

# Single row deep groove ball bearings

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## Single row deep groove ball bearings

Single row deep groove ball bearings are particularly versatile. They are simple in design, non-separable, suitable for high and even very high speeds and are robust in operation, requiring little maintenance. Deep raceway grooves and the close conformity between the raceway grooves and the balls enable deep groove ball bearings to accommodate axial loads in both directions, in addition to radial loads, even at high speeds.

Single row deep groove ball bearings are the most widely used bearing type. Consequently, they are available from SKF in many executions and sizes:

- open basic design bearings
- sealed bearings
- ICOS™ oil sealed bearing units
- bearings with snap ring groove, with or without snap ring

Other deep groove ball bearings for special applications, shown in the sections “Engineering products” and “Mechatronics” include

- hybrid bearings (→ [page 891](#))
- insulated bearings (→ [page 905](#))
- high temperature bearings (→ [page 917](#))
- bearings with Solid Oil (→ [page 945](#))
- sensorized bearings (→ [page 953](#))

The SKF product range also includes inch-size bearings and bearings with a tapered bore. These variants are not included in this General Catalogue. Information will be provided on request.

## Designs

### Basic design bearings

Basic design SKF single row deep groove ball bearings (→ [fig 1](#)) are open (unsealed). For manufacturing reasons, those sizes of open bearing that are also produced in sealed or shielded versions may have seal recesses in the outer ring.

### Sealed bearings

The most popular sizes of deep groove ball bearings are also produced in sealed versions with shields or contact seals on one or both sides. Details regarding the suitability of the different seals for various operating conditions will be found in [table 1](#). Sealed bearings in the wide 622, 623 and 630 series are particularly suitable for long maintenance-free service. In addition, ICOS bearing units with integrated radial shaft seals are available for higher sealing requirements.

The bearings with shields or seals on both sides are lubricated for life and are maintenance-free. They should not be washed or heated to temperatures above 80 °C. Depending on the series and size, deep groove ball bearings are supplied charged with one of three standard greases:

- LT10 grease for bearings in the 8 and 9 Diameter Series up to and including 30 mm outside diameter,

Fig 1

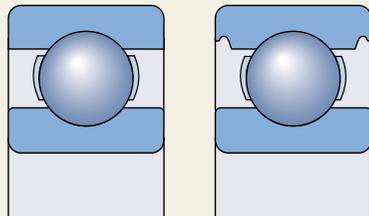


Table 1

Seal selection guidelines					
Requirement	Shields Z	Low-friction seals		Contact seals	
		RSL	RZ	RSH	RS1
Low friction	+++	++	+++	o	o
High speeds	+++	+++	+++	o	o
Grease retention	o	+++	+	+++	++
Dust exclusion	o	++	+	+++	+++
Water exclusion					
static	-	o	-	+++	++
dynamic	-	o	-	+	+
high pressure	-	o	-	+++	o
Symbols:	+++ excellent	++ very good	+ good	o fair	- not recommended

- MT47 grease for bearings in the 8 and 9 Diameter Series above 30 mm up to and including 62 mm outside diameter and for bearings in the 0, 1, 2 and 3 Diameter Series up to and including 62 mm outside diameter,
- MT33 grease for all bearings above 62 mm outside diameter.
- high temperature grease GJN for bearings up to and including 62 mm outside diameter
- high temperature grease HT22 for bearings above 62 mm outside diameter
- low temperature grease LT20
- wide temperature range grease GWB
- wide temperature range and silent running grease LHT23

Characteristics of the above standard greases are listed in **table 2**. The standard grease is not identified in the bearing designation. The quantity of grease fills some 25 to 35 % of the free space in the bearing. To special order, other grease filling grades are available. Also on request, special grease fills (→ **table 2**) can be supplied

