

Deep Groove Ball Bearings

└ Extra Small Ball Bearings and Miniature Ball Bearings Metric Design, With Flange

d	Boundary Dimensions (mm)									Basic Load Ratings (N)		Limiting Speeds (min <sup>-1</sup> )		Bearing Numbers	NSKHPS
	D	D1	D2	B	B1	C1	C2	r min.	r1 min.	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil		
1	3	3.8	-	1	-	0.3	-	0.05	-	80	23	130000	150000	F681	
1	4	5	-	1.6	-	0.5	-	0.1	-	140	36	100000	120000	F691	
1.2	4	4.8	-	1.8	-	0.4	-	0.1	-	138	35	110000	130000	MF41X	
1.5	4	5	-	1.2	-	0.4	-	0.05	-	112	33	100000	120000	F681X	
1.5	4	-	5	-	2	-	0.6	-	0.05	112	33	100000	-	F681X ZZ	
1.5	5	6.5	-	2	-	0.6	-	0.15	-	237	69	85000	100000	F691X	
1.5	5	-	6.5	-	2.6	-	0.8	-	0.15	237	69	85000	-	F691X ZZ	
1.5	6	7.5	-	2.5	-	0.6	-	0.15	-	330	98	75000	90000	F601X	
1.5	6	-	7.5	-	3	-	0.8	-	0.15	330	98	75000	-	F601X ZZ	
2	5	6.1	-	1.5	-	0.5	-	0.08	-	169	50	85000	100000	F682	
2	5	6.2	-	2	-	0.6	-	0.1	-	187	58	85000	100000	MF52B	
2	5	-	6.1	-	2.3	-	0.6	-	0.08	169	50	85000	-	F682ZZ	
2	5	-	6.2	-	2.5	-	0.6	-	0.1	187	58	85000	-	MF52B ZZ	
2	6	7.5	-	2.3	-	0.6	-	0.15	-	330	98	75000	90000	F692	
2	6	7.2	-	2.5	-	0.6	-	0.15	-	330	98	75000	90000	MF62	
2	6	-	7.5	-	3	-	0.8	-	0.15	330	98	75000	-	F692ZZ	
2	7	8.2	-	2.5	-	0.6	-	0.15	-	385	127	63000	75000	MF72	
2	7	8.5	-	2.8	-	0.7	-	0.15	-	385	127	63000	75000	F602	
2	7	-	8.2	-	3	-	0.6	-	0.15	385	127	63000	-	MF72Z Z	
2	7	-	8.5	-	3.5	-	0.9	-	0.15	385	127	63000	-	F602ZZ	
2.5	6	7.1	-	1.8	-	0.5	-	0.08	-	208	74	71000	80000	F682X	
2.5	6	-	7.1	-	2.6	-	0.8	-	0.08	208	74	71000	-	F682X ZZ	
2.5	7	8.5	-	2.5	-	0.7	-	0.15	-	385	127	63000	75000	F692X	
2.5	7	-	8.5	-	3.5	-	0.9	-	0.15	385	127	63000	-	F692X ZZ	
2.5	8	9.2	-	2.5	-	0.6	-	0.2	-	560	179	60000	67000	MF82X	
2.5	8	9.5	-	2.8	-	0.7	-	0.15	-	550	175	60000	71000	F602X	
2.5	8	-	9.5	-	4	-	0.9	-	0.15	550	175	60000	-	F602X ZZ	
3	6	7.2	-	2	-	0.6	-	0.1	-	208	74	71000	80000	MF63	
3	6	-	7.2	-	2.5	-	0.6	-	0.1	208	74	71000	-	MF63Z Z	
3	7	8.1	-	2	-	0.5	-	0.1	-	390	130	63000	75000	F683A	
3	7	-	8.1	-	3	-	0.8	-	0.1	390	130	63000	-	F683A ZZ	
3	8	9.2	-	2.5	-	0.6	-	0.15	-	560	179	60000	67000	MF83	
3	8	9.5	-	3	-	0.7	-	0.15	-	560	179	60000	67000	F693	
3	8	-	9.5	-	4	-	0.9	-	0.15	560	179	60000	-	F693ZZ	
3	9	10.2	-	2.5	-	0.6	-	0.2	-	570	187	56000	67000	MF93	
3	9	10.5	-	3	-	0.7	-	0.15	-	570	187	56000	67000	F603	
3	9	-	10.6	-	4	-	0.8	-	0.15	570	187	56000	-	MF93Z Z	
3	9	-	10.5	-	5	-	1	-	0.15	570	187	56000	-	F603ZZ	
3	10	11.5	-	4	-	1	-	0.15	-	630	218	50000	60000	F623	

