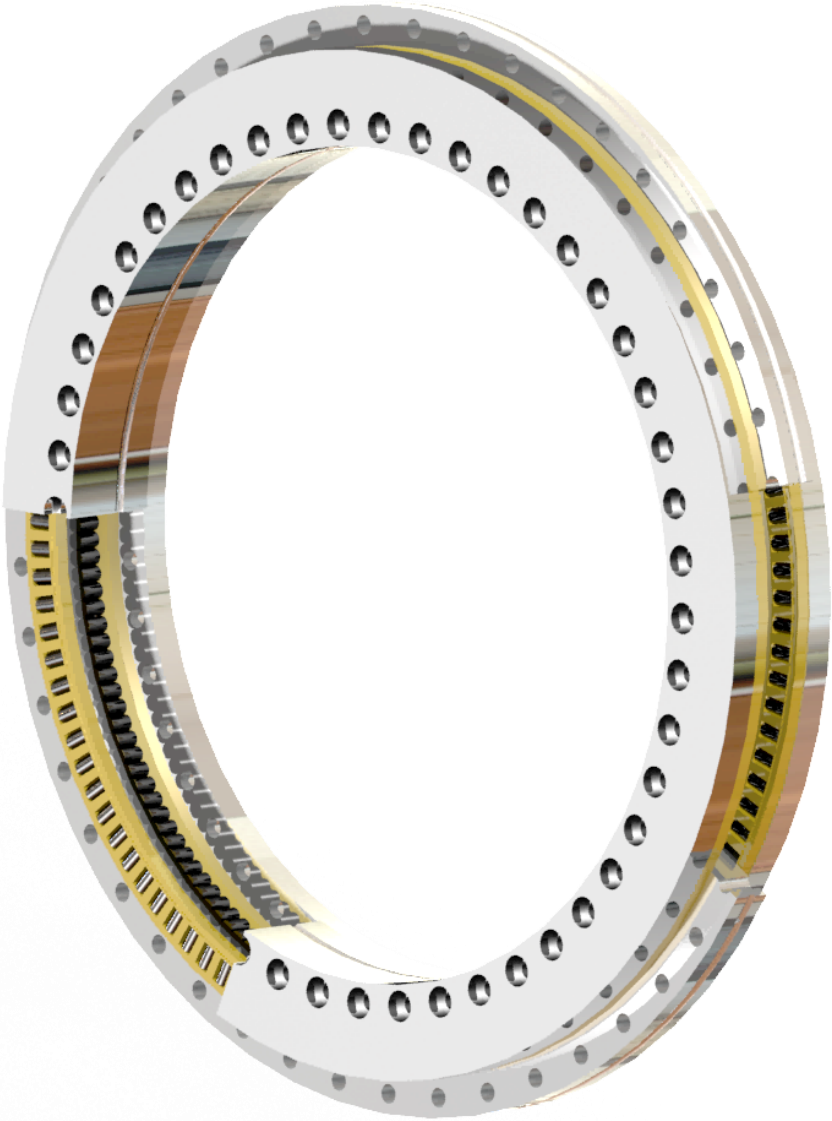
Products seems to be identical, if you used them you find out they are better ones.

ULTRAPRECISION ECB Series Bearings

See the difference – test us



ECB series bearings for combined loads + highest rigidity in ultraprecision for high end applications:

ECB + ECBM series from Ø 50 < 1200 mm
ECBS + ECBSM series from Ø 200 < 460 mm
ECBZKLDF series from Ø 100 - 650 mm but also < 1200 mm,

Technical information chart of ultra-precision ECB - ECBM – ECBS - ECBSM – ECBZKLDF series bearings,

pages

General information about the offered ECB bearings series 3 - 12
Main selection of bearing types 13
1. Design of machine parts and assembling ECB -ECBS-ECBM-ECBSM-ECBZKLDF

1.1 Housing design 14
1.2 Shaft design 15
1.3 Basic rating life 16
1.4 Static load safety factor 16
1.5 Limited speed 16
1.6 Temperature in rotary axis systems- 16
1.7 Bearing preload 17
1.8 Frictional torque 17
1.9 Lubrication + Relubrication 17
1.10 ECB and ECB VSP 18
1.11 Installation guidelines 18
1.12 Accuracy charts of 19
1.13 Dimension + chart 20
1.14 Dimension + chart 21
1.15 Dimension + chart 22
1.16 Dimension + chart 23

2. ECBM - ECBSM bearings with angular integrated measuring system 24
2.1. Structure and introduction 25

3. ECBZKLDF series 26

1.1 Housing design 14
1.2 Shaft design 15
1.3 Basic rating life 16
1.4 Static load safety factor 16
1.5 Limited speed 16
1.6 Temperature in rotary axis systems- 16
1.7 Bearing preload 17
1.8 Frictional torque 17
1.9 Lubrication + Relubrication 17

3.1 ECBZKLDF series
3.1 Dimension chart ECB ZKLDF 28
3.2 Dimension chart ECB ZKLDF 29

Contact: 30

Who we are?

German and Chinese

Senior and Chinese experts, especially for Machine Tool + Textile Machine application.
21 years Barmag AG, 2 years Barmag do Brasil as Technical Leader, Factory Manager + Process Planning Manager, 30 years Schaeffler Germany as Technical Sales in Germany, 6 years as Market Sector Manager in Italy and from 2003 – 2007 as Senior Manager Engineering in China, Korea + Japan (Production Machinery Asia Pacific).
2007 – 2009 Consultant for Schaeffler Group Industrial, Production Machinery Asia Pacific.
2010 foundation of Excellent Bearing (Shanghai) Trading Co., Ltd.
Retailer sins 10 years in Germany + China
for Chinese and German high-tech products. We import and export especially to China and Germany.
Developer sins 1965, mainly for Textile Machine - Machine Tool - and car application.

Meanwhile exist ~120 patent application, ~75 are applied together with Schaeffler KG, the rest of it after retirement in China, mainly for Machine Tool for mineral cast application and car application in Germany, China and worldwide.

Expert
for high tech - Mineral cast products, we are able to consult especially for Machine Tool base and complete machines in highest precision, e.g. we delivered a base surface of 1m x 3m in a surface precision of < 0,005mm.

Consultant from 2007,
for companies (e.g. German + Chinese) which like to have mutual cooperation, or technical support.

Owner
of CnC / R+D Machinery GmbH / Germany + Excellent Bearing (Shanghai) Trading Co., Ltd

Excellent Bearing (Shanghai) Trading Co., Ltd is a 100% subsidiary company of the German

CnC / R+D Machinery GmbH.

Why we are doing Trading in China, what we are doing there and what is our goal?

Our philosophy and goal is to grow with the global market.
"Chances multiply if you take them" (Sunzi)

We took our chances!
The only place in the world to grow fast 2010 was in Asia, especially in China (today also in Africa).

We established Excellent Bearing (Shanghai) Trading Co., Ltd in 2010 after dependent employment from 1957 to 2007 and 2 years as consultant work for Schaeffler KG in China, Japan and Korea.

The actual reason to build a company in Shanghai was one of the patent applications in China which is becoming nowadays finally reality.

We believe also in the Chinese Road and Belt Initiative - BRI - (new Seidenstrasse), because this is a very peaceful way for a lot of still pour countries on the road to grow economical fast. A win - win situation and a job creating initiative in that Countries and in China. We cannot understand why some countries see only a geopolitical reason of China in it? We forgot that the old "Seidenstrasse" brought for all Countries on the road also in the past economical grow and a win - win situation's? Why this time with much bigger global business it should be different? We have decided to support the BRI.
If Countries do not join the BRI, they can also not influence this initiative!

China is, as Europa too, without any war after the second world war and it is now going on to become the economic leader of the world. Nearly all western Countries in the world underestimated China for long time, western Countries used China as the work bank of the world and as a waste deposit Country, sent their rubbish to China as they do still in Afrika nowadays.

Western Companies didn't also not control in the past which knowledge was given to China away for free and now these Companies complain, that Chinese Companies took their knowledge! Now, after all western Countries woke up und China refused to take the word's rubbish anymore, clean up their environment with high speed, they are worry that China is going to take more influence in the world.

Every investor get influence where he does invest millions or billions of dollars. Western Countries got + get it, why Chinese should not get it?

