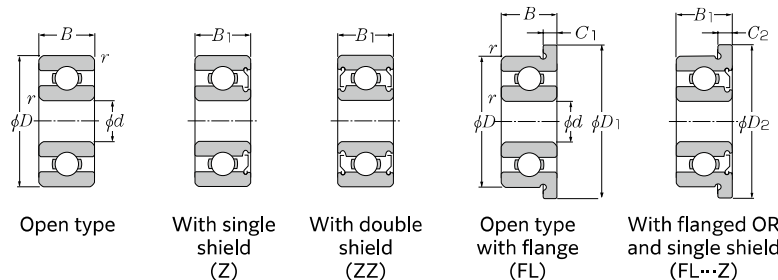


Miniature and Small Size Ball Bearings

NTN



d 5 ~ 9mm

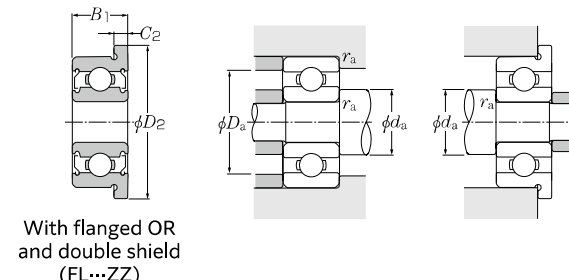
Boundary dimensions									Basic load rating		Fatigue load limit N C _u	Factor f ₀	Allowable speed min ⁻¹	
mm									dynamic	static			Grease lubrication	Oil lubrication
d	D	B	B ₁	D ₁	D ₂	C ₁	C ₂	r _s min ⁽¹⁾	C _r	C _{0r}				
5	11	—	4	—	12.6	—	0.8	0.15	795	282	11.4	14.0	43 000	51 000
	11	3	5	12.5	12.5	0.8	1	0.15	795	282	11.4	14.0	43 000	51 000
	13	4	4	15	15	1	1	0.2	1 190	430	17.3	13.4	40 000	47 000
	13	—	5	—	15	—	1	0.2	1 190	430	17.3	13.4	40 000	47 000
	14	5	5	16	16	1	1	0.2	1 470	505	20.5	12.8	39 000	46 000
	16	5	5	18	18	1	1	0.3	1 940	680	23.1	12.4	37 000	44 000
	19	6	6	—	—	—	—	0.3	2 590	885	64.5	12.1	34 000	40 000
6	10	2.5	3	11.2	11.2	0.6	0.6	0.1	515	196	5.15	15.2	43 000	51 000
	12	3	4	13.2	13.6	0.6	0.8	0.15	920	365	14.8	14.5	40 000	47 000
	13	3.5	5	15	15	1.0	1.1	0.15	1 200	440	17.5	13.7	39 000	46 000
	15	5	5	17	17	1.2	1.2	0.2	1 490	530	21.3	13.3	37 000	44 000
	16	6	6	—	—	—	—	0.2	1 960	695	28.1	12.7	36 000	42 000
	17	6	6	19	19	1.2	1.2	0.3	2 430	865	35.0	12.3	35 000	42 000
	19	6	6	22	22	1.5	1.5	0.3	2 590	885	64.5	12.1	34 000	40 000
7	11	2.5	3	12.2	12.2	0.6	0.6	0.1	610	269	7.05	15.6	40 000	47 000
	13	3	4	14.2	14.6	0.6	0.8	0.15	915	375	15.2	14.9	38 000	45 000
	14	3.5	5	16	16	1	1.1	0.15	1 300	505	20.4	14.0	37 000	44 000
	17	5	5	19	19	1.2	1.2	0.3	1 780	715	28.8	14.0	35 000	41 000
	19	6	6	—	—	—	—	0.3	2 480	910	60.0	12.9	34 000	40 000
	22	7	7	—	—	—	—	0.3	3 700	1 400	97.0	12.5	32 000	37 000
8	12	2.5	3.5	13.2	13.6	0.6	0.8	0.1	570	252	6.60	15.9	38 000	45 000
	14	3.5	4	15.6	15.6	0.8	0.8	0.15	910	385	15.5	15.2	36 000	43 000
	16	4	5	18	18	1	1.1	0.2	1 780	715	28.8	14.0	35 000	41 000
	19	6	6	22	22	1.5	1.5	0.3	2 200	865	35.0	13.8	33 000	39 000
	22	7	7	25	25	1.5	1.5	0.3	3 700	1 400	97.0	12.5	32 000	37 000
	24	8	8	—	—	—	—	0.3	4 450	1 590	122	11.7	31 000	36 000
9	14	3	4.5	—	—	—	—	0.1	1 020	465	18.8	15.5	36 000	42 000
	17	4	5	19	19	1	1.1	0.2	1 910	820	33.0	14.4	33 000	39 000
	20	6	6	—	—	—	—	0.3	2 750	1 090	44.0	13.5	32 000	38 000
	24	7	7	—	—	—	—	0.3	3 750	1 450	94.5	12.9	31 000	36 000
	26	8	8	—	—	—	—	0.6	5 050	1 960	138	12.4	30 000	35 000

1) Smallest allowable dimension for chamfer dimension r.

