

Table of Contents Thrust Bearings

INTRODUCTION	
About NSK Thrust Bearings	138
NOMENCLATURE/INTERCHANGE	
Ball Thrust Nomenclature	139
Ball Thrust Interchange	139
Spherical Thrust Nomenclature	140
Spherical Thrust Interchange	140
APPLICATION	
Ball Thrust Applications	141
Spherical Thrust Applications	141
BEARING TABLES	
Ball Thrust (51xxx)	
Bore Size 10 – 45mm	142
Bore Size 50 – 85mm	144
Bore Size 90 – 160mm	146
Spherical Thrust (29xxx)	
Bore Size 60 – 190mm	148
Bore Size 200 – 360mm	150
Bore Size 380 – 500mm	152

Introduction

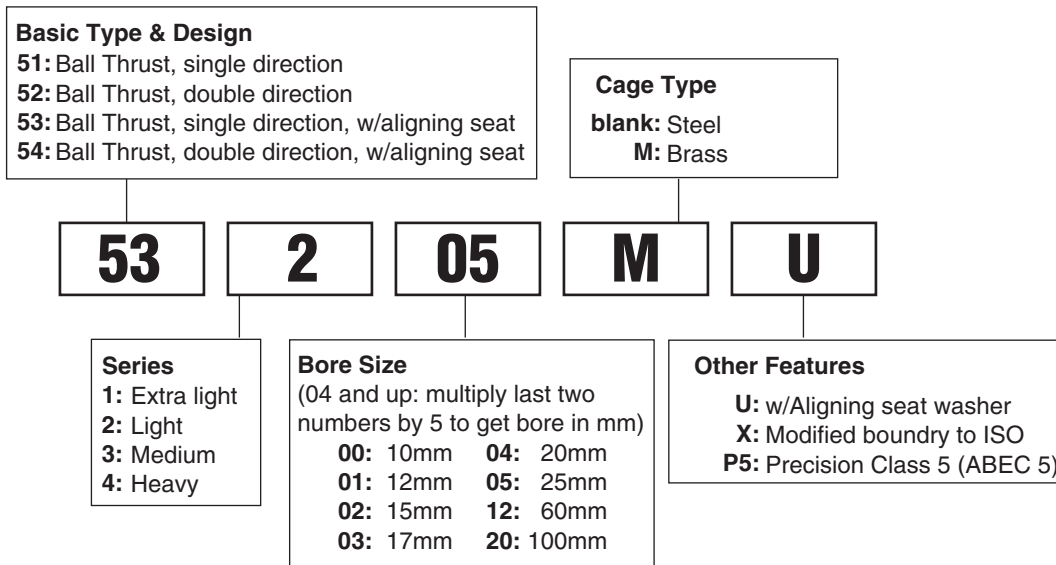
ABOUT NSK THRUST BEARINGS

- Ball Thrust Bearings
- Spherical Roller Thrust Bearings

Ball Thrust bearings are composed of washer-like bearing rings with raceway grooves for the balls. The ring attached to the shaft is called the inner ring or tight washer and the ring attached to the housing is called the outer ring or loose washer. In double direction thrust ball bearings there are three rings, with the center ring fixed to the shaft. Single direction thrust ball bearings can support axial loads in one direction only; double direction, in two. Both are available with an aligning seat and washer beneath the outer ring to compensate for shaft misalignment or deflection.

Spherical Roller Thrust bearings have a spherical raceway in the outer ring with the rollers diagonally arranged in a single row. These bearings have a very high axial load capacity and are capable of taking moderate radial loads when an axial load is imposed. Because of the configuration of their rolling elements, spherical roller thrust bearings are capable of handling misalignment and are suited for moderate speed operation.

Nomenclature — Ball Thrust Bearings

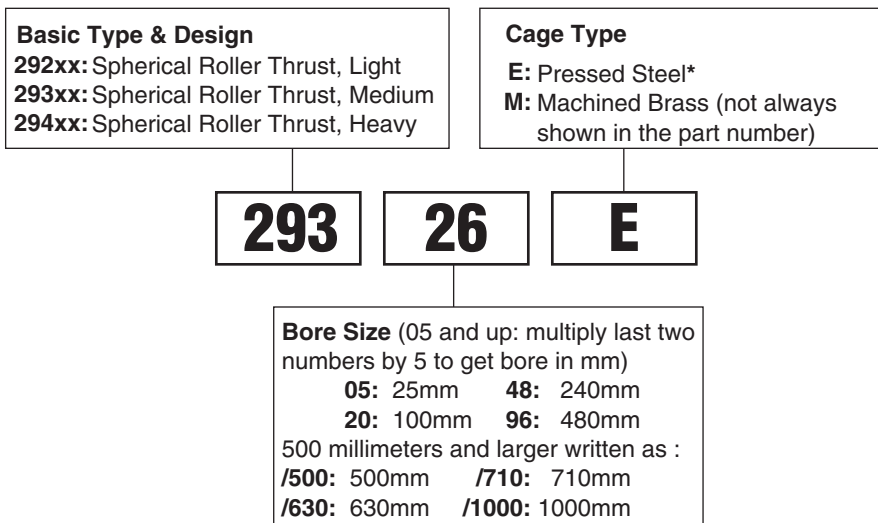


Please refer to the bearing tables for exact part number options.

