

THRUST SPHERICAL ROLLER BEARINGS TYPES TSR-EJ AND TSR-EM

- Designed to achieve high thrust capacity with low friction and continuous roller alignment.
- Utilize spherically contoured rollers arranged in a steep angular configuration to accommodate high thrust load alone, or in combination with moderate radial loads.
- Low friction of the bearing results from a combination of bearing geometry and manufacturing technology.
- Possess inherent dynamic misalignment capabilities up to 2.5 degrees between shaft and housing.
- Design variants include bearings with steel cage (EJ) or brass cage (EM).



Fig. 66. Type TSR-EJ



Fig. 67. Type TSR-EM

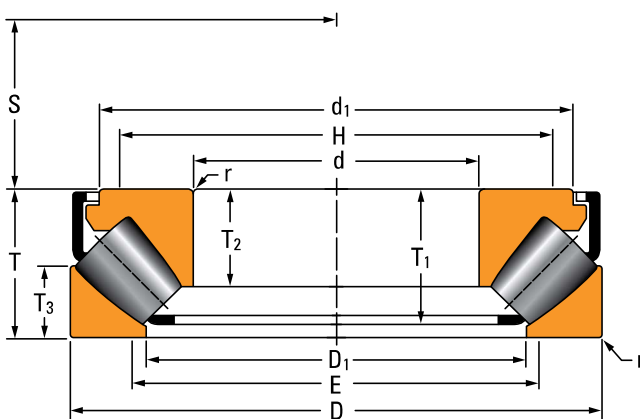


Fig. 68. Type TSR-EJ bearing assembly.

OVERALL DIMENSIONS:

- d – Bore diameter
- D – Bearing O.D.
- d₁ – Inner ring O.D.
- D₁ – Outer ring bore
- T – Bearing width
- T₁ – Inner ring assembly width
- T₂ – Inner ring width
- T₃ – Outer ring width
- E – Housing shoulder diameter
- H – Shaft shoulder diameter
- S – Pivot center location
- r – Shaft/housing maximum fillet radius

THRUST BEARING DATA

THRUST SPHERICAL ROLLER BEARINGS – TYPE TSR-EJ AND TYPE TSR-EM

DESIGN TYPES

TSR-EJ

- Spherical inner and outer races.
- Utilizes window-type steel cage which unitizes the cage and roller assembly with the inner ring via cage tabs.
- Optimized internal geometry, roller design and surface finishing to minimize torque and heat generation, improve lubrication, and maximize load capacity.

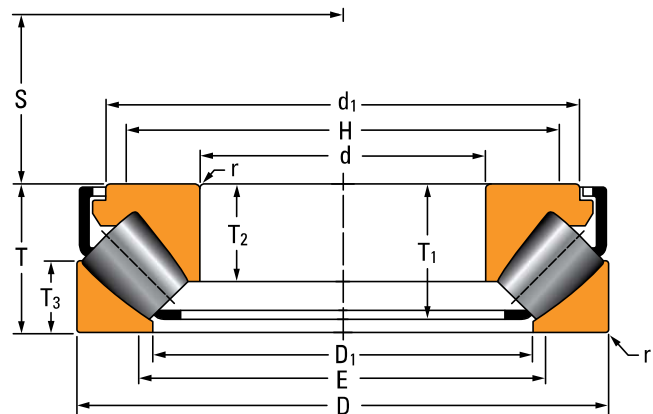


Fig. 69. Type TSR-EJ

TSR-EM

- Spherical inner and outer races.
- Utilizes large end roller-riding brass cage design which enhances lubrication flow and enables maximized roller length to provide high thrust load capacity within the envelope.
- Roller-cage assembly is unitized to the inner ring via a steel cage band for easier bearing mounting and handling.

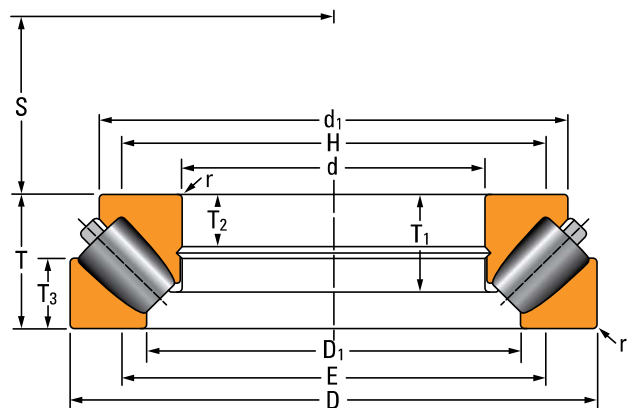
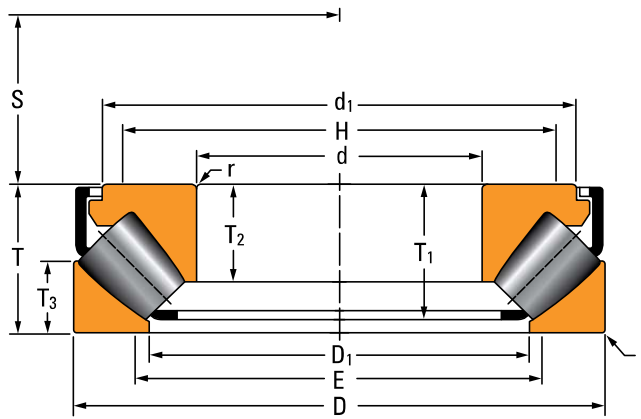


Fig. 70. Type TSR-EM.

