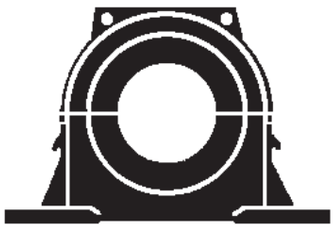
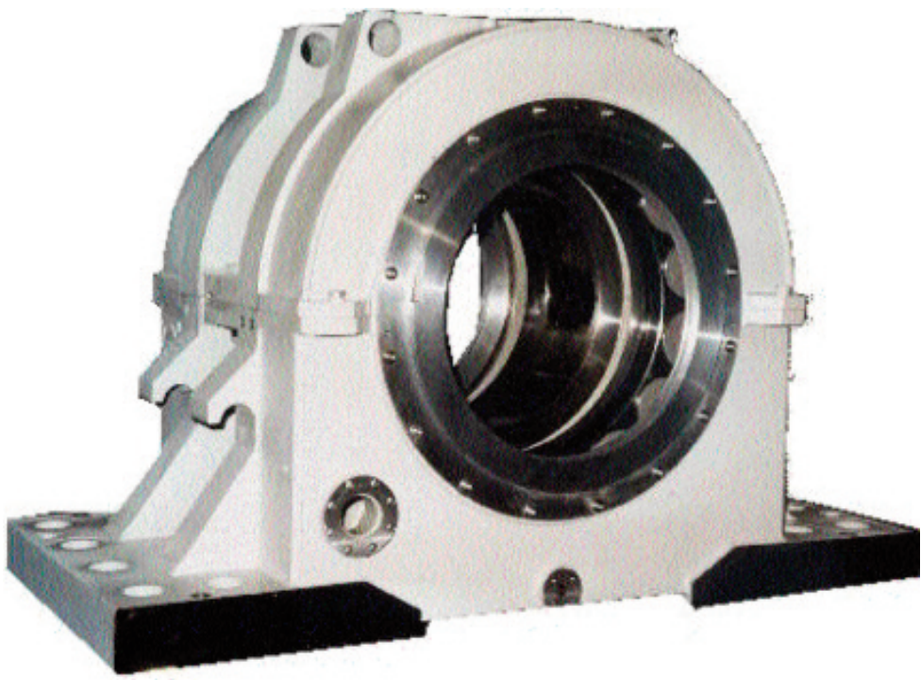
Slide Bearings Type WG
For Highest Thrust Loads

Slide Bearing Type WG



RENK series WG have been specially designed to carry highest thrust loads. The main application fields for this type of bearing are large electric machines and rolling mill drives. The use of the WG series prevents damage in cases where shock loads or highest thrust loads at low speed occur.

Side bearings type WG are based on RENK's long experience in the manufacture and design of slide bearings. The WG bearings can integrate different bearing components of various series, such as for instance, the shells of the SC type, the seals of the E type and the RD pads of the thrust bearing. The modular system reduces the stockkeeping of spare parts. Duite often it is possible to equip locating and non-locating bearings with the same journal parts or seals. Worn parts can be easily delivered from stock at short term.



Technical Information

Bearing Housing

The WG bearings have fabricated housings, of extremely rigid design, capable of taking highest thrust shock loads. They are most suitable to protect expensive installation parts against thrust loads in case of damage. Besides, the fabricated housings offer a most cost-effective solution.

RENK's own EDP-department offers order-related calculations of the stiffness and deflection of the bearing housing.

Journal Bearing

The shells are part of the SC type of modular compound principle. The shells are designed in accordance with the latest technical development. Contact RENK for reference information.

The shells have a spherical seating in the housing. This makes assembly easy and ensures a good heat transfer between bearing shell and housing. Upon request, the journal bearing can be provided with hydrostatic jacking.

Thrust Bearing

The RD-pads can carry high axial loads at low speed. A corresponding design ensures enough oil film thickness even under most unfavourable operating conditions.

The cup spring supported pads have excellent damping properties, absorbing shocks elastically.

Due to the modular component principle it is possible to adapt the thrust parts of the bearing to any technical requirement a customer might have.

Seals

WG bearings can be provided with the same type of seals as used for the E series.

All sealing systems are available in all corresponding sizes. However, the WG bearings are mainly provided with adjustable rigid labyrinth seals. The first two labyrinths prevent the lateral escape of the lubricant. Small oil quantities which have not been wiped off by the first group of labyrinths are collected into a chamber situated between the two groups of labyrinths. Through the return bores the lubricant flows back into the oil sump. Five other labyrinths build up the actual seal, that is, they prevent oil leakage and the penetration of impurities into the bearing.

