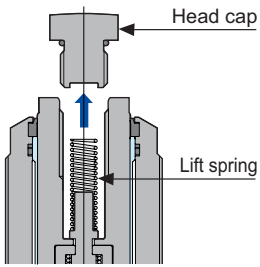


Pascal Work Support

Highly flexible mounting design

Easily accessible Lifting spring

Varying conditions may require a different rate lift spring. An extended head cap may require a heavier spring, due to the added weight. A lighter spring may help prevent deflection on thin section workpieces. See dimensional data for spring specifications.



Viton seal design

Fluorine rubber (Viton) is used for the plunger scraper as well as the pressure seals. Viton is compatible with chlorine based cutting fluids and coolants.

Stainless steel parts

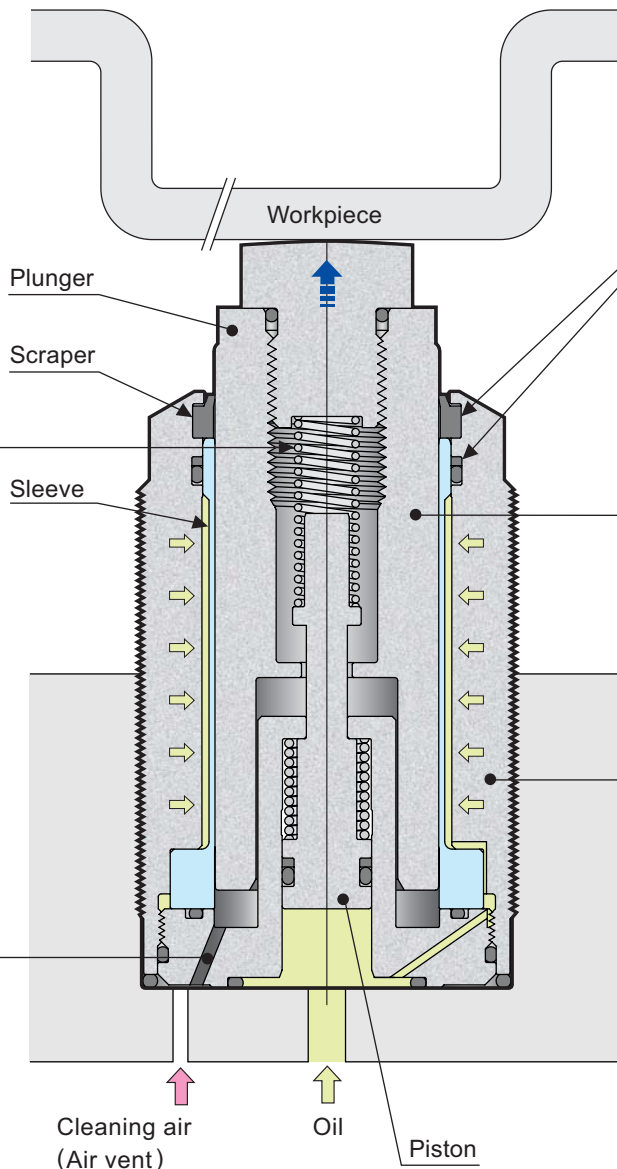
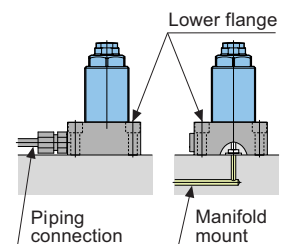
Plunger, sleeve, head cap and springs are made of stainless steel for longer life.

Ion-nitrided parts

Casing and piston are ion-nitrided for anti-abrasive and antirust durability.

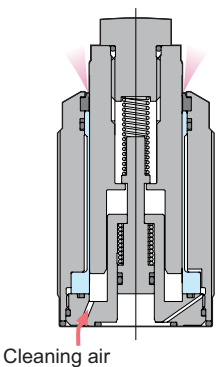
Optional lower flange

Flexible mounting with threaded port or manifold connections.