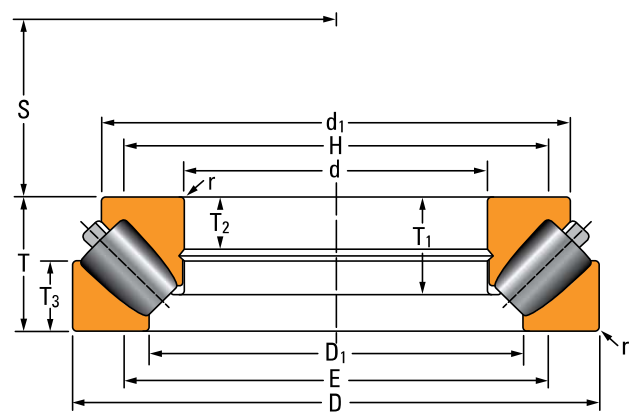
TABLE 42A. TIMKEN THRUST SPHERICAL ROLLER BEARING MODIFICATION CODES

Mod Code	Timken General Definition
W8	TDC coated rings & rollers
W16	Special internal features
W18	Inner ring with special squareness and parallelism tolerance
W23	Wide inner ring
W40	Rings and rollers made of carburizing-grade steel
W40B	Rings made of carburizing-grade steel.
W40R	Rollers only made of carburizing-grade steel
W50	Tapped holes in face of inner ring (imperial)
W50B	Tapped holes in face of inner ring (metric)
W57	Wide outer ring
W66	Special tolerances on spacer (where spacer requested)
W98	Inner ring with undersize bore
W896D	W23-Wider inner ring + W57-Wider outer ring
W921	Large chamfer on outer ring bore

THRUST SPHERICAL ROLLER BEARINGS – TYPE TSR-EJ AND TYPE TSR-EM



Type TSR-EJ



Type TSR-EM

TABLE 43. THRUST SPHERICAL ROLLER BEARINGS

Bearing Number	Bearing Dimensions					Shoulder Diameter		Mounting Dimensions					Load Rating		Thermal Speed Rating	Limiting Speed	Bearing Weight	Kc ⁽²⁾
	Bore	O.D.	Width	Inner Ring O.D.	Outer Ring Bore	Housing (Max.)	Shaft (Min.)				Fillet ⁽¹⁾ Radius (Max.)	Static Load Rating	Dynamic Load Rating					
	d	D	T	d ₁	D ₁	E	H	T ₁	T ₂	T ₃	S	r	C _{a0}	C _a				
29418EJ	90 3.5433	190 7.4803	60 2.3622	164.6 6.48	127.5 5.02	137 5.39	148 5.83	51.9 2.04	39 1.54	28.5 1.12	56 2.2	2 0.08	1890 426000	820 184000	2000	3410	7.4 16.3	20
29320EJ	100 3.937	170 6.6929	42 1.6535	152.3 6	127.5 5.02	134 5.28	141 5.55	35.4 1.39	26.2 1.03	20.5 0.81	58 2.28	1.5 0.06	1240 278000	462 104000	2000	3540	3.5 7.7	10
29420EJ	100 3.937	210 8.2677	67 2.6378	182.2 7.17	141.5 5.57	151 5.94	164 6.46	58 2.28	43 1.69	32 1.26	62 2.44	2.5 0.1	2390 536000	1020 230000	1800	3080	10.1 22.4	40
29322EJ	110 4.3307	190 7.4803	48 1.8908	171.1 6.74	140 5.51	149 5.87	157 6.18	40.3 1.59	30.3 1.19	24.8 0.98	63.8 2.51	2 0.08	1660 372000	604 136000	1800	3180	4.7 10.5	15
29422EJ	110 4.3307	230 9.0551	73 2.874	199.4 7.85	155.5 6.12	167 6.57	180 7.09	63.2 2.49	47 1.85	34.7 1.37	69 2.72	2.5 0.1	2840 638000	1200 269000	1700	2810	13.2 29.1	45
29324EJ	120 4.7244	210 8.2677	54 2.126	188.1 7.41	154 6.06	163 6.42	172 6.77	46 1.81	34 1.34	27 1.06	70 2.76	2 0.08	2070 466000	768 173000	1700	2890	7.2 15.8	25
29424EJ	120 4.7244	250 9.8425	78 3.0709	216.8 8.54	171 6.73	182 7.17	197 7.76	68.5 2.7	50.5 1.99	36.5 1.44	74 2.92	3 0.12	3320 746000	1390 312000	1500	2580	16.6 36.7	60
29326EJ	130 5.1181	225 8.8583	58 2.2835	203.4 8.01	165.5 6.52	177 6.97	186 7.32	48.6 1.91	36.7 1.44	30.1 1.19	75.6 2.98	2 0.08	2410 543000	852 192000	1600	2690	8.8 19.4	25
29426EJ	130 5.1181	270 10.6299	85 3.3464	234.4 9.23	184.5 7.26	197 7.76	213 8.39	72.7 2.86	54 2.13	40.9 1.61	81 3.19	3 0.12	3870 871000	1600 359000	1400	2390	20.9 46	80
29328EJ	140 5.5118	240 9.4488	60 2.3622	216.1 8.51	177 6.97	188 7.4	199 7.83	51.7 2.04	38.5 1.52	30 1.18	82 3.23	2 0.08	2710 609000	970 218000	1500	2510	10.2 22.5	40
29428EJ	140 5.5118	280 11.0236	85 3.3464	245.4 9.66	194.5 7.66	207 8.15	223 8.78	72.9 2.87	54 2.13	41 1.61	86 3.39	3 0.12	4110 924000	1640 369000	1300	2270	22.1 48.6	90
29330EJ	150 5.9055	250 9.8425	60 2.3622	223.9 8.82	190 7.48	198 7.8	209 8.23	52.2 2.06	38 1.5	28 1.1	87 3.43	2 0.08	2760 620000	993 223000	1400	2390	10.6 23.3	45
29430EJ	150 5.9055	300 11.811	90 3.5433	262.9 10.35	207.5 8.17	222 8.74	238 9.37	78.3 3.08	58 2.28	43.4 1.71	92 3.62	3 0.12	4730 1060000	1860 418000	1200	2120	27 59.5	115
29332EJ	160 6.2992	270 10.6299	67 2.6378	243.5 9.59	203 7.99	213 8.39	225 8.86	57.4 2.26	42 1.65	33 1.3	92 3.62	2.5 0.1	3370 758000	1190 267000	1300	2220	14.2 31.2	60
29432EJ	160 6.2992	320 12.5984	95 3.7402	279.3 11	223.5 8.8	237 9.33	255 10.04	82.2 3.24	60.5 2.38	45.5 1.79	99 3.9	4 0.16	5340 1200000	2100 472000	1200	1990	32 70.6	150
29334EJ	170 6.6929	280 11.0236	67 2.6378	251.2 9.89	215 8.46	223 8.78	235 9.25	58.6 2.31	42.2 1.66	30.5 1.2	96 3.78	2.5 0.1	3430 770000	1230 277000	1200	2120	14.5 32.1	70

