rolling bearings

production program

24/2010-VLO-A

Publication No.24/2010-VLO-A

BASIC INFORMATION

PSL, a. s., situated in Považská Bystrica, is a bearing producer with many years' tradition dating back to 1948.

This commercial catalog provides an overview of the types and boundary dimensions of both the standard and special rolling bearings.

The tapered roller bearings are the most significant bearing types in the PSL production program. They are the essential part of the rolling bearing production volume. They are mainly used for trucks, tractors, construction and earth machines, as well as for general utilization in the heavy machinery industry.

Boundary dimensions, tolerance classes, clearances and basic load ratings of PSL rolling bearings comply with international standards ISO.

PSL, a.s. is approved to the international Quality Standards ISO 9001 and ISO 14001 covering all our services from design to consulting.

Delivery of bearing types not listed in this catalog are possible and should be discussed with PSL, a. s.

Solutions to complex applications can be provided on request by the experts of the PSL Technical Advisory Department.

More detailed technical information concerning the selection of suitable bearings with regard to the operation conditions, the arrangement design, assembly, disassembly, lubrication and maintenance of the bearings is in the publication "ROLLING BEARINGS PSL-Technical Handbook 10/2001-TP-VL-A".

DET NORSKE VERITAS

MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: 61144-2009-AQ-CZS-RvA

This is to certify that the Management System of

PSL, a.s.

Robotnicka ul, 01701, Považská Bystrica, Slovak Republic

has been found to conform to:

ISO 9001:2008

This Certificate is valid for the following product or service ranges:

Development, design, manufacturing and sales of roller and ball bearings, slewing rings, bearing components and worm drives

Initial Certification date: 22 September 2009

This Certificate is valid until: 20 September 2012

The audit has been performed under the supervision of: Karol Jedlovský, *Lead Auditor*

Place and date: Prague, 30 September 2009

for the Accredited Unit: DNV CERTIFICATION B.V., THE NETHERLANDS

Tomáš Urban, *Management Representative*

MGMT SYS RvA C 425

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.

DET NORSKE VERITAS

MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: 61145-2009-AE-CZS-RvA

This is to certify that the Management System of

PSL, a.s.

Robotnicka ul, 01701, Považská Bystrica, Slovak Republic

has been found to conform to:

ISO 14001:2004

This Certificate is valid for the following product or service ranges:

Development, design, manufacturing and sales of roller and ball bearings, slewing rings, bearing components and worm drives

Initial Certification date: 22 September 2009

This Certificate is valid until: 20 September 2012

The audit has been performed under the supervision of: Karol Jedlovský, *Lead Auditor*

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Tomáš Urban, *Management Representative*

MGMT SYS RvA C 425

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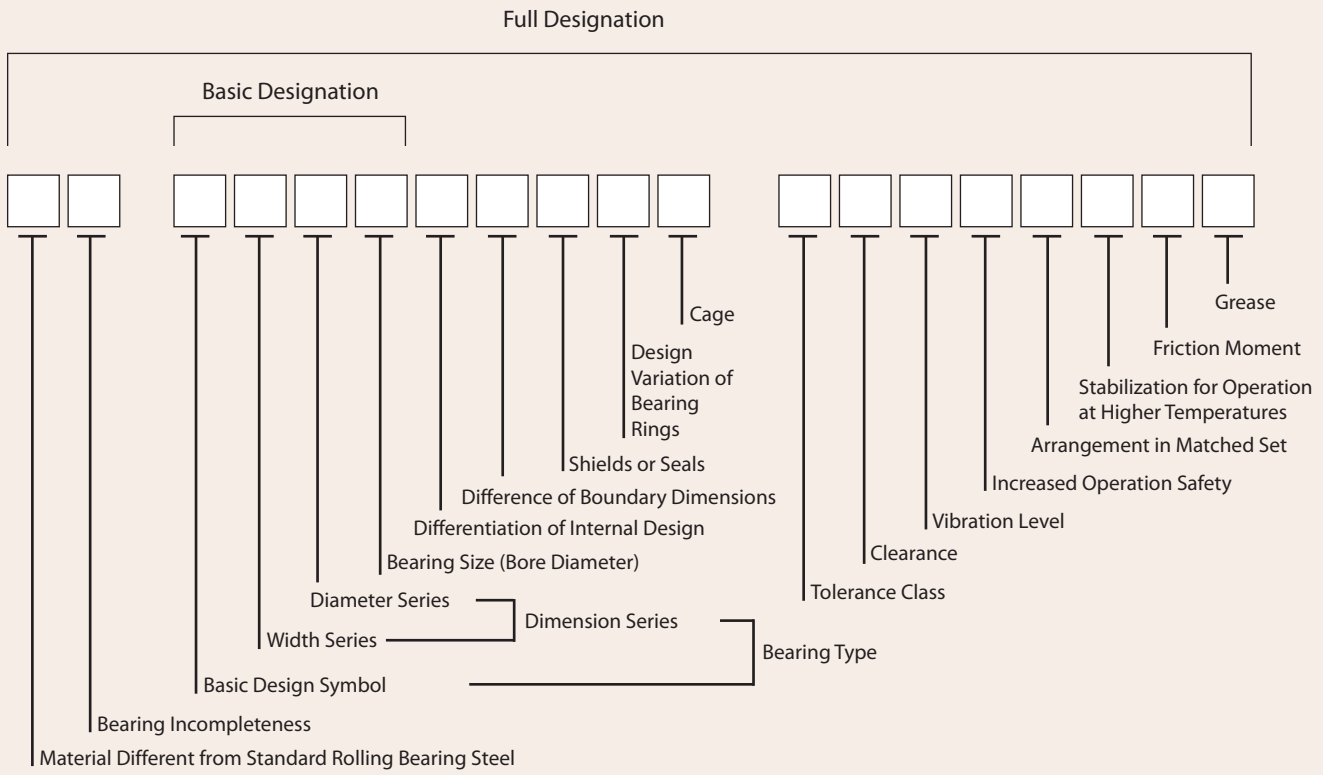
DESIGNATION

Standard Bearings PSL

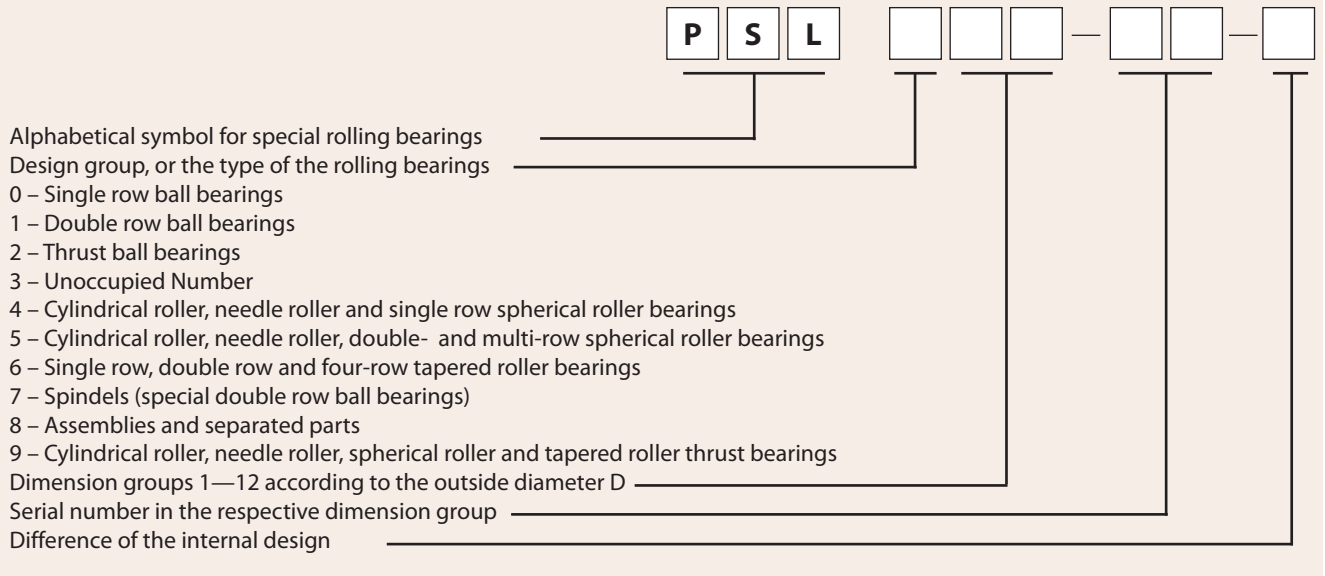
The meaning and sequence of the symbols used:



A detailed survey of all supplementary designations can be found in the standard STN 02 4608 and also in the publication "ROLLING BEARINGS PSL – Technical Handbook – 10/2001-TP-VL-A". The meaning of individual bearing designation symbols used in this catalog are more closely explained in the technical bearing characteristics of individual design groups (see tables).

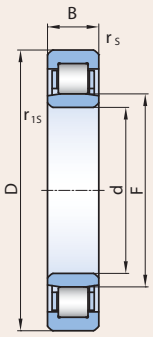
Non-standard Bearings PSL

are designated according to the scheme:

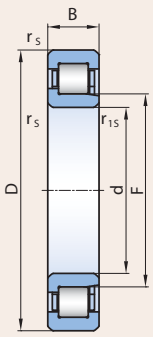


CYLINDRICAL ROLLER BEARINGS

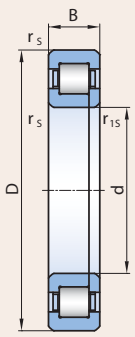
single row



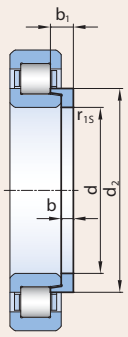
NU
NU+HJ=NUJ



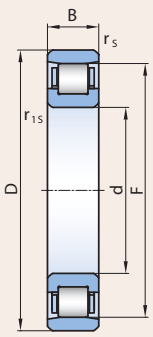
NJ
NJ+HJ=NH



NUP

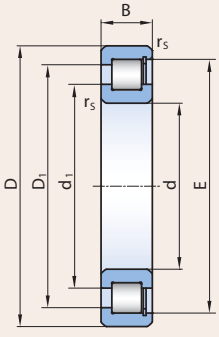


HJ



PSL

Pict. 1

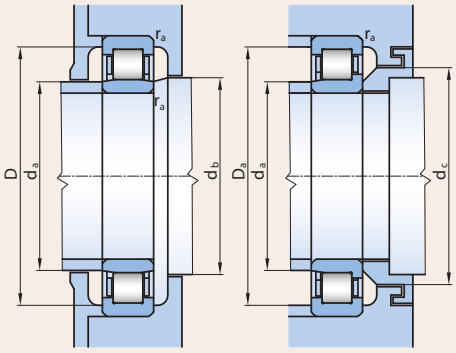


PSL

Pict. 2

Dimensions											Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation
d	D	B	r_s min	r_{1s} max	F	E	S[1]	d_2 max	b	b_1	C_r dyn.	C_{or} stat.	with grease	with oil	PSL
					[mm]						[kN]		[min^{-1}]		
170	250	30	2.5	2	229		4.2				261	369	2400	2800	**PSL 410-27** Pict.1
200	310	51	2.1	2.1	229		4.1				383	531	1900	2200	**NU1040**
220	340	56	3	3	250		4.1				501	694	1700	2000	**NU1044**
240	360	56	3	3	270		4.0				531	764	1600	1900	**NU1048**
240	440	72	4	4	295		2.0	315	16	29.5	944	1280	1300	1600	**NU248 NUJ248 NJ248 NH248**
260	400	65	4	4	296		4.3				643	962	1400	1700	**NU1052 NUP1052**
260	480	130	5	5	320		5.0				1760	2900	1100	1400	**NU2252**
280	420	65	4	4	316		4.5				681	1020	1300	1600	**NU1056**
300	460	74	4	4	340			357.6	19	36	891	1310	1200	1400	**NU1060 NUJ1060 NJ1060 NH1060**
300	460	74	4	4	340		5.0				891	1310	1200	1400	**PSL 412-305 NU**
320	480	74	4	4	360		5.0				909	1390	1100	1300	**NU1064**
360	540	82	5	5	480		4.5[2]	423	21	39.5	1076	1753	950	1100	**NU1072 NH1072**
360	440	38	2.1	2.1		419	6.0				426	930	550	800	**PSL 412-301** Pict.2
380	560	82	5	5	425		6.0[2]				1166	1982	850	1000	**NU1076**
380	480	46	2.1	2.1		453	5.0				573	1228	300	600	**PSL 412-202** Pict.2
400	600	90	5	5	450		5.0	470	19.6	42.6	1470	2330	840	1000	**NU1080 NU1080 K NUJ1080**
400	600	148	5	5	450		16.0				2255	4900	760	910	**NU3080**
400	720	185	6	6	480		6.0[2]				3410	5960	710	840	**NU2280**
400	500	46	2.1	2.1		476					590	1298	290	580	**PSL 412-203** Pict.2
440	540	46	2.1	2.1	468		12.0				535	1240	790	920	**NJ1888MA**
600	800	118	5	5	650						2230	4853	560	700	**NU29/600 NUP29/600**
647.7	774.7	101.6	4	4		746.2					2020	5340	495	580	**PSL 412-307 NP**
670	900	103	6	6	728						2352	4965	440	590	**NU19/670 MA**
704	864	60	3	3	760						544	1384	410	490	**PSL 412-200 NU**
710	870	95	4	4		830	15.0				2240	6000	220	260	**PSL 412-304** Pict.2
850	1120	155	8	8	925						3760	8740	380	450	**NU29/850 NUP29/850**
850	1050	125	5	5	894		17.0				3314	8264	380	450	**PSL 412-303 NJ**
900	1180	165	8	8	982						4220	9810	300	400	**NU29/900 NUP29/900**
940	1120	65	4	4	1003		17.0				945	2532	300	360	**PSL 412-201 NU**
950	1250	175	10	10	1032		17.0				4577	11452	300	370	**NU29/950 NUP29/950**
1000	1320	185	10	10	1090		20.0				4920	11600	300	350	**NU29/1000 NUP29/1000**
1060	1400	195	10	10	1155		21.0				5410	12800	280	330	**NU29/1060 NUP29/1060**
1180	1540	206	10	10	1280		21.0				6310	15300	250	300	**NU29/1180 NUP29/1180**
1320	1600	165	6	6	1400						5100	14430	120	160	**PSL 412-300 NU**
1700	2140	320	7.5	7.5	1805						14920	42050	168	196	**PSL 412-308** [3]

