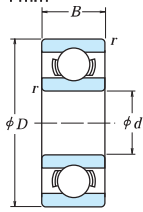
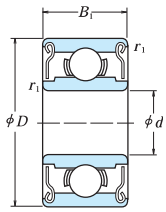


EXTRA SMALL BALL BEARINGS · MINIATURE BALL BEARINGS

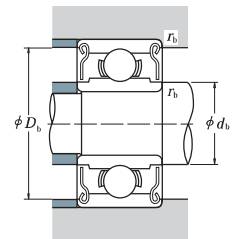
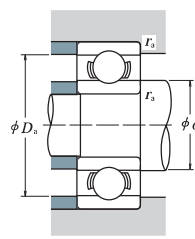
Metric Design
Bore Diameter 1 - 4 mm



Open Type



Shielded Type
ZZ · ZZ1



d	Boundary Dimensions (mm)					Basic Load Ratings (N)				Limiting Speeds (min ⁻¹)		Open
	D	B	B ₁	r ⁽¹⁾ min.	r ₁ ⁽¹⁾ min.	C _r	C _{0r}	C _r	C _{0r}	Grease Open Z-Z	Oil Open Z	
1	3	1	—	0.05	—	80	23	8	2.5	130 000	150 000	681
	3	1.5	—	0.05	—	80	23	8	2.5	130 000	150 000	MR 31
	4	1.6	—	0.1	—	138	35	14	3.5	100 000	120 000	691
1.2	4	1.8	2.5	0.1	0.1	138	35	14	3.5	110 000	130 000	MR 41 X
	4	1.2	2	0.05	0.05	112	33	11	3.5	100 000	120 000	681 X
1.5	5	2	2.6	0.15	0.15	237	69	24	7	85 000	100 000	691 X
	6	2.5	3	0.15	0.15	330	98	34	10	75 000	90 000	601 X
	5	1.5	2.3	0.08	0.08	169	50	17	5	85 000	100 000	682
2	5	2	2.5	0.1	0.1	187	58	19	6	85 000	100 000	MR 52 B
	6	2.3	3	0.15	0.15	330	98	34	10	75 000	90 000	692
	6	2.5	2.5	0.15	0.15	330	98	34	10	75 000	90 000	MR 62
2.5	7	2.5	3	0.15	0.15	385	127	39	13	63 000	75 000	MR 72
	7	2.8	3.5	0.15	0.15	385	127	39	13	63 000	75 000	MR 72 ZZ
	6	1.8	2.6	0.08	0.08	208	74	21	7.5	71 000	80 000	682 X
	7	2.5	3.5	0.15	0.15	385	127	39	13	63 000	75 000	692 X
	8	2.5	—	0.2	—	560	179	57	18	60 000	67 000	MR 82 X
3	8	2.8	4	0.15	0.15	550	175	56	18	60 000	71 000	602 X
	6	2	2.5	0.1	0.1	208	74	21	7.5	71 000	80 000	MR 63
	7	2	3	0.1	0.1	390	130	40	13	63 000	75 000	683 A
	8	2.5	—	0.15	—	560	179	57	18	60 000	67 000	MR 83
	8	3	4	0.15	0.15	560	179	57	18	60 000	67 000	693
4	9	2.5	4	0.2	0.15	570	187	58	19	56 000	67 000	MR 93
	9	3	5	0.15	0.15	570	187	58	19	56 000	67 000	603
	10	4	4	0.15	0.15	630	218	64	22	50 000	60 000	623
	13	5	5	0.2	0.2	1 300	485	133	49	40 000	48 000	633
	7	2	—	0.1	—	310	115	32	12	60 000	67 000	MR 74
	7	—	2.5	—	0.1	255	107	26	11	60 000	71 000	684 A
	8	2	3	0.15	0.1	395	139	40	14	56 000	67 000	MR 84
9	2.5	4	(0.15)	(0.15)	640	225	65	23	53 000	63 000	604	
10	3	4	0.2	0.15	710	270	73	28	50 000	60 000	MR 104 B	
	11	4	4	0.15	0.15	960	345	98	35	48 000	56 000	694
	12	4	4	0.2	0.2	960	345	98	35	48 000	56 000	604
	13	5	5	0.2	0.2	1 300	485	133	49	40 000	48 000	624
16	5	5	0.3	0.3	1 730	670	177	68	36 000	43 000	634	

