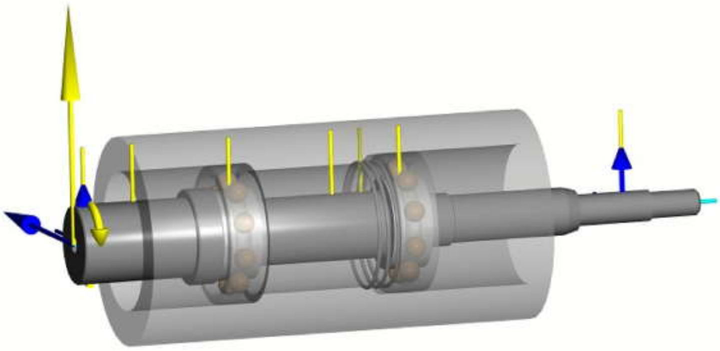
SKF SimPro Quick

Sterilisation Fan Bearing Housing @ 40C



Author: George Hutsby
Department: Design Engineering
Division: Specialist Tooling Technologies
Project number: 41005
Description: Axial Load is Mass of moving parts plus force applied by spring on 6205-2 loose fit outer ring. Radial load is that created by axial displacement of bearings due to Axial Load.As there is very little

load applied, the limiting factor is that the minimum load requiredis met to prevent bearing skid.

Date:	Fri Aug 22 11:54:55 2025
Version:	SKF SimPro Quick 4.10

1. Abstract

General comments about bearing rating life:

For rating life results above 100.000 hours, other failure modes than those included in the current rating life models will dominate and limit the life of the bearing.

Life value '0' or 'N/A' is shown if the requirements on either minimum load, permissible misalignment or static safety factor is not met.
If one case in duty cycle does not meet requirements, system life reverts to 0 (or N/A).

For detailed information and assumptions concerning the fatigue life calculation methodology refer to the ISO standard.
Individual bearing life can only be predicted statistically. Life calculations refer only to a bearing population and a given degree of reliability, i.e. 90%. Furthermore field failures are not generally caused by fatigue, but are more often caused by contamination, wear, misalignment and corrosion, or as a result of cage, lubrication or seal failure.

Bearing rating life (ISO)

Bearing	Life factor aISO	Basic rating life (ISO 281) (L10h) [h]	Modified rating life (ISO 281) (L10mh) [h]	Modified reference rating life (ISO/TS 16281) (L10mrh) [h]
W 6205 Drive End	26.06	> 200000	> 200000	> 200000
W 6205 Fan End	22.89	195400	> 200000	> 200000

Bearing rating life (SKF load based)

Bearing	Life factor aSKF	SKF load based method (SKF rating life, GBLM) [h]	SKF load based life method	RSF load based [-]
W 6205 Drive End	50.00	> 200000	SKF Rating Life	N/A
W 6205 Fan End	43.31	> 200000	SKF Rating Life	N/A

SKF load based method (SKF rating life, GBLM): Depending on the bearing design features, the SKF rating life (L10m) or the GBLM load based method (L10GM) is used.

Relative surface fatigue factor (RSF) only valid for bearings with GBLM life
RSF ~ 1: the surface takes most of the fatigue
RSF ~ 0: the surface takes almost no fatigue

2. Input

2.1. Bearing data

Bearing	Bearing designation	Bearing type	Performance class	Bore diameter (d) [mm]	Outer diameter (D) [mm]	Bearing width (B) [mm]
				nominal value	nominal value	nominal value
W 6205 Drive End	W 6205	DGBB	SKF Standard	25	52	15
W 6205 Fan End	W 6205	DGBB	SKF Standard	25	52	15

Bearing	Basic dynamic load rating (C) [kN]	Basic static load rating (C0) [kN]	Fatigue load limit (Pu) [kN]	Reference speed [rpm]	Limiting speed [rpm]
W 6205 Drive End	11.7	7.65	0.335	30000	19000
W 6205 Fan End	11.7	7.65	0.335	30000	19000

2.2. Lubricant data

Lubricant	Viscosity at 40 C [mm2/s]	Viscosity at 100 C [mm2/s]	With effective EP additives
	nominal value	nominal value	
Nyogel 758G	36.00	6.60	Off

Lubricant	Contamination type	ISO Diagram	Grease cleanliness
Nyogel 758G->ContaminationModel	ISO 281 2007	Grease	Grease - normal cleanliness

2.3. Temperatures

Boundary / interface	Temperature [C]
Temperature_1->T_Shaft system_1->Shaft->intf_W 6205 Drive End_1	40
Temperature_1->T_Shaft system_1->Shaft->intf_W 6205 Fan End_1	40
Temperature_1->T_Shaft system_1->W 6205 Drive End->IR	40
Temperature_1->T_Shaft system_1->W 6205 Drive End->OR	40
Temperature_1->T_Shaft system_1->W 6205 Drive End->ReDGBB_1	40
Temperature_1->T_Shaft system_1->W 6205 Fan End->IR	40
Temperature_1->T_Shaft system_1->W 6205 Fan End->OR	40
Temperature_1->T_Shaft system_1->W 6205 Fan End->ReDGBB_1	40

The maximum of the IR race and OR race temperatures is used as lubrication temperature.

2.4. Spring data

Spring	Axial stiffness [N/mm]	Preload force [N]
Bearing spring_1	241	285

2.5. Loads & speed

Gravity	Gravity field [m/s2]		
	X	Y	Z
Gravity_1	0	0	9.81

Force	Force [N]				Relative position [mm]			
	X	Y	Z	magnitude	X	Y	Z	magnitude
Force_1	0	0	-20	20	0.00	0.00	0.00	0.00
Force_2	0	10	0	10	0.00	0.00	0.00	0.00
Force_3	0	10	0	10	0.00	0.00	0.00	0.00

Force boundary: magnitude and position relative to the interface in defined coordinate system

Boundary	Rotation speed [rpm]
Rotation speed_1	1450

2.6. Tolerances

Clearance class tolerance

Bearing	Clearance class [um]				Clearance class (actual value) [um]
	nominal value	tolerance class	lower limit	upper limit	
Shaft system_1->W 6205 Drive End->manufacturingClearance	0	CN	5	20	12.5
Shaft system_1->W 6205 Fan End->manufacturingClearance	0	CN	5	20	12.5

Bearing tolerance table

		Nominal value [mm]	Tolerance class	Minimum [um]	Maximum [um]	Smoothing [um]
Shaft system_1->W 6205 Drive End						

Clearance setting	middle of tolerances					
Shaft		25	g5	-16	-7	0
IR		25	N	-10	0	2
OR		52	N	-13	0	2
Housing_1		52	G6	10	29	0
Shaft system_1->W 6205 Fan End						
Clearance setting	middle of tolerances					
Shaft		25	g5	-16	-7	0
IR		25	N	-10	0	2
OR		52	N	-13	0	2
Housing_1		52	G6	10	29	0

3. Results

3.1. Loads, static safety & C/P

Bearing	Bearing radial load [N]	Bearing axial load [N]	Forces [N]			Moments [Nm]		
			X	Y	Z	YZ	ZX	XY
W 6205 Drive End	6	220	0	6	220	0	0	0
W 6205 Fan End	14	-232	0	14	-232	0	0	0

Bearing row	Forces [N]			Moments [Nm]		
	X	Y	Z	YZ	ZX	XY
Shaft system_1->W 6205 Drive End->ReDGBB_1	0	6	220	0	0	0
Shaft system_1->W 6205 Fan End->ReDGBB_1	0	14	-232	0	0	0

Bearing	Equivalent static bearing load (P0) [N]	Static safety factor s0	Equivalent dynamic bearing load (P) [N]	C/P
W 6205 Drive End	114	67.3	432	27.1
W 6205 Fan End	124	61.6	455	25.7

Component on the shaft	Position [mm]			Force [N]			Moment [Nm]		
	X	Y	Z	X	Y	Z	YZ	ZX	XY
Shaft system_1->Shaft->intf_Force_1_1	0.0	0.0	23.1	0	0	-20	0	0	0
Shaft system_1->Shaft->intf_Force_2_1	0.0	0.0	4.1	0	10	0	0	0	0
Shaft system_1->Shaft->intf_Force_3_1	0.0	0.0	212.2	0	10	0	0	0	0
Shaft system_1->Shaft->intf_Rotation speed_1_1	0.0	0.0	0.0	0	0	0	0	0	0
Shaft system_1->Shaft->intf_Torque reaction_1_1	0.0	0.0	100.0	0	0	0	0	0	0
Shaft system_1->Shaft->intf_W 6205 Drive End_1	0.0	0.0	60.4	0	-6	-220	0	0	0
Shaft system_1->Shaft->intf_W 6205 Fan End_1	0.0	0.0	126.3	0	-14	232	0	0	0