1) Permissible axial displacement from the central position
2) Permissible axial displacement in axially free direction
3) Contact PSL for information on bearing design



Weight		Abutment and Fillet Dimensions						
Bearing	loose rib/ring	d	d_a min	d_a max	d_b min	d_c min	D_a max	r_a max
[kg]		[mm]						
5.41								
14		200	212	220	233	-	298	2
18.5		220	234	240	254	-	326	2.5
20		240	254	260	275	-	346	2.5
50.5	4.68	240	258	293	298	346	422	3
29		260	278	280	300	-	382	3
90		260	280	309	324	-	460	4
32.5		280	296	311	320	-	404	3
44	5.63	300	318	325	344	360	442	3
43.6								
48.5		320	336	355	364	-	464	3
67.5	10	360	382	390	410	-	518	4
12								
71		380	400	420	430	-	540	4
19.2								
89	10.5	400	422	435	455	-	578	4
150.5		400	422	435	455	-	578	4
350		400	426	460	485	-	694	5
20								
22		440	455	465	473	-	512	2
173		600	614	644	654	675	750	4
98.4								
195		670	696	723	734		874	5
79.2								
116								
430		850	878	920	930	952	1092	5
249								
500		900	928	977	987	1011	1152	5
126								
597		950	978	1027	1041	1066	1220	5
720		1000	1036	1085	1095	1122	1284	6
850		1060	1096	1150	1160	1189	1364	6
1050		1180	1216	1275	1285	1316	1504	6
730								
2730								

The single row cylindrical roller bearings are suitable for accommodation of heavy radial loads operating under high rotational speed.The single row cylindrical roller bearings are separable. They are manufactured in several basic designs: axially firm which (NUP, NH) can carry a certain axial load in both directions, axially loose (NU) which allows the mutual displacement of the rings in both directions and in the design (NJ, NUJ) which carries the axial load in one direction.

Suffixes

C3,C4,C5 – Radial clearance greater than normal
R... – Radial clearance in non-standard range
K – Tapered bore, taper 1:12
F – Machined steel cage, rolling elements centred
M – Machined brass cage, rolling elements centred
.A – Cage centred on the outer ring (it is connected with the designation of the cage material)
..P – Machined window-type cage
..S – Cage with lubricating grooves
P6 – Higher tolerance class than standard
S0 – Stabilization of dimensions for operating temperature up to 150 °C

Cages

The single row cylindrical roller bearings usually have in the basic design cages as indicated in the table (the symbol for material and cage design are not indicated):

Bearing type	Cage type
NU,NUJ,NJ,NH10..	F,M,MA,MAPS
NU,NUJ,NJ,NH2..	F,M,MA
NU22..	MA
NU,NUP29..	F,M
NU30..	M

Radial equivalent load:

- dynamic: $P_r = F_r$ [kN]
- static: $P_{ro} = F_{ro}$ [kN]

Permissible axial load:

As the axial load capacity is dependent on many factors it is not possible to express it by means of a simple calculation. Under the presumption of standard operation conditions it is possible to calculate the maximum permissible axial load ($F_{a\,max}$) with sufficient accuracy. In an opposite case the relations are only informative.

$$F_{a\,max} = \frac{0{,}5 C_{or} .10^4}{n(d+D)} - 0{,}05\ Fr \quad \text{for oil lubrication} \quad [kN]$$

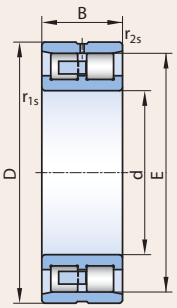
$$F_{a\,max} = \frac{0{,}35 C_{or} .10^4}{n(d+D)} - 0{,}03\ F_r \quad \text{for grease lubrication} \quad [kN]$$

$F_{a\,max}$ - Maximum permissible axial load [kN]
C_{or} - Radial basic static load rating [kN]
F_r - Radial bearing load [kN]
n - Rotational speed [min^{-1}]
d - Bearing bore diameter [mm]
D - Bearing outside diameter [mm]

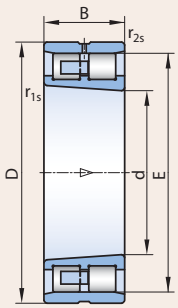
The simultaneous acting of the radial force with the axial load on the bearing is necessary for reliable function of the bearing. The ratio of these loads F_a/F_r cannot be greater than 0.4.

CYLINDRICAL ROLLER BEARINGS

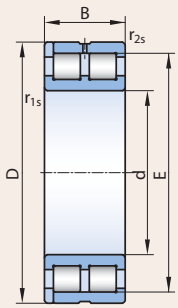
multi row



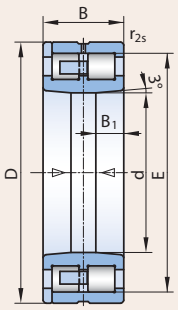
Pict. 1



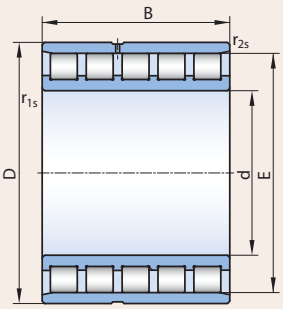
Pict. 2



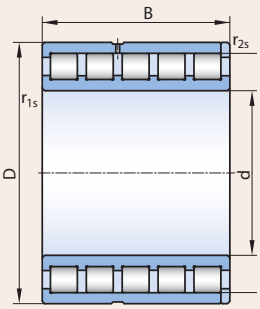
Pict. 4



Pict. 8



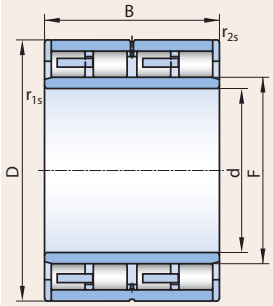
Pict. 18



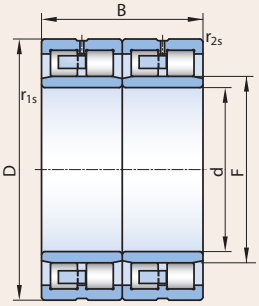
Pict. 19

Dimensions								Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation
d	D	B	r_s min	r_{2s} min	E	F	S[1]	C_r dyn.	C_{or} stat.	with grease	with oil	PSL
			[mm]					[kN]		[min^{-1}]		
120	180	109	3	3		138	3	625	1575	970	1800	**NNU6024V**
130	200	125	3	3		152	3	820	2070	920	1700	**NNU6026V**
165.1	225.45	168.3	1.5	1.5		181		930	2420	540	1010	**PSL 510-201**
170	230	109	3	3		188	3	735	2145	700	1300	**NNU6934V**
170	230	144	2.1	2.1	214		1.5	840	2270	540	1010	**PSL 510-13**
170	230	144	2.1	2.1	214			840	2270	540	1010	**PSL 510-14**
200	310	200	2.1	2.1		229	4	1723	3953	1700	2200	**NNU6040M**
220	300	60	3.5	3.5	278		2	299	668	1800	2200	**NN3944MB**
220	300	60 (27)		2	278		0.7	340	705	1500	1800	**PSL 510-12**
220	310	192	2	2		246	5.5	1455	3640	1400	1700	**PSL 511-10-1**
240	320	60	3.5	3.5	298		2	316	750	1600	2000	**NN3948MB**
260	360	100	2.1	2.1	332		2	1045	2530	480	900	**NNP4952V**
260	360	100	2.1	2.1		292	3.5	760	1780	1470	1700	**NNU4952W33M**
260	370	220	3	3		292	5	1945	4975	1200	1400	**PSL 511-11-1**
280	380	100	2.1	2.1		312	3.5	766	1836	1380	1610	**NNU4956W33M**
280	420	106	5	5	384		6	1100	2000	1300	1600	**NN3056K**
300	420	118	3	3	385		2	1375	3375	400	750	**NNP4960V**
300	420	300	3	1.1		332	5	3255	9110	1000	1200	**PSL 512-18-1**
320	480	121	5	5	438		8	1360	2510	1200	1400	**NN3064K**
340	520	133	6	6	473		9	1680	3100	1100	1300	**NN3068K**
340	480	350	8x20°	1.5		378		3981	11244	763	1015	**PSL 512-301**
360	540	134	6	6	493		9	1740	3350	1000	1200	**NN3072K**

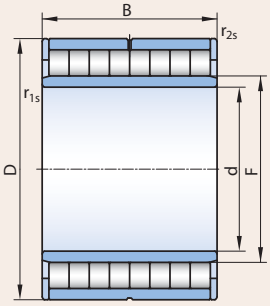
1) Permissible axial displacement from the central position
2) Permissible axial displacement in axially free direction



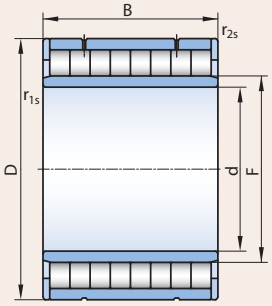
Pict. 10



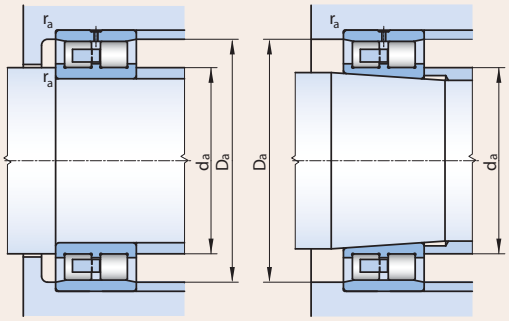
Pict. 12



Pict. 15



Pict. 16



Weight	Pict.	Abutment and Fillet Dimensions				
		d	d_a min	D_a min	D_a max	r_a max
[kg]		[mm]				
10.6	15	120	135	163	168	2
15.9	15	130	150	182	187	2
20	12					
14.4	15	170	186	213	218	2
17	18					
17.1	19					
60	10	200	220	270	290	2
12	1	220	238	280	285	3
12.6	8					
48.2	12					
13	1	240	258	300	305	3
31.8	4	260	278	335	345	3
31	1	260	278	330	345	3
80.3	12					
34	1	280	298	350	365	3
49.6	2	280	298	388	402	3
51.5	4	300	318	388	402	3
138	12					
74.2	2	320	338	442	462	3
99	2	340	362	477	498	4
205	16					
105	2	360	382	497	518	4

Double row cylindrical roller bearings are distinguished by great rigidity and are prevailingly used for spindle arrangements of machine-tools and similar equipment. Bearings of the NN30...K are manufactured in higher tolerance classes and with smaller radial clearance.

