



Spherical plain bearing 2016

LS Spherical Plain Bearings



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FUJIAN LONGXI BEARING (GROUP) CORPORATION LIMITED

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Introduction

龙溪股份
LONGXI CO., LTD

Fujian Longxi Bearing (Group) Corporation Limited (hereinafter referred to as "LS") is a modernized listed company that specializes in the production of spherical plain bearings (SPB), tapered roller bearings, gears, rolling functional components, gearboxes, automobile parts and knitting mechanical equipments. It is also known as one of the Top 100 Enterprises of China Machinery Industry Core Competence, Key National Torch Plan High-Tech Enterprises and National Innovative Pilot Enterprises. LS is the largest supplier and exporter of spherical plain bearings in China.

LS has the only one research institute of SPB in China and the national SPB' inspection & testing centre approved by China National Accreditation Service for Conformity Assessment (CNAS). LS was approved to establish the National Standardization Technical Committee SPB Sub-technical Committee, Provincial Technology Centre and Post Doctoral Programme. The technical center of LS is recognized as "National Certified Enterprise Technical Center". LS is responsible for drawing up and auditing national standard and industrial standard for SPB. LS has 52 granted patents. Now there are over 5600 varieties of SPB in LS. The output and varieties is at the leading position and the products have reached the advanced level of the world. The products not only are widely used in various machinery, large modern architecture, bridge, wind power, scientific research and national key project such as Shanghai Maglev Train, The Three Gorges, Electron-Positron Collider, Shenzhou Spaceship, Chang'e I and Chang'e II lunar orbiter and Static Wing Aircraft, but also sold well in industrial developed countries and regions.

LS is devoted to developing aircraft SPB ,not only can develop AS and EN standard aircraft SPB, but also can provide various kinds of non-standard products. Aircraft maintenance-free SPB are passed certification of NAVAIR, and listed in QPL-AS81820.

LS has established the management systems for quality, environment, occupational health & safety and Aerospace quality according to ISO9001, ISO/TS16949, ISO14001, OHSAS18001 and AS9100C, and has passed the audit of TUV SUD Management Service GmbH.

Qualification



AS9100C and ISO 9001



ISO 9001



ISO 14001



OHSAS 18001



ISO/TS 16949



ISO 17025

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Radial spherical plain bearings requiring maintenance

Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	GE...E 4~12	Steel/Steel	-50℃~+150℃	Outer ring of carbon chromium steel, fractured, hardened and phosphated, sliding surface treated with MoS ₂ . Inner ring of carbon chromium steel, hardened and phosphated, sliding surface treated with MoS ₂ . All bearings have an annular groove and lubrication holes in each ring except those of the E design. Bearings of the 2RS design are fitted with seals at both sides.	39
	GE...ES 15~300	Steel/Steel	-50℃~+150℃		39
	GE...ES-2RS 15~300	Steel/Steel	-30℃~+130℃		39
	GEG...E 4~12	Steel/Steel	-50℃~+150℃	Outer ring of carbon chromium steel, fractured, hardened and phosphated, sliding surface treated with MoS ₂ . Inner ring of carbon chromium steel, hardened and phosphated, sliding surface treated with MoS ₂ . All bearings have an annular groove and lubrication holes in each ring except those of the E design. Bearings of the 2RS design are fitted with seals at both sides.	40
	GEG...ES 15~280	Steel/Steel	-50℃~+150℃		40
	GEG...ES-2RS 15~280	Steel/Steel	-30℃~+130℃		40
	GEEW...ES 12~320	Steel/Steel	-50℃~+150℃	With cylindrical extensions at each side of inner ring. Outer ring of carbon chromium steel, fractured, hardened and phosphated, sliding surface treated with MoS ₂ . Inner ring of carbon chromium steel, hardened and phosphated, sliding surface treated with MoS ₂ . Bearings of the 2RS design are fitted with seals at both sides.	41
	GEEM...ES-2RS 20~120	Steel/Steel	-30℃~+130℃	Bearings of the 2RS design are fitted with seals at both sides.	42
	GEF...ES 12~150	Steel/Steel	-50℃~+150℃	As series GE...ES.	43

Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	GE...XS/K 12~150	Steel/Steel	-50°C ~ +150°C	As series GEC...XS.	44
	GEZ...ES 12.7~304.8	Steel/Steel	-50°C ~ +150°C	As series GE...ES, but with inch dimensions.	45-46
	GEZ...ES-2RS 19.05~304.8	Steel/Steel	-30°C ~ +130°C	As series GE...ES-2RS, but with inch dimensions.	45-46
	GEWZ...ES 12.7~152.4	Steel/Steel	-50°C ~ +150°C	As series GEEW...ES, but with inch dimensions.	47
	GEWZ...ES-2RS 19.05~152.4	Steel/Steel	-30°C ~ +130°C	As series GEEM...ES-2RS, but with inch dimensions.	47
	GEGZ...ES 31.75~139.7	Steel/Steel	-50°C ~ +150°C	As series GEG...ES, but with inch dimensions.	48
	GEGZ...ES-2RS 31.75~139.7	Steel/Steel	-30°C ~ +130°C	As series GEG...ES-2RS, but with inch dimensions.	48
	GEGZ...HS/K 31.75~139.7	Steel/Steel	-50°C ~ +150°C	Outer ring of carbon chromium steel, radially split twice, hardened and phosphated, One spacer in between, sliding surface treated with MoS ₂ . Inner ring of carbon chromium steel, hardened and phosphated, sliding surface treated with MoS ₂ .	49
	GEK...XS-2GS 25~60	Steel/Steel	-25°C ~ +120°C	Outer ring axially split twice, held together by retaining rings. Outer ring of carbon chromium steel, hardened and fitted with seals at both sides. Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating.	50

Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	GEC...XS 320~630	Steel/Steel	-50°C ~ +150°C	Outer ring axially split twice, held together by retaining rings. Outer and inner rings are made of carbon chromium steel and are hardened and phosphated, sliding surface treated with MoS ₂ . Bearings of the 2RS design are fitted with seals at both sides.	51
	GEC...XS-2RS 320~630	Steel/Steel	-30°C ~ +130°C		51
	GEBJ...S 5~50	Steel/Steel	-50°C ~ +150°C	Outer ring of carbon steel, pressed around the inner ring; Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating.	52
	GEFZ...S 4.83~25.4	Steel/Steel	-50°C ~ +150°C		53
	GEBK...S 5~30	Steel/Bronze	-50°C ~ +150°C	Outer ring of carbon steel, with bronze liner; Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating.	54

Radial spherical plain bearings maintenance free





Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	GE...C 4~50	Steel/PTFE composite material	-50°C~+150°C	Outer ring of carbon steel, pressed around the inner ring, with sliding surface of PTFE composite material; Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating.	65
	GEG...C 4~45	Steel/PTFE composite material	-50°C~+150°C		65
	GEBJ...C 5~50	Steel/PTFE composite material	-50°C~+150°C		66
	GEFZ...C 4.83~25.4	Steel/PTFE composite material	-50°C~+150°C		As series GE...C, but with inch dimensions.
	GEFZ...T 4.83~25.4	Steel/PTFE fabric	-50°C~+150°C	Outer ring of carbon steel, with sliding surface of PTFE fabric, pressed around the inner ring. Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating.	68
	GEC...HC 320~1000	Steel/PTFE composite material	-50°C~+150°C	Outer ring of carbon steel, phosphated, radially split twice, held together by screws, with sliding surface of PTFE composite material; Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating. Bearings of the S design have an annular groove and lubrication holes in inner ring.	69
	GEC...HCS 320~1000	Steel/PTFE composite material	-50°C~+150°C		69
	GEH...HC 100~1000	Steel/PTFE composite material	-50°C~+150°C		70-71
	GEH...HCS 100~1000	Steel/PTFE composite material	-50°C~+150°C		70-71

Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	GE...ETL-2RS 15~120	Steel/PTFE fabric	-30°C~+130°C	Outer ring of carbon chromium steel, fractured, hardened and phosphated, with two seals at both sides, with sliding surface of PTFE fabric; Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating. Outer ring of the XTL design axially split twice, held together by retaining rings.	72
	GE...XTL-2RS 140~300	Steel/PTFE fabric	-30°C~+130°C		72
	GE...HTL-2RS 120~300	Steel/PTFE fabric	-30°C~+130°C	Except there are two seals at both sides, other characteristics of the products is similar to GEC...HTL series.	73
	GEG...ETL-2RS 15~110	Steel/PTFE fabric	-30°C~+130°C	As series GE...E(X)TL-2RS.	74
	GEG...XTL-2RS 120~280	Steel/PTFE fabric	-30°C~+130°C		74
	GEEW...ETL-2RS 12~63	Steel/PTFE fabric	-30°C~+130°C	With cylindrical extensions at each side of inner ring. Outer ring of carbon chromium steel, fractured, hardened and phosphated, with two seals at both sides, with sliding surface of PTFE fabric; Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating. Outer ring of the XTL design axially split twice, held together by retaining rings.	75
	GEEW...XTL-2RS 70~320	Steel/PTFE fabric	-30°C~+130°C		75
	GEEM...ETL-2RS 20~60	Steel/PTFE fabric	-30°C~+130°C		76
	GEEM...XTL-2RS 70~120	Steel/PTFE fabric	-30°C~+130°C		76


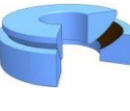
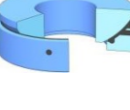
Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	GE...ETL-2RS/X 15~60	Steel/PTFE fabric	-25°C ~ +120°C	Outer ring of stainless steel, fractured, hardened, with sliding surface of PTFE fabric ; Inner ring of stainless steel, hardened. Outer ring of the XT design axially split twice, held together by retaining rings.	77
	GE...XTL-2GS/X 70~300	Steel/PTFE fabric	-25°C ~ +120°C		77
	GEZ...ETL-2RS 19.05~152.4	Steel/PTFE fabric	-30°C ~ +130°C	As series GE...ETL-2RS, but with inch dimensions.	78
	GEC...XTL 320~630	Steel/PTFE fabric	-50°C ~ +150°C	Outer ring of carbon chromium steel, hardened, axially split twice, held together by retaining rings, sliding surface of PTFE fabric. Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating. Outer ring of the 2RS design fitted with seals at both sides.	79
	GEC...XTL-2RS 320~630	Steel/PTFE fabric	-30°C ~ +130°C		79
	GEH...XTL 100~600	Steel/PTFE fabric	-50°C ~ +150°C		80
	GEH...XTL-2RS 100~600	Steel/PTFE	-30°C ~ +130°C		80
	GEC...HTL 320~1000	Steel/PTFE fabric	-50°C ~ +150°C	Outer ring of carbon steel, radially split twice, held together by screws, phosphated, sliding surface of PTFE fabric. Inner ring of carbon chromium steel, hardened and sliding surface treated with hard chromium plating	81
	GEH...HTL 100~1000	Steel/PTFE fabric	-50°C ~ +150°C		82
	GEH...HF/Q 440~1000	Steel/Copper alloy	-50°C ~ +150°C	Outer ring of carbon steel, phosphated, radially split twice, held together by screws, sliding surface treated with hard chromium plating. Inner ring of copper alloy and sliding surface inserted with solid lubricant.	83

Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	GE...XF/Q 100~300	Steel/Copper alloy	-50°C ~ +150°C	Outer ring of carbon chromium steel, axially split twice, held together by retaining ring, hardened and phosphated, sliding surface treated with hard chromium plating. Inner ring of copper alloy and sliding surface inserted with solid lubricant.	84
	GEC...XF/Q 320~630	Steel/Copper alloy	-50°C ~ +150°C		84
	GEH...XF/Q 100~600	Steel/Copper alloy	-50°C ~ +150°C		85
	GE...N 10~60	Steel/PTFE plastic	-40°C ~ +75°C	Outer ring of carbon chromium steel, hardened, with sliding surface of PTFE plastic. Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating.	86
	GEG...N 8~50	Steel/PTFE plastic	-40°C ~ +75°C		86








Angular contact spherical plain bearings

Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	GACZ...S 12.7~152.4	Steel/Steel	-50°C~+150°C	As series GAC...S, but with inch dimensions.	91
	GAC...S 25~200	Steel/Steel	-50°C~+150°C	Bearing rings of carbon chromium steel, hardened and phosphated, sliding surface treated with MoS ₂ . Outer ring have groove and lubrication holes, sliding surface with two cross lubrication grooves.	92
	GAC...TL 25~200	Steel/PTFE fabric	-50°C~+150°C	Outer rings of carbon chromium steel, hardened, with sliding surface of PTFE fabric; Inner ring of carbon chromium steel, hardened, sliding surface hard chromium plated.	93
	GAC...N 25~120	Steel/PTFE plastic	-40°C~+75°C	Outer rings of carbon chromium steel, hardened, with sliding surface of PTFE plastic; Inner ring of carbon chromium steel, hardened, sliding surface treated with hard chromium plating.	94







Thrust spherical plain bearings



Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	GX...S 10~200	Steel/Steel	-50°C~+150°C	Bearing housing washer of carbon chromium steel, hardened and phosphated, have groove and lubrication holes. Shaft washer of carbon chromium steel, hardened and phosphated. Sliding surfaces treated with MoS ₂ .	99
	GX...TL 10~360	Steel/PTFE fabric	-50°C~+150°C	Bearing housing washer of carbon chromium steel, hardened, with sliding surface of PTFE fabric. Shaft washer of carbon chromium steel, hardened, sliding surface hard chromium plated.	100
	GX...N 17~120	Steel/PTFE plastic	-40°C~+75°C	Bearing housing washer of carbon chromium steel, hardened, with sliding surface of PTFE plastic. Shaft washer of carbon chromium steel, hardened, sliding surface hard chromium plated.	101

Rod ends

Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	SI...E 5~12 SI...ES 15~80 SA...E 5~12 SA...ES 15~80	Steel/Steel	-50°C~+150°C	Rod end with male or female thread is made up of a rod end and a radial spherical plain bearing of series GE...E or GE...ES, rod end of steel and zinc coated; Can be relubricated via a nipple or a hole in the rod end, except those of the E design.	107-108
	SIZJ... 4.83~19.05 SAZJ... 4.83~19.05	Steel/Steel	-50°C~+150°C	Rod end of steel and zinc coated, with male or female thread press around the inner ring; inner ring of carbon chromium steel, spherical surface with chromium plating.	109-110
	SIBP...S 5~30 SABP...S 5~30 SIZP...S 4.83~25.4 SAZP...S 4.83~25.4	Steel/Bronze	-50°C~+150°C	Rod end of steel and zinc coated, with male or female thread, spherical surface with bronze liner; inner ring of carbon chromium steel, spherical surface with chromium plating; Can be relubricated via a nipple or a hole in the rod end, except hole diameter d≤6.35.	111-114
	SI...C 5~30 SA...C 5~30	Steel/PTFE composite material	-50°C~+150°C	Maintenance-free rod end with male or female thread is made up of a rod end and maintenance-free radial spherical plain bearing of series GE...C, rod end of steel and zinc coated; maintenance-free.	115-116
	SI...ETL-2RS 15~80 SA...ETL-2RS 15~80	Steel/PTFE fabric	-30°C~+130°C	Maintenance-free rod end with male or female thread is made up of a rod end and maintenance-free radial spherical plain bearing of series GE...ETL-2RS, rod end of steel and zinc coated; maintenance-free.	115-116
	SIJK...C 5~30 SAJK...C 5~30 SIK...C 5~20 SAK...C 5~20	Steel/PTFE composite material	-50°C~+150°C	Rod end of steel and zinc coated, with male or female thread; outer ring of bronze, with sliding surface of PTFE composite material, maintenance-free; inner ring of carbon chromium steel, spherical surface with hard chromium plating.	117-119
	SIBP...N 5~20 SABP...N 5~20 SIZP...N 4.83~19.05 SAZP...N 4.83~19.05	Steel/PTFE plastic	-40°C~+75°C	Maintenance free rod end with male or female thread is made up of a rod end, inner ring and PTFE plastic; Rod end of steel and zinc coated, maintenance-free; inner ring of carbon chromium steel, spherical surface with hard chromium plating.	120-122

Rod ends for hydraulic components

Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	SK...E 10~12 SK...ES 15~80	Steel/Steel	-50°C~+150°C	Rod end with welding shank is made up of a rod end and a radial spherical plain bearing of series GE...E or GE...ES, rod end of weldable steel, with dowel pin in shank bottom and 45° welding chamfer; Can be relubricated via a nipple or a hole in the rod end.	127
	SF...ES 15~120	Steel/Steel	-50°C~+150°C	Rod end with locking slot is made up of a rod end and a radial spherical plain bearing of series GE...ES or GEEW...ES, fixed in housing by snap rings, rod end of weldable steel, with rectangular welding face; Can be relubricated via a nipple.	128
	SFEW...ES 20~110	Steel/Steel	-50°C~+150°C		129
	SIR...ES 20~120	Steel/Steel	-50°C~+150°C	Rod end with locking slot is made up of a rod end and a radial spherical plain bearing of series GE...ES, fixed in housing by snap rings, rod end of carbon steel (d<60); carbon steel or spheroidal graphite cast iron (60≤d≤90); spheroidal graphite cast iron (d>90). Thread can be closed because shank is slotted, thread clamping by two hexagon socket screws of series SIR...ES; without socket screw of SIRN...ES; All can be relubricated via a nipple.	130
	SIRN...ES 20~120	Steel/Steel	-50°C~+150°C		131
	SIGEW...ES 12~320	Steel/Steel	-50°C~+150°C	Rod end with locking slot is made up of a rod end and a radial spherical plain bearing of series GEEW...ES, fixed in housing by snap rings, rod end of carbon steel (d<63); carbon steel or spheroidal graphite cast iron (63≤d≤80); spheroidal graphite cast iron (d>80). Thread can be closed because shank is slotted, thread clamping by two hexagon socket screws; Can be relubricated via a nipple.	132

Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	SIQ...ES 12~100	Steel/Steel	-50°C~+150°C	Rod end with locking slot is made up of a rod end and a radial spherical plain bearing of series GE...ES, rod end of carbon steel, Thread can be closed because shank is slotted, thread clamping by two hexagon socket screws; Can be relubricated via a nipple.	133
	SIA...ES 25~160	Steel/Steel	-50°C~+150°C	Rod end with locking slot is made up of a rod end and a radial spherical plain bearing of series GE...ES, fixed in housing by snap rings, rod end of carbon steel (d≤50) or spheroidal graphite cast iron (d>50), Thread can be closed because shank is slotted, thread clamping by two hexagon socket screws; Can be relubricated via a nipple.	134

Ball joint rod ends

Bearing	Series and bore diameter range	Sliding contact surfaces	Permissible operating temperature range	Design characteristics	Page
	SQG... 5~14	Steel/Steel	-50°C~+150°C	Ball joint housing and shank are of carbon steel and zinc coated.	137
	SQZ...-RS 5~22	Steel/Zinc base alloy	-25°C~+120°C	Ball joint housing is made up of zinc base alloy, ball joint shank of carbon steel.	138
	SQ...-RS 5~22	Steel/Zinc base alloy	-25°C~+120°C	Ball joint housing is made up of zinc base alloy, ball joint shank of carbon steel.	139
	SQY...-RS 4.83~19.05	Steel/Zinc base alloy	-25°C~+120°C	As series SQ...-RS, but with inch screw thread.	139
	SQIZJ... 4~19	Steel/Steel	-50°C~+150°C	Ball joint rod end of steel and zinc coated, with male or female thread press around the inner ring; inner ring of carbon chromium steel, spherical surface with chromium plating, ball joint shank of carbon steel.	140
	SQAZJ... 4~19	Steel/Steel	-50°C~+150°C		141

We, Fujian Longxi Bearing (Group) Corporation Limited, hereby certify that our LS bearings do not contain the hazardous substances restricted by ROHS Directive.

Symbol description

p	Contact stress, MPa	ΔL _{1s}	Center height deviation of ball joint rod ends, mm
k	Dynamic load factor, MPa	r _s	Inner chamfer, mm
k ₀	Static load factor, MPa	r _{1s}	External chamfer, mm
C _d	Basic dynamic load rating, kN	α°	Tilt angle, °
P	Equivalent dynamic load, kN	F _a	Axial load, N
d	Bearing bore diameter, nominal, mm	F _r	Radial load, N
Δd _{mp}	Single plane mean bore diameter deviation, mm	f	Oscillation frequency, min ⁻¹
V _{d_p}	Bore diameter variation in a single radial plane, mm	f _p	Frequency of load variation, min ⁻¹
V _{dmp}	Mean bore diameter variation, mm	K _M	Material factor
B	Width of inner ring, nominal, mm	L	Initial lubricating life of bearings, oscillation
ΔB _s	Deviation of a single width of the inner ring, mm	t	Temperature, °C
D	Bearing outside diameter, nominal, mm	v	Mean sliding velocity, mm/s
ΔD _{mp}	Single plane mean outside diameter deviation, mm	X _r	Equivalent dynamic load factor of spherical plain bearing
V _{D_p}	Outside diameter variation in a single radial plane, mm	X _{ra}	Equivalent dynamic load factor of angular contact spherical plain bearing
V _{Dmp}	Mean outside diameter variation, mm	Y _a	Equivalent dynamic load factor of thrust spherical plain bearing
C	Width of outer ring, nominal, mm	α _k	Load type factor
ΔC _s	Deviation of a single width of the outer ring, mm	α _p	Load factor
d _k	Ball diameter, mm	α _t	Temperature factor
T	Width of the angular contact spherical plain bearing, nominal, mm	α _v	Sliding velocity factor
ΔT _s	Actual deviation of width of the angular contact spherical plain bearing, mm	α _z	Lubrication factor
H	Height of the thrust spherical plain bearing, nominal, mm	β	Oscillation, °
ΔH _s	Actual deviation of height of the spherical plain thrust bearing, mm	ζ	Bearing type factor
Δh _s	Center height deviation of rod ends or ball joint rod ends, mm	α _h	Re-lubrication factor

TL type high performance maintenance-free spherical plain bearing

LS designed the new structure of the PTFE fabric and improved the resin matrix. The new PTFE fabric has better wettability with the improved resin. Base on the new PTFE fabric and the improved resin we develop the high performance liner(Fig.1) and TL type bearings. Under the same condition, The new PTFE fabric liner has better bonding strength(2 to 3 times of the old one) and wear resistance(the service life is 3 to 4 times of the old one, Fig.2).

Meanwhile, the new PTFE fabric liner also provides the following benefits:

- low friction coefficient;
- low affinity to moisture, which provides water repellent properties;
- better resistance to deformation under load.

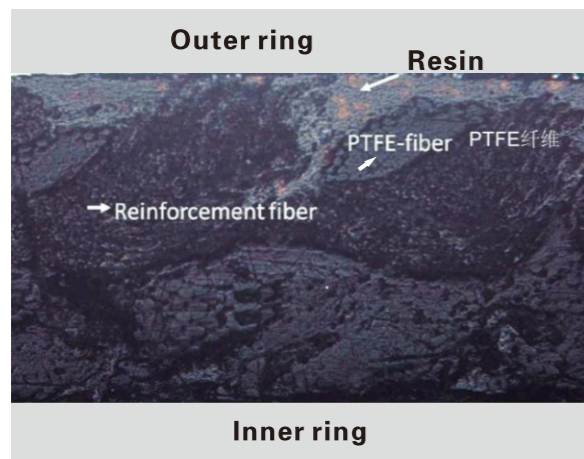


Fig.1 Cross-section of new PTFE fabric liner

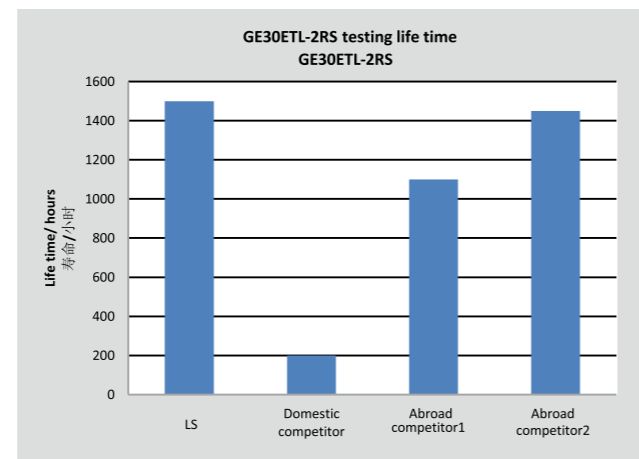


Fig.2 Testing life time comparison with comperitors home and abroad

Table 1 The designation difference between bearings with new and old PTFE fabric liner			
New designation	Old designation	New designation	Old designation
GE...ETL-2RS	GE...ET-2RS	GEH...XTL	GEH...XT
GE...XTL-2RS	GE...XT-2RS	GEH...XTL-2RS	GEH...XT-2RS
GEG...ETL-2RS	GEG...ET-2RS	GEC...HTL	GEC...HT
GEG...XTL-2RS	GEG...XT-2RS	GEH...HTL	GEH...HT
GE...ETL-2GS/X	GE...ET-2GS/X	GAC...TL	GAC...T
GE...XTL-2GS/X	GE...XT-2GS/X	GX...TL	GX...T
GEZ...ETL-2RS	GEZ...ET-2RS	SI...ETL-2RS	SI...ET-2RS
GEC...XTL	GEC...XT	SA...ETL-2RS	SA...ET-2RS
GEC...XTL-2RS	GEC...XT-2RS		

Load carrying capacity

Load rating There is no standardized method for determining the load ratings of spherical plain bearings, nor is there any standardized definition. As different manufacturers define load ratings differently, it is not possible to compare the load ratings of bearings produced by one manufacturer with those of another.

Basic dynamic load rating It represents the maximum load that a spherical plain bearing can accommodate at room temperature when there is movement between the sliding contact surfaces (Fig. 3). The basic dynamic load rating is used, together with other influencing factors, to determine the basic rating life of spherical plain bearings. The maximum load in any application should always be considered in relation to the required rating life. The basic dynamic load ratings quoted in the product tables are based on the specific load factor K (Table 2) and the effective projected sliding surface.

Basic static load rating It represents the maximum permissible load that a spherical plain bearing without inadmissible deforming, fracturing or damaging the sliding contact surfaces can accommodate when there is no relative movement between the sliding contact surfaces (Fig. 4). The basic static load rating must also be considered when bearings are dynamically loaded and subjected to additional heavy shock loads. The total load in these cases must not exceed the basic static load rating. The basic static load ratings quoted for spherical plain bearings are based on a specific static load factor K0 (Table 2) and the effective projected sliding surface.

For rod ends, it is the strength of the housing at room temperature, under a constant load acting in the direction of the shank axis, that is the determining factor. The basic static load rating represents a safety factor of at least 1.2 relative to the yield strength of the material of the rod end housing, under the above conditions.

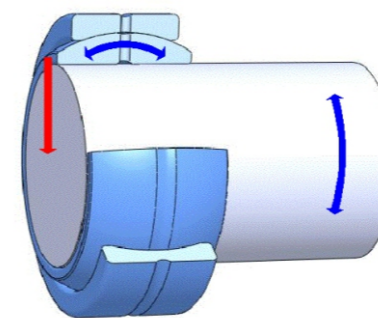


Fig.3 Basic dynamic load rating

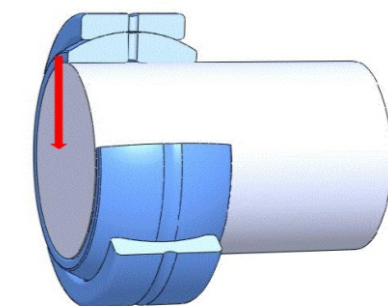


Fig.4 Basic static load rating

Bearing load

When considering load, a distinction is made between:

Load direction

- radial load (Fig.5)
- axial load (Fig.6)
- combined (axial and radial) load (Fig.7)

Type of load

- dynamic load, i.e. there is relative sliding movement in the loaded bearing
- static load, i.e. there is no relative movement in the loaded bearing.

Load conditions

- constant load (Fig.8), i.e. the direction in which the load is applied does not change and the same part of the bearing (loaded zone) is always subjected to the load.
- alternating load (Fig.9), i.e. change of load direction so that zones at opposite positions in the bearing are alternately loaded and unloaded.

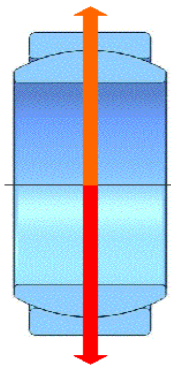


Fig.5 Radial load

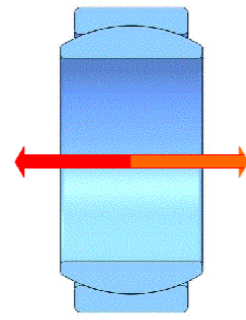


Fig.6 Axial load

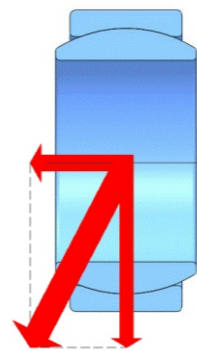


Fig.7 Combined load

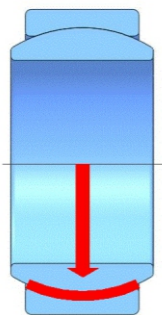


Fig. 8 Constant load

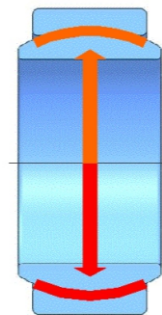


Fig.9 Alternating load

Equivalent bearing load

Equivalent dynamic load which is a constant load. The contact pressure on the working surface is equivalent to the actual load under which load.

Radial spherical plain bearings

Radial spherical plain bearings can accommodate a certain magnitude of axial load F_a in addition to a simultaneously acting radial load F_r . When the resultant load is constant in magnitude, the equivalent dynamic bearing load can be calculated using:

$$P = X_r F_r$$

Factor X_r for radial spherical plain bearings is calculated by the formula:

$$X_r = 0.978 \times 21.546 F_a / F_r$$

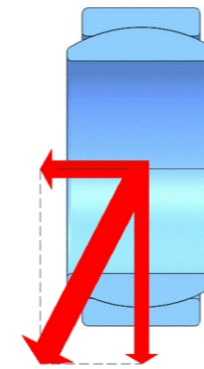


Fig.10 combined load of spherical plain bearing

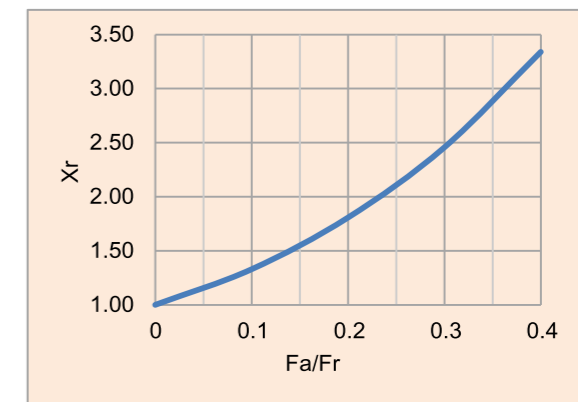


Diagram1 Xr for radial spherical plain bearings

Angular contact spherical plain bearings

When the resultant load (fig.11) is constant in magnitude, then use the formula: $P = X_{ra} F_r$

$$\text{When } 0 \leq F_a / F_r \leq 2.35, X_{ra} = 1.009 \times 1.4714^{F_a / F_r}$$

$$\text{When } 2.35 < F_a / F_r \leq 3, X_{ra} = 0.7678 \times F_a / F_r + 0.6966$$

$$X_{ra} = 0.7678 \times F_a / F_r + 0.6966$$

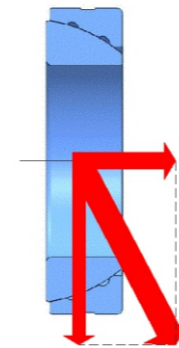


Fig.11 combined load of angular contact spherical plain bearing

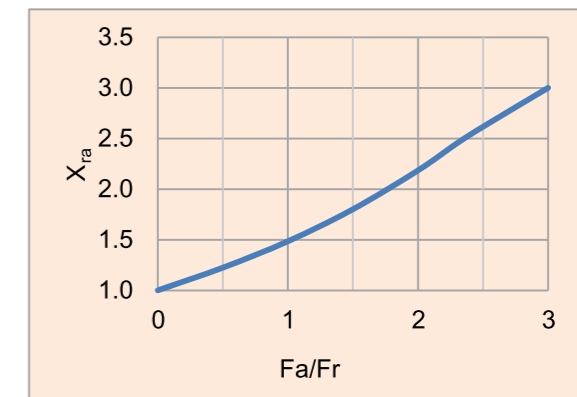


Diagram 2 Factor X_{ra} for angular contact spherical plain bearings

Thrust spherical plain bearings

Thrust spherical plain bearings can accommodate a radial load F_r in addition to an axial load F_a (fig.12).

When the resultant load is constant in magnitude, then use the formula : $P = Y_a F_a$

In which, $Y_a = 0.998 \times 2.6254^{F_r/F_a}$

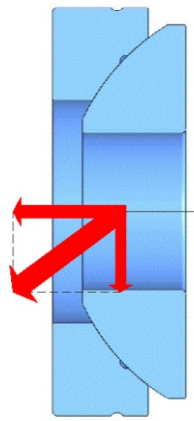


Fig.12 combined load of thrust spherical plain bearing

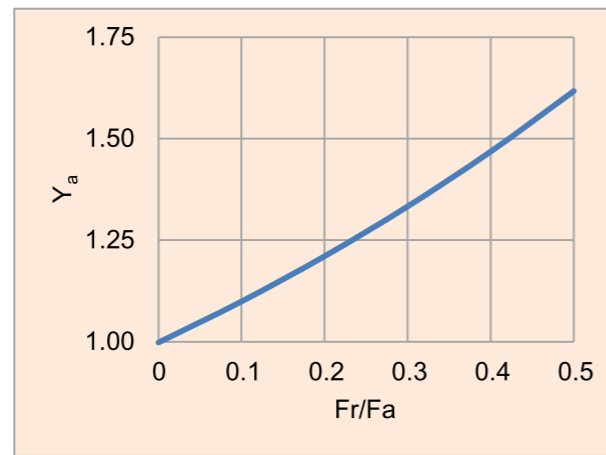


Diagram 3 Y_a factor of thrust spherical plain bearing

Basic rating life

For spherical plain bearings, a lubricant film that fully separates the sliding contact surfaces cannot be formed. Therefore, the sliding contact surfaces make direct contact with each other, resulting in a certain and unavoidable degree of wear. This increases the internal clearance in the bearing.

Regarding the life of spherical plain bearings, a distinction is made between the basic rating life and the service life. The basic rating life is a theoretical guideline value, used to estimate the service life. Service life depends on the actual operating conditions and is the actual life achieved by the bearing in service.

The basic rating life is based on a large number of laboratory tests. The bearings were tested for an operating period until a specific increase in bearing clearance or friction occurred (Table 3). The value in the table is just only for reference, in some cases that do not require very high precision, the bearing is still usable even the increase of the internal clearance is larger than the value listed in the table, for more detail you can contact with LS engineers. The basic rating life considers several influencing factors and can be expressed in operating hours or the number of oscillating movements.

The service life cannot be calculated as it is too complex to determine and evaluate all the influencing factors. Therefore, depending on the application conditions, the service life may differ from the basic rating life.

Table 2

Sliding contact surface	Dynamic load factor k	Static load factor k_0
Steel/steel	100	500
Steel/bronze	50	80
Steel/PTFE fabric liner	300	500
Steel/PTFE composite	100	200
Steel/copper alloy	100	200

Table 3

Failure criteria for basic rating life tests		
Sliding contact surface	Increase in bearing clearance/mm	Coefficient of friction μ
Steel/steel	$>0.004d_k$	0.2
Steel/bronze	$>0.004d_k$	0.25
Steel/PTFE composite	0.2	0.25
Steel/PTFE fabric liner	0.3	0.15
Steel/copper alloy	$>0.004d_k$	0.2

Basic rating life calculation

The basic rating life depends on the load capacity and operating condition.

Contact Stress

In order to achieve adequate service life, the bearing contact stress must be compatible with the operating conditions. The bearing contact stress represents the surface stress occurred in the bearing, which plays a key role in the evaluation of the bearings' application.

$$p = k \cdot \frac{P}{C_d}$$

- p=contact stress N/mm²
- k=load factor N/mm²
- C_d=Dynamic load rating KN
- P=Equivalent dynamic load KN

You can get the C_d/P value in table 4 to calculate the contact stress.

Table 4

Sliding contact surface	Load ratio C _d /P
Steel/steel	2
Steel/bronze	2
Steel/PTFE fabric liner	2
Steel/PTFE composite	1.6
Steel/copper alloy	2

Mean sliding velocity

The mean sliding velocity for constant movement can be calculated by using the formula:

$$v = 2.9089 \times 10^{-3} \beta f \zeta d_k$$

In the formula, β is oscillation angle (Fig.13), f is frequency, d_k is the nominal spherical diameter and ζ is the bearing type parameter (Table 5).

Table 5

Bearing type	Spherical plain bearing	Angular contact spherical plain bearing	thrust spherical plain bearing
ζ	1	0.9	0.7

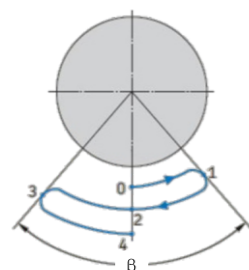


Fig.13 Oscillation β

The limited pv value of bearings

The pv value of bearings should be limited under a certain value, high pv value will shorten the service life of bearings. pv value is the product of the contact stress p and mean sliding velocity v. Table 6 lists the limited pv value for different sliding contact surface. When the real pv exceeds the limited value listed in the table, please contact with LS engineers.

Table 6 the limited pv value for different sliding contact surface

sliding contact surface				
	steel-steel	steel-bronze	steel-PTFE fabric liner	Steel/PTFE composite
p(MPa)	100	50	300	100
v(mm/s)	100	100	300	300
pv(MPa mm/s)	400	400	2000	300

The initial lubrication life of bearings

The initial lubrication life of bearings can be calculated by the following formula:

$$L = \alpha_k \alpha_t \alpha_p \alpha_v \alpha_z \frac{K_M \cdot C_d}{v \cdot P}$$

You can get the each parameter in the formula in table 7 to table 9.

Table 7 factors

Factors	sliding contact surface				Notes
	steel-steel	steel-bronze	steel-PTFE fabric liner	steel-PTFE composite	
K _M	830	207600	2.592×10 ⁵	2.946×10 ⁵	—
α _k	1	1	1	1	Constant load
	1	1	0.6062-6.0207×10 ⁻³ f _p p ^{1.11}	0.6062-3.1309×10 ⁻³ f _p p ^{1.25}	Pulse load
	2	2	0.433-4.3005×10 ⁻³ f _p p ^{1.11}	0.433-2.2364×10 ⁻³ f _p p ^{1.25}	Alternating load
α _t	1	1	1	1	t≤60℃
	0.9	1.15-2.5×10 ⁻³ t	1.225-3.75×10 ⁻³ t	2.20-0.02t	60℃ < t ≤ 100℃
	0.8	2.1-0.012t	1.35-0.005t	—	100℃ < t ≤ 150℃
	0.6	—	—	—	150℃ < t ≤ 200℃
α _v	v ^{0.86} β ^{0.84} f ^{0.64}	v ^{0.4} f ^{0.8}	$\frac{f}{1.00475^{1.1} \times 1.0093^f}$	$\frac{f}{1.00344^{1.1}}$	—
α _p	G/p ^b				—
λ	—	—	1.0193 ^b	1.0399 ^b	—

Notes: λ、G、b is variable in this table, you can get the G、b value in table 8

Table8 G、b value

p		sliding contact surface							
		steel-steel		steel-bronze		steel-PTFE fabric liner		steel-PTFE composite	
over	incl.	G	b	G	b	G	b	G	b
—	10	2.000	0	0.25	0	15.3460	0.0488	4.5102	0.2230
10	25	80.533	1.465	1	0.6	15.3460	0.0488	4.5102	0.2230
25	45	80.533	1.465	1	0.6	22.9060	0.1732	13.7170	0.5686
45	65	80.533	1.465	—	—	47.7259	0.366	13.7170	0.5686
65	100	80.533	1.465	—	—	157.9193	0.6527	13.7170	0.5686
100	300	—	—	—	—	402.0115	0.8556	—	—

 Table9 factor α_z

lubricating type	grease lubricating		self-lubricating
	without oil groove	with oil groove	
α_z	0.1~0.5	0.3~1	0.5~1

Re-lubrication life of bearings

When the bearing is regularly re-lubricated after the initial lubrication, the life of the bearing can be calculated by the following formula:

$$L_R = \alpha_h \alpha_\beta L \quad \text{or} \quad L_{Rh} = \alpha_h \alpha_\beta L_h$$

α_h is the factor depending on the frequency of re-lubrication, which can be calculated by the following formula:

$$\alpha_h = 7.45 \times 10^{-8} n^5 - 1.1 \times 10^{-5} n^4 + 6.05 \times 10^{-4} n^3 - 0.0166 n^2 + 0.3326 n + 0.6834$$

In which, n is the frequency of re-lubrication.

$$n = \frac{\text{Initial lubrication life } L}{\text{Re-lubrication interval } h}$$

α_β is the factor depending on the oscillation angle whose value can be got in the table 10.

Table10 the factor depending on the oscillation angle

β (°)	≤7	10	15	20	25	30	35	40
α_β	0.8	1	2.4	3.7	4.6	5.2	5.2	5.2

Selection calculation example

Given date

Purely radial load that alternates direction: $F_r=16$ KN;

Oscillation angle β (Fig.13) is 30°

Frequency of oscillation $f=10$ min⁻¹,

Maximum operating temperature: $+80^\circ\text{C}$

Requirements

The bearing must have a basic rating life of 5000 h.

Calculation and selection

Because a bearing in this application must accommodate an alternating load, a steel/steel radial spherical plain bearing is the appropriate choice. Re-lubrication is planned after every 40 hours of operation.

If, for the first check, a guideline value of 2 is used for the load ratio C_d/P (Table 4), the required basic dynamic load rating C_d for the bearing is

$$C_d = 2 P = 2 F_r = 32 \text{ KN}$$

In LS catalog, you can find that the smallest type of bearing whose dynamic load rating is higher than 32KN is GE25ES. Its dynamic load rating is 48KN and sphere diameter d_k is 35.5mm.

In order to calculate the basic rating life of the bearing, we have to calculate the following parameters according to the calculation formula of initial lubrication life of bearings.

$$p = k \times \frac{P}{C_d} = 100 \times \frac{16}{48} = 33.3 \text{ N/mm}^2$$

$$\begin{aligned} v &= 2.9089 \times 10^{-4} \beta f d_k \\ &= 2.9089 \times 10^{-4} \times 30 \times 10 \times 1 \times 35.5 \\ &= 3.10 \text{ mm/s} \end{aligned}$$

Because the load is alternating direction load, so $\alpha_k=2$ the highest temperature is 80°C , so $\alpha_t=0.9$ (Table7)

$$\alpha_p = G/p^b = 80.533/33.3^{1.465} = 0.4731$$

$$\begin{aligned} \alpha_v &= v^{0.86} \beta^{0.84} f^{0.64} \\ &= 3.10^{0.86} \times 30^{0.84} \times 10^{0.64} \\ &= 200.96 \end{aligned}$$

$$\alpha_z = 1$$

$$K_M = 830$$

Put all the parameters above into the calculation formula of initial lubrication life of bearings.

$$\begin{aligned} L &= \alpha_k \alpha_t \alpha_p \alpha_v \alpha_z \frac{K_M \cdot C_d}{v \cdot P} \\ &= 2 \times 0.9 \times 0.4731 \times 200.96 \times \frac{830 \times 48}{3.10 \times 16} \\ &= 137459 \text{ oscillations} \end{aligned}$$

Convert it to the operating time:

$$L_h = L/f + 60 = 137459/10 + 60 = 229 \text{ hours}$$

The re-lubrication interval is 40 hours

So the re-lubrication frequency $n = 229/40 = 5.73$

Put the value of n into the calculation formula of α_h

So,

$$\alpha_h = 7.45 \times 10^{-8} n^5 - 1.1 \times 10^{-5} n^4 + 6.05 \times 10^{-4} n^3 - 0.0166 n^2 + 0.3326 n + 0.6834$$

$$= 2.15$$

According to table 10, we can get $\alpha_\beta = 5.2$ when $\beta = 30^\circ$.
 So the re-lubrication life of bearing is

$$L_{Rh} = \alpha_h \alpha_\beta L_h$$

$$= 2.15 \times 5.2 \times 229$$

$$= 2560 \text{ hours, which is less than the requirement of the basic rating life 5000 hours.}$$

In this case, there are two kinds of method to re-selection.

- (1) To increase the re-lubrication frequency;
- (2) To select a larger size bearing.

To increase the re-lubrication frequency

In order to get the suitable re-lubrication frequency n , firstly we calculate the factor depending on the frequency of re-lubrication α_h .

$$\alpha_h = 5000 \div (\alpha_\beta L_h) = 5000 \div 5.2 \div 229 = 4.20,$$

which is the critical value.
 So the α_h should be larger than 4.20.

From the calculation formula of α_h , we can know that $\alpha_h = 4.22$ when the re-lubrication frequency $n = 22$.

So, the re-lubrication interval $h = 229 \div 22 \approx 10.5$ hours.

The GE25ES bearing shall meet the requirement if the re-lubrication interval is shorten to less than 10.5 hours.

To select a larger size bearing

We can also select a larger size bearing GE30ES whose basic dynamic load rating is 62KN and sphere diameter is 40.7mm. The calculation method is similar.

$$p = k \times \frac{P}{C_d} = 100 \times \frac{16}{62} = 25.8 \text{ N/mm}^2$$

$$v = 2.9089 \times 10^{-4} \beta f \zeta d_k$$

$$= 2.9089 \times 10^{-4} \times 30 \times 10 \times 1 \times 40.7$$

$$= 3.55 \text{ mm/s}$$

$$\alpha_p = G/p^b = 80.533 \div 25.8^{1.465} = 0.6886$$

$$\alpha_v = v^{0.86} \beta^{0.84} f^{0.64}$$

$$= 3.55^{0.86} \times 30^{0.84} \times 10^{0.64}$$

$$= 226.03$$

$$L = \alpha_k \alpha_t \alpha_p \alpha_v \alpha_z \frac{K_M \cdot C_d}{v \cdot P}$$

$$= 2 \times 0.9 \times 0.6886 \times 226.03 \times \frac{830 \times 62}{3.55 \times 16}$$

$$= 253684 \text{ oscillations}$$

$$L_h = L \div f \div 60 = 253684 \div f \div 60 = 422.8$$

The re-lubrication frequency $n = 422.8 \div 40 = 10.57$

$$\alpha_h = 7.45 \times 10^{-8} n^5 - 1.1 \times 10^{-5} n^4 + 6.05 \times 10^{-4} n^3 - 0.0166 n^2 + 0.3326 n + 0.6834$$

$$= 2.93$$

$$L_{Rh} = \alpha_h \alpha_\beta L_h$$

$$= 2.93 \times 5.2 \times 422.8$$

$$= 6441 \text{ hours,}$$

which is larger than the requirement of the basic rating life 5000 hours.

So, to select GE30ES bearing is another way to meet the requirement if you don't change the re-lubrication interval.

Friction

The friction in a spherical plain bearing depends primarily on the sliding contact surface combination, the load and the sliding velocity. Because there are so many influencing factors that are not mutually independent, it is not possible to quote exact values for the coefficient of friction.

The coefficient of friction changes during the service life of the bearing. The coefficient of friction for the bearing running-in well is the lowest. There is part of the time for the higher friction coefficient during the process of initial running-in and damage.

For security reasons, in the applications where friction is particularly important, LS recommends determining the power ratings by using the maximum values for the coefficient of friction that are listed in table 11.

Table 11

Contact surface combination	Coefficient of friction	
	min	max
Steel/steel	0.08	0.20
Steel/bronze	0.10	0.25
Steel/PTFE fabric	0.02	0.15
Steel/PTFE composite material	0.05	0.25
Steel/copper alloy	0.05	0.25

Bearing internal clearance

Bearing internal clearance is defined as the total distance through which one ring can be moved radially (radial internal clearance) or axially (axial internal clearance) relative to the other ring under a certain measuring force.

It is necessary to distinguish between the internal clearance of a bearing before it is mounted and the internal clearance of a mounted bearing in operation (working clearance). Because the rings are mounted with interference or transition fit, the rings will expand or compress, the bearing's initial clearance is always larger than the working clearance.

If the bearing is mounted with recommended fit and runs under the normal condition, the normal group of initial internal clearance is appropriate to the bearing's working clearance. If the inner and outer rings are mounted with interference fit or the working temperature is higher or lower, we can select larger or smaller clearance value than the normal group.

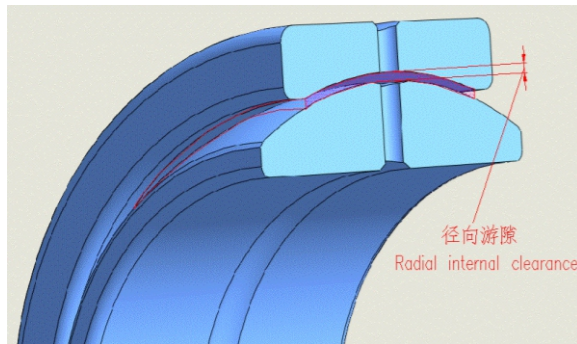


Fig.14 Radial internal clearance

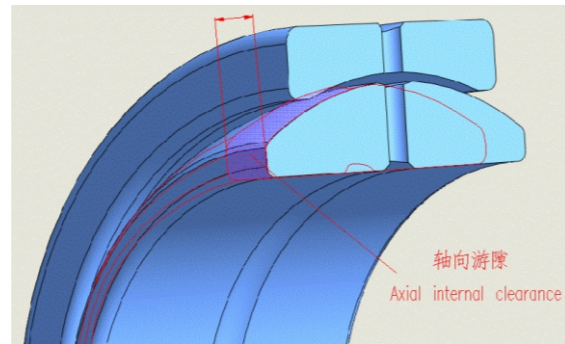


Fig.15 Axial internal clearance

Lubrication

For steel/steel spherical plain bearing requiring maintenance, the purpose of lubrication is reducing wear, reducing friction and preventing holding-on. Also the grease can prevent corrosion. Periodic lubrication can obviously improve the service life of the bearing during the running.

For steel/PTFE fabric spherical plain bearing free of maintenance, there is a transfer of PTFE from fabric to the sphere surface of the inner ring when in operation. Lubrication can generally interfere with the transfer, and shorten bearing life. Therefore, lubrication is not allowed for this kind of bearing.

For steel/PTFE composite spherical plain bearing, lubrication is generally not required. But when corrosion resistance and improving sealing is in need, filling the surrounding space of the bearing with lithium base grease is allowed.

MoS₂: Adding MoS₂ contributes to the running-in of bearing and the reducing of wear during the running-in stage. MoS₂ is treated with two kinds of way: wet-type and dry-type. Wet-type MoS₂ is treated with dipping, and dry-type is treated with spray. The effect of dry-type MoS₂ treating is superior to wet-type MoS₂ treating. If customer need dry-type MoS₂ treating, please contact with us when ordering.

Sealing

Most of the bearings must be equipped with seals to prevent the dirt and moisture from entering. The efficiency of the sealing has a decisive influence to the service life of the bearing. LS seal has two types, see table 12.

Table 12

Seal	Illustration	Design characteristics	Suitability
2RS design		Polyester elastomer seal (−30°C~+130°C) Nylon seal (−30°C~+130°C)	1.For compact bearing arrangements, mainly indoors 2.For cramped spaces 3.For high sealing demands when combined with an outboard seal 4.For arrangements with bearings that rotate 5.For long service life with minimal maintenance
2GSdesign		Rubber seal with sheet steel insert (−25°C~+120°C)	1.For compact bearing arrangements 2.For high sealing demands 3.For arrangements with bearings that rotate 4.For long service life with minimal maintenance 5.For difficult operating conditions in the presence of sand or mud

Accuracy

The dimensions and the tolerances apply before surface treatment and splitting for outer ring.

The outer ring becomes slightly out of round due to splitting. But when the bearing is mounted into the bearing housing, the roundness of the outer ring will be restored (Fig.16).

The measured value of the bearing's outside diameter without mounting cannot be used as the original actual value of the outside diameter.