Table 2

SKF grease filling for sealed deep groove ball bearings								
Technical specifications	Standard greases			Special greases			GWB	LHT23
	LT10	MT47	MT33	GJN	HT22	LT20		
Thickener	Lithium soap	Lithium soap	Lithium soap	Polyurea soap	Lithium complex soap	Lithium soap	Polyurea soap	Lithium soap
Base oil type	Diester oil	Mineral oil	Mineral oil	Mineral oil	Mineral oil	Diester oil	Ester oil	Ester oil
NLGI consistency class	2	2	3	2	3	2	2-3	2
Operating temperature, °C	-50 to +90	-30 to +110	-30 to +120	-30 to +150	-20 to +140	-55 to +110	-40 to +160	-50 to +140
Base oil viscosity, mm <sup>2</sup> /s								
at 40 °C	12	70	74	115	110	15	70	26
at 100 °C	3,3	7,3	8,5	12,2	13	3,7	9,4	5,1

## Single row deep groove ball bearings

### Bearings with shields

Bearings with shields, designation suffix Z or 2Z, are produced in one of two designs, depending on the bearing series and size (→ **fig 2**). The shields are made of sheet steel and normally have a cylindrical extension in the shield bore to form a long sealing gap with the inner ring shoulder (**a**). Some shields do not have the extension (**b**).

Shielded bearings are primarily intended for applications where the inner ring rotates. If the outer ring rotates, there is a risk that the grease will leak from the bearing at high speeds.

### Bearings with low-friction seals

SKF deep groove ball bearings with low-friction seals, designation suffixes RSL, 2RSL or RZ, 2RZ, are manufactured in three designs depending on bearing series and size (→ **fig 3**):

- bearings in the 60, 62 and 63 series up to 25 mm outside diameter are equipped with RSL seals to design (**a**),
- bearings in the 60, 62 and 63 series from 25 mm and up to and including 52 mm outside diameter are equipped with RSL seals to design (**b**),
- other bearings have RZ seals (**c**).

The seals form an extremely narrow gap with the cylindrical surface of the inner ring

shoulder or recess profile and are practically non-contacting. Because of this, bearings fitted with low-friction seals can be operated at the same high speeds as bearings with Z shields, but with improved seal performance.

The low-friction seals are made of oil and wear-resistant acrylonitrile butadiene rubber (NBR) with a sheet steel reinforcement. The permissible operating temperature range for these seals is  $-40$  to  $+100$  °C and up to  $+120$  °C for brief periods.

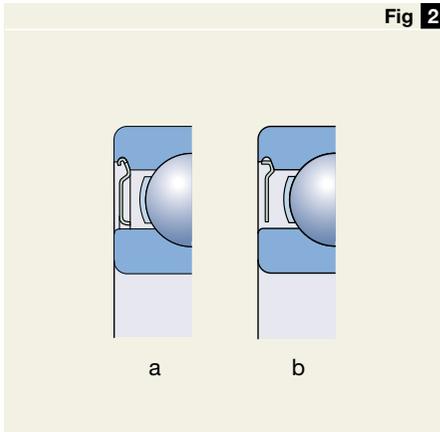
### Bearings with contact seals

Bearings with contact seals, designation suffixes RSH, 2RSH or RS1, 2RS1, are manufactured in four designs depending on bearing series and size (→ **fig 4**):

- bearings in the 60, 62, and 63 series up to 25 mm outside diameter are equipped with RSH seals to design (**a**),
- bearings in the 60, 62 and 63 series from 25 mm and up to and including 52 mm outside diameter are equipped with RSH seals to design (**b**),
- other bearings have RS1 seals, which seal against the cylindrical surface of the inner ring shoulder (**c**) indicated by dimension  $d_1$  in the product table or against a recess in the inner ring side face (**d**) indicated by dimension  $d_2$  in the product table.

