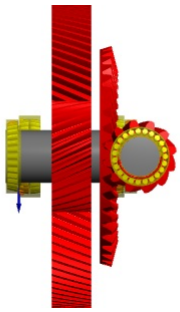
MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Shaft Calculation



Input data

Settings

Housing material		Steel	
Housing youngs modulus	E_Housing	207000	MPa
Housing poisson number	ν_Housing	0.3	
Housing thermal elongation coefficient	α_Housing	11.500	10^{-6}/°C
Housing temperature	ϑ_Housing	20.000	°C
Weight of the shaft is considered			
Angle for weight	βw	-90.0000	°
Shear deformations in the shaft are considered			
Shear deformations		According Hutchinson	
Gears are considered as stiffness			
Strength calculation		Infinite life according DIN 743	

Lubrication

Lubricant		ISO VG 220 mineral oil	
Kinematic viscosity at 40°C	v40	220.000	mm²/s
Kinematic viscosity at 100°C	v100	19.000	mm²/s
Pressure viscosity coefficient	α	0.0174	1/MPa
Oil density	ρOil	890.000	kg/m³
Oil temperature	ϑOil	70.000	°C
Lubricant cleanliness		Oil lubrication with on-line filter ISO4406 -/17/14	
Oil does not contain effective EP additives			

Load spectrum

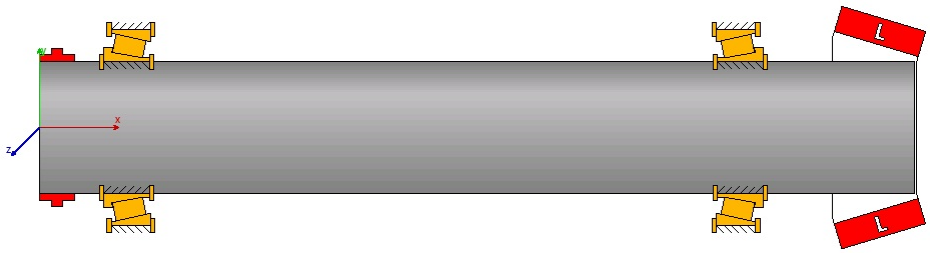
		InputShaft	InputShaft
		General	Coupling
	Frequency	n[rpm]	Mx[Nm]
1	1	1500	5000

Change this text in mesys.ini

Calculation is done with single load spectrum element

Load spectrum element for results 1

Group 1 ('Input')



Position	x	459.870	mm
Position	y	2087.6	mm
Position	z	0.0000	mm

Shaft 1 ('InputShaft')

Speed	n	1500.0	rpm
Temperature	T	20.000	°C
Position	x	0.0000	mm
Material	Steel		
Youngs modulus	E	207000	MPa
Poisson number	ν	0.3	
Density	ρ	7850.0	kg/m³
Thermal elongation coefficient	α	11.500	10^{-6}/°C

Nonlinear rolling bearing stiffness is considered

Outer geometry

Length [mm]	Diameter 1 [mm]
1000	150

Loading

Name	Position [mm]	Width [mm]	Element	Fx [kN]	Fy [kN]	Fz [kN]	Mx [Nm]	My [Nm]	Mz [Nm]
Coupling	20	40	1	0	0	0	5000	0	0

Bevel gear 'BG1' at position 960mm

Width	b	100.000	mm
Number of teeth	z	12	
Normal module	mn	15.000	mm

Normal pressure angle	αnD	20.000	°
Normal pressure angle	αnC	20.000	°
Helix angle	βm	35.000	°
Helix direction		Spiral left hand	
Profile shift coefficient	x	0	
Pitch angle	δ	16.699	°

Boundary conditions

Rolling bearing 'B1' at position 100mm

Bearing is connected to 'InputShaft' with inner ring and to 'Housing' with outer ring

Type of rolling bearing		Tapered roller bearing	
Bearing designation		Generic T 2ED 150	
Bearing inner diameter	d	150.000	mm
Bearing outer diameter	D	225.000	mm
Bearing width	B	53.000	mm
Nominal contact angle	α	12.592	°
Dynamic load rating	Cr	395.785	kN
Static load rating	C0r	638.500	kN
Center of contact cone		left	
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal axial clearance	Pa	0.0000	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Bearing data is set from shaft calculation: Geometry, Material, Temperature, Lubrication

Shaft is supported radially and axially

Rolling bearing 'B2' at position 800mm

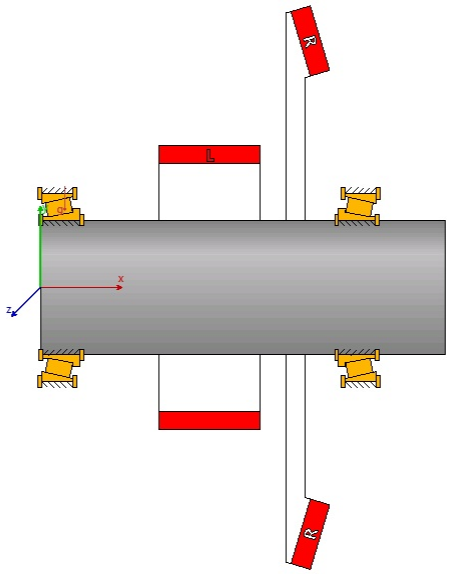
Bearing is connected to 'InputShaft' with inner ring and to 'Housing' with outer ring

Type of rolling bearing		Tapered roller bearing	
Bearing designation		Generic T 2ED 150	
Bearing inner diameter	d	150.000	mm
Bearing outer diameter	D	225.000	mm
Bearing width	B	53.000	mm
Nominal contact angle	α	12.592	°
Dynamic load rating	Cr	395.785	kN
Static load rating	C0r	638.500	kN
Center of contact cone		right	
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal axial clearance	Pa	0.0000	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Bearing data is set from shaft calculation: Geometry, Material, Temperature, Lubrication

Shaft is supported radially and axially

Group 2 ('Intermediate')



Position	x		-50.0000	mm
Position	y		761.331	mm
Position	z		0.0000	mm

Shaft 2 ('Intermediate shaft')

Speed	n		-450.0000	rpm
Temperature	T		20.000	°C
Position	x		0.0000	mm
Material		Steel		
Youngs modulus	E		207000	MPa
Poisson number	ν		0.3	
Density	ρ		7850.0	kg/m³
Thermal elongation coefficient	α		11.500	10^{-6}/°C

Nonlinear rolling bearing stiffness is considered

Outer geometry

Length [mm]	Diameter 1 [mm]
600	200

Loading

Cylindrical gear 'CG1' at position 250mm

Width	b		150.000	mm
Number of teeth	z		30	
Normal module	mn		12.000	mm
Normal pressure angle	αn		20.000	°
Helix angle	β		25.000	°
Helix direction		Helix left hand		
Profile shift coefficient	x		0	

Bevel gear 'BG2' at position 400mm

Width	b		100.000	mm
Number of teeth	z		40	
Normal module	mn		15.000	mm

Normal pressure angle	αnD	20.000	°
Normal pressure angle	αnC	20.000	°
Helix angle	βm	35.000	°
Helix direction		Spiral right hand	
Profile shift coefficient	x	0	
Pitch angle	δ	73.301	°

Boundary conditions

Rolling bearing 'B3' at position 30mm

Bearing is connected to 'Intermediate shaft' with inner ring and to 'Housing' with outer ring

Type of rolling bearing		Tapered roller bearing	
Bearing designation		Generic T 2ED 200	
Bearing inner diameter	d	200.000	mm
Bearing outer diameter	D	280.000	mm
Bearing width	B	56.000	mm
Nominal contact angle	α	12.742	°
Dynamic load rating	Cr	498.856	kN
Static load rating	C0r	893.959	kN
Center of contact cone		right	
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal axial clearance	Pa	0.0000	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Bearing data is set from shaft calculation: Geometry, Material, Temperature, Lubrication

Shaft is supported radially and axially

Rolling bearing 'B4' at position 470mm

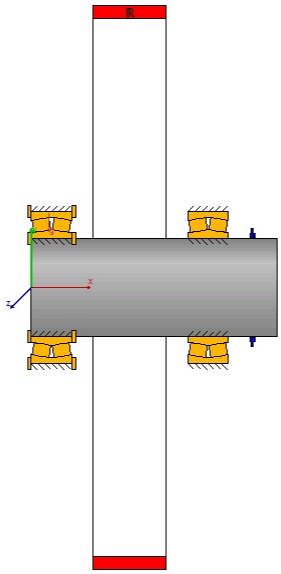
Bearing is connected to 'Intermediate shaft' with inner ring and to 'Housing' with outer ring

Type of rolling bearing		Tapered roller bearing	
Bearing designation		Generic T 2ED 200	
Bearing inner diameter	d	200.000	mm
Bearing outer diameter	D	280.000	mm
Bearing width	B	56.000	mm
Nominal contact angle	α	12.742	°
Dynamic load rating	Cr	498.856	kN
Static load rating	C0r	893.959	kN
Center of contact cone		left	
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal axial clearance	Pa	0.0000	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Bearing data is set from shaft calculation: Geometry, Material, Temperature, Lubrication

Shaft is supported radially and axially

Group 3 ('Output')



Position	x		0.0000	mm
Position	y		0.0000	mm
Position	z		0.0000	mm

Shaft 3 ('Intermediate shaft 2')

Speed	n		158.824	rpm
Temperature	T		20.000	°C
Position	x		0.0000	mm
Material		Steel		
Youngs modulus	E		207000	MPa
Poisson number	ν		0.3	
Density	ρ		7850.0	kg/m³
Thermal elongation coefficient	α		11.500	10^{-6}/°C

Nonlinear rolling bearing stiffness is considered

Outer geometry

Length [mm]	Diameter 1 [mm]
500	200

Loading

Cylindrical gear 'CG2' at position 200mm

Width	b		150.000	mm
Number of teeth	z		85	
Normal module	mn		12.000	mm
Normal pressure angle	αn		20.000	°
Helix angle	β		25.000	°
Helix direction		Helix right hand		
Profile shift coefficient	x		0	

Boundary conditions

Rolling bearing 'B5' at position 41mm

Bearing is connected to 'Intermediate shaft 2' with inner ring and to 'Housing' with outer ring

Type of rolling bearing	Spherical roller bearing

Bearing designation		Generic 23040	
Bearing inner diameter	d	200.000	mm
Bearing outer diameter	D	310.000	mm
Bearing width	B	82.000	mm
Nominal contact angle	α	9.1341	°
Dynamic load rating	Cr	1017.5	kN
Static load rating	C0r	1911.8	kN
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal diametral clearance	Pd	0.1650	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Bearing data is set from shaft calculation: Geometry, Material, Temperature, Lubrication

Shaft is supported radially and axially

Rolling bearing 'B6' at position 360mm

Bearing is connected to 'Intermediate shaft 2' with inner ring and to 'Housing' with outer ring

Type of rolling bearing		Spherical roller bearing	
Bearing designation		Generic 23040	
Bearing inner diameter	d	200.000	mm
Bearing outer diameter	D	310.000	mm
Bearing width	B	82.000	mm
Nominal contact angle	α	9.1341	°
Dynamic load rating	Cr	1017.5	kN
Static load rating	C0r	1911.8	kN
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal diametral clearance	Pd	0.1650	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Bearing data is set from shaft calculation: Geometry, Material, Temperature, Lubrication

Shaft is supported radially

Reaction coupling 'Reaction coupling' at position 450mm

Width	l	10.000	mm

Cylindrical gear connections

Name	z1	z2	mn [mm]	α_n [°]	β [°]	u	a [mm]	jt [mm]	cg [N/mm/µm]	η [%]
CG1-CG2	30	85	12	20	-25	2.83	761.331	0.1	20	100.00

Bevel gear connections

Name	z1	z2	mmn [mm]	β2m [°]	u	∑ [°]	a [mm]	jt [mm]	cg [N/mm/µm]	η [%]
BG1-BG2	12	40	15	35	3.33	90	0	0.1	20	100.00

Results

Results for load spectrum element 1

Maximal equivalent stress	maxSigV	56.404	MPa

Minimal dynamic shaft safety factor	minSD	99.99	
Minimal static shaft safety factor	minSS	99.99	
Maximal bearing stress	pmax	1609.8	MPa
Minimal static safety for bearings	minSF	6.17439	
Minimal bearing reference life	minL10rh	5955.7	h
Minimal bearing modified reference life	minLnmrh	29363.3	h
Minimal bearing basic life	minL10h	1645.7	h
Minimal bearing modified life	minLnmh	9677.5	h

Maximum shaft deflections

Shaft	maxUx [mm]	maxUy [mm]	maxUz [mm]	maxUr [mm]	maxSigV [MPa]	SD	SS
InputShaft	0.1005	0.0319	0.0948	0.1000	30.7	0.00	0.00
Intermediate shaft	0.0868	0.0223	0.0415	0.0471	24.6	0.00	0.00
Intermediate shaft 2	0.5634	0.1351	0.1119	0.1755	56.4	0.00	0.00

maxUx : Maximal displacement in x
maxUy : Maximal displacement in y
maxUz : Maximal displacement in z
maxUr : Maximal displacement in radial direction
maxSigV : Maximal equivalent stress
SD : Minimal dynamic shaft safety factor
SS : Minimal static shaft safety factor

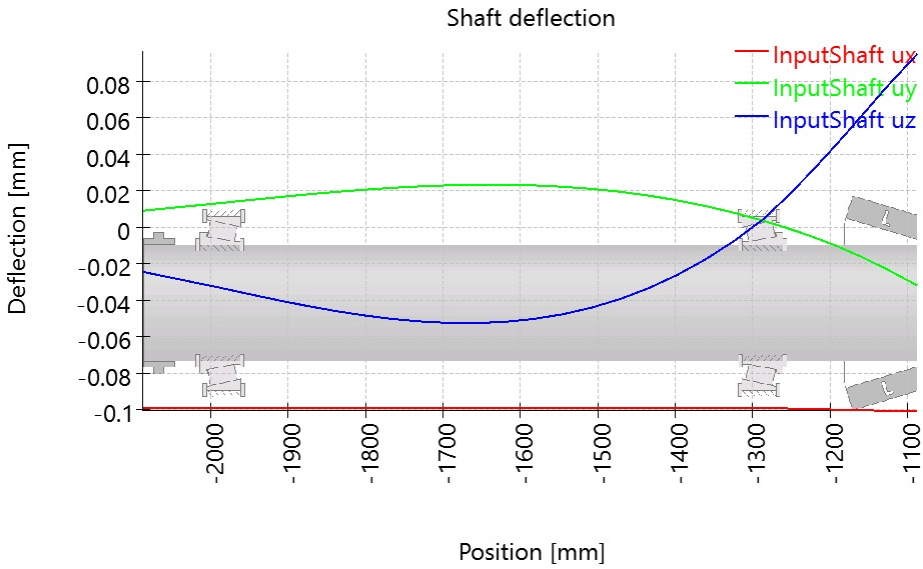
Mass properties

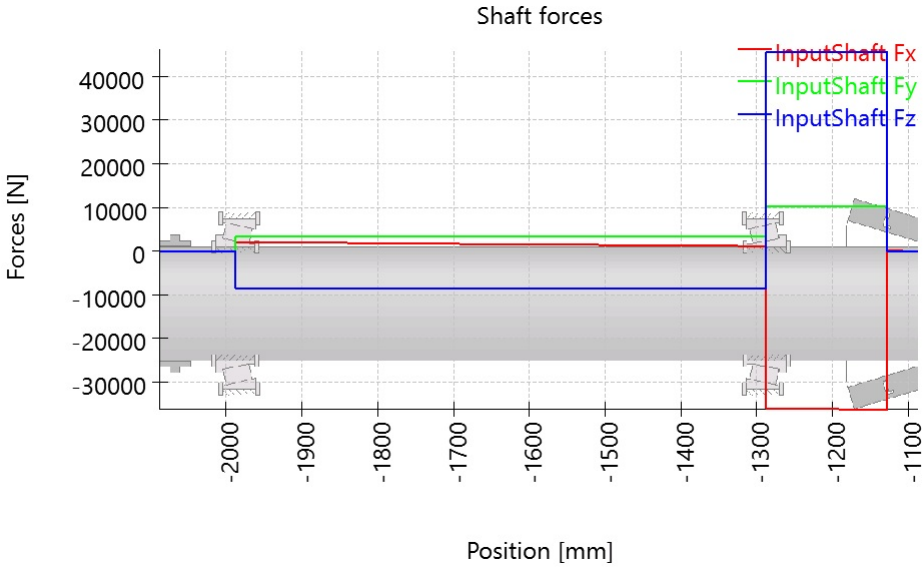
Shaft	Mass [kg]	Mass center [mm]	Jxx [kg m²]	Jyy [kg m²]	Jzz [kg m²]
InputShaft	138.721	500.0	0.390153	11.7552	11.7552
Intermediate shaft	147.969	300.0	0.739845	4.80899	4.80899
Intermediate shaft 2	123.308	250.0	0.616538	2.87718	2.87718

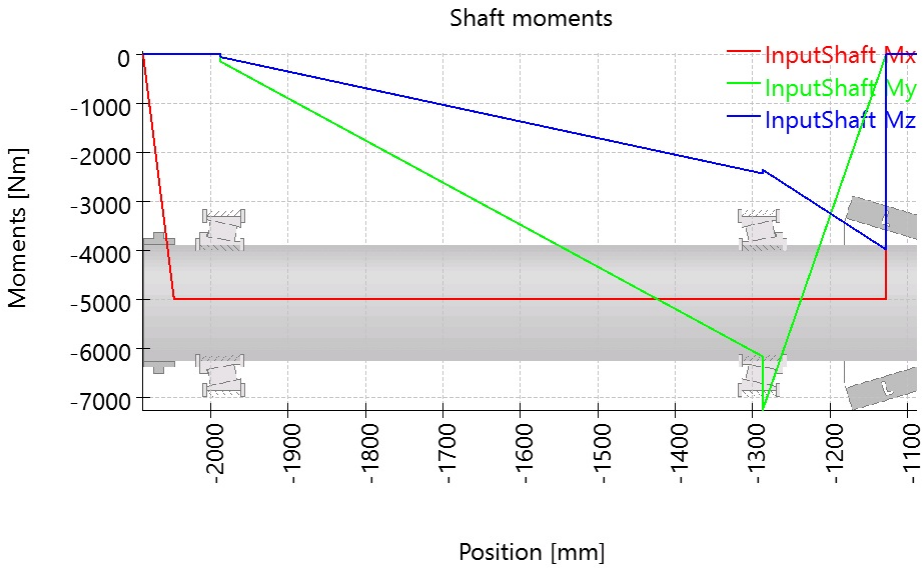
Group		Mass [kg]	Mass center [mm]	Jxx [kg m²]	Jyy [kg m²]	Jzz [kg m²]
Input	rotating	138.721	500.0	0.390153	11.7552	11.7552
Intermediate	rotating	147.969	300.0	0.739845	4.80899	4.80899
Output	rotating	123.308	250.0	0.616538	2.87718	2.87718

Graphics for load spectrum element 1

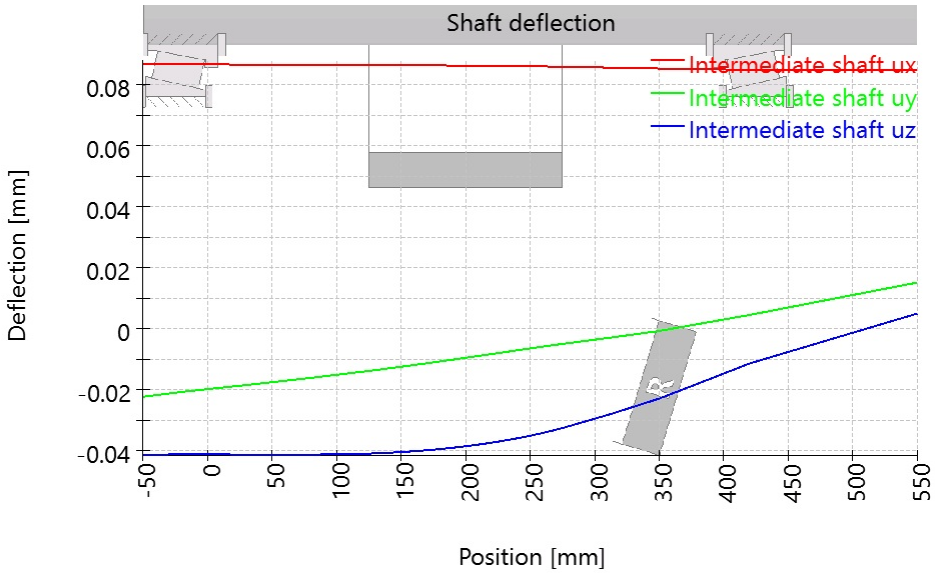
Result Graphics for Group 'Input'

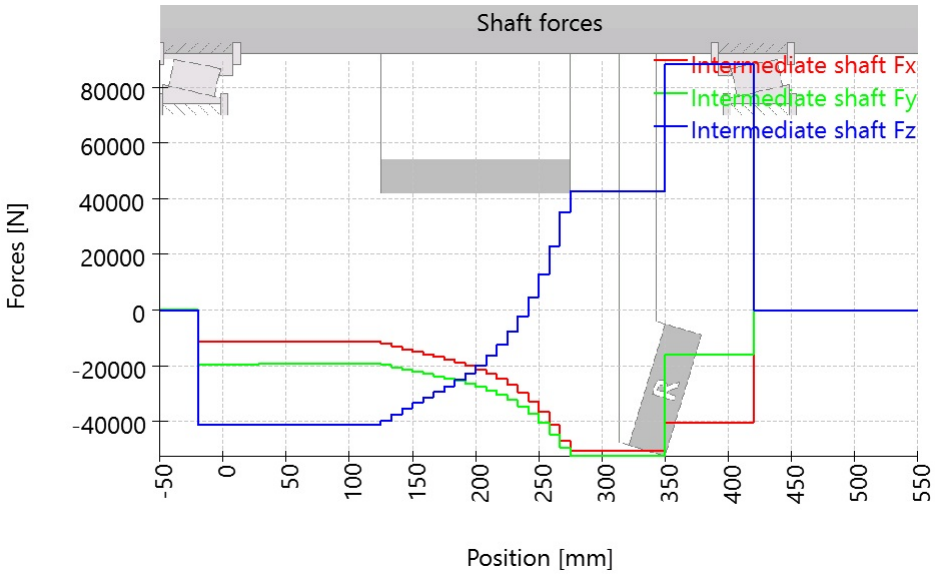


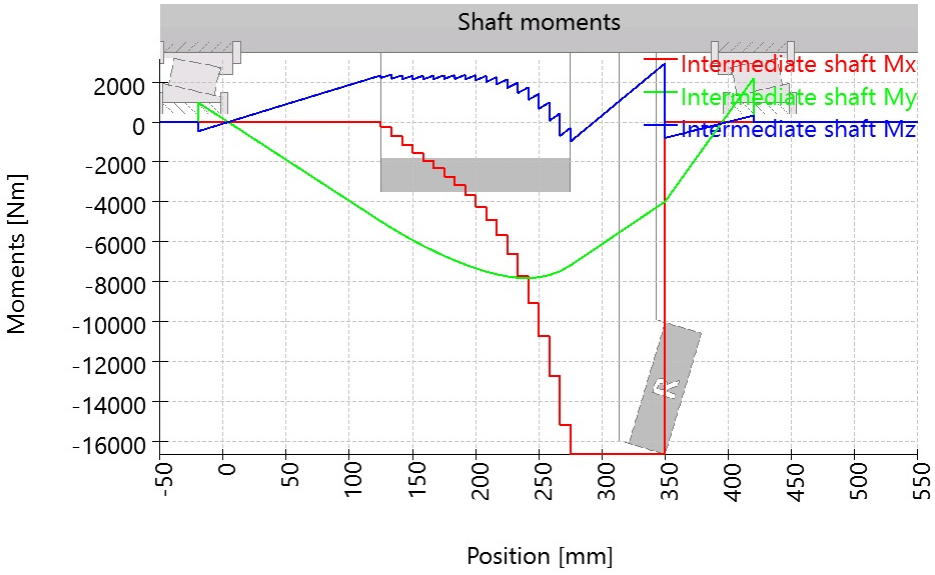




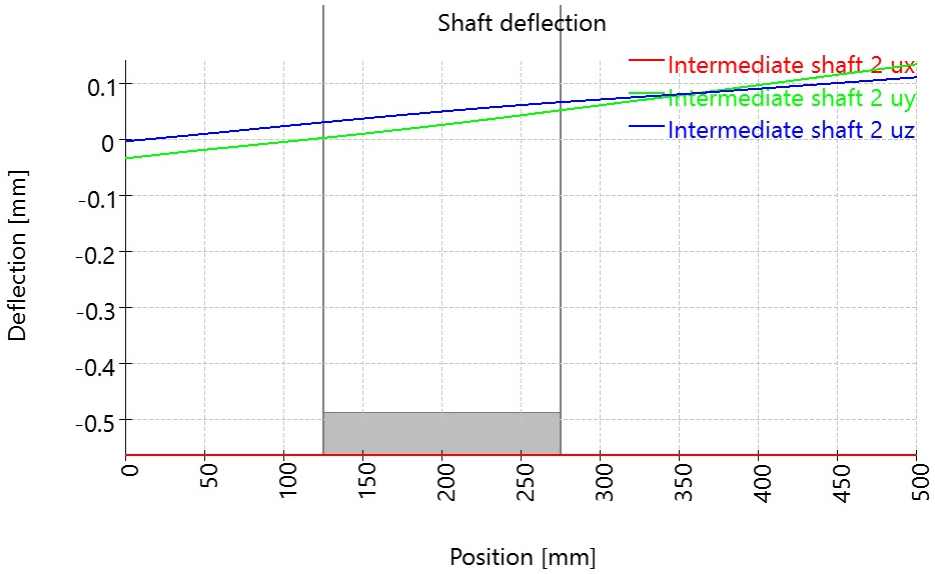
Result Graphics for Group 'Intermediate'

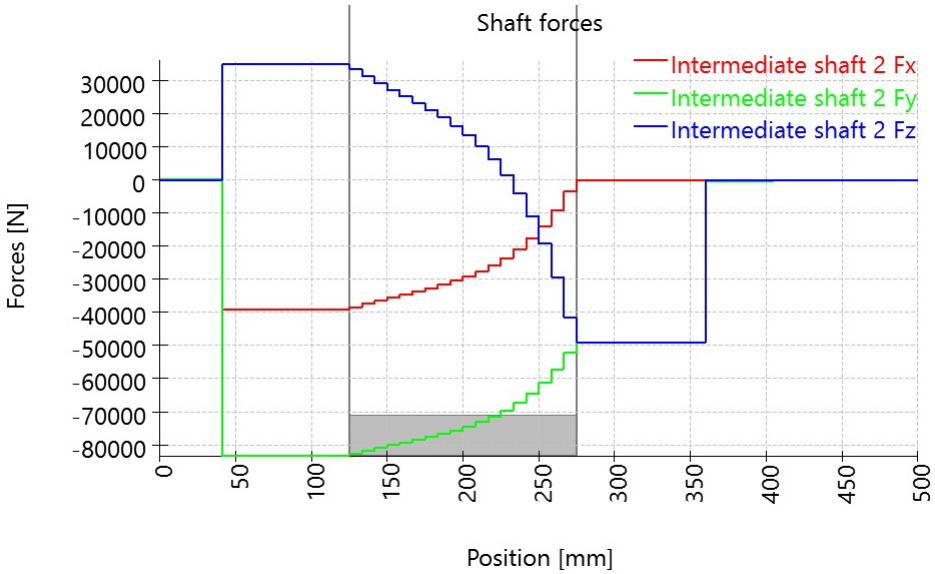


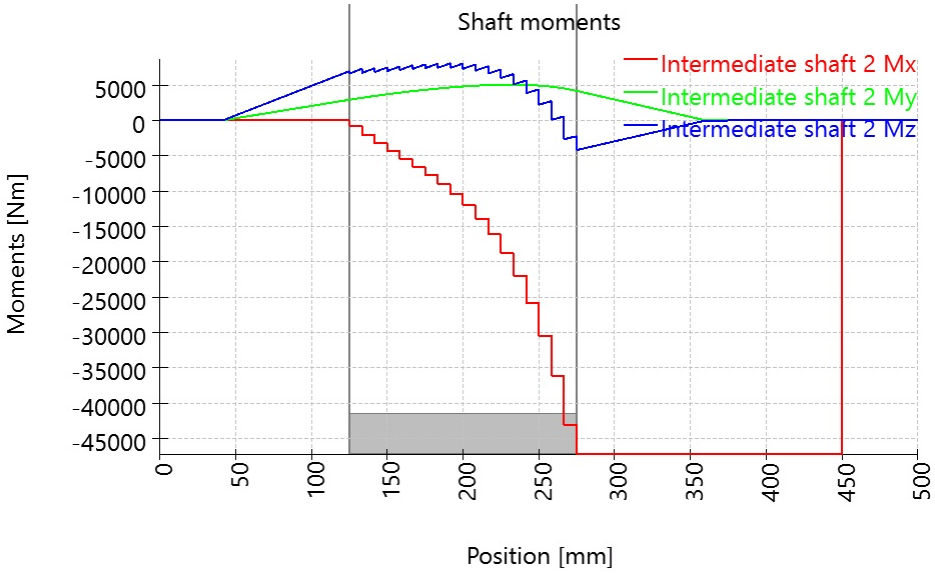




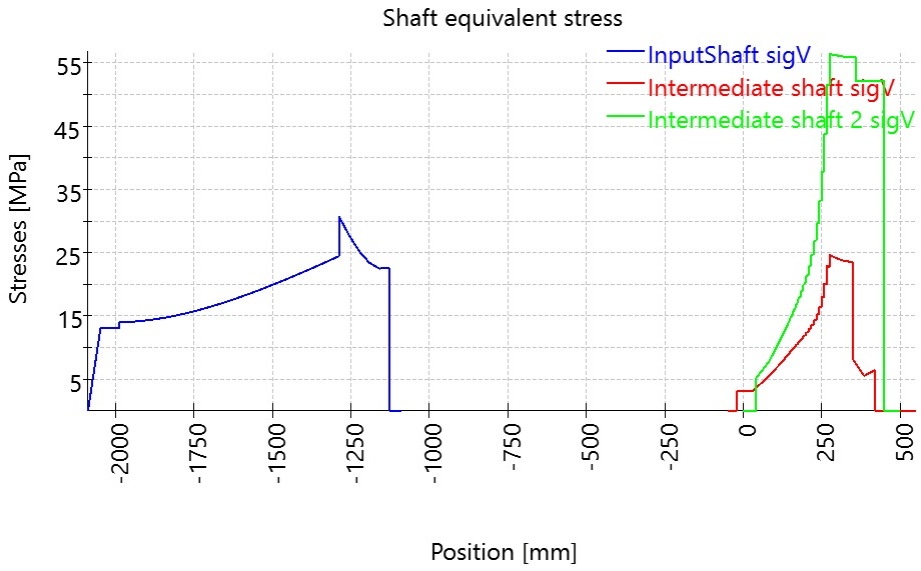
Result Graphics for Group 'Output'


Shaft deflection
Intermediate shaft 2 ux
Intermediate shaft 2 uy
Intermediate shaft 2 uz
Deflection [mm]
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
0
50
100
150
200
250
300
350
400
450
500
Position [mm]


Shaft forces
Intermediate shaft 2 Fx
Intermediate shaft 2 Fy
Intermediate shaft 2 Fz
Forces [N]
30000
20000
10000
0
-10000
-20000
-30000
-40000
-50000
-60000
-70000
-80000
0
50
100
150
200
250
300
350
400
450
500
Position [mm]


Shaft moments
Intermediate shaft 2 Mx
Intermediate shaft 2 My
Intermediate shaft 2 Mz
Moments [Nm]
5000
0
-5000
-10000
-15000
-20000
-25000
-30000
-35000
-40000
-45000
0
50
100
150
200
250
300
350
400
450
500
Position [mm]

