

InnTec Bearing

LOW-NOISE BEARINGS SERIES

Deep groove
ball bearing



DEEP GROOVE BALL BEARING

InnTec low-noise and quiet running bearings fall into the category of optimized-structured deep groove ball bearings made of high quality GCr15 high carbon chromium bearing steel and manufactured with advanced equipment and technology. Deep groove ball bearing is a most common structure of rolling bearings found in wide applications. The cross-sectional radius of inner and outer rings' grooves is slightly larger than that of balls. Deep groove ball bearing can bear axial load in both directions as well as radial load. With a small friction torque, it's fit for high-revolution-speed, low-noise and low-vibration applications. Besides open type, it also has ZZ type with double steel shields, 2RS type with double rubber seals and snap ring on the outer ring type. With a small friction coefficient, high revolution speed limit, simple structure and low manufacturing cost, deep groove ball bearing is easier to be made to a high precision. Its dimensions and type vary. Axial load bearing capacity increases when it has a larger radial clearance. The contact angle is zero when it only bears radial load. Contact angle is above zero degree when axial load is applied. Deep groove ball bearing's cage normally use stamped wave-shape cage and lathed cage. Nylon cage is used at times. Large size bearing uses solid lathed metal cage. Within its axial clearance range, deep groove ball bearing, when installed with a shaft into it, can limit displacement of shaft or housing in both directions and thus can be used for axial alignment in both directions. Deep groove ball bearing also has self-aligning function. It can function normally when inclining to a angle of 2-10 arcminutes relative to housing, which affects working life though.

Application fields

Deep groove ball bearings are found in applications that demand low-noise and high-revolution-speed and are widely used in household appliances, office equipment, medical equipment, home air-conditioners, washing machines, high-precision motors, all of which demand a noise level. They are also used in high-precision equipment, motors, automobiles, motorcycles and other machines. They are the most widely used bearings in machinery industry.

Main types

1. Single row deep groove ball bearing
2. Single row deep groove ball bearing with metal shields
3. Single row deep groove ball bearing with rubber seals
4. Single row deep groove ball bearing with a snap ring groove or snap ring on the outer ring
5. Deep groove ball bearing with filling slots
6. Double row deep groove ball bearing

Size range

InnTec manufactures following low-noise deep groove ball bearings:

1. Miniature ball bearing with nominal outer diameter under 26 mm
2. Small ball bearing with nominal outer diameter ranging from 28 to 55 mm
3. Medium-size ball bearing with nominal outer diameter ranging from 60 to 115 mm



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CAGES USED IN DIFFERENT SERIES DEEP GROOVE BALL BEARINGS

Series	Stamped cage	Lathed brass cage
68	6800~6838	6840~68/800
69	6900~6936	6938~69/800
160	16001~16026	16028~16064
60	6000~6040	6044~60/670
62	6200~6240	6244~6272
63	6300~6332	6344~6356

FULL BALL DEEP GROOVE BALL BEARING

• Full ball deep groove ball bearings, having a filling slot in both the inner and outer rings, can accommodate more balls than standard deep groove ball bearings. Their axial load carrying capacity is limited with slots in inner and outer rings.

• BL2 and BL3 series share the same dimensions as those of 62 and 63 series. All the series are available open or with shields.

• These series bearings with a stamped cage are suggested to limit the load born by the outer ring with slot during use.

MATTERS THAT SHOULD BE PUT ATTENTION TO WHEN USING DEEP GROOVE BALL BEARINGS

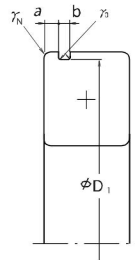
A limited load born by operating deep groove ball bearings brings about a sliding between balls and the raceway leading to a scratch, which is more likely to happen for large-size deep groove ball bearings with heavy balls. Please contact LXB with an expected limited load in choosing bearings.

EQUIVALENT DYNAMIC LOAD $P=XF_r + YF_a$

$\frac{f_0 F_a}{C_{0a}}$	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	0	0.56	1.99
0.689	0.26	1	0	0.56	1.71
0.03	0.28	1	0	0.56	1.55
0.38	0.30	1	0	0.56	1.45
2.07	0.34	1	0	0.56	1.31
3.45	0.38	1	0	0.56	1.15
5.17	0.43	1	0	0.56	1.04
6.89	0.44	1	0	0.56	1.00

$$\frac{F_a}{F_r} > 0.8, P_0 = 0.6 F_r + 0.5 F_a$$

$$\frac{F_a}{F_r} \leq 0.8, P_0 = F_r$$



SINGLE ROW DEEP GROOVE BALL BEARING

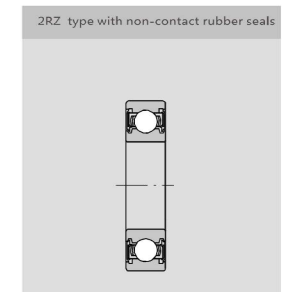
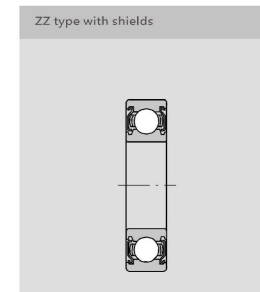
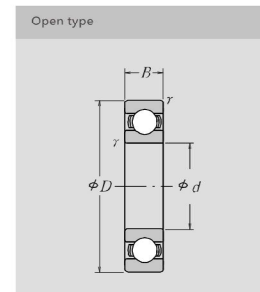
Single row deep groove ball bearing photoed above
Deep groove ball bearings with seals and shields are filled with lubrication grease.

Attributes of deep groove ball bearings with seals and shields

Structure	With shields ZZ type	With non-contact rubber seals VV type	With contact rubber seals 2RS type
Friction torque	Small	Small	Bigger than those of ZZ and 2RZ types
High revolution speed	good	Good	Limited by contact seals
Grease leakproofness	Good	Better than ZZ type's	Slightly better than 2RZ type's
dustproofness	good	Better than ZZ type's (applicable for slightly dusty environment)	Best of the three (applicable for heavily dusty environment)
waterproofness	Not applicable	Not applicable	Good (applicable for splashing environment)
Working temperature	-10-110 °C	-10-110 °C	-10-110 °C

The working temperature range is standard. The range is expandable using cold-resistant and heat-resistant grease and oil and special rubber material, all of which are available on request.

SINGLE ROW DEEP GROOVE BALL BEARING

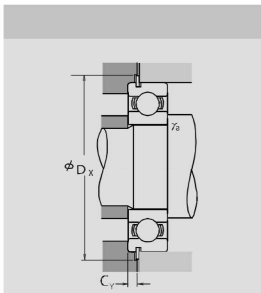
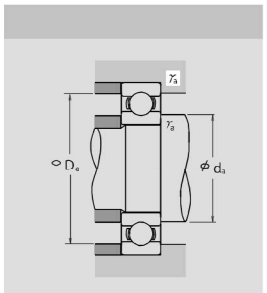
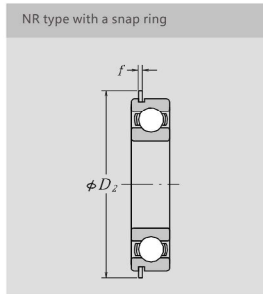
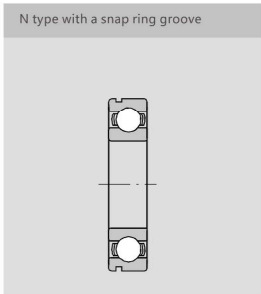
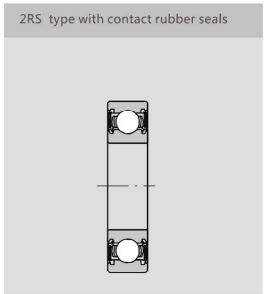




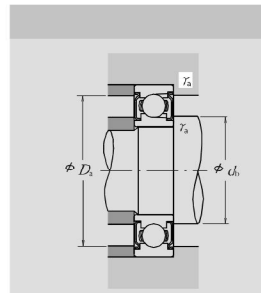
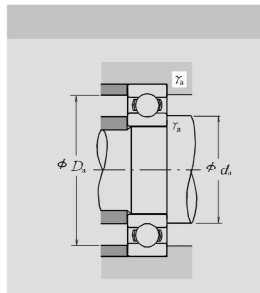
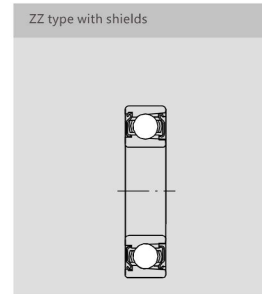
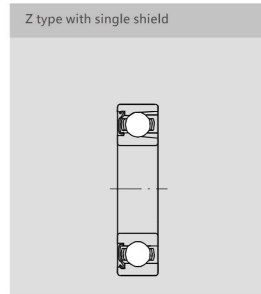
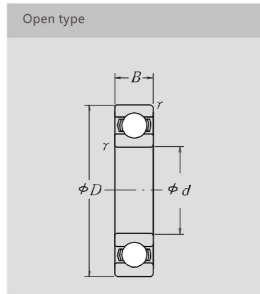
InnTec Bearing

Deep groove ball bearing

SINGLE ROW DEEP GROOVE BALL BEARING



FULL BALL DEEP GROOVE BALL BEARING





LOW-NOISE BEARINGS SERIES

Small and miniature metric size
single row deep groove ball bearings
600 series
MR series
Bore size ranging from 1 to 4 mm



