



Antifriction Bearings

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Bearing Elements

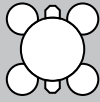
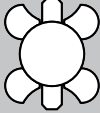
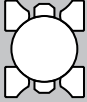
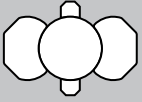
Bearing Assemblies


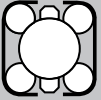
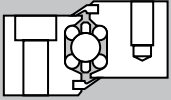
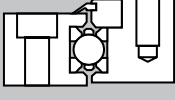
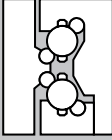
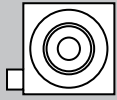
Rotary Tables

Accessories

Technical Information

Antifriction Bearings at a Glance

	Bearing Elements			
Type	LEL	LED	LER	LEG
				
Components	<ul style="list-style-type: none"> • Round profile with ground raceway • Plastic cage with retained balls 	<ul style="list-style-type: none"> • Double profile with ground or profiled raceway • Plastic cage with retained balls 	<ul style="list-style-type: none"> • Rectangular profile with profiled raceway • Plastic cage with retained balls 	<ul style="list-style-type: none"> • 2-ring bearing element with profiled raceway • Plastic cage with retained balls
Options	<ul style="list-style-type: none"> • Special materials • Special rolling elements • Surface coatings • Special cages 	<ul style="list-style-type: none"> • Surface coatings 	<ul style="list-style-type: none"> • Surface coatings • Special cages 	
Advantages	<ul style="list-style-type: none"> • High precision and smooth running • High load rating • Load rating and cross section can be adjusted individually 	<ul style="list-style-type: none"> • Higher load capacity and smooth running thanks to ground raceway • Short delivery times • Reasonable alternative to type LEL 	<ul style="list-style-type: none"> • Short delivery times • Very cost-effective thanks to competitive price, easy fitting and simplified finishing of the bearing bed • High stiffness • High load rating 	<ul style="list-style-type: none"> • Smallest mounting space, as particularly compact • Easy fitting • Consists of just two race rings
Use	<ul style="list-style-type: none"> • Individually adjustable to the application, therefore, suitable for almost all uses 	<ul style="list-style-type: none"> • Standard line if series needed 	<ul style="list-style-type: none"> • Maximum stiffness for diverse applications 	<ul style="list-style-type: none"> • Replaces conventional deep groove ball bearings • Ideal for radial loads
Race ring diameter (mm) Standard Special	1.5 – 7 0.75 – 22	4	4 x 3	5
Ball diameter (mm) Standard Special	5 – 16 4 – 50	9.525 10, 12	9.525	5
Bearing cross section (mm) Standard Special	5.9 x 5.9 – 20.9 x 20.9 Customer's choice	12.86 x 12.86 – 12.95 x 12.95 13.19 x 13.19 – 14.61 x 14.61	11 x 13	10.51 x 5
Ball pitch diameter (mm) Standard Special	70 – 2000 40 – 7000	100 – 1500	100 – 1500	100 – 500
More on page	30 – 33	34 – 35	36	37

		Bearing Assemblies			Systems
	LDD	LDL	LDV 	LDH	LTA, LTB
					
	<ul style="list-style-type: none"> • Slim bearing with ground raceway • Encapsulating steel housing 	<ul style="list-style-type: none"> • Bearing assembly of steel or aluminium • Double-sided seal • With or without gear 	<ul style="list-style-type: none"> • Bearing assembly of steel • One-sided seal • NEW with outer gear 	<ul style="list-style-type: none"> • Bearing assembly of steel as angular ball bearing 	<ul style="list-style-type: none"> • Rotary Tables and positioning systems • Rotary Tables with gear and drive unit
		<ul style="list-style-type: none"> • Special materials • Special rolling elements • Surface coatings • Gear to specifications 		<ul style="list-style-type: none"> • Inner to outer ring electrically insulated 	<ul style="list-style-type: none"> • End switch • Rotary encoder • Motorisation • Steering • Measuring systems
	<ul style="list-style-type: none"> • Easy fitting, as pre-finished bearing element • Bearing cross section in accordance with international standards 	<ul style="list-style-type: none"> • Ready-to-connect complete bearing • With preload • High accuracy 	<ul style="list-style-type: none"> • Ready-to-connect complete bearing • Available from stock • Competitive price 	<ul style="list-style-type: none"> • High accuracy • Geometry, cross section, set-up of choice • Adjustment adjustable • Silent bearing for very quiet and low-vibration running 	<ul style="list-style-type: none"> • Franke four-point bearing as basic component • Adaptors for customer-specific motors • Aluminium housing • High accuracy • High centre freedom
	<ul style="list-style-type: none"> • Prefinished bearing element for diverse applications 	<ul style="list-style-type: none"> • Individually adjustable to the application, therefore, suitable for almost all uses 	<ul style="list-style-type: none"> • Individual adjustment to the application possible if series required 	<ul style="list-style-type: none"> • For very dynamic applications • Individually adjustable to the application 	<ul style="list-style-type: none"> • For diverse applications in industry and research
	–	–	–	–	–
	6 – 20	–	–	–	–
	3/8" – 1"	–	–	–	–
	5.125" – 26"	100 – 1500 Customer's choice	200 – 600	21" – 41" Customer's choice	100 – 400 Customer's choice
	38 – 39	40 – 49	50	51	52 – 53

Antifriction Bearings in Practice

After in-depth consultation and precise design and production, Franke Antifriction Bearings provide movement in diverse applications. For example, in computer tomography, processing centres, textile machinery, machinery for chip production, indexing tables or robots. Our Antifriction Bearings pass the practical test day after day – you can rely on that.

In Medical Technology: Computer Tomography

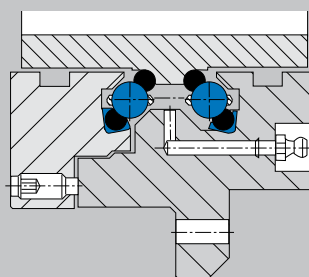


Photo credit: Siemens AG

The patented Franke **Fluesterlager**® as the main bearing in computer tomography contributes to exact x-rays thanks to its design tailor-made to the needs of medical technology.

The Features:

- Smooth and low-vibration running is even ensured at high rotary speeds thanks to CNC-ground raceways.
- The elastomer profiles between the race rings and the race ring bed form the basis for muted noise development and electrical insulation of the inner and outer ring.
- The silent bearing impresses with rotary speeds of up to 300 revolutions per minute.



Bearing diameter: 1500 mm

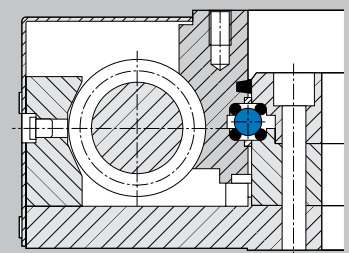
In Solar Industries: Tracking Systems



The best possible positioning to the sun is required for photovoltaic modules or solar panels to obtain an optimum yield in solar energy systems. Franke Antifriction Bearings in tracking systems automatically align solar collector systems such that radiation from the sun is collected in ideal fashion.

The Features:

- The 4-point system of Franke Antifriction Bearings makes for optimum swivelling of solar collector systems along with a high degree of rigidity.
- Built directly into the surrounding structure, these bearings are extremely space-saving.
- Good value for money tops off the benefits of this Franke product.



Bearing diameter: 170 mm

In the Textile Industry: Circular Knitting Machines

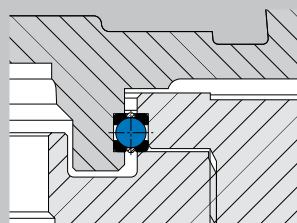


Photo credit: Mayer & Cie. GmbH & Co.KG

Our bearing elements for circular knitting machines have a decisive influence on the quality of the textiles due to their precision.

The Features:

- Even under severe thermal and mechanical loads, the bearing elements enable exact radial and axial guiding of the needles.
- The rotary speeds are up to 60 revolutions per minute.
- The quality of the machines is determined amongst other things by the quiet running of the bearing and the high surface quality of the raceways.



Bearing diameter: 960 mm

In Machinery: Machining Centres

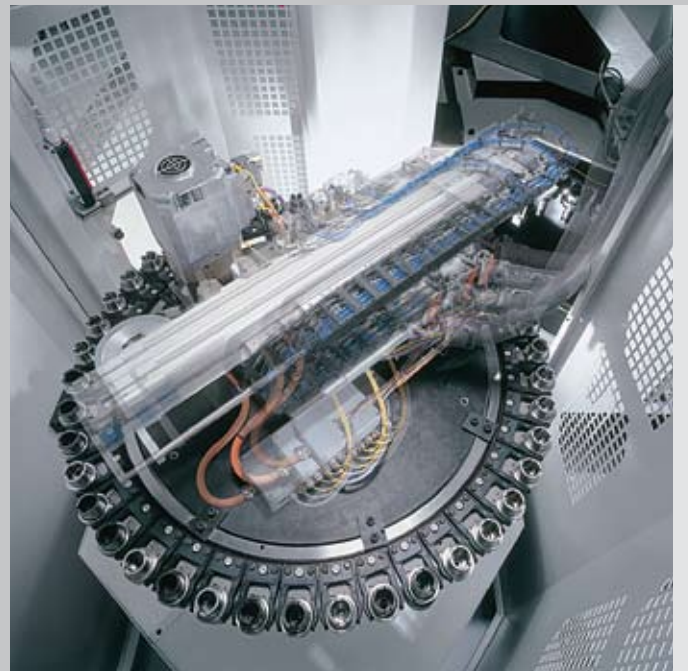
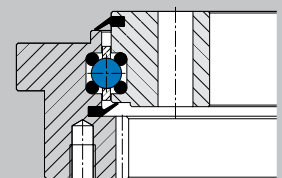


Photo credit: Hermle AG

In tool changers at machining centres, our bearing assemblies help to ensure that different tools are fed quickly and precisely into the machining head.

The Features:

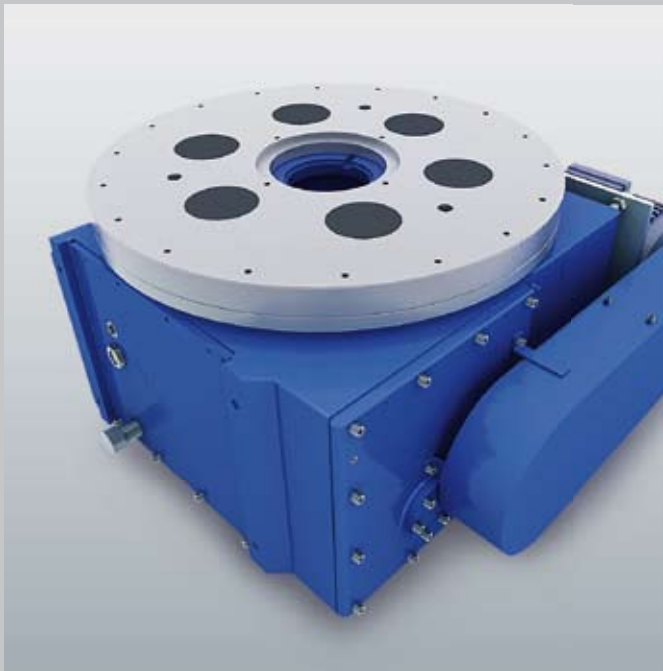
- Larger bore possibility of the bearing assemblies, the drive system can be installed to the inside.
- Labyrinth seals protect the raceways of the bearing assemblies from chipping and coolants.
- The preload of the bearing guarantees high accuracy and even adjustment – thus, nothing stands in the way of quiet running and maximum precision.



Bearing diameter: 970 mm

Antifriction Bearings in Practice

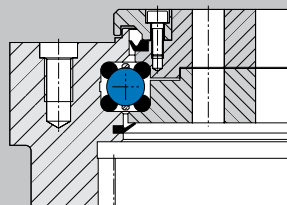
In Machinery: Indexing Tables



By using indexing tables, also called Rotary Tables, tools are moved precisely. The constant and precise movement of these indexing tables is based on our bearing elements amongst other things.

The Features:

- The bearing elements are precisely adjusted to the different loads. Enormous loads can easily be borne from all directions.
- The Antifriction Bearings guarantee that the Rotary Table can move without jerks or shocks, high repeat accuracy is included.



Bearing diameter: 800 mm

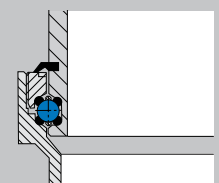
In Automation: Robots



Our bearing elements are ideally suited for use in the mobile axes of small robots.

The Features:

- The ingenious 4-point system from Franke facilitates high capacity from all directions of movement.
- As the bearing element is integrated into the existing robot design, only minimal installation space is needed.
- The larger bore possibility of the bearing enables cables and supply pipes to be fed through.



Bearing diameter: 240 mm

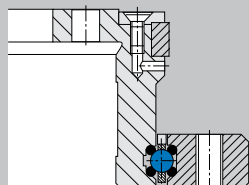
In Clean Room Technology: Machinery for Chip Production



Wafer steppers are used for microchip production in the clean room. The illumination optics form the heart of this machine. They produce the filigree chip structures. A component of the optics: a Franke Antifriction Bearing.

The Features:

- So that the illumination optics can work with extremely low tolerances, the bearing has good radial and axial accuracy and high stiffness.
- Low-abrasion materials, special balls, a special ball cage and freedom from lubricants meet the necessary requirements for the clean room.
- The final cleaning and packing of the bearing is effected for clean room level 10000.
- Weight is saved by using aluminium.



Bearing diameter: 138 mm

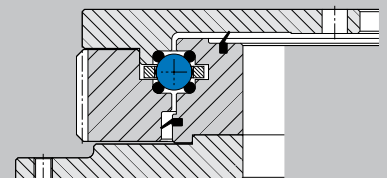
In the Aviation Industry: Turbine Testing



Franke Special Bearings of 700 to 1500 mm are used in testing stations for turbines. They are used to position the conducting segments and rotating blades. The bearings are integrated in precise housing contours to record the complex measuring and testing sensors.

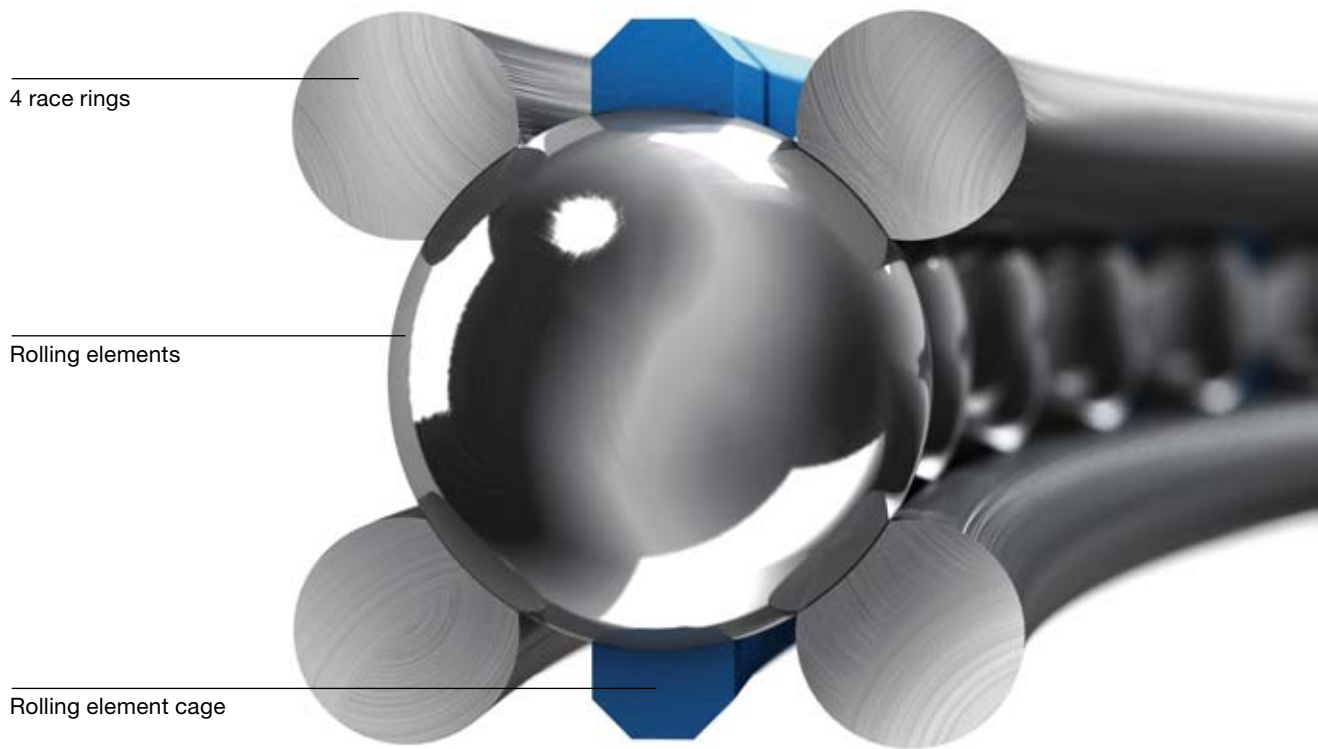
The Features:

- The bearings withstand temperatures up to 200 °C.
- High accuracy requirements for radial and axial running are fulfilled.
- The bearings can optionally be adjusted to all interface dimensions.



Bearing diameter: 850 mm

Bearing Elements – Advantages and Characteristics



The Characteristics:

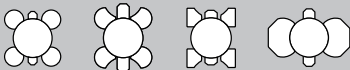
Race Rings

The four race rings have a diameter of 1.5 to 7 mm as standard. The special diameters are 0.75 to 22 mm. Different race ring diameters can be combined with different ball diameters.

The raceway of the ring is optimally adjusted to the diameter of the rolling element in its osculation. Osculation and angle support of the race ring are individually specified and are determined by the installation situation.

The raceway surface is either ground or drawn. Ground surfaces provide the highest precision and smoothest running. However, Franke also offers unground ball race rings.

There are several race ring profiles to choose from (see p. 30–39).



Rolling Elements

The standard steel rolling elements correspond to DIN 5401, G28. They are matched in tolerance and grade. Grades up to G3 are available for high accuracy applications.

You can choose between rolling elements of non-corrosive, non-magnetic steel or ceramics for special cases.

For particularly high requirements with regard to load rating and stiffness, Franke prefinished bearing assemblies with rollers as cross roller bearings are suitable.



> **The Franke principle as a film:**
www.franke-gmbh.com

The Advantages:

- Direct integration of the bearing in the application
- Minimum space needed thanks to compact design and low bearing cross section
- Acceptance of loads from all directions thanks to four-point geometry
- Best radial and axial accuracy
- High running performance and capacity thanks to raceways precisely adjusted to the ball diameters
- Shock-resistant thanks to internal elasticity
- Rotational resistance freely adjustable



Segmented Rolling Element Cage

The plastic cage holds the rolling elements in the predetermined position, facilitates fitting and reduces friction. The running is improved and less lubricant is needed.

Segmenting in equally long sections is oriented by the bearing diameter. It guarantees silent running. Sufficient clearance for thermal expansion is also guaranteed. The expansion depends, amongst other things, on the ball or ball pitch diameter.

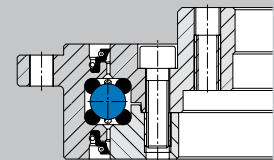
For special cases, e.g. heavy soiling and temperatures above 120 °C, flat cages of brass or non-corrosive are available.



