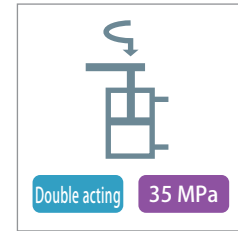


Swing clamp

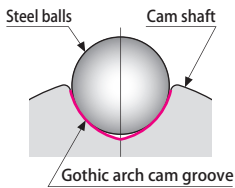
model
CTK



Compact, high performance, and high durability

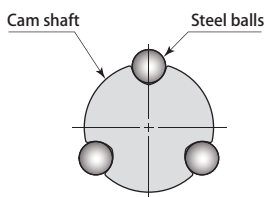
Gothic arch cam groove

Superior durability, high frequency, and high-speed swinging operation is achieved thanks to lowered and controlled seating surface pressure. This is made possible by adopting gothic arch cam grooves that use steel balls with larger surface area

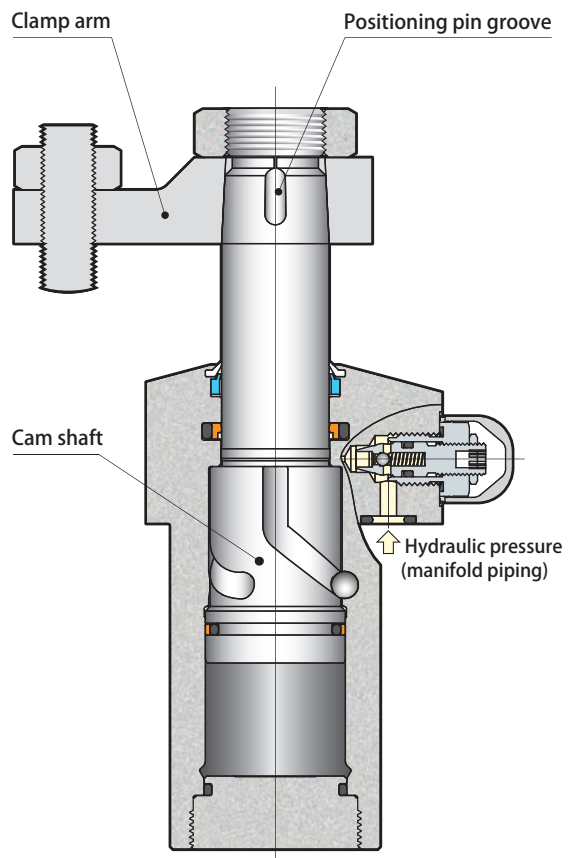


3-point ball support

Smooth, stable and high-speed swinging operation has been achieved by 3-point ball support mechanism.

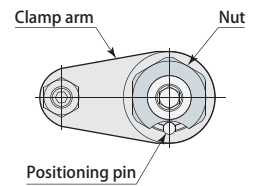


Large diameter cam shaft and wide distance between the cam grooves offers higher rigidity. An overload protection mechanism is not needed due to improvement of durability and impact resistance, providing stable and secure high-speed swing operation.



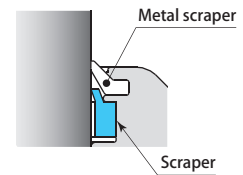
Clamp arm positioning & replacement

Positioning pin groove adopted with all models. Positioning (angle) of clamp arm can be performed easily.



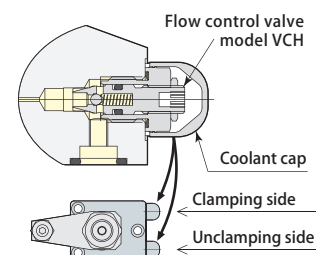
Metal scraper

Protecting the scraper from chips which become hot due to dry cutting.



Flow control valve Patented

For manifold piping, operating speeds can be adjusted individually by mounting a flow control valve (option), making sequential operation on same circuit or control of synchronization operation easier. page → 359



35MPa clamp & work support
Swing clamp
Swing clamp (ROHM/ELD-compatible)
Swing clamp (ENERPAC-compatible)
Link clamp
Clamp cylinder
Work support
Option

Model designation

CTK ①②-③ (Example : CTK06U-R)

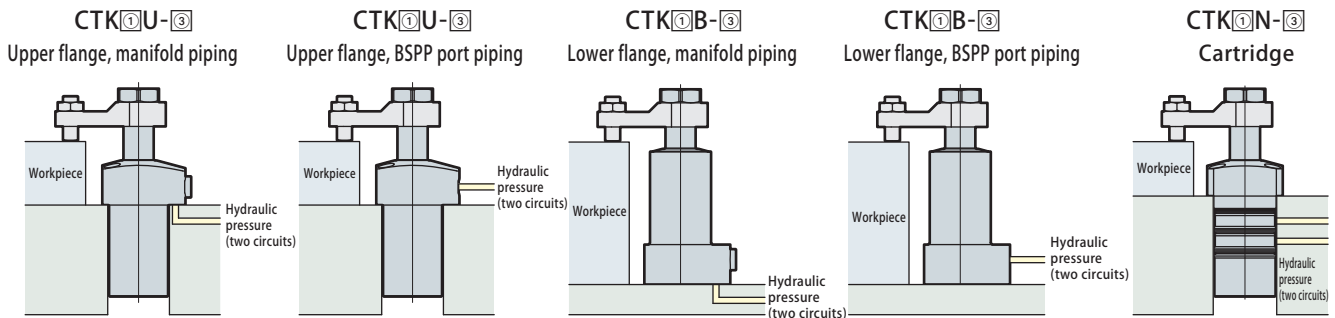
	① Size (refer to specification table)	② Mounting and piping types (refer to diagram below)	③ Swing direction & swing angle (refer to diagram below)
CTK	02	U : Upper flange page → 319	L : Counter-clockwise, swing angle 90° (L30) : Counter-clockwise, swing angle 30° (L45) : Counter-clockwise, swing angle 45° (L60) : Counter-clockwise, swing angle 60° R : Clockwise, swing angle 90° (R30) : Clockwise, swing angle 30° (R45) : Clockwise, swing angle 45° (R60) : Clockwise, swing angle 60° (C) : Straight, swing angle 0°
	04		
	06	B : Lower flange page → 320	
	10		
	16	(N) : Cartridge page → 321	

Those in brackets () are made to order.

Refer to pages → 327 and 328 for details on top pin (Model designation CTK□□□-□P).

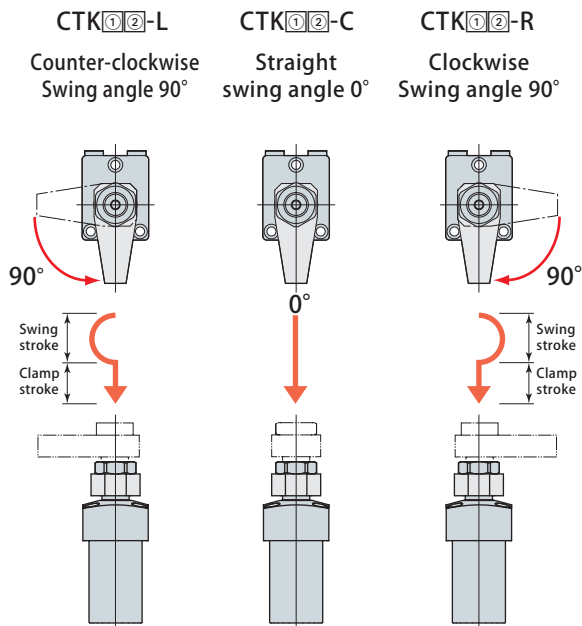
Refer to pages → 329 and 330 for details on long stroke of upper flange (Model designation CTK□U-□J).

Mounting and piping types

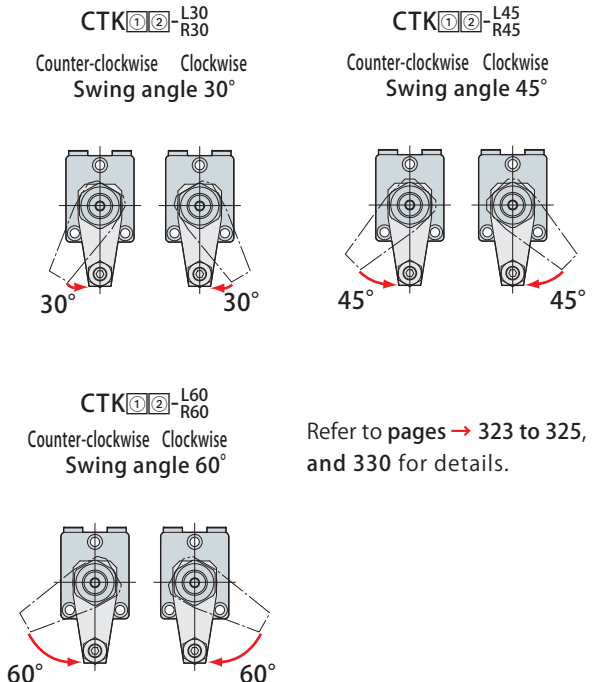


Refer to page → 315 for details on piping methods.
Only manifold piping is available for model CTK02.

Swing direction (when clamping)



Swing angle



Refer to pages → 323 to 325, and 330 for details.

Specifications

Model		CTK02	CTK04	CTK06	CTK10	CTK16	
Cylinder force (hydraulic pressure 35 MPa)	(kN)	3.1	5.1	7.6	14.6	20.3	
Cylinder inner diameter	(mm)	16	21	26	34	42	
Rod diameter	(mm)	12	16	20	25	32	
Effective area (clamp)	(cm ²)	0.88	1.45	2.17	4.17	5.81	
Swing angle		90° ± 3°					
		30° ± 5°					
		45° ± 5°					
		60° ± 5°					
Positioning pin groove position accuracy		± 1°					
Repeated clamp positioning accuracy		± 0.5°					
Full stroke	(mm)	15	17	21	25.5	28.5	
Swing stroke	(mm)	7	9	11	13.5	16.5	
Clamp stroke	(mm)	8	8	10	12	12	
Cylinder capacity	Clamp	(cm ³)	1.3	2.5	4.6	10.6	16.6
	Unclamp	(cm ³)	3.0	5.9	11.1	23.2	39.5
Mass	(kg)	0.4	0.7	1.1	2.0	3.3	

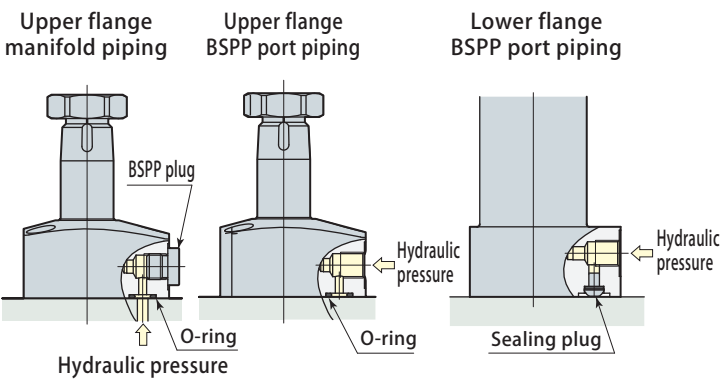
Working pressure range: 5.0 ~ 35 MPa Proof pressure: 52.5 MPa Operating temperature: 0 ~ 70°C

Fluid used: General mineral based hydraulic oil (ISO-VG32 equivalent)

Fluorocarbon has been adopted for seal sections where cutting fluid is applied, as a measure for the use of chlorine-based cutting fluid (this is not thermal resistant specification).

