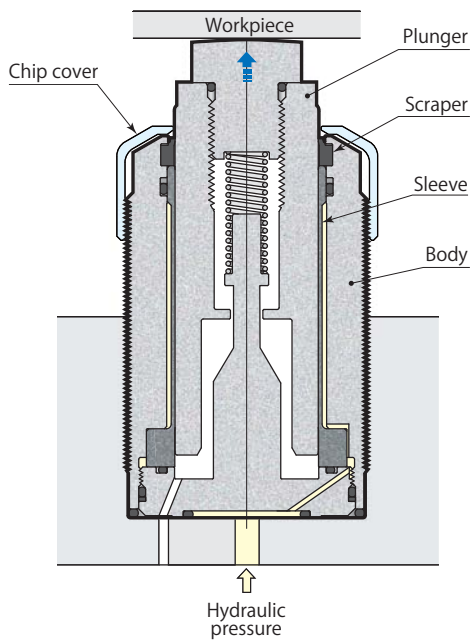
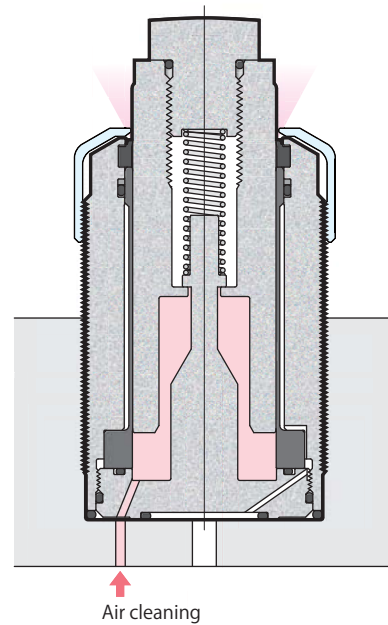


Spring lift
model CSV □ M-L

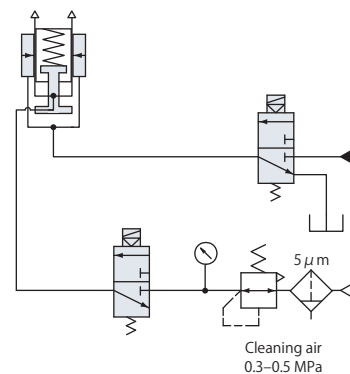


Lock



Unlock

Hydraulic and pneumatic circuit diagram



- Specifications page → 121
- Hydraulic pressure & support force page → 121
- Applied load & deformation page → 121
- Dimensions page → 122
- Mounting details page → 122

Specifications

Size Plunger stroke
 CSV **06** **10** **16** **25** M - L : Standard stroke

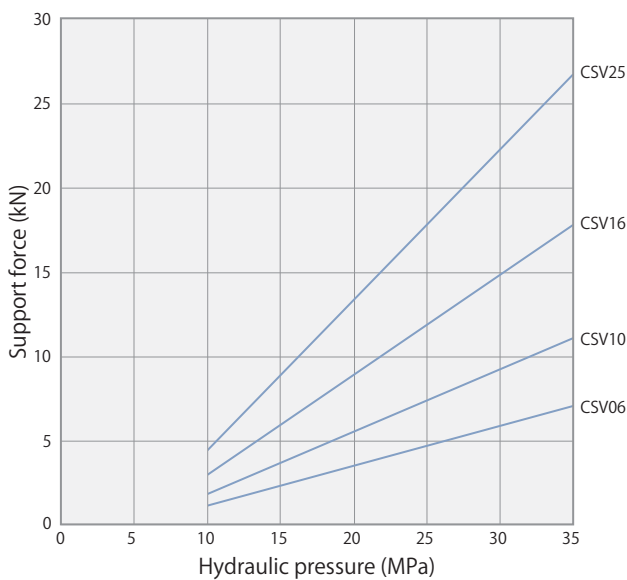
| Model | | CSV06M-L | CSV10M-L | CSV16M-L | CSV25M-L |
|--|-----------------|----------|----------|----------|----------|
| Support force (hydraulic pressure 35MPa)*1 | kN | 7.1 | 11.1 | 17.8 | 26.7 |
| Cylinder capacity | cm ³ | 1.5 | 2.9 | 5.5 | 5.7 |
| Lift spring force*2 | N | 6-11 | 10-16 | 16-29 | 25-45 |
| Plunger stroke | mm | 8 | 10 | 10 | 13 |
| Max. allowable mass of head cap | kg | 0.1 | 0.1 | 0.2 | 0.2 |
| Mass | kg | 0.28 | 0.42 | 1.02 | 1.90 |
| Recommended tightening torque of body | N·m | 35 | 60 | 130 | 250 |

- Pressure range: 10-35 MPa ● Proof pressure: 52.5 MPa ● Operating temperature: 0-70°C
- Fluid used: General mineral based hydraulic oil (ISO-VG32 equivalent)
- Seals are resistant to chlorine-based cutting fluid. (not thermal resistant specification)

*1: When work support and clamp are used facing each other, work support and clamp must be selected in such a way that the support force is 1.5 times the applied load (clamping force + machining force).