Housing Design

The race rings provide the necessary stiffness and precision of the bearing as far as possible. They bear the main load. The possibilities are endless for designing the connecting design. The encapsulating design is not directly exposed to the demands of the rolling elements. Thus, steel, cast iron, aluminium, non-corrosive, bronze, compounds or plastic can be used for the design. The weight saving is up to 65 % depending on the material chosen.

The result: a component with high quality mounting, which matches a conventional steel bearing in running performance, capacity and precision and is precisely adjusted to the application.

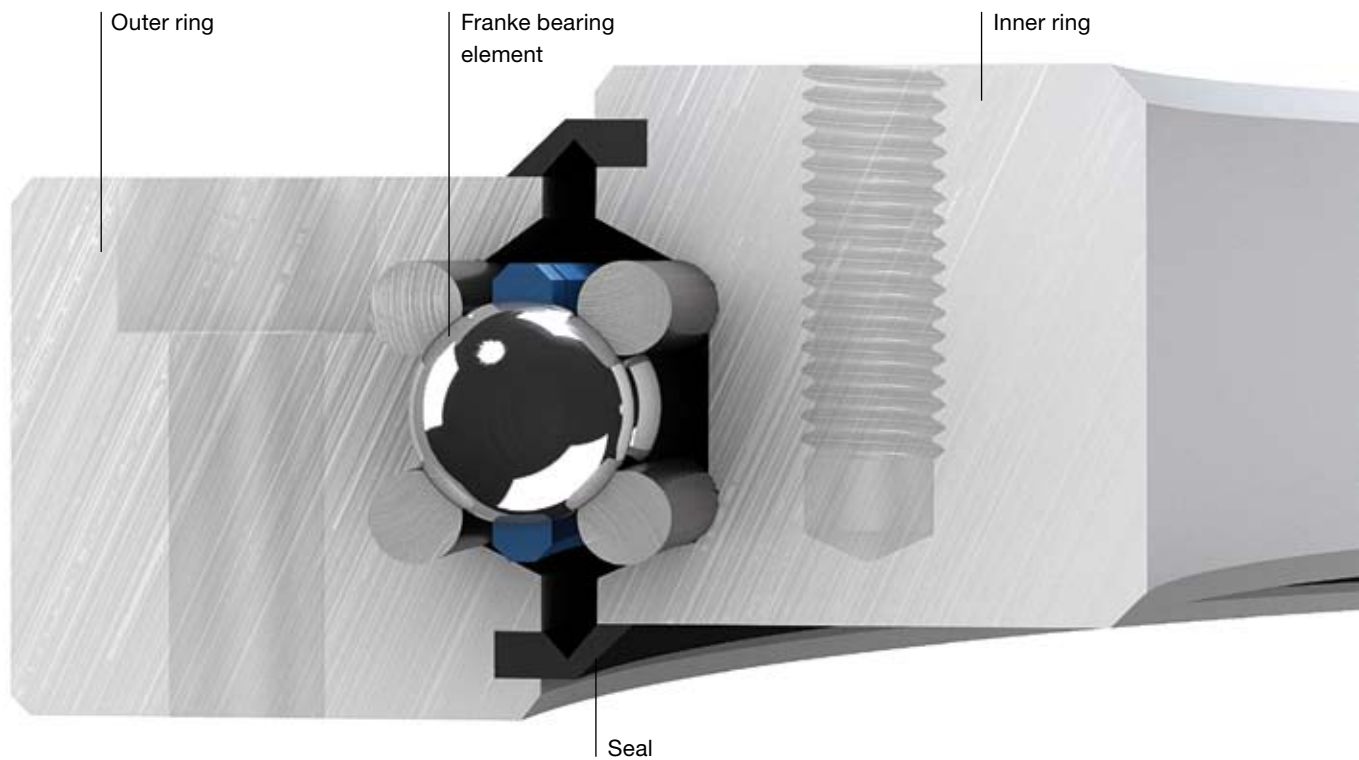


Seals

Seal

Seals can be ordered as bulk stock for sealing the design. Viton seals are available for high temperatures or aggressive media.

Bearing Assemblies – Advantages and Characteristics



The Characteristics:

Bearing Element

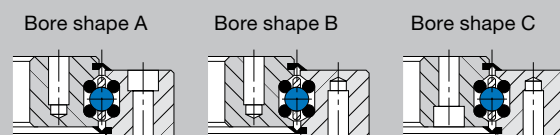
The integrated bearing element comprises four race rings and a plastic cage with retained balls. Depending on the application of the bearing assembly, the bearing element is designed as a conventional four-point bearing, radial or axial bearing. For special applications, such as main bearings for computer tomographs, there are double row angular bearings of various designs.

The performance of the bearing assembly is decisively influenced by the bearing element used. The right bearing element is chosen according to the requirements of the bearing assembly. Depending on the application and the load situation, bearing elements of the type LEL with ground raceway or LED type or LER with profiled raceway are used. In addition to the standard ranges, various special combinations of race ring cross sections and rolling element diameters are possible, to meet the requirements of your individual application.

Outer and Inner Ring (toothed on request)

The solid outer and inner rings enclose the bearing element. They are designed with ready-to-mount bore shape and a standard adjustment (see p. 61 – 62 for more details on setting the adjustment).

Outer and inner rings are available in three standard bore shapes:



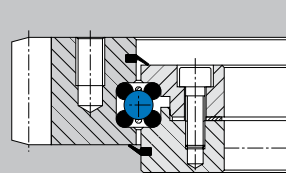
Other bore shapes on request.

Outer and inner ring can be equipped with gear on request. The standard gear corresponds to DIN 3967 in quality 8e25 basic profile DIN 867. All standard and special gears are, of course, part of the Franke range.

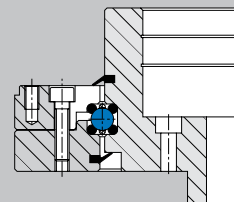


The Advantages:

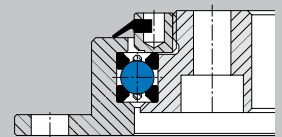
- Customer-specific special bearing
- Free choice of material, aluminium version 65 % lighter than steel design
- Individually adjusted bore shape for direct incorporation into the construction
- Integrated Franke bearing element for loads from all directions, high performance and precision
- High dynamic, maximum peripheral speed up to 20 m/s



Adjustment shim



Solid adjustment



Ring nut

Seal

A lip seal is a standard component of Franke bearing assemblies. Both sides are sealed on the LDL type. The LDV type has a one-sided seal.

We recommend viton seals for applications at high temperatures or for aggressive media.

Special bearing assemblies can be adjusted to requirements. All seal variations are available here.

Adjustment

Franke bearing assemblies are preloaded and free from clearance. The rotational resistance can be adjusted to the customer's requirements on request.

Setting using washers is the most flexible method, as this still allows readjustment of the adjustment later on.

When setting using solid adjustment, the adjustment surface is brought to the correct level by subsequent grinding. The advantage of this method is the high accuracy.

Adjusting using a ring nut is the cost-effective alternative. A screw thread is inserted in the divided inner or outer ring for this method. An adjusting ring can be turned to the desired preload using the thread.

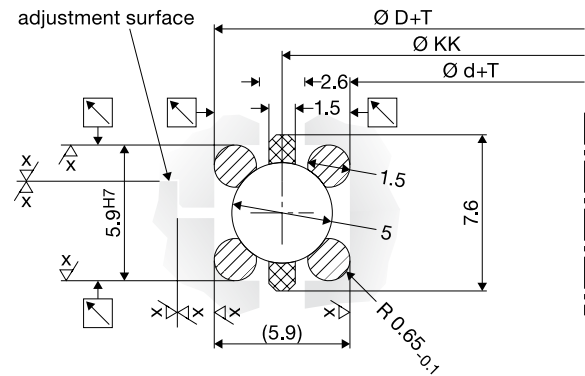
Bearing Elements

Type LEL

Ground raceways

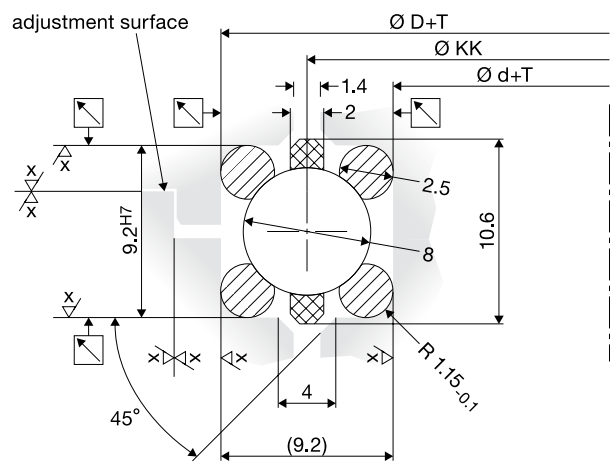
LEL 1.5/5

Ø KK mm	Load ratings KN				Weight kg	Order no.
	Coa	Cor	Ca	Cr		
70	13	6	7	6	0.04	68470A
80	15	7	7	6	0.05	68472A
90	18	8	8	7	0.05	68474A
100	20	9	8	7	0.06	68476A
110	22	10	8	7	0.07	68478A
120	23	11	9	8	0.07	68480A
130	25	12	9	8	0.08	68482A
140	27	13	9	8	0.09	68484A
150	30	14	10	8	0.09	71033A

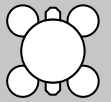


LEL 2.5/8

Ø KK mm	Load ratings KN				Weight kg	Order no.
	Coa	Cor	Ca	Cr		
160	73	35	20	17	0.10	71037A
170	79	37	20	17	0.11	71041A
180	83	39	20	18	0.11	71045A
190	88	41	21	18	0.12	71049A
200	92	43	21	18	0.12	71053A
210	97	46	22	19	0.13	71057A
220	102	48	22	19	0.13	71061A
230	106	50	22	19	0.14	68487A
240	112	53	23	20	0.15	68489A
250	115	54	23	20	0.15	68491A
260	121	57	24	20	0.16	68493A
270	126	59	24	21	0.16	68495A
280	130	61	24	21	0.17	68497A
290	135	64	25	21	0.18	68499A
300	139	65	25	21	0.18	68501A



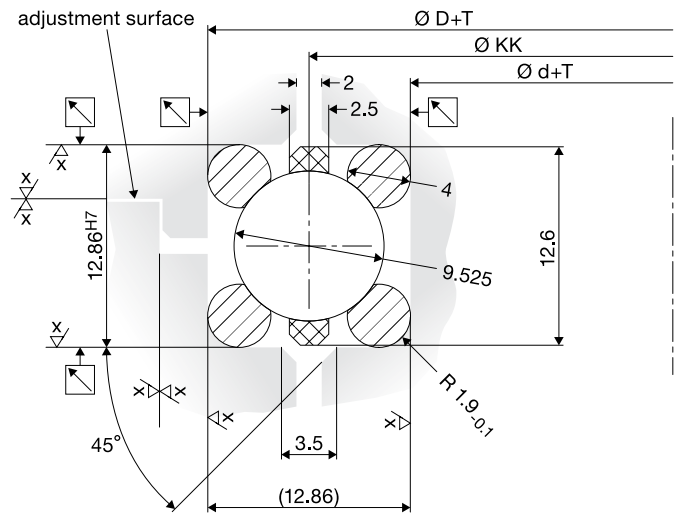
Materials



	Race ring	Balls	Cage
Standard	54SiCr6	100Cr6 DIN 5401, G28	PA12
Special	Niro X12CrNi177 Niro X7CrNiAl177 Duratherm	Niro X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	Non-corrosive Bronze Brass Teflon Laminate

LEL 4/9.525

Ø KK mm	Load ratings KN				Weight kg	Order no.
	Coa	Cor	Ca	Cr		
200	118	55	26	23	0.39	68502A
210	123	58	27	23	0.41	68504A
220	128	60	27	23	0.43	68506A
230	136	64	28	24	0.45	68508A
240	142	67	28	24	0.47	68510A
250	147	69	28	25	0.49	68512A
260	153	72	29	25	0.51	68514A
270	161	76	29	25	0.53	68516A
280	166	78	30	26	0.55	68518A
290	172	81	30	26	0.57	68520A
300	177	83	30	26	0.59	67503A
320	191	90	31	27	0.63	67505A
340	202	95	32	28	0.66	67507A
360	215	101	33	28	0.71	67509A
380	226	106	33	29	0.74	67511A
400	240	113	34	29	0.78	68522A
420	251	118	35	30	0.82	68524A
440	264	124	35	31	0.86	68526A
460	275	129	36	31	0.90	68528A
480	286	135	36	31	0.94	68530A
500	299	141	37	32	0.98	68532A
520	310	146	37	32	1.02	68534A
540	302	142	38	33	1.06	68536A
560	312	147	38	33	1.10	68538A
580	325	153	39	34	1.14	68540A
600	335	158	39	34	1.17	68542A
620	348	164	40	35	1.22	68544A
640	358	168	40	35	1.25	68546A
660	370	174	41	35	1.29	68548A
680	381	179	41	36	1.33	68550A
700	393	185	42	36	1.37	68552A
720	403	190	42	37	1.41	68554A
740	414	195	43	37	1.45	68556A
760	426	201	43	37	1.49	68558A
780	436	205	43	38	1.53	68560A
800	449	211	44	38	1.57	68562A
820	459	216	44	38	1.61	68564A
840	472	222	45	39	1.65	68566A
860	482	227	45	39	1.68	68568A
880	495	233	45	39	1.73	68570A
900	505	238	46	40	1.76	68572A
920	517	243	46	40	1.80	68573A
960	540	254	47	41	1.88	68575A
1000	560	264	48	41	1.96	68577A
1100	619	291	49	43	2.16	68582A
1200	674	317	51	44	2.35	68587A
1300	730	344	52	45	2.55	68592A
1400	788	371	54	47	2.75	68597A
1500	844	397	55	48	2.94	68602A



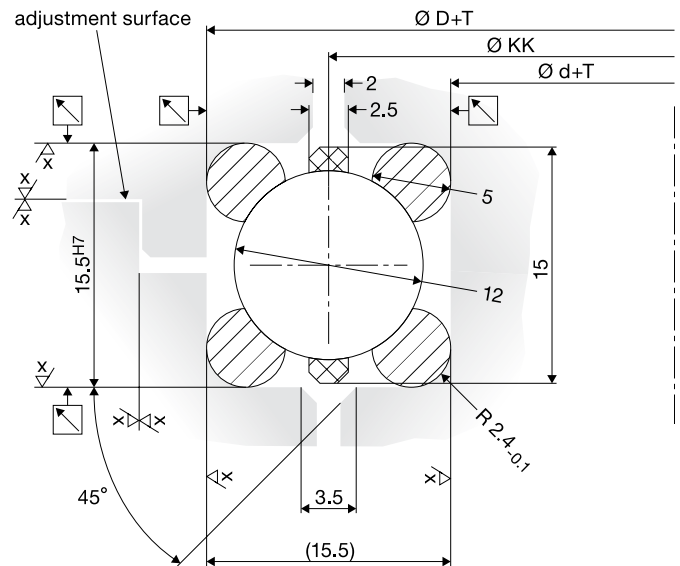
Bearing Elements

Type LEL

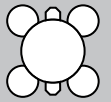
Ground raceways

LEL 5/12

Ø KK mm	Load ratings KN				Weight kg	Order no.
	Coa	Cor	Ca	Cr		
220	221	104	37	32	0.65	68603A
230	231	109	38	33	0.68	68605A
240	242	114	38	33	0.71	68607A
250	253	119	39	34	0.74	68609A
260	263	124	39	34	0.77	68611A
270	274	129	40	35	0.80	68613A
280	285	134	41	35	0.83	68615A
290	295	139	41	36	0.86	68617A
300	306	144	42	36	0.89	68619A
320	328	154	43	37	0.95	68621A
340	349	164	44	38	1.01	68623A
360	370	174	45	39	1.07	68625A
380	392	184	46	40	1.13	68627A
400	408	192	46	40	1.18	68629A
420	429	202	47	41	1.24	68631A
440	450	212	48	42	1.30	68633A
460	472	222	49	42	1.36	68635A
480	493	232	50	43	1.42	68637A
500	515	242	51	44	1.48	68639A
520	536	252	52	45	1.54	68641A
540	557	262	52	45	1.60	68643A
560	579	272	53	46	1.66	68645A
580	600	282	54	46	1.73	68647A
600	622	293	54	47	1.79	68649A
620	638	300	55	47	1.84	68651A
640	659	310	55	48	1.90	68653A
660	680	320	56	49	1.96	68655A
680	702	330	57	49	2.02	68657A
700	723	340	58	50	2.08	68659A
720	745	350	58	50	2.14	68661A
740	766	361	59	51	2.20	68663A
760	787	371	59	51	2.26	68665A
780	809	381	60	52	2.32	68667A
800	830	391	61	52	2.38	68669A
820	852	401	61	53	2.44	68671A
840	868	408	61	53	2.49	68673A
860	889	418	62	54	2.55	68675A
880	911	429	62	54	2.61	68677A
900	932	439	63	55	2.67	68679A
920	953	449	64	55	2.73	68680A
940	975	459	64	55	2.79	68681A
960	996	469	65	56	2.86	68682A
980	1018	479	65	56	2.92	68683A
1000	1034	486	65	57	2.97	68684A
1100	1141	537	68	59	3.27	68689A
1200	1242	585	70	61	3.56	68694A
1300	1349	635	72	62	3.86	68699A
1400	1456	685	74	64	4.17	68704A
1500	1558	733	76	66	4.46	68709A



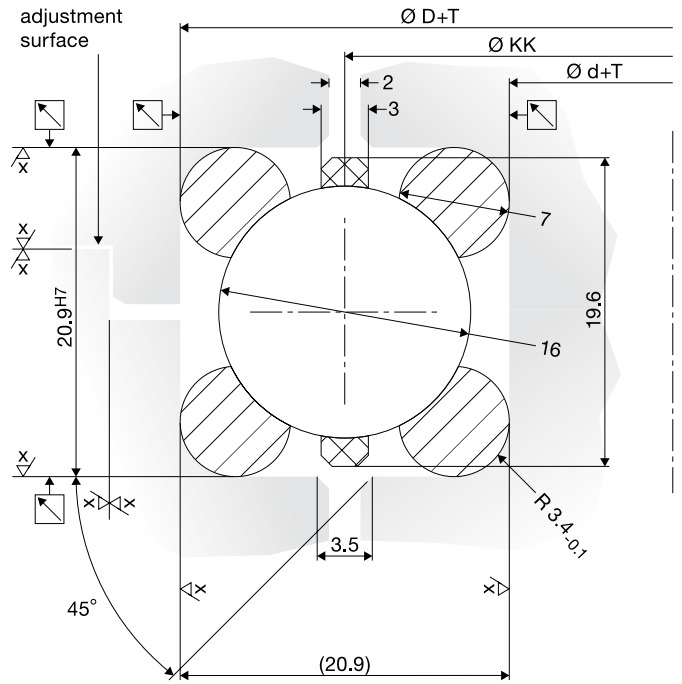
Materials



	Race ring	Balls	Cage
Standard	54SiCr6	100Cr6 DIN 5401, G28	PA12
Special	Niro X12CrNi177 Niro X7CrNiAl177 Duratherm	Niro X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	Non-corrosive Bronze Brass Teflon Laminate

LEL 7/16

Ø KK mm	Load ratings KN				Weight kg	Order no.
	Coa	Cor	Ca	Cr		
340	432	203	61	53	1.89	68711A
360	466	219	63	54	2.02	68713A
380	491	231	64	55	2.13	68715A
400	517	243	65	56	2.24	68717A
420	542	255	66	57	2.35	68719A
440	567	267	67	58	2.46	68721A
460	593	279	69	59	2.57	68723A
480	618	291	70	60	2.68	68725A
500	644	303	71	61	2.79	68727A
520	678	319	72	62	2.92	68729A
540	703	331	73	63	3.03	68731A
560	728	343	74	64	3.14	68733A
580	753	355	78	68	3.25	68735A
600	779	366	76	66	3.36	68737A
620	804	378	77	66	3.47	68739A
640	829	390	78	67	3.58	68741A
660	855	402	78	68	3.69	68743A
680	889	418	80	69	3.82	68745A
700	914	430	81	70	3.93	68747A
720	939	442	81	70	4.04	68749A
740	965	454	82	71	4.15	68751A
760	990	466	83	72	4.26	68753A
780	1015	478	84	72	4.37	68755A
800	1041	490	84	73	4.48	68757A
820	1074	506	85	74	4.61	68759A
840	1100	518	86	75	4.72	68761A
860	1125	529	87	75	4.83	68763A
880	1151	541	88	76	4.94	68765A
900	1176	553	88	76	5.05	68767A
920	1201	565	89	77	5.16	68768A
940	1227	577	90	78	5.27	68769A
960	1252	589	90	78	5.38	68770A
980	1277	601	91	79	5.49	68771A
1000	1302	613	92	79	5.60	68772A
1060	1387	653	94	81	5.95	68775A
1100	1438	677	95	82	6.17	68777A
1160	1522	716	97	84	6.52	68780A
1200	1573	740	98	85	6.74	68782A
1260	1649	776	100	86	7.07	68785A
1300	1700	800	101	87	7.29	68787A
1360	1784	840	103	89	7.64	68790A
1400	1835	864	104	90	7.86	68792A
1460	1911	899	106	91	8.19	68795A
1500	1970	927	107	92	8.43	68797A
1600	2021	951	108	93	8.65	68799A
1700	2122	999	110	95	9.09	68801A
1800	2232	1050	112	97	9.55	68803A
1900	2283	1074	113	97	9.77	68805A
2000	2629	1237	119	103	11.24	68807A



Ø KK ≤ 500 mm T = IT6 Ø KK > 500 mm T = IT7 $\frac{X}{Y} = Ra 3.2$
Other diameters and in-between sizes available on request.

