

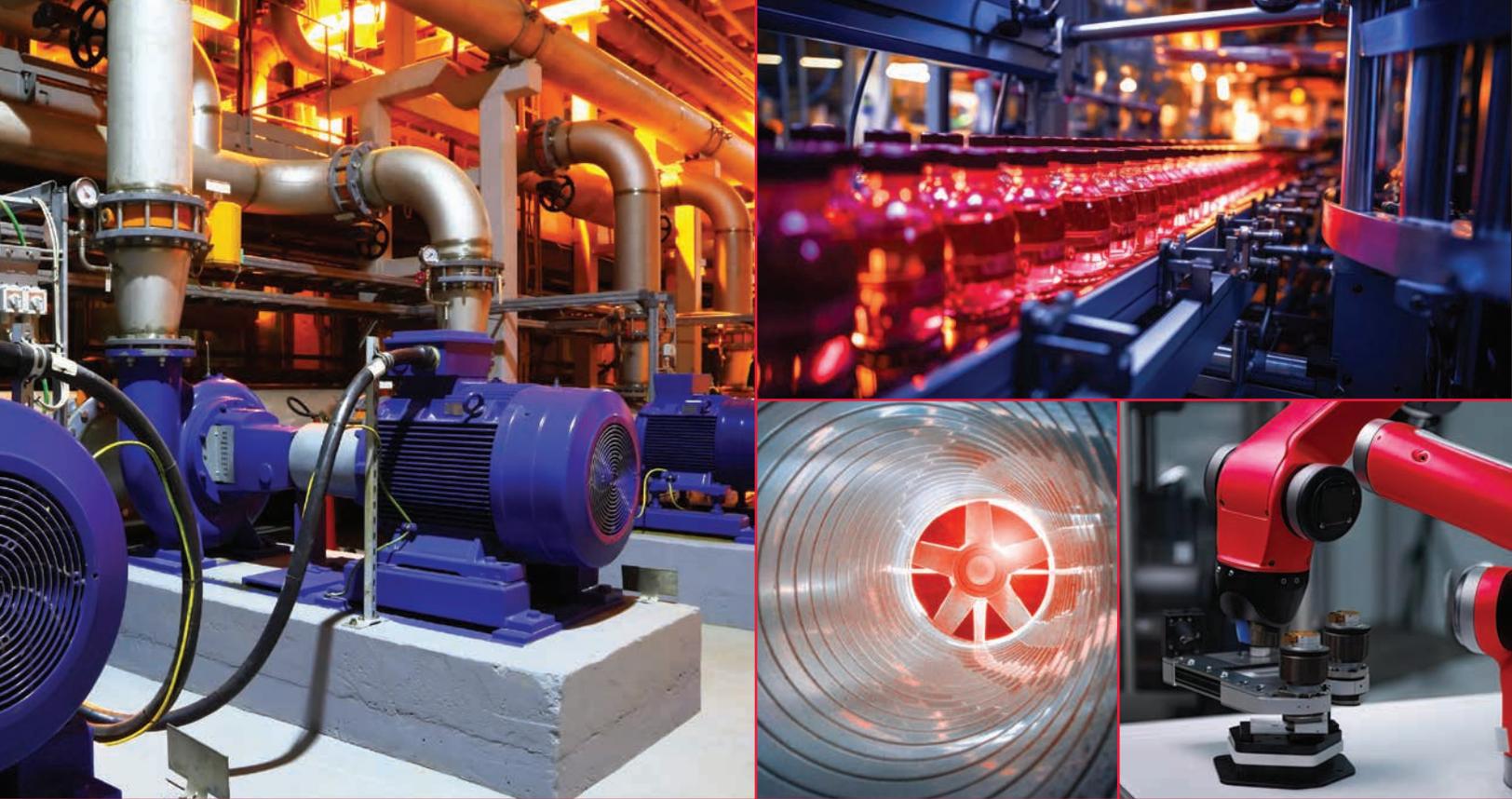
# NSK

## DEEP GROOVE BALL BEARINGS

FOR PEAK PERFORMANCE OF MACHINERY AND EQUIPMENT



STAY IN MOTION. STAY IN CONTROL.



## SMOOTHLY, QUIETLY EXCEPTIONAL.

### SINGLE ROW DEEP GROOVE BALL BEARINGS

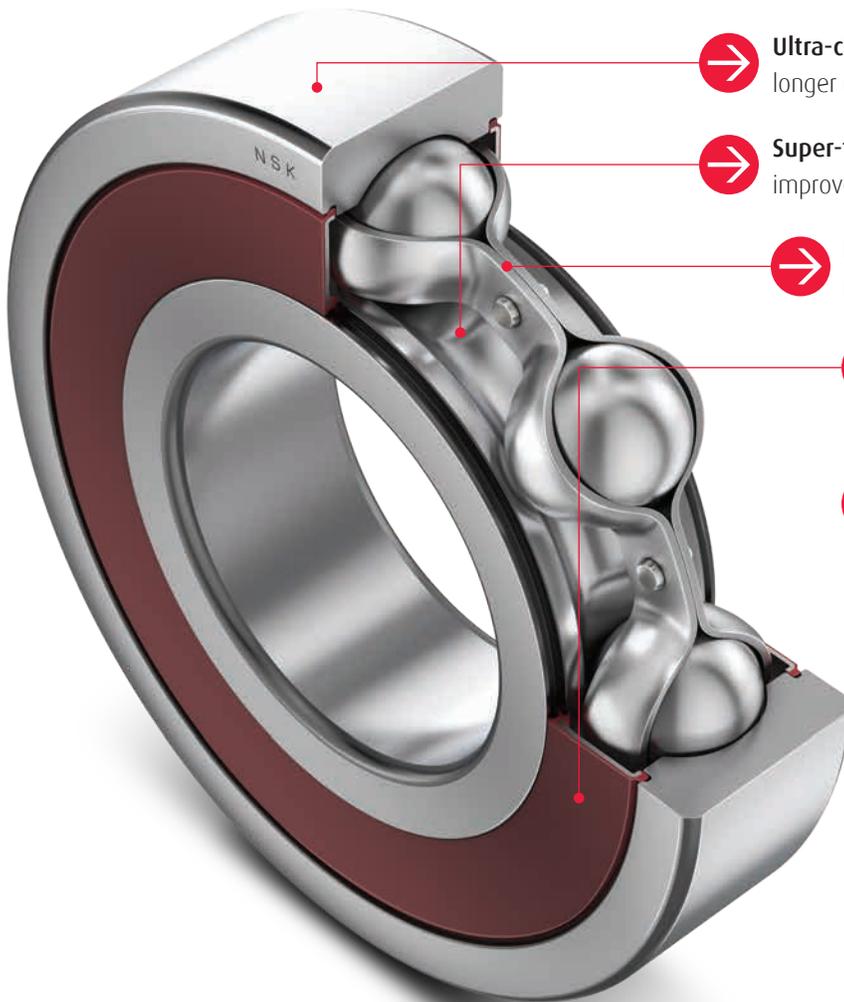
Single row deep groove ball bearings are inarguably the most widely used and versatile bearing type, owing to their simple, low-maintenance design and robust performance. NSK deep groove ball bearings deliver superior total operating and energy efficiency through our core development and manufacturing technologies with:

- › Optimized rolling contact for reduced noise, energy use and power loss
- › Advanced lubricant technologies and seal designs for durability and reliability
- › Special materials, coatings and innovation to contend with extraordinary environments
- › An extensive catalog of types and variants for easy adoption

For virtually any rotating machinery and equipment application — in virtually any working environment — NSK deep groove ball bearings quietly deliver exceptional performance and a reliably long service life for lower total cost of operation.