3.2. Bearing contact data

Bearing	Max pressure (IR) [N/mm2]	Max pressure (OR) [N/mm2]
W 6205 Drive End	1204	1094
W 6205 Fan End	1228	1116

3.3. Bearing clearance

Thermal settings analysis

Analysis	Thermal effects
Static	Thermal expansion active

3.3.1. Single bearing

Single bearing estimated radial clearance

Bearing	Radial (manufacturing) [um]	Radial (before mounting) [um]	Radial (after mounting) [um]	Radial (operational) [um]	Clearance setting
Shaft system_1->W 6205 Drive End	12	12	12	13	middle of tolerances
Shaft system_1->W 6205 Fan End	12	12	12	13	middle of tolerances

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

Single bearing estimated axial clearance

Bearing	Axial (manufacturing) [um]	Axial (before mounting) [um]	Axial (after mounting) [um]	Axial (operational) [um]	Clearance setting
Shaft system_1->W 6205 Drive End	141	141	141	145	middle of tolerances
Shaft system_1->W 6205 Fan End	141	141	141	145	middle of tolerances

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

Single bearing theoretical/probable radial clearance, min/mid/max

Bearing	Setting	Theoretical radial (before mounting) [um]	Theoretical radial (after mounting) [um]	Theoretical radial (operational) [um]	Probable radial (before mounting) [um]	Probable radial (after mounting) [um]	Probable radial (operational) [um]
Shaft system_1->W 6205 Drive End	1) Minimum clearance	5	4	6	5	5	6
	2) At the middle of tolerances	12	12	13	12	12	13
	3) Maximum clearance	20	20	21	20	20	21
Shaft system_1->W 6205 Fan End	1) Minimum clearance	5	4	6	5	5	6
	2) At the middle of	12	12	13	12	12	13

	tolerances						
	3) Maximum clearance	20	20	21	20	20	21

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

Single bearing theoretical/probable axial clearance, min/mid/max

Bearing	Setting	Theoretical axial (before mounting) [um]	Theoretical axial (after mounting) [um]	Theoretical axial (operational) [um]	Probable axial (before mounting) [um]	Probable axial (after mounting) [um]	Probable axial (operational) [um]
Shaft system_1->W 6205 Drive End	1) Minimum clearance	90	82	95	90	90	95
	2) At the middle of tolerances	141	141	145	141	141	145
	3) Maximum clearance	178	178	181	178	178	181
Shaft system_1->W 6205 Fan End	1) Minimum clearance	90	82	95	90	90	95
	2) At the middle of tolerances	141	141	145	141	141	145
	3) Maximum clearance	178	178	181	178	178	181

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

3.4. Relubrication interval & grease life

Bearing	Lubricant	Catalogue relubrication interval [h]	Catalogue grease life [h]	Grease relubrication quantity from the side [gr]	Grease relubrication quantity through centre of the bearing [gr]
W 6205 Drive End	Nyogel 758G	17400	N/A	3.9	N/A
W 6205 Fan End	Nyogel 758G	17400	N/A	3.9	N/A

Grease life is calculated based on the calculation of the relubrication interval.
The limitation of the grease life to 100,000 hours only happens after possible correction factors have been applied.

3.5. Lubrication conditions

Bearing	Lubricant	Bearing speed [rpm]	ndm factor [mm/min]	Lub. temperature [C]	Actual viscosity [mm2/s]	Kappa	etaC
W 6205 Drive End	Nyogel 758G	1450	56550	40	36.0	2.28	0.38
W 6205 Fan End	Nyogel 758G	1450	56550	40	36.0	2.28	0.38

3.6. Bearing rating life

General comments about bearing rating life:

For rating life results above 100.000 hours, other failure modes than those included in the current rating life models will dominate and limit the life of the bearing.

Life value '0' or 'N/A' is shown if the requirements on either minimum load, permissible misalignment or static safety factor is not met.
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Bearing rating life (ISO)

Bearing	Life factor aISO	Basic rating life (ISO 281) (L10h) [h]	Modified rating life (ISO 281) (L10mh) [h]	Modified reference rating life (ISO/TS 16281) (L10mrh) [h]
W 6205 Drive End	26.06	> 200000	> 200000	> 200000
W 6205 Fan End	22.89	195400	> 200000	> 200000

Bearing rating life (SKF load based)

Bearing	Life factor aSKF	SKF load based method (SKF rating life, GBLM) [h]	SKF load based life method	RSF load based [-]
W 6205 Drive End	50.00	> 200000	SKF Rating Life	N/A
W 6205 Fan End	43.31	> 200000	SKF Rating Life	N/A

SKF load based method (SKF rating life, GBLM): Depending on the bearing design features, the SKF rating life (L10m) or the GBLM load based method (L10GM) is used.

Relative surface fatigue factor (RSF) only valid for bearings with GBLM life
RSF ~ 1: the surface takes most of the fatigue
RSF ~ 0: the surface takes almost no fatigue

3.7. Bearing frictional moment & power loss

Bearing	Total frictional moment [Nmm]	Starting torque [Nmm]	Friction torque sources [Nmm]				Power loss [W]
			1) Rolling resistance	2) Sliding	3) Seal	4) Drag	
W 6205 Drive End	24	14	19	5	0	0	4
W 6205 Fan End	25	15	20	5	0	0	4

Based on the mean bearing raceway temperature (average of inner ring and outer ring).
Starting torque: At start 20-30 degC and zero speed

3.8. Bearing frequencies

Bearing	Rotational frequency IR [hertz]	Rotational frequency OR [hertz]	Rotational frequency of RE set and cage [hertz]	Rolling element about its axis [hertz]	Over-rolling frequency of point on IR [hertz]	Over-rolling frequency of point on OR [hertz]	Over-rolling frequency of point on RE [hertz]
W 6205 Drive End	24.17	0	9.70	57.05	130.24	87.26	114.09
W 6205 Fan End	24.17	0	9.70	57.05	130.24	87.26	114.10

3.9. Bearing & shaft displacement

Bearing	Displacement [um]			Misalignment [min]			Total misalignment [min]
	X	Y	Z	YZ	ZX	XY	
W 6205 Drive End	0	0	97	0	0	0	0
W 6205 Fan End	0	0	-98	0	0	0	0

- Bearing displacement and misalignment of inner ring relative to outer ring
- The displacements and misalignments are displayed in the local coordinate system of the bearing

Shaft displacement & misalignment (at interfaces)

Shaft position	Displacement [um]			Misalignment [min]		
	X	Y	Z	YZ	ZX	XY
intf_W 6205 Drive End_1	0	0	14	0.0	0.0	0.0
intf_W 6205 Fan End_1	0	0	46	0.0	0.0	0.0
intf_Force_1_1	0	0	104	0.0	0.0	0.0
intf_Force_2_1	0	0	100	0.0	0.0	0.0

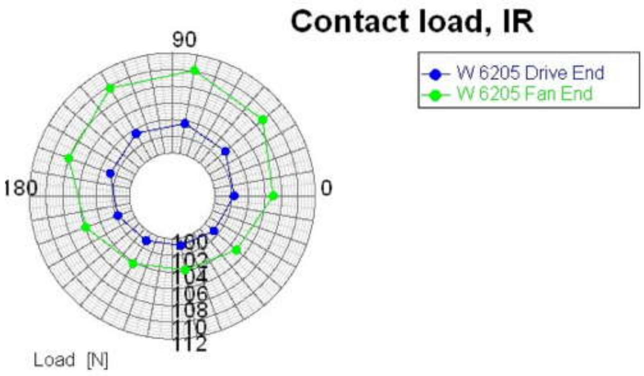
intf_Force_3_1	0	2	143	-0.1	0.0	0.0
intf_Rotation speed_1_1	0	0	100	0.0	0.0	0.0
intf_Torque reaction_1_1	0	0	120	0.0	0.0	0.0
intf_W 6205 Drive End_1	0	0	112	0.0	0.0	0.0
intf_W 6205 Fan End_1	0	0	125	0.0	0.0	0.0

Shaft displacement & misalignment (at positions)