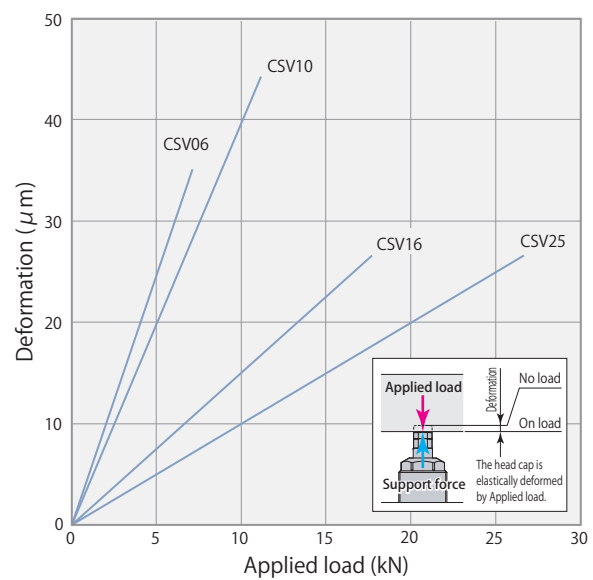
*2: Figures are for "upper end to lower end" of plunger action.

Hydraulic pressure & support force



| Hydraulic pressure MPa | Support force kN | | | |
|------------------------|------------------|-------|-------|-------|
| | CSV06 | CSV10 | CSV16 | CSV25 |
| 10 | 1.2 | 1.9 | 3.0 | 4.5 |
| 15 | 2.3 | 3.7 | 6.0 | 8.9 |
| 20 | 3.5 | 5.6 | 8.9 | 13.4 |
| 25 | 4.7 | 7.4 | 11.9 | 17.8 |
| 30 | 5.9 | 9.3 | 14.8 | 22.3 |
| 35 | 7.1 | 11.1 | 17.8 | 26.7 |

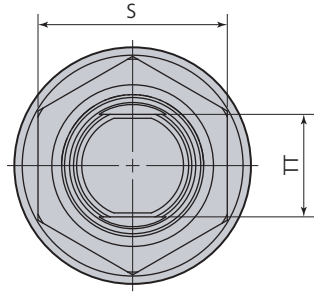
Applied load & deformation



| Applied load kN | Deformation μm | | | |
|-----------------|-----------------|-------|-------|-------|
| | CSV06 | CSV10 | CSV16 | CSV25 |
| 0 | 0 | 0 | 0 | 0 |
| 5 | 25 | 20 | 7.5 | 5 |
| 10 | 40 | 15 | 10 | 10 |
| 15 | Nonusable range | 22.5 | 15 | 15 |
| 20 | Nonusable range | 20 | 20 | 20 |
| 25 | Nonusable range | 25 | 25 | 25 |
| 30 | Nonusable range | 30 | 30 | 30 |

