

Ball Plungers / Wrenches for Ball Plungers

L Selectable Long / L Selectable Stainless Steel Long

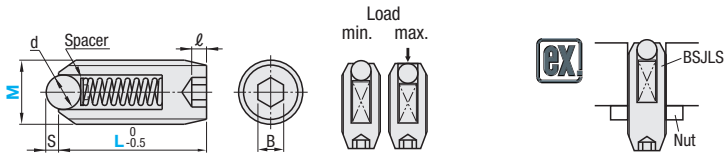
Ball Plungers / Ball Buttons

Hex Screw / Flanged

L Selectable Long



Type			Body			Ball		Spring	Spacer	Operating
			M Material	H Hardness	S Surface Treatment	M Material	H Hardness	M Material	M Material	Temperature
Metal Ball	Ultra Light Load	BPSLS	EN 1.1191 Equiv.	29~35HRC	Black Oxide	EN 1.3505 Equiv.	55HRC~	JIS-SWP-B	EN 1.4301 Equiv.	-30~80°C
	Light Load	BPJLS								
	Heavy Load	BSJLS								
	Extra Heavy Load	BPWLS								
Plastic Ball	Light Load	NPJRS			Black Oxide	Polyacetal	-			



Part Number		M Course	L Selection	Metal Ball Plastic Ball					Ultra Light Load (BPJLS)		Light Load (BPJLS, NPJRS)		Heavy Load (BSJLS)		Extra Heavy Load (BPWLS)		Unit Price	Metal Ball	Plastic Ball
Type				d	S	d	S	ℓ	B	Load (N)		Load (N)		Load (N)		Load (N)			
									min.	max.	min.	max.	min.	max.	min.	max.			
(Metal Ball)		* 3	20 30	1.5	0.5	-	-	1	1.5	0.3	0.64	1	2	1.5	2.9	2.2	5		-
	BPJLS	* 4	20 30	2.5		2.4	0.7	1.5	2	0.6	1.6	2	4.9	3.9	9.8	2.5	12.6		
	BPJLS	* 5	30 40	3	0.8	3	0.8	2	2.5	1	3.12	2.9	9.8	4.9	19.6	11.7	25.1		
	BSJLS	* 6	30 40	3	3	3	0.8	2.5	1.6	3	4.85	4.9	14.7	9.8	29.4	18.7	35.3		
	BPWJLS	* 8		4	1	4		2.5	4	2.4	6.36	6.9	19.6	12.7	39.2	24.5	46.8		
	NPJRS	* 10		5	1.2	5	1.2	3	5	3	8.1	8.8	24.5	18.6	49	26.7	58.7		
(Plastic Ball)		* 12		7.1	1.8	7	1.8	3	6	3.5	9.68	9.8	29.4	19.6	58.8	26.1	62.3		
	NPJRS (* only)	* 16		9.5	2.5	9.5	2.5	3	8	5.7	15.8	15.7	49	29.4	98	55.4	116		

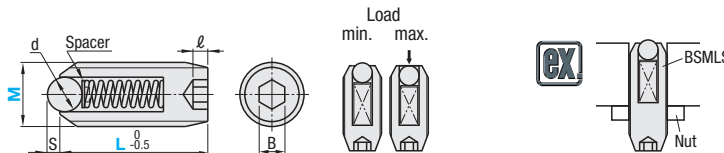
M3 and M4 have no slits for a wrench on the tip. It can be installed only by using a hex socket. Min. load is the initial load, and max. load is the one when the tip is fully compressed. kgf=Nx0.101972

Ordering Example: Part Number - L
BPJLS6 - 40

L Selectable Stainless Steel Long



Type	Body			Ball		Spring	Spacer	Operating
	M Material	H Hardness	S Surface Treatment	M Material	H Hardness	M Material	M Material	Temperature
Metal Ball	Ultra Light Load	BSSLS	EN 1.4301 Equiv.	EN 1.4125 Equiv.	55HRC	EN 1.4568 Equiv.	EN 1.4301 Equiv.	-30~260°C
	Light Load	BSMLS						
	Heavy Load	BSZLS						
Plastic Ball	Extra Heavy Load	BSXLS						