Interchange — Ball Thrust Bearings

DESCRIPTION		INTERCHANGE		
		NSK	SKF	FAG
Part Number	SINGLE DIRECTION	511xx	511xx	511xx
	SINGLE DIRECTION	512xx	512xx	512xx
	SINGLE DIRECTION	513xx	513xx	513xx
	SINGLE DIRECTION	514xx	514xx	514xx
	SINGLE DIRECTION WITH ALIGNING SEAT	532xx	532xx	532xx
	SINGLE DIRECTION WITH ALIGNING SEAT	533xx	533xx	533xx
	SINGLE DIRECTION WITH ALIGNING SEAT	534xx	534xx	534xx
	DOUBLE DIRECTION	522xx	522xx	522xx
	DOUBLE DIRECTION	523xx	523xx	523xx
	DOUBLE DIRECTION	524xx	524xx	524xx
	DOUBLE DIRECTION WITH ALIGNING SEAT	542xx	542xx	542xx
	DOUBLE DIRECTION WITH ALIGNING SEAT	543xx	543xx	543xx
	DOUBLE DIRECTION WITH ALIGNING SEAT	544xx	544xx	544xx
	Suffix	STEEL CAGE	BLANK	J
BRASS CAGE		M	M	MP
BOUNDARY DIMENSIONS ADOPTED TO ISO		X	--	X
WITH SELF-ALIGNING SEAT WASHER		U	U	U
ABEC 5 PRECISION CLASS		P5	P5	P5

Nomenclature — Spherical Thrust Bearings



Please refer to the bearing tables for exact part number options.

Interchange — Spherical Thrust Bearings

DESCRIPTION		INTERCHANGE			
		NSK	SKF	FAG	Torrington
Part Number	LIGHT	292xx	292xx	292xx	292xx
	MEDIUM	293xx	293xx	293xx	293xx
	HEAVY	294xx	294xx	294xx	294xx
Suffix	STEEL CAGE	E	EJ	E	EJ
	BRASS CAGE	M	M	EMB	EM

*The "E" designation has replaced the "H." This is nomenclature change only, not a design change.

Thrust Bearings Applications

Listed below are popular applications for the two thrust bearing styles shown in this section. They are ball thrust bearings and spherical roller thrust bearings. Also available, but not shown, are cylindrical roller thrust bearings (TMP) and tapered roller thrust bearings (TT, TTF or V-Flat). Please consult an NSK representative for more information.

The ball thrust bearings are designed to handle thrust loads while operating at high speeds. These bearings can be ordered with an aligning seat and aligning washer if misalignment or deflection can not be avoided.

The spherical thrust bearings are designed to handle very heavy thrust loads in one direction while operating at low to moderate speeds. The design of the spherical thrust will also allow for some radial load while thrust load is imposed. The spherical shape of the outer ring raceway makes these bearings excellent for handling misalignment.

BALL THRUST BEARINGS

- Screw Jacks
- Machine Tool Spindle Tail Stock
- Vertical Openers
(Spinning and Weaving Machines)

SPHERICAL THRUST BEARINGS

- Deep Well Pumps
- Centrifugal Pumps
- Power Plant Preheater
- Coal Pulverizer
- Plastic Forming Equipment
- Crane Hook
- Industrial Gear Boxes
- Axial Piston Pumps



Ball Thrust Bearings

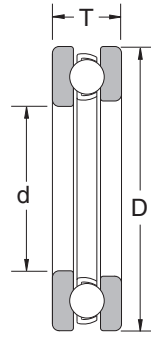
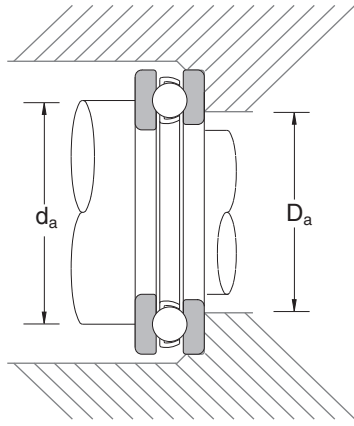
Single Direction, Flat Seat
Bore Diameter 10 – 45 mm
.3937 – 1.7717 inch

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions (inch)		
	<i>d</i>		<i>D</i>		<i>T</i>		<i>r</i> *	<i>da</i> min	<i>Da</i> max
	mm	inch	mm	inch	mm	inch			
51100	10	0.3937	24	0.9449	9	0.3543	0.012	0.709	0.630
51200	10	0.3937	26	1.0236	11	0.4331	0.024	0.788	0.630
51101	12	0.4724	26	1.0236	9	0.3543	0.012	0.788	0.709
51201	12	0.4724	28	1.1024	11	0.4331	0.024	0.867	0.709
51102	15	0.5906	28	1.1024	9	0.3543	0.012	0.906	0.867
51202	15	0.5906	32	1.2598	12	0.4724	0.024	0.985	0.867
51103	17	0.6693	30	1.1811	9	0.3543	0.012	0.985	0.867
51203	17	0.6693	35	1.3780	12	0.4724	0.024	1.103	0.946
51104	20	0.7874	35	1.3780	10	0.3937	0.012	1.143	1.024
51204	20	0.7874	40	1.5748	14	0.5512	0.024	1.261	1.103
51105	25	0.9843	42	1.6535	11	0.4331	0.024	1.379	1.261
51205	25	0.9843	47	1.8504	15	0.5906	0.024	1.497	1.340
51305	25	0.9843	52	2.0472	18	0.7087	0.039	1.615	1.418
51405	25	0.9843	60	2.3622	24	0.9449	0.039	1.812	1.537
51106	30	1.1811	47	1.8504	11	0.4331	0.024	1.576	1.458
51206	30	1.1811	52	2.0472	16	0.6299	0.024	1.694	1.537
51306	30	1.1811	60	2.3622	21	0.8268	0.039	1.891	1.655
51406	30	1.1811	70	2.7559	28	1.1024	0.039	2.128	1.812
51107	35	1.3780	52	2.0472	12	0.4724	0.024	1.773	1.655
51207	35	1.3780	62	2.4409	18	0.7087	0.039	2.009	1.812
51307	35	1.3780	68	2.6772	24	0.9449	0.039	2.167	1.891
51407	35	1.3780	80	3.1496	32	1.2598	0.039	2.443	2.088
51108	40	1.5748	60	2.3622	13	0.5118	0.024	2.049	1.891
51208	40	1.5748	68	2.6772	19	0.7480	0.039	2.246	2.009
51308	40	1.5748	78	3.0709	26	1.0236	0.039	2.482	2.167
51408	40	1.5748	90	3.5433	36	1.4173	0.039	2.758	2.364
51109	45	1.7717	65	2.5591	14	0.5512	0.024	2.246	2.088
51209	45	1.7717	73	2.8740	20	0.7874	0.039	2.443	2.206
51309	45	1.7717	85	3.3465	28	1.1024	0.039	2.719	2.403
51409	45	1.7717	100	3.9370	39	1.5354	0.039	3.073	2.640

*Maximum fillet which corner radius of bearing will clear.