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d	Boundary Dimensions (mm)									Basic Load Ratings (N)		Limiting Speeds (min <sup>-1</sup> )		Bearing Numbers	NSKHPS
	D	D1	D2	B	B1	C1	C2	r min.	r1 min.	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil		
3	10	-	11.5	-	4	-	1	-	0.15	630	218	50000	-	F623ZZ	
3	13	15	-	5	-	1	-	0.2	-	1300	485	36000	43000	F633	
3	13	-	15	-	5	-	1	-	0.2	1300	485	36000	-	F633ZZ	
4	7	8.2	-	2	-	0.6	-	0.1	-	310	115	60000	67000	MF74	
4	7	-	8.2	-	2.5	-	0.6	-	0.1	255	107	60000	-	MF74Z Z	
4	8	9.2	-	2	-	0.6	-	0.15	-	395	139	56000	67000	MF84	
4	8	-	9.2	-	3	-	0.6	-	0.1	395	139	56000	-	MF84Z Z	
4	9	10.3	-	2.5	-	0.6	-	0.1	-	640	225	53000	63000	F684	
4	9	-	10.3	-	4	-	1	-	0.1	640	225	53000	-	F684ZZ	
4	10	11.2	-	3	-	0.6	-	0.2	-	710	270	50000	60000	MF104 B	
4	10	-	11.6	-	4	-	0.8	-	0.15	710	270	50000	-	MF104 BZZ	
4	11	12.5	-	4	-	1	-	0.15	-	960	345	48000	56000	F694	
4	11	-	12.5	-	4	-	1	-	0.15	960	345	48000	-	F694ZZ	
4	12	13.5	-	4	-	1	-	0.2	-	960	345	48000	56000	F604	
4	12	-	13.5	-	4	-	1	-	0.2	960	345	48000	-	F604ZZ	
4	13	15	-	5	-	1	-	0.2	-	1300	485	40000	48000	F624	
4	13	-	15	-	5	-	1	-	0.2	1300	485	40000	-	F624ZZ	
4	16	18	-	5	-	1	-	0.3	-	1730	670	36000	43000	F634	
4	16	-	18	-	5	-	1	-	0.3	1730	670	36000	-	F634ZZ 1	
5	8	9.2	-	2	-	0.6	-	0.1	-	310	120	53000	63000	MF85	
5	8	-	9.2	-	2.5	-	0.6	-	0.1	310	120	53000	-	MF85Z Z	
5	9	10.2	-	2.5	-	0.6	-	0.15	-	430	168	50000	60000	MF95	
5	9	-	10.2	-	3	-	0.6	-	0.15	430	168	50000	-	MF95Z Z	
5	10	11.2	-	3	-	0.6	-	0.15	-	430	168	50000	60000	MF105	
5	10	-	11.6	-	4	-	0.8	-	0.15	430	168	50000	-	MF105 ZZ	
5	11	12.5	-	3	-	0.8	-	0.15	-	715	281	45000	53000	F685	
5	11	-	12.5	-	5	-	1	-	0.15	715	281	45000	-	F685ZZ	
5	13	15	-	4	-	1	-	0.2	-	1080	430	43000	50000	F695	
5	13	-	15	-	4	-	1	-	0.2	1080	430	43000	-	F695ZZ	
5	13	-	15	-	4	-	1	-	0.2	1080	430	43000	-	F695V V	
5	13	-	15	-	4	-	1	-	0.2	1080	430	40000	-	F695D D	
5	14	16	-	5	-	1	-	0.2	-	1330	505	40000	50000	F605	
5	14	-	16	-	5	-	1	-	0.2	1330	505	40000	-	F605ZZ	
5	14	-	16	-	5	-	1	-	0.2	1330	505	38000	-	F605D D	
5	16	18	-	5	-	1	-	0.3	-	1730	670	36000	43000	F625	
5	16	-	18	-	5	-	1	-	0.3	1730	670	36000	-	F625ZZ	
5	16	-	18	-	5	-	1	-	0.3	1730	670	36000	-	F625V V	
5	16	-	18	-	5	-	1	-	0.3	1730	670	32000	-	F625D D	

