Rod End Bearings
Standard L Short Type

RoHS10

Type		Standard: Tapped Type, Right-Hand Thread	Standard: Tapped Type, Left-Hand Thread	Standard: Threaded Type, Right-Hand Thread	Standard: Threaded Type, Left-Hand Thread	L Short Type: Tapped Type, Right-Hand Thread	L Short Type: Tapped Type, Left-Hand Thread	L Short Type: Threaded Type, Right-Hand Thread	L Short Type: Threaded Type, Left-Hand Thread	Material: Holder	Material: Spherical Inner Ring	Material: Bushing (Liner)
①	Steel	PHSC	PHSCL	PHSO	PHSOL	PHSCN	PHSCLN	PHSON	PHSOLN	EN 1.1181 Equiv. (Trivalent Chromate)	*EN 1.3505 Equiv.(58HRC~)	Special Copper Alloy
②	Lubrication Free	PHSCM	PHSCLM	PHSOM	PHSOLM	PHSCMN	PHSCLMN	PHSOMN	-	d3, 4 EN 1.1181 Equiv.(Trivalent Chromate)	*EN 1.3505 Equiv.(58HRC~)	Self-lubricating Synthetic Resin
										2for Than Above EN 1.1181 Equiv.(Trivalent Chromate)	EN 1.3505 Equiv.(58HRC~)	Polytetrafluoroethylene
③	Stainless Steel Oil Free	PHSS	PHSSL	PHSOS	PHSOSL	PHSSN	PHSSLN	PHSOSN	-	EN 1.4305 Equiv.	EN 1.4125 Equiv.(58HRC~)	Polytetrafluoroethylene

* Hard Chrome Plating

• Applicable Shaft Fits

Usage Condition	Tolerance of Shaft Dimensions: Steel	Lubrication Free	Stainless Steel Oil Free
Normal Load	h7	p6	Recommended gap between Sleeve and Shaft -0.013 to 0.013
Non-directional Load	p6	p6	

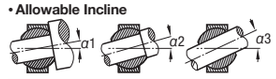
• Gap between Holder and Inner Ring Unit: mm

	Steel	Lubrication Free	Stainless Steel Oil Free
Radial Direction Clearance	0.035 or Less	0.045 or Less	No regulation
Axial Clearance	0.1 or Less	0.1 or Less	

• Torque Unit: N · m

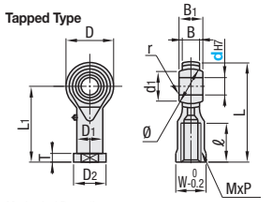
Steel, Oil Free	Stainless Steel Oil Free
No regulation	0.02~0.34

• Allowable Incline

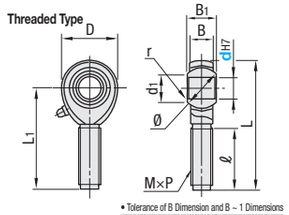


Shaft Step Shape	Shaft Condition	Allowable Incline Angle α
Large	Stepped part of the shaft contacts the outer circumference of the holder.	Small (α1)
Medium	Stepped part of the shaft contacts the side or the inner circumference of the holder.	Medium (α2)
No	Shaft contacts the inner circumference of the holder.	Large (α3)

Tapped Type



Threaded Type



- Mechanical Properties
  - Tensile Strength 275~314N/mm²
  - Tensile Proof Strength (0.2%) 216~245N/mm²
- The thread end of L Short Type has no surface treatment.
- The above drawing is for Standard Type. L Short Type does not have T/W dimension.

