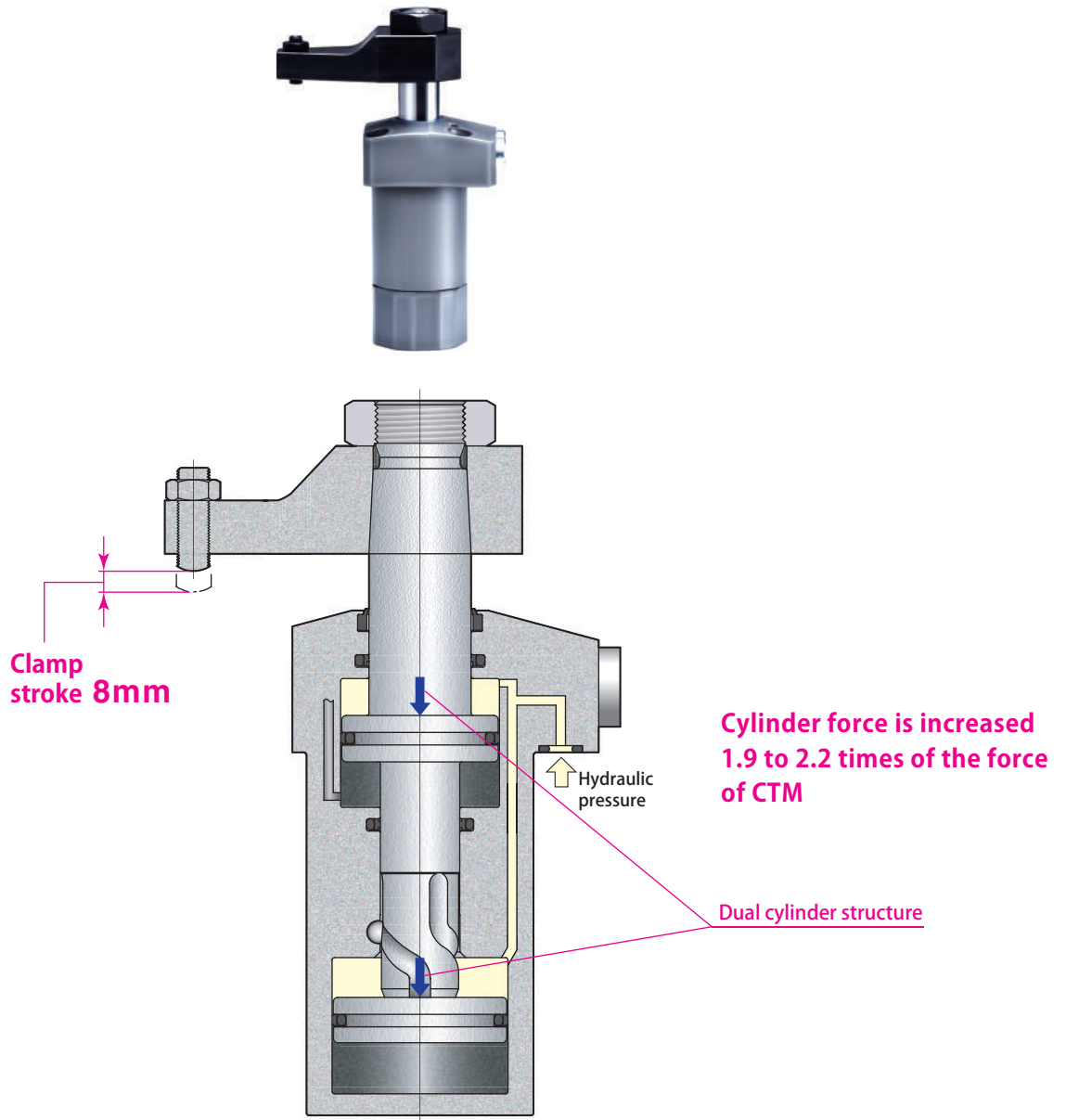


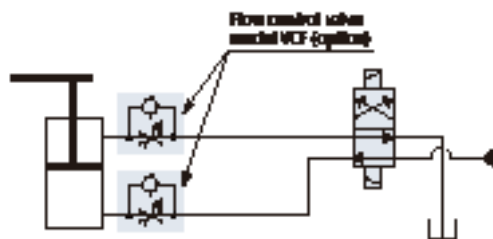
Swing clamp Dual cylinder model

model CTP□-□ JP PAT.

Same cylinder force but downsized.  
CTP mounting flange size is equal to that of 2 size smaller CTM.



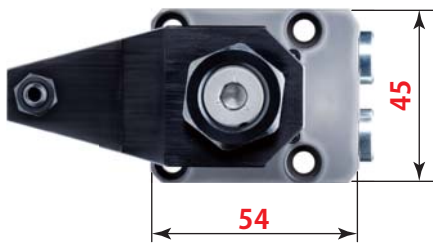
Hydraulic circuit diagram



Comparison with the current model

**Swing clamp  
Dual cylinder model  
CTP04**

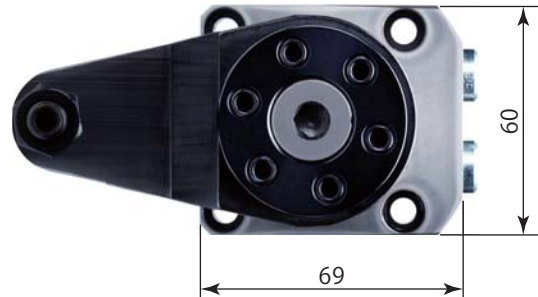
Clamp stroke : 8mm  
Cylinder force : 3.4kN  
(Hydraulic pressure 3.5MPa)



