

URESTORO™ [Overview]

Weather-Resistant Urethane Spring

Pressure Source Components

The URESTORO urethane elastomer spring for press tools is a weather resistant material suitable for most conditions. Ideal for repetitious compression applications, with resistance to high temperature and humidity conditions. Moreover, the product withstands not only high impact loads, but also resistant to certain chemicals. Excellent for pad pressure resistance of press tools.



■ Features

- The durability in extreme environments with high stress levels or humidity has been significantly increased compared to that of the existing USX, USA and USZL specifications.
- The URESTORO series can be easily substituted for existing products.
- The product dimensions have not altered and remain the same as that of the existing USX specifications.
- However, please note that the load deflection curve for that of non-URESTORO products can be different.

| Material Characteristics | | Performance Values |
|--------------------------|------|--------------------|
| Material | | Urethane Elastomer |
| Hardness | | Shore A 88° ± 3° |
| Color | | Green |
| Tensile Strength | | 28.3 MPa |
| Modulus | 100% | 6.9 MPa |
| | 300% | 11.7 MPa |
| Elongation | | 450% |
| Tear Strength | | 11.4 N/mm |
| Impact Resistance | | 50% |

■ Range of Application

| | Deflection Rate Limit for Operation | SPM Limit for Operation | Ambient Temperature Limit for Operation |
|------|-------------------------------------|-------------------------|---|
| USWA | 25% | 50SPM | 50°C |
| USWX | 30% | 40SPM | |

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

■ Oil and Chemical Resistance

| Lubrication oil | 1 | Ethyl alcohol | 3 | Water | 2 | |
|-----------------|---|---------------|---|-------------------------|---|------------------------|
| Turbine oil | 1 | Grease | 1 | Methyl alcohol | × | 1 excellent resistance |
| Gasoline | 2 | Mineral oil | 1 | Hydrochloric acid (20%) | 3 | 2 good resistance |
| Acetone | × | Acetic acid | × | Sulfuric acid (10%) | × | 3 mediocre resistance |
| Ammonia | 2 | Brine | 1 | Benzene | × | × not resistant |

For the use with press tools, 1 or 2 can be considered.

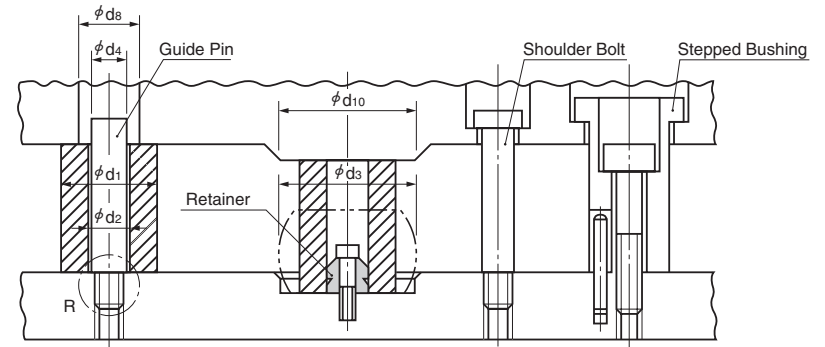
■ Storage

- 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.

URESTORO is a registered trademark or unregistered trademark of Sankyo Oilless Industry, INC.

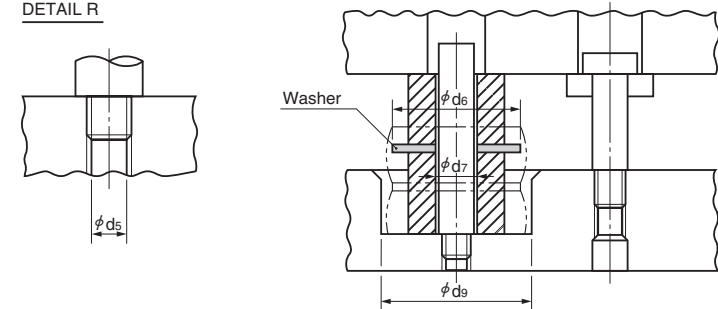
■ Application Examples [Type X&A]