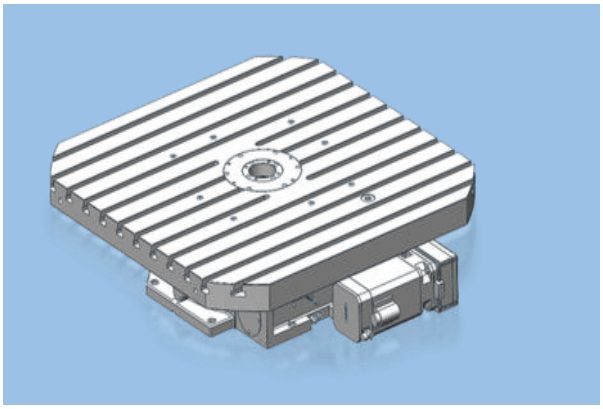
For us is this peaceful influence much more well come as the new American economic war against China, Europe and the rest of the world and their protectionism and war's in other Countries. We are convinced that we have the chance to get also a win situation and because of our know how, we have the possibility in China to realize a lot to clean up the environment for mankind.
We are involved to start up a mineral cast Company to substitute cast iron production, because, with each 1t of mineral cast we safe 1,5 t of CO2 and about 6000kWh of energy!

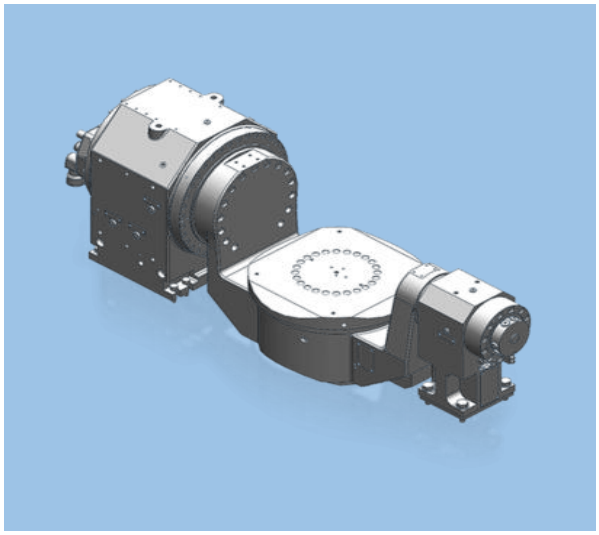
Additional we are going strong with Mineral cast products to support Industry 4.0 + Made in China 2025 with it!

Even a good quality blast furnaces is going to contaminate 1,5 CO2 and other harmful gases into the environment during production of 1t cast iron + need 6000kWh!

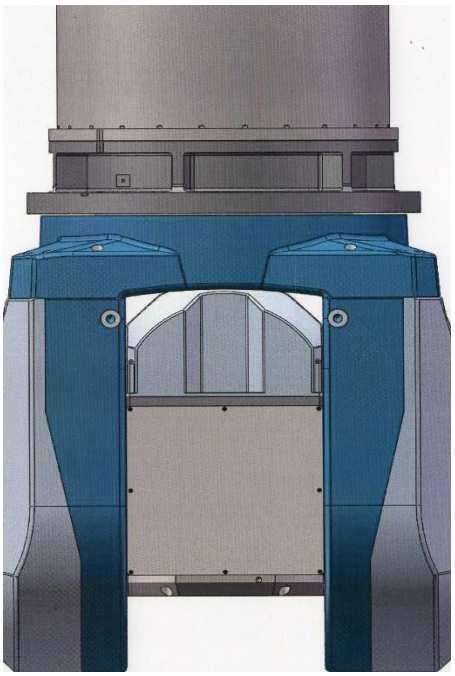
Where the bearings are produced

ECB ultra precision bearing series Ø 50 < 1200mm in P4 + P2





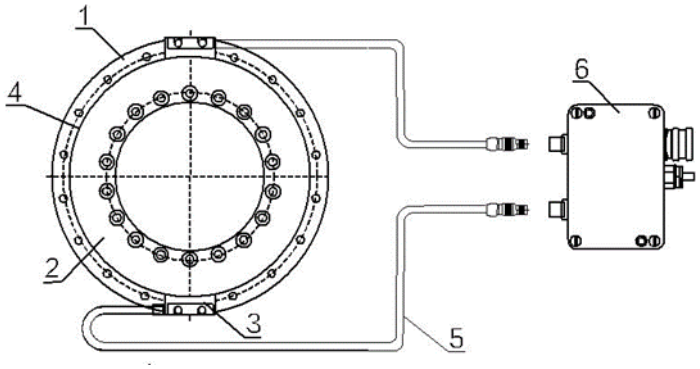
Rotary Table + Swivel table application



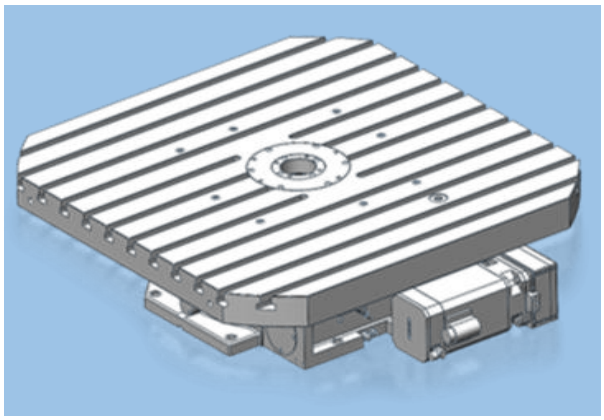
Milling head application ECB application

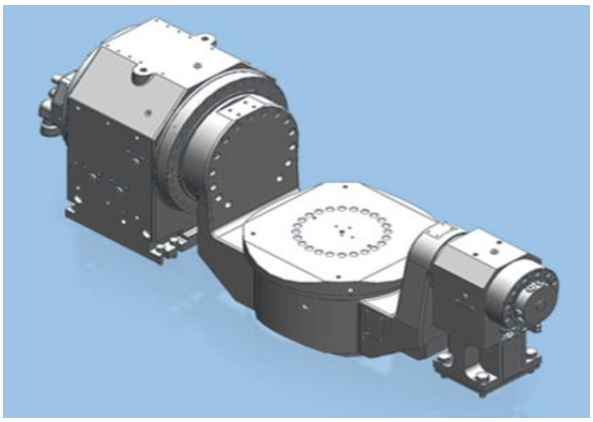
ECBM ultra precision bearings series in P4 + P2, Ø sizes from ECB100 < 1200

ECBSM ultra precision bearing series for high speed in P4 + P2 Ø sizes from ECBS200 < 460



1 Bearing outer Ring, **2** Bearing inner ring, **3** Two reading heads, **4** Steel grid measuring scal, **5** Sensor cable, **6** Electronic signal processing unit.
Producer: **AMOSIN** measuring system / Austria



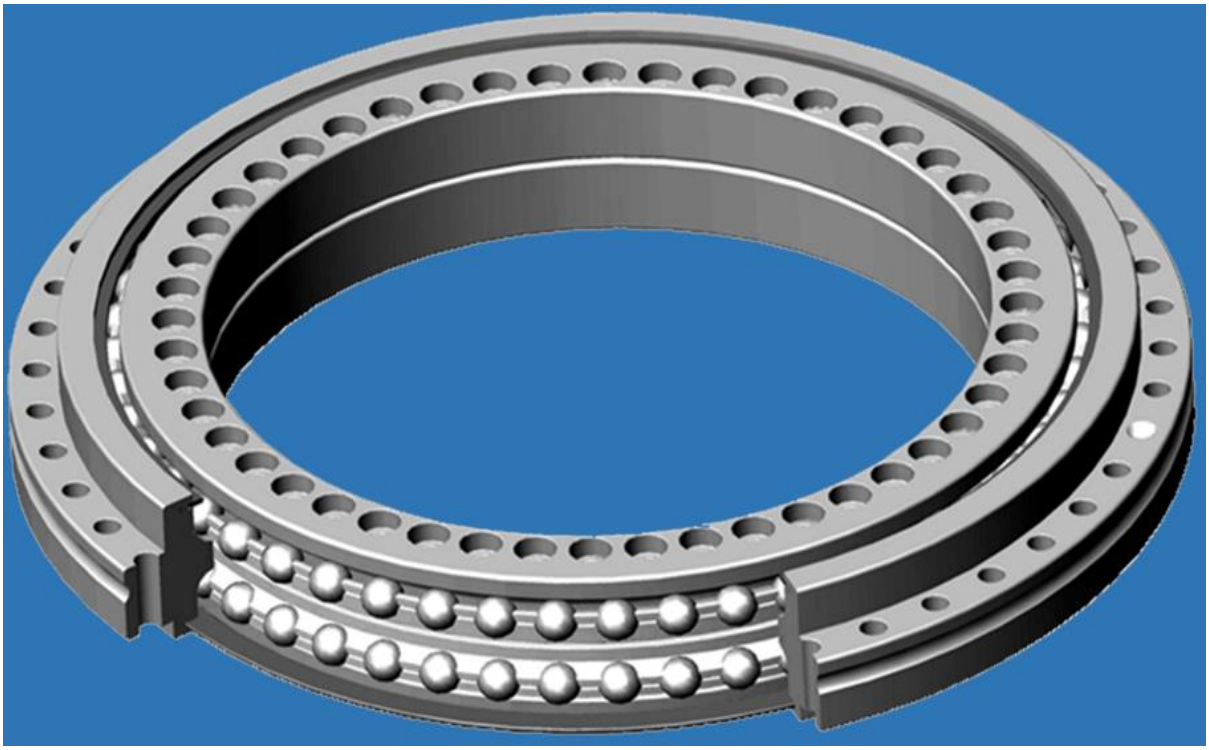


ECBM/ECBS bearing application

ECBS ultra precision bearings for high speed in P4 + P2
Ø ECBS 200 < 460

These bearings can be used especially for application which needs during operation processes highest stiffness, high speed + highest precision. These are mainly rotary table application for grinding, polishing or similar processes.