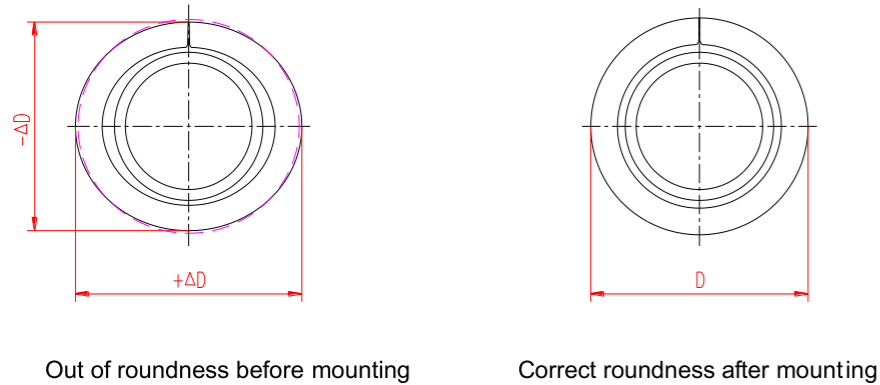


Fig.16

Mounting

For ease of mounting, the end faces of the shafts and the housings must have an opening angle of 10° to 20° . So the bearing can be more easily mounted and there is little risk of damage to the assembly surfaces caused by tilting of the bearing (Fig.17).

For radial spherical plain bearings with split outer ring, the joint must be perpendicular to the main direction of the load, otherwise the service life is reduced. The lubrication holes must be in the loading direction so as to ensure good lubrication distribution in the load area (Fig.18).

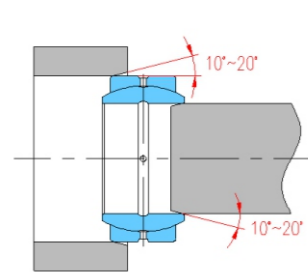


图 17
Fig.17

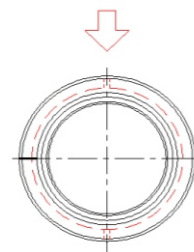


图 18
Fig.18

Matters needing attention

1. The assembly surface must be clean and no dirt.
2. The bearing must be protected from moist and corrosive solvents, especially the sliding sphere.
3. The bearing must maintain concentric with shaft or housing bore.

Mechanical assistance mounting

1. Direct blows with a hammer on the bearing rings for mounting must be avoided.
2. The installation force must directly and evenly applied to the rings. If the force is transferred through the sliding sphere, the bearings may damage (fig.19).
3. If bearings are mounted on the shaft and in a housing at the same time, the mounting tools must be pressed simultaneously on the endfaces of the inner and outer ring (fig.20).
4. Larger bearing must be mounted in a special tool (fig.21).

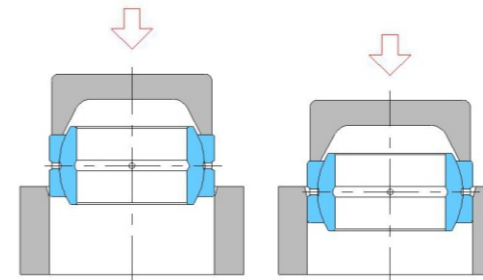


Fig.19

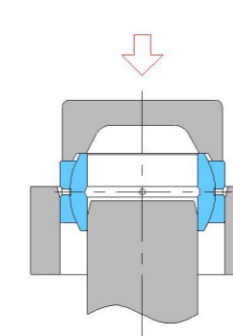


Fig.20

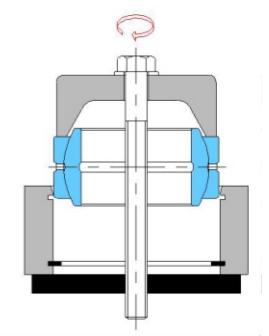


Fig.21

Thermal assistance mounting

When the bearing is difficult to install, heating the bearing and the housing can be done before mounting, but we should pay attention to that:

1. Spherical plain bearing must not be heated above $+130^\circ\text{C}$, higher temperatures will damage the seal.
2. Spherical plain bearing must not be heated in an oil bath, or else:
 - ① For self-lubricating bearing, oil bath heating weakens the lubrication system.
 - ② For steel/steel spherical plain bearing, oil bath heating dilute molybdenum disulfide concentration on the sphere.
3. Spherical plain bearing must not be heated with naked flame, or else:

- ① The material will undergo excessive localized heat and the hardness will reduce. Furthermore, the stress will reduce in the bearing.
- ② The seal will melt.
- ③ The self-lubricating layer will be damaged.

Cooling assistance mounting

Cooling also can be used for bearing mounting, but we should pay attention to that:

The rings of steel/steel spherical plain bearing will undergo microstructural change at temperatures about -61°C , which may cause the volume increased. Due to the change of fit clearance, the bearing is likely to be stuck.

Adhesive assistance mounting

If the recommended fit is used, it is not necessary to use adhesive on the bearing rings. When we should make the bearing easy to install and use the loose fit, consideration should be given about the fixed way between shaft and inner ring, housing bore and outer ring, so that we can use adhesive for fixing. But we should pay attention to that for steel/steel spherical plain bearing, adhesive is only used in the following cases:

1. The assembly surface must be clean and no grease.
2. Make sure that lubrication grooves and lubrication holes are not blocked by adhesive.

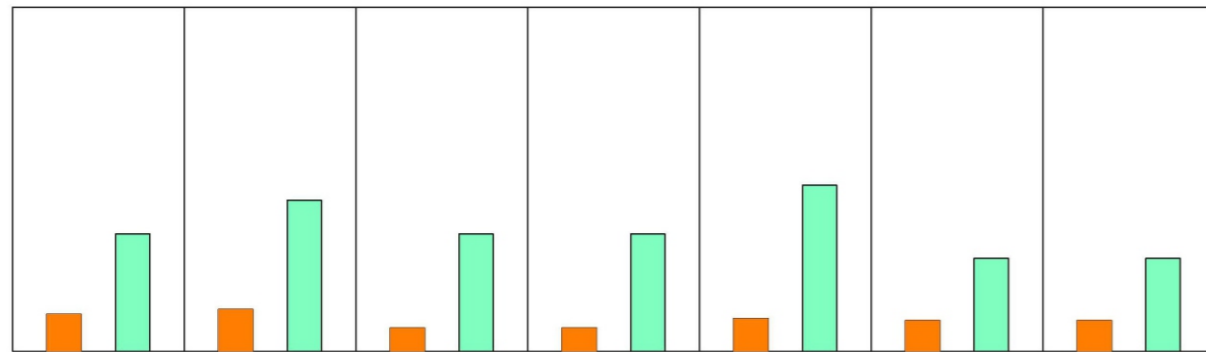
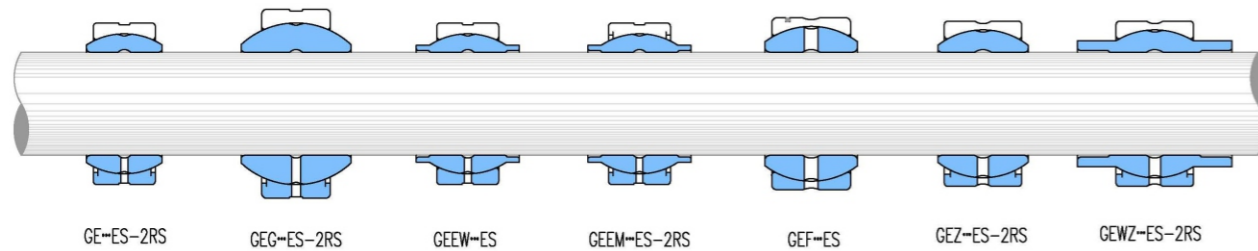
Radial spherical plain bearings requiring maintenance

Radial spherical plain bearings have an inner ring with a sphered convex outside surface and an outer ring with a correspondingly sphered but concave inside surface. Their design makes them particularly suitable for bearing arrangements where alignment movements between shaft and housing have to be accommodated, or where oscillating or recurrent tilting or slewing movements must be permitted at relatively slow sliding speeds. LS radial spherical plain bearings are available with different sliding contact surface combinations, i.e. the sliding surfaces of inner and outer rings are made from different materials. There are two main groups: spherical plain bearings requiring maintenance(steel-on-steel) and maintenance-free spherical plain bearings.

Radial spherical plain bearings requiring maintenance(steel-on-steel) generally have hardened sliding contact surface on both rings. The surfaces are treated with molybdenum disulphide and phosphated. It has characteristics of wear-resistance and wear-corrosion. Bearings with this sliding contact surface combination require regular re-lubrication. The high strength of the sliding contact surfaces makes these bearings especially suitable for bearing arrangements where heavy loads of alternating direction, shock loads or heavy static loads have to be accommodated.

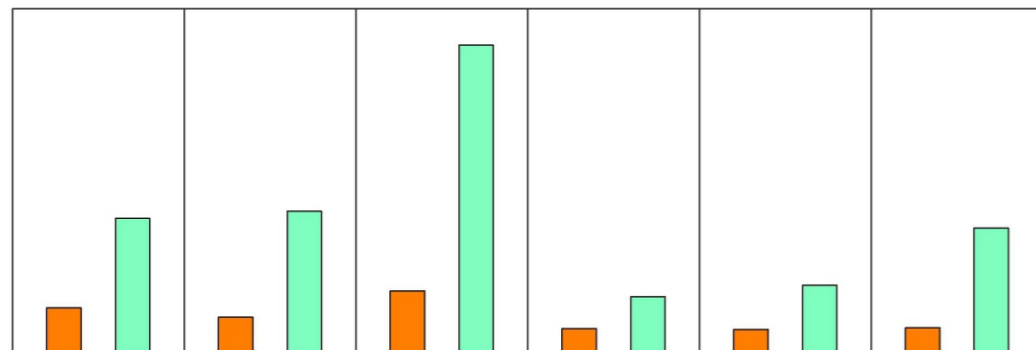
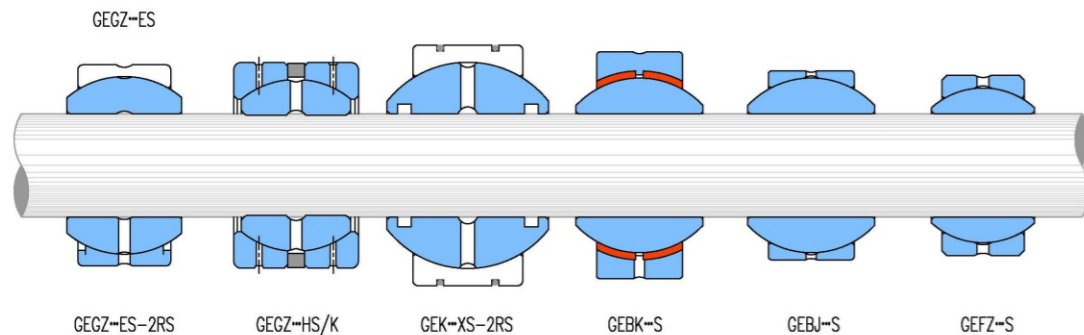


Radial spherical plain bearings requiring maintenance



Dynamic load rating
Static load rating

Radial spherical plain bearings requiring maintenance



Dynamic load rating
Static load rating

Tolerances for series E, G, EW, EM, F, C, H, GE...XS/K

Inner ring

d mm		Δd_{mp}		Δd_{mp}^*		V _{dp}	V _{dmp}	V _{dp} *	V _{dmp} *	ΔB_s		ΔB_s^*	
over	incl.	max	min	max	min	max	max	max	max	max	min	max	min
—	18	0	-8	+18	0	8	6	18	14	0	-120	0	-180
18	30	0	-10	+21	0	10	8	21	16	0	-120	0	-210
30	50	0	-12	+25	0	12	9	25	19	0	-120	0	-250
50	80	0	-15	+30	0	15	11	30	22	0	-150	0	-300
80	120	0	-20	+35	0	20	15	35	26	0	-200	0	-350
120	180	0	-25	+40	0	25	19	40	30	0	-250	0	-400
180	250	0	-30	+46	0	30	23	46	35	0	-300	0	-460
250	315	0	-35	+52	0	35	26	52	39	0	-350	0	-520
315	400	0	-40	+57	0	40	30	57	43	0	-400	0	-570
400	500	0	-45	—	—	45	34	—	—	0	-450	—	—
500	630	0	-50	—	—	50	38	—	—	0	-500	—	—
630	800	0	-75	—	—	75	56	—	—	0	-750	—	—
800	1000	0	-100	—	—	135	75	—	—	0	-1000	—	—

The deviations in the columns with symbol * apply to spherical plain bearings of series GEEW...ES.

Outer ring

D mm		ΔD_{mp}		V _{Dp}	V _{Dmp}	ΔC_s	
over	incl.	max	min	max	max	max	min
—	18	0	-8	10	6	0	-240
18	30	0	-9	12	7	0	-240
30	50	0	-11	15	8	0	-240
50	80	0	-13	17	10	0	-300
80	120	0	-15	20	11	0	-400
120	150	0	-18	24	14	0	-500
150	180	0	-25	33	19	0	-500
180	250	0	-30	40	23	0	-600
250	315	0	-35	47	26	0	-700
315	400	0	-40	53	30	0	-800
400	500	0	-45	60	34	0	-900
500	630	0	-50	67	38	0	-1000
630	800	0	-75	100	56	0	-1100
800	1000	0	-100	135	75	0	-1200
1000	1250	0	-125	190	125	0	-1300
1250	1600	0	-160	240	160	0	-1600

Tolerances for series GEBK...S

Inner ring

d mm		Δd_{mp}		V _{dp}	V _{dmp}	ΔB_s	
over	incl.	max	min	max	max	max	min
—	6	+12	0	12	9	0	-100
6	10	+15	0	15	11	0	-100
10	18	+18	0	18	14	0	-100
18	30	+21	0	21	16	0	-100

外圈 Outer ring

D mm		ΔD_{mp}		V _{Dp}	V _{Dmp}	ΔC_s	
over	incl.	max	min	max	max	max	min
10	18	0	-11	15	8	+100	-100
18	30	0	-13	17	10	+100	-100
30	50	0	-16	20	11	+100	-100
50	80	0	-19	24	14	+100	-100

Radial spherical plain bearings requiring maintenance

Tolerances for series GEBJ...S

d		mm		Δdmp		Vdp	Vdmp	ΔBs	
over	incl.	max	min	max	min	max	max	max	min
—	6	+12	0	12	9	0	9	0	-100
6	10	+15	0	15	11	0	11	0	-100
10	18	+18	0	18	14	0	14	0	-100
18	30	+21	0	21	16	0	16	0	-100
30	50	+25	0	25	19	0	19	0	-100

D		mm		ΔDmp		VDp	VDmp	ΔCs	
over	incl.	max	min	max	min	max	max	max	min
10	18	0	-11	15	8	0	8	0	-240
18	30	0	-13	17	10	0	10	0	-240
30	50	0	-16	20	11	0	11	0	-240
50	80	0	-19	24	14	0	14	0	-300
80	120	0	-22	29	17	0	17	0	-400

Tolerances for series GEFZ...S

d		mm		Δdmp		Vdp	Vdmp	ΔBs	
over	incl.	max	min	max	min	max	max	max	min
—	6	+38	-13	12	9	+130	9	+130	-130
6	10	+38	-13	15	11	+130	11	+130	-130
10	18	+38	-13	18	14	+130	14	+130	-130
18	30	+38	-13	21	16	+130	16	+130	-130

D		mm		ΔDmp		VDp	VDmp	ΔCs	
over	incl.	max	min	max	min	max	max	max	min
10	18	0	-18	24	14	+130	14	+130	-130
18	30	0	-18	24	14	+130	14	+130	-130
30	50	0	-18	24	14	+130	14	+130	-130

Tolerances for series GEK...XS-2GS

d		mm		Δdmp		Vdp	Vdmp	ΔBs	
over	incl.	max	min	max	min	max	max	max	min
18	30	+33	0	30	22	+50	22	+50	-110
30	50	+39	0	35	26	+50	26	+50	-110
50	60	+46	0	46	35	+50	35	+50	-140

D		mm		ΔDmp		VDp	VDmp	ΔCs	
over	incl.	max	min	max	min	max	max	max	min
50	80	+30	+11	24	14	0	14	0	-130
80	120	+35	+13	29	17	0	17	0	-130
120	150	+40	+15	33	19	0	19	0	-130

Tolerances for series Z, GZ, WZ

d		mm		Δdmp		Vdp	Vdmp	ΔBs	
over	incl.	max	min	max	min	max	max	max	min
—	50.8	0	-13	13	10	0	10	0	-130
50.8	76.2	0	-15	15	11	0	11	0	-130
76.2	120.65	0	-20	20	15	0	15	0	-130
120.65	152.4	0	-25	25	19	0	19	0	-130
152.4	203.2	0	-30	30	23	0	23	0	-130
203.2	254	0	-30	30	23	0	23	0	-130
254	304.8	0	-35	35	26	0	26	0	-130

D		mm		ΔDmp		VDp	VDmp	ΔCs	
over	incl.	max	min	max	min	max	max	max	min
—	50.8	0	-13	17	10	0	10	0	-130
50.8	80.963	0	-15	20	11	0	11	0	-130
80.963	120.65	0	-20	27	15	0	15	0	-130
120.65	177.8	0	-25	33	19	0	19	0	-130
177.8	222.25	0	-30	40	23	0	23	0	-130
222.25	304.8	0	-35	47	26	0	26	0	-130
304.8	381	0	-40	53	30	0	30	0	-130
381	457.2	0	-45	60	34	0	34	0	-130

Details of dimension and tolerance symbols see page 13

Radial internal clearance of steel-on-steel radial spherical plain bearings

GE...E, GE...ES, GE...ES-2RS, GEEW...ES,

Series GE...E, GE...ES, GE...ES-2RS, GEEW...ES, GEEM...ES-2RS

d		mm		Group C2		Group normal		Group C3	
over	incl.	min	max	min	max	min	max	min	max
—	12	8	32	32	68	68	104	68	104
12	20	10	40	40	82	82	124	82	124
20	35	12	50	50	100	100	150	100	150
35	60	15	60	60	120	120	180	120	180
60	90	18	72	72	142	142	212	142	212
90	140	18	85	85	165	165	245	165	245
140	200	18	100	100	192	192	284	192	284
200	240	18	110	110	214	214	318	214	318
240	300	18	125	125	239	239	353	239	353
300	320	18	135	135	261	261	387	261	387

Series GEG...E, GEG...ES, GEG...ES-2RS

d		mm		Group C2		Group normal		Group C3	
over	incl.	min	max	min	max	min	max	min	max
—	10	8	32	32	68	68	104	68	104
10	17	10	40	40	82	82	124	82	124
17	30	12	50	50	100	100	150	100	150
30	50	15	60	60	120	120	180	120	180
50	80	18	72	72	142	142	212	142	212
80	120	18	85	85	165	165	245	165	245
120	180	18	100	100	192	192	284	192	284
180	220	18	110	110	214	214	318	214	318
220	280	18	125	125	239	239	353	239	353

Series GEF...ES

d		mm		Group C2		Group normal		Group C3	
over	incl.	min	max	min	max	min	max	min	max
—	12	8	32	32	68	68	104	68	104
12	20	10	40	40	82	82	124	82	124
20	35	12	50	50	100	100	150	100	150
35	55	15	60	60	120	120	180	120	180
55	80	18	72	72	142	142	212	142	212
80	120	18	85	85	165	165	245	165	245
120	150	18	100	100	192	192	284	192	284

Series GEBJ...S, GEFZ...S μm

d mm		Group normal	
over	incl.	min	max
—	8	20	60
8	14	40	90
14	20	50	110
20	35	60	120
35	50	80	150

 Series GE...XS/K μm

d mm		Group normal	
over	incl.	min	max
—	15	70	125
15	30	75	140
30	50	85	150
50	65	90	160
65	80	95	170
80	100	100	185
100	120	110	200
120	150	120	215

 Series GEZ...ES, GEZ...ES-2RS, GEWZ...ES, GEWZ...ES-2RS μm

d mm		Group C2		Group normal		Group C3	
over	incl.	min	max	min	max	min	max
—	15.875	10	50	50	150	150	220
15.875	50.8	10	80	80	180	180	250
50.8	76.2	30	100	100	200	200	270
76.2	152.4	60	130	130	230	230	300
152.4	203.2	80	180	180	300	300	380
203.2	254	100	200	200	330	330	410
254	304.8	120	230	230	350	350	430

 Series GEGZ...ES, GEGZ...ES-2RS μm

d mm		Group C2		Group normal		Group C3	
over	incl.	min	max	min	max	min	max
12.7	44.45	10	80	80	180	180	250
44.45	69.85	30	100	100	200	200	270
69.85	139.7	60	130	130	230	230	300

 Series GEGZ...HS/K μm

d mm		Axial clearance	
over	incl.	min	max
12.7	57.15	76	178
57.15	82.55	100	200
82.55	139.7	150	250

 Series GEBK...S μm

d mm		Group normal	
over	incl.	min	max
—	30	0	35

 Series GEC...XS, GEC...XS-2RS μm

d mm		Group C2		Group normal		Group C3	
over	incl.	min	max	min	max	min	max
300	340	18	125	125	239	239	353
340	420	18	135	135	261	261	387
420	530	18	145	145	285	285	425
530	670	18	160	160	320	320	475

 Series GEK...XS-2GS μm

d mm		Group normal	
over	incl.	min	max
20	35	100	200
35	60	120	250

Shaft fits

Operating conditions	Sliding contact surface combination requiring maintenance	
	Loads of all kinds, clearance or transition fit	h6
Loads of all kinds, interference fit	m6	

Housing fits

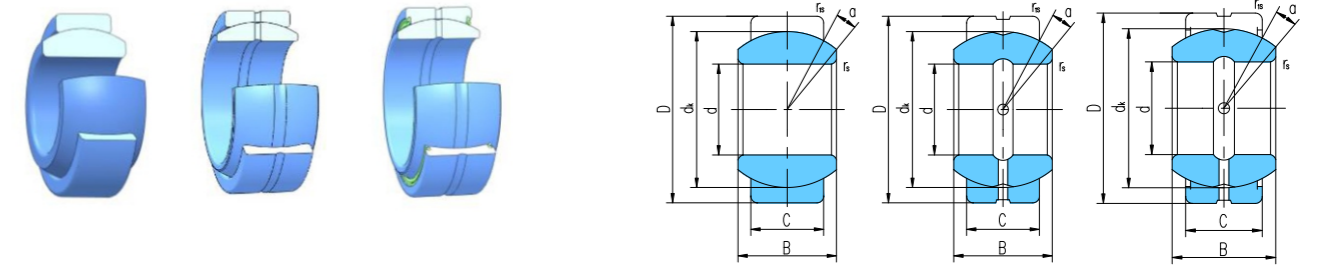
Operating conditions	Sliding contact surface combination requiring maintenance	
	Light loads Axial displacement required	H7
Heavy loads	M7	
Light alloy housings	N7	

Shaft diameter tolerances

Shaft diameter mm		Shaft diameter tolerances μm							
		g6		h6		k6		m6	
over	incl.	high	low	high	low	high	low	high	low
3	6	-4	-12	0	-8	+9	+1	+12	+4
6	10	-5	-14	0	-9	+10	+1	+15	+6
10	18	-6	-17	0	-11	+12	+1	+18	+7
18	30	-7	-20	0	-13	+15	+2	+21	+8
30	50	-9	-25	0	-16	+18	+2	+25	+9
50	80	-10	-29	0	-19	+21	+2	+30	+11
80	120	-12	-34	0	-22	+25	+3	+35	+13
120	180	-14	-39	0	-25	+28	+3	+40	+15
180	250	-15	-44	0	-29	+33	+4	+46	+17
250	315	-17	-49	0	-32	+36	+4	+52	+20
315	400	-18	-54	0	-36	+40	+4	+57	+21
400	500	-20	-60	0	-40	+45	+5	+63	+23
500	630	-22	-66	0	-44	+44	0	+70	+26
630	800	-24	-74	0	-50	+50	0	+80	+30
800	1000	-26	-82	0	-56	+56	0	+90	+34

Housing bore tolerances

Housing bore diameter mm		Housing bore tolerances μm							
		H7		K7		M7		N7	
over	incl.	low	high	low	high	low	high	low	high
10	18	0	+18	-12	+6	-18	0	-23	-5
18	30	0	+21	-15	+6	-21	0	-28	-7
30	50	0	+25	-18	+7	-25	0	-33	-8
50	80	0	+30	-21	+9	-30	0	-39	-9
80	120	0	+35	-25	+10	-35	0	-45	-10
120	150	0	+40	-28	+12	-40	0	-52	-12
150	180	0	+40	-28	+12	-40	0	-52	-12
180	250	0	+46	-33	+13	-46	0	-60	-14
250	315	0	+52	-36	+16	-52	0	-66	-14
315	400	0	+57	-40	+17	-57	0	-73	-16
400	500	0	+63	-45	+18	-63	0	-80	-17
500	630	0	+70	-70	0	-96	-26	-114	-44
630	800	0	+80	-80	0	-110	-30	-130	-50
800	1000	0	+90	-90	0	-124	-34	-146	-56
1000	1250	0	+105	-105	0	-145	-40	-171	-66
1250	1600	0	+125	-125	0	-173	-48	-203	-78



Sliding contact surfaces: Steel / Steel

GE...E

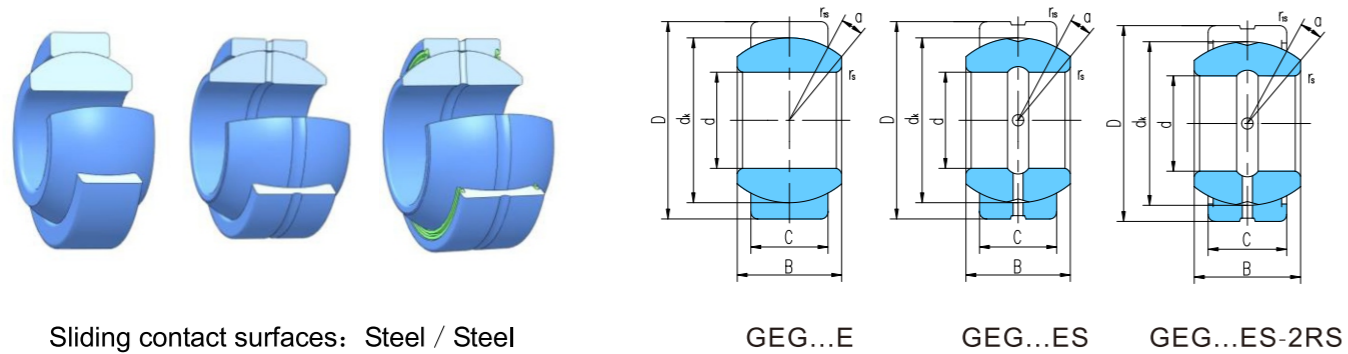
GE...ES

GE...ES-2RS

Bearing number	Dimensions mm								Load ratings kN		Weight \approx kg	
	d	D	B	C	dk	rs min	r1s min	$\alpha^\circ \approx$	Dynamic	Static		
GE4E	4	12	5	3	8	0.3	0.3	16	2	10	0.003	
GE5E	5	14	6	4	10	0.3	0.3	13	3.4	17	0.005	
GE6E	6	14	6	4	10	0.3	0.3	13	3.4	17	0.004	
GE8E	8	16	8	5	13	0.3	0.3	15	5.5	27	0.007	
GE10E	10	19	9	6	16	0.3	0.3	12	8.1	40	0.011	
GE12E	12	22	10	7	18	0.3	0.3	10	10	53	0.017	
GE15ES	GE15ES-2RS	15	26	12	9	22	0.3	0.3	8	16	84	0.026
GE17ES	GE17ES-2RS	17	30	14	10	25	0.3	0.3	10	21	106	0.040
GE20ES	GE20ES-2RS	20	35	16	12	29	0.3	0.3	9	30	146	0.064
GE25ES	GE25ES-2RS	25	42	20	16	35.5	0.6	0.6	7	48	240	0.115
GE30ES	GE30ES-2RS	30	47	22	18	40.7	0.6	0.6	6	62	310	0.149
GE35ES	GE35ES-2RS	35	55	25	20	47	0.6	1	6	79	399	0.228
GE40ES	GE40ES-2RS	40	62	28	22	53	0.6	1	7	99	495	0.318
GE45ES	GE45ES-2RS	45	68	32	25	60	0.6	1	7	127	637	0.421
GE50ES	GE50ES-2RS	50	75	35	28	66	0.6	1	6	156	780	0.562
GE55ES	GE55ES-2RS	55	85	40	32	74	0.6	1	7	200	1000	0.864
GE60ES	GE60ES-2RS	60	90	44	36	80	1	1	6	245	1220	1.03
GE70ES	GE70ES-2RS	70	105	49	40	92	1	1	6	313	1560	1.57
GE80ES	GE80ES-2RS	80	120	55	45	105	1	1	6	400	2000	2.32
GE90ES	GE90ES-2RS	90	130	60	50	115	1	1	5	488	2440	2.79
GE100ES	GE100ES-2RS	100	150	70	55	130	1	1	7	607	3030	4.44
GE110ES	GE110ES-2RS	110	160	70	55	140	1	1	6	654	3270	4.83
GE120ES	GE120ES-2RS	120	180	85	70	160	1	1	6	950	4750	8.11
GE140ES	GE140ES-2RS	140	210	90	70	180	1	1	7	1070	5350	11.2
GE160ES	GE160ES-2RS	160	230	105	80	200	1	1	8	1360	6800	14.1
GE180ES	GE180ES-2RS	180	260	105	80	225	1.1	1.1	6	1530	7650	18.5
GE200ES	GE200ES-2RS	200	290	130	100	250	1.1	1.1	7	2120	10600	28.4
GE220ES	GE220ES-2RS	220	320	135	100	275	1.1	1.1	8	2320	11600	35.7
GE240ES	GE240ES-2RS	240	340	140	100	300	1.1	1.1	8	2550	12700	39.7
GE260ES	GE260ES-2RS	260	370	150	110	325	1.1	1.1	7	3030	15190	51.5
GE280ES	GE280ES-2RS	280	400	155	120	350	1.1	1.1	6	3570	17850	64.9
GE300ES	GE300ES-2RS	300	430	165	120	375	1.1	1.1	7	3800	19100	77.6

$\phi 50 \leq d \leq \phi 200 \text{mm}$, the sliding surface of outer ring can be designed crossed grooves, sketch map see page P142 figure1, suffix "/J" is added to bearing number, e.g. GE80ES/J

Radial spherical plain bearings requiring maintenance



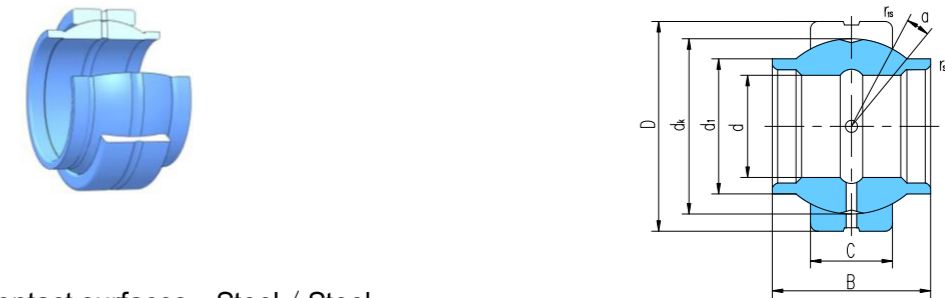
Sliding contact surfaces: Steel / Steel

GEG...E

GEG...ES

GEG...ES-2RS

Bearing number	Dimensions mm									Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static		
GEG4E	4	14	7	4	10	0.3	0.3	20	3.4	17	0.005	
GEG5E	5	16	9	5	13	0.3	0.3	21	5.5	27	0.009	
GEG6E	6	16	9	5	13	0.3	0.3	21	5.5	27	0.008	
GEG8E	8	19	11	6	16	0.3	0.3	21	8.1	40	0.014	
GEG10E	10	22	12	7	18	0.3	0.3	18	10	53	0.021	
GEG12E	12	26	15	9	22	0.3	0.3	18	16	84	0.036	
GEG15ES	GEG15ES-2RS	15	30	16	10	25	0.3	0.3	16	21	106	0.048
GEG17ES	GEG17ES-2RS	17	35	20	12	29	0.3	0.3	19	30	146	0.080
GEG20ES	GEG20ES-2RS	20	42	25	16	35.5	0.3	0.6	17	48	240	0.152
GEG25ES	GEG25ES-2RS	25	47	28	18	40.7	0.6	0.6	17	62	310	0.199
GEG30ES	GEG30ES-2RS	30	55	32	20	47	0.6	1	17	79	399	0.296
GEG35ES	GEG35ES-2RS	35	62	35	22	53	0.6	1	16	99	495	0.402
GEG40ES	GEG40ES-2RS	40	68	40	25	60	0.6	1	17	127	637	0.535
GEG45ES	GEG45ES-2RS	45	75	43	28	66	0.6	1	15	156	780	0.698
GEG50ES	GEG50ES-2RS	50	90	56	36	80	0.6	1	17	245	1220	1.42
GEG60ES	GEG60ES-2RS	60	105	63	40	92	1	1	17	313	1560	2.09
GEG70ES	GEG70ES-2RS	70	120	70	45	105	1	1	16	400	2000	3.01
GEG80ES	GEG80ES-2RS	80	130	75	50	115	1	1	14	488	2440	3.61
GEG90ES	GEG90ES-2RS	90	150	85	55	130	1	1	15	607	3030	5.50
GEG100ES	GEG100ES-2RS	100	160	85	55	140	1	1	14	654	3270	6.04
GEG110ES	GEG110ES-2RS	110	180	100	70	160	1	1	12	950	4750	9.74
GEG120ES	GEG120ES-2RS	120	210	115	70	180	1	1	16	1070	5350	15.1
GEG140ES	GEG140ES-2RS	140	230	130	80	200	1	1	16	1360	6800	18.9
GEG160ES	GEG160ES-2RS	160	260	135	80	225	1.1	1.1	16	1530	7650	24.8
GEG180ES	GEG180ES-2RS	180	290	155	100	250	1.1	1.1	14	2120	10600	35.9
GEG200ES	GEG200ES-2RS	200	320	165	100	275	1.1	1.1	15	2320	11600	44.9
GEG220ES	GEG220ES-2RS	220	340	175	100	300	1.1	1.1	16	2550	12700	50.9
GEG240ES	GEG240ES-2RS	240	370	190	110	325	1.1	1.1	15	3030	15190	65.3
GEG260ES	GEG260ES-2RS	260	400	205	120	350	1.1	1.1	15	3570	17850	82.0
GEG280ES	GEG280ES-2RS	280	430	210	120	375	1.1	1.1	15	3800	19100	96.6

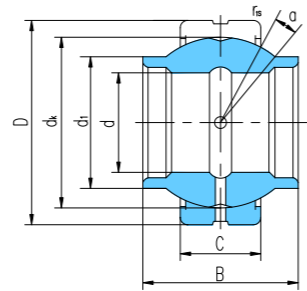


Sliding contact surfaces Steel / Steel

Bearing number	Dimensions mm									Load ratings kN		Weight ≈kg
	d	D	B	C	d1 max	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEEW12ES*	12	22	12	7	15.5	18	0.3	0.3	4	10	53	0.017
GEEW15ES	15	26	15	9	18.5	22	0.3	0.3	5	16	84	0.028
GEEW16ES	16	28	16	9	20	23	0.3	0.3	4	17	85	0.034
GEEW17ES	17	30	17	10	21	25	0.3	0.3	7	21	106	0.043
GEEW20ES	20	35	20	12	25	29	0.3	0.3	4	30	146	0.069
GEEW25ES	25	42	25	16	30.5	35.5	0.6	0.6	4	48	240	0.124
GEEW30ES	30	47	30	18	34	40.7	0.6	0.6	4	62	310	0.159
GEEW32ES	32	52	32	18	37	43	0.6	1	4	65	328	0.207
GEEW35ES	35	55	35	20	40	47	0.6	1	4	79	399	0.248
GEEW40ES	40	62	40	22	46	53	0.6	1	4	99	495	0.349
GEEW45ES	45	68	45	25	52	60	0.6	1	4	127	637	0.468
GEEW50ES	50	75	50	28	57	66	0.6	1	4	156	780	0.62
GEEW60ES	60	90	60	36	68	80	1	1	4	245	1220	1.11
GEEW63ES	63	95	63	36	71.5	83	1	1	4	253	1260	1.27
GEEW70ES	70	105	70	40	78	92	1	1	4	313	1560	1.69
GEEW80ES	80	120	80	45	91	105	1	1	4	400	2000	2.55
GEEW90ES	90	130	90	50	99	115	1	1	4	488	2440	3.04
GEEW100ES	100	150	100	55	113	130	1	1	4	607	3030	4.87
GEEW110ES	110	160	110	55	124	140	1	1	4	654	3270	5.53
GEEW125ES	125	180	125	70	138	160	1	1	4	950	4750	8.19
GEEW160ES	160	230	160	80	177	200	1	1	4	1360	6800	15.8
GEEW200ES	200	290	200	100	221	250	1.1	1.1	4	2120	10600	31.7
GEEW250ES	250	400	250	120	317	350	1.1	1.1	4	3750	17800	101
GEEW320ES	320	520	320	160	405	450	1.1	1.1	4	6200	30500	225

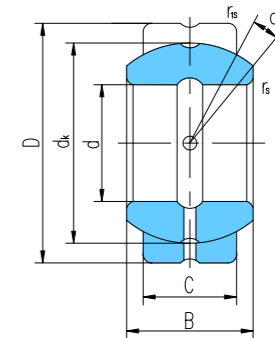
A lubrication groove and holes in the outer ring only.

Can supply spherical plain bearing with two seals for bore diameter $d \geq \phi 15\text{mm}$.



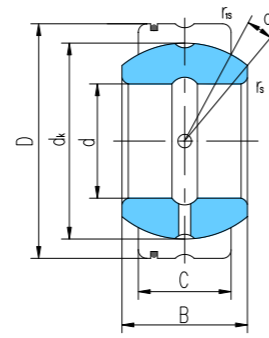
Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm									Load ratings kN		Weight ≈kg
	d	D	B	C	d _{1 max}	d _k	r _{s min}	r _{1s min}	α° ≈	Dynamic	Static	
GEEM20ES-2RS	20	35	24	12	24	29	0.3	0.3	6	30	146	0.072
GEEM25ES-2RS	25	42	29	16	29	35.5	0.3	0.6	4	48	240	0.13
GEEM30ES-2RS	30	47	30	18	34	40.7	0.3	0.6	4	62	310	0.16
GEEM35ES-2RS	35	55	35	20	40	47	0.6	1	4	79	399	0.25
GEEM40ES-2RS	40	62	38	22	45	53	0.6	1	4	99	495	0.34
GEEM45ES-2RS	45	68	40	25	52	60	0.6	1	4	127	637	0.45
GEEM50ES-2RS	50	75	43	28	57	66	0.6	1	4	156	780	0.59
GEEM60ES-2RS	60	90	54	36	68	80	0.6	1	3	245	1220	1.06
GEEM70ES-2RS	70	105	65	40	78	92	0.6	1	4	313	1560	1.66
GEEM80ES-2RS	80	120	74	45	90	105	0.6	1	4	400	2000	2.47
GEEM90ES-2RS	90	130	80	50	99	115	1	1	4	488	2440	2.88
GEEM100ES-2RS	100	150	90	55	113	130	1	1	4	607	3030	4.65
GEEM120ES-2RS	120	180	108	70	133	160	1	1	4	950	4750	8.44



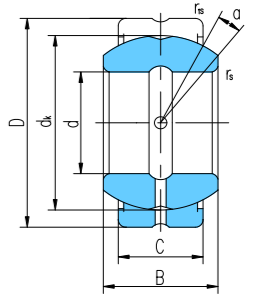
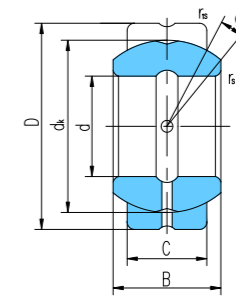
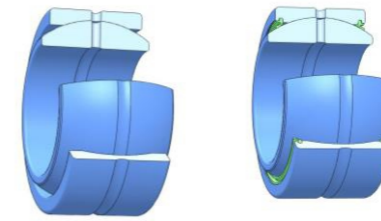
Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm									Load ratings kN		Weight ≈kg
	d	D	B	C	d _k	r _{s min}	r _{1s min}	α° ≈	Dynamic	Static		
GEF12ES	12	22	11	9	18	0.5	0.5	7	13	68	0.019	
GEF15ES	15	26	13	11	22	0.5	0.5	6	20	102	0.031	
GEF20ES	20	32	16	14	28	0.5	0.5	4	33	166	0.054	
GEF22ES	22	37	19	16	32	0.5	0.5	6	43	217	0.088	
GEF25ES	25	42	21	18	36	0.5	0.5	5	55	275	0.128	
GEF30ES	30	50	27	23	45	1	1	6	87	439	0.232	
GEF35ES	35	55	30	26	50	1	1	5	110	552	0.291	
GEF40ES	40	62	33	28	55	1	1	6	130	654	0.392	
GEF45ES	45	72	36	31	62	1	1	5	163	816	0.609	
GEF50ES	50	80	42	36	72	1	1	5	220	1100	0.885	
GEF55ES	55	90	47	40	80	1	1	6	272	1360	1.29	
GEF60ES	60	100	53	45	90	1	1	6	344	1720	1.84	
GEF65ES	65	105	55	47	94	1	1	5	375	1870	2.03	
GEF70ES	70	110	58	50	100	1	1	5	425	2125	2.28	
GEF75ES	75	120	64	55	110	1	1	5	510	2570	3.08	
GEF80ES	80	130	70	60	120	1	1	5	610	3060	4.04	
GEF85ES	85	135	74	63	125	1	1	6	669	3340	4.44	
GEF90ES	90	140	76	65	130	1	1	5	718	3590	4.79	
GEF95ES	95	150	82	70	140	1	1	5	833	4165	6.07	
GEF100ES	100	160	88	75	150	1.5	1.5	5	956	4780	7.56	
GEF110ES	110	170	93	80	160	1.5	1.5	5	1080	5440	8.63	
GEF115ES	115	180	98	85	165	1.5	1.5	5	1190	5960	10.4	
GEF120ES	120	190	105	90	175	1.5	1.5	6	1330	6690	12.5	
GEF130ES	130	200	110	95	185	1.5	1.5	5	1490	7460	14.0	
GEF150ES	150	220	120	105	205	1.5	1.5	5	1820	9140	17.2	



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GE12XS/K	12	22	11	9	18	0.5	0.5	7	13	68	0.019
GE15XS/K	15	26	13	11	22	0.5	0.5	6	20	102	0.031
GE20XS/K	20	32	16	14	28	0.5	0.5	4	33	166	0.054
GE22XS/K	22	37	19	16	32	0.5	0.5	6	43	217	0.088
GE25XS/K	25	42	21	18	36	0.5	0.5	5	55	275	0.128
GE30XS/K	30	50	27	23	45	1	1	6	87	439	0.232
GE35XS/K	35	55	30	26	50	1	1	5	110	552	0.291
GE40XS/K	40	62	33	28	55	1	1	6	130	654	0.392
GE45XS/K	45	72	36	31	62	1	1	5	163	816	0.609
GE50XS/K	50	80	42	36	72	1	1	5	220	1100	0.885
GE55XS/K	55	90	47	40	80	1	1	6	272	1360	1.29
GE60XS/K	60	100	53	45	90	1	1	6	344	1720	1.84
GE65XS/K	65	105	55	47	94	1	1	5	375	1870	2.03
GE70XS/K	70	110	58	50	100	1	1	5	425	2125	2.28
GE75XS/K	75	120	64	55	110	1	1	5	510	2570	3.08
GE80XS/K	80	130	70	60	120	1	1	5	610	3060	4.04
GE85XS/K	85	135	74	63	125	1	1	6	669	3340	4.44
GE90XS/K	90	140	76	65	130	1	1	5	718	3590	4.79
GE95XS/K	95	150	82	70	140	1	1	5	833	4165	6.07
GE100XS/K	100	160	88	75	150	1.5	1.5	5	956	4780	7.56
GE110XS/K	110	170	93	80	160	1.5	1.5	5	1080	5440	8.63
GE115XS/K	115	180	98	85	165	1.5	1.5	5	1190	5960	10.4
GE120XS/K	120	190	105	90	175	1.5	1.5	6	1330	6690	12.5
GE130XS/K	130	200	110	95	185	1.5	1.5	5	1490	7460	14.0
GE150XS/K	150	220	120	105	205	1.5	1.5	5	1820	9140	17.2

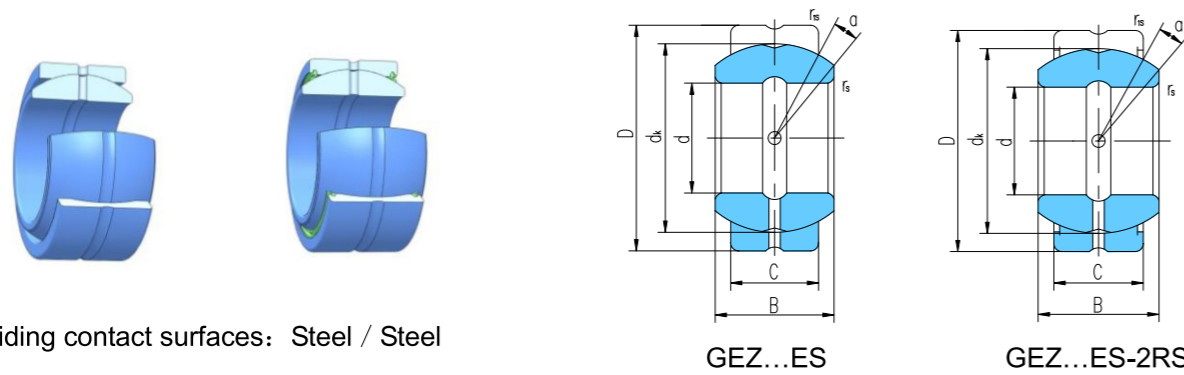


Sliding contact surfaces: Steel / Steel

GEZ...ES

GEZ...ES-2RS

Bearing number	Dimensions mm/inch								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEZ12ES	12.7	22.225	11.1	9.525	18	0.15	0.6	6	13	41	0.022
	0.5	0.875	0.437	0.375	0.709	0.006	0.024				
GEZ15ES	15.875	26.988	13.894	11.913	23	0.15	0.6	6	22	65	0.036
	0.625	1.0625	0.547	0.469	0.906	0.006	0.024				
GEZ19ES	19.05	31.75	16.662	14.275	27.5	0.3	0.6	6	31	95	0.053
	0.75	1.25	0.656	0.562	1.083	0.012	0.024				
GEZ22ES	22.225	36.513	19.431	16.662	32	0.3	0.6	6	42	127	0.085
	0.875	1.4375	0.765	0.656	1.26	0.012	0.024				
GEZ25ES	25.4	41.275	22.225	19.05	36.5	0.3	0.6	6	56	166	0.121
	1	1.625	0.875	0.75	1.437	0.012	0.024				
GEZ31ES	31.75	50.8	27.762	23.8	45.5	0.6	0.6	6	86	260	0.23
	1.25	2	1.093	0.937	1.791	0.024	0.024				
GEZ34ES	34.925	55.563	30.15	26.187	49	0.6	1	5	102	310	0.35
	1.375	2.1875	1.187	1.031	1.929	0.024	0.04				
GEZ38ES	38.1	61.913	33.325	28.575	54.7	0.6	1	6	125	375	0.42
	1.5	2.4375	1.312	1.125	2.154	0.024	0.04				
GEZ44ES	44.45	71.438	38.887	33.325	63.9	0.6	1	6	170	510	0.64
	1.75	2.8125	1.531	1.312	2.516	0.024	0.04				
GEZ50ES	50.8	80.963	44.45	38.1	73	0.6	1	6	224	670	0.93
	2	3.1875	1.75	1.5	2.874	0.024	0.04				
GEZ57ES	57.15	90.488	50.013	42.85	82	0.6	1	6	280	850	1.3
	2.25	3.5625	1.969	1.687	3.228	0.024	0.04				
GEZ63ES	63.5	100.013	55.55	47.625	92	1	1	6	355	1060	1.85
	2.5	3.9375	2.187	1.875	3.622	0.04	0.04				
GEZ69ES	69.85	111.125	61.112	52.375	100	1	1	6	415	1250	2.4
	2.75	4.375	2.406	2.062	3.937	0.04	0.04				
GEZ76ES	76.2	120.65	66.675	57.15	109.5	1	1	6	500	1500	3.1
	3	4.75	2.625	2.25	4.311	0.04	0.04				
GEZ82ES	82.55	130.175	72.238	61.9	119	1	1	6	585	1760	3.8
	3.25	5.125	2.844	2.437	4.685	0.04	0.04				
GEZ88ES	88.9	139.7	77.775	66.675	128	1	1	6	680	2040	4.8
	3.5	5.5	3.062	2.625	5.039	0.04	0.04				
GEZ95ES	95.25	149.225	83.337	71.425	137	1	1	6	780	2360	5.8
	3.75	5.875	3.281	2.812	5.394	0.04	0.04				
GEZ101ES	101.6	158.75	88.9	76.2	146	1	1	6	900	2650	7
	4	6.25	3.5	3	5.748	0.04	0.04				
GEZ107ES	107.95	168.275	94.463	80.95	155	1	1	6	1000	3000	8.4
	4.25	6.625	3.719	3.187	6.102	0.04	0.04				



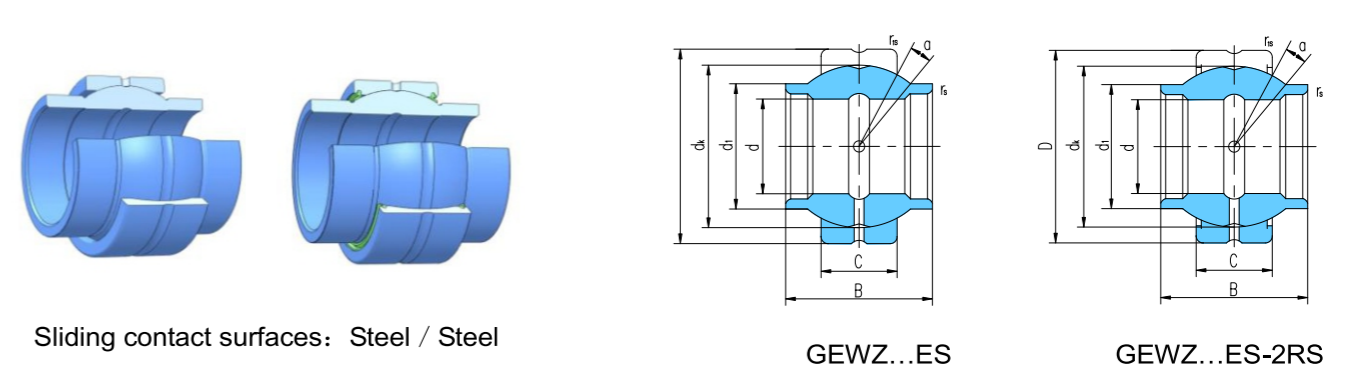
Sliding contact surfaces: Steel / Steel

GEZ...ES

GEZ...ES-2RS

Bearing number		Dimensions mm/inch								Load ratings kN		Weight ≈kg
		d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEZ114ES	GEZ114ES-2RS	114.3 4.5	177.8 7	100.013 3.937	85.725 3.375	164.5 6.476	1 0.04	1 0.04	6	1120	3400	9.8
GEZ120ES	GEZ120ES-2RS	120.65 4.75	187.325 7.375	105.562 4.156	90.475 3.562	173.5 6.831	1 0.04	1 0.04	6	1250	3750	11.5
GEZ127ES	GEZ127ES-2RS	127 5	196.85 7.75	111.125 4.375	95.25 3.75	183 7.205	1 0.04	1 0.04	6	1400	4150	13.5
GEZ152ES	GEZ152ES-2RS	152.4 6	222.25 8.75	120.65 4.75	104.775 4.125	207 8.15	1 0.04	1 0.04	5	1730	5200	17.5
GEZ165ES	GEZ165ES-2RS	165.1 6.5	247.65 9.75	123.825 4.875	103.175 4.062	223 8.78	1.1 0.043	1.1 0.043	7	1830	5500	22.9
GEZ177ES	GEZ177ES-2RS	177.8 7	266.7 10.5	133.35 5.25	111.125 4.375	240 9.449	1.1 0.043	1.1 0.043	7	2120	6390	28.6
GEZ190ES	GEZ190ES-2RS	190.5 7.5	285.75 11.25	142.875 5.625	119.05 4.687	257 10.118	1.1 0.043	1.1 0.043	7	2440	7340	35.1
GEZ203ES	GEZ203ES-2RS	203.2 8	304.8 12	152.4 6	127 5	275 10.827	1.1 0.043	1.1 0.043	7	2770	8350	42.6
GEZ215ES	GEZ215ES-2RS	215.9 8.5	323.85 12.75	161.925 6.375	134.925 5.312	292 11.496	1.1 0.043	1.1 0.043	7	3130	9420	51.1
GEZ228ES	GEZ228ES-2RS	228.6 9	342.9 13.5	171.45 6.75	142.875 5.625	309 12.165	1.1 0.043	1.1 0.043	7	3510	10500	60.7
GEZ241ES	GEZ241ES-2RS	241.3 9.5	361.95 14.25	180.975 7.125	150.8 5.937	326 12.835	1.1 0.043	1.1 0.043	7	3910	11700	71.4
GEZ254ES	GEZ254ES-2RS	254 10	381 15	190.5 7.5	158.75 6.25	343 13.504	1.1 0.043	1.1 0.043	7	4340	13050	83.3
GEZ266ES	GEZ266ES-2RS	266.7 10.5	400.05 15.75	200.025 7.875	166.675 6.562	360 14.173	1.1 0.043	1.1 0.043	7	4780	14300	96.4
GEZ279ES	GEZ279ES-2RS	279.4 11	419.1 16.5	209.55 8.25	174.625 6.875	377 14.843	1.1 0.043	1.1 0.043	7	5250	15700	110.8
GEZ292ES	GEZ292ES-2RS	292.1 11.5	438.15 17.25	219.075 8.625	182.55 7.187	395 15.551	1.1 0.043	1.1 0.043	7	5740	17200	126.7
GEZ304ES	GEZ304ES-2RS	304.8 12	457.2 18	228.6 9	190.5 7.5	412 16.22	1.1 0.043	1.1 0.043	7	6250	18700	143.9