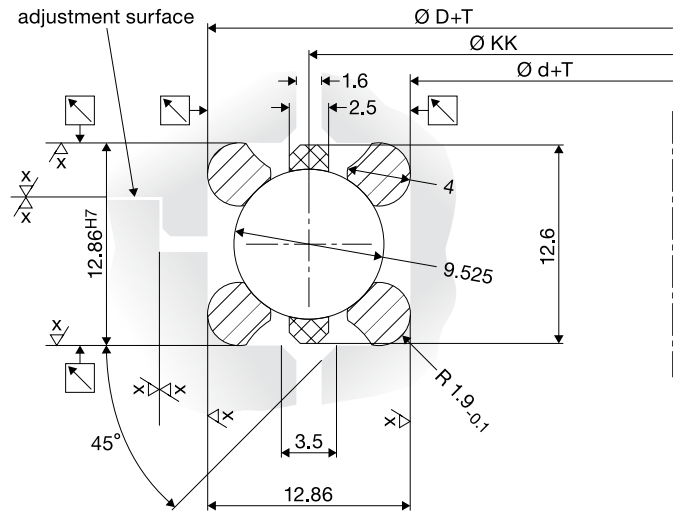
Bearing Elements

Type LED

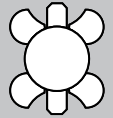
Double profile,
ground or unground raceways

LED 4/9.525 ground

Ø KK mm	Load ratings KN				Weight kg	Order no.
	Coa	Cor	Ca	Cr		
100	53	25	20	17	0.26	68310A
120	64	30	21	18	0.28	68314A
140	77	36	23	20	0.31	68318A
160	87	41	23	20	0.34	77202A
180	100	47	25	22	0.37	77206A
200	111	52	27	23	0.40	77210A
220	123	58	28	24	0.43	77214A
240	134	63	28	24	0.47	77218A
260	147	69	29	25	0.51	77222A
280	155	73	30	26	0.56	77226A
300	168	79	31	27	0.61	77230A
320	179	84	31	27	0.64	77232A
340	191	90	32	28	0.66	77234A
360	202	95	32	28	0.69	77236A
380	213	100	34	29	0.72	77238A
400	225	106	34	29	0.75	77240A
420	238	112	35	30	0.79	77242A
440	247	116	36	31	0.82	77244A
460	259	122	36	31	0.86	77246A
480	270	127	37	32	0.89	77248A
500	283	133	37	32	0.93	77250A
520	293	138	38	33	0.97	77252A
540	306	144	38	33	1.01	77254A
560	317	149	38	33	1.06	77256A
580	329	155	39	34	1.10	77258A
600	338	159	39	34	1.15	77260A
620	351	165	41	35	1.20	77262A
640	361	170	41	35	1.25	77264A
660	374	176	42	36	1.31	77266A
680	385	181	42	36	1.37	77268A
700	397	187	42	36	1.43	77270A
720	408	192	43	37	1.49	77272A
740	421	198	43	37	1.55	77274A
760	431	203	43	37	1.62	77276A
780	444	209	44	38	1.69	77278A
800	453	213	44	38	1.76	77280A
820	465	219	45	39	1.84	77282A
840	476	224	45	39	1.92	77284A
860	487	229	45	39	2.00	77286A
880	499	235	46	40	2.09	77288A
900	510	240	46	40	2.18	77290A
960	544	256	47	41	2.33	77293A
1000	567	267	47	41	2.43	77295A
1100	623	293	50	43	2.70	77300A
1200	682	321	51	44	3.00	77305A
1300	737	347	53	46	3.34	77310A
1400	797	375	54	47	3.71	77315A
1500	852	401	56	48	4.00	77320A



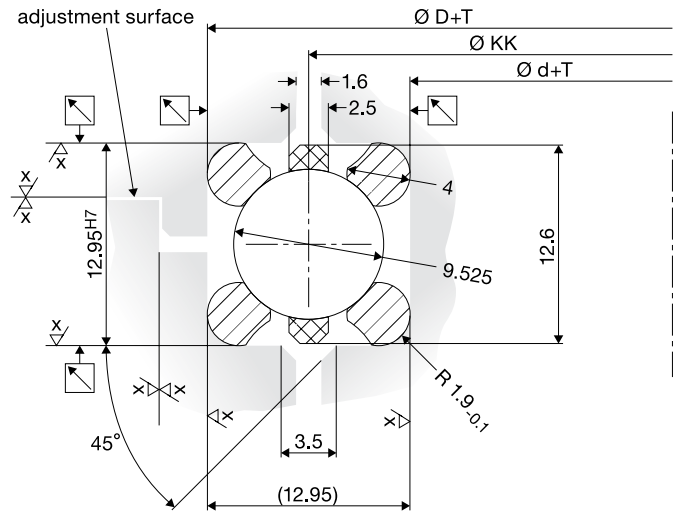
Materials



	Race ring	Balls	Cage
Standard	54SiCr6	100Cr6 DIN 5401, G28	PA12
Special	Coating: Corrotect ATC	X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	Non-corrosive Brass Bronze Teflon Laminate

LED 4/9.525 unground

Ø KK mm	Load ratings KN				Weight kg	Order no.
	Coa	Cor	Ca	Cr		
100	53	25	20	17	0.26	68310B
120	64	30	21	18	0.28	68314B
140	77	36	23	20	0.31	68318B
160	87	41	23	20	0.34	77202B
180	100	47	25	22	0.37	77206B
200	111	52	27	23	0.40	77210B
220	123	58	28	24	0.43	77214B
240	134	63	28	24	0.47	77218B
260	147	69	29	25	0.51	77222B
280	155	73	30	26	0.56	77226B
300	168	79	31	27	0.61	77230B
320	179	84	31	27	0.64	77232B
340	191	90	32	28	0.66	77234B
360	202	95	32	28	0.69	77236B
380	213	100	34	29	0.72	77238B
400	225	106	34	29	0.75	77240B
420	238	112	35	30	0.79	77242B
440	247	116	36	31	0.82	77244B
460	259	122	36	31	0.86	77246B
480	270	127	37	32	0.89	77248B
500	283	133	37	32	0.93	77250B
520	293	138	38	33	0.97	77252B
540	306	144	38	33	1.01	77254B
560	317	149	38	33	1.06	77256B
580	329	155	39	34	1.10	77258B
600	338	159	39	34	1.15	77260B
620	351	165	41	35	1.20	77262B
640	361	170	41	35	1.25	77264B
660	374	176	42	36	1.31	77266B
680	385	181	42	36	1.37	77268B
700	397	187	42	36	1.43	77270B
720	408	192	43	37	1.49	77272B
740	421	198	43	37	1.55	77274B
760	431	203	43	37	1.62	77276B
780	444	209	44	38	1.69	77278B
800	453	213	44	38	1.76	77280B
820	465	219	45	39	1.84	77282B
840	476	224	45	39	1.92	77284B
860	487	229	45	39	2.00	77286B
880	499	235	46	40	2.09	77288B
900	510	240	46	40	2.18	77290B
960	544	256	47	41	2.33	77293B
1000	567	267	47	41	2.43	77295B
1100	623	293	50	43	2.70	77300B
1200	682	321	51	44	3.00	77305B
1300	737	347	53	46	3.34	77310B
1400	797	375	54	47	3.71	77315B
1500	852	401	56	48	4.00	77320B



Ø KK ≤ 500 mm T = IT6 Ø KK > 500 mm T = IT7 $\frac{X}{Y} = Ra 3.2$
Other diameters and in-between sizes available on request.

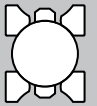
Bearing Elements

Type LER

Rectangular profile,
unground raceways

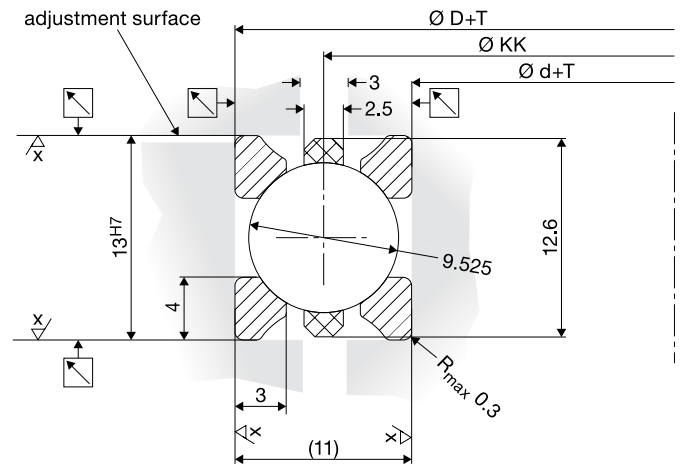
Materials

	Race ring	Balls	Cage
Standard	54SiCr6	100Cr6 DIN 5401, G28	PA12
Special	Coating: Corrotect ATC	Niro X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	Non-corrosive Brass Bronze Teflon Laminate

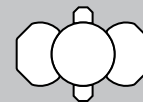


LER 3

Ø KK mm	Load ratings KN				Weight kg	Order no.
	Coa	Cor	Ca	Cr		
100	53	25	20	17	0.2	68460A
120	64	30	21	18	0.2	68464A
140	77	36	23	20	0.2	68468A
160	87	41	23	20	0.3	74062A
180	100	47	25	22	0.3	74066A
200	111	52	27	23	0.3	74070A
220	123	58	28	24	0.4	74074A
240	134	63	28	24	0.4	74078A
260	147	69	29	25	0.4	74082A
280	155	73	30	26	0.4	74086A
300	168	79	31	27	0.5	74090A
320	179	84	31	27	0.5	74092A
340	191	90	32	28	0.5	74094A
360	202	95	32	28	0.5	74096A
380	213	100	34	29	0.5	74098A
400	225	106	34	29	0.7	74100A
420	238	112	35	30	0.7	74102A
440	247	116	36	31	0.7	74104A
460	259	122	36	31	0.7	74106A
480	270	127	37	32	0.7	74108A
500	283	133	37	32	0.8	74110A
520	293	138	38	33	0.9	74112A
540	306	144	38	33	0.9	74114A
560	317	149	38	33	1.0	74116A
580	329	155	39	34	1.0	74118A
600	338	159	39	34	1.1	74120A
620	351	165	41	35	1.1	74122A
640	361	170	41	35	1.2	74124A
660	374	176	42	36	1.2	74126A
680	385	181	42	36	1.3	74128A
700	397	187	42	36	1.3	74130A
720	408	192	43	37	1.4	74132A
740	421	198	43	37	1.5	74134A
760	431	203	43	37	1.5	74136A
780	444	209	44	38	1.6	74138A
800	453	213	44	38	1.6	74140A
820	465	219	45	39	1.7	74142A
840	476	224	45	39	1.7	74144A
860	487	229	45	39	1.8	74146A
880	499	235	46	40	1.8	74148A
900	510	240	46	40	1.9	74150A
960	544	256	47	41	2.0	74153A
1000	567	267	47	41	2.0	74155A
1100	623	293	50	43	2.2	74160A
1200	682	321	51	44	2.4	74165A
1300	737	347	53	46	2.6	74170A
1400	797	375	54	47	2.8	74175A
1500	852	401	56	48	3.0	74180A



Materials



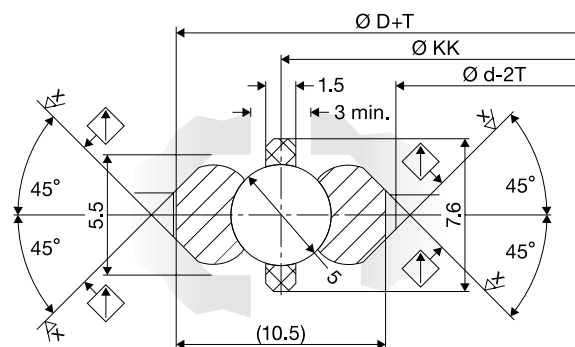
Type LEG

2-ring bearing element,
unground raceways

	Race ring	Balls	Cage
Standard	54SiCr6	100Cr6 DIN 5401, G28	PA12
Special	Coating: Corrotect ATC	Niro X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	Non-corrosive Brass Bronze Teflon

LEG

Ø KK mm	Load ratings KN				Weight kg	Order no.
	Coa	Cor	Ca	Cr		
100	20	19	7	11	0.09	68949A
120	23	23	7	12	0.10	68950A
140	27	27	8	12	0.12	68951A
160	32	31	8	13	0.14	68952A
180	35	35	8	14	0.15	68953A
200	39	40	9	14	0.17	68954A
220	44	43	9	15	0.19	68955A
240	48	47	9	15	0.20	68956A
260	52	51	10	16	0.22	68957A
280	56	55	10	16	0.24	68958A
300	60	59	10	16	0.26	68959A
320	64	63	10	17	0.27	68960A
340	68	67	11	17	0.29	68961A
360	72	71	11	18	0.31	68962A
380	76	75	11	18	0.32	68963A
400	80	79	11	18	0.34	68964A
420	84	83	12	19	0.36	68965A
440	88	87	12	19	0.38	68966A
460	92	91	12	19	0.39	68967A
480	96	95	12	20	0.41	68968A
500	100	99	12	20	0.43	68969A



Please contact us if you wish to purchase a type LEG Bearing Element. We would be happy to create a suitable installation plan for you, in order to make effective use of this bearing.

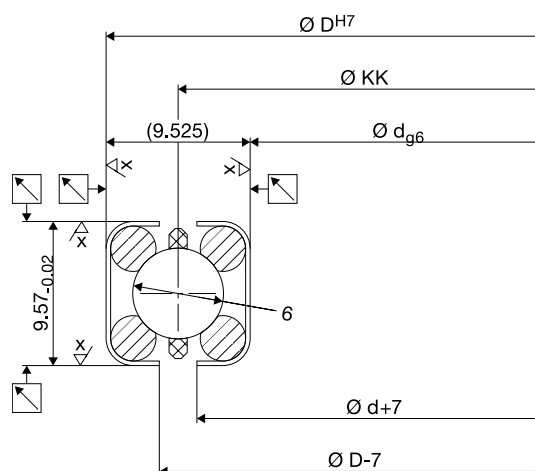
Slim Bearing

Type LDD

Bearing element
with steel housing

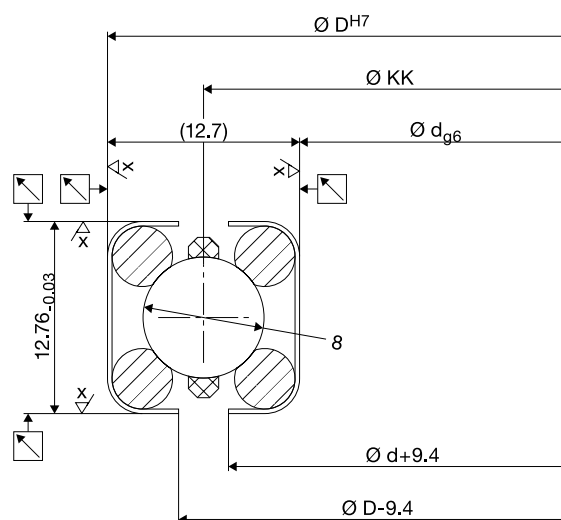
LDD 3/8"

Dimensions inch		Load ratings KN				Weight kg	Order no.
D	d	Coa	Cor	Ca	Cr		
5.50	4.75	51	24	17	15	0.15	75067A
5.75	5.00	53	25	19	16	0.16	75068A
6.25	5.50	60	28	19	16	0.16	75069A
6.75	6.00	64	30	20	17	0.19	75070A
7.25	6.50	70	33	20	17	0.21	75071A
7.75	7.00	74	35	21	18	0.22	75072A
8.25	7.50	79	37	21	18	0.24	75073A
8.75	8.00	85	40	22	19	0.25	75074A
9.75	9.00	96	45	23	20	0.29	75075A
10.75	10.00	106	50	23	20	0.32	75076A
11.75	11.00	115	54	24	21	0.35	75077A
12.75	12.00	125	59	25	22	0.38	75078A
14.75	14.00	147	69	27	23	0.44	75079A
16.75	16.00	166	78	28	24	0.50	75080A
18.75	18.00	187	88	29	25	0.56	75081A
20.75	20.00	208	98	30	26	0.63	75082A
25.75	25.00	259	122	32	28	0.78	75083A

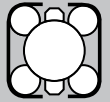


LDD 1/2"

Dimensions inch		Load ratings KN				Weight kg	Order no.
D	d	Coa	Cor	Ca	Cr		
7.00	6.00	70	33	31	27	0.34	75010A
7.50	6.50	74	35	32	28	0.36	75011A
8.00	7.00	79	37	34	29	0.39	75012A
8.50	7.50	87	41	35	30	0.42	75013A
9.00	8.00	91	43	35	30	0.45	75014A
10.00	9.00	102	48	36	31	0.50	75015A
11.00	10.00	113	53	37	32	0.56	75016A
12.00	11.00	123	58	39	34	0.61	75017A
13.00	12.00	136	64	41	35	0.66	75018A
15.00	14.00	157	74	43	37	0.77	75019A
17.00	16.00	179	84	45	39	0.88	75020A
19.00	18.00	202	95	46	40	0.99	75021A
21.00	20.00	223	105	49	42	1.09	75022A
26.00	25.00	278	131	52	45	1.36	75023A