For operation with single stage spring



DETAIL R

For operation with double stage spring



● Dimension Table (mm) [Type X]

| | Urethane Spring | | | Guide Pin | | Washer | | Others | | |
|---------|-----------------|-----|-----|-----------|-----|--------|-----|--------|-----|------|
| | φd1 | φd2 | φd3 | φd4 | φd5 | φd6 | φd7 | φd8 | φd9 | φd10 |
| USWX50 | 50 | 14 | 58 | 12 | M10 | 65 | 13 | 14 | 78 | 70 |
| USWX60 | 60 | 20 | 70 | 18 | M16 | 80 | 13 | 20 | 90 | 80 |
| USWX80 | 80 | 20 | 92 | 18 | M16 | 100 | 21 | 20 | 112 | 100 |
| USWX100 | 100 | 20 | 114 | 18 | M16 | 125 | 21 | 20 | 134 | 120 |

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

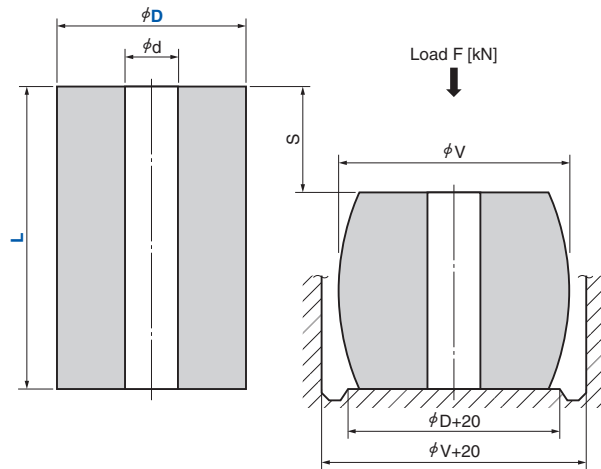
URESTORO™

Weather-Resistant Urethane Spring A Type

Pressure Source Components

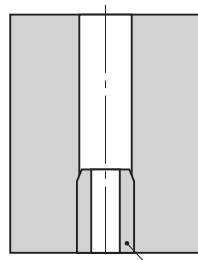
USWA

CAD FILE



USWAT (with Retainer)