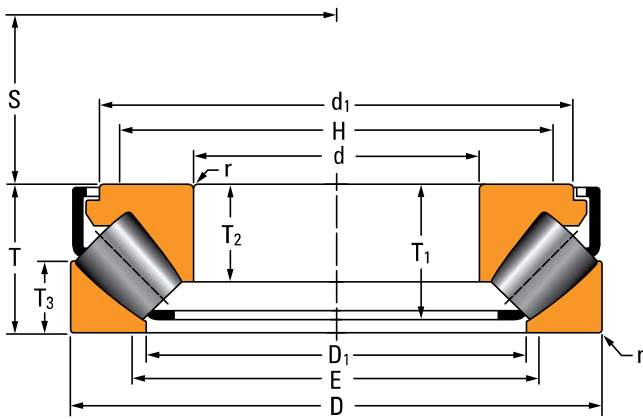
⁽¹⁾Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾Centrifugal force constant for induced thrust load calculation found on page 21.

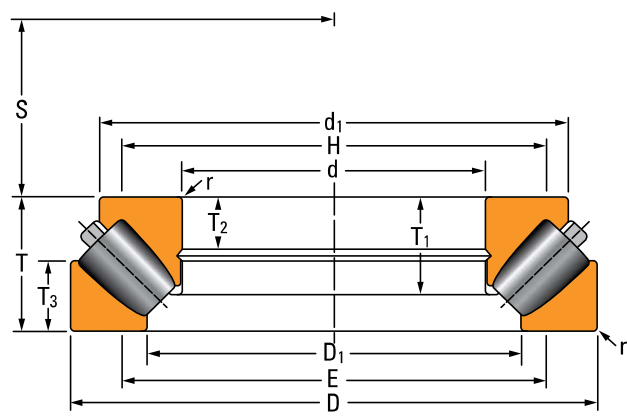
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THRUST BEARING DATA