ECBZKLDF ultra precision bearings for high speed in P4 + P2
Ø ECBZKLDF 100 < 650 mm, (< 1200 mm, please test us).



ECBZKLDF ultra precision bearings for various rotary table or headstock (grinding, polishing) application, with high-speed ranges of:

ECBZKLDF 100 > 2800 1/min
ECBZKLDF 120 > 2400 1/min
ECBZKLDF 150 > 2000 1/min
ECBZKLDF 180 > 1700 1/min
ECBZKLDF 200 > 1600 1/min
ECBZKLDF 260 > 1200 1/min
ECBZKLDF 325 > 1000 1/min
ECBZKLDF 395 > 800 1/min
ECBZKLDF 460 > 700 1/min
ECBZKLDF 580 > 500 1/min
ECBZKLDF 650 > 440 1/min
but → ECBZKLDF1200 is possible too, test us!

Certification test report for each bearing

We are testing every bearing we buy from our Chinese producer after it is delivered second time. Until size 460 we have our own test rig in our company in Shanghai. Bearings which are bigger than the size 460, we do the test in the production place.

We are testing:

- the inner and outer diameter; from every size we have master rings
- the radial and axial runout under preload condition
- the height of the bearings under preload condition
- the torque of the bearings under preload condition

In case you need an official certification, let us know.

Below you see our test rig and measuring equipment to test bearings from 80mm until 460mm inner diameter and 600mm outer diameter

General Information about ECB - ECBS – ECBM – ECBSM - ECBZKLDF bearing series:

All these bearings are double axial – radial bearings, which can support high axial + radial loads und high tilting moments from every direction with highest stiffness + ultraprecision.

All these ECB bearings which have flanges to fix the bearings directly on or in the machine parts, are able to do the relubrication through relubrication holes in the flanges directly into the raceways of the rolling elements of these bearings.

!!!

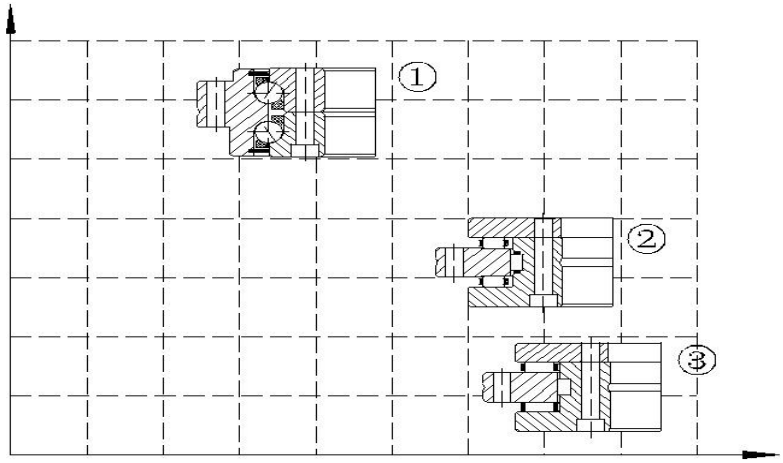
All ECB bearings are delivered ready to use with grease: Shell **“Gadus S3 V220 C2 TDB”!**
In case your bearing needs another grease or it will be lubricated with oil, please put this information in your order.

Main selection of bearing types

For standard applications with low speeds and small operating durations, such as indexing tables and swivel type milling heads, the most suitable bearings are generally series ECB and ECBM

For the bearing arrangements of direct drive axes, ECBS is a good choice, due to their high limiting speeds and very low, uniform frictional torque across the whole speed range, these bearings are particularly suitable for combination with torque motors.

Axial angular contact ECBZKLDF ball bearings are particularly suitable for high-speed applications with long operating duration.
These bearings are characterised by high tilting rigidity, low friction and low lubricant consumption.



1/min tilting rigidity C kl
speed

1 ECBZKLDF
2 ECB S
3 ECB + ECBM

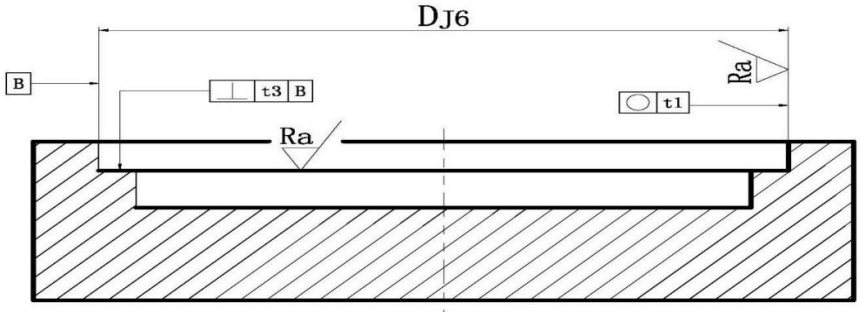
All these ECB series bearings are available in P4 and P2 accuracy and in 50% lower axial and radial runout precision.

Design of machine parts and assembling for ECB – ECBM – ECBS – ECBBSM + ECBZKLDF bearing series:

1.1 Housing design

All above mentioned ECB series types are ultraprecision bearings.

To transmit this ultraprecision about the machine parts where the bearings are assembled to the part which must be machined, it is necessary to produce the machine part, where the bearings are assembled also in high precision.



Below you find the information of the tolerances for housing accuracy.

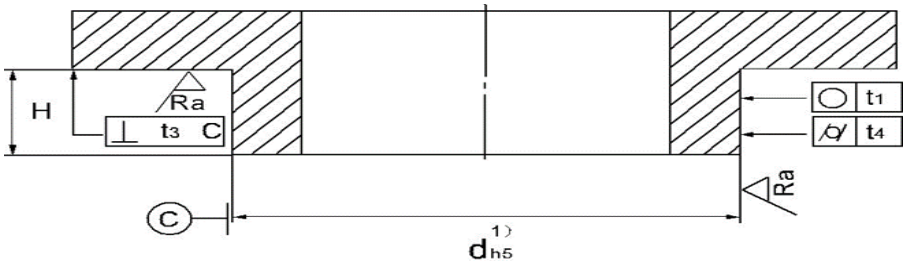
	Housing Ø for	Tolerances	Roundness	Perpenticularity	Roughness
ECB/S/M	ECB/S/M	+/-	t1	t3	Ra
ECBZKLDF	ECBZKLDF	ym	ym	ym / 50mm	ym
50	126	+18 / - 7	5	5	0,8
80	146	+18 / - 7	5	5	0,8
100	185	+22 / - 7	7	7	0,8
120	210	+22 / - 7	7	7	0,8
150	240	+22 / -7	7	7	0,8
180	280	+25 / - 7	8	8	0,8
200	300	+25 / - 7	8	8	0,8
260	385	+29 / - 7	9	9	0,8
325	450	+33 / -7	10	10	0,8
395	525	+34 / -10	11	11	1,6
460	600	+34 / -10	11	11	1,6
580	750	+38 / -12	12	12	1,6
650	870	+44 / -12	14	14	1,6
850	1095	+52 / -14	16	16	1,6
950	1200	+52 / -14	16	16	1,6
1030	1300	+60 / -16	18	18	1,6
1200	1490	+ 68 / -20	20	20	1,6

1. Design of machine parts and assembling of ECB – ECBM – ECBS – ECBSM + ECBZKLDF bearings series:

1.2 Shaft design

All above mentioned ECB series types are ultraprecision bearings.
To transmit this ultraprecision about the machine parts where the bearings are assembled to the part which must be machined, it is necessary to produce the machine part, where the bearings are assembled also in high precision.
The geometrical tolerances influence the axial and radial runout accuracy of the subassembly as well as the bearing frictional torque and the running characteristics.

!!! In case, your application creates higher temperature for the shaft + inner ring in relation to the outer ring of the bearing and this cannot be avoided, the ECB bearings series may be advantageous not to centre accordingly to the chart tolerance in the housing, the fit should have a clearance of about 0,020mm.



Below you find the information of the tolerances for shaft accuracy.