There is no overload protection mechanism.

Piping method



Two piping methods are available for model CTK□U-□ (upper flange) and model CTK□B-□ (lower flange), manifold piping and BSPP port piping.

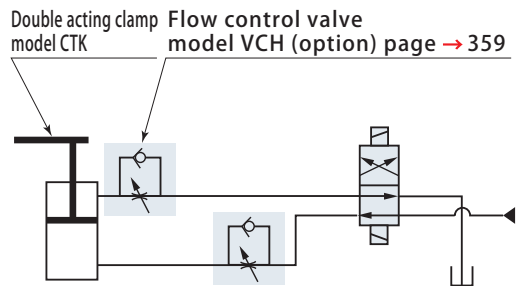
Remove BSPP plug when using BSPP port piping for model CTK□U-□ (upper flange).

Remove BSPP plug and O-ring and mount sealing plug that is included, as needed, when using BSPP port piping for model CTK□B-□ (lower flange).

(Sealing plug is not mounted with shipment.)

(Only manifold piping is available for model CTK02.)

Hydraulic circuit diagram (reference)



Use flow control valve for meter-in control. Using it in meter-out control results in abnormally high pressure due to back pressure on clamping side during unclamping, leading to malfunction.

For upper flange manifold piping and lower flange manifold piping, flow control valve model VCH can be mounted.

Swing speed adjustment

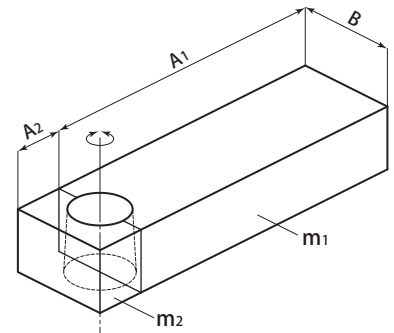
1. Adjust swing speed with flow control valve to ensure that the relationship between inertial moment and 90° swing time of clamp arm remains lower than the line — in the graph. Clamp stroke (perpendicular operation) time is not included in 90° swing time.

2. Use with 90° swing time shorter than line — results in excessive load on cylinder and piston, which may cause malfunction.

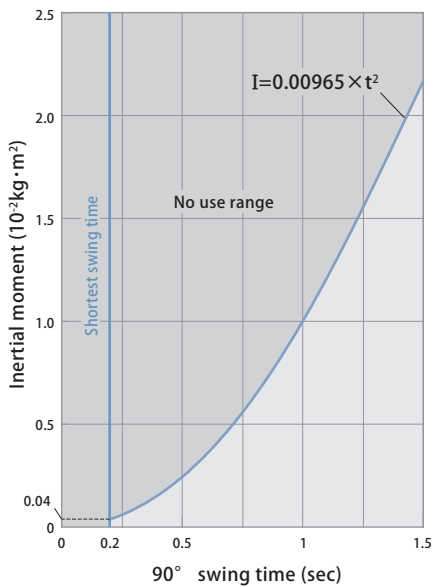
Example of calculation for inertial moment

$$I = \frac{1}{12} m_1(4A_1^2+B^2) + \frac{1}{12} m_2(4A_2^2+B^2)$$

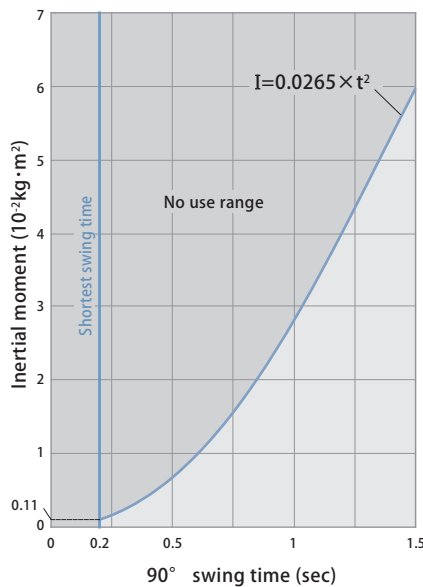
I : Inertial moment (kg·m²)
m : Mass (kg)



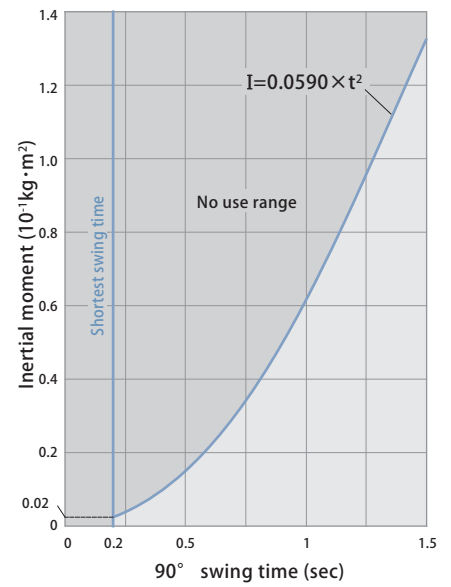
CTK 02



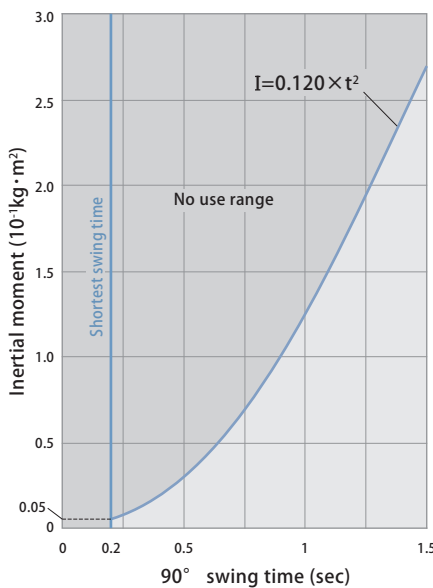
CTK 04



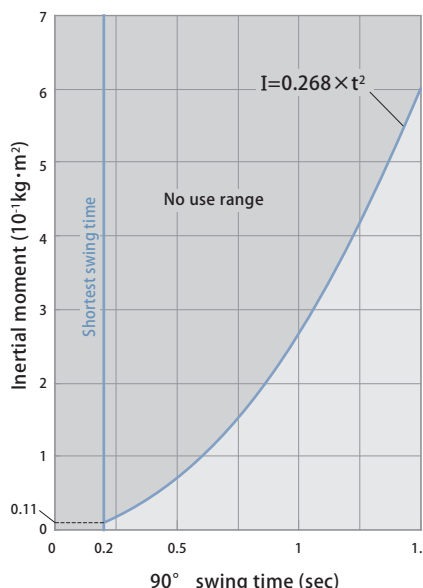
CTK 06



CTK 10



CTK 16



I : Inertial moment (kg·m²)
t : 90° swing time (sec)

Performance table

Clamping force varies depending on clamp arm length (LH) and hydraulic pressure. Select an appropriate clamp model based on considerations for clamp arm length (LH), working hydraulic pressure and mounting dimensions.

How to read performance table (Example 1)

For clamp arm length (LH) of 40 mm and where clamping force of 3.0 kN or more is necessary, the working hydraulic pressure for each model is:

- Not usable with CTK02
- 25 MPa for CTK04
- 20 MPa for CTK06
- 10 MPa for CTK10

How to read performance table (Example 2)

When working hydraulic pressure is 25 MPa with CTK06, clamping force necessary for clamp arm length (LH) is:

- 4.8 kN for LH = 30 mm
- 4.5 kN for LH = 50 mm
- 4.2 kN for LH = 70 mm
- Not usable with LH = 100 mm

- Note 1. Do not use arm lengths that exceed maximum arm length (Max. LH). It results in excessive load on cylinder and piston, may cause malfunction.
- 2. Calculate values that do not appear on table using a formula below.

CTK 02 $F = \frac{P}{11.4+0.0625 \times LH}$ indicates nonusable range

Hydraulic pressure (MPa)	Cylinder force (kN)	Clamping force (kN)											Max. arm length Max. LH (mm)
		Clamp arm length LH (mm)											
		20	25	30	35	40	45	50	60	70	80		
35	3.1	2.8	2.7										27
30	2.6	2.4	2.3	2.3									32
25	2.2	2.0	1.9	1.9	1.8	1.8							41
20	1.8	1.6	1.5	1.5	1.5	1.4	1.4	1.4					54
15	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9		82
10	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	↑
5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	82

CTK 04 $F = \frac{P}{6.88+0.0324 \times LH}$ indicates nonusable range

Hydraulic pressure (MPa)	Cylinder force (kN)	Clamping force (kN)											Max. arm length Max. LH (mm)
		Clamp arm length LH (mm)											
		25	30	40	50	60	70	80	90	100	120		
35	5.1	4.6	4.5	4.3									40
30	4.4	3.9	3.8	3.7									49
25	3.6	3.3	3.2	3.1	2.9	2.8							62
20	2.9	2.6	2.5	2.4	2.4	2.3	2.2	2.1					84
15	2.2	2.0	1.9	1.8	1.8	1.7	1.6	1.6	1.5	1.5	1.4		131
10	1.5	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9		↑
5	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	131

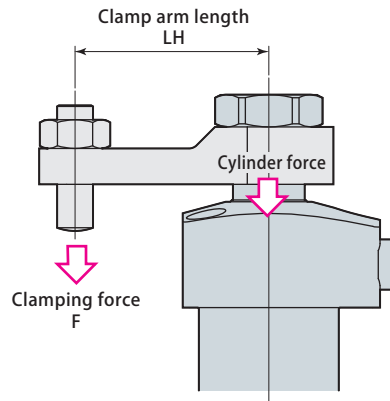
CTK 06 $F = \frac{P}{4.61+0.0185 \times LH}$ indicates nonusable range

Hydraulic pressure (MPa)	Cylinder force (kN)	Clamping force (kN)											Max. arm length Max. LH (mm)
		Clamp arm length LH (mm)											
		30	40	50	60	70	80	100	120	140	160		
35	7.6	6.8	6.5	6.3									54
30	6.5	5.8	5.6	5.4	5.2								66
25	5.4	4.8	4.7	4.5	4.4	4.2	4.1						84
20	4.3	3.9	3.7	3.6	3.5	3.4	3.3	3.1					116
15	3.3	2.9	2.8	2.7	2.6	2.5	2.5	2.3	2.2	2.1	2.0		185
10	2.2	1.9	1.9	1.8	1.7	1.7	1.6	1.5	1.5	1.4	1.3		↑
5	1.1	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.7		185

35MPa clamp & work support
Swing clamp
Swing clamp (ROHM/ELD-compatible)
Swing clamp (ENERPAC-compatible)
Link clamp
Clamp cylinder
Work support
Option

Clamping force calculation example

Clamp models	CTK06
Hydraulic pressure (P)	20 MPa
Clamp arm length (LH)	80 mm
Cylinder force	4.3 kN
Clamping force (F)	3.3 kN