Clamp stroke  
Cylinder force  
Height  
Equality

**Swing clamp  
Compact model  
CTM06-S10N**

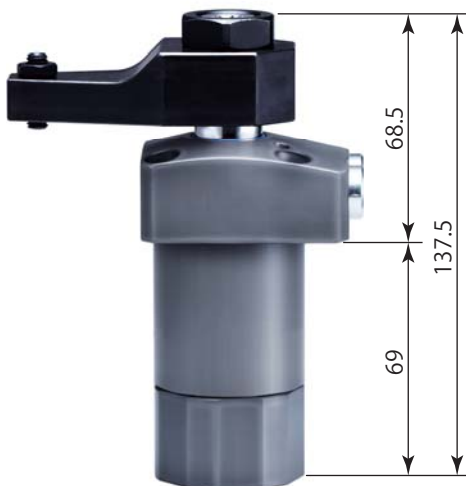
Clamp stroke : 10mm  
Cylinder force : 3.6kN  
(Hydraulic pressure 3.5MPa)



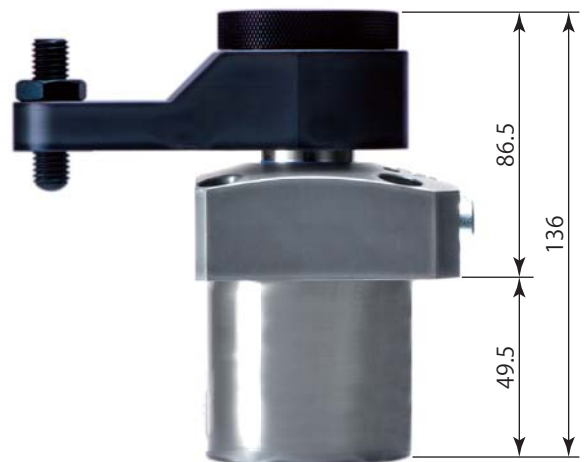
Flange area  
approx. 59%



**Less space**





Stroke end



Stroke end

### Specifications

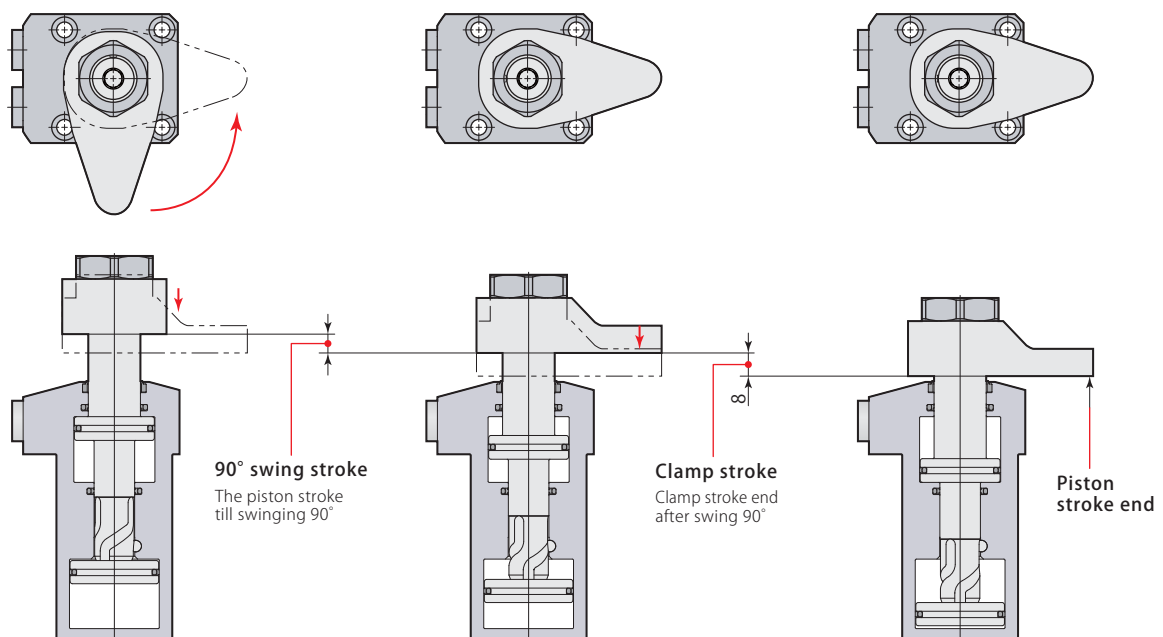
| Size      | Swing direction (when clamping)  |
|-----------|--|
| <b>04</b> | <b>L</b> : Counter-clockwise  |
| <b>05</b> | —  |
| <b>06</b> | <b>R</b> : Clockwise          |

| Model   |                 | CTP04           | CTP05 | CTP06 |      |
|---|-----------------|-----------------|-------|-------|------|
| Cylinder force (hydraulic pressure 3.5 MPa)           | kN              | 3.4             | 5.3   | 7.8   |      |
| Rod diameter  | mm              | 18              | 22    | 25    |      |
| Effective area (clamp)                                | cm <sup>2</sup> | 9.6             | 15.2  | 22.4  |      |
| Swing angle   |                 | 90° ± 3°        |       |       |      |
| Positioning pin groove position accuracy              |                 | ± 1°            |       |       |      |
| Repeated clamp positioning accuracy                   |                 | ± 0.5°          |       |       |      |
| Full stroke   | mm              | 14.5            | 15.5  | 16.5  |      |
| 90° swing stroke                                      | mm              | 6.5             | 7.5   | 8.5   |      |
| Clamp stroke  | mm              | 8               | 8     | 8     |      |
| Cylinder capacity                                     | Clamp           | cm <sup>3</sup> | 14.0  | 23.5  | 36.9 |
|   | Unclamp         | cm <sup>3</sup> | 17.6  | 29.4  | 45.0 |
| Mass  | kg              | 1.0             | 1.5   | 2.1   |      |
| Recommended tightening torque of mounting screws* N·m |                 | 7               | 7     | 12    |      |
| Recommended tightening torque of nut N·m              |                 | 35              | 60    | 100   |      |