Application Data

Bearing Tolerances — Table 10.25 thru Table 10.28 on page 324-326
Shaft & Housing Fits — Table 10.32 and Table 10.34 on page 329
Preload — page 335



Common Options	
53xxx	: Single Direction w/Aligning Seat
53xxxU	: Single Dir. w/Aligning Seat Washer
P5 (PA5)	: ISO 5 / ABEC 5 Precision
P6 (PA3)	: ISO 6 / ABEC 3 Precision
52xxx	: Double Direction, flat seat
54xxx	: D.D. with Aligning Seat
54xxxU	: D.D. with Aligning Seat Washer

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.)
	C_a	C_{oa}	Grease	Oil	lbs
51100	2270	3130	6.7	10.0	0.042
51200	2860	3830	6.0	9.0	0.062
51101	2330	3460	6.7	10.0	0.046
51201	2970	4270	5.6	8.5	0.068
51102	2380	3770	6.3	9.5	0.507
51202	3770	5570	5.0	7.5	0.095
51103	2570	4380	6.0	9.0	0.055
51203	3880	6120	4.8	7.5	0.110
51104	3390	5970	5.3	8.0	0.082
51204	5040	8480	4.3	6.3	0.170
51105	4430	8370	4.8	7.1	0.123
51205	6300	11300	3.8	5.6	0.245
51305	8040	13700	3.2	5.0	0.373
51405	12500	20000	2.6	4.0	0.736
51106	4630	9480	4.3	6.7	0.141
51206	6610	13100	3.4	5.3	0.302
51306	9700	17600	2.8	4.3	0.589
51406	16400	28200	2.2	3.4	1.144
51107	4960	11100	4.0	6.0	0.179
51207	8920	17500	3.0	4.5	0.463
51307	12500	23500	2.4	3.8	0.851
51407	19700	34800	2.0	3.0	1.695
51108	6100	14100	3.6	5.3	0.265
51208	10600	22000	2.8	4.3	0.595
51308	15600	30200	2.2	3.4	1.182
51408	23100	42100	1.7	2.6	2.425
51109	6300	15500	3.4	5.0	0.313
51209	10800	23500	2.6	4.0	0.683
51309	18000	36800	2.0	3.0	1.482
51409	28600	55300	1.6	2.4	3.219

C_a = Dynamic Axial Load Rating
 C_{oa} = Static Axial Load Rating

Introduction

Ball Bearings

Cylindrical Roller Bearings

Spherical Roller Bearings

Tapered Roller Bearings

Thrust Bearings

Split Pillow Blocks

Super Precision Bearings

Linear Motion

Rolling Mill Bearings

Engineering Section



Ball Thrust Bearings

Single Direction, Flat Seat (continued)

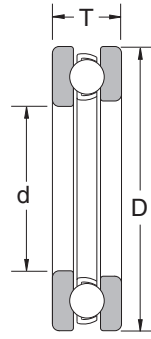
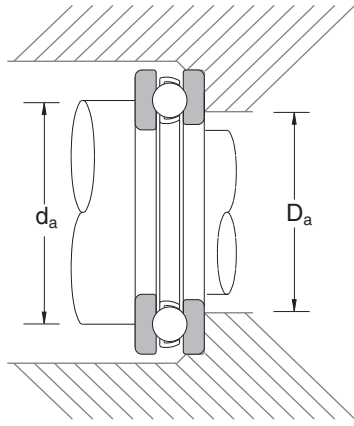
Bore Diameter 50 – 85 mm
1.9685 – 3.3465 inch