THRUST SPHERICAL ROLLER BEARINGS – TYPE TSR-EJ AND TYPE TSR-EM



Type TSR-EJ



Type TSR-EM

TABLE 43. THRUST SPHERICAL ROLLER BEARINGS – continued

Bearing Number	Bearing Dimensions					Shoulder Diameter		Mounting Dimensions					Load Rating		Thermal Speed Rating	Limiting Speed	Bearing Weight	Kc ⁽²⁾
	Bore	O.D.	Width	Inner Ring O.D.	Outer Ring Bore	Housing (Max.)	Shaft (Min.)	T ₁	T ₂	T ₃	S	Fillet ⁽¹⁾ Radius (Max.)	Static Load Rating	Dynamic Load Rating				
	d	D	T	d ₁	D ₁	E	H						C _{a0}	C _a				
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf.	kN lbf.	RPM	RPM	kg lbs.	
29434EJ	170 6.6929	340 13.3858	103 4.0551	297.7 11.72	236 9.29	251 9.88	270 10.63	89 3.5	65.5 2.58	50 1.97	104 4.09	4 0.16	6140 1380000	2380 536000	1100	1870	39.7 87.4	195
29336EJ	180 7.0866	300 11.811	73 2.875	270 10.63	227 8.94	238 9.37	251 9.88	62.7 2.47	46 1.81	35.5 1.4	103 4.06	2.5 0.1	4130 927000	1430 322000	1200	1990	18.6 41.1	90
29436EJ	180 7.0866	360 14.1732	109 4.2913	315.9 12.44	250 9.84	267 10.51	286 11.26	94.1 3.7	69.5 2.74	53 2.09	110 4.33	4 0.16	7090 1590000	2660 598000	990	1770	47.5 104.7	245
29338EJ	190 7.4803	320 12.5984	78 3.076	285.6 11.25	243.5 9.59	253 9.96	268 10.55	67.7 2.66	49 1.93	36 1.42	110 4.33	3 0.12	4550 1020000	1620 364000	1100	1870	22.5 49.6	120
29438EJ	190 7.4803	380 14.9606	115 4.5276	332.9 13.11	264.5 10.41	281 11.06	303 11.93	100.3 3.95	73 2.87	55.5 2.19	117 4.61	4 0.16	7910 1780000	3040 683000	930	1680	55.7 122.9	320
29340EJ	200 7.874	340 13.3858	85 3.348	304.3 11.98	257 10.12	269 10.59	284 11.18	73.9 2.91	53.5 2.11	40 1.57	116 4.57	3 0.12	5370 1210000	1880 423000	1000	1770	28.4 62.7	155
29440EJ	200 7.874	400 15.748	122 4.8031	350.7 13.81	277.5 10.93	295 11.61	317 12.48	104.2 4.1	77 3.03	59.4 2.34	122 4.8	4 0.16	8470 1900000	3210 723000	900	1590	64.8 142.8	370
29344EJ	220 8.6614	360 14.1716	85 3.3477	326.3 12.85	273.5 10.77	288 11.34	303 11.93	74.1 2.92	55 2.17	41 1.61	125 4.92	3 0.12	5840 1310000	1950 437000	960	1650	30.7 67.6	175
29444EJ	220 8.6614	420 16.5354	122 4.8031	371.6 14.63	300 11.81	317 12.48	339 13.35	105.7 4.16	77 3.03	58.5 2.3	132 5.2	5 0.2	9090 2040000	3350 754000	830	1490	69.4 153.1	435
29348EJ	240 9.4488	380 14.9606	85 3.3477	345.1 13.59	295.5 11.63	308 12.13	323 12.72	74.4 2.93	54 2.13	40.5 1.59	135 5.32	3 0.12	6280 1410000	2040 458000	870	1540	32.8 72.4	210
29448EJ	240 9.4488	440 17.3228	122 4.8031	391.6 15.42	322 12.68	338 13.31	360 14.17	104.7 4.12	76 2.99	59 2.32	142 5.59	5 0.2	9520 2140000	3410 767000	770	1400	73.3 161.6	490
29352EJ	260 10.2362	420 16.5354	95 3.7402	382.2 15.05	324 12.76	340 13.39	356 14.02	84.7 3.33	61 2.4	46 1.81	148 5.83	4 0.16	8100 1820000	2580 579000	790	1400	46.9 103.4	330
29452EJ	260 10.2362	480 18.8976	132 5.1969	427.9 16.85	346 13.62	367 14.45	391 15.39	116.9 4.6	86 3.39	63 2.48	154 6.06	5 0.2	11900 2680000	4160 935000	690	1290	96.4 212.4	715
29356EJ	280 11.0236	440 17.3228	95 3.7418	401 15.79	343 13.5	360 14.17	376 14.8	84.7 3.33	62 2.44	45.5 1.79	158 6.22	4 0.16	8500 1910000	2580 580000	740	1330	49.5 109	355
29456EJ	280 11.0236	520 20.4724	145 5.7148	464.3 18.28	372 14.65	397 15.63	423 16.65	128.9 5.07	95 3.74	70 2.76	166 6.54	5 0.2	14300 3220000	4920 1110000	630	1190	126.3 278.3	1000
29360EJ	300 11.811	480 18.8978	109 4.2929	434.1 17.09	372 14.65	388 15.28	407 16.02	95.5 3.76	70 2.76	51 2.01	168 6.61	4 0.16	9900 2230000	3150 709000	690	1220	67.3 148.4	530

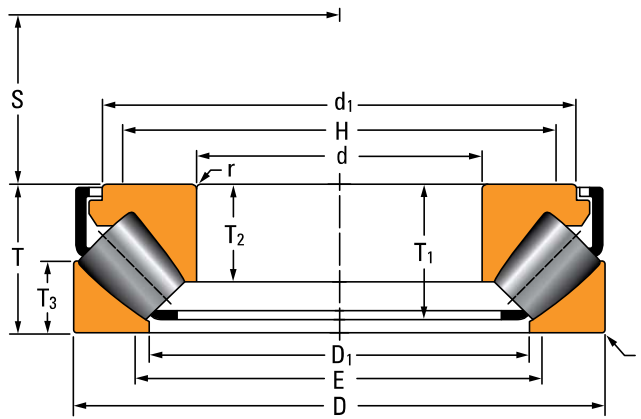
⁽¹⁾Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾Centrifugal force constant for induced thrust load calculation found on page 21.

