

SKF ConCentra ball bearings and units

True concentric locking, for fast and reliable
mounting





The SKF brand now stands for more than ever before, and means more to you as a valued customer.

While SKF maintains its leadership as the hallmark of quality bearings throughout the world, new dimensions in technical advances, product support and services have evolved SKF into a truly solutions-oriented supplier, creating greater value for customers.

These solutions encompass ways to bring greater productivity to customers, not only with breakthrough application-specific products, but also through leading-edge design simulation tools and consultancy services, plant asset efficiency maintenance programmes, and the industry's most advanced supply management techniques.

The SKF brand still stands for the very best in rolling bearings, but it now stands for much more.

SKF – the knowledge engineering company

Contents

A Product information

SKF ConCentra ball bearing –ready-to-mount offer	3
SKF ConCentra ball bearings and units – a truly innovative concentric locking technology	4
SKF ConCentra ball bearing units	4
The SKF ConCentra ball bearing	5
The SKF ConCentra stepped sleeve	5
Applications	6
Refined technology	6
Special executions	7

B Recommendations

Selection of a bearing unit size	8
Design of bearing unit arrangements	11
Lubrication and maintenance Mounting and dismounting	15
Mounting instructions for SKF ConCentra ball bearings and units	17
Mounting instructions	17
Dismounting instructions	18
Inserting or installing an SKF ConCentra bearing	19

C Product data

Product data – General	20
Dimensions	20
Tolerances	20
Designations	22
Product tables	24

D Additional information

SKF – the knowledge engineering company	38
--	-----------

SKF ConCentra ball bearing – ready-to-mount offer

SKF ConCentra ball bearings and units are part of SKF's extensive line of ready-to-install mounted products. These units, with true concentric location on the shaft, are particularly well suited for applications where there are relatively high speeds and moderate loads and where vibration, low noise, and minimal maintenance are key operational parameters.

SKF ConCentra ball bearings and units can provide several advantages including:

- Easy handling
 - fast, easy and safe to mount and dismount
 - patented locking technology
 - no loose parts
 - no need to prevent the sleeve from rotating during mounting

- High performance
 - full concentric locking and inner ring entirely supported by the shaft
 - high performance with commercial grade shafts
 - reduced vibration levels
- Minimum maintenance
 - long service life with high quality grease
 - under certain operating conditions the bearings are relubrication-free

- Flexibility
 - available as ready-to-mount units or as insert bearings
 - global availability in both metric and inch sizes

SKF ConCentra ball bearings are available as single bearings or assembled with plummer block or flanged housings.



SKF ConCentra ball bearings and units – a truly innovative concentric locking technology

SKF ConCentra ball bearings and units are based on:

- the reliable, proven design of SKF cast iron housings
- a SKF Y-bearing in the YSP 2 SB series
- the patented SKF ConCentra stepped sleeve

The stepped sleeve is characterized by its highly efficient, low cross section design.

SKF ConCentra ball bearings are filled with a high-quality, long-lasting grease that in most cases provides maintenance-free operation. For operating conditions that make relubrication necessary, the units are provided with a grease fitting.

SKF ConCentra ball bearing units

SKF ConCentra ball bearing units are available with plummer (pillow) block or flanged housings (→ **fig. 1, 2 and 3**) in

- the SY 5(00) M, FY 5(00) M, FYTB 5(00) M series for metric shafts
- the SY 5(00) U/AH, FY 5(00) U/AH, FYTB 5(00) U/AH series for inch shafts.

The housings are made from grey cast iron. They have a concave sphered bore and can, together with the incorporated bearing, accommodate initial misalignment.

The attachment holes cast in the base of plummer blocks are oblong, to easily and accurately align the bearing units and shaft.

Housings in U/AH series for inch shafts feature a solid base.

The housing paint provides very good corrosion resistance. A solventless rust inhibitor protects unpainted surfaces.



The SKF ConCentra ball bearing

The bearings used in SKF ConCentra ball bearing units are based on SKF Y-bearings in YSP 2 SB series. These bearings have a convex sphered outside surface. The inner ring, which has precision engineered inclined serrations, is extended on both sides. (→ fig. 4).

The bearing is sealed on both sides with a highly effective standard seal, which is complemented by flingers to considerably enhance the sealing effect without increasing friction. The bearings are filled with a premium grease with a lithium-calcium thickener and mineral oil base. If necessary, the bearing unit can be relubricated via a grease fitting in the housing.



The SKF ConCentra stepped sleeve

The ConCentra stepped sleeve, a masterpiece of locking technology, is the real innovation behind the SKF ConCentra bearing (→ fig. 5). The locking concept is based on two mating surfaces with precision-engineered inclined serrations. These mating surfaces respond to axial displacement by expanding and contracting evenly around the entire circumference of the shaft. The stepped sleeve is equipped with a mounting and pressure ring (→ fig. 6).

By tightening the grub (set) screws in the mounting ring, using the hexagonal key (allen wrench), the pressure ring forces the inner ring up the inclined planes of the stepped sleeve to provide a true concentric tight fit on the shaft (→ fig. 7).

SKF ConCentra locking technology enables a bearing to operate with maximum reliability – improving both function and service life.



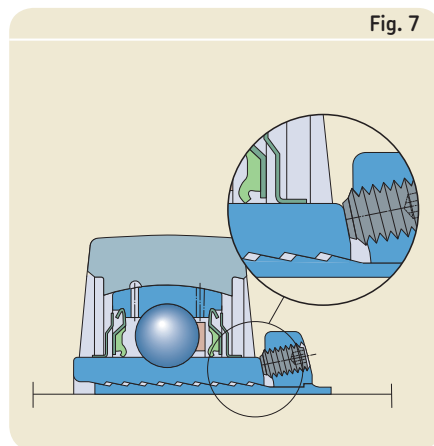
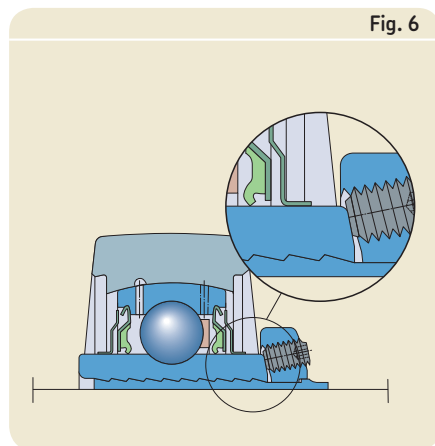
Mounting Kit (Instructions and hexagonal key equipped with torque indicator) has to be order separately from the bearings or units
[mounting kit designation = 626830]

Prior to installation

The two mating surfaces with precision-engineered serrations in the bearing bore and on the outside circumference of the sleeve are positioned to provide clearance around the shaft

During installation

The mating surfaces are axially displaced by tightening the grub screws, which forces the bearing ring to expand and the sleeve to contract, providing a true concentric, tight friction joint with the shaft



Applications

Refined technology

SKF ConCentra ball bearing units are part of SKF's commitment to the "Total Shaft Solutions" programme to provide a wide range of innovative bearing products to the air handling, conveyor equipment, fluid machinery, agricultural and forestry industries.

SKF ConCentra ball bearing units, with their true concentric locking mechanism, will provide optimum performance in applications where there is a need to reduce vibration levels because of relatively high rotational speeds.

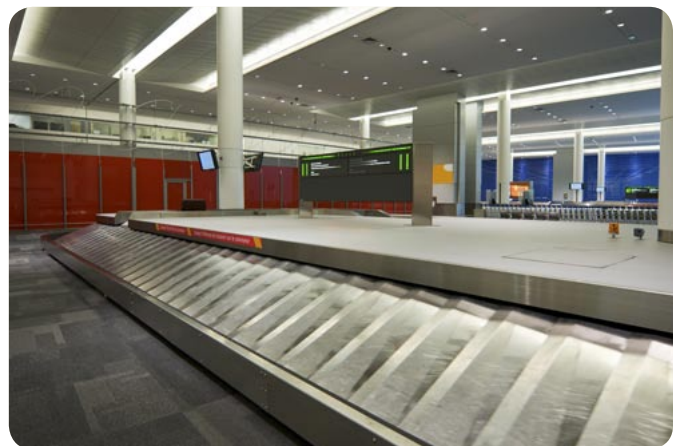
There is no comparable bearing unit available on the market that can be mounted or dismounted as fast as the SKF ConCentra technology allows.



Industrial fans



Textile machinery



Conveyors

Typical applications

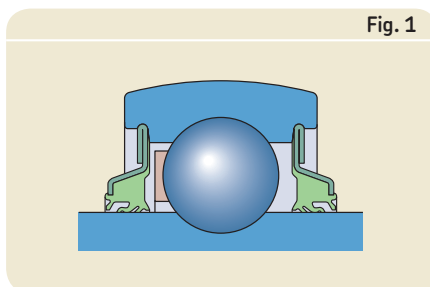
- Material handling
 - conveyor systems
- Fluid machinery
 - fans
- Textile machines
- Agricultural machinery
- Forestry machinery
- Food processing machinery
- Printing and packaging machines

SKF ConCentra – special executions

Variants of SKF ConCentra ball bearing units are available for specific applications. These variants incorporate innovative sealing systems and other features designed for specific operating conditions:

- YSPAG (agricultural applications)
- E2.YSP SB-2F (low friction variant for industrial fans, material handling and textile machines)

Bearings with a YSPAG designation prefix (→ **fig. 1**) are equipped with a new, patented seal consisting of a stamped steel insert with a vulcanized five-lip seal made from acrylonitrile-butadiene rubber. These new seals are recommended for applications where there is a high degree of contamination e.g. agricultural machinery. YSPAG bearings are lubricated for the life of the bearing.



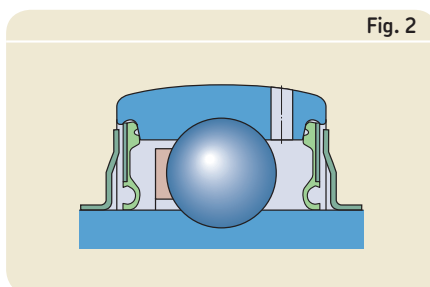
Bearings Units YSPAG 205 ... YSPAG 210 unit suffix xx LDW (i.e. FY 40 LDW)



Agricultural attachments

SKF Energy Efficient bearings, designation prefix E2 (→ **fig. 2**), are equipped with a new low-friction contact seal. The new seal is made from acrylonitrile-butadiene rubber and reinforced with a pressed steel insert. Plain sheet steel flingers on the outboard side of the seal have an interference fit on the inner ring to considerably enhance the seals' effectiveness without increasing friction.

E2.YSP SB-2F bearings are filled with a special low-noise, low-friction SKF grease.



Bearings E2.YSP 205 SB-2F ... E2.YSP 210 SB-2F



For additional information, contact the SKF Engineering service or your local SKF Authorized Distributor

Selection of a bearing unit size

The size of an SKF ConCentra ball bearing unit is initially selected on the basis of the loads within the application, the bearing load carrying ability, its calculated life and reliability. The load carrying ability is expressed by the basic dynamic and basic static load ratings. The basic dynamic load ratings are determined in accordance with the methods described by ISO 281:2007 while the basic static load ratings are in accordance with ISO 76:2006.

The simplest method to calculate bearing life is to use the ISO 281:2007 equation for basic rating life, which is

$$L_{10} = \left(\frac{C}{P} \right)^3$$

For ball bearings rotating at a constant speed, it may be more convenient to deal with basic rating life expressed in operating hours, using the equation

$$L_{10h} = \frac{1\,000\,000}{60\,n} \left(\frac{C}{P} \right)^3$$

The life-extending improvements embodied in SKF ConCentra ball bearing units can best be understood by using the SKF rating life equation

$$L_{nm} = a_1 a_{SKF} \left(\frac{C}{P} \right)^3$$

or

$$L_{nmh} = a_1 a_{SKF} \frac{1\,000\,000}{60\,n} \left(\frac{C}{P} \right)^3$$

where

L_{nm} = SKF rating life (at 100 – n% reliability)¹⁾, millions of revolutions

L_{nmh} = SKF rating life (at 100 – n% reliability)¹⁾, operating hours

L_{10} = basic rating life (at 90% reliability), millions of revolutions

L_{10h} = basic rating life (at 90% reliability), operating hours

a_1 = life adjustment factor for reliability (→ **table 1**)

a_{SKF} = SKF life modification factor (→ **diagram 1**)

C = basic dynamic load rating, kN

P = equivalent dynamic bearing load, kN (→ **page 10**)

n = rotational speed, r/min

This calculation method, which is in accordance with ISO 281:2007 is better able to predict bearing service life. The a_{SKF} factor represents a very complex relationship between various influencing factors: the fatigue load limit P_u by the ratio P_u/P , the contamination level by the factor η_c and the lubrication conditions by the viscosity ratio κ .

More detailed information about

- selection of a bearing size
- the fatigue load limit P_u
- the contamination level η_c
- determining the viscosity ratio κ
- allocating a value for the SKF life modification factor a_{SKF}

can be found on line at www.skf.com/bearings or the “SKF Interactive Engineering Catalogue”, available on CD-ROM or online at www.skf.com.

Values for the fatigue load limit P_u are provided in the product tables.

¹⁾ The factor n represents the failure probability, i.e. the difference between the requisite reliability and 100 %

SKF life modification factor a_{SKF}

Values of a_{SKF} can be obtained from **diagram 1** for different values of η_c (P_u/P) and viscosity ratio κ . **Diagram 1** has been drawn up for a safety factor commonly used in fatigue life considerations. Values for a_{SKF} can also be obtained by using the calculation programs provided on line at www.skf.com/bearings.

Contamination – the factor η_c for contamination level

It is not possible to determine precise values for η_c that have general validity for SKF ConCentra ball bearing. However, since SKF ConCentra ball bearing are protected by very efficient seals, guideline values for the contamination factor η_c between 0,5 and 0,8 can be used to determine the a_{SKF} factor.