Oil Supply

WG bearings can be designed to suit perfectly most different operating conditions.

Two fixed oil rings ensure emergency lubrication. Oil grooves and an oil scraper deliver the lubricant to the running surfaces. Various design forms make a safe lubrication of the thrust bearing possible. This ensures safe operation at any time.

Bearing Calculation

Based on the operating conditions indicated by the customer RENK can carry out hydrodynamic and thermic calculations for every bearing to be supplied. The values necessary for the calculations, such as speed, load, lubricant viscosity, ambient temperature offer the decisive base for bearing performance.

The operational safety of a bearing depends mainly on the bearing temperature and on the oil film thickness.

Upon request, our EDP-calculation department checks the stiffness and deflection of the bearing housing with the help of the Finite Element Method (FEM).

① Type	W	=	Rolling mill bearing
② Series	G	=	welded housing
③ Heat Dissipation	N	=	natural cooling
	W	=	water cooling in oil sump
	Z	=	lubrication by oil circulation with external oil cooling
	U	=	circulating pump
	T	=	circulating pump and water cooled oil sump
④ Shape of bore and type of lubrication	F	=	plain cylindrical bore, fixed oil ring lubrication
⑤ Thrust parts	A	=	elastically supported circular tilting pads (locating bearing)

Example

for quoting a complete bearing

① ② ③ ④ ⑤
W G Z F A

Dimensions and Loads

WG 600 (F_{sch} = 600 kN)

R	SC	D_W	B	RD	D_m	D_a	b	F_{rad}	$F_{ax,max}$
1	25	200 225 250	150	12090	390	490	440	94	305
2	28	250 265 280	170	12090	420	520	460	119	305
3	32	280 300 315	192	12090	460	560	480	151	305
4	36	315 335 355	216	16080	495	595	505	192	322
5	40	355 375 400	220	16080	530	620	505	220	322
6	45	400 425 450	248	20071	570	650	520	279	317
7	50	450 475 500	275	24063	610	685	520	344	299

WG 1000 (F_{sch} = 1000 kN)

R	SC	D_W	B	RD	D_m	D_a	b	F_{rad}	$F_{ax,max}$
1	28	250 265 280	170	10125	475	610	500	119	491
2	32	280 300 315	192	12112	500	620	520	151	473
3	36	315 335 355	216	12112	535	660	540	192	473
4	40	355 375 400	229	16100	570	680	540	220	503
5	45	400 425 450	248	16100	620	730	560	279	503
6	50	450 475 500	275	20090	660	760	585	344	509
7	56	500 530 560	308	24080	710	800	605	431	483

WG 1500 (F_{sch} = 1500 kN)

R	SC	D_W	B	RD	D_m	D_a	b	F_{rad}	$F_{ax,max}$
1	32	280 300 315	192	10140	530	680	560	151	616
2	36	315 335 355	216	12125	550	685	560	192	589
3	40	355 375 400	220	12125	595	730	560	220	589
4	45	400 425 450	248	16112	630	750	585	279	631
5	50	450 475 500	275	16112	680	800	610	344	631
6	56	500 530 560	308	20100	730	840	630	431	628
7	63	560 600 630	345	24090	790	890	665	543	611

WG 2000 (F_{sch} = 2000 kN)

R	SC	D_W	B	RD	D_m	D_a	b	F_{rad}	$F_{ax,max}$
1	36	315 335 355	216	12140	585	735	595	192	739
2	40	355 375 400	220	12140	630	780	595	220	739
3	45	400 425 450	248	12140	680	830	625	279	739
4	50	450 475 500	275	16125	715	850	625	344	785
5	56	500 530 560	308	16125	775	910	655	431	785
6	63	560 600 630	345	20112	830	955	690	543	788
7	71	630 670 710	390	24100	900	1010	720	692	754

R - line
SC - SCbearing shell size
D_w - shaft diameter
B - shell width
RD - type of thrust part
D_m - reference diameter
D_a - outer diameter of the shaft collar
b - distance between collars
F_{rad} - medium journal load (p = $\overline{2}$.5 N/mm^2)
$F_{ax,max}$ - maximum thrust load (p = $\overline{4}$ N/mm^2)
F_{sch} - shock load

Dimensions and Loads

WG 2500 (F_{sch} = 2500 kN)

