



PRODUCT CATALOG

SPHERICAL ROLLER THRUST BEARING

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Spherical Roller Thrust Bearing

DESIGN | CHARACTERISTICS | APPLICATIONS

These bearings can accommodate heavy thrust loads and, due to raceways being inclined to the bearings axis, they can also accommodate radial loads up to a maximum of 55% of the thrust load and are suitable for taking high thrust loads at relatively high speed. Misalignment depends on the series (figures show below).

The bearings are fitted with asymmetrical barrel-shaped rollers.

It is essential that a minimum thrust load be present to avoid damage to the raceways by centrifugal forces (see formula below).

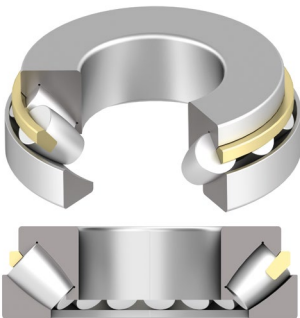
For static loads, a safety factor S_o of 4 should be used.

The steel cage version is available in the 294 series and is suitable for twin extruder gearboxes.

$$\frac{1.5 \text{ Cor}}{1000} F_{a \text{ min}} = [\text{KN}]$$

Where $F_{a \text{ min}}$ = minimum thrust load [KN]

Cor = static capacity [KN]



EM: Brass Cage



EX1: Steel Cage

ANGULAR MISALIGNMENT

Misalignment depends on the series (figures show below).

Series	Misalignent
292	2°
293	2.5°
294	3°

ISO SPECIFICATIONS

- Dimensions in accordance with ISO 104 (latest version)
- Precision class in accordance with ISO 199 (latest version)

SERIES



29200



29300



29400

NOMENCLATURE

Suffixes:

EM : Increased load rating | Brass cage

EX1 : Steel cage for series 294

P0 - P6 : Precision class

EQUIVALENT LOAD EQUATIONS

Equivalent dynamic load

$$P = F_a + 1.2 F_r \quad \text{providing} \quad F_r \leq 0.55 F_a$$

Equivalent static load

$$P_0 = F_a + 2.7 F_r \quad \text{providing} \quad F_r \leq 0.55 F_a$$

Equivalent static load

This can be calculated from

$$F_{am} = \frac{1.25 C_0}{1000} \quad [\text{kN}]$$

where: F_{am} = minimum axial load [kN]

F_r = radial component of load for bearings subjected to combined load [kN]

C_0 = basic static load [kN]

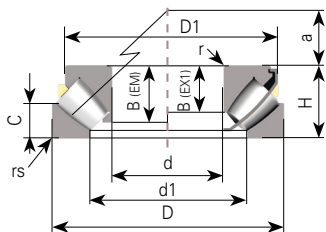
In many cases the axial load acting on the bearing produced by the weight of the supporting component parts and external forces is greater than the required minimum load. If this is not the case, then bearings must be preloaded. (e.g. using springs)

LUBRICATION

We recommend lubricating the spherical thrust roller bearing with oil. When the bearing is rotating a oil pump effect is created which let the oil circulate inside the bearing and will cool it down.

