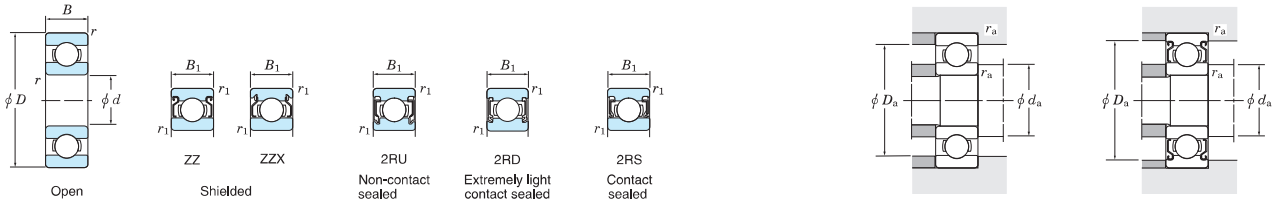


Extra-small ball bearings, miniature ball bearings

d 1 ~ (4) mm

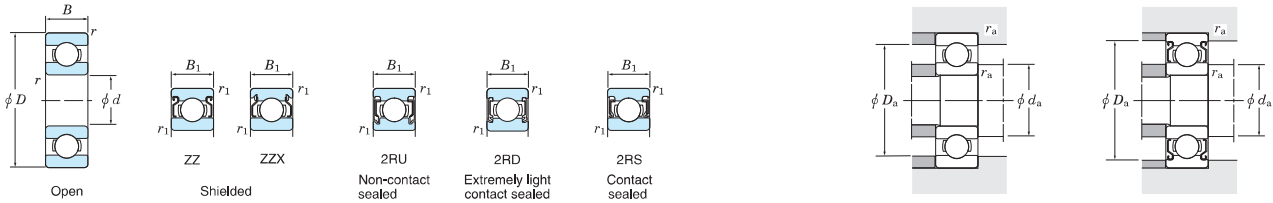


d	Boundary dimensions (mm)					Basic load ratings (kN)		Fatigue load limit (kN) C _u	Factor f ₀	Limiting speeds (min ⁻¹)				Bearing No.					Mounting dimensions (mm)			[Refer.] Mass (g)	
	D	B	B ₁	r ¹⁾ _{min.}	r ¹⁾ _{min.}	C _r	C _{0r}			Grease lub.	Oil lub.	Open	(2RD)	(2RS)	Open Z	Open	Shielded	Non-contact sealed	Extremely light shielded	Contact sealed	d _a min.		D _a max.
1	3	1	—	0.07	—	0.120	0.03	0.0007	11.6	130 000	—	—	150 000	681	—	—	—	—	—	1.6	2.4	0.05	0.03
	3	1.5	—	0.08	—	0.100	0.02	0.0006	12.8	130 000	—	—	150 000	ML1003	—	—	—	—	—	1.6	2.4	0.07	0.05
	4	1.6	—	0.1	—	0.170	0.04	0.001	11.4	120 000	—	—	140 000	691	—	—	—	—	—	1.8	3.2	0.1	0.1
1.2	4	1.8	—	0.08	—	0.140	0.03	0.0009	11.4	120 000	—	—	140 000	ML1204	—	—	—	—	—	1.8	3.4	0.07	0.1
1.5	4	1.2	2	0.1	0.1	0.140	0.03	0.0009	13.2	120 000	—	—	140 000	68/1.5	W68/1.5 ZZ	—	—	—	—	2.3	3.2	0.1	0.1
	5	2	2.6	0.15	0.15	0.300	0.07	0.002	13.3	110 000	—	—	130 000	69/1.5	W69/1.5 ZZX	—	—	—	—	2.7	3.8	0.15	0.1
	6	2.5	3	0.1	0.1	0.410	0.10	0.003	11.4	86 000	—	—	100 000	ML1506	WML1506 ZZX	—	—	—	—	2.3	5.2	0.1	0.3
2	5	1.5	2.3	0.1	0.1	0.210	0.05	0.001	13.3	98 000	—	—	110 000	682	W682 ZZX	—	—	—	—	2.8	4.4	0.1	0.1
	5	2	2.5	0.1	0.08	0.210	0.05	0.001	13.3	98 000	—	—	110 000	ML2005	WML2005 ZZ	—	—	—	—	2.6	4.2	0.07	0.1
	6	2.3	3	0.15	0.1	0.410	0.10	0.003	11.4	86 000	—	—	100 000	692	W692 ZZ	—	—	—	—	3.2	4.8	0.1	0.2
	6	2.5	3	0.1	0.1	0.410	0.10	0.003	11.4	86 000	—	—	100 000	ML2006	WML2006 ZZX	—	—	—	—	2.8	5.2	0.1	0.3
	7	2.5	3	0.15	0.15	0.480	0.13	0.003	12.6	67 000	—	—	79 000	ML2007	WML2007 ZZX	—	—	—	—	3.2	5.8	0.15	0.4