CAD FILE



SORTA (Retainer) (Material) Urethane Elastomer

| Catalog No. | D | L | S=Lx15% | | | S=Lx25% | | | V | d |
|---------------|-----|-----|---------|-----------------|-----------------|---------|-----------------|-----------------|-----|----|
| | | | S | F [kN] | | S | F [kN] | | | |
| | | | | Initial Strokes | 300,000 Strokes | | Initial Strokes | 300,000 Strokes | | |
| 30 | 30 | 30 | 4.5 | 1.2 | 1.1 | 7.5 | 2.5 | 2.4 | 36 | |
| | | 40 | 6.0 | 2.0 | 1.3 | 10 | 2.9 | 2.6 | | |
| | | 50 | 7.5 | 2.2 | 1.5 | 12.5 | 3.0 | 2.9 | | |
| | | 60 | 9.0 | 2.2 | 1.4 | 15 | 3.3 | 3.0 | | |
| 40 | 40 | 40 | 6.0 | 4.4 | 3.0 | 10 | 6.4 | 5.8 | 48 | 14 |
| | | 50 | 7.5 | 4.6 | 3.1 | 12.5 | 6.6 | 6.0 | | |
| | | 60 | 9.0 | 4.4 | 2.9 | 15 | 6.6 | 6.0 | | |
| | | 80 | 12.0 | 3.8 | 2.6 | 20 | 6.1 | 5.8 | | |
| 50 | 50 | 50 | 7.5 | 6.6 | 5.0 | 12.5 | 10.8 | 9.7 | 59 | |
| | | 60 | 9.0 | 6.8 | 4.7 | 15.0 | 10.2 | 9.2 | | |
| | | 80 | 12.0 | 7.0 | 4.6 | 20 | 10.0 | 8.5 | | |
| | | 110 | 16.5 | 6.8 | 4.0 | 27.5 | 10.0 | 8.5 | | |
| 60 | 60 | 60 | 7.5 | 10.6 | 7.0 | 12.5 | 16.1 | 14.4 | 72 | |
| | | 80 | 9.0 | 10.4 | 6.4 | 15.0 | 15.8 | 14.2 | | |
| USWA USWAT | 70 | 110 | 16.5 | 14.6 | 8.0 | 27.5 | 20.1 | 16.8 | 82 | |
| | | 140 | 21.0 | 14.0 | 8.5 | 35.0 | 20.6 | 17.7 | | |
| 80 | 80 | 170 | 25.5 | 13.4 | 7.0 | 42.5 | 19.2 | 16.5 | 96 | |
| | | 60 | 9.0 | 18.8 | 12.0 | 15.0 | 28.2 | 24.3 | | |
| | | 80 | 12.0 | 17.4 | 11.7 | 20.0 | 26.0 | 24.2 | | |
| 90 | 90 | 100 | 15.0 | 16.8 | 12.0 | 25.0 | 25.4 | 21.8 | 107 | 22 |
| | | 110 | 16.5 | 23.4 | 13.8 | 27.5 | 34.9 | 28.2 | | |
| | | 140 | 21.0 | 23.4 | 13.0 | 35.0 | 33.8 | 28.4 | | |
| | | 170 | 25.5 | 22.0 | 14.0 | 42.5 | 32.9 | 27.6 | | |
| 100 | 100 | 80 | 12.0 | 32.0 | 18.0 | 20.0 | 46.4 | 39.9 | 120 | |
| | | 100 | 15.0 | 28.8 | 19.8 | 25.0 | 44.2 | 38.4 | | |
| | | 120 | 18.0 | 31.0 | 20.0 | 30.0 | 46.8 | 40.2 | | |
| | | 140 | 21.0 | 31.8 | 19.0 | 35.0 | 46.2 | 39.7 | | |
| 110 | 110 | 140 | 21.0 | 37.8 | 23.0 | 35.0 | 54.4 | 46.8 | 130 | |
| | | 200 | 30.0 | 34.2 | 20.0 | 42.5 | 51.8 | 45.0 | | |



Order

| Catalog No. | D | — | L |
|-------------|----|---|-----|
| USWA | 80 | — | 100 |
| USWAT | 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.