Shaft Ø for	Tolerances	Roundness	Perpenticularity	Cylindricity	Roughness
ECB/S/M	+/-	t1	t3	t4	Ra
ECBZKLDF	mm	ym	ym / 50mm	ym	ym
50	0 / - 0,011	3	3	3	0,4
80	0 / - 0,013	3	3	3	0,4
100	0 / - 0,015	4	4	4	0,4
120	0/ - 0,015	4	4	4	0,4
150	0 / - 0,018	5	5	5	0,8
180	0 / - 0,018	5	5	5	0,8
200	0 / - 0,020	7	7	7	0,8
260	0 / - 0,023	8	8	8	0,8
325	0 / - 0,025	9	9	9	0,8
395	0 / - 0,025	9	9	9	0,8
460	0 / - 0,027	10	10	10	0,8
580	0 / - 0,028	11	11	11	1,6
650	0 / - 0,032	12	12	12	1,6
850	0 / - 0,036	14	14	14	1,6
950	0 / - 0,036	14	14	14	1,6
1030	0 / - 0,045	16	16	16	1,6
1200	0 / - 0,054	18	18	18	1,6

1.3 Basic rating life

The load carrying capacity and life must be checked for the radial and axial bearing component. Please contact us in relation to checking of the basic rating life. The speed, load and operating duration must be given.

1.4 Static load safety factor

The static load safety factor S0 indicates the security against impermissible permanent deformations in the bearing:

S0 = C0r/ F0r N

S0 = C0r/ F0r N

S0
Static load safety factor
C0r/ F0r
Basic static load rating according to dimension charts
C0r/ F0r
Maximum static load on the radial or axial bearing.

!!! In machine tools and similar areas of application, S0 should be > 4.

1.5 Limited speed

Axial/radial bearings ECB are designed, by means of the full complement radial roller bearing component for high rigidity, for rapid positioning and operating at low speed. Low speeds are normally required for multiple-axis simultaneous machining. The limit value nG stated in the dimension tables relates to the maximum swivel speed and a maximum speed applied for a short period.

!!! In applications with a high operating duration ED or continuous operation at a speed of more than nd=35000 1/min x mm at an ED > 10%, the series ECBS or ECBZKLDF should be selected.

1.6 Temperature in rotary axis systems

Rotary axes with a main spindle function, such as those used for combined milling and turning and with direct drive by a torque motor, are systems with complex thermal characteristics. The temperature distribution in the rotary axis system must be considered in greater detail during the design process:

a) Asymmetrical rotary axis housings can undergo asymmetrical deformation due to heating.

b) In turn, out-of-round bearing seats lead to additional bearing load, reduced life and a negative influence on running behaviour and running accuracy.

c) Temperature management of the rotary axis in the form of targeted cooling and heating is generally necessary for high performance rotary axes.

!!! In case you are unsure to handle temperature differences in your shaft und housing application, please contact us.

1.7 Bearing preload

Once the bearings have been fitted and fully screwed with the suggested screw quality and torque of the screws (see chart page 23), the bearings are axial and radial preloaded.

The bearing preload is influenced on the mounting fits, the geometrical accuracy of the adjacent parts, the temperature difference between the outer and the inner ring, the screw tightening torque and mounting situation (bearing inner ring axial supported on one or on both sides.

1.8 Friction torque

The bearing frictional torque M_R is influenced primarily by the viscosity and quantity of the lubricant, the temperature of the lubricant and the bearing preload:

The bearing preload is influenced on the mounting fits, the geometrical accuracy of the adjacent parts, the temperature difference between the outer and the inner ring, the screw tightening torque and mounting situation (bearing inner ring axial supported on one or on both sides.

!!! The biggest competitor of ECB series bearings specifies the torque value of these bearings with an operation temperature of 50°C and a measured speed of n=5 1/min. Unfortunately, the bearings cannot be tested easily with a temperature of 50°C. As informed (see page 12), we test every bearing we sell a second time, after we got it from our supplier. The torque of our delivered bearings is tested and certified in our test report under condition, that all screws are fixed with max. screw torque and 12.9 quality screws. We test under this condition the start torque of the bearings and the torque with n = 5 1/min. and 20°C. We use certified torque keys from Gedore / Germany for this test. The max. torque in our charts (see page 23, 25, 31,37 + 39) is related to these above specified conditions.

!!! The temperature of lubricant in applications will differ between 20°C and <50°C, so, for your calculation of your drive units, you should consider, that the start speed and the start torque is normally only about 20°C. We suggest, to use for your calculation and your drive unit the max. torque, you find in our charts page 23,25,31,37 + 39, because these torques are related to 20°C and the grease “Shell Gadus S3 V220 C2 TDB”.

!!! The frictional torque of the grease under 50°C condition is about 2,5 times lower as the frictional torque under 20°C condition, but with the max. speed of the bearing, the frictional torque can reach the value, which is shown in the charts page 23,25,31,37, + 39.

!!! For application which are sensitive to frictional torque, we recommend using ECB or ECBZKLDF series bearings.

1.9. Lubrication + Relubrication

Each of our bearings is delivered with lubricant **“Shell Gadus S3 V220 C2 TDB”.** We suggest this lubricant, because the start torque under 20°C condition is low. In case you need another lubricant, please let us know in your order.

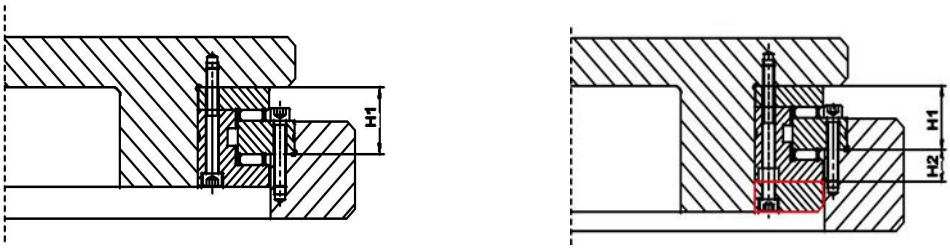
!!! All ECB series bearings can be relubricated through the inner ring and outer ring. The first use of any bearing which is greased, should be run longer time with low speed.

!!! The bearings may be damaged by overheating as result of increased frictional torque, when operating at high speeds, if they have been accidentally overlubricated.

!!! For the dimensioning of drive, it must be taken in consideration, that the starting frictional torque of all ECB and ECBZKLDF bearing series can be 2,5 times as high as the values M_{RL} in our charts.

1.10 ECB and ECB VSP series

1 **2**



1 ECB **2 ECB VSP**

In fitting of the series ECB VSP with an L-section ring supported axially over its whole surface, there is an increase in the axial rigidity in the direction of the support ring as a function of the support ring rigidity and in the tilting rigidity of the bearing position. In the case of ECB VSP, the tilting rigidity can be increased by up to 20% in this way. In this case, delivery with a different preload match is necessary for ECB with suffix VSP.

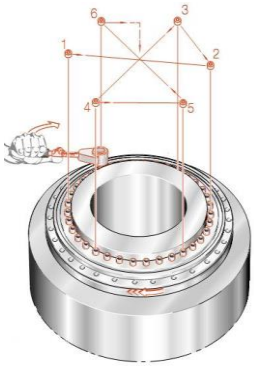
In YRTS bearings, the increase in rigidity and frictional torque is slight and can normally be ignored.

!!!

In case it is used a support ring for bearings ECB bearings, which are produced without to use a supporting, there will be a considerable increase in the bearing frictional torque. This use can damage the bearing

1.11 Installation guidelines

To fit the bearing on the housing and shaft, the two retained screw should be loosened bevor fitting and either secured again or removed after fitting. The fixing screws should be tightened in a crosswise sequence using a torque wrench in three stages to the specified tightening torque MA, while rotating the bearing.



