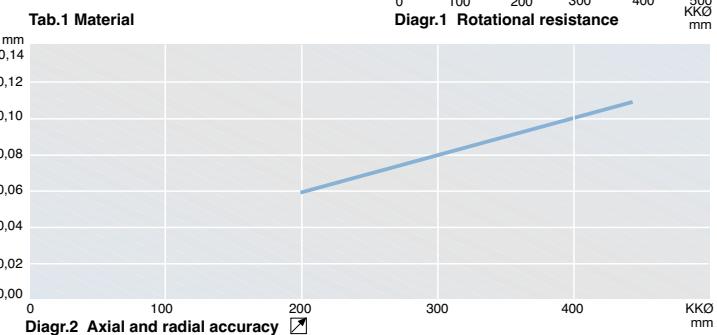
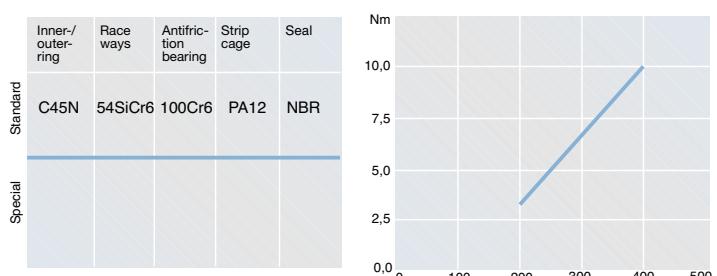
- with ball bearing grease. For more information see page 44.

## Temperature:

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

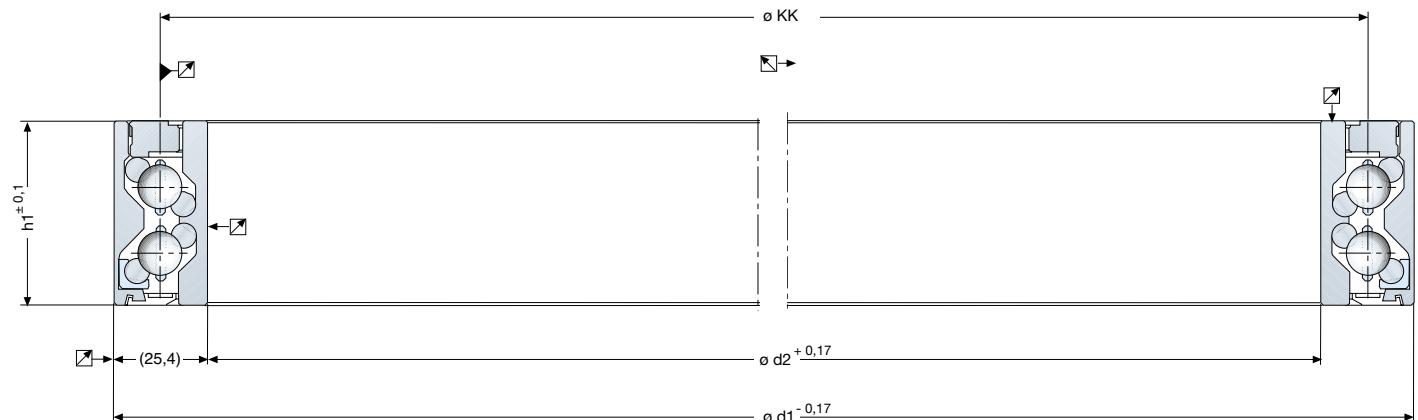
## Circumferential speed:

- With seal max. 5 m/s
- Without seal max. 10 m/s



# Bearing assemblies

Series LDH, highly dynamical



Special and metrical dimensions on request

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

Maße [mm], Tragzahl [kN]

## 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/metric system possible)
- Custom-made solutions are possible.

## Lubrication:

- With ball bearing grease. Further information on page 44.

