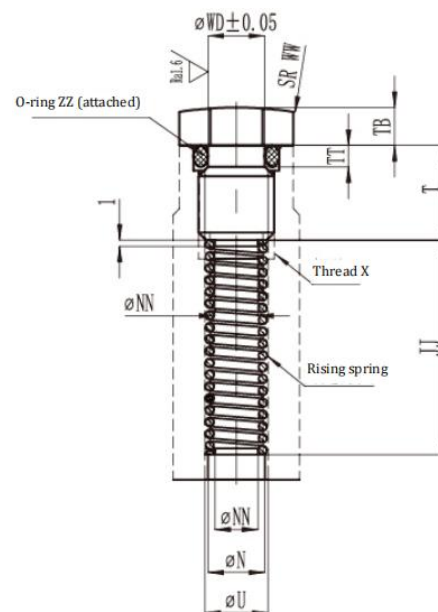




**External Dimension Table and Installation Part Processing Dimension Table**

(mm)

Model	HCST04 $-\frac{1}{H}$	HCST06 $-\frac{1}{H}$	HCST10 $-\frac{1}{H}$	HCST16 $-\frac{1}{H}$	HCST25 $-\frac{1}{H}$
JJ	17.6	22	22.5	32.5	39
N	7	7	8.5	8.5	10
NN	5.2	5.2	6.1	6.1	7.4
T	9	9	11	11	15
TB	7	7	7	9	9
TT	1.9	1.9	2.3	2.3	3.5
U	8.6	8.6	10.4	10.4	14.1
V	11	11	14	14	18
W	12.6	12.6	16.5	16.5	21.5
WD	7.8	7.8	9.2	9.2	13.5
WW	70	70	90	110	140
X nominal diameter × thread pitch	M10×1.5	M10×1.5	M12×1.75	M12×1.75	M16×2
Thread depth (recommended tightening torque)	Deep 11 (30 N·m)	Deep 11 (30 N·m)	Deep 13 (50 N·m)	Deep 13 (50 N·m)	Deep 20 (80 N·m)
O-ring ZZ	7×1.5	7×1.5	8.8×1.9	8.8×1.9	13.8×2.4



Model	HH33-02	HH33-03	HH33-05	HH33-07		HA33-03	HA33-04
JJ	15	18.5	22.1	25.5		12	17.1
N	4.8	5.5	7	7		4.5	4.5
NN	4	4.3	5	5.2		3.4	3.4
T	7	9	9	9		7.5	7.5
TB	3	4	4	4		3	3
TT	1.5	1.9	1.9	1.9		1.7	1.7
U	5.2	8	8.6	8.6		5.2	5.2
V	8	10	11	11		8	8
W	9	11.5	12.5	12.5		9	9
WD	4.5	6	7.8	7.8		4.5	4.5
WW	40	40	50	50		30	30
X nominal diameter × thread pitch Thread depth (recommended tightening torque)	M6 deep 7.5 (10 N·m)	M8 deep 8 (20 N·m)	M10×1.5 deep 10 (30 N·m)	M10×1.5 deep 10 (30 N·m)		M6 deep 9 (5 N·m)	M6 deep 9 (5 N·m)
O-ring ZZ	4×1.5	6×1.5	7×1.5	7×1.5		4×1.5	4×1.5

Note 1. When the user makes the cap, please refer to the cap detail to set the O-ring groove, spring shoulder surface and guide part. Be sure to use the supplied O-ring.

2. When the user makes the rising spring, please refer to the detailed drawing of the cap to determine its size. Be sure to carry out anti-rust treatment.

(the Company does not guarantee the action of the clamp when the user makes the spring.)