InnTec Bearing

Deep groove
ball bearing

Dimensions						Installation dimensions						Revolution speed limit (rpm)		Load ratings				Weight (g)		Type with seals		Reference	
d	D	B	B ₁	r _r ⁽¹⁾	r _i ⁽¹⁾	d _s	d _e	D _s	D _e	r _s	r _e	Grease ZZ	Oil Z	(N)		(Kgf)		Open type	Type with shields			Open type	Type with shields
				(MIN)	(MIN)	MIN	MAX	MAX	MIN	MAX	MAX			Cr	Cor	Cr	Cor						
1	3	1	-	0.05	-	1.4	-	2.6	-	0.1	-	130000	150000	80	23	8	2.5	0.03	-	-	-	681	-
	3	1.5	-	0.05	-	1.4	-	2.6	-	0.1	-	130000	150000	80	23	8	2.5	0.04	-	-	-	MR 31	-
	4	1.6	-	0.1	-	1.8	-	3.2	-	0.1	-	100000	120000	38	35	14	3.5	0.09	-	-	-	691	-
1.2	4	1.8	2.5	0.1	0.1	2.0	1.9	3.2	3.5	0.1	0.1	110000	130000	138	35	14	3.5	0.10	0.14	-	-	MR 41X	MR 41XZZ
1.5	4	1.2	2	0.05	0.05	1.9	2.1	3.6	3.6	0.1	0.1	100000	120000	112	33	11	3.5	0.07	0.11	-	-	681X	681XZZ
	5	2	2.6	0.15	0.15	2.7	2.5	3.8	4.3	0.2	0.2	85000	100000	237	69	24	7	0.17	0.20	-	-	691X	691XZZ
	6	2.5	3	0.15	0.15	2.7	3.0	4.8	5.4	0.2	0.2	75000	90000	330	98	34	10	0.33	0.38	-	-	601X	601XZZ
2	5	1.5	2.3	0.08	0.08	2.6	2.7	4.4	4.2	0.1	0.1	85000	100000	169	50	17	5	0.12	0.17	-	-	682	682ZZ
	5	2	2.5	0.1	0.1	2.8	2.7	4.2	4.4	0.1	0.1	85000	100000	187	58	19	6	0.16	0.23	-	-	MR 52B	MR 52BZZ
	6	2.3	3	0.15	0.15	3.2	3.0	4.8	5.4	0.2	0.2	75000	90000	330	98	34	10	0.28	0.38	-	-	692	692ZZ
2.5	6	2.5	2.5	0.15	0.15	3.2	3.0	4.8	5.2	0.2	0.2	75000	90000	330	98	34	10	0.30	0.29	-	-	MR 62	MR 62ZZ
	7	2.5	3	0.15	0.15	3.2	3.8	5.8	6.2	0.2	0.2	63000	75000	385	127	39	13	0.45	0.49	-	-	MR 72	MR 72ZZ
	7	2.8	3.5	0.15	0.15	3.2	3.8	5.8	6.2	0.2	0.2	63000	75000	385	127	39	13	0.51	0.58	-	-	602	602ZZ
3	6	1.8	2.6	0.08	0.08	3.1	3.7	5.4	5.4	0.1	0.1	71000	80000	208	74	21	7.5	0.23	0.29	-	-	682X	682XZZ
	7	2.5	3.5	0.15	0.15	3.7	3.8	5.8	6.2	0.2	0.2	63000	75000	385	127	39	13	0.41	0.55	-	-	692X	692XZZ
	8	2.5	-	0.2	-	4.1	-	6.4	-	0.2	-	60000	67000	560	179	57	18	0.56	-	-	-	MR 82X	-
3	8	2.8	4	0.15	0.15	3.7	4.1	6.8	7.0	0.2	0.2	60000	71000	550	175	56	18	0.63	0.83	-	-	602X	602XZZ
	6	2	2.5	0.1	0.1	3.8	3.7	5.2	5.4	0.1	0.1	71000	80000	208	74	21	7.5	0.20	0.27	-	-	MR 63	MR 63ZZ
	7	2	3	0.1	0.1	3.8	4.0	6.2	6.4	0.1	0.1	63000	75000	390	130	40	13	0.32	0.45	-	-	683A	683AZZ
3	8	2.5	-	0.15	-	4.2	-	6.8	-	0.2	-	60000	67000	560	179	57	18	0.54	-	-	-	MR 83	-
	8	3	4	0.15	0.15	4.2	4.3	6.8	7.3	0.2	0.2	60000	67000	560	179	57	18	0.61	0.83	-	-	693	693ZZ
	9	2.5	4	0.2	0.15	4.6	4.3	7.4	7.9	0.2	0.2	56000	67000	570	187	58	19	0.73	1.18	-	-	MR 93	MR 93ZZ
3	9	3	5	0.15	0.15	4.2	4.3	7.8	7.9	0.2	0.2	56000	67000	570	187	58	19	0.87	1.45	-	-	603	603ZZ
	10	4	4	0.15	0.15	4.2	4.3	8.8	8.0	0.2	0.2	50000	60000	630	218	64	22	1.65	1.66	-	-	623	623ZZ
	13	5	5	0.2	0.2	4.6	6.0	11.4	11.3	0.2	0.2	40000	48000	1300	485	133	49	3.38	3.33	-	-	633	633ZZ
4	7	2	-	0.1	-	4.8	-	6.2	-	0.1	-	60000	67000	310	115	32	12	0.22	-	-	-	MR 74	-
	7	-	2.5	-	0.1	-	4.8	-	6.3	-	0.1	60000	71000	255	107	26	11	-	0.29	-	-	-	MR 74ZZ
	8	2	3	0.15	0.1	5.2	5.0	6.8	7.4	0.2	0.1	56000	67000	395	139	40	14	0.36	0.56	-	-	MR 84	MR 84ZZ
4	9	2.5	4	(0.15)	(0.15)	4.8	5.2	8.2	8.1	0.1	0.1	53000	63000	640	225	65	23	0.63	1.01	-	-	684A	684AZZ
	10	3	4	0.2	0.15	5.6	5.9	8.4	8.8	0.2	0.2	50000	60000	710	270	73	28	1.04	1.42	-	-	MR 104B	MR 104BZZ
	11	4	4	0.15	0.15	5.2	5.6	9.8	9.9	0.2	0.2	48000	56000	960	345	98	35	1.70	1.75	-	-	694	694ZZ
4	12	4	4	0.2	0.2	5.6	5.6	10.4	9.9	0.2	0.2	48000	56000	960	345	98	35	2.25	2.29	-	-	604	604ZZ
	13	5	5	0.2	0.2	5.6	6.0	11.4	11.3	0.2	0.2	40000	48000	1300	485	133	49	3.03	3.04	-	-	624	624ZZ
	16	5	5	0.3	0.3	6.0	7.5	14.0	13.8	0.3	0.3	36000	43000	1730	670	177	68	5.24	5.21	-	-	634	634ZZ1

All the above specifications are in accord with ISO15 standard.
Outer-ring-rotating Bearings with shields are available on request.



LOW-NOISE BEARINGS SERIES

Small and miniature metric size
single row deep groove ball bearings
600 series
MR series
Bore size ranging from 5 to 9 mm