## HIGHER SPEEDS. LOWER NOISE. LONGER LIFE.

With our single row deep groove ball bearings, NSK brings our core technologies to bear to deliver unsurpassed performance and reliability to a near-infinite range of machinery, equipment, applications and operating conditions with:



- ➔ **Ultra-clean steel** to promote greater fatigue strength and longer operating life
- ➔ **Super-finished raceways** to minimize running noise and improve lubricant distribution
- ➔ **High-performance cages** to support smooth and reliable operation at high speeds
- ➔ **Optimized seals and shields** to provide problem-free performance in challenging environments
- ➔ **Advanced lubrication technology** to ensure durability and reliability

# AN EXTENSIVE RANGE OF TYPES, DESIGN AND CONSTRUCTION

## ULTRA-CLEAN STEEL EXTENDS BEARING LIFE

NSK ultra-clean steel is a highly pure, vacuum-degassed high-carbon chromium steel containing a minimum of non-metallic inclusions. In conjunction with appropriate heat treatment, it significantly increases bearing life by providing:

- › high rolling contact fatigue strength
- › high hardness
- › high wear resistance
- › high dimensional stability



### Pictured from left:

- › **Standard pressed steel cage** with tightly controlled clearances to deliver reduced friction and even distribution of lubricant
- › **Polyamide resin cage** for high-speed applications, with low temperature rise to extend grease life while reducing noise and power loss
- › **Machined brass cage** for larger size bearings and for applications with high mechanical stresses

**Table 1: Single row deep groove ball bearings series and size range**

SINGLE ROW DEEP GROOVE BALL BEARINGS - DIMENSION SERIES ( TYPES) AND STANDARD BORE DIAMETER RANGE							
68	69	160	60	62	63	BL2	BL3
from 10 to 800 mm	from 10 to 800 mm	from 12 to 320 mm	from 10 to 670 mm	from 10 to 360 mm	from 10 to 280 mm	from 25 to 110 mm	from 25 to 95 mm

NSK offers an extensive range of single row deep groove ball bearing dimension series and bore diameters, as shown in **Table 1** above. The basic construction of deep groove ball bearings may consist of a number of different design and component variants including:

- › **optional seals and shields** for protection against contaminant ingress
- › **high performance cage types** constructed from pressed steel (standard), polyamide resin (for high speeds) or machined brass (for larger sizes or severe mechanical stresses)
- › **special component materials** such as stainless steel and silicon nitride ceramic to contend with aggressive environments
- › **outer ring snap ring grooves**, with or without snap rings
- › **internal clearances** ranging from tight to extra-loose
- › **filling slots** to accommodate a larger quantity of balls (maximum capacity type)
- › **noise level specifications** for ultra-quiet running
- › **advanced grease options** for a wide range of operating conditions

**Table 2: Standard cages of deep groove ball bearings**

DIMENSION SERIES	PRESSED STEEL	MACHINED BRASS
68	6800 to 6838	6840 to 68/800
69	6900 to 6936	6938 to 69/800
160	16001 to 16026	16028 to 16064
60	6000 to 6040	6044 to 60/670
62	6200 to 6240	6244 to 6272
63	6300 to 6332	6334 to 6356

# LONG-LIFE DURABILITY AND RELIABILITY

## EFFICIENT SEALING AND LUBRICATION SELECTION

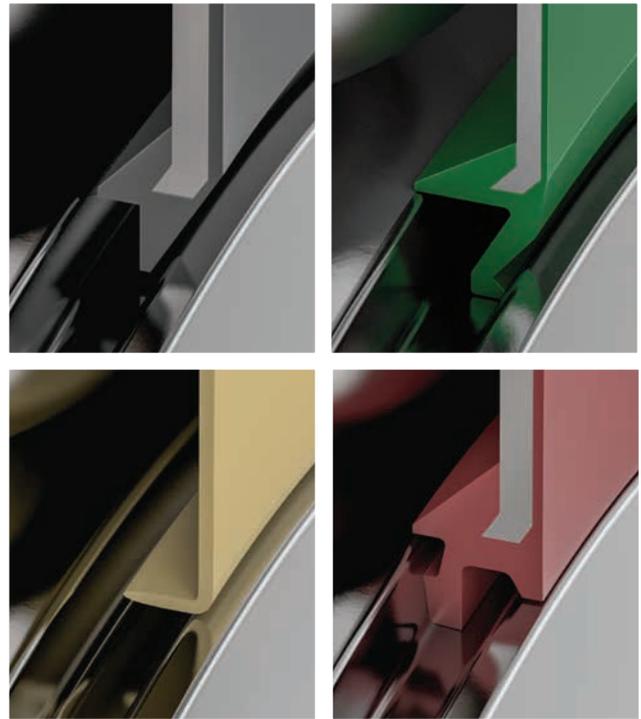
### TROUBLE-FREE OPERATION - SEALS, SHIELDS

Deep groove ball bearings equipped with seals or shields can deliver years of trouble-free operation, retaining clean grease free from external contaminants. Selection of appropriate sealing is based not only by the severity of the application environment, but also with consideration of operating speeds, seal torque and temperatures.

NSK offers a variety of standard sealing solutions designed to achieve optimal sealing while mitigating power loss in a wide variety of application conditions:

- › **non-contact V seals** for high performance at high speeds, particularly for electric motor applications
- › **light-contact DW seals** for high contamination protection with 1/3 lower friction than a full contact seal
- › **contact DU seals** for maximum protection against contaminant ingress - small particle, dust and water
- › **non-contact Z shields** for moderate protection at high speeds through a wide temperature range

Special seal designs and seal materials for highly corrosive, dust-laden and high temperature environments, as well as for low drag requirements, are also available.



**Clockwise from top left:** non-contact seal (V), light-contact seal (DW), contact seal (DU), non-contact shield (Z)

**Table 3: Comparison of seal / shield performance**

OPERATING CHARACTERISTICS	CLOSURE TYPE AND RELATIVE PERFORMANCE			
	VV	DDW	DDU	ZZ
Resistant to dust	good	excellent	excellent	normal
Resistant to water intrusion	not suitable	normal	excellent	not suitable
Effective against grease leakage	good	excellent	excellent	normal
Torque	very low	low	normal	very low
Speed capability	high	good	normal	high

**Table 4: High-performance greases for NSK deep groove ball bearings**

GREASE CODE / BRAND NAME		OPERATING TEMP. °C		KEY FEATURES	TYPICAL APPLICATIONS
		min	max		
AS2	Shell Alvania S2	-10	+110	good general purpose lithium grease with good rust prevention for normal and high loads	general purpose industrial applications
B32	Beacon 325	-50	+100	superior low temperature grease with low viscosity synthetic base oil capable of high speeds	motors in low temperature applications / arctic service
EA6	NSK Grease EA6	-40	+160	synthetic oil base, delivers long life at high temperatures with good wear resistance and rust prevention	induction motors, compressors, ventilators, vacuum cleaners
EA7	NSK Grease EA7	-40	+140	improved fretting resistance in environments with micro-vibrations	servomotors, actuators, oscillatory applications
EA9	NSK Grease EA9	-40	+140	low torque with reduced bearing heat generation at high speeds, low fill with extended grease life	high-efficiency motors, EV motors
EEM	Exxon Mobil Polyrex EM	-10	+130	good rust prevention and low noise performance	general industrial applications and industrial motors
LGU	NSK Grease LGU	-40	+140	significantly reduces particle emissions, preventing encoder contamination and brake slip	servomotors, ball screws, linear guides, clean rooms
NS7	NS Hi-Lube	-40	+130	exceptional low torque and low noise performance particularly at low temperature	motors, ventilators, pumps, compressors

## LONG OPERATING LIFE - ADVANCED LUBRICANTS

Lubrication is essential to minimize friction and wear between rolling contact surfaces of bearings. NSK sealed and shielded deep groove ball bearings are factory-filled with water-resistant grease for general industrial machinery, or with special lubricant formulations for operating considerations that include:

- › stability in high/low temperature environments
- › low torque and heat generation at high speeds
- › additive rust prevention
- › resistance to micro-vibrations
- › reduced particle emissions

**Table 4** illustrates a variety of grease types commonly employed by NSK for sealed or shielded single row deep groove ball bearings, each with unique attributes and suitability to meet various operating and environmental conditions.

