

# Thin-Section Deep-Groove Ball Bearings

# TIMKEN

## High Precision for Radial, Thrust and Combination Loads

For the demanding environment of satellite applications, performance and reliability are critical. Solar array panels require precise positioning control with minimal vibration and starting torque. Timken® deep-groove ball bearings provide the necessary design and accuracy to enable smooth mechanism operation. In addition, the low-profile design is ideal for smaller, lighter applications – saving space and weight.

Modern guidance systems require a highly accurate detection of position. The tight tolerances of standard Timken deep-groove ball bearings help meet the exacting specifications of these systems, enhancing overall success.

Deep-groove construction fulfills multiple application requirements. This series is designed for moderate speeds and loads in any direction. Numerous size, material and separator options are available to match specific customer needs.

Timken's advanced thin-section bearing technology gives designers of precision equipment robust solutions for compact space requirements and similar challenges.

### Thin-Section Features

**Precision tolerances** – meet ABEC 5 or 7 (ISO P5 or P4) standards for better fit with high running accuracy and consistent operation.

**Material selection** – performance options of 440C stainless steel or 52100 chrome steel offer corrosion resistance in challenging environments.

**Superfinished raceways** – provide a smooth surface finish of  $< 0.08 \mu\text{m}$  ( $3 \mu\text{in}$ ) Ra to reduce internal friction and vibration.

**High-quality ball complement** – delivers smooth rolling performance with Grade 5 or better balls optimized for minimum non-repeatable runout and low torque.

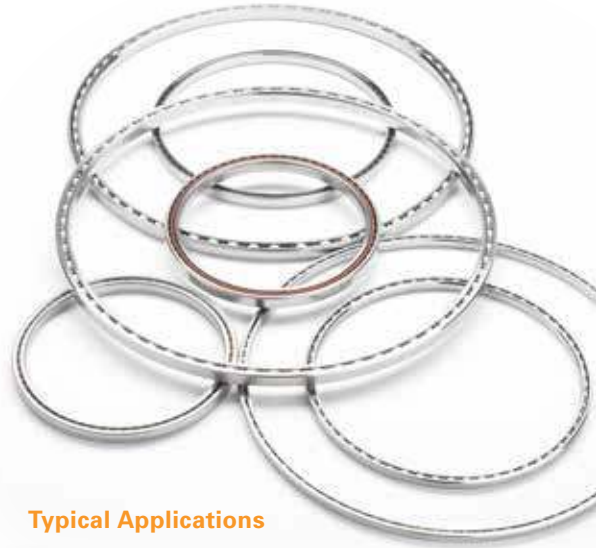
**Broad size range** – provides unique thin-section designs and superior performance up to 300 mm (12 in.) outside diameter in standard product.

**Compact size** – saves weight and space for both bearing and mating components, helping to reduce overall envelope dimensions.

**Duplexing capability** – matched pairs further increase capacity and stiffness.

**Low torque design** – minimizes friction and helps to reduce energy input requirements.

**Superior Timken quality** – More than a century of bearing expertise and continual technological advances.



### Typical Applications

- Radar Systems
- Satellites
- Medical Equipment
- Space Vehicles

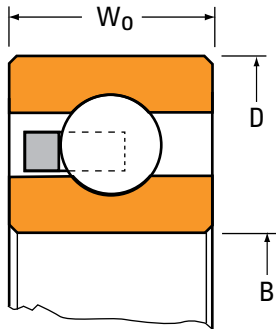
### Also Available – Thin-Section Angular Contact Ball Bearings

- Increased axial stiffness and capacity
- Higher thrust capacity in one direction



# THIN-SECTION BALL BEARINGS

## Deep-Groove Bearings



Standard thin-section deep-groove bearings are available with the following to meet your application requirements:

### Materials

- 440C stainless steel
- 52100 chrome steel

### Separators

- One-piece snap type phenolic retainer (up to chassis size 80-96)
- PTFE spacers

### Tolerances

- ABEC 5 (ISO P5)
- ABEC 7 (ISO P4)

### Preload

- None

### Mountings/Sets

- Matched bearing sets available

To learn about additional custom options, contact your Timken sales representative.