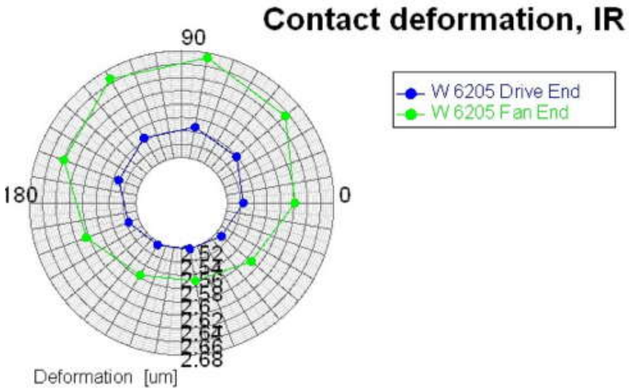
Shaft	Node	Axial position [mm]	Displacement [um]			Misalignment [min]		
			X	Y	Z	YZ	ZX	XY
Shaft	1	0.00	0	0	100	0.0	0.0	0.0
	2	0.50	0	0	100	0.0	0.0	0.0
	3	4.10	0	0	100	0.0	0.0	0.0
	4	13.55	0	0	102	0.0	0.0	0.0
	5	23.00	0	0	104	0.0	0.0	0.0
	6	23.10	0	0	104	0.0	0.0	0.0
	7	33.10	0	0	106	0.0	0.0	0.0
	8	43.10	0	0	108	0.0	0.0	0.0
	9	43.60	0	0	108	0.0	0.0	0.0
	10	52.40	0	0	110	0.0	0.0	0.0
	11	52.90	0	0	110	0.0	0.0	0.0
	12	60.40	0	0	112	0.0	0.0	0.0
	13	70.30	0	0	114	0.0	0.0	0.0
	14	80.20	0	0	116	0.0	0.0	0.0
	15	90.10	0	0	118	0.0	0.0	0.0
	16	100.00	0	0	120	0.0	0.0	0.0
	17	108.77	0	0	122	0.0	0.0	0.0
	18	117.53	0	0	123	0.0	0.0	0.0
	19	126.30	0	0	125	0.0	0.0	0.0
	20	134.20	0	0	126	0.0	0.0	0.0
	21	134.70	0	0	126	0.0	0.0	0.0
	22	144.20	0	0	127	0.0	0.0	0.0
	23	144.70	0	0	127	0.0	0.0	0.0
	24	153.52	0	0	129	-0.1	0.0	0.0
	25	162.34	0	1	130	-0.1	0.0	0.0
	26	171.16	0	1	132	-0.1	0.0	0.0
	27	179.98	0	1	133	-0.1	0.0	0.0
	28	188.80	0	1	135	-0.1	0.0	0.0
	29	193.80	0	2	136	-0.1	0.0	0.0
	30	198.40	0	2	137	-0.1	0.0	0.0

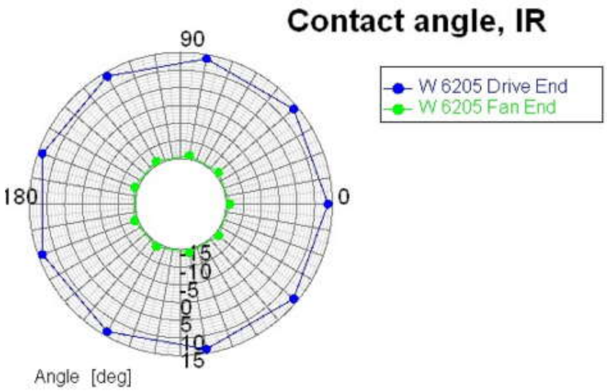
	31	203.00	0	2	139	-0.1	0.0	0.0
	32	207.60	0	2	141	-0.1	0.0	0.0
	33	212.20	0	2	143	-0.1	0.0	0.0
	34	217.20	0	3	143	-0.1	0.0	0.0
	35	222.20	0	3	143	-0.1	0.0	0.0
	36	226.70	0	3	143	-0.1	0.0	0.0
	37	231.20	0	3	143	-0.1	0.0	0.0
	38	235.70	0	3	143	-0.1	0.0	0.0
	39	240.20	0	4	143	-0.1	0.0	0.0
	40	241.20	0	4	143	-0.1	0.0	0.0

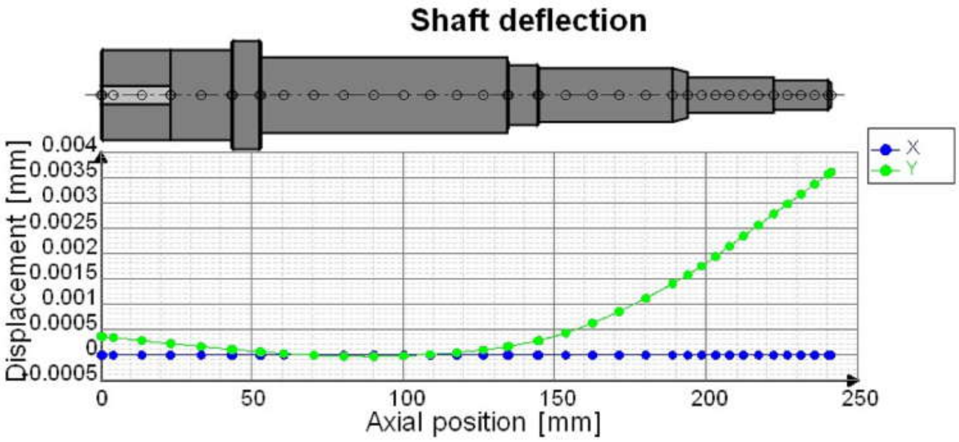
3.10. Charts



Contact load, IR
W 6205 Drive End
W 6205 Fan End
90
180
0
100
102
104
106
108
110
112
Load [N]


Contact deformation, IR
90
180
0
W 6205 Drive End
W 6205 Fan End
Deformation [um]


Contact angle, IR
90
180
0
W 6205 Drive End
W 6205 Fan End
-15
-10
-5
0
5
10
15
Angle [deg]


Shaft deflection
Displacement [mm]
0.004
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
-0.0005
0
50
100
150
200
250
Axial position [mm]
X
Y

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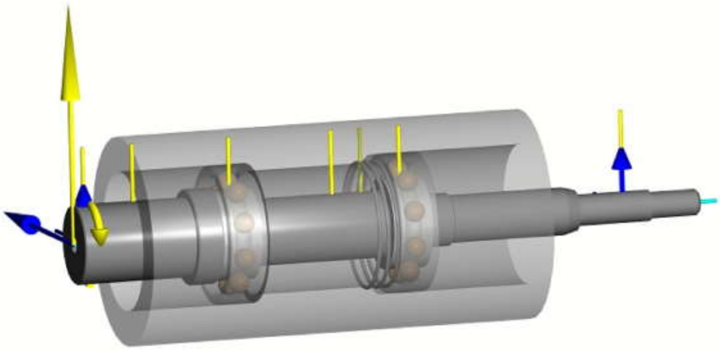
Sterilisation Fan Bearing Housing @ 70C



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Division: Specialist Tooling Technologies
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W 6205 Drive End	1.58	> 200000	> 200000	> 200000
W 6205 Fan End	1.49	> 200000	> 200000	> 200000

Bearing rating life (SKF load based)

Bearing	Life factor aSKF	SKF load based method (SKF rating life, GBLM) [h]	SKF load based life method	RSF load based [-]
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W 6205 Fan End	2.33	> 200000	SKF Rating Life	N/A

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Relative surface fatigue factor (RSF) only valid for bearings with GBLM life
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2.1. Bearing data

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W 6205 Fan End	W 6205	DGBB	SKF Standard	25	52	15

Bearing	Basic dynamic load rating (C) [kN]	Basic static load rating (C0) [kN]	Fatigue load limit (Pu) [kN]	Reference speed [rpm]	Limiting speed [rpm]
W 6205 Drive End	11.7	7.65	0.335	30000	19000
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2.2. Lubricant data

Lubricant	Viscosity at 40 C [mm2/s]	Viscosity at 100 C [mm2/s]	With effective EP additives
	nominal value	nominal value	
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Nyogel 758G	36.00	6.60	Off

Lubricant	Contamination type	ISO Diagram	Grease cleanliness
36-6.6->ContaminationModel	ISO 281 2007	Grease	Grease - normal cleanliness
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2.3. Temperatures

Boundary / interface	Temperature [C]
Temperature_1->T_Shaft system_1->Shaft->intf_W 6205 Drive End_1	70
Temperature_1->T_Shaft system_1->Shaft->intf_W 6205 Fan End_1	70
Temperature_1->T_Shaft system_1->W 6205 Drive End->IR	70
Temperature_1->T_Shaft system_1->W 6205 Drive End->OR	70
Temperature_1->T_Shaft system_1->W 6205 Drive End->ReDGBB_1	70
Temperature_1->T_Shaft system_1->W 6205 Fan End->IR	70

Temperature_1->T_Shaft system_1->W 6205 Fan End->OR	70
Temperature_1->T_Shaft system_1->W 6205 Fan End->ReDGBB_1	70

The maximum of the IR race and OR race temperatures is used as lubrication temperature.