Temperature ranges shown are general recommendations and do not reflect absolute limits. When operating outside of these ranges, consultation with NSK or the grease manufacturer is recommended.

Additional grease types and formulations (thickeners, base oils, additive chemistry) are available - **contact NSK**.

# DESIGNATION SYSTEM

## SINGLE ROW DEEP GROOVE BALL BEARINGS

Dimension Series		Special Materials		Closure		Radial Internal Clearance		Grease Code	
62	05	-H-20	T1X	ZZ	NR	C3	E	NS7	S
Bore Reference Number		Cage Type		Retention Feature		Noise Level		Grease Fill	

DESIGNATION	ATTRIBUTE	
Dimension series	68	metric, ultra-thin section
	69	metric, extra-thin section
	160	metric, thin section
	60	metric, extra light series
	62	metric, light series
	63	metric, medium series
	BL2	maximum type, light series
	BL3	maximum type, medium series
Bore reference number	for extra-small / miniature: equals the bore diameter in mm  for reference number: 00 = 10 mm bore diameter; 01 = 12; 02 = 15; 03 = 17  for reference number 04 to 96: multiply x 5  500 mm and greater are expressed as /500 = 500 mm, etc.	
Special materials	-H-20	stainless steel rings and balls
	SN24	ceramic balls
Cage type	blank	pressed steel cage
	M, MR	machined brass cage
	T1X	polyamide resin cage
Closure	blank	open bearing
	Z	non-contact shield, one side only
	ZZ	non-contact shield, both sides
	V	non-contact seal, one side only
	VV	non-contact seal, both sides
	DW	light-contact seal, one side only
	DDW	light-contact seal, both sides
	DU	contact seal, one side only
DDU	contact seal, both sides	

DESIGNATION	ATTRIBUTE	
Retention feature	blank	standard outer ring
	N	snap ring groove in outer ring
	NR	snap ring groove with snap ring
Radial internal clearance	C2	tighter than normal clearance
	blank	normal clearance (CN)
	CM	special clearance for electric motors
	C3	greater than normal clearance
	C4	greater than C3
Noise level	C5	greater than C4
	blank	standard noise quality
	E	NSK electric motor noise quality
Grease code <sup>1)</sup>	ER	NSK critical noise quality
	AS2	Shell Alvania S2
	B32	Beacon 325
	EA6	NSK Grease EA5
	EA7	NSK Grease EA6
	EA9	NSK Grease EA9
	EEM	Exxon Mobil Polyrex EM
Grease fill	LGU	NSK Grease LGU
	NS7	NS Hi-Lube
	L	light fill
	S	standard fill
	H	heavy fill

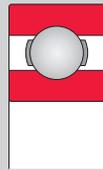
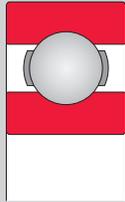
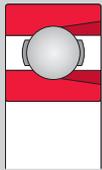
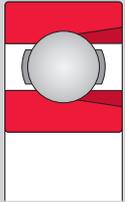
1) Grease codes shown are indicative of the range of NSK greases available for general industrial machinery, for electric motors, for extreme temperatures and for special environments.

Additional greases are available - contact NSK.

# RANGE OF AVAILABILITY

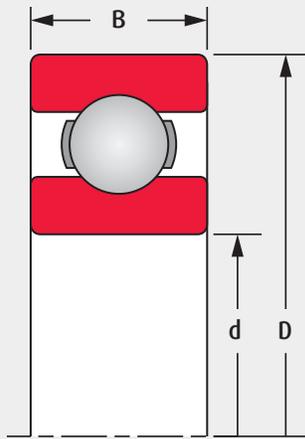
## DIMENSION SERIES AND BORE SIZE



RANGE OF AVAILABILITY BY SERIES AND BORE DIAMETER								
DIMENSION SERIES								
	68	69	160	60	62	63	BL2	BL3
BORE DIAMETER (MM)	20							
	40							
	60							
	80							
	100							
	120							
	140							
	160							
	180							
	200							
	220							
	240							
	260							
	280							
	300							
	320							
	340							
	360							
	380							
	400							
420								
440								
460								
480								
500								
530								
560								
600								
630								
670								
710								
750								
800								

