

# Mid-high Voltage Ceramic Capacitors

Disk type with lead

Low dissipation at high frequency

General use

CC45 series

Issue date: July 2011

- All specifications are subject to change without notice.
  - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
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# Mid-high Voltage Ceramic Capacitors(Disk with Lead) Low Dissipation at High Frequency CC45 Series

Conformity to RoHS Directive

## FEATURES

- High voltage ceramic capacitors series (for temperature compensation), low dissipation factor and higher reliability has been achieved through the use of TDK original dielectric and copper for electrode material due to nice matching of the ceramic dielectrics material for low dissipation factor, and copper for electrode.
- Low dissipation factor, and decreased self-heating temperature in the high frequency, and high voltage application.
- The rated voltage of 6kV series have been added the rated voltage of 3kV series.
- These products shall conform to RoHS Directive due to lead(Pb) free of lead wire and internal solder material.
- This product is compatible with halogen-free external resin coating (we recommend halogen-free products as standard).

## OPERATING TEMPERATURE RANGE: -25 to +125°C

(The maximum operating temperature of 125°C includes capacitor self-generated heat of up to 20°C.)

## PRODUCT IDENTIFICATION

| CC  | 45  | SL  | 3AD | 101 | J   | Y   | N   | N   | A    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |

- (1) Type
- (2) Shape
- (3) Capacitance temperature characteristics
- (4) Rated voltage
- (5) Nominal capacitance
- (6) Capacitance tolerance
- (7) Class
- (8) Lead type
- (9) General use
- (10) Halogen-free compatible product



## CAPACITANCE TEMPERATURE CHARACTERISTICS AND TOLERANCE

| Temperature characteristics | Test temperature range | Capacitance tolerance             |
|-----------------------------|------------------------|-----------------------------------|
| SL(+350 to -1000ppm/°C)     | +20 to +85°C           | C(±0.25pF)<br>D(±0.5pF)<br>J(±5%) |

## CAPACITANCE AND DIMENSIONS

### TEMPERATURE CHARACTERISTICS: SL(+350 to -1000ppm/°C)

RATED VOLTAGE Edc: 1kV

| Part No.             |                  | Capacitance (pF) | Dimensions(mm) |        |         |          | Taping dimensions |
|----------------------|------------------|------------------|----------------|--------|---------|----------|-------------------|
|                      |                  |                  | D max.         | T max. | F       | d        |                   |
| Halogen-free product | Current product  |                  |                |        |         |          |                   |
| CC45SL3AD100JY□NA    | CC45SL3AD100JY□N | 10               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD120JY□NA    | CC45SL3AD120JY□N | 12               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD150JY□NA    | CC45SL3AD150JY□N | 15               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD180JY□NA    | CC45SL3AD180JY□N | 18               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD220JY□NA    | CC45SL3AD220JY□N | 22               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD270JY□NA    | CC45SL3AD270JY□N | 27               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD330JY□NA    | CC45SL3AD330JY□N | 33               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD390JY□NA    | CC45SL3AD390JY□N | 39               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD470JY□NA    | CC45SL3AD470JY□N | 47               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD560JY□NA    | CC45SL3AD560JY□N | 56               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD680JY□NA    | CC45SL3AD680JY□N | 68               | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD820JY□NA    | CC45SL3AD820JY□N | 82               | 6.0            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD101JY□NA    | CC45SL3AD101JY□N | 100              | 6.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD121JY□NA    | CC45SL3AD121JY□N | 120              | 7.0            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD151JY□NA    | CC45SL3AD151JY□N | 150              | 7.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD181JY□NA    | CC45SL3AD181JY□N | 180              | 8.0            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD221JY□NA    | CC45SL3AD221JY□N | 220              | 8.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD271JY□NA    | CC45SL3AD271JY□N | 270              | 9.0            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD331JY□NA    | CC45SL3AD331JY□N | 330              | 10.0           | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD391JY□NA    | CC45SL3AD391JY□N | 390              | 10.5           | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                |
| CC45SL3AD471JY□NA    | CC45SL3AD471JY□N | 470              | 11.5           | 5.0    | 7.5±1.5 | 0.6±0.05 | V2                |
| CC45SL3AD561JY□NA    | CC45SL3AD561JY□N | 560              | 12.5           | 5.0    | 7.5±1.5 | 0.6±0.05 | V2                |
| CC45SL3AD681JY□NA    | CC45SL3AD681JY□N | 680              | 13.5           | 5.0    | 7.5±1.5 | 0.6±0.05 | V2                |
| CC45SL3AD821JY□NA    | CC45SL3AD821JY□N | 820              | 14.5           | 5.0    | 7.5±1.5 | 0.6±0.05 | —                 |
| CC45SL3AD102JY□NA    | CC45SL3AD102JY□N | 1,000            | 16.0           | 5.0    | 10.0±2  | 0.6±0.05 | —                 |