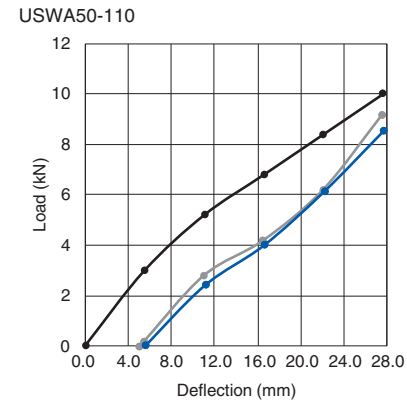
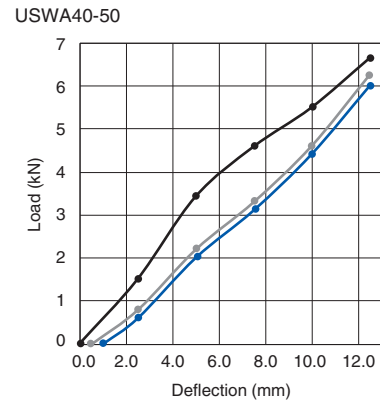
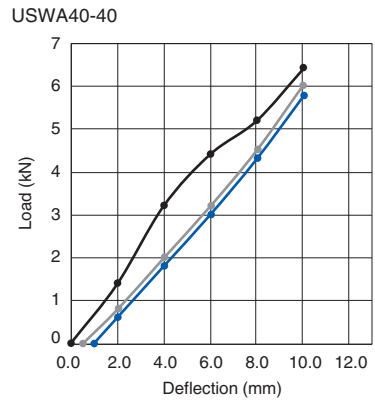
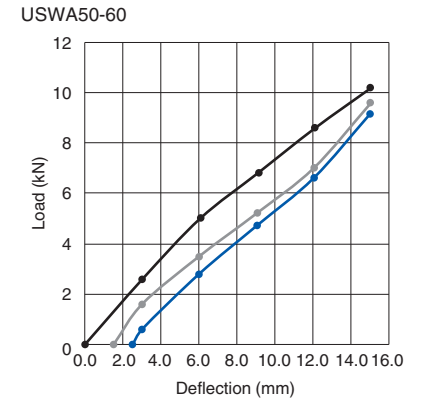
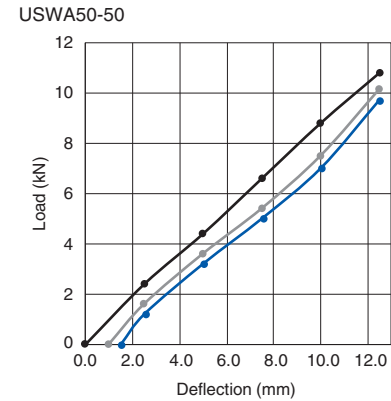
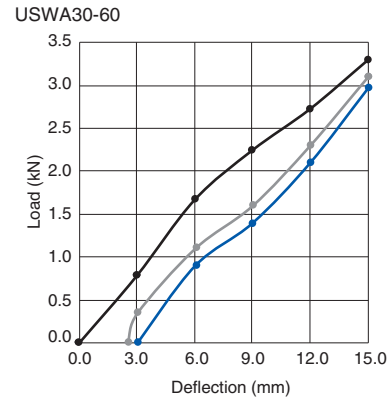
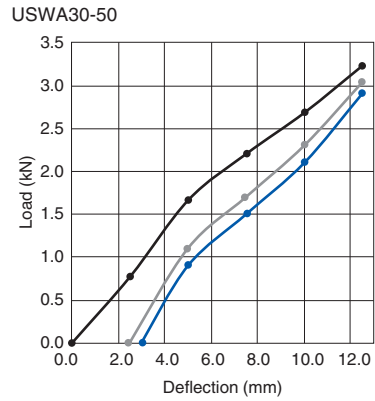
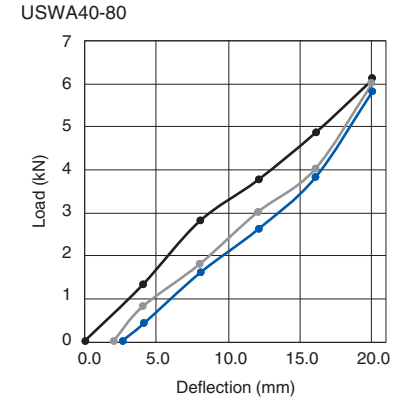
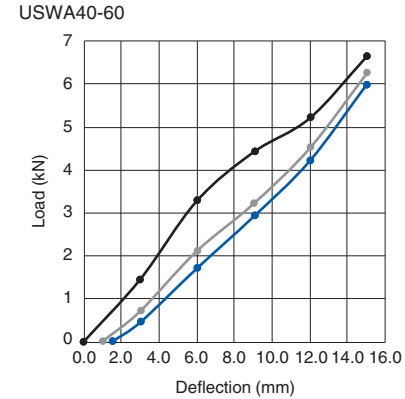
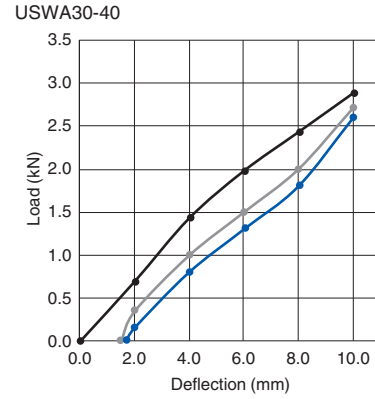
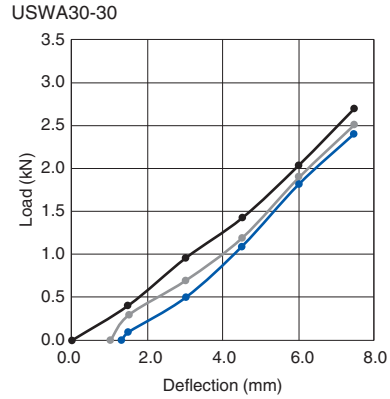
Pressure Source Components