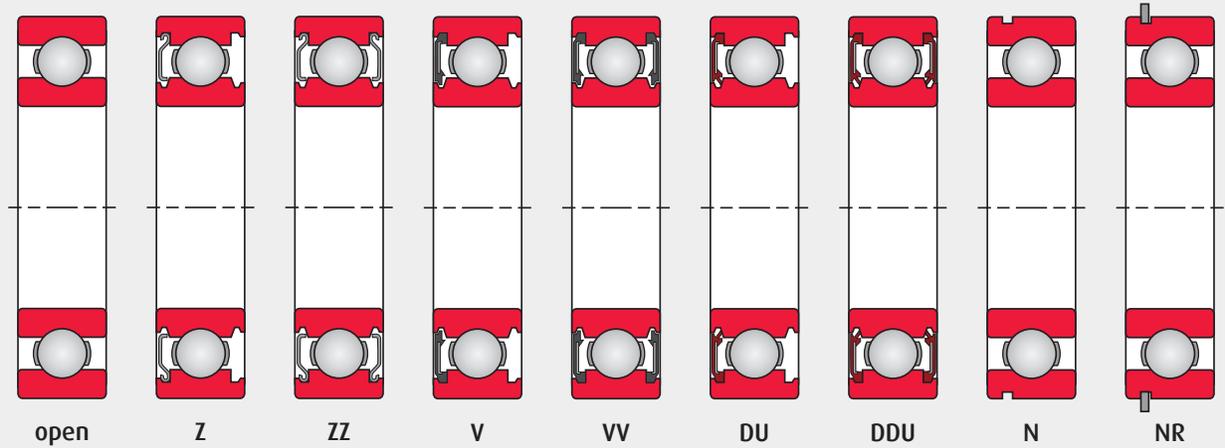
# SINGLE ROW DEEP GROOVE BALL BEARINGS

BORE DIAMETER: 10 - 28 MM



open type

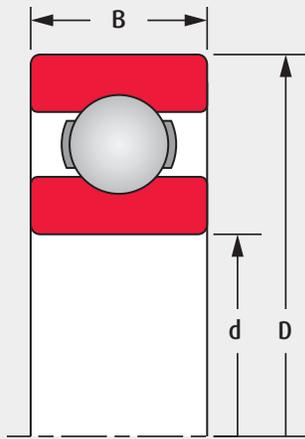
BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
10	19	5	6800	1 890	840	34 000	24 000	40 000
	22	6	6900	2 970	1 270	32 000	22 000	38 000
	26	8	6000	5 050	1 970	30 000	22 000	36 000
	30	9	6200	5 600	2 390	28 000	18 000	34 000
	35	11	6300	8 900	3 450	26 000	17 000	30 000
12	21	5	6801	2 110	1 040	32 000	20 000	38 000
	24	6	6901	3 200	1 460	30 000	20 000	36 000
	28	7	16001	5 600	2 370	28 000		32 000
	28	8	6001	5 600	2 370	32 000	18 000	38 000
	32	10	6201	7 500	3 050	26 000	17 000	32 000
	37	12	6301	10 700	4 200	24 000	16 000	28 000
15	24	5	6802	2 280	1 260	28 000	17 000	34 000
	28	7	6902	4 750	2 260	26 000	17 000	30 000
	32	8	16002	6 150	2 830	24 000		28 000
	32	9	6002	6 150	2 830	26 000	15 000	32 000
	35	11	6202	8 400	3 750	22 000	14 000	28 000
	42	13	6302	12 600	5 450	19 000	13 000	24 000
17	26	5	6803	2 890	1 570	26 000	15 000	30 000
	30	7	6903	5 050	2 550	24 000	15 000	28 000
	35	8	16003	6 600	3 250	22 000		26 000
	35	10	6003	6 600	3 250	24 000	13 000	28 000
	40	12	6203	10 500	4 800	20 000	12 000	24 000
	47	14	6303	15 000	6 650	17 000	11 000	20 000



BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
20	32	7	6804	4 400	2 470	22 000	13 000	26 000
	37	9	6904	7 000	3 700	19 000	12 000	22 000
	42	8	16004	8 700	4 450	18 000		20 000
	42	12	6004	10 300	5 000	20 000	11 000	24 000
	47	14	6204	14 100	6 600	17 000	11 000	20 000
	52	15	6304	17 500	7 900	16 000	10 000	19 000
22	44	12	60/22	10 300	5 050	17 000	11 000	20 000
	50	14	62/22	14 200	6 800	14 000	9 500	16 000
	56	16	63/22	20 200	9 250	13 000	9 500	16 000
25	37	7	6805	4 950	3 150	18 000	10 000	22 000
	42	9	6905	7 750	4 550	16 000	10 000	19 000
	47	8	16005	9 750	5 600	15 000		18 000
	47	12	6005	11 100	5 850	18 000	9 500	22 000
	52	15	6205	15 400	7 850	15 000	9 000	18 000
	62	17	6305	22 600	11 200	13 000	8 000	16 000
28	52	12	60/28	13 700	7 400	14 000	8 500	16 000
	58	16	62/28	18 300	9 500	12 000	8 000	14 000
	68	18	63/28	29 400	14 000	10 000	7 500	13 000

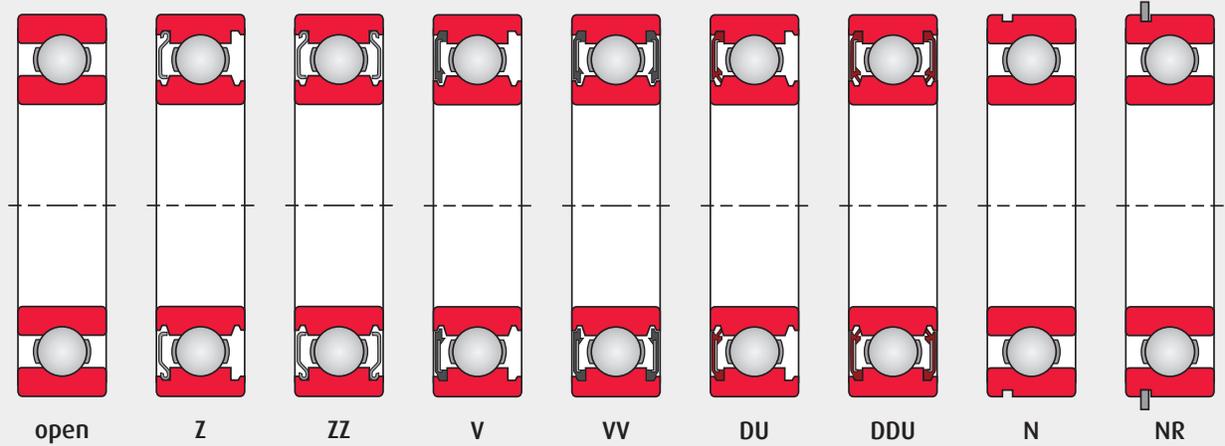
# SINGLE ROW DEEP GROOVE BALL BEARINGS

BORE DIAMETER: 30 - 60 MM



open type

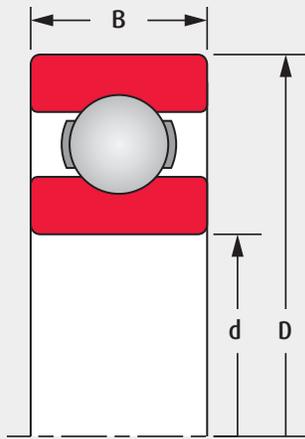
BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
30	42	7	6806	5 200	3 650	15 000	9 000	18 000
	47	9	6906	7 950	5 000	14 000	8 500	17 000
	55	9	16006	12 400	7 350	13 000		15 000
	55	13	6006	14 600	8 300	15 000	8 000	18 000
	62	16	6206	21 400	11 300	12 000	7 500	15 000
	72	19	6306	29 300	15 000	11 000	6 700	13 000
32	58	13	60/32	16 600	9 150	12 000	7 500	14 000
	65	17	62/32	22 800	11 600	10 000	7 100	12 000
	75	20	63/32	33 000	17 000	9 000	6 300	11 000
35	47	7	6807	5 400	4 100	14 000	7 500	16 000
	55	10	6907	11 600	7 250	12 000	7 500	15 000
	62	9	16007	12 800	8 200	11 000		13 000
	62	14	6007	17 600	10 300	13 000	6 700	15 000
	72	17	6207	28 200	15 300	11 000	6 300	13 000
	80	21	6307	36 500	19 200	10 000	6 000	12 000
40	52	7	6808	7 000	5 550	12 000	6 700	14 000
	62	12	6908	15 000	10 000	11 000	6 300	13 000
	68	9	16008	13 900	9 650	10 000		12 000
	68	15	6008	18 400	11 500	12 000	6 000	14 000
	80	18	6208	32 000	17 900	9 500	5 600	12 000
	90	23	6308	45 000	24 000	9 000	5 300	11 000



BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
45	58	7	6809	7 250	6 150	11 000	6 000	13 000
	68	12	6909	15 500	10 900	9 500	5 600	12 000
	75	10	16009	16 400	11 400	9 000		11 000
	75	16	6009	23 000	15 200	10 000	5 300	12 000
	85	19	6209	34 500	20 400	9 000	5 300	11 000
	100	25	6309	58 500	32 000	7 500	4 800	9 500
50	65	7	6810	7 050	6 200	9 500	5 300	11 000
	72	12	6910	16 000	11 700	9 000	5 300	11 000
	80	10	16010	17 000	12 400	8 500		10 000
	80	16	6010	24 000	16 600	9 500	4 800	11 000
	90	20	6210	38 500	23 200	8 000	4 800	10 000
	110	27	6310	68 000	38 500	7 100	4 300	8 500
55	72	9	6811	9 700	8 500	8 500	4 800	10 000
	80	13	6911	17 600	13 300	8 000	4 500	9 500
	90	11	16011	21 400	16 300	7 500		9 000
	90	18	6011	31 000	21 200	8 500	4 500	10 000
	100	21	6211	47 500	29 300	7 500	4 300	9 000
	120	29	6311	78 500	44 500	6 700	4 000	8 000
60	78	10	6812	12 600	10 900	8 000	4 500	9 500
	85	13	6912	21 400	16 300	7 500	4 300	9 000
	95	11	16012	22 000	17 500	7 100		8 500
	95	18	6012	32 500	23 200	8 000	4 000	9 500
	110	22	6212	57 500	36 000	6 700	3 800	8 000
	130	31	6312	90 000	52 000	6 000	3 600	7 100