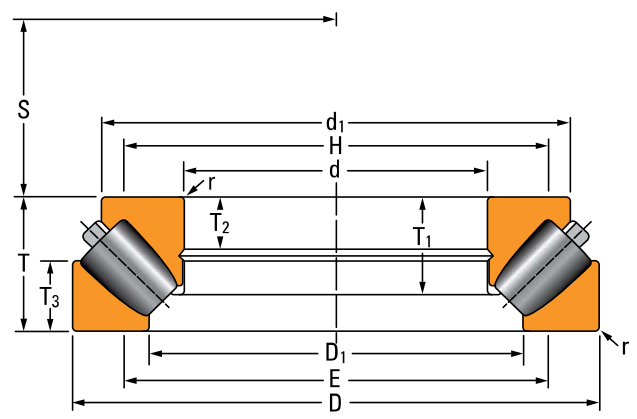
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THRUST BEARING DATA

THRUST SPHERICAL ROLLER BEARINGS – TYPE TSR-EJ AND TYPE TSR-EM



Type TSR-EJ



Type TSR-EM

Continued from previous page.

Bearing Number	Bearing Dimensions					Shoulder Diameter		Mounting Dimensions					Load Rating		Thermal Speed Rating	Limiting Speed	Bearing Weight	Kc ⁽²⁾
	Bore	O.D.	Width	Inner Ring O.D.	Outer Ring Bore	Housing (Max.)	Shaft (Min.)				Fillet ⁽¹⁾ Radius (Max.)	Static Load Rating	Dynamic Load Rating					
	d	D	T	d ₁	D ₁	E	H	T ₁	T ₂	T ₃	S	r	C _{a0}	C _a				
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf.	kN lbf.	RPM	RPM	kg lbs.	
29460EJ	300 11.811	540 21.2598	145 5.7087	485 19.09	392 15.43	418 16.46	443 17.44	128.6 5.06	95 3.74	70.5 2.78	175 6.89	5 0.2	15000 3370000	4990 1120000	600	1140	132.6 292.2	1090
29364EJ	320 12.5984	500 19.685	109 4.2913	460 18.11	391 15.39	407 16.02	427 16.81	94.4 3.72	68 2.68	53 2.09	180 7.09	4 0.16	10700 2400000	2830 636000	650	1170	71.6 157.8	615
29464EM	320 12.5984	580 22.8346	155 6.1024	514 20.24	407 16.02	444 17.48	469 18.46	112.2 4.42	56.3 2.22	80.5 3.17	191 7.52	6 0.24	18909 4251000	5155 1159000	530	1060	164 361.5	1485
29368EJ	340 13.3858	540 21.2598	122 4.8031	497 19.57	428 16.85	443 17.44	463 18.23	102.6 4.04	73.5 2.89	59.5 2.34	192 7.56	4 0.16	12000 2690000	3120 702000	620	1090	94.8 209	765
29468EM	340 13.3858	620 24.4094	170 6.6929	550 21.65	431 16.97	473 18.62	500 19.69	123.7 4.87	72 2.84	88 3.46	202 7.95	6 0.24	22030 4953000	5920 1331000	490	1000	207 456.3	1960
29372EM	360 14.1732	560 22.0472	122 4.8031	511 20.12	428 16.85	457 17.99	476 18.74	86.9 3.42	50 1.97	65 2.56	202 7.95	4 0.16	15130 3402000	3630 816400	540	1040	102.1 225	960
29472EM	360 14.1732	640 25.1968	170 6.6929	585 23.03	474 18.66	498 19.61	528 20.79	119.6 4.71	63 2.48	83.5 3.29	210 8.27	6 0.24	19500 4380000	5440 1220000	510	1000	209.2 461.3	2035
29376EM	380 14.9606	600 23.622	132 5.1969	546 21.5	455 17.91	486 19.13	507 19.96	94.5 3.72	49 1.93	70 2.76	216 8.5	5 0.2	17780 3996000	4300 965500	500	970	129.7 285.9	1315
29476EM	380 14.9606	670 26.378	175 6.8898	597 23.5	477 18.78	518 20.39	546.1 21.5	126.5 4.98	73.1 2.87	91 3.58	224 8.82	6 0.24	24870 5592000	6490 1460000	440	900	241.7 564.4	2550
29380EM	400 15.748	620 24.4094	132 5.1968	575 22.64	494 19.45	510 20.08	534 21.02	90.5 3.56	48 1.89	64 2.52	225 8.86	5 0.2	15100 3390000	3850 864000	530	940	128.6 283.5	1315
29480EM	400 15.748	710 27.9528	185 7.2835	632 24.88	501 19.72	547 21.54	577.1 22.72	134.9 5.31	77.7 3.06	97 3.82	237 9.33	6 0.24	28470 6400000	7330 1649000	410	860	290.4 640.2	3245
29284EM	420 16.5354	580 22.8346	95 3.7402	540 21.26	479 18.86	498 19.61	513.1 20.2	65.2 2.57	38 1.42	52 2.05	225 8.86	4 0.16	12460 2802000	2680 602900	580	960	68.2 150.3	735
29384EM	420 16.5354	650 25.5906	140 5.5118	600 23.62	520 20.47	537 21.14	561 22.09	95.8 3.77	53 2.09	67.5 2.66	235 9.25	5 0.2	16000 3610000	4040 909000	510	890	148.3 326.9	1515
29484EM	420 16.5354	730 28.7402	185 7.2835	670 26.38	545 21.46	576 22.68	608 23.94	133.4 5.25	70 2.76	90.5 3.56	244 9.61	6 0.24	26000 5860000	6780 1530000	430	830	295.4 651.3	3345
29388EM	440 17.3228	680 26.7717	145 5.7087	631.5 24.86	540 21.26	561 22.09	585 23.03	101.1 3.98	52 2.05	70.5 2.78	245 9.65	5 0.2	18500 4160000	4530 1020000	480	850	175.2 377.3	1860
29488EM	440 17.3228	780 30.7087	206 8.1102	694 27.32	554 21.81	602 23.7	635 25	148.3 5.84	89 3.5	108 4.25	257 10.12	8 0.31	33710 7579000	8610 1935000	370	780	387.4 854.1	4680