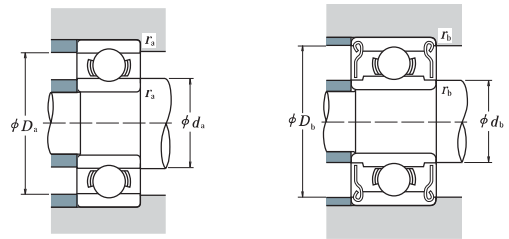
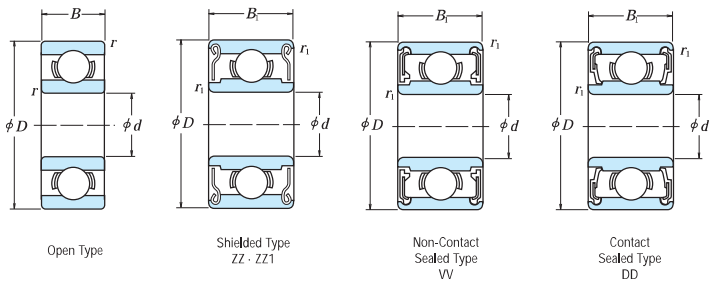
Note (1) The values in parentheses are not based on ISO 15.

Remarks When using bearings with a rotating outer ring, please contact NSK if they are shielded.

Bearing Numbers	Abutment and Fillet Dimensions (mm)						Mass (g)			
	Shielded	Sealed	d _s min.	d _s max.	D _s max.	D _b min.	r _s max.	r _b max.	approx. Open	Shielded
—	—	—	1.4	—	2.6	—	0.05	—	0.03	—
—	—	—	1.4	—	2.6	—	0.05	—	0.04	—
—	—	—	1.8	—	3.2	—	0.1	—	0.09	—
MR 41 XZZ	—	—	2.0	1.9	3.2	3.5	0.1	0.1	0.10	0.14
681 XZZ	—	—	1.9	2.1	3.6	3.6	0.05	0.05	0.07	0.11
691 XZZ	—	—	2.7	2.5	3.8	4.3	0.15	0.15	0.17	0.20
601 XZZ	—	—	2.7	3.0	4.8	5.4	0.15	0.15	0.33	0.38
682 ZZ	—	—	2.6	2.7	4.4	4.2	0.08	0.08	0.12	0.17
MR 52 BZZ	—	—	2.8	2.7	4.2	4.4	0.1	0.1	0.16	0.23
692 ZZ	—	—	3.2	3.0	4.8	5.4	0.15	0.15	0.28	0.38
MR 62 ZZ	—	—	3.2	3.0	4.8	5.2	0.15	0.15	0.30	0.29
MR 72 ZZ	—	—	3.2	3.8	5.8	6.2	0.15	0.15	0.45	0.49
602 ZZ	—	—	3.2	3.8	5.8	6.2	0.15	0.15	0.51	0.58
682 XZZ	—	—	3.1	3.7	5.4	5.4	0.08	0.08	0.23	0.29
692 XZZ	—	—	3.7	3.8	5.8	6.2	0.15	0.15	0.41	0.55
MR 82 XZZ	—	—	4.1	—	6.4	—	0.2	—	0.56	—
602 XZZ	—	—	3.7	4.1	6.8	7.0	0.15	0.15	0.63	0.83
MR 63 ZZ	—	—	3.8	3.7	5.2	5.4	0.1	0.1	0.20	0.27
683 AZZ	—	—	3.8	4.0	6.2	6.4	0.1	0.1	0.32	0.45
—	—	—	4.2	—	6.8	—	0.15	—	0.54	—
—	—	—	4.2	4.3	6.8	7.3	0.15	0.15	0.61	0.83
MR 93 ZZ	—	—	4.6	4.3	7.4	7.9	0.2	0.15	0.73	1.18
603 ZZ	—	—	4.2	4.3	7.8	7.9	0.15	0.15	0.87	1.45
623 ZZ	—	—	4.2	4.3	8.8	8.0	0.15	0.15	1.65	1.66
633 ZZ	—	—	4.6	6.0	11.4	11.3	0.2	0.2	3.38	3.33
—	—	—	4.8	—	6.2	—	0.1	—	0.22	—
MR 74 ZZ	—	—	—	4.8	—	6.3	—	0.1	—	0.29
MR 84 ZZ	—	—	5.2	5.0	6.8	7.4	0.15	0.1	0.36	0.56
684 AZZ	—	—	4.8	5.2	8.2	8.1	0.1	0.1	0.63	1.01
MR 104 BZZ	—	—	5.6	5.9	8.4	8.8	0.2	0.15	1.04	1.42
694 ZZ	—	—	5.2	5.6	9.8	9.9	0.15	0.15	1.7	1.75
604 ZZ	—	—	5.6	5.6	10.4	9.9	0.2	0.2	2.25	2.29
624 ZZ	—	—	5.6	6.0	11.4	11.3	0.2	0.2	3.03	3.04
634 ZZ1	—	—	6.0	7.5	14.0	13.8	0.3	0.3	5.24	5.21

