

Ball Plungers

Stainless Steel / Roller / Load Adjustable

Ball Plungers – Stainless Steel

RoHS10

Type	Metal Ball	Plastic Ball	Body		Ball		Spring	Spacer	Operating Temperature
			M	Material	M	H	M	M	
Metal Ball	Ultra Light Load	BMS	304 Stainless Steel Equivalent	440C Stainless Steel	55 HRC min.	631J1 Stainless Steel	304 Stainless Steel	—	-30~260°C
	Light Load	BSM							
	Heavy Load	BSZF							
Plastic Ball	Ultra Light Load	NBSS	Polyacetal	—	—	631J1 Stainless Steel	304 Stainless Steel	—	-30~80°C
	Light Load	NBSM							
	Heavy Load	NBSZ							

Part Number	Type	M (Coarse)	Metal Ball		Plastic Ball		L	ℓ	B	Ultra Light Load (BMS / NBSS)		Light Load (BSM)		Light Load (NBSM)		Heavy Load (BSZF / NBSZ)		Extra Heavy Load (BSX / NBSX)	
			d	S	d	S				min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
			BMS (*only)	**3	1.5	0.2				—	—	5	1	0.9	—	—	0.7	1.4	—
BSM	**4	2.5	—	2.4	—	7	1.5	0.3	0.64	1	2	—	—	1.5	2.9	2.2	—	—	5
BSZF	**5	3	0.8	3.2	0.8	12	2	2.5	1	3.12	3.3	9.8	2.9	9.8	4.9	19.6	11.2	24.1	—
BSX (*only)	**6	3	—	3.2	—	13	2.5	3	1.6	4.85	5.1	15.3	4.9	14.7	9.8	29.4	17.7	33.4	—
NBSS (*only)	**10	5	1.2	4.8	1.2	16	3	5	3	8.1	8.9	24.1	8.8	24.5	18.6	49	23.5	60	—
NBSM (*only)	**12	7.1	1.8	7.1	1.8	20	3	6	3.5	9.68	10.5	29.3	9.8	29.4	19.6	58.8	24.1	63.7	—
NBSZ (*only)	**16	9.5	2.5	9.5	2.5	25	3	8	5.7	15.8	14.9	48.9	15.7	49	29.4	98	43.6	116.3	—

Ⓜ M2, M3 and M4 have no screwdriver groove on the body tip. Plunger can be installed only by using an allen wrench. Ⓢ Thread-locking adhesive not applied. kgf=Nx0.101972

Ball Plungers – Roller

RoHS10

Type	Metal Ball	Plastic Ball	Body		Ball		Sub Balls		Spring	Operating Temperature
			Material	Material	Hardness	Material	Hardness	Material	Material	
Metal Ball	BPRM	302HQ Stainless Steel	440C Stainless Steel	55 HRC min.	440C Stainless Steel	55 HRC min.	631J1 Stainless Steel	—	-30~100°C	
Plastic Ball	BPRJ	Polyacetal	—	—	—	—	—	—	-30~80°C	

Features

Adding sub balls to the plunger structure helps smooth rotation of the main ball.

Part Number	Type	M (Coarse)	d	S	L	ℓ	B	h	Load (N)	
									min.	max.
									BPRM	5
BPRJ	6	3	0.8	13	2.5	3	1.5	8.1	29.6	
	8	4	1.3	15	—	4	2	12.6	39.8	
	10	5	1.6	16	—	5	2.5	13.5	44.4	
	12	7.1	2.3	20	3	6	3	16.1	46.9	
	16	9.5	3.1	25	—	8	4	26.1	88.2	

Ⓢ Plunger has no screwdriver groove on the body tip. It can be installed only by using an allen wrench. Ⓢ Thread-locking adhesive not applied.

Features: By tightening the nut the inner spring is compressed, and the load can be adjusted freely.

Ball Plungers – Load Adjustable

RoHS10

Type	Metal Ball	Plastic Ball	Body		Ball		Spring	Nut	Spacer	Operating Temperature
			Material	Material	Hardness	Material	Material	Material		
Metal Ball	BPCF	303 Stainless Steel	440C Stainless Steel	55 HRC min.	304 Stainless Steel	303 Stainless Steel	304 Stainless Steel	—	-30~80°C	
Plastic Ball	NPCF	Polyacetal	—	—	—	—	—	—	—	

Tightening Amount X

Min. Tightening (X=0)

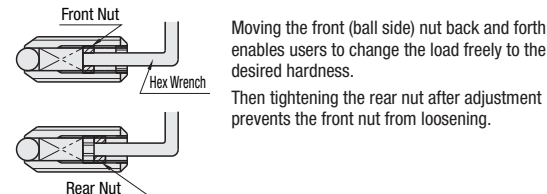
Max. Tightening (Xmax=l-3.8)