	7	2.8	3.5	0.15	0.15	0.480	0.13	0.003	12.6	67 000	—	—	79 000	602	W602 ZZX	—	—	—	—	3.2	5.8	0.15	0.5
2.5	6	1.8	2.6	0.1	0.1	0.240	0.06	0.002	14.3	75 000	—	—	89 000	68/2.5	W68/2.5 ZZ	—	—	—	—	3.3	5.2	0.1	0.2
	7	2.5	3.5	0.15	0.15	0.390	0.11	0.003	13.7	66 000	—	—	79 000	69/2.5	W69/2.5 ZZ	—	—	—	—	3.7	5.8	0.15	0.4
	8	2.5	—	0.1	—	0.540	0.15	0.004	13.4	63 000	—	—	75 000	ML2508/1B	—	—	—	—	3.3	7.2	0.1	0.6	
	8	2.8	4	0.15	0.1	0.680	0.17	0.005	11.5	64 000	—	—	76 000	ML2508	WML2508 ZZX	—	—	—	—	3.7	6.8	0.1	0.6
3	6	2	2.5	0.08	0.05	0.240	0.06	0.002	14.3	75 000	—	—	89 000	ML3006	WML3006 ZZ	—	—	—	—	3.6	5.4	0.05	0.2
	7	2	3	(0.15)	(0.15)	0.390	0.11	0.003	13.7	66 000	—	—	79 000	683	W683 ZZ	—	—	—	—	4.2	5.8	0.1	0.3
	8	2.5	—	0.1	—	0.490	0.14	0.004	13.4	63 000	—	—	75 000	ML3008	—	—	—	—	3.8	7.2	0.1	0.5	
	8	3	4	0.15	0.15	0.680	0.17	0.005	11.5	64 000	—	—	76 000	693	W693 ZZ	—	—	—	—	4.2	6.8	0.15	0.6
	9	3	5	0.15	0.15	0.540	0.16	0.004	14.0	60 000	—	—	72 000	603	W603 ZZX	—	—	—	—	4.2	7.8	0.15	0.9
	10	4	4	0.15	0.15	0.800	0.22	0.006	12.8	52 000	—	44 000	63 000	623	623 ZZ	—	—	623 2RS	—	4.2	8.8	0.15	1.6
	13	5	5	0.2	0.2	1.65	0.49	0.01	12.3	44 000	—	—	54 000	633	633 ZZ	—	—	—	—	4.6	11.4	0.2	3.0
	4	7	2	2.5	0.08	0.05	0.320	0.11	0.003	15.1	64 000	—	—	76 000	ML4007	WML4007 ZZ	—	—	—	—	4.6	6.4	0.05
8		2	3	0.1	0.08	0.490	0.14	0.004	14.6	61 000	—	—	73 000	ML4008	WML4008 ZZ	—	—	—	—	4.8	7.2	0.08	0.4
9		2.5	4	(0.15)	(0.15)	0.800	0.23	0.006	12.8	59 000	—	—	70 000	684	W684 ZZ	—	—	—	—	5.2	7.8	0.1	0.6

[Note] 1) Numerical values in () do not conform to JIS B 1521.

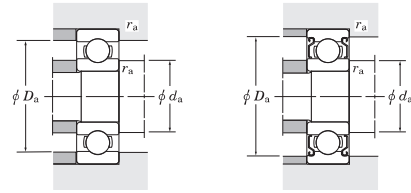
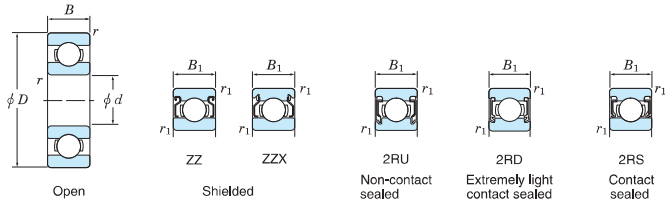
Extra-small ball bearings, miniature ball bearings

