

General Description of Urethane Spring

FOR HIGH LOAD

Optimum for pad pressure of press tools

Urethane spring USA and USX for press tools use polyester based cast urethane elastomer which is heat resistant. It is excellent in repeated compression. It also has high impact resilience, impact resistance, weather resistance and load resistance. It is the optimum product for pad pressure source of press tools.



Features

- Since material is hard and elastic, it is excellent in impact resistance and shows a strong performance as a spring.
- Since it is excellent in oil resistance, weather resistance and aging resistance, the service life is long.
- Additional cutting and grinding can be made with ease.
- Shape is a thick wall round pipe and is easy to handle.

Physical Properties

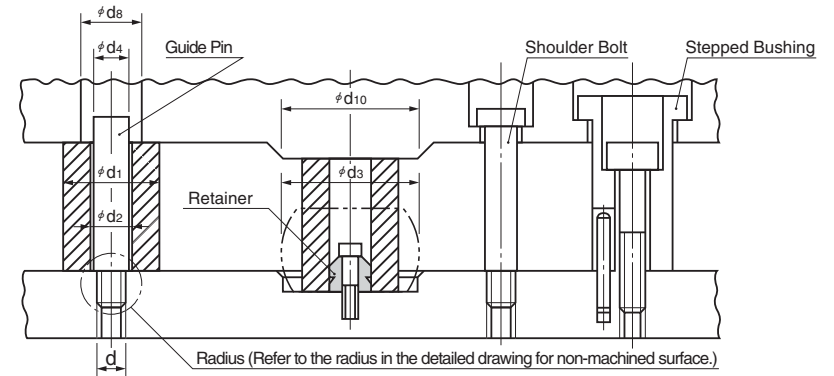
Item	Physical Property Values	
Material	Polyester Based	
Hardness	Shore A 90°	
	HRS 45°	
Color	Navy blue	
Tensile Strength	59MPa	
Modulus	100%	7.53MPa
	300%	15.2MPa
Elongation	510%	
Tensile Strength	109N/mm	
Impact Resilience	28%	

Application Range

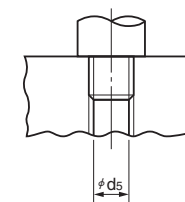
Item	Characteristic Value	
Deflection Rate Limit for Operation	25%	
SPM Limit for Operation	D < φ 90	60SPM
	D ≥ φ 90	40SPM
Ambient Temperature Limit for Operation	50°C	

Application Example

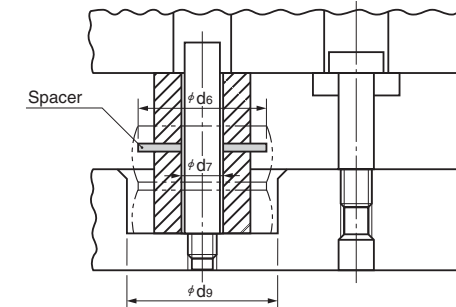
For operation with single stage spring



Detailed Drawing of Radius



For operation with double stage spring



Dimensional table (calculation table based on φd₁)