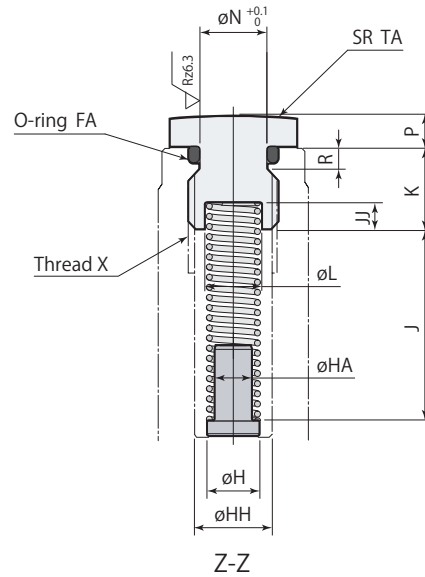
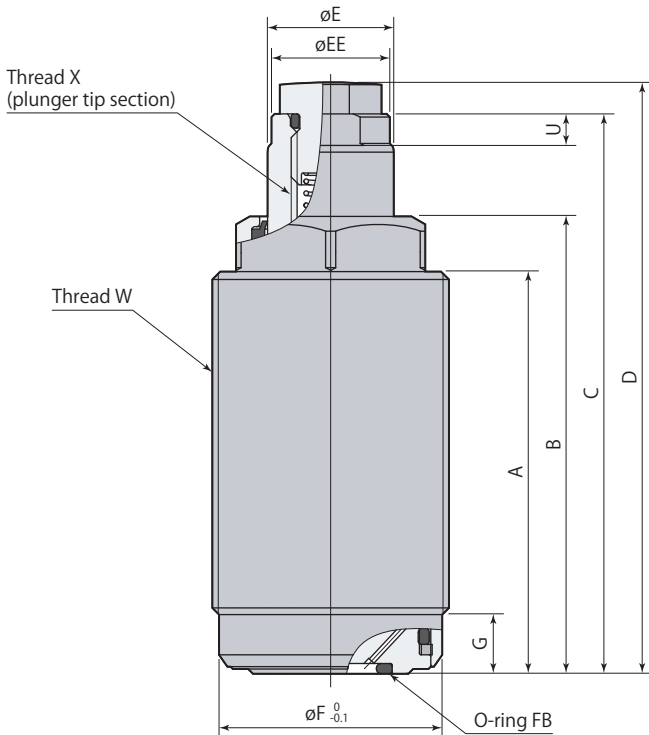
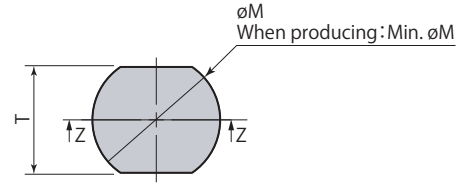
Held with hydraulic pressure of 35 MPa.

Dimensions

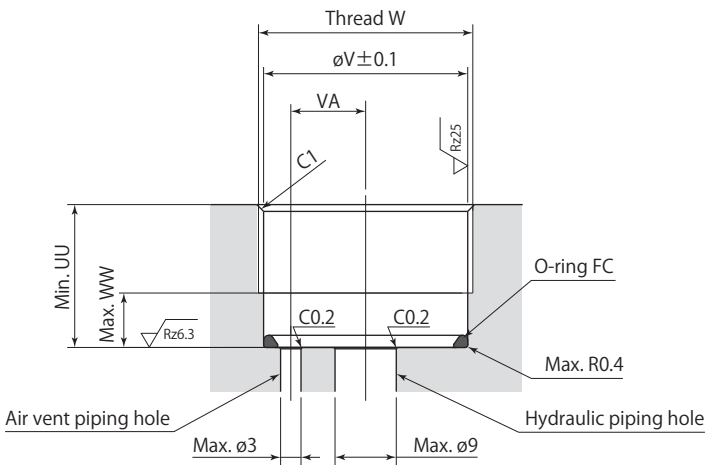


Head cap details

Hardness: HRC52



Mounting details



Rz: ISO4287(1997)

- When fixing the hexagon part of body with a vise, etc., make sure the tightening force is 2.5 kN or less.
- Always attach head cap (lift spring cannot be retained). When fabricating head cap, ensure that O-ring slot, spring spot facing and guide are made by referring to head cap details. Be sure to always use O-ring.
- When fabricating a lift spring, determine dimensions by referring to head cap details. Furthermore, rustproofing must be implemented (however, there is no guarantee for operation).
- Install O-ring FC at the bottom of the hole. The O-ring FC is packed with a work support.
- This diagram indicates a situation where head cap has been fitted into plunger with no pressure applied.

Work support

Spring lift

| | | | | |
|----------------|---------------------------------|--|--|--------------|
| CSV□M-L | Work support Spring lift | | | 35MPa |
|----------------|---------------------------------|--|--|--------------|

