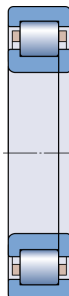


# 1. Abstract

## Calculation overview



Cylindrical roller bearing

■ SKF Explorer

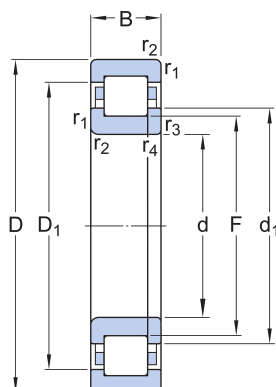
Designation	Bearing rating life	
	Basic	SKF life
	$L_{10h}$ (h)	$L_{10mh}$ (h)
■ NUP 2207 ECP	148000	30700

## Consideration

Low viscosity ratio  $k$ , reduced asperity contact. It is recommended to select a higher viscosity lubricant or improve cooling. It is not appropriate to look at basic rating life only. Instead use SKF rating life method. Recommended to use anti-wear (AW) or extreme pressure (EP) additives to reduce wear [More info](#)

## 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)
■ NUP 2207 ECP	Cylindrical roller bearing	35.0	72.0	23.0	69.5	63.0	8.15	11000.0	12000.0

### 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	10.0	0.0	72.0	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	Lubrication	Contamination	
	Type	Method	Name		Method	Method	Cleanliness / Factor
■ NUP 2207 ECP	Oil without filter	ISO VG (3448)	ISO VG 220	False	Oil spot	Detailed guidelines	ISO 4406 -/13/10

## 3. Results

### 3.1. Bearing loads

	Load ratio	Equivalent dynamic load
Designation	C/P	P (kN)
■ <u>NUP 2207 ECP</u>	6.95	10.0

### 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)	$\kappa$
■ <u>NUP 2207 ECP</u>	52.0	158	864	0.32

### 3.3. Bearing rating life

	Bearing rating life		SKF life modification factor	Contamination factor
Designation	Basic	SKF		
	$L_{10h}$ (h)	$L_{10mh}$ (h)	$a_{skf}$	$\eta_c$
■ <u>NUP 2207 ECP</u>	148000	30700	0.21	0.3

#### Consideration

Low viscosity ratio  $\kappa$ , reduced asperity contact. It is recommended to select a higher viscosity lubricant or improve cooling. It is not appropriate to look at basic rating life only. Instead use SKF rating life method. Recommended to use anti-wear (AW) or extreme pressure (EP) additives to reduce wear [More info](#)

### 3.4. Axial load carrying capacity

	Permissible axial load		
Designation	$F_{ap\ max}$ (kN)	$F_{ap\ brief}$ (kN)	$F_{ap\ peak}$ (kN)
■ <u>NUP 2207 ECP</u>	2.74	5.49	8.24