## Temperature range:

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

## Adjustment:

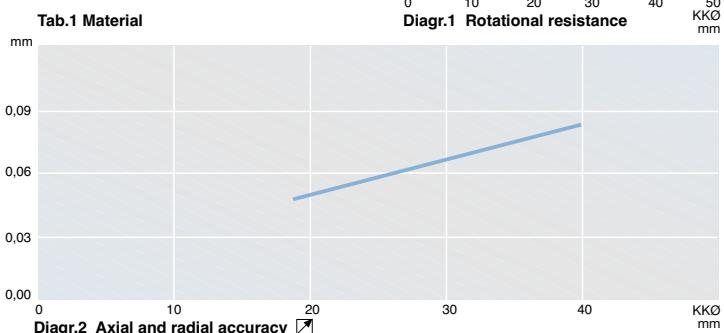
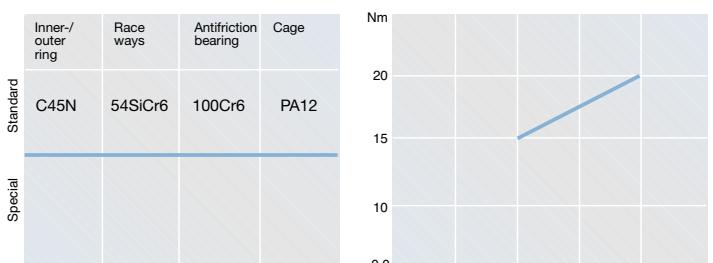
- Adjusted by threaded ring in our works
- Rotational resistance see diagram 1

## Circumferential speed:

- up to 20 m/s

## Further information:

Many manufacturers of computer tomographs became aware of the advantages of the Franke system and have been using them consequently in the core of their products.



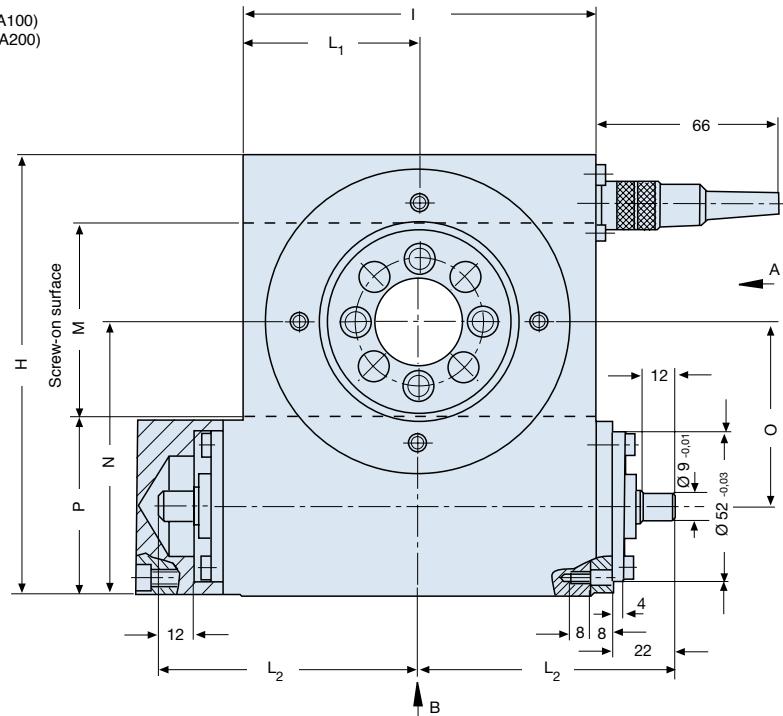
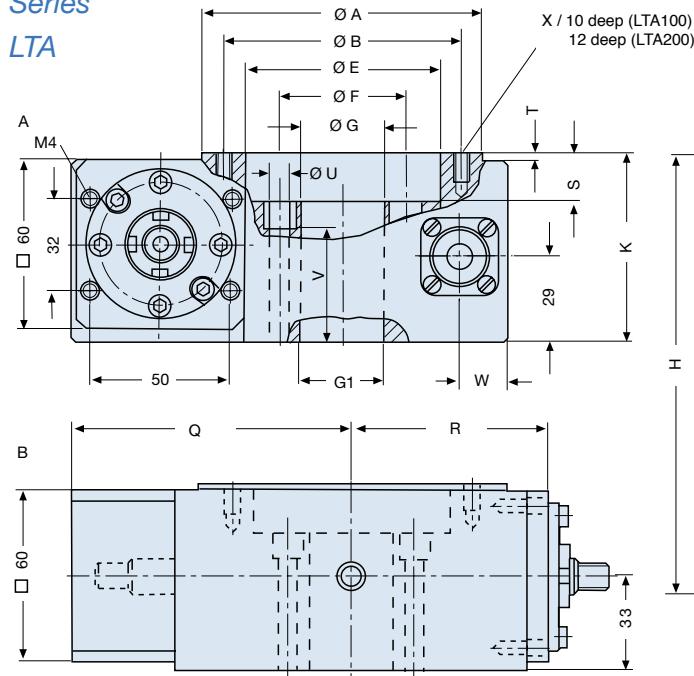
# Rotary tables