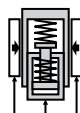


Air cleaning circuit

The standard-equipped vent can be used as an air cleaning circuit. When the work support is not under pressure, air can be used to clean the gap between the sleeve and the plunger. This helps prevent the intrusion of high-pressure coolant or chips.



Hydraulic advance model **CSW**



Model		CSW06T	CSW10T	CSW16T	CSW25T
Support force ※1	at 5000 psi	1600 lbs	2500 lbs	4000 lbs	6000 lbs
	at 3500 psi	1030 lbs	1620 lbs	2590 lbs	3890 lbs
	at 2000 psi	470 lbs	740 lbs	1190 lbs	1790 lbs
Plunger stroke		0.315 in	0.394 in	0.394 in	0.512 in
Oil capacity		0.09 in ³	0.18 in ³	0.34 in ³	0.35 in ³
Lift spring force ※2		1.3 ~ 2.5 lbs	2.2 ~ 3.6 lbs	3.6 ~ 6.5 lbs	5.6 ~ 10.1 lbs
Maximum allowable weight of head cap		0.22 lb	0.22 lb	0.44 lb	0.44 lb
Weight		0.6 lb	0.9 lb	2.3 lb	4.2 lb

Working pressure range 1000 ~ 5000 psi, Maximum backpressure 7 psi, Ambient temperature 32 ~ 158 °F

※1 : If the work support and work clamp are used at opposed directions, the support force of the work support must be more than 1.5 times that of the applied load (sum of the clamping force + machining force).

Be sure to select adequate models both work support and work clamp.

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

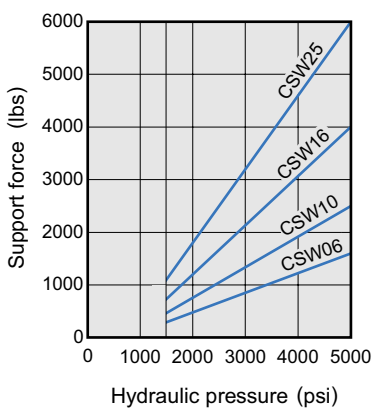
Class Definition (Example : CSW06T-F)

① Size(Refer to specification table.) ② Peripheral thread ③ Option symbol (Refer to mounting example.)

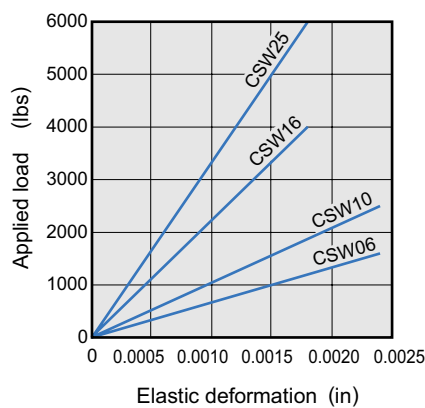
CSW	06	T : Unified thread	— F : Lower flange model CSP ① T-N equipped (see page 9)
	10		
	16		
	25		

