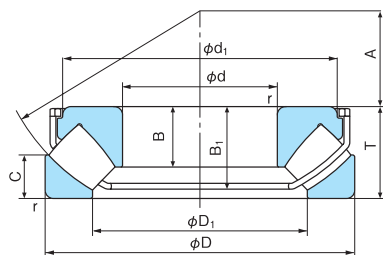
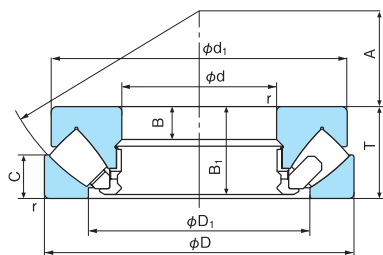


# Spherical Roller Thrust Bearings

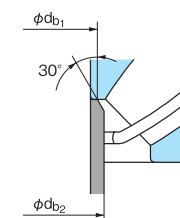
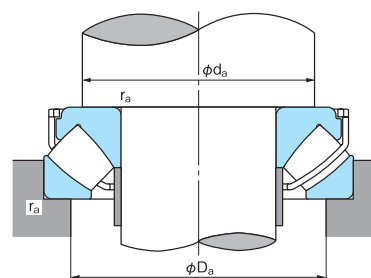
Bore Diameter: 60~130mm



Type EX



Type E



**Dynamic equivalent axial load**  
 $P_a = F_a + 1.2 F_r$   
**Static equivalent axial load**  
 $P_{0a} = F_a + 2.7 F_r$   
 where,  $F_a$ : Axial load  
 $F_r$ : Radial load  
 $\frac{F_r}{F_a} \leq 0.55$   
 However  $F_r/F_a \leq 0.55$  must be satisfied

