

Ball Plungers

Long / Stainless Steel Long

Ball Plungers – Long Type

Type	Body			Ball		Spring	Spacer	Operating Temperature
	Material	Hardness	Surface Treatment	Material	Hardness	Material	Material	
Metal Ball	Ultra Light Load	BPSL	1045 Carbon Steel or Equivalent	29~35 HRC	Black Oxide	52100 Bearing Steel	304 Stainless Steel	-30~80°C
	Light Load	BPJL	304 Stainless Steel or Equivalent	—	—			
	Heavy Load	BSJL						
Plastic Ball	Extra Heavy Load	BPWL	1045 Carbon Steel or Equivalent	29~35 HRC	Nickel Plating	JIS SWP-B	Brass	-30~80°C
	Ultra Light Load	NPSL			Black Oxide			
	Light Load	NPJR						
	Heavy Load	NSJL						
Extra Heavy Load	NSWL	Nickel Plating						

Application Example

RoHS10

Part Number	Type	M (Coarse)	Metal Ball		Plastic Ball		L	ℓ	B	Ultra Light Load (BPSL / NPSL)		Light Load (BPJL / NPJR)		Heavy Load (BSJL / NSJL)		Extra Heavy Load (BPWL / NSWL)		
			d	S	d	S				Load (N)		Load (N)		Load (N)		Load (N)		
			min.	max.	min.	max.				min.	max.	min.	max.	min.	max.			
Metal Ball	BPSL	3	1.5	0.5	—	—	13	1	1.5	0.3	0.64	1	2	1.5	2.9	2.2	5	
	BPJL	*4	2.5	—	2.4	0.7	15	1.5	2	0.6	1.6	2	4.9	3.9	9.8	2.5	12.6	
	BSJL	*5	3	0.8	3	0.8	18	2	2.5	1	3.12	2.9	9.8	4.9	19.6	11.7	25.1	
	BPWL	*6	3	—	3	0.8	20	2.5	3	1.6	4.85	4.9	14.7	9.8	29.4	18.7	35.3	
	Plastic Ball	NPSL (*only)	*8	4	1	4	1	23	2.5	4	2.4	6.36	6.9	19.6	12.7	39.2	24.5	46.8
		NPJR (*only)	*10	5	1.2	5	1.2	27	3	5	3	8.1	8.8	24.5	18.6	49	26.7	58.7
NSJL (*only)		*12	7.1	1.8	7	1.8	32	3	6	3.5	9.68	9.8	29.4	19.6	58.8	26.1	62.3	
NSWL (*only)		*16	9.5	2.5	9.5	2.5	40	3	8	5.7	15.8	15.7	49	29.4	98	55.4	116	

Ⓜ M3 and M4 have no slits for a screwdriver 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.

Part Number Example
 Part Number: **BPSL6**

Ball Plungers – Stainless Steel Long

Type	Body			Ball		Spring	Spacer	Operating Temperature
	Material	Material	Hardness	Material	Hardness	Material	Material	
Metal Ball	Ultra Light Load	BMSL	304 Stainless Steel Equivalent	440C Stainless Steel	55 HRC min.	631J1 Stainless Steel	304 Stainless Steel	-30~260°C
	Light Load	BSML						
	Heavy Load	BSZL						
	Extra Heavy Load	BSXL						
Plastic Ball	Ultra Light Load	NMSL	Polyacetal	—	—	—	—	-30~80°C
	Light Load	NSML						
	Heavy Load	NSZL						
	Extra Heavy Load	NSXL						

Application Example

RoHS10

Part Number	Type	M (Coarse)	Metal Ball		Plastic Ball		L	ℓ	B	Ultra Light Load (BMSL / NMSL)		Light Load (BSML / NSML)		Heavy Load (BSZL / NSZL)		Extra Heavy Load (BSXL / NSXL)		
			d	S	d	S				Load (N)		Load (N)		Load (N)		Load (N)		
			min.	max.	min.	max.				min.	max.	min.	max.	min.	max.			
Metal Ball	BMSL	3	1.5	0.5	—	—	13	1	1.5	0.3	0.65	1	2	1.5	2.9	2.2	5	
	BSML	*4	2.5	—	2.4	0.7	15	1.5	2	0.6	1.62	1.9	4.9	3.9	9.8	2.5	12.5	
	BSZL	*5	3	0.8	3	0.8	18	2	2.5	1.1	3.21	3.3	9.8	4.9	19.6	11.2	24.1	
	BSXL	*6	3	—	3	0.8	20	2.5	3	1.7	4.96	5.1	15.3	9.8	29.4	17.7	33.4	
	Resin Ball	NMSL (*only)	*8	4	1	4	1	23	2.5	4	2.5	6.56	5.5	19.1	12.7	39.2	21.4	45.3
		NSML (*only)	*10	5	1.2	5	1.2	27	3	5	3.2	8	8.9	24.1	18.6	49	23.5	60
NSZL (*only)		*12	7.1	1.8	7	1.8	32	3	6	3.5	9.8	10.5	29.3	19.6	58.8	24.1	63.7	
NSXL (*only)		*16	9.5	2.5	9.5	2.5	40	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 screwdriver 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.

