Note that, for some of the types shown here, order might be unable to be received by the MISUMI Malaysia, Indonesia and/or India offices.

Ball Plungers

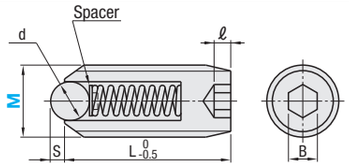
Economy / Standard

Features: By omitting heat treating, wrench slot and thread locking treatment, overwhelmingly low price is achieved.

Economy

RoHS10

Type		Body		Ball		Spring	Spacer	Operating Temperature
		M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	
Light Load	BPU	SCM435	Trivalent Chromate	SUJ2	55HRC~	SWP-B	SUS304	-30~80°C
Heavy Load	BPM							
Extra Heavy Load	BPQ							



(?)Values below are not guaranteed values but experimental values.

M	Breaking Torque (N·cm)
3	98
4	98
5	226
6	520
8	1726
10	2746
12	5099
16	7845
20	10787

Part Number Type	M (Coarse)	d	S	L	ℓ	B	Light Load Load (N) min.	Light Load Load (N) max.	Heavy Load Load (N) min.	Heavy Load Load (N) max.	Extra Heavy Load Load (N) min.	Extra Heavy Load Load (N) max.	Unit Price
BPU BPM BPQ	3	1.5	0.5	7	1	1.5	1	2	1.5	2.9	2.2	5	
	4	2.5	0.8	9	2.4	2	2	4.9	3.9	9.8	2.5	12.5	
	5	3		12	2	2.5	2.9	9.8	4.9	19.6	11.2	24.1	
	6			13	2.5	3	4.9	14.7	9.8	29.4	17.7	33.4	
	8	4	1	15	2.5	4	6.9	19.6	12.7	39.2	21.4	45.3	
	10	5	1.2	16	3	5	8.8	24.5	18.6	49	23.5	58.7	
	12	7.1	1.8	20	3	6	9.8	29.4	19.6	58.8	24.1	62.3	
	16	9.5	2.5	25	3	8	15.7	49	29.4	98	43.6	116	
	20	11.9	4.5	40	6	10	53.9	98	78.4	147.6	84.6	196.6	

(?)Has no Slit for a wrench on the tip. It can be installed only by using a hex socket. (?)Min. load is the initial load, and max. load is the one when the tip is fully compressed.

Part Number Type	M (Coarse)	Unit Price 1 ~ 4 pack(s).	(Reference) Price per Unit
PACK-BPU (Light Load)	3		
	4		
	5		
	6		
	8		

(?)PACK-BPU is sold by the package.
(?)For package sales, minimum order is 1 pack.
(?)100 pcs./package
(?)For orders larger than indicated quantity, please request a quotation.

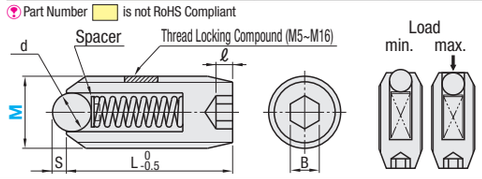
BPJF, BSJF: BPJ, BSJ (Identical Standard Products mentioned in Press Catalog) are also available.

Standard

RoHS10

Type		Standard	No Thread Locking Compound	Body M Material	Body H Hardness	Body S Surface Treatment	Ball M Material	Ball H Hardness	Spring M Material	Spacer M Material	Operating Temperature
Metal Ball	Ultra Light Load	BPY	BPY-N	SCM435	29~35HRC	Black Oxide	SUJ2	55HRC~	SWP-B	SUS304	-30~80°C
	Light Load	BPJF	BPJ-N								
	Heavy Load	BSJF	BSJ-N	SUS304 Equivalent	-	-					
	Extra Heavy Load	BPW	BPW-N	SCM435	29~35HRC	Electroless Nickel Plating					
Plastic Ball	Ultra Light Load	NBPS	-	S45C	29~35HRC	Black Oxide	Polyacetal	-	SWP-B	SUS304	-30~80°C
	Light Load	NBPJ									
	Heavy Load	NBSJ								SUS304	
	Extra Heavy Load	NBPW									

(?)Part Number ☐ is not RoHS Compliant



(?)Thread Locking Treatment is not provided on M2, M3 and M4 of Standard Type.
(?)Thread Locking Treatment is where anaerobic thread locking compound in micro capsules is used to retain the threads. Once parts have been loosened, adhesion is lost. Use an anaerobic thread locking compound when reassembling.
(?)The thread locking is most effective by leaving the parts for 72 hours or more in 25°C. It should be noted if the parts are left for short period of time and in low temperature, the thread locking compound will be less-effective.