Calculation formula

$$F = \frac{P}{4.61 + 0.0185 \times LH}$$

$$= \frac{20}{4.61 + 0.0185 \times 80} \approx 3.3 \text{ kN}$$

CTK 10 $F = \frac{P}{2.40 + 0.00776 \times LH}$ indicates nonusable range

Hydraulic pressure (MPa)	Cylinder force (kN)	Clamping force (kN)											Max. arm length Max. LH (mm)
		Clamp arm length LH (mm)											
		35	40	50	60	70	80	100	120	140	160		
35	14.6	13.1	12.9	12.6									52
30	12.5	11.2	11.1	10.8	10.5								63
25	10.4	9.4	9.2	9.0	8.7	8.5							79
20	8.3	7.5	7.4	7.2	7.0	6.8	6.6	6.3					107
15	6.3	5.6	5.5	5.4	5.2	5.1	5.0	4.7	4.5	4.3	4.1		164
10	4.2	3.7	3.7	3.6	3.5	3.4	3.3	3.1	3.0	2.9	2.7		↑
5	2.1	1.9	1.8	1.8	1.7	1.7	1.7	1.6	1.5	1.4	1.4		164

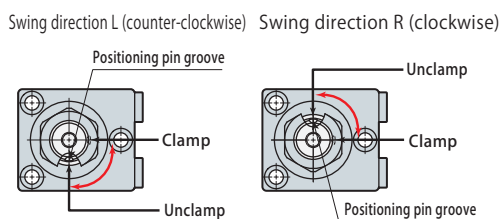
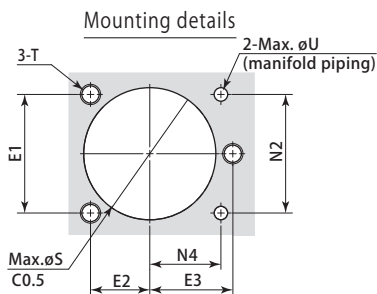
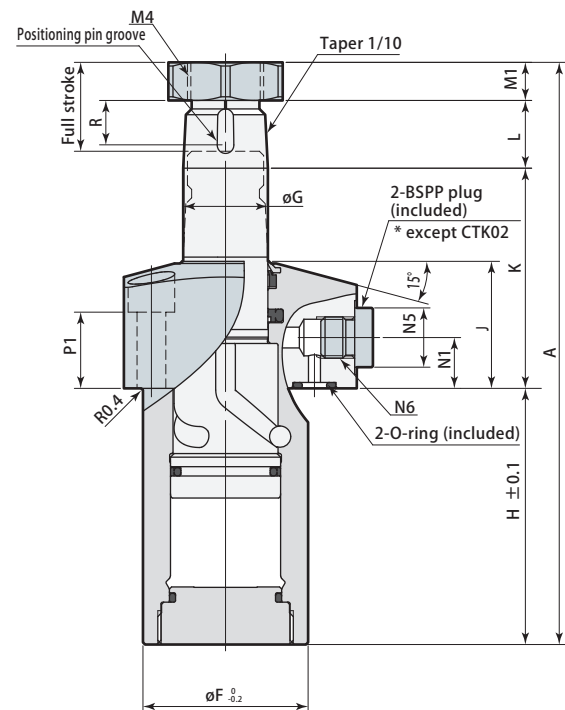
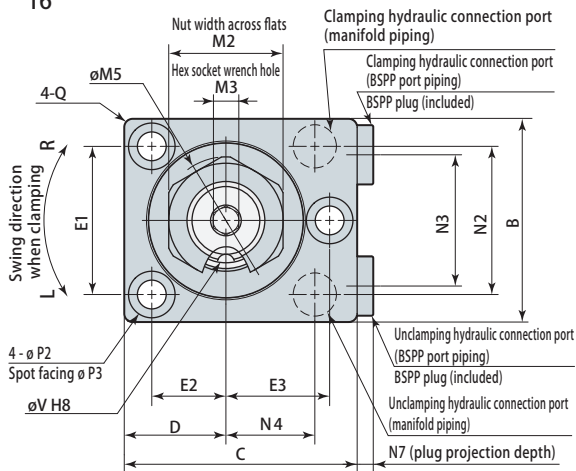
CTK 16 $F = \frac{P}{1.72 + 0.00479 \times LH}$ indicates nonusable range

Hydraulic pressure (MPa)	Cylinder force (kN)	Clamping force (kN)											Max. arm length Max. LH (mm)
		Clamp arm length LH (mm)											
		40	50	60	70	80	100	120	140	160	180		
35	20.3	18.3	17.9	17.4	17.0	16.6							83
30	17.4	15.7	15.3	14.9	14.6	14.3	13.6						101
25	14.5	13.1	12.8	12.5	12.2	11.9	11.4	10.9					131
20	11.6	10.5	10.2	10.0	9.7	9.5	9.1	8.7	8.4	8.0	7.7		182
15	8.7	7.8	7.7	7.5	7.3	7.1	6.8	6.5	6.3	6.0	5.8		297
10	5.8	5.2	5.1	5.0	4.9	4.8	4.5	4.4	4.2	4.0	3.9		↑
5	2.9	2.6	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.0	1.9		297

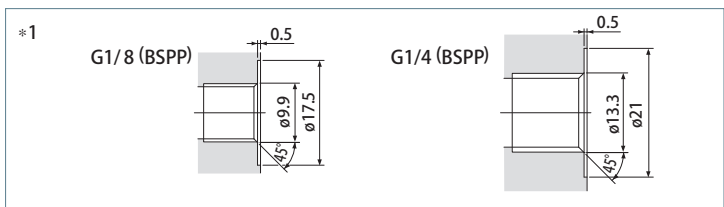
Dimensions

02
04
06U-L
10-R
16-C

(mm)



Model	CTK02U-L C	CTK04U-L C	CTK06U-L C	CTK10U-L C	CTK16U-L C
A	103	118	137.5	165	191.5
B	37	43	48	60	74
C	42	50	55	70	85
D	18.5	21.5	24	30	37
E1	26	32	35	44	54
E2	13	16	17.5	22	27
E3	18	22.5	24.5	32	38
F	27	33	39	48	58
G	12	16	20	25	32
H	47.5	54	60.5	75.5	88.5
J	21	24	30	34	37.5
K	37	42	52	60.5	67
L (arm thickness)	12	14	16	19	25
M1 (nut thickness)	6.5	8	9	10	11
M2 (nut width across flats)	17	22	27	30	36
M3 (hex socket wrench hole)	4	5	6	10	12
M4 (recommended tightening torque)	M10×0.75 (11 N·m)	M14×1.5 (26 N·m)	M18×1.5 (51 N·m)	M22×1.5 (75 N·m)	M28×1.5 (130 N·m)
M5	18.5	24.5	30	33	40
N1	—	9.5	12	12.5	14
N2	22	30	35	44	56
N3	—	26	31	40	50
N4	17	18.5	21	30	33
N5	—	14	14	14	19
N6*1	—	G1/8	G1/8	G1/8	G1/4
N7	—	3.8	3.8	3.8	4.8
P1	11	12	18	18	18
P2	5.5	5.5	6.8	9	11
P3	9.5	9.5	11	14	17.5
Q	R2	R2	R2	R3	R3
R	6.5	8.5	10.5	12.5	12.5
S	28	34	40	49	59
T	M5	M5	M6	M8	M10
U	3	5	5	5	6
V	2.5	3	4	5	6
O-ring*2	P5	P7	P7	P7	P8
Positioning pin	ø2.5(h8)×6	ø3(h8)×8	ø4(h8)×10	ø5(h8)×12	ø6(h8)×12

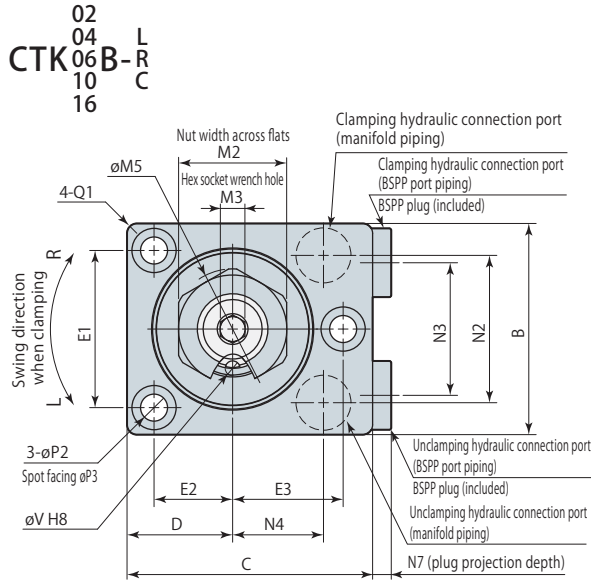


*2: Material used for O-ring is fluorocarbon (with hardness Hs90).

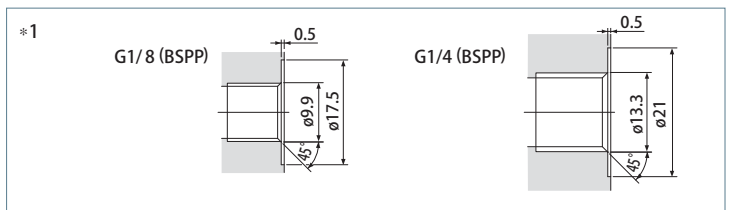
Note 1. This diagram indicates unclamped condition of swing direction L (counter-clockwise). Direction of positioning pin groove will be hydraulic connection port side at the time of clamping. Refer to diagram on left for relationship between swing direction and positioning pin groove.

- There is no piping connection port on CTK02 (Manifold piping connection only).
- The mounting surface finish must be no rougher than Rz 6.3. (ISO4287:1997)
- Positioning pins and mounting screws are not included.
- Refer to page → 331 for details on taper sleeve.

Dimensions



Model	CTK02B-L-C	CTK04B-L-C	CTK06B-L-C	CTK10B-L-C	CTK16B-L-C
A	103	118	137.5	165	191.5
B	38	43	52	63	77
C	43	50	57	70	86.5
D	18.5	21.5	24	30	37
E1	27	32	39	47	57
E2	13	16	17.5	22	27
E3	19	22.5	26.5	32	39.5
F	27.5	33	40.5	49	60
G	12	16	20	25	32
H	68.5	78	90.5	109.5	126
J	18	25	26.5	27	33
K	84.5	96	112.5	136	155.5
L (arm thickness)	12	14	16	19	25
M1 (nut thickness)	6.5	8	9	10	11
M2 (nut width across flats)	17	22	27	30	36
M3 (hex socket wrench hole)	4	5	6	10	12
M4 (recommended tightening torque)	M10×0.75 (11 N·m)	M14×1.5 (26 N·m)	M18×1.5 (51 N·m)	M22×1.5 (75 N·m)	M28×1.5 (130 N·m)
M5	18.5	24.5	30	33	40
N1	—	15	16.5	17	22
N2	22	30	35	44	56
N3	—	27	32	40	50
N4	18	18.5	23	30	34.5
N5	—	14	14	14	19
N6*1	—	G1/8	G1/8	G1/8	G1/4
N7	—	3.8	3.8	3.8	4.8
P1	12	18.5	18.5	16	20
P2	5.5	5.5	6.8	9	11
P3	9	9	11	14	17.5
Q1	R2	R2	R2	R3	R3
Q2	R1	R1	R1	R1	R2
R	6.5	8.5	10.5	12.5	12.5
T	M5	M5	M6	M8	M10
U	3	6	7	7	7
V	2.5	3	4	5	6
O-ring*2	P5	P8	P9	P9	P9
Positioning pin	$\phi 2.5(h8) \times 6$	$\phi 3(h8) \times 8$	$\phi 4(h8) \times 10$	$\phi 5(h8) \times 12$	$\phi 6(h8) \times 12$



*2: Material used for O-ring is fluorocarbon (with hardness Hs90).

