Structure and Features

The Rod End is a self-aligning plain bearing that uses a spherical inner ring which has the same level of accuracy and hardness as bearing steel balls and in which only the spherical area is hard chrome plated. With the combination of a spherical inner ring whose sliding surface is mirror-finished and a rationally designed holder, the Rod End ensures play-free, extremely smooth rotary and rocking motion.

Types and Features

Model PHS (Provided with a Female Thread)

With model PHS, a special copper alloy with high conformability is inserted between the color chromate finished steel holder and the spherical inner ring in which only the spherical area is hard chrome plated. This structure ensures high rigidity, high wear resistance and high corrosion resistance.
The grease nipple on the holder allows grease to be applied to the sliding surface as necessary.

Model RBH (Die Cast, Low-price Type)

This model is a high-accuracy, low-cost rod end in which the spherical inner ring serves as the core and the holder is formed by die-casting. The holder is made of a high-strength zinc alloy (see page s-5), which is superb in mechanical properties and bearing characteristics.

Model NHS-T (Lubrication-free Type)

This lubrication-free rod end uses self-lubricating synthetic resin formed between the steel holder and the spherical inner ring. Since the clearance on the sliding surface is minimized, an accurate link motion is achieved.

Model HS (Lubrication-free, Corrosion-resistant Type)

This lubrication-free rod end uses a special fluorocarbon sheet adhering to the holder's spherical area. It is more resistant to corrosion than a stainless steel type.
Since the holder is made of an aluminum alloy, this model is extremely light.

Model POS (Male-thread Type)

This model is a highly rigid rod end that is basically the same as the female-screw type model PHS, but has a male thread on the holder end.

Model NOS-T (Lubrication-free, Male-thread Type)

This model is a lubrication-free rod end that is basically the same as the female-screw type model NHS-T, but has a male thread on the holder end.

Model PB (Standard Type)

With model PB, a special copper alloy with high conformability is inserted between the steel outer ring and the spherical inner ring in which only the spherical area is hard chrome plated. This structure makes this model a high rigid spherical bearing with high corrosion resistance and high wear resistance.
The oil groove and the greasing hole on the outer ring allow grease to be applied to the sliding surface as necessary.

Model PBA (Die Cast Type)

This model is a high-accuracy, low-cost spherical bearing in which the spherical inner ring serves as the core and the outer ring is formed by die-casting.
The outer ring is made of a high-strength zinc alloy (see page s-5), which is superb in bearing characteristics.

Model NB-T (Lubrication-free Type)

This lubrication-free bearing uses self-lubricating synthetic resin formed between the steel outer ring and the spherical inner ring.

Model HB (Lubrication-free Type)

This lubrication-free spherical bearing uses a special fluorine sheet adhering to the outer ring's spherical area.

High-strength Zinc Alloy

The high-strength zinc alloy, developed as an alloy for bearings, is composed of Aℓ, Cu, Mg, Be and Ti as well as zinc as the base. It is excellent in mechanical properties, seizure resistance and wear resistance.

●Composition

Table 1 Composition of the High-strength Zinc Alloy

Unit: %

Aℓ	3 to 4
Cu	3 to 4
Mg	0.03 to 0.06
Be	0.02 to 0.06
Ti	0.04 to 0.12
Zn	Remaining portion

●Mechanical Properties

Tensile strength: 275 to 314 N/mm²
Tensile yield strength (0.2%): 216 to 245 N/mm²
Compressive strength: 539 to 686 N/mm²
Compressive yield strength (0.2%): 294 to 343 N/mm²
Fatigue strength 132 N/mm²×10⁷ (Schenk bending test)
Charpy impact strength: 0.098 to 0.49 N-m/mm²
Elongation: 1 to 5 %
Hardness: 120 to 145 HV

●Physical Properties

Specific gravity: 6.8
Melting point: 390 ℃
Specific heat: 460 J/(kg·k)
Linear expansion ratio: 24×10⁻⁶

●Wear Resistance

The wear resistance of the high-strength zinc alloy is superior to that of class-3 brass and class-3 bronze, almost equal to that of class-2 phosphor bronze.

Amsler wear-tester:
Test piece rotation speed: 185 min⁻¹
Load: 392 N
Lubricant: Dynamo oil

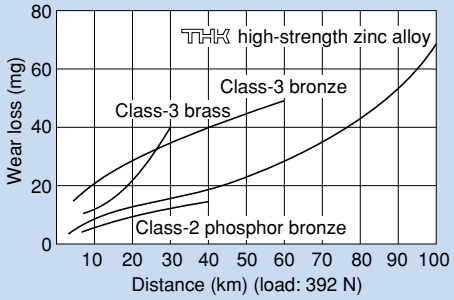


Fig. 1 Wear Resistance of the High-strength Zinc Alloy

Service Temperature

If any of models RBH, PBA, HS and HB, all of which use the high-strength zinc alloy and an aluminum alloy in the holder and the outer ring, and of models NHS-T, NOS-T and NB-T, which use synthetic-resin bushes, is to be used at temperature of 80℃ or higher, or receives an impact at low temperature, contact THK .