Part Number	Type	M1 (Coarse)	Metal Ball		Plastic Ball		L	ℓ	M2 (Fine)	C	X	Min. Tightening (X=0) Load (N)		Max. Tightening (X=Xmax) Load (N)	
			d	S	d	S						min.	max.	min.	max.
			BPCF	8	4	1						4	1	16	6.4
NPCF	10	4.8	1.2	4.8	1.2	18	6.5	6	1.3	0~2.7	7	21	38	52	
	12	7.1	1.8	7.1	1.8	22	6.6	8	1.8	0~2.8	3	29	42	62	

Ⓢ Has slits for a screwdriver on the tip. The rear hex socket is provided for load adjustments and can not be used to tighten the unit. Only the straight slit is used for tightening.
 Ⓢ Load values are for reference only.
 Ⓢ Thread locking treatment not applied.
 Ⓢ Fix the plunger with the rear nut after load setting.

Part Number Example

Part Number: **BSX8**, **BPRM10**, **BPCF8**



Ball Plungers

Plastic Resin / Fine Thread / Short

Ball Plungers – Plastic Resin

RoHS10

Type	Metal Ball	Plastic Ball	Body		Ball		Spring	Operating Temperature
			Material	Material	Hardness	Material	Material	
Metal Ball	Light Load	BSMN	Polyacetal (Black)	440C Stainless Steel	55 HRC min.	304 Stainless Steel	-30~80°C	
	Heavy Load	BSZN	Nylon 66 (White)	—	—	631J1 Stainless Steel		
Plastic Ball	Light Load	BNMN	Polyacetal (Black)	Polyacetal (White)	—	304 Stainless Steel	-30~80°C	
	Heavy Load	BNZN	Nylon 66 (White)	—	—	631J1 Stainless Steel		

Part Number	Type	M (Coarse)	d	S	L	a	Load (N)			
							Light Load		Heavy Load	
							min.	max.	min.	max.
BSMN	6	3.2	0.8	13	1	0.2	5	8	16	
BSZN	8	4	1	15	1.2	2	12	15	30	
	10	4.8	1.2	16	1.5	2.5	16	20	39	

Ⓢ Has no slit for a screwdriver on the tip. kgf=Nx0.101972

Part Number Example

Part Number: **BSZN6**

Ball Plungers – Fine Thread

RoHS10

Type	Metal Ball	Plastic Ball	Body		Ball		Spring	Spacer	Operating Temperature
			Material	Hardness	Surface Treatment	Material	Hardness	Material	Material
Light Load	BMPJ	52100 Bearing Steel	1045 Carbon Steel or Equivalent	29~35 HRC	Black Oxide	55 HRC min.	JIS SWP-B	304 Stainless Steel	-30~80°C
Heavy Load	BMSJ	—	—	—	—	—	—	—	—

Features

Fine threads provide an easy adjustment of strokes.

Application Example

Part Number	Type	M (Fine Thread)	Pitch (Fine)	Metal Ball		L	ℓ	B	Light Load (N)		Heavy Load (N)	
				d	S				min.	max.	min.	max.
				BMPJ	3				0.35	1.5	0.5	7
BMSJ	4	0.5	2.5	—	9	1.5	2	2	4.9	3.9	9.8	
	5	0.5	3	0.8	12	2	2.5	2.9	9.8	4.9	19.6	
	6	0.75	3	—	13	2.5	3	4.9	14.7	9.8	29.4	
	8	0.75	4	1	15	2.5	4	6.9	19.6	12.7	39.2	

Ⓢ Thread-locking adhesive is not applied. kgf=Nx0.101972

Part Number Example

Part Number: **BMPJ5**

Ball Plungers – Short

RoHS10

Type	Metal Ball	Plastic Ball	Body		Ball		Spring	Spacer	Operating Temperature
			Material	Material	Hardness	Material	Material		
BPK	302HQ Stainless Steel	440C Stainless Steel	59~66 HRC	304 Stainless Steel WPB	304 Stainless Steel	—	—	-30~240°C	

Feature:

Less likely to protrude from thin plates, as the overall length is shorter than conventional ball plunger by 30%.

Part Number	Type	M (Coarse)	d	S	L	ℓ	B	Load (N)	
								min.	max.
								BPK	3
	4	2.5	0.8	6	1.2	2	(1.1)	(3.7)	
	5	3	1	8	1.7	2.5	(2.2)	(5.9)	
	6	4	1	9	1.8	3	(4.6)	(8.7)	
	8	5	1.2	10	1.8	4	(7.5)	(11.9)	

Ⓢ Plunger has no screwdriver groove on the tip. It can be installed only by using an allen wrench. Ⓢ Min. load is the initial load, and max. load is when the tip is fully compressed. kgf=Nx0.101972

Part Number Example

Part Number: **BPK4**