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Deep groove
ball bearing

Dimensions (mm)					Installation dimensions (mm)							Revolution speed limit (rpm)			Load ratings				Weight (g)		Type with seals		Reference		
d	D	B	B ₁	r _r ⁽¹⁾	r _s ⁽¹⁾	d _s	d _e	D _e	D _o	r _s	r _e	Grease	Oil	(N)		(Kg f)		Open type	Type with shields			Open type	Type with shields		
													ZZZ	2RS	Z	Cr	Cor	Cr	Cor						
													2RZ												
5	8	2	-	0.1	-	5.8	-	7.2	-	0.1	-	53000	-	63000	310	120	31	12	0.26	-	-	-	MR 85	-	
	8	-	2.5	-	0.1	-	5.8	-	7.4	-	0.1	53000	-	63000	278	131	28	13	-	0.34	-	-	-	MR 85ZZ	
	9	2.5	3	0.15	0.15	6.2	6.0	7.8	8.2	0.2	0.2	50000	-	60000	430	168	44	17	0.50	0.58	-	-	MR 95	MR 95ZZ1	
	10	3	4	0.15	0.15	6.2	6.0	8.8	8.4	0.2	0.2	50000	-	60000	430	168	44	17	0.95	1.29	-	-	MR 105	MR 105ZZ	
	11	-	4	-	0.15	-	6.3	-	9.8	-	0.2	48000	-	56000	715	276	73	28	-	1.49	VV	-	-	MR 115ZZ	
	11	3	5	0.15	0.15	6.2	6.2	9.8	9.9	0.2	0.2	45000	-	53000	715	281	73	29	1.20	1.96	-	-	685	685ZZ	
	13	4	4	0.2	0.2	6.6	6.6	11.4	11.2	0.2	0.2	43000	40000	50000	1080	430	110	44	2.45	2.50	VV	DD	695	695ZZ	
	14	5	5	0.2	0.2	6.6	6.9	12.4	12.2	0.2	0.2	40000	38000	50000	1330	505	135	52	3.54	3.48	-	DD	605	605ZZ	
	16	5	5	0.3	0.3	7.0	7.5	14.0	13.8	0.3	0.3	36000	32000	43000	1730	670	177	68	4.95	4.86	VV	DD	625	625ZZ1	
	19	6	6	0.3	0.3	7.0	8.5	17.0	16.5	0.3	0.3	32000	30000	40000	2340	885	238	90	8.56	8.34	VV	DD	635	635ZZ1	
6	10	2.5	3	0.15	0.1	7.2	7.0	8.8	9.3	0.2	0.1	45000	-	53000	495	218	51	22	0.56	0.68	-	-	MR 106	MR 106ZZ1	
	12	3	4	0.2	0.15	7.6	7.2	10.4	10.9	0.2	0.2	43000	40000	50000	715	292	73	30	1.27	1.74	-	DD	MR 126	MR 126ZZ	
	13	3.5	5	0.15	0.15	7.2	7.4	11.8	11.7	0.2	0.2	40000	38000	50000	1080	440	110	45	1.91	2.69	VV	DD	686A	686AZZ	
	15	5	5	0.2	0.2	7.6	7.9	13.4	13.3	0.2	0.2	40000	36000	45000	1730	670	177	68	3.88	3.72	VV	DD	696	696ZZ1	
	17	6	6	0.3	0.3	8.0	8.2	15.0	14.8	0.3	0.3	38000	34000	45000	2260	835	231	85	5.97	6.08	VV	DD	606	606ZZ	
	19	6	6	0.3	0.3	8.0	8.5	17.0	16.5	0.3	0.3	32000	30000	40000	2340	885	238	90	8.15	7.94	VV	DD	626	626ZZ1	
	22	7	7	0.3	0.3	8.0	10.5	20.0	19.0	0.3	0.3	30000	28000	36000	3300	1370	335	140	14.00	14.00	VV	DD	636	636ZZ	
7	11	2.5	3	0.15	0.1	8.2	8.0	9.8	10.5	0.2	0.1	43000	-	50000	455	201	47	21	0.62	0.72	-	-	MR 117	MR 117ZZ	
	13	3	4	0.2	0.15	8.6	9.0	11.4	11.6	0.2	0.2	40000	-	48000	540	276	55	28	1.58	2.02	-	-	MR 137	MR 137ZZ	
	14	3.5	5	0.15	0.15	8.2	8.5	12.8	12.7	0.2	0.2	40000	34000	45000	1170	510	120	52	2.13	2.97	VV	DD	687	687ZZ1	
	17	5	5	0.3	0.2	9.0	10.2	15.0	14.8	0.3	0.3	36000	28000	43000	1610	710	164	73	5.26	5.12	VV	DD	697	697ZZ1	
	19	6	6	0.3	0.3	9.0	9.1	17.0	16.5	0.3	0.3	36000	32000	43000	2340	885	238	90	7.67	7.51	VV	DD	607	607ZZ1	
	22	7	7	0.3	0.3	9.0	10.5	20.0	19.0	0.3	0.3	30000	28000	36000	3300	1370	335	140	12.70	12.90	VV	DD	627	627ZZ	
	26	9	9	0.3	0.3	9.0	12.8	24.0	22.8	0.3	0.3	28000	22000	34000	4550	1970	465	201	24.00	25.00	VV	DD	637	637ZZ1	
8	12	2.5	3.5	0.15	0.1	9.2	9.0	10.8	11.3	0.2	0.1	40000	-	48000	545	274	56	28	0.71	0.97	-	-	MR 128	MR 128ZZ1	
	14	3.5	4	0.2	0.15	9.6	9.2	12.4	12.8	0.2	0.2	38000	32000	45000	820	385	83	39	1.86	2.16	VV	DD	MR 148	MR 148ZZ	
	16	4	5	0.2	0.2	9.6	10.2	14.4	14.2	0.2	0.2	36000	28000	43000	1610	710	164	73	3.12	4.02	VV	DD	688A	688AZZ1	
	19	6	6	0.3	0.2	10.0	10.0	17.0	16.5	0.3	0.3	36000	28000	43000	2240	910	228	93	7.23	7.18	VV	DD	698	698ZZ	
	22	7	7	0.3	0.3	10.0	10.5	20.0	19.0	0.3	0.3	34000	28000	40000	3300	1370	335	140	12.10	12.20	VV	DD	608	608ZZ	
	24	8	8	0.3	0.3	10.0	12.0	22.0	20.5	0.3	0.3	28000	24000	34000	3350	1430	340	146	17.20	17.40	VV	DD	628	628ZZ	
	28	9	9	0.3	0.3	10.0	12.8	26.0	22.8	0.3	0.3	28000	22000	34000	4550	1970	465	201	28.30	28.60	VV	DD	638	638ZZ1	
9	17	4	5	0.2	0.2	10.6	11.5	15.4	15.2	0.2	0.2	36000	24000	43000	1330	665	136	68	3.53	4.43	VV	DD	689	689ZZ1	
	20	6	6	0.3	0.3	11.0	12.0	18.0	17.2	0.3	0.3	34000	24000	40000	1720	840	175	86	8.45	8.33	VV	DD	699	699ZZ1	
	24	7	7	0.3	0.3	11.0	12.0	22.8	20.5	0.3	0.3	32000	24000	38000	3350	1430	340	146	14.50	14.70	VV	DD	609	609ZZ	
	26	8	8	(0.6)	(0.6)	11.0	12.8	24.0	22.8	0.3	0.3	28000	22000	34000	4550	1970	465	201	19.50	19.30	VV	DD	629	629ZZ	
	30	10	10	0.6	0.6	13.0	16.1	26.0	25.6	0.6	0.6	24000	-	30000	5100	2390	520	244	36.50	36.00	VV	-	639	639ZZ	

All the above specifications are in accord with ISO15 standard.
Outer-ring-rotating bearings with shields and bearings with a snap ring are available on request.



**LOW-NOISE BEARINGS
SERIES**

Small and miniature metric
size single row deep groove ball bearings
With flanged outer rings
F600 series
MF series
Bore size ranging from 1 to 4 mm



InnTec Bearing

Deep groove
ball bearing

Dimensions (mm)										Installation dimensions (mm)				Revolution speed limit (rpm)		Load ratings				Weight (g)		Type with seals		Reference		
d	D	D ₁	D ₂	B	B ₁	C ₁	C ₂	r ⁽¹⁾	r ⁽²⁾	d _a	d _b	r _a	r _b	Grease	Oil	(N)		(Kgf)		Open type	Type with shields			Open type	Type with shields	
								(MIN)	(MIN)	MIN	MAX	MAX	MAX			Cr	Cor	Cr	Cor							
1	3	3.8	-	1	-	0.3	-	0.05	-	1.4	-	0.1	-	130000	150000	80	23	8	2.5	0.04	-	-	-	-	F681	-
	4	5	-	1.6	-	0.5	-	0.1	-	1.8	-	0.1	-	100000	120000	140	36	14	3.5	0.14	-	-	-	-	F691	-
1.2	4	4.8	-	1.8	-	0.4	-	0.1	-	2.0	-	0.1	-	110000	130000	138	35	14	3.5	0.12	-	-	-	-	MF 41X	-
1.5	4	5	5	1.2	2	0.4	0.6	0.05	0.05	1.9	2.1	0.1	0.1	100000	120000	112	33	11	3.5	0.09	0.14	-	-	-	F681XF	F681XZZ
	5	6.5	6.5	2	2.6	0.6	0.8	0.15	0.15	2.7	2.5	0.2	0.2	85000	100000	237	69	24	7	0.23	0.28	-	-	-	F691XF	F691XZZ
2	6	7.5	7.5	2.5	3	0.6	0.8	0.15	0.15	2.7	3.0	0.2	0.2	75000	90000	330	98	34	10	0.42	0.52	-	-	-	F601XF	F601XZZ
	5	6.1	6.1	1.5	2.3	0.5	0.6	0.08	0.08	2.6	2.7	0.1	0.1	85000	100000	169	50	17	5	0.16	0.22	-	-	-	F682	F682ZZ
2.5	5	6.2	6.2	2	2.5	0.6	0.6	0.1	0.1	2.8	2.7	0.1	0.1	85000	100000	187	58	19	6	0.21	0.27	-	-	-	MF 52B	MF 52BZZ
	6	7.5	7.5	2.3	3	0.6	0.8	0.15	0.15	3.2	3.0	0.2	0.2	75000	90000	330	98	34	10	0.35	0.48	-	-	-	F692	F692ZZ
3	6	7.2	-	2.5	-	0.6	-	0.15	-	3.2	-	0.2	-	75000	90000	330	98	34	10	0.36	-	-	-	-	MF 62	-
	7	8.2	8.2	2.5	3	0.6	0.6	0.15	0.15	3.2	3.8	0.2	0.2	63000	75000	385	127	39	13	0.52	0.56	-	-	-	MF 72	MF 72ZZ
3.5	7	8.5	8.5	2.8	3.5	0.7	0.9	0.15	0.15	3.2	3.1	0.2	0.2	63000	75000	385	127	39	13	0.60	0.71	-	-	-	F602	F602ZZ
	6	7.1	7.1	1.8	2.6	0.5	0.8	0.08	0.08	3.1	3.7	0.1	0.1	71000	80000	208	74	21	7.5	0.25	0.36	-	-	-	F682XF	F682XZZ
4	7	8.5	8.5	2.5	3.5	0.7	0.9	0.15	0.15	3.7	3.8	0.2	0.2	63000	75000	385	127	39	13	0.51	0.68	-	-	-	F692XF	F692XZZ
	8	9.2	-	2.5	-	0.6	-	0.2	-	4.1	-	0.2	-	60000	67000	560	179	57	18	0.62	-	-	-	-	MF 82X	-
4.5	8	9.5	9.5	2.8	4	0.7	0.9	0.15	0.15	3.7	3.5	0.2	0.2	60000	71000	550	175	56	18	0.74	0.98	-	-	-	F602XF	F602XZZ
	6	7.2	7.2	2	2.5	0.6	0.6	0.1	0.1	3.8	3.7	0.1	0.1	71000	80000	208	74	21	7.5	0.27	0.33	-	-	-	MF 63	MF 63ZZ
5	8	9.2	-	2.5	-	0.6	-	0.15	-	4.2	-	0.2	-	60000	67000	560	179	57	18	0.56	-	-	-	-	MF 83	-
	8	9.5	9.5	3	4	0.7	0.9	0.15	0.15	4.2	4.3	0.2	0.2	60000	67000	560	179	57	18	0.70	0.97	-	-	-	F693	F693ZZ
5.5	9	10.2	10.6	2.5	4	0.6	0.8	0.2	0.15	4.6	4.3	0.2	0.2	56000	67000	570	187	58	19	0.81	1.34	-	-	-	MF 93	MF 93ZZ
	9	10.5	10.5	3	5	0.7	1	0.15	0.15	4.2	4.3	0.2	0.2	56000	67000	570	187	58	19	1.00	1.63	-	-	-	F603	F603ZZ
6	10	11.5	11.5	4	4	1	1	0.2	0.2	4.2	4.3	0.2	0.2	50000	60000	630	218	64	22	1.85	1.86	-	-	-	F623	F623ZZ
	13	15	15	5	5	1	1	0.2	0.2	4.6	6.0	0.2	0.2	36000	43000	1300	485	133	49	3.73	3.59	-	-	-	F633	F633ZZ
7	7	8.2	-	2	-	0.6	-	0.1	-	4.8	-	0.1	-	60000	67000	310	115	32	12	0.29	-	-	-	-	MF 74	-
	7	-	8.2	-	2.5	-	0.6	-	0.1	-	4.8	-	0.1	-	60000	71000	255	107	26	11	-	0.35	-	-	MF 74ZZ	-
8	8	9.2	9.2	2	3	0.6	0.6	0.15	0.1	5.2	5.0	0.2	0.1	56000	67000	395	139	40	14	0.44	0.63	-	-	-	MF 84	MF 84ZZ
	9	10.3	10.3	2.5	4	0.6	1	(0.15)	(0.15)	4.8	5.2	0.1	0.1	53000	63000	640	225	65	23	0.70	1.14	-	-	-	F684	F684AZZ
9	10	11.2	11.6	3	4	0.6	0.8	0.2	0.15	5.6	5.9	0.2	0.2	50000	60000	710	270	73	28	1.13	1.59	-	-	-	MF 104B	MF 104BZZ
	11	12.5	12.5	4	4	1	1	0.15	0.15	5.2	5.6	0.2	0.2	48000	56000	960	345	98	35	1.91	1.96	-	-	-	F694	F694ZZ
10	12	13.5	13.5	4	4	1	1	0.2	0.2	5.6	5.6	0.2	0.2	48000	56000	960	345	98	35	2.53	2.53	-	-	-	F604	F604ZZ
	13	15	15	5	5	1	1	0.2	0.2	5.6	6.0	0.2	0.2	40000	48000	1300	485	133	49	3.38	3.53	-	-	-	F624	F624ZZ
11	16	18	18	5	5	1	1	0.3	0.3	6.0	7.5	0.3	0.3	36000	43000	1730	670	177	68	5.73	5.62	-	-	-	F634	F634ZZ1

