7MPa

Work Support

model **CSM**

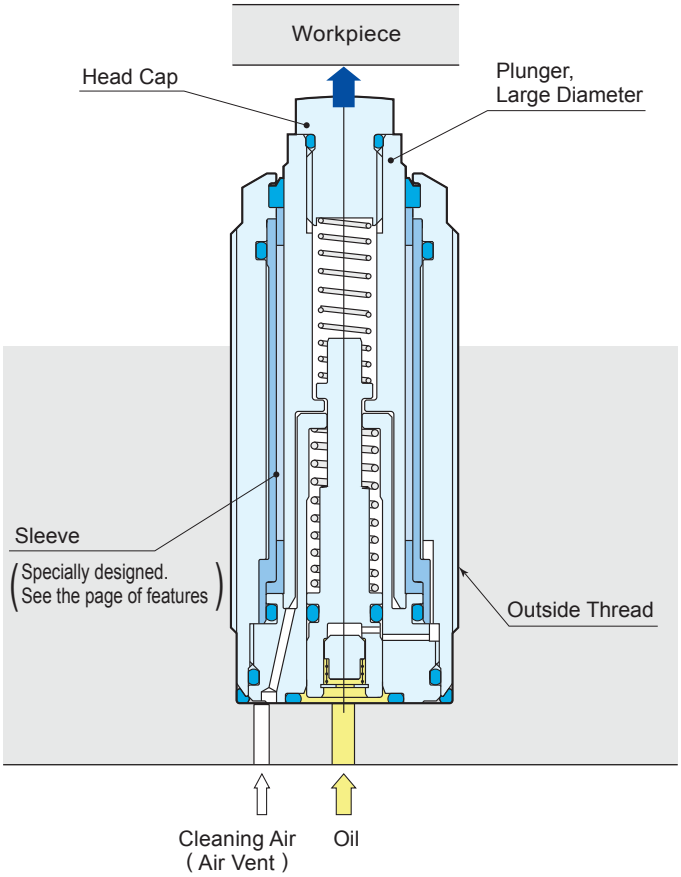
Pascal

www.pascaleng.co.jp

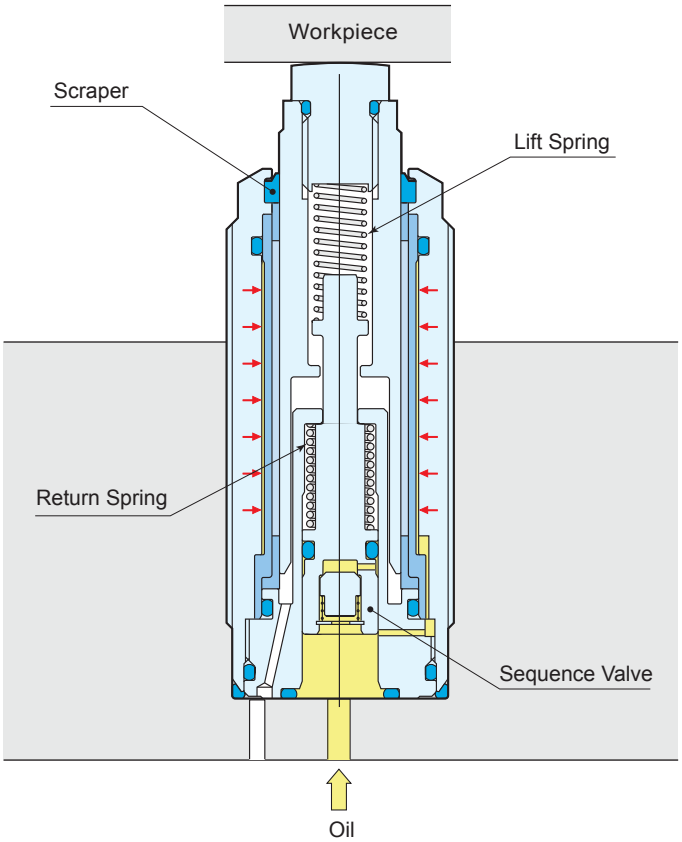
Work Support 7MPa

model **CSM**

①Hydraulically lifted / Touch & Height Positioning by Spring



②Hydraulically Locked



Model		CSM0.2	CSM0.3	CSM0.4	CSM0.6
Support Force at 7MPa ※1		2.0 kN	3.0 kN	4.0 kN	6.0 kN
Plunger Stroke		8 mm	8 mm	8 mm	8 mm
Cylinder Capacity		0.7 cm^3	0.7 cm^3	1.1 cm^3	1.1cm^3
Lift Spring Force	L : Standard Type	4.0～7.0 N ※2			
	H : High-Power Type	6.0～11.0 N ※2			
Maximum Allowable Mass of Head Cap		0.05kg（Standard Type）／0.1kg（High-Power Type）			
Mass		0.3 kg	0.4 kg	0.6 kg	1.2 kg