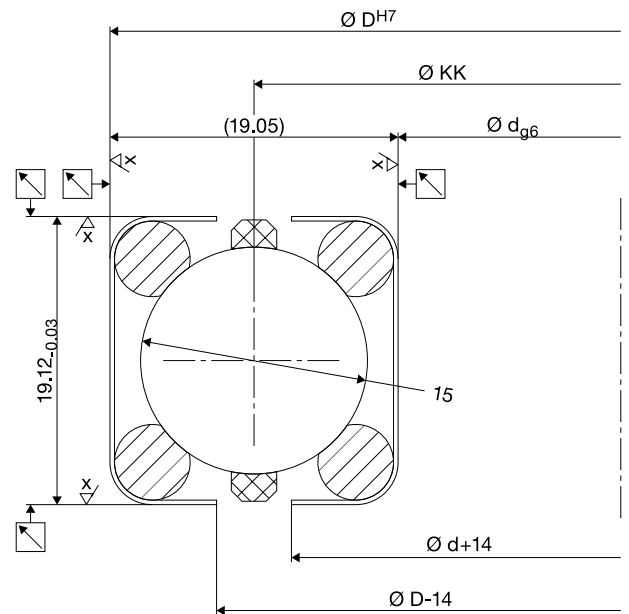
Materials



	Housings	Race ring	Balls	Cage
Standard	Ck55	54SiCr6	100Cr6 DIN 5401, G28	PA12
Special	Coating: ATC	Niro X12CrNi177 Niro X7CrNiAl177	Niro X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	

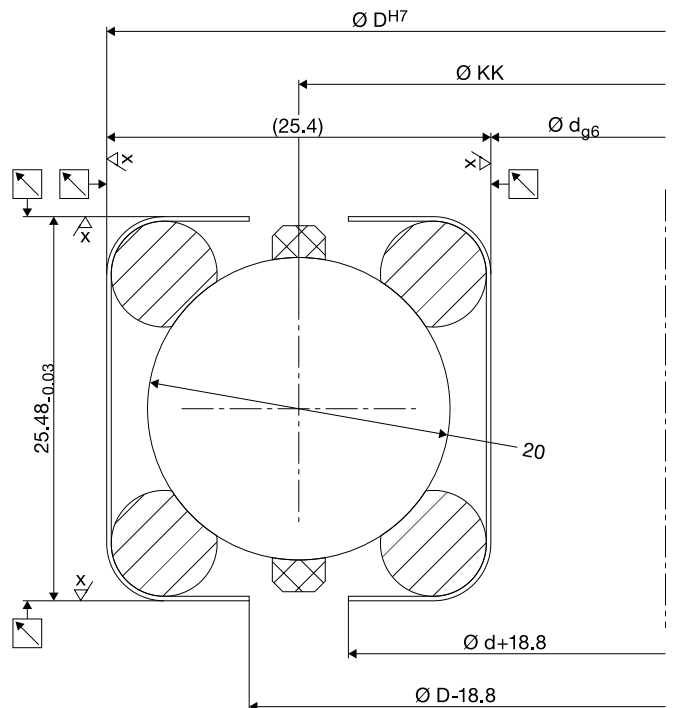
LDD 3/4“

Dimensions inch		Load ratings KN				Weight kg	Order no.
D	d	Coa	Cor	Ca	Cr		
8.50	7.00	155	73	84	73	0.89	75032A
9.00	7.50	166	78	87	75	0.95	75033A
9.50	8.00	174	82	89	77	1.01	75034A
10.50	9.00	196	92	93	80	1.13	75035A
11.50	10.00	219	103	97	84	1.26	75036A
12.50	11.00	238	112	101	87	1.38	75037A
13.50	12.00	257	121	103	89	1.49	75038A
15.50	14.00	302	142	110	95	1.74	75039A
17.50	16.00	340	160	116	100	1.97	75040A
19.50	18.00	383	180	119	103	2.22	75041A
21.50	20.00	427	201	125	108	2.47	75042A
26.50	25.00	529	249	134	116	3.07	75043A



LDD 1“

Dimensions inch		Load ratings KN				Weight kg	Order no.
D	d	Coa	Cor	Ca	Cr		
10.00	8.00	270	127	136	118	1.81	75054A
11.00	9.00	300	141	143	124	2.01	75055A
12.00	10.00	332	156	148	128	2.26	75056A
13.00	11.00	361	170	154	133	2.47	75057A
14.00	12.00	391	184	158	137	2.67	75058A
16.00	14.00	463	218	169	146	3.09	75059A
18.00	16.00	525	247	178	154	3.54	75060A
20.00	18.00	587	276	185	160	3.96	75061A
22.00	20.00	648	305	192	166	4.41	75062A
27.00	25.00	803	378	207	179	5.45	75063A



Bearing Assemblies

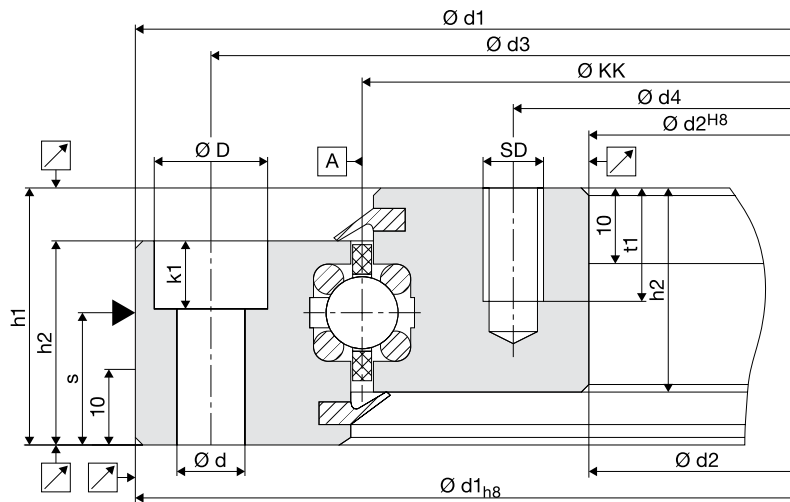
Type LDL

Steel version

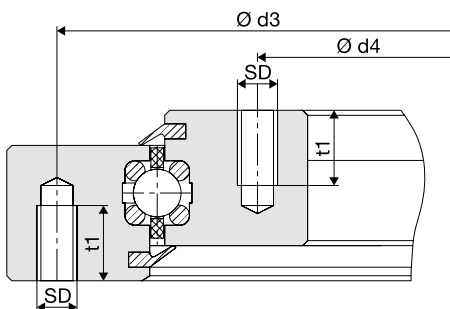
LDL steel

Ø KK mm	Dimensions mm							
	D	d	h1	h2	k1	s	SD	t1
100- 220	11	6.6	30	24	6.8	15.0	M 6	10
240- 280	15	9.0	34	27	9.0	17.5	M 8	15
300- 380	15	9.0	38	31	9.0	19.5	M 8	15
400- 480	18	11.0	44	37	11.0	22.5	M10	15
500- 600	20	14.0	49	42	13.0	25.0	M12	20
620- 780	20	14.0	53	45	13.0	29.0	M12	20
800-1500	26	18.0	60	52	17.5	33.0	M16	25

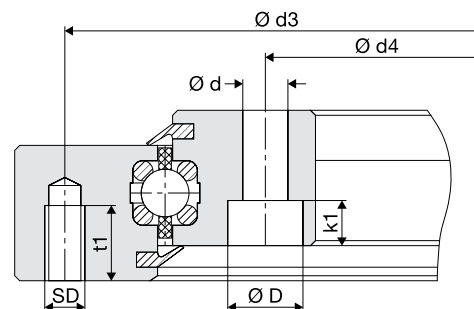
Bore shape A



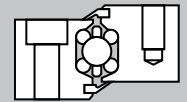
Bore shape B



Bore shape C



Materials



	Inner / Outer ring	Race ring	Balls	Cage	Seals
Standard	C45N	54SiCr6	100Cr6	PA12	NBR
Special	Niro X5CrNi18.10 Brass CuSn12 Plastic Magnesium Coatings	Niro X12CrNi177 Niro X7CrNi177 Duratherm Coating: Corrotect ATC	Niro X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	Non-corrosive Bronze Laminate Brass Teflon	Viton Teflon Labyrinth Metal seal

Ø KK mm	Diameter mm				Fixing per ring	Load rating KN				Weight kg	Order no. Bore shape		
	d1	d2	d3	d4		Coa	Cor	Ca	Cr		A	B	C
100	150	50	135	65	6x	53	25	20	17	2.5	66401Y	66402Y	66403Y
120	170	70	155	85	6x	66	31	20	17	3.0	69703Y	69704Y	69705Y
140	190	90	175	105	6x	79	37	20	17	3.5	69709Y	69710Y	69711Y
160	210	110	195	125	6x	91	43	21	18	4.0	73003Y	73004Y	73005Y
180	230	130	215	145	8x	104	49	22	19	4.5	73009Y	73010Y	73011Y
200	250	150	235	165	8x	115	54	23	20	5.0	73015Y	73016Y	73017Y
220	270	170	255	185	8x	128	60	24	21	5.5	73021Y	73022Y	73023Y
240	300	180	280	200	8x	142	67	28	24	8.1	73027Y	73028Y	73029Y
260	320	200	300	220	10x	155	73	29	25	8.8	73033Y	73034Y	73035Y
280	340	220	320	240	10x	166	78	30	26	9.4	73039Y	73040Y	73041Y
300	360	240	340	260	12x	179	84	31	27	11.6	73045Y	73046Y	73047Y
320	380	260	360	280	12x	191	90	31	27	12.4	73051Y	73052Y	73053Y
340	400	280	380	300	14x	204	96	32	28	13.2	73057Y	73058Y	73059Y
360	420	300	400	320	14x	215	101	32	28	13.9	73063Y	73064Y	73065Y
380	440	320	420	340	14x	227	107	34	29	14.7	73069Y	73070Y	73071Y
400	470	330	445	355	14x	272	128	32	28	21.6	73075Y	73076Y	73077Y
420	490	350	465	375	14x	289	136	32	28	22.7	73081Y	73082Y	73083Y
440	510	370	485	395	14x	302	142	34	29	23.7	73087Y	73088Y	73089Y
460	530	390	505	415	14x	317	149	34	29	24.8	73093Y	73094Y	73095Y
480	550	410	525	435	14x	329	155	35	30	25.9	73099Y	73100Y	73101Y
500	580	420	550	450	14x	344	162	35	30	35.0	73105Y	73106Y	73107Y
520	600	440	570	470	14x	357	168	36	31	36.4	73111Y	73112Y	73113Y
540	620	460	590	490	16x	372	175	36	31	37.8	73117Y	73118Y	73119Y
560	640	480	610	510	16x	385	181	36	31	39.2	73123Y	73124Y	73125Y
580	660	500	630	530	16x	400	188	37	32	40.6	73129Y	73130Y	73131Y
600	680	520	650	550	16x	412	194	37	32	42.0	73135Y	73136Y	73137Y
620	710	530	670	570	22x	701	330	87	75	56.9	66141A	66142A	66143A
640	730	550	690	590	22x	725	341	88	76	58.8	66144A	66145A	66146A
660	750	570	710	610	22x	746	351	89	77	60.7	66147A	66148A	66149A
680	770	590	730	630	22x	767	361	90	78	62.5	66150A	66151A	66152A
700	790	610	750	650	22x	788	371	91	79	64.4	66153A	66154A	66155A
720	810	630	770	670	22x	818	385	93	80	66.3	66156A	66157A	66158A
740	830	650	790	690	24x	842	396	94	81	68.0	66159A	66160A	66161A
760	850	670	810	710	24x	863	406	94	81	69.9	66162A	66163A	66164A
780	870	690	830	730	24x	884	416	95	82	71.8	66165A	66166A	66167A
800	900	700	865	735	24x	1056	497	120	104	93.9	66168A	66169A	66170A
820	920	720	885	755	24x	1090	513	123	106	96.3	66171A	66172A	66173A
840	940	740	905	775	24x	1111	523	123	106	98.7	66174A	66175A	66176A
860	960	760	925	795	24x	1135	534	124	107	101.1	66177A	66178A	66179A
880	980	780	945	815	24x	1167	549	125	108	103.5	66180A	66181A	66182A
900	1000	800	965	835	24x	1190	560	126	109	105.9	66183A	66184A	66185A
960	1060	860	1025	895	26x	1267	596	130	112	113.0	66192A	66193A	66194A
1000	1100	900	1065	935	26x	1324	623	131	113	117.8	66198A	66199A	66200A
1100	1200	1000	1165	1035	30x	1411	664	133	115	129.6	66386A	66387A	66388A
1200	1300	1100	1265	1135	30x	1587	747	140	121	141.6	66389A	66390A	66391A
1300	1400	1200	1365	1235	36x	1698	799	143	124	153.1	66392A	66393A	66394A
1400	1500	1300	1465	1335	36x	1853	872	148	128	165.1	66395A	66396A	66397A
1500	1600	1400	1565	1435	40x	1942	914	149	129	177.0	66398A	66399A	66400A

Bearing Assemblies

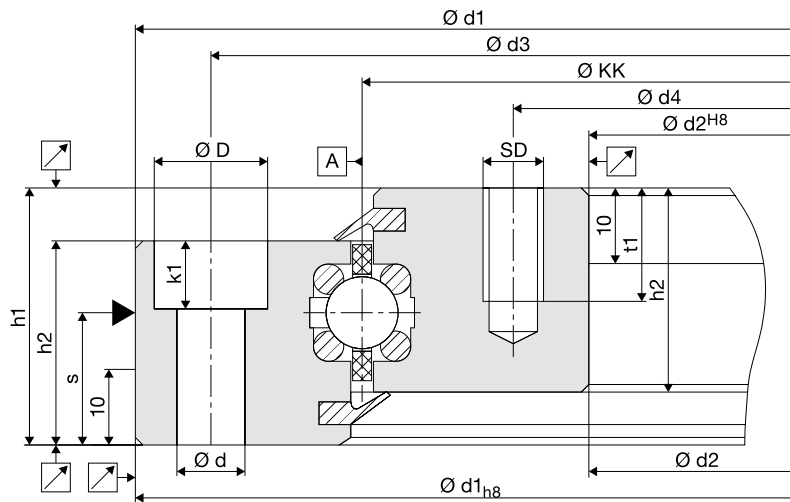
Type LDL

Aluminium version (anodized)

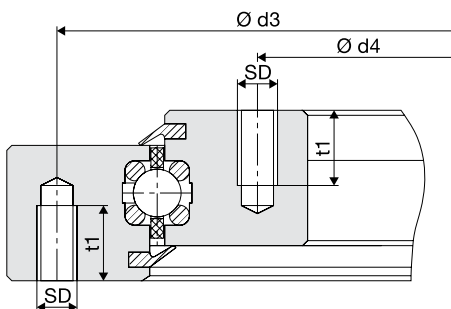
LDL aluminium

Ø KK mm	Dimensions mm							
	D	d	h1	h2	k1	s	SD	t1
100- 220	11	6.6	30	24	6.8	15.0	M 6	10
240- 280	15	9.0	34	27	9.0	17.5	M 8	15
300- 380	15	9.0	38	31	9.0	19.5	M 8	15
400- 480	18	11.0	44	37	11.0	22.5	M10	15
500- 600	20	14.0	49	42	13.0	25.0	M12	20
620- 780	20	14.0	53	45	13.0	29.0	M12	20
800-1500	26	18.0	60	52	17.5	33.0	M16	25

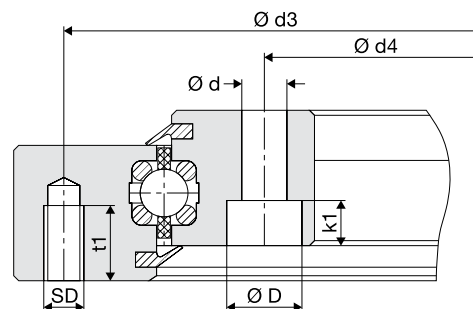
Bore shape A



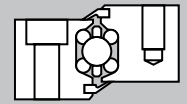
Bore shape B



Bore shape C



Materials



	Inner / Outer ring	Race ring	Balls	Cage	Seals
Standard	AlZnMgCu05	54SiCr6	100Cr6	PA12	NBR
Special	Niro X5CrNi18.10 Brass CuSn12 Plastic Magnesium Coatings	Niro X12CrNi177 Niro X7CrNi177 Duratherm Coating: Corrotect ATC	Niro X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	Non-corrosive Bronze Laminate Brass Teflon	Viton Teflon Labyrinth Metal seal

Ø KK mm	Diameter mm				Fixing per ring	Load rating KN				Weight kg	Order no. Bore shape		
	d1	d2	d3	d4		Coa	Cor	Ca	Cr		A	B	C
100	150	50	135	65	6x	53	25	20	17	1.0	66401L	66402L	66403L
120	170	70	155	85	6x	66	31	20	17	1.2	69703L	69704L	69705L
140	190	90	175	105	6x	79	37	20	17	1.4	69709L	69710L	69711L
160	210	110	195	125	6x	91	43	21	18	1.6	73003L	73004L	73005L
180	230	130	215	145	8x	104	49	22	19	1.8	73009L	73010L	73011L
200	250	150	235	165	8x	115	54	23	20	2.0	73015L	73016L	73017L
220	270	170	255	185	8x	128	60	24	21	2.2	73021L	73022L	73023L
240	300	180	280	200	8x	142	67	28	24	3.1	73027L	73028L	73029L
260	320	200	300	220	10x	155	73	29	25	3.4	73033L	73034L	73035L
280	340	220	320	240	10x	166	78	30	26	3.6	73039L	73040L	73041L
300	360	240	340	260	12x	179	84	31	27	4.5	73045L	73046L	73047L
320	380	260	360	280	12x	191	90	31	27	4.8	73051L	73052L	73053L
340	400	280	380	300	14x	204	96	32	28	5.1	73057L	73058L	73059L
360	420	300	400	320	14x	215	101	32	28	5.4	73063L	73064L	73065L
380	440	320	420	340	14x	227	107	34	29	5.7	73069L	73070L	73071L
400	470	330	445	355	14x	272	128	32	28	8.0	73075L	73076L	73077L
420	490	350	465	375	14x	289	136	32	28	8.4	73081L	73082L	73083L
440	510	370	485	395	14x	302	142	34	29	8.8	73087L	73088L	73089L
460	530	390	505	415	14x	317	149	34	29	9.2	73093L	73094L	73095L
480	550	410	525	435	14x	329	155	35	30	9.6	73099L	73100L	73101L
500	580	420	550	450	14x	344	162	35	30	13.0	73105L	73106L	73107L
520	600	440	570	470	14x	357	168	36	31	13.5	73111L	73112L	73113L
540	620	460	590	490	16x	372	175	36	31	14.0	73117L	73118L	73119L
560	640	480	610	510	16x	385	181	36	31	14.5	73123L	73124L	73125L
580	660	500	630	530	16x	400	188	37	32	15.0	73129L	73130L	73131L
600	680	520	650	550	16x	412	194	37	32	15.6	73135L	73136L	73137L
620	710	530	670	570	22x	701	330	87	75	21.1	66141L	66142L	66143L
640	730	550	690	590	22x	725	341	88	76	21.8	66144L	66145L	66146L
660	750	570	710	610	22x	746	351	89	77	22.5	66147L	66148L	66149L
680	770	590	730	630	22x	767	361	90	78	23.2	66150L	66151L	66152L
700	790	610	750	650	22x	788	371	91	79	23.9	66153L	66154L	66155L
720	810	630	770	670	22x	818	385	93	80	24.6	66156L	66157L	66158L
740	830	650	790	690	24x	842	396	94	81	25.2	66159L	66160L	66161L
760	850	670	810	710	24x	863	406	94	81	25.9	66162L	66163L	66164L
780	870	690	830	730	24x	884	416	95	82	26.6	66165L	66166L	66167L
800	900	700	865	735	24x	1056	497	120	104	36.1	66168L	66169L	66170L
820	920	720	885	755	24x	1090	513	123	106	37.0	66171L	66172L	66173L
840	940	740	905	775	24x	1111	523	123	106	38.0	66174L	66175L	66176L
860	960	760	925	795	24x	1135	534	124	107	38.9	66177L	66178L	66179L
880	980	780	945	815	24x	1167	549	125	108	39.9	66180L	66181L	66182L
900	1000	800	965	835	24x	1190	560	126	109	40.8	66183L	66184L	66185L
960	1060	860	1025	895	26x	1267	596	130	112	43.5	66192L	66193L	66194L
1000	1100	900	1065	935	26x	1324	623	131	113	45.3	66198L	66199L	66200L
1100	1200	1000	1165	1035	30x	1411	664	133	115	49.9	66386L	66387L	66388L
1200	1300	1100	1265	1135	30x	1587	747	140	121	54.5	66389L	66390L	66391L
1300	1400	1200	1365	1235	36x	1698	799	143	124	58.9	66392L	66393L	66394L
1400	1500	1300	1465	1335	36x	1853	872	148	128	63.5	66395L	66396L	66397L
1500	1600	1400	1565	1435	40x	1942	914	149	129	68.4	66398L	66399L	66400L