Change this text in mesys.ini



Bearing Forces

Name	x [mm]	Fx [kN]	Fy [kN]	Fz [kN]	Mx [Nm]	My [Nm]	Mz [Nm]
InputShaft	459.87						
B1	100	2.19	3.39	-8.60	0.000	-152.651	-60.221
B2	800	-37.17	6.82	54.10	0.000	-1112.009	78.161
Intermediate shaft	-50						
B3	30	-11.41	-19.63	-41.19	0.000	991.069	-469.930
B4	470	40.33	15.53	-88.24	0.000	-2187.145	-341.221
Intermediate shaft 2	0						
B5	41	-39.13	-83.55	34.85	0.000	-17.698	-42.420
B6	360	0.00	48.65	49.07	0.000	-0.000	0.000
Reaction coupling	450	0.00	0.00	0.00	47222.222	0.000	0.000

Fx : Axial force

Fy : Radial force Y

Fz : Radial force Z

Mx : Torque

My : Moment Y

Mz : Moment Z

Bearing Displacements

Name	x [mm]	ux [µm]	uy [µm]	uz [µm]	rx [mrad]	ry [mrad]	rz [mrad]
InputShaft	459.87						
B1	100	-99.22	13.23	-33.17	20.75	0.09	0.04
B2	800	-98.92	3.65	4.00	19.87	-0.34	-0.13
Intermediate shaft	-50						
B3	30	86.75	-20.70	-41.09	-5.04	-0.01	0.05
B4	470	84.94	4.53	-11.39	-5.20	-0.13	0.08
Intermediate shaft 2	0						
B5	41	-562.24	-20.00	8.35	0.84	-0.26	0.31
B6	360	-563.36	83.16	83.36	0.34	-0.20	0.37
Reaction coupling	450	-563.36	116.58	101.72	0.00	-0.20	0.37

Change this text in mesys.ini

ux : Displacement X

uy : Displacement Y

uz : Displacement Z

rx : Rotation around X

ry : Rotation around Y

rz : Rotation around Z

Bearing Results

Bearing	X [mm]	P [kN]	L10h [h]	Lnmh [h]	Pref [kN]	L10rh [h]	Lnmrh [h]	kappa	pmax [MPa]	S0eff
B1 'Generic T 2ED 150'	-1987.56	9.241	3053996	152699785	9.634	2658146	132907304	6.07	812.63	24.30
B2 'Generic T 2ED 150'	-1287.56	88.365	1646	9677	60.077	5956	29740	6.07	1446.40	7.65
B3 'Generic T 2ED 200'	-20	45.624	107458	5372892	40.524	159529	1936497	2.83	1200.41	11.13
B4 'Generic T 2ED 200'	420	107.189	6233	33158	76.160	19474	81075	2.83	1406.09	8.11
B5 'Generic 23040'	41	223.715	16356	17695	170.938	40106	29363	1.23	1609.77	6.14
B6 'Generic 23040'	360	69.093	821390	5351432	94.419	290046	402291	1.23	1332.73	9.02

P : Dynamic equivalent load (ISO 281)

L10h : Basic life (ISO 281)

Lnmh : Modified life (ISO 281)

Pref : Reference load (ISO 16281)

L10rh : Basic reference rating life (ISO 16281)

Lnmrh : Modified reference rating life (ISO 16281)

κ : Viscosity ratio

pmax : Maximal pressure

S0eff : Static safety factor (ISO 17956)

Connections

Name	Element	n1 [rpm]	n2 [rpm]	T1 [Nm]	T2 [Nm]	P [kW]	wmax [N/mm]	wmax/wavg	fsh [mm]	
CG1-CG2	1	-450.00	158.82	-16666.67	-47222.22	785.40	1935.29	3.21	0.0798	
Name	**Element**	**n1 [rpm]**	**n2 [rpm]**	**T1 [Nm]**	**T2 [Nm]**	**P [kW]**	**E [mm]**	**P [mm]**	**G [mm]**	**S [°]**
BG1-BG2	1	1500.00	-450.00	5000.00	16666.67	785.40	0.2532	0.0920	-0.1913	0.0180

n : Rotation speed

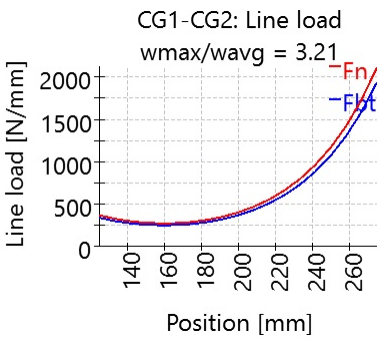
T : Torque

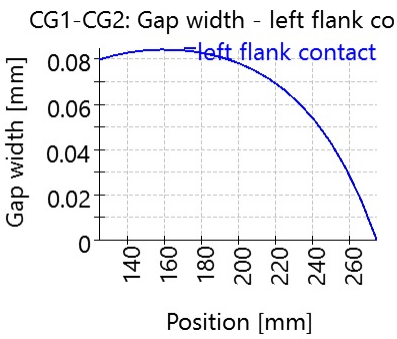
P : Power

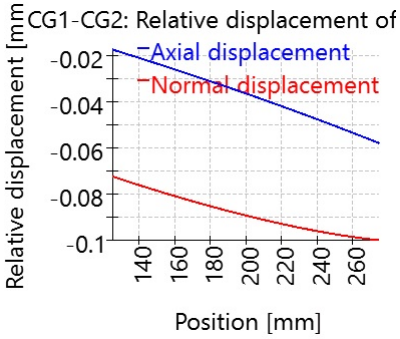
SF : Safety factor root

SH : Safety factor flank

Name	Element	Fx1 [kN]	Fy1 [kN]	Fz1 [kN]	Mx1 [Nm]	My1 [Nm]	Mz1 [Nm]	Fx2 [kN]	Fy2 [kN]	Fz2 [kN]	Mx2 [Nm]	My2 [Nm]	Mz2 [Nm]
CG1-CG2	1	39.131	33.691	-83.921	16666.67	0.91	7771.79	-39.131	-33.691	83.921	47222.22	2.58	22020.08
BG1-BG2	1	-36.332	10.211	45.508	-5000.00	0.00	-3991.77	-10.211	-36.332	-45.508	-16666.67	0.00	3739.73


CG1-CG2: Line load
wmax/wavg = 3.21
Fn
Flat
Line load [N/mm]
2000
1500
1000
500
0
140
160
180
200
220
240
260
Position [mm]


CG1-CG2: Gap width - left flank co
left flank contact
Gap width [mm]
0.08
0.06
0.04
0.02
0
140
160
180
200
220
240
260
Position [mm]


CG1-CG2: Relative displacement of
Axial displacement
Normal displacement
Relative displacement [mm
-0.02
-0.04
-0.06
-0.08
-0.1
140
160
180
200
220
240
260
Position [mm]

Change this text in mesys.ini

Details for bearing: B1 'Generic T 2ED 150'

Rolling Bearing Calculation

Input data

Bearing Geometry

Type of rolling bearing		Tapered roller bearing	
Bearing designation		Generic T 2ED 150	
Bearing inner diameter	d	150.000	mm
Bearing outer diameter	D	225.000	mm
Bearing width	B	53.000	mm
Bearing width inner ring	Bi	52.000	mm
Bearing width outer ring	Be	44.000	mm
Number of rolling elements	Z	23	
Roller diameter	Dw	20.625	mm
Pitch diameter	Dpw	185.703	mm
Length of Roller	Lwe	35.000	mm
Nominal contact angle	α	12.592	°
Center of contact cone		left	
Distance to centre of pressure	a	44.999	mm
Distance bearing center to row center	δRC	-2.4722	mm
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal axial clearance	Pa	0.0000	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Loading

Speed of inner ring	ni	1500.0	rpm
		inner ring rotates relative to load	
Speed of outer ring	ne	0.0000	rpm
		outer ring is stationary relative to load	
Displacement X	ux	-99.2200	µm
Displacement Y	uy	13.233	µm
Displacement Z	uz	-33.1742	µm
Rotation around Y	ry	0.0871	mrad
Rotation around Z	rz	0.0417	mrad
Temperature of inner ring	T_i	20.000	°C
Temperature of outer ring	T_e	20.000	°C
Reliability	reliability	90.000	%
Maximal permissible value for aISO	aISOMax	50	

Material

Surface hardness inner race	HRC_i	58	
Surface hardness outer race	HRC_e	58	
Ultimate strength of core inner race	Rm_i	1200.0	MPa
Ultimate strength of core outer race	Rm_e	1200.0	MPa

Material for inner ring		Steel	
Material for outer ring		Steel	
Material for rolling element		Steel	

Lubrication

Lubricant		ISO VG 220 mineral oil	
Kinematic viscosity at 40°C	v40	220.000	mm²/s
Kinematic viscosity at 100°C	v100	19.000	mm²/s
Oil density	rhoOil	890.000	kg/m³
Oil temperature	ϑOil	70.000	°C
Oil does not contain effective EP additives			
Effective kinematic viscosity	v(ϑ)	51.794	mm²/s
Effective oil density	ρ(ϑ)	851.593	kg/m³
Lubricant cleanliness		Oil lubrication with on-line filter ISO4406 -/17/14	

Results

Centrifugal loads are not considered

Bearing inner geometry

Number of rolling elements	Z	23	
Roller diameter	Dw	20.625	mm
Pitch diameter	Dpw	185.703	mm
Length of Roller	Lwe	35.000	mm
Nominal contact angle	α	12.592	°
Nominal axial clearance	Pa	0.0000	mm
Change of clearance	ΔPd	0.0000	mm
Effective axial clearance	Paeff	0.0000	mm
Distance between rolling elements	δRE	4.6616	mm
Shoulder diameter inner ring	dSi	184.197	mm
Shoulder opening angle inner race	γsi	0.0000	°

Forces and displacement

Axial force	Fx	2.1941	kN
Radial force Y	Fy	3.3941	kN
Radial force Z	Fz	-8.5953	kN
Displacement X	ux	-99.2200	µm
Displacement Y	uy	13.233	µm
Displacement Z	uz	-33.1742	µm
Moment Y	My	-152.6506	Nm
Moment Z	Mz	-60.2205	Nm
Rotation around Y	ry	0.0871	mrad
Rotation around Z	rz	0.0417	mrad
Maximal pressure inner race	pmax_i	812.626	MPa
Maximal pressure outer race	pmax_e	729.629	MPa
Maximal pressure	pmax	812.626	MPa
Static safety factor (ISO 17956)	S0eff	24.3017	

Life

Dynamic load rating	Cr	395.785	kN

Static load rating	C0r	638.500	kN
Fatigue load limit	Cur	63.475	kN
Life modification factor for reliability	a1	1	
Viscosity ratio	κ	6.07471	
Contamination factor	eC	0.713789	
Life modification factor	aISO	50	
Reference load	Pref	9634.1	N
Basic reference rating life	L10r	239233	
Basic reference rating life	L10rh	2.65815e+06	h
Modified reference rating life	Lnmr	1.19617e+07	
Modified reference rating life	Lnmrh	1.32907e+08	h
Life according ISO 281			
Dynamic radial load factor	X	1	
Dynamic axial load factor	Y	0	
Dynamic equivalent load	P	9241.2	N
Basic life	L10	274860	
Basic life	L10h	3.054e+06	h
Life modification factor	aISO	50	
Modified life	Lnm	1.3743e+07	
Modified life	Lnmh	1.527e+08	h
Static equivalent load	P0	9241.2	N
Static safety factor (ISO 76)	S0	69.0932	
Thermal permissible speed			
Factor for load independent losses	f0r	3	
Factor for load dependent losses	f1r	0.0004	
Surface for heat transfer	Ar	62439.2	mm²
Thermal transmission coefficient	kq	296.718	W/m²·K
Load for reference speed	P1r	31925.0	N
Viscosity at reference conditions	vr	12.000	mm²/s
Load independent friction moment	M0r	1.6916	Nm
Load dependent friction moment	M1r	2.3714	Nm
Thermal reference speed	ntr	2177.2	rpm
Method	DIN 732		
Factor for load independent losses	f0	3	
Factor for load dependent losses	f1	0.0004	
Load for permissible speed	P1	9241.2	N
Temperature difference between bearing and surroundings	Δϑ	50.000	°C
Load independent friction moment	M0	4.0490	Nm
Load dependent friction moment	M1	0.6864	Nm
Thermal permissible speed	nt	1868.0	rpm
Friction moments and temperature increase for current speed (n=1500)			
Load independent friction moment for current speed	M0_n	3.4981	Nm
Load dependent friction moment for current speed	M1_n	0.6864	Nm

Total friction moment for current speed	M_n	4.1845	Nm	
Temperature difference for current speed	Δϑ_n	35.478	°C	

Subsurface stresses

Maximal shear stress for inner race	τmax_i	244.148	MPa	
Depth for maximal shear stress inner race	h(τmax_i)	0.1030	mm	
Shear yield stress for core inner race	τYield_i	510.000	MPa	
Shear fatigue limit for core inner race	τa_i	306.000	MPa	
Shear stress at core inner race	τ_i	162.612	MPa	
Maximal shear stress for outer race	τmax_e	219.095	MPa	
Depth for maximal shear stress outer race	h(τmax_e)	0.1149	mm	
Shear yield stress for core outer race	τYield_e	510.000	MPa	
Shear fatigue limit for core outer race	τa_e	306.000	MPa	
Shear stress at core outer race	τ_e	145.926	MPa	
Required hardness depth inner race	hdmin_i	0.0000	mm	
Required hardness depth outer race	hdmin_e	0.0000	mm	

Damage Frequencies

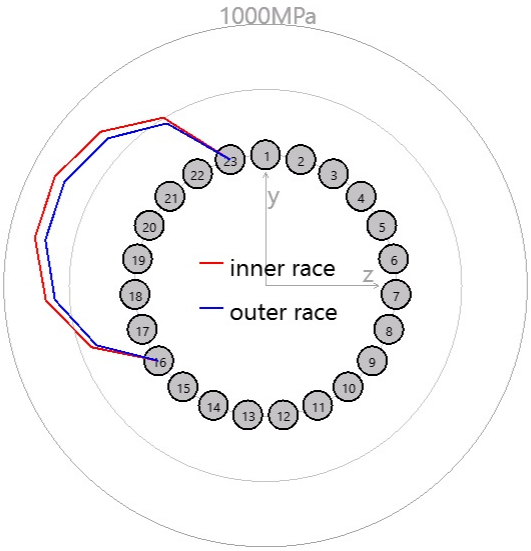
Speed of inner ring	ni	25.00	1/s	(1500rpm)
Speed of outer ring	ne	0.00	1/s	(0rpm)
Rotation speed of cage	fc	11.14	1/s	(668rpm)
Damage frequency for inner race	fip	318.81	1/s	(19128rpm)
Damage frequency for outer race	fep	-256.19	1/s	(-15372rpm)
Damage frequency for rolling element	frp	-222.43	1/s	(-13346rpm)

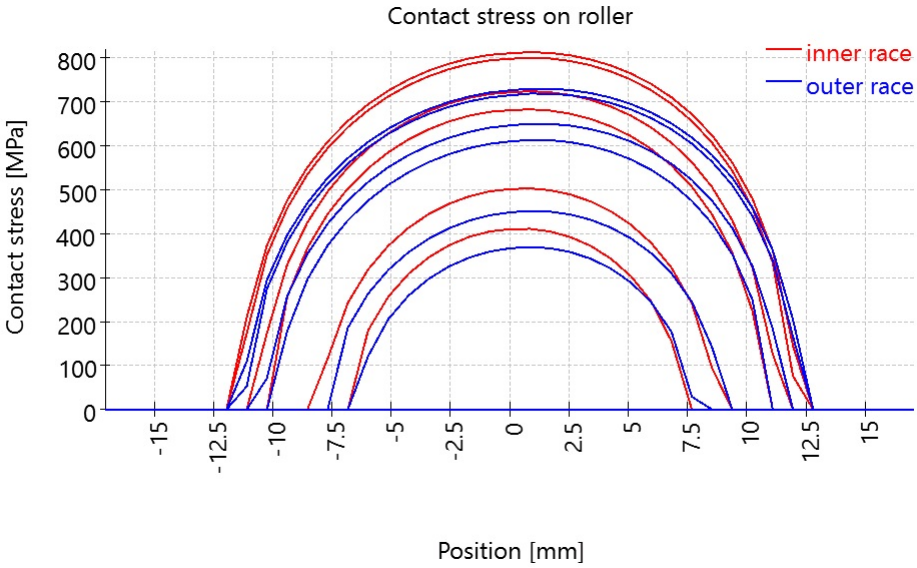
Bearing stiffness matrix

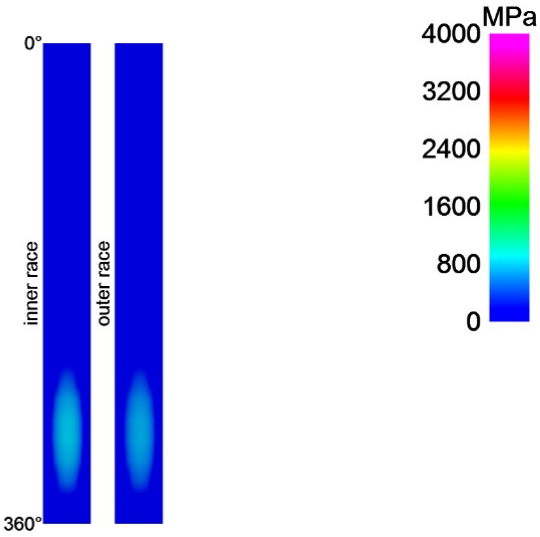
	ux [µm]	uy [µm]	uz [µm]	ry [mrad]	rz [mrad]
Fx [N]	85.610	124.992	-327.203	-5925.338	-2260.337
Fy [N]	125.030	420.903	-393.746	-7134.071	-7606.109
Fz [N]	-327.300	-393.746	1293.948	23457.223	7134.071
My [Nm]	-5.839	-7.025	23.092	467.625	144.078
Mz [Nm]	-2.228	-7.490	7.025	144.078	149.387

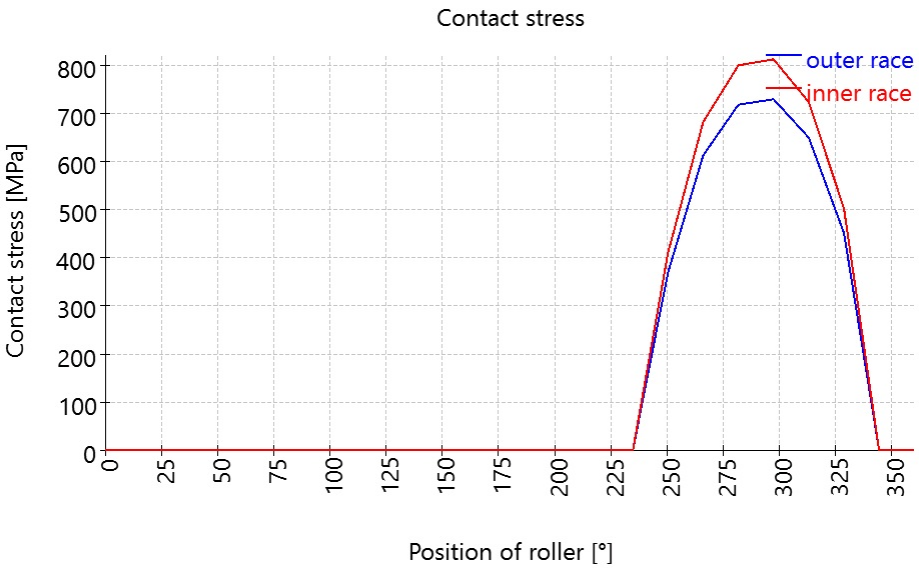
Bearing compliance matrix

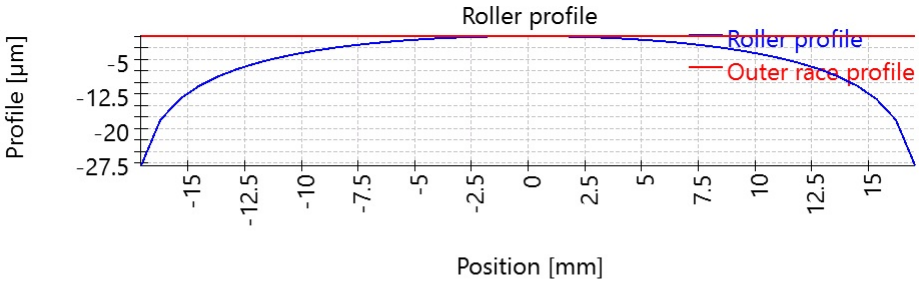
	Fx [N]	Fy [N]	Fz [N]	My [Nm]	Mz [Nm]
ux [µm]	1.43520	-0.12300	0.32856	-0.14067	-0.10184
uy [µm]	-0.12209	0.05254	-0.01364	-0.73575	2.18853
uz [µm]	0.32662	-0.01368	0.08702	-0.65862	0.72498
ry [mrad]	-0.00003	-0.00073	-0.00062	0.03461	-0.04139
rz [mrad]	-0.00005	0.00215	0.00073	-0.04139	0.12073

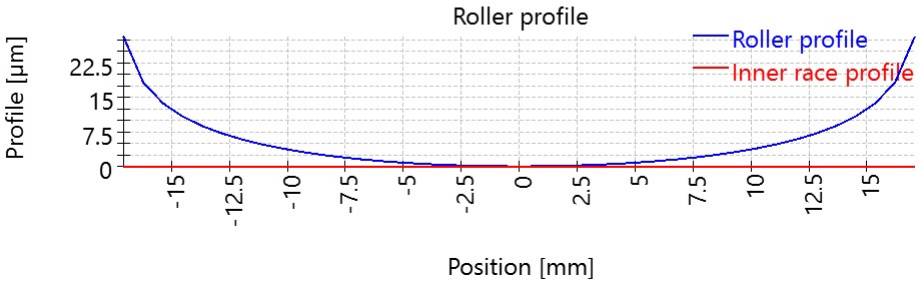

1000MPa
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
y
z
inner race
outer race


Contact stress on roller
inner race
outer race
Contact stress [MPa]
800
700
600
500
400
300
200
100
0
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
Position [mm]


0°
360°
inner race
outer race
MPa
4000
3200
2400
1600
800
0

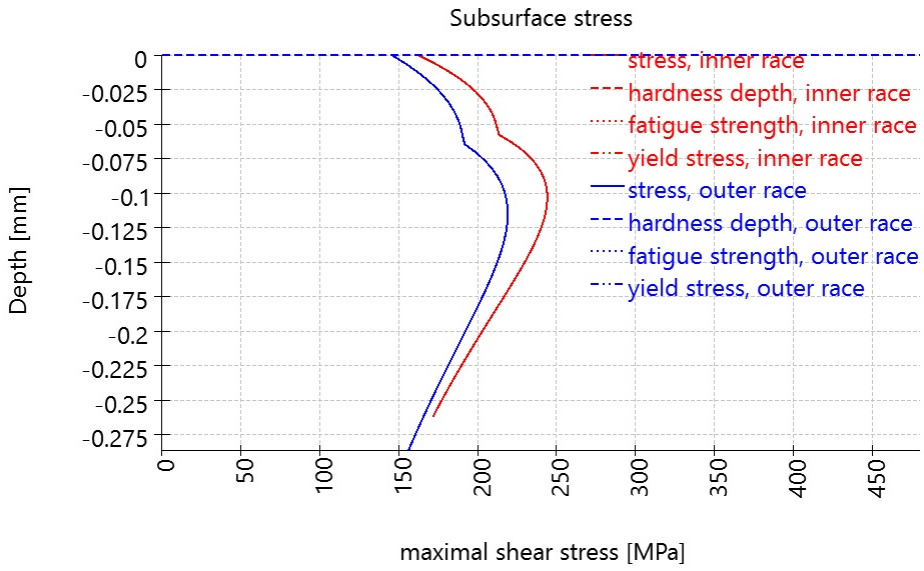

Contact stress
outer race
inner race
Contact stress [MPa]
800
700
600
500
400
300
200
100
0
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
Position of roller [°]


Roller profile
Roller profile
Outer race profile
Profile [µm]
-5
-12.5
-20
-27.5
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
Position [mm]


Roller profile
Roller profile
Inner race profile
Profile [µm]
22.5
15
7.5
0
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
Position [mm]


Rolling element load
Fi
Fsh
Load [N]
2500
2250
2000
1750
1500
1250
1000
750
500
250
0
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
Position of roller [°]

Change this text in mesys.ini



Result table for bearing 1

Roller	ψ [°]	|F| [N]	Fx [N]	Fy [N]	Fz [N]	M [Nm]	Fsh [N]
1	0	0	-0	-0	-0	0	0
2	15.6522	0	-0	-0	-0	0	0
3	31.3043	0	-0	-0	-0	0	0
4	46.9565	0	-0	-0	-0	0	0
5	62.6087	0	-0	-0	-0	0	0
6	78.2609	0	-0	-0	-0	0	0
7	93.913	0	-0	-0	-0	0	0
8	109.565	0	-0	-0	-0	0	0
9	125.217	0	-0	-0	-0	0	0
10	140.87	0	-0	-0	-0	0	0
11	156.522	0	-0	-0	-0	0	0
12	172.174	0	-0	-0	-0	0	0
13	187.826	0	-0	-0	-0	0	0
14	203.478	0	-0	-0	-0	0	0
15	219.13	0	-0	-0	-0	0	0
16	234.783	0	-0	-0	-0	0	0
17	250.435	400.339	-87.2831	130.84	368.149	6.96073	17.4824
18	266.087	1673.99	-364.979	111.489	1629.91	29.0481	73.1013
19	281.739	2598.12	-566.478	-515.885	2482.57	45.0367	113.457
20	297.391	2713.18	-591.57	-1218.21	2351.04	46.9991	118.482
21	313.043	1968.9	-429.286	-1311.54	1404.32	34.089	85.9796
22	328.696	708.534	-154.482	-590.821	359.286	12.2664	30.9409
23	344.348	0	-0	-0	-0	0	0

ψ : Position of roller

|F| : Absolute value of force on inner race

Fx : Axial force

Fy : Radial force Y

Fz : Radial force Z

M : Moment load on inner race

Fsh : Force on shoulder

Change this text in mesys.ini

Roller profile and aISO

Section	x [mm]	y [mm]	l [mm]	profile_r [µm]	profile_i [µm]	profile_e [µm]	aISO
1	-14.263	96.213	0.853	28.15	0.00	0.00	0.00
2	-13.426	96.045	0.853	18.19	0.00	0.00	0.00
3	-12.589	95.877	0.853	13.68	0.00	0.00	0.00
4	-11.752	95.710	0.853	10.80	0.00	0.00	0.00
5	-10.916	95.542	0.853	8.72	0.00	0.00	0.00
6	-10.079	95.374	0.853	7.12	0.00	0.00	0.00
7	-9.242	95.206	0.853	5.83	0.00	0.00	0.00
8	-8.405	95.038	0.853	4.78	0.00	0.00	50.00
9	-7.568	94.870	0.853	3.89	0.00	0.00	50.00
10	-6.732	94.702	0.853	3.15	0.00	0.00	50.00
11	-5.895	94.535	0.853	2.52	0.00	0.00	50.00
12	-5.058	94.367	0.853	1.99	0.00	0.00	50.00
13	-4.221	94.199	0.853	1.53	0.00	0.00	50.00
14	-3.384	94.031	0.853	1.15	0.00	0.00	50.00
15	-2.548	93.863	0.853	0.83	0.00	0.00	50.00
16	-1.711	93.695	0.853	0.57	0.00	0.00	50.00
17	-0.874	93.528	0.853	0.36	0.00	0.00	50.00
18	-0.037	93.360	0.853	0.20	0.00	0.00	50.00
19	0.800	93.192	0.853	0.09	0.00	0.00	50.00
20	1.636	93.024	0.853	0.02	0.00	0.00	50.00
21	2.473	92.856	0.853	0.00	0.00	0.00	50.00
22	3.310	92.688	0.853	0.02	0.00	0.00	50.00
23	4.147	92.521	0.853	0.09	0.00	0.00	50.00
24	4.983	92.353	0.853	0.20	0.00	0.00	50.00
25	5.820	92.185	0.853	0.36	0.00	0.00	50.00
26	6.657	92.017	0.853	0.57	0.00	0.00	50.00
27	7.494	91.849	0.853	0.83	0.00	0.00	50.00
28	8.331	91.681	0.853	1.15	0.00	0.00	50.00
29	9.167	91.513	0.853	1.53	0.00	0.00	50.00
30	10.004	91.346	0.853	1.99	0.00	0.00	50.00
31	10.841	91.178	0.853	2.52	0.00	0.00	50.00
32	11.678	91.010	0.853	3.15	0.00	0.00	50.00
33	12.515	90.842	0.853	3.89	0.00	0.00	50.00
34	13.351	90.674	0.853	4.78	0.00	0.00	50.00
35	14.188	90.506	0.853	5.83	0.00	0.00	50.00
36	15.025	90.339	0.853	7.12	0.00	0.00	0.00
37	15.862	90.171	0.853	8.72	0.00	0.00	0.00
38	16.698	90.003	0.853	10.80	0.00	0.00	0.00
39	17.535	89.835	0.853	13.68	0.00	0.00	0.00
40	18.372	89.667	0.853	18.19	0.00	0.00	0.00
41	19.209	89.499	0.853	28.15	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 16 to 23 row 1

Section	16	17	18	19	20	21	22	23
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	173.25	209.64	0.00	0.00	0.00
9	0.00	0.00	0.00	351.39	373.34	173.81	0.00	0.00
10	0.00	0.00	256.38	457.80	475.81	329.72	0.00	0.00
11	0.00	0.00	367.58	534.92	550.97	425.70	0.00	0.00
12	0.00	0.00	444.60	594.54	609.41	495.83	115.48	0.00
13	0.00	0.00	502.88	642.10	656.18	550.15	242.84	0.00
14	0.00	180.09	548.63	680.63	694.17	593.38	318.45	0.00
15	0.00	256.80	585.10	712.03	725.18	628.17	372.60	0.00
16	0.00	308.67	614.24	737.53	750.40	656.17	413.39	0.00
17	0.00	346.17	637.29	757.98	770.66	678.48	444.49	0.00
18	0.00	373.46	655.08	773.96	786.51	695.82	467.91	0.00
19	0.00	392.62	668.16	785.87	798.36	708.69	484.83	0.00
20	0.00	404.81	676.85	793.95	806.42	717.38	495.95	0.00
21	0.00	410.17	680.62	797.47	809.95	721.28	501.13	0.00
22	0.00	410.79	682.57	800.06	812.63	723.69	502.77	0.00
23	0.00	404.76	679.65	798.11	810.81	721.36	498.60	0.00
24	0.00	392.13	672.44	792.41	805.28	714.96	488.90	0.00
25	0.00	372.07	660.68	782.76	795.86	704.24	473.20	0.00
26	0.00	343.12	643.90	768.81	782.20	688.81	450.63	0.00
27	0.00	302.61	621.43	750.07	763.83	668.05	419.81	0.00
28	0.00	245.06	592.23	725.81	740.04	641.09	378.42	0.00
29	0.00	154.77	554.77	694.99	709.84	606.61	322.16	0.00
30	0.00	0.00	506.60	656.08	671.75	562.62	241.33	0.00
31	0.00	0.00	443.52	606.74	623.53	505.86	94.08	0.00
32	0.00	0.00	357.12	543.08	561.55	430.37	0.00	0.00
33	0.00	0.00	223.34	457.87	479.13	322.77	0.00	0.00
34	0.00	0.00	0.00	334.05	361.30	125.71	0.00	0.00
35	0.00	0.00	0.00	76.31	145.25	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 16 to 23 row 1