Lubrication conditions – the viscosity ratio κ

For SKF ConCentra ball bearing, the viscosity ratio κ is calculated as the ratio between the actual operating viscosity ν to the rated viscosity ν_1 for adequate lubrication.

To determine the operating viscosity use the kinematic base oil viscosity of 190 mm²/s at 40 °C and 15 mm²/s at 100 °C for standard SKF ConCentra ball bearing. For bearings with an E2 prefix, contact the SKF application engineering service.

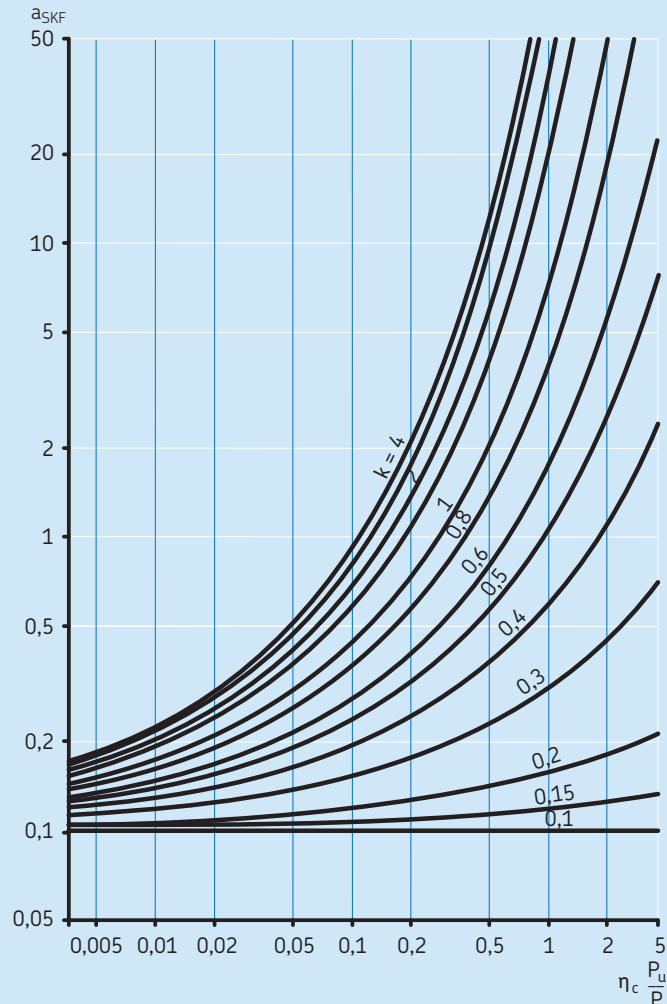
Table 1

Values for life adjustment factor a_1

Reliability %	Failure probability n %	SKF rating life L_{nm}	Factor a_1
90	10	L_{10m}	1
95	5	L_{5m}	0,62
96	4	L_{4m}	0,53
97	3	L_{3m}	0,44
98	2	L_{2m}	0,33
99	1	L_{1m}	0,21

Diagram 1

Factor a_{SKF} for radial ball bearing



If $\kappa > 4$, use curve for $\kappa = 4$
As the value of η_c (P_u/P) tends to zero, a_{SKF} tends to 0,1 for all values of κ

Equivalent loads

The loads acting on SKF ConCentra ball bearings can be calculated according to the laws of mechanics. If the load F fulfils the requirements for the basic dynamic or static load ratings, i.e. the load is constant in magnitude and direction and acts radially, then $P = F$ and the load may be inserted directly in the equations. In all other cases equivalent bearing loads must be calculated.

Equivalent dynamic bearing load

The equivalent dynamic bearing load is defined as that hypothetical radial load, constant in magnitude and direction, which, if applied, would have the same influence on bearing life as the actual load to which the bearing is subjected.

SKF ConCentra ball bearings are often subjected to simultaneously acting radial and axial loads. If the resultant load is constant in magnitude and direction, the equivalent dynamic bearing load P can be obtained from the general equations:

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

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

where

P = equivalent dynamic bearing load, kN
 F_r = actual radial bearing load, kN
 F_a = actual axial bearing load, kN
 X = radial load factor for the bearing
 Y = axial load factor for the bearing
 e = limiting value for F_a/F_r

and with reference to **tables 2** and **3**

C_0 = basic static load rating, kN
 f_0 = bearing-dependent calculation factor

The limiting value “ e ” and the load factors X and Y required to calculate the equivalent bearing load for SKF ConCentra ball bearings



When calculating P_0 , the maximum load that can occur should be used and its radial and axial components inserted in the equation above. If a static load acts in different directions on a bearing, the magnitude of these components will change. In these cases, the components of the load giving the largest value of the equivalent static bearing load P_0 should be used.

Calculation factors			
Relative thrust load $f_0 F_a/C_0$	SKF ConCentra ball bearings		
	e	X	Y
0,172	0,29	0,46	1,88
0,345	0,32	0,46	1,71
0,689	0,36	0,46	1,52
1,03	0,38	0,46	1,41
1,38	0,4	0,46	1,34
2,07	0,44	0,46	1,23
3,45	0,49	0,46	1,1
5,17	0,54	0,46	1,01
6,89	0,54	0,46	1

Calculation factor f_0	
Bearing size	Factor f_0
205-212	14
213	15

For additional information about how to select SKF ConCentra ball bearings or SKF ConCentra ball bearing units, contact the SKF application engineering service.

Guideline values for static safety factor s_0	
Type of operation	Required static safety factor s_0
Normal loads and smooth, vibration-free operation, where noise levels are not specified, and speeds are very low	$\geq 0,5$
Normal loads and smooth, vibration-free operation where noise levels are normal	≥ 1
Normal loads and high degree of running accuracy, where low noise levels are specified	≥ 2
Pronounced shock loads, very slow or non-rotating bearings	≥ 2

can be found in **table 2**. As for deep groove ball bearings, it depends on the value of the relative thrust load $f_0 F_a/C_0$.

Equivalent static bearing load

An equivalent static bearing load is defined as the hypothetical load which, if applied, would cause the same maximum rolling element load in the bearing as the actual loads. The equivalent static bearing load for SKF ConCentra ball bearings is obtained from the general equation

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

where

P_0 = equivalent static bearing load, kN
 F_r = actual radial bearing load, kN
 F_a = actual axial bearing load, kN

If $P_0 < F_r$, calculate with $P_0 = F_r$

Requisite static load rating

The requisite basic static load rating C_0 can be determined from

$$C_0 = s_0 P_0$$

where

C_0 = basic static load rating, kN
 P_0 = equivalent static bearing load, kN
 s_0 = static safety factor

Experience based guideline values of the static safety factor s_0 for Y-bearings and Y-bearing units are provided in **table 4**.

Design of bearing unit arrangements

Axial displacement

SKF ConCentra ball bearings can accommodate only limited axial displacement as a result of thermal shaft elongation. The distance between bearing positions should therefore be short or the units should be supported by resilient sheet metal support surfaces or walls to prevent them from being subjected to excessive stresses as a result of thermal elongation of the shaft

Misalignment

SKF ConCentra bearing and SKF ConCentra ball bearing units can accommodate initial misalignment of up to:

- 5° when relubrication is not required
- 2° when relubrication is required

Additionally, operational shaft deflections of a few minutes or arc can be permitted.

Shaft tolerances

SKF ConCentra ball bearing units can be used with solid or hollow commercial grade shafts. The shaft should be machined to at least an h9 tolerance class with a cylindricity tolerance of IT5. The limits are listed in **table 1**.

Support surfaces

To maximize the service life of an SKF ConCentra ball bearing unit, SKF recommends finishing support surfaces to a roughness of $Ra \leq 12,5 \mu m$ and a flatness (planicity) that meets IT7 specifications. For moderate demands IT8 may be satisfactory.

Attaching to the support surface

To attach SKF ConCentra ball bearing units to the support surface, SKF recommends using 8.8 class bolts or studs and a washer to ISO 7089:2000 or 7090:2000 and a spring washer. Hexagonal head bolts in accordance with ISO 4014:1999 are appropriate. Alternatively, hexagonal socket head cap screws in accordance with ISO 4762:1988 can be used (→ **fig. 1**). Appropriate fastener sizes are listed in the product tables.

SKF ConCentra ball bearing units with plummer block housings have two bolt holes in their base for attachment bolts. If the

Table 1

Recommended shaft tolerance

Bearing size ¹⁾		Shaft tolerance h9		Shaft tolerance Cylindricity
From	to	high	low	
mm		µm		–
05	06	0	-52	IT5
07	10	0	-62	IT5
11	13	0	-74	IT5

¹⁾ For Example: bearings size 07 includes all bearings based on a Y 207 e.g. YSP 207 SB-2F, YSP 207-104 SB-2F, YSP 207-106 SB-2F, YSP 207-107 SB-2F

Fig. 1

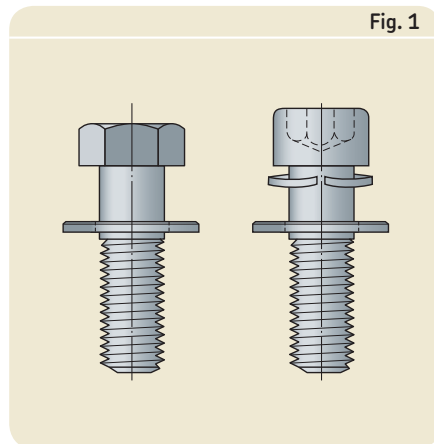
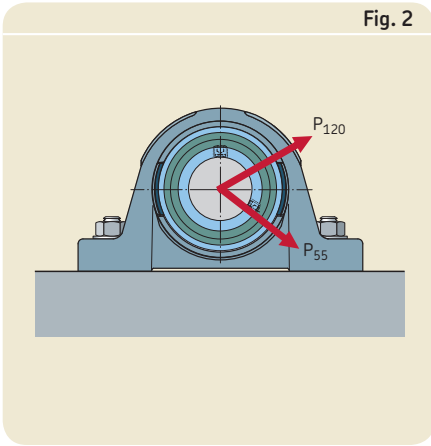


Fig. 2

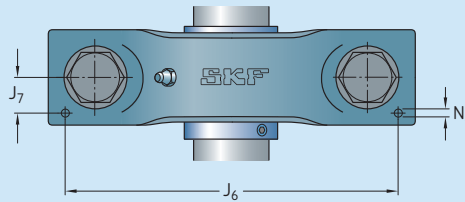


loads acting on a plummer block housing are between 55° and 120° (→ fig. 2), SKF ConCentra ball bearing units should be doweled to the support surface or stops should be provided in the direction of the load. Recommendations for the position and size of the dowel pin holes are provided in table 2.

SKF ConCentra ball bearing units with flanged housings have two or four drilled holes to attach the housing to its support surface. For applications where there are heavy loads, SKF recommends doweled the housing to its support surface. Dimples for the dowel pin holes are cast into housings in the SY, FY and FYTB series. Information on the position and size of the holes for these dowel pins is provided in table 3.

Table 2

Position and size of dowel pin holes for SKF ConCentra plummer block units

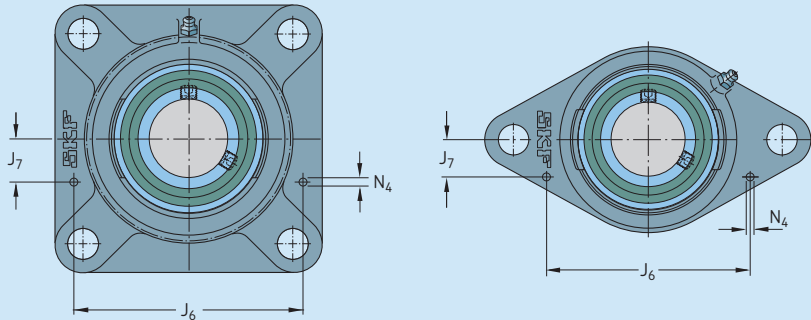


Housing size Dimension for SKF ConCentra plummer block housings

Housing size	Dimension for SKF ConCentra plummer block housings		
	J ₆	J ₇	N ₄
–	mm		
505	120	13	2
506	140	14	2
507	146	15,5	4
508	161	17	4
509	173	17	4
510	187	19	5
511	201	21	5
512	222	21	5
513	236	22,5	5

Table 3

Position and size of dowel pin holes for SKF ConCentra flanged units



Housing size Dimension for SKF ConCentra flanged housings

Housing size	Dimension for SKF ConCentra flanged housings					
	FY series			FYTB, FYT series		
–	J ₆	J ₇	N ₄	J ₆	J ₇	N ₄
–	mm					
505	83	19	4	81	12	4
506	96	24,5	4	99	12,5	4
507	106	29	4	106	15	5
508	118	34	4	116	16	6
509	123	33,5	5	120	18	6
510	129	35,5	5	127	20	6
511	148	45	5	154	18	6
512	161	49,5	5	–	–	–
513	169	51	6	–	–	–

SKF ConCentra ball bearing units with a flanged housing metric sizes only, have a recess (→ fig. 3), at the back for accurate positioning, on an appropriate centring ring provided by one of the following methods:

- machining the wall accordingly (→ fig. 4)

- attaching an appropriate centring ring to the wall (→ fig. 5)

A centring ring relieves the attachment bolts of radial loads.

