

Urethane Spring [Overview]

Pressure Source Components

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.

Material Characteristics		Performance Values
Material		Polyester Based
Hardness		Shore A90° HRS45°
Color		Navy blue
Tensile Strength		59 MPa
Modulus	100%	7.53 MPa
	300%	15.2 MPa
Elongation		510%
Tensile Strength		109 N/mm
Impact Resistance		28%

■ Range of Application

	Deflection Rate Limit for Operation	SPM Limit for Operation	Ambient Temperature Limit for Operation
USA	25%	50SPM	50°C
USX	30%	40SPM	

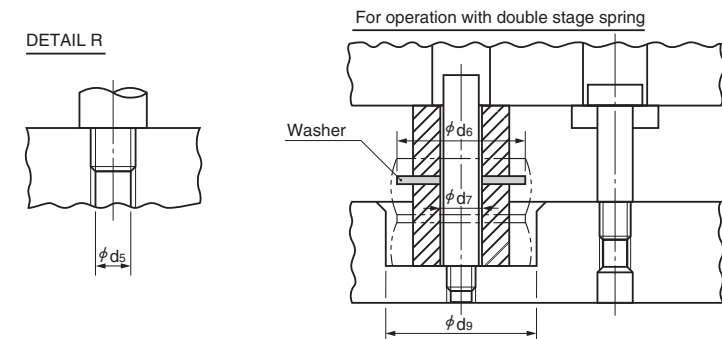
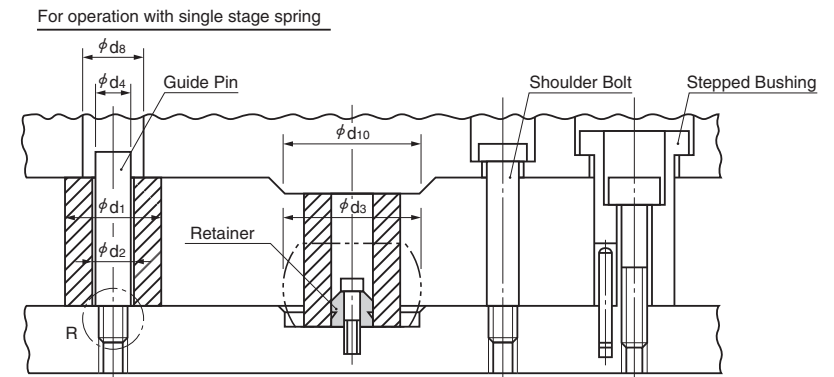
Specification limit SPM varies depending on the deflection ratio. Please contact our sales representatives for details.

■ Storage

- In order to protect against ultraviolet rays, store away from direct sunlight.
 - Deterioration is faster under conditions of high temperature or humidity.
- We recommend putting a desiccant in the container and storing in as cool a location as possible.

For use under high temperature and humidity conditions, we recommend URESTORO (P.1171), which has excellent hydrolysis performance.

■ Application Example [Type X&A]



● Dimension Table (mm) [Type A]

	Urethane Spring		Guide Pin	Washer		Others				
	φd1	φd2	φd3	φd4	φd5	φd6	φd7	φd8	φd9	φd10
USA40	40	14	48	12	M10	65	13	14	68	60
USA80	80	22	96	18	M16	100	21	22	116	100

For USX, use guide pin φ12 for urethane diameter φ50 or smaller and φ18 for urethane diameter φ60 or larger.

■ Conditions for Use

- Use at or below the stated deflection ratio.
- The urethane spring seating surface requires an external diameter of > 20 mm.
- The clearance around each spring must be sufficient to prevent any contact with the neighboring components.
- Exposure to ultraviolet and sunlight must be avoided.
- Guide pins should be S25C equivalent or better and finished within Ra1.6.