URESTORO™

USWA Load-Deflection Diagrams

Pressure Source Components

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



Pressure Source Components

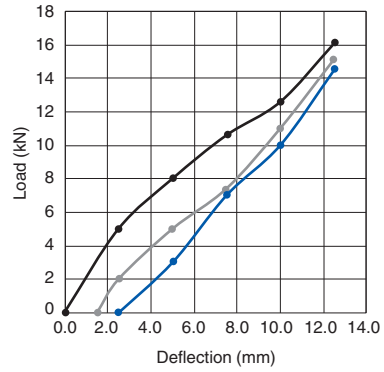
URESTORO™

USWA Load-Deflection Diagrams

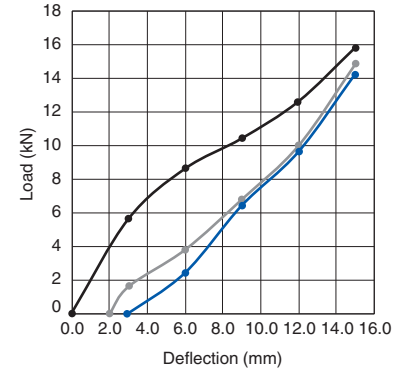
Pressure Source Components

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

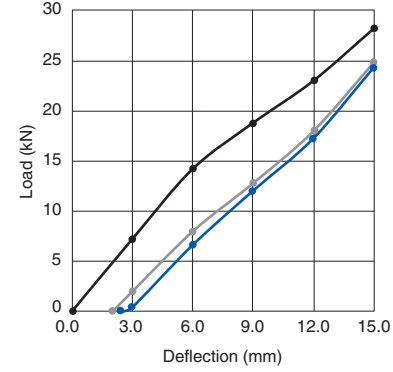
USWA60-50



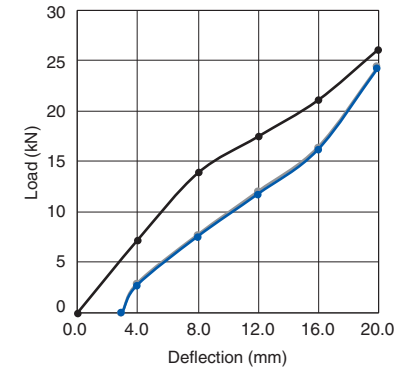
USWA60-60



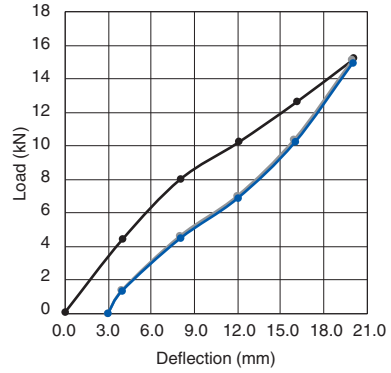
USWA80-60



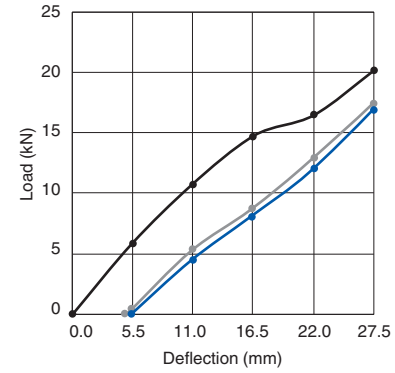
USWA80-80



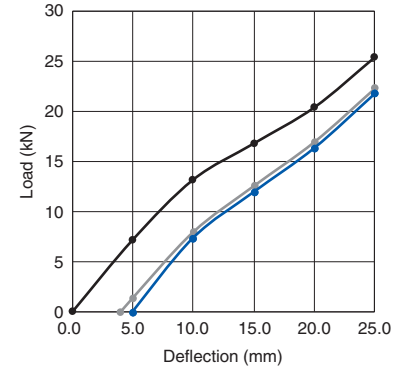
USWA60-80



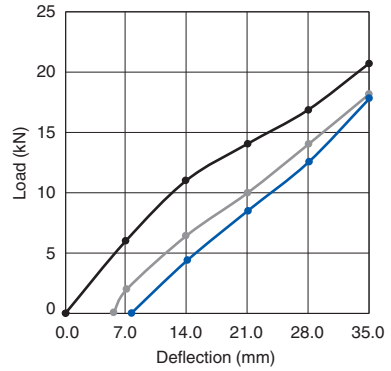
USWA70-110



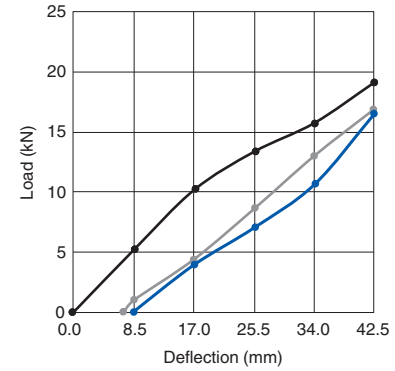
