Rolling bearings SKF

i Calculation without errors.

ii Project information

Input parameters section

1.0 ☑ Selection of bearing type, bearing loads

1.1	Calculation units	SI Units (N, mm, kW...)		
1.2	**Bearing type**	Deep groove ball bearings, single row		
1.3	**Bearing design**			
1.4	Open design			
1.5	Single bearing			
1.6	Normal clearance			
1.7	**Bearing load**			
1.8	Rotational speed	n	116.5	[/min]
1.9	Radial load	Fr	14719.1	[N]
1.10	Axial load	Fa	0.0	[N]
1.11	Factor of additional dynamic forces		1.32	
1.12	**Required parameters of bearing**			
1.13	Bearing life	Lh	20000	[h]
1.14	Static safety factor	s0	2.00	
1.15	**Additional dynamic forces**			
1.16	○ **None**			
1.17	◉ **From geared transmissions**			
1.18	Ordinary machined gears (deviations of shape and pitch 0.02-0.1m			
1.19	Factor	fk	1.1 - 1.3	1.20 ☑
1.20	Electric rotary machines, turbines, turbo-compressors			
1.21	Factor	fd	1 - 1.2	1.10 ☑
1.22	○ **From belt drives**			
1.23	Toothed belts			
1.24	Factor	fb	1.1 - 1.3	1.20 ☑

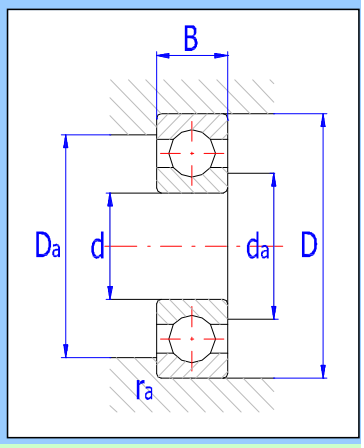
2.0 ☑ Selection of bearing size

2.1 **Bearing size**

ID	d	D	B	C	C0	nr	nmax	Bearing
143	70.0	180.0	42.0	143000	104000	8500	5300	6414

2.2 **Bearing parameters**

2.3	Basic dynamic load rating	C	143000	[N]	d	70
2.4	Equivalent dynamic load	P	19429.2	[N]	D	180
2.5	Basic rating life	L10h	57023	[h]	B	42
2.6	Basic static load rating	C0	104000	[N]	ramax	2.5
2.7	Equivalent static load	P0	19429.2	[N]	Damax	164
2.8	Static safety factor	s0	5.35		damin	86
2.9	Permissible radial load	Frmax	-	[N]		
2.10	Permissible axial load	Famax	-	[N]		
2.11	Reference speed	nr	8500	[/min]		
2.12	Limiting speed	nmax	5300	[/min]		
2.13	Power loss	NR	12.45	[W]		
2.14	Bearing mass	g	4.85	[kg]		



3.0 ☑ Operating parameters, adjusted bearing life

3.1	**Kinematic viscosity of the lubricant**				3.7	**Calculation of the adjusted rating life**		
3.2	Rated viscosity	ν_1	68	[mm^2/s]	3.8	Fatigue load limit	Pu	3900 [N]
3.3	Operating viscosity	ν	30.0	[mm^2/s]	3.9	Required reliability	90 %	
3.4	Viscosity ratio	κ	0.44		3.10	Contamination of the lubricant	Slight contamination	
					3.11	Factor for contamination level	η	0,6 - 0,4 / 0.50 ☑
3.5	**Requisite minimum load**				3.12	Life modification factor	a1/a23	1 / 0.52
3.6	Minimum radial load	Frmin	125.97	[N]	3.13	Adjusted rating life	Lmh	29652 [h]

Supplements section

4.0 ☐ Auxiliary calculations

5.0 ☐ Fluctuating bearing load

6.0 ☐ Calculation of bearings with angular contact

7.0 ☐ Graphical output, CAD systems