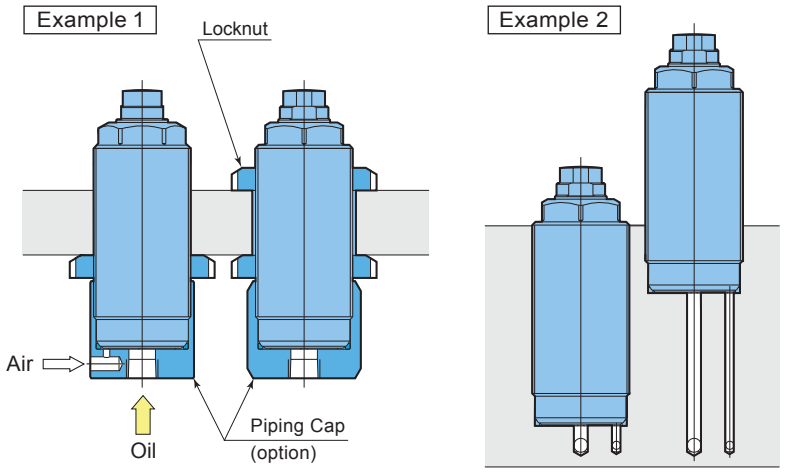
Working Pressure Range 2.5～7MPa　Proof Pressure 10.5MPa　Ambient Temperature 0～70℃

Fluorine rubber (Viton) is used as a material of scraper as well as of sealing portions (Note : this is not for heat resistance).

※1：If the work support and work clamp are used at opposed directions, the support force of work support must be more than 1.5 times of the applied load (sum of clamp's clamping force＋machining force). Be sure to select adequate models of both work support and work clamp.

※2：Figures are of "top end ~ bottom end" of plunger action.

Mounting Examples



See detailed dimensions on page 6.