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions (inch)		
	<i>d</i>		<i>D</i>		<i>T</i>		<i>r</i> *	<i>da</i> min	<i>Da</i> max
	mm	inch	mm	inch	mm	inch			
51110	50	1.9685	70	2.7559	14	0.5512	0.024	2.443	2.285
51210	50	1.9685	78	3.0709	22	0.8661	0.039	2.640	2.403
51310	50	1.9685	95	3.7402	31	1.2205	0.039	3.034	2.679
51410	50	1.9685	110	4.3307	43	1.6929	0.059	3.388	2.916
51111	55	2.1654	78	3.0709	16	0.6299	0.024	2.719	2.522
51211	55	2.1654	90	3.5433	25	0.9843	0.039	2.994	2.719
51311	55	2.1654	105	4.1339	35	1.3780	0.039	3.349	2.955
51411	55	2.1654	120	4.7244	48	1.8898	0.059	3.704	3.191
51112	60	2.3622	85	3.3465	17	0.6693	0.039	2.955	2.758
51212	60	2.3622	95	3.7402	26	1.0236	0.039	3.191	2.916
51312	60	2.3622	110	4.3307	35	1.3780	0.039	3.546	3.152
51412	60	2.3622	130	5.1181	51	2.0079	0.059	4.019	3.467
51113	65	2.5591	90	3.5433	18	0.7087	0.039	3.152	2.955
51213	65	2.5591	100	3.9370	27	1.0630	0.039	3.388	3.113
51313	65	2.5591	115	4.5276	36	1.4173	0.039	3.743	3.349
51413	65	2.5591	140	5.5118	56	2.2047	0.079	4.334	3.743
51114	70	2.7559	95	3.7402	18	0.7087	0.039	3.349	3.152
51214	70	2.7559	105	4.1339	27	1.0630	0.039	3.585	3.310
51314	70	2.7559	125	4.9213	40	1.5748	0.039	4.058	3.625
51414	70	2.7559	150	5.9055	60	2.3622	0.079	4.649	4.019
51115	75	2.9528	100	3.9370	19	0.7480	0.039	3.546	3.349
51215	75	2.9528	110	4.3307	27	1.0630	0.039	3.782	3.507
51315	75	2.9528	135	5.3150	44	1.7323	0.059	4.373	3.901
51415	75	2.9528	160	6.2992	65	2.5591	0.079	4.925	4.334
51116	80	3.1496	105	4.1339	19	0.7480	0.039	3.743	3.546
51216	80	3.1496	115	4.5276	28	1.1024	0.039	3.979	3.704
51316	80	3.1496	140	5.5118	44	1.7323	0.059	4.570	4.098
51416	80	3.1496	170	6.6929	68	2.6772	0.079	5.240	4.610
51117	85	3.3465	110	4.3307	19	0.7480	0.039	3.940	3.743
51217	85	3.3465	125	4.9213	31	1.2205	0.039	4.295	3.979
51317	85	3.3465	150	5.9055	49	1.9291	0.059	4.886	4.373
51417 X	85	3.3465	180	7.0866	72	2.8346	0.079	5.555	4.886

*Maximum fillet which corner radius of bearing will clear.

Application Data

Bearing Tolerances — Table 10.25 thru Table 10.28 on page 324-326
 Shaft & Housing Fits — Table 10.32 and Table 10.34 on page 329
 Preload — page 335



Common Options	
53xxx	: Single Direction w/Aligning Seat
53xxxU	: Single Dir. w/Aligning Seat Washer
P5 (PA5)	: ISO 5 / ABEC 5 Precision
P6 (PA3)	: ISO 6 / ABEC 3 Precision
52xxx	: Double Direction, flat seat
54xxx	: D.D. with Aligning Seat
54xxxU	: D.D. with Aligning Seat Washer

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.)
	C_a	C_{oa}	Grease	Oil	lbs
51110	6530	17000	3.2	4.8	0.34
51210	11000	25100	2.4	3.6	0.83
51310	21900	45400	1.8	2.8	2.05
51410	33100	64800	1.4	2.2	4.28
51111	7940	20900	2.8	4.3	0.50
51211	15800	35700	2.2	3.2	1.32
51311	26000	54900	1.6	2.4	2.89
51411	40800	78300	1.3	1.9	5.69
51112	9370	25400	2.6	4.0	0.62
51212	16100	37900	2.0	3.0	1.48
51312	26700	59100	1.6	2.4	3.09
51412	45400	89300	1.2	1.8	6.97
51113	9480	26500	2.4	3.8	0.71
51213	17000	42300	1.9	2.8	1.67
51313	27600	63300	1.5	2.4	3.40
51413	52500	111000	1.1	1.7	9.04
51114	9810	28400	2.4	3.6	0.76
51214	16600	42300	1.9	2.8	1.75
51314	30900	70500	1.4	2.0	4.41
51414	56700	125000	1.0	1.5	11.13
51115	9810	29500	2.2	3.4	0.86
51215	17500	47000	1.8	2.8	1.86
51315	35700	82700	1.3	1.9	5.73
51415	57100	126000	1.0	1.4	13.56
51116	10100	31700	2.2	3.4	0.92
51216	17700	49200	1.8	2.6	2.05
51316	36800	88200	1.3	1.9	6.04
51416	61300	140000	0.9	1.3	15.90
51117	10400	33700	2.2	3.2	0.97
51217	21600	59300	1.6	2.4	2.69
51317	46500	110000	1.1	1.7	7.87
51417 X	69400	170000	0.9	1.3	18.76

C_a = Dynamic Axial Load Rating
 C_{oa} = Static Axial Load Rating

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Ball Thrust Bearings

Single Direction, (continued)

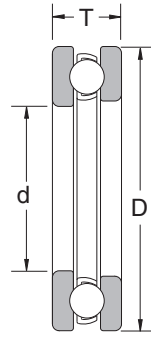
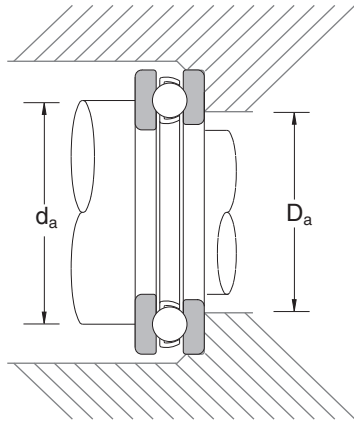
Bore Diameter 90 – 160 mm
3.5433 – 6.2992 inch