Performance diagram

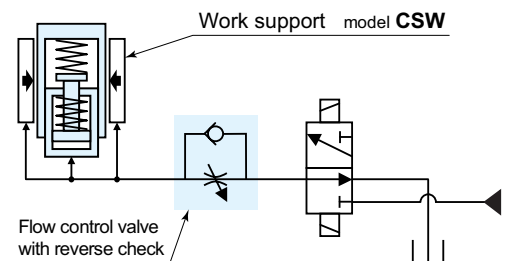
Hydraulic pressure & Support force



Applied load & Elastic deformation

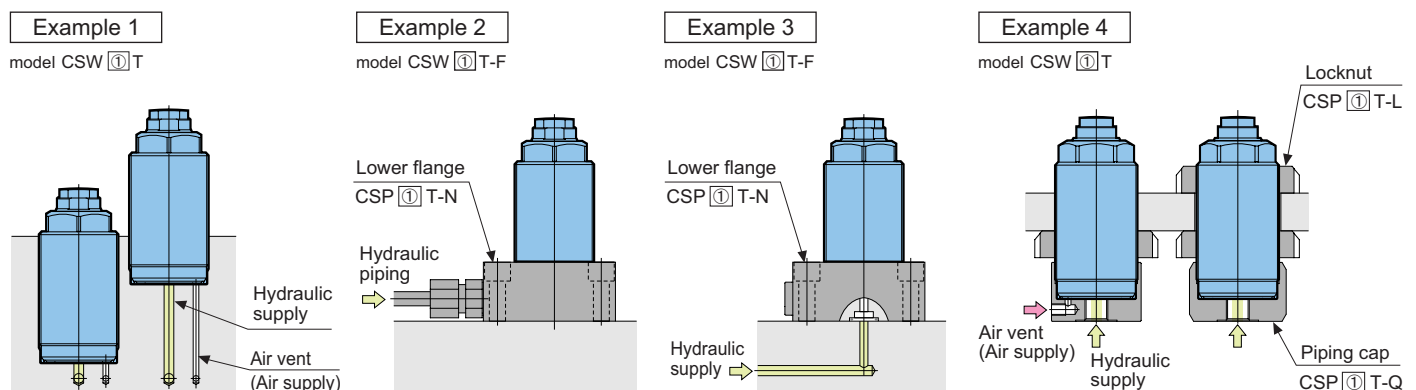


Hydraulic circuit diagram (reference)

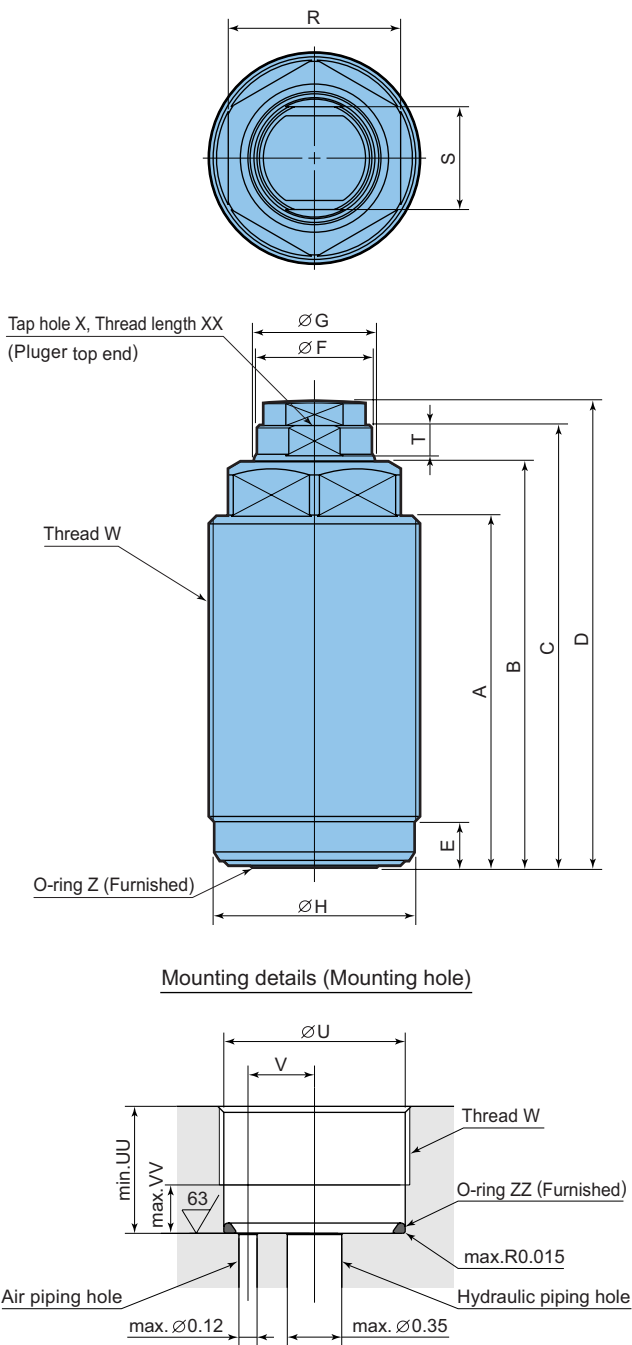


Make sure to set the plunger's lifting time to take longer than 0.5 second by using a flow control valve. This flow control valve should have a reverse free-flow check that has a cracking pressure of less than 7 psi. This will prevent excessive back pressure that could increase the plunger's retract time.