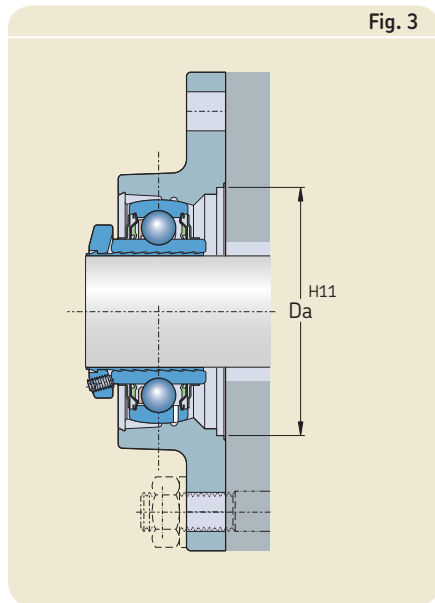


Fig. 3

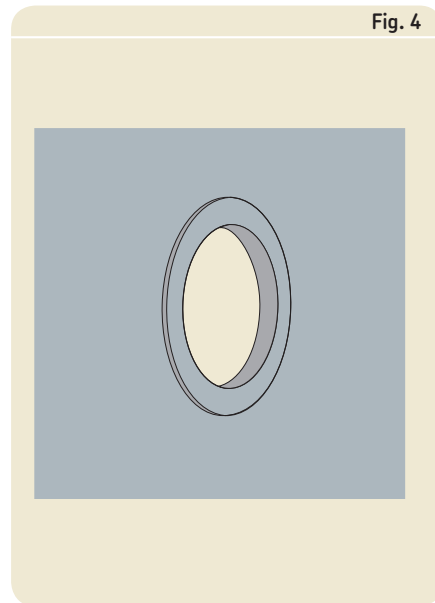


Fig. 4

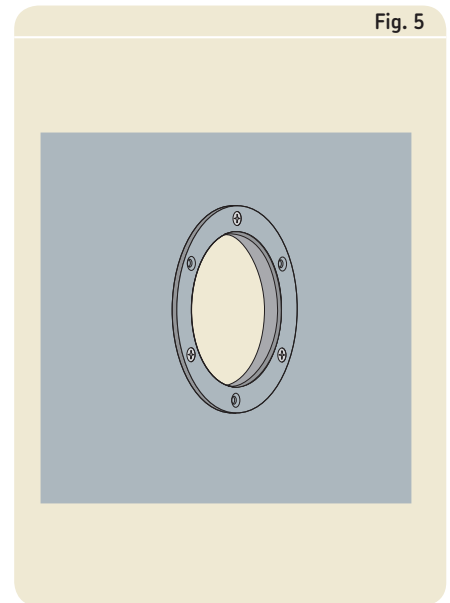


Fig. 5

Rubber seating rings

Rubber seating rings in the RIS 2 series (→ fig. 6) are primarily intended to “cushion” SKF ConCentra ball bearings when mounted in stamped steel plummer block housings.

Located between the bearing outer ring and housing bore, they dampen vibrations and noise and enable the bearings to be displaced slightly in their housings to accommodate minor variations in shaft length or misalignment.

For some applications rubber seating rings can be fitted to the SKF ConCentra ball bearing outer rings, to convert SKF ConCentra ball bearings to support rollers, and serve as tyres, to run quietly and protect the counter surface (→ fig. 7).



Fig. 6

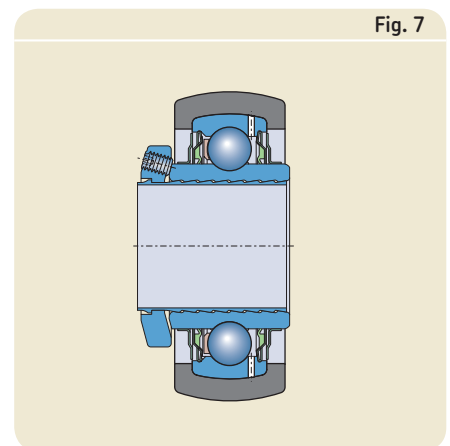


Fig. 7

Table 4

The seating rings in the RIS 2 series are made from acrylonitrile-butadiene rubber (NBR) and have a convex sphered outside diameter.

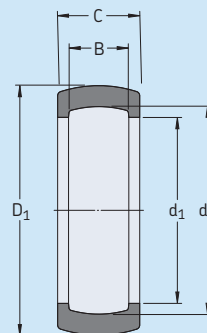
The rings can operate at temperatures from -30 to $+100$ °C. The designation and the dimensions of rubber seating rings are listed in **table 4**.

End covers

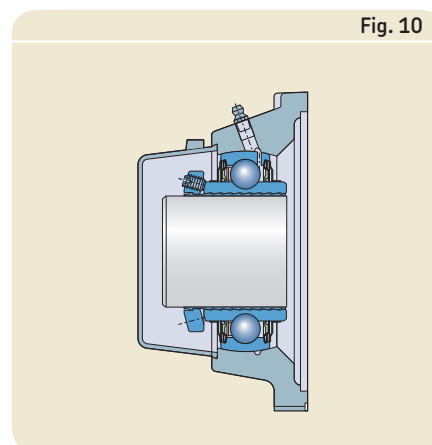
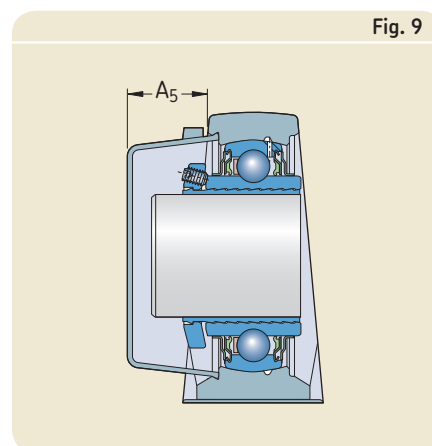
To protect the bearing arrangement at the end of a shaft, and to avoid the possibility of an accident caused by an exposed shaft end, ECY series end covers (\rightarrow **fig. 8**) are available for metric plummer block (\rightarrow **fig. 9**) and flanged housings (\rightarrow **fig. 10**). The end covers, made from polypropylene (PP), have good resistance to most chemicals and can withstand operating temperatures up to 100 °C. They can be snapped into the recesses provided in the housing bore.

In the product tables, the end covers are listed together with those units that can accommodate them. The designation of the end cover is listed together with the distance A_5 that the end cover protrudes from the housing (\rightarrow **fig. 9**).

Rubber seating rings



Y-bearing D	Rubber seating rings Dimensions					Mass	Designation	Suitable Y-bearing Size
	D ₁	d ₁	d ₂	B	C			
–	mm							
40	47,3	35,5	39,8	12	18	12	RIS 203	03
47	52,3	41,2	46,8	14	19	11,5	RIS 204	04
52	62,3	46,4	51,8	15	20,5	26,5	RIS 205	05
62	72,3	54,6	61,8	18	21,5	31	RIS 206 A	06
72	80,3	63,7	71,8	19	23	32	RIS 207 A	07
80	85,3	70,7	79,8	21	24	26	RIS 208 A	08



Lubrication and maintenance

Grease fills

SKF ConCentra ball bearings and SKF ConCentra ball bearing units are filled with a high-quality, long-lasting grease that has a mineral oil based and a lithium-calcium thickener.

The grease, which has a consistency of 2 on the NLGI scale, is extremely water resistant and will provide long service life even under heavy loads. The properties of this grease are listed in **table 1**.

Grease life

Grease life for SKF ConCentra ball bearings should be estimated according to the procedure described in this section. The grease life is presented as L₁₀, i.e. the time period at the end of which 90% of the bearings are still reliably lubricated. The grease life can be obtained from the **diagram 1** depending on the operating temperature, the bearing mean diameter d_m (→ **table 2**) and the rotational speed n.

The grease life is valid under the following operating conditions:

- horizontal shafts
- very light to moderate loads ($P \leq 0,05 C$)
- stationary machine
- low vibration levels

If operating conditions differ, the grease life obtained from the diagrams has to be adjusted:

- For vertical shafts, use 50% of the value from the diagram
- For heavier loads ($P > 0,05 C$), use the reduction factor listed in **table 3**

The values for adjusting the grease life are estimates. Vibration can have a negative influence on grease life. The extent cannot be quantified, and the influence increases with increasing operating temperature. For additional information contact the SKF application engineering service.

Relubrication

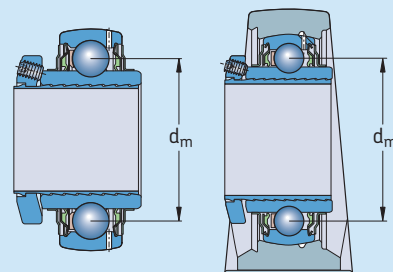
SKF ConCentra ball bearings do not need relubrication when the grease life exceeds the bearing life (→ Selection of a bearing unit size, **page 8**).

Relubrication can enable the bearing to realize extended service life in one of the following cases:

- The bearings are exposed to high humidity or severe contamination
- The bearings accommodate heavy loads
- The bearings operate at high speeds or at temperatures above 55 °C (130 °F) for extended periods
- The bearings are subjected to high vibration levels

Table 2

Bearing mean diameter d_m



Bearing size ¹⁾	Mean bearing diameter d _m
----------------------------	--------------------------------------

–	mm
05	39
06	46
07	53,5
08	60
09	65
10	70
11	77,5
12	85

¹⁾ For Example: size 07 includes all bearings based on a Y 207 bearing, such as YSP 207-104 BS-2F, YSP 207-106 BS-2F, YSP 207 BS-2F, YSP 207-107 BS-2F

Table 1

Lubricating greases

Technical specification

Grease fills in standard Y-bearings, standard Y-bearing units

Thickener	Lithium-calcium soap
Base oil	Mineral oil
Colour	Yellowish brown
Temperature range (°C) (continuous operation)	-30 to +120 ¹⁾
Kinematic viscosity (mm ² /s) of base oil at 40 °C/100 °C	190/15
Consistency (to NLGI scale)	2
Other	Long life grease

¹⁾ The temperature range for reliable operation in accordance with SKF traffic light concept is between 10 and 120 °C

If relubrication is needed, the relubrication intervals can be estimated following the method explained under the Lubrication chapter of SKF General Catalogue.

The SKF ConCentra ball bearing units have a grease fitting with different threads:

- 1/4-28 UNF for units metric shafts (all sizes) and for inch shafts size 1"
- 1/8 NPT for units inch shafts sizes larger than 1"

The 1/4-28 UNF thread can be changed to G 1/4 using an LAPN 1/4 28 UNF adapter.

Relubrication procedure

When relubricating, grease should be pumped slowly into the bearing as it rotates, until fresh grease starts to escape from the seals.

NOTE: Excessive pressure from pumping too quickly may damage the seals.

Greases for Relubrication

To relubricate SKF ConCentra ball bearings SKF LGWA 2, LGMT 2 or LGMT 3 greases can be used. Each of these greases is fully compatible with the original grease filled in the factory.

Storing SKF ConCentra ball bearing units

Because they are treated with a rust preventive compound, SKF ConCentra ball bearings can be stored in their original unbroken package for a number of years provided the relative humidity of the storeroom does not exceed 60% and there are no great fluctuations in temperature. When stored for an extended period, these ball bearing units may have a higher initial torque than a newer unit. If not stored in their original packaging, SKF ConCentra ball bearings and SKF ConCentra ball bearing units should be well protected from moisture and contaminants.

Diagram 1

Service life of the grease fill in SKF ConCentra ball bearing units

as a function of

- the operating temperature, °C
- the rotational speed n , r/min
- the bearing mean diameter d_m , mm (→ table 2)

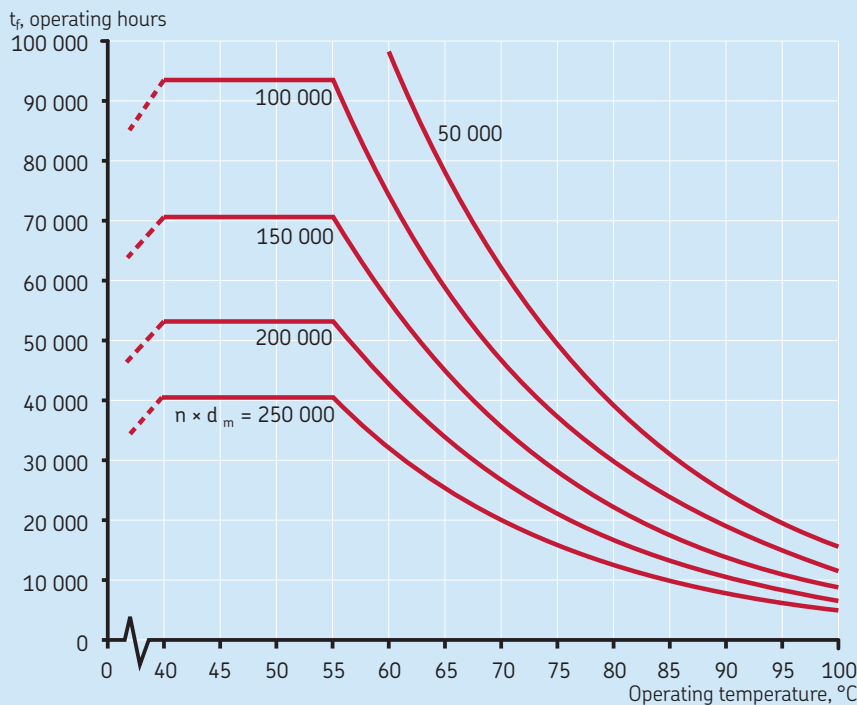


Table 3

Reduction factor for the grease life, depending on the load

Load P	Reduction factor
$\leq 0,05$	1
0,1 C	0,7
0,125 C	0,5
0,25 C	0,2

Mounting instructions for SKF ConCentra ball bearings and units

! Read the instructions completely prior to starting work

NOTE: SKF ConCentra ball bearings and units are unit assemblies. No attempt should be made to disassemble the sleeve and the mounting collar from the bearing prior to installation. These mounting instructions have been made in order to achieve a tight interference fit on the shaft using commercial grade shafts.

When mounting OR dismounting, SKF recommends removing all the weight from the bearing using slings or jacks, and securing the shaft to prevent it from rotating.

! WARNING!

Ensure the drive is not unexpectedly started during mounting or dismounting operations, turn off, lock and tag the power source before proceeding.