• Tolerance of B Dimension and B ~ 1 Dimensions

Type	B	B~1
①	0~-0.1	±0.1
②	+0.1~-0.4	0~-0.1
③	±0.3	0~-0.13

Part Number: Type	d	D	D1	D2	L: Standard	L: Short	L1: Standard	L1: Short	MxP	ℓ: Standard ①②	ℓ: Standard ③	ℓ: Short	B	B1	T	W	d1 ①②	d1 ③	r	Static Load Capacity Radial Cs (kN) ①	②	③	Mass ①②	Mass ③
Tapped Type	3	12	6.5	8	27	-	21	-	M3x0.5	10	-	-	4.5	6	3	7	7.4	-	0.3	-	1.57	-	6.5	-
Standard L Short Type	4	14	8	9.5	31		24		M4x0.7	12			5.3	7	4	8	7.6	-		-	2.25	-	10	
Right-hand Thread	5	16	9	11	35	28	27	20	M5x0.8	14	12.5	7	6	8		9	7.7	8.8		5.59	3.92	0.98	16.5	16
PHSC PHSCN	6	18	10	13	39	35	30	26	M6x1.0		13.5	10	6.75	9	5	11	9	11.1		6.86	5	1.44	25	25
PHSCM PHSCMN	8	22	12.5	16	47	42	36	31	M8x1.25	17	16	12	9	12		14	10.4	12.7		9.8	7.45	2.69	43	43
PHSS PHSSN	10	26	15	19	56	49	43	36	M10x1.5	21	19	14	10.5	14	6.5	17	12.9	15.2	0.5	13.2	9.41	4.16	72	72
	10A								M10x1.25		-							-			-	-		-
Left-hand Thread	12	30	17.5	22	65	59	50	44	M12x1.75	24	24	18	12	16		19	15.4	17.6		16.7	11	5.88	107	107
PHSCL PHSCLN	14	34	20	25	74	66	57	49	M14x2.0	27	27	19	13.5	19	8	22	16.9	19.2	0.7	20.6	15.2	6.61	160	160
PHSCLM PHSCLMN	14A								M14x1.5		-							-			-	-		-
PHSSL PHSSLN	16	38	22	27	83	70	64	51	M16x2.0	33	33	20	15	21			19.4	19.4		25	20.2	8.33	210	210
	18	42	25	31	92	81	71	60	M18x2.5	36	-	25	16.5	23	10	27	21.9	21.9		29.4	-	-	295	-
L Short Type will be d5 - 22.	18A								M18x1.5		36										25.2	11.52		11.52
	20	46	27.5	34	100	87	77	64	M20x1.5	40	-	27	18	25		30	24.4	-		34.3	27.8	-	380	-
	22	50	30	37	109	99	84	74	M22x1.5	43		33	20	28	12	32	25.8			41.2	35.9	-	490	

①Steel, ②Lubrication Free, ③Stainless Steel Oil Free kgf=Nx0.101972

Part Number: Type	d	D	L: Standard	L: Short	L1: Standard	L1: Short	MxP	ℓ: Standard	ℓ: Short	B	B1	d1 ①②	d1 ③	r	Static Load Capacity Radial Cs (kN) ①	②	③	Mass ①②	Mass ③
Threaded Type	3	12	33	-	27	-	M3×0.5	15	-	4.5	6	7.4	-	0.3	-	1.57	-	4.5	-
Standard L Short Type	4	14	37		30		M4×0.7	17		5.3	7	7.6			-	2.25	-	7	
Right-hand Thread	5	16	41	28	33	20	M5×0.8	20	7	6	8	7.7	8.8		3.43	3.43	0.98	12.5	12
PHSO PHSON	6	18	45	33	36	24	M6×1.0	22	10	6.75	9	9	11.1		4.9	4.9	1.44	19	19
PHSOM PHSOMN	8	22	53	40	42	29	M8×1.25	25	12	9	12	10.4	12.7		6.86	6.86	2.69	32	32
PHSOS PHSOSN	10	26	61	46	48	33	M10×1.5	29	14	10.5	14	12.9	15.2	0.5	10.8	9.41	4.16	54	54
Left-hand Thread	10A						M10×1.25						-			-	-		-
PHSOL PHSOLN	12	30	69	54	54	39	M12×1.75	33	18	12	16	15.4	17.6		16.7	11	5.88	85	85
PHSOLM	14	34	77	60	60	43	M14×2.0	36	19	13.5	19	16.9	19.2	0.7	20.6	15.2	6.61	126	126
PHSOSL	14A						M14×1.5						-			-	-		-
	16	38	85	65	66	46	M16×2.0	40	20	15	21	19.4	19.4		25	20.2	8.33	185	185
	18	42	93	74	72	53	M18×2.5	44	25	16.5	23	21.9	-		29.4	-	-	260	-
L Short Type will be d5 - 22.	18A						M18×1.5						21.9			25.2	11.52		258
	20	46	101	84	78	61	M20×1.5	47	30	18	25	24.4	-		34.3	27.8	-	340	-
	22	50	109	91	84	66	M22×1.5	51	33	20	28	25.8			41.2	35.9	-	435	