- Pressure range: 1~4 MPa
- Proof pressure: 6 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)

\* : ISO R898 class 12.9

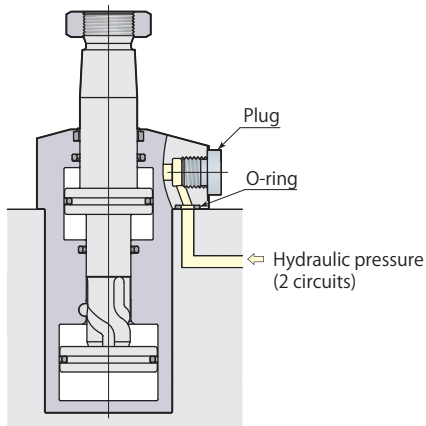
Clamping must be done within the range of clamp stroke.



Manifold piping and G port piping are available.

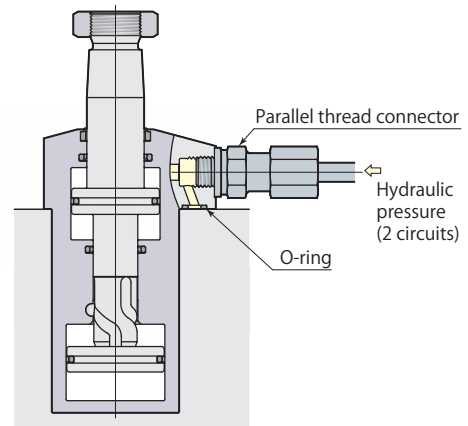
Manifold piping

When choosing manifold piping, a flow control valve (model VCF) and an air bleeding valve (model VCE) are mountable on the G ports of the clamp.



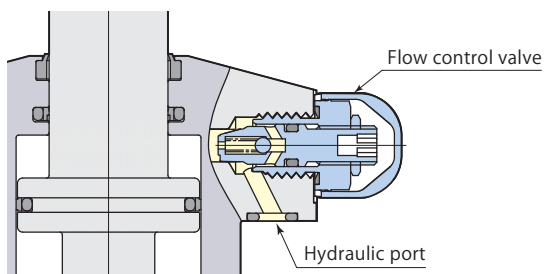
G port piping

Dismount plugs when choosing G port piping. (O-ring must be used.) The flow control valve and the air bleeding valve should be installed in the middle of oil path.



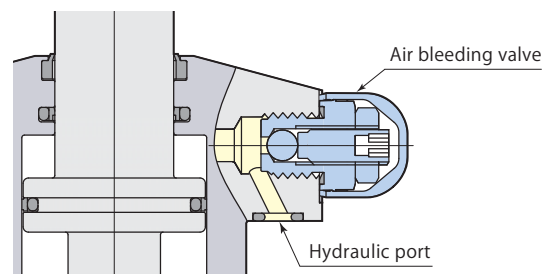
Flow control valve model VCF

Page →27



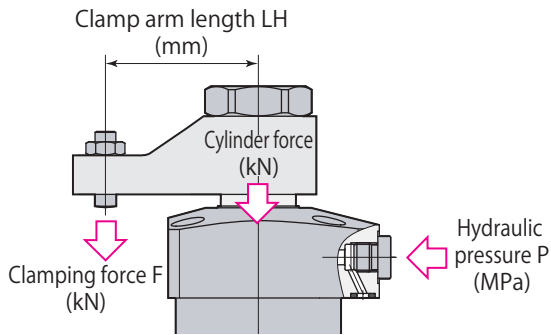
Air bleeding valve model VCE

Page →29



- In case of mounting flow control valve model VCF on the G port of the clamp, air bleeding valve should be installed in the piping to the clamp. (VCE Mounting details. Refer to **page →29**)

Performance table



Clamping force varies depending on the clamp arm length (LH) and hydraulic pressure (P).

Clamping force calculation formula

$$F = P / (\text{Coefficient 1} + \text{Coefficient 2} \times LH)$$

F: Clamping force P: Hydraulic pressure LH: Clamp arm length

CTP04 with clamp arm length (LH) = 60 mm at hydraulic pressure of 4 MPa, Clamping force F is calculated by  $4 / (1.094 + 0.00580 \times 60) = 2.8$  kN

Do not use the clamp in the nonusable range. It may cause damage to the cylinder and rod.