Mounting instructions

- 1 Remove any burrs on the shaft with emery cloth or a fine file, wipe clean with a cloth and check the shaft diameter (→ **fig 1**). For recommended shaft tolerances see **table 1**.
- 2 Mount any components on the shaft that are between the two bearings or unit positions.
- 3 Clean the base of the unit and its support surface. (→ **fig. 2**), making sure that the support surface is flat and smooth. Flatness should be within IT7 and roughness $R_a \leq 12,5$ mm. In case of pillow block units, if the elevation must be adjusted by shims, the shims must extend the full length and width of the base of the unit.
- 4 Slide the first bearing unit onto the shaft, making sure that the mounting collar is accessible (→ **fig. 3**). For pillow block units, fit the attachment bolts or nuts but do not tighten them. Flanged bearing units should be fastened to the machine wall using, when available, the centring recess machined at the housing back.
- 5 Locate the second bearing unit on the shaft following **steps 3** and **4**. For pillow block units, carefully align both units using the shaft and then fully tighten the attachment bolts in the housing base. Fasten flanged units securely to the machine wall using, when available, the centring recess machined at the housing back.

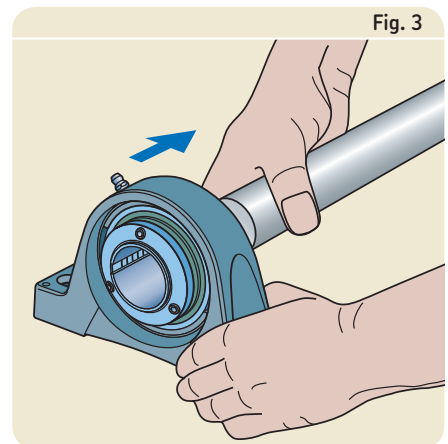
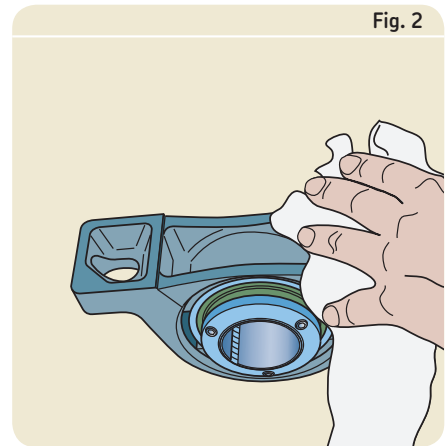
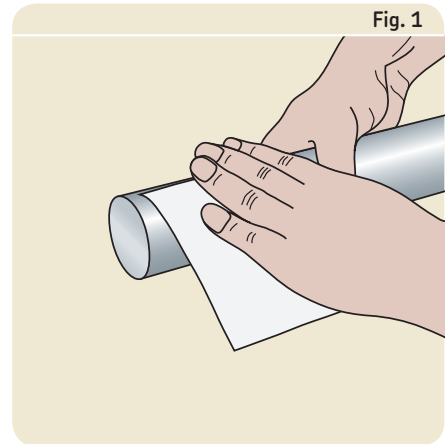


Table 1

Recommended shaft tolerance

Bearing size ¹⁾		Shaft tolerance	
from	to	high	low
mm		µm	
05	06	0	-52
07	10	0	-62
11	13	0	-74

¹⁾ For example: bearing size 07 includes all bearings based on a Y 207 e.g. YSP 207 SB-2F, YSP 207-104 SB-2F, YSP 207-106 SB-2F, YSP 207-107 SB-2F

- 6 Align the shaft in the bearing arrangement axially and, if possible, turn it a few times.
- 7 Start to secure the first bearing unit to the shaft by positioning the collar so that a grub screw is directly opposite the split in the sleeve. Tighten the screws finger-tight, holding the short leg of the supplied hexagonal key (→ **fig. 4**).
- 8 Tighten the screws 1/4 turn following the tightening pattern in **fig. 5**. Do this twice. Then tighten each set screw, starting with the screw opposite the split in the sleeve, until the long end of the hexagonal key comes in contact with the supplied torque indicator (→ **fig. 6**) or to the recommended torque value shown in **table 2**.

- 9 Secure the second bearing unit to the shaft following **steps 7** and **8**. Make sure the shaft turns smoothly and the bearings are not jammed. If the shaft does not turn smoothly, loosen one of the bearing units following the dismantling instructions and secure it again.
- 10 If applicable, snap the end cover in place.

Table 2

Recommended tightening torque values

Bearing size ¹⁾	Screw size	Recommended torque high
–	–	Nm/in.lbf
05	M5	4,2/37
07	M6	7,4/66

¹⁾ For example: bearing size 07 includes all bearings based on a Y 207 e.g. YSP 207 SB-2F, YSP 207-104 SB-2F, YSP 207-106 SB-2F, YSP 207-107 SB-2F

Caution: Do not use auxiliary equipment such as a hammer or pipe to tighten the screws.

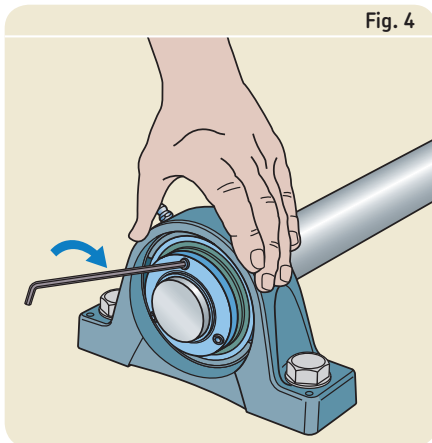


Fig. 4

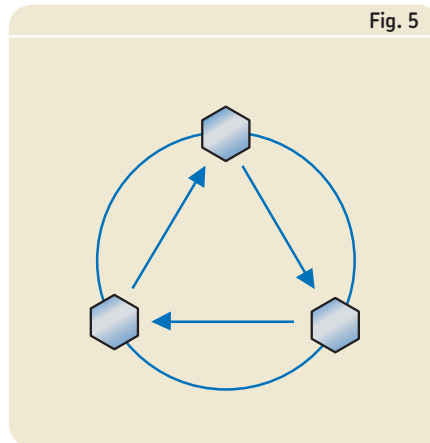


Fig. 5

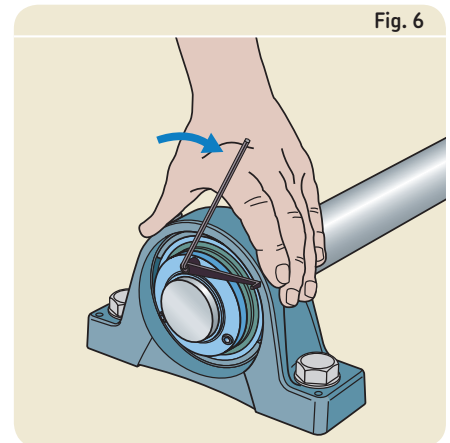


Fig. 6

Dismounting instructions

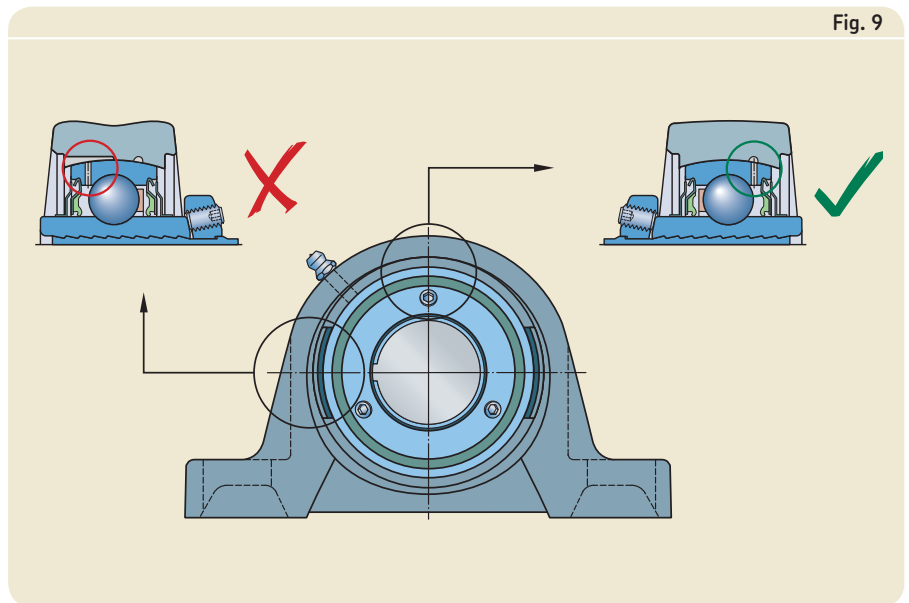
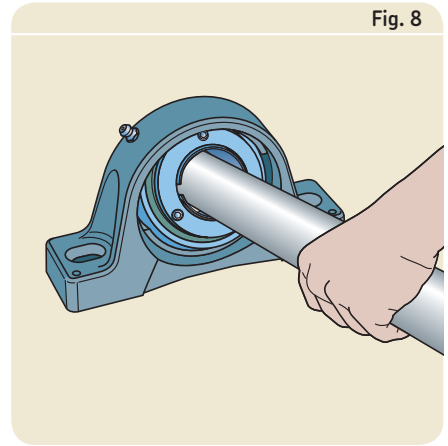
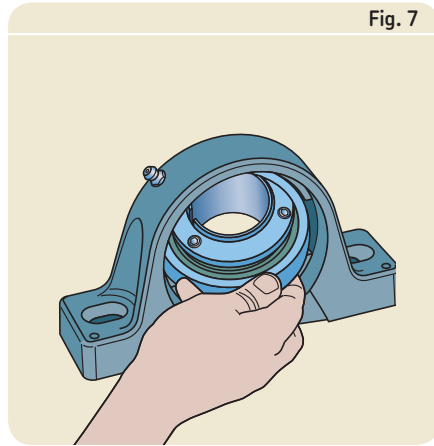
- 1 It may be necessary to clean the shaft extension with emery cloth to remove rust or repair surface damage.
- 2 Loosen the screws on the first unit.
- 3 Lightly tap the sleeve edge on the mounting collar side of the bearing until the locking system releases the shaft. As an alternative, tap on the bearing inner ring side face on the side opposite the collar.
- 4 Loosen and remove the attachment bolts and slide the unit off the shaft.
- 5 Repeat the **steps 1** to **4** for the second unit.

Inserting or installing an SKF ConCentra bearing

The SKF ConCentra ball bearings can be inserted into any SKF Y-housing.

To do this insert the bearing into the filling slot in the housing bore (→ **fig. 7**) and, with a round piece of wood or pipe, swivel the bearing into position so that the locking device is facing in the same direction as the filling slots (→ **fig. 8**). To avoid damaging the sleeve edge, use a piece of pipe or wood that is slightly smaller than the bore of the bearing. Also, avoid putting too much pressure on the bearing while swivelling it into place. Make sure not to transfer the swivelling torque in the sleeve slot area.

When installing the bearing, make sure that one of the relubrication holes in the bearing coincides with the relubrication facility in the housing and no one coincides with the filling slot in the housing, otherwise grease leakage may occur (→ **fig. 9**).



B

Product data – general

Dimensions

The boundary dimensions of SKF ConCentra ball bearings are not standardized. However, the outside diameter and the outer ring width conform to ISO 9628:2006 so that they are in most of the cases interchangeable with the SKF Y-bearings in the YAR, YAT, YEL, YET series. The sleeve bore diameter of SKF ConCentra ball bearings is always larger than the corresponding nominal value before mounting so that they can slide easily on the shaft, into their final position.

The boundary dimensions of SKF ConCentra ball bearing housings conform to ISO 3228:1993. The housings are dimensionally interchangeable with SKF Y-bearing plummer block housings in the SY series, and Y-bearing flanged in the FY, FYT, FYTB series.

Tolerances

SKF ConCentra ball bearings

The outside diameter of SKF ConCentra ball bearings are produced to tolerances indicated in **table 1**. Symbols used are explained in the following.

Symbols

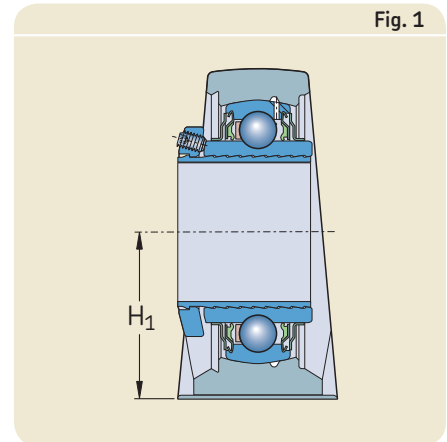
D	Nominal outside diameter
$\Delta_{D_{mp}}$	Deviation of the mean bore diameter from the nominal

SKF ConCentra ball bearing units with plummer block housings (SY series)

The tolerances for the shaft centre height H_1 (→ **fig. 1**) above the support surface are

- $\pm 0,25$ mm for metric units with a bore diameter up to and including 40 mm and for all inch size units
- $\pm 0,30$ mm for larger metric units.

The tolerance for the shaft centre height corresponds to the values specified in ISO 3228:1993.



SKF ConCentra ball bearing units with flanged housings (FY, FYT, FYTB series)

The tolerance for the total width T of the unit (→ **fig. 2**) is:

- $\pm 0,5$ mm for units up to and including 50 mm bore diameter
- $\pm 0,6$ mm for larger units

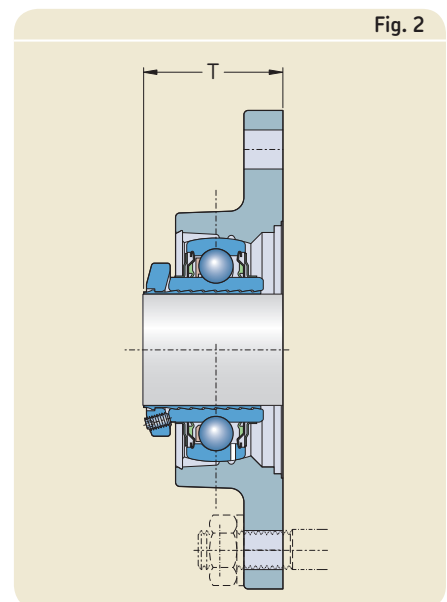


Table 1

Tolerances for SKF ConCentra ball bearings

Nominal diameter

D	Nominal diameter		$\Delta_{D_{mp}}$	Tolerance	
	Over	Incl.		High	Low
mm			μm		
52		80	0		-10
85		130	0		-15

For metric SKF ConCentra ball bearing units, the tolerances for the housing bore prevent the bearing from moving (wandering) on its seat without restricting its ability to compensate for misalignment. Bearings for inch shafts are mounted with a clearance fit in the housing. To prevent the bearing from moving (wandering) on its seat, the outer ring is equipped with an anti-rotation pin (→ fig. 3).