Class definition

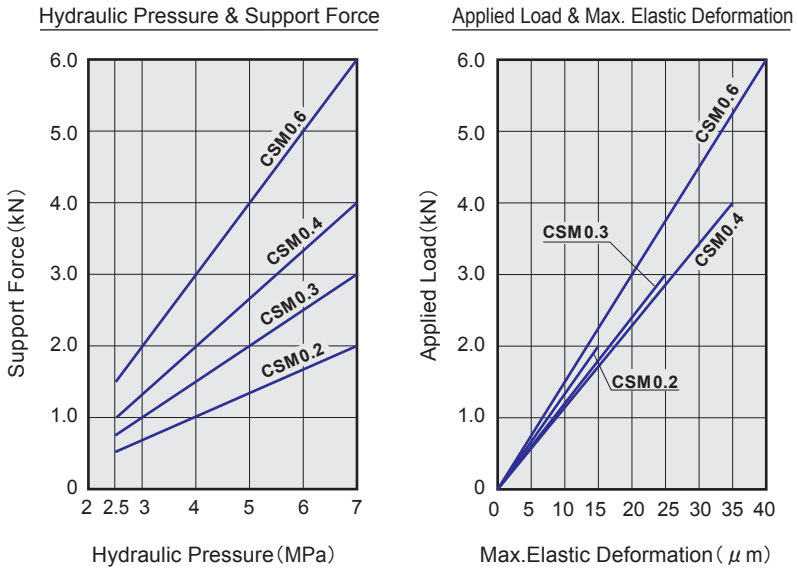
CSM ① ② - ③ （Example：CSM0.2H-A）

① Size (Refer to specification table above)
0.2, 0.3, 0.4, 0.6

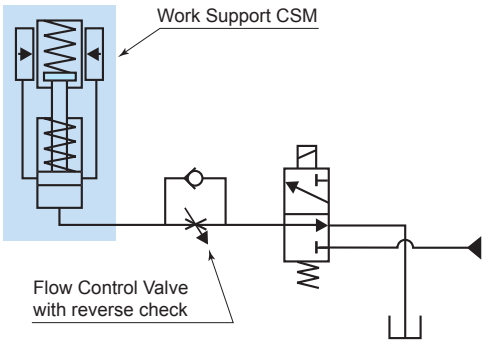
② Type of lift spring force (refer to specification table above)
L ： Standard type　H ： High-Power type

③ Option symbol
A ： Air Purge

Performance Diagram



Hydraulic Circuit Diagram (reference)

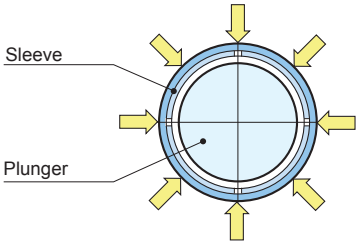


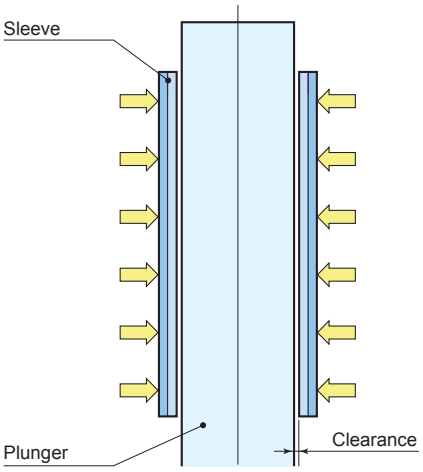
1.Make sure to set the plunger's lifting time to take longer than 0.5 second by using flow control valve with reverse check.

2.This flow control valve with reverse check should have a reverse free-flow check that has a cracking pressure of less than 0.05 MPa.This will prevent excessive back pressure that could increase the plunger's retract time.

Features

1. Sleeve-Specially designed





Even and stable Support Force

- Newly designed sleeve brings an even & stable support force even at low hydraulic pressure (7MPa).
- Contacting area is large at the surfaces of sleeve and plunger, so that plunger is given a highly uniform load. Thus, persistent supporting capacity is secured against intermittent machining force.

Tight locking with high-precision

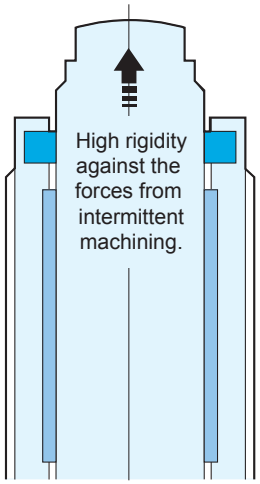
Plunger is designed not to cause any downward motion. Plunger's upward motion from sleeve's displacement is minimized.

Wide clearance

The sleeve was specially designed to have a large displacement amount. Thus when unlocked, wide clearance is secured between sleeve and plunger for smooth up/down motion of plunger.

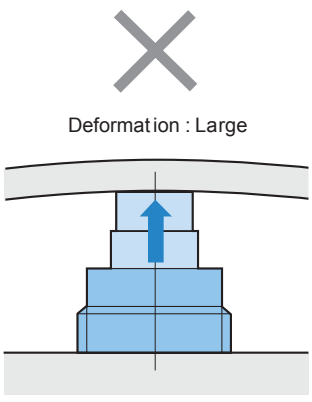
2. High Rigidity by large diameter plunger

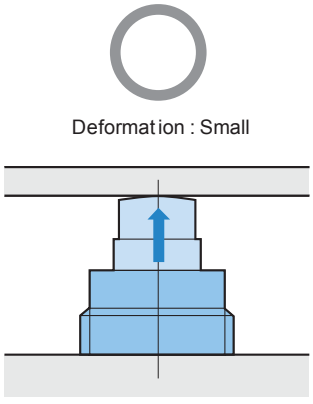
Plungers with large diameter are adopted. The high rigidity supports and protects thin workpieces from vibration and deflection.

