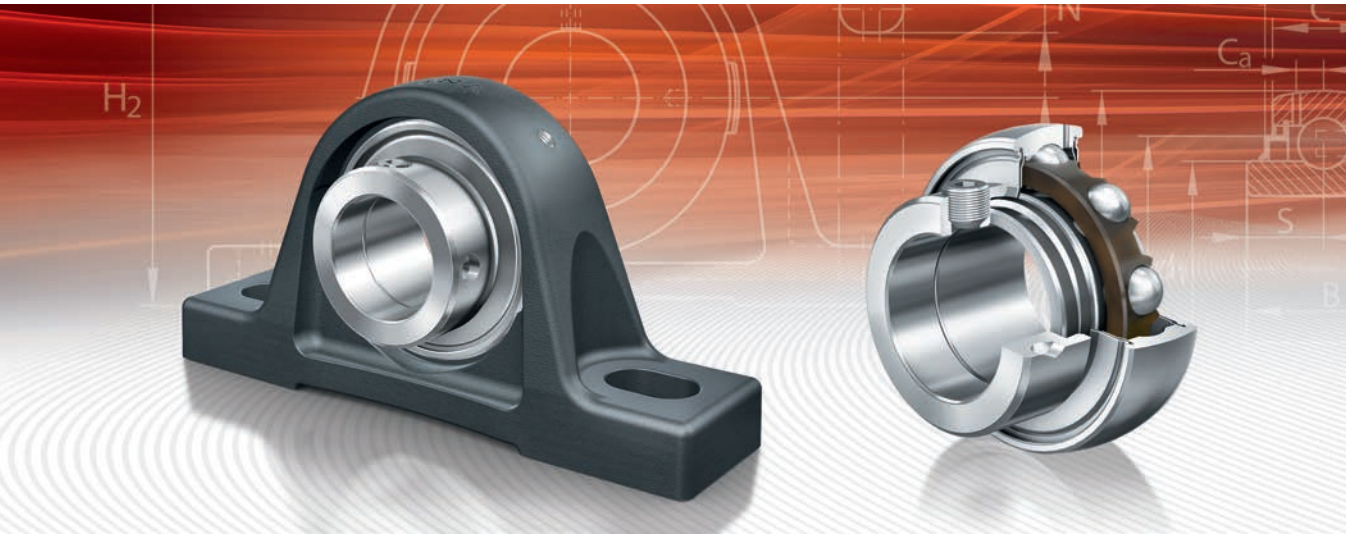


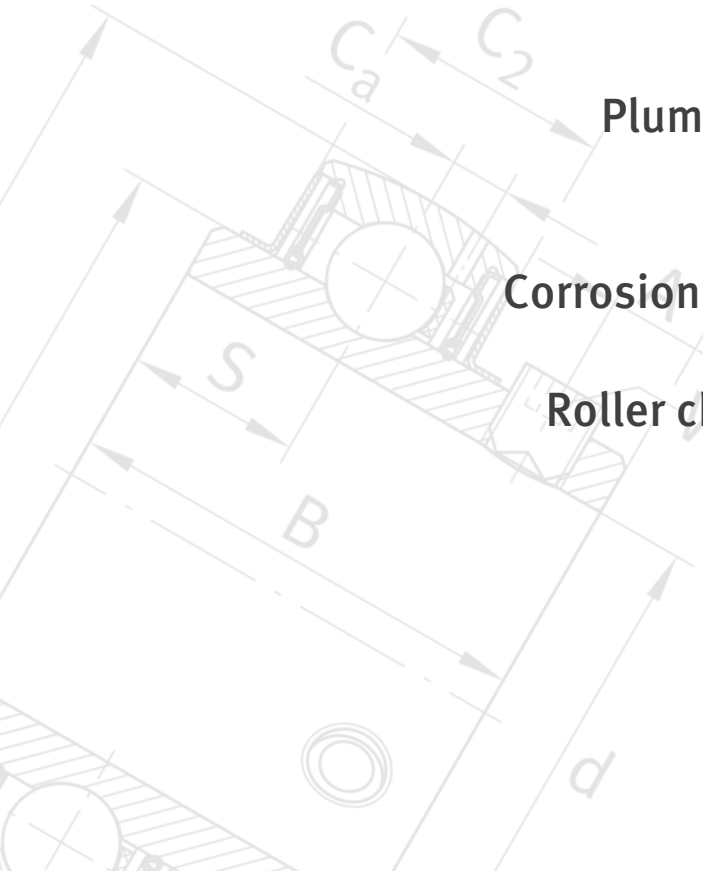
Radial Insert Ball Bearings and Housing Units

Plummer block housing units
Flanged housing units
Take-up housing units
Corrosion-resistant product range
Black Series
Roller chain idler sprocket units
Idler pulley units

SCHAEFFLER

Radial Insert Ball Bearings and Housing Units

Plummer block housing units
Flanged housing units
Take-up housing units
Corrosion-resistant product range
Black Series
Roller chain idler sprocket units
Idler pulley units



All data have been prepared with a great deal of care and checked for their accuracy. However, no liability can be assumed for any incorrect or incomplete data. We reserve the right to make technical modifications.

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Issued: 2017, January

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Foreword

Schaeffler Technologies

Schaeffler Technologies with its brands INA and FAG is a leading worldwide supplier of rolling bearings, spherical plain bearings, plain bearings, linear products, accessories specific to bearings and comprehensive maintenance products and services. Schaeffler has approximately 40 000 catalogue products manufactured as standard, providing an extremely wide portfolio that gives secure coverage of applications from 60 industrial market sectors.

The central factors responsible for this success are our outstanding strength in innovation, our global focus on local customer proximity, highly developed manufacturing methods, extremely high quality standards in all processes and our ability to transform specific customer requirements quickly and accurately into cost-effective solutions. Against this background of expertise, knowledge and experience together with our wide range of catalogue items, we see ourselves as a high performance, customer focussed partner.

Research and development

As a company looking to the future, we are especially active in the field of research and development. The key areas in this respect include not only research into fundamental principles, materials technology, tribology and calculation but also extensive inspection and test methods as well as activities to optimise manufacturing technology. This is oriented towards ensuring the continuous development, improvement and application of our products in the long term.

We carry out research and development on a global basis. Our development centres are linked with each other worldwide and are thus in a position to exchange current information on a very short timescale as well as access and communicate the most recent data. This ensures that a uniform level of knowledge and information is available worldwide.

In addition to continued development of standard products, we work closely in research and development activities with our customers where specific customer solutions are required. They can thus benefit from the best product for their application, with the maximum possible performance capacity at a cost-effective price.

Foreword

Quality, manufacturing technology, environmental protection

"Zero defects" is our quality objective. We have matched all our processes, both in product development and in manufacturing, to this target.

Our comprehensive know-how in forming, in forging, in heat treatment and surface technologies, in hard machining by means of grinding and honing and in assembly processes is applied in order to ensure that our products fulfil the required quality level.

Our manufacturing processes are monitored by means of systematic quality inspections. This ensures that all products continuously fulfil the same high standard of quality.

All Schaeffler sites worldwide are certified to ISO/TS 16949:2009 and DIN EN ISO 9001:2008.

With the validation and certification of our manufacturing sites, we are taking a pioneering role in environmental protection. All larger manufacturing sites are certified to ISO 14001 and are also validated in accordance with the more stringent EC ECO Management and Audit Scheme (EMAS).

Worldwide presence

Through a closely knit network of development and manufacturing sites, sales companies and an international distribution structure, we are represented throughout the world. This global presence ensures effective linkage between the major markets in Europe, India, South East Asia/Pacific Region, East Asia, North and South America.

As a result, we have an on-site presence with service and technical advice in close proximity to the customer.

We take orders from throughout the world and make deliveries worldwide too. Furthermore, we support our customers worldwide in resolving their bearing arrangement requirements, respond to technical queries and develop specific bearing arrangement solutions in local partnership with our customers.

Catalogue SG 1, Radial Insert Ball Bearings and Housing Units

Radial insert ball bearings and housing units are robust, ready-to-fit machine elements for the design of economical bearing arrangements. These products are available in many different series, have proven effective over many years and predominantly comprise a housing fitted with a radial insert ball bearing. The housing bore and the bearing outer ring have a spherical profile and are matched to each other. This allows the bearing ring in the housing to adapt to static angular misalignment of the shaft.

Due to their special locating methods, principally by eccentric locking collar or grub screws, the radial insert ball bearings can be easily located on the shaft. They are particularly easy to fit when they are used in combination with drawn shafts. Radial insert ball bearings are fitted with multi-piece seals that effectively protect the rolling element set against contamination and moisture, even under difficult and critical operating conditions.

Schaeffler offers a wide range of housing units with radial insert ball bearings. Radial insert ball bearings are based on single row deep groove ball bearings.

Radial insert ball bearings

The outer rings of radial insert ball bearings have a spherical or cylindrical outside surface. Radial insert ball bearings are available with a metric or inch size bore. Black Series radial insert ball bearings with a Durotect BS coating have basic anti-corrosion protection. Corrosion-resistant radial insert ball bearings are available in a high grade steel version or with the Corrotect coating.

Housing units

Housing units are available as plummer block, flanged and take-up housing units in numerous different designs. The units are ready-to-fit and comprise cast iron or sheet steel housings in which radial insert ball bearings are integrated. Corrosion-resistant units are available with the Corrotect coating, in a high grade steel version or made from plastic.

The dimensions of the FAG Black Series housing units with a primer paint coating correspond to JIS B 1557 and have basic anti-corrosion protection due to the Durotect BS coating.

Current level of technology

The data represent the current level of technology and manufacture as of January 2017. They reflect not only progress in bearing arrangement technology but also the experience gathered from numerous applications.

Any data in earlier publications that do not correspond to the data in this catalogue are therefore invalid.

Definition of the Attention symbol

This catalogue predominantly gives descriptions of standard housings. Since these are used in numerous applications, we cannot make a judgement as to whether any malfunctions will cause harm to persons or property.

Follow instructions

It is always and fundamentally the responsibility of the designer and user to ensure that all specifications are observed and that all necessary information is communicated to the end user. This applies in particular to applications in which product failure and malfunction may constitute a hazard to human beings.



If guidelines marked with the Attention symbol are not observed, damage or malfunctions in the product or the adjacent construction may occur.

Foreword

X-life

X-life is the premium brand that identifies particularly high performance products under the FAG and INA brands. They are characterised by longer rating life and operating life, due to higher basic dynamic load ratings compared to the previous standard.

X-life is an all-encompassing concept: advice, product development, service and sales are fully integrated with each other in all phases of the product cycle. As a service surround system, it includes a comprehensive lubrication concept. In addition, X-life stands for continuous quality improvement and local customer focus applied worldwide.

Advantages of X-life quality

The use of state of the art manufacturing technologies has resulted in a better, more uniform surface over the whole contact face between the rolling elements and raceway. As a result, under identical load there is a significant reduction in the stress conditions present on the rolling elements and raceway. The improved surface quality gives reduced friction and lower bearing temperatures, running resistance is lower and less strain is placed on the lubricant.

Thanks to such improvements, the basic dynamic load ratings are significantly higher than those of the previous design. As a result, the basic rating life is higher; i.e. the operating life of the bearings is considerably longer under the same operating conditions. Alternatively, higher loads can be applied while maintaining the same rating life values.

With their optimised characteristics, X-life bearings open up completely new application prospects, such as downsizing of the bearing arrangement. Furthermore, the improved price/performance ratio ultimately increases the overall cost-effectiveness of the bearing arrangement.

X-life bearings are indicated in the dimension tables.

Further information

- http://www.schaeffler.de/X-life.

medias® *professional* **electronic information system**

medias® *professional*, the proven selection and information system, presents the INA and FAG catalogue products in electronic format. As with the printed catalogue, this gives our customers product information on both brands in a single data source. This saves time and gives easier handling.

medias® *professional* is available online and in download form in several languages, is easy to navigate and is particularly clear thanks to the use of numerous images, diagrams and models. There are also highly representative application examples, classified by market sector.

Datasheets on the bearing series can be generated as PDF files. It includes a lubricant database and also the web2CAD link for direct download and integration of 3D models.

medias® *professional* focusses on the individual bearing. The complete shaft can be simulated and any influences arising from its deformation on the bearings can be determined using the calculation program BEARINX. This program can also be made available to direct customers as BEARINX-online via the Internet (for conditions, see the INA/FAG homepage).

In conclusion, ***medias***® *professional* is a comprehensive, reliable system to help you help yourself answer many questions on rolling bearing technology by electronic means, quickly and at any location.



http://medias.schaeffler.com

Foreword

Selection wizard for housing units in *medias*® *professional*

The selection wizard for bearing housings in ***medias***® *professional* gives comprehensive assistance in the selection of housings and housing units. It takes account of the environmental conditions and the requirements placed on the bearing arrangement as well as the characteristics of the housings and the bearings suitable for the housings. Once the specified data has been inputted, the software generates detailed lists of results that also contain information on further accessories.

http://bit.ly/HousingSelectionEN

medias® interchange

medias® interchange is available online and assists in the selection process where rolling bearings or housings from other manufacturers are to be replaced by products of the INA and FAG brands.

If a rolling bearing and housing designation is entered in ***medias***® interchange, this will indicate the manufacturer and INA or FAG designations. A traffic light system will quickly indicate whether and to what extent the INA or FAG part is interchangeable. Green indicates fully interchangeable, yellow indicates conditional interchangeability and red indicates non-interchangeable.

http://bit.ly/InterchangeEN

Other technical publications

This catalogue contains the core range of radial insert ball bearings and housing units of the brands INA and FAG. Furthermore, we develop and manufacture many other products and systems that are of significant interest in terms of technical progress and cost-effectiveness for rotary and linear bearing arrangements as well as for the automotive sector. These are covered in separate technical publications that can be obtained upon request.

http://medien.schaeffler.com

INA and FAG, when it comes to motion

Catalogue SG 1 stands for pioneering bearing technology, application-focussed advice, the highest product and performance density and continuous development.

The benefits to you:

- selection of products from a vast product range
- the most suitable product in the right place
- worldwide availability of products
- short delivery times
- long term supply capability
- security of planning for the long view
- simplified stockholding
- market-competitive prices
- global service
- comprehensive, application-focussed advice.

Together we move the world

For us, technical progress means never standing still. In partnership with you, we are continually working on new solutions so that your vision and our technical ideas can continue to become a reality, to your benefit.

With our products and our knowledge, we can together continue to fulfil the challenges of your market in relation to bearing arrangements. To this end, this catalogue is an important instrument.

Foreword

Catalogue GK 1 for bearing housings

In addition to the radial insert ball bearings and housing units described in this catalogue, Schaeffler offers a wide range of bearing housings. The bearing housings are subdivided into standard housings and housings for specific industrial and railway applications. Catalogue GK 1, Bearing Housings, describes the range of standard housings and gives essential information on special housings.

Standard housings

The standard housings comprise split and unsplit plummer block housings, take-up housings and flanged housings.

In the case of split plummer block housings, *Figure 1*, the upper section of the housing can be removed. This gives significantly simpler mounting and maintenance. Unsplit plummer block housings, *Figure 2*, are used where the bearing arrangement is subjected to very high loads.

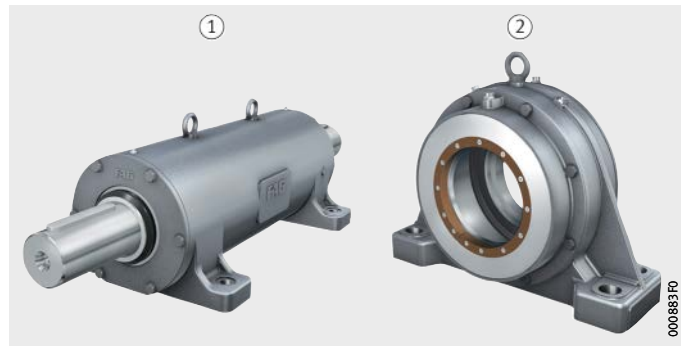
Take-up housings, *Figure 3*, page 11, were developed specifically for tensioner drum bearing arrangements in belt conveyor plant. There is a yoke-shaped drawbar eye for attachment to the tensioning device.

Flanged housings, *Figure 4*, page 11, have a flange perpendicular to the shaft axis and thus offer the ideal adjacent construction for numerous machines and pieces of equipment where the use of plummer block housings would be too demanding.



① Split plummer block housing SNS
② Split plummer block housing LOE

Figure 1
Split plummer block housings (examples)



① Plummer block housing unit VRE3
② Unsplit plummer block housing BND

Figure 2
Unsplit plummer block housings (examples)

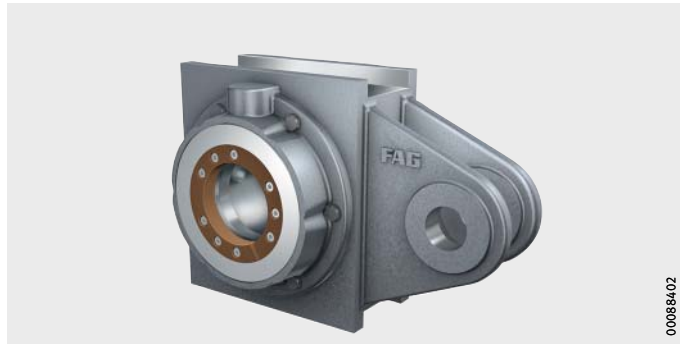


Figure 3
Take-up housing SPA



① Flanged housing F112
② Flanged housing F5

Figure 4
Flanged housings

Special housings

Special housings are used in particularly challenging applications where not all the requirements can be fulfilled by the use of standard housings. Apart from specific industrial applications, these are principally applications from the railway sector.

Special housings are developed in close cooperation and consultation with the customer. Schaeffler uses its comprehensive know-how of rolling bearing technology in order to ensure that every housing is optimally matched to the specific application.

Selected examples in Catalogue GK 1 give an insight into the diverse areas of application and possibilities of housings for specific industrial and railway applications.

Further information

- The complete catalogue range can be found in Catalogue GK 1, Bearing Housings.
- Download and ordering: http://medien.schaeffler.de
- Electronic selection wizard for bearing housings: http://medias.schaeffler.de/medias/ga.

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RASE..-XL	Plummer block housing units, cast iron housing, eccentric locking collar and R type seal, relubrication facility	229
RASE..-XL-N-FA125	Plummer block housing units, cast iron housing, eccentric locking collar and R type seal, Corrotect, relubrication facility	376

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RASEL..-XL	Plummer block housing units, cast iron housing, drive slot in inner ring and R type seal, relubrication facility	229
RASEY..-XL	Plummer block housing units, cast iron housing, grub screws in inner ring and R type seal, relubrication facility	229
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RCRA(B)..-XL-FA106	Radial insert ball bearings, with rubber interliner, eccentric locking collar and P type seal, no relubrication facility	214
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RCSMA(B)..-XL-FA106	Radial insert ball bearings with rubber interliner, eccentric locking collar	214
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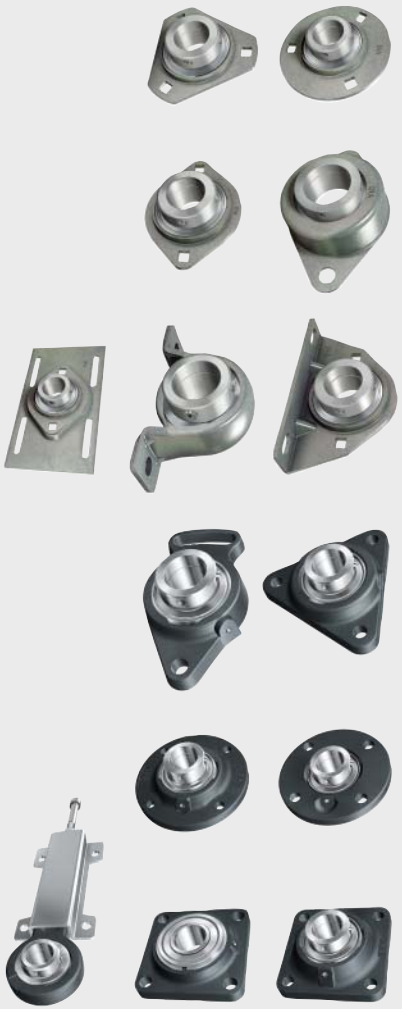
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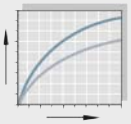
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Technical principles





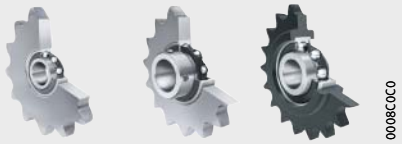
Radial insert ball bearings

- Spherical outer ring
- Cylindrical outer ring
- Rubber interliner
- Steel aligning ring



INA units with flake graphite cast iron or sheet steel housing

- Plummer block housing units
- Flanged housing units
- Take-up housing units



Roller chain idler sprocket units
Idler pulley units



Corrosion-resistant radial insert ball bearings and housing units

- Flake graphite cast iron and sheet steel housings
- High grade steel housings
- Plastic housings



FAG Black Series
Radial insert ball bearings and housing units



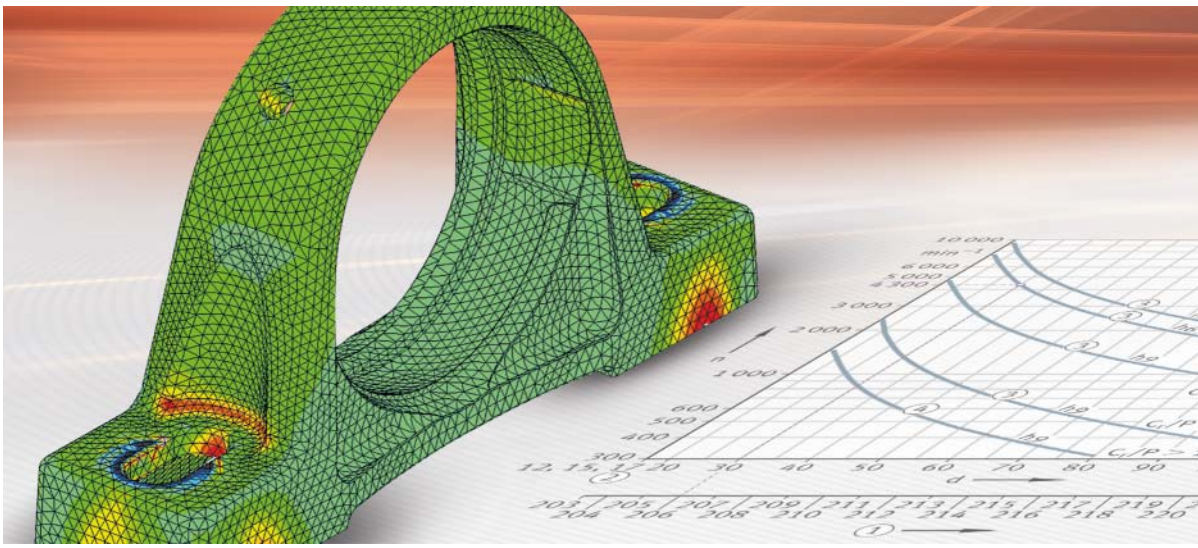
Market sectors



Mounting and maintenance



Addresses



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Load carrying capacity and life
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Bearing data
Design of bearing arrangements
Sealing
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Schaeffler introduced the “Expanded calculation of the adjusted rating life” in 1997. This method was standardised for the first time in DIN ISO 281 Appendix 1 and has been a constituent part of the international standard ISO 281 since 2007.

As part of the international standardisation work, the life adjustment factor a_{DIN} was renamed as a_{ISO} but without any change to the calculation method.

Fatigue theory as a principle

The basis of the rating life calculation in accordance with ISO 281 is Lundberg and Palmgren's fatigue theory which always gives a final rating life.

However, modern, high quality bearings can exceed by a considerable margin the values calculated for the basic rating life under favourable operating conditions. Ioannides and Harris have developed a further model of fatigue in rolling contact that expands on the Lundberg/Palmgren theory and gives a better description of the performance capability of modern bearings.

The method “Expanded calculation of the adjusted rating life” takes account of the following influences:

- the bearing load
- the fatigue limit of the material
- the extent to which the surfaces are separated by the lubricant
- the cleanliness in the lubrication gap
- the additive package in the lubricant
- the internal load distribution and frictional conditions in the bearing.

The influencing factors, particularly those relating to contamination, are very complex. A great deal of experience is required in order to arrive at an accurate assessment. Further advice should therefore be sought from the Schaeffler engineering service.

The tables and diagrams can give guide values only.

Dimensioning of rolling bearings

The required size of a rolling bearing is dependent on the demands made on its:

- rating life
- load carrying capacity
- operational reliability.

Dynamic load carrying capacity and life

The dynamic load carrying capacity is described in terms of the basic dynamic load ratings. The basic dynamic load ratings are based on DIN ISO 281.

The basic dynamic load ratings for rolling bearings are matched to empirically proven performance standards and published in previous FAG and INA catalogues.

The dynamic load carrying capacity of the rolling bearing is determined by the fatigue behaviour of the material.

The dynamic load carrying capacity is described in terms of the basic dynamic load rating and the basic rating life.

The fatigue life is dependent on:

- the load
- the operating speed
- the statistical probability of the first appearance of failure.

In the case of rotating rolling bearings, the basic dynamic load rating C is:

- a constant radial load C_r for radial bearings
- a constant, concentrically acting axial load C_a for axial bearings.

The basic dynamic load rating C is that load of constant magnitude and direction which a sufficiently large number of apparently identical bearings can endure for a basic rating life of one million revolutions.

Calculation of the rating life

The methods for calculating the rating life are:

- the basic rating life L_{10} and L_{10h} in accordance with ISO 281, see page 38
- the adjusted rating life L_{na} in accordance with DIN ISO 281:1990 (no longer a constituent part of ISO 281), see page 42
- the expanded adjusted rating life L_{nm} in accordance with ISO 281, see page 45.

Basic rating life

The basic rating life L_{10} and L_{10h} is determined as follows:

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

$$L_{10h} = \frac{16\,666}{n} \cdot \left(\frac{C}{P}\right)^p$$

L_{10} 10^6 revolutions
The basic rating life in millions of revolutions is the life reached or exceeded by 90% of a sufficiently large group of apparently identical bearings before the first evidence of material fatigue develops

C N
Basic dynamic load rating

P N
Equivalent dynamic bearing load for radial and axial bearings

p –
Life exponent;
for roller bearings: p = 10/3, for ball bearings: p =3

L_{10h} h
The basic rating life in operating hours according to the definition for L_{10}

n min^{-1}
Operating speed.

Equivalent dynamic bearing load

The equivalent dynamic load P is a calculated value. This value is constant in magnitude and direction; it is a radial load for radial bearings and an axial load for axial bearings.

A load corresponding to P will give the same rating life as the combined load occurring in practice.

For bearings under dynamic loading, the following applies:

Load ratio and axial bearing load

Load ratio	Equivalent dynamic bearing load
$\frac{F_a}{F_r} \leqq e$	$P = F_r$
$\frac{F_a}{F_r} > e$	$P = X \cdot F_r + Y \cdot F_a$

F_a N
Axial dynamic bearing load
F_r N
Radial dynamic bearing load
e, X, Y –
Factors, see table Factors e, X and Y
P N
Equivalent dynamic bearing load for combined load.

Factors e, X and Y

$\frac{f_0 \cdot F_a}{C_{0r}}$	Factor for radial internal clearance								
	Group N			Group 3			Group 4		
	e	X	Y	e	X	Y	e	X	Y
0,3	0,22	0,56	2	0,32	0,46	1,7	0,4	0,44	1,4
0,5	0,24	0,56	1,8	0,35	0,46	1,56	0,43	0,44	1,31
0,9	0,28	0,56	1,58	0,39	0,46	1,41	0,45	0,44	1,23
1,6	0,32	0,56	1,4	0,43	0,46	1,27	0,48	0,44	1,16
3	0,36	0,56	1,2	0,48	0,46	1,14	0,52	0,44	1,08
6	0,43	0,56	1	0,54	0,46	1	0,56	0,44	1

f_0 –
Factor, see table Factor f_0, page 40
F_a N
Axial dynamic bearing load
C_{0r} N
Basic static load rating, see dimension tables.

The values in the following table are valid for normal fits:
- shaft machined to j5 Ⓔ or k5 Ⓔ, housing machined to J6 Ⓔ.

Factor f_0

Bore code	Factor f_0		
	60	62	63
3	–	12,9	–
4	–	12,2	12,4
5	–	13,2	12,2
6	–	13	–
7	13	12,4	–
8	12,4	13	–
9	13	12,4	–
00	12,4	12,1	11,3
01	13	12,3	11,1
02	13,9	13,1	12,1
03	14,3	13,1	12,3
04	13,9	13,1	12,4
05	14,5	13,8	12,4
06	14,8	13,8	13
07	14,8	13,8	13,1
08	15,3	14	13
09	15,4	14,3	13
10	15,6	14,3	13
11	15,4	14,3	12,9
12	15,5	14,3	13,1
13	15,7	14,3	13,2
14	15,5	14,4	13,2
15	15,7	14,7	13,2
16	15,6	14,6	13,2
17	15,7	14,7	13,1
18	15,6	14,5	13,9
19	15,7	14,4	13,9
20	15,9	14,4	13,8
21	15,8	14,3	13,8
22	15,6	14,3	13,8
24	15,9	14,8	13,5
26	15,8	14,5	13,6
28	16	14,8	13,6
30	16	15,2	13,7
32	16	15,2	13,9
34	15,7	15,3	13,9
36	15,6	15,3	13,9
38	15,8	15	14
40	15,6	15,3	14,1
44	15,6	15,2	14,1
48	15,8	15,2	14,2

Factor f_0 (continued)

Bore code	Factor f_0		
	60	62	63
52	15,7	15,2	–
56	15,9	15,3	–
60	15,7	–	–
64	15,9	–	–
68	15,8	–	–
72	15,9	–	–
76	–	–	–
80	–	–	–
84	–	–	–
88	–	–	–
92	–	–	–
96	–	–	–

Equivalent static load

The equivalent static load P_0 is a calculated value. It corresponds to a radial load in radial bearings and a concentric axial load in axial bearings.

P_0 induces the same load at the centre point of the most heavily loaded contact point between the rolling element and raceway as the combined load occurring in practice.

$$P_0 = X_0 \cdot F_{0r} + Y_0 \cdot F_{0a}$$

P_0 N
Equivalent static bearing load

X_0 –
Radial factor

F_{0r} N
Radial static bearing load

Y_0 –
Axial factor

F_{0a} N
Axial static bearing load.

Load ratio and axial bearing load

For bearings under static loading, the following applies:

Load ratio	Equivalent static load
$\frac{F_{0a}}{F_{0r}} \leqq 0,8$	$P_0 = F_{0r}$
$\frac{F_{0a}}{F_{0r}} > 0,8$	$P_0 = 0,6 \cdot F_{0r} + 0,5 \cdot F_{0a}$

F_{0a} N
Axial static bearing load

F_{0r} N
Radial static bearing load

P_0 N
Equivalent static bearing load for combined load.

Adjusted rating life

The adjusted rating life L_{na} can be calculated if, in addition to the load and speed, other influences are known:

- special material characteristics
- lubrication
- a requisite reliability other than 90%.

This calculation method was replaced in ISO 281:2007 by the calculation of the expanded adjusted rating life L_{nm}, see page 45.

$$L_{na} = a_1 \cdot a_2 \cdot a_3 \cdot L_{10}$$

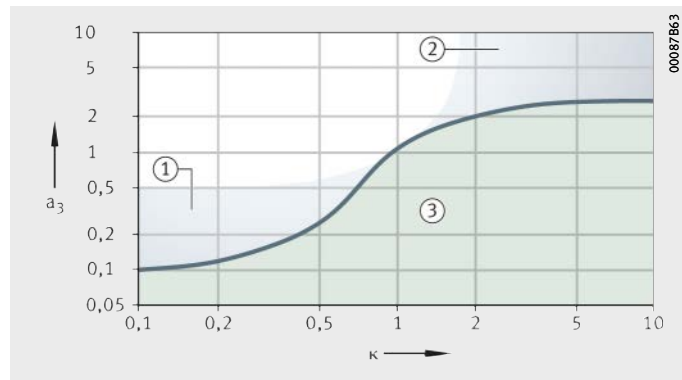
L_{na} 10^6 revolutions
Adjusted rating life for special material characteristics and operating conditions with a requisite reliability of (100 – n) %

a_1 –
Life adjustment factor for a requisite reliability other than 90%.
In ISO 281:2007, the values for the life adjustment factor a_1 have been redefined, see table Life adjustment factor a_1, page 45

a_2 –
Life adjustment factor for special material characteristics.
For standard rolling bearing steels: $a_2 = 1$

a_3 –
Life adjustment factor for special operating conditions; in particular for the lubrication regime, *Figure 1*

L_{10} 10^6 revolutions
Basic rating life.



a_3 = life adjustment factor
κ = viscosity ratio, see page 43

① Good cleanliness and suitable additives
② Very high cleanliness and low load
③ Contamination in the lubricant

Figure 1
Life adjustment factor a_3

Viscosity ratio

The viscosity ratio κ is an indication of the quality of lubricant film formation.

The reference viscosity ν_1 is determined from the mean bearing diameter $d_M = (D + d)/2$ and the operating speed n, *Figure 2*, page 44.

The nominal viscosity of the oil at +40 °C is determined from the required operating viscosity ν and the operating temperature ϑ, *Figure 3*, page 44. In the case of greases, ν is the operating viscosity of the base oil.

In accordance with ISO 281, the equations can also be used in approximate terms for synthetic oils, such as those of the type synthetic hydrocarbons (SHC).

In the case of heavily loaded bearings with a high proportion of sliding contact, the temperature in the contact area of the rolling elements may be up to 20 K higher than the temperature measured on the stationary ring (without the influence of any external heat sources).

The influence of EP additives is taken into consideration in calculation of the expanded adjusted rating life L_{nm}, see page 47.

Viscosity ratio κ

$$\kappa = \frac{\nu}{\nu_1}$$

Reference viscosity ν_1

$\nu < 1\,000$ min^{-1}:

$$\nu_1 = 45000 \cdot n^{-0,83} \cdot d_M{}^{-0,5}$$

$\nu > 1\,000$ min^{-1}:

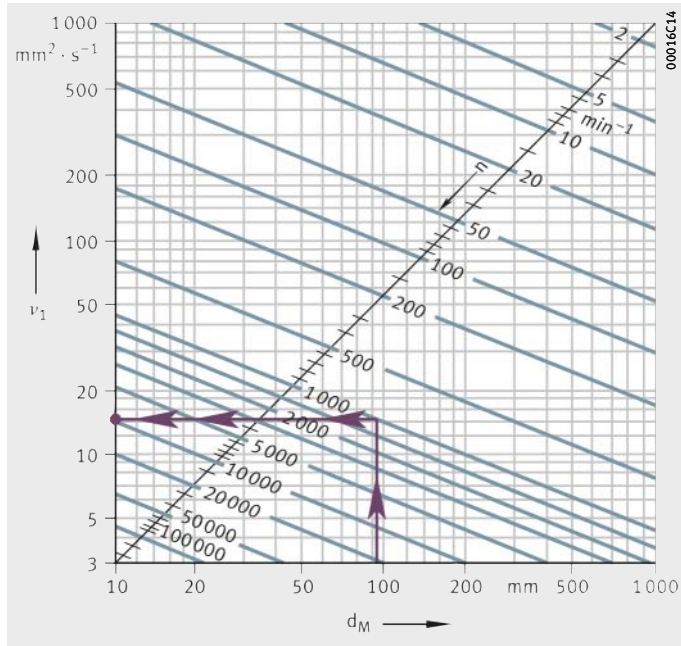
$$\nu_1 = 4500 \cdot n^{-0,5} \cdot d_M{}^{-0,5}$$

κ – Viscosity ratio

ν mm^{2}s^{-1} Kinematic viscosity of the lubricant at operating temperature

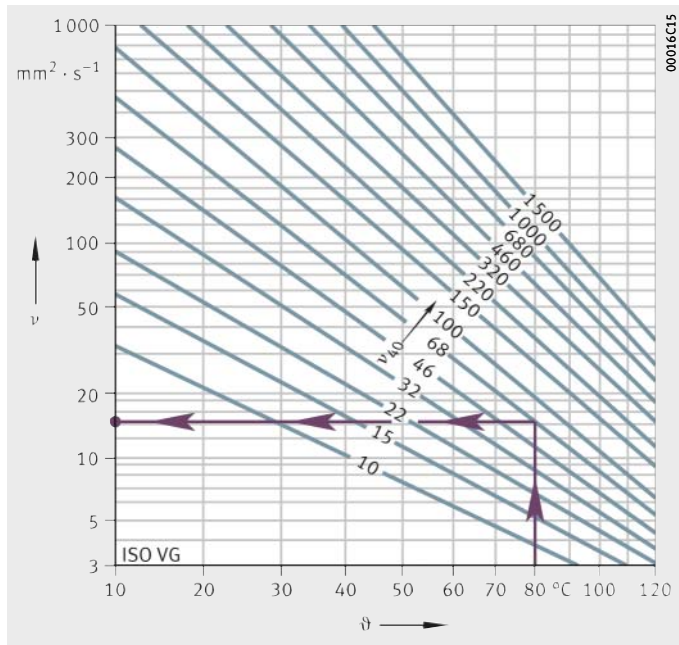
ν_1 mm^{2}s^{-1} Reference viscosity of the lubricant at operating temperature

n min^{-1} Reference speed.



ν_1 = reference viscosity
d_M = mean bearing diameter
n = speed

Figure 2
Reference viscosity ν_1



ν = operating viscosity
ϑ = operating temperature
ν_{40} = viscosity at +40 °C

Figure 3
V/T diagram for mineral oils

Expanded adjusted rating life

The calculation of the expanded adjusted rating life L_{nm} is standardised in the worldwide standard ISO 281. Computer-aided calculation in accordance with DIN ISO 281 Appendix 4 has been specified since 2008 in ISO/TS 16281.

L_{nm} is calculated as follows:

$$L_{nm} = a_1 \cdot a_{ISO} \cdot L_{10}$$

L_{nm} 10^6 revolutions
Expanded adjusted rating life to ISO 281

a_1 –
Life adjustment factor for a requisite reliability other than 90%, see table

a_{ISO} –
Life adjustment factor for operating conditions

L_{10} 10^6 revolutions
Basic rating life, see page 38.

The values for the life adjustment factor a_1 were redefined in ISO 281:2007 and differ from the previous data.

Life adjustment factor a_1

Requisite reliability %	Expanded adjusted rating life L_{nm}	Life adjustment factor a_1
90	L_{10m}	1
95	L_{5m}	0,64
96	L_{4m}	0,55
97	L_{3m}	0,47
98	L_{2m}	0,37
99	L_{1m}	0,25
99,2	$L_{0,8m}$	0,22
99,4	$L_{0,6m}$	0,19
99,6	$L_{0,4m}$	0,16
99,8	$L_{0,2m}$	0,12
99,9	$L_{0,1m}$	0,093
99,92	$L_{0,08m}$	0,087
99,94	$L_{0,06m}$	0,08
99,95	$L_{0,05m}$	0,077

Life adjustment factor a_{ISO}

The standardised method for calculating the life adjustment factor a_{ISO} takes account of the following significant factors:

- the load on the bearing
- the lubrication conditions (viscosity and type of lubricant, speed, bearing size, additives)
- the fatigue limit of the material
- the type of bearing
- the fatigue limit of the material
- the ambient conditions
- contamination of the lubricant.

$$a_{ISO} = f\left[\frac{e_C \cdot C_u}{P}, \kappa\right]$$

a_{ISO} –
Life adjustment factor for operating conditions, *Figure 4*, page 47

e_C –
Life adjustment factor for contamination, see table, page 48

C_u N
Fatigue limit load

P N
Equivalent dynamic bearing load

κ –
Viscosity ratio, see page 43
For $\kappa > 4$, calculation should be carried out using $\kappa = 4$.
For $\kappa < 0{,}1$, this calculation method cannot be used.

Taking account of EP additives in the lubricant

In accordance with ISO 281, EP additives in the lubricant can be taken into consideration. At a viscosity ratio $\kappa < 1$ and a contamination factor $e_C \geqq 0{,}2$, a value $\kappa = 1$ can be used in calculation in the case of lubricants with EP additives that have proven effective. If severe contamination is present (contamination factor $e_C < 0{,}2$), the effectiveness of the additives under these contamination conditions must be proven.

The effectiveness of the EP additives can be demonstrated in the actual application or on a rolling bearing test rig FE 8 to DIN 51819-1.

If the EP additives are proven effective and calculation is carried out using the value $\kappa = 1$, the life adjustment factor must be restricted to $a_{ISO} \leqq 3$, *Figure 4*. If the calculated value a_{ISO} calculated for the actual κ is > 3, this value can be used in calculation.

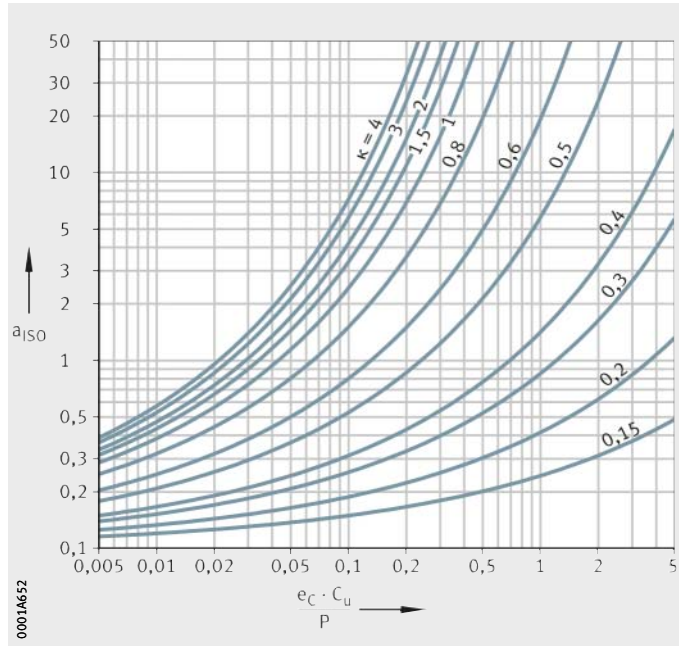


Figure 4
Life adjustment factor a_{ISO} for radial ball bearings

Fatigue limit load

The fatigue limit load C_u in accordance with ISO 281 is defined as the load below which, under laboratory conditions, no fatigue occurs in the material.

Life adjustment factor for contamination

The life adjustment factor for contamination e_C takes into consideration the influence of contamination in the lubrication gap on the rating life, see table.

The rating life is reduced by solid particles in the lubrication gap and is dependent on the following factors:

- the type, size, hardness and quantity of particles
- the relative lubricant film thickness
- the bearing size.

Due to the complex interactions between these influencing factors, it is only possible to give approximate guide values. The values in the tables are valid for contamination by solid particles (factor e_C). No account is taken of other contamination such as that caused by water or other fluids.



Under severe contamination ($e_C \rightarrow 0$), the bearings may fail due to wear. In this case, the operating life is substantially less than the calculated life.

Factor e_C

Contamination	Factor e_C			
	$d_M < 100$ mm[1]		$d_M \geqq 100$ mm[1]	
	from	to	from	to
Extreme cleanliness: - particle size within lubricant film thickness - laboratory conditions	–	1	–	1
High cleanliness: - oil filtered through extremely fine filter - sealed, greased bearings	0,6	0,8	0,8	0,9
Standard cleanliness: - oil filtered through fine filter	0,5	0,6	0,6	0,8
Low contamination: - slight contamination of oil	0,3	0,5	0,4	0,6
Typical contamination: - bearing contaminated by wear debris from other machine elements	0,1	0,3	0,2	0,4
Heavy contamination: - bearing environment heavily contaminated - bearing arrangement inadequately sealed	0	0,1	0	0,1
Very heavy contamination	0	–	0	–

[1] d_M = mean bearing diameter (d + D)/2.

Equivalent operating values

The rating life equations are based on the assumption that the bearing load P and bearing speed n are constant. If the load and speed are not constant, equivalent operating values can be determined that induce the same fatigue as the actual loading conditions.

The equivalent operating values calculated here already take account of the life adjustment factors a_3 or a_{ISO}. They must not be applied again when calculating the adjusted rating life.

Variable load and speed

If the load and speed vary over a time period T, the speed n and equivalent bearing load P are calculated as follows:

$$n = \frac{1}{T}\int_0^T n(t) \cdot dt$$

$$P = \sqrt[p]{\frac{\int_0^T \frac{1}{a(t)} \cdot n(t) \cdot F^p(t) \cdot dt}{\int_0^T n(t) \cdot dt}}$$

Variation in steps

If the load and speed vary in steps over a time period T, n and P are calculated as follows:

$$n = \frac{q_1 \cdot n_1 + q_2 \cdot n_2 + \ldots + q_z \cdot n_z}{100}$$

$$P = \sqrt[p]{\frac{\frac{1}{a_i} \cdot q_i \cdot n_i \cdot F_i^p + \ldots + \frac{1}{a_z} \cdot q_z \cdot n_z \cdot F_z^p}{q_i \cdot n_i + \ldots + q_z \cdot n_z}}$$

Variable load at constant speed

If the function F describes the variation in the load over a time period T and the speed is constant, P is calculated as follows:

$$P = \sqrt[p]{\frac{1}{T}\int_0^T \frac{1}{a(t)} \cdot F^p(t) \cdot dt}$$

Load varying in steps at constant speed

If the load varies in steps over a time period T and the speed is constant, P is calculated as follows:

$$P = \sqrt[p]{\frac{\frac{1}{a_i} \cdot q_i \cdot F_i^p + \ldots + \frac{1}{a_z} \cdot q_z \cdot F_z^p}{100}}$$

Constant load at variable speed

If the speed varies but the load remains constant, the following applies:

$$n = \frac{1}{T}\int_0^T \frac{1}{a(t)} \cdot n(t) \cdot dt$$

Constant load at speed varying in steps

If the speed varies in steps, the following applies:

$$n = \frac{\frac{1}{a_i} \cdot q_i \cdot n_i + \ldots + \frac{1}{a_z} \cdot q_z \cdot n_z}{100}$$

Oscillating bearing motion

The equivalent speed is calculated as follows:

$$n = n_{osc} \cdot \frac{\varphi}{180°}$$

If the angle of oscillation is smaller than twice the pitch angle of the rolling elements, there is a risk of false brinelling.

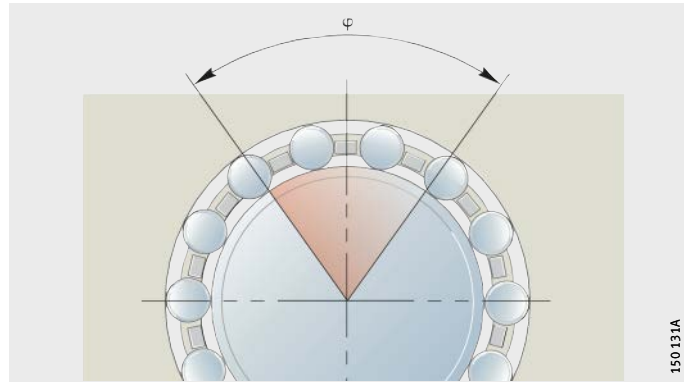


Figure 5
Angle of oscillation φ

Symbols, units and definitions

n	min^{-1}	Mean speed
T	min	Time period under consideration
n_i, $n(t)$	min^{-1}	Bearing speed for a particular operating condition
P	N	Equivalent bearing load
p	–	Life exponent; for roller bearings: p = 10/3 for ball bearings: p = 3
a_i, $a(t)$	–	Life adjustment factor a_{ISO} for current operating condition, see page 46
F_i, $F(t)$	N	Bearing load for a particular operating condition
q_i	%	Duration of operating condition as a proportion of the total operating period; $q_i = (\Delta t_i / T) \cdot 100$
n_{osc}	min^{-1}	Frequency of oscillating motion
φ	°	Angle of oscillation, *Figure 5*.

Requisite rating life

If no information is available on the rating life, the guide values from the tables may be used.

Do not overspecify the bearings, otherwise it may not be possible to observe the minimum load, see the design and safety guidelines in the product sections.

Agricultural machinery

Mounting location	Recommended rating life h Ball bearings		Operating life h	
	from	to	from	to
Self-propelled machinery	1 700	4 000	2 000	6 000
Seasonal machinery	500	1 700	500	2 000

Construction machinery

Mounting location	Recommended rating life h Ball bearings		Operating life h	
	from	to	from	to
Dozers, loaders	4 000	7 800	5 000	10 000
Excavators, travelling gear	500	1 700	500	2 000
Excavators, slewing gear	1 700	4 000	2 000	5 000
Vibratory road rollers, unbalance generators	1 700	4 000	5 000	30 000
Vibrator bodies	500	1 700	500	2 000

Rolling mills, steelworks equipment

Mounting location	Recommended rating life h Ball bearings		Operating life h	
	from	to	from	to
Roll stands	500	14 000	2 000	10 000
Rolling mill gearboxes	14 000	32 000	20 000	40 000
Roller tables	7 800	21 000	20 000	40 000
Centrifugal casting machines	21 000	46 000	30 000	60 000

Conveying equipment

Mounting location	Recommended rating life h Ball bearings		Operating life h	
	from	to	from	to
Belt drives, opencast mining	–	–	10 000	30 000
Conveyor belt rollers, opencast mining	46 000	63 000	10 000	30 000
Conveyor belt rollers, general	7 800	21 000	10 000	30 000
Belt drums	–	–	10 000	30 000
Bucket wheel excavators, travel drive	7 800	21 000	5 000	15 000
Bucket wheel excavators, bucket wheel	–	–	30 000	50 000
Bucket wheel excavators, bucket wheel drive	46 000	83 000	30 000	50 000
Winding cable sheaves	32 000	46 000	50 000	80 000
Sheaves	7 800	21 000	8 000	30 000

Fans

Mounting location	Recommended rating life h Ball bearings		Operating life h	
	from	to	from	to
Ventilators, fans	21 000	46 000	20 000	100 000
Large fans	32 000	63 000	10 000	–

Textile machinery

Mounting location	Recommended rating life h Ball bearings		Operating life h	
	from	to	from	to
Spinning machines, spinning spindles	21 000	46 000	10 000	50 000
Weaving and knitting machines	14 000	32 000	10 000	50 000

Plastics processing

Mounting location	Recommended rating life h Ball bearings		Operating life h	
	from	to	from	to
Plastics worm extruders	14 000	21 000	20 000	100 000
Rubber and plastics calenders	21 000	46 000	20 000	100 000

Printing machinery

Mounting location	Recommended rating life h Ball bearings		Operating life h	
	from	to	from	to
Printing machinery	32 000	46 000	30 000	60 000

Operating life

The operating life is defined as the life actually achieved by the bearing. It may differ significantly from the calculated value.

This may be due to wear or fatigue as a result of:

- deviations in the operating data
- misalignment between the shaft and housing
- insufficient or excessive operating clearance
- contamination
- inadequate lubrication
- excessive operating temperature
- oscillating bearing motion with very small angles of oscillation (false brinelling)
- high vibration and false brinelling
- very high shock loads (static overloading)
- prior damage during installation.



Due to the wide variety of possible mounting and operating conditions, it is not possible to precisely predetermine the operating life. The most reliable way of arriving at a close estimate is by comparison with similar applications.

Static load carrying capacity

If high, static or shock loads occur, the raceways and rolling elements may undergo plastic deformation. These deformations limit the static load carrying capacity of the rolling bearing with respect to the permissible noise level during operation of the bearing.

Rolling bearings that undergo rotary movement only rarely or not at all are specified in accordance with the basic static load rating C_0.

This is, according to DIN ISO 76, a constant radial load C_{0r} for radial bearings.

The basic static load rating C_0 is that load at which the Hertzian pressure between the rolling elements and the raceways reaches the following values at the most heavily loaded point:

- for ball bearings, 4 200 N/mm^2.

Under normal contact conditions, this load causes a permanent deformation at the contact points of approx. 1/10 000 of the rolling element diameter.

Static load safety factor

In addition to specification on the basis of the fatigue life, it is advisable to check the static load safety factor.

The static load safety factor S_0 is the ratio between the basic static load rating C_0 and the equivalent static load P_0:

$$S_0 = \frac{C_0}{P_0}$$

S_0 –
Static load safety factor

C_0 (C_{0r}, C_{0a}) N
Basic static load rating

P_0 (P_{0r}, P_{0a}) N
Equivalent static load on the radial or axial bearing, see page 41.

Guide values and shock loads occurring during operation must be taken into consideration, see table.

Guide values for the static load safety factor S_0

Operating conditions	Static load safety factor S_0 for ball bearings
Smooth, low-vibration, normal operation with minimal demands for smooth running; bearings with slight rotary motion	≧ 0,5
Normal operation with higher requirements for smooth running	≧ 1
Operation with pronounced shock loads	≧ 2
Bearing arrangement with high demands for running accuracy and smooth running	≧ 3

Friction

The friction in a rolling bearing is made up of several components, see table. Due to the large number of influencing factors, such as dynamics in speed and load, tilting and skewing resulting from installation, actual frictional torques and frictional power may deviate significantly from the calculated values. If the frictional torque is an important design criterion, please consult the Schaeffler engineering service.

The idling friction is dependent on the lubricant quantity, speed, operating viscosity of the lubricant, seals and the running-in condition of the bearing.

Frictional component and influencing factor

Frictional component	Influencing factor
Rolling friction	Magnitude of load
Sliding friction of rolling elements, sliding friction of cage	Magnitude and direction of load Speed and lubrication conditions, running-in condition
Fluid friction (flow resistance)	Type and speed Type, quantity and operating viscosity of lubricant
Seal friction	Type and preload of seal

Further information

Detailed calculation of friction in rolling bearings:

- BEARINX-online Easy Friction, http://bearinx-online-easy-friction.schaeffler.com
- publication PBR, BEARINX-online Easy Friction
- download and ordering: http://medien.schaeffler.de

Heat dissipation

Friction is converted into heat. This must be dissipated from the bearing. The equilibrium between the frictional power and heat dissipation allows calculation of the thermally safe operating speed n_ϑ, see page 58.

Grease does not give dissipation of heat.

Heat dissipation via the shaft and housing

Heat dissipation via the shaft and housing is dependent on the temperature differential between the bearing and its environment, *Figure 1*.

Any additional adjacent sources of heat or thermal radiation must be taken into consideration.

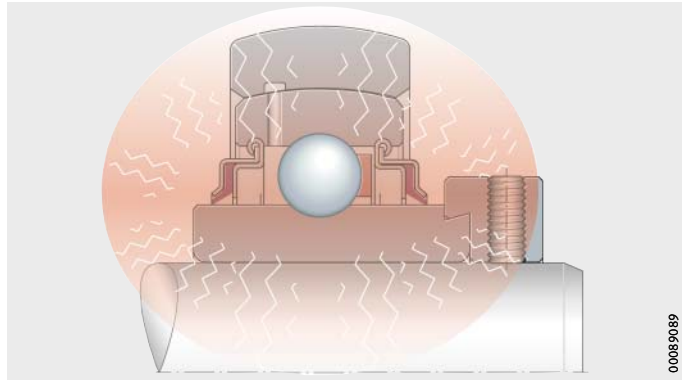


Figure 1
Temperature distribution between bearing, shaft and housing

Calculation of friction values

For this process, the speed and load must be known. The type of lubrication, lubrication method and viscosity of the lubricant at operating temperature are other factors necessary for calculation.

Total frictional torque M_R:

$$M_R = M_0 + M_1$$

Frictional power N_R:

$$N_R = M_R \cdot \frac{n}{9550}$$

Frictional torque as a function of speed for $\nu \cdot n \geqq 2\,000$:

$$M_0 = f_0 \cdot (\nu \cdot n)^{2/3} \cdot {d_M}^3 \cdot 10^{-7}$$

Frictional torque as a function of speed for $\nu \cdot n < 2\,000$:

$$M_0 = f_0 \cdot 160 \cdot {d_M}^3 \cdot 10^{-7}$$

Frictional torque as a function of load for ball bearings:

$$M_1 = f_1 \cdot P_1 \cdot d_M$$

M_R Nmm
Total frictional torque

M_0 Nmm
Frictional torque as a function of speed

M_1 Nmm
Frictional torque as a function of load

N_R W
Frictional power

n min^{-1}
Operating speed

f_0 –
Bearing factor for frictional torque as a function of speed, see tables, page 56

ν mm^2s^{-1}
Kinematic viscosity of lubricant at operating temperature. In the case of grease, the decisive factor is the viscosity of the base oil at operating temperature

d_M mm
Mean bearing diameter (d + D)/2

f_1 –
Bearing factor for frictional torque as a function of load, see tables, page 56

P_1 N
Decisive load for frictional torque.

Bearing factors

The bearing factors f_0 and f_1 are mean values from series of tests and correspond to the data in accordance with ISO 15312.

They are valid for bearings after running-in and with uniform distribution of lubricant. In the freshly greased state, the bearing factor f_0 can be two to five times higher.

Bearing factors for deep groove ball bearings

Series	Bearing factor	
	f_0 Grease	f_1
60	1,1	$0{,}0007 \cdot (P_0/C_0)^{0,5}$
62	1,3	$0{,}0009 \cdot (P_0/C_0)^{0,5}$
63	1,5	$0{,}0009 \cdot (P_0/C_0)^{0,5}$

Bearing factors for double row angular contact ball bearings

Series	Bearing factor	
	f_0 Grease	f_1
30..-B, 30..-B-2RSR, 30..-B-2Z	2,3	$0{,}001 \cdot (P_0/C_0)^{0,33}$
32..-B, 32..-B-2RSR, 32..-B-2Z, 32	2,3	$0{,}001 \cdot (P_0/C_0)^{0,33}$
38..-B, 38..-B-2RSR, 38..-B-2Z	2,3	$0{,}001 \cdot (P_0/C_0)^{0,33}$
33..-B, 33..-B-2RSR, 33, 33..-DA	4	$0{,}001 \cdot (P_0/C_0)^{0,33}$

Decisive load for ball bearings

Bearing type	Load[1] P_1 Single bearing
Deep groove ball bearings	$3{,}3 \cdot F_a - 0{,}1 \cdot F_r$
Angular contact ball bearings, double row	$1{,}4 \cdot F_a - 0{,}1 \cdot F_r$

[1] $\overline{\text{For } P_1 \leqq F_r}$, $P_1 = F_r$.

Speeds

Criteria for speed limitation

The highest permissible speed for a rolling bearing may be restricted by various criteria. The most frequent decisive factor is the increasing operating temperature with increasing speed.

The permissible speed is also dependent on the design of the entire bearing arrangement, in other words the rolling bearing itself, its type, size, accuracy and cage design as well as on the operating conditions. These comprise the magnitude and direction of the load, the lubrication method, the type and quantity of the lubricant, the environment (design layout and accuracy of the adjacent parts) as well as the dissipation of heat via the adjacent parts.

Limiting speed

The limiting speed n_G is based on practical experience and takes account of additional criteria such as smooth running, sealing function and centrifugal forces.

The limiting speeds indicated in the dimension tables should not be exceeded even under favourable operating conditions without prior consultation with Schaeffler.

Thermal reference speed

The thermal reference speed $n_{\vartheta r}$ was introduced as a parameter for the speed suitability of rolling bearings. On the basis of DIN 732, calculation of the thermal reference speed $n_{\vartheta r}$ has been standardised in ISO 15312.

The thermal reference speed $n_{\vartheta r}$ is used as an ancillary value when calculating the thermally safe operating speed n_ϑ. This is the speed at which, under defined reference conditions, the bearing temperature settles at +70 °C.

The thermal reference speed is not a speed limit for the application of a bearing. It is primarily for the purpose of comparing the speed suitability of different bearing types under defined reference conditions. A speed limit taking account of the thermal balance can be calculated using the thernally safe operating speed.

Speeds

Reference conditions

The reference conditions are based on the normal operating conditions of the most significant bearing types and sizes.

They are defined in ISO 15312 as follows:

- reference temperature of the environment of the rolling bearing $\vartheta_{Ar} = +20\ °C$
- reference temperature at the stationary outer ring $\vartheta_r = +70\ °C$
- radial bearings with nominal contact angle $0° \leqq \alpha_0 \leqq 45°$
  - The reference load P_{1r} is 5% of the basic static load rating C_0 as a pure constant radial load
  - $P_{1r} = 0{,}05 \cdot C_{0r}$
- kinematic viscosity of the lubricant under reference conditions (in the case of radial bearings) $\nu_r = 12\ mm^2s^{-1}$ (ISO VG 32)
- heat dissipation via the bearing seating surfaces, see equations:

Heat flow density

Radial bearing, bearing seat $A_r \leqq 50\,000\ mm^2$:

$$q_r = 0{,}016\ W/mm^2$$

Radial bearing, bearing seat $A_r > 50\,000\ mm^2$:

$$q_r = 0{,}016 \cdot \left(\frac{A_r}{50\,000}\right)^{-0{,}34}\ W/mm^2$$

Heat-dissipating reference surface

Bearing seating surface for radial bearings:

$$A_r = \pi \cdot B \cdot (D + d)$$

Thermally safe operating speed

If the operating conditions deviate from the reference conditions, there will be an increase in friction and thus in heat generation in the rolling bearing.

The method for calculating the thermally safe operating speed n_ϑ is standardised in DIN 732. On this basis, the thermally safe operating speed is the speed at which, under operating conditions, the mean bearing temperature reaches the permissible value.

Calculation of the thermally safe operating speed n_ϑ is based on the thermal balance in the rolling bearing. In accordance with the definition of the thermal reference speed according to ISO 15312, the speed is determined at which the rolling bearing reaches the permissible bearing temperature for the application.

For calculation, it is assumed that normal operating clearance and constant operating conditions are present.

In addition to the thermally safe operating speed, the limiting speed n_G must always be observed.

Limits of the calculation method

The calculation method is not valid for sealed rolling bearings with contact seals; the maximum speed is restricted by the permissible sliding velocity at the seal lip.

Calculation of the thermally safe operating speed

The thermally safe operating speed n_ϑ is a product of the reference speed $n_{\vartheta r}$ and the speed ratio f_n:

$$n_\vartheta = n_{\vartheta r} \cdot f_n$$

The speed ratio is derived from *Figure 1*, page 60:

$$K_L \cdot f_n^{5/3} + K_p \cdot f_n = 1$$

In the normal operating range of $0{,}01 < K_L < 10$ and $0{,}01 < K_P < 10$, f_n can be calculated using an approximation equation:

$$f_n = \frac{490{,}77}{1 + 498{,}78 \cdot K_L^{\,0{,}599} + 852{,}88 \cdot K_p^{\,0{,}963} - 504{,}5 \cdot K_L^{\,0{,}055} \cdot K_p^{\,0{,}832}}$$

Heat dissipation via the bearing seating surfaces $\dot{Q}_S$, *Figure 2*, page 60:

$$\dot{Q}_S = k_q \cdot A_r \cdot \Delta\vartheta_A$$

Heat dissipation by the lubricant $\dot{Q}_L$:

$$\dot{Q}_L = 0{,}0286 \frac{\text{kW}}{\text{l/min} \cdot \text{K}} \cdot \dot{V}_L \cdot \Delta\vartheta_L$$

Total dissipated heat flow $\dot{Q}$:

$$\dot{Q} = \dot{Q}_S + \dot{Q}_L - \dot{Q}_E$$

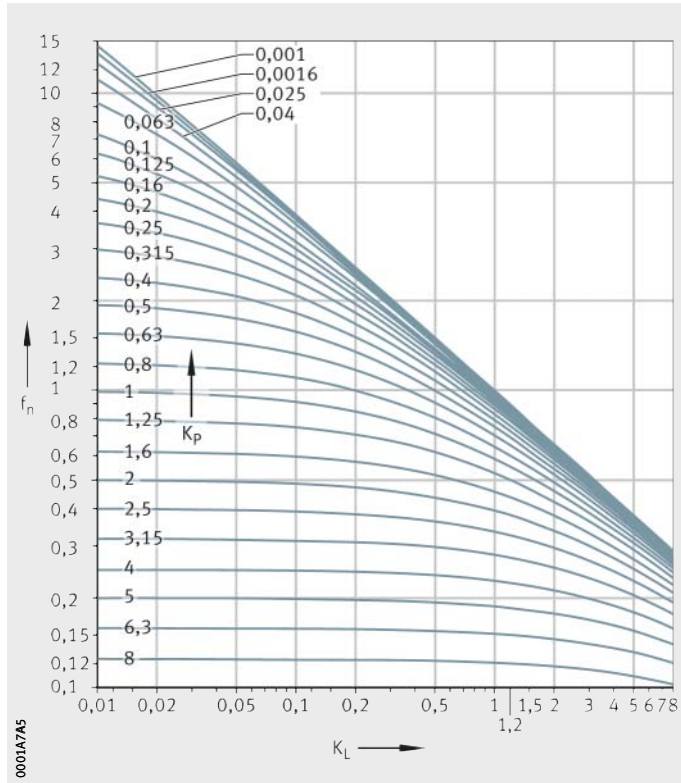
Lubricant film parameter k_L:

$$K_L = 10^{-6} \cdot \frac{\pi}{30} \cdot n_{\vartheta r} \cdot \frac{10^{-7} \cdot f_0 \cdot \left(\nu \cdot n_{\vartheta r}\right)^{\frac{2}{3}} \cdot d_M^{\,3}}{\dot{Q}}$$

Load parameter k_P:

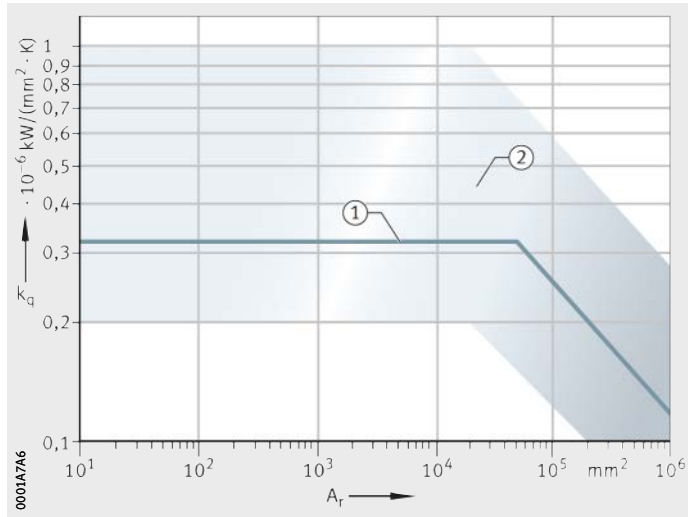
$$K_P = 10^{-6} \cdot \frac{\pi}{30} \cdot n_{\vartheta r} \cdot \frac{f_1 \cdot P_1 \cdot d_M}{\dot{Q}}$$

Speeds



f_n = speed ratio
K_L = lubricant film parameter
K_p = load parameter

Figure 1
Speed ratio as a function of lubricant film



k_q = heat transition coefficient
A_r = bearing seating surface

① Reference condition for radial bearings
② Heat transition coefficient k_q for normal applications with bearing seating surfaces up to A_r = 50 000 mm²

Figure 2
Heat transition coefficient, as a function of the bearing seating surface

Symbols, units and definitions

q_r W/mm²
Heat flow density

A_r mm²
Bearing seating surface for radial bearings: $A_r = \pi \cdot B \cdot (D + d)$

B mm
Bearing width

D mm
Bearing outside diameter

d mm
Bearing bore diameter

n_ϑ min^{-1}
Thermally safe operating speed

$n_{\vartheta r}$ min^{-1}
Reference speed

f_n –
Speed ratio, *Figure 1*, page 60

K_L –
Lubricant film parameter

K_P –
Load parameter

$\dot{Q}_S$ kW
Heat flow dissipated via the bearing seating surfaces

k_q 10^{-6} kW/(mm² · K)
Heat transition coefficient of bearing seating surface, *Figure 2*, page 60. This is dependent on the housing design and size, the housing material and the mounting position. For normal applications, the heat transition coefficient for bearing seating surfaces up to 25 000 mm² is between $0{,}2 \cdot 10^{-6}$ kW/(mm² · K) and $1{,}0 \cdot 10^{-6}$kW/(mm² · K)

$\Delta\vartheta_A$ K
Differential between mean bearing temperature and ambient temperature

$\dot{Q}_L$ kW
Heat flow dissipated by the lubricant

$\dot{V}_L$ l/min
Oil flow

$\Delta\vartheta_L$ K
Differential between oil inlet temperature and oil outlet temperature

$\dot{Q}$ kW
Total dissipated heat flow

$\dot{Q}_E$ kW
Heat flow due to heating by external source

ν mm² · s^{-1}
Kinematic viscosity of lubricant at operating temperature

d_M mm
Mean bearing diameter (D + d)/2

f_1 –
Bearing factor for frictional torque as a function of load, see section Friction and increases in temperature, page 54

P_1 N
Radial load for radial bearings, axial load for axial bearings

f_0 –
Bearing factor for frictional torque as a function of speed, see section Friction and increases in temperature, page 54.

Lubrication

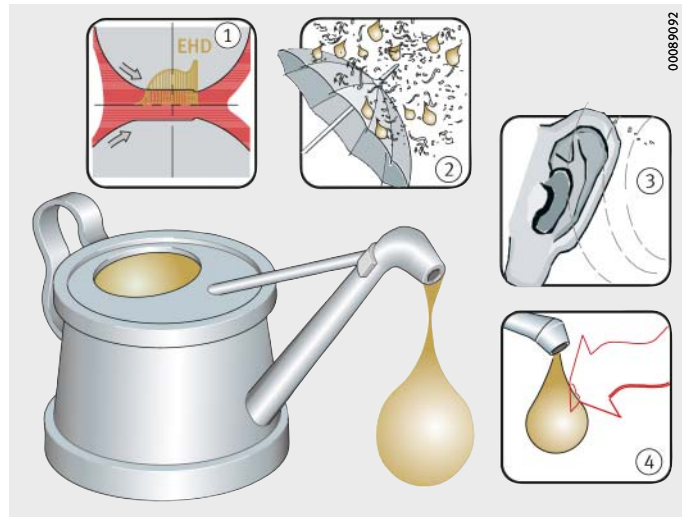
Principles

Lubrication and maintenance are important for the reliable operation and long operating life of rolling bearings.

Functions of the lubricant

The functions of the lubricant are as follows, *Figure 1*:

- A lubricant film is formed on the contact surfaces that is sufficiently capable of supporting loads and thus preventing wear and premature fatigue ①.
- When grease lubrication is used, the bearing is additionally sealed against the entry of both solid and fluid contaminants ②.
- Running noise is damped ③.
- Protection is provided against corrosion ④.



① Lubricant film capable of supporting loads
② Sealing against contamination
③ Damping of noise
④ Protection against corrosion

Figure 1
Functions of the lubricant

Design of lubrication system

Design guidelines for the feed ducts and lubrication holes in the housings and shafts, *Figure 2*:

- They should lead directly to the lubrication hole in the rolling bearing.
- They should be as short as possible.

Follow the guidelines provided by the manufacturers of the lubrication devices.

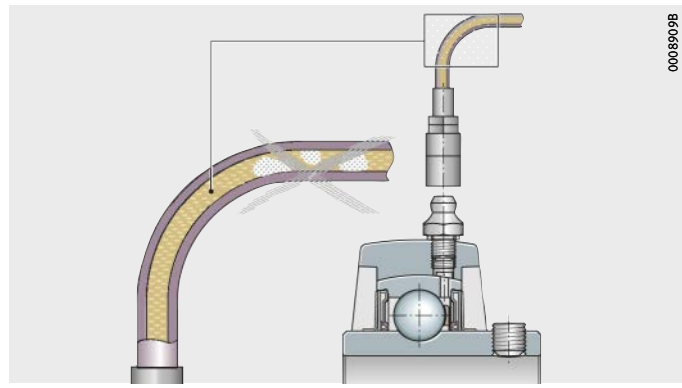


Figure 2
Design of the lubricant feed system

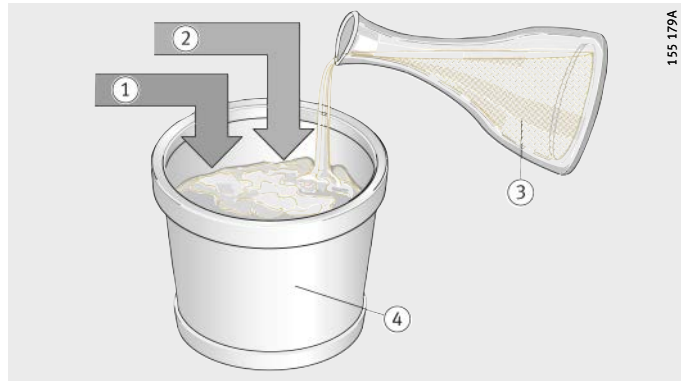
Grease lubrication

Greases can be differentiated in terms of their thickeners and base oils.

Composition of a grease

Conventional greases have metal soaps as thickeners and a mineral base oil, *Figure 3*. They also contain additives. These have a specific influence on, for example, the characteristics in relation to wear prevention, anti-corrosion protection or resistance to ageing. These combinations of additives are not, however, fully effective across every temperature and load range.

Greases exhibit widely varying behaviour in response to environmental influences such as temperature and moisture.



① Thickener
② Additives
③ Base oil
④ Grease

Figure 3
Type of grease

Lubricants must always be checked for their compatibility in relation to:

- other lubricants
- anti-corrosion agents
- thermoplastics, thermosets and elastomers
- light and non-ferrous metals
- coatings
- colouring agents and paints
- environmental compatibility:
  - toxicity
  - biological degradability
  - water pollution class.

Type of grease

The characteristics of a grease are influenced by:

- the base oil
- the viscosity of the base oil
  (this is important for the speed range)
- the thickener
  (the shear strength is important for the speed range)
- the additive package.

Consistency of greases

Greases are subdivided into consistency classes
(NLGI grades in accordance with DIN 51818).

For rolling bearings, grades 1, 2, 3 should be used in preference, *Figure 4*.

NLGI grades

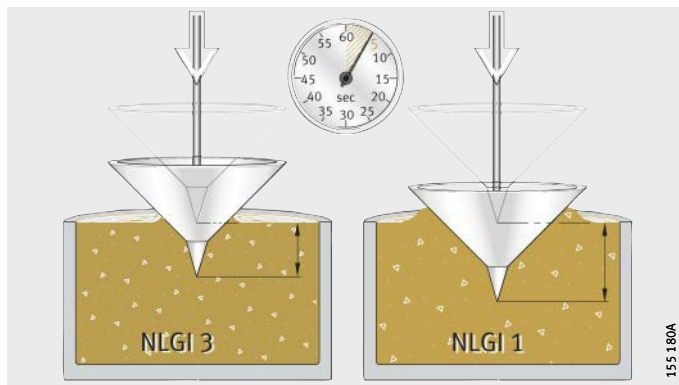


Figure 4
Consistency of greases

Selection of suitable grease

Rolling bearing greases K in accordance with DIN 51825 are suitable.

Greases should be selected in accordance with the operating conditions of the bearing:

- temperature
- compressive load, see page 67
- speed, see page 67
- the presence of water and moisture, see page 67.

Operating temperature range

The operating temperature range of the grease must correspond to the range of possible operating temperatures in the rolling bearing.

Grease manufacturers indicate an operating temperature range for their rolling bearing greases K in accordance with DIN 51825.

The upper value is determined in accordance with DIN 51821 by means of testing on the FAG rolling bearing grease test rig FE 9. At the upper operating temperature, a 50% failure probability rate (F_{50}) of at least 100 hours must be achieved in this test.

The lower value is defined in accordance with DIN 51825 by means of flow pressure. The flow pressure of a grease is the pressure required to press a stream of grease through a defined nozzle. For greases of type K, the flow pressure at the lower operating temperature must be less than 1 400 mbar.

The use of flow pressure in determining the lower operating temperature only indicates, however, whether the grease can be moved at this temperature. This cannot be used to give an indication of its suitability for use in rolling bearings at low temperatures.

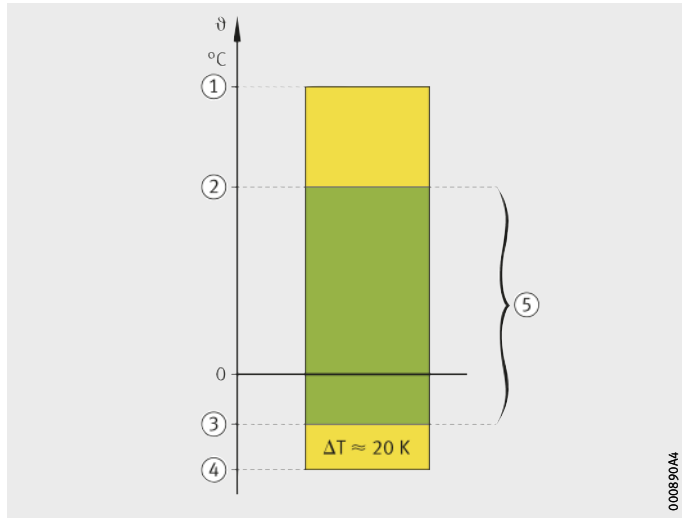
In addition to the lower operating temperature of a grease, therefore, the low temperature frictional torque is also determined in accordance with ASTM D 1478 or IP 186/93. At the lower operating temperature, the starting torque must not exceed 1 000 Nmm and the running torque must not exceed 100 Nmm.

Schaeffler recommends that greases should be used in accordance with the bearing temperature normally occurring in the standard operating range in order to achieve a reliable lubricating action and an acceptable grease operating life, *Figure 5*.

At low temperatures, greases release very little base oil.
This can result in lubricant starvation. Schaeffler therefore recommends that greases are not used below the lower continuous limit temperature $\vartheta_{lowerlimit}$, *Figure 5*. This is approx. 20 K above the lower operating temperature of the grease as indicated by grease manufacturers.

The upper continuous limit temperature $\vartheta_{upperlimit}$ must not be exceeded if a temperature-induced reduction in the grease operating life is to be avoided, see page 70.

At consistently low temperatures (for example in cold store applications), it must be ensured that the grease releases sufficient oil in relation to the bearing type.



ϑ = operating temperature
ΔT = temperature differential

① Upper operating temperature according to grease manufacturer
② $\vartheta_{upperlimit}$
③ $\vartheta_{lowerlimit}$
④ Lower operating temperature according to grease manufacturer
⑤ Standard operating range

Figure 5
Operating temperature range

Pressure capacity

The viscosity at operating temperature must be sufficiently high for the formation of a lubricant film capable of supporting loads. At high loads, greases with EP characteristics (“extreme pressure”) and high base oil viscosity should be used (KP grease in accordance with DIN 51825). Such greases should also be used for bearings with a substantial sliding component and with line contact.

Silicone greases should only be used at low loads (P ≦ 3% C).

Greases with solid lubricants should preferably be used for applications with mixed or boundary friction conditions. The solid lubricant particle size must not exceed 5 μm.

Speed

Greases should be selected in accordance with the speed parameter $n \cdot d_M$ for grease, see table, page 69:

- For rolling bearings running at high speeds or with a low starting torque, greases with a high speed parameter should be used.
- For bearings running at low speeds, greases with a low speed parameter should be used.

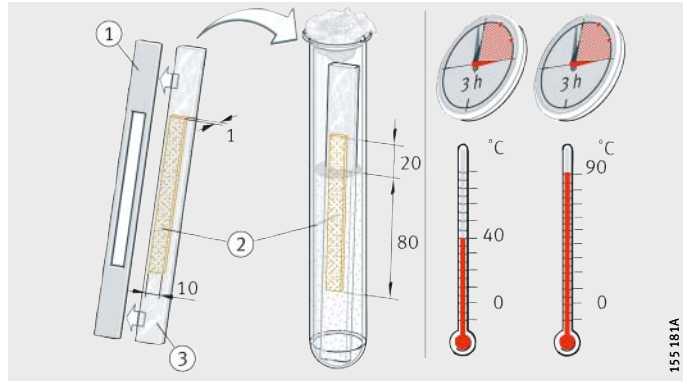
Under centrifugal accelerations > 500 g, separation (of the thickener and base oil) may occur. In this case, please consult the lubricant manufacturer.

The consistency of polycarbamide greases can be altered by shear stresses to a greater extent than that of metal soap greases.

Water and moisture

Water in the grease has a highly detrimental effect on the operating life of the bearing:

- The static behaviour of greases in the presence of water is assessed in accordance with DIN 51807, *Figure 6*.
- The anti-corrosion characteristics can be tested according to DIN 51802 (Emcor test) (information is given in the datasheets from the grease manufacturers).



① Blank
② Grease specimen
③ Glass slide

Figure 6
Behaviour in the presence of water in accordance with DIN 51807

Greases with special suitability

Many of the rolling bearings supplied by Schaeffler have a grease filling. The greases used have proved particularly suitable for the applications in mechanical-dynamic tests, see table.

Greases

Designation[1]	Classification	Type of grease
GA13	Standard ball bearing and radial insert ball bearing grease for D > 62 mm	Lithium soap Mineral oil
GA22	Free-running grease with low frictional torque	Lithium soap Ester oil
L069[4]	Radial insert ball bearing grease for wide temperature range	Polycarbamide Ester oil
GA11	Rolling bearing grease resistant to media for temperatures up to +250 °C	PTFE Alkoxyfluoroether
GA47	Rolling bearing grease resistant to media for temperatures up to +140 °C	Barium complex soap Mineral oil
L178	Rolling bearing grease for high speeds	Barium complex soap PAO oil

1) GA.. stands for **G**rease **A**pplication Group.., based on Grease Spec 00.

2) The upper continuous limit temperature $\vartheta_{upperlimit}$ must not be exceeded if a temperature-induced reduction in grease operating life is to be avoided.

3) Dependent on bearing type.

4) Since January 2008, the grease L069 has been used in radial insert ball bearings instead of L014 and L086.

Operating temperature range °C		Upper continuous limit temperature $\vartheta_{upperlimit}$ [2] °C	NLGI grade		Speed parameter $n \cdot d_M$ $min^{-1} \cdot mm$	ISO-VG grade (base oil) [3]		Designation [1]	Recommended Arcanol grease for relubrication
from	to		from	to		from	to		
–30	+120	+75	3	–	500 000	68	150	**GA13**	**MULTI3**
–50	+120	+70	2	–	1 500 000	10	22	**GA22**	–
–40	+180	+120	2	–	700 000	68	220	**L069** [4]	–
–30	+260	+200	2	–	300 000	460	680	**GA11**	**TEMP200**
–20	+130	+70	1	2	350 000	150	320	**GA47**	–
–20	+142	+75	2	–	800 000	22	46	**L178**	–

Arcanol rolling bearing greases

For users who wish to charge their rolling bearings with grease themselves, there is a range of particularly suitable Arcanol rolling bearing greases.

These greases are graded in terms of their performance capability such that they can be used to cover almost all areas of application.

Grease operating life

The grease operating life t_{fG} describes the period over which the grease is capable, without relubrication, of lubricating the bearing to an adequate extent. Once the grease operating life has been reached, function of the bearing is only conditionally possible and the bearing will fail relatively quickly as a result of lubricant failure.

The grease operating life is therefore a decisive value if it is shorter than the calculated bearing life. It applies where rolling bearings cannot be relubricated.

It is influenced by the following factors:

- the grease quantity and distribution
- the type of grease (thickener, base oil, additives)
- the production process of the grease
- the bearing type and size
- the magnitude and type of load
- the speed parameter $n \cdot d_M$
- the bearing temperature
- the mounting conditions.

Approximation equation for grease operating life

A guide value for the grease operating life t_{fG} can be determined in approximate terms as follows:

$$t_{fG} = t_f \cdot K_T \cdot K_P \cdot K_R \cdot K_U$$

t_{fG} h
Guide value for grease operating life

t_f h
Basic grease operating life, see page 71

K_T –
Correction factor for temperature, see page 72

K_P –
Correction factor for load, see page 73

K_R –
Correction factor for oscillation, see page 74

K_U –
Correction factor for environment, see page 75.

If the outer ring rotates, there may be a reduction in the grease operating life. If a grease operating life $>$ 3 years is required, this should be agreed in consultation with the lubricant manufacturer.

The grease operating life cannot be determined using the method described in the following cases:

- Air is sucked through the rolling bearing during operation
  – risk of increased grease oxidation.
- Contamination, water or other fluids enter the bearings.
- There is no bearing type factor k_f, see table, page 71.

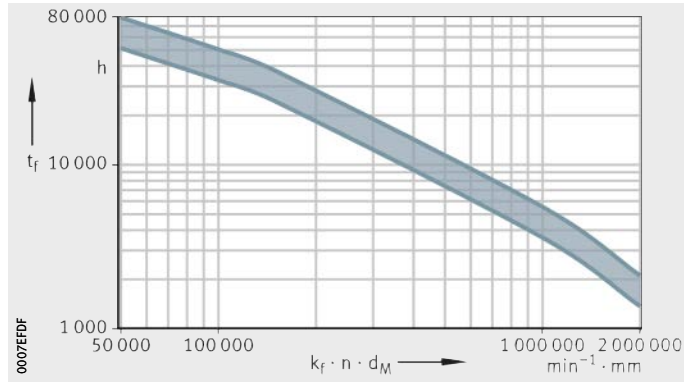
Basic grease operating life

The basic grease operating life t_f is valid under the following preconditions and is dependent on the bearing-specific speed parameter $k_f \cdot n \cdot d_M$, see table and *Figure 7*.

Preconditions for the basic grease operating life

	Precondition
Bearing temperature	< upper continuous limit temperature $\vartheta_{upperlimit}$
Load ratio	$C_0/P = 20$
Speed and load	Constant
Load in main direction	Radial bearing, radial
Axis of rotation	Horizontal for radial bearings
Inner ring	Rotating
Environmental influences	No disruptive influences

k_f –
Bearing type factor, see table
n min^{-1}
Operating speed or equivalent speed
d_M mm
Mean bearing diameter (d + D)/2.



t_f = basic grease operating life
$k_f \cdot n \cdot d_M$ = bearing-specific speed parameter

Figure 7
Calculation of basic grease operating life

Factor k_f, as a function of bearing type

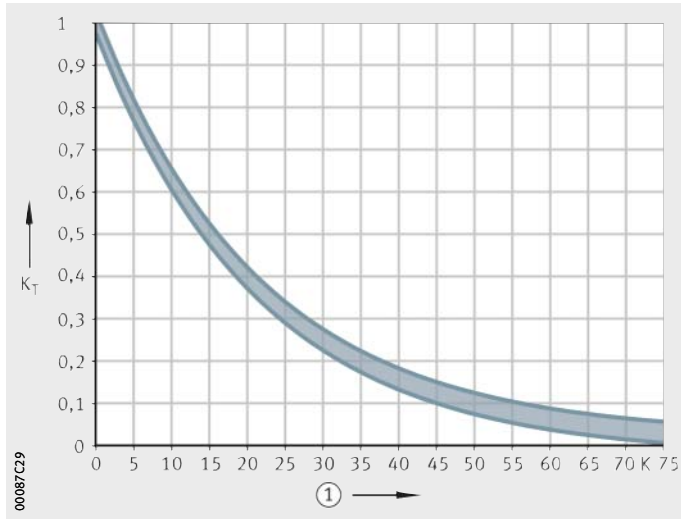
Bearing type	Factor k_f
Deep groove ball bearings, single row	1
Angular contact ball bearings, double row	2
Radial insert ball bearings, housing units	1

Temperature correction factor K_T

The ageing rate of greases increases as the temperature increases above the continuous limit temperature. As a rule of thumb, the following applies: an increase in temperature of 15 K will reduce the grease operating life by half. In the case of high grade greases, however, this effect is only pronounced above the so-called upper continuous limit temperature $\vartheta_{upperlimit}$, *Figure 5*, page 66.

If the bearing temperature is above $\vartheta_{upperlimit}$, the reduction in the grease operating life due to temperature must be determined, *Figure 8*.

The diagram must not be used if the bearing temperature is higher than the upper operating temperature of the grease used, see table Greases, page 68. If necessary, a different grease must be selected or contact must be made with Schaeffler.



K_T = temperature factor

① K above $\vartheta_{upperlimit}$

Figure 8
Temperature factor K_T

Load correction factor K_P

Under higher bearing load, greases are subjected to greater strain. As a function of the load ratio C_0/P and the bearing type, this influence can be taken into consideration using the factor K_P, *Figure 9* and table.

Basis:
lithium soap greases of high quality

K_P = load factor

C_0/P = ratio between basic static load rating and equivalent dynamic bearing load

① Bearing type, see table

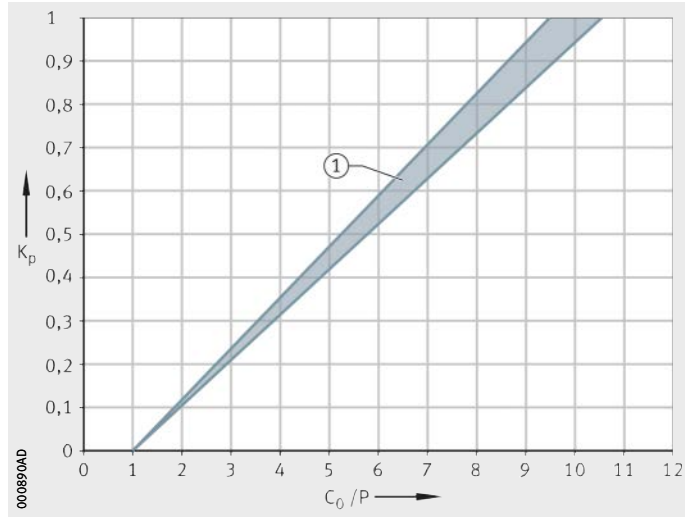


Figure 9
K_P factor for bearings

K_P factor

Curve[1)]	Bearing type
①	Deep groove ball bearings, single row
	Angular contact ball bearings, double row
	Radial insert ball bearings, housing units

1) Curves, see *Figure 9*.

Oscillation correction factor K_R

Oscillating movements place a higher strain on the grease than continuously rotating bearings. The strain is placed continuously on the same grease volume, since no new grease can be drawn into the lubrication contact.

As a result, the grease at the contact becomes depleted. In order to reduce fretting corrosion, the lubrication interval should be reduced. The reduction-inducing influence can be taken into consideration using the oscillation factor K_R, *Figure 11*.

The factor K_R has an effect at or above an angle of oscillation $\varphi < 180°$, *Figure 10*. At an angle of oscillation $\varphi < 5°$, calculation is no longer possible. In this case, special lubricants must be used.

If the rolling elements do not undergo complete rotation, please contact Schaeffler.

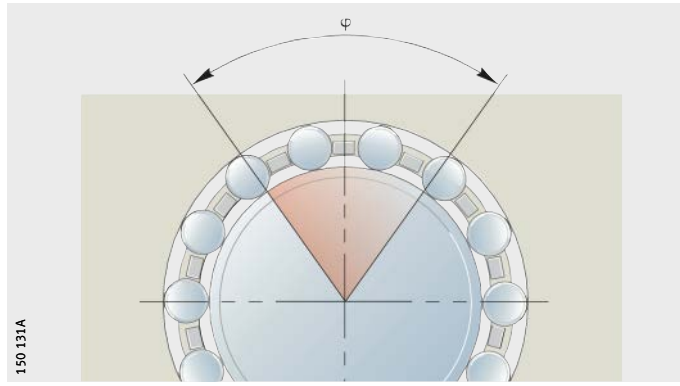
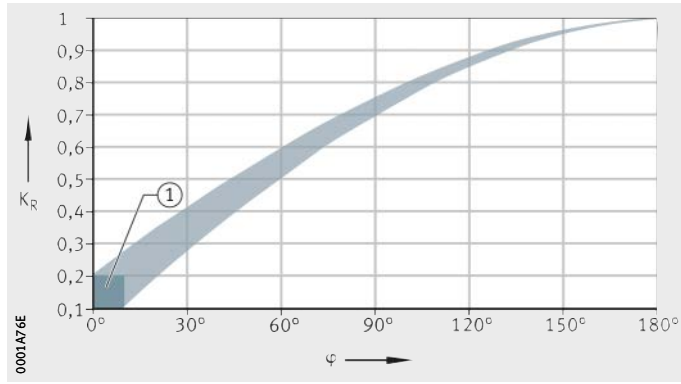


Figure 10
Angle of oscillation φ



K_R = oscillation factor
φ = angle of oscillation

① Angle of oscillation $\varphi < 5°$ requires special lubricants

Figure 11
Oscillation factor K_R

Environmental correction factor K_U

The factor K_U takes account of the influences of moisture, shaking forces, slight vibration (leading to fretting corrosion) and shocks, see table.

It does not take account of extreme environmental influences such as water, aggressive media, contamination, radiation and extreme vibrations such as those occurring in vibratory machines.

In relation to contamination, the influence of contamination on rating life calculation must also be noted, see section Load carrying capacity and life, page 36.

Environmental factor K_U

Environmental influence	Environmental factor K_U
Slight	1
Moderate	0,8
Severe	0,5

Relubrication intervals

If rolling bearings are relubricated, attention must be paid to the lubrication interval in order to ensure reliable function of the bearings.

The precise lubrication interval should be determined by tests conducted under application conditions. In this case:

- Sufficiently long observation periods must be selected.
- The condition of the grease must be checked at regular intervals.

For reasons of operational reliability, relubrication intervals $>$ 1 year are not recommended.

Guide value for relubrication interval

Experience shows that a guide value for most applications is:

$$t_{fR} = 0,5 \cdot t_{fG}$$

t_{fR} h
Guide value for relubrication interval

t_{fG} h
Guide value for grease operating life, see page 70.

Relubrication conditions

The grease used for relubrication must be the same as that used in initial greasing.

If other greases are used, the miscibility and compatibility of the greases must be checked, see page 78.

Relubrication quantity

Due to the compact construction of the bearings, relubrication should be carried out using 50% to 80% of the initial greasing quantity (recommendation).

If feed lines filled with air are present, the filling volume of the feed lines should be included in calculation of the relubrication quantity.

Relubrication

Relubrication should always be carried out as follows:

- with the bearing still warm from operation and rotating if safe to do so
- before the bearing comes to rest
- before extended breaks in operation.

Relubrication should continue until a fresh collar of grease appears at the seal gaps. Old grease must be allowed to leave the bearing unhindered.

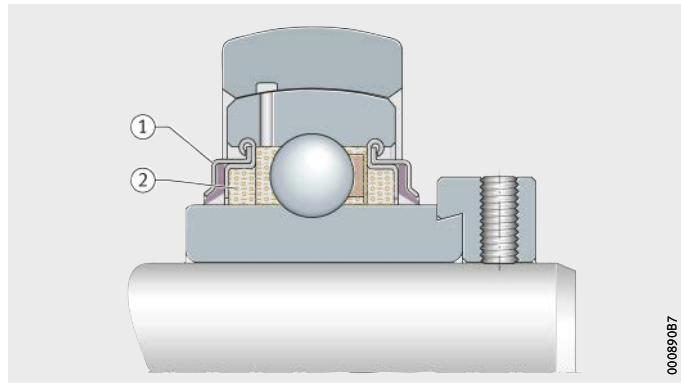
Grease reservoir

The initial greasing quantity is between 30% and 50% of the available volume in the bearing, dependent on the bearing type and operating conditions.

A grease reservoir can extend the grease operating life. The grease in the reservoir must be in constant contact with the grease on the raceway. Increasing the size of the grease reservoir does not lead to a proportional increase in the grease operating life.

The volume of the grease reservoir should correspond to the volume within the bearing area between the inner and outer ring (not taking account of the cage and rolling elements), *Figure 12*.

Evaporation of the base oil should be prevented by design measures, for example by sealing washers.



① Sealing washer
② Grease reservoir

Figure 12
Grease reservoir on both sides

Miscibility

Mixtures of greases should be avoided if at all possible.

Preconditions

If they are unavoidable, the following preconditions must be fulfilled:

- The base oil must be the same.
- The thickener types must match.
- The base oil viscosities must be similar (they must not differ by more than one ISO-VG grade).
- The consistency must be identical (NLGI grade).

Miscibility of greases must be always be agreed in consultation with the lubricant manufacturer.

Even when these preconditions are fulfilled, impairment of the performance capability of the mixed grease cannot be ruled out.

If a decision is taken to change to a different grease grade, the grease should be rinsed out if this is possible. Further relubrication should be carried out after a shortened period.

If incompatible greases are mixed, this can lead to considerable structural changes. Substantial softening of the grease mixture may also occur.

Definite statements on miscibility can only be obtained by means of suitable tests.

Storage

Lubricants age due to environmental influences. The information provided by lubricant manufacturers must always be observed.

Preconditions

In general, the greases used can be stored for 3 years.
The preconditions are:

- a closed room or store
- temperatures between 0 °C and +40 °C
- relative humidity no greater than 65%
- no influence of chemical agents (vapours, gases, fluids)
- sealed rolling bearings.

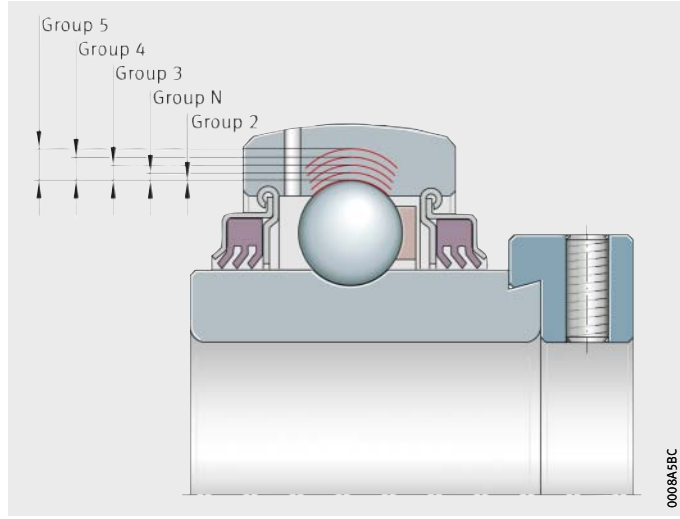
The start-up frictional torque of greased bearings can be temporarily higher than normal after long periods of storage. The lubricity of the grease may also have deteriorated.

Since the lubrication characteristics of greases vary and different raw materials may be used for greases of the same name, Schaeffler cannot offer any guarantees either for the lubricants used by customers for relubrication or for their characteristics.

Radial internal clearance

The radial internal clearance applies to bearings with an inner ring and is determined on the unmounted bearing. It is defined as the amount by which the inner ring can be moved in a radial direction from one extreme position to the other in relation to the outer ring, *Figure 1*.

In accordance with ISO 5753-1 (DIN 620-4), the radial internal clearance is subdivided into groups, *Figure 1* and table.



Group N to Group 5 = internal clearance groups

Figure 1
Radial internal clearance

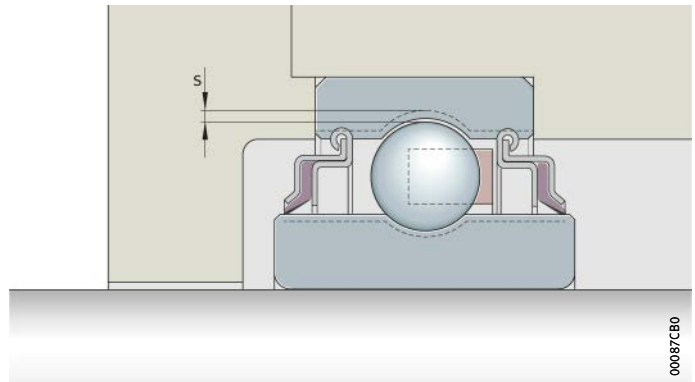
Radial internal clearance groups

Internal clearance group		Description	Application
DIN 620-4	ISO 5753-1		
CN	Group N	Normal internal clearance; CN is not included in bearing designations	For normal operating conditions with shaft and housing tolerances, see Operating clearance and Design of bearing arrangements
C2	Group 2	Internal clearance < CN	For heavy alternating loads combined with swivel motion
C3	Group 3	Internal clearance > CN	For bearing rings with press fits and large temperature differential between the inner and outer ring
C4	Group 4	Internal clearance > C3	
C5	Group 5	Internal clearance > C4	

Operating clearance

The operating clearance is determined on a mounted bearing still warm from operation. It is defined as the amount by which the shaft can be moved in a radial direction from one extreme position to the other, *Figure 2*.

The operating clearance is derived from the radial internal clearance and the change in the radial internal clearance as a result of interference fit and thermal influences in the mounted condition.



s = operating clearance

Figure 2
Operating clearance

Operating clearance value

The size of the operating clearance is dependent on the installation and operating conditions of the bearing, see section Design of bearing arrangements, page 100.

A larger operating clearance is, for example, necessary if heat is transferred via the shaft, the shaft undergoes deflection or if misalignment occurs.

An operating clearance smaller than Group N should only be used in special cases, for example in high precision bearing arrangements.

The normal operating clearance is achieved with the internal clearance Group N or, in the case of larger bearings, predominantly with Group 3 if the recommended shaft and housing tolerances are observed, see section Design of bearing arrangements, page 100.

Calculation of operating clearance

The operating clearance is derived from:

$$s = s_r - \Delta s_P - \Delta s_T$$

s µm
Radial operating clearance of mounted bearing warm from operation

s_r µm
Radial internal clearance

Δs_P µm
Reduction in radial internal clearance due to fit

Δs_T µm
Reduction in radial internal clearance due to temperature.

Reduction in radial internal clearance due to fit

The radial internal clearance is reduced due to the fit as a result of expansion of the inner ring and contraction of the outer ring:

$$\Delta s_P = \Delta d + \Delta D$$

Δd µm
Expansion of the inner ring
ΔD µm
Contraction of the outer ring.

Expansion of the inner ring

The expansion of the inner ring is calculated as follows:

$$\Delta d \approx 0{,}9 \cdot U \cdot d/F \approx 0{,}8 \cdot U$$

U µm
Theoretical interference of the fitted parts with firm seating.
The theoretical oversize of the fitted parts with firm seating is determined from the mean deviations and the upper and lower deviations of the tolerance zones of the fitted parts reduced by $^1/_3$ of their acceptable value. This must be reduced by the amount by which parts are smoothed during fitting
d mm
Bore diameter of the inner ring
F mm
Raceway diameter of the inner ring.

For very thin-walled housings and light metal housings, the reduction in the radial internal clearance must be determined by mounting trials.

Contraction of the outer ring

The contraction of the outer ring is calculated as follows:

$$\Delta D \approx 0{,}8 \cdot U \cdot E/D \approx 0{,}7 \cdot U$$

E mm
Raceway diameter of the outer ring
D mm
Outside diameter of the outer ring.

Reduction in radial internal clearance due to temperature

The radial internal clearance can alter considerably if there is a substantial temperature differential between the inner and outer ring.

$$\Delta s_T = \alpha \cdot d_M \cdot 1\,000 \cdot \left(\vartheta_{IR} - \vartheta_{AR}\right)$$

Δs_T µm
Reduction in radial internal clearance due to temperature
α K^{-1}
Coefficient of thermal expansion of steel: $\alpha = 0{,}000011\ K^{-1}$
d_M mm
Mean bearing diameter (d + D)/2
ϑ_{IR} °C, K
Temperature of the inner ring
ϑ_{AR} °C, K
Temperature of the outer ring
(usual temperature difference between inner and outer ring: 5 K to 10 K).

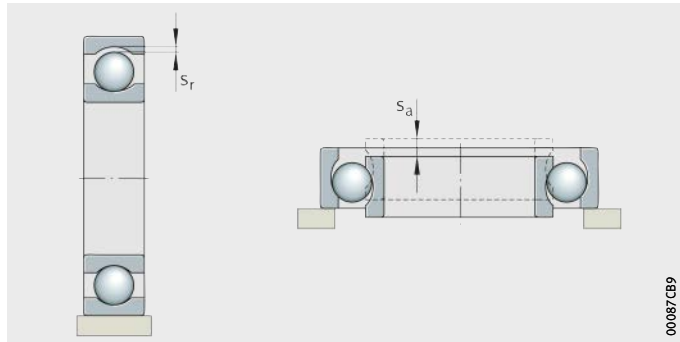
Where shafts start up quickly, a larger radial internal clearance should be used since adequate thermal compensation between the bearing, shaft and housing does not occur in this situation.

Δs_T can, in this case, be significantly higher in this case than for continuous operation.

Axial internal clearance

The axial internal clearance s_a is defined as the amount by which one bearing ring can be moved relative to the other, without load, along the bearing axis, *Figure 3*.

With various bearing types, the radial internal clearance s_r and the axial internal clearance s_a are dependent on each other, see table.



s_a = axial internal clearance
s_r = radial internal clearance

Figure 3
Axial internal clearance in comparison with radial internal clearance

Correlation between axial internal clearance and radial internal clearance

Bearing type		Ratio between axial and radial internal clearance s_a/s_r
Angular contact ball bearings, double row	Series 32 and 33	1,4
	Series 32..-B and 33..-B	2

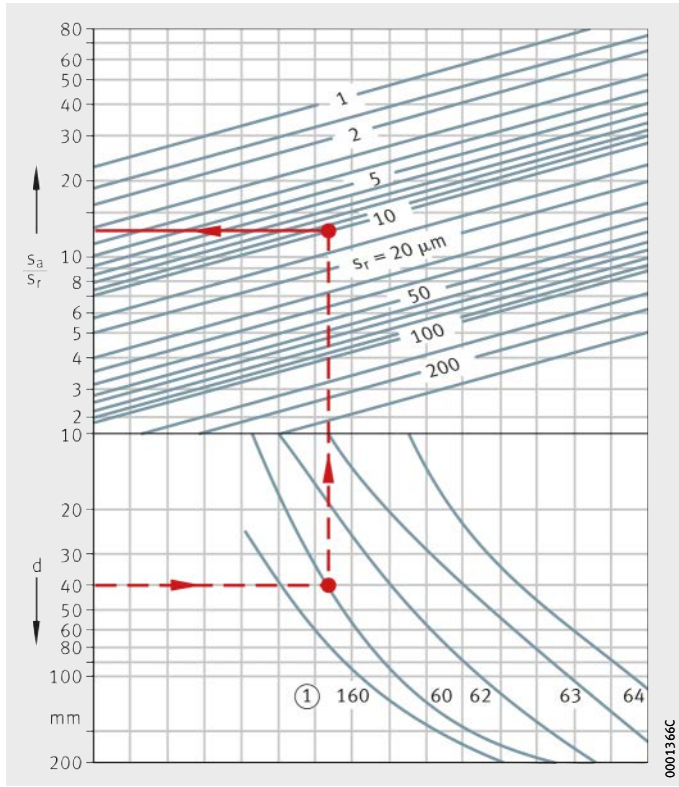
Calculation example

The calculation of axial internal clearance is shown in the following example:

Deep groove ball bearing		6008
Radial internal clearance		Group 3
Bore diameter d		40 mm
Radial internal clearance before mounting		15 μm to 33 μm
Actual radial internal clearance		24 μm
Mounting tolerance	Shaft	k5 Ⓔ
	Housing	J6 Ⓔ
Reduction in radial internal clearance during mounting		14 μm
Radial internal clearance after mounting		24 μm – 14 μm = 10 μm
Ratio s_a/s_r, *Figure 4*		13

Axial internal clearance

$s_a = 13 \cdot 10\ \mu m = 130\ \mu m$



s_a = axial internal clearance
s_r = radial internal clearance
d = bearing bore diameter

① Bearing series

Figure 4
Relationship between radial and axial internal clearance in deep groove ball bearings

Bearing materials

INA and FAG rolling bearings fulfil the requirements for fatigue strength, wear resistance, hardness, toughness and structural stability.

The material used for the rings and rolling elements is generally a low-alloy, through hardening chromium steel of high purity.

In recent years, the improved quality of rolling bearing steels has been the principal factor in achieving considerable increases in basic load ratings.

The results of research as well as practical experience confirm that bearings made from the steel currently used as standard can achieve their endurance limit if loads are not excessively high and the lubrication and cleanliness conditions are favourable.

Some suitable materials are listed as examples for some bearing components, see table.

Materials and bearing components

Material	Bearing component (example)
Through hardening chromium steel ■ Rolling bearing steel in accordance with ISO 683-17	Outer and inner ring, axial washer
Corrosion-resistant steel ■ Rolling bearing steel in accordance with ISO 683-17	Outer and inner ring
Case hardening steel	Locking collar
Polyamide (thermoplastic)	Cage
NBR, PTFE	Sealing ring

Corrosion-resistant steels

In addition to the standard rolling bearing steels, there is also a corrosion-resistant material for radial insert ball bearings operating in corrosive environments.

The steel SUS440C has been used as standard and proved effective in many applications. This material has adequate corrosion resistance in many media.

Cages

Rolling bearing cages are subdivided into sheet metal and solid cages.

Both sheet metal and solid cages for radial insert ball bearings are exclusively ball-guided.

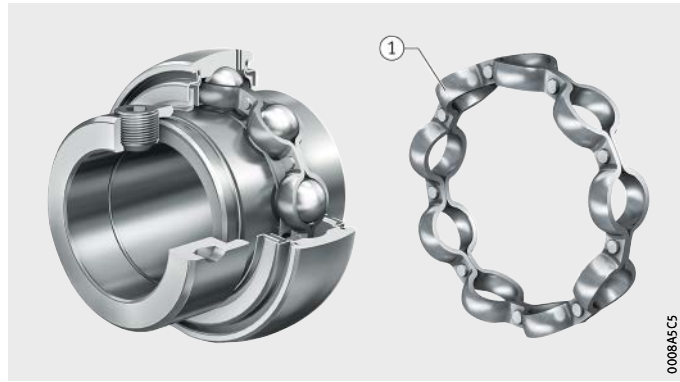
The most important functions of the cage are:

- to separate the rolling elements from each other, in order to minimise friction and heat generation
- to maintain the rolling elements at the same distance from each other, in order to ensure uniform load distribution
- to guide the rolling elements in the load zone of the bearing.

Sheet metal cages

These cages are predominantly made from steel, *Figure 5*.
In comparison with solid cages made from metal, they are of lower mass.

Since a sheet metal cage only fills a small proportion of the gap between the inner and outer ring, lubricant can easily reach the interior of the bearing and is held on the cage.



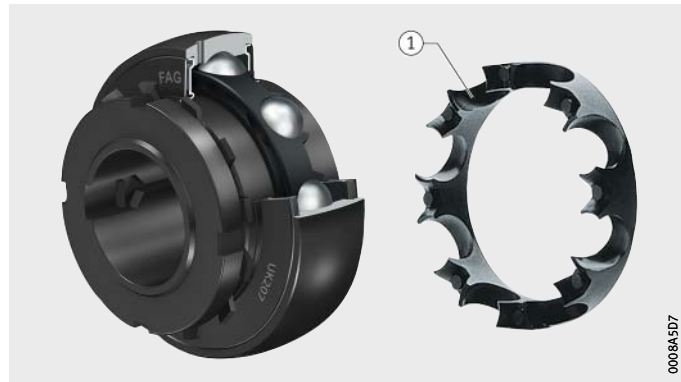
① Riveted cage

Figure 5
Radial insert ball bearing with sheet metal cages

Solid cages made from polyamide PA66

Solid cages made from polyamide PA66 are produced using the injection moulding process, *Figure 6*. As a result, cage types can generally be realised that allow designs with particularly high load carrying capacity. The elasticity and low mass of polyamide are favourable under shock type bearing loads, high accelerations and decelerations and tilting of the bearing rings in relation to each other. Polyamide cages have very good sliding and emergency running characteristics.

Cages made from glass fibre reinforced polyamide PA66 are suitable for continuous temperatures up to +120 °C.



① Polyamide cage

Figure 6
Solid cage
made from polyamide

Operating temperature

Radial insert ball bearings are heat treated such that, depending on their type, they are generally dimensionally stable up to +120 °C (certain series up to +250 °C).

Operating temperatures above +150 °C and up to +250 °C require special heat treatment. Bearings treated in this way are included in the catalogue range and are identified by the suffixes FA101, FA164, see table.

The temperature data in the product descriptions must be observed.

Suffixes for radial insert ball bearings for high temperatures

Suffix	FA101	FA164
Maximum operating temperature	–40 °C to +180 °C	+150 °C to +250 °C

Sealed bearings

The permissible temperature for sealed bearings is dependent on the requirements for the operating life of the grease filling and on the action of the contact seals.

Sealed bearings are greased with specially tested, high performance, high quality greases. These greases can withstand +120 °C for short periods. At or above continuous temperatures of +70 °C, a reduction in the operating life of standard greases with a lithium soap base must be expected.

In many cases, adequate operating life values are only achieved at high temperatures through the use of special greases. In these cases, it must also be checked whether seals made from especially heat-resistant materials must be used. The operating limit of normal contact seals is +100 °C.

If high temperature synthetic materials are used for seals and greases, it must be noted that the particularly high performance materials containing fluoride may give off harmful gases and vapours when heated to approx. +300 °C and above. This may occur, for example, if a welding torch is used in the dismounting of a bearing.

Anti-corrosion protection

Bearings are not resistant to corrosion by water or agents containing alkalis or acids but are often exposed to these corrosion-inducing agents. In these applications, anti-corrosion protection is therefore a decisive factor in achieving a long operating life of the bearings.

Anti-corrosion coating system Corrotect

Corrotect is an extremely thin, electroplated surface coating (coating thickness 2 µm to 5 µm). The coating is effective against moisture, contaminated water, salt spray and weakly alkaline and weakly acidic cleaning agents.

Before bearings with Corrotect coating are mounted, compatibility with media should always be checked.

For lower press-in forces, the surface of the parts should be lightly greased, the tolerances are increased by the thickness of the coating.

Advantages of the coating

The advantages of the special coating Corrotect are all-round rust protection, including the turned surfaces of chamfers and radii, *Figure 7*. It also gives long term prevention of rust penetration beneath seals and smaller bright spots are protected against rust by the cathodic protection effect. Anti-corrosion protection allows a significantly longer operating life compared to uncoated parts. Uncoated bearings can be easily replaced by coated bearings of the same dimensions and there is no decrease in load carrying capacity (such as occurs in the use of corrosion-resistant steels). During storage, there is no need to use organic-based preservatives.



Test time 24 h in salt spray

① With Corrotect coating
② Uncoated

Figure 7
Coated and uncoated part after the salt spray test

Dimensional and running tolerances

Unless stated otherwise, the tolerances for radial bearings correspond to ISO 492, *Figure 8*. The rules in ISO 492 and ISO 199 apply.

The accuracy corresponds to the tolerance class Normal.

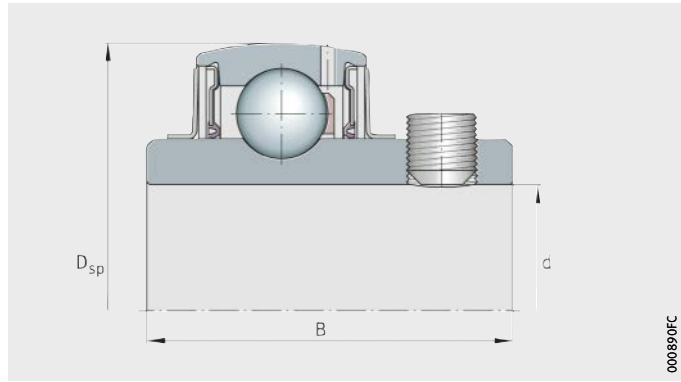


Figure 8
Nominal dimension symbols in accordance with ISO 492 and ISO 199

Measurement methods

The definition of the tolerances and the associated measurement principles are described in the following chapter.

The following restrictions apply to the stated specification modifiers:

- The specification modifier (LP) is not indicated on a drawing if the two-point size is defined as the default specification.
- The specification modifier (GN) is not suitable for cases where there is no opposing material, for example the outer ring of a tapered roller bearing with significant edge rounding on the back face and small front face. Solutions must be developed within the framework of the GPS system and taken into consideration in the future.

Symbols for nominal dimensions, characteristics and specification modifiers for radial rolling bearings in accordance with ISO 492:2014

Symbol for nominal dimension[1)2)] Tolerance symbol for characteristic[2)]	GPS symbol and specification modifier Symbols in accordance with ISO 1101 and ISO 14405-1	Description for radial bearings In accordance with ISO 492:2014 (based on ISO 1101, ISO 5459 and ISO 14405-1)	Old term In accordance with ISO 1132-1: 2000
		Width	
B	–	Nominal inner ring width	Nominal inner ring width
$t_{\Delta Bs}$	LP	**Symmetrical rings** deviation of a two-point size of inner ring width from its nominal size $\Delta Bs = Bs - B$ Bs = single two-point size of inner ring width	Deviation of a single inner ring width
	GN ALS LP	**Asymmetrical rings, upper limit** deviation of a minimum circumscribed size of inner ring width, between two opposite lines, in any longitudinal section which includes the inner ring bore axis, from its nominal size	
		Asymmetrical rings, lower limit deviation of a two-point size of inner ring width from its nominal size	
t_{VBs}	LP SR	**Symmetrical rings** range of two-point sizes of inner ring width $VBs = Bs\ max - Bs\ min$	Variation of inner ring width
	GN ALS SR	**Asymmetrical rings** range of minimum circumscribed sizes of inner ring width, between two opposite lines, obtained from any longitudinal section which includes the inner ring bore axis	

1) Symbols for the nominal dimension are printed bold; they indicate size dimensions and spacings.

2) Symbols in accordance with ISO 15241 (exception: font).

Symbols for nominal dimensions, characteristics and specification modifiers for radial rolling bearings in accordance with ISO 492:2014 (continued)

Symbol for nominal dimension[1)2)] Tolerance symbol for characteristic[2)]	GPS symbol and specification modifier Symbols in accordance with ISO 1101 and ISO 14405-1	Description for radial bearings In accordance with ISO 492:2014 (based on ISO 1101, ISO 5459 and ISO 14405-1)	Old term In accordance with ISO 1132-1: 2000
		Width	
C	–	Nominal outer ring width	Nominal outer ring width
$t_{\Delta Cs}$	(LP)	**Symmetrical rings** deviation of a two-point size of outer ring width from its nominal size $\Delta Cs = Cs - C$ Cs = single two-point size of inner ring width	Deviation of a single outer ring width
	(GN) ALS  (LP)	**Asymmetrical rings, upper limit** deviation of a minimum circumscribed size of outer ring width, between two opposite lines, in any longitudinal section which includes the outer ring outside surface axis, from its nominal size	
		Asymmetrical rings, lower limit deviation of a two-point size of outer ring width from its nominal size	
t_{VCs}	(LP) (SR)	**Symmetrical rings** range of two-point sizes of outer ring width $VCs = Cs\ max - Cs\ min$	Variation of outer ring width
	(GN) ALS (SR) 	**Asymmetrical rings** range of minimum circumscribed sizes of outer ring width, between two opposite lines, obtained from any longitudinal section which includes the outer ring outside surface axis	

1) Symbols for the nominal dimension are printed bold; they indicate size dimensions and spacings.

2) Symbols in accordance with ISO 15241 (exception: font).

Symbols for nominal dimensions, characteristics and specification modifiers for radial rolling bearings in accordance with ISO 492:2014 (continued)

Symbol for nominal dimension[1)2)] Tolerance symbol for characteristic[2)]	GPS symbol and specification modifier Symbols in accordance with ISO 1101 and ISO 14405-1	Description for radial bearings In accordance with ISO 492:2014 (based on ISO 1101, ISO 5459 and ISO 14405-1)	Old term In accordance with ISO 1132-1: 2000
		Diameter	
d	–	Nominal bore diameter of a cylindrical bore or at the theoretical small end of a tapered bore	Nominal bore diameter
$t_{\Delta ds}$	(LP)	Deviation of a two-point size of the bore diameter from its nominal size $\Delta ds = ds - d$	Deviation of a single bore diameter
t_{Vdsp}	(LP)(SR)ACS	Range of two-point sizes of bore diameter in any cross-section of a cylindrical or tapered bore $Vdsp = ds\ max - ds\ min$	Variation of single bore diameter in a single plane
$t_{\Delta dmp}$	(LP)(SD)ACS	**Cylindrical bore** deviation of a mid-range size (out of two-point sizes) of bore diameter in any cross-section from its nominal size $dmp = (d\ max + d\ min)/2$ $\Delta dmp = dmp - d$	Deviation of mean bore diameter in a single plane
	(LP)(SD)SCS	**Tapered bore** deviation of a mid-range size (out of two-point sizes) of bore diameter at the theoretical small end from its nominal size	
t_{Vdmp}	(LP)(SD)ACS(SR)	Range of mid-range sizes (out of two-point sizes) of bore diameter obtained from any cross-section of a cylindrical bore $Vdmp = dmp\ max - dmp\ min$	Variation of mean bore diameter

1) Symbols for the nominal dimension are printed bold; they indicate size dimensions and spacings.

2) Symbols in accordance with ISO 15241 (exception: font).

Symbols for nominal dimensions, characteristics and specification modifiers for radial rolling bearings in accordance with ISO 492:2014 (continued)

Symbol for nominal dimension[1)2)] Tolerance symbol for characteristic[2)]	GPS symbol and specification modifier Symbols in accordance with ISO 1101 and ISO 14405-1	Description for radial bearings In accordance with ISO 492:2014 (based on ISO 1101, ISO 5459 and ISO 14405-1)	Old term In accordance with ISO 1132-1: 2000
$\mathbf{d_1}$	–	Nominal diameter at the theoretical large end of a tapered bore	–
$t_{\Delta d1mp}$	(LP)(SD)SCS	Deviation of a mid-range size (out of two-point sizes) of bore diameter at the theoretical large end of a tapered bore from its nominal size	–
D	–	Nominal outside diameter	Nominal outside diameter
$t_{\Delta Ds}$	(LP)	Deviation of a two-point size of outside diameter from its nominal size	Deviation of a single outside diameter
t_{VDsp}	(LP)(SR)ACS	Range of two-point sizes of outside diameter in any cross-section	Variation of outside diameter in a single plane
$t_{\Delta Dmp}$	(LP)(SD)ACS	Deviation of a mid-range size (out of two-point sizes) of outside diameter in any cross-section from its nominal size Dmp = (D max + D min)/2 ΔDmp = Dmp – D	Deviation of mean outside diameter in a single plane
t_{VDmp}	(LP)(SD)ACS(SR)	Range of mid-range sizes (out of two-point sizes) of outside diameter obtained from any cross-section VDmp = Dmp max – Dmp min	Variation of mean outside diameter

1) Symbols for the nominal dimension are printed bold; they indicate size dimensions and spacings.

2) Symbols in accordance with ISO 15241 (exception: font).

Symbols for nominal dimensions, characteristics and specification modifiers for radial rolling bearings in accordance with ISO 492:2014 (continued)

Symbol for nominal dimension[1)2)] Tolerance symbol for characteristic[2)]	GPS symbol and specification modifier Symbols in accordance with ISO 1101 and ISO 14405-1	Description for radial bearings In accordance with ISO 492:2014 (based on ISO 1101, ISO 5459 and ISO 14405-1)	Old term In accordance with ISO 1132-1: 2000
		Running accuracy	
t_{Kea}	↗ [3)]	Circular radial run-out of outer ring outside surface of assembled bearing with respect to datum, i.e. axis, established from the inner ring bore surface	Radial run-out of outer ring of assembled bearing
t_{Kia}	↗ [3)]	Circular radial run-out of inner ring bore of assembled bearing with respect to datum, i.e. axis, established from the outer ring outside surface	Radial run-out of inner ring of assembled bearing
t_{Sd}	↗ [3)]	Circular axial run-out of inner ring face with respect to datum, i.e. axis, established from the inner ring bore surface	Perpendicularity of inner ring face with respect to the bore
t_{SD}	⊥	Perpendicularity of outer ring outside surface axis with respect to datum established from the outer ring face	Perpendicularity of outer ring outside surface with respect to the face
t_{Sea}	↗ [3)]	Circular axial run-out of outer ring face of assembled bearing with respect to datum, i.e. axis, established from the inner ring bore surface	Axial run-out of outer ring of assembled bearing
t_{Sia}	↗ [3)]	Circular axial run-out of inner ring face of assembled bearing with respect to datum, i.e. axis, established from the outer ring outside surface	Axial run-out of inner ring of assembled bearing
		Tapered bore	
SL	–	Taper slope: Taper slope is the difference between nominal diameters at the theoretical large end and small end of a tapered bore SL = d1 – d SL = spacing	–
$t_{\Delta SL}$	–	Deviation of taper slope of a tapered inner ring bore from its nominal size (description based on DIN EN ISO 1119) $\Delta SL = \Delta d1mp - \Delta dmp$	–
α	–	Frustum angle of tapered inner ring bore	–

1) Symbols for the nominal dimension are printed bold; they indicate size dimensions and spacings.

2) Symbols in accordance with ISO 15241 (exception: font).

3) Specification modifiers for the direction of action of the mass, as well as fixed and movable parts necessary in accordance with ISO/TS 17863.

Symbols for nominal dimensions, characteristics and specification modifiers for radial rolling bearings in accordance with ISO 492:2014 (continued)

Symbol for nominal dimension[1)2)] Tolerance symbol for characteristic[2)]	GPS symbol and specification modifier Symbols in accordance with ISO 1101 and ISO 14405-1	Description for radial bearings In accordance with ISO 492:2014 (based on ISO 1101, ISO 5459 and ISO 14405-1)	Old term In accordance with ISO 1132-1: 2000
		Width of assembled bearing	
T	–	Nominal assembled bearing width	Assembled bearing width
$t_{\Delta Ts}$	GN [3)]	Deviation of minimum circumscribed size of assembled bearing width from its nominal size	Deviation of the actual (assembled) bearing width
$\mathbf{T_1}$	–	Nominal effective width of inner subunit assembled with a master outer ring	Effective width of the inner subunit assembled with a master outer ring
$t_{\Delta T1s}$	GN [3)]	Deviation of minimum circumscribed size of effective width (inner subunit assembled with a master outer ring) from its nominal size	Nominal effective width of outer ring assembled with a master inner subunit

1) Symbols for the nominal dimension are printed bold; they indicate size dimensions and spacings.

2) Symbols in accordance with ISO 15241 (exception: font).

3) Specification modifiers for the direction of action of the mass, as well as fixed and movable parts necessary in accordance with ISO/TS 17863.

Radial bearings

The normal tolerances of radial bearings correspond to ISO 492, see tables. In the case of radial insert ball bearings, only the outside diameter corresponds to the tolerance class Normal in accordance with ISO 492. The inner ring bore has a plus tolerance, see the product description.

Tolerance class Normal, Inner ring

d		$t_{\Delta dmp}$		t_{Vdsp} Diameter series			t_{Vdmp}	t_{Kia}
				9	0, 1	2, 3, 4		
mm		µm Deviation		µm	µm	µm	µm	µm
over	incl.	U	L	max.	max.	max.	max.	max.
0,6[1)]	2,5	0	−8	10	8	6	6	10
2,5	10	0	−8	10	8	6	6	10
10	18	0	−8	10	8	6	6	10
18	30	0	−10	13	10	8	8	13
30	50	0	−12	15	12	9	9	15
50	80	0	−15	19	19	11	11	20
80	120	0	−20	25	25	15	15	25
120	180	0	−25	31	31	19	19	30
180	250	0	−30	38	38	23	23	40
250	315	0	−35	44	44	26	26	50
315	400	0	−40	50	50	30	30	60
400	500	0	−45	56	56	34	34	65
500	630	0	−50	63	63	38	38	70
630	800	0	−75	–	–	–	–	80
800	1 000	0	−100	–	–	–	–	90
1 000	1 250	0	−125	–	–	–	–	100
1 250	1 600	0	−160	–	–	–	–	120
1 600	2 000	0	−200	–	–	–	–	140

U = upper limit deviation
L = lower limit deviation

Tolerance symbols, see tables, page 90.

1) This diameter is included in the group.

Tolerance class Normal, Inner ring (continued)

d mm		$t_{\Delta Bs}$ µm Deviation				t_{VBs} µm
		normal		modified[1]		
over	incl.	U	L	U	L	max.
0,6[2]	2,5	0	−40	0	–	12
2,5	10	0	−120	0	−250	15
10	18	0	−120	0	−250	20
18	30	0	−120	0	−250	20
30	50	0	−120	0	−250	20
50	80	0	−150	0	−380	25
80	120	0	−200	0	−380	25
120	180	0	−250	0	−500	30
180	250	0	−300	0	−500	30
250	315	0	−350	0	−500	35
315	400	0	−400	0	−630	40
400	500	0	−450	0	–	50
500	630	0	−500	0	–	60
630	800	0	−750	0	–	70
800	1 000	0	−1 000	0	–	80
1 000	1 250	0	−1 250	0	–	100
1 250	1 600	0	−1 600	0	–	120
1 600	2 000	0	−2 000	0	–	140

U = upper limit deviation
L = lower limit deviation

Tolerance symbols, see tables, page 90.