The seals are inserted in recesses in the outer ring and provide good sealing at this

**Fig 2**



**Fig 3**

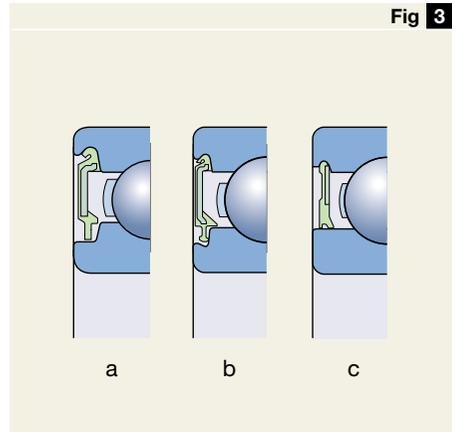
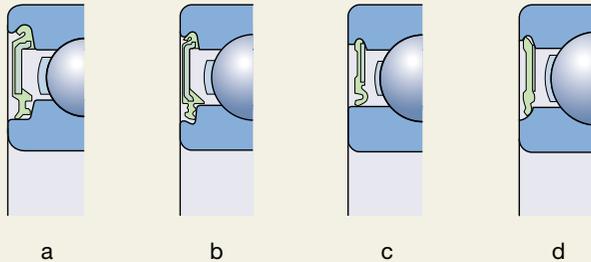


Fig 4



position without deforming the outer ring. Standard seals are made of acrylonitrile butadiene rubber (NBR) with a sheet steel reinforcement. The permissible operating temperature range for these seals is  $-40$  to  $+100$  °C and up to  $+120$  °C for brief periods.

When sealed bearings are operated under certain extreme conditions, e.g. very high speeds or high temperatures, grease leakage may occur at the inner ring. For bearing arrangements where this would be detrimental, special design steps must be undertaken, please consult the SKF application engineering service.

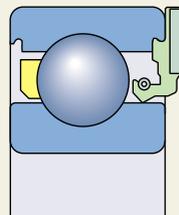
### ICOS™ oil sealed bearing units

ICOS oil sealed bearing units have been developed by SKF. The new concept aims at applications where sealing requirements exceed the capabilities of standard sealed bearings. An ICOS unit consists of a 62 series deep groove ball bearing and an integral CR radial shaft seal (→ fig 5). These units need less space than common two-component arrangements; they simplify mounting, and avoid expensive machining of the shaft because the inner ring shoulder serves as a perfect seal counterface.

The CR radial shaft seal is made of acrylonitrile butadiene rubber (NBR) and has a spring loaded Waveseal lip. The permissible operating temperature range for the seal is  $-40$  to  $+100$  °C and up to  $+120$  °C for brief periods.

The speed limits quoted in the product table are based on the permissible circumferential speed for the CR seal, which in this case is 14 m/s.

Fig 5



## Single row deep groove ball bearings

### Bearings with snap ring groove

Deep groove ball bearings with a snap ring groove can simplify arrangement design as the bearings can be axially located in the housing by a snap (or retaining) ring (→ **fig 6**). This saves space. Appropriate snap rings are shown in the product table with designation and dimensions and may be supplied separately or already mounted on the bearing.

SKF deep groove ball bearings with a snap ring groove (→ **fig 7**) are supplied as:

- open (unsealed) bearings, designation suffix N (**a**);
- open bearings with a snap ring, designation suffix NR (**b**);
- bearings with a Z shield at the opposite side and a snap ring, designation suffix ZNR (**c**);
- bearings with Z shields on both sides and a snap ring, designation suffix 2ZNR (**d**).

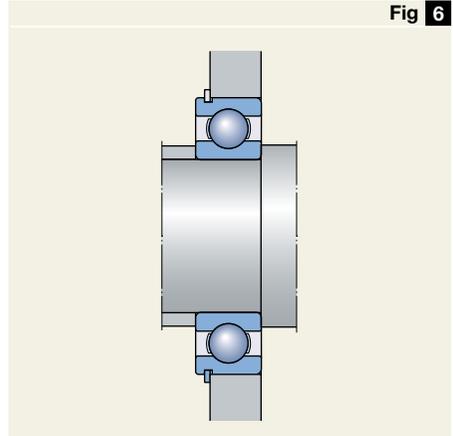
### Matched bearing pairs

For bearing arrangements where the load carrying capacity of a single bearing is inadequate, or where the shaft has to be axially located in both directions with a given amount of axial clearance, SKF can supply matched pairs of single row deep groove ball bearings to order. Depending on the requirements the matched pairs can be supplied in tandem, back-to-back, or face-to-face arrangements (→ **fig 8**). The bearings are matched in production so that, when mounted immediately adjacent to each other, the load will be even-