All the above specifications are in accord with ISO15 standard.
Outer-ring-rotating Bearings with shields are available on request.

LOW-NOISE BEARINGS SERIES



Small and miniature metric size single row deep groove ball bearings
 With flanged outer rings
 F600 series
 MF series
 Bore size ranging from 5 to 9 mm



InnTec Bearing

Deep groove ball bearing

Dimensions (mm)										Installation dimensions (mm)				Revolution speed limit (rpm)			Load ratings				Weight (g)		Type with seals		Reference	
d	D	D ₁	D ₂	B	B ₁	C ₁	C ₂	r	r ₁	d _a	d _b	r _a	r _b	Grease	Oil	(N)		(Kg f)		Open type	Type with shields			Open type	Type with shields	
														Open type ZZZ	2RS	Open type Z	C ₁	C _{0r}	C ₁	C _{0r}						
5	8	9.2	-	2	-	0.6	-	0.1	-	5.8	-	0.1	-	53000	-	63000	310	120	31	12	0.33	-	-	-	MF 85	-
	8	-	9.2	-	2.5	-	0.6	-	0.1	-	5.8	-	0.1	53000	-	63000	278	131	28	13	-	0.41	-	-	-	MF 85ZZ
	9	10.2	10	2.5	3	0.6	0.6	0.15	0.15	6.2	6.0	0.2	0.2	50000	-	60000	430	168	44	17	0.59	0.66	-	-	MF 95	MF 95ZZ1
	10	11.2	12	3	4	0.6	0.8	0.15	0.15	6.2	6.0	0.2	0.2	50000	-	60000	430	168	44	17	1.05	1.46	-	-	MF 105	MF 105ZZ
	11	12.5	13	3	5	0.8	1	0.15	0.15	6.2	6.2	0.2	0.2	45000	-	53000	715	281	73	29	1.37	2.18	-	-	F685	F685ZZ
6	13	15	15	4	4	1	1	0.2	0.2	6.6	6.6	0.2	0.2	43000	40000	50000	1080	430	110	44	2.79	2.84	VV	DD	F695	F695ZZ
	14	16	16	5	5	1	1	0.2	0.2	6.6	6.9	0.2	0.2	40000	38000	50000	1330	505	135	52	3.90	3.85	-	DD	F605	F605ZZ
	16	18	18	5	5	1	1	0.3	0.3	7.0	7.5	0.3	0.3	36000	32000	43000	1730	670	177	68	5.37	5.27	VV	DD	F625	F625ZZ1
	19	22	22	6	6	1.5	1.5	0.3	0.3	7.0	8.5	0.3	0.3	32000	30000	40000	2340	885	238	90	9.49	9.49	VV	DD	F635	F635ZZ1
	10	11.2	11	2.5	3	0.6	0.6	0.15	0.1	7.2	7.0	0.2	0.1	45000	-	53000	495	218	51	22	0.65	0.77	-	-	MF 106	MF 106ZZ1
	12	13.2	14	3	4	0.6	0.8	0.2	0.15	7.6	7.2	0.2	0.2	43000	40000	50000	715	292	73	30	1.38	1.94	-	DD	MF 126	MF 126ZZ
	13	15	15	3.5	5	1	1.1	0.15	0.15	7.2	7.4	0.2	0.2	40000	38000	50000	1080	440	110	45	2.25	3.04	VV	DD	F686A	F686AZZ
	15	17	17	5	5	1.2	1.2	0.2	0.2	7.6	7.9	0.2	0.2	40000	36000	45000	1730	670	177	68	4.34	4.26	VV	DD	F696	F696ZZ1
	17	19	19	6	6	1.2	1.2	0.3	0.3	8.0	8.2	0.3	0.3	38000	34000	45000	2260	835	231	85	6.58	6.61	VV	DD	F606	F606ZZ
	19	22	22	6	6	1.5	1.5	0.3	0.3	8.0	8.5	0.3	0.3	32000	30000	40000	2340	885	238	90	9.09	9.09	VV	DD	F626	F626ZZ1
7	22	25	25	7	7	1.5	1.5	0.3	0.3	8.0	10.5	0.3	0.3	30000	28000	36000	3300	1370	335	140	14.60	14.70	VV	DD	F636	F636ZZ
	11	12.2	12	2.5	3	0.6	0.6	0.15	0.1	8.2	8.0	0.2	0.1	43000	-	50000	455	201	47	21	0.72	0.82	-	-	MF 117	MF 117ZZ
	13	14.2	15	3	4	0.6	0.8	0.2	0.15	8.6	9.0	0.2	0.2	40000	-	48000	540	276	55	28	1.70	2.23	-	-	MF 137	MF 137ZZ
	14	16	16	3.5	5	1	1.1	0.15	0.15	8.2	8.5	0.2	0.2	40000	34000	45000	1170	510	120	52	2.48	3.37	VV	DD	F687	F687ZZ1
	17	19	19	5	5	1.2	1.2	0.3	0.3	9.0	10.2	0.3	0.3	36000	28000	43000	1610	715	164	73	5.65	5.65	VV	DD	F697	F697ZZ1
8	19	22	22	6	6	1.5	1.5	0.3	0.3	9.0	9.1	0.3	0.3	36000	32000	43000	2340	885	238	90	8.66	8.66	VV	DD	F607	F607ZZ1
	22	25	25	7	7	1.5	1.5	0.3	0.3	9.0	10.5	0.3	0.3	30000	28000	36000	3300	1370	335	140	14.20	14.20	VV	DD	F627	F627ZZ
	12	13.2	14	2.5	3.5	0.6	0.8	0.15	0.1	9.2	9.0	0.2	0.1	40000	-	48000	545	274	56	28	0.82	1.15	-	-	MF 128	MF 128ZZ1
	14	15.6	16	3.5	4	0.8	0.8	0.2	0.15	9.6	9.2	0.2	0.2	38000	32000	45000	820	385	83	39	2.09	2.39	VV	DD	MF 148	MF 148ZZ
	16	18	18	4	5	1	1.1	0.2	0.2	9.6	10.2	0.2	0.2	36000	30000	43000	1610	710	164	73	3.54	4.47	VV	DD	F688A	F688AZZ1
	19	22	22	6	6	1.5	1.5	0.3	0.3	10.0	10.0	0.3	0.3	36000	28000	43000	2240	910	228	93	8.35	8.30	VV	DD	F698	F698ZZ
9	22	25	25	7	7	1.5	1.5	0.3	0.3	10.0	10.5	0.3	0.3	34000	28000	40000	3300	1370	335	140	13.40	13.50	VV	DD	F608	F608ZZ
	17	19	19	4	5	1	1.1	0.2	0.2	10.6	11.5	0.2	0.2	36000	24000	43000	1330	665	136	68	3.97	4.91	VV	DD	F689	F689ZZ1
	20	23	23	6	6	1.5	1.5	0.3	0.3	11.0	12.0	0.3	0.3	34000	24000	40000	1720	840	175	86	9.51	9.51	VV	DD	F699	F699ZZ1

Outer-ring-rotating bearings with shields are available on request.