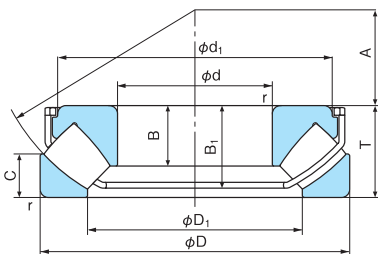
1N=0.102kgf

Boundary dimensions (mm)				Bearing No.	Basic dynamic load rating $C_a$ (N)	Basic static load rating $C_{0a}$ (N)	Limiting speed (min <sup>-1</sup> )			Reference Dimensions (mm)						Abutment and fillet dimensions (mm)			Spacer dimensions (mm)		Mass (kg) (Reference)	Bearing No.
d	D	T	r (min)				Grease lubrication	Oil lubrication		$d_1$	$D_1$	B	$B_1$	C	A	$d_a$ (min)	$D_a$ (max)	$r_a$ (max)	$d_{b1}$ (max)	$d_{b2}$ (max)		
60	130	42	1.5	29412E	299000	890000	—	2800		123	89	15	39.5	20	38	91	108	1.5	—	—	2.75	29412E
	130	42	1.5	29412EX	350000	915000	1800	2800		113	87	27	37.1	20	38	91	108	1.5	66.0	66.0	2.50	29412EX
65	140	45	2	29413E	345000	1040000	—	2700		133	96	16	42.5	21	42	99	115	2.0	—	—	3.41	29413E
	140	45	2	29413EX	410000	1110000	1700	2700		123	93.5	29.5	40	21	42	99	115	2.0	72.0	72.0	3.20	29413EX
70	150	48	2	29414E	375000	1110000	—	2400		142	103	17	45.5	23	44	106	125	2.0	—	—	4.16	29414E
	150	48	2	29414EX	490000	1350000	1600	2400		128.3	98.4	32	42.7	23	44	106	125	2.0	75.5	77.5	3.82	29414EX
75	160	51	2	29415E	445000	1380000	—	2300		152	109	18	48	24	47	113	132	2.0	—	—	4.98	29415E
	160	51	2	29415EX	525000	1470000	1600	2300		140	105.6	34.5	45.6	24	47	113	132	2.0	82.5	82.5	4.70	29415EX
80	170	54	2.1	29416E	480000	1490000	—	2100		162	117	19	51	26	50	120	140	2.0	—	—	5.95	29416E
	170	54	2.1	29416EX	580000	1630000	1500	2100		149	113	36	48.2	26	50	120	140	2.0	88.0	88.0	5.60	29416EX
85	150	39	1.5	29317E	293000	990000	—	2700		143.5	114	13	37	19	50	115	135	1.5	—	—	2.87	29317E
	150	39	1.5	29317EX	365000	1060000	1600	2700		134	110.5	25	35	19	50	115	135	1.5	90.0	90.0	2.67	29317EX
	180	58	2.1	29417E	540000	1720000	—	2000		170	125	21	55	28	54	130	150	2.0	—	—	7.19	29417E
	180	58	2.1	29417EX	640000	1810000	1300	2000		158.2	120.5	37	50.6	28	54	130	150	2.0	94.0	94.0	6.69	29417EX
90	155	39	1.5	29318E	300000	1040000	—	2700		148.5	117	13	37	19	52	120	140	1.5	—	—	3.06	29318E
	155	39	1.5	29318EX	355000	1070000	1600	2700		135.2	116	23.8	35.1	19	52	120	140	1.5	95.0	95.0	2.75	29318EX
	190	60	2.1	29418E	620000	2020000	—	1900		180	132	22	57	29	56	135	157	2.0	—	—	8.28	29418E
	190	60	2.1	29418EX	710000	2080000	1300	1900		162	127	40.5	53	29	56	135	157	2.0	99.0	99.0	7.83	29418EX
100	170	42	1.5	29320E	355000	1260000	—	2500		163	129	14	40	20.8	58	130	150	1.5	—	—	3.91	29320E
	170	42	1.5	29320EX	435000	1400000	1500	2500		146.9	126	27	38.2	20.8	58	130	150	1.5	105.0	107.0	3.61	29320EX
	210	67	3	29420E	690000	2230000	—	1700		200	146	24	64	32	62	150	175	2.5	—	—	11.2	29420E
	210	67	3	29420EX	870000	2530000	1100	1700		181	139	44.5	59.6	32	62	150	175	2.5	108.0	110.0	10.6	29420EX
110	190	48	2	29322E	470000	1680000	—	2100		182	143	16	45.5	23	64	145	165	2.0	—	—	5.67	29322E
	190	48	2	29322EX	550000	1730000	1300	2100		165.1	140.6	30.9	44	23	64	145	165	2.0	116.0	117.0	5.22	29322EX
	230	73	3	29422E	845000	2820000	—	1500		220	162	26	69	35	69	165	190	2.5	—	—	14.7	29422E
	230	73	3	29422EX	1060000	3150000	950	1500		199.6	153.4	48	64.4	35	69	165	190	2.5	119.5	120.0	14.0	29422EX
120	210	54	2.1	29324E	565000	2030000	—	1900		200	159	18	51	26	70	160	180	2.0	—	—	7.90	29324E
	210	54	2.1	29324EX	670000	2160000	1100	1900		184.5	155	34.5	48.7	26	70	160	180	2.0	127.0	128.0	7.30	29324EX
	250	78	4	29424E	1030000	3450000	—	1400		236	174	29	74	37	74	180	205	3.0	—	—	18.5	29424E
	250	78	4	29424EX	1210000	3750000	900	1400		218	166.5	54	70.9	37	74	180	205	3.0	131.0	132.0	17.6	29424EX
130	225	58	2.1	29326E	665000	2420000	—	1800		215	171	19	55	28	76	170	195	2.0	—	—	9.45	29326E
	225	58	2.1	29326EX	770000	2440000	1000	1800		197.4	165.8	36.8	52.7	28	76	170	195	2.0	136.0	138.0	8.82	29326EX
	270	85	4	29426E	1140000	3850000	—	1200		255	189	31	81	41	81	195	225	3.0	—	—	23.5	29426E
	270	85	4	29426EX	1400000	4300000	850	1200		236.4	181	56	75	41	81	195	225	3.0	141.5	143.0	22.3	29426EX

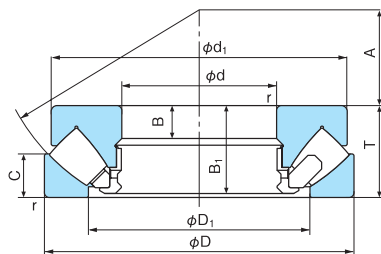
Note: For heavy load application,  $d_a$  should be large enough to support the shaft washer rib.