Part Number	Type	M (Coarse)	L Selection	d	S	ℓ	B	Ultra Light Load (BSSLS)		Light Load (BSMLS)		Heavy Load (BSZLS)		Extra Heavy Load (BSXLS)		Unit Price
								min.	max.	min.	max.	min.	max.	min.	max.	
(Metal Ball)	BSMLS	4	20 30	1.5	0.5	1	1.5	0.3	0.65	1	2	1.5	2.9	2.2	5	
			40 50	2.5	0.7	1.5	2	0.6	1.62	1.9	4.9	3.9	9.8	2.5	12.5	
			60 80	3	0.8	2	2.5	1.1	3.21	3.3	9.8	4.9	19.6	11.2	24.1	
			80 100	3	0.8	2.5	3	1.7	4.96	5.1	15.3	9.8	29.4	17.7	33.4	
			100 120	4	1	2.5	4	2.5	6.56	5.5	19.1	12.7	39.2	21.4	45.3	
(Plastic Ball)	NPJRS	12	50 60	5	1.2	3	5	3.2	8	8.9	24.1	18.6	49	23.5	60	
			80 100	7.1	1.8	3	6	3.5	9.8	10.5	29.3	19.6	58.8	24.1	63.7	
			100 120	9.5	2.5	3	8	6.1	15.6	14.9	48.9	29.4	98	43.6	116.3	

M3 and M4 have no slits 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

Ordering Example: Part Number - L
BSZLS8 - 40

Wrenches for Ball Plungers

BPJG



M Material: EN 1.1191 Equiv.
H Hardness: 34~43HRC
S Surface Treatment: Black Oxide (Fe3O4)

RoHS10

Part Number	Applicable M Size	Applicable Plunger	Unit Price 1 ~ 3 pc(s).	Volume Discount Rate 4 ~ 19 pcs.
BPJG1	5, 6	P1763 Standard (only Metal Ball)		
BPJG2	8	P1764 Stainless Steel		
BPJG3	10	P1766 Long / Stainless Steel Long		
BPJG4	12	P1767 L Selectable Long / Stainless Steel Long		
BPJG5	16			

For orders larger than indicated quantity, please request a quotation.

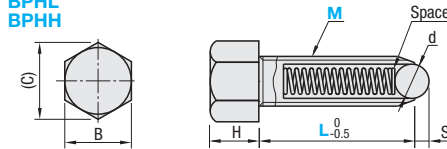
Ordering Example: Part Number
BPJG2

Hex Screw

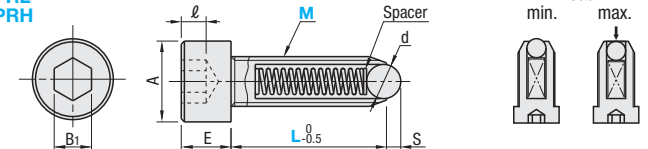


Type			Body		Ball		Spring	Spacer	Operating	
			M Material	H Hardness	S Surface Treatment	M Material	H Hardness	M Material	M Material	Temperature
Light Load	Hex Head Cap Screw	BPHL	EN 1.1191 Equiv.	29~35HRC	Black Oxide	EN 1.3505 Equiv.	55HRC~	JIS-SWP-B	EN 1.4301 Equiv.	-30~80°C
Heavy Load		BPHH			Electroless Nickel Plating					
Light Load	Hex Socket Head Cap Screw	BPRL			Black Oxide					
Heavy Load		BPRH			Electroless Nickel Plating					

Hex Head Cap Screw



Hex Socket Head Cap Screw



The incomplete threaded portion (Pitchx2) is included in L dim.