1) Only for bearings manufactured specifically for use as matched pairs.

2) This diameter is included in the group.

Tolerance class Normal, Outer ring[1)]

D		$t_{\Delta Dmp}$		$t_{\Delta Dsp}$				t_{VDmp}[2)]	t_{Kea}
				Open bearings Diameter series			Bearings with sealing shields or sealing washers		
				9	0, 1	2, 3, 4			
mm		µm Deviation		µm	µm	µm	µm	µm	µm
over	incl.	U	L	max.	max.	max.	max.	max.	max.
2,5[3)]	6	0	−8	10	8	6	10	6	15
6	18	0	−8	10	8	6	10	6	15
18	30	0	−9	12	9	7	12	7	15
30	50	0	−11	14	11	8	16	8	20
50	80	0	−13	16	13	10	20	10	25
80	120	0	−15	19	19	11	26	11	35
120	150	0	−18	23	23	14	30	14	40
150	180	0	−25	31	31	19	38	19	45
180	250	0	−30	38	38	23	–	23	50
250	315	0	−35	44	44	26	–	26	60
315	400	0	−40	50	50	30	–	30	70
400	500	0	−45	56	56	34	–	34	80
500	630	0	−50	63	63	38	–	38	100
630	800	0	−75	94	94	55	–	55	120
800	1 000	0	−100	125	125	75	–	75	140
1 000	1 250	0	−125	–	–	–	–	–	160
1 250	1 600	0	−160	–	–	–	–	–	190
1 600	2 000	0	−200	–	–	–	–	–	220
2 000	2 500	0	−250	–	–	–	–	–	250

U = upper limit deviation
L = lower limit deviation

Tolerance symbols, see tables, page 90.

1) $t_{\Delta Cs}$, $t_{\Delta C1s}$, t_{VCs} and t_{VC2s} are identical to $t_{\Delta DBs}$ and t_{VBs} for the inner ring of the corresponding bearing, see table, page 96.

2) Applies before assembly of the bearing and after removal of internal and/or external snap rings.

3) This diameter is included in the group.

Chamfer dimensions

The chamfer dimensions correspond to DIN 620-6, *Figure 9* and table.

d = inside diameter
r_1, r_2 = chamfer dimensions

① Arc
(radius with nominal chamfer dimension) beyond which material must not protrude
② Radial
③ Axial

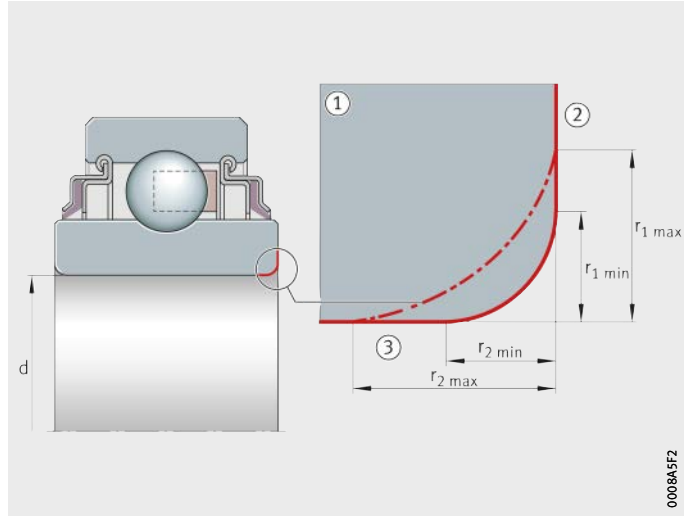


Figure 9
Symmetrical ring cross-section with identical chamfer dimensions on both rings

Limit values for chamfer dimensions to DIN 620-6

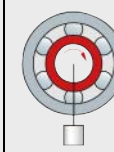
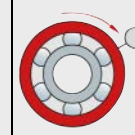
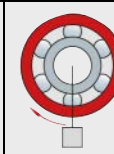
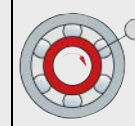
Nominal chamfer dimension $r^{1)}$ mm	Nominal bearing bore diameter d mm		Chamfer dimension		
			r_1, r_2 mm	r_1 mm	r_2 mm
	over	incl.	min.	max.	max.
0,05	–	–	0,05	0,1	0,2
0,08	–	–	0,08	0,16	0,3
0,1	–	–	0,1	0,2	0,4
0,15	–	–	0,15	0,3	0,6
0,2	–	–	0,2	0,5	0,8
0,3	–	40	0,3	0,6	1
	40	–	0,3	0,8	1
0,5	–	40	0,5	1	2
	40	–	0,5	1,3	2
0,6	–	40	0,6	1	2
	40	–	0,6	1,3	2
1	–	50	1	1,5	3
	50	–	1	1,9	3
1,1	–	120	1,1	2	3,5
	120	–	1,1	2,5	4
1,5	–	120	1,5	2,3	4
	120	–	1,5	3	5
2	–	80	2	3	4,5
	80	220	2	3,5	5
	220	–	2	3,8	6

1) The nominal chamfer dimension r is identical to the smallest permissible chamfer dimension r_{min}.

Conditions of rotation

The conditions of rotation indicate the motion of one bearing ring with respect to the load direction and are expressed as either circumferential load or point load, see table.

Conditions of rotation

Conditions of motion	Example	Schematic	Load case	Fit
☐ Rotating inner ring ☐ Stationary outer ring ☐ Constant load direction	Conveyor belts		Circumferential load on inner ring and Point load on outer ring	Inner ring: tight fit necessary Outer ring: loose fit permissible
☐ Stationary inner ring ☐ Rotating outer ring ☐ Load direction rotates with outer ring	Hub bearing arrangement with significant unbalance			
☐ Stationary inner ring ☐ Rotating outer ring ☐ Constant load direction	Roller chain idler sprocket units		Point load on inner ring and Circumferential load on outer ring	Inner ring: loose fit permissible Outer ring: tight fit necessary
☐ Rotating inner ring ☐ Stationary outer ring ☐ Load direction rotates with inner ring	Centrifuge, vibrating screen			

Point load

If the ring remains stationary relative to the load direction, there are no forces that displace the ring relative to its seating surface. This type of loading is described as point load.

There is no risk that the seating surface will be damaged and a loose fit is possible.

Circumferential load

If forces are present that displace the ring relative to its seating surface, every point on the raceway is subjected to load over the course of one revolution of the bearing. A load with this characteristic is described as a circumferential load.

The following information on design of the bearing arrangement is only applicable to self-aligning deep groove ball bearings and deep groove ball bearings with a cylindrical outer ring.

Shaft and housing tolerances

The fit is determined by the ISO tolerances for shafts and housings (DIN EN ISO 286-2) in conjunction with the tolerances $t_{\Delta dmp}$ for the bore and $t_{\Delta Dmp}$ for the outside diameter of the bearings (ISO 5753-1).

Tolerance classes

The ISO tolerances are defined in the form of tolerance classes. They are determined by their position relative to the zero line (= tolerance position) and their size (= tolerance grade, see ISO 286-1). The tolerance position is indicated by letters (upper case for housings, lower case for shafts), *Figure 1*.

Reference to tables of shaft and housing tolerances

The tables contain recommendations for the selection of shaft and housing tolerances that are valid for normal mounting and operating conditions, see page 102.

Deviations are possible if particular requirements apply, for example in relation to running accuracy, smooth running or operating temperature. Increased running accuracies thus require closer tolerances such as tolerance grade 5 instead of 6. If the inner ring is warmer than the shaft during operation, the seating may loosen to an impermissible extent. A tighter fit must then be selected, for example m6 instead of k6.

In such cases, the question of fits can only be resolved by a compromise. The individual requirements must be weighed against each other and those selected that give the best overall solution.

D = nominal bearing outside diameter
d = nominal bearing bore diameter
$t_{\Delta Dmp}$ = deviation of mean bearing outside diameter (in accordance with ISO 492)
$t_{\Delta dmp}$ = deviation of mean bearing bore diameter (in accordance with ISO 492)

① Zero line
② Housing
③ Shaft
④ Clearance fit
⑤ Transition fit
⑥ Interference fit

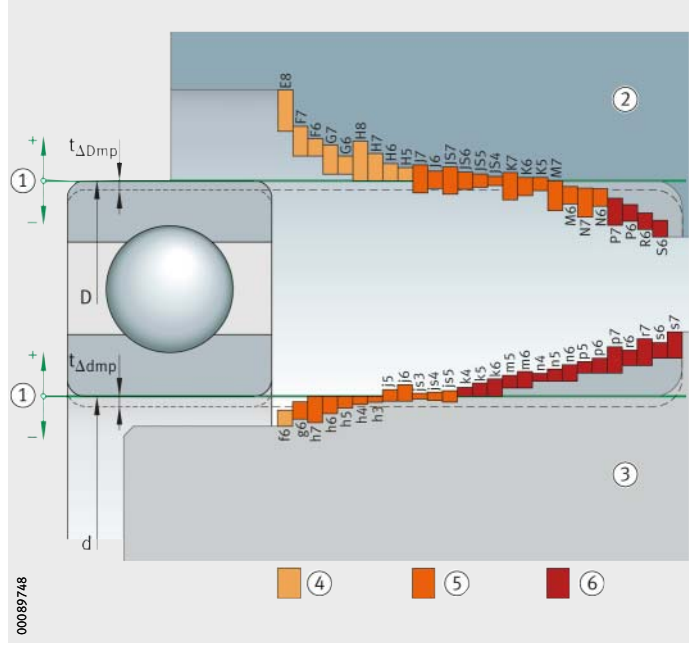


Figure 1
Shaft and housing fits for rolling bearings

Shaft tolerances for radial bearings with cylindrical bore

Conditions of rotation	Bearing type	Shaft diameter mm	Displacement facility Load	Tolerance class[1]
Point load on inner ring	Ball bearings	All sizes	Inner ring easily displaced	g6 (g5)
			Inner ring not easily displaced	h6 (j5)
Circumferential load on inner ring or indeterminate load direction	Ball bearings	up to 50	Normal loads[2]	j6 (j5)
		50 to 100	Low loads[3]	j6 (j5)
			Normal and high loads[4]	k6 (k5)
		100 to 200	Low loads[2]	k6 (m6)
			Normal and high loads[5]	m6 (m5)
		over 200	Low loads	m6 (m5)
			Normal and high loads	n6 (n5)

1) The envelope condition Ⓔ applies here.

2) $C/P > 10$.

3) $C/P > 12$.

4) $C/P < 12$.

5) $C/P < 10$.

Housing tolerances for radial bearings

Conditions of rotation	Displacement facility Load	Operating conditions	Tolerance class[1]
Point load on outer ring	Outer ring not easily displaced Housing unsplit	Normal running accuracy	H7 (J7)
Circumferential load on outer ring or indeterminate load direction	Low loads Outer ring cannot be displaced	For high running accuracy requirements: K6, M6, N6 and P6	K7

1) The envelope condition Ⓔ applies here.

Tables of shaft and housing fits

The numerical values for the fits are valid for solid steel shafts and cast housings, see tables, page 104 to page 108. In the table header, below the nominal diameters, are the normal tolerances for the bore or outside diameters of radial bearings. Below these are the deviations for the most important tolerance classes for mounting of rolling bearings.

In each cell are five numbers in accordance with the following scheme, for example for shaft ∅40 j5 Ⓔ, see table, page 104:

Example of table entry Shaft fit

Shaft deviation µm		Fit interference or fit clearance µm	
Maximum material value	+6	**18**[1]	Interference or fit clearance if the maximum material values are combined
		10[1)2)]	Probable interference or fit clearance
Minimum material value	−5	5[3)]	Interference or fit clearance if the minimum material values are combined

1) Values printed in bold type indicate fit interference.

2) The probable interference or fit clearance is the value obtained if the actual dimensions are one third away from the maximum material values.

3) Values printed in regular type indicate fit clearance.

In each cell are five numbers in accordance with the following scheme, for example for housing ∅100 K6 Ⓔ, see table, page 108:

Example of table entry Housing fit

Housing deviation µm		Fit interference or fit clearance µm	
Minimum material value	+4	**18**[1]	Interference or fit clearance if the maximum material values are combined
		6[1)2)]	Probable interference or fit clearance
Maximum material value	−18	19[3)]	Interference or fit clearance if the minimum material values are combined

1) Values printed in bold type indicate fit interference.

2) The probable interference or fit clearance is the value obtained if the actual dimensions are one third away from the maximum material values.

3) Values printed in regular type indicate fit clearance.

Shaft fits

	Nominal shaft diameter in mm											
	over incl.	**3** **6**		**6** **10**		**10** **18**		**18** **30**		**30** **50**		**50** **65**	
	Deviation of bearing bore diameter in µm (tolerance class Normal)												
	$t_{\Delta dmp}$	0 −8		0 −8		0 −8		0 −10		0 −12		0 −15	
	Shaft deviation, fit interference or fit clearance in µm												
Clearance fit	**f6**	−10 −18	2 7 18	−13 −22	5 11 22	−16 −27	8 15 27	−20 −33	10 17 33	−25 −41	13 22 41	−30 −49	15 26 49
Transition fit	**g5**	−4 −9	**4** **0** 9	−5 −11	**3** 2 11	−6 −14	**2** 3 14	−7 −16	**3** 3 16	−9 −20	**3** 5 20	−10 −23	**5** 4 23
	g6	−4 −12	**4** 1 12	−5 −14	**3** 3 14	−6 −17	**2** 4 17	−7 −20	**3** 5 20	−9 −25	**3** 6 25	−10 −29	**5** 6 29
	h5	0 −5	**8** **4** 5	0 −6	**8** **3** 6	0 −8	**8** **3** 8	0 −9	**10** **4** 9	0 −11	**12** **4** 11	0 −13	**15** **6** 13
	h6	0 −8	**8** **3** 8	0 −9	**8** **2** 9	0 −11	**8** **2** 11	0 −13	**10** **2** 13	0 −16	**12** **3** 16	0 −19	**15** **4** 19
	j5	+3 −2	**11** **7** 2	+4 −2	**12** **7** 2	+5 −3	**13** **8** 3	+5 −4	**15** **9** 4	+6 −5	**18** **10** 5	+6 −7	**21** **12** 7
	j6	+6 −2	**14** **8** 2	+7 −2	**15** **9** 2	+8 −3	**16** **10** 3	+9 −4	**19** **11** 4	+11 −5	**23** **14** 5	+12 −7	**27** **16** 7
	js5	+2,5 −2,5	**11** **6** 3	+3 −3	**11** **6** 3	+4 −4	**12** **6** 4	+4,5 −4,5	**15** **9** 5	+5,5 −5,5	**18** **10** 6	+6,5 −6,5	**22** **13** 7
	js6	+4 −4	**12** **7** 4	+4,5 −4,5	**13** **7** 5	+5,5 −5,5	**14** **8** 6	+6,5 −6,5	**17** **9** 7	+8 −8	**20** **11** 8	+9,5 −9,5	**25** **13** 10
Interference fit	**k5**	+6 +1	**14** **9** **1**	+7 +1	**15** **10** **1**	+9 +1	**17** **12** **1**	+11 +2	**21** **15** **2**	+13 +2	**25** **17** **2**	+15 +2	**30** **21** **2**
	k6	+9 +1	**17** **11** **1**	+10 +1	**18** **12** **1**	+12 +1	**20** **14** **1**	+15 +2	**25** **17** **2**	+18 +2	**30** **21** **2**	+21 +2	**36** **25** **2**
	m5	+9 +4	**17** **13** **4**	+12 +6	**20** **15** **6**	+15 +7	**23** **18** **7**	+17 +8	**27** **21** **8**	+20 +9	**32** **24** **9**	+24 +11	**39** **30** **11**
	m6	+12 +4	**20** **15** **4**	+15 +6	**23** **17** **6**	+18 +7	**26** **20** **7**	+21 +8	**31** **23** **8**	+25 +9	**37** **27** **9**	+30 +11	**45** **34** **11**

Example: shaft ∅ 40 j5 Ⓔ

Maximum material value	+6	**18**	Interference or fit clearance if the maximum material values are combined.
		10	Probable interference or fit clearance.
Minimum material value	−5	5	Interference or fit clearance if minimum material values are combined. Values **in bold type** in the group of three indicate fit interference, values in normal type indicate fit clearance.

65 80		80 100		100 120		120 140		140 160		160 180		180 200		200 220		220 250	
0 −15		0 −20		0 −20		0 −25		0 −25		0 −25		0 −30		0 −30		0 −30	
−30 −49	15 26 49	−36 −58	16 30 58	−36 −58	16 30 58	−43 −68	18 34 68	−43 −68	18 34 68	−43 −68	18 34 68	−50 −79	20 40 79	−50 −79	20 40 79	−50 −79	20 40 79
−10 −23	**5** 4 23	−12 −27	**8** 4 27	−12 −27	**8** 4 27	−14 −32	**11** 3 32	−14 −32	**11** 3 32	−14 −32	**11** 3 32	−15 −35	**15** 2 35	−15 −35	**15** 2 35	−15 −35	**15** 2 35
−10 −29	**5** 6 29	−12 −34	**8** 6 34	−12 −34	**8** 6 34	−14 −39	**11** 6 39	−14 −39	**11** 6 39	−14 −39	**11** 6 39	−15 −44	**15** 5 44	−15 −44	**15** 5 44	−15 −44	**15** 5 44
0 −13	**15** **6** 13	0 −15	**20** **8** 15	0 −15	**20** **8** 15	0 −18	**25** **11** 18	0 −18	**25** **11** 18	0 −18	**25** **11** 18	0 −20	**30** **13** 20	0 −20	**30** **13** 20	0 −20	**30** **13** 20
0 −19	**15** **4** 19	0 −22	**20** **6** 22	0 −22	**20** **6** 22	0 −25	**25** **8** 25	0 −25	**25** **8** 25	0 −25	**25** **8** 25	0 −29	**30** **10** 29	0 −29	**30** **10** 29	0 −29	**30** **10** 29
+6 −7	**21** **12** 7	+6 −9	**26** **14** 9	+6 −9	**26** **14** 9	+7 −11	**32** **18** 11	+7 −11	**32** **18** 11	+7 −11	**32** **18** 11	+7 −13	**37** **20** 13	+7 −13	**37** **20** 13	+7 −13	**37** **20** 13
+12 −7	**27** **16** 7	+13 −9	**33** **19** 9	+13 −9	**33** **19** 9	+14 −11	**39** **22** 11	+14 −11	**39** **22** 11	+14 −11	**39** **22** 11	+16 −13	**46** **26** 13	+16 −13	**46** **26** 13	+16 −13	**46** **26** 13
+6,5 −6,5	**22** **13** 7	+7,5 −7,5	**28** **16** 8	+7,5 −7,5	**28** **16** 8	+9 −9	**34** **20** 9	+9 −9	**34** **20** 9	+9 −9	**34** **20** 9	+10 −10	**40** **23** 10	+10 −10	**40** **23** 10	+10 −10	**40** **23** 10
+9,5 −9,5	**25** **13** 10	+11 −11	**31** **17** 11	+11 −11	**31** **17** 11	+12,5 −12,5	**38** **21** 13	+12,5 −12,5	**38** **21** 13	+12,5 −12,5	**38** **21** 13	+14,5 −14,5	**45** **25** 15	+14,5 −14,5	**45** **25** 15	+14,5 −14,5	**45** **25** 15
+15 +2	**30** **21** **2**	+18 +3	**38** **26** **3**	+18 +3	**38** **26** **3**	+21 +3	**46** **32** **3**	+21 +3	**46** **32** **3**	+21 +3	**46** **32** **3**	+24 +4	**54** **37** **4**	+24 +4	**54** **37** **4**	+24 +4	**54** **37** **4**
+21 +2	**36** **25** **2**	+25 +3	**45** **31** **3**	+25 +3	**45** **31** **3**	+28 +3	**53** **36** **3**	+28 +3	**53** **36** **3**	+28 +3	**53** **36** **3**	+33 +4	**63** **43** **4**	+33 +4	**63** **43** **4**	+33 +4	**63** **43** **4**
+24 +11	**39** **30** **11**	+28 +13	**48** **36** **13**	+28 +13	**48** **36** **13**	+33 +15	**58** **44** **15**	+33 +15	**58** **44** **15**	+33 +15	**58** **44** **15**	+37 +17	**67** **50** **17**	+37 +17	**67** **50** **17**	+37 +17	**67** **50** **17**
+30 +11	**45** **34** **11**	+35 +13	**55** **42** **13**	+35 +13	**55** **42** **13**	+40 +15	**65** **48** **15**	+40 +15	**65** **48** **15**	+40 +15	**65** **48** **15**	+46 +17	**76** **56** **17**	+46 +17	**76** **56** **17**	+46 +17	**76** **56** **17**

Shaft fits
(continued)

	Nominal shaft diameter in mm											
	over	**3**		**6**		**10**		**18**		**30**		**50**	
	incl.	**6**		**10**		**18**		**30**		**50**		**65**	
	Deviation of bearing bore diameter in µm (tolerance class Normal)												
	$t_{\Delta dmp}$	0	−8	0	−8	0	−8	0	−10	0	−12	0	−15
	Shaft deviation, fit interference or fit clearance in µm												
Interference fit	**n5**	+13	**21**	+16	**24**	+20	**28**	+24	**34**	+28	**40**	+33	**48**
		+8	**17**	+10	**19**	+12	**23**	+15	**28**	+17	**32**	+20	**39**
			8		**10**		**12**		**15**		**17**		**20**
	n6	+16	**24**	+19	**27**	+23	**31**	+28	**38**	+33	**45**	+39	**54**
		+8	**19**	+10	**21**	+12	**25**	+15	**30**	+17	**36**	+20	**43**
			8		**10**		**12**		**15**		**17**		**20**
	p6	+20	**28**	+24	**32**	+29	**37**	+35	**45**	+42	**54**	+51	**66**
		+12	**23**	+15	**26**	+18	**31**	+22	**37**	+26	**45**	+32	**55**
			12		**15**		**18**		**22**		**26**		**32**
	p7	+24	**32**	+30	**38**	+36	**44**	+43	**53**	+51	**63**	+62	**77**
		+12	**25**	+15	**30**	+18	**35**	+22	**43**	+26	**51**	+32	**62**
			12		**15**		**18**		**22**		**26**		**32**
	r6	+23	**31**	+28	**36**	+34	**42**	+41	**51**	+50	**62**	+60	**75**
		+15	**25**	+19	**30**	+23	**35**	+28	**44**	+34	**53**	+41	**64**
			15		**19**		**23**		**28**		**34**		**41**
	r7	+27	**35**	+34	**42**	+41	**49**	+49	**59**	+59	**71**	+71	**86**
		+15	**28**	+19	**34**	+23	**40**	+28	**49**	+34	**59**	+41	**71**
			15		**19**		**23**		**28**		**34**		**41**
	s6	+27	**35**	+32	**40**	+39	**47**	+48	**58**	+59	**71**	+72	**87**
		+19	**30**	+23	**34**	+28	**41**	+35	**50**	+43	**62**	+53	**76**
			19		**23**		**28**		**35**		**43**		**53**

Values **in bold type** in the group of three indicate fit interference,
values in normal type indicate fit clearance.

65 80	80 100	100 120	120 140	140 160	160 180	180 200	200 220	220 250
0 −15	0 −20	0 −20	0 −25	0 −25	0 −25	0 −30	0 −30	0 −30
+33 **48** +20 **39** **20**	+38 **58** +23 **46** **23**	+38 **58** +23 **46** **23**	+45 **70** +27 **56** **27**	+45 **70** +27 **56** **27**	+45 **70** +27 **56** **27**	+51 **81** +31 **64** **31**	+51 **81** +31 **64** **31**	+51 **81** +31 **64** **31**
+39 **54** +20 **43** **20**	+45 **65** +23 **51** **23**	+45 **65** +23 **51** **23**	+52 **77** +27 **60** **27**	+52 **77** +27 **60** **27**	+52 **77** +27 **60** **27**	+60 **90** +31 **70** **31**	+60 **90** +31 **70** **31**	+60 **90** +31 **70** **31**
+51 **66** +32 **55** **32**	+59 **79** +37 **65** **37**	+59 **79** +37 **65** **37**	+68 **93** +43 **76** **43**	+68 **93** +43 **76** **43**	+68 **93** +43 **76** **43**	+79 **109** +50 **89** **50**	+79 **109** +50 **89** **50**	+79 **109** +50 **89** **50**
+62 **77** +32 **62** **32**	+72 **92** +37 **73** **37**	+72 **92** +37 **73** **37**	+83 **108** +43 **87** **43**	+83 **108** +43 **87** **43**	+83 **108** +43 **87** **43**	+96 **126** +50 **101** **50**	+96 **126** +50 **101** **50**	+96 **126** +50 **101** **50**
+62 **77** +43 **66** **43**	+73 **93** +51 **79** **51**	+76 **96** +54 **82** **54**	+88 **113** +63 **97** **63**	+90 **115** +65 **99** **65**	+93 **118** +68 **102** **68**	+106 **136** +77 **116** **77**	+109 **139** +80 **119** **80**	+113 **143** +84 **123** **84**
+73 **88** +43 **73** **43**	+86 **106** +51 **87** **51**	+89 **109** +54 **90** **54**	+103 **128** +63 **107** **63**	+105 **130** +65 **109** **65**	+108 **133** +68 **112** **68**	+123 **153** +77 **128** **77**	+126 **156** +80 **131** **80**	+130 **160** +84 **135** **84**
+78 **93** +59 **82** **59**	+93 **113** +71 **99** **71**	+101 **121** +79 **107** **79**	+117 **142** +92 **125** **92**	+125 **150** +100 **133** **100**	+133 **158** +108 **141** **108**	+151 **181** +122 **161** **122**	+159 **189** +130 **169** **130**	+169 **199** +140 **179** **140**

Housing fits

	Nominal housing bore diameter in mm								
	over incl.	**6** **10**			**10** **18**			**18** **30**	
	Deviation of bearing outside diameter in µm (tolerance class Normal)								
	$t_{\Delta Dmp}$	0 −8			0 −8			0 −9	
	Housing deviation, fit interference or fit clearance in µm								
Clearance fit	**E8**	+47 +25	25 35 55		+59 +32	32 44 67		+73 +40	40 54 82
	F7	+28 +13	13 21 36		+34 +16	16 25 42		+41 +20	20 30 50
	G6	+14 +5	5 11 22		+17 +6	6 12 25		+20 +7	7 14 29
	G7	+20 +5	5 13 28		+24 +6	6 15 32		+28 +7	7 17 37
	H6	+9 0	**0** 6 17		+11 0	**0** 6 19		+13 0	**0** 7 22
	H7	+15 0	**0** 8 23		+18 0	**0** 9 26		+21 0	**0** 10 30
	H8	+22 0	**0** 10 30		+27 0	**0** 12 35		+33 0	**0** 14 42
Transition fit	**J6**	+5 −4	**4** 2 13		+6 −5	**5** 1 14		+8 −5	**5** 2 17
	J7	+8 −7	**7** 1 16		+10 −8	**8** 1 18		+12 −9	**9** 1 21
	JS6	+4,5 −4,5	**4,5** 2 12,5		+5,5 −5,5	**5,5** 1 13,5		+6,5 −6,5	**6,5** **0** 15,5
	JS7	+7,5 −7,5	**7,5** 1 15,5		+9 −9	**9** **0** 17		+10,5 −10,5	**10,5** **1** 19,5
	K6	+2 −7	**7** **1** 10		+2 −9	**9** **3** 10		+2 −11	**11** **4** 11
	K7	+5 −10	**10** **2** 13		+6 −12	**12** **3** 14		+6 −15	**15** **5** 15

Example: housing ∅ 100 K6 Ⓔ

Minimum material value	+4	**18**	Interference or fit clearance if the maximum material values are combined.
		6	Probable interference or fit clearance.
Maximum material value	−18	19	Interference or fit clearance if minimum material values are combined. Values **in bold type** in the group of three indicate fit interference, values in normal type indicate fit clearance.

30 **50**		**50** **80**		**80** **120**		**120** **150**		**150** **180**	
0 −11		0 −13		0 −15		0 −18		0 −25	
+89 +50	50 67 100	+106 +60	60 79 119	+126 +72	72 85 141	+148 +85	85 112 166	+148 +85	85 114 173
+50 +25	25 37 61	+60 +30	30 44 73	+71 +36	36 53 86	+83 +43	43 62 101	+83 +43	43 64 108
+25 +9	9 18 36	+29 +10	10 21 42	+34 +12	12 24 49	+39 +14	14 28 57	+39 +14	14 31 64
+34 +9	9 21 45	+40 +10	10 24 53	+47 +12	12 29 62	+54 +14	14 33 72	+54 +14	14 36 79
+16 0	**0** 9 27	+19 0	**0** 11 32	+22 0	**0** 12 37	+25 0	**0** 14 43	+25 0	**0** 17 50
+25 0	**0** 12 36	+30 0	**0** 14 43	+35 0	**0** 17 50	+40 0	**0** 19 58	+40 0	**0** 22 65
+39 0	**0** 17 50	+46 0	**0** 20 59	+54 0	**0** 23 69	+63 0	**0** 27 81	+63 0	**0** 29 88
+10 −6	**6** 3 21	+13 −6	**6** 5 26	+16 −6	**6** 6 31	+18 −7	**7** 7 36	+18 −7	**7** 10 43
+14 −11	**11** 1 25	+18 −12	**12** 2 31	+22 −13	**13** 4 37	+26 −14	**14** 5 44	+26 −14	**14** 8 51
+8 −8	**8** 1 19	+9,5 −9,5	**9,5** **0** 22,5	+11 −11	**11** 1 26	+12,5 −12,5	**12,5** 1 30,5	+12,5 −12,5	**12,5** 3 37,5
+12,5 −12,5	**12,5** **1** 23,5	+15 −15	**15** **1** 28	+17,5 −17,5	**17,5** **1** 32,5	+20 −20	**20** 1 38	+20 −20	**20** 1 45
+3 −13	**13** **4** 14	+4 −15	**15** **4** 17	+4 −18	**18** **6** 19	+4 −21	**21** **7** 22	+4 −21	**21** **4** 29
+7 −18	**18** **6** 18	+9 −21	**21** **7** 22	+10 −25	**25** **8** 25	+12 −28	**28** **9** 30	+12 −28	**28** **6** 37

Housing fits
(continued)

	Nominal housing bore diameter in mm								
	over incl.	**180** **250**			**250** **315**			**315** **400**	
	Deviation of bearing outside diameter in µm (tolerance class Normal)								
	$t_{\Delta Dmp}$	0 −30			0 −35			0 −40	
	Housing deviation, fit interference or fit clearance in µm								
Clearance fit	**E8**	+172 +100	100 134 202		+191 +110	110 149 226		+214 +125	125 168 254
	F7	+96 +50	50 75 126		+108 +56	56 85 143		+119 +62	62 94 159
	G6	+44 +15	15 35 74		+49 +17	17 39 84		+54 +18	18 43 94
	G7	+61 +15	15 40 91		+69 +17	17 46 104		+75 +18	18 50 115
	H6	+29 0	**0** 20 59		+32 0	**0** 22 67		+36 0	**0** 25 76
	H7	+46 0	**0** 25 76		+52 0	**0** 29 87		+57 0	**0** 32 97
	H8	+72 0	**0** 34 102		+81 0	**0** 39 116		+89 0	**0** 43 129
Transition fit	**J6**	+22 −7	**7** 13 52		+25 −7	**7** 15 60		+29 −7	**7** 18 69
	J7	+30 −16	**16** 9 60		+36 −16	**16** 13 71		+39 −18	**18** 14 79
	JS6	+14,5 −14,5	**14,5** 5 44,5		+16 −16	**16** 7 51		+18 −18	**18** 6 58
	JS7	+23 −23	**23** 2 53		+26 −26	**26** 3 61		+28,5 −28,5	**28,5** 3 68,5
	K6	+5 −24	**24** **4** 35		+5 −27	**27** **5** 40		+7 −29	**29** **4** 47
	K7	+13 −33	**33** **8** 43		+16 −36	**36** **7** 51		+17 −40	**40** **8** 57

Values **in bold type** in the group of three indicate fit interference, values in normal type indicate fit clearance.

	400 **500**		**500** **630**		**630** **800**		**800** **1000**		**1000** **1250**	
	0 −45		0 −50		0 −75		0 −100		0 −125	
+232 +135	135 182 277		+255 +145	145 199 305	+285 +160	160 227 360	+310 +170	170 250 410	+360 +195	195 292 485
+131 +68	68 104 176		+146 +76	76 116 196	+160 +80	80 132 235	+176 +86	86 149 276	+203 +98	98 175 328
+60 +20	20 48 105		+66 +22	22 54 116	+74 +24	24 66 149	+82 +26	26 78 182	+94 +28	28 93 219
+83 +20	20 56 128		+92 +22	22 62 142	+104 +24	24 76 179	+116 +26	26 89 216	+133 +28	28 105 258
+40 0	**0** 28 85		+44 0	**0** 32 94	+50 0	**0** 42 125	+56 0	**0** 52 156	+66 0	**0** 64 191
+63 0	**0** 36 108		+70 0	**0** 40 120	+80 0	**0** 52 155	+90 0	**0** 63 190	+105 0	**0** 77 230
+97 0	**0** 47 142		+110 0	**0** 54 160	+125 0	**0** 67 200	+140 0	**0** 80 240	+165 0	**0** 97 290
+33 −7	**7** 21 78		–	–	–	–	–	–	–	–
+43 −20	**20** 16 88		–	–	–	–	–	–	–	–
+20 −20	**20** 8 65		+22 −22	**22** 10 72	+25 −25	**25** 17 100	+28 −28	**28** 24 128	+33 −33	**33** 31 158
+31,5 −31,5	**31,5** 4 76,5		+35 −35	**35** 5 85	+40 −40	**40** 12 115	+45 −45	**45** 18 145	+52,5 −52,5	**52** 24 177
+8 −32	**32** **4** 53		0 −44	**44** **12** 50	0 −50	**50** **8** 75	0 −56	**56** **4** 100	0 −66	**66** **2** 125
+18 −45	**45** **9** 63		0 −70	**70** **30** 50	0 −80	**80** **28** 75	0 −90	**90** **27** 100	0 −105	**105** **28** 125

Housing fits
(continued)

	Nominal housing bore diameter in mm								
	over incl.	**6** **10**			**10** **18**			**18** **30**	
	Deviation of bearing outside diameter in µm (tolerance class Normal)								
	$t_{\Delta Dmp}$	0 –8			0 –8			0 –9	
	Housing deviation, fit interference or fit clearance in µm								
Transition fit	**M6**	–3 –12	**12** **6** 5		–4 –15	**15** **9** 4		–4 –17	**17** **10** 5
	M7	0 –15	**15** **7** 8		0 –18	**18** **9** 8		0 –21	**21** **11** 9
	N6	–7 –16	**16** **10** 1		–9 –20	**20** **14** 1		–11 –24	**24** **17** 2
	N7	–4 –19	**19** **11** 4		–5 –23	**23** **14** 3		–7 –28	**28** **18** 2
Interference fit	**P6**	–12 –21	**21** **15** **4**		–15 –26	**26** **20** **7**		–18 –31	**31** **24** **9**
	P7	–9 –24	**24** **16** **1**		–11 –29	**29** **20** **3**		–14 –35	**35** **25** **5**

Values **in bold type** in the group of three indicate fit interference, values in normal type indicate fit clearance.

	30 **50**		**50** **80**		**80** **120**		**120** **150**		**150** **180**
	0 −11		0 −13		0 −15		0 −18		0 −25
−4 −20	**20** **11** 7	−5 −24	**24** **13** 8	−6 −28	**28** **16** 9	−8 −33	**33** **19** 10	−8 −33	**33** **16** 17
0 −25	**25** **13** 11	0 −30	**30** **16** 13	0 −35	**35** **18** 15	0 −40	**40** **21** 18	0 −40	**40** **18** 25
−12 −28	**28** **19** 1	−14 −33	**33** **22** 1	−16 −38	**38** **26** 1	−20 −45	**45** **31** 2	−20 −45	**45** **28** 5
−8 −33	**33** **21** 3	−9 −39	**39** **25** 4	−10 −45	**45** **28** 5	−12 −52	**52** **33** 3	−12 −52	**52** **30** 13
−21 −37	**37** **28** **10**	−26 −45	**45** **34** **13**	−30 −52	**52** **40** **15**	−36 −61	**61** **47** **18**	−36 −61	**61** **44** **11**
−17 −42	**42** **30** **6**	−21 −51	**51** **37** **8**	−24 −59	**59** **42** **9**	−28 −68	**68** **49** **10**	−28 −68	**68** **46** **3**

Housing fits
(continued)

	Nominal housing bore diameter in mm								
	over incl.	**180** **250**			**250** **315**			**315** **400**	
	Deviation of bearing outside diameter in µm (tolerance class Normal)								
	$t_{\Delta Dmp}$	0 −30			0 −35			0 −40	
	Housing deviation, fit interference or fit clearance in µm								
Transition fit	**M6**	−8 −37	**37** **17** 22		−9 −41	**41** **19** 26		−10 −46	**46** **21** 30
	M7	0 −46	**46** **21** 30		0 −52	**52** **23** 35		0 −57	**57** **25** 40
	N6	−22 −51	**51** **31** 8		−25 −57	**57** **35** 10		−26 −62	**62** **37** 14
	N7	−14 −60	**60** **35** 16		−14 −66	**66** **37** 21		−16 −73	**73** **41** 24
Interference fit	**P6**	−41 −70	**70** **50** **11**		−47 −79	**79** **57** **12**		−51 −87	**87** **62** **11**
	P7	−33 −79	**79** **54** **3**		−36 −88	**88** **59** **1**		−41 −98	**98** **66** **1**

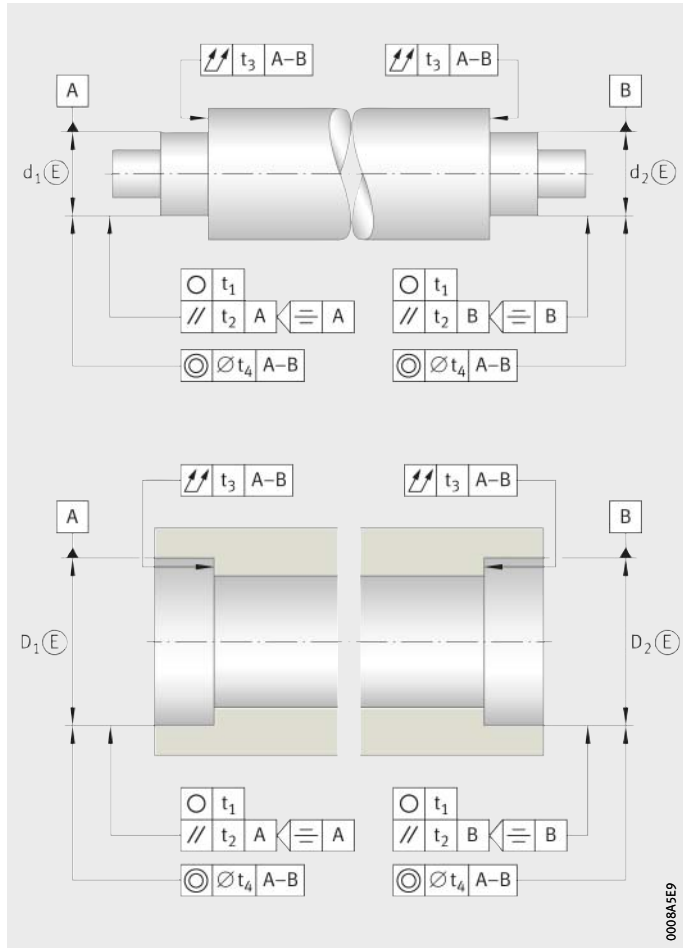
Values **in bold type** in the group of three indicate fit interference, values in normal type indicate fit clearance.

400 **500**		**500** **630**		**630** **800**		**800** **1000**		**1000** **1250**	
0 −45		0 −50		0 −75		0 −100		0 −125	
−10 −50	**50** **22** 35	−26 −70	**70** **38** 24	−30 −80	**80** **38** 45	−34 −90	**90** **38** 66	−40 −106	**106** **45** 85
0 −63	**63** **27** 45	−26 −96	**96** **56** 24	−30 −110	**110** **58** 45	−34 −124	**124** **61** 66	−40 −145	**145** **68** 85
−27 −67	**67** **39** 18	−44 −88	**88** **56** 6	−50 −100	**100** **58** 25	−56 −112	**112** **60** 44	−66 −132	**132** **67** 59
−17 −80	**80** **44** 28	−44 −114	**114** **74** 6	−50 −130	**130** **78** 25	−56 −146	**146** **83** 44	−66 −171	**171** **94** 59
−55 −95	**95** **67** **10**	−78 −122	**122** **90** **28**	−88 −138	**138** **96** **13**	−100 −156	**156** **104** **0**	−120 −186	**186** **121** 5
−45 −108	**108** **72** **0**	−78 −148	**148** **108** **28**	−88 −168	**168** **126** **13**	−100 −190	**190** **127** **0**	−120 −225	**225** **148** 5

Geometrical and positional tolerances of bearing seating surfaces

In order to achieve the required fit, the bearing seats and fit surfaces of the shaft and housing bore must conform to certain tolerances, *Figure 2* and table, page 117.

The positional tolerances t_4 for a second bearing seat on the shaft (d_2) or in the housing (D_2) are dependent on the types of bearings used and the operating conditions. Values for the tolerances t_4 can be requested from Schaeffler.



t_1 = roundness tolerance
t_2 = parallelism tolerance
t_3 = total axial runout tolerance of abutment shoulders
t_4 = coaxiality tolerance

Figure 2
Guide values for geometrical and positional tolerances

Accuracy of bearing seating surfaces

The degree of accuracy for the bearing seat tolerances on the shaft and in the housing correspond to the fundamental tolerances in accordance with ISO 286-1, see table.

When using the fits in accordance with ISO 286-1, the envelope requirement Ⓔ always applies.

Geometrical and positional tolerances of bearing seating surfaces

Bearing tolerance class		Bearing seating surface	Fundamental tolerance grades[1]			
ISO 492	DIN 620		Diameter tolerance	Roundness tolerance t_1	Parallelism tolerance t_2	Total axial runout tolerance of abutment shoulder t_3
Normal 6X	PN (P0) P6X	Shaft	IT6 (IT5)	Circumferential load IT4/2	IT4/2	IT4
				Point load IT5/2	IT5/2	
		Housing	IT7 (IT6)	Circumferential load IT5/2	IT5/2	IT5
				Point load IT6/2	IT6/2	
5	P5	Shaft	IT5	Circumferential load IT2/2	IT2/2	IT2
				Point load IT3/2	IT3/2	
		Housing	IT6	Circumferential load IT3/2	IT3/2	IT3
				Point load IT4/2	IT4/2	
4	P4 P4S[2] SP[2]	Shaft	IT4	Circumferential load IT1/2	IT1/2	IT1
				Point load IT2/2	IT2/2	
		Housing	IT5	Circumferential load IT2/2	IT2/2	IT2
				Point load IT3/2	IT3/2	
	UP[2]	Shaft	IT3	Circumferential load IT0/2	IT0/2	IT0
				Point load IT1/2	IT1/2	
		Housing	IT4	Circumferential load IT1/2	IT1/2	IT1
				Point load IT2/2	IT2/2	

[1] ISO fundamental tolerances (IT grades) in accordance with ISO 286:

[2] Not included in DIN 620.

Roughness of bearing seats

The roughness of the bearing seats must be matched to the tolerance class of the bearings. The mean roughness value Ra must not be too high, in order to maintain the interference loss within limits. Shafts should be ground and bores should be precision turned, see table.

The bore and shaft tolerances and permissible roughness values are also given in the design and safety guidelines in the product sections.

Guide values for roughness of bearing seating surfaces

Diameter of bearing seat d (D) mm		Recommended mean roughness values Ra and roughness classes for ground bearing seats Diameter tolerance corresponding to [1] µm			
over	incl.	IT7	IT6	IT5	IT4
–	80	1,6 (N7)	0,8 (N6)	0,4 (N5)	0,2 (N4)
80	500	1,6 (N7)	1,6 (N7)	0,8 (N6)	0,4 (N5)

[1] The values in brackets are roughness classes in accordance with DIN EN ISO 1302.

Functions

A basic distinction is made between contact and non-contact seals in the adjacent construction and the bearing.

The sealing arrangement has a considerable influence on the operating life of a bearing arrangement. Its function is to retain the lubricant in the bearing and prevent the ingress of contaminants into the bearing.

Contaminants may have various effects:

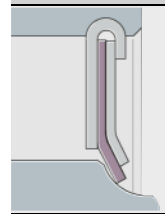
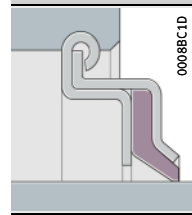
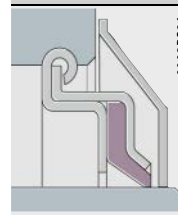
- A large quantity of very small, abrasive particles causes wear in the bearing. The increase in clearance or noise bring the operating life of the bearing to an end.
- Large, overrolled hard particles reduce the fatigue life since pittings occur at the indentation points under high bearing loads.

Overview of seal types

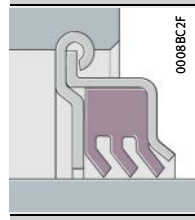
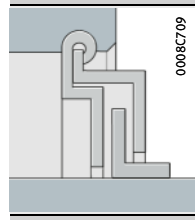
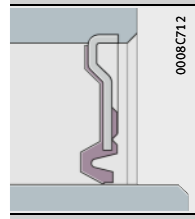
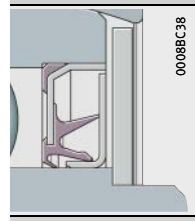
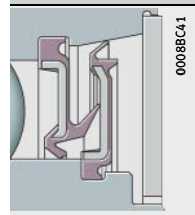
Seals for radial insert ball bearings are of a three-piece design. This concept offers, due to the rigidly rolled-in sheet steel washer, optimum seating in the bearing as well as concentric alignment of the seal lip to the inner ring.

Seals for radial insert ball bearings are available in various designs, see table. The stated suffix is included in the ordering designation and explained in the table of suffixes.

Seal types

P seal (NPP)	
 0008C5D4	Two zinc-coated sheet steel washers with intermediate NBR part, seal lip axially preloaded. In order to protect the seal lip from mechanical damage, the outer sheet steel washer extends a considerable distance down towards the bearing inner ring. For use in narrow radial insert ball bearings with inner ring extended on one side.
R seal (KRR)	
 0008BC1D	Two zinc-coated sheet steel washers extended outwards and angled downwards with intermediate NBR or PTFE part and radially preloaded seal lip. Improved protection against mechanical damage. Substantial grease reservoir due to the space between the extended and angled sheet steel washers. Used in radial insert ball bearings with inner ring extended on both sides.
R seal with flinger shield (KRR-..-2C)	
 0008BC26	As R seal, but with outer flinger shield with anti-corrosion protection. Additional sealing action without restriction on speed and with additional protection against mechanical damage.

Seal types
(continued)

T seal (KTT)	
 0008BC2F	Two zinc-coated sheet steel washers with intermediate NBR part and three radially preloaded seal lips for heavily contaminated conditions. For better protection of the seal lip against mechanical damage, the outer sheet steel washer is angled outwards. Lower speeds due to higher friction.
L seal (labyrinth seal) (KLL)	
 0008C709	Two zinc-coated sheet steel washers extended outwards in the outer ring with a zinc-plated intermediate sheet steel L-section ring pressed onto the inner ring. Substantial grease reservoir due to the space between the extended and angled sheet steel washers. For use in bearings with inner ring extended on both sides. For increased temperatures and lower friction.
RSR seal (2RSR)	
 0008C712	Single piece, zinc-plated sheet steel washer with vulcanised and radially preloaded seal lip made from NBR. For use in radial insert ball bearings with integral adapter sleeve.
Sealing cartridge with flinger shield	
 0008BC38	Design identical to normal cartridge seal but supplemented by a flinger shield to protect the bearing against high pressure cleaning equipment and mechanical damage.
Combined sealing washer and flinger shield with protective shield	
 0008BC41	Design identical to normal sealing washer and flinger shield but supplemented by a protective shield to protect the bearing against high pressure cleaning equipment and mechanical damage.

BRS seals

Bearings with BRS seals can be supplied by agreement, *Figure 1*.

The friction in this case is as low as that in bearings with sealing shields. They have the advantage over these, however, that the outer elastic rim gives good sealing when fitted in the slot in the outer ring. This is important with a rotating outer ring since the base oil is separated from the soap suspension by centrifugal force and would escape through the unsealed metallic seat in the outer ring if sealing shields were fitted.

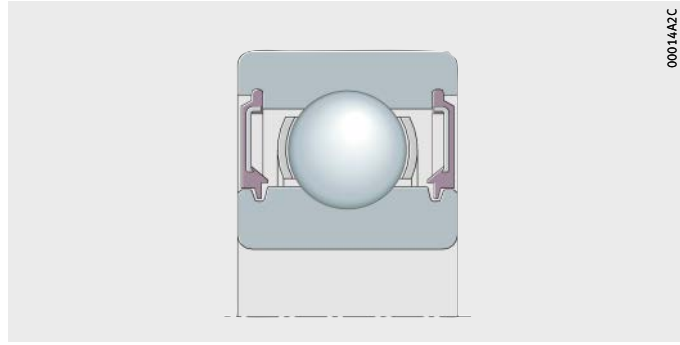


Figure 1
BRS seals

Non-contact seals in the adjacent construction

With non-contact seals, only lubricant friction occurs in the lubrication gap. The seals do not undergo wear and remain capable of operation for a long period. Since they generate no heat, non-contact seals are also suitable for very high speeds.

Mounting and dismounting

Radial insert ball bearings must be handled with care before and during mounting. Their trouble-free operation is also dependent on the care taken during mounting.

Handling and use

Rolling bearings, rolling bearing parts and Arcanol rolling bearing greases are high quality goods and must therefore be handled with care.

Storage of rolling bearings

The performance capability of modern rolling bearings lies at the boundaries of what is technically achievable. The materials, dimensional and geometrical tolerances, surface quality and lubrication have been optimised for maximum levels of function, which means that even slight deviations in functional areas, such as those caused by corrosion, can impair the performance capacity. In order to realise the full performance capability of rolling bearings, it is essential to match the anti-corrosion protection, packaging, storage and handling to each other.

Anti-corrosion protection and packaging constitute part of the bearing and are optimised such that they preserve all characteristics of the product at the same time as far as possible. In addition to protecting the surface against corrosion, this includes emergency running lubrication, friction, lubricant compatibility, noise behaviour, resistance to ageing and compatibility with rolling bearing components (cage and seal material).

Since the packaging offers additional protection against contamination through dirt, foreign media and other environmental influences, we recommend that the components should not be unpacked until immediately prior to further processing.

Storage conditions for rolling bearings

As a basic prerequisite, parts must be stored in a closed storage area which cannot be affected by any aggressive media, such as exhaust gases from vehicles or gases, mist or aerosols of acids, lyes or salts. Direct sunlight should be avoided since, apart from the harmful effects of UV radiation, it can lead to wide temperature fluctuations in the packaging. The temperature should be constant and air humidity should be as low as possible. Jumps in temperature and increased humidity lead to condensation.

The following conditions must be fulfilled:

- frost-free storage, i.e. a temperature $>$ +5 °C (this prevents formation of white frost, up to a maximum of +2 °C permissible up to 12 hours per day)
- maximum temperature +40 °C (to prevent excessive drainage of anti-corrosion oils)
- relative humidity $<$ 65% (with temperature changes up to 70% up to a maximum of 12 hours per day).

The temperature and humidity must be continuously monitored. This can be carried out using a datalogger. The measurements must be taken at intervals of no more than 2 hours.

At least 2 measurement points must be selected: the highest point and the lowest point in the vicinity of an external wall at which the goods can be stored.

Storage periods for rolling bearings

Empirical values show that corrosion protection is usually achieved for 3 years. In particular, greased rolling bearings should not be stored for longer, since the chemical-physical behaviour of greases may change during storage. Even if the minimum performance capacity remains, the safety reserves of the grease may have diminished. This also applies to greased bearings with sealing shields or washers.

In principle, rolling bearings can also be used beyond the storage period of 3 years. If this period is exceeded, an agreement must be reached with the lubricant manufacturer. The storage periods stated are empirical values based on practice. This is therefore not associated with any extension in the legal or contractually agreed warranty periods. Furthermore, these empirical values only relate to the component in its unopened original packaging.

If these periods are exceeded, it is recommended that the bearing should be checked for corrosion, the condition of the anti-corrosion oil, the lubricating grease and the plastic and elastomer components before it is used.

Storage of Arcanol rolling bearing greases

The information on storage of rolling bearings applies as appropriate to Arcanol rolling bearing greases. The precondition is that the grease is stored in closed, completely filled original containers.

Storage periods for Arcanol rolling bearing greases

Rolling bearing greases are mixtures of oil, thickener and additives. Such mixtures of liquid and solid substances do not have unlimited stability. During storage, their chemical-physical characteristics may change and they should therefore be used up as soon as possible.

If the storage conditions are observed, Arcanol greases can be stored without loss of performance for 3 years. As in the case of rolling bearings, however, the permissible storage period should not be seen as a rigid limit.

If storage is carried out as prescribed, most greases can also be used after 3 years, if allowances are made for small changes. If there is any doubt when using older greases, random sample checking of chemical-physical characteristics is recommended in order to determine any changes in the grease. It is therefore not possible to state storage periods for containers that have been opened. If containers are to be stored after opening, the grease surface should always be brushed flat, the container should be sealed airtight and it should be stored such that the empty space is upwards. High temperatures should be avoided in all cases.

Unpacking of rolling bearings

Perspiration leads to corrosion. Hands should be kept clean and dry and protective gloves worn if necessary. Bearings should only be removed from their original packaging immediately before assembly. If bearings are removed from multi-item packaging with dry preservation, the package must be closed again immediately, since the protective vapour phase is only effective in closed packaging. Bearings should be oiled or greased immediately after unpacking.

Compatibility, miscibility

The anti-corrosion agents in bearings with an oil-based preservative are compatible and miscible with oils and greases having a mineral oil base. Compatibility should be checked if synthetic lubricants or thickeners other than lithium or lithium complex soaps are used. If there is an incompatibility, the anti-corrosion oil should be washed out before greasing, especially in the case of lubricants with a PTFE/alkoxyfluoroether base and thickeners based on polycarbamide. Bearings should be washed out if the lubricant is changed or the bearings are contaminated. If in doubt, please contact the relevant lubricant manufacturer.

Cleaning of rolling bearings

The following are suitable for degreasing and washing of rolling bearings:

- aqueous neutral, acidic or alkaline cleaning agents. Check the compatibility of alkaline agents with aluminum components before cleaning
- organic cleaning agents such as paraffin oil free from water and acid, petroleum ether (not petrol), spirit, dewatering fluids, freon 12 substitutes, cleaning agents containing chlorinated hydrocarbons.

Cleaning should be carried out using brushes, paint brushes or lint-free cloths. In the case of resinous oil or grease residues, precleaning by mechanical means followed by treatment with an aqueous, strongly alkaline cleaning agent is recommended.



Legal regulations relating to handling, environmental protection and health and safety at work must be observed. The specifications of cleaning agent manufacturers must be observed.

Paraffin oil, petroleum ether, spirit and dewatering fluids are flammable, alkaline agents are corrosive. The use of chlorinated hydrocarbons is associated with the risk of fire, explosion and decomposition as well as with health hazards. These hazards and appropriate protective measures are described comprehensively in ZH1/425 of the German Federation of Institutions for Statutory Accident Insurance and Prevention (Hauptverband der gewerblichen Berufsgenossenschaften).

After cleaning, rolling bearings must be dried and preservative applied immediately (risk of corrosion).

Mounting and dismounting

General guidelines for mounting

The following guidelines must always be taken into account:

- The assembly area must be kept clean and free from dust.
- Protect bearings from dust, contaminants and moisture. Contaminants have a detrimental influence on the running and operating life of rolling bearings.
- Before mounting work is started, familiarise yourself with the design by means of the final assembly drawing.
- Before mounting, check whether the bearing presented for mounting corresponds to the data in the drawing.
- Check the housing bore and shaft seat for dimensional, geometrical and positional accuracy as well as cleanliness.
- Check that the shaft and housing bore have a lead chamfer of 10° to 15°.
- Wipe away any anti-corrosion agent from the seating and contact surfaces, wash anti-corrosion agent out of tapered bores.
- Lightly oil the bearing ring seating surfaces or rub with grease.
- Do not cool the bearings excessively. Moisture due to condensation can lead to corrosion in the bearings and bearing seatings.
- After mounting, supply the rolling bearings with lubricant.
- Check the correct functioning of the bearing arrangement.

Mounting of housing units

Radial insert ball bearings must be handled with care before and during mounting. Their trouble-free operation is also dependent on the care taken during mounting.

Delivered condition, INA brand

The housings have a coating of anthracite grey primer (≈ RAL 7016).

The radial insert ball bearings are greased; for information on the grease used, see the features of the specific bearing. A standard kit is included, see page 238.

Delivered condition, FAG brand

The housings have a coating of black primer paint (RAL 9005).

The radial insert ball bearings are greased using a grease in grease group GA13, see table, page 68.

The housing units are supplied with a loose packed lubrication nipple and integrated end cap for the lubrication nipple as well as an Allen key.

Storage and shelf life

The units should be stored:

- in dry, clean rooms with the temperature as constant as possible
- at a relative humidity of max. 65%.

The storage period of radial insert ball bearings is limited by the storage life of the grease, see section Lubrication, page 62.

Unpacking

Perspiration causes corrosion. Hands must be kept clean and dry.

Bearings should not be removed from their original packaging until immediately before mounting.

Guidelines for mounting of housing units

If flake graphite cast iron housings and bearings are not supplied by INA as ready-to-fit units but are instead combined by the customer, the following guidelines should be followed:

- If the fit is too loose, grease can escape between the housing and bearing and will not therefore reach the bearing during relubrication.
- If the fit is too tight, the bearing outer ring cannot align itself within the housing bore.

The assembly area should be as dry and clean as possible.

First, screw mount the housing on the adjacent construction, then locate the bearing inner ring on the shaft. If this sequence is applied, the bearing aligns itself to the shaft in such a way that no stresses occur.

Ensure that the fitting tools and fixing screws are present.

Clean the shaft and remove any burrs.

Inspect the bearing seating surfaces on the shaft.

Keep bearing seating surfaces clean, dry and free of grease.

The specified tolerances must be observed.

Mounting forces must never be directed through the rolling elements.

Blows should never be applied directly to the bearing rings and seals.

Mounting of coated components

Before the mounting of products with Corrotect coating, they should be checked for compatibility with the media.

The tolerances are increased by the thickness of the coating.

In order to reduce the forces involved in pressing-in, the surface of the parts should be lightly greased or a mounting paste used.

Mounting of cast units

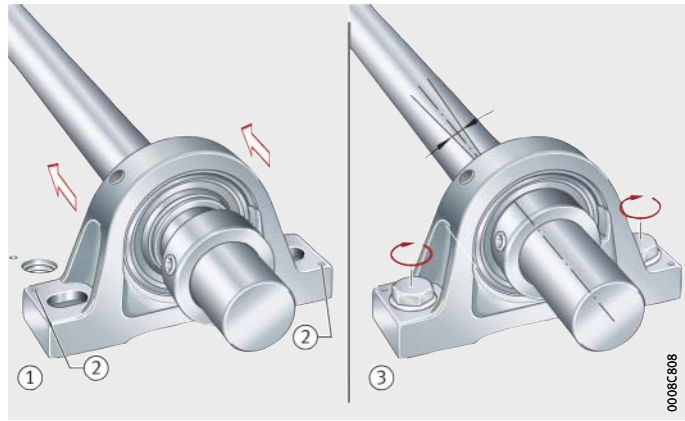
Plummer block and flanged housing units have various options for location on the shaft. Housing units of the brand INA can be combined with bearing end caps, see page 134.

Radial insert ball bearings with eccentric locking collar or grub screw in inner ring

Housing units and radial insert ball bearings with eccentric locking collar or grub screw in inner ring, *Figure 1*:

- Push the housing unit onto the shaft and align it with the fixing holes in the adjacent construction.
- Fit dowel pins if necessary.
- Screw the housing to the adjacent construction by means of the fixing screws.

If the shaft is to be supported by several housing units, tighten the screws finger tight at first, align the shaft and then tighten the screws securely.



① Alignment
② Position of additional through hole for location of dowel pins in accordance with DIN EN ISO 8752 (in the event of high loads occurring parallel to the mounting surface of housings ASE, P and SP)
③ Screw mounting on the adjacent construction

Figure 1
Sliding the unit onto the shaft

Location on the shaft by means of eccentric locking collar

- Slide the eccentric locking collar onto the collar seating on the bearing inner ring and rotate by hand, preferably in the direction of shaft rotation, *Figure 2*.
- Using a drift and hammer, tension the eccentric locking collar by means of one or two strong blows, *Figure 2*.
- For location using a locking collar, tighten the grub screw to the tightening torque M_A, *Figure 3*, page 130.

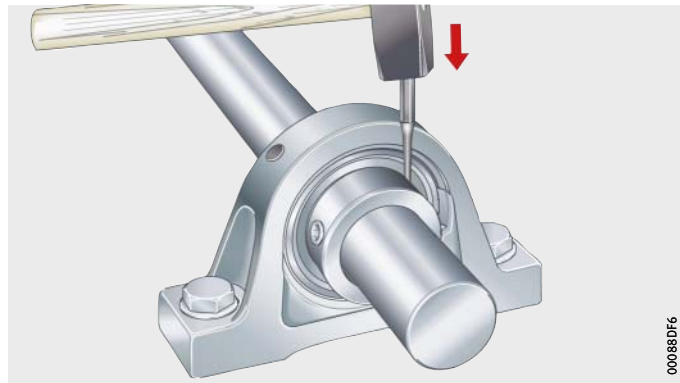
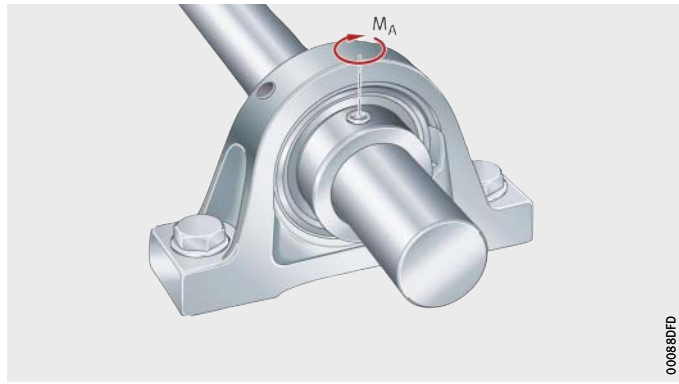


Figure 2
Tensioning the eccentric locking collar

Location on the shaft by means of grub screws in the inner ring

▶ For location using a locking collar, tighten both grub screws to the tightening torque M_A, see table.



M_A = tightening torque, see table

Figure 3
Tightening the grub screw in the eccentric locking collar or inner ring

Tightening torques for grub screws

Width across flats W		Thread		Tightening torques[1] M_A
mm	inch	ISO	UNF	Nm
2,5	3/32	M5	N10-32	3,6
3	1/8	M6×0,75	1/4″-28	6
4	5/32	M8×1	5/16″-24	14
5	3/16	M10×1,25	3/8″-24	26
6	1/4	M12×1,5 M12×1,25[2]	1/2″-20	42

1) The tightening torques are valid for original INA or FAG grub screws only.

2) GYE90-KRR-B.

Dismounting

Observe the correct sequence in dismounting:

▶ For bearings with an eccentric locking collar, undo the grub screw and rotate the locking collar in the opposite direction to the direction of shaft rotation.

▶ For bearings with grub screws in the inner ring, undo both grub screws.

▶ Unscrew the housing.

Radial insert ball bearings with adapter sleeve

The bearing seats on the shaft and the outside surface of the adapter sleeve must be dry and free of grease.

- ▶ Slide the housing unit onto the shaft and align it with the fixing holes in the adjacent construction, *Figure 4*.
- ▶ Fit dowel pins if necessary.
- ▶ Screw the housing to the adjacent construction using the fixing screws, *Figure 5*.

If the shaft is to be supported by several housing units, tighten the screws finger tight at first, align the shaft and then tighten the screws securely.

ASE

① Position of additional through hole for location of dowel pins in accordance with DIN EN ISO 8752 (in the event of high loads occurring parallel to the mounting surface of housings ASE, P and SP)

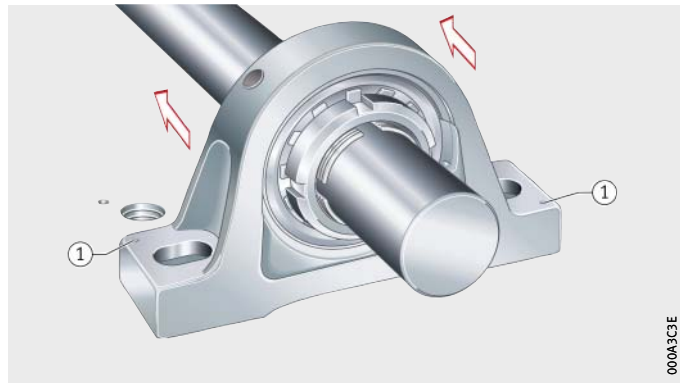


Figure 4
Sliding the unit onto the shaft

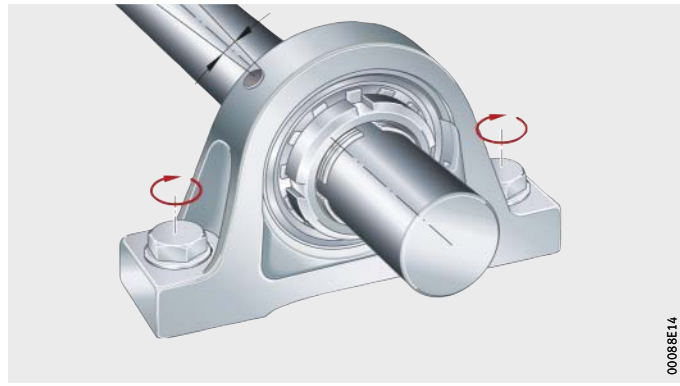


Figure 5
Screw mounting the housing finger tight

Tightening of locknut

▶ Tighten the locknut using 2 hook wrenches of type A to DIN 1810; during tightening, the adapter sleeve must be held in place using a second hook wrench, *Figure 6*. Wrenches for tightening and holding, see tables.

Do not exceed the maximum tightening torque M_A given in the table, otherwise the operating clearance in the bearing will become too small. Driving the locknut up will slightly displace the bearing in an axial direction.

The contact pressure at the end face of the inner ring should not exceed 10 N/mm^2.

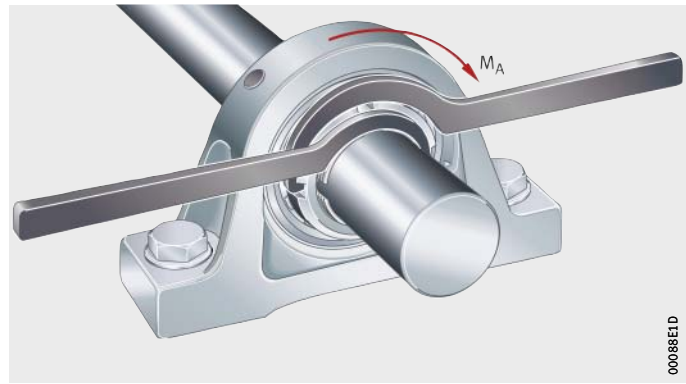


Figure 6
Tightening of locknut

Hook wrenches and tightening torques for housing units, INA brand

Shaft diameter d mm	Hook wrench, type A, to DIN 1810		Tightening torque Locknut M_A	
	For tightening of locknut	For countertensioning of adapter sleeve	min. Nm	max. Nm
20	A 30–32 (HN 4)	A 25–28 (HN 2)	13	17
25	A 40–42 (HN 5)	A 30–32 (HN 3)	22	28
30	A 45–50 (HN 6)	A 34–36 (HN 4)	33	40
35	A 52–55 (HN 7)	A 40–42 (HN 5)	47	56
40	A 58–62 (HN 8)	A 45–50 (HN 6)	70	80
50	A 68–75 (HN 10)	A 52–55 (HN 7)	90	105

Tightening torques for locknuts, Black Series, FAG brand

Shaft d mm	Locknut	Tightening torques M_A ±5% Nm
20	AN05	25
25	AN06	30
30	AN07	40
35	AN08	50
40	AN09	60
45	AN10	75
50	AN11	100
55	AN12	130
60	AN13	150
65	AN15	170
70	AN16	200
75	AN17	230
80	AN18	270

Securing of precision locknut

▶ Bend the tab on the tab washer into a groove in the locknut to secure the nut against loosening, *Figure 7*.

Ensure that the seal in the bearing is not damaged when bending the locking tab over.

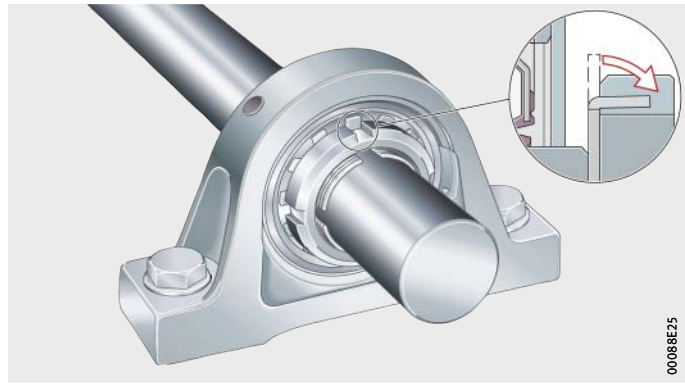


Figure 7
Securing of precision locknut

Dismounting

Observe the correct sequence in dismounting:

▶ Bend back the tab on the tab washer and undo the locknut by a few turns.

▶ Place the impact cap in front of the locknut and drive the adapter sleeve off the shaft seat using hammer blows.

▶ Unscrew the housing.

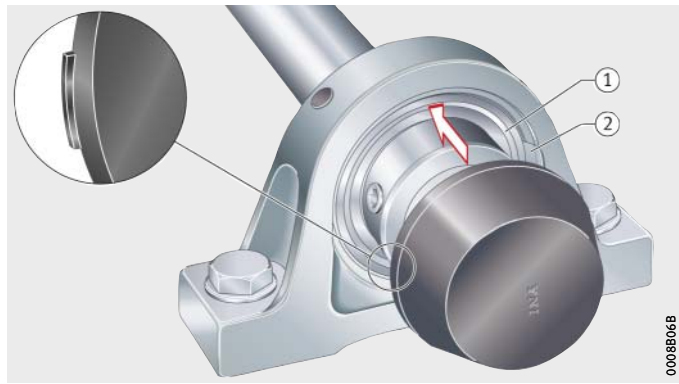
Fitting of bearing end caps

Bearing end caps are available for series of the INA brand.

Bearing end caps should only be fitted or removed while the shaft is stationary. There is a serious danger of injury if the shaft is rotating.

Fitting

- ▶ Position the tabs of the end cap in the locating slots, noting the position of the INA logo, *Figure 8*.
- ▶ Rotate the end cap clockwise by 90°, noting the position of the INA logo, *Figure 9*. Check that the end cap is secured properly in the housing.



① Annular slot
② Locating slots

Figure 8
Positioning of end cap

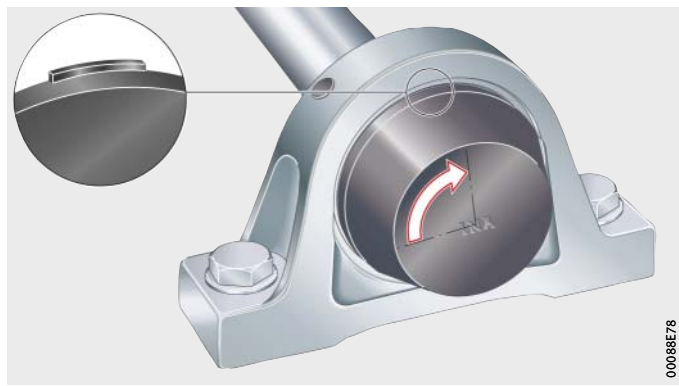


Figure 9
Locating end cap in annular slot

Removal

Observe the correct sequence in removal:

- Loosen the end cap by rotating it anticlockwise (90°), noting the position of the INA logo, *Figure 10*.

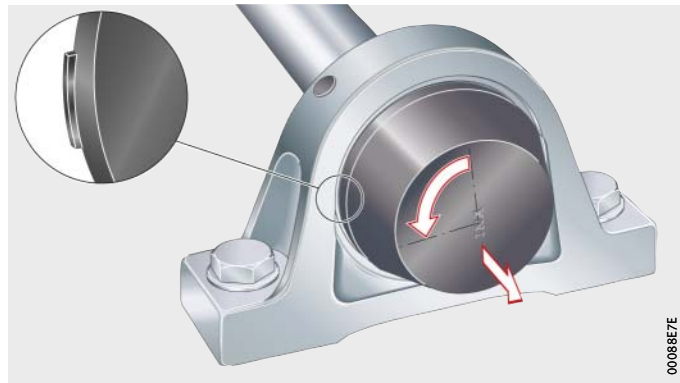


Figure 10
Removal of end cap

Mounting of sheet steel units

Sheet steel units with eccentric locking collar and grub screws in the inner ring:

- Slide the housing unit onto the shaft and align it with the fixing holes in the adjacent construction, *Figure 11*.
- Screw the housing to the adjacent construction using the fixing screws, *Figure 12*. If the shaft is to be supported by several housing units, tighten the screws finger tight at first, align the shaft and then tighten the screws securely.

With two-piece housings, the housing and radial insert ball bearing should be assembled first.



Figure 11
Sliding the unit onto the shaft



Figure 12
Screw mounting the housing finger tight

Location on the shaft by means of eccentric locking collar

- Slide the eccentric locking collar onto the collar seating on the bearing inner ring and rotate by hand, preferably in the direction of shaft rotation.
- Using a drift and hammer, tension the eccentric locking collar by means of one or two strong blows, *Figure 13*.
- For location using a locking collar, tighten the grub screw to the tightening torque M_A, *Figure 14*.



Figure 13
Tensioning
the eccentric locking collar

Location on the shaft by means of grub screws in the inner ring

- For location using grub screws in the inner ring, tighten both grub screws by means of a torque wrench.

Observe the tightening torque M_A, see table, page 130.



M_A = tightening torque, see table, page 130

Figure 14
Tightening the grub screw in the eccentric locking collar or inner ring

Dismounting

Observe the correct sequence in dismounting:

- For bearings with an eccentric locking collar, undo the grub screw and rotate the locking collar in the opposite direction to the direction of shaft rotation.
- For bearings with grub screws in the inner ring, undo both grub screws.
- Unscrew the housing.

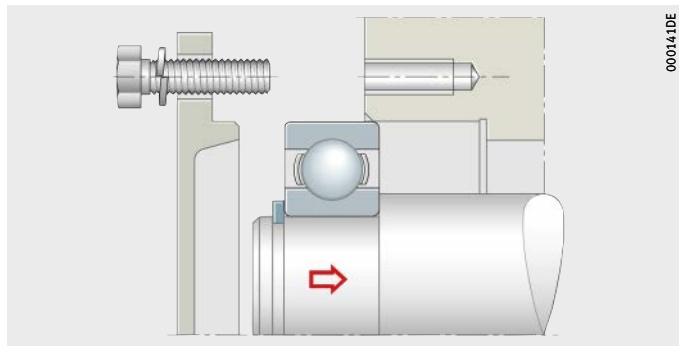
Mounting of rolling bearings with cylindrical seats

Avoid applying direct blows to the bearing rings with a hammer.

Non-separable bearings

In the case of non-separable bearings, apply the mounting forces to the ring with a tight fit, which should also be fitted first, *Figure 15*.

If the inner ring of a non-separable bearing will have a tight fit, press the bearing onto the shaft first, *Figure 15*. The bearing together with the shaft is then pushed into the housing (fit clearance).



Tight fit of the inner ring, mount this ring first

Figure 15
Non-separable bearing

Cold fitting of bearings by pressing

Bearings up to d = 80 mm can be pressed onto the shaft while cold for normal tight fits, *Figure 16*. Mechanical or hydraulic presses can be used for this purpose.

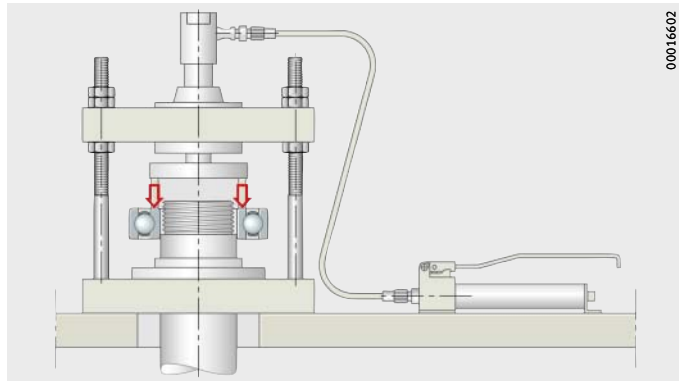
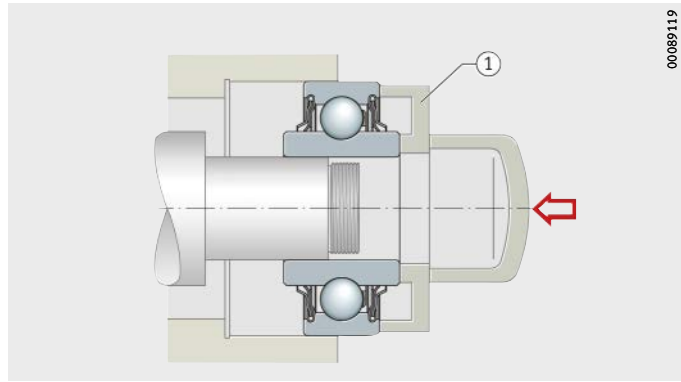


Figure 16
Mounting using hydraulic press

If a press is not available, the bearings can also be driven up by means of a hammer and a mounting sleeve.

In bearings with an angular adjustment facility, tilting of the outer ring is prevented by a mounting disc that is in contact with both bearing rings, *Figure 17*. In bearings with laterally protruding cages or balls, the disc must have a turned recess, *Figure 17*.

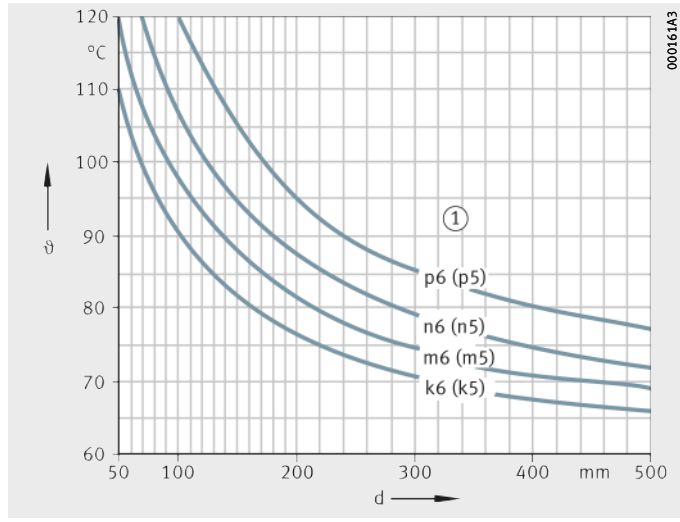


① Mounting disc with turned recess

Figure 17
Mounting using mounting disc

Heating of bearings

Bearings with a cylindrical bore should be heated before mounting if a tight fit on the shaft is intended and excessive effort is required for pressing by mechanical means, *Figure 18*. The data are valid for maximum fit interference, a room temperature of +20 °C and an excess temperature safety margin of 30 K.



ϑ = heating temperature
d = bearing diameter

① Shaft tolerance (this is subject to the envelope requirement Ⓔ)

Figure 18
Heating temperature

Induction heating devices

Induction heating devices give rapid, safe and clean heating. The devices are used mainly in volume mounting work.

Heating plate

Individual bearings can be heated on an electric heating plate. A thermostatic controller must be always be used.

Heating cabinet

Thermostatically controlled hot air or heating cabinets are safe and clean. This method is mainly used for small and medium sized bearings. The heating times are relatively long.

Guidelines for dismounting

Information on mounting and dismounting is given in the publications WL 80 100, Mounting of Rolling Bearings and IS 1, Mounting and Maintenance of Rolling Bearings.

Dismounting should be taken into consideration in the original design of the bearing position. If bearing rings are to be mounted with a tight fit, slots should be provided in the shaft or housing bore, for example, to allow removal of the rings.



If the bearing is to be reused, the following guidelines should be taken into consideration:

- Do not use a concentrated or “hard” flame.
- Avoid direct blows on the bearing rings.
- Do not apply fitting forces through the rolling elements.
- Carefully clean the bearings after dismounting.

Dismounting of rolling bearings on cylindrical seats

If the bearings and adjacent parts are to be reused, the removal tool should be applied to the ring fitted with a tight fit. In non-separable bearings, the ring with a sliding fit is dismounted first and the ring with a tight fit is then removed.

Removal of small bearings

For the extraction of small bearings, mechanical extraction devices, *Figure 19*, or hydraulic presses are suitable. Dismounting is made easier if there are withdrawal slots on the shaft or housing so that the withdrawal tool can be applied directly to the bearing ring with a tight fit.

Special devices are available for cases where withdrawal slots are not present.

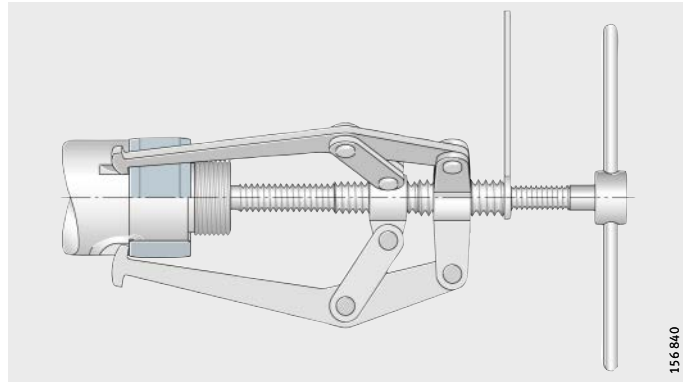


Figure 19
Removal device
with three adjustable arms



Radial insert ball bearings

Spherical outer ring
Cylindrical outer ring
Rubber interliner or steel aligning ring

Radial insert ball bearings

With eccentric locking collar **152**

Spherical or cylindrical outer ring

Radial insert ball bearings with spherical outer ring, for compensation of misalignments. Location on the shaft by means of a locking collar, which is preferably tightened in the direction of rotation and then secured.

..... **194**

Radial insert ball bearings with cylindrical outer ring, eccentric locking collar and two slots in the outer ring. Axial location in cylindrical bores by means of snap rings.

With grub screws in inner ring **152**

Radial insert ball bearings with spherical outer ring, for compensation of misalignments. Inner ring located on the shaft by means of grub screws. For bearing arrangements with a constant direction of rotation.

With adapter sleeve **152**

Radial insert ball bearings with spherical outer ring, for compensation of misalignments. The inner ring is located on the shaft by means of an adapter sleeve with a locknut and a tab washer.

With drive slot **152**

Radial insert ball bearings with spherical outer ring and drive slot in the inner ring. For compensation of misalignments. The slot prevents rotation.

Self-aligning deep groove ball bearings **152**

Radial insert ball bearings with spherical outer ring, for compensation of misalignments. With cylindrical bore for a fit seat or with profiled bore for square or hexagonal shafts.

Deep groove ball bearings with extended inner ring **194**

Radial insert ball bearings with cylindrical outer ring. Inner ring extended on both sides, which is located by means of a fit or hexagonal bore. Constant or alternating load.

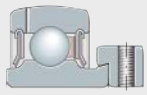
With rubber interliner **212**

Radial insert ball bearings with rubber interliner. Location on the shaft by means of eccentric locking collar. The NBR interliner absorbs vibrations and shocks.

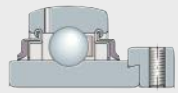
With steel aligning ring **212**

Radial insert ball bearings for mounting in cylindrical bores. Bearing with eccentric locking collar and additionally with an axially split outer ring as an aligning ring.

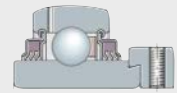




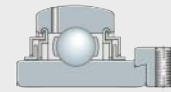
(G)RAE..-XL-NPP-B
RALE..-XL-NPP-B



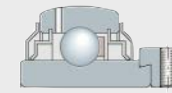
G(N)E..-XL-KRR-B
(N)E..-XL-KRR-B



GE..-XL-KTT-B

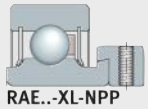


GE..-XL-KLL-B

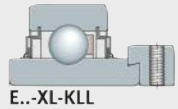


GE..-XL-KRR-B-2C

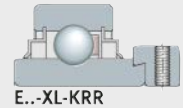
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RAE..-XL-NPP
RALE..-XL-NPP



E..-XL-KLL

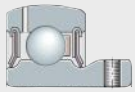


E..-XL-KRR

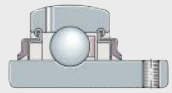


RAE..-XL-NPP-NR

0008B32E

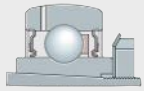


GAY..-XL-NPP-B
AY..-XL-NPP-B



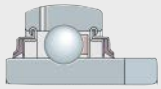
GYE..-XL-KRR-B

0008B337



GSH..-XL-2RSR-B

0008B341



GLE..-XL-KRR-B

0008B34A



2..-XL-NPP-B

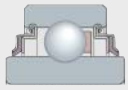


GVK..-KTT-B-AS2/V
VK..-KTT-B

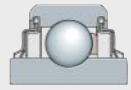


SK..-KRR-B
SK..-KTT-B

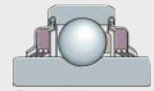
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2..-XL-KRR
2..-XL-KRR-AH



SK..-KRR

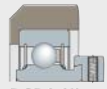


SK..-KTT

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RABRA-XL
RABRB-XL



RCRA-XL
RCRB-XL

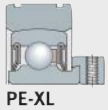


CRB-XL



RCSMA-XL
RCSMB-XL

0008B365



PE-XL



BE-XL

0008B36E

Features of radial insert ball bearings, comparison of series

Series	Shaft diameter				Location
	mm		inch		
	from	to	from	to	
GE..-XL-KLL-B	20	50	–	–	Eccentric locking collar
E..-XL-KLL	20	50	–	–	Eccentric locking collar
GRAE..-XL-NPP-B	12	60	–	–	Eccentric locking collar
GRA..-NPP-B-AS2/V	–	–	5/8	1 15/16	
RABRB..-XL-FA106	12	50	–	–	Eccentric locking collar
RABRA..-XL-FA106	30	–	–	–	
RAE..-XL-NPP-B	12	50	–	–	Eccentric locking collar
RA..-NPP-B	–	–	3/4	1 1/2	
RALE..-XL-NPP-B	20	30	–	–	
PE..-XL	20	40	–	–	
RCSMB..-XL-FA106	15	25	–	–	Eccentric locking collar
RCSMA..-XL-FA106	30	–	–	–	
RCRA..-XL-FA106	20	–	–	–	
RCRB..-XL-FA106	20	–	–	–	
CRB..-XL	20	35	–	–	
RAE..-XL-NPP	12	60	–	–	Eccentric locking collar
RALE..-XL-NPP	20	30	–	–	
RAE..-XL-NPP-NR	20	40	–	–	
RA..-NPP	–	–	5/8	1 1/2	
RAL..-NPP	–	–	3/4	–	
GE..-XL-KRR-B	17	120	–	–	Eccentric locking collar
G..-KRR-B-AS2/V	–	–	15/16	2 15/16	Eccentric locking collar
GE..-XL-KRR-B-2C	25	40	–	–	
GNE..-XL-KRR-B	30	100	–	–	
E..-XL-KRR-B	25	40	–	–	Eccentric locking collar
NE..-XL-KRR-B	50	–	–	–	
GE..-XL-KRR-B-FA101	20	75	–	–	Eccentric locking collar
GE..-XL-KRR-B-FA164	20	90	–	–	
E..-XL-KRR	20	70	–	–	Eccentric locking collar
GE..-XL-KTT-B	20	80	–	–	Eccentric locking collar
GAY..-XL-NPP-B	12	60	–	–	Grub screws
GAY..-NPP-B-AS2/V	–	–	5/8	1 7/16	
GYE..-XL-KRR-B	12	90	–	–	
GY..-KRR-B-AS2/V	–	–	1/2	2 15/16	
AY..-XL-NPP-B	12	30	–	–	Grub screws
GAY..-XL-NPP-B-FA164	12	15	–	–	Grub screws
GLE..-XL-KRR-B	20	70	–	–	Drive slot
BE..-XL	20	40	–	–	Fit
2..-XL-NPP-B	12	50	–	–	Fit
2..-XL-KRR(-AH)	13	60	–	–	
SK(E)..-KRR-B	16,1	38,1	–	–	Hexagonal bore
SK..-KRR	–	–	7/8	1 1/4	
SK..-KTT-B	–	–	7/8	1 1/4	Hexagonal bore
SK..-KTT	–	–	1 1/4	1 3/4	
GSH..-XL-2RSR-B	20	50	–	–	Adapter sleeve
GVK(E)..-KRR-B-AS2/V	16,3	–	–	–	Square bore
VK(E)..-KTT-B	25,4	38	1	–	
GVK(E)..-KTT-B(-AS2/V)	25,4	39,7	1	1 9/16	

1) Further guidelines must be observed, see page 62.

2) Recommended operating temperature.
If temperatures exceed +100 °C, relubrication must be carried out regularly.

3) Temporary temperature peaks are possible up to +120 °C.

Accessories	Sealing	Compensation of misalignment	Internal clearance Group	Cage	Grease[1]	Relubrication facility	Temperature[2] °C from	to	Comments	Dimension table Page
–	L	yes	5	Steel	L069	yes	−40	+180	–	166
–	L	no	3	PA66	GA13	no	−20	+100[3]	–	202
–	P	yes	3	PA66	GA13	yes	−20	+100[3]	–	166
										188
Rubber interliner	P	yes	3	PA66	GA13	no	−20	+85	–	218
									Light series	218
–	P	yes	3	PA66	GA13	no	−20	+100[3]	–	166
									–	188
									Light series	166
Aligning ring									Annular slots in aligning ring	220
Rubber interliner	P	no	3	PA66	GA13	no	−20	+85	–	218
									Light series	218
									Light series, mounting chamfer	218
									Mounting chamfer	218
									Abutment shoulder	218
–	P	no	3	PA66	GA13	no	−20	+100[3]	–	202
									–	202
									Two slots, one snap ring	202
									–	210
									–	210
–	R	yes	3	PA66	GA13	yes	−20	+100[3]	–	166
–	R	yes	3	PA66	GA13	yes	−20	+100[3]	–	188
									Flinger shields	166
									Heavy series	168
–	R	yes	3	PA66	GA13	no	−20	+100[3]	–	166
									Heavy series	170
–	R	yes	5	Steel	L069	yes	−40	+180	PTFE seal lip	166
					GA11		+150	+250		166
–	R	no	3	PA66	GA13	no	−20	+100[3]	–	202
–	T	yes	3	PA66	GA13	yes	−20	+100[3]	–	166
–	P	yes	3	PA66	GA13	yes	−20	+100[3]	–	174
										188
										174
										188
–	P	yes	3	PA66	GA13	no	−20	+100[3]	–	174
–	P	yes	5	Steel	GA11	yes	+150	+250	PTFE seal lip	174
–	R	yes	5	Steel	L069	yes	−40	+180	PTFE seal lip	180
Aligning ring	P	yes	N	PA66	GA13	no	−20	+100[3]	Annular slots in aligning ring	220
–	R	yes	N	PA66	GA13	no	−20	+100[3]	–	182
		no								206
–	R	yes	3	PA66	GA13	no	−20	+100[3]	Corrosion-resistant, maximum greasing	186
		no								208
–	T	yes	3	PA66	L402	no	−20	+100[3]	Corrosion-resistant, maximum greasing	186
		no			GA13					208
–	RSR	yes	4	PA66	GA13	yes	−20	+100[3]	–	178
–	R	yes	3	PA66	GA13	yes	−20	+100[3]	Corrosion-resistant, maximum greasing	184
	T					no				184
	T					yes				184

The chapter Technical principles brings together the essential guidelines on the design of bearing arrangements, lubrication, mounting and dismounting and the operation of bearings, see page 32.

Compensation of static misalignments

Bearings with a spherical outer ring, fitted in housings with a concave bore, can compensate for static misalignment of the shaft, *Figure 1*.

For units with a lubrication groove in the housing and lubrication hole in the radial insert ball bearing, the following applies:

- Up to ±2,5°, the units can be relubricated.
- Between ±2,5° and ±5°, the possibility of relubrication is dependent on the specific unit. Please contact us in this case.
- Over ±5°, relubrication is no longer possible.

The units must not be used to support swivelling or tumbling motion.

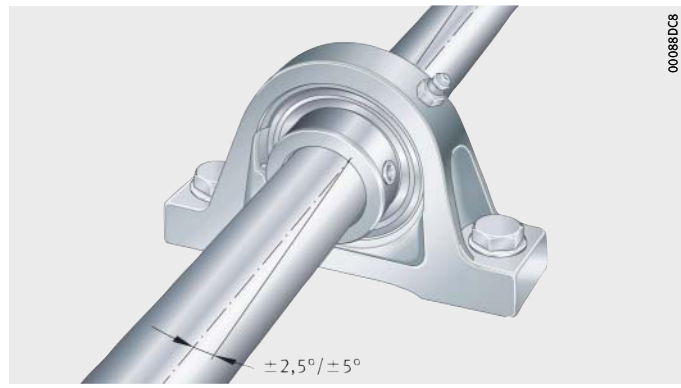


Figure 1
Compensation of static shaft misalignment

Minimum radial load

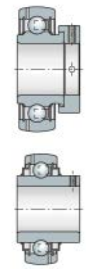
In order to ensure slippage-free operation, the bearings must be subjected to a minimum radial load. This applies particularly in the case of high speeds and high accelerations. In continuous operation, a minimum radial load of the order of $P \geqq 0{,}01 \cdot C_r$ is necessary for ball bearings with cage.

Speed limits for radial insert ball bearings

The speed limits are dependent on the load, the clearance between the bearing bore and shaft and the friction of the seals in the case of bearings with contact seals.

Guide values for the permissible speeds can be derived from the diagram, *Figure 2*, page 149.

In the case of load ratios $C_r/P > 13$, the speeds can be increased. For $C_r/P < 5$, location by means of a fit with a shaft roughness of Ra 0,3 is recommended, see page 100. For both types of applications, please contact us. In order to ensure slippage-free operation, the minimum radial load must be observed.



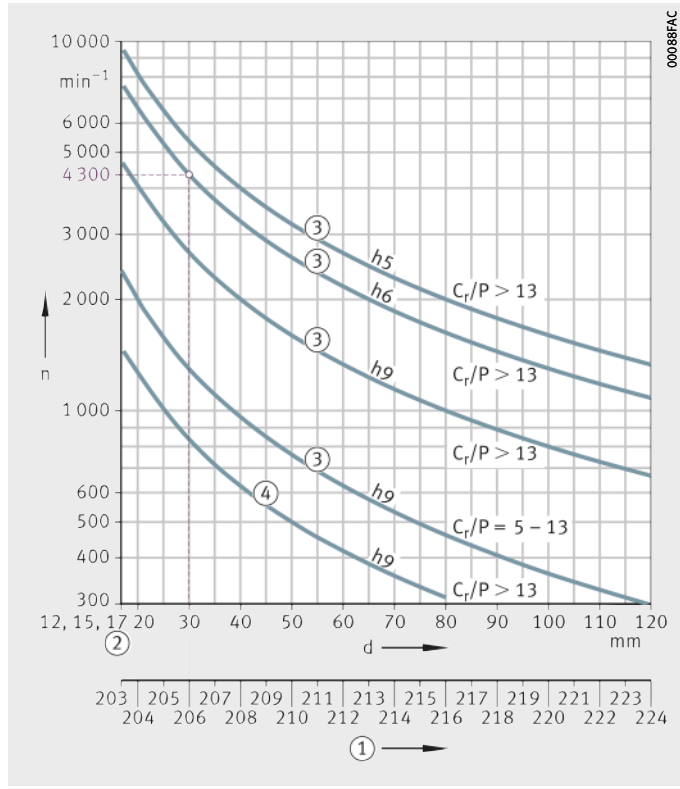
Example
of permissible speed calculation

Given:

Shaft tolerance	h6 Ⓔ
Radial insert ball bearing	GRAE30-XL-NPP-B
Ball set	206
Basic dynamic load rating C_r	20 700 N
Load P	1 300 N
Sealing	Seals P.

Required:

Load ratio $C_r/P = 20\,700\ N/1\,300\ N$	$C_r/P > 13$
Permissible speed	$n \approx 4\,300\ min^{-1}$, *Figure 2*.



n = permissible speed
h5, h6, h9 = shaft tolerance (this is subject to the envelope requirement Ⓔ)
C_r/P = load ratio

① Ball set
② For d = 12 mm, 15 mm and 17 mm, identical ball set 203
③ For radial insert ball bearings with seals L, P or R
④ For radial insert ball bearings with seals T

Figure 2
Permissible speeds
for radial insert ball bearings

Shaft tolerances for radial insert ball bearings

The permissible shaft tolerance is dependent on the speed and load. Shafts up to tolerance class h9 Ⓔ can be used.

Conventional drawn shafts will suffice for most applications.

Standard tolerances of radial insert ball bearings

The outside diameter of the bearings corresponds to tolerance class Normal in accordance with ISO 492, see table. The inner ring bore has a plus tolerance to facilitate mounting of the bearing.

Tolerances of radial insert ball bearings

Inner ring				Outer ring			
Nominal dimension Bore d mm		Variation[1] $t_{\Delta dmp}$ µm		Nominal dimension Outside diameter D mm		Variation[2)3)] $t_{\Delta Dmp}$ µm	
over	incl.	min.	max.	over	incl.	max.	min.
12	18	0	+18	30	50	0	–11
18	24	0	+18	50	80	0	–13
24	30	0	+18	80	120	0	–15
30	40	0	+18	120	150	0	–18
40	50	0	+18	150	180	0	–25
50	60	0	+18	180	250	0	–30
60	90	0	+25	–	–	–	–
90	120	0	+30	–	–	–	–

1) This corresponds to the arithmetic mean value derived from the largest and smallest diameters (measured using a two-point measuring device).

2) In the case of sealed bearings, the largest and smallest values of the outside diameter can deviate from the mean value by approximately 0,03 mm.

3) Outside diameter tolerances also valid for 2..-KRR and 2..-NPP-B.

Radial internal clearance of radial insert ball bearings

The radial internal clearance of most series is Group 3 to ISO 5753-1 and is thus larger than for normal deep groove ball bearings, see table and page 146.

The larger internal clearance allows better support of angular misalignment and shaft deflection.

Radial internal clearance

Bore d mm		Radial internal clearance							
		Group N µm		Group 3 µm		Group 4 µm		Group 5 µm	
over	incl.	min.	max.	min.	max.	min.	max.	min.	max.
2,5	6	2	13	8	23	–	–	–	–
6	10	2	13	8	23	14	29	20	37
10	18	3	18	11	25	18	33	25	45
18	24	5	20	13	28	20	36	28	48
24	30	5	20	13	28	23	41	30	53
30	40	6	20	15	33	28	46	40	64
40	50	6	23	18	36	30	51	45	73
50	65	8	28	23	43	38	61	55	90
65	80	10	30	25	51	46	71	65	105
80	100	12	36	30	58	53	84	75	120
100	120	15	41	36	66	61	97	90	140
120	140	18	48	41	81	71	114	105	160
140	160	18	53	46	91	81	130	120	180





Radial insert ball bearings with spherical outer ring

Radial insert ball bearings with spherical outer ring



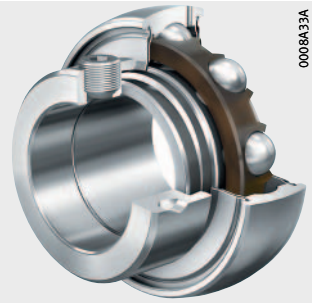


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	Self-aligning deep groove ball bearings, hexagonal bore	186
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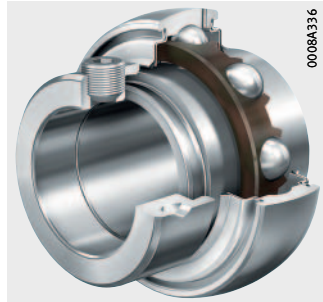
Radial insert ball bearings with spherical outer ring

With eccentric locking collar

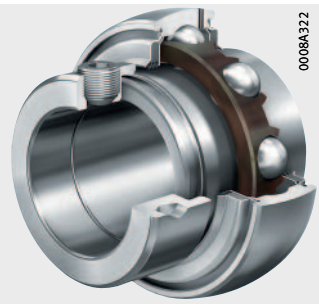
(G)RAE..-XL-NPP-B, RALE..-XL-NPP-B



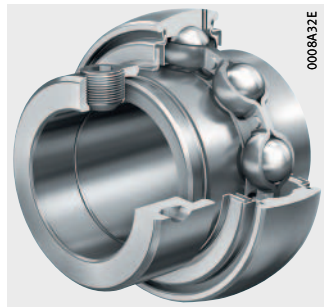
G(N)E..-XL-KRR-B, (N)E..-KRR-B



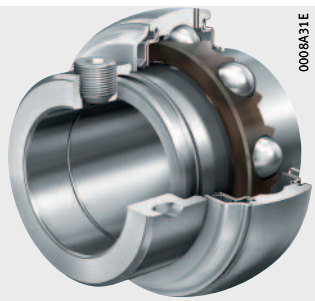
GE..-XL-KTT-B



GE..-XL-KLL-B



GE..-XL-KRR-B-2C



With grub screws in inner ring

GAY..-XL-NPP-B, AY..-XL-NPP-B



GYE..-XL-KRR-B

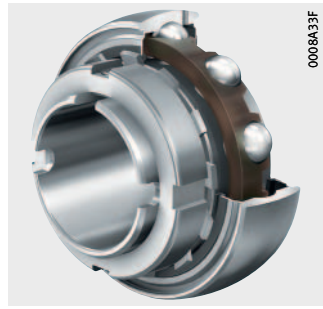






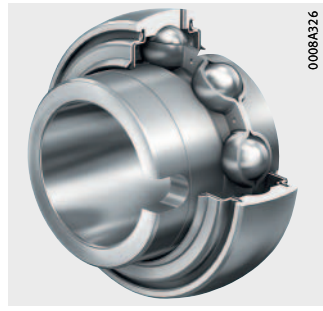
With adapter sleeve

GSH..-XL-2RSR-B



With drive slot

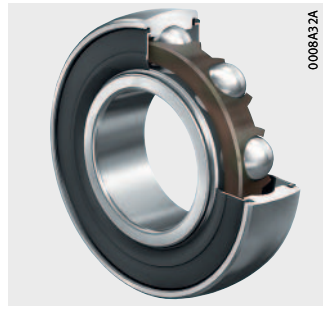
GLE..-XL-KRR-B



Self-aligning deep groove ball bearings

With bore for fit

2..-XL-NPP-B



Radial insert ball bearings with spherical outer ring

Self-aligning deep groove ball bearings with profiled bore

With square bore

GVK..-KTT-B-AS2/V,
VK..-KTT-B



With hexagonal bore

SK..-KRR-B



SK..-KTT-B



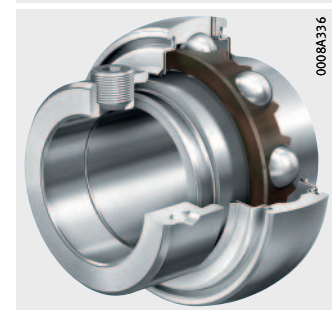
Inch size radial insert ball bearings

With eccentric locking collar

GRA..-NPP-B-AS2/V,
RA..-NPP-B



G..-KRR-B-AS2/V

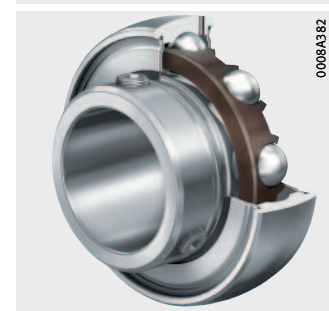


With grub screws in inner ring

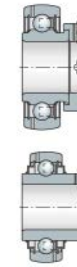
GY..-KRR-B-AS2/V



GAY..-NPP-B(-AS2/V)



Radial insert ball bearings with spherical outer ring



Features

Radial insert ball bearings with spherical outer ring are single row, ready-to-fit units comprising a solid outer ring, cages made from plastic or sheet steel and seals P, R, L or T. Bearings with an inner ring extended on both sides undergo less tilting of the inner ring and therefore run more smoothly.

The outer ring has a spherical outside surface. In combination with a housing matched to the design, bearings with a spherical outer ring can compensate for misalignment of the shaft, see section Compensation of static misalignments, page 148.

With only a few exceptions, radial insert ball bearings can be relubricated. For this purpose, they have two lubrication holes in one plane of the outer ring offset by 180°.

Radial insert ball bearings are particularly easy to fit and are preferentially suitable for drawn shafts of tolerance classes h6 Ⓔ to h9 Ⓔ. For non-locating bearings, shafts of tolerance class h7 Ⓔ are recommended. They are located on the shaft by means of an eccentric locking collar, grub screws in the inner ring, an adapter sleeve, a drive slot, fit or profiled bore.

The series comparison matrix presents the features of the series in detail, see table, page 146.

X-life

Numerous sizes are supplied in the X-life design. These products are indicated in the dimension tables.

Radial insert ball bearings of X-life quality have, for example, lower roughness Ra and higher geometrical accuracy of the raceways than comparable designs that are not X-life. As a result, these bearings have higher load carrying capacity and longer rating life although their dimensions are identical. In certain applications, this means that a smaller bearing arrangement can be designed.

Radial insert ball bearings of X-life quality have an eccentric locking collar of an improved design and the quantity and distribution of the lubricant has been optimised. Housings ASE have additional crosspieces on the underside. For extreme requirements, the cage and seal material in the high and low temperature designs (suffix FA101) has been significantly improved in comparison with earlier versions.

Radial insert ball bearings with spherical outer ring

Inch size designs

Some series with an eccentric locking collar or grub screws in the inner ring are also available with inch size bore dimensions, see page 188.

Corrosion-resistant radial insert ball bearings

For corrosion-resistant bearing arrangements and for applications in the food and drinks industry, bearings with a Corrotect coating under the suffix FA125 and bearings of a corrosion-resistant design are available. Corrosion-resistant radial insert ball bearings are suitable where moisture, contaminated water, salt spray mist or weakly alkaline and weakly acidic cleaning agents are present, see section Radial insert ball bearings and housing units, corrosion-resistant, page 345.

Radial insert ball bearings for high and low temperatures

At high temperatures, rolling bearings expand in volume due to a change in the material microstructure. Depending on the location of the heat source, there may also be a significant temperature differential between the inner and outer ring.

The radial insert ball bearings are not dimensionally stabilised but have an increased internal clearance Group 5. They have cages made from metal or a high temperature plastic, lubricants with improved thermal resistance and special seals.

These bearings have the suffix FA164 or FA101, see table, page 164. An extended temperature range can also be covered by using the series GLE..-XL-KRR-B and GE..-XL-KLL-B, see table, page 146.

Radial insert ball bearings with eccentric locking collar

These “classic” INA radial insert ball bearings are located on the shaft by means of a locking collar, *Figure 1*. They are particularly suitable for bearing arrangements with a constant direction of rotation or, under low speed and load, for an alternating direction of rotation.

The locking collar is preferably tightened in the direction of rotation and secured by means of a grub screw. This location method prevents damage to the shaft and can be easily loosened again.

GE..-XL-KRR-B

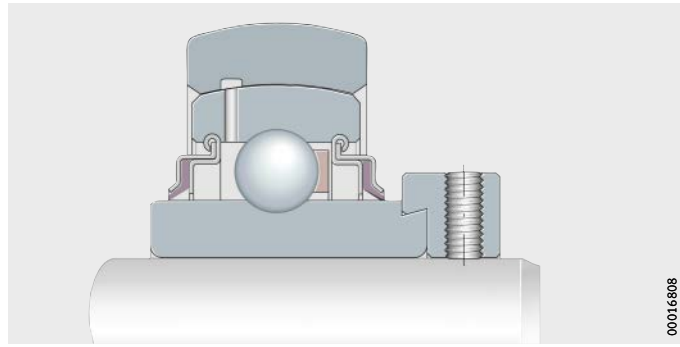


Figure 1
Location
by means of eccentric locking collar

Sealing

The radial insert ball bearings are sealed by means of seals P, R, L or T, see page 119. In the case of series GE..-XL-KRR-B-2C, the seals R have outer flinger shields with Corrotect coating for protection against mechanical damage.

Lubrication

With the exception of a few series, sealed bearings can be relubricated.

Anti-corrosion protection

Several series are also available in a corrosion-resistant design. These bearings have the suffix FA125.

The inner rings up to d = 60 mm and the locking collars in general have a Corrotect coating and are thus protected against fretting corrosion. This is not valid for the series RALE..-XL-NPP(-B).

Radial insert ball bearings for high and low temperatures

The series for high or expanded temperature ranges have the suffixes FA164 or FA101, see table, page 146.

Cylindrical outer ring

In addition to the bearings with a spherical outer ring, there are also the following series with a cylindrical outer ring: RAE..-XL-NPP, RALE..-XL-NPP, E..-XL-KRR and E..-XL-KLL, see section Radial insert ball bearings with cylindrical outer ring, page 194.

Inch size designs

The series GRA..-NPP-B-AS2/V, RA..-NPP-B, G..-KRR-B-AS2/V have an inch size bore diameter, see page 188.

Tightening torques

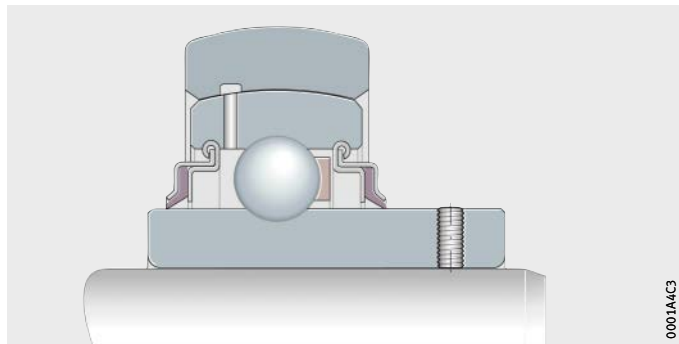
The tightening torques for metric and inch size grub screws must be observed, see table, page 130.

Radial insert ball bearings with spherical outer ring

Radial insert ball bearings with grub screws in inner ring

In the case of these radial insert ball bearings, the inner ring is located on the shaft by means of two grub screws offset by 120°, *Figure 2*. This location method is suitable for bearing arrangements with a constant direction of rotation or, under low speed and load, for an alternating direction of rotation.

The grub screws are self-retaining and have a fine pitch thread with cup point for secure location of the bearings.



GYE..-XL-KRR-B

Figure 2
Location
by means of grub screws
in the inner ring

Sealing

The radial insert ball bearings are sealed on both sides by means of seals P or R, see page 119.

Lubrication

With the exception of series AY..-XL-NPP-B, the bearings can be relubricated.

Anti-corrosion protection

The radial insert ball bearings are also available in a corrosion-resistant design with bearing rings and rolling elements made from high alloy, corrosion-resistant rolling bearing steel with an increased chromium and molybdenum content. The steel cages are made from corrosion-resistant steel.

The bearings are sealed on both sides by means of seals RSR and have additional outer flinger shields made from corrosion-resistant steel, see section Radial insert ball bearings and housing units, corrosion-resistant, page 345.

Radial insert ball bearings for high temperatures

The radial insert ball bearings for high temperatures have the suffix FA164, see table, page 146.

Inch size designs

In the case of series GY..-KRR-B-AS2/V, the bore is of inch dimensions, see page 188.

Tightening torques

The tightening torques for metric and inch size grub screws must be observed, see table, page 130.

Radial insert ball bearings with adapter sleeve

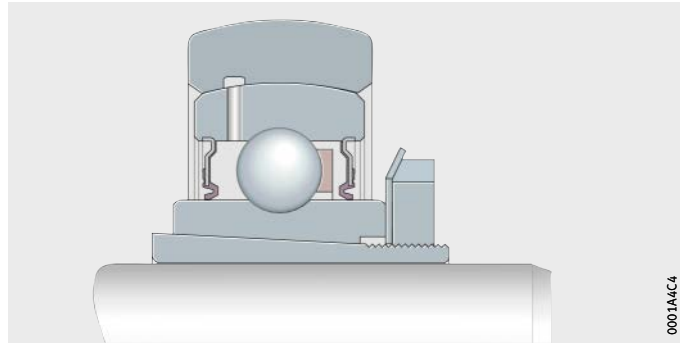
In the case of this series, the inner ring is located on the shaft by means of an adapter sleeve with a locknut and a tab washer, *Figure 3*. These radial insert ball bearings are suitable for shafts up to tolerance class h11 Ⓔ.

This location method is suitable for bearing arrangements with a constant or alternating direction of rotation and for high speeds.

The adapter sleeve and locknut give concentric, force locking location of the bearing inner ring on the shaft. As a result, the speeds that can be achieved are the same as with deep groove ball bearings. These bearings also give quieter running than normal radial insert ball bearings. The adapter sleeve, locknut and tab washer are all zinc plated.

The bearings are highly suitable for reversing operation. As a result of the force locking connection, there is no occurrence of fretting corrosion between the shaft and the bore of the adapter sleeve.

Due to the integral adapter sleeve, the bearings have the same radial dimensions and basic load ratings as radial insert ball bearings with an eccentric locking collar or with grub screws in the inner ring and are interchangeable with these bearings.



GSH..-XL-2RSR-B

Figure 3
Location
using adapter sleeve and locknut

Sealing

Radial insert ball bearings with an integral adapter sleeve are sealed by means of seals RSR, see page 119.

Lubrication

The bearings can be relubricated.

Hook wrenches and tightening torques

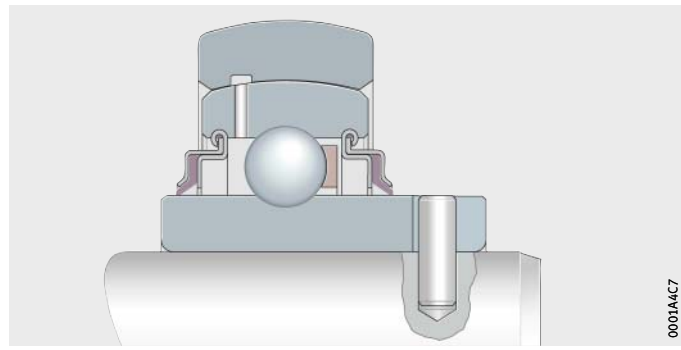
The permissible tightening torques for the locknut must be observed, see table, page 132. Hook wrenches in accordance with DIN 1810 are available from the Industrial Service function of Schaeffler, see page 568.

Radial insert ball bearings with spherical outer ring

Radial insert ball bearings with drive slot

Radial insert ball bearings with a drive slot in the inner ring are non-locating bearings with good high temperature characteristics, *Figure 4*. Non-locating bearings are used at low speeds and loads to compensate for thermal elongation of the shaft.

Due to the slot, they are easy to locate in a radial direction. Rotation is prevented by means of a drive pin on the shaft or a set collar with a pin. The non-locating bearings are suitable for drawn shafts of tolerance classes h5 Ⓔ to h7 Ⓔ.



GLE..-XL-KRR-B

Figure 4
Location by means of drive slot

Anti-corrosion protection

The inner rings up to a bore diameter d = 60 mm have a Corrotect coating and are thus protected against fretting corrosion.

Sealing

Radial insert ball bearings with a drive slot have seals R with lip seals made from PTFE, see page 119.

Lubrication

The bearings can be relubricated.

Self-aligning deep groove ball bearings with bore for fit

Self-aligning deep groove ball bearings are available with a cylindrical bore for a fit seat, *Figure 5*, or with a reamed square or hexagonal bore, *Figure 6*.

Bearings with a fit seat on the shaft can achieve the same speeds as standard ball bearings. These are suitable for bearings with an alternating direction of rotation and offer smooth running.

2..-XL-NPP-B

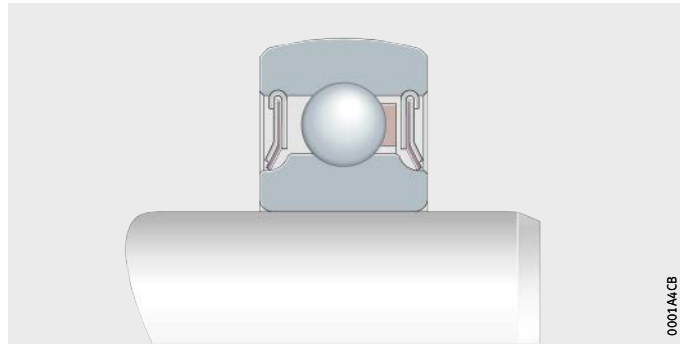


Figure 5
Self-aligning deep groove ball bearings with fit seat

Sealing

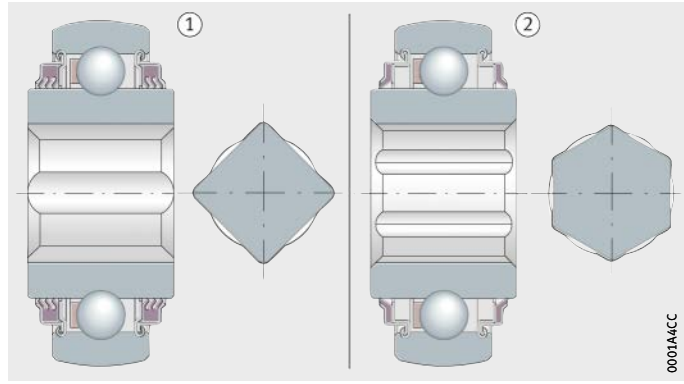
The bearings are sealed on both sides using P seals with a vulcanised seal lip or three-piece designs, see page 119.

For self-aligning deep groove ball bearings with a fit seat, the fit data for ball bearings apply.

Self-aligning deep groove ball bearings with profiled bore

Bearings with a profiled bore are used where shafts must transmit very high torques and this is only possible using square or hexagonal shafts, *Figure 6*. Rotation is prevented by form fit.

VK..-KTT-B
SK..-KRR-B



① Square bore
② Hexagonal bore

Figure 6
Self-aligning deep groove ball bearings with profiled bore

Anti-corrosion protection

The bearings have a Corrotect coating.

Sealing

The self-aligning deep groove ball bearings are sealed using seals R or T, see page 119.

Lubrication

The bearings are greased to their maximum, some designs can also be relubricated.

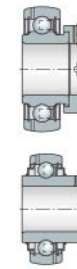
Radial insert ball bearings with spherical outer ring

Suffixes

Suffixes for available designs, see table.

Available designs

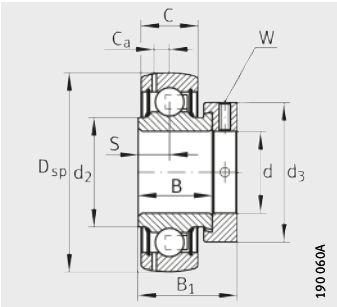
Suffix	Description	Design
AS2/V	Bearing outer ring with two lubrication holes in offset planes	Standard
B	Bearing with spherical outer ring	
2C	Flinger shields on both sides	
FA101	High and low temperature design –40 °C to +180 °C	
FA106	Bearing subjected to special noise testing	
FA107	Bearing with lubrication holes on the locating side	
FA125	With Corrotect coating, corrosion-resistant	
FA164	High temperature design up to +250 °C	
KRR	Lip seals on both sides (seal R)	
KLL	Labyrinth seals on both sides (seal L)	
KTT	Triple lip seals on both sides (seal T)	
NR	Slot and snap ring for radial insert ball bearing with cylindrical outer ring	
NPP	Lip seals on both sides (seal P)	
OSE	Bearing without locking element (eccentric locking collar)	
2RSR	Lip seals on both sides (vulcanised)	



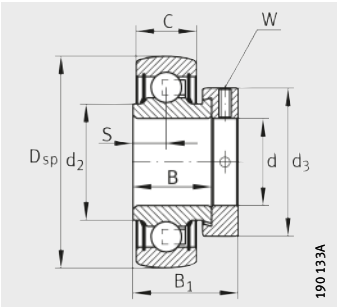
Radial insert ball bearings with eccentric locking collar

Spherical outer ring

X-life



GRAE..-XL-NPP-B



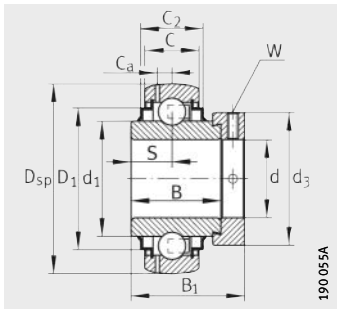
RAE..-XL-NPP-B, RALE..-XL-NPP-B

Dimension table · Dimensions in mm

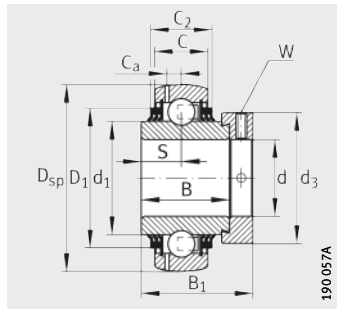
Designation[1]	Mass	Dimensions							
	m ≈ kg	d	D_{sp}	C	C_2	B	S	d_1	d_2
GRAE12-XL-NPP-B	0,13	**12**	40	12	–	19	6,5	–	23
RAE12-XL-NPP-B	0,13	**12**	40	12	–	19	6,5	–	23
GRAE15-XL-NPP-B	0,11	**15**	40	12	–	19	6,5	–	23
RAE15-XL-NPP-B	0,12	**15**	40	12	–	19	6,5	–	23
GE17-XL-KRR-B	0,12	**17**	40	12	16,6	27,8	13,9	23,9	–
GRAE17-XL-NPP-B	0,12	**17**	40	12	–	19	6,5	–	23
RAE17-XL-NPP-B	0,1	**17**	40	12	–	19	6,5	–	23
GE20-XL-KLL-B	0,2	**20**	47	14	16,6	34,1	17,1	27,6	–
GE20-XL-KRR-B	0,19	**20**	47	14	16,6	34,1	17,1	27,6	–
GE20-XL-KRR-B-FA164	0,2	**20**	47	14	16,6	34,1	17,1	27,6	–
GE20-XL-KTT-B	0,19	**20**	47	14	16,6	34,1	17,1	27,6	–
GRAE20-XL-NPP-B	0,16	**20**	47	14	–	21,4	7,5	–	26,9
RAE20-XL-NPP-B	0,16	**20**	47	14	–	21,4	7,5	–	26,9
RALE20-XL-NPP-B	0,1	**20**	42	12	–	16,7	6	–	25,4
E25-XL-KRR-B	0,24	**25**	52	15	16,7	34,9	17,5	33,8	–
GE25-XL-KRR-B	0,25	**25**	52	15	16,7	34,9	17,5	33,8	–
GE25-XL-KRR-B-FA101	0,24	**25**	52	15	16,7	34,9	17,5	33,8	–
GE25-XL-KRR-B-FA164	0,25	**25**	52	15	16,7	34,9	17,5	33,8	–
GE25-XL-KLL-B	0,25	**25**	52	15	20,2	34,9	17,5	33,8	–
GE25-XL-KTT-B	0,24	**25**	52	15	20,2	34,9	17,5	33,8	–
GE25-XL-KRR-B-2C	0,26	**25**	52	15	24,6	34,9	17,5	33,8	–
GRAE25-XL-NPP-B	0,19	**25**	52	15	–	21,4	7,5	–	30,5
RAE25-XL-NPP-B	0,19	**25**	52	15	–	21,4	7,5	–	30,5
RALE25-XL-NPP-B	0,12	**25**	47	12	–	17,5	6	–	30

[1] Permissible speeds of radial insert ball bearings: see page 148.

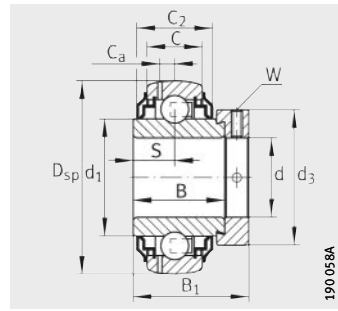
[2] Factor f_0 for determining equivalent bearing load, see table, page 40.



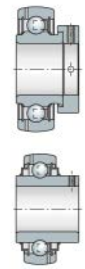
GE..-XL-KRR-B



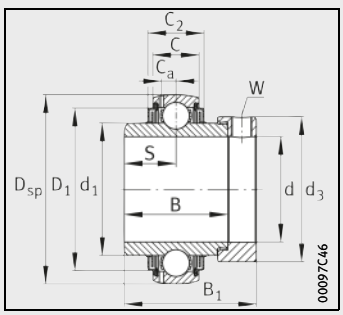
GE..-XL-KTT-B



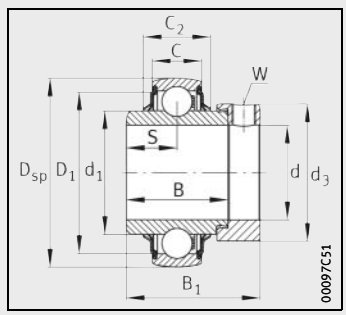
GE..-XL-KRR-B-2C



				Width across flats	Basic load ratings		Fatigue limit load	Factor[2]
D_1	C_a	B_1	d_3 max.	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
–	3,4	28,6	28,4	3	10 100	4 750	241	13,1
–	–	28,6	28,4	3	10 100	4 750	241	13,1
–	3,4	28,6	28,4	3	10 100	4 750	241	13,1
–	–	28,6	28,4	3	10 100	4 750	241	13,1
31,6	3,4	37,4	28,4	3	10 100	4 750	241	13,1
–	3,4	28,6	28,4	3	10 100	4 750	241	13,1
–	–	28,6	28,4	3	10 100	4 750	241	13,1
37,4	4	43,7	33	3	13 600	6 600	335	13,1
37,4	4	43,7	33	3	13 600	6 600	335	13,1
37,4	4	43,7	33	3	13 600	6 600	335	13,1
37,4	4	43,7	33	3	13 600	6 600	335	13,1
–	4	31	33	3	13 600	6 600	335	13,1
–	–	31	33	3	13 600	6 600	335	13,1
–	–	24,5	30	2,5	10 000	5 000	255	13,9
42,5	–	44,5	37,5	3	14 900	7 800	395	13,8
42,5	4,1	44,5	37,5	3	14 900	7 800	395	13,8
42,5	4,1	44,5	37,5	3	14 900	7 800	395	13,8
42,5	4,1	44,5	37,5	3	14 900	7 800	395	13,8
42,5	4,1	44,5	37,5	3	14 900	7 800	395	13,8
42,5	4,1	44,5	37,5	3	14 900	7 800	395	13,8
–	4,1	44,5	37,5	3	14 900	7 800	395	13,8
–	4,1	31	37,5	3	14 900	7 800	395	13,8
–	–	31	37,5	3	14 900	7 800	395	13,8
–	–	25,5	36	2,5	10 700	5 900	295	13,8



GE..-XL-KLL-B

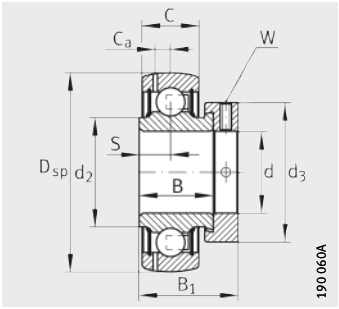


E..-XL-KRR-B

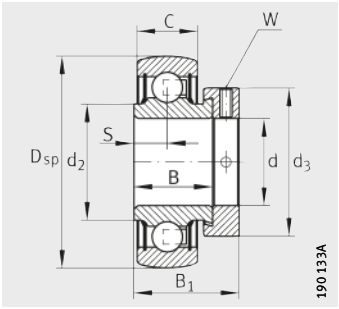
Radial insert ball bearings with eccentric locking collar

Spherical outer ring

X-life



GRAE..-XL-NPP-B



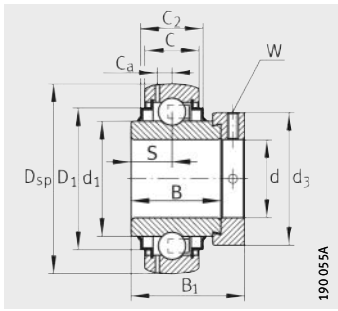
RAE..-XL-NPP-B, RALE..-XL-NPP-B

Dimension table (continued) · Dimensions in mm

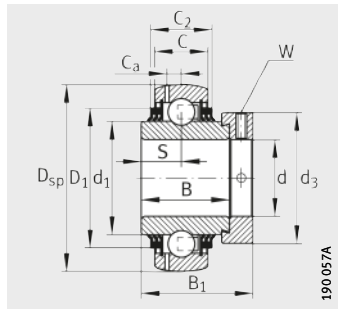
Designation[1]	Mass	Dimensions							
	m ≈ kg	d	D_{sp}	C	C_2	B	S	d_1	d_2
GE30-XL-KLL-B	0,39	**30**	62	18	20,6	36,5	18,3	40,2	–
E30-XL-KRR-B	0,39	**30**	62	18	20,7	36,5	18,3	40,2	–
GE30-XL-KRR-B	0,39	**30**	62	18	20,7	36,5	18,3	40,2	–
GE30-XL-KRR-B-FA101	0,38	**30**	62	18	20,7	36,5	18,3	40,2	–
GE30-XL-KRR-B-FA164	0,39	**30**	62	18	20,7	36,5	18,3	40,2	–
GE30-XL-KTT-B	0,38	**30**	62	18	20,7	36,5	18,3	40,2	–
GNE30-XL-KRR-B	0,63	**30**	72	20	24	36,6	17,5	44	–
GE30-XL-KRR-B-2C	0,41	**30**	62	18	27,2	36,5	18,3	40,2	–
GRAE30-XL-NPP-B	0,32	**30**	62	18	–	23,8	9	–	37,4
RAE30-XL-NPP-B	0,32	**30**	62	18	–	23,8	9	–	37,4
RALE30-XL-NPP-B	0,18	**30**	55	13	–	18,5	6,5	–	35,7
E35-XL-KRR-B	0,59	**35**	72	19	22,5	37,7	18,8	46,8	–
GE35-XL-KRR-B	0,59	**35**	72	19	22,5	37,7	18,8	46,8	–
GE35-XL-KRR-B-FA164	0,61	**35**	72	19	22,5	37,7	18,8	46,8	–
GE35-XL-KTT-B	0,59	**35**	72	19	22,5	37,7	18,8	46,8	–
GNE35-XL-KRR-B	0,74	**35**	80	22	25	38,1	18,3	48	–
GE35-XL-KLL-B	0,6	**35**	72	19	25,4	37,7	18,8	46,8	–
GE35-XL-KRR-B-2C	0,63	**35**	72	19	29,2	37,7	18,8	46,8	–
GRAE35-XL-NPP-B	0,52	**35**	72	19	–	25,4	9,5	–	44,6
RAE35-XL-NPP-B	0,52	**35**	72	19	–	25,4	9,5	–	44,6

1) Permissible speeds of radial insert ball bearings: see page 148.