### Spherical Roller Thrust Bearings

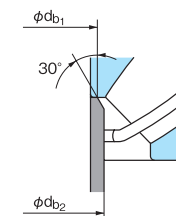
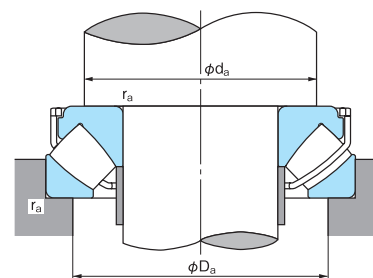
Bore Diameter: 140~240mm



Type EX



Type E



**Dynamic equivalent axial load**  
 $P_a = F_a + 1.2F_r$   
**Static equivalent axial load**  
 $P_{0a} = F_a + 2.7F_r$   
 where,  $F_a$ : Axial load  
 $F_r$ : Radial load  
 $\frac{F_r}{F_a} \leq 0.55$   
 However  $F_r/F_a \leq 0.55$  must be satisfied

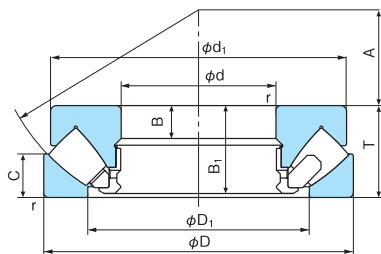
1N=0.102kgf

Boundary dimensions (mm)				Bearing No.	Basic dynamic load rating Ca (N)	Basic static load rating Coa (N)	Limiting speed (min <sup>-1</sup> )			Reference Dimensions (mm)						Abutment and fillet dimensions (mm)			Spacer dimensions (mm)		Mass (kg) (Reference)	Bearing No.
d	D	T	r (min)				Grease lubrication	Oil lubrication		d <sub>1</sub>	D <sub>1</sub>	B	B <sub>1</sub>	C	A	da (min)	Da (max)	ra (max)	db <sub>1</sub> (max)	db <sub>2</sub> (max)		
140	240	60	2.1	29328E	700000	2560000	—	1600		230	183	20	57	29	82	185	205	2.0	—	—	11.2	29328E
	240	60	2.1	29328EX	860000	2840000	950	1600		218.4	179	38.5	54.8	29	82	185	205	2.0	147.5	149.0	10.5	29328EX
	280	85	4	29428E	1200000	4050000	—	1200		268	199	31	81	41	86	205	235	3.0	—	—	24.6	29428E
	280	85	4	29428EX	1410000	4350000	850	1200		246	196	53.6	74.4	41	86	205	235	3.0	153.0	160.0	22.8	29428EX
150	215	39	1.5	29230E	335000	1390000	—	2100		208	178	14	37	19	82	179	196	1.5	—	—	4.60	29230E
	250	60	2.1	29330E	735000	2840000	—	1600		240	194	20	57	29	87	195	215	2.0	—	—	11.7	29330E
	300	90	4	29430E	1330000	4600000	—	1100		285	214	32	86	44	92	220	250	3.0	—	—	29.6	29430E
	300	90	4	29430EX	1630000	5150000	800	1100		265.4	207.5	58.5	80.8	44	92	220	250	3.0	163.0	169.0	27.8	29430EX
160	225	39	1.5	29232E	345000	1470000	—	2100		219	188	14	37	19	85	189	206	1.5	—	—	4.70	29232E
	270	67	3	29332E	880000	3400000	—	1400		260	208	23	64	32	92	210	235	2.5	—	—	15.5	29332E
	270	67	3	29332EX	1040000	3500000	850	1400		243.4	199.8	44	61.4	32	92	210	235	2.5	166.0	174.0	14.5	29332EX