Suffixes

C1, C2, - Radial clearance less than normal
R... - Radial clearance in non-standard range
K - Tapered bore, taper 1:12
F - Machined steel cage,rolling elements centred
M - Machined brass cage, rolling elements centred
V - Bearing without cage, full rolling element number
.B - Cage centred on the inner ring
(it is connected with the cage material)
..S - Cage with lubricating grooves
P6 - Higher tolerance class than standard
P5 - Higher tolerance class than P6
P4 - Higher tolerance class than P5
S0 - Stabilization of dimensions for operating temperature up to 150 °C
W33 - Lubrication groove and holes in outer ring

Cages

The cylindrical roller bearings have the basic design cages as indicated in the following table:

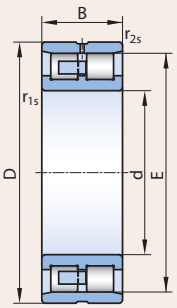
Bearing type	Cage type
NN 30..K	M
NN 39..	MB
NNU 49..	F, M
NNU 60..	F, M

Radial equivalent load:

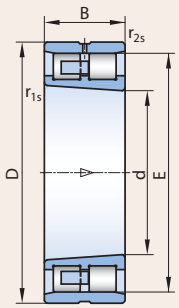
- dynamic: $P_r = F_r$ [kN]
- static: $P_{ro} = F_{ro}$ [kN]

CYLINDRICAL ROLLER BEARINGS

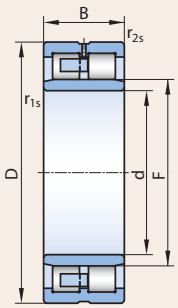
multi row



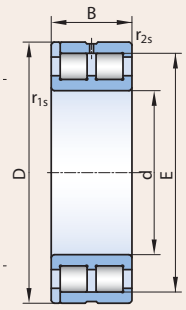
Pict. 1



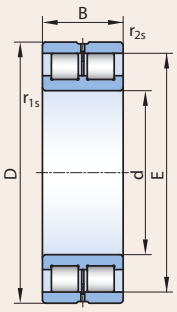
Pict. 2



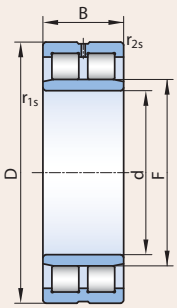
Pict. 3



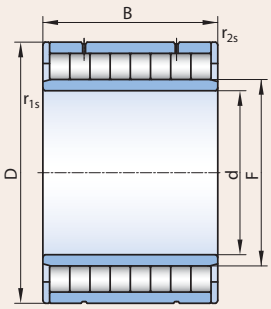
Pict. 4



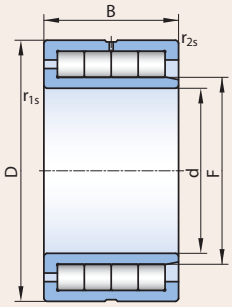
Pict. 5



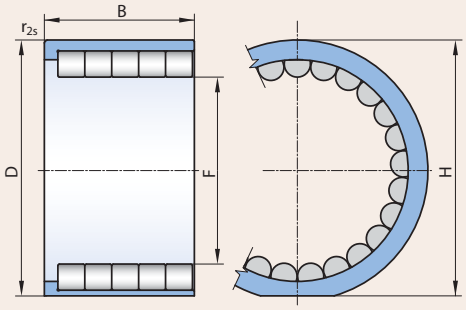
Pict. 6



Pict. 16



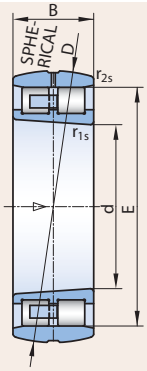
Pict. 17



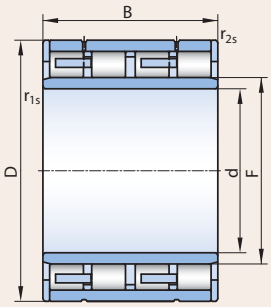
Pict. 20

Dimensions								Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation
d	D	B	r_s min	r_{2s} min	E	F	S[1]	C_r dyn.	C_{or} stat.	with grease	with oil	PSL
			[mm]					[kN]		[min^{-1}]		
370	440	60	3.5	3.5		393.3	3	585	1955	210	400	**PSL 512-6**
370	520	380	1.5	1.5		409	6	5220	12520			**PSL 512-304**
374.65	431.8	57.15	2.1	2.1	417.225		3	439	1249	1120	1490	**PSL 512-300**
380	520	140	4	4	481.5			2150	5525	260	500	**NNCL4976V**
380	480	100	3.5	3.5	452			1250	3585	850	1000	**PSL 512-24**
380	480	100	3.5	3.5	452		4.8	1250	3585	850	1000	**PSL 512-25**
380	520	250	5	5		412		3300	8960			**PSL 512-303**
380	520	256	5	5		418	11 [2]	3910	11400	180	340	**PSL 512-17**
380	540	300	6	3		421	5.5	4337	11120	700	880	**PSL 512-23-1**
400	500	100	2.1	2.1	471.0			1360	3760	260	500	**NNCL4880V NNC4880V**
400	540	140	4	4	501.6			2250	5900	240	480	**NNCL4980V**
400	540	380	4	4		436	2.5	6540	14760	520	740	**PSL 512-200**
420	560	140	4	4	522.5		7	2320	6200			**PSL 512-302**
440	650	157	8	8	596		13	2460	4920	750	890	**NN3088K**
560	750	190	5	5		617		3290	8580	760	950	**NNU49/560KW33M**
600	810	200	3	3	740		8	3570	10085	400	570	**PSL 512-29**
630	850	218	8	8		704	5	3910	10200	470	600	**NNU49/630**
630	920	515	10	10		719	17	8775	26880	430	500	**NNU60/630**
630	920	515	10	10		719	17	11725	39320	110	210	**NNU60/630V**
730	1030	750	6	6		809	8	19415	59615			**PSL 512-305**
	245 (236.5)	143		2.1		177.5		1185	2935	540	1010	**PSL 510-3**
	310 (298)	170		3		229		1560	4545	420	780	**PSL 511-3**

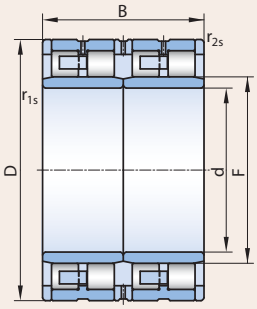
1) Permissible axial displacement from the central position
2) Permissible axial displacement in axially free direction



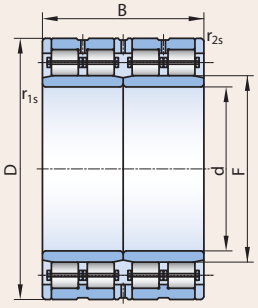
Pict. 7



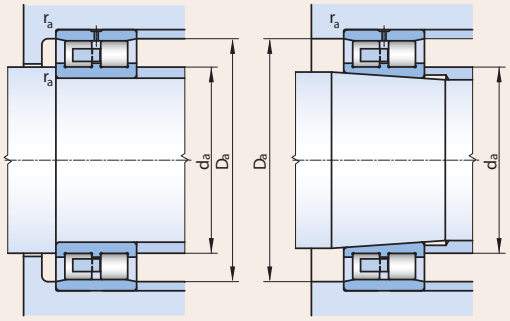
Pict. 11



Pict. 13



Pict. 14

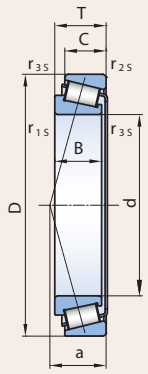


Weight	Pict.	Abutment and Fillet Dimensions				
		d	d_a min	D_a min	D_a max	r_a max
[kg]		[mm]				
18	6					
251	14					
13	1					
86	5	380	396	486	504	3
44	4					
42.9	1					
153	-					
171	17					
246	13					
48.8	5	400	411	475	489	2
94	5	400	416	506	524	3
263	14					
101	4					
169.4	2	440	468	602	622	5
233	3	560	580	776	730	4
232	7					
363	3	630	670	775	810	6
1235	11	630	670	775	810	6
1280	16	630	670	775	810	6
2055	14					
19	20					
39.6	20					

For accommodating great radial forces it is suitable to use special multi row cylindrical roller bearings, especially in arrangements with limited space – e. g. for rolling mill roll arrangements, calenders and in metallurgy and rubber industry, etc.

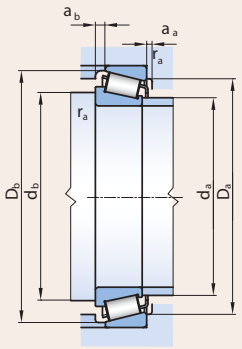
TAPERED ROLLER BEARINGS

single row



Dimensions									Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation		Weight	Factors		
d	D	B	C	T	r_s min	r_{2s} min	r_{3s} min	a	C_r dyn.	C_{or} stat.	with grease	with oil	PSL	ISO ANSI/ABMA 19.2.[1]		e	Y	Y_0
[mm]									[kN]		[min^{-1}]				[kg]			
120	170	25	19.5	27	3	3	0.6	34	153	248	1900	2600	**T4CB120**	**T4CB120**	1.7	0.47	1.27	0.7
120	180	38	29	38	2.5	2	0.6	40	260	445	2400	3200	**32024AX**	**T4DC120**	3.32	0.46	1.3	0.7
120	180	48	38	48	2.5	2	0.6	36	311	565	1780	2540	**33024A**	**T2DE120**	4.1	0.31	1.97	1.08
120	215	40	34	43.5	3	2.5	1	43.6	347	473	1550	2220	**30224A**	**T4FB120**	6.2	0.44	1.38	0.76
120	215	58	50	61.5	3	2.5	1	52	484	727	1900	3000	**32224A**	**T4FD120**	9.45	0.44	1.38	0.76
127	182.562	38.1	33.338	39.688	3.5	3.3	0.6	33.8	282	492	1710	2440	**PSL 69-306**	**48290-48220**	3.2	0.31	1.97	1.08
130	185	27	21	29	3	3	0.6	38	186	292	1800	2400	**T4CB130**	**T4CB130**	2.3	0.47	1.27	0.7
130	185	27	21	29	6	3	0.6	38	185	290	1800	2400	**T4CB130X.**	**T4CB130X.**	2.3	0.47	1.27	0.7
130	200	45	34	45	2.5	2	0.6	43	338	578	2100	2800	**32026AX**	**T4EC130**	5.05	0.44	1.4	0.8
130	230	40	34	43.75	4	3	1	45.7	375	506	1430	2040	**30226 A**	**T4FB130**	6.9	0.44	1.38	0.76
140	195	27	21	29	3	3	0.6	41	206	343	1700	2200	**T4CB140**	**T4CB140**	2.5	0.5	1.19	0.65
140	195	27	21	29	6	3	0.6	41	206	343	1700	2200	**T4CB140X.**	**T4CB140X.**	2.5	0.5	1.19	0.65
140	210	45	34	45	2.5	2	0.6	46	353	621	1700	2200	**32028AX**	**T4DC140**	5.26	0.46	1.3	0.7
146.05	193.675	28.575	23.02	28.575	4.8	1.5	0.6	34	181	390	1700	2200	**PSL 69-301**	**36691-36620**	2.31	0.37	1.63	0.9
150	225	48	36	48	3	2.5	1	49	371	644	1370	1960	**32030 AX**	**T4EC150**	6.3	0.46	1.31	0.72
150	225	59	46	59	3	2.5	1	48	482	876	1370	1960	**33030 A**	**T2EE150**	8	0.36	1.65	0.9
158.75	205.583	23.812	18.258	23.812	4.8	1.5	0.6	33.2	144	272	1410	2020	**PSL 610-300**	**L432349-L432310**	1.9	0.37	1.6	0.88
160	220	30	23	32	3	3	0.6	44.8	237	400	1350	1920	**T4DB160**	**T4DB160**	3.2	0.49	1.23	0.68
160	290	80	67	84	4	3	1	70.4	890	1420	1110	1590	**32232A**	**T4GD160**	23.4	0.44	1.38	0.76
160	375.05	79.37	60.3	87.3	6	6	1.5	79	805	1014	950	1400	**PSL 611-6**		41.2	0.76	0.8	0.4
170	230	30	23	32	3	3	1	45	245	428	1400	1900	**T4DB170**	**T4DB170**	3.5	0.46	1.3	0.72
170	230	30	23	32	6	3	1	45	245	428	1400	1900	**T4DB170X**	**T4DB170X**	3.5	0.46	1.3	0.72
170	310	52	43	57	5	4	1.5	61.4	690	995	1020	1450	**30234**	**T4GB170**	17.4	0.44	1.38	0.76
170	220	25	19.5	27	3	3	0.6	42.5	174	317	1310	1870	**PSL 610-305**		2.3	0.47	1.27	0.7
180	250	45	34	45	2.5	2	0.6	54	351	761	1160	1660	**32936**	**T4DC180**	6.7	0.48	1.25	0.69
180	280	64	48	64	3	2.5	1	59.7	631	1110	1080	1540	**32036AX**	**T3FD180**	14	0.42	1.42	0.78
190	260	44	36.5	46	3	2.5	0.6	56.6	371	799	1110	1580	**PSL 610-312**	**JM738249-JM738210**	7	0.48	1.26	0.69
190	260	45	34	45	2.5	2	0.6	55	371	799	1110	1580	**32938**	**T4DC190**	7	0.48	1.26	0.69
195	250	33	28	34	2	2	0.6	41.8	267	560	1120	1600	**PSL 610-313**		4	0.35	1.69	0.93
196.85	241.3	23.017	17.462	23.812	1.5	1.5	0.6	40.8	161	333	1140	1630	**PSL 610-303-2**	**LL639249-LL639210**	2.1	0.42	1.44	0.79
196.85	254	27.783	21.433	28.575	1.5	1.5	0.6	42.6	198	413	1100	1570	**PSL 610-308**	**L540049-L540010**	3.5	0.4	1.51	0.83
200	270	34	27	37	3	3	1	54	319	589	950	1400	**T4DB200**	**T4DB200**	5.2	0.47	1.27	0.7
200	254	27.783	21.433	28.575	1.5	1.5	0.4	42.2	213	453	1100	1570	**PSL 610-309**	**564534A**	3.3	0.4	1.51	0.83
200	310	70	53	70	3	2.5	1	66.8	755	1360	950	1360	**32040AX**	**T4FD200**	18.7	0.43	1.39	0.77

1) Boundary dimensions comply with the standard ANSI/ABMA 19.2.
Different internal design.