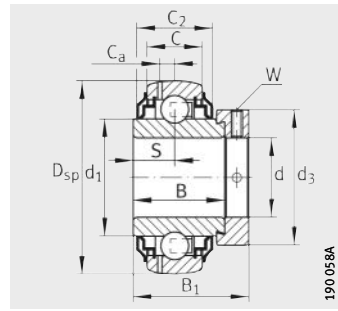
2) Factor f_0 for determining equivalent bearing load, see table, page 40.



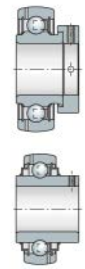
GE..-XL-KRR-B, GNE..-XL-KRR-B



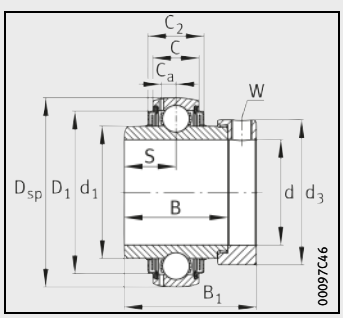
GE..-XL-KTT-B



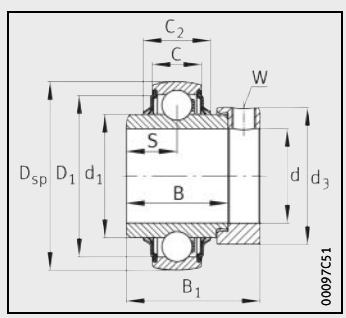
GE..-XL-KRR-B-2C



				Width across flats	Basic load ratings		Fatigue limit load	Factor[2]
D_1	C_a	B_1	d_3 max.	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
52	4,7	48,5	44	4	20 700	11 300	570	13,8
52	–	48,5	44	4	20 700	11 300	570	13,8
52	4,7	48,5	44	4	20 700	11 300	570	13,8
52	4,7	48,5	44	4	20 700	11 300	570	13,8
52	4,7	48,5	44	4	20 700	11 300	570	13,8
52	4,7	48,5	44	4	20 700	11 300	570	13,8
60,2	6,2	50,2	51	5	31 500	16 700	840	13
–	4,7	48,5	44	4	20 700	11 300	570	13,8
–	4,7	35,8	44	4	20 700	11 300	570	13,8
–	–	35,8	44	4	20 700	11 300	570	13,8
–	–	26,5	42,5	2,5	14 100	8 300	420	13,8
60,3	–	51,3	55	5	27 500	15 300	770	13,8
60,3	5,6	51,3	55	5	27 500	15 300	770	13,8
60,3	5,6	51,3	55	5	27 500	15 300	770	13,8
60,3	5,6	51,3	55	5	27 500	15 300	770	13,8
66,6	6,9	51,6	55	5	39 000	20 900	1 060	13,1
60,3	5,6	51,3	55	5	27 500	15 300	770	13,8
–	5,6	51,3	55	5	27 500	15 300	770	13,8
–	5,6	39	55	5	27 500	15 300	770	13,8
–	–	39	55	5	27 500	15 300	770	13,8



GE..-XL-KLL-B

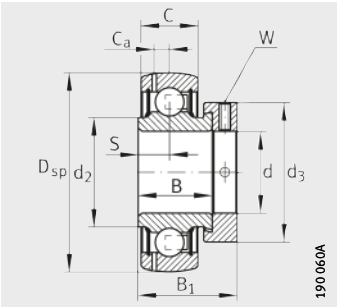


E..-XL-KRR-B

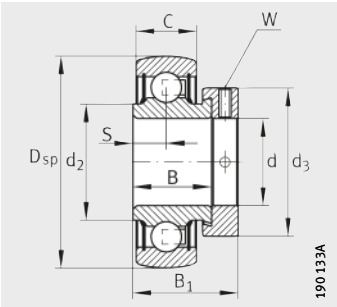
Radial insert ball bearings with eccentric locking collar

Spherical outer ring

X-life



GRAE..-XL-NPP-B



RAE..-XL-NPP-B

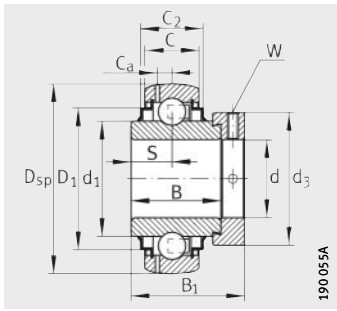
Dimension table (continued) · Dimensions in mm

Designation[1]	Mass	Dimensions							
	m ≈ kg	d	D_{sp}	C	C_2	B	S	d_1	d_2
E40-XL-KRR-B	0,73	**40**	80	21	23,5	42,9	21,4	52,3	–
GE40-XL-KRR-B	0,73	**40**	80	21	23,5	42,9	21,4	52,3	–
GE40-XL-KRR-B-FA101	0,74	**40**	80	21	23,5	42,9	21,4	52,3	–
GE40-XL-KRR-B-FA164	0,75	**40**	80	21	23,5	42,9	21,4	52,3	–
GNE40-XL-KRR-B	1,02	**40**	90	23	26	41	18	53,8	–
GE40-XL-KLL-B	0,75	**40**	80	21	28,1	42,9	21,4	52,3	–
GE40-XL-KTT-B	0,75	**40**	80	21	28,1	42,9	21,4	52,3	–
GE40-XL-KRR-B-2C	0,78	**40**	80	21	31,9	42,9	21,4	52,3	–
GRAE40-XL-NPP-B	0,62	**40**	80	21	–	30,2	11	–	49,4
RAE40-XL-NPP-B	0,63	**40**	80	21	–	30,2	11	–	49,4
GE45-XL-KLL-B	0,84	**45**	85	22	26,4	42,9	21,4	57,9	–
GE45-XL-KRR-B	0,83	**45**	85	22	26,4	42,9	21,4	57,9	–
GE45-XL-KTT-B	0,83	**45**	85	22	26,4	42,9	21,4	57,9	–
GRAE45-XL-NPP-B	0,7	**45**	85	22	–	30,2	11	–	54,3
GE50-XL-KLL-B	1	**50**	90	22	26,4	49,2	24,6	62,8	–
GE50-XL-KRR-B	0,99	**50**	90	22	26,4	49,2	24,6	62,8	–
GE50-XL-KRR-B-FA101	0,99	**50**	90	22	26,4	49,2	24,6	62,8	–
GE50-XL-KRR-B-FA164	0,99	**50**	90	22	26,4	49,2	24,6	62,8	–
GE50-XL-KTT-B	0,98	**50**	90	22	26,4	49,2	24,6	62,8	–
GNE50-XL-KRR-B	1,82	**50**	110	29	–	49,2	24,6	68,8	–
GRAE50-XL-NPP-B	0,77	**50**	90	22	–	30,2	11	–	59,4
NE50-XL-KRR-B[3]	1,82	**50**	110	29	–	49,2	24,6	68,8	–
RAE50-XL-NPP-B	0,77	**50**	90	22	–	30,2	11	–	59,4

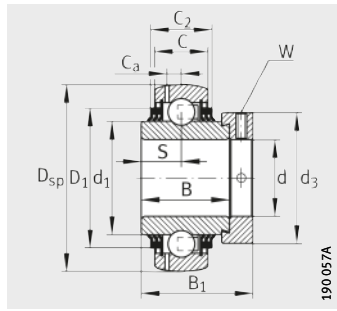
1) Permissible speeds of radial insert ball bearings: see page 148.

2) Factor f_0 for determining equivalent bearing load, see table, page 40.

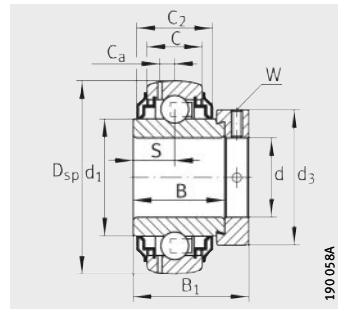
3) No relubrication facility.



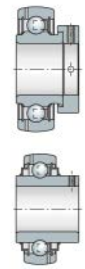
GE..-XL-KRR-B, GNE..-XL-KRR-B



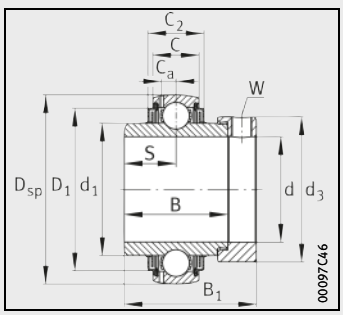
GE..-XL-KTT-B



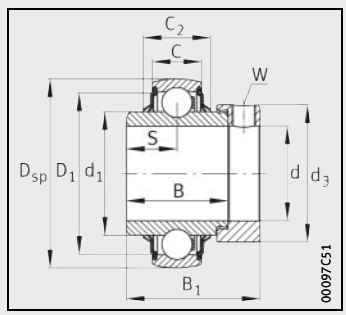
GE..-XL-KRR-B-2C



				Width across flats	Basic load ratings		Fatigue limit load	Factor[2]
D_1	C_a	B_1	d_3 max.	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
68,3	–	56,5	58	5	34 500	19 800	1 010	14
68,3	6,4	56,5	58	5	34 500	19 800	1 010	14
68,3	6,4	56,5	58	5	34 500	19 800	1 010	14
68,3	6,4	56,5	58	5	34 500	19 800	1 010	14
74,5	7,5	54,6	63	5	47 000	26 000	1 320	13
68,3	6,4	56,5	58	5	34 500	19 800	1 010	14
68,3	6,4	56,5	58	5	34 500	19 800	1 010	14
–	6,4	56,5	58	5	34 500	19 800	1 010	14
–	6,4	43,8	58	5	34 500	19 800	1 010	14
–	–	43,8	58	5	34 500	19 800	1 010	14
72,3	6,4	56,5	63	5	34 500	20 400	1 030	14,3
72,3	6,4	56,5	63	5	34 500	20 400	1 030	14,3
72,3	6,4	56,5	63	5	34 500	20 400	1 030	14,3
–	6,4	43,8	63	5	34 500	20 400	1 030	14,3
77,3	6,9	62,8	69	5	37 500	23 200	1 180	14,3
77,3	6,9	62,8	69	5	37 500	23 200	1 180	14,3
77,3	6,9	62,8	69	5	37 500	23 200	1 180	14,3
77,3	6,9	62,8	69	5	37 500	23 200	1 180	14,3
77,3	6,9	62,8	69	5	37 500	23 200	1 180	14,3
92,7	8,7	66,75	75,8	5	66 000	38 000	1 920	13
–	6,9	43,8	69	5	37 500	23 200	1 180	14,3
–	–	66,75	75,8	5	66 000	38 000	1 920	13
–	–	43,8	69	5	37 500	23 200	1 180	14,3



GE..-XL-KLL-B

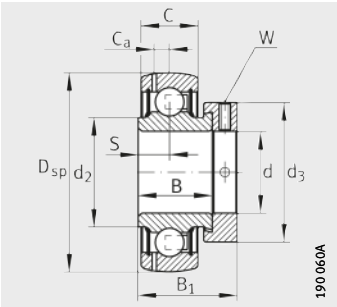


E..-XL-KRR-B, NE..-XL-KRR-B

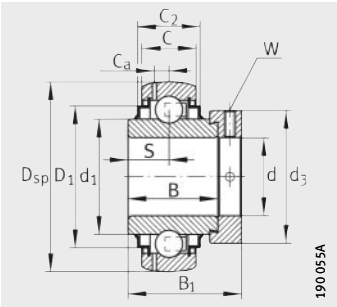
Radial insert ball bearings with eccentric locking collar

Spherical outer ring

X-life



GRAE..-XL-NPP-B



GE..-XL-KRR-B, GNE..-XL-KRR-B

Dimension table (continued) · Dimensions in mm

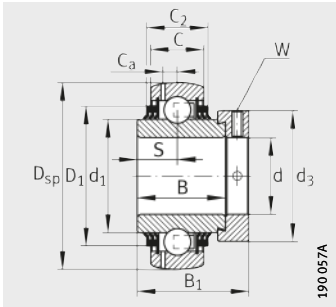
Designation[1]	Mass	Dimensions							
	m	d	D_{sp}	C	C_2	B	S	d_1	d_2
	≈ kg								
GE55-XL-KRR-B	1,37	**55**	100	25	29	55,5	27,8	69,8	–
GE55-XL-KTT-B	1,37	**55**	100	25	29	55,5	27,8	69,8	–
GRAE55-XL-NPP-B	1,06	**55**	100	25	–	32,5	12	–	66
GE60-XL-KRR-B	1,8	**60**	110	24	29	61,9	31	76,5	–
GE60-XL-KRR-B-FA101	1,8	**60**	110	24	29	61,9	31	76,5	–
GE60-XL-KRR-B-FA164	1,8	**60**	110	24	29	61,9	31	76,5	–
GE60-XL-KTT-B	1,8	**60**	110	24	29	61,9	31	76,5	–
GNE60-XL-KRR-B	2,97	**60**	130	33	37,2	52	23	79,4	–
GRAE60-XL-NPP-B	1,4	**60**	110	24	–	37,1	13,5	–	72
GE65-214-XL-KRR-B[3]	2,71	**65**	125	28	32	48,5	21,5	85,2	–
GE65-214-XL-KRR-B-FA164[3]	2,71	**65**	125	28	32	48,5	21,5	85,2	–
GE65-214-XL-KTT-B[3]	2,71	**65**	125	28	32	48,5	21,5	85,2	–
GE70-XL-KRR-B	2,15	**70**	125	28	32	48,5	21,5	85,2	–
GE70-XL-KRR-B-FA101	2,15	**70**	125	28	32	48,5	21,5	85,2	–
GE70-XL-KRR-B-FA164	2,15	**70**	125	28	32	48,5	21,5	85,2	–
GE70-XL-KTT-B	2,15	**70**	125	28	32	48,5	21,5	85,2	–
GNE70-XL-KRR-B	3,81	**70**	150	37	41	58	26	92,2	–
GE75-XL-KRR-B	2,14	**75**	130	28	30,5	49,5	21,5	90	–
GE75-XL-KRR-B-FA101	2,14	**75**	130	28	30,5	49,5	21,5	90	–
GE75-XL-KTT-B	2,14	**75**	130	28	30,5	49,5	21,5	90	–
GE80-XL-KRR-B	2,79	**80**	140	30	38	53,2	23,4	97	–
GE80-XL-KRR-B-AH01-FA164	2,95	**80**	140	30	38	53,2	23,4	97	–
GE80-XL-KTT-B	2,79	**80**	140	30	38	53,2	23,4	97	–
GNE80-XL-KRR-B[4]	7,1	**80**	170	41	51	73	34	109	–
GE90-XL-KRR-B[4]	3,56	**90**	160	32	35	52	23	109,4	–
GE90-XL-KRR-B-FA164[4]	3,68	**90**	160	32	35	52	23	109,4	–
GNE90-XL-KRR-B[4]	8,07	**90**	190	45	52,6	77,5	35,5	122,2	–
GE100-XL-KRR-B[4]	5	**100**	180	36	39	57,5	25,5	122,2	–
GNE100-XL-KRR-B[4]	11,41	**100**	215	49	59,4	86	39,5	137,1	–
GE120-XL-KRR-B[4]	7,49	**120**	215	40	45	63,5	28,5	146,4	–

1) Permissible speeds of radial insert ball bearings: see page 148.

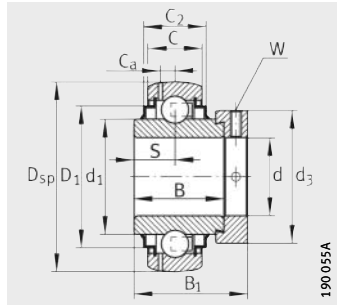
2) Factor f_0 for determining equivalent bearing load, see table, page 40.

3) Alternative ball set 6214.

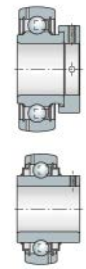
4) Lubrication groove in outer ring.



GE..-XL-KTT-B



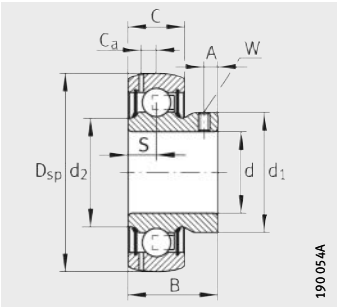
GNE..-XL-KRR-B



				Width across flats	Basic load ratings		Fatigue limit load	Factor[2]
D_1	C_a	B_1	d_3 max.	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
85,9	7	71,4	76	5	46 000	29 000	1 480	14,3
85,9	7	71,4	76	5	46 000	29 000	1 480	14,3
–	7	48,4	76	5	46 000	29 000	1 480	14,3
94,5	7,2	77,9	84	5	56 000	36 000	1 820	14,3
94,5	7,2	77,9	84	5	56 000	36 000	1 820	14,3
94,5	7,2	77,9	84	5	56 000	36 000	1 820	14,3
94,5	7,2	77,9	84	5	56 000	36 000	1 820	14,3
109	11,2	68	89	5	87 000	52 000	2 650	13,1
–	7,2	53,1	84	5	56 000	36 000	1 820	14,3
109	8,9	66	96	6	66 000	44 000	2 230	14,4
109	8,9	66	96	6	66 000	44 000	2 230	14,4
109	8,9	66	96	6	66 000	44 000	2 230	14,4
109	8,9	66	96	6	66 000	44 000	2 230	14,4
109	8,9	66	96	6	66 000	44 000	2 230	14,4
109	8,9	66	96	6	66 000	44 000	2 230	14,4
109	8,9	66	96	6	66 000	44 000	2 230	14,4
127	12	75,5	102	6	111 000	68 000	3 300	13,2
113	8,5	67	100	6	66 000	44 500	2 240	14,4
113	8,5	67	100	6	66 000	44 500	2 240	14,4
113	8,5	67	100	6	66 000	44 500	2 240	14,4
120	8,8	70,7	108	6	76 000	54 000	2 600	14,6
120	8,8	70,7	108	6	76 000	54 000	2 600	14,6
120	8,8	70,7	108	6	76 000	54 000	2 600	14,6
142,8	13,2	93,6	118	6	131 000	87 000	3 950	13,2
138	10	69,5	118	6	109 000	79 000	3 550	14,5
138	10	69,5	118	6	109 000	79 000	3 550	14,5
161,3	14,3	101	132	6	151 000	107 000	4 600	13,9
155,5	11,2	75	132	6	130 000	93 000	4 000	14,4
182,8	16,7	109,4	145	6	184 000	141 000	5 700	13,8
186,5	12,8	81	152	6	165 000	131 000	5 100	14,8

Radial insert ball bearings with grub screws in inner ring

Spherical outer ring



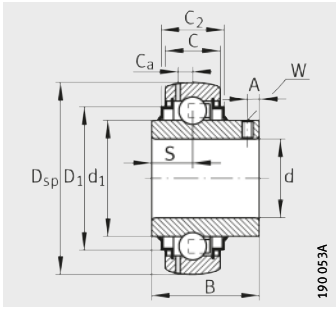
GAY..-XL-NPP-B, AY..-XL-NPP-B

Dimension table · Dimensions in mm

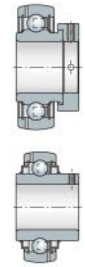
Designation[1]	Mass	Dimensions					
	m	d	D_{sp}	C	C_2	B	S
	≈ kg						
GYE12-XL-KRR-B	0,11	**12**	40	12	16,6	27,4	11,5
AY12-XL-NPP-B	0,1	**12**	40	12	–	22	6
GAY12-XL-NPP-B	0,1	**12**	40	12	–	22	6
GAY12-XL-NPP-B-FA164	0,1	**12**	40	12	–	22	6
GYE15-XL-KRR-B	0,1	**15**	40	12	16,6	27,4	11,5
AY15-XL-NPP-B	0,09	**15**	40	12	–	22	6
GAY15-XL-NPP-B	0,09	**15**	40	12	–	22	6
GAY15-XL-NPP-B-FA164	0,09	**15**	40	12	–	22	6
GYE16-XL-KRR-B	0,09	**16**	40	12	16,6	27,4	11,5
GYE17-XL-KRR-B	0,09	**17**	40	12	16,6	27,4	11,5
AY17-XL-NPP-B	0,08	**17**	40	12	–	22	6
GAY17-XL-NPP-B	0,08	**17**	40	12	–	22	6
GYE20-XL-KRR-B	0,14	**20**	47	14	16,6	31	12,7
AY20-XL-NPP-B	0,13	**20**	47	14	–	25	7
GAY20-XL-NPP-B	0,13	**20**	47	14	–	25	7
GYE25-XL-KRR-B	0,19	**25**	52	15	16,7	34,1	14,3
AY25-XL-NPP-B	0,16	**25**	52	15	–	27	7,5
GAY25-XL-NPP-B	0,16	**25**	52	15	–	27	7,5
GYE30-XL-KRR-B	0,31	**30**	62	18	20,7	38,1	15,9
AY30-XL-NPP-B	0,25	**30**	62	18	–	30	9
GAY30-XL-NPP-B	0,26	**30**	62	18	–	30	9
GYE35-XL-KRR-B	0,46	**35**	72	19	22,5	42,9	17,5
GAY35-XL-NPP-B	0,41	**35**	72	19	–	35	9,5

1) Permissible speeds of radial insert ball bearings: see page 148.

2) Factor f_0 for determining equivalent bearing load, see table, page 40.



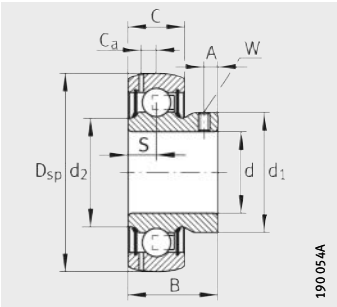
GYE..-XL-KRR-B



					Width across flats	Basic load ratings		Fatigue limit load	Factor[2]
d_1	d_2	D_1	C_a	A	W	dyn. C_r	stat. C_{0r}	C_{ur}	f_0
						N	N	N	
23,9	–	31,6	3,4	4	2,5	10 100	4 750	241	13,1
23,9	22,9	–	–	4	2,5	10 100	4 750	241	13,1
23,9	22,9	–	3,4	4	2,5	10 100	4 750	241	13,1
23,9	22,9	–	3,4	4	2,5	10 100	4 750	241	13,1
23,9	–	31,6	3,4	4	2,5	10 100	4 750	241	13,1
23,9	22,9	–	–	4	2,5	10 100	4 750	241	13,1
23,9	22,9	–	3,4	4	2,5	10 100	4 750	241	13,1
23,9	22,9	–	3,4	4	2,5	10 100	4 750	241	13,1
23,9	–	31,6	3,4	4	2,5	10 100	4 750	241	13,1
23,9	–	31,6	3,4	4	2,5	10 100	4 750	241	13,1
23,9	22,9	–	–	4	2,5	10 100	4 750	241	13,1
23,9	22,9	–	3,4	4	2,5	10 100	4 750	241	13,1
27,6	–	37,4	4	4,5	2,5	13 600	6 600	335	13,1
28,3	26,7	–	–	4,5	2,5	13 600	6 600	335	13,1
28,3	26,7	–	4	4,5	2,5	13 600	6 600	335	13,1
33,8	–	42,5	3,9	5	2,5	14 900	7 800	395	13,8
33,5	30,4	–	–	5	2,5	14 900	7 800	395	13,8
33,5	30,4	–	3,9	5	2,5	14 900	7 800	395	13,8
40,2	–	52	4,7	5,8	3	20 700	11 300	570	13,8
39,4	37,3	–	–	5,8	3	20 700	11 300	570	13,8
39,4	37,3	–	4,7	5,8	3	20 700	11 300	570	13,8
46,8	–	60,3	5,6	6	3	27 500	15 300	770	13,8
46,9	44,5	–	5,6	6	3	27 500	15 300	770	13,8

Radial insert ball bearings with grub screws in inner ring

Spherical outer ring



GAY..-XL-NPP-B

Dimension table (continued) · Dimensions in mm

Designation[1]	Mass	Dimensions					
	m	d	D_{sp}	C	C_2	B	S
	≈ kg						
GYE40-XL-KRR-B	0,62	**40**	80	21	23,5	49,2	19
GAY40-XL-NPP-B	0,53	**40**	80	21	–	39,5	10,5
GYE45-210-XL-KRR-B[3]	0,8	**45**	90	22	26,4	51,6	19
GYE45-XL-KRR-B	0,71	**45**	85	22	26,4	49,2	19
GAY45-XL-NPP-B	0,6	**45**	85	22	–	41,5	11
GYE50-XL-KRR-B	0,79	**50**	90	22	26,4	51,6	19
GAY50-XL-NPP-B	0,67	**50**	90	22	–	43	11
GYE55-XL-KRR-B	1,08	**55**	100	25	29	55,6	22,2
GYE60-XL-KRR-B	1,46	**60**	110	24	29	65,1	25,4
GAY60-XL-NPP-B	1,17	**60**	110	24	–	47	13
GYE65-214-XL-KRR-B[4]	2,25	**65**	125	28	32	74,6	30,2
GYE70-XL-KRR-B	1,95	**70**	125	28	32	74,6	30,2
GYE75-XL-KRR-B	2,07	**75**	130	28	30,5	77,8	33,3
GYE80-XL-KRR-B	2,7	**80**	140	30	38	82,6	33,3
GYE90-XL-KRR-B[5]	3,93	**90**	160	32	35	96	39,7

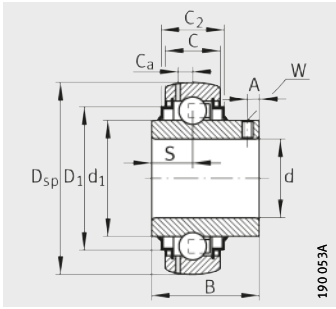
1) Permissible speeds of radial insert ball bearings: see page 148.

2) Factor f_0 for determining equivalent bearing load, see table, page 40.

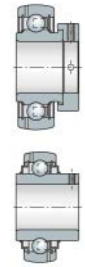
3) Alternative ball set 6210.

4) Alternative ball set 6214.

5) Lubrication groove in outer ring.



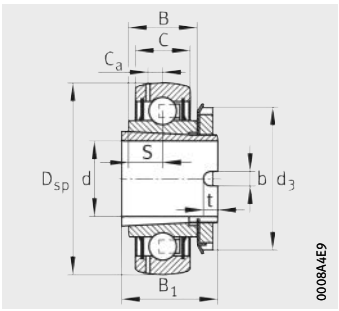
GYE..-XL-KRR-B



					Width across flats	Basic load ratings		Fatigue limit load	Factor[2]
d_1	d_2	D_1	C_a	A	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
52,3	–	68,3	6,4	8	4	34 500	19 800	1 010	14
52,4	49,3	–	6,4	8	4	34 500	19 800	1 010	14
62,9	–	77,3	6,9	8,5	4	37 500	23 200	1 180	14,3
57	–	72,3	6,4	8	4	34 500	20 400	1 030	14,3
57	54,3	–	6,4	8	4	34 500	20 400	1 030	14,3
62,8	–	77,3	6,9	8,5	4	37 500	23 200	1 180	14,3
62	59,3	–	6,9	9	4	37 500	23 200	1 180	14,3
69,8	–	85,9	7	9	4	46 000	29 000	1 480	14,3
76,5	–	94,5	7,2	10,1	5	56 000	36 000	1 820	14,3
76	73,6	–	7,2	10	5	56 000	36 000	1 820	14,3
85,2	–	109	8,9	12,1	5	66 000	44 000	2 230	14,4
85,2	–	109	8,9	12	5	66 000	44 000	2 230	14,4
90	–	113	8,5	12,7	5	66 000	44 500	2 240	14,7
97	–	120	8,8	12	5	76 000	54 000	2 600	14,6
109,4	–	138	10	12	6	109 000	79 000	3 550	14,6

Radial insert ball bearings with adapter sleeve

Spherical outer ring



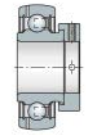
GSH..-XL-2RSR-B

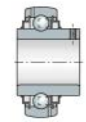
Dimension table · Dimensions in mm

Designation	Mass	Dimensions						
	m	d	D_{sp}	C	B	S	C_a	B_1
	≈ kg	H8						
GSH20-XL-2RSR-B	0,14	**20**	47	14	15	7,5	4	28
GSH25-XL-2RSR-B	0,17	**25**	52	15	15	7,5	3,9	28
GSH30-XL-2RSR-B	0,27	**30**	62	18	18	9	4,7	32
GSH35-XL-2RSR-B	0,43	**35**	72	19	19	9,5	5,8	34
GSH40-XL-2RSR-B	0,54	**40**	80	21	22	11	6,4	38
GSH45-XL-2RSR-B	0,69	**45**	85	22	36	18	6,4	46
GSH50-XL-2RSR-B	0,64	**50**	90	22	22	11	6,5	40

1) Preferably for shafts of tolerance classes h6 Ⓔ to h11 Ⓔ.

2) Factor f_0 for determining equivalent bearing load, see table, page 40.

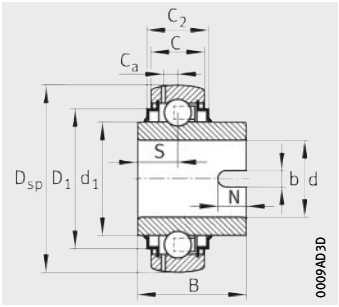




			Limiting speed[1]	Basic load ratings		Fatigue limit load	Factor[2]
b	t	d_3	n_G grease	dyn. C_r	stat. C_{0r}	C_{ur}	f_0
		max.	min^{-1}	N	N	N	
5	5	32	8 700	13 400	7 000	355	13,1
5	5	38	7 500	14 400	8 100	410	13,8
5	5	45	6 200	20 100	11 600	590	13,8
5	5	52	5 500	26 500	15 700	800	13,8
5	5	58	4 850	31 000	19 700	1 000	14
5	5	62	4 500	31 000	20 100	1 020	14,3
5	5	70	4 150	35 000	23 100	1 170	14,3

Radial insert ball bearings with drive slot

Non-locating bearings
Spherical outer ring



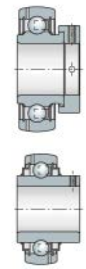
GLE..-XL-KRR-B

Dimension table · Dimensions in mm

Designation[1]	Mass	Dimensions						
	m	d	D_{sp}	C	C_2	B	S	d_1
	≈ kg							
GLE20-XL-KRR-B	0,15	**20**	47	14	16,6	34,1	15,6	27,6
GLE25-XL-KRR-B	0,19	**25**	52	15	16,7	34,9	14,7	33,8
GLE30-XL-KRR-B	0,3	**30**	62	18	20,7	36,5	14,5	40,2
GLE35-XL-KRR-B	0,43	**35**	72	19	22,5	37,7	15,7	46,8
GLE40-XL-KRR-B	0,57	**40**	80	21	23,5	42,9	15,9	52,3
GLE45-XL-KRR-B	0,66	**45**	85	22	26,4	42,9	17,4	57,9
GLE50-XL-KRR-B	0,76	**50**	90	22	26,4	49,2	19	62,8
GLE60-XL-KRR-B	1,46	**60**	110	24	29	61,9	24,6	76,5
GLE70-XL-KRR-B	1,9	**70**	125	28	32	68,2	27	85,2

1) Permissible speeds of radial insert ball bearings: see page 148.

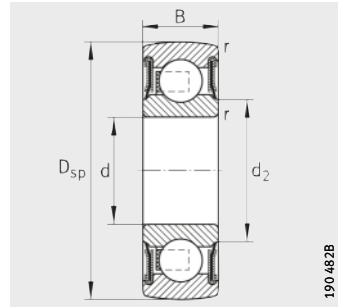
2) Factor f_0 for determining equivalent bearing load, see table, page 40.



				Basic load ratings		Fatigue limit load	Factor[2]
D_1	C_a	N	b H11	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
37,4	4	7	7	13 600	6 600	335	13,1
42,5	3,9	8	7	14 900	7 800	395	13,8
52	4,7	8	7	20 700	11 300	570	13,8
60,3	5,6	8	7	27 500	15 300	770	13,8
68,3	6,4	9	7	34 500	19 800	1 010	14
72,3	6,4	9	7	34 500	20 400	1 030	14,3
77,3	6,9	10	7	37 500	23 200	1 180	14,3
95,9	7,2	12	9	56 000	36 000	1 820	14,3
109	8,9	12	9	66 000	44 000	2 230	14,4

Self-aligning deep groove ball bearings

Spherical outer ring
Bore for fit



2..-XL-NPP-B

X-life

Dimension table · Dimensions in mm

Designation	Mass	Dimensions					Limiting speed	Basic load ratings		Fatigue limit load	Factor[1]
	m	d	D_{sp}	B	d_2	r_{min}	n_G grease	dyn. C_r	stat. C_{0r}	C_{ur}	f_0
	≈ kg						min^{-1}	N	N	N	
201-XL-NPP-B[2]	0,04	**12**	32	10	17,1	0,6	18 300	7 200	3 050	154	12,3
203-XL-NPP-B[3]	0,06	**17**	40	12	22,5	0,6	13 000	10 100	4 750	241	13,1
204-XL-NPP-B[3]	0,11	**20**	47	14	26,5	1	11 000	13 600	6 600	335	13,1
205-XL-NPP-B[3]	0,13	**25**	52	15	30,3	1	8 800	14 900	7 800	395	13,8
206-XL-NPP-B[2]	0,2	**30**	62	16	37,4	1	7 300	20 700	11 300	570	13,8
207-XL-NPP-B[2]	0,29	**35**	72	17	42,4	1	6 300	27 500	15 300	770	13,8
208-XL-NPP-B[2]	0,37	**40**	80	18	48,4	1,1	5 500	34 500	19 800	1 010	14
209-XL-NPP-B[2]	0,41	**45**	85	19	53,2	1,1	4 900	34 500	20 400	1 030	14,3
210-XL-NPP-B[3]	0,46	**50**	90	20	58,2	1,1	4 400	37 500	23 200	1 180	14,3

1) Factor f_0 for determining equivalent bearing load, see table, page 40.

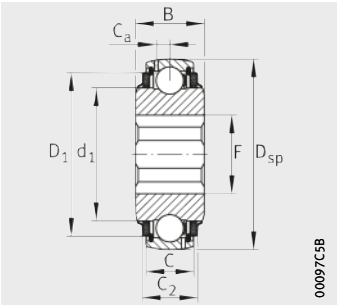
2) One-piece seal with moulded seal lip.

3) Three-piece P seal.

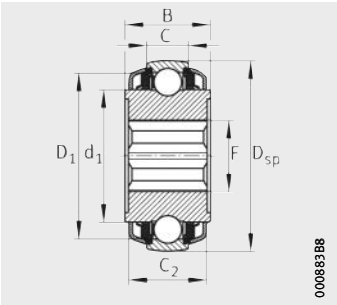


Self-aligning deep groove ball bearings

Spherical outer ring
Square bore



GVK(E)..-KTT-B(-AS2/V)(-AH)



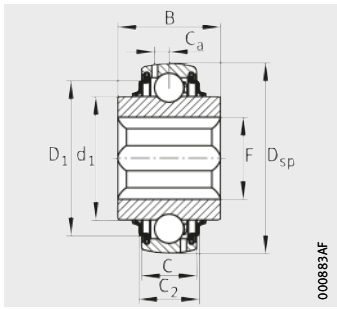
VKE..-KTT-B-2C

Dimension table · Dimensions in mm

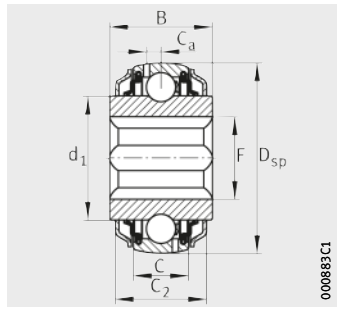
Width across flats of shaft d		Designation	Mass m	Dimensions				
				d	D_{sp}	C	C_2	d_1
inch	mm		≈ kg					
–	**16,3**	**GVKE16-205-KRR-B-AS2/V-AH01**	0,22	**16,3** $^{+0,2}_{0}$	52	15	16,5	33,8
		GVKE16-205-KRR-B-2C-AS2/V-AH01	0,24	**16,3** $^{+0,2}_{0}$	52	15	24,8[2]	33,8
1	**25,4**	**VK100-208-KTT-B-AH10**	0,67	**25,4** $^{+0,9}_{+0,6}$	80	18	25,2	52,3
		GVK100-208-KTT-B-AS2/V	0,74	**25,4** $^{+0,9}_{+0,6}$	80	21	28,1	52,3
–	**28**	**VKE28-209-KTT-B-GA47/70**	0,89	**28** $^{+0,9}_{+0,6}$	85	22	25,4	57,9
1 1/8	**28,575**	**GVK102-208-KTT-B-AH10**	0,62	**28,575** $^{+0,9}_{+0,6}$	80	18	25	52,3
–	**30**	**VKE30-212-KTT-B-2C**	2,02	**30** $^{+0,13}_{0}$	110	24	45,4[2]	74,8
		GVKE30-211-KTT-B-AS2/V	1,23	**30** $^{+0,9}_{+0,6}$	100	25	27,4	69,7
1 1/4	**31,75**	**GVK104-209-KTT-B**	0,72	**31,75** $^{+0,9}_{+0,6}$	85	22	26,3	57,9
–	**38**	**VKE38-211-KTT-B-GA47/70-AH01**	1,42	**38** $^{+0,9}_{+0,6}$	100	25	27,4	69,7
1 1/2	**38,1**	**GVK108-211-KTT-B-AS2/V**	1,08	**38,1** $^{+0,9}_{+0,6}$	100	25	27,4	69,7
1 9/16	**39,6875**	**GVK109-211-KTT-B**	1,07	**39,6875** $^{+0,3}_{0}$	100	25	28,9	69,8

[1] Factor f_0 for determining equivalent bearing load, see table, page 40.

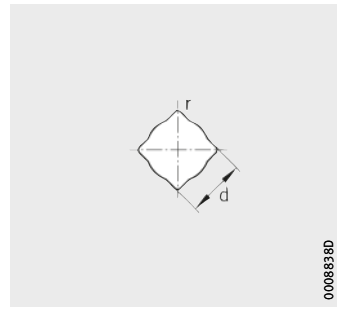
[2] Dimension for flinger shield.



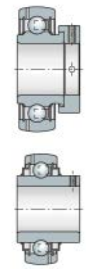
GVKE..-KRR-B-AS2/V-AH



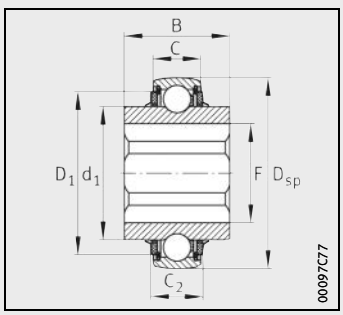
GVKE..-KRR-B-2C-AS2/V-AH



Design of bore



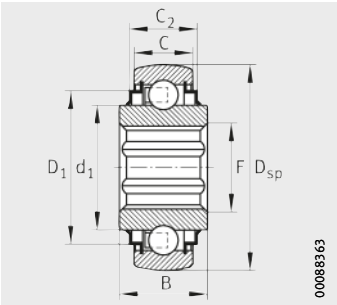
					Basic load ratings		Fatigue limit load	Factor[1]	Width across flats of shaft	
F	D_1	C_a	B	r	dyn. C_r	stat. C_{0r}	C_{ur}	f_0	d	
					N	N	N		inch	mm
22,4	42,5	3,9	28	0,7	14 900	7 800	395	13,8	–	**16,3**
22,4	–	3,9	28	0,7	14 900	7 800	395	13,8		
33,8	68,4	–	36,5	2,5	34 500	19 800	1 010	14	***1***	**25,4**
35,4	68,3	6,4	36,5	2,5	34 500	19 800	1 010	14		
37,5	71,7	–	42,9	2,5	34 500	20 400	1 030	14,3	–	**28**
38,3	67,8	5,8	36,5	2,5	34 500	19 800	1 010	14	***1 1/8***	**28,575**
41,2	–	–	49,2	2,5	56 000	36 000	1 820	14,3	–	**30**
40,3	85,3	7,1	36	2,5	46 000	29 000	1 480	14,3		
36,4	72,2	6,4	36,5	2,5	34 500	20 400	1 030	14,3	***1 1/4***	**31,75**
51,8	85,3	–	55,2	2,5	46 000	29 000	1 480	14,3	–	**38**
43,9	85,3	7,1	36	2,5	46 000	29 000	1 480	14,3	***1 1/2***	**38,1**
55,1	85,8	7	36	2,5	46 000	29 000	1 480	14,3	***19/16***	**39,6875**



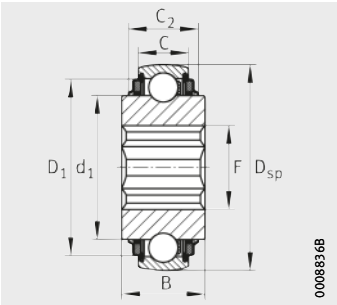
VK..-KTT-B(-AH),
VKE..-KTT-B-G47/70(-AH)

Self-aligning deep groove ball bearings

Spherical outer ring
Hexagonal bore



SK..-KRR-B(-L402/70)(-AH),
SKE..-KRR-B

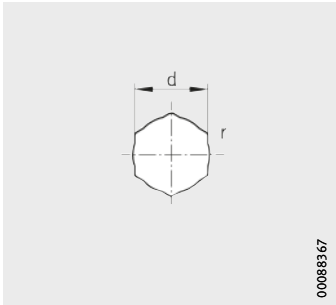


SK..-KTT-B(-L402/70)(-AH)

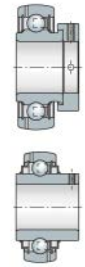
Dimension table · Dimensions in mm

Width across flats of shaft d		Designation	Mass	Dimensions				
			m	d	D_{sp}	C	C_2	d_1
inch	mm		≈ kg					
–	**16,1**	**SK010-204-KRR-B**	0,12	**16,1** $^{+0,15}_{+0,05}$	47	14	–	27,6
–	**17**	**SKE17-204-KRR-B**	0,12	**17** $^{+0,15}_{+0,05}$	47	14	–	28,7
7/8	**22,225**	**SK014-205-KRR-B**	0,2	**22,225** $^{+0,15}_{+0,05}$	52	15	16,7	33,8
		SK014-205-KTT-B-L402/70	0,18	**22,225** $^{+0,15}_{+0,05}$	52	15	19	33,8
1	**25,4**	**SK100-206-KRR-B-AH11**	0,32	**25,4** $^{+0,15}_{+0,03}$	62	16	18,7	40,2
1 1/8	**28,575**	**SK102-207-KRR-B-L402/70-AH11**	0,38	**28,575** $^{+0,13}_{0}$	72	17	18,7	46,8
		SK102-207-KRR-B-AH10	0,45	**28,575** $^{+0,175}_{+0,03}$	72	17	20,5	46,8
1 1/4	**31,75**	**SK104-207-KRR-B-L402/70-AH12**	0,35	**31,75** $^{+0,15}_{+0,05}$	72	17	18,7	46,8
		SK104-208-KTT-B-AH10	0,65	**31,75** $^{+0,15}_{+0,05}$	80	18	25	52,3
		SK104-208-KTT-B-L402/70-AH10	0,6	**31,75** $^{+0,15}_{+0,05}$	80	18	25	52,3
		SK104-207-KTT-B-L402/70	0,45	**31,75** $^{+0,15}_{+0,05}$	72	19	22,7	46,8
		SK104-207-KTT-B	0,48	**31,75** $^{+0,15}_{+0,05}$	72	19	23,7	46,8
		SK104-210-KTT-B-L402/70	0,98	**31,75** $^{+0,15}_{+0,05}$	90	22	25,5	62,8
1 3/8	**34,925**	**SK106-208-KRR-B-L402/70**	0,59	**34,925** $^{+0,15}_{0}$	80	20,9	22,4	52,3
1 1/2	**38,1**	**SK108-209-KRR-B-L402/70-AH11**	0,59	**38,1** $^{+0,12}_{0}$	85	19	23,9	57,9
		SK108-210-KRR-B	0,78	**38,1** $^{+0,12}_{0}$	90	22	26	62,8
		SK108-210-KRR-B-AH01	0,75	**38,1** $^{+0,1}_{0}$	90	22	27,1	62,8

[1] Factor f_0 for determining equivalent bearing load, see table, page 40.



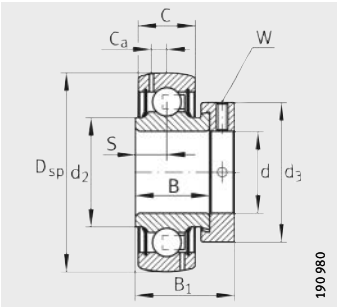
Design of bore



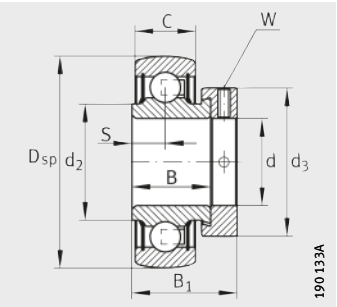
				Basic load ratings		Fatigue limit load	Factor[1)]	Width across flats of shaft	
F	D_1	B	r	dyn. C_r	stat. C_{0r}	C_{ur}	f_0	d	
				N	N	N		inch	mm
19,7	–	17,7	0,13	13 600	6 600	335	13,1	–	**16,1**
20,2	–	17,7	0,13	13 600	6 600	335	13,1	–	**17**
26,2	42,6	25,4	0,13	14 900	7 800	395	13,8	***7/8***	**22,225**
26,6	42,5	25,4	0,12	14 900	7 800	395	13,8		
30,5	52	24	0,13	20 700	11 300	570	13,8	***1***	**25,4**
34,2	60	25	0,25	27 500	15 300	770	13,8	***1 1/8***	**28,575**
38	60,3	37,7	0,25	27 500	15 300	770	13,8		
38	60	25	0,12	27 500	15 300	770	13,8	***1 1/4***	**31,75**
38	68,4	36,5	0,12	34 500	19 800	1 010	14		
38	68,4	36,5	0,12	34 500	19 800	1 010	14		
37,2	60	37,9	0,13	27 500	15 300	770	13,8		
38	60	37,9	0,12	27 500	15 300	770	13,8		
36,8	77,2	36,5	0,12	37 500	23 200	1 180	14,3		
41,5	67,7	36,5	0,12	34 500	19 800	1 010	14	***1 3/8***	**34,925**
45,1	71,7	30	0,13	34 500	20 400	1 030	14,3	***1 1/2***	**38,1**
43,6	76,7	30	0,13	37 500	23 200	1 180	14,3		
43,7	77,2	32	0,13	37 500	23 200	1 180	14,3		

Inch size radial insert ball bearings

Spherical outer ring



GRA..-NPP-B-AS2/V



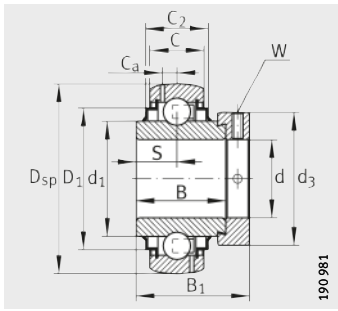
RA..-NPP-B

Dimension table · Dimensions in mm

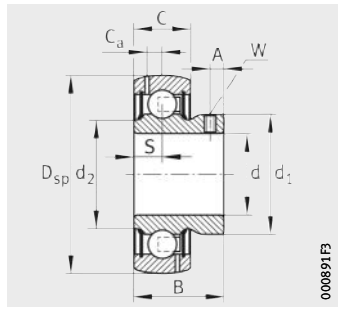
Shaft diameter d		Designation[1]	Mass m	Dimensions						
				D_{sp}	C	C_2	B	S	d_1	d_2
inch	mm		≈ kg							
1/2	12,7	GY1008-KRR-B-AS2/V	0,11	40	12	–	27,3	11,5	23,9	–
5/8	15,875	GRA010-NPP-B-AS2/V	0,11	40	12	–	19	6,5	–	23
		GAY010-NPP-B-AS2/V	0,09	40	12	–	22	6	23	23
		GY1010-KRR-B-AS2/V	0,1	40	12	–	27,3	11,5	23,9	–
		G1010-KRR-B-AS2/V	0,13	40	12	–	27,7	13,9	23,9	–
3/4	19,05	GRA012-NPP-B-AS2/V	0,16	47	14	–	21,4	7,5	–	26,9
		GAY012-NPP-B-AS2/V	0,13	47	14	–	25	7	27,8	26,9
		GY1012-KRR-B-AS2/V	0,15	47	14	16,2	31	12,7	27,6	–
		G1012-KRR-B-AS2/V	0,21	47	14	16,2	34,1	17,1	27,6	–
7/8	22,225	GRA014-NPP-B-AS2/V	0,21	52	15	–	21,4	7,5	–	30,3
		GY1014-KRR-B-AS2/V	0,21	52	15	16,5	34,1	14,3	33,8	–
		G1014-KRR-B-AS2/V	0,27	52	15	16,5	34,9	17,5	33,8	–
15/16	23,8125	GY1015-KRR-B-AS2/V	0,2	52	15	16,5	34,1	14,3	33,8	–
		G1015-KRR-B-AS2/V	0,25	52	15	16,5	34,9	17,5	33,8	–
1	25,4	RA100-NPP-B	0,19	52	15	–	21,4	7,5	–	30,5
		GRA100-NPP-B-AS2/V	0,18	52	15	–	21,4	7,5	–	30,3
		GAY100-NPP-B-AS2/V	0,15	52	15	–	27	7,5	33,6	30,4
		GY1100-KRR-B-AS2/V	0,18	52	15	16,5	34,1	14,3	33,8	–
		G1100-KRR-B-AS2/V	0,23	52	15	16,5	34,9	17,5	33,8	–

1) Permissible speeds of radial insert ball bearings: see page 148.

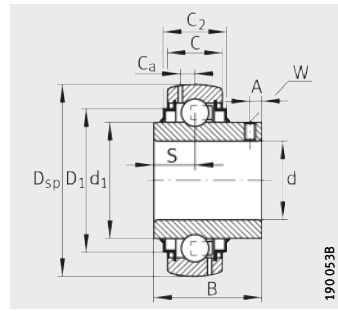
2) Factor f_0 for determining equivalent bearing load, see table, page 40.



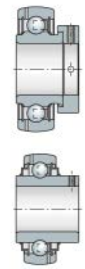
G..-KRR-B-AS2/V



GAY..-NPP-B(-AS2/V)



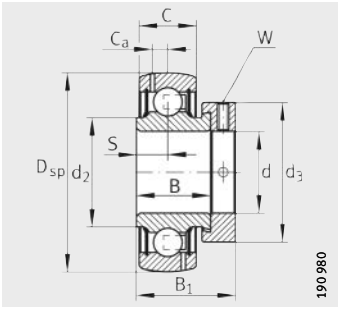
GY..-KRR-B-AS2/V



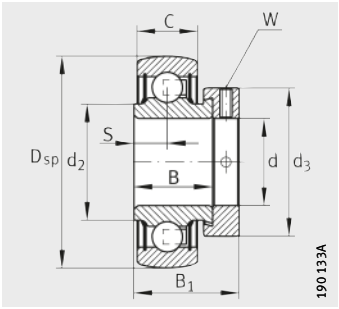
					Width across flats	Basic load ratings		Fatigue limit load	Factor[2]	Shaft diameter	
D_1	C_a	B_1	d_3	A	W	dyn. C_r	stat. C_{0r}	C_{ur}	f_0	d	
					inch	N	N	N		inch	mm
–	3,4	–	–	4	3/32	10 100	4 750	241	13,1	1/2	**12,7**
–	3,4	28,6	28	–	1/8	10 100	4 750	241	13,1	5/8	**15,875**
–	3,4	–	–	4	3/32	10 100	4 750	241	13,1		
–	3,4	–	–	4	3/32	10 100	4 750	241	13,1		
–	3,4	37,3	28	–	1/8	10 100	4 750	241	13,1		
–	3,9	31	33	–	1/8	13 600	6 600	335	13,1	3/4	**19,05**
–	3,9	–	–	4,5	3/32	13 600	6 600	335	13,1		
37,4	3,9	–	–	4,5	3/32	13 200	6 100	310	13,1		
37,4	3,9	43,7	33	–	1/8	13 600	6 600	335	13,1		
–	3,9	31	37,5	–	1/8	14 900	7 800	395	13,8	7/8	**22,225**
42,5	3,9	–	–	4,9	3/32	14 900	7 800	395	13,8		
42,5	3,9	44,5	37,5	–	1/8	14 900	7 800	395	13,8		
42,5	3,9	–	–	4,9	3/32	14 900	7 800	395	13,8	15/16	**23,8125**
42,5	3,9	44,5	37,5	–	1/8	14 900	7 800	395	13,8		
–	–	31	37,5	–	1/8	14 900	7 800	395	13,8	1	**25,4**
–	3,9	31	37,5	–	1/8	14 900	7 800	395	13,8		
–	3,9	–	–	5	3/32	14 900	7 800	395	13,8		
42,5	3,9	–	–	5	3/32	14 900	7 800	395	13,8		
42,5	3,9	44,5	37,5	–	1/8	14 900	7 800	395	13,8		

Inch size radial insert ball bearings

Spherical outer ring



GRA..-NPP-B-AS2/V



RA..-NPP-B

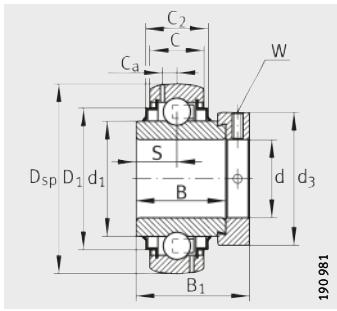
Dimension table (continued) · Dimensions in mm

Shaft diameter d		Designation[1]	Mass m	Dimensions						
				D_{sp}	C	C_2	B	S	d_1	d_2
inch	mm		≈ kg							
1 1/8	**28,575**	**GRA102-NPP-B-AS2/V**	0,32	62	18	–	23,8	9	–	37,3
		G1102-KRR-B-AS2/V	0,4	62	18	20,7	36,5	18,3	40,2	–
		GY1102-KRR-B-AS2/V	0,32	62	18	20	38,1	15,9	40,2	–
1 3/16	**30,1625**	**GRA103-NPP-B-AS2/V**	0,3	62	18	–	23,8	9	–	37,3
		G1103-KRR-B-AS2/V	0,37	62	18	20,7	36,5	18,3	40,2	–
		GY1103-KRR-B-AS2/V	0,3	62	18	20	38,1	15,9	40,2	–
1 1/4	**31,75**	**RA104-206-NPP-B**	0,31	62	18	–	23,8	9	–	37,4
		GRA104-206-NPP-B-AS2/V	0,28	62	18	–	23,8	9	–	37,3
		G1104-206-KRR-B-AS2/V	0,34	62	18	20,7	36,5	18,3	40,2	–
		GY1104-206-KRR-B-AS2/V	0,27	62	18	20	38,1	15,9	40,2	–
		RA104-NPP-B	0,48	72	19	–	25,4	9,5	–	44,6
		GRA104-NPP-B-AS2/V	0,5	72	19	–	25,4	9,5	–	44,5
		GAY104-NPP-B-AS2/V[3]	0,44	72	19	–	35	9,5	47,1	44,5
		G1104-KRR-B-AS2/V	0,65	72	19	22,5	37,7	18,8	46,8	–
		GY1104-KRR-B-AS2/V	0,5	72	19	20,7	42,9	17,5	46,8	–
1 3/8	**34,925**	**GRA106-NPP-B-AS2/V**	0,45	72	19	–	25,4	9,5	–	44,5
		G1106-KRR-B-AS2/V	0,54	72	19	22,5	37,7	18,8	46,8	–
		GY1106-KRR-B-AS2/V	0,45	72	19	20,7	42,9	17,5	46,8	–
1 7/16	**36,5125**	**GRA107-NPP-B-AS2/V**	0,43	72	19	–	25,4	9,5	–	44,5
		GAY107-NPP-B-AS2/V	0,37	72	19	–	35	9,5	47,1	44,5
		G1107-KRR-B-AS2/V	0,5	72	19	20,7	37,7	18,8	46,8	–
		GY1107-KRR-B-AS2/V	0,42	72	19	20,7	42,9	17,5	46,8	–

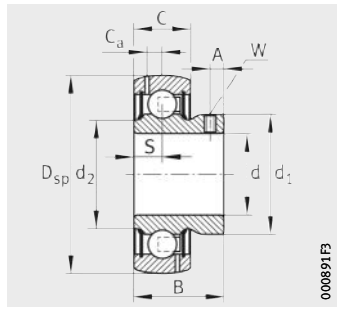
1) Permissible speeds of radial insert ball bearings: see page 148.

2) Factor f_0 for determining equivalent bearing load, see table, page 40.

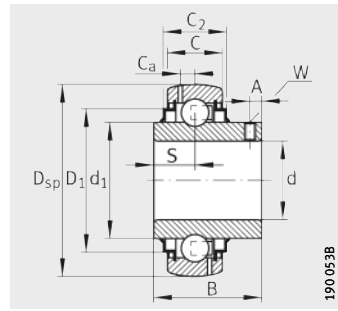
3) Available by agreement.



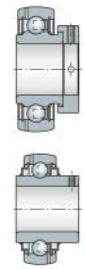
G..-KRR-B-AS2/V



GAY..-NPP-B-AS2/V



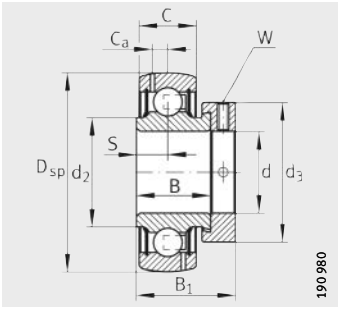
GY..-KRR-B-AS2/V



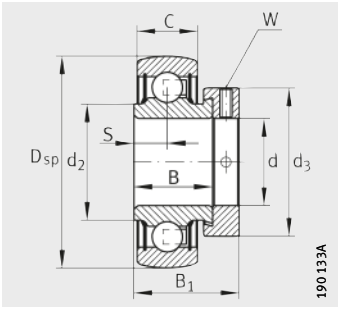
					Width across flats	Basic load ratings		Fatigue limit load	Factor[2]	Shaft diameter	
D_1	C_a	B_1	d_3	A	W	dyn. C_r	stat. C_{0r}	C_{ur}	f_0	d	
					inch	N	N	N		inch	mm
–	5	35,8	44	–	5/32	20 700	11 300	570	13,8	**1 1/8**	**28,575**
52	5	48,5	44	–	5/32	20 700	11 300	570	13,8		
51,8	5	–	–	5,6	1/8	20 700	11 300	570	13,8		
–	4,9	35,8	44	–	5/32	20 700	11 300	570	13,8	**1 3/16**	**30,1625**
52	5	48,35	44	–	5/32	20 700	11 300	570	13,8		
51,8	5	–	–	5,6	1/8	20 700	11 300	570	13,8		
–	–	35,8	44	–	5/32	20 700	11 300	570	13,8	**1 1/4**	**31,75**
–	5	35,8	44	–	5/32	20 700	11 300	570	13,8		
52	5	48,5	44	–	5/32	20 700	11 300	570	13,8		
51,8	5	–	–	5,6	1/8	20 700	11 300	570	13,8		
–	–	39	51	–	3/16	27 500	15 300	770	13,8		
–	5,7	39	51	–	3/16	27 500	15 300	770	13,8		
–	5,7	–	–	8	1/8	27 500	15 300	770	13,8		
60,3	5,7	51,3	51	–	5/32	27 500	15 300	770	13,8		
60,2	5,7	–	–	5,9	1/8	27 500	15 300	770	13,8		
–	5,7	39	51	–	3/16	27 500	15 300	770	13,8	**1 3/8**	**34,925**
60,3	5,7	51,3	51	–	3/16	27 500	15 300	770	13,8		
60	5,7	–	–	7,9	1/8	27 500	15 300	770	13,8		
–	5,7	39	51	–	3/16	27 500	15 300	770	13,8	**1 7/16**	**36,5125**
–	5,7	–	–	8	1/8	27 500	15 300	770	13,8		
60,3	5,7	51,3	51	–	3/16	27 500	15 300	770	13,8		
60	5,7	–	–	6	1/8	27 500	15 300	770	13,8		

Inch size radial insert ball bearings

Spherical outer ring



GRA..-NPP-B-AS2/V



RA..-NPP-B

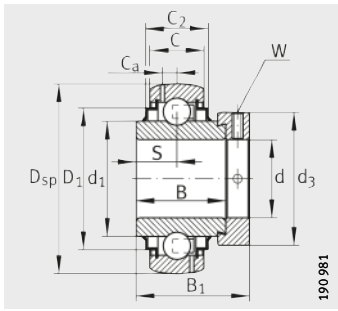
Dimension table (continued) · Dimensions in mm

Shaft diameter d		Designation[1]	Mass m	Dimensions						
				D_{sp}	C	C_2	B	S	d_1	d_2
inch	mm		≈ kg							
1 1/2	**38,1**	**RA108-NPP-B**	0,62	80	21	–	30,2	11	–	49,4
		GRA108-NPP-B-AS2/V	0,64	80	21	–	30,2	11	–	49,3
		G1108-KRR-B-AS2/V	0,76	80	21	22,5	42,9	21,4	52,3	–
1 5/8	**41,275**	**G1110-KRR-B-AS2/V**	0,9	85	22	25,7	42,9	21,4	57,9	–
1 11/16	**42,8625**	**G1111-KRR-B-AS2/V**	0,85	85	22	25,7	42,9	21,4	57,9	–
1 3/4	**44,45**	**G1112-KRR-B-AS2/V**	0,81	85	22	25,7	42,9	21,4	57,9	–
		GY1112-KRR-B-AS2/V	0,68	85	22	25,7	49,2	19	57,9	–
1 15/16	**49,2125**	**GRA115-NPP-B-AS2/V**[3]	0,75	90	22	–	30,2	11	–	59,3
		G1115-KRR-B-AS2/V	1,01	90	22	26,1	49,2	24,6	62,8	–
		GY1115-KRR-B-AS2/V	0,82	90	22	26	51,6	19	62,8	–
2	**50,8**	**G1200-KRR-B-AS2/V**	1,51	100	25	28,4	55,5	27,8	69,8	–
		GY1200-KRR-B-AS2/V	1,18	100	25	28,4	55,6	22,2	69,8	–
2 3/16	**55,5625**	**G1203-KRR-B-AS2/V**	1,28	100	25	28,4	55,5	27,8	69,8	–
		GY1203-KRR-B-AS2/V	1,01	100	25	28,4	55,5	22,2	69,8	–
2 7/16	**61,912**	**G1207-KRR-B-AS2/V**	1,59	110	24	29,3	61,9	31	76,5	–
2 15/16	**74,6125**	**G1215-KRR-B-AS2/V**	2,09	130	28	30,5	49,5	21,5	99	–
		GY1215-KRR-B-AS2/V	2,01	130	28	31,5	77,8	33,4	90	–

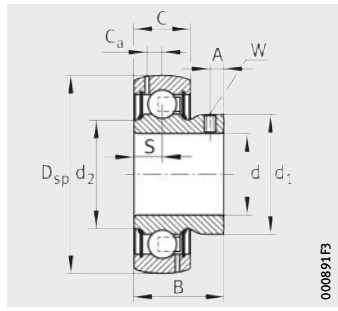
1) Permissible speeds of radial insert ball bearings: see page 148.

2) Factor f_0 for determining equivalent bearing load, see table, page 40.

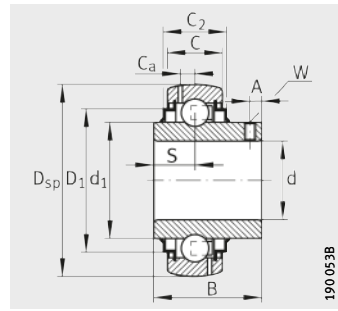
3) Available by agreement.



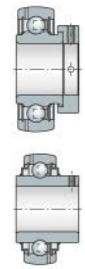
G..-KRR-B-AS2/V



GAY..-NPP-B-AS2/V



GY..-KRR-B-AS2/V



					Width across flats	Basic load ratings		Fatigue limit load	Factor[2]	Shaft diameter	
D_1	C_a	B_1	d_3	A	W	dyn. C_r	stat. C_{0r}	C_{ur}	f_0	d	
					inch	N	N	N		inch	mm
–	–	43,8	58	–	3/16	34 500	19 800	1 010	14	**1 1/2**	**38,1**
–	6,5	43,8	58	–	3/16	34 500	19 800	1 010	14		
68,3	6,5	56,5	58	–	3/16	34 500	19 800	1 010	14		
72,3	6,4	56,5	63	–	3/16	34 500	20 400	1 030	14,3	**1 5/8**	**41,275**
72,3	6,4	56,5	63	–	3/16	34 500	20 400	1 030	14,3	**1 11/16**	**42,8625**
72,3	6,4	56,5	63	–	3/16	34 500	20 400	1 030	14,3	**1 3/4**	**44,45**
71,7	6,4	–	–	8	5/32	34 500	20 400	1 030	14,3		
–	6,8	43,8	69	–	3/16	37 500	23 200	1 180	14,3	**1 15/16**	**49,2125**
77,3	6,8	62,75	69	–	3/16	37 500	23 200	1 180	14,3		
76,7	6,8	–	–	10	5/32	37 500	23 200	1 180	14,3		
85,9	7,1	71,4	76	–	3/16	46 000	29 000	1 480	14,3	**2**	**50,8**
85,3	7,1	–	–	9,1	5/32	46 000	29 000	1 480	14,3		
85,3	7,08	71,4	76	–	3/16	46 000	29 000	1 480	14,3	**2 3/16**	**55,5625**
85,3	7,1	–	–	10	5/32	46 000	29 000	1 480	14,3		
95,3	7,8	77,9	84	–	3/16	56 000	36 000	1 820	14,3	**2 7/16**	**61,912**
112,9	8,56	67	100,5	–	1/4	66 000	44 500	2 240	14,7	**2 15/16**	**74,6125**
113	8,5	–	–	12,6	3/16	66 000	44 500	2 240	14,7		



Radial insert ball bearings with cylindrical outer ring

Radial insert ball bearings with cylindrical outer ring



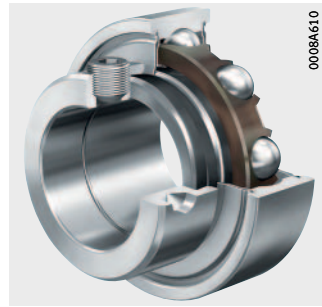


		Page
Product overview	Radial insert ball bearings with cylindrical outer ring	196
Features	X-life	198
	Radial insert ball bearings with eccentric locking collar and slots in outer ring	199
	Inch size designs	199
	Deep groove ball bearings with bore for fit	200
	Deep groove ball bearings with profiled bore	201
	Suffixes	201
Dimension tables	Radial insert ball bearings with eccentric locking collar	202
	Deep groove ball bearings with extended inner ring, bore for fit	206
	Deep groove ball bearings with extended inner ring, hexagonal bore	208
	Inch size radial insert ball bearings	210

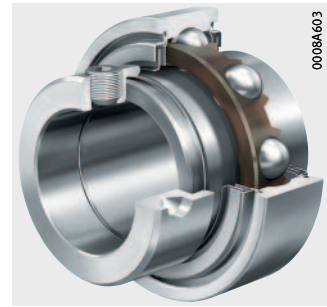
Radial insert ball bearings with cylindrical outer ring

With eccentric locking collar

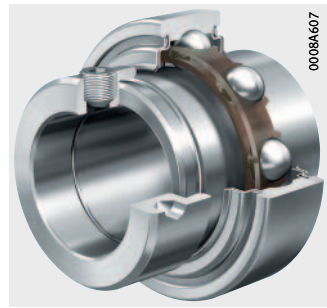
RAE..-XL-NPP, RALE..-XL-NPP



E..-XL-KLL

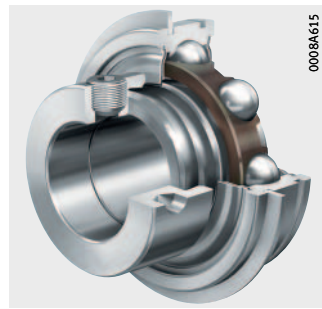


E..-XL-KRR



One snap ring in outer ring

RAE..-XL-NPP-NR







Deep groove ball bearings with extended inner ring

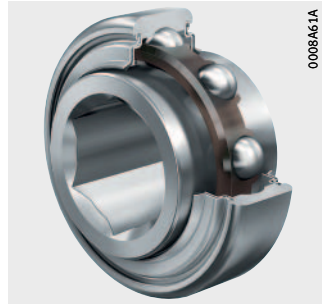
With bore for fit

2..-XL-KRR, 2..-XL-KRR-AH

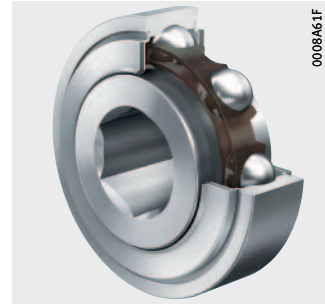


With hexagonal bore

SK..-KRR



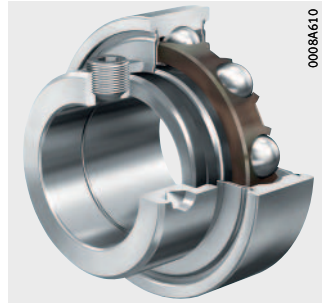
SK..-KTT



Inch size radial insert ball bearings

With eccentric locking collar

RA..-NPP, RAL..-NPP



Radial insert ball bearings with cylindrical outer ring

Features

Radial insert ball bearings with cylindrical outer ring are single row, ready-to-fit units comprising a solid outer ring, an inner ring extended on one or both sides, cages made from plastic and seals of type P or R. Bearings with an inner ring extended on both sides undergo less tilting of the inner ring and therefore run more smoothly.

The radial insert ball bearings are greased and cannot be relubricated.

Radial insert ball bearings are particularly easy to fit and are preferentially suitable for drawn shafts of tolerance classes h6 Ⓔ to h9 Ⓔ. They are located on the shaft by means of an eccentric locking collar or a location fit.



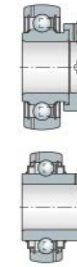
The series comparison matrix presents the features of the series in detail, see table, page 146.

X-life

Numerous sizes are supplied in the X-life design. These products are indicated in the dimension tables.

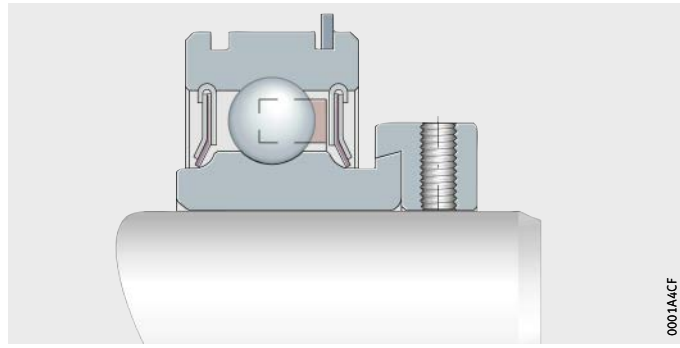
Radial insert ball bearings of X-life quality have, for example, lower roughness Ra and higher geometrical accuracy of the raceways than comparable designs that are not X-life. As a result, these bearings have higher load carrying capacity and longer rating life although their dimensions are identical. In certain applications, this means that a smaller bearing arrangement can be designed.

Radial insert ball bearings of X-life quality have an eccentric locking collar of an improved design and the quantity and distribution of the lubricant has been optimised. Housings ASE have additional crosspieces on the underside. For extreme requirements, the cage and seal material in the high and low temperature designs (suffix FA101) has been significantly improved in comparison with earlier versions.



Radial insert ball bearings with eccentric locking collar and slots in outer ring

The basic design of series RAE..-XL-NPP-NR is a radial insert ball bearing with an eccentric locking collar and an inner ring extended on one side, *Figure 1*. The outer ring has a cylindrical outside surface and two slots to DIN 616. The bearings are fitted in cylindrical bores and axially located by easy-to-fit snap rings. The bearing is supplied with one snap ring to DIN 5417 already fitted.



RAE..-XL-NPP-NR

Figure 1
Radial insert ball bearing with cylindrical outer ring and two slots in outer ring

Seals

The bearings are sealed on both sides using P type seals, see page 119.

Lubrication

The radial insert ball bearings are greased and cannot be relubricated.

Inch size designs

Some series with an eccentric locking collar are also available with inch size bore dimensions, see page 210.

Radial insert ball bearings with cylindrical outer ring

Deep groove ball bearings with bore for fit

These bearings have a cylindrical outer ring and are fitted in cylindrical bores, *Figure 2*. The inner ring is extended on both sides and is located on the shaft using a location fit. Due to the extended inner ring, additional axial spacer rings are not required.

The concentric seat allows speeds equivalent to those of standard ball bearings, while the load can be either constant or alternating. Smooth running is also achieved.

The tolerance of the inner ring bore corresponds to tolerance class Normal to ISO 492.

2..-XL-KRR
2..-XL-KRR-AH

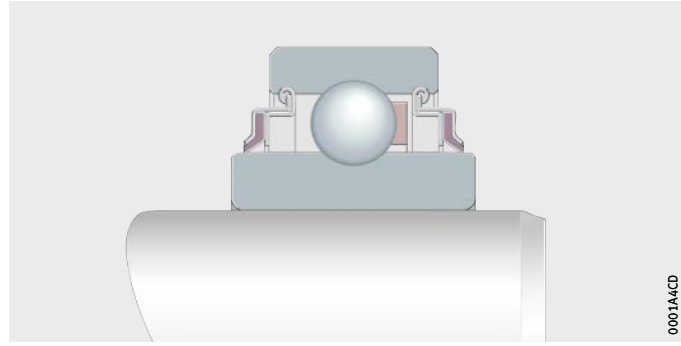


Figure 2
Deep groove ball bearing with extended inner ring and bore for fit

Seals

The bearings are sealed on both sides using R type seals, see page 119.

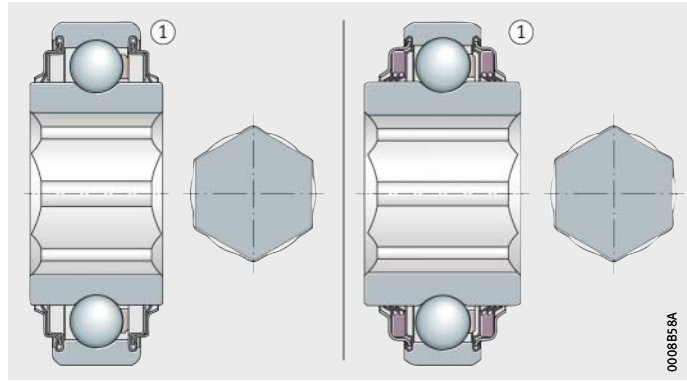
Lubrication

The sheet steel washers extended outwards and angled downwards form a large grease reservoir.

Deep groove ball bearings with profiled bore

Bearings with a profiled bore are used where shafts must transmit very high torques and this is only possible using hexagonal shafts, *Figure 3*. Rotation is prevented by form fit.

These bearings have a cylindrical outer ring and an inner ring that is extended on both sides.



SK..-KRR
SK..-KTT

① Hexagonal bore

Figure 3
Deep groove ball bearings with extended inner ring and profiled bore

Anti-corrosion protection

The bearings have a Corrotect coating.

Seals

The self-aligning deep groove ball bearings are sealed using seals R or T, see page 119.

Lubrication

The bearings contain the maximum quantity of grease.

Suffixes

Suffixes for available designs, see table.

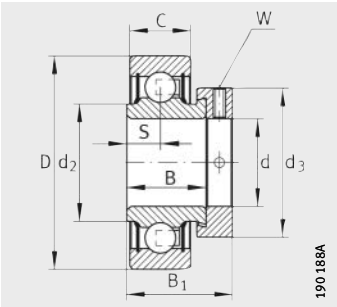
Available designs

Suffix	Description	Design
FA106	Bearing subjected to special noise testing	Standard
KRR	Lip seals on both sides (R type seal)	
KLL	Labyrinth seals on both sides (L type seal)	
NR	Slot and snap ring for radial insert ball bearing with cylindrical outer ring	
NPP	Lip seals on both sides (P seal)	

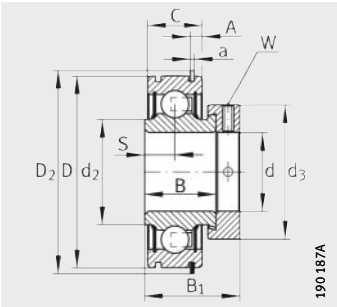
Radial insert ball bearings with eccentric locking collar

Cylindrical outer ring

X-life



RAE..-XL-NPP-FA106,
RALE..-XL-NPP



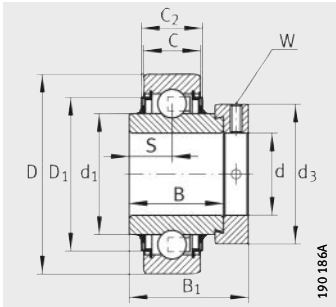
RAE..-XL-NPP-NR

Dimension table · Dimensions in mm

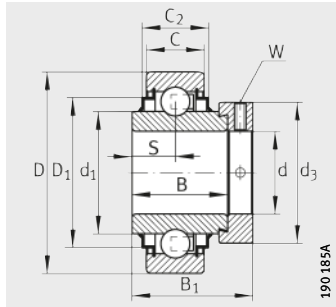
Designation[1]	Mass	Dimensions							
	m ≈ kg	d	D	D_2	C	C_2	A	a	B
RAE12-XL-NPP-FA106	0,13	**12**	40	–	12	–	–	–	19
RAE15-XL-NPP-FA106	0,12	**15**	40	–	12	–	–	–	19
RAE17-XL-NPP-FA106	0,11	**17**	40	–	12	–	–	–	19
RALE20-XL-NPP-FA106	0,1	**20**	42	–	12	–	–	–	16,7
RAE20-XL-NPP-FA106	0,17	**20**	47	–	14	–	–	–	21,4
RAE20-XL-NPP-NR	0,17	**20**	47	52,7	14	–	$3,58_{-0,25}$	1,12	21,4
E20-XL-KLL	0,2	**20**	47	–	14	16,6	–	–	34,1
E20-XL-KRR	0,2	**20**	47	–	14	16,6	–	–	34,1
RALE25-XL-NPP	0,13	**25**	47	–	12	–	–	–	17,5
RAE25-XL-NPP-FA106	0,2	**25**	52	–	15	–	–	–	21,4
RAE25-XL-NPP-NR	0,2	**25**	52	57,9	15	–	$3,58_{-0,25}$	1,12	21,4
E25-XL-KLL	0,25	**25**	52	–	15	20,2	–	–	34,9
E25-XL-KRR	0,25	**25**	52	–	15	16,7	–	–	34,9
RALE30-XL-NPP-FA106	0,18	**30**	55	–	13	–	–	–	18,5
RAE30-XL-NPP-FA106	0,33	**30**	62	–	18	–	–	–	23,8
RAE30-XL-NPP-NR	0,33	**30**	62	67,7	18	–	$4,98_{-0,3}$	1,7	23,8
E30-XL-KLL	0,39	**30**	62	–	18	20,6	–	–	36,5
E30-XL-KRR	0,4	**30**	62	–	18	20,7	–	–	36,5
RAE35-XL-NPP-FA106	0,54	**35**	72	–	19	–	–	–	25,4
RAE35-XL-NPP-NR	0,53	**35**	72	78,6	19	–	$4,98_{-0,3}$	1,7	25,4
E35-XL-KLL	0,6	**35**	72	–	19	25,4	–	–	37,7
E35-XL-KRR	0,61	**35**	72	–	19	21,7	–	–	37,7

1) Permissible speeds of radial insert ball bearings: see page 148.

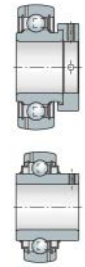
2) Factor f_0 for determining equivalent bearing load, see table, page 40.



E..-XL-KLL



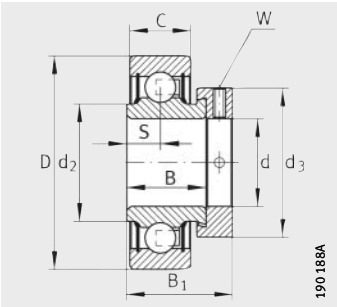
E..-XL-KRR



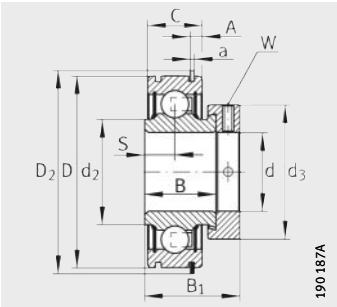
						Width across flats	Basic load ratings		Fatigue limit load	Factor[2]
S	d_1	d_2	D_1	B_1	d_3 max.	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
6,5	–	23	–	28,6	28,4	3	10 100	4 750	241	13,1
6,5	–	23	–	28,6	28,4	3	10 100	4 750	241	13,1
6,5	–	23	–	28,6	28,4	3	10 100	4 750	241	13,1
6	–	25,4	–	24,5	30	2,5	10 000	5 000	255	13,9
7,5	–	26,9	–	31	33	3	13 600	6 600	335	13,1
7,5	–	26,9	–	31	33	3	13 600	6 600	335	13,1
17,1	27,6	–	37,4	43,7	33	3	13 600	6 600	335	13,1
17,1	27,6	–	37,4	43,7	33	3	13 600	6 600	335	13,1
6	–	30	–	25,5	36	2,5	10 700	5 900	295	14,5
7,5	–	30,5	–	31	37,5	3	14 900	7 800	395	13,8
7,5	–	30,5	–	31	37,5	3	14 900	7 800	395	13,8
17,5	33,8	–	42,5	44,5	37,5	3	14 900	7 800	395	13,8
17,5	33,8	–	42,5	44,5	37,5	3	14 900	7 800	395	13,8
6,5	–	35,7	–	26,5	42,5	2,5	14 100	8 300	420	14,8
9	–	37,4	–	35,8	44	4	20 700	11 300	570	13,8
9	–	37,4	–	35,8	44	4	20 700	11 300	570	13,8
18,3	40,2	–	52	48,5	44	4	20 700	11 300	570	13,8
18,3	40,2	–	52	48,5	44	4	20 700	11 300	570	13,8
9,5	–	44,6	–	39	55	5	27 500	15 300	770	13,8
9,5	–	44,6	–	39	55	5	27 500	15 300	770	13,8
18,8	46,8	–	60,3	51,3	55	5	27 500	15 300	770	13,8
18,8	46,8	–	60,3	51,3	55	5	27 500	15 300	770	13,8

Radial insert ball bearings with eccentric locking collar

Cylindrical outer ring



RAE..-XL-NPP(-FA106),
RALE..-XL-NPP



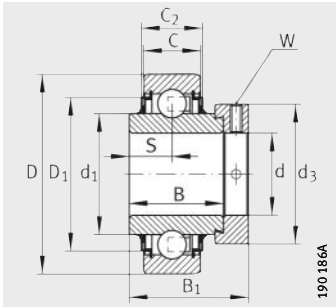
RAE..-XL-NPP-NR

Dimension table (continued) · Dimensions in mm

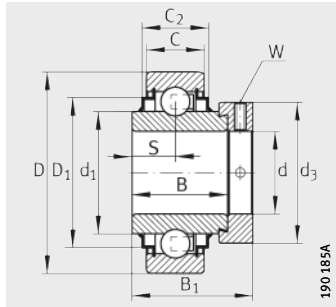
Designation[1]	Mass	Dimensions							
	m ≈ kg	d	D	D_2	C	C_2	A	a	B
RAE40-XL-NPP-FA106	0,64	**40**	80	–	21	–	–	–	30,2
RAE40-XL-NPP-NR	0,64	**40**	80	86,6	21	–	$4{,}98_{-0{,}3}$	1,7	30,2
E40-XL-KLL	0,76	**40**	80	–	21	28,1	–	–	42,9
E40-XL-KRR	0,75	**40**	80	–	21	23,5	–	–	42,9
RAE45-XL-NPP-FA106	0,72	**45**	85	–	22	–	–	–	30,2
E45-XL-KLL	0,85	**45**	85	–	22	26,4	–	–	42,9
E45-XL-KRR	0,85	**45**	85	–	22	26,4	–	–	42,9
RAE50-XL-NPP-FA106	0,79	**50**	90	–	22	–	–	–	30,2
E50-XL-KLL	1	**50**	90	–	22	26,4	–	–	49,2
E50-XL-KRR	1	**50**	90	–	22	26,4	–	–	49,2
RAE60-XL-NPP	1,43	**60**	110	–	24	–	–	–	37,1
E60-XL-KRR	1,82	**60**	110	–	24	29	–	–	61,9
E70-XL-KRR	2,45	**70**	125	–	28	32	–	–	48,5

1) Permissible speeds of radial insert ball bearings: see page 148.

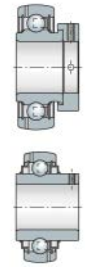
2) Factor f_0 for determining equivalent bearing load, see table, page 40.



E..-XL-KLL



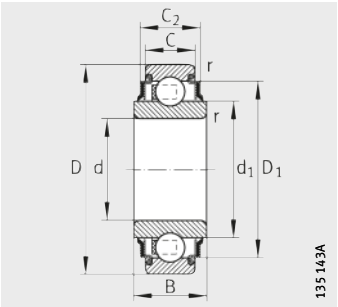
E..-XL-KRR



						Width across flats	Basic load ratings		Fatigue limit load	Factor[2]
S	d_1	d_2	D_1	B_1	d_3 max.	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
11	–	49,4	–	43,8	58	5	34 500	19 800	1 010	14
11	–	49,4	–	43,8	58	5	34 500	19 800	1 010	14
21,4	52,3	–	68,3	56,5	58	5	34 500	19 800	1 010	14
21,4	52,3	–	68,3	56,5	58	5	34 500	19 800	1 010	14
11	–	54,5	–	43,8	63	5	34 500	20 400	1 030	14,3
21,4	57,9	–	72,3	56,5	63	5	34 500	20 400	1 030	14,3
21,4	57,9	–	72,3	56,5	63	5	34 500	20 400	1 030	14,3
11	–	59,4	–	43,8	69	5	37 500	23 200	1 180	14,3
24,6	62,8	–	77,3	62,8	69	5	37 500	23 200	1 180	14,3
24,6	62,8	–	77,3	62,8	69	5	37 500	23 200	1 180	14,3
13,5	–	72	–	53,1	84	5	56 000	36 000	1 820	14,3
31	76,5	–	94,5	77,9	84	5	56 000	36 000	1 820	14,3
21,5	85,2	–	109	66	96	6	66 000	44 000	2 230	14,4

Deep groove ball bearings with extended inner ring

Cylindrical outer ring
Bore for fit

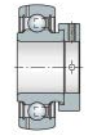


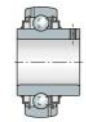
2..-XL-KRR, 2..-XL-KRR-AH..

Dimension table · Dimensions in mm

Designation[1]	Mass	Dimensions							
	m	d	D	C	C_2	d_1	D_1	B	r_{min}
	≈ kg								
203-XL-KRR-AH05[3]	0,09	**13** $^{+0,08}_{-0,05}$	40	12	12	24,2	40	18,3	0,6
202-XL-KRR	0,05	**15**	35	11	11	21,5	28,8	14,4	0,6
203-XL-KRR-AH02	0,07	**16,2** $^{+0,1}$	40	12	12	24,2	32,6	18,3	0,6
203-XL-KRR	0,07	**17**	40	12	12	24,2	32,9	18,3	0,6
204-XL-KRR	0,12	**20**	47	14	14	28,7	38,7	17,7	1
205-XL-KRR	0,16	**25**	52	15	16,7	33,8	42,6	21	1
206-XL-KRR	0,24	**30**	62	16	19,6	40,2	52	24	1
207-XL-KRR-AH03[4]	0,35	**35**	72	17	19,7	46,8	60,3	25	2
208-XL-KRR-AH04[4]	0,48	**38,892**	80	21	21,2	52,3	68,2	27,5	1
208-XL-KRR	0,44	**40**	80	18	20,5	52,3	68,2	27	1,1
209-XL-KRR	0,53	**45**	85	19	26,4	57,9	72,3	30	1,1
210-XL-KRR	0,58	**50**	90	20	24	62,8	77,6	30	1,1
211-XL-KRR	0,85	**55**	100	21	27,5	69,8	85,9	36	1,5
212-XL-KRR	1,1	**60**	110	22	30	76,5	94,7	36	1,5

1) Internal clearance Group N.
2) Factor f_0 for determining equivalent bearing load, see table, page 40.
3) Greased with L114 (GA47).
4) With steel cage.

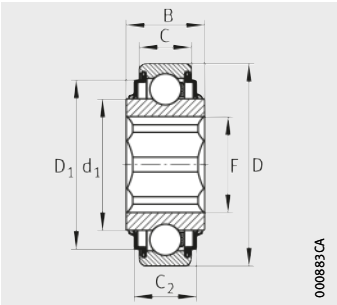




Limiting speed n_G grease min^{-1}	Basic load ratings dyn. C_r N	 stat. C_{0r} N	Fatigue limit load C_{ur} N	Factor[2)] f_0
11 100	10 100	4 750	241	13,1
12 700	8 100	3 700	187	13,1
11 100	10 100	4 750	241	13,1
11 100	10 100	4 750	241	13,1
9 300	13 600	6 600	335	13,1
8 000	14 900	7 800	395	13,8
6 700	20 700	11 300	570	13,8
5 700	27 500	15 300	770	13,8
5 000	34 500	19 800	1 010	14
5 000	34 500	19 800	1 010	14
4 650	34 500	20 400	1 030	14,3
4 300	37 500	23 200	1 180	14,3
3 900	46 000	29 000	1 480	14,3
3 550	56 000	36 000	1 820	14,3

Deep groove ball bearings with extended inner ring

Cylindrical outer ring
Hexagonal bore

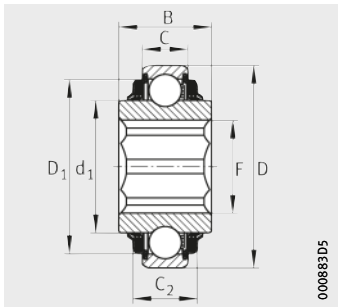


SK..-KRR(-L402/70)(-AH)

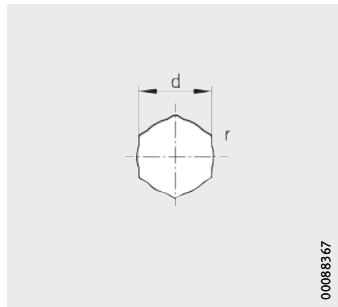
Dimension table · Dimensions in mm

Width across flats of shaft d		Designation	Mass m	Dimensions			
				d	D	C	C_2
inch	mm		≈ kg				
7/8	**22,225**	**SK014-205-KRR**	0,18	**22,225** $^{+0,15}_{+0,05}$	52	15	16,5
1	**25,4**	**SK100-206-KRR-AH11**	0,27	**25,4** $^{+0,15}_{+0,05}$	62	16	19
1 1/4	**31,75**	**SK104-207-KRR-L402/70-AH12**	0,35	**31,75** $^{+0,15}_{+0,05}$	72	17	18,7
		SK104-208-KTT-L402/70-AH10	0,62	**31,75** $^{+0,15}_{+0,05}$	80	18	25
1 3/4	**44,45**	**SK112-312-KTT-L402/70**	2,62	**44,45** $^{+0,127}_{0}$	130	33	41,3

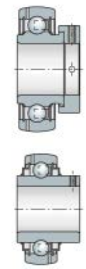
[1] Factor f_0 for determining equivalent bearing load, see table, page 40.



SK..-KTT-L402/70(-AH)



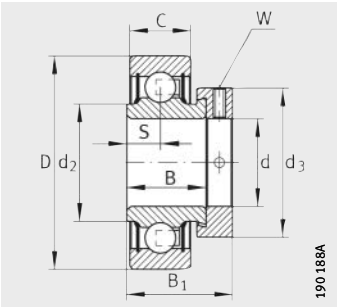
Design of bore



					Basic load ratings		Fatigue limit load	Factor[1)]	Width across flats of shaft	
d_1	F	D_1	B	r	dyn. C_r	stat. C_{0r}	C_{ur}	f_0	d	
					N	N	N		inch	mm
33,8	26,5	42,5	25,4	0,12	14 900	7 800	395	13,8	*7/8*	**22,225**
40,2	30	52	24	0,12	20 700	11 300	570	13,8	*1*	**25,4**
46,8	38	60	25	0,12	27 500	15 300	770	13,8	*1 1/4*	**31,75**
52,3	38	68,4	36,5	0,12	34 500	19 800	1 010	14		
79,4	51,6	108,9	48	0,13	87 000	52 000	2 650	13,1	*1 3/4*	**44,45**

Inch size radial insert ball bearings

Cylindrical outer ring



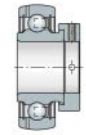
RA..-NPP, RAL..-NPP

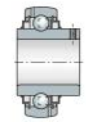
Dimension table · Dimensions in mm

Shaft diameter d		Designation[1]	Mass m	Dimensions				
				D	C	B	B_1	S
inch	mm		≈ kg					
3/4	**19,05**	**RAL012-NPP**	0,09	42	12	16,7	24,6	6
7/8	**22,225**	**RA014-NPP**	0,19	52	15	21,4	31	7,5
1	**25,4**	**RA100-NPP**	0,19	52	15	21,4	31	7,5
1 1/8	**28,575**	**RA102-NPP**	0,31	62	18	23,8	35,8	9
1 3/16	**30,1625**	**RA103-NPP**	0,31	62	18	23,8	35,8	9
1 1/4	**31,75**	**RA104-206-NPP**	0,31	62	18	23,8	35,8	9
		RA104-NPP	0,48	72	19	25,4	39	9,5
1 7/16	**36,5125**	**RA107-NPP**	0,48	72	19	25,4	39	9,5
1 1/2	**38,1**	**RA108-NPP**	0,62	80	21	30,2	43,8	11

1) Permissible speeds of radial insert ball bearings: see page 148.

2) Factor f_0 for determining equivalent bearing load, see table, page 40.





		Width across flats	Basic load ratings		Fatigue limit load	Factor[2)]	Shaft diameter	
d_2	d_3	W	dyn. C_r	stat. C_{0r}	C_{ur}	f_0	d	
	max.	inch	N	N	N		inch	mm
25,4	30	1/8	10 000	5 000	255	13,9	**3/4**	**19,05**
30,5	37,5	1/8	14 900	7 800	395	13,8	**7/8**	**22,225**
30,5	37,5	1/8	14 900	7 800	395	13,8	**1**	**25,4**
37,4	44	5/32	20 700	11 300	570	13,8	**1 1/8**	**28,575**
37,4	44	5/32	20 700	11 300	570	13,8	**1 3/16**	**30,1625**
37,4	44	5/32	20 700	11 300	570	13,8	**1 1/4**	**31,75**
44,6	51	3/16	27 500	15 300	770	13,8		
44,6	51	3/16	27 500	15 300	770	13,8	**1 7/16**	**36,5125**
49,4	58	3/16	34 500	19 800	1 010	14	**1 1/2**	**38,1**



Radial insert ball bearings with rubber interliner or steel aligning ring

Radial insert ball bearings with rubber interliner or steel aligning ring





Page

Product overview

Radial insert ball bearings with rubber interliner or steel aligning ring 214

Features

X-life 215

Radial insert ball bearings with rubber interliner 216

Radial insert ball bearings with steel aligning ring 217

Suffixes 217

Dimension tables

Radial insert ball bearings with rubber interliner, spherical or cylindrical outside surface of interliner 218

Radial insert ball bearings with steel aligning ring 220

Radial insert ball bearings with rubber interliner or steel aligning ring

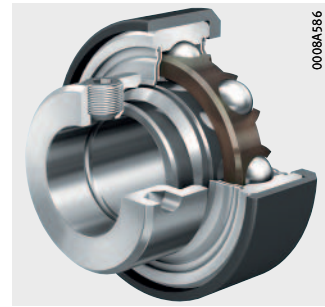
With rubber interliner

With spherical or cylindrical outside surface

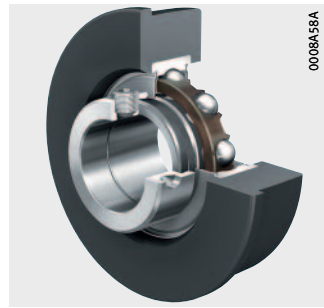
RABRA..-XL-FA106,
RABRB..-XL-FA106



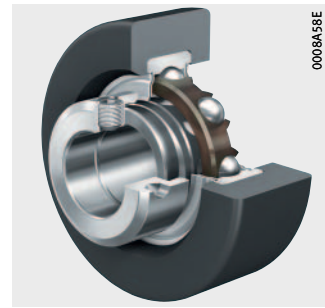
RCRA..-XL-FA106,
RCRB..-XL-FA106



CRB..-XL

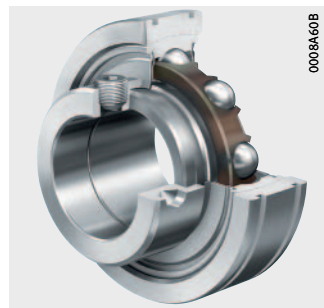


RCSMA..-XL-FA106,
RCSMB..-XL-FA106

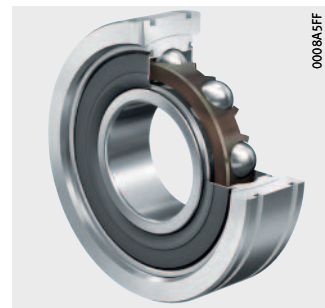


With steel aligning ring

PE..-XL



BE..-XL



Radial insert ball bearings with rubber interliner or steel aligning ring





Features

Radial insert ball bearings are particularly easy to fit and are preferentially suitable for drawn shafts of tolerance classes h6 Ⓔ to h9 Ⓔ. For non-locating bearings, shafts of tolerance class h7 Ⓔ are recommended. They are located on the shaft by means of an eccentric locking collar.

X-life

Numerous sizes are supplied in the X-life design. These products are indicated in the dimension tables.

Radial insert ball bearings of X-life quality have, for example, lower roughness Ra and higher geometrical accuracy of the raceways than comparable designs that are not X-life. As a result, these bearings have higher load carrying capacity and longer rating life although their dimensions are identical. In certain applications, this means that a smaller bearing arrangement can be designed.

Radial insert ball bearings of X-life quality have an eccentric locking collar of an improved design and the quantity and distribution of the lubricant has been optimised. Housings ASE have additional crosspieces on the underside. For extreme requirements, the cage and seal material in the high and low temperature designs (suffix FA101) has been significantly improved in comparison with earlier versions.

Radial insert ball bearings with rubber interliner or steel aligning ring

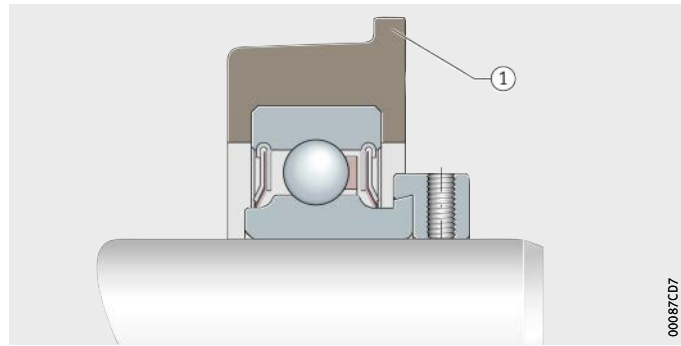
Radial insert ball bearings with rubber interliner

Radial insert ball bearings with a rubber interliner are located on the shaft using an eccentric locking collar. The outer ring is encased in a thick-walled NBR interliner, *Figure 1*.

The interliner absorbs vibrations and shocks and thus gives damping of running noises.

The interliners have a spherical or cylindrical outside surface.

For roll bearing arrangements, one series has a locating shoulder on the rubber ring.



CRB..-XL

① Locating shoulder

Figure 1
Radial insert ball bearing with rubber interliner

Anti-corrosion protection

The inner ring and locking collar have a Corrotect coating and are thus protected against fretting corrosion. This is not valid for series with the radial insert ball bearing RALE..-XL-NPP(-B).

Seals

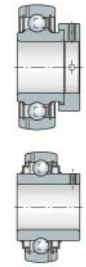
The bearings are sealed on both sides using P type seals, see page 119.

Lubrication

Bearings with rubber interliners cannot be lubricated.

Note the tube and housing diameters for radial insert ball bearings with rubber interliner:

- CRB: tube inside diameter D –0,6 to –1,6
- RABR, RCR, RCSM: housing diameter D –0,25 to –0,35.



Radial insert ball bearings with steel aligning ring

These bearings are based on radial insert ball bearings with an eccentric locking collar or on self-aligning deep groove ball bearings, but additionally have an axially split outer ring as an aligning ring, *Figure 2*. They are mounted in cylindrical bores and can compensate for static misalignment of the shaft up to ±5°.

Due to the annular slots in the outer ring to DIN 616, they are highly suitable for sheet metal constructions. In this case, they are axially located using snap rings to DIN 5417.

The inner ring is located on the shaft by means a locking collar in the case of series PE and by a location fit in the case of series BE.

PE..-XL

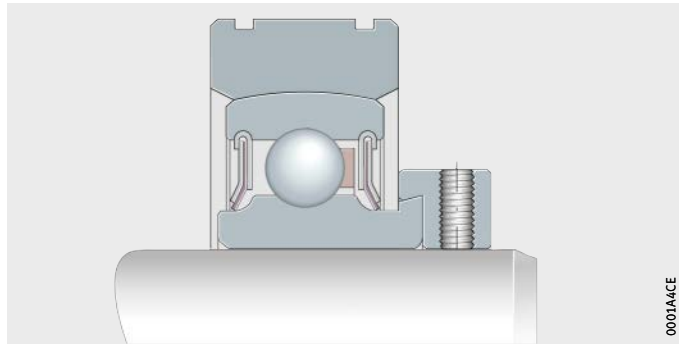


Figure 2
Radial insert ball bearing with steel aligning ring

Anti-corrosion protection

The aligning ring has a Corrotect coating and is thus protected against fretting corrosion. In the case of series PE..-XL, the inner ring and locking collar also have a coating.

Seals

The bearings are sealed on both sides using P type seals, see page 119.

Lubrication

Radial insert ball bearings with an aligning ring cannot be relubricated.

The fit tolerances of the aligning rings are those of the deep groove ball bearings. Select the fit for the shaft and housing such that the outer ring of the radial insert ball bearing can undergo self-alignment.

Suffix

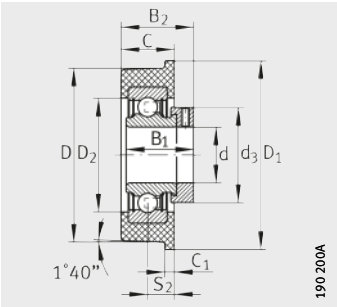
Suffixes for available designs, see table.

Available designs

Suffix	Description	Design
FA106	Bearing subjected to special noise testing	Standard

Radial insert ball bearings with rubber interliner

Spherical or cylindrical outside surface of the interliner



CRB..-XL

X-life

Dimension table · Dimensions in mm

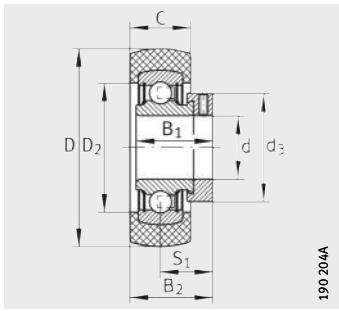
Designation		Mass	Dimensions						
Unit[1]	Radial insert ball bearing[2]	m ≈ kg	d	D	D_1	C	C_2	C_1	S_1
RABRB12/47-XL-FA106	RAE12-XL-NPP-B-FA106	0,15	**12**	47,3	–	17,6	–	–	22,1
RABRB15/47-XL-FA106	RAE15-XL-NPP-B-FA106	0,15	**15**	47,3	–	18	–	–	22,1
RCSMB15/65-XL-FA106	RAE15-XL-NPP-FA106	0,18	**15**	65,1	–	25,4	–	–	22,1
RCSMB17/65-XL-FA106	RAE17-XL-NPP-FA106	0,18	**17**	65,1	–	25,4	–	–	22,1
RCRA20/46-XL-FA106	RALE20-XL-NPP-FA106	0,14	**20**	46	–	18,3	16	–	18,6
RABRB20/52-XL-FA106	RAE20-XL-NPP-B-FA106	0,2	**20**	52,3	–	17,6	–	–	23,5
RCSMB20/65-XL-FA106	RAE20-XL-NPP-FA106	0,22	**20**	65,1	–	25,4	–	–	23,5
CRB20/76-XL	RAE20-XL-NPP	0,3	**20**	77,5	80	25,4	–	5	–
CRB20/83-XL	RAE20-XL-NPP	0,3	**20**	83,6	87,4	25,4	–	4,8	–
RCRB25/57-XL-FA106	RAE25-XL-NPP-FA106	0,21	**25**	57,3	–	19,8	17,5	–	23,5
RABRB25/62-XL-FA106	RAE25-XL-NPP-B-FA106	0,24	**25**	62,2	–	20,8	–	–	23,5
RCSMB25/65-XL-FA106	RAE25-XL-NPP-FA106	0,24	**25**	65,1	–	25,4	–	–	23,5
CRB25/70-XL	RAE25-XL-NPP	0,32	**25**	71,5	76	25	–	5	–
CRB25/72-XL	RAE25-XL-NPP	0,32	**25**	73	80	25	–	5	–
CRB25/83-XL	RAE25-XL-NPP	0,32	**25**	83,6	87,4	25,4	–	4,8	–
RABRA30/62-XL-FA106	RALE30-XL-NPP-B-FA106	0,3	**30**	62,2	–	20,8	–	–	20
RCSMA30/65-XL-FA106	RALE30-XL-NPP-FA106	0,32	**30**	65,1	–	25,4	–	–	20
RABRB30/72-XL-FA106	RAE30-XL-NPP-B-FA106	0,38	**30**	72,2	–	23	–	–	26,7
CRB30/83-XL	RAE30-XL-NPP	0,41	**30**	83,6	87,4	28	–	4,8	–
CRB30/92-XL	RAE30-XL-NPP	0,41	**30**	93	98	28	–	5	–
RABRB35/80-XL-FA106	RAE35-XL-NPP-B-FA106	0,62	**35**	80,2	–	24	–	–	29,4
CRB35/110-XL	RAE35-XL-NPP	0,61	**35**	112,3	120	30	–	5	–
RABRB40/85-XL-FA106	RAE40-XL-NPP-B-FA106	0,73	**40**	85	–	27	–	–	32,7
RABRB50/100-XL-FA106	RAE50-XL-NPP-B-FA106	0,92	**50**	100,2	–	30	–	–	32,7

1) Operating temperature from –20 °C to +85 °C.

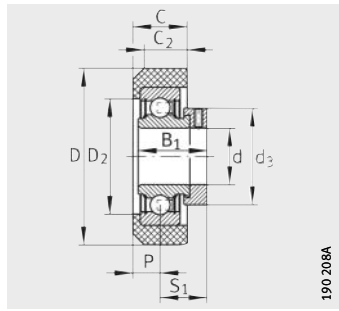
2) Permissible speeds of radial insert ball bearings: see page 148.

3) Factor f_0 for determining equivalent bearing load, see table, page 40.

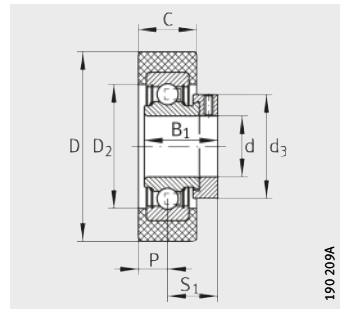
4) Also available by agreement in NBR80.



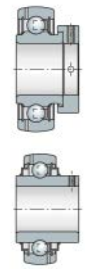
RABRA..-XL-FA106,
RABRB..-XL-FA106



RARA..-XL-FA106,
RARB..-XL-FA106

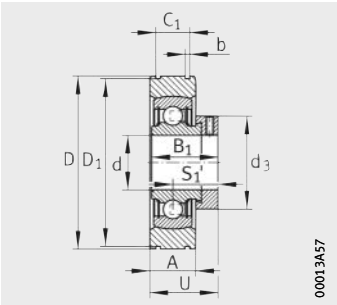


RCSMA..-XL-FA106,
RCSMB..-XL-FA106



						Rubber ring		Basic load ratings		Fatigue limit load	Factor[3]
						Hard-ness	Load carrying capacity				
D_2	B_1	P	d_3 max.	S_2	B_2	Shore A °	C_G N	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
33,5	28,6	–	28,4	–	30,9	70	840	10 100	4 750	241	13,1
33,5	28,6	–	28,4	–	31,1	70	840	10 100	4 750	241	13,1
35	28,6	12,7	28,4	–	–	70	900	10 100	4 750	241	13,1
35	28,6	12,7	28,4	–	–	70	900	10 100	4 750	241	13,1
35	24,5	10	30	–	–	70	900	10 000	5 000	255	13,9
39	31	–	33	–	32,3	70	1 160	13 600	6 600	335	13,1
40	31	12,7	33	–	–	70	1 200	13 600	6 600	335	13,1
40	31	–	33	12,5	36	80	750	13 600	6 600	335	13,1
40	31	–	33	12,7	36,2	80	750	13 600	6 600	335	13,1
44,5	31	9,8	37,5	–	–	70	1 400	14 900	7 800	395	13,8
44,5	31	–	37,5	–	33,9	70[4]	1 390	14 900	7 800	395	13,8
46	31	12,7	37,5	–	–	70	1 400	14 900	7 800	395	13,8
46	31	–	37,5	12,5	36	80	1 000	14 900	7 800	395	13,8
46	31	–	37,5	12,5	36	80	1 000	14 900	7 800	395	13,8
46	31	–	37,5	12,7	36,2	80	1 000	14 900	7 800	395	13,8
47	26,5	–	42,5	–	30,4	70	1 390	14 100	8 300	420	14,8
47,6	26,5	15	42,5	–	–	70	1 400	14 100	8 300	420	14,8
54	35,8	–	44	–	38,2	70[4]	1 980	20 700	11 300	570	13,8
56	35,8	–	44	14	40,7	80	1 400	20 700	11 300	570	13,8
56	35,8	–	44	14	40,7	80	1 400	20 700	11 300	570	13,8
62	39	–	55	–	41,4	70	2 700	27 500	15 300	770	13,8
64	39	–	55	15	44,4	80	1 500	27 500	15 300	770	13,8
70	43,8	–	58	–	46,3	70[4]	3 500	34 500	19 800	1 010	14
80	43,8	–	69	–	47,7	70[4]	4 100	37 500	23 200	1 180	14,3

Radial insert ball bearings with steel aligning ring



X-life

PE..-XL

Dimension table · Dimensions in mm

Designation		Mass	Dimensions				
Unit[2]	Radial insert ball bearing	m ≈ kg	d	D[3]	A	C_1[4] +0,2	b[4] +0,3
PE20-XL	**RAE20-XL-NPP-B**	0,24	**20**	55	16	11,2	1,35
PE25-XL	**RAE25-XL-NPP-B**	0,31	**25**	62	17	11,2	1,9
PE30-XL	**RAE30-XL-NPP-B**	0,48	**30**	72	21	14,4	1,9
PE35-XL	**RAE35-XL-NPP-B**	0,69	**35**	80	21	14,4	1,9
PE40-XL	**RAE40-XL-NPP-B**	0,88	**40**	90	25	15,4	2,7

Dimension table · Dimensions in mm

Designation		Mass	Dimensions				
Unit[5]	Radial insert ball bearing	m ≈ kg	d	D[3]	A	C_1[4] +0,2	b[4] +0,3
BE20-XL	**204-XL-NPP-B**	0,19	**20**	55	16	11,2	1,35
BE25-XL	**205-XL-NPP-B**	0,25	**25**	62	17	11,2	1,9
BE30-XL	**206-XL-NPP-B**	0,37	**30**	72	21	14,4	1,9
BE35-XL	**207-XL-NPP-B**	0,45	**35**	80	21	14,4	1,9
BE40-XL	**208-XL-NPP-B**	0,63	**40**	90	25	15,4	2,7

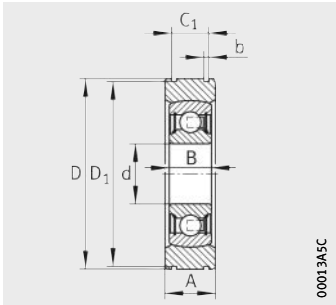
1) Factor f_0 for determining equivalent bearing load, see table, page 40.

2) Permissible speeds of radial insert ball bearings RAE..NPP-B: see page 148.

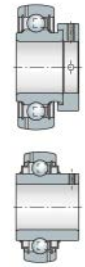
3) Before splitting, dimension D corresponds to tolerance class Normal in accordance with ISO 492.

4) Annular slot tolerances to DIN 616 (for snap rings to DIN 5417).

5) Permissible speeds of self-aligning deep groove ball bearings 2..NPP-B: see page 182.



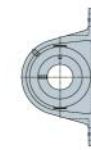
BE..-XL



					Basic load ratings		Fatigue limit load	Factor[1]
D_1[4]	B_1	S_1	d_3	U	dyn. C_r	stat. C_{0r}	C_{ur}	f_0
−0,5			max.		N	N	N	
52,6	31	23,5	33	31,5	13 600	6 600	335	13,1
59,6	31	23,5	37,5	32	14 900	7 800	395	13,8
68,8	35,8	26,8	44	37,2	20 700	11 300	570	13,8
76,8	39	29,5	55	40	27 500	15 300	770	13,8
86,8	43,8	32,8	58	45,2	34 500	19 800	1 010	14

					Basic load ratings		Fatigue limit load	Factor[1]
D_1[4]	B	S_1	d_3	U	dyn. C_r	stat. C_{0r}	C_{ur}	f_0
−0,5			max.		N	N	N	
52,6	14	23,5	33	–	13 600	6 600	335	13,1
59,6	15	23,5	37,5	–	14 900	7 800	395	13,8
68,8	16	26,8	44	–	20 700	11 300	570	13,8
76,8	17	29,5	55	–	27 500	15 300	770	13,8
86,8	18	32,8	58	–	34 500	19 800	1 010	14







Housing units

Flake graphite cast iron housings
Sheet steel housings

Units with flake graphite cast iron or sheet steel housing

Plummer block housing units

226

The single-piece flake graphite cast iron housings have a long or short base and a high load carrying capacity. They can compensate for static misalignment of the shaft.

304

The two-piece sheet steel housings are made from steel strip of deep drawn quality. They are suitable for moderate loads and can compensate for static misalignment of the shaft.

Two-bolt flanged housing units

226

The single-piece, oval flake graphite cast iron housings are available in a narrow or wide version with or without a centring spigot.

304

The predominantly two-piece, oval sheet steel housings are suitable for lightweight constructions with moderate loads. The units cannot be relubricated.

Three-bolt flanged housing units

226

The single-piece, triangular flake graphite cast iron housings have a high load carrying capacity. The units have three through holes.

304

The two-piece sheet steel housings are suitable for lightweight constructions with moderate loads. The flanged housing units GRA and GRRY can be relubricated.

Four-bolt flanged housing units

226

The single-piece flake graphite cast iron housings are available in a square or round version with or without a centring spigot. The units have four through holes.

304

The two-piece, round sheet steel housings are suitable for lightweight constructions with moderate loads. The flanged housing units GRA can be relubricated.

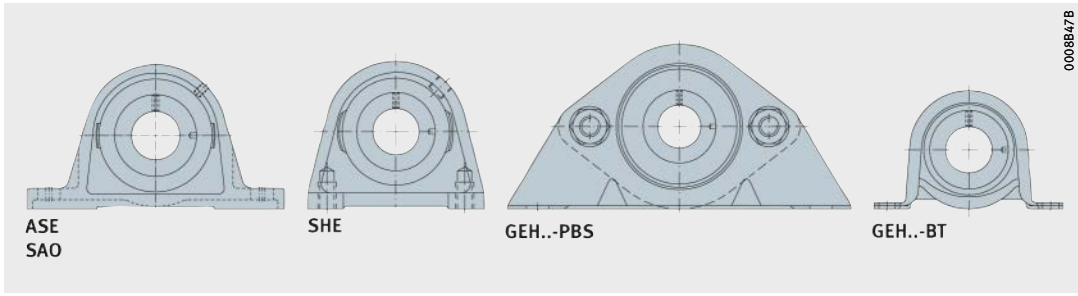
Take-up housing units

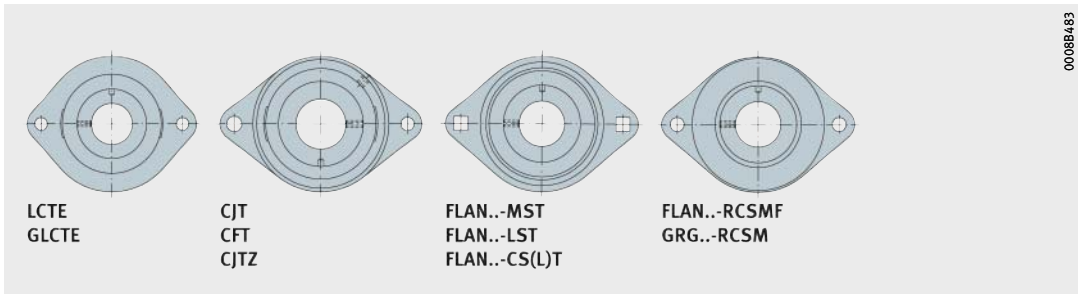
226

The single-piece flake graphite cast iron housings have guide slots on both sides, guide surfaces on both sides or additionally a sheet steel guide tube. They are used where shafts must undergo substantial displacement travel.

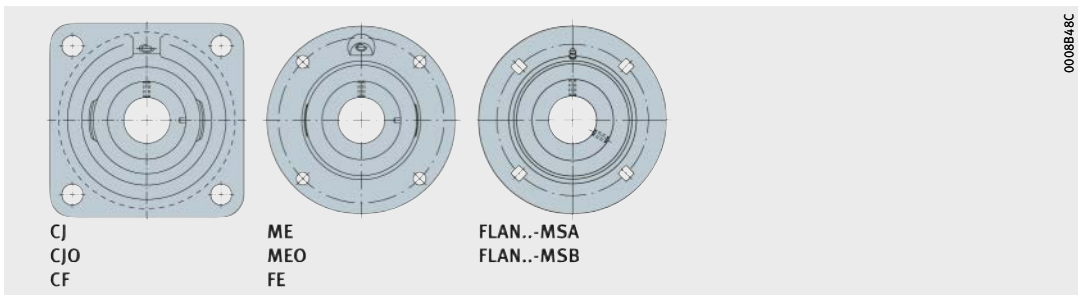
304

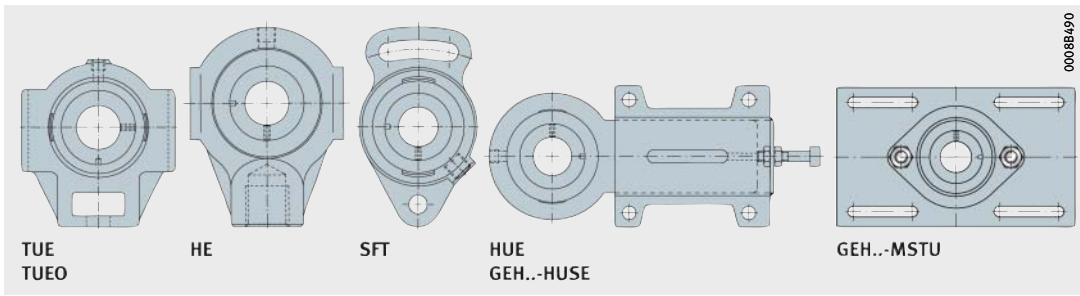
The two-piece sheet steel housings are suitable for lightweight constructions with moderate loads. The units cannot be relubricated.


0008B47B
ASE
SAO
SHE
GEH..-PBS
GEH..-BT


0008B483
LCTE
GLCTE
CJT
CFT
CJTZ
FLAN..-MST
FLAN..-LST
FLAN..-CS(L)T
FLAN..-RCSMF
GRG..-RCSM


0008B488
CFTR
FLAN..-MSA
FLAN..-MSB
FLAN..-LSTR
FLAN..-MSTR


0008B48C
CJ
CJO
CF
ME
MEO
FE
FLAN..-MSA
FLAN..-MSB


0008B490
TUE
TUEO
HE
SFT
HUE
GEH..-HUSE
GEH..-MSTU

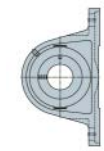


Housing units with flake graphite cast iron housing

Plummer block housing units
Flanged housing units
Take-up housing units

Housing units
with flake graphite cast iron housing

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Housing units
with flake graphite cast iron housing

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Take-up housing units,
guide surfaces on both sides, with threaded hole 298

Take-up housing units,
guide tube, with adjusting screw 300

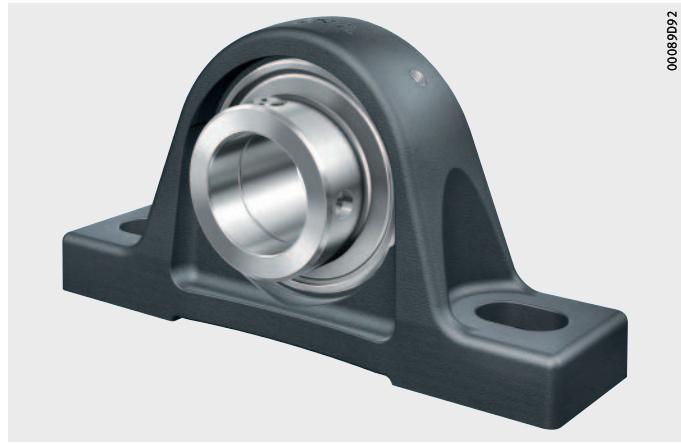
Take-up housing units, self-aligning 302

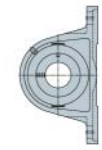
Housing units with flake graphite cast iron housing

Plummer block housing units

With long base

PASE..-XL, PASEY..-XL, RASE..-XL, RASEL..-XL, RASEA..-XL, RASEY..-XL, TASE..-XL, LASE..-XL, RSAO..-XL

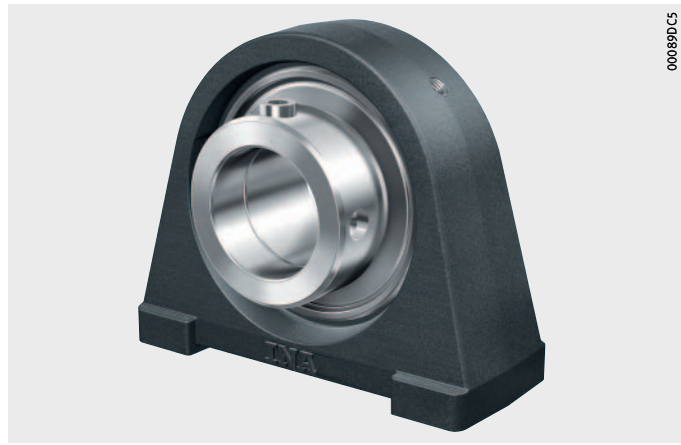






With short base

PSHE..-XL, PSHEY..-XL, RSHE..-XL, RSHEY..-XL, TSHE..-XL



Housing units with flake graphite cast iron housing

Two-bolt flanged housing units

PCJT..-XL, PCJTY..-XL, RCJTZ..-XL, RCJT..-XL, RCJTA..-XL, RCJTY..-XL, PCFT..-XL, TCJT..-XL, LCJT..-XL



FLCTE..-XL, FLCTEY..-XL, GLCTE..-XL



Three-bolt flanged housing units

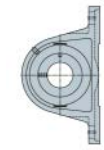
PCFTR..-XL



Four-bolt flanged housing units

PCJ..-XL, PCJY..-XL, RCJ..-XL, RCJY..-XL, RCJL..-XL, RCJO..-XL, TCJ..-XL, PCF..-XL





PME(Y)..-XL, RME(Y)..-XL, RMEO..-XL, TME..-XL



RFE..-XL, TFE..-XL





PCCJ



Housing units with flake graphite cast iron housing

Take-up housing units

For linear motion or swivel motion

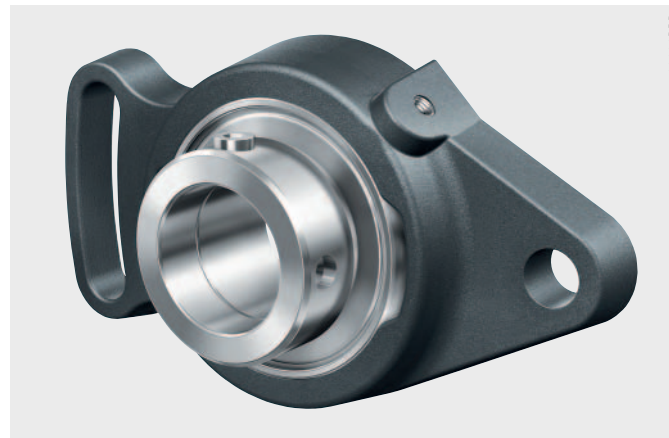
PTUE(Y)..-XL, RTUE(Y)..-XL, RTUEO..-XL, TTUE..-XL



PHE..-XL, PHEY..-XL, RHE..-XL, THE..-XL

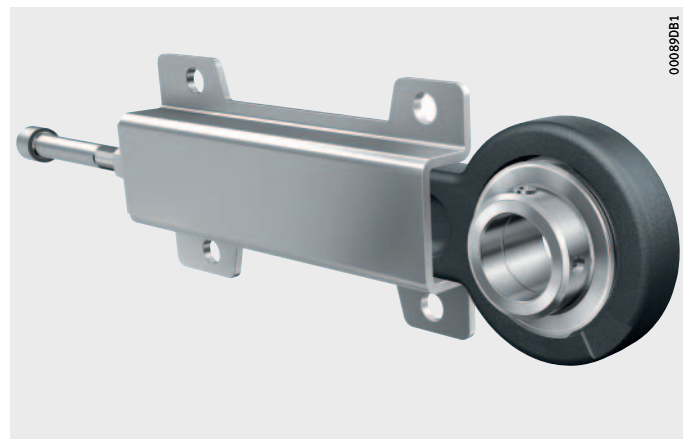


PSFT..-XL



Guide tube, with adjusting screw

PHUSE..-XL

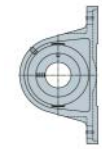


Accessories

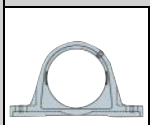
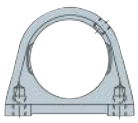
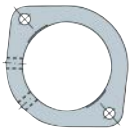
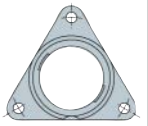
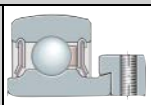
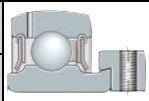
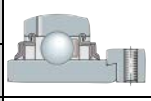
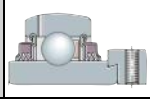
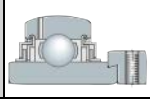
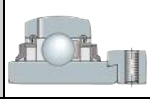
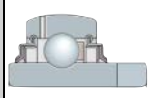
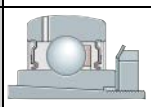
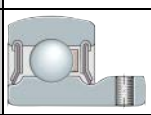
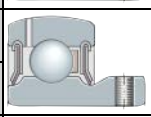
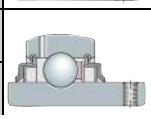
End caps

KASK







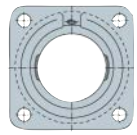
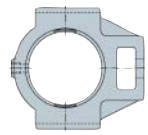
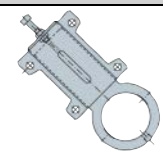
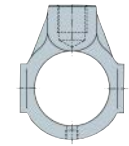
Possible combinations Radial insert ball bearings with cast iron housings		Housing				
		Plummer block housing		Two-bolt flanged housing		Three-bolt flanged housing
						
Designation		**ASE**	**SHE**	**LCTE**[1]	**CJT**	**CFTR**
Shaft diameter d		**SAO**[2]		**GLCTE**	**CFT**	
					CJTZ	
RAE..-XL-NPP-B 12 mm –50 mm				**FLCTE..-XL**[1] page 258		
GRAE..-XL-NPP-B 12 mm – 60 mm		**PASE..-XL** page 244	**PSHE..-XL** page 254	**GLCTE..-XL** page 258	**PC(J, F)T..-XL** page 262	**PCFTR..-XL** page 272
GRA..-NPP-B-AS2/V $5/8'' - 1\,15/16''$		Available by agreement	Available by agreement	Available by agreement	Available by agreement	Available by agreement
GE..-XL-KRR-B 17 mm – 120 mm		**RASE..-XL** page 244	**RSHE..-XL** page 254		**RCJT(Z)..-XL** page 262, 270	Available by agreement
G..-KRR-B-AS2/V $5/8'' - 2\,15/16''$		Available by agreement	Available by agreement		Available by agreement	
GE..-XL-KTT-B 20 mm – 80 mm		**TASE..-XL** page 244	**TSHE..-XL** page 254		**TCJT..-XL** page 262	Available by agreement
GE..-XL-KLL-B 20 mm – 50 mm		**LASE..-XL** page 244	Available by agreement		**LCJT..-XL** page 262	Available by agreement
GNE..-XL-KRR-B[2] 30 mm – 100 mm		**RSAO..-XL** page 246				
GLE..-XL-KRR-B 20 mm – 70 mm		**RASEL..-XL** page 244	Available by agreement		Available by agreement	Available by agreement
GSH..-XL-2RSR-B 20 mm – 50 mm		**RASEA..-XL** page 244	Available by agreement		**RCJTA..-XL** page 262	Available by agreement
AY..-XL-NPP-B 12 mm – 30 mm				**FLCTEY..-XL**[1] page 258		
GAY..-XL-NPP-B 12 mm – 60 mm		**PASEY..-XL** page 244	**PSHEY..-XL** page 254	**FLCTEY..-XL**[1] page 258	**PCJTY..-XL** page 262	Available by agreement
GAY..-NPP-B(-AS2/V) $1/2'' - 1\,7/16''$		Available by agreement	Available by agreement	Available by agreement	Available by agreement	
GYE..-XL-KRR-B 12 mm – 90 mm		**RASEY..-XL** page 244	**RSHEY..-XL** page 254		**RCJTY..-XL** page 262	Available by agreement
GY..-KRR-B-AS2/V $1/2'' - 2\,15/16''$		Available by agreement	Available by agreement		Available by agreement	

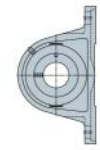
Catalogue range, dimension table, see pages indicated.
Other dimensions and combinations available by agreement.