Radial internal clearance

SKF ConCentra ball bearings are produced, as standard, with radial internal clearance to Group 3 according to ISO 9628:2006. The clearance values are provided in **table 2** and are valid for unmounted bearings units under zero measuring load.

Speeds

SKF ConCentra ball bearings are designed for a wide range of speeds. The speed ratings are only limited by the permissible circumferential speed of the seal lip on its counter surface. The limiting speeds are listed in the product tables.

Seals

SKF ConCentra ball bearings are supplied, as standard, with rugged integral seals that are inserted in recesses in the outer ring. These seals consist of a pressed sheet steel washer with a sealing lip made of acrylonitrile-butadiene rubber (NBR) vulcanized to its inner surface. The non-contact sheet steel washer forms a narrow gap with the cylindrical surface of the inner ring shoulder and protects the land-riding seal against coarse contaminants.

To enhance the sealing effect, plain sheet steel flingers are added on the outboard side of the integral seal (→ fig. 4). The flingers have an interference fit on the inner ring to considerably enhance the effectiveness of the seal without increasing friction.

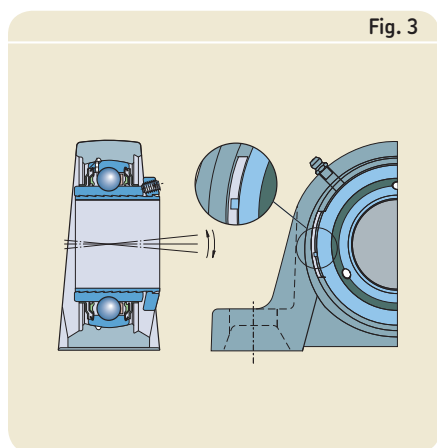
Housing Materials

The cast housings of SKF ConCentra ball bearing units are manufactured from grey cast iron EN-GJL HB195 in accordance with EN 1561:1997.

Load carrying ability

SKF ConCentra ball bearing units are able to withstand the same dynamic and static loads as the SKF ConCentra ball bearings they incorporate. These Y-bearing units can also be used in applications where shock loads or variable axial loads occur.

Anti-rotation pin



Seal design

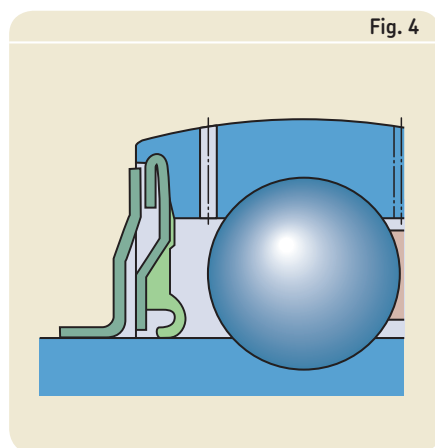


Table 2

Radial internal clearance for SKF ConCentra ball bearings

Bearing size ¹⁾		Radial internal clearance	
From	to	min	max
µm			
05	06	23	41
07	08	28	46
09	10	30	51
11	13	38	61

¹⁾ For example: bearings size 12 includes all bearings based on a YSP 212 SB bearing as YSP 212 SB-2F, YSP 212-204 SB-2F, YSP 212-207 SB-2F

! WARNING!

Application Note

Because of their special properties, SKF ConCentra ball bearing units are used in applications in virtually every industry. If however, they are to be used in an application where health, safety, or the environment is at risk, SKF recommends contacting the SKF application engineering service during the design phase.

This is also true for applications with high speeds and where machine downtime can cause significant problems.

Designations

The complete designation for the SKF Con-Centra ball bearings and SKF ConCentra ball bearing units consists of:

- prefixes, identifying the Y-bearing or Y-bearing unit series
- figures, identifying the size
- suffixes, identifying designs and variants

More details about SKF ConCentra ball bearings and SKF ball bearing units can be obtained in **Table 3** and **Table 4**.

Table 3

Designation system for SKF ConCentra ball bearings

Examples YSP 205 SB-2F
YSP 207-104 SB-2F/AH

YSP	2	05	SB	-2F	
YSP	2	07-104	SB	-2F	/AH

Bearing series

YSP SKF ConCentra ball bearings

Dimensions Series

2 Bearing to ISO 9628:2006

Bore diameter

Bearings for metric shafts

05 25 mm bore diameter

to

12 60 mm bore diameter

Bearings for inch shafts

Three figure combination that follows the designation of the basic metric bearing and is separated from this by hyphen. The first figure is the number of whole inches and the second and third figures are the number of sixteenths of an inch e.g. 205-100

05-100 1 in = 25,4 mm bore diameter

to

13-211 2 ¹¹/₁₆ in = 68,26 mm bore diameter

Identification of execution

SB SKF ConCentra ball bearing

Suffix Seal

-2F Integral contact seal with a plain with an additional plain flinger on both sides of the bearing

Other features

AH Anti-rotation pin

Table 4

Designation system for SKF ConCentra ball bearing units

Examples SY 25 LF
 FY 1.15/16 LF/AH
 FYTB 60 LF
 FYT 1. LF/AH

SY	30	LF	
FY	1.15/16	LF	/AH
FYTB	60	LF	
FYT	1.	LF	/AH

Identification of housing shape

SY Plummer block cast iron housing
 FY Square flange (4-bolt) cast iron housing
 FYTB Oval flanged (2-bolt) metric cast iron housings
 FYT Oval flanged (2-bolt) inch cast iron housings

Identification of size

Bearing units for metric shafts: in millimetres uncoded
 25 20 mm bore diameter
 to
 60 60 mm bore diameter

Bearing units for inch shafts: in inches uncoded
 1 1 in = 25,4 mm bore diameter
 to
 2.11/16 2 ¹¹/₁₆ in = 68,26 mm bore diameter

Identification of inserted Y-bearing

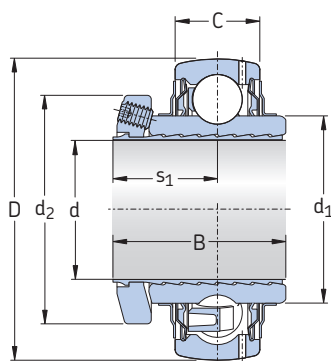
LF SKF ConCentra ball bearings with integral contact seal
 and plain sheet flingers

Other features

AH Anti-rotation pin, and loose alignment torque

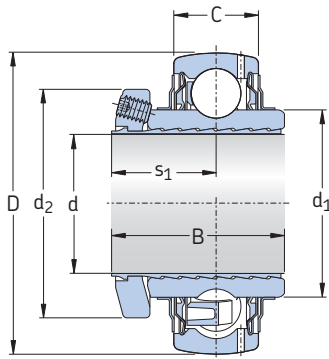
C

SKF ConCentra ball bearing, metric shafts
d 25 – 60 mm



Dimensions							Basic load ratings		Fatigue load limit P_u	Limiting speed	Mass	Designation
d	D	B	C	d_1	d_2	s_1	dynamic	static				
mm	mm						kN		r/min	kg	–	
25	52	33	15	33,74	40,6	21,0	14	7,8	0,335	7 000	0,190	YSP 205 SB-2F
30	62	37	18	39,70	48	23,0	19,5	11,2	0,475	6 300	0,300	YSP 206 SB-2F
35	72	39,5	19	46,10	57	24,3	25,5	15,3	0,655	5 300	0,463	YSP 207 SB-2F
40	80	42,9	21	51,80	62	25,9	30,7	19	0,800	4 800	0,594	YSP 208 SB-2F
45	85	44	22	56,80	67	26,5	33,2	21,6	0,915	4 300	0,667	YSP 209 SB-2F
50	90	46	22	62,51	72	27,5	35,1	23,2	0,980	4 000	0,749	YSP 210 SB-2F
55	100	49	25	69,06	77,6	29,0	43,6	29	1,250	3 600	0,995	YSP 211 SB-2F
60	110	51,5	26	75,64	83	30,3	52,7	36	1,530	3 400	1,253	YSP 212 SB-2F

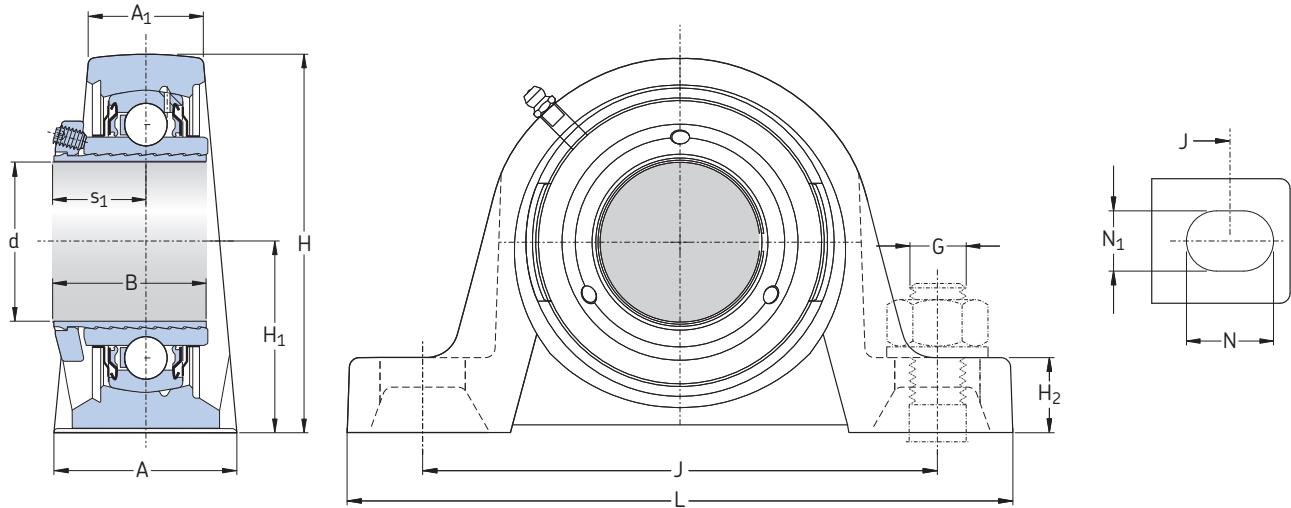
SKF ConCentra ball bearing, inch shafts

 d 1 – 2 ¹¹/₁₆ in.


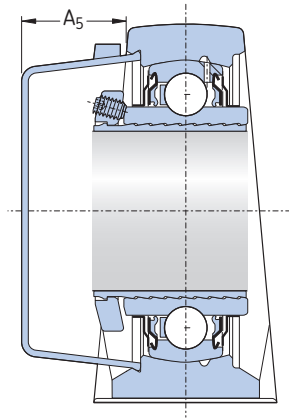
Dimensions							Basic load ratings		Fatigue load limit P_u	Limiting speed	Mass	Designation
d	D	B	C	d ₁	d ₂	s ₁	dynamic	static				
in./mm							lbf/kN			r/min	lbf/kg	–
1 25,400	2,05 52	1,30 33	0,59 15	1,33 33,74	1,60 40,6	0,83 21,0	3 150 14	1 760 7,800	80 0,335	7 000	0,400 0,180	YSP 205-100 SB-2F
1 ³/₁₆ 30,163	2,44 62	1,46 37	0,71 18	1,56 39,70	1,89 48	0,91 23,0	4 390 19,5	2 520 11,2	110 0,475	6 300	0,661 0,300	YSP 206-103 SB-2F
1 ¹/₄ 31,750	2,83 72	1,56 39,5	0,75 19	1,81 46,10	2,24 57	0,96 24,3	5 740 25,5	3 440 15,3	150 0,655	5 300	1,135 0,515	YSP 207-104 SB-2F
1 ³/₈ 34,925	2,83 72	1,56 39,5	0,75 19	1,81 46,10	2,24 57	0,96 24,3	5 740 25,5	3 440 15,3	150 0,655	5 300	1,022 0,464	YSP 207-106 SB-2F
1 ⁷/₁₆ 36,513	2,83 72	1,56 39,5	0,75 19	1,81 46,10	2,24 57	0,96 24,3	5 740 25,5	3 440 15,3	150 0,655	5 300	0,963 0,437	YSP 207-107 SB-2F
1 ¹/₁₂ 38,100	3,15 80	1,69 42,9	0,83 21	2,04 51,80	2,44 62	1,0 25,9	6 910 30,7	4 280 19	180 0,800	4 800	1,388 0,630	YSP 208-108 SB-2F
1 ¹¹/₁₆ 42,863	3,35 85	1,73 44	0,87 22	2,24 56,80	2,64 67	1,0 26,5	7 470 33,2	4 860 21,6	210 0,915	4 300	1,576 0,715	YSP 209-111 SB-2F
1 ¹⁵/₁₆ 49,213	3,54 90	1,81 46	0,87 22	2,46 62,51	2,83 72	1,1 27,5	7 900 35,1	5 220 23,2	220 0,980	4 000	1,699 0,771	YSP 210-115 SB-2F
2 50,8	3,94 100	1,93 49	0,99 25	2,72 69,1	3,06 77,6	1,14 29	9 810 43,6	6 525 29	281 1,25	3 600	2,43 1,1	YSP 211-200 SB-2F
2 ³/₁₆ 55,563	3,94 100	1,9 49	0,98 25	2,72 69,06	3,06 77,6	1,1 29,0	9 810 43,6	6 530 29	280 1,25	3 600	2,153 0,977	YSP 211-203 SB-2F
2 ¹/₄ 57,150	4,33 110	2,0 51,5	1,02 26	2,98 75,64	3,27 83	1,2 30,3	11 864 52,7	8 100 36	340 1,53	3 400	2,910 1,320	YSP 212-204 SB-2F
2 ⁷/₁₆ 61,913	4,33 110	2,03 51,5	1,02 26	2,98 75,6	3,44 87,3	1,19 30,3	11 860 52,7	8 100 36	340 1,53	3 400	2,65 1,2	YSP 212-207 SB-2F
2 ¹¹/₁₆ 68,263	4,72 120	2,07 52,5	1,06 27	3,25 82,5	3,52 89,4	1,21 30,8	12 870 57,2	9 000 40	380 1,7	3 000	3,2 1,45	YSP 213-211 SB-2F