3. This figure shows the state of screwing the cap into the support plunger rod when it is not pressurized.

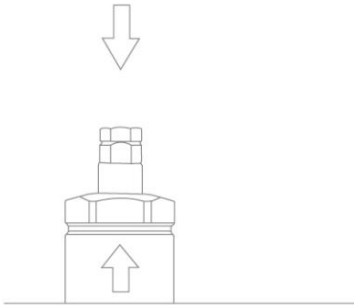
## Precautions

### Design Precautions

#### 1) Please confirm the specification

The maximum working pressure is 7.0Mpa and the minimum working pressure is 2.5 Mpa.

When the support cylinder is used with other clamping cylinders, please refer to the support force recorded on the attached "outline drawing" to ensure that it can be used with a support force more than 1.5 times the clamping force.



#### 2) Please pay attention to the design of the circuit

When designing the oil pressure circuit, please design the corresponding circuit on the basis of the attached machine carefully. The design error of the circuit may lead to the malfunction and damage of the machine.

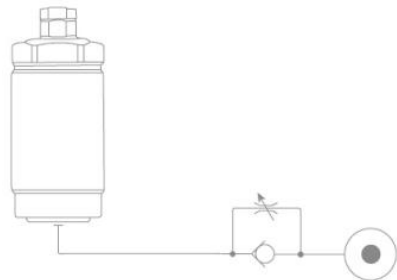


Caution

- When the workpiece is light, please set the temporary fixing device according to the specific situation. When a plurality of support cylinders are used, the plunger spring force may push the D-piece up.
- When the plunger is in use, the upper end of the plunger must be equipped with attached devices. The intrusion of foreign matters or cutting fluid from the threaded part at the top of the plunger will lead to poor operation.
- When the support cylinder is used on the welding fixture, the surface of the plunger must be protected. The splash deposited on the surface of the plunger during welding will increase the telescopic resistance of the plunger and make it unable to reach the normal position.

#### 3) Please adjust the oil supply based on the plunger action time of 0.5 to 1s.

To prevent the low speed of single acting oil cylinder during release, please use the flow regulating valve (oil inlet throttling type) with one-way valve to control the flow. In addition, too fast rising speed of the plunger will cause the plunger to rebound when it is pushed against the workpiece, and the position after rebound will be locked, resulting in a gap between the plunger and the L piece.

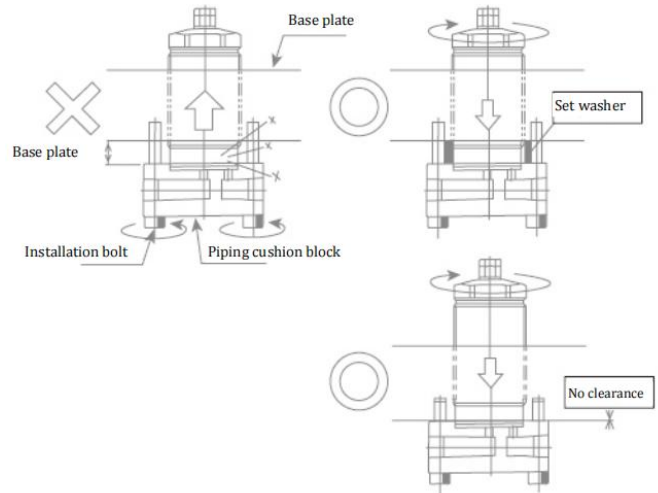


#### 5) Please select a flow regulating valve with a check valve with an opening pressure of 0.1MPa or less.

Selecting a flow regulating valve with a one-way valve with a high opening pressure will cause the plunger not to fall normally when released.

#### 6) When using the piping cushion block, please pay attention to prevent the deformation of the oil cylinder body during installation.