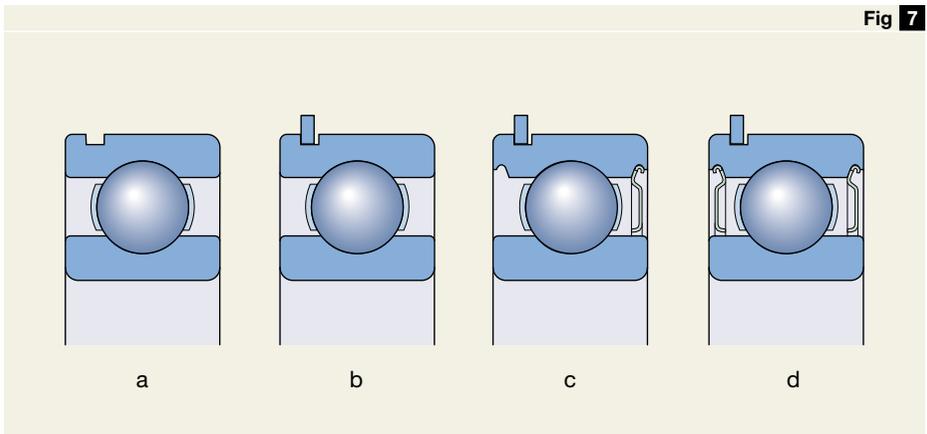
ly distributed between the bearings without having to use shims or similar devices.

Further information on matched bearing pairs can be found in the “SKF Interactive Engineering Catalogue” on CD-ROM or online at [www.skf.com](http://www.skf.com).

**Fig 6**



**Fig 7**



# SKF Explorer class bearings

High performance SKF Explorer deep groove ball bearings are shown with an asterisk in the product tables. The higher performance of SKF Explorer deep groove ball bearings also includes quieter running. SKF Explorer bearings retain the designation of the earlier standard bearings. However, each bearing and its box are marked with the name "EXPLORER".

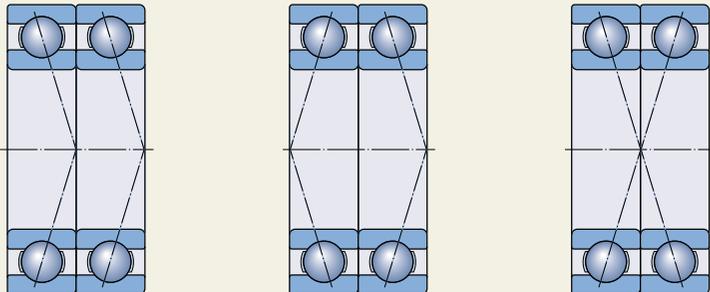


Fig 8

## Bearing data – general

### Dimensions

The boundary dimensions of SKF single row deep groove ball bearings are in accordance with ISO 15:1998. Dimensions of the snap ring grooves and snap rings comply with ISO 464:1995.

### Tolerances

SKF single row deep groove ball bearings are manufactured as standard to Normal tolerances.

SKF Explorer single row deep groove ball bearings are produced to higher precision than the ISO Normal tolerances. The dimensional accuracy corresponds to P6 tolerances, except the width tolerance, which is considerably tighter and reduced to

- 0/–60 µm for bearings with outside diameter up to 110 mm and
- 0/–100 µm for larger bearings.

The running accuracy depends on the bearing size and corresponds to

- P5 tolerances for bearings up to 52 mm outside diameter,
- P6 tolerances for bearings above 52 mm up to 110 mm outside diameter and
- Normal tolerances for larger bearings.

For bearing arrangements where accuracy is a key operational factor some SKF single row deep groove ball bearings are also available with accuracy completely to P6 or P5 tolerance class specifications. The availability of these bearings should always be checked before ordering.