	320	95	5	29432E	1510000	5350000	—	1000		306	229	34	91	45	99	230	265	4.0	—	—	35.9	29432E
170	240	42	1.5	29234E	390000	1700000	—	1900		283.8	222	62.5	85.7	45	99	230	265	4.0	174.5	181.0	33.4	29432EX
	270	67	3	29334E	900000	3550000	—	1400		233	198	15	40	20	92	201	218	1.5	—	—	6.00	29234E
	280	67	3	29334E	900000	3550000	—	1400		270	216	23	64	32	96	220	245	2.5	—	—	16.3	29334E
	340	103	5	29434E	1670000	5900000	—	950		324	243	37	99	50	104	245	285	4.0	—	—	44.0	29434E
180	250	42	1.5	29236E	420000	1900000	—	1900		243	208	15	40	21	95	211	228	1.5	—	—	6.30	29236E
	300	73	3	29336E	1020000	3950000	—	1300		290	232	25	69	35	103	235	260	2.5	—	—	20.7	29336E
	360	109	5	29436E	1950000	7000000	—	860		342	255	39	105	52	110	260	300	4.0	—	—	52.2	29436E
190	270	48	2	29238E	540000	2300000	—	1800		262	223	15	45	24	104	225	245	2.0	—	—	8.50	29238E
	320	78	4	29338E	1170000	4550000	—	1100		308	246	27	74	38	110	250	275	3.0	—	—	25.5	29338E
	380	115	5	29438E	2120000	7750000	—	800		360	271	41	111	55	117	275	320	4.0	—	—	61.4	29438E
200	280	48	2	29240E	550000	2410000	—	1800		271	236	15	45	24	108	235	255	2.0	—	—	9.08	29240E
	340	85	4	29340E	1350000	5250000	—	1000		325	261	29	81	41	116	265	295	3.0	—	—	32.0	29340E
	400	122	5	29440E	2350000	8450000	—	740		380	286	43	117	59	122	290	335	4.0	—	—	73.0	29440E
220	300	48	2	29244E	595000	2750000	—	1600		292	254	15	45	24	117	260	275	2.0	—	—	9.84	29244E
	360	85	4	29344E	1410000	5750000	—	1000		345	280	29	81	41	125	285	315	3.0	—	—	34.5	29344E
	420	122	6	29444E	2410000	8950000	—	720		400	308	43	117	58	132	310	355	5.0	—	—	74.2	29444E
240	340	60	2.1	29248E	890000	4000000	—	1300		330	283	19	57	30	130	285	305	2.0	—	—	17.1	29248E
	380	85	4	29348E	1410000	5850000	—	980		365	300	29	81	41	135	300	330	3.0	—	—	36.3	29348E
	440	122	6	29448E	2480000	9450000	—	720		420	326	43	117	59	142	330	375	5.0	—	—	83.0	29448E

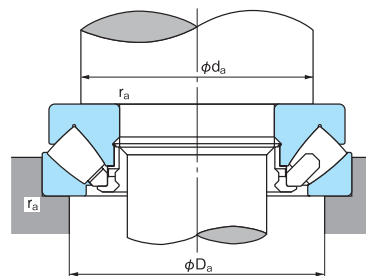
Note: For heavy load application, da should be large enough to support the shaft washer rib.

