

# 1. Abstract

## Calculation overview



Spherical roller bearing

■ SKF Explorer

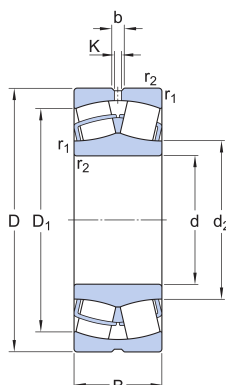
Designation	Bearing rating life	
	Basic	SKF life
	$L_{10h}$ (h)	$L_{10mh}$ (h)
■ <u>22312 E</u>	128000	$> 2 \times 10^5$

### 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 <sub>0</sub> (kN)	P <sub>u</sub> (kN)	n <sub>ref</sub> (r/min)	n <sub>lim</sub> (r/min)
■ <u>22312 E</u>	Spherical roller bearing	60.0	130.0	46.0	325.0	335.0	36.0	4000.0	5300.0

### 2.2. Loads, Speed and Temperature

	Forces		Speed	Temperature		Case weight
	Radial ( F <sub>r</sub> ) (kN)	Axial ( F <sub>a</sub> ) (kN)	(r/min)	Inner ring (°C)	Outer ring (°C)	
LC1	18.3	0.0	1897.1	65	55	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	Viscosity		Contamination	
	Type	Method		@40°C ( mm <sup>2</sup> /s )	@100°C ( mm <sup>2</sup> /s )	Method	Cleanliness / Factor
■ <u>22312 E</u>	Oil with filter	Viscosity @40°C & 100°C	False	68.0	8.5	Simplified guidelines	Normal cleanliness

## 3. Results

### 3.1. Bearing loads

	Load ratio	Equivalent dynamic load
Designation	C/P	P (kN)
■ 22312 E	17.76	18.3

### 3.2. Lubrication conditions

	Operating viscosity			Viscosity ratio
Designation	Actual	Rated	Rated @ 40 °C	
	$\nu$ (mm <sup>2</sup> /s)	$\nu_1$ (mm <sup>2</sup> /s)	$\nu_{ref}$ (mm <sup>2</sup> /s)	$\kappa$
■ 22312 E	23.6	8.65	19.9	2.73

### 3.3. Bearing rating life

	Bearing rating life		SKF life modification factor	Contamination factor
Designation	Basic	SKF		
	$L_{10h}$ (h)	$L_{10mh}$ (h)	$a_{skf}$	$\eta_c$
■ 22312 E	128000	> 2x10 <sup>5</sup>	50.0	0.55

#### 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.