

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	

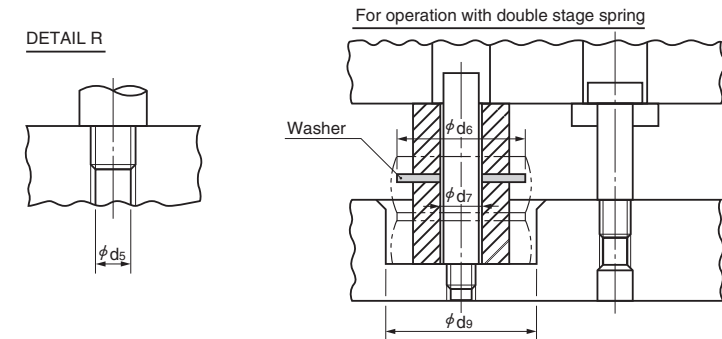
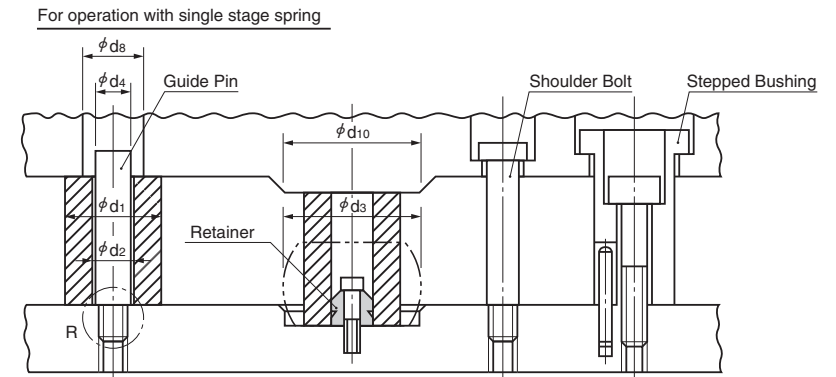
Specification limit SPM varies depending on the deflection ratio. Please contact our sales representatives for details.

■ 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.

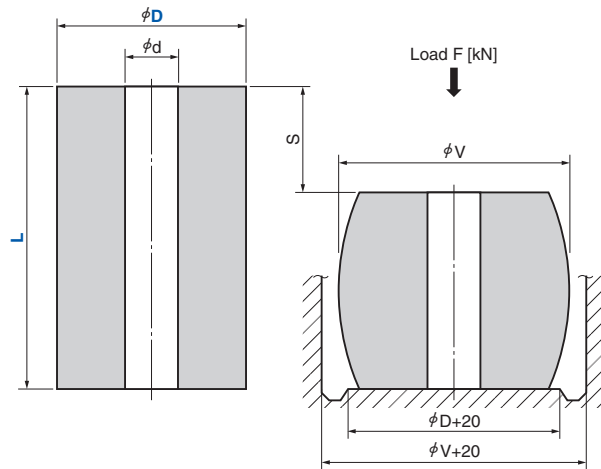
Urethane Spring

High Load A Type

Pressure Source Components

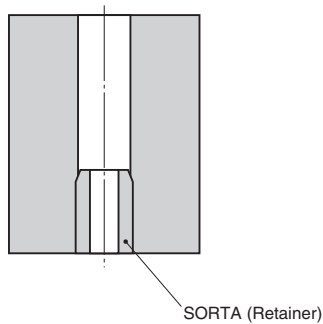
USA

CAD
FILE



USAT (with Retainer)

CAD
FILE



SORTA (Retainer)

⟨Material⟩ Polyester based

Catalog No.	D	L	S=Lx15%		S=Lx25%		d
			S	F [kN]	S	F [kN]	
30	30	30	4.5	2.6	7.5	3.6	36
		40	6.0		10.0		
		50	7.5		12.5		
		60	9.0		15.0		
40	40	40	6.0	4.6	10.0	6.4	48
		50	7.5		12.5		
		60	9.0		15.5		
		80	12.0		20.0		
50	50	50	7.5	8.0	12.5	11.0	59
		60	9.0		15.0		
		80	12.0		20.0		
		110	16.5		27.5		
USA USAT	60	50	7.5	13.0	12.5	18.0	72
		60	9.0		15.0		
70	70	110	16.5	18.0	27.5	24.0	82
		140	21.0		35.0		
		170	25.5		42.5		
		60	9.0		15.0		
80	80	80	12.0	22.0	20.0	30.0	96
		100	15.0		25.0		
		110	16.5		27.5		
90	90	140	21.0	28.0	35.0	38.0	107
		170	25.5		42.5		
		200	30.0		50.0		
		80	12.5		20.0		
100	100	100	15.0	37.0	25.0	51.0	120
		120	18.0		30.0		
		140	21.0		35.0		
		140	21.0		35.0		
110	110	140	21.0	46.0	35.0	62.0	130
		200	30.0		50.0		



Order

Catalog No.	D	—	L
USA	80	—	100
USAT	90	—	140



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



For guide pin, use φ12 for urethane diameter φ60 or smaller and φ18 for urethane diameter φ70 or larger.