Section	16	17	18	19	20	21	22	23
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	52.78	109.15	0.00	0.00	0.00
9	0.00	0.00	0.00	274.16	294.91	71.02	0.00	0.00
10	0.00	0.00	178.31	380.81	397.14	257.62	0.00	0.00
11	0.00	0.00	296.20	455.98	470.32	354.11	0.00	0.00
12	0.00	0.00	373.14	513.56	526.77	422.72	0.00	0.00
13	0.00	0.00	430.41	559.38	571.87	475.41	186.07	0.00
14	0.00	121.43	475.15	596.57	608.57	517.27	263.69	0.00
15	0.00	205.71	510.88	627.02	638.67	551.05	317.57	0.00
16	0.00	259.15	539.61	651.94	663.37	578.43	357.87	0.00
17	0.00	297.36	562.61	672.18	683.45	600.48	388.71	0.00
18	0.00	325.37	580.71	688.30	699.48	617.93	412.21	0.00
19	0.00	345.55	594.46	700.70	711.84	631.27	429.62	0.00
20	0.00	359.17	604.19	709.61	720.75	640.80	441.68	0.00
21	0.00	366.52	609.46	714.40	725.57	646.00	448.32	0.00
22	0.00	369.57	613.09	718.33	729.61	649.84	451.75	0.00
23	0.00	366.68	612.35	718.21	729.63	649.45	449.98	0.00
24	0.00	358.02	607.82	714.75	726.35	645.43	443.34	0.00
25	0.00	342.97	599.27	707.79	719.61	637.60	431.44	0.00
26	0.00	320.46	586.35	697.05	709.15	625.63	413.62	0.00
27	0.00	288.53	568.48	682.12	694.57	609.02	388.78	0.00
28	0.00	243.43	544.85	662.39	675.28	587.05	355.13	0.00
29	0.00	176.10	514.20	636.99	650.43	558.63	309.49	0.00
30	0.00	29.24	474.61	604.66	618.84	522.15	245.23	0.00
31	0.00	0.00	422.88	563.50	578.65	475.01	141.67	0.00
32	0.00	0.00	352.90	510.39	526.95	412.69	0.00	0.00
33	0.00	0.00	249.80	439.78	458.60	325.66	0.00	0.00
34	0.00	0.00	0.00	339.57	362.78	183.69	0.00	0.00
35	0.00	0.00	0.00	165.78	205.01	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Details for bearing: B2 'Generic T 2ED 150'

Rolling Bearing Calculation

Input data

Bearing Geometry

Type of rolling bearing		Tapered roller bearing	
Bearing designation		Generic T 2ED 150	
Bearing inner diameter	d	150.000	mm
Bearing outer diameter	D	225.000	mm
Bearing width	B	53.000	mm
Bearing width inner ring	Bi	52.000	mm
Bearing width outer ring	Be	44.000	mm
Number of rolling elements	Z	23	
Roller diameter	Dw	20.625	mm
Pitch diameter	Dpw	185.703	mm
Length of Roller	Lwe	35.000	mm
Nominal contact angle	α	12.592	°
Center of contact cone		right	
Distance to centre of pressure	a	44.999	mm
Distance bearing center to row center	δRC	-2.4722	mm
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal axial clearance	Pa	0.0000	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Loading

Speed of inner ring	ni	1500.0	rpm
		inner ring rotates relative to load	
Speed of outer ring	ne	0.0000	rpm
		outer ring is stationary relative to load	
Displacement X	ux	-98.9169	µm
Displacement Y	uy	3.6469	µm
Displacement Z	uz	3.9961	µm
Rotation around Y	ry	-0.3430	mrad
Rotation around Z	rz	-0.1282	mrad
Temperature of inner ring	T_i	20.000	°C
Temperature of outer ring	T_e	20.000	°C
Reliability	reliability	90.000	%
Maximal permissible value for aISO	aISOMax	50	

Material

Surface hardness inner race	HRC_i	58	
Surface hardness outer race	HRC_e	58	
Ultimate strength of core inner race	Rm_i	1200.0	MPa
Ultimate strength of core outer race	Rm_e	1200.0	MPa

Material for inner ring		Steel	
Material for outer ring		Steel	
Material for rolling element		Steel	

Lubrication

Lubricant		ISO VG 220 mineral oil	
Kinematic viscosity at 40°C	v40	220.000	mm²/s
Kinematic viscosity at 100°C	v100	19.000	mm²/s
Oil density	rhoOil	890.000	kg/m³
Oil temperature	ϑOil	70.000	°C
Oil does not contain effective EP additives			
Effective kinematic viscosity	v(ϑ)	51.794	mm²/s
Effective oil density	ρ(ϑ)	851.593	kg/m³
Lubricant cleanliness		Oil lubrication with on-line filter ISO4406 -/17/14	

Results

Centrifugal loads are not considered

Bearing inner geometry

Number of rolling elements	Z	23	
Roller diameter	Dw	20.625	mm
Pitch diameter	Dpw	185.703	mm
Length of Roller	Lwe	35.000	mm
Nominal contact angle	α	12.592	°
Nominal axial clearance	Pa	0.0000	mm
Change of clearance	ΔPd	0.0000	mm
Effective axial clearance	Paeff	0.0000	mm
Distance between rolling elements	δRE	4.6616	mm
Shoulder diameter inner ring	dSi	184.197	mm
Shoulder opening angle inner race	γsi	0.0000	°

Forces and displacement

Axial force	Fx	-37.1650	kN
Radial force Y	Fy	6.8172	kN
Radial force Z	Fz	54.104	kN
Displacement X	ux	-98.9169	µm
Displacement Y	uy	3.6469	µm
Displacement Z	uz	3.9961	µm
Moment Y	My	-1112.0089	Nm
Moment Z	Mz	78.161	Nm
Rotation around Y	ry	-0.3430	mrad
Rotation around Z	rz	-0.1282	mrad
Maximal pressure inner race	pmax_i	1446.4	MPa
Maximal pressure outer race	pmax_e	1293.9	MPa
Maximal pressure	pmax	1446.4	MPa
Static safety factor (ISO 17956)	S0eff	7.64615	

Life

Dynamic load rating	Cr	395.785	kN

Change this text in mesys.ini

Static load rating	C0r	638.500	kN
Fatigue load limit	Cur	63.475	kN
Life modification factor for reliability	a1	1	
Viscosity ratio	κ	6.07471	
Contamination factor	eC	0.713789	
Life modification factor	aISO	4.99344	
Reference load	Pref	60076.6	N
Basic reference rating life	L10r	536.017	
Basic reference rating life	L10rh	5955.7	h
Modified reference rating life	Lnmr	2676.57	
Modified reference rating life	Lnmrh	29739.6	h
Life according ISO 281			
Dynamic radial load factor	X	0.4	
Dynamic axial load factor	Y	1.79072	
Dynamic equivalent load	P	88364.8	N
Basic life	L10	148.115	
Basic life	L10h	1645.7	h
Life modification factor	aISO	5.88036	
Modified life	Lnm	870.971	
Modified life	Lnmh	9677.5	h
Static equivalent load	P0	63869.5	N
Static safety factor (ISO 76)	S0	9.99695	
Thermal permissible speed			
Factor for load independent losses	f0r	3	
Factor for load dependent losses	f1r	0.0004	
Surface for heat transfer	Ar	62439.2	mm²
Thermal transmission coefficient	kq	296.718	W/m²·K
Load for reference speed	P1r	31925.0	N
Viscosity at reference conditions	vr	12.000	mm²/s
Load independent friction moment	M0r	1.6916	Nm
Load dependent friction moment	M1r	2.3714	Nm
Thermal reference speed	ntr	2177.2	rpm
Method	DIN 732		
Factor for load independent losses	f0	3	
Factor for load dependent losses	f1	0.0004	
Load for permissible speed	P1	133104	N
Temperature difference between bearing and surroundings	Δϑ	50.000	°C
Load independent friction moment	M0	2.1714	Nm
Load dependent friction moment	M1	9.8872	Nm
Thermal permissible speed	nt	733.582	rpm
Friction moments and temperature increase for current speed (n=1500)			
Load independent friction moment for current speed	M0_n	3.4981	Nm
Load dependent friction moment for current speed	M1_n	9.8872	Nm

Change this text in mesys.ini

Total friction moment for current speed	M_n	13.385	Nm	
Temperature difference for current speed	Δϑ_n	113.487	°C	

Subsurface stresses

Maximal shear stress for inner race	τmax_i	434.561	MPa	
Depth for maximal shear stress inner race	h(τmax_i)	0.1847	mm	
Shear yield stress for core inner race	τYield_i	510.000	MPa	
Shear fatigue limit for core inner race	τa_i	306.000	MPa	
Shear stress at core inner race	τ_i	306.000	MPa	
Maximal shear stress for outer race	τmax_e	388.527	MPa	
Depth for maximal shear stress outer race	h(τmax_e)	0.2052	mm	
Shear yield stress for core outer race	τYield_e	510.000	MPa	
Shear fatigue limit for core outer race	τa_e	306.000	MPa	
Shear stress at core outer race	τ_e	306.000	MPa	
Required hardness depth inner race	hdmin_i	0.4690	mm	
Required hardness depth outer race	hdmin_e	0.4381	mm	

Damage Frequencies

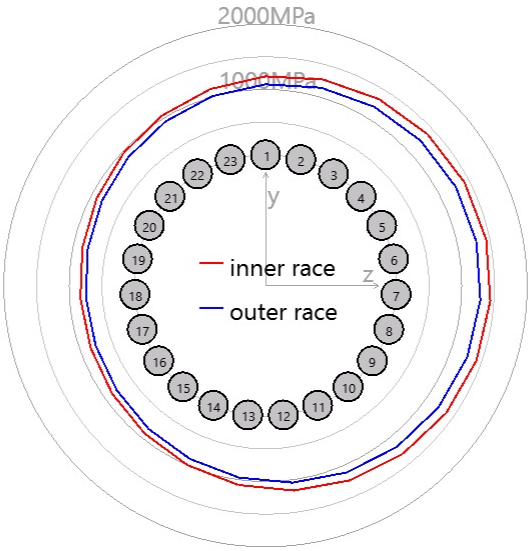
Speed of inner ring	ni	25.00	1/s	(1500rpm)
Speed of outer ring	ne	0.00	1/s	(0rpm)
Rotation speed of cage	fc	11.14	1/s	(668rpm)
Damage frequency for inner race	fip	318.81	1/s	(19128rpm)
Damage frequency for outer race	fep	-256.19	1/s	(-15372rpm)
Damage frequency for rolling element	frp	-222.43	1/s	(-13346rpm)

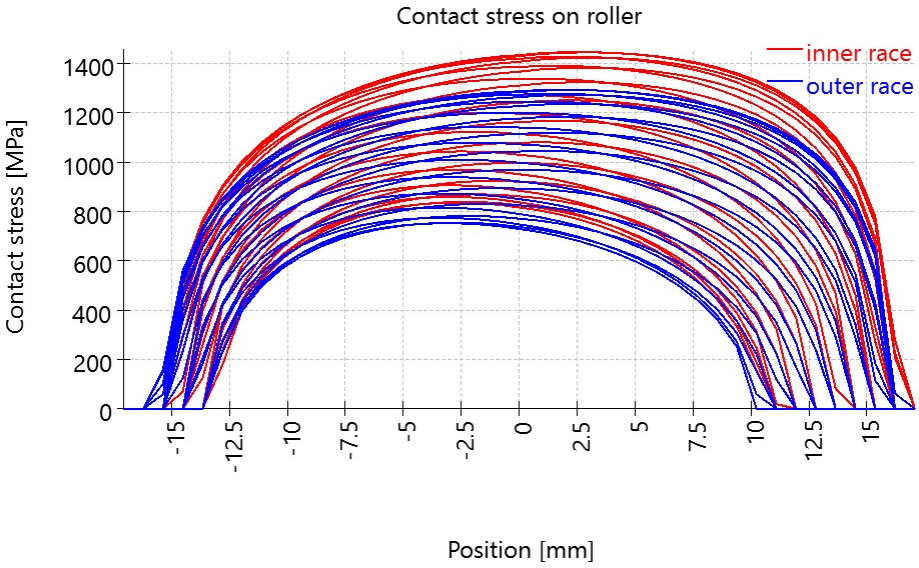
Bearing stiffness matrix

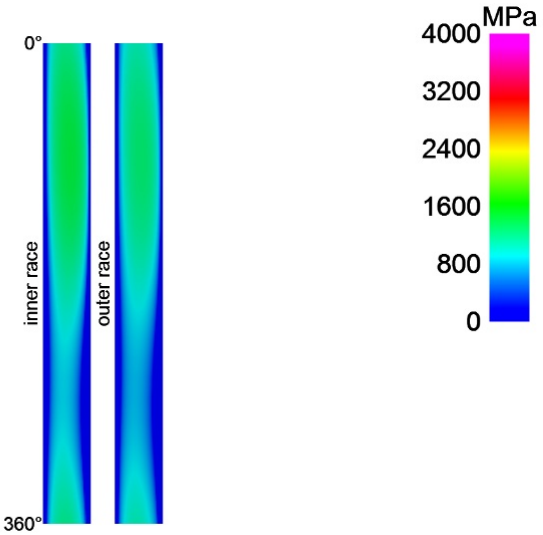
	ux [µm]	uy [µm]	uz [µm]	ry [mrad]	rz [mrad]
Fx [N]	517.309	-27.129	-223.857	5232.809	-44.198
Fy [N]	-27.473	5248.653	-11.415	73.456	96248.739
Fz [N]	-222.972	-11.415	5122.653	-93236.771	-73.456
My [Nm]	5.247	0.077	-92.882	2040.175	0.470
Mz [Nm]	-0.043	95.866	-0.077	0.470	2117.211

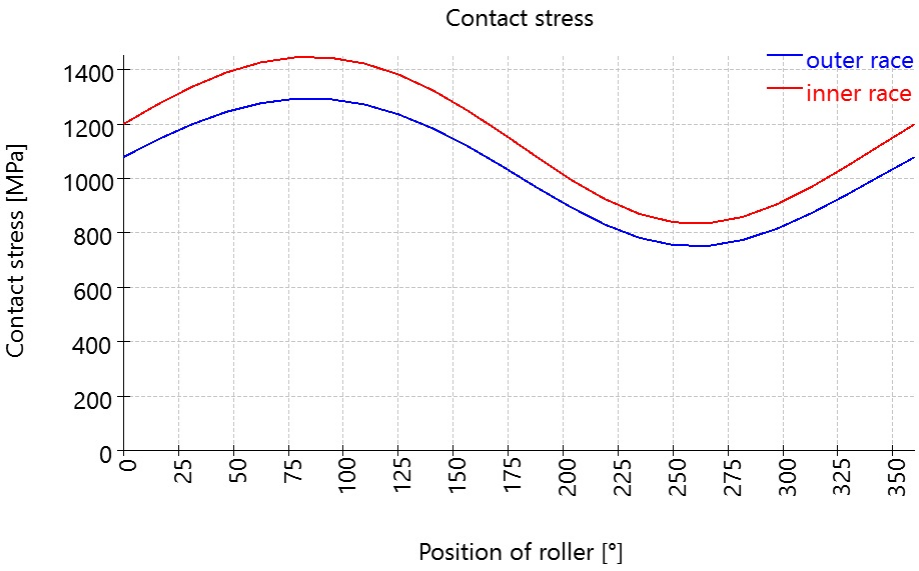
Bearing compliance matrix

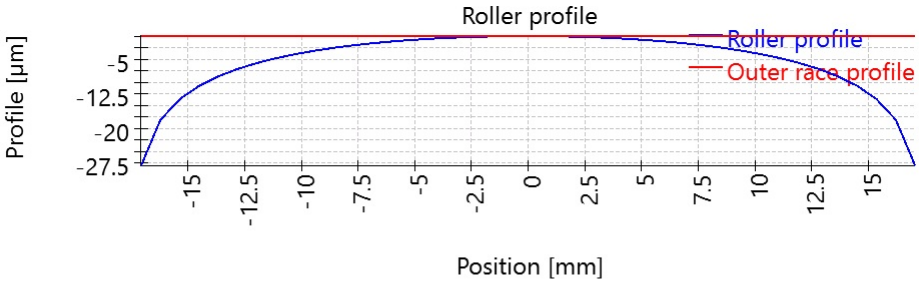
	Fx [N]	Fy [N]	Fz [N]	My [Nm]	Mz [Nm]
ux [µm]	0.00199	0.00006	-0.00003	-0.00657	-0.00251
uy [µm]	0.00006	0.00112	0.00001	0.00011	-0.05112
uz [µm]	-0.00004	0.00001	0.00114	0.05218	-0.00025
ry [mrad]	-0.00001	0.00000	0.00005	0.00288	-0.00000
rz [mrad]	-0.00000	-0.00005	-0.00000	-0.00000	0.00279

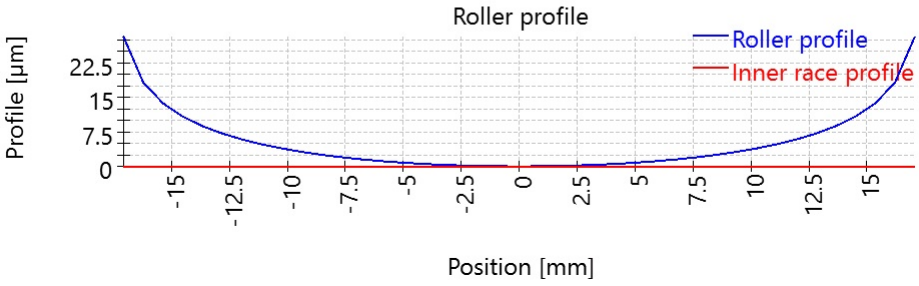

2000MPa
1000MPa
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
y
z
inner race
outer race

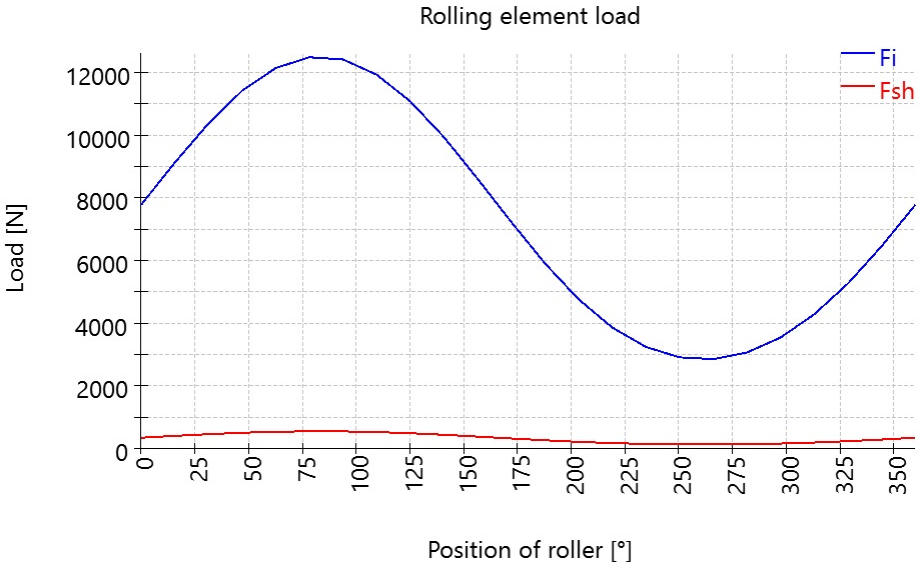

Contact stress on roller
inner race
outer race
Contact stress [MPa]
1400
1200
1000
800
600
400
200
0
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
Position [mm]


0°
360°
inner race
outer race
MPa
4000
3200
2400
1600
800
0

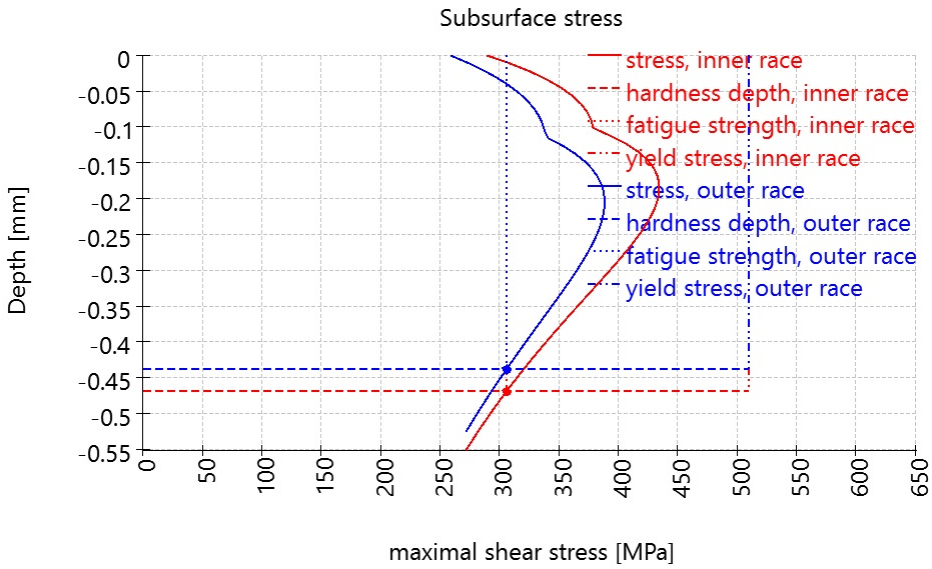

Contact stress
outer race
inner race
Contact stress [MPa]
1400
1200
1000
800
600
400
200
0
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
Position of roller [°]


Roller profile
Roller profile
Outer race profile
Profile [µm]
-5
-12.5
-20
-27.5
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
Position [mm]


Roller profile
Roller profile
Inner race profile
Profile [µm]
22.5
15
7.5
0
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
Position [mm]


Rolling element load
Fi
Fsh
Load [N]
12000
10000
8000
6000
4000
2000
0
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
Position of roller [°]

Change this text in mesys.ini



Result table for bearing 1

Roller	ψ [°]	|F| [N]	Fx [N]	Fy [N]	Fz [N]	M [Nm]	Fsh [N]
1	0	7769.48	1694.1	-7582.54	-0	134.62	339.285
2	15.6522	9115.89	1987.23	-8566.74	-2400.29	161.954	398.082
3	31.3043	10364.8	2258.98	-8643.02	-5255.93	188.189	452.622
4	46.9565	11412.6	2486.8	-7602.51	-8140.31	211.09	498.377
5	62.6087	12138.1	2644.38	-5450.17	-10518.3	227.732	530.059
6	78.2609	12482.2	2718.96	-2478.6	-11927.7	236.783	545.087
7	93.913	12411	2703.21	826.624	-12084.8	237.224	541.979
8	109.565	11925.7	2597.43	3897.81	-10967.4	228.835	520.787
9	125.217	11073	2411.77	6232.26	-8829.1	212.559	483.548
10	140.87	9930.07	2163.04	7517.9	-6116.27	189.949	433.638
11	156.522	8599.85	1873.55	7698.42	-3343.9	162.897	375.548
12	172.174	7223.18	1573.92	6983.95	-959.922	134.81	315.43
13	187.826	5901.82	1286.28	5706.3	784.313	107.876	257.727
14	203.478	4756.37	1036.86	4257.67	1849.37	84.6347	207.706
15	219.13	3856.07	840.792	2919.22	2374.96	66.5375	168.39
16	234.783	3236.15	705.765	1821.3	2580.2	54.1337	141.319
17	250.435	2904.3	633.498	949.172	2670.71	47.285	126.827
18	266.087	2848.86	621.478	189.73	2773.76	45.499	124.406
19	281.739	3060.28	667.642	-607.635	2924.1	48.5054	133.639
20	297.391	3537.66	771.79	-1588.35	3065.38	56.2673	154.486
21	313.043	4278.77	933.415	-2850.15	3051.76	68.9864	186.849
22	328.696	5259.98	1147.33	-4386.01	2667.19	86.6494	229.697
23	344.348	6450.6	1406.81	-6061.87	1698.46	108.917	281.69

ψ : Position of roller

|F| : Absolute value of force on inner race

Fx : Axial force

Fy : Radial force Y

Fz : Radial force Z

M : Moment load on inner race

Fsh : Force on shoulder

Change this text in mesys.ini

Roller profile and aISO

Section	x [mm]	y [mm]	l [mm]	profile_r [µm]	profile_i [µm]	profile_e [µm]	aISO
1	-19.206	89.483	0.853	28.15	0.00	0.00	0.00
2	-18.369	89.651	0.853	18.19	0.00	0.00	0.00
3	-17.532	89.819	0.853	13.68	0.00	0.00	50.00
4	-16.695	89.987	0.853	10.80	0.00	0.00	50.00
5	-15.858	90.155	0.853	8.72	0.00	0.00	50.00
6	-15.022	90.322	0.853	7.12	0.00	0.00	50.00
7	-14.185	90.490	0.853	5.83	0.00	0.00	27.42
8	-13.348	90.658	0.853	4.78	0.00	0.00	17.16
9	-12.511	90.826	0.853	3.89	0.00	0.00	12.46
10	-11.675	90.994	0.853	3.15	0.00	0.00	9.87
11	-10.838	91.162	0.853	2.52	0.00	0.00	8.27
12	-10.001	91.330	0.853	1.99	0.00	0.00	7.21
13	-9.164	91.497	0.853	1.53	0.00	0.00	6.46
14	-8.327	91.665	0.853	1.15	0.00	0.00	5.91
15	-7.491	91.833	0.853	0.83	0.00	0.00	5.49
16	-6.654	92.001	0.853	0.57	0.00	0.00	5.18
17	-5.817	92.169	0.853	0.36	0.00	0.00	4.94
18	-4.980	92.337	0.853	0.20	0.00	0.00	4.75
19	-4.143	92.505	0.853	0.09	0.00	0.00	4.61
20	-3.307	92.672	0.853	0.02	0.00	0.00	4.51
21	-2.470	92.840	0.853	0.00	0.00	0.00	4.46
22	-1.633	93.008	0.853	0.02	0.00	0.00	4.38
23	-0.796	93.176	0.853	0.09	0.00	0.00	4.35
24	0.040	93.344	0.853	0.20	0.00	0.00	4.35
25	0.877	93.512	0.853	0.36	0.00	0.00	4.38
26	1.714	93.680	0.853	0.57	0.00	0.00	4.44
27	2.551	93.848	0.853	0.83	0.00	0.00	4.54
28	3.388	94.015	0.853	1.15	0.00	0.00	4.68
29	4.224	94.183	0.853	1.53	0.00	0.00	4.86
30	5.061	94.351	0.853	1.99	0.00	0.00	5.12
31	5.898	94.519	0.853	2.52	0.00	0.00	5.47
32	6.735	94.687	0.853	3.15	0.00	0.00	5.95
33	7.572	94.855	0.853	3.89	0.00	0.00	6.64
34	8.408	95.023	0.853	4.78	0.00	0.00	7.68
35	9.245	95.190	0.853	5.83	0.00	0.00	9.38
36	10.082	95.358	0.853	7.12	0.00	0.00	12.52
37	10.919	95.526	0.853	8.72	0.00	0.00	19.77
38	11.755	95.694	0.853	10.80	0.00	0.00	46.03
39	12.592	95.862	0.853	13.68	0.00	0.00	50.00
40	13.429	96.030	0.853	18.19	0.00	0.00	50.00
41	14.266	96.198	0.853	28.15	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	367.70	456.42	514.06	544.23	548.18	527.28	480.18	403.58	288.06	68.96	0.00	0.00	0.00	0.00	0.00
5	622.30	687.06	733.10	759.47	765.66	752.43	719.66	667.51	596.53	507.68	396.06	258.48	0.00	0.00	0.00
6	767.99	826.44	869.53	895.63	903.79	894.44	867.67	824.06	764.99	692.83	607.41	514.89	417.42	318.64	233.03
7	868.35	924.48	966.89	993.68	1003.69	997.09	974.00	935.13	881.99	817.14	741.40	661.17	579.93	502.97	442.21
8	942.91	998.35	1041.04	1068.94	1080.71	1076.33	1055.92	1020.19	970.66	909.87	839.05	764.38	689.48	619.48	564.44
9	1000.64	1056.24	1099.71	1128.94	1142.43	1139.98	1121.69	1088.26	1041.16	982.87	914.85	843.04	771.06	703.92	650.64
10	1046.45	1102.70	1147.28	1177.97	1193.14	1192.43	1175.92	1144.28	1098.93	1042.25	975.87	905.53	834.85	768.75	715.64
11	1083.31	1140.56	1186.44	1218.67	1235.50	1236.41	1221.46	1191.28	1147.22	1091.59	1026.15	956.45	886.13	820.09	766.34
12	1113.16	1171.63	1218.97	1252.81	1271.28	1273.72	1260.16	1231.21	1188.13	1133.17	1068.20	998.62	928.07	861.46	806.57
13	1137.31	1197.20	1246.10	1281.60	1301.70	1305.61	1293.33	1265.42	1223.11	1168.55	1103.71	1033.85	962.66	895.09	838.72
14	1156.70	1218.14	1268.71	1305.91	1327.63	1332.96	1321.87	1294.88	1253.17	1198.79	1133.83	1063.42	991.29	922.45	864.36
15	1172.01	1235.13	1287.43	1326.37	1349.71	1356.43	1346.45	1320.29	1279.03	1224.68	1159.39	1088.22	1014.92	944.57	884.56
16	1183.71	1248.63	1302.75	1343.45	1368.42	1376.49	1367.58	1342.15	1301.24	1246.79	1181.02	1108.91	1034.25	962.19	900.09
17	1192.19	1259.00	1315.00	1357.51	1384.11	1393.52	1385.63	1360.86	1320.22	1265.54	1199.17	1125.96	1049.77	975.84	911.49
18	1197.69	1266.49	1324.44	1368.80	1397.04	1407.77	1400.86	1376.71	1336.24	1281.25	1214.15	1139.72	1061.85	985.88	919.15
19	1200.39	1271.28	1331.25	1377.50	1407.39	1419.43	1413.47	1389.88	1349.53	1294.15	1226.21	1150.43	1070.75	992.60	923.32
20	1200.37	1273.46	1335.51	1383.68	1415.24	1428.59	1423.56	1400.49	1360.20	1304.34	1235.47	1158.23	1076.61	996.12	924.15
21	1196.36	1271.67	1335.81	1385.90	1419.11	1433.74	1429.63	1407.06	1366.82	1310.48	1240.67	1161.95	1078.34	995.46	920.71
22	1193.73	1271.62	1338.15	1390.37	1425.38	1441.35	1438.12	1415.96	1375.58	1318.50	1247.42	1166.84	1080.82	995.09	917.13
23	1187.10	1267.62	1336.57	1390.93	1427.73	1445.05	1442.69	1420.92	1380.40	1322.57	1250.20	1167.72	1079.23	990.56	909.24
24	1177.72	1261.04	1332.50	1389.09	1427.72	1446.40	1444.91	1423.51	1382.79	1324.13	1250.37	1165.85	1074.72	982.89	897.95
25	1165.50	1251.80	1325.92	1384.82	1425.34	1445.39	1444.78	1423.71	1382.73	1323.17	1247.89	1161.19	1067.20	971.94	883.07
26	1150.26	1239.75	1316.68	1378.01	1420.48	1441.94	1442.20	1421.43	1380.14	1319.57	1242.65	1153.58	1056.50	957.50	864.30
27	1131.71	1224.66	1304.60	1368.47	1412.99	1435.90	1437.02	1416.53	1374.86	1313.18	1234.46	1142.80	1042.34	939.22	841.20
28	1109.47	1206.20	1289.37	1355.96	1402.62	1427.03	1429.03	1408.77	1366.65	1303.73	1223.02	1128.52	1024.33	916.60	813.12
29	1083.00	1183.92	1270.62	1340.12	1389.04	1415.01	1417.91	1397.86	1355.19	1290.88	1207.97	1110.31	1001.93	888.98	779.17
30	1051.56	1157.20	1247.80	1320.46	1371.81	1399.44	1403.24	1383.35	1340.03	1274.15	1188.75	1087.53	974.39	855.38	738.05
31	1014.15	1125.21	1220.18	1296.34	1350.33	1379.71	1384.46	1364.68	1320.57	1252.88	1164.65	1059.34	940.67	814.44	687.83
32	969.29	1086.75	1186.75	1266.83	1323.74	1355.03	1360.75	1341.02	1295.96	1226.16	1134.62	1024.52	899.23	764.09	625.44
33	914.80	1040.08	1146.02	1230.65	1290.84	1324.25	1331.00	1311.24	1264.99	1192.67	1097.17	981.28	847.78	701.09	545.55
34	847.24	982.56	1095.81	1185.85	1249.88	1285.68	1293.55	1273.65	1225.90	1150.47	1050.07	926.88	782.68	619.82	437.26
35	760.73	909.87	1032.63	1129.43	1198.12	1236.75	1245.86	1225.66	1175.93	1096.51	989.76	856.85	697.53	509.10	268.70
36	643.77	814.32	950.53	1056.39	1131.08	1173.23	1183.78	1163.03	1110.57	1025.71	910.12	763.04	579.47	338.53	0.00
37	467.58	679.87	838.02	957.42	1040.60	1087.52	1099.88	1078.14	1021.56	928.56	799.21	628.12	393.54	0.00	0.00
38	0.00	460.91	667.92	812.14	909.47	963.87	978.79	955.11	891.44	784.09	628.26	399.37	0.00	0.00	0.00
39	0.00	0.00	331.86	557.97	689.69	760.05	779.80	751.32	671.05	526.34	271.64	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	224.96	278.86	206.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 16 to 23 row 1

