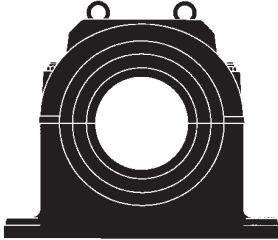


# Slide Bearings Type E For Shaft Diameter Range 475-1250 mm Main Application Field Electric Machines



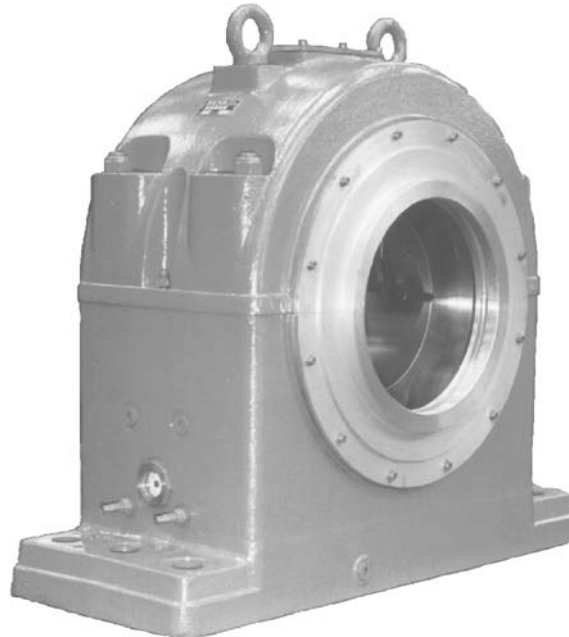
Foot Mounted Slide Bearing Type EG



RENK E-Type bearings are slide bearings of the most up-to-date design. The modular system permits the assembly of varying configurations as required.

Sizes 56...112, with a diameter range of 475-1250 mm are an extension of sizes 9...45.

These new sizes were developed primarily for electrical machines, turbines, blowers and turbocompressors. Because of the possibility of fitting them with the most varied accessories they can be used, however, almost universally throughout the engineering industry.



# Technical Information

This brochure gives details of a range of E-bearings, shaft diameters 475 to 1250 mm, suitable for use on electrical machines, fans, water turbines and pumps.

For information on E-bearings with smaller shaft diameters refer to the corresponding RENK brochures.

## Bearing Housing

The unfinned EG housings size 56 to 112 are made of high quality cast iron (EN-GJL-300) and are designed for heavy duty performance. Other materials, such as for instance EN-GJS-400-18-LT or GS 45 can be supplied in special cases.

## Bearing Shells

The shells are manufactured from steel (C 10) and have a spherical seating. They are lined with RENKmetal therm 89 and the working surfaces and the oilways are configured to give long life under severe operating conditions. Being fully interchangeable ensures trouble free assembly at all times.

E-type bearing sizes 56 to 112 are mostly equipped with shells having a plain cylindrical bore and a natural cooling form. However, shells suitable for connection to an external oil circulation system are also available. If required, shells with two lobe bore ("lemon bore") can also be supplied.

Apart from bearings without thrust parts (type...Q) there are shells with plain white-metal lined shoulders (type...B) to absorb non-continuous axial loads of limited magnitude, as well as shells with bi-directional taper land faces (type...K) which can absorb axial loads of medium magnitude.

Alternatively the taper land faces can be supplied suitable for only one sense of rotation (type E) to absorb high axial loads.

For high thrust loads elastically supported circular tilting pads (RD thrust pads) are fitted in the ends of the shell (type...A). The cup springs supporting the RD thrust pads have damping properties and can also absorb any shock loads elastically.

## Seals

For normal applications the E-type bearings sizes 56 to 112 are equipped with rigid seals (type 20). These seals are made of corrosion resistant aluminium alloys and correspond to protection grade IP 44. Special types of seals (e.g. air seals, or seals of higher protection grades) are also available on request.