Pressure Source
Components



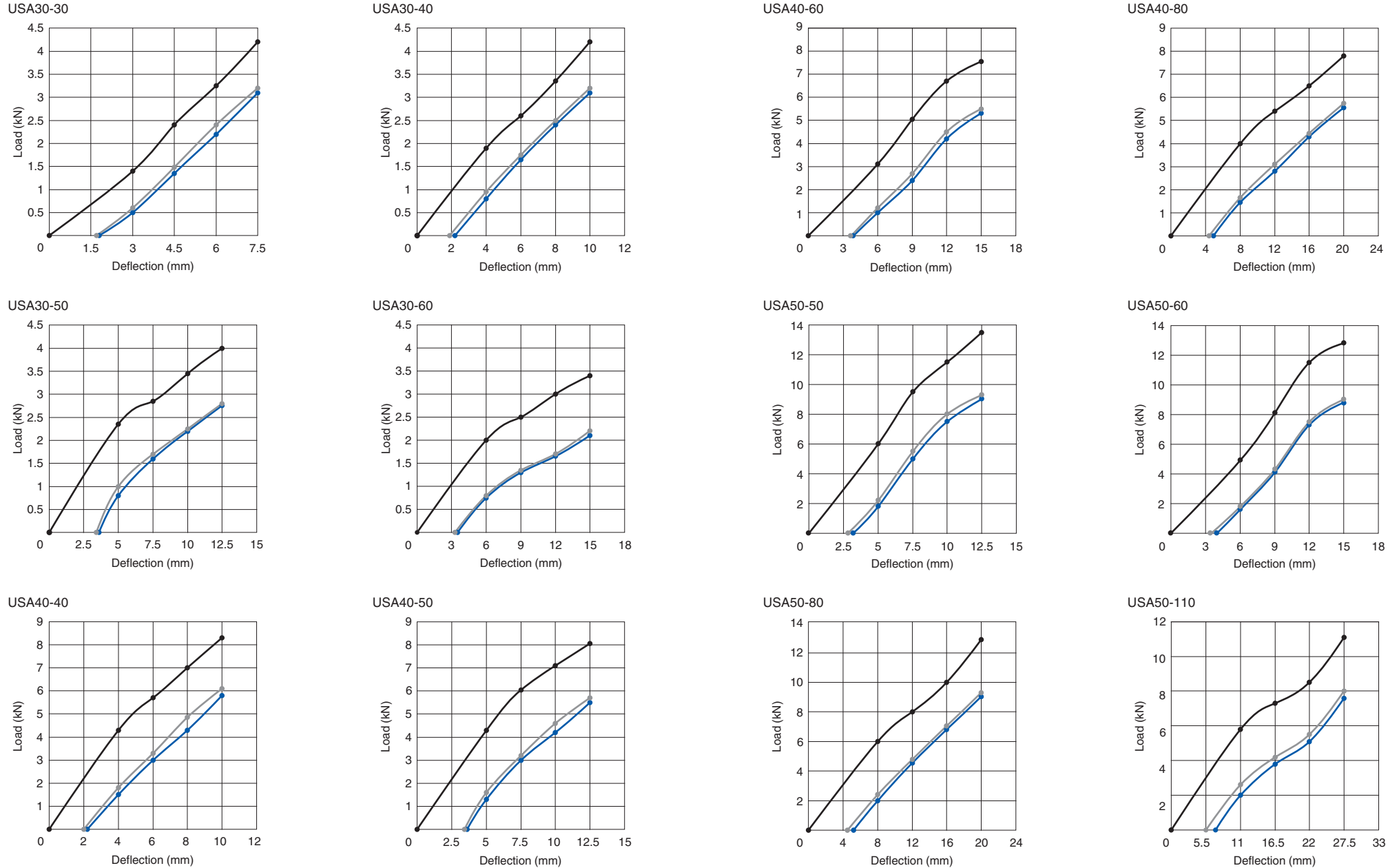
Refer to page 1191 for attached retainer size.