2.4. Spring data

Spring	Axial stiffness [N/mm]	Preload force [N]
Bearing spring_1	241	285

2.5. Loads & speed

Gravity	Gravity field [m/s2]		
	X	Y	Z
Gravity_1	0	0	9.81

Force	Force [N]				Relative position [mm]			
	X	Y	Z	magnitude	X	Y	Z	magnitude
Force_1	0	0	-20	20	0.00	0.00	0.00	0.00
Force_2	0	10	0	10	0.00	0.00	0.00	0.00
Force_3	0	10	0	10	0.00	0.00	0.00	0.00

Force boundary: magnitude and position relative to the interface in defined coordinate system

Boundary	Rotation speed [rpm]
Rotation speed_1	1450

2.6. Tolerances

Clearance class tolerance

Bearing	Clearance class [um]				Clearance class (actual value) [um]
	nominal value	tolerance class	lower limit	upper limit	
Shaft system_1->W 6205 Drive End->manufacturingClearance	0	CN	5	20	12.5
Shaft system_1->W 6205 Fan End->manufacturingClearance	0	CN	5	20	12.5

Bearing tolerance table

		Nominal value [mm]	Tolerance class	Minimum [um]	Maximum [um]	Smoothing [um]
Shaft system_1->W 6205 Drive End						
Clearance setting	middle of tolerances					
Shaft		25	g5	-16	-7	0
IR		25	N	-10	0	2
OR		52	N	-13	0	2
Housing_1		52	G6	10	29	0
Shaft system_1->W 6205 Fan End						
Clearance setting	middle of tolerances					
Shaft		25	g5	-16	-7	0
IR		25	N	-10	0	2
OR		52	N	-13	0	2
Housing_1		52	G6	10	29	0

3. Results

3.1. Loads, static safety & C/P

Bearing	Bearing radial load [N]	Bearing axial load [N]	Forces [N]			Moments [Nm]		
			X	Y	Z	YZ	ZX	XY
W 6205 Drive End	6	209	0	6	209	0	0	0
W 6205 Fan End	14	-221	0	14	-221	0	0	0

Bearing row	Forces [N]			Moments [Nm]		
	X	Y	Z	YZ	ZX	XY
Shaft system_1->W 6205 Drive End->ReDGBB_1	0	6	209	0	0	0
Shaft system_1->W 6205 Fan End->ReDGBB_1	0	14	-221	0	0	0

Bearing	Equivalent static bearing load (P0) [N]	Static safety factor s0	Equivalent dynamic bearing load (P) [N]	C/P
W 6205 Drive End	108	70.6	415	28.2
W 6205 Fan End	119	64.4	438	26.7

Component on the shaft	Position [mm]			Force [N]			Moment [Nm]		
	X	Y	Z	X	Y	Z	YZ	ZX	XY
Shaft system_1->Shaft->intf_Force_1_1	0.0	0.0	23.1	0	0	-20	0	0	0
Shaft system_1->Shaft->intf_Force_2_1	0.0	0.0	4.1	0	10	0	0	0	0
Shaft system_1->Shaft->intf_Force_3_1	0.0	0.0	212.2	0	10	0	0	0	0
Shaft system_1->Shaft->intf_Rotation speed_1_1	0.0	0.0	0.0	0	0	0	0	0	0
Shaft system_1->Shaft->intf_Torque reaction_1_1	0.0	0.0	100.0	0	0	0	0	0	0
Shaft system_1->Shaft->intf_W 6205 Drive End_1	0.0	0.0	60.4	0	-6	-209	0	0	0
Shaft system_1->Shaft->intf_W 6205 Fan End_1	0.0	0.0	126.3	0	-14	221	0	0	0

3.2. Bearing contact data

Bearing	Max pressure (IR) [N/mm2]	Max pressure (OR) [N/mm2]
W 6205 Drive End	1182	1074
W 6205 Fan End	1208	1097

3.3. Bearing clearance

Thermal settings analysis

Analysis	Thermal effects
Static	Thermal expansion active

3.3.1. Single bearing

Single bearing estimated radial clearance

Bearing	Radial (manufacturing) [um]	Radial (before mounting) [um]	Radial (after mounting) [um]	Radial (operational) [um]	Clearance setting
Shaft system_1->W 6205 Drive End	12	12	12	14	middle of tolerances
Shaft system_1->W 6205 Fan End	12	12	12	14	middle of tolerances

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

Single bearing estimated axial clearance

Bearing	Axial (manufacturing) [um]	Axial (before mounting) [um]	Axial (after mounting) [um]	Axial (operational) [um]	Clearance setting
Shaft system_1->W 6205 Drive End	141	141	141	150	middle of tolerances
Shaft system_1->W 6205 Fan End	141	141	141	150	middle of tolerances

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

Single bearing theoretical/probable radial clearance, min/mid/max

Bearing	Setting	Theoretical radial (before mounting) [um]	Theoretical radial (after mounting) [um]	Theoretical radial (operational) [um]	Probable radial (before mounting) [um]	Probable radial (after mounting) [um]	Probable radial (operational) [um]
Shaft system_1->W 6205 Drive End	1) Minimum clearance	5	4	7	5	5	7
	2) At the middle of tolerances	12	12	14	12	12	14
	3) Maximum clearance	20	20	22	20	20	22
Shaft system_1->W 6205 Fan End	1) Minimum clearance	5	4	7	5	5	7
	2) At the middle of	12	12	14	12	12	14

	tolerances						
	3) Maximum clearance	20	20	22	20	20	22

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

Single bearing theoretical/probable axial clearance, min/mid/max

Bearing	Setting	Theoretical axial (before mounting) [um]	Theoretical axial (after mounting) [um]	Theoretical axial (operational) [um]	Probable axial (before mounting) [um]	Probable axial (after mounting) [um]	Probable axial (operational) [um]
Shaft system_1->W 6205 Drive End	1) Minimum clearance	90	82	103	90	90	103
	2) At the middle of tolerances	141	141	150	141	141	150
	3) Maximum clearance	178	178	185	178	178	185
Shaft system_1->W 6205 Fan End	1) Minimum clearance	90	82	103	90	90	103
	2) At the middle of tolerances	141	141	150	141	141	150
	3) Maximum clearance	178	178	185	178	178	185

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

3.4. Relubrication interval & grease life

Bearing	Lubricant	Catalogue relubrication interval [h]	Catalogue grease life [h]	Grease relubrication quantity from the side [gr]	Grease relubrication quantity through centre of the bearing [gr]
W 6205 Drive End	Nyogel 758G	8700	N/A	3.9	N/A
W 6205 Fan End	Nyogel 758G	8700	N/A	3.9	N/A

Grease life is calculated based on the calculation of the relubrication interval.
The limitation of the grease life to 100,000 hours only happens after possible correction factors have been applied.

3.5. Lubrication conditions

Bearing	Lubricant	Bearing speed [rpm]	ndm factor [mm/min]	Lub. temperature [C]	Actual viscosity [mm2/s]	Kappa	etaC
W 6205 Drive End	Nyogel 758G	1450	56550	70	13.4	0.85	0.19
W 6205 Fan End	Nyogel 758G	1450	56550	70	13.4	0.85	0.19

3.6. Bearing rating life

General comments about bearing rating life:

For rating life results above 100.000 hours, other failure modes than those included in the current rating life models will dominate and limit the life of the bearing.

Life value '0' or 'N/A' is shown if the requirements on either minimum load, permissible misalignment or static safety factor is not met.
If one case in duty cycle does not meet requirements, system life reverts to 0 (or N/A).

For detailed information and assumptions concerning the fatigue life calculation methodology refer to the ISO standard.
Individual bearing life can only be predicted statistically. Life calculations refer only to a bearing population and a given degree of reliability, i.e. 90%. Furthermore field failures are not generally caused by fatigue, but are more often caused by contamination, wear, misalignment and corrosion, or as a result of cage, lubrication or seal failure.