$d \leq \phi 152.4\text{mm}$, the sliding surface of inner ring can be designed crossed grooves, sketch map see page P142 figure2, suffix "/J" is added to bearing number, e.g. GEZ57ES/J

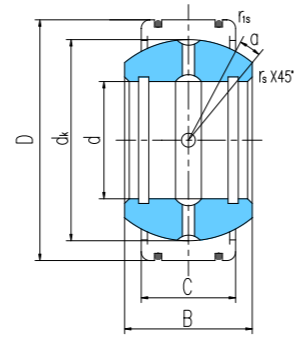


Sliding contact surfaces: Steel / Steel

GEWZ...ES

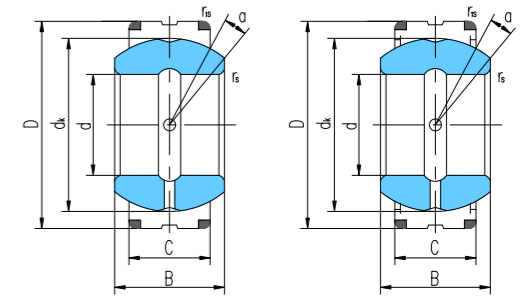
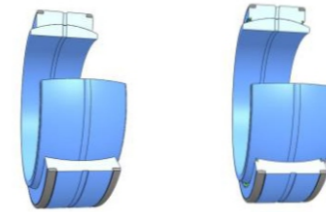
GEWZ...ES-2RS

Bearing number		Dimensions mm/inch								Load ratings kN		Weight ≈kg	
		d	D	B	C	d1 max	dk	rs min	r1s min	α° ≈	Dynamic		Static
GEWZ12ES		12.700 0.5	22.225 0.875	19.050 0.75	9.525 0.375	15.875 0.625	18 0.709	0.15 0.006	0.6 0.024	5	13	41	0.024
GEWZ15ES		15.875 0.625	26.988 1.0625	23.800 0.937	11.913 0.469	19.812 0.78	23 0.906	0.15 0.006	0.6 0.024	5	22	65	0.038
GEWZ19ES	GEWZ19ES-2RS	19.050 0.75	31.750 1.25	28.575 1.125	14.275 0.562	23.368 0.92	27.5 1.083	0.3 0.012	0.6 0.024	5	31	95	0.064
GEWZ22ES	GEWZ22ES-2RS	22.225 0.875	36.513 1.4375	33.325 1.312	16.662 0.656	27.178 1.07	32 1.26	0.3 0.012	0.6 0.024	5	42	127	0.098
GEWZ25ES	GEWZ25ES-2RS	25.400 1	41.275 1.625	38.100 1.5	19.050 0.75	30.988 1.22	36.5 1.437	0.3 0.012	0.6 0.024	5	56	166	0.142
GEWZ31ES	GEWZ31ES-2RS	31.750 1.25	50.800 2	47.625 1.875	23.800 0.937	38.735 1.525	45.5 1.791	0.6 0.024	0.6 0.024	5	86	260	0.271
GEWZ34ES	GEWZ34ES-2RS	34.925 1.375	55.563 2.1875	52.375 2.062	26.187 1.031	42.418 1.67	49 1.929	0.6 0.024	1 0.04	5	102	310	0.373
GEWZ38ES	GEWZ38ES-2RS	38.100 1.5	61.913 2.4375	57.150 2.25	28.575 1.125	46.99 1.85	54.7 2.154	0.6 0.024	1 0.04	5	125	375	0.494
GEWZ44ES	GEWZ44ES-2RS	44.450 1.75	71.438 2.8125	66.675 2.625	33.325 1.312	54.991 2.165	63.9 2.516	0.6 0.024	1 0.04	5	170	510	0.762
GEWZ50ES	GEWZ50ES-2RS	50.800 2	80.963 3.1875	76.200 3	38.100 1.5	62.484 2.46	73 2.874	0.6 0.024	1 0.04	5	224	670	1.11
GEWZ57ES	GEWZ57ES-2RS	57.150 2.25	90.488 3.5625	85.725 3.375	42.850 1.687	70.104 2.76	82 3.228	0.6 0.024	1 0.04	5	280	850	1.57
GEWZ63ES	GEWZ63ES-2RS	63.500 2.5	100.013 3.9375	95.250 3.75	47.625 1.875	77.724 3.06	92 3.622	1 0.04	1 0.04	5	355	1060	2.15
GEWZ69ES	GEWZ69ES-2RS	69.850 2.75	111.125 4.375	104.775 4.125	52.375 2.062	85.852 3.38	100 3.937	1 0.04	1 0.04	5	415	1250	2.9
GEWZ76ES	GEWZ76ES-2RS	76.200 3	120.65 4.75	114.300 4.5	57.150 2.25	93.345 3.675	109.5 4.311	1 0.04	1 0.04	5	500	1500	3.59
GEWZ82ES	GEWZ82ES-2RS	82.550 3.25	130.17 5.125	123.825 4.875	61.900 2.437	101.219 3.985	119 4.685	1 0.04	1 0.04	5	585	1760	4.69
GEWZ88ES	GEWZ88ES-2RS	88.900 3.5	139.70 5.5	133.35 5.25	66.675 2.625	109.22 4.3	128 5.039	1 0.04	1 0.04	5	680	2040	5.86
GEWZ95ES	GEWZ95ES-2RS	95.250 3.75	149.225 5.875	142.875 5.625	71.425 2.812	116.586 4.59	137 5.394	1 0.04	1 0.04	5	780	2360	7.11
GEWZ101ES	GEWZ101ES-2RS	101.600 4	158.750 6.25	152.400 6	76.200 3	124.587 4.905	146 5.748	1 0.04	1 0.04	5	900	2650	8.56
GEWZ114ES	GEWZ114ES-2RS	114.30 4.5	177.80 7	171.45 6.75	85.725 3.375	140.335 5.525	164.5 6.476	1 0.04	1 0.04	5	1120	3400	12.24
GEWZ127ES	GEWZ127ES-2RS	127.00 5	196.85 7.75	190.50 7.5	95.250 3.75	155.705 6.13	183 7.205	1 0.04	1 0.04	5	1400	4150	16.63
GEWZ152ES	GEWZ152ES-2RS	152.40 6	222.25 8.75	209.55 8.25	104.775 4.125	178.308 7.02	207 8.15	1 0.04	1 0.04	5	1730	5200	20.7



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEK25XS-2GS	25	68	40	28	50	0.6	1	19	117	590	0.707
GEK30XS-2GS	30	70	47	32	60	0.6	1	19	163	813	0.814
GEK35XS-2GS	35	80	54	38	70	0.6	1	17	226	1130	1.23
GEK40XS-2GS	40	90	64	44	80	0.6	1	19	298	1490	2
GEK45XS-2GS	45	100	72	52	90	0.6	1	17	398	1990	2.84
GEK50XS-2GS	50	110	80	58	100	1	1	17	493	2450	3.81
GEK55XS-2GS	55	125	90	64	110	1	1	19	598	2990	5.49
GEK60XS-2GS	60	135	98	72	120	1	1	17	732	3660	6.93

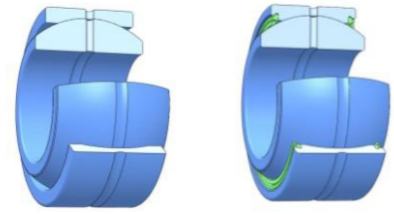


Sliding contact surfaces : Steel / Steel

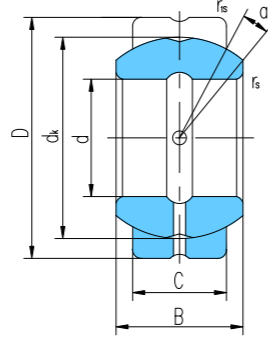
GEC...XS

GEC...XS-2RS

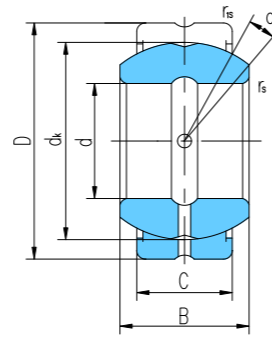
Bearing number		Dimensions mm								Load ratings kN		Weight ≈kg
		d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEC320XS	GEC320XS-2RS	320	440	160	135	380	1.1	3	4	4400	22000	78
GEC340XS	GEC340XS-2RS	340	460	160	135	400	1.1	3	3	4650	23200	83
GEC360XS	GEC360XS-2RS	360	480	160	135	420	1.1	3	3	4800	24000	87
GEC380XS	GEC380XS-2RS	380	520	190	160	450	1.5	4	4	6300	31500	129
GEC400XS	GEC400XS-2RS	400	540	190	160	470	1.5	4	3	6550	32500	135
GEC420XS	GEC420XS-2RS	420	560	190	160	490	1.5	4	3	6800	34500	141
GEC440XS	GEC440XS-2RS	440	600	218	185	520	1.5	4	3	8650	42300	196
GEC460XS	GEC460XS-2RS	460	620	218	185	540	1.5	4	3	9000	45000	204
GEC480XS	GEC480XS-2RS	480	650	230	195	565	2	5	3	9800	49000	239
GEC500XS	GEC500XS-2RS	500	670	230	195	585	2	5	3	10200	51000	248
GEC530XS	GEC530XS-2RS	530	710	243	205	620	2	5	3	11400	57000	294
GEC560XS	GEC560XS-2RS	560	750	258	215	655	2	5	4	12700	64000	345
GEC600XS	GEC600XS-2RS	600	800	272	230	700	2	5	3	14600	73500	413
GEC630XS	GEC630XS-2RS	630	850	300	260	740	3	6	3	17600	88000	538



Sliding contact surfaces: Steel / Steel



GEGZ...ES

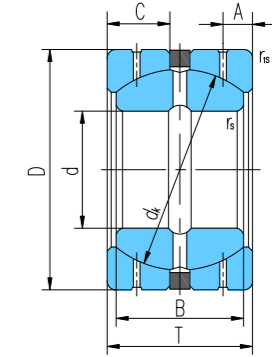


GEGZ...ES-2RS

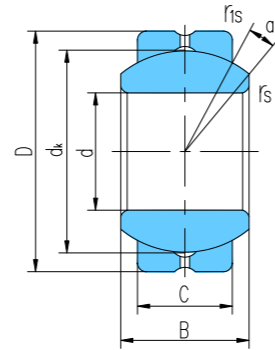
Bearing number		Dimensions mm/inch								Load ratings kN		Weight ≈kg
		d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEGZ31ES	GEGZ31ES-2RS	31.750	61.913	35.306	28.575	54.7	0.6	1	8	125	375	0.454
		1.25	2.4375	1.39	1.125	2.154	0.024	0.04				
GEGZ38ES	GEGZ38ES-2RS	38.100	71.438	40.132	33.325	63.9	0.6	1	7	170	510	0.726
		1.5	2.8125	1.58	1.312	2.516	0.024	0.04				
GEGZ44ES	GEGZ44ES-2RS	44.450	80.963	46.228	38.100	73	0.6	1	7	224	670	1.14
		1.75	3.1875	1.82	1.5	2.874	0.024	0.04				
GEGZ50ES	GEGZ50ES-2RS	50.800	90.488	52.578	42.850	82	0.6	1	8	280	850	1.68
		2	3.5625	2.07	1.687	3.228	0.024	0.04				
GEGZ57ES	GEGZ57ES-2RS	57.150	100.013	58.877	47.625	92	0.6	1	8	355	1060	2.01
		2.25	3.9375	2.318	1.875	3.622	0.024	0.04				
GEGZ63ES	GEGZ63ES-2RS	63.500	111.125	64.643	52.375	100	1	1	8	415	1250	2.95
		2.5	4.375	2.545	2.062	3.937	0.04	0.04				
GEGZ69ES	GEGZ69ES-2RS	69.850	120.650	70.866	57.150	109.5	1	1	8	500	1500	3.63
		2.75	4.75	2.79	2.25	4.311	0.04	0.04				
GEGZ76ES	GEGZ76ES-2RS	76.200	130.175	76.759	61.900	119	1	1	8	585	1760	4.36
		3	5.125	3.022	2.437	4.685	0.04	0.04				
GEGZ82ES	GEGZ82ES-2RS	82.550	139.700	82.931	66.675	128	1	1	8	680	2040	5.31
		3.25	5.5	3.265	2.625	5.039	0.04	0.04				
GEGZ88ES	GEGZ88ES-2RS	88.900	149.225	90.424	71.425	137	1	1	9	780	2360	6.81
		3.5	5.875	3.56	2.812	5.394	0.04	0.04				
GEGZ95ES	GEGZ95ES-2RS	95.250	158.750	94.945	76.200	146	1	1	9	900	2650	8.85
		3.75	6.25	3.738	3	5.748	0.04	0.04				
GEGZ101ES	GEGZ101ES-2RS	101.600	177.800	107.315	85.725	164.5	1	1	9	1120	3400	10.2
		4	7	4.225	3.375	6.476	0.04	0.04				
GEGZ114ES	GEGZ114ES-2RS	114.300	196.850	119.126	95.250	183	1	1	9	1400	4150	13.6
		4.5	7.75	4.69	3.75	7.205	0.04	0.04				
GEGZ139ES	GEGZ139ES-2RS	139.700	222.250	125.730	104.775	207	1	1	6	1730	5200	20.4
		5.5	8.75	4.95	4.125	8.15	0.04	0.04				



Sliding contact surfaces Steel Steel

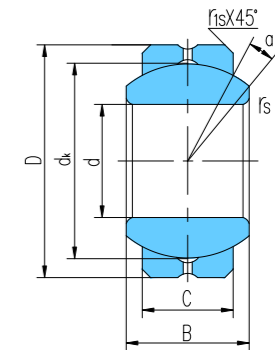


Bearing number		Dimensions mm/inch								Load ratings kN		Weight ≈kg	
		d	D	B	C	T	A	dk	rs min	r1s max	Dynamic		Static
GEGZ31HS/K		31.750	61.913	35.306	16.764	38.1	7.925	54.7	0.6	2.54	99	395	0.65
		1.25	2.4375	1.39	0.66	1.5	0.312	2.154	0.024	0.1			
GEGZ38HS/K		38.100	71.438	40.132	20.066	44.704	8.331	63.9	0.6	2.54	135	540	1.04
		1.5	2.8125	1.58	0.79	1.76	0.328	2.516	0.024	0.1			
GEGZ44HS/K		44.450	80.963	46.228	23.368	51.308	9.525	73	0.6	3.56	180	720	1.41
		1.75	3.1875	1.82	0.92	2.02	0.375	2.874	0.024	0.14			
GEGZ50HS/K		50.800	90.488	52.578	26.67	57.912	11.506	82	0.6	3.56	230	920	1.95
		2	3.5625	2.07	1.05	2.28	0.453	3.228	0.024	0.14			
GEGZ57HS/K		57.150	100.013	58.877	29.972	64.516	12.7	92	0.6	3.56	295	1180	2.62
		2.25	3.9375	2.318	1.18	2.54	0.5	3.622	0.024	0.14			
GEGZ63HS/K		63.500	111.125	64.643	32.385	71.12	13.081	100	1	4.6	345	1380	3.57
		2.5	4.375	2.545	1.275	2.8	0.515	3.937	0.04	0.18			
GEGZ69HS/K		69.850	120.650	70.866	35.687	77.724	14.681	109.5	1	4.6	420	1680	4.55
		2.75	4.75	2.79	1.405	3.06	0.578	4.311	0.04	0.18			
GEGZ76HS/K		76.200	130.175	76.759	39.243	84.836	16.662	119	1	4.6	500	2000	5.70
		3	5.125	3.022	1.545	3.34	0.656	4.685	0.04	0.18			
GEGZ82HS/K		82.550	139.700	82.931	42.545	91.44	17.856	128	1	4.6	585	2340	7.02
		3.25	5.5	3.265	1.675	3.6	0.703	5.039	0.04	0.18			
GEGZ88HS/K		88.900	149.225	90.424	45.847	98.044	19.431	137	1	4.6	675	2700	8.54
		3.5	5.875	3.56	1.805	3.86	0.765	5.394	0.04	0.18			
GEGZ95HS/K		95.250	158.750	94.945	49.149	104.648	19.837	146	1	4.6	775	3100	10.2
		3.75	6.25	3.738	1.935	4.12	0.781	5.748	0.04	0.18			
GEGZ101HS/K		101.600	177.800	107.315	55.753	117.856	22.225	164.5	1	4.6	1000	4000	15.1
		4	7	4.225	2.195	4.64	0.875	6.476	0.04	0.18			
GEGZ114HS/K		114.300	196.850	119.126	62.357	131.064	25.4	183	1	4.6	1230	4920	20.2
		4.5	7.75	4.69	2.455	5.16	1	7.205	0.04	0.18			
GEGZ139HS/K		139.700	222.250	125.730	66.421	139.192	34.798	207	1	4.6	1480	5920	25.1
		5.5	8.75	4.95	2.615	5.48	1.37	8.15	0.04	0.18			



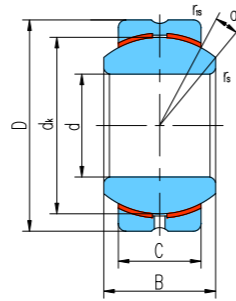
Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEBJ5S	5	13	8	6	11.112	0.3	0.3	13	3.2	9	0.006
GEBJ6S	6	16	9	6.75	12.7	0.3	0.3	13	4.1	12	0.010
GEBJ8S	8	19	12	9	15.88	0.3	0.3	14	6.5	20	0.018
GEBJ10S	10	22	14	10.5	19.05	0.3	0.6	13	9.6	28	0.027
GEBJ12S	12	26	16	12	22.23	0.3	0.6	13	12	37	0.043
GEBJ14S	14	28	19	13.5	25.4	0.3	0.6	16	16	49	0.055
GEBJ16S	16	32	21	15	28.58	0.3	0.6	15	20	61	0.081
GEBJ18S	18	35	23	16.5	31.75	0.6	0.6	15	25	74	0.103
GEBJ20S	20	40	25	18	34.93	0.6	0.6	14	30	89	0.149
GEBJ22S	22	42	28	20	38.1	0.6	0.6	15	36	108	0.176
GEBJ25S	25	47	31	22	42.86	0.6	0.6	15	45	130	0.242
GEBJ30S	30	55	37	25	50.8	0.6	0.6	17	61	178	0.378
GEBJ35S	35	62	43	28	57.15	0.6	1	19	76	224	0.522
GEBJ40S	40	75	49	33	66.67	0.6	1	17	105	308	0.931
GEBJ50S	50	90	60	45	82.5	0.6	1	13	178	519	1.69



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm/inch								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEFZ4S	4.83	14.29	7.14	5.54	10.31	0.3	0.38	11	3	15	0.006
	0.19	0.5625	0.281	0.218	0.406	0.012	0.015				
GEFZ6S	6.35	16.67	8.71	6.35	12.70	0.3	0.56	13	4.4	22	0.010
	0.25	0.6562	0.343	0.25	0.5	0.012	0.022				
GEFZ7S	7.94	19.05	9.53	7.14	14.27	0.3	0.81	11	6	28	0.014
	0.3125	0.75	0.375	0.281	0.562	0.012	0.032				
GEFZ9S	9.53	20.64	10.31	7.92	16.66	0.3	0.81	9	7.4	37	0.018
	0.375	0.8125	0.406	0.312	0.656	0.012	0.032				
GEFZ11S	11.11	23.02	11.10	8.71	17.45	0.3	0.81	9	8.4	42	0.021
	0.4375	0.9062	0.437	0.343	0.687	0.012	0.032				
GEFZ12S	12.70	25.40	12.70	9.91	20.65	0.3	0.81	9	12	58	0.029
	0.5	1	0.5	0.39	0.813	0.012	0.032				
GEFZ14S	14.29	27.78	14.27	11.10	23.01	0.3	0.81	9	15	73	0.042
	0.5625	1.0937	0.562	0.437	0.906	0.012	0.032				
GEFZ15S	15.88	30.16	15.88	12.70	25.40	0.3	0.81	8	19	94	0.053
	0.625	1.1875	0.625	0.5	1	0.012	0.032				
GEFZ19S	19.05	36.51	19.05	15.06	30.15	0.3	1.12	9	28	141	0.094
	0.75	1.4375	0.75	0.593	1.187	0.012	0.044				
GEFZ22S	22.23	39.69	22.23	17.86	33.32	0.6	1.12	9	37	186	0.119
	0.875	1.5625	0.875	0.703	1.312	0.024	0.044				
GEFZ25S	25.40	44.45	25.40	20.24	38.10	0.6	1.12	9	49	245	0.173
	1	1.75	1	0.797	1.5	0.024	0.044				



Sliding contact surfaces: Steel / Bronze

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	d _k	r _{s min}	r _{1s min}	α° ≈	Dynamic	Static	
GEBK5S	5	16	8	6	11.112	0.3	0.3	13	3.3	7.8	0.009
GEBK6S	6	18	9	6.75	12.7	0.3	0.3	13	4.3	9.8	0.013
GEBK8S	8	22	12	9	15.88	0.3	0.3	14	6.8	16	0.024
GEBK10S	10	26	14	10.5	19.05	0.3	0.6	14	10	23	0.039
GEBK12S	12	30	16	12	22.23	0.3	0.6	13	13	31	0.058
GEBK14S	14	34	19	13.5	25.4	0.3	0.6	16	17	40	0.084
GEBK16S	16	38	21	15	28.58	0.3	0.6	15	21	50	0.118
GEBK18S	18	42	23	16.5	31.75	0.6	0.6	15	26	61	0.16
GEBK20S	20	46	25	18	34.93	0.6	0.6	15	31	73	0.21
GEBK22S	22	50	28	20	38.1	0.6	0.6	15	38	88	0.26
GEBK25S	25	56	31	22	42.86	0.6	0.6	15	47	110	0.39
GEBK28S	28	62	35	25	47.63	0.6	0.6	15	59	138	0.50
GEBK30S	30	66	37	25	50.8	0.6	0.6	17	63	148	0.61

Radial spherical plain bearings maintenance-free

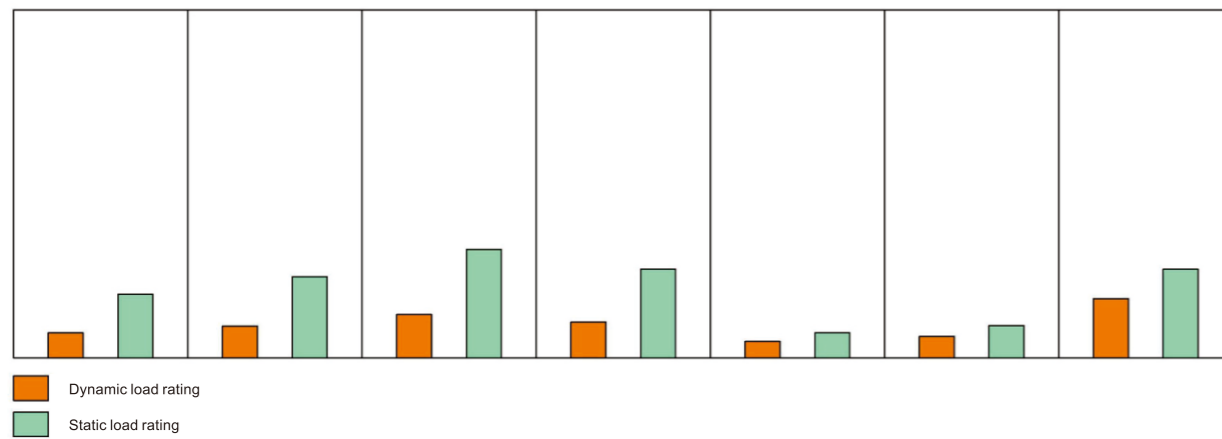
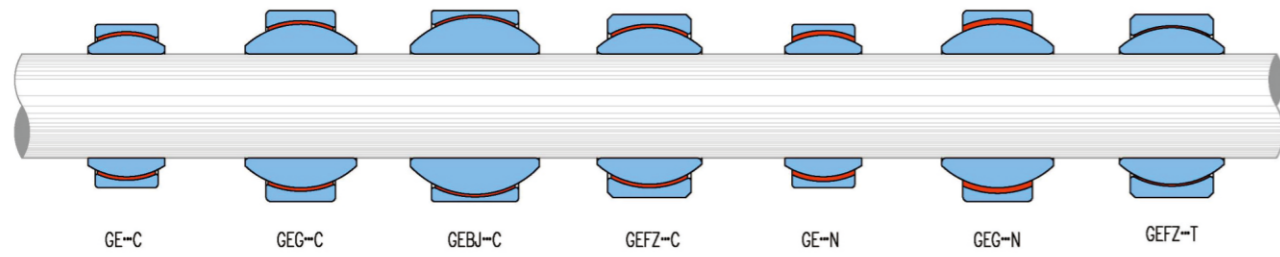
Maintenance-free spherical plain bearing sliding contact surfaces have four groups: steel-on-PTFE composite material, steel-on-PTFE fabric, steel-on-copper alloy and steel-on-PTFE plastic. Dynamic load support capability of steel-on-PTFE fabric spherical plain bearings is higher than that of steel-on-PTFE composite material. They have very low friction and can be operated without maintenance. They are used for applications where long bearing lives are required without maintenance, or where operating conditions, such as inadequate lubrication or the absence of lubrication make the use of steel-on-steel bearing inadvisable.

TL type bearing with long service life

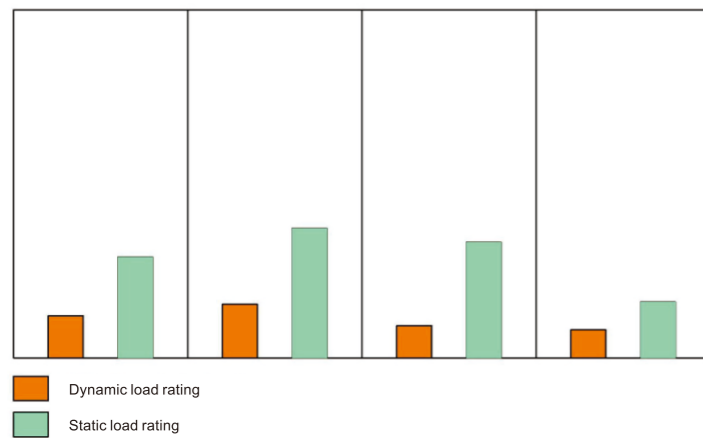
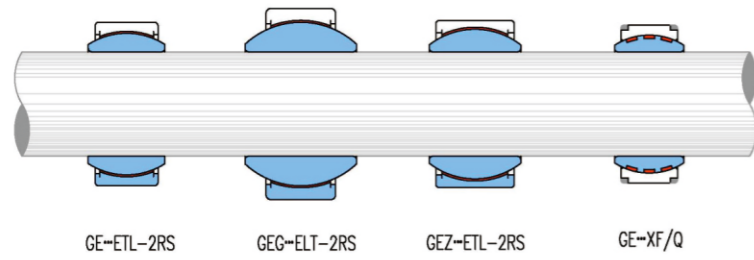
LS designed the new structure of the PTFE fabric and improved the resin matrix. The new PTFE fabric has better wettability with the improved resin. Base on the new PTFE fabric and the improved resin we develop the high performance liner and TL type bearings. Under the same condition, The new PTFE fabric liner has better bonding strength(2 to 3 times of the old one) and wear resistance(the service life is 3 to 4 times of the old one).



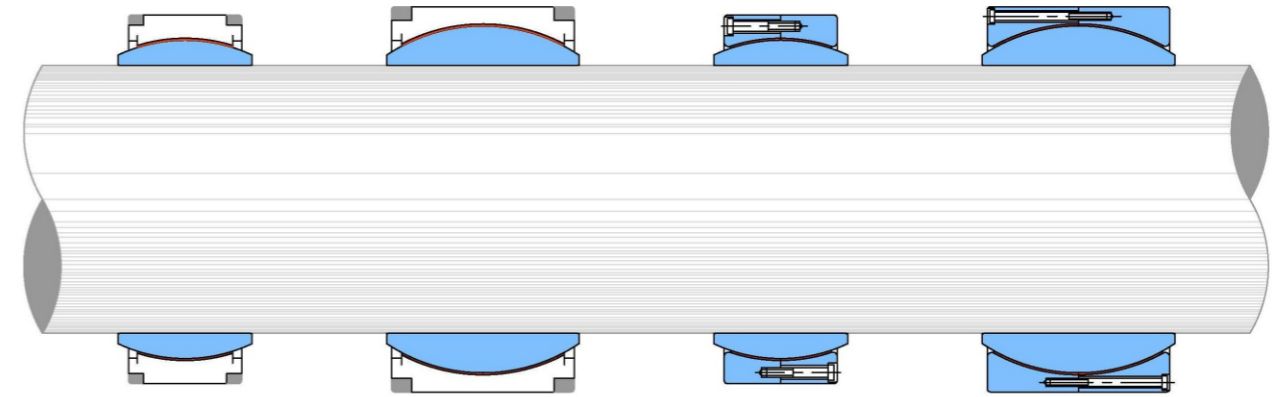
Maintenance-free radial spherical plain bearings



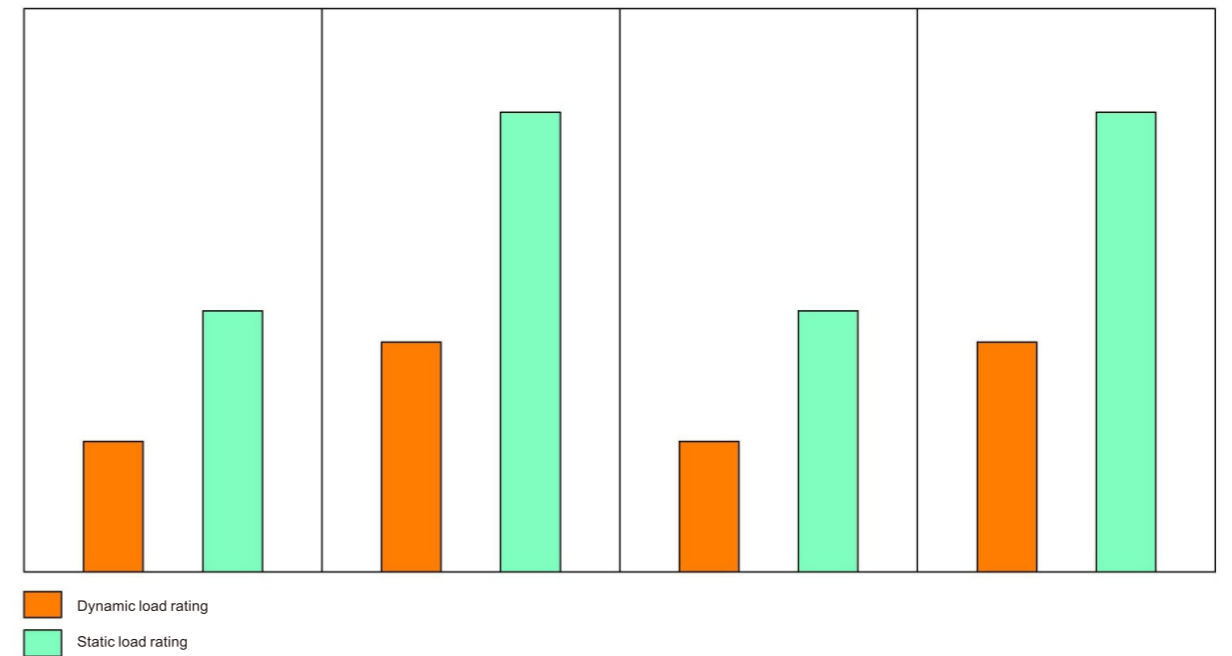
Maintenance-free radial spherical plain bearings



Maintenance-free radial spherical plain bearings

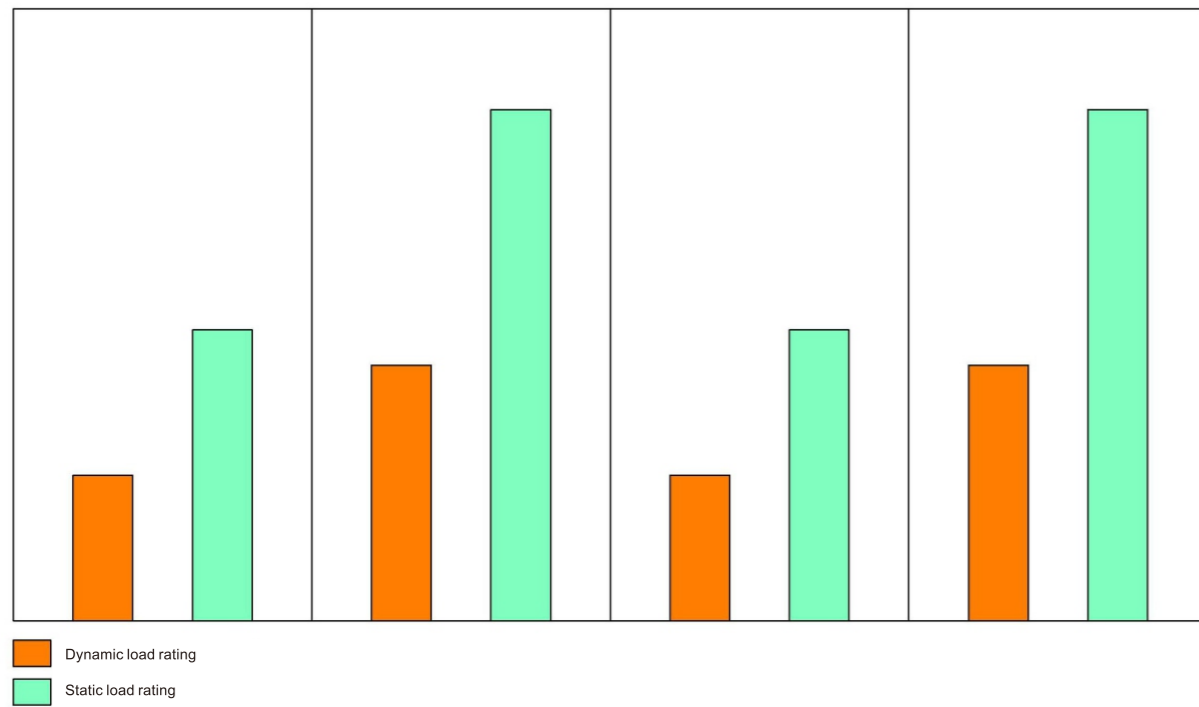
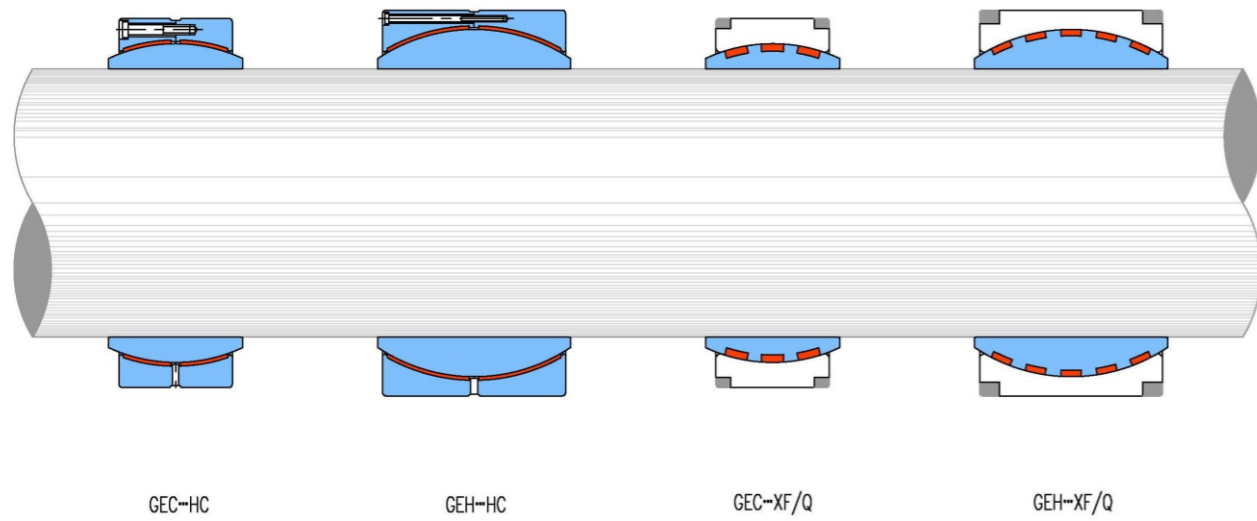


GEC-XTL-2RS GEH-XTL-2RS GEC-HTL GEH-HTL



Radial spherical plain bearings maintenance-free

Maintenance-free large radial spherical plain bearings



Tolerances for series E、G、EW、EM、F、C、H

Inner ring

d		Δdmp		Δdmp^*		Vdp	Vdmp	Vdp*	Vdmp*	ΔBs		ΔBs^*	
over	incl.	max	min	max	min	max	max	max	max	max	min	max	min
—	18	0	-8	+18	0	8	6	18	14	0	-120	0	-180
18	30	0	-10	+21	0	10	8	21	16	0	-120	0	-210
30	50	0	-12	+25	0	12	9	25	19	0	-120	0	-250
50	80	0	-15	+30	0	15	11	30	22	0	-150	0	-300
80	120	0	-20	+35	0	20	15	35	26	0	-200	0	-350
120	180	0	-25	+40	0	25	19	40	30	0	-250	0	-400
180	250	0	-30	+46	0	30	23	46	35	0	-300	0	-460
250	315	0	-35	+52	0	35	26	52	39	0	-350	0	-520
315	400	0	-40	+57	0	40	30	57	43	0	-400	0	-570
400	500	0	-45	—	—	45	34	—	—	0	-450	—	—
500	630	0	-50	—	—	50	38	—	—	0	-500	—	—
630	800	0	-75	—	—	75	56	—	—	0	-750	—	—
800	1000	0	-100	—	—	135	75	—	—	0	-1000	—	—

The deviations in the columns with symbol * apply to spherical plain bearings of series GEEW...ETL.

Outer ring

D		ΔDmp		VDp	VDmp	ΔCs	
over	incl.	max	min	max	max	max	min
—	18	0	-8	10	6	0	-240
18	30	0	-9	12	7	0	-240
30	50	0	-11	15	8	0	-240
50	80	0	-13	17	10	0	-300
80	120	0	-15	20	11	0	-400
120	150	0	-18	24	14	0	-500
150	180	0	-25	33	19	0	-500
180	250	0	-30	40	23	0	-600
250	315	0	-35	47	26	0	-700
315	400	0	-40	53	30	0	-800
400	500	0	-45	60	34	0	-900
500	630	0	-50	67	38	0	-1000
630	800	0	-75	100	56	0	-1100
800	1000	0	-100	135	75	0	-1200
1000	1250	0	-125	190	125	0	-1300
1250	1600	0	-160	240	160	0	-1600

Tolerances for series GEBJ...C

d		mm		Δ dmp		Vdp	Vdmp	Δ Bs	
over	incl.	max	min	max	min	max	max	max	min
—	6	+12	0	12	9	0	9	0	-100
6	10	+15	0	15	11	0	11	0	-100
10	18	+18	0	18	14	0	14	0	-100
18	30	+21	0	21	16	0	16	0	-100
30	50	+25	0	25	19	0	19	0	-100

D		mm		Δ Dmp		VDp	VDmp	Δ Cs	
over	incl.	max	min	max	min	max	max	max	min
10	18	0	-11	15	8	0	8	0	-240
18	30	0	-13	17	10	0	10	0	-240
30	50	0	-16	20	11	0	11	0	-240
50	80	0	-19	24	14	0	14	0	-300
80	120	0	-22	29	17	0	17	0	-400

Tolerances for series GEFZ...C, GEFZ...T

d		mm		Δ dmp		Vdp	Vdmp	Δ Bs	
over	incl.	max	min	max	min	max	max	max	min
—	6	+38	-13	12	9	+130	-130	+130	-130
6	10	+38	-13	15	11	+130	-130	+130	-130
10	18	+38	-13	18	14	+130	-130	+130	-130
18	30	+38	-13	21	16	+130	-130	+130	-130

D		mm		Δ Dmp		VDp	VDmp	Δ Cs	
over	incl.	max	min	max	min	max	max	max	min
10	18	0	-18	24	14	+130	130	+130	130
18	30	0	-18	24	14	+130	130	+130	130
30	50	0	-18	24	14		130		130

Tolerances for series Z, GZ, WZ

d		mm		Δ dmp		Vdp	Vdmp	Δ Bs	
over	incl.	max	min	max	min	max	max	max	min
—	50.8	0	-13	13	10	0	10	0	-130
50.8	76.2	0	-15	15	11	0	11	0	-130
76.2	120.65	0	-20	20	15	0	15	0	-130
120.65	152.4	0	-25	25	19	0	19	0	-130
152.4	203.2	0	-30	30	23	0	23	0	-130
203.2	254	0	-30	30	23	0	23	0	-130
254	304.8	0	-35	35	26	0	26	0	-130

D		mm		Δ Dmp		VDp	VDmp	Δ Cs	
over	incl.	max	min	max	min	max	max	max	min
—	50.8	0	-13	17	10	0	10	0	-130
50.8	80.963	0	-15	20	11	0	11	0	-130
80.963	120.65	0	-20	27	15	0	15	0	-130
120.65	177.8	0	-25	33	19	0	19	0	-130
177.8	222.25	0	-30	40	23	0	23	0	-130
222.25	304.8	0	-35	47	26	0	26	0	-130
304.8	381	0	-40	53	30	0	30	0	-130
381	457.2	0	-45	60	34	0	34	0	-130

Details of dimension and tolerance symbols see page 13

Radial internal clearance of steel-on-PTFE composite material radial spherical plain bearings

d		mm		Group normal			
over	incl.	min		max			
90	120	85		285			
120	180	100		335			
180	220	100		355			
220	240	110		356			
240	280	110		380			
280	300	135		415			
300	380	135		490			
380	400	135		510			
400	480	145		550			
480	500	145		570			
500	600	160		610			
600	630	160		640			
630	750	170		670			
750	800	170		700			
800	950	195		770			
950	1000	195		820			

d		mm		Group normal			
over	incl.	min		max			
300	340	135		350			
340	400	135		360			
400	500	145		390			
500	530	160		420			
530	630	160		440			
630	670	170		460			
670	800	170		490			
800	850	195		530			
850	1000	195		560			

Series GE...C, GEBJ...C, GEFZ...C

d		mm		Group C2		Group normal		Group C3	
over	incl.	min		max		min		max	
—	12	2		20		4		28	
12	20	3		25		5		35	
20	30	4		30		6		44	
30	50	5		35		7		53	

Series GEG...C μm

d mm		roφ C2		Group normal		Group C3	
over	incl.	min	max	min	max	min	max
—	10	2	20	4	28	20	55
10	17	3	25	5	35	25	60
17	25	4	30	6	44	30	75
25	45	5	35	7	53	35	80

Radial internal clearance of steel-on-PTFE fabric, steel-on-PTFE plastic and steel-on-copper alloy radial spherical plain bearings

 Series GE...ETL-2RS, GE...XTL-2RS, GE...HTL-2RS, GE...ETL-2RS/X, GE...XTL-2RS/X, GEZ...ETL-2RS, GEEW...ETL-2RS, GEEM...ETL-2RS, GEEW...XTL-2RS, GEEM...XTL-2RS, GEC...XTL-2RS, GEC...HTL, GEFZ...T, GE...N μm

d mm		Group normal	
over	incl.	min	max
—	12	0	32
12	20	0	40
20	35	0	50
35	60	0	60
60	90	0	72
90	140	0	85
140	240	0	100
240	300	0	110
300	340	0	125
340	420	0	135
420	530	0	145
530	670	0	160
670	950	0	170
950	1000	0	195

 Series GEG...ETL-2RS, GEG...XTL-2RS, GEG...N μm

d mm		Group normal	
over	incl.	min	max
—	10	0	32
10	17	0	40
17	30	0	50
30	50	0	60
50	80	0	72
80	120	0	85
120	220	0	100
220	280	0	110

 Series GEH...XTL-2RS, GEH...HTL μm

d mm		Group normal	
over	incl.	min	max
100	140	0	85
140	240	0	100
240	280	0	110
280	300	0	125
300	380	0	135
380	480	0	145
480	600	0	160
600	850	0	170
850	1000	0	195

 Series GE...XF/Q, GEC...XF/Q, GEH...XF/Q, GEH...HF/Q μm

d mm		Group normal	
over	incl.	min	max
90	120	85	165
120	180	100	192
180	240	110	214
240	300	125	239
300	380	135	261
380	480	145	285
480	600	160	320
600	750	170	350
750	950	195	405
950	1000	220	470

Shaft fits

Operating conditions	Sliding contact surface combination	
	maintenance-free	
Loads of all kinds, clearance or transition fit	h6, g6	
Loads of all kinds, interference fit	k6	

Housing fits

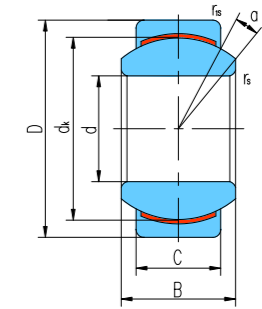
Operating conditions	Sliding contact surface combination	
	maintenance-free	
Light loads Axial displacement required	H7	
Heavy loads	K7	
Light alloy housings	M7	

Shaft diameter tolerances

Shaft diameter mm		Shaft diameter tolerances							
		g6		h6		k6		m6	
over	incl.	high	low	high	low	high	low	high	low
3	6	-4	-12	0	-8	+9	+1	+12	+4
6	10	-5	-14	0	-9	+10	+1	+15	+6
10	18	-6	-17	0	-11	+12	+1	+18	+7
18	30	-7	-20	0	-13	+15	+2	+21	+8
30	50	-9	-25	0	-16	+18	+2	+25	+9
50	80	-10	-29	0	-19	+21	+2	+30	+11
80	120	-12	-34	0	-22	+25	+3	+35	+13
120	180	-14	-39	0	-25	+28	+3	+40	+15
180	250	-15	-44	0	-29	+33	+4	+46	+17
250	315	-17	-49	0	-32	+36	+4	+52	+20
315	400	-18	-54	0	-36	+40	+4	+57	+21
400	500	-20	-60	0	-40	+45	+5	+63	+23
500	630	-22	-66	0	-44	+44	0	+70	+26
630	800	-24	-74	0	-50	+50	0	+80	+30
800	1000	-26	-82	0	-56	+56	0	+90	+34

Housing bore tolerances

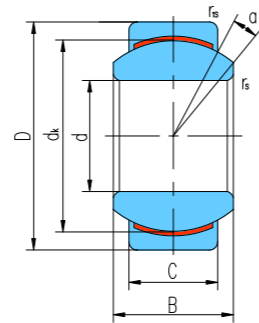
Housing bore diameter mm		Housing bore tolerances							
		H7		K7		M7		N7	
over	incl.	low	high	low	high	low	high	low	high
10	18	0	+18	-12	+6	-18	0	-23	-5
18	30	0	+21	-15	+6	-21	0	-28	-7
30	50	0	+25	-18	+7	-25	0	-33	-8
50	80	0	+30	-21	+9	-30	0	-39	-9
80	120	0	+35	-25	+10	-35	0	-45	-10
120	150	0	+40	-28	+12	-40	0	-52	-12
150	180	0	+40	-28	+12	-40	0	-52	-12
180	250	0	+46	-33	+13	-46	0	-60	-14
250	315	0	+52	-36	+16	-52	0	-66	-14
315	400	0	+57	-40	+17	-57	0	-73	-16
400	500	0	+63	-45	+18	-63	0	-80	-17
500	630	0	+70	-70	0	-96	-26	-114	-44
630	800	0	+80	-80	0	-110	-30	-130	-50
800	1000	0	+90	-90	0	-124	-34	-146	-56
1000	1250	0	+105	-105	0	-145	-40	-171	-66
1250	1600	0	+125	-125	0	-173	-48	-203	-78



Sliding contact surfaces: Steel / PTFE composite material

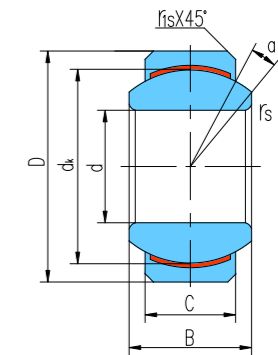
Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	d _k	r _s min	r _{1s} min	α° ≈	Dynamic	Static	
GE4C	4	12	5	3	8	0.3	0.3	16	2.1	5.4	0.003
GE5C	5	14	6	4	10	0.3	0.3	13	3.6	9.1	0.005
GE6C	6	14	6	4	10	0.3	0.3	13	3.6	9.1	0.004
GE8C	8	16	8	5	13	0.3	0.3	15	5.8	14	0.007
GE10C	10	19	9	6	16	0.3	0.3	12	8.6	21	0.011
GE12C	12	22	10	7	18	0.3	0.3	10	11	28	0.017
GE15C	15	26	12	9	22	0.3	0.3	8	18	45	0.026
GE17C	17	30	14	10	25	0.3	0.3	10	22	56	0.040
GE20C	20	35	16	12	29	0.3	0.3	9	31	78	0.064
GE25C	25	42	20	16	35.5	0.6	0.6	7	51	127	0.115
GE30C	30	47	22	18	40.7	0.6	0.6	6	65	166	0.149
GE35C	35	55	25	20	47	0.6	1	6	84	211	0.228
GE40C	40	62	28	22	53	0.6	1	7	104	262	0.318
GE45C	45	68	32	25	60	0.6	1	7	135	337	0.421
GE50C	50	75	35	28	66	0.6	1	6	166	415	0.562
GEG4C	4	14	7	4	10	0.3	0.3	20	3.6	9.1	0.005
GEG5C	5	16	9	5	13	0.3	0.3	21	5.8	14	0.008
GEG6C	6	16	9	5	13	0.3	0.3	21	5.8	14	0.006
GEG8C	8	19	11	6	16	0.3	0.3	21	8.6	21	0.014
GEG10C	10	22	12	7	18	0.3	0.3	18	11	28	0.021
GEG12C	12	26	15	9	22	0.3	0.3	18	18	45	0.033
GEG15C	15	30	16	10	25	0.3	0.3	16	22	56	0.049
GEG17C	17	35	20	12	29	0.3	0.3	19	31	78	0.083
GEG20C	20	42	25	16	35.5	0.3	0.3	17	51	127	0.153
GEG25C	25	47	28	18	40.7	0.6	0.6	17	65	166	0.203
GEG30C	30	55	32	20	47	0.6	1	17	84	211	0.304
GEG35C	35	62	35	22	53	0.6	1	16	104	262	0.408
GEG40C	40	68	40	25	60	0.6	1	17	135	337	0.542
GEG45C	45	75	43	28	66	0.6	1	15	166	415	0.713

The inner and outer rings of the bearings is of stainless steel and the mark of the items has a letter "X". That is GE...C/X.