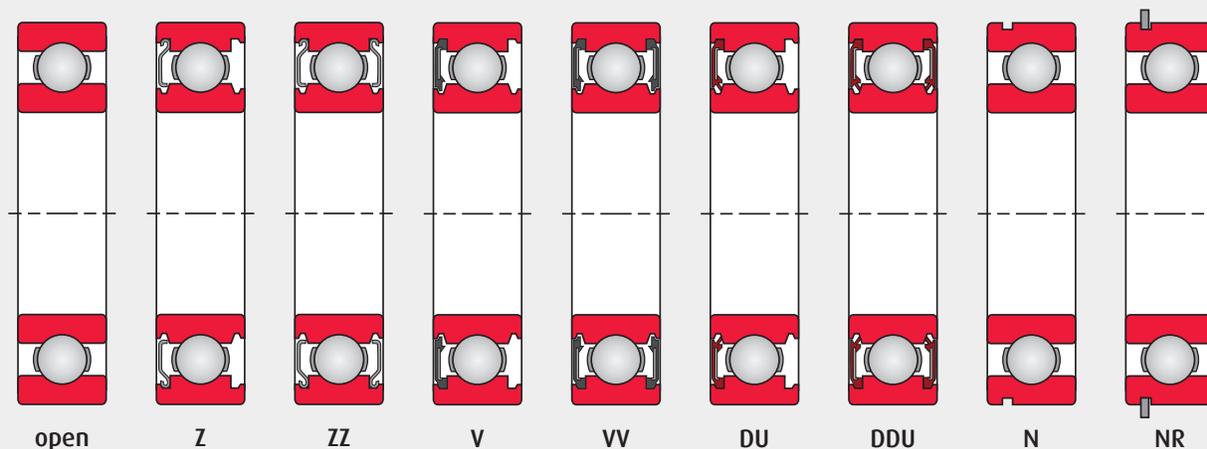
# SINGLE ROW DEEP GROOVE BALL BEARINGS

BORE DIAMETER: 65 - 100 MM



open type

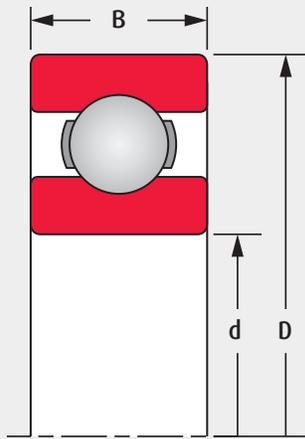
BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
65	85	10	6813	13 100	12 100	7 500	4 000	8 500
	90	13	6913	19 100	16 100	7 100	4 000	8 500
	100	11	16013	22 500	18 700	6 700		8 000
	100	18	6013	33 500	25 200	7 500	4 000	9 000
	120	23	6213	63 000	40 000	6 300	3 600	7 500
	140	33	6313	102 000	60 000	5 600	3 400	6 700
70	90	10	6814	13 300	12 700	6 700	3 800	8 000
	100	16	6914	26 100	21 200	6 300	3 600	7 500
	110	13	16014	29 500	23 600	6 000		7 100
	110	20	6014	42 000	31 000	7 100	3 600	8 500
	125	24	6214	68 500	44 000	6 000	3 400	7 100
	150	35	6314	115 000	68 000	5 300	3 200	6 300
75	95	10	6815	13 800	13 900	6 300	3 600	7 500
	105	16	6915	26 800	22 600	6 000	3 400	7 100
	115	13	16015	30 500	25 300	5 600		6 700
	115	20	6015	43 500	33 500	6 700	3 400	8 000
	130	25	6215	73 000	49 500	5 600	3 200	6 700
	160	37	6315	125 000	77 000	4 800	2 800	6 000
80	100	10	6816	13 900	14 500	6 000	3 400	7 100
	110	16	6916	27 400	24 000	5 600	3 200	6 700
	125	14	16016	35 000	29 600	5 300		6 300
	125	22	6016	52 500	40 000	6 300	3 200	7 100
	140	26	6216	80 000	53 000	5 300	3 000	6 300
	170	39	6316	135 000	86 500	4 500	2 800	5 600



BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
85	110	13	6817	20 600	20 000	5 600	3 200	6 700
	120	18	6917	35 000	29 600	5 300	3 000	6 300
	130	14	16017	36 000	31 500	5 000		6 000
	130	22	6017	54 500	43 000	6 000	3 000	7 100
	150	28	6217	92 500	62 000	4 800	2 800	6 000
	180	41	6317	146 000	97 000	4 300	2 600	5 000
90	115	13	6818	20 900	21 000	5 300	3 000	6 300
	125	18	6918	36 000	31 500	5 000	2 800	6 000
	140	16	16018	45 500	39 500	4 800		5 600
	140	24	6018	64 000	50 000	5 600	2 800	6 300
	160	30	6218	106 000	71 500	4 500	2 600	5 600
	190	43	6318	157 000	107 000	4 000	2 400	4 800
95	120	13	6819	21 200	22 000	5 000	2 800	6 000
	130	18	6919	37 000	33 500	4 800	2 800	5 600
	145	16	16019	47 000	42 000	4 500		5 300
	145	24	6019	66 500	54 000	5 300	2 600	6 000
	170	32	6219	120 000	82 000	4 300	2 600	5 000
	200	45	6319	168 000	119 000	3 400	2 400	4 300
100	125	13	6820	21 500	23 000	4 800	2 800	5 600
	140	20	6920	47 000	42 000	4 500	2 600	5 300
	150	16	16020	46 500	42 000	4 300		5 300
	150	24	6020	66 000	54 000	5 000	2 600	6 000
	180	34	6220	134 000	93 000	4 000	2 400	4 800
	215	47	6320	191 000	141 000	2 800	2 200	3 400