Installation

Please note that the Rod End is not capable of receiving a thrust load indicated in Fig. 2.

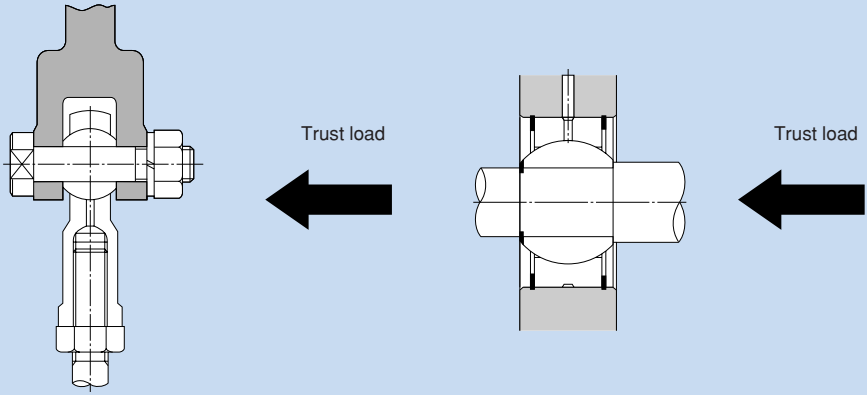
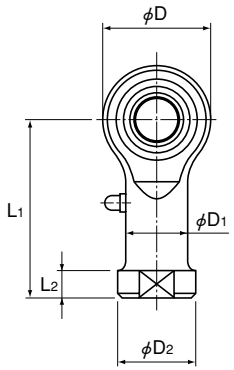
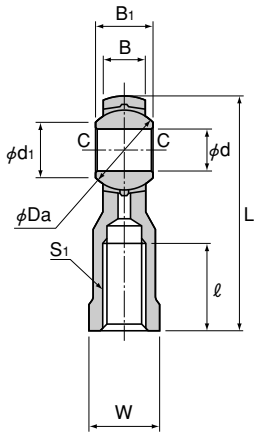


Fig. 2 Examples of Installing the Rod End

Model PHS
Female-thread Type





Unit: mm

Model No.	Outer dimensions Length L	Diameter D	Width B_1 $^{0}_{-0.1}$	Thread S_1 JIS Class 2	Holder dimensions W $^{0}_{-0.2}$	D_1	D_2	B ±0.1	L_1	L_2	ℓ	Grease nipple	Spherical inner ring dimensions d H7	Ball diameter Da mm (inch)	d_1	C	Permissible tilt angle α_1°	α_2°	α_3°	Static applied load Radial C_s N	Mass g
PHS 5	35	16	8	M5×0.8	9	9	11	6	27	4	14	PB107	5	11.112 (7/16)	7.7	0.3	8	13	30	5590	16.5
PHS 6	39	18	9	M6×1	11	10	13	6.75	30	5	14		6	12.7 (1/2)	9	0.3	8	13	30	6860	25
PHS 8	47	22	12	M8×1.25	14	12.5	16	9	36	5	17		8	15.875 (5/8)	10.4	0.5	8	14	25	9800	43
PHS 10	56	26	14	M10×1.5	17	15	19	10.5	43	6.5	21		10	19.05 (3/4)	12.9	0.5	8	14	25	13200	72
PHS 12	65	30	16	M12×1.75	19	17.5	22	12	50	6.5	24		12	22.225 (7/8)	15.4	0.5	8	13	25	16700	107
PHS 14	74	34	19	M14×2	22	20	25	13.5	57	8	27		14	25.4 (1)	16.9	0.7	10	16	24	20600	160
PHS 16	83	38	21	M16×2	22	22	27	15	64	8	33		16	28.575 (1 1/8)	19.4	0.7	9	15	24	25000	210
PHS 18	92	42	23	M18×1.5	27	25	31	16.5	71	10	36		18	31.75 (1 1/4)	21.9	0.7	9	15	24	29400	295
PHS 20	100	46	25	M20×1.5	30	27.5	34	18	77	10	40		20	34.925 (1 3/8)	24.4	0.7	9	15	24	34300	380
PHS 22	109	50	28	M22×1.5	32	30	37	20	84	12	43		22	38.1 (1 1/2)	25.8	0.7	10	15	23	41200	490
PHS 25	124	60	31	M24×2	36	33.5	42	22	94	12	48	A-M6F	25	42.862 (1 11/16)	29.6	0.8	9	15	23	72500	750
PHS 30	145	70	37	M30×2	41	40	50	25	110	15	56		30	50.8 (2)	34.8	0.8	10	17	23	92200	1130

Material

Holder: S35C (color chromate finish)
Spherical inner ring: SUJ2, 58 HRC or higher (hard chrome plated)
Bush: Special copper alloy

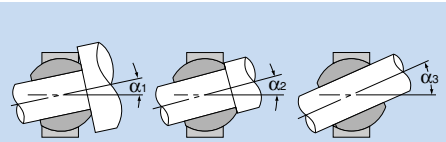
Fitting with the Shaft

Service conditions	Dimensional tolerance of the shaft
Normal load	h7
Indeterminate load	p6

Clearance

Unit: mm

Radial clearance	0.035 or less
Axial clearance	0.1 or less



Permissible tilt angle

Lubrication

The holder has a greasing hole and an oil groove; they allow grease to be replenished through the grease nipple as necessary.