LOW-NOISE BEARINGS SERIES



Small and miniature inch size deep groove ball bearings
With wider inner rings
RW series
Bore size ranging from 1.016 to 9.525 mm



InnTec Bearing

Deep groove ball bearing

Dimensions (mm)					Installation dimensions (mm)					Revolution speed limit (rpm)		Load ratings				Weight (g)		Reference	
d	D	B	B _i	r	d _s	d _e	D _s	D _e	r _s	Grease	Oil	(N)		(Kgf.)		Open type	Type with shields	Open type	Type with shields
				(MIN)	MIN	MAX	MAX	MIN	MAX			C _r	C _{or}	C _r	C _{or}				
1.016	3.175	1.191	-	0.1	1.9	-	2.3	-	0.1	130000	150000	80	23	8	2.5	0.04	-	R09	-
1.191	3.967	1.588	2.380	0.1	2.0	1.9	3.1	3.5	0.1	110000	130000	138	35	14	3.5	0.09	0.11	R0	ROZZ
1.397	4.762	1.984	2.779	0.1	2.2	2.3	3.9	4.1	0.1	90000	110000	231	66	24	6.5	0.15	0.19	R1	R1ZZ
1.984	6.350	2.380	3.571	0.1	2.8	3.9	5.5	5.9	0.1	67000	80000	310	108	32	11	0.35	0.50	R1-4	R1-4ZZ
2.380	4.762	1.588	-	0.1	3.2	-	3.9	-	0.1	80000	95000	188	60	19	6	0.10	-	R133	-
	4.762	-	2.380	0.1	-	3.0	-	4.2	0.1	80000	95000	143	52	15	5.5	-	0.13	-	R133ZZS
3.175	7.938	2.779	3.571	0.15	3.6	4.1	6.7	7.0	0.2	60000	71000	550	175	56	18	0.60	0.72	R1-5	R1-5ZZ
	6.350	2.380	2.779	0.1	4.0	3.9	5.5	5.9	0.1	67000	80000	283	95	29	9.5	0.25	0.27	R144	R144ZZ
	7.938	2.779	3.571	0.1	4.0	4.3	7.1	7.3	0.1	60000	67000	560	179	57	18	0.55	0.72	R2-5	R2-5ZZ
9.525	2.779	3.571	0.15	4.4	4.6	8.3	8.2	0.2	53000	63000	640	225	65	23	0.96	1.13	R2-6	R2-6ZZS	
	3.967	3.967	0.3	5.2	4.8	7.5	8.0	0.3	56000	67000	630	218	64	22	1.36	1.39	R2	R2ZZ	
	12.700	4.366	4.366	0.3	5.2	4.6	10.7	8.2	0.3	53000	63000	640	225	65	23	3.30	3.23	R2A	R2AZZ
3.967	7.938	2.779	3.175	0.1	4.8	5.5	7.1	7.3	0.1	53000	63000	360	149	37	15	0.51	0.56	R155	R155ZZS
4.762	7.938	2.779	3.175	0.1	5.6	5.5	7.1	7.3	0.1	53000	63000	360	149	37	15	0.39	0.42	R156	R156ZZS
	9.525	3.175	3.175	0.1	5.6	5.9	8.7	8.8	0.1	50000	60000	710	270	73	28	0.81	0.85	R166	R166ZZ
	12.700	3.967	4.978	0.3	6.8	6.5	10.7	11.2	0.3	43000	53000	1300	485	133	49	2.21	2.79	R3	R3ZZ
6.350	9.525	3.175	3.175	0.1	7.2	7.0	8.7	8.9	0.1	48000	56000	420	204	43	21	0.58	0.62	R168B	R168BZZ
	12.700	3.175	4.762	0.15	7.6	7.4	11.5	11.6	0.2	40000	50000	1080	440	110	45	1.53	2.21	R188	R188ZZ
	15.875	4.978	4.978	0.3	8.4	8.4	13.8	13.8	0.3	38000	45000	1610	660	164	68	4.50	4.43	R4B	R4BZZ
7.938	19.050	5.558	7.142	0.4	9.4	9.0	16.0	16.6	0.4	36000	43000	2340	885	238	90	7.48	9.17	R4AA	R4AAZZ
	12.700	3.967	3.967	0.15	9.2	9.0	11.5	11.6	0.2	40000	48000	540	276	55	28	1.56	1.48	R1810	R1810ZZ
9.525	22.225	5.558	7.142	0.4	12.6	11.9	19.2	20.0	0.4	32000	38000	3350	1410	340	144	9.02	11.00	R6	R6ZZ

Outer-ring-rotating bearings with shields are available on request.
Single shield types Z are also available.

LOW-NOISE BEARINGS SERIES



Small and miniature inch size deep groove ball bearings
With flanged outer rings
FR series
Bore size ranging from 1.191 to 9.525 mm



InnTec Bearing

Deep groove ball bearing

Dimensions (mm)								Installation dimensions (mm)			Revolution speed limit (rpm)		Load ratings				Weight (g)		Reference	
d	D	D ₁	B	B ₁	C ₁	C ₂	r	d _i	d _o	r _a	Grease	Oil	(N)		(Kgf)		Open type	Type with shields	Open type	Type with shields
							(MIN)	MIN	MAX	MAX	Open type ZZZ	Open type Z	C _r	C _{or}	C _r	C _{or}				
1.191	3.967	5.156	1.588	2.380	0.330	0.787	0.1	2.0	1.9	0.1	110000	130000	138	35	14	3.5	0.11	0.16	FR0	FR0ZZ
1.397	4.762	5.944	1.984	2.779	0.584	0.787	0.1	2.2	2.3	0.1	90000	110000	231	66	24	6.5	0.20	0.25	FR1	FR1ZZ
1.984	6.350	7.518	2.380	3.571	0.584	0.787	0.1	2.8	3.9	0.1	67000	80000	310	108	32	11	0.41	0.58	FR1-4	FR1-4ZZ
2.380	4.762	5.944	1.588	-	0.460	-	0.1	3.2	-	0.1	80000	95000	188	60	19	6	0.13	-	FR133	-
	4.762	5.944	-	2.380	-	0.790	0.1	-	3.0	0.1	80000	95000	143	52	15	5.5	-	0.19	-	FR133ZZS
	7.938	9.119	2.779	3.571	0.584	0.787	0.15	3.6	3.5	0.2	60000	71000	550	175	56	18	0.68	0.82	FR1-5	FR1-5ZZ
3.175	6.350	7.518	2.380	2.779	0.584	0.787	0.1	4.0	3.9	0.1	67000	80000	283	95	29	9.5	0.31	0.35	FR144	FR144ZZ
	7.938	9.119	2.779	3.571	0.584	0.787	0.1	4.0	4.3	0.1	60000	67000	560	179	57	18	0.62	0.81	FR2-5	FR2-5ZZ
	9.525	10.719	2.779	3.571	0.584	0.787	0.15	4.4	4.6	0.2	53000	63000	640	225	65	23	1.04	1.25	FR2-6	FR2-6ZZS
	9.525	11.176	3.967	3.967	0.762	0.762	0.3	5.2	4.8	0.3	56000	67000	630	218	64	22	1.51	1.55	FR2	FR2ZZ
3.967	7.938	9.119	2.779	3.175	0.584	0.914	0.1	4.8	5.5	0.1	53000	63000	360	149	37	15	0.59	0.67	FR155	FR155ZZS
4.762	7.938	9.119	2.779	3.175	0.584	0.914	0.1	5.6	5.5	0.1	53000	63000	360	149	37	15	0.47	0.53	FR156	FR156ZZS
	9.525	10.719	3.175	3.175	0.584	0.787	0.1	5.6	5.9	0.1	50000	60000	710	270	73	28	0.90	0.98	FR166	FR166ZZ
	12.700	14.351	4.978	4.978	1.067	1.067	0.3	6.8	6.5	0.3	43000	53000	1300	485	133	49	2.97	3.09	FR3	FR3ZZ
6.350	9.525	10.719	3.175	3.175	0.584	0.914	0.1	7.2	7.0	0.1	48000	56000	420	204	43	21	0.66	0.75	FR168B	FR168BZZ
	12.700	13.894	3.175	4.762	0.584	1.143	0.15	7.6	7.4	0.2	40000	50000	1080	440	110	45	1.64	2.49	FR188	FR188ZZ
	15.875	17.526	4.978	4.978	1.067	1.067	0.3	8.4	8.4	0.3	38000	45000	1610	660	164	68	4.82	4.78	FR4B	FR4BZZ
7.938	12.700	13.894	3.967	3.967	0.787	0.787	0.15	9.2	9.0	0.2	40000	48000	540	276	55	28	1.71	1.63	FR1810	FR1810ZZ
9.525	22.225	24.613	7.142	7.142	1.570	1.570	0.4	###	###	0.4	32000	38000	3350	1410	340	144	10.10	12.10	FR6	FR6ZZ

Outer-ring-rotating bearings with shields are available on request.
Single shield types Z are also available.