Standard

Part Number Type	M (Coarse)	Metal Ball d	Metal Ball S	Plastic Ball d	Plastic Ball S	L	ℓ	B	Ultra Light Load Load (N) min.	Ultra Light Load Load (N) max.	Light Load Load (N) min.	Light Load Load (N) max.	Heavy Load Load (N) min.	Heavy Load Load (N) max.	Extra Heavy Load Load (N) min.	Extra Heavy Load Load (N) max.	Unit Price Metal Ball	Unit Price Plastic Ball
(Metal Ball) BPY (* only) BPJF BSJF BPW (* only) (Plastic Ball) NBPS (*only) NBPJ (*only) NBSJ (*only) NBPW (*only)	2	1	0.2	-	-	5	1	0.9	-	-	0.7	1.4	1.2	2	-	-		-
	* 3	1.5	0.5	-	-	7	1	1.5	0.3	0.64	1	2	1.5	2.9	2.2	5		
	** 4	2.5		2.4		9	1.5	2	0.6	1.6	2	4.9	3.9	9.8	2.5	12.5		
	** 5	3	0.8	3.2	0.8	12	2	2.5	1	3.12	2.9	9.8	4.9	19.6	11.2	24.1		
	** 6	3		3.2		13	2.5	3	1.6	4.85	4.9	14.7	9.8	29.4	17.7	33.4		
	** 8	4	1	4	1.0	15	2.5	4	2.4	6.36	6.9	19.6	12.7	39.2	21.4	45.3		
	**10	5	1.2	4.8	1.2	16	3	5	3	8.1	8.8	24.5	18.6	49	23.5	58.7		
	**12	7.1	1.8	7.1	1.8	20	3	6	3.5	9.68	9.8	29.4	19.6	58.8	24.1	62.3		
	**16	9.5	2.5	9.5	2.5	25	3	8	5.7	15.8	15.7	49	29.4	98	43.6	116		

(?)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. (?)Min. load is the initial load, and max. load is the one when the tip is fully compressed. kgf=Nx0.101972

No Thread Locking Compound

Part Number Type	M (Coarse)	d	S	L	ℓ	B	Ultra Light Load Load (N) min.	Ultra Light Load Load (N) max.	Light Load Load (N) min.	Light Load Load (N) max.	Heavy Load Load (N) min.	Heavy Load Load (N) max.	Extra Heavy Load Load (N) min.	Extra Heavy Load Load (N) max.	Unit Price
(Metal Ball) BPY-N BPJ-N BSJ-N BPW-N	5	3	0.8	12	2	2.5	1	3.12	2.9	9.8	4.9	19.6	11.2	24.1	
	6	3		13	2.5	3	1.6	4.85	4.9	14.7	9.8	29.4	17.7	33.4	
	8	4	1	15	2.5	4	2.4	6.36	6.9	19.6	12.7	39.2	21.4	45.3	
	10	5	1.2	16	3	5	3	8.1	8.8	24.5	18.6	49	23.5	58.7	
	12	7	1.8	20	3	6	3.5	9.68	9.8	29.4	19.6	58.8	24.1	62.3	
	16	9.5	2.5	25	3	8	5.7	15.8	15.7	49	29.4	98	43.6	116	

(?)Min. load is the initial load, and max. load is the one when the tip is fully compressed. kgf=Nx0.101972

Ordering Example: Part Number BPQ8, PACK-BPU8, BPW-N12

Ball Plungers

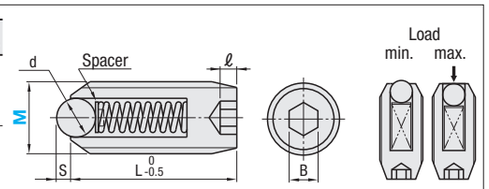
Stainless Steel / Roller / Load Adjustable