EXTRA SMALL BALL BEARINGS · MINIATURE BALL BEARINGS

Metric Design
Bore Diameter 5 – 9 mm



d	Boundary Dimensions (mm)				Basic Load Ratings (N)				Limiting Speeds (min ⁻¹)				Open
	D	B	B ₁	r ⁽¹⁾ min.	C _r	C _{0r}	C _r	C _{0r}	Open Z · ZZ V · VV	Oil DD	Grease 2	Oil 2	
5	8	2	—	0.1	310	120	31	12	53 000	—	63 000	MR 85	
	8	—	2.5	—	278	131	28	13	53 000	—	63 000	MR 95	
	9	2.5	3	0.15	430	168	44	17	50 000	—	60 000	MR 105	
	10	3	4	0.15	430	168	44	17	50 000	—	60 000	MR 105	
	11	—	4	—	715	276	73	28	48 000	—	56 000	—	
	11	3	5	0.15	715	281	73	29	45 000	—	53 000	685	
	13	4	4	0.2	1 080	430	110	44	43 000	40 000	50 000	695	
	14	5	5	0.2	1 330	505	135	52	40 000	38 000	50 000	605	
	16	5	5	0.3	1 730	670	177	68	36 000	32 000	43 000	625	
	19	6	6	0.3	2 340	885	238	90	32 000	30 000	40 000	635	
6	10	2.5	3	0.15	495	218	51	22	45 000	—	53 000	MR 106	
	12	3	4	0.2	715	292	73	30	43 000	40 000	50 000	MR 126	
	13	3.5	5	0.15	1 080	440	110	45	40 000	38 000	50 000	686 A	
	15	5	5	0.2	1 730	670	177	68	40 000	36 000	45 000	696	
	17	6	6	0.3	2 260	835	231	85	38 000	34 000	45 000	606	
	19	6	6	0.3	2 340	885	238	90	32 000	30 000	40 000	626	
	22	7	7	0.3	3 300	1 370	335	140	30 000	28 000	36 000	636	
	11	2.5	3	0.15	455	201	47	21	43 000	—	50 000	MR 117	
	13	3	4	0.2	540	276	55	28	40 000	—	48 000	MR 137	
	14	3.5	5	0.15	1 170	510	120	52	40 000	34 000	45 000	687	
7	17	5	5	0.3	1 610	710	164	73	36 000	28 000	43 000	697	
	19	6	6	0.3	2 340	885	238	90	36 000	32 000	43 000	607	
	22	7	7	0.3	3 300	1 370	335	140	30 000	28 000	36 000	627	
	26	9	9	0.3	4 550	1 970	465	201	28 000	22 000	34 000	637	
	12	2.5	3.5	0.15	545	274	56	28	40 000	—	48 000	MR 128	
	14	3.5	4	0.2	820	385	83	39	38 000	32 000	45 000	MR 148	
	16	4	5	0.2	1 610	710	164	73	36 000	28 000	43 000	688 A	
	19	6	6	0.3	2 240	910	228	93	36 000	28 000	43 000	698	
	22	7	7	0.3	3 300	1 370	335	140	34 000	28 000	40 000	608	
	24	8	8	0.3	3 350	1 430	340	146	28 000	24 000	34 000	628	
8	28	9	9	0.3	4 550	1 970	465	201	28 000	22 000	34 000	638	
	17	4	5	0.2	1 330	665	136	68	36 000	24 000	43 000	689	
	20	6	6	0.3	1 720	840	175	86	34 000	24 000	40 000	699	
	24	7	7	0.3	3 350	1 430	340	146	32 000	24 000	38 000	609	
	26	8	8	(0.6)	4 550	1 970	465	201	28 000	22 000	34 000	629	
	30	10	10	0.6	5 100	2 390	520	244	24 000	—	30 000	639	