Combinations not possible or not advisable.

1) Without lubrication hole.

2) Heavy series.

Four-bolt flanged housing		Take-up housing			
					
ME	**CJ**	**TUE**	**HUE** **GEH..-HUSE**	**HE**	**SFT**
MEO[2]	**CJO**[2]	**TUEO**[2]			
FE	**CF**				
PME..-XL page 282	**PCJ..-XL**, **PCF..-XL** page 274	**PTUE..-XL** page 292	**PHUSE..-XL** page 300	**PHE..-XL** page 298	**PSFT..-XL** page 302
Available by agreement	Available by agreement	Available by agreement	Available by agreement	Available by agreement	Available by agreement
RME..-XL, **RFE..-XL** page 282, 288	**RCJ..-XL** page 274	**RTUE..-XL** page 292	Available by agreement	**RHE..-XL** page 298	Available by agreement
Available by agreement	Available by agreement	Available by agreement		Available by agreement	
TME..-XL page 282	**TCJ..-XL** page 274	**TTUE..-XL** page 292	Available by agreement	**THE..-XL** page 298	Available by agreement
TFE..-XL page 288					
Available by agreement	Available by agreement	Available by agreement	Available by agreement	Available by agreement	Available by agreement
RMEO..-XL page 282	**RCJO..-XL** page 276	**RTUEO..-XL** page 294			
Available by agreement	**RCJL..-XL** page 276	Available by agreement	Available by agreement	Available by agreement	Available by agreement
Available by agreement	Available by agreement	Available by agreement	Available by agreement	Available by agreement	Available by agreement
PMEY..-XL page 282	**PCJY..-XL** page 274	**PTUEY..-XL** page 292	Available by agreement	**PHEY..-XL** page 298	Available by agreement
Available by agreement	Available by agreement	Available by agreement		Available by agreement	
RMEY..-XL page 282	**RCJY..-XL** page 274	**RTUEY..-XL** page 292	Available by agreement	Available by agreement	Available by agreement
Available by agreement	Available by agreement	Available by agreement			





Housing units
with flake graphite cast iron housing

Features

INA housing units are available as plummer block, flanged and take-up housing units in numerous different designs. The units are ready-to-fit and comprise INA flake graphite cast iron housings in which INA radial insert ball bearings are fitted. In order to ensure function and reliability under all operating conditions, the bearings and housings are matched to each other.

Due to the spherical bearing outer ring and the concave housing bore, housing units can compensate for static angular misalignment of the shaft, see page 240.

The housings are screw mounted on the adjacent construction. Less stringent tolerances are sufficient for the screw mounting surfaces, see page 241.

Cast iron housings are single-piece units with high load carrying capacity, see page 241.

X-life

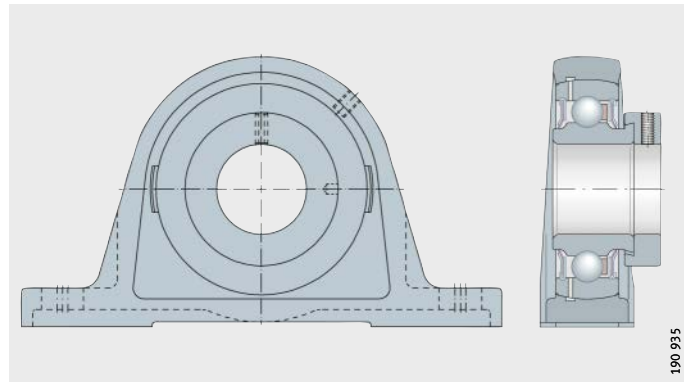
Numerous sizes are supplied in the X-life design. These products are indicated in the dimension tables.

Radial insert ball bearings of X-life quality have, for example, lower roughness Ra and higher geometrical accuracy of the raceways than comparable designs that are not X-life. As a result, these bearings have higher load carrying capacity and longer rating life although their dimensions are identical. In certain applications, this means that a smaller bearing arrangement can be designed.

Radial insert ball bearings of X-life quality have an eccentric locking collar of an improved design and the quantity and distribution of the lubricant has been optimised. Housings ASE have additional crosspieces on the underside. For extreme requirements, the cage and seal material in the high and low temperature designs (suffix FA101) has been significantly improved in comparison with earlier versions.

Plummer block housing units

Plummer block housing units have a long or a short base, *Figure 1*. Housings with a long base are screw mounted to the adjacent construction by means of slots, housings with a short base by blind threaded holes.

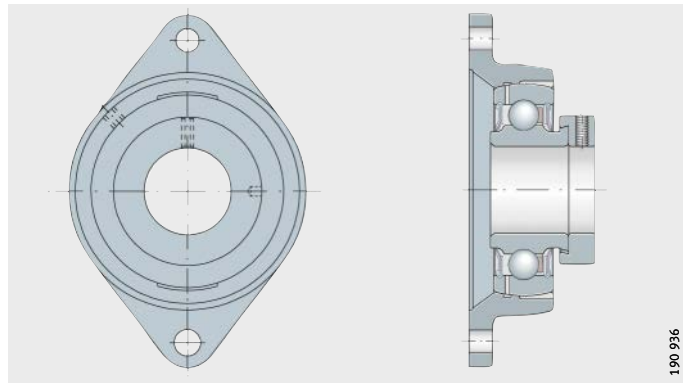


PASE..-XL

Figure 1
Plummer block housing unit, flake graphite cast iron housing, with long base

Flanged housing units

Flanged housing units are available as two-bolt, three-bolt and four-bolt units, *Figure 2*. The housings are oval, triangular, square or round in shape. The housings have through holes for location purposes. Some series also have a centring spigot. The centring spigot is mounted in a turned recess in the machine structure. This gives concentric alignment of the housings and relieves the fixing screws of any radial forces.

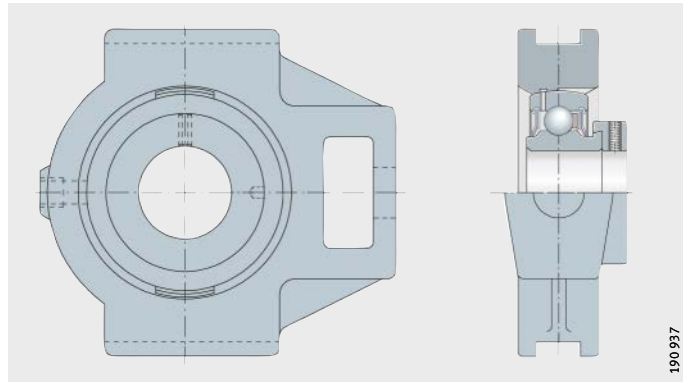


PCJT..-XL

Figure 2
Flanged housing unit,
flake graphite cast iron housing

Take-up housing units

Take-up housing units have facilities for sliding or swivel motion, *Figure 3*. They are used where shafts must undergo substantial displacement travel.



PTUE..-XL

Figure 3
Take-up housing unit,
flake graphite cast iron housing

Housing materials

The material used for the flake graphite cast iron housings is cast iron in accordance with DIN EN 1561. Housings are also available by agreement in spheroidal graphite cast iron in accordance with DIN EN 1563.

Bearing end caps

In order to cover the exposed ends of rotating shafts, cast iron housings with the suffix N can also be fitted with bearing end caps, see page 242.

Housing units
with flake graphite cast iron housing

Operating temperature

Housing units with bearing end caps are suitable for operating temperatures from –20 °C to +80 °C.

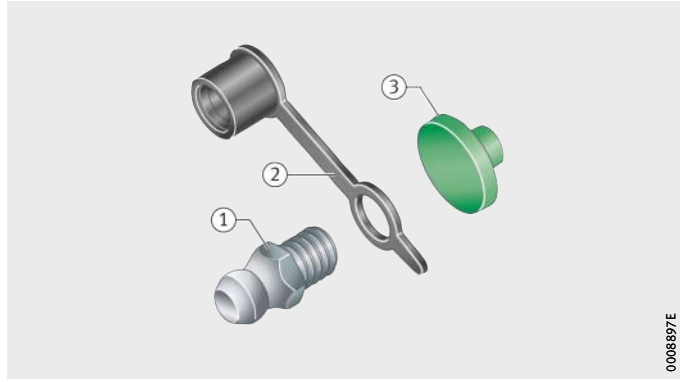
Housing units without bearing end caps are suitable for operating temperatures from –20 °C to +100 °C. Temporary temperature peaks are possible up to +120 °C.

Lubrication

For the relubrication of radial insert ball bearings, the housing bore has a radial groove and a lubrication hole suitable for conventional lubrication nipples to DIN 71412. The housing units are supplied with a kit. This kit contains a lubrication nipple with a thread M6, a plastic end cap for the lubrication nipple and a plastic plug for the lubrication hole in the housing, *Figure 4*. Other kits are available by agreement.

For a lubrication nipple with thread M6, the maximum tightening torque M_A = 6 Nm must be observed.

In the case of housing units with the suffix FA125, FA101 and FA164, the lubrication nipple with the thread M6 is already fitted.
An additional kit is not included. This is also the case for radial insert ball bearings that have a labyrinth seal KLL and for radial insert ball bearings GLE that are used as non-locating bearings.



① Lubrication nipple
② Plastic end cap
③ Plastic plug

Figure 4
Lubrication kit

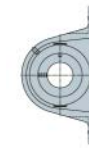
Corrosion-resistant units

Corrosion-resistant units are available as plummer block and flanged housing units. The housings and radial insert ball bearings have a Corrotect coating and the suffix FA125,see section Radial insert ball bearings and housing units, corrosion-resistant, page 345.

The units are used if moisture, contaminated water, salt spray mist, weakly alkaline or weakly acidic cleaning agents are present.

Units for high and low temperatures

These units are available as plummer block and flanged housing units. The housings correspond to the cast iron housings described above. In addition, the high temperature design FA164 has a taper type lubrication nipple to DIN 71412 screwed into the housing.



Units for high temperatures have the suffix FA164 and units for the extended temperature range have the suffix FA101, see table, page 239, and table, page 146.

Market sectors

In addition to the comprehensive catalogue range, we also supply housing units for special applications.



Examples include:

- corrosion-resistant flanged housing units with a two-piece housing
  - polypropylene flange, combined with corrosion-resistant high grade steel flange, see page 556
- units with plastic housings combined with radial insert ball bearings in a corrosion-resistant (VA) design or with bearings with a Corrotect coating, see page 422
- other designs with special greases or seals. Please contact us as necessary.

Suffixes

Suffixes for available designs: see table.

Available designs

Suffix	Description	Design
2C	Radial insert ball bearing with flinger shields on both sides	Standard
FA101	High and low temperature design –40 °C to +180 °C	
FA106	Bearing subjected to special noise testing	
FA107	Bearing with lubrication holes on the locating side	
FA125	With Corrotect coating	
FA164	High temperature design up to +250 °C	
N	Cast iron housing with undercut slot for end caps	
OSE	Bearing without clamping element	

Housing units
with flake graphite cast iron housing

Design and safety guidelines

The chapter Technical principles brings together the essential guidelines on the design of bearing arrangements, lubrication, mounting and dismounting and the operation of bearings, see page 32.

INA radial insert ball bearings and INA housings are matched to each other and, as a unit, give particularly robust and economical bearing arrangements.

Compensation of static misalignments

Bearings with a spherical outer ring, fitted in housings with a concave bore, can compensate for static misalignment of the shaft, *Figure 5*.

For units with a lubrication groove in the housing and lubrication hole in the radial insert ball bearing, the following applies:

- Up to ±2,5°, the units can be relubricated.
- Between ±2,5° and ±5°, the possibility of relubrication is dependent on the specific unit. Please contact us in this case.
- Over ±5°, relubrication is no longer possible.

The units must not be used to support swivelling or tumbling motion.

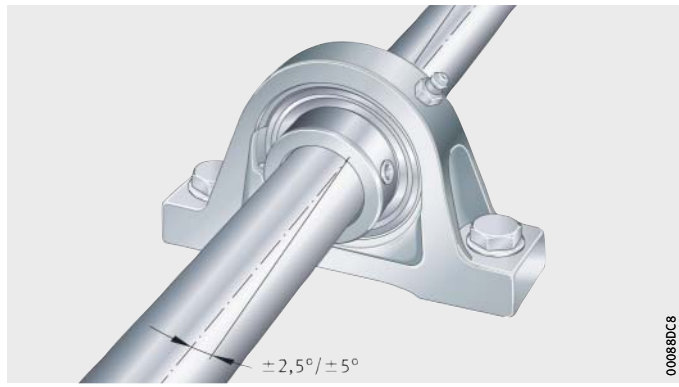


Figure 5
Compensation of static shaft misalignment

Speed limits for radial insert ball bearings

The speed limits are dependent on the load, the clearance between the bearing bore and shaft and the friction of the seals in bearings with contact seals, see page 148.

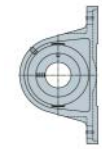
Load carrying capacity of housings

Due to their versatile characteristics, INA housing units can be easily used in almost all industrial sectors.

If bearing arrangements are planned for equipment in which a malfunction could be hazardous to persons or an unplanned stoppage of the machine could cause major disruption, it is essential that you consult us before proceeding with the design.

Radial load carrying capacity

Flake graphite cast iron housings can support the same radial loads as the radial insert ball bearings fitted. The static load carrying capacity C_{0r} of the radial insert ball bearings is stated in the dimension tables.



Where shock loads are present, appropriate safety factors must be applied. In this case, please contact us.

In the case of TUE..-XL and TUEO..-XL, the maximum radial tensile loading is only $0{,}25 \times C_{0r}$ (higher loads by agreement only).

Axial load carrying capacity

The axial load carrying capacity of flake graphite cast iron housings is restricted to $0{,}5 \times C_{0r}$.



Design of adjacent construction

The permissible shaft tolerance is dependent on the speed, load and the radial insert ball bearing fitted. Shafts of the tolerance classes h6 Ⓔ to h9 Ⓔ can be used. Conventional drawn shafts will suffice for most applications.

Screw mounting surfaces

Recommendations for the screw mounting surfaces are as follows:

- roughness of the screw mounting surface max. Ra 12,5 (Rzmax 63)
- geometrical and positional tolerance 0,04/100 concave, spherical not permissible.
- In the event of high loads occurring parallel to the mounting surface of plummer block housing units (in the case of cast iron housings with long base), the use of additional dowel pins to DIN EN ISO 8752 is recommended. In this case, through holes (see centre punch mark for housing ASE) must be applied, see *Figure 1*, page 129.

Fixing screws

The screw connection should be designed in accordance with VDI 2230; friction coefficient $\mu = 0{,}12$ (90%).

Screws of grade 8.8 or better can be used for fixing.
The maximum tightening torques applicable to this screw grade must not be exceeded even if screws of a higher grade are used.

In principle, we recommend that the screw connection should only be tightened to 70% of the values stated in the standard.

For fixing, hexagonal socket head screws in accordance with DIN EN ISO 4762 or hexagonal socket head screws with a coarse pitch full thread in accordance with DIN EN ISO 4017 should be used. The screws should be combined as a minimum with a washer in accordance with DIN EN ISO 7089 or DIN EN ISO 7090.

Screws and accessories for location are not included in the delivery.

Bearing end caps

The ends of shafts can be covered using bearing end caps made from acrylonitrile styrene acrylate copolymer (ASA), see table and *Figure 6*. The caps are suitable for temperatures from –20 °C to +80 °C. They protect against injury due to rotating shafts and also protect the bearings against contamination.

For location of the caps, housings with the suffix N have an annular slot on the entry side, see page 134.

The series for which end caps are supplied are indicated in the dimension tables. Bearing end caps are accessories and must always be ordered separately.

Housing units with the suffixes FA101 and FA164 are not suitable for combination with bearing end caps.

End caps

Designation	Dimensions mm				
	d	D	H	L	E max.
KASK04	20	48	31	36	30
KASK05	25	54	33	38	30
KASK06	30	63	37	44	35
KASK07	35	73	39	47	39
KASK08	40	82	42	51	42
KASK10	50	92	47	56	46
KASK12	60	112	55	65	55

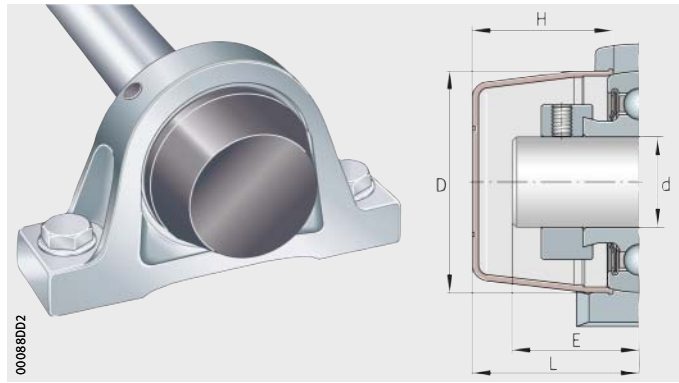


Figure 6
Housing unit with bearing end cap

Accuracy

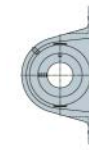
The cast housings correspond predominantly to DIN 626-2 and ISO 3228, insofar as they are described therein.

The accuracy of the radial insert ball bearings fitted must be observed, see page 150.

Dimensional tolerances

The dimensional tolerances for the machined surfaces of the flake graphite cast iron housings are ±0,25 mm.

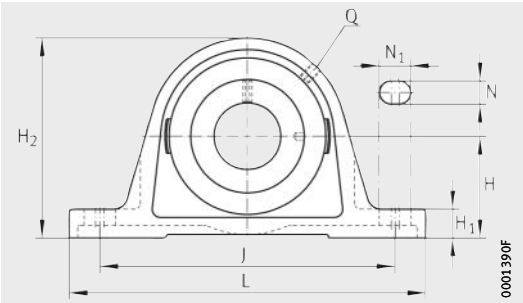
The dimensional tolerances for unmachined as well as machined to unmachined surfaces correspond to ISO 8062-3 (dimensional tolerance grade DCTG 9).





Plummer block housing units

Flake graphite cast iron housing
With long base
Eccentric locking collar



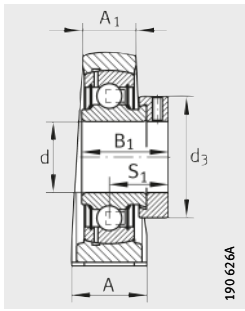
PASE..-XL(-N), RASE..-XL(-N,-FA164), TASE..-XL-N, LASE..-XL-N, RSAO..-XL

Dimension table · Dimensions in mm

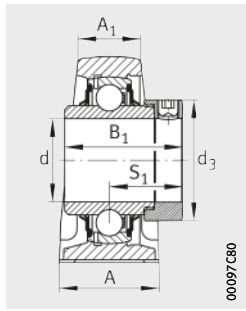
Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
PASE12-XL	ASE03	GRAE12-XL-NPP-B	0,46	**12**	30,2	95	125
PASE15-XL	ASE03	GRAE15-XL-NPP-B	0,46	**15**	30,2	95	125
PASE17-XL	ASE03	GRAE17-XL-NPP-B	0,46	**17**	30,2	95	125
RASE17-XL	ASE03	GE17-XL-KRR-B	0,5	**17**	30,2	95	125
PASE20-XL-N	ASE04	GRAE20-XL-NPP-B	0,6	**20**	33,3	97	130
LASE20-XL-N[2]	ASE04	GE20-XL-KLL-B	0,63	**20**	33,3	97	130
RASE20-XL-FA164[2]	ASE04	GE20-XL-KRR-B-FA164	0,64	**20**	33,3	97	130
RASE20-XL-N	ASE04	GE20-XL-KRR-B	0,63	**20**	33,3	97	130
TASE20-XL-N	ASE04	GE20-XL-KTT-B	0,63	**20**	33,3	97	130
PASE25-XL-N	ASE05	GRAE25-XL-NPP-B	0,7	**25**	36,5	103	130
LASE25-XL-N[2]	ASE05	GE25-XL-KLL-B	0,76	**25**	36,5	103	130
RASE25-XL-FA164[2]	ASE05	GE25-XL-KRR-B-FA164	0,75	**25**	36,5	103	130
RASE25-XL-N	ASE05	GE25-XL-KRR-B	0,75	**25**	36,5	103	130
TASE25-XL-N	ASE05	GE25-XL-KTT-B	0,75	**25**	36,5	103	130
PASE30-XL-N	ASE06	GRAE30-XL-NPP-B	1,13	**30**	42,9	118	158
LASE30-XL-N[2]	ASE06	GE30-XL-KLL-B	1,2	**30**	42,9	118	158
RASE30-XL-FA164[2]	ASE06	GE30-XL-KRR-B-FA164	1,21	**30**	42,9	118	158
RASE30-XL-N	ASE06	GE30-XL-KRR-B	1,11	**30**	42,9	118	158
TASE30-XL-N	ASE06	GE30-XL-KTT-B	1,2	**30**	42,9	118	158
RSAO30-XL	SAO06	GNE30-XL-KRR-B	1,8	**30**	50	140	180
PASE35-XL-N	ASE07	GRAE35-XL-NPP-B	1,61	**35**	47,6	126	163
LASE35-XL-N[2]	ASE07	GE35-XL-KLL-B	1,64	**35**	47,6	126	163
RASE35-XL-FA164[2]	ASE07	GE35-XL-KRR-B-FA164	1,66	**35**	47,6	126	163
RASE35-XL-N	ASE07	GE35-XL-KRR-B	1,69	**35**	47,6	126	163
TASE35-XL-N	ASE07	GE35-XL-KTT-B	1,69	**35**	47,6	126	163
RSAO35-XL	SAO07	GNE35-XL-KRR-B	2,79	**35**	56	160	210

1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

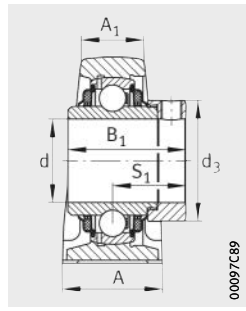
2) With fitted lubrication nipple M6.



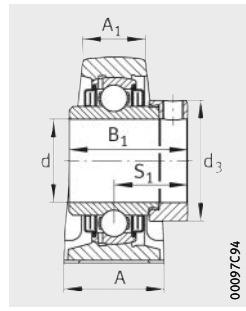
PASE..-XL(-N)



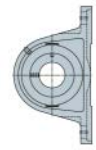
RASE..-XL(-N,-FA164),
RSAO..-XL



TASE..-XL-N



LASE..-XL-N

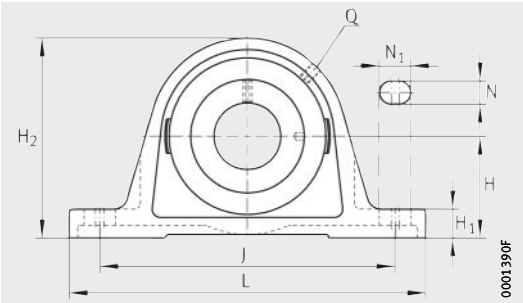




										End cap[1)]
A	A_1	H_1	H_2	N	N_1	B_1	S_1	Q	d_3 max.	
30	18	10	57	11	19	28,6	22,1	M6	28,4	–
30	18	10	57	11	19	28,6	22,1	M6	28,4	–
30	18	10	57	11	19	28,6	22,1	M6	28,4	–
30	18	10	57	11	19	37,4	23,5	M6	28,4	–
32	19	14,5	64	11	19	31	23,5	M6	33	KASK04
32	19	14,5	64	11	19	43,7	26,6	M6	33	KASK04
32	19	14,5	64	11	19	43,7	26,6	M6	33	–
32	19	14,5	64	11	19	43,7	26,6	M6	33	KASK04
32	19	14,5	64	11	19	43,7	26,6	M6	33	KASK04
36	21	14,5	70	11	19	31	23,5	M6	37,5	KASK05
36	21	14,5	70	11	19	44,5	27	M6	37,5	KASK05
36	21	14,5	70	11	19	44,5	27	M6	37,5	–
36	21	14,5	70	11	19	44,5	27	M6	37,5	KASK05
36	21	14,5	70	11	19	44,5	27	M6	37,5	KASK05
40	25	17	82	14	22	35,8	26,8	M6	44	KASK06
40	25	17	82	14	22	48,5	30,2	M6	44	KASK06
40	25	17	82	14	22	48,5	30,2	M6	44	–
40	25	17	82	14	22	48,5	30,2	M6	44	KASK06
40	25	17	82	14	22	48,5	30,2	M6	44	KASK06
50	28	18	95	17,5	20,5	50,2	32,7	M6	51	–
45	27	19	93	14	21	39	29,5	M6	55	KASK07
45	27	19	93	14	21	51,3	32,5	M6	55	KASK07
45	27	19	93	14	21	51,3	32,5	M6	55	–
45	27	19	93	14	21	51,3	32,5	M6	55	KASK07
45	27	19	93	14	21	51,3	32,5	M6	55	KASK07
56	30	20	106	17,5	25,5	51,6	33,3	M6	55	–

Plummer block housing units

Flake graphite cast iron housing
With long base
Eccentric locking collar



X-life

PASE..-XL(-N), RASE..-XL(-N,-FA164), TASE..-XL(-N), LASE..-XL(-N), RSAO..-XL

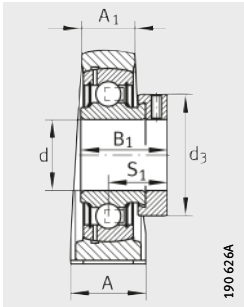
Dimension table (continued) · Dimensions in mm

Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
PASE40-XL-N	ASE08	GRAE40-XL-NPP-B	1,84	**40**	49,2	138	179
RSAO40-XL	SAO08	GNE40-XL-KRR-B	3,18	**40**	60	170	220
LASE40-XL-N[2]	ASE08	GE40-XL-KLL-B	1,97	**40**	49,2	138	179
RASE40-XL-FA164[2]	ASE08	GE40-XL-KRR-B-FA164	1,97	**40**	49,2	138	179
RASE40-XL-N	ASE08	GE40-XL-KRR-B	1,95	**40**	49,2	138	179
TASE40-XL-N	ASE08	GE40-XL-KTT-B	1,96	**40**	49,2	138	179
PASE45-XL	ASE09	GRAE45-XL-NPP-B	2,15	**45**	54	150	192
LASE45-XL[2]	ASE09	GE45-XL-KLL-B	2,3	**45**	54	150	192
RASE45-XL	ASE09	GE45-XL-KRR-B	2,28	**45**	54	150	192
TASE45-XL	ASE09	GE45-XL-KTT-B	2,28	**45**	54	150	192
PASE50-XL-N	ASE10	GRAE50-XL-NPP-B	2,59	**50**	57,2	158	200
LASE50-XL-N[2]	ASE10	GE50-XL-KLL-B	2,82	**50**	57,2	158	200
RASE50-XL-FA164[2]	ASE10	GE50-XL-KRR-B-FA164	2,82	**50**	57,2	158	200
RASE50-XL-N	ASE10	GE50-XL-KRR-B	2,8	**50**	57,2	158	200
TASE50-XL-N	ASE10	GE50-XL-KTT-B	2,8	**50**	57,2	158	200
RSAO50-XL	SAO10	GNE50-XL-KRR-B	6,1	**50**	75	212	275
PASE55-XL	ASE11	GRAE55-XL-NPP-B	2,79	**55**	63,5	176	222
RASE55-XL	ASE11	GE55-XL-KRR-B	3,4	**55**	63,5	176	222
TASE55-XL	ASE11	GE55-XL-KTT-B	3,51	**55**	63,5	176	222
PASE60-XL-N	ASE12	GRAE60-XL-NPP-B	4,35	**60**	69,9	190	240
RSAO60-XL	SAO12	GNE60-XL-KRR-B	9	**60**	85	250	330
RASE60-XL-FA164[2]	ASE12	GE60-XL-KRR-B-FA164	4,79	**60**	69,9	190	240
RASE60-XL-N	ASE12	GE60-XL-KRR-B	4,79	**60**	69,9	190	240
TASE60-XL-N	ASE12	GE60-XL-KTT-B	4,77	**60**	69,9	190	240
RASE65-214-XL[3]	ASE14	GE65-214-XL-KRR-B	6,41	**65**	79,4	203	260
TASE65-214-XL[3]	ASE14	GE65-214-XL-KTT-B	6,41	**65**	79,4	203	260

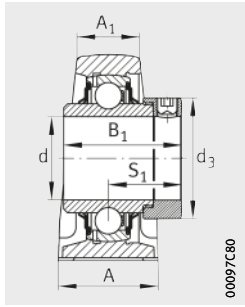
1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

2) With fitted lubrication nipple M6.

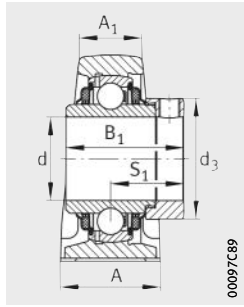
3) Alternative ball set 6214.



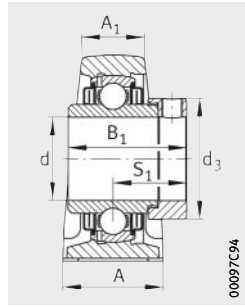
PASE..-XL(-N)



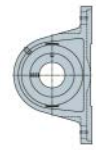
RASE..-XL(-N,-FA164), RSAO..-XL



TASE..-XL(-N)



LASE..-XL(-N)

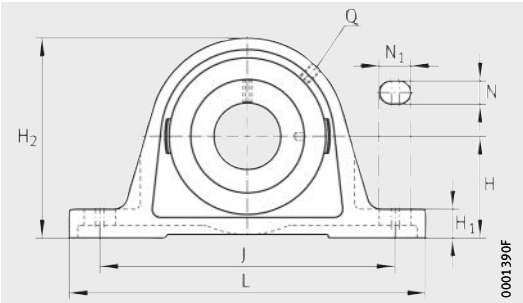




										End cap[1)]
A	A_1	H_1	H_2	N	N_1	B_1	S_1	Q	d_3 max.	
48	30	19	99	14	26	43,8	32,8	M6	58	KASK08
60	31	22	116	17,5	27,5	54,6	36,6	M6	63	–
48	30	19	99	14	26	56,5	35,1	M6	58	KASK08
48	30	19	99	14	26	56,5	35,1	M6	58	–
48	30	19	99	14	26	56,5	35,1	M6	58	KASK08
48	30	19	99	14	26	56,5	35,1	M6	58	KASK08
48	32	21,5	107	14	29	43,8	32,8	M6	63	–
48	32	21,5	107	14	29	56,5	35,1	M6	63	–
48	32	21,5	107	14	29	56,5	35,1	M6	63	–
48	32	21,5	107	14	29	56,5	35,1	M6	63	–
54	34	21,5	115	18	23	43,8	32,8	M6	69	KASK10
54	34	21,5	115	18	23	62,8	38,2	M6	69	KASK10
54	34	21,5	115	18	23	62,8	38,2	M6	69	–
54	34	21,5	115	18	23	62,8	38,2	M6	69	KASK10
54	34	21,5	115	18	23	62,8	38,2	M6	69	KASK10
75	39	27	143	20	35	66,75	42,15	M6	75,8	–
60	35	22,5	124,5	18	30	48,4	36,4	M6	76	–
60	35	22,5	124,5	18	30	71,4	43,6	M6	76	–
60	35	22,5	124,5	18	30	71,4	43,6	M6	76	–
60	42	25	140	18	28	53,1	39,6	M6	84	KASK12
85	46	32	165	25	38	68	45	M6	89	–
60	42	25	140	18	28	77,9	46,9	M6	84	–
60	42	25	140	18	28	77,9	46,9	M6	84	KASK12
60	42	25	140	18	28	77,9	46,9	M6	84	KASK12
65	44	27,5	156	22	28	66	44,5	M6	96	–
65	44	27,5	156	22	28	66	44,5	M6	96	–

Plummer block housing units

Flake graphite cast iron housing
With long base
Eccentric locking collar

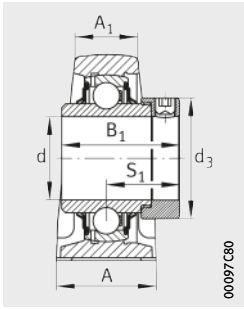


RASE..-XL(-FA164), TASE..-XL, RSAO..-XL

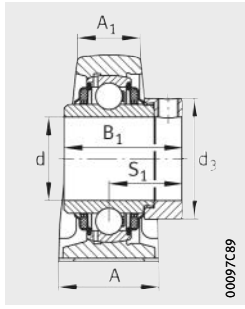
Dimension table (continued) · Dimensions in mm

Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
RASE70-XL	ASE14	GE70-XL-KRR-B	6,15	**70**	79,4	203	260
RASE70-XL-FA164[1)]	ASE14	GE70-XL-KRR-B-FA164	6,15	**70**	79,4	203	260
TASE70-XL	ASE14	GE70-XL-KTT-B	6,09	**70**	79,4	203	260
RSAO70-XL	SAO14	GNE70-XL-KRR-B	11	**70**	95	282	360
RASE75-XL	ASE15	GE75-XL-KRR-B	6,58	**75**	82,5	210	265
RASE75-XL-FA164[1)]	ASE15	GE75-XL-KRR-B-FA164	7,65	**75**	82,5	210	265
TASE75-XL	ASE15	GE75-XL-KTT-B	7,65	**75**	82,5	210	265
RASE80-XL	ASE16	GE80-XL-KRR-B	8,65	**80**	89	232	290
RASE80-XL-AH01-FA164[1)]	ASE16	GE80-XL-KRR-B-AH01-FA164	8,65	**80**	89	232	290
TASE80-XL	ASE16	GE80-XL-KTT-B	8,49	**80**	89	232	290
RSAO80-XL	SAO16	GNE80-XL-KRR-B	22,5	**80**	116	315	390
RASE90-XL	ASE18	GE90-XL-KRR-B	12,12	**90**	101,6	268	330
RASE90-XL-FA164[1)]	ASE18	GE90-XL-KRR-B-FA164	12,12	**90**	101,6	268	330
RSAO90-XL	SAO18	GNE90-XL-KRR-B	29,5	**90**	130	340	410
RASE100-XL	ASE20	GE100-XL-KRR-B	15,85	**100**	115	308	380
RSAO100-XL	SAO20	GNE100-XL-KRR-B	41	**100**	145	375	440
RASE120-XL	ASE24	GE120-XL-KRR-B	26,52	**120**	135	358	440

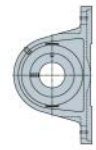
[1)] With fitted lubrication nipple M6.



RASE..-XL(-FA164),
RSAO..-XL



TASE..-XL

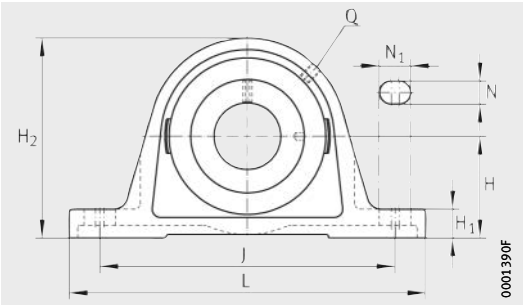




A	A_1	H_1	H_2	N	N_1	B_1	S_1	Q	d_3 max.
65	44	27,5	156	22	28	66	44,5	M6	96
65	44	27,5	156	22	28	66	44,5	M6	96
65	44	27,5	156	22	28	66	44,5	M6	96
90	54	35	187	27	42	75,5	49,5	M6	102
66	48	27,5	164	22	30	67	45,5	M6	100
66	48	27,5	164	22	30	67	45,5	M6	100
66	48	27,5	164	22	30	67	45,5	M6	100
78	55	30	175	26	34	70,7	47,3	M6	108
78	55	30	175	26	34	70,7	47,3	M6	108
78	55	30	175	26	34	70,7	47,3	M6	108
110	76	50	226	25,5	44,5	93,6	59,6	M6	118
85	55	35	200	27	35	69,5	46,5	M6	118
85	55	35	200	27	35	69,5	46,5	M6	118
120	84	57	250	28	54	101	65,5	M6	132
95	62	40	225	30	38	75	49,5	M6	132
130	94	65	280	32	47	109,4	69,9	M6	145
105	70	45	265	33	41	81	52,5	M6	152

Plummer block housing units

Flake graphite cast iron housing
With long base
Grub screws in inner ring



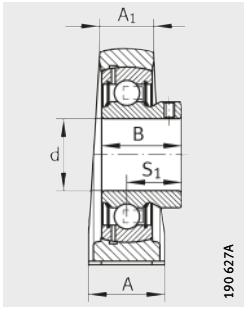
PASEY..-XL(-N), RASEY..-XL(-N)

Dimension table · Dimensions in mm

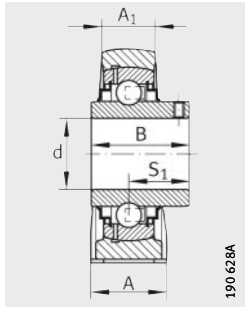
Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
PASEY12-XL	ASE03	GAY12-XL-NPP-B	0,44	**12**	30,2	95	125
RASEY12-XL	ASE03	GYE12-XL-KRR-B	0,45	**12**	30,2	95	125
PASEY15-XL	ASE03	GAY15-XL-NPP-B	0,43	**15**	30,2	95	125
RASEY15-XL	ASE03	GYE15-XL-KRR-B	0,45	**15**	30,2	95	125
RASEY16-XL	ASE03	GYE16-XL-KRR-B	0,45	**16**	30,2	95	125
PASEY17-XL	ASE03	GAY17-XL-NPP-B	0,42	**17**	30,2	95	125
RASEY17-XL	ASE03	GYE17-XL-KRR-B	0,45	**17**	30,2	95	125
PASEY20-XL-N	ASE04	GAY20-XL-NPP-B	0,56	**20**	33,3	97	130
RASEY20-XL-N	ASE04	GYE20-XL-KRR-B	0,58	**20**	33,3	97	130
PASEY25-XL-N	ASE05	GAY25-XL-NPP-B	0,61	**25**	36,5	103	130
RASEY25-XL-N	ASE05	GYE25-XL-KRR-B	0,7	**25**	36,5	103	130
PASEY30-XL-N	ASE06	GAY30-XL-NPP-B	1,07	**30**	42,9	118	158
RASEY30-XL-N	ASE06	GYE30-XL-KRR-B	1,13	**30**	42,9	118	158
PASEY35-XL-N	ASE07	GAY35-XL-NPP-B	1,45	**35**	47,6	126	163
RASEY35-XL-N	ASE07	GYE35-XL-KRR-B	1,55	**35**	47,6	126	163
PASEY40-XL-N	ASE08	GAY40-XL-NPP-B	1,75	**40**	49,2	138	179
RASEY40-XL-N	ASE08	GYE40-XL-KRR-B	1,84	**40**	49,2	138	179
PASEY45-XL	ASE09	GAY45-XL-NPP-B	2,06	**45**	54	150	192
RASEY45-XL	ASE09	GYE45-XL-KRR-B	2,16	**45**	54	150	192
PASEY50-XL-N	ASE10	GAY50-XL-NPP-B	2,49	**50**	57,2	158	200
RASEY50-XL-N	ASE10	GYE50-XL-KRR-B	2,6	**50**	57,2	158	200
RASEY55-XL	ASE11	GYE55-XL-KRR-B	3,22	**55**	63,5	176	222
PASEY60-XL-N	ASE12	GAY60-XL-NPP-B	4,15	**60**	69,9	190	240
RASEY60-XL-N	ASE12	GYE60-XL-KRR-B	4,27	**60**	69,9	190	240
RASEY65-214-XL[2]	ASE14	GYE65-214-XL-KRR-B	5,95	**65**	79,4	203	260
RASEY70-XL	ASE14	GYE70-XL-KRR-B	5,93	**70**	79,4	203	260
RASEY75-XL	ASE15	GYE75-XL-KRR-B	6,51	**75**	82,5	210	265
RASEY80-XL	ASE16	GYE80-XL-KRR-B	8,41	**80**	89	232	290
RASEY90-XL	ASE18	GYE90-XL-KRR-B	12,6	**90**	101,6	268	330

[1] To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

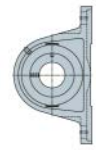
[2] Alternative ball set 6214.



PASEY..-XL(-N)



RASEY..-XL(-N)

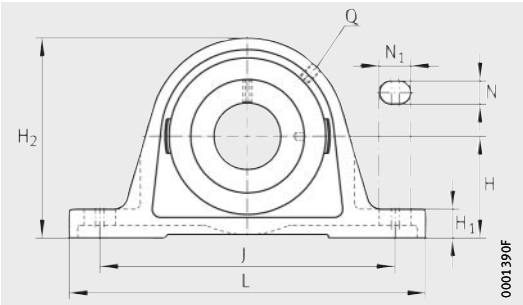




									End cap[1)]
A	A_1	H_1	H_2	N	N_1	B	S_1	Q	
30	18	10	57	11	19	22	16	M6	–
30	18	10	57	11	19	27,4	15,9	M6	–
30	18	10	57	11	19	22	16	M6	–
30	18	10	57	11	19	27,4	15,9	M6	–
30	18	10	57	11	19	27,4	15,9	M6	–
30	18	10	57	11	19	22	16	M6	–
30	18	10	57	11	19	27,4	15,9	M6	–
32	19	14,5	64	11	19	25	18	M6	KASK04
32	19	14,5	64	11	19	31	18,3	M6	KASK04
36	21	14,5	70	11	19	27	19,5	M6	KASK05
36	21	14,5	70	11	19	34,1	19,8	M6	KASK05
40	25	17	82	14	22	30	21	M6	KASK06
40	25	17	82	14	22	38,1	22,2	M6	KASK06
45	27	19	93	14	21	35	25,5	M6	KASK07
45	27	19	93	14	21	42,9	25,4	M6	KASK07
48	30	19	99	14	26	39,5	29	M6	KASK08
48	30	19	99	14	26	49,2	30,2	M6	KASK08
48	32	21,5	107	14	29	41,5	30,5	M6	–
48	32	21,5	107	14	29	49,2	30,2	M6	–
54	34	21,5	115	18	23	43	32	M6	KASK10
54	34	21,5	115	18	23	51,6	32,6	M6	KASK10
60	35	22,5	124,5	18	30	55,6	33,4	M6	–
60	42	25	140	18	28	47	34	M6	KASK12
60	42	25	140	18	28	65,1	39,7	M6	KASK12
65	44	27,5	156	22	28	74,6	44,4	M6	–
65	44	27,5	156	22	28	74,6	44,4	M6	–
66	48	27,5	164	22	30	77,8	44,5	M6	–
78	55	30	175	26	35	82,6	49,3	M6	–
85	55	35	200	27	35	96	56,3	M6	–

Plummer block housing units

Flake graphite cast iron housing
With long base
Adapter sleeve or drive slot



RASEA..-XL-N, RASEL..-XL(-N)

Dimension table · Dimensions in mm

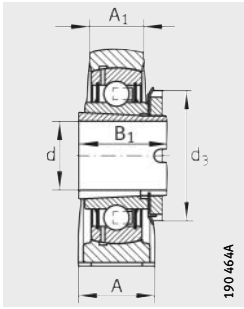
Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
RASEA20-XL-N	ASE04	GSH20-XL-2RSR-B	0,51	**20**	33,3	97	130
RASEA25-XL-N	ASE05	GSH25-XL-2RSR-B	0,6	**25**	36,5	103	130
RASEA30-XL-N	ASE06	GSH30-XL-2RSR-B	1	**30**	42,9	118	158
RASEA35-XL-N	ASE07	GSH35-XL-2RSR-B	1,48	**35**	47,6	126	163
RASEA40-XL-N	ASE08	GSH40-XL-2RSR-B	1,71	**40**	49,2	138	179
RASEA50-XL-N	ASE10	GSH50-XL-2RSR-B	2,09	**50**	57,2	158	200

Dimension table · Dimensions in mm

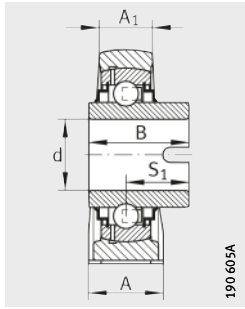
Designation			Mass	Dimensions			
Unit[2)]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
RASEL20-XL-N	ASE04	GLE20-XL-KRR-B	0,58	**20**	33,3	97	130
RASEL25-XL-N	ASE05	GLE25-XL-KRR-B	0,7	**25**	36,5	103	130
RASEL30-XL-N	ASE06	GLE30-XL-KRR-B	1,1	**30**	42,9	118	158
RASEL40-XL-N	ASE08	GLE40-XL-KRR-B	1,79	**40**	49,2	138	179
RASEL45-XL	ASE09	GLE45-XL-KRR-B	2,1	**45**	54	150	192
RASEL50-XL-N	ASE10	GLE50-XL-KRR-B	2,6	**50**	57,2	158	200
RASEL60-XL-N	ASE12	GLE60-XL-KRR-B	4,43	**60**	69,9	190	240
RASEL70-XL	ASE14	GLE70-XL-KRR-B	5,87	**70**	79,4	203	260

1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

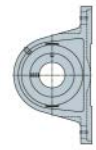
2) With fitted lubrication nipple M6.



RASEA..-XL-N



RASEL..-XL(-N)



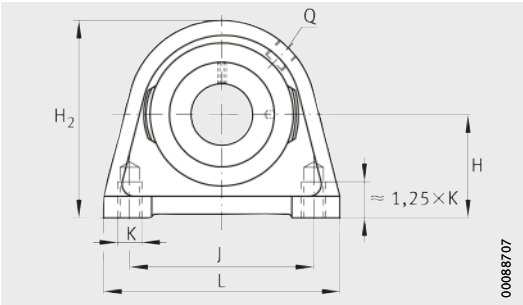


A	A_1	H_1	H_2	N	N_1	B_1	S_1	Q	d_3 max.	End cap[1)]
32	19	14,5	64	11	19	28	20,5	M6	32	KASK04
36	21	14,5	70	11	19	28	20,5	M6	38	KASK05
40	25	17	82	14	22	32	23	M6	45	KASK06
45	27	19	93	14	21	34	24,5	M6	52	KASK07
48	30	19	99	14	26	38	27	M6	58	KASK08
54	34	21,5	115	18	23	40	29	M6	70	KASK10

A	A_1	H_1	H_2	N	N_1	B	S_1	Q	End cap[1)]
32	19	14,5	64	11	19	34,1	18,5	M6	KASK04
36	21	14,5	70	11	19	34,9	20,2	M6	KASK05
40	25	17	82	14	22	36,5	22	M6	KASK06
48	30	19	99	14	26	42,9	27	M6	KASK08
48	32	21,5	107	14	29	42,9	25,5	M6	–
54	34	21,5	115	18	23	49,2	30,2	M6	KASK10
60	42	25	140	18	28	61,9	37,3	M6	KASK12
65	44	27,5	156	22	28	68,2	41,2	M6	–

Plummer block housing units

Flake graphite cast iron housing
With short base
With eccentric locking collar

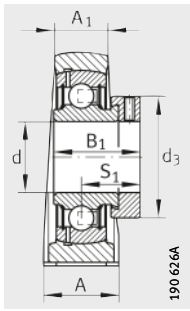


PSHE..-XL, RSHE..-XL, TSHE..-XL

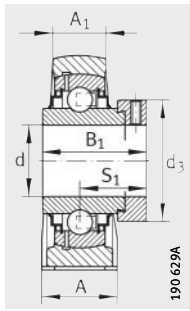
Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
PSHE12-XL	SHE03	GRAE12-XL-NPP-B	0,44	**12**	30,2	47	63
PSHE15-XL	SHE03	GRAE15-XL-NPP-B	0,44	**15**	30,2	47	63
PSHE17-XL	SHE03	GRAE17-XL-NPP-B	0,44	**17**	30,2	47	63
RSHE17-XL	SHE03	GE17-XL-KRR-B	0,48	**17**	30,2	47	63
PSHE20-XL-N	SHE04	GRAE20-XL-NPP-B	0,46	**20**	33,3	50,8	65
RSHE20-XL-N	SHE04	GE20-XL-KRR-B	0,49	**20**	33,3	50,8	65
TSHE20-XL-N	SHE04	GE20-XL-KTT-B	0,49	**20**	33,3	50,8	65
PSHE25-XL-N	SHE05	GRAE25-XL-NPP-B	0,54	**25**	36,5	50,8	70
RSHE25-XL-N	SHE05	GE25-XL-KRR-B	0,6	**25**	36,5	50,8	70
TSHE25-XL-N	SHE05	GE25-XL-KTT-B	0,66	**25**	36,5	50,8	70
PSHE30-XL-N	SHE06	GRAE30-XL-NPP-B	0,94	**30**	42,9	76,2	98
RSHE30-XL-N	SHE06	GE30-XL-KRR-B	1,01	**30**	42,9	76,2	98
TSHE30-XL-N	SHE06	GE30-XL-KTT-B	1,01	**30**	42,9	76,2	98
PSHE35-XL-N	SHE07	GRAE35-XL-NPP-B	1,3	**35**	47,6	82,6	103
RSHE35-XL-N	SHE07	GE35-XL-KRR-B	1,38	**35**	47,6	82,6	103
TSHE35-XL-N	SHE07	GE35-XL-KTT-B	1,38	**35**	47,6	82,6	103
PSHE40-XL-N	SHE08	GRAE40-XL-NPP-B	1,84	**40**	49,2	88,9	116
RSHE40-XL-N	SHE08	GE40-XL-KRR-B	1,96	**40**	49,2	88,9	116
TSHE40-XL-N	SHE08	GE40-XL-KTT-B	1,66	**40**	49,2	88,9	116
PSHE45-XL	SHE09	GRAE45-XL-NPP-B	2,14	**45**	54	95,3	120
RSHE45-XL	SHE09	GE45-XL-KRR-B	2,26	**45**	54	95,3	120
TSHE45-XL	SHE09	GE45-XL-KTT-B	2,31	**45**	54	95,3	120
PSHE50-XL-N	SHE10	GRAE50-XL-NPP-B	2,79	**50**	57,2	101,6	135
RSHE50-XL-N	SHE10	GE50-XL-KRR-B	3,02	**50**	57,2	101,6	135
TSHE50-XL-N	SHE10	GE50-XL-KTT-B	2,47	**50**	57,2	101,6	135
PSHE55-XL	SHE11	GRAE55-XL-NPP-B	2,91	**55**	64	118	150
RSHE55-XL	SHE11	GE55-XL-KRR-B	3,52	**55**	64	118	150
TSHE55-XL	SHE11	GE55-XL-KTT-B	3,59	**55**	64	118	150
PSHE60-XL-N	SHE12	GRAE60-XL-NPP-B	4,1	**60**	69,9	118	150
RSHE60-XL-N	SHE12	GE60-XL-KRR-B	4,54	**60**	69,9	118	150
TSHE60-XL-N	SHE12	GE60-XL-KTT-B	4,22	**60**	69,9	118	150

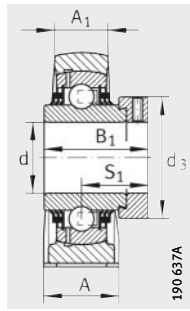
[1] To be ordered separately. The caps are suitable for temperatures from −20 °C to +80 °C.



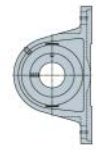
PSHE..-XL



RSHE..-XL



TSHE..-XL

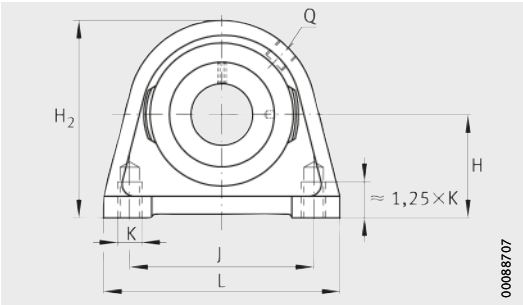




								End cap[1)]
A	A_1	H_2	K	B_1	S_1	Q	d_3 max.	
30	18	57	M8	28,6	22,1	M6	28,4	–
30	18	57	M8	28,6	22,1	M6	28,4	–
30	18	57	M8	28,6	22,1	M6	28,4	–
30	18	57	M8	37,4	23,5	M6	28,4	–
32	19	64	M8	31	23,5	M6	33	KASK04
32	19	64	M8	43,7	26,6	M6	33	KASK04
32	19	64	M8	43,7	26,6	M6	33	KASK04
36	21	70	M10	31	23,5	M6	37,5	KASK05
36	21	70	M10	44,5	27	M6	37,5	KASK05
36	21	70	M10	44,5	27	M6	37,5	KASK05
40	25	82	M10	35,8	26,8	M6	44	KASK06
40	25	82	M10	48,5	30,2	M6	44	KASK06
40	25	82	M10	48,5	30,2	M6	44	KASK06
45	27	93	M10	39	29,5	M6	55	KASK07
45	27	93	M10	51,3	32,5	M6	55	KASK07
45	27	93	M10	51,3	32,5	M6	55	KASK07
48	30	99	M12	43,8	32,8	M6	58	KASK08
48	30	99	M12	56,5	35,1	M6	58	KASK08
48	30	99	M12	56,5	35,1	M6	58	KASK08
48	32	107	M12	43,8	32,8	M6	63	–
48	32	107	M12	56,5	35,1	M6	63	–
48	32	107	M12	56,5	35,1	M6	63	–
54	34	115	M16	43,8	32,8	M6	69	KASK10
54	34	115	M16	62,8	38,2	M6	69	KASK10
54	34	115	M16	62,8	38,2	M6	69	KASK10
60	35	125	M16	48,4	36,4	M6	76	–
60	35	125	M16	71,4	43,6	M6	76	–
60	35	125	M16	71,4	43,6	M6	76	–
60	42	140	M16	53,1	39,6	M6	84	KASK12
60	42	140	M16	77,9	46,9	M6	84	KASK12
60	42	140	M16	77,9	46,9	M6	84	KASK12

Plummer block housing units

Flake graphite cast iron housing
With short base
With grub screws

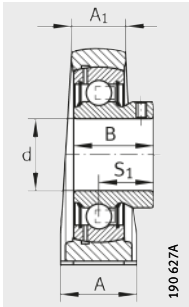


PSHEY..-XL, RSHEY..-XL

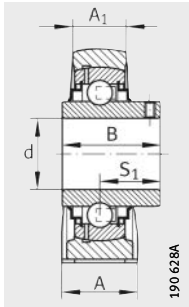
Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
PSHEY12-XL	SHE03	GAY12-XL-NPP-B	0,42	**12**	30,2	47	63
PSHEY15-XL	SHE03	GAY15-XL-NPP-B	0,41	**15**	30,2	47	63
RSHEY15-XL	SHE03	GYE15-XL-KRR-B	0,42	**15**	30,2	47	63
PSHEY17-XL	SHE03	GAY17-XL-NPP-B	0,4	**17**	30,2	47	63
RSHEY17-XL	SHE03	GYE17-XL-KRR-B	0,41	**17**	30,2	47	63
PSHEY20-XL-N	SHE04	GAY20-XL-NPP-B	0,42	**20**	33,3	50,8	65
RSHEY20-XL-N	SHE04	GYE20-XL-KRR-B	0,43	**20**	33,3	50,8	65
PSHEY25-XL-N	SHE05	GAY25-XL-NPP-B	0,57	**25**	36,5	50,8	70
RSHEY25-XL-N	SHE05	GYE25-XL-KRR-B	0,54	**25**	36,5	50,8	70
PSHEY30-XL-N	SHE06	GAY30-XL-NPP-B	0,88	**30**	42,9	76,2	98
RSHEY30-XL-N	SHE06	GYE30-XL-KRR-B	0,94	**30**	42,9	76,2	98
PSHEY35-XL-N	SHE07	GAY35-XL-NPP-B	1,19	**35**	47,6	82,6	103
RSHEY35-XL-N	SHE07	GYE35-XL-KRR-B	1,25	**35**	47,6	82,6	103
PSHEY40-XL-N	SHE08	GAY40-XL-NPP-B	1,73	**40**	49,2	88,9	116
RSHEY40-XL-N	SHE08	GYE40-XL-KRR-B	1,53	**40**	49,2	88,9	116
PSHEY45-XL	SHE09	GAY45-XL-NPP-B	1,91	**45**	54	95,3	120
RSHEY45-XL	SHE09	GYE45-XL-KRR-B	2,15	**45**	54	95,3	120
PSHEY50-XL-N	SHE10	GAY50-XL-NPP-B	2,64	**50**	57,2	101,6	135
RSHEY50-XL-N	SHE10	GYE50-XL-KRR-B	2,82	**50**	57,2	101,6	135
RSHEY55-XL	SHE11	GYE55-XL-KRR-B	3,29	**55**	64	118	150
PSHEY60-XL-N	SHE12	GAY60-XL-NPP-B	3,6	**60**	69,9	118	150
RSHEY60-XL-N	SHE12	GYE60-XL-KRR-B	3,9	**60**	69,9	118	150

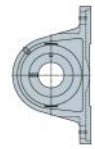
[1] To be ordered separately. The caps are suitable for temperatures from –20 °C to +80 °C.



PSHEY..-XL



RSHEY..-XL



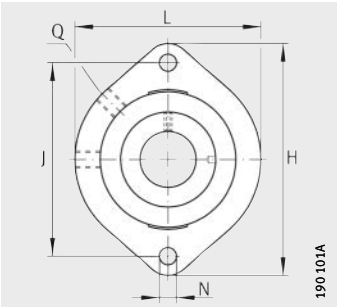


							End cap[1)]
A	A_1	H_2	K	B	S_1	Q	
30	18	57	M8	22	16	M6	–
30	18	57	M8	22	16	M6	–
30	18	57	M8	27,4	15,9	M6	–
30	18	57	M8	22	16	M6	–
30	18	57	M8	27,4	15,9	M6	–
32	19	64	M8	25	18	M6	KASK04
32	19	64	M8	31	18,3	M6	KASK04
36	21	70	M10	27	19,5	M6	KASK05
36	21	70	M10	34,1	19,8	M6	KASK05
40	25	82	M10	30	21	M6	KASK06
40	25	82	M10	38,1	22,2	M6	KASK06
45	27	93	M10	35	25,5	M6	KASK07
45	27	93	M10	42,9	25,4	M6	KASK07
48	30	99	M12	39,5	29	M6	KASK08
48	30	99	M12	49,2	30,2	M6	KASK08
48	32	107	M12	41,5	30,5	M6	–
48	32	107	M12	49,2	30,2	M6	–
54	34	115	M16	43	32	M6	KASK10
54	34	115	M16	51,6	32,6	M6	KASK10
60	35	125	M16	55,6	33,4	M6	–
60	42	140	M16	47	34	M6	KASK12
60	42	140	M16	65,1	39,7	M6	KASK12

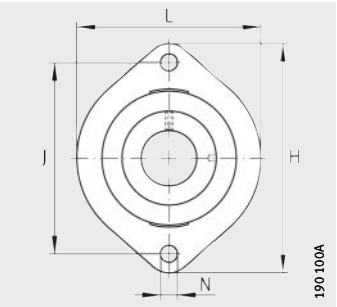
Two-bolt flanged housing units

Flake graphite cast iron housing
Oval, wide version
With eccentric locking collar

X-life



GLCTE..-XL

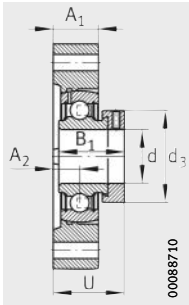


FLCTE..-XL

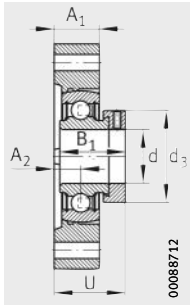
Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J
FLCTE12-XL	LCTE03	RAE12-XL-NPP-B	0,3	**12**	81	63,5
GLCTE12-XL[1)]	GLCTE03	GRAE12-XL-NPP-B	0,3	**12**	81	63,5
FLCTE15-XL	LCTE03	RAE15-XL-NPP-B	0,3	**15**	81	63,5
GLCTE15-XL[1)]	GLCTE03	GRAE15-XL-NPP-B	0,3	**15**	81	63,5
FLCTE17-XL	LCTE03	RAE17-XL-NPP-B	0,3	**17**	81	63,5
GLCTE17-XL[1)]	GLCTE03	GRAE17-XL-NPP-B	0,3	**17**	81	63,5
FLCTE20-XL	LCTE04	RAE20-XL-NPP-B	0,39	**20**	90,5	71,4
GLCTE20-XL[2)]	GLCTE04	GRAE20-XL-NPP-B	0,39	**20**	90,5	71,4
FLCTE25-XL	LCTE05	RAE25-XL-NPP-B	0,47	**25**	97	76,2
GLCTE25-XL[2)]	GLCTE05	GRAE25-XL-NPP-B	0,47	**25**	97	76,2
FLCTE30-XL	LCTE06	RAE30-XL-NPP-B	0,76	**30**	112,5	90,5
GLCTE30-XL[2)]	GLCTE06	GRAE30-XL-NPP-B	0,76	**30**	112,5	90,5
FLCTE35-XL	LCTE07	RAE35-XL-NPP-B	1,02	**35**	126	100
GLCTE35-XL[1)]	GLCTE07	GRAE35-XL-NPP-B	1,01	**35**	126	100
FLCTE40-XL	LCTE08	RAE40-XL-NPP-B	1,32	**40**	150	119
GLCTE40-XL[1)]	GLCTE08	GRAE40-XL-NPP-B	1,3	**40**	150	119

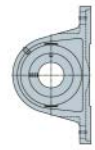
[1)] Lubrication hole 90°.
[2)] Lubrication hole 45°.



GLCTE..-XL



FLCTE..-XL

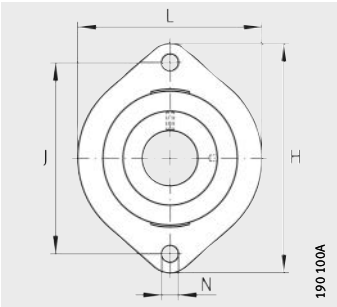




L	A_1	A_2	N	B_1	U	Q	d_3 max.
58,7	15	8,4	6,6	28,6	30,5	–	28,4
58,7	15	8,4	6,6	28,6	30,5	M6[1)]	28,4
58,7	15	8,4	6,6	28,6	30,5	–	28,4
58,7	15	8,4	6,6	28,6	30,5	M6[1)]	28,4
58,7	15	8,4	6,6	28,6	30,5	–	28,4
58,7	15	8,4	6,6	28,6	30,5	M6[1)]	28,4
66,5	17	9,5	9	31	33	–	33
66,5	17	9,5	9	31	33	M6[2)]	33
71	17,5	9,9	9	31	33,4	–	37,5
71	17,5	9,9	9	31	33,4	M6[2)]	37,5
84	20,5	11,4	11,5	35,8	38,1	–	44
84	20,5	11,4	11,5	35,8	38,1	M6[2)]	44
94	22	12,4	11,5	39	42	–	55
94	22	12,4	11,5	39	42	M6[1)]	55
100	24	13,5	14	43,8	46,3	–	58
100	24	13,5	14	43,8	46,3	M6[1)]	58

Two-bolt flanged housing units

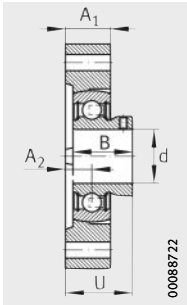
Flake graphite cast iron housing
Oval, wide version
With grub screws



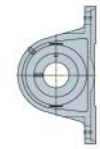
FLCTEY..-XL

Dimension table · Dimensions in mm

Designation			Mass	Dimensions	
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H
FLCTEY12-XL	LCTE03	AY12-XL-NPP-B	0,28	**12**	81
FLCTEY15-XL	LCTE03	AY15-XL-NPP-B	0,27	**15**	81
FLCTEY17-XL	LCTE03	AY17-XL-NPP-B	0,26	**17**	81
FLCTEY20-XL	LCTE04	AY20-XL-NPP-B	0,36	**20**	90,5
FLCTEY25-XL	LCTE05	AY25-XL-NPP-B	0,44	**25**	97
FLCTEY30-XL	LCTE06	AY30-XL-NPP-B	0,7	**30**	112,5
FLCTEY35-XL	LCTE07	GAY35-XL-NPP-B	0,93	**35**	126
FLCTEY40-XL	LCTE08	GAY40-XL-NPP-B	1,18	**40**	150



FLCTEY..-XL

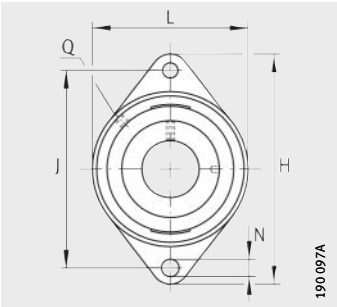




J	L	A_1	A_2	N	B	U
63,5	58,7	15	8,4	6,6	22	24,4
63,5	58,7	15	8,4	6,6	22	24,4
63,5	58,7	15	8,4	6,6	22	24,4
71,4	66,5	17	9,5	9	25	27
76,2	71	17,5	9,9	9	27	29,4
90,5	84	20,5	11,4	11,5	30	32,4
100	94	22	12,4	11,5	35	37,9
119	100	24	13,5	14	39,5	42,5

Two-bolt flanged housing units

Flake graphite cast iron housing
Oval, narrow version
Eccentric locking collar



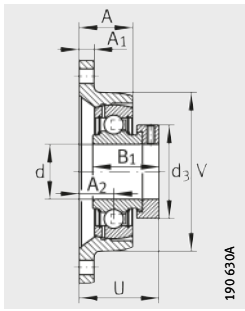
PCFT..-XL, PCJT..-XL(-N),
RCJT..-XL(-N,-FA164), TCJT..-XL-N,
LCJT..-XL-N

Dimension table · Dimensions in mm

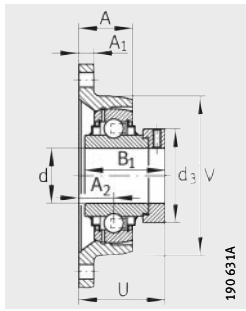
Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
PCFT12-XL	CFT03	GRAE12-XL-NPP-B	0,39	**12**	99	76,5	57
PCJT12-XL	CJT03	GRAE12-XL-NPP-B	0,37	**12**	99	76,5	57
PCFT15-XL	CFT03	GRAE15-XL-NPP-B	0,39	**15**	99	76,5	57
PCJT15-XL	CJT03	GRAE15-XL-NPP-B	0,37	**15**	99	76,5	57
PCFT17-XL	CFT03	GRAE17-XL-NPP-B	0,39	**17**	99	76,5	57
PCJT17-XL	CJT03	GRAE17-XL-NPP-B	0,37	**17**	99	76,5	57
RCJT17-XL	CJT03	GE17-XL-KRR-B	0,41	**17**	99	76,5	57
PCFT20-XL	CFT04	GRAE20-XL-NPP-B	0,4	**20**	112	90	61
PCJT20-XL-N	CJT04	GRAE20-XL-NPP-B	0,48	**20**	112	90	61
LCJT20-XL-N[2)]	CJT04	GE20-XL-KLL-B	0,52	**20**	112	90	61
RCJT20-XL-N	CJT04	GE20-XL-KRR-B	0,52	**20**	112	90	61
TCJT20-XL-N	CJT04	GE20-XL-KTT-B	0,48	**20**	112	90	61
PCFT25-XL	CFT05	GRAE25-XL-NPP-B	0,52	**25**	124	99	70
PCJT25-XL-N	CJT05	GRAE25-XL-NPP-B	0,58	**25**	124	99	70
LCJT25-XL-N[2)]	CJT05	GE25-XL-KLL-B	0,62	**25**	124	99	70
RCJT25-XL-N	CJT05	GE25-XL-KRR-B	0,62	**25**	124	99	70
TCJT25-XL-N	CJT05	GE25-XL-KTT-B	0,64	**25**	124	99	70
PCFT30-XL	CFT06	GRAE30-XL-NPP-B	0,77	**30**	142	116,5	80
PCJT30-XL-N	CJT06	GRAE30-XL-NPP-B	0,81	**30**	142	116,5	80
LCJT30-XL-N[2)]	CJT06	GE30-XL-KLL-B	0,9	**30**	142	116,5	80
RCJT30-XL-FA164[2)]	CJT06	GE30-XL-KRR-B-FA164	0,88	**30**	142	116,5	80
RCJT30-XL-N	CJT06	GE30-XL-KRR-B	0,88	**30**	142	116,5	80
TCJT30-XL-N	CJT06	GE30-XL-KTT-B	0,9	**30**	142	116,5	80
PCFT35-XL	CFT07	GRAE35-XL-NPP-B	1,04	**35**	155	130	92
PCJT35-XL-N	CJT07	GRAE35-XL-NPP-B	1,11	**35**	155	130	92
LCJT35-XL-N[2)]	CJT07	GE35-XL-KLL-B	1,19	**35**	155	130	92
RCJT35-XL-FA164[2)]	CJT07	GE35-XL-KRR-B-FA164	1,2	**35**	155	130	92
RCJT35-XL-N	CJT07	GE35-XL-KRR-B	1,19	**35**	155	130	92
TCJT35-XL-N	CJT07	GE35-XL-KTT-B	1,17	**35**	155	130	92

1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

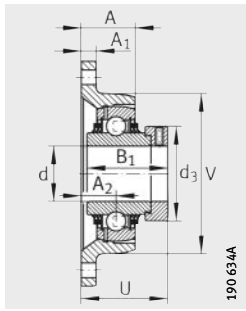
2) With fitted lubrication nipple M6.



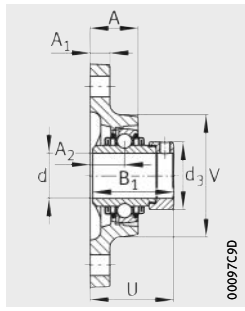
PCFT..-XL, PCJT..-XL(-N)



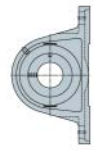
RCJT..-XL(-N,-FA164)



TCJT..-XL-N



LCJT..-XL-N

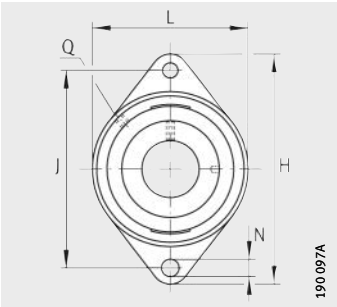




									End cap[1)]
A	A_1	A_2	N	B_1	U	V	Q	d_3 max.	
18	9,5	10	11,5	28,6	32,1	57	M6	28,4	–
25	9,5	17	11,5	28,6	39,1	57	M6	28,4	–
18	9,5	10	11,5	28,6	32,1	57	M6	28,4	–
25	9,5	17	11,5	28,6	39,1	57	M6	28,4	–
18	9,5	10	11,5	28,6	32,1	57	M6	28,4	–
25	9,5	17	11,5	28,6	39,1	57	M6	28,4	–
25	9,5	17	11,5	37,4	40,4	57	M6	28,4	–
17,5	10	10,5	11,5	31	34	61	M6	33	–
28	10	19	11,5	31	42,5	61	M6	33	KASK04
28	10	19	11,5	43,7	45,6	61	M6	33	KASK04
28	10	19	11,5	43,7	45,6	61	M6	33	KASK04
28	10	19	11,5	43,7	45,6	61	M6	33	KASK04
20	11	12,5	11,5	31	36	70	M6	37,5	–
26,5	11	19	11,5	31	42,5	70	M6	37,5	KASK05
26,5	11	19	11,5	44,5	46	70	M6	37,5	KASK05
26,5	11	19	11,5	44,5	46	70	M6	37,5	KASK05
26,5	11	19	11,5	44,5	46	70	M6	37,5	KASK05
22,3	12	13,3	11,5	35,8	40	80	M6	44	–
29	12	20	11,5	35,8	46,8	80	M6	44	KASK06
29	12	20	11,5	48,5	50,2	80	M6	44	KASK06
29	12	20	11,5	48,5	50,2	80	M6	44	–
29	12	20	11,5	48,5	50,2	80	M6	44	KASK06
29	12	20	11,5	48,5	50,2	80	M6	44	KASK06
25	12,5	15,5	14	39	44,9	92	M6	55	–
30,5	12,5	21	14	39	50,5	92	M6	55	KASK07
30,5	12,5	21	14	51,3	53,5	92	M6	55	KASK07
30,5	12,5	21	14	51,3	53,5	92	M6	55	–
30,5	12,5	21	14	51,3	53,5	92	M6	55	KASK07
30,5	12,5	21	14	51,3	53,5	92	M6	55	KASK07

Two-bolt flanged housing units

Flake graphite cast iron housing
Oval, narrow version
Eccentric locking collar



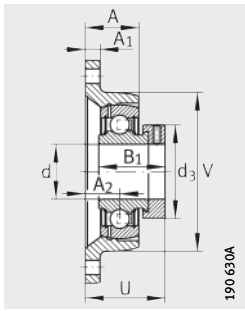
PCFT..-XL, PCJT..-XL(-N),
RCJT..-XL(-N,-FA164),
TCJT..-XL(-N), LCJT..-XL(-N)

Dimension table (continued) · Dimensions in mm

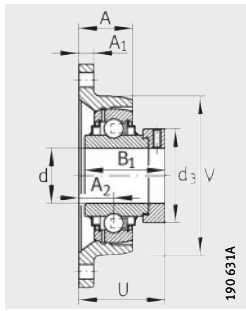
Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
PCFT40-XL	CFT08	GRAE40-XL-NPP-B	1,42	**40**	172	143,5	105
PCJT40-XL-N	CJT08	GRAE40-XL-NPP-B	1,54	**40**	172	143,5	105
LCJT40-XL-N[2)]	CJT08	GE40-XL-KLL-B	1,66	**40**	172	143,5	105
RCJT40-XL-FA164[2)]	CJT08	GE40-XL-KRR-B-FA164	1,66	**40**	172	143,5	105
RCJT40-XL-N	CJT08	GE40-XL-KRR-B	1,66	**40**	172	143,5	105
TCJT40-XL-N	CJT08	GE40-XL-KTT-B	1,7	**40**	172	143,5	105
PCFT45-XL	CFT09	GRAE45-XL-NPP-B	1,59	**45**	180	148,5	111
PCJT45-XL	CJT09	GRAE45-XL-NPP-B	1,69	**45**	180	148,5	111
LCJT45-XL[2)]	CJT09	GE45-XL-KLL-B	1,81	**45**	180	148,5	111
RCJT45-XL	CJT09	GE45-XL-KRR-B	1,81	**45**	180	148,5	111
TCJT45-XL	CJT09	GE45-XL-KTT-B	1,92	**45**	180	148,5	111
PCFT50-XL	CFT10	GRAE50-XL-NPP-B	1,82	**50**	190	157	116
PCJT50-XL-N	CJT10	GRAE50-XL-NPP-B	1,97	**50**	190	157	116
LCJT50-XL-N[2)]	CJT10	GE50-XL-KLL-B	2,21	**50**	190	157	116
RCJT50-XL-FA164[2)]	CJT10	GE50-XL-KRR-B-FA164	2,2	**50**	190	157	116
RCJT50-XL-N	CJT10	GE50-XL-KRR-B	2,2	**50**	190	157	116
TCJT50-XL-N	CJT10	GE50-XL-KTT-B	2,19	**50**	190	157	116
PCJT55-XL	CJT11	GRAE55-XL-NPP-B	2,31	**55**	222	184	134
RCJT55-XL	CJT11	GE55-XL-KRR-B	2,92	**55**	222	184	134
TCJT55-XL	CJT11	GE55-XL-KTT-B	3,15	**55**	222	184	134
PCJT60-XL-N	CJT12	GRAE60-XL-NPP-B	3,25	**60**	238	202	138
RCJT60-XL-N	CJT12	GE60-XL-KRR-B	3,69	**60**	238	202	138
RCJT65-214-XL[2)]	CJT13/14	GE65-214-XL-KRR-B	6,41	**65**	258	216	160
TCJT65-214-XL[2)]	CJT13/14	GE65-214-XL-KTT-B	6,41	**65**	258	216	160
RCJT70-XL	CJT13/14	GE70-XL-KRR-B	6,15	**70**	258	216	160
RCJT75-XL	CJT15	GE75-XL-KRR-B	6	**75**	258	216	160

1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

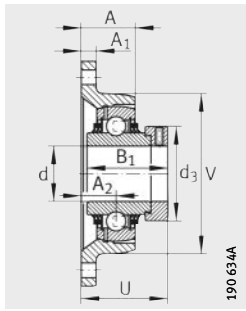
2) With fitted lubrication nipple M6.



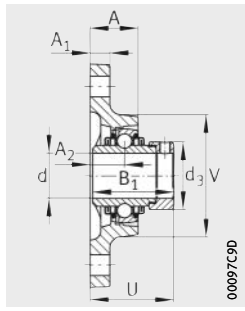
PCFT..-XL, PCJT..-XL(-N)



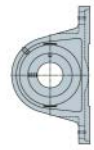
RCJT..-XL(-N,-FA164)



TCJT..-XL(-N)



LCJT..-XL(-N)

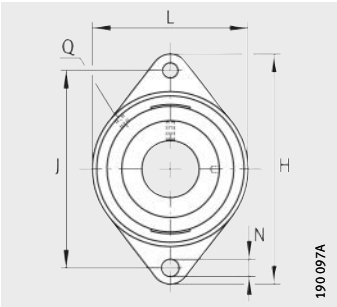




									End cap[1)]
A	A_1	A_2	N	B_1	U	V	Q	d_3 max.	
28,8	13	18,3	14	43,8	51	105	M6	58	–
34,5	13	24	14	43,8	56,7	105	M6	58	KASK08
34,5	13	24	14	56,5	59,1	105	M6	58	KASK08
34,5	13	24	14	56,5	59,1	105	M6	58	–
34,5	13	24	14	56,5	59,1	105	M6	58	KASK08
34,5	13	24	14	56,5	59,1	105	M6	58	KASK08
30,2	13	19,2	14	43,8	51,9	111	M6	63	–
35	13	24	14	43,8	56,7	111	M6	63	–
35	13	24	14	56,5	59,1	111	M6	63	–
35	13	24	14	56,5	59,1	111	M6	63	–
35	13	24	14	56,5	59,1	111	M6	63	–
30,2	13	19,2	14	43,8	51,9	116	M6	69	–
39	13	28	18	43,8	60,7	116	M6	69	KASK10
39	13	28	18	62,8	66,2	116	M6	69	KASK10
39	13	28	18	62,8	66,2	116	M6	69	–
39	13	28	18	62,8	66,2	116	M6	69	KASK10
39	13	28	18	62,8	66,2	116	M6	69	KASK10
43,5	15	31	18	48,4	67,4	134	M6	76	–
43,5	15	31	18	71,4	74,6	134	M6	76	–
43,5	15	31	18	71,4	74,6	134	M6	76	–
46	16	34	18	53,1	73,6	138	M6	84	KASK12
46	16	34	18	77,9	80,8	138	M6	84	KASK12
57	18	38	21	66	82,6	160	M6	96	–
57	18	38	21	66	82,6	160	M6	96	–
57	18	38	21	66	82,6	160	M6	96	–
57	18	38	21	67	83,6	160	M6	100	–

Two-bolt flanged housing units

Flake graphite cast iron housing
Oval, narrow version
Grub screws in inner ring



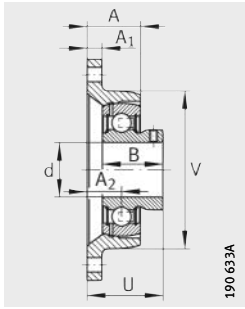
PCJTY..-XL(-N), RCJTY..-XL(-N)

Dimension table · Dimensions in mm

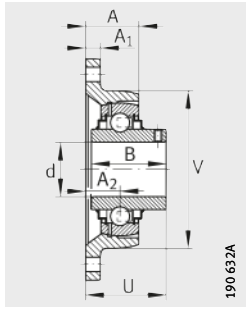
Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
PCJTY12-XL	CJT03	GAY12-XL-NPP-B	0,35	**12**	99	76,5	57
RCJTY12-XL	CJT03	GYE12-XL-KRR-B	0,36	**12**	99	76,5	57
PCJTY15-XL	CJT03	GAY15-XL-NPP-B	0,34	**15**	99	76,5	57
RCJTY15-XL	CJT03	GYE15-XL-KRR-B	0,35	**15**	99	76,5	57
RCJTY16-XL	CJT03	GYE16-XL-KRR-B	0,34	**16**	99	76,5	57
PCJTY17-XL	CJT03	GAY17-XL-NPP-B	0,33	**17**	99	76,5	57
RCJTY17-XL	CJT03	GYE17-XL-KRR-B	0,34	**17**	99	76,5	57
PCJTY20-XL-N	CJT04	GAY20-XL-NPP-B	0,41	**20**	112	90	61
RCJTY20-XL-N	CJT04	GYE20-XL-KRR-B	0,42	**20**	112	90	61
PCJTY25-XL-N	CJT05	GAY25-XL-NPP-B	0,48	**25**	124	99	70
RCJTY25-XL-N	CJT05	GYE25-XL-KRR-B	0,57	**25**	124	99	70
PCJTY30-XL-N	CJT06	GAY30-XL-NPP-B	0,77	**30**	142	116,5	80
RCJTY30-XL-N	CJT06	GYE30-XL-KRR-B	0,88	**30**	142	116,5	80
PCJTY35-XL-N	CJT07	GAY35-XL-NPP-B	1,05	**35**	155	130	92
RCJTY35-XL-N	CJT07	GYE35-XL-KRR-B	1,13	**35**	155	130	92
PCJTY40-XL-N	CJT08	GAY40-XL-NPP-B	1,48	**40**	172	143,5	105
RCJTY40-XL-N	CJT08	GYE40-XL-KRR-B	1,57	**40**	172	143,5	105
PCJTY45-XL	CJT09	GAY45-XL-NPP-B	1,69	**45**	180	148,5	111
RCJTY45-XL	CJT09	GYE45-XL-KRR-B	1,7	**45**	180	148,5	111
PCJTY50-XL-N	CJT10	GAY50-XL-NPP-B	1,82	**50**	190	157	116
RCJTY50-XL-N	CJT10	GYE50-XL-KRR-B	2	**50**	190	157	116
RCJTY55-XL	CJT11	GYE55-XL-KRR-B	2,86	**55**	222	184	134
PCJTY60-XL-N	CJT12	GAY60-XL-NPP-B	2,92	**60**	238	202	138
RCJTY60-XL-N	CJT12	GYE60-XL-KRR-B	3,46	**60**	238	202	138
RCJTY65-214-XL[2)]	CJT13/14	GYE65-214-XL-KRR-B	5,95	**65**	258	216	160
RCJTY70-XL	CJT13/14	GYE70-XL-KRR-B	5,65	**70**	258	216	160
RCJTY75-XL	CJT15	GYE75-XL-KRR-B	5,53	**75**	258	216	160

1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

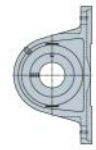
2) Alternative ball set 6214.



PCJTY..-XL(-N)



RCJTY..-XL(-N)

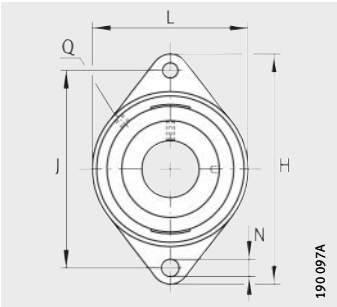




								End cap[1)]
A	A_1	A_2	N	B	U	V	Q	
25	9,5	17	11,5	22	33	57	M6	–
25	9,5	17	11,5	27,4	32,9	57	M6	–
25	9,5	17	11,5	22	33	57	M6	–
25	9,5	17	11,5	27,4	32,9	57	M6	–
25	9,5	17	11,5	27,4	32,9	57	M6	–
25	9,5	17	11,5	22	33	57	M6	–
25	9,5	17	11,5	27,4	32,9	57	M6	–
28	10	19	11,5	25	37	61	M6	KASK04
28	10	19	11,5	31	37,3	61	M6	KASK04
26,5	11	19	11,5	27	38,5	70	M6	KASK05
26,5	11	19	11,5	34,1	38,8	70	M6	KASK05
29	12	20	11,5	30	41	80	M6	KASK06
29	12	20	11,5	38,1	42,2	80	M6	KASK06
30,5	12,5	21	14	35	46,45	92	M6	KASK07
30,5	12,5	21	14	42,9	46,4	92	M6	KASK07
34,5	13	24	14	39,5	52,95	105	M6	KASK08
34,5	13	24	14	49,2	54,2	105	M6	KASK08
35	13	24	14	41,5	54,5	111	M6	–
35	13	24	14	49,2	54,2	111	M6	–
39	13	28	18	43	60	116	M6	KASK10
39	13	28	18	51,6	60,6	116	M6	KASK10
43,5	15	31	18	55,6	64,4	134	M6	–
46	16	34	18	47	68	138	M6	KASK12
46	16	34	18	65,1	73,7	138	M6	KASK12
57	18	38	21	74,6	82,4	160	M6	–
57	18	38	21	74,6	82,4	160	M6	–
57	18	38	21	77,8	82,5	160	M6	–

Two-bolt flanged housing units

Flake graphite cast iron housing
Oval, narrow version
Adapter sleeve

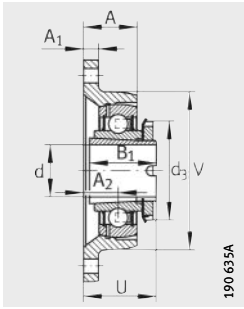


RCJTA..-XL-N

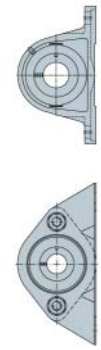
Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
RCJTA20-XL-N	CJT04	GSH20-XL-2RSR-B	0,52	**20**	112	90	61
RCJTA25-XL-N	CJT05	GSH25-XL-2RSR-B	0,54	**25**	124	99	70
RCJTA30-XL-N	CJT06	GSH30-XL-2RSR-B	0,77	**30**	142	116,5	80
RCJTA35-XL-N	CJT07	GSH35-XL-2RSR-B	1,06	**35**	155	130	92
RCJTA40-XL-N	CJT08	GSH40-XL-2RSR-B	1,46	**40**	172	143,5	105

1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.



RCJTA..-XL-N

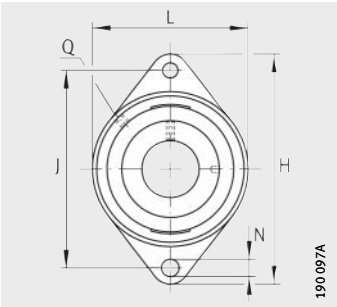


									End cap[1)]
A	A_1	A_2	N	B_1	U	V	Q	d_3 max.	
28	10	19	11,5	28	42,5	61	M6	32	KASK04
26,5	11	19	11,5	28	42,5	70	M6	38	KASK05
29	12	20	11,5	32	44	80	M6	45	KASK06
30,5	12,5	21	14	34	46	92	M6	52	KASK07
34,5	13	24	14	38	51	105	M6	58	KASK08

Two-bolt flanged housing units

Flake graphite cast iron housing
Oval, narrow version
With centring spigot

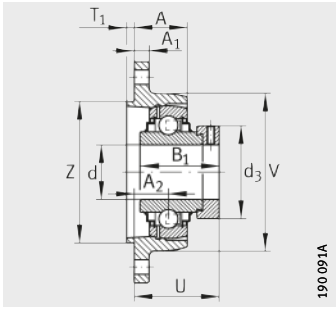
X-life



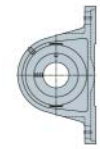
RCJTZ..-XL

Dimension table · Dimensions in mm

Designation			Mass	Dimensions				
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L	A
RCJTZ20-XL	CJTZ04	GE20-XL-KRR-B	0,61	**20**	112,5	90	60,5	31,7
RCJTZ25-XL	CJTZ05	GE25-XL-KRR-B	0,76	**25**	124	99	70	26,5
RCJTZ30-XL	CJTZ06	GE30-XL-KRR-B	0,98	**30**	142	116,5	83	26
RCJTZ35-XL	CJTZ07	GE35-XL-KRR-B	1,32	**35**	155	130	94	26,5
RCJTZ40-XL	CJTZ08	GE40-XL-KRR-B	1,72	**40**	172	143,5	105	30,5
RCJTZ45-XL	CJTZ09	GE45-XL-KRR-B	1,94	**45**	180	148,5	111	31
RCJTZ50-XL	CJTZ10	GE50-XL-KRR-B	2,32	**50**	190	157	116	35
RCJTZ60-XL	CJTZ12	GE60-XL-KRR-B	3,9	**60**	238	202	138	42



RCJTZ..-XL

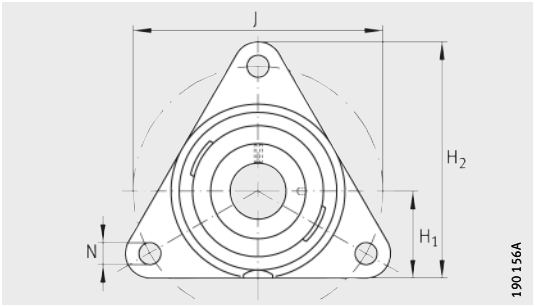




A_1	A_2	N	B_1	T_1	U	V	Z h8	Q	d_3 max.
11	19	11,5	43,7	3,5	45,6	60,5	55	M6	33
12	19	11,5	44,5	3,5	46	70	60	M6	37,5
12	17	11,5	48,5	3	47,2	83	80	M6	44
12,5	17	14	51,3	4	49,5	94	90	M6	55
13	20	14	56,5	4	55,1	105	100	M6	58
13	20	14	56,5	4	55,1	111	105	M6	63
13	24	14	62,8	4	62,2	116	105	M6	69
16	30	18	77,9	4	76,9	138	130	M6	84

Three-bolt flanged housing units

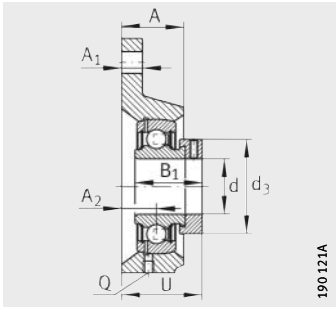
Flake graphite cast iron housing



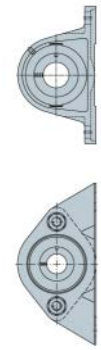
PCFTR..-XL

Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	J	A	A_1
PCFTR15-XL	CFTR03	GRAE15-XL-NPP-B	0,4	**15**	76,1	20	11
PCFTR17-XL	CFTR03	GRAE17-XL-NPP-B	0,4	**17**	76,1	20	11
PCFTR20-XL	CFTR04	GRAE20-XL-NPP-B	0,56	**20**	89,5	20	11
PCFTR25-XL	CFTR05	GRAE25-XL-NPP-B	0,71	**25**	96	22	12
PCFTR30-XL	CFTR06	GRAE30-XL-NPP-B	0,99	**30**	116	24	12
PCFTR35-XL	CFTR07	GRAE35-XL-NPP-B	1,39	**35**	129,7	27	14
PCFTR40-XL	CFTR08	GRAE40-XL-NPP-B	1,83	**40**	140	30	16
PCFTR45-XL	CFTR09	GRAE45-XL-NPP-B	2	**45**	160	33	16
PCFTR50-XL	CFTR10	GRAE50-XL-NPP-B	2,15	**50**	160	33	16



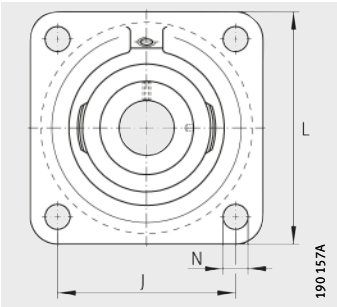
PCFTR..-XL



A_2	H_1	H_2	N	B_1	U	Q	d_3 max.
10	31	81	11,5	28,6	32,1	M6	28,4
10	31	81	11,5	28,6	32,1	M6	28,4
10,5	35	92	11,5	31	34	M6	33
12,5	36	97	11,5	31	36	M6	37,5
13,3	44	117	11,5	35,8	40	M6	44
15,6	48	128	14	39	45,1	M6	55
18,3	51	137	14	43,8	51	M6	58
19,2	55	150	14	43,8	51,9	M6	63
19,2	55	150	14	43,8	51,9	M6	69

Four-bolt flanged housing units

Flake graphite cast iron housing
Square version
Eccentric locking collar



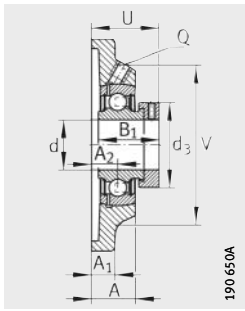
PCF..-XL, PCJ..-XL(-N),
RCJ..-XL(-N,-FA164),
TCJ..-XL-N, RCJO..-XL

Dimension table · Dimensions in mm

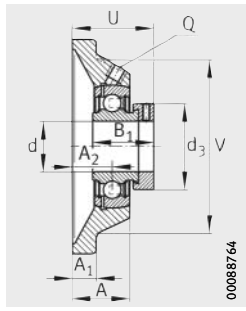
Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	J	L
PCJ12-XL	CJ03	GRAE12-XL-NPP-B	0,52	**12**	54	76
PCJ15-XL	CJ03	GRAE15-XL-NPP-B	0,52	**15**	54	76
PCJ17-XL	CJ03	GRAE17-XL-NPP-B	0,52	**17**	54	76
RCJ17-XL	CJ03	GE17-XL-KRR-B	0,56	**17**	54	76
PCF20-XL	CF04	GRAE20-XL-NPP-B	0,55	**20**	63,5	86
PCJ20-XL-N	CJ04	GRAE20-XL-NPP-B	0,6	**20**	63,5	86
RCJ20-XL-N	CJ04	GE20-XL-KRR-B	0,65	**20**	63,5	86
TCJ20-XL-N	CJ04	GE20-XL-KTT-B	0,65	**20**	63,5	86
PCF25-XL	CF05	GRAE25-XL-NPP-B	0,71	**25**	70	95
PCJ25-XL-N	CJ05	GRAE25-XL-NPP-B	0,76	**25**	70	95
RCJ25-XL-FA164[2]	CJ05	GE25-XL-KRR-B-FA164	0,82	**25**	70	95
RCJ25-XL-N	CJ05	GE25-XL-KRR-B	0,82	**25**	70	95
TCJ25-XL-N	CJ05	GE25-XL-KTT-B	0,81	**25**	70	95
PCF30-XL	CF06	GRAE30-XL-NPP-B	1,01	**30**	82,5	108
PCJ30-XL-N	CJ06	GRAE30-XL-NPP-B	1,11	**30**	82,5	108
RCJ30-XL-N	CJ06	GE30-XL-KRR-B	1,16	**30**	82,5	108
RCJO30-XL	CJO06	GNE30-XL-KRR-B	1,75	**30**	95	125
TCJ30-XL-N	CJ06	GE30-XL-KTT-B	1,17	**30**	82,5	108
PCF35-XL	CF07	GRAE35-XL-NPP-B	1,34	**35**	92	118
PCJ35-XL-N	CJ07	GRAE35-XL-NPP-B	1,47	**35**	92	118
RCJ35-XL-FA164[2]	CJ07	GE35-XL-KRR-B-FA164	1,57	**35**	92	118
RCJ35-XL-N	CJ07	GE35-XL-KRR-B	1,55	**35**	92	118
RCJO35-XL	CJO07	GNE35-XL-KRR-B	2,55	**35**	100	135
TCJ35-XL-N	CJ07	GE35-XL-KTT-B	1,53	**35**	92	118
PCF40-XL	CF08	GRAE40-XL-NPP-B	1,72	**40**	101,5	130
PCJ40-XL-N	CJ08	GRAE40-XL-NPP-B	1,89	**40**	101,5	130
RCJ40-XL-FA164[2]	CJ08	GE40-XL-KRR-B-FA164	2,02	**40**	101,5	130
RCJ40-XL-N	CJ08	GE40-XL-KRR-B	2,02	**40**	101,5	130
RCJO40-XL	CJO08	GNE40-XL-KRR-B	3,1	**40**	112	150
TCJ40-XL-N	CJ08	GE40-XL-KTT-B	2,02	**40**	101,5	130
PCF45-XL	CF09	GRAE45-XL-NPP-B	1,99	**45**	105	137
PCJ45-XL	CJ09	GRAE45-XL-NPP-B	2,22	**45**	105	137
RCJ45-XL	CJ09	GE45-XL-KRR-B	2,26	**45**	105	137
TCJ45-XL	CJ09	GE45-XL-KTT-B	2,37	**45**	105	137

[1] To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

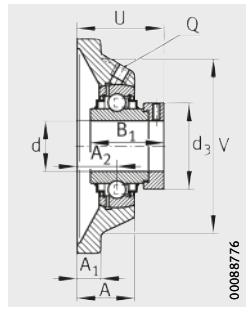
[2] With fitted lubrication nipple M6.



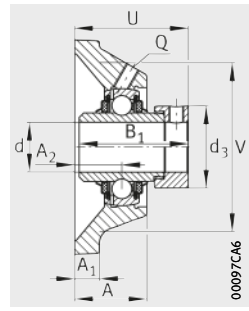
PCF..-XL



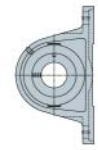
PCJ..-XL(-N)



RCJ..-XL(-N,-FA164), RCJO..-XL



TCJ..-XL-N

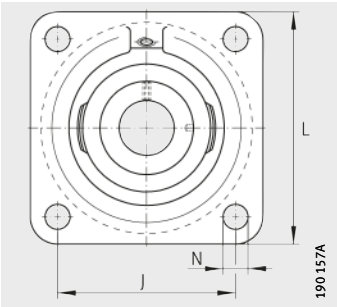




									End cap[1)]
A	A_1	A_2	N	B_1	U	V	Q	d_3 max.	
27	9,5	17	11,5	28,6	39,1	58	M6	28,4	–
27	9,5	17	11,5	28,6	39,1	58	M6	28,4	–
27	9,5	17	11,5	28,6	39,1	58	M6	28,4	–
27	9,5	17	11,5	37,4	40,4	58	M6	28,4	–
20	10	10,5	11,5	31	34	68	M6	33	–
29	10	19	11,5	31	42,5	68	M6	33	KASK04
29	10	19	11,5	43,7	45,6	68	M6	33	KASK04
29	10	19	11,5	43,7	45,6	68	M6	33	KASK04
22	11	12,5	11,5	31	36	74	M6	37,5	–
29	11	19	11,5	31	42,5	74	M6	37,5	KASK05
29	11	19	11,5	44,5	46	74	M6	37,5	–
29	11	19	11,5	44,5	46	74	M6	37,5	KASK05
29	11	19	11,5	44,5	46	74	M6	37,5	KASK05
22,3	12	13,3	11,5	35,8	40	85	M6	44	–
29	12	20	11,5	35,8	46,8	85	M6	44	KASK06
29	12	20	11,5	48,5	50,2	85	M6	44	KASK06
30,6	15	20,6	14,5	50,2	53,1	98	M6	51	–
29	12	20	11,5	48,5	50,2	85	M6	44	KASK06
25	12,5	15,5	14	39	45	100	M6	55	–
30,5	12,5	21	14	39	50,5	100	M6	55	KASK07
30,5	12,5	21	14	51,3	53,5	100	M6	55	–
30,5	12,5	21	14	51,3	53,5	100	M6	55	KASK07
31	16	20	19	51,6	53,4	104	M6	55	–
30,5	12,5	21	14	51,3	53,5	100	M6	55	KASK07
28,8	13	18,3	14	43,8	51	110	M6	58	–
34,5	13	24	14	43,8	56,8	110	M6	58	KASK08
34,5	13	24	14	56,5	59,1	110	M6	58	–
34,5	13	24	14	56,5	59,1	110	M6	58	KASK08
34,5	17	23	19	54,6	59,6	121	M6	63	–
34,5	13	24	14	56,5	59,1	110	M6	58	KASK08
30,2	13	19,2	14	43,8	51,9	116	M6	63	–
35	13	24	14	43,8	56,7	116	M6	63	–
35	13	24	14	56,5	59,1	116	M6	63	–
35	13	24	14	56,5	59,1	116	M6	63	–

Four-bolt flanged housing units

Flake graphite cast iron housing
Square version
Eccentric locking collar



PCF..-XL, PCJ..-XL(-N),
RCJ..-XL(-N,-FA164), TCJ..-XL-N,
RCJO..-XL

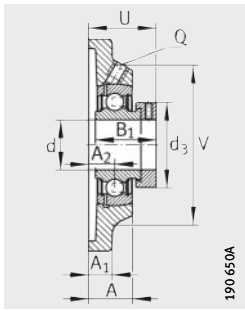
Dimension table (continued) · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	J	L
PCF50-XL	CF10	GRAE50-XL-NPP-B	2,2	**50**	111	143
PCJ50-XL-N	CJ10	GRAE50-XL-NPP-B	2,3	**50**	111	143
RCJ50-XL-FA164[2]	CJ10	GE50-XL-KRR-B-FA164	2,53	**50**	111	143
RCJ50-XL-N	CJ10	GE50-XL-KRR-B	2,53	**50**	111	143
RCJO50-XL	CJO10	GNE50-XL-KRR-B	4,9	**50**	132	175
TCJ50-XL-N	CJ10	GE50-XL-KTT-B	2,53	**50**	111	143
PCJ55-XL	CJ11	GRAE55-XL-NPP-B	2,91	**55**	130	162
RCJ55-XL	CJ11	GE55-XL-KRR-B	3,52	**55**	130	162
TCJ55-XL	CJ11	GE55-XL-KTT-B	3,57	**55**	130	162
PCJ60-XL-N	CJ12	GRAE60-XL-NPP-B	4,1	**60**	143	175
RCJ60-XL-FA164[2]	CJ12	GE60-XL-KRR-B-FA164	4,26	**60**	143	175
RCJ60-XL-N	CJ12	GE60-XL-KRR-B	4,21	**60**	143	175
RCJO60-XL	CJO12	GNE60-XL-KRR-B	6,8	**60**	150	195
TCJ60-XL-N	CJ12	GE60-XL-KTT-B	4,21	**60**	143	175
RCJ65-214-XL[3]	CJ14	GE65-214-XL-KRR-B	6,11	**65**	150	188
RCJ65-214-XL-FA164[2] [3]	CJ14	GE65-214-XL-KRR-B-FA164	6,11	**65**	150	188
TCJ65-214-XL[3]	CJ14	GE65-214-XL-KTT-B	6,11	**65**	150	188
RCJ70-XL	CJ14	GE70-XL-KRR-B	5,85	**70**	150	188
RCJO70-XL	CJO14	GNE70-XL-KRR-B	10	**70**	178	226
TCJ70-XL	CJ14	GE70-XL-KTT-B	5,85	**70**	150	188
RCJ75-XL	CJ15	GE75-XL-KRR-B	6,5	**75**	153	197
TCJ75-XL	CJ15	GE75-XL-KTT-B	6,5	**75**	153	197
RCJ80-XL	CJ16	GE80-XL-KRR-B	6,85	**80**	153	197
RCJO80-XL	CJO16	GNE80-XL-KRR-B	17,15	**80**	196	250
TCJ80-XL	CJ16	GE80-XL-KTT-B	6,85	**80**	153	197
RCJ90-XL	CJ18	GE90-XL-KRR-B	9	**90**	187	235
RCJO90-XL	CJO18	GNE90-XL-KRR-B	21,6	**90**	216	280
RCJ100-XL	CJ20	GE100-XL-KRR-B	12,25	**100**	210	265
RCJO100-XL	CJO20	GNE100-XL-KRR-B	33,6	**100**	242	310
RCJ120-XL	CJ24	GE120-XL-KRR-B	18	**120**	240	305

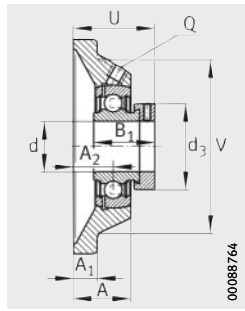
[1] To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

[2] With fitted lubrication nipple M6.

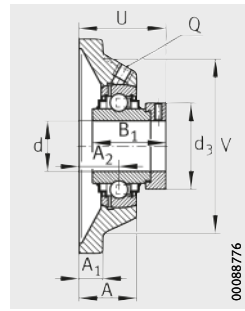
[3] Alternative ball set 6214.



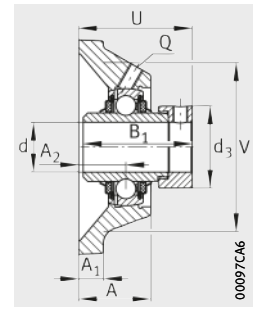
PCF..-XL



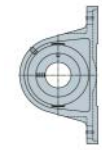
PCJ..-XL(-N)



RCJ..-XL(-N,-FA164),
RCJO..-XL



TCJ..-XL-N

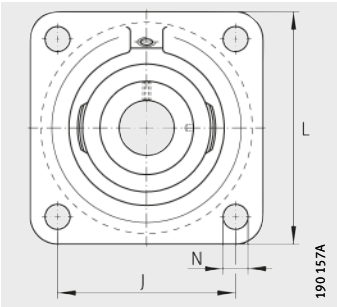




									End cap[1)]
A	A_1	A_2	N	B_1	U	V	Q	d_3 max.	
30,2	13	19,2	14	43,8	51,4	125	M6	69	–
41	13	28	18	43,8	60,8	119	M6	69	KASK10
41	13	28	18	62,8	66,2	119	M6	69	–
41	13	28	18	62,8	66,2	119	M6	69	KASK10
42,5	19	28	23	66,75	70,1	144	M6	75,8	–
41	13	28	18	62,8	66,2	119	M6	69	KASK10
43,5	15	31	18	48,4	67,4	140	M6	76	–
43,5	15	31	18	71,4	74,6	140	M6	76	–
43,5	15	31	18	71,4	74,6	140	M6	76	–
47,5	16	34	18	53,1	73,6	150	M6	84	KASK12
47,5	16	34	18	77,9	80,9	150	M6	84	–
47,5	16	34	18	77,9	80,9	150	M6	84	KASK12
49,5	22	33	23	68	78,4	170	M6	89	–
47,5	16	34	18	77,9	80,9	150	M6	84	KASK12
52	18	38	18	66	82,6	165	M6	96	–
52	18	38	18	66	82,6	165	M6	96	–
52	18	38	18	66	82,6	165	M6	96	–
52	18	38	18	66	82,5	165	M6	96	–
54,5	25	36	25	75,5	85,4	196	M6	102	–
52	18	38	18	66	82,6	165	M6	96	–
55,8	20	41,3	23	67	86,9	170	M6	100	–
55,8	20	41,3	23	67	86,9	170	M6	100	–
55,8	20	41,3	23	70,7	88,9	180	M6	108	–
80	25	50	28	93,6	109,7	210	M6	118	–
55,8	20	41,3	23	70,7	88,9	180	M6	108	–
39,8	22	23,8	23	69,5	70,3	200	M6	118	–
85	28,5	48,5	28	101	114	230	M6	132	–
46	25	28	27	75	77,5	230	M6	132	–
97	32	55	32	109,4	125	268	M6	145	–
51	28	31	30	81	83	270	M6	152	–

Four-bolt flanged housing units

Flake graphite cast iron housing
Square version
Grub screws in inner ring or drive slot



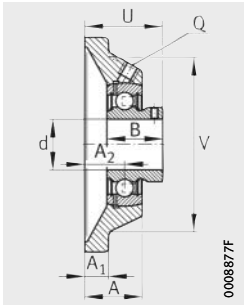
PCJY..-XL(-N), RCJY..-XL(-N),
RCJL..-XL-N

Dimension table · Dimensions in mm

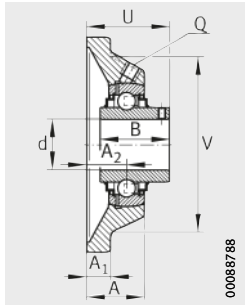
Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	J	L
PCJY12-XL	CJ03	GAY12-XL-NPP-B	0,5	**12**	54	76
RCJY12-XL	CJ03	GYE12-XL-KRR-B	0,51	**12**	54	76
PCJY15-XL	CJ03	GAY15-XL-NPP-B	0,49	**15**	54	76
RCJY15-XL	CJ03	GYE15-XL-KRR-B	0,51	**15**	54	76
RCJY16-XL	CJ03	GYE16-XL-KRR-B	0,51	**16**	54	76
PCJY17-XL	CJ03	GAY17-XL-NPP-B	0,48	**17**	54	76
RCJY17-XL	CJ03	GYE17-XL-KRR-B	0,51	**17**	54	76
PCJY20-XL-N	CJ04	GAY20-XL-NPP-B	0,56	**20**	63,5	86
RCJY20-XL-N	CJ04	GYE20-XL-KRR-B	0,62	**20**	63,5	86
PCJY25-XL-N	CJ05	GAY25-XL-NPP-B	0,72	**25**	70	95
RCJY25-XL-N	CJ05	GYE25-XL-KRR-B	0,77	**25**	70	95
PCJY30-XL-N	CJ06	GAY30-XL-NPP-B	1,03	**30**	82,5	108
RCJL30-XL-N[2]	CJ06	GLE30-XL-KRR-B	1,08	**30**	82,5	108
RCJY30-XL-N	CJ06	GYE30-XL-KRR-B	1,1	**30**	82,5	108
PCJY35-XL-N	CJ07	GAY35-XL-NPP-B	1,38	**35**	92	118
RCJL35-XL-N[2]	CJ07	GLE35-XL-KRR-B	1,4	**35**	92	118
RCJY35-XL-N	CJ07	GYE35-XL-KRR-B	1,44	**35**	92	118
PCJY40-XL-N	CJ08	GAY40-XL-NPP-B	1,81	**40**	101,5	130
RCJL40-XL-N[2]	CJ08	GLE40-XL-KRR-B	1,84	**40**	101,5	130
RCJY40-XL-N	CJ08	GYE40-XL-KRR-B	1,93	**40**	101,5	130
PCJY45-XL	CJ09	GAY45-XL-NPP-B	2	**45**	105	137
RCJY45-XL	CJ09	GYE45-XL-KRR-B	2,15	**45**	105	137

[1] To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

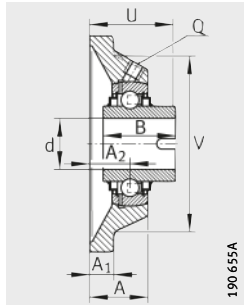
[2] With fitted lubrication nipple M6.



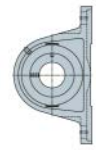
PCJY..-XL(-N)



RCJY..-XL(-N)



RCJL..-XL-N

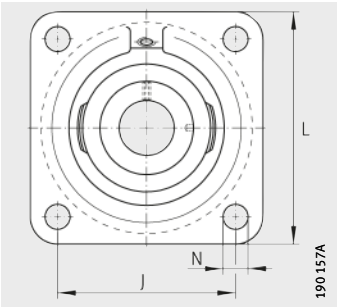




								End cap[1)]
A	A_1	A_2	N	B	U	V	Q	
27	9,5	17	11,5	33	22	58	M6	–
27	9,5	17	11,5	32,9	27,4	58	M6	–
27	9,5	17	11,5	33	22	58	M6	–
27	9,5	17	11,5	32,9	27,4	58	M6	–
27	9,5	17	11,5	32,9	27,4	58	M6	–
27	9,5	17	11,5	33	22	58	M6	–
27	9,5	17	11,5	32,9	27,4	58	M6	–
29	10	19	11,5	37	25	68	M6	KASK04
29	10	19	11,5	37,3	31	68	M6	KASK04
29	11	19	11,5	38,5	27	74	M6	KASK05
29	11	19	11,5	38,8	34,1	74	M6	KASK05
29	12	20	11,5	41	30	85	M6	KASK06
29	12	20	11,5	42	36,5	85	M6	KASK06
29	12	20	11,5	42,2	38,1	85	M6	KASK06
30,5	12,5	21	14	46,45	35	100	M6	KASK07
30,5	12,5	21	14	43	37,7	100	M6	KASK07
30,5	12,5	21	14	46,4	42,9	100	M6	KASK07
34,5	13	24	14	52,95	39,5	110	M6	KASK08
34,5	13	24	14	51	42,9	110	M6	KASK08
34,5	13	24	14	54,2	49,2	110	M6	KASK08
35	13	24	14	54,5	41,5	116	M6	–
35	13	24	14	54,2	49,2	116	M6	–

Four-bolt flanged housing units

Flake graphite cast iron housing
Square version
Grub screws in inner ring or drive slot



PCJY..-XL-N, RCJY..-XL(-N),
RCJL..-XL(-N)

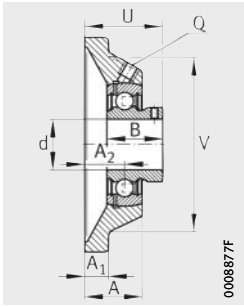
Dimension table (continued) · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	J	L
PCJY50-XL-N	CJ10	GAY50-XL-NPP-B	2,2	**50**	111	143
RCJL50-XL-N[2]	CJ10	GLE50-XL-KRR-B	2,29	**50**	111	143
RCJY50-XL-N	CJ10	GYE50-XL-KRR-B	2,33	**50**	111	143
RCJY55-XL	CJ11	GYE55-XL-KRR-B	3,41	**55**	130	162
PCJY60-XL-N	CJ12	GAY60-XL-NPP-B	3,59	**60**	143	175
RCJL60-XL-N[2]	CJ12	GLE60-XL-KRR-B	4,22	**60**	143	175
RCJY60-XL-N	CJ12	GYE60-XL-KRR-B	4,22	**60**	143	175
RCJY65-214-XL[3]	CJ14	GYE65-214-XL-KRR-B	5,65	**65**	150	188
RCJL70-XL[2]	CJ14	GLE70-XL-KRR-B	5,65	**70**	150	188
RCJY70-XL	CJ14	GYE70-XL-KRR-B	5,35	**70**	150	188
RCJY75-XL	CJ15	GYE75-XL-KRR-B	6,04	**75**	153	197
RCJY80-XL	CJ16	GYE80-XL-KRR-B	6,82	**80**	153	197
RCJY90-XL	CJ18	GYE90-XL-KRR-B	9,48	**90**	187	235

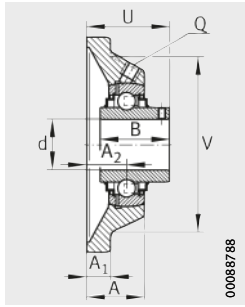
1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

2) With fitted lubrication nipple M6.

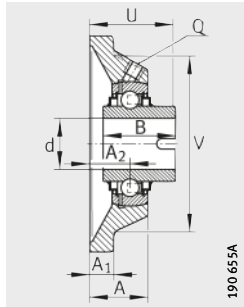
3) Alternative ball set 6214.



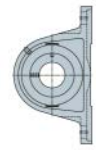
PCJY..-XL-N



RCJY..-XL(-N)



RCJL..-XL(-N)



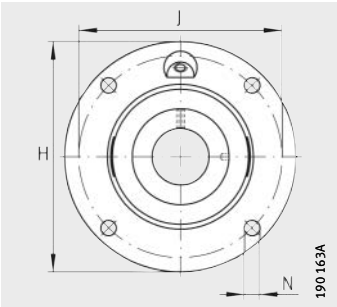


								End cap[1)]
A	A_1	A_2	N	B	U	V	Q	
41	13	28	18	43	60	119	M6	KASK10
41	13	28	18	49,2	58,2	119	M6	KASK10
41	13	28	18	51,6	60,6	119	M6	KASK10
43,5	15	31	18	55,6	64,4	140	M6	–
47,5	16	34	18	47	68	150	M6	KASK12
47,5	16	34	18	61,9	71,3	150	M6	KASK12
47,5	16	34	18	65,1	73,7	150	M6	KASK12
52	18	38	18	74,6	82,4	165	M6	–
52	18	38	18	68,2	79,2	165	M6	–
52	18	38	18	74,6	82,4	165	M6	–
55,8	20	41,3	23	77,8	85,8	170	M6	–
55,8	20	41,3	23	82,6	90,6	180	M6	–
39,8	22	23,8	23	96	80,1	200	M6	–

Four-bolt flanged housing units

Flake graphite cast iron housing
Round version
With wide centring spigot
Eccentric locking collar

X-life

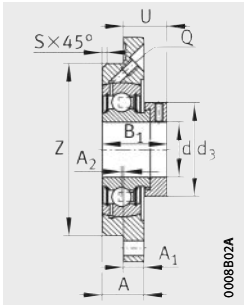


PME..-XL, RME..-XL, RMEO..-XL, TME..-XL

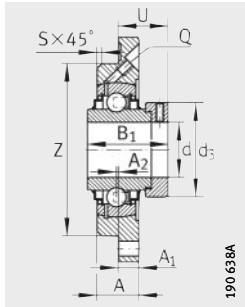
Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	A
PME20-XL-N	ME04	GRAE20-XL-NPP-B	0,53	**20**	100	78	17
RME20-XL-N	ME04	GE20-XL-KRR-B	0,57	**20**	100	78	17
TME20-XL-N	ME04	GE20-XL-KTT-B	0,56	**20**	100	78	17
PME25-XL-N	ME05	GRAE25-XL-NPP-B	0,73	**25**	115	90	19
RME25-XL-N	ME05	GE25-XL-KRR-B	0,8	**25**	115	90	19
TME25-XL-N	ME05	GE25-XL-KTT-B	0,8	**25**	115	90	19
PME30-XL-N	ME06	GRAE30-XL-NPP-B	0,97	**30**	125	100	20,5
RME30-XL-N	ME06	GE30-XL-KRR-B	1,04	**30**	125	100	20,5
TME30-XL-N	ME06	GE30-XL-KTT-B	1,05	**30**	125	100	20,5
PME35-XL-N	ME07	GRAE35-XL-NPP-B	1,26	**35**	135	110	20,5
RME35-XL-N	ME07	GE35-XL-KRR-B	1,34	**35**	135	110	20,5
RMEO35-XL	MEO07	GNE35-XL-KRR-B	2,4	**35**	174	141	25
TME35-XL-N	ME07	GE35-XL-KTT-B	1,34	**35**	135	110	20,5
PME40-XL-N	ME08	GRAE40-XL-NPP-B	1,62	**40**	145	120	23
RME40-XL-N	ME08	GE40-XL-KRR-B	1,74	**40**	145	120	23
RMEO40-XL	MEO08	GNE40-XL-KRR-B	3,4	**40**	194	158	27
TME40-XL-N	ME08	GE40-XL-KTT-B	1,77	**40**	145	120	23
PME45-XL	ME09	GRAE45-XL-NPP-B	1,93	**45**	155	130	25
RME45-XL	ME09	GE45-XL-KRR-B	2,05	**45**	155	130	25
TME45-XL	ME09	GE45-XL-KTT-B	2,1	**45**	155	130	25
PME50-XL-N	ME10	GRAE50-XL-NPP-B	2,13	**50**	165	135	25
RME50-XL-N	ME10	GE50-XL-KRR-B	2,53	**50**	165	135	25
RMEO50-XL	MEO10	GNE50-XL-KRR-B	4,6	**50**	230	187	31
TME50-XL-N	ME10	GE50-XL-KTT-B	2,59	**50**	165	135	25
PME55-XL	ME11	GRAE55-XL-NPP-B	2,76	**55**	185	150	27,5
RME55-XL	ME11	GE55-XL-KRR-B	3,37	**55**	185	150	27,5
TME55-XL	ME11	GE55-XL-KTT-B	3,38	**55**	185	150	27,5

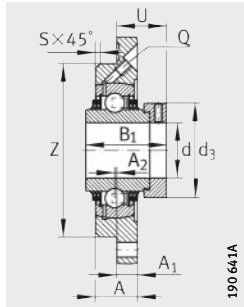
1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.



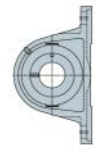
PME..-XL



RME..-XL, RMEO..-XL



TME..-XL



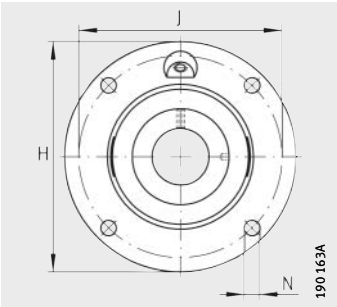


									End cap[1)]
A_1	A_2	N	B_1	S	U	Z h8	Q	d_3 max.	
8	2	9	31	2	21,5	62	M6	33	KASK04
8	2	9	43,7	2	24,6	62	M6	33	KASK04
8	2	9	43,7	2	24,6	62	M6	33	KASK04
9	2,5	9	31	2	21	70	M6	37,5	KASK05
9	2,5	9	44,5	2	24,4	70	M6	37,5	KASK05
9	2,5	9	44,5	2	24,4	70	M6	37,5	KASK05
9,5	2	11,5	35,8	2	24,7	80	M6	44	KASK06
9,5	2	11,5	48,5	2	28,1	80	M6	44	KASK06
9,5	2	11,5	48,5	2	28,1	80	M6	44	KASK06
10	1	11,5	39	2	28,5	90	M6	55	KASK07
10	1	11,5	51,3	2	31,3	90	M6	55	KASK07
16	–2	19	51,6	2	35,35	100	M6	55	–
10	1	11,5	51,3	2	31,3	90	M6	55	KASK07
11,5	1	11,5	43,8	2	31,7	100	M6	58	KASK08
11,5	1	11,5	56,5	2	33,9	100	M6	58	KASK08
17	–2,5	19	54,6	2	39,1	115	M6	63	–
11,5	1	11,5	56,5	2	33,9	100	M6	58	KASK08
12	2	14	43,8	2	30,7	105	M6	63	–
12	2	14	56,5	2	32,9	105	M6	63	–
12	2	14	56,5	2	32,9	105	M6	63	–
13	1	14	43,8	3	31,8	110	M6	69	KASK10
13	1	14	62,8	3	37,1	110	M6	69	KASK10
19	–2,5	23	66,75	2	44,6	140	M6	75,8	–
13	1	14	62,8	3	37,1	110	M6	69	KASK10
15	–	18	48,4	3	36,4	125	M6	76	–
15	–	18	71,4	3	43,6	125	M6	76	–
15	–	18	71,4	3	43,6	125	M6	76	–

Four-bolt flanged housing units

Flake graphite cast iron housing
Round version
With wide centring spigot
Eccentric locking collar

X-life



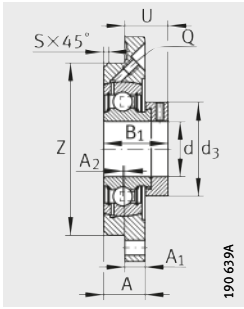
PME..-XL, RME..-XL, RMEO..-XL, TME..-XL

Dimension table (continued) · Dimensions in mm

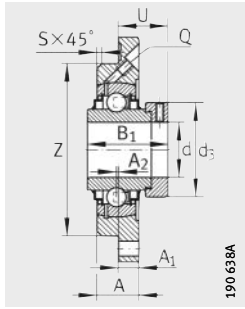
Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	A
PME60-XL-N	ME12	GRAE60-XL-NPP-B	3,65	**60**	195	160	29
RME60-XL-N	ME12	GE60-XL-KRR-B	4,04	**60**	195	160	29
RMEO60-XL	MEO12	GNE60-XL-KRR-B	6	**60**	256	212	36
TME60-XL-N	ME12	GE60-XL-KTT-B	4,04	**60**	195	160	29
RME65-214-XL[2]	ME14	GE65-214-XL-KRR-B	5,81	**65**	215	177	32
TME65-214-XL[2]	ME14	GE65-214-XL-KTT-B	5,81	**65**	215	177	32
RME70-XL	ME14	GE70-XL-KRR-B	5,55	**70**	215	177	32
RMEO70-XL	MEO14	GNE70-XL-KRR-B	9	**70**	300	252	43
TME70-XL	ME14	GE70-XL-KTT-B	5,03	**70**	215	177	32
RME75-XL	ME15	GE75-XL-KRR-B	5,65	**75**	220	184	32
TME75-XL	ME15	GE75-XL-KTT-B	5,76	**75**	220	184	32
RME80-XL	ME16	GE80-XL-KRR-B	5,75	**80**	220	184	31
RMEO80-XL	MEO16	GNE80-XL-KRR-B-FA107	12,7	**80**	275	235	51
TME80-XL	ME16	GE80-XL-KTT-B	5,51	**80**	220	184	31
RME90-XL	ME18	GE90-XL-KRR-B	8,5	**90**	265	220	32
RMEO90-XL	MEO18	GNE90-XL-KRR-B-FA107	12,7	**90**	300	260	50
RME100-XL	ME20	GE100-XL-KRR-B	11,45	**100**	295	245	36
RMEO100-XL	MEO20	GNE100-XL-KRR-B-FA107	22,3	**100**	340	295	57
RME120-XL	ME24	GE120-XL-KRR-B	17,43	**120**	350	295	40

1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

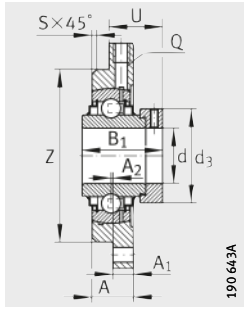
2) Alternative ball set 6214.