| Model | CSV06M-L | CSV10M-L | CSV16M-L | CSV25M-L |
|--|------------------------------|-------------------------------|-----------------------------|-----------------------------|
| A | 51 | 58 | 59.5 | 68.5 |
| B | 58 | 67 | 71.8 | 82 |
| C | 71 | 83 | 88 | 102 |
| D | 75 | 87 | 94 | 109 |
| øE | 16 | 20 | 30 | 40 |
| øEE | 15 | 19 | 29 | 39 |
| øF | 28.3 | 33.2 | 48.2 | 63.2 |
| G | 7.5 | 7.5 | 7.5 | 8 |
| øH | 7 | 7 | 8.5 | 10 |
| øHA | 5 | 5 | 6 | 7.5 |
| øHH | 8.5 | 10.3 | 14 | 14 |
| J | 20.5 | 25.5 | 25 | 32.5 |
| JJ | 1.5 | 3.5 | 1.5 | 1.5 |
| K | 9 | 11 | 12 | 11 |
| øL | 7.4 | 7.6 | 9.2 | 11.2 |
| øM | 12.9 | 16.9 | 23 | 30 |
| Min. øM | 12.5 | 16 | 21 | 21 |
| øN | 7.8 | 8.9 | 13.3 | 13.3 |
| P | 4 | 4 | 6 | 7 |
| R | 1.9 | 3 | 2.4 | 2.4 |
| S | 24 | 30 | 41 | 55 |
| T (width across flats) | 12 | 14 | 19 | 24 |
| TA | 70 | 90 | 110 | 140 |
| TT (plunger width across flats) | 13 | 17 | 24 | 32 |
| U | 4 | 5 | 5 | 5.7 |
| UU | 15.5 | 15.5 | 15.5 | 20 |
| øV | 28.5 | 33.5 | 48.5 | 63.5 |
| VA | 11 | 12 | 18 | 23.5 |
| W | M30×1.5 | M35×1.5 | M50×1.5 | M65×1.5 |
| WW | 6.5 | 6.5 | 6.5 | 7 |
| X (recommended tightening torque) | M10×1.5 depth 13 (30 N·m) | M12×1.75 depth 16 (50 N·m) | M16×2 depth 20 (100 N·m) | M16×2 depth 20 (100 N·m) |
| O-ring FA (fluorocarbon hardness Hs70) | S8 | P9 | AS568-014 | AS568-014 |
| O-ring FB (fluorocarbon hardness Hs90) | AS568-014 | AS568-015 | AS568-019 | AS568-022 |
| O-ring FC (fluorocarbon hardness Hs90) | AS568-022 | AS568-025 | S45 | AS568-036 |

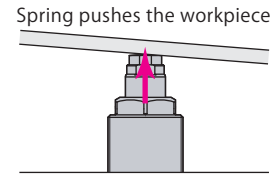
mm

Work support

CSV
Spring lift

Caution in use

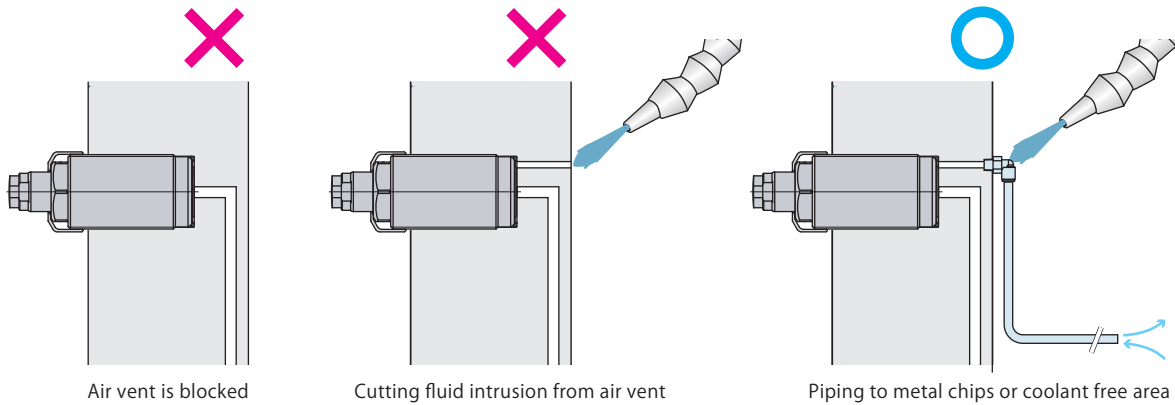
- If the workpiece is light weight, the plunger cannot be pressed down by the weight of workpiece and seating detection cannot be complete. Review the weight of workpiece or lift spring force to make the workpiece seat perfectly, and lock the work support.



- Avoid following usages. These may cause sleeve deformation that could lead to malfunction of plunger or decreased support force.

- ✗ Applying eccentric load on plunger.
- ✗ Applying load that exceeds rated support force.
- ✗ Rotating plunger when locked.

- Air vent must be opened to atmosphere. Any blockage on the vent results in malfunction. Provide the piping if there is a risk of coolant or metal chips intrusion. Allowing intrusion of cutting fluid may cause rusting and other problems.



- Air (oil free) must be fed through a 5 μm filter that is connected to an air vent port for air cleaning. Perform air cleaning only when replacing workpiece.