B-50

Miniature and Small Size Ball Bearings

NTN



Dynamic equivalent radial load
 $P_r = X F_r + Y F_a$

$\frac{f_0 \cdot F_a}{C_{0r}}$	e	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
		X	Y	X	Y
0.172	0.19	1	0	0.56	2.30
0.345	0.22				1.99
0.689	0.26				1.71
1.03	0.28				1.55
1.38	0.30				1.45
2.07	0.34				1.31
3.45	0.38				1.15
5.17	0.42				1.04
6.89	0.44				1.00

Static equivalent radial load

$$P_{0r} = 0.6 F_r + 0.5 F_a$$

When $P_{0r} < F_r$ use $P_{0r} = F_r$.

Open type	Bearing numbers						Installation-related dimensions				Mass (approx.)	
	With single shield	With double shield	Open type with flange	With flanged OR and single shield	With flanged OR and double shield		mm		mm		Open type	Open type with flange
							d _a Min.	D _a Max. ²⁾	r _{as} Max.			
—	WBC5-11Z	ZZ	—	FLWBC5-11Z	ZZ	6.2	6.8	9.8	0.2	1.8 ³⁾	2 ³⁾	—
685	W685Z	ZZ	FL685	FLW685Z	ZZ	6.2	6.8	9.8	0.15	1.1	1.3	—
695A	695AZ	ZZ	FL695A	FLW695AZ	ZZ	6.6	6.9	11.4	0.2	2.4	2.7	—
—	WBC5-13Z	ZZ	—	FLWBC5-13Z	ZZ	6.6	6.9	11.4	0.2	3.4 ³⁾	3.7 ³⁾	—
605	605Z	ZZ	FL605	FLW605Z	ZZ	6.6	7.4	12.4	0.2	3.5	3.9	—
625	625Z	ZZ	FL625	FLW625Z	ZZ	7	7.6	14	0.3	4.8	5.2	—
635	635Z	ZZ	—	—	—	7	9.5	17	0.3	8	—	—
676A	WA676AZ	ZZ	FL676A	FLWA676AZ	ZZ	6.6	6.7	9.2	0.1	0.65	0.74	—
BC6-12	WBC6-12Z	ZZ	FLBC6-12	FLAWBC6-12Z	ZZ	7.2	7.9	10.8	0.15	1.3	1.4	—
686	W686Z	ZZ	FL686	FLW686Z	ZZ	7	7.2	11.8	0.15	1.9	2.2	—
696	696Z	ZZ	FL696	FLW696Z	ZZ	7.6	7.8	13.4	0.2	3.8	4.3	—
BC6-16A	BC6-16AZ	ZZ	—	—	—	7.6	8	14.4	0.2	5.2	—	—
606	606Z	ZZ	FL606	FLW606Z	ZZ	8	8.6	15	0.3	6	6.5	—
626	626Z	ZZ	FL626	FLW626Z	ZZ	8	9.5	17	0.3	8.1	9.2	—
677	WA677Z	ZZ	FL677	FLWA677Z	ZZ	7.8	8.1	10.2	0.1	0.67	0.77	—
BC7-13	WBC7-13Z	ZZ	FLBC7-13	FLAWBC7-13Z	ZZ	8.2	8.9	11.8	0.15	1.4	1.5	—
687A	W687AZ	ZZ	FL687A	FLW687AZ	ZZ	8.2	8.7	12.8	0.15	2.1	2.4	—
697	697Z	ZZ	FL697	FLW697Z	ZZ	9	10	15	0.3	5.2	5.7	—
607	607Z	ZZ	—	—	—	9	10.4	17	0.3	8	—	—
627	627Z	ZZ	—	—	—	9	12.2	20	0.3	13	—	—
678A	W678AZ	ZZ	FL678A	FLWA678AZ	ZZ	8.8	9.1	11.2	0.1	0.75	0.86	—
BC8-14	WBC8-14Z	ZZ	FLBC8-14	FLWBC8-14Z	ZZ	9.2	9.5	12.8	0.15	1.8	1.9	—
688A	W688AZ	ZZ	FL688A	FLW688AZ	ZZ	9.6	10	14.4	0.2	3.1	3.5	—
698	698Z	ZZ	FL698	FLW698Z	ZZ	10	10.6	17	0.3	7.3	8.4	—
608	608Z	ZZ	FL608	FLW608Z	ZZ	10	12.2	20	0.3	12	13	—
628	628Z	ZZ	—	—	—	10	12.1	22	0.3	17	—	—
679	W679Z	ZZ	—	—	—	9.8	10.4	13.2	0.1	1.4	—	—
689	W689Z	ZZ	FL689	FLW689Z	ZZ	10.6	10.7	15.4	0.2	3.2	3.6	—
699	699Z	ZZ	—	—	—	11	11.6	18	0.3	8.2	—	—
609JX2	609JX2Z	ZZ	—	—	—	11	13.1	22	0.3	14	—	—
629X50	629X50Z	ZZ	—	—	—	13	13.9	22	0.3	20	—	—

2) This dimension applies to sealed and shielded bearings. 3) Values for double shielded bearings are shown.

B-51