Abutment and Fillet Dimensions

d	d_a max	d_b min	D_a min	D_a max	D_b min	a_a min	a_b min	r_a max
				[mm]				
120	129	139	158	161	165	6	7	3
120	130	130	162	170	173	6	9	2
120	131	130	158	170	172	4.8	9.6	2
120	140	132	188	203	203	5.5	8	2
120	136	132	181	203	204	7	11.5	2
127	137	141	165	167	177	4	7	3.3
130	140	143	171	172	178	6	8	3
130	140	143	171	172	178	6	8	3
130	140	140	178	190	192	8	11	2
130	152	144	203	216	217	7	9.5	3
140	150	153	180	181	189	6	8	3
140	150	153	180	181	189	6	8	3
140	150	150	186	200	202	8	11	2
146.05	155	162	176	182	187	6	6.5	1.5
150	164	162	200	213	218	8	12	3
150	162	162	201	213	219	9.2	12.7	2.5
158.75	166	168	189	195	199	4	6	1.5
160	171	174	204	206	213	5	9	3
160	171	174	244	276	277	10.8	19.4	3
160	206	190	292	345	350	6	8.5	4.5
170	182	185	214	216	223	6	9	3
170	182	185	214	216	223	6	9	3
170	202	188	272	292	288	8	14	4
170	179	184	206	208	216	4.8	9.5	1.5
180	194	190	225	240	241	8	11	2
180	200	192	243	268	268	11	17	
190	204	204	235	243	252	7	9.5	2
190	204	200	235	250	251	8	11	2
195	206	204	236	239	245	6	7.5	1.5
196.85	206	205	229	232	236	3.5	7	1
196.85	212	205.85	239	245	246	5.1	10	
200	214	218	251	254	262	7	10	3
200	212	209	238	245	246	5	9	
200	222	212	273	298	299	9.2	15.7	

Single row tapered roller bearings are finding a wide application in many industrial branches, especially in the production of cars, tractors, machine-tools, etc. They are able to accommodate both radial and axial forces. The axial load capacity depends on the contact angle size. Single row tapered roller bearings are able to accommodate the axial load in only one direction and that is why the arrangements are assembled in pairs. The axial clearance or preload in the pairs of tapered roller bearings is to be adjusted during assembling. The size of the axial clearance or the preload is selected according to the operating conditions, as well as the size and the type of the bearings and according to the requirements on the arrangement rigidity. The boundary dimensions of these bearings comply with the international standards ISO 355 or ANSI/ABMA 19.2.

Cages

The tapered roller bearings have pressed steel cages.
Selected bearings are produced with pin type cages.

Equivalent load calculation

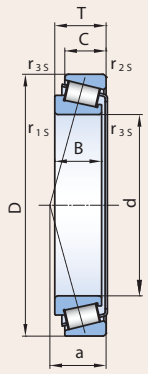
The following formulas are used to calculate the axial load acting on an individual single row tapered roller bearing:

Radial equivalent load:

- dynamic:	$P_r = F_r$	if $F_a/F_r \leq e$	[kN]
	$P_r = 0{,}4F_r + YF_a$	if $F_a/F_r > e$	[kN]
- static:	$P_{or} = 0{,}5F_r + Y_oF_a$	($P_{or} > F_r$)	[kN]

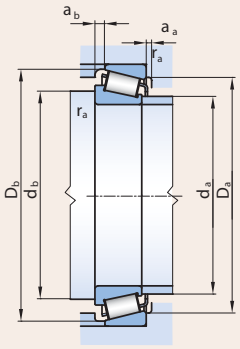
TAPERED ROLLER BEARINGS

single row

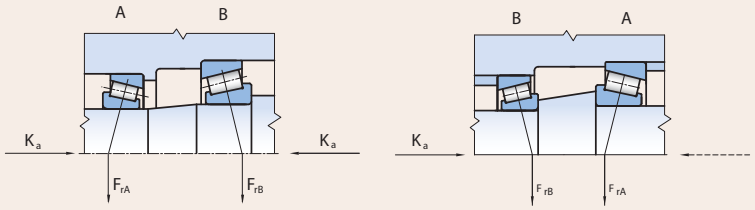


Dimensions									Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation		Weight	Factors		
d	D	B	C	T	r_s min	r_{2s} min	r_{3s} min	a	C_r dyn.	C_{or} stat.	with grease	with oil	PSL	ISO ANSI/ABMA 19.2.[1]		e	Y	Y_0
[mm]									[kN]		[min^{-1}]				[kg]			
200.025	276.225	46.038	34.133	42.862	3.5	3.3	1	44.4	407	797	1030	1470	**PSL 611-317**	**LM241147-LM241110**	7.6	0.32	1.88	1.04
203.2	261.142	27.783	21.433	28.575	1.5	1.5	0.6	44.1	207	441	1060	1520	**PSL 610-307**	**LL641149-LL641110**	3.7	0.41	1.47	0.81
203.2	360.05	88.09	63.5	92.1	3	6	1.5	43	863	1364	900	1300	**PSL 611-3**		34.5	0.41	1.5	0.8
210	285	40	33	41	4	3	0.6	45.2	391	807	960	1380	**PSL 611-315-2**		7.3	0.32	1.88	1.04
213	285	40	33	41	4	3	0.6	45.2	391	807	960	1380	**PSL 611-315-1**		7	0.32	1.88	1.04
215.9	285.75	46.038	34.925	46.038	3.6	3.3	0.4	60	381	850	980	1390	**PSL 611-316**	**LM742749-LM742710**	7.8	0.48	1.25	0.69
216.5	285	40	33	41	4	3	0.6	45.2	391	807	960	1380	**PSL 611-315**		6.6	0.32	1.88	1.04
220	285	40	33	41	4	3	0.6	45.2	391	807	960	1380	**T2DC220**	**T2DC220**	6.3	0.32	1.88	1.04
220	300	51	39	51	3	2.5	1	59	498	1016	930	1330	**32944**	**T3EC220**	10.5	0.43	1.41	0.78
220	340	76	57	76	4	3	1	72.5	875	1587	850	1220	**32044AX**	**T4FD220**	24.1	0.43	1.39	0.77
220	265	25	19	25	2.5	1	0.4	45.6	170	425	1010	1450	**PSL 610-304**		2.7	0.43	1.39	0.77
228.6	295.275	31.75	23.813	33.338	3.6	3.3	0.6	15.7	258	495	930	1320	**PSL 611-312**	**AK544090-AK544116**	5	0.4	1.49	0.82
231.775	317.5	52.388	36.512	47.625	3.2	3.2	1.5	49.9	500	980	870	1250	**PSL 611-302**	**LM245848-LM245810**	11	0.32	1.87	1.03
234.95	314.325	49.212	36.512	49.212	3.6	3.3	1	57.1	479	959	880	1250	**PSL 611-313**	**LM545849-LM545810**	9.9	0.4	1.51	0.83
240	320	55	47.5	62.5	3.5	3.5	1.2	43	408	814	900	1300	**PSL 611-9**		12.1	0.43	1.4	0.8
240	345	60	46	60	6.4	3.3	0.4	60.1	755	1339	810	1160	**PSL 611-304**		16.5	0.35	1.73	0.95
247.65	304.8	22.225	15.875	22.225	1.5	1.5	1	39.3	182	356	870	1240	**PSL 611-306-2**	**28880-28820**	3.2	0.32	2.09	3.11
247.65	346.075	63.5	50.8	63.5	6.4	6.4	1.2 (2.3)	62	783	1557	800	1140	**PSL 611-305**	**M348449-M348410**	17.3	0.34	1.76	0.97
266.7	325.438	28.575	25.4	28.575	1.5	1.5	0.8	48	219	505	800	1140	**PSL 611-300-1**	**38885-38820 class 2**	5.1	0.37	1.64	0.9
266.7	355.6	57.15	44.45	57.15	3.6	3.3	1	62.2	665	1380	750	1070	**PSL 611-314**		15	0.36	1.67	0.92
276.225	352.425	34.925	23.812	36.512	3.6	2	1	69	340	715	740	1060	**PSL 611-301**	**L 853049-L 853010**	7.8	0.52	1.15	0.63
280	380	63.5	48	63.5	3	2.5	1	75	763	1624	700	1000	**32956**	**T4EC280**	20.3	0.43	1.39	0.76
292.1	374.65	47.625	34.925	47.625	3.3	3.3	1	65	525	1118	690	990	**PSL 611-205**	**L 555249-L 555210**	12.3	0.4	1.49	0.82
319.98	400.015	38	38	38	2	0.6	1.1x20°	115.4	328	762	630	900	**PSL 612-324**	**GFV89X**	10.2	0.83	0.72	0.4
340	460	76	57	76	4	3	1	90.5	1064	2332	550	780	**32968**	**T4FD340**	35.6	0.44	1.37	0.75
384.175	441.325	28.575	20.638	28.575	3.6	3.3	0.6	58.4	245	651	530	750	**PSL 612-306**	**LL365348-LL365310**	5.8	0.34	1.77	0.97
406.4	574.675	67.9	50.8	76.2	6.8	3.2	2	86	848	1765	470	630	**PSL 612-27**		53.8	0.5	1.2	0.7
409.575	546.1	87.312	68.262	87.312	6.4	6.4	1.5	104	1425	3255	430	620	**PSL 612-321**	**M667948-M667911**	53.8	0.42	1.44	0.79
409.575	546.1	87.312	68.262	87.312	6.4	6.4	0.6	109.4	1360	3230	440	620	**PSL 612-329**	**831499**	54.6	0.45	1.34	0.73
430.213	603.25	73	50.8	76.2	6.4	6.4	2	95	852	1813	450	600	**PSL 612-26**		58.9	0.52	1.1	0.6
440	540	40	29	46	2.5	2.5	1.1x20°	161.9	489	1103	420	600	**PSL 612-323**	**GFV119X-129X**	19.3	0.87	0.69	0.38
482.6	634.873	80.962	63.5	80.962	6.4	3.3	1.5	98.5	1473	3452	500	350	**PSL 612-320**	**EE243190-243250**	65.2	0.34	0	1.76
536.575	820	146	112	152	6	5	1.5	163	3920	7820	270	380	**PSL 612-330**	**830238**	269.9	0.43	1.39	0.77
635	933.45	177.8	141.288	179.388	11.9	6.4	5.1	165.6	5100	11650	210	300	**PSL 612-328**	**830851**	419	0.33	1.80	0.99

1) Boundary dimensions comply with the standard ANSI/ABMA 19.2.
Different internal design.



Bearing Arrangement



Abutment and Fillet Dimensions

d	d_a max	d_b min	D_a min	D_a max	D_b min	a_a min	a_b min	r_a max
				[mm]				
200.025	219	216	257	259	265	6	8.5	3
203.2	218	213	245	252	253	5.8	9.7	
203.2	240	230	301	328	335	10	29	2.5
210	233	236	269	270	277	8	8	2.5
213	233	236	269	270	277	8	8	2.5
215.9	227	233	260	266	279	5	8.5	3
216.5	233	236	269	270	277	8	8	2.5
220	233	236	269	270	277	8	8	2.5
220	235	232	277	288	293	9	14	2.5
220	243	234	302	326	329	12	18	3
220	228	230	252	259	259	4	6.5	1
228.6	243	242.6	280	281	287	4.7	9.8	
231.775	245	248	288	299	306	10	14	3
234.95	250	248.95	290	300.325	305	7.8	13.2	
240	253	269	286	299	311	8	15	2.5
240	255	265	317	330	355	8	13	3.5
247.65	260	258	293	296	296	8	11	1.5
247.65	263	275	318	321	336	8	13	6
266.7	281	276	311	316	317	3	8	1
266.7	284	282.7	329	339.6	347	10.1	14.6	
276.225	294	286	332	342	343	7	13	1.5
280	299	292	349	368	371	8	15	2.5
292.1	308	306	353	360	366	9	14	3
319.98	333	329.98	364	390.015	392	3.2	6.5	
340	363	354	422	446	449	15	21	3
384.175	398	400	426	429	432	4	8	3
406.4	452	459	505	533	540	10	25.5	3
409.575	437	440	502	516	534	10	15	
409.575	431	440	496	518.1	528	10	14	
430.213	476	452	530	556	565	10	25.5	6
440	459	452	503	528	531	5	16	
482.6	520	498.6	590	619	613	9.5	13.5	
536.575	578	616	724	798	777	12	36	
635	702	710	860	880	898	15	30	

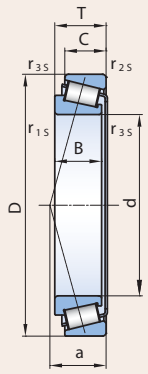
Bearing Axial Load

Loading conditions	for K_a →	Loading conditions	for K_a ←
$\frac{F_{rA}}{Y_A} \le \frac{F_{rB}}{Y_B}$ $K_a \ge 0$	$F_{aA}=F_{aB}+K_a$ $F_{aB}=0{,}5\ \frac{F_{rB}}{Y_B}$	$\frac{F_{rA}}{Y_A} \ge \frac{F_{rB}}{Y_B}$ $K_a \ge 0$	$F_{aA}=0{,}5\ \frac{F_{rA}}{Y_A}$ $F_{aB}=F_{aA}+K_a$
$\frac{F_{rA}}{Y_A} > \frac{F_{rB}}{Y_B}$ $K_a \ge 0{,}5\left[\frac{F_{rA}}{Y_A}-\frac{F_{rB}}{Y_B}\right]$	$F_{aA}=F_{aB}+K_a$ $F_{aB}=0{,}5\ \frac{F_{rB}}{Y_B}$	$\frac{F_{rA}}{Y_A} < \frac{F_{rB}}{Y_B}$ $K_a \ge 0{,}5\left[\frac{F_{rB}}{Y_B}-\frac{F_{rA}}{Y_A}\right]$	$F_{aA}=0{,}5\ \frac{F_{rA}}{Y_A}$ $F_{aB}=F_{aA}+K_a$
$\frac{F_{rA}}{Y_A} > \frac{F_{rB}}{Y_B}$ 1) $K_a < 0{,}5\left[\frac{F_{rA}}{Y_A}-\frac{F_{rB}}{Y_B}\right]$	$F_{aA}=0{,}5\ \frac{F_{rA}}{Y_A}$ $F_{aB}=F_{aA}-K_a$	$\frac{F_{rA}}{Y_A} < \frac{F_{rB}}{Y_B}$ 1) $K_a < 0{,}5\left[\frac{F_{rB}}{Y_B}-\frac{F_{rA}}{Y_A}\right]$	$F_{aA}=F_{aB}-K_a$ $F_{aB}=0{,}5\ \frac{F_{rB}}{Y_B}$