| model CTP04            |                   | Clamping force $F = P / (1.094 + 0.00580 \times LH)$ |     |     |     |                 |                 |     |                 |                            |     |     |
|------------------------|-------------------|--|-----|-----|-----|-----------------|-----------------|-----|-----------------|----------------------------|-----|-----|
| 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             |                            |     |     |
| 4                      | 3.8               | 3.0  | 2.9 | 2.8 | 2.7 | Nonusable range |                 |     |                 | 78                         |     |     |
| 3.5                    | 3.4               | 2.6  | 2.5 | 2.4 | 2.3 | 2.2             | Nonusable range |     |                 |                            | 95  |     |
| 3                      | 2.9               | 2.3  | 2.2 | 2.1 | 2.0 | 1.9             | 1.8             | 1.7 | Nonusable range |                            | 121 |     |
| 2.5                    | 2.4               | 1.9  | 1.8 | 1.7 | 1.7 | 1.6             | 1.5             | 1.4 | 1.3             | Nonusable range            |     | 167 |
| 2                      | 1.9               | 1.5  | 1.4 | 1.4 | 1.3 | 1.3             | 1.2             | 1.1 | 1.0             | Nonusable range            |     | 189 |
| 1.5                    | 1.4               | 1.1  | 1.1 | 1.0 | 1.0 | 1.0             | 0.9             | 0.8 | 0.8             | Nonusable range            |     | ↑   |
| 1                      | 1.0               | 0.8  | 0.7 | 0.7 | 0.7 | 0.6             | 0.6             | 0.6 | 0.5             | Nonusable range            |     | 189 |

| model CTP05            |                   | Clamping force $F = P / (0.694 + 0.00345 \times LH)$ |     |     |     |                 |     |                 |     |                            |  |     |
|------------------------|-------------------|--|-----|-----|-----|-----------------|-----|-----------------|-----|----------------------------|--|-----|
| Hydraulic pressure MPa | Cylinder force kN | Clamping force kN                                    |     |     |     |                 |     |                 |     | Max. arm length Max. LH mm |  |     |
|                        |                   | Clamp arm length LH mm                               |     |     |     |                 |     |                 |     |                            |  |     |
|                        |                   | 40   | 50  | 60  | 80  | 100             | 120 | 140             | 160 |                            |  |     |
| 4                      | 6.1               | 4.8  | 4.6 | 4.4 | 4.1 | Nonusable range |     |                 |     | 81                         |  |     |
| 3.5                    | 5.3               | 4.2  | 4.0 | 3.9 | 3.6 | Nonusable range |     |                 |     | 99                         |  |     |
| 3                      | 4.6               | 3.6  | 3.5 | 3.3 | 3.1 | 2.9             | 2.7 | Nonusable range |     | 126                        |  |     |
| 2.5                    | 3.8               | 3.0  | 2.9 | 2.8 | 2.6 | 2.4             | 2.3 | 2.1             | 2.0 | Nonusable range            |  | 172 |
| 2                      | 3.0               | 2.4  | 2.3 | 2.2 | 2.1 | 1.9             | 1.8 | 1.7             | 1.6 | Nonusable range            |  | 196 |
| 1.5                    | 2.3               | 1.8  | 1.7 | 1.7 | 1.5 | 1.4             | 1.4 | 1.3             | 1.2 | Nonusable range            |  | ↑   |
| 1                      | 1.5               | 1.2  | 1.2 | 1.1 | 1.0 | 1.0             | 0.9 | 0.8             | 0.8 | Nonusable range            |  | 196 |

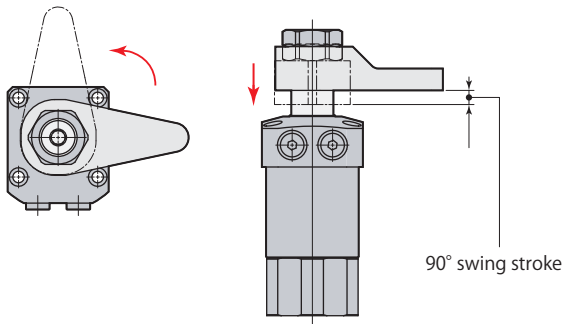
| model CTP06            |                   | Clamping force $F = P / (0.470 + 0.00210 \times LH)$ |     |     |     |                 |                 |     |                 |                            |     |     |
|------------------------|-------------------|--|-----|-----|-----|-----------------|-----------------|-----|-----------------|----------------------------|-----|-----|
| Hydraulic pressure MPa | Cylinder force kN | Clamping force kN                                    |     |     |     |                 |                 |     |                 | Max. arm length Max. LH mm |     |     |
|                        |                   | Clamp arm length LH mm                               |     |     |     |                 |                 |     |                 |                            |     |     |
|                        |                   | 50   | 60  | 80  | 100 | 120             | 140             | 160 | 180             |                            |     |     |
| 4                      | 9.0               | 6.9  | 6.7 | 6.3 | 5.9 | Nonusable range |                 |     |                 | 108                        |     |     |
| 3.5                    | 7.8               | 6.1  | 5.9 | 5.5 | 5.1 | 4.8             | Nonusable range |     |                 |                            | 133 |     |
| 3                      | 6.7               | 5.2  | 5.0 | 4.7 | 4.4 | 4.1             | 3.9             | 3.7 | Nonusable range |                            | 172 |     |
| 2.5                    | 5.6               | 4.3  | 4.2 | 3.9 | 3.7 | 3.5             | 3.3             | 3.1 | 2.9             | Nonusable range            |     | 245 |
| 2                      | 4.5               | 3.5  | 3.4 | 3.1 | 2.9 | 2.8             | 2.6             | 2.5 | 2.4             | Nonusable range            |     | 281 |
| 1.5                    | 3.4               | 2.6  | 2.5 | 2.3 | 2.2 | 2.1             | 2.0             | 1.9 | 1.8             | Nonusable range            |     | ↑   |
| 1                      | 2.2               | 1.7  | 1.7 | 1.6 | 1.5 | 1.4             | 1.3             | 1.2 | 1.2             | Nonusable range            |     | 281 |

### Swing speed adjustment

Swing time is restricted by the mass and length of the clamp arm (moment of inertia) since the 90° swing action impacts the cam shaft.