Chassis	B Bore	D O.D.	W <sub>0</sub> Width	Load Ratings				Approx. Weight
				Radial		Thrust		
	mm/in.	mm/in.	mm/in.	kg/lbs.	kg/lbs.	kg/lbs.	kg/lbs.	g/oz.
64-80	101.60	127.00	12.70	1371	1244	1048	1404	273.0
	4.000	5.000	0.500	3023	2743	2311	3095	9.6
68-76	107.95	120.65	6.35	736	470	506	532	68.5
	4.25	4.75	0.25	1623	1036	1115	1172	2.4
68-78	107.95	123.83	7.94	931	655	664	742	108.6
	4.25	4.875	0.3125	2053	1443	1463	1636	3.8
68-80	107.95	127.00	9.53	1103	845	808	951	158.2
	4.250	5.000	0.375	2433	1863	1781	2097	5.6
68-84	107.95	133.35	12.70	1483	1287	1129	1453	288.8
	4.250	5.250	0.500	3270	2838	2490	3204	10.2
72-80	114.30	127.00	6.35	370	480	535	543	72.3
	4.500	5.000	0.250	1720	1058	1180	1197	2.6
72-82	114.30	130.18	7.94	977	664	695	753	114.5
	4.500	5.125	0.3125	2154	1464	1531	1660	4.0
72-84	114.30	133.35	9.53	1169	863	853	971	166.8
	4.500	5.250	0.375	2576	1902	1880	2141	5.9
72-88	114.30	139.70	12.70	1543	1299	1170	1466	303.6
	4.500	5.500	0.500	3401	2864	2580	3233	10.7
76-84	120.65	133.35	6.35	825	490	565	554	76.1
	4.750	5.250	0.250	1818	1080	1245	1222	2.7
76-86	120.65	136.53	7.94	1023	674	726	764	120.3
	4.750	5.375	0.3125	2255	1485	1600	1684	4.2
76-88	120.65	139.70	9.53	1234	880	898	991	175.5
	4.750	5.500	0.375	2720	1940	1980	2184	6.2
76-92	120.65	146.05	12.70	1602	1310	1211	1480	318.4
	4.750	5.750	0.500	3532	2889	2670	3262	11.2
76-100	120.65	158.75	19.05	2420	2359	1925	2659	749.1
	4.750	6.250	0.750	5335	5200	4245	5861	26.4
80-88	127.00	139.70	6.35	854	494	584	559	79.8
	5.000	5.500	0.250	1884	1088	1288	1232	2.8
80-90	127.00	142.88	7.94	1091	692	772	785	126.5
	5.000	5.625	0.3125	2405	1526	1702	1730	4.5
80-92	127.00	146.05	9.53	1268	882	921	993	183.6
	5.000	5.750	0.375	2795	1945	2030	2190	6.5
80-96	127.00	152.40	12.70	1715	1350	1292	1525	334.2
	5.000	6.000	0.500	3780	2976	2849	3361	11.8
80-104	127.00	165.10	19.05	2547	2404	2018	2710	783.5
	5.000	6.500	0.750	5615	5299	4449	5975	27.6
88-96	139.70	152.40	6.35	943	512	643	579	87.5
	5.500	6.000	0.250	2079	1129	1417	1277	3.1
88-98	139.70	155.58	7.94	1183	709	834	805	138.2
	5.500	6.125	0.3125	2607	1564	1839	1774	4.9
88-100	139.70	158.75	9.53	1429	928	1034	1045	201.3
	5.500	6.250	0.375	3150	2046	2279	2304	7.1
88-104	139.70	165.10	12.70	1886	1397	1414	1579	364.8
	5.500	6.500	0.500	4159	3080	3118	3481	12.9
88-112	139.70	177.80	19.05	2802	2490	2203	2809	852.4
	5.500	7.000	0.750	6177	5489	4858	6192	30.1
96-104	152.40	165.10	6.35	1031	529	701	599	95.1
	6.000	6.500	0.250	2274	1167	1546	1321	3.4
96-106	152.40	168.28	7.94	1296	734	912	833	150.2
	6.000	6.625	0.3125	2858	1619	2010	1837	5.3
96-108	152.40	171.45	9.53	1559	958	1124	1079	218.5
	6.000	6.750	0.375	3437	2111	2478	2378	7.7
96-112	152.40	177.80	12.70	2058	1442	1536	1630	395.4
	6.000	7.000	0.500	4538	3179	3387	3593	13.9
96-120	152.40	190.50	19.05	3057	2571	2389	2901	921.2
	6.000	7.500	0.750	6739	5667	5267	6395	32.5
104-112	165.10	177.80	6.35	1120	546	760	618	102.8
	6.500	7.000	0.250	2469	1203	1676	1362	3.6
104-114	165.10	180.98	7.94	1410	758	990	860	162.3
	6.500	7.125	0.3125	3109	1671	2181	1895	5.7
104-116	165.10	184.15	9.53	1689	986	1214	1110	235.7
	6.500	7.250	0.375	3724	2173	2677	2448	8.3

