Rolling bearings

i   Calculation without errors.
ii   Project information

?	Input parameters section

1.0 ☑ Selection of bearing type, bearing loads

1.1	Calculation units		Imperial (lbf, in, HP....) ▼

1.3	Bearing design	
1.4	RBC Bearings	d = 1 - 40 in ▼

1.2 Bearing type
[○ ○ ▭ ⬭ ◪ Ⅱ Ⅱ]

Deep groove ball bearings, single row ▼

1.5	Open design	▼
1.6	Single bearing	▼

1.7 Bearing load

1.8	Rotational speed	n	1000,0	[/min]
1.9	Radial load	Fr	500,0	[lb]
1.10	Axial load	Fa	250,0	[lb]
1.11	Factor of additional dynamic forces		1	

1.12 Required parameters of bearing

1.13	Bearing life	Lh	10000	[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	V-belts ▼			
1.24	Factor	fb	1,9 - 2,5	2,20 ☑

2.0 ☑ Selection of bearing size

2.1 Bearing size

▲	ID	d	D	B	C	C0	nO	nG	Bearing
▼	16	4.0	6.0	1.0	6700	6480	4000	3200	KG040CP0 ▼

2.2 Bearing parameters

2.3	Basic dynamic load rating	C	6700	[lb]	d	4
2.4	Equivalent dynamic load	P	755	[lb]	D	6
2.5	Basic rating life	L10h	11647	[h]	B	1
2.6	Basic static load rating	C0	6480	[lb]	ramax	0,08
2.7	Equivalent static load	P0	500	[lb]		
2.8	Static safety factor	s0	12,96			
2.9	Permissible radial load	Frmax	-	[lb]		
2.10	Permissible axial load	Famax	-	[lb]		
2.11	Limiting speed - Oil	nO	4000	[/min]		
2.12	Limiting speed - Grease	nG	3200	[/min]		
2.13	Power loss	NR	0,03594	[HP]		
2.14	Bearing mass	g	3,6	[lb]		
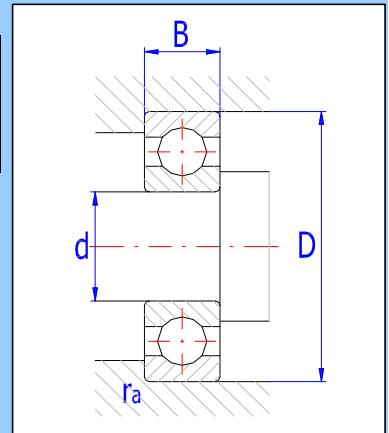
3.0 ☑ Operating parameters, adjusted bearing life

3.1 Kinematic viscosity of the lubricant

3.2	Rated viscosity	ν_1	12,6	[cSt]
3.3	Operating viscosity	ν	10,0	[cSt]
3.4	Viscosity ratio	κ	0,79	

3.7 Calculation of the adjusted rating life

3.8	Fatigue load limit	Pu	240	[lb]
3.9	Required reliability		90 %	▼
3.10	Contamination of the lubricant		Typical contamination	▼
3.11	Factor for contamination level	η	0,4 - 0,2	0,30 ☑
3.12	Life modification factor	a1/a23	1	1,3
3.13	Adjusted rating life	Lmh	15141	[h]

	Supplements section

4.0 ☑ Auxiliary calculations

4.1 Calculation of operating viscosity

4.2	Operating temperature	T	160,0	[°F]

4.3 Mineral oils

4.4	ISO viscosity grade		ISO VG 32 ▼ ☑	
4.5	Reference viscosity	ν_{40}	32,0	[cSt]
4.6	Operating viscosity	ν	10,6	[cSt]

4.7 Other lubricants

4.8	Temperature	100,0	210,0	[°F]

4.11 Bearing lubrication

4.12	Method of lubrication		Oil lubrication	▼
4.13	Desired oil volume flow	v	0,024	[gpm]
4.14	Relubrication interval	tf	-	[h]

| 4.9 | Viscosity | | 30,0 | 5,7 | [cSt] |
| 4.10 | Operating viscosity | ν | | 10,5 | [cSt] |