Step 1, 40% of the MA Step 2, 70% of the MA Step 3, 100% of the MA

1.12 Precision chart (tolerances) of ECB, ECBM, ECBS, ECBSM + ECBZKLDF

Dimension		Dimension		Dimension		P4 Bearing	P2 Bearing	P4 Bearing	P2 Beang	Runout[2]	Runout[2]
Borehole Ø	Tolerances	Outer - Ø	Tolerances			Tolerance[1]	Tolerance[1]		Tolerance[1]	P4 Bearing	P2 Bearing
d	Δds	D	ΔDs	H	H1	ΔH1s	ΔH1s	H2	ΔH2s		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	ym	ym
50	0 - 0,008	126	0 - 0,011	30	20	± 0,125	± 0,025	10	± 0,020	2	1
80	0 - 0,009	146	0 - 0,011	35	23,35	± 0,150	± 0,025	11,65	± 0,020	3	1,5
100	0 - 0,010	185	0 - 0,015	38	25	± 0,175	± 0,025	13	± 0,020	3	1,5
120	0 - 0,010	210	0 - 0,015	40	26	± 0,175	± 0,025	14	± 0,020	3	1,5
150	0 - 0,013	240	0 - 0,015	40	26	± 0,175	± 0,030	14	± 0,020	3	1,5
180	0 - 0,013	280	0 - 0,018	43	29	± 0,175	± 0,030	14	± 0,025	4	2
200	0 - 0,015	300	0 - 0,018	45	30	± 0,175	± 0,030	15	± 0,025	4	2
260	0 - 0,018	385	0 - 0,020	55	36,5	± 0,200	± 0,040	18,5	± 0,025	6	3
325	0 - 0,023	450	0 - 0,023	60	40	± 0,200	± 0,050	20	± 0,025	6	3
395	0 - 0,023	525	0 - 0,028	65	42,5	± 0,200	± 0,050	22,5	± 0,025	6	3
460	0 - 0,023	600	0 - 0,028	70	46	± 0,225	± 0,060	24	± 0,030	6	3
580	0 - 0,025	750	0 - 0,035	90	60	± 0,250	± 0,075	30	± 0,030	10	5[3]
650	0 - 0,038	870	0 - 0,050	122	78	± 0,250	± 0,100	44	± 0,030	10	5[3]
850	0 - 0,050	1095	0 - 0,063	124	80,5	± 0,300	± 0,120	43,5	± 0,030	12	6[3]
950	0 - 0,050	1200	0 - 0,063	132	86	± 0,300	± 0,120	46	± 0,030	12	6[3]
1030	0 - 0,063	1300	0 - 0,080	145	92,5	± 0,300	± 0,150	52,5	± 0,030	12	6[3]
1200	0 - 0,075	1490	0 - 0,085	164	108	± 0,300	± 0,150	52,5	± 0,050	15	8[3]

[1] Only valid for ECB YRT series bearings. [2] For the rotational inner ring or outer ring, the runout is valid on ideal dimension. [3] These runout values are only valid for the outer ring rotation.

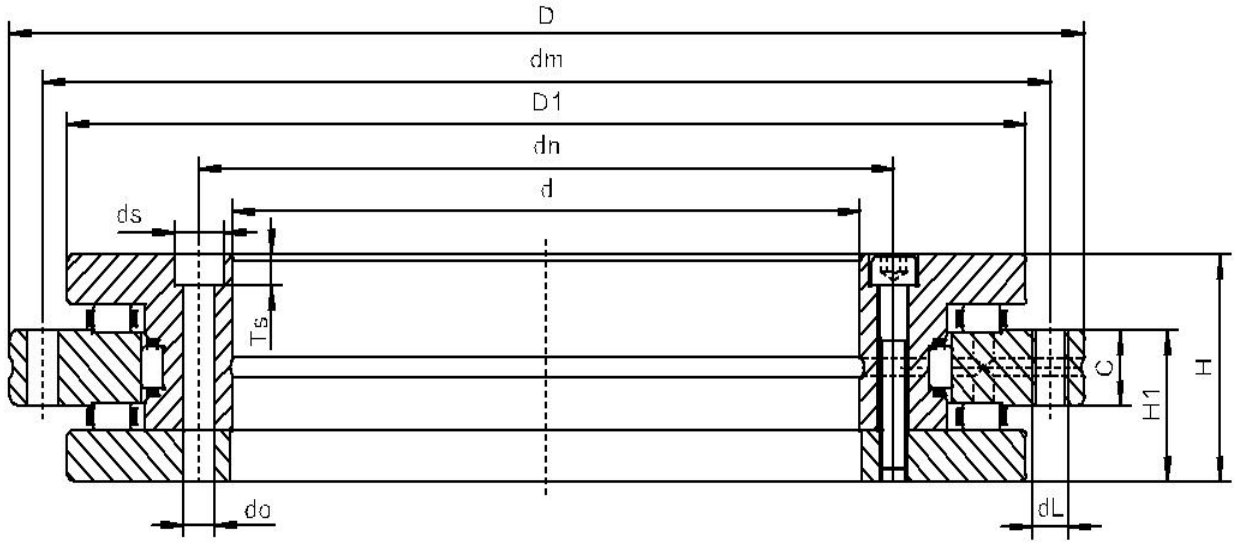
ECBS

Dimension		Dimension		Dimension	P4 bearing			Runout	Runout
Borehole Ø	Tolerances	Outer - Ø	Tolerances			Tolerance		P4 Bearing	P2 Bearing[3]
d	Δds	D	ΔDs	H	H1	ΔH1s	H2		
mm	mm	mm	mm	mm	mm	mm	mm	ym	ym
200	0 - 0,015	300	0 - 0,018	45	30	+ 0,040 - 0,060	15	4	2
260	0 - 0,018	385	0 - 0,020	55	36,5	+ 0,050 - 0,070	18,5	6	3
325	0 - 0,023	450	0 - 0,023	60	40	+ 0,060 - 0,070	20	6	3
395	0 - 0,023	525	0 - 0,028	65	42,5	+ 0,060 - 0,070	22,5	6	3
460	0 - 0,023	600	0 - 0,028	70	46	+ 0,070 - 0,080	24	6	3

[2] For the rotational inner ring or outer ring, the runout is valid on ideal shaft + flange dimension.

[3] These runout values are only valid for the inner ring rotation.

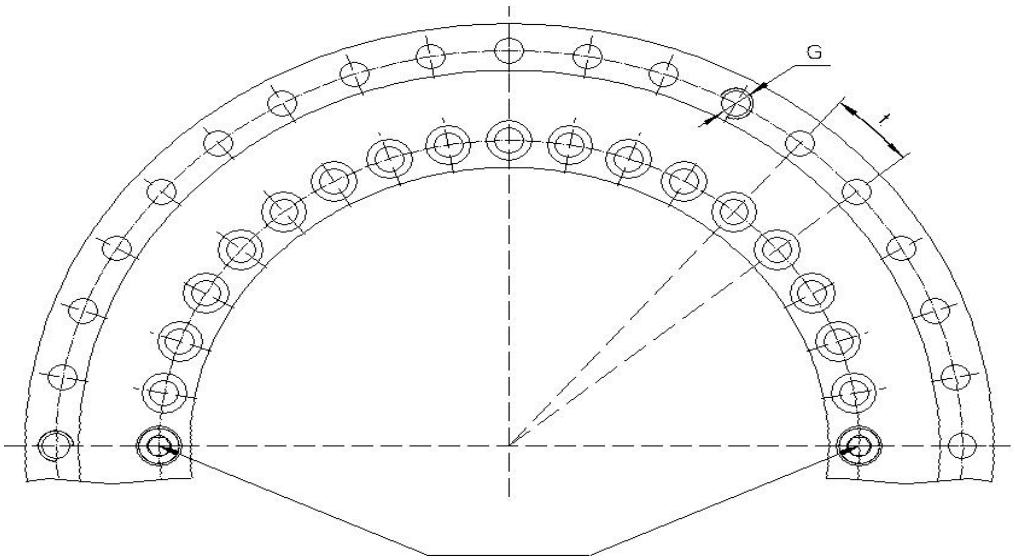
1.13 Dimension chart ECB + ECBM series



Dimension									Inner ring				Outer ring	
ECB Typ														
d	D	H	H1	H2	C	D1	dn	dm	do	ds	Ts	Qty[3]	dL	Qty[3]
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	
50	126	30	20	10	10	105	63	116	5,6	9	4,2	10	5,6	12
80	146	35	23,35	11,65	12	130	92	138	5,6	10	4,2	10	4,6	12
100	185	38	25	13	12	160	112	170	5,6	10	5,4	16	5,6	15
120	210	40	26	14	12	184	135	195	7	11	6,2	22	7	21
150	240	40	26	14	12	214	165	225	7	11	6,2	34	7	33
180	280	43	29	14	15	244	194	260	7	11	6,2	46	7	45
200	300	45	30	15	15	274	215	285	7	11	6,2	46	7	45
260	385	55	36,5	18,5	18	345	280	365	9,3	15	8,2	34	9,3	33
325	450	60	40	20	20	415	342	430	9,3	15	8,2	34	9,3	33
395	525	65	42,5	22,5	20	486	415	505	9,3	15	8,2	46	9,3	45
460	600	70	46	24	22	560	482	580	10	15	8,2	46	10	45
580	750	90	60	30	30	700	610	720	11,4	18	11	46	11,4	42
650	870	122	78	44	34	800	680	830	14	20	13	45	14	42
850	1095	124	80,5	43,5	37	1018	890	1055	18,5	26	17	57	18,5	54
950	1200	132	86	46	40	1130	990	1160	18,5	26	17	57	18,5	54
1030	1300	145	92,5	52,5	40	1215	1075	1255	18,5	26	17	66	18,5	66
1200	1490	164	108	56	52	1410	1240	1445	18,5	26	17	66	18,5	66