# Spherical Roller Thrust Bearings

Bore Diameter: 260~460mm



Type E



**Dynamic equivalent axial load**  
 $P_a = F_a + 1.2F_r$   
**Static equivalent axial load**  
 $P_{0a} = F_a + 2.7F_r$   
 where,  $F_a$ : Axial load  
 $F_r$ : Radial load  
 $\frac{F_r}{F_a} \leq 0.55$   
 However  $\frac{F_r}{F_a} \leq 0.55$  must be satisfied

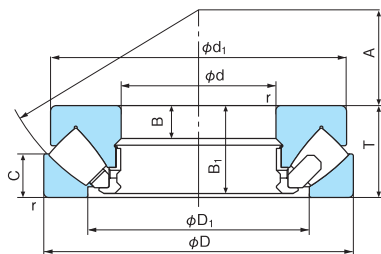
1N=0.102kgf

Boundary dimensions (mm)				Bearing No.	Basic dynamic load rating $C_a$ (N)	Basic static load rating $C_{0a}$ (N)	Limiting speed (min <sup>-1</sup> )			Reference Dimensions (mm)						Abutment and fillet dimensions (mm)			Spacer dimensions (mm)		Mass (kg) (Reference)	Bearing No.
d	D	T	r (min)				Grease lubrication	Oil lubrication		$d_1$	$D_1$	B	$B_1$	C	A	$d_a$ (min)	$D_a$ (max)	$r_a$ (max)	$db_1$ (max)	$db_2$ (max)		
260	360	60	2.1	29252E	915000	4250000	—	1300		350	302	19	57	30	139	305	325	2.0	—	—	18.5	29252E
	420	95	5	29352E	1810000	7500000	—	860		405	329	32	91	45	148	330	365	4.0	—	—	51.5	29352E
	480	132	6	29452E	2940000	11600000	—	640		460	357	48	127	64	154	360	405	5.0	—	—	106	29452E
280	380	60	2.1	29256E	935000	4500000	—	1200		370	323	19	57	30	150	325	345	2.0	—	—	19.5	29256E
	440	95	5	29356E	1850000	7950000	—	840		423	348	32	91	46	158	350	390	4.0	—	—	54.0	29356E
	520	145	6	29456E	3450000	13500000	—	580		495	387	52	140	68	166	390	440	5.0	—	—	137	29456E
300	420	73	3	29260E	1220000	5850000	—	1000		405	353	21	69	38	162	355	380	2.5	—	—	31.0	29260E
	480	109	5	29360E	2310000	10000000	—	720		460	379	37	105	50	168	380	420	4.0	—	—	75.4	29360E
	540	145	6	29460E	3650000	14800000	—	540		515	402	52	140	70	175	410	460	5.0	—	—	146	29460E
320	440	73	3	29264E	1270000	6150000	—	980		430	372	21	69	38	172	375	400	2.5	—	—	32.8	29264E
	500	109	5	29364E	2370000	10600000	—	720		482	399	37	105	53	180	400	440	4.0	—	—	80.0	29364E
	580	155	7.5	29464E	4050000	16800000	—	480		555	435	55	149	75	191	435	495	6.0	—	—	179	29464E
340	460	73	3	29268E	1290000	6350000	—	950		445	395	21	69	37	183	395	420	2.5	—	—	34.5	29268E
	540	122	5	29368E	2850000	12400000	—	630		520	428	41	117	59	192	430	470	4.0	—	—	106	29368E
	620	170	7.5	29468E	4750000	19300000	—	430		590	462	61	164	82	201	465	530	6.0	—	—	228	29468E
360	500	85	4	29272E	1650000	8050000	—	830		485	423	25	81	44	194	420	455	3.0	—	—	50.4	29272E
	560	122	5	29372E	2900000	12900000	—	600		540	448	41	117	59	202	450	495	4.0	—	—	111	29372E
	640	170	7.5	29472E	4900000	20500000	—	410		610	480	61	164	82	210	485	550	6.0	—	—	234	29472E
380	520	85	4	29276E	1780000	8800000	—	800		505	441	27	81	42	202	440	475	3.0	—	—	52.8	29276E
	600	132	6	29376E	3400000	15300000	—	540		580	477	44	127	63	216	480	525	5.0	—	—	140	29376E
	670	175	7.5	29476E	5200000	22000000	—	400		640	504	63	168	85	230	510	575	6.0	—	—	263	29476E
400	540	85	4	29280E	1840000	9250000	—	800		526	460	27	81	42	212	460	490	3.0	—	—	55.1	29280E
	620	132	6	29380E	3550000	16300000	—	530		596	494	44	127	64	225	500	550	5.0	—	—	146	29380E
	710	185	7.5	29480E	5850000	25000000	—	360		680	534	67	178	89	236	540	610	6.0	—	—	314	29480E
420	580	95	5	29284E	2260000	11300000	—	700		564	489	30	91	46	225	490	525	4.0	—	—	74.9	29284E
	650	140	6	29384E	3900000	17900000	—	480		626	520	48	135	68	235	525	575	5.0	—	—	170	29384E
	730	185	7.5	29484E	6050000	26000000	—	360		700	556	67	178	89	244	560	630	6.0	—	—	325	29484E
440	600	95	5	29288E	2290000	11800000	—	660		585	508	30	91	49	235	510	545	4.0	—	—	79.0	29288E
	680	145	6	29388E	4050000	19000000	—	450		655	548	49	140	70	245	550	600	5.0	—	—	192	29388E
	780	206	9.5	29488E	6950000	30000000	—	300		745	588	74	199	100	260	595	670	8.0	—	—	421	29488E
460	620	95	5	29292E	2290000	11900000	—	660		605	530	30	91	46	245	530	570	4.0	—	—	80.9	29292E
	710	150	6	29392E	4600000	21700000	—	430		685	567	51	144	72	257	575	630	5.0	—	—	216	29392E
	800	206	9.5	29492E	7150000	31500000	—	290		765	608	74	199	100	272	615	690	8.0	—	—	435	29492E