Sliding contact surfaces: Steel / PTFE composite material

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEBJ5C	5	13	8	6	11.112	0.3	0.3	13	6	15	0.007
GEBJ6C	6	16	9	6.75	12.7	0.3	0.3	13	7.7	19	0.011
GEBJ8C	8	19	12	9	15.88	0.3	0.3	14	13	32	0.018
GEBJ10C	10	22	14	10.5	19.05	0.3	0.6	13	18	45	0.029
GEBJ12C	12	26	16	12	22.23	0.3	0.6	13	24	60	0.047
GEBJ14C	14	28	19	13.5	25.4	0.3	0.6	16	31	77	0.055
GEBJ16C	16	32	21	15	28.58	0.3	0.6	15	38	96	0.087
GEBJ18C	18	35	23	16.5	31.75	0.6	0.6	15	47	117	0.109
GEBJ20C	20	40	25	18	34.93	0.6	0.6	14	56	141	0.156
GEBJ22C	22	42	28	20	38.1	0.6	0.6	15	68	171	0.184
GEBJ25C	25	47	31	22	42.86	0.6	0.6	15	84	212	0.254
GEBJ30C	30	55	37	25	50.8	0.6	0.6	17	113	283	0.396
GEBJ35C	35	62	43	28	57.15	0.6	1	19	144	360	0.522
GEBJ40C	40	75	49	33	66.67	0.6	1	17	198	495	0.931
GEBJ50C	50	90	60	45	82.5	0.6	1	13	334	835	1.69

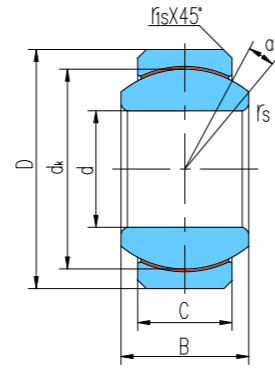


Sliding contact surfaces: Steel / PTFE composite material

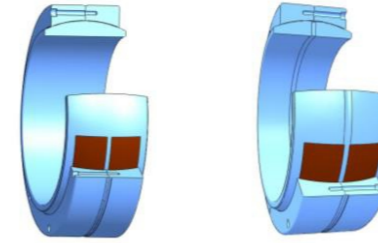
Bearing number	Dimensions mm/inch								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEFZ4C	4.83	14.29	7.14	5.54	10.31	0.3	0.38	11	5.1	12.8	0.006
	0.19	0.5625	0.281	0.218	0.406	0.012	0.015				
GEFZ6C	6.35	16.67	8.71	6.35	12.70	0.3	0.56	13	7.2	18.4	0.010
	0.25	0.6562	0.343	0.25	0.5	0.012	0.022				
GEFZ7C	7.94	19.05	9.53	7.14	14.27	0.3	0.81	11	9.1	22.9	0.014
	0.3125	0.75	0.375	0.281	0.562	0.012	0.032				
GEFZ9C	9.53	20.64	10.31	7.92	16.66	0.3	0.81	9	11.8	29.6	0.018
	0.375	0.8125	0.406	0.312	0.656	0.012	0.032				
GEFZ11C	11.11	23.02	11.10	8.71	17.45	0.3	0.81	9	13.6	34.1	0.021
	0.4375	0.9062	0.437	0.343	0.687	0.012	0.032				
GEFZ12C	12.70	25.40	12.70	9.91	20.65	0.3	0.81	9	18.4	46	0.029
	0.5	1	0.5	0.39	0.813	0.012	0.032				
GEFZ14C	14.29	27.78	14.27	11.10	23.01	0.3	0.81	9	23	57.4	0.042
	0.5625	1.0937	0.562	0.437	0.906	0.012	0.032				
GEFZ15C	15.88	30.16	15.88	12.70	25.40	0.3	0.81	8	29	72.5	0.053
	0.625	1.1875	0.625	0.5	1	0.012	0.032				
GEFZ19C	19.05	36.51	19.05	15.06	30.15	0.3	1.12	9	40.8	102.1	0.094
	0.75	1.4375	0.75	0.593	1.187	0.012	0.044				
GEFZ22C	22.23	39.69	22.23	17.86	33.32	0.6	1.12	9	53.5	133.8	0.119
	0.875	1.5625	0.875	0.703	1.312	0.024	0.044				
GEFZ25C	25.40	44.45	25.40	20.24	38.10	0.6	1.12	9	69.4	173.5	0.173
	1	1.75	1	0.797	1.5	0.024	0.044				



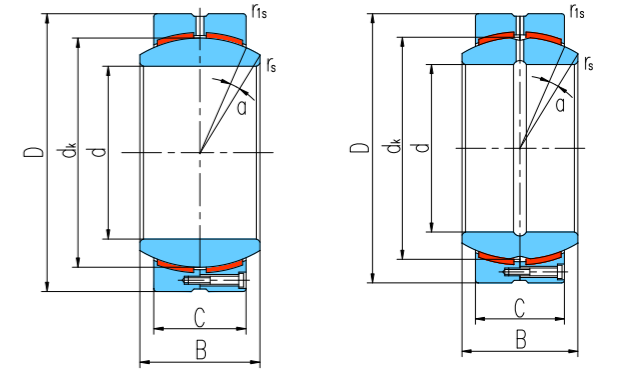
Sliding contact surfaces: Steel / PTFE fabric



Bearing number	Dimensions mm/inch								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEFZ4T	4.83	14.29	7.14	5.54	10.31	0.3	0.38	11	7.4	11	0.006
	0.19	0.5625	0.281	0.218	0.406	0.012	0.015				
GEFZ6T	6.35	16.67	8.71	6.35	12.70	0.3	0.56	13	10	15	0.010
	0.25	0.6562	0.343	0.25	0.5	0.012	0.022				
GEFZ7T	7.94	19.05	9.53	7.14	14.27	0.3	0.81	11	13	19	0.014
	0.3125	0.75	0.375	0.281	0.562	0.012	0.032				
GEFZ9T	9.53	20.64	10.31	7.92	16.66	0.3	0.81	9	17	25	0.018
	0.375	0.8125	0.406	0.312	0.656	0.012	0.032				
GEFZ11T	11.11	23.02	11.10	8.71	17.45	0.3	0.81	9	19	28	0.021
	0.4375	0.9062	0.437	0.343	0.687	0.012	0.032				
GEFZ12T	12.70	25.40	12.70	9.91	20.65	0.3	0.81	9	26	39	0.029
	0.5	1	0.5	0.39	0.813	0.012	0.032				
GEFZ14T	14.29	27.78	14.27	11.10	23.01	0.3	0.81	9	33	49	0.042
	0.5625	1.0937	0.562	0.437	0.906	0.012	0.032				
GEFZ15T	15.88	30.16	15.88	12.70	25.40	0.3	0.81	8	41	61	0.053
	0.625	1.1875	0.625	0.5	1	0.012	0.032				
GEFZ19T	19.05	36.51	19.05	15.06	30.15	0.3	1.12	9	59	88	0.094
	0.75	1.4375	0.75	0.593	1.187	0.012	0.044				
GEFZ22T	22.23	39.69	22.23	17.86	33.32	0.6	1.12	9	89	133	0.119
	0.875	1.5625	0.875	0.703	1.312	0.024	0.044				
GEFZ25T	25.40	44.45	25.40	20.24	38.10	0.6	1.12	9	115	172	0.173
	1	1.75	1	0.797	1.5	0.024	0.044				



Sliding contact surfaces: Steel / PTFE composite material

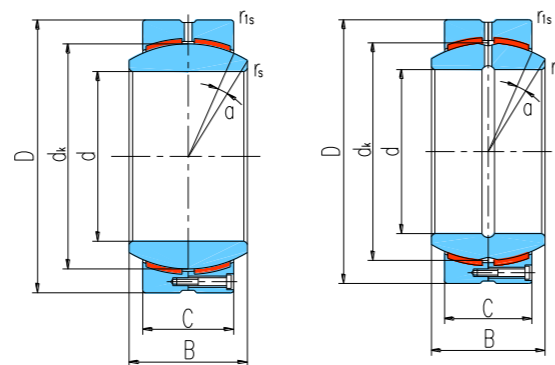
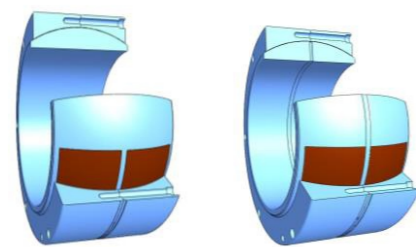


GEC...HC

GEC...HCS

Bearing number		Dimensions mm								Load ratings kN		Weight ≈kg
		d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEC320HC	GEC320HCS	320	440	160	135	380	1.1	3	4	5130	10260	78
GEC340HC	GEC340HCS	340	460	160	135	400	1.1	3	3	5400	10800	83
GEC360HC	GEC360HCS	360	480	160	135	420	1.1	3	3	5670	11340	87
GEC380HC	GEC380HCS	380	520	190	160	450	1.5	4	4	7200	14400	129
GEC400HC	GEC400HCS	400	540	190	160	470	1.5	4	3	7520	15040	135
GEC420HC	GEC420HCS	420	560	190	160	490	1.5	4	3	7840	15680	141
GEC440HC	GEC440HCS	440	600	218	185	520	1.5	4	3	9620	19240	196
GEC460HC	GEC460HCS	460	620	218	185	540	1.5	4	3	9990	19980	204
GEC480HC	GEC480HCS	480	650	230	195	565	2	5	3	11000	22000	239
GEC500HC	GEC500HCS	500	670	230	195	585	2	5	3	11400	22800	248
GEC530HC	GEC530HCS	530	710	243	205	620	2	5	3	12710	25420	294
GEC560HC	GEC560HCS	560	750	258	215	655	2	5	4	14080	28160	345
GEC600HC	GEC600HCS	600	800	272	230	700	2	5	3	16100	32200	413
GEC630HC	GEC630HCS	630	850	300	260	740	3	6	3	19240	38480	538
GEC670HC	GEC670HCS	670	900	308	260	785	3	6	3	20410	40820	603
GEC710HC	GEC710HCS	710	950	325	275	830	3	6	3	22820	45640	703
GEC750HC	GEC750HCS	750	1000	335	280	875	3	6	3	24500	49000	790
GEC800HC	GEC800HCS	800	1060	355	300	930	3	6	3	27900	55800	933
GEC850HC	GEC850HCS	850	1120	365	310	985	3	6	3	30530	61060	1060
GEC900HC	GEC900HCS	900	1180	375	320	1040	3	6	3	33280	66560	1198
GEC950HC	GEC950HCS	950	1250	400	340	1100	4	7.5	3	37400	74800	1445
GEC1000HC	GEC1000HCS	1000	1320	438	370	1160	4	7.5	3	42920	85840	1768

Can supply other spherical bearings with Sliding contact surfaces Steel / Double metal or Steel / Polyformaldehyde.

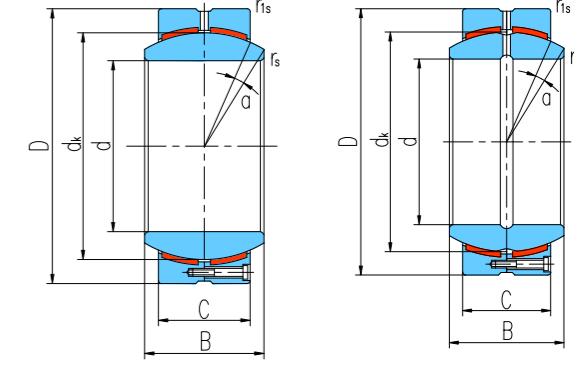
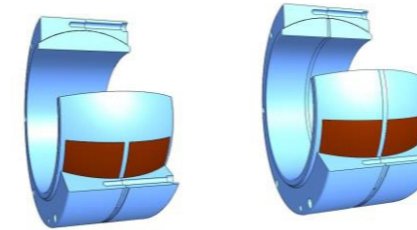


GEH...HC

GEH...HCS

Sliding contact surfaces: Steel / PTFE composite

Bearing number		Dimensions mm								Load ratings kN		Weight ≈kg
		d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEH100HC	GEH100HCS	100	150	71	67	135	1	1	2	900	1800	5.07
GEH110HC	GEH110HCS	110	160	78	74	145	1	1	2	1070	2140	6.21
GEH120HC	GEH120HCS	120	180	85	80	160	1	1	2	1280	2560	8.87
GEH140HC	GEH140HCS	140	210	100	95	185	1	1	2	1750	3500	14.6
GEH160HC	GEH160HCS	160	230	115	109	210	1	1	2	2280	4560	18.6
GEH180HC	GEH180HCS	180	260	128	122	240	1.1	1.1	2	2920	5840	26.7
GEH200HC	GEH200HCS	200	290	140	134	260	1.1	1.1	2	3480	6960	37.1
GEH220HC	GEH220HCS	220	320	155	148	290	1.1	1.1	2	4290	8580	49.4
GEH240HC	GEH240HCS	240	340	170	162	310	1.1	1.1	2	5020	10040	57.9
GEH260HC	GEH260HCS	260	370	185	175	340	1.1	1.1	2	5950	11900	75.2
GEH280HC	GEH280HCS	280	400	200	190	370	1.1	1.1	2	7030	14060	96
GEH300HC	GEH300HCS	300	430	212	200	390	1.1	1.1	2	7800	15600	117
GEH320HC	GEH320HCS	320	460	230	218	414	1.1	3	2	9020	18040	148
GEH340HC	GEH340HCS	340	480	243	230	434	1.1	3	2	9980	19960	163
GEH360HC	GEH360HCS	360	520	258	243	474	1.1	4	2	11510	23020	213
GEH380HC	GEH380HCS	380	540	272	258	494	1.5	4	2	12740	25480	236
GEH400HC	GEH400HCS	400	580	280	265	514	1.5	4	2	13620	27240	290
GEH420HC	GEH420HCS	420	600	300	280	534	1.5	4	2	14950	29900	319
GEH440HC	GEH440HCS	440	630	315	300	574	1.5	4	2	17220	34440	379
GEH460HC	GEH460HCS	460	650	325	308	593	1.5	4	2	18260	36520	404
GEH480HC	GEH480HCS	480	680	340	320	623	2	5	2	19930	39860	463
GEH500HC	GEH500HCS	500	710	355	335	643	2	5	2	21540	43080	529
GEH530HC	GEH530HCS	530	750	375	355	673	2	5	2	23890	47780	620
GEH560HC	GEH560HCS	560	800	400	380	723	2	5	2	27470	54940	770
GEH600HC	GEH600HCS	600	850	425	400	773	2	6	2	30920	61840	903
GEH630HC	GEH630HCS	630	900	450	425	813	3	6	2	34550	69100	1092
GEH670HC	GEH670HCS	670	950	475	450	862	3	6	2	38790	77580	1270
GEH710HC	GEH710HCS	710	1000	500	475	912	3	6	2	43320	86640	1465
GEH750HC	GEH750HCS	750	1060	530	500	972	3	6	2	48600	97200	1750
GEH800HC	GEH800HCS	800	1120	565	530	1022	3	6	2	54160	108320	2029
GEH850HC	GEH850HCS	850	1220	600	565	1112	3	7.5	2	62820	125640	2704



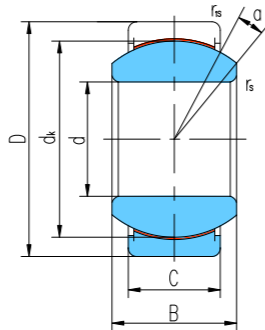
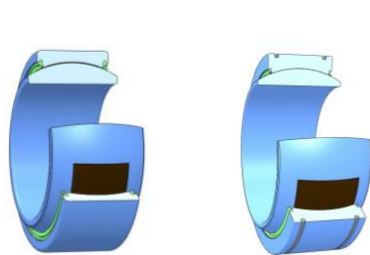
GEH...HC

GEH...HCS

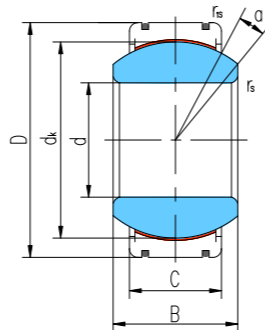
Sliding contact surfaces: Steel / PTFE composite

Bearing number		Dimensions mm								Load ratings kN		Weight ≈kg
		d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEH900HC	GEH900HCS	900	1250	635	600	1142	3	7.5	2	68520	137040	2806
GEH950HC	GEH950HCS	950	1360	670	635	1242	4	7.5	2	78860	157720	3752
GEH1000HC	GEH1000HCS	1000	1450	710	670	1312	4	7.5	2	87900	175800	4612

Can supply other spherical bearings with Sliding contact surfaces Steel / Double metal or Steel / Polyformaldehyde.



GE...ETL-2RS



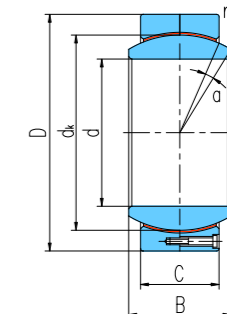
GE...XTL-2RS

Sliding contact surfaces: Steel / PTFE fabric

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GE15ETL-2RS	15	26	12	9	22	0.3	0.3	8	47	79	0.026
GE17ETL-2RS	17	30	14	10	25	0.3	0.3	10	60	100	0.040
GE20ETL-2RS	20	35	16	12	29	0.3	0.3	9	83	139	0.064
GE25ETL-2RS	25	42	20	16	35.5	0.6	0.6	7	135	225	0.115
GE30ETL-2RS	30	47	22	18	40.7	0.6	0.6	6	175	290	0.149
GE35ETL-2RS	35	55	25	20	47	0.6	1	6	225	375	0.228
GE40ETL-2RS	40	62	28	22	53	0.6	1	7	275	465	0.318
GE45ETL-2RS	45	68	32	25	60	0.6	1	7	360	600	0.421
GE50ETL-2RS	50	75	35	28	66	0.6	1	6	440	735	0.562
GE55ETL-2RS	55	85	40	32	74	0.6	1	7	560	940	0.864
GE60ETL-2RS	60	90	44	36	80	1	1	6	690	1150	1.03
GE70ETL-2RS	70	105	49	40	92	1	1	6	880	1470	1.57
GE80ETL-2RS	80	120	55	45	105	1	1	6	1130	1890	2.32
GE90ETL-2RS	90	130	60	50	115	1	1	5	1380	2300	2.79
GE100ETL-2RS	100	150	70	55	130	1	1	7	1710	2860	4.44
GE110ETL-2RS	110	160	70	55	140	1	1	6	1840	3080	4.83
GE120ETL-2RS	120	180	85	70	160	1	1	6	2680	4480	8.11
GE140XTL-2RS	140	210	90	70	180	1	1	7	3020	5040	11.2
GE160XTL-2RS	160	230	105	80	200	1	1	8	3840	6400	14.1
GE180XTL-2RS	180	260	105	80	225	1.1	1.1	6	4320	7200	18.5
GE200XTL-2RS	200	290	130	100	250	1.1	1.1	7	6000	10000	28.4
GE220XTL-2RS	220	320	135	100	275	1.1	1.1	8	6600	11000	35.7
GE240XTL-2RS	240	340	140	100	300	1.1	1.1	8	7200	12000	39.7
GE260XTL-2RS	260	370	150	110	325	1.1	1.1	7	8580	14300	51.5
GE280XTL-2RS	280	400	155	120	350	1.1	1.1	6	10000	16800	64.9
GE300XTL-2RS	300	430	165	120	375	1.1	1.1	7	10800	18000	77.6

Can supply spherical plain bearing with "2GS" seals or without seal.

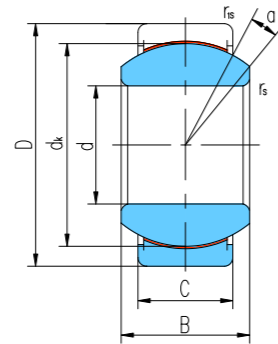
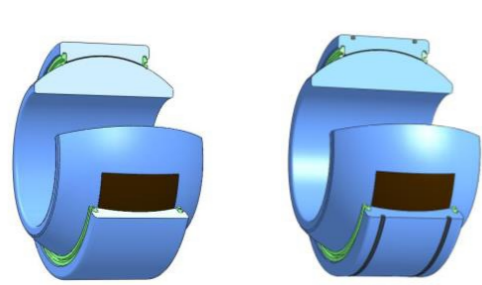
This series replaces the original series GE...E(X)T-2RS, capability of GE...E(X)TL-2RS see page14.



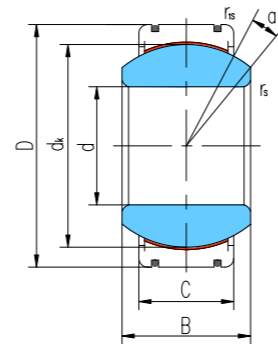
Sliding contact surfaces: Steel / PTFE fabric

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GE120HTL-2RS	120	180	85	70	160	1	1	6	3350	5580	8.11
GE140HTL-2RS	140	210	90	70	180	1	1	7	3770	6290	11.2
GE160HTL-2RS	160	230	105	80	200	1	1	8	4800	8000	14.1
GE180HTL-2RS	180	260	105	80	225	1.1	1.1	6	5400	9000	18.5
GE200HTL-2RS	200	290	130	100	250	1.1	1.1	7	7500	12500	28.4
GE220HTL-2RS	220	320	135	100	275	1.1	1.1	8	8250	13750	35.7
GE240HTL-2RS	240	340	140	100	300	1.1	1.1	8	9000	15000	39.7
GE260HTL-2RS	260	370	150	110	325	1.1	1.1	7	10720	17870	51.5
GE280HTL-2RS	280	400	155	120	350	1.1	1.1	6	12500	20830	64.9
GE300HTL-2RS	300	430	165	120	375	1.1	1.1	7	13500	22500	77.6

Can supply spherical plain bearing with "2GS" seals or without seal.



GEG...ETL-2RS

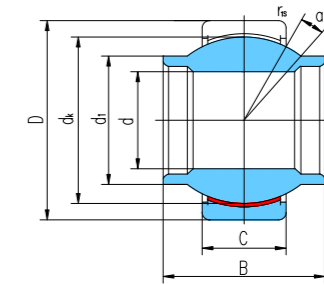
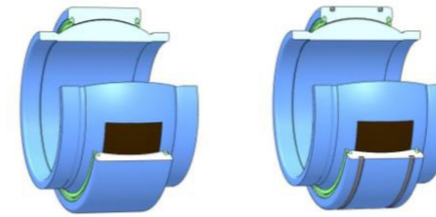


GEG...XTL-2RS

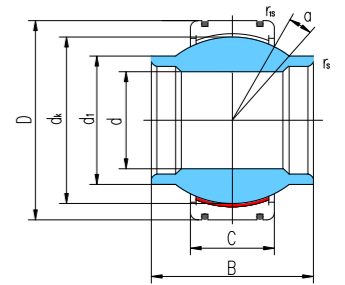
Sliding contact surfaces: Steel / PTFE fabric

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEG15ETL-2RS	15	30	16	10	25	0.3	0.3	16	60	100	0.048
GEG17ETL-2RS	17	35	20	12	29	0.3	0.3	19	83	139	0.080
GEG20ETL-2RS	20	42	25	16	35.5	0.3	0.6	17	135	225	0.152
GEG25ETL-2RS	25	47	28	18	40.7	0.6	0.6	17	175	290	0.199
GEG30ETL-2RS	30	55	32	20	47	0.6	1	17	225	375	0.296
GEG35ETL-2RS	35	62	35	22	53	0.6	1	16	275	465	0.402
GEG40ETL-2RS	40	68	40	25	60	0.6	1	17	360	600	0.535
GEG45ETL-2RS	45	75	43	28	66	0.6	1	15	440	735	0.698
GEG50ETL-2RS	50	90	56	36	80	0.6	1	17	690	1150	1.42
GEG60ETL-2RS	60	105	63	40	92	1	1	17	880	1470	2.09
GEG70ETL-2RS	70	120	70	45	105	1	1	16	1130	1890	3.01
GEG80ETL-2RS	80	130	75	50	115	1	1	14	1380	2300	3.61
GEG90ETL-2RS	90	150	85	55	130	1	1	15	1710	2860	5.50
GEG100ETL-2RS	100	160	85	55	140	1	1	14	1840	3080	6.04
GEG110ETL-2RS	110	180	100	70	160	1	1	12	2680	4480	9.74
GEG120XTL-2RS	120	210	115	70	180	1	1	16	3020	5040	15.1
GEG140XTL-2RS	140	230	130	80	200	1	1	16	3840	6400	18.9
GEG160XTL-2RS	160	260	135	80	225	1.1	1.1	16	4320	7200	24.8
GEG180XTL-2RS	180	290	155	100	250	1.1	1.1	14	6000	10000	35.9
GEG200XTL-2RS	200	320	165	100	275	1.1	1.1	15	6600	11000	44.9
GEG220XTL-2RS	220	340	175	100	300	1.1	1.1	16	7200	12000	50.9
GEG240XTL-2RS	240	370	190	110	325	1.1	1.1	15	8580	14300	65.3
GEG260XTL-2RS	260	400	205	120	350	1.1	1.1	15	10000	16800	82.0
GEG280XTL-2RS	280	430	210	120	375	1.1	1.1	15	10800	18000	96.6

Can supply spherical plain bearing with "2GS" seals or without seal.
 This series replaces the original series GEG...E(X)T-2RS, capability of GEG...E(X)TL-2RS see page 14.



GEEW...ETL-2RS

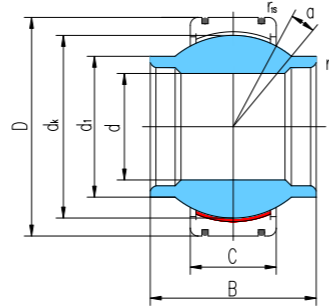
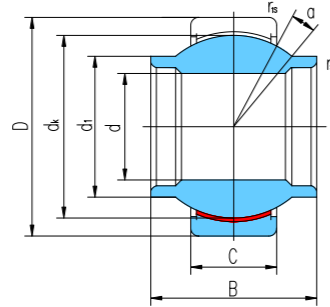
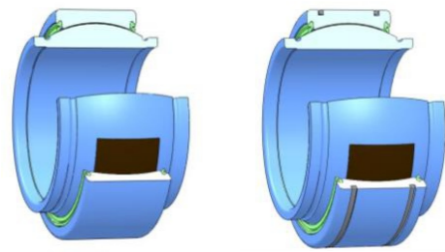


GEEW...XTL-2RS

Sliding contact surfaces: Steel / PTFE fabric

Bearing number	Dimensions mm									Load ratings kN		Weight ≈kg
	d	D	B	C	d1 max	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEEW12ETL	12	22	12	7	15.5	18	0.3	0.3	4	30	50	0.017
GEEW15ETL-2RS	15	26	15	9	18.5	22	0.3	0.3	5	47	79	0.028
GEEW16ETL-2RS	16	28	16	9	20	23	0.3	0.3	4	49	81	0.034
GEEW17ETL-2RS	17	30	17	10	21	25	0.3	0.3	7	60	100	0.043
GEEW20ETL-2RS	20	35	20	12	25	29	0.3	0.3	4	83	139	0.069
GEEW25ETL-2RS	25	42	25	16	30.5	35.5	0.6	0.6	4	135	225	0.124
GEEW30ETL-2RS	30	47	30	18	34	40.7	0.6	0.6	4	175	290	0.159
GEEW32ETL-2RS	32	52	32	18	37	43	0.6	1	4	185	308	0.207
GEEW35ETL-2RS	35	55	35	20	40	47	0.6	1	4	225	375	0.248
GEEW40ETL-2RS	40	62	40	22	46	53	0.6	1	4	275	465	0.349
GEEW45ETL-2RS	45	68	45	25	52	60	0.6	1	4	360	600	0.468
GEEW50ETL-2RS	50	75	50	28	57	66	0.6	1	4	440	735	0.62
GEEW60ETL-2RS	60	90	60	36	68	80	1	1	4	690	1150	1.11
GEEW63ETL-2RS	63	95	63	36	71.5	83	1	1	4	715	119	1.27
GEEW70XTL-2RS	70	105	70	40	78	92	1	1	4	880	1470	1.69
GEEW80XTL-2RS	80	120	80	45	91	105	1	1	4	1130	1890	2.55
GEEW90XTL-2RS	90	130	90	50	99	115	1	1	4	1380	2300	3.04
GEEW100XTL-2RS	100	150	100	55	113	130	1	1	4	1710	2860	4.87
GEEW110XTL-2RS	110	160	110	55	124	140	1	1	4	1840	3080	5.53
GEEW125XTL-2RS	125	180	125	70	138	160	1	1	4	2685	4475	8.19
GEEW160XTL-2RS	160	230	160	80	177	200	1	1	4	3840	6400	15.8
GEEW200XTL-2RS	200	290	200	100	221	250	1.1	1.1	4	6000	10000	31.7
GEEW250XTL-2RS	250	400	250	120	317	350	1.1	1.1	4	10080	16800	101
GEEW320XTL-2RS	320	520	320	160	405	450	1.1	1.1	4	17280	28800	225

Can supply spherical plain bearing with "2GS" seals or without seal.



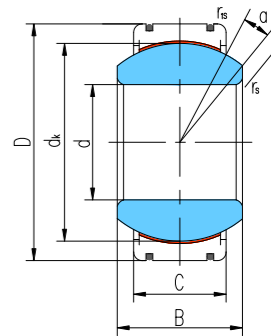
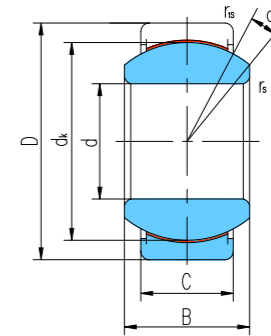
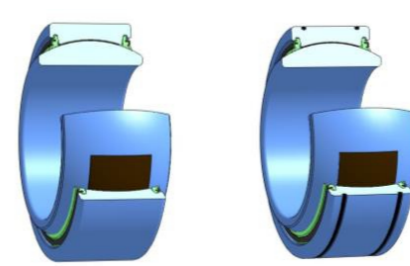
Sliding contact surfaces: Steel / PTFE fabric

GEEM...ETL-2RS

GEEM...XTL-2RS

Bearing number	Dimensions mm									Load ratings kN		Weight ≈kg
	d	D	B	C	d _{1 max}	d _k	r _{s min}	r _{1s min}	α° ≈	Dynamic	Static	
GEEM20ETL-2RS	20	35	24	12	24	29	0.3	0.3	6	83	139	0.072
GEEM25ETL-2RS	25	42	29	16	29	35.5	0.3	0.6	4	135	225	0.13
GEEM30ETL-2RS	30	47	30	18	34	40.7	0.3	0.6	4	175	290	0.16
GEEM35ETL-2RS	35	55	35	20	40	47	0.6	1	4	225	375	0.25
GEEM40ETL-2RS	40	62	38	22	45	53	0.6	1	4	275	465	0.34
GEEM45ETL-2RS	45	68	40	25	52	60	0.6	1	4	360	600	0.45
GEEM50ETL-2RS	50	75	43	28	57	66	0.6	1	4	440	735	0.59
GEEM60ETL-2RS	60	90	54	36	68	80	0.6	1	3	690	1150	1.06
GEEM70XTL-2RS	70	105	65	40	78	92	0.6	1	4	880	1470	1.66
GEEM80XTL-2RS	80	120	74	45	90	105	0.6	1	4	1130	1890	2.47
GEEM90XTL-2RS	90	130	80	50	99	115	1	1	4	1380	2300	2.88
GEEM100XTL-2RS	100	150	90	55	113	130	1	1	4	1710	2860	4.65
GEEM120XTL-2RS	120	180	108	70	133	160	1	1	4	2680	4480	8.44

Can supply spherical plain bearing with "2GS" seals or without seal.



Sliding contact surfaces: Stainless steel / PTFE

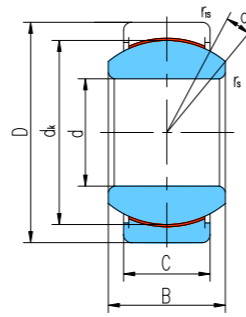
GE...ETL-2RS/X

GE...XTL-2RS/X

Bearing number	Dimensions mm									Load ratings kN		Weight ≈kg
	d	D	B	C	d _k	r _{s min}	r _{1s min}	α° ≈	Dynamic	Static		
GE15ETL-2RS/X	15	26	12	9	22	0.3	0.3	8	47	79	0.026	
GE17ETL-2RS/X	17	30	14	10	25	0.3	0.3	10	60	100	0.040	
GE20ETL-2RS/X	20	35	16	12	29	0.3	0.3	9	83	139	0.064	
GE25ETL-2RS/X	25	42	20	16	35.5	0.6	0.6	7	135	225	0.115	
GE30ETL-2RS/X	30	47	22	18	40.7	0.6	0.6	6	175	290	0.149	
GE35ETL-2RS/X	35	55	25	20	47	0.6	1	6	225	375	0.228	
GE40ETL-2RS/X	40	62	28	22	53	0.6	1	7	275	465	0.318	
GE45ETL-2RS/X	45	68	32	25	60	0.6	1	7	360	600	0.421	
GE50ETL-2RS/X	50	75	35	28	66	0.6	1	6	440	735	0.562	
GE55ETL-2RS/X	55	85	40	32	74	0.6	1	7	560	940	0.864	
GE60ETL-2RS/X	60	90	44	36	80	1	1	6	690	1150	1.03	
GE70XTL-2RS/X	70	105	49	40	92	1	1	6	880	1470	1.57	
GE80XTL-2RS/X	80	120	55	45	105	1	1	6	1130	1890	2.32	
GE90XTL-2RS/X	90	130	60	50	115	1	1	5	1380	2300	2.79	
GE100XTL-2RS/X	100	150	70	55	130	1	1	7	1710	2860	4.44	
GE110XTL-2RS/X	110	160	70	55	140	1	1	6	1840	3080	4.83	
GE120XTL-2RS/X	120	180	85	70	160	1	1	6	2680	4480	8.11	
GE140XTL-2RS/X	140	210	90	70	180	1	1	7	3020	5040	11.2	
GE160XTL-2RS/X	160	230	105	80	200	1	1	8	3840	6400	14.1	
GE180XTL-2RS/X	180	260	105	80	225	1.1	1.1	6	4320	7200	18.5	
GE200XTL-2RS/X	200	290	130	100	250	1.1	1.1	7	6000	10000	28.4	
GE220XTL-2RS/X	220	320	135	100	275	1.1	1.1	8	6600	11000	35.7	
GE240XTL-2RS/X	240	340	140	100	300	1.1	1.1	8	7200	12000	39.7	
GE260XTL-2RS/X	260	370	150	110	325	1.1	1.1	7	8580	14300	51.5	
GE280XTL-2RS/X	280	400	155	120	350	1.1	1.1	6	10000	16800	64.9	
GE300XTL-2RS/X	300	430	165	120	375	1.1	1.1	7	10800	18000	77.6	

Can supply spherical plain bearing with "2GS" seals or without seal.

This series replaces the original series GE...E(X)T-2RS/X, capability of GE...E(X)TL-2RS/X see page 14.



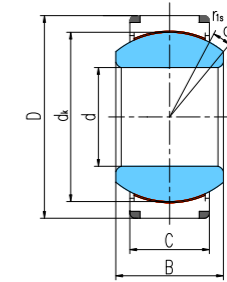
Sliding contact surfaces: Steel / PTFE fabric

Bearing number	Dimensions mm/inch								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEZ19ETL-2RS	19.05	31.75	16.662	14.275	27.5	0.3	0.6	6	50	117	0.053
	0.75	1.25	0.656	0.562	1.081	0.012	0.024				
GEZ22ETL-2RS	22.225	36.513	19.431	16.662	32	0.3	0.6	6	69	160	0.085
	0.875	1.4375	0.756	0.656	1.258	0.012	0.024				
GEZ25ETL-2RS	25.4	41.275	22.225	19.05	36.5	0.3	0.6	6	104	250	0.121
	1	1.625	0.875	0.75	1.437	0.012	0.024				
GEZ31ETL-2RS	31.75	50.8	27.762	23.8	45.5	0.6	0.6	6	160	390	0.23
	1.25	2	1.093	0.937	1.788	0.024	0.024				
GEZ34ETL-2RS	34.925	55.563	30.15	26.187	49	0.6	1	5	190	460	0.35
	1.375	2.1875	1.187	1.031	1.926	0.024	0.04				
GEZ38ETL-2RS	38.1	61.913	33.325	28.575	54.7	0.6	1	6	235	560	0.42
	1.5	2.4375	1.312	1.125	2.154	0.024	0.04				
GEZ44ETL-2RS	44.45	71.438	38.887	33.325	63.9	0.6	1	6	320	765	0.64
	1.75	2.8125	1.531	1.312	2.511	0.024	0.04				
GEZ50ETL-2RS	50.8	80.963	44.45	38.1	73	0.6	1	6	415	1000	0.93
	2	3.1875	1.75	1.5	2.869	0.024	0.04				
GEZ57ETL-2RS	57.15	90.488	50.013	42.85	82	0.6	1	6	525	1260	1.3
	2.25	3.5625	1.969	1.687	3.223	0.024	0.04				
GEZ63ETL-2RS	63.5	100.013	55.55	47.625	92	1	1	6	655	1570	1.85
	2.5	3.9375	2.187	1.875	3.616	0.04	0.04				
GEZ69ETL-2RS	69.85	111.125	61.112	52.375	100	1	1	6	785	1880	2.4
	2.75	4.375	2.406	2.062	3.937	0.04	0.04				
GEZ76ETL-2RS	76.2	120.65	66.675	57.15	109.5	1	1	6	935	2250	3.1
	3	4.75	2.625	2.25	4.303	0.04	0.04				
GEZ82ETL-2RS	82.55	130.175	72.238	61.9	119	1	1	6	1100	2650	3.8
	3.25	5.125	2.844	2.437	4.685	0.04	0.04				
GEZ88ETL-2RS	88.9	139.7	77.775	66.675	128	1	1	6	1280	3070	4.8
	3.5	5.5	3.062	2.625	5.04	0.04	0.04				
GEZ95ETL-2RS	95.25	149.225	83.337	71.425	137	1	1	6	1460	3520	5.8
	3.75	5.875	3.281	2.812	5.393	0.04	0.04				
GEZ101ETL-2RS	101.6	158.75	88.9	76.2	146	1	1	6	1660	4000	7
	4	6.25	3.5	3	5.748	0.04	0.04				
GEZ107ETL-2RS	107.95	168.275	94.463	80.95	155	1	1	6	1880	4510	8.4
	4.25	6.625	3.719	3.187	6.102	0.04	0.04				
GEZ114ETL-2RS	114.3	177.8	100.013	85.725	164.5	1	1	6	2110	5070	9.8
	4.5	7	3.937	3.375	6.476	0.04	0.04				
GEZ120ETL-2RS	120.65	187.325	105.562	90.475	173.5	1	1	6	2350	5650	11.5
	4.75	7.375	4.156	3.562	6.83	0.04	0.04				
GEZ127ETL-2RS	127	196.85	111.125	95.25	183	1	1	6	2610	6270	13.5
	5	7.75	4.375	3.75	7.204	0.04	0.04				
GEZ152ETL-2RS	152.4	222.25	120.65	104.775	207	1	1	5	3250	7800	17.5
	6	8.75	4.75	4.125	8.15	0.04	0.04				

The inner and outer rings of the bearings is of stainless steel and the mark of the items has a letter "X".

That is GEZ ...ETL-2RS/X; Can supply spherical plain bearing with "2GS" seals or without seal.

This series replaces the original series GEZ...ET-2RS, capability of GEZ...ETL-2RS see page 14.

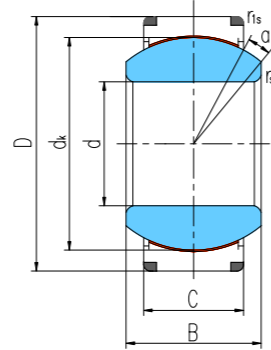
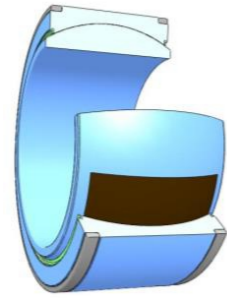


Sliding contact surfaces: Steel / PTFE

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEC320XTL-2RS	320	440	160	135	380	1.1	3	4	12310	20520	78
GEC340XTL-2RS	340	460	160	135	400	1.1	3	3	12960	21600	83
GEC360XTL-2RS	360	480	160	135	420	1.1	3	3	13600	22680	87
GEC380XTL-2RS	380	520	190	160	450	1.5	4	4	17280	28800	129
GEC400XTL-2RS	400	540	190	160	470	1.5	4	3	18040	30080	135
GEC420XTL-2RS	420	560	190	160	490	1.5	4	3	18810	31360	141
GEC440XTL-2RS	440	600	218	185	520	1.5	4	3	23080	38480	196
GEC460XTL-2RS	460	620	218	185	540	1.5	4	3	23970	39960	204
GEC480XTL-2RS	480	650	230	195	565	2	5	3	26440	44070	239
GEC500XTL-2RS	500	670	230	195	585	2	5	3	27370	45630	248
GEC530XTL-2RS	530	710	243	205	620	2	5	3	30500	50840	294
GEC560XTL-2RS	560	750	258	215	655	2	5	4	33790	56330	345
GEC600XTL-2RS	600	800	272	230	700	2	5	3	38640	64400	413
GEC630XTL-2RS	630	850	300	260	740	3	6	3	46170	76960	538

Can supply spherical plain bearing without seal.

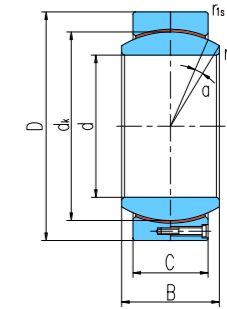
This series replaces the original series GEC...XT-2RS, capability of GEC...XTL-2RS see page 14.



Sliding contact surfaces: Steel / PTFE fabric

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEH100XTL-2RS	100	150	71	67	135	1	1	2	2170	3610	5.07
GEH110XTL-2RS	110	160	78	74	145	1	1	2	2570	4290	6.21
GEH120XTL-2RS	120	180	85	80	160	1	1	2	3070	5120	8.87
GEH140XTL-2RS	140	210	100	95	185	1	1	2	4210	7030	14.6
GEH160XTL-2RS	160	230	115	109	210	1	1	2	5490	9150	18.6
GEH180XTL-2RS	180	260	128	122	240	1.1	1.1	2	7020	11710	26.7
GEH200XTL-2RS	200	290	140	134	260	1.1	1.1	2	8360	13930	37.1
GEH220XTL-2RS	220	320	155	148	290	1.1	1.1	2	10300	17160	49.4
GEH240XTL-2RS	240	340	170	162	310	1.1	1.1	2	12050	20080	57.9
GEH260XTL-2RS	260	370	185	175	340	1.1	1.1	2	14280	23800	75.2
GEH280XTL-2RS	280	400	200	190	370	1.1	1.1	2	16870	28120	96
GEH300XTL-2RS	300	430	212	200	390	1.1	1.1	2	18720	31200	117
GEH320XTL-2RS	320	460	230	218	414	1.1	3	2	21660	36100	148
GEH340XTL-2RS	340	480	243	230	434	1.1	3	2	23950	39920	163
GEH360XTL-2RS	360	520	258	243	474	1.1	4	2	27640	46070	213
GEH380XTL-2RS	380	540	272	258	494	1.5	4	2	30580	50980	236
GEH400XTL-2RS	400	580	280	265	514	1.5	4	2	32690	54480	290
GEH420XTL-2RS	420	600	300	280	534	1.5	4	2	35880	59800	319
GEH440XTL-2RS	440	630	315	300	574	1.5	4	2	41320	68880	379
GEH460XTL-2RS	460	650	325	308	593	1.5	4	2	43830	73050	404
GEH480XTL-2RS	480	680	340	320	623	2	5	2	47840	79740	463
GEH500XTL-2RS	500	710	355	335	643	2	5	2	51690	86160	529
GEH530XTL-2RS	530	750	375	355	673	2	5	2	57330	95560	620
GEH560XTL-2RS	560	800	400	380	723	2	5	2	65930	109890	770
GEH600XTL-2RS	600	850	425	400	773	2	6	2	74200	123680	903

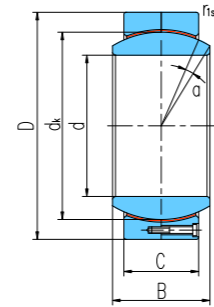
Can supply spherical plain bearing with "2GS" seals(d≤300mm) or without seal.
This series replaces the original series GEH...XT-2RS, capability of GEH...XTL-2RS see page 14.



Sliding contact surfaces: Steel / PTFE fabric

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GEC320HTL	320	440	160	135	380	1.1	3	4	15390	25650	78
GEC340HTL	340	460	160	135	400	1.1	3	3	16200	27000	83
GEC360HTL	360	480	160	135	420	1.1	3	3	17010	28350	87
GEC380HTL	380	520	190	160	450	1.5	4	4	21600	36000	129
GEC400HTL	400	540	190	160	470	1.5	4	3	22560	37600	135
GEC420HTL	420	560	190	160	490	1.5	4	3	23520	39200	141
GEC440HTL	440	600	218	185	520	1.5	4	3	28860	48100	196
GEC460HTL	460	620	218	185	540	1.5	4	3	29970	49950	204
GEC480HTL	480	650	230	195	565	2	5	3	33050	55080	239
GEC500HTL	500	670	230	195	585	2	5	3	34220	57030	248
GEC530HTL	530	710	243	205	620	2	5	3	38130	63550	294
GEC560HTL	560	750	258	215	655	2	5	4	42240	70410	345
GEC600HTL	600	800	272	230	700	2	5	3	48300	80500	413
GEC630HTL	630	850	300	260	740	3	6	3	57720	96200	538
GEC670HTL	670	900	308	260	785	3	6	3	61230	102050	603
GEC710HTL	710	950	325	275	830	3	6	3	68470	114120	703
GEC750HTL	750	1000	335	280	875	3	6	3	73500	122500	790
GEC800HTL	800	1060	355	300	930	3	6	3	83700	139500	933
GEC850HTL	850	1120	365	310	985	3	6	3	91600	152670	1060
GEC900HTL	900	1180	375	320	1040	3	6	3	99840	166400	1198
GEC950HTL	950	1250	400	340	1100	4	7.5	3	112200	187000	1445
GEC1000HTL	1000	1320	438	370	1160	4	7.5	3	128760	214600	1768

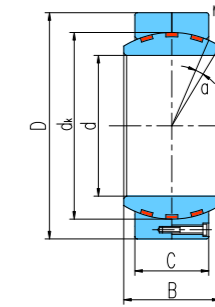
This series replaces the original series GEC...HT, capability of GEC...HTL see page 14.



Sliding contact surfaces: Steel / PTFE fabric

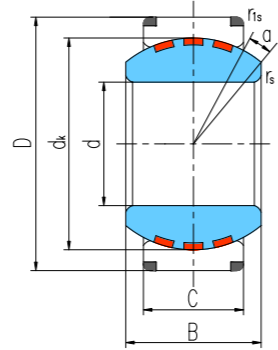
Bearing number	Dimensions mm								Load ratings kN		Weight ≈ kg
	d	D	B	C	dk	r_s min	r_{1s} min	$\alpha^\circ \approx$	Dynamic	Static	
GEH100HTL	100	150	71	67	135	1	1	2	2710	4520	5.07
GEH110HTL	110	160	78	74	145	1	1	2	3210	5360	6.21
GEH120HTL	120	180	85	80	160	1	1	2	3840	6400	8.87
GEH140HTL	140	210	100	95	185	1	1	2	5270	8780	14.6
GEH160HTL	160	230	115	109	210	1	1	2	6860	11440	18.6
GEH180HTL	180	260	128	122	240	1.1	1.1	2	8780	14640	26.7
GEH200HTL	200	290	140	134	260	1.1	1.1	2	10450	17420	37.1
GEH220HTL	220	320	155	148	290	1.1	1.1	2	12870	21460	49.4
GEH240HTL	240	340	170	162	310	1.1	1.1	2	15060	25110	57.9
GEH260HTL	260	370	185	175	340	1.1	1.1	2	17850	29750	75.2
GEH280HTL	280	400	200	190	370	1.1	1.1	2	21090	35150	96
GEH300HTL	300	430	212	200	390	1.1	1.1	2	23400	39000	117
GEH320HTL	320	460	230	218	414	1.1	3	2	27070	45120	148
GEH340HTL	340	480	243	230	434	1.1	3	2	29940	49910	163
GEH360HTL	360	520	258	243	474	1.1	4	2	34550	57590	213
GEH380HTL	380	540	272	258	494	1.5	4	2	38230	63720	236
GEH400HTL	400	580	280	265	514	1.5	4	2	40860	68100	290
GEH420HTL	420	600	300	280	534	1.5	4	2	44850	74760	319
GEH440HTL	440	630	315	300	574	1.5	4	2	51660	86100	379
GEH460HTL	460	650	325	308	593	1.5	4	2	54790	91320	404
GEH480HTL	480	680	340	320	623	2	5	2	59800	99680	463
GEH500HTL	500	710	355	335	643	2	5	2	64620	107700	529
GEH530HTL	530	750	375	355	673	2	5	2	71670	119450	620
GEH560HTL	560	800	400	380	723	2	5	2	82420	137370	770
GEH600HTL	600	850	425	400	773	2	6	2	92760	154600	903
GEH630HTL	630	900	450	425	813	3	6	2	103650	172760	1092
GEH670HTL	670	950	475	450	862	3	6	2	116370	193950	1270
GEH710HTL	710	1000	500	475	912	3	6	2	129960	216600	1465
GEH750HTL	750	1060	530	500	972	3	6	2	145800	243000	1750
GEH800HTL	800	1120	565	530	1022	3	6	2	162490	270830	2029
GEH850HTL	850	1220	600	565	1112	3	7.5	2	188480	314140	2704
GEH900HTL	900	1250	635	600	1142	3	7.5	2	205560	342600	2806
GEH950HTL	950	1360	670	635	1242	4	7.5	2	236600	394330	3752
GEH1000HTL	1000	1450	710	670	1312	4	7.5	2	263710	439520	4612

This series replaces the original series GEH...HT, capability of GEH...HTL see page 14.