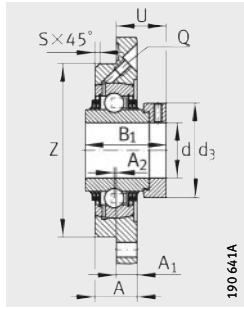
PME..-XL



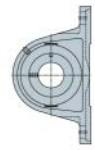
RME..-XL, RMEO..-XL
(up to d = 70 mm)



RMEO..-XL
(from d = 80 mm)



TME..-XL



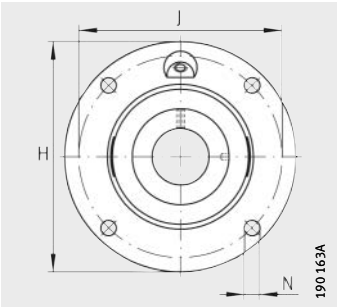


									End cap[1)]
A_1	A_2	N	B_1	S	U	Z h8	Q	d_3 max.	
16	1	18	53,1	3	38,6	135	M6	84	KASK12
16	1	18	77,9	3	45,9	135	M6	84	KASK12
22	–2,5	23	68	3	47,5	160	M6	89	–
16	1	18	77,9	3	45,9	135	M6	84	KASK12
18	–	18	66	6	44,5	150	M6	96	–
18	–	18	66	6	44,5	150	M6	96	–
18	–	18	66	6	44,5	150	M6	96	–
25	–0,5	25	75,5	4	49,9	185	M6	102	–
18	–	18	66	6	44,5	150	M6	96	–
18	–	18	67	6	45,6	160	M6	100	–
18	–	18	67	6	45,6	160	M6	100	–
18	–2	18	70,7	6	49,3	160	M6	108	–
12	3	22	93,6	6	56,6	200	M6	118	–
18	–2	18	70,7	6	49,3	160	M6	108	–
20	–4	23	69,5	3	50,5	190	M6	118	–
22	3	22	101	6	62,5	220	M6	132	–
22	–4	23	75	3	53,4	210	M6	132	–
27	1,5	26	109,4	8	68,5	250	M6	145	–
24	–4	27	81	3	56,5	250	M6	152	–

Four-bolt flanged housing units

Flake graphite cast iron housing
Round version
With wide centring spigot
Grub screws in inner ring

X-life



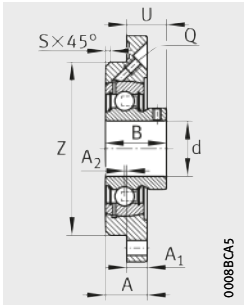
PMEY..-XL, RMEY..-XL

Dimension table · Dimensions in mm

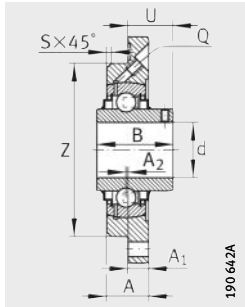
Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J
PMEY20-XL-N	ME04	GAY20-XL-NPP-B	0,5	**20**	100	78
RMEY20-XL-N	ME04	GYE20-XL-KRR-B	0,54	**20**	100	78
PMEY25-XL-N	ME05	GAY25-XL-NPP-B	0,7	**25**	115	90
RMEY25-XL-N	ME05	GYE25-XL-KRR-B	0,75	**25**	115	90
PMEY30-XL-N	ME06	GAY30-XL-NPP-B	0,9	**30**	125	100
RMEY30-XL-N	ME06	GYE30-XL-KRR-B	0,99	**30**	125	100
PMEY35-XL-N	ME07	GAY35-XL-NPP-B	1,15	**35**	135	110
RMEY35-XL-N	ME07	GYE35-XL-KRR-B	1,28	**35**	135	110
PMEY40-XL-N	ME08	GAY40-XL-NPP-B	1,51	**40**	145	120
RMEY40-XL-N	ME08	GYE40-XL-KRR-B	1,65	**40**	145	120
PMEY45-XL	ME09	GAY45-XL-NPP-B	1,77	**45**	155	130
RMEY45-XL	ME09	GYE45-XL-KRR-B	1,94	**45**	155	130
PMEY50-XL-N	ME10	GAY50-XL-NPP-B	2,03	**50**	165	135
RMEY50-XL-N	ME10	GYE50-XL-KRR-B	2,16	**50**	165	135
RMEY55-XL	ME11	GYE55-XL-KRR-B	3,05	**55**	185	150
PMEY60-XL-N	ME12	GAY60-XL-NPP-B	3,41	**60**	195	160
RMEY60-XL-N	ME12	GYE60-XL-KRR-B	3,71	**60**	195	160
RMEY65-214-XL[2)]	ME14	GYE65-214-XL-KRR-B	5,35	**65**	215	177
RMEY70-XL	ME14	GYE70-XL-KRR-B	5,29	**70**	215	177
RMEY75-XL	ME15	GYE75-XL-KRR-B	5,19	**75**	220	184
RMEY80-XL	ME16	GYE80-XL-KRR-B	5,43	**80**	220	184
RMEY90-XL	ME18	GYE90-XL-KRR-B	8,86	**90**	265	220

1) To be ordered separately.
The caps are suitable for temperatures from –20 °C to +80 °C.

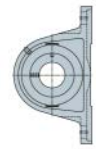
2) Alternative ball set 6214.



PMEY..-XL



RMEY..-XL



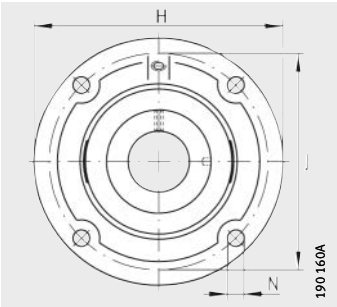


									End cap[1)]
A	A_1	A_2	N	B	S	U	Z h8	Q	
17	8	2	9	25	2	16	62	M6	KASK04
17	8	2	9	31	2	16,3	62	M6	KASK04
19	9	2,5	9	27	2	17	70	M6	KASK05
19	9	2,5	9	34,1	2	17,3	70	M6	KASK05
20,5	9,5	2	11,5	30	2	19	80	M6	KASK06
20,5	9,5	2	11,5	38,1	2	20,2	80	M6	KASK06
20,5	10	1	11,5	35	2	24,45	90	M6	KASK07
20,5	10	1	11,5	42,9	2	24,4	90	M6	KASK07
23	11,5	1	11,5	39,5	2	28	100	M6	KASK08
23	11,5	1	11,5	49,2	2	29,2	100	M6	KASK08
25	12	2	14	41,5	2	28,5	105	M6	–
25	12	2	14	49,2	2	28,2	105	M6	–
25	13	1	14	43	3	31	110	M6	KASK10
25	13	1	14	51,6	3	31,6	110	M6	KASK10
27,5	15	–	18	55,6	3	33,4	125	M6	–
29	16	1	18	47	3	33	135	M6	KASK12
29	16	1	18	65,1	3	38,7	135	M6	KASK12
32	18	–	18	74,6	6	44,4	150	M6	–
32	18	–	18	74,6	6	44,4	150	M6	–
32	18	–	18	77,8	6	44,5	160	M6	–
31	18	–2	18	82,6	6	51,3	160	M6	–
32	20	–4	23	96	3	60,3	190	M6	–

Four-bolt flanged housing units

Flake graphite cast iron housing
Round version
With narrow centring spigot

X-life

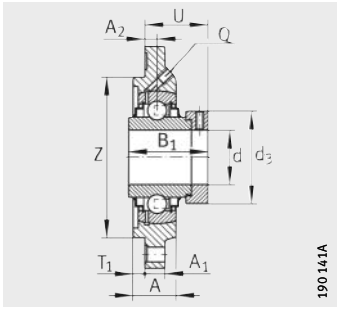


RFE..-XL, TFE..-XL

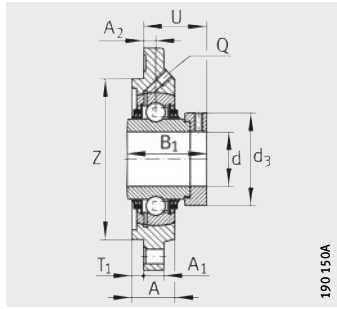
Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	A
RFE25-XL	FE05	GE25-XL-KRR-B	0,8	**25**	115	92	22
TFE25-XL	FE05	GE25-XL-KTT-B	0,8	**25**	115	92	22
RFE30-XL	FE06	GE30-XL-KRR-B	1,08	**30**	127	105	22,5
TFE30-XL	FE06	GE30-XL-KTT-B	1,08	**30**	127	105	22,5
RFE35-XL	FE07	GE35-XL-KRR-B	1,33	**35**	135	110	22,5
TFE35-XL	FE07	GE35-XL-KTT-B	1,31	**35**	135	110	22,5
RFE40-XL	FE08	GE40-XL-KRR-B	1,72	**40**	145	120	26
TFE40-XL	FE08	GE40-XL-KTT-B	1,72	**40**	145	120	26
RFE45-XL	FE09	GE45-XL-KRR-B	2,06	**45**	155	130	26,5
RFE50-XL-N[1)]	FE10	GE50-XL-KRR-B	2,48	**50**	165	136	27,5
TFE50-XL-N[1)]	FE10	GE50-XL-KTT-B	2,48	**50**	165	136	27,5
RFE60-XL	FE12	GE60-XL-KRR-B	3,99	**60**	195	165	33
TFE60-XL	FE12	GE60-XL-KTT-B	3,99	**60**	195	165	33

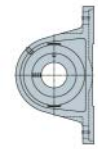
1) End cap KASK10 must be ordered separately.
The cap is suitable for temperatures from –20 °C to +80 °C.



RFE..-XL



TFE..-XL

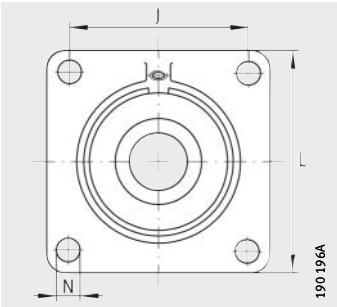




									End cap[1)]
A_1	A_2	N	B_1	T_1	U	Z h8	Q	d_3 max.	
9	9,5	9	44,5	3	36,4	75	M6	37,5	–
9	9,5	9	44,5	3	36,4	75	M6	37,5	–
9,5	10,5	9	48,5	3	40,6	85	M6	44	–
9,5	10,5	9	48,5	3	40,6	85	M6	44	–
10	9	11,5	51,3	4	41,3	90	M6	55	–
10	9	11,5	51,3	4	41,3	90	M6	55	–
11,5	11,5	11,5	56,5	4	46,4	100	M6	58	–
11,5	11,5	11,5	56,5	4	46,4	100	M6	58	–
12	11,5	14	56,5	4	46,4	105	M6	63	–
13	12,5	14	62,8	4	50,6	115	M6	69	KASK10
13	12,5	14	62,8	4	50,6	115	M6	69	KASK10
16	17	14	77,9	4	63,8	140	M6	84	–
16	17	14	77,9	4	63,8	140	M6	84	–

Four-bolt flanged housing units

Flake graphite cast iron housing
With double row angular contact ball bearing



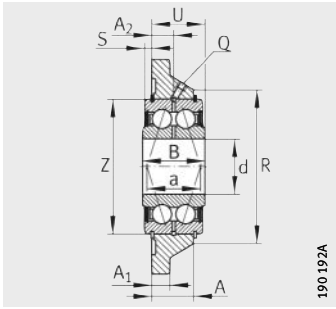
PCCJ

Dimension table · Dimensions in mm

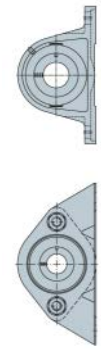
Designation			Mass	Dimensions					
Unit	Housing	Bearing[1)]	m ≈ kg	d	J	L	A	A_1	A_2
PCCJ25	CCJ05	G5205-2RS-N	0,79	**25**	70	95	22,1	12	11,7
PCCJ30	CCJ06	G5206-2RS-N	1,12	**30**	82,5	108	24	12	13
PCCJ35	CCJ07	G5207-2RS-N	1,48	**35**	92	118	26	14	14
PCCJ40	CCJ08	G5208-2RS-N	1,8	**40**	101,5	130	28	14	15

1) For general guidelines on double row angular contact ball bearings, see Catalogue HR 1, Rolling Bearings.

2) Tolerance class Normal of bearing outside diameter to ISO 492.



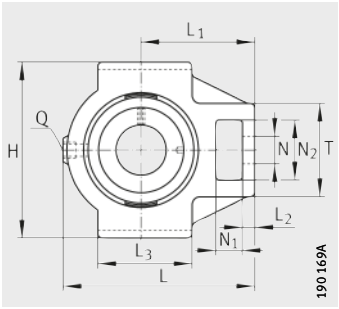
PCCJ



								Basic load ratings		Fatigue limit load
a	N	B	R max.	S	U	Z[2)] h5	Q	dyn. C_r N	stat. C_{0r} N	C_{ur} N
24	11,5	30	64	2,4	26,7	52	M6	21 600	14 900	750
28,9	11,5	34	76	3,2	29,7	62	M6	30 000	21 400	1 080
33,8	14	36	88	3	31,7	72	M6	39 500	29 000	1 470
38,8	14	38	98	3,2	33,7	80	M6	50 000	38 000	1 910

Take-up housing units

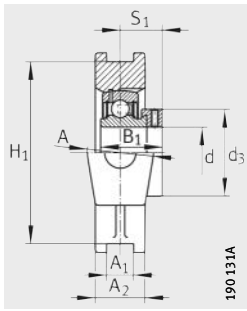
Flake graphite cast iron housing
Guide slots on both sides
Hole for threaded rod
Eccentric locking collar



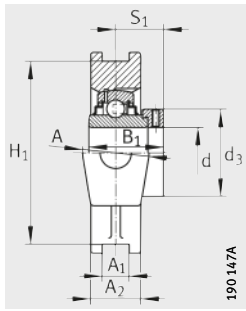
PTUE..-XL, RTUE..-XL, TTUE..-XL

Dimension table · Dimensions in mm

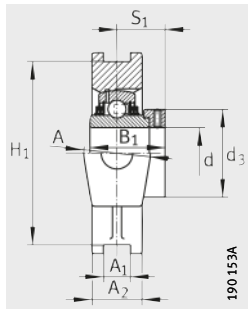
Designation			Mass	Dimensions					
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	L	L_1	L_2	L_3
PTUE20-XL	TUE04	GRAE20-XL-NPP-B	0,83	**20**	90	94,5	60	9	50
RTUE20-XL	TUE04	GE20-XL-KRR-B	0,9	**20**	90	94,5	60	9	50
PTUE25-XL	TUE05	GRAE25-XL-NPP-B	0,85	**25**	90	98,5	62	10	50
RTUE25-XL	TUE05	GE25-XL-KRR-B	0,91	**25**	90	98,5	62	10	50
TTUE25-XL	TUE05	GE25-XL-KTT-B	0,91	**25**	90	98,5	62	10	50
PTUE30-XL	TUE06	GRAE30-XL-NPP-B	1,19	**30**	102	114,5	70	10	57
RTUE30-XL	TUE06	GE30-XL-KRR-B	1,24	**30**	102	114,5	70	10	57
TTUE30-XL	TUE06	GE30-XL-KTT-B	1,25	**30**	102	114,5	70	10	57
PTUE35-XL	TUE07	GRAE35-XL-NPP-B	1,69	**35**	102	131,5	80	13	63
RTUE35-XL	TUE07	GE35-XL-KRR-B	1,77	**35**	102	131,5	80	13	63
TTUE35-XL	TUE07	GE35-XL-KTT-B	1,75	**35**	102	131,5	80	13	63
PTUE40-XL	TUE08	GRAE40-XL-NPP-B	2,43	**40**	115	141	88	16	82
RTUE40-XL	TUE08	GE40-XL-KRR-B	2,52	**40**	115	141	88	16	82
TTUE40-XL	TUE08	GE40-XL-KTT-B	2,55	**40**	115	141	88	16	82
PTUE45-XL	TUE09	GRAE45-XL-NPP-B	2,32	**45**	115	141	88	16	82
RTUE45-XL	TUE09	GE45-XL-KRR-B	2,61	**45**	115	141	88	16	82
TTUE45-XL	TUE09	GE45-XL-KTT-B	2,45	**45**	115	141	88	16	82
PTUE50-XL	TUE10	GRAE50-XL-NPP-B	2,42	**50**	115	148	90	16	85
RTUE50-XL	TUE10	GE50-XL-KRR-B	2,57	**50**	115	148	90	16	85
TTUE50-XL	TUE10	GE50-XL-KTT-B	2,56	**50**	115	148	90	16	85
PTUE55-XL	TUE11	GRAE55-XL-NPP-B	3,99	**55**	145	169	104	17	95
RTUE55-XL	TUE11	GE55-XL-KRR-B	4,6	**55**	145	169	104	17	95
TTUE55-XL	TUE11	GE55-XL-KTT-B	4,72	**55**	145	169	104	17	95



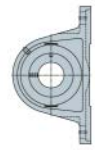
PTUE..-XL



RTUE..-XL



TTUE..-XL

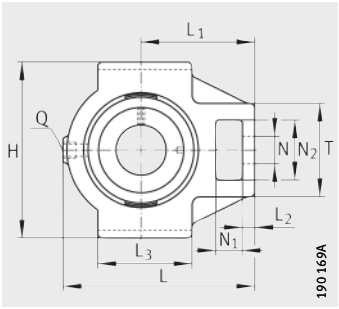




A	A_1 H13	A_2	H_1 ±0,15	N	N_1	N_2	B_1	S_1	T	Q	d_3 max.
37	12	25	76	19	18	32	31	23,5	51	M6	33
37	12	25	76	19	18	32	43,7	26,6	51	M6	33
37	12	25	76	19	18	32	31	23,5	51	M6	37,5
37	12	25	76	19	18	32	44,5	27	51	M6	37,5
37	12	25	76	19	18	32	44,5	27	51	M6	37,5
37	12	25	89	22	18	36,5	35,8	26,8	56	M6	44
37	12	25	89	22	18	36,5	48,5	30,2	56	M6	44
37	12	25	89	22	18	36,5	48,5	30,2	56	M6	44
40	12	30	89	22	18	36,5	39	29,5	64	M6	55
40	12	30	89	22	18	36,5	51,3	32,5	64	M6	55
40	12	30	89	22	18	36,5	51,3	32,5	64	M6	55
50	16	35	102	29	20	49	43,8	32,8	82	M6	58
50	16	35	102	29	20	49	56,5	35,1	82	M6	58
50	16	35	102	29	20	49	56,5	35,1	82	M6	58
50	16	35	102	29	20	49	43,8	32,8	82	M6	63
50	16	35	102	29	20	49	56,5	35,1	82	M6	63
50	16	35	102	29	20	49	56,5	35,1	82	M6	63
50	16	35	102	29	20	49	43,8	32,8	83	M6	69
50	16	35	102	29	20	49	62,8	38,2	83	M6	69
50	16	35	102	29	20	49	62,8	38,2	83	M6	69
60	22	42	130	35	26	63,5	48,4	36,4	102	M6	76
60	22	42	130	35	26	63,5	71,4	43,6	102	M6	76
60	22	42	130	35	26	63,5	71,4	43,6	102	M6	76

Take-up housing units

Flake graphite cast iron housing
Guide slots on both sides
Hole for threaded rod
Eccentric locking collar

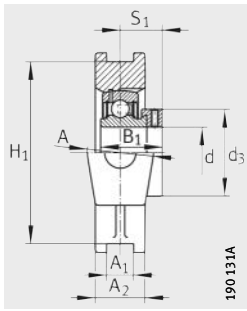


PTUE..-XL, RTUE..-XL, TTUE..-XL, RTUEO..-XL

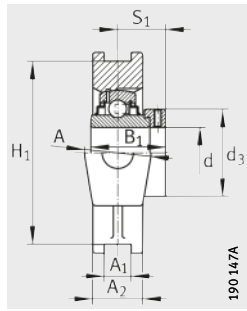
Dimension table (continued) · Dimensions in mm

Designation			Mass	Dimensions					
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	L	L_1	L_2	L_3
PTUE60-XL	TUE12	GRAE60-XL-NPP-B	4,21	**60**	146	186	118	19	100
RTUE60-XL	TUE12	GE60-XL-KRR-B	4,77	**60**	146	186	118	19	100
TTUE60-XL	TUE12	GE60-XL-KTT-B	4,76	**60**	146	186	118	19	100
RTUE65-214-XL[1)]	TUE13/14	GE65-214-XL-KRR-B	7,46	**65**	166	214	135	20	120
RTUE70-XL	TUE13/14	GE70-XL-KRR-B	6,82	**70**	166	214	135	20	120
TTUE70-XL	TUE13/14	GE70-XL-KTT-B	6,85	**70**	166	214	135	20	120
RTUE75-XL	TUE15	GE75-XL-KRR-B	6,44	**75**	166	214	135	20	120
TTUE75-XL	TUE15	GE75-XL-KTT-B	7,13	**75**	166	214	135	20	120
RTUE80-XL	TUE16	GE80-XL-KRR-B	8,4	**80**	184	230	140	20	120
RTUEO80-XL	TUEO16	GNE80-XL-KRR-B	17,25	**80**	230	282	174	28	150
TTUE80-XL	TUE16	GE80-XL-KTT-B	7,7	**80**	184	230	140	20	120
RTUE90-XL	TUE18	GE90-XL-KRR-B	11,87	**90**	215	275	170	30	140
RTUEO90-XL	TUEO18	GNE90-XL-KRR-B	22,9	**90**	255	312	192	30	165
RTUE100-XL	TUE20	GE100-XL-KRR-B	14,55	**100**	240	295	180	30	160
RTUE120-XL	TUE24	GE120-XL-KRR-B	23,89	**120**	285	345	210	35	190

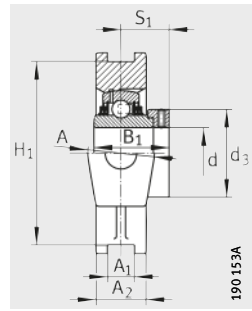
1) Alternative ball set 6214.



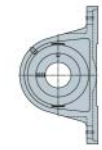
PTUE..-XL



RTUE..-XL, RTUEO..-XL



TTUE..-XL



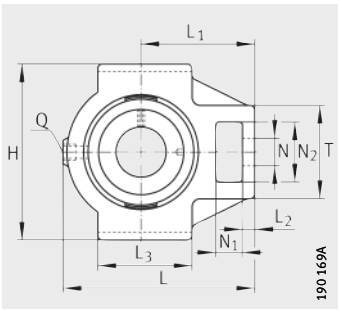


A	A_1 H13	A_2	H_1	N	N_1	N_2	B_1	S_1	T	Q	d_3 max.
60	22	44	$130^{+0,15}_{-0,15}$	35	32	63,5	53,1	39,6	102	M6	84
60	22	44	$130^{+0,15}_{-0,15}$	35	32	63,5	77,9	46,9	102	M6	84
60	22	44	$130^{+0,15}_{-0,15}$	35	32	63,5	77,9	46,9	102	M6	84
70	25	50	$151^{+0,25}_{-0,25}$	41	35	70	66	44,5	110	M6	96
70	25	50	$151^{+0,25}_{-0,25}$	41	35	70	66	44,5	110	M6	96
70	25	50	$151^{+0,25}_{-0,25}$	41	35	70	66	44,5	110	M6	96
70	25	50	$151^{+0,25}_{-0,25}$	41	35	70	67	45,5	110	M6	100
70	25	50	$151^{+0,25}_{-0,25}$	41	35	70	67	45,5	110	M6	100
70	28	50	$165^{+0,25}_{-0,25}$	41	35	70	70,7	47,3	110	M6	108
102	30	60	$204^{0}_{-0,6}$	53	42	98	93,6	59,6	150	M6	118
70	28	50	$165^{+0,25}_{-0,25}$	41	35	70	70,7	47,3	110	M6	108
80	28	55	$190^{+0,25}_{-0,25}$	47	40	80	69,5	46,5	130	M6	118
110	32	66	$228^{0}_{-0,6}$	57	46	106	101	65,5	160	M6	132
90	28	60	$215^{+0,25}_{-0,25}$	47	40	80	75	49,5	130	M6	132
100	32	70	$255^{+0,25}_{-0,25}$	55	45	95	81	52,5	150	M6	152

Take-up housing units

Flake graphite cast iron housing
Guide slots on both sides
Hole for threaded rod
Grub screws in inner ring

X-life

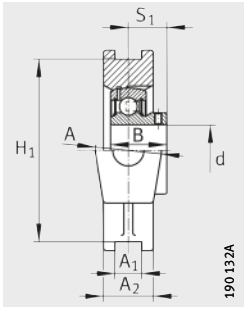


PTUEY..-XL, RTUEY..-XL

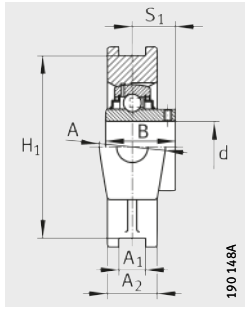
Dimension table · Dimensions in mm

Designation			Mass	Dimensions					
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	L	L_1	L_2	L_3
PTUEY20-XL	TUE04	GAY20-XL-NPP-B	0,8	**20**	90	94,5	60	9	50
RTUEY20-XL	TUE04	GYE20-XL-KRR-B	0,84	**20**	90	94,5	60	9	50
PTUEY25-XL	TUE05	GAY25-XL-NPP-B	0,82	**25**	90	98,5	62	10	50
RTUEY25-XL	TUE05	GYE25-XL-KRR-B	0,86	**25**	90	98,5	62	10	50
PTUEY30-XL	TUE06	GAY30-XL-NPP-B	1,11	**30**	102	114,5	70	10	57
RTUEY30-XL	TUE06	GYE30-XL-KRR-B	1,19	**30**	102	114,5	70	10	57
PTUEY35-XL	TUE07	GAY35-XL-NPP-B	1,64	**35**	102	131,5	80	13	63
RTUEY35-XL	TUE07	GYE35-XL-KRR-B	1,74	**35**	102	131,5	80	13	63
RTUEY40-XL	TUE08	GYE40-XL-KRR-B	2,43	**40**	115	141	88	16	82
PTUEY50-XL	TUE10	GAY50-XL-NPP-B	2,25	**50**	115	148	90	16	85
RTUEY50-XL	TUE10	GYE50-XL-KRR-B	2,38	**50**	115	148	90	16	85
PTUEY60-XL	TUE12	GAY60-XL-NPP-B	4,14	**60**	146	186	118	19	100
RTUEY60-XL	TUE12	GYE60-XL-KRR-B	4,44	**60**	146	186	118	19	100
RTUEY65-214-XL[1)]	TUE13/14	GYE65-214-XL-KRR-B	7	**65**	166	214	135	20	120
RTUEY70-XL	TUE13/14	GYE70-XL-KRR-B	6,69	**70**	166	214	135	20	120
RTUEY75-XL	TUE15	GYE75-XL-KRR-B	6,38	**75**	166	214	135	20	120
RTUEY80-XL	TUE16	GYE80-XL-KRR-B	7,63	**80**	184	230	140	20	120

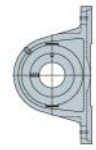
1) Alternative ball set 6214.



PTUEY..-XL



RTUEY..-XL



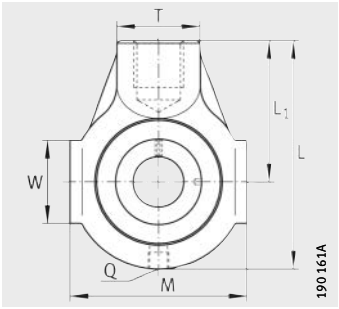


A	A_1 H13	A_2	H_1	N	N_1	N_2	B	S_1	T	Q
37	12	25	$76^{+0,15}_{-0,15}$	19	18	32	25	18	51	M6
37	12	25	$76^{+0,15}_{-0,15}$	19	18	32	31	18,3	51	M6
37	12	25	$76^{+0,15}_{-0,15}$	19	18	32	27	19,5	51	M6
37	12	25	$76^{+0,15}_{-0,15}$	19	18	32	34,1	19,8	51	M6
37	12	25	$89^{+0,15}_{-0,15}$	22	18	36,5	30	21	56	M6
37	12	25	$89^{+0,15}_{-0,15}$	22	18	36,5	38,1	22,2	56	M6
40	12	30	$89^{+0,15}_{-0,15}$	22	18	36,5	35	25,5	64	M6
40	12	30	$89^{+0,15}_{-0,15}$	22	18	36,5	42,9	25,4	64	M6
50	16	35	$102^{+0,15}_{-0,15}$	29	20	49	49,2	30,2	82	M6
50	16	35	$102^{+0,15}_{-0,15}$	29	20	49	43	32	83	M6
50	16	35	$102^{+0,15}_{-0,15}$	29	20	49	51,6	32,6	83	M6
60	22	44	$130^{+0,15}_{-0,15}$	35	32	63,5	47	34	102	M6
60	22	44	$130^{+0,15}_{-0,15}$	35	32	63,5	65,1	39,7	102	M6
70	25	50	$151^{+0,25}_{-0,25}$	41	35	70	74,6	44,4	110	M6
70	25	50	$151^{+0,25}_{-0,25}$	41	35	70	74,6	44,4	110	M6
70	25	50	$151^{+0,25}_{-0,25}$	41	35	70	77,8	44,5	110	M6
70	28	50	$165^{+0,25}_{-0,25}$	41	35	70	82,6	49,3	110	M6

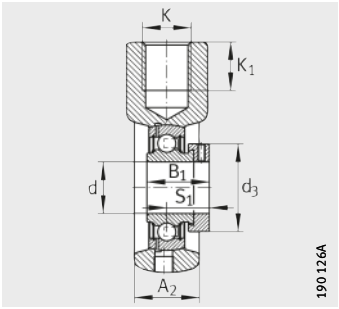
Take-up housing units

Flake graphite
cast iron housing
Guide surfaces
on both sides
With threaded hole

X-life



PHE..-XL, RHE..-XL, THE..-XL, PHEY..-XL



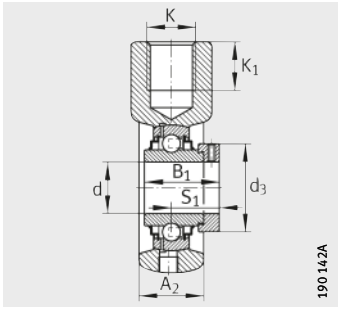
PHE..-XL

Dimension table · Dimensions in mm

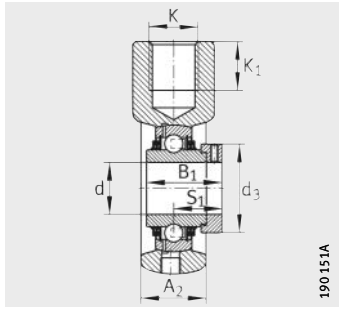
Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	L	L_1
PHE20-XL	HE04	GRAE20-XL-NPP-B	0,54	**20**	91	58
RHE20-XL	HE04	GE20-XL-KRR-B	0,58	**20**	91	58
PHE25-XL	HE05	GRAE25-XL-NPP-B	0,71	**25**	99	64
RHE25-XL	HE05	GE25-XL-KRR-B	0,77	**25**	99	64
THE25-XL	HE05	GE25-XL-KTT-B	0,75	**25**	99	64
PHE30-XL	HE06	GRAE30-XL-NPP-B	1,09	**30**	114	72
RHE30-XL	HE06	GE30-XL-KRR-B	1,16	**30**	114	72
THE30-XL	HE06	GE30-XL-KTT-B	1,17	**30**	114	72
PHE35-XL	HE07	GRAE35-XL-NPP-B	1,32	**35**	122	76
RHE35-XL	HE07	GE35-XL-KRR-B	1,39	**35**	122	76
THE35-XL	HE07	GE35-XL-KTT-B	1,36	**35**	122	76
PHE40-XL	HE08	GRAE40-XL-NPP-B	1,65	**40**	135	85
RHE40-XL	HE08	GE40-XL-KRR-B	1,77	**40**	135	85
THE40-XL	HE08	GE40-XL-KTT-B	1,8	**40**	135	85
PHE45-XL	HE09	GRAE45-XL-NPP-B	1,89	**45**	145	90
RHE45-XL	HE09	GE45-XL-KRR-B	2,01	**45**	145	90
THE45-XL	HE09	GE45-XL-KTT-B	2,13	**45**	145	90
PHE50-XL	HE10	GRAE50-XL-NPP-B	1,92	**50**	145	90
RHE50-XL	HE10	GE50-XL-KRR-B	2,15	**50**	145	90
THE50-XL	HE10	GE50-XL-KTT-B	2,08	**50**	145	90

Dimension table · Dimensions in mm

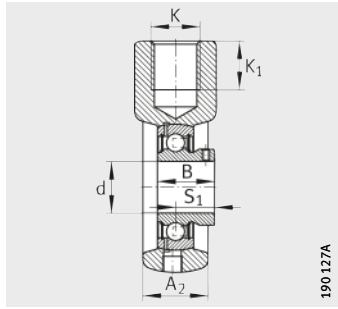
Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	L	L_1
PHEY20-XL	HE04	GAY20-XL-NPP-B	0,51	**20**	91	58
PHEY25-XL	HE05	GAY25-XL-NPP-B	0,68	**25**	99	64
PHEY30-XL	HE06	GAY30-XL-NPP-B	1,03	**30**	114	72
PHEY35-XL	HE07	GAY35-XL-NPP-B	1,23	**35**	122	76
PHEY40-XL	HE08	GAY40-XL-NPP-B	1,5	**40**	135	85
PHEY45-XL	HE09	GAY45-XL-NPP-B	1,91	**45**	145	90



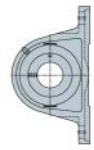
RHE..-XL



THE..-XL



PHEY..-XL





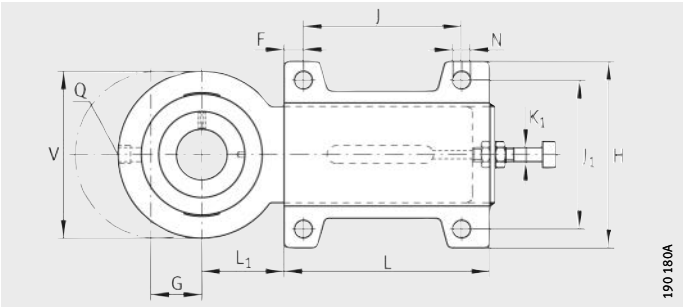
A_2	K	K_1	B_1	M	S_1	T	W	Q	d_3 max.
25	M16	21	31	65	23,5	30	38	M6	33
25	M16	21	43,7	65	26,6	30	38	M6	33
28	M20	22	31	70	23,5	35	38	M6	37,5
28	M20	22	44,5	70	27	35	38	M6	37,5
28	M20	22	44,5	70	27	35	38	M6	37,5
32	M24	24	35,8	85	26,8	40	40	M6	44
32	M24	24	48,5	85	30,2	40	40	M6	44
32	M24	24	48,5	85	30,2	40	40	M6	44
32	M24	24	39	90	29,5	40	49	M6	55
32	M24	24	51,3	90	32,5	40	49	M6	55
32	M24	24	51,3	90	32,5	40	49	M6	55
36	M24	24	43,8	100	32,8	40	45	M6	58
36	M24	24	56,5	100	35,1	40	45	M6	58
36	M24	24	56,5	100	35,1	40	45	M6	58
40	M24	24	43,8	110	32,8	40	45	M6	63
40	M24	24	56,5	110	35,1	40	45	M6	63
40	M24	24	56,5	110	35,1	40	45	M6	63
40	M24	24	43,8	110	32,8	40	46	M6	69
40	M24	24	62,8	110	38,2	40	46	M6	69
40	M24	24	62,8	110	38,2	40	46	M6	69

A_2	K	K_1	B	M	S_1	T	W	Q
25	M16	21	25	65	18	30	38	M6
28	M20	22	27	70	19,5	35	38	M6
32	M24	24	30	85	21	40	40	M6
32	M24	24	35	90	25,5	40	49	M6
36	M24	24	39,5	100	29	40	45	M6
40	M24	24	41,5	110	30,5	40	45	M6

Take-up housing units

Flake graphite
cast iron housing
Guide tube
With adjusting screw

X-life

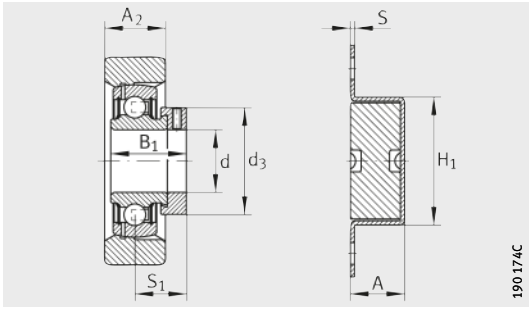


PHUSE..-XL(-N)

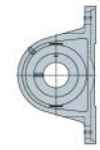
Dimension table · Dimensions in mm

Designation				Mass	Dimensions						
Unit	Housing	Guide tube	Radial insert ball bearing	m ≈ kg	d	H	J	J_1	L	L_1	A
PHUSE25-XL	HUE05	HUSE07	GRAE25-XL-NPP-B	2,07	**25**	103	140	80	187	50	28
PHUSE30-XL	HUE06	HUSE07	GRAE30-XL-NPP-B	2,22	**30**	103	140	80	187	50	28
PHUSE35-XL	HUE07	HUSE07	GRAE35-XL-NPP-B	2,46	**35**	103	140	80	187	50	28
PHUSE40-XL	HUE08	HUSE10	GRAE40-XL-NPP-B	4,89	**40**	130	180	100	256	60	36
PHUSE50-XL-N	HUE10	HUSE10	GRAE50-XL-NPP-B	5,25	**50**	130	180	100	256	60	36

1) End cap KASK10 must be ordered separately.
The cap is suitable for temperatures from −20 °C to +80 °C.



PHUSE..-XL(-N)

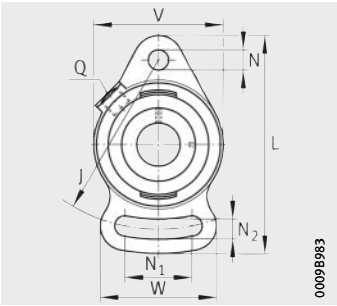




A_2	H_1	N	B_1	K_1	S	F	G	S_1	V	Q	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N	End cap[1)]
22	52	11,5	31	M12	4	20	65	23,5	78	M6	37,5	7 800	–
22	52	11,5	35,8	M12	4	20	65	26,8	88	M6	44	11 300	–
22	52	11,5	39	M12	4	20	65	29,5	98	M6	55	15 300	–
30	60	14	43,8	M16	4	20	80	32,8	108	M6	58	19 800	–
30	60	14	43,8	M16	4	20	80	32,8	120	M6	69	23 200	KASK10

Take-up housing units

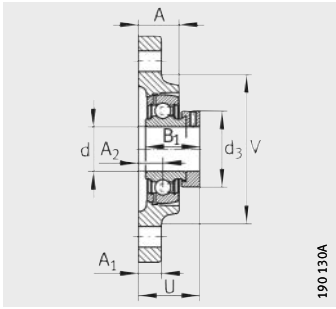
Flake graphite cast iron housing
Self-aligning



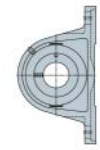
PSFT..-XL

Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	J	L	A
PSFT20-XL	SFT04	GRAE20-XL-NPP-B	0,41	**20**	90	112	18
PSFT25-XL	SFT05	GRAE25-XL-NPP-B	0,52	**25**	99	124	20
PSFT30-XL	SFT06	GRAE30-XL-NPP-B	0,77	**30**	117	142	22
PSFT35-XL	SFT07	GRAE35-XL-NPP-B	1,1	**35**	128	155	25



PSFT..-XL





A_1	A_2	N	N_1	N_2	B_1	U	V	W	Q	d_3 max.
10	10,5	11,5	30	11,5	31	34	61	52	M6	33
11	12,5	11,5	37,5	11,5	31	36	70	63	M6	37,5
12	13	11,5	40	11,5	35,8	39,7	80	65	M6	44
12,5	15	14	45	14	39	44,5	90	75	M6	55

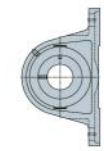


Housing units with sheet steel housing

Plummer block housing units
Flanged housing units
Take-up housing units

Housing units with sheet steel housing

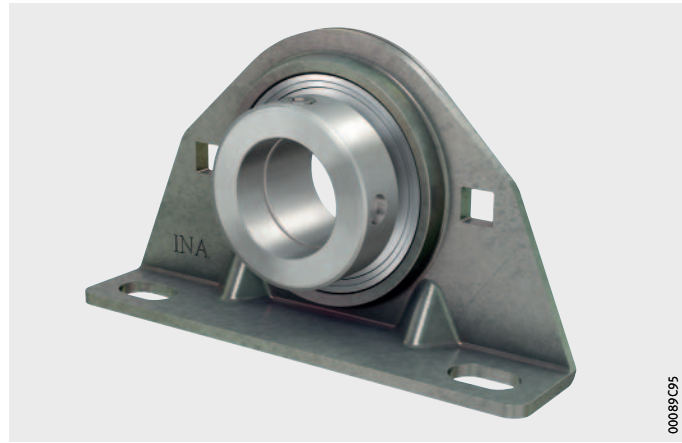
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	Three-bolt and four-bolt flanged housing units	324
	Take-up housing units	328



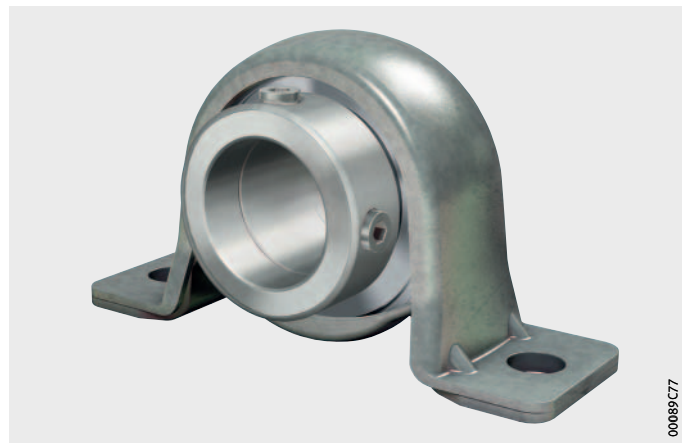


Plummer block housing units

PBS..-XL

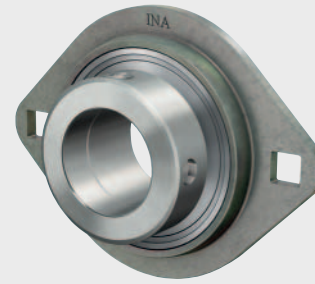


PB..-XL, PBY..-XL, RPB..-XL

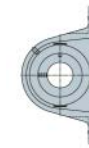


Two-bolt and three-bolt flanged housing units

RAT..-XL, RATY..-XL, RALT..-XL, PCSLT..-XL



00089C7F



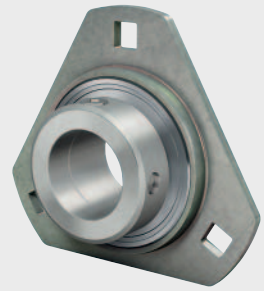
RCSMF..-XL



00089C89



RATR..-XL, RALTR..-XL, RRTR..-XL, RATRY..-XL



00089C83

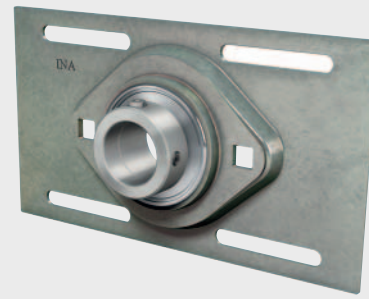
RA..-XL, RAY..-XL, GRA..-XL



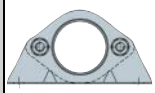
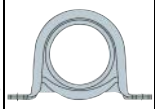
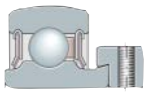
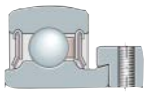
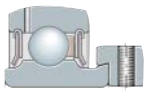
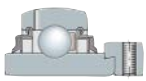
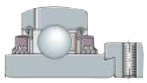
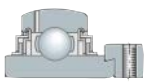
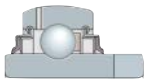
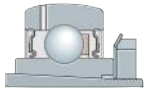
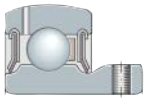
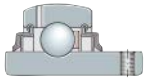
00089C7B

Take-up housing units

MSTU..-XL



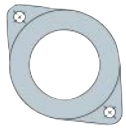
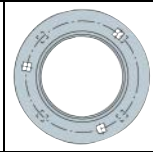
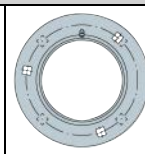
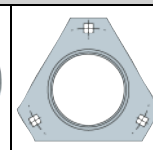
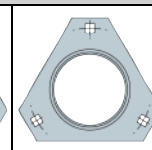
00089C73

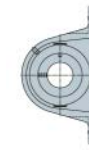
Possible combinations Radial insert ball bearings with sheet steel housings		Housing[1)]				
		Plummer block housing			Two-bolt flanged housing	
						
Designation Shaft diameter d		**GEH..-PBS**	**GEH..-BT**	**GEH..-BT** **GRG..-RABR**	**FLAN..-LST** (2 pieces)	**FLAN..-MST** (2 pieces)
RALE..-XL-NPP(-B) 20 mm – 30 mm				**RPB..-XL** page 316 d = 30 mm	**RALT..-XL** page 318	
RAE..-XL-NPP(-B) 12 mm – 40 mm		**PBS..-XL** page 316	**PB..-XL** page 316	**RPB..-XL** page 316		**RAT..-XL** page 318
GRAE..-XL-NPP-B 20 mm – 60 mm						
(G)E..-XL-KRR-B 17 mm – 60 mm		To be ordered separately	To be ordered separately	To be ordered separately		To be ordered separately
GE..-XL-KTT-B 20 mm – 60 mm		To be ordered separately	To be ordered separately			To be ordered separately
GE..-XL-KLL-B 20 mm – 50 mm		To be ordered separately	To be ordered separately			To be ordered separately
GLE..-XL-KRR-B 20 mm – 60 mm		To be ordered separately	To be ordered separately			To be ordered separately
GSH..-XL-2RSR-B 20 mm – 50 mm		To be ordered separately	To be ordered separately			To be ordered separately
(G)AY..-XL-NPP-B 12 mm – 60 mm		To be ordered separately	**PBY..-XL** page 316			**RATY..-XL** page 318
GYE..-XL-KRR-B 12 mm – 60 mm		To be ordered separately	To be ordered separately			To be ordered separately

Catalogue range, for dimension table see page number specified.
Please contact us for details about other sizes and combinations.

Combinations not possible or not advisable.

[1)] Housings have a Corrotect coating, suffix FA125.

			Three-bolt flanged housing				Take-up housing
							
	FLAN..-CSLT **FLAN..-CST**	**FLAN..-RCSMF** **GRG..-RCSM**	**FLAN..-MSB** (2 pieces)	**FLAN..-MSA** **FLAN..-MSB**	**FLAN..-LSTR** (2 pieces)	**FLAN..-MSTR** (2 pieces)	**GEH..-MSTU**
	PCSLT..-XL page 318	**RCSMF..-XL** page 320 d = 30 mm			**RALTR..-XL** page 322		
		RCSMF..-XL page 320	**RA..-XL** page 324			**RATR..-XL** page 322	**MSTU..-XL** page 328
			RA..-XL page 324	**GRA..-XL** page 324			
			To be ordered separately	To be ordered separately		**RRTR..-XL** page 322	To be ordered separately
			To be ordered separately	To be ordered separately		To be ordered separately	To be ordered separately
			To be ordered separately	To be ordered separately		To be ordered separately	To be ordered separately
			To be ordered separately	To be ordered separately		To be ordered separately	To be ordered separately
			To be ordered separately	To be ordered separately		To be ordered separately	To be ordered separately
			RAY..-XL page 324			**RATRY..-XL** page 322	To be ordered separately
						To be ordered separately	To be ordered separately





Housing units with sheet steel housing

Features

INA housing units are available as plummer block, flanged and take-up housing units in numerous different designs. The units are ready-to-fit and comprise INA sheet steel housings in which INA radial insert ball bearings are fitted. In order to ensure function and reliability under all operating conditions, the bearings and housings are matched to each other.

Due to the spherical outside surface of the bearing outer ring and the concave housing bore, housing units can compensate for static angular misalignment of the shaft, see page 313.

The housings are screw mounted on the adjacent construction. Less stringent tolerances are sufficient for the screw mounting surfaces, see page 315.

X-life

Numerous sizes are supplied in the X-life design. These products are indicated in the dimension tables.

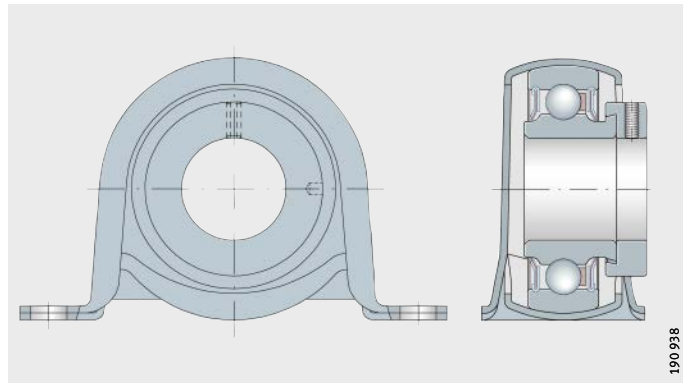
Radial insert ball bearings of X-life quality have, for example, lower roughness Ra and higher geometrical accuracy of the raceways than comparable designs that are not X-life. As a result, these bearings have higher load carrying capacity and longer rating life although their dimensions are identical. In certain applications, this means that a smaller bearing arrangement can be designed.

Radial insert ball bearings of X-life quality have an eccentric locking collar of an improved design and the quantity and distribution of the lubricant has been optimised. Housings ASE have additional crosspieces on the underside. For extreme requirements, the cage and seal material in the high and low temperature designs (suffix FA101) has been significantly improved in comparison with earlier versions.

Plummer block and flanged housing units

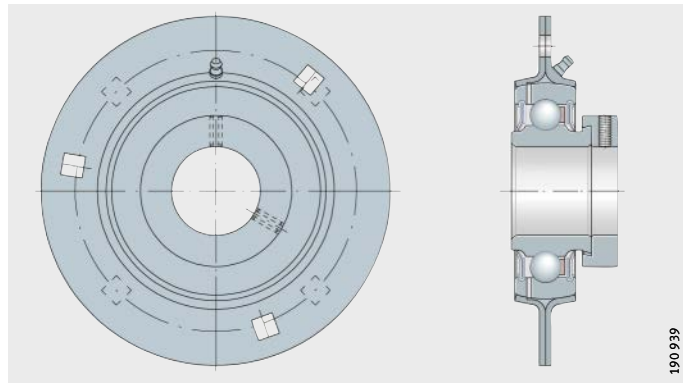
Sheet steel housings are two-piece units made from steel strip of deep drawn quality and as standard have a Corrotect coating, *Figure 1* and *Figure 2*. Corrosion-resistant sheet steel housing units RRY..-VA and GRRY..-VA are made from corrosion-resistant steel, see page 376.

Units with sheet steel housings are suitable for moderate loads and lightweight constructions.



PB..-XL

Figure 1
Plummer block housing unit, sheet steel housing

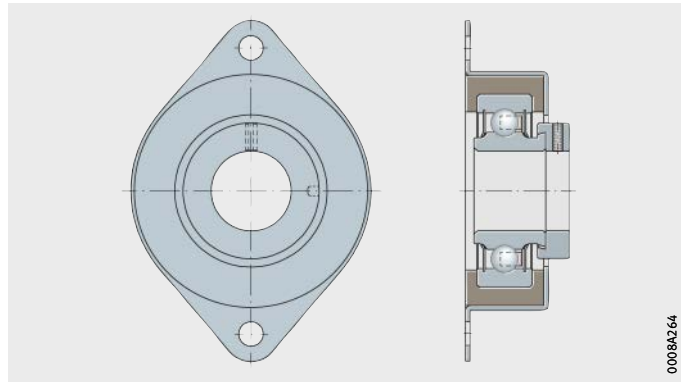


GRA..-XL

Figure 2
Flanged housing unit, sheet steel housing

Plummer block and flanged housing units with rubber interliner

In addition to the normal plummer block and flanged housing units, there is also a design with a rubber interliner on the bearing outer ring, *Figure 3*. This interliner absorbs shocks and vibrations and thus gives damping of running noises.

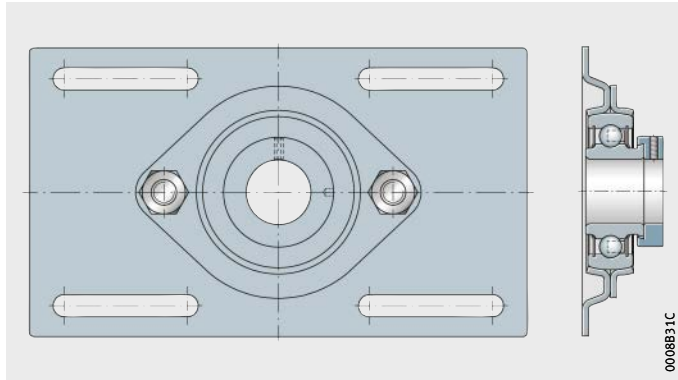


RCSMF..-XL

Figure 3
Flanged housing unit with rubber interliner

Take-up housing units

The units are two-piece sheet steel housings and have a displacement facility, *Figure 4*. They are used where shafts must carry out long displacement motions.



MSTU..-XL

Figure 4
Take-up housing unit, sheet steel housing

Operating temperature

Housing units with a rubber interliner are suitable for operating temperatures from –20 °C to +85 °C.

Housing units without a rubber interliner are suitable for operating temperatures from –20 °C to +100 °C. Temporary temperature peaks are possible up to +120 °C.

Lubrication

The flanged housing unit GRA..-XL can be relubricated by means of a lubrication nipple.

Corrosion-resistant units

The housing units are also available in a corrosion-resistant design. The two-piece sheet steel housings have the suffix VA and are also available in a design with a relubrication facility, see section Radial insert ball bearings and housing units, corrosion-resistant, page 345.

They are used where moisture, contaminated water, salt spray mist, weakly alkaline or weakly acidic cleaning agents are present.

Market sectors

In addition to the comprehensive catalogue range, we also supply housing units for special applications.

Examples include:

- specially sealed flanged housing units for plough discs
- other designs with special greases or seals are available. Please contact us if necessary.

Suffixes

Suffixes for available designs: see table.

Available designs

Suffix	Description	Design
FA106	Bearing subjected to special noise testing	Standard
FA125	With Corrotect coating	

Design and safety guidelines

The chapter Technical principles brings together the essential guidelines on the design of bearing arrangements, lubrication, mounting and dismounting and the operation of bearings, see page 32.

INA radial insert ball bearings and INA housings are matched to each other and, as a unit, give particularly robust and economical bearing arrangements.

Compensation of static misalignments

Bearings with a spherical outer ring, fitted in housings with a concave bore, can compensate for static misalignment of the shaft or housing, *Figure 5* and *Figure 6*. In the case of flanged housing units GRA with a relubrication facility, the functional capability of lubrication must be taken into consideration. Please contact us in this case.

The units must not be used to support swivelling or tumbling motion.

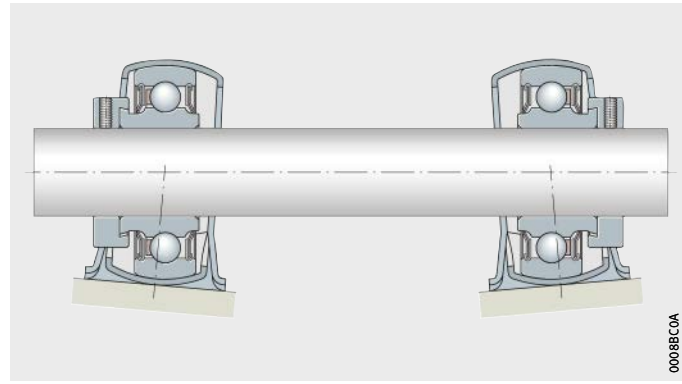


Figure 5
Compensation of static housing misalignment

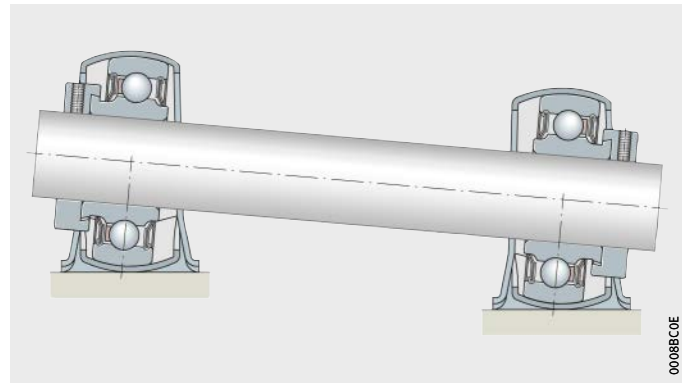


Figure 6
Compensation of static shaft misalignment

Speed limits for radial insert ball bearings

The speed limits are dependent on the load, the clearance between the bearing bore and shaft and the friction of the seals in bearings with contact seals, see page 148.

Load carrying capacity of housings

Due to their versatile characteristics, INA housing units can be easily used in almost all industrial sectors.

If bearing arrangements are planned for equipment in which a malfunction could be hazardous to persons or an unplanned stoppage of the machine could cause major disruption, it is essential that you consult us before proceeding with the design.

Radial load carrying capacity

Sheet steel housings are suitable for moderate loads.

The permissible radial load carrying capacity $C_{0r\,G}$ of sheet steel housings is given in the dimension tables.

Axial load carrying capacity

The permissible axial load carrying capacity of sheet steel housings is dependent on the value for the radial load carrying capacity, see table.

Permissible axial load carrying capacity

Units with sheet steel housings	Axial load carrying capacity[1)]
MSTU	$0{,}20 \times C_{0r\,G}$
PHUSE	$0{,}25 \times C_{0r\,G}$
PB, PBY, RPB	$0{,}33 \times C_{0r\,G}$
PBS	$0{,}20 \times C_{0r\,G}$
RALTR, RATR, RATRY, RRTR	$0{,}50 \times C_{0r\,G}$
PCSLT, RAT, RATY, RALT	$0{,}50 \times C_{0r\,G}$
RCSMF	$0{,}33 \times C_{0r\,G}$
RA, RAY, GRA, RRY, GRRY	$0{,}50 \times C_{0r\,G}$

1) $\overline{C_{0r\,G}}$ is the permissible radial load carrying capacity of the sheet steel housing according to the dimension table.

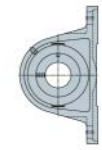
Design of adjacent construction

The permissible shaft tolerance is dependent on the speed, load and the radial insert ball bearing fitted. Shafts of the tolerance classes h6 Ⓔ to h9 Ⓔ can be used. Conventional drawn shafts will suffice for most applications.

Screw mounting surfaces

Recommendations for the screw mounting surfaces are as follows:

- roughness of the screw mounting surface max. Ra 12,5 (Rzmax 63)
- geometrical and positional tolerance 0,04/100 concave, spherical not permissible.





Fixing screws

The screw connection should be designed in accordance with VDI 2230; friction coefficient $\mu = 0{,}12$ (90%).

Screws of grade 8.8 or better can be used for fixing.
The maximum tightening torques applicable to this screw grade must not be exceeded even if screws of a higher grade are used.

In principle, we recommend that the screw connection should only be tightened to 70% of the values stated in the standard.

For fixing, hexagonal socket head screws in accordance with DIN EN ISO 4762 or hexagonal socket head screws with a coarse pitch full thread in accordance with DIN EN ISO 4017 should be used. The screws should be combined as a minimum with a washer in accordance with DIN EN ISO 7089 or DIN EN ISO 7090.

Screws and accessories for location are not included in the delivery.

Accuracy

The sheet steel housings correspond predominantly to DIN 626-2 and ISO 3228, insofar as they are described therein.

The accuracy of the radial insert ball bearings mounted must be observed, see page 150.

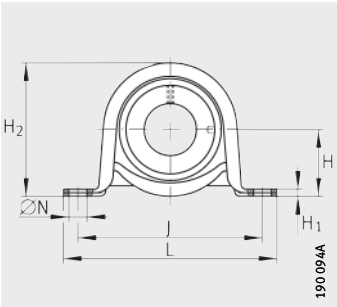
Dimensional tolerances

The dimensional tolerances for the sheet steel housings correspond to DIN 6930. For location of sheet steel housings with a square bore, the use of mushroom head bolts with a square neck (DIN 603) or a short square neck (DIN 11015) is recommended.

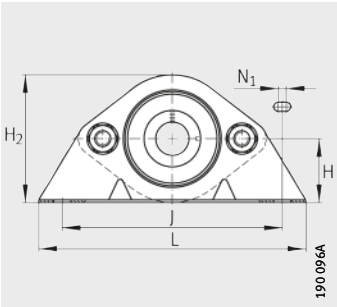
Plummer block housing units

Sheet steel housing
With or without rubber interliner

X-life



PB..-XL, PBY..-XL, RPB..-XL



PBS..-XL

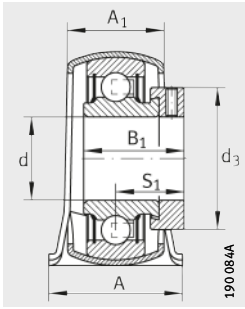
Dimension table · Dimensions in mm

Designation				Mass	Dimensions			
Unit	Housing[1)]	Rubber interliner	Radial insert ball bearing	m ≈ kg	d	H	J	L
PB12-XL	GEH40-BT	–	RAE12-XL-NPP-B	0,17	**12**	22,2	68	85,7
RPB12-XL	GEH47-BT	GRG.RABR40/47	RAE12-XL-NPP-B	0,23	**12**	25,4	76	98,7
PBS12-XL	GEH40-PBS	–	RAE12-XL-NPP-B	0,32	**12**	30,2	92	123,8
PB15-XL	GEH40-BT	–	RAE15-XL-NPP-B	0,17	**15**	22,2	68	85,7
RPB15-XL	GEH47-BT	GRG.RABR40/47	RAE15-XL-NPP-B	0,23	**15**	25,4	76	98,4
PBS15-XL	GEH40-PBS	–	RAE15-XL-NPP-B	0,32	**15**	30,2	92	123,8
PB17-XL	GEH40-BT	–	RAE17-XL-NPP-B	0,17	**17**	22,2	68	85,7
RPB17-XL	GEH47-BT	GRG.RABR40/47	RAE17-XL-NPP-B	0,23	**17**	25,4	76	98,4
PBS17-XL	GEH40-PBS	–	RAE17-XL-NPP-B	0,32	**17**	30,2	92	123,8
PB20-XL	GEH47-BT	–	RAE20-XL-NPP-B	0,27	**20**	25,4	76	98,4
RPB20-XL	GEH52-BT	GRG.RABR47/52-AH01	RAE20-XL-NPP-B	0,28	**20**	28,6	86	108
PBS20-XL	GEH47-PBS	–	RAE20-XL-NPP-B	0,45	**20**	33,6	97	127
PB25-XL	GEH52-BT	–	RAE25-XL-NPP-B	0,3	**25**	28,6	86	108
RPB25-XL	GEH62-BT	GRG.RABR52/62-AH01	RAE25-XL-NPP-B	0,38	**25**	33,3	95	117,5
PBS25-XL	GEH52-PBS	–	RAE25-XL-NPP-B	0,49	**25**	36,5	95,5	133,5
PB30-XL	GEH62-BT	–	RAE30-XL-NPP-B	0,5	**30**	33,3	95	117,5
RPB30-XL	GEH62-BT	GRG.RABR55/62	RALE30-XL-NPP-B	0,45	**30**	33,3	95	117,5
PBS30-XL	GEH62-PBS	–	RAE30-XL-NPP-B	0,79	**30**	42,9	119	159
PBS35-XL	GEH72-PBS	–	RAE35-XL-NPP-B	1,05	**35**	47,6	127	165
PBS40-XL	GEH80-PBS	–	RAE40-XL-NPP-B	1,33	**40**	55	136,5	180

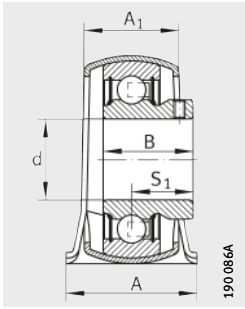
Dimension table · Dimensions in mm

Designation				Mass	Dimensions			
Unit	Housing[1)]	Rubber interliner	Radial insert ball bearing	m ≈ kg	d	H	J	L
PBY12-XL	GEH40-BT	–	AY12-XL-NPP-B	0,15	**12**	22,2	68	85,7
PBY15-XL	GEH40-BT	–	AY15-XL-NPP-B	0,15	**15**	22,2	68	85,7
PBY17-XL	GEH40-BT	–	AY17-XL-NPP-B	0,15	**17**	22,2	68	85,7
PBY20-XL	GEH47-BT	–	AY20-XL-NPP-B	0,22	**20**	25,4	76	98,4
PBY25-XL	GEH52-BT	–	AY25-XL-NPP-B	0,26	**25**	28,6	86	108
PBY30-XL	GEH62-BT	–	AY30-XL-NPP-B	0,4	**30**	33,3	95	117,5

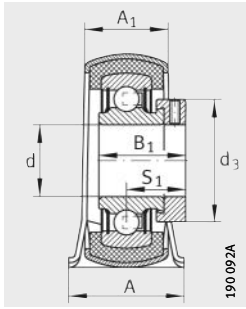
1) Housing with Corrotect coating, suffix FA125.



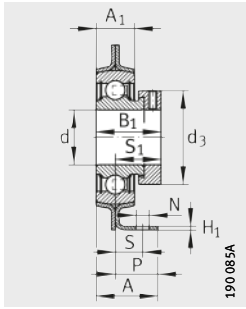
PB..-XL



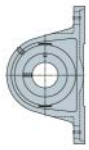
PBY..-XL



RPB..-XL



PBS..-XL



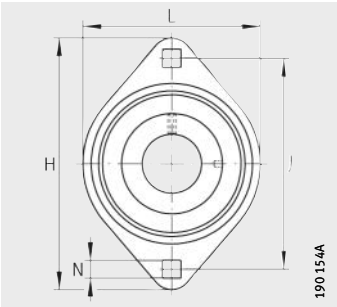


A	A_1	H_1	H_2	N		N_1	B_1	S_1	S	P	d_3 max.	Load carrying capacity Housing C_{0rG} N
25,4	18,4	2,6	43,2	9,5	–	–	28,6	22,1	–	–	28,4	1 350
31,8	22,3	3,3	50,1	9,5	–	–	28,6	22,1	–	–	28,4	900
32,5	14,2	2,6	59,6	–	10,5	5,6	28,6	22,1	15	25,4	28,4	2 700
25,4	18,4	2,6	43,2	9,5	–	–	28,6	22,1	–	–	28,4	1 350
31,8	22,3	3,3	50,1	9,5	–	–	28,6	22,1	–	–	28,4	900
32,5	14,2	2,6	59,6	–	10,5	5,6	28,6	22,1	15	25,4	28,4	2 700
25,4	18,4	2,6	43,2	9,5	–	–	28,6	22,1	–	–	28,4	1 350
31,8	22,3	3,3	50,1	9,5	–	–	28,6	22,1	–	–	28,4	900
32,5	14,2	2,6	59,6	–	10,5	5,6	28,6	22,1	15	25,4	28,4	2 700
31,8	22,3	3,3	50,1	9,5	–	–	31	23,5	–	–	33	1 600
31,8	23,5	4	56,5	11,5	–	–	31	23,5	–	–	33	1 100
33	15,8	3	66,8	–	10,5	5,6	31	23,5	15	25,4	33	3 200
31,8	23,5	4	56,5	11,5	–	–	31	23,5	–	–	37,5	1 800
38	26,5	4	66,1	11,5	–	–	31	23,5	–	–	37,5	1 400
34,1	17,4	3,4	72	–	10,5	9,5	31	23,5	14,3	25,4	37,5	3 600
38	26,5	4	66,1	11,5	–	–	35,8	26,8	–	–	44	2 700
38	26,5	4	66,1	11,5	–	–	26,5	20	–	–	42,5	1 400
38,9	17,4	3,4	85	–	13,5	8	35,8	26,8	16	30,2	44	3 600
46,1	22,2	4	94,4	–	13,5	8	39	29,5	20,7	35	55	4 100
53,5	23	4	106	–	13,5	8	43,8	32,8	25	40	58	4 500

A	A_1	H_1	H_2	N	B	S_1	Load carrying capacity Housing C_{0rG} N
25,4	18,4	2,6	43,2	9,5	22	16	1 350
25,4	18,4	2,6	43,2	9,5	22	16	1 350
25,4	18,4	2,6	43,2	9,5	22	16	1 350
31,8	22,3	3,3	50,1	9,5	25	18	1 600
31,8	23,5	4	56,5	11,5	27	19,5	1 800
38	26,5	4	66,1	11,5	30	21	2 700

Two-bolt flanged housing units

Sheet steel housing



RAT..-XL, RALT..-XL, PCSLT..-XL, RATY..-XL

Dimension table · Dimensions in mm

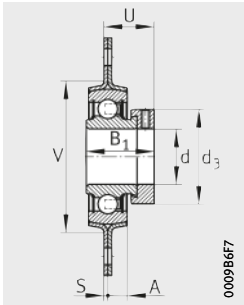
Designation			Mass	Dimensions	
Unit	Housing[1]	Radial insert ball bearing	m ≈ kg	d	H
RAT12-XL	2× FLAN40-MST	RAE12-XL-NPP-B	0,19	**12**	81
RAT15-XL	2× FLAN40-MST	RAE15-XL-NPP-B	0,19	**15**	81
RAT17-XL	2× FLAN40-MST	RAE17-XL-NPP-B	0,19	**17**	81
RALT20-XL-FA125.8	2× FLAN42-LST	RALE20-XL-NPP-B	0,17	**20**	81
PCSLT20-XL	1× FLAN42-CSLT, 1× FLAN42-CST	RALE20-XL-NPP-B	0,22	**20**	90,5
RAT20-XL	2× FLAN47-MST	RAE20-XL-NPP-B	0,27	**20**	90,5
PCSLT25-XL	1× FLAN47-CSLT, 1× FLAN47-CST	RALE25-XL-NPP-B	0,25	**25**	95,2
RALT25-XL	2× FLAN47-LST	RALE25-XL-NPP-B	0,22	**25**	95,2
RAT25-XL	2× FLAN52-MST	RAE25-XL-NPP-B	0,34	**25**	95,2
PCSLT30-XL	1× FLAN55-CSLT, 1× FLAN55-CST	RALE30-XL-NPP-B	0,3	**30**	112,5
RAT30-XL	2× FLAN62-MST	RAE30-XL-NPP-B	0,49	**30**	112,7
RAT35-XL	2× FLAN72-MST	RAE35-XL-NPP-B	0,72	**35**	123
RAT40-XL	2× FLAN80-MST	RAE40-XL-NPP-B	0,98	**40**	151

Dimension table · Dimensions in mm

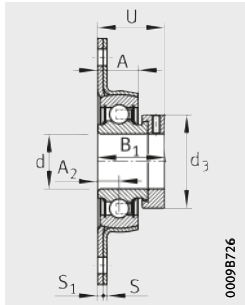
Designation			Mass	Dimensions	
Unit	Housing[1]	Radial insert ball bearing	m ≈ kg	d	H
RATY12-XL	2× FLAN40-MST	AY12-XL-NPP-B	0,14	**12**	81
RATY15-XL	2× FLAN40-MST	AY15-XL-NPP-B	0,13	**15**	81
RATY17-XL	2× FLAN40-MST	AY17-XL-NPP-B	0,12	**17**	81
RATY20-XL	2× FLAN47-MST	AY20-XL-NPP-B	0,22	**20**	90,5
RATY25-XL	2× FLAN52-MST	AY25-XL-NPP-B	0,26	**25**	95,2
RATY30-XL	2× FLAN62-MST	AY30-XL-NPP-B	0,41	**30**	112,7
RATY35-XL	2× FLAN72-MST	GAY35-XL-NPP-B	0,56	**35**	123
RATY40-XL	2× FLAN80-MST	GAY40-XL-NPP-B	0,85	**40**	151

1) Housing with Corrotect coating, suffix FA125.

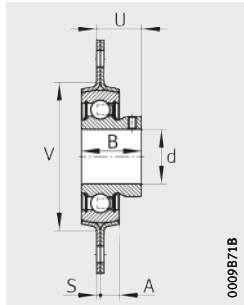
2) Includes radial insert ball bearing with relubrication facility.



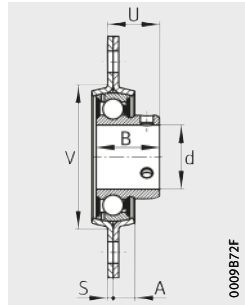
RAT..-XL, RALT..-XL



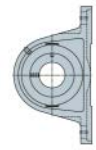
PCSLT..-XL



RATY..-XL



RATY35-XL[2], RATY40-XL[2]



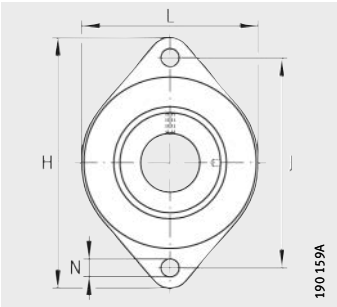


J	L	A	A_2	N	B_1	S_1	S	U	V	d_3 max.	Load carrying capacity Housing C_{0rG} N
63,5	58,7	7	–	7,1	28,6	–	2	24	48	28,4	2 700
63,5	58,7	7	–	7,1	28,6	–	2	24	48	28,4	2 700
63,5	58,7	7	–	7,1	28,6	–	2	24	48	28,4	2 700
63,5	58,7	7	–	7	24,5	–	2	20,46	48	30	2 700
71,4	66	14	7,5	–	24,5	3	2	26,1	–	30	4 200
71,5	66	8	–	8,7	31	–	2	25,5	55	33	3 200
76,2	71	16	8,5	–	25,5	3	2	28	–	36	4 500
76	71	7,1	–	8,7	25,5	–	2	21,4	55	36	3 000
76,2	71	8,7	–	8,7	31	–	2	25,5	60	37,5	3 650
90,5	84	16	9	–	26,5	3,5	2,5	29	–	42,5	6 000
90,5	84	8,7	–	10,5	35,8	–	2,5	29,2	71	44	5 000
100	93,7	10,5	–	10,5	39	–	2,5	31,5	81	55	6 300
119	100	11,5	–	13,5	43,8	–	3,5	36,2	90	58	7 000

J	L	A	N	B	S	U	V	Load carrying capacity Housing C_{0rG} N
63,5	58,7	7	7,1	22	2	18	48	2 700
63,5	58,7	7	7,1	22	2	18	48	2 700
63,5	58,7	7	7,1	22	2	18	48	2 700
71,5	66	8	8,7	25	2	20	55	3 200
76,2	71	8,7	8,7	27	2	21,5	60	3 650
90,5	84	8,7	10,5	30	2,5	23,5	71	5 000
100	93,7	10,5	10,5	35	2,5	28	81	6 300
119	100	11,5	13,5	39,5	3,5	32,5	90	7 000

Two-bolt flanged housing units

Sheet steel housing
With rubber interliner

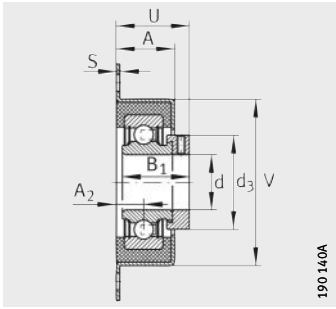


RCSMF..-XL

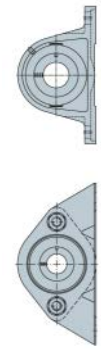
Dimension table · Dimensions in mm

Designation				Mass	Dimensions		
Unit	Housing[1)]	Rubber interliner	Radial insert ball bearing	m ≈ kg	d	H	J
RCSMF12-XL	FLAN65-RCSMF	GRG.RCSM40/65	RAE12-XL-NPP-FA106	0,27	**12**	114	92
RCSMF15-XL	FLAN65-RCSMF	GRG.RCSM40/65	RAE15-XL-NPP-FA106	0,27	**15**	114	92
RCSMF17-XL	FLAN65-RCSMF	GRG.RCSM40/65	RAE17-XL-NPP-FA106	0,27	**17**	114	92
RCSMF20-XL	FLAN65-RCSMF	GRG.RCSM47/65	RAE20-XL-NPP-FA106	0,32	**20**	114	92
RCSMF25-XL	FLAN65-RCSMF	GRG.RCSM52/65	RAE25-XL-NPP-FA106	0,33	**25**	114	92
RCSMF30-XL	FLAN65-RCSMF	GRG.RCSM55/65	RALE30-XL-NPP-FA106	0,32	**30**	114	92

1) Housing with Corrotect coating, suffix FA125.



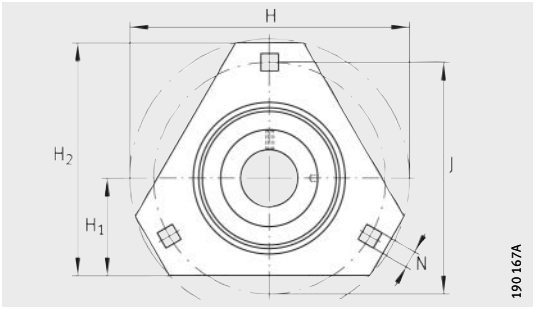
RCSMF..-XL



L	A	A_2	N	B_1	S	U	V	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
70	27	12,7	10,5	28,6	1,5	34,8	68	28,4	900
70	27	12,7	10,5	28,6	1,5	34,8	68	28,4	900
70	27	12,7	10,5	28,6	1,5	34,8	68	28,4	900
70	27	12,7	10,5	31	1,5	36,2	68	33	1 100
70	27	12,7	10,5	31	1,5	36,2	68	37,5	1 400
70	27	15	10,5	26,5	1,5	35	68	42,5	1 400

Three-bolt flanged housing units

Sheet steel housing



X-life

RATR..-XL, RALTR..-XL, RRTR..-XL, RATRY..-XL

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing[1]	Radial insert ball bearing	m ≈ kg	d	H	J
RALTR20-XL	2× FLAN42-LSTR[2]	RALE20-XL-NPP-B	0,21	**20**	90,5	71,5
RATR20-XL	2× FLAN47-MSTR	RAE20-XL-NPP-B	0,28	**20**	90,5	71,5
RALTR25-XL[3]	2× FLAN47-LSTR[2]	RALE25-XL-NPP-B	0,23	**25**	95,3	76
RATR25-XL	2× FLAN52-MSTR	RAE25-XL-NPP-B	0,32	**25**	95,3	76
RRTR25-XL[3]	2× FLAN52-MSTR	E25-XL-KRR-B	0,37	**25**	95,3	76
RATR30-XL	2× FLAN62-MSTR	RAE30-XL-NPP-B	0,43	**30**	112,7	90,5
RRTR30-XL[3]	2× FLAN62-MSTR	E30-XL-KRR-B	0,5	**30**	112,7	90,5
RATR35-XL	2× FLAN72-MSTR	RAE35-XL-NPP-B	0,75	**35**	122	100
RRTR35-XL	2× FLAN72-MSTR	E35-XL-KRR-B	0,83	**35**	122	100

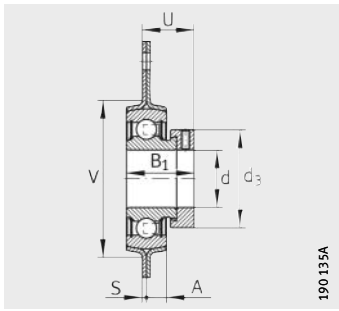
Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing[1]	Radial insert ball bearing	m ≈ kg	d	H	J
RATRY30-XL	2× FLAN62-MSTR	AY30-XL-NPP-B	0,41	**30**	112,7	90,5
RATRY35-XL	2× FLAN72-MSTR	GAY35-XL-NPP-B	0,47	**35**	122	100

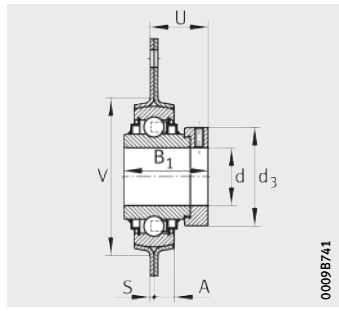
1) Housing with Corrotect coating, suffix FA125.

2) Light series.

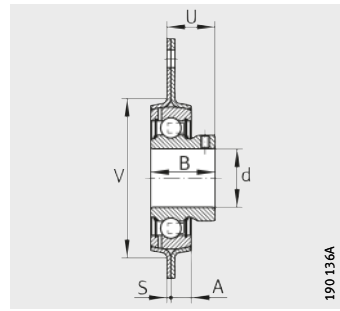
3) Housing and radial insert ball bearing must be ordered separately.



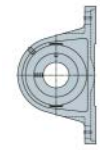
RATR..-XL, RALTR..-XL



RRTR..-XL



RATRY..-XL



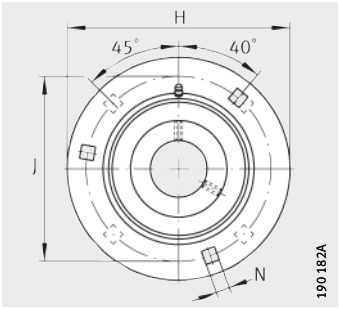


A	H_1	H_2	N	B_1	S_1	U	V	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
7,2	33,3	76,2	8,7	24,5	2	20,6	49	30	2 600
8	33,3	76,2	8,7	31	2	25,5	55	33	3 200
7,2	34,9	80,5	8,7	25,5	2	21,4	54	36	3 000
8,7	34,9	80,5	8,7	31	2	25,5	60	37,5	3 650
8,7	34,9	80,5	8,7	44,5	2	28,9	60	37,5	3 650
8,7	38,1	93	10,5	35,8	2,5	29,2	71	44	5 000
8,7	38,1	93	10,5	48,5	2,5	32,6	71	44	5 000
9,5	44,5	105,6	10,5	39	2,5	31,9	81	55	6 400
9,5	44,5	105,6	10,5	51,3	2,5	34,8	81	55	6 400

A	H_1	H_2	N	B	S_1	U	V	Load carrying capacity Housing $C_{0r\,G}$ N
8,7	38,1	93	10,5	30	2,5	23,5	71	5 000
9,5	44,5	105,6	10,5	35	2,5	28	81	6 400

Three-bolt and four-bolt flanged housing units

Sheet steel housing
Eccentric locking collar

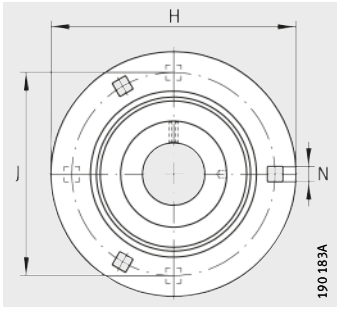


GRA..-XL

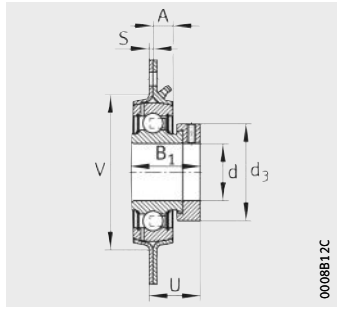
Dimension table · Dimensions in mm

Designation			Mass	Dimensions	
Unit	Housing[1]	Radial insert ball bearing	m ≈ kg	d	H
RA12-XL[2]	2× FLAN40-MSB	RAE12-XL-NPP-B	0,23	**12**	81
RA15-XL	2× FLAN40-MSB	RAE15-XL-NPP-B	0,23	**15**	81
RA17-XL	2× FLAN40-MSB	RAE17-XL-NPP-B	0,23	**17**	81
GRA20-XL[3]	1× FLAN47-MSB, 1× FLAN47-MSA	GRAE20-XL-NPP-B	0,32	**20**	90,5
RA20-XL	2× FLAN47-MSB	RAE20-XL-NPP-B	0,32	**20**	90,5
GRA25-XL[3]	1× FLAN52-MSB, 1× FLAN52-MSA	GRAE25-XL-NPP-B	0,37	**25**	95
RA25-XL	2× FLAN52-MSB	RAE25-XL-NPP-B	0,37	**25**	95
GRA30-XL[3]	1× FLAN62-MSB, 1× FLAN62-MSA	GRAE30-XL-NPP-B	0,61	**30**	112,7
RA30-XL	2× FLAN62-MSB	RAE30-XL-NPP-B	0,61	**30**	112,7
GRA35-XL[3]	1× FLAN72-MSB, 1× FLAN72-MSA	GRAE35-XL-NPP-B	0,85	**35**	122
RA35-XL	2× FLAN72-MSB	RAE35-XL-NPP-B	0,85	**35**	122
GRA40-XL[3]	1× FLAN80-MSB, 1× FLAN80-MSA	GRAE40-XL-NPP-B	1,36	**40**	147,5
RA40-XL	2× FLAN80-MSB	RAE40-XL-NPP-B	1,36	**40**	147,5
GRA45-XL[3]	1× FLAN85-MSB, 1× FLAN85-MSA	GRAE45-XL-NPP-B	1,41	**45**	149,2
RA45-XL	2× FLAN85-MSB	RAE45-XL-NPP-B	1,41	**45**	149,2
GRA50-XL[3]	1× FLAN90-MSB, 1× FLAN90-MSA	GRAE50-XL-NPP-B	1,68	**50**	155,5
RA50-XL	2× FLAN90-MSB	GRAE50-XL-NPP-B	1,68	**50**	155,5
RA55-XL[2]	2× FLAN100-MSB	GRAE55-XL-NPP-B	1,39	**55**	167
RA60-XL[2]	2× FLAN110-MSB	GRAE60-XL-NPP-B	2,54	**60**	176

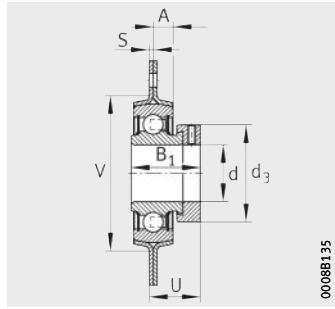
1) Housing with Corrotect coating, suffix FA125.
2) Housing and radial insert ball bearing must be ordered separately.
3) Units with relubrication facility.



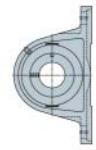
RA..-XL



GRA..-XL



RA..-XL

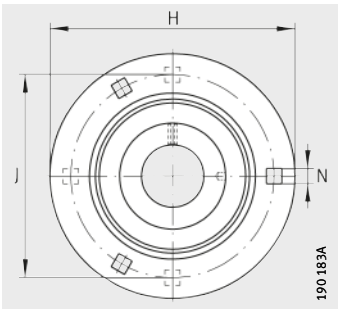




								Number of screw mounting holes	Load carrying capacity Housing
J	A	N	B_1	S	U	V	d_3 max.	n	C_{0rG} N
63,5	7	7,1	28,6	2	24	48	28,4	3	2 700
63,5	7	7,1	28,6	2	24	48	28,4	3	2 700
63,5	7	7,1	28,6	2	24	48	28,4	3	2 700
71,5	8	8,7	31	2	25,5	55	33	3	3 200
71,5	8	8,7	31	2	25,5	55	33	3	3 200
76	8,7	8,7	31	2	25,5	60	37,5	3	3 650
76	8,7	8,7	31	2	25,5	60	37,5	3	3 650
90,5	8,7	10,5	35,8	2,5	29,2	71	44	3	5 000
90,5	8,7	10,5	35,8	2,5	29,2	71	44	3	5 000
100	9,5	10,5	39	2,5	32	81	55	3	6 400
100	9,5	10,5	39	2,5	31,9	81	55	3	6 400
119	10,3	13,5	43,8	3,5	36,2	90	58	4	7 700
119	10,3	13,5	43,8	3,5	36,2	90	58	4	7 700
120,5	11,1	13,5	43,8	3,5	36,2	95	63	4	7 700
120,5	11,1	13,5	43,8	3,5	36,2	95	63	4	7 700
127	11,1	13,5	43,8	4	36,7	100	69	4	8 600
127	11,1	13,5	43,8	4	36,7	100	69	4	8 600
138	12,5	13,5	48,4	4	40,4	110	76	4	9 500
148	12	13,5	53,1	4	43,6	120	84	4	11 200

Three-bolt and four-bolt flanged housing units

Sheet steel housing
Grub screws in inner ring



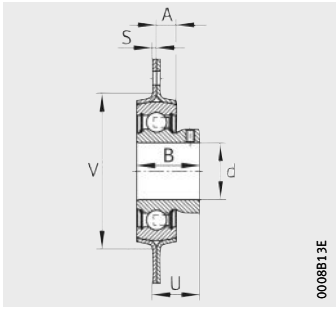
RAY..-XL

Dimension table · Dimensions in mm

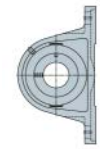
Designation			Mass	Dimensions	
Unit	Housing[1]	Radial insert ball bearing	m ≈ kg	d	H
RAY12-XL[2]	2× FLAN40-MSB	AY12-XL-NPP-B	0,17	**12**	81
RAY15-XL	2× FLAN40-MSB	AY15-XL-NPP-B	0,16	**15**	81
RAY17-XL[2]	2× FLAN40-MSB	AY17-XL-NPP-B	0,15	**17**	81
RAY20-XL	2× FLAN47-MSB	AY20-XL-NPP-B	0,3	**20**	90,5
RAY25-XL	2× FLAN52-MSB	AY25-XL-NPP-B	0,34	**25**	95
RAY30-XL	2× FLAN62-MSB	AY30-XL-NPP-B	0,45	**30**	112,7
RAY35-XL	2× FLAN72-MSB	GAY35-XL-NPP-B	0,78	**35**	122
RAY40-XL[2]	2× FLAN80-MSB	GAY40-XL-NPP-B	1,25	**40**	147,5
RAY50-XL[2]	2× FLAN90-MSB	GAY50-XL-NPP-B	1,68	**50**	155,5
RAY60-XL[2]	2× FLAN110-MSB	GAY60-XL-NPP-B	2,13	**60**	176

1) Housing with Corrotect coating, suffix FA125.

2) Housing and radial insert ball bearing must be ordered separately.



RAY..-XL

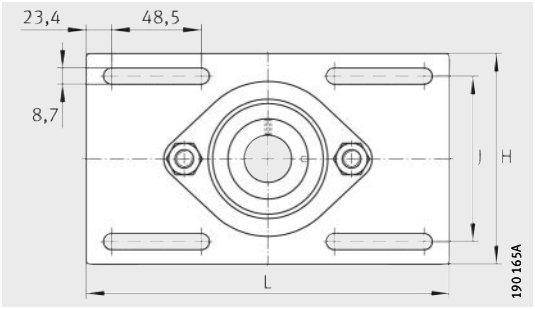




							Number of screw mounting holes	Load carrying capacity Housing
J	A	N	B	S	U	V	n	$C_{0r\,G}$ N
63,5	7	7,1	22	2	18	48	3	2 700
63,5	7	7,1	22	2	18	48	3	2 700
63,5	7	7,1	22	2	18	48	3	2 700
71,5	8	8,7	25	2	20	55	3	3 200
76	8,7	8,7	27	2	21,5	60	3	3 650
90,5	8,7	10,5	30	2,5	23,5	71	3	5 000
100	9,5	10,5	35	2,5	28	81	3	6 400
119	10,3	13,5	39,5	3,5	32,5	90	4	7 700
127	11,1	13,5	43	4	36	100	4	8 600
148	12	13,5	47	4	38	120	4	11 200

Take-up housing units

Sheet steel housing

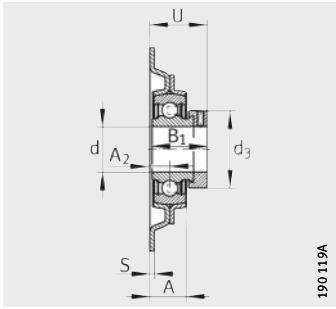


MSTU..-XL

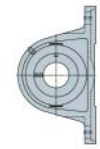
Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing[1)]	Radial insert ball bearing	m ≈ kg	d	H	J
MSTU25-XL	GEH52-MSTU	RAE25-XL-NPP-B	0,58	**25**	104,8	80,2
MSTU30-XL	GEH62-MSTU	RAE30-XL-NPP-B	0,84	**30**	114,3	89,2

1) Housing with Corrotect coating, suffix FA125.

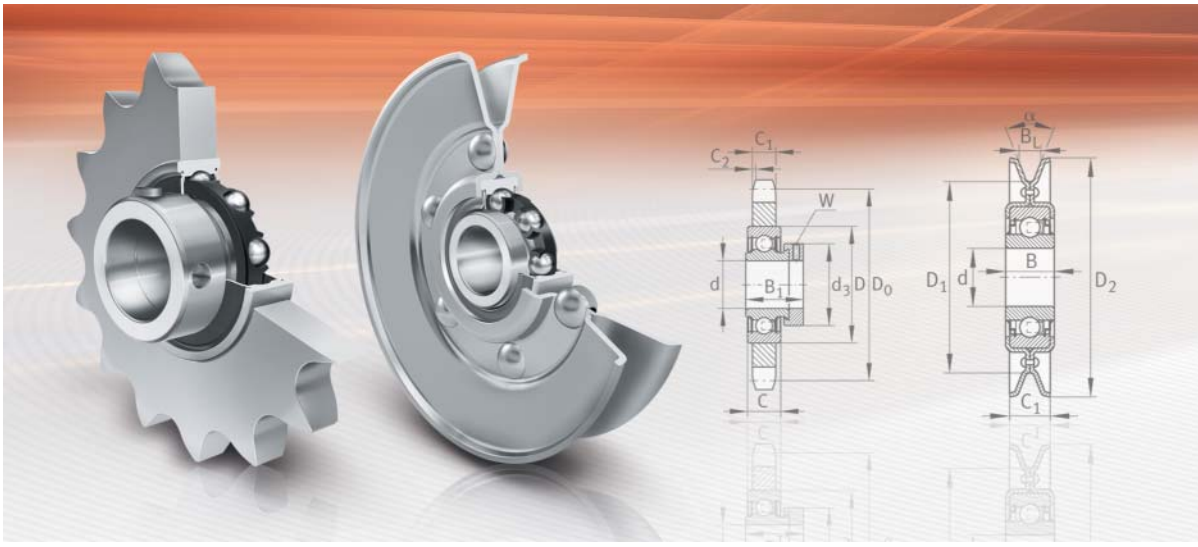


MSTU..-XL





							Load carrying capacity Housing
L	A	A_2	B_1	S	U	d_3 max.	$C_{0r\,G}$ N
203,2	19	10,3	31	2	33,8	37,5	3 900
203,2	21,1	12,1	35,8	2,5	37,8	44	3 900



Roller chain idler sprocket units
Idler pulley units

Roller chain idler sprocket units, idler pulley units

		Page
Product overview	Roller chain idler sprocket units, idler pulley units	332
Features	Roller chain idler sprocket units	333
	Idler pulley units	333
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	Material codes	334
Design and safety guidelines	Roller chain idler sprocket units	335
	Idler pulley units	336
Accuracy	Tolerances of radial insert ball bearing bore	337
	Radial internal clearance	337
Dimension tables	Roller chain idler sprocket units	338
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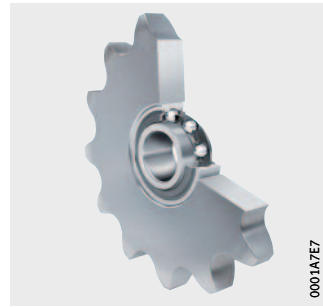


Roller chain idler sprocket units, idler pulley units

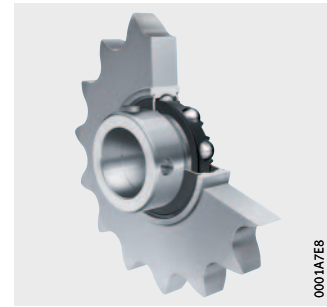
Roller chain idler sprocket units

Sprocket made from steel or sintered iron

KSR..-L0

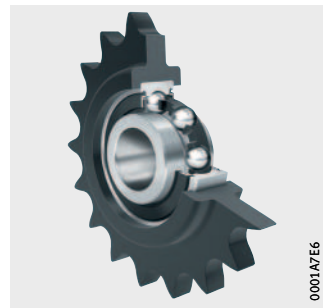


KSR..-B0



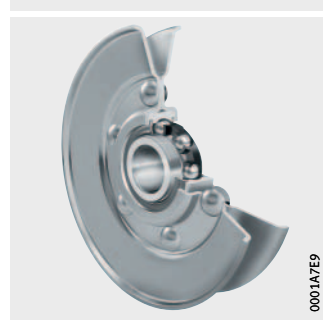
Sprocket made from plastic

KSR..-L0..-22

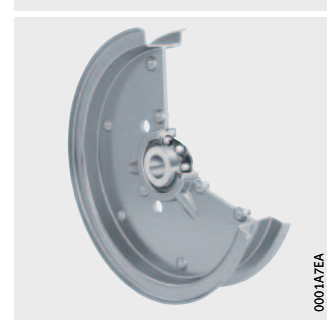


Idler pulley units

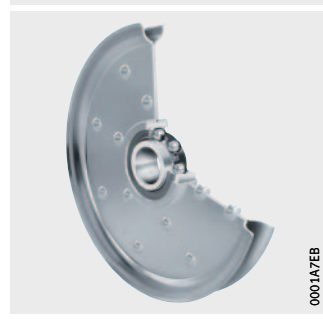
RSRA..-L0, RSRA..-K0



RSRB..-L0



RSRD..-L0



Roller chain idler sprocket units, idler pulley units

Features

Roller chain idler sprocket units and idler pulley units are robust, economical tensioning elements. These proven machine elements are available in various series and are suitable for a wide range of diverse applications.

Roller chain idler sprocket units

Roller chain idler sprocket units are guidance and return units for roller bush chains and roller chains. They can compensate for chain stretch resulting from operation and give smoother system running under high loads and speeds.

The ready-to-fit units comprise sprockets and deep groove ball bearings or radial insert ball bearings. The sprockets are made from high strength steel, sintered iron or plastic (polyamide). Sprockets made from plastic give particularly smooth running and generate very little noise. Since the inner ring of the deep groove ball bearing is extended on both sides, no additional spacer rings are required.

In series KSR..-B0, the inner ring is located on the shaft by means of a locking collar. The bearing bore of this series has a plus tolerance. As a result, unmachined shafts up to tolerance class h9 Ⓔ can be used under moderate loads and speeds.

Sealing

The deep groove ball bearings are sealed on both sides.

Lubrication

They are greased using a lithium soap grease to GA13 and are maintenance-free.

Idler pulley units



Idler pulley units are tensioning systems for belt drives and idler units:

- They increase the wrap angle in belt drives and can therefore support higher power levels or allow smaller units to be used.
- They compensate for belt stretch resulting from operation.
- They allow shorter centre distances.
- They reduce the wear on the belt drive.

The ready-to-fit units comprise deep drawn, profiled sheet steel pulley halves riveted together and deep groove ball bearings. Pulleys of larger diameters are additionally welded together.
A lead chamfer on the pulley profile prevents damage to the belt. Due to the sheet steel construction, the additional rotating masses and the unbalance masses generated are low.

Type A is suitable for vee belts, type B for flat, vee and round belts, type D for round belts, steel cables and hemp ropes.

Sealing

The deep groove ball bearings are sealed on both sides.

Lubrication

They are greased using a lithium soap grease to GA13 and are maintenance-free.

Roller chain idler sprocket units, idler pulley units

Operating temperature

Roller chain idler sprocket units with steel or sintered iron sprockets are suitable for operating temperatures from –20 °C to +100 °C. Temporary temperature peaks are possible up to +120 °C.

Roller chain idler sprocket units with plastic sprockets are suitable for operating temperatures from –20 °C to +80 °C.

Idler pulley units are suitable for operating temperatures from –20 °C to +100 °C, limited by the grease and seal material. Temporary temperature peaks are possible up to +120 °C.

Designation structure

Units with the suffix L0 contain deep groove ball bearings with inner rings extended on both sides. Units with the suffix B0 contain radial insert ball bearings RAE..-NPP with eccentric locking collars, *Figure 1*.

① Design (KSR or RSR)
② Bore diameter of bearing
③ Radial insert ball bearing with eccentric locking collar
④ Pitch p of sprocket in 1/16″, code
⑤ Chain number in accordance with DIN ISO 606
⑥ Number of teeth z
⑦ Material code, see table
⑧ Outside diameter of pulley
⑨ Inner ring extended on both sides

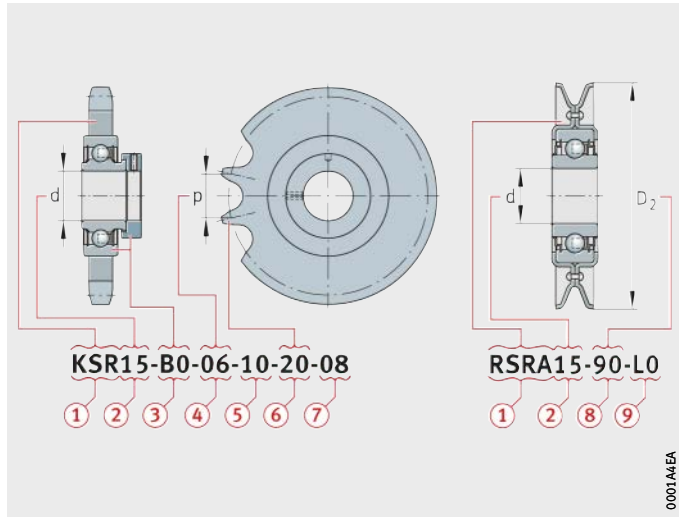


Figure 1
Structure of the designation

Material codes

The materials used for the sprockets are classified by means of material codes, see table.

Classification of materials

Code	Material		Hardness to DIN EN ISO 6506-1	
			from	to
08	Sintered iron	C 10	40 HBW	60 HBW
09	Sintered iron	D 39	90 HBW	120 HBW
15	Steel	St 52	–	–
16	Steel	C 45	45 HRC	55 HRC
			Tooth flanks hardened	
22	Plastic	PA	–	–

Design and safety guidelines

The chapter Technical principles brings together the essential guidelines on the design of bearing arrangements, lubrication, mounting and dismounting and the operation of bearings, see page 32.

Roller chain idler sprocket units

Roller chain idler sprocket units should always be mounted on the slack side of the chain, *Figure 2*.

The wrap angle on the idler sprocket unit should be selected such that at least three teeth are engaged simultaneously.

For grease lubrication, a grease with good adhesion characteristics should be used.

Roller chain idler sprocket units of bore d = 16 mm are toleranced so that they can be fitted using fixing screws M16.

The contact pressure at the end face of the inner ring should not exceed 10 N/mm^2.

The minimum press-out force of the deep groove ball bearings is 700 N. This value must not be exceeded during operation.

The preload on the slack side should not be less than 1% of the tractive force on the taut side.

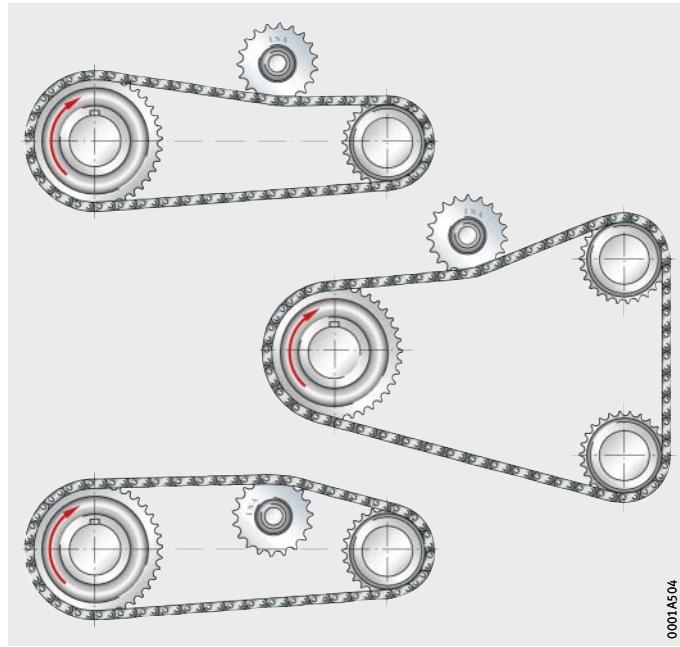


Figure 2
Arrangement on slack side of chain drive

Roller chain idler sprocket units, idler pulley units

Idler pulley units

Idler pulley units should only be positioned on the slack side of the drive, *Figure 3*.

For normal loads, a light fit for the inner ring combined with axial clamping is sufficient.

If idler pulley units with a flat profile are to be used for tensioning via the back of a vee belt, check the suitability of the vee belt for this arrangement.

The permissible belt speed of 40 m/s must not be exceeded.

Check the permissible belt tension and operating life of the ball bearing for each individual application.

Preload force

The following is an approximate guide value for the preload force S_v between the shafts:

- for flat belts $S_v = 2$ to $3 \times F_u$ (circumferential force)
- for vee belts $S_v = 1{,}7$ to $2{,}5 \times F_u$ (circumferential force).

Checking of belt tension

Measure the speed ratio without load at low speed. Then measure the speed ratio at operating speed and under operating load. If the difference in speed due to slippage is $>$ 2%, retension the belt.

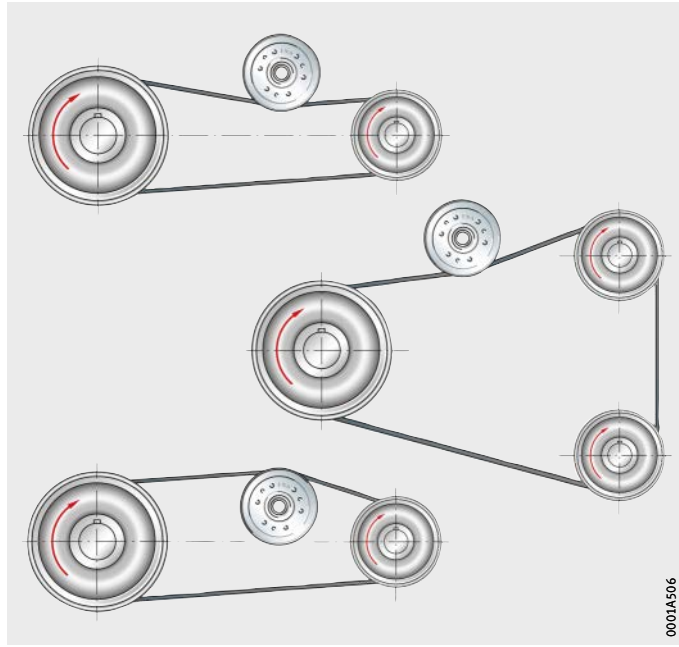


Figure 3
Arrangement on slack side of belt drive

Accuracy

In the case of idler pulley units for vee belts, the groove angles are slightly larger due to the small wrap than recommended according to DIN 2211 and DIN 2217.

Tolerances of radial insert ball bearing bore

The tolerances of the inner ring bore of roller chain idler sprocket units KSR..-L0 are dependent on the diameter, see table.

The inner ring bore of roller chain idler sprocket units KSR..-B0 has a plus tolerance to allow easier mounting of the bearing, see dimension table.

Bore tolerances

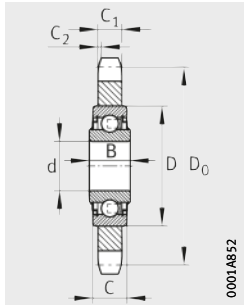
Series	Bore d mm	Deviation mm
KSR..-L0	16,2	$^{+0,1}_{0}$
	20	$^{0}_{-0,01}$
	25	$^{0}_{-0,01}$
RSR..-L0	13	$^{+0,08}_{-0,05}$
	15	$^{+0,08}_{-0,05}$
	16	$^{+0,26}_{+0,13}$
	17	$^{0}_{-0,008}$
	20	$^{0}_{-0,01}$
	25	$^{0}_{-0,01}$

Radial internal clearance

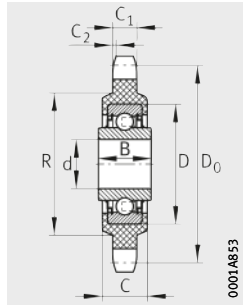
The radial internal clearance of mounted roller chain idler sprocket units corresponds to Group 5 in accordance with ISO 5753-1.

Roller chain idler sprocket units

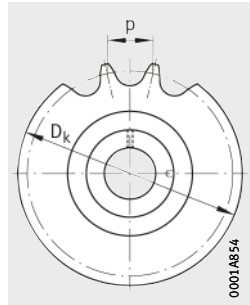
With extended inner ring



KSR..-L0



KSR..-L0..-22



Dimension table · Dimensions in mm

Tooth set		Designation[1]	Mass	Dimensions									Chain to DIN ISO 606	
p[2]	z[3]		m	d[4]	C_1	D_0	D_k	C_2	D	B	C	R	ISO chain	ANSI chain
"			≈ kg					min.						
3/8	20	**KSR16-L0-06-10-20-08**	0,14	16,2	5,2	60,9	65	0,8	40	18,3	12	–	x	–
1/2	16	**KSR16-L0-08-10-16-08**	0,16	16,2	7	65,1	70,5	1,1	40	18,3	12	–	x	–
		KSR16-L0-08-10-16-08-AH02	0,23	15	7	65,1	70,5	1,1	40	17	12	–	x	–
		KSR16-L0-08-10-16-15	0,14	16,2	7	65,1	70,5	1,1	40	18,3	12	–	x	x
		KSR16-L0-08-10-16-22	0,1	16,2	7	65,1	70,5	1,1	40	18,3	18,1	48	x	x
	18	**KSR16-L0-08-10-18-08**	0,21	16,2	7	73,1	78,6	1,1	40	18,3	12	–	x	–
		KSR16-L0-08-10-18-09	0,21	16,2	7	73,1	78,6	1,1	40	18,3	12	–	x	x
		KSR16-L0-08-10-18-16	0,21	16,2	7	73,1	78,6	1,1	40	18,3	12	–	x	x
		KSR16-L0-08-10-18-22	0,23	16,2	7	65,1	70,5	1,1	40	18,3	18	48	x	x
5/8	14	**KSR16-L0-10-10-14-08**	0,21	16,2	8,7	71,3	78	1,3	40	18,3	12	–	x	x
		KSR16-L0-10-10-14-08-FA101	0,21	16,2	8,7	71,3	78	1,3	40	18,3	12	–	x	x
		KSR16-L0-10-10-14-08-L091	0,24	16,2	8,7	71,3	78	1,3	40	18,3	12	–	x	x
	17	**KSR16-L0-10-10-17-08**	0,32	16,2	8,7	86,4	93,1	1,3	40	18,3	12	–	x	x
		KSR16-L0-10-10-17-09	0,32	16,2	8,7	86,4	93,1	1,3	40	18,3	12	–	x	x
		KSR16-L0-10-10-17-22	0,26	16,2	8,7	86,4	93,1	1,3	40	18,3	18	48	x	x
	19	**KSR16-L0-10-10-19-15-FA101**	0,45	16,2	9,15	96,4	103,5	1,5	40	18,3	12	–	x	–
3/4	13	**KSR16-L0-12-10-13-08**	0,33	16,2	10,5	79,6	87	1,5	40	18,3	12	–	x	x
		KSR16-L0-12-10-13-16	0,33	16,2	10,5	79,6	87	1,5	40	18,3	12	–	x	x
	15	**KSR16-L0-12-10-15-08**	0,42	16,2	10,5	91,6	99,2	1,5	40	18,3	12	–	x	x
		KSR16-L0-12-10-15-09	0,42	16,2	10,5	91,6	99,2	1,5	40	18,3	12	–	x	–
		KSR16-L0-12-10-15-22	0,36	16,2	10,5	91,6	99,2	1,5	40	18,3	18	48	x	x
	17	**KSR16-L0-12-10-17-15**	0,58	16,2	10,5	103,7	111,4	1,5	40	18,3	12	–	x	x
		KSR16-L0-12-10-17-16	0,58	16,2	10,5	103,7	111,4	1,5	40	18,3	12	–	x	x
	20	**KSR16-L0-12-10-20-15**	0,86	16,2	10,5	121,78	130	1,5	40	18,3	12	–	x	–
1	12	**KSR20-L0-16-10-12-15**	0,7	20	15,3	98,1	107,6	2	47	17,7	14	–	x	x
		KSR20-L0-16-10-12-16	0,7	20	15,3	98,1	107,6	2	47	17,7	14	–	x	–
1 1/4	9	**KSR25-L0-20-10-09-16**	0,8	25	17,6	92,8	103	2,5	52	21	15	–	x	x
	13	**KSR25-L0-20-10-13-15**	1,6	25	17,6	132,7	144	2,5	52	21	15	–	x	x

x suitable

1) Composition of designation, see page 334.

2) p = pitch.

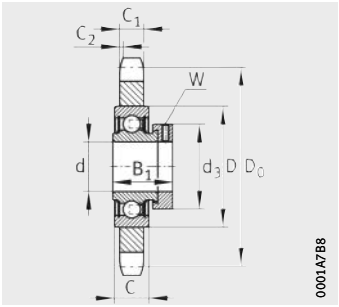
3) z = number of teeth.

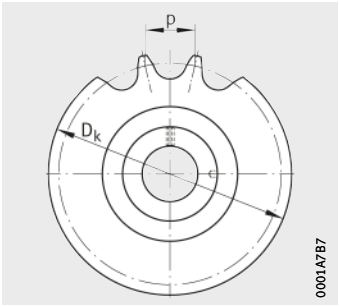
4) Tolerance of bore d, see page 337.
Inner rings of d = Ø16,2 are designed for fixing holes M16.



Roller chain idler sprocket units

With eccentric locking collar





KSR..-B0

Dimension table · Dimensions in mm

Tooth set		Designation[1]	Mass	Dimensions				
p[2]	z[3]		m	d	C_1	D_0	D_k	C_2
″			≈ kg	$^{+0,018}_{0}$				min.
3/8	20	**KSR15-B0-06-10-20-08**	0,18	**15**	5,2	60,9	65	0,8
1/2	16	**KSR15-B0-08-10-16-08**	0,21	**15**	7	65,1	70,5	1,1
		KSR15-B0-08-10-16-08-AH01	0,22	**15**	7	65,1	70,5	1,1
	18	**KSR20-B0-08-10-18-08**	0,32	**20**	7	73,1	78,6	1,1
		KSR20-B0-08-10-18-15	0,32	**20**	7	73,1	78,6	1,1
	19	**KSR25-B0-08-10-19-08**	0,29	**25**	7	77,1	82,5	1,1
5/8	14	**KSR15-B0-10-10-14-08**	0,26	**15**	8,7	71,3	78	1,3
	17	**KSR20-B0-10-10-17-15**	0,41	**20**	8,7	86,3	93,1	1,3
3/4	13	**KSR15-B0-12-10-13-08**	0,4	**15**	10,5	79,6	87	1,5
	15	**KSR20-B0-12-10-15-16**	0,47	**20**	10,5	91,6	99,2	1,5
1	10	**KSR20-B0-16-10-10-15**	0,5	**20**	15,3	82,3	89,4	2
	15	**KSR30-B0-16-10-15-15**	1,34	**30**	15,3	122,2	131	2

x suitable

1) Composition of designation, see page 334.

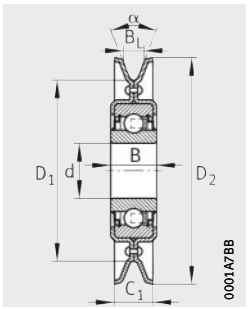
2) p = pitch.

3) z = number of teeth.

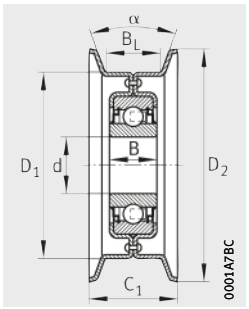
				Width across flats	Chain to DIN ISO 606	
D	B_1	C	d_3 max.	W	ISO chain	ANSI chain
40	28,6	12	28,4	3	x	–
40	28,6	12	28,4	3	x	–
40	28,6	12	28,4	3	x	–
47	31	14	33	3	x	x
47	31	14	33	3	x	x
52	31	15	37,3	3	x	x
40	28,3	12	28,4	3	x	x
47	31	14	33	3	x	x
40	28,6	12	28,4	3	x	x
47	31	14	33	3	x	x
47	31	14	33	3	x	–
62	35,7	18	44	4	x	–



Idler pulley units



RSRA..-L0, RSRA..-K0
Type A



RSRB..-L0
Type B

Dimension table · Dimensions in mm

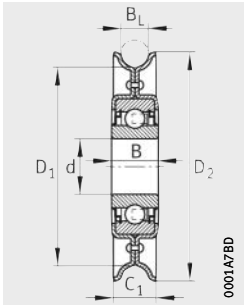
Type	Designation	Mass	Dimensions			
		m	d[1]	D_1	D_2	B
		≈ kg				
A	**RSRA15-90-L0**	0,24	**15**	61,6	90	14,4
	RSRA17-102-K0-AH01	0,42	**17**	70,8	102	12
	RSRA13-129-L0-L114[4]	0,56	**13**	73,7	129	18,3
	RSRA13-186-L0	1,13	**13**	130,8	186	18,3
	RSRA16-129-L0	0,54	**16**	73,7	129	18,3
	RSRA16-186-L0	1,11	**16**	130,8	186	18,3
B	**RSRB13-117-L0**	0,5	**13**	101	117	18,3
	RSRB13-159-L0	0,8	**13**	139,7	159	18,3
	RSRB15-92-L0	0,31	**15**	76,2	92	14,4
	RSRB16-117-L0	0,48	**16**	101	117	18,3
	RSRB16-159-L0	0,78	**16**	139,7	159	18,3
	RSRB16-222-L0	1,45	**16**	203	222	18,3
D	**RSRD20-160-L0**	0,75	**20**	136,5	155,8	17,7
	RSRD25-150-L0	0,83	**25**	133	154	21

1) Tolerance of bore d, see table, page 337.

2) Vee belt size according to DIN 2215 (ISO 1081, ISO 4183, ISO 4184) and DIN 7753-1 (ISO 4184).

3) Basic load rating of bearing.

4) The bearing is greased with L114 (GA47).



RSRD..-L0
Type D

		Angle	Vee belt size[2]	Basic load ratings[3]		Fatigue limit load
C_1	B_L	α		dyn. C_r	stat. C_{0r}	C_{ur}
		°		N	N	N
20	12,4	32	8, 10, (12,5)	8 100	3 700	187
22,2	12,7	34	8, 10, (12,5)	9 600	4 750	239
32	22,1	32	13, 17, 20, 22	10 100	4 750	241
32	22,1	32	13, 17, 20, 22	10 100	4 750	241
32	22,1	32	13, 17, 20, 22	10 100	4 750	241
32	22,1	32	13, 17, 20, 22	10 100	4 750	241
36	25,4	10	–	10 100	4 750	241
36,5	25,4	10	–	10 100	4 750	241
31	22,2	10	–	8 100	3 700	187
36	25,4	10	–	10 100	4 750	241
36,5	25,4	10	–	10 100	4 750	241
50	38	10	–	10 100	4 750	241
17,5	13,5	–	–	13 600	6 600	335
24	17	–	–	14 900	7 800	395



Radial insert ball bearings and housing units, corrosion-resistant



Radial insert ball bearings with Corrotect coating or in corrosion-resistant VA design
Flake graphite cast iron and sheet steel housings
High grade steel housings
Plastic housings

Radial insert ball bearings and housing units, corrosion-resistant

Radial insert ball bearings

348

Corrosion-resistant VA design
With Corrotect coating

Corrosion-resistant radial insert ball bearings are designed for particularly humid environments. The bearings are available either with the anti-corrosion coating Corrotect or in the corrosion-resistant VA design.

Typical areas of application include the agricultural and mining sector, conveying equipment, textile, paper and woodworking machinery as well as machinery for the food and drinks industry.

Flake graphite cast iron housings

372

With Corrotect coating

Due to the anti-corrosion coating Corrotect, corrosion-resistant flake graphite cast iron housings are specially designed for humid environments.

The housings are single-piece components, have high load carrying capacity and are screw mounted to the adjacent construction by means of fixing holes.

The housings correspond in their design to standard housings and can be combined with end caps KASK.

Sheet steel housings

372

Corrosion-resistant VA design

The sheet steel housings are made from corrosion-resistant, austenitic chromium-nickel steel and are designed for moderate loads and lightweight constructions.

High grade steel housings

392

High grade steel housings are suitable for extremely high humidity, heavily contaminated water, salt spray and weakly alkaline and weakly acidic cleaning agents.

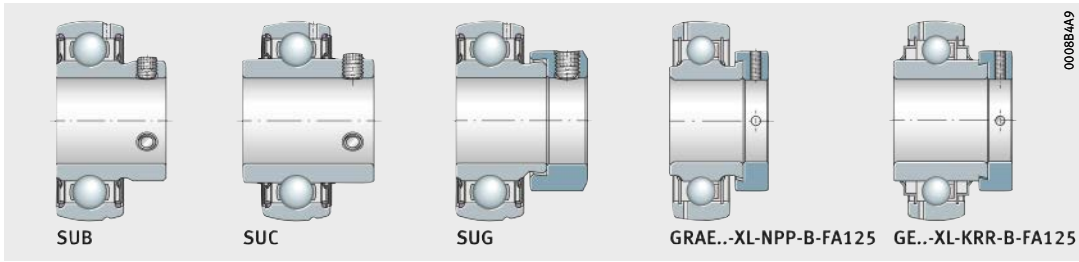
The housings do not have annular slots and cannot therefore be combined with end caps.

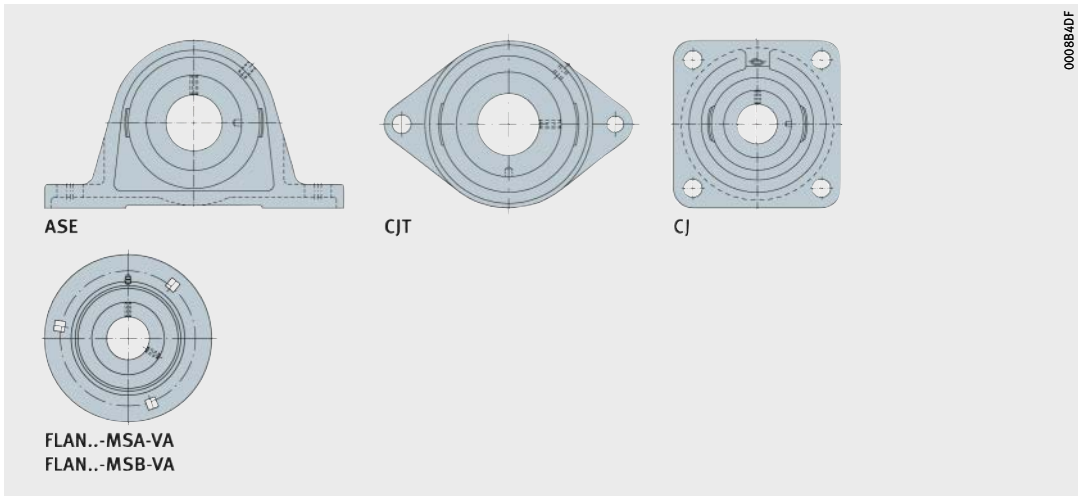
Plastic housings

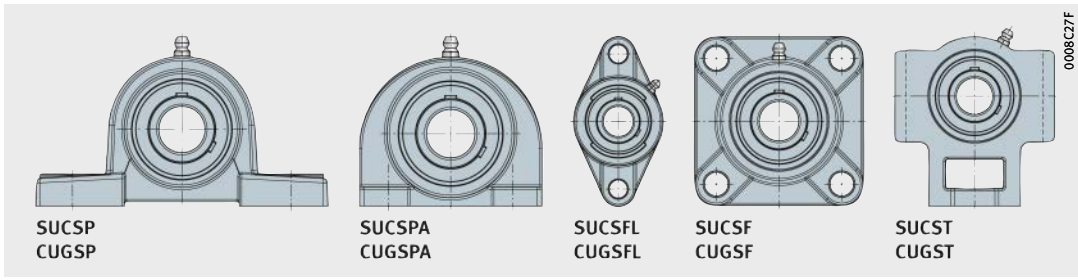
422

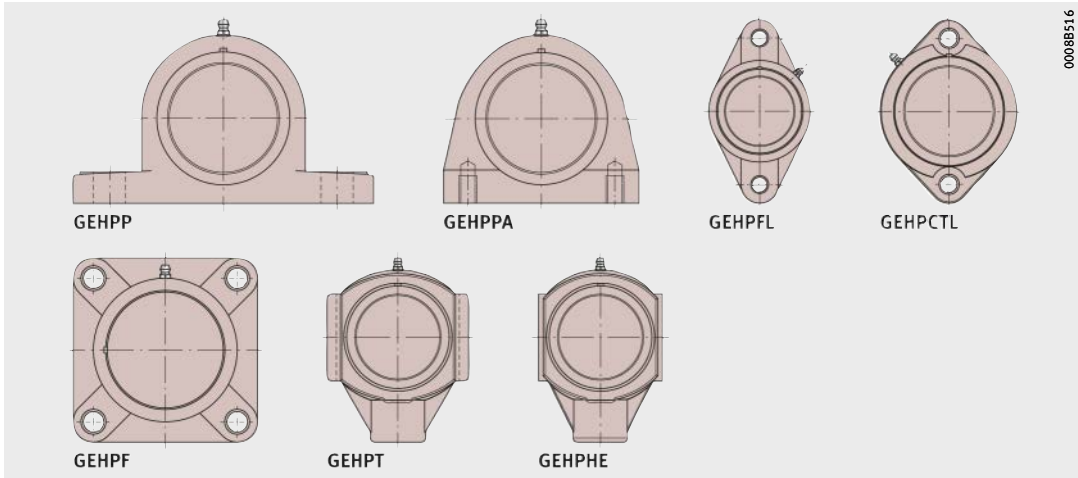
Plastic housings made from the glass fibre reinforced material PBT are resistant not only to humidity but also to numerous chemical agents.

The housings are used in preference in foods and drinks industry. They have annular slots and are supplied with a closed end cap CC.


0008B4A9
SUB
SUC
SUG
GRAE..-XL-NPP-B-FA125
GE..-XL-KRR-B-FA125


0008B4DF
ASE
CJT
CJ
FLAN..-MSA-VA
FLAN..-MSB-VA


0008C27F
SUCSP
CUGSP
SUCSPA
CUGSPA
SUCSFL
CUGSFL
SUCSF
CUGSF
SUCST
CUGST


0008B516
GEHPP
GEHPPA
GEHPFL
GEHPCTL
GEHPF
GEHPT
GEHPHE



Radial insert ball bearings, corrosion-resistant

Radial insert ball bearings, corrosion-resistant

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Features of radial insert ball bearings, comparison of series

Series	Shaft diameter mm		Compensation of misalignment	Internal clearance
	from	to		
GRAE..-XL-NPP-B-FA125	20	60	yes	Group 3
GE..-XL-KRR-B-FA125	20	50	yes	Group 3
SUB	20	50	yes	Group 3
SUC	12	50	yes	Group 3
SUG	20	50	yes	Group 3

1) Further guidelines must be observed, see section Lubrication, page 62.