1. Calculate the moment of inertia according to the arm length and mass.
2. Adjust swing speed with flow control valve to ensure that 90° swing time of the clamp arm is greater than the shortest swing time in the graph shown below.

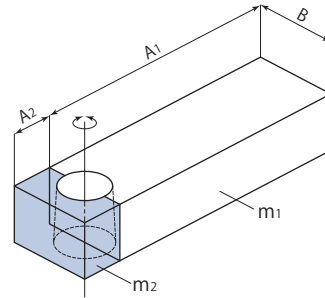
● The cam groove may be damaged in case the swing speed is set at the nonusable range in the graph.



### Example of calculation for moment of inertia

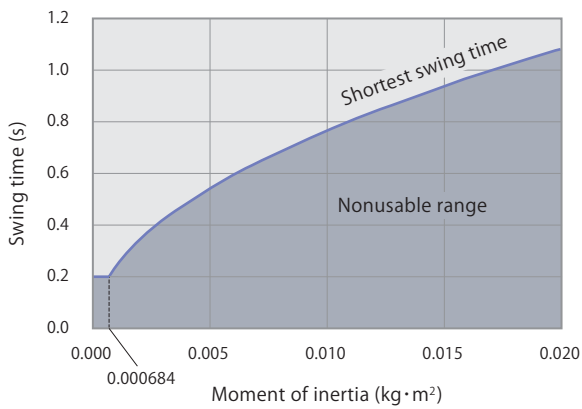
$$I = \frac{1}{12} m_1(4A_1^2 + B^2) + \frac{1}{12} m_2(4A_2^2 + B^2)$$

I : Moment of inertia (kg·m<sup>2</sup>)  
m : Mass (kg)