LOW-NOISE BEARINGS SERIES



Single deep groove ball bearing
Bore size ranging from 10 to 22 mm



InnTec Bearing

Deep groove ball bearing

Dimensions (mm)				Installation dimensions (mm)						Revolution speed limit (rpm)				snap ring groove dimensions (mm)				snap ring dimensions (mm)			Load ratings				Weight		Reference					
d	D	B	r	d ₁ ⁽²⁾	D ₁ ⁽²⁾	r _s	D _s	C _r	Grease	Oil	a	b	D ₁	r _e	r _k	D ₂	f	(N)		(Kgf)		系数	(g)	Open type	Type with shields	Type with seals	With a snap ring groove	With a snap ring				
			(MIN)	(MIN)	(MAX)	(MAX)	(MAX)	(MIN)	(MAX)	Open type	Open type	(MAX)	(MIN)	(MAX)	(MAX)	(MIN)	(MAX)	(MAX)	Cr	Cor	Cr	Cor	f _s									
ZZZ																																
10	19	5	0.3	12	12	17	0.3	-	-	34000	24000	40000	-	-	-	-	-	-	-	1720	840	175	85	14.8	0.005	6800	ZZ	2RZ	2RS	-	-	
	22	6	0.3	12	12.5	20	0.3	25.5	1.5	32000	22000	38000	1.1	0.8	20.8	0.2		0.2	24.80	0.7	2700	1270	275	129	14.0	0.009	6900	ZZ	2RZ	2RS	N	NR
	26	8	0.3	12	14	24	0.3	29.4	1.9	30000	22000	36000	1.4	0.87	24.5	0.2		0.3	28.70	0.84	4550	1970	465	201	12.4	0.018	6000	ZZ	2RZ	2RS	N	NR
	30	9	0.6	14	16	26	0.6	35.5	2.9	24000	18000	30000	2.1	1.35	28.17	0.4		0.5	34.70	1.12	5100	2390	520	244	13.2	0.032	6200	ZZ	2RZ	2RS	N	NR
	35	11	0.6	14	16.5	31	0.6	40.5	2.9	22000	17000	26000	2.1	1.35	33.17	0.4		0.5	39.70	1.12	8100	3450	825	350	11.2	0.052	6300	ZZ	2RZ	2RS	N	NR
12	21	5	0.3	14	14	19	0.3	-	-	32000	20000	38000	-	-	-	-		-	-	-	1920	1040	195	106	15.3	0.006	6801	ZZ	2RZ	2RS	-	-
	24	6	0.3	14	14.5	22	0.3	27.5	1.5	30000	20000	36000	1.1	0.8	22.8	0.2		0.2	26.80	0.70	2890	1460	295	149	14.5	0.01	6901	ZZ	2RZ	2RS	N	NR
	28	7	0.3	14	-	26	0.3	-	-	28000	-	32000	-	-	-	-		-	-	-	5100	2370	520	241	13.0	0.019	16001	-	-	-	-	-
	28	8	0.3	14	15.5	26	0.3	31.4	1.9	28000	18000	32000	1.4	0.87	26.5	0.2		0.3	30.70	0.84	5100	2370	520	241	13.0	0.022	6001	ZZ	2RZ	2RS	N	NR
	32	10	0.6	16	17	28	0.6	37.5	2.9	22000	17000	28000	2.1	1.35	30.15	0.4		0.5	36.70	1.12	6800	3050	695	310	12.3	0.037	6201	ZZ	2RZ	2RS	N	NR
	37	12	1	17	18	32	1	42	2.9	20000	16000	24000	2.1	1.35	34.77	0.4		0.5	41.30	1.12	9700	4200	990	425	11.1	0.06	6301	ZZ	2RZ	2RS	N	NR
15	24	5	0.3	17	17	22	0.3	-	-	28000	17000	34000	-	-	-	-		-	-	-	2070	1260	212	128	15.8	0.007	6802	ZZ	2RZ	2RS	-	-
	28	7	0.3	17	17	26	0.3	31.5	1.8	26000	17000	30000	1.3	0.95	26.7	0.25		0.3	30.80	0.85	4350	2260	440	230	14.3	0.015	6902	ZZ	2RZ	2RS	N	NR
	32	8	0.3	17	-	30	0.3	-	-	24000	-	28000	-	-	-	-		-	-	-	5600	2830	570	289	13.9	0.027	16002	-	-	-	-	-
	32	9	0.3	17	19	30	0.3	37.5	2.9	24000	15000	28000	2.1	1.35	30.15	0.4		0.3	36.70	1.12	5600	2830	570	289	13.9	0.031	6002	ZZ	2RZ	2RS	N	NR
	35	11	0.6	19	20.5	31	0.6	40.5	2.9	20000	14000	24000	2.1	1.35	33.17	0.4		0.5	39.70	1.12	7650	3750	780	380	13.2	0.045	6202	ZZ	2RZ	2RS	N	NR
	42	13	1	20	22.5	37	1	47	2.9	17000	13000	20000	2.1	1.35	39.75	0.4		0.5	46.30	1.12	11400	5450	1170	555	12.3	0.083	6302	ZZ	2RZ	2RS	N	NR
17	26	5	0.3	19	19	24	0.3	-	-	26000	15000	30000	-	-	-	-		-	-	-	2630	1570	268	160	15.7	0.007	6803	ZZ	2RZ	2RS	-	-
	30	7	0.3	19	19.5	28	0.3	33.5	1.8	24000	15000	28000	1.3	0.95	28.7	0.25		0.3	32.80	0.85	4600	2550	470	260	14.7	0.017	6903	ZZ	2RZ	2RS	N	NR
	35	8	0.3	19	-	33	0.3	-	-	22000	-	26000	-	-	-	-		-	-	-	6000	3250	610	330	14.4	0.033	16003	-	-	-	-	-
	35	10	0.3	19	21.5	33	0.3	40.5	2.9	22000	13000	26000	2.1	1.35	33.17	0.4		0.3	39.70	1.12	6000	3250	610	330	14.4	0.041	6003	ZZ	2RZ	2RS	N	NR
	40	12	0.6	21	23.5	36	0.6	45.5	2.9	17000	12000	20000	2.1	1.35	38.1	0.4		0.5	44.60	1.12	9550	4800	975	490	13.2	0.067	6203	ZZ	2RZ	2RS	N	NR
	47	14	1	22	25.5	42	1	53.5	3.3	15000	11000	18000	2.5	1.35	44.6	0.4		0.5	52.70	1.12	13600	6650	1390	675	12.4	0.113	6303	ZZ	2RZ	2RS	N	NR
20	32	7	0.3	22	22	30	0.3	35.5	1.8	22000	13000	26000	1.3	0.95	30.7	0.25		0.3	34.80	0.85	4000	2470	410	252	15.5	0.017	6804	ZZ	2RZ	2RS	N	NR
	37	9	0.3	22	24	35	0.3	40.5	2.3	19000	12000	22000	1.7	0.95	35.7	0.25		0.3	39.80	0.85	6400	3700	650	375	14.7	0.037	6904	ZZ	2RZ	2RS	N	NR
	42	8	0.3	22	-	40	0.3	-	-	18000	-	20000	-	-	-	-		-	-	-	7900	4450	810	455	14.5	0.048	16004	-	-	-	-	-
	42	12	0.6	24	25.5	38	0.6	47	2.9	18000	11000	20000	2.1	1.35	39.75	0.4		0.5	46.30	1.12	9400	5000	955	510	13.8	0.068	6004	ZZ	2RZ	2RS	N	NR
	47	14	1	25	26.5	42	1	53.5	3.3	15000	11000	18000	2.5	1.35	44.6	0.4		0.5	52.70	1.12	12800	6600	1300	670	13.1	0.107	6204	ZZ	2RZ	2RS	N	NR
	52	15	1.1	26.5	28	45.5	1	58.5	3.3	14000	10000	17000	2.5	1.35	49.73	0.4		0.5	57.90	1.12	15900	7900	1620	805	12.4	0.145	6304	ZZ	2RZ	2RS	N	NR
22	44	12	0.6	26	26.5	40	0.6	49	2.9	17000	11000	20000	2.1	1.35	41.75	0.4		0.5	48.30	1.12	9400	5050	960	515	14.0	0.074	60/22	ZZ	2RZ	2RS	N	NR
	50	14	1	27	29.5	45	1	56.5	3.3	14000	9500	16000	2.5	1.35	47.6	0.4		0.5	55.70	1.12	12900	6800	1320	695	13.5	0.119	62/22	ZZ	2RZ	2RS	N	NR
	56	16	1.1	28.5	30.5	49.5	1	62.5	3.3	13000	9500	16000	2.5	1.35	53.6	0.4		0.5	61.70	1.12	18400	9250	1870	940	12.4	0.179	63/22	ZZ	2RZ	2RS	N	NR

Dimensions of da and Da can be adjusted to the same as inner ring outer diameter and outer ring inner diameter when the bearing is used to bear large axial load. Snap ring groove of N type and snap ring of NR type are only applicable to open type bearings.

Super thin section diameter 7 series ball bearings are also available on request. Outer-ring-rotating bearings with seals, shields, a snap ring are also available on request.