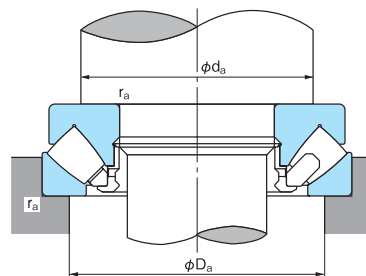
Note: For heavy load application,  $d_a$  should be large enough to support the shaft washer rib.

### Spherical Roller Thrust Bearings

Bore Diameter: 480~530mm



Type E



■ Dynamic equivalent axial load

$$Pa = Fa + 1.2Fr$$

■ Static equivalent axial load

$$Poa = Fa + 2.7Fr$$

where, Fa : Axial load

Fr : Radial load

$$\text{However } \frac{Fr}{Fa} \leq 0.55$$

However  $Fr/Fa \leq 0.55$  must be satisfied

1N=0.102kgf

Boundary dimensions (mm)				Bearing No.	Basic dynamic load rating Ca (N)	Basic static load rating Coa (N)	Limiting speed (min <sup>-1</sup> )			Reference Dimensions (mm)						Abutment and fillet dimensions (mm)			Spacer dimensions (mm)		Mass (kg) (Reference)	Bearing No.
d	D	T	r (min)				Grease lubrication	Oil lubrication		d <sub>1</sub>	D <sub>1</sub>	B	B <sub>1</sub>	C	A	da (min)	Da (max)	ra (max)	db <sub>1</sub> (max)	db <sub>2</sub> (max)		
480	650	103	5	29296E	2530000	13200000	—	600		635	556	33	99	55	259	555	595	4.0	—	—	97.5	29296E
	730	150	6	29396E	4630000	21900000	—	410		705	590	51	144	72	270	595	650	5.0	—	—	224	29396E
	850	224	9.5	29496E	8250000	36000000	—	260		810	638	81	216	108	280	645	730	8.0	—	—	543	29496E
500	670	103	5	292/500E	2590000	13800000	—	600		654	574	33	99	55	268	575	615	4.0	—	—	101	292/500E
	750	150	6	293/500E	4700000	22600000	—	410		725	611	51	144	74	280	615	670	5.0	—	—	231	293/500E
	870	224	9.5	294/500E	8250000	35000000	—	250		830	661	81	216	107	290	670	750	8.0	—	—	559	294/500E
530	710	109	5	292/530E	2820000	15100000	—	540		692	612	35	105	57	288	615	653	4.0	—	—	106	292/530E

Note: For heavy load application, da should be large enough to support the shaft washer rib.