Bearing Numbers	Abutment and Fillet Dimensions (mm)						Mass (g)			
	Shielded	Sealed	d _i min.	d _i max.	D _s max.	D _b min.	r _s max.	r _b max.	approx. Open	Shielded
—	—	—	5.8	—	7.2	—	0.1	—	0.26	—
MR 85 ZZ	—	—	—	5.8	—	7.4	—	0.1	—	0.34
MR 95 ZZ1	—	—	6.2	6.0	7.8	8.2	0.15	0.15	0.50	0.58
MR 105 ZZ	—	—	6.2	6.0	8.8	8.4	0.15	0.15	0.95	1.29
MR 115 ZZ	VV	—	—	6.3	—	9.8	—	0.15	—	1.49
685 ZZ	—	—	6.2	6.2	9.8	9.9	0.15	0.15	1.2	1.96
695 ZZ	VV	DD	6.6	6.6	11.4	11.2	0.2	0.2	2.45	2.5
605 ZZ	—	DD	6.6	6.9	12.4	12.2	0.2	0.2	3.54	3.48
625 ZZ1	VV	DD	7.0	7.5	14.0	13.8	0.3	0.3	4.95	4.86
635 ZZ1	VV	DD	7.0	8.5	17.0	16.5	0.3	0.3	8.56	8.34
MR 106 ZZ1	—	—	7.2	7.0	8.8	9.3	0.15	0.1	0.56	0.68
MR 126 ZZ1	—	DD	7.6	7.2	10.4	10.9	0.2	0.15	1.27	1.74
686 AZZ	VV	DD	7.2	7.4	11.8	11.7	0.15	0.15	1.91	2.69
696 ZZ1	VV	DD	7.6	7.9	13.4	13.3	0.2	0.2	3.88	3.72
606 ZZ	VV	DD	8.0	8.2	15.0	14.8	0.3	0.3	5.97	6.08
626 ZZ1	VV	DD	8.0	8.5	17.0	16.5	0.3	0.3	8.15	7.94
636 ZZ	VV	DD	8.0	10.5	20.0	19.0	0.3	0.3	14	14
MR 117 ZZ	—	—	8.2	8.0	9.8	10.5	0.15	0.1	0.62	0.72
MR 137 ZZ	—	—	8.6	9.0	11.4	11.6	0.2	0.15	1.58	2.02
687 ZZ1	VV	DD	8.2	8.5	12.8	12.7	0.15	0.15	2.13	2.97
697 ZZ1	VV	DD	9.0	10.2	15.0	14.8	0.3	0.3	5.26	5.12
607 ZZ1	VV	DD	9.0	9.1	17.0	16.5	0.3	0.3	7.67	7.51
627 ZZ	VV	DD	9.0	10.5	20.0	19.0	0.3	0.3	12.7	12.9
637 ZZ1	VV	DD	9.0	12.8	24.0	22.8	0.3	0.3	24	25
MR 128 ZZ1	—	—	9.2	9.0	10.8	11.3	0.15	0.1	0.71	0.97
MR 148 ZZ	VV	DD	9.6	9.2	12.4	12.8	0.2	0.15	1.86	2.16
688 AZZ1	VV	DD	9.6	10.2	14.4	14.2	0.2	0.2	3.12	4.02
698 ZZ	VV	DD	10.0	10.0	17.0	16.5	0.3	0.3	7.23	7.18
608 ZZ	VV	DD	10.0	10.5	20.0	19.0	0.3	0.3	12.1	12.2
628 ZZ	VV	DD	10.0	12.0	22.0	20.5	0.3	0.3	17.2	17.4
638 ZZ1	VV	DD	10.0	12.8	26.0	22.8	0.3	0.3	28.3	28.6
689 ZZ1	VV	DD	10.6	11.5	15.4	15.2	0.2	0.2	3.53	4.43
699 ZZ1	VV	DD	11.0	12.0	18.0	17.2	0.3	0.3	8.45	8.33
609 ZZ	VV	DD	11.0	12.0	22.8	20.5	0.3	0.3	14.5	14.7
629 ZZ	VV	DD	11.0	12.8	24.0	22.8	0.3	0.3	19.5	19.3
639 ZZ	VV	—	13.0	16.1	26.0	25.6	0.6	0.6	36.5	36

Note (1) The values in parentheses are not based on ISO 15.

- Remarks
1. When using bearings with a rotating outer ring, please contact NSK if they are sealed or shielded.
2. Bearings with snap rings are also available, please contact NSK.