Identification of Left-hand Thread

If the female thread is left-hand, symbol "L" is added.
The actual product is marked with symbol "L" on the holder.

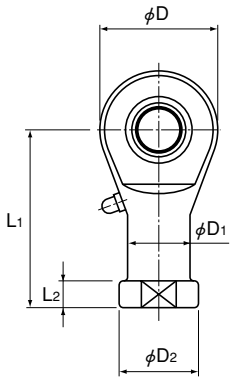
Model number coding

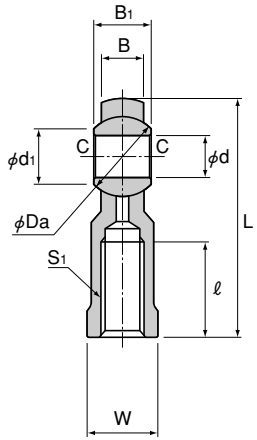
PHS10 L
1 2

1 Model number 2 Left-hand thread

Model RBH

Die Cast, Low-price Type





Unit: mm

Model No.	Outer dimensions Length L	Diameter D	Width B1 0 −0.1	Screw S1 JIS Class 2	Holder dimensions W 0 −0.3	D1	D2	B	L1	L2	ℓ	Grease nipple	Spherical inner ring dimensions d H7	Ball diameter Da mm (inch)	d1	C	Permissible tilt angle α1°	α2°	α3°	Static applied load Radial C0 N	Mass g
RBH 5	35.5	17	8	M5×0.8	9	9	11	6	27	4	16	PB107	5	11.112 (7/16)	7.7	0.3	8	13	30	5490	16
RBH 6	39.7	19.5	9	M6×1	11	10	13	6.75	30	5	16		6	12.7 (1/2)	9	0.3	8	13	30	6760	21
RBH 8	48	24	12	M8×1.25	14	12.5	16	9	36	5	19		8	15.875 (5/8)	10.4	0.5	8	14	25	9610	43
RBH 10	57	28	14	M10×1.5	17	15	19	10.5	43	6.5	23		10	19.05 (3/4)	12.9	0.5	8	14	25	13000	68
RBH 12	66	32	16	M12×1.75	19	17.5	22	12	50	6.5	27		12	22.225 (7/8)	15.4	0.5	8	13	25	16400	100
RBH 14	75	36	19	M14×2	22	20	25	13.5	57	8	30		14	25.4 (1)	16.9	0.7	10	16	24	20200	142
RBH 16	84	40	21	M16×2	22	22	27	15	64	8	36		16	28.575 (1 1/8)	19.4	0.7	9	15	24	24600	185
RBH 18	93.5	45	23	M18×1.5	27	25	31	16.5	71	10	40		18	31.75 (1 1/4)	21.9	0.7	9	15	24	28800	265
RBH 20	101.5	49	25	M20×1.5	30	27.5	34	18	77	10	43		20	34.925 (1 3/8)	24.4	0.7	9	15	24	33600	334
RBH 22	111	54	28	M22×1.5	32	30	37	20	84	12	47		22	38.1 (1 1/2)	25.8	0.7	10	15	23	40400	454

Material

Holder: High-strength zinc alloy (see page s-5)
Spherical inner ring: SUJ2, 58 HRC or higher (hard chrome plated)

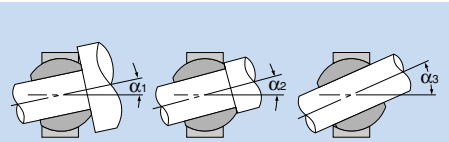
Fitting with the Shaft

Service conditions	Dimensional tolerance of the shaft
Normal load	h7
Indeterminate load	p6

Clearance

Unit: mm

Radial clearance	0.03 or less
Axial clearance	0.1 or less



Permissible tilt angle

Lubrication

The holder has a greasing hole and an oil groove; they allow grease to be replenished through the grease nipple as necessary.

Identification of Left-hand Thread

If the female thread is left-hand, symbol "L" is added.
The actual product is marked with symbol "L" on the holder.