Note 1. This diagram indicates unclamped condition of swing direction L (counter-clockwise). Direction of positioning pin groove will be hydraulic connection port side at the time of clamping. Refer to diagram on left for relationship between swing direction and positioning pin groove.

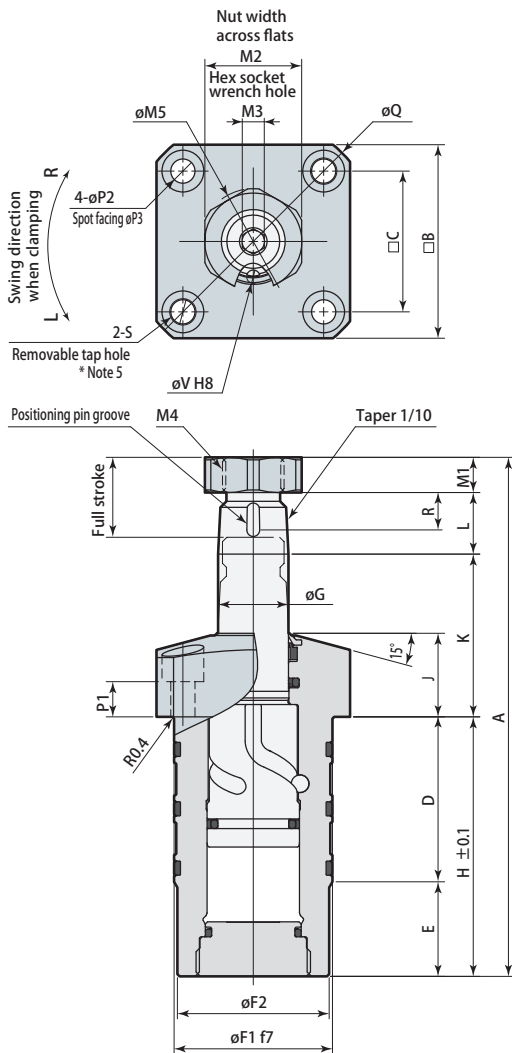
- There is no piping connection port on CTK02 (Manifold piping connection only).
- The mounting surface finish must be no rougher than Rz 6.3. (ISO4287:1997)
- Positioning pins and mounting screws are not included.
- Refer to page → 331 for details on taper sleeve.

Dimensions

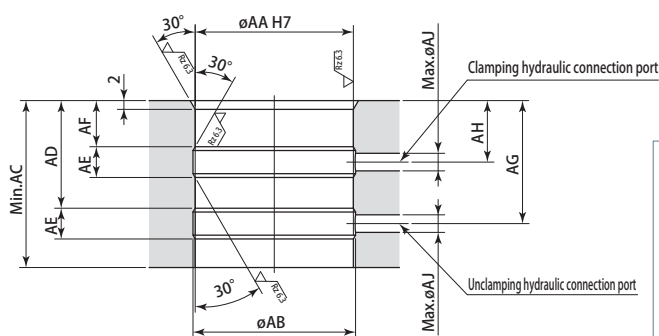
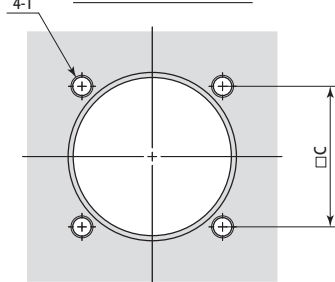
02
04
06N-L
10-R
16-C

(mm)

Model	CTK02N-L-C	CTK04N-L-C	CTK06N-L-C	CTK10N-L-C	CTK16N-L-C
A	103	118	137.5	165	191.5
B	39	44	50	62	75
C	28	32	37	46	55
D	34.5	37.5	39.5	49.5	54.5
E	17	21.5	27	33	42.5
F1	30	36	42	51	61
F2	29	34.5	40.5	49.5	59.5
G	12	16	20	25	32
H	51.5	59	66.5	82.5	97
J	17	19	24	27	29
K	33	37	46	53.5	58.5
L (arm thickness)	12	14	16	19	25
M1 (nut thickness)	6.5	8	9	10	11
M2 (nut width across flats)	17	22	27	30	36
M3 (hex socket wrench hole)	4	5	6	10	12
M4 (recommended tightening torque)	M10×0.75 (11 N·m)	M14×1.5 (26 N·m)	M18×1.5 (51 N·m)	M22×1.5 (75 N·m)	M28×1.5 (130 N·m)
M5	18.5	24.5	30	33	40
P1	6	8	11.5	10	9.5
P2	5.5	5.5	6.8	9	11
P3	9.5	9.5	11	14	17.5
Q	51	57	66	82	98
R	6.5	8.5	10.5	12.5	12.5
S	M6×1.0	M6×1.0	M8×1.25	M10×1.5	M12×1.75
T	M5×0.8	M5×0.8	M6×1.0	M8×1.25	M10×1.5
V	2.5	3	4	5	6
AA	30 ^{+0.021} ₀	36 ^{+0.025} ₀	42 ^{+0.025} ₀	51 ^{+0.030} ₀	61 ^{+0.030} ₀
AB	31	37	43	52	62
AC	35	38	40	50	55
AD	22.5	24.5	26.5	33.5	38.5
AE	6	7	7	10	10
AF	10	10.5	13	16.5	21.5
AG	25.5±0.5	28±0.5	30±0.5	38.5±1	43.5±1
AH	13±0.5	14±0.5	16.5±0.5	21.5±1	26.5±1
AJ	3	4	4	6	6
Positioning pin	∅2.5(h8)×6	∅3(h8)×8	∅4(h8)×10	∅5(h8)×12	∅6(h8)×12

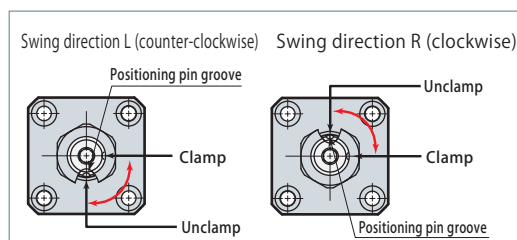


Mounting details



Note 1. This diagram indicates unclamped condition of swing direction L (counter-clockwise). Refer to diagram below for relationship between swing direction and positioning pin groove.

- Refer to diagram on left for mounting hole finish.
- Positioning pins and mounting screws are not included.
- Refer to **page → 331** for details on taper sleeve.
- When removing clamp from mounting hole, use removable tap hole. (Refer to **page → 335**)
- This product is made to order.



Model designation

CTK ①U-③ (Example: CTK06U-R30)

① Size (refer to specification table)

② Mounting and piping types

③ Swing direction, swing angle (when clamping)

CTK

- 02
- 04
- 06
- 10
- 16

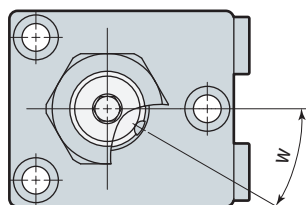
U : Upper flange

- L30 : Counter-clockwise, swing angle 30°
- L45 : Counter-clockwise, swing angle 45°
- L60 : Counter-clockwise, swing angle 60°
- R30 : Clockwise, swing angle 30°
- R45 : Clockwise, swing angle 45°
- R60 : Clockwise, swing angle 60°

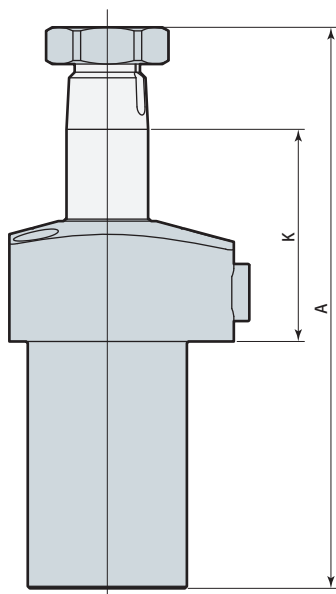
* Made to order

Upper flange, swing angle 30°, 45°, 60°

(mm)



Model	CTK02U-L30 R30	CTK04U-L30 R30	CTK06U-L30 R30	CTK10U-L30 R30	CTK16U-L30 R30
W (swing angle)	30° ± 5°				
Full stroke	11.5	12.5	15.5	18.8	20.3
Swing stroke	3.5	4.5	5.5	6.8	8.3
Clamp stroke	8	8	10	12	12
Cylinder capacity	Clamp	1.0 cm ³	1.8 cm ³	3.4 cm ³	7.8 cm ³
	Unclamp	2.3 cm ³	4.3 cm ³	8.2 cm ³	17.0 cm ³
A	99.5	113.5	132	158.3	183.3
K	33.5	37.5	46.5	53.8	58.8



(mm)

Model	CTK02U-L45 R45	CTK04U-L45 R45	CTK06U-L45 R45	CTK10U-L45 R45	CTK16U-L45 R45
W (swing angle)	45° ± 5°				
Full stroke	12.4	13.6	16.9	20.4	22.3
Swing stroke	4.4	5.6	6.9	8.4	10.3
Clamp stroke	8	8	10	12	12
Cylinder capacity	Clamp	1.1 cm ³	2.0 cm ³	3.7 cm ³	8.5 cm ³
	Unclamp	2.5 cm ³	4.7 cm ³	9.0 cm ³	18.6 cm ³
A	100.4	114.6	133.4	159.9	185.3
K	34.4	38.6	47.9	55.4	60.8

(mm)

Model	CTK02U-L60 R60	CTK04U-L60 R60	CTK06U-L60 R60	CTK10U-L60 R60	CTK16U-L60 R60
W (swing angle)	60° ± 5°				
Full stroke	13.3	14.8	18.3	22.1	24.4
Swing stroke	5.3	6.8	8.3	10.1	12.4
Clamp stroke	8	8	10	12	12
Cylinder capacity	Clamp	1.2 cm ³	2.1 cm ³	4.0 cm ³	9.2 cm ³
	Unclamp	2.7 cm ³	5.1 cm ³	9.7 cm ³	20.1 cm ³
A	101.3	115.8	134.8	161.6	187.4
K	35.3	39.8	49.3	57.1	62.9

Note 1. This diagram indicates unclamped condition.

2. Refer to specifications (refer to page → 315), dimensions (refer to page → 319) for specifications and dimensions of products that are not listed on this diagram.

