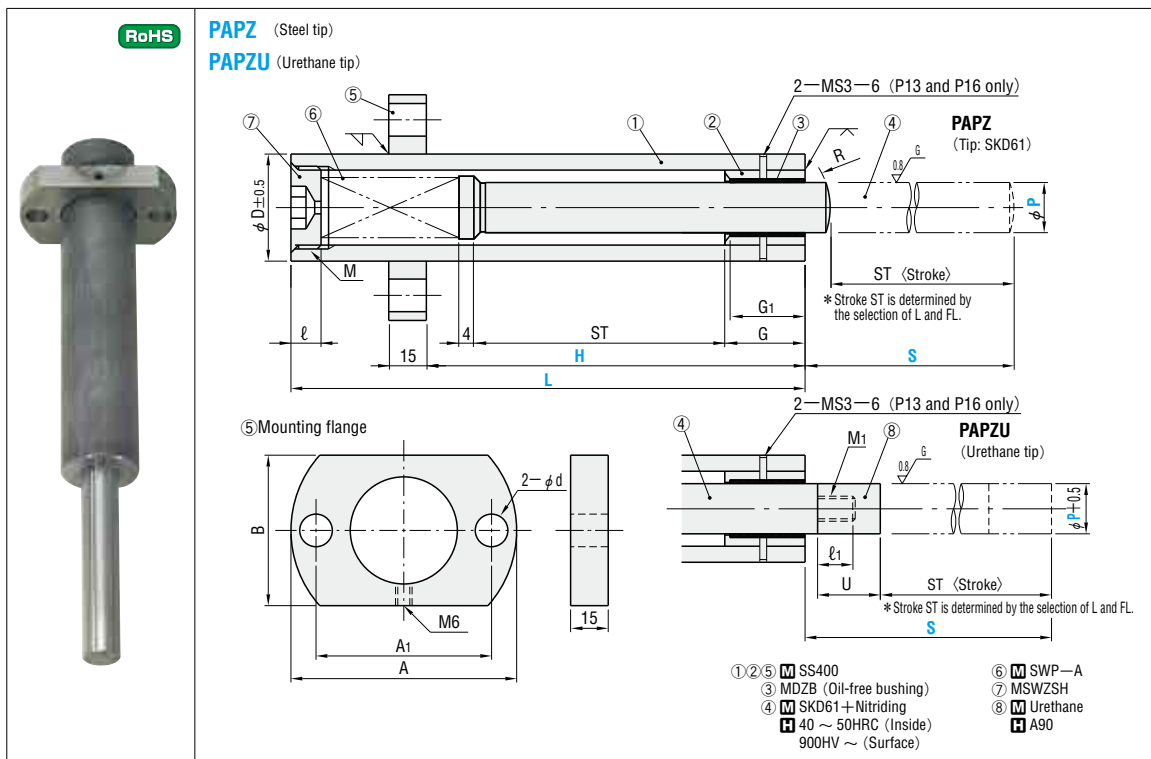


PRE-HOLDING PUSH PIN SETS

—STANDARD TYPE—



① Case			④ Pushing pin				⑤ Mounting flange				Catalog No.		S	L 10mm increments	H 1mm increments	Spring free length FL	Base unit price 1~9 pieces		
D	G	G1	l	M	R	U	M1	l1	A	A1	B	d					Type	P	PAPZ
27.2	22	20	10	22	20	15	M6	9	70	52	40	11	PAPZ (Steel tip)	13	100	0 ≤ H ≤ L - 20	90	Quotation	
															125		125		
															150		150		
															175		175		
34.0	27	25	10	26	25	20	M8	12	80	60	50	11		PAPZU (Urethane tip)	16	100	0 ≤ H ≤ L - 20	90	
																150		125	
																200		150	
																250		175	
42.7	32	30	12	33	30	25	M10	15	90	70	60	13			PAPZU (Urethane tip)	20	100	0 ≤ H ≤ L - 20	90
																	150		150
																	200		175
																	250		200
													300				250		
350	300																		
400	350																		
425	400																		
450	425																		
500	450																		
500	500																		

For PAPZU, select an appropriate size so that the urethane tip does not enter the bushing. S—ST > U

Order Catalog No. — S — L — H — FL
PAPZ 16 — 150 — 220 — 190 — 200

■ Features • Because durability has been improved by adopting an oil-free bushing and a polished pin made of SKD61 (nitrided).