Chassis	B Bore	D O.D.	W <sub>0</sub> Width	Load Ratings				Approx. Weight
				Radial		Thrust		
	mm/in.	mm/in.	mm/in.	kg/lbs.	kg/lbs.	kg/lbs.	kg/lbs.	g/oz.
104-120	165.10	190.50	12.70	2230	1485	1658	1678	426.0
	6.500	7.500	0.500	4917	3273	3656	3700	15.0
104-128	165.10	203.20	19.05	3312	2647	2574	2988	990.1
	6.500	8.000	0.750	7301	5836	5676	6587	34.9
112-120	177.80	190.50	6.35	1208	561	819	635	110.4
	7.000	7.500	0.250	2664	1237	1805	1401	3.9
112-122	177.80	193.68	7.94	1524	780	1067	885	174.3
	7.000	7.625	0.3125	3360	1720	2353	1952	6.1
112-124	177.80	196.85	9.53	1820	1012	1305	1141	252.9
	7.000	7.750	0.375	4011	2232	2876	2515	8.9
112-128	177.80	203.20	12.70	2402	1525	1780	1724	456.7
	7.000	8.000	0.500	5296	3362	3925	3801	16.1
112-136	177.80	215.90	19.05	3567	2719	2760	3071	1059.0
	7.000	8.500	0.750	7864	5995	6084	6070	37.4
120-128	190.50	203.20	6.35	1297	576	877	652	118.1
	7.500	8.000	0.250	2859	1270	1934	1438	4.2
120-130	190.50	206.38	7.94	1616	794	1129	901	186.0
	7.500	8.125	0.3125	3562	1751	2489	1987	6.6
120-132	190.50	209.55	9.53	1918	1027	1372	1157	269.7
	7.500	8.250	0.375	4229	2264	3026	2551	9.5
120-136	190.50	215.90	12.70	2574	1563	1902	1768	487.3
	7.500	8.500	0.500	5675	3447	4194	3898	17.2
120-144	190.50	228.60	19.05	3822	2789	2945	3150	1127.8
	7.500	9.000	0.750	8427	6148	6493	6944	39.8
128-136	203.20	215.90	6.35	1385	590	936	669	125.8
	8.000	8.500	0.250	3054	1301	2063	1474	4.4
128-138	203.20	219.08	7.94	1707	808	1191	917	197.8
	8.000	8.625	0.3125	3764	1781	2626	2022	7.0
128-140	203.20	222.25	9.53	2049	1052	1463	1186	287.0
	8.000	8.750	0.375	4516	2319	3225	2614	10.1
128-144	203.20	228.60	12.70	2746	1600	2024	1810	517.9
	8.000	9.000	0.500	6054	3528	4463	3991	18.3
128-152	203.20	241.30	19.05	4078	2855	3131	3225	1196.7
	8.000	9.500	0.750	8990	6294	6902	7111	42.2
144-152	228.60	241.30	6.35	1548	613	1043	694	140.9
	9.000	9.500	0.250	3412	1351	2301	1531	5.0
144-154	228.60	244.48	7.94	1935	847	1346	962	221.8
	9.000	9.625	0.3125	4265	1867	2969	2120	7.8
144-156	228.60	247.65	9.53	2309	1099	1643	1239	321.4
	9.000	9.750	0.375	5091	2422	3623	2331	11.3
144-160	228.60	254.00	12.70	3090	1670	2269	1890	579.1
	9.000	10.000	0.500	6813	3682	5001	4166	20.4
144-168	228.60	266.70	19.05	4589	2979	3502	3367	1334.4
	9.000	10.500	0.750	10116	6569	7720	7424	47.1
160-168	254.00	266.70	6.35	1725	638	1161	723	156.3
	10.000	10.500	0.250	3802	1407	2559	1594	5.5
160-170	254.00	269.88	7.94	2140	877	1486	996	245.6
	10.000	10.625	0.3125	4718	1934	3276	2196	8.7
160-172	254.00	273.05	9.53	2601	1152	1847	1299	356.3
	10.000	10.750	0.375					