## Standard



### Series

#### LTA



Nom. $\emptyset$	Load rating		Load moment		RPM input	Gear down	i	RPM output	max. input torque RPM	max. output torque RPM	Weight	Order number
	C <sub>0</sub> [kN]	C [kN]	M <sub>c0</sub> [Nm]	N <sub>1 max</sub> [U/min]								
100	17,5	9	289	1800	100	18		5	54	5,5	91800A	
200	43,0	18	433	2200	61	36		5	108	10,0	91801A	

Nom. $\emptyset$																						
A	B	$\emptyset E^{H7}/_{10\text{ tief}}$	$\emptyset F$	$\emptyset G$	$\emptyset G_1^{H7}/_{12\text{ tief}}$	H	I	K	L <sub>1</sub>	L <sub>2</sub>	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	6xØ9,0	39	22 6xM8	
<b>Ø100</b>												<b>Ø200</b>										
Radial/axial accuracy				$\mu\text{m}$		30				30												
Positioning accuracy				"		160				120												
Repetitive accuracy				"		20				14												

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  $S_{ST} \geq 3$ , static safety with levers and moments  $S_{ST} \geq 6$ .
- 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 97-98. 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-bronze               |
| Worm shaft: | CK45N, ground and hardened |
| Housing:    | non corrosive steel V2A    |