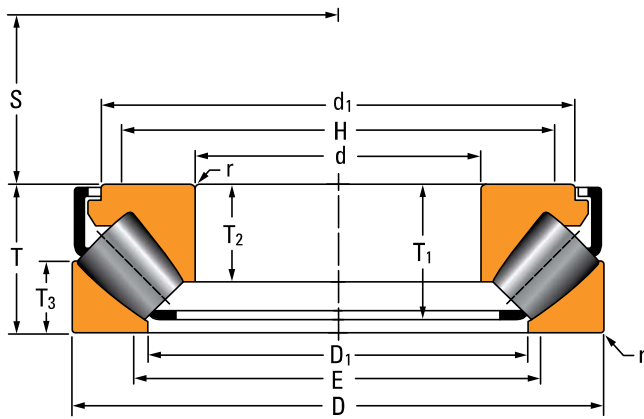
⁽¹⁾Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾Centrifugal force constant for induced thrust load calculation found on page 21.

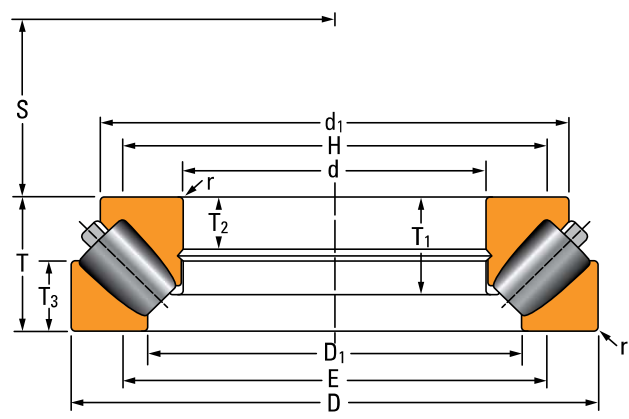
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THRUST BEARING DATA