35MPa clamp & work support

Swing clamp

Swing clamp (ROHMHELD-compatible)

Swing clamp (ENERPAC-compatible)

Link clamp

Clamp cylinder

Work support

Option

Model designation

CTK ^①B-^③ (Example: CTK06B-R30)

① Size (refer to specification table)

② Mounting and piping types

③ Swing direction, swing angle (when clamping)

CTK

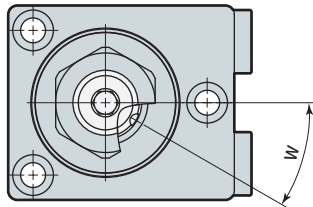
- 02
- 04
- 06
- 10
- 16

B : Lower flange

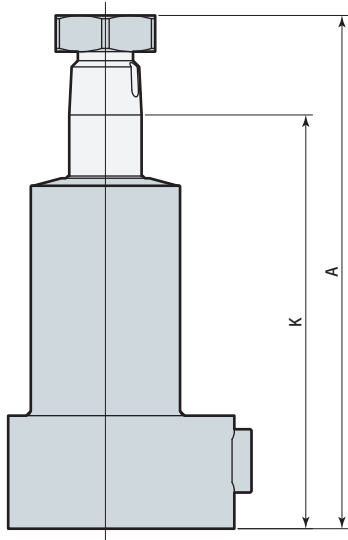
- L30 : Counter-clockwise, swing angle 30°
- L45 : Counter-clockwise, swing angle 45°
- L60 : Counter-clockwise, swing angle 60°
- R30 : Clockwise, swing angle 30°
- R45 : Clockwise, swing angle 45°
- R60 : Clockwise, swing angle 60°

* Made to order

Lower flange, swing angle 30° , 45° , 60°



Model	CTK02B- ^{L30} _{R30}	CTK04B- ^{L30} _{R30}	CTK06B- ^{L30} _{R30}	CTK10B- ^{L30} _{R30}	CTK16B- ^{L30} _{R30}
W (swing angle)	30° ± 5°				
Full stroke	11.5	12.5	15.5	18.8	20.3
Swing stroke	3.5	4.5	5.5	6.8	8.3
Clamp stroke	8	8	10	12	12
Cylinder capacity	Clamp	1.0 cm ³	1.8 cm ³	3.4 cm ³	7.8 cm ³
	Unclamp	2.3 cm ³	4.3 cm ³	8.2 cm ³	17.0 cm ³
A	99.5	113.5	132	158.3	183.3
K	81	91.5	107	129.3	147.3



Model	CTK02B- ^{L45} _{R45}	CTK04B- ^{L45} _{R45}	CTK06B- ^{L45} _{R45}	CTK10B- ^{L45} _{R45}	CTK16B- ^{L45} _{R45}
W (swing angle)	45° ± 5°				
Full stroke	12.4	13.6	16.9	20.4	22.3
Swing stroke	4.4	5.6	6.9	8.4	10.3
Clamp stroke	8	8	10	12	12
Cylinder capacity	Clamp	1.1 cm ³	2.0 cm ³	3.7 cm ³	8.5 cm ³
	Unclamp	2.5 cm ³	4.7 cm ³	9.0 cm ³	18.6 cm ³
A	100.4	114.6	133.4	159.9	185.3
K	81.9	92.6	108.4	130.9	149.3

Model	CTK02B- ^{L60} _{R60}	CTK04B- ^{L60} _{R60}	CTK06B- ^{L60} _{R60}	CTK10B- ^{L60} _{R60}	CTK16B- ^{L60} _{R60}
W (swing angle)	60° ± 5°				
Full stroke	13.3	14.8	18.3	22.1	24.4
Swing stroke	5.3	6.8	8.3	10.1	12.4
Clamp stroke	8	8	10	12	12
Cylinder capacity	Clamp	1.2 cm ³	2.1 cm ³	4.0 cm ³	9.2 cm ³
	Unclamp	2.7 cm ³	5.1 cm ³	9.7 cm ³	20.1 cm ³
A	101.3	115.8	134.8	161.6	187.4
K	82.8	93.8	109.8	132.6	151.4

- Note 1. This diagram indicates unclamped condition.
- 2. Refer to specifications (refer to page → 315), dimensions (refer to page → 320) for specifications and dimensions of products that are not listed on this diagram.

Model designation

CTK ①N-③ (Example: CTK06N-R30)

① Size (refer to specification table)

② Mounting and piping types

③ Swing direction, swing angle (when clamping)

CTK

02
04
06
10
16

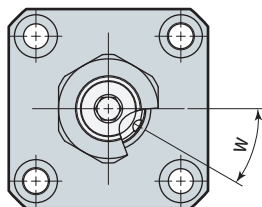
N: Cartridge

L30 : Counter-clockwise, swing angle 30°
L45 : Counter-clockwise, swing angle 45°
L60 : Counter-clockwise, swing angle 60°
R30 : Clockwise, swing angle 30°
R45 : Clockwise, swing angle 45°
R60 : Clockwise, swing angle 60°

* Made to order

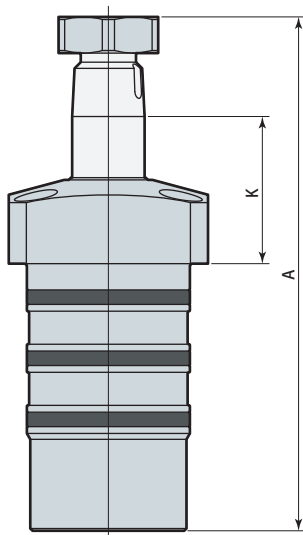
Cartridge, swing angle 30° , 45° , 60°

(mm)



Model	CTK02N-L30 R30	CTK04N-L30 R30	CTK06N-L30 R30	CTK10N-L30 R30	CTK16N-L30 R30
W (swing angle)	30° ± 5°				
Full stroke	11.5	12.5	15.5	18.8	20.3
Swing stroke	3.5	4.5	5.5	6.8	8.3
Clamp stroke	8	8	10	12	12
Cylinder capacity	Clamp	1.0 cm ³	1.8 cm ³	3.4 cm ³	7.8 cm ³
	Unclamp	2.3 cm ³	4.3 cm ³	8.2 cm ³	17.0 cm ³
A	99.5	113.5	132	158.3	183.3
K	29.5	32.5	40.5	46.8	50.3

(mm)



Model	CTK02N-L45 R45	CTK04N-L45 R45	CTK06N-L45 R45	CTK10N-L45 R45	CTK16N-L45 R45
W (swing angle)	45° ± 5°				
Full stroke	12.4	13.6	16.9	20.4	22.3
Swing stroke	4.4	5.6	6.9	8.4	10.3
Clamp stroke	8	8	10	12	12
Cylinder capacity	Clamp	1.1 cm ³	2.0 cm ³	3.7 cm ³	8.5 cm ³
	Unclamp	2.5 cm ³	4.7 cm ³	9.0 cm ³	18.6 cm ³
A	100.4	114.6	133.4	159.9	185.3
K	30.4	33.6	41.9	48.4	52.3

(mm)

Model	CTK02N-L60 R60	CTK04N-L60 R60	CTK06N-L60 R60	CTK10N-L60 R60	CTK16N-L60 R60
W (swing angle)	60° ± 5°				
Full stroke	13.3	14.8	18.3	22.1	24.4
Swing stroke	5.3	6.8	8.3	10.1	12.4
Clamp stroke	8	8	10	12	12
Cylinder capacity	Clamp	1.2 cm ³	2.1 cm ³	4.0 cm ³	9.2 cm ³
	Unclamp	2.7 cm ³	5.1 cm ³	9.7 cm ³	20.1 cm ³
A	101.3	115.8	134.8	161.6	187.4
K	31.3	34.8	43.3	50.1	54.4

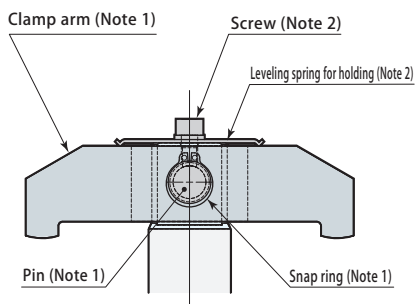
Note 1. This diagram indicates unclamped condition.

2. Refer to specifications (refer to page → 315), dimensions (refer to page → 321) for specifications and dimensions of products that are not listed on this diagram.

Usage example

Model designation

CTK ①②-③P (Example: CTK06N-RP)



	① Size (refer to specification table)	② Mounting and piping types	③ Swing direction (when clamping)	
CTK	02	U : Upper flange B : Lower flange N : Cartridge	L : Counter-clockwise R : Clockwise	P : Top pin
	04			
	06			
	10			
	16			

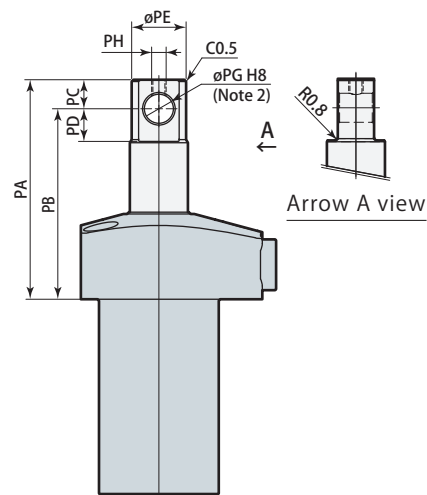
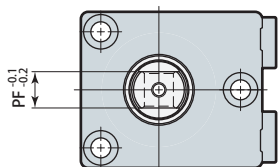
* Made to order

Note 1. Clamp arm, pin and snap ring are not included. Customers must arrange for them.

2. Thread at top portion of the rod is for attaching a leveling spring. Screw and leveling spring are not included.

Upper flange, top pin

02
04
CTK06U-LP
10-RP
16

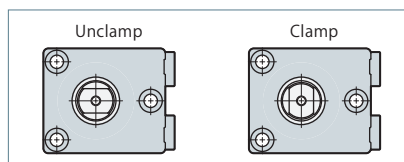


(mm)

Model	CTK02U-LP RP	CTK04U-LP RP	CTK06U-LP RP	CTK10U-LP RP	CTK16U-LP RP
PA	51.5	60.5	74.5	91	101.5
PB	45.5	52.5	64.5	77	85.5
PC	6	8	10	14	16
PD	7	9	11	15	17
PE	11	15	19	24	30
PF	7.5	10	12	18	20
PG	6 ^{+0.018} ₀	8 ^{+0.022} ₀	10 ^{+0.022} ₀	14 ^{+0.027} ₀	16 ^{+0.027} ₀
PH	M3×0.5	M4×0.7	M5×0.8	M6×1.0	M8×1.25

Note 1. Refer to specifications (page → 315), dimensions (page → 319) for specifications and dimensions of products that are not listed on this page.

2. This diagram indicates unclamped condition. Direction of pin hole will be hydraulic connection port side at the time of clamping.