Compact worm gear drive

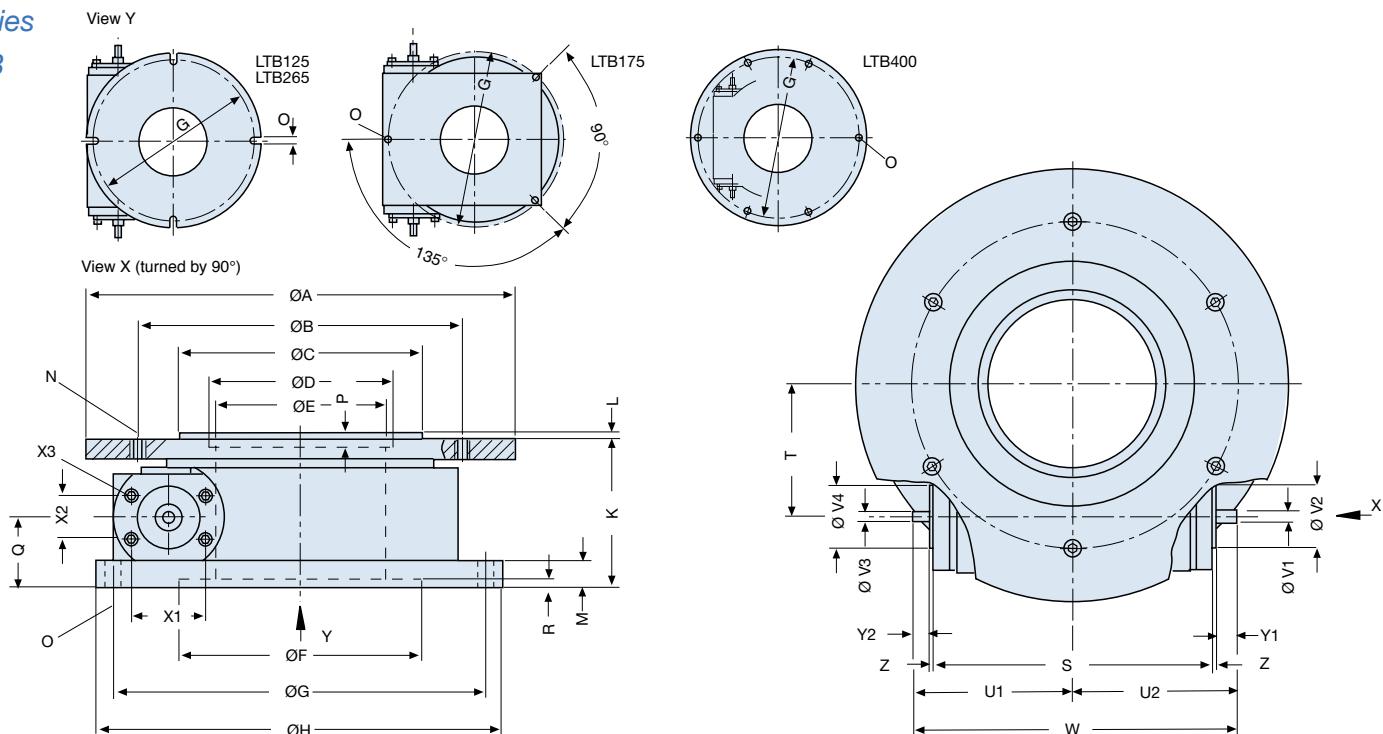
# Rotary tables

## high precision



### Series

#### LTB



Nom. Ø rating	Load moment $C_{OM}$	Load moment $C_{OM}^6$	Order number																									
			A	C <sub>0</sub>	A	B	C <sup>6</sup>	D <sup>H7</sup>	E	F <sup>H7</sup>	G	H	K	L	M	N	O	P	Q	R	S	T	U1	U2	V <sub>1</sub> <sup>g6</sup>	V <sub>2</sub> <sup>g6</sup>	V <sub>3</sub> <sup>g6</sup>	V <sub>4</sub> <sup>g6</sup>
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 <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	Y <sub>1</sub>	Y <sub>2</sub>	Z	Trans-mission	N max. [U/min]	Nominal-Ø [mm]		125	175	265	400
									Radial / axial accuracy µm	Positioning accuracy µm				
125	21,8	26,0	2 x M4/ 8 deep	8,0	9,0	2,8	360 : 1	7	Repetitive accuracy "	16	20	20	20	30
175	50,0	32,0	2 x M4/16 deep	18,0	18,0	4,0	360 : 1	7	Max. input torque Nm	0,7	80	80	70	50
265	45,0	26,0	4 x M4/13 deep	10,0	7,0	2,5	360 : 1	7	Max. output torque Nm	70	14	10	10	8
400	45,0	26,0	4 x M5/24 deep	9,0	6,0	2,5	360 : 1	7	Dimensions [mm], Weight [kg], Load rating [N], Momenta [Nm]	75	160	160	290	

#### Consists of:

- Aluminium body with metal cover from non-corrosive steel
- High precision worm gear

#### 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  $S_{ST} \geq 3$ . 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.

#### 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 97-98. Please consult us.

#### Material:

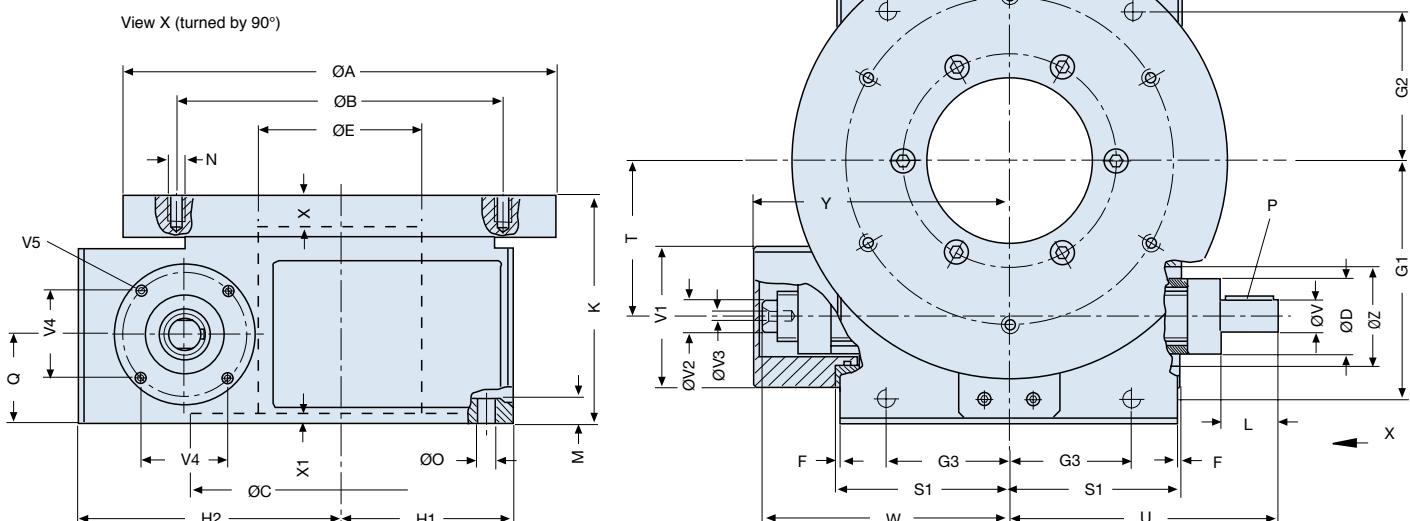
- |   |                         |
|---|-------------------------|
| Table body:                                       | aluminium               |
| Raceways:   | high alloy spring steel |
| Balls:  | steel                   |
| Worm gear:  | steel-bronze            |
| Vacuum and partly non-magnetic version on request |                         |