Section	16	17	18	19	20	21	22	23
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	231.81
5	0.00	0.00	0.00	0.00	124.50	305.87	434.34	539.02
6	176.76	176.86	234.55	321.13	419.86	517.42	610.77	695.86
7	405.56	401.02	430.44	486.50	560.81	641.44	723.21	800.68
8	530.34	523.01	544.35	590.10	654.45	727.30	803.43	877.18
9	616.55	606.82	623.46	663.48	722.23	790.70	863.72	935.59
10	680.64	668.67	681.91	718.10	773.25	839.03	910.31	981.35
11	729.96	715.85	726.33	759.69	812.35	876.43	946.81	1017.67
12	768.54	752.32	760.43	791.57	842.43	905.47	975.50	1046.65
13	798.84	780.53	786.50	815.81	865.36	927.81	997.90	1069.67
14	822.48	802.08	806.06	833.82	882.39	944.60	1015.08	1087.73
15	840.56	818.04	820.14	846.55	894.41	956.65	1027.77	1101.53
16	853.84	829.18	829.46	854.67	902.04	964.55	1036.53	1111.59
17	862.89	836.02	834.52	858.66	905.72	968.70	1041.74	1118.27
18	868.06	838.93	835.68	858.84	905.75	969.39	1043.68	1121.84
19	869.63	838.16	833.14	855.41	902.33	966.81	1042.53	1122.49
20	867.72	833.81	827.00	848.45	895.52	961.02	1038.35	1120.28
21	861.44	825.01	816.39	837.06	884.38	951.02	1030.07	1114.04
22	854.62	815.41	804.89	824.90	872.79	941.00	1022.25	1108.74
23	843.34	801.19	788.69	808.08	856.66	926.61	1010.23	1099.35
24	828.37	783.05	768.45	787.28	836.76	908.74	995.00	1087.01
25	809.47	760.66	743.80	762.13	812.77	887.13	976.38	1071.60
26	786.24	733.54	714.20	732.11	784.24	861.40	954.09	1052.86
27	758.08	700.95	678.83	696.41	750.46	831.01	927.68	1030.47
28	724.18	661.85	636.50	653.88	710.47	795.18	896.54	1003.93
29	683.32	614.67	585.40	602.78	662.82	752.80	859.84	972.60
30	633.68	556.94	522.61	540.31	605.28	702.24	816.39	935.55
31	572.38	484.44	442.88	461.55	534.19	640.99	764.41	891.49
32	494.37	388.74	334.60	355.95	442.61	564.81	701.19	838.49
33	389.16	246.17	153.46	187.82	313.72	465.64	622.17	773.58
34	223.99	0.00	0.00	0.00	19.07	323.15	518.71	691.76
35	0.00	0.00	0.00	0.00	0.00	0.00	369.60	583.50
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	425.83
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.79
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	58.77	150.28	159.71	100.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	401.57	476.49	526.45	554.25	560.81	545.33	507.85	447.52	360.73	233.79	0.00	0.00	0.00	0.00	0.00
5	604.11	662.74	704.58	729.49	737.27	727.12	699.45	654.90	593.98	516.61	425.81	316.62	181.34	0.00	0.00
6	725.25	778.89	818.44	843.05	852.19	845.06	822.04	783.96	731.90	666.98	593.50	511.68	426.92	346.49	275.69
7	809.53	861.23	900.25	925.37	935.89	931.00	910.99	876.69	829.33	770.36	704.09	631.59	558.57	491.98	436.58
8	872.26	923.35	962.62	988.62	1000.52	997.49	979.71	947.98	903.58	848.09	785.64	717.63	649.60	587.96	536.99
9	920.72	971.91	1011.88	1038.95	1052.23	1050.84	1034.87	1005.05	962.68	909.40	849.17	783.57	717.94	658.34	608.85
10	958.99	1010.72	1051.64	1079.92	1094.56	1094.68	1080.25	1051.94	1011.04	959.24	900.33	836.00	771.47	712.54	663.24
11	989.56	1042.12	1084.18	1113.75	1129.75	1131.28	1118.20	1091.14	1051.34	1000.55	942.39	878.65	814.45	755.41	705.62
12	1014.06	1067.67	1111.00	1141.93	1159.29	1162.15	1150.30	1124.28	1085.34	1035.23	977.43	913.82	849.45	789.81	739.10
13	1033.61	1088.43	1133.14	1165.47	1184.19	1188.35	1177.63	1152.52	1114.24	1064.57	1006.85	943.05	878.15	817.58	765.63
14	1049.01	1105.18	1151.35	1185.12	1205.21	1210.62	1200.96	1176.64	1138.89	1089.47	1031.63	967.40	901.70	839.94	786.54
15	1060.83	1118.46	1166.17	1201.43	1222.88	1229.52	1220.86	1197.25	1159.90	1110.60	1052.46	987.60	920.92	857.75	802.72
16	1069.49	1128.68	1178.00	1214.78	1237.61	1245.46	1237.75	1214.79	1177.75	1128.45	1069.88	1004.23	936.37	871.64	814.81
17	1075.30	1136.16	1187.14	1225.48	1249.70	1258.74	1251.95	1229.57	1192.77	1143.36	1084.25	1017.68	948.50	882.05	823.28
18	1078.48	1141.09	1193.81	1233.74	1259.36	1269.59	1263.69	1241.85	1205.21	1155.61	1095.85	1028.24	957.60	889.29	828.44
19	1079.17	1143.63	1198.15	1239.72	1266.75	1278.16	1273.12	1251.78	1215.25	1165.38	1104.88	1036.11	963.90	893.59	830.52
20	1077.43	1143.83	1200.23	1243.47	1271.93	1284.53	1280.33	1259.44	1222.97	1172.77	1111.45	1041.42	967.50	895.05	829.61
21	1072.13	1140.50	1198.77	1243.68	1273.57	1287.33	1283.96	1263.52	1227.10	1176.56	1114.40	1043.08	967.42	892.78	824.89
22	1068.05	1138.73	1199.15	1245.93	1277.37	1292.35	1289.80	1269.71	1233.17	1182.05	1118.76	1045.81	968.02	890.77	820.02
23	1060.37	1133.41	1196.00	1244.67	1277.67	1293.87	1292.13	1272.38	1235.72	1184.01	1119.56	1044.95	964.96	885.01	811.27
24	1050.19	1125.75	1190.63	1241.26	1275.85	1293.29	1292.35	1272.93	1236.09	1183.72	1118.03	1041.63	959.28	876.41	799.41
25	1037.44	1115.68	1182.98	1235.65	1271.90	1290.60	1290.46	1271.33	1234.27	1181.16	1114.12	1035.77	950.87	864.84	784.29
26	1021.91	1103.06	1172.92	1227.74	1265.71	1285.70	1286.36	1267.51	1230.16	1176.23	1107.71	1027.25	939.56	850.07	765.59
27	1003.36	1087.65	1160.27	1217.36	1257.12	1278.45	1279.92	1261.31	1223.62	1168.77	1098.63	1015.85	925.10	831.77	742.88
28	981.40	1069.16	1144.75	1204.27	1245.92	1268.63	1270.93	1252.52	1214.42	1158.53	1086.59	1001.26	907.11	809.48	715.55
29	955.52	1047.15	1125.99	1188.13	1231.79	1255.96	1259.09	1240.86	1202.26	1145.19	1071.25	983.05	885.08	782.54	682.72
30	925.03	1021.04	1103.50	1168.49	1214.33	1240.03	1244.01	1225.92	1186.72	1128.30	1052.10	960.66	858.30	750.02	643.12
31	888.96	990.04	1076.59	1144.74	1192.94	1220.29	1225.16	1207.15	1167.23	1107.25	1028.45	933.26	825.76	710.59	594.84
32	845.88	953.01	1044.28	1116.02	1166.85	1195.99	1201.79	1183.82	1143.01	1081.18	999.33	899.71	786.01	662.25	534.75
33	793.68	908.29	1005.19	1081.11	1134.93	1166.06	1172.84	1154.83	1112.91	1048.85	963.33	858.30	736.83	601.73	457.26
34	728.98	853.32	957.23	1038.17	1095.50	1128.92	1136.77	1118.61	1075.28	1008.44	918.34	806.42	674.65	523.31	350.11
35	645.85	783.91	897.07	984.36	1046.01	1082.14	1091.19	1072.72	1027.52	957.05	860.96	739.71	593.06	414.87	168.03
36	532.27	692.40	818.93	914.87	982.15	1021.71	1032.18	1013.15	965.32	889.84	785.27	650.14	478.66	237.96	0.00
37	354.97	562.25	711.48	820.67	896.08	940.36	952.63	932.61	880.77	797.61	679.54	519.89	290.32	0.00	0.00
38	0.00	340.90	546.65	681.44	770.91	822.79	837.71	815.71	756.77	659.55	514.14	287.53	0.00	0.00	0.00
39	0.00	0.00	184.62	429.84	557.21	626.51	646.73	619.59	542.88	404.99	114.57	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	61.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 16 to 23 row 1

Section	16	17	18	19	20	21	22	23
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	124.77	294.80
5	0.00	0.00	0.00	0.00	205.44	335.14	440.66	529.37
6	231.30	229.19	269.43	337.91	417.89	502.85	584.64	659.29
7	402.78	397.63	421.81	470.41	533.61	605.69	678.54	747.31
8	505.08	497.65	515.68	556.22	611.83	677.58	745.89	811.75
9	576.94	567.46	581.66	617.47	668.64	730.71	796.47	860.86
10	630.58	619.15	630.48	663.03	711.29	771.05	835.37	899.15
11	671.79	658.47	667.44	697.53	743.75	802.04	865.61	929.32
12	703.84	688.65	695.56	723.70	768.43	825.79	889.09	953.12
13	728.79	711.73	716.76	743.26	786.90	843.73	907.11	971.74
14	747.96	729.01	732.29	757.39	800.22	856.83	920.56	986.02
15	762.28	741.42	743.03	766.91	809.15	865.77	930.08	996.57
16	772.40	749.60	749.58	772.36	814.21	871.05	936.14	1003.82
17	778.79	753.99	752.37	774.16	815.77	873.01	939.05	1008.09
18	781.75	754.89	751.69	772.57	814.07	871.89	939.06	1009.61
19	781.51	752.50	747.70	767.75	809.29	867.84	936.31	1008.51
20	778.15	746.90	740.48	759.76	801.45	860.92	930.85	1004.86
21	770.87	737.30	729.22	747.77	789.71	850.20	921.70	997.60
22	763.08	726.93	717.11	735.03	777.51	839.42	912.94	991.16
23	751.25	712.36	700.71	718.03	761.18	824.68	900.36	981.03
24	736.05	694.19	680.59	697.36	741.37	806.73	884.86	968.22
25	717.23	672.09	656.38	672.66	717.78	785.34	866.25	952.59
26	694.40	645.57	627.53	643.39	689.93	760.12	844.24	933.92
27	666.99	613.91	593.22	608.75	657.15	730.54	818.40	911.87
28	634.18	576.07	552.26	567.58	618.45	695.83	788.16	885.98
29	594.78	530.45	502.79	518.08	572.37	654.89	752.69	855.63
30	546.95	474.48	441.70	457.30	516.62	606.08	710.80	819.93
31	487.72	403.59	363.08	379.72	447.22	546.80	660.76	777.62
32	411.67	307.81	252.25	272.20	356.19	472.53	599.79	726.81
33	306.51	151.22	0.00	58.44	220.54	374.04	523.13	664.54
34	119.48	0.00	0.00	0.00	0.00	223.55	421.18	585.70
35	0.00	0.00	0.00	0.00	0.00	0.00	266.79	480.12
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	320.37
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Details for bearing: B3 'Generic T 2ED 200'

Rolling Bearing Calculation

Input data

Bearing Geometry

Type of rolling bearing		Tapered roller bearing	
Bearing designation		Generic T 2ED 200	
Bearing inner diameter	d	200.000	mm
Bearing outer diameter	D	280.000	mm
Bearing width	B	56.000	mm
Bearing width inner ring	Bi	55.000	mm
Bearing width outer ring	Be	46.000	mm
Number of rolling elements	Z	28	
Roller diameter	Dw	22.000	mm
Pitch diameter	Dpw	238.157	mm
Length of Roller	Lwe	37.000	mm
Nominal contact angle	α	12.742	°
Center of contact cone		right	
Distance to centre of pressure	a	52.362	mm
Distance bearing center to row center	δRC	-2.7748	mm
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal axial clearance	Pa	0.0000	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Loading

Speed of inner ring	ni	-450.0000	rpm
		inner ring rotates relative to load	
Speed of outer ring	ne	0.0000	rpm
		outer ring is stationary relative to load	
Displacement X	ux	86.754	µm
Displacement Y	uy	-20.7016	µm
Displacement Z	uz	-41.0927	µm
Rotation around Y	ry	-0.0144	mrad
Rotation around Z	rz	0.0537	mrad
Temperature of inner ring	T_i	20.000	°C
Temperature of outer ring	T_e	20.000	°C
Reliability	reliability	90.000	%
Maximal permissible value for aISO	aISOMax	50	

Material

Surface hardness inner race	HRC_i	58	
Surface hardness outer race	HRC_e	58	
Ultimate strength of core inner race	Rm_i	1200.0	MPa
Ultimate strength of core outer race	Rm_e	1200.0	MPa

Material for inner ring		Steel	
Material for outer ring		Steel	
Material for rolling element		Steel	

Lubrication

Lubricant		ISO VG 220 mineral oil	
Kinematic viscosity at 40°C	v40	220.000	mm²/s
Kinematic viscosity at 100°C	v100	19.000	mm²/s
Oil density	rhoOil	890.000	kg/m³
Oil temperature	ϑOil	70.000	°C
Oil does not contain effective EP additives			
Effective kinematic viscosity	v(ϑ)	51.794	mm²/s
Effective oil density	ρ(ϑ)	851.593	kg/m³
Lubricant cleanliness		Oil lubrication with on-line filter ISO4406 -/17/14	

Results

Centrifugal loads are not considered

Bearing inner geometry

Number of rolling elements	Z	28	
Roller diameter	Dw	22.000	mm
Pitch diameter	Dpw	238.157	mm
Length of Roller	Lwe	37.000	mm
Nominal contact angle	α	12.742	°
Nominal axial clearance	Pa	0.0000	mm
Change of clearance	ΔPd	0.0000	mm
Effective axial clearance	Paeff	0.0000	mm
Distance between rolling elements	δRE	4.6651	mm
Shoulder diameter inner ring	dSi	236.752	mm
Shoulder opening angle inner race	γsi	0.0000	°

Forces and displacement

Axial force	Fx	-11.4142	kN
Radial force Y	Fy	-19.6265	kN
Radial force Z	Fz	-41.1869	kN
Displacement X	ux	86.754	µm
Displacement Y	uy	-20.7016	µm
Displacement Z	uz	-41.0927	µm
Moment Y	My	991.069	Nm
Moment Z	Mz	-469.9296	Nm
Rotation around Y	ry	-0.0144	mrad
Rotation around Z	rz	0.0537	mrad
Maximal pressure inner race	pmax_i	1200.4	MPa
Maximal pressure outer race	pmax_e	1098.1	MPa
Maximal pressure	pmax	1200.4	MPa
Static safety factor (ISO 17956)	S0eff	11.13	

Life

Dynamic load rating	Cr	498.856	kN

Static load rating	C0r	893.959	kN
Fatigue load limit	Cur	82.900	kN
Life modification factor for reliability	a1	1	
Viscosity ratio	κ	2.82923	
Contamination factor	eC	0.736566	
Life modification factor	aISO	12.1388	
Reference load	Pref	40524.2	N
Basic reference rating life	L10r	4307.28	
Basic reference rating life	L10rh	159529	h
Modified reference rating life	Lnmr	52285.4	
Modified reference rating life	Lnmrh	1.9365e+06	h
Life according ISO 281			
Dynamic radial load factor	X	1	
Dynamic axial load factor	Y	0	
Dynamic equivalent load	P	45624.1	N
Basic life	L10	2901.36	
Basic life	L10h	107458	h
Life modification factor	aISO	50	
Modified life	Lnm	145068	
Modified life	Lnmh	5.37289e+06	h
Static equivalent load	P0	45624.1	N
Static safety factor (ISO 76)	S0	19.594	
Thermal permissible speed			
Factor for load independent losses	f0r	3	
Factor for load dependent losses	f1r	0.0004	
Surface for heat transfer	Ar	84446.0	mm²
Thermal transmission coefficient	kq	267.771	W/m²·K
Load for reference speed	P1r	44698.0	N
Viscosity at reference conditions	vr	12.000	mm²/s
Load independent friction moment	M0r	2.8157	Nm
Load dependent friction moment	M1r	4.2580	Nm
Thermal reference speed	ntr	1526.3	rpm
Method	DIN 732		
Factor for load independent losses	f0	3	
Factor for load dependent losses	f1	0.0004	
Load for permissible speed	P1	45624.1	N
Temperature difference between bearing and surroundings	Δϑ	50.000	°C
Load independent friction moment	M0	5.8497	Nm
Load dependent friction moment	M1	4.3463	Nm
Thermal permissible speed	nt	1058.9	rpm
Friction moments and temperature increase for current speed (n=450)			
Load independent friction moment for current speed	M0_n	3.3065	Nm
Load dependent friction moment for current speed	M1_n	4.3463	Nm

Change this text in mesys.ini

Total friction moment for current speed	M_n	7.6528	Nm	
Temperature difference for current speed	Δϑ_n	15.948	°C	

Subsurface stresses

Maximal shear stress for inner race	τmax_i	360.603	MPa	
Depth for maximal shear stress inner race	h(τmax_i)	0.1658	mm	
Shear yield stress for core inner race	τYield_i	510.000	MPa	
Shear fatigue limit for core inner race	τa_i	306.000	MPa	
Shear stress at core inner race	τ_i	306.000	MPa	
Maximal shear stress for outer race	τmax_e	329.727	MPa	
Depth for maximal shear stress outer race	h(τmax_e)	0.1817	mm	
Shear yield stress for core outer race	τYield_e	510.000	MPa	
Shear fatigue limit for core outer race	τa_e	306.000	MPa	
Shear stress at core outer race	τ_e	306.000	MPa	
Required hardness depth inner race	hdmin_i	0.3094	mm	
Required hardness depth outer race	hdmin_e	0.2759	mm	

Damage Frequencies

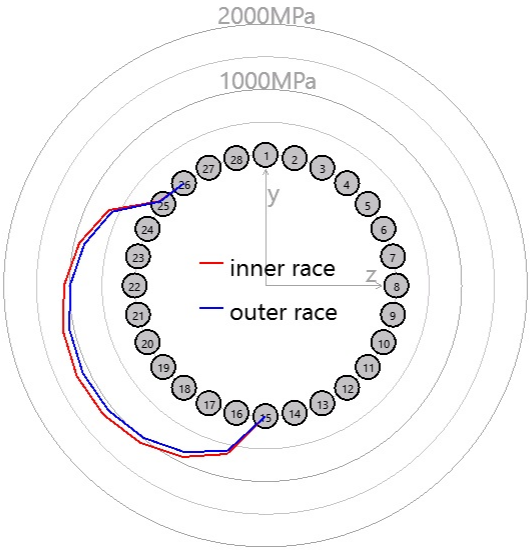
Speed of inner ring	ni	-7.50	1/s	(-450rpm)
Speed of outer ring	ne	0.00	1/s	(0rpm)
Rotation speed of cage	fc	-3.41	1/s	(-205rpm)
Damage frequency for inner race	fip	-114.50	1/s	(-6870rpm)
Damage frequency for outer race	fep	95.50	1/s	(5730rpm)
Damage frequency for rolling element	frp	80.53	1/s	(4832rpm)

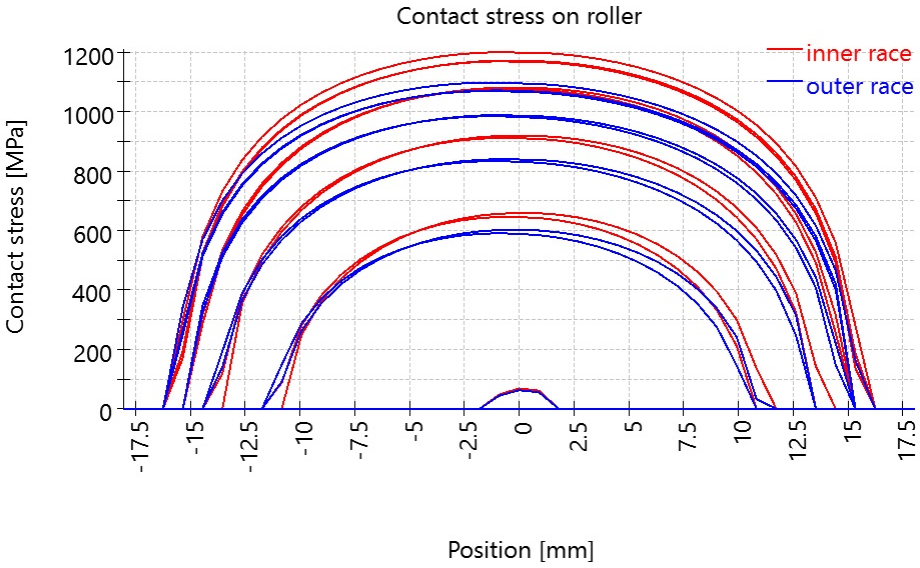
Bearing stiffness matrix

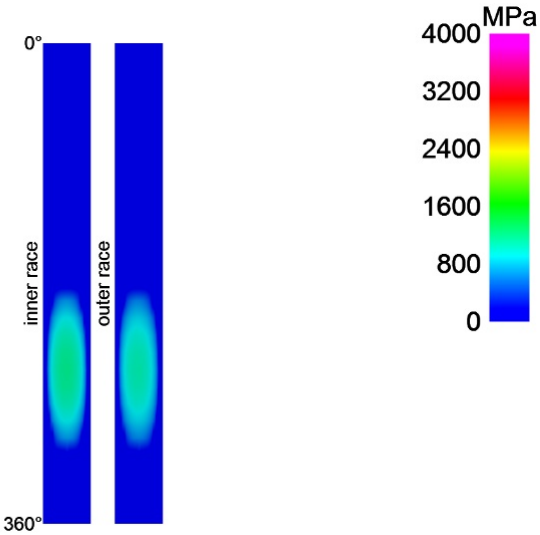
	ux [µm]	uy [µm]	uz [µm]	ry [mrad]	rz [mrad]
Fx [N]	199.746	324.205	687.877	-16739.564	7825.723
Fy [N]	324.283	1312.013	782.019	-18918.759	31777.883
Fz [N]	687.967	782.019	2593.910	-63249.741	18918.759
My [Nm]	-16.571	-18.772	-62.530	1705.835	-516.638
Mz [Nm]	7.771	31.403	18.772	-516.638	840.928

Bearing compliance matrix

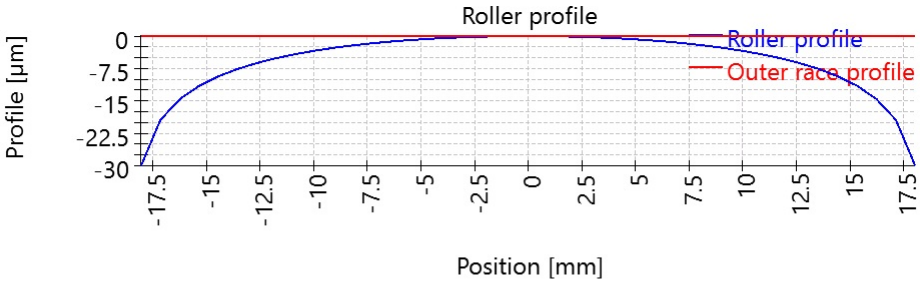
	Fx [N]	Fy [N]	Fz [N]	My [Nm]	Mz [Nm]
ux [µm]	0.21656	-0.02488	-0.05037	-0.00088	0.05748
uy [µm]	-0.02370	0.01354	0.00178	-0.14321	-0.41940
uz [µm]	-0.05044	0.00207	0.01665	0.18465	0.13025
ry [mrad]	-0.00000	-0.00014	0.00018	0.00755	0.00587
rz [mrad]	0.00001	-0.00041	0.00014	0.00587	0.01702

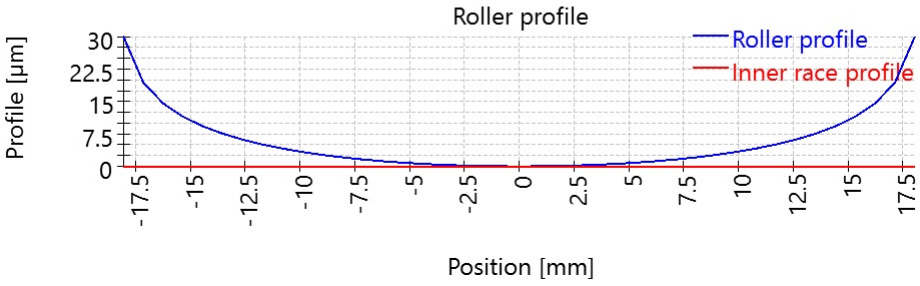

2000MPa
1000MPa
y
z
inner race
outer race

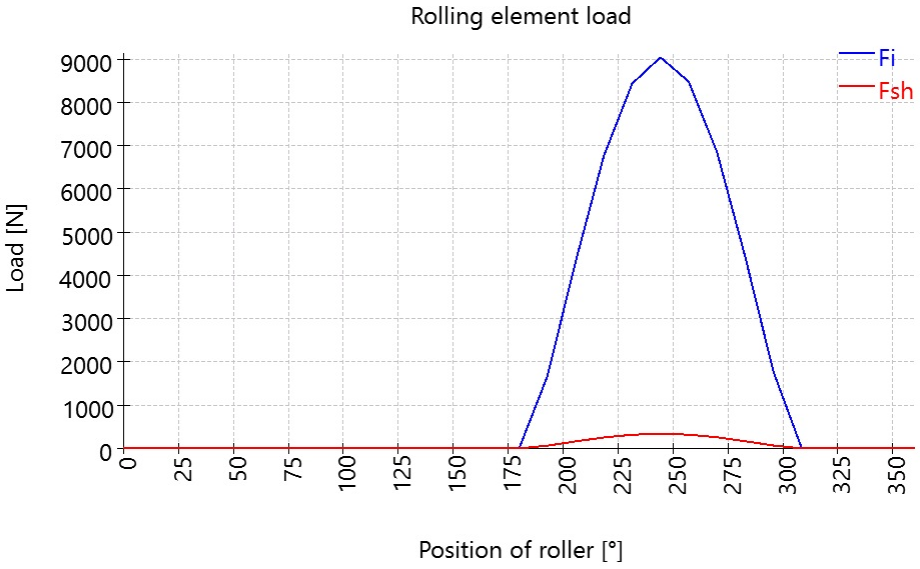

Contact stress on roller
inner race
outer race
Contact stress [MPa]
1200
1000
800
600
400
200
0
-17.5
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
17.5
Position [mm]

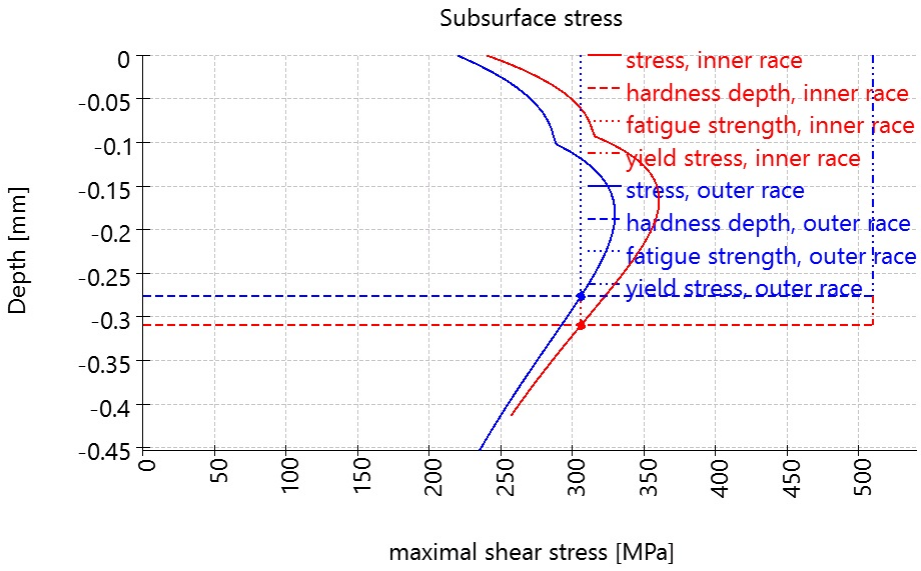

0°
360°
inner race
outer race
MPa
4000
3200
2400
1600
800
0


Contact stress
outer race
inner race
Contact stress [MPa]
Position of roller [°]


Roller profile
Roller profile
Outer race profile
Profile [µm]
Position [mm]


Roller profile
Roller profile
Inner race profile
Profile [µm]
Position [mm]


Rolling element load
Fi
Fsh
Load [N]
Position of roller [°]



Result table for bearing 1

Roller	ψ [°]	|F| [N]	Fx [N]	Fy [N]	Fz [N]	M [Nm]	Fsh [N]
1	0	0	-0	-0	-0	0	0
2	12.8571	0	-0	-0	-0	0	0
3	25.7143	0	-0	-0	-0	0	0
4	38.5714	0	-0	-0	-0	0	0
5	51.4286	0	-0	-0	-0	0	0
6	64.2857	0	-0	-0	-0	0	0
7	77.1429	0	-0	-0	-0	0	0
8	90	0	-0	-0	-0	0	0
9	102.857	0	-0	-0	-0	0	0
10	115.714	0	-0	-0	-0	0	0
11	128.571	0	-0	-0	-0	0	0
12	141.429	0	-0	-0	-0	0	0
13	154.286	0	-0	-0	-0	0	0
14	167.143	0	-0	-0	-0	0	0
15	180	0	-0	-0	-0	0	0
16	192.857	1669.04	368.144	1587.12	362.249	38.7838	62.3682
17	205.714	4321.25	953.137	3797.43	1828.74	100.702	161.475
18	218.571	6765.37	1492.21	5159.11	4114.25	158.011	252.806
19	231.429	8431.68	1859.71	5127.6	6429.81	197.315	315.072
20	244.286	9039.45	1993.72	3825.48	7943.7	211.936	337.783
21	257.143	8477.13	1869.66	1839.89	8061.08	199.118	316.771
22	270	6851.85	1511.16	1.22767e-12	6683.13	161.296	256.037
23	282.857	4426.17	976.167	-960.665	4208.95	104.462	165.396
24	295.714	1767.2	389.738	-747.878	1552.99	41.8518	66.036
25	308.571	2.66906	0.588647	-1.62316	2.03537	0.052046	0.0997366
26	321.429	0	-0	-0	-0	0	0
27	334.286	0	-0	-0	-0	0	0
28	347.143	0	-0	-0	-0	0	0

