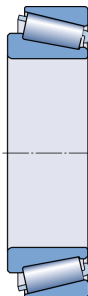


1. Abstract

Calculation overview



Tapered roller bearing

■ SKF Explorer

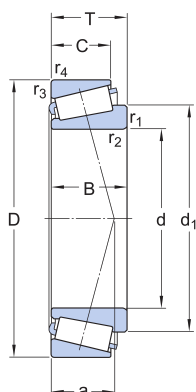
Designation	Bearing rating life	
	Basic	SKF life
	L_{10h} (h)	L_{10mh} (h)
■ <u>30313</u>	51900	$> 2 \times 10^5$

Consideration

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	Speed ratings	
					Dynamic	Static		Reference	Limiting
		d (mm)	D (mm)	B (mm)	C (kN)	C ₀ (kN)	P _u (kN)	n _{ref} (r/min)	n _{lim} (r/min)
■ 30313	Tapered roller bearing	65.0	140.0	36.0	240.0	228.0	27.5	4000.0	4800.0

2.2. Loads, Speed and Temperature

	Forces		Speed	Temperature		Case weight
	Radial (F _r) (kN)	Axial (F _a) (kN)	(r/min)	Inner ring (°C)	Outer ring (°C)	
LC1	3.635	10.355	1490.0	70	65	1

Maximum temperature is used for calculating the actual viscosity, κ , 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	Contamination	
	Type	Method	Name		Method	Cleanliness / Factor
■ 30313	Grease	SKF grease	LGMT 2: all purpose industrial and automotive	False	Detailed guidelines	Normal cleanliness

3. Results

3.1. Bearing loads

	Load ratio	Equivalent dynamic load
Designation	C/P	P (kN)
■ <u>30313</u>	12.59	19.06

3.2. Bearing minimum load

	Reaction forces		Minimum load		
Designation	Radial	Axial		Axial	Requirements
	F_r (kN)	F_a (kN)	F_{rm} (kN)	F_{am} (kN)	met?
■ <u>30313</u>	3.635	10.355	4.08	1.27	yes

3.3. Lubrication conditions

	Operating viscosity			Viscosity ratio
Designation	Actual	Rated	Rated @ 40 °C	
	ν (mm ² /s)	ν_1 (mm ² /s)	ν_{ref} (mm ² /s)	κ
■ <u>30313</u>	28.0	9.39	26.2	2.98

3.4. Bearing rating life

	Bearing rating life		SKF life modification factor	Contamination factor
Designation	Basic	SKF		
	L_{10h} (h)	L_{10mh} (h)	a_{skf}	η_c
■ <u>30313</u>	51900	> 2x10 ⁵	50.0	0.76

Consideration

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.