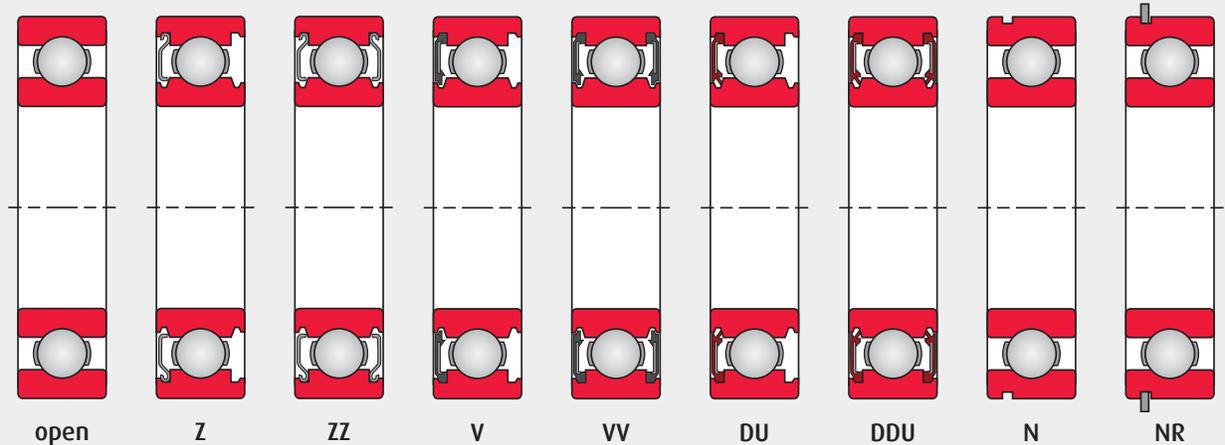
# SINGLE ROW DEEP GROOVE BALL BEARINGS

BORE DIAMETER: 105 - 170 MM



open type

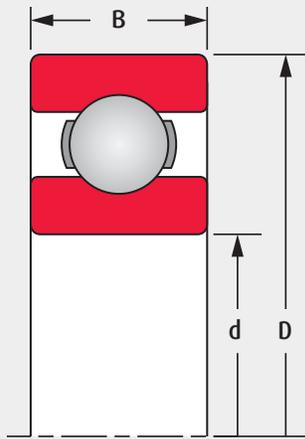
BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
<b>105</b>	130	13	<b>6821</b>	21 800	23 900	4 800	2 600	5 600
	145	20	<b>6921</b>	46 500	42 000	4 300		5 300
	160	18	<b>16021</b>	57 000	50 500	4 000		4 800
	160	26	<b>6021</b>	79 500	66 000	4 500	2 400	5 600
	190	36	<b>6221</b>	146 000	105 000	3 800	2 200	4 500
	225	49	<b>6321</b>	202 000	154 000	2 600	2 000	3 200
<b>110</b>	140	16	<b>6822</b>	31 000	32 500	4 300	2 400	5 300
	150	20	<b>6922</b>	48 000	44 500	4 300	2 400	5 000
	170	19	<b>16022</b>	63 000	56 500	3 800		4 500
	170	28	<b>6022</b>	93 000	73 000	4 500	2 200	5 300
	200	38	<b>6222</b>	159 000	117 000	2 800	2 200	3 400
	240	50	<b>6322</b>	226 000	179 000	2 400		3 000
<b>120</b>	150	16	<b>6824</b>	32 000	35 500	4 000	2 200	4 800
	165	22	<b>6924</b>	58 500	54 000	3 800		4 500
	180	19	<b>16024</b>	62 500	57 500	3 600		4 300
	180	28	<b>6024</b>	97 000	80 000	4 000	2 200	4 800
	215	40	<b>6224</b>	171 000	131 000	2 600	2 000	3 200
	260	55	<b>6324</b>	227 000	185 000	2 200	1 800	2 800
<b>130</b>	165	18	<b>6826</b>	40 500	44 000	3 600	2 000	4 300
	180	24	<b>6926</b>	71 500	67 500	3 400		4 000
	200	22	<b>16026</b>	83 500	77 500	3 000		3 600
	200	33	<b>6026</b>	117 000	101 000	3 000	1 900	3 600
	230	40	<b>6226</b>	184 000	146 000	2 400		3 000
	280	58	<b>6326</b>	252 000	214 000	2 200		2 600



BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
<b>140</b>	175	18	<b>6828</b>	42 000	48 000	3 400	1 900	4 000
	190	24	<b>6928</b>	73 500	72 000	3 200		3 800
	210	22	<b>16028</b>	85 500	82 500	2 800		3 400
	210	33	<b>6028</b>	121 000	109 000	2 800	1 800	3 400
	250	42	<b>6228</b>	183 000	150 000	2 200	1 700	2 800
	300	62	<b>6328</b>	278 000	246 000	2 000		2 400
<b>150</b>	190	20	<b>6830</b>	52 500	58 500	3 200	1 800	3 800
	210	28	<b>6930</b>	93 500	90 500	2 600	1 700	3 200
	225	24	<b>16030</b>	92 500	91 000	2 600		3 000
	225	35	<b>6030</b>	138 000	126 000	2 600	1 700	3 000
	270	45	<b>6230</b>	194 000	168 000	2 000		2 600
	320	65	<b>6330</b>	300 000	284 000	1 800		2 200
<b>160</b>	200	20	<b>6832</b>	53 000	61 000	2 600	1 700	3 200
	220	28	<b>6932</b>	95 500	96 000	2 600	1 600	3 000
	240	25	<b>16032</b>	109 000	108 000	2 400		2 800
	240	38	<b>6032</b>	150 000	135 000	2 400	1 600	2 800
	290	48	<b>6232</b>	204 000	186 000	1 900		2 400
	340	68	<b>6332</b>	305 000	287 000	1 700		2 000
<b>170</b>	215	22	<b>6834</b>	66 000	75 000	2 600	1 600	3 000
	230	28	<b>6934</b>	94 500	97 000	2 400		2 800
	260	28	<b>16034</b>	126 000	126 000	2 200		2 600
	260	42	<b>6034</b>	177 000	161 000	2 200		2 600
	310	52	<b>6234</b>	234 000	224 000	1 800		2 200
	360	72	<b>6334</b>	360 000	355 000	1 600		2 000

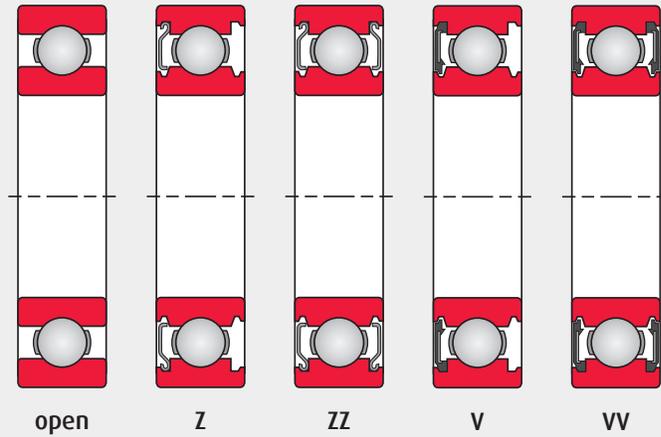
# SINGLE ROW DEEP GROOVE BALL BEARINGS

BORE DIAMETER: 180 - 300 MM



open type

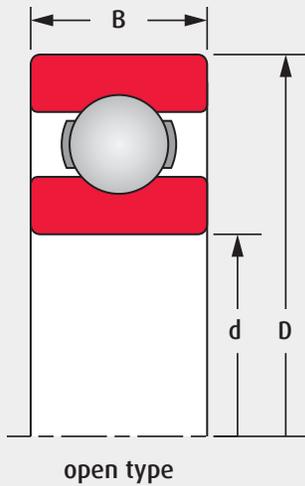
BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
180	225	22	6836	66 500	78 500	2 400		2 800
	250	33	6936	131 000	128 000	2 200		2 600
	280	31	16036	159 000	157 000	2 000		2 400
	280	46	6036	198 000	185 000	2 000		2 400
	320	52	6236	250 000	241 000	1 700		2 000
	380	75	6336	390 000	405 000	1 500		1 800
190	240	24	6838	80 500	93 500	2 200		2 600
	260	33	6938	124 000	127 000	2 200		2 600
	290	31	16038	164 000	168 000	2 000		2 400
	290	46	6038	207 000	201 000	2 000		2 400
	340	55	6238	280 000	282 000	1 600		2 000
	400	78	6338	390 000	415 000	1 400		1 700
200	250	24	6840	81 500	98 000	2 200		2 600
	280	38	6940	158 000	158 000	2 000		2 400
	310	34	16040	177 000	180 000	1 900		2 200
	310	51	6040	228 000	226 000	1 900		2 200
	360	58	6240	296 000	310 000	1 500		1 800
	420	80	6340	415 000	445 000	1 300		1 600
220	270	24	6844	84 000	107 000	1 900		2 400
	300	38	6944	161 000	169 000	1 800		2 200
	340	37	16044	198 000	217 000	1 600		2 000
	340	56	6044	259 000	271 000	1 700		2 000
	400	65	6244	340 000	375 000	1 300		1 600
	460	88	6344	450 000	520 000	1 200		1 500