Bearing Assemblies

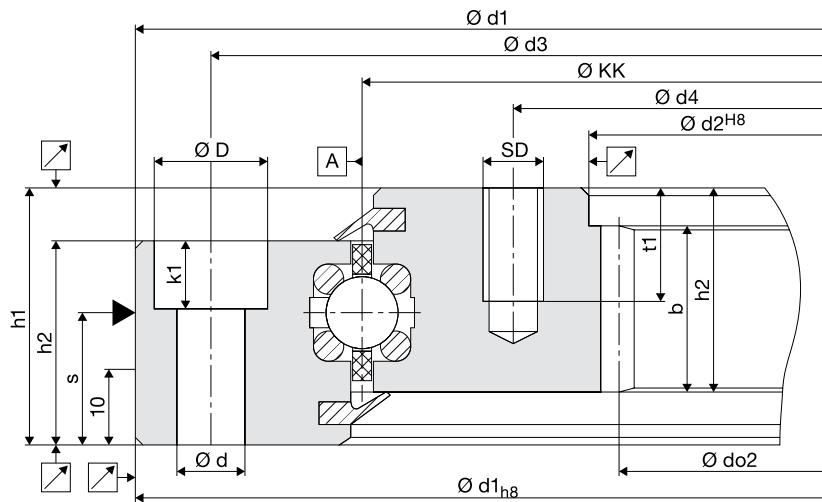
Type LDL

Steel version
with inner gear

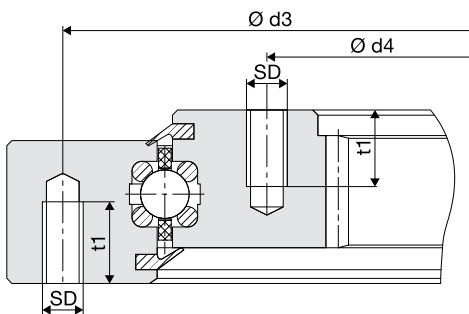
LDL inner gear

Ø KK mm	Dimensions mm								
	D	d	h1	h2	b	k1	s	SD	t1
100- 220	11	6.6	30	24	19	6.8	15.0	M 6	10
240- 280	15	9.0	34	27	22	9.0	17.5	M 8	15
300- 380	15	9.0	38	31	26	9.0	19.5	M 8	15
400- 480	18	11.0	44	37	32	11.0	22.5	M10	15
500- 600	20	14.0	49	42	35	13.0	25.0	M12	20
620- 780	20	14.0	53	45	38	13.0	29.0	M12	20
800-1500	26	18.0	60	52	45	17.5	33.0	M16	25

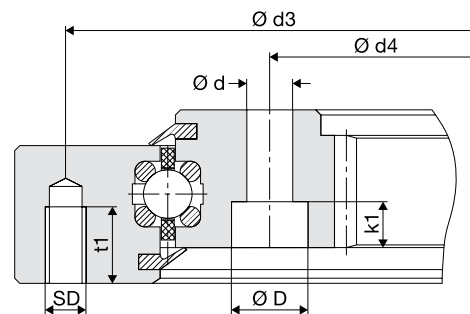
Bore shape A



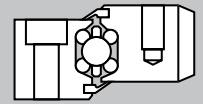
Bore shape B



Bore shape C



Materials



	Inner / Outer ring	Race ring	Balls	Cage	Seals	Gears
Standard	42CrMo4V C45N	54SiCr6	100Cr6	PA12	NBR	DIN 3967 Quality 8e25 Basic profile DIN 867
Special	Niro X5CrNi18.10 Brass CuSn12 Plastic Magnesium Coatings	Niro X12CrNi177 Niro X7CrNi177 Duratherm Coating: Corroctect ATC	Niro X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	Non- corrosive Bronze Laminate Brass Teflon	Viton Teflon Labyrinth Metal seal	other gears on request

Ø KK mm	Module m	Dimensions mm		Teeth number Z	Permit. peripheral forces KN		Order no. Bore shape		
		d02	d2		Standard	Max.	A	B	C
100	2	40	50	20	4.47	8.94	66401W	66402W	66403W
120	2	60	70	30	4.00	8.00	69703W	69704W	69705W
140	2	80	90	40	3.80	7.60	69709W	69710W	69711W
160	2	100	110	50	3.62	7.24	73003W	73004W	73005W
180	2	120	130	60	3.62	7.24	73009W	73010W	73011W
200	2	140	150	70	3.45	6.90	73015W	73016W	73017W
220	2	160	170	80	3.45	6.90	73021W	73022W	73023W
240	2	170	180	85	4.00	8.00	73027W	73028W	73029W
260	2	190	200	95	3.83	7.65	73033W	73034W	73035W
280	2	210	220	105	3.83	7.65	73039W	73040W	73041W
300	3	228	240	76	7.09	14.18	73045W	73046W	73047W
320	3	249	260	83	7.09	14.18	73051W	73052W	73053W
340	3	264	280	88	7.09	14.18	73057W	73058W	73059W
360	3	288	300	96	6.78	13.57	73063W	73064W	73065W
380	3	306	320	102	6.78	13.57	73069W	73070W	73071W
400	3	318	330	106	8.35	16.70	73075W	73076W	73077W
420	3	336	350	112	8.35	16.70	73081W	73082W	73083W
440	3	357	370	119	8.35	16.70	73087W	73088W	73089W
460	3	378	390	126	8.17	16.34	73093W	73094W	73095W
480	3	396	410	132	8.17	16.34	73099W	73100W	73101W
500	3	408	420	136	8.90	17.80	73105W	73106W	73107W
520	3	426	440	142	8.90	17.80	73111W	73112W	73113W
540	3	444	460	148	8.86	17.72	73117W	73118W	73119W
560	3	468	480	156	8.86	17.72	73123W	73124W	73125W
580	3	486	500	162	8.82	17.65	73129W	73130W	73131W
600	3	507	520	169	8.82	17.65	73135W	73136W	73137W
620	4	512	530	128	12.94	25.87	66141W	66142W	66143W
640	4	532	550	133	12.94	25.87	66144W	66145W	66146W
660	4	552	570	138	12.88	25.76	66147W	66148W	66149W
680	4	572	590	143	12.88	25.76	66150W	66151W	66152W
700	4	592	610	148	12.83	25.65	66153W	66154W	66155W
720	4	612	630	153	12.83	25.65	66156W	66157W	66158W
740	4	632	650	158	12.83	25.65	66159W	66160W	66161W
760	4	648	670	162	12.77	25.55	66162W	66163W	66164W
780	4	672	690	168	12.77	25.55	66165W	66166W	66167W
800	5	680	700	136	19.07	38.14	66168W	66169W	66170W
820	5	700	720	140	19.07	38.14	66171W	66172W	66173W
840	5	720	740	144	19.07	38.14	66174W	66175W	66176W
860	5	740	760	148	18.99	37.97	66177W	66178W	66179W
880	5	760	780	152	18.99	37.97	66180W	66181W	66182W
900	5	780	800	156	18.99	37.97	66183W	66184W	66185W
960	5	840	860	168	18.91	37.82	66192W	66193W	66194W
1000	5	880	900	176	18.83	37.66	66198W	66199W	66200W
1100	5	980	1000	196	18.75	37.50	66386W	66387W	66388W
1200	5	1080	1100	216	18.75	37.50	66389W	66390W	66391W
1300	5	1180	1200	236	18.75	37.50	66392W	66393W	66394W
1400	5	1280	1300	256	18.75	37.50	66395W	66396W	66397W
1500	5	1380	1400	276	18.75	37.50	66398W	66399W	66400W

Load rating and other dimensions as for type LDL steel design (page 41).
Other diameters and in-between sizes available on request.

Bearing Assemblies

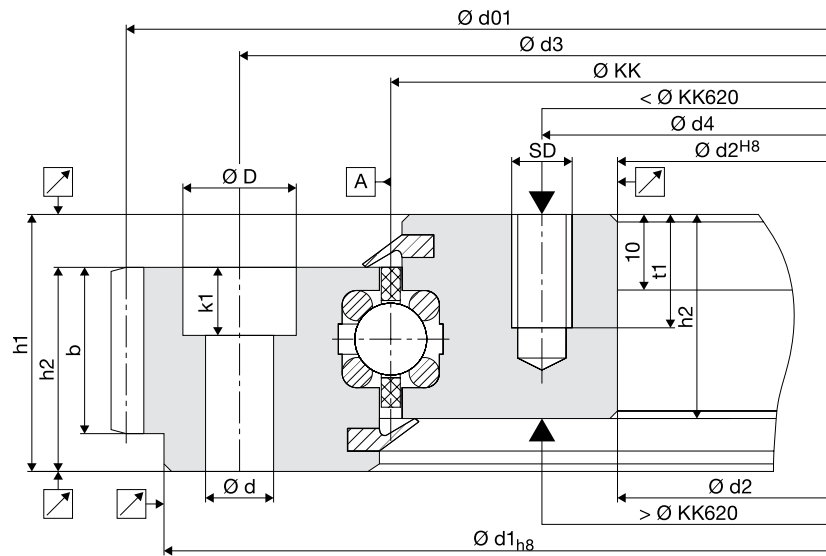
Type LDL

Steel version
with outer gear

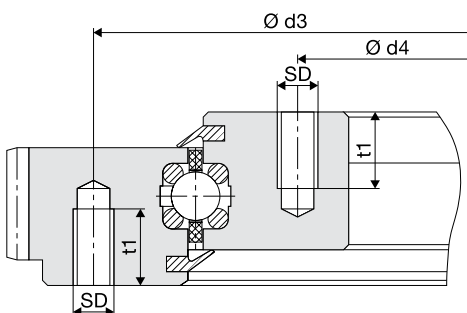
LDL outer gear

Ø KK mm	Dimensions mm								
	D	d	h1	h2	b	k1	s	SD	t1
100- 220	11	6.6	30	24	19	6.8	15.0	M 6	10
240- 280	15	9.0	34	27	22	9.0	17.5	M 8	15
300- 380	15	9.0	38	31	26	9.0	19.5	M 8	15
400- 480	18	11.0	44	37	32	11.0	22.5	M10	15
500- 600	20	14.0	49	42	35	13.0	25.0	M12	20
620- 780	20	14.0	53	45	38	13.0	29.0	M12	20
800-1500	26	18.0	60	52	45	17.5	33.0	M16	25

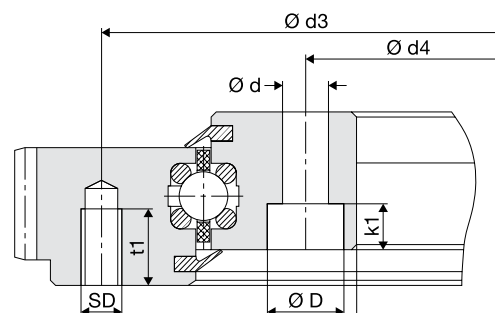
Bore shape A



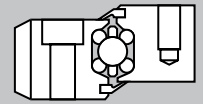
Bore shape B



Bore shape C



Materials



	Inner / Outer ring	Race ring	Balls	Cage	Seals	Gears
Standard	C45N 42CrMo4V	54SiCr6	100Cr6	PA12	NBR	DIN 3967 Quality 8e25 Basic profile DIN 867
Special	Niro X5CrNi18.10 Brass CuSn12 Plastic Magnesium Coatings	Niro X12CrNi177 Niro X7CrNi177 Duratherm Coating: Corrotect ATC	Niro X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	Non-corrosive Bronze Laminate Brass Teflon	Viton Teflon Labyrinth Metal seal	other gears on request

Ø KK mm	Module m	Dimensions mm		Teeth number Z	Permit. peripheral forces KN		Order no. Bore shape		
		d01	d1		Standard	Max.	A	B	C
100	2	160	150	80	2.92	5.85	66401V	66402V	66403V
120	2	180	170	90	2.92	5.85	69703V	69704V	69705V
140	2	200	190	100	3.04	6.08	69709V	69710V	69711V
160	2	220	210	110	3.04	6.08	73003V	73004V	73005V
180	2	240	230	120	3.04	6.08	73009V	73010V	73011V
200	2	260	250	130	3.04	6.08	73015V	73016V	73017V
220	2	280	270	140	3.04	6.08	73021V	73022V	73023V
240	2	310	300	155	3.52	7.04	73027V	73028V	73029V
260	2	330	320	165	3.52	7.04	73033V	73034V	73035V
280	2	350	340	175	3.52	7.04	73039V	73040V	73041V
300	3	372	360	124	6.24	12.48	73045V	73046V	73047V
320	3	396	380	132	6.24	12.48	73051V	73052V	73053V
340	3	414	400	138	6.24	12.48	73057V	73058V	73059V
360	3	432	420	144	6.24	12.48	73063V	73064V	73065V
380	3	456	440	152	6.24	12.48	73069V	73070V	73071V
400	3	483	470	161	7.68	15.36	73075V	73076V	73077V
420	3	504	490	168	7.68	15.36	73081V	73082V	73083V
440	3	522	510	174	7.68	15.36	73087V	73088V	73089V
460	3	546	530	182	7.68	15.36	73093V	73094V	73095V
480	3	564	550	188	7.68	15.36	73099V	73100V	73101V
500	3	594	580	189	8.40	16.80	73105V	73106V	73107V
520	3	612	600	204	8.40	16.80	73111V	73112V	73113V
540	3	636	620	212	8.40	16.80	73117V	73118V	73119V
560	3	654	640	218	8.40	16.80	73123V	73124V	73125V
580	3	672	660	224	8.40	16.80	73129V	73130V	73131V
600	3	693	680	231	8.40	16.80	73135V	73136V	73137V
620	4	728	710	182	12.16	24.32	66141V	66142V	66143V
640	4	748	730	187	12.16	24.32	66144V	66145V	66146V
660	4	768	750	192	12.16	24.32	66147V	66148V	66149V
680	4	792	770	198	12.16	24.32	66150V	66151V	66152V
700	4	808	790	202	12.16	24.32	66153V	66154V	66155V
720	4	828	810	207	12.16	24.32	66156V	66157V	66158V
740	4	848	830	212	12.16	24.32	66159V	66160V	66161V
760	4	868	850	217	12.16	24.32	66162V	66163V	66164V
780	4	888	870	222	12.16	24.32	66165V	66166V	66167V
800	5	920	900	184	18.00	36.00	66168V	66169V	66170V
820	5	940	920	188	18.00	36.00	66171V	66172V	66173V
840	5	960	940	192	18.00	36.00	66174V	66175V	66176V
860	5	980	960	196	18.00	36.00	66177V	66178V	66179V
880	5	1000	980	200	18.00	36.00	66180V	66181V	66182V
900	5	1020	1000	204	18.00	36.00	66183V	66184V	66185V
960	5	1080	1060	216	18.00	36.00	66192V	66193V	66194V
1000	5	1120	1100	224	18.00	36.00	66198V	66199V	66200V
1100	5	1220	1200	244	18.00	36.00	66386V	66387V	66388V
1200	5	1320	1300	264	18.00	36.00	66389V	66390V	66391V
1300	5	1420	1400	284	18.00	36.00	66392V	66393V	66394V
1400	5	1520	1500	304	18.00	36.00	66395V	66396V	66397V
1500	5	1620	1600	324	18.00	36.00	66398V	66399V	66400V

Load rating and other dimensions as for type LDL steel design (page 41).
Other diameters and in-between sizes available on request.

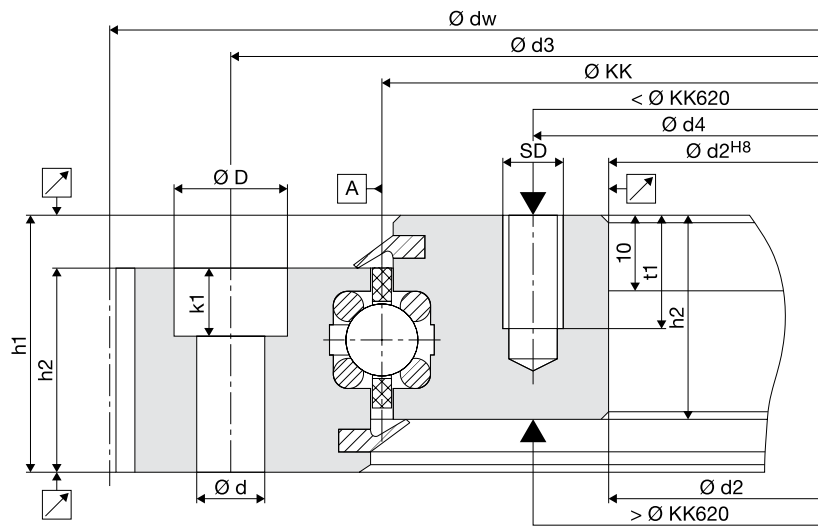
Bearing Assemblies

Type LDL

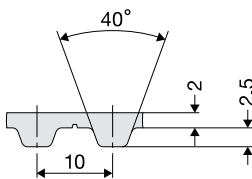
Aluminium version (anodized)
with toothed belt gear

LDL toothed belt gear

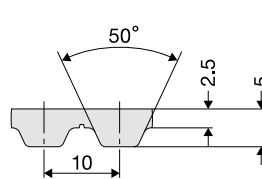
Ø KK mm	Dimensions mm						
	D	d	h1	h2	k1	SD	t1
100- 220	11	6.6	30	24	6.8	M 6	10
230- 290	15	9.0	34	27	9.0	M 8	15
300- 380	15	9.0	38	31	9.0	M 8	15
400- 480	18	11.0	44	37	11.0	M10	15
500- 600	20	14.0	49	42	13.0	M12	20
620- 780	20	14.0	53	45	13.0	M12	20
800-1500	26	18.0	60	52	17.5	M16	25



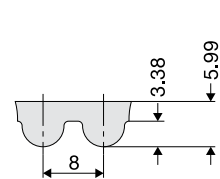
Profile T10



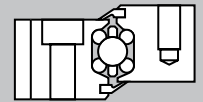
Profile AT10



Profile HTD8



Materials



	Inner / Outer ring	Race ring	Balls	Cage	Seals
Standard	AlZnMgCu05	54SiCr6	100Cr6	PA12	NBR
Special	Niro X5CrNi18.10 Brass CuSn12 Plastic Magnesium Coatings	Niro X12CrNi177 Niro X7CrNi177 Duratherm Coating: Corrotect ATC	Niro X45Cr13 POM Ceramic Al ₂ O ₃ Ceramic Si ₃ N ₄	Non-corrosive Bronze Laminate Brass Teflon	Viton Teflon Labyrinth Metal seal