Model number coding

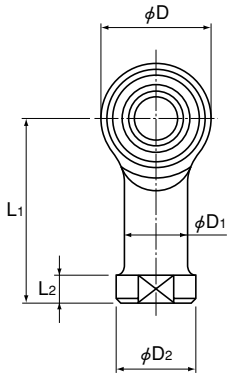
RBH10 L
1 2

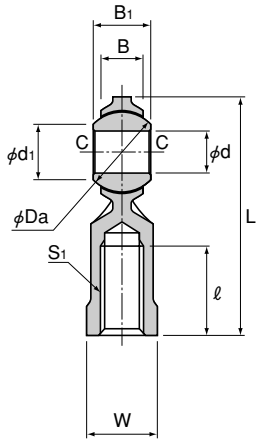
1 Model number 2 Left-hand thread

Selecting a Model Number | Refer to the "THK General Catalog - Technical Descriptions of the Products," provided separately

Model NHS-T

Lubrication-free Type





Unit: mm

Model No.	Outer dimensions Length L	Diameter D	Width B1 0 −0.1	Screw S1 JIS Class 2	Holder W 0 −0.2	D1	D2	B +0.1 −0.4	dimensions L1	L2	ℓ	Spherical inner ring dimensions d H7	Ball diameter Da mm (inch)	d1	C	Permissible tilt angle α1°	α2°	α3°	Static applied load Radial Cs N	Mass g
NHS 3T	27	12	6	M3×0.5	7	6.5	8	4.5	21	3	10	3	9.525 (3/8)	7.4	0.3	8	10	42	1570	6.5
NHS 4T	31	14	7	M4×0.7	8	8	9.5	5.3	24	4	12	4	10.319 (13/32)	7.6	0.3	9	11	35	2250	10
NHS 5T	35	16	8	M5×0.8	9	9	11	6	27	4	14	5	11.112 (7/16)	7.7	0.3	8	13	30	3920	16.5
NHS 6T	39	18	9	M6×1	11	10	13	6.75	30	5	14	6	12.7 (1/2)	9	0.3	8	13	30	5000	25
NHS 8T	47	22	12	M8×1.25	14	12.5	16	9	36	5	17	8	15.875 (5/8)	10.4	0.5	8	14	25	7450	43
NHS 10T	56	26	14	M10×1.5	17	15	19	10.5	43	6.5	21	10	19.05 (3/4)	12.9	0.5	8	14	25	9410	72
NHS 12T	65	30	16	M12×1.75	19	17.5	22	12	50	6.5	24	12	22.225 (7/8)	15.4	0.5	8	13	25	11000	107
NHS 14T	74	34	19	M14×2	22	20	25	13.5	57	8	27	14	25.4 (1)	16.9	0.7	10	16	24	15200	160
NHS 16T	83	38	21	M16×2	22	22	27	15	64	8	33	16	28.575 (1 1/8)	19.4	0.7	9	15	24	20200	210
NHS 18T	92	42	23	M18×1.5	27	25	31	16.5	71	10	36	18	31.75 (1 1/4)	21.9	0.7	9	15	24	25200	295
NHS 20T	100	46	25	M20×1.5	30	27.5	34	18	77	10	40	20	34.925 (1 3/8)	24.4	0.7	9	15	24	27800	380
NHS 22T	109	50	28	M22×1.5	32	30	37	20	84	12	43	22	38.1 (1 1/2)	25.8	0.7	10	15	23	35900	490

Material

Holder: S35C (color chromate finish)
Spherical inner ring: SUJ2, 58 HRC or higher (hard chrome plated)
Bush: Self-lubricating synthetic resin

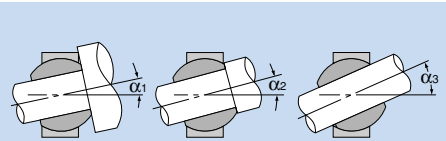
Fitting with the Shaft

Service conditions	Dimensional tolerance of the shaft
Normal load	h7
Indeterminate load	p6

Clearance

Unit: mm

Radial clearance	0.035 or less
Axial clearance	0.1 or less



Permissible tilt angle

Initial Lubrication

This model can be used without lubrication. However, if desiring to provide initial lubrication, apply oil or grease to the spherical area.

Identification of Left-hand Thread

If the female thread is left-hand, symbol "L" is added.
The actual product is marked with symbol "L" on the holder.