R	SC	D_w	B	RD	D_m	D_a	b	F_{rad}	$F_{ax,max}$
1	40	355 375 400	220	10180	670	860	660	220	1018
2	45	400 425 450	248	12160	700	870	670	279	965
3	50	450 475 500	275	12160	750	920	700	344	965
4	56	500 530 560	308	16140	860	940	700	431	985
5	63	560 600 630	345	16140	860	1010	740	543	985
6	71	630 670 710	390	20125	925	1060	750	692	982
7	80	710 750 800	440	24112	1000	1120	800	880	946

WG 3000 (F_{sch} = 3000 kN)

R	SC	D_w	B	RD	D_m	D_a	b	F_{rad}	$F_{ax,max}$
1	45	400 425 450	248	10200	770	980	705	279	1257
2	50	450 475 500	275	12180	800	990	720	344	1221
3	56	500 530 560	308	12180	860	1050	760	431	1221
4	63	560 600 630	345	16160	910	1080	780	543	1287
5	71	630 670 710	390	16160	990	1160	820	692	1287
6	80	710 750 800	440	20140	1060	1210	840	880	1231
7	90	800 850 900	495	24125	1145	1280	860	1114	1178

WG 4000 (F_{sch} = 4000 kN)

R	SC	D_w	B	RD	D_m	D_a	b	F_{rad}	$F_{ax,max}$
1	50	450 475 500	275	12200	810	1020	765	344	1508
2	56	500 530 560	308	12200	870	1080	800	431	1508
3	63	560 600 630	345	12200	940	1150	835	543	1508
4	71	630 670 710	390	16180	1000	1190	870	692	1629
5	80	710 750 800	440	16180	1090	1280	920	880	1629
6	90	800 850 900	495	20160	1170	1340	960	1114	1608
7	100	900 950 1000	550	24140	1250	1400	985	1375	1478

WG 5000 (F_{sch} = 5000 kN)

R	SC	D_w	B	RD	D_m	D_a	b	F_{rad}	$F_{ax.max}$
1	56	500 530 560	308	12225	905	1140	840	431	1909
2	63	560 600 630	345	12225	975	1210	880	543	1909
3	71	630 670 710	390	16200	1055	1290	925	692	1909
4	80	710 750 800	440	16200	1120	1330	950	880	2011
5	90	800 850 900	495	16200	1220	1430	1005	1114	2011
6	100	900 950 1000	550	20180	1300	1490	1030	1375	2036
7	112	1000 1060 1120	616	24160	1400	1570	1080	1725	1930

R - line
SC - SCbearing shell size
D_w - shaft diameter
B - shell width
RD - type of thrust part
D_m - reference diameter

D_a - outer diameter of the shaft collar
b - distance between collars
F_{rad} - medium journal load (p = $\bar{2}.5$ N/mm^2)
$F_{ax,max}$ - maximum thrust load (p = $\bar{4}$ N/mm^2)
F_{sch} - shock load

WG 6500 (F_{sch} = 6500 kN)

R	SC	D_w	B	RD	D_m	D_a	b	F_{rad}	$F_{ax.max}$
1	63	560 600 630	345	12250	1010	1270	940	543	2356
2	71	630 670 710	390	12250	1090	1350	985	692	2356
3	80	710 750 800	440	12250	1180	1440	1035	880	2356
4	90	800 850 900	495	16225	1255	1490	1050	1114	2545
5	100	900 950 1000	550	16225	1355	1590	1105	1375	2545
6	112	1000 1060 1120	616	20200	1450	1660	1145	1725	2513
7	125	1120 1180 1250	687	24180	1560	1750	1190	2147	2443

WG 9000 (F_{sch} = 9000 kN)

R	SC	D_w	B	RD	D_m	D_a	b	F_{rad}	$F_{ax.max}$
1	71	630 670 710	390	12280	1140	1430	1060	692	2956
2	80	710 750 800	440	12280	1230	1520	1110	880	2956
3	90	800 850 900	495	12280	1330	1620	1165	1114	2956
4	100	900 950 1000	550	16250	1400	1660	1180	1375	3142
5	112	1000 1060 1120	616	16250	1520	1780	1245	1725	3142
6	125	1120 1180 1250	687	20225	1625	1860	1270	2147	3181
7	140	1250 1320 1400	770	24200	1750	1960	1310	2695	3016

R - line

SC - SCbearing shell size

D_w - shaft diameter

B - shell width

RD - type of thrust part

D_m - reference diameter

D_a - outer diameter of the shaft collar

b - distance between collars

F_{rad} - medium journal load ($p = \bar{2}.5$ N/mm^2)

$F_{ax,max}$ - maximum thrust load ($p = \bar{4}$ N/mm^2)

F_{sch} - shock load

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