[3] The fixing hole for shaft + bearing housing

1.14 Dimension chart ECB + ECBM series



Joint screws

Basic load ratings

Joint	Lifting		Pitch[1]	Screw tightening	Axial		Radial		Limited speed	Bearing	Mass	ECB Typ
screws	Holes for:		t	torque MA[2]	Dynamic	Static	Dynamic	Static	with grease	friction torque		d
	G	Qty	Qty x t	Nm	Ca kN	Coa kN	Cr kN	Cor kN	1 / min	Nm*	~ kg	mm
2	0	0	12 x 30°	8,5	38	158	28,5	49,5	600	2,5	1,6	50
2	0	0	12 x 30°	8,5	56	255	42,5	100	530	3	2,4	80
2	M5	3	18 x 20°	8,5	76,5	415	47,5	120	430	3	4,1	100
2	M8	3	24 x 15°	14	102	540	52	143	340	7	5,3	120
2	M8	3	36 x 10°	14	112	630	56	170	320	10	6,2	150
2	M8	3	48 x 7,5°	14	118	710	69,5	200	280	12	7,7	180
2	M8	3	48 x 7,5°	14	120	765	81,5	220	260	14	9,7	200
2	M12	3	36 x 10°	34	160	1060	93	290	200	20	18,3	260
2	M12	3	36 x 10°	34	275	1930	120	345	170	40	25	325
2	M12	3	48 x 7,5°	34	300	2280	186	655	140	55	33	395
2	M12	3	48 x 7,5°	34	355	2800	200	765	120	70	45	460
2	M12	6	48 x 7,5°	68	490	4250	228	965	80	140	89	580
2	M12	6	48 x 7,5°	116	870	7400	430	1700	65	200	170	650
3	M16	6	60 x 6°	284	1000	10010	455	1800	50	300	253	850
3	M16	6	60 x 6°	284	1290	11400	530	2040	40	600	312	950
6	M16	6	72 x 5°	284	1380	12000	620	2650	35	800	375	1030
6	M16	6	72 x 5°	284	1435	12850	745	2800	25	1000	450	1200

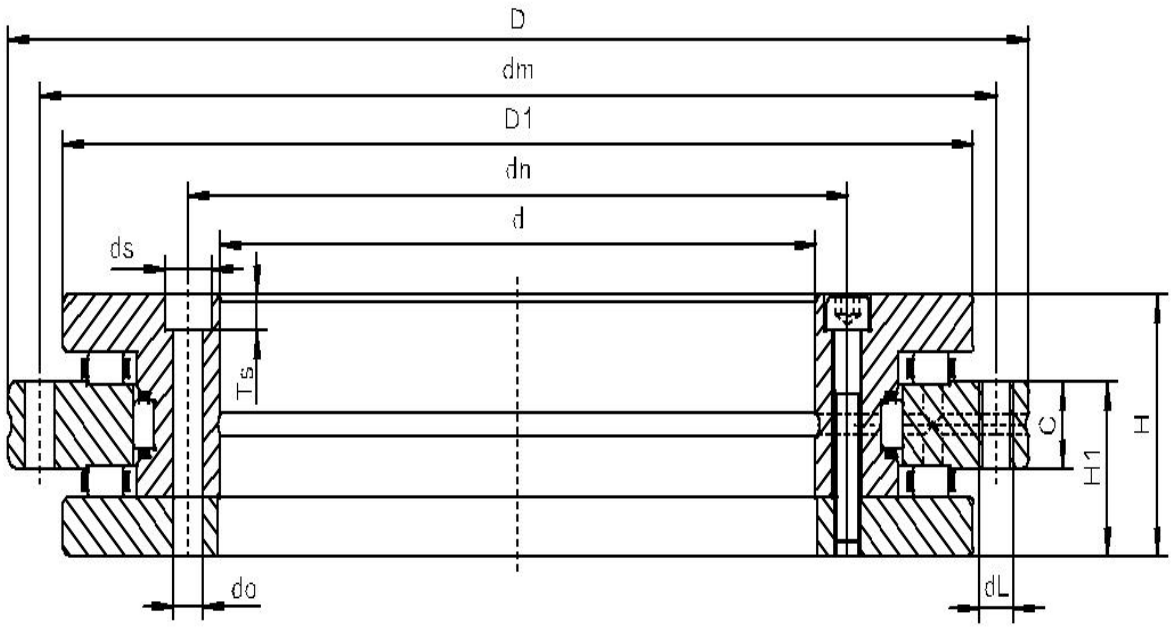
[1] Including the joint screw holes and the lifting holes.

[2] Tightening torque for screws to DIN 912, grade 10.9

* The torque referes to 5 1/min and 20°C, grease Shell Gadus S3 V220 C2 TDB

1.15 Dimension chart ECBS

!!! Larger dimension of ECBS are also available, ECBSM too

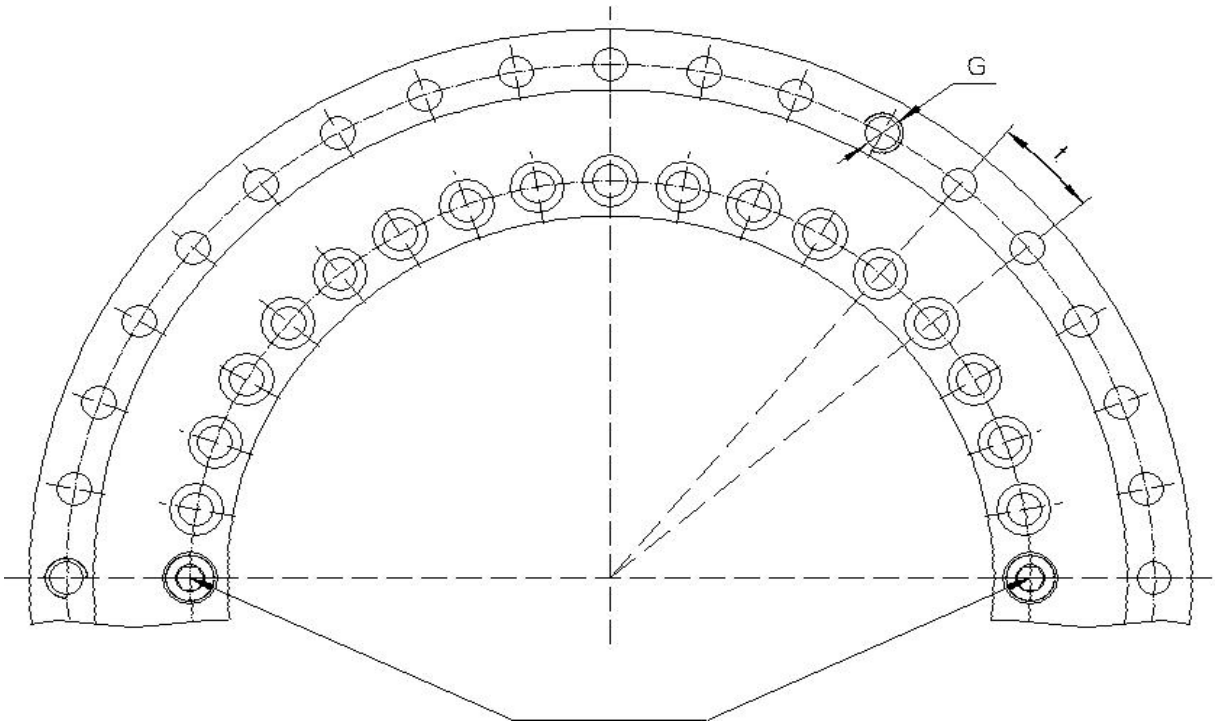


Dimension														
ECBS Typ														
d	D	H	H1	H2	C	D1	dn	dm	do	ds	Ts	Qty[3]	dL	Qty[3]
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	
200	300	45	30	15	15	274	215	285	7	11	6,2	46	7	45
260	385	55	36,5	18,5	18	345	280	365	9,3	15	8,2	34	9,3	33
325	450	60	40	20	20	415	342	430	9,3	15	8,2	34	9,3	33
395	525	65	42,5	22,5	20	486	415	505	9,3	15	8,2	46	9,3	45
460	600	70	46	24	22	560	482	580	10	15	8,2	46	10	45

[3] The fixing hole for shaft + bearing housing

1.16 Dimension chart ECBS

!!! Larger dimension of ECBS are also available, ECBSM too



Joint screws

Basic load ratings											
Joint	Lifting holes		Pitch[1]	Screw tightening	Axial		Radial		Limited speed	Mass	ECBS Typ
screws	for:		t	torque MA[2]	Dynamic	Static	Dynamic	Static	with grease		d
	G	Qty	Qty x t	Nm	Ca kN	Coa kN	Cr kN	Cor kN	1 / min	~ kg	mm
2	M8	3	48 x 7,5°	14	105	635	78	202	950	9,7	200
2	M12	3	36 x 10°	34	131	840	85	275	800	18,7	260
2	M12	3	36 x 10°	34	191	1260	109	300	680	25	325
2	M12	3	48 x 7,5°	34	214	1540	121	390	600	33	395
2	M12	3	48 x 7,5°	34	221	1690	168	570	500	45	460

[1] Including the joint screw holes and the lifting holes.