35MPa clamp & work support

Swing clamp

Swing clamp (ROHMHELD-compatible)

Swing clamp (ENERPAC-compatible)

Link clamp

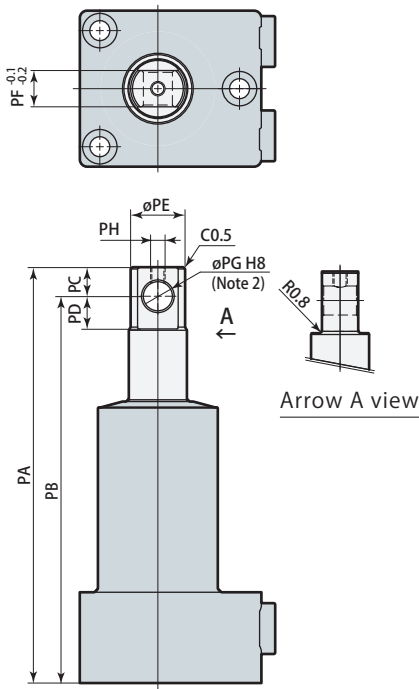
Clamp cylinder

Work support

Option

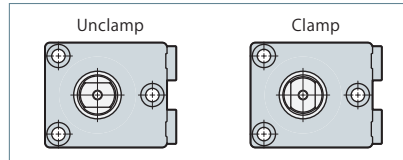
Lower flange, top pin

02
04
CTK06B-LP
10
16



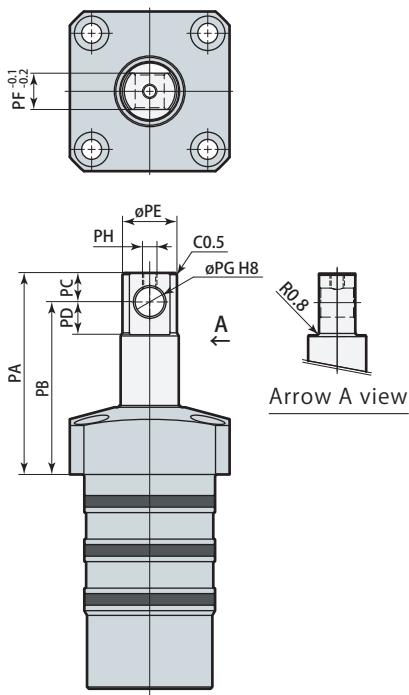
Model	CTK02B-LP RP	CTK04B-LP RP	CTK06B-LP RP	CTK10B-LP RP	CTK16B-LP RP
PA	99	114.5	135	166.5	190
PB	93	106.5	125	152.5	174
PC	6	8	10	14	16
PD	7	9	11	15	17
PE	11	15	19	24	30
PF	7.5	10	12	18	20
PG	6 ^{+0.018} ₀	8 ^{+0.022} ₀	10 ^{+0.022} ₀	14 ^{+0.027} ₀	16 ^{+0.027} ₀
PH	M3×0.5	M4×0.7	M5×0.8	M6×1.0	M8×1.25

Note 1. Refer to specifications (page → 315), dimensions (page → 320) for specifications and dimensions of products that are not listed on this page.
2. This diagram indicates unclamped condition. Direction of pin hole will be hydraulic connection port side at the time of clamping.



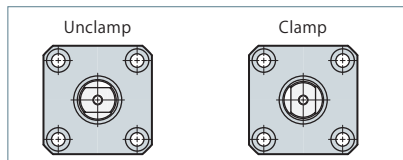
Cartridge, top pin

02
04
CTK06N-LP
10
16



Model	CTK02N-LP RP	CTK04N-LP RP	CTK06N-LP RP	CTK10N-LP RP	CTK16N-LP RP
PA	47.5	55.5	68.5	84	93
PB	41.5	47.5	58.5	70	77
PC	6	8	10	14	16
PD	7	9	11	15	17
PE	11	15	19	24	30
PF	7.5	10	12	18	20
PG	6 ^{+0.018} ₀	8 ^{+0.022} ₀	10 ^{+0.022} ₀	14 ^{+0.027} ₀	16 ^{+0.027} ₀
PH	M3×0.5	M4×0.7	M5×0.8	M6×1.0	M8×1.25

Note 1. Refer to specifications (page → 315), dimensions (page → 321) for specifications and dimensions of products that are not listed on this page.



Model designation

CTK ①U-③ (Example: CTK06U-RJ)

① Size (refer to specification table)

② Mounting and piping types

③ Swing direction & clamp stroke

CTK

- 02
- 04
- 06
- 10
- 16

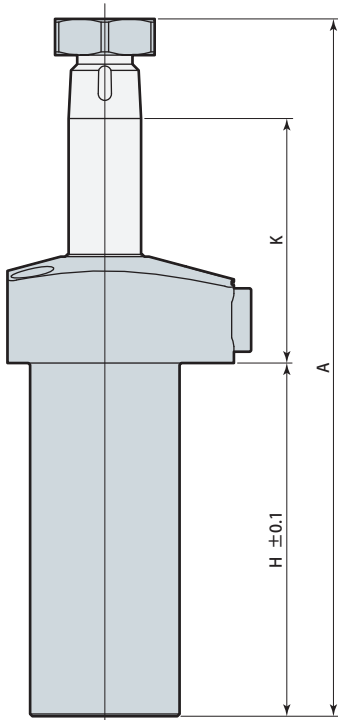
U : Upper flange

- LJ : Counter-clockwise·long stroke
- RJ : Clockwise·long stroke
- CJ : Straight·long stroke

* Made to order

Upper flange, long stroke

(mm)



Model	CTK02U- ^U / _{RJ} / _{CJ}	CTK04U- ^U / _{RJ} / _{CJ}	CTK06U- ^U / _{RJ} / _{CJ}	CTK10U- ^U / _{RJ} / _{CJ}	CTK16U- ^U / _{RJ} / _{CJ}
Full stroke	27	29	36	43.5	46.5
Swing stroke	7	9	11	13.5	16.5
Clamp stroke	20	20	25	30	30
Cylinder capacity	Clamp	2.4 cm ³	4.2 cm ³	7.8 cm ³	18.1 cm ³
	Unclamp	5.4 cm ³	10.0 cm ³	19.1 cm ³	39.5 cm ³
A	139	154	182.5	219	245.5
H	71.5	78	90.5	111.5	124.5
K	49	54	67	78.5	85

Note 1. This diagram indicates unclamped condition.

2. Refer to specifications (page → 315), dimensions (page → 319) for specifications and dimensions of products that are not listed on this diagram.

35MPa clamp & work support
Swing clamp
Swing clamp (ROEMHELD-compatible)
Swing clamp (ENERPAC-compatible)
Link clamp
Clamp cylinder
Work support
Option

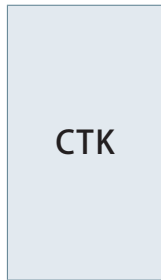
Model designation

CTK ①U-③ (Example: CTK06U-RJ30)

① Size (refer to specification table)

② Mounting and piping types

③ Swing direction, clamp stroke and swing angle (when clamping)



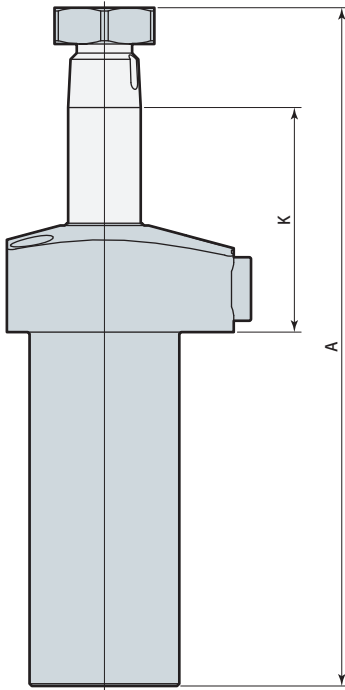
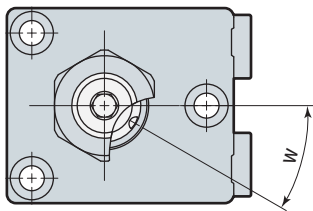
02
04
06
10
16



LJ30 : Counter-clockwise, long stroke, swing angle 30°
LJ45 : Counter-clockwise, long stroke, swing angle 45°
LJ60 : Counter-clockwise, long stroke, swing angle 60°
RJ30 : Clockwise, long stroke, swing angle 30°
RJ45 : Clockwise, long stroke, swing angle 45°
RJ60 : Clockwise, long stroke, swing angle 60°

* Made to order

Upper flange, long stroke, swing angle 30°, 45°, 60°



Model	CTK02U-LJ30-RJ30	CTK04U-LJ30-RJ30	CTK06U-LJ30-RJ30	CTK10U-LJ30-RJ30	CTK16U-LJ30-RJ30
W (swing angle)	30° ± 5°				
Full stroke	23.5	24.5	30.5	36.8	38.3
Swing stroke	3.5	4.5	5.5	6.8	8.3
Clamp stroke	20	20	25	30	30
Cylinder capacity	Clamp	2.1 cm ³	3.6 cm ³	6.6 cm ³	15.3 cm ³
	Unclamp	4.7 cm ³	8.5 cm ³	16.2 cm ³	33.4 cm ³
A	135.5	149.5	177	212.3	237.3
K	45.5	49.5	61.5	71.8	76.8

Model	CTK02U-LJ45-RJ45	CTK04U-LJ45-RJ45	CTK06U-LJ45-RJ45	CTK10U-LJ45-RJ45	CTK16U-LJ45-RJ45
W (swing angle)	45° ± 5°				
Full stroke	24.4	25.6	31.9	38.4	40.3
Swing stroke	4.4	5.6	6.9	8.4	10.3
Clamp stroke	20	20	25	30	30
Cylinder capacity	Clamp	2.1 cm ³	3.7 cm ³	6.9 cm ³	16.0 cm ³
	Unclamp	4.9 cm ³	8.9 cm ³	16.9 cm ³	34.9 cm ³
A	136.4	150.6	178.4	213.9	239.3
K	46.4	50.6	62.9	73.4	78.8

Model	CTK02U-LJ60-RJ60	CTK04U-LJ60-RJ60	CTK06U-LJ60-RJ60	CTK10U-LJ60-RJ60	CTK16U-LJ60-RJ60
W (swing angle)	60° ± 5°				
Full stroke	25.3	26.8	33.3	40.1	42.4
Swing stroke	5.3	6.8	8.3	10.1	12.4
Clamp stroke	20	20	25	30	30
Cylinder capacity	Clamp	2.2 cm ³	3.9 cm ³	7.2 cm ³	16.7 cm ³
	Unclamp	5.1 cm ³	9.3 cm ³	17.7 cm ³	36.4 cm ³
A	137.3	151.8	179.8	215.6	241.4
K	47.3	51.8	64.3	75.1	80.9

Note 1. This diagram indicates unclamped condition.

2. Refer to specifications (page → 315), dimensions (page → 319) for specifications and dimensions of products that are not listed on this diagram.

Model designation

CTH①-② (Example: CTH06-KS)

① Size
(refer to specification table)

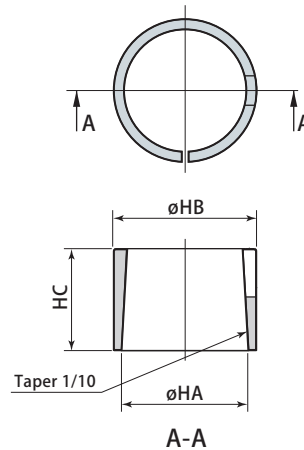
② Option code

CTH	02	-	KS : Taper sleeve
	04		
	06		
	10		
	16		
			KN : Perfect nut
			KNR : Perfect release nut

Taper sleeve and perfect release nut can not be combined.