2) Attention! Recommended operating temperature of bearing series. In the case of temperatures over +100 °C, relubrication must be carried out regularly.

3) Temporary temperature peaks are possible up to 120 °C.

Location	Sealing	Cage material	Grease[1]	Relubrication facility	Temperature[2] °C		Comments	Dimension table
					from	to		Page
Eccentric locking collar	P	PA66	GA47	yes	–20	+100[3]	Corrosion-resistant	370
Eccentric locking collar	R	PA66	GA47	yes	–20	+100[3]	Corrosion-resistant	370
Grub screws	RSR	Corrosion-resistant VA steel	FM222	yes	–35	+100	Corrosion-resistant	364
Grub screws	RSR	Corrosion-resistant VA steel	FM222	yes	–35	+100	Corrosion-resistant, flinger shield	366
Eccentric locking collar	RSR	Corrosion-resistant VA steel	FM222	yes	–35	+100	Corrosion-resistant	368

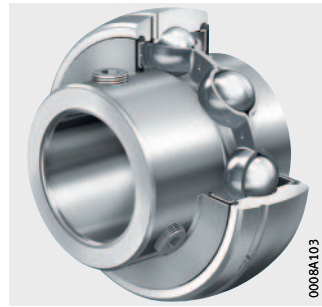


Radial insert ball bearings, corrosion-resistant

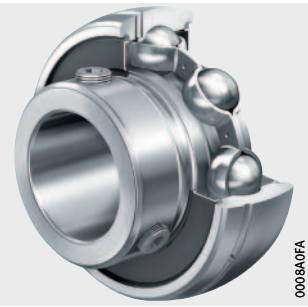
With grub screws in inner ring

Corrosion-resistant VA design

SUC



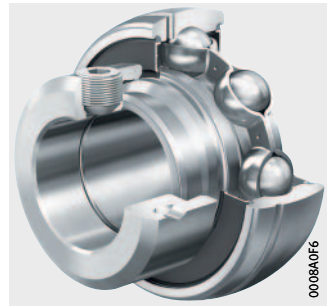
SUB



With eccentric locking collar

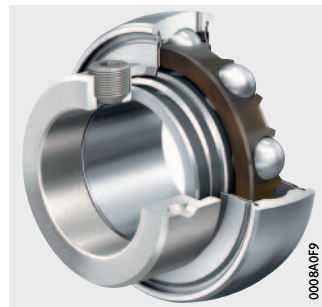
Corrosion-resistant VA design

SUG



With Corrotect coating

GRAE..-XL-NPP-B-FA125



GE..-XL-KRR-B-FA125



Radial insert ball bearings, corrosion-resistant

Features

The radial insert ball bearings SUB, SUC and SUG as well as the radial insert ball bearings with the suffix FA125 are designed for corrosion-resistant bearing arrangements. They are therefore equally suitable for applications involving humidity, contaminated water, salt spray mist and for weakly alkaline or weakly acidic cleaning agents. The classic areas of application include the agricultural, construction and mining sector, conveying equipment, textile, paper and woodworking machinery as well as machinery for the food and drinks industry.

X-life

Numerous sizes are supplied in the X-life design. These products are indicated in the dimension tables.

Radial insert ball bearings of X-life quality have, for example, lower roughness Ra and higher geometrical accuracy of the raceways than comparable designs that are not X-life. As a result, these bearings have higher load carrying capacity and longer rating life although their dimensions are identical. In certain applications, this means that a smaller bearing arrangement can be designed.

Radial insert ball bearings of X-life quality have an eccentric locking collar of an improved design and the quantity and distribution of the lubricant has been optimised. Housings ASE have additional crosspieces on the underside. For extreme requirements, the cage and seal material in the high and low temperature designs (suffix FA101) has been significantly improved in comparison with earlier versions.

Corrosion-resistant VA design or with Corrotect coating

The bearings are available in the corrosion-resistant VA design or with the Corrotect coating. They correspond in their design to single row deep groove ball bearings 62, are ready to fit, particularly easy to fit and allow robust, economical bearing arrangements with a long operating life. They are located on the shaft by means of grub screws in the extended inner ring or by means of an eccentric locking collar.

Operation even under difficult conditions is ensured by seals and greases that are matched to the application.



Radial insert ball bearings in corrosion-resistant VA design

In the case of radial insert ball bearings SUB, SUC and SUG, the bearing rings, eccentric locking collar and rolling elements are made from high alloy, corrosion-resistant rolling bearing steel with an increased chromium and molybdenum content, material number 1.4125.

Sheet steel cages made from corrosion-resistant steel, material number 1.4301, retain and guide the rolling elements.

Radial insert ball bearings, corrosion-resistant

Media resistance

In the food industry in particular, the resistance of the material in relation to various cleaning agents is of increasing importance.

Resistance to media

Medium	Concentration	X5CrNi18-10 (1.4301)		440C (1.4125)	
	%	+20 °C	+80 °C	+20 °C	+80 °C
Hydrochloric acid HCl	0,1	+	+	–	–
	1	(+)	–	–	–
	18	–	–	–	–
Hydrofluoric acid HF	1	–	–	–	–
	5	–[1]	–	–[1]	–
Sulphuric acid H_2SO_4	1	+	–	–	–
	10	(+)	–	–	–
	96	+	(+)	–	–
Sulphurous acid H_2SO_3	1	+	+	–	–
Nitric acid HNO_3	5	+	+	–	–
	25	+	+	+	(+)
	65	+	+	+	(+)
Phosphoric acid H_3PO_4	1	+	+	+	+
	10	+	+	(+)	+
	85	+	+	+	–
Formic acid HCOOH	5	+	+	–	–
	25	+	+	–	–
Acetic acid CH_3COOH	5	+	+	+	–
	25	+	+	+	–
Citric acid	5	+	+	+	+
	25	+	+	–	–
Chloroacetic acid	5	+	+	(+)	–
Sodium chloride NaCl	10	+	+	(–)	(–)
Sea water	4	+	+	(–)	(–)
Distilled water	–	+	+	+	+
Ammonium hydroxide NH_4OH	1	+	+	+	+
	10	+	+	+	+
Potassium hydroxide solution KOH	0,1	+	+	+	+
	1	+	+	+	+
	10	+	+	+	+
Sodium hypochlorite solution	1	+[1]	+	[2]	(–)
Hydrogen peroxide H_2O_2	5	+	+	+	+

\+ Resistant
(+) Moderately resistant
(–) Barely resistant
– Not resistant

[1] Not tested.
Estimate generated from remaining test series.

[2] Not tested.
No estimate possible.

Location by means of corrosion-resistant VA grub screws

The inner ring is located axially on the shaft by means of two corrosion-resistant VA grub screws, material number 1.4301, offset by 120°. This location method is suitable for bearing arrangements with a constant direction of rotation or, under low speed and load, for an alternating direction of rotation.

The grub screws are self-retaining and have a fine pitch thread with cup point for secure location of the bearings when taking account of the stated tightening torques, see table.

Tightening torques for metric grub screws, corrosion-resistant VA design

Width across flats W mm	Thread	Tightening torque[1)] M_A Nm
2,5	M5	2,4
3	M6×0,75	3,9
4	M8×1	8,3
5	M10×1,25	16

[1)] The tightening torques are only valid for grub screws from Schaeffler.

Location by means of corrosion-resistant VA eccentric locking collar

The bearings are located on the shaft by a corrosion-resistant VA locking collar. They are thus particularly suitable for bearing arrangements with a constant direction of rotation or, under low speed and load, for an alternating direction of rotation.

The locking collar is preferably tightened in the direction of rotation and must be secured by means of a grub screw. This location method prevents damage to the shaft and can be easily loosened again.

Sealing

Single-piece seals RSR seal the radial insert ball bearings on both sides. Additional outer flinger shields made from corrosion-resistant steel, material number 1.4301, protect the seals against mechanical damage.



Lubrication

Initial greasing is carried out with an aluminium complex soap grease with food applications approval to NSF-H1 that is sufficient in many case for the entire operating life of the bearings. For relubrication, the outer rings have lubrication holes on their circumference.

Operating temperature

Radial insert ball bearings in the corrosion-resistant VA design are suitable for operating temperatures from –35 °C to +100 °C.

Radial insert ball bearings, corrosion-resistant

Radial insert ball bearings with Corrotect coating

The radial insert ball bearings GRAE..-XL-NPP-B-FA125 and GE..-XL-KRR-B-FA125 have a Corrotect coating on all surfaces.

Plastic cages made from polyamide PA66 retain and guide the rolling elements.

Anti-corrosion coating system Corrotect

The anti-corrosion coating Corrotect is an economical alternative to radial insert ball bearings with conventional anti-corrosion protection, see page 88. The coating thickness is between 2 µm and 5 µm.

Advantages of the anti-corrosion coating

The advantages of the anti-corrosion coating Corrotect include:

- All surfaces are protected against corrosion, including the machined surfaces of chamfers and radii.
- Rust beneath seals is prevented in the long term.
- Small bright spots are protected against corrosion by the cathodic protection mechanism.
- Operating life is significantly longer compared to uncoated parts due to the anti-corrosion protection.
- Uncoated bearings and housings are fully interchangeable with the coated versions of the same design.
- Bearings and housings made of corrosion-resistant rolling bearing steel are often no longer required.

Media resistance

The resistance of the Corrotect coating to various media must be observed, see table.

The use of the Corrotect coating is not permitted for direct contact with foodstuffs.

Resistance to media

Chemicals	Corrotect coating[1)]
Neutral, organic fluids (oil, brake fluid, petrol)	Resistant
Aqueous salt solutions in the neutral range 6 ≦ pH ≧ 8 (table salt NaCl, seawater applications)	Conditionally resistant
Acidic liquids (pH ≦ 6)	Not resistant
Alkaline liquids (pH ≧ 8)	Not resistant
Oxidising substances (ozone, chlorine, peroxides, hypochlorides)	Not resistant

1) Valid for Corrotect coatings based on zinc and zinc alloy.

Location by means of locking collar

The bearings are located on the shaft by a locking collar. They are thus particularly suitable for bearing arrangements with a constant direction of rotation or, under low speed and load, for an alternating direction of rotation.

The locking collar is preferably tightened in the direction of rotation and must be secured by means of a grub screw. This location method prevents damage to the shaft and can be easily loosened again.

Sealing

Three-piece seals P or R seal the bearings on both sides.
The NBR part is protected against mechanical damage by zinc plated sheet steel shields. In seals P, the seal lip is axially preloaded, in seals R it is radially preloaded.

Lubrication

Initial greasing is carried out using the grease GA47, which is sufficient in many case for the entire operating life of the bearings. GA47 is a barium complex soap grease with a mineral oil base, see page 68.

In order to increase the grease quantity, radial insert ball bearings with seals R have sheet steel shields that are angled and extended outwards. This provides more space for the grease. This extends the bearing operating life and the relubrication intervals. For relubrication, the outer rings have lubrication holes on their circumference.

Operating temperature

Corrosion-resistant radial insert ball bearings with a Corrotect coating are suitable for operating temperatures from –20 °C to +100 °C.

Temporary temperature peaks are possible up to +120 °C.



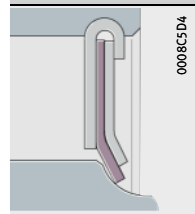
Radial insert ball bearings, corrosion-resistant

Sealing

Seals for radial insert ball bearings are of a three-piece design. This concept offers, due to the rigidly rolled-in sheet steel washer, optimum seating in the bearing as well as concentric alignment of the seal lip to the inner ring.

Seal types

P seal (NPP)

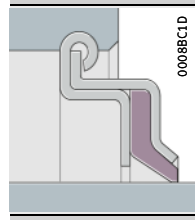


Two zinc-coated sheet steel washers (or in a corrosion-resistant VA design) with intermediate NBR part, seal lip axially preloaded.

In order to protect the seal lip from mechanical damage, the outer sheet steel washer extends a considerable distance down towards the bearing inner ring.

For use in narrow radial insert ball bearings with inner ring extended on one side.

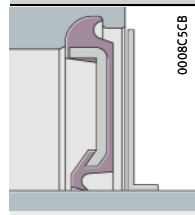
R seal (KRR)



Two zinc-coated sheet steel washers extended outwards and angled downwards with intermediate NBR part and radially preloaded seal lip. Improved protection against mechanical damage.

Substantial grease reservoir due to the space between the extended and angled sheet steel washers. For use in radial insert ball bearings with inner ring extended on both sides.

RSR seal with flinger shield in corrosion-resistant VA design



Single piece, sheet steel washer in corrosion-resistant VA design with vulcanised and radially preloaded seal lip made from NBR and additional flinger shield.

Suffixes

Suffixes for available designs, see table.

Available designs

Suffix	Description	Design
B	Bearing with spherical outside surface of outer ring	Standard
FA125	With Corrotect coating, corrosion-resistant	
KRR	Lip seals on both sides (seal R, three-piece)	
NPP	Lip seals on both sides (seal P, three-piece)	
FA107	Bearing with lubrication holes on the locating side	

Design and safety guidelines

The chapter Technical principles brings together the essential guidelines on the design of bearing arrangements, lubrication, mounting and dismounting and the operation of bearings, see page 32.

Compensation of static misalignments

Bearings with a spherical outer ring, fitted in housings with a concave bore, can compensate for static misalignment of the shaft, *Figure 1*.

For units with a lubrication groove in the housing and lubrication hole in the radial insert ball bearing, the following applies:

- Up to ±2,5°, the units can be relubricated.
- Between ±2,5° and ±5°, the possibility of relubrication is dependent on the specific unit. Please contact us in this case.
- Over ±5°, relubrication is no longer possible.

The units must not be used to support swivelling or tumbling motion.

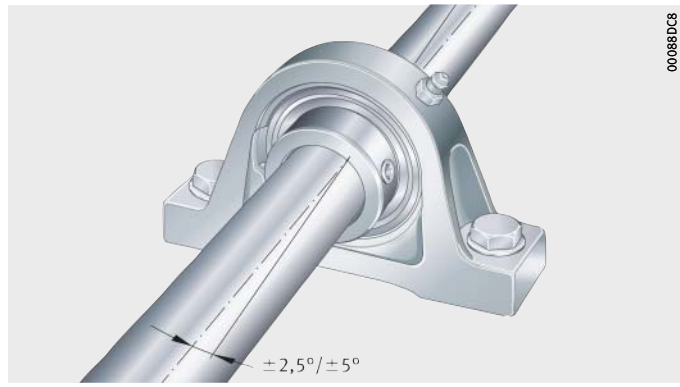


Figure 1
Compensation of static shaft misalignment

Minimum radial load

In order to ensure slippage-free operation, the bearings must be subjected to a minimum radial load. This applies particularly in the case of high speeds and high accelerations. In continuous operation, a minimum radial load of the order of $P \geqq 0{,}01 \cdot C_r$ is necessary for ball bearings with cage.

Speed limits for radial insert ball bearings

The speed limits are dependent on the load, the clearance between the bearing bore and shaft and the friction of the seals in the case of bearings with contact seals.

Guide values for the permissible speeds can be derived from the diagram, *Figure 2*, page 360.

In the case of load ratios $C_r/P > 13$, the speeds can be increased. For $C_r/P < 5$, location by means of a fit with a shaft roughness of Ra 0,3 is recommended, see page 100. For both types of applications, please contact us. In order to ensure slippage-free operation, the minimum radial load must be observed.

Radial insert ball bearings, corrosion-resistant

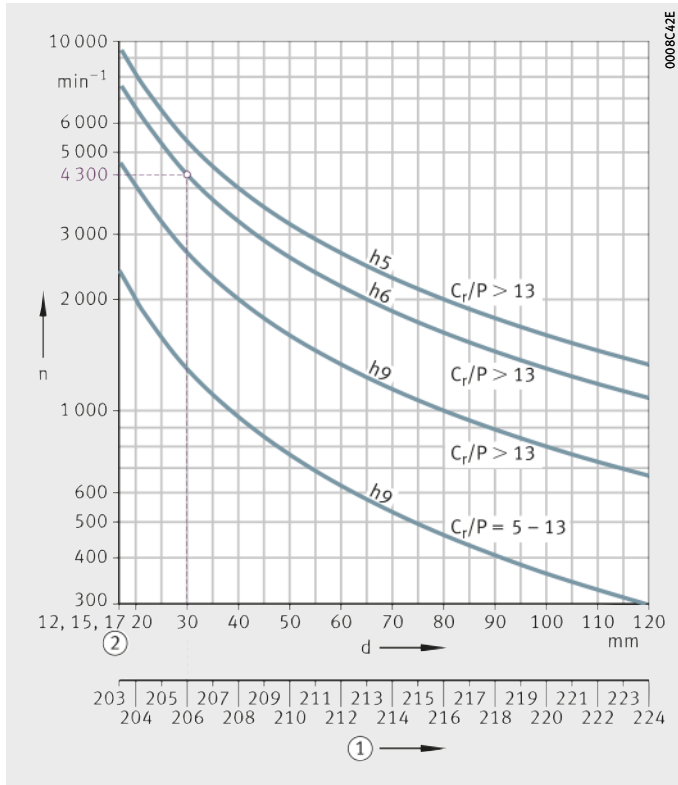
Example of permissible speed calculation

Given:

Shaft tolerance	h6 Ⓔ
Radial insert ball bearing	GRAE30-XL-NPP-B-FA125
Ball set	206
Basic dynamic load rating C_r	20 700 N
Load P	1 300 N
Sealing	Seals P.

Required:

Load ratio $C_r/P = 20\,700\ N/1\,300\ N$	$C_r/P > 13$
Permissible speed	$n \approx 4\,300\ min^{-1}$, *Figure 2*.



n = permissible speed
h5, h6, h9 = shaft tolerance (this is subject to the envelope requirement Ⓔ)
C_r/P = load ratio

① Ball set
② For d = 12 mm, 15 mm and 17 mm, identical ball set 203

Figure 2
Permissible speed for radial insert ball bearings with seal RSR

Shaft tolerances for radial insert ball bearings

The permissible shaft tolerance is dependent on the speed and load. Shafts of the tolerance classes h6 Ⓔ to h9 Ⓔ can be used.

Conventional drawn shafts will suffice for most applications.

Accuracy
Standard tolerances of radial insert ball bearings

The outside diameter of the bearings corresponds to tolerance class Normal in accordance with ISO 492, see tables. The inner ring bore has a plus tolerance to facilitate mounting of the bearing.

Tolerances of radial insert ball bearings, with Corrotect coating

Inner ring				Outer ring			
Nominal dimension Bore d mm		Variation[1] $t_{\Delta dmp}$ µm		Nominal dimension Outside diameter D mm		Variation[2] $t_{\Delta Dmp}$ µm	
over	incl.	min.	max.	over	incl.	max.	min.
12	18	0	+18	30	50	0	–11
18	24	0	+18	50	80	0	–13
24	30	0	+18	80	120	0	–15
30	40	0	+18	120	150	0	–18
40	50	0	+18	150	180	0	–25
50	60	0	+18	180	250	0	–30
60	90	0	+25	–	–	–	–
90	120	0	+30	–	–	–	–

1) This corresponds to the arithmetic mean value derived from the largest and smallest diameters (measured using a two-point measuring device).

2) In the case of sealed bearings, the largest and smallest values of the outside diameter can deviate from the mean value by approx. 0,03 mm.

Tolerances of radial insert ball bearings, corrosion-resistant VA design

Inner ring				Outer ring			
Nominal dimension Bore d mm		Variation[1] $t_{\Delta dmp}$ µm		Nominal dimension Outside diameter D mm		Variation[2] $t_{\Delta Dmp}$ µm	
over	incl.	min.	max.	over	incl.	max.	min.
18	24	0	+25	50	80	0	–13
24	30	0	+25	80	120	0	–13
30	40	0	+25	120	150	0	–13
40	50	0	+25	150	180	0	–13
50	60	0	+25	180	250	0	–13



1) This corresponds to the arithmetic mean value derived from the largest and smallest diameters (measured using a two-point measuring device).

2) In the case of sealed bearings, the largest and smallest values of the outside diameter can deviate from the mean value by approx. 0,03 mm.

Radial insert ball bearings, corrosion-resistant

Radial internal clearance of radial insert ball bearings

The radial internal clearance of most series is Group 3 to ISO 5753-1 and is thus larger than for normal deep groove ball bearings, see table and page 146.

The larger internal clearance allows better support of angular misalignment and shaft deflection.

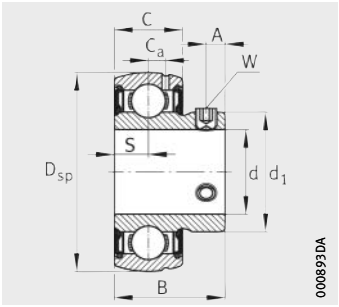
Radial internal clearance

Bore d mm		Radial internal clearance							
		Group N µm		Group 3 µm		Group 4 µm		Group 5 µm	
over	incl.	min.	max.	min.	max.	min.	max.	min.	max.
2,5	6	2	13	8	23	–	–	–	–
6	10	2	13	8	23	14	29	20	37
10	18	3	18	11	25	18	33	25	45
18	24	5	20	13	28	20	36	28	48
24	30	5	20	13	28	23	41	30	53
30	40	6	20	15	33	28	46	40	64
40	50	6	23	18	36	30	51	45	73
50	65	8	28	23	43	38	61	55	90
65	80	10	30	25	51	46	71	65	105
80	100	12	36	30	58	53	84	75	120
100	120	15	41	36	66	61	97	90	140
120	140	18	48	41	81	71	114	105	160
140	160	18	53	46	91	81	130	120	180



Radial insert ball bearings with grub screws in inner ring

Spherical outer ring
Corrosion-resistant VA design



SUB

Dimension table · Dimensions in mm

Designation[1)2)]	Mass	Dimensions					
	m	d	D_{sp}	C	B	S	d_1
	≈ kg						
SUB204	0,14	**20**	47	16	26	8	29,05
SUB205	0,17	**25**	52	17	28	8,5	34,03
SUB206	0,26	**30**	62	19	30,5	9,5	40,31
SUB207	0,41	**35**	72	20	35,45	10	47,4
SUB208	0,52	**40**	80	21	39,45	10,5	52,83
SUB209	0,6	**45**	85	22	41,5	11	57,3
SUB210	0,67	**50**	90	23	43,5	11,5	62,92

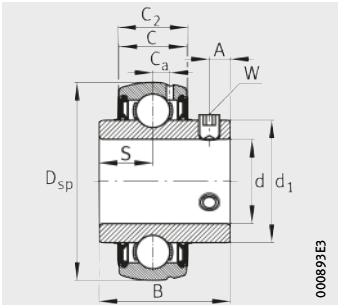
1) Speed limits for radial insert ball bearings, see page 359.
2) Lubrication groove and two lubrication holes in the outer ring.
3) Factor f_0 for determining equivalent bearing load, see table, page 40.

		Width across flats	Basic load ratings		Fatigue limit load	Factor[3]
C_a	A	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
4	4,5	2,5	12 300	6 300	300	13,1
4,15	5	2,5	13 400	7 500	360	13,8
5	5,8	3	18 700	10 700	510	13,8
5,7	6,1	3	24 600	14 600	700	13,8
5,9	8	4	31 500	18 900	910	14
6,5	8	4	31 500	19 400	930	14,3
6,5	9	5	33 500	22 100	1 060	14,3



Radial insert ball bearings with grub screws in inner ring

Spherical outer ring
Corrosion-resistant VA design
With extended inner ring



SUC

Dimension table · Dimensions in mm

Designation[1]	Mass	Dimensions					
	m	d	D_{sp}	C	C_2	B	S
	≈ kg				max.		
SUC201[3]	0,11	**12**	40	12	12,6	25	9,6
SUC202[3]	0,1	**15**	40	12	12,6	25	9,6
SUC203[3]	0,08	**17**	40	12	12,6	25	9,6
SUC204[4]	0,16	**20**	47	16	16,6	31	12,7
SUC205[4]	0,2	**25**	52	17	17,6	34,1	14,3
SUC206[4]	0,31	**30**	62	19	19,6	38,1	15,9
SUC207[4]	0,47	**35**	72	20	20,6	42,9	17,5
SUC208[4]	0,62	**40**	80	21	21,6	49,2	19
SUC209[4]	0,67	**45**	85	22	22,6	49,2	19
SUC210[4]	0,78	**50**	90	23	23,6	51,6	19

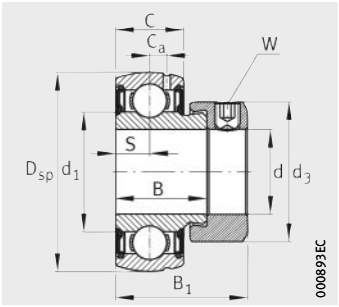
1) Speed limits for radial insert ball bearings, see page 359.
2) Factor f_0 for determining equivalent bearing load, see table, page 40.
3) Two lubrication holes in the outer ring.
4) Lubrication groove and two lubrication holes in the outer ring.

			Width across flats	Basic load ratings		Fatigue limit load	Factor[2]
d_1	C_a	A	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
23,9	3,4	4	2,5	9 200	4 550	218	13,1
23,9	3,4	4	2,5	9 200	4 550	218	13,1
23,9	3,4	4	2,5	9 200	4 550	218	13,1
29,05	4	5	2,5	12 300	6 300	300	13,1
34,03	4,15	5	2,5	13 400	7 500	360	13,8
40,31	5	6	3	18 700	10 700	510	13,8
47,4	5,7	6,5	3	24 600	14 600	700	13,8
52,83	5,9	8	4	31 500	18 900	910	14
57,3	6,5	8	4	31 500	19 400	930	14,3
62,92	6,5	9	5	33 500	22 100	1 060	14,3



Radial insert ball bearings with eccentric locking collar

Spherical outer ring
Corrosion-resistant VA design



SUG

Dimension table · Dimensions in mm

Designation[1)2)]	Mass	Dimensions					
	m	d	D_{sp}	C	B	S	d_1
	≈ kg						
SUG204	0,17	**20**	47	16	21,9	8	29,05
SUG205	0,2	**25**	52	17	22,4	8,5	34,03
SUG206	0,31	**30**	62	19	24,3	9,5	40,31
SUG207	0,51	**35**	72	20	25,9	10	47,4
SUG208	0,6	**40**	80	21	30,2	11	52,83
SUG209	0,7	**45**	85	22	30,2	11	57,3
SUG210	0,77	**50**	90	23	30,7	11	62,92

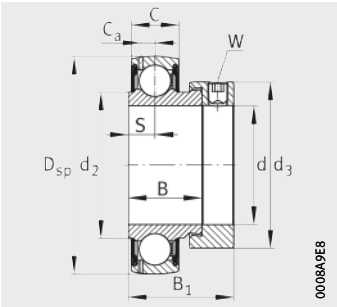
1) Speed limits for radial insert ball bearings, see page 359.
2) Lubrication groove and two lubrication holes in the outer ring.
3) Factor f_0 for determining equivalent bearing load, see table, page 40.

			Width across flats	Basic load ratings		Fatigue limit load	Factor[3]
C_a	B_1	d_3 max.	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
4	31,5	33	3	12 300	6 300	300	13,1
4,15	32	37,5	3	13 400	7 500	360	13,8
5	36,3	44	4	18 700	10 700	510	13,8
5,7	39,5	55	5	24 600	14 600	700	13,8
5,9	43,8	58	5	31 500	18 900	910	14
6,5	43,8	63	5	31 500	19 400	930	14,3
6,5	44,3	69	5	33 500	22 100	1 060	14,3



Radial insert ball bearings with eccentric locking collar

Spherical outer ring
With Corrotect coating



GRAE..-XL-NPP-B-FA125

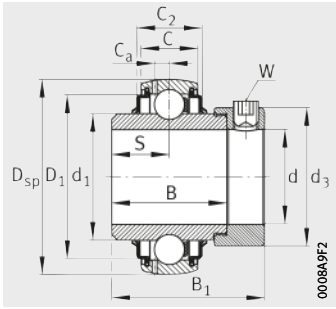
X-life

Dimension table · Dimensions in mm

Designation[1]	Mass	Dimensions						
	m	d	D_{sp}	C	C_2	B	S	d_1
	≈ kg							
GRAE20-XL-NPP-B-FA125	0,16	**20**	47	14	–	21,4	7,5	–
GE20-XL-KRR-B-FA125	0,19	**20**	47	14	16,6	34,1	17,1	27,6
GRAE25-XL-NPP-B-FA125	0,19	**25**	52	15	–	21,4	7,5	–
GE25-XL-KRR-B-FA125	0,25	**25**	52	15	16,7	34,9	17,5	33,8
GRAE30-XL-NPP-B-FA125	0,32	**30**	62	18	–	23,8	9	–
GE30-XL-KRR-B-FA125	0,39	**30**	62	18	20,7	36,5	18,3	40,2
GRAE35-XL-NPP-B-FA125	0,48	**35**	72	19	–	25,4	9,5	–
GE35-XL-KRR-B-FA125	0,55	**35**	72	19	22,5	37,7	18,8	46,8
GRAE40-XL-NPP-B-FA125	0,62	**40**	80	21	–	30,2	11	–
GE40-XL-KRR-B-FA125	0,73	**40**	80	21	23,5	42,9	21,4	52,3
GRAE45-XL-NPP-B-FA125	0,69	**45**	85	22	–	30,2	11	–
GE45-XL-KRR-B-FA125	0,83	**45**	85	22	26,4	42,9	21,4	57,9
GRAE50-XL-NPP-B-FA125	0,77	**50**	90	22	–	30,2	11	–
GE50-XL-KRR-B-FA125	0,99	**50**	90	22	26,4	49,2	24,6	62,8
GRAE60-XL-NPP-B-FA125	1,4	**60**	110	24	–	37,1	13,5	–

[1] Speed limits for radial insert ball bearings, see page 359.

[2] Factor f_0 for determining equivalent bearing load, see table, page 40.



GE..-XL-KRR-B-FA125

					Width across flats	Basic load ratings		Fatigue limit load	Factor[2]
d_2	D_1	C_a	B_1	d_3 max.	W	dyn. C_r N	stat. C_{0r} N	C_{ur} N	f_0
26,9	–	4	31	33	3	13 600	6 600	335	13,1
–	37,4	4	43,7	33	3	13 600	6 600	335	13,1
30,5	–	3,9	31	37,5	3	14 900	7 800	395	13,8
–	42,5	4,1	44,5	37,5	3	14 900	7 800	395	13,8
37,4	–	4,7	35,8	44	4	20 700	11 300	570	13,8
–	52	4,7	48,5	44	4	20 700	11 300	570	13,8
44,6	–	5,6	39	55	5	27 500	15 300	770	13,8
–	60,3	5,6	51,3	55	5	27 500	15 300	770	13,8
49,4	–	6,4	43,8	58	5	34 500	19 800	1 010	14
–	68,3	6,4	56,5	58	5	34 500	19 800	1 010	14
54,3	–	6,4	43,8	63	5	34 500	20 400	1 030	14,3
–	72,3	6,4	56,5	63	5	34 500	20 400	1 030	14,3
59,4	–	6,9	43,8	69	5	37 500	23 200	1 180	14,3
–	77,3	6,9	62,8	69	5	37 500	23 200	1 180	14,3
72	–	7,2	53,1	84	5	56 000	36 000	1 820	14,3





Flake graphite cast iron or sheet steel housing units, corrosion-resistant

With Corrotect coating
Corrosion-resistant VA design

Flake graphite cast iron or sheet steel housing units, corrosion-resistant

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Dimension tables

Plummer block housing units, flake graphite cast iron housing, with Corrotect coating 384

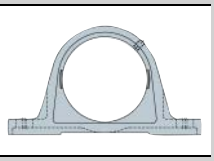
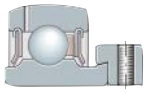
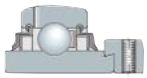
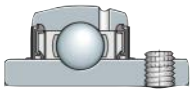
Two-bolt flanged housing units, flake graphite cast iron housing, oval version, with Corrotect coating 386

Three-bolt flanged housing units, sheet steel housing, round version, corrosion-resistant VA design 388

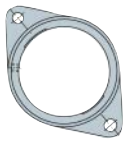
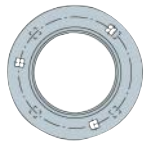
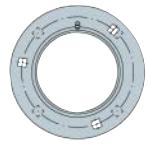
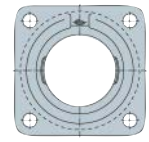
Four-bolt flanged housing units, flake graphite cast iron housing, square version, with Corrotect coating 390



Possible combinations Radial insert ball bearings with flake graphite cast iron or sheet steel housings, corrosion-resistant

Radial insert ball bearing		Housing
		Plummer block housing 
Designation Shaft diameter d		**ASE**
GRAE..-XL-NPP-B-FA125 20 mm – 60 mm		**PASE..-XL-N-FA125** page 384
GE..-XL-KRR-B-FA125 20 mm – 50 mm		**RASE..-XL-N-FA125** page 384
SUC 12 mm – 30 mm		Available by agreement

Catalogue range, dimension table, see pages indicated.
Other dimensions and combinations available by agreement.

Two-bolt flanged housing	Three-bolt flanged housing		Four-bolt flanged housing
			
CJT	**FLAN..-MSB-VA** (2 pieces)	**FLAN..-MSA-VA** **FLAN..-MSB-VA**	**CJ**
PCJT..-XL-N-FA125 page 386	Available by agreement	Available by agreement	**PCJ..-XL-N-FA125** page 390
RCJT..-XL-N-FA125 page 386	Available by agreement	Available by agreement	**RCJ..-XL-N-FA125** page 390
Available by agreement	**RRY..-VA** page 388	**GRRY..-VA** page 388	Available by agreement

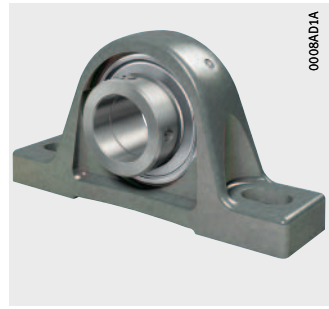


Flake graphite cast iron or sheet steel housing units, corrosion-resistant

Flake graphite cast iron housing units

With Corrotect coating

PASE..-XL-N-FA125,
RASE..-XL-N-FA125



PCJT..-XL-N-FA125,
RCJT..-XL-N-FA125



PCJ..-XL-N-FA125,
RCJ..-XL-N-FA125



Sheet steel housing units

Corrosion-resistant VA design

GRRY..-VA,
RRY..-VA



Flake graphite cast iron or sheet steel housing units, corrosion-resistant

Features

Corrosion-resistant flake graphite cast iron and sheet steel housings are available as plummer block and flanged housing units. The areas of application of the housings correspond to that of the radial insert ball bearings. They are suitable where humidity, contaminated water, salt spray mist, weakly alkaline or weakly acidic cleaning agents are present.

Further information

Further information on Corrotect

- TPI 64, Corrosion-resistant Products
- TPI 67, Special Coating Corrotect, Anti-corrosion Protection for Rolling Bearings and Precision Components
- TPI 186, Higher Performance Capacity Through the Use of Coatings, Coated Rolling Bearings and Precision Components, functional coatings for Automotive and Industrial applications
- Download and ordering: http://medien.schaeffler.de.

X-life

Numerous sizes are supplied in the X-life design. These products are indicated in the dimension tables.

Radial insert ball bearings of X-life quality have, for example, lower roughness Ra and higher geometrical accuracy of the raceways than comparable designs that are not X-life. As a result, these bearings have higher load carrying capacity and longer rating life although their dimensions are identical. In certain applications, this means that a smaller bearing arrangement can be designed.

Radial insert ball bearings of X-life quality have an eccentric locking collar of an improved design and the quantity and distribution of the lubricant has been optimised. Housings ASE have additional crosspieces on the underside. For extreme requirements, the cage and seal material in the high and low temperature designs (suffix FA101) has been significantly improved in comparison with earlier versions.

Housings with integral radial insert ball bearing

The units are ready-to-fit and comprise INA sheet steel or INA flake graphite cast iron housings in which INA radial insert ball bearings are integrated, see page 353. In order to ensure function and reliability under all operating conditions, the bearings and housings are matched to each other.



Due to the spherical outside surface of the bearing outer ring and the concave housing bore, housing units can compensate for static angular misalignment of the shaft.

The units are used predominantly as locating bearings, but are also suitable as non-locating bearings under low loads and speeds.

The housings are screw mounted on the adjacent construction. Less stringent tolerances are sufficient for the screw mounting surfaces.

Flake graphite cast iron or sheet steel housing units, corrosion-resistant

Units with flake graphite cast iron housing

Cast iron units are available as plummer block housing units PASE..-XL-N-FA125 and RASE..-XL-N-FA125, as well as flanged housing units PCJT..-XL-N-FA125, RCJT..-XL-N-FA125, PCJ..-XL-N-FA125 and RCJ..-XL-N-FA125.

The housings and radial insert ball bearings have a Corrotect coating and the suffix FA125. The housings are single-piece components, have high load carrying capacity and are screw mounted to the adjacent construction by means of fixing holes. For location, screws in accordance with DIN EN ISO 4762 are suitable.

Lubrication

For the relubrication of radial insert ball bearings, the housing bore has a lubrication groove and a lubrication hole suitable for conventional taper type lubrication nipples to DIN 71412. When the housing units are supplied, a taper type lubrication nipple with a thread M6 is already fitted.

Units with sheet steel housing

These units are available in their preferred versions as series GRRY..-VA and RRY..-VA.

The units comprise radial insert ball bearings in a corrosion-resistant VA design, see page 353, and two-piece sheet steel housings made from corrosion-resistant steel, material number 1.4301. The units have the suffix VA.

The units are designed for moderate loads and lightweight constructions.

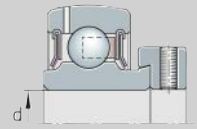
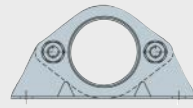
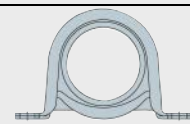
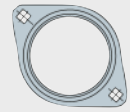
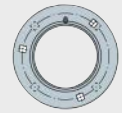
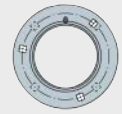
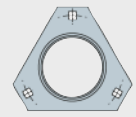
Lubrication

GRRY can be relubricated via a lubrication nipple.

Further possible combinations

In addition to the sheet steel housings in corrosion-resistant VA design, sheet steel housings with Corrotect coating are also possible in combination with the radial insert ball bearing GRAE..-XL-NPP-B-FA125. Housings and bearings in the following possible combinations must be ordered separately, see table.

Possible combinations for available diameters

Combination Radial insert ball bearing with sheet steel housing[1]		GRAE...XL-NPP-B-FA125  00081619 mm	
		min.	max.
Plummer block housing			
GEH..-PBS-FA125	 190 941A	20	40
GEH..-BT-FA125	 190 942A	20	30
Two-bolt flanged housing			
FLAN..-MST-FA125 (2 pieces)	 0008C5DD	20	40
Three-bolt flanged housing			
FLAN..-MSB-FA125 (2 pieces)	 0008C5E6	20	55
FLAN..-MSA-FA125[2] **FLAN..-MSB-FA125**[2]	 0008C5E6	25	45
FLAN..-MSTR-FA125	 0008C5EF	20	35

[1] For housing code and bearing bore, see table.

[2] Relubrication facility.



Housing code and bearing bore

Housing code		47	52	62	72	80	85	90	100
Bearing bore ∅d	mm	20	25	30	35	40	45	50	55

Operating temperature

Housing units with bearing end caps are suitable for operating temperatures from –20 °C to +80 °C.

Housing units without bearing end caps are suitable for operating temperatures from –20 °C to +100 °C. Temporary temperature peaks are possible up to +120 °C.

Sheet steel housing units in the corrosion-resistant VA design without bearing end caps are suitable for operating temperatures from –35 °C to +100 °C.

Flake graphite cast iron or sheet steel housing units, corrosion-resistant

Suffixes

Suffixes for available designs, see table.

Available designs

Suffix	Design	Design
FA125	With Corrotect coating, corrosion-resistant	Standard
VA	Made from corrosion-resistant steel	

Design and safety guidelines

The chapter Technical principles brings together the essential guidelines on the design of bearing arrangements, lubrication, mounting and dismounting and the operation of bearings, see page 32.

Due to their versatile characteristics, INA housing units can be easily used in almost all industrial sectors.

It is always and fundamentally the responsibility of the designer of a machine to ensure that a malfunction of housing units cannot be hazardous to persons. An unplanned stoppage of the machine should not cause major disruptions in operation. In both cases, it is therefore essential that you contact us before design work is carried out.

Compensation of static misalignments

Bearings with a spherical outer ring, fitted in housings with a concave bore, can compensate for static misalignment of the shaft, *Figure 1*.

For units with a lubrication groove in the housing and lubrication hole in the radial insert ball bearing, the following applies:

- Up to ±2,5°, the units can be relubricated.
- Between ±2,5° and ±5°, the possibility of relubrication is dependent on the specific unit. Please contact us in this case.
- Over ±5°, relubrication is no longer possible.

The units must not be used to support swivelling or tumbling motion.

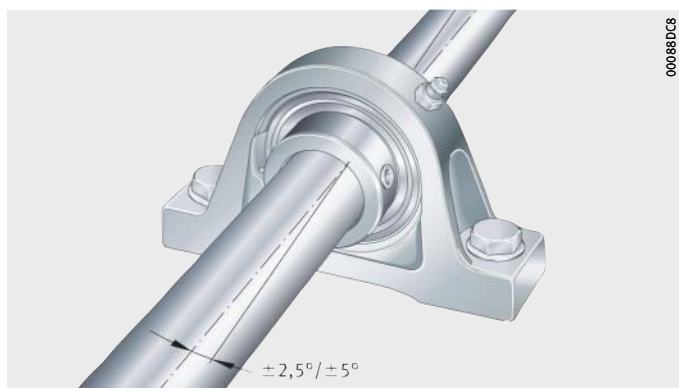


Figure 1
Compensation of static shaft misalignment

Speed limits for radial insert ball bearings

The speed limits are dependent on the load, the clearance between the bearing bore and shaft and the friction of the seals, see page 359.

Radial load carrying capacity

Flake graphite cast iron housings can support the same radial loads as the radial insert ball bearings fitted.

Sheet steel housings are suitable for moderate loads. The permissible radial load carrying capacity $C_{0r\,G}$ of sheet steel housings is given in the dimension tables.

The static load carrying capacity C_{0r} of the radial insert ball bearings is stated in the dimension tables.

Where shock loads are present, appropriate safety factors must be applied. In this case, please contact us.

Axial load carrying capacity

The axial operating load of the unit must not exceed the axial load carrying capacity of the housing.

The axial load carrying capacity of flake graphite cast iron housings is $C_{0a\,G} = 0{,}5 \cdot C_{0r}$.

The permissible axial load carrying capacity of sheet steel housings for three-bolt flanged housing units RRY..-VA and GRRY..-VA is $C_{0a\,G} = 0{,}5 \cdot C_{0r\,G}$.

Design of adjacent construction

The permissible shaft tolerance is dependent on the speed, load and the radial insert ball bearing fitted. Shafts of the tolerance classes h6 Ⓔ to h9 Ⓔ can be used. Conventional drawn shafts will suffice for most applications.

Screw mounting surfaces

Recommendations for the screw mounting surfaces are as follows:

- roughness of the screw mounting surface max. Ra 12,5 (Rzmax 63)
- geometrical and positional tolerance 0,04/100 concave, spherical not permissible.
- In the event of high loads occurring parallel to the mounting surface of plummer block housing units (in the case of cast iron housings with long base), the use of additional dowel pins to DIN EN ISO 8752 is recommended. In this case, through holes (see centre punch mark for housing ASE) must be applied, see *Figure 1*, page 129.



Fixing screws

The screw connection should be designed in accordance with VDI 2230; friction coefficient $\mu = 0{,}12$ (90%).

Screws of grade 8.8 or better can be used for fixing.
The maximum tightening torques applicable to this screw grade must not be exceeded even if screws of a higher grade are used.

In principle, we recommend that the screw connection should only be tightened to 70% of the values stated in the standard.

For fixing, hexagonal socket head screws in accordance with DIN EN ISO 4762 or hexagonal socket head screws with a coarse pitch full thread in accordance with DIN EN ISO 4017 should be used. The screws should be combined as a minimum with a washer in accordance with DIN EN ISO 7089 or DIN EN ISO 7090.

Screws and accessories for location are not included in the delivery.

All screws and other accessories used for location of the units GRRY..-VA and RRY..-VA should be in the corrosion-resistant VA design.

Bearing end caps

The ends of shafts can be covered using bearing end caps made from acrylonitrile styrene acrylate copolymer (ASA), see table and *Figure 2*. The caps are suitable for temperatures from –20 °C to +80 °C. They protect against injury due to rotating shafts and also protect the bearings against contamination.

For location of the caps, housings with the suffix N have an annular slot on the entry side, see page 134.

The series for which end caps are supplied are indicated in the dimension tables. Bearing end caps are accessories and must always be ordered separately.

End caps

Designation	Dimensions mm				
	d	D	H	L	E max.
KASK04	20	48	31	36	30
KASK05	25	54	33	38	30
KASK06	30	63	37	44	35
KASK07	35	73	39	47	39
KASK08	40	82	42	51	42
KASK10	50	92	47	56	46
KASK12	60	112	55	65	55

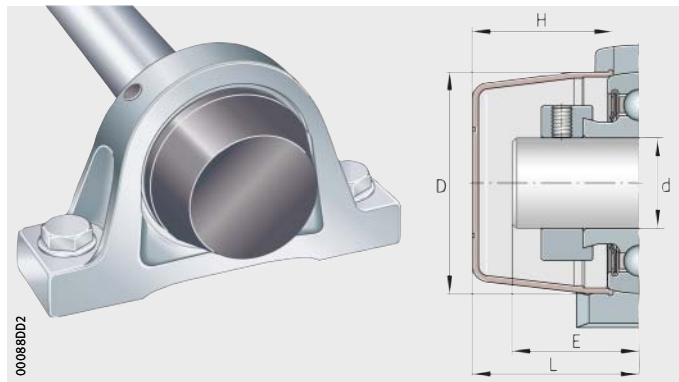


Figure 2
Housing unit with bearing end cap

Accuracy

The housings correspond predominantly to DIN 626-2 and ISO 3228, insofar as they are described therein.

Dimensional tolerances

The dimensional tolerances for the machined surfaces of the flake graphite cast iron housings are ±0,25 mm.

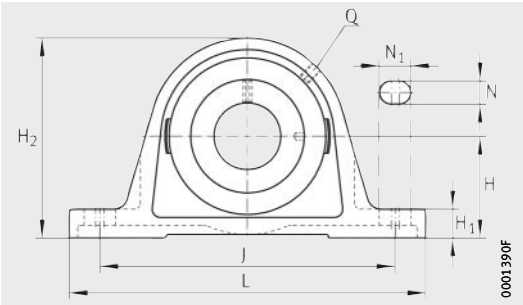
The dimensional tolerances for the unmachined surfaces of flake graphite cast iron housings as well as machined to unmachined cast surfaces correspond to ISO 8062-3 (dimensional tolerance grade DCTG 9).

The bearing seat of sheet steel housings is designed such that the bearing is seated in the housing with a defined swivel moment once the housing parts are bolted together.



Plummer block housing units

Flake graphite cast iron housing
With Corrotect coating



PASE..-XL(-N)-FA125, RASE..-XL(-N)-FA125

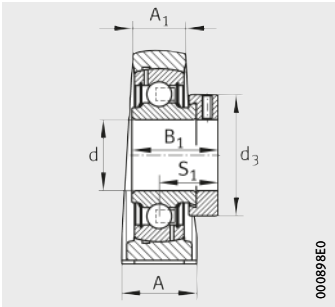
Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit	Housing[2]	Radial insert ball bearing	m ≈ kg	d	H	J	L
PASE20-XL-N-FA125	ASE04	GRAE20-XL-NPP-B-FA125	0,58	**20**	33,3	97	130
RASE20-XL-N-FA125	ASE04	GE20-XL-KRR-B-FA125	0,61	**20**	33,3	97	130
PASE25-XL-N-FA125	ASE05	GRAE25-XL-NPP-B-FA125	0,72	**25**	36,5	103	130
RASE25-XL-N-FA125	ASE05	GE25-XL-KRR-B-FA125	0,75	**25**	36,5	103	130
PASE30-XL-N-FA125	ASE06	GRAE30-XL-NPP-B-FA125	1,11	**30**	42,9	118	158
RASE30-XL-N-FA125	ASE06	GE30-XL-KRR-B-FA125	1,18	**30**	42,9	118	158
PASE35-XL-N-FA125	ASE07	GRAE35-XL-NPP-B-FA125	1,6	**35**	47,6	126	163
RASE35-XL-N-FA125	ASE07	GE35-XL-KRR-B-FA125	1,69	**35**	47,6	126	163
PASE40-XL-N-FA125	ASE08	GRAE40-XL-NPP-B-FA125	1,84	**40**	49,2	138	179
RASE40-XL-N-FA125	ASE08	GE40-XL-KRR-B-FA125	1,95	**40**	49,2	138	179
PASE45-XL-FA125	ASE09	GRAE45-XL-NPP-B-FA125	2,12	**45**	54	150	192
RASE45-XL-FA125	ASE09	GE45-XL-KRR-B-FA125	2,21	**45**	54	150	192
PASE50-XL-N-FA125	ASE10	GRAE50-XL-NPP-B-FA125	2,55	**50**	57,2	158	200
RASE50-XL-N-FA125	ASE10	GE50-XL-KRR-B-FA125	2,7	**50**	57,2	158	200
PASE60-XL-N-FA125	ASE12	GRAE60-XL-NPP-B-FA125	4,35	**60**	69,9	190	240

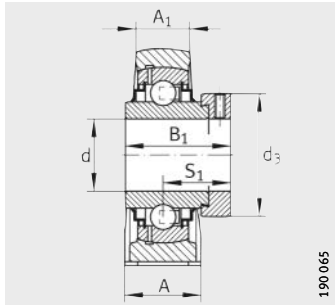
1) To be ordered separately.
For a description of the end caps, see page 382.

2) The housings have the Corrotect coating.

3) Lubrication nipple M6 fitted.



PASE..-XL(-N)-FA125



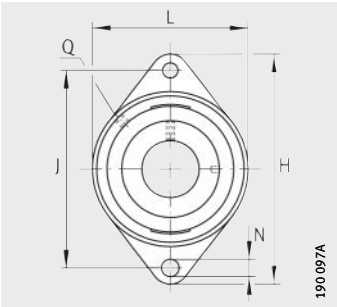
RASE..-XL(-N)-FA125

										End cap[1]
A	A_1	H_1	H_2	N	N_1	B_1	S_1	Q[3]	d_3 max.	
32	19	14,5	64	11	19	31	23,5	M6	33	KASK04
32	19	14,5	64	11	19	43,7	26,6	M6	33	KASK04
36	21	14,5	70	11	19	31	23,5	M6	37,5	KASK05
36	21	14,5	70	11	19	44,5	27	M6	37,5	KASK05
40	25	17	82	14	22	35,8	26,8	M6	44	KASK06
40	25	17	82	14	22	48,5	30,2	M6	44	KASK06
45	27	19	93	14	21	39	29,5	M6	55	KASK07
45	27	19	93	14	21	51,3	32,5	M6	55	KASK07
48	30	19	99	14	26	43,8	32,8	M6	58	KASK08
48	30	19	99	14	26	56,5	35,1	M6	58	KASK08
48	32	21,5	107	14	29	43,8	32,8	M6	63	–
48	32	21,5	107	14	29	56,5	35,1	M6	63	–
54	34	21,5	115	18	23	43,8	32,8	M6	69	KASK10
54	34	21,5	115	18	23	62,8	38,2	M6	69	KASK10
60	42	25	140	18	28	53,1	39,6	M6	84	KASK12



Two-bolt flanged housing units

Flake graphite cast iron housing
Oval version
With Corrotect coating



PCJT..-XL-N-FA125,
RCJT..-XL-N-FA125

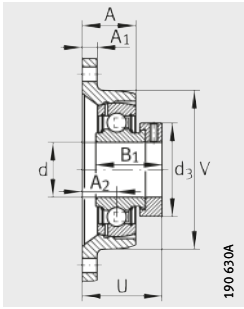
Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing[2]	Radial insert ball bearing	m ≈ kg	d	H	J
PCJT20-XL-N-FA125	CJT04	GRAE20-XL-NPP-B-FA125	0,45	**20**	112	90
RCJT20-XL-N-FA125	CJT04	GE20-XL-KRR-B-FA125	0,48	**20**	112	90
PCJT25-XL-N-FA125	CJT05	GRAE25-XL-NPP-B-FA125	0,58	**25**	124	99
RCJT25-XL-N-FA125	CJT05	GE25-XL-KRR-B-FA125	0,64	**25**	124	99
PCJT30-XL-N-FA125	CJT06	GRAE30-XL-NPP-B-FA125	0,84	**30**	142	116,5
RCJT30-XL-N-FA125	CJT06	GE30-XL-KRR-B-FA125	0,9	**30**	142	116,5
PCJT35-XL-N-FA125	CJT07	GRAE35-XL-NPP-B-FA125	1,18	**35**	155	130
RCJT35-XL-N-FA125	CJT07	GE35-XL-KRR-B-FA125	1,25	**35**	155	130
PCJT40-XL-N-FA125	CJT08	GRAE40-XL-NPP-B-FA125	1,57	**40**	172	143,5
RCJT40-XL-N-FA125	CJT08	GE40-XL-KRR-B-FA125	1,68	**40**	172	143,5
PCJT50-XL-N-FA125	CJT10	GRAE50-XL-NPP-B-FA125	1,98	**50**	190	157
RCJT50-XL-N-FA125	CJT10	GE50-XL-KRR-B-FA125	2,2	**50**	190	157
PCJT60-XL-N-FA125	CJT12	GRAE60-XL-NPP-B-FA125	3,37	**60**	238	202

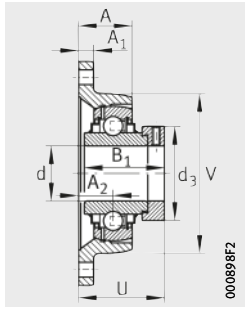
1) To be ordered separately.
For a description of the end caps, see page 382.

2) The housings have the Corrotect coating.

3) Lubrication nipple M6 fitted.



PCJT..-XL-N-FA125



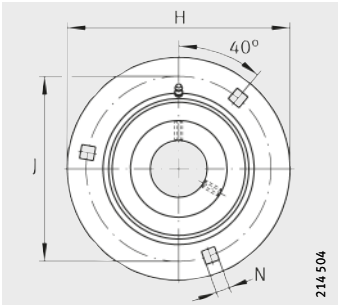
RCJT..-XL-N-FA125

										End cap[1]
L	A	A_1	A_2	N	B_1	U	V	$Q^{3)}$	d_3 max.	
61	28	10	19	11,5	31	42,5	61	M6	33	KASK04
61	28	10	19	11,5	43,7	45,6	61	M6	33	KASK04
70	26,5	11	19	11,5	31	42,5	70	M6	37,5	KASK05
70	26,5	11	19	11,5	44,5	46	70	M6	37,5	KASK05
80	29	12	20	11,5	35,8	46,8	80	M6	44	KASK06
80	29	12	20	11,5	48,5	50,2	80	M6	44	KASK06
92	30,5	12,5	21	14	39	50,5	92	M6	55	KASK07
92	30,5	12,5	21	14	51,3	53,5	92	M6	55	KASK07
105	34,5	13	24	14	43,8	56,8	105	M6	58	KASK08
105	34,5	13	24	14	56,5	59,1	105	M6	58	KASK08
116	39	13	28	18	43,8	60,8	116	M6	69	KASK10
116	39	13	28	18	62,8	66,2	116	M6	69	KASK10
138	46	16	34	18	53,1	73,6	138	M6	84	KASK12



Three-bolt flanged housing units

Sheet steel housing
Round version
Corrosion-resistant VA design



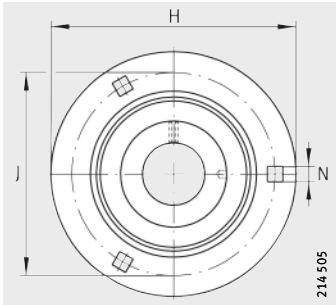
GRRY..-VA

Dimension table · Dimensions in mm

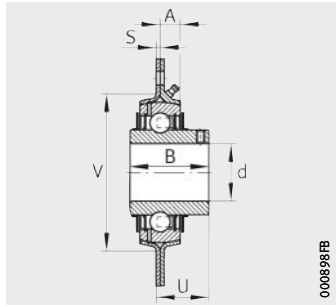
Designation			Mass	Dimensions	
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H
RRY12-VA[1]	2× FLAN40-MSB-VA	SUC201	0,21	**12**	81
RRY15-VA[1]	2× FLAN40-MSB-VA	SUC202	0,2	**15**	81
RRY17-VA[1]	2× FLAN40-MSB-VA	SUC203	0,19	**17**	81
GRRY20-VA[2]	1× FLAN47-MSB-VA, 1× FLAN47-MSA-VA	SUC204	0,34	**20**	90,5
RRY20-VA	2× FLAN47-MSB-VA	SUC204	0,34	**20**	90,5
GRRY25-VA[2]	1× FLAN52-MSB-VA, 1× FLAN52-MSA-VA	SUC205	0,38	**25**	95
RRY25-VA	2× FLAN52-MSB-VA	SUC205	0,38	**25**	95
GRRY30-VA[2]	1× FLAN62-MSB-VA, 1× FLAN62-MSA-VA	SUC206	0,63	**30**	112,7
RRY30-VA	2× FLAN62-MSB-VA	SUC206	0,63	**30**	112,7

1) Housing and radial insert ball bearing must be ordered separately.

2) Bearing can be relubricated.



RRY..-VA



GRRY..-VA, RRY..-VA

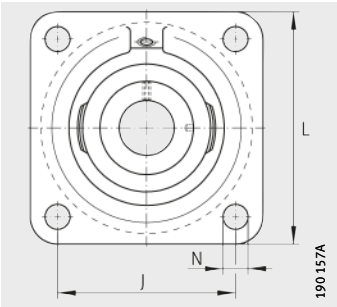
							Number of screw mounting holes	Load carrying capacity Housing
J	A	N	B	S	U	V	n	$C_{0r\,G}$ N
63,5	7	7,1	25	2	17,4	48	3	2 700
63,5	7	7,1	25	2	17,4	48	3	2 700
63,5	7	7,1	25	2	17,4	48	3	2 700
71,5	8	8,7	31	2	20,3	55	3	3 200
71,5	8	8,7	31	2	20,3	55	3	3 200
76	8,7	8,7	34,1	2	21,7	60	3	3 650
76	8,7	8,7	34,1	2	21,7	60	3	3 650
90,5	9	10,5	38,1	2,5	24,7	71	3	5 000
90,5	9	10,5	38,1	2,5	24,7	71	3	5 000



Four-bolt flanged housing units

Flake graphite cast iron housing
Square version
With Corrotect coating

X-life



PCJ..-XL(-N)-FA125,
RCJ..-XL(-N)-FA125

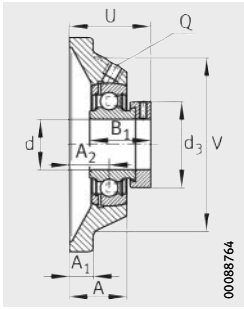
Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing[2]	Radial insert ball bearing	m ≈ kg	d	J	L
PCJ20-XL-N-FA125	CJ04	GRAE20-XL-NPP-B-FA125	0,6	**20**	63,5	86
RCJ20-XL-N-FA125	CJ04	GE20-XL-KRR-B-FA125	0,65	**20**	63,5	86
PCJ25-XL-N-FA125	CJ05	GRAE25-XL-NPP-B-FA125	0,76	**25**	70	95
RCJ25-XL-N-FA125	CJ05	GE25-XL-KRR-B-FA125	0,82	**25**	70	95
PCJ30-XL-N-FA125	CJ06	GRAE30-XL-NPP-B-FA125	1,11	**30**	82,5	108
RCJ30-XL-N-FA125	CJ06	GE30-XL-KRR-B-FA125	1,17	**30**	82,5	108
PCJ35-XL-N-FA125	CJ07	GRAE35-XL-NPP-B-FA125	1,5	**35**	92	118
RCJ35-XL-N-FA125	CJ07	GE35-XL-KRR-B-FA125	1,58	**35**	92	118
PCJ40-XL-N-FA125	CJ08	GRAE40-XL-NPP-B-FA125	1,9	**40**	101,5	130
RCJ40-XL-N-FA125	CJ08	GE40-XL-KRR-B-FA125	2,02	**40**	101,5	130
PCJ45-XL-FA125	CJ09	GRAE45-XL-NPP-B-FA125	2,22	**45**	105	137
RCJ45-XL-FA125	CJ09	GE45-XL-KRR-B-FA125	2,26	**45**	105	137
PCJ50-XL-N-FA125	CJ10	GRAE50-XL-NPP-B-FA125	2,3	**50**	111	143
RCJ50-XL-N-FA125	CJ10	GE50-XL-KRR-B-FA125	2,53	**50**	111	143

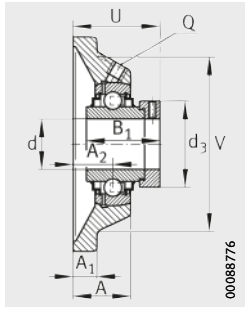
1) To be ordered separately.
For a description of the end caps, see page 382.

2) The housings have the Corrotect coating.

3) Lubrication nipple M6 fitted.



PCJ..-XL(-N)-FA125



RCJ..-XL(-N)-FA125

									End cap[1]
A	A_1	A_2	N	B_1	U	V	Q[3]	d_3 max.	
29	10	19	11,5	31	42,5	68	M6	33	KASK04
29	10	19	11,5	43,7	45,6	68	M6	33	KASK04
29	11	19	11,5	31	42,5	74	M6	37,5	KASK05
29	11	19	11,5	44,5	46	74	M6	37,5	KASK05
29	12	20	11,5	35,8	46,8	85	M6	44	KASK06
29	12	20	11,5	48,5	50,2	85	M6	44	KASK06
30,5	12,5	21	14	39	50,5	100	M6	55	KASK07
30,5	12,5	21	14	51,3	53,5	100	M6	55	KASK07
34,5	13	24	14	43,8	56,8	110	M6	58	KASK08
34,5	13	24	14	56,5	59,1	110	M6	58	KASK08
35	13	24	14	43,8	56,7	116	M6	63	–
35	13	24	14	56,5	59,1	116	M6	63	–
41	13	28	18	43,8	60,8	119	M6	69	KASK10
41	13	28	18	62,8	66,2	119	M6	69	KASK10





High grade steel housing units, corrosion-resistant

Radial insert ball bearings
in corrosion-resistant VA design or
with Corrotect coating

High grade steel housing units, corrosion-resistant

Page

Matrix

Possible combinations of radial insert ball bearings and high grade steel housings 394

Product overview

High grade steel housing units, corrosion-resistant 396

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Housings with integral radial insert ball bearing 398

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Load carrying capacity of housings 400

Design of adjacent construction 400

Accuracy

Dimensional tolerances 401

Dimension tables

Plummer block housing units, high grade steel housings

With long base, radial insert ball bearing in corrosion-resistant VA design, with grub screws in inner ring 402

With long base, radial insert ball bearing with Corrotect coating, with eccentric locking collar 404

With short base, radial insert ball bearing in corrosion-resistant VA design, with grub screws in inner ring 406

With short base, radial insert ball bearing with Corrotect coating, with eccentric locking collar 408

Two-bolt flanged housing units, high grade steel housings

Radial insert ball bearing in corrosion-resistant VA design, with grub screws in inner ring 410

Radial insert ball bearing with Corrotect coating, with eccentric locking collar 412

Four-bolt flanged housing units, high grade steel housings

Radial insert ball bearing in corrosion-resistant VA design, with grub screws in inner ring 414

Radial insert ball bearing with Corrotect coating, with eccentric locking collar 416

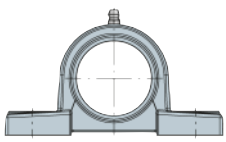
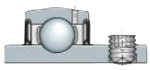
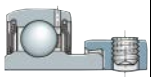
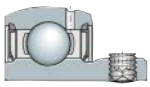
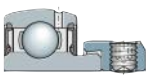
Take-up housing units, sheet steel housings

Radial insert ball bearing in corrosion-resistant VA design, with grub screws in inner ring 418

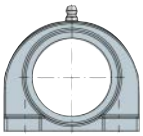
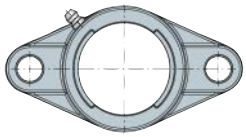
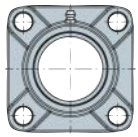
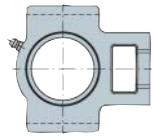
Radial insert ball bearing with Corrotect coating, with eccentric locking collar 420



Possible combinations Radial insert ball bearings and high grade steel housings

Radial insert ball bearing		Housing
		Plummer block housing
		
Designation Shaft diameter d		**GEHSP**
SUC 20 mm – 50 mm		**SUCSP** page 402
GRAE..-XL-NPP-B-FA107/125 20 mm – 50 mm		**CUGSP** page 404
SUB 20 mm – 50 mm		**SUBSP** Available by agreement
SUG 20 mm – 50 mm		**SUGSP** Available by agreement

Catalogue range, dimension table, see pages indicated.
Other dimensions and combinations available by agreement.

	Two-bolt flanged housing	Four-bolt flanged housing	Take-up housing
			
GEHSPA	**GEHSFL**	**GEHSF**	**GEHST**
SUCSPA page 406	**SUCSFL** page 410	**SUCSF** page 414	**SUCST** page 418
CUGSPA page 408	**CUGSFL** page 412	**CUGSF** page 416	**CUGST** page 420
SUBSPA Available by agreement	**SUBSFL** Available by agreement	**SUBSF** Available by agreement	**SUBST** Available by agreement
SUGSPA Available by agreement	**SUGSFL** Available by agreement	**SUGSF** Available by agreement	**SUGST** Available by agreement

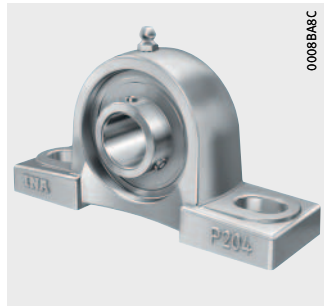


High grade steel housing units, corrosion-resistant

Plummer block housing units

Radial insert ball bearing in corrosion-resistant VA design
With grub screws and extended inner ring

SUCSP

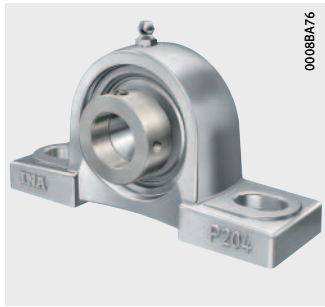


SUCSPA



Radial insert ball bearing with Corrotect coating
With eccentric locking collar

CUGSP



CUGSPA



Flanged housing units

Radial insert ball bearing in corrosion-resistant VA design
With grub screws and extended inner ring

SUCSFL



SUCSF

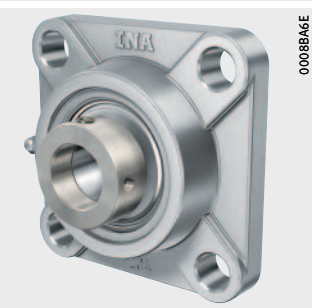


Radial insert ball bearing with Corrotect coating
With eccentric locking collar

CUGSFL



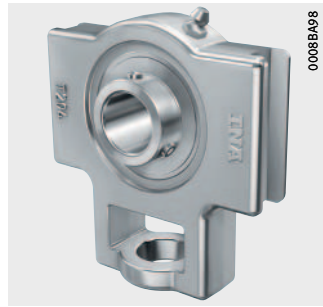
CUGSF



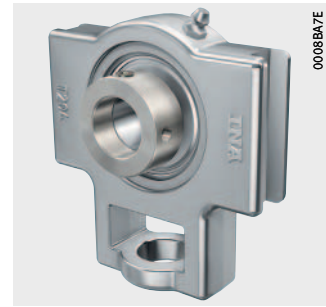
Take-up housing units

Radial insert ball bearings in corrosion-resistant VA design or with Corrotect coating

SUCST



CUGST





High grade steel housing units, corrosion-resistant

Features

Housing units with high grade steel housings are available as plummer block and flanged housing units as well as take-up housing units.

Plummer block housing units SUCSP and CUGSP have a long base. Plummer block housing units SUCSPA and CUGSPA have a short base.

Flanged housing units are available as two-bolt and four-bolt flanged housing units.

Take-up housing units have facilities for sliding motion. They are used where shafts must undergo substantial radial displacement travel.

The area of application of the housings correspond to that of the radial insert ball bearings fitted. They are suitable where humidity, contaminated water, salt spray mist, weakly alkaline or weakly acidic cleaning agents are present.

High grade steel housings do not have annular slots and cannot therefore be combined with end caps.

Housings with integral radial insert ball bearing

The units are ready-to-fit and comprise high grade steel housings in which INA radial insert ball bearings are fitted. In order to ensure function and reliability under all operating conditions, the bearings and housings are matched to each other.

The housings are single-piece components, have high load carrying capacity and are screw mounted to the adjacent construction by means of slots or threaded holes. For location, screws in accordance with DIN EN ISO 4762 are suitable. Less stringent tolerances are sufficient for the screw mounting surfaces.

Radial insert ball bearings in corrosion-resistant VA design or with Corrotect coating

The units comprise high grade steel housings and radial insert ball bearings with a spherical outer ring in a corrosion-resistant VA design or with Corrotect coating.

Location on the shaft in the case of housing units SUCS and SUBS is by means of grub screws and in the case of housing units SUGS by means of an eccentric locking collar. Housing units CUGS with the radial insert ball bearing GRAE..-FA125 have an eccentric locking collar.

Lubrication

For relubrication of radial insert ball bearings, the housing bore has a lubrication groove and the housing has a lubrication hole suitable for conventional lubrication nipples with a precision thread $^{1}/_{4}$″ – 28 UNF in accordance with ANSI B1.1. The lubrication nipple is already fitted at the time of delivery.

Operating temperature

Units with a high grade steel housing are suitable for operating temperatures from –35 °C to +100 °C.

Suffixes

Suffixes for available designs, see table.

Available designs

Suffix	Design	Design
FA125	Bearing with Corrotect coating, corrosion-resistant	Standard

Design and safety guidelines

The chapter Technical principles brings together the essential guidelines on the design of bearing arrangements, lubrication, mounting and dismounting and the operation of bearings, see page 32.

Compensation of static misalignments

Bearings with a spherical outer ring, fitted in housings with a concave bore, can compensate for static misalignment of the shaft, *Figure 1*.

For units with a lubrication groove in the housing and lubrication hole in the radial insert ball bearing, the following applies:

- Up to ±2,5°, the units can be relubricated.
- Between ±2,5° and ±5°, the possibility of relubrication is dependent on the specific unit. Please contact us in this case.
- Over ±5°, relubrication is no longer possible.

The units must not be used to support swivelling or tumbling motion.

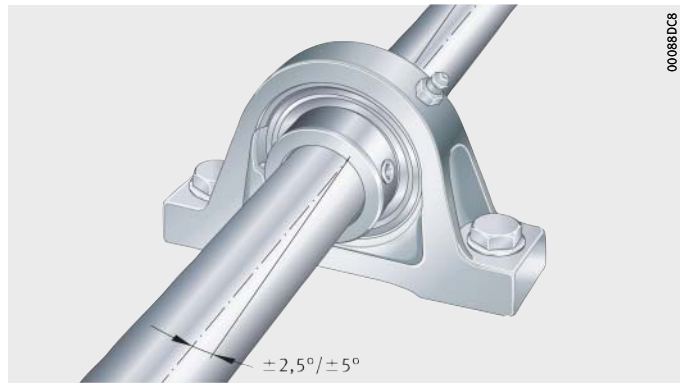


Figure 1
Compensation of static shaft misalignment

Speed limits for radial insert ball bearings

The speed limits are dependent on the load, the clearance between the bearing bore and shaft and the friction of the seals, see page 359.



High grade steel housing units, corrosion-resistant

Load carrying capacity of housings

Due to their versatile characteristics, INA housing units can be easily used in almost all industrial sectors.

If bearing arrangements are planned for equipment in which a malfunction could be hazardous to persons or an unplanned stoppage of the machine could cause major disruption, it is essential that you consult us before proceeding with the design.

Radial load carrying capacity

High grade steel housings can support the same radial loads as the radial insert ball bearings fitted.

The static load carrying capacity C_{0r} of the radial insert ball bearings is stated in the dimension tables.

Where shock loads are present, appropriate safety factors must be applied. In this case, please contact us.

Axial load carrying capacity

The axial load carrying capacity of radial insert ball bearings must not exceed the axial load carrying capacity of the housing.

The axial load carrying capacity of high grade steel housings is $0,5 \cdot C_{0r}$.

Design of adjacent construction

The permissible shaft tolerance is dependent on the speed, load and the radial insert ball bearing fitted. Shafts of the tolerance classes h6 Ⓔ to h9 Ⓔ can be used. Conventional drawn shafts will suffice for most applications.

Screw mounting surfaces

Recommendations for the screw mounting surfaces are as follows:

- roughness of the screw mounting surface max. Ra 12,5 (Rzmax 63)
- geometrical and positional tolerance 0,04/100 concave, spherical not permissible.
- In the event of high loads occurring parallel to the mounting surface of plummer block housing units (in the case of high grade steel housings with long base), the use of additional dowel pins to DIN EN ISO 8752 is recommended. In this case, through holes (see centre punch mark for housing ASE) must be applied, see *Figure 1*, page 129.

Fixing screws

The screw connection should be designed in accordance with VDI 2230; friction coefficient $\mu = 0,12$ (90%).

Screws of grade 8.8 or better can be used for fixing.
The maximum tightening torques applicable to this screw grade must not be exceeded even if screws of a higher grade are used.

In principle, we recommend that the screw connection should only be tightened to 70% of the values stated in the standard.

For fixing, hexagonal socket head screws in accordance with DIN EN ISO 4762 or hexagonal socket head screws with a coarse pitch full thread in accordance with DIN EN ISO 4017 should be used. The screws should be combined as a minimum with a washer in accordance with DIN EN ISO 7089 or DIN EN ISO 7090.

Screws and accessories for location are not included in the delivery.

All screws and other accessories used for location should be in the corrosion-resistant VA design.

Accuracy

The dimensions of high grade steel housings conform to JIS B 1559.

Dimensional tolerances

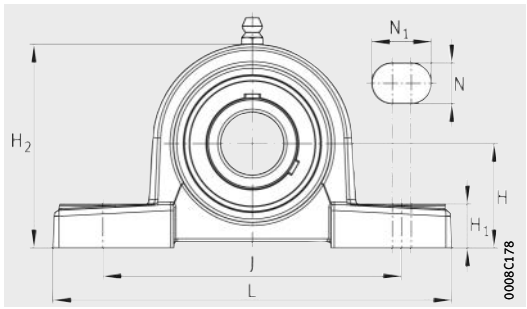
The dimensional tolerances for the machined surfaces of the high grade steel housings are ±0,25 mm.

The dimensional tolerances for unmachined as well as machined to unmachined surfaces correspond to JIS B 0403 (dimensional tolerance grade CT 10).



Plummer block housing units

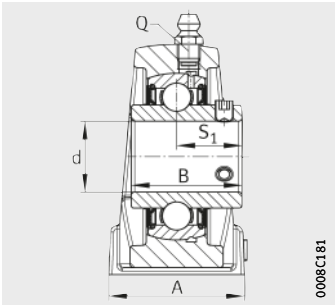
High grade steel housing
With long base
Radial insert ball bearing
in corrosion-resistant VA design
With grub screws in inner ring



SUCSP

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J
SUCSP204	GEHSP204	SUC204	0,9	**20**	33,3	95
SUCSP205	GEHSP205	SUC205	0,95	**25**	36,5	105
SUCSP206	GEHSP206	SUC206	1,6	**30**	42,9	121
SUCSP207	GEHSP207	SUC207	1,9	**35**	47,6	127
SUCSP208	GEHSP208	SUC208	2,4	**40**	49,2	137
SUCSP209	GEHSP209	SUC209	2,7	**45**	54	146
SUCSP210	GEHSP210	SUC210	3,1	**50**	57,2	159



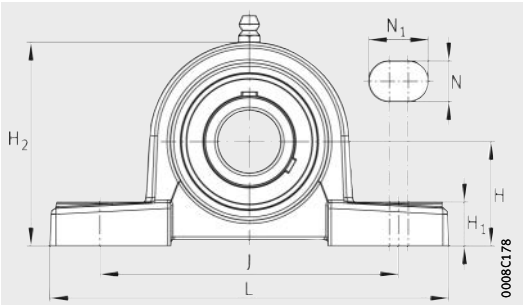
SUCSP

L	A	H_1	H_2	N	N_1	B	S_1	Q
127	38	14	65	13	19	31	18,3	$^1/_4$″ – 28 UNF
140	38	15	71	13	19	34,1	19,8	$^1/_4$″ – 28 UNF
165	48	17	83	17	21	38,1	22,2	$^1/_4$″ – 28 UNF
167	48	18	93	17	21	42,9	25,4	$^1/_4$″ – 28 UNF
184	54	18	98	17	21	49,2	30,2	$^1/_4$″ – 28 UNF
190	54	20	106	17	21	49,2	30,2	$^1/_4$″ – 28 UNF
206	60	21	114	20	25	51,6	32,6	$^1/_4$″ – 28 UNF



Plummer block housing units

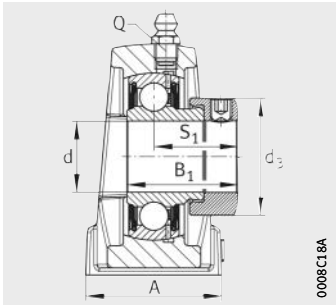
High grade steel housing
With long base
Radial insert ball bearing
with Corrotect coating
With eccentric locking collar



CUGSP

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J
CUGSP204	GEHSP204	GRAE20-XL-NPP-B-FA107/125	0,9	**20**	33,3	95
CUGSP205	GEHSP205	GRAE25-XL-NPP-B-FA107/125	0,94	**25**	36,5	105
CUGSP206	GEHSP206	GRAE30-XL-NPP-B-FA107/125	1,61	**30**	42,9	121
CUGSP207	GEHSP207	GRAE35-XL-NPP-B-FA107/125	1,95	**35**	47,6	127
CUGSP208	GEHSP208	GRAE40-XL-NPP-B-FA107/125	2,4	**40**	49,2	137
CUGSP209	GEHSP209	GRAE45-XL-NPP-B-FA107/125	2,72	**45**	54	146
CUGSP210	GEHSP210	GRAE50-XL-NPP-B-FA107/125	3,05	**50**	57,2	159



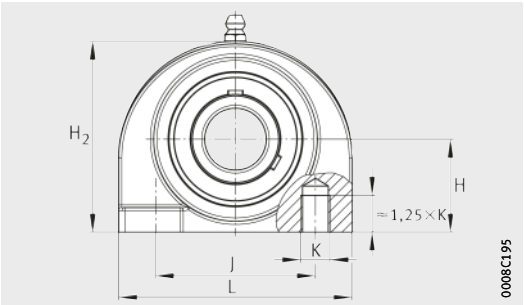
CUGSP

L	A	H_1	H_2	N	N_1	B_1	S_1	Q	d_3 max.
127	38	14	65	13	19	31	23,5	$^1/_4$″ – 28 UNF	33
140	38	15	71	13	19	31	23,5	$^1/_4$″ – 28 UNF	37,5
165	48	17	83	17	21	35,8	26,8	$^1/_4$″ – 28 UNF	44
167	48	18	93	17	21	39	29,5	$^1/_4$″ – 28 UNF	55
184	54	18	98	17	21	43,8	32,8	$^1/_4$″ – 28 UNF	58
190	54	20	106	17	21	43,8	32,8	$^1/_4$″ – 28 UNF	63
206	60	21	114	20	25	43,8	32,8	$^1/_4$″ – 28 UNF	69



Plummer block housing units

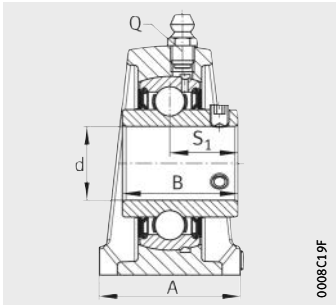
High grade steel housing
With short base
Radial insert ball bearing
in corrosion-resistant VA design
With grub screws in inner ring



SUCSPA

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J
SUCSPA204	GEHSPA204	SUC204	0,68	**20**	30,2	52
SUCSPA205	GEHSPA205	SUC205	0,85	**25**	36,5	56
SUCSPA206	GEHSPA206	SUC206	1,1	**30**	42,9	66
SUCSPA207	GEHSPA207	SUC207	1,4	**35**	47,6	80
SUCSPA208	GEHSPA208	SUC208	1,8	**40**	49,2	84
SUCSPA209	GEHSPA209	SUC209	2,5	**45**	54,2	90
SUCSPA210	GEHSPA210	SUC210	3,1	**50**	57,2	94



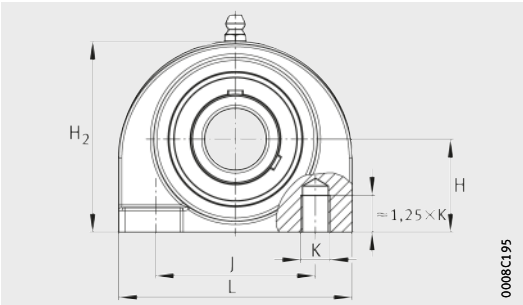
SUCSPA

L	A	H_2	B	S_1	K	Q
76	38	62	31	18,3	M10	$^1/_4$″ – 28 UNF
84	38	72	34,1	19,8	M10	$^1/_4$″ – 28 UNF
94	48	84	38,1	22,2	M14	$^1/_4$″ – 28 UNF
110	48	95	42,9	25,4	M14	$^1/_4$″ – 28 UNF
116	54	100	49,2	30,2	M14	$^1/_4$″ – 28 UNF
120	54	108	49,2	30,2	M14	$^1/_4$″ – 28 UNF
130	60	116	51,6	32,6	M16	$^1/_4$″ – 28 UNF



Plummer block housing units

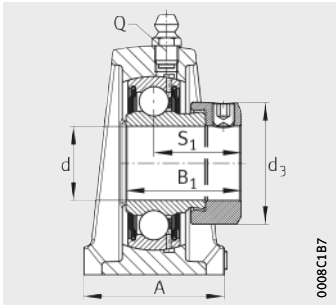
High grade steel housing
With short base
Radial insert ball bearing
with Corrotect coating
With eccentric locking collar



CUGSPA

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J
CUGSPA204	GEHSPA204	GRAE20-XL-NPP-B-FA107/125	0,68	**20**	30,2	52
CUGSPA205	GEHSPA205	GRAE25-XL-NPP-B-FA107/125	0,84	**25**	36,5	56
CUGSPA206	GEHSPA206	GRAE30-XL-NPP-B-FA107/125	1,11	**30**	42,9	66
CUGSPA207	GEHSPA207	GRAE35-XL-NPP-B-FA107/125	1,45	**35**	47,6	80
CUGSPA208	GEHSPA208	GRAE40-XL-NPP-B-FA107/125	1,8	**40**	49,2	84
CUGSPA209	GEHSPA209	GRAE45-XL-NPP-B-FA107/125	2,52	**45**	54,2	90
CUGSPA210	GEHSPA210	GRAE50-XL-NPP-B-FA107/125	3,05	**50**	57,2	94



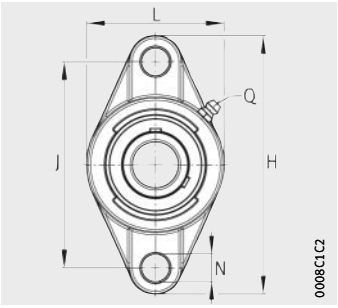
CUGSPA

L	A	H_2	B_1	S_1	K	Q	d_3 max.
76	38	62	31	23,5	M10	1/4″ – 28 UNF	33
84	38	72	31	23,5	M10	1/4″ – 28 UNF	37,5
94	48	84	35,8	26,8	M14	1/4″ – 28 UNF	44
110	48	95	39	29,5	M14	1/4″ – 28 UNF	55
116	54	100	43,8	32,8	M14	1/4″ – 28 UNF	58
120	54	108	43,8	32,8	M14	1/4″ – 28 UNF	63
130	60	116	43,8	32,8	M16	1/4″ – 28 UNF	69



Two-bolt flanged housing units

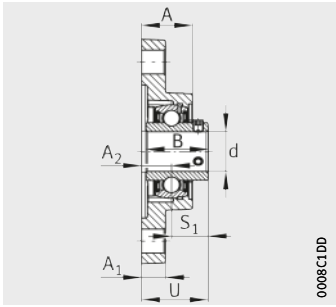
High grade steel housing
Radial insert ball bearing in corrosion-resistant VA design
With grub screws in inner ring



SUCSFL

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J
SUCSFL204	GEHSFL204	SUC204	0,5	**20**	113	90
SUCSFL205	GEHSFL205	SUC205	0,65	**25**	130	99
SUCSFL206	GEHSFL206	SUC206	0,9	**30**	148	117
SUCSFL207	GEHSFL207	SUC207	1,2	**35**	161	130
SUCSFL208	GEHSFL208	SUC208	1,6	**40**	175	144
SUCSFL209	GEHSFL209	SUC209	1,8	**45**	188	148
SUCSFL210	GEHSFL210	SUC210	2,1	**50**	197	157



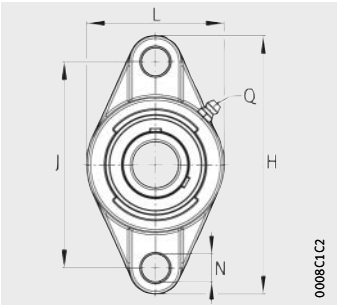
SUCSFL

L	A	A_1	A_2	N	B	S_1	U	Q
60	25,5	12	15	12	31	18,3	33,3	$^1/_4$″ – 28 UNF
68	27	15	16	16	34,1	19,8	35,8	$^1/_4$″ – 28 UNF
80	31	14	18	16	38,1	22,2	40,2	$^1/_4$″ – 28 UNF
90	34	16	19	16	42,9	25,4	44,4	$^1/_4$″ – 28 UNF
100	36	16	21	16	49,2	30,2	51,2	$^1/_4$″ – 28 UNF
108	38	18	22	19	49,2	30,2	52,2	$^1/_4$″ – 28 UNF
115	40	18	22	19	51,6	32,6	54,6	$^1/_4$″ – 28 UNF



Two-bolt flanged housing units

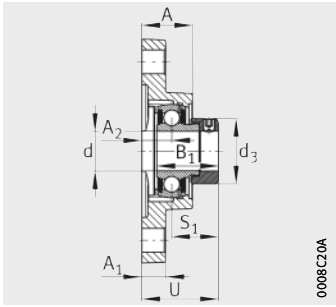
High grade steel housing
Radial insert ball bearing with Corrotect coating
With eccentric locking collar



CUGSFL

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	J
CUGSFL204	GEHSFL204	GRAE20-XL-NPP-B-FA107/125	0,5	**20**	113	90
CUGSFL205	GEHSFL205	GRAE25-XL-NPP-B-FA107/125	0,64	**25**	130	99
CUGSFL206	GEHSFL206	GRAE30-XL-NPP-B-FA107/125	0,91	**30**	148	117
CUGSFL207	GEHSFL207	GRAE35-XL-NPP-B-FA107/125	1,25	**35**	161	130
CUGSFL208	GEHSFL208	GRAE40-XL-NPP-B-FA107/125	1,6	**40**	175	144
CUGSFL209	GEHSFL209	GRAE45-XL-NPP-B-FA107/125	1,82	**45**	188	148
CUGSFL210	GEHSFL210	GRAE50-XL-NPP-B-FA107/125	2,05	**50**	197	157



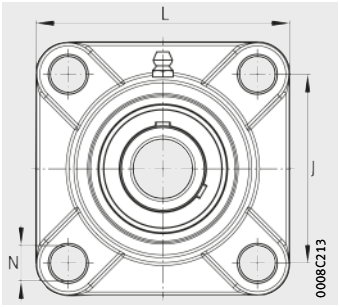
CUGSFL

L	A	A_1	A_2	N	B_1	S_1	U	Q	d_3 max.
60	25,5	12	15	12	31	23,5	38,5	1/4″ – 28 UNF	33
68	27	15	16	16	31	23,5	39,5	1/4″ – 28 UNF	37,5
80	31	14	18	16	35,8	26,8	44,8	1/4″ – 28 UNF	44
90	34	16	19	16	39	29,5	48,5	1/4″ – 28 UNF	55
100	36	16	21	16	43,8	32,8	53,8	1/4″ – 28 UNF	58
108	38	18	22	19	43,8	32,8	54,8	1/4″ – 28 UNF	63
115	40	18	22	19	43,8	32,8	54,8	1/4″ – 28 UNF	69



Four-bolt flanged housing units

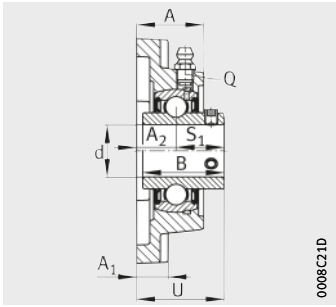
High grade steel housing
Radial insert ball bearing in corrosion-resistant VA design
With grub screws in inner ring



SUCSF

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	J	L
SUCSF204	GEHSF204	SUC204	0,63	**20**	64	86
SUCSF205	GEHSF205	SUC205	0,85	**25**	70	95
SUCSF206	GEHSF206	SUC206	1,17	**30**	83	108
SUCSF207	GEHSF207	SUC207	1,51	**35**	92	117
SUCSF208	GEHSF208	SUC208	2	**40**	102	130
SUCSF209	GEHSF209	SUC209	2,2	**45**	105	137
SUCSF210	GEHSF210	SUC210	2,4	**50**	111	143



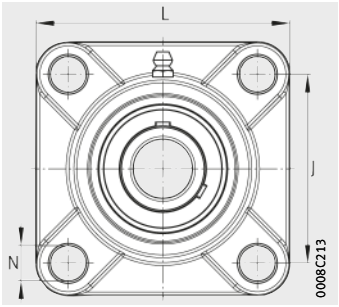
SUCSF

A	A_1	A_2	N	B	S_1	U	Q
25,5	12	15	12	31	18,3	33,3	$^1/_4$″ – 28 UNF
27	14	16	12	34,1	19,8	35,8	$^1/_4$″ – 28 UNF
31	14	18	12	38,1	22,2	40,2	$^1/_4$″ – 28 UNF
34	16	19	14	42,9	25,4	44,4	$^1/_4$″ – 28 UNF
36	16	21	16	49,2	30,2	51,2	$^1/_4$″ – 28 UNF
38	18	22	16	49,2	30,2	52,2	$^1/_4$″ – 28 UNF
40	18	22	16	51,6	32,6	54,6	$^1/_4$″ – 28 UNF



Four-bolt flanged housing units

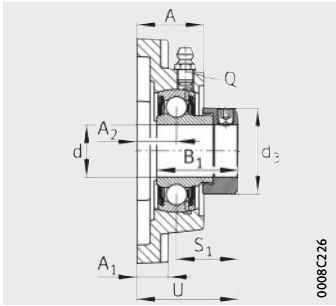
High grade steel housing
Radial insert ball bearing with Corrotect coating
With eccentric locking collar



CUGSF

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	J	L
CUGSF204	GEHSF204	GRAE20-XL-NPP-B-FA107/125	0,63	**20**	64	86
CUGSF205	GEHSF205	GRAE25-XL-NPP-B-FA107/125	0,84	**25**	70	95
CUGSF206	GEHSF206	GRAE30-XL-NPP-B-FA107/125	1,18	**30**	83	108
CUGSF207	GEHSF207	GRAE35-XL-NPP-B-FA107/125	1,56	**35**	92	117
CUGSF208	GEHSF208	GRAE40-XL-NPP-B-FA107/125	2	**40**	102	130
CUGSF209	GEHSF209	GRAE45-XL-NPP-B-FA107/125	2,22	**45**	105	137
CUGSF210	GEHSF210	GRAE50-XL-NPP-B-FA107/125	2,35	**50**	111	143



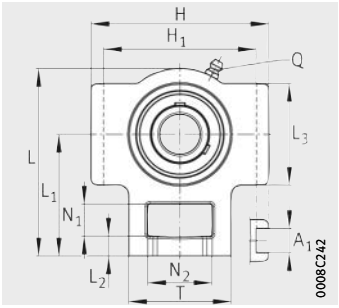
CUGSF

A	A_1	A_2	N	B_1	S_1	U	Q	d_3 max.
25,5	12	15	12	31	23,5	38,5	1/4″ – 28 UNF	33
27	14	16	12	31	23,5	39,5	1/4″ – 28 UNF	37,5
31	14	18	12	35,8	26,8	44,8	1/4″ – 28 UNF	44
34	16	19	14	39	29,5	48,5	1/4″ – 28 UNF	55
36	16	21	16	43,8	32,8	53,8	1/4″ – 28 UNF	58
38	18	22	16	43,8	32,8	54,8	1/4″ – 28 UNF	63
40	18	22	16	43,8	32,8	54,8	1/4″ – 28 UNF	69



Take-up housing units

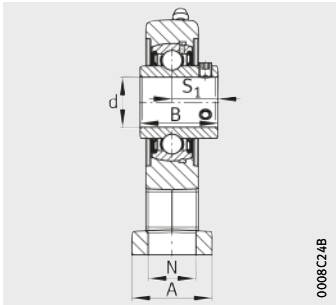
High grade steel housing
Radial insert ball bearing in corrosion-resistant VA design
With grub screws in inner ring



SUCST

Dimension table · Dimensions in mm

Designation			Mass	Dimensions				
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	H_1	L	L_1
SUCST204	GEHST204	SUC204	0,9	**20**	89	76	94	61
SUCST205	GEHST205	SUC205	1	**25**	89	76	97	62
SUCST206	GEHST206	SUC206	1,4	**30**	102	89	113	70
SUCST207	GEHST207	SUC207	1,8	**35**	102	89	129	78
SUCST208	GEHST208	SUC208	2,7	**40**	114	102	144	88
SUCST209	GEHST209	SUC209	2,9	**45**	117	102	144	87
SUCST210	GEHST210	SUC210	3	**50**	117	102	149	90



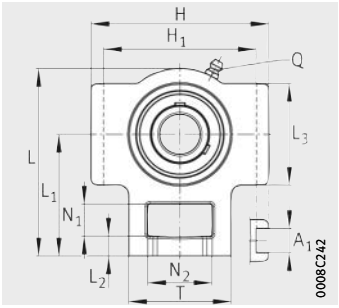
SUCST

L_2	L_3	N	N_1	N_2	A	A_1	B	S_1	T	Q
10	51	19	16	32	32	12	31	18,3	51	$^1/_4$″ – 28 UNF
10	51	19	16	32	32	12	34,1	19,8	51	$^1/_4$″ – 28 UNF
10	57	22	16	37	37	12	38,1	22,2	56	$^1/_4$″ – 28 UNF
13	64	22	16	37	37	12	42,9	25,4	64	$^1/_4$″ – 28 UNF
16	83	29	19	49	49	16	49,2	30,2	83	$^1/_4$″ – 28 UNF
16	83	29	19	49	49	16	49,2	30,2	83	$^1/_4$″ – 28 UNF
16	86	29	19	49	49	16	51,6	32,6	83	$^1/_4$″ – 28 UNF



Take-up housing units

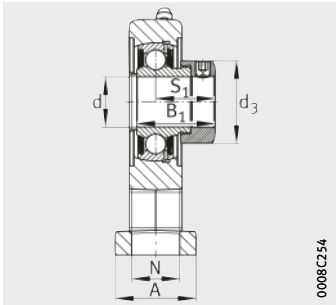
High grade steel housing
Radial insert ball bearing with Corrotect coating
With eccentric locking collar



CUGST

Dimension table · Dimensions in mm

Designation			Mass	Dimensions				
Unit	Housing	Radial insert ball bearing	m ≈ kg	d	H	H_1	L	L_1
CUGST204	GEHST204	GRAE20-XL-NPP-B-FA107/125	0,9	**20**	89	76	94	61
CUGST205	GEHST205	GRAE25-XL-NPP-B-FA107/125	0,99	**25**	89	76	97	62
CUGST206	GEHST206	GRAE30-XL-NPP-B-FA107/125	1,41	**30**	102	89	113	70
CUGST207	GEHST207	GRAE35-XL-NPP-B-FA107/125	1,85	**35**	102	89	129	78
CUGST208	GEHST208	GRAE40-XL-NPP-B-FA107/125	2,7	**40**	114	102	144	88
CUGST209	GEHST209	GRAE45-XL-NPP-B-FA107/125	2,92	**45**	117	102	144	87
CUGST210	GEHST210	GRAE50-XL-NPP-B-FA107/125	2,95	**50**	117	102	149	90



CUGST

L_2	L_3	N	N_1	N_2	A	A_1	B_1	S_1	T	Q	d_3 max.
10	51	19	16	32	32	12	31	23,5	51	$^1/_4$″ – 28 UNF	33
10	51	19	16	32	32	12	31	23,5	51	$^1/_4$″ – 28 UNF	37,5
10	57	22	16	37	37	12	35,8	26,8	56	$^1/_4$″ – 28 UNF	44
13	64	22	16	37	37	12	39	29,5	64	$^1/_4$″ – 28 UNF	55
16	83	29	19	49	49	16	43,8	32,8	83	$^1/_4$″ – 28 UNF	58
16	83	29	19	49	49	16	43,8	32,8	83	$^1/_4$″ – 28 UNF	63
16	86	29	19	49	49	16	43,8	32,8	83	$^1/_4$″ – 28 UNF	69





Plastic housing units, corrosion-resistant

Radial insert ball bearings
in corrosion-resistant VA design or
with Corrotect coating

Plastic housing units, corrosion-resistant

Page

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Plummer block housing units, with long or short base

- Radial insert ball bearings in corrosion-resistant VA design, with grub screws or eccentric locking collar 434
- Radial insert ball bearings with Corrotect coating, with eccentric locking collar 436

Two-bolt flanged housing units, narrow or wide version

- Radial insert ball bearings in corrosion-resistant VA design, with grub screws or eccentric locking collar 442
- Radial insert ball bearings with Corrotect coating, with eccentric locking collar 444

Four-bolt flanged housing units

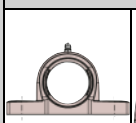
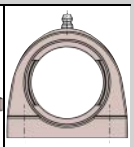
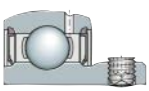
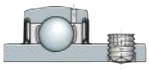
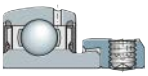
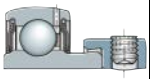
- Radial insert ball bearings in corrosion-resistant VA design, with grub screws or eccentric locking collar 450
- Radial insert ball bearings with Corrotect coating, with eccentric locking collar 452

Take-up housing units, guide slots or guide surfaces on both sides, hole for threaded rod

- Radial insert ball bearings in corrosion-resistant VA design, with grub screws or eccentric locking collar 454
- Radial insert ball bearings with Corrotect coating, with eccentric locking collar 456

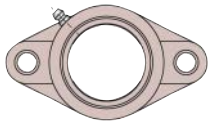
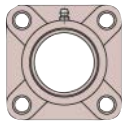
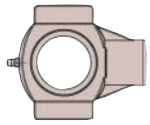
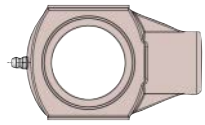


Possible combinations
Radial insert ball bearings and plastic housings

Radial insert ball bearing		Housing	
		Plummer block housing	
			
Designation Shaft diameter d		**GEHPP**	**GEHPPA**
SUB 20 mm – 50 mm		**SUBPP** page 434	**SUBPPA** page 438
SUC 20 mm – 50 mm		**SUCPP** page 434	**SUCPPA** page 438
SUG 20 mm – 50 mm		**SUGPP** page 434	**SUGPPA** page 438
GRAE..-XL-NPP-B-FA107/125 20 mm – 50 mm		**CUGPP** page 436	**CUGPPA** page 440

Catalogue range, dimension table, see pages indicated.
Other dimensions and combinations available by agreement.

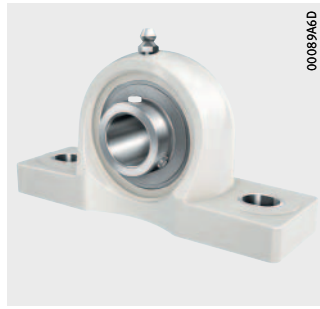
Combinations not possible or not advisable.

	Two-bolt flanged housing		Four-bolt flanged housing	Take-up housing	
					
	GEHPFL	**GEHPCTL**	**GEHPF**	**GEHPT**	**GEHPHE**
	SUBPFL page 442	**SUBPCTL** page 446	**SUBPF** page 450	**SUBPT** page 454	**SUBPHE** page 458
	SUCPFL page 442		**SUCPF** page 450	**SUCPT** page 454	**SUCPHE** page 458
	SUGPFL page 442	**SUGPCTL** page 446	**SUGPF** page 450	**SUGPT** page 454	**SUGPHE** page 458
	CUGPFL page 444	**CUGPCTL** page 448	**CUGPF** page 452	**CUGPT** page 456	**CUGPHE** page 460

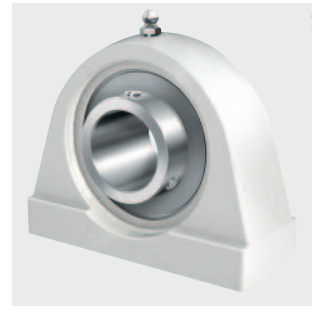


Plummer block housing units

SUBPP, SUCPP,
SUGPP, CUGPP



SUBPPA, SUCPPA,
SUGPPA, CUGPPA



Flanged housing units

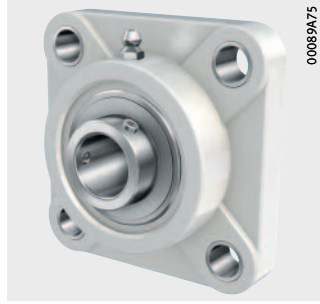
SUBPFL, SUCPFL,
SUGPFL, CUGPFL



SUBPCTL, SUGPCTL,
CUGPCTL

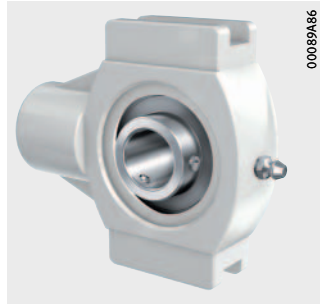


SUBPF, SUCPF
SUGPF, CUGPF



Take-up housing units

SUBPT, SUCPT,
SUGPT, CUGPT



SUBPHE, SUCPHE,
SUGPHE, CUGPHE



Accessories

Back Seal component

BS



End caps
Open or closed design

CO



CC





Features

Housing units with plastic housings made from PBT are available as plummer block and flanged housing units as well as take-up housing units.

The glass fibre reinforced material PBT is highly resistant to humidity, UV radiation, bacterial and fungal attacks as well as many chemical agents.

Housings with integral radial insert ball bearing

The units are ready-to-fit and comprise plastic housings in which INA radial insert ball bearings are fitted. In order to ensure function and reliability under all operating conditions, the bearings and housings are matched to each other.

Location on the shaft in the case of housing units SUC and SUB is by means of grub screws and in the case of housing units SUG by means of an eccentric locking collar. Housing units with radial insert ball bearing GRAE and the suffix FA125 have an eccentric locking collar.

The units are used predominantly as locating bearings, but are also suitable as non-locating bearings under low loads and speeds.

The housings are screw mounted on the adjacent construction. Less stringent tolerances are sufficient for the screw mounting surfaces.

Plummer block housing units

Plummer block housing units are available with a long base or short base. The housings are made from glass fibre reinforced plastic PBT, are not split and are screw mounted to the adjacent construction by means of slots or threaded holes. Fixing screws to DIN EN ISO 4762 are suitable.

For relubrication of radial insert ball bearings, the housing bore has a lubrication groove and the housing has a lubrication hole suitable for conventional lubrication nipples with a precision thread $^1/_4$″ – 28 UNF in accordance with ANSI B1.1. The lubrication nipple is supplied already fitted, a bearing end cap is supplied loose at the time of delivery.

Flanged housing units

Flanged housing units are available as two-bolt and four-bolt flanged housing units. For location, the housings have through holes for screws to DIN EN ISO 4762.

The housing material, the design of lubrication arrangements and the delivered condition correspond to those of plummer block housing units.

Take-up housing units

Take-up housing units have facilities for sliding motion. They are used where shafts must undergo substantial radial displacement travel.

The housing material, the design of lubrication arrangements and the delivered condition correspond to those of plummer block housing units.

Radial insert ball bearings in corrosion-resistant VA design or with Corrotect coating

The housing units are available with radial insert ball bearings in the corrosion-resistant VA design or with Corrotect coating, suffix FA125.

Operating temperature

Housing units with or without a Back Seal component are suitable for operating temperatures from –20 °C to +100 °C. If bearing end caps are used, the maximum temperature is reduced to +80 °C.

Suffixes

Suffixes for available designs, see table.

Available designs

Suffix	Design	Design
FA107	Units CUG have radial insert ball bearings with lubrication holes on the locating side	Standard
FA125	Units CUG have radial insert ball bearings with Corrotect coating, corrosion-resistant	

Design and safety guidelines

The chapter Technical principles brings together the essential guidelines on the design of bearing arrangements, lubrication, mounting and dismounting and the operation of bearings, see page 32.

Due to their versatile characteristics, INA housing units can be easily used in almost all industrial sectors.

It is always and fundamentally the responsibility of the designer of a machine to ensure that a malfunction of housing units cannot be hazardous to persons. An unplanned stoppage of the machine should not cause major disruptions in operation. In both cases, it is therefore essential that you contact us before design work is carried out.

Compensation of static misalignments

Due to the spherical outer ring of the bearing and the concave housing bore, housing units can compensate for static misalignments of the shaft, see page 359.



Speed limits for radial insert ball bearings

The speed limits are dependent on the load, the clearance between the bearing bore and shaft and the friction of the seals, see page 359.

Radial load carrying capacity

Plastic housings are suitable for moderate loads. The radial static load carrying capacity $C_{0r\,G}$ of plastic housings and the static load carrying capacity C_{0r} of the radial insert ball bearings is stated in the relevant dimension tables.

Axial load carrying capacity

The axial operating load of the unit must not exceed the axial load carrying capacity of the housing.

The axial load carrying capacity of plastic housings is $C_{0a\,G} = 0{,}25 \cdot C_{0r\,G}$.

Design of adjacent construction

The permissible shaft tolerance is dependent on the speed, load and the radial insert ball bearing fitted. Shafts of the tolerance classes h6 Ⓔ to h9 Ⓔ can be used. Conventional drawn shafts will suffice for most applications.

Screw mounting surfaces

Recommendations for the screw mounting surfaces are as follows:

- roughness of the screw mounting surface max. Ra 12,5 (Rzmax 63)
- geometrical and positional tolerance 0,04/100 concave, spherical not permissible.
- For high loads occurring parallel to the mounting surface of plummer block housing units (in the case of plastic housings with long base), please contact Schaeffler.

Fixing screws

The screw connection should be designed in accordance with VDI 2230; friction coefficient $\mu = 0{,}12$ (90%).

Screws of grade 8.8 or better can be used for fixing.
The maximum tightening torques applicable to this screw grade must not be exceeded even if screws of a higher grade are used.

In principle, we recommend that the screw connection should only be tightened to 70% of the values stated in the standard.

For fixing, hexagonal socket head screws in accordance with DIN EN ISO 4762 or hexagonal socket head screws with a coarse pitch full thread in accordance with DIN EN ISO 4017 should be used. The screws should be combined as a minimum with a washer in accordance with DIN EN ISO 7089 or DIN EN ISO 7090.

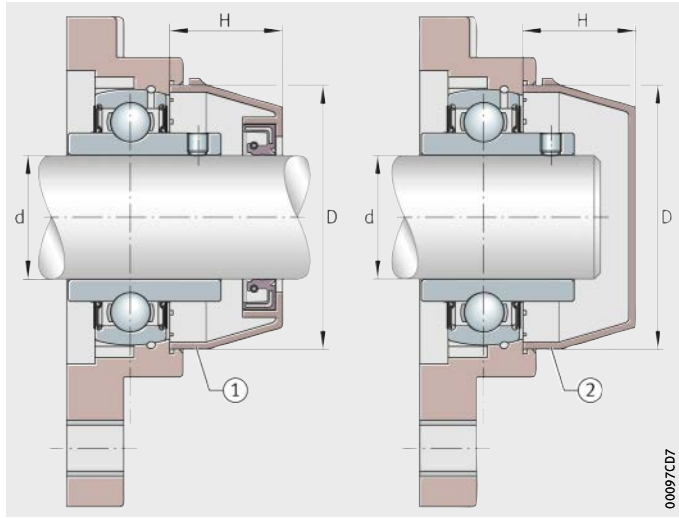
Screws and accessories for location are not included in the delivery.

All screws and other accessories used for location should be in the corrosion-resistant VA design.

Bearing end caps

Each housing unit is supplied with a closed end cap CC.

For all units, open end caps CO with an integral rotary shaft seal are available by agreement, *Figure 1* and table.



① Open end cap with integral rotary shaft seal
② Closed end cap

Figure 1
Open or closed end caps

Bearing end caps for plastic housing units

Designation		Dimensions mm		
Closed end cap	Open end cap	d	D	H
CC204	CO204	20	50,1	23
CC205	CO205	25	55	25
CC206	CO206	30	64	30
CC207	CO207	35	74,6	32
CC208	CO208	40	84	37
CC209	CO209	45	89,2	41
CC210	CO210	50	94,2	47



Back Seal component

For flanged housing units SUBPFL, SUGPFL, CUGPFL, SUBPF, SUGPF and CUGPF, a Back Seal component BS from NBR is available with a spring washer made from corrosion-resistant steel, material number 1.4301, that closes off the rear face of the housing, *Figure 2*, *Figure 3* and table.



CUGPF
CUGPFL

① Back Seal component

Figure 2
Flanged housing units
with Back Seal component

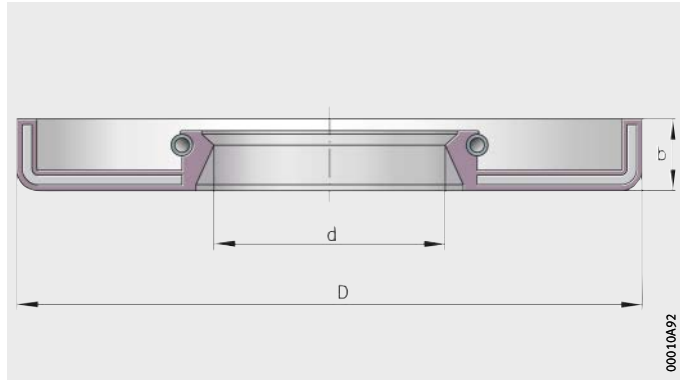


Figure 3
Dimensions
of Back Seal component

Designations and dimensions of Back Seal components

Designation	Dimensions mm		
	d	b	D
BS204	20	6	52
BS205	25	6	62
BS206	30	6	72
BS207	35	6	82
BS208	40	6	88
BS209	45	6	93
BS210	50	6	98

Accuracy

Tolerances of plastic housings

The dimensional, geometrical and positional tolerances of plastic housings correspond to DIN 16742.

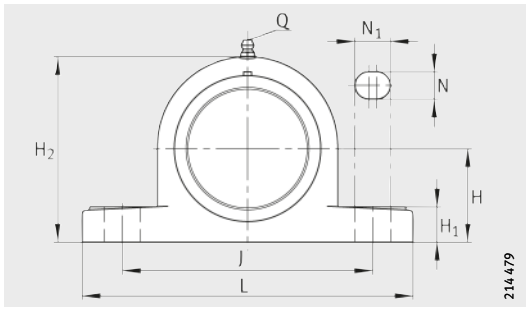
Shaft tolerances for insert bearings

Shafts of the tolerance classes h6 Ⓔ to h9 Ⓔ can be used.
Conventional drawn shafts will suffice for most applications.



Plummer block housing units

Plastic housing
With long base
Radial insert ball bearing
in corrosion-resistant VA design
With grub screw or eccentric locking collar



SUBPP, SUCPP, SUGPP

Dimension table · Dimensions in mm

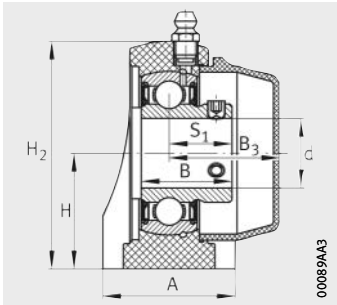
Designation			Mass	Dimensions				
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L	A
SUBPP204	GEHPP204	SUB204	0,28	**20**	33,3	95	127	38
SUCPP204	GEHPP204	SUC204	0,3	**20**	33,3	95	127	38
SUBPP205	GEHPP205	SUB205	0,33	**25**	36,5	105	140	38
SUCPP205	GEHPP205	SUC205	0,36	**25**	36,5	105	140	38
SUBPP206	GEHPP206	SUB206	0,5	**30**	42,9	119	162	46
SUCPP206	GEHPP206	SUC206	0,55	**30**	42,9	119	162	46
SUBPP207	GEHPP207	SUB207	0,7	**35**	47,6	127	167	48
SUCPP207	GEHPP207	SUC207	0,77	**35**	47,6	127	167	48
SUBPP208	GEHPP208	SUB208	0,89	**40**	49,2	137	184	54
SUCPP208	GEHPP208	SUC208	0,98	**40**	49,2	137	184	54
SUBPP209	GEHPP209	SUB209	1,02	**45**	54	146	192	54
SUCPP209[2]	GEHPP209	SUC209	1,08	**45**	54	146	192	54
SUBPP210	GEHPP210	SUB210	1,21	**50**	57,2	159	206	60
SUCPP210[2]	GEHPP210	SUC210	1,32	**50**	57,2	159	206	60

Dimension table · Dimensions in mm

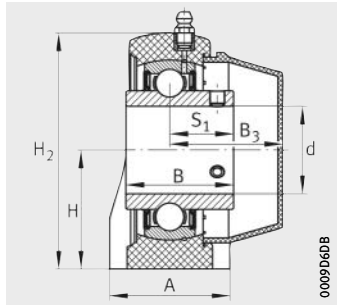
Designation			Mass	Dimensions				
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L	A
SUGPP204	GEHPP204	SUG204	0,31	**20**	33,3	95	127	38
SUGPP205	GEHPP205	SUG205	0,37	**25**	36,5	105	140	38
SUGPP206	GEHPP206	SUG206	0,56	**30**	42,9	119	162	46
SUGPP207	GEHPP207	SUG207	0,81	**35**	47,6	127	167	48
SUGPP208	GEHPP208	SUG208	0,97	**40**	49,2	137	184	54
SUGPP209	GEHPP209	SUG209	1,12	**45**	54	146	192	54
SUGPP210[2]	GEHPP210	SUG210	1,31	**50**	57,2	159	206	60

[1] Available end caps, see page 431.

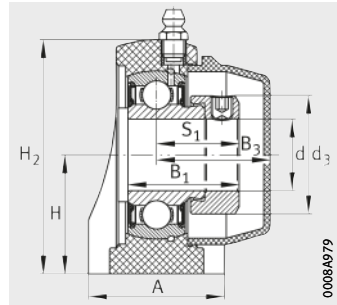
[2] Available by agreement.



SUBPP



SUCPP



SUGPP

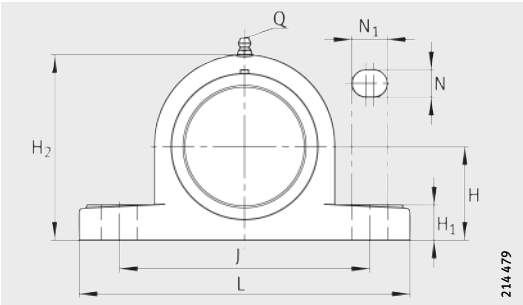
H_1	H_2	N	N_1	B	B_3	S_1	Q	Load carrying capacity Housing $C_{0r\,G}$ N
14,2	65,5	11	14	26	31,65	18	1/4″ – 28 UNF	7 700
14,2	65,5	11	14	31	31,65	18,3	1/4″ – 28 UNF	7 700
14,5	71	11	14	28	34,05	19,5	1/4″ – 28 UNF	10 000
14,5	71	11	14	34,1	34,05	19,8	1/4″ – 28 UNF	10 000
17,8	83	14	18	30,5	39,95	21	1/4″ – 28 UNF	10 600
17,8	83	14	18	38,1	39,95	22,2	1/4″ – 28 UNF	10 600
18	94	14	18	35,45	44,85	25,45	1/4″ – 28 UNF	10 800
18	94	14	18	42,9	44,85	25,4	1/4″ – 28 UNF	10 800
19,5	98	14	18	39,45	51,5	28,95	1/4″ – 28 UNF	11 100
19,5	98	14	18	49,2	51,5	30,2	1/4″ – 28 UNF	11 100
23	106	17	20	41,5	53,7	30,5	1/4″ – 28 UNF	11 400
23	106	17	20	49,2	53,7	30,2	1/4″ – 28 UNF	11 400
23	114	17	20	43,5	60,9	32	1/4″ – 28 UNF	11 700
23	114	17	20	51,6	60,9	32,6	1/4″ – 28 UNF	11 700



H_1	H_2	N	N_1	B_1	B_3	S_1	Q	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
14,2	65,5	11	14	31,5	31,65	23,5	1/4″ – 28 UNF	33	7 700
14,5	71	11	14	32	34,05	23,5	1/4″ – 28 UNF	37,5	10 000
17,8	83	14	18	36,3	39,95	26,8	1/4″ – 28 UNF	44	10 600
18	94	14	18	39,5	44,85	29,5	1/4″ – 28 UNF	55	10 800
19,5	98	14	18	43,8	51,5	32,8	1/4″ – 28 UNF	58	11 100
23	106	17	20	43,8	53,7	32,8	1/4″ – 28 UNF	63	11 400
23	114	17	20	44,3	60,9	32,8	1/4″ – 28 UNF	69	11 700

Plummer block housing units

Plastic housing
With long base
Radial insert ball bearing
with Corrotect coating
With eccentric locking collar



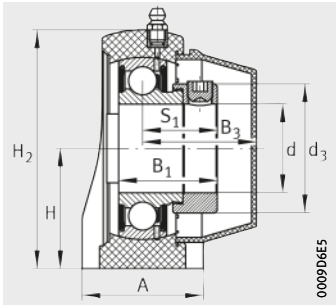
CUGPP

Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
CUGPP204	GEHPP204	GRAE20-XL-NPP-B-FA107/125	0,32	**20**	33,3	95	127
CUGPP205	GEHPP205	GRAE25-XL-NPP-B-FA107/125	0,37	**25**	36,5	105	140
CUGPP206	GEHPP206	GRAE30-XL-NPP-B-FA107/125	0,61	**30**	42,9	119	162
CUGPP207	GEHPP207	GRAE35-XL-NPP-B-FA107/125	0,87	**35**	47,6	127	167
CUGPP208	GEHPP208	GRAE40-XL-NPP-B-FA107/125	1,06	**40**	49,2	137	184
CUGPP209[2]	GEHPP209	GRAE45-XL-NPP-B-FA107/125	1,19	**45**	54	146	192
CUGPP210[2]	GEHPP210	GRAE50-XL-NPP-B-FA107/125	1,37	**50**	57,2	159	206

[1] Available end caps, see page 431.

[2] Available by agreement.



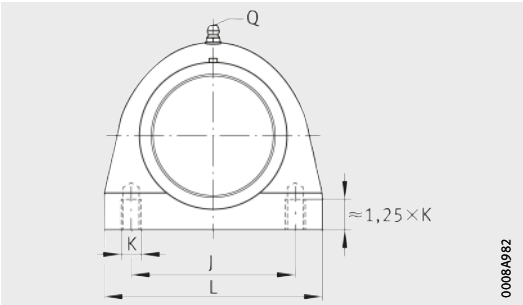
CUGPP

A	H_1	H_2	N	N_1	B_1	B_3	S_1	Q	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
38	14,2	65,5	11	14	31	31,65	23,5	$^1/_4$″ – 28 UNF	33	7 700
38	14,5	71	11	14	31	34,05	23,5	$^1/_4$″ – 28 UNF	37,5	10 000
46	17,8	83	14	18	35,8	39,95	26,8	$^1/_4$″ – 28 UNF	44	10 600
48	18	94	14	18	39	44,85	29,5	$^1/_4$″ – 28 UNF	55	10 800
54	19,5	98	14	18	43,8	51,5	32,8	$^1/_4$″ – 28 UNF	58	11 100
54	23	106	17	20	43,8	53,7	32,8	$^1/_4$″ – 28 UNF	63	11 400
60	23	114	17	20	43,8	60,9	32,8	$^1/_4$″ – 28 UNF	69	11 700



Plummer block housing units

Plastic housing
With short base
Radial insert ball bearing
in corrosion-resistant VA design
With grub screw or eccentric locking collar



SUBPPA, SUCPPA, SUGPPA

Dimension table · Dimensions in mm

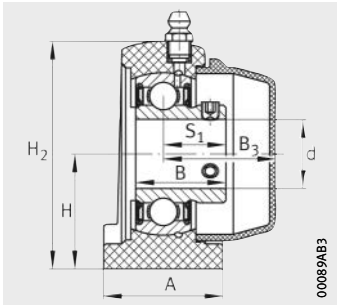
Designation			Mass	Dimensions			
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
SUBPPA204	GEHPPA204	SUB204	0,26	**20**	33,3	50,8	72,8
SUCPPA204	GEHPPA204	SUC204	0,28	**20**	33,3	50,8	72,8
SUBPPA205	GEHPPA205	SUB205	0,31	**25**	36,5	50,8	76,2
SUCPPA205	GEHPPA205	SUC205	0,34	**25**	36,5	50,8	76,2
SUBPPA206	GEHPPA206	SUB206	0,47	**30**	42,9	76,2	101
SUCPPA206	GEHPPA206	SUC206	0,52	**30**	42,9	76,2	101
SUBPPA207	GEHPPA207	SUB207	0,7	**35**	47,6	82,6	110
SUCPPA207	GEHPPA207	SUC207	0,76	**35**	47,6	82,6	110
SUBPPA208	GEHPPA208	SUB208	0,83	**40**	49,2	88,9	120
SUCPPA208	GEHPPA208	SUC208	0,92	**40**	49,2	88,9	120
SUBPPA209[2]	GEHPPA209	SUB209	0,97	**45**	54	95,3	124
SUCPPA209[2]	GEHPPA209	SUC209	1,03	**45**	54	95,3	124
SUBPPA210[2]	GEHPPA210	SUB210	1,15	**50**	57,2	101,6	135
SUCPPA210[2]	GEHPPA210	SUC210	1,26	**50**	57,2	101,6	135

Dimension table · Dimensions in mm

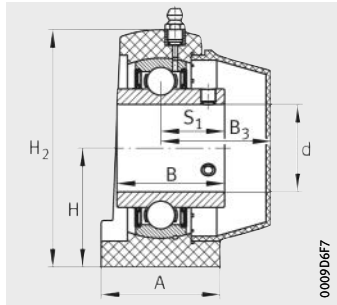
Designation			Mass	Dimensions			
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
SUGPPA204	GEHPPA204	SUG204	0,29	**20**	33,3	50,8	72,8
SUGPPA205	GEHPPA205	SUG205	0,35	**25**	36,5	50,8	76,2
SUGPPA206	GEHPPA206	SUG206	0,52	**30**	42,9	76,2	101
SUGPPA207	GEHPPA207	SUG207	0,8	**35**	47,6	82,6	110
SUGPPA208	GEHPPA208	SUG208	0,91	**40**	49,2	88,9	120
SUGPPA209[2]	GEHPPA209	SUG209	1,07	**45**	54	95,3	124
SUGPPA210[2]	GEHPPA210	SUG210	1,25	**50**	57,2	101,6	135

[1] Available end caps, see page 431.

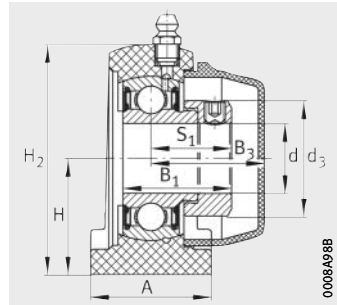
[2] Available by agreement.



SUBPPA



SUCPPA



SUGPPA

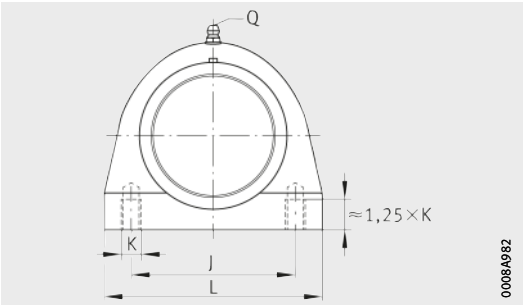
A	H_2	B	B_3	K	S_1	Q	Load carrying capacity Housing C_{0rG} N
34,5	66	26	31,65	M8	18	$^1/_4$″ – 28 UNF	6 900
34,5	66	31	31,65	M8	18,3	$^1/_4$″ – 28 UNF	6 900
39,5	73,5	28	34,05	M10	19,5	$^1/_4$″ – 28 UNF	7 000
39,5	73,5	34,1	34,05	M10	19,8	$^1/_4$″ – 28 UNF	7 000
42,5	84	30,5	39,95	M10	21	$^1/_4$″ – 28 UNF	6 500
42,5	84	38,1	39,95	M10	22,2	$^1/_4$″ – 28 UNF	6 500
47,5	95	35,45	44,85	M10	25,45	$^1/_4$″ – 28 UNF	8 000
47,5	95	42,9	44,85	M10	25,4	$^1/_4$″ – 28 UNF	8 000
48	100,5	39,45	51,5	M12	28,95	$^1/_4$″ – 28 UNF	9 100
48	100,5	49,2	51,5	M12	30,2	$^1/_4$″ – 28 UNF	9 100
50	108,5	41,5	53,7	M12	30,5	$^1/_4$″ – 28 UNF	10 400
50	108,5	49,2	53,7	M12	30,2	$^1/_4$″ – 28 UNF	10 400
54	115	43,5	60,9	M16	32	$^1/_4$″ – 28 UNF	11 000
54	115	51,6	60,9	M16	32,6	$^1/_4$″ – 28 UNF	11 000



A	H_2	B_1	B_3	K	S_1	Q	d_3 max.	Load carrying capacity Housing C_{0rG} N
34,5	66	31,5	31,65	M8	23,5	$^1/_4$″ – 28 UNF	33	6 900
39,5	73,5	32	34,05	M10	23,5	$^1/_4$″ – 28 UNF	37,5	7 000
42,5	84	36,3	39,95	M10	26,8	$^1/_4$″ – 28 UNF	44	6 500
47,5	95	39,5	44,85	M10	29,5	$^1/_4$″ – 28 UNF	55	8 000
48	100,5	43,8	51,5	M12	32,8	$^1/_4$″ – 28 UNF	58	9 100
50	108,5	43,8	53,7	M12	32,8	$^1/_4$″ – 28 UNF	63	10 400
54	115	44,3	60,9	M16	32,8	$^1/_4$″ – 28 UNF	69	11 000

Plummer block housing units

Plastic housing
With short base
Radial insert ball bearing
with Corrotect coating
With eccentric locking collar



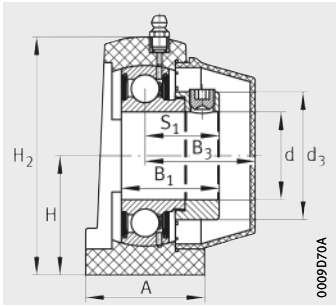
CUGPPA

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J
CUGPPA204	GEHPPA204	GRAE20-XL-NPP-B-FA107/125	0,3	**20**	33,3	50,8
CUGPPA205	GEHPPA205	GRAE25-XL-NPP-B-FA107/125	0,35	**25**	36,5	50,8
CUGPPA206	GEHPPA206	GRAE30-XL-NPP-B-FA107/125	0,57	**30**	42,9	76,2
CUGPPA207	GEHPPA207	GRAE35-XL-NPP-B-FA107/125	0,85	**35**	47,6	82,6
CUGPPA208	GEHPPA208	GRAE40-XL-NPP-B-FA107/125	0,99	**40**	49,2	88,9
CUGPPA209[2]	GEHPPA209	GRAE45-XL-NPP-B-FA107/125	1,12	**45**	54	95,3
CUGPPA210[2]	GEHPPA210	GRAE50-XL-NPP-B-FA107/125	1,22	**50**	57,2	101,6

[1] Available end caps, see page 431.