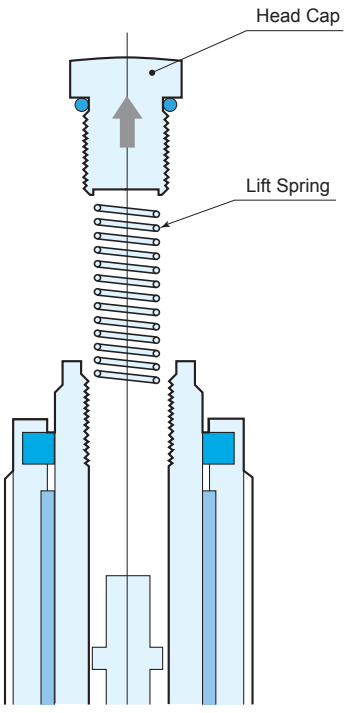


3. Easy Accessibility of Lift Spring

Light force type spring is employed in order to avoid workpiece's deformation from plunger lifting. Lift spring can be flexibly changed according to the rigidity of workpiece or the weight of head cap. Ask us if necessary.







Lift Spring	Standard Type	High-Power type
Lift Spring Force ※	4.0～7.0N	6.0～11.0N
Max.Allowable Mass of Head Cap	0.05kg	0.1kg

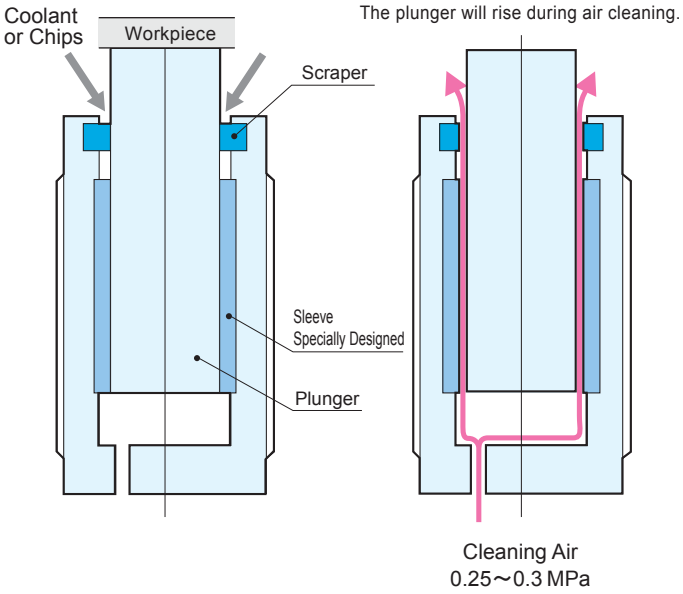
※Figures are for"top end～bottom end"of plunger action.

4. Air Cleaning Circuit (Standard)

PATENT P.

In order to smoothly lift / lower the plunger, too tight scraper can not be applied. In model CSM, air cleaning circuit is standard-equipped to clean the gap between sleeve and plunger when workpiece is off, avoiding intrusion of high-pressure coolant or chips.

Workpiece ON | Workpiece OFF

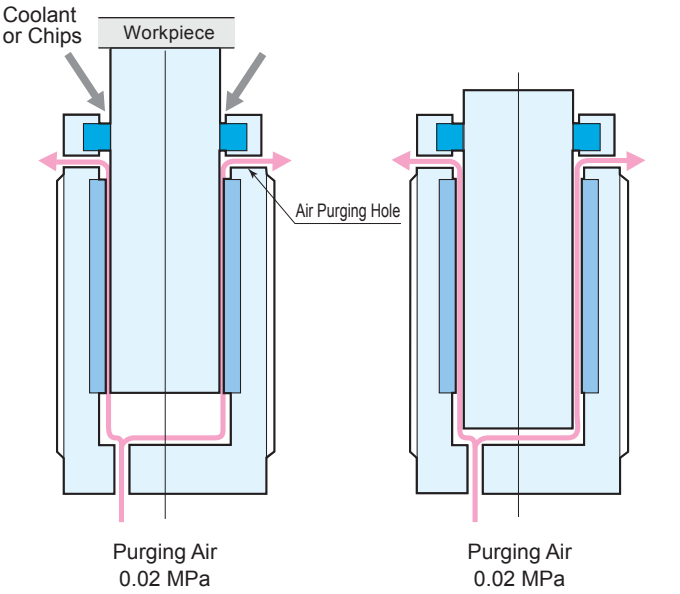


5. Air-Purge (Option)

PATENT P.