Spherical Roller Thrust Bearing

DATA TABLE



Part number	Principal dimensions			Basic load ratings			Speed limits		Weight	Radius	Calculation factors					
	d	D	H	Dynamic	Static	Fatigue	Grease	Oil			rs min	d1	D1	B	C	a
				Cr	Cor	Pu	rpm		Kg	mm						
	mm			kN			1 min ⁻¹				mm					
29412 EX1	60	130	42	390,0	1090	132,9	1800	2600	2,52	1,5	85,5	112	27	21	38	
29413 EM	65	140	45	418,2	1126	136,3	1550	2200	3,41	2	91,5	125	36	21,9	42	
29414 EX1	70	150	48	520,0	1250	148,1	1600	2200	4,13	2	99	129	31	23,8	44,8	
29415 EX1	75	160	51	600,0	1430	166,2	1600	2200	4,56	2	105,5	137	33,5	24,5	47	
29416 EX1	80	170	54	670,0	1630	185,9	1400	2000	5,50	2,1	112,5	146	35	26,5	50	
29317 EM	85	150	39	300	1050	122	1500	2000	2,87	1,5	110,0	135	31	19,4	50	
29417 EM	85	180	58	653	1815	203	1200	1600	7,19	2,1	119,5	160	46	27,5	54	
29318 EM	90	155	39	370	1139	131	1500	2000	3,06	1,5	115,5	140	31	19,8	52	
29418 EX1	90	190	60	815,0	2000	220	1300	1900	7,56	2,1	128	164	39	28,5	56	
29320 EM	100	170	42	440	1400	156	1400	1800	3,91	1,5	127,5	155	32,5	21,2	58	
29420 EX1	100	210	67	970,0	2910	311	1200	1700	10,80	3	141,5	186	43	32,2	62	
29322 EM	110	190	48	542	1740	188	1200	1600	5,67	2	141,5	175	37	23,9	64	
29422 EX1	110	230	73	1180	3000	312	1100	1600	13,40	3	223,5	199	47	34,7	69	
29324 EM	120	210	54	685	2230	234	1000	1400	7,96	2,1	155,0	190	41	27,2	70	
29424 EX1	120	250	78	1370	3450	350	900	1300	16,65	4	171	216	50,5	36,5	74	
29326 EM	130	225	58	770	2520	259	900	1400	9,45	2,1	167,0	205	44,5	28,3	76	
29426 EM	130	270	85	1382	4160	412	780	1100	22,06	4	181,0	240	66,5	41,1	81	
29328 EM	140	240	60	868	2940	296	850	1200	11,20	2,1	178,0	220	46,5	29,6	82	
29428 EM	140	280	85	1433	4436	433	780	1000	24,60	4	192,5	250	66,5	41,4	86	
29330 EM	150	250	60	884	3065	304	850	1200	11,70	2,1	188,0	230	46	30	87	
29430 EX1	150	300	90	1740	5220	499	800	1100	27,70	4	207,5	262	58	43,4	92	
29332 EM	160	270	67	1021	3486	338	800	1100	15,50	3	204,0	245	51	33	92	
29432 EX1	160	320	95	2080	5600	525	700	1000	32,70	5	223,5	279	60,5	45,5	99	
29234 EM	170	240	42	439	1760	173	1600	5,54	1,5	199,0	225	32	20	92		
29334 EM	170	280	67	1044	3644	348	800	1000	16,30	3	214,5	255	51	32,9	96	
29434 EX1	170	340	103	2360	6550	603	700	950	40	5	236	297	65,5	50	104	
29236 EM	180	250	42	420	2010	195	750	1300	7,05	1,5	208,0	236	32	22	96	
29336 EM	180	300	73	1244	4387	411	1000	20,70	3	227,5	275	55,2	35,8	103		
29436 EM	180	360	109	2275	7317	662	1760	5500	52,20	5	247,5	320	84,5	52,5	110	
29238 EM	190	270	48	518	2460	234	1300	7,95	2	220,0	255	36	25,4	102		
29338 EM	190	320	78	1398	4955	456	580	760	25,50	4	240,0	295	59,5	39,2	110	
29438 EX1	190	380	115	2850	8000	713	630	850	56,60	5	264,5	332	73	55,5	117	
29240 EM	200	280	48	546	2518	236	1300	9,08	2	230,0	263	39	24	108		
29340 EM	200	340	85	1582	5566	504	650	800	32	4	253,5	310	64	42,7	116	
29440 EM	200	400	122	2785	9070	796	550	760	73	5	275,0	360	93,5	59	122	