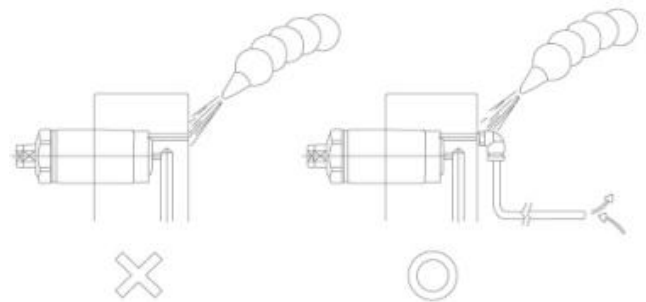
When 4 bolts are used for installation, it is difficult to control the tightening torque, so it is easy to cause deformation of the oil cylinder body due to excessive torque. In this case, firstly, fix the piping cushion block on the base plate without clearance, and then screw the oil cylinder body into the base plate with the specified torque.



Model	Thread size	Tightening torque (N•m)
HH33-02UL	M26×1.5	31.5
HH33-03UL	M30×1.5	50
HH33-05UL	M36×1.5	63
HH33-07UL	M45×1.5	80

#### 7) The vent must be open to the atmosphere.

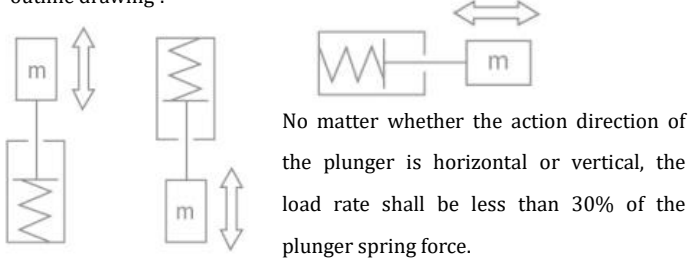
In order to ensure the normal operation of the repeated action of the plunger, the vent must be open to the atmosphere. In addition, the design of auxiliary tools must ensure that cutting fluid or foreign matters do not mix into the vent.



## Design Precautions

### 1) When other self-made devices are configured on the plunger

The load rate of the self-made device on the upper part of the plunger shall be less than 30% of the plunger spring force recorded on the attached "outline drawing".



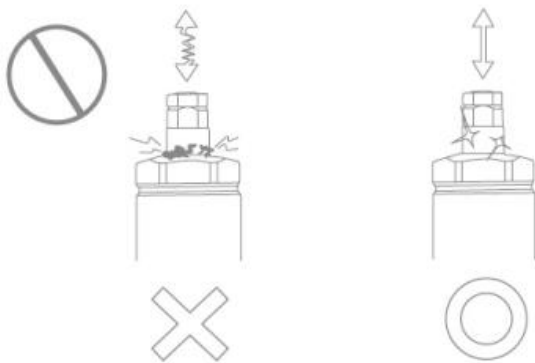
Example: if the plunger spring force of HH33-02UL is 2.8 to 4.1N, the weight of the self-made device shall be  $2.8 \times 0.3/9.807=0.09\text{Kg}$ . However, its value will change under the influence of the friction and spring characteristics when the plunger slides. Therefore, it is recommended to use it under low load rate as far as possible.

The dimension of the thread part of the self-made device shall be processed according to the dimension of the connecting bolt given in the attached "outline drawing". Because there is a spring inside the rod plug, if the self-made screw thread on the upper part of the plunger is inconsistent with the internal screw thread of the plunger, the spring force will change and be damaged, and eventually cause poor action of the oil cylinder.

## Maintenance

### 1) Keep the area around the plunger clean.

If it is used under the condition of oil dirt and other dirt on the surface, it will increase the telescopic resistance of the plunger and make it unable to reach the normal position.



2) When the automatic joint separation method is adopted, it must be noted that long-term use will cause air to mix into the air path, so the exhaust operation shall be regularly implemented.

3) Please regularly check and tighten the pipe joints, auxiliary devices and support cylinder body.

4) Please confirm whether the working oil is deteriorated.

5) Please confirm whether the movement is smooth and whether there is abnormal sound. Please confirm whether the action is normal when starting again after long-time placement.

6) The product shall be stored in a cold and dark place away from direct sunlight, moisture, etc.