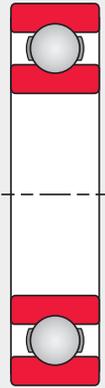
BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
240	300	28	6848	108 000	137 000	1 700		2 000
	320	38	6948	170 000	190 000	1 700		2 000
	360	37	16048	215 000	243 000	1 500		1 900
	360	56	6048	269 000	296 000	1 500		1 900
	440	72	6248	375 000	430 000	1 200		1 500
	500	95	6348	515 000	625 000	1 100		1 300
260	320	28	6852	111 000	148 000	1 600		1 900
	360	46	6952	224 000	255 000	1 500		1 800
	400	44	16052	260 000	310 000	1 400		1 700
	400	65	6052	320 000	375 000	1 400		1 700
	480	80	6252	440 000	540 000	1 100		1 300
	540	102	6352	555 000	710 000	1 000		1 200
280	350	33	6856	146 000	191 000	1 500		1 700
	380	46	6956	230 000	272 000	1 400		1 700
	420	44	16056	267 000	330 000	1 300		1 600
	420	65	6056	330 000	410 000	1 300		1 600
	500	80	6256	440 000	550 000	1 000		1 300
	580	108	6356	625 000	840 000	900		1 100
300	380	38	6860	183 000	233 000	1 300		1 600
	420	56	6960	296 000	370 000	1 300		1 500
	460	50	16060	315 000	405 000	1 200		1 400
	460	74	6060	390 000	500 000	1 200		1 400
	540	85	6260	510 000	670 000	950		1 200

# SINGLE ROW DEEP GROOVE BALL BEARINGS

BORE DIAMETER: 320 - 480 MM



BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
320	400	38	6864	185 000	244 000	1 300		1 500
	440	56	6964	292 000	375 000	1 200		1 400
	480	50	16064	320 000	430 000	1 100		1 300
	480	74	6064	430 000	570 000	1 100		1 300
	580	92	6264	585 000	805 000	850		1 100
340	420	38	6868	192 000	265 000	1 200		1 400
	460	56	6968	300 000	400 000	1 100		1 300
	520	82	6068	485 000	660 000	1 000		1 200
	620	92	6268	580 000	820 000	800		1 000
360	440	38	6872	211 000	290 000	1 100		1 300
	480	56	6972	310 000	425 000	1 100		1 300
	540	82	6072	505 000	720 000	950		1 200
	650	95	6272	615 000	905 000	750		950
380	480	46	6876	261 000	375 000	1 000		1 200
	520	65	6976	355 000	510 000	950		1 200
	560	82	6076	505 000	725 000	900		1 100

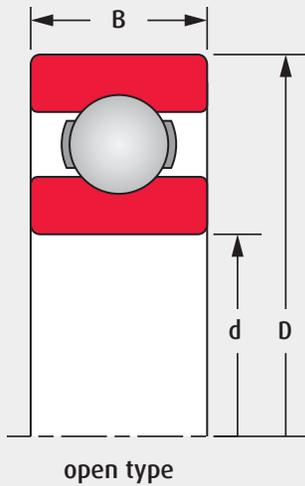


open

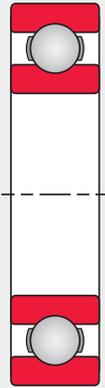
BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
400	500	46	6880	265 000	390 000	950		1 200
	540	65	6980	365 000	540 000	900		1 100
	600	90	6080	560 000	825 000	850		1 000
420	520	46	6884	269 000	410 000	900		1 100
	560	65	6984	375 000	570 000	900		1 100
	620	90	6084	585 000	895 000	800		1 000
440	540	46	6888	273 000	425 000	900		1 100
	600	74	6988	435 000	680 000	800		1 000
	650	94	6088	605 000	965 000	750		900
460	580	56	6892	340 000	550 000	800		1 000
	620	74	6992	450 000	720 000	800		950
	680	100	6092	665 000	1 080 000	710		850
480	600	56	6896	350 000	575 000	800		950
	650	78	6996	495 000	815 000	750		900
	700	100	6096	665 000	1 090 000	710		850

# SINGLE ROW DEEP GROOVE BALL BEARINGS

BORE DIAMETER: 500 - 800 MM



BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
500	620	56	68/500	355 000	600 000	750		900
	670	78	69/500	505 000	865 000	710		850
	720	100	60/500	690 000	1 170 000	670		800
530	650	56	68/530	360 000	625 000	710		850
	710	82	69/530	500 000	870 000	670		800
	780	112	60/530	745 000	1 300 000	600		750
560	680	56	68/560	360 000	650 000	670		800
	750	85	69/560	575 000	1 040 000	600		750
	820	115	60/560	810 000	1 500 000	560		670
600	730	60	68/600	390 000	735 000	600		710
	800	90	69/600	605 000	1 160 000	560		670
	870	118	60/600	870 000	1 640 000	530		630
630	780	69	68/630	460 000	890 000	560		670
	850	100	69/630	690 000	1 350 000	530		630
	920	128	60/630	825 000	1 620 000	480		600

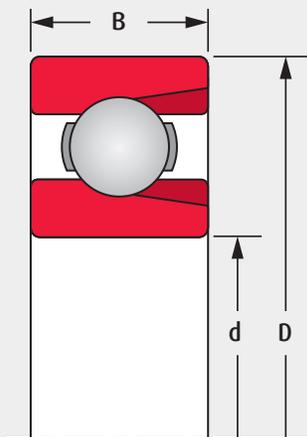


open

BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>		
mm				N		Grease		Oil
d	D	B		Dynamic	Static	Open, Z/ZZ, V/VV	DU/DDU	Open, Z
670	820	69	68/670	480 000	965 000	500		630
	900	103	69/670	740 000	1 460 000	480		560
	980	136	60/670	840 000	1 730 000	450		530
710	870	74	68/710	530 000	1 100 000	480		560
	950	106	69/710	785 000	1 640 000	450		530
750	920	78	68/750	580 000	1 260 000	430		530
	1000	112	69/750	865 000	1 840 000	400		500
800	980	82	68/800	585 000	1 310 000	400		480
	1060	115	69/800	910 000	2 050 000	380		450

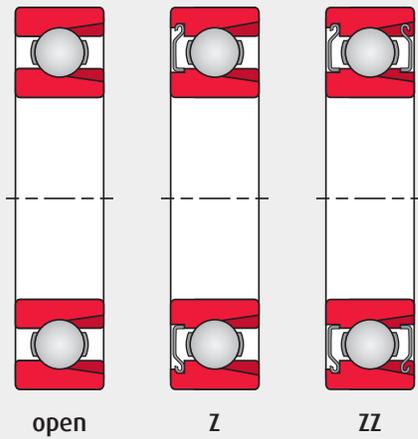
# MAXIMUM TYPE DEEP GROOVE BALL BEARINGS

