Selecting a Rod End

[Permissible Load P]

The static load capacity (C_s) indicated in the specification tables, is presented as a guide for the mechanical strength of the Rod End. Select a bearing while taking into account the safety factor (f_s) indicated in Table1 according to the type of the load.

Table1 Safety Factor (f_s)

Type of load	Lower limit of f_s
Constant load in a constant direction	2 to 3
Fluctuating load in a constant direction	3 to 5
Load in varying directions	5 to 8

According to the type of load, select a bearing that satisfies the following equation from a mechanical strength's viewpoint.

$$P \leqq \frac{C_s}{f_s} \quad \cdots\cdots\cdots (1)$$

P : Permissible Load (N)
C_s : Static load capacity (N)
f_s : Safety factor (see Table1)

[Dynamic Load Capacity C_d]

The dynamic load capacity refers to the upper limit of load that the spherical area can receive without showing seizure while the Rod End is rotating or oscillating. The dynamic load capacity is obtained from the following approximation formula using the static load capacity (C_s) (note 1) indicated in the specification table.

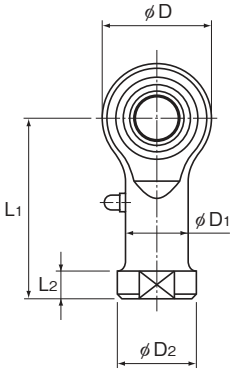
$$C_d = \frac{C_s}{\sqrt[3]{n}} \quad \cdots\cdots\cdots (2)$$

C_d : Dynamic load capacity (N)
C_s : Static load capacity (N)
n : Revolutions per minute (min^{-1})

The selected bearing must meet both the permissible load obtained from equation (1) and the dynamic load capacity obtained from equation (2).

Note1) Static load capacity (C_s) refers to the value obtained by multiplying the projected area on the spherical section by the permissible surface pressure, and is used to obtain the dynamic load capacity.

Model PHS (Female Threading Type)



Model No.	Outer dimensions			Threaded	Holder Dimensions			
	Length L	Diameter D	Width B_1 0 −0.1	S_1 JIS Class 2	W 0 −0.2	D_1	D_2	B ±0.1
PHS 5	35	16	8	M5×0.8	9	9	11	6
PHS 6	39	18	9	M6×1	11	10	13	6.75
PHS 8	47	22	12	M8×1.25	14	12.5	16	9
PHS 10	56	26	14	M10×1.5	17	15	19	10.5
PHS 12	65	30	16	M12×1.75	19	17.5	22	12
PHS 14	74	34	19	M14×2	22	20	25	13.5
PHS 16	83	38	21	M16×2	22	22	27	15
PHS 18	92	42	23	M18×1.5	27	25	31	16.5
PHS 20	100	46	25	M20×1.5	30	27.5	34	18
PHS 22	109	50	28	M22×1.5	32	30	37	20
PHS 25	124	60	31	M24×2	36	33.5	42	22
PHS 30	145	70	37	M30×2	41	40	50	25

[Material]

Holder : S35C (Chromate treatment)
Spherical inner ring : SUJ2, 58 HRC or higher
(Hard chrome plated except for the inner surface of the inner ring)
Bush : copper alloy

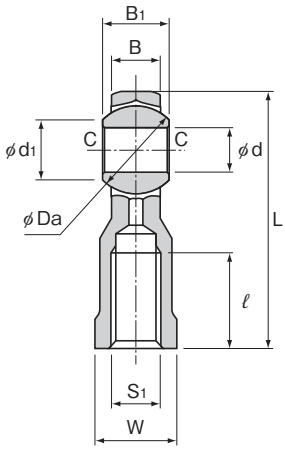
[Fitting with the Shaft]

Condition	Dimensional tolerance of the shaft
Normal load	h7
Indeterminate load	p6

Model number coding

PHS10 L

PHS10: Model number
L: Left-hand thread



Unit: mm

					Spherical inner ring dimensions				Permissible tilt angles			Static applied load Radial	Mass
	L_1	L_2	ℓ	Grease nipple	d H7	Ball diameter Da mm (inch)	d_1	C	α_1°	α_2°	α_3°	C_s N	g
	27	4	14	PB107	5	11.112($^7/_{16}$)	7.7	0.3	8	13	30	5590	16.5
	30	5	14		6	12.7($^1/_2$)	9	0.3	8	13	30	6860	25
	36	5	17		8	15.875($^5/_8$)	10.4	0.5	8	14	25	9800	43
	43	6.5	21		10	19.05($^3/_4$)	12.9	0.5	8	14	25	13200	72
	50	6.5	24		12	22.225($^7/_8$)	15.4	0.5	8	13	25	16700	107
	57	8	27		14	25.4(1)	16.9	0.7	10	16	24	20600	160
	64	8	33		16	28.575($1^1/_8$)	19.4	0.7	9	15	24	25000	210
	71	10	36		18	31.75($1^1/_4$)	21.9	0.7	9	15	24	29400	295
	77	10	40		20	34.925($1^3/_8$)	24.4	0.7	9	15	24	34300	380
	84	12	43		22	38.1($1^1/_2$)	25.8	0.7	10	15	23	41200	490
	94	12	48	A-M6F	25	42.862($1^{11}/_{16}$)	29.6	0.8	9	15	23	72500	750
	110	15	56		30	50.8(2)	34.8	0.8	10	17	23	92200	1130

[Clearance]

Unit: mm

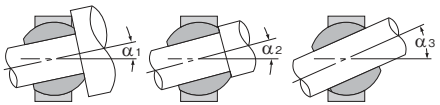
Radial clearance	0.035 or less
Axial clearance	0.1 or less

[Lubrication]

Apply lubricant before using the product. 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 threading is left-hand, symbol “L” is added. The actual product is marked with symbol “L” on the holder.



Permissible Tilt Angles