## Oil Supply

Self contained oil bath lubrication, by means of two loose oil rings, is supplied for shaft speeds up to 20 m/s, with a limiting shaft diameter of

710 mm. The loose oil rings take the lubricant direct to the shaft. If the bearings are supplied with cool oil from an external lubricating system, the loose oil rings can be retained as a back-up for shaft speeds up to 26 m/s. Such an arrangement will permit emergency shut-down without damage to the shells.

Information on E-bearings with lubrication by fixed oil ring (EGNF) or without oil ring (EGZC./EGXY.) upon request.

An external oil lubrication system can be used in addition to self-lubrication or it can be operated as oil supply unit for the bearing.

When the bearing is subject to frequent reversals, or if the type...A needs large quantities of oil, a pump is fitted to the bearing to suck cool oil from the bearing sump and deliver it to the oil inlet position. Filters and oil cooler can be incorporated into the oil circulation system.

## Heat Dissipation

Frictional heat generated is usually dissipated by radiation and natural convection.

Water cooling can also be used, through seawater resistant cooling tubes submerged in the oil sump. Dimensions for connection upon request.

## Temperature Control

Two independent commercial-

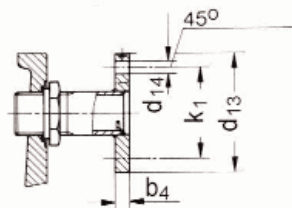
ly available thermosensors can be used for monitoring the temperature of the bearing. We recommend the use of RENK resistance thermometers; alternatively RENK angle thermometers for direct visual reading.

## Oil Selection

Generally, any branded oil of low foaming tendency can be used as a lubricant. The correct viscosity for each operating condition will be determined by EDP calculation. Such calculations are always carried out at the design stage. A print-out of the results can be provided on request.