In this option, low pressure air (0.02 MPa) is constantly provided in order to blow coolant and chips off from air purging hole.
Ask us for details.

Workpiece ON | Workpiece OFF



6. Function of Sequence Valve

PATENT P.

Owing to built-in sequence valve's action, plunger's upward and downward actions are secured.

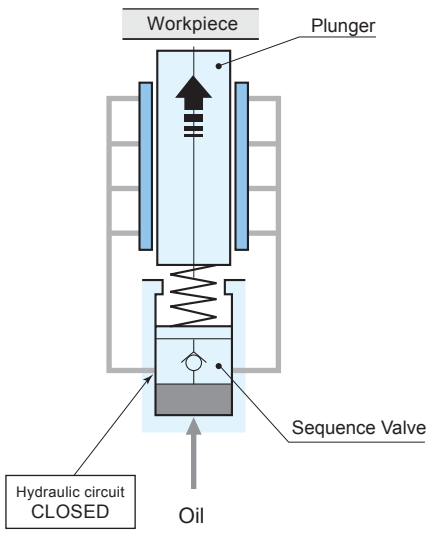
When Lifting and Locking

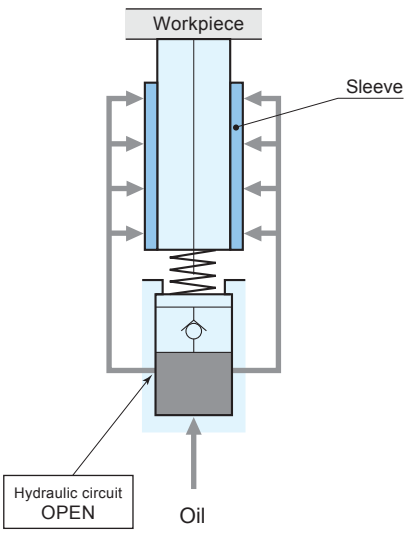
①Sequence valve and plunger are hydraulically lifted to touch the workpiece and position the height.

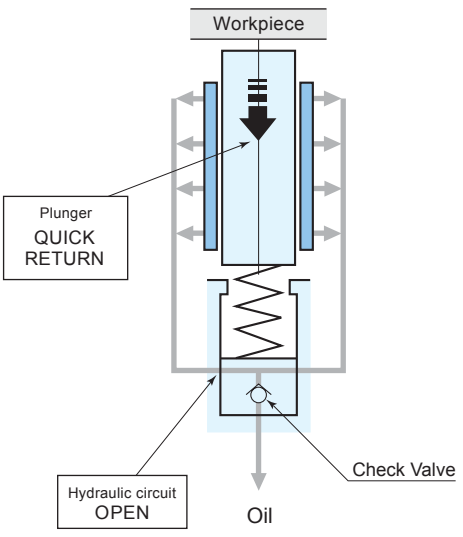
②Hydraulic circuit is opened at the stroke end of sequence valve action. Sleeve tightly locks the plunger.

When Unlocking and Descending

Sequence valve descends and check valve is opened. Sleeve unlocks plunger.