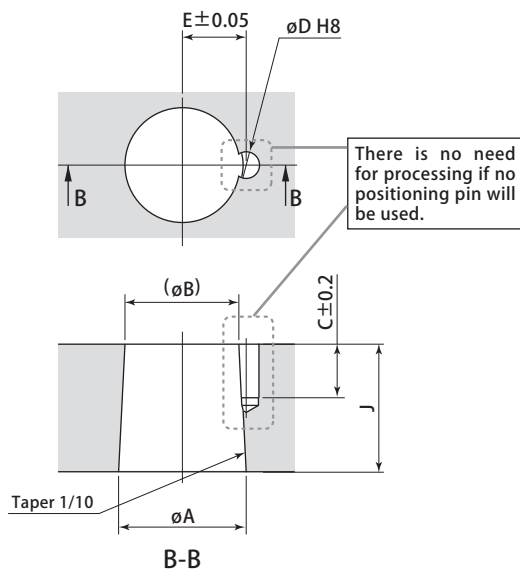
Taper sleeve

02
04
06-KS
10
16

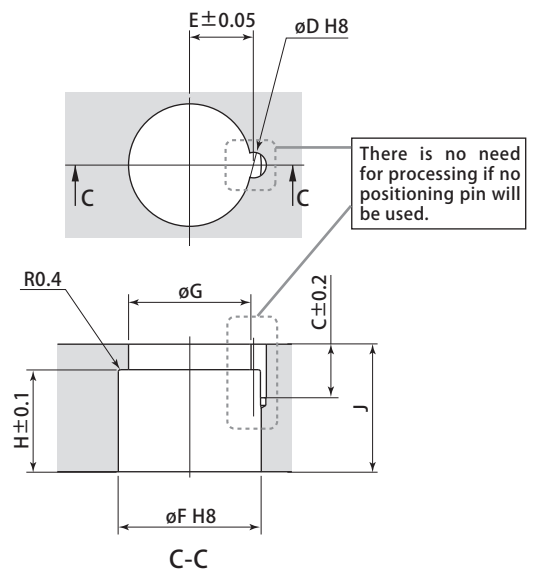


Clamp arm processing diagram

Not using taper sleeve



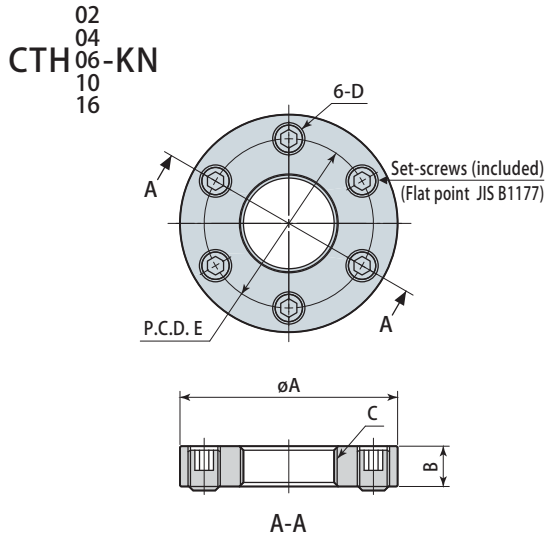
Using taper sleeve



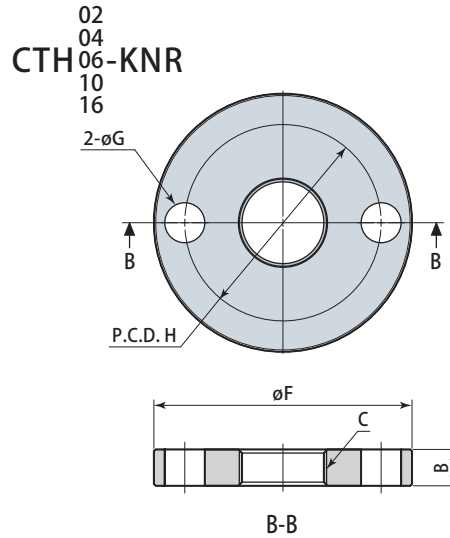
(mm)

Clamp models	CTK02	CTK04	CTK06	CTK10	CTK16
HA	12	16	20	25	32
HB	14	18	22	28	36
HC	9.5	11	13	16	22
A	12 ^{-0.016} _{-0.034}	16 ^{-0.016} _{-0.034}	20 ^{-0.020} _{-0.041}	25 ^{-0.020} _{-0.041}	32 ^{-0.025} _{-0.050}
B	10.8	14.6	18.4	23.1	29.5
C	6.5	8.5	10.5	12.5	12.5
D	2.5 ^{+0.014} ₀	3 ^{+0.014} ₀	4 ^{+0.018} ₀	5 ^{+0.018} ₀	6 ^{+0.018} ₀
E	6.05	8.1	10.1	12.6	16.1
F	14 ^{+0.027} ₀	18 ^{+0.027} ₀	22 ^{+0.033} ₀	28 ^{+0.033} ₀	36 ^{+0.039} ₀
G	11.5	15	19	23.5	30
H	9.5	11	13	16	22
J	12	14	16	19	25
Positioning pin	$\phi 2.5(h8) \times 6$	$\phi 3(h8) \times 8$	$\phi 4(h8) \times 10$	$\phi 5(h8) \times 12$	$\phi 6(h8) \times 12$
Taper sleeve models	CTH02-KS	CTH04-KS	CTH06-KS	CTH10-KS	CTH16-KS

Perfect nut



Perfect release nut

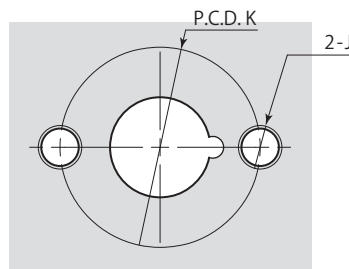


Perfect nut and perfect release nut are not included with swing clamp. Place an order by specifying following models.

Perfect nut models		CTH02-KN	CTH04-KN	CTH06-KN	CTH10-KN	CTH16-KN
Perfect release nut models		CTH02-KNR	CTH04-KNR	CTH06-KNR	CTH10-KNR	CTH16-KNR
Applicable clamp models		CTK02	CTK04	CTK06	CTK10	CTK16
Set-screw	Size	M4×0.7 length 6	M5×0.8 length 8	M6×1 length 8	M8×1.25 length 8	M8×1.25 length 8
	Specified tightening torque	0.8 N·m	2 N·m	3 N·m	6 N·m	7 N·m
Recommended draw screw *		M5×0.8	M6×1	M8×1.25	M10×1.5	M10×1.5
A		23	30	36	48	55
B		6.5	8	9	10	11
C		M10×0.75	M14×1.5	M18×1.5	M22×1.5	M28×1.5
D		M4×0.7	M5×0.8	M6×1	M8×1.25	M8×1.25
E		17	22	26.5	35	42
F		33	40	50	62	70
G		5.5	6.8	9	11	11
H		23	29	36	45	52
Mass	Perfect nut	0.02 kg	0.04 kg	0.06 kg	0.12 kg	0.16 kg
	Perfect release nut	0.04 kg	0.07 kg	0.12 kg	0.21 kg	0.28 kg

*: Draw screws are not included with perfect release nut. Determine length to suit arm shape (strength category 12.9).

Clamp arm processing diagram (with Perfect release nut) *1

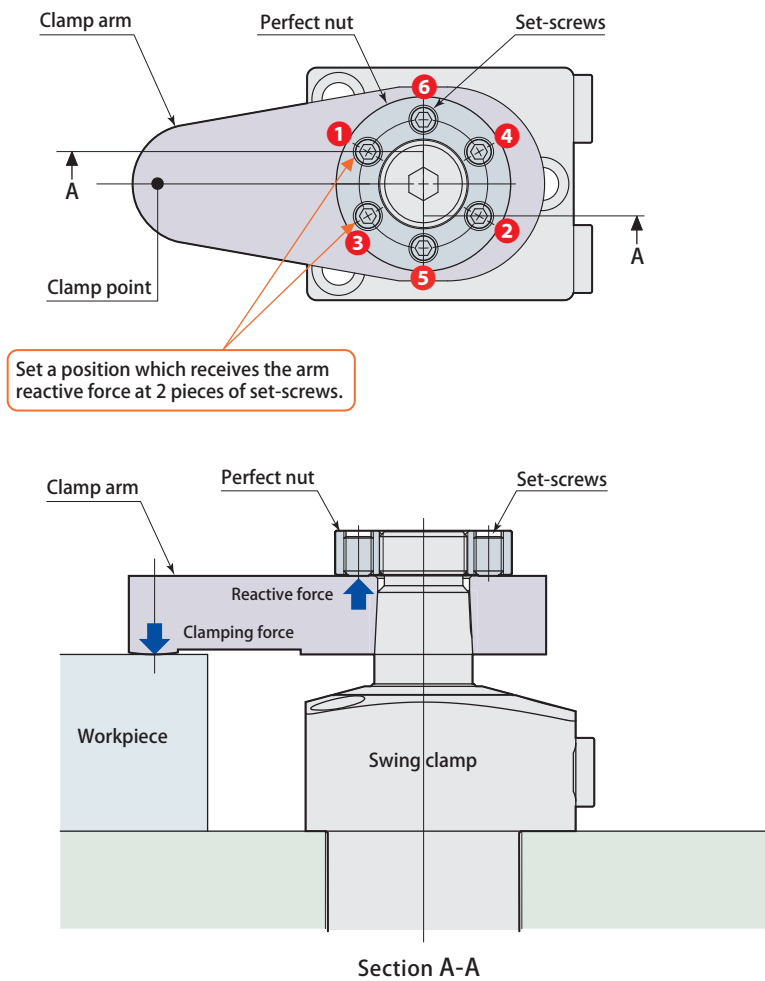


Applicable clamp models		CTK02	CTK04	CTK06	CTK10	CTK16
J		M5	M6	M8	M10	M10
K		23	29	36	45	52

*1: For the finished dimensions of clamp arm in those portions other than the perfect release nut using part, refer to page → 331.

Perfect nut (Arm mounting guide)

1. Set clamp arm and turn perfect nut as tight as it gets manually.
2. Turn back perfect nut to the position where two set-screws hold against reactive force of arm, as shown in diagram below.
3. Tighten set-screws with specified torque (refer to table below) in order of 1 to 6 in diagram below.
4. Once set-screws are tightened to 6, 1 becomes loose, so retighten in sequence of 1 to 6 again.
5. Repeat tightening of set-screws 1 to 6 six times.
6. Repeat clamping and unclamping of workpiece five times (this operation allows taper section to become accustomed to use).
7. Return to unclamped condition and then retighten set-screws in order of 1 to 6.
Once tightening in sequence of 1 to 6 is repeated three times, all set-screws will be fixed and clamp arm is completely mounted.



Note 1. Tightening set-screws with excessive torque will cause clamp arm to dig into taper section of rod, making it difficult to dismount. Be sure to use specified tightening torque shown in table below for tightening.

