


# Ball Plungers

## Stainless Steel / Roller / Load Adjustable

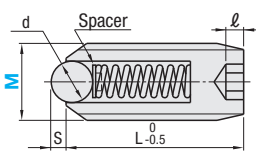
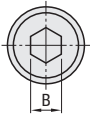
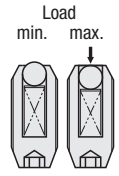
■BSZF: Equivalent to BSZ (old product). Up to 12% price reduction compared to BSZ.

■ **Stainless Steel**



RoHS 10


Type	Body	Ball		Spring	Spacer	Operating Temperature
		Material	Hardness			
Metal Ball	Ultra Light Load	BMS				
	Light Load	BSM	SUS440C	55HRC~	SUS631J1	SUS304
	Heavy Load	BSZF				-30~260°C
Plastic Ball	Ultra Heavy Load	BSX	SUS304 Equivalent			
	Light Load	NBSM	Polyacetal	-	SUS631J1	SUS304
	Heavy Load	NBSZ				-30~80°C
	Extra Heavy Load	NBSX				

Part Number	Type	Metal Ball		Plastic Ball		L	ℓ	B	Ultra Light Load (BMS, NBSX)		Light Load (BSM)		Light Load (NBSM)		Heavy Load (BSZF, NBSZ)		Extra Heavy Load (BSX, NBSX)		Unit Price		
		M	d	S	d				S	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	Metal Ball	Plastic Ball
		(Coarse)																			
(Metal Ball)																					
	2	1	0.2	-	-	5	1	0.9	-	-	0.7	1.4	-	-	1.2	2	-	-	-	-	
BMS (* only)	* 3	1.5	0.5	-	-	7	1	1.5	0.3	0.64	1	2	-	-	1.5	2.9	2.2	5			
BSM	** 4	2.5		2.4		9	1.5	2	0.6	1.6	1.9	4.9	2	4.9	3.9	9.8	2.5	12.5			
BSZF (* only)	** 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			
(Plastic Ball)																					
NBSM (* only)	** 8	4	1	4.0	1.0	15	2.5	4	2.4	6.36	5.5	19.1	6.9	19.6	12.7	39.2	21.4	45.3			
NBSM (* 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			
NBSZ (* 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			
NBSX (* 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			

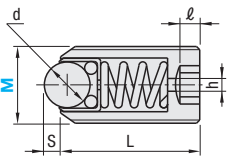
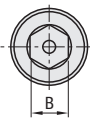
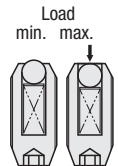
⚠ M2, M3 and M4 have no slits for a wrench on the tip. Has no Slit for a wrench on the tip. It can be installed only by using a hex socket. ⚠ Thread locking treatment not applied. kgf-Nx0.101972

■ **Roller**

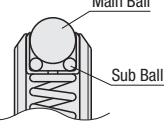


RoHS 10

Type	Body	Ball		Sub Ball		Spring	Operating Temperature
		Material	Hardness	Material	Hardness		
Metal Ball	BPRM	SUSXM7	SUS440C	55HRC~	SUS440C	55HRC~	SUS631J1
Plastic Ball	BPRJ		Polyacetal	-			

■ **Features**




The combination structure of the main ball and the sub balls helps smooth rotation of the ball.

Part Number	Type	M (Coarse)	d	S	L	ℓ	B	h	Load (N)		Unit Price
									min.	max.	
BPRM BPRJ		5	2.4	0.7	12	2	2.5	1.2	4.4	19.6	
		6	3	0.8	13		3	1.5	8.1	29.6	
		8	4	1.3	15	2.5	4	2	12.6	39.8	
		10	5	1.6	16		5	2.5	13.5	44.4	
		12	7.1	2.3	20		6	3	16.1	46.9	
		16	9.5	3.1	25		8	4	26.1	88.2	

⚠ Has no Slit for a wrench on the tip. It can be installed only by using a hex socket. ⚠ Thread locking treatment not applied.

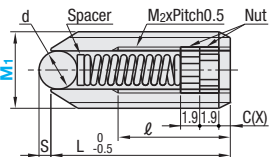

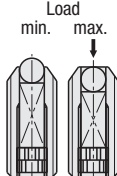
■ **Features:** By moving the nut for compressing the inner spring, the load can be adjusted freely.

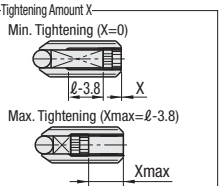
■ **Load Adjustable**



RoHS 10

Type	Body	Ball		Spring	Nut	Spacer	Operating Temperature
		Material	Hardness				
Metal Ball	BPCF	SUS303	SUS440C	55HRC~	SUS304-WPB	SUS303	SUS304
Plastic Ball	NPCF		Polyacetal	-			



Tightening Amount X  
Min. Tightening (X=0)  
Max. Tightening (Xmax=ℓ-3.8)

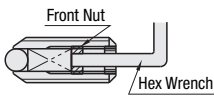
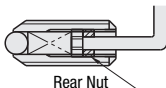
⚠ For facilitating installation, the plunger is tightened approx. X=C/2mm at shipping.

Part Number	Type	Metal Ball		Plastic Ball		L	ℓ	M2 (Fine)	C	X	Min. Tightening (X=0) Load (N)		Max. Tightening (X=Xmax) Load (N)		Unit Price		
		M1 (Coarse)	d	S	d						S	min.	max.	min.	max.	BPCF	NPCF
BPCF NPCF		8	4	1	4	1	16	6.4	5	1	0~2.6	10	20	32	41		
		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 wrench on the tip. The rear hex socket is provided for load adjustments and can not be used to tighten the unit. Only the straight slot is used for tightening. ⚠ Load values are for reference, not guaranteed. ⚠ Thread locking treatment not applied. ⚠ Fix the plunger with the rear nut after load setting.

Ordering Example

Part Number  
BSX8  
BPRM10  
BPCF8

Moving the front (ball side) nut back and forth enables users to change the load freely to the desired hardness.

Then tightening the rear nut after adjustment prevents the front nut from loosening.