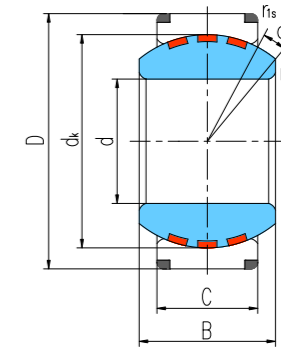
Sliding contact surfaces: Steel / Copper alloy

Bearing number	Dimensions mm								Load ratings kN		Weight ≈ kg
	d	D	B	C	dk	r_s min	r_{1s} min	$\alpha^\circ \approx$	Dynamic	Static	
GEH440HF/Q	440	630	315	300	574	1.5	4	2	17220	34440	370
GEH460HF/Q	460	650	325	308	593	1.5	4	2	18260	36520	395
GEH480HF/Q	480	680	340	320	623	2	5	2	19930	39860	453
GEH500HF/Q	500	710	355	335	643	2	5	2	21540	43080	519
GEH530HF/Q	530	750	375	355	673	2	5	2	23890	47780	609
GEH560HF/Q	560	800	400	380	723	2	5	2	27470	54940	754
GEH600HF/Q	600	850	425	400	773	2	6	2	30920	61840	885
GEH630HF/Q	630	900	450	425	813	3	6	2	34550	69100	1072
GEH670HF/Q	670	950	475	450	862	3	6	2	38790	77580	1248
GEH710HF/Q	710	1000	500	475	912	3	6	2	43320	86640	1440
GEH750HF/Q	750	1060	530	500	972	3	6	2	48600	97200	1722
GEH800HF/Q	800	1120	565	530	1022	3	6	2	54160	108320	1998
GEH850HF/Q	850	1220	600	565	1112	3	7.5	2	62820	125640	2660
GEH900HF/Q	900	1250	635	600	1142	3	7.5	2	68520	137040	2761
GEH950HF/Q	950	1360	670	635	1242	4	7.5	2	78860	157720	3692
GEH1000HF/Q	1000	1450	710	670	1312	4	7.5	2	87900	175800	4538



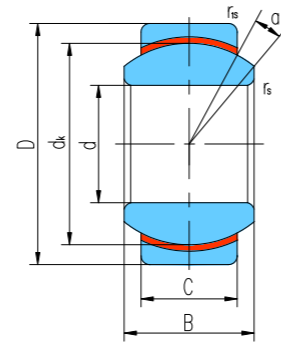
Sliding contact surfaces: Steel / Copper alloy

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	r _{s min}	r _{1s min}	α° ≈	Dynamic	Static	
GE100XF/Q	100	150	70	55	130	1	1	7	710	1420	4.24
GE110XF/Q	110	160	70	55	140	1	1	6	770	1540	4.55
GE120XF/Q	120	180	85	70	160	1	1	6	1120	2240	7.77
GE140XF/Q	140	210	90	70	180	1	1	7	1260	2520	10.7
GE160XF/Q	160	230	105	80	200	1	1	8	1600	3200	13.5
GE180XF/Q	180	260	105	80	225	1.1	1.1	6	1800	3600	17.9
GE200XF/Q	200	290	130	100	250	1.1	1.1	7	2500	5000	27.3
GE220XF/Q	220	320	135	100	275	1.1	1.1	8	2750	5500	34.5
GE240XF/Q	240	340	140	100	300	1.1	1.1	8	3000	6000	38.3
GE260XF/Q	260	370	150	110	325	1.1	1.1	7	3570	7140	49.7
GE280XF/Q	280	400	155	120	350	1.1	1.1	6	4200	8400	63
GE300XF/Q	300	430	165	120	375	1.1	1.1	7	4500	9000	75.3
GEC320XF/Q	320	440	160	135	380	1.1	3	4	5130	10260	75.8
GEC340XF/Q	340	460	160	135	400	1.1	3	3	5400	10800	80.8
GEC360XF/Q	360	480	160	135	420	1.1	3	3	5670	11340	84.5
GEC380XF/Q	380	520	190	160	450	1.5	4	4	7200	14400	125
GEC400XF/Q	400	540	190	160	470	1.5	4	3	7520	15040	131
GEC420XF/Q	420	560	190	160	490	1.5	4	3	7840	15680	137
GEC440XF/Q	440	600	218	185	520	1.5	4	3	9620	19240	191
GEC460XF/Q	460	620	218	185	540	1.5	4	3	9990	19980	199
GEC480XF/Q	480	650	230	195	565	2	5	3	11000	22000	233
GEC500XF/Q	500	670	230	195	585	2	5	3	11400	22800	242
GEC530XF/Q	530	710	243	205	620	2	5	3	12710	25420	287
GEC560XF/Q	560	750	258	215	655	2	5	4	14080	28160	336
GEC600XF/Q	600	800	272	230	700	2	5	3	16100	32200	403
GEC630XF/Q	630	850	300	260	740	3	6	3	19240	38480	525



Sliding contact surfaces: Steel / Copper alloy

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	r _{s min}	r _{1s min}	α° ≈	Dynamic	Static	
GEH100XF/Q	100	150	71	67	135	1	1	2	900	1800	4.85
GEH110XF/Q	110	160	78	74	145	1	1	2	1070	2140	5.9
GEH120XF/Q	120	180	85	80	160	1	1	2	1280	2560	8.49
GEH140XF/Q	140	210	100	95	185	1	1	2	1750	3500	14.1
GEH160XF/Q	160	230	115	109	210	1	1	2	2280	4560	17.9
GEH180XF/Q	180	260	128	122	240	1.1	1.1	2	2920	5840	25.9
GEH200XF/Q	200	290	140	134	260	1.1	1.1	2	3480	6960	35.9
GEH220XF/Q	220	320	155	148	290	1.1	1.1	2	4290	8580	48
GEH240XF/Q	240	340	170	162	310	1.1	1.1	2	5020	10040	56
GEH260XF/Q	260	370	185	175	340	1.1	1.1	2	5950	11900	72.8
GEH280XF/Q	280	400	200	190	370	1.1	1.1	2	7030	14060	93.3
GEH300XF/Q	300	430	212	200	390	1.1	1.1	2	7800	15600	114
GEH320XF/Q	320	460	230	218	414	1.1	3	2	9020	18040	144
GEH340XF/Q	340	480	243	230	434	1.1	3	2	9980	19960	158
GEH360XF/Q	360	520	258	243	474	1.1	4	2	11510	23020	207
GEH380XF/Q	380	540	272	258	494	1.5	4	2	12740	25480	230
GEH400XF/Q	400	580	280	265	514	1.5	4	2	13620	27240	283
GEH420XF/Q	420	600	300	280	534	1.5	4	2	14950	29900	312
GEH440XF/Q	440	630	315	300	574	1.5	4	2	17220	34440	370
GEH460XF/Q	460	650	325	308	593	1.5	4	2	18260	36520	395
GEH480XF/Q	480	680	340	320	623	2	5	2	19930	39860	453
GEH500XF/Q	500	710	355	335	643	2	5	2	21540	43080	519
GEH530XF/Q	530	750	375	355	673	2	5	2	23890	47780	609
GEH560XF/Q	560	800	400	380	723	2	5	2	27470	54940	754
GEH600XF/Q	600	850	425	400	773	2	6	2	30920	61840	885



Sliding contact surfaces: Stainless steel / PTFE plastic

Bearing number	Dimensions mm								Load ratings kN		Weight ≈kg
	d	D	B	C	dk	rs min	r1s min	α° ≈	Dynamic	Static	
GE10N	10	19	9	6	16	0.3	0.3	12	5.7	8.6	0.011
GE12N	12	22	10	7	18	0.3	0.3	10	7.5	11	0.017
GE15N	15	26	12	9	22	0.3	0.3	8	11	17	0.026
GE17N	17	30	14	10	25	0.3	0.3	10	15	22	0.040
GE20N	20	35	16	12	29	0.3	0.3	9	20	31	0.064
GE25N	25	42	20	16	35.5	0.6	0.6	7	34	51	0.115
GE30N	30	47	22	18	40.7	0.6	0.6	6	43	65	0.149
GE35N	35	55	25	20	47	0.6	1	6	56	84	0.228
GE40N	40	62	28	22	53	0.6	1	7	69	104	0.318
GE45N	45	68	32	25	60	0.6	1	7	90	135	0.421
GE50N	50	75	35	28	66	0.6	1	6	110	166	0.562
GE60N	60	90	44	36	80	1	1	6	172	259	1.03
GEG8N	8	19	11	6	16	0.3	0.3	21	5.7	8.6	0.014
GEG10N	10	22	12	7	18	0.3	0.3	18	7.5	11	0.021
GEG12N	12	26	15	9	22	0.3	0.3	18	11	17	0.033
GEG15N	15	30	16	10	25	0.3	0.3	16	15	22	0.049
GEG17N	17	35	20	12	29	0.3	0.3	19	20	31	0.083
GEG20N	20	42	25	16	35.5	0.3	0.6	17	34	51	0.153
GEG25N	25	47	28	18	40.7	0.6	0.6	17	43	65	0.203
GEG30N	30	55	32	20	47	0.6	1	17	56	84	0.304
GEG35N	35	62	35	22	53	0.6	1	16	69	104	0.408
GEG40N	40	68	40	25	60	0.6	1	17	90	135	0.542
GEG45N	45	75	43	28	66	0.6	1	15	110	166	0.713
GEG50N	50	90	56	36	80	0.6	1	17	172	259	1.14

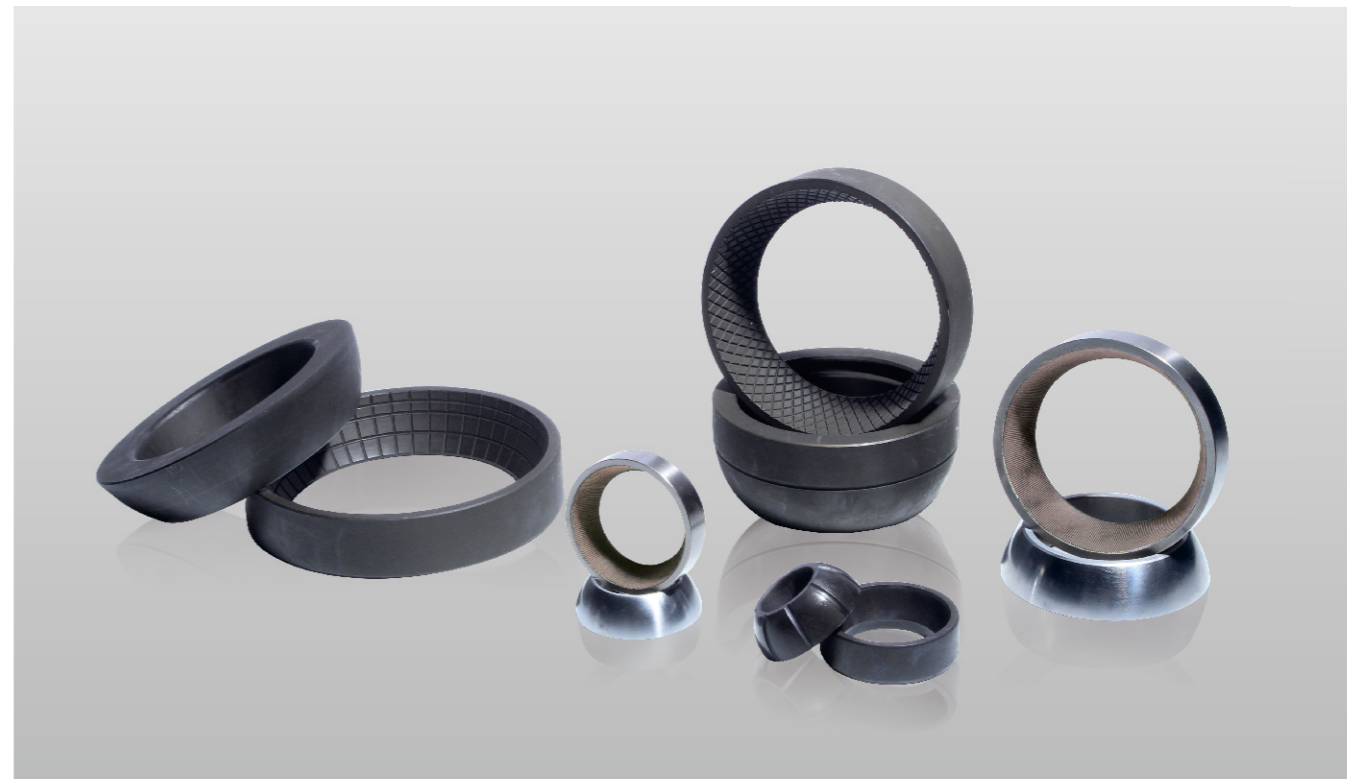
Angular contact spherical plain bearings

Angular contact spherical plain bearings, whose sliding contact surfaces of angular contact spherical plain bearings are inclined at an angle to the bearing axis. They are therefore particularly suitable for carrying combined (radial and axial) loads. A single angular contact spherical plain bearing can only accept axial loads acting in one direction. Under radial loads, a force acting in the axial direction is produced in the bearing which must always be opposed by an equal force acting in the opposite direction. Therefore, the bearings are usually adjusted against a second bearing. When two angular contact spherical plain bearings are arranged so that their sphere centres coincide, a clearance-free radial spherical plain bearing is obtained which can accommodate heavy radial loads as well as heavy axial loads in both directions. LS angular contact spherical plain bearings are available with different sliding contact surface combinations, i.e. the sliding surfaces of inner and outer rings are made from different materials. There are two main groups: steel-on-steel angular contact spherical plain bearings and maintenance-free angular contact spherical plain bearings.

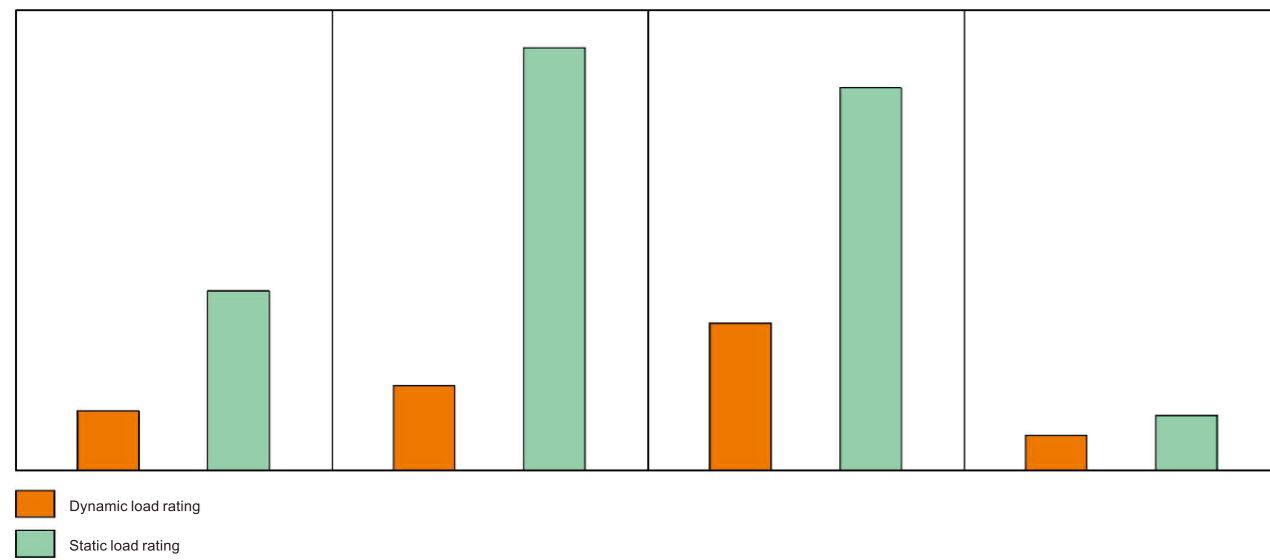
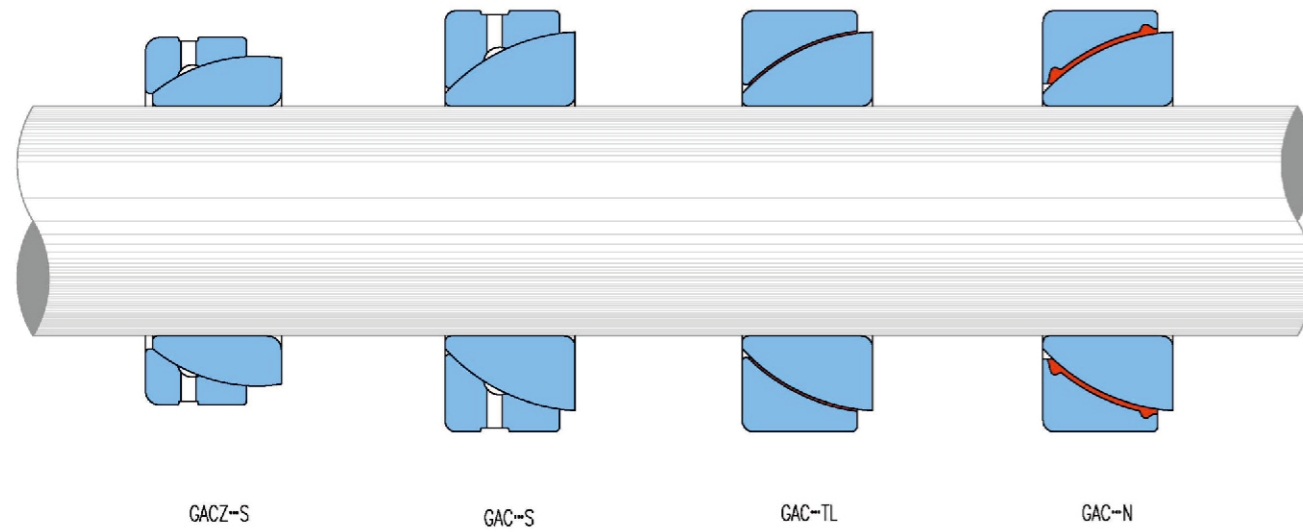
LS steel-on-steel angular contact spherical plain bearings are made of carbon chromium steel and are hardened and phosphated, it has characteristics of wear-resistance and wear-corrosion. The inner and outer rings sliding contact surface are treated with molybdenum disulphide. Bearings with this sliding contact surface combination require regular re-lubrication. To facilitate efficient lubrication, outer ring has an annular groove and two lubrication holes. The high strength of the sliding surfaces makes these bearings especially suitable for bearing arrangements where heavy loads of alternating direction, shock loads or heavy static loads have to be accommodated.

LS maintenance-free angular contact spherical plain bearings have sliding contact surface combinations steel-on-PTFE fabric and steel-on-PTFE plastic, they have very low friction and can be operated without maintenance, any lubrication of the sliding contact surfaces will shorten bearing life. They are used for applications where long bearing lives are required without maintenance, or where operating conditions, such as inadequate lubrication or the absence of lubrication make the use of steel-on-steel bearing inadvisable. The maintenance-free bearings are primarily intended for applications where loads are heavy and have a constant direction.

Now the PTFE fabric lubricated angular contact spherical plain bearings have used the high performance PTFE fabric liner. The type designation is GAC...TL.



Angular contact spherical plain bearings



Inner ring and width of bearing

d		Δdmp		Vdp	Vdmp	ΔBs		ΔTs	
over	incl.	max	min	max	max	max	min	max	min
—	50	0	-12	12	9	0	-240	+250	-400
50	80	0	-15	15	11	0	-300	+250	-500
80	120	0	-20	20	15	0	-400	+250	-600
120	180	0	-25	25	19	0	-500	+350	-700
180	200	0	-30	30	23	0	-600	+350	-800

Outer ring

D		ΔDmp		VDp	VDmp	ΔCs	
over	incl.	max	min	max	max	max	min
—	50	0	-14	14	11	0	-240
50	80	0	-16	16	12	0	-300
80	120	0	-18	18	14	0	-400
120	150	0	-20	20	15	0	-500
150	180	0	-25	25	19	0	-500
180	250	0	-30	30	23	0	-600
250	315	0	-35	35	26	0	-700

Details of dimension and tolerance symbols see page 13

Shaft fits

Operating conditions	Sliding contact surface combination	
	requiring maintenance	maintenance-free
Loads of all kinds, interference fit	m6	m6

Housing fits

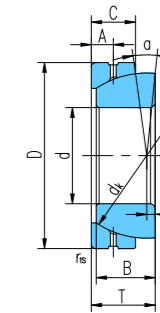
Operating conditions	Sliding contact surface combination	
	requiring maintenance	maintenance-free
Loads of all kinds, interference fit	M7	M7
Loads of all kinds, can generally be displaced axially	J7	J7

Shaft diameter tolerances

Shaft diameter		Shaft diameter tolerances	
mm		μm	
		m6	
over	incl.	high	low
—	30	+21	+8
30	50	+25	+9
50	80	+30	+11
80	120	+35	+13
120	180	+40	+15
180	250	+46	+17

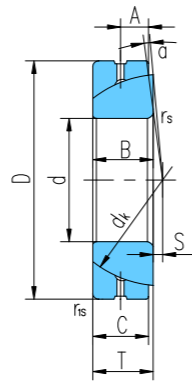
Housing bore tolerances

Housing bore diameter		Housing bore tolerances			
mm		μm			
		J7		M7	
over	incl.	low	high	low	high
—	50	-11	+14	-25	0
50	80	-12	+18	-30	0
80	120	-13	+22	-35	0
120	150	-14	+26	-40	0
150	180	-14	+26	-40	0
180	250	-16	+30	-46	0
250	315	-16	+36	-52	0



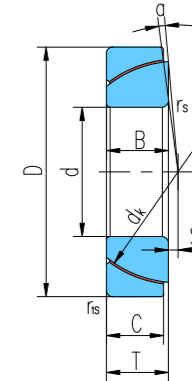
Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions										Load ratings kN		Weight ≈kg
	d	D	B	C	T	d _k	S	A	r _s , r _{1s} max	α°	Dynamic	Static	
GACZ12S	12.7	22.225	6.86	4.83	7.62	18.26	1.3	2.39	0.51	7	6	18	0.013
	0.5	0.875	0.27	0.19	0.3	0.719	0.051	0.094	0.02				
GACZ15S	15.875	26.988	8.64	6.35	9.40	22.83	1.48	2.77	0.76	6	10	31	0.025
	0.625	1.0625	0.34	0.25	0.37	0.899	0.058	0.109	0.03				
GACZ19S	19.05	31.75	10.41	7.87	11.18	27.43	1.79	3.18	1	6	16	47	0.038
	0.75	1.25	0.41	0.31	0.44	1.08	0.07	0.125	0.04				
GACZ22S	22.225	36.512	12.19	9.65	13.21	31.95	2.02	4.37	2	5.5	22	66	0.049
	0.875	1.4375	0.48	0.38	0.52	1.258	0.08	0.172	0.08				
GACZ25S	25.4	41.275	13.97	11.18	15.24	36.50	2.54	5.16	2	6	29	87	0.085
	1	1.625	0.55	0.44	0.6	1.437	0.1	0.203	0.08				
GACZ31S	31.75	50.8	17.78	13.97	18.80	45.59	3.36	5.94	2	6	47	142	0.159
	1.25	2	0.7	0.55	0.74	1.795	0.132	0.234	0.08				
GACZ34S	34.925	55.562	19.56	15.24	21.34	49.20	3.69	7.14	2.54	4	53	159	0.213
	1.375	2.1875	0.77	0.6	0.84	1.937	0.145	0.281	0.1				
GACZ38S	38.1	61.912	21.34	16.76	23.11	54.74	3.93	7.92	2.54	5.5	66	197	0.301
	1.5	2.4375	0.84	0.66	0.91	2.155	0.155	0.312	0.1				
GACZ44S	44.45	71.438	24.89	20.07	27.18	63.88	4.72	8.33	2.54	6	91	273	0.458
	1.75	2.8125	0.98	0.79	1.07	2.515	0.186	0.328	0.1				
GACZ50S	50.8	80.962	28.70	23.37	31.24	73.02	5.51	9.52	3.56	5.5	122	365	0.671
	2	3.1875	1.13	0.92	1.23	2.875	0.217	0.375	0.14				
GACZ57S	57.15	90.488	32.26	26.67	35.31	82.17	6.18	11.51	3.56	5.5	155	466	0.948
	2.25	3.5625	1.27	1.05	1.39	3.235	0.243	0.453	0.14				
GACZ63S	63.5	100.013	36.07	29.97	39.12	91.19	6.79	12.7	3.56	5	196	589	1.13
	2.5	3.9375	1.42	1.18	1.54	3.59	0.267	0.5	0.14				
GACZ69S	69.85	111.125	39.62	32.38	43.18	100.33	7.46	13.08	4.6	5	231	694	1.75
	2.75	4.375	1.56	1.275	1.7	3.95	0.294	0.515	0.18				
GACZ76S	76.2	120.65	43.43	35.69	47.24	109.52	8.17	14.68	4.6	5	279	838	2.28
	3	4.75	1.71	1.405	1.86	4.312	0.322	0.578	0.18				
GACZ82S	82.55	130.175	47.24	39.24	51.56	118.74	9.04	16.66	4.6	5	332	995	2.89
	3.25	5.125	1.86	1.545	2.03	4.675	0.356	0.656	0.18				
GACZ88S	88.9	139.7	50.80	42.54	55.37	128.02	9.51	17.86	4.6	5	389	1167	3.57
	3.5	5.5	2	1.675	2.18	5.04	0.374	0.703	0.18				
GACZ95S	95.25	149.225	54.61	45.85	59.44	136.91	10.1	19.43	4.6	4.5	449	1348	4.35
	3.75	5.875	2.15	1.805	2.34	5.39	0.398	0.765	0.18				
GACZ101S	101.6	158.75	58.42	49.15	63.50	146.05	10.4	19.84	4.6	4.5	515	1545	5.26
	4	6.25	2.3	1.935	2.5	5.75	0.409	0.781	0.18				
GACZ114S	114.3	177.8	65.79	55.75	71.12	164.46	12.4	22.22	4.6	4.5	663	1990	7.76
	4.5	7	2.59	2.195	2.8	6.475	0.488	0.875	0.18				
GACZ127S	127	196.85	73.15	62.36	79.50	182.63	13.9	25.4	4.6	4.5	818	2455	11.07
	5	7.75	2.88	2.455	3.13	7.19	0.547	1	0.18				
GACZ152S	152.4	222.25	78.74	66.42	85.72	207.16	16.1	34.8	4.6	4.5	985	2955	17.37
	6	8.75	3.1	2.615	3.375	8.156	0.634	1.37	0.18				



Sliding contact surfaces: Steel / Steel

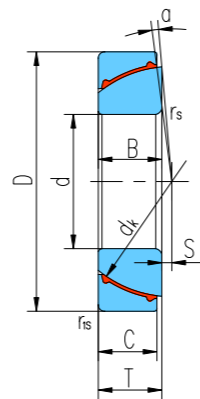
Bearing number	Dimensions mm										Load ratings kN		Weight ≈kg
	d	D	B	C	T	dk	S	A	rs, r1s min	α° ≈	Dynamic	Static	
GAC25S	25	47	15	14	15	42	0.6	7.5	1	2.5	50	250	0.148
GAC28S	28	52	15	15	16	47	1	8	1	2	60	300	0.186
GAC30S	30	55	17	15	17	49.5	1.3	8.5	1	4.5	63	315	0.208
GAC32S	32	58	17	16	17	52	2	8.5	1	2	71	354	0.241
GAC35S	35	62	18	16	18	55.5	2.1	9	1	4	78	390	0.268
GAC40S	40	68	19	17	19	62	2.8	9.5	1	3.5	92	463	0.327
GAC45S	45	75	20	18	20	68.5	3.5	10	1	3	108	540	0.416
GAC50S	50	80	20	19	20	74	4.3	10	1	1.5	123	618	0.455
GAC55S	55	90	23	20	23	82	5	11.5	1.1	4	144	721	0.645
GAC60S	60	95	23	21	23	88.5	5.7	11.5	1.1	2.5	163	817	0.714
GAC65S	65	100	23	22	23	93.5	6.5	11.5	1.1	1	180	905	0.759
GAC70S	70	110	25	23	25	102	7.2	12.5	1.1	2	206	1030	1.04
GAC75S	75	115	25	24	25	107	7.9	12.5	1.1	1	220	1129	1.12
GAC80S	80	125	29	25.5	29	115	8.6	14.5	1.1	3.5	258	1290	1.54
GAC85S	85	130	29	26.5	29	122	9.4	14.5	1.1	2	284	1422	1.61
GAC90S	90	140	32	28	32	128.5	10.1	16	1.5	3.5	316	1580	2.09
GAC95S	95	145	32	29.5	32	135	10.8	16	1.5	2	350	1750	2.22
GAC100S	100	150	32	31	32	141	11.6	16	1.5	0.5	384	1923	2.34
GAC105S	105	160	35	32.5	35	148	12.3	17.5	2	2	423	2116	2.93
GAC110S	110	170	38	34	38	155	13	19	2	3	463	2318	3.68
GAC120S	120	180	38	37	38	168	14.5	19	2	0.5	547	2735	3.97
GAC130S	130	200	45	43	45	188	18	19	2.5	1	710	3550	5.92
GAC140S	140	210	45	43	45	198	19	19	2.5	1	740	3740	6.33
GAC150S	150	225	48	46	48	211	20	20.5	3	1	850	4270	8.01
GAC160S	160	240	51	49	51	225	20	22	3	1	970	4850	9.79
GAC170S	170	260	57	55	57	246	21	27	3	1	1190	5950	12.3
GAC180S	180	280	64	61	64	260	21	28	3	1	1395	6970	17.4
GAC190S	190	290	64	62	64	275	26	30	3	0.5	1500	7500	18.2
GAC200S	200	310	70	66	70	290	26	30	3	1.5	1680	8420	23.8



Sliding contact surfaces: Steel / PTFE fabric

Bearing number	Dimensions mm										Load ratings kN		Weight ≈kg
	d	D	B	C	T	dk	S	rs, r1s min	α° ≈	Dynamic	Static		
GAC25TL	25	47	15	14	15	42	0.6	1	2.5	135	225	0.148	
GAC28TL	28	52	15	15	16	47	1	1	2	170	280	0.186	
GAC30TL	30	55	17	15	17	49.5	1.3	1	4.5	175	290	0.208	
GAC32TL	32	58	17	16	17	52	2	1	2	190	315	0.241	
GAC35TL	35	62	18	16	18	55.5	2.1	1	4	205	340	0.268	
GAC40TL	40	68	19	17	19	62	2.8	1	3.5	250	415	0.327	
GAC45TL	45	75	20	18	20	68.5	3.5	1	3	290	485	0.416	
GAC50TL	50	80	20	19	20	74	4.3	1	1.5	335	560	0.455	
GAC55TL	55	90	23	20	23	82	5	1.1	4	405	675	0.645	
GAC60TL	60	95	23	21	23	88.5	5.7	1.1	2.5	465	775	0.714	
GAC65TL	65	100	23	22	23	93.5	6.5	1.1	1	495	825	0.759	
GAC70TL	70	110	25	23	25	102	7.2	1.1	2	575	960	1.04	
GAC75TL	75	115	25	24	25	107	7.9	1.1	1	660	1100	1.12	
GAC80TL	80	125	29	25.5	29	115	8.6	1.1	3.5	705	1175	1.54	
GAC85TL	85	130	29	26.5	29	122	9.4	1.1	2	820	1365	1.61	
GAC90TL	90	140	32	28	32	128.5	10.1	1.5	3.5	925	1540	2.09	
GAC95TL	95	145	32	29.5	32	135	10.8	1.5	2	985	1640	2.22	
GAC100TL	100	150	32	31	32	141	11.6	1.5	0.5	1100	1835	2.34	
GAC105TL	105	160	35	32.5	35	148	12.3	2	2	1165	1940	2.93	
GAC110TL	110	170	38	34	38	155	13	2	3	1175	1960	3.68	
GAC120TL	120	180	38	37	38	168	14.5	2	0.5	1540	2565	3.97	
GAC130TL	130	200	45	43	45	188	18	2.5	1	1750	2915	5.92	
GAC140TL	140	210	45	43	45	198	19	2.5	1	1960	3265	6.33	
GAC150TL	150	225	48	46	48	211	20	3	1	2275	3790	8.01	
GAC160TL	160	240	51	49	51	225	20	3	1	2700	4500	9.79	
GAC170TL	170	260	57	55	57	246	21	3	1	3500	5835	12.3	
GAC180TL	180	280	64	61	64	260	21	3	1	3895	6490	17.4	
GAC190TL	190	290	64	62	64	275	26	3	0.5	4125	6875	18.2	
GAC200TL	200	310	70	66	70	290	26	3	1.5	4610	7685	23.8	

This series replaces the original series GAC... T, capability of GAC... TL see page 14.



Sliding contact surfaces: Steel / PTFE plastic

Bearing number	Dimensions mm									Load ratings kN		Weight ≈kg
	d	D	B	C	T	d _k	S	r _s , r _{1s} min	α° ≈	Dynamic	Static	
GAC25N	25	47	15	14	15	42	0.6	1	2.5	20	32	0.148
GAC30N	30	55	17	15	17	49.5	1.3	1	4.5	26	41	0.208
GAC35N	35	62	18	16	18	55.5	2.1	1	4	31	49	0.268
GAC40N	40	68	19	17	19	62	2.8	1	3.5	36	59	0.327
GAC45N	45	75	20	18	20	68.5	3.5	1	3	43	69	0.416
GAC50N	50	80	20	19	20	74	4.3	1	1.5	49	78	0.455
GAC60N	60	95	23	21	23	88.5	5.7	1.1	2.5	65	104	0.714
GAC70N	70	110	25	23	25	102	7.2	1.1	2	82	131	1.04
GAC80N	80	125	29	25.5	29	115	8.6	1.1	3.5	102	164	1.54
GAC90N	90	140	32	28	32	128.5	10.1	1.5	3.5	125	201	2.09
GAC100N	100	150	32	31	32	141	11.6	1.5	0.5	152	244	2.34
GAC110N	110	170	38	34	38	155	13	2	3	184	295	3.68
GAC120N	120	180	38	37	38	168	14.5	2	0.5	217	348	3.97

Thrust spherical plain bearings

Thrust spherical plain bearings have sliding contact surfaces in the shaft and housing washers which are arranged at an angle to the bearing axis. They are primarily intended for axial loads although they can accommodate combined loads to a certain extent. LS spherical plain thrust bearings are available with different sliding contact surface combinations, i.e. the sliding surfaces of shaft and housing washers are made from different materials. There are two main group: steel-on-steel spherical plain thrust bearings and maintenance-free spherical plain thrust bearings.

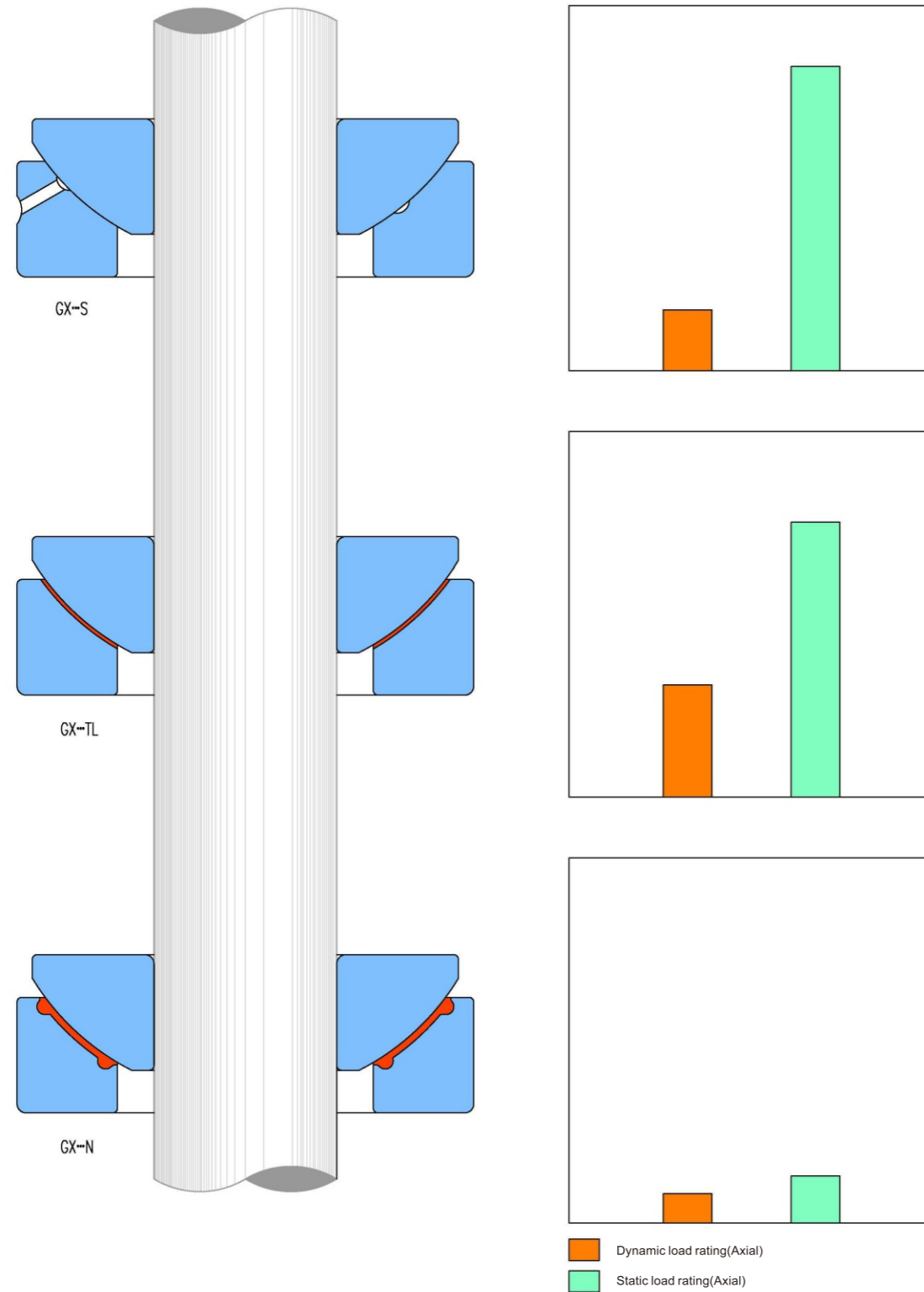
LS steel-on-steel spherical plain thrust bearings are made of carbon chromium steel and are hardened and phosphated, the shaft and housing washers sliding contact surface are treated with molybdenum disulphide, it has characteristics of wear-resistance and wear-corrosion. Bearings with this sliding contact surface combination require regular re-lubrication. To facilitate efficient lubrication, housing washer have an annular groove and a lubrication hole. The high wear resistance of the sliding surfaces makes these bearings especially suitable for bearing arrangements where heavy loads of alternating direction, shock loads or heavy static loads have to be accommodated.

LS maintenance-free spherical plain thrust bearings have sliding contact surface combinations steel-on-PTFE fabric and steel-on-PTFE plastic, they have very low friction and can be operated without maintenance, any lubrication of the sliding contact surfaces will shorten bearing life. They are used for applications where long bearing lives are required without maintenance, or where operating conditions, such as inadequate lubrication or the absence of lubrication make the use of steel-on-steel bearing inadvisable. The maintenance-free bearings are primarily intended for applications where loads are heavy and have a constant direction.

Now the PTFE fabric lubricated spherical plain thrust bearings have used the high performance PTFE fabric liner. The type designation is GX...TL.



Spherical plain thrust bearings



Shaft washer and height of bearing

d		Δdmp		Vdp	$Vdmp$	ΔBs		ΔHs	
over	incl.	max	min	max	max	max	min	max	min
—	18	0	-8	8	6	0	-240	+250	-400
18	30	0	-10	10	8	0	-240	+250	-400
30	50	0	-12	12	9	0	-240	+250	-400
50	80	0	-15	15	11	0	-300	+250	-500
80	120	0	-20	20	15	0	-400	+250	-600
120	180	0	-25	25	19	0	-500	+350	-700
180	200	0	-30	30	23	0	-600	+350	-800
200	250	0	-35	35	26	0	-700	+350	-800
250	315	0	-35	35	26	0	-700	+350	-800
315	400	0	-40	40	30	0	-800	+350	-800

Housing washer

D		ΔDmp		VDp	$VDmp$	ΔCs	
over	incl.	max	min	max	max	max	min
—	30	0	-9	12	7	0	-240
30	50	0	-11	15	8	0	-240
50	80	0	-13	17	10	0	-300
80	120	0	-15	20	11	0	-400
120	150	0	-18	24	14	0	-500
150	180	0	-25	33	19	0	-500
180	250	0	-30	40	23	0	-600
250	315	0	-35	47	26	0	-700
315	340	0	-40	53	30	0	-800
340	400	0	-40	53	30	0	-800
400	500	0	-45	60	34	0	-800
500	630	0	-50	67	38	0	-800

Details of dimension and tolerance symbols see page13

Shaft fits

Operating conditions	Sliding contact surface combination	
	requiring maintenance	maintenance-free
Loads of all kinds, interference fit	m6	m6

Housing fits

Operating conditions	Sliding contact surface combination	
	requiring maintenance	maintenance-free
Purely axial loads	H11	H11
Combined loads	J7	J7

Shaft diameter tolerances

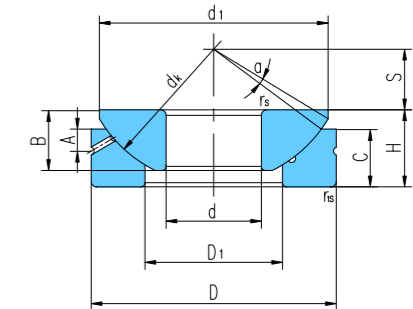
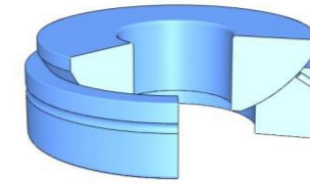
 μm

Shaft diameter		Shaft diameter tolerances	
mm		m6	
over	incl.	high	low
6	10	+15	+6
10	18	+18	+7
18	30	+21	+8
30	50	+25	+9
50	80	+30	+11
80	120	+35	+13
120	180	+40	+15
180	250	+46	+17
250	315	+52	+20
315	400	+57	+21

Housing bore tolerances

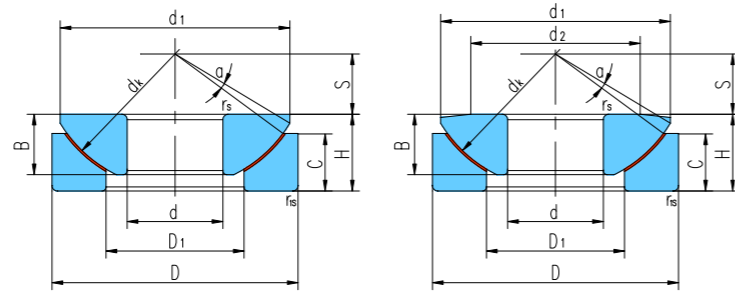
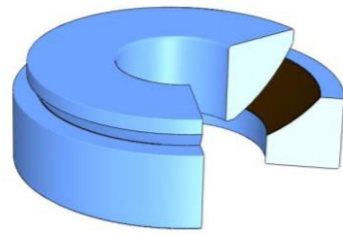
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Housing bore diameter		Housing bore tolerances			
mm		H11		J7	
over	incl.	low	high	low	high
18	30	0	+130	-9	+12
30	50	0	+160	-11	+14
50	80	0	+190	-12	+18
80	120	0	+220	-13	+22
120	150	0	+250	-14	+26
150	180	0	+250	-14	+26
180	250	0	+290	-16	+30
250	315	0	+320	-16	+36
315	400	0	+360	-18	+39
400	500	0	+400	-20	+43
500	630	0	+440	-	-



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm												Load ratings kN		Weight \approx kg
	d	D	B	C	H	d_k	S	d_1 max	D_1 min	A	r_s, r_{1s} min	$\alpha^\circ \approx$	Dynamic	Static	
GX10S	10	30	7.5	7	9.5	32	7	27.5	15.5	3	0.6	5	27	136	0.036
GX12S	12	35	9.5	9.3	13	38	8	32	18	4	0.6	5	37	188	0.072
GX15S	15	42	11	10.8	15	46	10	39	22.5	5	0.6	6	53	267	0.108
GX17S	17	47	11.8	11.2	16	52	11	43.5	27	5	0.6	4	61	311	0.137
GX20S	20	55	14.5	13.8	20	60	12.5	50	31	6	1	5	84	425	0.246
GX25S	25	62	16.5	16.7	22.5	68	14	58.5	34.5	6	1	5	134	672	0.415
GX30S	30	75	19	19	26	82	17.5	70	42	8	1	5	182	909	0.614
GX35S	35	90	22	20.7	28	98	22	84	50.5	8	1	5	266	1330	0.973
GX40S	40	105	27	21.5	32	114	24.5	97	59	9	1	6	357	1810	1.59
GX45S	45	120	31	25.5	36.5	128	27.5	110	67	11	1	6	486	2470	2.24
GX50S	50	130	33	30.5	42.5	139	30	120	70	10	1	6	554	2810	3.14
GX60S	60	150	37	34	45	160	35	140	84	12.5	1	6	748	3820	4.63
GX70S	70	160	42	36.5	50	176	35	153	94.5	13.5	1	3	902	4610	5.37
GX80S	80	180	43.5	38	50	197	42.5	172	107.5	14.5	1	4	1110	5700	6.91
GX100S	100	210	51	46	59	222	45	198	127	15	1.1	4	1300	6470	11
GX120S	120	230	53.5	50	64	250	52.5	220	145	16.5	1.1	3	1530	7580	14
GX140S	140	260	61	54	72	274	52.5	243	177	23	1.5	3	1820	9040	19.1
GX160S	160	290	66	58	77	313	65	271	200	23	1.5	2	2100	10440	25
GX180S	180	320	74	62	86	340	67.5	299	225	26	1.5	4	2430	12070	32.8
GX200S	200	340	80	66	87	365	70	320	247	27	1.5	1	3070	15280	35.4



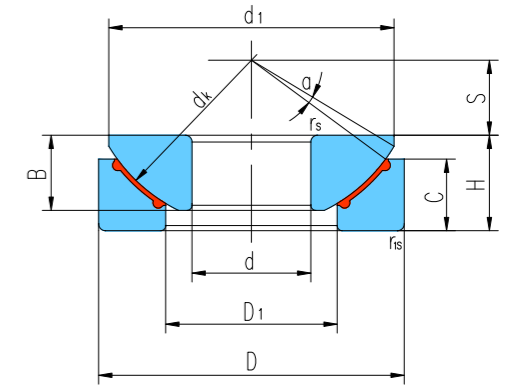
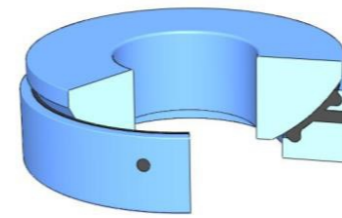
Sliding contact surfaces: Steel / PTFE fabric

$d \leq \phi 200$

$d > \phi 220$

Bearing number	Dimensions mm												Load ratings kN		Weight ≈kg
	d	D	B	C	H	d _k	S	d _{1 max}	d ₂	D _{1 min}	r _s , r _{1s min}	α°	Dynamic	Static	
GX10TL	10	30	7.5	7	9.5	32	7	27.5		15.5	0.6	5	99	165	0.036
GX12TL	12	35	9.5	9.3	13	38	8	32		18	0.6	5	134	220	0.072
GX15TL	15	42	11	10.8	15	46	10	39		22.5	0.6	6	189	315	0.108
GX17TL	17	47	11.8	11.2	16	52	11	43.5		27	0.6	4	230	380	0.137
GX20TL	20	55	14.5	13.8	20	60	12.5	50		31	1	5	290	480	0.246
GX25TL	25	62	16.5	16.7	22.5	68	14	58.5		34.5	1	5	439	730	0.415
GX30TL	30	75	19	19	26	82	17.5	70		42	1	5	600	1000	0.614
GX35TL	35	90	22	20.7	28	98	22	84		50.5	1	5	850	1415	0.973
GX40TL	40	105	27	21.5	32	114	24.5	97		59	1	6	1085	1805	1.59
GX45TL	45	120	31	25.5	36.5	128	27.5	110		67	1	6	1405	2340	2.24
GX50TL	50	130	33	30.5	42.5	139	30	120		70	1	6	1730	2880	3.14
GX60TL	60	150	37	34	45	160	35	140		84	1	6	2370	3950	4.63
GX70TL	70	160	42	36.5	50	176	35	153		94.5	1	3	2975	4960	5.37
GX80TL	80	180	43.5	38	50	197	42.5	172		107.5	1	4	3620	6030	6.91
GX100TL	100	210	51	46	59	222	45	198		127	1.1	4	4635	7725	11
GX120TL	120	230	53.5	50	64	250	52.5	220		145	1.1	3	5600	9330	14
GX140TL	140	260	61	54	72	274	52.5	243		177	1.5	3	5620	9365	19.1
GX160TL	160	290	66	58	77	313	65	271		200	1.5	2	7000	11660	25
GX180TL	180	320	74	62	86	340	67.5	299		225	1.5	4	7410	12350	32.8
GX200TL	200	340	80	66	87	365	70	320		247	1.5	1	7970	13280	35.4
GX220TL	220	370	82	67	97	388	75	350	289	265	1.5	7	8525	14200	44.7
GX240TL	240	400	87	73	103	420	77.5	382	314	294	1.5	6	10300	17165	56.9
GX260TL	260	430	95	80	115	449	82.5	409	336	317	1.5	7	10800	18000	71.3
GX280TL	280	460	100	85	110	480	80	445	366	337	3	4	17120	28530	84.7
GX300TL	300	480	100	90	110	490	80	460	388	356	3	3.5	17270	28780	88.9
GX320TL	320	520	105	91	116	540	95	500	405	380	4	4	21100	35160	111
GX340TL	340	540	105	91	116	550	95	510	432	380	4	4	23660	39430	117
GX360TL	360	560	115	95	125	575	95	535	452	400	4	4	25460	42430	132

This series replaces the original series GX... T, capability of GX... TL see page 14.



Sliding contact surfaces: Steel / PTFE plastic

Bearing number	Dimensions mm												Load ratings kN		Weight ≈kg
	d	D	B	C	H	d _k	S	d _{1 max}	D _{1 min}	r _s , r _{1s min}	α°	Dynamic	Static		
GX17N	17	47	11.8	11.2	16	52	11	43.5	27	0.6	4	32	52	0.137	
GX20N	20	55	14.5	13.8	20	60	12.5	50	31	1	5	44	71	0.246	
GX25N	25	62	16.5	16.7	22.5	68	14	58.5	34.5	1	5	65	104	0.415	
GX30N	30	75	19	19	26	82	17.5	70	42	1	5	88	141	0.614	
GX35N	35	90	22	20.7	28	98	22	84	50.5	1	5	129	207	0.973	
GX40N	40	105	27	21.5	32	114	24.5	97	59	1	6	169	270	1.59	
GX45N	45	120	31	25.5	36.5	128	27.5	110	67	1	6	230	368	2.24	
GX50N	50	130	33	30.5	42.5	139	30	120	70	1	6	262	420	3.14	
GX60N	60	150	37	34	45	160	35	140	84	1	6	374	599	4.63	
GX70N	70	160	42	36.5	50	176	35	153	94.5	1	3	451	722	5.37	
GX80N	80	180	43.5	38	50	197	42.5	172	107.5	1	4	558	893	6.91	
GX100N	100	210	51	46	59	222	45	198	127	1.1	4	717	1140	11	
GX120N	120	230	53.5	50	64	250	52.5	220	145	1.1	3	839	1340	14	

Rod ends

Rod ends consist of an eye-shaped head with integral shank forming a housing and a standard spherical plain bearing, or a spherical plain bearing inner ring, or a spherical plain bearing inner ring and a sliding layer between the bore of the head and the inner ring. As a rule, rod ends are available with left or right-hand female or male threads. LS rod ends have the sliding contact surface combinations steel-on-steel, steel-on-bronze, steel-on-PTFE composite material, steel-on-PTFE fabric and steel-on-PTFE plastic.

LS steel-on-steel and steel-on-bronze rod ends have very wear-resistant sliding surfaces and perform well under conditions of lubricant starvation. Rod ends with this sliding contact surface combination require regular re-lubrication. They are particularly suited for bearing arrangements where heavy alternating loads have to be accommodated.