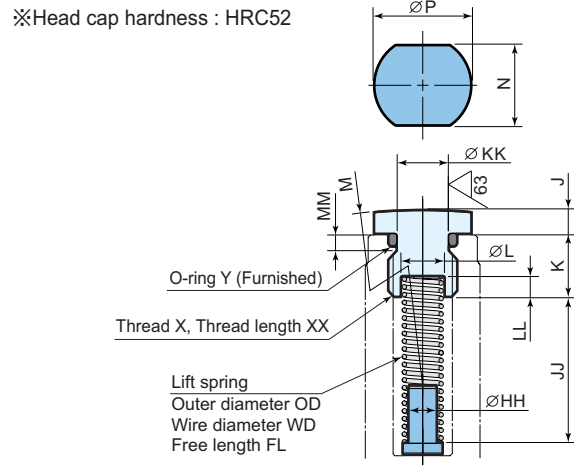
Mounting example



Outline dimensions



Head cap dimensions



(inch-accept where noted)

model	CSW06T	CSW10T	CSW16T	CSW25T
A	2.01	2.28	2.34	2.70
B	2.28	2.64	2.83	3.23
C	2.48	2.87	3.07	3.50
D	2.64	3.03	3.31	3.78
E	0.30	0.30	0.30	0.31
F	0.59	0.75	1.14	1.54
G	0.63	0.79	1.18	1.57
H	1.181-1.177	1.307-1.303	1.933-1.929	2.433-2.429
HH	0.20	0.20	0.24	0.30
J	0.16	0.16	0.24	0.28
JJ	0.81	1.00	0.96	1.28
K	0.35	0.43	0.47	0.43
KK	0.307-0.311	0.350-0.354	0.524-0.528	0.524-0.528
L	0.29	0.30	0.37	0.44
LL	0.06	0.14	0.06	0.06
M	2.76	3.54	4.33	5.51
MM	0.08	0.12	0.09	0.09
N	0.47	0.55	0.75	0.94
P	0.51	0.67	0.91	1.18
R	1	1 1/8	1 11/16	2 1/4
S	0.51	0.67	0.94	1.26
T	0.16	0.20	0.20	0.22
U	1.193-1.185	1.327-1.319	1.945-1.937	2.453-2.445
UU	0.61	0.61	0.61	0.79
V	0.43	0.47	0.71	0.93
VV	0.26	0.26	0.26	0.28
W (Recommended Tightening torque)	1 1/4 -16 (26 ft·lb)	1 3/8 -18 (44 ft·lb)	2-16 (96 ft·lb)	2 1/2 -16 (184 ft·lb)
X	M10×1.5	M12×1.75	M16×2	M16×2
XX	0.51	0.63	0.79	0.79
Y ※1	S8	P9	AS568-014	AS568-014
Z ※2	AS568-014	AS568-015	AS568-019	AS568-022
ZZ ※1	AS568-023	AS568-025	S46	AS568-036
OD	0.26	0.28	0.34	0.41
WD	0.028	0.031	0.039	0.047
FL	1.35	1.83	1.68	2.27