\* □ : Lead shape symbol

• Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

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## CAPACITANCE AND DIMENSIONS

### TEMPERATURE CHARACTERISTICS: SL(+350 to –1000ppm/°C)

RATED VOLTAGE Edc: 2kV

| Part No.             |                   | Capacitance<br>(pF) | Dimensions(mm) |        |         |          | Taping<br>dimensions |
|----------------------|-------------------|---------------------|----------------|--------|---------|----------|----------------------|
| Halogen-free product | Current product   |                     | D max.         | T max. | F       | d        |                      |
| CC45SL3DD100JY□*NA   | CC45SL3DD100JY□*N | 10                  | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD120JY□NA    | CC45SL3DD120JY□N  | 12                  | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD150JY□NA    | CC45SL3DD150JY□N  | 15                  | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD180JY□NA    | CC45SL3DD180JY□N  | 18                  | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD220JY□NA    | CC45SL3DD220JY□N  | 22                  | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD270JY□NA    | CC45SL3DD270JY□N  | 27                  | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD330JY□NA    | CC45SL3DD330JY□N  | 33                  | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD390JY□NA    | CC45SL3DD390JY□N  | 39                  | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD470JY□NA    | CC45SL3DD470JY□N  | 47                  | 5.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD560JY□NA    | CC45SL3DD560JY□N  | 56                  | 6.0            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD680JY□NA    | CC45SL3DD680JY□N  | 68                  | 6.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD820JY□NA    | CC45SL3DD820JY□N  | 82                  | 7.0            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD101JY□NA    | CC45SL3DD101JY□N  | 100                 | 7.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD121JY□NA    | CC45SL3DD121JY□N  | 120                 | 8.0            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD151JY□NA    | CC45SL3DD151JY□N  | 150                 | 8.5            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD181JY□NA    | CC45SL3DD181JY□N  | 180                 | 9.0            | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD221JY□NA    | CC45SL3DD221JY□N  | 220                 | 10.0           | 5.0    | 5.0±1.5 | 0.6±0.05 | V1                   |
| CC45SL3DD271JY□NA    | CC45SL3DD271JY□N  | 270                 | 11.0           | 5.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3DD331JY□NA    | CC45SL3DD331JY□N  | 330                 | 11.5           | 5.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3DD391JY□NA    | CC45SL3DD391JY□N  | 390                 | 12.5           | 5.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3DD471JY□NA    | CC45SL3DD471JY□N  | 470                 | 13.5           | 5.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3DD561JY□NA    | CC45SL3DD561JY□N  | 560                 | 14.5           | 5.0    | 7.5±1.5 | 0.6±0.05 | V3                   |
| CC45SL3DD681JY□NA    | CC45SL3DD681JY□N  | 680                 | 16.0           | 5.0    | 10.0±2  | 0.6±0.05 | —                    |