[2] Available by agreement.



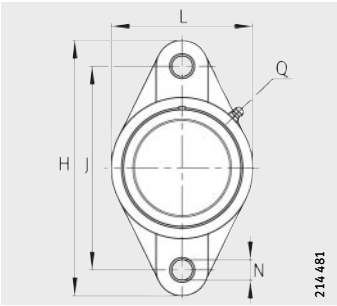
CUGPPA

L	A	H_2	B_1	B_3	K	S_1	Q	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
72,8	34,5	66	31	31,65	M8	23,5	$^1/_4$″ – 28 UNF	33	6 900
76,2	39,5	73,5	31	34,05	M10	23,5	$^1/_4$″ – 28 UNF	37,5	7 000
101	42,5	84	35,8	39,95	M10	26,8	$^1/_4$″ – 28 UNF	44	6 500
110	47,5	95	39	44,85	M10	29,5	$^1/_4$″ – 28 UNF	55	8 000
120	48	100,5	43,8	51,5	M12	32,8	$^1/_4$″ – 28 UNF	58	9 100
124	50	108,5	43,8	53,7	M12	32,8	$^1/_4$″ – 28 UNF	63	10 400
135	54	115	43,8	60,9	M16	32,8	$^1/_4$″ – 28 UNF	69	11 000



Two-bolt flanged housing units

Plastic housing
Narrow version
Radial insert ball bearing in corrosion-resistant VA design
With grub screw or eccentric locking collar



SUBPFL, SUCPFL, SUGPFL

Dimension table · Dimensions in mm

Designation			Mass	Dimensions				
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L	A
SUBPFL204	GEHPFL204	SUB204	0,23	**20**	114	90	64,8	26,5
SUCPFL204	GEHPFL204	SUC204	0,26	**20**	114	90	64,8	26,5
SUBPFL205	GEHPFL205	SUB205	0,29	**25**	130	99	70	29,1
SUCPFL205	GEHPFL205	SUC205	0,32	**25**	130	99	70	29,1
SUBPFL206	GEHPFL206	SUB206	0,41	**30**	148	117	80	30,5
SUCPFL206	GEHPFL206	SUC206	0,45	**30**	148	117	80	30,5
SUBPFL207	GEHPFL207	SUB207	0,6	**35**	163	130	90	32,8
SUCPFL207	GEHPFL207	SUC207	0,66	**35**	163	130	90	32,8
SUBPFL208	GEHPFL208	SUB208	0,78	**40**	175	144	100	37,5
SUCPFL208	GEHPFL208	SUC208	0,88	**40**	175	144	100	37,5
SUBPFL209	GEHPFL209	SUB209	0,91	**45**	188,5	148,5	108	41
SUCPFL209[2]	GEHPFL209	SUC209	1	**45**	188,5	148,5	108	41
SUBPFL210	GEHPFL210	SUB210	1,02	**50**	197	157	115	43
SUCPFL210[2]	GEHPFL210	SUC210	1,16	**50**	197	157	115	43

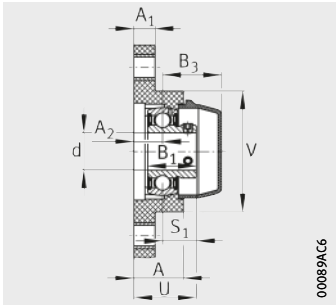
Dimension table · Dimensions in mm

Designation			Mass	Dimensions				
Unit[1] [3]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L	A
SUGPFL204	GEHPFL204	SUG204	0,27	**20**	114	90	64,8	26,5
SUGPFL205	GEHPFL205	SUG205	0,31	**25**	130	99	70	29,1
SUGPFL206	GEHPFL206	SUG206	0,45	**30**	148	117	80	30,5
SUGPFL207	GEHPFL207	SUG207	0,68	**35**	163	130	90	32,8
SUGPFL208	GEHPFL208	SUG208	0,84	**40**	175	144	100	37,5
SUGPFL209[2]	GEHPFL209	SUG209	1,01	**45**	188,5	148,5	108	41
SUGPFL210[2]	GEHPFL210	SUG210	1,12	**50**	197	157	115	43

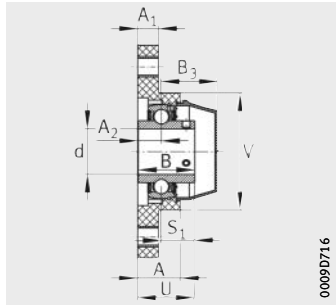
[1] Available end caps, see page 431.

[2] Available by agreement.

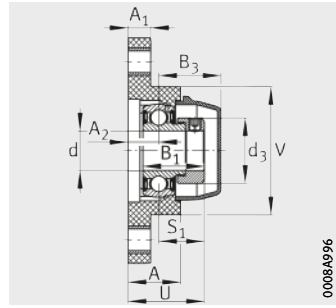
[3] For these series, Back Seal components are also available, see page 432.



SUBPFL



SUCPFL



SUGPFL

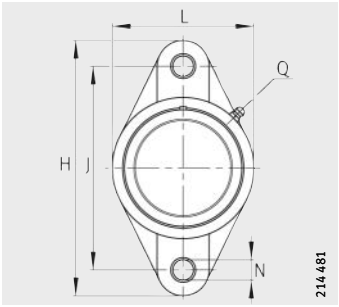
									Load carrying capacity Housing
A_1	A_2	N	B	B_3	S_1	U	V	Q	$C_{0r\,G}$ N
11,4	15,4	11	26	31,4	18	33,4	64,8	1/4″ – 28 UNF	8 500
11,4	15,4	11	31	31,4	18,3	33,7	64,8	1/4″ – 28 UNF	8 500
13,5	17	11	28	34,1	19,5	36,5	70	1/4″ – 28 UNF	11 100
13,5	17	11	34,1	34,1	19,8	36,8	70	1/4″ – 28 UNF	11 100
13,3	18	11	30,5	38,5	21	39	80	1/4″ – 28 UNF	14 200
13,3	18	11	38,1	38,5	22,2	40,2	80	1/4″ – 28 UNF	14 200
16,1	18	13	35,45	43,6	25,45	43,45	90	1/4″ – 28 UNF	14 900
16,1	18	13	42,9	43,6	25,4	43,4	90	1/4″ – 28 UNF	14 900
20	21,5	14	39,45	49,5	28,95	50,45	100	1/4″ – 28 UNF	14 900
20	21,5	14	49,2	49,5	30,2	51,7	100	1/4″ – 28 UNF	14 900
21	24	17	41,5	53,7	30,5	54,5	108	1/4″ – 28 UNF	15 100
21	24	17	49,2	53,7	30,2	54,2	108	1/4″ – 28 UNF	15 100
21	25	17	43,5	60,3	32	57	115	1/4″ – 28 UNF	15 600
21	25	17	51,6	60,3	32,6	57,6	115	1/4″ – 28 UNF	15 600



										Load carrying capacity Housing
A_1	A_2	N	B_1	B_3	S_1	U	V	Q	d_3 max.	$C_{0r\,G}$ N
11,4	15,4	11	31,5	31,4	23,5	38,9	64,8	1/4″ – 28 UNF	33	8 500
13,5	17	11	32	34,1	23,5	40,5	70	1/4″ – 28 UNF	37,5	11 100
13,3	18	11	36,3	38,5	26,8	44,8	80	1/4″ – 28 UNF	44	14 200
16,1	18	13	39,5	43,6	29,5	47,5	90	1/4″ – 28 UNF	55	14 900
20	21,5	14	43,8	49,5	32,8	54,3	100	1/4″ – 28 UNF	58	14 900
21	24	17	43,8	53,7	32,8	56,8	108	1/4″ – 28 UNF	63	15 100
21	25	17	44,3	60,3	32,8	57,8	115	1/4″ – 28 UNF	69	15 600

Two-bolt flanged housing units

Plastic housing
Narrow version
Radial insert ball bearing with Corrotect coating
With eccentric locking collar



CUGPFL

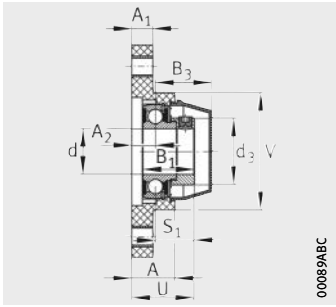
Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit[1) 2)]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
CUGPFL204	GEHPFL204	GRAE20-XL-NPP-B-FA107/125	0,27	**20**	114	90	64,8
CUGPFL205	GEHPFL205	GRAE25-XL-NPP-B-FA107/125	0,33	**25**	130	99	70
CUGPFL206	GEHPFL206	GRAE30-XL-NPP-B-FA107/125	0,49	**30**	148	117	80
CUGPFL207	GEHPFL207	GRAE35-XL-NPP-B-FA107/125	0,74	**35**	163	130	90
CUGPFL208	GEHPFL208	GRAE40-XL-NPP-B-FA107/125	0,93	**40**	175	144	100
CUGPFL209[3)]	GEHPFL209	GRAE45-XL-NPP-B-FA107/125	1,09	**45**	188,5	148,5	108
CUGPFL210[3)]	GEHPFL210	GRAE50-XL-NPP-B-FA107/125	1,18	**50**	197	157	115

1) Available end caps, see page 431.

2) For these series, Back Seal components are also available, see page 432.

3) Available by agreement.



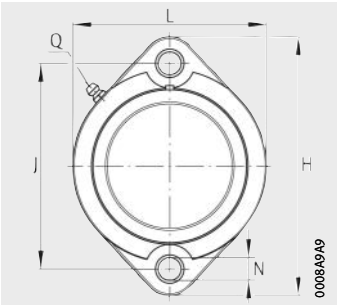
CUGPFL

A	A_1	A_2	N	B_1	B_3	S_1	U	V	Q	d_3 max.	Load carrying capacity Housing C_{0rG} N
26,5	11,4	15,4	11	31	31,4	23,5	38,9	64,8	1/4″ – 28 UNF	33	8 500
29,1	13,5	17	11	31	34,1	23,5	40,5	70	1/4″ – 28 UNF	37,5	11 100
30,5	13,3	18	11	35,8	38,5	26,8	44,8	80	1/4″ – 28 UNF	44	14 200
32,8	16,1	18	13	39	43,6	29,5	47,5	90	1/4″ – 28 UNF	55	14 900
37,5	20	21,5	14	43,8	49,5	32,8	54,3	100	1/4″ – 28 UNF	58	14 900
41	21	24	17	43,8	53,7	32,8	56,8	108	1/4″ – 28 UNF	63	15 100
43	21	25	17	43,8	60,3	32,8	57,8	115	1/4″ – 28 UNF	69	15 600



Two-bolt flanged housing units

Plastic housing
Wide version
Radial insert ball bearing in corrosion-resistant VA design
With grub screw or eccentric locking collar



SUBPCTL, SUGPCTL

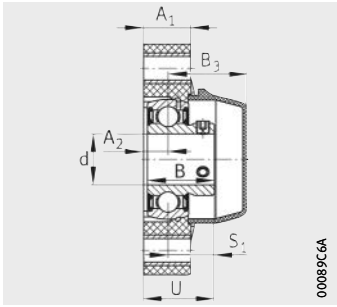
Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit[1)]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
SUBPCTL204	GEHPCTL204	SUB204	0,22	**20**	90,5	71,4	66,5
SUBPCTL205	GEHPCTL205	SUB205	0,25	**25**	97	76,2	71
SUBPCTL206	GEHPCTL206	SUB206	0,37	**30**	112	90,5	84
SUBPCTL207	GEHPCTL207	SUB207	0,55	**35**	126	100	94
SUBPCTL208	GEHPCTL208	SUB208	0,7	**40**	150	119	100

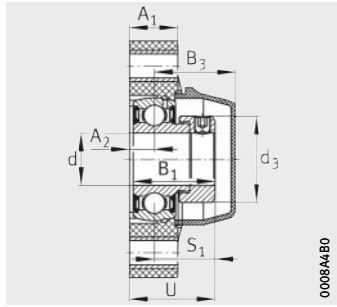
Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit[1)]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J	L
SUGPCTL204	GEHPCTL204	SUG204	0,25	**20**	90,5	71,4	66,5
SUGPCTL205	GEHPCTL205	SUG205	0,28	**25**	97	76,2	71
SUGPCTL206	GEHPCTL206	SUG206	0,42	**30**	112	90,5	84
SUGPCTL207	GEHPCTL207	SUG207	0,66	**35**	126	100	94
SUGPCTL208	GEHPCTL208	SUG208	0,79	**40**	150	119	100

1) Available end caps, see page 431.



SUBPCTL



SUGPCTL

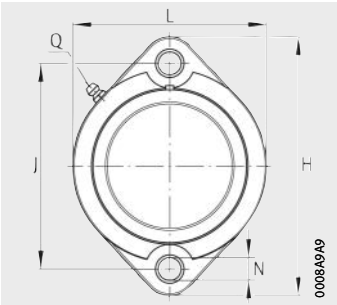
A_1	A_2	N	B	B_3	S_1	U	Q	Load carrying capacity Housing $C_{0r\,G}$ N
18,4	9,5	9,2	26	30,8	18	27,5	$^1/_4$″ – 28 UNF	7 200
18,4	9,9	9,2	28	33,5	19,5	29,4	$^1/_4$″ – 28 UNF	9 400
20,5	11,4	11	30,5	38,6	21	32,4	$^1/_4$″ – 28 UNF	12 000
22,5	12,4	11	35,45	41,1	25,45	37,85	$^1/_4$″ – 28 UNF	12 600
24	13,5	14	39,45	47,5	28,95	42,45	$^1/_4$″ – 28 UNF	12 800

A_1	A_2	N	B_1	B_3	S_1	U	Q	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
18,4	9,5	9,2	31,5	30,8	23,5	33	$^1/_4$″ – 28 UNF	33	7 200
18,4	9,9	9,2	32	33,5	23,5	33,4	$^1/_4$″ – 28 UNF	37,5	9 400
20,5	11,4	11	36,3	38,6	26,8	38,2	$^1/_4$″ – 28 UNF	44	12 000
22,5	12,4	11	39,5	41,1	29,5	41,9	$^1/_4$″ – 28 UNF	55	12 600
24	13,5	14	43,8	47,5	32,8	46,3	$^1/_4$″ – 28 UNF	58	12 800



Two-bolt flanged housing units

Plastic housing
Wide version
Radial insert ball bearing with Corrotect coating
With eccentric locking collar

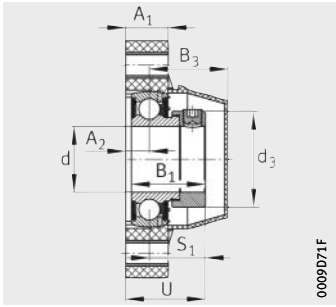


CUGPCTL

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit[1)]	Housing	Radial insert ball bearing	m ≈ kg	d	H	J
CUGPCTL204	GEHPCTL204	GRAE20-XL-NPP-B-FA107/125	0,26	**20**	90,5	71,4
CUGPCTL205	GEHPCTL205	GRAE25-XL-NPP-B-FA107/125	0,29	**25**	97	76,2
CUGPCTL206	GEHPCTL206	GRAE30-XL-NPP-B-FA107/125	0,47	**30**	112	90,5
CUGPCTL207	GEHPCTL207	GRAE35-XL-NPP-B-FA107/125	0,71	**35**	126	100
CUGPCTL208	GEHPCTL208	GRAE40-XL-NPP-B-FA107/125	0,86	**40**	150	119

1) Available end caps, see page 431.



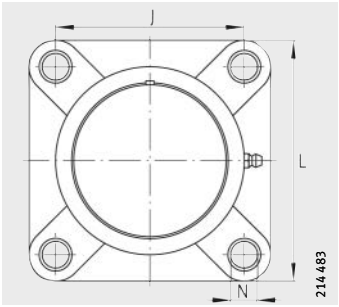
CUGPCTL

L	A_1	A_2	N	B_1	B_3	S_1	U	Q	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
66,5	18,4	9,5	9,2	31	30,8	23,5	33	1/4" – 28 UNF	33	7 200
71	18,4	9,9	9,2	31	33,5	23,5	33,4	1/4" – 28 UNF	37,5	9 400
84	20,5	11,4	11	35,8	38,6	26,8	38,2	1/4" – 28 UNF	44	12 000
94	22,5	12,4	11	39	41,1	29,5	41,9	1/4" – 28 UNF	55	12 600
100	24	13,5	14	43,8	47,5	32,8	46,3	1/4" – 28 UNF	58	12 800



Four-bolt flanged housing units

Plastic housing
Radial insert ball bearing in corrosion-resistant VA design
With grub screw or eccentric locking collar



SUBPF, SUCPF, SUGPF

Dimension table · Dimensions in mm

Designation			Mass	Dimensions				
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	J	L	A	A_1
SUBPF204	GEHPF204	SUB204	0,29	**20**	63,5	87	27,8	13,4
SUCPF204	GEHPF204	SUC204	0,31	**20**	63,5	87	27,8	13,4
SUBPF205	GEHPF205	SUB205	0,34	**25**	70	94,5	27,9	14,3
SUCPF205	GEHPF205	SUC205	0,38	**25**	70	94,5	27,9	14,3
SUBPF206	GEHPF206	SUB206	0,48	**30**	83	107	31,5	14,3
SUCPF206	GEHPF206	SUC206	0,52	**30**	83	107	31,5	14,3
SUBPF207	GEHPF207	SUB207	0,68	**35**	92	117	34,8	15,5
SUCPF207	GEHPF207	SUC207	0,74	**35**	92	117	34,8	15,5
SUBPF208	GEHPF208	SUB208	0,89	**40**	102	130	37,5	17
SUCPF208	GEHPF208	SUC208	0,98	**40**	102	130	37,5	17
SUBPF209[2]	GEHPF209	SUB209	1	**45**	105	137	41	19
SUCPF209[2]	GEHPF209	SUC209	1,1	**45**	105	137	41	19
SUBPF210[2]	GEHPF210	SUB210	1,16	**50**	111	143	43	21
SUCPF210[2]	GEHPF210	SUC210	1,31	**50**	111	143	43	21

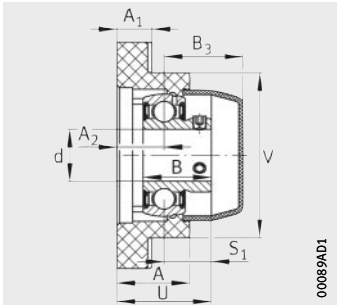
Dimension table · Dimensions in mm

Designation			Mass	Dimensions				
Unit[1] [3]	Housing	Radial insert ball bearing	m ≈ kg	d	J	L	A	A_1
SUGPF204	GEHPF204	SUG204	0,32	**20**	63,5	87	27,8	13,4
SUGPF205	GEHPF205	SUG205	0,36	**25**	70	94,5	27,9	14,3
SUGPF206	GEHPF206	SUG206	0,51	**30**	83	107	31,5	14,3
SUGPF207	GEHPF207	SUG207	0,76	**35**	92	117	34,8	15,5
SUGPF208	GEHPF208	SUG208	0,94	**40**	102	130	37,5	17
SUGPF209[2]	GEHPF209	SUG209	1,1	**45**	105	137	41	19
SUGPF210[2]	GEHPF210	SUG210	1,26	**50**	111	143	43	21

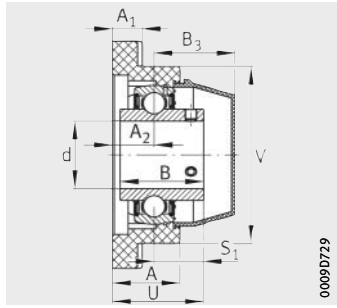
[1] Available end caps, see page 431.

[2] Available by agreement.

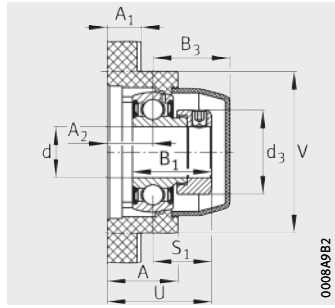
[3] For these series, Back Seal components are also available, see page 432.



SUBPF



SUCPF



SUGPF

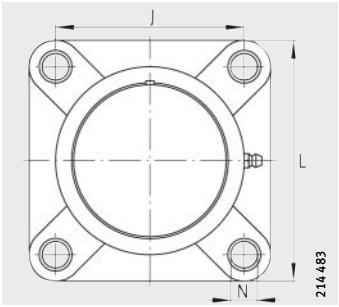
A_2	N	B	B_3	S_1	U	V	Q	Load carrying capacity Housing $C_{0r\,G}$ N
18	11	26	30,2	18	36	63,5	1/4″ – 28 UNF	10 200
18	11	31	30,2	18,3	36,3	63,5	1/4″ – 28 UNF	10 200
17	11	28	33,1	19,5	36,5	70	1/4″ – 28 UNF	12 100
17	11	34,1	33,1	19,8	36,8	70	1/4″ – 28 UNF	12 100
19,2	11	30,5	39,5	21	40,2	80	1/4″ – 28 UNF	17 700
19,2	11	38,1	39,5	22,2	41,4	80	1/4″ – 28 UNF	17 700
21,5	13	35,45	42,1	25,45	46,95	90	1/4″ – 28 UNF	18 500
21,5	13	42,9	42,1	25,4	46,9	90	1/4″ – 28 UNF	18 500
23	14	39,45	48	28,95	51,95	99	1/4″ – 28 UNF	19 200
23	14	49,2	48	30,2	53,2	99	1/4″ – 28 UNF	19 200
24	17	41,5	53,7	30,5	54,5	105	1/4″ – 28 UNF	19 300
24	17	49,2	53,7	30,2	54,2	105	1/4″ – 28 UNF	19 300
25	17	43,5	60,7	32	57	115	1/4″ – 28 UNF	19 600
25	17	51,6	60,7	32,6	57,6	115	1/4″ – 28 UNF	19 600



A_2	N	B_1	B_3	S_1	U	V	Q	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
18	11	31,5	30,2	23,5	41,5	63,5	1/4″ – 28 UNF	33	10 200
17	11	32	33,1	23,5	40,5	70	1/4″ – 28 UNF	37,5	12 100
19,2	11	36,3	39,5	26,8	46	80	1/4″ – 28 UNF	44	17 700
21,5	13	39,5	42,1	29,5	51	90	1/4″ – 28 UNF	55	18 500
23	14	43,8	48	32,8	55,8	99	1/4″ – 28 UNF	58	19 200
24	17	43,8	53,7	32,8	56,8	105	1/4″ – 28 UNF	63	19 300
25	17	44,3	60,7	32,8	57,8	115	1/4″ – 28 UNF	69	19 600

Four-bolt flanged housing units

Plastic housing
Radial insert ball bearing with Corrotect coating
With eccentric locking collar



CUGPF

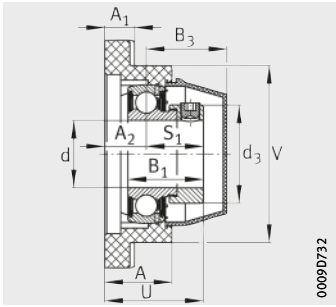
Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit[1) 2)]	Housing	Radial insert ball bearing	m ≈ kg	d	J	L
CUGPF204	GEHPF204	GRAE20-XL-NPP-B-FA107/125	0,33	**20**	63,5	87
CUGPF205	GEHPF205	GRAE25-XL-NPP-B-FA107/125	0,39	**25**	70	94,5
CUGPF206	GEHPF206	GRAE30-XL-NPP-B-FA107/125	0,57	**30**	83	107
CUGPF207	GEHPF207	GRAE35-XL-NPP-B-FA107/125	0,85	**35**	92	117
CUGPF208	GEHPF208	GRAE40-XL-NPP-B-FA107/125	1,07	**40**	102	130
CUGPF209[3)]	GEHPF209	GRAE45-XL-NPP-B-FA107/125	1,2	**45**	105	137
CUGPF210[3)]	GEHPF210	GRAE50-XL-NPP-B-FA107/125	1,32	**50**	111	143

1) Available end caps, see page 431.

2) For these series, Back Seal components are also available, see page 432.

3) Available by agreement.



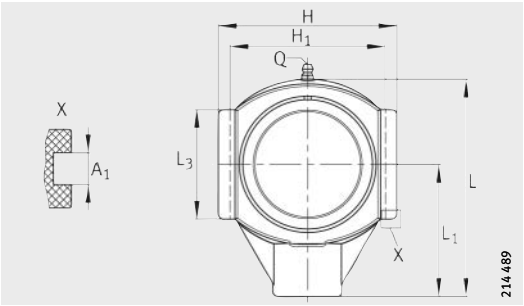
CUGPF

A	A_1	A_2	N	B_1	B_3	S_1	U	V	Q	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
27,8	13,4	18	11	31	30,2	23,5	41,5	63,5	1/4″ – 28 UNF	33	10 200
27,9	14,3	17	11	31	33,1	23,5	40,5	70	1/4″ – 28 UNF	37,5	12 100
31,5	14,3	19,2	11	35,8	39,5	26,8	46	80	1/4″ – 28 UNF	44	17 700
34,8	15,5	21,5	13	39	42,1	29,5	51	90	1/4″ – 28 UNF	55	18 500
37,5	17	23	14	43,8	48	32,8	55,8	99	1/4″ – 28 UNF	58	19 200
41	19	24	17	43,8	53,7	32,8	56,8	105	1/4″ – 28 UNF	63	19 300
43	21	25	17	43,8	60,7	32,8	57,8	115	1/4″ – 28 UNF	69	19 600



Take-up housing units

Plastic housing
Guide slots on both sides
Hole for threaded rod
Radial insert ball bearing
in corrosion-resistant VA design
With grub screw or eccentric locking collar



SUBPT, SUCPT, SUGPT

Dimension table · Dimensions in mm

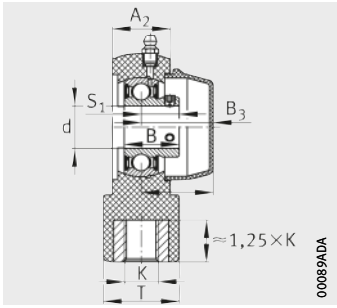
Designation			Mass	Dimensions				
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	H	L	L_1	L_3
SUBPT204	GEHPT204	SUB204	0,35	**20**	89	99	64	46
SUCPT204	GEHPT204	SUC204	0,37	**20**	89	99	64	46
SUBPT205	GEHPT205	SUB205	0,37	**25**	89	99	64	46
SUCPT205	GEHPT205	SUC205	0,4	**25**	89	99	64	46
SUBPT206	GEHPT206	SUB206	0,62	**30**	102,5	125	76	63,5
SUCPT206	GEHPT206	SUC206	0,65	**30**	102,5	125	76	63,5
SUBPT207	GEHPT207	SUB207	0,71	**35**	102,5	125	76	63,5
SUCPT207	GEHPT207	SUC207	0,77	**35**	102,5	125	76	63,5
SUBPT208	GEHPT208	SUB208	0,9	**40**	114	140	85	80
SUCPT208	GEHPT208	SUC208	1	**40**	114	140	85	80
SUBPT209[2]	GEHPT209	SUB209	1,09	**45**	117	149	90	85
SUCPT209[2]	GEHPT209	SUC209	1,16	**45**	117	149	90	85
SUBPT210[2]	GEHPT210	SUB210	1,21	**50**	117	149	90	85
SUCPT210[2]	GEHPT210	SUC210	1,32	**50**	117	149	90	85

Dimension table · Dimensions in mm

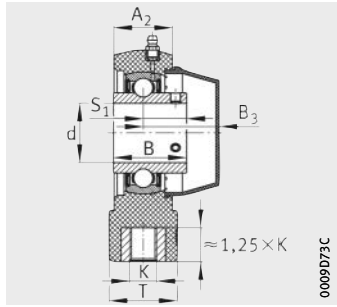
Designation			Mass	Dimensions				
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	H	L	L_1	L_3
SUGPT204	GEHPT204	SUG204	0,38	**20**	89	99	64	46
SUGPT205	GEHPT205	SUG205	0,4	**25**	89	99	64	46
SUGPT206	GEHPT206	SUG206	0,67	**30**	102,5	125	76	63,5
SUGPT207	GEHPT207	SUG207	0,81	**35**	102,5	125	76	63,5
SUGPT208	GEHPT208	SUG208	0,98	**40**	114	140	85	80
SUGPT209[2]	GEHPT209	SUG209	1,19	**45**	117	149	90	85
SUGPT210[2]	GEHPT210	SUG210	1,31	**50**	117	149	90	85

[1] Available end caps, see page 431.

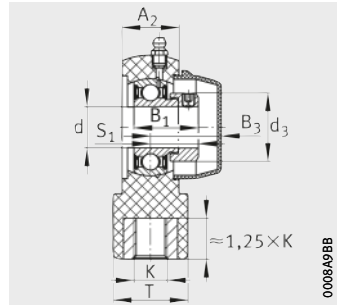
[2] Available by agreement.



SUBPT



SUCPT



SUGPT

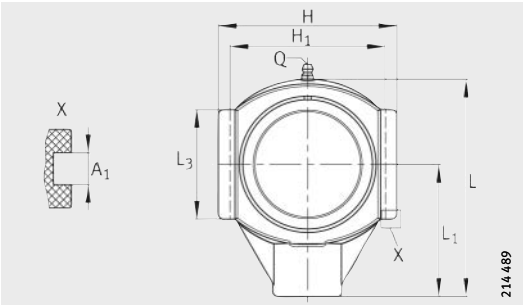
A_1	A_2	H_1	B	B_3	K	T	S_1	Q	Load carrying capacity Housing $C_{0r\,G}$ N
12	27,5	76	26	34,05	M16	36	18	1/4″ – 28 UNF	9 600
12	27,5	76	31	34,05	M16	36	18,3	1/4″ – 28 UNF	9 600
12	27,5	76	28	35,95	M16	36	19,5	1/4″ – 28 UNF	10 000
12	27,5	76	34,1	35,95	M16	36	19,8	1/4″ – 28 UNF	10 000
12	34	89	30,5	43,5	M16	40	21	1/4″ – 28 UNF	10 200
12	34	89	38,1	43,5	M16	40	22,2	1/4″ – 28 UNF	10 200
12	34	89	35,45	45,2	M16	40	25,45	1/4″ – 28 UNF	10 700
12	34	89	42,9	45,2	M16	40	25,4	1/4″ – 28 UNF	10 700
16	34	102	39,45	50,6	M16	40	28,95	1/4″ – 28 UNF	11 200
16	34	102	49,2	50,6	M16	40	30,2	1/4″ – 28 UNF	11 200
16	40	102	41,5	57,6	M20	50	30,5	1/4″ – 28 UNF	11 800
16	40	102	49,2	57,6	M20	50	30,2	1/4″ – 28 UNF	11 800
16	40	102	43,5	63,6	M20	50	32	1/4″ – 28 UNF	12 200
16	40	102	51,6	63,6	M20	50	32,6	1/4″ – 28 UNF	12 200



A_1	A_2	H_1	B_1	B_3	K	T	S_1	Q	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
12	27,5	76	31,5	34,05	M16	36	23,5	1/4″ – 28 UNF	33	9 600
12	27,5	76	32	35,95	M16	36	23,5	1/4″ – 28 UNF	37,5	10 000
12	34	89	36,3	43,5	M16	40	26,8	1/4″ – 28 UNF	44	10 200
12	34	89	39,5	45,2	M16	40	29,5	1/4″ – 28 UNF	55	10 700
16	34	102	43,8	50,6	M16	40	32,8	1/4″ – 28 UNF	58	11 200
16	40	102	43,8	57,6	M20	50	32,8	1/4″ – 28 UNF	63	11 800
16	40	102	44,3	63,6	M20	50	32,8	1/4″ – 28 UNF	69	12 200

Take-up housing units

Plastic housing
Guide slots on both sides
Hole for threaded rod
Radial insert ball bearing
with Corrotect coating
With eccentric locking collar

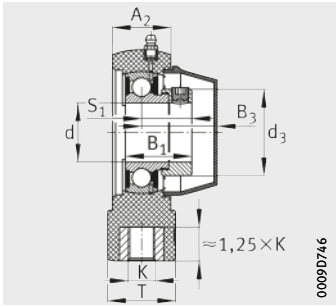


CUGPT

Dimension table · Dimensions in mm

Designation			Mass	Dimensions			
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	H	L	L_1
CUGPT204	GEHPT204	GRAE20-XL-NPP-B-FA107/125	0,4	**20**	89	99	64
CUGPT205	GEHPT205	GRAE25-XL-NPP-B-FA107/125	0,41	**25**	89	99	64
CUGPT206	GEHPT206	GRAE30-XL-NPP-B-FA107/125	0,72	**30**	102,5	125	76
CUGPT207	GEHPT207	GRAE35-XL-NPP-B-FA107/125	0,87	**35**	102,5	125	76
CUGPT208	GEHPT208	GRAE40-XL-NPP-B-FA107/125	1,05	**40**	114	140	85
CUGPT209[2]	GEHPT209	GRAE45-XL-NPP-B-FA107/125	1,19	**45**	117	149	90
CUGPT210	GEHPT210	GRAE50-XL-NPP-B-FA107/125	1,28	**50**	117	149	90

1) Available end caps, see page 431.
2) Available by agreement.



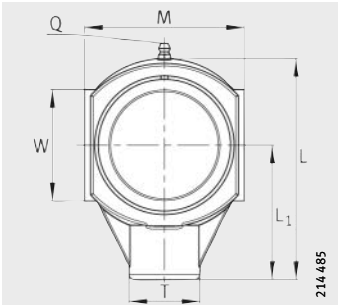
CUGPT

L_3	A_1	A_2	H_1	B_1	B_3	K	T	S_1	Q	d_3 max.	Load carrying capacity Housing $C_{0r\,G}$ N
46	12	27,5	76	31	34,05	M16	36	23,5	1/4″ – 28 UNF	33	9 600
46	12	27,5	76	31	35,95	M16	36	23,5	1/4″ – 28 UNF	37,5	10 000
63,5	12	34	89	35,8	43,5	M16	40	26,8	1/4″ – 28 UNF	44	10 200
63,5	12	34	89	39	45,2	M16	40	29,5	1/4″ – 28 UNF	55	10 700
80	16	34	102	43,8	50,6	M16	40	32,8	1/4″ – 28 UNF	58	11 200
85	16	40	102	43,8	57,6	M20	50	32,8	1/4″ – 28 UNF	63	11 800
85	16	40	102	43,8	63,6	M20	50	32,8	1/4″ – 28 UNF	69	12 200



Take-up housing units

Plastic housing
Guide surfaces on both sides
Hole for threaded rod
Radial insert ball bearing in corrosion-resistant VA design
With grub screw or eccentric locking collar



SUBPHE, SUCPHE, SUGPHE

Dimension table · Dimensions in mm

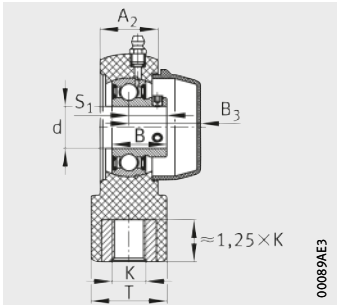
Designation			Mass	Dimensions				
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	M	L	L_1	W
SUBPHE204	GEHPHE204	SUB204	0,32	**20**	65	99	64	46
SUCPHE204	GEHPHE204	SUC204	0,35	**20**	65	99	64	46
SUBPHE205	GEHPHE205	SUB205	0,35	**25**	74	99	64	46
SUCPHE205	GEHPHE205	SUC205	0,39	**25**	74	99	64	46
SUBPHE206	GEHPHE206	SUB206	0,6	**30**	90	125	76	63,5
SUCPHE206	GEHPHE206	SUC206	0,63	**30**	90	125	76	63,5
SUBPHE207	GEHPHE207	SUB207	0,69	**35**	90	125	76	63,5
SUCPHE207	GEHPHE207	SUC207	0,75	**35**	90	125	76	63,5
SUBPHE208	GEHPHE208	SUB208	0,87	**40**	100	140	85	80
SUCPHE208	GEHPHE208	SUC208	0,97	**40**	100	140	85	80
SUBPHE209[2]	GEHPHE209	SUB209	1,07	**45**	110	149	90	85
SUCPHE209[2]	GEHPHE209	SUC209	1,13	**45**	110	149	90	85
SUBPHE210[2]	GEHPHE210	SUB210	1,17	**50**	110	149	90	85
SUCPHE210[2]	GEHPHE210	SUC210	1,28	**50**	110	149	90	85

Dimension table · Dimensions in mm

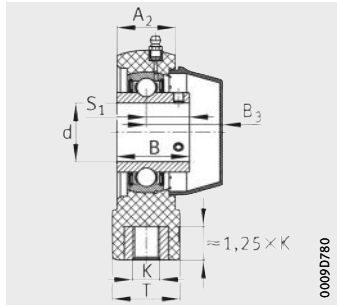
Designation			Mass	Dimensions				
Unit[1]	Housing	Radial insert ball bearing	m ≈ kg	d	M	L	L_1	W
SUGPHE204	GEHPHE204	SUG204	0,35	**20**	65	99	64	46
SUGPHE205	GEHPHE205	SUG205	0,38	**25**	74	99	64	46
SUGPHE206	GEHPHE206	SUG206	0,65	**30**	90	125	76	63,5
SUGPHE207	GEHPHE207	SUG207	0,79	**35**	90	125	76	63,5
SUGPHE208	GEHPHE208	SUG208	0,95	**40**	100	140	85	80
SUGPHE209[2]	GEHPHE209	SUG209	1,16	**45**	110	149	90	85
SUGPHE210[2]	GEHPHE210	SUG210	1,27	**50**	110	149	90	85

[1] Available end caps, see page 431.

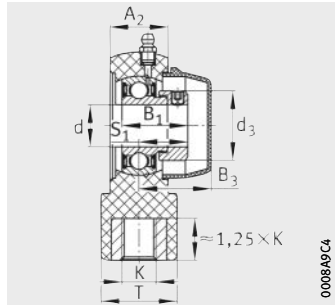
[2] Available by agreement.



SUBPHE



SUCPHE



SUGPHE

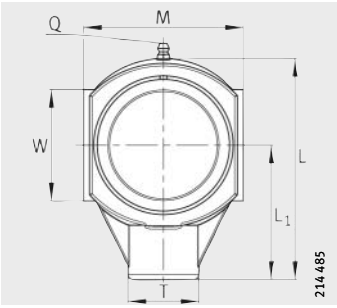
A_2	B	B_3	K	T	S_1	Q	Load carrying capacity Housing C_{0rG} N
27,5	26	34,05	M16	36	18	1/4″ – 28 UNF	9 600
27,5	31	34,05	M16	36	18,3	1/4″ – 28 UNF	9 600
27,5	28	35,95	M16	36	19,5	1/4″ – 28 UNF	10 000
27,5	34,1	35,95	M16	36	19,8	1/4″ – 28 UNF	10 000
34	30,5	43,5	M16	40	21	1/4″ – 28 UNF	10 200
34	38,1	43,5	M16	40	22,2	1/4″ – 28 UNF	10 200
34	35,45	45,2	M16	40	25,45	1/4″ – 28 UNF	10 700
34	42,9	45,2	M16	40	25,4	1/4″ – 28 UNF	10 700
34	39,45	50,6	M16	40	28,95	1/4″ – 28 UNF	11 200
34	49,2	50,6	M16	40	30,2	1/4″ – 28 UNF	11 200
40	41,5	57,6	M20	50	30,5	1/4″ – 28 UNF	11 800
40	49,2	57,6	M20	50	30,2	1/4″ – 28 UNF	11 800
40	43,5	63,6	M20	50	32	1/4″ – 28 UNF	12 200
40	51,6	63,6	M20	50	32,6	1/4″ – 28 UNF	12 200



A_2	B_1	B_3	K	T	S_1	Q	d_3 max.	Load carrying capacity Housing C_{0rG} N
27,5	31,5	34,05	M16	36	23,5	1/4″ – 28 UNF	33	9 600
27,5	32	35,95	M16	36	23,5	1/4″ – 28 UNF	37,5	10 000
34	36,3	43,5	M16	40	26,8	1/4″ – 28 UNF	44	10 200
34	39,5	45,2	M16	40	29,5	1/4″ – 28 UNF	55	10 700
34	43,8	50,6	M16	40	32,8	1/4″ – 28 UNF	58	11 200
40	43,8	57,6	M20	50	32,8	1/4″ – 28 UNF	63	11 800
40	44,3	63,6	M20	50	32,8	1/4″ – 28 UNF	69	12 200

Take-up housing units

Plastic housing
Guide surfaces on both sides
Hole for threaded rod
Radial insert ball bearing with Corrotect coating
With eccentric locking collar

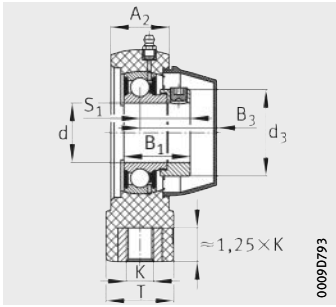


CUGPHE

Dimension table · Dimensions in mm

Designation			Mass	Dimensions		
Unit[1)]	Housing	Radial insert ball bearing	m ≈ kg	d	M	L
CUGPHE204	GEHPHE204	GRAE20-XL-NPP-B-FA107/125	0,37	**20**	65	99
CUGPHE205	GEHPHE205	GRAE25-XL-NPP-B-FA107/125	0,39	**25**	74	99
CUGPHE206	GEHPHE206	GRAE30-XL-NPP-B-FA107/125	0,69	**30**	90	125
CUGPHE207	GEHPHE207	GRAE35-XL-NPP-B-FA107/125	0,84	**35**	90	125
CUGPHE208	GEHPHE208	GRAE40-XL-NPP-B-FA107/125	1,02	**40**	100	140
CUGPHE209[2)]	GEHPHE209	GRAE45-XL-NPP-B-FA107/125	1,16	**45**	110	149
CUGPHE210[2)]	GEHPHE210	GRAE50-XL-NPP-B-FA107/125	1,24	**50**	110	149

1) Available end caps, see page 431.
2) Available by agreement.



CUGPHE

L1	W	A2	B1	B3	K	T	S1	Q	d3 max.	Load carrying capacity Housing C0r G N
64	46	27,5	31	34,05	M16	36	23,5	1/4″ – 28 UNF	33	9 600
64	46	27,5	31	35,95	M16	36	23,5	1/4″ – 28 UNF	37,5	10 000
76	63,5	34	35,8	43,5	M16	40	26,8	1/4″ – 28 UNF	44	10 200
76	63,5	34	39	45,2	M16	40	29,5	1/4″ – 28 UNF	55	10 700
85	80	34	43,8	50,6	M16	40	32,8	1/4″ – 28 UNF	58	11 200
90	85	40	43,8	57,6	M20	50	32,8	1/4″ – 28 UNF	63	11 800
90	85	40	43,8	63,6	M20	50	32,8	1/4″ – 28 UNF	69	12 200



FAG



Black Series

Radial insert ball bearings and housing units



FAG Black Series, radial insert ball bearings and housing units

Radial insert ball bearings **466**

Black Series

The new radial insert ball bearing and housing units FAG Black Series from Schaeffler give easy mounting, smooth running and high reliability and thus allow particularly economical bearing arrangements.

FAG radial insert ball bearings with a spherical outer ring are based on single row deep groove ball bearings 62 and are designed in accordance with JIS B 1558. The outer and inner rings as well as the flinger shields of the radial insert ball bearings are provided with the Durotect BS coating in order to offer basic protection against corrosion. The Black Series radial insert ball bearings are available with two location methods and one type of seal. They can be relubricated and are particularly easy to install.

Housing units **484**

Black Series

The dimensions of the FAG housings, made from flake graphite cast iron and with a primer paint coating, conform to JIS B 1559. These single piece cast housings can support moderate to high radial and axial loads. The radial insert ball bearings have basic protection against corrosion due to the Durotect BS coating.

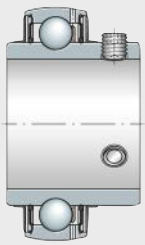
The bearing units are particularly suitable for applications with moderate to high loads.

Typical areas of application for these bearings include the agricultural, construction and mining sector, power transmission and conveying equipment as well as in pumps, textile, paper and woodworking machinery, in machinery for the timber, filling and packaging industries and in the steel industry.

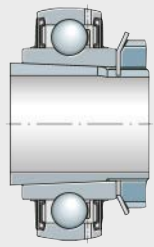
Housing units in accordance with JIS B 1557 comprise FAG flake graphite cast iron housings with a concave bore in which FAG radial insert ball bearings are fitted. These units are matched to each other and are available as plummer block housing units, flanged housing units and take-up housing units.

Radial insert ball bearings with a spherical outer ring, when fitted in housings with a concave bore, can compensate for static misalignment of the shaft.

Housing units are supplied with a loose packed lubrication nipple and integrated end cap for the lubrication nipple as well as an Allen key.

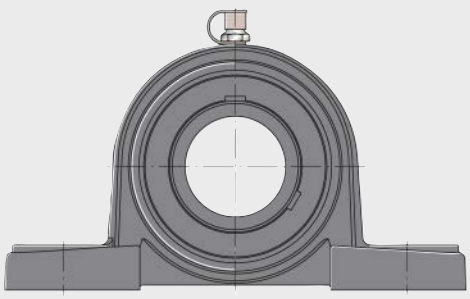


UC

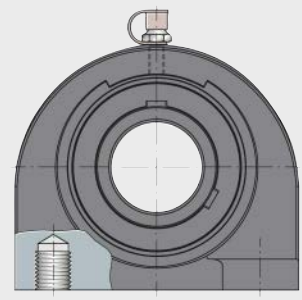


UK

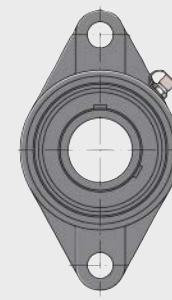
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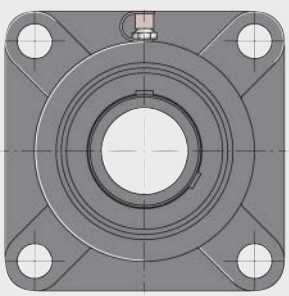
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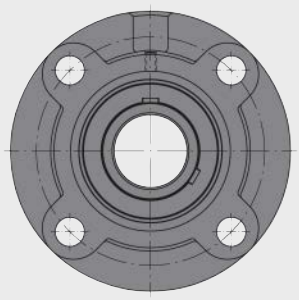
PA



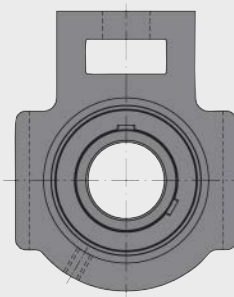
FL



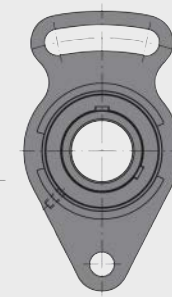
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FC



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FA

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FAG



Radial insert ball bearings

Radial insert ball bearings

		Page
Matrix	Features of radial insert ball bearings, comparison of series	468
Product overview	Radial insert ball bearings	470
Features	Anti-corrosion protection	471
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	Sealing	472
	Operating temperature	472
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	Shaft tolerances for radial insert ball bearings	475
Accuracy	Standard tolerances of radial insert ball bearings	475
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Features of radial insert ball bearings, comparison of series

Series	Shaft diameter				Compensation of misalignment	Internal clearance
	mm		inch			
	from	to	from	to		
UC	12	90	$1/2$	$3\,1/2$	yes	C3
UK	20	80	–	–	yes	C4

1) Attention!
Recommended operating temperature of bearing series.
If temperatures exceed +100 °C, relubrication must be carried out regularly.

2) Temperature peaks of up to +120 °C possible for short periods.

Location	Sealing	Cage material	Greasing	Relubrication facility	Temperature[1] °C		Comments	Dimension table
					from	to		Page
Grub screw	RSR	PA66	GA13	yes	–20	+100[2]	Corrosion-resistant	478
Adapter sleeve	RSR	PA66	GA13	yes	–20	+100[2]	Corrosion-resistant	482



With grub screws in inner ring

Spherical outer ring

UC



With adapter sleeve

Spherical outer ring

UK



Radial insert ball bearings

Features

These radial insert ball bearings are based on single row deep groove ball bearings 62 and comprise a solid section outer ring and an inner ring extended on both sides.

The bearings have plastic cages and are sealed on both sides by single piece seals RSR with a vulcanised seal lip and an outer flinger shield.

The honed raceways of the bearing rings, in conjunction with the high ball grade, ensure quiet running and a reduced frictional torque.

The outer ring has a spherical outside surface. In combination with a housing matched to the design, bearings with a spherical outer ring can compensate static misalignments of the shaft, see page 473.

The radial insert ball bearings are pregreased and can be relubricated by means of two lubrication holes in the outer ring.

Inch size designs

The radial insert ball bearings are also available with inch size bore dimensions, see dimension table.

Anti-corrosion protection

The inner and outer rings as well as the flinger shields of the radial insert ball bearings are provided with the black Durotect BS coating in order to offer basic protection against corrosion.

Adapter sleeves have a Durotect BS or phosphate coating.

Location on shaft

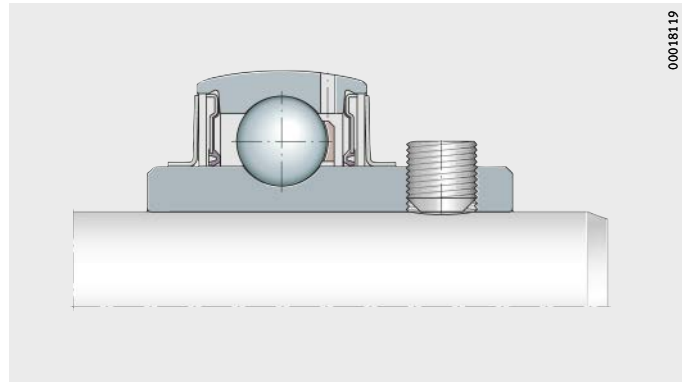
Radial insert ball bearings are particularly easy to fit and are preferentially suitable for drawn shafts with the tolerances h6 Ⓔ to h9 Ⓔ.

In the radial insert ball bearings UC, the inner ring is located on the shaft by means of two grub screws offset by 120°, *Figure 1*, page 472. They are suitable for bearing arrangements with a constant direction of rotation or, under low speed and load, for an alternating direction of rotation.

The grub screws are self-retaining and have a fine pitch thread with cup point for secure location of the bearings. In order to allow better differentiation, the metric grub screws have a Durotect BS coating while the inch size grub screws are zinc plated.

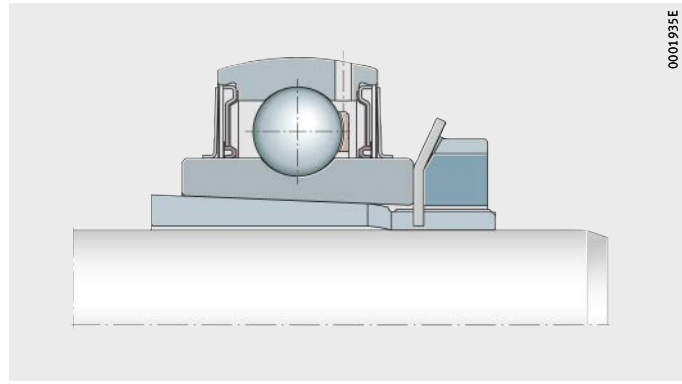
In the case of radial insert ball bearings UK, the inner ring is located on the shaft by means of a concentric adapter sleeve in accordance with JIS B 1552, *Figure 2*, page 472. The roughness of the adapter sleeve on the inside and outside is Ra 2,5. They are suitable for bearing arrangements with an alternating direction of rotation, even under high speed and load.





UC

Figure 1
Location by grub screws in the inner ring



UK

Figure 2
Location by adapter sleeve

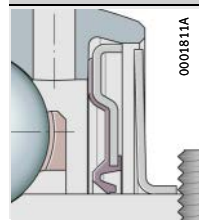
Tightening torques

Tightening torques for metric and inch size grub screws, see table, page 496.
Tightening torques for locknuts, see table, page 497.

Sealing

FAG Black Series radial insert ball bearings are supplied with seals RSR, see table.

Seal types

Seal RSR	
	Single piece, zinc-plated sheet steel washer with vulcanised and radially preloaded seal lip made from NBR and additional flinger shield

Operating temperature

The insert bearings are suitable for operating temperatures of –20 °C to +100 °C. Temperature peaks of up to +120 °C are possible for short periods.

In the case of temperatures over ϑ = +100 °C, relubrication must be carried out regularly.

Design and safety guidelines Compensation of static misalignments

Bearings with a spherical outer ring, fitted in housings with a concave bore, can compensate for static misalignment of the shaft, *Figure 3*:

For units with a lubrication groove in the housing and a lubrication hole in the radial insert ball bearing, the following applies:

- Up to ±2,5°, the units can be relubricated.
- Between ±2,5° and ±5°, the facility for relubrication is dependent on the specific unit. Please contact us in this case.
- Above ±5°, relubrication is no longer possible.

The units must not be used to support swivelling or tumbling motion.

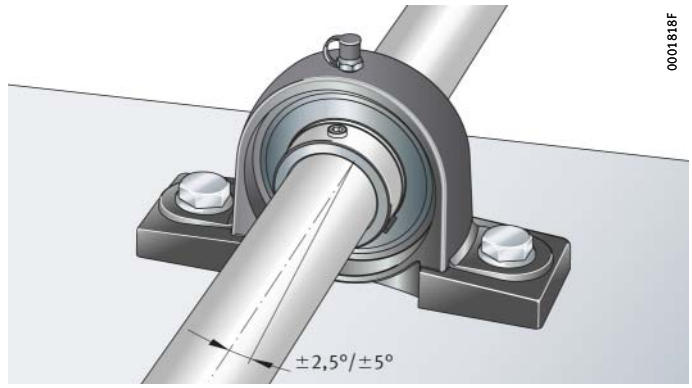


Figure 3
Compensation of static shaft misalignment

Minimum radial load

In order to ensure slippage-free operation, the bearings must be subjected to a minimum radial load. This applies particularly in the case of high speeds and high accelerations. In continuous operation, a minimum radial load of the order of $P \geqq 0{,}01 \cdot C_r$ is necessary for ball bearings with cage.

Speed limits for radial insert ball bearings

The speed limits are dependent on the load, the clearance between the bearing bore and shaft and the friction of the seals in the case of bearings with contact seals.

Guide values for the permissible speeds can be derived from the diagram, *Figure 4*.

In the case of load ratios $C_r/P > 13$, the speeds can be increased. At $C_r/P < 5$, location by means of a fit is recommended, see section Conditions of rotation, chapter Technical principles, Catalogue HR 1, Rolling Bearings. For both types of applications, please contact us.

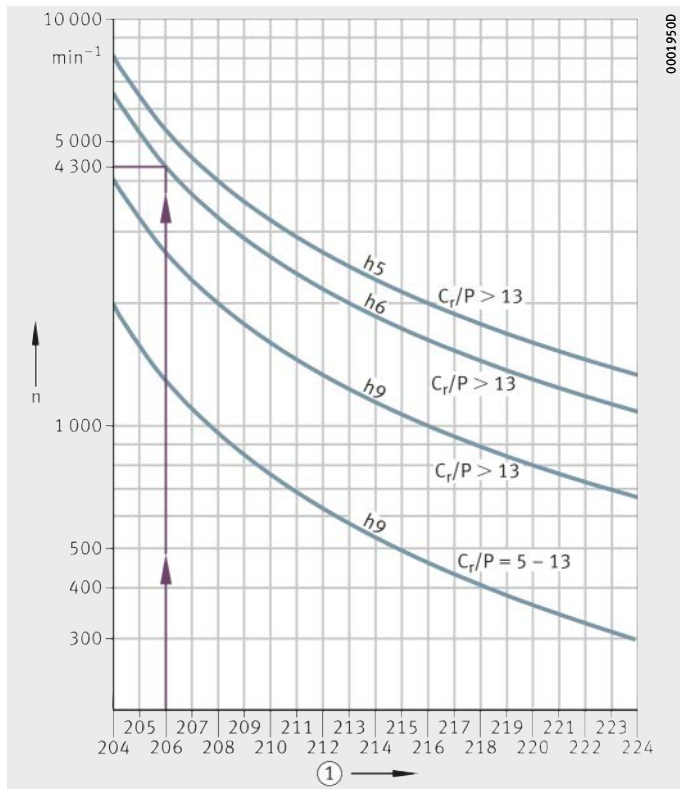
Example of permissible speed calculation

Given:

Shaft tolerance	h6 Ⓔ
Radial insert ball bearing	UC206
Basic dynamic load rating C_r	20 700 N
Load P	1 300 N
Sealing	Seals RSR.

Required:

Load ratio $C_r/P = 20\,700\ N/1\,300\ N$	$C_r/P > 13$
Permissible speed	$n \approx 4\,300\ min^{-1}$, *Figure 4*.



n = permissible speed
h5, h6, h9 = shaft tolerance (this is subject to the envelope requirement Ⓔ)
C_r/P = load ratio

① Ball set (bearings of sizes 201, 202, 203 and 204 all have the ball set 204)

Figure 4
Permissible speeds for radial insert ball bearings with seals RSR

Shaft tolerances for radial insert ball bearings

The permissible shaft tolerance is dependent on the speed and load. Tolerances h6 Ⓔ to h9 Ⓔ are recommended.

Conventional drawn shafts will suffice for most applications.

Accuracy
Standard tolerances of radial insert ball bearings

The outside diameter tolerances of the bearings conform to the tolerances in accordance with JIS B 1558. The inner ring bore has a plus tolerance to allow easier mounting of the bearing, see tables.

Inner ring tolerances

Nominal bearing bore diameter d mm		Variation[1] Δ_{dmp} µm		Width deviation Δ_{Bs} µm	
over	incl.	min.	max.	min.	max.
10	18	0	+15	−120	0
18	31,75	0	+18	−120	0
31,75	50,8	0	+21	−120	0
50,8	80,962	0	+24	−150	0
80,962	120	0	+28	−200	0

[1] This corresponds to the arithmetic mean value derived from the largest and smallest diameters (measured using a two-point measuring device).

Outer ring tolerances

Nominal outside diameter D_{sp} mm		Variation[1] Δ_{Dm} µm	
over	incl.	min.	max.
30	50	−11	0
50	80	−13	0
80	120	−15	0
120	150	−18	0
150	180	−25	0
180	250	−30	0

[1] In the case of sealed bearings, the largest and smallest values of the outside diameter can deviate from the mean value by approx. 0,03 mm.



Radial internal clearance of radial insert ball bearings

The radial internal clearance in accordance with JIS B 1520 is C3 for radial insert ball bearings UC and C4 for radial insert ball bearings UK. It is thus larger than in the case of normal deep groove ball bearings, see table.

The larger internal clearance allows better support of misalignments and shaft deflection.

Radial internal clearance

Bore d		Ball set	Outside diameter D	Radial internal clearance			
				C3 µm		C4 µm	
mm	inch		mm	min.	max.	min.	max.
12	–	204	47	13	28	20	36
12,7	1/2						
14,288	9/16						
15	–						
15,875	5/8						
17	–						
17,462	11/16						
19,05	3/4						
20	–						
20,638	13/16	205	52	13	28	23	41
22,225	7/8						
23,812	15/16						
25	–						
25,4	1						
26,988	1 1/16	206	62				
28,575	1 1/8						
30	–						
30,162	1 3/16						
31,75	1 1/4						
31,75	1 1/4	207	72	15	33	28	46
33,338	1 5/16						
34,925	1 3/8						
35	–						
36,512	1 7/16						
38,1	1 1/2	208	80				
39,688	1 9/16						
40	–						
41,275	1 5/8	209	85	18	36	30	51
42,862	1 11/16						
44,45	1 3/4						
45	–						
46,038	1 13/16	210	90				
47,625	1 7/8						
49,212	1 15/16						
50	–						
50,8	2						

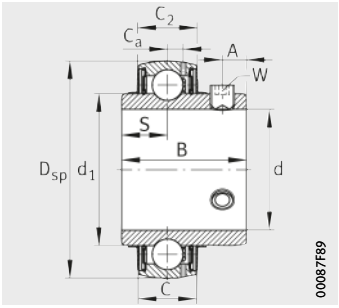
Radial internal clearance
(continued)

Bore d		Ball set	Outside diameter D	Radial internal clearance			
				C3 µm		C4 µm	
mm	inch		mm	min.	max.	min.	max.
50,8	2	211	100	23	43	38	61
52,388	$2^{1}/_{16}$						
53,975	$2^{1}/_{8}$						
55	–						
55,562	$2^{3}/_{16}$						
57,15	$2^{1}/_{4}$	212	110				
58,738	$2^{5}/_{16}$						
60	–						
60,325	$2^{3}/_{8}$						
61,912	$2^{7}/_{16}$						
63,5	$2^{1}/_{2}$	213	120				
65	–						
65,09	$2^{9}/_{16}$						
66,675	$2^{5}/_{8}$	214	125	25	51	46	71
68,262	$2^{11}/_{16}$						
69,85	$2^{3}/_{4}$						
70	–						
71,438	$2^{13}/_{16}$	215	130				
73,025	$2^{7}/_{8}$						
74,612	$2^{15}/_{16}$						
75	–						
76,2	3						
77,787	$3^{1}/_{16}$	216	140				
79,375	$3^{1}/_{8}$						
80	–						
80,962	$3^{3}/_{16}$						
82,55	$3^{1}/_{4}$	217	150	30	58	53	84
84,137	$3^{5}/_{16}$						
85	–						
87,312	$3^{7}/_{16}$						
88,9	$3^{1}/_{2}$	218	160				
90	–						
93,662	$3^{11}/_{16}$	219	170				
95	–						
100	–	220	180				
100,012	$3^{15}/_{16}$						
101,6	4						



Radial insert ball bearings with grub screws in inner ring

Spherical outer ring



UC

Dimension table · Dimensions in mm and inch

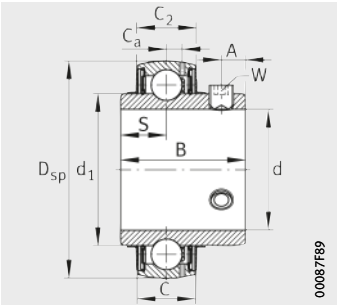
Designation	Mass	Dimensions						
	m	d		D_{sp}	C	C_2	B	S
	≈ kg	mm	inch					
UC201	0,2	**12**	–	47	17	16,8	31	12,7
UC201-08	0,2	**12,7**	***1/2***	47	17	16,8	31	12,7
UC202-09	0,19	**14,288**	***9/16***	47	17	16,8	31	12,7
UC202	0,18	**15**	–	47	17	16,8	31	12,7
UC202-10	0,18	**15,875**	***5/8***	47	17	16,8	31	12,7
UC203	0,17	**17**	–	47	17	16,8	31	12,7
UC203-11	0,17	**17,463**	***11/16***	47	17	16,8	31	12,7
UC204-12	0,16	**19,05**	***3/4***	47	17	16,8	31	12,7
UC204	0,15	**20**	–	47	17	16,8	31	12,7
UC205-13	0,24	**20,638**	***13/16***	52	17	17,6	34,1	14,3
UC205-14	0,22	**22,225**	***7/8***	52	17	17,6	34,1	14,3
UC205-15	0,21	**23,813**	***15/16***	52	17	17,6	34,1	14,3
UC205	0,2	**25**	–	52	17	17,6	34,1	14,3
UC205-16	0,19	**25,4**	***1***	52	17	17,6	34,1	14,3
UC206-17	0,35	**26,988**	***1 1/16***	62	19	19,6	38,1	15,9
UC206-18	0,33	**28,575**	***1 1/8***	62	19	19,6	38,1	15,9
UC206	0,31	**30**	–	62	19	19,6	38,1	15,9
UC206-19	0,31	**30,163**	***1 3/16***	62	19	19,6	38,1	15,9
UC206-20	0,29	**31,75**	***1 1/4***	62	19	19,6	38,1	15,9
UC207-20	0,52	**31,75**	***1 1/4***	72	20	20,6	42,9	17,5
UC207-21	0,5	**33,338**	***1 5/16***	72	20	20,6	42,9	17,5
UC207-22	0,47	**34,925**	***1 3/8***	72	20	20,6	42,9	17,5
UC207	0,47	**35**	–	72	20	20,6	42,9	17,5
UC207-23	0,44	**36,513**	***1 7/16***	72	20	20,6	42,9	17,5
UC208-24	0,66	**38,1**	***1 1/2***	80	21	21,6	49,2	19
UC208-25	0,63	**39,688**	***1 9/16***	80	21	21,6	49,2	19
UC208	0,62	**40**	–	80	21	21,6	49,2	19
UC209-26	0,79	**41,275**	***1 5/8***	85	22	22,6	49,2	19
UC209-27	0,75	**42,863**	***1 11/16***	85	22	22,6	49,2	19
UC209-28	0,71	**44,45**	***1 3/4***	85	22	22,6	49,2	19
UC209	0,69	**45**	–	85	22	22,6	49,2	19
UC210-29	0,92	**46,038**	***1 13/16***	90	24	24,6	51,6	19
UC210-30	0,87	**47,625**	***1 7/8***	90	24	24,6	51,6	19
UC210-31	0,82	**49,213**	***1 15/16***	90	24	24,6	51,6	19
UC210	0,8	**50**	–	90	24	24,6	51,6	19
UC210-32	0,77	**50,8**	***2***	90	24	24,6	51,6	19

			Width across flats		Basic load ratings		Fatigue limit load	Factor
d_1	C_a	A	W		dyn. C_r	stat. C_{0r}	C_{ur}	f_0
			mm	inch	N	N	N	
27,56	4,2	5	3	–	13 600	6 600	335	13,1
27,56	4,2	5	–	1/8	13 600	6 600	335	13,1
27,56	4,2	5	–	1/8	13 600	6 600	335	13,1
27,56	4,2	5	3	–	13 600	6 600	335	13,1
27,56	4,2	5	–	1/8	13 600	6 600	335	13,1
27,56	4,2	5	3	–	13 600	6 600	335	13,1
27,56	4,2	5	–	1/8	13 600	6 600	335	13,1
27,56	4,2	5	–	1/8	13 600	6 600	335	13,1
27,56	4,2	5	3	–	13 600	6 600	335	13,1
33,83	4,2	5	–	1/8	14 900	7 800	395	13,8
33,83	4,2	5	–	1/8	14 900	7 800	395	13,8
33,83	4,2	5	–	1/8	14 900	7 800	395	13,8
33,83	4,2	5	3	–	14 900	7 800	395	13,8
33,83	4,2	5	–	1/8	14 900	7 800	395	13,8
40,2	5	5	–	1/8	20 700	11 300	570	13,8
40,2	5	5	–	1/8	20 700	11 300	570	13,8
40,2	5	5	3	–	20 700	11 300	570	13,8
40,2	5	5	–	1/8	20 700	11 300	570	13,8
40,2	5	5	–	1/8	20 700	11 300	570	13,8
46,84	5,7	7	–	5/32	27 500	15 300	770	13,8
46,84	5,7	7	–	5/32	27 500	15 300	770	13,8
46,84	5,7	7	–	5/32	27 500	15 300	770	13,8
46,84	5,7	7	4	–	27 500	15 300	770	13,8
46,84	5,7	7	–	5/32	27 500	15 300	770	13,8
52,27	6,2	8	–	5/32	34 500	19 800	1 010	14
52,27	6,2	8	–	5/32	34 500	19 800	1 010	14
52,27	6,2	8	4	–	34 500	19 800	1 010	14
57,91	6,3	8	–	5/32	34 500	20 400	1 030	14,3
57,91	6,3	8	–	5/32	34 500	20 400	1 030	14,3
57,91	6,3	8	–	5/32	34 500	20 400	1 030	14,3
57,91	6,3	8	4	–	34 500	20 400	1 030	14,3
62,84	6,5	10	–	3/16	37 500	23 200	1 180	14,3
62,84	6,5	10	–	3/16	37 500	23 200	1 180	14,3
62,84	6,5	10	–	3/16	37 500	23 200	1 180	14,3
62,84	6,5	10	5	–	37 500	23 200	1 180	14,3
62,84	6,5	10	–	3/16	37 500	23 200	1 180	14,3



Radial insert ball bearings with grub screws in inner ring

Spherical outer ring



UC

Dimension table (continued) · Dimensions in mm and inch

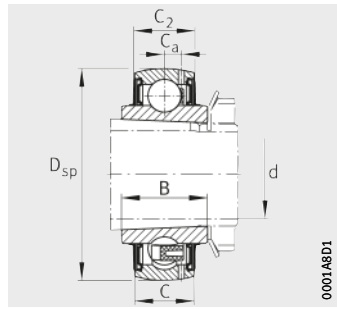
Designation	Mass	Dimensions						
	m	d		D_{sp}	C	C_2	B	S
	≈ kg	mm	inch					
UC211-32	1,22	**50,8**	***2***	100	25	25,6	55,6	22,2
UC211-33	1,17	**52,388**	***2 1/16***	100	25	25,6	55,6	22,2
UC211-34	1,11	**53,975**	***2 1/8***	100	25	25,6	55,6	22,2
UC211	1,07	**55**	–	100	25	25,6	55,6	22,2
UC211-35	1,05	**55,563**	***2 3/16***	100	25	25,6	55,6	22,2
UC212-36	1,62	**57,15**	***2 1/4***	110	27	27,6	65,1	25,4
UC212-37	1,55	**58,738**	***2 5/16***	110	27	27,6	65,1	25,4
UC212	1,49	**60**	–	110	27	27,6	65,1	25,4
UC212-38	1,48	**60,325**	***2 3/8***	110	27	27,6	65,1	25,4
UC212-39	1,4	**61,913**	***2 7/16***	110	27	27,6	65,1	25,4
UC213-40	1,79	**63,5**	***2 1/2***	120	28	29,4	65,1	25,4
UC213	1,72	**65**	–	120	28	29,4	65,1	25,4
UC213-41	1,71	**65,088**	***2 9/16***	120	28	29,4	65,1	25,4
UC214-42	2,17	**66,675**	***2 5/8***	125	30	31,4	74,6	30,2
UC214-43	2,07	**68,263**	***2 11/16***	125	30	31,4	74,6	30,2
UC214-44	1,97	**69,85**	***2 3/4***	125	30	31,4	74,6	30,2
UC214	1,96	**70**	–	125	30	31,4	74,6	30,2
UC215-45	2,39	**71,438**	***2 13/16***	130	32	33,4	77,8	33,3
UC215-46	2,28	**73,025**	***2 7/8***	130	32	33,4	77,8	33,3
UC215-47	2,17	**74,613**	***2 15/16***	130	32	33,4	77,8	33,3
UC215	2,14	**75**	–	130	32	33,4	77,8	33,3
UC215-48	2,06	**76,2**	***3***	130	32	33,4	77,8	33,3
UC216-49	2,88	**77,788**	***3 1/16***	140	33	34,4	82,6	33,3
UC216-50	2,76	**79,375**	***3 1/8***	140	33	34,4	82,6	33,3
UC216	2,71	**80**	–	140	33	34,4	82,6	33,3
UC216-51	2,63	**80,963**	***3 3/16***	140	33	34,4	82,6	33,3
UC217-52	3,62	**82,55**	***3 1/4***	150	35	36,4	85,7	34,1
UC217-53	3,48	**84,138**	***3 5/16***	150	35	36,4	85,7	34,1
UC217	3,41	**85**	–	150	35	36,4	85,7	34,1
UC217-55	3,2	**87,313**	***3 7/16***	150	35	36,4	85,7	34,1
UC218-56	4,2	**88,9**	***3 1/2***	160	38	39,4	96	39,7
UC218	4,08	**90**	–	160	38	39,4	96	39,7

			Width across flats		Basic load ratings		Fatigue limit load	Factor
d_1	C_a	A	W		dyn. C_r	stat. C_{0r}	C_{ur}	f_0
			mm	inch	N	N	N	
69,77	7	10	–	3/16	46 000	29 000	1 480	14,3
69,77	7	10	–	3/16	46 000	29 000	1 480	14,3
69,77	7	10	–	3/16	46 000	29 000	1 480	14,3
69,77	7	10	5	–	46 000	29 000	1 480	14,3
69,77	7	10	–	3/16	46 000	29 000	1 480	14,3
76,48	7,4	10	–	3/16	56 000	36 000	1 820	14,3
76,48	7,4	10	–	3/16	56 000	36 000	1 820	14,3
76,48	7,4	10	5	–	56 000	36 000	1 820	14,3
76,48	7,4	10	–	3/16	56 000	36 000	1 820	14,3
76,48	7,4	10	–	3/16	56 000	36 000	1 820	14,3
80,85	8,2	12	–	1/4	61 000	40 000	2 030	14,3
80,85	8,2	12	6	–	61 000	40 000	2 030	14,3
80,85	8,2	12	–	1/4	61 000	40 000	2 030	14,3
85,2	8,5	12	–	1/4	66 000	44 000	2 230	14,4
85,2	8,5	12	–	1/4	66 000	44 000	2 230	14,4
85,2	8,5	12	–	1/4	66 000	44 000	2 230	14,4
85,2	8,5	12	6	–	66 000	44 000	2 230	14,4
90	8,5	12	–	1/4	66 000	44 500	2 240	14,7
90	8,5	12	–	1/4	66 000	44 500	2 240	14,7
90	8,5	12	–	1/4	66 000	44 500	2 240	14,7
90	8,5	12	6	–	66 000	44 500	2 240	14,7
90	8,5	12	–	1/4	66 000	44 500	2 240	14,7
97	9,3	14	–	1/4	76 000	54 000	2 600	14,6
97	9,3	14	–	1/4	76 000	54 000	2 600	14,6
97	9,3	14	6	–	76 000	54 000	2 600	14,6
97	9,3	14	–	1/4	76 000	54 000	2 600	14,6
104,09	10	14	–	1/4	88 000	64 000	2 950	14,7
104,09	10	14	–	1/4	88 000	64 000	2 950	14,7
104,09	10	14	6	–	88 000	64 000	2 950	14,7
104,09	10	14	–	1/4	88 000	64 000	2 950	14,7
109,4	11	15	–	1/4	102 000	72 000	3 250	14,5
109,4	11	15	6	–	102 000	72 000	3 250	14,5

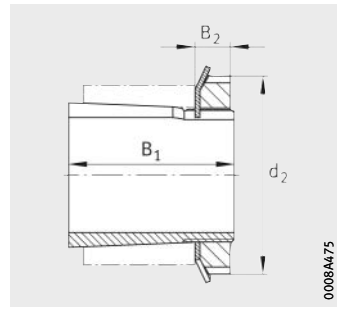


Radial insert ball bearings with adapter sleeve

Spherical outer ring



UK



Complete adapter sleeve[1)]

Dimension table · Dimensions in mm

Designation	Mass	Dimensions						Basic load ratings		Fatigue limit load	Factor
	m	d	D_{sp}	C	C_2	B	C_a	dyn. C_r	stat. C_{0r}	C_{ur}	f_0
	≈ kg							N	N	N	
UK205	0,25	**20**	52	17	17,6	23	4,2	14 900	7 800	395	13,8
UK206	0,37	**25**	62	19	19,6	26	5	20 700	11 300	570	13,8
UK207	0,54	**30**	72	20	20,6	29	5,7	27 500	15 300	770	13,8
UK208	0,7	**35**	80	21	21,6	31	6,2	34 500	19 800	1 010	14
UK209	0,83	**40**	85	22	22,6	32	6,3	34 500	20 400	1 030	14,3
UK210	0,98	**45**	90	24	24,6	34	6,5	37 500	23 200	1 180	14,3
UK211	1,24	**50**	100	25	25,6	36	7	46 000	29 000	1 480	14,3
UK212	1,58	**55**	110	27	27,6	40	7,4	56 000	36 000	1 820	14,3
UK213	1,88	**60**	120	28	29,4	41	8,2	61 000	40 000	2 030	14,3
UK215	2,62	**65**	130	32	33,4	44,5	8,5	66 000	44 500	2 240	14,7
UK216	3,23	**70**	140	33	34,4	46	9,3	76 000	54 000	2 600	14,6
UK217	3,9	**75**	150	35	36,4	48	10	88 000	64 000	2 950	14,7
UK218	4,62	**80**	160	38	39,4	51	11	102 000	72 000	3 250	14,5

[1)] Radial insert ball bearings UK are supplied with an adapter sleeve H..X.

Designation					Mass	Dimensions		
Complete adapter sleeve	Sleeve	Locknut	Tab washer	Matching bearing	m ≈ kg	B_1	B_2	d_2 max.
H2305X	A2305X	AN05	AW05X	UK205	0,1	35	8	38
H2306X	A2306X	AN06	AW06X	UK206	0,13	38	8	45
H2307X	A2307X	AN07	AW07X	UK207	0,18	43	9	52
H2308X	A2308X	AN08	AW08X	UK208	0,23	46	10	58
H2309X	A2309X	AN09	AW09X	UK209	0,31	50	11	65
H2310X	A2310X	AN10	AW10X	UK210	0,38	55	12	70
H2311X	A2311X	AN11	AW11X	UK211	0,45	59	12	75
H2312X	A2312X	AN12	AW12X	UK212	0,5	62	13	80
H2313X	A2313X	AN13	AW13X	UK213	0,58	65	14	85
H2315X	A2315X	AN15	AW15X	UK215	1,1	73	15	98
H2316X	A2316X	AN16	AW16X	UK216	1,33	78	17	105
H2317X	A2317X	AN17	AW17X	UK217	1,51	82	18	110
H2318X	A2318X	AN18	AW18X	UK218	1,77	86	18	120



FAG



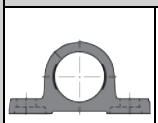
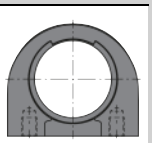
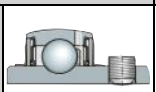
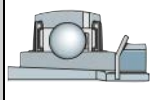
Housing units

Housing units

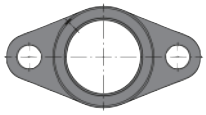
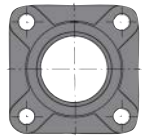
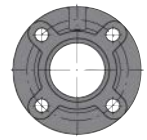
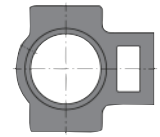
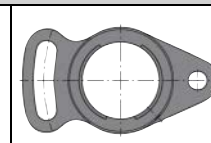
		Page
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	Load carrying capacity of housings	493
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Possible combinations of radial insert ball bearings and housings

Radial insert ball bearing		Housing	
		Plummer block housing	
			
Designation Shaft diameter d		**P**	**PA**
UC 12 mm – 90 mm *1/2″ – 3 1/2″*		**UCP** page 498	**UCPA** page 504
UK 20 mm – 80 mm		**UKP** page 502	Available by agreement

Catalogue range, for dimension tables see pages indicated.
Other dimensions and combinations available by agreement.

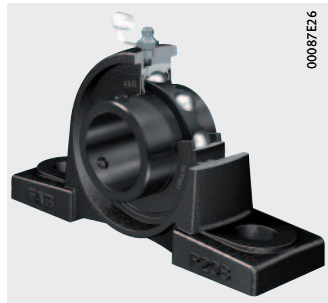
Two-bolt flanged housing	Four-bolt flanged housing		Take-up housing	
				
FL	**F**	**FC**	**T**	**FA**
UCFL page 506	**UCF** page 509	**UCFC** page 512	**UCT** page 518	**UCFA** page 524
UKFL page 508	**UKF** page 511	**UKFC** page 516	**UKT** page 522	Available by agreement



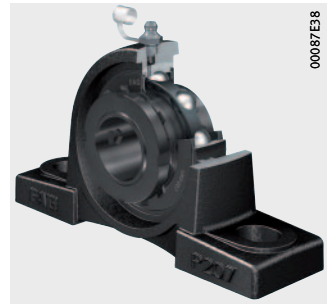
Plummer block housing units

Flake graphite cast iron housing with long base

UCP

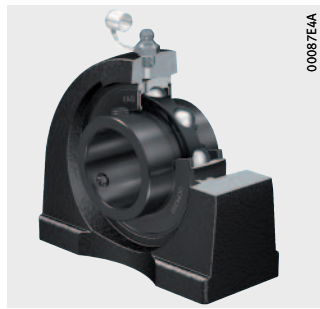


UKP



Flake graphite cast iron housing with short base

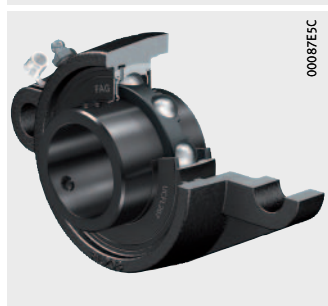
UCPA



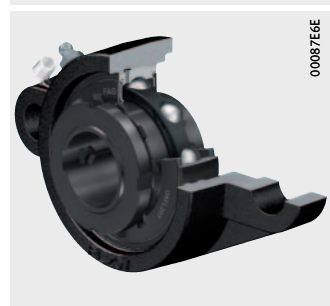
Two-bolt flanged housing units

Flake graphite cast iron housing

UCFL



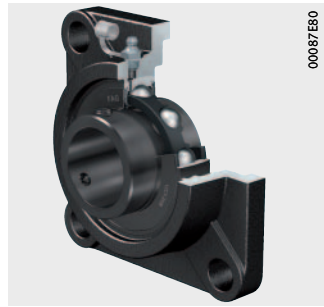
UKFL



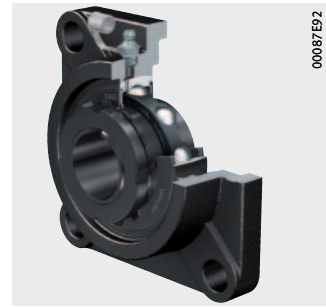
Four-bolt flanged housing units

Flake graphite cast iron housing

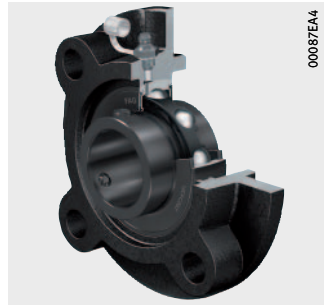
UCF



UKF



UCFC



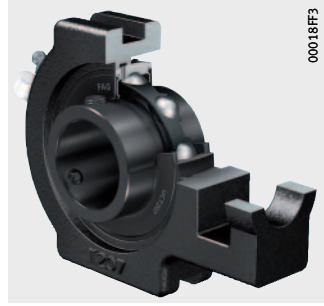
UKFC



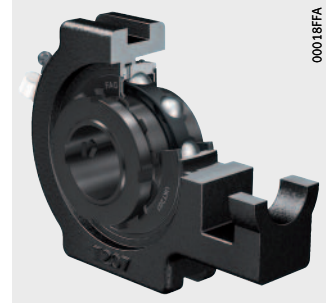
Take-up housing units

Flake graphite cast iron housing

UCT



UKT



UCFA



Housing units

Features

These housing units are available as plummer block housing units, flanged housing units and take-up housing units. The units are ready-to-fit and comprise FAG flake graphite cast iron housings in which FAG Black Series radial insert ball bearings are fitted. In order to ensure function and reliability under all operating conditions, the bearings and housings are matched to each other.

Due to the spherical outer ring of the bearing and the concave housing bore, housing units can compensate for static misalignments of the shaft, see page 493.

The housings are screw mounted on the adjacent construction. Less stringent tolerances are sufficient for the screw mounting surfaces, see page 493.

Housing units with flake graphite cast iron housing

The flake graphite cast iron housings are single piece components in accordance with JIS B 1559 and have high radial and axial load carrying capacity, see page 493.

The housing has a lubrication groove for relubrication of the radial insert ball bearing. The housing has a lubrication hole with an M6 thread for a lubrication nipple.

The housings have a primer paint coating as anti-corrosion protection of colour RAL 9005 (black).

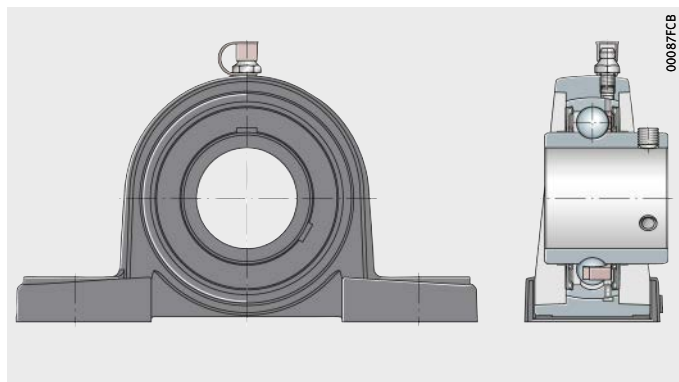
Housing material

The material used for the flake graphite cast iron housings is cast iron in accordance with JIS G 5501.

Plummer block housing units

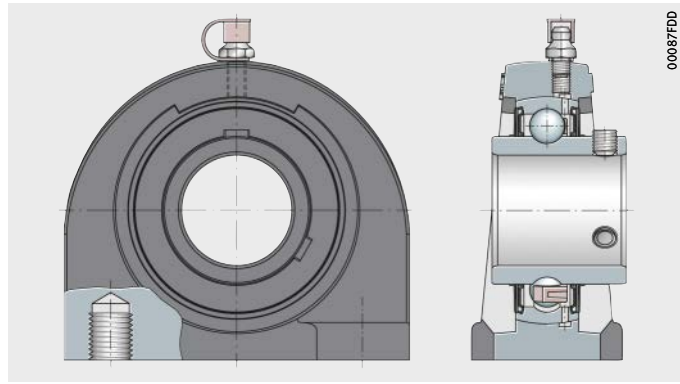
Plummer block housing units have a housing with a short or long base and are screw mounted to the adjacent construction through slot holes or fixing holes, *Figure 1* and *Figure 2*, page 491.

Plummer block housing units with a long base are available either with radial insert ball bearings UC with grub screws or with radial insert ball bearings UK with adapter sleeves, see dimension table.



UCP

Figure 1
Plummer block housing unit, flake graphite cast iron housing with long base



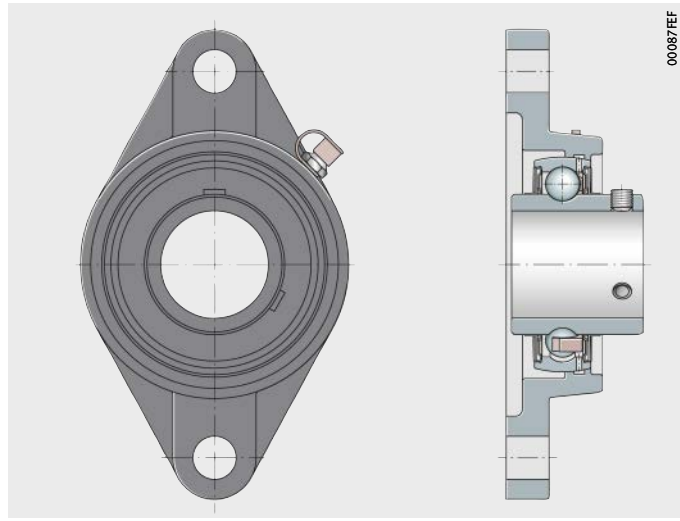
UCPA

Figure 2
Plummer block housing unit with short base

Flanged housing units

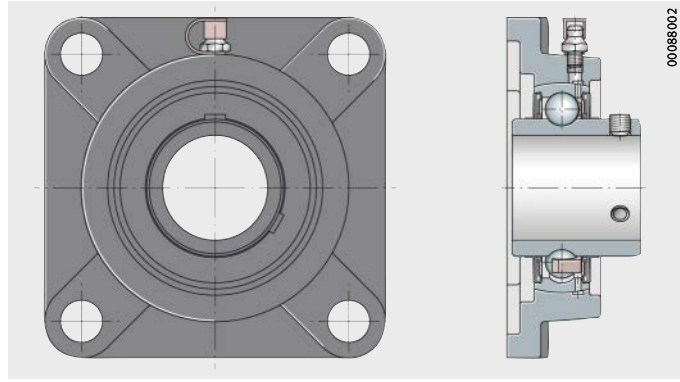
Flanged housing units are available as two-bolt and four-bolt units, *Figure 3* to *Figure 5*, page 492. The housings are oval, square or round in shape. The housings have through holes for location purposes.

Flanged housing units are available either with radial insert ball bearings UC with grub screws or with radial insert ball bearings UK with adapter sleeves, see dimension table.



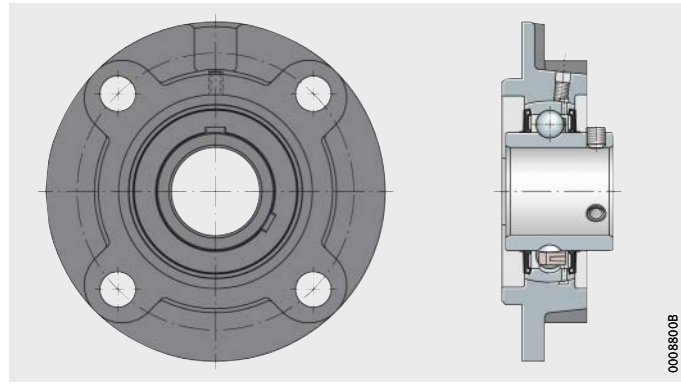
UCFL

Figure 3
Two-bolt flanged housing unit, oval version



UCF

Figure 4
Four-bolt flanged housing unit, square version

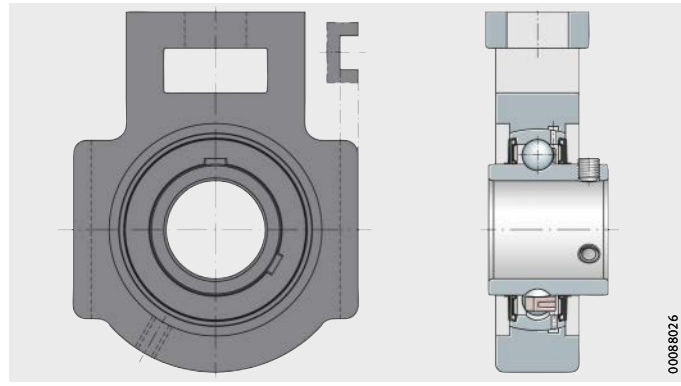


UCFC

Figure 5
Four-bolt flanged housing unit, round version

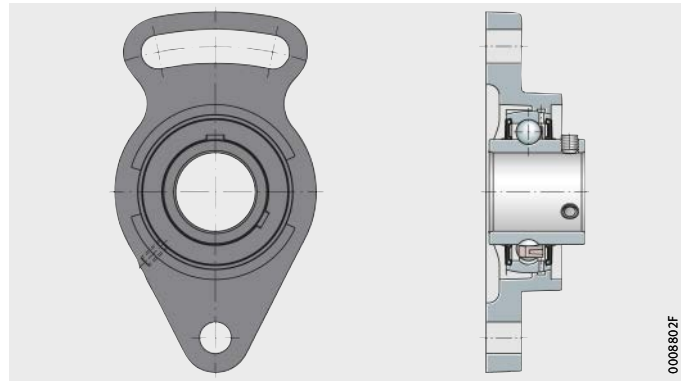
Take-up housing units

Take-up housing units can be moved or swivelled, *Figure 6* and *Figure 7*. They are used where shafts must carry out long displacement motions.



UCT

Figure 6
Take-up housing unit for linear motion



UCFA

Figure 7
Take-up housing unit for swivel motion

Operating temperature

Housing units are suitable for operating temperatures of –20 °C to +100 °C. Temperature peaks of up to +120 °C are possible for short periods.

Design and safety guidelines

Compensation of static misalignments

Units with a spherical outer ring and concave housing bore can compensate static misalignments of the shaft, see page 473.

Load carrying capacity of housings

Due to their versatile characteristics, FAG housing units can be easily used in almost all industrial sectors.

Radial load carrying capacity

Flake graphite cast iron housings can support the same radial loads as the radial insert ball bearings fitted. The static load carrying capacity C_{0r} of the radial insert ball bearings is stated in the dimension tables.

Where shock loads are present, appropriate safety factors must be applied. In this case, please contact us.

Axial load carrying capacity

The axial load carrying capacity of flake graphite cast iron housings is restricted to $0,5 \times C_{0r}$.

Load carrying capacity and speed limits of radial insert ball bearings

In the design of housing units, attention must be paid to the load carrying capacity and speed limits of the radial insert ball bearings fitted:

- speed limits, see page 474
- dimension table, see page 478.

Design of adjacent construction

The permissible shaft tolerance is dependent on the speed and load. Shafts of the tolerance classes h6 Ⓔ to h9 Ⓔ can be used.

Screw mounting surfaces

Recommendations for the screw mounting surfaces are as follows:

- roughness of the screw mounting surface max. Ra 12,5 (Rzmax 63)
- geometrical and positional tolerance 0,04/100 concave, spherical not permissible.
- In the event of high loads occurring parallel to the mounting surface of plummer block housing units (in the case of cast iron housing with long base), the use of additional dowel pins to DIN EN ISO 8752 is recommended. In this case, through holes (see centre punch mark for housing ASE) must be applied, see *Figure 8*, page 495.



Fixing screws

The screw connection should be designed in accordance with the state of the art; friction coefficient $\mu = 0{,}12$ (90%).

Screws of grade 8.8 or better can be used for fixing. The maximum tightening torques applicable to this screw grade must not be exceeded even if screws of a higher grade are used.

In principle, we recommend that the screw connection should only be tightened to 70% of the values stated in the standard.

For fixing, hexagonal socket head screws in accordance with DIN EN ISO 4762 or hexagonal socket head screws with a coarse pitch full thread in accordance with DIN EN ISO 4017 should be used. The screws should be combined as a minimum with a washer in accordance with DIN EN ISO 7089 or DIN EN ISO 7090.

Screws and accessories for location are not included in the delivery.

Mounting and dismounting

Radial insert ball bearings must be handled with care before and during mounting. Their trouble-free operation is also dependent on the care taken during mounting.

Delivered condition

The housings have a coating of black primer paint (RAL 9005).

The radial insert ball bearings are greased using a grease in grease group GA13, see Catalogue HR 1, Rolling Bearings.

The housing units are supplied with a loose packed lubrication nipple and integrated end cap for the lubrication nipple as well as an Allen key.

Storage and shelf life

The units should be stored in dry, clean rooms with a temperature as constant as possible and at a relative humidity of max. 65%.

The storage life of radial insert ball bearings is limited by the shelf life of the grease, see chapter Technical principles in Catalogue HR 1, Rolling Bearings.

Removal from packaging

Perspiration causes corrosion. Hands must therefore be kept clean and dry. Bearings should not be removed from their original packaging until immediately before mounting.

Preparation for mounting

The following preparatory measures for mounting should be taken:

- Ensure that the mounting tools and fixing screws are present.
- Clean the shaft and remove any burrs.
- Inspect the bearing seating surfaces on the shaft.
- Keep bearing seating surfaces clean, dry and free of grease.

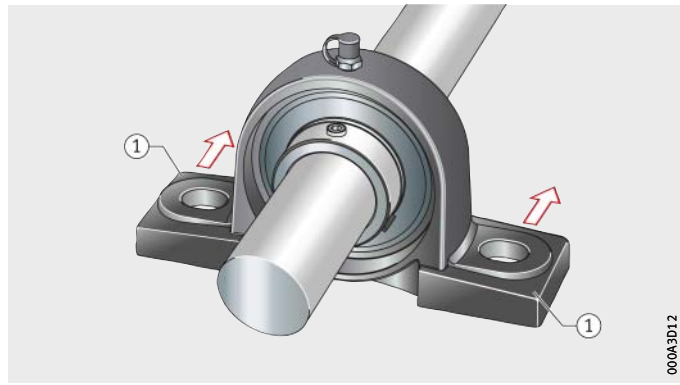
Mounting of plummer block and flanged housing units

The assembly area should be as dry and clean as possible:

- The specified shaft tolerances must be observed, see page 493.
- Mounting forces must never be directed through the rolling elements.
- Blows should never be applied directly to the bearing rings and flinger shields or seals.
- Observe the tightening torques M_A for grub screws and adapter sleeve, see tables, page 496.

If the following sequence is observed, the bearing will align itself on the shaft in such a way that no undesirable stresses occur:

- ▶ Slide the housing unit onto the shaft and align it with the fixing holes in the adjacent construction, *Figure 8*.
- ▶ Fit dowel pins if necessary.
- ▶ Tighten the fixing screws for all housings finger tight in the adjacent construction as far as possible and align the shaft, *Figure 9*, page 496.
- ▶ Tighten both grub screws in the inner ring (for radial insert ball bearing UC) or the locknut of the adapter sleeve (for radial insert ball bearing UK) using a tightening torque (with an additional adapter if necessary) to the specified tightening torque, *Figure 10*, page 496.
- ▶ Locate the housings on the adjacent construction using the recommended tightening torque, see page 493.



① Position of additional through hole for location of dowel pins in accordance with DIN EN ISO 8752 (in the event of high loads occurring parallel to the mounting surface; for housing P)

Figure 8
Sliding the unit onto the shaft

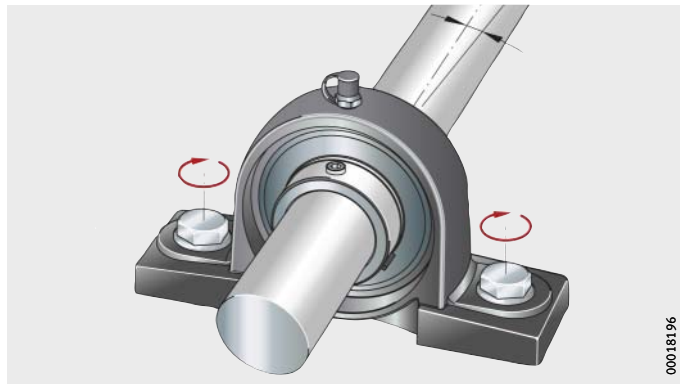


Figure 9
Screw mounting
the housing finger tight

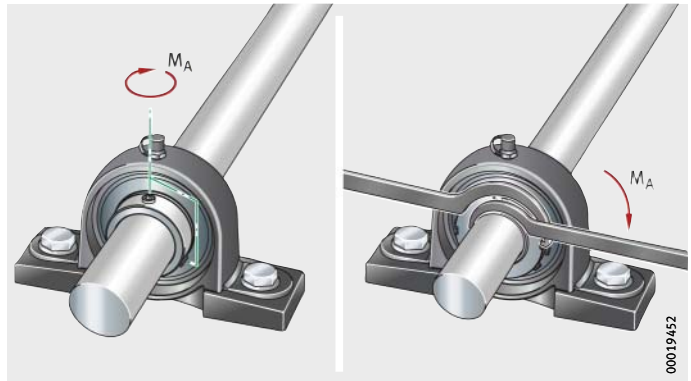


Figure 10
Fully tightening the grub screws or
locknut in the inner ring

Tightening torques for grub screws

Width across flats W		Thread		Tightening torques[1] M_A
mm	inch	ISO	UNF	Nm
3	$1/8$	M6×0,75	$1/4$″-28	6
4	$5/32$	M8×1	$5/16$″-24	14
5	$3/16$	M10×1,25	$3/8$″-24	26
6	$1/4$	M12×1,5	$1/2$″-20	42

[1] The tightening torques are valid for original FAG grub screws only.

Tightening torques for locknut

Locknut	Tightening torques M_A Nm
AN05	25
AN06	30
AN07	40
AN08	50
AN09	60
AN10	75
AN11	100
AN12	130
AN13	150
AN15	170
AN16	200
AN17	230
AN18	270

Dismounting

The units are dismounted in the reverse sequence.

- ▶ Loosen the grub screws in the inner ring or the locknut of the adapter sleeve.
- ▶ Unscrew the housing.

Accuracy

The flake graphite cast iron housings conform to JIS B 1559.

Accuracy of fitted radial insert ball bearings: see page 475.

Dimensional tolerances

The dimensional tolerances for the machined surfaces of the flake graphite cast iron housings are ±0,25 mm.

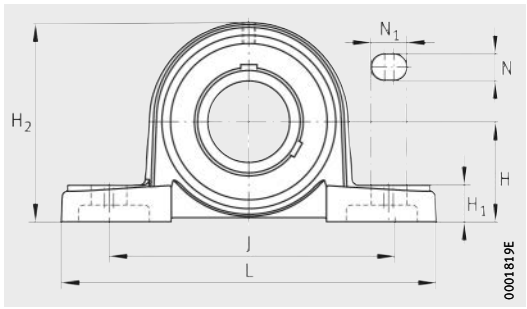
Dimensions without tolerance conform to JIS B 0403:

- unfinished dimensions to Table 1, class CT 10
- finished dimensions to Table 5.



Plummer block housing units

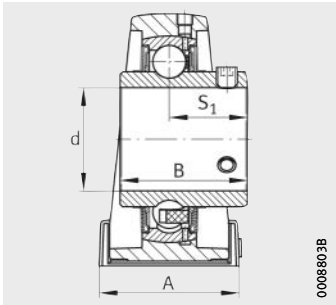
Flake graphite cast iron housing
with long base
With grub screws in inner ring



UCP

Dimension table · Dimensions in mm and inch

Designation	Mass	Dimensions				
	m	d		H	J	L
	≈ kg	mm	inch			
UCP201	0,7	**12**	–	30,2	95	127
UCP201-08	0,69	**12,7**	**1/2**	30,2	95	127
UCP202-09	0,69	**14,288**	**9/16**	30,2	95	127
UCP202	0,68	**15**	–	30,2	95	127
UCP202-10	0,68	**15,875**	**5/8**	30,2	95	127
UCP203	0,67	**17**	–	30,2	95	127
UCP203-11	0,67	**17,463**	**11/16**	30,2	95	127
UCP204-12	0,66	**19,05**	**3/4**	33,3	95	127
UCP204	0,65	**20**	–	33,3	95	127
UCP205-13	0,83	**20,638**	**13/16**	36,5	105	140
UCP205-14	0,82	**22,225**	**7/8**	36,5	105	140
UCP205-15	0,81	**23,813**	**15/16**	36,5	105	140
UCP205	0,79	**25**	–	36,5	105	140
UCP205-16	0,79	**25,4**	**1**	36,5	105	140
UCP206-17	1,33	**26,988**	**1 1/16**	42,9	121	165
UCP206-18	1,31	**28,575**	**1 1/8**	42,9	121	165
UCP206	1,29	**30**	–	42,9	121	165
UCP206-19	1,29	**30,163**	**1 3/16**	42,9	121	165
UCP206-20	1,27	**31,75**	**1 1/4**	42,9	121	165
UCP207-20	1,6	**31,75**	**1 1/4**	47,6	127	167
UCP207-21	1,58	**33,338**	**1 5/16**	47,6	127	167
UCP207-22	1,55	**34,925**	**1 3/8**	47,6	127	167
UCP207	1,55	**35**	–	47,6	127	167
UCP207-23	1,52	**36,513**	**1 7/16**	47,6	127	167
UCP208-24	1,89	**38,1**	**1 1/2**	49,2	137	184
UCP208-25	1,85	**39,688**	**1 9/16**	49,2	137	184
UCP208	1,84	**40**	–	49,2	137	184
UCP209-26	2,29	**41,275**	**1 5/8**	54	146	190
UCP209-27	2,25	**42,863**	**1 11/16**	54	146	190
UCP209-28	2,21	**44,45**	**1 3/4**	54	146	190
UCP209	2,2	**45**	–	54	146	190
UCP210-29	2,89	**46,038**	**1 13/16**	57,2	159	206
UCP210-30	2,85	**47,625**	**1 7/8**	57,2	159	206
UCP210-31	2,8	**49,213**	**1 15/16**	57,2	159	206
UCP210	2,77	**50**	–	57,2	159	206
UCP210-32	2,75	**50,8**	**2**	57,2	159	206



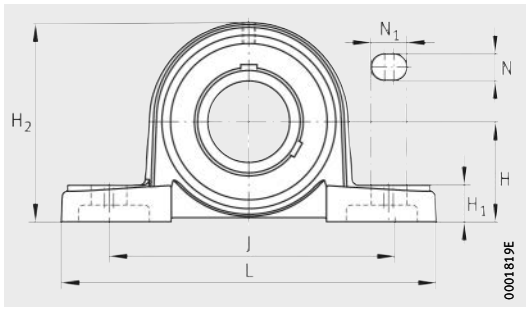
UCP

							Housing	Radial insert ball bearing
A	H_1	H_2	N	N_1	B	S_1		
38	14	62	13	19	31	18,3	P203	UC201
38	14	62	13	19	31	18,3	P203	UC201-08
38	14	62	13	19	31	18,3	P203	UC202-09
38	14	62	13	19	31	18,3	P203	UC202
38	14	62	13	19	31	18,3	P203	UC202-10
38	14	62	13	19	31	18,3	P203	UC203
38	14	62	13	19	31	18,3	P203	UC203-11
38	14	65	13	19	31	18,3	P204	UC204-12
38	14	65	13	19	31	18,3	P204	UC204
38	15	71	13	19	34,1	19,8	P205	UC205-13
38	15	71	13	19	34,1	19,8	P205	UC205-14
38	15	71	13	19	34,1	19,8	P205	UC205-15
38	15	71	13	19	34,1	19,8	P205	UC205
38	15	71	13	19	34,1	19,8	P205	UC205-16
48	17	83	17	21	38,1	22,2	P206	UC206-17
48	17	83	17	21	38,1	22,2	P206	UC206-18
48	17	83	17	21	38,1	22,2	P206	UC206
48	17	83	17	21	38,1	22,2	P206	UC206-19
48	17	83	17	21	38,1	22,2	P206	UC206-20
48	18	93	17	21	42,9	25,4	P207	UC207-20
48	18	93	17	21	42,9	25,4	P207	UC207-21
48	18	93	17	21	42,9	25,4	P207	UC207-22
48	18	93	17	21	42,9	25,4	P207	UC207
48	18	93	17	21	42,9	25,4	P207	UC207-23
54	18	98	17	21	49,2	30,2	P208	UC208-24
54	18	98	17	21	49,2	30,2	P208	UC208-25
54	18	98	17	21	49,2	30,2	P208	UC208
54	20	106	17	21	49,2	30,2	P209	UC209-26
54	20	106	17	21	49,2	30,2	P209	UC209-27
54	20	106	17	21	49,2	30,2	P209	UC209-28
54	20	106	17	21	49,2	30,2	P209	UC209
60	21	114	20	25	51,6	32,6	P210	UC210-29
60	21	114	20	25	51,6	32,6	P210	UC210-30
60	21	114	20	25	51,6	32,6	P210	UC210-31
60	21	114	20	25	51,6	32,6	P210	UC210
60	21	114	20	25	51,6	32,6	P210	UC210-32



Plummer block housing units

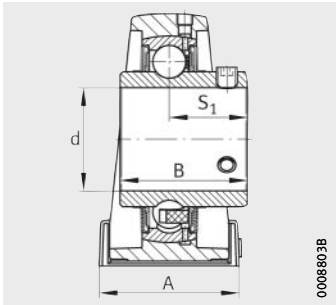
Flake graphite cast iron housing
with long base
With grub screws in inner ring



UCP

Dimension table (continued) · Dimensions in mm and inch

Designation	Mass	Dimensions				
	m	d		H	J	L
	≈ kg	mm	inch			
UCP211-32	3,56	**50,8**	***2***	63,5	171	219
UCP211-33	3,5	**52,388**	***2 1/16***	63,5	171	219
UCP211-34	3,44	**53,975**	***2 1/8***	63,5	171	219
UCP211	3,41	**55**	–	63,5	171	219
UCP211-35	3,39	**55,563**	***2 3/16***	63,5	171	219
UCP212-36	4,75	**57,15**	***2 1/4***	69,8	184	241
UCP212-37	4,68	**58,738**	***2 5/16***	69,8	184	241
UCP212	4,62	**60**	–	69,8	184	241
UCP212-38	4,6	**60,325**	***2 3/8***	69,8	184	241
UCP212-39	4,53	**61,913**	***2 7/16***	69,8	184	241
UCP213-40	5,63	**63,5**	***2 1/2***	76,2	203	265
UCP213	5,55	**65**	–	76,2	203	265
UCP213-41	5,55	**65,088**	***2 9/16***	76,2	203	265
UCP214-42	6,29	**66,675**	***2 5/8***	79,4	210	266
UCP214-43	6,2	**68,263**	***2 11/16***	79,4	210	266
UCP214-44	6,1	**69,85**	***2 3/4***	79,4	210	266
UCP214	6,1	**70**	–	79,4	210	266
UCP215-45	6,9	**71,438**	***2 13/16***	82,6	217	275
UCP215-46	6,81	**73,025**	***2 7/8***	82,6	217	275
UCP215-47	6,7	**74,613**	***2 15/16***	82,6	217	275
UCP215	6,67	**75**	–	82,6	217	275
UCP215-48	6,58	**76,2**	***3***	82,6	217	275
UCP216-49	8,53	**77,788**	***3 1/16***	88,9	232	292
UCP216-50	8,4	**79,375**	***3 1/8***	88,9	232	292
UCP216	8,4	**80**	–	88,9	232	292
UCP216-51	8,28	**80,963**	***3 3/16***	88,9	232	292
UCP217-52	10,3	**82,55**	***3 1/4***	95,2	247	310
UCP217-53	10,17	**84,138**	***3 5/16***	95,2	247	310
UCP217	10,1	**85**	–	95,2	247	310
UCP217-55	9,9	**87,313**	***3 7/16***	95,2	247	310
UCP218-56	12,3	**88,9**	***3 1/2***	101,6	262	327
UCP218	12,2	**90**	–	101,6	262	327



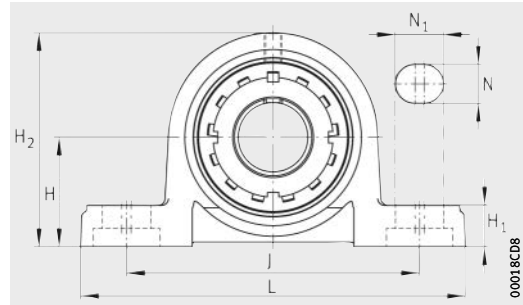
UCP

							Housing	Radial insert ball bearing
A	H_1	H_2	N	N_1	B	S_1		
60	23	126	20	25	55,6	33,4	P211	UC211-32
60	23	126	20	25	55,6	33,4	P211	UC211-33
60	23	126	20	25	55,6	33,4	P211	UC211-34
60	23	126	20	25	55,6	33,4	P211	UC211
60	23	126	20	25	55,6	33,4	P211	UC211-35
70	25	138	20	25	65,1	39,7	P212	UC212-36
70	25	138	20	25	65,1	39,7	P212	UC212-37
70	25	138	20	25	65,1	39,7	P212	UC212
70	25	138	20	25	65,1	39,7	P212	UC212-38
70	25	138	20	25	65,1	39,7	P212	UC212-39
70	27	151	25	29	65,1	39,7	P213	UC213-40
70	27	151	25	29	65,1	39,7	P213	UC213
70	27	151	25	29	65,1	39,7	P213	UC213-41
72	27	157	25	31	74,6	44,4	P214	UC214-42
72	27	157	25	31	74,6	44,4	P214	UC214-43
72	27	157	25	31	74,6	44,4	P214	UC214-44
72	27	157	25	31	74,6	44,4	P214	UC214
74	28	163	25	31	77,8	44,5	P215	UC215-45
74	28	163	25	31	77,8	44,5	P215	UC215-46
74	28	163	25	31	77,8	44,5	P215	UC215-47
74	28	163	25	31	77,8	44,5	P215	UC215
74	28	163	25	31	77,8	44,5	P215	UC215-48
78	30	175	25	31	82,6	49,3	P216	UC216-49
78	30	175	25	31	82,6	49,3	P216	UC216-50
78	30	175	25	31	82,6	49,3	P216	UC216
78	30	175	25	31	82,6	49,3	P216	UC216-51
83	32	187	25	31	85,7	51,6	P217	UC217-52
83	32	187	25	31	85,7	51,6	P217	UC217-53
83	32	187	25	31	85,7	51,6	P217	UC217
83	32	187	25	31	85,7	51,6	P217	UC217-55
88	33	200	27	33	96	56,3	P218	UC218-56
88	33	200	27	33	96	56,3	P218	UC218



Plummer block housing units

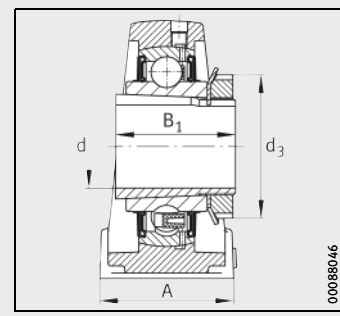
Flake graphite cast iron housing
with long base
With adapter sleeve



UKP

Dimension table · Dimensions in mm

Designation	Mass	Dimensions											Housing	Radial insert ball bearing
	m ≈ kg	d	H	J	L	A	H_1	H_2	N	N_1	B_1	d_3 max.		
UKP205	0,84	**20**	36,5	105	140	38	15	71	13	19	35	38	P205	UK205
UKP206	1,36	**25**	42,9	121	165	48	17	83	17	21	38	45	P206	UK206
UKP207	1,63	**30**	47,6	127	167	48	18	93	17	21	43	52	P207	UK207
UKP208	1,92	**35**	49,2	137	184	54	18	98	17	21	46	58	P208	UK208
UKP209	2,33	**40**	54	146	190	54	20	106	17	21	50	65	P209	UK209
UKP210	2,95	**45**	57,2	159	206	60	21	114	20	25	55	70	P210	UK210
UKP211	3,58	**50**	63,5	171	219	60	23	126	20	25	59	75	P211	UK211
UKP212	4,71	**55**	69,8	184	241	70	25	138	20	25	62	80	P212	UK212
UKP213	5,71	**60**	76,2	203	265	70	27	151	25	29	65	85	P213	UK213
UKP215	7,11	**65**	82,6	217	275	74	28	163	25	31	73	98	P215	UK215
UKP216	8,86	**70**	88,9	232	292	78	30	175	25	31	78	105	P216	UK216
UKP217	10,58	**75**	95,2	247	310	83	32	187	25	31	82	110	P217	UK217
UKP218	12,71	**80**	101,6	262	327	88	33	200	27	33	86	120	P218	UK218

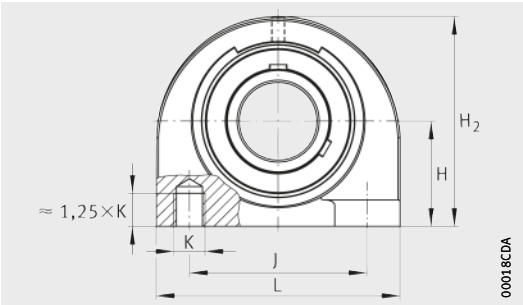


UKP



Plummer block housing units

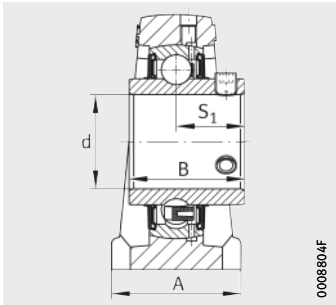
Flake graphite cast iron housing
with short base
With grub screws in inner ring



UCPA

Dimension table · Dimensions in mm and inch

Designation	Mass	Dimensions				
	m	d		H	J	L
	≈ kg	mm	inch			
UCPA201	0,65	**12**	–	30,2	52	76
UCPA201-08	0,65	**12,7**	**1/2**	30,2	52	76
UCPA202-09	0,64	**14,288**	**9/16**	30,2	52	76
UCPA202	0,64	**15**	–	30,2	52	76
UCPA202-10	0,63	**15,875**	**5/8**	30,2	52	76
UCPA203	0,63	**17**	–	30,2	52	76
UCPA203-11	0,63	**17,463**	**11/16**	30,2	52	76
UCPA204-12	0,62	**19,05**	**3/4**	30,2	52	76
UCPA204	0,61	**20**	–	30,2	52	76
UCPA205-13	0,87	**20,638**	**13/16**	36,5	56	84
UCPA205-14	0,86	**22,225**	**7/8**	36,5	56	84
UCPA205-15	0,84	**23,813**	**15/16**	36,5	56	84
UCPA205	0,83	**25**	–	36,5	56	84
UCPA205-16	0,83	**25,4**	**1**	36,5	56	84
UCPA206-17	1,26	**26,988**	**1 1/16**	42,9	66	94
UCPA206-18	1,24	**28,575**	**1 1/8**	42,9	66	94
UCPA206	1,22	**30**	–	42,9	66	94
UCPA206-19	1,22	**30,163**	**1 3/16**	42,9	66	94
UCPA206-20	1,2	**31,75**	**1 1/4**	42,9	66	94
UCPA207-20	1,75	**31,75**	**1 1/4**	47,6	80	110
UCPA207-21	1,73	**33,338**	**1 5/16**	47,6	80	110
UCPA207-22	1,7	**34,925**	**1 3/8**	47,6	80	110
UCPA207	1,7	**35**	–	47,6	80	110
UCPA207-23	1,67	**36,513**	**1 7/16**	47,6	80	110
UCPA208-24	1,96	**38,1**	**1 1/2**	49,2	84	116
UCPA208-25	1,92	**39,688**	**1 9/16**	49,2	84	116
UCPA208	1,91	**40**	–	49,2	84	116
UCPA209-26	2,28	**41,275**	**1 5/8**	54,2	90	120
UCPA209-27	2,24	**42,863**	**1 11/16**	54,2	90	120
UCPA209-28	2,2	**44,45**	**1 3/4**	54,2	90	120
UCPA209	2,19	**45**	–	54,2	90	120
UCPA210-29	2,9	**46,038**	**1 13/16**	57,2	94	130
UCPA210-30	2,85	**47,625**	**1 7/8**	57,2	94	130
UCPA210-31	2,8	**49,213**	**1 15/16**	57,2	94	130
UCPA210	2,78	**50**	–	57,2	94	130
UCPA210-32	2,76	**50,8**	**2**	57,2	94	130

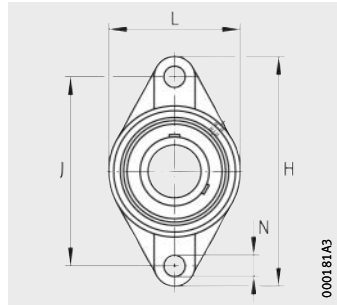


UCPA

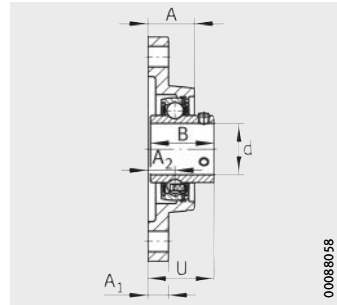
					Housing	Radial insert ball bearing
A	H_2	K	B	S_1		
38	62	M10	31	18,3	PA204	UC201
38	62	M10	31	18,3	PA204	UC201-08
38	62	M10	31	18,3	PA204	UC202-09
38	62	M10	31	18,3	PA204	UC202
38	62	M10	31	18,3	PA204	UC202-10
38	62	M10	31	18,3	PA204	UC203
38	62	M10	31	18,3	PA204	UC203-11
38	62	M10	31	18,3	PA204	UC204-12
38	62	M10	31	18,3	PA204	UC204
38	72	M10	34,1	19,8	PA205	UC205-13
38	72	M10	34,1	19,8	PA205	UC205-14
38	72	M10	34,1	19,8	PA205	UC205-15
38	72	M10	34,1	19,8	PA205	UC205
38	72	M10	34,1	19,8	PA205	UC205-16
48	84	M14	38,1	22,2	PA206	UC206-17
48	84	M14	38,1	22,2	PA206	UC206-18
48	84	M14	38,1	22,2	PA206	UC206
48	84	M14	38,1	22,2	PA206	UC206-19
48	84	M14	38,1	22,2	PA206	UC206-20
48	95	M14	42,9	25,4	PA207	UC207-20
48	95	M14	42,9	25,4	PA207	UC207-21
48	95	M14	42,9	25,4	PA207	UC207-22
48	95	M14	42,9	25,4	PA207	UC207
48	95	M14	42,9	25,4	PA207	UC207-23
54	100	M14	49,2	30,2	PA208	UC208-24
54	100	M14	49,2	30,2	PA208	UC208-25
54	100	M14	49,2	30,2	PA208	UC208
54	108	M14	49,2	30,2	PA209	UC209-26
54	108	M14	49,2	30,2	PA209	UC209-27
54	108	M14	49,2	30,2	PA209	UC209-28
54	108	M14	49,2	30,2	PA209	UC209
60	116	M16	51,6	32,6	PA210	UC210-29
60	116	M16	51,6	32,6	PA210	UC210-30
60	116	M16	51,6	32,6	PA210	UC210-31
60	116	M16	51,6	32,6	PA210	UC210
60	116	M16	51,6	32,6	PA210	UC210-32

Two-bolt flanged housing units

Oval version
With grub screws
in inner ring



UCFL



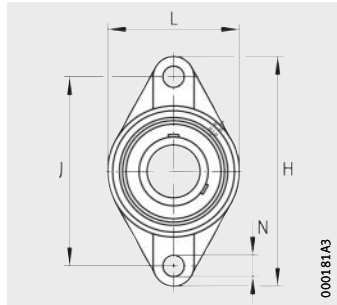
UCFL

Dimension table · Dimensions in mm and inch

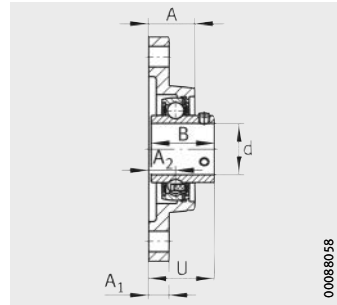
Designation	Mass	Dimensions											Housing	Radial insert ball bearing
	m	d		H	J	L	A	A_1	A_2	N	B	U		
	≈ kg	mm	inch											
UCFL201	0,47	**12**	–	113	90	60	25,5	12	15	12	31	33,3	FL204	UC201
UCFL201-08	0,47	**12,7**	*1/2*	113	90	60	25,5	12	15	12	31	33,3	FL204	UC201-08
UCFL202-09	0,46	**14,288**	*9/16*	113	90	60	25,5	12	15	12	31	33,3	FL204	UC202-09
UCFL202	0,46	**15**	–	113	90	60	25,5	12	15	12	31	33,3	FL204	UC202
UCFL202-10	0,45	**15,875**	*5/8*	113	90	60	25,5	12	15	12	31	33,3	FL204	UC202-10
UCFL203	0,44	**17**	–	113	90	60	25,5	12	15	12	31	33,3	FL204	UC203
UCFL203-11	0,44	**17,463**	*11/16*	113	90	60	25,5	12	15	12	31	33,3	FL204	UC203-11
UCFL204-12	0,43	**19,05**	*3/4*	113	90	60	25,5	12	15	12	31	33,3	FL204	UC204-12
UCFL204	0,42	**20**	–	113	90	60	25,5	12	15	12	31	33,3	FL204	UC204
UCFL205-13	0,68	**20,638**	*13/16*	130	99	68	27	15	16	16	34,1	35,8	FL205	UC205-13
UCFL205-14	0,67	**22,225**	*7/8*	130	99	68	27	15	16	16	34,1	35,8	FL205	UC205-14
UCFL205-15	0,65	**23,813**	*15/16*	130	99	68	27	15	16	16	34,1	35,8	FL205	UC205-15
UCFL205	0,64	**25**	–	130	99	68	27	15	16	16	34,1	35,8	FL205	UC205
UCFL205-16	0,64	**25,4**	*1*	130	99	68	27	15	16	16	34,1	35,8	FL205	UC205-16
UCFL206-17	0,92	**26,988**	*1 1/16*	148	117	80	31	14	18	16	38,1	40,2	FL206	UC206-17
UCFL206-18	0,9	**28,575**	*1 1/8*	148	117	80	31	14	18	16	38,1	40,2	FL206	UC206-18
UCFL206	0,88	**30**	–	148	117	80	31	14	18	16	38,1	40,2	FL206	UC206
UCFL206-19	0,88	**30,163**	*1 3/16*	148	117	80	31	14	18	16	38,1	40,2	FL206	UC206-19
UCFL206-20	0,85	**31,75**	*1 1/4*	148	117	80	31	14	18	16	38,1	40,2	FL206	UC206-20
UCFL207-20	1,27	**31,75**	*1 1/4*	161	130	90	34	16	19	16	42,9	44,4	FL207	UC207-20
UCFL207-21	1,24	**33,338**	*1 5/16*	161	130	90	34	16	19	16	42,9	44,4	FL207	UC207-21
UCFL207-22	1,21	**34,925**	*1 3/8*	161	130	90	34	16	19	16	42,9	44,4	FL207	UC207-22
UCFL207	1,21	**35**	–	161	130	90	34	16	19	16	42,9	44,4	FL207	UC207
UCFL207-23	1,18	**36,513**	*1 7/16*	161	130	90	34	16	19	16	42,9	44,4	FL207	UC207-23
UCFL208-24	1,53	**38,1**	*1 1/2*	175	144	100	36	16	21	16	49,2	51,2	FL208	UC208-24
UCFL208-25	1,49	**39,688**	*1 9/16*	175	144	100	36	16	21	16	49,2	51,2	FL208	UC208-25
UCFL208	1,48	**40**	–	175	144	100	36	16	21	16	49,2	51,2	FL208	UC208
UCFL209-26	2,05	**41,275**	*1 5/8*	188	148	108	38	18	22	19	49,2	52,2	FL209	UC209-26
UCFL209-27	2,01	**42,863**	*1 11/16*	188	148	108	38	18	22	19	49,2	52,2	FL209	UC209-27
UCFL209-28	1,97	**44,45**	*1 3/4*	188	148	108	38	18	22	19	49,2	52,2	FL209	UC209-28
UCFL209	1,95	**45**	–	188	148	108	38	18	22	19	49,2	52,2	FL209	UC209