1) Valid also for $K_a=0$

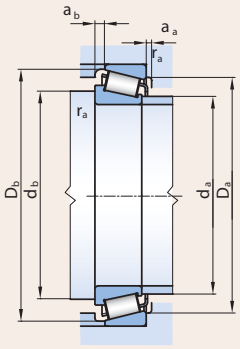
TAPERED ROLLER BEARINGS

single row

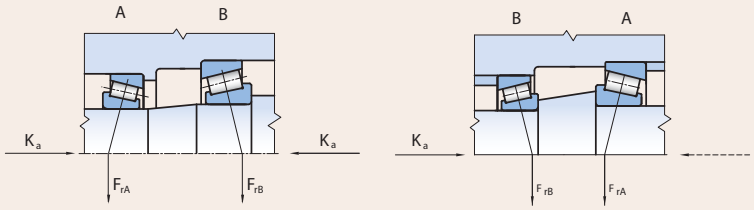


Dimensions									Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation		Weight	Factors		
d	D	B	C	T	r_s min	r_{2s} min	r_{3s} min	a	C_r dyn.	C_{or} stat.	with grease	with oil	PSL	ISO ANSI/ABMA 19.2.[1]		e	Y	Y_0
[mm]									[kN]		[min^{-1}]				[kg]			
682.625	1080	195	142	200	12	12	1.5	211	6970	12760	180	260	**PSL 612-336**		1318	0.43	1.40	0.77
749.3	990.6	160.338	123	159.5	6.4	6.4	1.5	165	5100	11305	180	260	**PSL 612-312**	**LM283649-LM283610**	325	0.33	1.8	0.99
759.925	889	88.9	72	88.9	3.3	3.3	1.5	123.2	2010	6240	200	280	**PSL 612-334**	**L183448-L183410**	92.3	0.31	1.97	1.08
815	1124	178	130	178	6.4	6.4	1.5	207.3	6780	13350	150	220	**PSL 612-311**		504	0.41	1.48	0.81
1095.375	1276.35	133.35	114.3	133.35	6.4	6.4	1.5	169.6	4260	14645	100	150	**PSL 612-308**	**NP407078-NP630637**	292	0.28	2.17	1.19
1098.55	1276.35	133.35	114.3	133.35	6.4	6.4	1.5	169.6	4260	14645	100	150	**PSL 612-307**	**NP761119-NP630637**	281	0.28	2.17	1.19

1) Boundary dimensions comply with the standard ANSI/ABMA 19.2.
Different internal design.



Bearing Arrangement

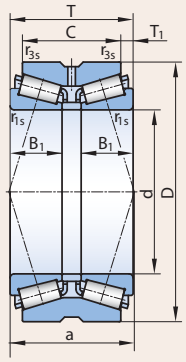


Abutment and Fillet Dimensions

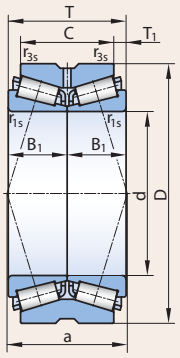
d	d_a max	d_b min	D_a min	D_a max	D_b min	a_a min	a_b min	r_a max
				[mm]				
682.625	762	727	951	1036	1026	20	45	
749.3	799	780	910	960	957	16	35	6
759.925	786	774	855	875	876	12	19	
815	872	845	1023	1094	1086	16	40	6
1095.375	1130	1135	1225	1240	1255	15	25	6
1098.55	1130	1135	1225	1240	1255	15	25	6

TAPERED ROLLER BEARINGS

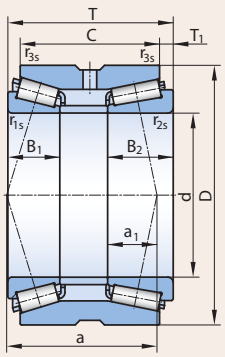
double row



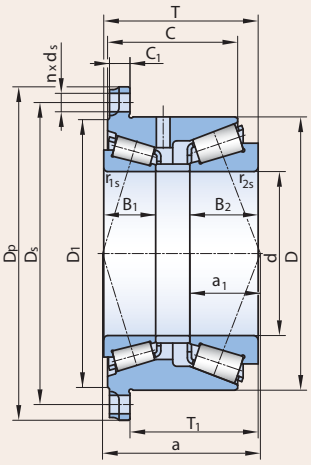
Pict. 1



Pict. 2



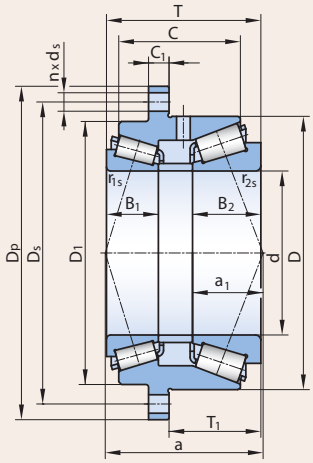
Pict. 3



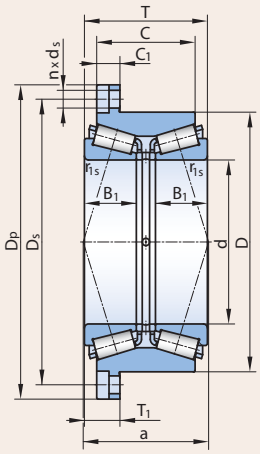
Pict. 4

Dimensions														Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation	We-ight	Factors			
d	D	D_1	D_p	T	T_1	B_1	B_2	C	C_1	r_{1s} min	r_{2s} min	r_{3s} min	a (a_1)	C_r dyn.	C_{or} stat.	with grease	with oil			e	Y_1	Y_2	Y_0
														[kN]		[min^{-1}]			[kg]				
120	185		230	90	26	38		72	17	2.5		0.6	92	430	850	1500	2200	**PSL 69-201** [1]	11.1	0.46	1.5	2.2	1.5
120	190			121	10	38	48	102		2.5	2.5	0.6	110 (36)	254 (310)	430 (560)	500	2200	**PSL 69-200** [1]	12	0.3 (0.46)	2.2 (1.5)	3.3 (2.2)	2.2 (1.5)
120	200	196	244	113	93.8	38	50	95.2	15	2.5	3		115.5 (52)	254 (315)	430 (510)	1500	2200	**PSL 510-16** [1]	15	0.46 (0.57)	1.5 (1.2)	2.2 (1.7)	1.5 (1.2)
120	200	192.5	244	113	67.2	38	50	89	15	2.5	3		115.5 (52)	254 (315)	430 (510)	1500	2200	**PSL 69-17-1** [1]	14.5	0.46 (0.57)	1.5 (1.2)	2.2 (1.7)	1.5 (1.2)
120	215			136	12	58		112		3		1	117	829	1453	1250	1650	**PSL 610-23**	20.5	0.43	1.5	2.3	1.5
127	206.4			108	12.75	54		82.5		3.5		1	100	526	1016	1100	1600	**PSL 610-2**	12.9	0.43	1.5	2.3	1.5
127	234.975			143.6	14.65	71.8		114.3		3.5		1.5	116	829	1494	1000	1500	**PSL 610-7**	25	0.35	1.9	2.8	1.9
130	200			124	11	45		102		2.5		0.6	120	559	1100	1300	1800	**PSL 69-202**	18	0.43	1.5	2.3	1.5
130	230			150	15	64		120		4		1.5	126	781	1487	1000	1500	**PSL 610-22**	25.1	0.43	1.5	2.3	1.5
160	270			150	15	66		120		3.5		1.5	120	1007	1920	900	1250	**PSL 610-21**	32.2	0.32	2.1	3.2	2.1
177.8	282.575			107.95	14.29	53.975		79.375		3.6		1.5	107.95	794	1408	860	1230	**PSL 611-309**	23	0.42	1.62	2.42	1.59
180	300			164	15	72		134		4		1.5	121	1225	2398	800	1100	**PSL 611-16**	43.6	0.26	2.6	3.9	2.6
196.85	255		330	79		24		69	16	2			145	328	789	850	1150	**PSL 610-203**	12.9	0.74	0.91	1.36	0.89
196.85	255	259	300	79		24		80	18	2			145	328	789	850	1150	**PSL 610-301**	11.6	0.74	0.91	1.36	0.89
220	340			100	12.5	45		75		3		2	103.8	788	1440	680	970	**PSL 611-308**	29.5	0.3	2.26	3.36	2.21
228.6	355.65			146.8	17.85	73.4		111.1		6		1.5	128	1131	2372	650	900	**PSL 611-4**	48.4	0.32	2.1	3.2	2.1
253.975	347.662			101.6	15.88	50.8		69.85		2.5		1	101.6	852	1810	620	890	**PSL 611-311**	24.6	0.33	2.03	3.02	1.98
254	431.774			173.8	22.65	86.9		128.5		6		1.5	157	1607	3125	550	750	**PSL 612-4**	94.3	0.35	1.9	2.9	1.9
260	360			134	22.65	86.9		109		3		1	141	1158	2712	600	800	**PSL 611-23-1**	37.1	0.37	1.8	2.7	1.8
266.7	325.438			68.075		33.775		60.8		1.5		0.8	107	390	1100	600	800	**PSL 611-200-1**	11.3	0.36	1.84	2.74	1.8
276.225	352.425			85.024		34.925		59.624		3.6		1	150.4	577	1413	500	700	**PSL 611-204**	18.1	0.52	1.3	1.93	1.27
304.8	393.7			107.95	12.7	53.975		82.55		3.6		1.5	107.95	982	2542	520	740	**PSL 611-310**	30.9	0.36	1.88	2.8	1.84
305.07	500			200		200		73		6.4		5	154	2415	5030	440	630	**PSL 612-315**	151	0.78	0.86	1.29	0.85
333.375	469.9			190.5		90.488		152.4		6.4		2	180.3	2686	5655	440	620	**PSL 612-332**	98	0.33	2.03	3.02	1.98
340	460			160	16	72		128		4		1.5	160	1595	4118	450	600	**PSL 612-38**	72.5	0.3	2.1	3.1	2.1
340	520			190	22.5	87.5		145		6		2.5	212.7	2055	4265	360	460	**PSL 612-207**	109	0.44	1.5	2.3	1.5
355.6	444.5			136.525	12.7	68.263		111.125		2.5		1	148.8	1249	3730	440	630	**PSL 612-316**	43	0.31	2.2	3.27	2.15
460	655			184		212		92		2.5		6		2700	6915	280	400	**PSL 612-319**	207	0.87	0.78	1.16	0.76
510	655			185		212		77.8		1.5		6.4		3365	9690			**PSL 612-305-1**	161	0.34	1.99	2.96	1.94
630	850			242	30	106		182		6		6	360	4446	10977	160	250	**PSL 612-37-1**	342	0.5	1.3	2	1.3
682.625	1080			660		195		142		12		1.5	211	11950	25530	140	200	**PSL 612-331**	1466	0.43	1.57	2.34	1.54
940	1310			410		390		125		5		7.5		10210	28590	90	130	**PSL 612-333**	1486	0.78	0.86	1.29	0.85
950	1250			300		300		220		7.5		7.5	379.97	6915	19640			**PSL 612-300**	810	0.35	1.95	2.9	1.91
1440	1918			360		180		210		6				8650	25520	30	50	**PSL 612-335**	2410	1.5	0.45	0.67	0.44

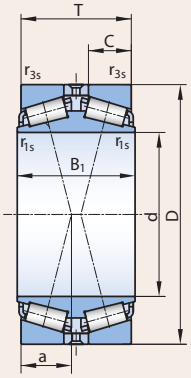
1) Use of these bearings should be checked with PSL in advance
2) Fixing holes are not spaced uniformly
3) Contact PSL for information on bearing design



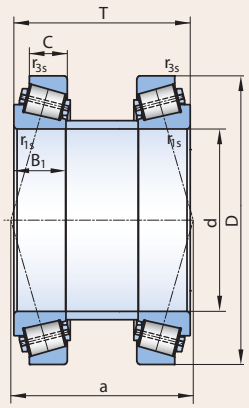
Pict. 5



Pict. 6

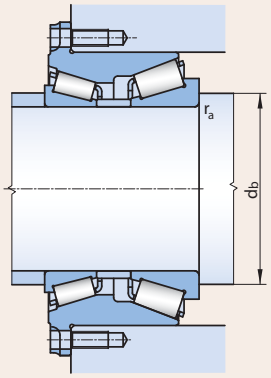


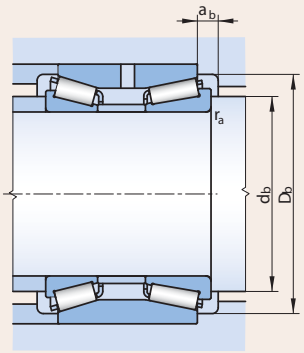
Pict. 7



Pict. 8

Pict.	Abutment and Fillet Dimensions							
	d	D_s	n	d_s	d_b min	D_b min	a_b min	r_a max
	[mm]							
6	120	209	6 [2]	13	130			2
3	120				130	173	10	2
4	120	221	8	13	130			2
5	120	221	8	13	130			2
1	120				135	205	11	2
2	127				152	197	15	3
2	127				156	218	15	3
1	130				140	192	11	2
1	130				156	218	15	3
1	160				190	255	15	3
2	177.8				187.8	271	10.3	
1	180				210	283	18	3
[3]	196.85	305	20	M16-8H	207	252	11	1.5
[3]	196.85	280	8	M13,5-8H	207	252	11	1.5
1	220				234	318	15.2	2
2	228.6				265	332	20	5
2	253.975				264	335	13.1	
2	254				300	397	24	5
1	260				287	348	15	2
[3]	266.7							1.5
[3]	276.225				305			3.5
2	304.8				314.8	384	13.3	
7	305.07					408		
1	333.375				346	452	18	
1	340				376	445	18	3
1	340				376	492	18	5
2	355.6				369.6	430	11.5	
[3]								
[3]	510							
1	630				692	830	20	5
8	682.625				727	1026	45	
[3]								
[3]	950							7.5
[3]								





Double row tapered roller bearings are used in heavy industrial engineering applications and in the automobile industry. They are manufactured with an axial clearence selected to suit operating conditions.