# Rotary tables

robust, splash-proof



## Series LTC



Nom. Ø	Load rating	Load moment	Weight															kg	
A	C <sub>OA</sub>	C <sub>OM</sub>	A	B	C <sup>H7</sup>	D	E <sup>H7</sup>	F	G1	G2	G3	H1	H2	K	L	M	N	kg	
175	2500	75	175	126	-	40	40	-	89	79	58	94	104	110	35	81*	M6,10 deep	9	91186A
265	7800	610	265	200	198	48	100	2	145	90	75	106	160	138	35	15	M10,15 deep	22	91187G
400	16000	2000	400	340	206	62	200	4	235	155	135	175	255	165	55	25	M10,15 deep	48	91214A
A	0	0	P	Q	S1	T	U**	V	V1	V2	V3	V4	V5	W**	X	X'	Y	Z	
175	9	DIN 6885 A4 x 4x28	47	68	53	127	12j6	80	10j6/12lg.	-	47	M6,11 deep	118	5	-	124	56 <sup>H8</sup>		91186A
265	11	DIN 6885 A6 x 6x30	54	105	95	164	19g6	85	19/ 9 lg.6 <sup>H7</sup> /18lg.	53	M6,14 deep	151	20	6	156	60 <sup>H7</sup>		91187G	
400	14	DIN 6885 A6 x 6x45	64	170	159	246	19j6	120	26/ 8 lg.14 <sup>H8</sup> /20lg	96	M8,16 deep	220	8	12	227	90 <sup>F8</sup>		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 <sup>-1</sup>	Radial/axial accuracy	μm	30	40
		Positioning accuracy	"	100	90
		Repetitive accuracy	"	16	14
		Max. input torque	Nm	1,4	4,6
		Max. output torque	Nm	70	270

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

### 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 and lifetime we recommend a static safety of  $S \geq 3$ . 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 97-98. Please consult us.

**Material:** Table body: aluminium

Raceways: high alloy spring steel

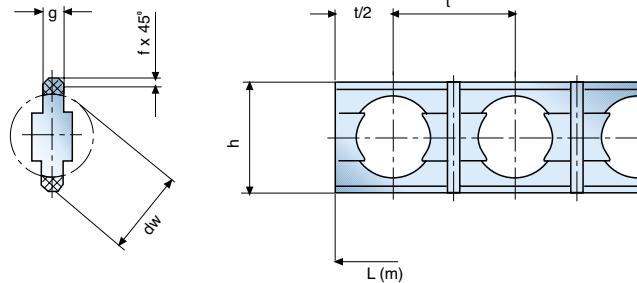
Balls: steel

Worm gear: steel-bronze

Vacuum-fit and partly non-magnetic version on request

## Accessories

### Strip cages (Standard) Series LKB



Cage Size	dw		h	g	t	f	Order number (per meter)
	mm	Zoll					
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:

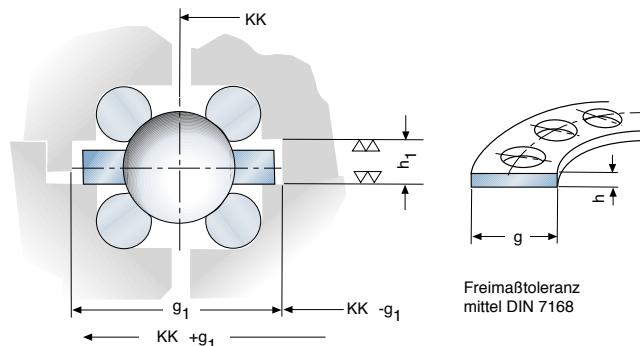
$$Z = \left[ \frac{\varnothing_{KK} \cdot \pi}{t} \right] - 1 \quad \begin{array}{l} Z = \text{Number of balls} \\ \varnothing_{KK} = \text{Ball pitch diameter} \end{array}$$

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

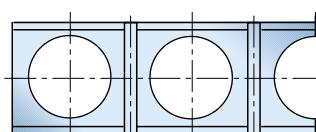


dw	h x g	h1 x g1	Order number
5,0	2 x 10	2,7 x 13	
6,0	2 x 12	2,7 x 15	on request
8,0	2 x 15	4,0 x 18	
9,0	3 x 16	4,0 x 18	
12,0	4 x 20	5,5 x 23	
16,0	5 x 26	6,5 x 30	
20,0	6 x 31	7,5 x 35	
25,0	8 x 38	10,0 x 43	
30,0	8 x 45	10,0 x 50	
40,0	12 x 56	14,0 x 61	
50,0	15 x 80	17,5 x 88	

Material: fabric-base laminate, brass, Niro

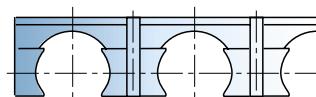
Dimensions [mm]

### Strip cage: hard material, non-corrosive steel, brass



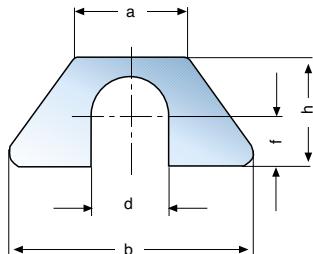
Flat cages have to be used with temperatures over 100°C and ball diameters bigger than 20 mm. Special solutions like complete corrosion-protection or radiation-resistance are possible.

### Comb cage



# Accessories

## Washers



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

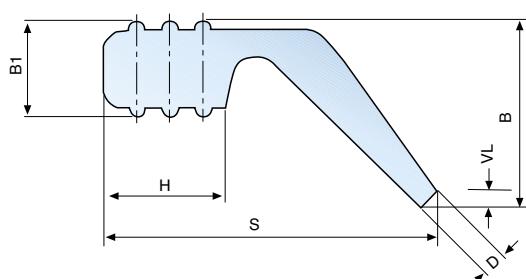
Dimensions [mm]								
	Order number							
Dicke	0,025	0,1	0,15	0,2	0,25	0,3	0,5	1,0
<b>M6</b>	79015A	79034A	79035A	79036A	79037A	79038A	79039A	79040A
<b>M8</b>	79041A	79023A	79042A	79000A	79026A	79043A	79044A	79045A
<b>M10</b>	79046A	79012A	79010A	79011A	79047A	79048A	79049A	79050A
<b>M12</b>	79118A	79051A	79052A	79053A	79054A	79055A	79056A	79065A
<b>M16</b>	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	$B \pm 0,3$	$B_1 \pm 0,2$	D	Material	Preload	Weight	Order number
10	4,2	5,3	3,0	0,8	Perbunan 170NBR/221	0,5...1,5	0,026	09080
15	5,5	8,5	4,3	1,0	Perbunan 170NBR/221	0,5...2,0	0,051	09190

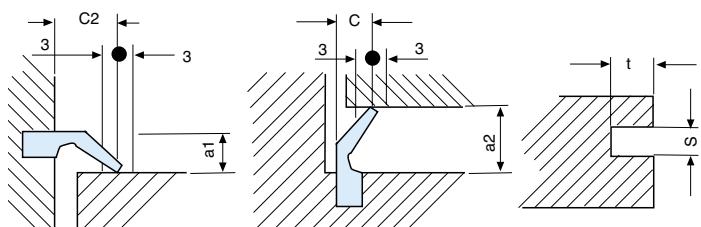
1)Depending on the required rotational resistance (approx. 1 Nm/m seal)

Dimensions [mm], Weight [kg/m]

Franke bearing assemblies are equipped with the S10-seal.