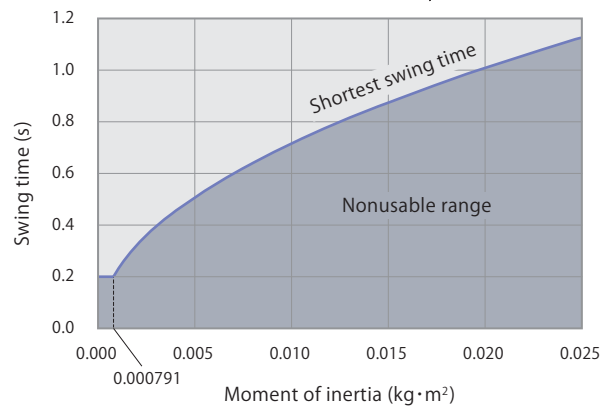
model CTP04

Shortest swing time calculation formula  $t = \sqrt{\frac{I}{0.0171}}$



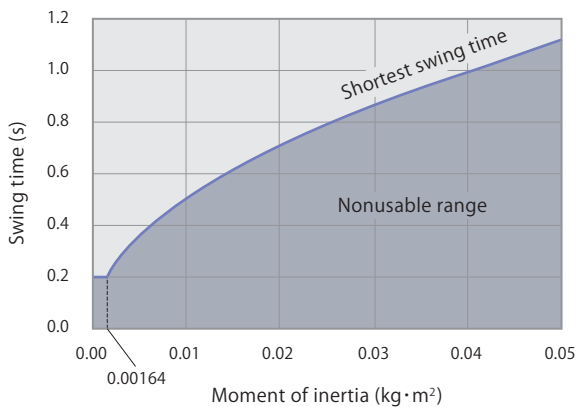
model CTP05

Shortest swing time calculation formula  $t = \sqrt{\frac{I}{0.0198}}$

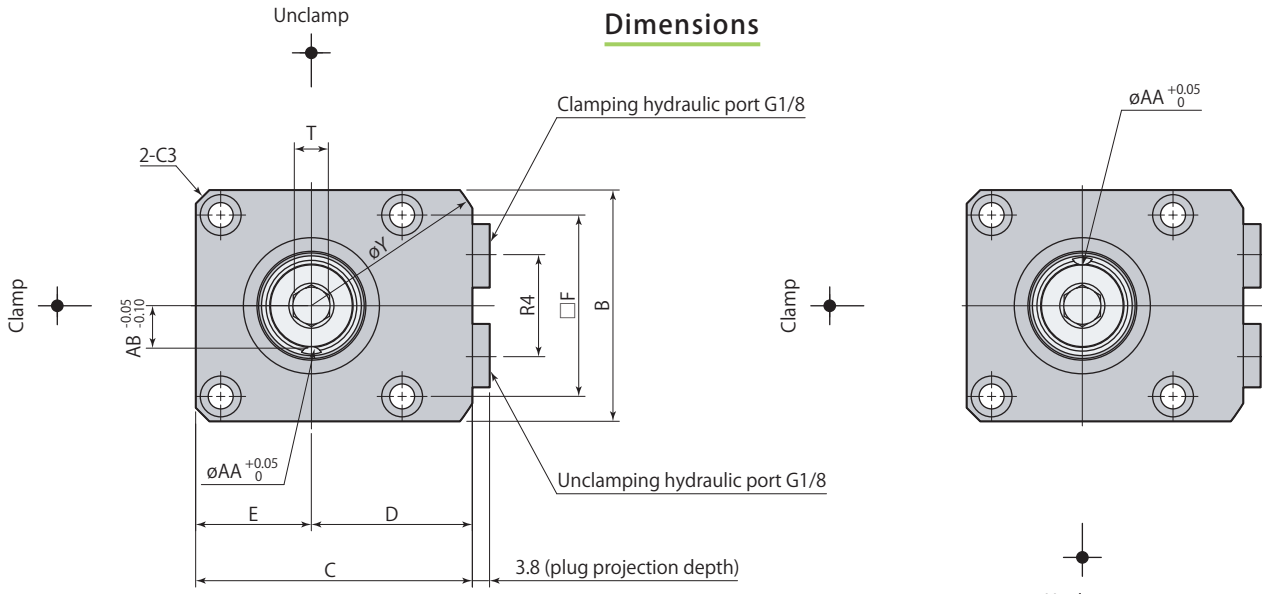


model CTP06

Shortest swing time calculation formula  $t = \sqrt{\frac{I}{0.0410}}$

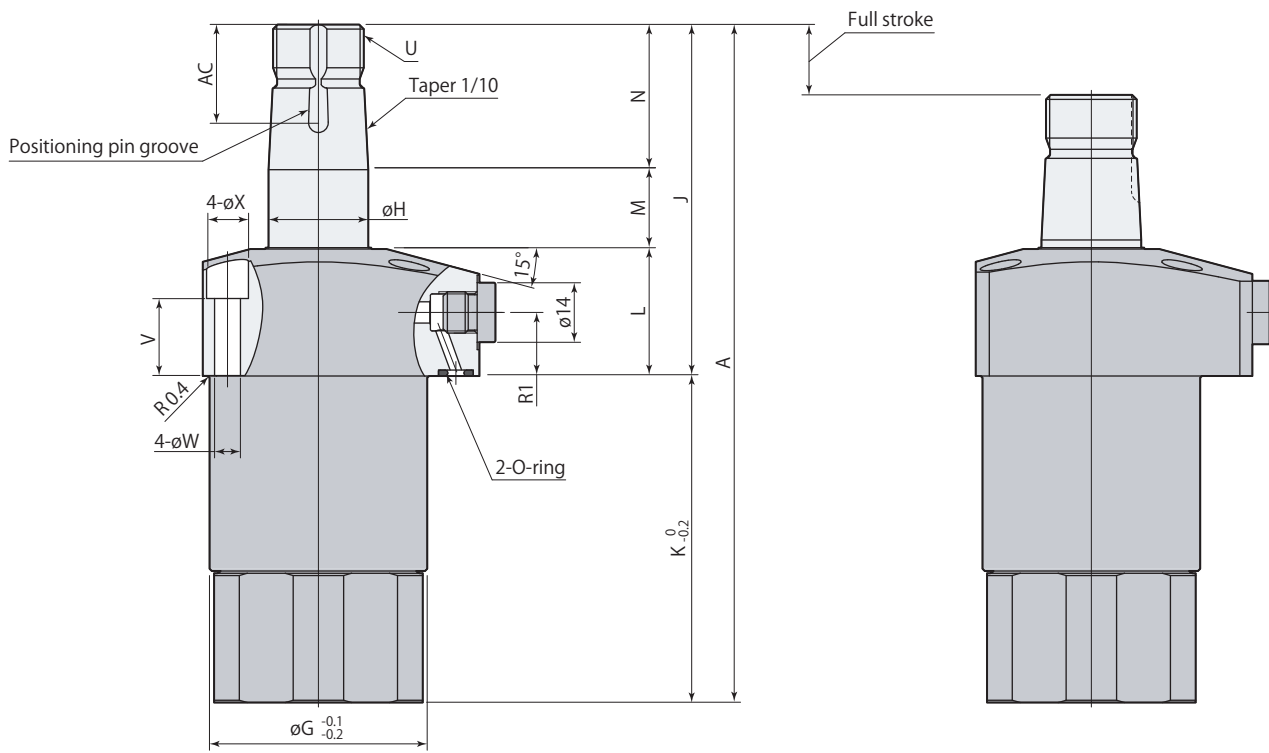


Dimensions



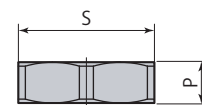
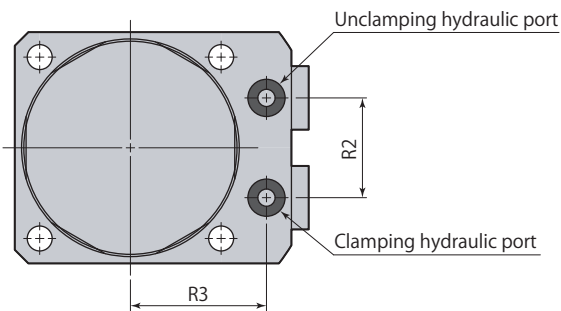
Swing direction L (counter-clockwise)

Swing direction R (clockwise)



Unclamp

Stroke end



Hex. nut for arm mount

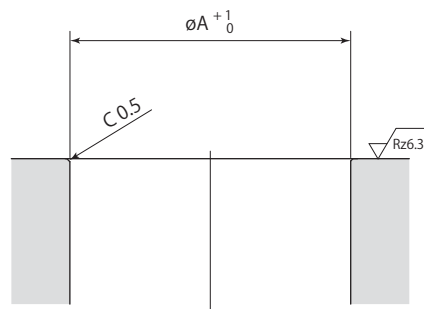
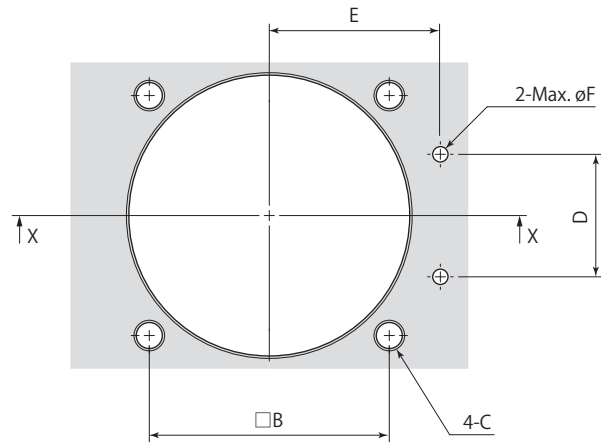
- Hex. nut for arm mount is included.
- Refer to **page → 13** for the details of perfect nut.
- Clamp arm, positioning pin and mounting screws are not included.

