Rod End Bearings

Standard L Short Type

RoHS

Type		Standard				L Short Type				Material		
		Tapped Type		Threaded Type		Tapped Type		Threaded Type		Holder	Spherical Inner Ring	Bushing (Liner)
		Right-Hand Thread	Left-hand Thread	Right-Hand Thread	Left-hand Thread	Right-Hand Thread	Left-hand Thread	Right-Hand Thread	Left-hand Thread			
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); Other Than Above: EN 1.1181 Equiv.(Trivalent Chromate)	*EN 1.3505 Equiv.(58HRC~); EN 1.3505 Equiv.(58HRC~)	Self-lubricating Synthetic Resin; 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	

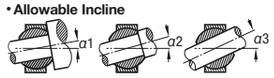
• Gap between Holder and Inner Ring Unit: mm

	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

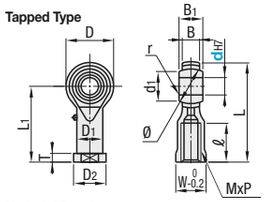
Steel, Oil Free	Stainless Steel Oil Free
No regulation	0.02~0.34

• Allowable Incline

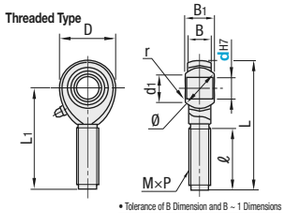


Shaft Step Shape	Shaft Condition	Allowable Incline Angle α
Large	Stepped part of the shaft contacts the outer circumference of the holder.	Small (α1)
Medium	Stepped part of the shaft contacts the side or the inner circumference of the holder.	Medium (α2)
No	Shaft contacts the inner circumference of the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

Tapped Type



Threaded Type



• 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

• 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.

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 Standard L Short Type	3	12	6.5	8	27	-	21	-	M3x0.5	10	-	-	4.5	6	3	7	7.4	-	0.3	-	1.57	-	6.5	-
	4	14	8	9.5	31		24		M4x0.7	12			5.3	7	4	8	7.6	-		-	2.25	-	10	
Right-hand Thread PHSC PHSCN PHSCM PHSCMN PHSS PHSSN	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
	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
	8	22	12.5	16	47	42	36	31	M8x1.25	17	16	12	9	12		14	10.4	12.7	0.5	9.8	7.45	2.69	43	43
	10	26	15	19	56	49	43	36	M10x1.5	21	19	14	10.5	14	6.5	17	12.9	15.2		13.2	9.41	4.16	72	72
	10A								M10x1.25		-							-			-	-		-
Left-hand Thread PHSCL PHSCLN PHSCLM PHSCLMN PHSSL PHSSLN	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
	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
	14A								M14x1.5		-							-			-	-		-
	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	-
	18A								M18x1.5		36										25.2	11.52		11.52
L Short Type will be d5 - 22.	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	M×P	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 Standard L Short Type	3	12	33	-	27	-	M3×0.5	15	-	4.5	6	7.4	-	0.3	-	1.57	-	4.5	-
	4	14	37		30		M4×0.7	17		5.3	7	7.6			-	2.25	-	7	
Right-hand Thread PHSO PHSON PHSOM PHSOMN PHSOS PHSOSN	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
	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
	8	22	53	40	42	29	M8×1.25	25	12	9	12	10.4	12.7	0.5	6.86	6.86	2.69	32	32
	10	26	61	46	48	33	M10×1.5	29	14	10.5	14	12.9	15.2		10.8	9.41	4.16	54	54
	10A						M10×1.25						-			-	-		-
Left-hand Thread PHSOL PHSOLN PHSOLM PHSOSL	12	30	69	54	54	39	M12×1.75	33	18	12	16	15.4	17.6		16.7	11	5.88	85	85
	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
	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	-
	18A						M18×1.5						21.9			25.2	11.52		258
L Short Type will be d5 - 22.	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	

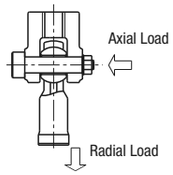
①Steel, ②Lubrication Free, ③Stainless Steel Oil Free No Grease Nipple for PHSO(L)5 ~ 6 and PHSO(L)N5 ~ 6. kgf=Nx0.101972

Ordering Example **Part Number** PHSC5

d	Ball Dia. Ø (mm) ①	②	③	α1 ①	α1 ②	α2 ①	α2 ②	α3 ①	α3 ②	α3 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	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.

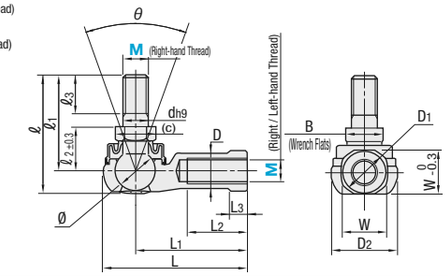
Rod End Bearings

Link Ball Type

■Link Ball L Type

RoHS

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



M 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
H Hardness: Sphere 650HV~

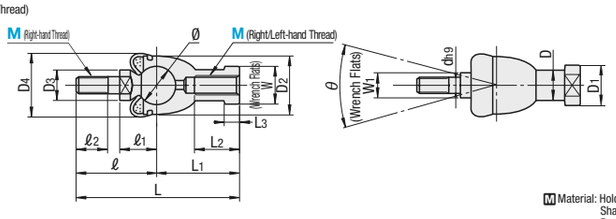
Part Number Type	M	Holder Part D	D1	D2	L	L1	L2	MxP	L3	W	Shank with Ball dh9	(c)	ℓ	ℓ1	ℓ2	ℓ3	B	Ball Dia. Ømm	Allowable Incline Angle θ	Strength of Yielding Point Pk (N)	Static Load Capacity Radial Cs (N)	Mass (g)	Unit Price 1 ~ 9 pc(s).	Volume Discount Rate 10~30
RBLD (Right-hand Thread) RBLDL (Left-hand 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		
	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 0 -0.043	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

RoHS

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



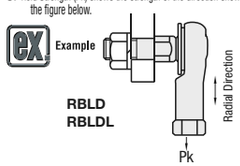
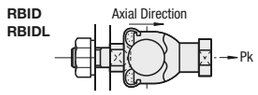
M Material: Holder: High Strength Zinc Alloy
Shank with Ball: EN 1.1181 Equiv. (20 ~ 28HRC)
Boot: NBR Type Special Synthetic Rubber
H Hardness: Sphere 650HV~

Part Number Type	M	Holder Part 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)	Compression Cs (N)	Mass (g)	Unit Price 1 ~ 9 pc(s).	Volume Discount Rate 10~30
RBID (Right-hand Thread) RBIDL (Left-hand Thread)	5	9	11	17	46	24	12	M5x0.8	4	9	5 0 -0.030	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		
	8	12.5	16	24	65	32	16	M8x1.25		14	8 0 -0.036	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		
	12	17.5	22	32	91	40	20	M12x1.75		19	12 0 -0.043	51	21	24	17	19	32	22.225		11400	22800	45600	190		
	12A				84			M12x1.25				44		17									185		
M16A is available for RBID only.	14	20	25	36	109	45	25	M14x2.0	8	22	14 0 -0.043	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 0 -0.043	68	25.5	29	19	22	44						370		
	16A				112			M16x1.5				62		23									360		

Ordering Example **Part Number** RBLD8 RBIDL12A

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

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.