LOW-NOISE BEARINGS SERIES



Single deep groove ball bearing
Bore size ranging from 25 to 45 mm



InnTec Bearing

Deep groove ball bearing

Dimensions (mm)				Installation dimensions (mm)						Revolution speed limit (rpm)			snap ring groove dimensions (mm)				snap ring dimensions (mm)			Load ratings				Weight		Reference							
d	D	B	r	d ₁ ⁽²⁾	D ₁ ⁽²⁾	r _s	D _s	C _r	Grease	Oil	a	b	D ₁	r _e	r _k	D ₂	f	(N)		(Kgf)		系数	(g)	Open type	Type with shields	Type with seals	With a snap ring groove	With a snap ring					
			(MIN)	(MIN)	(MAX)	(MAX)	(MAX)	(MIN)	(MAX)	Open type		(MAX)	(MIN)	(MAX)	(MAX)	(MIN)	(MAX)	(MAX)	Cr	Cor	Cr	Cor	f _s										
										2RS	Z																						
ZZZ																																	
25	37	7	0.3	27	27	35	0.3	40.5	1.8	18000	10000	22000	1.3	0.95	35.7	0.25		0.3	39.8	0.85	4500	3150	455	320	16.1	0.021	6805	ZZ	2RZ	2RS	N	NR	
	42	9	0.3	27	28.5	40	0.3	45.5	2.3	16000	10000	19000	1.7	0.95	40.7	0.25		0.3	44.8	0.85	7050	4550	715	460	15.4	0.042	6905	ZZ	2RZ	2RS	N	NR	
	47	8	0.3	27	-	45	0.3	-	-	15000	-	18000	-	-	-	-	-		-	-	-	8850	5600	905	570	15.1	0.059	16005	-	-	-	-	-
	47	12	0.6	29	30	43	0.6	53.5	2.9	15000	9500	18000	2.1	1.35	44.6	0.4		0.5	52.7	1.12	10100	5850	1030	595	14.5	0.079	6005	ZZ	2RZ	2RS	N	NR	
	52	15	1	30	32	47	1	58.5	3.3	13000	9000	15000	2.5	1.35	49.73	0.4		0.5	57.9	1.12	14000	7850	1430	800	13.9	0.129	6205	ZZ	2RZ	2RS	N	NR	
	62	17	1.1	31.5	36	55.5	1	68.5	4.6	11000	8000	13000	3.3	1.9	59.61	0.6		0.5	67.7	1.7	20600	11200	2100	1150	13.2	0.235	6305	ZZ	2RZ	2RS	N	NR	
28	52	12	0.6	32	34	48	0.6	58.5	2.9	14000	8500	16000	2.1	1.35	49.73	0.4		0.5	57.9	1.12	12500	7400	1270	755	14.5	0.096	60/28	ZZ	2RZ	2RS	N	NR	
	58	16	1	33	35.5	53	1	64.5	3.3	12000	8000	1000	2.5	1.35	55.6	0.4		0.5	63.7	1.12	16600	9500	1700	970	13.9	0.175	62/28	ZZ	2RZ	2RS	N	NR	
	68	18	1.1	34.5	38	61.5	1	76	4.6	10000	7500	13000	3.3	1.9	64.82	0.6		0.5	74.6	1.7	26700	14000	2730	1430	12.4	0.287	63/28	ZZ	2RZ	2RS	N	NR	
30	42	7	0.3	32	32	40	0.3	45.5	1.8	15000	9000	18000	1.3	0.95	40.7	0.25		0.3	44.8	0.85	4700	3650	480	370	16.4	0.024	6806	ZZ	2RZ	2RS	N	NR	
	47	9	0.3	32	34	45	0.3	50.5	2.3	14000	8500	17000	1.7	0.95	45.7	0.25		0.3	49.8	0.85	7250	5000	740	510	15.8	0.052	6906	ZZ	2RZ	2RS	N	NR	
	55	9	0.3	32	-	53	0.3	-	-	13000	-	15000	-	-	-	-	-		-	-	-	11200	7350	1150	750	15.2	0.087	16006	-	-	-	-	-
	55	13	1	35	36.5	50	1	61.5	2.9	13000	8000	15000	2.1	1.35	52.6	0.4		0.5	60.7	1.12	13200	8300	1350	845	14.7	0.116	6006	ZZ	2RZ	2RS	N	NR	
	62	16	1	35	38.5	57	1	68.5	4.6	11000	7500	13000	3.3	1.9	59.61	0.6		0.5	67.7	1.7	19500	11300	1980	1150	13.8	0.199	6206	ZZ	2RZ	2RS	N	NR	
	72	19	1.1	36.5	42.5	65.5	1	80	4.6	9500	6700	12000	3.3	1.9	68.81	0.6		0.5	78.6	1.7	26700	15000	2720	1530	13.2	0.345	6306	ZZ	2RZ	2RS	N	NR	
32	58	13	1	37	38.5	53	1	64.5	2.9	12000	7500	14000	2.1	1.35	55.6	0.4		0.5	63.7	1.12	15100	9150	1530	935	14.5	0.122	60/32	ZZ	2RZ	2RS	N	NR	
	65	17	1	37	40	60	1	71.5	4.6	10000	7100	12000	3.3	1.9	62.6	0.6		0.5	70.7	1.7	20700	11600	2120	1190	13.6	0.225	62/32	ZZ	2RZ	2RS	N	NR	
	75	20	1.1	38.5	44.5	68.5	1	83	4.6	9000	6300	11000	3.3	1.9	71.83	0.6		0.5	81.6	1.7	29900	17000	3050	1730	13.2	0.389	63/32	ZZ	2RZ	2RS	N	NR	
35	47	7	0.3	37	37	45	0.3	50.5	1.8	14000	7500	16000	1.3	0.95	45.7	0.25		0.3	49.8	0.85	2900	4100	500	420	16.7	0.027	6807	ZZ	2RZ	2RS	N	NR	
	55	10	0.6	39	39	51	0.6	58.5	2.3	12000	7500	15000	1.7	0.95	53.7	0.25		0.5	57.8	0.85	10600	7250	1080	740	15.5	0.075	6907	ZZ	2RZ	2RS	N	NR	
	62	9	0.3	37	-	60	0.3	-	-	11000	-	13000	-	-	-	-	-		-	-	-	11700	8200	1190	835	15.6	0.107	16007	-	-	-	-	-
	62	14	1	40	41.5	57	1	68.5	3.4	11000	6700	13000	2.1	1.9	59.61	0.6		0.5	67.7	1.7	16000	10300	1630	1050	14.8	0.151	6007	ZZ	2RZ	2RS	N	NR	
	72	17	1.1	41.5	44.5	65.5	1	80	4.6	9500	6300	11000	3.3	1.9	68.81	0.6		0.5	78.6	1.7	25700	15300	2620	1560	13.8	0.284	6207	ZZ	2RZ	2RS	N	NR	
	80	21	1.5	43	47	72	1.5	88	4.6	8500	6000	10000	3.3	1.9	76.81	0.6		0.5	86.6	1.7	33500	19200	3400	1960	13.2	0.464	6307	ZZ	2RZ	2RS	N	NR	
40	52	7	0.3	42	42	50	0.3	55.5	1.8	12000	6700	14000	1.3	0.95	50.7	0.25		0.3	96.5	0.85	6350	5550	650	565	17.0	0.031	6808	ZZ	2RZ	2RS	N	NR	
	62	12	0.6	44	46	58	0.6	65.5	2.3	11000	6300	13000	1.7	0.95	60.7	0.25		0.5	60.8	0.85	13700	10000	1390	1020	15.7	0.112	6908	ZZ	2RZ	2RS	N	NR	
	68	9	0.3	42	-	66	0.3	-	-	10000	-	12000	-	-	-	-	-		-	-	-	12600	9650	1290	985	16.0	0.13	16008	-	-	-	-	-
	68	15	1	45	47.5	63	1	76	3.8	10000	6000	12000	2.5	1.9	64.82	0.6		0.5	74.6	1.7	16800	11500	1710	1180	15.3	0.19	6008	ZZ	2RZ	2RS	N	NR	
	80	18	1.1	46.5	50.5	73.5	1	88	4.6	8500	5600	10000	3.3	1.9	76.81	0.6		0.5	86.6	1.7	29100	17900	2970	1820	14.0	0.366	6208	ZZ	2RZ	2RS	N	NR	
	90	23	1.5	48	53	82	1.5	98	5.4	7500	5300	9000	3.3	2.7	86.79	0.6		0.5	96.5	2.46	40500	24000	4150	2450	13.2	0.636	6308	ZZ	2RZ	2RS	N	NR	
45	58	7	0.3	47	47.5	56	0.3	61.5	1.8	11000	6000	13000	1.3	0.95	56.7	0.25		0.3	60.8	0.85	6600	6150	670	625	17.2	0.038	6809	ZZ	2RZ	2RS	N	NR	
	68	12	0.6	49	50	64	0.6	72	2.3	9500	5600	12000	1.7	0.95	66.7	0.25		0.5	70.8	0.85	14100	10900	1440	1110	15.9	0.126	6909	ZZ	2RZ	2RS	N	NR	
	75	10	0.6	49	-	71	0.6	-	-	9000	-	11000	-	-	-	-	-		-	-	-	14900	11400	1520	1160	15.9	0.167	16009	-	-	-	-	-
	75	16	1	50	53.5	70	1	83	3.8	9000	5300	11000	2.5	1.9	71.83	0.6		0.5	81.6	1.7	20900	15200	2140	1550	15.3	0.241	6009	ZZ	2RZ	2RS	N	NR	
	85	19	1.1	51.5	55.5	78.5	1	93	4.6	7500	5300	9000	3.3	1.9	81.81	0.6		0.5	91.6	1.7	31500	20400	3200	2080	14.4	0.42	6209	ZZ	2RZ	2RS	N	NR	
	100	25	1.5	53	61.5	92	1.5	108	5.4	6700	4800	8000	3.3	2.7	96.8	0.6		0.5	106.5	2.46	53000	32000	5400	3250	13.1	0.829	6309	ZZ	2RZ	2RS	N	NR	

Dimensions of da and Da can be adjusted to the same as inner ring outer diameter and outer ring inner diameter when the bearing is used to bear large axial load. Snap ring groove of N type and snap ring of NR type are only applicable to open type bearings.