Urethane Spring

USA Load-Deflection Diagrams

Pressure Source Components

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

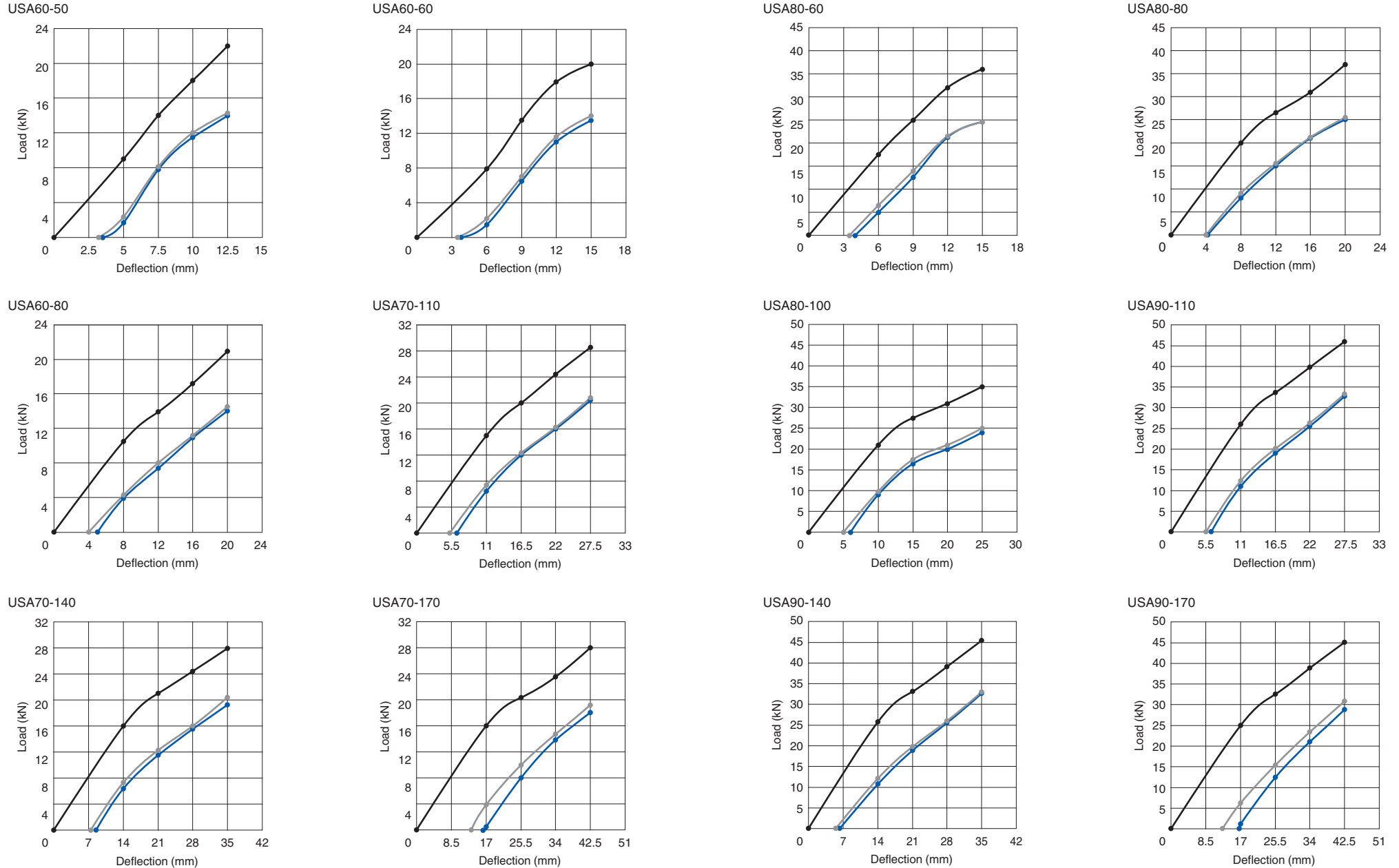


Urethane Spring

USA Load-Deflection Diagrams

Pressure Source Components

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

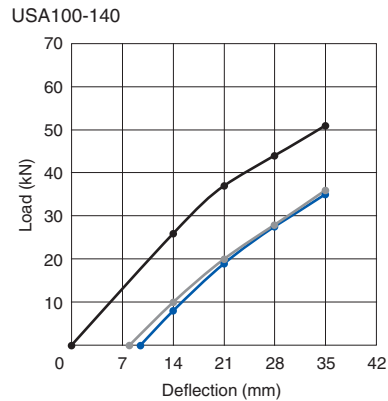
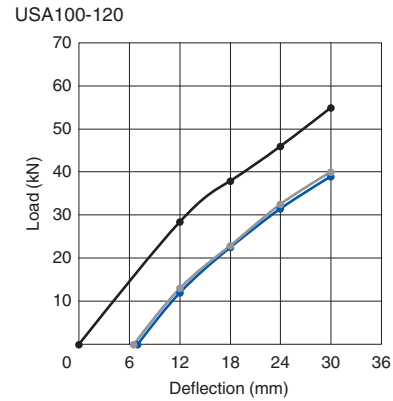
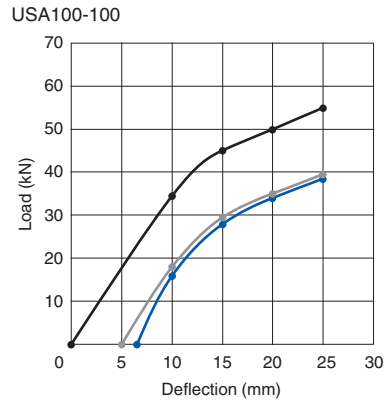
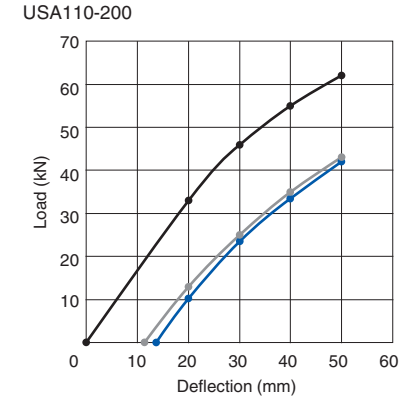
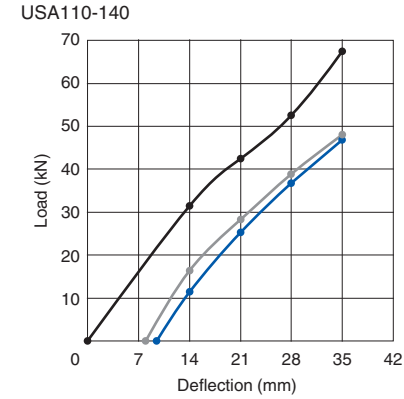
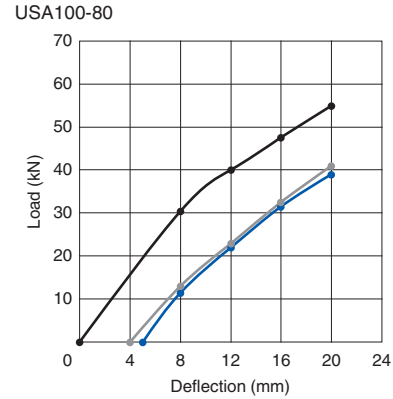
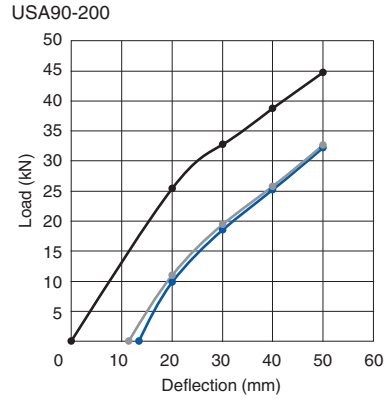


Urethane Spring

USA Load-Deflection Diagrams

Pressure Source Components

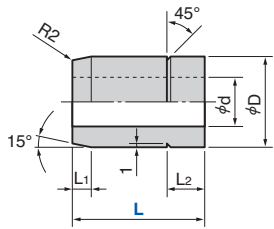
—●— Initial —●— 100,000 Strokes —●— 300,000 Strokes



Retainer, Spacer

Pressure Source Components

SORTA



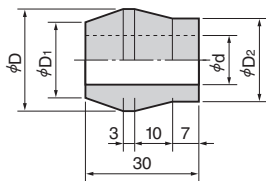
〈Material〉 SS400 or S25C

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

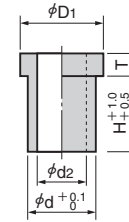


When installing SORTB, set the straight part to the fixed surface side.



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

K



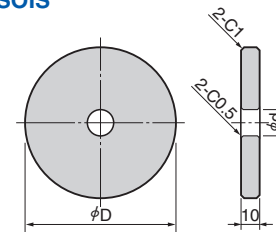
〈Material〉 SS400

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		
				Outer Diameter	Inner Diameter	Guide Pin Diameter
SOIS	50	65	13	30	40	50
	63			60	63	14
	80	100	21	70	80	20
	100			90	100	110



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



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