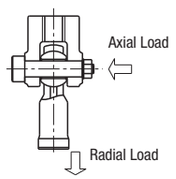
①Steel, ②Lubrication Free, ③Stainless Steel Oil Free ♀No Grease Nipple for PHSO(L)5 ~ 6 and PHSO(L)N5 ~ 6. kgf=Nx0.101972

Ordering Example — Part Number: PHSC5

d	Ball Dia. Ø (mm) ①	②	③	α1 ①	②	α2 ①	②	α3 ①	②	③
3	-	9.525	-	-	8	-	10	-	42	-
4	-	10.319	-	-	9	-	11	-	35	-
5	11.112	11.112	11.91	8	8	13	13	30	30	12
6	12.7	12.7	14.29	8	8	13	13	30	30	10
8	15.875	15.875	17.46	8	8	14	14	25	25	12
10	19.05	19.05	20.64	8	8	14	14	25	25	12
12	22.225	22.225	23.81	8	8	13	13	25	25	12
14	25.4	25.4	26.99	10	10	16	16	24	24	14
16	28.575	28.575	28.58	9	9	15	15	24	24	15
18	31.75	31.75	31.75	9	9	15	15	24	24	15
20	34.925	-	-	9	-	15	-	24	-	-
22	38.1	-	-	10	-	15	-	23	-	-

①Steel, ②Lubrication Free, ③Stainless Steel Oil Free

•Cautions on Installation



♀Rod End cannot bear the thrust load.

♀L Short Type is available for the types whose prices are shown in the below Standard Type price table (d3 and d4 are not available).

d	Standard: PHSC, PHSCL — Unit Price 1 ~ 9 pc(s).	PHSC, PHSCL — Volume Discount Rate 10 ~ 30 pc.	PHSO, PHSOL — Unit Price 1 ~ 9 pc(s).	PHSO, PHSOL — Volume Discount Rate 10 ~ 30 pc.	PHSCM, PHSCLM — Unit Price 1 ~ 9 pc(s).	PHSCM, PHSCLM — Volume Discount Rate 10 ~ 50 pc.	PHSOM, PHSOLM — Unit Price 1 ~ 9 pc(s).	PHSOM, PHSOLM — Volume Discount Rate 10 ~ 50 pc.	PHSS, PHSSL — Unit Price 1 ~ 9 pc(s).	PHSS, PHSSL — Volume Discount Rate 10 ~ 30 pc.	PHSOS, PHSOSL — Unit Price 1 ~ 9 pc(s).	PHSOS, PHSOSL — Volume Discount Rate 10 ~ 30 pc.
3	-	-	-	-					-	-	-	-
4												
5												
6												
8												
10												
10A					-	-	-	-	-	-	-	-
12												
14												
14A					-	-	-	-	-	-	-	-
16												
18					-	-	-	-	-	-		
18A											-	-
20												
22					-	-	-	-	-	-		

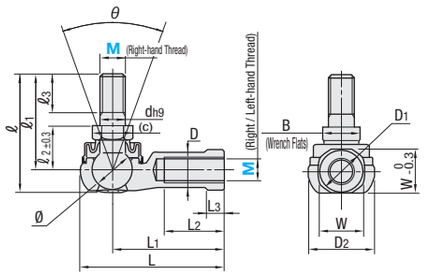
♀For orders larger than indicated quantity, please check with WOS.

Rod End Bearings
Link Ball Type

■Link Ball L Type

RoHS10

RBLD (Right-hand Thread)
RBLDL (Left-hand Thread)



Ⓜ Material: Holder: High Strength Zinc Alloy
* M4, 5: High Strength Aluminum Alloy
Shank with Ball: EN 1.1181 Equiv. (20 ~ 28HRC)
Boot: NBR Type Special Synthetic Rubber
Ⓗ Hardness: Sphere 650HV~