USWA80-100



USWA70-140



USWA70-170



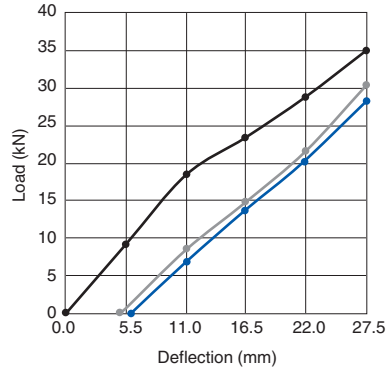
URESTORO™

USWA Load-Deflection Diagrams

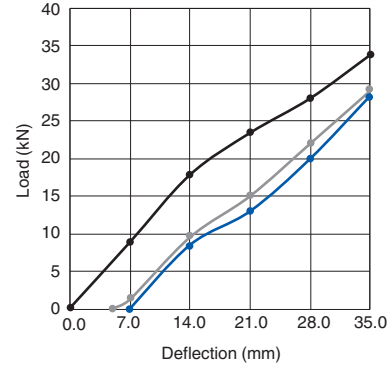
Pressure Source Components

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

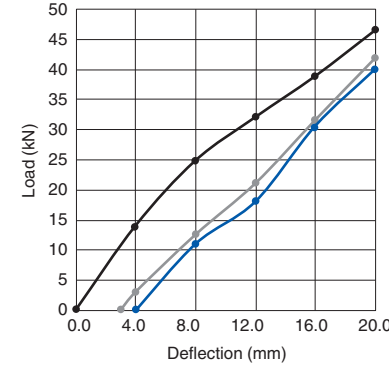
USWA90-110



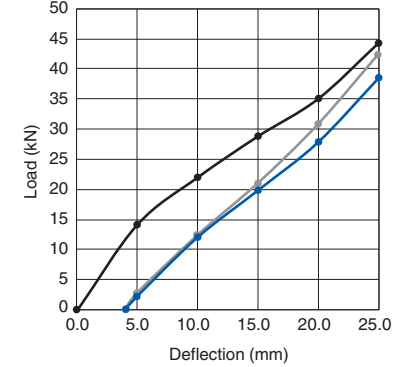
USWA90-140



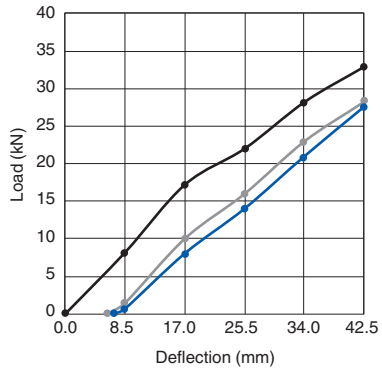
USWA100-80



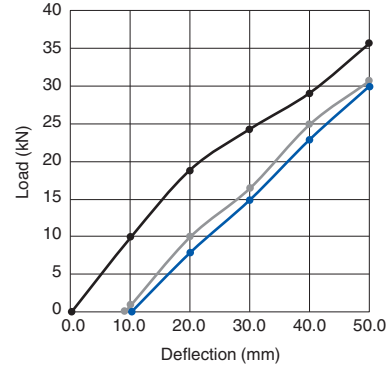
USWA100-100



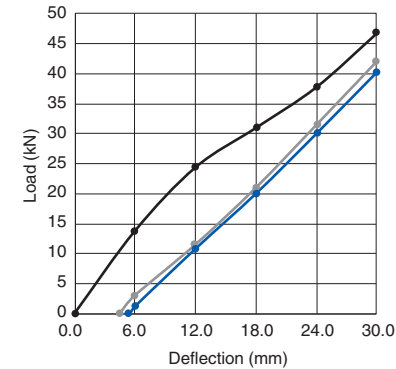
USWA90-170



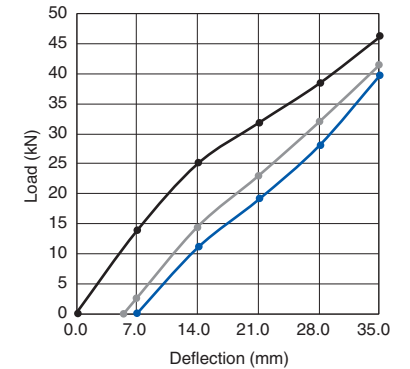
USWA90-200



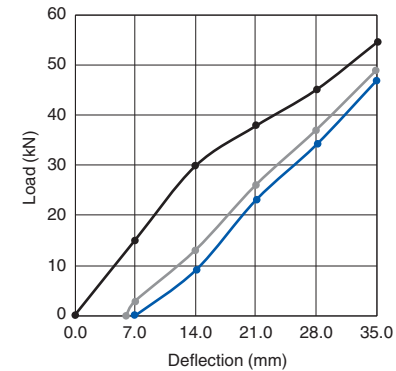
USWA100-120



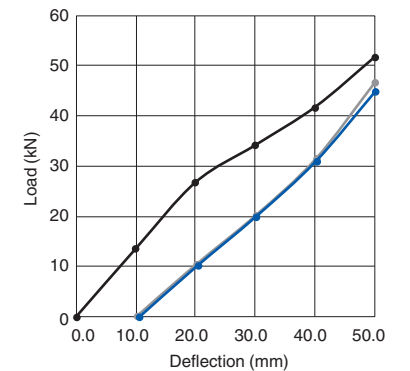
USWA100-140



USWA110-140



USWA110-200

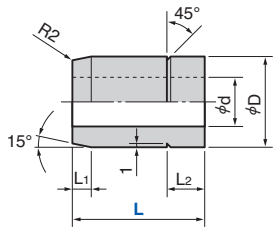


Pressure Source Components

Retainer, Spacer

Pressure Source Components

SORTA



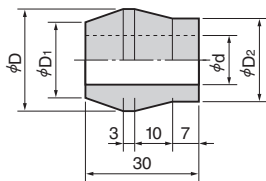
〈Material〉 SS400 or S25C

| 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 |

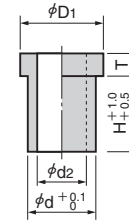


When installing SORTB, set the straight part to the fixed surface side.



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

K



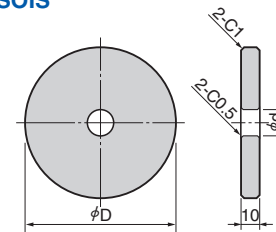
〈Material〉 SS400

| 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 | | |
|-------------|---------|-----|----|---|----------------|--------------------|
| | | | | 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**