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d	Boundary Dimensions (mm)									Basic Load Ratings (N)		Limiting Speeds (min <sup>-1</sup> )		Bearing Numbers	NSKHPS
	D	D1	D2	B	B1	C1	C2	r min.	r1 min.	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil		
5	19	22	-	6	-	1.5	-	0.3	-	2340	885	32000	40000	F635	
5	19	-	22	-	6	-	1.5	-	0.3	2340	885	32000	-	F635ZZ	
5	19	-	22	-	6	-	1.5	-	0.3	2340	885	32000	-	F635V	
5	19	-	22	-	6	-	1.5	-	0.3	2340	885	30000	-	F635D	
6	10	11.2	-	2.5	-	0.6	-	0.15	-	495	218	45000	53000	MF106	
6	10	-	11.2	-	3	-	0.6	-	0.1	495	218	45000	-	MF106ZZ1	
6	12	13.2	-	3	-	0.6	-	0.2	-	715	292	43000	50000	MF126	
6	12	-	13.6	-	4	-	0.8	-	0.15	715	292	43000	-	MF126ZZ	
6	13	15	-	3.5	-	1	-	0.15	-	1080	440	40000	50000	F686A	
6	13	-	15	-	5	-	1.1	-	0.15	1080	440	40000	-	F686AZZ	
6	13	-	15	-	5	-	1.1	-	0.15	1080	440	40000	-	F686AVV	
6	13	-	15	-	5	-	1.1	-	0.15	1080	440	38000	-	F686ADD	
6	15	17	-	5	-	1.2	-	0.2	-	1730	670	40000	45000	F696	
6	15	-	17	-	5	-	1.2	-	0.2	1730	670	40000	-	F696ZZ1	
6	15	-	17	-	5	-	1.2	-	0.2	1730	670	40000	-	F696V	
6	15	-	17	-	5	-	1.2	-	0.2	1730	670	36000	-	F696D	
6	17	19	-	6	-	1.2	-	0.3	-	2260	835	38000	45000	F606	
6	17	-	19	-	6	-	1.2	-	0.3	2260	835	38000	-	F606ZZ	
6	17	-	19	-	6	-	1.2	-	0.3	2260	835	38000	-	F606V	
6	17	-	19	-	6	-	1.2	-	0.3	2260	835	34000	-	F606D	
6	19	22	-	6	-	1.5	-	0.3	-	2340	885	32000	40000	F626	
6	19	-	22	-	6	-	1.5	-	0.3	2340	885	32000	-	F626ZZ1	
6	19	-	22	-	6	-	1.5	-	0.3	2340	885	32000	-	F626V	
6	19	-	22	-	6	-	1.5	-	0.3	2340	885	30000	-	F626D	
6	22	25	-	7	-	1.5	-	0.3	-	3300	1370	30000	36000	F636	
6	22	-	25	-	7	-	1.5	-	0.3	3300	1370	30000	-	F636ZZ	
6	22	-	25	-	7	-	1.5	-	0.3	3300	1370	30000	-	F636V	
6	22	-	25	-	7	-	1.5	-	0.3	3300	1370	28000	-	F636D	
7	11	12.2	-	2.5	-	0.6	-	0.15	-	455	201	43000	50000	MF117	
7	11	-	12.2	-	3	-	0.6	-	0.1	455	201	43000	-	MF117ZZ	
7	13	14.2	-	3	-	0.6	-	0.2	-	540	276	40000	48000	MF137	
7	13	-	14.6	-	4	-	0.8	-	0.15	540	276	40000	-	MF137ZZ	
7	14	16	-	3.5	-	1	-	0.15	-	1170	510	40000	45000	F687	
7	14	-	16	-	5	-	1.1	-	0.15	1170	510	40000	-	F687ZZ1	