The tolerances are in accordance with ISO 492:2002 and can be found in **tables 3** to **5**, starting on **page 125**.

### Internal clearance

SKF single row deep groove ball bearings are manufactured with Normal radial internal clearance as standard. Most of the bearings are also available with C3 radial internal clearance. Some of the bearings can even be supplied with the appreciably greater C4 or the smaller C2 clearances. In addition, deep groove ball bearings are available with

reduced or displaced internal clearance ranges. These special clearances may use reduced ranges of standard clearance classes or partitions of adjacent classes (→ designation suffix CN on **page 300**). Bearings with internal clearance not to standard are supplied on request.

The values for radial internal clearance are given in **table 3**. They are in accordance with ISO 5753:1991 and are valid for unmounted bearings under zero measuring load.

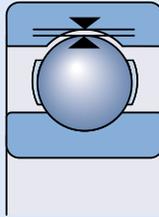
### Misalignment

Single row deep groove ball bearings have only limited ability to accommodate misalignment. The permissible angular misalignment between the inner and outer rings, which will not produce inadmissibly high additional stresses in the bearing, depends on

- the radial internal clearance of the bearing in operation,
- the bearing size,
- the internal design and
- the forces and moments acting on the bearing.

Because of the complex relationship between these factors, no generally applicable specific values can be given. However, depending on the various influences of the factors, the permissible angular misalignment lies between 2 and 10 minutes of arc. Any misalignment will result in increased bearing noise and reduced bearing service life.

**Radial internal clearance of deep groove ball bearings**



Bore diameter d		Radial internal clearance C2				Normal		C3		C4		C5	
over	incl.	min	max	min	max	min	max	min	max	min	max	min	max
mm		µm											
	<b>6</b>	0	7	2	13	8	23	-	-	-	-	-	-
<b>6</b>	<b>10</b>	0	7	2	13	8	23	14	29	20	37		
<b>10</b>	<b>18</b>	0	9	3	18	11	25	18	33	25	45		
	<b>18</b>	0	10	5	20	13	28	20	36	28	48		
<b>24</b>	<b>30</b>	1	11	5	20	13	28	23	41	30	53		
<b>30</b>	<b>40</b>	1	11	6	20	15	33	28	46	40	64		
	<b>40</b>	1	11	6	23	18	36	30	51	45	73		
<b>50</b>	<b>65</b>	1	15	8	28	23	43	38	61	55	90		
<b>65</b>	<b>80</b>	1	15	10	30	25	51	46	71	65	105		
	<b>80</b>	1	18	12	36	30	58	53	84	75	120		
<b>100</b>	<b>120</b>	2	20	15	41	36	66	61	97	90	140		
<b>120</b>	<b>140</b>	2	23	18	48	41	81	71	114	105	160		
	<b>140</b>	2	23	18	53	46	91	81	130	120	180		
<b>160</b>	<b>180</b>	2	25	20	61	53	102	91	147	135	200		
<b>180</b>	<b>200</b>	2	30	25	71	63	117	107	163	150	230		
	<b>200</b>	4	32	28	82	73	132	120	187	175	255		
<b>225</b>	<b>250</b>	4	36	31	92	87	152	140	217	205	290		
<b>250</b>	<b>280</b>	4	39	36	97	97	162	152	237	255	320		
	<b>280</b>	8	45	42	110	110	180	175	260	260	360		
<b>315</b>	<b>355</b>	8	50	50	120	120	200	200	290	290	405		
<b>355</b>	<b>400</b>	8	60	60	140	140	230	230	330	330	460		
	<b>400</b>	10	70	70	160	160	260	260	370	370	520		
<b>450</b>	<b>500</b>	10	80	80	180	180	290	290	410	410	570		
<b>500</b>	<b>560</b>	20	90	90	200	200	320	320	460	460	630		
	<b>560</b>	20	100	100	220	220	350	350	510	510	700		
<b>630</b>	<b>710</b>	30	120	120	250	250	390	390	560	560	780		
<b>710</b>	<b>800</b>	30	130	130	280	280	440	440	620	620	860		
	<b>800</b>	30	150	150	310	310	490	490	690	690	960		
<b>900</b>	<b>1 000</b>	40	160	160	340	340	540	540	760	760	1 040		
<b>1 000</b>	<b>1 120</b>	40	170	170	370	370	590	590	840	840	1 120		
	<b>1 120</b>	40	180	180	400	400	640	640	910	910	1 220		
<b>1 250</b>	<b>1 400</b>	60	210	210	440	440	700	700	1 000	1 000	1 340		
<b>1 400</b>	<b>1 600</b>	60	230	230	480	480	770	770	1 100	1 100	1 470		