Radial equivalent load:

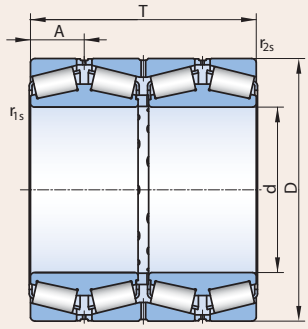
- dynamic:	$P_r = F_r + Y_1 F_a$	if $F_a/F_r \leq e$	[kN]
	$P_r = 0{,}67F_r + Y_2 F_a$	if $F_a/F_r > e$	[kN]
- static:	$P_{or} = F_r + Y_o F_a$		[kN]

Cages

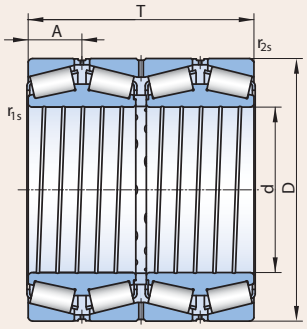
The tapered roller bearings have pressed steel cages.

TAPERED ROLLER BEARINGS

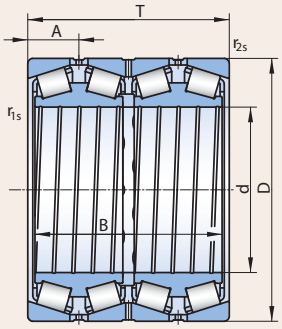
four row



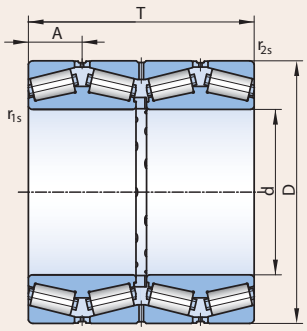
Pict. 1



Pict. 2

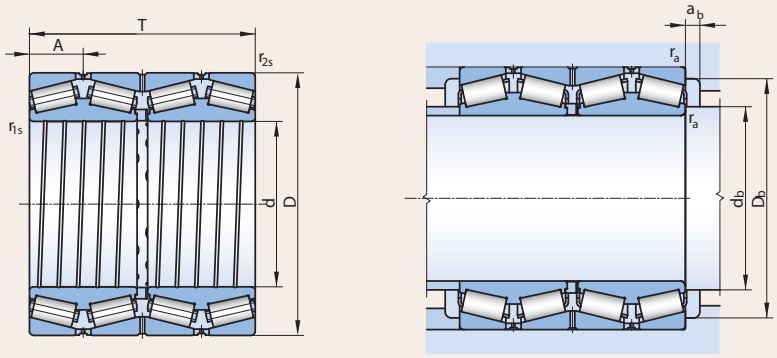


Pict. 3



Pict. 4

Dimensions						Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation	Weight	Factors			
d	D	T	r_{1s} min	r_{2s} min	A	C_r dyn.	C_{or} stat.	with grease	with oil			e	Y_1	Y_2	Y_0
[mm]						[kN]		[min^{-1}]			[kg]				
187.325	269.875	211.138	1.5	3.3	50.03	1492	3856	760	1090	**PSL 610-310**	40.3	0.33	2.03	3.02	1.98
200	310	200	2.5	2.5	47.5	1415	3112	500	670	**PSL 611-201**	53	0.44	1.5	2.3	1.5
220	340	305	3	4	73.25	2600	5600	420	560	**PSL 611-15-1**	100	0.34	1.95	2.9	1.9
220	340	305	3	3	73.25	2794	6081	420	560	**PSL 611-303**	103	0.34	1.95	2.9	1.9
220	340	305	3	3	73.25	3326	6842	420	560	**PSL 611-307**	103	0.34	1.95	2.9	1.9
240	360	218	3	3	51.75	1704	3923	400	530	**PSL 611-202**	76.3	0.48	1.4	2.1	1.4
280	420	250	4	4	59.75	2267	5294	320	420	**PSL 612-206-1**	117	0.47	1.4	2.1	1.4
280	420	345	5	5	82.5	4800	9700	380	500	**PSL 612-209**	171	0.33	2.03	3.02	1.98
300	460	290	4	4	69.25	2908	6755	290	380	**36060**	169	0.44	1.5	2.3	1.5
300	424	310	4	5	74	4000	9200	380	500	**PSL 612-211**	141	0.36	1.87	2.79	1.83
300	500	350	6	6	84	4940	10039	380	550	**PSL 612-327**	288	0.40	1.69	2.52	1.65
304.902	412.648	266.7	3	3	64.29	2253	6202	300	400	**PSL 612-32**	98.1	0.39	1.7	2.6	1.7
304.902	412.648	266.7	3	3	63.18	2730	7961	550	790	**PSL 612-303**	102.2	0.39	1.74	2.59	1.7
360	480	218	3	3	51.75	2170	5992	240	320	**36972**	113	0.43	1.6	2.3	1.5
360	540	340	5	5	80.5	4324	10502	250	330	**PSL 612-15**	274	0.29	2.3	3.5	2.3
395	545	288.7	5	7.5	71.45	3811	8871	310	440	**PSL 612-317**	189	0.47	1.43	2.12	1.4
406.4	546.1	288.925 (268.288)	1.5	6.4	70.64	3175	8868	300	400	**PSL 612-202**	186	0.48	1.4	2.1	1.4
431.8	571.5	336.5	2.5	5	80.96	3942	13175	190	250	**PSL 612-29-3**	241	0.44	1.5	2.3	1.5
460	610	360	1.5	6	85.5	5960	15103	260	380	**PSL 612-304**	281.9	0.33	2.03	3.02	1.98
489.026	634.873	320.675	4	4	76.17	5100	15197	240	350	**PSL 612-302**	265.5	0.35	1.95	2.9	1.91
500	720	400	6	6	95	5387	14325	140	190	**360/500**	504	0.47	1.4	2.1	1.4
514.35	673.1	422.275	3.3	6.4	100	6445	20825	230	330	**PSL 612-313**	395	0.31	2.2	3.27	2.15
530	782	450	6	6	106.5	6663	17558	160	200	**PSL 612-22**	703	0.45	1.5	2.2	1.5
620	800	365	2.5	5	85.75	5463	16608	110	150	**PSL 612-21-1**	441.6	0.33	2	3	2
630	920	515	7.5	7.5	125	8730	24230	94	126	**360/630**	1090	0.44	1.5	2.3	1.5
650	1030	560	7.5	10	136.5	15823	33590	140	190	**PSL 612-318**	1834	0.31	2.21	3.29	2.16



Pict. 5

Abutment and Fillet Dimensions				Pict.
d_b min	D_b min	a_b min	r_a max	
205	244	11.9	1	1
220	280	6	2	1
238	298	8	2.5	2
238	298	8	2.5	2
238	298	8	2.5	5
262	330	8	2.5	1
305	380	8	3	1
304	370	8	4	2
330	415	8	3	1
318	380	8	3.5	1
349	435	17.8	5	4
320	370	8	2.5	1
325	377	10.3	2.5	1
382	450	8	4	1
392	490	8	4	1
431	498		6	3
425	490	10	1	3
460	515	10	2	2
489	564	13	5	2
518	590	16.7	3	2
540	660	10	5	1
543	623	18.8	2.5	2
575	710	14	5	1
650	745	14	2	2
680	840	16	6.5	1
739	922	16	8	4

Four-row tapered roller bearings – types 360.. und 369.. are suitable for accommodating great radial forces and are used for rolling mill roll arrangements.

Suffixes

X – Difference in boundary dimensions from the international standards
W 1 – Cylindrical bore with conical end on both sides
W 28 – Spiral lubricating groove on the bore surface of the inner ring
W 128 – Combination of W1 and W28

Radial equivalent load:

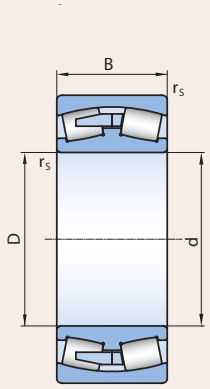
- dynamic:	$P_r = F_r + Y_1 F_a$	if $F_a/F_r \leq e$	[kN]
	$P_r = 0{,}67F_r + Y_2 F_a$	if $F_a/F_r > e$	[kN]
- static:	$P_{or} = F_r + Y_o F_a$		[kN]

Cages

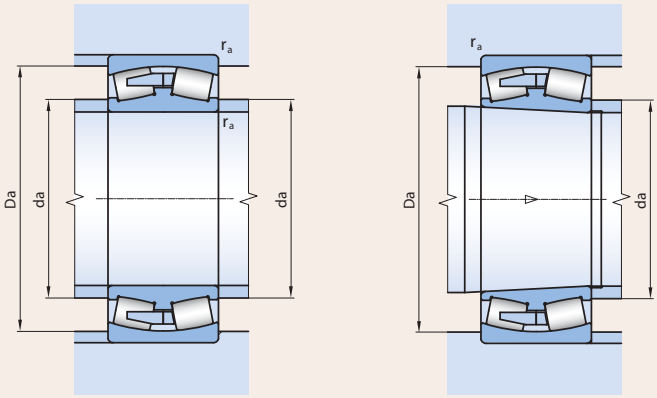
The tapered roller bearings have pressed steel cages.
Selected bearings are produced with pin type cages.

SPHERICAL ROLLER BEARINGS

double row



Dimensions				Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation	Weight	Factors			
d	D	B	r_s min	C_r dyn.	C_{or} stat.	with grease	with oil			e	Y_1	Y_2	Y_0
[mm]				[kN]		[min^{-1}]			[kg]				
140	300	102	4	1120	1530	1260	1600	**22328CW33MB**	43.4	0.37	1.84	2.74	1.8
160	240	80	2.1	694	1310	1200	1500	**24032CW33MB**	13.4	0.31	2.17	3.23	2.12
160	290	104	3	1100	1690	1000	1300	**23232MB**	31	0.32	2.1	3.2	2.1
170	260	90	2.1	840	1580	1100	1400	**24034CW33MB**	17.5	0.32	2.1	3.1	2.1
170	310	110	4	1230	1900	940	1200	**23234MB**	37.7	0.34	2	3	2
180	250	52	2	501	874	1600	2000	**23936CCW33MB**	8	0.19	3.5	5.2	3.4
180	280	100	2.1	1020	1960	1150	1500	**24036CW33MB**	23	0.34	2	2.9	1.9
180	300	118	3	1230	2200	630	790	**24136CW33MB**	35.7	0.39	1.74	2.59	1.7
180	320	112	4	1305	2080	890	1100	**23236MB**	40	0.31	2.2	3.2	2.1
190	290	100	2.1	1070	2060	1100	1400	**24038CW33MB**	24	0.32	2.1	3.1	2.1
190	340	120	4	1460	2360	840	1000	**23238MB**	48.5	0.32	2.1	3.2	2.1
190	400	132	5	1750	2545	840	1000	**22338MB**	84.1	0.31	2.2	3.2	2.1
200	280	60	2.1	619	1120	1300	1700	**23940CCW33MB**	11.8	0.2	3.43	5.1	3.35
200	310	82	2.1	915	1600	890	1100	**23040MB**	24.1	0.23	2.9	4.3	2.8
200	310	109	2.1	1205	2150	1050	1300	**24040CW33MB**	30.5	0.34	2	3	2
200	340	140	3	1750	3150	800	1000	**24140CW33MB**	52.8	0.42	1.62	2.42	1.59
200	360	98	4	1280	1920	1100	1400	**22240CW33MB**	51.3	0.28	2.41	3.59	2.36
200	360	128	4	1620	2560	790	940	**23240MB**	58.4	0.32	2.1	3.2	2.1
200	420	138	5	2030	2930	840	1060	**22340CW33MB**	110	0.35	1.93	2.87	1.88
220	300	60	2.1	600	1155	1500	1800	**23944CCW33MB**	12.8	0.18	3.7	5.6	3.7
220	340	90	3	1095	1950	790	940	**23044MB**	31.5	0.23	2.9	4.3	2.8
220	340	118	3	1340	2420	900	1200	**24044CW33MB**	39.5	0.33	2.1	3.1	2
220	370	120	4	1710	2820	890	1100	**23144CCW33MB**	56	0.32	2.1	3.1	2.1
220	400	144	4	2020	3260	710	840	**23244MB**	82	0.32	2.1	3.1	2
240	360	92	3	1175	2190	750	890	**23048MB**	35.5	0.22	3	4.5	2.9
240	360	118	3	1500	2990	800	1000	**24048CW33MB**	42.5	0.32	2.1	3.1	2
240	440	160	4	2470	4188	640	760	**23248CW33MB**	114.2	0.36	1.88	2.79	1.84
260	360	75	2.1	944	1850	1060	1300	**23952CCW33MB**	24.2	0.19	3.5	5.21	3.42
260	400	104	4	1425	2590	670	790	**23052MB**	50.7	0.23	3	4.4	2.9
260	400	140	4	1915	3730	700	900	**24052CW33MB**	64.5	0.35	1.9	2.9	1.9
280	380	75	2.1	840	1900	670	790	**23956CCW33MB**	26.4	0.18	3.8	5.7	3.7
280	420	106	4	1650	2935	890	1100	**23056CW33MB**	59.4	0.24	2.8	4.2	2.8
280	420	140	4	1920	3910	670	840	**24056CW33MB**	72	0.32	2.12	3.16	2.07
280	500	176	5	2915	5127	560	670	**23256CW33MB**	153	0.36	1.86	2.77	1.82