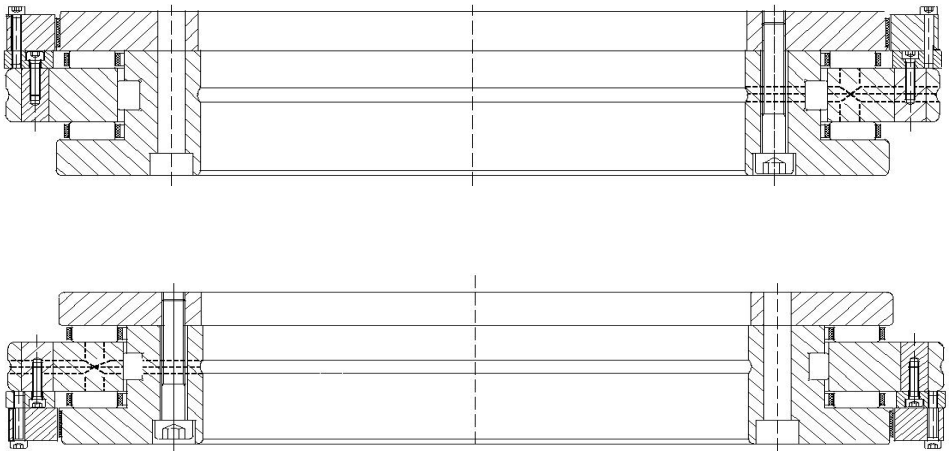
[2] Tightening torque for screws to DIN 912, grade min. 10.9

2. ECBM bearings with angular integrated measuring system from AMOSIN / Austria.

ECB or ECBS bearings with integrated angular measuring system are ECMM – ECBSM bearings and these bearings comprise:

- a ECBM or ECBSM with a dimensional steel grid scale on the single ring of the bearings or on the outer diameter of the angular inner ring.
- two signal reading heads with cable + the electronic evaluation signal processing unit.

!!! We offer the assembling of steel grid of the measuring system on the single ring (see 1), or on the angular inner ring outer diameter (see 2).



!!! In case you have a need of this measuring system and you need to know the characteristic and application details, you have to consider at your parts, please contact us or contact the AMOSIN website directly: **www.amosin.com**

2.1. Structure and introduction

The **AMOSIN®** measuring systems function on a patented purely inductive principle. The measuring scale is a stainless-steel tape onto which a high precise periodical graduation of variable reluctance has been etched using photo-lithographic techniques.

A coil structure, with a number of coils aligned in the direction of measurement, is implemented on a substrate using micro-multi-layer technology. The relative angular movement in the direction of measurement between the sensor structure (in the scanning head) and the measuring scale periodically changes the mutual inductance of the individual coils, generating two sinusoidal signals with a 90° phase difference.

The extremely accurate signal, and its immunity to environmental influences, has the effect that, after conditioning of the signal in the evaluation electronics deviations of no more than 0.1% from the ideal sinusoidal form (harmonic content) remains. This allows high interpolation factors to be carried out in the course of signal digitization.

The **AMOSIN®** absolute angle measuring systems consist of a stainless-steel inductive Grating Ring and a matching non-contact electronic reader head. The grating ring size corresponds with the number of whole pitches contained within its circumference. The smallest diameter is approximately 80mm. They are available in a variety of both binary and non-binary sizes and there is no limit to the maximum diameter. The thin stainless-steel ring is ideal for encoding large diameters because it adds little to the mechanical inertia and aids in maximizing the useable bore space. With an IP-67 rating and tolerance to many industrial contaminants (grease, oil, coolant, dust and dirt for example) these mechanical advantages can be employed in both clean and polluted environments.

The **AMOSIN®** absolute angle measuring systems deliver high-performance position feedback that is suitable for closed loop motion control either as the primary encoder (direct drive torque motor) or as the secondary encoder. They are of value in general for drives where high dynamic range and stiffness is required.

The environmental attributes of the **AMOSIN** design are similar to that of magnetic encoders but these are not magnetic. Neither the grating ring nor the reading head are harmed by direct contact **AMOSIN** design are similar to that of magnetic encoders but these are not magnetic. Neither the grating ring nor the reading head are harmed by direct contact to a magnet. Unlike magnetic encoders they exhibit no hysteresis (backlash) of motion and can operate in close proximity to direct drive motors.

The **Grating Scales** can be applied directly to the mounting surface with a dual sided adhesive tape or integrated into a screwed stainless-steel spar system with a snap cover that locks the scale tape into the spar without any adhesives. Linear scales are available to any measuring length, with a variety of grating pitches and in different accuracy classes. They are manufactured using a photolithographically patterned and precision etched stainless steel material that results in high accuracy and high linearity. Single Reference Index marks, multiple Reference Index marks or distance coded Reference Index marks are available.

The **Read Head**, when in close proximity to the matching grating scale, develops high-quality sine and cosine waves with little harmonic distortion and ZERO hysteresis. As a 1VPP sine/cosine output signal to the control, the signal period can be 1:1 to the pitch count or through signal subdividing it can be 25:1 or 50:1. This capability makes possible higher control resolution when the input signal subdividing level is limited. The reading head can also deliver +5V TTL RS422 square wave signals with high resolution to the control.
All encoder heads have a high degree of immunity to contamination due to their IP-67 rating and inductive sensor technology. Grease, oil, coolant, dust and dirt have no deleterious effect on the read head function.

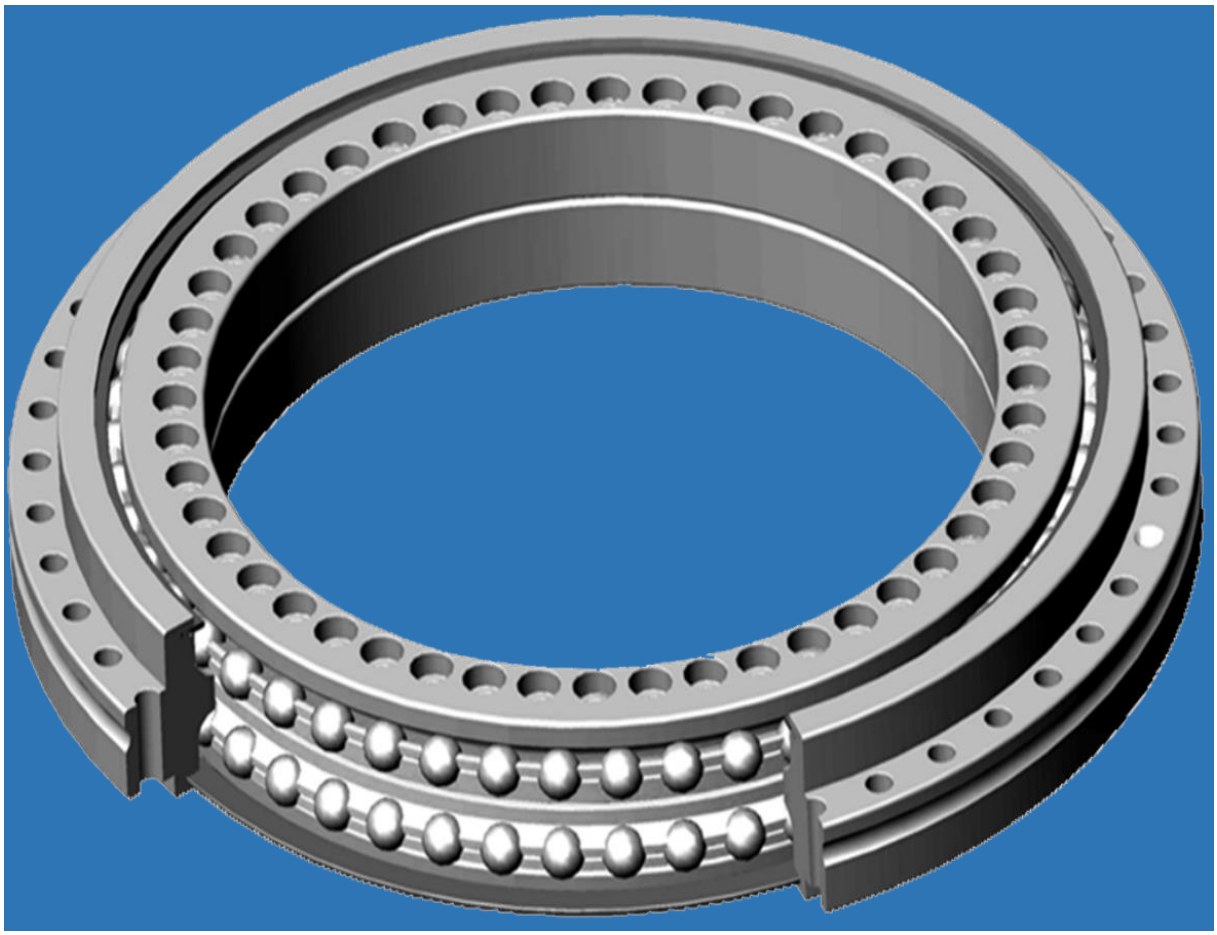
ECBM series with measuring system AMOSIN are offered from ECBM80 to ECBM1200

ECBS series with AMOSIN measuring system are offered from ECBS 200 to ECBS 650

3. ECBZKLDF series

ECBZKLDF bearings are bearings with low friction, which are ready – to - fit, lubricated for high-speed application with high accuracy, high axial and radial loads, long operation duration + high tilting rigidity. These bearings are particularly suitable for ultra-precision application + combined loads. ECBZKLDF bearings are preferred to assemble in application of rotary tables with a main spindle function, also for example in combined milling, turning, grinding + honing operation heads and in measurement or testing equipment.