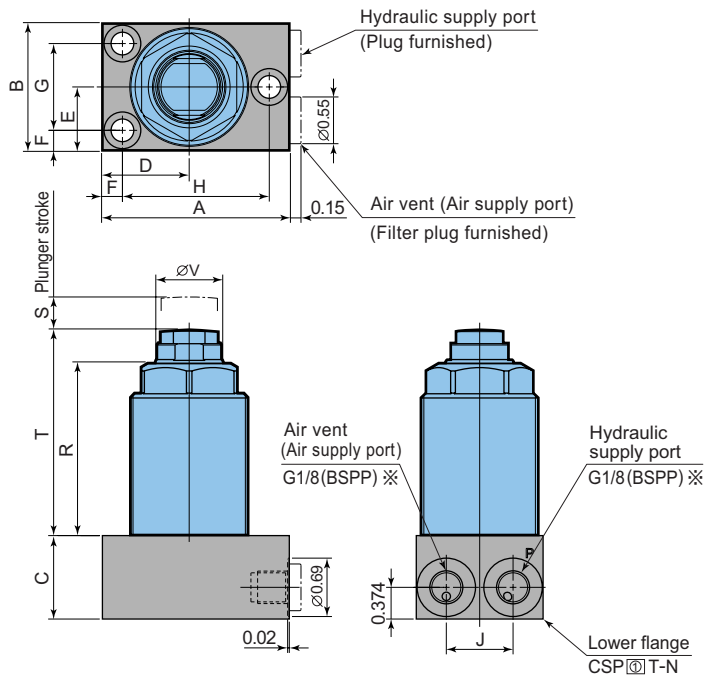
Caution in use

1. The O-ring sealing area should have a minimum surface finish of 63 MU in.
2. Do not block the air vent. If there is a chance of coolant or debris entering the air vent, pipe to a clean area of the fixture.
3. A head cap should always be used on the plunger. If a fabricating head cap is used, be sure to machine a groove for the O-ring and spot-facing for the lift spring. Refer to the above head cap dimensions.
4. Be sure to use the furnished O-ring at all times.

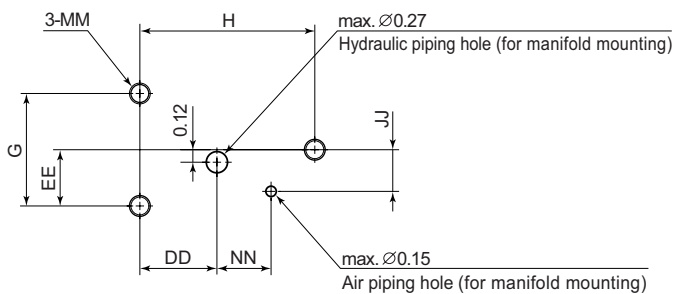
※ 1 : The material of O-ring is fluorine rubber (Viton) with hardness Hs70.
 ※ 2 : The material of O-ring is fluorine rubber (Viton) with hardness Hs90.

(inch-accept where noted)

Mounting dimensions 1 with Lower flange

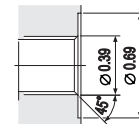


Mounting details



Model	CSW06T-F	CSW10T-F	CSW16T-F	CSW25T-F
A	1.93	2.20	2.62	3.29
B	1.50	1.50	2.36	2.95
C	0.98	0.98	0.98	1.18
D	0.83	1.02	1.14	1.42
E	0.75	0.75	1.18	1.48
F	0.20	0.24	0.24	0.31
G	1.10	1.02	1.89	2.32
H	1.48	1.73	2.15	2.68
J	0.79	0.79	0.94	1.18
R	1.67	2.03	2.22	2.44
S	0.31	0.39	0.39	0.51
T	2.03	2.42	2.70	2.99
V	0.63	0.79	1.18	1.57
DD	0.63	0.79	0.91	1.10
EE	0.55	0.51	0.945	1.16
JJ	0.39	0.39	0.47	0.59
MM	No.10-24 (M5 × 0.8)	1/4-20 (M6 × 1)	1/4-20 (M6 × 1)	5/16-18 (M8 × 1.25)
NN	0.47	0.51	0.61	0.89

G1/8(BSPP)