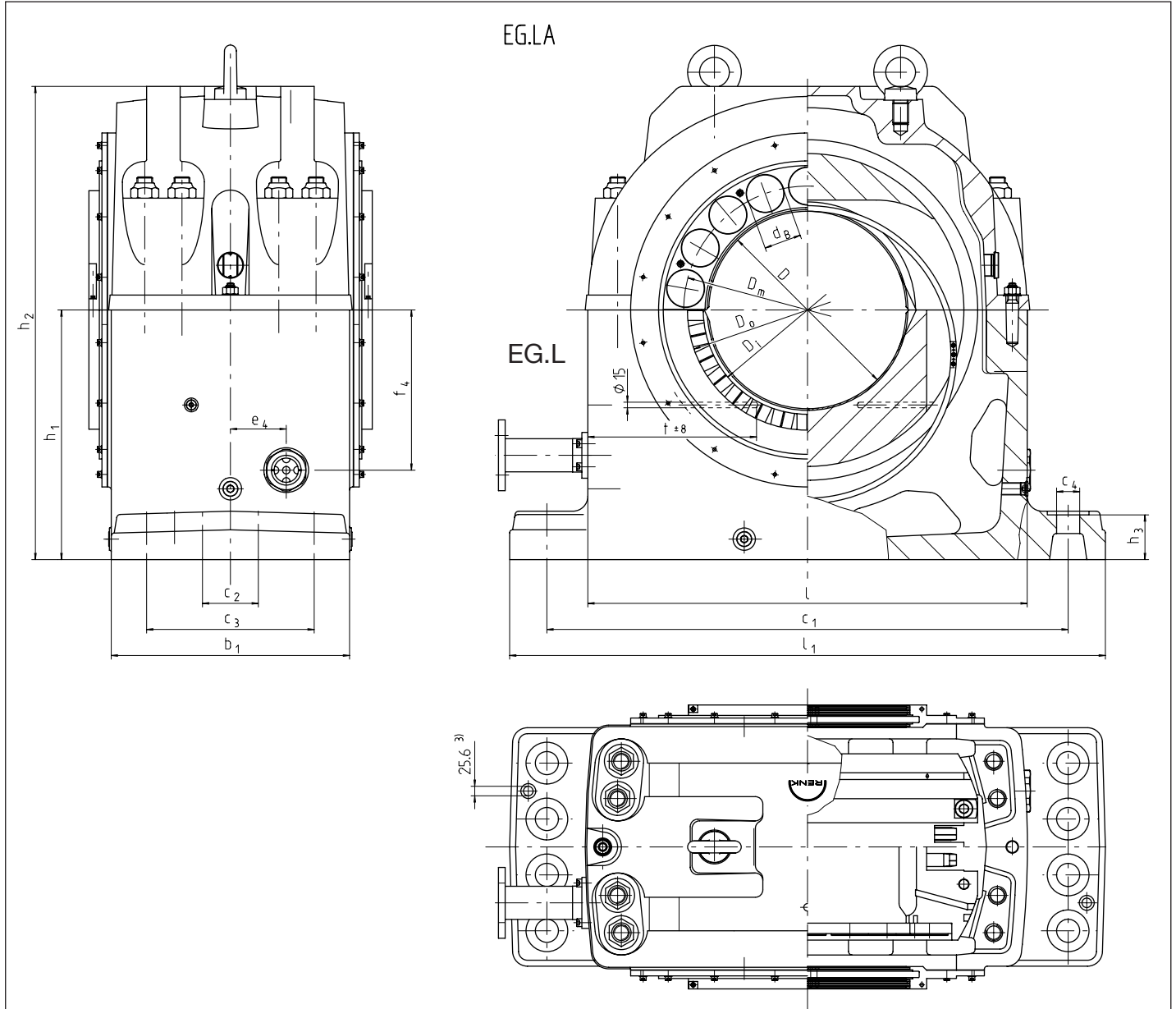
## Dimensions of oil outlet

The oil outlet pipes are mounted to the housing by means of a SAE flange. The X design can be provided with larger oil outlet pipes, depending on the necessary quantity of lubricant.



Size	design Z					
	oil outlet	l / min	b <sub>4</sub>	d <sub>13</sub>	d <sub>14</sub>	k <sub>1</sub>
56	DN 80	42	18	190	18	150
71	DN 80	42	18	190	18	150
90	upon request					
112	upon request					