Single deep groove ball bearing
Bore size ranging from 50 to 75 mm

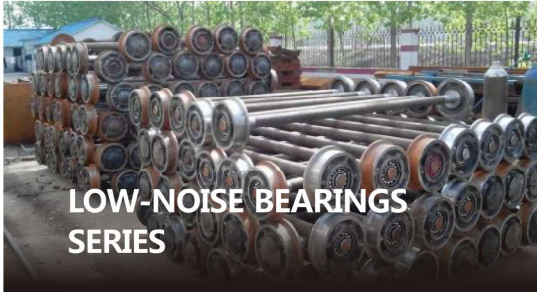


InnTec Bearing

Deep groove
ball bearing

Dimensions (mm)				Installation dimensions (mm)					Revolution speed limit (rpm)				snap ring groove dimensions (mm)				snap ring dimensions (mm)			Load ratings				Weight		Reference				
d	D	B	r	d ₁ ⁽²⁾	D ₁ ⁽²⁾	r _s	D _s	C _r	Grease	Oil	a	b	D ₁	r _e	r _κ	D ₂	f	(N)		(Kgf)		系数	(g)	Open type	Type with shields	Type with seals	With a snap ring groove	With a snap ring		
			(MIN)	(MIN)	(MAX)	(MAX)	(MAX)	(MIN)	(MAX)	Open type	Open type	(MAX)	(MIN)	(MAX)	(MAX)	(MIN)	(MAX)	(MAX)	Cr	Cor	Cr	Cor	f _s							
ZRS																														
ZZZ																														
50	65	7	0.3	52	52.5	63	0.3	68.5	1.8	9500	5300	11000	1.3	0.95	63.7	0.25									6810	ZZ	2RZ	2RS	N	NR
	72	12	0.6	54	55	68	0.6	76	2.3	9000	5300	11000	1.7	0.95	70.7	0.25									6910	ZZ	2RZ	2RS	N	NR
	80	10	0.6	54	-	76	0.6	-	-	8500	-	10000	-	-	-	-	-								16010	-	-	-	-	-
	80	16	1	55	58.5	75	1	88	3.8	8500	4800	10000	2.5	1.9	76.81	0.6									6010	ZZ	2RZ	2RS	N	NR
	90	20	1.1	56.5	60	83.5	1	98	5.4	7100	4800	8500	3.3	2.7	86.79	0.6									6210	ZZ	2RZ	2RS	N	NR
	110	27	2	59	68	101	2	118	5.4	6000	4300	7500	3.3	2.7	106.81	0.6									6310	ZZ	2RZ	2RS	N	NR
55	72	9	0.3	57	59	70	0.3	76	2.3	8500	4800	10000	1.7	0.95	70.7	0.25									6811	ZZ	2RZ	2RS	N	NR
	80	13	1	60	61.5	75	1	86	2.9	8000	4500	9500	2.1	1.3	77.9	0.4									6911	ZZ	2RZ	2RS	N	NR
	90	11	0.6	59	-	86	0.6	-	-	7500	-	9000	-	-	-	-	-								16011	ZZ	2RZ	2RS	N	NR
	90	18	1.1	61.5	64	83.5	1	98	5	7500	4500	9000	2.9	2.7	86.79	0.6									6011	ZZ	2RZ	2RS	N	NR
	100	21	1.5	63	66.5	92	1.5	108	5.4	6300	4300	7500	3.3	2.7	96.8	0.6									6211	ZZ	2RZ	2RS	N	NR
	120	29	2	64	72.5	111	2	131.5	6.5	5600	4000	6700	4.1	3.1	115.21	0.6									6311	ZZ	2RZ	2RS	N	NR
60	78	10	0.3	62	64	76	0.3	84	2.5	8000	4500	9500	1.7	1.3	76.2	0.4									6812	ZZ	2RZ	2RS	N	NR
	85	13	1	65	6	80	1	91	2.9	7500	4300	9000	2.1	1.3	82.9	0.4									6912	ZZ	2RZ	2RS	N	NR
	95	11	0.6	64	-	91	0.6	-	-	7100	-	8500	-	-	-	-	-								16012	-	-	-	-	-
	95	18	1.1	66.5	69	88.5	1	103	5	7100	4000	8500	2.9	2.7	91.82	0.6									6012	ZZ	2RZ	2RS	N	NR
	110	22	1.5	68	74.5	102	1.5	118	5.4	5600	3800	7100	3.3	2.7	106.81	0.6									6212	ZZ	2RZ	2RS	N	NR
	130	31	2.1	71	79	119	2	141.5	6.5	5300	3600	6300	4.1	3.1	125.22	0.6									6312	ZZ	2RZ	2RS	N	NR
65	85	10	0.6	69	69	81	0.6	91	2.5	7500	4000	8500	1.7	1.3	82.9	0.4									6813	ZZ	2RZ	2RS	N	NR
	90	13	1	70	71.5	85	1	96	2.9	7100	4000	8500	2.1	1.3	87.9	0.4									6913	ZZ	2RZ	2RS	N	NR
	100	11	0.6	69	-	96	0.6	-	-	6700	-	8000	-	-	-	-	-								16013	-	-	-	-	-
	100	18	1.1	71.5	73	93.5	1	108	5	6700	4000	8000	2.9	2.7	96.8	0.6									6013	ZZ	2RZ	2RS	N	NR
	120	23	1.5	73	80	112	1.5	131.5	6.5	5300	3600	6300	4.1	3.1	115.21	0.6									6213	ZZ	2RZ	2RS	N	NR
	140	33	2.1	76	85.5	129	2	152	7.3	4800	3400	6000	4.9	3.1	135.23	0.6									6313	ZZ	2RZ	2RS	N	NR
70	90	10	0.6	74	74.5	86	0.6	96	2.5	6700	3800	8000	1.7	1.3	87.9	0.4									6814	ZZ	2RZ	2RS	N	NR
	100	16	1	75	77.5	95	1	106	3.3	6300	3600	7500	2.5	1.3	97.9	0.4									6914	ZZ	2RZ	2RS	N	NR
	110	13	0.6	74	-	106	0.6	-	-	6000	-	7100	-	-	-	-	-								16014	-	-	-	-	-
	110	20	1.1	76.5	80.5	104	1	118	5	6000	3600	7100	2.9	2.7	106.81	0.6									6014	ZZ	2RZ	2RS	N	NR
	125	24	1.5	78	84	117	1.5	136.5	6.5	5000	3400	6300	4.1	3.1	120.22	0.6									6214	ZZ	2RZ	2RS	N	NR
	150	35	2.1	81	92	139	2	162	7.3	4500	3200	5300	4.9	3.1	145.24	0.6									6314	ZZ	2RZ	2RS	N	NR
75	95	10	0.6	79	79.5	91	0.6	101	2.5	6300	-	7500	1.7	1.3	92.9	0.4									6815	ZZ	2RZ	2RS	N	NR
	105	16	1	80	82	100	1	112	3.3	6000	-	7100	2.5	1.3	102.6	0.4									6915	ZZ	2RZ	2RS	N	NR
	115	13	0.6	79	-	111	0.6	-	-	5600	-	6700	-	-	-	-	-								16015	-	-	-	-	-
	115	20	1.1	81.5	85.5	109	1	123	5	5600	3400	6700	2.9	2.7	111.81	0.6									6015	ZZ	2RZ	2RS	N	NR
	130	25	1.5	83	90	122	1.5	141.5	6.5	4800	3200	5600	4.1	3.1	125.22	0.6									6215	ZZ	2RZ	2RS	N	NR
	160	37	2.1	86	98.5	149	2	172	7.3	4300	2800	5000	4.9	3.1	155.22	0.6									6315	ZZ	2RZ	2RS	N	NR

Dimensions of da and Da can be adjusted to the same as inner ring outer diameter and outer ring inner diameter when the bearing is used to bear large axial load. Snap ring groove of N type and snap ring of NR type are only applicable to open type bearings.



LOW-NOISE BEARINGS SERIES

Full ball deep groove ball bearing
Bore size ranging from 10 to 22 mm



InnTec Bearing

Deep groove ball bearing

Dimensions (mm)				Installation dimensions (mm)				Revolution speed limit (rpm)		Load ratings				Weight (g)	Reference				
d	D	B	r	d _i	d _s	D _s	r _s	Grease	Oil	(N)		(Kgf)			Open type	Type With shields	Type With shields		
			(MIN)	(MIN)	(MAX)	(MAX)	(MAX)	Open type	Open type	Cr	Cor	Cr	Cor						
								ZZZ	Z										
25	52	15	1	30	32	47	1	12000	15000			14400	10500	1470	1070	0.133	BL205	BL205Z	BL205ZZ
	62	17	1.1	31.5	36	55.5	1	11000	13000			21500	15500	2200	1580	0.246	BL305	BL305Z	BL305ZZ
30	62	16	1	35	38.5	57	1	10000	12000			21000	16300	2150	1660	0.215	BL206	BL206Z	BL206ZZ
	72	19	1.1	36.5	42	65.5	1	9000	11000			27900	20700	2840	2110	0.364	BL306	BL306Z	BL306ZZ
35	72	17	1.1	41.5	44.5	65.5	1	9000	11000			27800	22100	2830	2250	0.307	BL207	BL207Z	BL207ZZ
	80	21	1.5	43	44.5	72	1.5	8000	9500			37000	29100	3800	2970	0.486	BL307	BL307Z	BL307ZZ
40	80	18	1.1	46.5	50	73.5	1	8000	9500			35500	28800	3600	2940	0.394	BL208	BL208Z	BL208ZZ
	90	23	1.5	48	52.5	82	1.5	7500	9000			46500	36000	4750	3650	0.685	BL308	BL308Z	BL308ZZ
45	85	19	1.1	51.5	55.5	78.5	1	7500	9000			37000	32000	3800	3250	0.449	BL209	BL209Z	BL209ZZ
	100	25	1.5	53	61.5	92	1.5	6300	8000			55500	44000	5650	4500	0.883	BL309	BL309Z	BL309ZZ
50	90	20	1.1	56.5	60	83.5	1	6700	8500			39000	35000	3950	3550	0.504	BL210	BL210Z	BL210ZZ
	110	27	2	59	68	101	2	6000	7100			65000	52500	6600	5350	1.16	BL310	BL310Z	BL310ZZ
55	100	21	1.5	63	66.5	92	1.5	6300	7500			48000	44000	4900	4500	0.667	BL211	BL211Z	BL211ZZ
	120	29	2	64	72.5	111	2	5600	6700			75000	61500	7650	6250	1.49	BL311	BL311Z	BL311ZZ
60	110	22	1.5	68	74.5	102	1.5	5600	6700			58000	54000	5950	5550	0.856	BL212	BL212Z	BL212ZZ
	130	31	2.1	71	79	119	2	5000	6000			85500	71500	8700	7300	1.88	BL312	BL312Z	BL312ZZ
65	120	23	1.5	73	80	112	1.5	5300	6300			63500	60000	6450	6150	1.09	BL213	BL213Z	BL213ZZ
	140	33	2.1	76	85.5	129	2	4800	5600			103000	89500	10500	9150	2.36	BL313	BL313Z	BL313ZZ
70	125	24	1.5	78	84	117	1.5	5000	6000			69000	66000	7050	6750	1.19	BL214	BL214Z	BL214ZZ
	150	35	2.1	81	92	139	2	4300	5300			115000	102000	11800	10400	2.87	BL314	BL314Z	BL314ZZ
75	130	25	1.5	83	90	122	1.5	4500	5600			72000	72000	7350	7300	1.29	BL215	BL215Z	BL215ZZ
	160	37	2.1	86	98.5	149	2	4000	5000			126000	116000	12800	11800	3.43	BL315	BL315Z	BL315ZZ
80	140	26	2	89	95.5	131	2	4300	5300			84000	85000	8600	8650	1.61	BL216	BL216Z	BL216ZZ
	170	39	2.1	91	104.5	159	2	3800	4500			136000	130000	13900	13300	4.08	BL316	BL316Z	BL316ZZ
85	150	28	2	94	102	141	2	4000	5000			93000	93000	9500	9450	1.97	BL217	BL217Z	BL217ZZ
	180	41	3	98	110.5	167	2.5	3600	4300			147000	145000	15000	14800	4.77	BL317	BL317Z	BL317ZZ
90	160	30	2	99	107.5	151	2	3800	4500			107000	107000	10900	10900	2.43	BL218	BL218Z	BL218ZZ
	190	43	3	103	117	177	2.5	3400	4000			158000	161000	16100	16400	5.45	BL318	BL318Z	BL318ZZ
95	170	32	2.1	106	114	159	2	3600	4300			121000	123000	12300	12500	2.95	BL219	BL219Z	BL219ZZ
	200	45	3	108	124	187	2.5	2800	3600			169000	178000	17300	18100	6.4	BL319	BL319Z	BL319ZZ
100	180	34	2.1	111	121.5	169	2	3400	4000			136000	140000	13800	14200	3.54	BL220	BL220Z	BL220ZZ
	105	190	36	2.1	116	127.5	179	2	3200	3800			148000	157000	15000	16000	4.23	BL221	BL221Z
110	200	38	2.1	121	-	189	2	2800	3400			160000	176000	16300	17900	4.84	BL222	-	-