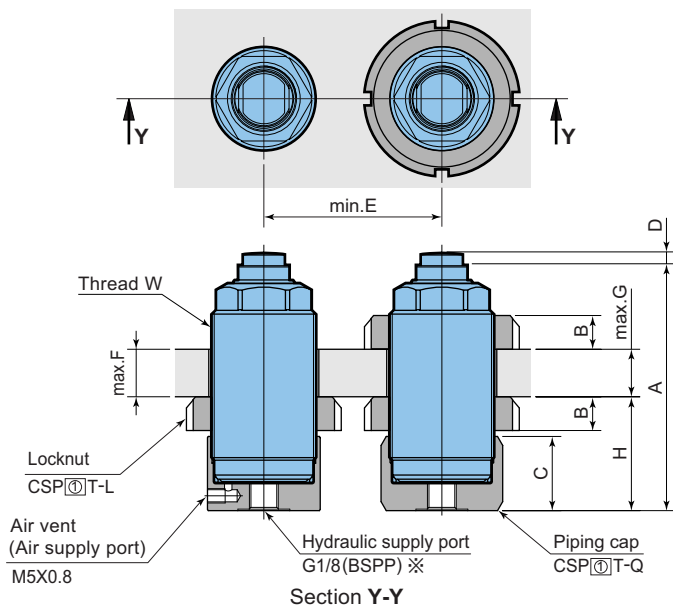


* BSPP tube fittings are available from Pascal. Please refer to separate listing for model number.

- 1 : In case for manifold mounting, the mounting surface should have a minimum surface finish of 63 MU in.
- 2 : One filter plug for air vent and one plug for manifold mounting are furnished.
- 3 : For the details of lower flange refer to page 9.

(inch-accept where noted)

Mounting dimensions 2 with Locknut and Piping cap

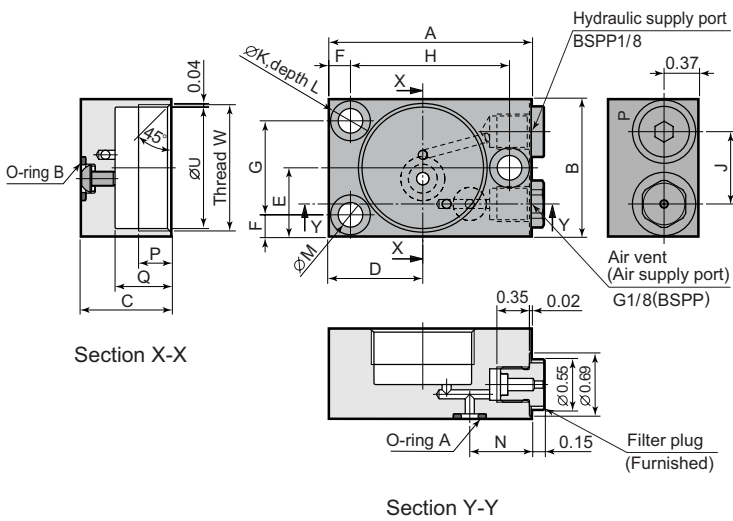


Model	CSW06T	CSW10T	CSW16T	CSW25T
A	2.85	3.25	3.44	3.88
B	0.51	0.45	0.51	0.64
C	0.98	0.98	0.98	1.12
D	0.16	0.16	0.24	0.28
E	2.05	2.11	3.05	3.54
F	0.79	1.14	1.14	1.22
G	0.28	0.31	0.63	0.59
H	1.53	1.47	1.53	1.80
W	1 1/4-16	1 3/8-18	2-16	2 1/2-16

1. For the details of locknut and piping cap refer to page 9.

(inch-accept where noted)