Bearing rating life (ISO)

Bearing	Life factor aISO	Basic rating life (ISO 281) (L10h) [h]	Modified rating life (ISO 281) (L10mh) [h]	Modified reference rating life (ISO/TS 16281) (L10mrh) [h]
W 6205 Drive End	1.58	> 200000	> 200000	> 200000
W 6205 Fan End	1.49	> 200000	> 200000	> 200000

Bearing rating life (SKF load based)

Bearing	Life factor aSKF	SKF load based method (SKF rating life, GBLM) [h]	SKF load based life method	RSF load based [-]
W 6205 Drive End	2.49	> 200000	SKF Rating Life	N/A
W 6205 Fan End	2.33	> 200000	SKF Rating Life	N/A

SKF load based method (SKF rating life, GBLM): Depending on the bearing design features, the SKF rating life (L10m) or the GBLM load based method (L10GM) is used.

Relative surface fatigue factor (RSF) only valid for bearings with GBLM life
RSF ~ 1: the surface takes most of the fatigue
RSF ~ 0: the surface takes almost no fatigue

3.7. Bearing frictional moment & power loss

Bearing	Total frictional moment [Nmm]	Starting torque [Nmm]	Friction torque sources [Nmm]				Power loss [W]
			1) Rolling resistance	2) Sliding	3) Seal	4) Drag	
W 6205 Drive End	17	13	11	7	0	0	3
W 6205 Fan End	18	14	11	7	0	0	3

Based on the mean bearing raceway temperature (average of inner ring and outer ring).
Starting torque: At start 20-30 degC and zero speed

3.8. Bearing frequencies

Bearing	Rotational frequency IR [hertz]	Rotational frequency OR [hertz]	Rotational frequency of RE set and cage [hertz]	Rolling element about its axis [hertz]	Over-rolling frequency of point on IR [hertz]	Over-rolling frequency of point on OR [hertz]	Over-rolling frequency of point on RE [hertz]
W 6205 Drive End	24.17	0	9.70	57.05	130.23	87.27	114.10
W 6205 Fan End	24.17	0	9.70	57.05	130.22	87.28	114.10

3.9. Bearing & shaft displacement

Bearing	Displacement [um]			Misalignment [min]			Total misalignment [min]
	X	Y	Z	YZ	ZX	XY	
W 6205 Drive End	0	0	98	0	0	0	0
W 6205 Fan End	0	0	-99	0	0	0	0

- Bearing displacement and misalignment of inner ring relative to outer ring
- The displacements and misalignments are displayed in the local coordinate system of the bearing

Shaft displacement & misalignment (at interfaces)

Shaft position	Displacement [um]			Misalignment [min]		
	X	Y	Z	YZ	ZX	XY
intf_W 6205 Drive End_1	0	0	36	0.0	0.0	0.0
intf_W 6205 Fan End_1	0	0	115	0.0	0.0	0.0
intf_Force_1_1	0	0	116	0.0	0.0	0.0
intf_Force_2_1	0	0	106	0.0	0.0	0.0

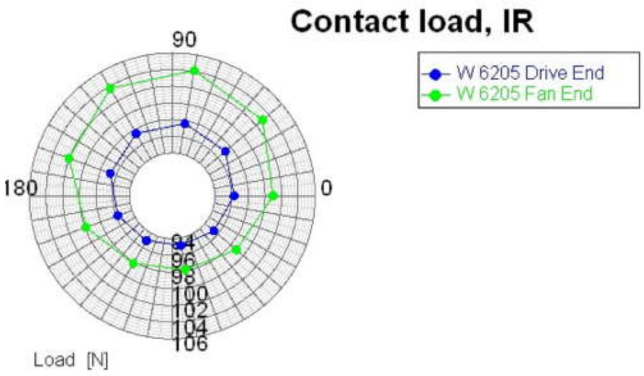
intf_Force_3_1	0	2	212	-0.1	0.0	0.0
intf_Rotation speed_1_1	0	0	104	0.0	0.0	0.0
intf_Torque reaction_1_1	0	0	155	0.0	0.0	0.0
intf_W 6205 Drive End_1	0	0	135	0.0	0.0	0.0
intf_W 6205 Fan End_1	0	0	168	0.0	0.0	0.0

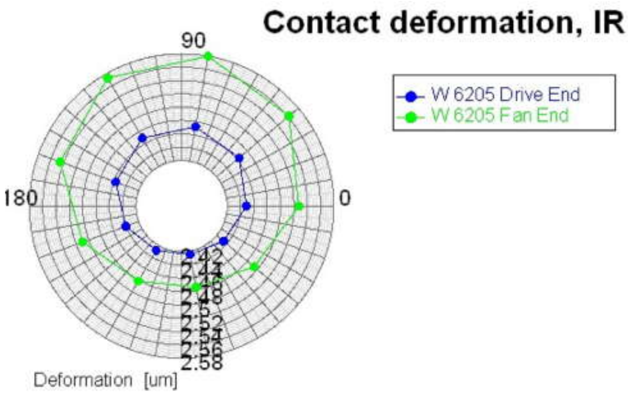
Shaft displacement & misalignment (at positions)

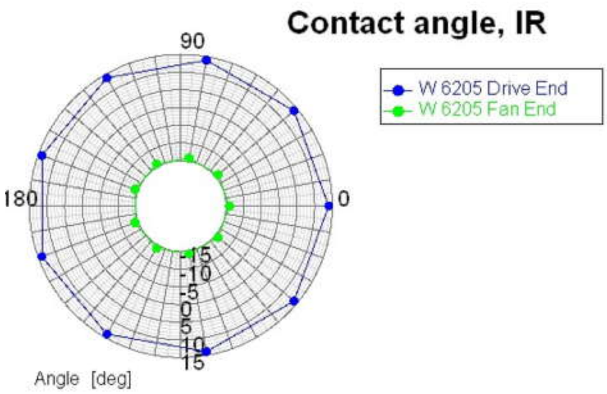
Shaft	Node	Axial position [mm]	Displacement [um]			Misalignment [min]		
			X	Y	Z	YZ	ZX	XY
Shaft	1	0.00	0	0	104	0.0	0.0	0.0
	2	0.50	0	0	104	0.0	0.0	0.0
	3	4.10	0	0	106	0.0	0.0	0.0
	4	13.55	0	0	111	0.0	0.0	0.0
	5	23.00	0	0	116	0.0	0.0	0.0
	6	23.10	0	0	116	0.0	0.0	0.0
	7	33.10	0	0	121	0.0	0.0	0.0
	8	43.10	0	0	126	0.0	0.0	0.0
	9	43.60	0	0	126	0.0	0.0	0.0
	10	52.40	0	0	129	0.0	0.0	0.0
	11	52.90	0	0	129	0.0	0.0	0.0
	12	60.40	0	0	135	0.0	0.0	0.0
	13	70.30	0	0	140	0.0	0.0	0.0
	14	80.20	0	0	145	0.0	0.0	0.0
	15	90.10	0	0	150	0.0	0.0	0.0
	16	100.00	0	0	155	0.0	0.0	0.0
	17	108.77	0	0	159	0.0	0.0	0.0
	18	117.53	0	0	164	0.0	0.0	0.0
	19	126.30	0	0	168	0.0	0.0	0.0
	20	134.20	0	0	170	0.0	0.0	0.0
	21	134.70	0	0	170	0.0	0.0	0.0
	22	144.20	0	0	173	0.0	0.0	0.0
	23	144.70	0	0	173	0.0	0.0	0.0
	24	153.52	0	0	177	-0.1	0.0	0.0
	25	162.34	0	1	181	-0.1	0.0	0.0
	26	171.16	0	1	184	-0.1	0.0	0.0
	27	179.98	0	1	188	-0.1	0.0	0.0
	28	188.80	0	1	191	-0.1	0.0	0.0
	29	193.80	0	2	194	-0.1	0.0	0.0
	30	198.40	0	2	198	-0.1	0.0	0.0