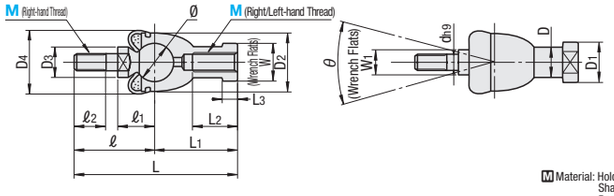
Part Number: Type	M	D	D1	D2	L	L1	L2	MxP	L3	W	Shank with Ball: dh9	(c)	ℓ	ℓ1	ℓ2	ℓ3	B	Ball Dia. Ømm	Allowable Incline Angle θ	Strength of Yielding Point Pk (N)	Static Load Capacity Radial Cs (N)	Mass (g)	Unit Price 1 ~ 9 pc(s).	Volume Discount Rate 10~30
RBLD (Right-hand Thread)	4	7.5	9.5	13	24.5	18	8	M4x0.7	4	8	4	0 -0.030	8.1	20	15	7	6	7	7.938	40°	1370	4510	7		
	5	9	12	15	34.5	27	15	M5x0.8		10	5		9.2	26.7	21	10	8	8	9.525		2250	6470	12		
RBLDL (Left-hand Thread)	6	10	13	16	38	30	16	M6x1.0	5	11	6		11.6	32.6	26	11	11	10	11.112		3920	9900	26		
	8	12.5	16	19	45.5	36	19	M8x1.25	6	14	8	0 -0.036	13.8	38.6	31	14	12	12	12.7		6570	12500	49		
	10	14.5	19	25	55.5	43	23	M10x1.5	7	17	10		16.2	52.3	43	17	21	14	15.875		11300	18300	90		
	10A							M10x1.25						46.3	37		15						87		
	12	17.5	22	29	64.5	50	26	M12x1.75	8	19	12		19.6	59.7	49	19	24	17	19.05		16400	26700	148		
	12A							M12x1.25						52.7	42		17						143		
	14	20	25	34	74	57	30	M14x2.0	10	22	14		21.9	74.4	62	21.5	28	19	22.225		19800	36400	245		
	14A							M14x1.5						68.4	56		22						235		
	16	22	27	38	83	64	34	M16x2.0	11	24	16		25.4	80	66	23.5	29	22		30°	26900		325		
	16A							M16x1.5						74	60		23						315		

kgf=Nx0.101972 ♀For orders larger than indicated quantity, please check with WOS.

■Link Ball Straight Type

RoHS10

RBID (Right-hand Thread)
RBIDL (Left-hand Thread)



Ⓜ Material: Holder: High Strength Zinc Alloy
Shank with Ball: EN 1.1181 Equiv. (20 ~ 28HRC)
Boot: NBR Type Special Synthetic Rubber
Ⓗ Hardness: Sphere 650HV~

Part Number: Type	M	D	D1	D2	L	L1	L2	MxP	L3	W	Shank with Ball: dh9	ℓ	ℓ1	ℓ2	W1	D3	D4	Ball Dia. Ømm	Allowable Incline Angle θ	Strength of Yielding Point Pk (N)	Static Load Capacity Thrust Cs (N): Tensile Cs (N)	Static Load Capacity Thrust Cs (N): Compression Cs (N)	Mass (g)	Unit Price 1 ~ 9 pc(s).	Volume Discount Rate 10~30
RBID (Right-hand Thread)	5	9	11	17	46	24	12	M5x0.8	4	9	5	22	11	8	7	9	20	11.112	25°	2840	5690	11400	25		
	6	10	13	20	55.2	28	15	M6x1.0	5	11	6	27.2	12.2	11	8	10		12.7		3730	7450	14900	40		
RBIDL (Left-hand Thread)	8	12.5	16	24	65	32	16	M8x1.25		14	8	33	16	12	10	12	24	15.875		5880	11700	23200	75		
	10	15	19	28	80.5	35	18	M10x1.5	6.5	17	10	45.5	19.5	21	11	14	30	19.05		8430	16800	33500	123		
	10A				74.5			M10x1.25				39.5		15									120		
♀M16A is available for RBID only.	12	17.5	22	32	91	40	20	M12x1.75		19	12	51	21	24	17	19	32	22.245		11400	22800	45600	190		
	12A				84			M12x1.25				44		17									185		
	14	20	25	36	109	45	25	M14x2.0	8	22	14	64	23.5	28			38	25.4	17°	14900	29800	59600	280		
	14A				103			M14x1.5				58		22									275		
	16	22	27	40	118	50	27	M16x2.0			16	68	25.5	29	19	22	44						370		
	16A				112			M16x1.5				62		23									360		

kgf=Nx0.101972 ♀For orders larger than indicated quantity, please check with WOS.

Ordering Example — Part Number: RBLD8, RBIDL12A

1. Clearance of Sphere Unit: mm

	RBLD, RBLDL	RBID, RBIDL
Radial Direction Clearance	0.02~0.06	0.03 or Less
Axial Clearance	0.3 or Less	0.1 or Less

2. H10 tolerance is recommended for Shank with Ball and the mating hole.
3. Yield Strength (Pk) shows the strength of the direction shown in the figure below.