SKF ConCentra ball bearing units with plummer block housing, for metric shafts
d 25 – 60 mm



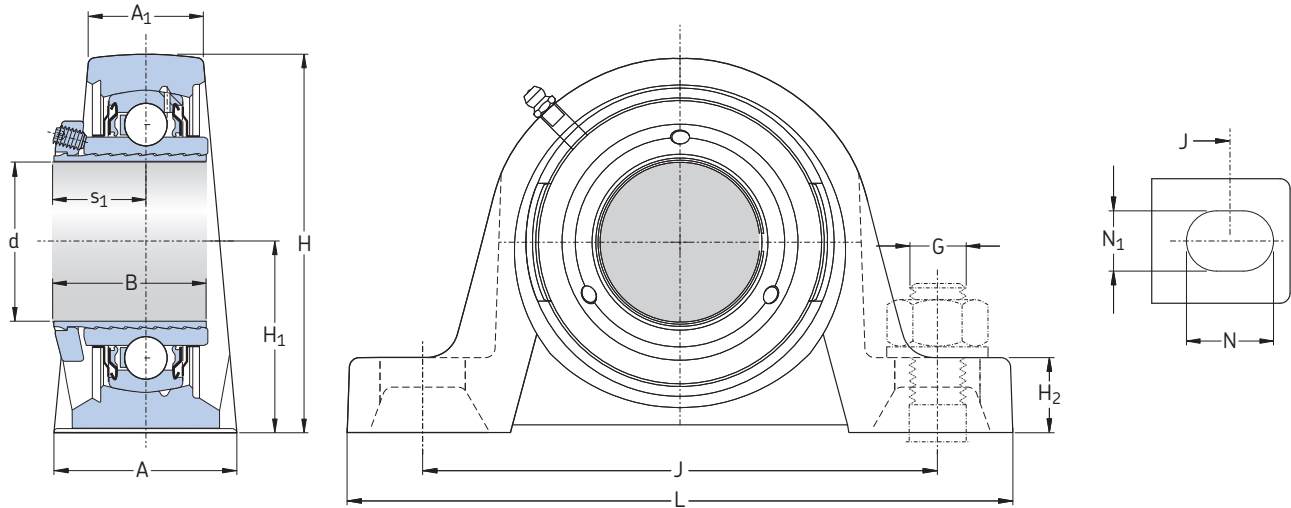
Shaft diameter d	Bearing unit Dimensions			H	H ₁	H ₂	J	L	N	N ₁	G	s ₁	Mass kg	Designation Bearing unit
	A	A ₁	B											
mm	mm													
25	36	22	33,0	70,5	36,5	16,0	102,0	130	19,5	11,5	10	21,0	0,74	SY 25 LF
30	40	25	37,0	82,5	42,9	17,0	117,5	152	23,5	14,0	12	23,0	1,12	SY 30 LF
35	45	27	39,5	93,0	47,6	19,0	126,0	160	21,0	14,0	12	24,3	1,51	SY 35 LF
40	48	30	42,9	99,0	49,2	19,0	135,5	175	24,5	14,0	12	25,9	1,84	SY 40 LF
45	48	32	44,0	107,5	54,0	21,0	143,5	187	22,5	14,0	12	26,5	2,27	SY 45 LF
50	54	34	46,0	114,4	57,2	22,0	157,0	203	26,0	18,0	16	27,5	2,73	SY 50 LF
55	60	40	49,0	126,0	63,5	24,0	171,5	219	27,5	18,0	16	29,0	3,50	SY 55 LF
60	60	42	51,5	138,0	69,9	26,5	190,5	240	29,5	18,0	16	30,3	4,40	SY 60 LF



Designations Bearing unit	Separate components		Basic load ratings		Fatigue load limit P_u	Limiting speed r/min	Appropriate end cover	
	Housing	Bearing	dynamic C	static C_0			Designation cover	Dimension A_5
			kN				mm	
SY 25 LF	SY 505 M	YSP 205-SB-2F	14,0	7,8	0,335	7 000	ECY 205	18,0
SY 30 LF	SY 506 M	YSP 206-SB-2F	19,5	11,2	0,475	6 300	ECY 206	20,0
SY 35 LF	SY 507 M	YSP 207-SB-2F	25,5	15,3	0,655	5 300	ECY 207	22,0
SY 40 LF	SY 508 M	YSP 208-SB-2F	30,7	19,0	0,8	4 800	ECY 208	23,5
SY 45 LF	SY 509 M	YSP 209-SB-2F	33,2	21,6	0,915	4 300	ECY 209	23,0
SY 50 LF	SY 510 M	YSP 210-SB-2F	35,1	23,2	0,98	4 000	ECY 210	29,5
SY 55 LF	SY 511 M	YSP 211-SB-2F	43,6	29,0	1,25	3 600	ECY 211	34,0
SY 60 LF	SY 512 M	YSP 212-SB-2F	52,7	36,0	1,53	3 400	ECY 212	35,5

SKF ConCentra ball bearing units with plummer block housing, for inch shafts

d 1 – 2 11/16 in.

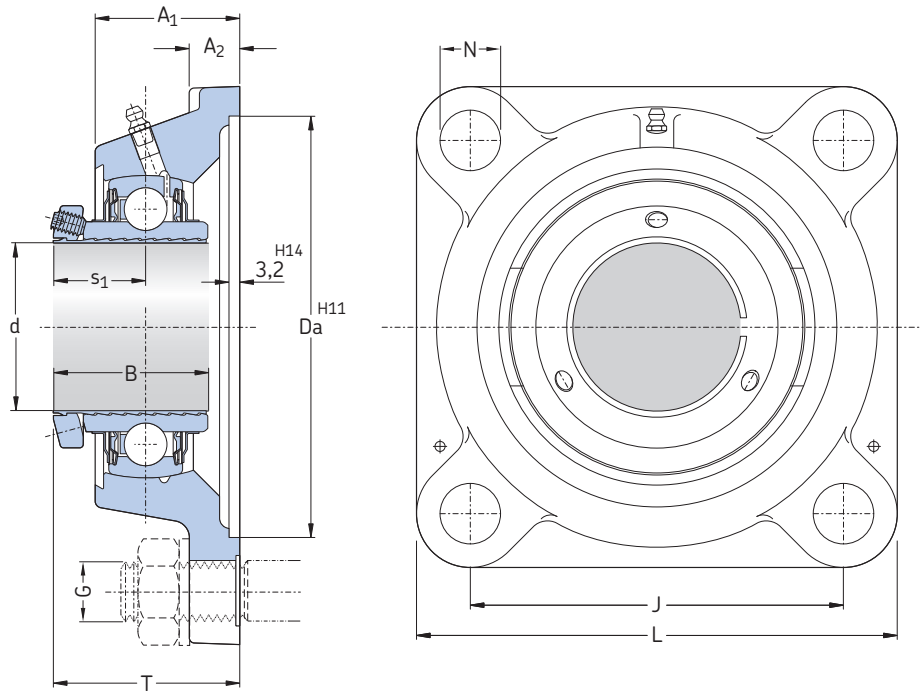


Shaft diameter d	Bearing unit Dimensions				H	H ₁	H ₂	J	L	N	N ₁	G	s ₁	Mass lb/ kg	Designation Bearing unit
	A	A ₁	B	H											
in./mm	in./mm														
1 25,400	1,42 36,0	0,87 22,0	1,30 33	2,76 70,0	1,44 36,5	0,63 16,0	4,02 102,0	5,12 130,0	0,77 19,5	0,45 11,5	3/8	0,83 21,0	1,62 0,73	SY 1. LF/AH	
1 3/16 30,163	1,57 40,0	1,0 25,0	1,46 37	3,23 82,0	1,69 42,9	0,65 16,5	4,63 117,5	5,98 152,0	0,93 23,5	0,55 14,0	1/2	0,91 23,0	2,46 1,12	SY 1.3/16 LF/AH	
1 1/4 31,750	1,77 45,0	1,06 27,0	1,56 39,5	3,66 93,0	1,87 47,6	0,75 19,0	4,96 126,0	6,30 160,0	0,83 21,0	0,55 14,0	1/2	0,96 24,3	3,43 1,56	SY 1.1/4 LF/AH	
1 3/8 34,925	1,77 45,0	1,06 27,0	1,56 39,5	3,66 93,0	1,87 47,6	0,75 19,0	4,96 126,0	6,30 160,0	0,83 21,0	0,55 14,0	1/2	0,96 24,3	3,32 1,50	SY 1.3/8 LF/AH	
1 7/16 36,513	1,77 45,0	1,06 27,0	1,56 39,5	3,66 93,0	1,87 47,6	0,75 19,0	4,96 126,0	6,30 160,0	0,83 21,0	0,55 14,0	1/2	0,96 24,3	3,26 1,48	SY 1.7/16 LF/AH	
1 1/2 38,100	1,89 48,0	1,18 30,0	1,69 42,9	3,90 99,0	1,94 49,2	0,75 19,0	5,33 135,5	6,89 175,0	0,91 23,2	0,55 14,0	1/2	1,02 25,9	4,03 1,83	SY 1.1/2 LF/AH	
1 11/16 42,863	1,89 48,0	1,26 32,0	1,73 44	4,22 107,16	2,13 54,0	0,81 20,6	5,66 143,7	7,36 187,0	0,89 22,5	0,55 14,0	1/2	1,04 26,5	5,11 2,32	SY 1.11/16 LF/AH	
1 15/16 49,213	2,13 54,0	1,34 34,0	1,81 46	4,49 114,0	2,25 57,2	0,87 22,0	6,18 157,0	7,99 203,0	1,02 26,0	0,71 18,0	5/8	1,08 27,5	6,06 2,75	SY 1.15/16 LF/AH	
2 3/16 55,563	2,36 60,0	1,57 40,0	1,93 49	5,00 127,0	2,50 63,5	0,94 24,0	6,75 171,5	8,62 219,0	1,08 27,5	0,71 18,0	5/8	1,14 29,0	8,19 3,72	SY 2.3/16 LF/AH	
2 1/4 57,150	2,36 60,0	1,65 42,0	2,03 51,5	5,50 139,7	2,75 69,9	1,02 26,0	7,50 190,5	9,45 240,0	1,16 29,5	0,71 18,0	5/8	1,19 30,3	10,01 4,54	SY 2.1/4 LF/AH	
2 7/16 61,913	2,36 60,0	1,65 42,0	2,03 51,5	5,50 139,7	2,75 69,9	1,02 26,0	7,50 190,5	9,45 240,0	1,16 29,5	0,71 18,0	5/8	1,19 30,3	9,63 4,37	SY 2.7/16 LF/AH	
2 11/16 68,263	2,56 65,0	1,73 44,0	2,07 52,5	5,87 149,0	3,00 76,2	1,14 29,0	7,99 203,0	10,12 257,0	1,38 35,0	0,87 22,0	3/4	1,21 30,75	10,03 4,55	SY 2.11/16 LF/AH	

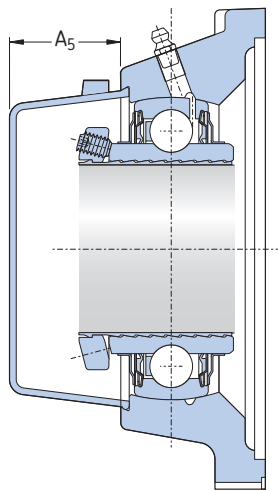
Designations Bearing unit unit	Separate components		Basic load ratings		Fatigue load limit	Limiting speed
	Housing	Bearing	dynamic C	static C ₀	P _u	
			lbf/kN			r/min
SY 1. LF/AH	SY 505 U/AH	YSP 205-100-SB-2F	3 150 14	1 760 7,8	80 0,335	7 000
SY 1.3/16 LF/AH	SY 506 U/AH	YSP 206-103-SB-2F	4 390 19,5	2 520 11,2	110 0,475	6 300
SY 1.1/4 LF/AH	SY 507 U/AH	YSP 207-104-SB-2F	5 740 25,5	3 440 15,3	150 0,655	5 300
SY 1.3/8 LF/AH	SY 507 U/AH	YSP 207-106-SB-2F	5 740 25,5	3 440 15,3	150 0,655	5 300
SY 1.7/16 LF/AH	SY 507 U/AH	YSP 207-107-SB-2F	5 740 25,5	3 440 15,3	150 0,655	5 300
SY 1.1/2 LF/AH	SY 508 U/AH	YSP 208-108-SB-2F	6 910 30,7	4 280 19	180 0,8	4 800
SY 1.11/16 LF/AH	SY 509 U/AH	YSP 209-111-SB-2F	7 470 33,2	4 860 21,6	210 0,915	4 300
SY 1.15/16 LF/AH	SY 510 U/AH	YSP 210-115-SB-2F	7 900 35,1	5 220 23,2	220 0,98	4 000
SY 2.3/16 LF/AH	SY 511 U/AH	YSP 211-203-SB-2F	9 810 43,6	6 530 29	280 1,25	3 600
SY 2.1/4 LF/AH	SY 512 U/AH	YSP 212-204-SB-2F	11 860 52,7	8 100 36	340 1,53	3 400
SY 2.7/16 LF/AH	SY 512 U/AH	YSP 212-207-SB-2F	11 860 52,7	8 100 36	340 1,53	3 400
SY 2.11/16 LF/AH	SY 513 U/AH	YSP 213-211-SB-2F	12 870 57,2	9 000 40	380 1,7	3 000