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions (inch)		
	<i>d</i>		<i>D</i>		<i>T</i>		<i>r</i> *	<i>da</i> min	<i>Da</i> max
	mm	inch	mm	inch	mm	inch			
51118	90	3.5433	120	4.7244	22	0.8661	0.039	4.255	4.019
51218	90	3.5433	135	5.3150	35	1.3780	0.039	4.610	4.255
51318	90	3.5433	155	6.1024	50	1.9685	0.059	5.083	4.570
51418 X	90	3.5433	190	7.4803	77	3.0315	0.079	5.871	5.161
51120	100	3.9370	135	5.3150	25	0.9843	0.039	4.767	4.492
51220	100	3.9370	150	5.9055	38	1.4961	0.039	5.122	4.728
51320	100	3.9370	170	6.6929	55	2.1654	0.059	5.595	5.043
51420 X	100	3.9370	210	8.2677	85	3.3465	0.099	6.501	5.713
51122	110	4.3307	145	5.7087	25	0.9843	0.039	5.161	4.886
51222	110	4.3307	160	6.2992	38	1.4961	0.039	5.516	5.122
51322 X	110	4.3307	190	7.4803	63	2.4803	0.079	6.225	5.595
51422 X	110	4.3307	230	9.0551	95	3.7402	0.099	7.131	6.265
51124	120	4.7244	155	6.1024	25	0.9843	0.039	5.555	5.280
51224	120	4.7244	170	6.6929	39	1.5354	0.039	5.910	5.516
51324 X	120	4.7244	210	8.2677	70	2.7559	0.079	6.816	6.186
51424 X	120	4.7244	250	9.8425	102	4.0157	0.118	7.722	6.856
51126	130	5.1181	170	6.6929	30	1.1811	0.039	6.068	5.752
51226 X	130	5.1181	190	7.4803	45	1.7717	0.059	6.540	6.068
51326 X	130	5.1181	225	8.8583	75	2.9528	0.079	7.328	6.659
51426 X	130	5.1181	270	10.6299	110	4.3307	0.118	8.353	7.407
51128 X	140	5.5118	200	7.8740	31	1.2205	0.039	6.462	6.146
51228 X	140	5.5118	240	9.4488	46	1.8110	0.059	6.934	6.462
51328 X	140	5.5118	280	11.0236	80	3.1496	0.079	7.841	7.131
51428 X	140	5.5118	160	6.2992	112	4.4094	0.118	8.747	7.801
51130 X	150	5.9055	190	7.4803	31	1.2205	0.039	6.856	6.540
51230 X	150	5.9055	215	8.4646	50	1.9685	0.059	7.447	6.934
51330 X	150	5.9055	250	9.8425	80	3.1496	0.079	8.235	7.525
51430 X	150	5.9055	300	11.8110	120	4.7244	0.118	9.377	8.353
51132 X	160	6.2992	200	7.8740	31	1.2205	0.039	7.250	6.934
51232 X	160	6.2992	225	8.8583	51	2.0079	0.059	7.841	7.329
51332 X	160	6.2992	270	10.6299	87	3.4252	0.099	8.865	8.077
51432 X	160	6.2992	320	12.5984	130	5.1181	0.158	10.008	8.904

*Maximum fillet which corner radius of bearing will clear.

Application Data

Bearing Tolerances — Table 10.25 thru Table 10.28 on page 324-326
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 Preload — page 335



Common Options	
53xxx	: Single Direction w/Aligning Seat
53xxxU	: Single Dir. w/Aligning Seat Washer
P5 (PA5)	: ISO 5 / ABEC 5 Precision
P6 (PA3)	: ISO 6 / ABEC 3 Precision
52xxx	: Double Direction, flat seat
54xxx	: D.D. with Aligning Seat
54xxxU	: D.D. with Aligning Seat Washer

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.)
	C_a	C_{oa}	Grease	Oil	lbs
51118	13600	42800	1.9	3.0	1.42
51218	25600	69400	1.4	2.2	3.73
51318	48300	118000	1.1	1.7	8.44
51418 X	73900	185000	8.0	1.2	22.49
51120	19300	60200	1.7	2.6	2.12
51220	30200	84900	1.3	2.0	4.96
51320	53600	134000	1.0	1.5	10.98
51420 X	83800	220000	7.1	1.1	32.63
51122	19700	64800	1.7	2.4	2.29
51222	30600	88200	1.3	1.9	5.34
51322 X	63500	170000	9.0	1.3	15.83
51422 X	92600	260000	6.3	1.0	44.09
51124	20200	69400	1.6	2.4	2.47
51224	31700	97000	1.2	1.8	5.93
51324 X	73900	209000	8.0	1.2	21.39
51424 X	108000	313000	6.0	0.9	57.76
51126	23600	79400	1.4	2.0	3.70
51226 X	41200	123000	1.1	1.6	8.71
51326 X	78300	231000	7.5	1.1	26.68
51426 X	118000	357000	5.3	0.8	71.21
51128 X	24300	84900	1.3	2.0	4.03
51228 X	41700	130000	1.0	1.5	9.48
51328 X	82700	254000	6.7	1.0	34.39
51428 X	125000	392000	5.3	0.8	76.50
51130 X	24700	90400	1.3	1.9	4.28
51230 X	53600	165000	9.5	1.4	12.15
51330 X	86000	271000	6.7	1.0	36.82
51430 X	139000	452000	4.8	0.7	95.90
51132 X	25400	95900	1.2	1.9	4.54
51232 X	56000	181000	9.0	1.4	13.32
51332 X	101000	331000	6.0	0.9	47.40
51432 X	146000	498000	4.5	0.7	116.20

C_a = Dynamic Axial Load Rating
 C_{oa} = Static Axial Load Rating

Introduction

Ball Bearings

Cylindrical Roller Bearings

Spherical Roller Bearings

Tapered Roller Bearings

Thrust Bearings

Split Pillow Blocks

Super Precision Bearings

Linear Motion

Rolling Mill Bearings

Engineering Section



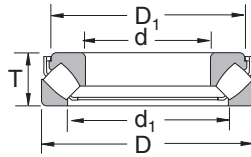
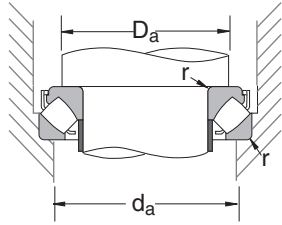
Spherical Roller Thrust Bearings