Please refer to **page 137** for definition of radial internal clearance

## Single row deep groove ball bearings

### Cages

Depending on the bearing series and size, SKF single row deep groove ball bearings are supplied with one of the following cages (→ fig 9):

- ribbon-type cage of steel or brass sheet (a)
- riveted cage of steel or brass sheet (b)
- machined brass cage (c)
- snap-type cage of polyamide 6,6 (d)

Bearings having a pressed steel cage in standard execution may also be available with a machined brass or polyamide cage. For higher operating temperatures, polyamide 4,6 or PEEK cages may be advantageous. Before ordering, please check for availability.

### Note:

Deep groove ball bearings with polyamide 6,6 cages can be operated at temperatures up to +120 °C. The lubricants generally used for rolling bearings do not have a detrimental effect on cage properties, with the exception of a few synthetic oils and greases with a synthetic oil base and lubricants containing a high proportion of EP additives when used at high temperatures.

For bearing arrangements, which are to be operated at continuously high temperatures or under arduous conditions, SKF recommends using bearings with a pressed steel or a machined brass cage.

For detailed information regarding the temperature resistance and the applicability of cages, please refer to the section “Cage materials”, starting on page 140.

### Minimum load

In order to provide satisfactory operation, deep groove ball bearings, like all ball and roller bearings, must always be subjected to a given minimum load, particularly if they are to operate at high speeds or are subjected to high accelerations or rapid changes in the direction of load. Under such conditions the inertia forces of the balls and cage, and the friction in the lubricant, can have a detrimental effect on the rolling conditions in the bearing arrangement and may cause damaging sliding movements to occur between the balls and raceways.

The requisite minimum radial load to be applied to deep groove ball bearings can be estimated using

$$F_{rm} = k_r \left( \frac{v n}{1\,000} \right)^{2/3} \left( \frac{d_m}{100} \right)^2$$

where

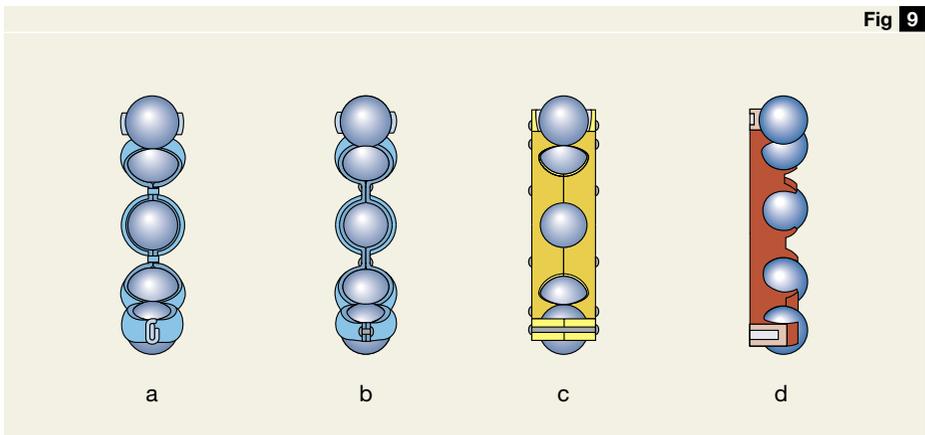
$F_{rm}$  = minimum radial load, kN

$k_r$  = minimum load factor  
(→ product tables)