# Dimensions of Bearings



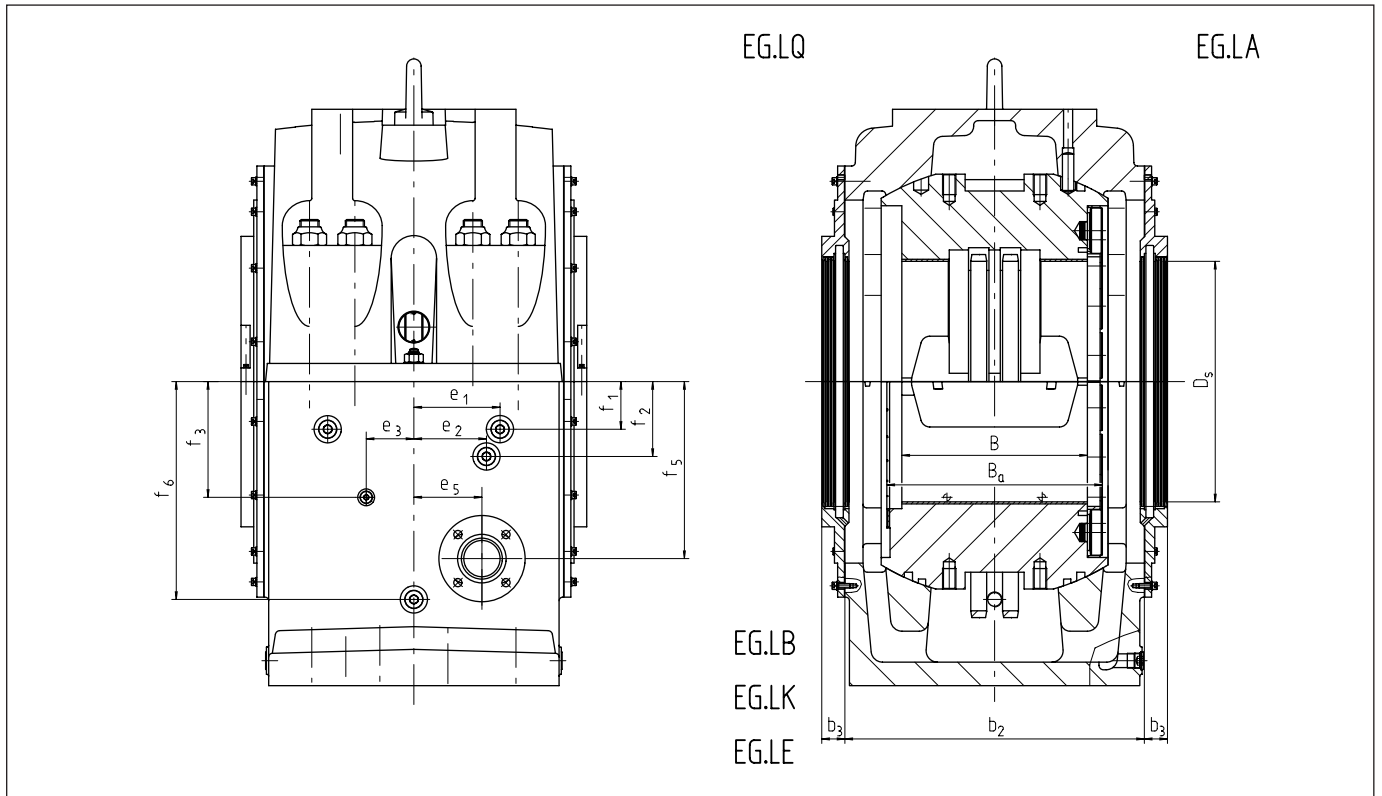
The main dimensions of the shell with plain cylindrical bore (EG.C.) and of the two-lobe bore shell (EG.Y.) are similar to the dimensions of the shell type EG.L. (plain cylindrical bore, loose oil ring lubrication) shown in the catalogue.

Information on bearings with lubrication by fixed oil ring upon request.

Loose oil ring possible up to bore diameter 710 mm.

- 1) Seal diameters ( $D_5$ ) are possible with every shaft diameter of one size.
- 2) Bore available on both sides.
- 3) Rough bore for later fitting of cylindrical or taper pin.
- 4) Number on each side
- 5) Data upon request

All weight values indicated in this catalogue are average, non-binding values. The drawings shown are not strictly binding.



Dimensions in mm

Size	D <sup>1)</sup>	B	B <sub>a</sub>	D <sub>i</sub>	D <sub>o</sub>	D <sub>m</sub>	d <sub>B</sub>	RD-thrust pads <sup>4)</sup>	b <sub>1</sub>	b <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l	l <sub>1</sub>	c <sub>1</sub>	c <sub>2</sub>	
56	475	409	475 -0,26	505	590	610	100	16	640	660	670	1280	120	1180	1600	1400	150	
	500			530	615	635		18										
	530			560	645	665		22										
	560	418,8		590	675	670	80	24										
	600			630	715	700		30										
	630			660	745	715												
	670	429																
710																		
71	600	522	600 -0,26	635	725	765	125	18	780	810	750	1515	150	1550	2000	1800	200	
	630			665	755	795												
	670			705	795	835												
	710	534		745	835	850	100	24										
	750			785	875	870												
	800																	
	850	549,2																
900																		
90	750	534,6	630 -0,3	790	885	940	140	18	960	990	850	1795	148	2000	2500	2300	240	
	800			840	935	990												20
	850	552		890	985	1020	125	22										
	900			940	1035	1070		24										
	950			990	1085	—		—										
	1000			1040	1135	—		—										
112	950	554,4	670 -0,3	995	1095	1160	160	20	1050	1080	950	1950	168	2200	2800	2550	260	
	1000			1045	1145	1230												22
	1060			1105	1205	1270												26
	1120	574,6		1165	1265	1305	140	—										
	1180			1225	1325	—	—											
	1250			1295	1395	—	—											