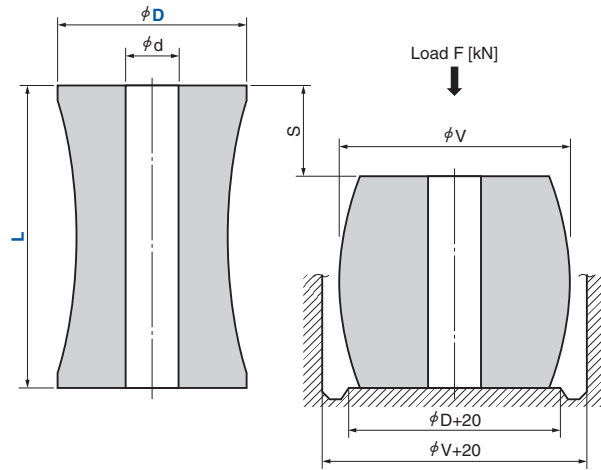
Urethane Spring

High Load X Type

Pressure Source Components

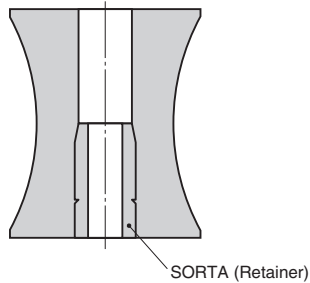
USX

CAD FILE



USXT (with Retainer)

CAD FILE



〈Material〉 Polyester based

Catalog No.	D	L (actual size)	S=Lx20%		S=Lx25%		S=Lx30%			d
			S	F [kN]	S	F [kN]	S	F [kN]	V	
	50	60 (62)	12.4	7.5	15.5	9.4	18.6	13	57	14
		80 (82)	16.4	6.5	20.5	8.8	24.6	13	58	
USX	60	60 (62)	12.4	10.0	15.5	13.5	18.6	20	70	
		80 (82)	16.4	10.0	20.5	13.4	24.6	18		
USXT	80	80 (82)	16.4	19.0	20.5	26.0	24.6	38	92	20
		100 (103)	20.6	20.0	25.8	28.0	30.9	42		
	100	80 (82)	16.4	31.0	20.5	42.0	24.6	63	114	
		100 (103)	20.6	30.0	25.8	42.0	30.9	60		
		120 (123)	24.6	27.0	30.8	37.0	36.9	57		



Order

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

Refer to page 1192 for the spacer for stack use of springs.

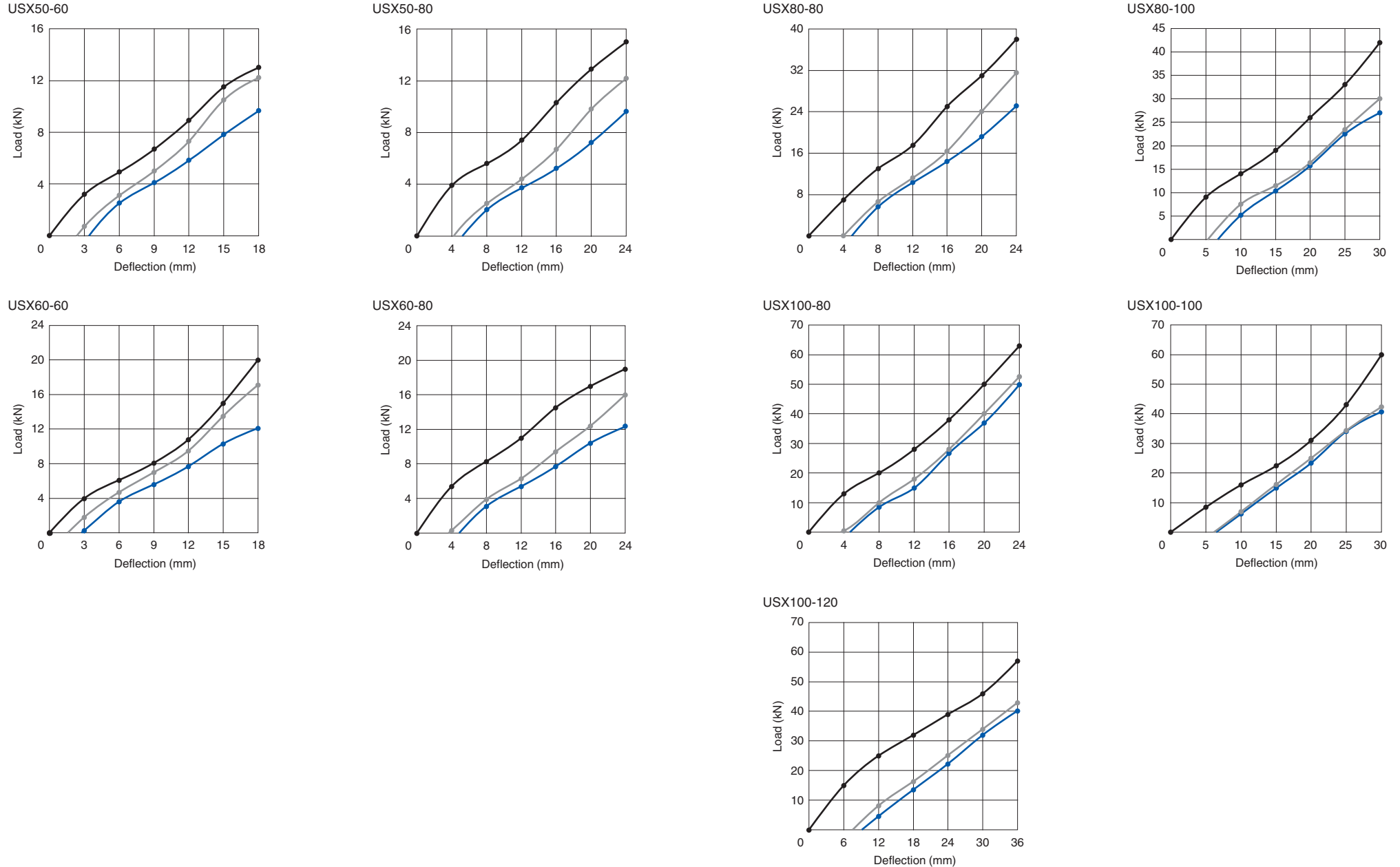
For guide pin, use $\phi 12$ for urethane diameter $\phi 50$ or smaller and $\phi 18$ for urethane diameter $\phi 60$ or larger.