Spherical Roller Thrust Bearing

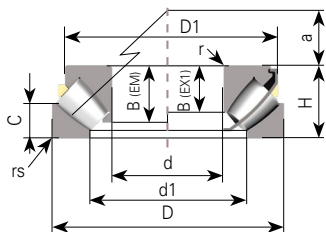
DATA TABLE



Part number	Principal dimensions			Basic load ratings			Speed limits		Weight	Radius	Calculation factors					
	d	D	H	Dynamic	Static	Fatigue	Grease	Oil			rs min mm	d1	D1	B	C	a
				Cr	Cor	Pu	rpm									
	mm	kN	1 min ⁻¹	Kg	mm											
29244 EM	220	300	48	694	2974	272		1200	9,84	2	249,5	285	36	25,4	117	
29344 EM	220	360	85	1608	5822	516	650	800	34,50	4	275,0	330	64	42,6	125	
29444 EM	220	420	122	2870	9634	829	500	680	74,20	6	275,0	360	93,5	59	122	
29248 EM	240	340	60	977	4077	361		1000	17,10	2,1	278,0	320	44	31,7	130	
29348 EM	240	380	85	1700	6412	557	630	800	36,30	4	297,0	350	64	42,1	135	
29448 EM	240	440	122	2978	10298	870	500	630	83	6	316,0	400	93,5	60,1	142	
29252 EM	260	360	60	1050	4598	399		1000	18,50	2,1	300,5	340	45,5	30,4	139	
29352 EM	260	420	95	2110	8050	680	550	710	51,50	5	323,0	385	71,8	48,2	148	
29452 EX1	260	480	132	4050	12900	1062	500	670	97,80	6	346	427,9	86	63	154	
29256 EM	280	380	60	1050	4598	392		900	19,50	2,1	321,0	360	45	31	150	
29356 EM	280	440	95	2220	8767	728	550	710	54	5	343,0	405	71,8	48	158	
29456 EM	280	520	145	4131	14645	1178	430	560	137	6	370,5	470	110	72,4	166	
29260 EM	300	420	73	1466	6488	539		710	31	3	348,0	395	54,5	36,4	162	
29360 EM	300	480	109	2682	10400	843	500	700	69,60	5	370,5	440	81	55,9	168	
29460 EM	300	540	145	4250	15449	1225	400	500	146	6	392,0	490	110	72,4	175	
29264 EM	320	440	73	1521	6893	563		630	32,80	3	368,5	415	54	37,4	172	
29364 EM	320	500	109	2833	11360	907	450	560	80	5	391,5	465	81	55,2	180	
29464 EM	320	580	155	4917	18167	1411	380	500	179	7,5	417,5	525	118,5	76,7	191	
29268 EM	340	460	73	1570	7304	588		630	34,50	3	389,0	435	54,5	36,5	183	
29368 EM	340	540	122	3373	13425	1050	400	500	106	5	419,5	500	90,5	60,6	192	
29468 EM	340	620	170	5504	20070	1529	340	450	228	7,5	446,0	560	128	84,5	201	
29272 EM	360	500	85	1989	9084	715		560	50,40	4	417,0	475	63	42,7	194	
29372 EM	360	560	122	3442	13990	1079		500	140	5	440,0	520	91	60,8	202	
29472 EM	360	640	170	5682	21212	1596		450	234	7,5	467,5	580	129	83,1	210	
29276 EM	380	520	85	2002	9307	723		560	52,80	4	437,5	490	65	43,1	202	
29376 EM	380	600	132	3962	16164	1224		500	140	6	466,0	555	98,5	66,9	216	
29476 EM	380	670	175	6025	22737	1686		430	263	7,5	490,5	610	130	85,9	230	
29280 EM	400	540	85	2065	9839	754		700	55,10	4	457,5	510	63,3	42,6	212	
29380 EM	400	620	132	4040	16810	1257		450	146	6	487,5	575	98	66,9	225	
29480 EM	400	710	185	6757	25820	1883		380	314	7,5	517,5	645	140	94	236	
29284 EM	420	580	95	2536	12067	908		560	74,90	5	483,5	550	72	49,7	225	
29384 EM	420	650	140	4434	18466	1362		420	170	6	512,5	600	103,5	70,7	235	
29484 EM	420	730	185	6969	27200	1963		370	325	7,5	538,0	665	142	92,1	244	
29288 EM	440	600	95	2618	12747	948		560	79	5	503,5	570	72	49,6	235	
29388 EM	440	680	145	4757	20018	1456		400	192	6	536,5	630	108	73,7	245	