| Model                               |           | CTP04-□   | CTP05-□   | CTP06-□   |
|-------------------------------------|-----------|-----------|-----------|-----------|
| A                                   |           | 137.5     | 152       | 167.5     |
| B                                   |           | 45        | 51        | 60        |
| C                                   |           | 54        | 61        | 69        |
| D                                   |           | 31.5      | 35.5      | 39        |
| E                                   |           | 22.5      | 25.5      | 30        |
| F                                   |           | 34        | 40        | 47        |
| øG                                  |           | 40        | 48        | 55        |
| øH                                  |           | 18        | 22        | 25        |
| J                                   |           | 68.5      | 77.5      | 84.5      |
| K                                   |           | 69        | 74.5      | 83        |
| L                                   |           | 25        | 28        | 30        |
| M                                   |           | 16.5      | 17.5      | 18.5      |
| N                                   |           | 27        | 32        | 36        |
| P                                   |           | 8         | 9         | 10        |
| R1                                  |           | 11.5      | 14        | 13.5      |
| R2                                  |           | 18        | 22        | 24        |
| R3                                  |           | 26        | 30        | 33.5      |
| R4                                  |           | 20        | 22        | 24        |
| S (nut width across flats)          |           | 24        | 30        | 32        |
| T (hex. socket)                     |           | 6         | 8         | 8         |
| U                                   |           | M16×1.5   | M20×1.5   | M22×1.5   |
| V                                   |           | 15        | 17.5      | 17        |
| øW                                  |           | 5.5       | 5.5       | 6.8       |
| øX                                  |           | 9         | 9         | 11        |
| øY                                  |           | 73        | 83        | 88        |
| øAA (pin groove diameter)           |           | 4         | 5         | 6         |
| AB                                  |           | 7         | 9         | 10        |
| AC                                  |           | 18.5      | 21.5      | 24.5      |
| Positioning pin (dowel pin)         |           | ø4(h8)×10 | ø5(h8)×12 | ø6(h8)×14 |
| O-ring (fluorocarbon hardness Hs90) |           | P5        | P5        | P5        |
| Taper sleeve                        |           | CTH04-MS  | CTH05-MS  | CTH06-MS  |
| Flow control valve                  | Meter-in  | VCF01S    | VCF01S    | VCF01S    |
|                                     | Meter-out | VCF01S-O  | VCF01S-O  | VCF01S-O  |
| Air bleeding valve                  |           | VCE01     | VCE01     | VCE01     |

Refer to each page for the details of options.

● Taper sleeve **page →13** ● Flow control valve **page →27** ● Air bleeding valve **page →29**



Mounting details

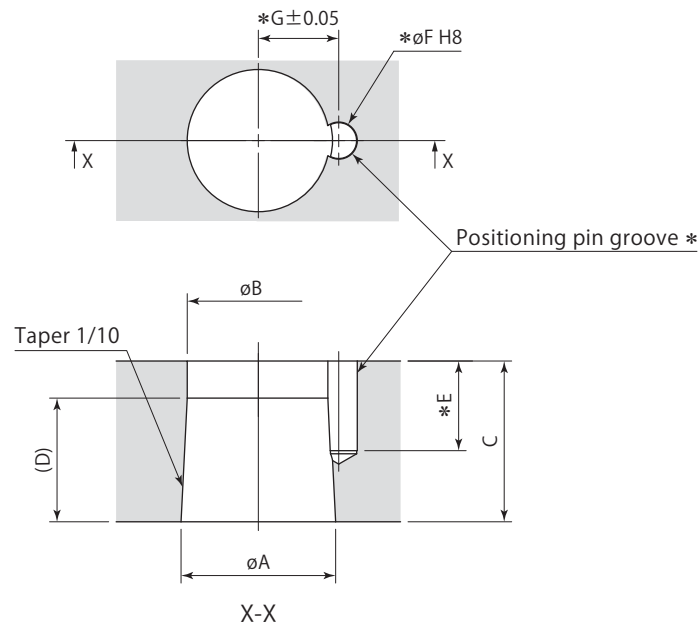
X-X

| Model | CTP04-□ | CTP05-□ | CTP06-□ |
|-------|---------|---------|---------|
| øA    | 40      | 48      | 55      |
| B     | 34      | 40      | 47      |
| C     | M5      | M5      | M6      |
| D     | 18      | 22      | 24      |
| E     | 26      | 30      | 33.5    |
| øF    | 3       | 3       | 3       |

mm

### Clamp arm mounting details

Clamp arm is not included. Manufacture a clamp arm with the dimensions shown in the table below.