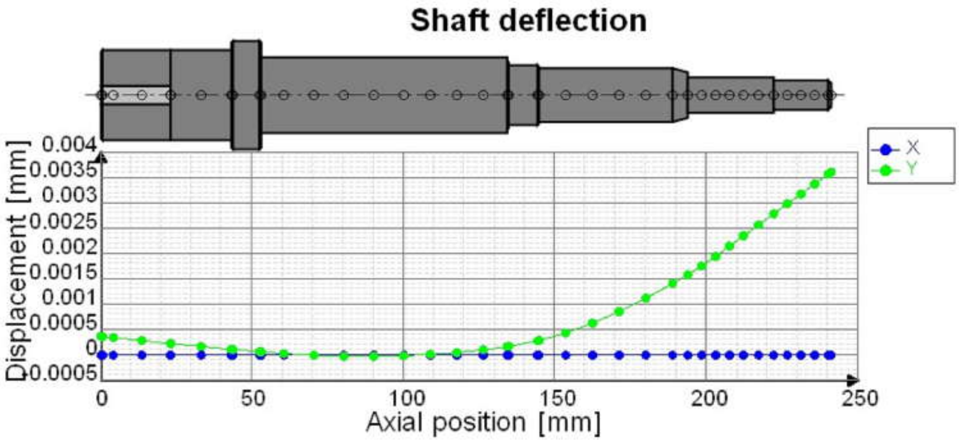
	31	203.00	0	2	203	-0.1	0.0	0.0
	32	207.60	0	2	207	-0.1	0.0	0.0
	33	212.20	0	2	212	-0.1	0.0	0.0
	34	217.20	0	3	212	-0.1	0.0	0.0
	35	222.20	0	3	212	-0.1	0.0	0.0
	36	226.70	0	3	212	-0.1	0.0	0.0
	37	231.20	0	3	212	-0.1	0.0	0.0
	38	235.70	0	3	212	-0.1	0.0	0.0
	39	240.20	0	4	212	-0.1	0.0	0.0
	40	241.20	0	4	212	-0.1	0.0	0.0

3.10. Charts


Contact load, IR
90
180
0
94
96
98
100
102
104
106
Load [N]
W 6205 Drive End
W 6205 Fan End

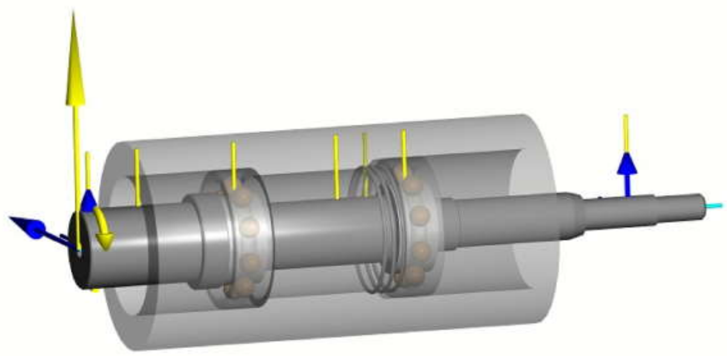

Contact deformation, IR
W 6205 Drive End
W 6205 Fan End
90
180
0
2.42
2.58
Deformation [um]


Contact angle, IR
W 6205 Drive End
W 6205 Fan End
90
180
0
-15
-10
-5
0
5
10
15
Angle [deg]


Shaft deflection
Displacement [mm]
0.004
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
-0.0005
0
50
100
150
200
250
Axial position [mm]
X
Y

SKF SimPro Quick

Sterilisation Fan Bearing Housing @ 80C



Author: George Hutsby
Department: Design Engineering
Division: Specialist Tooling Technologies

Project number: 41005
Description: Axial Load is Mass of moving parts plus force applied by spring on 6205-2 loose fit outer ring. Radial load is that created by axial displacement of bearings due to Axial Load.As there is very little

load applied, the limiting factor is that the minimum load requiredis met to prevent bearing skid.

Date:	Fri Aug 22 11:39:39 2025
Version:	SKF SimPro Quick 4.10

1. Abstract

General comments about bearing rating life:

For rating life results above 100.000 hours, other failure modes than those included in the current rating life models will dominate and limit the life of the bearing.

Life value '0' or 'N/A' is shown if the requirements on either minimum load, permissible misalignment or static safety factor is not met.
If one case in duty cycle does not meet requirements, system life reverts to 0 (or N/A).

For detailed information and assumptions concerning the fatigue life calculation methodology refer to the ISO standard.
Individual bearing life can only be predicted statistically. Life calculations refer only to a bearing population and a given degree of reliability, i.e. 90%. Furthermore field failures are not generally caused by fatigue, but are more often caused by contamination, wear, misalignment and corrosion, or as a result of cage, lubrication or seal failure.

Bearing rating life (ISO)

Bearing	Life factor aISO	Basic rating life (ISO 281) (L10h) [h]	Modified rating life (ISO 281) (L10mh) [h]	Modified reference rating life (ISO/TS 16281) (L10mrh) [h]
W 6205 Drive End	0.72	> 200000	194000	> 200000
W 6205 Fan End	0.69	> 200000	157600	> 200000

Bearing rating life (SKF load based)

Bearing	Life factor aSKF	SKF load based method (SKF rating life, GBLM) [h]	SKF load based life method	RSF load based [-]
W 6205 Drive End	1.28	> 200000	SKF Rating Life	N/A
W 6205 Fan End	1.21	> 200000	SKF Rating Life	N/A

SKF load based method (SKF rating life, GBLM): Depending on the bearing design features, the SKF rating life (L10m) or the GBLM load based method (L10GM) is used.

Relative surface fatigue factor (RSF) only valid for bearings with GBLM life
RSF ~ 1: the surface takes most of the fatigue
RSF ~ 0: the surface takes almost no fatigue

2. Input

2.1. Bearing data

Bearing	Bearing designation	Bearing type	Performance class	Bore diameter (d) [mm]	Outer diameter (D) [mm]	Bearing width (B) [mm]
				nominal value	nominal value	nominal value
W 6205 Drive End	W 6205	DGBB	SKF Standard	25	52	15
W 6205 Fan End	W 6205	DGBB	SKF Standard	25	52	15

Bearing	Basic dynamic load rating (C) [kN]	Basic static load rating (C0) [kN]	Fatigue load limit (Pu) [kN]	Reference speed [rpm]	Limiting speed [rpm]
W 6205 Drive End	11.7	7.65	0.335	30000	19000
W 6205 Fan End	11.7	7.65	0.335	30000	19000

2.2. Lubricant data

Lubricant	Viscosity at 40 C [mm2/s]	Viscosity at 100 C [mm2/s]	With effective EP additives
	nominal value	nominal value	
Nyogel 758G	36.00	6.60	Off

Lubricant	Contamination type	ISO Diagram	Grease cleanliness
Nyogel 758G->ContaminationModel	ISO 281 2007	Grease	Grease - normal cleanliness

2.3. Temperatures

Boundary / interface	Temperature [C]
Temperature_1->T_Shaft system_1->Shaft->intf_W 6205 Drive End_1	80
Temperature_1->T_Shaft system_1->Shaft->intf_W 6205 Fan End_1	80
Temperature_1->T_Shaft system_1->W 6205 Drive End->IR	80
Temperature_1->T_Shaft system_1->W 6205 Drive End->OR	80
Temperature_1->T_Shaft system_1->W 6205 Drive End->ReDGBB_1	80
Temperature_1->T_Shaft system_1->W 6205 Fan End->IR	80
Temperature_1->T_Shaft system_1->W 6205 Fan End->OR	80
Temperature_1->T_Shaft system_1->W 6205 Fan End->ReDGBB_1	80

The maximum of the IR race and OR race temperatures is used as lubrication temperature.

2.4. Spring data

Spring	Axial stiffness [N/mm]	Preload force [N]
Bearing spring_1	241	285

2.5. Loads & speed

Gravity	Gravity field [m/s2]		
	X	Y	Z
Gravity_1	0	0	9.81

Force	Force [N]				Relative position [mm]			
	X	Y	Z	magnitude	X	Y	Z	magnitude
Force_1	0	0	-20	20	0.00	0.00	0.00	0.00
Force_2	0	10	0	10	0.00	0.00	0.00	0.00
Force_3	0	10	0	10	0.00	0.00	0.00	0.00

Force boundary: magnitude and position relative to the interface in defined coordinate system

Boundary	Rotation speed [rpm]
Rotation speed_1	1450

2.6. Tolerances

Clearance class tolerance

Bearing	Clearance class [um]				Clearance class (actual value) [um]
	nominal value	tolerance class	lower limit	upper limit	
Shaft system_1->W 6205 Drive End->manufacturingClearance	0	CN	5	20	12.5
Shaft system_1->W 6205 Fan End->manufacturingClearance	0	CN	5	20	12.5

Bearing tolerance table

		Nominal value [mm]	Tolerance class	Minimum [um]	Maximum [um]	Smoothing [um]
Shaft system_1->W 6205 Drive End						