2. More secure tightening can be accomplished by applying some thread adhesive on set-screws. Recommended adhesive: LOCTITE 242 (medium strength type)

(mm)

Applicable clamp models		CTK02	CTK04	CTK06	CTK10	CTK16
Set-screw	Size	M4×0.7 length 6	M5×0.8 length 8	M6×1 length 8	M8×1.25 length 8	M8×1.25 length 8
	Specified tightening torque	0.8 N·m	2 N·m	3 N·m	6 N·m	7 N·m

35MPa clamp & work support

Swing clamp

Swing clamp (ROEMHELD-compatible)

Swing clamp (ENERPAC-compatible)

Link clamp

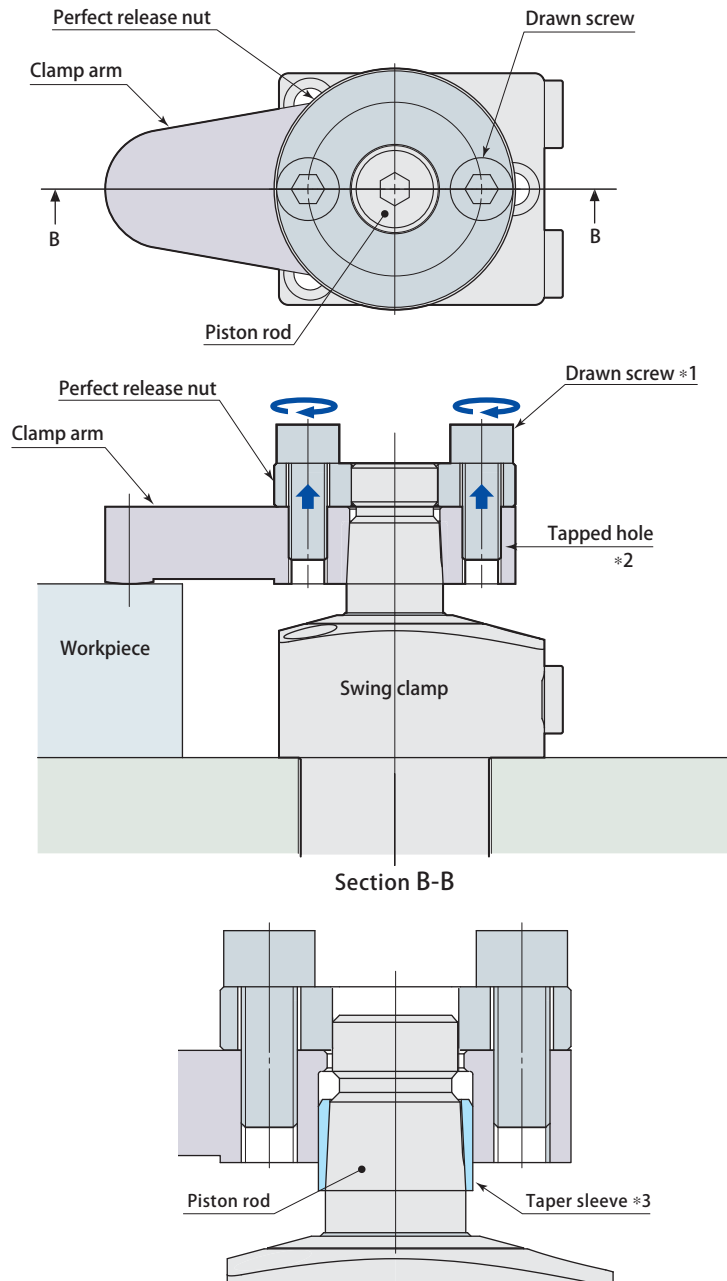
Clamp cylinder

Work support

Option

Perfect release nut (Arm dismounting guide)

1. Loosen all set-screws of perfect nut and dismount perfect nut from piston rod.
2. Mount perfect release nut and turn it until clamp arm comes into contact.
3. Turn perfect release nut back one or two more times, align the nut hole with tap hole of clamp arm and then mount the draw screws.
4. Once draw screws are tightened, clamp arm can be pulled off piston rod.



*1 : Turn draw screws as a pair, alternately turning 45° to 90° at a time to tighten them evenly. Some movement is felt in hand as clamp arm comes off, but there is no danger involved in this procedure.

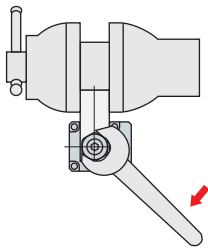
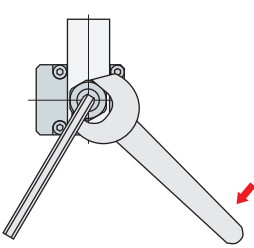
*2 : Tap holes for draw screws are needed on clamp arm in order to use perfect release nut. Refer to clamp arm processing diagram on page → 332 for details on tap holes.

*3 : In the event that a clamp arm is used with taper sleeve, the perfect release nut may not be able to remove the clamp arm due to the taper sleeve remaining on the piston rod. (When using a taper sleeve, please use a gear puller (or similar) to remove clamp arm.) To be able to quickly change clamp arms using the perfect release nut, drill a 1/10 taper hole into the clamp arm. (Clamp arm processing diagram refer to page → 331)

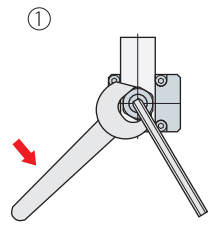
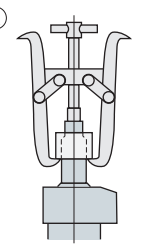
Mounting & dismounting of clamp arm

1. Swing clamp may be damaged if excessive torque is applied to piston rod, since structure is intended for swinging using cam mechanism with lead grooves. Follow instructions shown below to prevent excessive torque from being applied on piston rod when mounting or dismounting clamp arm.
2. Be sure to tighten the locknut with specified tightening torque (refer to recommended tightening torque on page → 319 to 321). If the tightening torque is insufficient, clamp arm may slip during operation.

Mounting of clamp arm

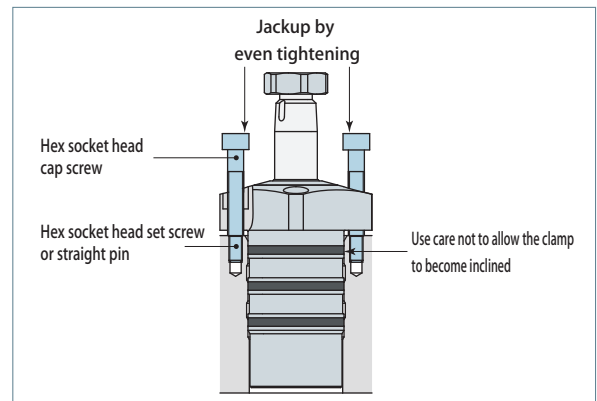
 <p>Fix the clamp arm in a vise, then set the clamp body and clamp arm at the desired orientation, and tighten locknut with a wrench.</p>	 <p>For clamps that are mounted on fixture, set clamp arm at desired orientation as shown in diagram above. Insert a hex wrench to hex socket at tip section of piston rod to hold it and tighten locknut with a wrench.</p>
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Dismounting of clamp arm

 <p>① Insert hex wrench to hex socket at tip section of piston rod to ensure that piston rod is held in place, then loosen locknut with wrench.</p>	 <p>② After dismounting the locknut, pull out clamp arm using gear puller.</p>
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Dismounting of model CTK□N (Cartridge)

1. Check that the hydraulic pressure is set at zero (0).
2. Remove mounting screws.
3. For protection of the mounting surfaces, install the hex socket head set screw or straight pin.
4. Using removable tap hole in the clamp, lift the clamp up with two screws for proper dismounting. In this step, use care not to allow the clamp to become inclined.



35MPa clamp & work support
 Swing clamp
 Swing clamp (ROHMHELD-compatible)
 Swing clamp (ENERPAC-compatible)
 Link clamp
 Clamp cylinder
 Work support
 Option

Mounting of clamp and work support

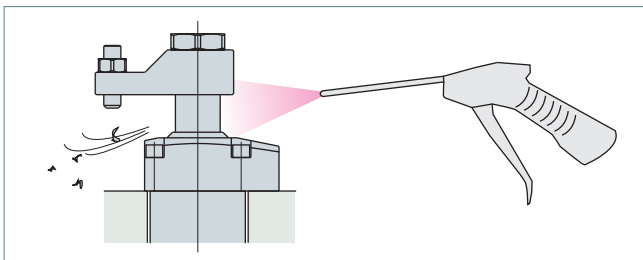
Use screws with strength class of 12.9 for mounting clamp and work support and be sure to apply specified torque for tightening, by referring to recommended tightening torque of mounting screws indicated below.

Recommended tightening torque of mounting screws (strength class 12.9)

Mounting screw size	Tightening torque
M4 × 0.7	2.8 N·m
M5 × 0.8	7 N·m
M6 × 1	11 N·m
M8 × 1.25	25 N·m
M10 × 1.5	49 N·m
M12 × 1.75	60 N·m

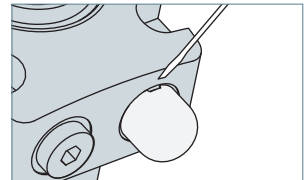
Caution in use of equipment

1. Clamp and work supports have been developed for the purpose of clamping workpiece for machine tools. Do not use them for other purposes.
2. Always protect them with a cover to ensure sliding surfaces are not exposed to weld slags when using them as fixture for welding.
3. Clean sliding surfaces and top part of clamp body with air blowing periodically to ensure smooth operations.



Mounting & dismounting of optional parts

1. When mounting or dismounting a flow control valve or air bleeding valve, be sure to set pressure within hydraulic circuit to 0 MPa before starting.
2. When mounting a flow control valve or air bleeding valve, be sure to tighten it with the specified tightening torque (refer to pages → 359 and 360 for recommended tightening torque).
3. When mounting a coolant cap (resin : POM), firmly press the body of cover. If it is not mounting properly, use a plastic mallet to tap it into place.
4. When dismounting a coolant cap, use a sharp-pointed tool such as a precision screw driver by hooking the notched portion.



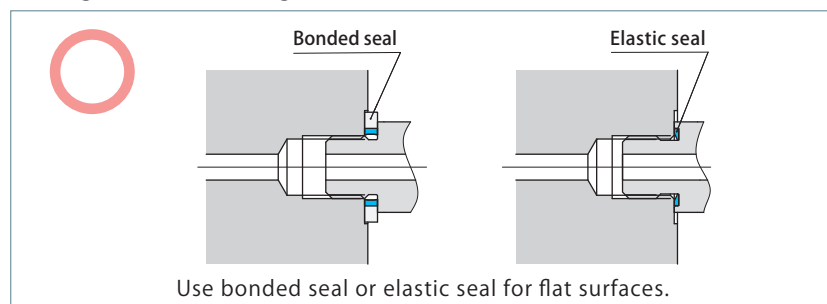
Caution for hydraulic piping

1. Most problems that occur with hydraulic equipment are caused by foreign substances such as metal chips and dust that enter into hydraulic circuits. Refer to "Piping Hydraulic & Pneumatic Equipment-Practical Notes" provided with the product for mounting and hydraulic piping of the product.
2. After performing hydraulic piping, always be sure to bleed out air in the hydraulic circuit. Insufficient bleeding can lead to malfunction.
3. When using multiple clamps, operating speeds and timings vary due to variance in pipe resistance and internal resistance of clamps. Adjust operating speeds and timings using flow control valve.
4. The special scraper has superior scraping capability to remove oil film on the surface of the rod, there are cases where grease and working fluids (oil films) inside the clamp are scraped and expelled to the outside. This may result in accumulation of oil in the external perimeters of piston rod on the upper part of the scraper, but this does not indicate an oil leak.

BSPB port sealing method

1. "Sealing method for flange surfaces" has been adopted as standard means for this product. Use fittings and connectors of bonded seal or elastic body seal. Do not use fittings of "Sealing method for tapered surfaces" (O-ring seal method).
2. Seal tapes and liquid packing are not necessary. Seal fittings with included with packing.
3. When mounting, clean metal chips and dust off surfaces that will come into contact with packing.

Sealing method for flange surfaces



Sealing method for tapered surfaces