Gear types: also available as T5, AT5, HTD3, HTD14, T20, AT20

Ø KK mm	Dimensions			Effective pulley diameter dw				Order no. Gear Bore shape A		
	d2	d3	d4	mm	teeth number	mm	teeth number	T10	AT10	HTD8
				T10/AT10	z	HTD8	z			
100	50	135	65	159.15	50	160.43	63	66401LZ	66402LZ	66403LZ
120	70	155	85	178.25	56	178.25	70	69703LZ	69704LZ	69705LZ
140	90	175	105	200.54	63	198.63	78	69709LZ	69710LZ	69711LZ
160	110	195	125	219.63	69	219.00	86	73003LZ	73004LZ	73005LZ
180	130	215	145	238.73	75	236.82	93	73009LZ	73010LZ	73011LZ
200	150	235	165	261.01	82	259.74	102	73015LZ	73016LZ	73017LZ
220	170	255	185	280.11	88	280.11	110	73021LZ	73022LZ	73023LZ
240	180	280	200	311.94	98	310.67	122	73027LZ	73028LZ	73029LZ
260	200	300	220	331.04	104	331.04	130	73033LZ	73034LZ	73035LZ
280	220	320	240	350.14	110	348.87	137	73039LZ	73040LZ	73041LZ
300	240	340	260	372.42	117	371.79	146	73045LZ	73046LZ	73047LZ
320	260	360	280	394.70	124	394.70	155	73051LZ	73052LZ	73053LZ
340	280	380	300	413.80	130	412.53	162	73057LZ	73058LZ	73059LZ
360	300	400	320	432.90	136	430.35	169	73063LZ	73064LZ	73065LZ
380	320	420	340	455.18	143	453.27	178	73069LZ	73070LZ	73071LZ
400	330	445	355	480.65	151	478.74	188	73075LZ	73076LZ	73077LZ
420	350	465	375	502.93	158	501.66	197	73081LZ	73082LZ	73083LZ
440	370	485	395	522.03	164	522.03	205	73087LZ	73088LZ	73089LZ
460	390	505	415	544.31	171	542.40	213	73093LZ	73094LZ	73095LZ
480	410	525	435	563.41	177	562.77	221	73099LZ	73100LZ	73101LZ
500	420	550	450	592.06	186	593.33	233	73105LZ	73106LZ	73107LZ
520	440	570	470	611.15	192	611.15	240	73111LZ	73112LZ	73113LZ
540	460	590	490	633.44	199	631.53	248	73117LZ	73118LZ	73119LZ
560	480	610	510	652.54	205	651.90	256	73123LZ	73124LZ	73125LZ
580	500	630	530	671.63	211	672.27	264	73129LZ	73130LZ	73131LZ
600	520	650	550	693.92	218	692.64	272	73135LZ	73136LZ	73137LZ
620	530	670	570	728.93	229	728.29	286	66141LZ	66142LZ	66143LZ
640	550	690	590	748.03	235	748.66	294	66144LZ	66145LZ	66146LZ
660	570	710	610	767.13	241	766.49	301	66147LZ	66148LZ	66149LZ
680	590	730	630	789.41	248	789.41	310	66150LZ	66151LZ	66152LZ
700	610	750	650	808.51	254	807.23	317	66153LZ	66154LZ	66155LZ
720	630	770	670	827.61	260	827.61	325	66156LZ	66157LZ	66158LZ
740	650	790	690	846.70	266	845.43	332	66159LZ	66160LZ	66161LZ
760	670	810	710	868.99	273	868.35	341	66162LZ	66163LZ	66164LZ
780	690	830	730	888.08	279	886.17	348	66165LZ	66166LZ	66167LZ
800	700	865	735	919.92	289	919.28	361	66168LZ	66169LZ	66170LZ
820	720	885	755	939.01	295	939.65	369	66171LZ	66172LZ	66173LZ
840	740	905	775	958.11	301	957.48	376	66174LZ	66175LZ	66176LZ
860	760	925	795	980.39	308	980.39	385	66177LZ	66178LZ	66179LZ
880	780	945	815	999.49	314	998.22	392	66180LZ	66181LZ	66182LZ
900	800	965	835	1018.59	320	1018.59	400	66183LZ	66184LZ	66185LZ
960	860	1025	895	1079.07	339	1079.71	424	66192LZ	66193LZ	66194LZ
1000	900	1065	935	1120.45	352	1120.45	440	66198LZ	66199LZ	66200LZ
1100	1000	1165	1035	1219.13	383	1217.22	478	66386LZ	66387LZ	66388LZ
1200	1100	1265	1135	1320.99	415	1319.08	518	66389LZ	66390LZ	66391LZ
1300	1200	1365	1235	1419.66	446	1418.39	557	66392LZ	66393LZ	66394LZ
1400	1300	1465	1335	1518.34	477	1517.70	596	66395LZ	66396LZ	66397LZ
1500	1400	1565	1435	1620.20	509	1619.56	636	66398LZ	66399LZ	66400LZ

Load ratings as for type LDL aluminium design (page 43).
Other diameters and in-between sizes available on request.

Bearing Assemblies

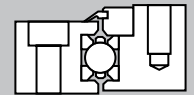
Type LDV

Steel version
Preference series



Materials

Inner / Outer ring	Race ring	Balls	Cage	Seals
C45N	54SiCr6	100Cr6	PA12	NBR

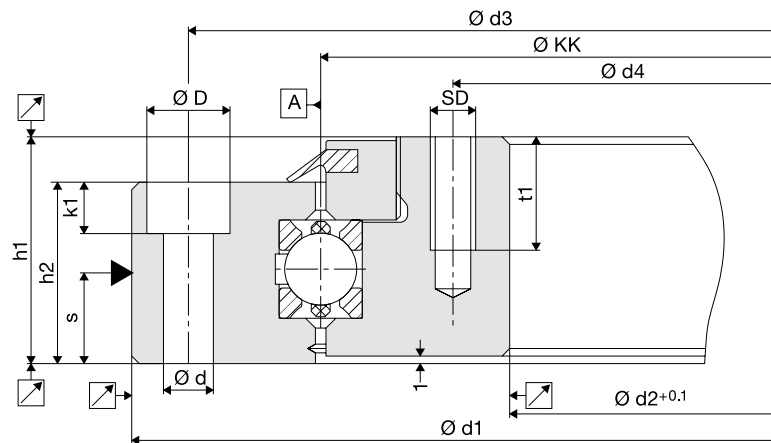


Gear: DIN 3967, quality 8e25, basic profile DIN 867

available from stock

LDV

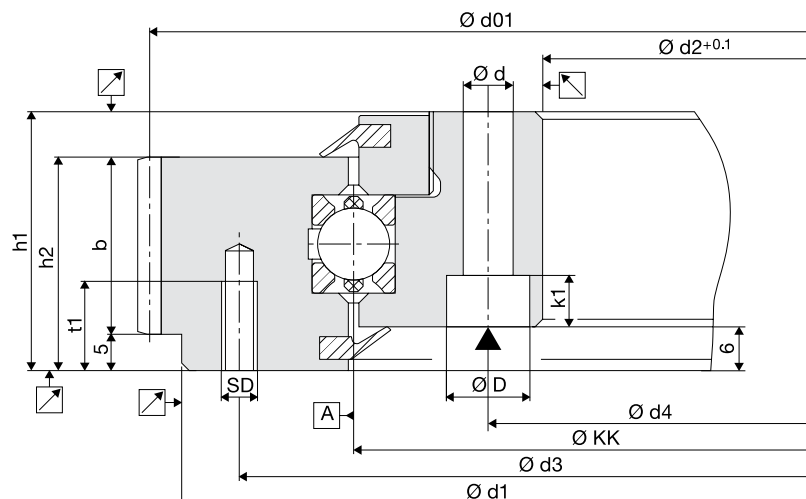
Ø KK mm	Load ratings KN				Dimensions mm														Weight kg	Order no.
	Coa	Cor	Ca	Cr	D	d	d1	d2	d3	d4	h1	h2	per ring	k1	s	SD	t1			
100	54	25	18	16	11	6.6	150 _{-0.10}	50	135	65	30 ^{±0.3}	24	6 x 6.8	12.5	M 6	10	2.5	69715A		
200	110	52	24	21	11	6.6	250 _{-0.10}	150	235	165	30 ^{±0.3}	24	8 x 6.8	12.5	M 6	10	5.0	66276A		
300	166	78	28	24	15	9.0	360 _{-0.10}	240	340	260	38 ^{±0.4}	31	12 x 9.0	15.5	M 8	15	11.6	66277A		
400	429	202	48	41	18	11.0	470 _{-0.15}	330	445	355	44 ^{±0.5}	37	14 x 11.0	16.0	M10	15	21.6	66278A		
500	541	255	52	45	20	14.0	580 _{-0.15}	420	550	450	49 ^{±0.5}	42	14 x 13.0	19.5	M12	20	35.0	66865A		
600	654	308	56	49	20	14.0	680 _{-0.15}	520	650	550	49 ^{±0.5}	42	16 x 13.0	19.5	M12	20	42.0	66866A		



LDV outer gear

Ø KK mm	Module m	Dimensions mm														Teeth number Z	Permit. peripheral forces KN		Order no. Bore shape C
		D	d	d01	d1	d2	d3	d4	h1	h2	b	per ring	k1	SD	t1		normal	max	
200	2	11	6.6	260	250 _{-0.10}	150	235	165	35 ^{±0.3}	29	24	8 x 6.8	M 6	10	130	3.04	6.08	66276V	
300	3	15	9.0	372	360 _{-0.10}	240	340	260	43 ^{±0.4}	36	31	12 x 9.0	M 8	15	124	6.24	12.48	66277V	
400	3	18	11.0	483	470 _{-0.15}	330	445	355	49 ^{±0.5}	42	37	14 x 11.0	M10	15	161	7.68	15.36	66278V	

Order numbers of bore shape A and B on request.

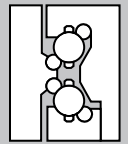


Type LDH

Steel version
Angular ball bearings

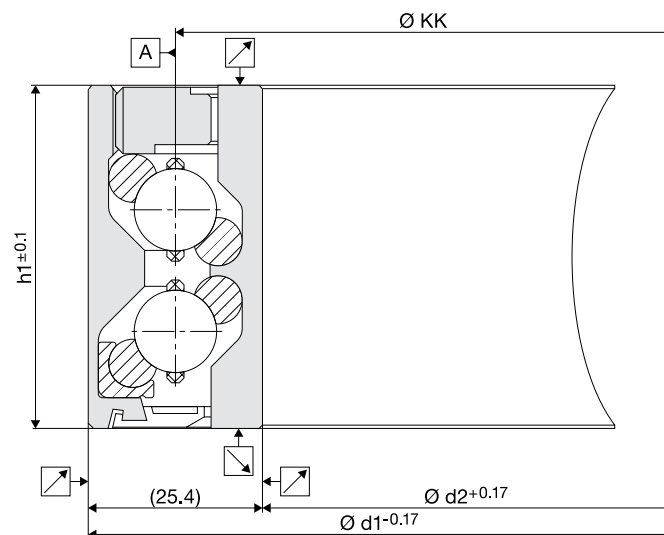
Materials

Inner / Outer ring	Race ring	Balls	Cage
C45N	54SiCr6	100Cr6	PA12



LDH

Ø KK inch	Ø KK mm	Load ratings KN				Diameter				Height		Weight kg	Order no.
		Coa	Cor	Ca	Cr	inch d1	mm d1	inch d2	mm d2	inch h1	mm h1		
21	533.4	712	335	66	57	22	558.8	20	508	2	50.8	11.5	66602A
26	660.4	878	413	71	61	27	685.8	25	635	2	50.8	14.0	66603A
31	787.4	1050	494	75	65	32	812.8	30	762	2	50.8	16.5	66604A
36	914.4	1222	575	80	69	37	939.8	35	889	2	50.8	19.0	66605A
41	1041.4	1394	656	84	73	42	1066.8	40	1016	2	50.8	21.5	66606A



Rotary Tables

Type LTA

Standard

Materials

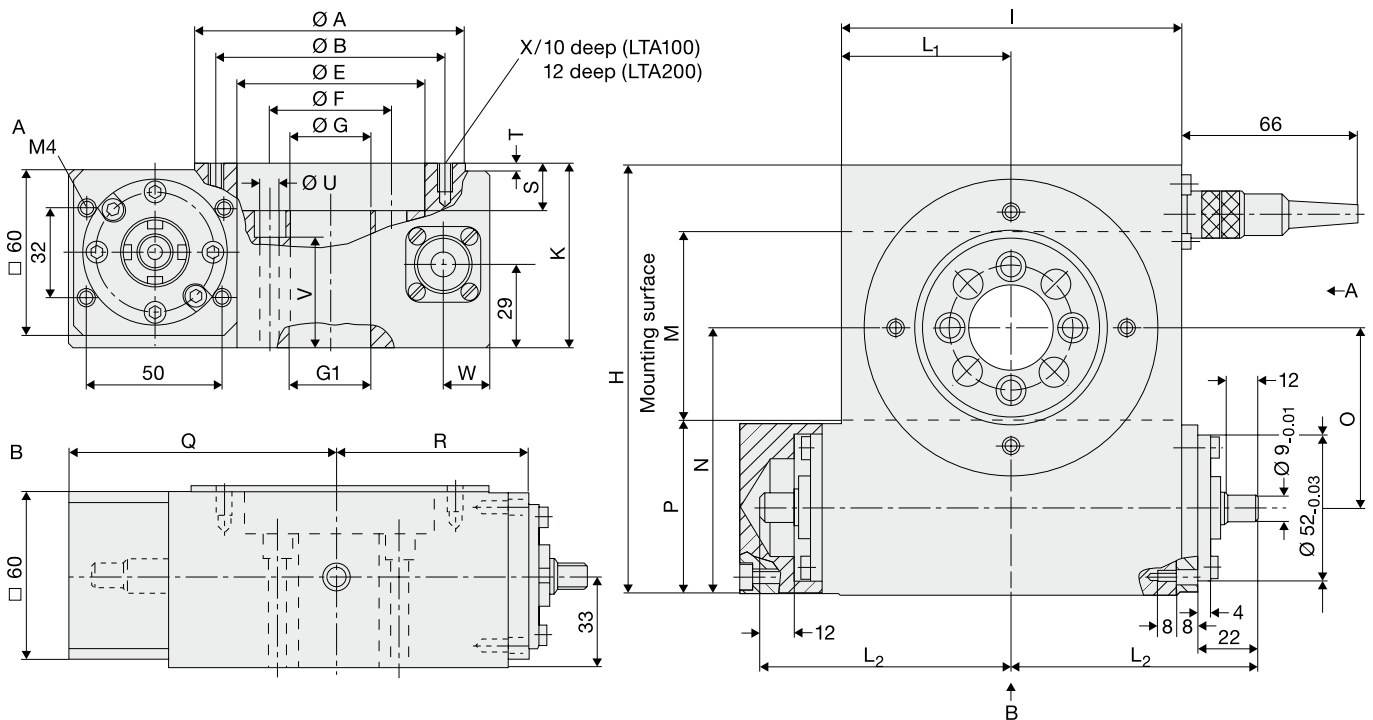
Base plate	Raceways	Balls	Worm wheel	Worm shaft	Housing
Aluminium	High-alloy spring steel	Antifriction bearing steel	Wear-resistant bronze alloy	CK45N hardened and ground	V2A

LTA

Nominal Ø mm A	Load ratings KN Co C		Tilt moment Nm Com	Input rotary speed U/min N _{1max}	Gear reduction i	Output rotary speed U/min N _{2max}	Input torque Nm M _{1max}	Output torque Nm M _{2max}	Weight kg	Order no.
	100	17.5	9	289	1800	18	100	5	54	5.5
200	43.0	18	433	2200	36	61	5	108	10.0	91801A

Nominal Ø																						
A	B	ØE ^{H7/6 deep}	ØF	ØG	ØG ₁ ^{H7/12 deep}	H	I	K	L ₁	L ₂	M	N	O	P	Q	R	S	T	U	V	W	X
100	85	70	45	30	30	155	125	65	62.5	91.5	70	96.0	65.0	61	99.5	69.5	17	2	4xØ6.6	39	17	4xM6
200	175	160	130	110	110	255	220	70	110.0	139.0	165	145.5	114.5	63	147.0	117.0	22	7	6xØ9.0	39	22	6xM8

	Ø	100	200
Axial and radial accuracy	µm	30	30
Positioning accuracy in angular seconds	sec	160	120
Repeat accuracy in angular seconds	sec	20	14

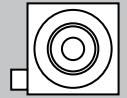


Type LTB

High accuracy

Materials

Body material	Raceways	Balls	Worm gear
Aluminium ribbed	High-alloy spring steel	Antifriction bearing steel	Steel-bronze alloy



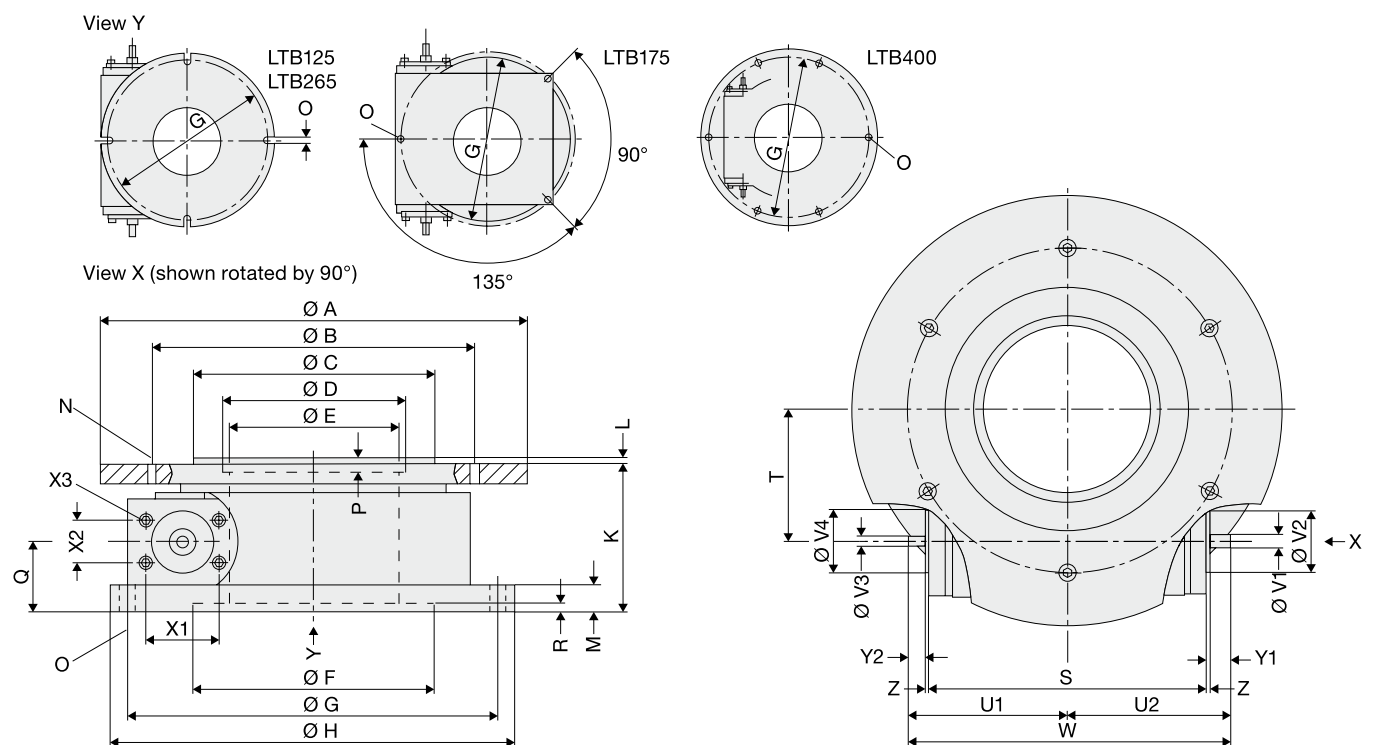
Vacuum and part-magnetic design possible