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d	Boundary Dimensions (mm)									Basic Load Ratings (N)		Limiting Speeds (min <sup>-1</sup> )		Bearing Numbers	NSKHPS
	D	D1	D2	B	B1	C1	C2	r min.	r1 min.	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil		
7	14	-	16	-	5	-	1.1	-	0.15	1170	510	40000	-	F687V V	
7	14	-	16	-	5	-	1.1	-	0.15	1170	510	34000	-	F687D D	
7	17	19	-	5	-	1.2	-	0.3	-	1610	715	36000	43000	F697	
7	17	-	19	-	5	-	1.2	-	0.3	1610	715	36000	-	F697ZZ 1	
7	17	-	19	-	5	-	1.2	-	0.3	1610	715	36000	-	F697V V	
7	17	-	19	-	5	-	1.2	-	0.3	1610	715	28000	-	F697D D	
7	19	22	-	6	-	1.5	-	0.3	-	2340	885	36000	43000	F607	
7	19	-	22	-	6	-	1.5	-	0.3	2340	885	36000	-	F607ZZ 1	
7	19	-	22	-	6	-	1.5	-	0.3	2340	885	36000	-	F607V V	
7	19	-	22	-	6	-	1.5	-	0.3	2340	885	32000	-	F607D D	
7	22	25	-	7	-	1.5	-	0.3	-	3300	1370	30000	36000	F627	
7	22	-	25	-	7	-	1.5	-	0.3	3300	1370	30000	-	F627ZZ	
7	22	-	25	-	7	-	1.5	-	0.3	3300	1370	30000	-	F627V V	
7	22	-	25	-	7	-	1.5	-	0.3	3300	1370	28000	-	F627D D	
8	12	13.2	-	2.5	-	0.6	-	0.15	-	545	275	40000	48000	MF128	
8	12	-	13.6	-	3.5	-	0.8	-	0.1	545	275	40000	-	MF128 ZZ1	
8	14	15.6	-	3.5	-	0.8	-	0.2	-	820	385	38000	45000	MF148	
8	14	-	15.6	-	4	-	0.8	-	0.15	820	385	38000	-	MF148 ZZ	
8	16	18	-	4	-	1	-	0.2	-	1610	710	36000	43000	F688A	
8	16	-	18	-	5	-	1.1	-	0.2	1610	710	36000	-	F688A ZZ1	
8	16	-	18	-	5	-	1.1	-	0.2	1610	710	36000	-	F688A VV	
8	16	-	18	-	5	-	1.1	-	0.2	1610	710	30000	-	F688A DD	
8	19	22	-	6	-	1.5	-	0.3	-	2240	910	36000	43000	F698	
8	19	-	22	-	6	-	1.5	-	0.3	2240	910	36000	-	F698ZZ	
8	19	-	22	-	6	-	1.5	-	0.3	2240	910	36000	-	F698V V	
8	19	-	22	-	6	-	1.5	-	0.3	2240	910	28000	-	F698D D	
8	22	25	-	7	-	1.5	-	0.3	-	3300	1370	34000	40000	F608	
8	22	-	25	-	7	-	1.5	-	0.3	3300	1370	34000	-	F608ZZ	
8	22	-	25	-	7	-	1.5	-	0.3	3300	1370	34000	-	F608V V	
8	22	-	25	-	7	-	1.5	-	0.3	3300	1370	28000	-	F608D D	
9	17	19	-	4	-	1	-	0.2	-	1330	665	36000	43000	F689	
9	17	-	19	-	5	-	1.1	-	0.2	1330	665	36000	-	F689ZZ 1	
9	17	-	19	-	5	-	1.1	-	0.2	1330	665	36000	-	F689V V	

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<i>d</i>	Boundary Dimensions (mm)									Basic Load Ratings (N)		Limiting Speeds (min <sup>-1</sup> )		Bearing Numbers	NSKHPS
	<i>D</i>	<i>D1</i>	<i>D2</i>	<i>B</i>	<i>B1</i>	<i>C1</i>	<i>C2</i>	<i>r</i> min.	<i>r1</i> min.	<i>C<sub>r</sub></i>	<i>C<sub>0r</sub></i>	Grease	Oil		
9	17	-	19	-	5	-	1.1	-	0.2	1330	665	24000	-	F689D D	
9	20	23	-	6	-	1.5	-	0.3	-	1720	840	34000	40000	F699	
9	20	-	23	-	6	-	1.5	-	0.3	1720	840	34000	-	F699ZZ 1	
9	20	-	23	-	6	-	1.5	-	0.3	1720	840	34000	-	F699V V	
9	20	-	23	-	6	-	1.5	-	0.3	1720	840	24000	-	F699D D	