ECBZKLDF bearings comprise a single piece outer ring, a two-piece inner ring and two ball cages in a 60° angular contact.

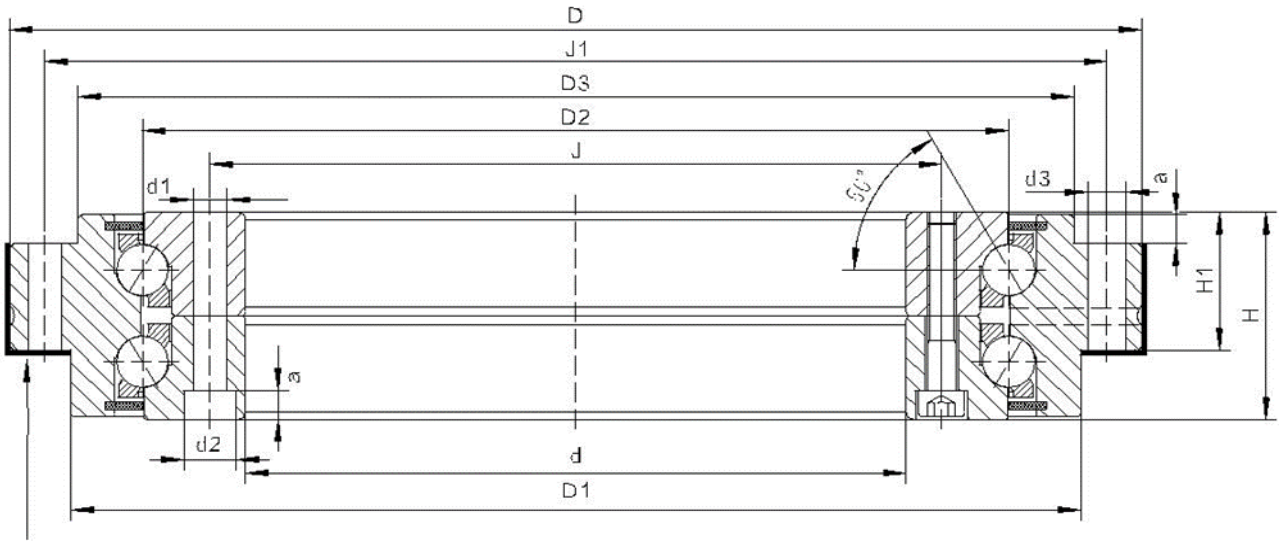


3. ECBZKLDF series **26**

1.1 Housing design 14
1.2 Shaft design 15
1.3 Basic rating life 16
1.4 Static load safety factor 16
1.5 Limited speed 16
1.6 Temperature in rotary axis systems- 16
1.7 Bearing preload 17
1.8 Frictional torque 17
1.9 Lubrication + Relubrication 17

3.1 EC ZKLDF series
3.1 Dimension chart ECBZKLDF 28
3.2 Dimension chart ECBZKLDF 29

3.1 Dimension chart ECBZKLDF series

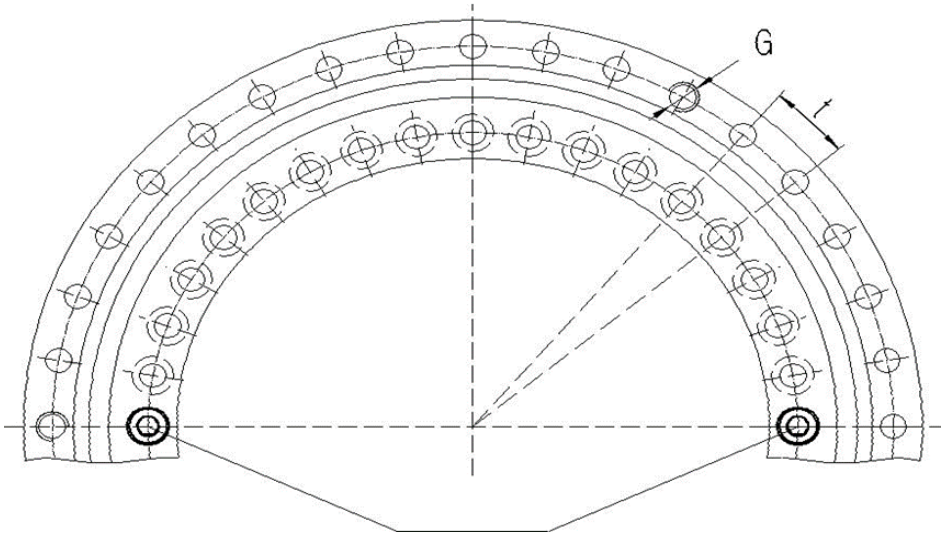


Bearing assembling surface and positioning diameter

!!! **d < ECBZKLDF 650 can also provide, test us**

ECB ZKLDF Typ										Inner ring			Outer ring	
d	D	H	H1	D1	D2	D3	J	J1	a	d1	d2	Qty³	d3	Qty³
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	
100	185	38	25	160	136	158	112	170	5,4	5,6	10	16	5,6	15
120	210	40	26	184	159	181	135	195	6,2	7	11	22	7	21
150	240	40	26	214	188	211	165	225	6,2	7	11	34	7	33
180	280	43	29	244	221	241	194	260	6,2	7	11	46	7	45
200	300	45	30	274	243	271	215	285	6,2	7	11	46	7	45
260	385	55	36,5	345	313	348	280	365	8,2	9,3	15	34	9,3	33
325	450	60	40	415	380	413	342	430	8,2	9,3	15	34	9,3	33
395	525	65	42,5	486	450	488	415	505	8,2	9,3	15	46	9,3	45
460	600	70	46	560	520	563	482	580	8,2	9,3	15	46	9,3	45
580	750	90	60	702	656	700	610	720	11	11,4	18	45	11,4	42
650	870	122	78	800	739	802	680	830	13	14	20	45	14	42

3.2 Dimension chart ECBZKLDF series



Joint screws

Basic load ratings

Joint	Lifting		Pitch[1]	Screw tightening	Axial		Limited speed	Bearing	Mass	ECB Typ
screws	holes		t	torque MA[2]	Dynamic	Static	with grease	friction torque		d
	G	Qty	Qty x t	Nm	Ca kN	Coa kN	1/min	Nm*	~ kg	mm
2	M5	3	18 x 20°	8,5	67	251	2800	1,6	4,5	100
2	M8	3	24x 15°	14	72	315	2400	2	6	120
2	M8	3	36 x 10°	14	76	365	2000	3	7,5	150
2	M8	3	48x 7,5°	14	85	440	1700	3	8	180
2	M8	3	48 x 7,5°	14	112	550	1600	4,5	11	200
2	M12	3	36 x 10°	34	155	920	1200	7,5	22	260
2	M12	3	36 x 10°	34	165	1110	1000	11	28	325
2	M12	3	48 x 7,5°	34	214	1470	800	16	39	395
2	M12	3	48 x 7,5°	34	255	1860	700	21	50	460
3	M12	6	48 x 7,5°	68	282	2150	500	40	82	580
3	M12	6	48 x 7,5°	116	388	2350	440	63	168	650

[1] Including the joint screw holes and the lifting holes.

[2] Tightening torque for screws to DIN 912, grade 10.9

*The torque refers to 5 1/min and 20°C

Contact:

Detlef Görgens
Geschäftsführer
CnC / R+D Machinery GmbH

Handy: 0049 176 32778508
e Mail: excellent.bearing@yahoo.de
Website: www.hightech-germany.de

Shanghai representative Office:

Detlef Görgens / Yong Chun Hui (Peggy)
General Manager
Excellent Bearing (Shanghai) Trading Co.,Ltd
Room No.902, Building No. 12, 199 Minchen Road
Minhang District, Shanghai 201100, China

Phone: 0086 21 34207128
Mobil: 0086 13671819833
FAX: 0086 21 34207127
e - mail excellent.bearing@yahoo.de
Website: www.hightech-germany.de
Minhang District, Shanghai 201100, China