LTB

Nominal Ø	Load ratings	Tilt moment	Input rotary speed	Gear reduction	Output rotary speed	Input torque	Output torque	Weight	Order no.
mm	N	Nm	U/min	i	U/min	Nm	Nm	kg	
A	Co	Com	N _{1max}		N _{2max}	M _{1max}	M _{2max}		
125	1950	110	2500	360	7	0.7	70	3	91042A
175	2550	140	2500	360	7	0.9	75	6	91043A
265	4200	310	2500	360	7	1.5	160	10	91044A
400	14100	1780	2500	360	7	2.0	290	27	91045A

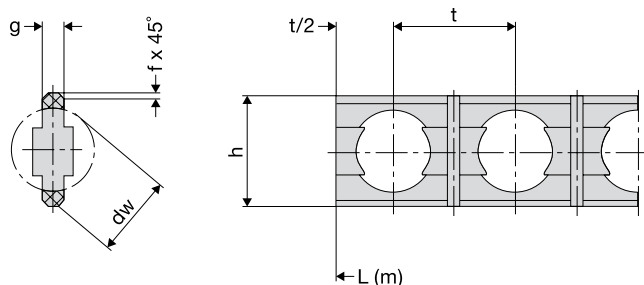
Nominal Ø		A	B	C ⁹⁶	D ^{H7}	E	F ^{H7}	G	H	K	L	M	N	O	P	Q	R	S	T	U1	U2	V ₁ ⁹⁶	V ₂ ⁹⁶	V ₃ ⁹⁶	V ₄ ⁹⁶	W
125	100	-	70	70	100	150	165	75	-	10	4x M5	4x 7.0	5	34	5	112	60	67.5	67.5	6	22	6	22	135		
175	126	-	102	70	102	178	-	82	-	12	6x M6	3x 6.6	4	31	4	152	63	98.0	98.0	6	52	6	52	196		
265	200	150	-	105	150	230	250	90	4	16	6x M10	4x 10.0	-	43	5	171	81	95.0	98.0	8	38	6	38	193		
400	340	300	200	190	270	380	400	100	4	16	6x M10	6x 11.0	5	43	5	229	139	124.0	127.0	8	38	6	38	251		

Nominal Ø	X1	X2	X3	Y1	Y2	Z	Ø 125	175	265	400		
125	21.8	26	2xM4/16 deep	8	9	2.8	Axial and radial accuracy	µm	20	20	20	30
175	50.0	32	4xM4/13 deep	18	18	4.0	Positioning accuracy in angular seconds	sec	80	80	70	50
265	45.0	26	4xM5/24 deep	10	7	2.5	Repeat accuracy in angular seconds	sec	16	14	10	8
400	45.0	26	4xM5/24 deep	9	6	2.5						



Standard Cages

Strip cages of the LKB type



Cage size	dw		Dimensions				Order no. (bulk stock)
	mm	inch	h	g	t	f	
LKB5	5.0	3/16	7.6	1.5	7.5	0.4	78916A
LKB6	6.0		8.6	1.6	9.2	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		13.2	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

The strip cage is segmented into the required lengths and supplied ready for use with balls. The number of required balls is calculated by:

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

Z = number of balls
 $\varnothing KK$ = ball pitch diameter
 t = ball distribution (tolerance ± 0.2)

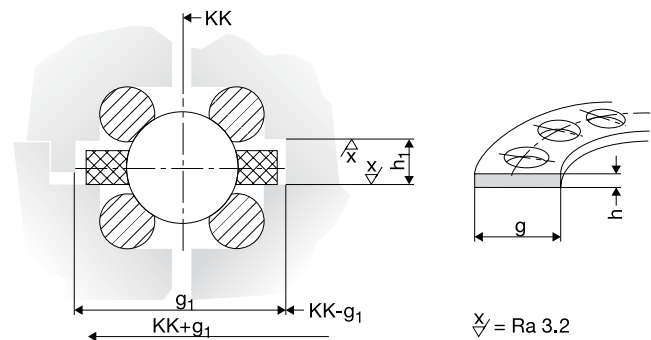
The number of segments depends on the bearing diameter and the ball size. Guide values:

$\varnothing KK$ mm	< 200	200-399	400-799	800-1500
Number of segments	3-4	4-6	6-8	8-12

The strip cage can also be ordered as a one-piece for special applications.

Special Cages

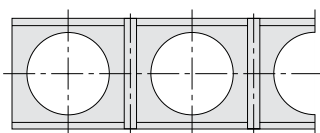
Flat cages of laminated cloth, non-corrosive, brass



dw mm	h x g mm	h1 x g1 mm	Order no.
5.0	2 x 10	2.7 x 13	on request
6.0	2 x 12	2.7 x 15	
8.0	3 x 15	4.0 x 18	
9.0	3 x 16	4.0 x 18	
9.525	3 x 18	4.0 x 20	
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	

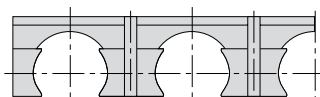
Material: laminated cloth, brass, non-corrosive

Strip cages of laminated cloth, non-corrosive, brass



Use of a flat cage is mandatory at temperatures over 100 °C and for ball diameters greater than 20 mm. Special solutions, such as complete corrosion protection or radiation adjustment, are also available.

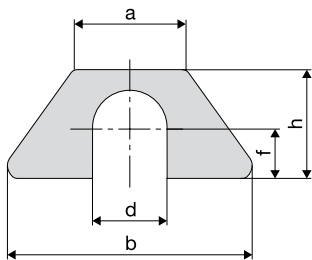
Comb cages



Special cages in the form of strip or comb cages are available for special applications with regard to environmental influences or mounting space requirements.

Franke offers materials like plastic, non-corrosive steel, brass, Teflon etc.

Washers

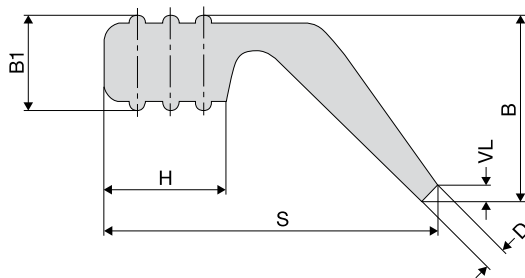


Adjustment between the divided inner or outer rings is simplified by washers for larger bearings or bearing elements. The washers are made of non-corrosive sheet steel. A theoretical begin column of 0.5 mm is recommended in the construction design for adjustment.

Size	Dimensions mm				
	a	b	d	f	h
M 6	11.0	24.4	7	5	11.0
M 8	14.7	34.2	9	6	13.5
M10	16.4	42.3	11	7	16.0
M12	20.3	46.0	13	8	18.0
M16	25.4	54.0	17	11	24.0

Gauge mm	Order no.							
	0.025	0.1	0.15	0.2	0.25	0.3	0.5	1.0
M 6	79015A	79034A	79035A	79036A	79037A	79038A	79039A	79040A
M 8	79041A	79023A	79042A	79000A	79026A	79043A	79044A	79045A
M10	79046A	79012A	79010A	79011A	79047A	79048A	79049A	79050A
M12	79118A	79051A	79052A	79053A	79054A	79055A	79056A	79065A
M16	79119A	79024A	79066A	79057A	79058A	79059A	79060A	79061A

Seals



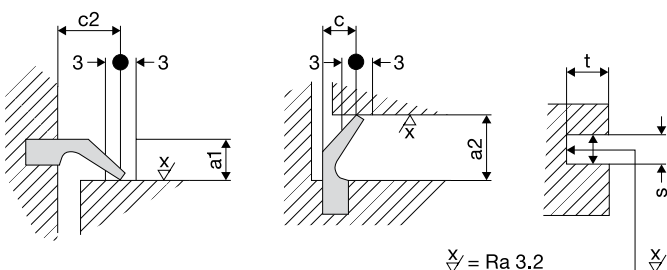
The bearing assemblies are equipped with the S10 collar seal as standard. Temperature: $-30\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$ (NBR). Max. peripheral speed: 5 m/s.

For sealing the construction (e.g. for use as a bearing element) seals can be ordered as bulk stock. The point of impact is then glued with the adhesive Loctite 401®.

Profile	Dimensions mm				Material	Preload mm	Weight kg/m	Order no.
S	H	$B^{\pm 0.3}$	$B1^{\pm 0.2}$	D		VL ¹		
10	4.2	5.3	3.0	0.8	Perbunan 70NBR/221	0.5...1.5	0.026	09080
10	4.2	5.3	3.0	0.8	Viton	0.5...1.5	0.026	46062
15	5.5	8.5	4.3	1.0	Perbunan 70NBR/221	0.5...2.0	0.051	09190

¹ depending on bearing assembly (approx. 1 Nm/m seal)

Installation Dimensions



Profile	Installation dimensions mm				Groove dimension mm	
	c	c2	a1	a2	$t^{\pm 0.2}$	$s^{\pm 0.1}$
10	5+1	5.5+1	3.6...4.6	4.3...5.3	4.2	2.8
15	8+1.5	9.0+1.5	6.3...7.7	7.5...9.0	5.5	3.9

Important note: measure seal first, then make groove.

Special seals are available on request. Franke offers Viton seals for high temperatures or aggressive media.

1 Choice of Antifriction Bearings

It is best to select and size the bearing before design begins.

1.1 Parameters for Choosing Bearings

- Permitted dimensions and material information of the bearing.
- Loads with load spectrums and associated time slices in %.
- Rotary speed and number of rotating motions and rotating angle per time unit.
- Peripheral forces to be borne by the gear.
- Other operating conditions, such as temperature, vacuum, clean room, moisture ...

An approximate choice of bearing is possible using the catalogue. All relevant data are to be found on the pages for the individual types.

1.2 Static and Dynamic Load Capacity, Calculation

The figures given in the catalogue for the static and dynamic load ratings are for a preliminary design, but are insufficient for exact sizing. The load ratings given correspond to the radial load ratings. Exact sizing requires the static axial, radial and torque load ratings and the dynamic axial and radial load ratings. The axial values are approximately higher by a factor of 2. Franke will perform the calculation on request.

2 Installation and Set-Up of Bearing Elements

Bearing elements consist of two inner and two outer race rings and a multipart, segmented cage with balls. The race rings are divided and can, thus, be used flexibly in the diameter for installation.

The balls correspond to quality grade 3 (DIN 5401). Only the supplied balls may be used. If balls are lost, all the balls must be exchanged to ensure the race characteristics of the bearing are not impaired.

Setting the preload is an important requirement for a long lifetime. This guarantees that all raceways are sharing the load and the balls are running perfectly in the predetermined positions.

2.1 Setting with Washers

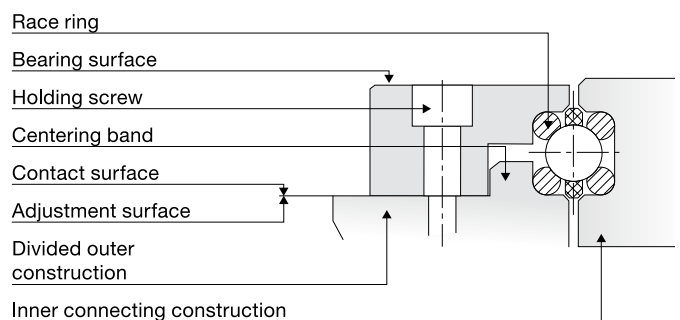
Setting using washers is the most cost-effective and flexible method, as this still allows readjustment of the adjustment later

on. You can order the washers by screw diameter in different thicknesses (see accessories p. 55).

Requirements:

- Spacing of the inner or outer design.
- The height of the race ring bed is 0.3 to 0.5 mm smaller on the side of the divided mating structure. This gap is needed to insert the washers.
- The divided side of the mating structure should be fixed with a centering collar. This is the only way to guarantee the parallelism.

Installation and set-up:



The race rings are laid in the mating structure. The race ring beds can be greased to hold the race rings in position during installation. The points of impact of the opposite race rings in the same section, are installed at an angle of approx. 180°. Afterwards, the divided side of the mating structure is brought to the intended position.* Then, you insert the cage segments with the balls and grease the bearing element (see 4.1 Lubrication). Before the mating structure of the divided side is closed, arrange the washers on the screw borings of the holding screws. The thickness depends on the in-built gap (see above). Once the screws are tightened (see 4.5 Screws) and the bearing assemblies have been turned about 2 to 3 times through 360°, check the adjustment. If the values differ by more than 5 to 10 %, the thickness of all washers must be changed and the process repeated.

*Applies for both installation methods 2.1 and 2.2

2.2 Setting through Massive Adjustment

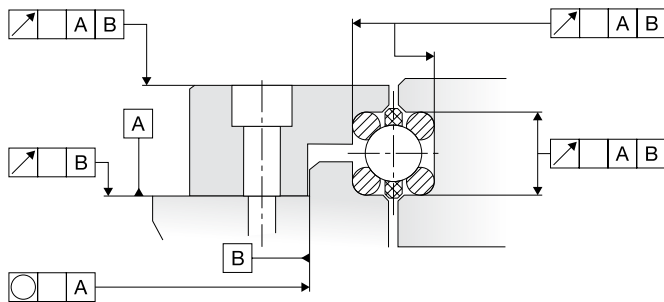
When setting using massive adjustment, the adjustment surface is brought to the correct level by subsequent grinding. The best accuracy is achieved with this method, as the joint face

between the divided side of the mating structure is form-fit and no tension bridges can build up.

Requirement:

- Spacing of the inner or outer design.
- Surface grinding machine of suitable size.
- The height of the race ring bed is 0.1 mm larger on the side of the divided mating structure. This oversize is necessary for the adjustment.
- The divided side of the mating structure should be fixed with a centering collar. This determines the parallelism of the two raceways.

Installation and set-up:



Then insert the cage segments with the balls and close the bearing assembly with the two divided sides of the mating structure (adjustment ring). Once the screws have been tightened properly (see 4.5 Screws) and the bearing assembly has been turned 2 to 3 times through 360°, measure the space between the inner and outer ring using a test gauge. Then the adjustment ring is taken off again and the determined value plus 0.02 to 0.03 mm is ground off with the grinding machine.

To ensure the parallelism is maintained between this surface and the raceway, a suitable bearing surface should already be chosen during design.

After thorough removal of the ground dust, the ring is refitted as described and the bearing moves. Then check the adjustment. If this value differs by more than 5 to 10 %, the procedure must be repeated. Finally, the bearing assembly is greased via the in-built grease borings (see 4.1 Lubrication).

Note:

Setting the preload is advisable, as there are tolerances that need to be compensated even with the best production.

3 Installation and Set-Up of Slim Bearings

Slim bearings of the LDD type are highly loadable, pre-finished bearing elements, which can be fitted very easily in a small installation space. With slim bearings the bearing element (four ball race rings with ground raceway and a plastic band cage with retained balls) is embedded in a steel inner and outer casing. The casings are peripherally divided and form a pre-finished bearing, which is integrated directly in each design.

In contrast to standard, closed and ground slim bearings, the play on Franke slim bearings is not dependent on the fit of the outer and inner rings. As a result, fitting and removing are easier and require no special tools or thermal treatment.

The bearings are suitable for permanent operation at temperatures between -10 °C and $+70\text{ °C}$ – and briefly for use up to $+120\text{ °C}$. Peripheral speeds of 10 m/s with fat lubrication and 12 m/s with oil lubrication can be achieved.

Setting the preload is an important requirement for a long lifetime of the slim bearing. This guarantees that all raceways are sharing the load and the balls are running perfectly in their predetermined positions. The preload is set correctly when the adjustment corresponds to the values in the diagram at point 6 without seal.

Note:

Setting the preload is advisable, as there are tolerances that need to be compensated even with the best production.

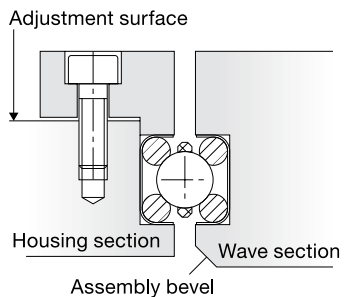
3.1 Settings with Washers

Setting using washers is the most cost-effective and flexible method, as this still allows readjustment of the adjustment later on. You can order the washers by screw diameter in different thicknesses (see accessories p. 55).

Requirements:

- Spacing of the inner or outer design.
- The height of the race ring bed is 0.3 to 0.5 mm smaller on the side of the divided mating structure. This gap is needed to insert the washers.
- The divided side of the mating structure can be fixed with a centering collar to improve the parallelism of the raceways.

Installation suggestion A:



The slim bearing is laid in the mating structure. Before the mating structure of the divided side is closed, arrange the washers on the screw borings of the holding screws. The thickness depends on the in-built gap (see above). Once the screws are tightened (see 4.5 Screws) and the bearing assemblies have been turned about 2 to 3 times through 360°, check the adjustment. If the values differ by more than 5 to 10 %, the thickness of all washers must be changed and the process repeated.

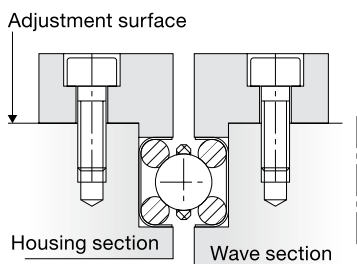
3.2 Setting through Massive Adjustment

When setting using massive adjustment, the adjustment surface is brought to the correct level by subsequent grinding. The best accuracy is achieved with this method, as the joint face between the divided side of the mating structure is form-fit and no tension bridges can build up.

Requirement:

- Spacing of the inner or outer design.
- Surface grinding machine of suitable size.
- The height of the wire ring bed is 0.1 mm larger on the side of the divided mating structure. This oversize is necessary for the adjustment.
- The divided side of the mating structure can be fixed with a centering collar. In this way the parallelism of the two raceways is improved.

Installation and set-up:



The slim bearing is inserted into the mating structure and the bearing is closed with the two divided sides of the mating structure (adjustment ring). Once the screws have been tightened properly (see 4.5 Screws) and the bearing has been turned 2 to 3 times through 360°, measure the space between the inner and outer ring using a test gauge.

Then the adjustment ring is taken off again and the determined value plus 0.02 to 0.03 mm is ground off with the grinding machine. To ensure the parallelism is maintained between this surface and the raceway, a suitable bearing surface should already be chosen during design. After thorough removal of the ground dust, the ring is refitted as described and the bearing moves. Then check the adjustment. If this value differs by more than 5 to 10 %, the procedure must be repeated.

4 Installation and Set-Up of Bearing Assemblies

Franke bearing assemblies are pre-finished complete bearings – regardless of whether they are standard bearings from the catalogue or a customer-specific version. The preset or defined race accuracy, adjustment, stiffness and general characteristics are dependent on the mating structure and on the accuracy or completeness of the data supplied. Therefore, particular attention must be paid.