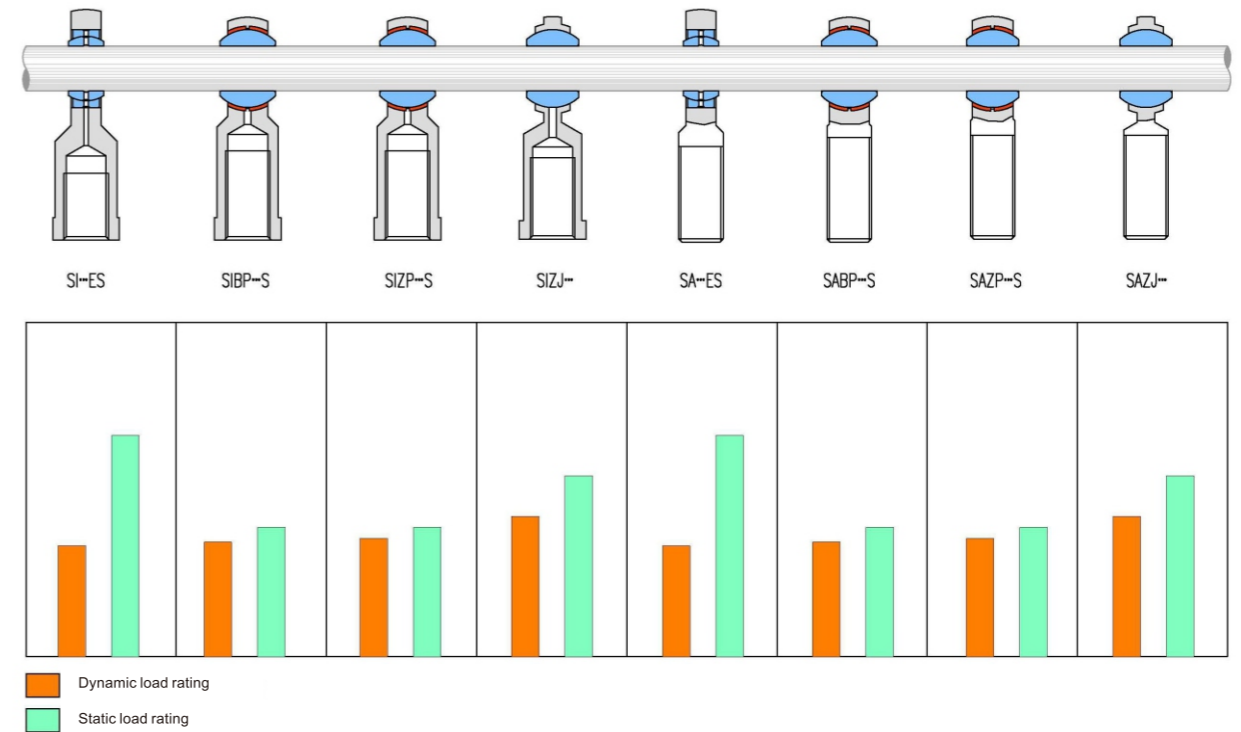
LS maintenance-free rod ends sliding contact surfaces have three groups: steel-on-PTFE composite material, steel-on-PTFE fabric and steel-on-PTFE plastic. They have very low friction and can be operated without maintenance. They are used for applications where long bearing lives are required without maintenance, or where operating conditions, such as inadequate lubrication or the absence of lubrication make the use of steel-on-steel bearing inadvisable. The maintenance-free bearings are primarily intended for applications where loads are heavy and have a constant direction.

Now the PTFE fabric lubricated rod ends have used the high performance PTFE fabric liner. The type designation is SI...ETL or SA...ETL.

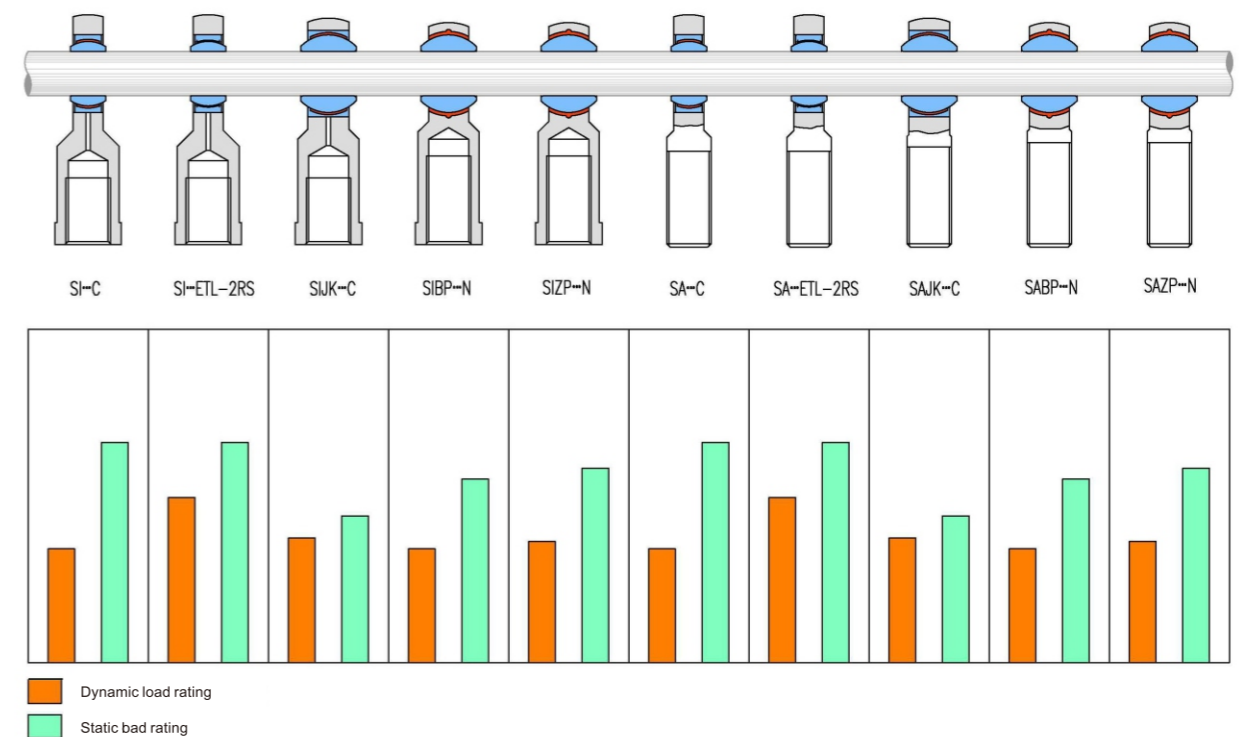


Load rating diagram

Rod ends requiring maintenance



Maintenance-free rod ends



Tolerances for Rod ends

Inner ring

The Δ dmp and Δ Bs of SI...E, SI...ES, SA...E, SA...ES, SI...C, SA...C, SI...ETL-2RS, SA...ETL-2RS are the same as radial spherical plain bearings GE...E, GE...ES, GE...C and GE...ETL-2RS.

The Δ dmp and Δ Bs of SIBP...S, SABP...S, SIZP...S, SAZP...S, SIZJ... and SAZJ... are the same as radial spherical plain bearings GEBK...S.

Series SIJK...C, SAJK...C, SIK...C, SAK...C

d		Δ dmp		Δ Bs	
over	incl.	max	min	max	min
—	6	+12	0	0	-150
6	10	+15	0	0	-150
10	12	+18	0	0	-150
12	18	+18	0	0	-200
18	30	+21	0	0	-200

Center height deviation

d		Δ hs		Δ h _{1s}	
over	incl.	max	min	max	min
—	6	+0.80	-1.20	+0.65	-1.05
6	20	+0.80	-1.20	+0.80	-1.20
20	30	+1.00	-1.70	+1.00	-1.70
30	45	+1.40	-2.10	+1.40	-2.10
45	60	+1.80	-2.70	+1.80	-2.70
60	80	+2.25	-3.40	+2.25	-3.40
80	125	+2.70	-3.40	+2.70	-3.40
125	200	+3.20	-4.20	+3.20	-4.20

Details of dimension and tolerance symbols see page 13

Radial internal clearance of rod ends

Series SI...E, SI...ES, SA...E, SA...ES

d		Group normal	
over	incl.	min	max
—	12	23	68
12	20	30	82
20	35	37	100
35	60	43	120
60	90	55	142
90	125	65	165
125	200	65	192

Series SI...C, SA...C, SI...ETL-2RS, SA...ETL-2RS, SIBP...N, SABP...N, SIZP...N, SAZP...N

d		Group normal	
over	incl.	min	max
—	12	0	32
12	20	0	40
20	35	0	50
35	60	0	60
60	80	0	72

Series SIZJ..., SAZJ...

d		Group normal	
over	incl.	min	max
—	8	10	40
8	22	15	60

Series SIJK...C, SAJK...C, SIK...C, SAK...C

d		Group normal	
over	incl.	min	max
—	12	0	32
12	20	0	40
20	30	0	50

Series SIBP...S, SABP...S, SIZP...S, SAZP...S

d		Group normal	
over	incl.	min	max
—	30	0	35

Fits of rod ends

Shaft fits

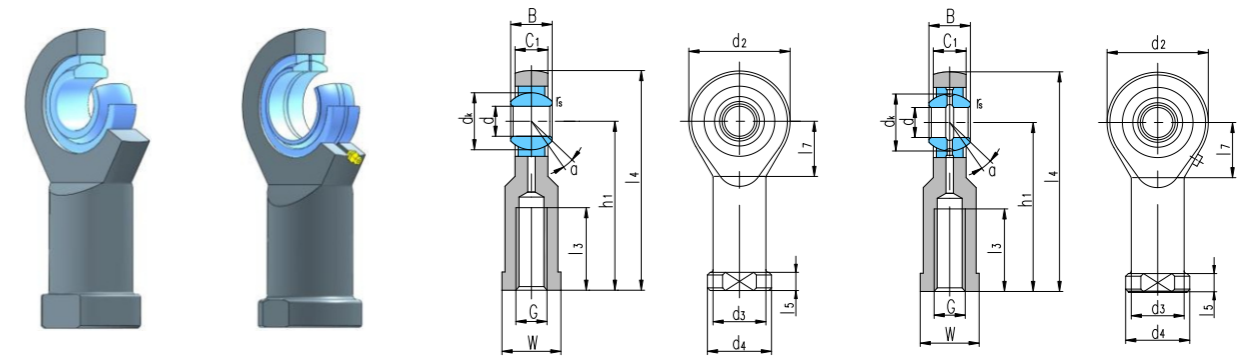
Operating conditions	Tolerance
With indeterminate loads	n6, p6
Normal conditions	h6, h7

Thread

Male thread	Female thread
6g	6H
UNF-2A	UNF-2B

Shaft diameter tolerances

Shaft diameter mm		Shaft diameter tolerances μm							
		h6		h7		n6		p6	
over	incl.	high	low	high	low	high	low	high	low
3	6	0	-8	0	-12	+16	+8	+20	+12
6	10	0	-9	0	-15	+19	+10	+24	+15
10	18	0	-11	0	-18	+23	+12	+29	+18
18	30	0	-13	0	-21	+28	+15	+35	+22
30	50	0	-16	0	-25	+33	+17	+42	+26
50	80	0	-19	0	-30	+39	+20	+51	+32
80	120	0	-22	0	-35	+45	+23	+59	+37
120	180	0	-25	0	-40	+52	+27	+68	+43
180	200	0	-29	0	-46	+60	+31	+79	+50



Sliding contact surfaces: Steel / Steel

SI...E

SI...ES, SIS...ES

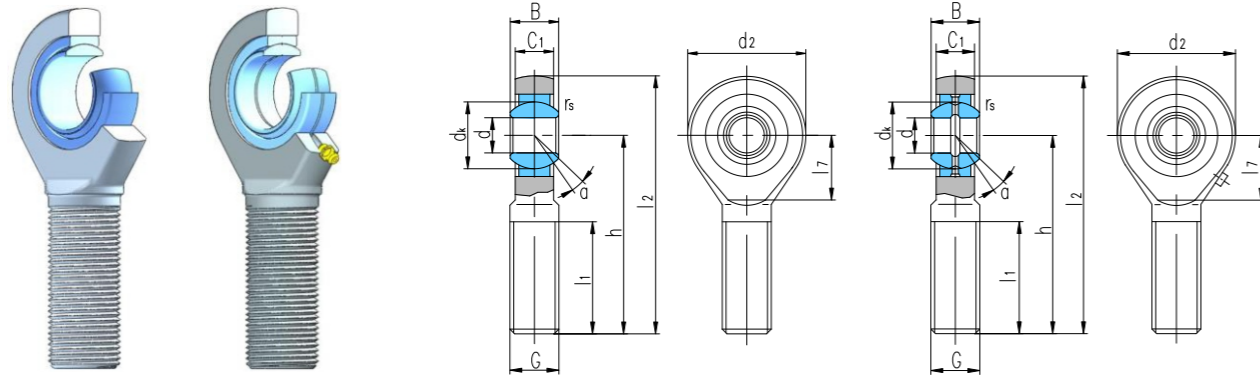
Bearing number	Dimensions mm																Load Ratings kN		Weight \approx kg
	d	B	d_K	C_1 max	d_2	G 6H	h_1	l_3 min	l_4	l_5	l_7	W	d_3	d_4	r_s min	$\alpha \approx$	Dynamic	Static	
SI5E ¹⁾	5	6	10	4.5	21	M5	30	11	40.5	5	11.5	10	10	13	0.3	13	3.4	8.1	0.023
SI6E ¹⁾	6	6	10	4.5	21	M6	30	11	40.5	5	11.5	11	11	13	0.3	13	3.4	8.1	0.023
SI8E ¹⁾	8	8	13	6.5	24	M8	36	15	48	5	13	13	13	16	0.3	15	5.5	12.9	0.040
SI10E ¹⁾	10	9	16	7.5	29	M10	43	20	57.5	6.5	15	16	16	19	0.3	12	8.1	17.6	0.065
SI12E ¹⁾	12	10	18	8.5	34	M12	50	23	67	7	18	18	19	22	0.3	10	10	24.5	0.108
SI15ES ²⁾	15	12	22	10.5	40	M14	61	30	81	8	21	21	21	26	0.3	8	16	36	0.169
SI17ES ²⁾	17	14	25	11.5	46	M16	67	34	90	10	24	27	25	29	0.3	10	21	45	0.235
SI20ES ²⁾	20	16	29	13.5	53	M20X1.5	77	40	103.5	10	25.5	30	28	34	0.3	9	30	60	0.335
SI25ES	25	20	35.5	18	64	M24X2	94	48	126	12	33	36	35	42	0.6	7	48	83	0.665
SI30ES	30	22	40.7	20	73	M30X2	110	56	146.5	15	37.5	46	42	50	0.6	6	62	110	1.05
SI35ES	35	25	47	22	82	M36X3	125	60	166	15	40	55	48	58	0.6	6	79	146	1.50
SI40ES	40	28	53	24	92	M39X3	142	65	188	18	47	60	52	65	0.6	7	99	180	2.05
SIS40ES	40	28	53	24	92	M42X3	142	65	188	18	47	55	52	65	0.6	7	99	180	1.94
SI45ES	45	32	60	28	102	M42X3	145	65	196	20	52	65	58	70	0.6	7	127	240	2.72
SIS45ES	45	32	60	27	102	M45X3	145	65	196	20	52	60	58	70	0.6	7	127	240	2.61
SI50ES	50	35	66	31	112	M45X3	160	68	216	20	57	70	62	75	0.6	6	156	290	3.48
SIS50ES	50	35	66	31	112	M52X3	160	69	216	20	57	65	62	75	0.6	6	156	260	3.24
SI60ES	60	44	80	39	135	M52X3	175	70	242.5	20	68.5	80	70	88	1	6	245	450	5.55
SIS60ES	60	44	80	39	135	M60X4	175	73	242.5	20	68.5	75	70	88	1	6	245	300	4.99
SI70ES	70	49	92	43	160	M56X4	200	80	280	20	81	85	80	98	1	6	313	610	8.72
SIS70ES	70	49	92	42	160	M72X4	200	80	280	20	81	80	85	98	1	6	313	470	8.33
SI80ES	80	55	105	48	180	M64X4	230	85	320	25	91	95	95	110	1	6	400	750	12.9
SIS80ES	80	55	105	47	180	M80X4	230	85	320	25	91	100	95	110	1	6	400	600	11.7

Can not be relubricated.

Can only be relubricated through the rod end housing.

Can supply other rod ends with different pitch or accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SIL20ES M20X1.5L-6H.



Sliding contact surfaces: Steel / Steel

SA...E

SA...ES, SAS...ES

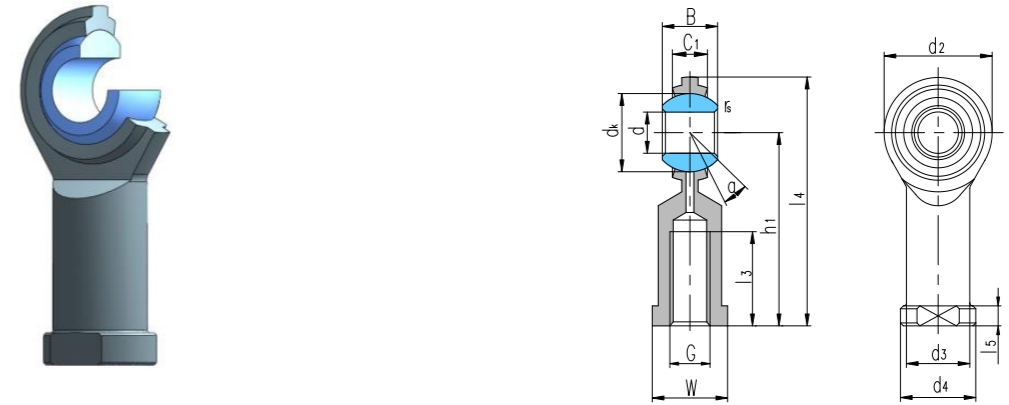
Bearing number	Dimensions mm												Load ratings kN		Weight ≈kg
	d	B	dk	C1 max	d2	G 6g	h	l1 min	l2	l7	rs min	α° ≈	D dynamic	S static	
SA5E ¹⁾	5	6	10	4.5	21	M5	36	16	46.5	11.5	0.3	13	3.4	3.9	0.015
SA6E ¹⁾	6	6	10	4.5	21	M6	36	16	46.5	11.5	0.3	13	3.4	5.5	0.016
SA8E ¹⁾	8	8	13	6.5	24	M8	42	21	54	13	0.3	15	5.5	10	0.026
SA10E ¹⁾	10	9	16	7.5	29	M10	48	26	62.5	15.5	0.3	12	8.1	16	0.050
SA12E ¹⁾	12	10	18	8.5	34	M12	54	28	71	18	0.3	10	10	23	0.068
SA15ES ²⁾	15	12	22	10.5	40	M14	63	34	83	21	0.3	8	16	32	0.120
SA17ES ²⁾	17	14	25	11.5	46	M16	69	36	92	24	0.3	10	21	44	0.190
SA20ES ²⁾	20	16	29	13.5	53	M20X1.5	78	43	104.5	25.5	0.3	9	30	60	0.300
SA25ES	25	20	35.5	18	64	M24X2	94	53	126	31	0.6	7	48	83	0.555
SA30ES	30	22	40.7	20	73	M30X2	110	65	146.5	35.5	0.6	6	62	110	0.875
SA35ES	35	25	47	22	82	M36X3	140	82	181	41	0.6	6	79	146	1.42
SA40ES	40	28	53	24	92	M39X3	150	86	196	47	0.6	7	99	180	1.85
SAS40ES	40	28	53	23	92	M42X3	145	86	191	47	0.6	7	99	180	2.04
SA45ES	45	32	60	28	102	M42X3	163	92	214	52	0.6	7	127	240	2.49
SAS45ES	45	32	60	27	102	M45X3	165	95	216	52	0.6	7	127	240	2.74
SA50ES	50	35	66	31	112	M45X3	185	104	241	60	0.6	6	156	290	3.58
SAS50ES	50	35	66	30	112	M52X3	195	110	251	60	0.6	6	156	290	4.07
SA60ES	60	44	80	39	135	M52X3	210	115	277.5	75.5	1.0	6	245	450	5.89
SAS60ES	60	44	80	38	135	M60X4	225	120	292.5	75.5	1.0	6	245	450	6.79
SA70ES	70	49	92	43	160	M56X4	235	125	315	95	1.0	6	313	610	8.51
SAS70ES	70	59	92	42	160	M72X4	265	132	345	95	1.0	6	313	610	11.2
SA80ES	80	55	105	48	180	M64X4	270	140	360	105.5	1.0	6	400	750	12.3
SAS80ES	80	55	105	47	180	M80X4	295	147	385	105.5	1.0	6	400	750	15.3

Can not be relubricated.

Can only be relubricated through the rod end housing.

Can supply other rod ends with different pitch or accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SAL20ES M20X1.5L-6g.



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm/inch															Load ratings kN		Weight ≈kg
	d	B	dk	C1 max	d2	G UNF-2B	h1	l3 min	l4	l5	W	d3	d4	rs min	α° ≈	D Dynamic	S Static	
SIZJ4	4.83	7.92	11.1	5.94	15.88	10-32	26.97	12.70	34.93	4.75	7.92	7.54	10.31	0.3	10	3.6	6.8	0.018
	0.19	0.312	0.437	0.234	0.625		1.062	0.5	1.375	0.187	0.312	0.297	0.406	0.012				
SIZJ6	6.35	9.53	12.7	6.35	19.05	1/4-28	33.32	15.88	42.85	4.75	9.53	9.15	11.91	0.3	13.5	5.4	9.6	0.023
	0.25	0.375	0.5	0.25	0.75		1.312	0.625	1.687	0.187	0.375	0.36	0.469	0.012				
SIZJ7	7.94	11.10	15.88	7.92	22.23	5/16-24	34.93	15.88	46.02	4.75	11.1	10.72	12.70	0.3	11	8.5	12	0.036
	0.3125	0.437	0.625	0.312	0.875		1.375	0.625	1.812	0.187	0.437	0.422	0.5	0.012				
SIZJ9	9.53	12.70	18.26	9.12	25.40	3/8-24	41.28	19.05	53.98	6.35	14.27	13.89	17.45	0.6	11	11	16	0.059
	0.375	0.5	0.719	0.359	1		1.625	0.75	2.125	0.25	0.562	0.547	0.687	0.024				
SIZJ11	11.11	14.27	20.62	10.31	28.58	7/16-20	46.02	22.23	60.33	6.35	15.88	15.49	19.05	0.6	10.5	14	21	0.082
	0.4375	0.562	0.812	0.406	1.125		1.812	0.875	2.375	0.25	0.625	0.61	0.75	0.024				
SIZJ12	12.7	15.88	23.81	11.50	33.32	1/2-20	53.98	25.40	70.64	6.35	19.05	18.67	22.23	0.6	10	18	28	0.132
	0.5	0.625	0.937	0.453	1.312		2.125	1	2.781	0.25	0.75	0.735	0.875	0.024				
SIZJ15	15.88	19.05	28.58	12.29	38.10	5/8-18	63.50	31.75	82.55	7.92	22.23	21.84	25.40	0.6	13	23	29	0.195
	0.625	0.75	1.125	0.484	1.5		2.5	1.25	3.25	0.312	0.875	0.86	1	0.024				
SIZJ19	19.05	22.23	33.32	15.06	44.45	3/4-16	73.03	34.93	95.25	7.92	25.4	25.02	28.58	0.6	12	34	44	0.295
	0.75	0.875	1.312	0.593	1.75		2.875	1.375	3.75	0.312	1	0.985	1.125	0.024				

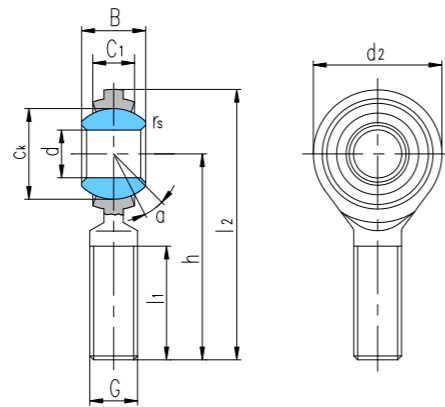
Can supply other rod ends with different accuracy of thread.

Can supply other rod ends with Sliding contact surfaces Steel / PTFE composite material or Steel / PTFE fabric.

For left-hand thread, suffix "L" is added to bearings number and suffix "LH" is added to thread sign,

e.g. SILZJ12 1/2-20UNF-2BLH.

The rod and inner ring of the bearings is of stainless steel and the mark of the items has a letter "X". That is SIZJ.../X.



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm/inch											Load ratings kN		Weight ≈kg
	d	B	d _k	C ₁ max	d ₂	G UNF-2A	h	l ₁ min	l ₂	r _s min	α° ≈	Dynamic	Static	
SAZJ4	4.83	7.92	11.1	5.94	15.88	10-32	31.75	19.05	39.70	0.3	10	3.6	3.8	0.014
	0.19	0.312	0.437	0.234	0.625		1.25	0.75	1.563	0.012				
SAZJ6	6.35	9.53	12.7	6.35	19.05	1/4-28	39.67	25.40	49.20	0.3	13.5	5.4	6.6	0.018
	0.25	0.375	0.5	0.25	0.75		1.562	1	1.937	0.012				
SAZJ7	7.94	11.10	15.88	7.92	22.23	5/16-24	47.63	31.75	58.72	0.3	11	8.5	12	0.032
	0.3125	0.437	0.625	0.312	0.875		1.875	1.25	2.312	0.012				
SAZJ9	9.53	12.70	18.26	9.12	25.40	3/8-24	49.23	31.75	61.93	0.6	11	11	16	0.050
	0.375	0.5	0.719	0.359	1		1.938	1.25	2.438	0.024				
SAZJ11	11.11	14.27	20.62	10.31	28.58	7/16-20	53.98	34.93	68.28	0.6	10.5	14	21	0.068
	0.4375	0.562	0.812	0.406	1.125		2.125	1.375	2.688	0.024				
SAZJ12	12.7	15.88	23.81	11.50	33.32	1/2-20	61.93	38.10	78.59	0.6	10	18	28	0.11
	0.5	0.625	0.937	0.453	1.312		2.438	1.5	3.094	0.024				
SAZJ15	15.88	19.05	28.58	12.29	38.10	5/8-18	66.68	41.28	85.73	0.6	13	23	29	0.16
	0.625	0.75	1.125	0.484	1.5		2.625	1.625	3.375	0.024				
SAZJ19	19.05	22.23	33.32	15.06	44.45	3/4-16	73.03	44.45	95.25	0.6	12	34	44	0.26
	0.75	0.875	1.312	0.593	1.75		2.875	1.75	3.75	0.024				

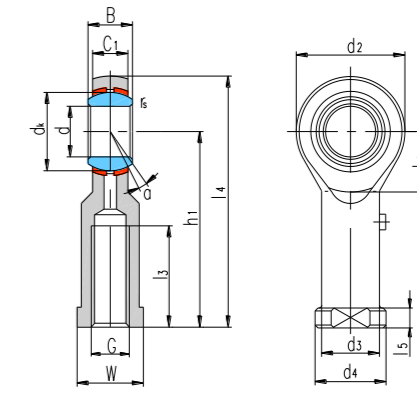
Can supply other rod ends with different accuracy of thread.

Can supply other rod ends with Sliding contact surfaces Steel / PTFE composite material or Steel / PTFE fabric.

For left-hand thread, suffix "L" is added to bearings number and suffix "LH" is added to thread sign,

e.g. SALZJ12 1/2-20UNF-2ALH.

The rod and inner ring of the bearings is of stainless steel and the mark of the items has a letter "X". That is SAZJ.../X.



Sliding contact surfaces: Steel / Bronze

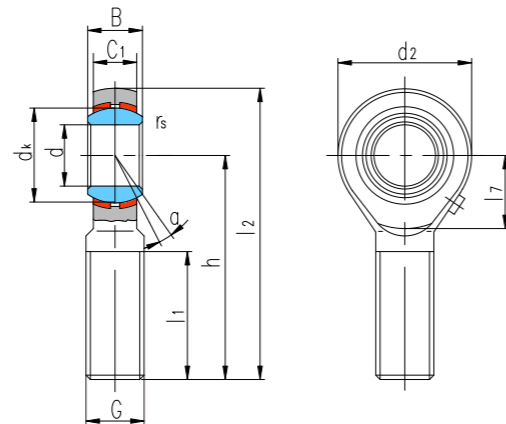
Bearing number	Dimensions mm																Load ratings kN		Weight ≈kg
	d	B	d _k	C ₁ max	d ₂	G 6H	h ₁	l ₃ min	l ₄	l ₅	l ₇	W	d ₃	d ₄	r _s min	α° ≈	Dynamic	Static	
SIBP5S ¹⁾	5	8	11.112	6	16	M5	27	14	35	4	8	9	9	11	0.3	13	3.3	4.1	0.016
SIBP6S ¹⁾	6	9	12.7	6.75	18	M6	30	14	39	5	9	11	10	13	0.3	13	4.3	5.3	0.026
SIBP8S	8	12	15.88	9	22	M8	36	17	47	5	11	14	12.5	16	0.3	14	6.8	8.5	0.044
SIBP10S	10	14	19.05	10.5	26	M10	43	21	56	6.5	13	17	15	19	0.3	14	10	11	0.072
SIBP10S/B1						M10X1.25													
SIBP12S	12	16	22.23	12	30	M12	50	24	65	6.5	15	19	17.5	22	0.3	13	13	14	0.108
SIBP12S/B2						M12X1.25													
SIBP14S	14	19	25.4	13.5	34	M14	57	27	74	8	16	22	20	25	0.3	16	17	20	0.161
SIBP14S/B1						M14X1.5													
SIBP16S	16	21	28.58	15	38	M16	64	33	83	8	17.5	22	22	27	0.3	15	21	25	0.225
SIBP16S/B1						M16X1.5													
SIBP18S	18	23	31.75	16.5	42	M18X1.5	71	36	92	10	19.5	27	25	31	0.6	15	26	30	0.295
SIBP20S	20	25	34.93	18	46	M20X1.5	77	40	100	10	21.5	30	27.5	34	0.6	15	31	35	0.382
SIBP22S	22	28	38.1	20	50	M22X1.5	84	43	109	12	23	32	30	37	0.6	15	38	43	0.488
SIBP25S	25	31	42.86	22	60	M24X2	94	48	124	12	29.5	36	33.5	42	0.6	15	47	65	0.749
SIBP28S	28	35	47.63	25	66	M27X2	103	53	136	12	32.5	41	37	46	0.6	15	59	77	0.949
SIBP30S	30	37	50.8	25	70	M30X2	110	56	145	15	34	41	40	50	0.6	17	63	86	1.13

Can not be relubricated.

Can supply other rod ends with different pitch or accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SILBP20S M20X1.5L-6H.

The rod and inner ring of the bearings is of stainless steel and the mark of the items has a letter "X". That is SIBP...S/X.



Sliding contact surfaces: Steel / Bronze

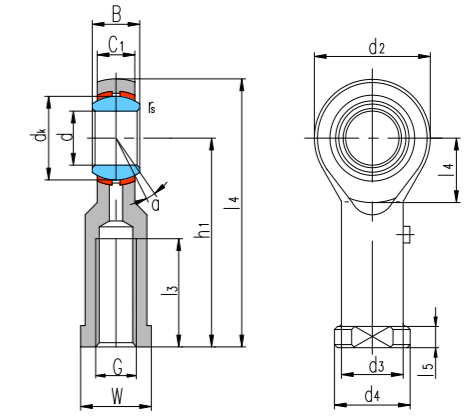
Bearing number	Dimensions mm												Load ratings kN		Weight ≈kg
	d	B	dk	C ₁ max	d ₂	G _{6g}	h	l ₁ min	l ₂	l ₇	r _s min	α° ≈	Dynamic	Static	
SABP5S ¹⁾	5	8	11.112	6	16	M5	33	20	41	—	0.3	13	3.3	3.9	0.016
SABP6S ¹⁾	6	9	12.7	6.75	18	M6	36	22	45	—	0.3	13	4.3	5.3	0.026
SABP8S	8	12	15.88	9	22	M8	42	25	53	—	0.3	14	6.8	8.5	0.044
SABP10S	10	14	19.05	10.5	26	M10	48	29	61	—	0.3	14	10	11	0.072
SABP12S	12	16	22.23	12	30	M12	54	33	69	—	0.3	13	13	14	0.108
SABP14S	14	19	25.4	13.5	34	M14	60	36	77	—	0.3	16	17	20	0.161
SABP16S	16	21	28.58	15	38	M16	66	40	85	—	0.3	15	21	25	0.225
SABP18S	18	23	31.75	16.5	42	M18X1.5	72	44	93	23	0.6	15	26	30	0.295
SABP20S	20	25	34.93	18	46	M20X1.5	78	47	101	25	0.6	15	31	35	0.382
SABP22S	22	28	38.1	20	50	M22X1.5	84	51	109	27	0.6	15	38	43	0.488
SABP25S	25	31	42.86	22	60	M24X2	94	57	124	29	0.6	15	47	65	0.749
SABP28S	28	35	47.63	25	66	M27X2	103	62	136	33	0.6	15	59	77	0.949
SABP30S	30	37	50.8	25	70	M30X2	110	66	145	39	0.6	17	63	86	1.13

Can not be relubricated.

Can supply other rod ends with different pitch or accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SALBP20S M20X1.5L-6g.

The rod and inner ring of the bearings is of stainless steel and the mark of the items has a letter "X". That is SABP...S/X.



Sliding contact surfaces: Steel / Bronze

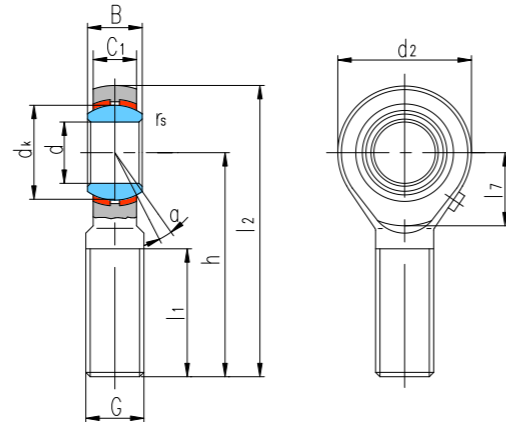
Bearing number	Dimensions mm/inch																	Load ratings kN		Weight ≈kg
	d	B	dk	C ₁ max	d ₂	G UNF-2B	h ₁	l ₃ min	l ₄	l ₅	l ₇	W	d ₃	d ₄	r _s min	α° ≈	Dynamic	Static		
SIZP4S ¹⁾	4.83	7.92	11.1	6.35	15.88	10-32	26.97	14.27	34.93	4.75	9	7.92	7.54	10.31	0.3	10	3.4	4.6	0.015	
	0.19	0.312	0.437	0.25	0.625		1.062	0.562	1.375	0.187	0.354	0.312	0.297	0.406	0.012					
SIZP6S ¹⁾	6.35	9.53	12.7	7.14	19.05	1/4-28	33.32	19.05	42.85	4.75	10.5	9.53	9.15	11.91	0.3	13	4.5	7.7	0.025	
	0.25	0.375	0.5	0.281	0.75		1.312	0.75	1.687	0.187	0.413	0.375	0.36	0.469	0.012					
SIZP7S	7.94	11.10	15.88	8.74	22.23	5/16-24	34.93	19.05	46.02	4.75	11.7	11.1	10.72	12.70	0.3	10	6.9	8.4	0.036	
	0.3125	0.437	0.625	0.344	0.875		1.375	0.75	1.812	0.187	0.461	0.437	0.422	0.5	0.012					
SIZP9S	9.53	12.70	18.26	10.31	25.40	3/8-24	41.28	23.80	53.98	6.35	12.3	14.27	13.89	17.45	0.6	9	9.4	10	0.061	
	0.375	0.5	0.719	0.406	1		1.625	0.937	2.125	0.25	0.484	0.562	0.547	0.687	0.024					
SIZP11S	11.11	14.27	20.62	11.1	28.58	7/16-20	46.02	26.97	60.33	6.35	14	15.88	15.49	19.05	0.6	11	11	13	0.081	
	0.4375	0.562	0.812	0.437	1.125		1.812	1.062	2.375	0.25	0.551	0.625	0.61	0.75	0.024					
SIZP12S	12.7	15.88	23.81	12.7	33.32	1/2-20	53.98	30.15	70.64	6.35	16.2	19.05	18.67	22.23	0.6	9	15	19	0.133	
	0.5	0.625	0.937	0.5	1.312		2.125	1.187	2.781	0.25	0.638	0.75	0.735	0.875	0.024					
SIZP15S	15.88	19.05	28.58	14.27	38.10	5/8-18	63.50	38.10	82.55	7.92	18.2	22.23	21.84	25.40	0.6	11	20	21	0.190	
	0.625	0.75	1.125	0.562	1.5		2.5	1.5	3.25	0.312	0.717	0.875	0.86	1	0.024					
SIZP19S	19.05	22.23	33.32	17.45	44.45	3/4-16	73.03	44.45	95.25	7.92	20.9	25.4	25.02	28.58	0.6	10	29	29	0.285	
	0.75	0.875	1.312	0.687	1.75		2.875	1.75	3.75	0.312	0.823	1	0.985	1.125	0.024					
SIZP25S	25.40	34.93	47.63	25.40	69.85	5/4-12	104.78	53.98	139.70	11.10	33.1	38.1	37.72	44.45	0.6	14	60	101	1.00	
	1	1.375	1.875	1	2.75		4.125	2.125	5.5	0.437	1.303	1.5	1.485	1.75	0.024					

Can not be relubricated.

Can supply other rod ends with different accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and suffix "LH" is added to thread sign, e.g. SILZP12S 1/2-20UNF-2BLH.

The rod and inner ring of the bearings is of stainless steel and the mark of the items has a letter "X". That is SIZP...S/X.



Sliding contact surfaces: Steel / Bronze

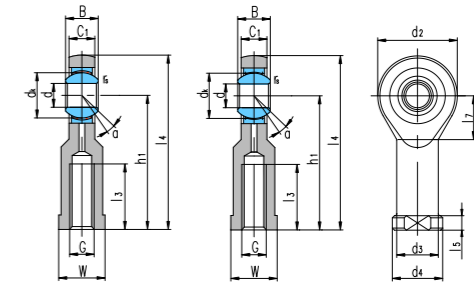
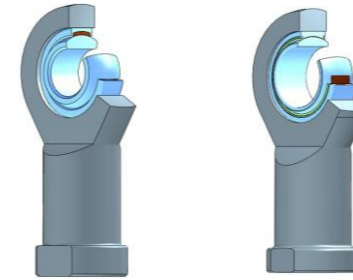
Bearing number	Dimensions mm/inch												Load ratings kN		Weight ≈kg
	d	B	dk	C ₁ max	d ₂	G UNF-2A	h	l ₁ min	l ₂	l ₇	r _s min	α° ≈	Dynamic	Static	
SAZP4S ¹⁾	4.83	7.92	11.1	6.35	15.88	10-32	31.75	19.05	39.70	—	0.3	10	3.4	3.8	0.013
	0.19	0.312	0.437	0.25	0.625		1.25	0.75	1.563		0.012				
SAZP6S ¹⁾	6.35	9.53	12.7	7.14	19.05	1/4-28	39.67	25.40	49.20	—	0.3	13	4.5	6.6	0.022
	0.25	0.375	0.5	0.281	0.75		1.562	1	1.937		0.012				
SAZP7S	7.94	11.10	15.88	8.74	22.23	5/16-24	47.63	31.75	58.72	—	0.3	10	6.9	8.4	0.037
	0.3125	0.437	0.625	0.344	0.875		1.875	1.25	2.312		0.012				
SAZP9S	9.53	12.70	18.26	10.31	25.40	3/8-24	49.23	31.75	61.93	—	0.6	9	9.4	10	0.055
	0.375	0.5	0.719	0.406	1		1.938	1.25	2.438		0.024				
SAZP11S	11.11	14.27	20.62	11.1	28.58	7/16-20	53.98	34.93	68.28	—	0.6	11	11	13	0.078
	0.4375	0.562	0.812	0.437	1.125		2.125	1.375	2.688		0.024				
SAZP12S	12.7	15.88	23.81	12.7	33.32	1/2-20	61.93	38.10	78.59	—	0.6	9	15	19	0.12
	0.5	0.625	0.937	0.5	1.312		2.438	1.5	3.094		0.024				
SAZP15S	15.88	19.05	28.58	14.27	38.10	5/8-18	66.68	41.28	85.73	18.2	0.6	11	20	21	0.18
	0.625	0.75	1.125	0.562	1.5		2.625	1.625	3.375		0.717				
SAZP19S	19.05	22.23	33.32	17.45	44.45	3/4-16	73.03	44.45	95.25	20.9	0.6	10	29	29	0.29
	0.75	0.875	1.312	0.687	1.75		2.875	1.75	3.75		0.823				
SAZP25S	25.40	34.93	47.63	25.40	69.85	5/4-12	104.78	53.98	139.70	33.9	0.6	14	60	101	1.1
	1	1.375	1.875	1	2.75		4.125	2.125	5.5		1.335				

Can not be relubricated.

Can supply other rod ends with different accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and suffix "LH" is added to thread sign, e.g. SALZP12S 1/2-20UNF-2ALH.

The rod and inner ring of the bearings is of stainless steel and the mark of the items has a letter "X". That is SAZP...S/X.



SI...C

SI...ETL-2RS

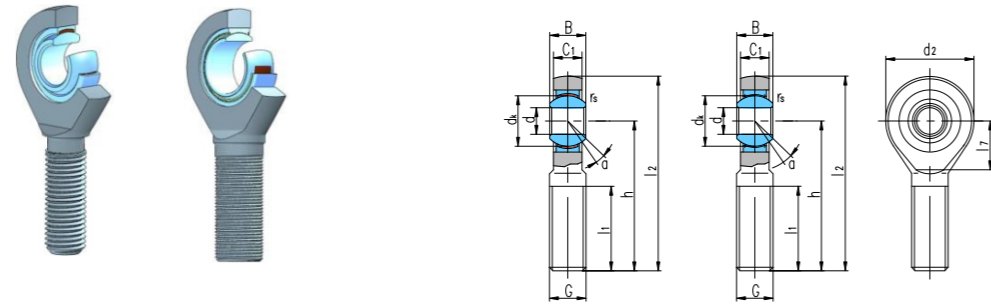
SIS...ETL-2RS

 Sliding contact surfaces: Steel / PTFE composite material ($d \leq 30$)
 Steel / PTFE fabric ($d \geq 15$)

Bearing number	Dimensions mm																Load Ratings kN		Weight ≈kg
	d	B	dk	C ₁ max	d ₂	G 6H	h ₁	l ₃ min	l ₄	l ₅	l ₇	W	d ₃	d ₄	r _s min	α° ≈	Dynamic	Static	
SI5C	5	6	10	4.5	21	M5	30	11	40.5	5	11.5	10	10	13	0.3	13	3.6	8.1	0.023
SI6C	6	6	10	4.5	21	M6	30	11	40.5	5	11.5	11	11	13	0.3	13	3.6	8.1	0.023
SI8C	8	8	13	6.5	24	M8	36	15	48	5	13	13	13	16	0.3	15	5.8	12.9	0.040
SI10C	10	9	16	7.5	29	M10	43	20	57.5	6.5	15	16	16	19	0.3	12	8.6	17.6	0.065
SI12C	12	10	18	8.5	34	M12	50	23	67	7	18	18	19	22	0.3	10	11	24.5	0.108
SI15C	15	12	22	10.5	40	M14	61	30	81	8	21	21	21	26	0.3	8	18	36	0.169
SI15ETL-2RS																	25		
SI17C	17	14	25	11.5	46	M16	67	34	90	10	24	27	25	29	0.3	10	22	45	0.235
SI17ETL-2RS																	32		
SI20C	20	16	29	13.5	53	M20X1.5	77	40	103.5	10	25.5	30	28	34	0.3	9	31	60	0.335
SI20ETL-2RS																	45		
SI25C	25	20	35.5	18	64	M24X2	94	48	126	12	33	36	35	42	0.6	7	51	85	0.665
SI25ETL-2RS																	85		
SI30C	30	22	40.7	20	73	M30X2	110	56	146.5	15	37.5	46	42	50	0.6	6	65	110	1.05
SI30ETL-2RS																	110		
SI35ETL-2RS	35	25	47	22	82	M36X3	125	60	166	15	40	55	48	58	0.6	6	140	146	1.50
SI40ETL-2RS	40	28	53	24	92	M39X3	142	65	188	18	47	60	52	65	0.6	7	175	180	2.05
SIS40ETL-2RS	40	28	53	24	92	M42X3	142	65	188	18	47	55	52	65	0.6	7	99	180	1.94
SI45ETL-2RS	45	32	60	28	102	M42X3	145	65	196	20	52	65	58	70	0.6	7	225	240	2.72
SIS45ETL-2RS	45	32	60	27	102	M45X3	145	65	196	20	52	60	58	70	0.6	7	127	240	2.61
SI50ETL-2RS	50	35	66	31	112	M45X3	160	68	216	20	57	70	62	75	0.6	6	275	290	3.48
SIS50ETL-2RS	50	35	66	31	112	M52X3	160	69	216	20	57	65	62	75	0.6	6	156	260	3.24
SI60ETL-2RS	60	44	80	39	135	M52X3	175	70	242.5	20	68.5	80	70	88	1	6	430	450	5.55
SIS60ETL-2RS	60	44	80	39	135	M60X4	175	73	242.5	20	68.5	75	70	88	1	6	245	300	4.99
SI70ETL-2RS	70	49	92	43	160	M56X4	200	80	280	20	81	85	80	98	1	6	550	610	8.72
SIS70ETL-2RS	70	49	92	42	160	M72X4	200	80	280	20	81	80	85	98	1	6	313	470	8.33
SI80ETL-2RS	80	55	105	48	180	M64X4	230	85	320	25	91	95	95	110	1	6	705	750	12.9
SIS80ETL-2RS	80	55	105	47	180	M80X4	230	85	320	25	91	100	95	110	1	6	400	600	11.7

Can supply other rod ends with different pitch or accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SIL20C M20X1.5L-6H.

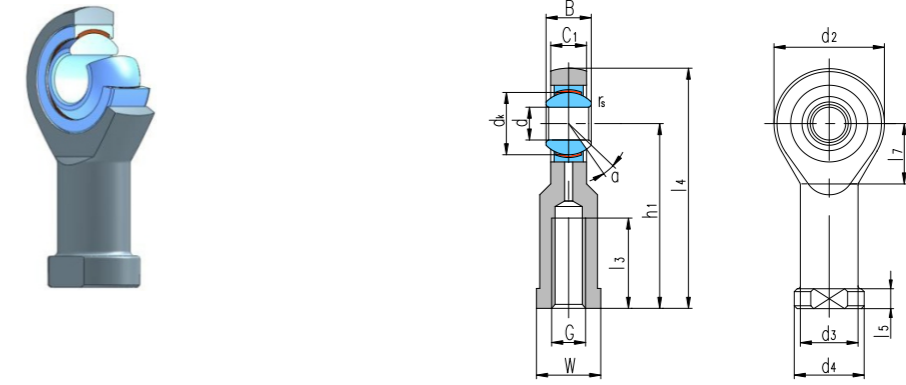

 SA...C
 SA...ETL-2RS
 SAS...ETL-2RS

Sliding contact surfaces: Steel / PTFE composite material($d \leq 30$)
 Steel / PTFE fabric($d \geq 15$)

Bearing number	Dimensions mm												Load ratings kN		Weight ≈kg
	d	B	dk	C ₁ max	d ₂	G 6g	h	l ₁ min	l ₂	l ₇	r _s min	α° ≈	Dynamic	Static	
SA5C	5	6	10	4.5	21	M5	36	16	46.5	11.5	0.3	13	3.6	3.9	0.015
SA6C	6	6	10	4.5	21	M6	36	16	46.5	11.5	0.3	13	3.6	5.5	0.016
SA8C	8	8	13	6.5	24	M8	42	21	54	13	0.3	15	5.8	10	0.026
SA10C	10	9	16	7.5	29	M10	48	26	62.5	15.5	0.3	12	8.6	16	0.050
SA12C	12	10	18	8.5	34	M12	54	28	71	18	0.3	10	11	23	0.068
SA15C	15	12	22	10.5	40	M14	63	34	83	21	0.3	8	18	32	0.120
SA15ETL-2RS													25		
SA17C	17	14	25	11.5	46	M16	69	36	92	24	0.3	10	22	44	0.190
SA17ETL-2RS													32		
SA20C	20	16	29	13.5	53	M20X1.5	78	43	104.5	25.5	0.3	9	31	60	0.300
SA20ETL-2RS													45		
SA25C	25	20	35.5	18	64	M24X2	94	53	126	31	0.6	7	51	85	0.555
SA25ETL-2RS													85		
SA30C	30	22	40.7	20	73	M30X2	110	65	146.5	35.5	0.6	6	65	110	0.875
SA30ETL-2RS													110		
SA35ETL-2RS	35	25	47	22	82	M36X3	140	82	181	41	0.6	6	140	146	1.42
SA40ETL-2RS	40	28	53	24	92	M39X3	150	86	196	47	0.6	7	175	180	1.85
SAS40ETL-2RS	40	28	53	23	92	M42X3	145	86	191	47	0.6	7	99	180	2.04
SA45ETL-2RS	45	32	60	28	102	M42X3	163	92	214	52	0.6	7	225	240	2.49
SAS45ETL-2RS	45	32	60	27	102	M45X3	165	95	216	52	0.6	7	127	240	2.74
SA50ETL-2RS	50	35	66	31	112	M45X3	185	104	241	60	0.6	6	275	290	3.58
SAS50ETL-2RS	50	35	66	30	112	M52X3	195	110	251	60	0.6	6	156	290	4.07
SA60ETL-2RS	60	44	80	39	135	M52X3	210	115	277.5	75.5	1.0	6	430	450	5.89
SAS60ETL-2RS	60	44	80	38	135	M60X4	225	120	292.5	75.5	1.0	6	245	450	6.79
SA70ETL-2RS	70	49	92	43	160	M56X4	235	125	315	95	1.0	6	550	610	8.51
SAS70ETL-2RS	70	59	92	42	160	M72X4	265	132	345	95	1.0	6	313	610	11.2
SA80ETL-2RS	80	55	105	48	180	M64X4	270	140	360	105.5	1.0	6	705	750	12.3
SAS80ETL-2RS	80	55	105	47	180	M80X4	295	147	385	105.5	1.0	6	400	750	15.3

Can supply other rod ends with different pitch or accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SAL20C M20X1.5L-6g.

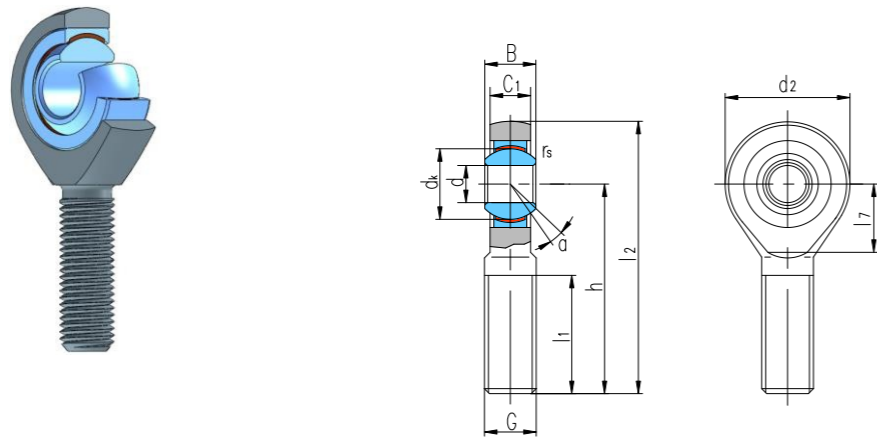


Sliding contact surfaces : Steel / PTFE composite material

Bearing number	Dimensions mm																	Load ratings kN		Weight ≈kg
	d	B	dk	C ₁ max	d ₂	G 6H	h ₁	l ₃ min	l ₄	l ₅	l ₇	W	d ₃	d ₄	r _s min	α° ≈	Dynamic	Static		
SIJK5C	5	8	11.112	7.5	18	M5	27	8	36	4	10	10	9	12	0.3	4	3.6	4.6	0.012	
SIJK6C	6	9	12.7	7.5	20	M6	30	9	40	5	11	10	10	13	0.3	9	4.7	5.2	0.015	
SIJK8C	8	12	15.88	9.5	24	M8	36	12	48	5	13	13	12.5	16	0.3	12	7.6	8.2	0.057	
SIJK10C	10	14	19.05	11.5	30	M10	43	15	58	6.5	16	16	15	19	0.3	10	12	15	0.104	
SIJK10C /B1						M10X1.25														
SIJK12C	12	16	22.23	12.5	34	M12	50	18	67	6.5	18	18	17.5	22	0.3	12	14	19	0.155	
SIJK12C /B2						M12X1.25														
SIJK14C	14	19	25.4	14.5	38	M14	57	21	76	8	20	21	20	25	0.3	14	19	24	0.224	
SIJK14C /B1						M14X1.5														
SIJK16C	16	21	28.58	15.5	42	M16	64	24	85	8	21	24	22	27	0.3	14	23	29	0.289	
SIJK16C /B1						M16X1.5														
SIJK18C	18	23	31.75	17.5	46	M18X1.5	71	27	94	10	22.5	27	25	31	0.6	13	29	34	0.404	
SIJK20C	20	25	34.93	18.5	50	M20X1.5	77	30	102	10	25	30	27.5	34	0.6	14	34	40	0.512	
SIJK22C	22	28	38.1	21	56	M22X1.5	84	33	112	12	27.5	34	30	37	0.6	14	42	50	0.697	
SIJK25C	25	31	42.86	23	60	M24X2	94	36	124	12	28.5	36	33.5	42	0.6	14	52	57	0.972	
SIJK28C	28	35	47.63	26	66	M27X2	103	41	136	14	31.5	41	37	46	0.6	14	66	69	1.234	
SIJK30C	30	37	50.8	27	70	M30X2	110	45	145	15	33	46	40	50	0.6	15	73	77	1.479	

Can supply other rod ends with different pitch or accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SILJK20C M20X1.5L-6H. The rod and inner ring of the bearings is of stainless steel and the mark of the items has a letter "X". That is SIJK...C/X.