Abutment and Fillet Dimensions				
d	d_a min	D_a max	D_a min	r_a max
		[mm]		
1402	153	287	254	3
160	178	222	214	2
160	174	276	245	2.5
170	182	248	228	2
170	188	292	261	3
180	194	236	233	2
180	192	268	245	2
180	200	280	256	2
180	198	302	274	3
190	202	278	253	2
190	208	322	288	3
190	212	378	338	4
200	214	266	260	2
200	212	298	279	2
200	212	298	271	2
200	214	326	286	2
200	218	342	318	3
200	218	342	307	3
200	226	394	360	4
220	232	288	280	2
220	234	326	302	2.5
220	234	326	297	2.5
220	238	352	325	3
220	238	382	337	3
240	254	346	324	2.5
240	254	346	318	2.5
240	264	416	374	3
260	274	346	342	2
260	278	382	356	3
260	278	382	348	3
280	292	368	347	2
280	298	402	377	3
280	298	402	369	3
280	306	474	426	4

Double row spherical roller bearings can simultaneously accommodate heavy radial loads and axial loads in both directions. The spherical shape of the outer ring raceway enables mutual alignment in operation and secures uniform load distribution on the rolling elements. They are suitable for rolling mill roll arrangements, gearboxes, railway carriages, axleboxes, etc.

Suffixes

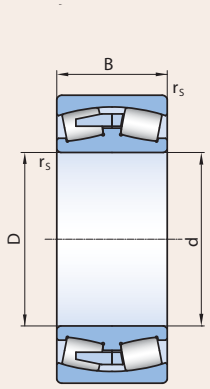
C	– Difference in internal design
CC	– Difference in internal design
C3, C4, C5	– Radial clearance greater than normal
K	– Tapered bore, taper 1:12
K30	– Tapered bore, tape 1:30 (Type 240..; 241..)
MB	– Machined brass cage, rolling elements centred on inner ring
W33	– Lubrication groove and holes in outer ring

Radial equivalent load:

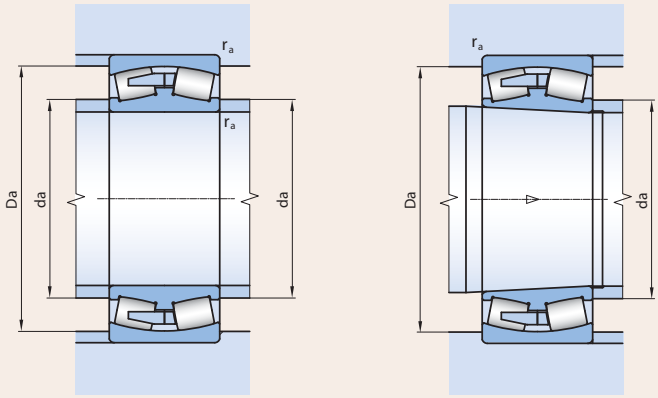
- dynamic:	$P_r = F_r + Y_1 F_a$	if $F_a/F_r \leq e$	[kN]
	$P_r = 0{,}67F_r + Y_2 F_a$	if $F_a/F_r > e$	[kN]
- static:	$P_{or} = F_r + Y_o F_a$		[kN]

SPHERICAL ROLLER BEARINGS

double row

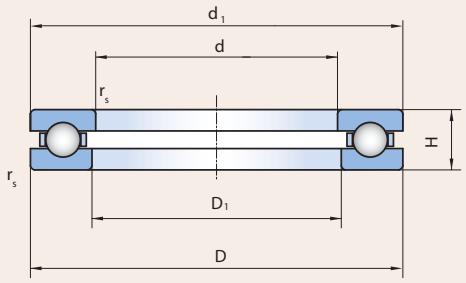


Dimensions				Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation	Weight	Factors			
d	D	B	r_s min	C_r dyn.	C_{or} stat.	with grease	with oil	PSL		e	Y_1	Y_2	Y_0
[mm]				[kN]		[min^{-1}]			[kg]				
300	460	118	4	2000	3620	840	1060	**23060CCW33MB**	76.5	0.25	2.7	4.1	2.7
320	480	160	4	2540	5050	560	700	**24064CW33MB**	106	0.32	2.12	3.15	2.07
320	580	208	5	3813	6750	490	580	**23264CW33MB**	249	0.37	1.8	2.68	1.76
340	460	90	3	1390	2930	790	1000	**23968CCW33MB**	44.7	0.18	3.81	5.68	3.73
340	520	180	5	3055	6135	560	700	**24068CW33MB**	140	0.33	2	3	2
360	440	60	2.1	779	1960	790	1000	**23872CCW33MB**	20.3	0.12	5.74	8.54	5.61
360	480	90	3	1440	3100	710	890	**23972CCW33MB**	47	0.17	4	5.96	3.91
360	540	180	5	3040	6430	470	600	**24072CW33MB**	154	0.32	2.13	3.17	2.1
400	600	200	5	3735	7790	450	560	**24080CW33MB**	205	0.3	2.3	3.4	2.2
420	560	106	4	1850	4470	600	750	**23984CW33MB**	76.2	0.17	3.99	5.94	3.9
420	620	150	5	3160	6560	560	710	**23084CCW33MB C3**	166	0.23	2.96	4.4	2.89
440	720	280	6	6680	13100	220	280	**24188CCK30W33MB**	454	0.39	1.73	2.58	1.69
460	620	118	4	2370	5310	530	670	**23992CCW33MB**	107	0.17	3.91	5.83	3.83
480	650	128	5	2900	6430	500	630	**23996CCW33MB**	130	0.17	3.9	5.8	3.8
500	670	128	5	2930	6680	470	600	**239/500CCW33MB**	133	0.17	4	6	3.9
560	820	195	6	4820	11000	400	500	**230/560CW33MB**	369	0.23	2.99	4.45	2.92
560	820	258	6	6190	14700	280	350	**240/560W33MB**	487	0.3	2.28	3.4	2.23
600	800	150	5	3480	8910	400	500	**239/600CW33MB**	218	0.18	3.79	5.65	3.71
600	870	200	6	5210	12300	380	470	**230/600CW33MB**	416	0.22	3.13	4.66	3.06
600	870	272	6	7220	17800	270	330	**240/600CW33MB**	573	0.28	2.4	3.6	2.35
630	920	212	7.5	5840	13300	360	440	**230/630CKMB**	479	0.22	3.13	4.66	3.06
710	1030	315	7.5	9440	22800	210	270	**240/710CW33MB**	923	0.29	2.35	3.49	2.29
750	1000	185	6	5280	13200	220	370	**239/750CCW33MB**	424.2	0.16	4.1	6.1	4
800	1060	195	6	5730	15500	250	350	**239/800CW33MB**	498	0.18	3.79	5.65	3.7
850	1220	272	7.5	9440	24200	240	300	**230/850CW33MB**	1110	0.21	3.26	4.86	3.19
880	1450	610	15	27100	57300	70	90	**PSL 512-306**	3934	0.43	1.58	2.35	1.55
900	1420	515	12	20000	45400	94	120	**241/900CW33MB**	3210	0.37	1.83	2.72	1.79

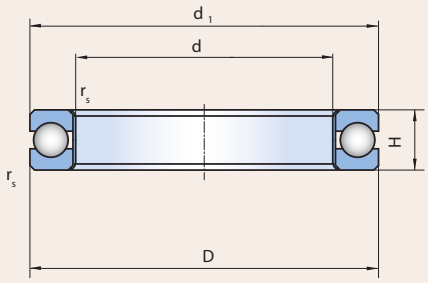


Abutment and Fillet Dimensions				
d	d_a min	D_a max	D_a min	r_a max
		[mm]		
300	318	442	415	3
320	343	457	426	3
320	346	554	492	4
340	358	442	428	2.5
340	362	498	454	4
360	374	426	419	2
360	378	462	450	4
360	382	518	478	4
400	422	578	527	4
420	438	538	522	3
420	440	600	580	4
440	463	697	648	5
460	478	596	577	3
480	502	628	594	4
500	522	648	613	4
560	583	797	748	5
560	583	797	748	5
600	622	778	745	4
600	630	840	790	5
600	630	840	770	5
630	665	885	838	6.5
710	745	995	924	6
750	778	972	935	5
800	830	1030	990	5
850	885	1185	1110	6
880	940	1390	1230	13
900	954	1366	1240	10

THRUST BEARINGS
single direction



Pict. 1

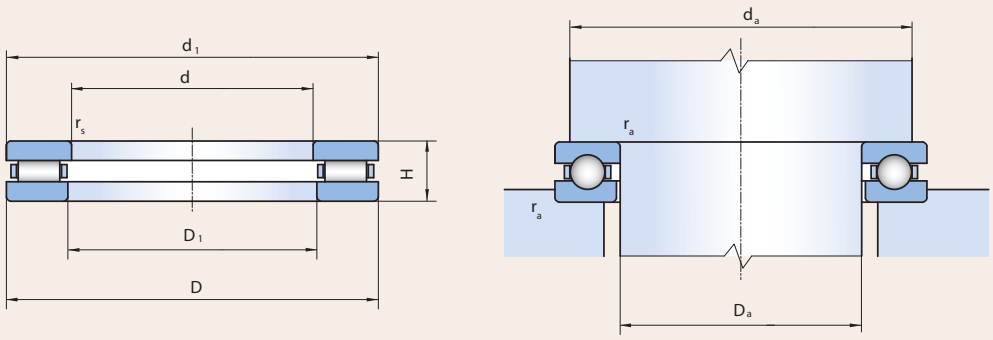


Pict. 2

Dimensions						Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation	Weight	Factor of Min. Axial Load
d	D	H	d_1	D_1	r_s min	C_r dyn.	C_{or} stat.	with grease	with oil	PSL		M
[mm]						[kN]		[min^{-1}]			[kg]	
271.460	330.2	53.975			5x45°	290	1305			**PSL 212-318**	9.4	
289.710	381	83.31			7x45°	540	2505			**PSL 211-301**	25.7	
299.240	379.4	73.15			5x45°					**PSL 211-302**	20.3	
300	420	95	415	304	3	589	2255	500	670	**51260**	43.1	40
300	420	95	420	304	3	1548	7173		630	**81260**	44.7	
320	440	95	435	325	3	614	2495	470	630	**51264**	45.5	48
340	420	64	416	344	2	419	1780	600	790	**51168**	20.3	19
350.444	463.55	107.95			7x45°	775	3975			**PSL 212-315**	50.2	
360	440	65	436	364	2	430	1885	560	750	**51172**	21.8	22
360	500	110	495	365	5	727	3264	400	530	**51272**	70.6	90
380	460	65	384		2	891	4730		560	**81176**	23.6	
380	520	112	385		4	2045	9750		500	**81276**	76.5	
400	480	65	476	404	3	446	2141	530	710	**51180**	23.6	28
420	500	65	495	424	2	460	2255	530	710	**51184**	25	30
454.025	615.95	139.7			7x45°	1200	7245			**PSL 212-320**	123	
1000	1180	140	1175	1005	5	1377	11595	210	280	**511/1000**	270	720
1180	1280	80	1185		2.1	1469	11025			**PSL 912-300**	130	
1200	1580	330	1205		6	14340	114730			**PSL 912-301**	1950	
1205	1295	64	1208	1292	2x45°	540	5281			**PSL 212-319**	79.1	

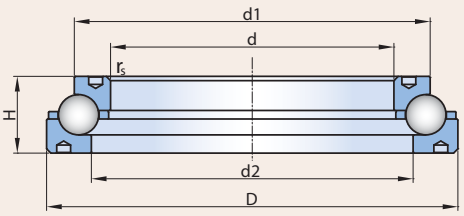
single direction angular contact thrust ball bearings

Dimensions						Basic Load Ratings		Bearing Designation	Weight
d	D	H	d_1	d_2	r_s	C_r dyn.	C_{or} stat.	PSL	
[mm]						[kN]			[kg]
482.6	622.300	77.47	545.465	555.625	6.35 min.	406	1822	**PSL 212-312**	37.5
511.175	628.650	66.675	590.65	549.275	4 min.	473	2370	**PSL 212-311**	39.9
514.35	704.850	114.3	571.5	514.35	6.4x45°	763	3948	**PSL 212-306**	109
768.35	920.750	88.9	873.125	835.025	6.4x45°max.	630	3841	**PSL 212-309**	80
771.449	898.525	63.881	860.425	809.625	6.5x45°	493	3456	**PSL 212-300**	65
785.685	952.500	95.631	882.65	857.25	6.4x45°	612	3702	**PSL 212-301**	94
787.349	1025.525	139.7	917.58	893.76	6.35 max	1252	8138	**PSL 212-313**	222
806.399	1025.525	127	933.45	873.12	6.35 max.	1200	7455	**PSL 212-314**	241
1420	1580.000	112	1579.4	1420.8	4 min.	1045	11139	**PSL 212-308**	278



Pict. 3

Abutment and Fillet Dimensions				Pict.
d	d_a min	D_a max	r_a max	
[mm]				
				2
				2
				2
300	372	348	2.5	1
				3
320	392	368	2.5	1
340	388	372	2	1
				2
360	408	392	2	1
360	443	417	3	1
				3
				3
400	448	432	2	1
420	470	450	2	1
				2
1000	1110	1070	4	1
				3
				3
				1



Single direction thrust bearings are designed for carrying axial forces acting in one direction. They cannot accommodate radial forces. To prevent undesirable slipping of the rolling elements due to high centrifugal forces at high rotational speed, they must be loaded by minimum axial force.