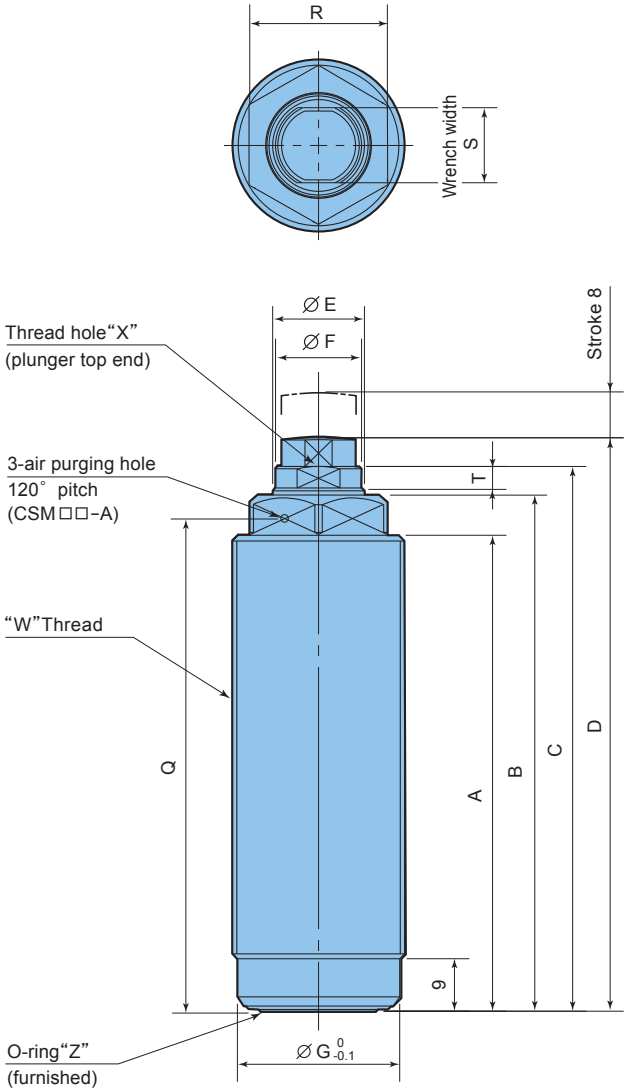






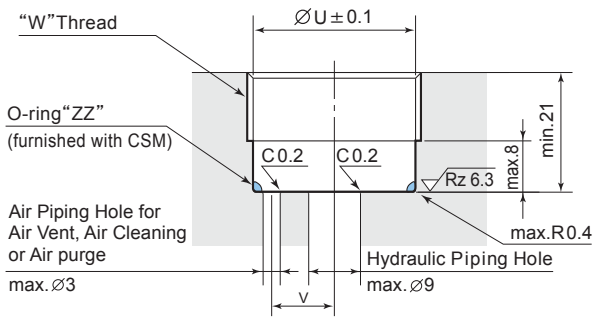
Outline Dimensions

CSM0.2／CSM0.3／CSM0.4／CSM0.6



Outline drawing for 2D/ 3D CAD can be downloaded from our URL: http: //www.pascaleng.co.jp/

Mounting Details



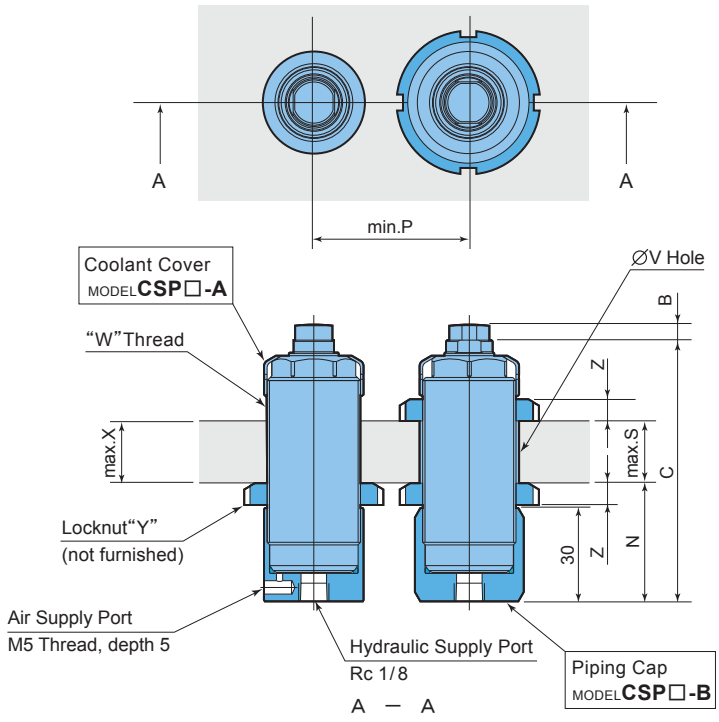
The mounting surface should be no rougher than Rz 6.3 (ISO 4287 : 1997)