$v$  = oil viscosity at operating temperature, mm<sup>2</sup>/s

$n$  = rotational speed, r/min

$d_m$  = bearing mean diameter  
= 0,5 (d + D), mm



When starting up at low temperatures or when the lubricant is highly viscous, even greater minimum loads may be required. The weight of the components supported by the bearing, together with external forces, generally exceeds the requisite minimum load. If this is not the case, the deep groove ball bearing must be subjected to an additional radial load. For applications where deep groove ball bearings are used, an axial preload can be applied by adjusting the inner and outer rings against each other, or by using springs.

### Axial load carrying capacity

If deep groove ball bearings are subjected to purely axial load, this axial load should generally not exceed the value of  $0,5 C_0$ . Small bearings (bore diameter up to approx. 12 mm) and light series bearings (Diameter Series 8, 9, 0, and 1) should not be subjected to an axial load greater than  $0,25 C_0$ . Excessive axial loads can lead to a considerable reduction in bearing service life.

### Equivalent dynamic bearing load

For dynamically loaded single row deep groove ball bearings

$$P = F_r \quad \text{when } F_a/F_r \leq e$$

$$P = X F_r + Y F_a \quad \text{when } F_a/F_r > e$$

The factors  $e$ ,  $X$  and  $Y$  depend on the relationship  $f_0 F_a/C_0$ , where  $f_0$  is a calculation factor ( $\rightarrow$  product tables),  $F_a$  the axial component of the load and  $C_0$  the basic static load rating.

In addition, the factors are influenced by the magnitude of the radial internal clearance; increased clearance allows heavier axial loads to be supported. For bearings mounted with the usual fits (shaft tolerance j5 to n6 depending on the shaft diameter, and housing bore tolerance J7), the values for  $e$ ,  $X$  and  $Y$  are listed in **table 4**. If a clearance greater than Normal is chosen because a reduction in clearance is expected in operation, the values given under "Normal clearance" should be used.

### Equivalent static bearing load

For statically loaded single row deep groove ball bearings

$$P_0 = 0,6 F_r + 0,5 F_a$$

If  $P_0 < F_r$ ,  $P_0 = F_r$  should be used.

**Table 4**

Calculation factors for single row deep groove ball bearings									
$f_0 F_a/C_0$	Normal clearance			C3 clearance			C4 clearance		
	$e$	$X$	$Y$	$e$	$X$	$Y$	$e$	$X$	$Y$
<b>0,172</b>	0,19	0,56	2,30	0,29	0,46	1,88	0,38	0,44	1,47
<b>0,345</b>	0,22	0,56	1,99	0,32	0,46	1,71	0,40	0,44	1,40
<b>0,689</b>	0,26	0,56	1,71	0,36	0,46	1,52	0,43	0,44	1,30
<b>1,03</b>	0,28	0,56	1,55	0,38	0,46	1,41	0,46	0,44	1,23
<b>1,38</b>	0,30	0,56	1,45	0,40	0,46	1,34	0,47	0,44	1,19
<b>2,07</b>	0,34	0,56	1,31	0,44	0,46	1,23	0,50	0,44	1,12
<b>3,45</b>	0,38	0,56	1,15	0,49	0,46	1,10	0,55	0,44	1,02
<b>5,17</b>	0,42	0,56	1,04	0,54	0,46	1,01	0,56	0,44	1,00
<b>6,89</b>	0,44	0,56	1,00	0,54	0,46	1,00	0,56	0,44	1,00

Intermediate values are obtained by linear interpolation

## Single row deep groove ball bearings

### Supplementary designations

The designation suffixes used to identify certain features of SKF deep groove ball bearings are explained in the following.