ψ : Position of roller

|F| : Absolute value of force on inner race

Fx : Axial force

Fy : Radial force Y

Fz : Radial force Z

M : Moment load on inner race

Fsh : Force on shoulder

Change this text in mesys.ini

Roller profile and aISO

Section	x [mm]	y [mm]	l [mm]	profile_r [µm]	profile_i [µm]	profile_e [µm]	aISO
1	-20.451	115.447	0.902	30.03	0.00	0.00	0.00
2	-19.568	115.629	0.902	19.40	0.00	0.00	0.00
3	-18.684	115.812	0.902	14.59	0.00	0.00	0.00
4	-17.800	115.994	0.902	11.52	0.00	0.00	50.00
5	-16.917	116.177	0.902	9.30	0.00	0.00	50.00
6	-16.033	116.359	0.902	7.59	0.00	0.00	50.00
7	-15.149	116.542	0.902	6.22	0.00	0.00	50.00
8	-14.266	116.724	0.902	5.09	0.00	0.00	50.00
9	-13.382	116.907	0.902	4.15	0.00	0.00	38.19
10	-12.499	117.089	0.902	3.36	0.00	0.00	27.12
11	-11.615	117.272	0.902	2.69	0.00	0.00	21.14
12	-10.731	117.454	0.902	2.12	0.00	0.00	17.52
13	-9.848	117.637	0.902	1.64	0.00	0.00	15.15
14	-8.964	117.819	0.902	1.23	0.00	0.00	13.54
15	-8.080	118.002	0.902	0.89	0.00	0.00	12.40
16	-7.197	118.184	0.902	0.61	0.00	0.00	11.58
17	-6.313	118.367	0.902	0.38	0.00	0.00	11.00
18	-5.430	118.549	0.902	0.21	0.00	0.00	10.60
19	-4.546	118.732	0.902	0.09	0.00	0.00	10.34
20	-3.662	118.914	0.902	0.02	0.00	0.00	10.22
21	-2.779	119.097	0.902	0.00	0.00	0.00	10.27
22	-1.895	119.279	0.902	0.02	0.00	0.00	10.27
23	-1.011	119.462	0.902	0.09	0.00	0.00	10.45
24	-0.128	119.644	0.902	0.21	0.00	0.00	10.76
25	0.756	119.827	0.902	0.38	0.00	0.00	11.24
26	1.640	120.009	0.902	0.61	0.00	0.00	11.91
27	2.523	120.192	0.902	0.89	0.00	0.00	12.84
28	3.407	120.374	0.902	1.23	0.00	0.00	14.13
29	4.290	120.557	0.902	1.64	0.00	0.00	15.98
30	5.174	120.739	0.902	2.12	0.00	0.00	18.69
31	6.058	120.922	0.902	2.69	0.00	0.00	22.92
32	6.941	121.104	0.902	3.36	0.00	0.00	30.04
33	7.825	121.287	0.902	4.15	0.00	0.00	43.65
34	8.709	121.469	0.902	5.09	0.00	0.00	50.00
35	9.592	121.652	0.902	6.22	0.00	0.00	50.00
36	10.476	121.834	0.902	7.59	0.00	0.00	50.00
37	11.359	122.017	0.902	9.30	0.00	0.00	50.00
38	12.243	122.199	0.902	11.52	0.00	0.00	50.00
39	13.127	122.382	0.902	14.59	0.00	0.00	0.00
40	14.010	122.564	0.902	19.40	0.00	0.00	0.00
41	14.894	122.747	0.902	30.03	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 16 to 28 row 1

Section	16	17	18	19	20	21	22	23	24	25	26	27	28
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	196.32	298.36	171.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	316.86	525.34	578.76	515.63	286.43	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	118.47	534.98	688.53	732.17	681.51	517.45	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	384.77	665.55	798.05	837.11	792.50	652.49	355.20	0.00	0.00	0.00	0.00	0.00
8	0.00	518.86	757.89	878.74	915.11	874.21	747.55	498.66	0.00	0.00	0.00	0.00	0.00
9	88.18	611.29	827.78	941.12	975.74	937.41	819.44	595.99	0.00	0.00	0.00	0.00	0.00
10	280.81	680.53	882.63	990.75	1024.15	987.73	875.92	668.64	248.77	0.00	0.00	0.00	0.00
11	381.34	734.52	926.62	1030.91	1063.43	1028.50	921.31	725.31	361.14	0.00	0.00	0.00	0.00
12	451.63	777.53	962.31	1063.71	1095.59	1061.86	958.27	770.60	437.81	0.00	0.00	0.00	0.00
13	504.41	812.14	991.40	1090.58	1122.00	1089.26	988.52	807.23	495.12	0.00	0.00	0.00	0.00
14	545.18	840.03	1015.05	1112.51	1143.59	1111.69	1013.27	836.97	539.55	0.00	0.00	0.00	0.00
15	576.93	862.35	1034.10	1130.22	1161.08	1129.88	1033.37	861.03	574.48	0.00	0.00	0.00	0.00
16	601.47	879.91	1049.14	1144.25	1174.96	1144.37	1049.42	880.24	601.91	0.00	0.00	0.00	0.00
17	619.98	893.28	1060.62	1154.97	1185.61	1155.54	1061.89	895.22	623.13	0.00	0.00	0.00	0.00
18	633.25	902.87	1068.83	1162.66	1193.30	1163.69	1071.08	906.38	639.00	0.00	0.00	0.00	0.00
19	641.78	908.97	1074.01	1167.52	1198.20	1168.98	1077.21	914.03	650.07	0.00	0.00	0.00	0.00
20	645.89	911.72	1076.26	1169.62	1200.41	1171.53	1080.42	918.32	656.71	48.25	0.00	0.00	0.00
21	645.04	910.23	1074.47	1167.76	1198.68	1170.12	1079.58	918.37	658.40	68.38	0.00	0.00	0.00
22	642.16	908.59	1073.46	1167.17	1198.36	1169.98	1079.55	918.31	658.17	60.93	0.00	0.00	0.00
23	634.30	902.69	1068.41	1162.62	1194.11	1165.88	1075.50	914.03	653.04	0.00	0.00	0.00	0.00
24	621.95	893.46	1060.45	1155.34	1187.18	1159.07	1068.55	906.45	643.60	0.00	0.00	0.00	0.00
25	604.79	880.71	1049.46	1145.24	1177.51	1149.45	1058.60	895.44	629.56	0.00	0.00	0.00	0.00
26	582.22	864.18	1035.23	1132.15	1164.91	1136.85	1045.46	880.73	610.45	0.00	0.00	0.00	0.00
27	553.39	843.45	1017.45	1115.80	1149.14	1121.01	1028.83	861.95	585.55	0.00	0.00	0.00	0.00
28	516.97	817.93	995.70	1095.81	1129.84	1101.57	1008.29	838.55	553.78	0.00	0.00	0.00	0.00
29	470.86	786.78	969.38	1071.68	1106.53	1078.01	983.28	809.75	513.46	0.00	0.00	0.00	0.00
30	411.42	748.82	937.66	1042.69	1078.52	1049.65	952.99	774.47	461.87	0.00	0.00	0.00	0.00
31	331.44	702.27	899.36	1007.87	1044.91	1015.52	916.31	731.11	394.09	0.00	0.00	0.00	0.00
32	210.66	644.38	852.77	965.81	1004.35	974.24	871.60	677.20	299.32	0.00	0.00	0.00	0.00
33	0.00	570.49	795.29	914.42	954.92	923.78	816.40	608.69	135.84	0.00	0.00	0.00	0.00
34	0.00	471.54	722.61	850.43	893.58	860.93	746.69	518.11	0.00	0.00	0.00	0.00	0.00
35	0.00	324.24	626.93	768.28	815.31	780.30	655.32	388.29	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	491.14	657.30	710.70	671.65	527.18	142.92	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	254.84	491.70	558.46	510.66	315.33	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	136.28	279.12	185.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 16 to 28 row 1

Section	16	17	18	19	20	21	22	23	24	25	26	27	28
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	268.01	343.12	251.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	347.72	523.09	570.01	514.41	324.64	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	193.45	526.06	661.79	701.06	655.35	511.42	140.93	0.00	0.00	0.00	0.00	0.00
7	0.00	389.86	637.40	756.21	791.70	751.07	626.28	365.55	0.00	0.00	0.00	0.00	0.00
8	0.00	502.39	716.97	826.05	859.27	821.85	708.09	485.16	0.00	0.00	0.00	0.00	0.00
9	148.49	581.44	777.35	880.04	911.75	876.59	770.17	568.27	91.48	0.00	0.00	0.00	0.00
10	287.43	640.99	824.70	922.88	953.53	920.07	818.92	630.76	262.75	0.00	0.00	0.00	0.00
11	370.68	687.45	862.55	957.39	987.28	955.16	857.99	679.58	354.58	0.00	0.00	0.00	0.00
12	430.14	724.36	893.10	985.39	1014.72	983.70	889.65	718.52	419.17	0.00	0.00	0.00	0.00
13	475.02	753.91	917.80	1008.12	1037.05	1006.93	915.38	749.88	467.88	0.00	0.00	0.00	0.00
14	509.65	777.52	937.68	1026.46	1055.10	1025.75	936.23	775.18	505.68	0.00	0.00	0.00	0.00
15	536.45	796.19	953.45	1041.03	1069.47	1040.78	952.94	795.43	535.28	0.00	0.00	0.00	0.00
16	556.93	810.62	965.63	1052.29	1080.61	1052.49	966.03	811.38	558.32	0.00	0.00	0.00	0.00
17	572.06	821.29	974.61	1060.58	1088.84	1061.23	975.89	823.53	575.89	0.00	0.00	0.00	0.00
18	582.52	828.57	980.66	1066.14	1094.41	1067.22	982.81	832.26	588.70	0.00	0.00	0.00	0.00
19	588.72	832.69	983.95	1069.13	1097.45	1070.65	986.97	837.81	597.23	0.00	0.00	0.00	0.00
20	590.93	833.77	984.59	1069.63	1098.05	1071.58	988.47	840.34	601.75	44.08	0.00	0.00	0.00
21	588.62	830.98	981.54	1066.52	1095.06	1068.89	986.29	838.99	601.78	62.47	0.00	0.00	0.00
22	584.44	828.06	979.21	1064.56	1093.36	1067.38	984.86	837.55	600.06	55.67	0.00	0.00	0.00
23	575.67	821.23	973.19	1058.97	1088.05	1062.24	979.73	832.24	593.85	0.00	0.00	0.00	0.00
24	562.75	811.31	964.47	1050.87	1080.29	1054.60	971.94	823.90	583.66	0.00	0.00	0.00	0.00
25	545.31	798.15	952.95	1040.17	1069.99	1044.38	961.39	812.38	569.19	0.00	0.00	0.00	0.00
26	522.79	781.47	938.44	1026.70	1056.99	1031.40	947.87	797.43	549.97	0.00	0.00	0.00	0.00
27	494.31	760.85	920.63	1010.20	1041.04	1015.41	931.11	778.68	525.29	0.00	0.00	0.00	0.00
28	458.53	735.73	899.10	990.31	1021.81	996.06	910.71	755.61	494.06	0.00	0.00	0.00	0.00
29	413.27	705.29	873.28	966.53	998.82	972.86	886.11	727.45	454.59	0.00	0.00	0.00	0.00
30	354.66	668.36	842.38	938.20	971.44	945.17	856.55	693.16	404.07	0.00	0.00	0.00	0.00
31	274.48	623.20	805.25	904.37	938.77	912.04	820.95	651.15	337.23	0.00	0.00	0.00	0.00
32	144.70	567.03	760.24	863.68	899.55	872.15	777.72	599.00	241.40	0.00	0.00	0.00	0.00
33	0.00	495.05	704.76	814.11	851.89	823.53	724.44	532.59	32.29	0.00	0.00	0.00	0.00
34	0.00	397.47	634.54	752.43	792.86	763.04	657.14	444.10	0.00	0.00	0.00	0.00	0.00
35	0.00	245.82	541.58	673.12	717.46	685.36	568.53	314.09	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	407.30	565.24	616.22	580.04	442.52	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	147.79	400.54	466.57	420.90	220.40	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	162.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Details for bearing: B4 'Generic T 2ED 200'

Rolling Bearing Calculation

Input data

Bearing Geometry

Type of rolling bearing		Tapered roller bearing	
Bearing designation		Generic T 2ED 200	
Bearing inner diameter	d	200.000	mm
Bearing outer diameter	D	280.000	mm
Bearing width	B	56.000	mm
Bearing width inner ring	Bi	55.000	mm
Bearing width outer ring	Be	46.000	mm
Number of rolling elements	Z	28	
Roller diameter	Dw	22.000	mm
Pitch diameter	Dpw	238.157	mm
Length of Roller	Lwe	37.000	mm
Nominal contact angle	α	12.742	°
Center of contact cone		left	
Distance to centre of pressure	a	52.362	mm
Distance bearing center to row center	δRC	-2.7748	mm
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal axial clearance	Pa	0.0000	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Loading

Speed of inner ring	ni	-450.0000	rpm
		inner ring rotates relative to load	
Speed of outer ring	ne	0.0000	rpm
		outer ring is stationary relative to load	
Displacement X	ux	84.935	µm
Displacement Y	uy	4.5293	µm
Displacement Z	uz	-11.3879	µm
Rotation around Y	ry	-0.1260	mrad
Rotation around Z	rz	0.0819	mrad
Temperature of inner ring	T_i	20.000	°C
Temperature of outer ring	T_e	20.000	°C
Reliability	reliability	90.000	%
Maximal permissible value for aISO	aISOMax	50	

Material

Surface hardness inner race	HRC_i	58	
Surface hardness outer race	HRC_e	58	
Ultimate strength of core inner race	Rm_i	1200.0	MPa
Ultimate strength of core outer race	Rm_e	1200.0	MPa

Material for inner ring		Steel	
Material for outer ring		Steel	
Material for rolling element		Steel	

Lubrication

Lubricant		ISO VG 220 mineral oil	
Kinematic viscosity at 40°C	v40	220.000	mm²/s
Kinematic viscosity at 100°C	v100	19.000	mm²/s
Oil density	rhoOil	890.000	kg/m³
Oil temperature	ϑOil	70.000	°C
Oil does not contain effective EP additives			
Effective kinematic viscosity	v(ϑ)	51.794	mm²/s
Effective oil density	ρ(ϑ)	851.593	kg/m³
Lubricant cleanliness		Oil lubrication with on-line filter ISO4406 -/17/14	

Results

Centrifugal loads are not considered

Bearing inner geometry

Number of rolling elements	Z	28	
Roller diameter	Dw	22.000	mm
Pitch diameter	Dpw	238.157	mm
Length of Roller	Lwe	37.000	mm
Nominal contact angle	α	12.742	°
Nominal axial clearance	Pa	0.0000	mm
Change of clearance	ΔPd	0.0000	mm
Effective axial clearance	Paeff	0.0000	mm
Distance between rolling elements	δRE	4.6651	mm
Shoulder diameter inner ring	dSi	236.752	mm
Shoulder opening angle inner race	γsi	0.0000	°

Forces and displacement

Axial force	Fx	40.334	kN
Radial force Y	Fy	15.534	kN
Radial force Z	Fz	-88.2429	kN
Displacement X	ux	84.935	µm
Displacement Y	uy	4.5293	µm
Displacement Z	uz	-11.3879	µm
Moment Y	My	-2187.1449	Nm
Moment Z	Mz	-341.2207	Nm
Rotation around Y	ry	-0.1260	mrad
Rotation around Z	rz	0.0819	mrad
Maximal pressure inner race	pmax_i	1406.1	MPa
Maximal pressure outer race	pmax_e	1283.3	MPa
Maximal pressure	pmax	1406.1	MPa
Static safety factor (ISO 17956)	S0eff	8.10695	

Life

Dynamic load rating	Cr	498.856	kN

Static load rating	C0r	893.959	kN
Fatigue load limit	Cur	82.900	kN
Life modification factor for reliability	a1	1	
Viscosity ratio	κ	2.82923	
Contamination factor	eC	0.736566	
Life modification factor	aISO	4.16325	
Reference load	Pref	76160.4	N
Basic reference rating life	L10r	525.799	
Basic reference rating life	L10rh	19474.0	h
Modified reference rating life	Lnmr	2189.03	
Modified reference rating life	Lnmrh	81075.3	h
Life according ISO 281			
Dynamic radial load factor	X	0.4	
Dynamic axial load factor	Y	1.76894	
Dynamic equivalent load	P	107189	N
Basic life	L10	168.301	
Basic life	L10h	6233.4	h
Life modification factor	aISO	5.31942	
Modified life	Lnm	895.264	
Modified life	Lnmh	33157.9	h
Static equivalent load	P0	89599.7	N
Static safety factor (ISO 76)	S0	9.97725	
Thermal permissible speed			
Factor for load independent losses	f0r	3	
Factor for load dependent losses	f1r	0.0004	
Surface for heat transfer	Ar	84446.0	mm²
Thermal transmission coefficient	kq	267.771	W/m²·K
Load for reference speed	P1r	44698.0	N
Viscosity at reference conditions	vr	12.000	mm²/s
Load independent friction moment	M0r	2.8157	Nm
Load dependent friction moment	M1r	4.2580	Nm
Thermal reference speed	ntr	1526.3	rpm
Method	DIN 732		
Factor for load independent losses	f0	3	
Factor for load dependent losses	f1	0.0004	
Load for permissible speed	P1	142698	N
Temperature difference between bearing and surroundings	Δϑ	50.000	°C
Load independent friction moment	M0	4.0573	Nm
Load dependent friction moment	M1	13.594	Nm
Thermal permissible speed	nt	611.664	rpm
Friction moments and temperature increase for current speed (n=450)			
Load independent friction moment for current speed	M0_n	3.3065	Nm
Load dependent friction moment for current speed	M1_n	13.594	Nm

Change this text in mesys.ini

Total friction moment for current speed	M_n	16.900	Nm	
Temperature difference for current speed	Δϑ_n	35.220	°C	

Subsurface stresses

Maximal shear stress for inner race	τmax_i	422.389	MPa	
Depth for maximal shear stress inner race	h(τmax_i)	0.1948	mm	
Shear yield stress for core inner race	τYield_i	510.000	MPa	
Shear fatigue limit for core inner race	τa_i	306.000	MPa	
Shear stress at core inner race	τ_i	306.000	MPa	
Maximal shear stress for outer race	τmax_e	385.343	MPa	
Depth for maximal shear stress outer race	h(τmax_e)	0.2130	mm	
Shear yield stress for core outer race	τYield_e	510.000	MPa	
Shear fatigue limit for core outer race	τa_e	306.000	MPa	
Shear stress at core outer race	τ_e	306.000	MPa	
Required hardness depth inner race	hdmin_i	0.4743	mm	
Required hardness depth outer race	hdmin_e	0.4487	mm	

Damage Frequencies

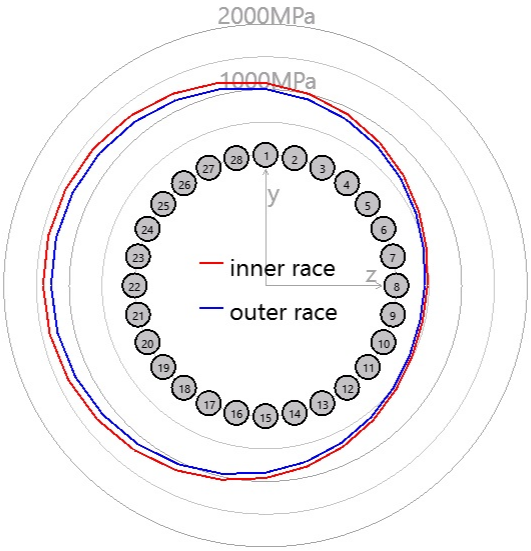
Speed of inner ring	ni	-7.50	1/s	(-450rpm)
Speed of outer ring	ne	0.00	1/s	(0rpm)
Rotation speed of cage	fc	-3.41	1/s	(-205rpm)
Damage frequency for inner race	fip	-114.50	1/s	(-6870rpm)
Damage frequency for outer race	fep	95.50	1/s	(5730rpm)
Damage frequency for rolling element	frp	80.53	1/s	(4832rpm)

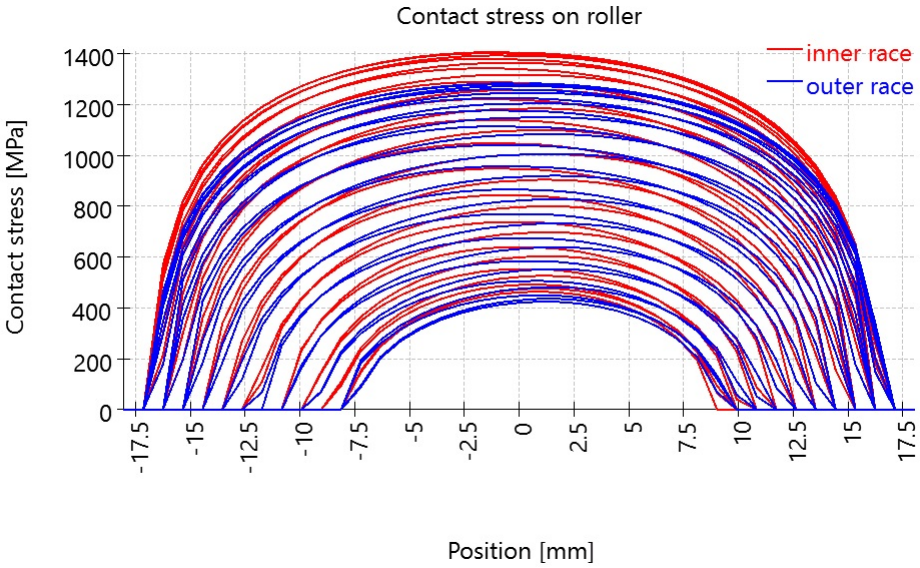
Bearing stiffness matrix

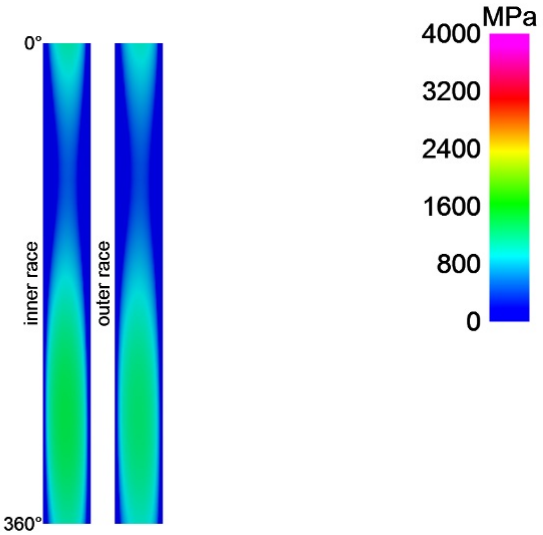
	ux [µm]	uy [µm]	uz [µm]	ry [mrad]	rz [mrad]
Fx [N]	602.879	92.188	-505.840	-12797.370	-1785.682
Fy [N]	92.474	6094.614	73.462	1754.964	-147937.639
Fz [N]	-505.558	73.462	5698.833	137788.461	-1754.964
My [Nm]	-12.806	1.754	137.387	3724.005	-45.237
Mz [Nm]	-1.787	-147.502	-1.754	-45.237	3999.089

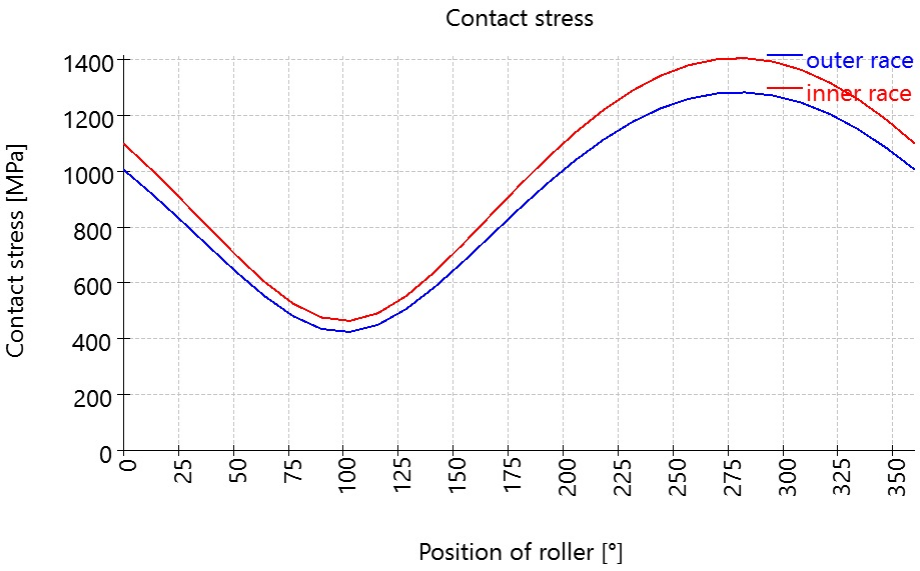
Bearing compliance matrix

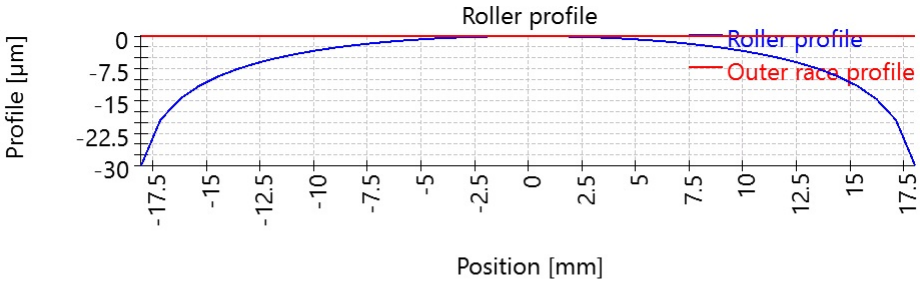
	Fx [N]	Fy [N]	Fz [N]	My [Nm]	Mz [Nm]
ux [µm]	0.00180	-0.00008	0.00010	0.00252	-0.00194
uy [µm]	-0.00008	0.00157	-0.00002	0.00038	0.05806
uz [µm]	0.00009	-0.00002	0.00163	-0.05999	-0.00059
ry [mrad]	0.00000	0.00000	-0.00006	0.00249	0.00002
rz [mrad]	-0.00000	0.00006	-0.00000	0.00002	0.00239

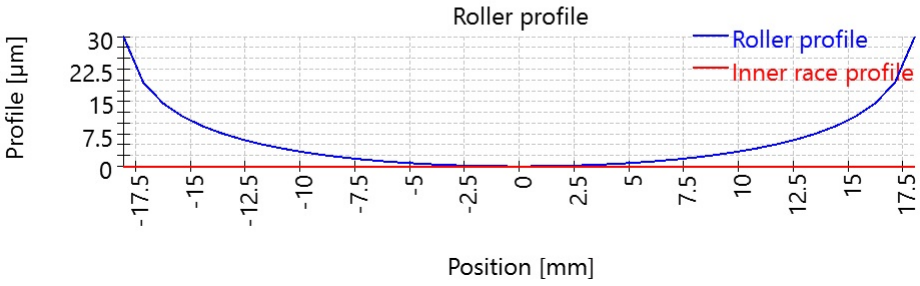

2000MPa
1000MPa
y
z
inner race
outer race

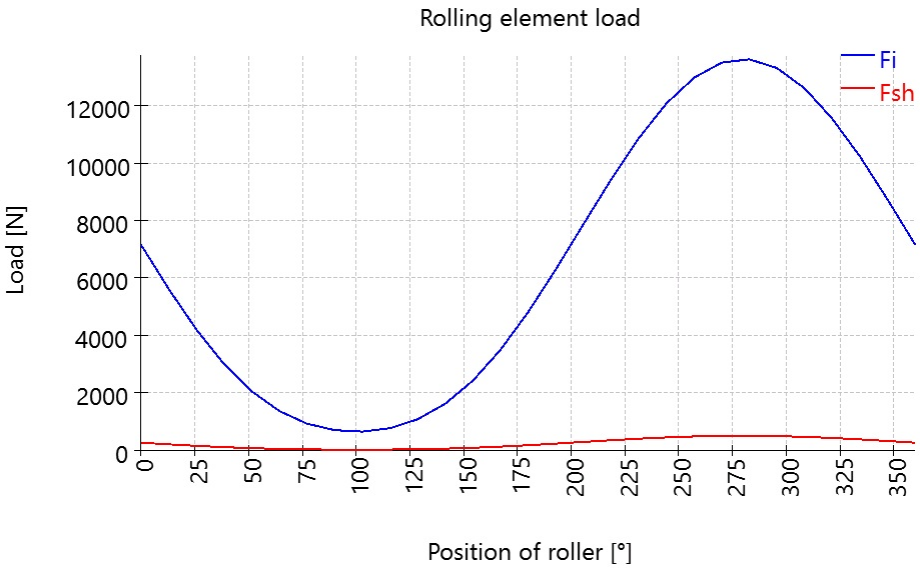

Contact stress on roller
inner race
outer race
Contact stress [MPa]
1400
1200
1000
800
600
400
200
0
-17.5
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
17.5
Position [mm]

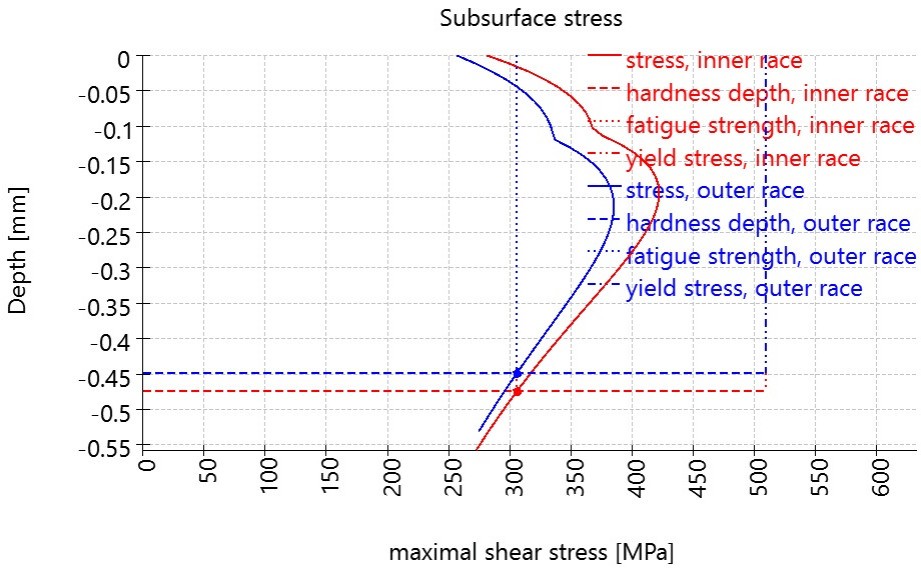

0°
360°
inner race
outer race
MPa
4000
3200
2400
1600
800
0


Contact stress
outer race
inner race
Contact stress [MPa]
1400
1200
1000
800
600
400
200
0
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
Position of roller [°]


Roller profile
Roller profile
Outer race profile
Profile [µm]
0
-7.5
-15
-22.5
-30
-17.5
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
17.5
Position [mm]


Roller profile
Roller profile
Inner race profile
Profile [µm]
30
22.5
15
7.5
0
-17.5
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
17.5
Position [mm]


Rolling element load
Fi
Fsh
Load [N]
12000
10000
8000
6000
4000
2000
0
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
Position of roller [°]



Result table for bearing 1

Roller	ψ [°]	|F| [N]	Fx [N]	Fy [N]	Fz [N]	M [Nm]	Fsh [N]
1	0	7154.21	-1578.08	-6977.99	-0	166.103	267.336
2	12.8571	5617.04	-1239.09	-5341.3	-1219.12	129.449	209.895
3	25.7143	4208.54	-928.429	-3698.35	-1781.03	96.279	157.263
4	38.5714	3004.75	-662.889	-2291.33	-1827.28	68.2969	112.281
5	51.4286	2054.86	-453.338	-1249.62	-1566.97	46.4939	76.7853
6	64.2857	1368.42	-301.9	-579.108	-1202.53	30.8886	51.1348
7	77.1429	929.403	-205.04	-201.716	-883.776	20.9899	34.7296
8	90	702.978	-155.082	-4.19845e-14	-685.658	15.9372	26.2686
9	102.857	652.528	-143.946	141.624	-620.495	14.8975	24.3834
10	115.714	770.973	-170.065	326.273	-677.512	17.7561	28.8094
11	128.571	1081.31	-238.504	657.583	-824.583	25.1668	40.4061
12	141.429	1622.67	-357.883	1237.42	-986.806	38.1596	60.6355
13	154.286	2426.23	-535.069	2132.14	-1026.78	57.5907	90.6626
14	167.143	3499.59	-771.723	3327.86	-759.562	83.7369	130.772
15	180	4810.24	-1060.67	4691.85	-5.74585e-13	115.777	179.748
16	192.857	6298.18	-1388.68	5989.15	1366.99	152.202	235.348
17	205.714	7873.04	-1735.83	6918.81	3331.92	190.657	294.198
18	218.571	9425.02	-2077.93	7187.46	5731.81	228.489	352.191
19	231.429	10862.6	-2394.84	6606.1	8283.78	263.174	405.912
20	244.286	12072.9	-2661.65	5109.36	10609.7	292.262	451.138
21	257.143	12968.6	-2859.17	2814.78	12332.4	313.343	484.608
22	270	13495.5	-2975.43	2.41809e-12	13163.4	325.102	504.297
23	282.857	13610.8	-3000.99	-2954.16	12943	326.741	508.605
24	295.714	13305.6	-2933.87	-5630.99	11692.9	318.15	497.2
25	308.571	12599	-2778.26	-7661.97	9607.8	299.876	470.795
26	321.429	11540.4	-2545.01	-8800.49	7018.16	273.162	431.237
27	334.286	10229.5	-2256.1	-8989.54	4329.13	240.722	382.253
28	347.143	8726.34	-1924.73	-8298.03	1893.97	203.926	326.083