\* □ : Lead shape symbol

RATED VOLTAGE Edc: 3kV

| Part No.             |                   | Capacitance<br>(pF) | Dimensions(mm) |        |         |          | Taping<br>dimensions |
|----------------------|-------------------|---------------------|----------------|--------|---------|----------|----------------------|
| Halogen-free product | Current product   |                     | D max.         | T max. | F       | d        |                      |
| CC45SL3FD100JY□*NA   | CC45SL3FD100JY□*N | 10                  | 5.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD120JY□NA    | CC45SL3FD120JY□N  | 12                  | 5.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD150JY□NA    | CC45SL3FD150JY□N  | 15                  | 5.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD180JY□NA    | CC45SL3FD180JY□N  | 18                  | 5.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD220JY□NA    | CC45SL3FD220JY□N  | 22                  | 5.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD270JY□NA    | CC45SL3FD270JY□N  | 27                  | 5.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD330JY□NA    | CC45SL3FD330JY□N  | 33                  | 6.0            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD390JY□NA    | CC45SL3FD390JY□N  | 39                  | 6.0            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD470JY□NA    | CC45SL3FD470JY□N  | 47                  | 6.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD560JY□NA    | CC45SL3FD560JY□N  | 56                  | 7.0            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD680JY□NA    | CC45SL3FD680JY□N  | 68                  | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD820JY□NA    | CC45SL3FD820JY□N  | 82                  | 8.0            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD101JY□NA    | CC45SL3FD101JY□N  | 100                 | 8.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD121JY□NA    | CC45SL3FD121JY□N  | 120                 | 9.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD151JY□NA    | CC45SL3FD151JY□N  | 150                 | 10.0           | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD181JY□NA    | CC45SL3FD181JY□N  | 180                 | 11.0           | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD221JY□NA    | CC45SL3FD221JY□N  | 220                 | 12.0           | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD271JY□NA    | CC45SL3FD271JY□N  | 270                 | 13.0           | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3FD331JY□NA    | CC45SL3FD331JY□N  | 330                 | 14.0           | 6.0    | 7.5±1.5 | 0.6±0.05 | V3                   |
| CC45SL3FD391JY□NA    | CC45SL3FD391JY□N  | 390                 | 15.0           | 6.0    | 7.5±1.5 | 0.6±0.05 | —                    |
| CC45SL3FD471JY□NA    | CC45SL3FD471JY□N  | 470                 | 16.0           | 6.0    | 10.0±2  | 0.6±0.05 | —                    |

\* □ : Lead shape symbol

## CAPACITANCE AND DIMENSIONS

### TEMPERATURE CHARACTERISTICS: SL(+350 to –1000ppm/°C)

RATED VOLTAGE E<sub>dc</sub>: 6kV

| Part No.             |                   | Capacitance<br>(pF) | Dimensions(mm) |        |         |          | Taping<br>dimensions |
|----------------------|-------------------|---------------------|----------------|--------|---------|----------|----------------------|
|                      |                   |                     | D max.         | T max. | F       | d        |                      |
| Halogen-free product | Current product   |                     |                |        |         |          |                      |
| CC45SL3JD030CY□*NA   | CC45SL3JD030CY□*N | 3                   | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD050DY□NA    | CC45SL3JD050DY□N  | 5                   | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD080DY□NA    | CC45SL3JD080DY□N  | 8                   | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD100JY□NA    | CC45SL3JD100JY□N  | 10                  | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD120JY□NA    | CC45SL3JD120JY□N  | 12                  | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD150JY□NA    | CC45SL3JD150JY□N  | 15                  | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD180JY□NA    | CC45SL3JD180JY□N  | 18                  | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD220JY□NA    | CC45SL3JD220JY□N  | 22                  | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD270JY□NA    | CC45SL3JD270JY□N  | 27                  | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD330JY□NA    | CC45SL3JD330JY□N  | 33                  | 7.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD390JY□NA    | CC45SL3JD390JY□N  | 39                  | 8.0            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |
| CC45SL3JD470JY□NA    | CC45SL3JD470JY□N  | 47                  | 8.5            | 6.0    | 7.5±1.5 | 0.6±0.05 | V2                   |

\* □ : Lead shape symbol

### LIST OF STANDARD LEAD SHAPES

The lead type is indicated by the letter which is the 15th character of the product name.

Example) TDK Product Name: **CC45SL3AD101JYNNA**

└ N: Lead type (Vertical kink, Short)

Dimensions in mm

|               | Long lead<br>Symbol G | Short lead<br>Symbol N | Taping<br>Symbol V |
|---------------|-----------------------|------------------------|--------------------|
| Vertical kink |                       |                        |                    |
| Straight      |                       |                        |                    |

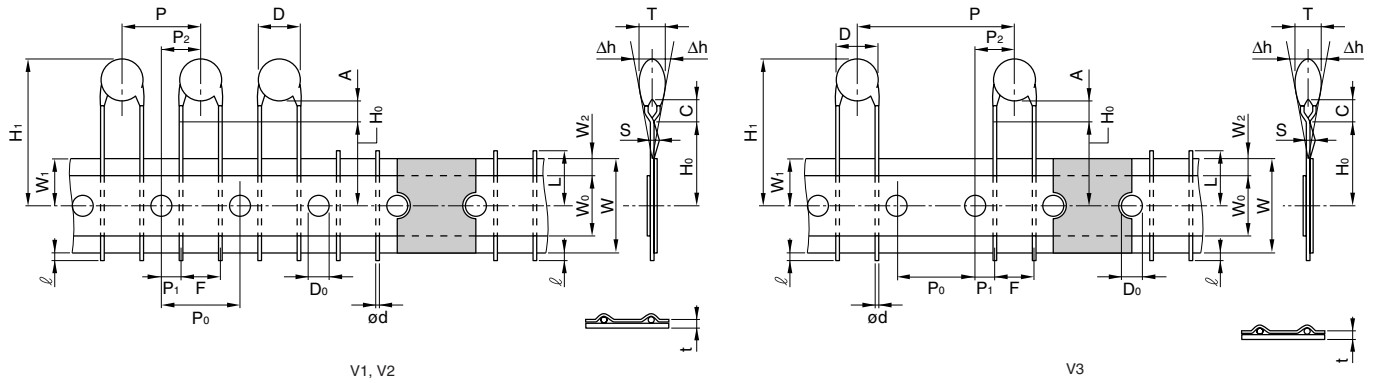
- We recommend using a vertical kink type.
- For bulk products, we recommend a short lead type with the symbol N.