Clearance setting	middle of tolerances					
Shaft		25	g5	-16	-7	0
IR		25	N	-10	0	2
OR		52	N	-13	0	2
Housing_1		52	G6	10	29	0
Shaft system_1->W 6205 Fan End						
Clearance setting	middle of tolerances					
Shaft		25	g5	-16	-7	0
IR		25	N	-10	0	2
OR		52	N	-13	0	2
Housing_1		52	G6	10	29	0

3. Results

3.1. Loads, static safety & C/P

Bearing	Bearing radial load [N]	Bearing axial load [N]	Forces [N]			Moments [Nm]		
			X	Y	Z	YZ	ZX	XY
W 6205 Drive End	6	206	0	6	206	0	0	0
W 6205 Fan End	14	-217	0	14	-217	0	0	0

Bearing row	Forces [N]			Moments [Nm]		
	X	Y	Z	YZ	ZX	XY
Shaft system_1->W 6205 Drive End->ReDGBB_1	0	6	206	0	0	0
Shaft system_1->W 6205 Fan End->ReDGBB_1	0	14	-217	0	0	0

Bearing	Equivalent static bearing load (P0) [N]	Static safety factor s0	Equivalent dynamic bearing load (P) [N]	C/P
W 6205 Drive End	107	71.8	409	28.6
W 6205 Fan End	117	65.4	432	27.1

Component on the shaft	Position [mm]			Force [N]			Moment [Nm]		
	X	Y	Z	X	Y	Z	YZ	ZX	XY
Shaft system_1->Shaft->intf_Force_1_1	0.0	0.0	23.1	0	0	-20	0	0	0
Shaft system_1->Shaft->intf_Force_2_1	0.0	0.0	4.1	0	10	0	0	0	0
Shaft system_1->Shaft->intf_Force_3_1	0.0	0.0	212.2	0	10	0	0	0	0
Shaft system_1->Shaft->intf_Rotation speed_1_1	0.0	0.0	0.0	0	0	0	0	0	0
Shaft system_1->Shaft->intf_Torque reaction_1_1	0.0	0.0	100.0	0	0	0	0	0	0
Shaft system_1->Shaft->intf_W 6205 Drive End_1	0.0	0.0	60.4	0	-6	-205	0	0	0
Shaft system_1->Shaft->intf_W 6205 Fan End_1	0.0	0.0	126.3	0	-14	218	0	0	0

3.2. Bearing contact data

Bearing	Max pressure (IR) [N/mm2]	Max pressure (OR) [N/mm2]
W 6205 Drive End	1175	1067
W 6205 Fan End	1201	1090

3.3. Bearing clearance

Thermal settings analysis

Analysis	Thermal effects
Static	Thermal expansion active

3.3.1. Single bearing

Single bearing estimated radial clearance

Bearing	Radial (manufacturing) [um]	Radial (before mounting) [um]	Radial (after mounting) [um]	Radial (operational) [um]	Clearance setting
Shaft system_1->W 6205 Drive End	12	12	12	14	middle of tolerances
Shaft system_1->W 6205 Fan End	12	12	12	14	middle of tolerances

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

Single bearing estimated axial clearance

Bearing	Axial (manufacturing) [um]	Axial (before mounting) [um]	Axial (after mounting) [um]	Axial (operational) [um]	Clearance setting
Shaft system_1->W 6205 Drive End	141	141	141	151	middle of tolerances
Shaft system_1->W 6205 Fan End	141	141	141	151	middle of tolerances

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

Single bearing theoretical/probable radial clearance, min/mid/max

Bearing	Setting	Theoretical radial (before mounting) [um]	Theoretical radial (after mounting) [um]	Theoretical radial (operational) [um]	Probable radial (before mounting) [um]	Probable radial (after mounting) [um]	Probable radial (operational) [um]
Shaft system_1->W 6205 Drive End	1) Minimum clearance	5	4	7	5	5	7
	2) At the middle of tolerances	12	12	14	12	12	14
	3) Maximum clearance	20	20	22	20	20	22
Shaft system_1->W 6205 Fan End	1) Minimum clearance	5	4	7	5	5	7
	2) At the middle of	12	12	14	12	12	14

	tolerances						
	3) Maximum clearance	20	20	22	20	20	22

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

Single bearing theoretical/probable axial clearance, min/mid/max

Bearing	Setting	Theoretical axial (before mounting) [um]	Theoretical axial (after mounting) [um]	Theoretical axial (operational) [um]	Probable axial (before mounting) [um]	Probable axial (after mounting) [um]	Probable axial (operational) [um]
Shaft system_1->W 6205 Drive End	1) Minimum clearance	90	82	105	90	90	105
	2) At the middle of tolerances	141	141	151	141	141	151
	3) Maximum clearance	178	178	186	178	178	186
Shaft system_1->W 6205 Fan End	1) Minimum clearance	90	82	105	90	90	105
	2) At the middle of tolerances	141	141	151	141	141	151
	3) Maximum clearance	178	178	186	178	178	186

Estimated operational clearance/preload values are shown. These can differ slightly from the actual operational clearance or preload in the final analysis.
Considers only a single bearing.
The elongation or displacements of the shaft and housing are not taken into account.

3.4. Relubrication interval & grease life

Bearing	Lubricant	Catalogue relubrication interval [h]	Catalogue grease life [h]	Grease relubrication quantity from the side [gr]	Grease relubrication quantity through centre of the bearing [gr]
W 6205 Drive End	Nyogel 758G	5500	N/A	3.9	N/A
W 6205 Fan End	Nyogel 758G	5500	N/A	3.9	N/A

Grease life is calculated based on the calculation of the relubrication interval.
The limitation of the grease life to 100,000 hours only happens after possible correction factors have been applied.

3.5. Lubrication conditions

Bearing	Lubricant	Bearing speed [rpm]	ndm factor [mm/min]	Lub. temperature [C]	Actual viscosity [mm2/s]	Kappa	etaC
W 6205 Drive End	Nyogel 758G	1450	56550	80	10.3	0.65	0.16
W 6205 Fan End	Nyogel 758G	1450	56550	80	10.3	0.65	0.16

3.6. Bearing rating life

General comments about bearing rating life:

For rating life results above 100.000 hours, other failure modes than those included in the current rating life models will dominate and limit the life of the bearing.

Life value '0' or 'N/A' is shown if the requirements on either minimum load, permissible misalignment or static safety factor is not met.
If one case in duty cycle does not meet requirements, system life reverts to 0 (or N/A).

For detailed information and assumptions concerning the fatigue life calculation methodology refer to the ISO standard.
Individual bearing life can only be predicted statistically. Life calculations refer only to a bearing population and a given degree of reliability, i.e. 90%. Furthermore field failures are not generally caused by fatigue, but are more often caused by contamination, wear, misalignment and corrosion, or as a result of cage, lubrication or seal failure.

Bearing rating life (ISO)

Bearing	Life factor aISO	Basic rating life (ISO 281) (L10h) [h]	Modified rating life (ISO 281) (L10mh) [h]	Modified reference rating life (ISO/TS 16281) (L10mrh) [h]
W 6205 Drive End	0.72	> 200000	194000	> 200000
W 6205 Fan End	0.69	> 200000	157600	> 200000

Bearing rating life (SKF load based)

Bearing	Life factor aSKF	SKF load based method (SKF rating life, GBLM) [h]	SKF load based life method	RSF load based [-]
W 6205 Drive End	1.28	> 200000	SKF Rating Life	N/A
W 6205 Fan End	1.21	> 200000	SKF Rating Life	N/A

SKF load based method (SKF rating life, GBLM): Depending on the bearing design features, the SKF rating life (L10m) or the GBLM load based method (L10GM) is used.

