

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 Temperature			
	Material	Hardness	Material	Hardness						
Metal Ball	Ultra Light Load	BPSLS	S45C	29~35HRC	Black Oxide	SUJ2	55HRC~	SWP-B	SUS304	-30~80°C
	Light Load	BPJLS								
	Heavy Load	BSJLS								
	Extra Heavy Load	BPWLS								
Plastic Ball	Light Load	NPJRS			Black Oxide	Polyacetal	-			

Part Number: **BPJLS6** - **L** 40

Part Number	Type	M (Coarse)	L Selection	Metal Ball		Plastic Ball		Ultra Light Load (BPSLS)		Light Load (BPJLS, NPJRS)		Heavy Load (BSJLS)		Extra Heavy Load (BPWLS)		Unit Price	
				d	S	d	S	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	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	0.8	2.5	3	1.6	4.85	4.9	14.7	9.8	29.4	18.7	35.3		
BPWLS	8	40	50	4	1	4	1	2.5	4	2.4	6.36	6.9	19.6	12.7	39.2	24.5	46.8
(Plastic Ball)	*10	40	50	5	1.2	5	1.2	3	5	3	8.1	8.8	24.5	18.6	49	26.7	58.7
NPJRS (* only)	*12	50	60	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
	*16	50	60	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 Temperature	
	Material	Hardness	Material	Hardness				
Metal Ball	Ultra Light Load	BSSLS	SUS304 Equivalent	SUS440C	55HRC	SUS631J1	SUS304	-30~260°C
	Light Load	BSMLS						
	Heavy Load	BSZLS						
	Extra Heavy Load	BSXLS						

Part Number: **BSZLS8** - **L** 40

Part Number	Type	M (Coarse)	L Selection	Metal Ball		Plastic Ball		Ultra Light Load (BSSLS)		Light Load (BSMLS)		Heavy Load (BSZLS)		Extra Heavy Load (BSXLS)		Unit Price
				d	S	d	S	min.	max.	min.	max.	min.	max.	min.	max.	
(Metal Ball)	3	20	30	1.5	0.5	1	1.5	0.3	0.65	1	2	1.5	2.9	2.2	5	
BSSLS	4	20	30	2.5	0.7	1.5	2	0.6	1.62	1.9	4.9	3.9	9.8	2.5	12.5	
BSMLS	5	30	40	3	0.8	2	2.5	1.1	3.21	3.3	9.8	4.9	19.6	11.2	24.1	
BSZLS	6	30	40	3	0.8	2.5	3	1.7	4.96	5.1	15.3	9.8	29.4	17.7	33.4	
BSXLS	8	40	50	4	1	2.5	4	2.5	6.56	5.5	19.1	12.7	39.2	21.4	45.3	
	10	40	50	5	1.2	3	5	3.2	8	8.9	24.1	18.6	49	23.5	60	
	12	50	60	7.1	1.8	3	6	3.5	9.8	10.5	29.3	19.6	58.8	24.1	63.7	
	16	50	60	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

Part Number	Applicable M Size	Applicable Plunger	Unit Price	Volume Discount Rate
BPJG1	5, 6	P.1763 Standard (only Metal Ball)	1 - 3 pc(s).	4 - 19 pcs.
BPJG2	8	P.1764 Stainless Steel		
BPJG3	10	P.1766 Long / Stainless Steel Long		
BPJG4	12	P.1767 L Selectable Long / Stainless Steel Long		
BPJG5	16			

Material: S45C
Hardness: 34~43HRC
Surface Treatment: Black Oxide (Fe3O4)

Ordering Example: Part Number
BPJG2

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

Hex Screw

Type	Body		Ball		Spring	Spacer	Operating Temperature			
	Material	Hardness	Material	Hardness						
Light Load	Hex Head Cap Screw	BPHL	S45C	29~35HRC	Black Oxide	SUJ2	55HRC~	SWP-B	SUS304	-30~80°C
	Hex Socket Head Cap Screw	BPHH								
Heavy Load	Hex Head Cap Screw	BPHL	SCM435	29~35HRC	Electroless Nickel Plating	SUJ2	55HRC~	SWP-B	SUS304	-30~80°C
	Hex Socket Head Cap Screw	BPHH								

Part Number: **BPHL5** - **L** 30

Part Number	Type	M	L Selection	d	S	A	B	B1	(C)	E	H	l	Load (N)			Unit Price				
													min.	max.	min.	max.	BPHL	BPHH	BPHH, BPRH	
(Hex Head Cap Screw)	4	*10	*15	*20	30	2.5	7	7	3	8.1	4	2.8	2	1.9	4.9	3.9	9.8			
BPHL	5	*15	*20	30	40	3	0.8	8.5	8	4	9.2	5	3.5	3.3	9.8	4.9	19.6			
BPHH	6	*15	*20	30	40	3	10	10	5	11.5	6	4	3	5.1	15.3	9.8	29.4			
	8	*15	*20	30	40	4	1	13	13	6	15	8	5.5	4	5.5	19.1	12.7	39.2		
(Hex Socket Head Cap Screw)	10	15	*20	30	40	50	5	1.2	16	17	8	19.6	10	7	5	8.9	24.1	18.6	49	
BPHL	12		*25	30	40	7.1	1.8	18	19	10	21.9	12	8	6	10.9	29.3	19.6	58.8		
BPHH	16		40	9.5	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 Temperature
	Material	Hardness	Material	Hardness		
FBPJ	S45C	29~35HRC	SUS440C	55HRC~	SUS631J1	-30~80°C
FBPJS	SUS303	-				

Part Number: **FBPJ5**

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
5	7	5	0.8	3	0.8	0.6	5.6	1.3	6.4	BPJG1				
6	8	6	1	4	1	2.8	6.3	2.7	8	BPJG2				
8	10	7	1.6	5	1.5	2.9	9.6	1.3	10.2	BPJG3				
10	12	9	1.9	6.35	1.5	6.4	11.7	6.1	17.2	BPJG4				
12	14	11.5	2.4	7.94		9	15	2.1	18.8	BPJG5				
16	18	16	3.2	9.53	2	9.9	21.5	13	25.5	BPJG5				

kgf=Nx0.101972

Ordering Example: Part Number
FBPJ5

Ball Buttons

BBT

Part Number: **BBT6**

Part Number	Type	D	Dk5	L	d	l	Unit Price	Volume Discount Rate		
6	6	+0.006	+0.001	8	2	2	1 - 19 pc(s).	20~49	50~199	200~500
8	8	+0.007	+0.001	10	3	3				
10	10	+0.007	+0.001	12	4	4				
12	12	+0.009	+0.001	14	5	3				
16	16	+0.011	+0.001	18	8	3				

Material: SK4
Hardness: 53~58HRC

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