- CN** Normal radial clearance; generally only used in combination with one of the following letters that indicate reduced or displaced clearance range
- H** reduced clearance range corresponding to the upper half of the actual clearance range
  - L** reduced clearance range corresponding to the lower half of the actual clearance range
  - P** displaced clearance range comprising the upper half of the actual clearance range plus the lower half of the next larger clearance range
- The above letters are also used together with the following clearance classes: C2, C3, and C4
- C2** Radial internal clearance less than Normal
- C3** Radial internal clearance greater than Normal
- C4** Radial internal clearance greater than C3
- C5** Radial internal clearance greater than C4
- DB** Two single row deep groove ball bearings matched for paired mounting in a back-to-back arrangement
- DF** Two single row deep groove ball bearings matched for paired mounting in a face-to-face arrangement
- DT** Two single row deep groove ball bearings matched for paired mounting in a tandem arrangement
- E** Reinforced ball set
- GJN** Polyurea base grease of consistency 2 to the NLGI Scale for a temperature range –30 to +150 °C (normal fill grade)
- HT** Lithium base grease of consistency 3 to the NLGI Scale for a temperature range –20 to +140 °C (normal fill grade)
- J** Pressed steel cage
- LHT23** Lithium base grease of consistency 2 to the NLGI Scale for a temperature range –50 to +140 °C (normal fill grade)
- LT** Lithium base grease of consistency 2 to the NLGI Scale for a temperature range –55 to +110 °C (normal fill grade)
- LT10** Lithium base grease of consistency 2 to the NLGI Scale for a temperature range –50 to +90 °C (normal fill grade)
- M** Machined brass cage, ball centred. Different designs and material grades are identified by a figure following the M, e.g. M2
- MA** Machined brass cage, outer ring centred
- MB** Machined brass cage, inner ring centred
- MT33** Lithium base grease of consistency 3 to the NLGI Scale for a temperature range –30 to +120 °C (normal fill grade)
- MT47** Lithium base grease of consistency 2 to the NLGI Scale for a temperature range –30 to +110 °C (normal fill grade)
- N** Snap ring groove in the outer ring
- NR** Snap ring groove in the outer ring, with snap ring
- N1** One notch in the outer ring side face (enabling stop to be used to prevent rotation of ring)
- P5** Dimensional and running accuracy to ISO tolerance class 5
- P6** Dimensional and running accuracy to ISO tolerance class 6
- P52** P5 + C2
- P62** P6 + C2
- P63** P6 + C3
- RS1** Acrylonitrile butadiene rubber (NBR) seal with sheet steel reinforcement on one side of the bearing
- RSH** Acrylonitrile butadiene rubber (NBR) seal with sheet steel reinforcement on one side of the bearing
- RSL** Low friction, acrylonitrile butadiene rubber (NBR) seal with sheet steel reinforcement on one side of the bearing

<b>RZ</b>	Low friction, acrylonitrile butadiene rubber (NBR) seal with sheet steel reinforcement on one side of the bearing
<b>TH</b>	Cage of fabric reinforced phenolic resin (snap-type)
<b>TN</b>	Injection moulded polyamide cage
<b>TN9</b>	Injection moulded glass fibre reinforced polyamide 6,6 cage
<b>VL0241</b>	Aluminium oxide coated outside surface of the outer ring for electrical resistance up to 1 000 V DC
<b>VL2071</b>	Aluminium oxide coated outside surface of the inner ring for electrical resistance up to 1 000 V DC
<b>WT</b>	Polyurea base grease of consistency 2–3 to the NLGI Scale for a temperature range –40 to +160 °C (normal fill grade)
<b>Y</b>	Pressed brass cage
<b>Z</b>	Pressed steel shield on one side of the bearing
<b>2RS1</b>	Acrylonitrile butadiene rubber (NBR) seal with sheet steel reinforcement on both sides of the bearing
<b>2RSH</b>	Acrylonitrile butadiene rubber (NBR) seal with sheet steel reinforcement on both sides of the bearing
<b>2RSL</b>	Low friction, acrylonitrile butadiene rubber (NBR) seal with sheet steel reinforcement on both sides of the bearing
<b>2RZ</b>	Low friction, acrylonitrile butadiene rubber (NBR) seal with sheet steel reinforcement on both sides of the bearing
<b>2Z</b>	Z shield on both sides of the bearing