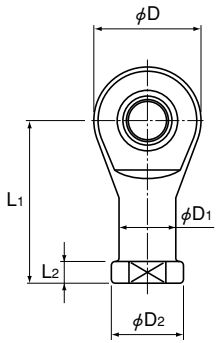
Model number coding

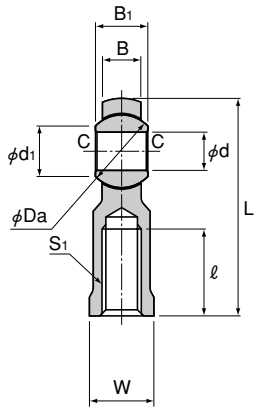
NHS10T L
1 2

1 Model number 2 Left-hand thread

Model HS

Lubrication-free, Corrosion-resistant Type





Unit: mm

Model No.	Outer dimensions Length L	Diameter D	Width B1 0 −0.1	Screw S1 JIS Class 2	Holder dimensions W 0 −0.3	D1	D2	B	L1	L2	ℓ	Spherical inner ring dimensions d G7	Ball diameter Da mm (inch)	d1	C	Permissible tilt angle α1°	α2°	α3°	Static applied load Radial Cs N	Yield point strength Pk N	Mass g
HS 5	35.5	17	8	M5×0.8	9	9	11	6	27	4	16	5	11.112 (7/16)	7.7	0.3	7	13	30	5590	3920	9
HS 6	39.7	19.5	9	M6×1	11	10	13	6.75	30	5	16	6	12.7 (1/2)	9	0.3	7	13	30	6860	5290	15
HS 8	48	24	12	M8×1.25	14	12.5	16	9	36	5	19	8	15.875 (5/8)	10.4	0.5	8	14	25	9800	8330	26
HS 10	57	28	14	M10×1.5	17	15	19	10.5	43	6.5	23	10	19.05 (3/4)	12.9	0.5	8	14	25	13200	10800	41
HS 12	66	32	16	M12×1.75	19	17.5	22	12	50	6.5	27	12	22.225 (7/8)	15.4	0.5	8	13	25	16700	14700	60

Material

Holder: A-1 alloy
Spherical inner ring: SUJ2, 600 Hv or higher (corrosion resistant coated)
Bush: Special fluorine resin with net

Fitting with the Shaft

Service conditions	Dimensional tolerance of the shaft
Normal load	h7
Indeterminate load	n6,p6

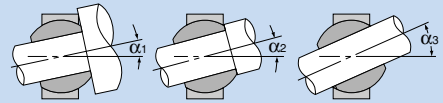
Clearance

Unit: mm

Radial clearance	0.03 or less
Axial clearance	0.1 or less

Identification of Left-hand Thread

If the female thread is left-hand, symbol "L" is added.
The actual product is marked with symbol "L" on the holder.



Permissible tilt angle

Model number coding

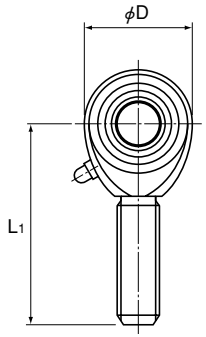
HS10 L
1 2

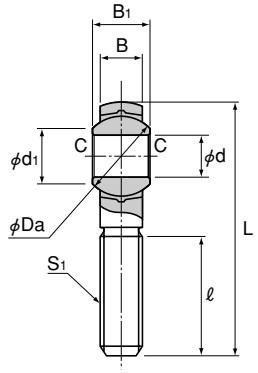
1 Model number 2 Left-hand thread

Selecting a Model Number | Refer to the "THK General Catalog - Technical Descriptions of the Products," provided separately

Model POS

Male-thread Type





Unit: mm

Model No.	Outer dimensions Length L	Diameter D	Width B_1 $^{0}_{-0.1}$	Screw S_1 JIS Class 2	Holder dimensions B ±0.1	L_1	ℓ	Grease nipple	Spherical inner ring dimensions d H7	Ball diameter Da mm (inch)	d_1	C	Permissible tilt angle α_1°	α_2°	α_3°	Static applied load Radial C_S N	Mass g
POS 5	41	16	8	M5×0.8	6	33	20	—	5	11.112 (7/16)	7.7	0.3	8	13	30	3430	12.5
POS 6	45	18	9	M6×1	6.75	36	22		6	12.7 (1/2)	9	0.3	8	13	30	4900	19
POS 8	53	22	12	M8×1.25	9	42	25	PB107	8	15.875 (5/8)	10.4	0.5	8	14	25	6860	32
POS 10	61	26	14	M10×1.5	10.5	48	29		10	19.05 (3/4)	12.9	0.5	8	14	25	10800	54
POS 12	69	30	16	M12×1.75	12	54	33		12	22.225 (7/8)	15.4	0.5	8	13	25	16700	85
POS 14	77	34	19	M14×2	13.5	60	36		14	25.4 (1)	16.9	0.7	10	16	24	20600	126
POS 16	85	38	21	M16×2	15	66	40		16	28.575 (1 1/8)	19.4	0.7	9	15	24	25000	185
POS 18	93	42	23	M18×1.5	16.5	72	44		18	31.75 (1 1/4)	21.9	0.7	9	15	24	29400	260
POS 20	101	46	25	M20×1.5	18	78	47		20	34.925 (1 3/8)	24.4	0.7	9	15	24	34300	340
POS 22	109	50	28	M22×1.5	20	84	51		22	38.1 (1 1/2)	25.8	0.7	10	15	23	41200	435
POS 25	124	60	31	M24×2	22	94	57	A-M6F	25	42.862 (1 11/16)	29.6	0.8	9	15	23	72500	650
POS 30	145	70	37	M30×2	25	110	66		30	50.8 (2)	34.8	0.8	10	17	23	92200	1070

Material

Holder: S35C (color chromate finish)
Spherical inner ring: SUJ2, 58 HRC or higher (hard chrome plated)
Bush: Special copper alloy

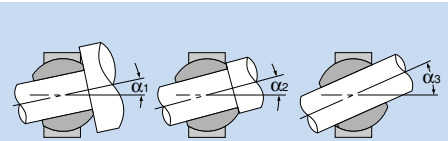
Fitting with the Shaft

Service conditions	Dimensional tolerance of the shaft
Normal load	h7
Indeterminate load	p6

Clearance

Unit: mm

Radial clearance	0.035 or less
Axial clearance	0.1 or less



Permissible tilt angle

Lubrication

The holder has a greasing hole and an oil groove; they allow grease to be replenished through the grease nipple as necessary. To lubricate the product, replenish grease from the holder greasing hole for models POS5 and 6, or from the grease nipple for other models.