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

Stainless Steel

RoHS10

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



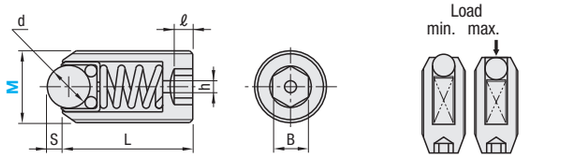
Part Number Type	M (Coarse)	Metal Ball d	Metal Ball S	Plastic Ball d	Plastic Ball S	L	ℓ	B	Ultra Light Load (BMS, NBSS) Load (N) min.	Ultra Light Load (BMS, NBSS) Load (N) max.	Light Load (BSM) Load (N) min.	Light Load (BSM) Load (N) max.	Light Load (NBSM) Load (N) min.	Light Load (NBSM) Load (N) max.	Heavy Load (BSZF, NBSZ) Load (N) min.	Heavy Load (BSZF, NBSZ) Load (N) max.	Extra Heavy Load (BSX, NBSX) Load (N) min.	Extra Heavy Load (BSX, NBSX) Load (N) max.	Unit Price Metal Ball	Unit Price Plastic Ball
(Metal Ball) BMS (* only) BSM BSZF BSX (* only) (Plastic Ball) NBSS (*only) NBSM (*only) NBSZ (*only) NBSX (*only)	2	1	0.2	-	-	5	1	0.9	-	-	0.7	1.4	-	-	1.2	2	-	-		-
	* 3	1.5	0.5	-	-	7	1	1.5	0.3	0.64	1	2	-	-	1.5	2.9	2.2	5		
	** 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		
	** 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		
	** 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		
	** 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		
	**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		
	**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		
	**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

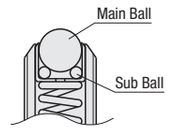
Roller

RoHS10

Type		Body M Material	Ball M Material	Ball H Hardness	Sub Ball M Material	Sub Ball H Hardness	Spring M Material	Operating Temperature
Metal Ball	BPRM	SUSXM7	SUS440C	55HRC~	SUS440C	55HRC~	SUS631J1	-30~100°C
Plastic Ball	BPRJ		Polyacetal	-				-30~80°C



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) min.	Load (N) max.	Unit Price
BPRM BPRJ	5	2.4	0.7	12	2	2.5	1.2	4.4	19.6	
	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	

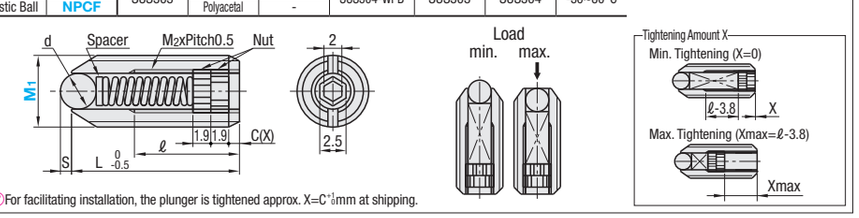
(?)Has no Slit for a wrench on the tip. It can be installed only by using a hex socket. (?)Thread locking treatment not applied.

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

Load Adjustable

RoHS10

Type		Body M Material	Ball M Material	Ball H Hardness	Spring M Material	Nut M Material	Spacer M Material	Operating Temperature
Metal Ball	BPCF	SUS303	SUS440C	55HRC~	SUS304-WPB	SUS303	SUS304	-30~80°C
Plastic Ball	NPCF		Polyacetal	-				

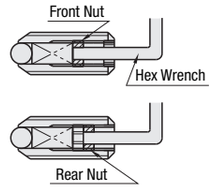


(?)For facilitating installation, the plunger is tightened approx. X=C$^{+1}_{0}$mm at shipping.

Part Number Type	M1 (Coarse)	Metal Ball d	Metal Ball S	Plastic Ball d	Plastic Ball S	L	ℓ	M2 (Fine)	C	X	Min. Tightening (X=0) Load (N) min.	Min. Tightening (X=0) Load (N) max.	Max. Tightening (X=Xmax) Load (N) min.	Max. Tightening (X=Xmax) Load (N) max.	Unit Price BPCF	Unit Price 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 .