Bore Diameter 60 – 190 mm
2.3622 – 7.4803 inch

Bearing Number	Nominal Bearing Dimensions								
	<i>d</i>		<i>D</i>		<i>T</i>		<i>d₁</i>	<i>D₁</i>	<i>C</i>
	mm	inch	mm	inch	mm	inch	inch	inch	inch
29412 E	60	2.3622	130	5.1181	42	1.6535	4.508	3.504	0.787
29413 E	65	2.5591	140	5.5118	45	1.7717	4.783	3.661	0.866
29414 E	70	2.7559	150	5.9055	48	1.8898	5.177	4.016	0.945
29415 E	75	2.9528	160	6.2992	51	2.0079	5.433	4.213	0.984
29416 E	80	3.1496	170	6.6929	54	2.1260	5.827	4.508	1.063
29317 E	85	3.3465	150	5.9055	39	1.5354	5.295	4.409	0.748
29417 E	85	3.3465	180	7.0866	58	2.2935	6.161	4.882	1.102
29318 E	90	3.5433	150	6.1024	39	1.5354	5.492	4.646	0.748
29418 E	90	3.5433	190	7.4803	60	2.3622	6.516	5.098	1.142
29320 E	100	3.9370	170	6.6929	42	1.6535	5.984	5.039	0.819
29420 E	100	3.9370	210	8.2677	67	2.6378	7.293	5.669	1.299
29322 E	110	4.3307	190	7.4803	48	1.8898	6.673	5.610	0.945
29422 E	110	4.3307	230	9.0551	73	2.8740	7.874	6.181	1.417
29324 E	120	4.7244	210	8.2677	54	2.1260	7.382	6.161	1.063
29424 E	120	4.7244	250	9.8425	78	3.0709	8.465	6.732	1.496
29326 E	130	5.1181	225	8.8583	58	2.2835	8.012	6.634	1.102
29426 E	130	5.1181	270	10.6299	85	3.3465	9.252	7.293	1.654
29328 E	140	5.5118	240	9.4488	60	2.3622	8.524	7.047	1.181
29428 E	140	5.5118	280	11.0236	85	3.3465	9.626	7.697	1.654
29330 E	150	5.9055	250	9.9425	60	2.3622	8.819	7.480	1.142
29430 E	150	5.9055	300	11.8110	90	3.5433	10.472	8.228	1.732
29332 E	160	6.2992	270	10.6299	67	2.6378	9.567	7.992	1.299
29432 E	160	6.2992	320	12.5984	95	3.7402	10.945	8.839	1.811
29334 E	170	6.6929	280	11.0236	67	2.6378	9.921	8.445	1.260
29434	170	6.6929	340	13.3958	103	4.0551	12.205	9.567	1.969
29336 E	180	7.0866	300	11.8110	73	2.8740	10.630	8.937	1.417
29436	180	7.0866	360	14.1732	109	4.2913	12.992	10.039	2.047
29338 E	190	7.4803	320	12.5984	78	3.0709	11.358	9.606	1.496
29438	190	7.4803	380	14.9606	115	4.5276	13.583	10.669	2.165

Application Data

Bearing Tolerances — Table 10.25 thru Table 10.28 on page 324-326
 Shaft & Housing Fits — Table 10.32 and Table 10.34 on page 329
 Preload — page 335



Common Options	
E*	: Stamped Steel Cage
M†	: Machined Brass Cage
†May not be shown in part number	
*The "E" designation has replaced the "H." This is a nomenclature change only, not a design change.	

Bearing Number	Preferred Shoulder Diameters (inch)			Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)	Bearing Weight (Approx.)
	r^*	D_a min	d_a min	C_a	C_{oa}	Oil	lbs
29412 E	0.059	3.543	4.252	74500	199000	2.6	5.60
29413 E	0.079	3.937	4.528	91000	247000	2.4	7.05
29414 E	0.079	4.134	4.921	102000	279000	2.2	8.60
29415 E	0.079	4.528	5.197	116000	322000	2.2	10.30
29416 E	0.079	4.724	5.512	129000	360000	2.0	12.20
29317 E	0.059	4.528	5.315	74500	234000	2.2	5.95
29417 E	0.079	5.118	5.906	142000	396000	1.9	14.40
29318 E	0.059	4.724	5.512	78500	243000	2.2	6.25
29418 E	0.079	5.315	6.181	156000	438000	1.8	16.60
29320 E	0.059	5.118	5.906	92000	288000	2.0	7.95
29420 E	0.098	5.906	6.890	189000	540000	1.6	22.70
29322 E	0.079	5.709	6.496	120000	384000	1.8	11.60
29422 E	0.098	6.496	7.480	227000	659000	1.4	29.30
29324 E	0.079	6.299	7.087	144000	472000	1.6	16.10
29424 E	0.118	7.087	8.071	262000	764000	1.4	36.50
29326 E	0.079	6.693	7.677	166000	551000	1.5	19.70
29426 E	0.118	7.677	8.858	298000	877000	1.2	46.50
29328 E	0.079	7.283	8.071	189000	632000	1.4	22.90
29428 E	0.118	8.071	9.252	310000	944000	1.2	49.00
29330 E	0.079	7.677	8.465	196000	652000	1.4	23.80
29430 E	0.118	8.661	9.843	355000	1100000	1.1	60.00
29332 E	0.098	8.768	9.252	226000	764000	1.3	31.50
29432 E	0.157	9.055	10.433	390000	1210000	1.1	70.80
29334 E	0.098	8.661	9.646	235000	787000	1.2	32.50
29434	0.157	9.646	11.220	375000	1300000	0.1	96.00
29336 E	0.098	9.252	10.236	277000	944000	1.1	42.50
29436	0.157	10.236	11.811	420000	1460000	0.9	115.00
29338 E	0.118	9.843	10.827	310000	1060000	1.0	50.50
29438	0.157	10.827	12.598	475000	1670000	0.9	132.00

*Maximum fillet which corner radius of bearing will clear.