Identification of Left-hand Thread

If the male thread is left-hand, symbol "L" is added. The actual product is marked with symbol "L" on the holder.

Model number coding

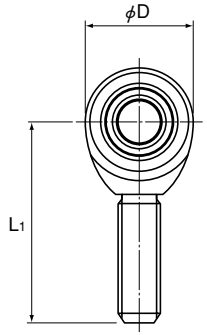
POS10 L
1 2

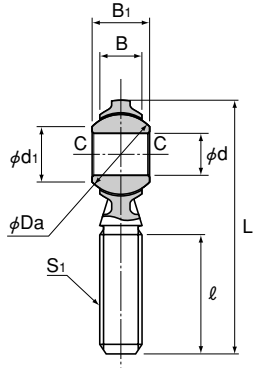
1 Model number 2 Left-hand thread

Selecting a Model Number | Refer to the "THK General Catalog - Technical Descriptions of the Products," provided separately

Model NOS-T

Lubrication-free, Male-thread Type





Unit: mm

Model No.	Outer dimensions Length L	Diameter D	Width B_1 $^{0}_{-0.1}$	Screw S_1 JIS Class 2	Holder dimensions B $^{+0.1}_{-0.4}$	L_1	ℓ	Spherical inner ring dimensions d H7	Ball diameter Da mm (inch)	d_1	C	Permissible tilt angle α_1°	α_2°	α_3°	Static applied load Radial C_s N	Mass g
NOS 3 T	33	12	6	M3×0.5	4.5	27	15	3	9.525 (3/8)	7.4	0.3	8	10	42	1570	4.5
NOS 4 T	37	14	7	M4×0.7	5.3	30	17	4	10.319 (13/32)	7.6	0.3	9	11	35	2250	7
NOS 5 T	41	16	8	M5×0.8	6	33	20	5	11.112 (7/16)	7.7	0.3	8	13	30	3430	12.5
NOS 6 T	45	18	9	M6×1	6.75	36	22	6	12.7 (1/2)	9	0.3	8	13	30	4900	19
NOS 8 T	53	22	12	M8×1.25	9	42	25	8	15.875 (5/8)	10.4	0.5	8	14	25	6860	32
NOS 10 T	61	26	14	M10×1.5	10.5	48	29	10	19.05 (3/4)	12.9	0.5	8	14	25	9410	54
NOS 12 T	69	30	16	M12×1.75	12	54	33	12	22.225 (7/8)	15.4	0.5	8	13	25	11000	85
NOS 14 T	77	34	19	M14×2	13.5	60	36	14	25.4 (1)	16.9	0.7	10	16	24	15200	126
NOS 16 T	85	38	21	M16×2	15	66	40	16	28.575 (1 1/8)	19.4	0.7	9	15	24	20200	185
NOS 18 T	93	42	23	M18×1.5	16.5	72	44	18	31.75 (1 1/4)	21.9	0.7	9	15	24	25200	260
NOS 20 T	101	46	25	M20×1.5	18	78	47	20	34.925 (1 3/8)	24.4	0.7	9	15	24	27800	340
NOS 22 T	109	50	28	M22×1.5	20	84	51	22	38.1 (1 1/2)	25.8	0.7	10	15	23	35900	435

Material

Holder: S35C (color chromate finish)
Spherical inner ring: SUJ2, 58 HRC or higher (hard chrome plated)
Bush: Self-lubricating synthetic resin

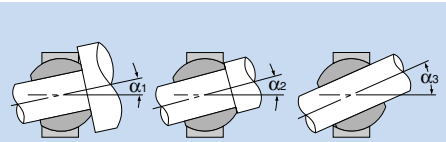
Fitting with the Shaft

Service conditions	Dimensional tolerance of the shaft
Normal load	h7
Indeterminate load	p6

Clearance

Unit: mm

Radial clearance	0.035 or less
Axial clearance	0.1 or less



Permissible tilt angle

Initial Lubrication

This model can be used without lubrication. However, if desiring to provide initial lubrication, apply oil or grease to the spherical area.

Identification of Left-hand Thread

If the male thread is left-hand, symbol "L" is added.