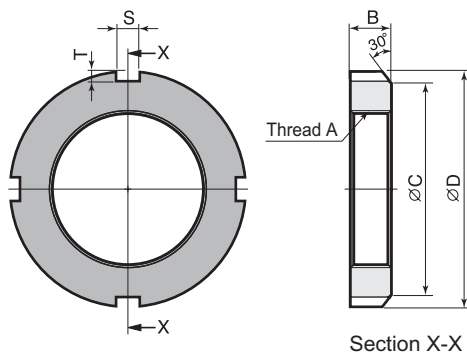
Lower flange model CSP ① T-N



Lower flange model	CSP06T-N	CSP10T-N	CSP16T-N	CSP25T-N
A	1.93	2.20	2.62	3.29
B	1.50	1.50	2.36	2.95
C	0.98	0.98	0.98	1.18
D	0.83	1.02	1.14	1.42
E	0.75	0.75	1.18	1.48
F	0.20	0.24	0.24	0.31
G	1.10	1.02	1.89	2.32
H	1.48	1.73	2.15	2.68
J	0.79	0.79	0.94	1.18
K	0.37	0.43	0.43	0.55
L	0.26	0.31	0.31	0.43
M	0.22	0.27	0.27	0.33
N	0.63	0.67	0.87	0.98
P	0.35	0.35	0.35	0.51
Q	0.61	0.61	0.61	0.79
U	1.19	1.32	1.94	2.45
W	1 1/4-16	1 3/8-18	2-16	2 1/2-16
O-ring A ※1	4DP6	4DP6	4DP6	4DP6
O-ring B ※2	4DBP9	4DBP9	4DBP9	4DBP9
Work support model applied	CSW06T CSV06T	CSW10T CSV10T	CSW16T CSV16T	CSW25T CSV25T

※1 Material is fluorine rubber (viton) with hardness Hs70.
 ※2 Material is fluorine rubber (viton) with hardness Hs90.

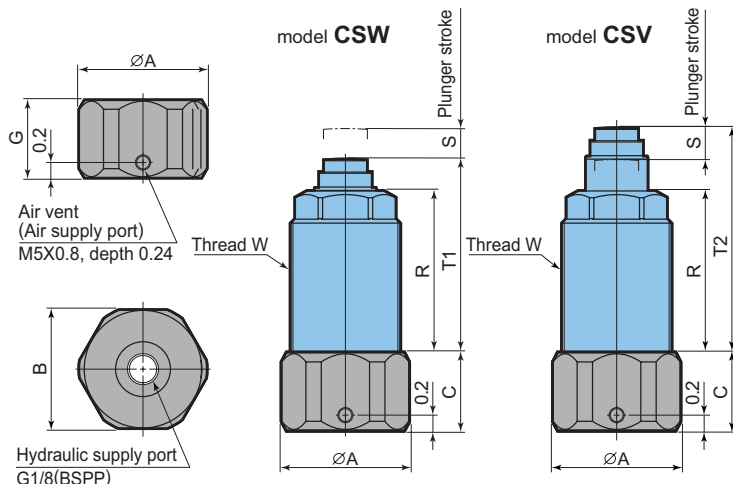
Locknut model CSP ① T-L



(inch-accept where noted)

Locknut model	CSP06T-L	CSP10T-L	CSP16T-L	CSP25T-L
A	1 1/4-16	1 3/8-18	2-16	2 1/2-16
B	0.51	0.45	0.51	0.64
C	1.69	1.81	2.69	3.13
D	2.00	2.06	3.00	3.50
S	0.24	0.178	0.302	0.302
T	0.125	0.094	0.125	0.156
Work support model applied	CSW06T CSV06T	CSW10T CSV10T	CSW16T CSV16T	CSW25T CSV25T

Piping cap model CSP ① T-Q



(inch-accept where noted)

Piping cap model	CSP06T-Q	CSP10T-Q	CSP16T-Q	CSP25T-Q
A	1.50	1.61	2.36	2.99
B	1.38	1.50	2.17	2.76
C	0.98	0.98	0.98	1.12
R	1.67	2.03	2.22	2.48
S	0.31	0.39	0.39	0.51
T1	2.03	2.42	2.70	3.03
T2	2.34	2.81	3.09	3.54
W	1 1/4-16	1 3/8-18	2-16	2 1/2-16
Work support model applied	CSW06T CSV06T	CSW10T CSV10T	CSW16T CSV16T	CSW25T CSV25T

⚠ Caution in use

1. For air cleaning circuit, oil free air through $5\ \mu\text{m}$ filter should be used by connecting to air vent port (Cleaning air pressure recommended : $45 \sim 60\ \text{psi}$). This air pressure cleans the gap between the sleeve and the plunger. Once the work support is pressurized, this gap closes and the air no longer purges. The air pressure does exert upward force to the plunger. To prevent the air pressure from exerting additional force against the piece part, turn the air supply on during the part exchange when no parts are in the fixture.
2. Below usages should be avoided, as these may cause a sleeve deformation that could lead a malfunction of plunger or decrease of support force.

- To give an eccentric load to the plunger.
- To apply a load over the rated support force.
- To rotate the plunger when locked.