C_a = Dynamic Axial Load Rating
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Introduction
 Ball Bearings
 Cylindrical Roller Bearings
 Spherical Roller Bearings
 Tapered Roller Bearings
 Thrust Bearings
 Split Pillow Blocks
 Super Precision Bearings
 Linear Motion
 Rolling Mill Bearings
 Engineering Section



Spherical Roller Thrust Bearings

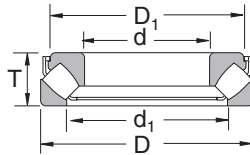
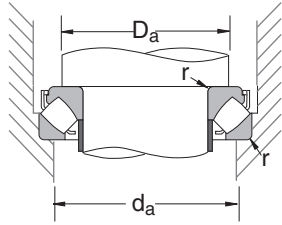
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Bore Diameter 200 – 360 mm
7.8740– 14.1732 inch

Bearing Number	Nominal Bearing Dimensions								
	<i>d</i>		<i>D</i>		<i>T</i>		<i>d_I</i>	<i>D_I</i>	<i>C</i>
	mm	inch	mm	inch	mm	inch	inch	inch	inch
29240	200	7.8740	280	11.0236	48	1.8898	10.472	9.291	0.945
29340 E	200	7.8740	340	13.3858	85	3.3465	12.067	10.118	1.614
29440	200	7.8740	400	15.7480	122	4.8031	14.370	11.024	2.323
29244	220	8.6614	300	11.8110	48	1.8898	11.220	10.000	0.945
29344	220	8.6614	360	14.1732	85	3.3465	13.189	11.024	1.614
29444	220	8.6614	420	16.5354	122	4.8031	15.157	12.126	2.283
29248	240	9.4488	340	13.3858	60	2.3622	12.795	11.142	1.181
29348	240	9.4488	380	14.9606	85	3.3465	13.976	11.811	1.614
29448	240	9.4488	440	17.3228	122	4.8031	15.945	12.835	2.323
29252	260	10.2362	360	14.1732	60	2.3622	13.583	11.890	1.181
29352	260	10.2362	420	16.5354	95	3.7402	15.354	12.953	1.772
29452	260	10.2362	480	18.8976	132	5.1969	17.520	14.055	2.520
29256	280	11.0236	380	14.9606	60	2.3622	14.370	12.717	1.181
29356	280	11.0236	440	17.3228	95	3.7402	18.898	15.118	1.811
29456	280	11.0236	520	20.4724	145	5.7087	18.898	15.118	2.677
29260	300	11.8110	420	16.9540	73	2.8740	15.748	13.898	1.496
29360	300	11.8110	480	18.8976	109	4.2913	17.717	14.921	1.969
29460	300	11.8110	540	21.2598	145	5.7087	19.685	15.827	2.756
29264	320	12.5984	440	17.3228	73	2.8740	16.535	14.646	1.496
29364	320	12.5984	500	19.6850	109	4.2913	18.504	15.709	2.087
29464	320	12.5984	580	22.8346	155	6.1024	21.850	17.165	2.953
29268	340	13.3858	460	11.1102	73	2.8740	17.323	15.551	1.457
29368	340	13.3858	540	21.2598	122	4.8031	20.079	16.850	2.323
29468	340	13.3858	620	24.4094	170	6.6929	23.228	18.189	3.228
29272	360	14.1732	500	19.6850	85	3.3465	18.898	16.654	1.732
29372	360	14.1732	560	22.0472	122	4.8031	20.669	17.638	2.323
29472	360	14.1732	640	25.1969	170	6.6929	24.016	18.898	3.228

Application Data

Bearing Tolerances — Table 10.25 thru Table 10.28 on page 324-326
 Shaft & Housing Fits — Table 10.32 and Table 10.34 on page 329
 Preload — page 335



Common Options	
E*	: Stamped Steel Cage
M†	: Machined Brass Cage
†May not be shown in part number	
*The "E" designation has replaced the "H." This is a nomenclature change only, not a design change.	

Bearing Number	Preferred Shoulder Diameters (inch)			Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)	Bearing Weight (Approx.)
	r^*	D_a min	d_a min	C_a	C_{oa}	Oil	lbs
29240	0.079	9.252	10.039	121000	519000	1.5	18.80
29340 E	0.118	10.433	11.614	355000	1230000	1.0	63.00
29440	0.157	11.417	13.189	515000	1830000	0.8	152.00
29244	0.079	10.236	10.827	126000	562000	1.40	20
29344	0.118	11.220	12.402	302000	1170000	0.95	73
29444	0.197	12.205	13.976	530000	1940000	0.80	163
29248	0.079	11.220	12.008	180000	776000	1.20	37
29348	0.118	11.811	12.992	305000	1210000	0.90	79
29448	0.197	12.992	14.764	545000	2050000	0.75	174
29252	0.079	12.008	12.795	192000	866000	1.20	40
29352	0.157	12.992	14.370	382000	1530000	0.80	107
29452	0.197	14.173	15.945	634000	2410000	0.71	231
29256	0.079	12.795	13.583	199000	922000	1.10	42
29356	0.157	13.780	15.354	411000	1720000	0.80	116
29456	0.197	15.354	17.323	764000	2950000	0.63	291
29260	0.098	13.976	14.961	261000	1160000	0.95	66
29160	0.157	14.961	16.535	492000	2050000	0.71	163
29460	0.197	16.142	18.110	787000	3080000	0.60	310
29264	0.098	14.764	15.748	268000	1230000	0.95	71.5
29364	0.157	15.748	17.323	501000	2110000	0.67	170
29464	0.236	17.126	19.488	821000	3300000	0.56	385
29268	0.098	15.551	16.535	277000	1290000	0.90	74
29368	0.157	16.929	18.504	593000	2520000	0.63	227
29468	0.236	18.307	20.866	989000	3910000	0.53	480
29272	0.118	16.535	17.913	348000	1640000	0.80	112
29372	0.157	17.717	19.488	600000	2590000	0.60	236
29472	0.236	19.094	21.654	944000	3870000	0.50	505

*Maximum fillet which corner radius of bearing will clear.