Size Table

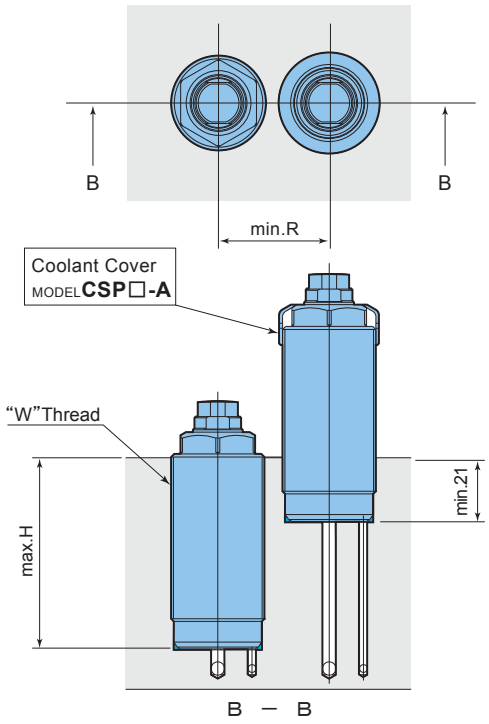
（mm）

Model	CSM0.2	CSM0.3	CSM0.4	CSM0.6
A	63	83	87	101
B	70	90	97	112
C	75	95	103	118
D	80	100	110	125
E	16	16	20	25
F	15	15	19	24
G	28.3	28.3	33.3	43.1
Q	65.5	85.5	92.5	105.8
R	24	24	30	36
S	13	13	17	19
T	4	4	5	5
U	28.5	28.5	33.5	43.5
V	11	11	13	16
W	M30×1.5	M30×1.5	M35×1.5	M45×1.5
X	M10×1.5	M10×1.5	M12×1.75	M12×1.75
Z	AS568-014	AS568-014	AS568-016	AS568-016
ZZ	AS568-022	AS568-022	AS568-025	AS568-030

Mounting Dimensions 1



Mounting Dimensions 2



Size Table

(mm)

Model	B	C	H ※1	N	P	R	S ※1	V	W	X ※1	Y	Z
CSM0.2	5	84	62	38	46	33	26	30.5	M30×1.5	33	CSP 06M-L ※2 (AN06)	7
CSM0.3	5	104	82	38	46	33	46	30.5	M30×1.5	53	CSP 06M-L ※2 (AN06)	7
CSM0.4	7	112	86	39	53	38	49	35.5	M35×1.5	57	CSP 10M-L ※2 (AN07)	8
CSM0.6	7	127	100	41	66	48	59	45.5	M45×1.5	69	(AN09)	10

※1 : If coolant cover is mounted, reduce 6 mm.
※2 : For the detailed dimensions, refer to the separate brochure (No CLS-25E).

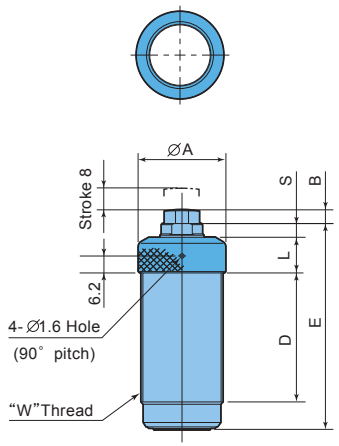
Class Designation for Options

CSP ① - ② (Example : CSP0.4-A)

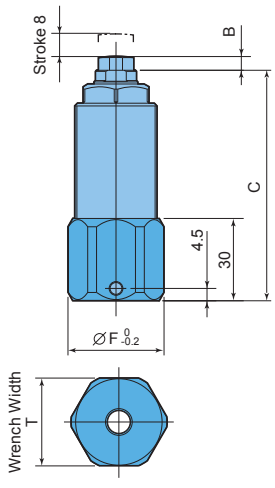
① Size (refer to specification table)
Nil : for CSM0.2 and 0.3
0.4 : for CSM0.4
0.6 : for CSM0.6
② Option Symbol
A : coolant cover
B : Piping cap

Coolant cover is to protect the air purging hole (of air purge option) from the intrusion of coolant and chips. Its slant outline serves to smoothly put the chips away from the top hexagon portion of body.