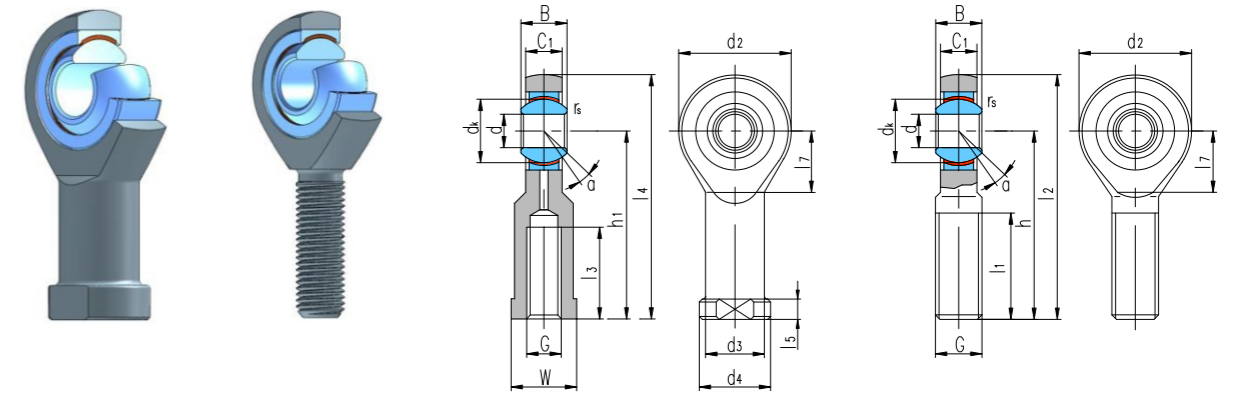
Sliding contact surfaces: Steel / PTFE composite material

Bearing number	Dimensions mm												Load ratings kN		Weight ≈kg
	d	B	dk	C ₁ max	d ₂	G 6g	h	l ₁ min	l ₂	l ₇	r _s min	α° ≈	Dynamic	Static	
SAJK5C	5	8	11.112	7.5	18	M5	33	19	42	—	0.3	4	3.6	3.9	0.009
SAJK6C	6	9	12.7	7.5	20	M6	36	21	46	—	0.3	9	4.7	5.2	0.010
SAJK8C	8	12	15.88	9.5	24	M8	42	25	54	—	0.3	12	7.6	8.2	0.042
SAJK10C	10	14	19.05	11.5	30	M10	48	28	63	—	0.3	10	12	15	0.079
SAJK12C	12	16	22.23	12.5	34	M12	54	32	71	—	0.3	12	14	19	0.118
SAJK14C	14	19	25.4	14.5	38	M14	60	36	79	—	0.3	14	19	24	0.169
SAJK16C	16	21	28.58	15.5	42	M16	66	37	87	—	0.3	14	23	29	0.224
SAJK18C	18	23	31.75	17.5	46	M18×1.5	72	41	95	—	0.6	13	29	34	0.291
SAJK20C	20	25	34.93	18.5	50	M20×1.5	78	45	103	27.5	0.6	14	34	40	0.385
SAJK22C	22	28	38.1	21	56	M22×1.5	84	48	112	30.5	0.6	14	42	50	0.529
SAJK25C	25	31	42.86	23	60	M24×2	94	55	124	33	0.6	14	52	57	0.673
SAJK28C	28	35	47.63	26	66	M27×2	103	62	136	33	0.6	14	66	69	0.915
SAJK30C	30	37	50.8	27	70	M30×2	110	66	145	36	0.6	15	73	77	1.119

Can supply other rod ends with different pitch or accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SALJK20C M20X1.5L-6g.

The rod and inner ring of the bearings is of stainless steel and the mark of the items has a letter "X". That is SAJK...C/X.



Sliding contact surfaces: Steel / PTFE composite material

SIK...C

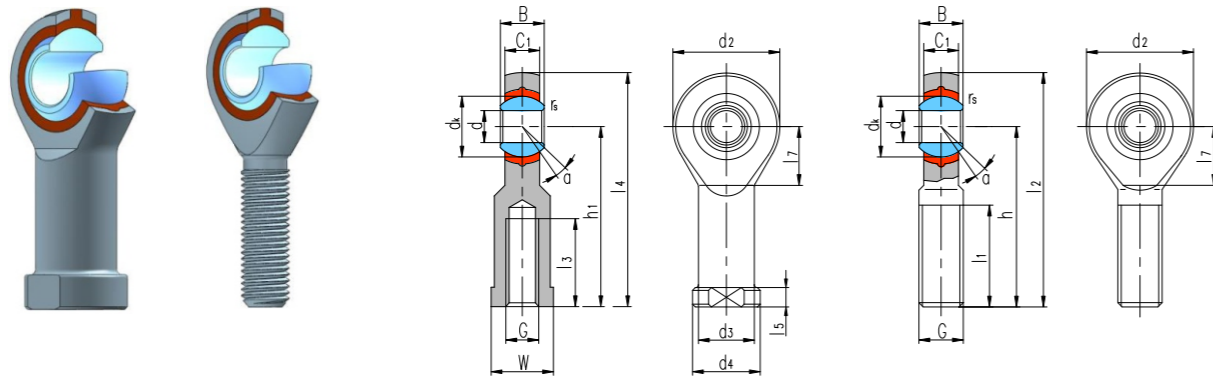
SAK...C

Bearing number	Dimensions mm																Load ratings kN		Weight ≈kg
	d	B	dk	C ₁ max	d ₂	G 6H	h ₁	l ₃ min	l ₄	l ₅	l ₇	W	d ₃	d ₄	r _s min	α° ≈	Dynamic	Static	
SIK5C	5	8	11.112	6	19.5	M5	30	12	39.8	5	9.5	10	10	13	0.3	4	3.6	4.6	0.024
SIK6C	6	9	12.7	7.5	21.2	M6	30	9	40.7	5	11	10	10	13	0.3	9	4.7	5.2	0.028
SIK8C	8	12	15.88	9.5	25.5	M8	36	12	48.8	5	13	13	12.5	16	0.3	12	7.6	8.2	0.053
SIK10C	10	14	19.05	11.5	31	M10	43	19	58.6	6.5	16	16	15	19	0.3	10	12	15	0.11
SIK12C	12	16	22.23	12.5	34	M12	50	23	67	6.5	18	18	17.5	22	0.3	12	14	19	0.14
SIK14C	14	19	25.4	14.5	38	M14	57	23	76	8	20	21	20	25	0.3	14	19	24	0.20
SIK16C	16	21	28.58	15.5	42	M16	64	24	85	8	21	24	22	27	0.3	14	23	29	0.25
SIK18C	18	23	31.75	17.5	46	M18×1.5	71	27	94	10	22.5	27	25	31	0.6	13	29	34	0.35
SIK20C	20	25	34.93	18.5	50	M20×1.5	77	30	102	10	25	30	27.5	34	0.6	14	34	40	0.43

Bearing number	Dimensions mm												Load ratings kN		Weight ≈kg
	d	B	dk	C ₁ max	d ₂	G 6g	h	l ₁ min	l ₂	l ₇	r _s min	α° ≈	Dynamic	Static	
SAK5C	5	8	11.112	6	19.5	M5	33	19	42.8	—	0.3	4	3.6	3.9	0.017
SAK6C	6	9	12.7	7.5	21.2	M6	36	21	46.7	—	0.3	9	4.7	5.2	0.023
SAK8C	8	12	15.88	9.5	25.5	M8	42	25	54.8	—	0.3	12	7.6	8.2	0.047
SAK10C	10	14	19.05	11.5	31	M10	48	28	63.6	—	0.3	10	12	15	0.085
SAK12C	12	16	22.23	12.5	34	M12	54	32	71	—	0.3	12	14	19	0.12
SAK14C	14	19	25.4	14.5	38	M14	60	36	79	—	0.3	14	19	24	0.17
SAK16C	16	21	28.58	15.5	42	M16	66	37	87	—	0.3	14	23	29	0.23
SAK18C	18	23	31.75	17.5	46	M18×1.5	72	41	95	—	0.6	13	29	34	0.31
SAK20C	20	25	34.93	18.5	50	M20×1.5	78	45	103	27.5	0.6	14	34	40	0.40

Can supply other rod ends with different pitch or accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SILK20C M20X1.5L-6H, SALK20C M20X1.5 左-6g



Sliding contact surfaces: Steel / PTFE plastic

SIBP...N

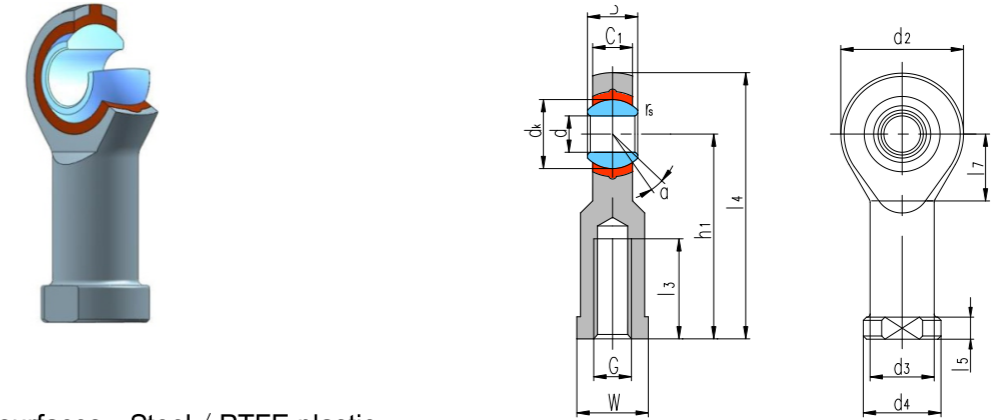
SABP...N

Bearing number	Dimensions mm															Load ratings kN		Weight ≈kg	
	d	B	d _K	C ₁ max	d ₂	G 6H	h ₁	l ₃ min	l ₄	l ₅	l ₇	W	d ₃	d ₄	r _s min	α° ≈	Dynamic		Static
SIBP5N	5	8	11.112	6	16	M5	27	14	35	4	8	9	9	11	0.3	13	3.25	5.3	0.016
SIBP6N	6	9	12.7	6.75	18	M6	30	14	39	5	9	11	10	13	0.3	13	4.25	6.8	0.026
SIBP8N	8	12	15.88	9	22	M8	36	17	47	5	11	14	12.5	16	0.3	14	7.1	11.4	0.044
SIBP10N	10	14	19.05	10.5	26	M10	43	21	56	6.5	13	17	15	19	0.3	14	9.8	14.3	0.072
SIBP12N	12	16	22.23	12	30	M12	50	24	65	6.5	15	19	17.5	22	0.3	13	13.2	17	0.108
SIBP14N	14	19	25.4	13.5	34	M14	57	27	74	8	16	22	20	25	0.3	16	17	27.5	0.161
SIBP16N	16	21	28.58	15	38	M16	64	33	83	8	17.5	22	22	27	0.3	15	21.4	34.5	0.225
SIBP18N	18	23	31.75	16.5	42	M18X15	71	36	92	10	19.5	27	25	31	0.6	15	26	41.5	0.295
SIBP20N	20	25	34.93	18	46	M20X15	77	40	100	10	21.5	30	27.5	34	0.6	15	31	50	0.382

Bearing number	Dimensions mm												Load ratings kN		Weight ≈kg
	d	B	d _K	C ₁ max	d ₂	G 6g	h	l ₁ min	l ₂	l ₇	r _s min	α° ≈	Dynamic	Static	
SABP5N	5	8	11.112	6	16	M5	33	20	41	—	0.3	13	3.25	5.3	0.016
SABP6N	6	9	12.7	6.75	18	M6	36	22	45	—	0.3	13	4.25	6.8	0.026
SABP8N	8	12	15.88	9	22	M8	42	25	53	—	0.3	14	7.1	10	0.044
SABP10N	10	14	19.05	10.5	26	M10	48	29	61	—	0.3	14	9.8	12.5	0.072
SABP12N	12	16	22.23	12	30	M12	54	33	69	—	0.3	13	13.2	15	0.108
SABP14N	14	19	25.4	13.5	34	M14	60	36	77	—	0.3	16	17	25.5	0.161
SABP16N	16	21	28.58	15	38	M16	66	40	85	—	0.3	15	21.4	34.5	0.225
SABP18N	18	23	31.75	16.5	42	M18X15	72	44	93	23	0.6	15	26	41.5	0.295
SABP20N	20	25	34.93	18	46	M20X15	78	47	101	25	0.6	15	31	50	0.382

Can supply other rod ends with different pitch or accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SILBP20N M20X1.5L-6H, SALBP20N M20X1.5L-6g.

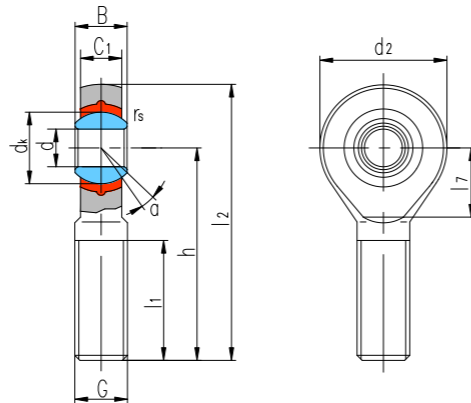


Sliding contact surfaces: Steel / PTFE plastic

Bearing number	Dimensions mm/inch															Load ratings kN		Weight ≈kg	
	d	B	d _K	C ₁ max	d ₂	G UNF-2B	h ₁	l ₃ min	l ₄	l ₅	l ₇	W	d ₃	d ₄	r _s min	α° ≈	Dynamic		Static
SIZP4N	4.83	7.92	11.1	6.35	15.88	10-32	26.97	14.27	34.93	4.75	9	7.92	7.54	10.31	0.3	10	3.3	5.38	0.015
SIZP6N	0.19	0.312	0.437	0.25	0.625	1/4-28	1.062	0.562	1.375	0.187	0.354	0.312	0.297	0.406	0.012	10	3.3	5.38	0.015
SIZP6N	6.35	9.53	12.7	7.14	19.05	1/4-28	33.32	19.05	42.85	4.75	10.5	9.53	9.15	11.91	0.3	13	6.8	10.9	0.025
SIZP6N	0.25	0.375	0.5	0.281	0.75	1/4-28	1.312	0.75	1.687	0.187	0.413	0.375	0.36	0.469	0.012	13	6.8	10.9	0.025
SIZP7N	7.94	11.10	15.88	8.74	22.23	5/16-24	34.93	19.05	46.02	4.75	11.7	11.1	10.72	12.70	0.3	10	7.6	12.2	0.036
SIZP7N	0.3125	0.437	0.625	0.344	0.875	5/16-24	1.375	0.75	1.812	0.187	0.461	0.437	0.422	0.5	0.012	10	7.6	12.2	0.036
SIZP9N	9.53	12.70	18.26	10.31	25.40	3/8-24	41.28	23.80	53.98	6.35	12.3	14.27	13.89	17.45	0.6	9	11.9	18.2	0.061
SIZP9N	0.375	0.5	0.719	0.406	1	3/8-24	1.625	0.937	2.125	0.25	0.484	0.562	0.547	0.687	0.024	9	11.9	18.2	0.061
SIZP11N	11.11	14.27	20.62	11.1	28.58	7/16-20	46.02	26.97	60.33	6.35	14	15.88	15.49	19.05	0.6	11	17.4	23.8	0.081
SIZP11N	0.4375	0.562	0.812	0.437	1.125	7/16-20	1.812	1.062	2.375	0.25	0.551	0.625	0.61	0.75	0.024	11	17.4	23.8	0.081
SIZP12N	12.7	15.88	23.81	12.7	33.32	1/2-20	53.98	30.15	70.64	6.35	16.2	19.05	18.67	22.23	0.6	9	19.9	28.6	0.133
SIZP12N	0.5	0.625	0.937	0.5	1.312	1/2-20	2.125	1.187	2.781	0.25	0.638	0.75	0.735	0.875	0.024	9	19.9	28.6	0.133
SIZP15N	15.88	19.05	28.58	14.27	38.10	5/8-18	63.50	38.10	82.55	7.92	18.2	22.23	21.84	25.40	0.6	11	22.9	36.9	0.190
SIZP15N	0.625	0.75	1.125	0.562	1.5	5/8-18	2.5	1.5	3.25	0.312	0.717	0.875	0.86	1	0.024	11	22.9	36.9	0.190
SIZP19N	19.05	22.23	33.32	17.45	44.45	3/4-16	73.03	44.45	95.25	7.92	20.9	25.4	25.02	28.58	0.6	10	30.2	48.5	0.285
SIZP19N	0.75	0.875	1.312	0.687	1.75	3/4-16	2.875	1.75	3.75	0.312	0.823	1	0.985	1.125	0.024	10	30.2	48.5	0.285

Can supply other rod ends with different accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and suffix "LH" is added to thread sign, e.g. SILZP12N 1/2-20UNF-2BLH.



Sliding contact surfaces: Steel / PTFE plastic

Bearing number	Dimensions mm/inch											Load ratings kN		Weight ≈kg	
	d	B	dk	C ₁ max	d ₂	G UNF-2A	h	l ₁ min	l ₂	l ₇	r _s min	α° ≈	Dynamic		Static
SAZP4N	4.83	7.92	11.1	6.35	15.88	10-32	31.75	19.05	39.70	—	0.3	10	3.3	5.38	0.013
	0.19	0.312	0.437	0.25	0.625		1.25	0.75	1.563		0.012				
SAZP6N	6.35	9.53	12.7	7.14	19.05	1/4-28	39.67	25.40	49.20	—	0.3	13	6.8	10.9	0.022
	0.25	0.375	0.5	0.281	0.75		1.562	1	1.937		0.012				
SAZP7N	7.94	11.10	15.88	8.74	22.23	5/16-24	47.63	31.75	58.72	—	0.3	10	7.6	12.2	0.037
	0.3125	0.437	0.625	0.344	0.875		1.875	1.25	2.312		0.012				
SAZP9N	9.53	12.70	18.26	10.31	25.40	3/8-24	49.23	31.75	61.93	—	0.6	9	11.9	18.7	0.055
	0.375	0.5	0.719	0.406	1		1.938	1.25	2.438		0.024				
SAZP11N	11.11	14.27	20.62	11.1	28.58	7/16-20	53.98	34.93	68.28	—	0.6	11	17.4	23.8	0.078
	0.4375	0.562	0.812	0.437	1.125		2.125	1.375	2.688		0.024				
SAZP12N	12.7	15.88	23.81	12.7	33.32	1/2-20	61.93	38.10	78.59	—	0.6	9	19.9	28.6	0.12
	0.5	0.625	0.937	0.5	1.312		2.438	1.5	3.094		0.024				
SAZP15N	15.88	19.05	28.58	14.27	38.10	5/8-18	66.68	41.28	85.73	18.2	0.6	11	22.9	36.9	0.18
	0.625	0.75	1.125	0.562	1.5		2.625	1.625	3.375		0.717				
SAZP19N	19.05	22.23	33.32	17.45	44.45	3/4-16	73.03	44.45	95.25	20.9	0.6	10	30.2	48.5	0.29
	0.75	0.875	1.312	0.687	1.75		2.875	1.75	3.75		0.823				

Can supply other rod ends with different accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and suffix "LH" is added to thread sign, e.g. SALZP12N 1/2-20UNF-2ALH.

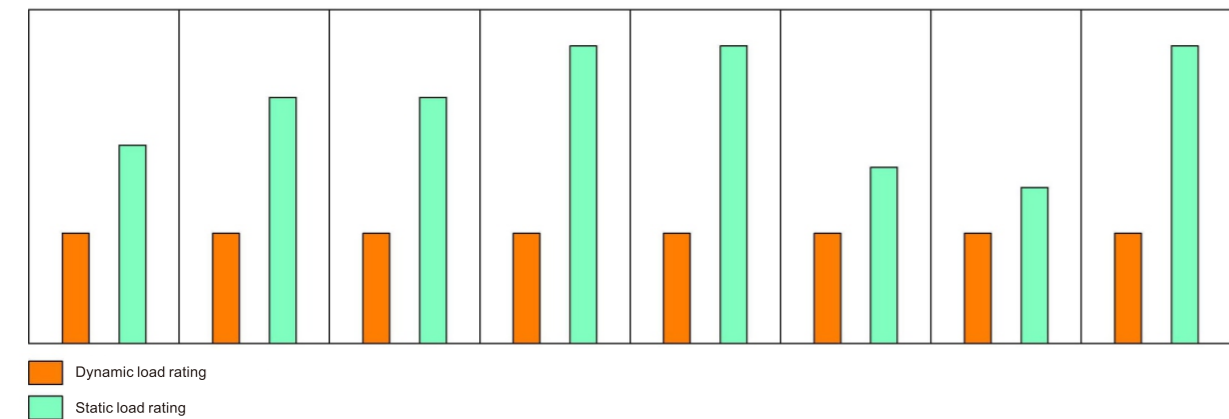
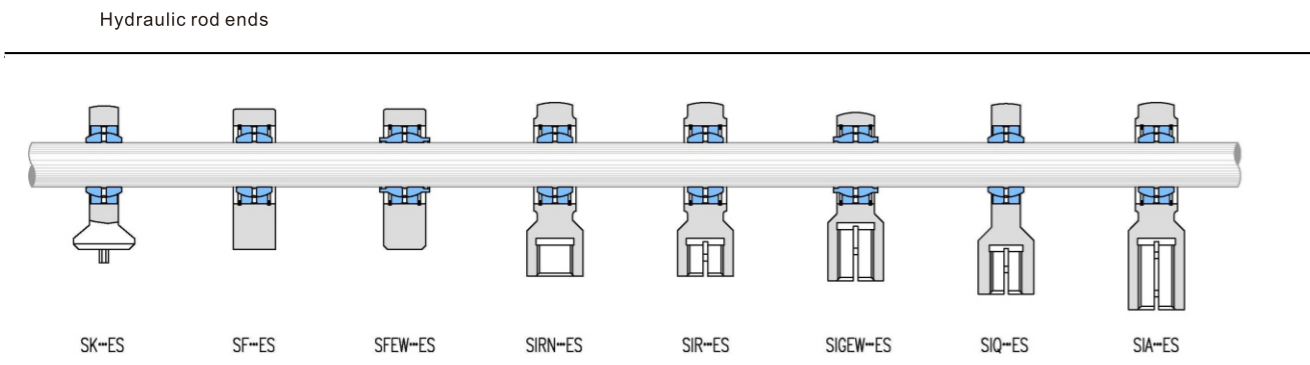
Rod ends for hydraulic components

Rod ends for hydraulic components is made up of a rod end and a radial spherical plain bearing which is fixed in housing by snap rings. There are two kinds of rod end: rod end with welding shank and rod end with locking slot. The material of rod end with welding shank is weldable steel. The rod end shank has two kinds of shape, one is prismatic and another is cylindrical. At the bottom of the cylindrical shank, there is elastic pin which is easy for location.

Normally, the material of rod end with locking slot is carbon steel or spheroidal graphite cast iron. The thread of the rod end body is female and equipped with screw for fastening. The hydraulic rod ends can be re-lubricated by oil cup or through the hole of the rod end body.

Rod ends for hydraulic components(steel to steel) have good wear resistance. Normally, hydraulic rod ends needs periodic re-lubrication. The high strength of the sliding surface makes these bearings especially suitable for bearing arrangements where heavy loads of alternating direction, or heavy static loads have to be accommodated.





Tolerances for Rod ends for hydraulic components

Inner ring

The Δ dmp and Δ Bs of SIR...ES, SIRN...ES, SIA...ES, SIQ...ES, SK...ES, SF...ES are the same as radial spherical plain bearings GE...E, GE...ES, GE...C and GE...ETL-2RS.

The Δ dmp and Δ Bs of SIGEW...ES, SFEW...ES are the same as radial spherical plain bearings GEEW...ES.

Radial internal clearance of rod ends for hydraulic components

Series SK...ES, SF...ES, SFEW...ES, SIRN...ES, SIR...ES, SIGEW...ES, SIQ...ES, SIA...ES

d	mm	Group normal	
		min	max
—	incl. 12	23	68
12	20	30	82
20	35	37	100
35	60	43	120
60	90	55	142
90	125	65	165
125	200	65	192

Fits of rod ends for hydraulic components

Shaft fits

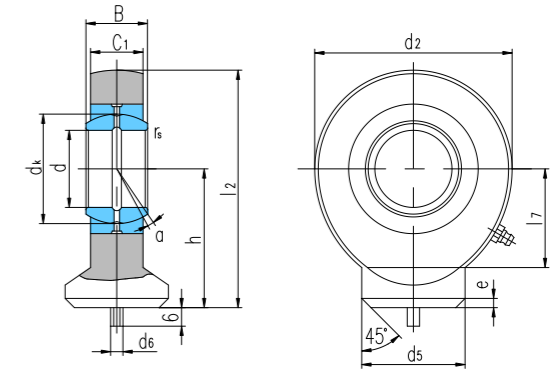
Operating conditions	Tolerance
With indeterminate loads	n6, p6
Normal conditions	h6, h7

Thread

Male thread	Female thread
6g	6H

Shaft diameter tolerances

Shaft diameter mm		Shaft diameter tolerances μm							
		h6		h7		n6		p6	
over	incl.	high	low	high	low	high	low	high	low
3	6	0	-8	0	-12	+16	+8	+20	+12
6	10	0	-9	0	-15	+19	+10	+24	+15
10	18	0	-11	0	-18	+23	+12	+29	+18
18	30	0	-13	0	-21	+28	+15	+35	+22
30	50	0	-16	0	-25	+33	+17	+42	+26
50	80	0	-19	0	-30	+39	+20	+51	+32
80	120	0	-22	0	-35	+45	+23	+59	+37
120	180	0	-25	0	-40	+52	+27	+68	+43
180	200	0	-29	0	-46	+60	+31	+79	+50



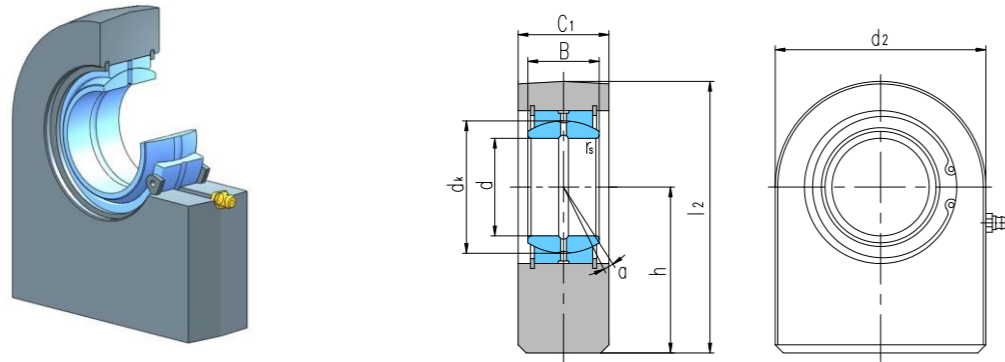
Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm													Load ratings kN		Weight \approx kg
	d	B	d _k	C ₁	d ₂	h	l ₂	l ₇	d ₅	d ₆	e	r _s	$\alpha^\circ \approx$	Dynamic	Static	
SK10E ¹⁾	10	9	16	7	29	24	38.5	15	15	3	2	0.3	12	8.1	15	0.041
SK12E ¹⁾	12	10	18	8	34	27	44	17.5	17.5	3	2	0.3	10	10	21	0.066
SK15ES ²⁾	15	12	22	10	40	31	51	20	21	4	2.5	0.3	8	16	32	0.12
SK16ES ²⁾	16	14	25	11	46	35	58	23	24	4	3	0.3	10	21	40	0.19
SK17ES ²⁾	17	14	25	11	46	35	58	23	24	4	3	0.3	10	21	40	0.18
SK20ES	20	16	29	13	53	38	64.5	27.5	27.5	4	3	0.3	9	30	54	0.26
SK25ES	25	20	35.5	17	64	45	77	33	33.5	4	4	0.6	7	48	72	0.45
SK30ES	30	22	40.7	19	73	51	87.5	37.5	40	4	4	0.6	6	62	95	0.67
SK35ES	35	25	47	21	82	61	102	43	47	4	4	0.6	6	79	125	1.02
SK40ES	40	28	53	23	92	69	115	48	52	4	5	0.6	7	99	156	1.40
SK45ES	45	32	60	27	102	77	128	52	58	6	5	0.6	7	127	208	1.93
SK50ES	50	35	66	30	112	88	144	59	62	6	6	0.6	6	156	250	2.69
SK60ES	60	44	80	38	135	100	167.5	72.5	70	6	8	1	6	245	390	4.60
SK70ES	70	49	92	42	160	115	195	85.5	80	6	10	1	6	313	510	7.00
SK80ES	80	55	105	47	180	141	231	98	95	6	10	1	6	400	620	11.0

No relubrication facility.

Can only be relubricated through the rod end housing.

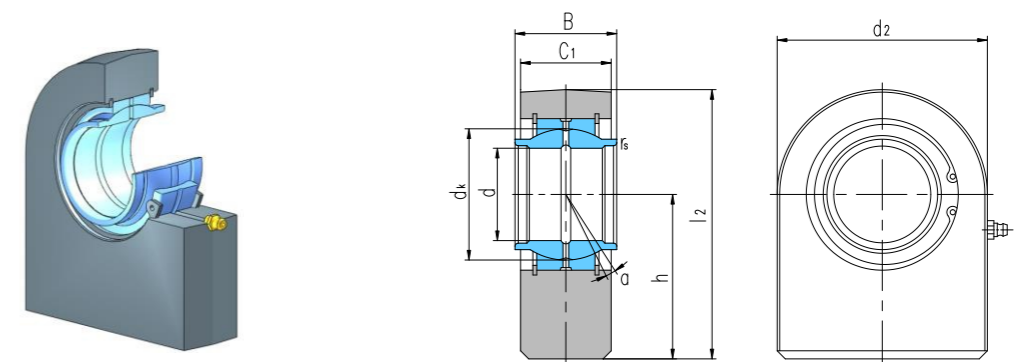
Can supply rod ends with maintenance-free spherical plain bearing.



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm									Load ratings kN		Weight ≈kg
	d	B	d _k	C ₁	d ₂	h	l ₂	r _s	α° ≈	Dynamic	Static	
SF15ES	15	12	22	16	45	31	53.5	0.3	8	16	53	0.22
SF16ES	16	14	25	17.5	48	35	59	0.3	10	21	59	0.29
SF17ES	17	14	25	17.5	48	35	59	0.3	10	21	59	0.28
SF20ES	20	16	29	19	50	38	63	0.3	9	30	67	0.36
SF25ES	25	20	35.5	23	55	45	72.5	0.6	7	48	69	0.53
SF30ES	30	22	40.7	28	65	51	83.5	0.6	6	62	118	0.85
SF35ES	35	25	47	30	83	61	102.5	0.6	6	79	196	1.50
SF40ES	40	28	53	35	100	69	119	0.6	7	99	305	2.42
SF45ES	45	32	60	40	110	77	132	0.6	7	127	386	3.39
SF50ES	50	35	66	40	123	88	149.5	0.6	6	156	441	4.24
SF60ES	60	44	80	50	140	100	170	1	6	245	570	7.10
SF70ES	70	49	92	55	164	115	197	1	6	313	724	10.7
SF80ES	80	55	105	60	180	141	231	1	6	400	804	15.1
SF90ES	90	60	115	65	226	150	263	1	5	488	1340	23.4
SF100ES	100	70	130	70	250	170	295	1	7	607	1516	33.1
SF110ES	110	70	140	80	295	185	332.5	1	6	654	2340	48.5
SF120ES	120	85	160	90	360	210	390	1	6	950	3210	79.5

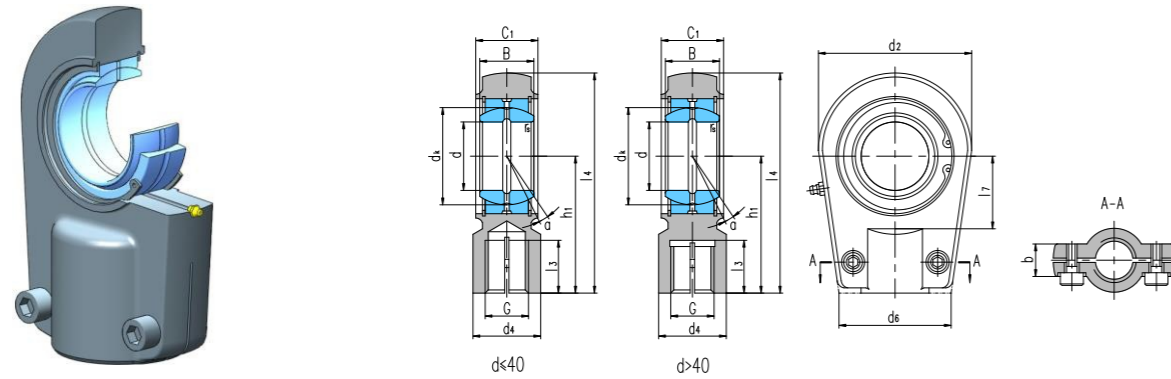
Can supply rod ends with maintenance-free spherical plain bearing.



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm									Load ratings kN		Weight ≈kg
	d	B	d _k	C ₁	d ₂	h	l ₂	r _s	α° ≈	Dynamic	Static	
SFEW20ES	20	20	29	19	50	38	63	0.3	4	30	67	0.37
SFEW25ES	25	25	35.5	23	55	45	72.5	0.6	4	48	69	0.54
SFEW32ES	32	32	43	27	70	65	100	0.6	4	65	168	1.16
SFEW40ES	40	40	53	35	100	69	119	0.6	4	99	305	2.57
SFEW50ES	50	50	66	40	123	88	149.5	0.6	4	156	441	4.50
SFEW63ES	63	63	83	50	145	107	179.5	1	4	253	591	7.14
SFEW70ES	70	70	92	55	164	115	197	1	4	313	724	10.86
SFEW80ES	80	80	105	60	180	141	231	1	4	400	804	15.33
SFEW90ES	90	90	115	65	226	150	263	1	4	488	1340	24.00
SFEW100ES	100	100	130	70	250	170	295	1	4	607	1516	33.44
SFEW110ES	110	110	140	80	295	185	332.5	1	4	654	2340	49.46

Can supply rod ends with maintenance-free spherical plain bearing.



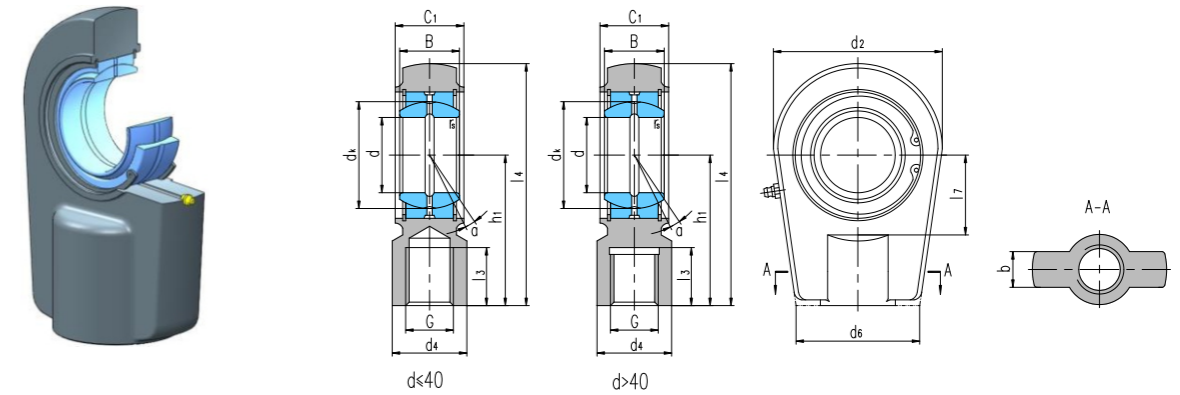
Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm															Load ratings kN		Screw	Weight ≈kg
	d	B	d _K	C ₁	d ₂	G _{6H}	h ₁	l ₃	l ₄	l ₇	d ₄	d ₆	b	r _s	α°	Dynamic	Static		
SIR20ES	20	16	29	19	56	M16X1.5	50	17	80	25	25	46	20	0.3	9	30	81	M8X20	0.44
SIR25ES	25	20	35.5	23	56	M16X1.5	50	17	80	25	25	46	21	0.6	7	48	72	M8X20	0.47
SIR30ES	30	22	40.7	28	64	M22X1.5	60	23	94	30	32	50	26	0.6	6	62	106	M8X25	0.77
SIR35ES	35	25	47	30	78	M28X1.5	70	29	112	38	40	66	28	0.6	6	79	153	M10X30	1.24
SIR40ES	40	28	53	35	94	M35X1.5	85	36	135	45	49	76	33	0.6	7	99	250	M10X35	2.12
SIR50ES	50	35	66	40	116	M45X1.5	105	45	168	55	61	90	37	0.6	6	156	365	M12X40	3.74
SIR60ES	60	44	80	50	130	M58X1.5	130	59	200	65	75	120	46	1	6	245	400	M16X45	6.49
SIR60ES-D ¹⁾																			
SIR70ES	70	49	92	55	154	M65X1.5	150	66	232	75	86	130	51	1	6	313	540	M16X50	9.88
SIR70ES-D ¹⁾																			
SIR80ES	80	55	105	60	176	M80X2	170	81	265	80	105	160	55	1	6	400	670	M20X55	14.2
SIR80ES-D ¹⁾																			
SIR90ES	90	60	115	65	206	M100X2	210	101	323	90	124	180	60	1	5	488	980	M20X60	23.5
SIR90ES-D ¹⁾																			
SIR100ES	100	70	130	70	231	M110X2	235	111	360	105	138	200	65	1	7	607	1120	M24X65	32.14
SIR110ES	110	70	140	80	266	M120X3	265	125	407	115	152	220	74	1	6	654	1700	M24X80	47.6
SIR120ES	120	85	160	90	340	M130X3	310	135	490	140	172	257	84	1	6	950	2900	M24X80	72

Rod end is made of carbon steel.

Can supply rod ends with maintenance-free spherical plain bearing.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SILR40ES M35X1.5L-6H.



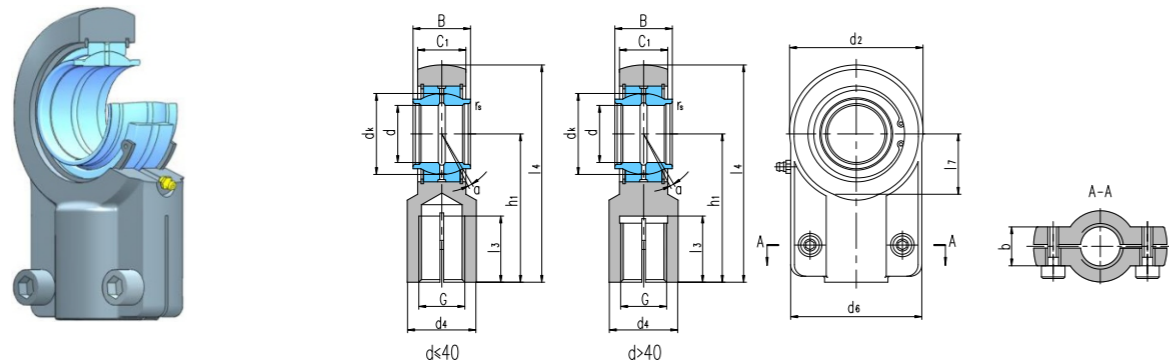
Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm															Load ratings kN		Weight ≈kg
	d	B	d _K	C ₁	d ₂	G _{6H}	h ₁	l ₃	l ₄	l ₇	d ₄	d ₆	b	r _s	α°	Dynamic	Static	
SIRN20ES	20	16	29	19	56	M16X1.5	50	17	80	25	25	46	20	0.3	9	30	81	0.44
SIRN25ES	25	20	35.5	23	56	M16X1.5	50	17	80	25	25	46	21	0.6	7	48	72	0.47
SIRN30ES	30	22	40.7	28	64	M22X1.5	60	23	94	30	32	50	26	0.6	6	62	106	0.77
SIRN35ES	35	25	47	30	78	M28X1.5	70	29	112	38	40	66	28	0.6	6	79	153	1.24
SIRN40ES	40	28	53	35	94	M35X1.5	85	36	135	45	49	76	33	0.6	7	99	250	2.12
SIRN50ES	50	35	66	40	116	M45X1.5	105	45	168	55	61	90	37	0.6	6	156	365	3.74
SIRN60ES	60	44	80	50	130	M58X1.5	130	59	200	65	75	120	46	1	6	245	400	6.49
SIRN60ES-D ¹⁾																		
SIRN70ES	70	49	92	55	154	M65X1.5	150	66	232	75	86	130	51	1	6	313	540	9.88
SIRN70ES-D ¹⁾																		
SIRN80ES	80	55	105	60	176	M80X2	170	81	265	80	105	160	55	1	6	400	670	14.2
SIRN80ES-D ¹⁾																		
SIRN90ES	90	60	115	65	206	M100X2	210	101	323	90	124	180	60	1	5	488	980	23.5
SIRN90ES-D ¹⁾																		
SIRN100ES	100	70	130	70	231	M110X2	235	111	360	105	138	200	65	1	7	607	1120	32.14
SIRN110ES	110	70	140	80	266	M120X3	265	125	407	115	152	220	74	1	6	654	1700	47.6
SIRN120ES	120	85	160	90	340	M130X3	310	135	490	140	172	257	84	1	6	950	2900	72

Rod end is made of carbon steel.

Can supply rod ends with maintenance-free spherical plain bearing.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SILRN40ES M35X1.5L-6H.



Sliding contact surfaces: Steel / Steel

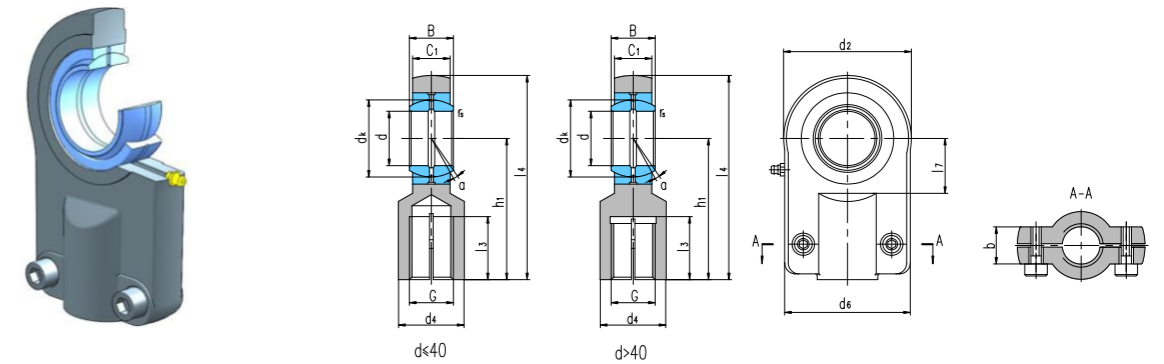
Bearing number	Dimensions mm															Load Ratings kN		Screw	Weight ≈kg
	d	B	dk	C ₁	d ₂	G _{6H}	h ₁	l ₃	l ₄	l ₇	d ₄	d ₆	b	r _s	α°	Dynamic	Static		
SIGEW12ES ¹⁾	12	12	18	11	32	M12X1.25	38	17	54	14	16	32	15	0.3	4	10	24.5	M5X16	0.11
SIGEW16ES	16	16	23	14	40	M14X1.5	44	19	64	18	21	40	15	0.3	4	17	36.5	M6X16	0.20
SIGEW20ES	20	20	29	17	47	M16X1.5	52	23	77	22	25	47	19	0.3	4	30	48	M8X20	0.35
SIGEW25ES	25	25	35.5	22	58	M20X1.5	65	29	96	27	30	54	19	0.6	4	48	78	M8X20	0.62
SIGEW32ES	32	32	43	28	71	M27X2	80	42	118.5	32	38	66	22	0.6	4	65	114	M10X25	1.15
SIGEW40ES	40	40	53	33	90	M33X2	97	52.5	146	41	47	80	26	0.6	4	99	204	M10X25	2.18
SIGEW50ES	50	50	66	40	109	M42X2	120	63.5	179.5	50	58	96	32	0.6	4	156	310	M12X35	3.96
SIGEW63ES	63	63	83	53	136	M48X2	140	72	211	62	70	114	38	1	4	253	430	M16X40	7.23
SIGEW70ES	70	70	92	57	155	M56X2	160	84	245	70	80	135	42	1	4	313	540	M16X40	11.1
SIGEW80ES	80	80	105	67	170	M64X3	180	92.5	270	78	90	148	48	1	4	400	695	M20X50	15.01
SIGEW90ES	90	90	115	72	185	M72X3	195	103	296	85	100	160	52	1	4	488	750	M20X55	19.1
SIGEW100ES	100	100	130	85	211	M80X3	210	108	322.5	98	110	178	62	1	4	607	1060	M24X60	25.5
SIGEW110ES	110	110	140	88	235	M90X3	235	118	364	105	125	190	62	1	4	654	1200	M24X60	36.6
SIGEW125ES	125	125	160	103	265	M100X3	260	125	405	120	135	200	72	1	4	950	1430	M24X70	52.6
SIGEW160ES	160	160	200	130	326	M125X4	310	138	488	150	165	250	82	1	4	1360	2200	M24X80	79
SIGEW200ES	200	200	250	162	418	M160X4	390	173	620	195	215	320	102	1.1	4	2120	3650	M30X100	164
SIGEW250ES	250	250	350	192	580	M200X4	530	217	847	265	300	420	142	1.1	4	3750	6400	M36X140	430
SIGEW320ES	320	320	450	260	700	M250X6	640	272	1015	325	360	520	170	1.1	4	6200	10800	M36X160	771

Can only be relubricated through the rod end housing.

Rod end is made of carbon steel.

Can supply rod ends with maintenance-free spherical plain bearing.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SILGEW40ES M33X2L-6H.



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm															Load Ratings kN		Screw	Weight ≈kg
	d	B	dk	C ₁	d ₂	G _{6H}	h ₁	l ₃	l ₄	l ₇	d ₄	d ₆	b	r _s	α°	Dynamic	Static		
SIQ12E ¹⁾	12	10	18	8	35	M10X1.25	42	15	59.5	16	17	35	13	0.3	10	10	17	M6X12	0.12
SIQ16ES ²⁾	16	14	25	11	45	M12X1.25	48	17	70.5	20	21	45	13	0.3	10	21	28.5	M6X12	0.22
SIQ20ES ²⁾	20	16	29	13	55	M14X1.5	58	19	85.5	25	25	55	17	0.3	9	30	42.5	M8X16	0.43
SIQ25ES	25	20	35.5	17	65	M16X1.5	68	23	100.5	30	30	62	17	0.6	7	48	67	M8X16	0.67
SIQ30ES	30	22	40.7	19	80	M20X1.5	85	29	125	35	36	77	19	0.6	6	62	108	M10X20	1.25
SIQ40ES	40	28	53	23	100	M27X2	105	37	155	45	45	90	23	0.6	7	99	156	M10X25	2.16
SIQ50ES	50	35	66	30	120	M33X2	130	54	190	58	55	105	30	0.6	6	156	245	M12X30	3.90
SIQ60ES	60	44	80	38	160	M42X2	150	65	230	68	68	134	36	1	6	245	380	M16X35	8.2
SIQ80ES	80	55	105	47	205	M48X2	185	75	287.5	92	90	156	45	1	6	400	585	M20X45	16.2
SIQ100ES	100	70	130	57	240	M64X3	240	102	360	116	110	190	55	1	7	607	865	M24X55	28.4

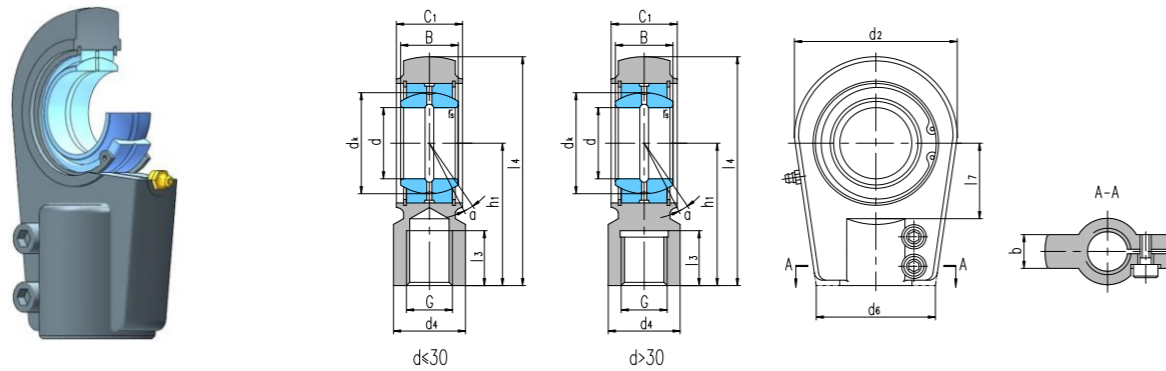
No relubrication facility.

Can only be relubricated through the rod end housing.

Rod end is made of carbon steel.

Can supply rod ends with maintenance-free spherical plain bearing.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SILQ40ES M27x2L-6H.



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm															Load ratings kN		Screw	Weight ≈kg
	d	B	d _k	C ₁	d ₂	G 6H	h ₁	l ₃	l ₄	l ₇	d ₄	d ₆	b	r _s	α° ≈	Dynamic	Static		
SIA25ES	25	20	35.5	23	56	M18X2	65	30	95	29	28	48	21	0.6	7	48	72	M8X20	0.62
SIA30ES	30	22	40.7	28	64	M24X2	75	35	109	34	34	56	26	0.6	6	62	106	M8X25	0.88
SIA35ES	35	25	47	30	78	M30X2	90	46	132	40	45	65	28	0.6	6	79	153	M10X30	1.52
SIA40ES	40	28	53	35	94	M39X3	105	56	155	44	56.5	77	33	0.6	7	99	250	M12X35	2.43
SIA50ES	50	35	66	40	116	M50X3	135	76	198	55	70	88	36	0.6	6	156	365	M12X35	4.75
SIA60ES	60	44	80	50	130	M64X3	170	96	240	65	87	118	46	1	6	245	400	M16X45	8.55
SIA70ES	70	49	92	55	154	M80X3	195	112	277	75	110	128	51	1	6	313	540	M16X50	12.24
SIA80ES	80	55	105	60	176	M90X3	210	122	305	80	128	156	55	1	6	400	670	M20X55	18.35
SIA90ES	90	60	115	65	210	M100X3	250	142	365	90	152	167	60	1	5	488	980	M20X60	31.56
SIA100ES	100	70	130	70	230	M110X4	275	150	400	105	170	171	65	1	7	607	1120	M20X60	34
SIA110ES	110	70	140	80	264	M120X4	300	160	442	115	180	187	75	1	6	654	1700	M24X75	44
SIA120ES	120	85	160	90	340	M150X4	360	192	540	140	210	240	85	1	6	950	2900	M24X85	75
SIA140ES	140	90	180	110	380	M160X4	420	210	620	185	230	244	105	1	7	1070	3350	M30X100	160
SIA160ES	160	105	200	110	480	M180X4	460	220	710	200	260	268	105	1	8	1360	4302	M30X100	185

Can supply rod ends with maintenance-free spherical plain bearing.

For left-hand thread, suffix "L" is added to bearings number and thread sign, e.g. SILA40ES M39X3L-6H.

