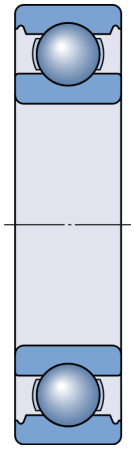
Bearing B - Mainshaft

Bearing in position B mounted in the mainshaft



Emanuele Mariniello

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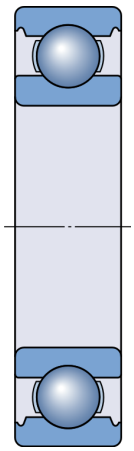
1. Abstract



Deep groove ball bearing

■ SKF Explorer ▶ Popular item

Designation	Load Cases	Life model	
		Basic	SKF life
		L_{10h}	L_{10mh}
		h	
62/22	LC1	17600	145000
	LC2	3780	24500
	LC3	8600	> 2x10^5
	LC4	3440	72600
	LC5	684	5220
	combined	**2280**	**19500**

** SKF rating life (L_{10mh}) for steel-steel bearings; GBLM load based life (L_{10GMh}) for hybrid bearings*

warnings

! Results are based on default operating conditions. Please, review and adjust operating conditions where needed

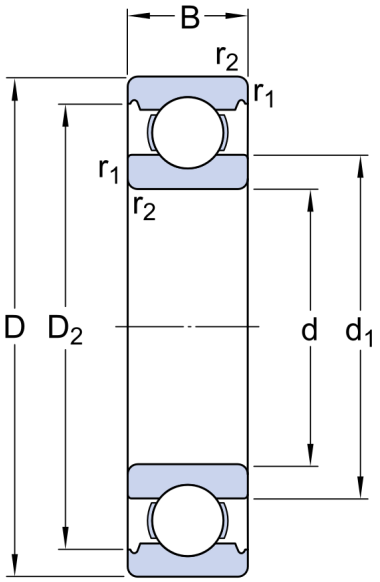
! LC3 : - For rating life results above 100000 hours, other failure modes than those included in the current rating life models will dominate and limit the life of the bearing. More info

! LC3,LC4,LC5 : - High viscosity ratio k, no asperity contact. k>4 will no further increase bearing rating life but result in higher viscous frictional losses. Operating temperature must be given more attention More info

! LC1 : - For rating life results above 100000 hours, other failure modes than those included in the current rating life models will dominate and limit the life of the bearing.

2. Input

2.1. Bearing data



Designation	Bearing type	Principal dimensions			Basic load ratings		Fatigue load limit
					Dynamic	Static	
		d	D	B	C	C_0	P_u
		mm			*kN*		
62/22	Deep groove ball bearing	22	50	14	14	7.65	0.325

Designation	Speed ratings		Clearance class
	Reference	Limiting	
	n_{ref}	n_{lim}	
	r/min		
62/22	30000	19000	Normal

2.2. Loads, Speed and Temperature

	Forces		Speed	Temperature		Case weight
	Radial (F_r)	Axial (F_a)		Inner ring	Outer ring	
	kN		*r/min*	*°C*		
LC1	0.954	0.0	2988.51	70	65	1
LC2	1.376	0.0	4627.36	70	65	1
LC3	0.803	0.0	10246.31	70	65	1
LC4	1.031	0.0	12079.85	70	65	1
LC5	1.67	0.0	14344.83	70	65	1

- *Maximum temperature is used for calculating the actual viscosity, kappa, a_{SKF} and SKF rating life.*
- *Mean temperature is used for calculating bearing friction and power loss.*

2.3. Lubrication

Designation	Lubricant			Effective EP additives
	Type	Method	Name	
62/22	Grease	SKF grease	LGMT 2: all purpose industrial and automotive	False

Designation	Contamination
	Method
62/22	Detailed guidelines

3. Results

3.1. Bearing loads

Designation	Load Cases	Load ratio	Equivalent dynamic load
		C/P	P
			kN
62/22	LC1	14.68	0.95
	LC2	10.17	1.38
	LC3	17.43	0.8
	LC4	13.57	1.03
	LC5	8.38	1.67

3.2. Lubrication conditions

Designation	Load Cases	Operating viscosity			Viscosity ratio
		Actual	Rated	Rated @ 40 °C	
		ν	ν_1	ν_{ref}	K
		mm²/s			
62/22	LC1	28.0	11.3	33.2	2.46
	LC2	28.0	9.23	25.6	3.03
	LC3	28.0	6.45	16.4	4.34
	LC4	28.0	6.02	15.1	4.64
	LC5	28.0	5.62	13.9	4.98

3.3. Bearing rating life

Designation	Load Cases	Bearing rating life		SKF life modification factor	Contamination factor
		Basic	SKF		
		L_{10h}	L_{10mh}	a_{skf}	η_c
		h			
62/22	LC1	17600	145000	8.24	0.38
	LC2	3780	24500	6.49	0.44
	LC3	8600	> 2x10^5	40.35	0.53
	LC4	3440	72600	21.06	0.53
	LC5	684	5220	7.63	0.53
	combined	**2280**	**19500**		

** SKF rating life (L_{10mh}) for steel-steel bearings; GBLM load based life (L_{10GMh}) for hybrid bearings*

warnings

! LC3 : - For rating life results above 100000 hours, other failure modes than those included in the current rating life models will dominate and limit the life of the bearing. More info

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