Coolant Cover CSP□-A



Piping Cap CSP□-B



Remark : O-ring ZZ is not furnished.

Size Table

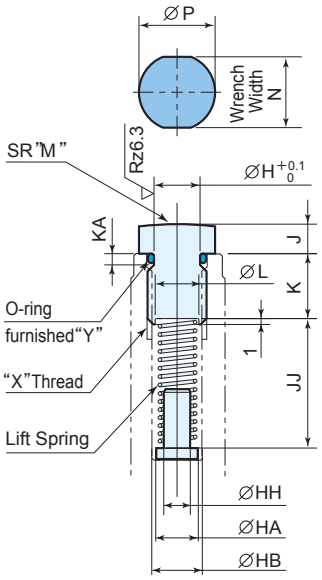
(mm)

Model	A	B	C	D	E	F	L	S	T	W
CSM0.2	32	5	84	47	75	35	13	5	32	M30×1.5
CSM0.3	32	5	104	67	95	35	13	5	32	M30×1.5
CSM0.4	37	7	112	72	103	45	15	6	41	M35×1.5
CSM0.6	47	7	127	86	118	54	16	6	50	M45×1.5

Work Support

Head Cap Dimension

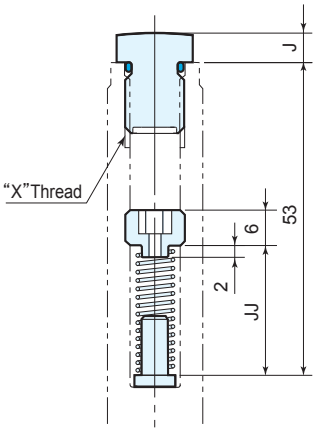
CSM 0.2 / 0.4 / 0.6



※Head cap hardness HRC52

CSM0.3

※Head cap and lift spring can be commonly used for both CSM0.2 & CSM0.3.



Size Table (mm)

	CSM0.2/0.3	CSM0.4	CSM0.6
H	7.8	8.9	8.9
HA	7	9.2	9.2
HB	8.5	10.3	10.3
HH	5	6	6
J	5	7	7
JJ	22	39	54
K	11	12	12
KA	1.9	3	3
L	7.4	9.2	9.2
M	55	90	90
N	12	14	17
P	12.9	16.9	18.9
X	M10×1.5(coarse) Thread depth 13	M12×1.75(coarse) Thread depth 18	M12×1.75(coarse) Thread depth 18
Y	4DS8	4DP9	4DP9

⚠ Caution in Use

1. Surface roughness at the bottom of mounting hole should be no rougher than Rz 6.3 (ISO 4287 : 1997).
2. Tightening torque to mount should be :
   40 ~ 50 N·m for CSM0.2 & CSM0.3, 45 ~ 55 N·m for CSM0.4, 55 ~ 65 N·m for CSM0.6.
3. When fixing a body by vise, etc., make sure its force is less than 2.5 kN.
4. Do not block the air vent. If coolant or dust is intruding, make necessary piping.
5. Head cap should be always used in order to retain the lift spring. If fabricating head cap yourself, be sure to make an O-ring slot and spring's spot-facing by referring to above head cap dimensions. Be sure to use the furnished O-ring at all times.
6. The furnished O-ring"ZZ"should be always used.
7. If fabricating a lift spring yourself, set the dimensions by referring to the size table of head cap dimensions. Anti rust precaution should be taken. When non-standard lift springs are used, no guarantee is provided for its action.
8. Head cap should be tightened with the designated torques as under.
   30 N·m for CSM0.2 & CSM0.3
   50 N·m for CSM0.4 & CSM0.6
9. Oil free air through 5μm filter should be used.

CLS-09E-6
2023. 05

Itami, Hyogo, Japan 664-8502
TEL. 072-777-3333 FAX. 072-777-3520