BORE DIAMETER: 25 - 110 MM



open type

BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>	
mm				N		Grease	Oil
d	D	B		Dynamic	Static	Open, Z/ZZ	Open, Z
25	52	15	<b>BL205</b>	15 800	10 500	12 000	15 000
	62	17	<b>BL305</b>	23 700	15 500	11 000	13 000
30	62	16	<b>BL206</b>	23 200	16 300	10 000	12 000
	72	19	<b>BL306</b>	30 500	20 700	9 000	11 000
35	72	17	<b>BL207</b>	30 500	22 100	9 000	11 000
	80	21	<b>BL307</b>	41 000	29 100	8 000	9 500
40	80	18	<b>BL208</b>	39 000	28 800	8 000	9 500
	90	23	<b>BL308</b>	51 000	36 000	7 500	9 000
45	85	19	<b>BL209</b>	41 000	32 000	7 500	9 000
	100	25	<b>BL309</b>	61 000	44 000	6 300	8 000
50	90	20	<b>BL210</b>	43 000	35 000	6 700	8 500
	110	27	<b>BL310</b>	71 500	52 500	6 000	7 100
55	100	21	<b>BL211</b>	53 000	44 000	5 300	7 500
	120	29	<b>BL311</b>	82 500	61 500	5 600	6 700
60	110	22	<b>BL212</b>	64 000	54 000	5 600	6 700
	130	31	<b>BL312</b>	94 000	71 500	5 000	6 000
65	120	23	<b>BL213</b>	70 000	60 000	5 300	6 300
	140	33	<b>BL313</b>	113 000	89 500	4 800	5 600

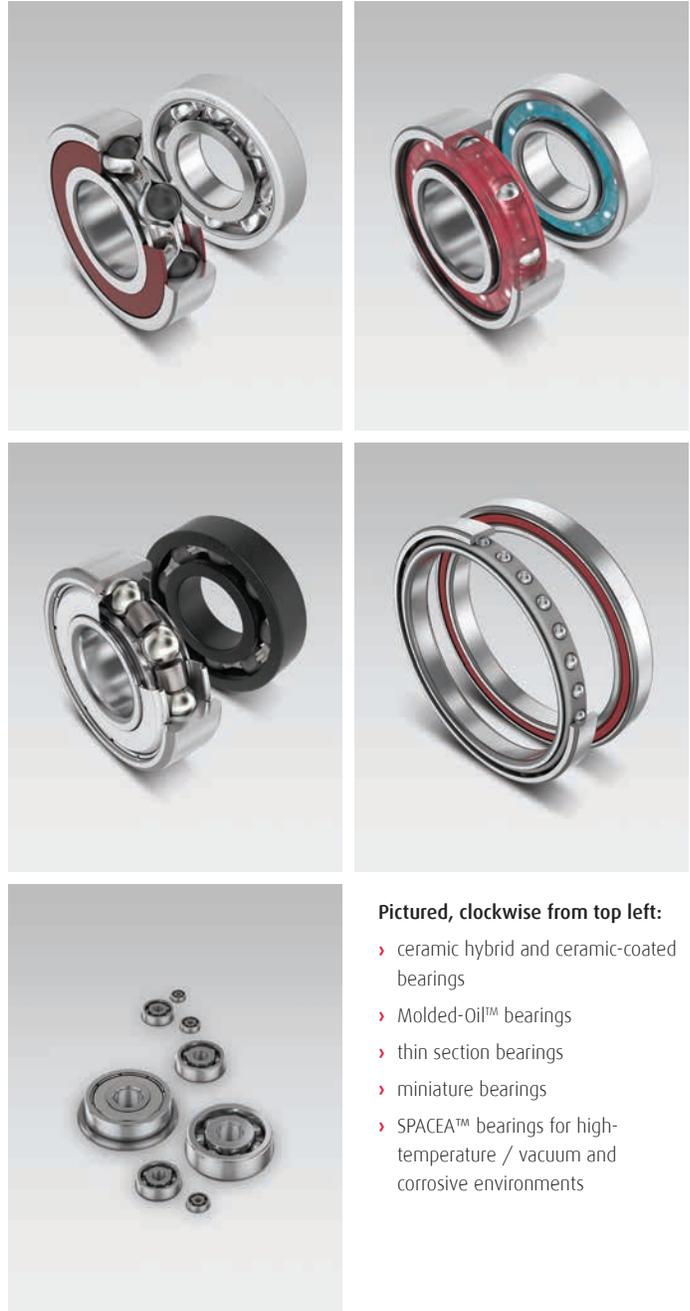


BOUNDARY DIMENSIONS			BASIC BEARING No.	BASIC LOAD RATINGS		LIMITING SPEED, min <sup>-1</sup>	
mm				N		Grease	Oil
d	D	B		Dynamic	Static	Open, Z/ZZ	Open, Z
70	125	24	BL214	76 000	66 000	5 000	6 000
	150	35	BL314	127 000	102 000	4 300	5 300
75	130	25	BL215	79 000	72 000	4 500	5 600
	160	37	BL315	138 000	116 000	4 000	5 000
80	140	26	BL216	92 500	85 000	4 300	5 300
	170	39	BL316	150 000	130 000	3 800	4 500
85	150	28	BL217	102 000	93 000	4 000	5 000
	180	41	BL317	162 000	145 000	3 600	4 300
90	160	30	BL218	117 000	107 000	3 800	4 500
	190	43	BL318	174 000	161 000	3 400	4 000
95	170	32	BL219	133 000	123 000	3 600	4 300
	200	45	BL319	186 000	178 000	2 800	3 600
100	180	34	BL220	149 000	140 000	3 400	4 000
105	190	36	BL221	162 000	157 000	3 200	3 800
110	200	38	BL222	176 000	176 000	2 800	3 400

# FOR SPECIAL APPLICATIONS AND ENVIRONMENTS

When meeting the practical need for smooth, reliable motion can only be achieved through extraordinary design measures and product innovation, NSK brings our core technologies to bear to deliver specifically optimized and highly-tailored deep groove ball bearing products that include:

- › **Industrial machinery solutions** to contend with challenges such as current transmission, corrosion, lubrication and wear, with special design deep groove ball bearings including:
  - › ceramic hybrid and HDY2 ceramic-coated bearings
  - › ES1 stainless steel bearings
  - › Molded-Oil™ / solid lubricant bearings
  - › Creep-Free Bearings™
- › **NSK SPACEA™ bearings**, optimized for operating environments that are too severe for standard advanced lubricants and surface treatments to deliver high performance and reliability to challenging conditions that include:
  - › vacuum
  - › sanitary
  - › clean-room
  - › non-magnetic
  - › corrosive
  - › contamination
  - › high temperature
- › **Thin Section bearings** that deliver compact, lightweight, high-speed and low-torque solutions for robot axes and speed reducers, harmonic drives and medical devices
- › **Extra Small and Miniature bearings** of conventional design or with flanged outer rings, with thin-walled cross-sections, or with special geometry for synchro motors, turbomachinery, medical handpieces and measuring instruments



**Pictured, clockwise from top left:**

- › ceramic hybrid and ceramic-coated bearings
- › Molded-Oil™ bearings
- › thin section bearings
- › miniature bearings
- › SPACEA™ bearings for high-temperature / vacuum and corrosive environments

**NSK**



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