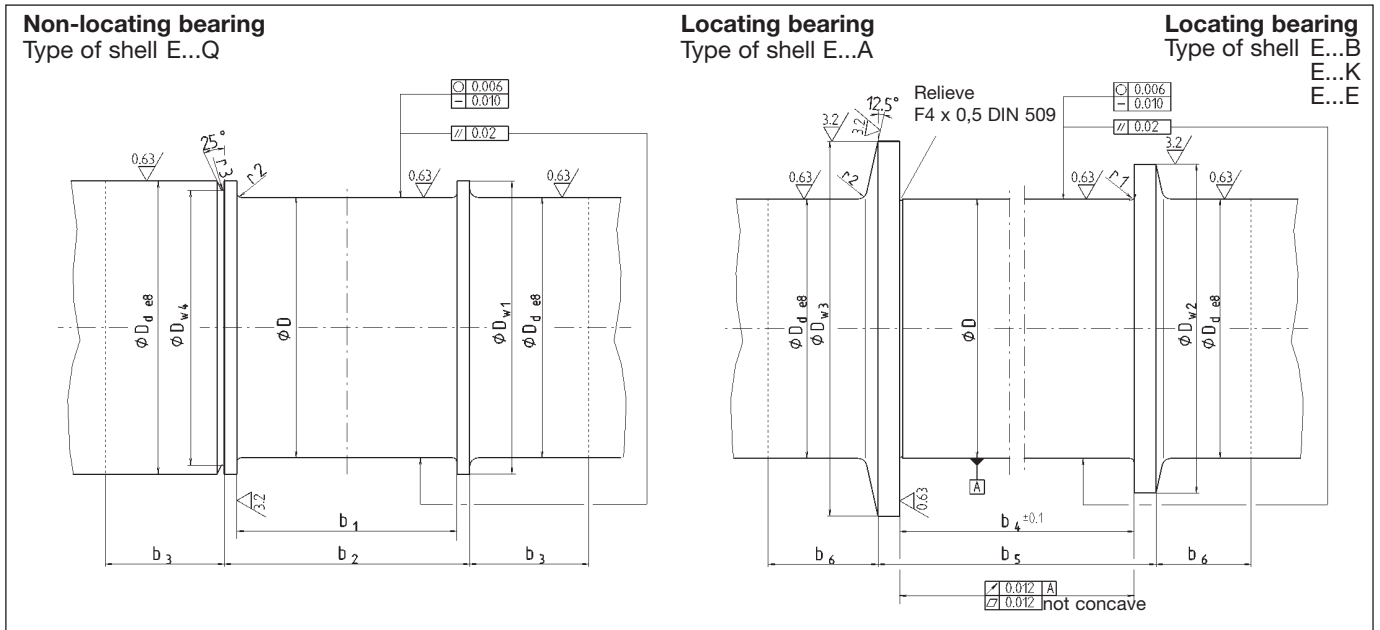
① Type	E
② Housing	G smooth, foot-mounted
③ Heat dissipation	<ul style="list-style-type: none"> <li>N natural cooling</li> <li>Z lubrication by oil circulation with external oil cooling</li> <li>X<sup>5)</sup> lubrication by circulation with external oil cooling for high oil throughput</li> <li>W<sup>5)</sup> water cooling (finned tubes in oil sump)</li> <li>U circulating pump and natural cooling</li> <li>T circulating pump and water cooling (finned tubes in oil sump)</li> </ul>
④ Shape of bore and type of lubrication	<ul style="list-style-type: none"> <li>C<sup>5)</sup> plain cylindrical bore, without oil ring</li> <li>L plain cylindrical bore, loose oil ring lubrication</li> <li>F<sup>5)</sup> plain cylindrical bore, fixed oil ring lubrication</li> <li>Y<sup>5)</sup> two-lobe bore (lemon shape), without oil ring</li> </ul>
⑤ Thrust surface	<ul style="list-style-type: none"> <li>Q without thrust parts (non-locating bearing)</li> <li>B plain sliding surfaces (locating bearing)</li> <li>K taper land faces for both senses of rotation (locating bearing)</li> <li>E taper land faces for one sense of rotation (locating bearing)</li> <li>A elastically supported circular tilting pads (locating bearing)</li> </ul>