ψ : Position of roller

|F| : Absolute value of force on inner race

Fx : Axial force

Fy : Radial force Y

Fz : Radial force Z

M : Moment load on inner race

Fsh : Force on shoulder

Change this text in mesys.ini

Roller profile and aISO

Section	x [mm]	y [mm]	l [mm]	profile_r [µm]	profile_i [µm]	profile_e [µm]	aISO
1	-14.900	122.719	0.902	30.03	0.00	0.00	0.00
2	-14.016	122.536	0.902	19.40	0.00	0.00	0.00
3	-13.133	122.354	0.902	14.59	0.00	0.00	50.00
4	-12.249	122.171	0.902	11.52	0.00	0.00	50.00
5	-11.365	121.989	0.902	9.30	0.00	0.00	27.11
6	-10.482	121.806	0.902	7.59	0.00	0.00	14.42
7	-9.598	121.624	0.902	6.22	0.00	0.00	9.88
8	-8.714	121.441	0.902	5.09	0.00	0.00	7.67
9	-7.831	121.258	0.902	4.15	0.00	0.00	6.39
10	-6.947	121.076	0.902	3.36	0.00	0.00	5.58
11	-6.064	120.893	0.902	2.69	0.00	0.00	5.02
12	-5.180	120.711	0.902	2.12	0.00	0.00	4.62
13	-4.296	120.528	0.902	1.64	0.00	0.00	4.33
14	-3.413	120.346	0.902	1.23	0.00	0.00	4.12
15	-2.529	120.163	0.902	0.89	0.00	0.00	3.95
16	-1.645	119.981	0.902	0.61	0.00	0.00	3.83
17	-0.762	119.798	0.902	0.38	0.00	0.00	3.75
18	0.122	119.616	0.902	0.21	0.00	0.00	3.69
19	1.005	119.433	0.902	0.09	0.00	0.00	3.66
20	1.889	119.250	0.902	0.02	0.00	0.00	3.65
21	2.773	119.068	0.902	0.00	0.00	0.00	3.68
22	3.656	118.885	0.902	0.02	0.00	0.00	3.69
23	4.540	118.703	0.902	0.09	0.00	0.00	3.75
24	5.423	118.520	0.902	0.21	0.00	0.00	3.82
25	6.307	118.338	0.902	0.38	0.00	0.00	3.93
26	7.191	118.155	0.902	0.61	0.00	0.00	4.08
27	8.074	117.973	0.902	0.89	0.00	0.00	4.27
28	8.958	117.790	0.902	1.23	0.00	0.00	4.52
29	9.842	117.607	0.902	1.64	0.00	0.00	4.85
30	10.725	117.425	0.902	2.12	0.00	0.00	5.30
31	11.609	117.242	0.902	2.69	0.00	0.00	5.91
32	12.492	117.060	0.902	3.36	0.00	0.00	6.80
33	13.376	116.877	0.902	4.15	0.00	0.00	8.16
34	14.260	116.695	0.902	5.09	0.00	0.00	10.44
35	15.143	116.512	0.902	6.22	0.00	0.00	14.85
36	16.027	116.330	0.902	7.59	0.00	0.00	25.69
37	16.911	116.147	0.902	9.30	0.00	0.00	50.00
38	17.794	115.965	0.902	11.52	0.00	0.00	50.00
39	18.678	115.782	0.902	14.59	0.00	0.00	50.00
40	19.561	115.599	0.902	19.40	0.00	0.00	0.00
41	20.445	115.417	0.902	30.03	0.00	0.00	0.00

Pressure pi in MPa on inner race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	286.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	511.87	275.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	339.00
7	645.21	468.53	214.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	270.85	502.72
8	739.98	588.04	401.49	107.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	162.86	427.68	608.89
9	812.36	674.82	515.13	320.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	336.26	528.44	686.40
10	869.85	741.98	597.76	434.06	231.94	0.00	0.00	0.00	0.00	0.00	0.00	238.94	438.26	602.12	746.05
11	916.61	795.78	661.85	515.29	352.55	149.36	0.00	0.00	0.00	0.00	143.91	348.93	511.37	658.90	793.27
12	955.21	839.76	713.25	577.78	434.38	282.19	108.99	0.00	0.00	93.57	270.98	423.89	567.21	703.87	831.25
13	987.32	876.14	755.25	627.61	496.11	364.88	243.20	153.40	146.91	229.82	349.27	479.96	611.12	739.94	861.97
14	1014.09	906.38	789.90	668.08	544.70	425.52	321.99	254.29	248.18	306.90	405.97	523.46	646.10	768.98	886.78
15	1036.34	931.50	818.55	701.21	583.72	472.40	378.69	319.65	313.04	361.56	449.12	557.66	673.98	792.21	906.61
16	1054.66	952.22	842.15	728.33	615.23	509.41	421.83	367.38	360.11	402.53	482.47	584.51	695.97	810.49	922.13
17	1069.47	969.07	861.35	750.32	640.57	538.72	455.22	403.46	395.46	433.67	508.14	605.24	712.88	824.43	933.81
18	1081.09	982.40	876.62	767.80	660.63	561.67	480.94	430.77	421.98	457.06	527.40	620.67	725.29	834.43	941.97
19	1089.72	992.48	888.28	781.21	675.97	579.11	500.22	450.93	441.30	473.92	541.06	631.33	733.57	840.77	946.84
20	1095.47	999.44	896.51	790.79	686.98	591.56	513.83	464.87	454.33	484.96	549.60	637.53	737.92	843.61	948.52
21	1097.20	1002.27	900.45	795.83	693.12	598.70	521.62	472.61	461.11	490.06	552.68	638.74	737.65	842.10	946.03
22	1099.83	1005.49	904.18	799.99	697.60	603.38	526.16	476.53	463.94	491.58	552.89	637.87	736.07	839.99	943.58
23	1098.45	1004.61	903.66	799.68	697.34	602.93	525.15	474.55	460.75	487.30	547.67	631.98	729.82	833.47	936.90
24	1094.19	1000.65	899.81	795.71	692.99	597.89	519.01	466.98	451.82	477.50	537.40	621.58	719.53	823.30	926.90
25	1086.97	993.50	892.48	787.91	684.35	587.99	507.39	453.38	436.63	461.67	521.65	606.31	704.93	809.27	913.38
26	1076.57	982.94	881.43	775.96	671.03	572.77	489.67	432.94	414.27	438.96	499.70	585.58	685.55	791.00	896.04
27	1062.71	968.64	866.26	759.43	652.49	551.46	464.82	404.35	383.21	407.94	470.39	558.54	660.71	767.94	874.43
28	1044.96	950.13	846.46	737.64	627.86	522.94	431.24	365.33	340.80	366.22	431.91	523.85	629.45	739.35	847.93
29	1022.77	926.77	821.24	709.67	595.93	485.44	386.23	311.76	281.88	309.31	381.14	479.43	590.29	704.10	815.66
30	995.35	897.68	789.55	674.15	554.79	436.05	324.67	234.23	193.12	226.69	311.96	421.74	540.96	660.60	776.38
31	961.62	861.57	749.82	629.00	501.39	369.40	234.39	92.66	0.00	64.24	208.25	343.81	477.64	606.33	728.23
32	920.00	816.58	699.68	570.90	430.21	273.12	39.29	0.00	0.00	0.00	0.00	227.09	392.96	537.09	668.37
33	868.14	759.83	635.27	493.92	329.17	87.92	0.00	0.00	0.00	0.00	0.00	0.00	268.03	444.86	591.94
34	802.27	686.51	549.67	385.34	152.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	309.47	489.57
35	715.87	587.67	427.77	201.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	337.23
36	595.80	442.43	215.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	406.53	154.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pressure pi in MPa on inner race for rollers 16 to 28 row 1

Section	16	17	18	19	20	21	22	23	24	25	26	27	28
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	301.52	454.79	536.69	571.49	564.17	513.46	410.23	214.63	0.00	0.00
4	0.00	298.81	510.29	644.75	737.60	794.71	820.52	815.86	780.37	712.41	608.31	456.58	195.58
5	360.24	562.60	707.76	814.30	891.96	941.22	964.05	960.61	930.72	873.84	789.18	673.85	516.19
6	552.23	708.05	831.24	925.46	995.63	1040.88	1062.24	1059.65	1032.97	982.09	907.05	807.11	677.04
7	671.73	807.53	918.97	1006.00	1071.61	1114.42	1134.96	1133.05	1108.59	1061.64	992.65	901.71	785.94
8	757.20	881.33	985.28	1067.54	1130.07	1171.24	1191.30	1189.98	1167.21	1123.15	1058.43	973.60	866.92
9	822.18	938.53	1037.24	1116.08	1176.38	1216.42	1236.20	1235.42	1214.02	1172.22	1110.75	1030.42	930.19
10	873.29	984.03	1078.83	1155.12	1213.75	1252.97	1272.61	1272.33	1252.09	1212.15	1153.28	1076.45	981.10
11	914.26	1020.76	1112.55	1186.86	1244.20	1282.83	1302.42	1302.63	1283.40	1245.04	1188.32	1114.33	1022.85
12	947.45	1050.63	1140.03	1212.78	1269.11	1307.30	1326.93	1327.60	1309.29	1272.29	1217.41	1145.79	1057.46
13	974.39	1074.91	1162.39	1233.89	1289.42	1327.32	1347.03	1348.16	1330.68	1294.90	1241.60	1172.00	1086.32
14	996.16	1094.53	1180.43	1250.92	1305.84	1343.54	1363.37	1364.95	1348.24	1313.56	1261.66	1193.81	1110.39
15	1013.51	1110.11	1194.73	1264.42	1318.84	1356.43	1376.44	1378.46	1362.48	1328.79	1278.15	1211.82	1130.35
16	1027.00	1122.15	1205.71	1274.76	1328.81	1366.37	1386.57	1389.04	1373.74	1340.97	1291.46	1226.49	1146.73
17	1037.00	1130.97	1213.68	1282.23	1336.02	1373.60	1394.04	1396.95	1382.30	1350.38	1301.89	1238.13	1159.87
18	1043.79	1136.82	1218.85	1287.04	1340.64	1378.30	1399.01	1402.37	1388.34	1357.22	1309.67	1246.99	1170.05
19	1047.57	1139.86	1221.35	1289.29	1342.80	1380.60	1401.60	1405.40	1391.98	1361.61	1314.92	1253.21	1177.45
20	1048.40	1140.13	1221.25	1289.04	1342.53	1380.52	1401.84	1406.09	1393.26	1363.60	1317.69	1256.86	1182.14
21	1045.18	1136.44	1217.22	1284.89	1338.38	1376.57	1398.20	1402.91	1390.66	1361.70	1316.58	1256.60	1182.87
22	1042.57	1133.84	1214.69	1282.58	1336.31	1374.87	1396.94	1402.13	1390.40	1362.01	1317.46	1258.04	1184.95
23	1035.84	1127.20	1208.17	1276.31	1330.31	1369.26	1391.76	1397.43	1386.24	1358.42	1314.43	1255.57	1183.08
24	1026.04	1117.68	1198.93	1267.42	1321.78	1361.18	1384.14	1390.31	1379.64	1352.37	1308.89	1250.49	1178.49
25	1013.01	1105.15	1186.85	1255.83	1310.64	1350.56	1374.02	1380.70	1370.55	1343.78	1300.75	1242.73	1171.09
26	996.48	1089.38	1171.72	1241.34	1296.71	1337.21	1361.24	1368.45	1358.81	1332.51	1289.86	1232.11	1160.71
27	976.07	1070.03	1153.24	1223.67	1279.72	1320.92	1345.55	1353.32	1344.18	1318.32	1275.98	1218.39	1147.07
28	951.25	1046.64	1130.99	1202.44	1259.33	1301.32	1326.63	1334.98	1326.34	1300.87	1258.76	1201.22	1129.79
29	921.30	1018.58	1104.42	1177.15	1235.06	1277.97	1304.05	1313.02	1304.87	1279.74	1237.76	1180.11	1108.37
30	885.19	984.99	1072.76	1147.10	1206.26	1250.27	1277.20	1286.85	1279.18	1254.34	1212.37	1154.41	1082.10
31	841.46	944.63	1034.94	1111.32	1172.05	1217.36	1245.29	1255.67	1248.48	1223.85	1181.74	1123.25	1050.01
32	787.94	895.74	989.44	1068.46	1131.18	1178.09	1207.20	1218.38	1211.67	1187.16	1144.71	1085.35	1010.72
33	721.17	835.61	933.99	1016.54	1081.84	1130.76	1161.30	1173.41	1167.17	1142.63	1099.56	1038.88	962.21
34	635.18	759.82	865.02	952.49	1021.28	1072.84	1105.17	1118.38	1112.59	1087.84	1043.73	981.06	901.30
35	517.94	660.38	776.41	871.22	945.04	1000.23	1034.95	1049.54	1044.18	1018.90	973.09	907.30	822.74
36	335.85	519.89	656.19	763.38	845.16	905.82	943.99	960.41	955.45	929.08	880.37	809.42	716.67
37	0.00	278.72	474.25	608.15	705.06	775.31	819.15	838.38	833.74	805.12	750.93	670.07	560.56
38	0.00	0.00	0.00	333.45	477.59	571.62	627.99	652.81	648.23	613.92	546.11	438.11	267.45
39	0.00	0.00	0.00	0.00	0.00	0.00	206.83	265.16	257.91	179.48	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	183.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	425.79	183.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	257.66
7	557.58	389.70	119.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	193.49	425.42
8	649.73	507.96	328.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.79	358.06	529.71
9	719.72	592.43	442.40	251.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	273.47	457.74	605.01
10	775.26	657.43	523.25	367.57	163.13	0.00	0.00	0.00	0.00	0.00	0.00	174.95	375.96	529.60	662.78
11	820.50	709.43	585.50	447.90	291.98	71.72	0.00	0.00	0.00	0.00	69.56	291.04	447.76	584.75	708.55
12	857.96	751.99	635.33	509.03	374.04	228.01	0.00	0.00	0.00	0.00	219.18	366.18	502.23	628.43	745.48
13	889.27	787.30	676.09	557.61	434.92	311.98	193.51	94.70	87.36	181.43	298.89	421.61	545.03	663.59	775.53
14	915.55	816.79	709.82	597.09	482.59	372.10	274.31	207.91	202.29	260.92	355.31	464.48	579.23	692.06	800.00
15	937.58	841.47	737.86	629.51	520.85	418.24	330.84	274.57	268.66	315.63	397.99	498.28	606.66	715.06	819.81
16	955.94	862.02	761.13	656.21	551.87	454.65	373.53	322.35	315.90	356.36	431.06	525.01	628.52	733.41	835.59
17	971.04	878.94	780.28	678.07	577.01	483.62	406.61	358.37	351.30	387.41	456.72	545.93	645.63	747.71	847.79
18	983.17	892.61	795.77	695.70	597.14	506.53	432.28	385.82	378.05	410.97	476.28	561.86	658.54	758.35	856.74
19	992.54	903.25	807.89	709.53	612.86	524.23	451.83	406.39	397.89	428.33	490.58	573.33	667.61	765.62	862.65
20	999.25	911.02	816.85	719.81	624.53	537.27	466.03	421.08	411.80	440.24	500.12	580.67	673.06	769.66	865.64
21	1002.27	915.00	821.87	725.91	631.70	545.39	474.84	430.00	419.89	446.64	504.62	583.42	674.28	769.71	864.81
22	1006.12	919.32	826.68	731.17	637.34	551.22	480.63	435.36	424.31	449.74	506.48	584.27	674.31	769.24	864.03
23	1006.31	919.90	827.61	732.37	638.63	552.36	481.34	435.34	423.25	447.55	503.42	580.57	670.10	764.75	859.41
24	1003.89	917.69	825.51	730.23	636.21	549.34	477.40	430.26	417.01	440.39	495.80	572.79	662.25	756.97	851.78
25	998.79	912.59	820.27	724.62	629.92	541.93	468.53	419.77	405.18	427.85	483.29	560.66	650.52	745.72	840.99
26	990.82	904.41	811.67	715.29	619.42	529.75	454.21	403.23	387.02	409.22	465.28	543.69	634.53	730.67	826.79
27	979.74	892.87	799.38	701.84	604.26	512.16	433.61	379.56	361.32	383.35	440.85	521.16	613.70	711.37	808.77
28	965.18	877.56	782.93	683.72	583.70	488.22	405.39	346.95	325.98	348.32	408.50	491.97	587.22	687.17	786.42
29	946.65	857.92	761.68	660.11	556.72	456.45	367.37	302.18	277.10	300.67	365.77	454.43	553.85	657.13	758.97
30	923.48	833.18	734.69	629.86	521.71	414.48	315.58	238.48	205.66	232.91	308.05	405.72	511.72	619.89	725.37
31	894.72	802.24	700.63	591.22	476.17	358.07	241.27	134.12	69.25	118.77	224.51	340.60	457.75	573.35	684.05
32	859.00	763.49	657.46	541.41	415.68	278.15	111.16	0.00	0.00	0.00	56.56	246.68	386.24	514.12	632.63
33	814.31	714.46	601.98	475.63	331.18	143.29	0.00	0.00	0.00	0.00	0.00	52.34	284.02	435.91	567.15
34	757.44	651.12	528.49	384.12	194.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	85.84	324.36	480.25
35	682.95	566.11	425.25	238.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	113.93	354.71
36	580.15	443.19	256.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	104.07
37	422.34	223.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pressure pe in MPa on outer race for rollers 16 to 28 row 1

Section	16	17	18	19	20	21	22	23	24	25	26	27	28
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	177.44	345.41	428.46	462.21	454.39	403.82	297.51	0.00	0.00	0.00
4	0.00	194.65	413.65	545.50	631.69	685.34	709.03	704.29	671.04	607.42	507.55	355.17	0.00
5	271.43	473.94	609.80	710.72	781.47	827.01	847.73	844.25	816.64	764.29	685.07	574.76	425.55
6	468.04	616.27	729.50	817.74	881.25	922.79	942.08	939.45	914.97	868.45	798.91	704.69	584.59
7	585.06	712.34	814.01	895.06	954.28	993.42	1011.93	1009.97	987.60	944.84	881.22	796.10	690.18
8	667.87	783.35	877.85	954.18	1010.56	1048.11	1066.18	1064.78	1044.00	1003.95	944.47	865.41	768.23
9	730.65	838.42	927.95	1000.95	1055.32	1091.76	1109.57	1108.69	1089.19	1051.24	994.87	920.23	829.13
10	780.06	882.32	968.23	1038.74	1091.62	1127.26	1144.95	1144.56	1126.13	1089.88	1035.98	964.76	878.19
11	819.80	917.93	1001.06	1069.66	1121.41	1156.48	1174.13	1174.20	1156.70	1121.89	1070.03	1001.56	918.54
12	852.16	947.08	1028.02	1095.12	1146.01	1180.65	1198.34	1198.85	1182.19	1148.61	1098.47	1032.29	952.13
13	878.63	970.98	1050.19	1116.08	1166.31	1200.66	1218.43	1219.37	1203.46	1170.98	1122.33	1058.09	980.31
14	900.25	990.52	1068.33	1133.25	1182.98	1217.12	1235.02	1236.38	1221.18	1189.67	1142.33	1079.76	1003.99
15	917.74	1006.31	1082.98	1147.13	1196.48	1230.50	1248.57	1250.34	1235.79	1205.17	1158.99	1097.89	1023.83
16	931.63	1018.81	1094.55	1158.09	1207.17	1241.13	1259.40	1261.59	1247.65	1217.84	1172.71	1112.90	1040.33
17	942.29	1028.32	1103.33	1166.39	1215.30	1249.27	1267.76	1270.36	1257.00	1227.95	1183.76	1125.11	1053.82
18	949.98	1035.10	1109.53	1172.24	1221.05	1255.08	1273.82	1276.84	1264.04	1235.68	1192.36	1134.74	1064.58
19	954.90	1039.29	1113.29	1175.75	1224.54	1258.68	1277.70	1281.13	1268.86	1241.16	1198.63	1141.93	1072.76
20	957.12	1040.95	1114.66	1176.96	1225.81	1260.10	1279.42	1283.27	1271.52	1244.43	1202.63	1146.77	1078.45
21	955.63	1038.98	1112.44	1174.61	1223.53	1257.99	1277.60	1281.87	1270.64	1244.16	1203.07	1148.02	1080.52
22	954.72	1038.02	1111.60	1173.95	1223.17	1257.95	1277.96	1282.66	1271.90	1245.90	1205.34	1150.84	1083.83
23	950.06	1033.40	1107.13	1169.69	1219.23	1254.34	1274.75	1279.90	1269.61	1244.09	1204.05	1150.07	1083.52
24	942.62	1026.17	1100.21	1163.07	1213.00	1248.50	1269.34	1274.94	1265.11	1240.05	1200.47	1146.96	1080.75
25	932.28	1016.23	1090.72	1154.01	1204.42	1240.36	1261.67	1267.74	1258.36	1233.72	1194.55	1141.41	1075.44
26	918.81	1003.38	1078.49	1142.34	1193.33	1229.78	1251.60	1258.16	1249.22	1224.97	1186.15	1133.30	1067.44
27	901.88	987.33	1063.27	1127.82	1179.51	1216.55	1238.92	1245.99	1237.48	1213.59	1175.06	1122.39	1056.50
28	881.02	967.68	1044.69	1110.13	1162.65	1200.37	1223.36	1230.95	1222.88	1199.30	1160.98	1108.39	1042.30
29	855.62	943.87	1022.26	1088.81	1142.33	1180.84	1204.52	1212.67	1205.02	1181.71	1143.52	1090.87	1024.40
30	824.79	915.17	995.31	1063.27	1117.98	1157.44	1181.88	1190.64	1183.41	1160.31	1122.15	1069.27	1002.18
31	787.28	880.51	962.93	1032.65	1088.84	1129.42	1154.75	1164.17	1157.34	1134.39	1096.12	1042.81	974.78
32	741.26	838.37	923.79	995.80	1053.83	1095.76	1122.14	1132.28	1125.86	1102.97	1064.41	1010.39	941.02
33	683.83	786.44	875.95	950.99	1011.38	1055.02	1082.65	1093.61	1087.58	1064.62	1025.54	970.43	899.13
34	610.12	721.03	816.38	895.59	959.13	1004.97	1034.17	1046.10	1040.44	1017.24	977.28	920.52	846.39
35	510.68	635.57	739.95	825.30	893.27	942.14	973.39	986.51	981.19	957.48	916.10	856.75	778.33
36	361.76	516.43	636.94	732.33	807.13	860.47	894.63	909.32	904.31	879.60	835.81	772.23	686.70
37	0.00	323.18	484.34	600.03	687.19	748.11	786.94	803.97	799.17	772.48	724.25	652.80	553.46
38	0.00	0.00	176.83	377.36	497.69	575.81	624.27	645.70	640.85	609.48	550.91	459.73	318.46
39	0.00	0.00	0.00	0.00	0.00	199.89	300.69	339.86	333.16	278.42	147.90	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Details for bearing: B5 'Generic 23040'

Rolling Bearing Calculation

Input data

Bearing Geometry

Type of rolling bearing		Spherical roller bearing	
Bearing designation		Generic 23040	
Bearing inner diameter	d	200.000	mm
Bearing outer diameter	D	310.000	mm
Bearing width	B	82.000	mm
Number of rolling elements	Z	27	
Roller diameter	Dw	26.000	mm
Pitch diameter	Dpw	255.000	mm
Length of Roller	Lwe	34.700	mm
Conformity inner race	fi	0.5	
Conformity outer race	fe	0.5	
Conformity roller	fr	0.485	
Nominal contact angle	α	9.1341	°
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal diametral clearance	Pd	0.1650	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Loading

Speed of inner ring	ni	158.824	rpm
		inner ring rotates relative to load	
Speed of outer ring	ne	0.0000	rpm
		outer ring is stationary relative to load	
Displacement X	ux	-562.2372	µm
Displacement Y	uy	-20.0038	µm
Displacement Z	uz	8.3473	µm
Rotation around Y	ry	-0.2630	mrad
Rotation around Z	rz	0.3110	mrad
Temperature of inner ring	T_i	20.000	°C
Temperature of outer ring	T_e	20.000	°C
Reliability	reliability	90.000	%
Maximal permissible value for aISO	aISOMax	50	

Material

Surface hardness inner race	HRC_i	58	
Surface hardness outer race	HRC_e	58	
Ultimate strength of core inner race	Rm_i	1200.0	MPa
Ultimate strength of core outer race	Rm_e	1200.0	MPa
Material for inner ring		Steel	
Material for outer ring		Steel	

Change this text in mesys.ini

Material for rolling element		Steel	

Lubrication

Lubricant		ISO VG 220 mineral oil	
Kinematic viscosity at 40°C	v40	220.000	mm²/s
Kinematic viscosity at 100°C	v100	19.000	mm²/s
Oil density	rhoOil	890.000	kg/m³
Oil temperature	ϑOil	70.000	°C
Oil does not contain effective EP additives			
Effective kinematic viscosity	v(ϑ)	51.794	mm²/s
Effective oil density	ρ(ϑ)	851.593	kg/m³
Lubricant cleanliness		Oil lubrication with on-line filter ISO4406 -/17/14	

Results

Centrifugal loads are not considered

Bearing inner geometry

Number of rolling elements	Z	27	
Roller diameter	Dw	26.000	mm
Pitch diameter	Dpw	255.000	mm
Length of Roller	Lwe	34.700	mm
Conformity inner race	fi	0.5	
Conformity outer race	fe	0.5	
Conformity roller	fr	0.485	
Nominal contact angle	α	9.1341	°
Nominal diametral clearance	Pd	0.1650	mm
Nominal axial clearance	Pa	0.8816	mm
Diameter inner race	di	232.112	mm
Diameter outer race	de	284.275	mm
Radius inner race	ri	142.138	mm
Radius outer race	re	142.138	mm
Radius roller	rr	137.873	mm
Change of clearance	ΔPd	0.0000	mm
Effective diametral clearance	Pdeff	0.1650	mm
Distance between rolling elements	δRE	3.6037	mm
Axial distance between rows	δR	41.000	mm

Forces and displacement

Axial force	Fx	-39.1313	kN
Radial force Y	Fy	-83.5458	kN
Radial force Z	Fz	34.855	kN
Displacement X	ux	-562.2372	µm
Displacement Y	uy	-20.0038	µm
Displacement Z	uz	8.3473	µm
Moment Y	My	-17.6984	Nm
Moment Z	Mz	-42.4204	Nm
Rotation around Y	ry	-0.2630	mrad
Rotation around Z	rz	0.3110	mrad

Maximal pressure inner race	pmax_i	1609.8	MPa
Maximal pressure outer race	pmax_e	1493.2	MPa
Maximal pressure	pmax	1609.8	MPa
Static safety factor (ISO 17956)	S0eff	6.14209	
Life			
Dynamic load rating	Cr	1017.5	kN
Static load rating	C0r	1911.8	kN
Fatigue load limit	Cur	129.273	kN
Life modification factor for reliability	a1	1	
Viscosity ratio	κ	1.23339	
Contamination factor	eC	0.519557	
Life modification factor	aISO	0.732146	
Reference load	Pref	170938	N
Basic reference rating life	L10r	382.184	
Basic reference rating life	L10rh	40105.8	h
Modified reference rating life	Lnmr	279.815	
Modified reference rating life	Lnmrh	29363.3	h
Life according ISO 281			
Dynamic radial load factor	X	0.67	
Dynamic axial load factor	Y	4.16707	
Dynamic equivalent load	P	223715	N
Basic life	L10	155.866	
Basic life	L10h	16356.4	h
Life modification factor	aISO	1.08183	
Modified life	Lnm	168.621	
Modified life	Lnmh	17694.8	h
Static equivalent load	P0	197611	N
Static safety factor (ISO 76)	S0	9.67462	
Thermal permissible speed			
Factor for load independent losses	f0r	4.5	
Factor for load dependent losses	f1r	0.00017	
Surface for heat transfer	Ar	131381	mm²
Thermal transmission coefficient	kq	230.408	W/m²·K
Load for reference speed	P1r	95590.6	N
Viscosity at reference conditions	vr	12.000	mm²/s
Load independent friction moment	M0r	5.2226	Nm
Load dependent friction moment	M1r	4.1439	Nm
Thermal reference speed	ntr	1543.1	rpm
Method	DIN 732		
Factor for load independent losses	f0	4.5	
Factor for load dependent losses	f1	0.000241126	
Load for permissible speed	P1	259603	N
Temperature difference between bearing and surroundings	Δϑ	50.000	°C
Load independent friction moment	M0	7.5052	Nm

Load dependent friction moment	M1	15.962	Nm
Thermal permissible speed	nt	615.897	rpm
Friction moments and temperature increase for current speed (n=158.824)			
Load independent friction moment for current speed	M0_n	3.0406	Nm
Load dependent friction moment for current speed	M1_n	15.962	Nm
Total friction moment for current speed	M_n	19.003	Nm
Temperature difference for current speed	Δϑ_n	10.441	°C

Subsurface stresses

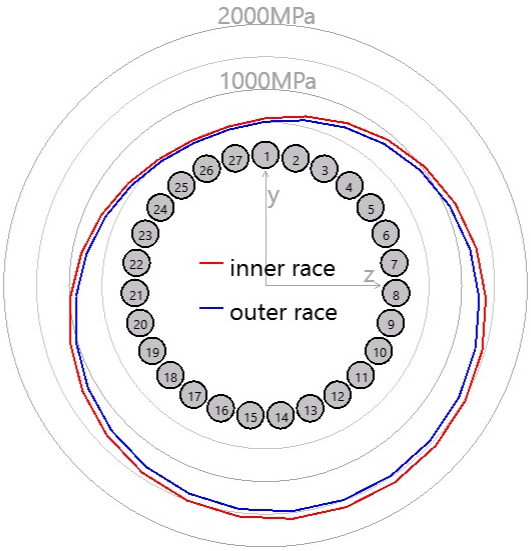
Maximal shear stress for inner race	τmax_i	483.386	MPa
Depth for maximal shear stress inner race	h(τmax_i)	0.2539	mm
Shear yield stress for core inner race	τYield_i	510.000	MPa
Shear fatigue limit for core inner race	τa_i	306.000	MPa
Shear stress at core inner race	τ_i	306.000	MPa
Maximal shear stress for outer race	τmax_e	448.372	MPa
Depth for maximal shear stress outer race	h(τmax_e)	0.2868	mm
Shear yield stress for core outer race	τYield_e	510.000	MPa
Shear fatigue limit for core outer race	τa_e	306.000	MPa
Shear stress at core outer race	τ_e	306.000	MPa
Required hardness depth inner race	hdmin_i	0.7461	mm
Required hardness depth outer race	hdmin_e	0.7613	mm