Days to Ship **Quotation**

Price **Quotation**

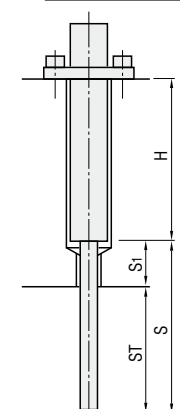


Alterations Catalog No. — S(SC) — L(LC) — H — FL — (SRC-TFC-TFS)
PAPZ 16 — SC148 — 220 — 190 — 200 — SRC

Alteration	Code	Spec.	1Code
④ Pushing pin length change	SC	31 ≤ SC < S 1mm increments	Quotation
① Case length change	LC	75 ≤ LC < L 1mm increments	
④ Spherical surface machining to pushing pin tip	SRC		

Alteration	Code	Spec.	1Code
Mounting flange change Mounting flange is changed to round flange (for old PAP20). Flange thickness 15mm Can be used for PAP220 and PAPZU20 only.	TFC		Quotation
Mounting flange change Mounting flange is changed to one-side bolted flange. Flange thickness 15mm	TFS		Quotation

P	A	A1	A2	B	B1	d	1Code
13	60	20	25	38	20	11	Quotation
16	70	25	30	50	24	11	
20	88	30	40	60	30	13	



■ Selecting FL, L, and S

Consider a case in which pushing pin diameter P=13mm, pushing pin stroke ST=100mm, and spring initial deflection f1=25mm, (Maximum deflection fmax.=100+25).

- Selecting free length FL
 $FL \geq (ST + f_1) / 0.7$
 $\geq (100 + 25) / 0.7$
 $\geq 179\text{mm}$
 Select FL200 from the table.
- Selecting case length L
 $L \geq ST + (G + 4 + FL - f_{max.} + l)$
 $\geq 100 + (22 + 4 + 200 - 125 + 10)$
 ≥ 211
 Select L=220mm.

- Selecting protruding length S of pushing pin
 Select S=150 from the table.
 $S_1 = S - ST = 150 - 100 = 50\text{mm}$

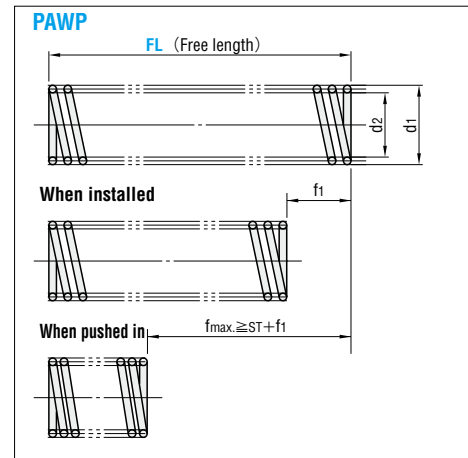
P — S — L — H — FL

∴ Select PAPZ13-150-220-200-200.

Initial deflection $f_1 = FL - (L - G - 4 - l)$
 Initial load $P_1 = f_1 \times K$ (Spring constant)
 Maximum deflection $f_{max.} = FL \times 0.7$ (70% of maximum allowable deflection)
 Spring free length $FL \geq f_{max.} / 0.7 \geq (ST + f_1) / 0.7$

In this case, the initial deflection, initial load, maximum load, and maximum stroke are the following.
 Initial deflection $f_1 = FL - (L - G - 4 - l)$ Initial load $P_1 = K \times f_1 = 0.27 \text{ [N/mm]} \times 16 \text{ [mm]} = 4.3 \text{N} \text{ (0.4kgf)}$
 $= 200 - (220 - 22 - 4 - 10) = 16\text{mm}$
 Max. load $P_e = K \times f_{max.} = 0.27 \times (100 + 16) = 31 \text{ [N]} \text{ (3.2kgf)}$
 Max. stroke $ST = L - (G + 4 + FL - FL \times 0.7 + l) = 220 - (22 + 4 + 200 - 140 + 10) = 124\text{mm}$

■ Coil spring for PAPZ and PAPZU



Spring constant K N/mm (kgf/mm)	Max.		Effective minimum length fe = FL - fmax.	Outer diameter d1	Inner diameter d2	Wire diameter	Catalog No.	Base unit price				
	Deflection	Load N [kgf]										
0.63 {0.064}	63	27	17	14.2	1.4	PAPZ13—	90	Quotation				
0.45 {0.046}	87.5	37.5					125					
0.37 {0.038}	105	45					150					
0.32 {0.033}	122.5	52.5					175					
0.27 {0.028}	140	60					200					
0.23 {0.023}	175	75					250					
0.80 {0.082}	63	27				20	17	1.6	PAPZ16—	90		
0.55 {0.056}	87.5	37.5								125		
0.47 {0.048}	105	45								150		
0.39 {0.040}	122.5	52.5								175		
0.34 {0.035}	140	60								200		
0.28 {0.029}	175	75								250		
0.24 {0.024}	210	90	PAPZ20—	22	2.0				300			
0.20 {0.02}	245	105							350			
0.95 {0.097}	63	27							26	2.0	PAPZ20—	90
0.57 {0.058}	105	45										150
0.48 {0.049}	123	53										175
0.42 {0.043}	140	60										200
0.33 {0.034}	175	75	250									
0.28 {0.029}	210	90	300									
0.24 {0.024}	245	105	PAPZ20—	26	2.0	350						
0.21 {0.021}	280	120				400						
0.20 {0.020}	298	128				425						
0.19 {0.019}	315	135				450						
0.17 {0.017}	350	150				500						

Order Catalog No. PAWP 13—175

Days to Ship **Quotation**

Price **Quotation**

• Load [kgf] = Load N × 0.101972