Part Number Example
 Part Number: **NSML8**

Ball Plungers / Wrenches for Ball Plungers

Selectable L-Dimension / Configurable L-Dimension

Ball Plungers – L Dimension Selectable Long

Type	Body			Ball		Spring	Spacer	Operating Temperature
	Material	Hardness	Surface Treatment	Material	Hardness	Material	Material	
Metal Ball	Ultra Light Load	BPSLS	1045 Carbon Steel or Equivalent	29~35 HRC	52100 Bearing Steel	55 HRC min.	JIS SWP-B	-30~80°C
	Light Load	BPJLS						
	Heavy Load	BSJLS						
	Extra Heavy Load	BPWLS						
Plastic Ball	Light Load	NPJRS	Polyacetal	—	—	—	—	

Application Example

kgf=Nx0.101972

Part Number	Type	M (Coarse)	L Selection		d	S	ℓ	B	Ultra Light Load (BPSLS)		Light Load (BPJLS / NPJRS)		Heavy Load (BSJLS)		Extra Heavy Load (BPWLS)				
			min.	max.					Load (N)		Load (N)		Load (N)		Load (N)				
			min.	max.					min.	max.	min.	max.	min.	max.					
Metal Ball	BPSLS	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	
	BSJLS	*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	
	BPWLS	*6	30	40	3	—	3	0.8	2.5	3	1.6	4.85	4.9	14.7	9.8	29.4	18.7	35.3	
	Plastic Ball	NPJRS (*only)	*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
			*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
		*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 screwdriver 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.

Part Number Example
 Part Number: **BPJLS6 - 40**

Ball Plungers – L Dimension Selectable Stainless Steel Long

Type	Body			Ball		Spring	Spacer	Operating Temperature
	Material	Material	Hardness	Material	Hardness	Material	Material	
Metal Ball	Ultra Light Load	BSSLS	304 Stainless Steel Equivalent	440C Stainless Steel	55 HRC	631J1 Stainless Steel	304 Stainless Steel	-30~260°C
	Light Load	BSMLS						
	Heavy Load	BSZLS						
	Extra Heavy Load	BSXLS						

Application Example

kgf=Nx0.101972

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)		
			min.	max.					Load (N)		Load (N)		Load (N)		Load (N)		
			min.	max.					min.	max.	min.	max.	min.	max.			
Metal Ball	BSSLS	3	20	30	1.5	0.5	—	1	1.5	0.3	0.65	1	2	1.5	2.9	2.2	5
	BSMLS	4	20	30	2.5	—	2.5	1.5	2	0.6	1.62	1.9	4.9	3.9	9.8	2.5	12.5
	BSZLS	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	
	BSXLS	6	30	40	3	—	3	2.5	3	1.7	4.96	5.1	15.3	9.8	29.4	17.7	33.4
	Resin Ball	NMSL (*only)	8	40	50	4	1	2.5	4	2.5	6.56	5.5	19.1	12.7	39.2	21.4	45.3
		NSML (*only)	10	40	50	5	1.2	3	5	3.2	8	8.9	24.1	18.6	49	23.5	60
NSZLS (*only)		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	
NSXLS (*only)		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 screwdriver 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.

Part Number Example
 Part Number: **BSZLS8 - 40**

Wrenches for Ball Plungers

Part Number	Applicable M Size	Applicable Plungers
BPJG1	5, 6	P:1747 Standard Type (Metal ball only)
BPJG2	8	P:1760 Stainless Steel Type
BPJG3	10	P:1750 Long Type / Stainless Steel Long Type
BPJG4	12	P:1751 L Dimension Selectable Long Type / Stainless Steel Long Type
BPJG5	16	P:1752 Flanged Type

Part Number Example
 Part Number: **BPJG2**

RoHS10