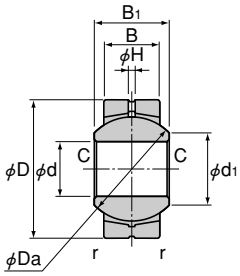
Model number coding

NOS10T L
1 2

1 Model number 2 Left-hand thread

Selecting a Model Number | Refer to the "THK General Catalog - Technical Descriptions of the Products," provided separately

Model PB
Standard Type



Unit: mm

Model No.	Major dimensions							Ball diameter	Permissible tilt angle			Static applied load Radial	Mass
	Inner diameter d H7	Outer diameter D h6	Outer ring width B ±0.1	Inner ring width B_1 $^{0}_{-0.1}$	d_1	H	C,r	Da mm (inch)	α_1°	α_2°	α_3°	C_S N	g
PB 5	5	16	6	8	7.7	1	0.3	11.112 (7/16)	8	13	30	7840	8.5
PB 6	6	18	6.75	9	9	1	0.3	12.7 (1/2)	8	13	30	9800	13
PB 8	8	22	9	12	10.4	1	0.5	15.875 (5/8)	8	14	25	16700	24
PB 10	10	26	10.5	14	12.9	1.2	0.5	19.05 (3/4)	8	14	25	23500	39
PB 12	12	30	12	16	15.4	1.5	0.5	22.225 (7/8)	8	13	25	31400	58
PB 14	14	34	13.5	19	16.9	1.5	0.7	25.4 (1)	10	16	24	40200	84
PB 16	16	38	15	21	19.4	2.5	0.7	28.575 (1 1/8)	9	15	24	50000	111
PB 18	18	42	16.5	23	21.9	2.5	0.7	31.75 (1 1/4)	9	15	24	61800	160
PB 20	20	46	18	25	24.4	2.5	0.7	34.925 (1 3/8)	9	15	24	73500	210
PB 22	22	50	20	28	25.8	2.5	0.7	38.1 (1 1/2)	10	15	23	88200	265
PB 25	25	56	22	31	29.6	3	0.8	42.862 (1 11/16)	9	15	23	111000	390
PB 30	30	66	25	37	34.8	3	0.8	50.8 (2)	10	17	23	148000	610

Material

Outer ring: S35C
Spherical inner ring: SUJ2, 58 HRC or higher (hard chrome plated)
Bush: Special copper alloy

Clearance

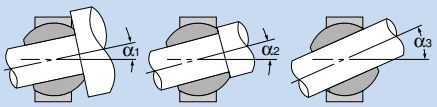
Unit: mm

Radial clearance	0.035 or less
Axial clearance	0.1 or less

Fitting with the Shaft

For the fitting between the shaft and the housing, the following values are recommended.

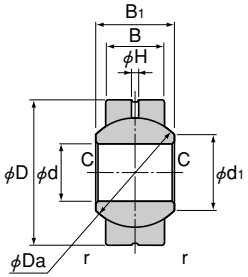
Service conditions		Shaft	Housing
Inner ring rotational load	Normal load	m6	H7
	Indeterminate load	n6	
Outer ring rotational load	Normal load	h7	M7
	Indeterminate load	k6	



Permissible tilt angle

Model PBA

Die Cast Type



Unit: mm

Model No.	Major dimensions							Ball diameter	Permissible tilt angle			Static applied load Radial	Mass
	Inner diameter d H7	Outer diameter D h8	Outer ring width B ±0.1	Inner ring width B_1 $^{0}_{-0.1}$	d_1	H	C,r	Da mm (inch)	α_1°	α_2°	α_3°	Cs N	g
PBA 5	5	16	6	8	7.7	1	0.3	11.112 (7/16)	8	13	30	7840	8.5
PBA 6	6	18	6.75	9	9	1	0.3	12.7 (1/2)	8	13	30	9800	13
PBA 8	8	22	9	12	10.4	1	0.5	15.875 (5/8)	8	14	25	16700	24
PBA 10	10	26	10.5	14	12.9	1.2	0.5	19.05 (3/4)	8	14	25	23500	39
PBA 12	12	30	12	16	15.4	1.5	0.5	22.225 (7/8)	8	13	25	31400	58
PBA 14	14	34	13.5	19	16.9	1.5	0.7	25.4 (1)	10	16	24	40200	84
PBA 16	16	38	15	21	19.4	2.5	0.7	28.575 (1 1/8)	9	15	24	50000	111
PBA 18	18	42	16.5	23	21.9	2.5	0.7	31.75 (1 1/4)	9	15	24	61800	160
PBA 20	20	46	18	25	24.4	2.5	0.7	34.925 (1 3/8)	9	15	24	73500	210
PBA 22	22	50	20	28	25.8	2.5	0.7	38.1 (1 1/2)	10	15	23	88200	265

Material

Outer ring: High-strength zinc alloy (see page s-5)

Spherical inner ring: SUJ2, 58 HRC or higher (hard chrome plated)

Clearance

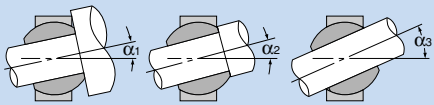
Unit: mm

Radial clearance	0.035 or less
Axial clearance	0.1 or less

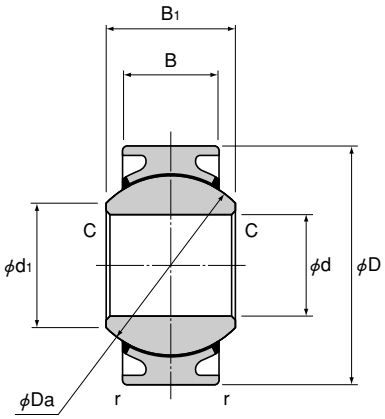
Fitting with the Shaft

For the fitting between the shaft and the housing, the following values are recommended.