**Example**  
for quoting a slide bearing type EG, circulating oil system with external oil cooling, plain cylindrical bore with loose oil ring (for emergency lubrication), thrust part with elastically supported circular tilting pads, size 56, shaft diameter 500 mm:

① ② ③ ④ ⑤  
**slide bearing E G Z L A 56-500**

c <sub>3</sub>	c <sub>4</sub>	d <sub>S</sub> (1)	b <sub>3</sub>	oil inlet for type...A		oil inlet (radial)		thermosensor (2)			oil sight glass		oil outlet		thermosensor (oil sump)		oil quantity l	weight kg			
				e <sub>1</sub>	f <sub>1</sub>	e <sub>2</sub>	f <sub>2</sub>	e <sub>3</sub>	f <sub>3</sub>	t	e <sub>4</sub>	f <sub>4</sub>	e <sub>5</sub>	f <sub>5</sub>	f <sub>6</sub>						
450	for M48	475/500/530 560/600/630 670/710	51	G1	190	105	160	165	105	225	450	G3	150	430	DN 80	150	390	G1	480	approx. 78	approx. 4000
										240											
										255											
										270											
										295											
										310											
										330											
350																					
560	for M64	600/630/670 710/750/800 850	51	G1	250	125	200	175	140	250	560	G3	190	500	DN 80	190	460	G1	540	approx. 125	approx. 6400
										270											
										295											
										320											
										340											
										370											
										400											
425																					
710	for M64	750/800 850/900 950/1000	51	G1	255	135	210	185	140	280	710	-	-	-	5)	5)	5)	G1	-	-	approx. 10500
										315											
										345											
										375											
										410											
										440											
770	for M72	950/1000 1060/1120 1180/1250	51	G1	265	100	220	230	140	370	765	-	-	-	5)	5)	5)	G1	-	-	approx. 15000
										405											
										445											
										480											
										515											
										560											

# Shaft Dimensions



Dimensions in mm

Size	D	b <sub>1</sub> <sup>4)</sup>	b <sub>2</sub>	b <sub>3</sub>	b <sub>4</sub> <sup>1)</sup>	b <sub>5</sub>	b <sub>6</sub>	D <sub>W1</sub>	D <sub>W2</sub>	D <sub>W3</sub>	D <sub>d</sub> <sup>2)</sup>	D <sub>d</sub> / D <sub>W4</sub> <sup>2) 3)</sup>	r <sub>1</sub>	r <sub>2</sub>	r <sub>3</sub>
56	475	500	530	135	475,5	555	120	530	590	715	450/500 530/560/600 630/670/710	475/ —, 500/475 530/500, 560/530 600/560, 630/600 670/630, 710/670	10	16	4
	500							560	615	740					
	530							600	645	770					
	560							630	675	755					
	600							670	715	785					
	630							710	745	785					
	670							740	—	—					
	710							780	—	—					
71	600	630	670	135	600,5	690	125	670	725	900	600/630 670/710/800 850/900	600/ —, 630/600 670/630, 710/670 750/710, 800/750 850/800	10	16	6
	630							710	755	925					
	670							750	795	965					
	710							800	835	955					
	750							850	875	975					
	800							900	925	970					
	850							920	—	—					
	900							970	—	—					
90	750	660	700	210	630,5	730	195	850	885	1085	750/800 850/900 950/1000	750/ —, 800/750 850/800	12	20	8
	800							900	935	1135					
	850							950	985	1150					
	900							1000	1035	1200					
	950							1060	1135	—					
	1000							1120	—	—					
	1120							1250	—	—					
112	950	700	750	230	670,5	880	165	1060	1095	1325	950/1000 1060/1120 1180/1250	950/ —, 1000/950 1060/1000, 1120/1060 1180/1120, 1250/1180	12	20	8
	1000							1120	1145	1395					
	1060							1180	1205	1435					
	1120							1250	1265	1450					
	1180							1320	1325	—					
	1250							1400	1395	—					

Shafts for bearings with fixed oil ring lubrication on request.  
Shafts for high oil throughput with type...A on request.