Part Number	Type	M	L Selection	d	S	A	B	B1	(C)	E	H	ℓ	Load (N)				Unit Price		
													BPHL min.	BPHL max.	BPHH min.	BPHH max.	BPHL	BPHH	BPRH
(Hex Head Cap Screw)	BPHL	4	*10	2.5	0.8	7	7	3	8.1	4	2.8	2	1.9	4.9	3.9	9.8			
			*15	3	10	8	8	4	9.2	5	3.5	2.5	3.3	9.8	4.9	19.6			
			*20	4	10	10	10	5	11.5	6	4	3	5.1	15.3	9.8	29.4			
			*30	5	10	10	10	5	11.5	6	4	3	5.1	15.3	9.8	29.4			
(Hex Socket Head Cap Screw)	BPRH	4	*10	4	1	13	13	6	15	8	5.5	4	5.5	19.1	12.7	39.2			
			*15	5	1.2	16	17	8	19.6	10	7	5	8.9	24.1	18.6	49			
			*20	6	1.8	18	19	10	21.9	12	8	6	10.9	29.3	19.6	58.8			
			*30	7	2.5	24	24	14	27.7	16	10	8	14.9	48.9	29.4	98			

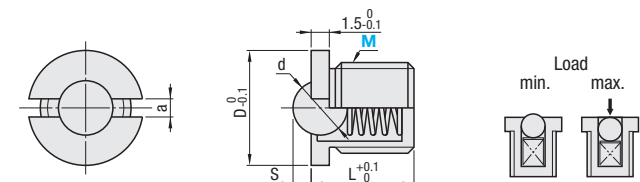
BPHL and BPHH are available for L sizes marked with * only.

Ordering Example: Part Number - L
BPHL5 - 30

Flanged



Type	Body			Ball		Spring	Operating
	M Material	H Hardness	S Surface Treatment	M Material	H Hardness	M Material	Temperature
FBPJ	EN 1.1191 Equiv.	29~35HRC	Black Oxide	EN 1.4125 Equiv.	55HRC~	EN 1.4568 Equiv.	-30~80°C
FBPJS	EN 1.4305 Equiv.	-	-				-30~260°C



Part Number	Type	M (Coarse)	D	L	S	d	a	FBPJ Load (N)		FBPJS Load (N)		Applicable Wrench	Unit Price	
								min.	max.	min.	max.		FBPJ	FBPJS
FBPJ FBPJS		5	7	5	0.8	3	0.8	0.6	5.6	1.3	6.4	BPJG1		
			8	6	1	4	1	2.8	6.3	2.7	8	BPJG2		
			10	7	1.6	5	1	2.9	9.8	1.3	10.2	BPJG3		
			12	9	1.9	6.35	1.5	6.4	11.7	6.1	17.2	BPJG4		
			14	11.5	2.4	7.94		9	15	2.1	18.8	BPJG5		
			16	18	3.2	9.53	2	9.9	21.5	13	25.5	BPJG5		

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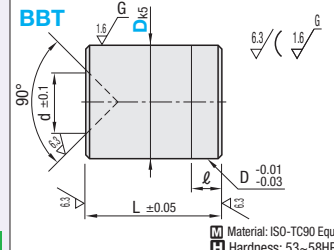
Ordering Example: Part Number
FBPJ5

For Tapped Type which enables users to change the parts easily, refer to P1769.

Ball Buttons



RoHS10



M Material: ISO-TC90 Equiv.
H Hardness: 53~58HRC

Part Number	Type	D	Dk5	L	d	ℓ	Unit Price 1 ~ 19 pc(s).	Volume Discount Rate		
								20~49	50~199	200~500
BBT		6	6	+0.006 +0.001	8	2				
		8	8	+0.007 +0.001	10	3				
		10	10	+0.007 +0.001	12	4				
		12	12	+0.009 +0.001	14	5				
		16	16	+0.009 +0.001	18	8				

When using it with a ball plunger, select the same No.(M=D). (BBT6 is also applicable to M5)

Ordering Example: Part Number
BBT6