THRUST SPHERICAL ROLLER BEARINGS – TYPE TSR-EJ AND TYPE TSR-EM



Type TSR-EJ



Type TSR-EM

TABLE 43. THRUST SPHERICAL ROLLER BEARINGS – continued

Bearing Number	Bearing Dimensions					Shoulder Diameter		Mounting Dimensions					Load Rating		Thermal Speed Rating	Limiting Speed	Bearing Weight	Kc ⁽²⁾
	Bore	O.D.	Width	Inner Ring O.D.	Outer Ring Bore	Housing (Max.)	Shaft (Min.)	T ₁	T ₂	T ₃	S	Fillet ⁽¹⁾ Radius (Max.)	Static Load Rating	Dynamic Load Rating				
	d	D	T	d ₁	D ₁	E	H						C _{a0}	C _a				
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kN	kN				
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	lb.	lb.				
29392EM	460	710	150	660	567	589	614	105.3	55	72.5	257	5	20200	4820	450	820	193.6	2165
	18.1102	27.9528	5.9055	25.98	22.32	23.19	24.17	4.15	2.17	2.85	10.12	0.2	4540000	1080000			426.8	
29492EM	460	800	206	735	596	631	666	147.8	77	101.5	268	8	31700	8120	380	760	396.5	4875
	18.1102	31.4961	8.1102	28.94	23.46	24.84	26.22	5.82	3.03	4	10.55	0.31	7120000	1830000			874.2	
29396EM	480	730	150	680	591	610	635	101.6	54	73.5	270	5	20000	4820	440	790	196.5	2305
	18.8976	28.7402	5.9055	26.77	23.27	24.02	25	4	2.13	2.89	10.63	0.2	4500000	1080000			433.2	
29496EM	480	850	224	780	625	662	700	161.5	88	108	280	8	35800	9320	360	720	493.1	6335
	18.8976	33.4646	8.8189	30.71	24.61	26.06	27.56	6.36	3.46	4.25	11.02	0.31	8040000	2090000			1087.2	
293/500EM	500	750	150	700	611	630	655	101.5	54	74	280	5	20500	4840	430	760	202.9	2420
	19.685	29.5276	5.9055	27.56	24.06	24.8	25.79	4	2.13	2.91	11.02	0.2	4620000	1090000			447.4	
294/500EM	500	870	224	779	620	677	712	163	95.5	118	293	8	42370	10360	320	700	544	7070
	19.685	34.252	8.8189	30.67	24.41	26.65	28.03	6.42	3.76	4.65	11.54	0.31	9525000	2328000			1200	
293/530EM	530	800	160	745	648	670	697	112.3	58	76	295	6	24100	5600	390	720	251.1	3220
	20.8661	31.4961	6.2992	29.33	25.51	26.38	27.44	4.42	2.28	2.99	11.61	0.24	5410000	1260000			553.6	
294/530EM	530	920	236	823	657	716	753	171.4	93.7	124	310	8	47120	11440	300	660	609.5	8830
	20.8661	36.2205	9.2913	32.4	25.87	28.19	29.65	6.75	3.69	4.88	12.21	0.31	10593000	2572000			1343.8	
293/560EM	560	850	175	790	690	712	740	119.1	63	85	310	6	26600	6180	370	680	309.8	4055
	22.0472	33.4646	6.8898	31.1	27.17	28.03	29.13	4.69	2.48	3.35	12.21	0.24	5990000	1390000			683	
294/560EM	560	980	250	876	693	759	798.1	183.2	106.5	134	328	10	54370	13010	280	620	744.1	11425
	22.0472	38.5827	9.8425	34.89	27.28	29.88	31.42	7.21	4.19	6.28	12.91	0.39	12222000	2926000			1640.4	
292/600EM	600	800	122	750	677	699	718	82.9	40.6	64	322	4	21920	4370	400	680	152	2355
	23.622	31.4961	4.8031	29.53	26.65	27.52	28.27	3.26	1.598	2.52	12.68	0.16	4927000	981600			335.1	
293/600EM	600	900	180	840	720	751	780	127.3	65	89	335	6	32700	7380	330	640	361.1	5465
	23.622	35.4331	7.0946	33.07	28.35	29.57	30.71	5.01	2.56	3.5	13.19	0.24	7360000	1660000			796.2	
294/600EM	600	1030	258	922	744	805	847.1	186	107	134	351	10	57530	13840	260	590	822.3	13750
	23.622	40.5512	10.1575	36.3	29.29	31.69	33.35	7.32	4.21	5.28	13.82	0.39	12933000	3112000			1814.1	
292/630EM	630	850	132	796	712	759	738	90.3	43.9	71.5	338	5	25800	5040	380	650	195	3090
	24.803	33.4646	5.1968	31.34	28.03	29.88	29.06	3.56	1.73	2.82	13.31	0.2	5800000	1133000			430	
294/630EM	630	1090	280	975	780	849	893.1	203.1	114.2	146	367	10	65910	15640	240	560	1011.5	17420
	24.803	42.9134	11.0236	38.39	30.71	33.43	35.16	8	4.5	5.75	14.45	0.39	14816000	3515000			2230.1	
292/670EM	670	900	140	865	773	792	813	89.5	44	73	363	5	22000	4290	410	610	218.5	2790
	26.378	35.4331	5.5118	34.06	30.43	31.18	32.01	3.52	1.73	2.87	14.29	0.2	4940000	965000			481.8	

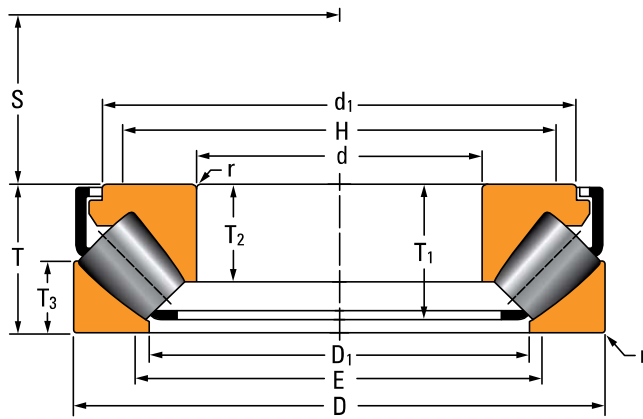
⁽¹⁾Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾Centrifugal force constant for induced thrust load calculation found on page 21.