Ball joint rod ends

Ball joint rod ends have a ball joint housing with a sphered convex inside surface and a ball joint shank with a correspondingly sphered but concave outside surface. Ball joint housing is with left or right-hand thread. There are two kinds of sliding contact surfaces: steel to steel and steel to zinc base alloy. Ball joint housing is made of zinc base alloy or carbon steel, ball joint shank is made of a steel ball and a stud which is joined by precision welding, it has characteristics of self-aligning, wear-resistance and easy mounting.



Tolerances for ball joint rod ends

housing of ball joint		μm					
d	mm	ΔL_{1s}		Δh_s		Δh_{1s}	
over	incl.	max	min	max	min	max	min
—	6	+800	-1200	+800	-1200	+650	-1050
6	10	+800	-1200	+800	-1200	+800	-1200
10	18	+800	-1200	+800	-1200	+800	-1200
18	30	+800	-1200	+800	-1200	+800	-1200

Details of dimension and tolerance symbols see page 13

Radial internal clearance of ball joint rod ends

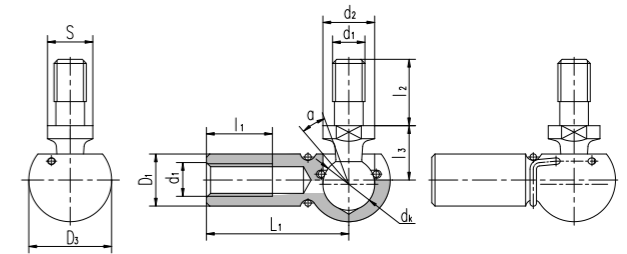
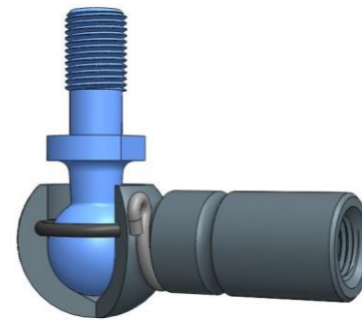
Type	Group normal	
	min	max
SQZ...-RS	0	30
SQ...-RS, SQY...-RS	20	60
SQG...	0	80

Series SQIZJ..., SQAZJ...

d	mm	Group normal	
over	incl.	min	max
—	8	10	40
8	22	15	60

Fits of ball joint rod ends

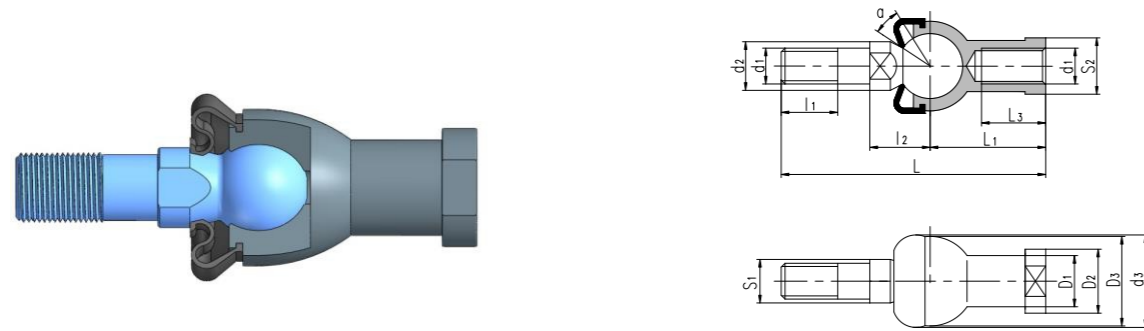
Thread	Male thread	Female thread
	6g	6H



Sliding contact surfaces Steel / Steel

Bearing number	Dimensions mm											Static load ratings kN	Weight ≈kg
	d ₁	d ₂	d _k	l ₁	l ₂	l ₃	S	L ₁	D ₁	D ₃	α°		
SQG5	M5	8	8	10.2	10.2	9	7	22	8	12.8	10	2.2	0.015
SQG6	M6	10	10	11.5	12.5	11	8	25	10	14.8	15	3.5	0.025
SQG8	M8	13	13	14	16.5	13	11	30	13	19.3	15	6.6	0.053
SQG10	M10	16	16	15.5	20	16	13	35	16	24	15	10	0.104
SQG12	M12	16	16	15.5	20	16	13	35	16	24	15	16	0.104
SQG14	M14X1.5	19	19	21.5	28	20	16	45	22	30	15	19	0.221
SQG14/B5	M14X2	19	19	21.5	28	20	16	45	22	30	15	26	0.221

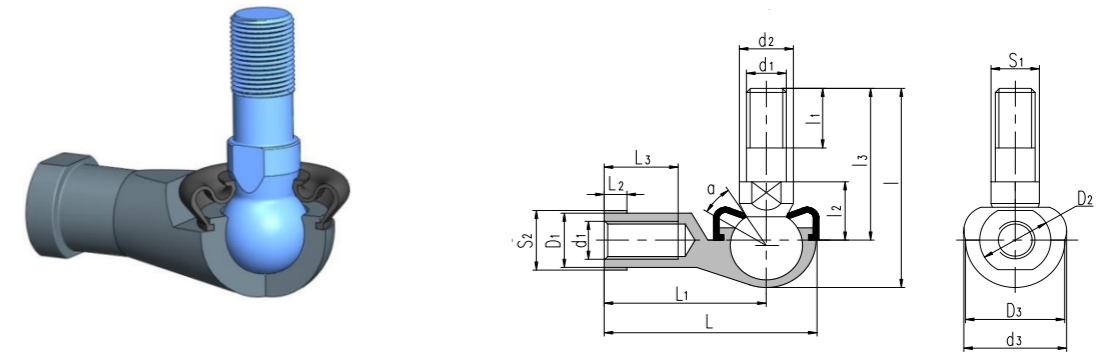
The shank of ball joint housing may be left-hand thread, for left-hand thread, suffix "L" is added to bearing number and thread sign, e.g. SQGL5 M5L-6H.



Sliding contact surfaces: Steel / Zinc base alloy

Bearing number	Dimensions mm															Static load ratings kN	Weight ≈kg
	d ₁	d ₂	d ₃	l ₁	l ₂	S ₁	L	L ₁	L ₂	L ₃	D ₁	D ₂	D ₃	S ₂	α°		
SQZ5-RS	M5	9	19	8	11	7	46	24	4	12	9	11	17	9	15	2.8	0.025
SQZ6-RS	M6	10	20	11	12.2	8	55.2	28	5	15	10	13	20	11	15	3.7	0.041
SQZ8-RS	M8	12	24	12	16	10	65	32	5	16	12.5	16	24	14	15	5.8	0.075
SQZ10-RS	M10X1.25	14	30	15	19.5	11	74.5	35	6.5	18	15	19	28	17	15	8.4	0.12
SQZ12-RS	M12X1.25	17	32	17	21	15	84	40	6.5	20	17.5	22	32	19	15	11	0.18
SQZ14-RS	M14X1.5	19	38	22	23.5	17	103	45	8	25	20	25	36	22	11	15	0.27
SQZ16-RS	M16X1.5	22	44	23	25.5	19	112	50	8	27	22	27	40	22	11	15	0.36
SQZ18-RS	M18X1.5	23	45	25	31	20	130.5	58	10	32	25	31	45	27	11	19	0.54
SQZ20-RS	M20X1.5	23	50	25	29	20	133	63	10	38	27.5	34	45	30	7.5	19	0.57
SQZ22-RS	M22X1.5	27	52	26	33	24	145	70	12	43	30	37	50	32	7.5	23	0.76

The shank of ball joint housing may be left-hand thread, for left-hand thread, suffix "L" is added to bearing number and thread sign, e.g. SQZL5-RS M5L-6H.



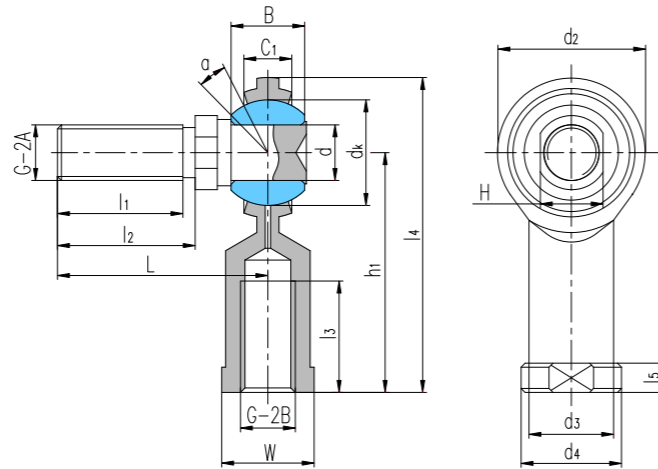
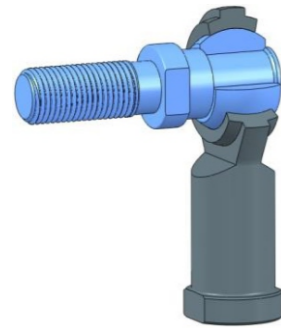
Sliding contact surfaces: Steel / Zinc base alloy

Bearing number	Dimensions mm															Static load ratings kN	Weight ≈kg		
	d ₁	d ₂	d ₃	l	l ₁	l ₂	l ₃	S ₁	L	L ₁	L ₂	L ₃	D ₁	D ₂	D ₃			S ₂	α°
SQ5-RS	M5	9	19	29	8	10	21	7	35	27	4	14	9	11	16	9	25	2.2	0.026
SQ6-RS	M6	10	20	35.5	11	11	26	8	40	30.5	5	14	10	13	19	11	25	3.5	0.039
SQ8-RS	M8	12	24	42.5	12	14	31	10	48	36.5	5	17	12.5	16	23	14	25	6.6	0.068
SQ10-RS	M10X1.25	14	30	50.5	15	17	37	11	57	43.5	6.5	21	15	19	27	17	25	10	0.112
SQ12-RS	M12X1.25	17	32	57.5	17	19	42	15	66	50.5	6.5	25	17.5	22	31	19	25	16	0.164
SQ14-RS	M14X1.5	19	38	73.5	22	21.5	56	17	75	57.5	8	26	20	25	35	22	25	19	0.254
SQ16-RS	M16X1.5	22	44	79.5	23	23.5	60	19	84	64.5	8	32	22	27	39	22	20	26	0.336
SQ18-RS	M18X1.5	23	45	90	25	26.5	68	20	93	71	10	34	25	31	44	27	20	33	0.464
SQ20-RS	M20X1.5	23	50	90	25	27	68	20	99	77	10	35	27.5	34	44	30	20	45	0.538
SQ22-RS	M22X1.5	27	52	95	26	28	70	24	109	84	12	41	30	37	50	32	16	48	0.713

The shank of ball joint housing may be left-hand thread, for left-hand thread, suffix "L" is added to bearing number and thread sign, e.g. SQ5L-RS M5L-6H.

Bearing number	Dimensions mm															Static load ratings kN	Weight ≈kg		
	d ₁	d ₂	d ₃	l	l ₁	l ₂	l ₃	S ₁	L	L ₁	L ₂	L ₃	D ₁	D ₂	D ₃			S ₂	α°
SQY4-RS	10-32	9	19	29	8	10	21	7	35	27	4	14	9	11	16	9	25	2.2	0.026
SQY6-RS	1/4-28	10	20	35.5	11	11	26	8	40	30.5	5	14	10	13	19	11	25	3.5	0.039
SQY7-RS	5/16-24	12	24	42.5	12	14	31	10	48	36.5	5	17	12.5	16	23	14	25	6.6	0.068
SQY9-RS	3/8-24	14	30	50.5	15	17	37	11	57	43.5	6.5	21	15	19	27	17	25	10	0.112
SQY11-RS	7/16-20	17	32	57.5	17	19	42	15	66	50.5	6.5	25	17.5	22	31	19	25	16	0.164
SQY12-RS	1/2-20	19	38	73.5	22	21.5	56	17	75	57.5	8	26	20	25	35	22	25	19	0.254
SQY15-RS	5/8-18	22	44	79.5	23	23.5	60	19	84	64.5	8	32	22	27	39	22	20	26	0.336
SQY19-RS	3/4-16	23	45	90	25	26.5	68	20	93	71	10	34	25	31	44	27	20	33	0.464

The shank of ball joint housing may be left-hand thread, for left-hand thread, suffix "L" is added to bearing number and thread sign, e.g. SQYL4-RS 10-32UNF-2BLH.

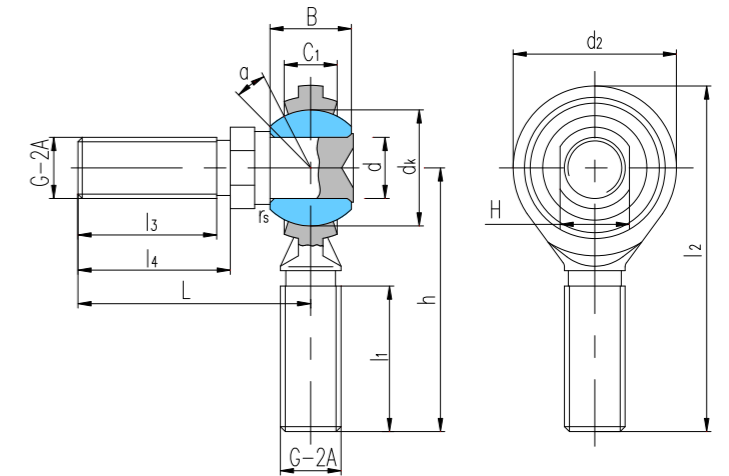


Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm/inch																	Load ratings kN		Weight ≈kg		
	d	B	dk	C1 max	d2	G UNF	h1	l3 min	l4	l5	l1 min	l2	L	W	d3	d4	H	rs min	α° ≈		Dynamic	Static
SQIZJ4	4.83	7.92	11.1	5.94	15.88	10-32	26.97	12.70	34.93	4.75	8.89	12.70	25.81	7.92	7.54	10.31	7.92	0.3	10	3.6	6.8	0.018
	0.19	0.312	0.437	0.234	0.625		1.062	0.5	1.375	0.187	0.35	0.5	1.016	0.312	0.297	0.406	0.312	0.012				
SQIZJ6	6.35	9.53	12.7	6.35	19.05	1/4-28	33.32	15.88	42.85	4.75	10.46	14.27	26.59	9.53	9.15	11.91	9.53	0.3	13.5	5.4	9.6	0.023
	0.25	0.375	0.5	0.25	0.75		1.312	0.625	1.687	0.187	0.412	0.562	1.047	0.375	0.36	0.469	0.375	0.012				
SQIZJ7	7.94	11.10	15.88	7.92	22.23	5/16-24	34.93	15.88	46.02	4.75	12.93	17.45	31.34	11.1	10.72	12.70	11.13	0.3	11	8.5	12	0.036
	0.3125	0.437	0.625	0.312	0.875		1.375	0.625	1.812	0.187	0.509	0.687	1.234	0.437	0.422	0.5	0.438	0.012				
SQIZJ9	9.53	12.70	18.26	9.12	25.40	3/8-24	41.28	19.05	53.98	6.35	18.49	23.01	39.88	14.27	13.89	17.45	12.70	0.6	11	11	16	0.059
	0.375	0.5	0.719	0.359	1		1.625	0.75	2.125	0.25	0.728	0.906	1.57	0.562	0.547	0.687	0.5	0.024				
SQIZJ11	11.11	14.27	20.62	10.31	28.58	7/16-20	46.02	22.23	60.33	6.35	23.27	28.58	49.99	15.88	15.49	19.05	15.88	0.6	10.5	14	21	0.082
	0.4375	0.562	0.812	0.406	1.125		1.812	0.875	2.375	0.25	0.916	1.125	1.968	0.625	0.61	0.75	0.625	0.024				
SQIZJ12	12.7	15.88	23.81	11.50	33.32	1/2-20	53.98	25.40	70.64	6.35	23.27	28.58	50.80	19.05	18.67	22.23	15.88	0.6	10	18	28	0.132
	0.5	0.625	0.937	0.453	1.312		2.125	1	2.781	0.25	0.916	1.125	2	0.75	0.735	0.875	0.625	0.024				
SQIZJ15	15.88	19.05	28.58	12.29	38.10	5/8-18	63.50	31.75	82.55	7.92	31.75	38.10	63.50	22.23	21.84	25.40	19.05	0.6	13	23	29	0.195
	0.625	0.75	1.125	0.484	1.5		2.5	1.25	3.25	0.312	1.25	1.5	2.5	0.875	0.86	1	0.75	0.024				
SQIZJ19	19.05	22.23	33.32	15.06	44.45	3/4-16	73.03	34.93	95.25	7.92	41.28	46.02	76.20	25.4	25.02	28.58	25.40	0.6	12	34	44	0.295
	0.75	0.875	1.312	0.593	1.75		2.875	1.375	3.75	0.312	1.625	1.812	3	1	0.985	1.125	1	0.024				

Can supply other ball joint rod ends with different accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and suffix "LH" is added to thread sign, e.g. SQILZJ12 1/2-20UNF-2BLH.



Sliding contact surfaces: Steel / Steel

Bearing number	Dimensions mm/inch																	Load ratings kN		Weight ≈kg
	d	B	dk	C1 max	d2	G UNF	h	l1 min	l2	l3 min	l4	L	H	rs min	α° ≈	Dynamic	Static			
SQAZJ4	4.83	7.92	11.1	5.94	15.88	10-32	31.75	19.05	39.70	8.89	12.70	25.81	7.92	0.3	10	3.6	3.8	0.014		
	0.19	0.312	0.437	0.234	0.625		1.25	0.75	1.563	0.35	0.5	1.016	0.312	0.012						
SQAZJ6	6.35	9.53	12.7	6.35	19.05	1/4-28	39.67	25.40	49.20	10.46	14.27	26.59	9.53	0.3	13.5	5.4	6.6	0.018		
	0.25	0.375	0.5	0.25	0.75		1.562	1	1.937	0.412	0.562	1.047	0.375	0.012						
SQAZJ7	7.94	11.10	15.88	7.92	22.23	5/16-24	47.63	31.75	58.72	12.93	17.45	31.34	11.13	0.3	11	8.5	12	0.032		
	0.3125	0.437	0.625	0.312	0.875		1.875	1.25	2.312	0.509	0.687	1.234	0.438	0.012						
SQAZJ9	9.53	12.70	18.26	9.12	25.40	3/8-24	49.23	31.75	61.93	18.49	23.01	39.88	12.70	0.6	11	11	16	0.050		
	0.375	0.5	0.719	0.359	1		1.938	1.25	2.438	0.728	0.906	1.57	0.5	0.024						
SQAZJ11	11.11	14.27	20.62	10.31	28.58	7/16-20	53.98	34.93	68.28	23.27	28.58	49.99	15.88	0.6	10.5	14	21	0.068		
	0.4375	0.562	0.812	0.406	1.125		2.125	1.375	2.688	0.916	1.125	1.968	0.625	0.024						
SQAZJ12	12.7	15.88	23.81	11.50	33.32	1/2-20	61.93	38.10	78.59	23.27	28.58	50.80	15.88	0.6	10	18	28	0.11		
	0.5	0.625	0.937	0.453	1.312		2.438	1.5	3.094	0.916	1.125	2	0.625	0.024						
SQAZJ15	15.88	19.05	28.58	12.29	38.10	5/8-18	66.68	41.28	85.73	31.75	38.10	63.50	19.05	0.6	13	23	29	0.16		
	0.625	0.75	1.125	0.484	1.5		2.625	1.625	3.375	1.25	1.5	2.5	0.75	0.024						
SQAZJ19	19.05	22.23	33.32	15.06	44.45	3/4-16	73.03	44.45	95.25	41.28	46.02	76.20	25.40	0.6	12	34	44	0.26		
	0.75	0.875	1.312	0.593	1.75		2.875	1.75	3.75	1.625	1.812	3	1	0.024						

Can supply other rod ends with different accuracy of thread.

For left-hand thread, suffix "L" is added to bearings number and suffix "LH" is added to thread sign, e.g. SQALZJ12 1/2-20UNF-2ALH.

Special products

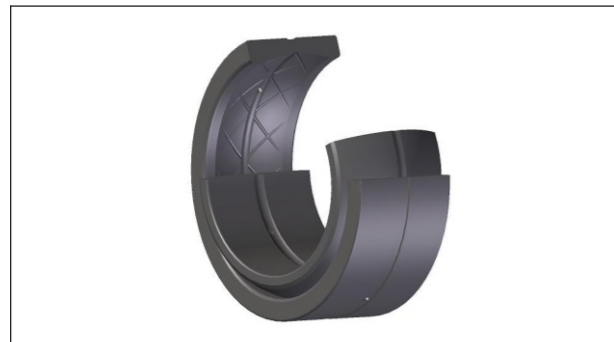


Figure1: Spherical plain bearing with cross grooves in the sliding surface of outer ring



Figure2: Spherical plain bearing with cross grooves in the sliding surface of inner ring



Figure3: Spherical plain bearing with keyway in the hole of inner ring

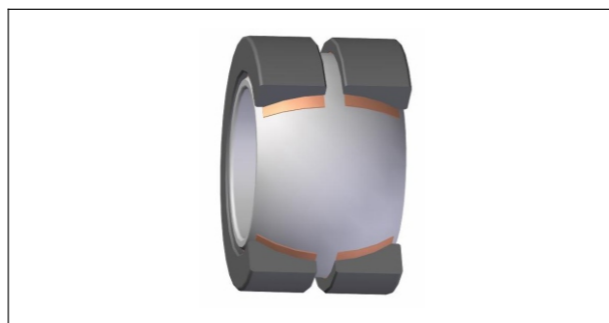


Figure4: Angular contact bearing double acting

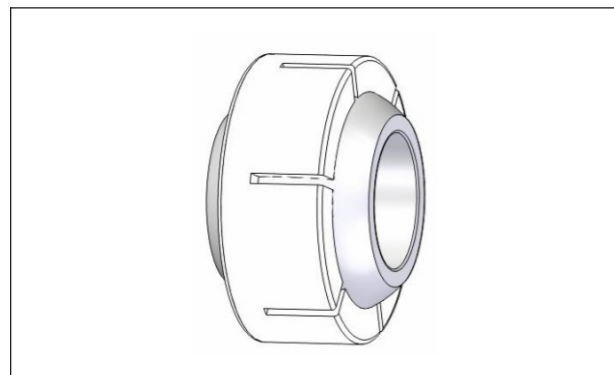


Figure5: Outer ring spherical bearings made of high performance plastics

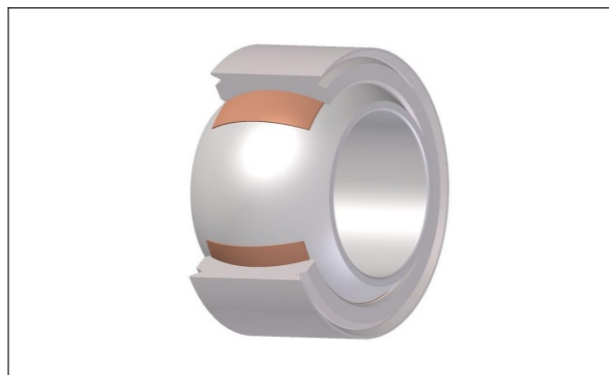


Figure6: Swaged self lubricating bearing with grooves

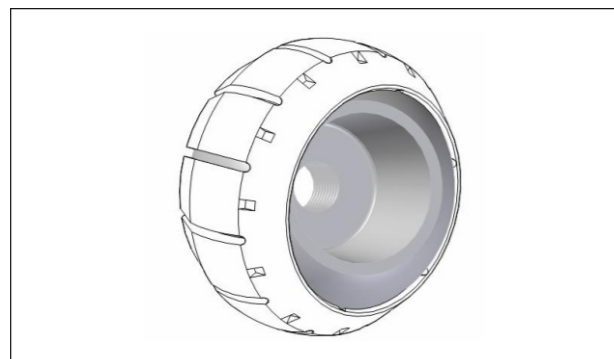


Figure7: Outer ring spherical bearings made of high performance plastics

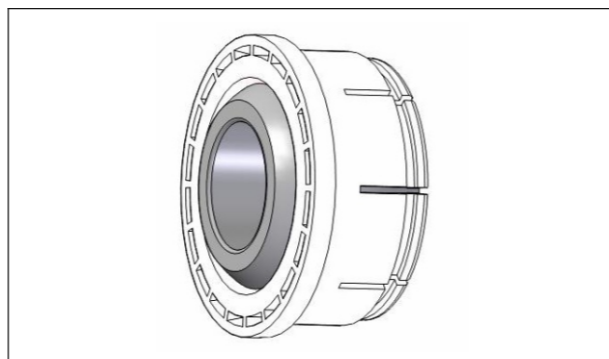


Figure8: Outer ring spherical bearings made of high performance plastics

Special products



Figure9: Sleeve bearing with cross grooves

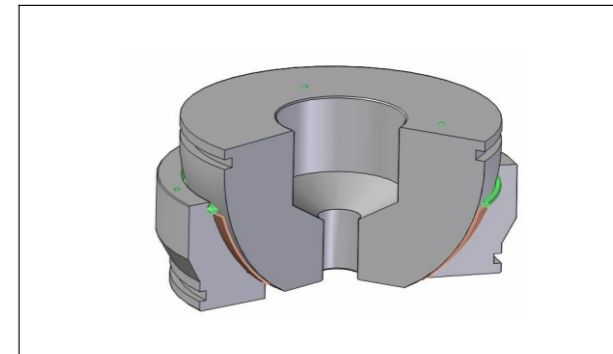


Figure10: Special spherical plain thrust bearing

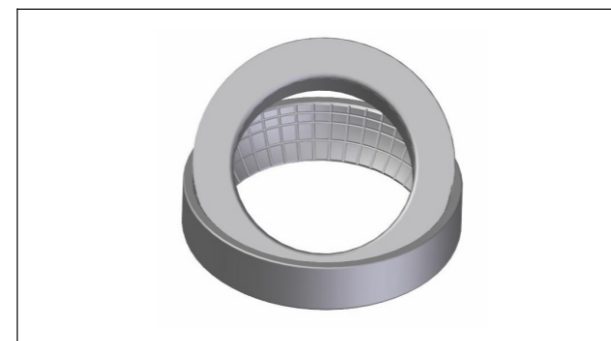


Figure11: Special angular contact spherical plain bearing

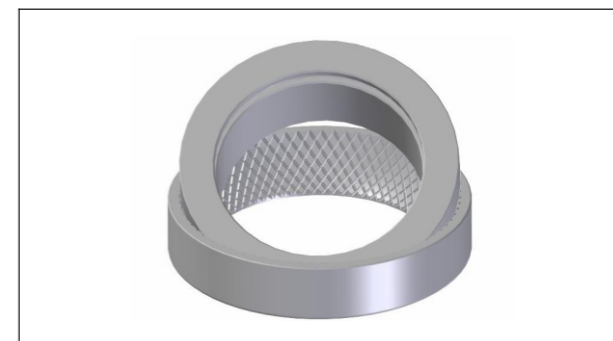


Figure12: Special angular contact spherical plain bearing

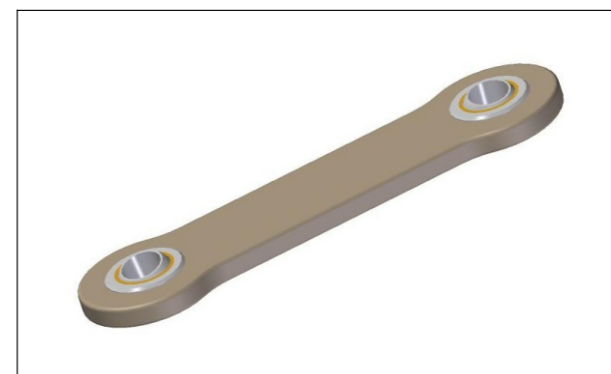


Figure13: Joint connecting rod

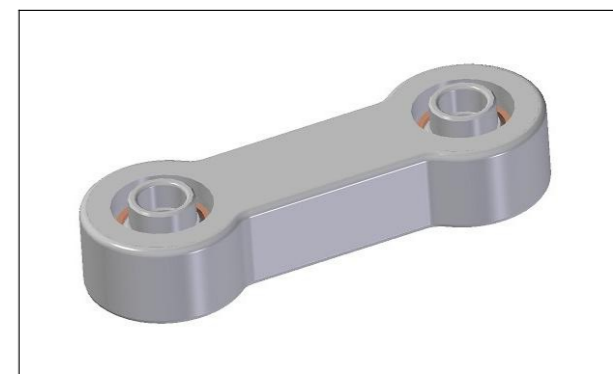


Figure14: Joint connecting rod

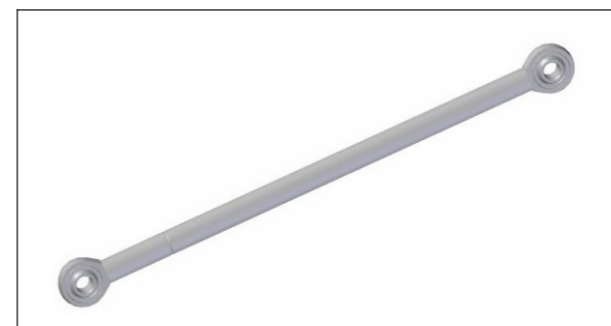


Figure15: Joint connecting rod

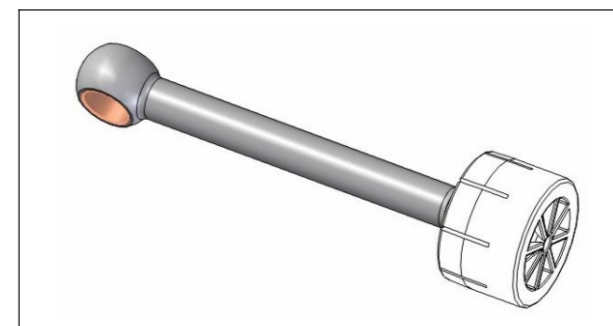


Figure16: Special rod end

Special products

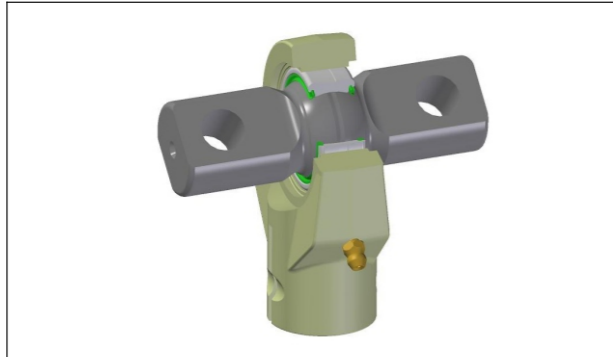


Figure17: Special rod end

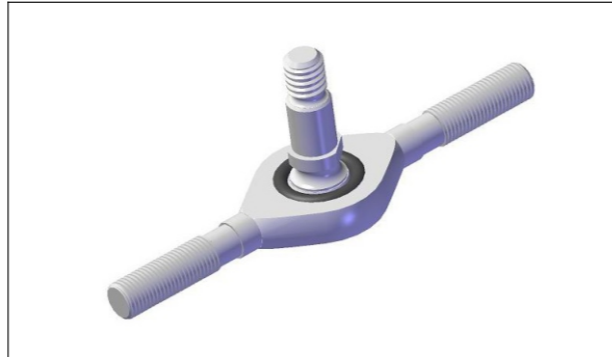


Figure18: Special ball joint rod end

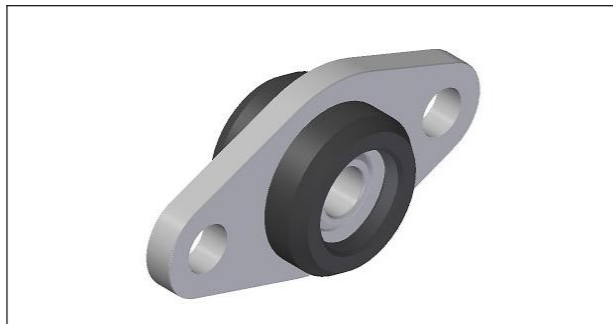


Figure19: Special rod end



Figure20: Special ball joint rod end



Figure21: Special ball joint rod end



Figure22: Special ball joint rod end

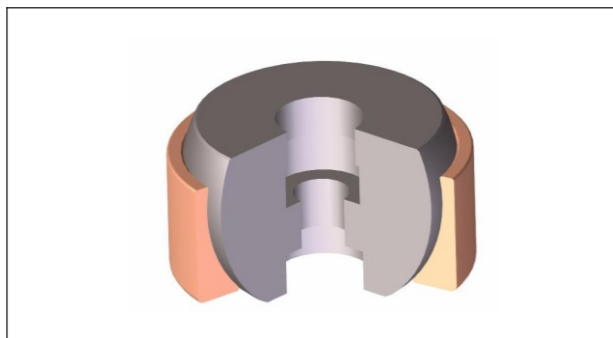


Figure23: Special radial spherical plain bearing

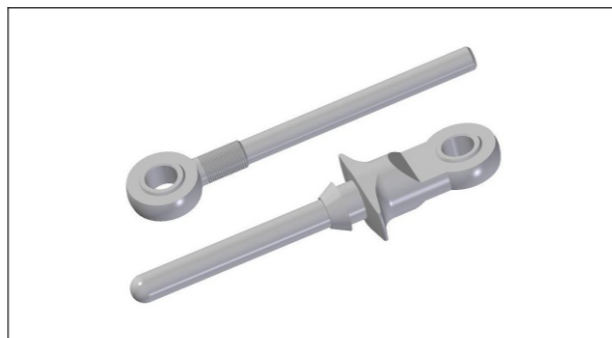


Figure24: Aluminium diecast rod ends

Special products

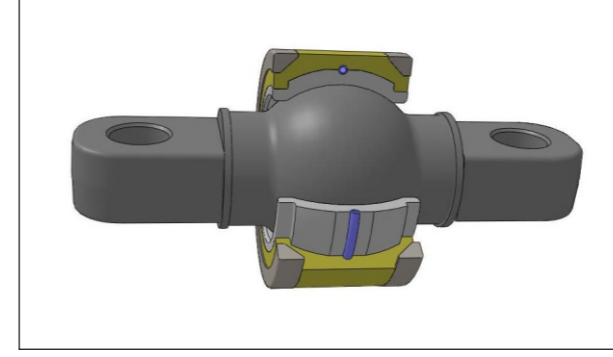


Figure25: Special spherical plain bearing



Figure26: Special spherical plain bearing

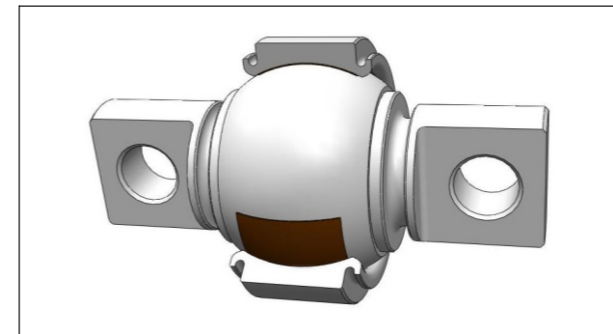


Figure27: Special spherical plain bearing

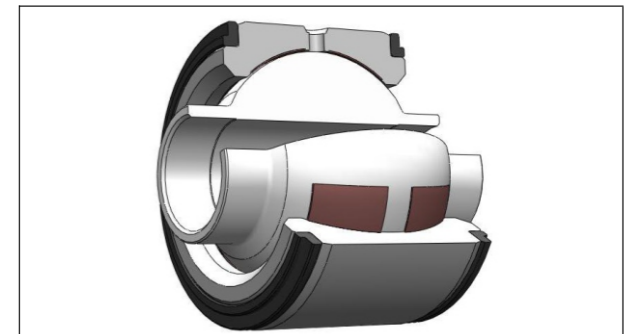


Figure28: Special spherical plain bearing

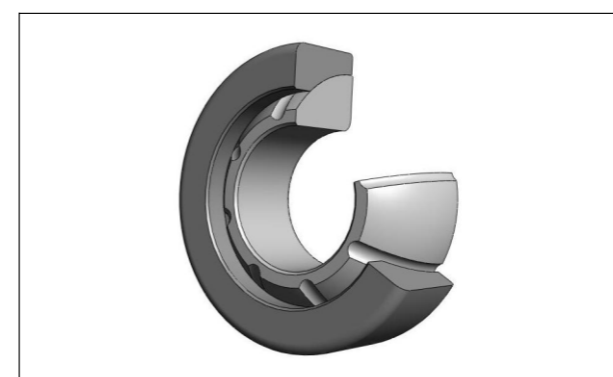


Figure29: Special angular contact spherical plain bearing

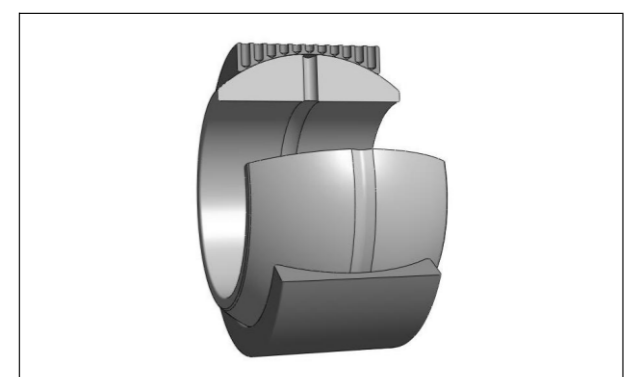


Figure30: Special spherical plain bearing

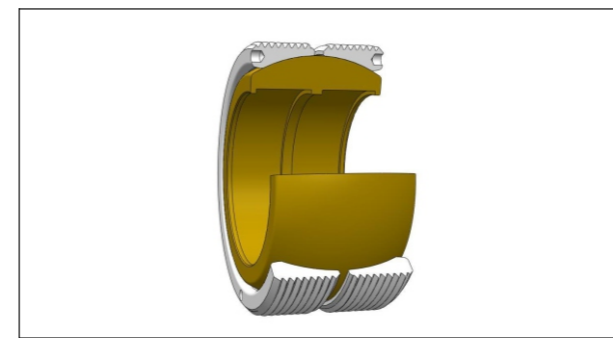


Figure31: Special spherical plain bearing

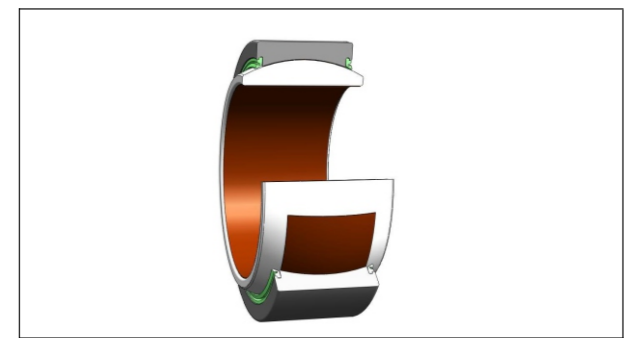


Figure32: Special spherical plain bearing

Special products

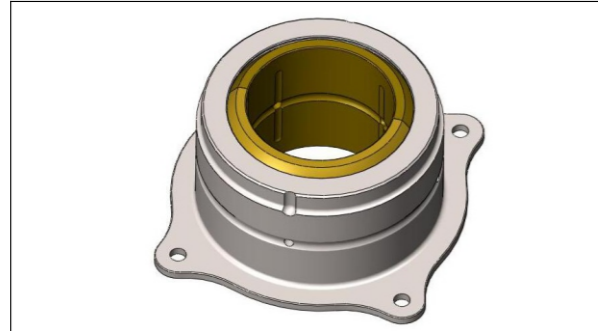


Figure33: Special spherical plain bearing

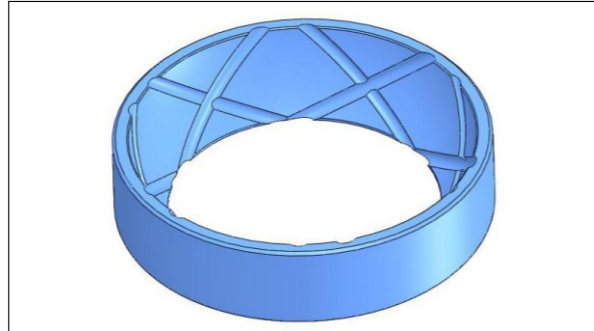


Figure34: Special spherical plain bearing

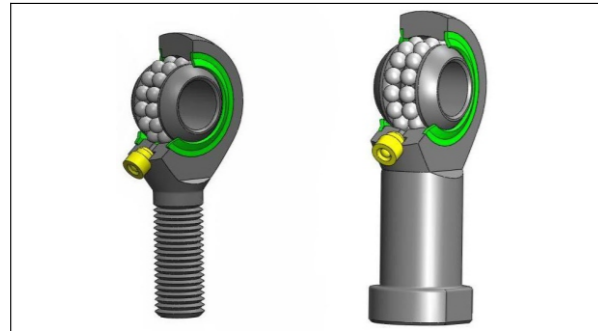


Figure35: Special spherical plain bearing



Figure36: Special spherical plain bearing

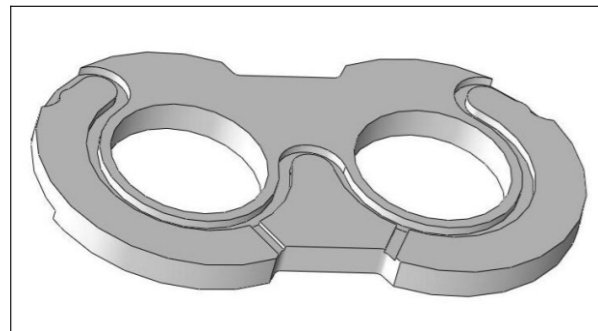


Figure37:Aluminum plate

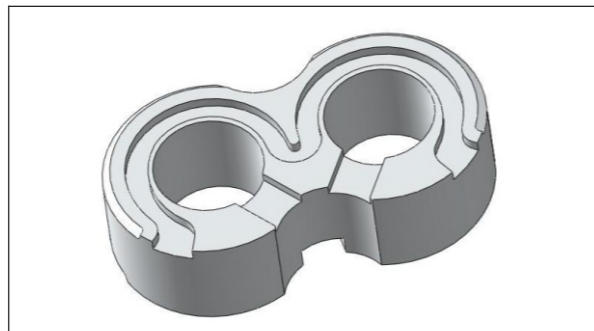


Figure38:Aluminum plate

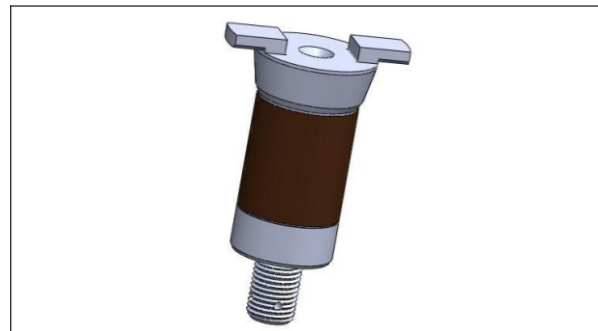


Figure39:Pin

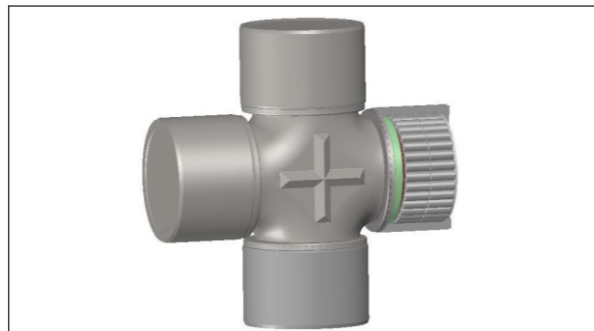


Figure40:Maintenance-free universal bearing

Spherical plain bearings series interchange list

Bearing type	LS series	Bore diameter range	Other manufacturer series			
			SKF	INA	IKO	RBC
Radial spherical plain bearing	GE... E	4-12	GE... E	GE... DO	GE... E	MB... MB...SS
	GE... ES	15-300	GE... ES	GE... DO-2RS	GE... ES	
	GE... ES-2RS	15-300	GE... ES-2RS		GE... ES-2RS	
	GEG... E	4-12	GEH... E	GE... FO	GE... G	MBH MBH...-SS
	GEG... ES	15-280	GEH... ES	GE... FO-2RS	GE... GS	
	GEG... ES-2RS	15-280	GEH... ES-2RS		GE... GS-2RS	
	GEEW... ES	12-320	GEG... ES	GE... LO		MB...-E
	GEEM... ES-2RS	20-120	GEM... ES-2RS	GE... HO-2RS		MB...-ESS
	GEZ... ES	12.7-304.8	GEZ... ES	GE... ZO	SBB	B...L B...LSS
	GEZ... ES-2RS	19.05-304.8	GEZ... ES-2RS	GE... ZO-2RS	SBB...-2RS	
	GEGZ... ES	31.75-139.7	GEZH... ES			BH...L BH...LSS
	GEGZ... ES-2RS	31.75-139.7	GEZH... ES-2RS			
	GEWZ... ES	12.7-152.4	GEZM... ES			B...EL B...ELSS
	GEWZ... ES-2RS	19.05-152.4	GEZM... ES-2RS			
	GEBK... S	5-30			PB...	
	GEBJ... S	5-50				
	GEFZ... S	4.83-25.4				COM...
	GEC... XS	320-630		GE... DO		
GEC... XS-2RS	320-630		GE... DO-2RS			
GEF... ES	12-150			SB...A		
GE... XS/K	12-150			SB...		
GEEK... XS-2GS	25-60			SA3...A		
Maintenance-free radial spherical plain bearings	GE... C	4-50	GE... C	GE... UK		
	GEG... C	4-45	GEH... C	GE... FW		
	GEFZ... C	4.83-25.4				COM...AT
	GEBJ... C	5-50				
	GE... ETL-2RS	15-120	GE... TXE-2RS	GE... UK-2RS		MB...FSS
	GE... ETL/X	15-60	GE... TXGR			
	GE... ETL-2RS/X	15-60	GE... TXG3E-2RS			
	GE... XTL-2RS	140-300	GE... TXA-2RS	GE... UK-2RS		MB...LFSS
	GE... XTL/X	70-300				
	GE... XTL-2RS/X	70-300	GE...TXG3A-2RS			
	GEG... ETL-2RS	15-110	GEH...TXE-2RS	GE... FW-2RS		
	GEG... XTL-2RS	120-280	GEH...TXA-2RS	GE...FW-2RS		
	GEZ... ETL-2RS	19.05-152.4	GEZ...TXE-2RS			B...LFSS
	GEC... HTL	320-1000		GE... DW		
	GEH... HC	100-1000	GEP... FS			
	GEC... XTL	320-630	GEC... TXA-2RS			
	GEC... XTL-2RS	320-630				
	GEH... XTL	100-600				
	GEH... XTL-2RS	100-600				
	GEH... HTL	100-1000				
GE... XF/Q	100-300	GEC... PSA				
GEC... XF/Q	320-630	GEC... PSA				
GEH... XF/Q	100-600					
GEH... HF/Q	440-1000	GEP... P4S				
GAC... S	25-200	GACD... SA	GE... SX		MB...SA B...SA	
GACZ... S	12.7-152.4	GAZ... SA				
GAC... TL	25-200	GACD...TX	GE... SW			

Bearing type	LS series	Bore diameter range	Other manufacturer series			
			SKF	INA	THK	AURORA
Spherical plain thrust bearing	GX ... S	10-200	GXD ... GA	GE ... AX		
	GX ... TL	10-360	GXD ... TX	GE ... AW		
Rod ends	SA ... E, SA ... ES SAL ... E, SAL ... ES	5-80	SA ... E, SA ... ES SAL ... E, SAL ... ES	GAR ... DO GAL ... DO		
	SI ... E, SI ... ES SIL ... E, SIL ... ES	5-80	SI ... E, SI ... ES SIL ... E, SIL ... ES	GIR ... DO GIL ... DO		
	SABP ... S SALBP ... S	5-30	SAKAC ... M SALKAC ... M	GAKFR ... PB GAKFL ... PB	POS ... POS ... L	
	SIBP ... S SILBP ... S	5-30		GIKFR ... PB GIKFL ... PB	PHS ... PHS ... L	
	SAZP ... S SALZP ... S	4.83-25.4			POSB ... POSB ... L	MM ... T MB ... T
	SIZP ... S SILZP ... S	4.83-25.4			PHSB ... PHSB ... L	MW ... T MG ... T
	SAZJ ... SALZJ ...	4.83-19.05				CM ... CB ...
	SIZJ ... SILZJ ...	4.83-19.05				CW ... CG ...
Hydraulic rod ends	SK ... ES	10-80	SC ... ES	GK ... DO		
	SF ... ES	15-120	SCF ... ES	GF ... DO		
	SIR ... ES SILR ... ES	20-120	SIR ... ES SILR ... ES	GIHR-K ... DO		
	SIGEW ... ES SILGEW ... ES	12-320	SIQG ... ES SILQG ... ES	GIHNRK ... LO		
	SIQ ... E SIQ ... E SILQ ... E SILQ ... ES	12-100		GIHO-K ... DO		
Maintenance-free rod ends	SA ... C SAL ... C	5-30	SA ... C SAL ... C	GAR ... UK GAL ... UK		
	SI ... C SIL ... C	5-30	SI ... C SIL ... C	GIR ... UK GIL ... UK		
	SA ... ETL-2RS SAL ... ETL-2RS	15-80	SAA ... TXE-2RS SALA ... TXE-2RS	GAR ... UK-2 RS GAL ... UK-2 RS		
	SI ... ETL-2RS SIL ... ETL-2RS	15-80	SIA ... TXE-2RS SILA ... TXE-2RS	GIR ... UK-2RS GIL ... UK-2RS		
	SAJK ... C SALJK ... C	5-30		GAKFR ... PW GAKFL ... PW	POS ... EC POS ... EC	
	SIJK ... C SILJK ... C	5-30		GIKFR ... PW GIKFL ... PW	PHS ... EC PHS ... EC	
	SA(L)K ... C SI(L)K ... C	5-20				
Ball joint rod ends	SQD ...	5-16			ABS ...	
	SQZ ... -RS	5-22			RBI ... D	
	SQ ... -RS	5-22			RBL ... D	

Common Units conversion

Quantity	Units	Metric & Imperial	Imperial & Metric
Length	Inch	1 mm = 0.03937 in	1 in = 25.40 mm
	foot	1 m = 3.281 ft	1 ft = 0.3048 m
	yard	1 m = 1.094 yd	1 yd = 0.9144 m
	mile	1 km = 0.6214 mile	1 mile = 1.609 km
Area	square inch	1 mm ² = 0.00155 sq.in	1 sq.in = 645.16 mm ²
	square foot	1 m ² = 10.76 sq.ft	1 sq.ft = 0.0929 m ²
Volume	cubic inch	1 cm ³ = 0.061 cub.in	1 cub.in = 16.387 cm ³
	cubic foot	1 m ³ = 35.315 cub.ft	1 cub.ft = 0.02832 m ³
	imperial gallon	1 L = 0.22 gallon	1 gallon = 4.5461 L
	U.S.gallon	1 L = 0.264 U.S.gallon	1 U.S.gallon = 3.7854 L
Velocity / speed	foot per second	1m/s = 3.28 ft/s	1 ft/s = 0.30480 m/s
	mile per hour	1km/h=0.6214 mile/h(mph)	1 mile/h(mph) = 1.609km/h
Mass	ounce	1 g = 0.03527 oz	1 oz = 28.350g
	pound	1kg = 2.205 lb	1 lb = 0.45359kg
	short ton	1 tonne = 1.1023 short ton	1 short ton = 0.90718 tonne
	long ton	1 tonne = 0.9842 long ton	1 long ton = 1.0161 tonne
Density	pound per cubic inch	1 g/cm ³ = 0.0361 lb/cub.in	1 lb/cub.in = 27.680 g/cm ³
Force	pound-force	1 N = 0.2248 lbf	1 lbf = 4.4482 N
Pressure / stress	pound per square inch	1MPa = 145 psi	1 psi = 6.8948x10 ³ Pa
Moment	inch pound-force	1Nm = 8.85 in.lbf	1 in.lbf = 0.113 Nm
Power	foot-pound per second	1 W =0.7376 ft lbf/s	1 ft lbf/s = 1.3558W
	horsepower	1 kW = 1.36 HP	1 HP = 0.736W
Temperature	degree	°C t _c = 0.555(t _F - 32)	°F t _F = 1.8 t _c + 32