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	d	D	H	Dynamic	Static	Fatigue	Grease	Oil			rs min	d1	D1	B	C	a
				Cr	Cor	Pu	rpm		Kg	mm		mm				
	mm			kN			1 min ⁻¹									
29488 EM	440	780	206	8073	31032	2200		350	421	9,5	570,0	710	152	105	260	
29292 EM	460	620	95	2644	13085	962		500	80,90	5	524,5	590	72	49,4	245	
29392 EM	460	710	150	5205	22264	1598		400	216	6	558,5	660	112	76,6	257	
29492 EM	460	800	206	8325	32668	2294		350	435	9,5	592,5	730	149	107	272	
29296 EM	480	650	103	2982	14620	1061		480	98	5	549,0	620	76,5	52,1	259	
29396 EM	480	730	150	5214	22550	1603		400	224	6	579,5	675	112	76	270	
29496 EM	480	850	224	9419	36691	2535		320	534,20	9,5	623,0	770	166,5	111,8	280	
292500 EM	500	670	103	3012	14987	1076		450	101	5	569,5	640	76,5	52	268	
293500 EM	500	750	150	5322	23422	1648		360	231	6	600,0	700	112	76,2	280	
294500 EM	500	870	224	9520	40000	2739		320	559	9,5	643,0	790	170	109,1	290	
292530 EM	530	710	109	3356	16859	1189		400	108	5	603,0	675	81	55,2	288	
293530 EM	530	800	160	6057	26973	1863		320	270	7,5	639,5	745	119,5	81	295	
294530 EM	530	920	236	10703	42908	2888		300	650	9,5	682,0	840	177	118,5	309	
292560 EM	560	750	115	3100	8600	597		350	140	5	640,0	715	84	56,8	302	
293560 EM	560	850	175	5790	29700	2016		280	320	7,5						
294560 EM	560	980	250	10210	47800	3160		250	740	12	890,0	727	92	120	328	
292600 EM	600	800	122	3420	20100	1367		300	172	5	688,0	760	39	60	321	
293600 EM	600	900	180	6350	32600	2172		250	368	7,5	731,0	870	61	87	335	
294600 EM	600	1030	258	12730	52273	3397		200	880	12	766,0	940	200	128,7	347	
292630 EM	630	850	132	4770	24500	1639		250	218	6	728,0	814,5	94	67,3	338	
293630 EM	630	950	190	7070	37000	2427		200	438	9,5	880,0	761	68	92	359	
294630 EM	630	1090	280	13700	58200	3722		200	1000	12	995,0	815	107	137	365	
292670 EM	670	900	140	4900	26000	1709		380	225	6	773,0	855	93	74	364	
293670 EM	670	1000	200	7720	40300	2600		150	501	9,5						
292710 EM	710	950	145	4840	29400	1900			261	6						
293710 EM	710	1060	212	8570	45100	2859		260	620	9,5	995,0	857,5	150	103,5	724	
294710 EM	710	1220	308	16800	71000	4386		220	1500	15	1130	910	113	148,5	415	
292750 EM	750	1000	150	5180	31900	2029		200	311	6	854,5	955	108	76	406	
293750 EM	750	1120	224	9370	50600	3156		250	696	9,5						
294750 EM	750	1280	315	15000	76000	4624		300	1536	18	972,0	1164	222	158	436	
292800 EM	800	1060	155	5620	35300	2205		340	339	7,5	1010,0	907,5	50	80	426	
293800 EM	800	1180	230	10110	54900	3366			780	9,5	1099	958	78	117	440	
292850 EM	850	1120	160	6080	38900	2388			389	7,5						
294850 EM	850	1440	354	28600	100000	5869		150	2090	7,5	1098,0	1330	221	172	494	
292900 EM	900	1180	170	6590	42000	2537		250	444	7,5	1017,0	1129,5	122	86	477	
292950 EM	950	1250	180	8430	46900	2786		240	537	7,5	1081,0	1185	58	88	507	