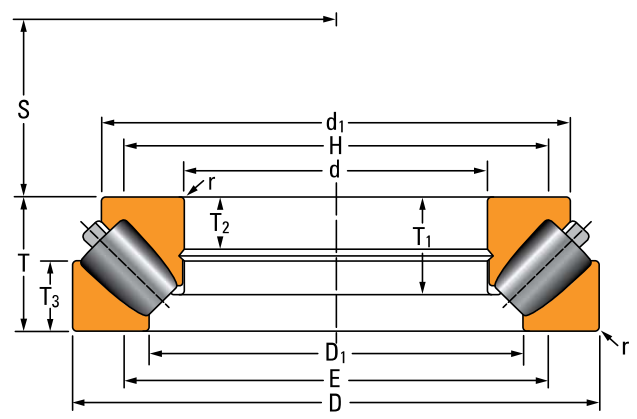
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THRUST BEARING DATA

THRUST SPHERICAL ROLLER BEARINGS – TYPE TSR-EJ AND TYPE TSR-EM



Type TSR-EJ



Type TSR-EM

Continued from previous page.

Bearing Number	Bearing Dimensions					Shoulder Diameter		Mounting Dimensions					Load Rating		Thermal Speed Rating	Limiting Speed	Bearing Weight	K _c ⁽²⁾
	Bore	O.D.	Width	Inner Ring O.D.	Outer Ring Bore	Housing (Max.)	Shaft (Min.)	T ₁	T ₂	T ₃	S	Fillet ⁽¹⁾ Radius (Max.)	Static Load Rating	Dynamic Load Rating				
	d	D	T	d ₁	D ₁	E	H						C ₁₀	C _a				
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf.	kN lbf.	RPM	RPM	kg lbs.		
292/670EJ	670 26.378	900 35.4331	140 5.5118	838.2 33	773 30.43	792 31.18	813 32.01	111.1 4.37	94 3.7	73 2.87	363 14.29	5 0.2	23100 5190000	4450 1000000	370	610	224 493.7	2925
294/670EM	670 26.378	1150 45.2756	290 11.4173	1029 40.51	830 32.68	899 35.39	946 37.24	209.3 8.24	118 4.65	150 5.91	391 15.39	12 0.47	71970 16179000	17030 3829000	230	530	1159.4 2538.3	21420
294/710EM	710 27.9528	1220 48.0315	308 12.126	1092 42.99	879 34.61	953 37.52	1003 39.49	222.6 8.76	122.7 4.83	160 6.3	414 16.3	12 0.47	81300 18276000	19060 4284000	210	500	1379.3 3040.8	27180
293/750EM	750 29.5276	1120 44.0945	224 8.8189	1028 40.47	884 34.8	930 36.61	966 38.03	156.4 6.16	83.3 3.28	117 4.61	418 16.46	8 0.32	55860 12557000	11770 2647000	240	510	699.6 1542.2	14010
294/750EM	750 29.5276	1280 50.3937	315 12.4016	1146 45.12	929 36.58	1002 39.45	1054 41.5	226.8 8.93	130.2 5.13	163 6.42	439 17.28	12 0.47	87900 19761000	20560 4621000	200	470	1537 3388.4	32685
294/800EM	800 31.4961	1360 53.5433	335 13.189	1219 47.99	988 38.9	1067 42.01	1122 44.17	241.6 9.51	131.5 5.18	173.5 6.83	467 18.39	12 0.47	98280 22094000	22700 5104000	190	440	1836 4048	40935
294/850EM	850 33.4646	1440 56.6929	354 13.9402	1290 50.79	1053 41.46	1131 44.53	1190 46.85	253.1 9.96	139.8 5.51	181 7.13	495 19.49	12 0.47	109310 24574000	25250 5677000	170	420	2156 4753	51670
294/850EJ	850 33.4646	1440 56.6929	354 13.9402	1294 50.95	1045 41.14	1129 44.5	1171.1 46.11	309.5 12.18	224.7 8.85	185.5 7.3	495 19.49	12 0.47	112880 25377000	24650 5542000	170	420	2253 4969	50035
294/900EM	900 35.4331	1520 59.8425	372 14.6457	1366 53.78	1098 43.23	1194 47.01	1253 49.33	272.1 10.71	148.8 5.86	195.5 7.7	523 20.59	12 0.47	126950 28540000	27440 6168000	160	400	2561 5646	63350
294/950EM	950 37.4016	1600 62.9921	390 15.3543	1438 56.61	1162 45.75	1259 49.57	1321 52.01	284.6 11.21	155.4 6.12	204 8.03	552 21.73	12 0.47	139020 31253000	30600 6880000	150	370	2962.3 6530.8	77810
292/1000EM	1000 39.3701	1320 51.9685	190 7.4803	1242 48.9	1118 44.02	1157 45.55	1187 46.73	131.1 5.16	68.1 2.68	102 4.02	539 21.22	8 0.31	59110 13288000	10580 2379000	230	410	633.3 1396.2	15850
293/1000EM	1000 39.3701	1460 57.4803	276 10.8661	348 53.07	162 45.75	1268 49.92	1224 48.19	275.8 10.86	104.3 4.11	144.5 5.69	561 22.09	10 0.39	94280 21194000	18520 4163000	140	390	1426 3144	37215
294/1000EM	1000 39.3701	1670 65.748	402 15.8268	1501 59.09	1225 48.23	1319 51.93	1385.1 54.53	289.9 11.41	162 6.38	208.5 8.21	580 22.84	12 0.47	148040 33280000	32590 7326000	140	360	3263.5 7194.7	91560

⁽¹⁾Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾Centrifugal force constant for induced thrust load calculation found on page 21.