SKF ConCentra ball bearing units with plummer block housing, for metric shafts

d 25 – 60 mm



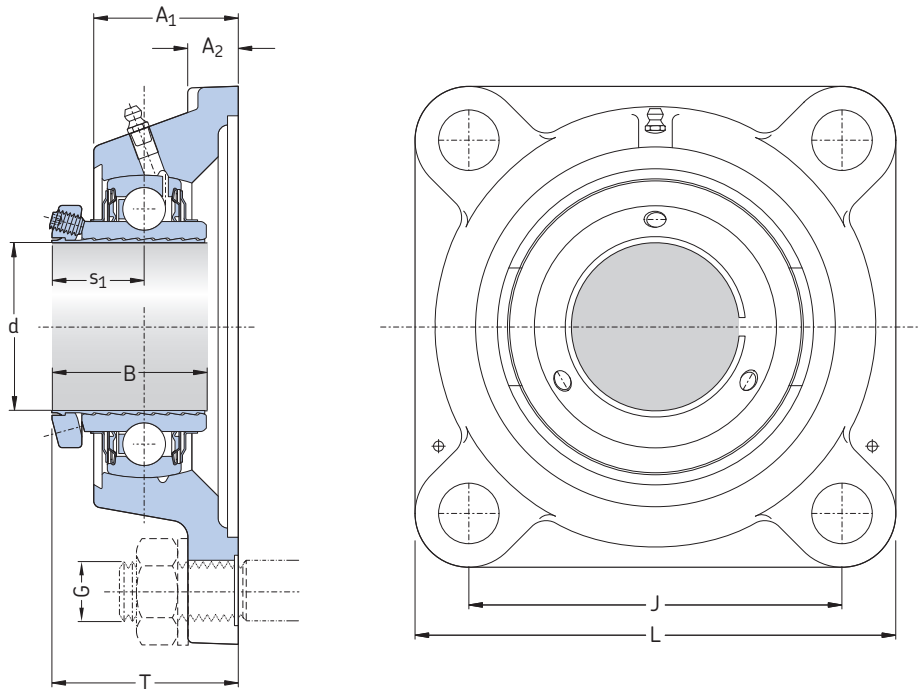
Shaft diameter	Bearing unit Dimensions										Mass	Designation Bearing unit
	A ₁	A ₂	B	D _a	J	L	N	G	s ₁	T		
mm	mm										kg	–
25	30,0	12	33,0	74,6	70,0	95	12	M10	21,0	40,0	0,79	FY 25 LF
30	32,5	13	37,0	93,7	82,5	108	12	M10	23,0	43,0	1,12	FY 30 LF
35	34,5	13	39,5	106,4	92,0	118	14	M12	24,3	45,3	1,45	FY 35 LF
40	38,5	14	42,9	115,9	101,5	130	14	M12	25,9	49,9	1,95	FY 40 LF
45	39,0	14	44,0	119,1	105,0	137	16	M14	26,5	50,5	2,15	FY 45 LF
50	43,0	15	46,0	125,4	111,0	143	18	M16	27,5	55,5	2,55	FY 50 LF
55	47,5	16	49,0	150,8	130,0	162	18	M16	29,0	60,0	3,62	FY 55 LF
60	52,0	17	51,5	161,9	143,0	175	18	M16	30,3	64,3	4,46	FY 60 LF



Designations Bearing unit	Separate components		Basic load ratings		Fatigue load limit P_u	Limiting speed r/min	Appropriate end cover	
	Housing	Bearing	dynamic C	static C_0			Designation cover	Dimension A_5
–			kN				mm	
FY 25 LF	FY 505 M	YSP 205-SB-2F	14,0	7,8	0,335	7 000	ECY 205	18,0
FY 30 LF	FY 506 M	YSP 206-SB-2F	19,5	11,2	0,475	6 300	ECY 206	20,0
FY 35 LF	FY 507 M	YSP 207-SB-2F	25,5	15,3	0,655	5 300	ECY 207	22,0
FY 40 LF	FY 508 M	YSP 208-SB-2F	30,7	19,0	0,800	4 800	ECY 208	23,5
FY 45 LF	FY 509 M	YSP 209-SB-2F	33,2	21,6	0,915	4 300	ECY 209	23,0
FY 50 LF	FY 510 M	YSP 210-SB-2F	35,1	23,2	0,980	4 000	ECY 210	29,5
FY 55 LF	FY 511 M	YSP 211-SB-2F	43,6	29,0	1,250	3 600	ECY 211	34,0
FY 60 LF	FY 512 M	YSP 212-SB-2F	52,7	36,0	1,530	3 400	ECY 212	35,5

SKF ConCentra ball bearing units with plummer block housing, for inch shafts

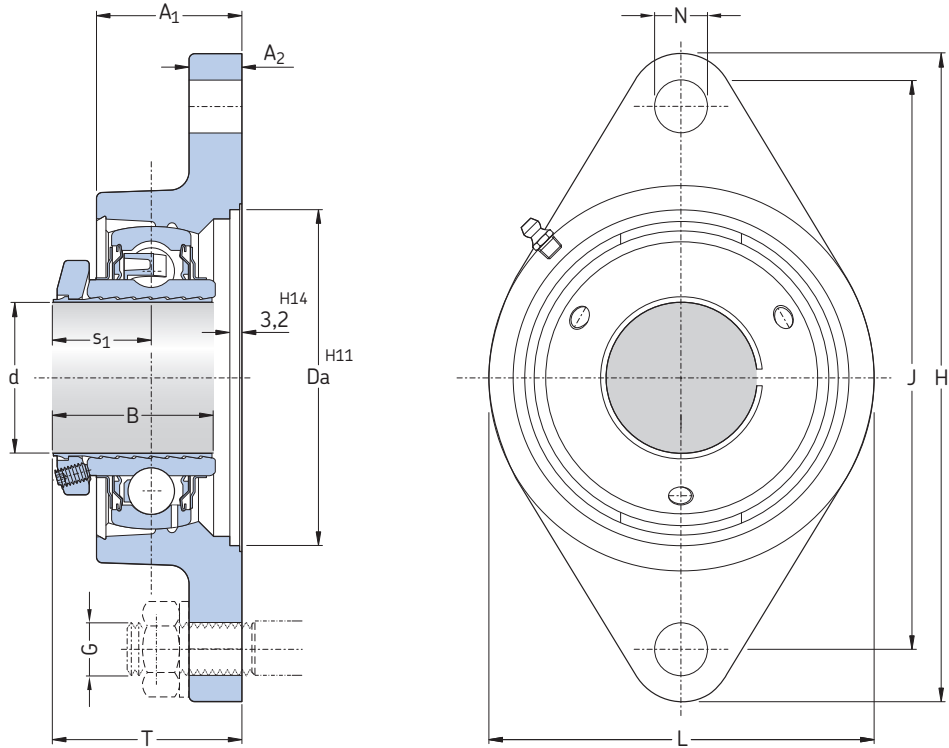
d 1 – 2 11/16 in.



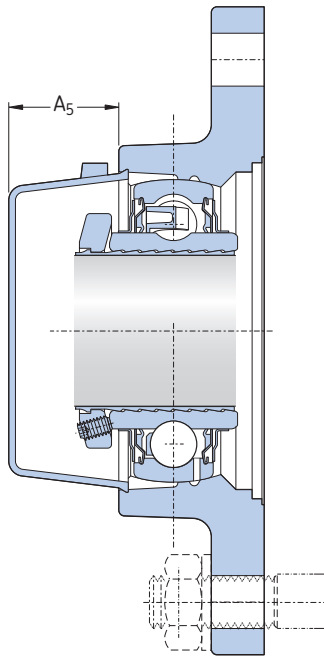
Shaft diameter d	Bearing unit Dimensions			J	L	G	s ₁	T	Mass lbf/kg	Designation Bearing unit
	A ₁	A ₂	B							
in./mm	in./mm									–
1 25,400	1,18 30	0,47 12	1,30 33	2,76 70	3,74 95	3/8	0,83 21	1,57 40,0	1,726 0,783	FY 1. LF/AH
1 3/16 30,163	1,28 32,5	0,51 13	1,46 37	3,25 82,5	4,25 108	7/16	0,91 23	1,69 43,0	2,465 1,118	FY 1.3/16 LF/AH
1 1/4 31,750	1,36 34,5	0,51 13	1,56 39,5	3,62 92	4,65 118	1/2	0,96 24,3	1,78 45,3	3,296 1,495	FY 1.1/4 LF/AH
1 3/8 34,925	1,36 34,5	0,51 13	1,56 39,5	3,62 92	4,65 118	1/2	0,96 24,3	1,78 45,3	3,183 1,444	FY 1.3/8 LF/AH
1 7/16 36,513	1,36 34,5	0,51 13	1,56 39,5	3,62 92	4,65 118	1/2	0,96 24,3	1,78 45,3	3,131 1,420	FY 1.7/16 LF/AH
1 1/2 38,100	1,52 38,5	0,55 14	1,69 42,9	4,00 101,5	5,12 130	1/2	1,01 25,9	1,96 49,9	4,270 1,937	FY 1.1/2 LF/AH
1 11/16 42,863	1,54 39	0,55 14	1,73 44	4,13 105	5,39 137	9/16	1,04 26,5	1,99 50,5	4,850 2,200	FY 1.11/16 LF/AH
1 15/16 49,213	1,69 43	0,59 15	1,81 46	4,37 111	5,63 143	9/16	1,08 27,5	2,19 55,5	5,622 2,550	FY 1.15/16 LF/AH
2 3/16 55,563	1,87 47,5	0,63 16	1,93 49	5,12 130	6,38 162	5/8	1,14 29	2,36 60,0	7,948 3,605	FY 2.3/16 LF/AH
2 1/4 57,15	2,05 52	0,67 17	2,03 51,5	5,63 143	6,89 175	5/8	1,19 30,3	2,53 64,3	10,031 4,550	FY 2.1/4 LF/AH
2 7/16 61,913	2,05 52	0,67 17	2,03 51,5	5,63 143	6,89 175	5/8	1,19 30,3	2,53 64,3	9,656 4,380	FY 2.7/16 LF/AH
2 11/16 68,26	2,07 52,5	0,65 16,5	2,07 52,5	5,89 149,5	7,36 187	5/8	1,21 30,75	2,37 60,25	11,05 5,01	FY 2.11/16 LF/AH

Designations Bearing unit unit	Separate components		Basic load ratings		Fatigue load limit P_u	Limiting speed
	Housing	Bearing	dynamic C	static C_0		
			lbf/kN		r/min	
FY 1. LF/AH	FY 505 U/AH	YSP 205-100-SB-2F	3 150 14	1 760 7,8	80 0,335	7 000
FY 1.3/16 LF/AH	FY 506 U/AH	YSP 206-103-SB-2F	4 390 19,5	2 520 11,2	110 0,475	6 300
FY 1.1/4 LF/AH	FY 507 U/AH	YSP 207-104-SB-2F	5 740 25,5	3 440 15,3	150 0,655	5 300
FY 1.3/8 LF/AH	FY 507 U/AH	YSP 207-106-SB-2F	5 740 25,5	3 440 15,3	150 0,655	5 300
FY 1.7/16 LF/AH	FY 507 U/AH	YSP 207-107-SB-2F	5 740 25,5	3 440 15,3	150 0,655	5 300
FY 1.1/2 LF/AH	FY 508 U/AH	YSP 208-108-SB-2F	6 910 30,7	4 280 19	180 0,8	4 800
FY 1.11/16 LF/AH	FY 509 U/AH	YSP 209-111-SB-2F	7 470 33,2	4 860 21,6	210 0,915	4 300
FY 1.15/16 LF/AH	FY 510 U/AH	YSP 210-115-SB-2F	7 900 35,1	5 220 23,2	220 0,98	4 000
FY 2.3/16 LF/AH	FY 511 U/AH	YSP 211-203-SB-2F	9 810 43,6	6 530 29	280 1,25	3 600
FY 2.1/4 LF/AH	FY 512 U/AH	YSP 212-204-SB-2F	11 860 52,7	8 100 36	340 1,53	3 400
FY 2.7/16 LF/AH	FY 512 U/AH	YSP 212-207-SB-2F	11 860 52,7	8 100 36	340 1,53	3 400
FY 2.11/16 LF/AH	FY 513 U/AH	YSP 213-211-SB-2F	12 870 57,2	9 000 40	380 1,7	3 000

SKF ConCentra ball bearing units with plummer block housing, for metric shafts
d 25 – 60 mm