Urethane Spring

USX Load-Deflection Diagrams

Pressure Source Components

—●— Initial —●— 100,000 Strokes —●— 300,000 Strokes

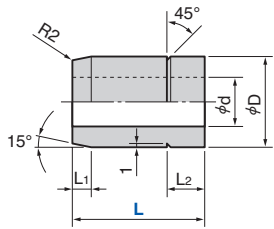


Pressure Source Components

Retainer, Spacer

Pressure Source Components

SORTA



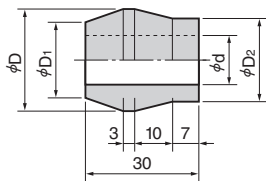
〈Material〉 SS400 or S25C

Catalog No.	Nominal	L	D	d	L ₁	L ₂	Applicable Rubber Spring, Urethane Spring	
							Outer Diameter	Length
SORTA	14	10	16	9	2	3	30, 40	~40
		20			3	7	30~63	50~63
	20	30	22	13	5	10	60~	60~125
		35			24		70~100	60~200



Catalog No. **SORTA** Nominal **20** - L **30**

SORTB



〈Material〉 SS400 or S25C

Catalog No.	Nominal	D	D ₁	D ₂	d	Outer Diameter	
						SORTB	14
	22	27	20	22	13	80	100

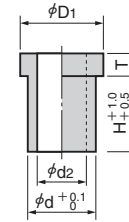


When installing SORTB, set the straight part to the fixed surface side.



Catalog No. **SORTB** Nominal **14**

K



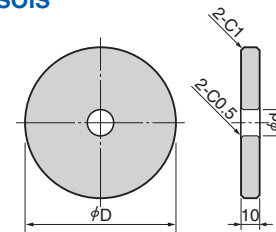
〈Material〉 SS400

Catalog No.	Nominal	D ₁	d	d ₂	H	T
K	10	19.5	15	11	12	5
	12	22	18	13	20	6



Catalog No. **K** Nominal **10**

SOIS



〈Material〉 Neodel (#25-61N)

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



Guide pins should be S25C equivalent or better and finished within Ra1.6.



Catalog No. **SOIS** Nominal **63**