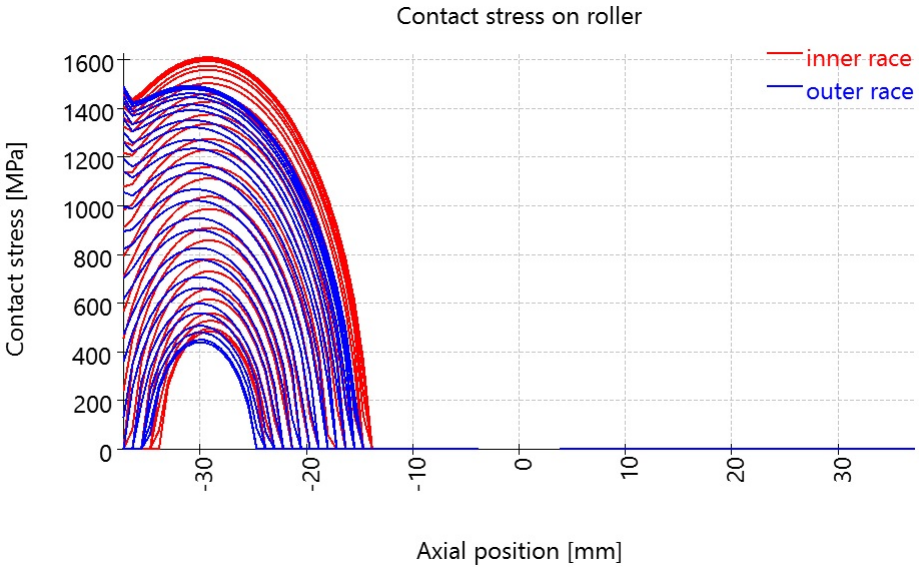
Damage Frequencies

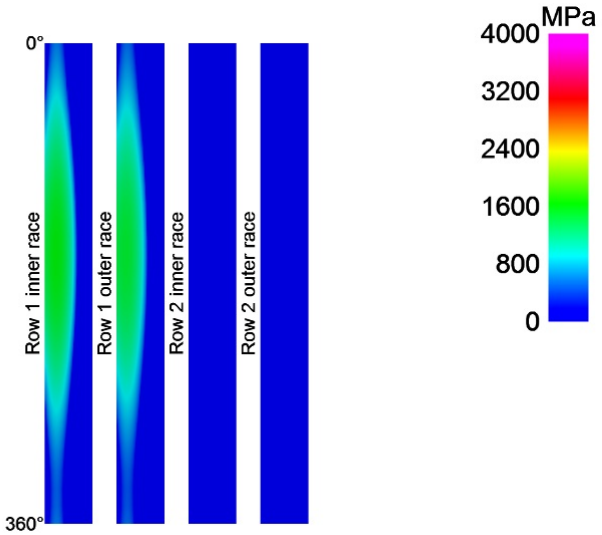
Speed of inner ring	ni	2.65	1/s	(159rpm)
Speed of outer ring	ne	0.00	1/s	(0rpm)
Rotation speed of cage	fc	1.19	1/s	(71rpm)
Damage frequency for inner race	fip	39.33	1/s	(2360rpm)
Damage frequency for outer race	fep	-32.14	1/s	(-1928rpm)
Damage frequency for rolling element	frp	-25.70	1/s	(-1542rpm)

Bearing stiffness matrix

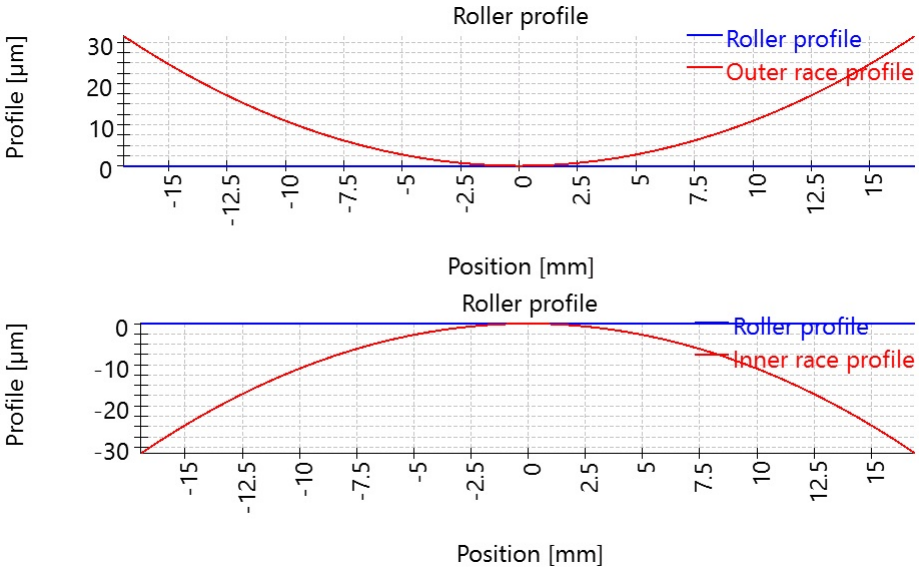
	ux [µm]	uy [µm]	uz [µm]	ry [mrad]	rz [mrad]
Fx [N]	404.243	314.442	-130.879	0.000	0.000
Fy [N]	314.565	3895.645	114.518	0.000	0.000
Fz [N]	-131.031	114.518	4124.052	0.000	0.000
My [Nm]	0.074	-0.081	-2.090	0.000	0.000
Mz [Nm]	0.175	1.918	0.081	0.000	0.000

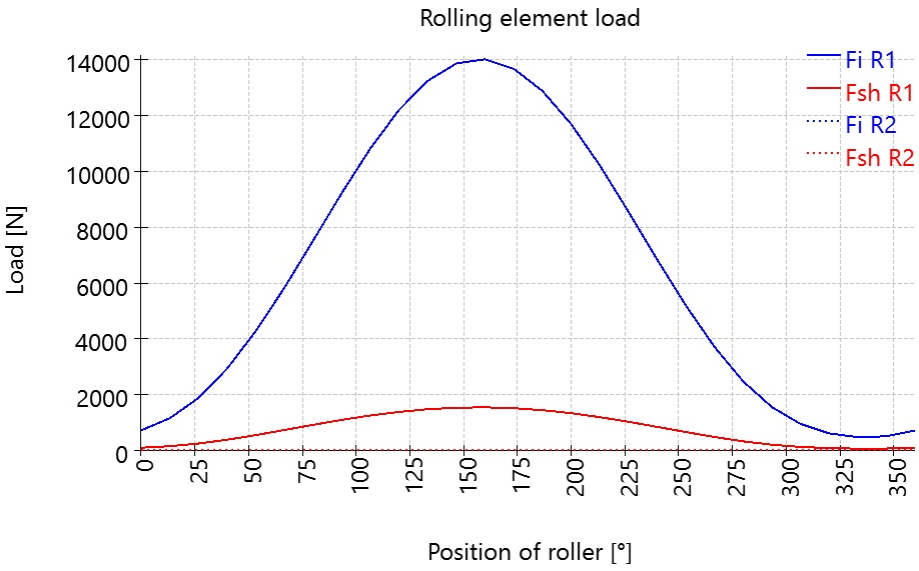

2000MPa
1000MPa
y
z
inner race
outer race
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27

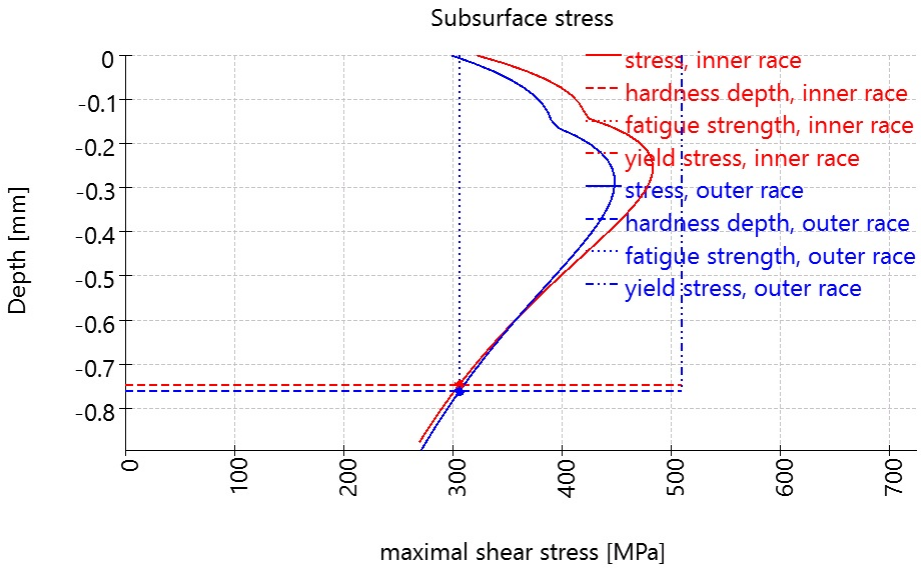

Contact stress on roller
inner race
outer race
Contact stress [MPa]
1600
1400
1200
1000
800
600
400
200
0
-30
-20
-10
0
10
20
30
Axial position [mm]


0°
360°
Row 1 inner race
Row 1 outer race
Row 2 inner race
Row 2 outer race
MPa
4000
3200
2400
1600
800
0


Contact stress
outer race R1
inner race R1
outer race R2
inner race R2
Contact stress [MPa]
Position of roller [°]


Roller profile
Roller profile
Outer race profile
Profile [µm]
Position [mm]
Roller profile
Roller profile
Inner race profile
Profile [µm]
Position [mm]


Rolling element load
Fi R1
Fsh R1
Fi R2
Fsh R2
Load [N]
Position of roller [°]



Result table for bearing 1

Results for row 1

Roller	ψ [°]	|F| [N]	Fx [N]	Fy [N]	Fz [N]	M [Nm]	Fsh [N]
1	0	716.097	163.459	-697.192	0	0.395119	93.6203
2	13.3333	1152.31	262.958	-1091.66	-258.729	0.635171	150.511
3	26.6667	1875.39	427.898	-1631.7	-819.471	1.0329	244.831
4	40	2929.45	667.678	-2185.03	-1833.46	1.6073	381.074
5	53.3333	4274.19	969.863	-2485.79	-3339	2.31583	547.772
6	66.6667	5831.25	1314.27	-2250.21	-5216.58	3.10908	730.143
7	80	7518.58	1681.38	-1272.52	-7216.83	3.94188	915.895
8	93.3333	9225.3	2047.21	523.029	-8980.06	4.7586	1093.12
9	106.667	10829.9	2386.63	3029.69	-10119.9	5.5048	1250.98
10	120	12210.7	2675.4	5956.98	-10317.8	6.1335	1380.37
11	133.333	13250.9	2891.51	8874.18	-9406.08	6.60211	1475.04
12	146.667	13874.5	3020.01	11314.1	-7441.38	6.87736	1529.75
13	160	14022.1	3050.35	12860.9	-4680.99	6.94197	1542.58
14	173.333	13681.5	2980.29	13262.6	-1550.18	6.79269	1512.93
15	186.667	12883.4	2815.36	12487	1459.52	6.43612	1441.99
16	200	11696.6	2568.18	10723	3902.84	5.90199	1332.76
17	213.333	10214.4	2256.75	8323.09	5474.18	5.21984	1191.05
18	226.667	8553.99	1903.8	5722.88	6065.89	4.43857	1024.36
19	240	6841.06	1534.51	3333.37	5773.57	3.60998	842.355
20	253.333	5192.22	1173.55	1450.61	4845.38	2.78726	656.504
21	266.667	3707.72	843.309	209.934	3604.43	2.02111	478.986
22	280	2473.41	564.118	-418.182	2371.63	1.36046	322.469
23	293.333	1552.29	354.263	-598.606	1387.72	0.855587	202.813
24	306.667	947.051	216.259	-550.598	739.581	0.522894	123.972
25	320	608.722	139.029	-453.983	380.937	0.336337	79.7351
26	333.333	472.852	107.93	-411.401	206.613	0.260999	61.8088
27	346.667	505.238	115.362	-478.632	113.438	0.27903	66.1194

ψ : Position of roller

|F| : Absolute value of force on inner race

Fx : Axial force

Change this text in mesys.ini

Fy : Radial force Y

Fz : Radial force Z

M : Moment load on inner race

Fsh : Force on shoulder

Results for row 2

Roller	ψ [°]	|F| [N]	Fx [N]	Fy [N]	Fz [N]	M [Nm]	Fsh [N]
1	0	0	-0	-0	-0	0	0
2	13.3333	0	-0	-0	-0	0	0
3	26.6667	0	-0	-0	-0	0	0
4	40	0	-0	-0	-0	0	0
5	53.3333	0	-0	-0	-0	0	0
6	66.6667	0	-0	-0	-0	0	0
7	80	0	-0	-0	-0	0	0
8	93.3333	0	-0	0	-0	0	0
9	106.667	0	-0	0	-0	0	0
10	120	0	-0	0	-0	0	0
11	133.333	0	-0	0	-0	0	0
12	146.667	0	-0	0	-0	0	0
13	160	0	-0	0	-0	0	0
14	173.333	0	-0	0	-0	0	0
15	186.667	0	-0	0	0	0	0
16	200	0	-0	0	0	0	0
17	213.333	0	-0	0	0	0	0
18	226.667	0	-0	0	0	0	0
19	240	0	-0	0	0	0	0
20	253.333	0	-0	0	0	0	0
21	266.667	0	-0	0	0	0	0
22	280	0	-0	-0	0	0	0
23	293.333	0	-0	-0	0	0	0
24	306.667	0	-0	-0	0	0	0
25	320	0	-0	-0	0	0	0
26	333.333	0	-0	-0	0	0	0
27	346.667	0	-0	-0	0	0	0

ψ : Position of roller

|F| : Absolute value of force on inner race

Fx : Axial force

Fy : Radial force Y

Fz : Radial force Z

M : Moment load on inner race

Fsh : Force on shoulder

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Roller profile and aISO

Section	x [mm]	y [mm]	l [mm]	profile_r [µm]	aISO row 1	aISO row 2
1	-37.194	124.703	0.846	0.00	0.82	0.00
2	-36.359	124.839	0.846	0.00	0.86	0.00
3	-35.524	124.975	0.846	0.00	0.83	0.00
4	-34.688	125.111	0.846	0.00	0.79	0.00
5	-33.853	125.247	0.846	0.00	0.75	0.00
6	-33.018	125.383	0.846	0.00	0.73	0.00
7	-32.182	125.519	0.846	0.00	0.71	0.00
8	-31.347	125.655	0.846	0.00	0.69	0.00
9	-30.512	125.791	0.846	0.00	0.68	0.00
10	-29.676	125.927	0.846	0.00	0.68	0.00
11	-28.841	126.063	0.846	0.00	0.68	0.00
12	-28.006	126.199	0.846	0.00	0.68	0.00
13	-27.170	126.335	0.846	0.00	0.69	0.00
14	-26.335	126.472	0.846	0.00	0.71	0.00
15	-25.500	126.608	0.846	0.00	0.73	0.00
16	-24.664	126.744	0.846	0.00	0.76	0.00
17	-23.829	126.880	0.846	0.00	0.80	0.00
18	-22.994	127.016	0.846	0.00	0.85	0.00
19	-22.158	127.152	0.846	0.00	0.91	0.00
20	-21.323	127.288	0.846	0.00	1.01	0.00
21	-20.488	127.424	0.846	0.00	1.14	0.00
22	-19.652	127.560	0.846	0.00	1.33	0.00
23	-18.817	127.696	0.846	0.00	1.64	0.00
24	-17.982	127.832	0.846	0.00	2.19	0.00
25	-17.146	127.968	0.846	0.00	3.37	0.00
26	-16.311	128.104	0.846	0.00	6.86	0.00
27	-15.476	128.240	0.846	0.00	29.73	0.00
28	-14.640	128.376	0.846	0.00	50.00	0.00
29	-13.805	128.512	0.846	0.00	0.00	0.00
30	-12.970	128.649	0.846	0.00	0.00	0.00
31	-12.134	128.785	0.846	0.00	0.00	0.00
32	-11.299	128.921	0.846	0.00	0.00	0.00
33	-10.464	129.057	0.846	0.00	0.00	0.00
34	-9.628	129.193	0.846	0.00	0.00	0.00
35	-8.793	129.329	0.846	0.00	0.00	0.00
36	-7.958	129.465	0.846	0.00	0.00	0.00
37	-7.122	129.601	0.846	0.00	0.00	0.00
38	-6.287	129.737	0.846	0.00	0.00	0.00
39	-5.452	129.873	0.846	0.00	0.00	0.00
40	-4.616	130.009	0.846	0.00	0.00	0.00
41	-3.781	130.145	0.846	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	237.66	563.98	792.93	981.22	1137.27	1263.67	1361.63	1430.63	1469.60	1478.59	1457.74	1406.46
2	0.00	0.00	80.73	450.92	667.12	848.56	1005.65	1139.14	1248.80	1334.44	1395.04	1429.39	1437.32	1418.92	1373.81
3	0.00	0.00	358.27	580.48	760.24	920.63	1063.27	1186.35	1288.42	1368.55	1425.42	1457.75	1465.23	1447.89	1405.51
4	0.00	280.60	493.11	675.41	835.83	983.47	1116.85	1233.13	1330.19	1406.67	1461.06	1492.04	1499.23	1482.58	1442.03
5	246.54	416.82	586.46	748.06	896.51	1035.61	1162.50	1273.90	1367.33	1441.13	1493.69	1523.69	1530.65	1514.52	1475.32
6	371.67	506.03	655.10	804.05	944.56	1077.67	1199.86	1307.64	1398.36	1470.13	1521.29	1550.54	1557.33	1541.59	1503.43
7	450.72	568.77	705.78	846.48	981.60	1110.49	1229.24	1334.34	1423.02	1493.25	1543.33	1572.00	1578.67	1563.23	1525.87
8	503.61	612.56	742.01	877.22	1008.76	1134.73	1251.02	1354.17	1441.36	1510.43	1559.70	1587.93	1594.50	1579.29	1542.54
9	537.42	641.06	765.78	897.50	1026.84	1150.94	1265.57	1367.37	1453.51	1521.75	1570.43	1598.35	1604.85	1589.79	1553.50
10	555.40	656.20	778.29	908.07	1036.36	1159.48	1273.13	1374.11	1459.60	1527.32	1575.59	1603.31	1609.77	1594.81	1558.83
11	559.11	659.01	780.16	909.37	1037.63	1160.57	1273.88	1374.52	1459.74	1527.19	1575.24	1602.85	1609.29	1594.38	1558.58
12	549.04	649.81	771.64	901.55	1030.79	1154.32	1267.89	1368.67	1453.95	1521.39	1569.40	1596.99	1603.43	1588.52	1552.78
13	524.76	628.37	752.57	884.55	1015.80	1140.72	1255.14	1356.52	1442.23	1509.91	1558.04	1585.72	1592.18	1577.22	1541.40
14	484.76	593.75	722.41	858.00	992.43	1119.59	1235.52	1337.98	1424.47	1492.66	1541.09	1568.94	1575.44	1560.38	1524.37
15	425.69	544.08	680.06	821.25	960.24	1090.64	1208.80	1312.87	1400.54	1469.51	1518.41	1546.54	1553.11	1537.89	1501.56
16	339.99	475.74	623.62	773.18	918.54	1053.38	1174.60	1280.88	1370.17	1440.22	1489.81	1518.32	1524.98	1509.55	1472.75
17	203.71	380.94	549.67	711.97	866.24	1007.08	1132.38	1241.60	1333.01	1404.50	1454.98	1484.01	1490.79	1475.08	1437.65
18	0.00	236.55	451.46	634.60	801.67	950.67	1081.39	1194.43	1288.57	1361.91	1413.56	1443.24	1450.18	1434.11	1395.86
19	0.00	0.00	311.60	535.49	722.17	882.56	1020.52	1138.55	1236.19	1311.88	1365.01	1395.51	1402.64	1386.13	1346.85
20	0.00	0.00	0.00	402.07	623.11	800.28	948.19	1072.79	1174.93	1253.61	1308.62	1340.15	1347.51	1330.45	1289.85
21	0.00	0.00	0.00	185.37	494.64	699.02	861.07	994.42	1102.34	1184.78	1242.10	1274.90	1282.55	1264.81	1222.60
22	0.00	0.00	0.00	0.00	312.25	574.08	759.05	905.37	1021.49	1109.17	1169.70	1204.23	1212.29	1193.61	1149.17
23	0.00	0.00	0.00	0.00	0.00	403.21	631.05	797.13	924.70	1019.34	1084.04	1120.79	1129.34	1109.49	1062.18
24	0.00	0.00	0.00	0.00	0.00	57.54	461.59	663.56	808.77	913.42	983.88	1023.61	1032.85	1011.41	960.18
25	0.00	0.00	0.00	0.00	0.00	0.00	178.01	488.20	665.57	786.02	865.01	909.04	919.22	895.55	838.63
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	201.55	475.60	626.43	719.77	770.59	782.25	755.10	689.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	136.43	405.50	530.83	594.74	609.11	575.48	490.94
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	227.15	338.61	360.92	307.47	135.34
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 16 to 27 row 1

Section	16	17	18	19	20	21	22	23	24	25	26	27
1	1326.49	1216.80	1078.42	910.49	708.58	454.36	0.00	0.00	0.00	0.00	0.00	0.00
2	1303.62	1208.02	1088.58	946.04	780.06	586.62	343.63	0.00	0.00	0.00	0.00	0.00
3	1339.64	1250.38	1139.60	1008.82	859.34	691.40	499.97	244.93	0.00	0.00	0.00	0.00
4	1379.02	1293.97	1188.90	1065.75	926.63	773.58	606.57	413.26	177.95	0.00	0.00	0.00
5	1414.40	1332.43	1231.49	1113.76	981.79	838.48	685.87	519.43	349.80	180.10	0.00	76.50
6	1444.09	1364.46	1266.60	1152.84	1025.99	889.39	746.07	595.03	450.45	327.34	256.90	275.96
7	1467.73	1389.87	1294.32	1183.49	1060.32	928.39	791.28	650.01	519.01	413.57	357.76	372.44
8	1485.30	1408.76	1314.91	1206.20	1085.61	956.87	823.88	689.00	566.17	470.02	420.71	433.56
9	1496.89	1421.30	1328.65	1221.37	1102.49	975.77	845.32	714.52	596.65	505.76	459.87	471.78
10	1502.62	1427.64	1335.73	1229.30	1111.36	985.69	856.49	728.00	612.84	524.70	480.56	492.01
11	1502.57	1427.89	1336.31	1230.19	1112.50	986.98	857.90	730.21	615.94	528.66	485.06	496.37
12	1496.75	1422.09	1330.44	1224.12	1106.01	979.79	849.72	721.43	606.33	518.17	474.04	485.51
13	1485.16	1410.22	1318.12	1211.08	1091.88	964.07	831.86	701.45	583.70	492.73	446.83	458.80
14	1467.71	1392.20	1299.23	1190.92	1069.90	939.55	803.89	669.63	546.92	450.51	401.04	414.04
15	1444.25	1367.85	1273.58	1163.40	1039.75	905.72	765.01	624.60	493.60	387.39	330.89	345.93
16	1414.56	1336.91	1240.83	1128.11	1000.86	861.75	713.85	563.93	418.91	293.19	219.35	239.84
17	1378.30	1299.00	1200.54	1084.43	952.38	806.32	648.11	483.01	311.14	124.32	0.00	0.00
18	1335.03	1253.60	1152.06	1031.52	893.04	737.37	563.76	371.60	116.53	0.00	0.00	0.00
19	1284.14	1199.99	1094.46	968.12	820.95	651.44	452.57	193.51	0.00	0.00	0.00	0.00
20	1224.79	1137.15	1026.45	892.35	733.00	542.05	291.64	0.00	0.00	0.00	0.00	0.00
21	1154.60	1062.56	945.13	800.49	623.11	393.62	0.00	0.00	0.00	0.00	0.00	0.00
22	1077.13	978.89	851.76	691.09	482.48	135.09	0.00	0.00	0.00	0.00	0.00	0.00
23	984.86	878.23	737.19	550.64	271.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	875.48	756.55	593.00	352.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	742.80	603.53	394.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	573.71	391.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	326.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 1 to 15 row 2

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 16 to 27 row 2

Section	16	17	18	19	20	21	22	23	24	25	26	27
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pressure pe in MPa on outer race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	129.56	469.75	703.67	895.15	1056.42	1192.20	1303.30	1388.90	1448.73	1482.92	1490.89	1472.41	1428.26
2	0.00	0.00	347.29	556.50	741.49	902.33	1041.53	1160.39	1258.46	1334.46	1387.79	1418.31	1425.43	1408.93	1369.51
3	0.00	274.42	461.94	633.07	795.96	942.43	1071.52	1182.86	1275.28	1347.23	1397.88	1426.89	1433.65	1417.98	1380.48
4	241.05	391.13	542.47	693.80	843.06	980.19	1102.62	1208.99	1297.70	1367.01	1415.93	1443.95	1450.49	1435.34	1399.09
5	348.12	468.39	601.93	741.08	881.03	1011.53	1129.16	1231.93	1317.92	1385.32	1432.98	1460.29	1466.66	1451.91	1416.54
6	416.48	522.72	645.77	776.86	910.19	1035.82	1149.91	1249.99	1333.95	1399.90	1446.63	1473.41	1479.65	1465.19	1430.49
7	462.05	560.38	676.87	802.52	931.07	1053.14	1164.61	1262.70	1345.14	1410.03	1456.06	1482.44	1488.59	1474.35	1440.13
8	490.74	584.47	696.90	818.96	944.15	1063.67	1173.29	1269.95	1351.29	1415.42	1460.97	1487.06	1493.14	1479.06	1445.19
9	505.31	596.61	706.83	826.77	949.74	1067.58	1176.00	1271.73	1352.35	1415.99	1461.23	1487.13	1493.17	1479.19	1445.53
10	507.05	597.66	707.21	826.28	948.05	1064.97	1172.78	1268.04	1348.29	1411.67	1456.77	1482.58	1488.59	1474.67	1441.10
11	496.30	587.85	698.20	817.60	939.11	1055.86	1163.64	1258.86	1339.05	1402.43	1447.54	1473.34	1479.34	1465.44	1431.84
12	472.61	566.91	679.62	800.61	922.83	1040.17	1148.47	1244.09	1324.56	1388.17	1433.46	1459.34	1465.35	1451.42	1417.68
13	434.46	533.92	650.94	774.96	898.97	1017.68	1127.14	1223.62	1304.71	1368.79	1414.42	1440.46	1446.51	1432.50	1398.50
14	378.58	487.07	611.10	740.00	867.05	988.08	1099.37	1197.21	1279.29	1344.11	1390.25	1416.56	1422.66	1408.52	1374.13
15	297.37	422.81	558.29	694.64	826.38	950.84	1064.77	1164.56	1248.04	1313.89	1360.73	1387.41	1393.60	1379.26	1344.35
16	164.93	333.40	489.20	637.15	775.87	905.23	1022.79	1125.22	1210.59	1277.81	1325.58	1352.74	1359.04	1344.45	1308.86
17	0.00	194.07	397.18	564.58	713.84	850.15	972.67	1078.60	1166.45	1235.44	1284.40	1312.19	1318.61	1303.71	1267.25
18	0.00	0.00	264.30	471.40	637.59	783.98	913.28	1023.87	1114.96	1186.22	1236.68	1265.25	1271.85	1256.54	1218.99
19	0.00	0.00	0.00	344.65	542.27	704.17	843.01	959.86	1055.18	1129.36	1181.72	1211.29	1218.11	1202.29	1163.36
20	0.00	0.00	0.00	124.14	417.58	606.32	759.35	884.87	985.83	1063.80	1118.59	1149.42	1156.52	1140.04	1099.37
21	0.00	0.00	0.00	0.00	229.17	481.12	657.41	795.47	904.08	986.99	1044.88	1077.30	1084.75	1067.46	1024.58
22	0.00	0.00	0.00	0.00	0.00	305.89	531.93	690.84	811.06	901.13	963.38	998.03	1005.98	987.54	941.58
23	0.00	0.00	0.00	0.00	0.00	0.00	358.85	559.04	697.81	798.31	866.63	904.30	912.90	892.91	842.77
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	379.79	555.83	673.66	751.24	793.35	802.90	780.67	724.29
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	359.08	514.42	608.57	658.04	669.14	643.25	576.31
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	277.86	416.72	482.01	496.21	462.86	371.83
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	195.40	223.46	152.69	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 16 to 27 row 1

Section	16	17	18	19	20	21	22	23	24	25	26	27
1	1357.64	1262.20	1141.55	995.50	822.52	617.10	358.46	0.00	0.00	0.00	0.00	0.00
2	1306.70	1222.09	1115.86	988.65	840.70	671.11	476.40	247.82	0.00	0.00	0.00	0.00
3	1320.95	1240.94	1141.01	1022.28	885.96	733.12	565.32	390.66	184.51	0.00	0.00	0.00
4	1341.70	1264.70	1168.91	1055.79	927.11	785.00	633.05	482.41	330.15	182.69	60.05	101.86
5	1360.72	1285.89	1193.12	1084.07	960.88	826.29	684.84	548.02	417.57	307.74	245.66	262.12
6	1375.84	1302.65	1212.12	1106.11	986.98	857.85	723.70	595.67	477.21	382.48	332.46	345.36
7	1386.37	1314.38	1225.53	1121.76	1005.64	880.48	751.49	629.22	518.01	431.32	386.79	398.16
8	1392.06	1320.93	1233.27	1131.11	1017.13	894.79	769.39	650.78	543.99	461.84	420.20	430.78
9	1392.82	1322.24	1235.35	1134.26	1021.70	901.21	778.11	661.58	557.17	477.37	437.14	447.33
10	1388.62	1318.31	1231.81	1131.26	1019.46	899.96	778.06	662.24	558.57	479.41	439.52	449.61
11	1379.40	1309.08	1222.61	1122.13	1010.44	891.13	769.36	652.96	548.47	468.37	427.83	438.08
12	1365.08	1294.49	1207.67	1106.77	994.57	874.60	751.90	633.53	526.53	443.69	401.33	412.06
13	1345.56	1274.41	1186.85	1085.01	971.62	850.09	725.25	603.30	491.64	403.58	357.65	369.34
14	1320.64	1248.62	1159.92	1056.57	941.21	817.08	688.64	560.97	441.51	344.00	290.99	304.67
15	1290.08	1216.86	1126.52	1021.01	902.78	774.74	640.77	504.19	371.39	254.68	183.42	202.72
16	1253.55	1178.73	1086.20	977.73	855.46	721.78	579.44	428.50	269.51	84.45	0.00	0.00
17	1210.59	1133.70	1038.28	925.83	798.00	656.15	500.73	323.66	70.16	0.00	0.00	0.00
18	1160.60	1081.04	981.85	864.05	728.42	574.35	396.54	149.65	0.00	0.00	0.00	0.00
19	1102.75	1019.76	915.58	790.48	643.56	469.65	242.73	0.00	0.00	0.00	0.00	0.00
20	1035.92	948.43	837.53	702.06	537.54	325.07	0.00	0.00	0.00	0.00	0.00	0.00
21	957.46	864.04	743.83	592.77	396.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	869.22	767.07	632.34	453.56	167.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	763.00	647.78	488.40	242.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	632.90	494.75	276.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	462.93	266.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	183.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 1 to 15 row 2

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 16 to 27 row 2

Section	16	17	18	19	20	21	22	23	24	25	26	27
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Details for bearing: B6 'Generic 23040'

Rolling Bearing Calculation

Input data

Bearing Geometry

Type of rolling bearing		Spherical roller bearing	
Bearing designation		Generic 23040	
Bearing inner diameter	d	200.000	mm
Bearing outer diameter	D	310.000	mm
Bearing width	B	82.000	mm
Number of rolling elements	Z	27	
Roller diameter	Dw	26.000	mm
Pitch diameter	Dpw	255.000	mm
Length of Roller	Lwe	34.700	mm
Conformity inner race	fi	0.5	
Conformity outer race	fe	0.5	
Conformity roller	fr	0.485	
Nominal contact angle	α	9.1341	°
Definition of clearance		From database	
Definition of bearing tolerance		Not considered	
Nominal diametral clearance	Pd	0.1650	mm
Selection for clearance		Calculation for medium clearance	
		Rolling element has mean temperature	