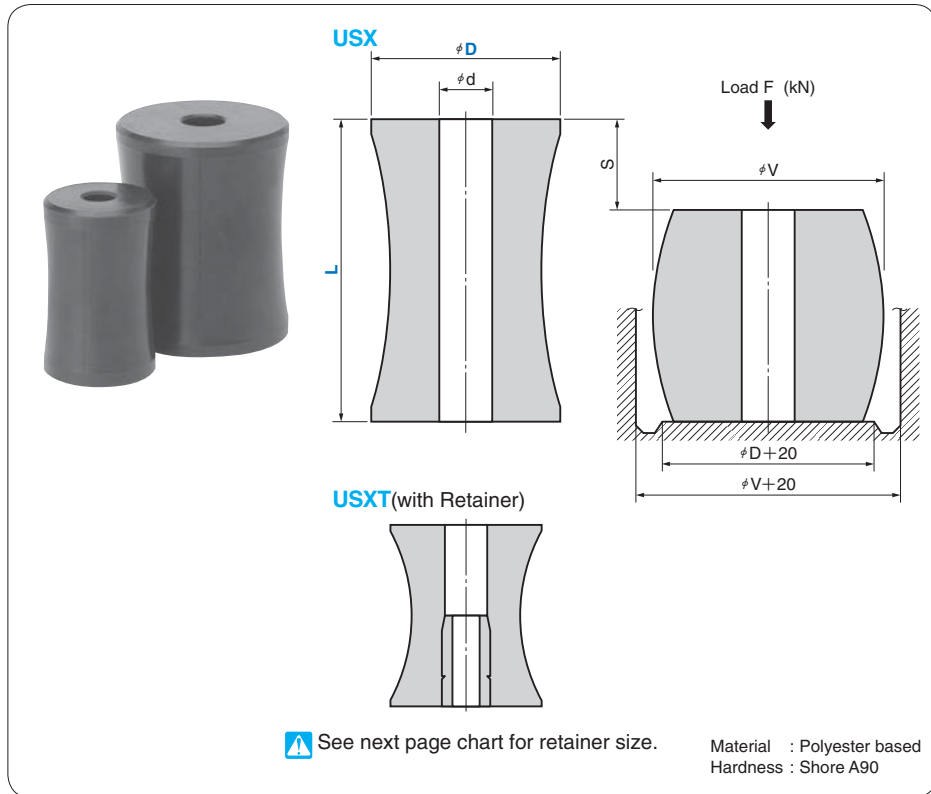
	Urethane Spring			Guide Pin		Spacer		Others		
	φd ₁	φd ₂	φd ₃	φd ₄	φd ₅	φd ₆	φd ₇	φd ₈	φd ₉	φd ₁₀
For φd ₁ = 40	40	14	49	13	M10	50	14	15	60	50
For φd ₁ = 80	80	22	95	20	M16	100	22	22	110	100

⚠ Use φ 18 guide pin for φ60, φ80, φ100 USX type (P.1701).

Urethane Spring Type X

FOR HIGH LOAD

CAD FILE



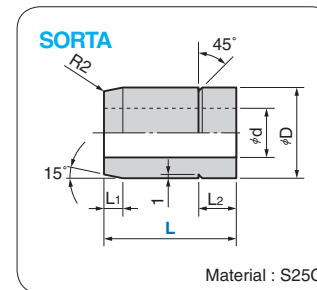
S=L×20%		S=L×25%		S=L×30%		d	Catalog No.	D	L (actual size)
S	F (kN)	S	F (kN)	S	F (kN)				
12.4	7.5	15.5	9.4	18.6	13	57	USX	50	60 (62)
16.4	6.5	20.5	8.8	24.6	13	58			80 (82)
12.4	10.0	15.5	13.5	18.6	20	70	USX	60	60 (62)
16.4	10.0	20.5	13.4	24.6	18				80 (82)
16.4	19.0	20.5	26.0	24.6	38	92	USXT	80	80 (82)
20.6	20.0	25.8	28.0	30.9	42				100 (103)
16.4	31.0	20.5	42.0	24.6	63	114	USXT	100	80 (82)
20.6	30.0	25.8	42.0	30.9	60				100 (103)
24.6	27.0	30.8	37.0	36.9	57	57			120 (123)

Order	Catalog No.	D	L
	USX	50	60
	USXT	80	80

*kgf=0.101972N

When it is used in stages, use the spacer in page 528.

Retainer



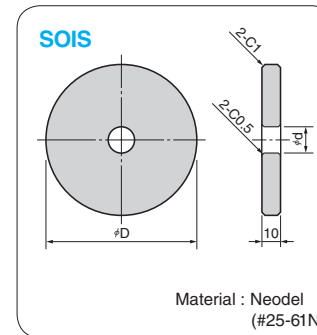
D	d	L1	L2	Applicable Urethane		Catalog No.	Nominal Size	L
				Outer Diameter	Length			
16	9	5	10	50	60 · 80	SORTA	14	30
22	13	5	10	60~	60~120		20	30



Order

Order	Catalog No.	Nominal Size	L
	SORTA	20	30

Spacer



- Use this spacer for multiple stages of urethane springs (USA, page 1693, USX).
- Use the guide pin of S25C or equivalent with smooth surface.

Catalog No.	Nominal Size	D	d	Application: Rubber Spring, Urethane Spring		
				Outer Diameter	Inner Diameter	Guide Pin Diameter
SOIS	50	65	13	30	40	50
	63	80		60	63	14
	80	100	21	70	80	20
100	125	90		100	110	20 (22)



Order

Order	Catalog No.	Nominal Size
	SOIS	63



Use diameter $\phi 18$ guide pin for diameter for $\phi 60$, $\phi 80$ and $\phi 100$ USX type.

Urethane Spring

LOAD - DEFLECTION DIAGRAMS

■ USX Load - Deflection Diagram