d (4) ~ (7) mm



d	Boundary dimensions (mm)					Basic load ratings (kN)		Fatigue load limit (kN) C _u	Factor f ₀	Limiting speeds (min ⁻¹)				Bearing No.					Mounting dimensions (mm)			[Refer.] Mass (g)	
	D	B	B ₁	r _{min.}	r _{1 min.}	C _r	C _{0r}			Grease lub.	Oil lub.	Open (ZZ, 2RU)	(2RD)	(2RS)	Open (Z)	Open	Shielded	Non-contact sealed	Extremely light shielded	Contact sealed	d _a min.		D _{da} max.
4	10	3	4	0.15	0.1	0.810	0.23	0.006	13.3	56 000	—	—	67 000	ML4010	WML4010 ZZ	—	—	—	5.2	8.8	0.1	1.0	
	11	4	4	0.15	0.15	1.20	0.35	0.009	12.4	54 000	—	44 000	65 000	694	694 ZZ	694 2RU	—	694 2RS	5.2	9.8	0.15	1.8	
	12	4	4	0.2	0.2	1.20	0.35	0.009	12.4	53 000	—	—	63 000	604	604 ZZ	—	—	—	5.6	10.4	0.2	2.1	
	13	5	5	0.2	0.2	1.65	0.48	0.010	12.3	44 000	—	39 000	54 000	624	624 ZZ	624 2RU	—	624 2RS	5.6	11.4	0.2	2.9	
	16	5	5	0.3	0.3	1.70	0.52	0.010	12.4	40 000	—	—	49 000	634	634 ZZ	—	—	—	6	14	0.3	5.3	
	5	8	2	2.5	0.08	0.05	0.270	0.09	0.002	15.7	59 000	—	—	70 000	ML5008	WML5008 ZZ	—	—	—	5.6	7.4	0.05	0.3
9		2.5	3	0.1	0.08	0.540	0.17	0.004	15.3	56 000	—	—	67 000	ML5009	WML5009 ZZ	—	—	—	5.8	8.2	0.08	0.5	
10		3	4	0.1	0.1	0.540	0.17	0.005	14.8	55 000	—	—	65 000	ML5010	WML5010 ZZ	—	—	—	5.8	9	0.1	0.9	
11		3	5	0.15	0.15	0.890	0.28	0.007	12.8	53 000	—	—	63 000	685	W685 ZZ	—	—	—	6.2	9.8	0.15	1.0	
13		4	4	0.2	0.2	1.35	0.43	0.010	12.3	50 000	45 000	42 000	60 000	695	695 ZZ	695 2RU	695 2RD	695 2RS	6.6	11.4	0.2	2.2	
14		5	5	0.2	0.2	1.65	0.49	0.010	12.3	50 000	—	—	60 000	605	605 ZZ	—	—	—	6.6	12.4	0.2	3.5	
16		5	5	0.3	0.3	2.15	0.67	0.030	12.4	40 000	36 000	33 000	49 000	625	625 ZZ	625 2RU	—	625 2RS	7	14	0.3	5.0	
19		6	6	0.3	0.3	2.90	0.89	0.040	12.3	35 000	32 000	27 000	43 000	635	635 ZZ	635 2RU	—	635 2RS	7	17	0.3	8.5	
6		10	2.5	3	0.1	0.08	0.620	0.22	0.006	15.7	53 000	—	—	63 000	ML6010	WML6010 ZZ	—	—	—	6.8	9.2	0.08	0.6
		12	3	4	0.15	0.1	0.890	0.29	0.008	14.5	49 000	—	37 000	59 000	ML6012	WML6012 ZZ	—	—	WML6012 2RS	7.2	10.8	0.1	1.3
	13	3.5	5	0.15	0.15	1.35	0.44	0.010	13.7	48 000	43 000	36 000	57 000	686	W686 ZZ	—	—	W686 2RS	7.2	11.8	0.15	1.8	
	15	5	5	0.2	0.2	1.70	0.52	0.010	12.4	45 000	41 000	32 000	54 000	696	696 ZZ	696 2RU	696 2RD	696 2RS	7.6	13.4	0.2	3.9	
	17	6	6	0.3	0.3	2.45	0.74	0.030	12.2	43 000	39 000	—	51 000	606	606 ZZ	606 2RU	606 2RD	—	8	15	0.3	5.8	
	19	6	6	0.3	0.3	2.90	0.89	0.040	12.3	35 000	32 000	27 000	43 000	626	626 ZZ	626 2RU	626 2RD	626 2RS	8	17	0.3	8.1	
	19	8	8	0.3	0.3	3.25	1.05	0.04	12.3	40 000	—	—	47 000	ML6019	ML6019 ZZ	—	—	—	7	18	0.3	9.0	
	22	7	7	0.3	0.3	4.10	1.35	0.060	12.4	31 000	—	23 000	37 000	636	636 ZZ	—	—	636 2RS	8	20	0.3	13	
	7	11	2.5	3	0.1	0.08	0.540	0.23	0.006	16.1	49 000	—	—	59 000	ML7011	WML7011 ZZ	—	—	—	7.8	10.2	0.08	0.7
		13	3	4	0.15	0.15	0.880	0.28	0.007	14.9	47 000	—	—	55 000	ML7013	WML7013 ZZ	—	—	—	8.2	11.8	0.15	1.4
14		3.5	5	0.15	0.15	1.45	0.51	0.010	14.2	45 000	—	—	54 000	687	W687 ZZ	—	—	—	8.2	12.8	0.15	2.0	
17		5	5	0.3	0.3	2.00	0.71	0.02	14.0	42 000	—	28 000	50 000	697	697 ZZ	—	—	697 2RS	9	15	0.3	5.3	
19		6	6	0.3	0.3	2.95	0.89	0.040	12.3	40 000	36 000	27 000	47 000	607	607 ZZ	607 2RU	607 2RD	607 2RS	9	17	0.3	7.6	
22		7	7	0.3	0.3	4.10	1.35	0.060	12.4	31 000	28 000	23 000	37 000	627	627 ZZ	627 2RU	627 2RD	627 2RS	9	20	0.3	13	
22		8	8	0.3	0.3	4.10	1.35	0.06	12.4	34 000	—	—	41 000	ML7022	ML7022 ZZ	—	—	—	9	20	0.3	14	