Loading

Speed of inner ring	ni	158.824	rpm
		inner ring rotates relative to load	
Speed of outer ring	ne	0.0000	rpm
		outer ring is stationary relative to load	
Displacement X	ux	0.0000	µm
Displacement Y	uy	83.161	µm
Displacement Z	uz	83.361	µm
Rotation around Y	ry	-0.2040	mrad
Rotation around Z	rz	0.3714	mrad
Temperature of inner ring	T_i	20.000	°C
Temperature of outer ring	T_e	20.000	°C
Reliability	reliability	90.000	%
Maximal permissible value for aISO	aISOMax	50	

Material

Surface hardness inner race	HRC_i	58	
Surface hardness outer race	HRC_e	58	
Ultimate strength of core inner race	Rm_i	1200.0	MPa
Ultimate strength of core outer race	Rm_e	1200.0	MPa
Material for inner ring		Steel	
Material for outer ring		Steel	

Change this text in mesys.ini

Material for rolling element		Steel	

Lubrication

Lubricant		ISO VG 220 mineral oil	
Kinematic viscosity at 40°C	v40	220.000	mm²/s
Kinematic viscosity at 100°C	v100	19.000	mm²/s
Oil density	rhoOil	890.000	kg/m³
Oil temperature	ϑOil	70.000	°C
Oil does not contain effective EP additives			
Effective kinematic viscosity	v(ϑ)	51.794	mm²/s
Effective oil density	ρ(ϑ)	851.593	kg/m³
Lubricant cleanliness		Oil lubrication with on-line filter ISO4406 -/17/14	

Results

Centrifugal loads are not considered

Bearing inner geometry

Number of rolling elements	Z	27	
Roller diameter	Dw	26.000	mm
Pitch diameter	Dpw	255.000	mm
Length of Roller	Lwe	34.700	mm
Conformity inner race	fi	0.5	
Conformity outer race	fe	0.5	
Conformity roller	fr	0.485	
Nominal contact angle	α	9.1341	°
Nominal diametral clearance	Pd	0.1650	mm
Nominal axial clearance	Pa	0.8816	mm
Diameter inner race	di	232.112	mm
Diameter outer race	de	284.275	mm
Radius inner race	ri	142.138	mm
Radius outer race	re	142.138	mm
Radius roller	rr	137.873	mm
Change of clearance	ΔPd	0.0000	mm
Effective diametral clearance	Pdeff	0.1650	mm
Distance between rolling elements	δRE	3.6037	mm
Axial distance between rows	δR	41.000	mm

Forces and displacement

Axial force	Fx	0.0000	kN
Radial force Y	Fy	48.645	kN
Radial force Z	Fz	49.067	kN
Displacement X	ux	0.0000	µm
Displacement Y	uy	83.161	µm
Displacement Z	uz	83.361	µm
Moment Y	My	-0.0000	Nm
Moment Z	Mz	0.0000	Nm
Rotation around Y	ry	-0.2040	mrad
Rotation around Z	rz	0.3714	mrad

Maximal pressure inner race	pmax_i	1332.7	MPa
Maximal pressure outer race	pmax_e	1204.8	MPa
Maximal pressure	pmax	1332.7	MPa
Static safety factor (ISO 17956)	S0eff	9.02495	
Life			
Dynamic load rating	Cr	1017.5	kN
Static load rating	C0r	1911.8	kN
Fatigue load limit	Cur	129.273	kN
Life modification factor for reliability	a1	1	
Viscosity ratio	κ	1.23339	
Contamination factor	eC	0.519557	
Life modification factor	aISO	1.38699	
Reference load	Pref	94419.3	N
Basic reference rating life	L10r	2763.97	
Basic reference rating life	L10rh	290046	h
Modified reference rating life	Lnmr	3833.6	
Modified reference rating life	Lnmrh	402291	h
Life according ISO 281			
Dynamic radial load factor	X	1	
Dynamic axial load factor	Y	2.79878	
Dynamic equivalent load	P	69093.3	N
Basic life	L10	7827.36	
Basic life	L10h	821390	h
Life modification factor	aISO	6.51509	
Modified life	Lnm	50996	
Modified life	Lnmh	5.35143e+06	h
Static equivalent load	P0	69093.3	N
Static safety factor (ISO 76)	S0	27.67	
Thermal permissible speed			
Factor for load independent losses	f0r	4.5	
Factor for load dependent losses	f1r	0.00017	
Surface for heat transfer	Ar	131381	mm²
Thermal transmission coefficient	kq	230.408	W/m²·K
Load for reference speed	P1r	95590.6	N
Viscosity at reference conditions	vr	12.000	mm²/s
Load independent friction moment	M0r	5.2226	Nm
Load dependent friction moment	M1r	4.1439	Nm
Thermal reference speed	ntr	1543.1	rpm
Method	DIN 732		
Factor for load independent losses	f0	4.5	
Factor for load dependent losses	f1	0.000142579	
Load for permissible speed	P1	69093.3	N
Temperature difference between bearing and surroundings	Δϑ	50.000	°C
Load independent friction moment	M0	10.899	Nm

Load dependent friction moment	M1	2.5121	Nm
Thermal permissible speed	nt	1077.8	rpm
Friction moments and temperature increase for current speed (n=158.824)			
Load independent friction moment for current speed	M0_n	3.0406	Nm
Load dependent friction moment for current speed	M1_n	2.5121	Nm
Total friction moment for current speed	M_n	5.5527	Nm
Temperature difference for current speed	Δϑ_n	3.0508	°C

Subsurface stresses

Maximal shear stress for inner race	τmax_i	400.196	MPa
Depth for maximal shear stress inner race	h(τmax_i)	0.2154	mm
Shear yield stress for core inner race	τYield_i	510.000	MPa
Shear fatigue limit for core inner race	τa_i	306.000	MPa
Shear stress at core inner race	τ_i	306.000	MPa
Maximal shear stress for outer race	τmax_e	361.783	MPa
Depth for maximal shear stress outer race	h(τmax_e)	0.2383	mm
Shear yield stress for core outer race	τYield_e	510.000	MPa
Shear fatigue limit for core outer race	τa_e	306.000	MPa
Shear stress at core outer race	τ_e	306.000	MPa
Required hardness depth inner race	hdmin_i	0.4826	mm
Required hardness depth outer race	hdmin_e	0.4476	mm

Damage Frequencies

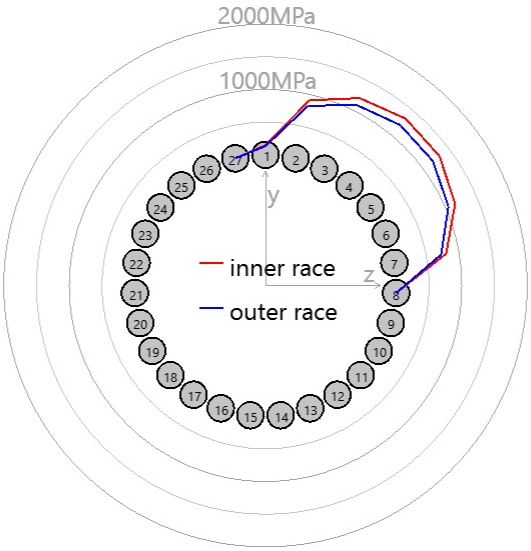
Speed of inner ring	ni	2.65	1/s	(159rpm)
Speed of outer ring	ne	0.00	1/s	(0rpm)
Rotation speed of cage	fc	1.19	1/s	(71rpm)
Damage frequency for inner race	fip	39.33	1/s	(2360rpm)
Damage frequency for outer race	fep	-32.14	1/s	(-1928rpm)
Damage frequency for rolling element	frp	-25.70	1/s	(-1542rpm)

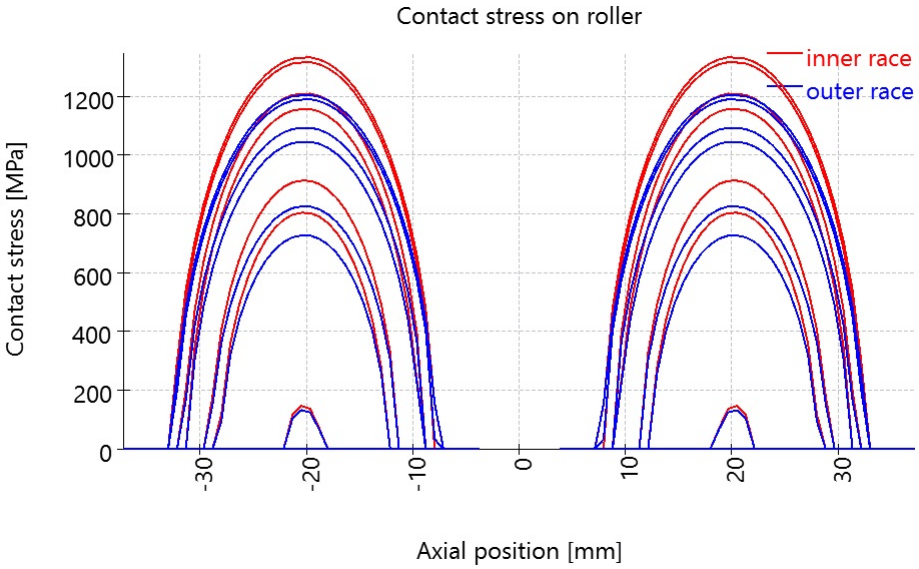
Bearing stiffness matrix

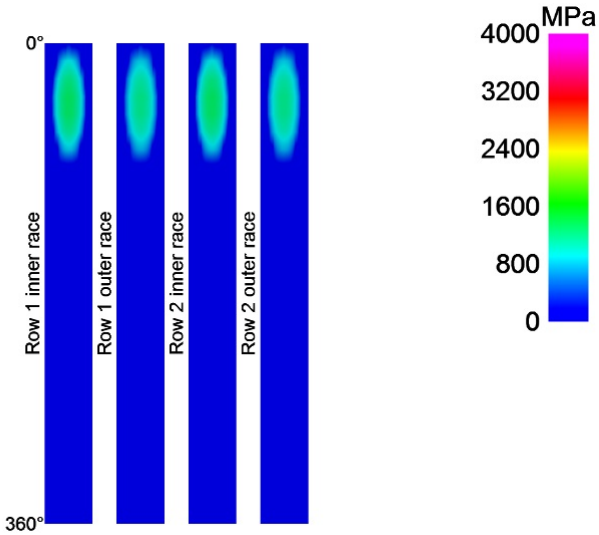
	ux [µm]	uy [µm]	uz [µm]	ry [mrad]	rz [mrad]
Fx [N]	118.196	-0.000	0.000	0.000	0.000
Fy [N]	-0.000	2144.101	1603.675	0.000	0.000
Fz [N]	-0.000	1603.675	2167.029	0.000	0.000
My [Nm]	0.041	0.000	0.000	0.000	0.000
Mz [Nm]	-0.041	-0.000	-0.000	0.000	0.000

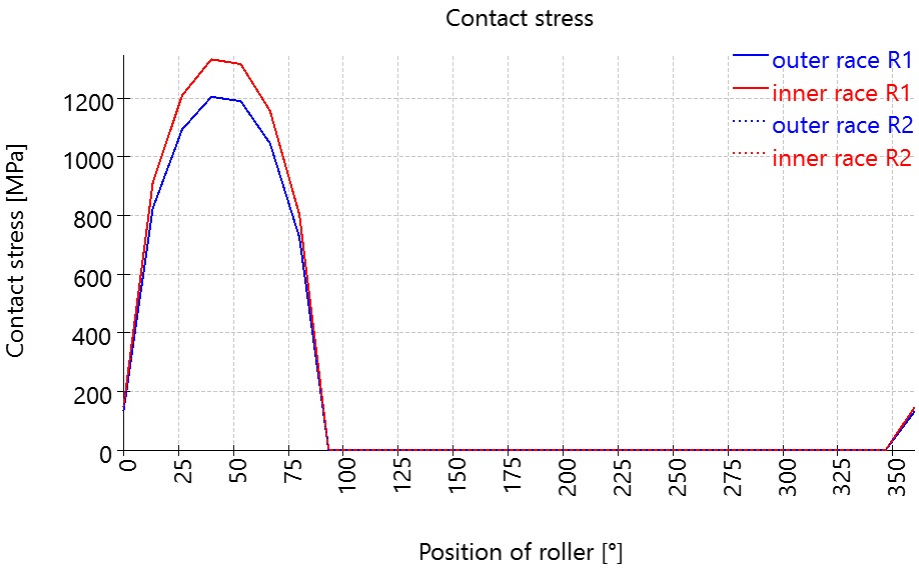
MESYS Shaft and Rolling Bearing Calculation

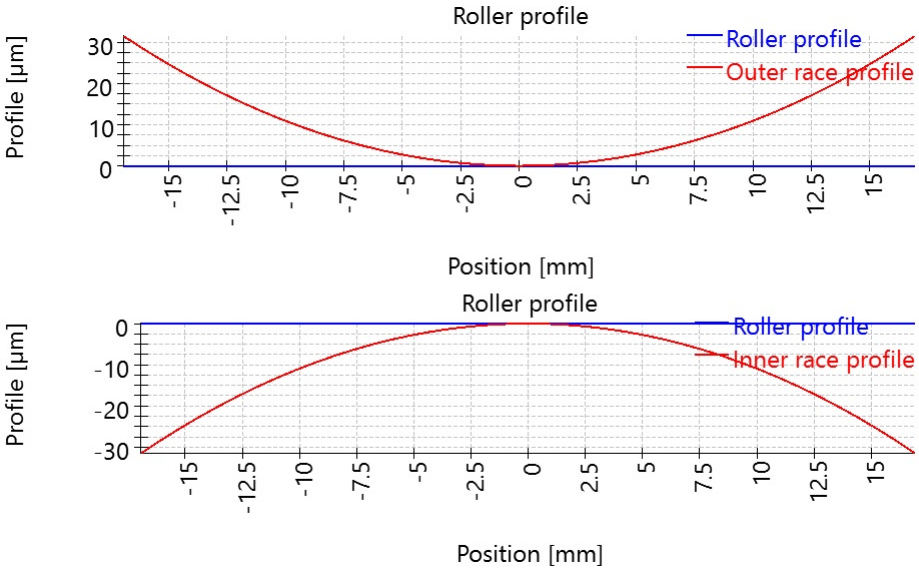
Change this text in mesys.ini

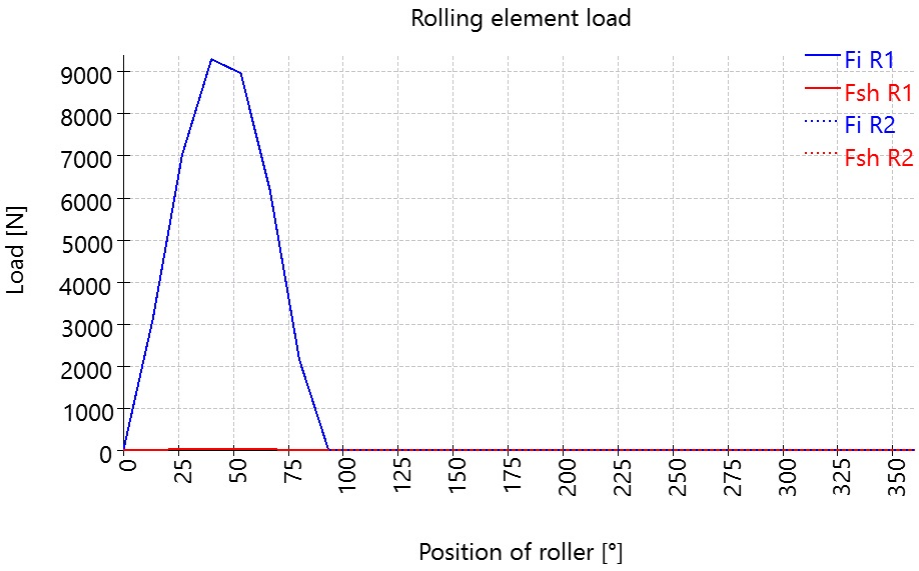


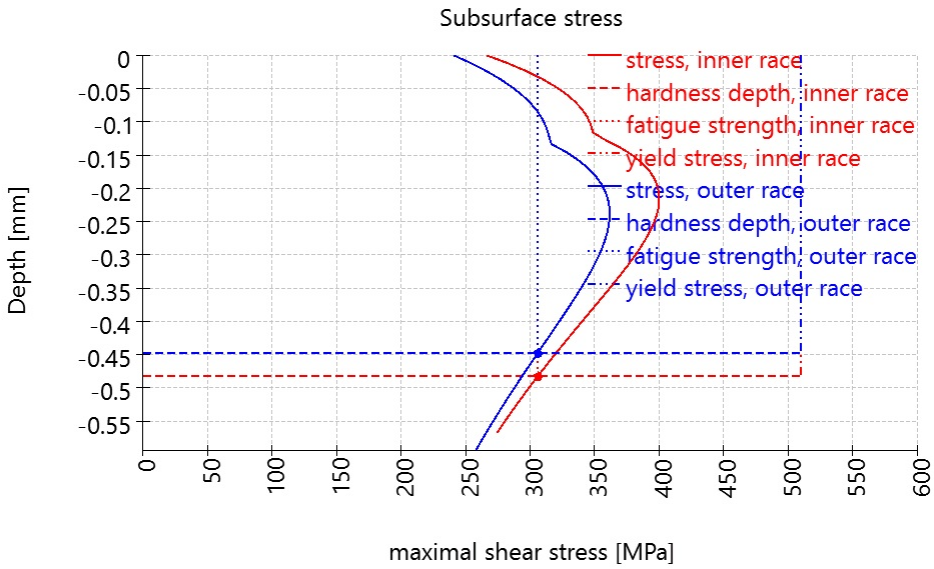





Contact stress
outer race R1
inner race R1
outer race R2
inner race R2
Contact stress [MPa]
0
200
400
600
800
1000
1200
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
Position of roller [°]


Roller profile
Roller profile
Outer race profile
Profile [µm]
30
20
10
0
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
Position [mm]
Roller profile
Roller profile
Inner race profile
Profile [µm]
0
-10
-20
-30
-15
-12.5
-10
-7.5
-5
-2.5
0
2.5
5
7.5
10
12.5
15
Position [mm]


Rolling element load
Fi R1
Fsh R1
Fi R2
Fsh R2
Load [N]
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
Position of roller [°]



Result table for bearing 1

Results for row 1

Roller	ψ [°]	|F| [N]	Fx [N]	Fy [N]	Fz [N]	M [Nm]	Fsh [N]
1	0	16.1827	2.53952	-15.9822	0	0.000221204	0.0551389
2	13.3333	3117.59	488.744	-2996.04	-710.075	0.0487412	11.5104
3	26.6667	7023.28	1099.45	-6198.85	-3113.18	0.12233	28.8919
4	40	9297.62	1454.56	-7034.69	-5902.81	0.169753	39.9735
5	53.3333	8968.87	1403.35	-5289.87	-7105.53	0.1622	38.1395
6	66.6667	6178.82	967.387	-2417.12	-5603.53	0.106078	25.1872
7	80	2157.27	338.221	-369.973	-2098.22	0.0330563	7.9233
8	93.3333	0	-0	0	-0	0	0
9	106.667	0	-0	0	-0	0	0
10	120	0	-0	0	-0	0	0
11	133.333	0	-0	0	-0	0	0
12	146.667	0	-0	0	-0	0	0
13	160	0	-0	0	-0	0	0
14	173.333	0	-0	0	-0	0	0
15	186.667	0	-0	0	0	0	0
16	200	0	-0	0	0	0	0
17	213.333	0	-0	0	0	0	0
18	226.667	0	-0	0	0	0	0
19	240	0	-0	0	0	0	0
20	253.333	0	-0	0	0	0	0
21	266.667	0	-0	0	0	0	0
22	280	0	-0	-0	0	0	0
23	293.333	0	-0	-0	0	0	0
24	306.667	0	-0	-0	0	0	0
25	320	0	-0	-0	0	0	0
26	333.333	0	-0	-0	0	0	0
27	346.667	0	-0	-0	0	0	0

ψ : Position of roller

|F| : Absolute value of force on inner race

Fx : Axial force

Change this text in mesys.ini

Fy : Radial force Y

Fz : Radial force Z

M : Moment load on inner race

Fsh : Force on shoulder

Results for row 2

Roller	ψ [°]	|F| [N]	Fx [N]	Fy [N]	Fz [N]	M [Nm]	Fsh [N]
1	0	16.1827	-2.53952	-15.9822	-0	0.000221204	0.0551389
2	13.3333	3117.59	-488.744	-2996.04	-710.075	0.0487412	11.5104
3	26.6667	7023.28	-1099.45	-6198.85	-3113.18	0.12233	28.8919
4	40	9297.62	-1454.56	-7034.69	-5902.81	0.169753	39.9735
5	53.3333	8968.87	-1403.35	-5289.87	-7105.53	0.1622	38.1395
6	66.6667	6178.82	-967.387	-2417.12	-5603.53	0.106078	25.1872
7	80	2157.27	-338.221	-369.973	-2098.22	0.0330563	7.9233
8	93.3333	0	-0	0	-0	0	0
9	106.667	0	-0	0	-0	0	0
10	120	0	-0	0	-0	0	0
11	133.333	0	-0	0	-0	0	0
12	146.667	0	-0	0	-0	0	0
13	160	0	-0	0	-0	0	0
14	173.333	0	-0	0	-0	0	0
15	186.667	0	-0	0	0	0	0
16	200	0	-0	0	0	0	0
17	213.333	0	-0	0	0	0	0
18	226.667	0	-0	0	0	0	0
19	240	0	-0	0	0	0	0
20	253.333	0	-0	0	0	0	0
21	266.667	0	-0	0	0	0	0
22	280	0	-0	-0	0	0	0
23	293.333	0	-0	-0	0	0	0
24	306.667	0	-0	-0	0	0	0
25	320	0	-0	-0	0	0	0
26	333.333	0	-0	-0	0	0	0
27	346.667	0	-0	-0	0	0	0

ψ : Position of roller

|F| : Absolute value of force on inner race

Fx : Axial force

Fy : Radial force Y

Fz : Radial force Z

M : Moment load on inner race

Fsh : Force on shoulder

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Roller profile and aISO

Section	x [mm]	y [mm]	l [mm]	profile_r [µm]	aISO row 1	aISO row 2
1	-37.199	124.733	0.846	0.00	0.00	0.00
2	-36.364	124.867	0.846	0.00	0.00	0.00
3	-35.528	125.002	0.846	0.00	0.00	0.00
4	-34.692	125.136	0.846	0.00	0.00	0.00
5	-33.857	125.270	0.846	0.00	0.00	0.00
6	-33.021	125.405	0.846	0.00	0.00	50.00
7	-32.186	125.539	0.846	0.00	50.00	50.00
8	-31.350	125.673	0.846	0.00	50.00	22.78
9	-30.514	125.808	0.846	0.00	15.35	8.08
10	-29.679	125.942	0.846	0.00	6.56	4.53
11	-28.843	126.076	0.846	0.00	3.98	3.12
12	-28.008	126.210	0.846	0.00	2.86	2.42
13	-27.172	126.345	0.846	0.00	2.27	2.00
14	-26.336	126.479	0.846	0.00	1.91	1.74
15	-25.501	126.613	0.846	0.00	1.68	1.57
16	-24.665	126.748	0.846	0.00	1.52	1.44
17	-23.829	126.882	0.846	0.00	1.42	1.36
18	-22.994	127.016	0.846	0.00	1.34	1.30
19	-22.158	127.151	0.846	0.00	1.29	1.27
20	-21.323	127.285	0.846	0.00	1.26	1.25
21	-20.487	127.419	0.846	0.00	1.25	1.25
22	-19.651	127.554	0.846	0.00	1.25	1.26
23	-18.816	127.688	0.846	0.00	1.27	1.29
24	-17.980	127.822	0.846	0.00	1.30	1.34
25	-17.145	127.957	0.846	0.00	1.36	1.42
26	-16.309	128.091	0.846	0.00	1.44	1.52
27	-15.473	128.225	0.846	0.00	1.57	1.68
28	-14.638	128.359	0.846	0.00	1.74	1.91
29	-13.802	128.494	0.846	0.00	2.00	2.27
30	-12.966	128.628	0.846	0.00	2.42	2.86
31	-12.131	128.762	0.846	0.00	3.12	3.98
32	-11.295	128.897	0.846	0.00	4.53	6.56
33	-10.460	129.031	0.846	0.00	8.08	15.35
34	-9.624	129.165	0.846	0.00	22.78	50.00
35	-8.788	129.300	0.846	0.00	50.00	50.00
36	-7.953	129.434	0.846	0.00	50.00	0.00
37	-7.117	129.568	0.846	0.00	0.00	0.00
38	-6.282	129.703	0.846	0.00	0.00	0.00
39	-5.446	129.837	0.846	0.00	0.00	0.00
40	-4.610	129.971	0.846	0.00	0.00	0.00
41	-3.775	130.106	0.846	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	295.64	233.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	201.41	543.63	508.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	473.66	707.69	679.52	347.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	638.86	833.85	809.39	545.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	178.35	762.90	935.98	913.82	683.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	406.66	861.80	1020.58	1000.01	790.70	117.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	543.76	942.65	1091.36	1071.95	877.05	358.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	644.42	1009.36	1150.67	1132.13	947.65	490.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	722.23	1064.34	1200.08	1182.20	1005.49	585.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	783.19	1109.19	1240.71	1223.34	1052.46	656.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	830.57	1145.01	1273.34	1256.36	1089.86	711.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	866.35	1172.57	1298.56	1281.86	1118.57	751.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	891.75	1192.39	1316.76	1300.26	1139.18	780.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	116.39	907.53	1204.80	1328.18	1311.79	1152.07	797.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	147.61	913.12	1208.66	1331.49	1315.17	1156.19	804.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	137.24	912.79	1209.47	1332.73	1316.35	1156.82	803.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	71.96	902.40	1201.82	1325.93	1309.45	1148.76	791.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	882.68	1186.91	1312.48	1295.81	1133.15	769.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	853.07	1164.50	1292.20	1275.27	1109.72	735.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	812.62	1134.19	1264.79	1247.50	1077.99	689.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	759.82	1095.36	1229.79	1212.03	1037.27	628.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	692.23	1047.14	1186.56	1168.19	986.53	547.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	605.66	988.25	1134.19	1115.04	924.28	438.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	491.88	916.84	1071.45	1051.28	848.27	277.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	329.04	830.07	996.53	975.00	754.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	723.12	906.72	883.30	637.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	586.76	797.60	771.37	482.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	397.08	660.99	630.07	236.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	477.69	436.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	152.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 16 to 27 row 1

Section	16	17	18	19	20	21	22	23	24	25	26	27
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 1 to 15 row 2

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	152.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	477.69	436.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	397.08	660.99	630.07	236.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	586.76	797.60	771.37	482.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	723.12	906.72	883.30	637.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	329.04	830.07	996.53	975.00	754.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	491.88	916.84	1071.45	1051.28	848.27	277.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	605.66	988.25	1134.19	1115.04	924.28	438.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	692.23	1047.14	1186.56	1168.19	986.53	547.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	759.82	1095.36	1229.79	1212.03	1037.27	628.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	812.62	1134.19	1264.79	1247.50	1077.99	689.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	853.07	1164.50	1292.20	1275.27	1109.72	735.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	882.68	1186.91	1312.48	1295.81	1133.15	769.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	71.96	902.40	1201.82	1325.93	1309.45	1148.76	791.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	137.24	912.79	1209.47	1332.73	1316.35	1156.82	803.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	147.61	913.12	1208.66	1331.49	1315.17	1156.19	804.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	116.39	907.53	1204.80	1328.18	1311.79	1152.07	797.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	891.75	1192.39	1316.76	1300.26	1139.18	780.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	866.35	1172.57	1298.56	1281.86	1118.57	751.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	830.57	1145.01	1273.34	1256.36	1089.86	711.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	783.19	1109.19	1240.71	1223.34	1052.46	656.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	722.23	1064.34	1200.08	1182.20	1005.49	585.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	644.42	1009.36	1150.67	1132.13	947.65	490.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	543.76	942.65	1091.36	1071.95	877.05	358.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	406.66	861.80	1020.58	1000.01	790.70	117.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	178.35	762.90	935.98	913.82	683.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	638.86	833.85	809.39	545.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	473.66	707.69	679.52	347.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	201.41	543.63	508.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	295.64	233.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change this text in mesys.ini

Pressure pi in MPa on inner race for rollers 16 to 27 row 2

Section	16	17	18	19	20	21	22	23	24	25	26	27
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 1 to 15 row 1

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	256.02	197.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	168.19	485.12	452.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	421.90	635.04	609.41	305.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	573.01	750.01	727.81	487.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	150.94	686.10	842.97	822.89	613.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	362.92	776.15	919.94	901.32	711.62	93.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	488.25	849.73	984.33	966.77	790.24	319.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	580.03	910.44	1038.28	1021.53	854.50	440.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	650.90	960.49	1083.25	1067.10	907.15	527.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	706.43	1001.34	1120.25	1104.57	949.94	592.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	749.61	1034.00	1150.01	1134.68	984.04	641.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	782.27	1059.17	1173.04	1157.98	1010.26	678.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	805.52	1077.34	1189.72	1174.84	1029.14	704.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	103.16	820.05	1088.79	1200.26	1185.50	1041.04	720.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	132.89	825.37	1092.51	1203.47	1188.77	1045.00	726.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	124.70	825.33	1093.48	1204.81	1190.07	1045.81	726.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	68.12	816.21	1086.80	1198.88	1184.05	1038.76	716.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	798.66	1073.56	1186.94	1171.95	1024.90	696.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	772.19	1053.56	1168.85	1153.62	1003.97	666.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	735.96	1026.43	1144.31	1128.78	975.57	624.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	688.62	991.63	1112.94	1096.98	939.06	569.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	628.00	948.36	1074.14	1057.65	893.54	497.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	550.39	895.50	1027.12	1009.94	837.66	400.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	448.51	831.40	970.76	952.68	769.43	256.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	303.41	753.51	903.47	884.19	685.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	657.60	822.82	801.87	580.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	535.52	724.89	701.47	441.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	366.55	602.46	574.93	224.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	438.81	402.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	156.26	34.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 16 to 27 row 1

Section	16	17	18	19	20	21	22	23	24	25	26	27
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 1 to 15 row 2

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	156.26	34.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	438.81	402.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	366.55	602.46	574.93	224.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	535.52	724.89	701.47	441.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	657.60	822.82	801.87	580.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	303.41	753.51	903.47	884.19	685.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	448.51	831.40	970.76	952.68	769.43	256.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	550.39	895.50	1027.12	1009.94	837.66	400.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	628.00	948.36	1074.14	1057.65	893.54	497.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	688.62	991.63	1112.94	1096.98	939.06	569.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	735.96	1026.43	1144.31	1128.78	975.57	624.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	772.19	1053.56	1168.85	1153.62	1003.97	666.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	798.66	1073.56	1186.94	1171.95	1024.90	696.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	68.12	816.21	1086.80	1198.88	1184.05	1038.76	716.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	124.70	825.33	1093.48	1204.81	1190.07	1045.81	726.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	132.89	825.37	1092.51	1203.47	1188.77	1045.00	726.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	103.16	820.05	1088.79	1200.26	1185.50	1041.04	720.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	805.52	1077.34	1189.72	1174.84	1029.14	704.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	782.27	1059.17	1173.04	1157.98	1010.26	678.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	749.61	1034.00	1150.01	1134.68	984.04	641.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	706.43	1001.34	1120.25	1104.57	949.94	592.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	650.90	960.49	1083.25	1067.10	907.15	527.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	580.03	910.44	1038.28	1021.53	854.50	440.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	488.25	849.73	984.33	966.77	790.24	319.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	362.92	776.15	919.94	901.32	711.62	93.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	150.94	686.10	842.97	822.89	613.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	573.01	750.01	727.81	487.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	421.90	635.04	609.41	305.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	168.19	485.12	452.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	256.02	197.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MESYS Shaft and Rolling Bearing Calculation

Change this text in mesys.ini

Pressure pe in MPa on outer race for rollers 16 to 27 row 2

Section	16	17	18	19	20	21	22	23	24	25	26	27
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Details for gear pair: CG1-CG2

Details for gear pair: BG1-BG2