Two-bolt flanged housing units

Oval version
With grub screws
in inner ring



UCFL



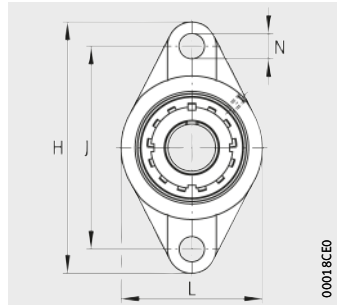
UCFL

Dimension table (continued) · Dimensions in mm and inch

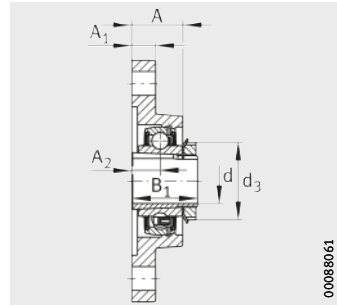
Designation	Mass	Dimensions											Housing	Radial insert ball bearing
	m	d		H	J	L	A	A_1	A_2	N	B	U		
	≈ kg	mm	inch											
UCFL210-29	2,34	**46,038**	***1 13/16***	197	157	115	40	18	22	19	51,6	54,6	FL210	UC210-29
UCFL210-30	2,3	**47,625**	***1 7/8***	197	157	115	40	18	22	19	51,6	54,6	FL210	UC210-30
UCFL210-31	2,25	**49,213**	***1 15/16***	197	157	115	40	18	22	19	51,6	54,6	FL210	UC210-31
UCFL210	2,23	**50**	–	197	157	115	40	18	22	19	51,6	54,6	FL210	UC210
UCFL210-32	2,2	**50,8**	***2***	197	157	115	40	18	22	19	51,6	54,6	FL210	UC210-32
UCFL211-32	3,02	**50,8**	***2***	224	184	130	43	20	25	19	55,6	58,4	FL211	UC211-32
UCFL211-33	2,96	**52,388**	***2 1/16***	224	184	130	43	20	25	19	55,6	58,4	FL211	UC211-33
UCFL211-34	2,91	**53,975**	***2 1/8***	224	184	130	43	20	25	19	55,6	58,4	FL211	UC211-34
UCFL211	2,87	**55**	–	224	184	130	43	20	25	19	55,6	58,4	FL211	UC211
UCFL211-35	2,85	**55,563**	***2 3/16***	224	184	130	43	20	25	19	55,6	58,4	FL211	UC211-35
UCFL212-36	4,1	**57,15**	***2 1/4***	250	202	140	48	20	29	23	65,1	68,7	FL212	UC212-36
UCFL212-37	4,02	**58,738**	***2 5/16***	250	202	140	48	20	29	23	65,1	68,7	FL212	UC212-37
UCFL212	3,96	**60**	–	250	202	140	48	20	29	23	65,1	68,7	FL212	UC212
UCFL212-38	3,95	**60,325**	***2 3/8***	250	202	140	48	20	29	23	65,1	68,7	FL212	UC212-38
UCFL212-39	3,87	**61,913**	***2 7/16***	250	202	140	48	20	29	23	65,1	68,7	FL212	UC212-39
UCFL213-40	4,78	**63,5**	***2 1/2***	258	210	155	50	24	30	23	65,1	69,7	FL213	UC213-40
UCFL213	4,69	**65**	–	258	210	155	50	24	30	23	65,1	69,7	FL213	UC213
UCFL213-41	4,68	**65,088**	***2 9/16***	258	210	155	50	24	30	23	65,1	69,7	FL213	UC213-41
UCFL214-42	5,45	**66,675**	***2 5/8***	265	216	160	54	24	31	23	74,6	75,4	FL214	UC214-42
UCFL214-43	5,35	**68,263**	***2 11/16***	265	216	160	54	24	31	23	74,6	75,4	FL214	UC214-43
UCFL214-44	5,25	**69,85**	***2 3/4***	265	216	160	54	24	31	23	74,6	75,4	FL214	UC214-44
UCFL214	5,25	**70**	–	265	216	160	54	24	31	23	74,6	75,4	FL214	UC214
UCFL215-45	5,94	**71,438**	***2 13/16***	275	225	165	56	24	34	23	77,8	78,5	FL215	UC215-45
UCFL215-46	5,82	**73,025**	***2 7/8***	275	225	165	56	24	34	23	77,8	78,5	FL215	UC215-46
UCFL215-47	5,72	**74,613**	***2 15/16***	275	225	165	56	24	34	23	77,8	78,5	FL215	UC215-47
UCFL215	5,69	**75**	–	275	225	165	56	24	34	23	77,8	78,5	FL215	UC215
UCFL215-48	5,61	**76,2**	***3***	275	225	165	56	24	34	23	77,8	78,5	FL215	UC215-48
UCFL216-49	7,41	**77,788**	***3 1/16***	290	233	180	58	24	34	25	82,6	83,3	FL216	UC216-49
UCFL216-50	7,29	**79,375**	***3 1/8***	290	233	180	58	24	34	25	82,6	83,3	FL216	UC216-50
UCFL216	7,24	**80**	–	290	233	180	58	24	34	25	82,6	83,3	FL216	UC216
UCFL216-51	7,16	**80,963**	***3 3/16***	290	233	180	58	24	34	25	82,6	83,3	FL216	UC216-51
UCFL217-52	9,01	**82,55**	***3 1/4***	305	248	190	63	26	36	25	85,7	87,6	FL217	UC217-52
UCFL217-53	8,85	**84,138**	***3 5/16***	305	248	190	63	26	36	25	85,7	87,6	FL217	UC217-53
UCFL217	8,77	**85**	–	305	248	190	63	26	36	25	85,7	87,6	FL217	UC217
UCFL217-55	8,54	**87,313**	***3 7/16***	305	248	190	63	26	36	25	85,7	87,6	FL217	UC217-55
UCFL218-56	10,51	**88,9**	***3 1/2***	320	265	205	68	26	40	25	96	96,3	FL218	UC218-56
UCFL218	10,4	**90**	–	320	265	205	68	26	40	25	96	96,3	FL218	UC218

Two-bolt flanged housing units

Oval version
With adapter sleeve



UKFL



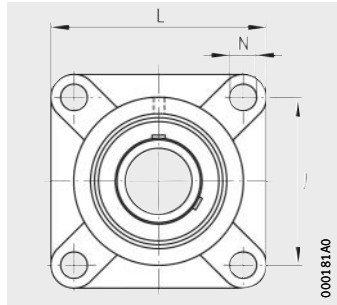
UKFL

Dimension table · Dimensions in mm

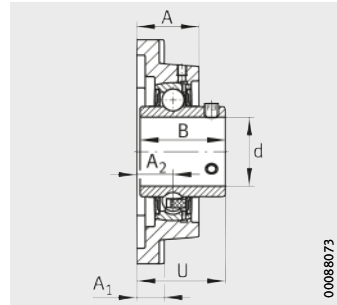
Designation	Mass	Dimensions										Housing	Radial insert ball bearing
	m ≈ kg	d	H	J	L	A	A_1	A_2	N	B_1	d_3 max.		
UKFL205	0,69	**20**	130	99	68	27	15	16	16	35	38	FL205	UK205
UKFL206	0,94	**25**	148	117	80	31	14	18	16	38	45	FL206	UK206
UKFL207	1,29	**30**	161	130	90	34	16	19	16	43	52	FL207	UK207
UKFL208	1,56	**35**	175	144	100	36	16	21	16	46	58	FL208	UK208
UKFL209	2,08	**40**	188	148	108	38	18	22	19	50	65	FL209	UK209
UKFL210	2,4	**45**	197	157	115	40	18	22	19	55	70	FL210	UK210
UKFL211	3,04	**50**	224	184	130	43	20	25	19	59	75	FL211	UK211
UKFL212	4,05	**55**	250	202	140	48	20	29	23	62	80	FL212	UK212
UKFL213	4,84	**60**	258	210	155	50	24	30	23	65	85	FL213	UK213
UKFL215	6,14	**65**	275	225	165	56	24	34	23	73	98	FL215	UK215
UKFL216	7,74	**70**	290	233	180	58	24	34	25	78	105	FL216	UK216
UKFL217	9,02	**75**	305	248	190	63	26	36	25	82	110	FL217	UK217
UKFL218	10,91	**80**	320	265	205	68	26	40	25	86	120	FL218	UK218

Four-bolt flanged housing units

Square version
With grub screws
in inner ring



UCF



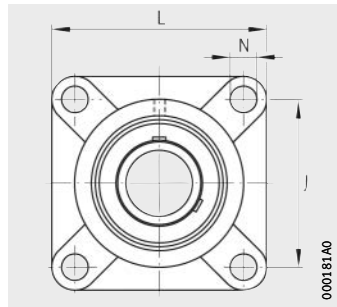
UCF

Dimension table · Dimensions in mm and inch

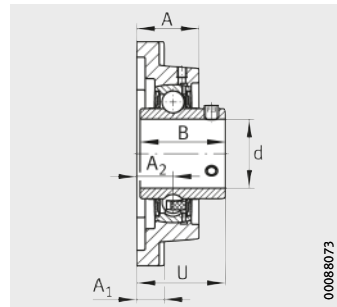
Designation	Mass	Dimensions										Housing	Radial insert ball bearing
	m	d		J	L	A	A_1	A_2	N	B	U		
	≈ kg	mm	inch										
UCF201	0,62	**12**	–	64	86	25,5	12	15	12	31	33,3	F204	UC201
UCF201-08	0,62	**12,7**	*1/2*	64	86	25,5	12	15	12	31	33,3	F204	UC201-08
UCF202-09	0,61	**14,288**	*9/16*	64	86	25,5	12	15	12	31	33,3	F204	UC202-09
UCF202	0,6	**15**	–	64	86	25,5	12	15	12	31	33,3	F204	UC202
UCF202-10	0,6	**15,875**	*5/8*	64	86	25,5	12	15	12	31	33,3	F204	UC202-10
UCF203	0,59	**17**	–	64	86	25,5	12	15	12	31	33,3	F204	UC203
UCF203-11	0,59	**17,463**	*11/16*	64	86	25,5	12	15	12	31	33,3	F204	UC203-11
UCF204-12	0,58	**19,05**	*3/4*	64	86	25,5	12	15	12	31	33,3	F204	UC204-12
UCF204	0,57	**20**	–	64	86	25,5	12	15	12	31	33,3	F204	UC204
UCF205-13	0,89	**20,638**	*13/16*	70	95	27	14	16	12	34,1	35,8	F205	UC205-13
UCF205-14	0,87	**22,225**	*7/8*	70	95	27	14	16	12	34,1	35,8	F205	UC205-14
UCF205-15	0,86	**23,813**	*15/16*	70	95	27	14	16	12	34,1	35,8	F205	UC205-15
UCF205	0,85	**25**	–	70	95	27	14	16	12	34,1	35,8	F205	UC205
UCF205-16	0,84	**25,4**	*1*	70	95	27	14	16	12	34,1	35,8	F205	UC205-16
UCF206-17	1,15	**26,988**	*1 1/16*	83	108	31	14	18	12	38,1	40,2	F206	UC206-17
UCF206-18	1,13	**28,575**	*1 1/8*	83	108	31	14	18	12	38,1	40,2	F206	UC206-18
UCF206	1,11	**30**	–	83	108	31	14	18	12	38,1	40,2	F206	UC206
UCF206-19	1,11	**30,163**	*1 3/16*	83	108	31	14	18	12	38,1	40,2	F206	UC206-19
UCF206-20	1,09	**31,75**	*1 1/4*	83	108	31	14	18	12	38,1	40,2	F206	UC206-20
UCF207-20	1,55	**31,75**	*1 1/4*	92	117	34	16	19	14	42,9	44,4	F207	UC207-20
UCF207-21	1,53	**33,338**	*1 5/16*	92	117	34	16	19	14	42,9	44,4	F207	UC207-21
UCF207-22	1,5	**34,925**	*1 3/8*	92	117	34	16	19	14	42,9	44,4	F207	UC207-22
UCF207	1,5	**35**	–	92	117	34	16	19	14	42,9	44,4	F207	UC207
UCF207-23	1,47	**36,513**	*1 7/16*	92	117	34	16	19	14	42,9	44,4	F207	UC207-23
UCF208-24	1,95	**38,1**	*1 1/2*	102	130	36	16	21	16	49,2	51,2	F208	UC208-24
UCF208-25	1,92	**39,688**	*1 9/16*	102	130	36	16	21	16	49,2	51,2	F208	UC208-25
UCF208	1,91	**40**	–	102	130	36	16	21	16	49,2	51,2	F208	UC208
UCF209-26	2,4	**41,275**	*1 5/8*	105	137	38	18	22	16	49,2	52,2	F209	UC209-26
UCF209-27	2,36	**42,863**	*1 11/16*	105	137	38	18	22	16	49,2	52,2	F209	UC209-27
UCF209-28	2,32	**44,45**	*1 3/4*	105	137	38	18	22	16	49,2	52,2	F209	UC209-28
UCF209	2,3	**45**	–	105	137	38	18	22	16	49,2	52,2	F209	UC209
UCF210-29	2,67	**46,038**	*1 13/16*	111	143	40	18	22	16	51,6	54,6	F210	UC210-29
UCF210-30	2,63	**47,625**	*1 7/8*	111	143	40	18	22	16	51,6	54,6	F210	UC210-30
UCF210-31	2,58	**49,213**	*1 15/16*	111	143	40	18	22	16	51,6	54,6	F210	UC210-31
UCF210	2,56	**50**	–	111	143	40	18	22	16	51,6	54,6	F210	UC210
UCF210-32	2,53	**50,8**	*2*	111	143	40	18	22	16	51,6	54,6	F210	UC210-32

Four-bolt flanged housing units

Square version
With grub screws
in inner ring



UCF



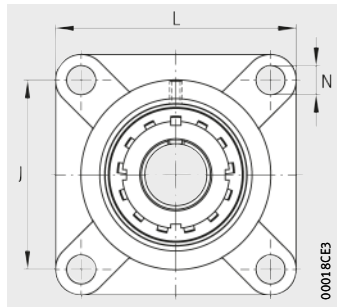
UCF

Dimension table (continued) · Dimensions in mm and inch

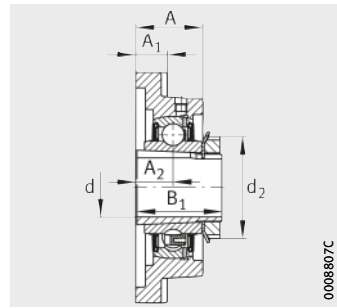
Designation	Mass	Dimensions										Housing	Radial insert ball bearing
	m	d		J	L	A	A_1	A_2	N	B	U		
	≈ kg	mm	inch										
UCF211-32	3,46	**50,8**	***2***	130	163	43	20	25	19	55,6	58,4	F211	UC211-32
UCF211-33	3,4	**52,388**	***2 1/16***	130	163	43	20	25	19	55,6	58,4	F211	UC211-33
UCF211-34	3,35	**53,975**	***2 1/8***	130	163	43	20	25	19	55,6	58,4	F211	UC211-34
UCF211	3,31	**55**	–	130	163	43	20	25	19	55,6	58,4	F211	UC211
UCF211-35	3,29	**55,563**	***2 3/16***	130	163	43	20	25	19	55,6	58,4	F211	UC211-35
UCF212-36	4,38	**57,15**	***2 1/4***	143	175	48	20	29	19	65,1	68,7	F212	UC212-36
UCF212-37	4,31	**58,738**	***2 5/16***	143	175	48	20	29	19	65,1	68,7	F212	UC212-37
UCF212	4,25	**60**	–	143	175	48	20	29	19	65,1	68,7	F212	UC212
UCF212-38	4,23	**60,325**	***2 3/8***	143	175	48	20	29	19	65,1	68,7	F212	UC212-38
UCF212-39	4,15	**61,913**	***2 7/16***	143	175	48	20	29	19	65,1	68,7	F212	UC212-39
UCF213-40	4,98	**63,5**	***2 1/2***	149	187	50	20	30	19	65,1	69,7	F213	UC213-40
UCF213	4,9	**65**	–	149	187	50	20	30	19	65,1	69,7	F213	UC213
UCF213-41	4,9	**65,088**	***2 9/16***	149	187	50	20	30	19	65,1	69,7	F213	UC213-41
UCF214-42	6,19	**66,675**	***2 5/8***	152	193	54	24	31	19	74,6	75,4	F214	UC214-42
UCF214-43	6,09	**68,263**	***2 11/16***	152	193	54	24	31	19	74,6	75,4	F214	UC214-43
UCF214-44	5,99	**69,85**	***2 3/4***	152	193	54	24	31	19	74,6	75,4	F214	UC214-44
UCF214	5,99	**70**	–	152	193	54	24	31	19	74,6	75,4	F214	UC214
UCF215-45	6,9	**71,438**	***2 13/16***	159	200	56	24	34	19	77,8	78,5	F215	UC215-45
UCF215-46	6,8	**73,025**	***2 7/8***	159	200	56	24	34	19	77,8	78,5	F215	UC215-46
UCF215-47	6,7	**74,613**	***2 15/16***	159	200	56	24	34	19	77,8	78,5	F215	UC215-47
UCF215	6,7	**75**	–	159	200	56	24	34	19	77,8	78,5	F215	UC215
UCF215-48	6,6	**76,2**	***3***	159	200	56	24	34	19	77,8	78,5	F215	UC215-48
UCF216-49	7,6	**77,788**	***3 1/16***	165	208	58	24	34	23	82,6	83,3	F216	UC216-49
UCF216-50	7,5	**79,375**	***3 1/8***	165	208	58	24	34	23	82,6	83,3	F216	UC216-50
UCF216	7,4	**80**	–	165	208	58	24	34	23	82,6	83,3	F216	UC216
UCF216-51	7,3	**80,963**	***3 3/16***	165	208	58	24	34	23	82,6	83,3	F216	UC216-51
UCF217-52	9,3	**82,55**	***3 1/4***	175	220	63	26	36	23	85,7	87,6	F217	UC217-52
UCF217-53	9,1	**84,138**	***3 5/16***	175	220	63	26	36	23	85,7	87,6	F217	UC217-53
UCF217	9,1	**85**	–	175	220	63	26	36	23	85,7	87,6	F217	UC217
UCF217-55	8,8	**87,313**	***3 7/16***	175	220	63	26	36	23	85,7	87,6	F217	UC217-55
UCF218-56	10,8	**88,9**	***3 1/2***	187	235	68	26	40	23	96	96,3	F218	UC218-56
UCF218	10,7	**90**	–	187	235	68	26	40	23	96	96,3	F218	UC218

Four-bolt flanged housing units

Square version
With adapter sleeve



UKF



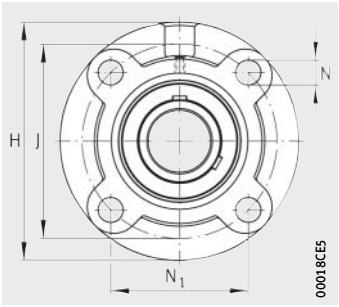
UKF

Dimension table · Dimensions in mm

Designation	Mass	Dimensions									Housing	Radial insert ball bearing
	m ≈ kg	d	J	L	A	A_1	A_2	N	B_1	d_2 max.		
UKF205	0,9	**20**	70	95	27	14	16	12	35	38	F205	UK205
UKF206	1,18	**25**	83	108	31	14	18	12	38	45	F206	UK206
UKF207	1,58	**30**	92	117	34	16	19	14	43	52	F207	UK207
UKF208	1,99	**35**	102	130	36	16	21	16	46	58	F208	UK208
UKF209	2,44	**40**	105	137	38	18	22	16	50	65	F209	UK209
UKF210	2,73	**45**	111	143	40	18	22	16	55	70	F210	UK210
UKF211	3,48	**50**	130	163	43	20	25	19	59	75	F211	UK211
UKF212	4,34	**55**	143	175	48	20	29	19	62	80	F212	UK212
UKF213	5,06	**60**	149	187	50	20	30	19	65	85	F213	UK213
UKF215	7,13	**65**	159	200	56	24	34	19	73	98	F215	UK215
UKF216	7,9	**70**	165	208	58	24	34	23	78	105	F216	UK216
UKF217	9,55	**75**	175	220	63	26	36	23	82	110	F217	UK217
UKF218	11,16	**80**	187	235	68	26	40	23	86	120	F218	UK218

Four-bolt flanged housing units

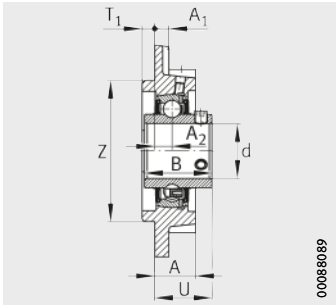
Round version
With grub screws
in inner ring



UCFC

Dimension table · Dimensions in mm and inch

Designation	Mass	Dimensions				
	m	d		H	J	A
	≈ kg	mm	inch			
UCFC201	0,77	**12**	–	100	78	20,5
UCFC201-08	0,77	**12,7**	**1/2**	100	78	20,5
UCFC202-09	0,76	**14,288**	**9/16**	100	78	20,5
UCFC202	0,76	**15**	–	100	78	20,5
UCFC202-10	0,75	**15,875**	**5/8**	100	78	20,5
UCFC203	0,74	**17**	–	100	78	20,5
UCFC203-11	0,74	**17,463**	**11/16**	100	78	20,5
UCFC204-12	0,73	**19,05**	**3/4**	100	78	20,5
UCFC204	0,72	**20**	–	100	78	20,5
UCFC205-13	0,98	**20,638**	**13/16**	115	90	21
UCFC205-14	0,97	**22,225**	**7/8**	115	90	21
UCFC205-15	0,95	**23,813**	**15/16**	115	90	21
UCFC205	0,94	**25**	–	115	90	21
UCFC205-16	0,94	**25,4**	**1**	115	90	21
UCFC206-17	1,29	**26,988**	**1 1/16**	125	100	23
UCFC206-18	1,27	**28,575**	**1 1/8**	125	100	23
UCFC206	1,25	**30**	–	125	100	23
UCFC206-19	1,25	**30,163**	**1 3/16**	125	100	23
UCFC206-20	1,23	**31,75**	**1 1/4**	125	100	23
UCFC207-20	1,76	**31,75**	**1 1/4**	135	110	26
UCFC207-21	1,73	**33,338**	**1 5/16**	135	110	26
UCFC207-22	1,7	**34,925**	**1 3/8**	135	110	26
UCFC207	1,7	**35**	–	135	110	26
UCFC207-23	1,67	**36,513**	**1 7/16**	135	110	26
UCFC208-24	2,08	**38,1**	**1 1/2**	145	120	26
UCFC208-25	2,04	**39,688**	**1 9/16**	145	120	26
UCFC208	2,03	**40**	–	145	120	26
UCFC209-26	2,78	**41,275**	**1 5/8**	160	132	26
UCFC209-27	2,74	**42,863**	**1 11/16**	160	132	26
UCFC209-28	2,7	**44,45**	**1 3/4**	160	132	26
UCFC209	2,69	**45**	–	160	132	26
UCFC210-29	3,08	**46,038**	**1 13/16**	165	138	28
UCFC210-30	3,03	**47,625**	**1 7/8**	165	138	28
UCFC210-31	2,98	**49,213**	**1 15/16**	165	138	28
UCFC210	2,96	**50**	–	165	138	28
UCFC210-32	2,94	**50,8**	**2**	165	138	28



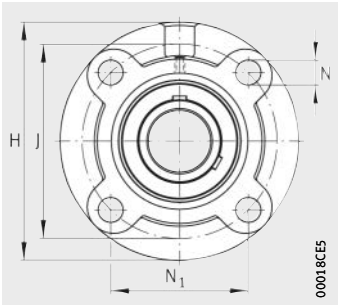
UCFC

								Housing	Radial insert ball bearing
A_1	A_2	N	N_1	B	T_1	U	Z h8		
8	10	12	55,1	31	5	28,3	62	FC204	UC201
8	10	12	55,1	31	5	28,3	62	FC204	UC201-08
8	10	12	55,1	31	5	28,3	62	FC204	UC202-09
8	10	12	55,1	31	5	28,3	62	FC204	UC202
8	10	12	55,1	31	5	28,3	62	FC204	UC202-10
8	10	12	55,1	31	5	28,3	62	FC204	UC203
8	10	12	55,1	31	5	28,3	62	FC204	UC203-11
8	10	12	55,1	31	5	28,3	62	FC204	UC204-12
8	10	12	55,1	31	5	28,3	62	FC204	UC204
7	10	12	63,6	34,1	6	29,8	70	FC205	UC205-13
7	10	12	63,6	34,1	6	29,8	70	FC205	UC205-14
7	10	12	63,6	34,1	6	29,8	70	FC205	UC205-15
7	10	12	63,6	34,1	6	29,8	70	FC205	UC205
7	10	12	63,6	34,1	6	29,8	70	FC205	UC205-16
8	10	12	70,7	38,1	8	32,2	80	FC206	UC206-17
8	10	12	70,7	38,1	8	32,2	80	FC206	UC206-18
8	10	12	70,7	38,1	8	32,2	80	FC206	UC206
8	10	12	70,7	38,1	8	32,2	80	FC206	UC206-19
8	10	12	70,7	38,1	8	32,2	80	FC206	UC206-20
9	11	14	77,8	42,9	8	36,4	90	FC207	UC207-20
9	11	14	77,8	42,9	8	36,4	90	FC207	UC207-21
9	11	14	77,8	42,9	8	36,4	90	FC207	UC207-22
9	11	14	77,8	42,9	8	36,4	90	FC207	UC207
9	11	14	77,8	42,9	8	36,4	90	FC207	UC207-23
9	11	14	84,8	49,2	10	41,2	100	FC208	UC208-24
9	11	14	84,8	49,2	10	41,2	100	FC208	UC208-25
9	11	14	84,8	49,2	10	41,2	100	FC208	UC208
14	10	16	93,3	49,2	12	40,2	105	FC209	UC209-26
14	10	16	93,3	49,2	12	40,2	105	FC209	UC209-27
14	10	16	93,3	49,2	12	40,2	105	FC209	UC209-28
14	10	16	93,3	49,2	12	40,2	105	FC209	UC209
14	10	16	97,6	51,6	12	42,6	110	FC210	UC210-29
14	10	16	97,6	51,6	12	42,6	110	FC210	UC210-30
14	10	16	97,6	51,6	12	42,6	110	FC210	UC210-31
14	10	16	97,6	51,6	12	42,6	110	FC210	UC210
14	10	16	97,6	51,6	12	42,6	110	FC210	UC210-32



Four-bolt flanged housing units

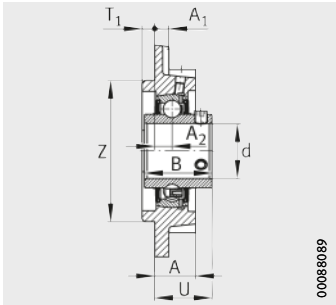
Round version
With grub screws
in inner ring



UCFC

Dimension table (continued) · Dimensions in mm and inch

Designation	Mass	Dimensions				
	m	d		H	J	A
	≈ kg	mm	inch			
UCFC211-32	4,13	**50,8**	***2***	185	150	31
UCFC211-33	4,07	**52,388**	***2 1/16***	185	150	31
UCFC211-34	4,02	**53,975**	***2 1/8***	185	150	31
UCFC211	3,98	**55**	–	185	150	31
UCFC211-35	3,96	**55,563**	***2 3/16***	185	150	31
UCFC212-36	5	**57,15**	***2 1/4***	195	160	36
UCFC212-37	4,92	**58,738**	***2 5/16***	195	160	36
UCFC212	4,86	**60**	–	195	160	36
UCFC212-38	4,85	**60,325**	***2 3/8***	195	160	36
UCFC212-39	4,77	**61,913**	***2 7/16***	195	160	36
UCFC213-40	5,55	**63,5**	***2 1/2***	205	170	36
UCFC213	5,47	**65**	–	205	170	36
UCFC213-41	5,44	**65,088**	***2 9/16***	205	170	36
UCFC214-42	6,84	**66,675**	***2 5/8***	215	177	40
UCFC214-43	6,74	**68,263**	***2 11/16***	215	177	40
UCFC214-44	6,64	**69,85**	***2 3/4***	215	177	40
UCFC214	6,63	**70**	–	215	177	40
UCFC215-45	7,47	**71,438**	***2 13/16***	220	184	40
UCFC215-46	7,36	**73,025**	***2 7/8***	220	184	40
UCFC215-47	7,25	**74,613**	***2 15/16***	220	184	40
UCFC215	7,22	**75**	–	220	184	40
UCFC215-48	7,13	**76,2**	***3***	220	184	40
UCFC216-49	8,95	**77,788**	***3 1/16***	240	200	42
UCFC216-50	8,82	**79,375**	***3 1/8***	240	200	42
UCFC216	8,8	**80**	–	240	200	42
UCFC216-51	8,69	**80,963**	***3 3/16***	240	200	42
UCFC217-52	10,59	**82,55**	***3 1/4***	250	208	45
UCFC217-53	10,46	**84,138**	***3 5/16***	250	208	45
UCFC217	10,38	**85**	–	250	208	45
UCFC217-55	10,17	**87,313**	***3 7/16***	250	208	45
UCFC218-56	12,33	**88,9**	***3 1/2***	265	220	50
UCFC218	12,21	**90**	–	265	220	50

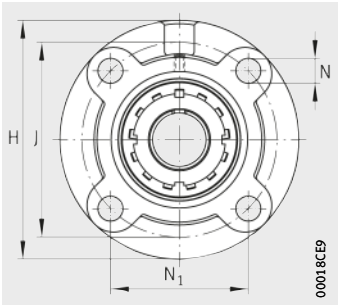


UCFC

								Housing	Radial insert ball bearing
A_1	A_2	N	N_1	B	T_1	U	Z h8		
15	13	19	106,1	55,6	12	46,4	125	FC211	UC211-32
15	13	19	106,1	55,6	12	46,4	125	FC211	UC211-33
15	13	19	106,1	55,6	12	46,4	125	FC211	UC211-34
15	13	19	106,1	55,6	12	46,4	125	FC211	UC211
15	13	19	106,1	55,6	12	46,4	125	FC211	UC211-35
15	17	19	113,1	65,1	12	56,7	135	FC212	UC212-36
15	17	19	113,1	65,1	12	56,7	135	FC212	UC212-37
15	17	19	113,1	65,1	12	56,7	135	FC212	UC212
15	17	19	113,1	65,1	12	56,7	135	FC212	UC212-38
15	17	19	113,1	65,1	12	56,7	135	FC212	UC212-39
15	16	19	120,2	65,1	14	55,7	145	FC213	UC213-40
15	16	19	120,2	65,1	14	55,7	145	FC213	UC213
15	16	19	120,2	65,1	14	55,7	145	FC213	UC213-41
18	17	19	125,15	74,6	14	61,4	150	FC214	UC214-42
18	17	19	125,15	74,6	14	61,4	150	FC214	UC214-43
18	17	19	125,15	74,6	14	61,4	150	FC214	UC214-44
18	17	19	125,15	74,6	14	61,4	150	FC214	UC214
18	18	19	130,1	77,8	16	62,5	160	FC215	UC215-45
18	18	19	130,1	77,8	16	62,5	160	FC215	UC215-46
18	18	19	130,1	77,8	16	62,5	160	FC215	UC215-47
18	18	19	130,1	77,8	16	62,5	160	FC215	UC215
18	18	19	130,1	77,8	16	62,5	160	FC215	UC215-48
18	18	23	141,4	82,6	16	67,3	170	FC216	UC216-49
18	18	23	141,4	82,6	16	67,3	170	FC216	UC216-50
18	18	23	141,4	82,6	16	67,3	170	FC216	UC216
18	18	23	141,4	82,6	16	67,3	170	FC216	UC216-51
20	18	23	147,1	85,7	18	69,6	180	FC217	UC217-52
20	18	23	147,1	85,7	18	69,6	180	FC217	UC217-53
20	18	23	147,1	85,7	18	69,6	180	FC217	UC217
20	18	23	147,1	85,7	18	69,6	180	FC217	UC217-55
20	22	23	155,55	96	18	78,3	190	FC218	UC218-56
20	22	23	155,55	96	18	78,3	190	FC218	UC218

Four-bolt flanged housing units

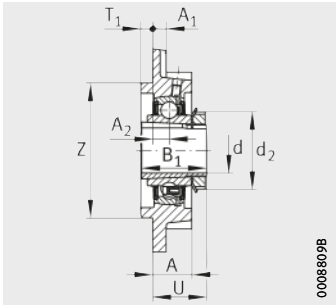
Round version
With adapter sleeve



UKFC

Dimension table · Dimensions in mm

Designation	Mass	Dimensions					
	m ≈ kg	d	H	J	A	A_1	A_2
UKFC205	0,99	**20**	115	90	21	7	10
UKFC206	1,31	**25**	125	100	23	8	10
UKFC207	1,78	**30**	135	110	26	9	11
UKFC208	2,12	**35**	145	120	26	9	11
UKFC209	2,82	**40**	160	132	26	14	10
UKFC210	3,14	**45**	165	138	28	14	10
UKFC211	4,15	**50**	185	150	31	15	13
UKFC212	4,95	**55**	195	160	36	15	17
UKFC213	5,62	**60**	205	170	36	15	16
UKFC215	7,7	**65**	220	184	40	18	18
UKFC216	9,33	**70**	240	200	42	18	18
UKFC217	10,87	**75**	250	208	45	20	18
UKFC218	12,76	**80**	265	220	50	20	22



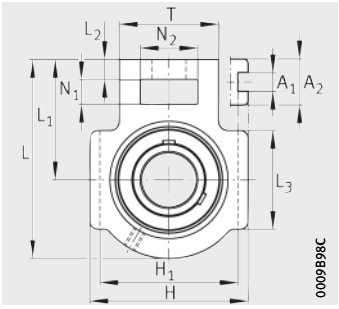
UKFC

							Housing	Radial insert ball bearing
N	N_1	B_1	T_1	U	Z h8	d_2 max.		
12	63,6	35	6	30,7	70	38	FC205	UK205
12	70,7	38	8	32,2	80	45	FC206	UK206
14	77,8	43	8	35,7	90	52	FC207	UK207
14	84,8	46	10	37,7	100	58	FC208	UK208
16	93,3	50	12	38,2	105	65	FC209	UK209
16	97,6	55	12	40,2	110	70	FC210	UK210
19	106,1	59	12	44,2	125	75	FC211	UK211
19	113,1	62	12	51,2	135	80	FC212	UK212
19	120,2	65	14	51,2	145	85	FC213	UK213
19	130,1	73	16	55	160	98	FC215	UK215
23	141,4	78	16	58,2	170	105	FC216	UK216
23	147,1	82	18	60,2	180	110	FC217	UK217
23	155,55	86	18	65,7	190	120	FC218	UK218



Take-up housing units

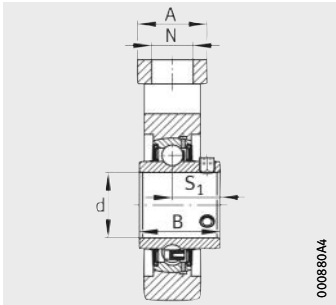
For linear motion
With grub screws
in inner ring



UCT

Dimension table · Dimensions in mm and inch

Designation	Mass	Dimensions							
	m	d		H	L	L_1	L_2	L_3	A
	≈ kg	mm	inch						
UCT201	0,77	**12**	–	89	94	61	10	51	32
UCT201-08	0,77	**12,7**	***1/2***	89	94	61	10	51	32
UCT202-09	0,76	**14,288**	***9/16***	89	94	61	10	51	32
UCT202	0,75	**15**	–	89	94	61	10	51	32
UCT202-10	0,75	**15,875**	***5/8***	89	94	61	10	51	32
UCT203	0,74	**17**	–	89	94	61	10	51	32
UCT203-11	0,74	**17,463**	***11/16***	89	94	61	10	51	32
UCT204-12	0,73	**19,05**	***3/4***	89	94	61	10	51	32
UCT204	0,72	**20**	–	89	94	61	10	51	32
UCT205-13	0,84	**20,638**	***13/16***	89	97	62	10	51	32
UCT205-14	0,83	**22,225**	***7/8***	89	97	62	10	51	32
UCT205-15	0,81	**23,813**	***15/16***	89	97	62	10	51	32
UCT205	0,8	**25**	–	89	97	62	10	51	32
UCT205-16	0,8	**25,4**	***1***	89	97	62	10	51	32
UCT206-17	1,27	**26,988**	***1 1/16***	102	113	70	10	57	37
UCT206-18	1,25	**28,575**	***1 1/8***	102	113	70	10	57	37
UCT206	1,23	**30**	–	102	113	70	10	57	37
UCT206-19	1,23	**30,163**	***1 3/16***	102	113	70	10	57	37
UCT206-20	1,2	**31,75**	***1 1/4***	102	113	70	10	57	37
UCT207-20	1,64	**31,75**	***1 1/4***	102	129	78	13	64	37
UCT207-21	1,61	**33,338**	***1 5/16***	102	129	78	13	64	37
UCT207-22	1,58	**34,925**	***1 3/8***	102	129	78	13	64	37
UCT207	1,58	**35**	–	102	129	78	13	64	37
UCT207-23	1,55	**36,513**	***1 7/16***	102	129	78	13	64	37
UCT208-24	2,36	**38,1**	***1 1/2***	114	144	88	16	83	49
UCT208-25	2,33	**39,688**	***1 9/16***	114	144	88	16	83	49
UCT208	2,32	**40**	–	114	144	88	16	83	49
UCT209-26	2,46	**41,275**	***1 5/8***	117	144	87	16	83	49
UCT209-27	2,42	**42,863**	***1 11/16***	117	144	87	16	83	49
UCT209-28	2,38	**44,45**	***1 3/4***	117	144	87	16	83	49
UCT209	2,37	**45**	–	117	144	87	16	83	49
UCT210-29	2,64	**46,038**	***1 13/16***	117	149	90	16	86	49
UCT210-30	2,59	**47,625**	***1 7/8***	117	149	90	16	86	49
UCT210-31	2,54	**49,213**	***1 15/16***	117	149	90	16	86	49
UCT210	2,52	**50**	–	117	149	90	16	86	49
UCT210-32	2,5	**50,8**	***2***	117	149	90	16	86	49



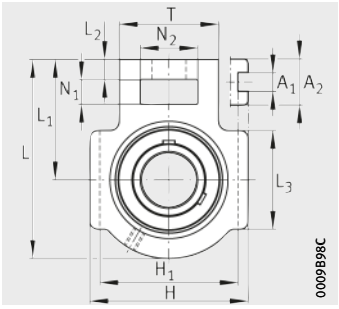
UCT

									Housing	Radial insert ball bearing
A_1 +0,2/0	A_2	H_1 0/−0,5	N	N_1	N_2	B	S_1	T		
12	21	76	19	16	32	31	18,3	51	T204	UC201
12	21	76	19	16	32	31	18,3	51	T204	UC201-08
12	21	76	19	16	32	31	18,3	51	T204	UC202-09
12	21	76	19	16	32	31	18,3	51	T204	UC202
12	21	76	19	16	32	31	18,3	51	T204	UC202-10
12	21	76	19	16	32	31	18,3	51	T204	UC203
12	21	76	19	16	32	31	18,3	51	T204	UC203-11
12	21	76	19	16	32	31	18,3	51	T204	UC204-12
12	21	76	19	16	32	31	18,3	51	T204	UC204
12	24	76	19	16	32	34,1	19,8	51	T205	UC205-13
12	24	76	19	16	32	34,1	19,8	51	T205	UC205-14
12	24	76	19	16	32	34,1	19,8	51	T205	UC205-15
12	24	76	19	16	32	34,1	19,8	51	T205	UC205
12	24	76	19	16	32	34,1	19,8	51	T205	UC205-16
12	28	89	22	16	37	38,1	22,2	56	T206	UC206-17
12	28	89	22	16	37	38,1	22,2	56	T206	UC206-18
12	28	89	22	16	37	38,1	22,2	56	T206	UC206
12	28	89	22	16	37	38,1	22,2	56	T206	UC206-19
12	28	89	22	16	37	38,1	22,2	56	T206	UC206-20
12	30	89	22	16	37	42,9	25,4	64	T207	UC207-20
12	30	89	22	16	37	42,9	25,4	64	T207	UC207-21
12	30	89	22	16	37	42,9	25,4	64	T207	UC207-22
12	30	89	22	16	37	42,9	25,4	64	T207	UC207
12	30	89	22	16	37	42,9	25,4	64	T207	UC207-23
16	33	102	29	19	49	49,2	30,2	83	T208	UC208-24
16	33	102	29	19	49	49,2	30,2	83	T208	UC208-25
16	33	102	29	19	49	49,2	30,2	83	T208	UC208
16	35	102	29	19	49	49,2	30,2	83	T209	UC209-26
16	35	102	29	19	49	49,2	30,2	83	T209	UC209-27
16	35	102	29	19	49	49,2	30,2	83	T209	UC209-28
16	35	102	29	19	49	49,2	30,2	83	T209	UC209
16	37	102	29	19	49	51,6	32,6	83	T210	UC210-29
16	37	102	29	19	49	51,6	32,6	83	T210	UC210-30
16	37	102	29	19	49	51,6	32,6	83	T210	UC210-31
16	37	102	29	19	49	51,6	32,6	83	T210	UC210
16	37	102	29	19	49	51,6	32,6	83	T210	UC210-32



Take-up housing units

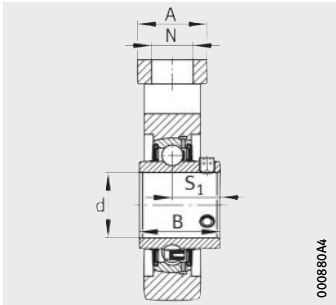
For linear motion
With grub screws
in inner ring



UCT

Dimension table (continued) · Dimensions in mm and inch

Designation	Mass	Dimensions							
	m	d		H	L	L_1	L_2	L_3	A
	≈ kg	mm	inch						
UCT211-32	3,98	**50,8**	***2***	146	171	106	19	95	64
UCT211-33	3,93	**52,388**	***2 1/16***	146	171	106	19	95	64
UCT211-34	3,87	**53,975**	***2 1/8***	146	171	106	19	95	64
UCT211	3,83	**55**	–	146	171	106	19	95	64
UCT211-35	3,81	**55,563**	***2 3/16***	146	171	106	19	95	64
UCT212-36	4,84	**57,15**	***2 1/4***	146	194	119	19	102	64
UCT212-37	4,77	**58,738**	***2 5/16***	146	194	119	19	102	64
UCT212	4,71	**60**	–	146	194	119	19	102	64
UCT212-38	4,69	**60,325**	***2 3/8***	146	194	119	19	102	64
UCT212-39	4,61	**61,913**	***2 7/16***	146	194	119	19	102	64
UCT213-40	6,68	**63,5**	***2 1/2***	167	224	137	21	121	70
UCT213	6,61	**65**	–	167	224	137	21	121	70
UCT213-41	6,61	**65,088**	***2 9/16***	167	224	137	21	121	70
UCT214-42	6,99	**66,675**	***2 5/8***	167	224	137	21	121	70
UCT214-43	6,89	**68,263**	***2 11/16***	167	224	137	21	121	70
UCT214-44	6,79	**69,85**	***2 3/4***	167	224	137	21	121	70
UCT214	6,78	**70**	–	167	224	137	21	121	70
UCT215-45	7,45	**71,438**	***2 13/16***	167	232	140	21	121	70
UCT215-46	7,34	**73,025**	***2 7/8***	167	232	140	21	121	70
UCT215-47	7,23	**74,613**	***2 15/16***	167	232	140	21	121	70
UCT215	7,2	**75**	–	167	232	140	21	121	70
UCT215-48	7,12	**76,2**	***3***	167	232	140	21	121	70
UCT216-49	8,27	**77,788**	***3 1/16***	184	235	140	21	121	70
UCT216-50	8,15	**79,375**	***3 1/8***	184	235	140	21	121	70
UCT216	8,09	**80**	–	184	235	140	21	121	70
UCT216-51	8,01	**80,963**	***3 3/16***	184	235	140	21	121	70
UCT217-52	10,9	**82,55**	***3 1/4***	198	260	162	29	157	73
UCT217-53	10,8	**84,138**	***3 5/16***	198	260	162	29	157	73
UCT217	10,7	**85**	–	198	260	162	29	157	73
UCT217-55	10,5	**87,313**	***3 7/16***	198	260	162	29	157	73
UCT218-56	12,37	**88,9**	***3 1/2***	215	275	170	30	140	80
UCT218	12,26	**90**	–	215	275	170	30	140	80



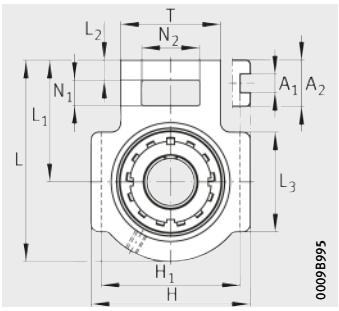
UCT

									Housing	Radial insert ball bearing
A_1 +0,3/0	A_2	H_1 0/−0,8	N	N_1	N_2	B	S_1	T		
22	38	130	35	25	64	55,6	33,4	102	T211	UC211-32
22	38	130	35	25	64	55,6	33,4	102	T211	UC211-33
22	38	130	35	25	64	55,6	33,4	102	T211	UC211-34
22	38	130	35	25	64	55,6	33,4	102	T211	UC211
22	38	130	35	25	64	55,6	33,4	102	T211	UC211-35
22	42	130	35	32	64	65,1	39,7	102	T212	UC212-36
22	42	130	35	32	64	65,1	39,7	102	T212	UC212-37
22	42	130	35	32	64	65,1	39,7	102	T212	UC212
22	42	130	35	32	64	65,1	39,7	102	T212	UC212-38
22	42	130	35	32	64	65,1	39,7	102	T212	UC212-39
26	44	151	41	32	70	65,1	39,7	111	T213	UC213-40
26	44	151	41	32	70	65,1	39,7	111	T213	UC213
26	44	151	41	32	70	65,1	39,7	111	T213	UC213-41
26	46	151	41	32	70	74,6	44,4	111	T214	UC214-42
26	46	151	41	32	70	74,6	44,4	111	T214	UC214-43
26	46	151	41	32	70	74,6	44,4	111	T214	UC214-44
26	46	151	41	32	70	74,6	44,4	111	T214	UC214
26	48	151	41	32	70	77,8	44,5	111	T215	UC215-45
26	48	151	41	32	70	77,8	44,5	111	T215	UC215-46
26	48	151	41	32	70	77,8	44,5	111	T215	UC215-47
26	48	151	41	32	70	77,8	44,5	111	T215	UC215
26	48	151	41	32	70	77,8	44,5	111	T215	UC215-48
26	51	165	41	32	70	82,6	49,3	111	T216	UC216-49
26	51	165	41	32	70	82,6	49,3	111	T216	UC216-50
26	51	165	41	32	70	82,6	49,3	111	T216	UC216
26	51	165	41	32	70	82,6	49,3	111	T216	UC216-51
30	54	173	48	38	73	85,7	51,6	124	T217	UC217-52
30	54	173	48	38	73	85,7	51,6	124	T217	UC217-53
30	54	173	48	38	73	85,7	51,6	124	T217	UC217
30	54	173	48	38	73	85,7	51,6	124	T217	UC217-55
28	55	190	47	40	80	96	56,3	130	T218	UC218-56
28	55	190	47	40	80	96	56,3	130	T218	UC218



Take-up housing units

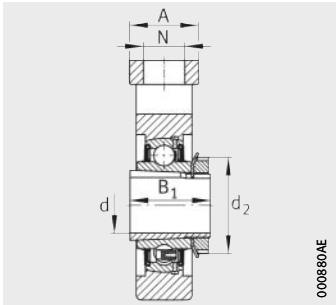
For linear motion
With adapter sleeve



UKT

Dimension table · Dimensions in mm

Designation	Mass	Dimensions						
	m ≈ kg	d	H	L	L_1	L_2	L_3	A
UKT205	0,85	**20**	89	97	62	10	51	32
UKT206	1,29	**25**	102	113	70	10	57	37
UKT207	1,66	**30**	102	129	78	13	64	37
UKT208	2,4	**35**	114	144	88	16	83	49
UKT209	2,5	**40**	117	144	87	16	83	49
UKT210	2,7	**45**	117	149	90	16	86	49
UKT211	4	**50**	146	171	106	19	95	64
UKT212	4,79	**55**	146	194	119	19	102	64
UKT213	6,76	**60**	167	224	137	21	121	70
UKT215	7,69	**65**	167	232	140	21	121	70
UKT216	8,6	**70**	184	235	140	21	121	70
UKT217	11,2	**75**	198	260	162	29	157	73
UKT218	12,78	**80**	215	275	170	30	140	80



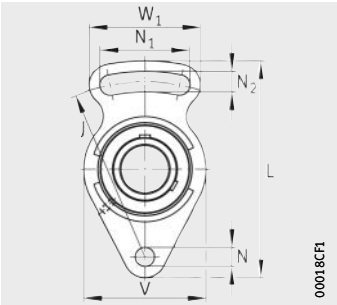
UKT

									Housing	Radial insert ball bearing
A_1	A_2	H_1	N	N_1	N_2	B_1	T	d_2 max.		
$12\ ^{+0,2}_{0}$	24	$76\ ^{0}_{-0,5}$	19	16	32	35	51	38	T205	UK205
$12\ ^{+0,2}_{0}$	28	$89\ ^{0}_{-0,5}$	22	16	37	38	56	45	T206	UK206
$12\ ^{+0,2}_{0}$	30	$89\ ^{0}_{-0,5}$	22	16	37	43	64	52	T207	UK207
$16\ ^{+0,2}_{0}$	33	$102\ ^{0}_{-0,5}$	29	19	49	46	83	58	T208	UK208
$16\ ^{+0,2}_{0}$	35	$102\ ^{0}_{-0,5}$	29	19	49	50	83	65	T209	UK209
$16\ ^{+0,2}_{0}$	37	$102\ ^{0}_{-0,5}$	29	19	49	55	83	70	T210	UK210
$22\ ^{+0,3}_{0}$	38	$130\ ^{0}_{-0,8}$	35	25	64	59	102	75	T211	UK211
$22\ ^{+0,3}_{0}$	42	$130\ ^{0}_{-0,8}$	35	32	64	62	102	80	T212	UK212
$26\ ^{+0,3}_{0}$	44	$151\ ^{0}_{-0,8}$	41	32	70	65	111	85	T213	UK213
$26\ ^{+0,3}_{0}$	48	$151\ ^{0}_{-0,8}$	41	32	70	73	111	98	T215	UK215
$26\ ^{+0,3}_{0}$	51	$165\ ^{0}_{-0,8}$	41	32	70	78	111	105	T216	UK216
$30\ ^{+0,3}_{0}$	54	$173\ ^{0}_{-0,8}$	48	38	73	82	124	110	T217	UK217
$28\ ^{+0,3}_{0}$	55	$190\ ^{0}_{-0,8}$	47	40	80	86	130	120	T218	UK218



Take-up housing units

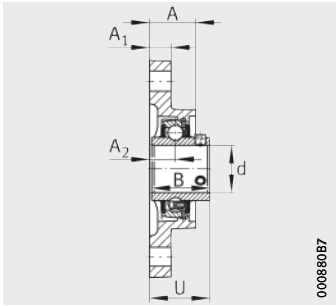
For swivel motion
With grub screws
in inner ring



UCFA

Dimension table · Dimensions in mm and inch

Designation	Mass	Dimensions						
	m	d		J	L	A	A_1	A_2
	≈ kg	mm	inch					
UCFA201	0,45	**12**	–	78	98	25,5	12	15
UCFA201-08	0,44	**12,7**	**1/2**	78	98	25,5	12	15
UCFA202-09	0,43	**14,288**	**9/16**	78	98	25,5	12	15
UCFA202	0,43	**15**	–	78	98	25,5	12	15
UCFA202-10	0,43	**15,875**	**5/8**	78	98	25,5	12	15
UCFA203	0,42	**17**	–	78	98	25,5	12	15
UCFA203-11	0,42	**17,463**	**11/16**	78	98	25,5	12	15
UCFA204-12	0,41	**19,05**	**3/4**	78	98	25,5	12	15
UCFA204	0,41	**20**	–	78	98	25,5	12	15
UCFA205-13	0,67	**20,638**	**13/16**	98	125	27	14	16
UCFA205-14	0,66	**22,225**	**7/8**	98	125	27	14	16
UCFA205-15	0,64	**23,813**	**15/16**	98	125	27	14	16
UCFA205	0,63	**25**	–	98	125	27	14	16
UCFA205-16	0,62	**25,4**	**1**	98	125	27	14	16
UCFA206-17	0,94	**26,988**	**1 1/16**	117	144	31	14	18
UCFA206-18	0,92	**28,575**	**1 1/8**	117	144	31	14	18
UCFA206	0,9	**30**	–	117	144	31	14	18
UCFA206-19	0,9	**30,163**	**1 3/16**	117	144	31	14	18
UCFA206-20	0,88	**31,75**	**1 1/4**	117	144	31	14	18



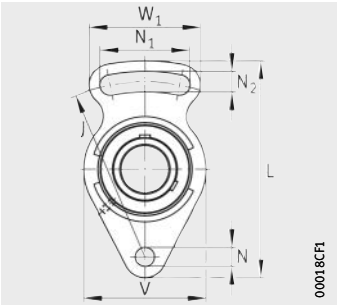
UCFA

							Housing	Radial insert ball bearing
N	N_1	N_2	B	U	V	W_1		
10	40	10	31	33,3	60	50	FA204	UC201
10	40	10	31	33,3	60	50	FA204	UC201-08
10	40	10	31	33,3	60	50	FA204	UC202-09
10	40	10	31	33,3	60	50	FA204	UC202
10	40	10	31	33,3	60	50	FA204	UC202-10
10	40	10	31	33,3	60	50	FA204	UC203
10	40	10	31	33,3	60	50	FA204	UC203-11
10	40	10	31	33,3	60	50	FA204	UC204-12
10	40	10	31	33,3	60	50	FA204	UC204
12	51	12	34,1	35,8	68	66	FA205	UC205-13
12	51	12	34,1	35,8	68	66	FA205	UC205-14
12	51	12	34,1	35,8	68	66	FA205	UC205-15
12	51	12	34,1	35,8	68	66	FA205	UC205
12	51	12	34,1	35,8	68	66	FA205	UC205-16
12	58	12	38,1	40,2	80	72	FA206	UC206-17
12	58	12	38,1	40,2	80	72	FA206	UC206-18
12	58	12	38,1	40,2	80	72	FA206	UC206
12	58	12	38,1	40,2	80	72	FA206	UC206-19
12	58	12	38,1	40,2	80	72	FA206	UC206-20



Take-up housing units

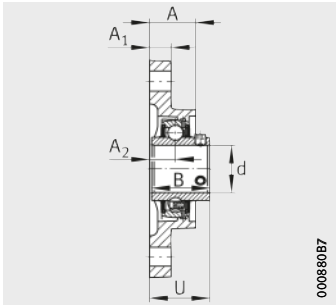
For swivel motion
With grub screws
in inner ring



UCFA

Dimension table (continued) · Dimensions in mm and inch

Designation	Mass	Dimensions						
	m	d		J	L	A	A_1	A_2
	≈ kg	mm	inch					
UCFA207-20	1,29	**31,75**	***1 1/4***	130	161	34	16	19
UCFA207-21	1,26	**33,338**	***1 5/16***	130	161	34	16	19
UCFA207-22	1,24	**34,925**	***1 3/8***	130	161	34	16	19
UCFA207	1,23	**35**	–	130	161	34	16	19
UCFA207-23	1,21	**36,513**	***1 7/16***	130	161	34	16	19
UCFA208-24	1,58	**38,1**	***1 1/2***	144	175	36	16	21
UCFA208-25	1,54	**39,688**	***1 9/16***	144	175	36	16	21
UCFA208	1,53	**40**	–	144	175	36	16	21
UCFA209-26	1,99	**41,275**	***1 5/8***	148	181	38	18	22
UCFA209-27	1,95	**42,863**	***1 11/16***	148	181	38	18	22
UCFA209-28	1,91	**44,45**	***1 3/4***	148	181	38	18	22
UCFA209	1,9	**45**	–	148	181	38	18	22
UCFA210-29	2,2	**46,038**	***1 13/16***	157	190	37,5	18	22
UCFA210-30	2,16	**47,625**	***1 7/8***	157	190	37,5	18	22
UCFA210-31	2,11	**49,213**	***1 15/16***	157	190	37,5	18	22
UCFA210	2,08	**50**	–	157	190	37,5	18	22
UCFA210-32	2,06	**50,8**	***2***	157	190	37,5	18	22
UCFA211-32	3,1	**50,8**	***2***	184	219	43	20	25
UCFA211-33	3,05	**52,388**	***2 1/16***	184	219	43	20	25
UCFA211-34	2,99	**53,975**	***2 1/8***	184	219	43	20	25
UCFA211	2,95	**55**	–	184	219	43	20	25
UCFA211-35	2,93	**55,563**	***2 3/16***	184	219	43	20	25



UCFA

							Housing	Radial insert ball bearing
N	N_1	N_2	B	U	V	W_1		
14	66	14	42,9	44,4	90	82	FA207	UC207-20
14	66	14	42,9	44,4	90	82	FA207	UC207-21
14	66	14	42,9	44,4	90	82	FA207	UC207-22
14	66	14	42,9	44,4	90	82	FA207	UC207
14	66	14	42,9	44,4	90	82	FA207	UC207-23
14	71	14	49,2	51,2	100	87	FA208	UC208-24
14	71	14	49,2	51,2	100	87	FA208	UC208-25
14	71	14	49,2	51,2	100	87	FA208	UC208
16	72	16	49,2	52,2	108	90	FA209	UC209-26
16	72	16	49,2	52,2	108	90	FA209	UC209-27
16	72	16	49,2	52,2	108	90	FA209	UC209-28
16	72	16	49,2	52,2	108	90	FA209	UC209
16	76	16	51,6	54,6	115	94	FA210	UC210-29
16	76	16	51,6	54,6	115	94	FA210	UC210-30
16	76	16	51,6	54,6	115	94	FA210	UC210-31
16	76	16	51,6	54,6	115	94	FA210	UC210
16	76	16	51,6	54,6	115	94	FA210	UC210-32
16	86	16	55,6	58,4	130	104	FA211	UC211-32
16	86	16	55,6	58,4	130	104	FA211	UC211-33
16	86	16	55,6	58,4	130	104	FA211	UC211-34
16	86	16	55,6	58,4	130	104	FA211	UC211
16	86	16	55,6	58,4	130	104	FA211	UC211-35





Market sectors

Tillage and harvesting
Conveying equipment
Textile machinery
Food industry



Market sectors

Page

Bearing arrangements for tillage and harvesting

Product overview 532

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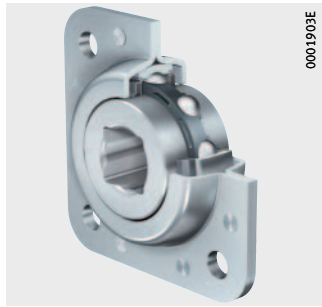
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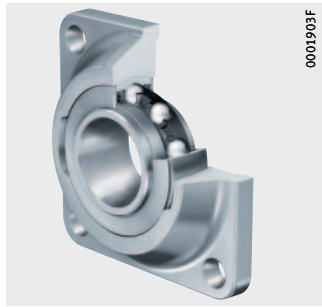
Flanged housing units for plough discs

TRV..-IA02

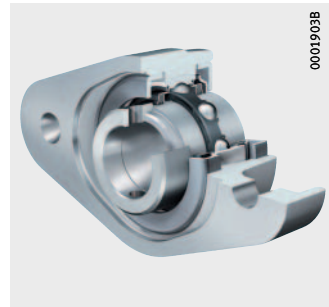


Flanged housing units for drums

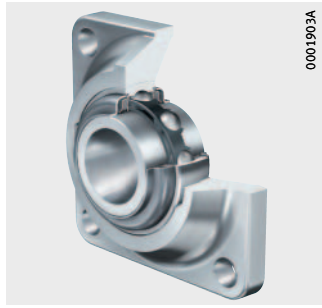
IBBU..-IA03



RCJT..-IA03

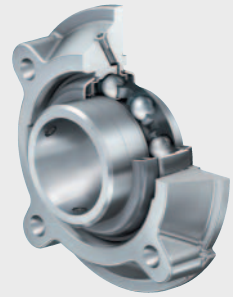


RCJ..-IA03, TCJY..-IA03

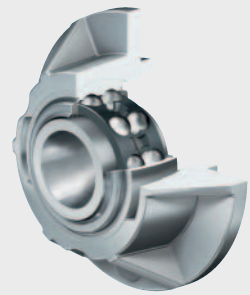


Flanged housing units for harvesters

RMEY..-IA04



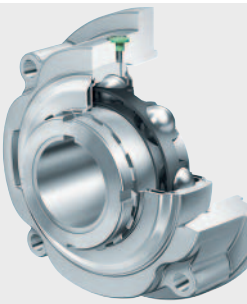
TME..-IA04



RME..-IA04



RMEO..-IA04

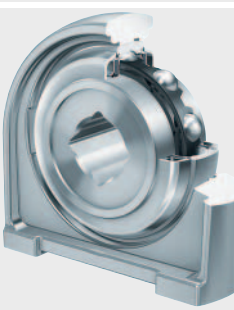


IBBU..-IA04



Plummer block housing units for harvesters

TSHEV..-IA04



Bearing arrangements for tillage and harvesting

Features

The following sections describe selected bearing arrangements for use in machinery for tillage and harvesting. Bearing arrangements for seed discs, plough discs, drums and harvesters require seals, see page 537, that give complete protection of the rolling elements against the environmental conditions in agricultural operations.

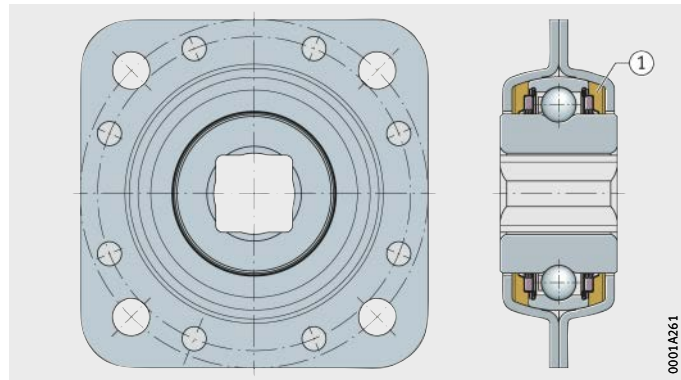
In addition, Schaeffler develops and manufactures further products for agricultural engineering use in consultation with the customer.

Further information

- TPI 220, Bearing arrangements for tillage and harvesting
- Download and ordering: http://medien.schaeffler.de.

Flanged housing units with sheet steel housing

The two sheet steel halves are riveted together, *Figure 1*. The unit is positioned on a square section shaft by means of spacers.
The sheet steel halves protect the seal system against mechanical damage and, in addition, form a prechamber for grease.



① Prechamber greased

Figure 1
Four-bolt flanged housing unit with sheet steel housing and square bore

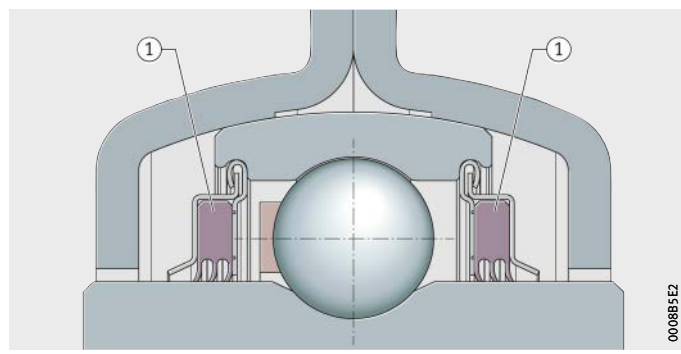
Preload

Once the bearing system is mounted, it operates almost free from clearance.

Sealing

Housing units for plough discs are sealed on both sides by means of a triple lip seal, *Figure 2*.

The seals are additionally protected by a steel plate against mechanical damage and high pressure cleaning equipment.



① T seal

Figure 2
Sealing of bearing

Lubrication

Grease prechambers provide lubrication of the seal lips and thus prevent dry running.

Flanged housing units for drums

Flanged housing units for drums comprise a machined cast housing and a self-aligning bearing as well as additional flinger shields, *Figure 3*.

In general, the housings are made from spheroidal graphite cast iron. They are designed for the high requirements present at the operating location. They can securely support shock loads.

Due to the spherical shape of the outer ring, the bearing can align itself during mounting of the unit. As a result, small misalignments can be compensated.

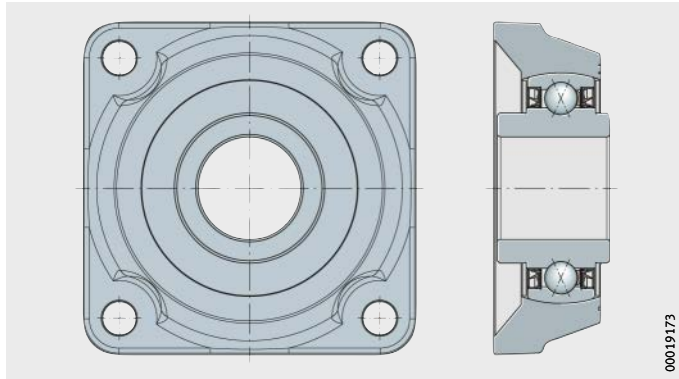


Figure 3
Flanged housing unit for drums

Corrotect coating

In order that the seal can remain effective in the long term, the inner ring has a Corrotect coating. This prevents penetration of rust under the seal due to corrosion of the inner ring.

Sealing

Housing units for drums are sealed on both sides by means of a triple lip seal. In addition, the seals are protected by flinger shields against mechanical damage and high pressure cleaning equipment, which means that it is possible to operate these units without maintenance.

Lubrication

The flinger shields are either pressed onto the inner ring or are staked with the inner ring or housing. They are fitted such that there is a narrow gap and a prechamber of a labyrinth design for the grease. The seal is lubricated by the grease and the friction is reduced at the same time.



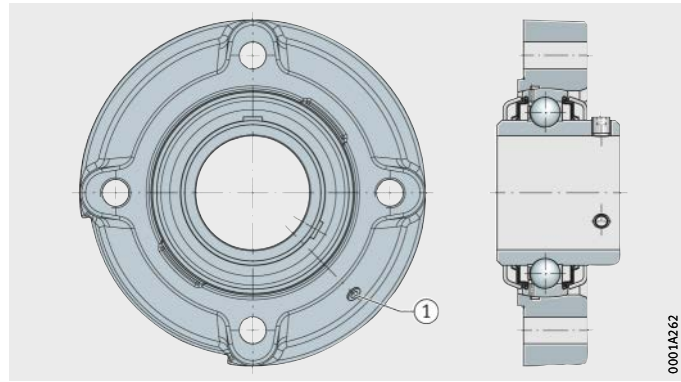
Bearing arrangements for tillage and harvesting

Flanged housing units for harvesters

Flanged housing units for harvesting generally comprise a machined cast housing and a self-aligning bearing, *Figure 4*.

The housings are normally made from spheroidal graphite cast iron. They are designed for the high requirements present at the operating location. They can securely support shock loads.

Due to the spherical shape of the outer ring, the bearing can align itself during mounting of the unit. Slight misalignments can thus be compensated.



① Threaded hole in housing

Figure 4
Flanged housing unit for harvesting

Corrotect coating

In order that the seal can remain effective in the long term, the inner ring has a Corrotect coating. This prevents penetration of rust under the seal due to corrosion of the inner ring.

Sealing

Housing units for harvesters are normally sealed on both sides by means of a triple lip seal. In addition, the seals are normally protected by flinger shields against mechanical damage and high pressure cleaning equipment.

Lubrication

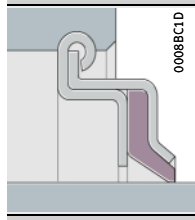
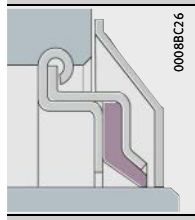
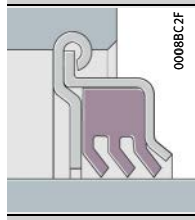
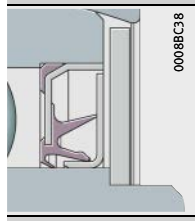
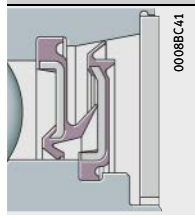
Most units are designed with a threaded hole in the housing and can thus be relubricated by means of an appropriate lubrication nipple.

Relubrication of the bearing is facilitated where necessary by means of two lubrication holes offset by 180° in the outer ring.

Sealing

Some seals for agricultural engineering are of a multi-piece design, see table. This concept offers, due to the rigidly rolled-in sheet steel washer, optimum seating in the bearing as well as concentric alignment of the seal lip to the inner ring.

Seal types

R seal	
 0008BC1D	Two zinc-coated sheet steel washers extended outwards and angled downwards with intermediate NBR part and radially preloaded seal lip. Improved protection against mechanical damage. Large grease reservoir due to the space between the extended and angled sheet steel washers. For use in radial insert ball bearings with inner ring extended on both sides.
R seal with flinger shield	
 0008BC26	As R seal, but with outer flinger shield with anti-corrosion protection. Additional sealing action without restriction on speed and with additional protection against mechanical damage and high pressure cleaning equipment.
T seal	
 0008BC2F	Two zinc-plated sheet steel washers with intermediate NBR part and three radially preloaded seal lips for protection against extreme contamination. For better protection of the seal lip against mechanical damage, the outer sheet steel washer is extended outwards and angled downwards. Lower speeds due to higher friction.
Sealing cartridge with flinger shield	
 0008BC38	Design identical to normal cartridge seal but supplemented by a flinger shield to protect the bearing against high pressure cleaning equipment and mechanical damage.
Combined sealing washer and flinger shield with protective shield	
 0008BC41	Design identical to normal sealing washer and flinger shield but supplemented by a protective shield to protect the bearing against high pressure cleaning equipment and mechanical damage.



Bearing arrangements for tillage and harvesting

Lubrication

In general, bearing arrangements in the tillage sector cannot be relubricated. However, relubrication of the bearings in the harvesting sector may be necessary. A suitable solution is a lithium soap grease with a base oil viscosity ISO VG 68 or higher, for example the rolling bearing grease MULTITOP or MULTI2.

Relubrication should be carried out with the bearing rotating and still warm from operation in order to achieve good replacement and distribution of grease.

Operating temperature

Open bearings can be used at operating temperatures from –20 °C to +120 °C.

Sealed bearings are suitable for operating temperatures from –20 °C to +100 °C, restricted by the grease and seal material.

Suffixes

Suffixes for available designs, see table.

Available designs

Suffix	Description	Design
IA02	Flanged housing units for plough discs	Standard
IA03	Flanged housing units for drums	
IA04	Flanged housing units for harvesters	

Design and safety guidelines
Compensation of static misalignments

Bearings with a spherical outside surface of the bearing outer ring, fitted in housings with a concave bore, can compensate for static misalignment of the shaft or housing, *Figure 5* and *Figure 6*:

For units with a lubrication groove in the housing and a lubrication hole in the radial insert ball bearing, the following applies:

- Up to ±2,5°, the units can be relubricated.
- Between ±2,5° and ±5°, the facility for relubrication is dependent on the specific unit. Please contact us in this case.
- Above ±5°, relubrication is no longer possible.

The units must not be used to support swivelling or tumbling motion in dynamic operation.

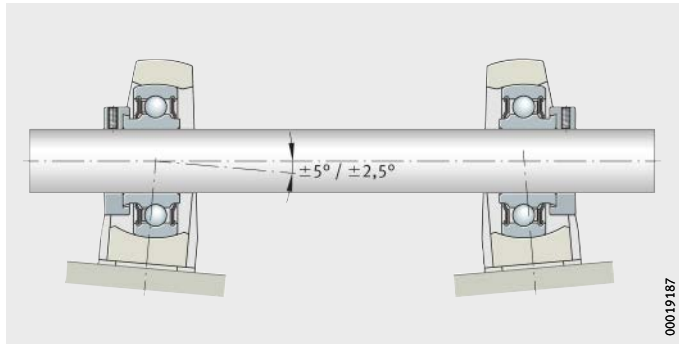


Figure 5
Compensation of static housing misalignment

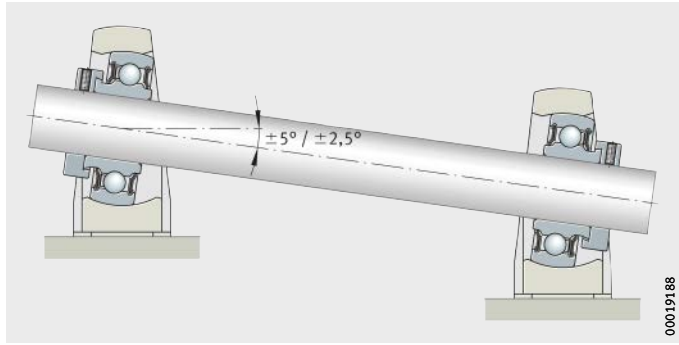
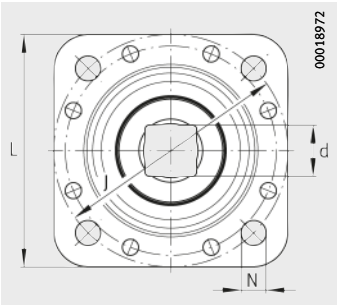


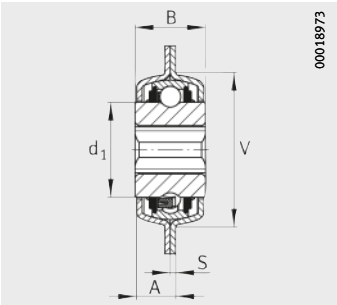
Figure 6
Compensation of static shaft misalignment

Flanged housing units for plough discs

Sheet steel housing and square bore



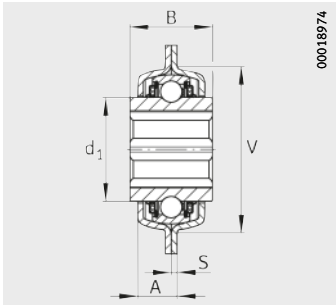
TRV



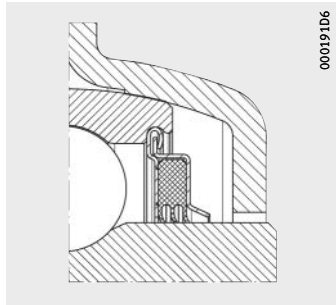
TRV-28X127X42,9

Dimension table · Dimensions in mm

Designation	Mass	Dimensions					
	m	d	L	J	N	S	B
	≈kg						
TRV-28X127X42,9-IA02	1,28	**28**	127	127	13,5	3,4	42,9
TRV-38X140X55,2-IA02	2,5	**38**	140	140	13,6	4	55,2



TRV-38X140X55,2



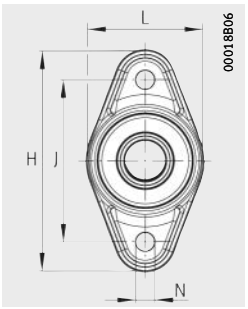
With T seal

			Load carrying capacity Housing	Basic load ratings	
V	A	d_1	$C_{0r\,G}$	dyn. C_r	stat. C_{0r}
			N	N	N
95	23,8	57,9	7 700	32 500	20 400
113	26,4	69,77	9 800	43 500	29 000

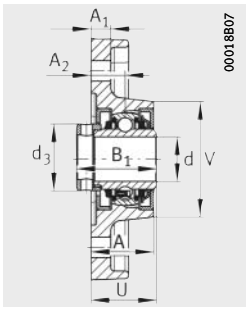


Flanged housing units for drums

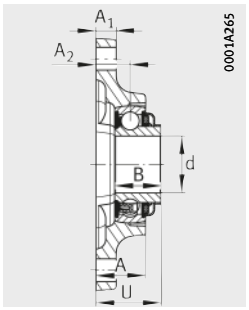
Two-bolt and four-bolt flanged housing units



RCJT-25X134X44,6
RCJT-35X155X39,9



RCJT-25X134X44,6

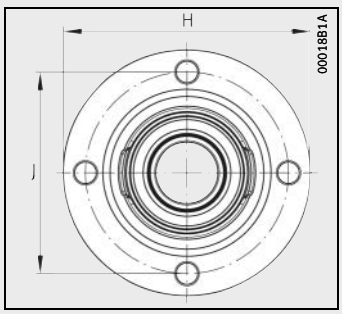


RCJT-35X155X39,9

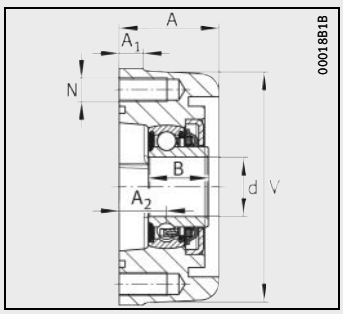
Dimension table · Dimensions in mm

Designation	Mass	Dimensions						
	m ≈kg	d	L	H	A_1	N	B	U
IBBU-25X100X42-IA03	1,6	**25**	–	100	10	M10	25	–
RCJT-25X134X44,6-IA03	0,89	**25**	70	134	11	11,5	–	36,5
IBBU-35X125X40-IA03	1,83	**35**	–	125	20	M12	28,4	–
RCJT-35X155X39,9-IA03	1,05	**35**	92	155	12,5	14	28,4	39,9
RCJ-35X118X39,1-IA03	1,45	**35**	118	–	12,5	14	37,7	39,9
IBBU-40X143X38,4-IA03	2,91	**40**	143	–	13	17	38,4	38,4
IBBU-50X143X38,4-IA03	2,5	**50**	143	–	13	17	38,4	–
TCJY-60X175X73,8-IA03	4	**60**	175	–	16	18	65,1	73,7
IBBU-60X175X73,8-IA03[1)]	4,1	**60**	175	–	16	18	65,1	73,7

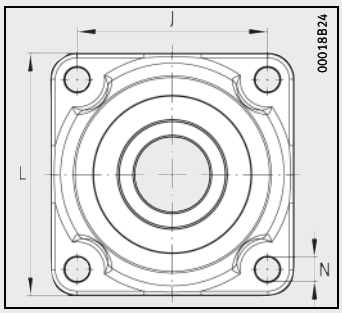
1) Available by agreement only.



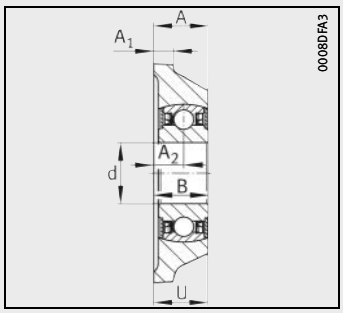
IBBU-25X100X42



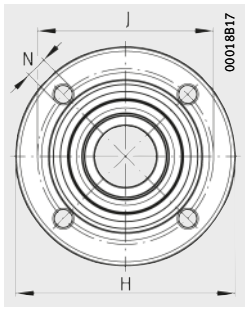
IBBU-25X100X42



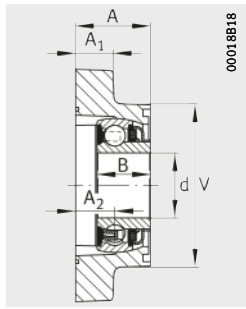
IBBU-40X143X38,4
IBBU-50X143X38,4



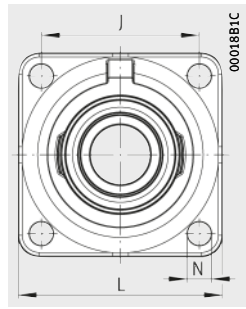
IBBU-40X143X38,4
IBBU-50X143X38,4



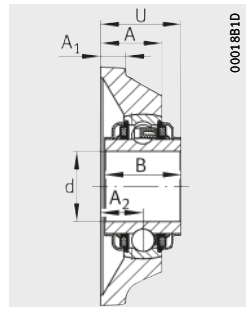
IBBU-35X125X40



IBBU-35X125X40

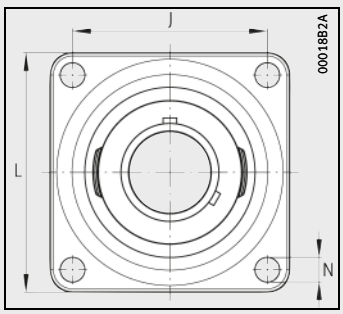


TCJY-60X175X73,8
RCJ-35X118X39,1

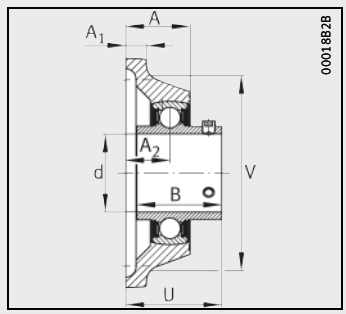


TCJY-60X175X73,8
RCJ-35X118X39,1

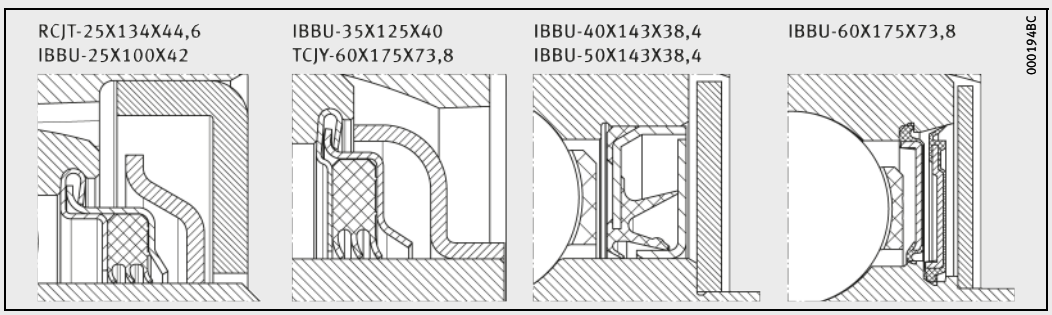
						Basic load ratings	
B_1	J	A_2	d_3	A	V	dyn. C_r N	stat. C_{0r} N
–	82	19,8	–	42	98	14 000	7 800
44,5	99	19	37,5	35	65	14 000	7 800
–	100	21	–	40	88	25 500	15 300
–	130	21	–	30,5	–	25 500	15 300
–	92	21	–	30,5	–	25 500	15 300
–	111	19,2	–	35	–	56 000	45 500
–	111	19,2	–	35	–	56 000	45 500
–	143	34	–	46	150	52 000	36 000
–	143	34	–	49,5	150	79 000	67 000



IBBU-60X175X73,8

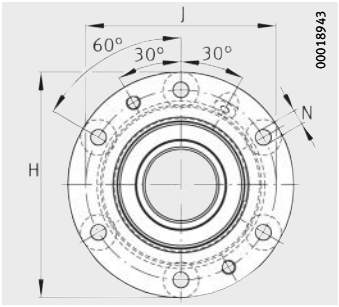


IBBU-60X175X73,8

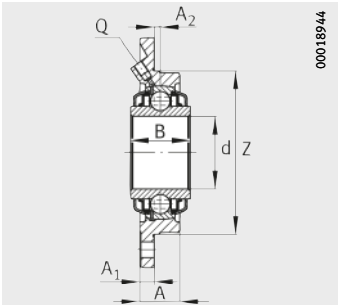


Selection of sealing concepts

Flanged housing units for harvesters



RME, RMEO



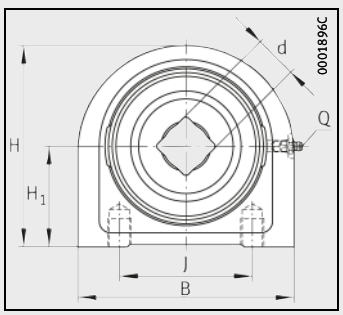
RME, RMEO

Dimension table · Dimensions in mm

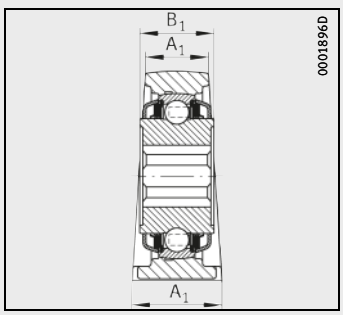
Designation	Mass	Dimensions				
	m	d	H	H_1	A_1	N
	≈kg					
TSHEV-30X150X140-IA04	4	**30**	140	69,9	60 / 42[1]	–
TME-40X150X60-IA04	2,64	**40**	150	–	10	13
IBBU-42X124X48-IA04	0,71	**42**	124	–	–	–
RMEO-50X190X49,3-IA04	3,59	**50**	190	–	12	13
RMEO-55X200X49,2-IA04	4,5	**55**	200	–	13	13
RMEY-60X173X65,2-IA04	4,1	**60**	183	–	34	14 / M16[2]
RME-60X190X49,3-IA04	3,46	**60**	190	–	12	13
RMEO-60X217X98,6-IA04	10,12	**60**	217	–	18	13

1) Base width = 60, head width = 42.

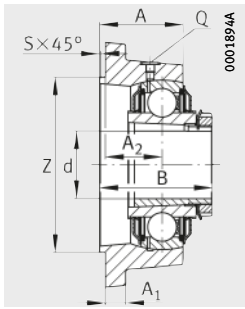
2) Fixing holes: 2×∅14 and 2×M16.



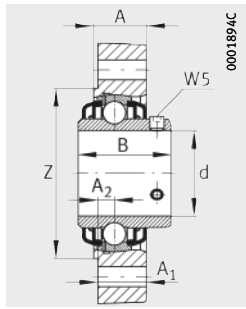
Cast iron housing TSHEV with short base



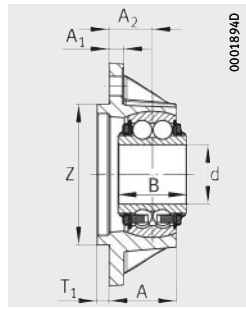
TSHEV



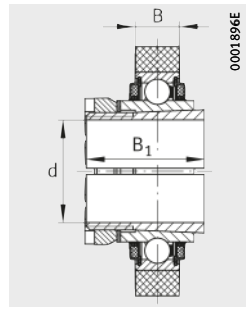
RMEO-60X217X98,6



RMEY-60X173X65,2

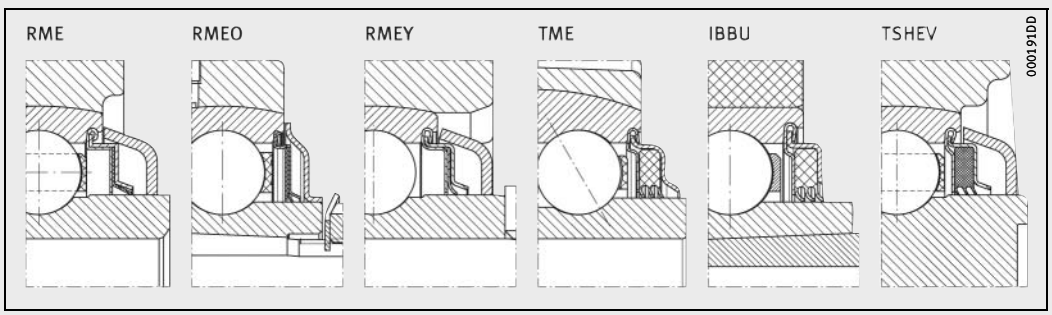


TME-40X150X60



IBBU-42X124X48

								Basic load ratings	
B	B_1	J	A_2	Q	A	T_1	Z	dyn. C_r N	stat. C_{0r} N
150	49,2	92	–	M8×1	–	–	–	52 000	36 000
46	–	119	29	–	45,25	8	94,7	50 000	37 500
18	48	–	–	–	–	–	–	43 000	37 000
49,2	–	160	5	M8×1	33	–	135	62 000	38 000
49,2	–	170	5	M8×1	36	–	145	72 000	44 500
65,1	–	145	11,5	–	37	–	119,5	52 000	36 000
49,2	–	160	5	M8×1	33	–	135	52 000	36 000
100	–	186	50	M8×1	73,5	–	155,5	104 000	68 000



Selection of sealing concepts

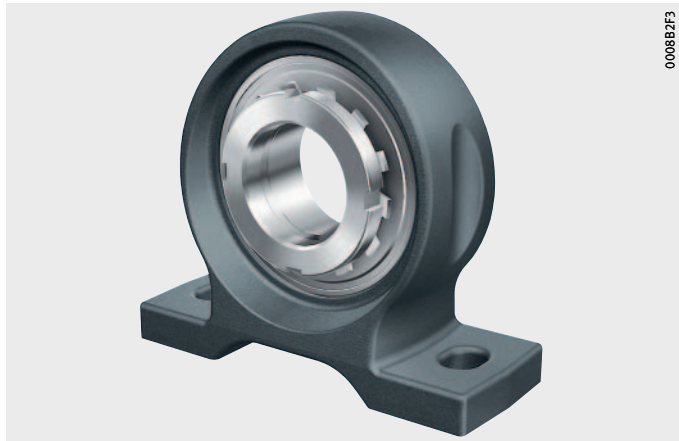


Bearing arrangements for conveying equipment

Plummer block housing units

Radial insert ball bearing with adapter sleeve

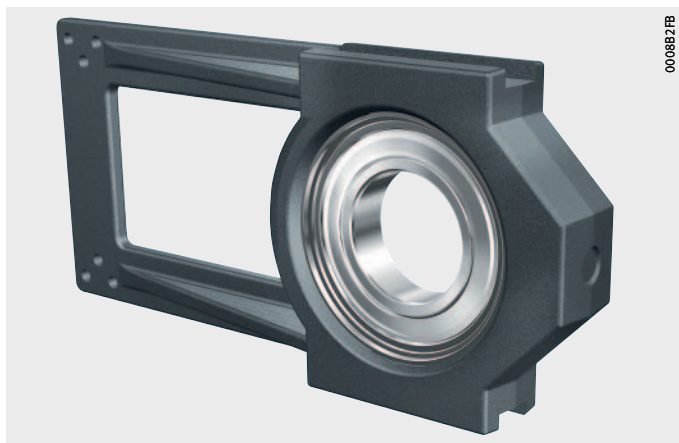
PASEA..-IC



Take-up housing units

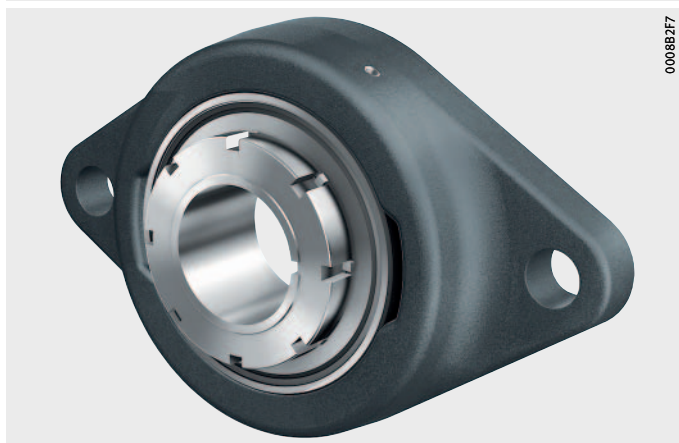
Self-aligning deep groove ball bearing with bore for fit

PTUE..-IC



Two-bolt flanged housing units

PCJTZA..-IC



Bearing arrangements for conveying equipment

Features

Radial insert ball bearings and housing units are used in the conveying equipment sector predominantly for the transport of materials, parts or passengers.

This involves continuous conveying within transport and logistics systems:

- workpieces
- products in industrial production
- package or luggage conveying systems
- passenger transport by means of lifts and moving stairways.

In order to ensure steady flow of goodsand people, these conveying systems place heavy demands on reliable and low-friction functioning of the radial insert ball bearings and housing units fitted. Accordingly, the following products are characterised by low maintenance requirements and high corrosion resistance as well as user-friendly mounting. The units can compensate for static misalignment.

Location on shaft

The radial insert ball bearings can be located on the shaft by means of an eccentric locking collar or two grub screws in the inner ring. For an alternating direction of rotation and smooth running, a self-aligning deep groove ball bearing can be located on the shaft by means of a fit seat.

The take-up housing unit PTUE..-IC has a bore designed for a fit seat. For high speeds or very high requirements for smooth running, radial insert ball bearings with adapter sleeves are used. Typical areas of application for plummer block housing units PASEA..-IC include glass transport systems in industrial production.

Anti-corrosion protection

The radial insert ball bearings in two-bolt flanged housing units PCJTZA have a Corrotect coating.

Sealing

Most conveying equipment is operated in an environment protected against the weather and is subjected to only slight or moderate contamination. As a result, standard seals are absolutely sufficient. Radial insert ball bearings for conveying equipment are therefore sealed by means of seals P or R.

Lubrication

The radial insert ball bearings are greased and can be relubricated via the holes in the housing.

Operating temperature

The units are suitable for operating temperatures from –20 °C to +100 °C.

Suffixes

Suffixes for available designs: see table.

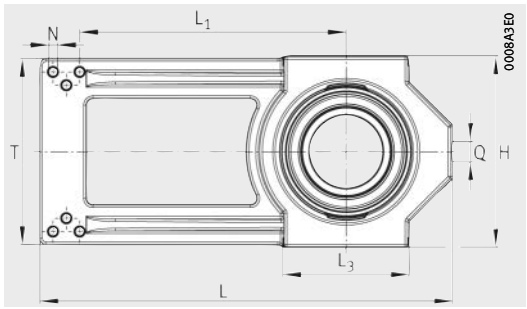
Available designs

Suffix	Description	Design
IC	Design matched to conveying equipment (Industry Conveyors)	Standard



Housing units for conveying equipment

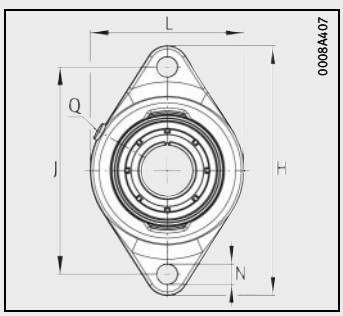
Plummer block housing units
Two-bolt flanged housing units
Take-up housing units



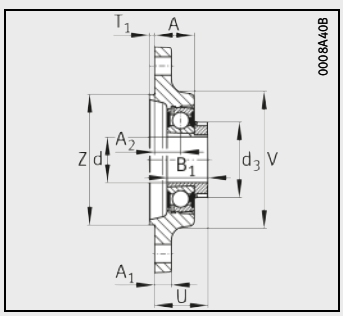
PTUE-55×310×146

Dimension table · Dimensions in mm

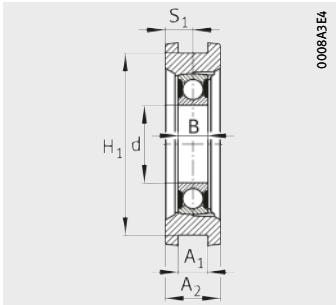
Designation	Mass	Dimensions								
	m ≈ kg	d	H	J	L	L_1	L_3	A	A_1	A_2
PASEA-35×132×114,2-IC	1,72	**35**	64,2	100	132	–	–	50	30	–
PCJTZA-35×172×45-IC	1,54	**35**	172	143,5	105	–	–	30,5	13	20
PTUE-55×310×146-IC	4,1	**55**	146	–	310	200	95	–	$20,5^{+0,2}$	39



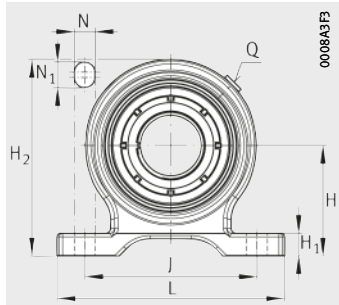
PCJTZA-35×172×45



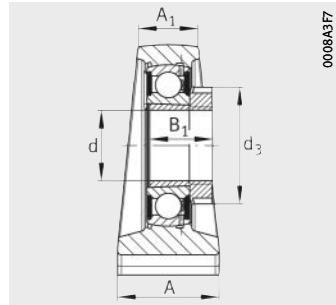
PCJTZA-35×172×45



PTUE-55×310×146



PASEA-35×132×114,2



PASEA-35×132×114,2

														Basic load ratings	
H_1	H_2	N	N_1	B	B_1	S_1	T	T_1	U	V	Z h8	Q	d_3 max.	dyn. C_r N	stat. C_{0r} N
13,2	114,2	12	17	–	31	–	–	–	–	–	–	R_p 1/8	58	32 500	19 800
–	–	14	–	–	31	–	–	4	41	105	100	R_p 1/8	58	32 500	19 800
129,5	–	M8	–	21	–	19,5	140	–	–	–	–	13	–	43 500	29 000



Radial insert ball bearings

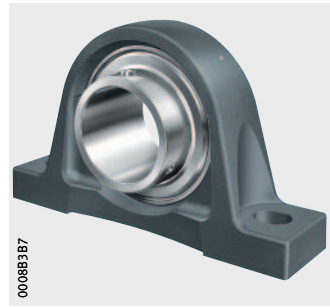
With adapter sleeve

SH



Plummer block housing units

RASEY..-IT

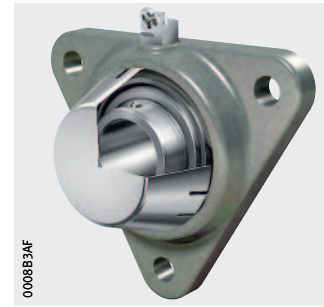


Two-bolt or three-bolt flanged housing units

LCJT..-IT



LCFTRY..-IT



Bearing arrangements for textile machinery

Features

Whether it is spinning or weaving, finishing or processing, modern textile machines are highly automated and must run with high material throughput and without malfunctions, right around the clock.

The decisive features of bearing arrangements for textile machinery are:

- high precision
- low friction
- energy efficiency
- ease of mounting
- ease of maintenance
- reliability.

Further information

- Bearing arrangements for texile machinery based on various products are compiled in publication TMB, Rolling Bearings for Textile Machinery.
- Download and ordering: http://medien.schaeffler.de.

Radial insert ball bearings

The radial insert ball bearing SH30-2BRS-AH05 is used to support the delivery shaft in texturing machines, *Figure 1*. It is characterised by particularly low running friction and smooth running. Location on the shaft is by means of an adapter sleeve and locknut.



Figure 1
Radial insert ball bearings in texturing machinery

Sealing

The BRS seal integrated in the bearing acts as a gap seal and ensures not only low-friction running but also good sealing action due to the elastic rim in the outer ring slot.

Lubrication

The radial insert ball bearing SH30-2BRS-AH05 is greased by means of a barium complex soap grease L178 and lubricated for life.



Plummer block housing units

The plummer block housing unit RASEY70..-IT is used as a bearing arrangement for dryer rolls, *Figure 2*. The dryer rolls are driven by means of flat belts. The locating bearing is arranged on the side with the belt pulley. Location on the shaft is by means of two grub screws. On the non-locating bearing side, the unit is used as a non-locating bearing. A grub screw on the radial insert ball bearing engages in a slot on the shaft without clamping against the shaft. As a result, the shaft can be displaced axially in the inner ring. Static misalignments can be compensated by the self-alignment facility of the cast iron housing units.



① Non-locating bearing RASEY70
② Locating bearing RASEY70

Figure 2
Dryer roll
for removing residual moisture
from processed material

Sealing

Sealing is carried out by means of an R seal, as is typical for a radial insert ball bearing.

Lubrication

The unit is relubricated via holes in the housing.

Flanged housing units

Two-bolt flanged housing units are used for the bearing arrangement of the straightening shaft in a straightening machine.
In order to prevent corrosion, the entire unit has a Corrotect coating. Location on the shaft is by means of an eccentric locking collar.

Three-bolt flanged housing units with a corrosion-resistant steel end cap are specially matched to use in ink cylinders. The housings are made corrosion-resistant by means of an iron-zinc coating.

Sealing

Sealing with reduced friction is ensured by means of labyrinth seals.

Lubrication

The flanged housing units can be relubricated by means of a lubrication nipple.

Anti-corrosion protection

The radial insert ball bearing and eccentric locking collar have a Corrotect coating.

Operating temperature

Radial insert ball bearings and housing units for textile machinery are suitable for a temperature range from −20 °C to +100 °C. In the case of the plummer block housing unit RASEY-70×260×156-IT, the upper limit is +160 °C.

Suffixes

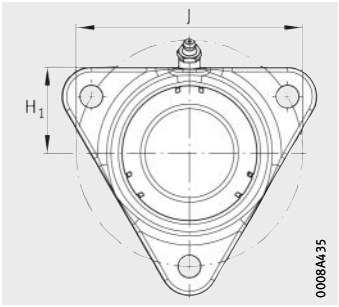
Suffixes for available designs: see table.

Available designs

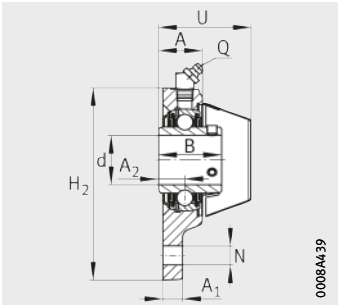
Suffix	Description	Design
IT	Design matched to textile machinery (Industry Textile)	Standard



Radial insert ball bearings and units for textile machinery



LCFTRY-30×116×56-IT



LCFTRY-30×116×56-IT

Dimension table · Dimensions in mm

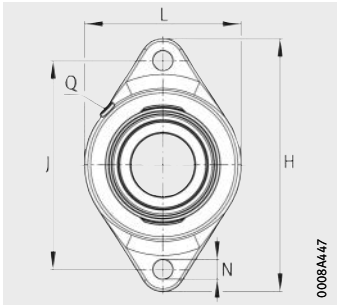
Designation	Mass	Dimensions						
	m	d	H	J	L	A	A_1	A_2
	≈ kg							
LCFTRY-30×116×56-IT	1,11	**30**	–	116	–	26,6	12	15,9
LCJT-45×180×59,1-IT	2,2	**45**	180	148,5	111	35	13	24
RASEY-70×260×156-IT	5,9	**70**	79,4	203	260	65	44	–

Dimension table · Dimensions in mm

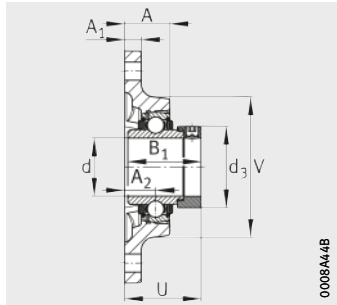
Designation	Mass	Dimensions						Limiting speed[1]	Basic load ratings		Factor[2]
	m	d	B	B_1	S	D_{sp}	C	n_G grease	dyn. C_r	stat. C_{0r}	f_0
	≈ kg	H8						min^{-1}	N	N	
SH30-2BRS-AH05	0,26	**30**	16	31	8	62	16	17 900	18 900	11 300	13,8

1) Preferably for shafts of tolerance classes h6 Ⓔ h11 Ⓔ.

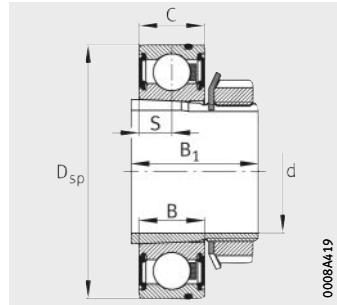
2) Factor f_0 for determining equivalent bearing load, see table, page 40.



LCJT-45×180×59,1-IT

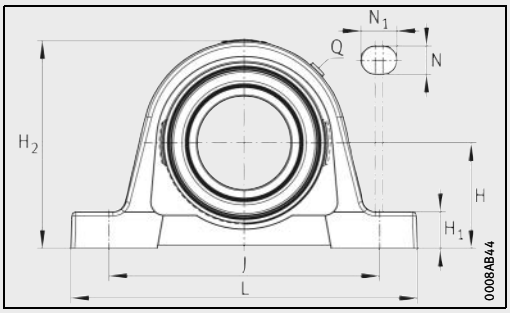


LCJT-45×180×59,1-IT

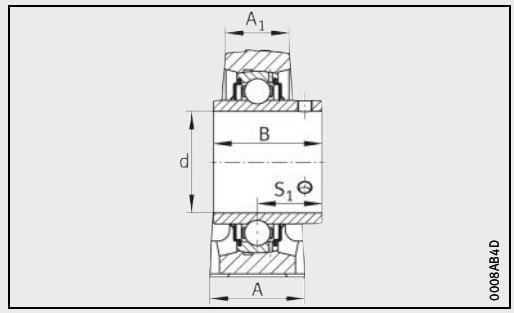


SH30-2BRS-AH05

											Basic load ratings	
N	N_1	H_1	H_2	B	B_1	S_1	U	V	Q	d_3 max.	dyn. C_r N	stat. C_{0r} N
11	–	44	117	38,1	–	–	56	–	R_p 1/8	–	19 500	11 300
14	–	–	–	–	56,5	–	59,1	111	R_p 1/8	63	32 500	20 400
22	28	27,5	156	74,6	–	44,4	–	–	R_p 1/8	–	62 000	44 000



RASEY-70×260×156-IT



RASEY-70×260×156-IT

Flanged housing units for the food industry

Two-bolt flanged housing units

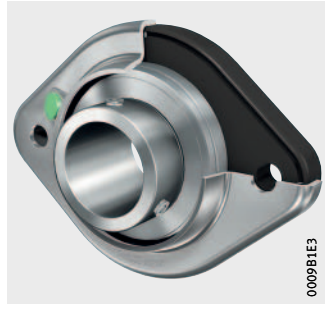
Eccentric locking collar
With Corrotect coating

PCSTK



Grub screws in inner ring
VA steel

RCSTKY..-VA



Four-bolt flanged housing units

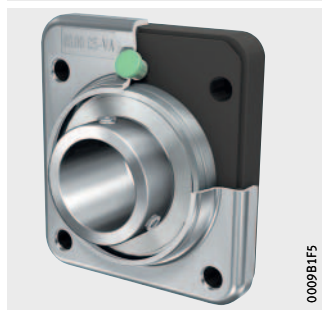
Eccentric locking collar
With Corrotect coating

PCSK



Grub screws in inner ring
VA steel

RCSKY..-VA



Features

Flanged housing units are ready-to-fit units comprising a two-piece, two-bolt or four-bolt housing fitted with a radial insert ball bearing.

The bearings are particularly easy to mount and compensate static shaft misalignment. With regular relubrication, misalignments of up to ±2,5° are possible.

The flanged housing units are resistant to moisture, contaminated water and weakly alkaline or weakly acidic cleaning agents. They are also resistant to mould and fungal attack.

The ends of shafts can be covered by means of bearing end caps KASK, giving protection against injury due to the rotating shaft. The bearing end caps, which are ordered separately, also protect the bearing against contamination, see page 431.

Location on shaft

The radial insert ball bearings are located on the shaft by means of an eccentric locking collar or two grub screws. They are preferably suitable for shafts up to tolerance class h9 Ⓔ.

Tightening torques

The tightening torques for the grub screws must be observed, see table, page 130.

Location on adjacent construction

The flanged housings are of a two-piece design and comprise a polypropylene flange combined with a corrosion-resistant, high grade steel flange. The housing is screw mounted on the adjacent construction.

Fixing screws

The screw connection should be designed in accordance with VDI 2230; friction coefficient $\mu = 0{,}12$ (90%).

Screws of grade 8.8 or better can be used for fixing.
The maximum tightening torques applicable to this screw grade must not be exceeded even if screws of a higher grade are used.

In principle, we recommend that the screw connection should only be tightened to 70% of the values stated in the standard.

For fixing, hexagonal socket head screws in accordance with DIN EN ISO 4762 or hexagonal socket head screws with a coarse pitch full thread in accordance with DIN EN ISO 4017 should be used. The screws should be combined as a minimum with a washer in accordance with DIN EN ISO 7089 or DIN EN ISO 7090.

Screws and accessories for location are not included in the delivery.

All screws and other accessories used for location should be in the corrosion-resistant VA design.



Anti-corrosion protection

The radial insert ball bearing and eccentric locking collar have a Corrotect coating. In the case of flanged housing units with the suffix VA, the bearing rings and rolling elements are made from corrosion-resistant, high alloy rolling bearing steel.

Sealing

The flanged housing units PCSTK and PCSK with eccentric locking collar have zinc plated P seals on both sides.

The flanged housing units RCSTKY..-VA and RCSKY..-VA with grub screws have RSR seals and additional outer filnger shields on both sides.

Lubrication

The radial insert ball bearings GRAE..-XL-NPP-B-FA107/125 are greased by means of a barium complex soap grease KP2N-20 with a mineral oil base in accordance with DIN 51825.

The radial insert ball bearings SUC are greased by means of the grease FM222 of grease class KPF2K-20 in accordance with DIN 51825.

Relubrication

The housings have a threaded hole with a Whitworth pipe thread $R_p 1/8$ in accordance with DIN 3858 and DIN EN ISO 228-1 for conventional lubrication connectors. The hole is closed off using a plastic plug.

The radial insert ball bearings GRAE can be relubricated by means of two lubrication holes offset by 180° in the outer ring. In the case of radial insert ball bearings SUC, the two lubrication holes are offset by 120°.

Operating temperature

Housing units with bearing end caps are suitable for operating temperatures from –20 °C to +80 °C.

Housing units without bearing end caps are suitable for operating temperatures from –20 °C to +100 °C.

Suffixes

Suffixes for available designs: see table.

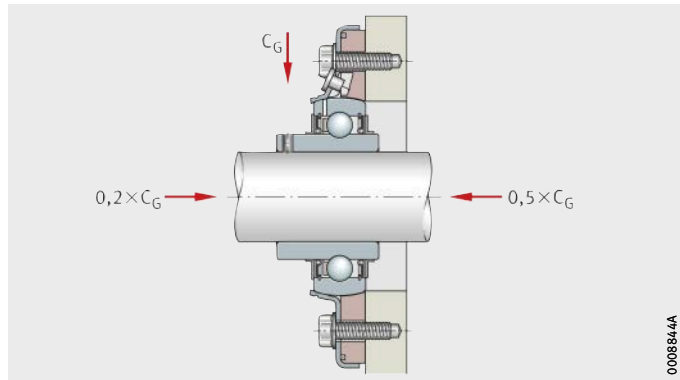
Available designs

Suffix	Description	Design
FA107	Bearing with lubrication holes on the locating side	Standard
FA125	With Corrotect coating, corrosion-resistant	
VA	Corrosion-resistant design made from high alloy rolling bearing steel	

Design and safety guidelines

Axial load carrying capacity

The axial load carrying capacity is restricted by the load carrying capacity C_G of the housing and the mounting connection between the shaft and inner ring, *Figure 1*.



C_G = load carrying capacity of housing

Figure 1
Axial load carrying capacity of housing

Bearing end caps

The ends of shafts can be covered using bearing end caps made from acrylonitrile styrene acrylate copolymer (ASA), see table and *Figure 2*. The end caps are suitable for temperatures from –20 °C to +80 °C. They protect against injury due to rotating shafts and also protect the bearings against contamination.

The end caps have a breakout section that allows the shaft to pass through if necessary.

Bearing end caps are accessories and must always be ordered separately.

End caps

Designation	Dimensions				
	d	D	H	L	E max.
KASK08-S	30	84,6	35	44,8	40,05
	40				

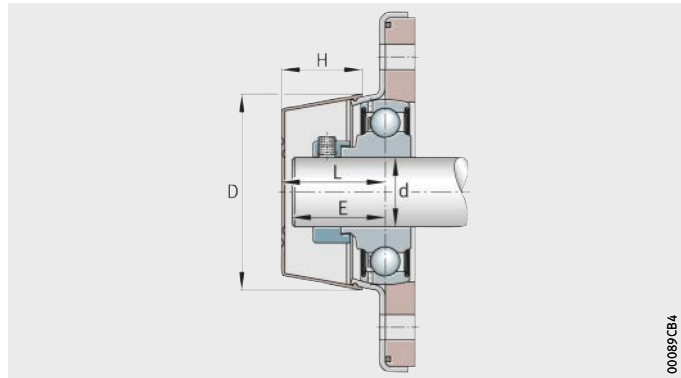
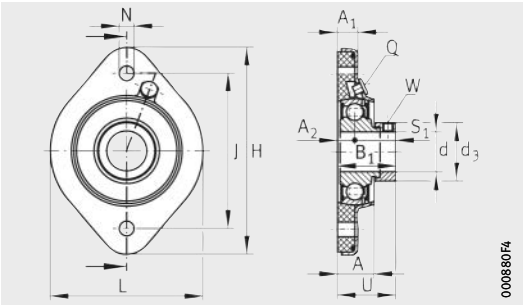


Figure 2
Housing unit with bearing end cap

Flanged housing units for the food industry

Two-bolt and four-bolt flanged housing units
Corrosion-resistant



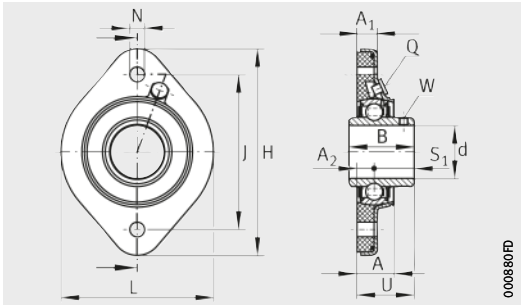
PCSTK

Dimension table · Dimensions in mm

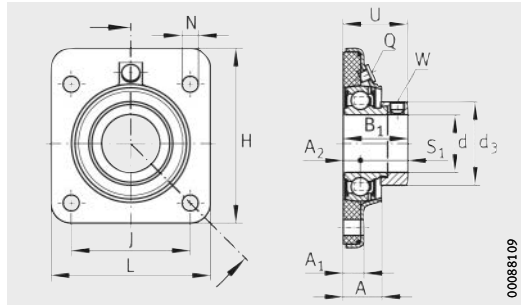
Designation[1]	Housing	Radial insert ball bearing	Mass	Dimensions				
			m	d	H	J	L	A
			≈ kg					
PCSK30-208	GEH80-CSK	GRAE30-208-XL-NPP-B-FA107/125	0,94	**30**	121	82	110	27
PCSTK30-208	GEH80-CSTK	GRAE30-208-XL-NPP-B-FA107/125	0,93	**30**	156	117	115	28
PCSK40	GEH80-CSK	GRAE40-XL-NPP-B-FA107/125	0,93	**40**	121	82	110	27
PCSTK40	GEH80-CSTK	GRAE40-XL-NPP-B-FA107/125	0,92	**40**	156	117	115	28
RCSKY40-VA	GEH80-CSK	SUC208	0,93	**40**	121	82	110	27
RCSTKY40-VA	GEH80-CSTK	SUC208	0,93	**40**	156	117	115	28

1) Fixing screws in accordance with DIN EN ISO 4762 are not included in the scope of delivery.
Note maximum tightening torque M_A = 50 Nm.

2) Tightening torque for grub screws, see table, page 130.

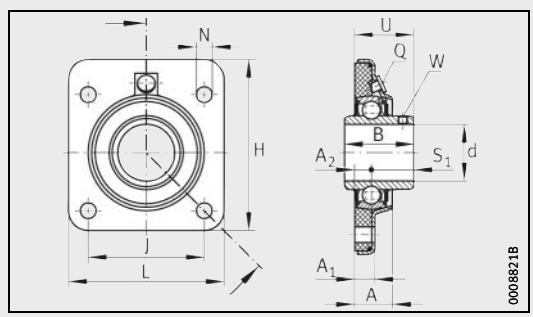


RCSTKY..-VA



PCSK

									Width across flats[2]	Load carrying capacity Housing	Basic load ratings	
A_1	A_2	N	B	B_1	U	S_1	Q	d_3 max.	W	$C_{0r\,G}$ N	dyn. C_r N	stat. C_{0r} N
14,5	12	11	–	42,1	42,1	31,05	$Rp^1/_8$	44	4	10 000	34 500	19 800
15,5	13	11	–	42,1	44	31,05	$Rp^1/_8$	44	4	6 000	34 500	19 800
14,5	12	11	–	43,8	44,8	32,8	$Rp^1/_8$	58	5	10 000	34 500	19 800
15,5	13	11	–	43,8	45,8	32,8	$Rp^1/_8$	58	5	6 000	34 500	19 800
14,5	12	11	49,2	–	42,2	30,2	$Rp^1/_8$	–	4	10 000	31 500	18 900
15,5	13	11	49,2	–	43,2	30,2	$Rp^1/_8$	–	4	6 000	31 500	18 900



RCSKY..-VA



Mounting and maintenance

Mounting and maintenance

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Products and services

Features

Within its Industrial Service concept, Schaeffler offers high quality products, services and training, *Figure 1*.

Portfolio

This chapter gives an overview of the portfolio:

- Mounting
- Lubrication
- Condition Monitoring
- Reconditioning.

The employees of Schaeffler worldwide will be pleased to help you select the ideal products, services and training courses, *Figure 1*.



Figure 1
Portfolio

Products and services

Industrial Aftermarket

Schaeffler Industrial Aftermarket (IAM) is responsible for replacement parts and service business for end customers and sales partners in all significant industrial sectors. On the basis of innovative solutions, products and services relating to rolling and plain bearings, the service function of Schaeffler Industrial Aftermarket offers a comprehensive portfolio that covers all phases in the lifecycle of the bearing and takes account of the total costs (TCO).

The aim is to help customers save on maintenance costs, optimise plant availability and avoid unforeseen machine downtime. Schaeffler Industrial Aftermarket offers each customer an individual concept solution.

Schaeffler has centres of competence all around the world. This means we can provide customers worldwide with products, services and training quickly and professionally. All service employees worldwide undergo a comprehensive training programme and are audited regularly by officially certified specialists. This ensures that services throughout the world conform to a uniformly high standard of quality.

Sales partners

In order to achieve this objective, we have established a network of Schaeffler sales partners. This network makes it possible to service all end customers worldwide to the same high level of competence and is thus the optimum delivery strategy.

At www.schaeffler.de/sales, you can find the addresses of all the sales partners certified by Schaeffler.

Mounting Toolbox, mounting made easy

The Schaeffler Mounting Toolbox, *Figure 2*, brings together valuable knowledge relating to mounting and dismounting. In individual video sequences, the service experts present step by step the points that must be paid close attention for correct mounting, lubrication and alignment.

The interface is a “Virtual Plant” and offers the user easy, rapid navigation. With just a few clicks of the mouse, it is possible to gain an overview of the tools and accessories as well as to select individual video sequences. Internet access is all that is needed to enter the “Virtual Plant” and watch the Schaeffler fitting personnel at work.

http://mtb.schaeffler.de



Figure 2
Mounting Toolbox

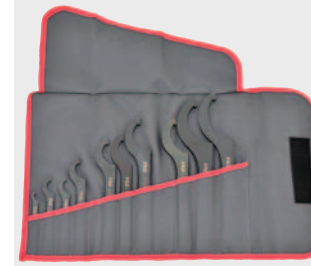
Hook and pin wrenches

Hook wrench

LOCKNUT-HOOK



LOCKNUT-HOOK-KM0-16-SET



Jointed hook wrench
Jointed pin wrench

LOCKNUT-FLEXIHOOK



LOCKNUT-FLEXIPIN



Mounting

Features

The Schaeffler industrial service experts offer mounting services for rolling and plain bearings that are applicable across industrial sectors. They have detailed knowledge and extensive experience in all industrial sectors.

The mounting personnel in the Industrial Service function are trained and skilled personnel who can provide reliable, rapid and competent assistance. The services are provided either at the customer's location or in the Schaeffler workshop facilities.

These mechanical tools are designed for the mounting and dismounting of bearings. The mounting forces are transmitted by the form fit effect.

Further information

- Detailed information on mechanical tools can be found in Catalogue IS 1, Mounting and Maintenance of Rolling Bearings.

Mounting services

The mounting services, *Figure 1*, include:

- mounting and dismounting of rolling bearings of all types
- approval inspection of adjacent parts (shafts and housings)
- measurement and production inspection of tapered shaft seats, together with provision of the necessary measuring equipment
- maintenance and inspection of bearing arrangements
- support in achieving optimum mounting operations
- use of modern mounting tools, such as heating by means of versatile medium frequency technology
- design and manufacture of special tools.



Figure 1
Mounting services

Advantages

The mounting services give the following advantages:

- extended bearing life
- considerable cost reductions
- less unplanned downtime
- increased plant availability
- correct use of rolling bearings.

Further information

- Enquiries:
  tel. +49 9721 91-3142, fax +49 9721 91-3639.

Hook and pin wrenches

These wrenches can be used for the mounting and dismounting of small bearings on shaft seats, adapter sleeves or withdrawal sleeves. In addition to the sizes named here, other sizes are available by agreement.

Hook wrench

The hook wrench LOCKNUT-HOOK can be used to dismount not only bearings but also withdrawal sleeves with the aid of extraction nuts.

Hook wrenches are available in sizes suitable for locknuts KM to KM40, suitable for diameters from 16 mm to 245 mm.

Ordering example: Hook wrench, suitable for locknuts KM18, KM19 and KM20

Ordering designation: **LOCKNUT-HOOK-KM18-20**

Hook wrenches can also be ordered as a set. The set comprises ten hook wrenches of sizes KM0 to KM16 in a roll-up pouch and is suitable for diameters from 16 mm to 100 mm.

Ordering example: Set of ten hook wrenches

Ordering designation: **LOCKNUT-HOOK-KM0-16-SET**

Jointed hook wrench

The joint allows one hook wrench LOCKNUT-FLEXIHOOK to be used for the mounting or dismounting of locknuts of various sizes.

Jointed hook wrenches are available in sizes for locknuts KM1 to KM36, suitable for diameters from 20 mm to 230 mm.

Ordering example: Jointed hook wrench, suitable for locknuts KM14 to KM24

Ordering designation: **LOCKNUT-FLEXIHOOK-KM14-24**

Jointed pin wrench

The jointed pin wrench LOCKNUT-FLEXIPIN is hooked into radially arranged holes in the nut.

Jointed pin wrenches are available in sizes for locknuts AM15 to AM90, suitable for diameters from 35 mm to 155 mm.

Ordering example: Jointed pin wrench, suitable for precision locknuts AM35 to AM60

Ordering designation: **LOCKNUT-FLEXIPIN-AM35-60**

Further information

- For detailed information, see TPI 216, FAG Tools for Mechanical Mounting and Dismounting of Rolling Bearings.
- Enquiries: industrial-services@schaeffler.com, +49 2407 9149-66.



Arcanol greases

ARCANOL



Lubricators

CONCEPT2



Lubrication system

CONCEPT8



Lubrication

Features

In more than half of all cases, inadequate lubrication is the cause of unplanned machine downtime. The life of machine elements undergoing swivel, rotary or linear motion can be significantly extended by the use of greases appropriate to the different operating and environmental conditions as well as the definition of and adherence to lubrication intervals and quantities.

Services

Services relating to lubrication include:

- selection of lubricants and lubrication systems
- preparation of lubrication and maintenance plans
- lubrication point management
- consultancy on lubricants
- lubricant investigations and tests.

Advantages

The Schaeffler lubrication service helps to:

- prevent failures involving components undergoing swivel, rotary or linear motion
- increase productivity
- reduce lubrication costs.

Lubricants

An extensive selection of high quality Arcanol greases is available. Several greases were specially tested and selected for use in rolling bearings, see table. For advice on selection, please consult the Schaeffler engineering service.

Greases recommended for radial insert ball bearings

Designation	Thickener	Base oil viscosity at +40 °C mm^2/s	Consistency NLGI	Operating temperature °C	
				over	incl.
MULTITOP	Lithium soap	≧ ISO VG 68	2	–40	+140
MULTI2	Lithium soap	≧ ISO VG 68	2	–30	+120
MULTI3	Lithium soap	≧ ISO VG 68	3	–30	+120
TEMP90	Mixed thickener	≧ ISO VG 100	2	–30	+140
TEMP110	Lithium complex	≧ ISO VG 68	2 – 3	–40	+160
TEMP120	Polycarbamide	≧ ISO VG 460	2	–30	+180
TEMP200	PTFE	≧ ISO VG 220 – 460	2	–30	+250
FOOD2	Aluminium complex	≧ ISO VG 100	2	–30	+120



Lubrication devices

Lubricators and lubrication systems automatically provide rolling bearings with the correct quantity of lubricant. This prevents the most frequent cause of rolling bearing failure: inadequate or incorrect lubrication. Approximately 90% of bearings are lubricated with grease. Relubrication with the correct quantity of grease at the appropriate intervals gives a significant increase in the life of bearings.

For manual relubrication, grease guns are suitable.

Further information

- For information on products for the supply of lubricant, see Catalogue IS 1, Mounting and Maintenance of Rolling Bearings.

Automatic relubrication devices

Automatic relubrication devices convey fresh grease in the defined quantity at the correct time to the contact points of the rolling bearing.

The devices adhere to the lubrication and maintenance intervals and prevent undersupply or oversupply of grease. Plant downtime and maintenance costs are reduced as a result.

The relubrication devices are matched to the bearing position. They have a wide range of applications, for example in electric motors, gearboxes, pumps, compressors and fans, in linear systems, conveying equipment or machine tools.

Lubricator CONCEPT2

This lubricator of protection class IP54 has a very compact design. It has one or two pump bodies that can be individually controlled, depending on the design. This means it can supply one or two lubrication points with lubricant. LC units are available in the size 250 cm^3. The lubricator is supplied with voltage either from a battery or via a mains power pack. It can work independently or can be optionally controlled by an external control system.

Advantages

The advantages of the lubricator are as follows:

- easy operation and good overview
- supply of up to two lubrication points
- facility for setting different lubrication intervals for each lubrication point
- supply of set lubricant quantity independent of temperature
- counterpressure measurement up to the lubrication point
- reliable piston pump as delivery pump
- low ongoing maintenance costs
- favourable price/performance ratio
- operating temperature from –20 °C to +70 °C
- battery or mains operation (DC 24 V) possible
- pressure build-up to 50 bar (mains operation) or to 30 bar (battery operation)
- differentiated alarm messages
- simple coupling with machine operation possible
- suitable for control via an external control system.

Available lubricators CONCEPT2

Designation	Design
CONCEPT2-1P	Battery version with one outlet
CONCEPT2-2P	Battery version with two outlets
CONCEPT2-1P-24VDC	24 V version with one outlet
CONCEPT2-2P-24VDC	24 V version with two outlets

Available LC units

Designation	
ARCALUB-C2.LC250-MULTITOP	**ARCALUB-C2.LC250-TEMP90**
ARCALUB-C2.LC250-MULTI2	**ARCALUB-C2.LC250-TEMP110**
ARCALUB-C2.LC250-LOAD150	**ARCALUB-C2.LC250-TEMP120**
ARCALUB-C2.LC250-LOAD220	**ARCALUB-C2.LC250-TEMP200**
ARCALUB-C2.LC250-LOAD400	**ARCALUB-C2.LC250-SPEED2,6**
ARCALUB-C2.LC250-LOAD460	**ARCALUB-C2.LC250-MOTION2**
ARCALUB-C2.LC250-LOAD1000	**ARCALUB-C2.LC250-FOOD2**
–	**ARCALUB-C2.LC250-CLEAN-M**

Further information

LC units are also available by agreement with other greases.



Lubrication

Lubrication system CONCEPT8

This single-point and multi-point lubrication system offers high flexibility. It has one, two, three or four pump bodies that can be individually controlled, depending on the design. Each pump body has two outlets and, as a result, up to eight lubrication points can be flexibly provided with the required quantity of lubricant in the correct lubrication interval using just one lubrication system.

The lubrication system CONCEPT8 is designed for a wide variety of operating conditions. Designs for linear systems, the use of oils as lubricant or with an internal heating facility are also available. Lubricant cartridges (LC units) provide the device with lubricant. LC units are available in the size 800 cm^3.

The lubrication system is supplied with voltage from a mains power pack. Coupling with machine operation is possible if the voltage supply to machine and lubrication system is coupled, then the relubrication interval will always be dependent on the number of operating hours.

Advantages

The advantages of the lubrication system are as follows:

- easy operation and good overview
- suitable for oil and grease up to NLGI 3
- supply of up to eight lubrication points
- supply of set lubricant quantity independent of temperature
- counterpressure measurement up to the lubrication point
- reliable piston pump as delivery pump
- favourable price/performance ratio
- operating temperature from –20 °C to +70 °C
- individual lubrication intervals and lubricant quantities possible for each pump body
- low operating voltage of DC 24 V
- pressure build-up to 70 bar
- differentiated alarm messages
- simple coupling with machine operation possible
- suitable for control via an external control system.

Available lubrication systems CONCEPT8

Designation	
CONCEPT8-1P	**CONCEPT8-1P-CC**
CONCEPT8-2P	**CONCEPT8-2P-CC**
CONCEPT8-3P	**CONCEPT8-3P-CC**
CONCEPT8-4P	**CONCEPT8-4P-CC**
CONCEPT8-1P-LIN	**CONCEPT8-1P-OIL**
CONCEPT8-2P-LIN	**CONCEPT8-2P-OIL**
CONCEPT8-3P-LIN	**CONCEPT8-3P-OIL**
CONCEPT8-4P-LIN	**CONCEPT8-4P-OIL**

LIN = for linear applications
CC = with internal heating facility
OIL = oil version

Available LC units

Designation	
ARCALUB-C8.LC800-MULTITOP	**ARCALUB-C8.LC800-TEMP90**
ARCALUB-C8.LC800-MULTI2	**ARCALUB-C8.LC800-TEMP110**
ARCALUB-C8.LC800-MULTI3	**ARCALUB-C8.LC800-TEMP120**
ARCALUB-C8.LC800-LOAD150	**ARCALUB-C8.LC800-TEMP200**
ARCALUB-C8.LC800-LOAD220	**ARCALUB-C8.LC800-SPEED2,6**
ARCALUB-C8.LC800-LOAD400	**ARCALUB-C8.LC800-VIB3**
ARCALUB-C8.LC800-LOAD460	**ARCALUB-C8.LC800-MOTION2**
ARCALUB-C8.LC800-LOAD1000	**ARCALUB-C8.LC800-FOOD2**
–	**ARCALUB-C8.LC800-CLEAN-M**

Further information

- LC units are also available by agreement with other greases or with oils
- Other accessories available by agreement
- Enquiries:
  industrial-services@schaeffler.com, +49 2407 9149-66.



Lever grease gun

The lever grease gun, see table, can be used to manually relubricate radial insert ball bearings via lubrication nipples.

The container on the lever grease gun can be filled with 500 g loose grease or with a 400-g cartridge. The cartridge must conform to DIN 1284 (diameter 53,5 mm, length 235 mm).

The lever grease gun is connected to the lubrication nipple via a reinforced hose. The reinforced hose must be ordered separately, see table.

Available lever grease guns

Designation	Maximum delivery pressure bar	Delivery quantity per stroke cm^3
ARCA-GREASE-GUN	800	2

Available reinforced hoses

Designation	Length mm	Connector
ARCA-GREASE-GUN.HOOK-ON-HOSE	300	Cylindrical lubrication nipple with head 16 mm to DIN 3404
ARCA-GREASE-GUN.HOSE	300	Taper type lubrication nipple to DIN 71412

Addresses

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You can find all the addresses and contacts for Schaeffler at www.schaeffler.com

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