Service conditions		Shaft	Housing
Inner ring rotational load	Normal load	m6	H7
	Indeterminate load	n6	
Outer ring rotational load	Normal load	h7	M7
	Indeterminate load	k6	



Permissible tilt angle



Unit: mm

Model No.	Major dimensions						Ball diameter	Permissible tilt angle			Static applied load Radial	Mass
	Inner diameter d H7	Outer diameter D h7	Outer ring width B ±0.1	Inner ring width B_1 $^{0}_{-0.1}$	d_1	C,r	Da mm (inch)	α_1°	α_2°	α_3°	C_S N	g
NB 14T	14	34	13.5	19	16.9	0.7	25.4 (1)	10	16	24	20200	84
NB 16T	16	38	15	21	19.4	0.7	28.575 (1 1/8)	9	15	24	25200	111
NB 18T	18	42	16.5	23	21.9	0.7	31.75 (1 1/4)	9	15	24	30800	160
NB 20T	20	46	18	25	24.4	0.7	34.925 (1 3/8)	9	15	24	36900	210
NB 22T	22	50	20	28	25.8	0.7	38.1 (1 1/2)	10	15	23	44800	265

Material

Outer ring: S35C
Spherical inner ring: SUJ2, 58 HRC or higher (hard chrome plated)
Bush: Self-lubricating synthetic resin

Clearance

Unit: mm

Radial clearance	0.035 or less
Axial clearance	0.1 or less

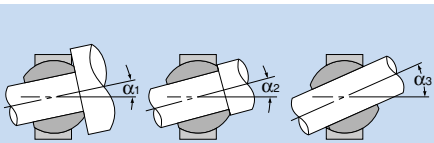
Fitting with the Shaft

For the fitting between the shaft and the housing, the following values are recommended.

Service conditions		Shaft	Housing
Inner ring rotational load	Normal load	m6	H7
	Indeterminate load	n6	
Outer ring rotational load	Normal load	h7	M7
	Indeterminate load	k6	

Initial Lubrication

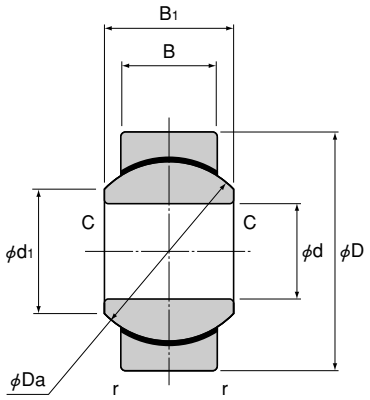
This model can be used without lubrication. However, if desiring to provide initial lubrication, apply oil or grease to the spherical area.



Permissible tilt angle

Model HB

Lubrication-free Type



Unit: mm

Model No.	Major dimensions						Ball diameter	Permissible tilt angle			Static applied load Radial	Mass
	Inner diameter d H7	Outer diameter D h7	Outer ring width B ±0.1	Inner ring width B_1 $^{0}_{-0.1}$	d_1	C,r	Da mm (inch)	α_1°	α_2°	α_3°	Cs N	g
HB 5	5	16	6	8	7.7	0.3	11.112 (7/16)	7	13	30	13100	8.5
HB 6	6	18	6.75	9	9	0.3	12.7 (1/2)	7	13	30	16900	13
HB 8	8	22	9	12	10.4	0.5	15.875 (5/8)	8	14	25	28000	24
HB 10	10	26	10.5	14	12.9	0.5	19.05 (3/4)	8	14	25	39200	39
HB 12	12	30	12	16	15.4	0.5	22.225 (7/8)	8	13	25	52500	58

Material

Outer ring: Zinc alloy
Spherical inner ring: SUJ2, 600 Hv or higher (corrosion resistant coated)
Bush: Special fluorine resin with net

Clearance

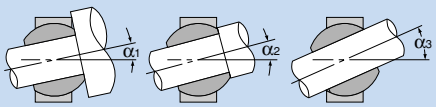
Unit: mm

Radial clearance	0.03 or less
Axial clearance	0.1 or less

Fitting with the Shaft

For the fitting between the shaft and the housing, the following values are recommended.

Service conditions		Shaft	Housing
Inner ring rotational load	Normal load	m6	H7
	Indeterminate load	n6	
Outer ring rotational load	Normal load	h7	M7
	Indeterminate load	k6	



Permissible tilt angle