Relative surface fatigue factor (RSF) only valid for bearings with GBLM life
RSF ~ 1: the surface takes most of the fatigue
RSF ~ 0: the surface takes almost no fatigue

3.7. Bearing frictional moment & power loss

Bearing	Total frictional moment [Nmm]	Starting torque [Nmm]	Friction torque sources [Nmm]				Power loss [W]
			1) Rolling resistance	2) Sliding	3) Seal	4) Drag	
W 6205 Drive End	16	13	9	7	0	0	3
W 6205 Fan End	17	14	10	8	0	0	3

Based on the mean bearing raceway temperature (average of inner ring and outer ring).
Starting torque: At start 20-30 degC and zero speed

3.8. Bearing frequencies

Bearing	Rotational frequency IR [hertz]	Rotational frequency OR [hertz]	Rotational frequency of RE set and cage [hertz]	Rolling element about its axis [hertz]	Over-rolling frequency of point on IR [hertz]	Over-rolling frequency of point on OR [hertz]	Over-rolling frequency of point on RE [hertz]
W 6205 Drive End	24.17	0	9.70	57.05	130.22	87.28	114.10
W 6205 Fan End	24.17	0	9.70	57.05	130.22	87.28	114.11

3.9. Bearing & shaft displacement

Bearing	Displacement [um]			Misalignment [min]			Total misalignment [min]
	X	Y	Z	YZ	ZX	XY	
W 6205 Drive End	0	0	99	0	0	0	0
W 6205 Fan End	0	0	-100	0	0	0	0

- Bearing displacement and misalignment of inner ring relative to outer ring
- The displacements and misalignments are displayed in the local coordinate system of the bearing

Shaft displacement & misalignment (at interfaces)

Shaft position	Displacement [um]			Misalignment [min]		
	X	Y	Z	YZ	ZX	XY
intf_W 6205 Drive End_1	0	0	43	0.0	0.0	0.0
intf_W 6205 Fan End_1	0	0	138	0.0	0.0	0.0
intf_Force_1_1	0	0	120	0.0	0.0	0.0
intf_Force_2_1	0	0	108	0.0	0.0	0.0

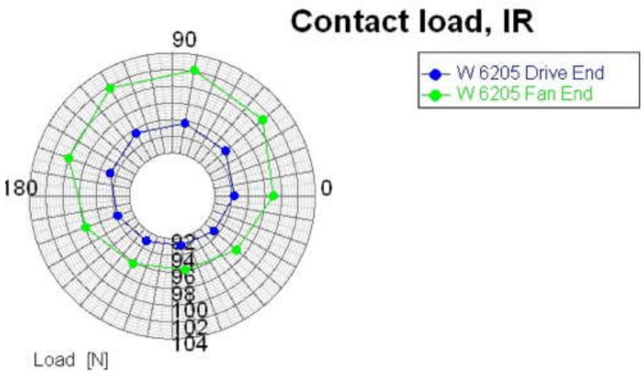
intf_Force_3_1	0	2	235	-0.1	0.0	0.0
intf_Rotation speed_1_1	0	0	106	0.0	0.0	0.0
intf_Torque reaction_1_1	0	0	166	0.0	0.0	0.0
intf_W 6205 Drive End_1	0	0	142	0.0	0.0	0.0
intf_W 6205 Fan End_1	0	0	182	0.0	0.0	0.0

Shaft displacement & misalignment (at positions)

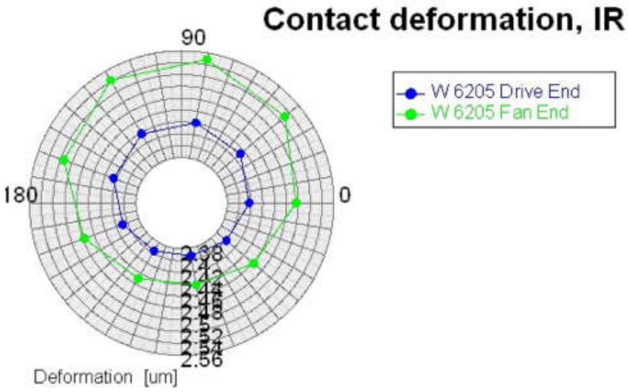
Shaft	Node	Axial position [mm]	Displacement [um]			Misalignment [min]		
			X	Y	Z	YZ	ZX	XY
Shaft	1	0.00	0	0	106	0.0	0.0	0.0
	2	0.50	0	0	106	0.0	0.0	0.0
	3	4.10	0	0	108	0.0	0.0	0.0
	4	13.55	0	0	114	0.0	0.0	0.0
	5	23.00	0	0	120	0.0	0.0	0.0
	6	23.10	0	0	120	0.0	0.0	0.0
	7	33.10	0	0	126	0.0	0.0	0.0
	8	43.10	0	0	132	0.0	0.0	0.0
	9	43.60	0	0	132	0.0	0.0	0.0
	10	52.40	0	0	136	0.0	0.0	0.0
	11	52.90	0	0	136	0.0	0.0	0.0
	12	60.40	0	0	142	0.0	0.0	0.0
	13	70.30	0	0	148	0.0	0.0	0.0
	14	80.20	0	0	154	0.0	0.0	0.0
	15	90.10	0	0	160	0.0	0.0	0.0
	16	100.00	0	0	166	0.0	0.0	0.0
	17	108.77	0	0	172	0.0	0.0	0.0
	18	117.53	0	0	177	0.0	0.0	0.0
	19	126.30	0	0	182	0.0	0.0	0.0
	20	134.20	0	0	184	0.0	0.0	0.0
	21	134.70	0	0	185	0.0	0.0	0.0
	22	144.20	0	0	188	0.0	0.0	0.0
	23	144.70	0	0	189	0.0	0.0	0.0
	24	153.52	0	0	193	-0.1	0.0	0.0
	25	162.34	0	1	197	-0.1	0.0	0.0
	26	171.16	0	1	202	-0.1	0.0	0.0
	27	179.98	0	1	206	-0.1	0.0	0.0
	28	188.80	0	1	210	-0.1	0.0	0.0
	29	193.80	0	2	213	-0.1	0.0	0.0
	30	198.40	0	2	219	-0.1	0.0	0.0

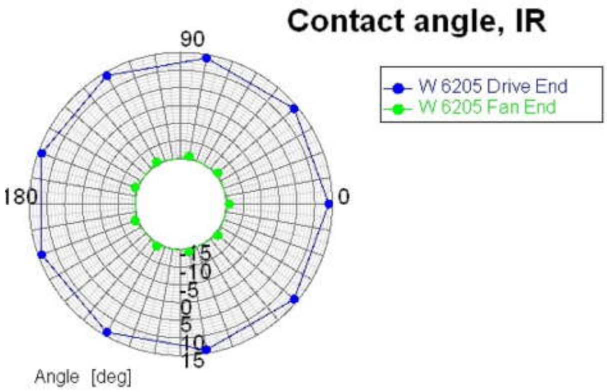
	31	203.00	0	2	224	-0.1	0.0	0.0
	32	207.60	0	2	229	-0.1	0.0	0.0
	33	212.20	0	2	235	-0.1	0.0	0.0
	34	217.20	0	3	235	-0.1	0.0	0.0
	35	222.20	0	3	235	-0.1	0.0	0.0
	36	226.70	0	3	235	-0.1	0.0	0.0
	37	231.20	0	3	235	-0.1	0.0	0.0
	38	235.70	0	3	235	-0.1	0.0	0.0
	39	240.20	0	4	235	-0.1	0.0	0.0
	40	241.20	0	4	235	-0.1	0.0	0.0

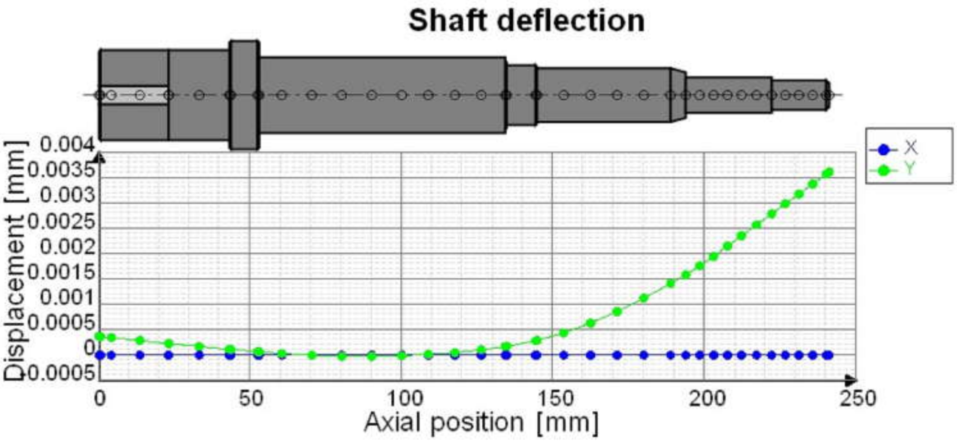
3.10. Charts



Contact load, IR
W 6205 Drive End
W 6205 Fan End
90
180
0
92
94
96
98
100
102
104
Load [N]


Contact deformation, IR
90
180
0
W 6205 Drive End
W 6205 Fan End
2.38
2.56
Deformation [um]


Contact angle, IR
90
180
0
W 6205 Drive End
W 6205 Fan End
-15
-10
-5
0
5
10
15
Angle [deg]


Shaft deflection
Displacement [mm]
0.004
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
-0.0005
0
50
100
150
200
250
Axial position [mm]
X
Y