• For more information about products with other capacitance or other data, please contact us.

• All specifications are subject to change without notice.

## TAPING DIMENSIONS

### VERTICAL KINK LEAD TYPE



| Item                                 | Symbol         | Dimensions(mm)                                |                |                | Remarks                                              |
|--------------------------------------|----------------|-----------------------------------------------|----------------|----------------|------------------------------------------------------|
|                                      |                | V1                                            | V2             | V3             |                                                      |
| Body diameter                        | D              | Depends on the specification of each product. |                |                |                                                      |
| Body thickness                       | T              | Depends on the specification of each product. |                |                |                                                      |
| Lead-wire diameter                   | ød             | 0.6±0.05                                      | 0.6±0.05       | 0.6±0.05       |                                                      |
| Pitch of component                   | P              | 12.7±1.0                                      | 15.0±1.0       | 30.0±1.0       | Including the slant of body                          |
| Feed hole pitch                      | P <sub>0</sub> | 12.7±0.3                                      | 15.0±0.3       | 15.0±0.3       | Excepting the tape splicing part                     |
| Feed hole center to lead             | P <sub>1</sub> | 3.85±0.7                                      | 3.75±0.7       | 3.75±0.7       |                                                      |
| Feed hole center to component center | P <sub>2</sub> | 6.35±1.3                                      | 7.5±1.3        | 7.5±1.3        |                                                      |
| Lead-to lead distance                | F              | 5+0.8, -0.2                                   | 7.5±0.8        | 7.5±0.8        | Measuring point is bottom kink                       |
| Component alignment                  | Δh             | 0±2.0                                         | 0±2.0          | 0±2.0          | Including the slanting body due to bending lead-wire |
| Tape width                           | W              | 18.0+1.0, -0.5                                | 18.0+1.0, -0.5 | 18.0+1.0, -0.5 |                                                      |
| Adhesive tape width                  | W <sub>0</sub> | 11.5min.                                      | 11.5min.       | 11.5min.       |                                                      |
| Hole position                        | W <sub>1</sub> | 9.0±0.5                                       | 9.0±0.5        | 9.0±0.5        |                                                      |
| Adhesive tape position               | W <sub>2</sub> | 3.0max.                                       | 3.0max.        | 3.0max.        | Adhesive tape do not stick out the tape              |
| Bottom of kink from tape center      | H <sub>0</sub> | 16.0+1.5, -0.5                                | 16.0+1.5, -0.5 | 16.0+1.5, -0.5 |                                                      |
| Height of body from tape center      | H <sub>1</sub> | 46.0max.                                      | 46.0max.       | 46.0max.       |                                                      |
| Lead-wire protrusion                 | ℓ              | 1.0max.                                       | 1.0max.        | 1.0max.        |                                                      |
| Feed hole diameter                   | D <sub>0</sub> | 4.0±0.2                                       | 4.0±0.2        | 4.0±0.2        |                                                      |
| Total tape thickness                 | t              | 0.6±0.3                                       | 0.6±0.3        | 0.6±0.3        | Do not including adhesive tape                       |
| Length of snapped lead               | L              | 11.0max.                                      | 11.0max.       | 11.0max.       |                                                      |
| Coating on lead                      | C              | 4.0max.                                       | 4.0max.        | 4.0max.        |                                                      |
| Height of kink                       | A              | 4.0max.                                       | 4.0max.        | 4.0max.        | Measuring point is bottom kink                       |
| Spring action                        | S              | 2.0max.                                       | 2.0max.        | 2.0max.        |                                                      |