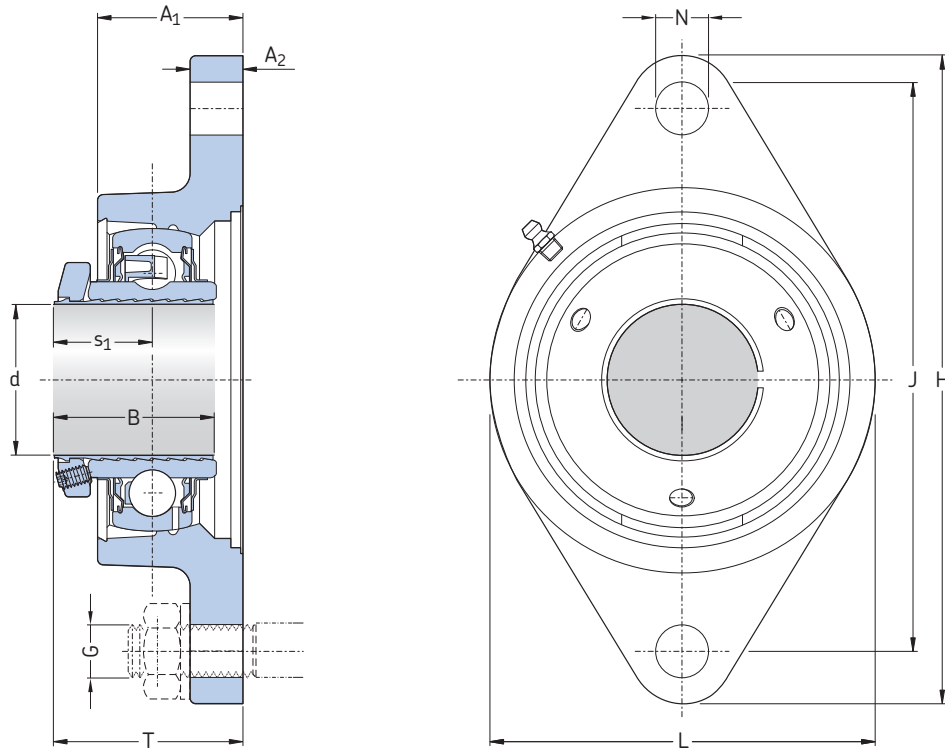
Shaft diameter d	Bearing unit Dimensions											Mass kg	Designation Bearing unit
	A_1	A_2	B	D_a	H	J	L	N	G	s_1	T		
mm	mm												-
25	30,0	12	33,0	63,5	124,0	99,0	70	11,5	M10	21,0	40,0	0,65	FYTB 25 LF
30	32,5	13	37,0	76,2	141,5	116,5	83	11,5	M10	23,0	43,0	0,95	FYTB 30 LF
35	34,5	13	39,5	88,9	156,0	130,0	96	14	M12	24,3	45,3	1,28	FYTB 35 LF
40	38,5	14	42,9	88,9	171,5	143,5	102	14	M12	25,9	49,9	1,69	FYTB 40 LF
45	39,0	14	44,0	98,4	178,5	148,5	111	16	M14	26,5	50,5	1,87	FYTB 45 LF
50	43,0	15	46,0	101,6	189,0	157,0	116	18	M16	27,5	55,5	2,22	FYTB 50 LF



Designations Bearing unit	Separate components		Basic load ratings		Fatigue load limit P_u	Limiting speed r/min	Appropriate end cover	
	Housing	Bearing	dynamic C	static C_0			Designation cover	Dimension A_5
			kN					mm
FYTB 25 LF	FYTB 505 M	YSP 205-SB-2F	14,0	7,8	0,335	7 000	ECY 205	18,0
FYTB 30 LF	FYTB 506 M	YSP 206-SB-2F	19,5	11,2	0,475	6 300	ECY 206	20,0
FYTB 35 LF	FYTB 507 M	YSP 207-SB-2F	25,5	15,3	0,655	5 300	ECY 207	22,0
FYTB 40 LF	FYTB 508 M	YSP 208-SB-2F	30,7	19,0	0,800	4 800	ECY 208	23,5
FYTB 45 LF	FYTB 509 M	YSP 209-SB-2F	33,2	21,6	0,915	4 300	ECY 209	23,0
FYTB 50 LF	FYTB 510 M	YSP 210-SB-2F	35,1	23,2	0,980	4 000	ECY 210	29,5

SKF ConCentra ball bearing units with plummer block housing, for inch shafts

d 1 – 2 ³/₁₆ in.



Shaft diameter d	Bearing unit Dimensions										Mass lbf/kg	Designation Bearing unit
	A ₁	A ₂	B	H	J	L	N	G	s ₁	T		
in./mm	in./mm											–
1 25,400	1,18 30	0,47 12	1,30 33	4,88 124	3,89 98,8	2,76 70	0,50 12,7	7/16	0,83 21,0	1,57 40	1,42 0,64	FYT 1. LF/AH
1 ³/₁₆ 30,163	1,28 32,5	0,51 13	1,46 37	5,57 141,6	4,60 116,9	3,27 83	0,50 12,7	7/16	0,91 23,0	1,69 43	2,09 0,95	FYT 1.3/16 LF/AH
1 ¹/₄ 31,750	1,36 34,5	0,51 13	1,56 39,5	6,14 156	5,13 130,2	3,78 96	0,56 14,3	1/2	0,96 24,3	1,78 45,3	2,92 1,33	FYT 1.1/4 LF/AH
1 ³/₈ 34,925	1,36 34,5	0,51 13	1,56 39,5	6,14 156	5,13 130,2	3,78 96	0,56 14,3	1/2	0,96 24,3	1,78 45,3	2,81 1,27	FYT 1.3/8 LF/AH
1 ⁷/₁₆ 36,513	0,14 34,5	0,05 13	0,16 39,5	0,62 156	0,51 130,2	0,38 96	0,06 14,3	1/2	0,10 24,3	0,18 45,3	2,76 1,25	FYT 1.7/16 LF/AH
1 ¹/₁₂ 38,100	1,52 38,5	0,55 14	1,69 42,9	6,75 171,5	5,66 143,7	4,02 102	0,56 14,3	1/2	1,02 25,9	1,96 49,9	3,98 1,81	FYT 1.1/2 LF/AH
1 ¹¹/₁₆ 42,863	1,54 39	0,55 14	1,73 44	7,03 178,5	5,84 148,4	4,37 111	0,63 15,9	9/16	1,04 26,5	1,99 50,5	4,23 1,92	FYT 1.11/16 LF/AH
1 ¹⁵/₁₆ 49,213	1,69 43	0,59 15	1,81 46	7,44 189	6,19 157,2	4,57 116	0,63 15,9	9/16	1,08 27,5	2,19 55,5	4,89 2,22	FYT 1.15/16 LF/AH
2 ³/₁₆ 55,563	1,87 47,60	0,81 20,6	1,93 49	8,50 215,9	7,25 184,2	5,0 127	0,75 19	5/8	1,14 29,0	2,30 58,4	6,98 3,17	FYT 2.3/16 LF/AH

Designations Bearing unit unit	Separate components		Basic load ratings		Fatigue load limit P_u	Limiting speed
	Housing	Bearing	dynamic C	static C_0		
			lbf/kN		r/min	
FYT 1. LF/AH	FYT 505 U/AH	YSP 205-100-SB-2F	3 150 14,0	1 760 7,8	80 0,335	7 000
FYT 1.3/16 LF/AH	FYT 506 U/AH	YSP 206-103-SB-2F	4 390 19,5	2 520 11,2	110 0,475	6 300
FYT 1.1/4 LF/AH	FYT 507 U/AH	YSP 207-104-SB-2F	5 740 25,5	3 440 15,3	150 0,655	5 300
FYT 1.3/8 LF/AH	FYT 507 U/AH	YSP 207-106-SB-2F	5 740 25,5	3 440 15,3	150 0,655	5 300
FYT 1.7/16 LF/AH	FYT 507 U/AH	YSP 207-107-SB-2F	5 740 25,5	3 440 15,3	150 0,655	5 300
FYT 1.1/2 LF/AH	FYT 508 U/AH	YSP 208-108-SB-2F	6 910 30,7	4 280 19,0	180 0,800	4 000
FYT 1.11/16 LF/AH	FYT 509 U/AH	YSP 209-111-SB-2F	7 470 33,2	4 860 21,6	210 0,915	4 000
FYT 1.15/16 LF/AH	FYT 510 U/AH	YSP 210-115-SB-2F	7 900 35,1	5 220 23,2	220 0,98	4 000
FYT 2.3/16 LF/AH	FYT 511 U/AH	YSP 211-203-SB-2F	9 810 43,6	6 530 29,0	280 1,25	3 600

SKF – the knowledge engineering company

From the company that invented the self-aligning ball bearing more than 100 years ago, SKF has evolved into a knowledge engineering company that is able to draw on five technology platforms to create unique solutions for its customers. These platforms include bearings, bearing units and seals, of course, but extend to other areas including: lubricants and lubrication systems, critical for long bearing life in many applications; mechatronics that combine mechanical and electronics knowledge into systems for more effective linear motion and sensorized solutions; and a full range of services, from design and logistics support to conditioning monitoring and reliability systems.

Though the scope has broadened, SKF continues to maintain the world's leadership in the design, manufacture and marketing of rolling bearings, as well as complementary products such as radial seals. SKF also holds an increasingly important position in the market for linear motion products, high-precision aerospace bearings, machine tool spindles and plant maintenance services.

The SKF Group is globally certified to ISO 14001, the international standard for environmental management, as well as OHSAS 18001, the health and safety management standard. Individual divisions have been approved for quality certification in accordance with ISO 9001 and other customer specific requirements.

With over 100 manufacturing sites worldwide and sales companies in 70 countries, SKF is a truly international corporation. In addition, our distributors and dealers in some 15 000 locations around the world, an e-business marketplace and a global distribution system put SKF close to customers for the supply of both products and services. In essence, SKF solutions are available wherever and whenever customers need them. Overall, the SKF brand and the corporation are stronger than ever. As the knowledge engineering company, we stand ready to serve you with world-class product competencies, intellectual resources, and the vision to help you succeed.

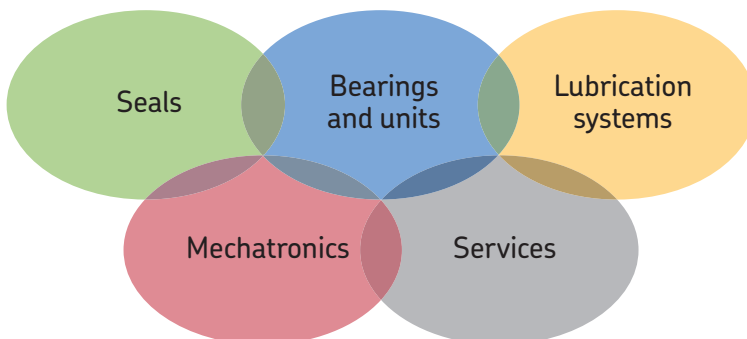


© Airbus – photo: e*im company, H. Goussé

Evolving by-wire technology

SKF has a unique expertise in fast-growing by-wire technology, from fly-by-wire, to drive-by-wire, to work-by-wire. SKF pioneered practical fly-by-wire technology and is a close working partner with all aerospace industry leaders. As an example, virtually all aircraft of the Airbus design use SKF by-wire systems for cockpit flight control.

SKF is also a leader in automotive by-wire technology, and has partnered with automotive engineers to develop two concept cars, which employ SKF mechatronics for steering and braking. Further by-wire development has led SKF to produce an all-electric forklift truck, which uses mechatronics rather than hydraulics for all controls.





Harnessing wind power

The growing industry of wind-generated electric power provides a source of clean, green electricity. SKF is working closely with global industry leaders to develop efficient and trouble-free turbines, providing a wide range of large, highly specialized bearings and condition monitoring systems to extend equipment life of wind farms located in even the most remote and inhospitable environments.



Working in extreme environments

In frigid winters, especially in northern countries, extreme sub-zero temperatures can cause bearings in railway axleboxes to seize due to lubrication starvation. SKF created a new family of synthetic lubricants formulated to retain their lubrication viscosity even at these extreme temperatures. SKF knowledge enables manufacturers and end user customers to overcome the performance issues resulting from extreme temperatures, whether hot or cold. For example, SKF products are at work in diverse environments such as baking ovens and instant freezing in food processing plants.



Developing a cleaner cleaner

The electric motor and its bearings are the heart of many household appliances. SKF works closely with appliance manufacturers to improve their products' performance, cut costs, reduce weight, and reduce energy consumption. A recent example of this cooperation is a new generation of vacuum cleaners with substantially more suction. SKF knowledge in the area of small bearing technology is also applied to manufacturers of power tools and office equipment.



Maintaining a 350 km/h R&D lab

In addition to SKF's renowned research and development facilities in Europe and the United States, Formula One car racing provides a unique environment for SKF to push the limits of bearing technology. For over 50 years, SKF products, engineering and knowledge have helped make Scuderia Ferrari a formidable force in F1 racing. (The average racing Ferrari utilizes more than 150 SKF components.) Lessons learned here are applied to the products we provide to automakers and the aftermarket worldwide.



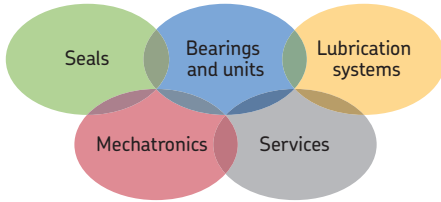
Delivering Asset Efficiency Optimization

Through SKF Reliability Systems, SKF provides a comprehensive range of asset efficiency products and services, from condition monitoring hardware and software to maintenance strategies, engineering assistance and machine reliability programmes. To optimize efficiency and boost productivity, some industrial facilities opt for an Integrated Maintenance Solution, in which SKF delivers all services under one fixed-fee, performance-based contract.



Planning for sustainable growth

By their very nature, bearings make a positive contribution to the natural environment, enabling machinery to operate more efficiently, consume less power, and require less lubrication. By raising the performance bar for our own products, SKF is enabling a new generation of high-efficiency products and equipment. With an eye to the future and the world we will leave to our children, the SKF Group policy on environment, health and safety, as well as the manufacturing techniques, are planned and implemented to help protect and preserve the earth's limited natural resources. We remain committed to sustainable, environmentally responsible growth.



The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

© SKF is a registered trademark of the SKF Group.

© SKF Group 2012

The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) unless prior written permission is granted. Every care has been taken to ensure the accuracy of the information contained in this publication but no liability can be accepted for any loss or damage whether direct, indirect or consequential arising out of the use of the information contained herein.

PUB BU/P2 12227 EN · April 2012

This publication supersedes publication 6107/1 EN.