5.0 ☑ Fluctuating bearing load

| 5.1 | Number of different load conditions | 2 ▼ |

5.2 Table of load conditions

i	Fri [lb]	Fai [lb]	ni [/min]	ti/t [%]
1	100,0	50,0	4500,0	25,0
2	50,0	25,0	7000,0	75,0
3				
4				
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11				
12				
13				
14				
15				
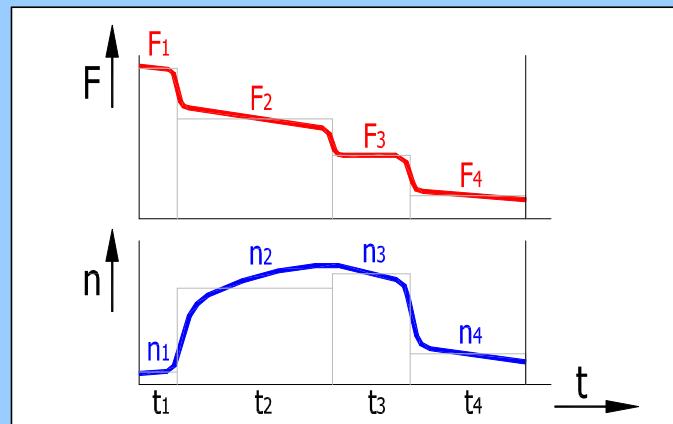
5.3	**Mean load**			
5.4	Rotational speed	n	6375	[/min]
5.5	Radial load	Fr	65,4	[lb]
5.6	Axial load	Fa	32,7	[lb]
5.7	Transfer of load into main calculation			

6.0 ☑ Calculation of bearings with angular contact

6.1 Bearing arrangement
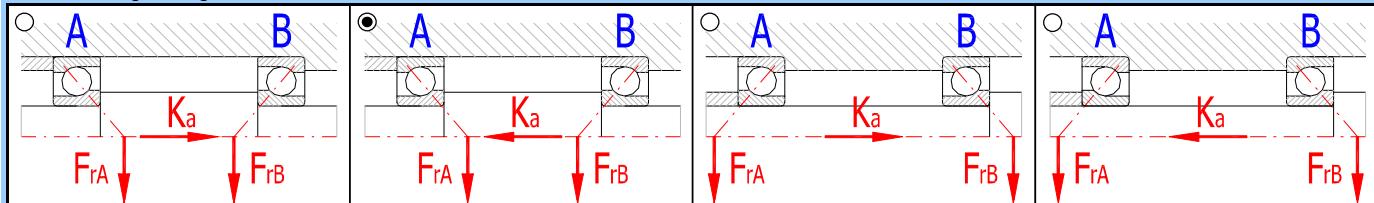
| 6.2 | Bearing type | RBC - Angular contact ball bearings ▼ |
| 6.3 | External axial load | Ka | 400,0 | [lb] |

6.4	**Bearing A**					6.12	**Bearing B**			
6.5	Bearing design	Single bearing ▼				6.13	Bearing design	Single bearing ▼		
6.6	Radial load	FrA	700,0	[lb]		6.14	Radial load	FrB	300,0	[lb]

6.7 Bearing size

▲	ID	d	D	B	nO	nG	Bearing
▼	16	4.0	6.0	1.0	4000	3200	KG040AR0	▼

6.15 Bearing size

▲	ID	d	D	B	nO	nG	Bearing
▼	15	4.0	5.5	0.75	4210	3370	KF040AR0	▼

6.8	Axial load	Fa	597,4	[lb]		6.16	Axial load	Fa	0	[lb]
6.9	Equivalent dynamic load	P	727	[lb]		6.17	Equivalent dynamic load	P	300	[lb]
6.10	Basic rating life	L10h	17153	[h]		6.18	Basic rating life	L10h	50810	[h]
6.11	Transfer into main calculation					6.19	Transfer into main calculation			

7.0 ☑ Graphical output, CAD systems

| 7.1 | 2D drawing output to: | DXF File ▼ |
| 7.2 | 2D Drawing scale | Automatic ▼ |
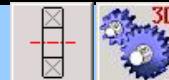
7.3 **Text description (Information for BOM)**

7.4	Row 1 (BOM attribute 1)	Bearing	☑
7.5	Row 2 (BOM attribute 2)	KG040CP0
7.6	Row 3 (BOM attribute 3)	RBC