Temperatupe -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 $S$	c	$c_2$	$a_1$	$a_2$	$t^{+0,2}$	$s^{-0,1}$
$10^{\pm 0,5}$	5+1	$5,5^{\pm 1}$	3,6...4,6	4,3...5,3	4,2	2,8
$15^{\pm 0,5}$	8+1,5	$9,0^{\pm 1,5}$	6,3...7,7	7,5...9,0	5,5	3,9

\* Important note: please check seal dimension first before manufacturing the groove

Dimensions [mm]

## Special seals on request

For high temperature or special environments we offer Viton-seals.

# Technical information



## 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, cleanroom, humidity

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.

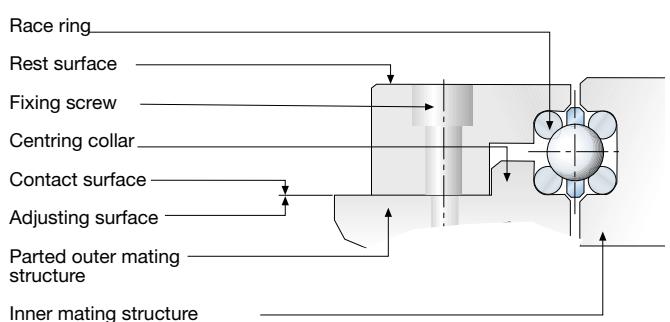
### 2.1 Adjustment by means of washers

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 41).

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 44: 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 3.5 "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.

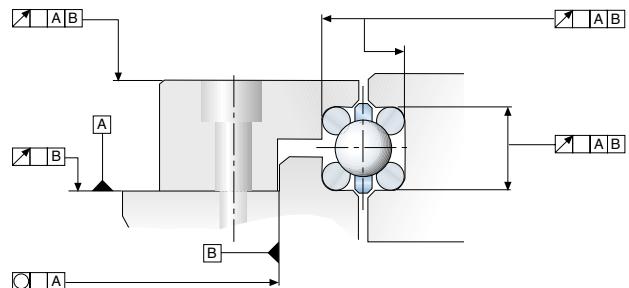
Condition:

- 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 3.5 "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 3.1 "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 ISOFLUX 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:

$$M = KK\varnothing \times h2/3 \times X$$

$h2$  = height of bearing ring n mm (see page 20 resp. 24)

$KK\varnothing$  = Ball pitch diameter in mm

$m$  = Re-lubrication quantity

$X$  = Factor according to table 1 in  $\text{mm}^{-1}$

#### 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 (3X120i). 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)

$$= 1000 (\text{h}) / 16 (\text{h/day}) = 63 \text{ days} \sim \text{three months}$$

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).

$$m = 500\text{mm} \times 42/3\text{mm} \times 0.0003 = 21 \text{ g}$$

Hence the quantity for re-lubrication amounts to 21g ISOFLUX 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	
	88 [Nm]	129 [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 DIN ISO 286 (see table 4).

Table 4

Nominal dimensional range ...up to [mm]	Basic tolerances	
	IT6 [µm]	IT7 [µm]
80...	22	35
120...	25	40
180...	29	46
250...	32	52
315...	36	57
400...	40	63
500...	44	70
630...	50	80
800...	56	90
1000...	66	105
1250...	78	125

DIN ISO 286 T1 (11.90)

## 4. Rotary Tables

Franke rotary tables are compact and have high load capacity. They are particularly 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.

Generally all standard rotary 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 "gr." per lubricating point

Lubricating	left	right	top	bottom	sidewise
LTA100	-	-	-	-	1
LTA200	-	-	-	-	1
LTB125	-	-	-	-	3
LTB175	-	-	-	-	3
LTB265	-	-	-	-	3
LTB400	-	-	-	-	1
LTC175	1	1	3	2	-
LTC265	1	1	3	2	-
LTC400	1	1	4	3	-

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