- A normal axial clearance is approx. 0.6 mm. Where directional changes of axial loads or where axial shock loads can be expected (marine applications, rolling mills, fans), the dimension "b<sub>4</sub>" can be reduced by 0.3 mm. Where a locating bearing is required only for the test run, the axial clearance can amount to 3 to 6 mm. In this case dimension "b<sub>6</sub>" has to be considered.
- Diameters "D<sub>d</sub>" and "D<sub>d</sub>/D<sub>W4</sub>" apply to any shaft diameter "D" of one size.

- The groove "D<sub>W4</sub>" may be omitted, if "D<sub>d</sub>" equal to or smaller than shaft diameter "D".
  - If the non-locating bearing is to allow higher end floats (for instance because of heat elongation), the distance "b<sub>4</sub>" between the collars has to be increased, taking into consideration "b<sub>3</sub>". If the shaft ends within the bearing, the length of the journal equals "b<sub>1</sub>".
- Tolerances of form and position follow DIN 31 699.  
Degree of accuracy B 10 (radial). Degree of accuracy B 20 (axial); others upon request.

# Load Table

Size	shaft-Ø D [mm]	F <sub>R</sub> (1) [kN]	F <sub>R</sub> (2) [kN]	thrust part B F <sub>A</sub> [kN]	thrust part K F <sub>A</sub> (3) [kN]	thrust part E F <sub>A</sub> (3) [kN]	thrust part A F <sub>A</sub> (4) [kN]
56	475	485	777	18	57	94	314
	500	512	818	19	60	99	353
	530	542	867	20	63	103	353
	560	586	938	21	66	109	277
	600	628	1005	23	70	115	302
	630	675	1081	24	73	121	234
	670	718	1150	—	—	—	—
	710	761	1218	—	—	—	—
71	600	783	1253	25	75	125	552
	630	822	1315	26	79	130	552
	670	874	1399	27	83	138	552
	710	948	1517	29	87	145	471
	750	1001	1602	31	92	151	471
	800	1098	1757	33	98	160	337
	850	1167	1867	—	—	—	—
	900	1236	1977	—	—	—	—
90	750	1002	1604	upon request			
	800	1069	1711				
	850	1173	1877				
	900	1242	1987				
	950	1311	2098				
	1000	1380	2208				
112	950	1317	2106	upon request			
	1000	1386	2218				
	1060	1469	2351				
	1120	1609	2574				
	1180	1695	2712				
	1250	1796	2873				

The table serves only to select the size of E-Type bearing. Before booking an order, however, it will be necessary to carry out an EDP calculation, taking into account the reciprocal influence of operating parameters.

1. Radial loads F<sub>R</sub> in [kN] as permanent load without hydrostatic jacking (maximum value) for plain cylindrical bores.

2. Radial loads F<sub>R</sub> in [kN] as permanent load with

hydrostatic jacking (maximum value) for plain cylindrical bores.

3. Axial load F<sub>A</sub> in [kN] as permanent load (maximum value).

4. Axial load F<sub>A</sub> [kN] as maximum admissible load at start-up. During operation, this load can be increased by approx. 60%.

Load values for other bore shapes upon request.

# Sales Organisation



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## Sales Agencies

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Austria	Hungary	PR China
Belgium	India	Slovak Republic
Brazil	Italy	Slovenia Republic
Canada	Japan	South Africa
Czech Republic	Liechtenstein	South Korea
Croatia	Luxembourg	Spain
Finland	Mexico	Switzerland
France	Netherlands	USA

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We reserve the right to changes made in the interests of technical improvement.