Extra-small ball bearings, miniature ball bearings
 d (7) ~ 9 mm



d	Boundary dimensions (mm)						Basic load ratings (kN)		Fatigue load limit (kN) C_u	Factor f_0	Limiting speeds (min^{-1})				Bearing No.					Mounting dimensions (mm)			[Refer.] Mass (g)
	D	B	B_1	$r^{1)}$ min.	$r_1^{1)}$ min.	C_r	C_{0r}	Grease lub.			Oil lub.	[Open ZZ, 2RU]	(2RD)	(2RS)	[Open Z]	Open	Shielded	Non-contact sealed	Extremely light shielded	Contact sealed	d_a min.	D_a max.	
7	26	9	9	0.3	0.3	5.65	1.95	0.100	12.3	26 000	—	—	32 000	637	637 ZZ	—	—	—	9	24	0.3	24	
8	12	2.5	3.5	0.1	0.08	0.680	0.27	0.007	16.4	47 000	—	—	55 000	ML8012	WML8012 ZZ	—	—	—	8.8	11.2	0.08	0.8	
	14	3.5	4	0.15	0.15	1.00	0.39	0.010	15.3	44 000	—	—	52 000	ML8014	WML8014 ZZ	—	—	—	9.2	12.8	0.15	1.8	
	16	4	5	0.2	0.2	1.55	0.59	0.020	14.0	42 000	38 000	28 000	50 000	688	W688 ZZ	W688 2RU	W688 2RD	W688 2RS	9.6	14.4	0.2	3.2	
	19	6	6	0.3	0.3	2.80	0.91	0.040	12.9	39 000	35 000	27 000	46 000	698	698 ZZ	—	698 2RD	698 2RS	10	17	0.3	7.2	
	22	7	7	0.3	0.3	4.10	1.35	0.060	12.4	34 000	31 000	23 000	41 000	608	608 ZZ	608 2RU	608 2RD	608 2RS	10	20	0.3	12	
	24	8	8	0.3	0.3	4.15	1.40	0.060	12.8	28 000	—	22 000	35 000	628	628 ZZ	628 2RU	—	628 2RS	10	22	0.3	18	
	28	9	9	0.3	0.3	5.65	1.95	0.100	12.3	26 000	23 000	—	32 000	638	638 ZZ	—	638 2RD	—	10	26	0.3	29	
9	17	4	5	0.2	0.2	1.65	0.66	0.020	14.9	39 000	35 000	—	46 000	689	W689 ZZ	W689 2RU	W689 2RD	—	10.6	15.4	0.2	3.5	
	20	6	6	0.3	0.3	3.10	1.05	0.040	13.3	35 000	32 000	25 000	42 000	699	699 ZZ	—	699 2RD	699 2RS	11	18	0.3	7.5	
	24	7	7	0.3	0.3	4.15	1.40	0.060	12.8	33 000	30 000	22 000	40 000	609	609 ZZ	609 2RU	609 2RD	609 2RS	11	22	0.3	15	
	26	8	8	(0.6)	(0.6)	5.70	1.95	0.100	12.4	27 000	24 000	19 000	33 000	629	629 ZZ	629 2RU	629 2RD	629 2RS	12.1	22	0.3	20	
	30	10	10	0.6	0.6	7.50	2.65	0.210	12.3	24 000	—	—	29 000	639	639 ZZ	—	—	—	13	26	0.6	35	

[Note] 1) Numerical values in () do not conform to JIS B 1521.