4.1 Lubrication and Maintenance

To keep friction low and to protect the bearing from corrosion in the long run, ensure use of sufficient lubrication. All lubricants undergo an ageing process, which limits the service life. The best ageing stability is achieved with fully synthetic lubricants. ISOFLEX TOPAS NCA52 (special grease from Klüber, designation in accordance with DIN 51502: KHC2 N-50) is used as the initial lubrication on Franke bearings. The ageing stability of this lubricant is for approx. three years. This lubricant is also recommended for the use of bearing elements.

High quality lithium soap fats based on polyalpha-olefin or mineral oils and in accordance with DIN 51825-K2 K-40 are suitable as an alternative. Questions on lubricants, such as miscibility, aggressiveness, extreme temperatures, removal, areas of use etc., must be clarified with the relevant lubricant manufacturer.

4.2 First or Relubrication

The amount of lubricant that an Antifriction Bearing needs for lubrication is relatively low and is dependent on the rotary speed. Because of the flexing work, too much lubricant causes increased temperatures, which limit or prevent lubricity. The

bearing's lifetime is substantially reduced due to the increased wear. The amount of lubricant is determined by the calculated play inside the bearing assembly. The calculated volume must be filled with 20 to 30 % lubricant. The recommendation is 30 to 40 % for slewing bearings.

4.3 Relubrication and Lubrication Periods

The lubricity reduces due to mechanical loads and ageing. Therefore, it is necessary to supplement or completely replace the existing lubricant (e.g. in the event of heavy soiling). The bearing must be rotated during relubrication. Relubrication should be effected at operating temperatures as far as possible.

The amounts for relubrication are calculated as follows:

- m = \varnothing KK x $h^2/3$ x X
- h^2 = bearing ring height in mm
- \varnothing KK = ball pitch diameter in mm
- m = amount of lubricant in g
- X = factor according to table 1 in mm^{-1}

Relubrication periods:

Exact determination of the periods is usage-specific and, therefore, can only be correctly determined by trial and error (guide values see table 1). To determine the X factor (table 2), use the read time value in reference to the operating time of the application.

Note: for standard bearings applying one lubrication application is sufficient, as the lubricant is evenly distributed by the bearing rotation. For slewing bearings at least three relubrication applications are needed ($3 \times 120^\circ$).

Vu m/s	Frequency h
0 to < 3	5000
3 to < 5	1000
5 to < 8	600
3 to < 10	200

Table 1: Relubrication Periods

Frequency	weekly	monthly	yearly	2-3 years
X	0.002	0.003	0.004	0.005

Table 2: Relubrication Intervals

Circular oil lubrication is possible in principle and should be discussed with the relevant lubricant manufacturer. Lubricant-free bearings are available for special applications (e.g. clean room or ultrahigh vacuum).

Calculation example:

bearing assembly of type LDL, \varnothing KK 500 mm, order no. 73105Y
Peripheral speed 3 m/s
Operating time approx. 16 hrs/day

Relubrication period for 3 m/s is 1000 hrs (see table 1)
= 1000 (hrs) / 16 (hrs/day) = 63 days ~ 3 months for 16 hrs/day operating time

Relubrication should be effected quarterly. The X factor (table 2) is rounded off and is 0.003. The h^2 measurement is 42 mm (see catalogue page 40).

$$m = 500 \text{ mm} \times 42/3 \text{ mm}^{-1} \times 0.003 \text{ g} = 21 \text{ g}$$

Thus, relubrication of 21 g of ISOFLEX TOPAS NCA52 should be applied every three months. The lubricant has a shelf life of three years.

4.4 Lubrication and Lubrication Periods for the Gear

Automatic gear lubrication is recommended. With manual lubrication, the gear and the pinion must be sufficiently lubricated before start-up. The lubrication period depends on the design and peripheral speed and, therefore, must be determined individually.

4.5 Screws

The number of screws and the diameter for fixing to the mating structure should be checked in principle. The spacing X from holding screw to holding screw should not exceed 125 mm to avoid formation of bridges. The fixing screws are tightened crosswise with a torque wrench in relation to the screw quality – according to the figures in table 3.

	Quality	
	Nm 8,8	Nm 12,9
M6	10	17
M8	25	41
M10	49	83
M12	86	145
M16	210	355

Table 3: Starting Torque

The screws need to be retightened with the prescribed tightening moment to resolve settling phenomena. This process should be effected as far as possible when the screws are free of additional forces. They must be checked after around

100 and then every 600 operating hours. This period can also be much shorter for special applications (e.g. heavy vibrations).

4.6 Gear

Franke supplies straight gear without hardening as standard (material 42CrMo4V) and special gears on request. The material, design and quality can be changed at any time on request.

The catalogue figures with regard to permitted peripheral forces were determined using the permitted bending stress in the tooth foot. The maximum forces relate to extreme loads, which occur in the event of brief impact loads such as starting and braking. These values are for guidance purposes only and can only be determined through a gear calculation, including both components pinion and bearing assembly.

4.7 Tolerance and Accuracy

All tolerances and accuracies are given on the relevant page of the catalogue. The greatest possible accuracy is achieved when the constructive design of the encapsulating parts is effected in such a way that machining of all related diameters and surfaces can be performed in a clamp.

The run accuracy values in the catalogue are maximum values and can be improved further by limiting the tolerances.

The tolerance values $T = IT6$ or $T = IT7$ relate to the diameter-dependent basic tolerances in accordance with DIN ISO 286 (see table 4).

Nominal size range mm over ... to	Basic tolerances	
	μm IT6	μm IT7
80... 120	22	35
120... 180	25	40
180... 250	29	46
250... 315	32	52
315... 400	36	57
400... 500	40	63
500... 630	44	70
630... 800	50	80
800... 1000	56	90
1000... 1250	66	105
1250... 1600	78	125

Table 4: Tolerances

DIN ISO 286 T1 (11.90)

5 Rotary Tables

Franke Rotary Tables have a high load capacity and are ideally suited for assembly, measuring and inspecting tasks. All Rotary Tables have a compact aluminium housing with integrated Franke components. A worm gear pair guarantees high accuracy also for permanent loading. The Rotary Tables are extremely tip-resistant with a low own weight. Precise technical details are on the relevant pages in the catalogue.

5.1 Load Capacity

The recommended safety for Franke Rotary Tables is $SST \geq 3$ for simple loading and $SST \geq 6$ for dynamically changing loading and lifting. Franke will perform calculations on loading and lifetime on request.

5.2 Temperature Range

The Rotary Tables can be used at an operating temperature of $-10\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$. Expanded temperature ranges are possible on request.

5.3 Lubrication

In general, all standard Rotary Tables ex works have long-term lubrication with the Antifriction Bearing grease Isoflex Tops NCA52. It is recommended that Franke Rotary Tables – depending on usage – are relubricated twice a year to once a year (see also 4.1 Lubrication and maintenance).

Lubrication point	Relubrication amount per lubrication point
	g front side
LTA100	1
LTA200	1
LTB125	3
LTB175	3
LTB265	3
LTB400	1

5.4 Options

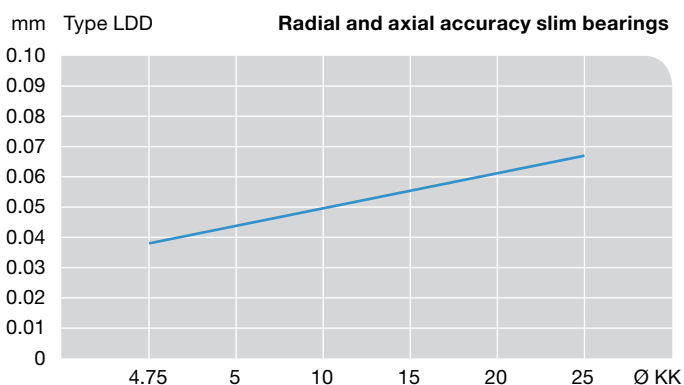
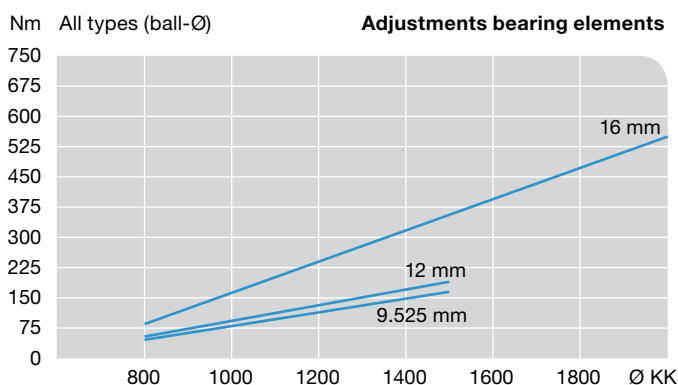
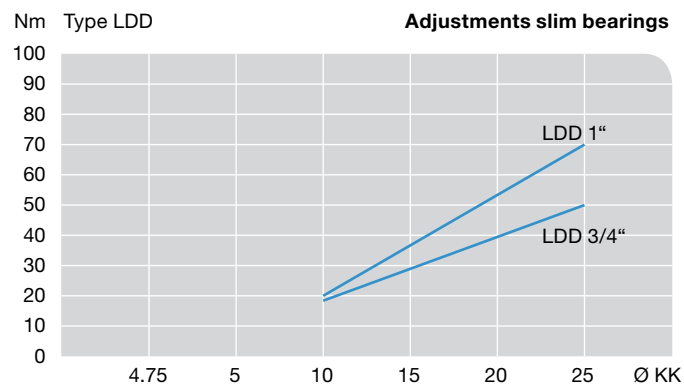
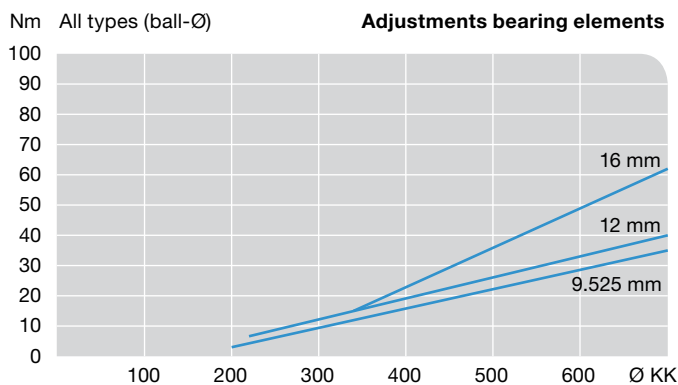
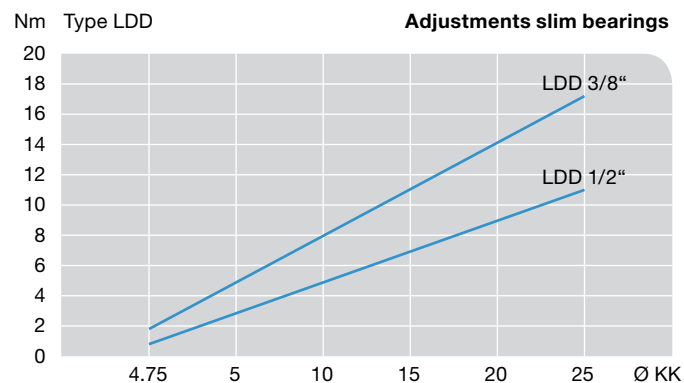
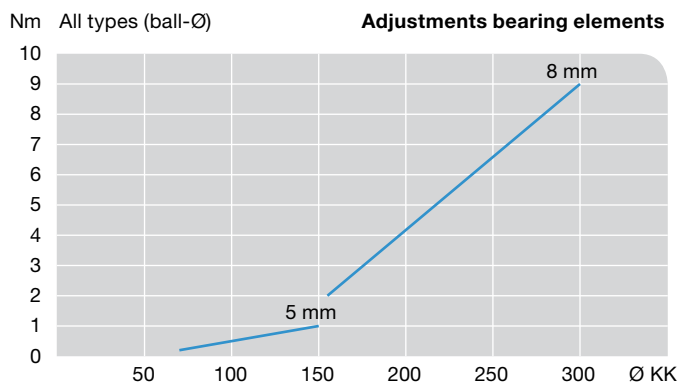
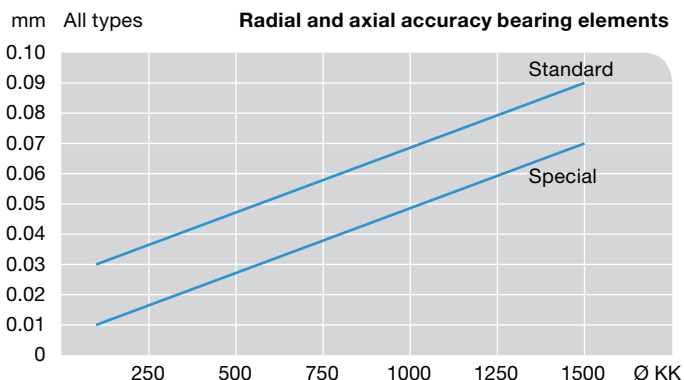
- One or two inductive proximity switches, integrated inside the table
- Freely positionable trips
- Adaptor sets for motors at customer's request
- Motorisation depending on application with step or servo motors
- Rotary encoder on the second shaft extension of the worm shaft
- Complete automation solutions

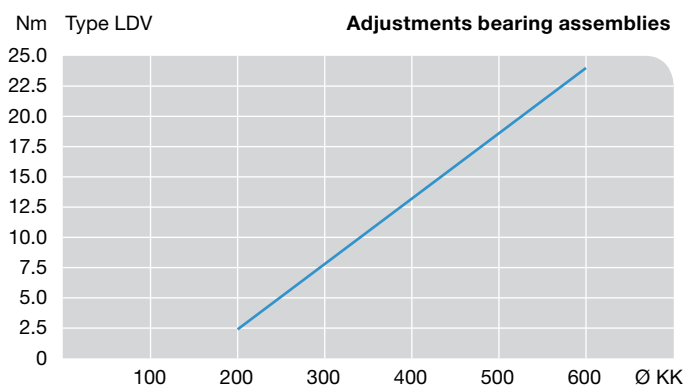
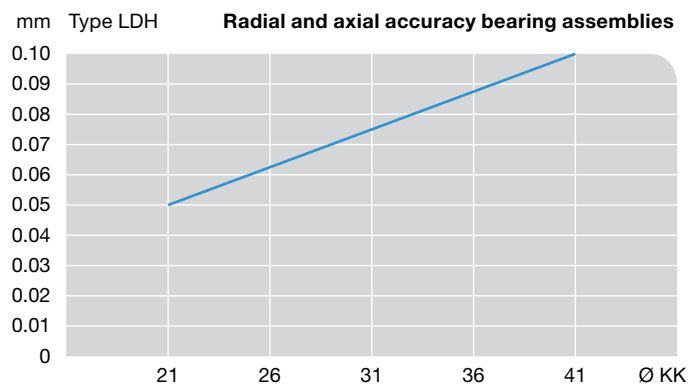
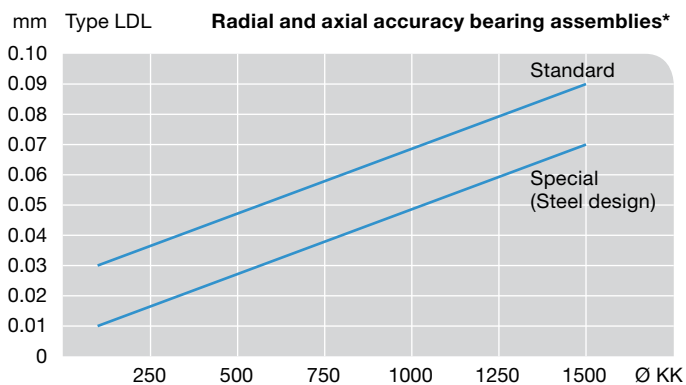
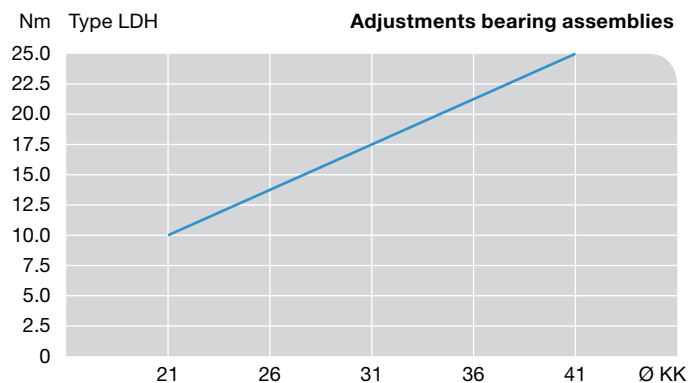
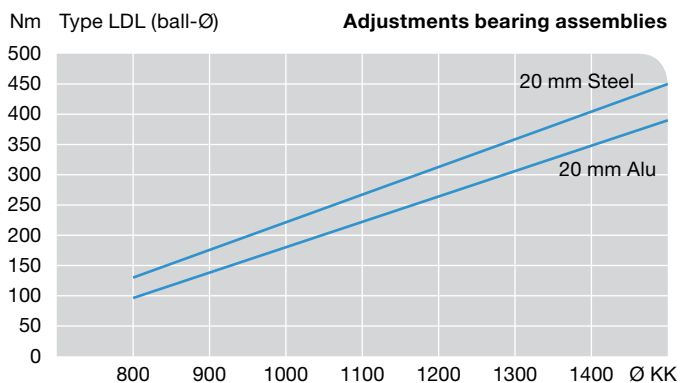
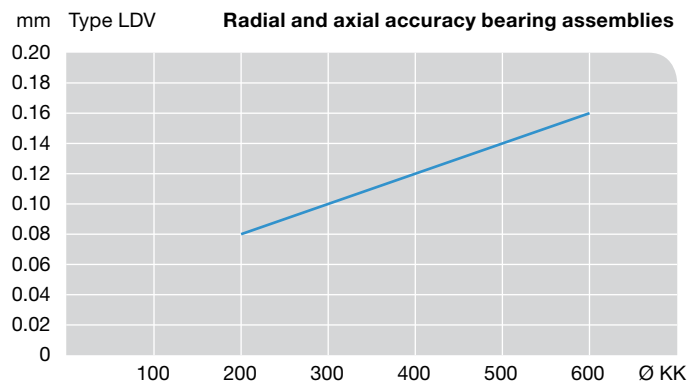
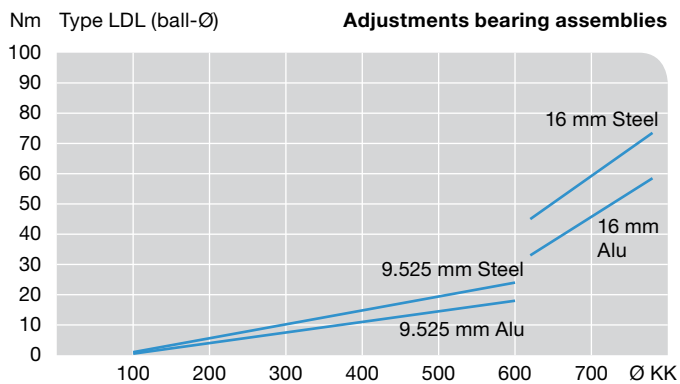
Please follow assembly and maintenance instructions. They are included with every delivery.

6 Adjustment Values and Accuracy

The adjustment gives information on the preload of the bearing assembly. It depends on the individual type and the rolling circle (see 6. Adjustments of individual types). However, these values are not definitive and, therefore, can be adjusted individually depending on the application.

The stiffness is indirectly related to the adjustment. The rule of thumb: the higher the adjustment, the higher the stiffness. The adjustment increase by the seal S10 (see Accessories page 55) amounts to approx. 1 Nm/m circumference and sealing side. This value can fluctuate depending on dry running or surface quality.





*Concentric and axial run-outs are directly related to the profile and the material of the bearing.