C_a = Dynamic Axial Load Rating
 C_{oa} = Static Axial Load Rating

Introduction
 Ball Bearings
 Cylindrical Roller Bearings
 Spherical Roller Bearings
 Tapered Roller Bearings
 Thrust Bearings
 Split Pillow Blocks
 Super Precision Bearings
 Linear Motion
 Rolling Mill Bearings
 Engineering Section



Spherical Roller Thrust Bearings

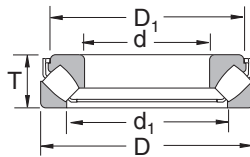
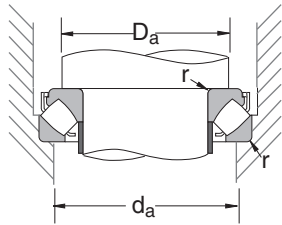
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Bore Diameter 380 – 500 mm
14.9606 – 19.6850 inch

Bearing Number	Nominal Bearing Dimensions								
	<i>d</i>		<i>D</i>		<i>H</i>		<i>d_I</i>	<i>D_I</i>	<i>C</i>
	mm	inch	mm	inch	mm	inch	inch	inch	inch
29276	380	14.9606	520	20.4724	85	3.3465	19.528	17.362	1.654
29376	380	14.9606	600	23.6220	132	5.1969	22.362	18.780	2.480
29476	380	14.9606	670	26.3780	175	6.8898	25.197	19.843	3.346
29280	400	15.7480	540	21.2598	85	3.3465	20.354	18.110	1.654
29380	400	15.7480	620	24.4094	132	5.1969	23.228	19.449	2.520
29480	400	15.7480	710	27.9528	185	7.2935	26.772	21.102	3.504
29284	420	16.5354	580	22.8346	95	3.7402	21.772	19.252	1.811
29384	420	16.5354	650	25.5906	140	5.5118	24.409	20.472	2.677
29484	420	16.5354	730	28.7402	185	7.2835	27.559	21.890	3.504
29288	440	17.3228	600	23.6220	95	3.7402	22.638	20.000	1.929
29388	440	17.3228	680	26.7717	145	5.7087	25.394	12.575	2.756
29488	440	17.3228	780	30.7087	206	8.1102	29.331	23.150	3.937
29292	460	18.1102	620	24.4094	95	3.7402	23.307	20.866	1.811
29392	460	18.1102	710	27.9528	150	5.9055	26.220	22.323	2.835
29492	460	18.1102	800	31.4961	206	8.1102	30.118	23.937	3.937
29296	480	18.8976	650	25.5906	103	4.0551	24.567	21.890	2.165
29396	480	18.8976	730	28.7402	150	5.9055	27.165	23.228	2.835
29496	480	18.8976	850	33.4646	224	8.8189	31.890	25.118	4.252
292/500	500	19.6850	670	26.3780	103	4.0551	25.394	22.598	2.165
293/500	500	19.6850	750	29.5276	150	5.9055	28.150	24.055	2.913
294/500	500	19.6850	870	34.2520	224	8.8189	32.677	26.024	4.213

Application Data

Bearing Tolerances — Table 10.25 thru Table 10.28 on page 324-326
 Shaft & Housing Fits — Table 10.32 and Table 10.34 on page 329
 Preload — page 335



Common Options

E* : Stamped Steel Cage
M† : Machined Brass Cage

†May not be shown in part number
*The "E" designation has replaced the "H." This is a nomenclature change only, not a design change.

Bearing Number	Preferred Shoulder Diameters (inch)			Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)	Bearing Weight (Approx.)
	r^*	D_a min	d_a min	C_a	C_{oa}	Oil	lbs
29276	0.118	17.323	18.701	364000	1750000	0.75	115
29376	0.197	18.898	20.669	742000	3260000	0.56	310
29476	0.236	20.079	22.638	1080000	4380000	0.48	560
29280	0.118	19.110	19.291	369000	1800000	0.75	121
20380	0.197	19.695	21.654	731000	3260000	0.53	330
29480	0.236	21.260	24.016	1210000	4970000	0.45	675
29284	0.157	19.291	20.669	452000	2200000	0.67	159
29384	0.197	20.669	22.638	787000	3530000	0.50	375
29484	0.236	22.047	24.803	1270000	5280000	0.43	710
29288	0.157	20.079	21.457	456000	2270000	0.67	170
29388	0.197	21.654	23.622	843000	3780000	0.48	420
29488	0.315	23.425	26.378	1470000	6110000	0.40	900
29292	0.157	20.866	22.441	463000	2320000	0.63	176
29392	0.197	22.638	24.803	922000	4140000	0.45	465
29492	0.315	24.213	27.165	1520000	6430000	0.38	925
29206	0.157	21.850	23.425	533000	2720000	0.60	214
29396	0.197	23.425	25.591	933000	4270000	0.45	475
29496	0.315	25.394	28.740	1620000	6970000	0.36	1200
292/500	0.157	22.638	24.213	537000	2790000	0.60	220
293/500	0.197	24.213	26.378	978000	4590000	0.45	485
294/500	0.315	26.378	29.528	1760000	7420000	0.34	1230

*Maximum fillet which corner radius of bearing will clear.

C_a = Dynamic Axial Load Rating
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Introduction

Ball Bearings

Cylindrical Roller Bearings

Spherical Roller Bearings

Tapered Roller Bearings

Thrust Bearings

Split Pillow Blocks

Super Precision Bearings

Linear Motion

Rolling Mill Bearings

Engineering Section