Suffixes

F – Machined steel cage, rolling elements centered
M – Machined brass cage, rolling elements centered

Axial equivalent load

– dynamic: $P_a = F_a$ [kN]
– static: $P_{oa} = F_a$ [kN]

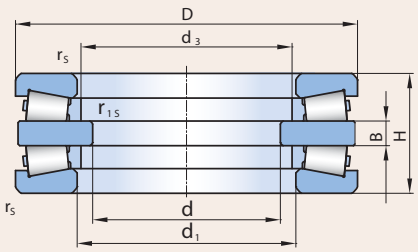
Calculation of minimum axial load $F_{a\,min}$:

$$F_{a\,min.} = M \left[\frac{n_{max}}{1000}\right]^2 \quad [\text{kN}]$$

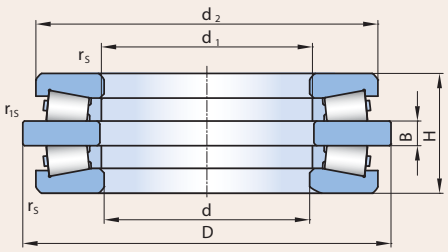
where:
n – maximum rotational speed [min^{-1}]
M – minimum axial load factor

THRUST BEARINGS

double direction ball, cylindrical and tapered rollers



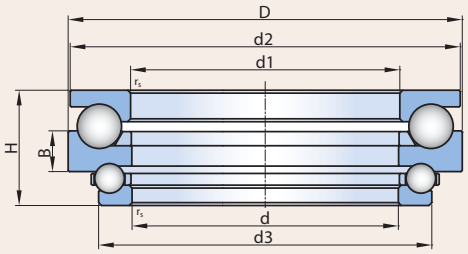
Pict. 1



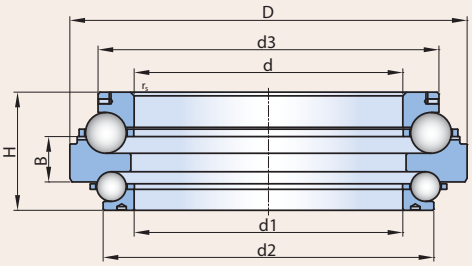
Pict. 2

Dimensions									Basic Load Ratings		Limited Speed for Lubrication		Bearing Designation	Weight	Pict.
d	D	H	d_1	d_2	d_3	B	r_s	r_{1s}	C_r dyn.	C_{or} stat.	with grease	with oil	PSL		
[mm]									[kN]		[min^{-1}]			[kg]	
260	360	92	285		276	20	2.1	2.1	607	2600	280	710	**PSL 911-2**	30	1
385	649.91	240	443.5		436	66	5	3	3220	15800	320	450	**PSL 912-302**	330	1
390	540	150	440		438	50	3.5	3.5	1210	7360	380	530	**PSL 912-11**	94	1
630	850	264	675.8		690	70	8	5	4060	18100	110	160	**PSL 912-17**	385	3
852	1080	230	852	1000		70	5	5	3350	21000	120	170	**PSL 912-14**	419	2
864	1028	110	951.2	1015.5	895	28			540	4290	120	170	**PSL 212-27**	104	4

double direction angular contact ball

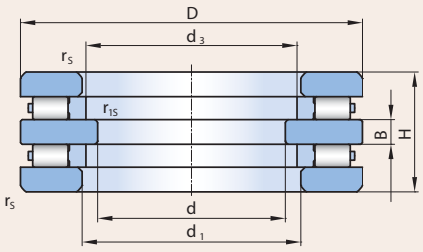


Pict. 1

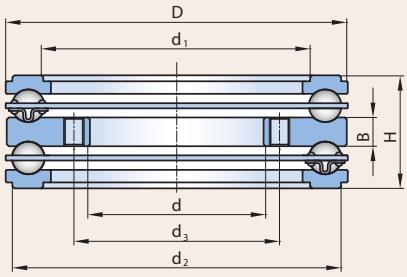


Pict. 2

Dimensions								Basic Load Ratings		Bearing Designation	Weight	Pict.
d	D	H	d_1	d_2	d_3	B	r_s	C_r dyn.	C_{or} stat.	PSL		
[mm]								[kN]			[kg]	
507.949	742.95	170.3	507.949	679.45	587.38	63.5	6x45°	841/447	5110/2200	**PSL 212-310**	192	2
786.917	1006.22	197.74	792	999.24	901.7	69.85	5x45°	804/1166	5550/8230	**PSL 212-302**	320	1
808.02	1066.67	193.08	822.32	944.56	908.05	88.95	4x45°	742/1303	4890/9367	**PSL 212-303**	310	1
1041.02	1260.348	200	1046.1	1254	1155.7	70	5.5x45°	823/1222	6536/9471	**PSL 212-304**	340	1
1049.35	1269.873	202.677	1050.087	1155.7	1173.16	77.8	6.35x45°	586/1233	3873/10024	**PSL 212-305**	372	2
1371.6	1597.025	247.65	1374.775	1536.7	1489.075	104.775	5x45°	871/1526	7928/14945	**PSL 212-317**	610	1



Pict. 3



Pict. 4

Double direction cylindrical roller thrust bearings, double direction tapered roller thrust bearings and thrust ball bearings are suitable for accommodating high axial forces (e.g. rolling mill arrangements), as well as also in arrangements where high rigidity in the axial direction is required (e. g. vertical lathe tables).

Axial equivalent load

– dynamic: $P_a = F_a$ [kN]
– static: $P_{oa} = F_a$ [kN]

PSL, a.s.
Robotnícka
017 01 Považská Bystrica
Slovak Republic

ROLLING BEARINGS
CUSTOMER REQUIREMENTS

1. Customer

Company name:
Address:
City: | ZIP: | Country:
Contact person: | Department:
Phone: | Fax: | E-mail:

2. Application

Description of application, machine:

Machine type:
Bearings intended for:

Info also available at web:
☐ New equipment ☐ Replacement, spare parts

3. 3. Bearings required

Bearing Designation	Bore diameter (mm)	Outer diameter (mm)	Overall bearing width (mm)	Radial clearance / preload (mm)	Axial clearance / preload (mm)	Shaft seating loose/interfer.	Housing seating loose/interfer.	Rotating ring outer/inner

4. Conditions of operation

Rotating ring:
☐ Vertical axis *(Bearing installed horizontal)*
☐ Horizontal axis *(Bearing installed vertical)*
☐ Angular *(Please specify in Remarks)*
☐ Variable *(Please specify in Remarks)*

Direction of rotation:
☐ Mainly one-direction
☐ Cyclic (Oscillating)

Way of rotation:
☐ Continuous
☐ Interrupted/Intermittent

Maximal speed: rpm
Required life: hours
Running accuracy:

5. Loadings

Operating mode	Radial loading (kN)	Axial loading (kN)	Torque (kNm)	Rotational speed (rpm)	Share (%)
1					
2					
3					
4					
5					
6					
Maximum					

Note: *We recommend to add to loading data a basic scheme of axis co-ordination system, directions of rotation, bearings layout, application points of forces and torques etc.*

6. Method of lubrication

☐ Oil lubrication ☐ Grease lubrication

☐ Other method (please specify):

Lubricant designation:

Producer:

Viscosity:

Other parameters:

7. Special requirements (check where applicable)

☐ Seals are required

☐ Extremly dirty surroundings (dust, sand, ...)

☐ High temperature (>50°C) Max. temperature °C

☐ Low temperature (<-25°C) Min. temperature °C

Remarks:

For the most precise and economically, please attach applicable drawings or sketches.

8. Offer

Required date of offer:

Required date of delivery:

Quantity required: pc

Annual requirements: pc/year

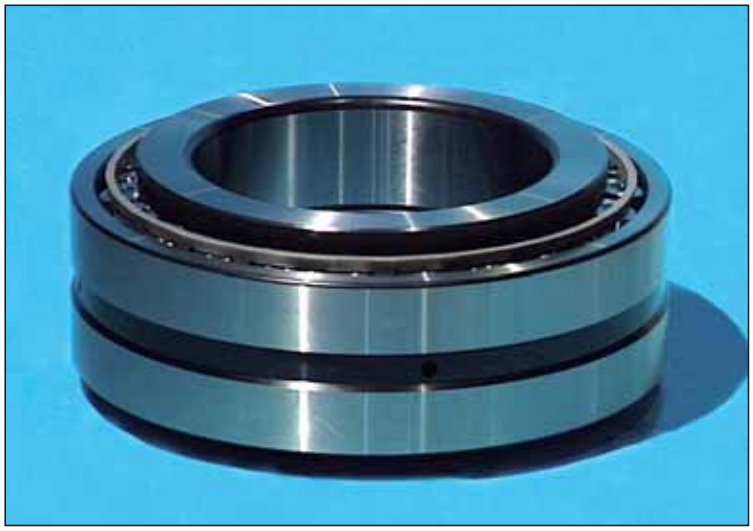
Individual consultation required. Please call for appointment. ☐

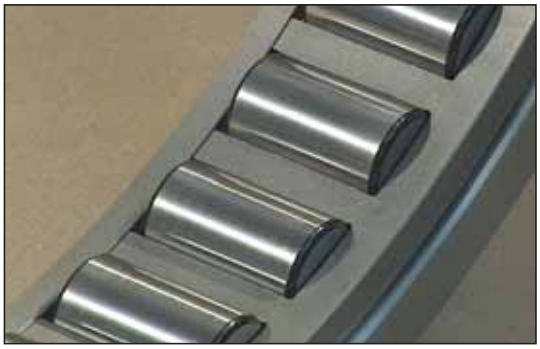
Please send the filled form to one of the following address:

Thank you very much for your assistance.

PSL, a. s.	PSL Wälzlager GmbH	PSL of America, Inc.	PSL OOO
Slovakia	Germany	USA	Russian Federation
Phone: +421 42 4371 460	+49 6074 828 98 30	+1 330 405 1888	+7 495 925 6187
Fax: +421 42 4326 644	+49 6074 828 98 331	+1 330 405 1398	+7 495 925 6188
E-mail: pslpb@pslas.com	info@psl-gmbh.de	sales@pslamerica.com	pslopora@yandex.ru

CONVERSION EQUIVALENTS FOR U.S. AND METRIC UNIT			
Unit	**When you Know**	**Multiply by**	**To get an equivalent in**
Length	[inch]	25.4	[mm]
	[mm]	0.03937	[inch]
	[ft]	0.3048	[m]
	[m]	3.2808399	[ft]
	[mile]	1.609	[km]
	[km]	0.6214	[mile]
Area	[$inch^2$]	645.16	[mm^2]
	[mm^2]	0.001550003	[$inch^2$]
	[ft^2]	92903.04	[mm^2]
	[mm^2]	0.00001076391	[ft^2]
Volume	[$inch^3$]	16387.064	[mm^3]
	[mm^3]	0.000061023744	[$inch^3$]
Weight	[lb]	0.4536	[kg]
	[kg]	2.2046	[lb]
	[lb]	0.0004536	[t]
	[t]	2204.6	[lb]
Force	[lbf]	4.448222	[N]
	[N]	0.22480892	[lbf]
	[lbf]	0.004448222	[kN]
	[kN]	224.80892	[lbf]
Torque	[lbf.inch]	0.1129848	[Nm]
	[Nm]	8.850748	[lbf.inch]
	[lbf.ft]	1.3558182	[Nm]
	[Nm]	0.73756207	[lbf.ft]
	[lbf.ft]	0.0013558182	[kNm]
	[kNm]	737.56207	[lbf.ft]
Temperature	[°F]	(°F-32)/1.8	[°C]
	[°C]	1.8.°C+32	[°F]
Pressure, Stress	[psi]	0.006894757	[MPa]
	[MPa]	145.03774	[psi]
Power	[hp]	0.7457	[kW]
	[kW]	1.341	[hp]
Velocity	[$ft.s^{-1}$]	0.3048	[$m.s^{-1}$]
	[$m.s^{-1}$]	3.2808399	[$ft.s^{-1}$]
	[$mile.h^{-1}$]	1.609	[$km.h^{-1}$]
	[$km.h^{-1}$]	0.621	[$mile.h^{-1}$]
Acceleration	[$ft.s^{-2}$]	0.3048	[$m.s^{-2}$]
	[$m.s^{-2}$]	3.2808399	[$ft.s^{-2}$]





Typical applications of PSL bearings

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Design: Reklamný servis, 2010

Other PSL literature