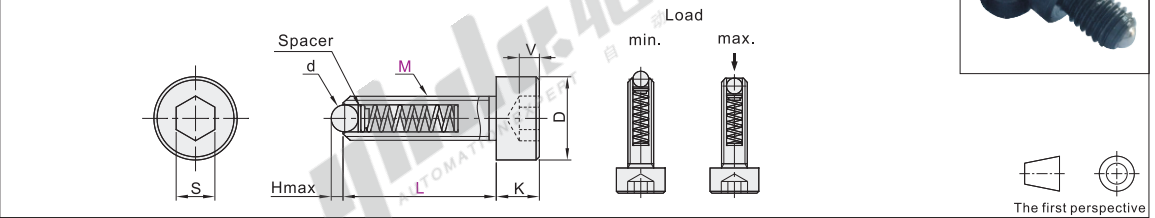


Ball Plungers

- ◀ Hex Socket Head Cap Screw Type
- ◀ Flange-Type
- ◀ Press-Fit Type

Hex Socket Head Cap Screw Type

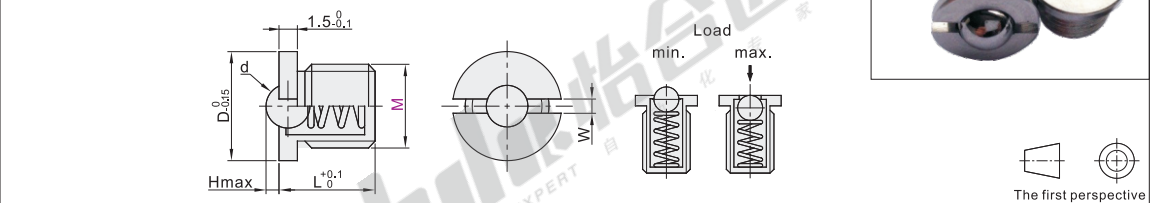
Code	Type	Load	Body			Ball		Spring	Spacer	Operating Temperature
			Material	Hardness	Surface Treatment	Material	Hardness	Material	Material	
ZAK01	Hex Socket Head Cap Screw Type	Light Load	SCM435	30~35HRC	Black Oxide	SUJ2	56HRC~	SWP-B	SUS304	30~80°C
ZAK02		Heavy Load			Electroless Nickel Plating					



Part Number		L				d	H	D	S	K	V	Load(N)					
Code	M											ZAK01		ZAK02			
												min.	max.	min.	max.		
ZAK01 ZAK02	4	10	15	20	30	2.5		7	3	4	2	1.8	5	3.8	9.9		
	5		15	20	30	40		0.8	8.5	4	5	2.5	3.2	9.9	4.8	19.7	
	6		15	20	30	40	3		10	5	6	3	5	15.4	9.7	29.5	
	8		15	20	30	40	4	1	13	6	8	4	5.4	19.2	12.6	39.3	
	10		15	20	30	40	50	5	1.2	16	8	10	5	8.8	24.2	18.5	49.1
	12			25	30	40	7.1	1.8	18	10	12	6	10.8	29.4	19.5	58.9	
	16				40	9.5	2.5	24	14	16	8	14.8	49	29.3	98.1		

Flange-Type

Code	Type	Load	Body			Ball		Spring
			Material	Hardness	Surface Treatment	Material	Hardness	Material
ZAK52	Flange-Type	Light Load	SUS303	—	—	SUS440C	56HRC~	SUS631J1



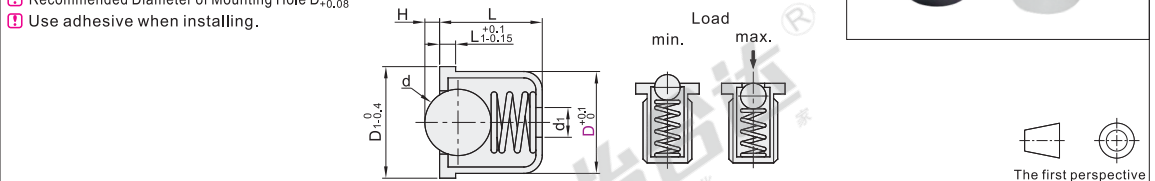
Part Number		H	d	L	D	W	Load(N)	
Code	M						min.	max.
ZAK52	5	0.8	3	5	7	0.8	1.2	6.5
	6	1	4	6	8	1	2.6	8.1
	8	1.6	5	7	10		1.2	10.3
	10	1.9	6.35	9	12	1.5	6	17.3
	12	2.4	7.94	11.5	14		2	18.9
	16	3.2	9.53	16	18	2	12.9	25.6

Press-Fit Type

kgf=N×0.101972

Code	Type		Load	Body	Ball		Spring
				Material	Material	Hardness	Material
ZAL01	Press-Fit Type	Metal Ball	Light Load	SUS303	SUS440C	56HRC ~	SUS631J
ZAL02			Heavy Load				
ZAL21		Plastic Ball	Light Load	Polyacetal	Polyacetal	—	
ZAL22			Light Load				

- ① Recommended Diameter of Mounting Hole $D_{1+0.13/0.08}$
- ② Use adhesive when installing.



Part Number		D ₁	L		L ₁	H	d	d ₁	Load(N)					
Code	D		Light Load	Heavy Load					Light Load				Heavy Load	
									ZAL01	ZAL21/ZAL22		ZAL02		
									min.	max.	min.	max.	min.	max.
ZAL01 ZAL02 ZAL21 ZAL22	3*	3.6	4	—	1	0.6	2	1	0.73	0.99	0.64	1.05	—	—
	4	4.6	5	6.5		0.8	3	1.5	0.55	5.7	1.2	6.5	3	8.8
	5	5.6	6	8		1	4	2	2.7	6.4	2.6	8.1	5	13.8
	6	6.6	7	9		1.6	5	2.5	2.85	9.7	1.05	10.3	5.2	16.8
	8	8.6	9	12		1.9	6.35	3	6.4	11.8	6.05	17.3	7.9	28.1
	10	10.6	11.5	14.5		2.4	8		8.9	15.1	2	18.9	13.4	30.6

- ① ZAL02 doesn't apply to those with * specifications.

Hex Socket Head Cap Screw Type

Part Number		L
Code	M	
ZAK01	6	15 20 30 40
ZAK02	8	15 20 30 40

ZAK01—M6—L30



Discount price	
Per	Price
1~29	30~
100%	Additional quotation



ZAL01/02/21/22



ZAK01/02/52



Please order as shown