\* : No need to machine the pin groove (E,  $\phi F$ , G) unless positioning pin is used for the arm.  
The positioning pin enables a clamp arm to locate on the clamp firmly and easily.

| Model                          | CTP04-□                                | CTP05-□                                | CTP06-□                                |
|--------------------------------|--|--|--|
| $\phi A$                       | 18 <sup>-0.016</sup> <sub>-0.034</sub> | 22 <sup>-0.020</sup> <sub>-0.041</sub> | 25 <sup>-0.020</sup> <sub>-0.041</sub> |
| $\phi B$                       | 16.5                                   | 20.5                                   | 23                                     |
| C                              | 19                                     | 23                                     | 26                                     |
| D                              | 15                                     | 15                                     | 20                                     |
| E                              | 10.5                                   | 12.5                                   | 14.5                                   |
| $\phi F$ (pin groove diameter) | 4 <sup>+0.018</sup> <sub>0</sub>       | 5 <sup>+0.018</sup> <sub>0</sub>       | 6 <sup>+0.018</sup> <sub>0</sub>       |
| G                              | 9                                      | 11.5                                   | 13                                     |

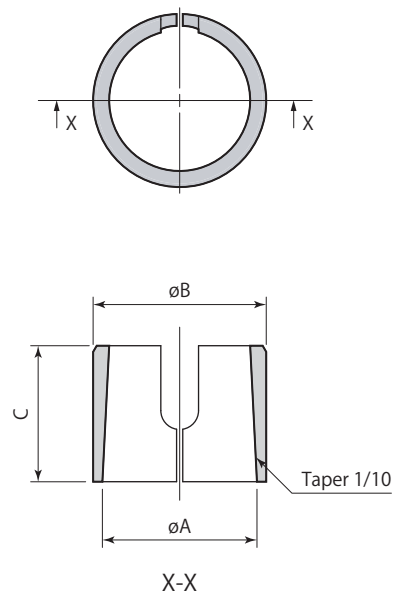
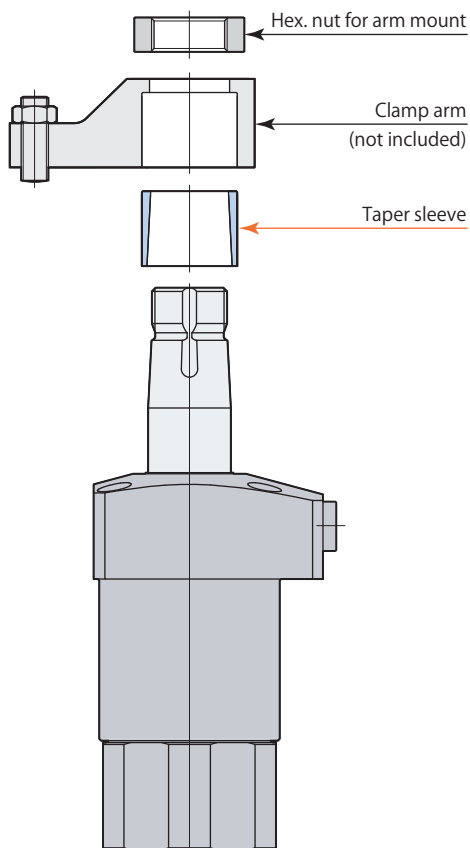
mm

Taper sleeve



Size

CTH **04** **05** **06** — **MS** : Taper sleeve



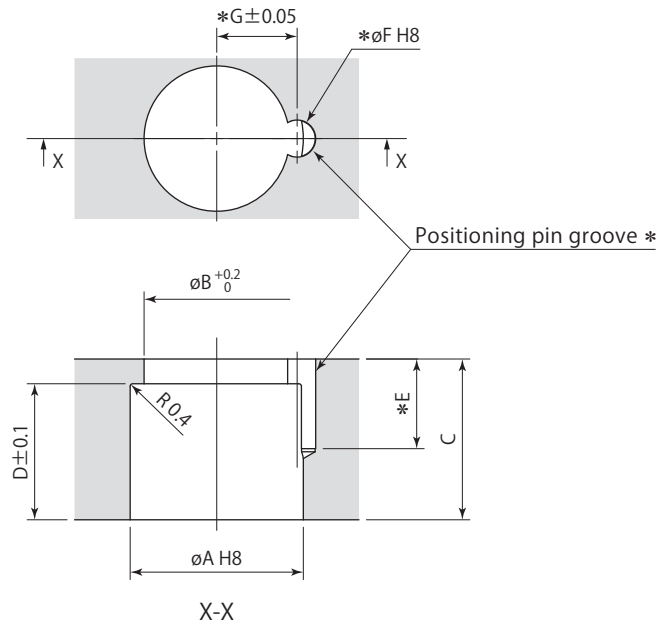
| Taper sleeve           | CTH04-MS | CTH05-MS | CTH06-MS |
|------------------------|----------|----------|----------|
| Applicable swing clamp | CTP04-□  | CTP05-□  | CTP06-□  |
| $\phi A$               | 18       | 22       | 25       |
| $\phi B$               | 20       | 25       | 28       |
| C                      | 16       | 19       | 22       |

mm

Clamp arm mounting details

(Using taper sleeve)

Clamp arm is not included. Manufacture a clamp arm with the dimensions shown in the table below.



\* : No need to machine the pin groove (E,  $\phi F$ , G) unless positioning pin is used for the arm.  
The positioning pin enables a clamp arm to locate on the clamp firmly and easily.

| Taper sleeve                   | CTH04-MS         | CTH05-MS         | CTH06-MS         |
|--------------------------------|------------------|------------------|------------------|
| Applicable swing clamp         | CTP04-□          | CTP05-□          | CTP06-□          |
| $\phi A$                       | 20 $^{+0.033}_0$ | 25 $^{+0.033}_0$ | 28 $^{+0.033}_0$ |
| $\phi B$                       | 17               | 21               | 23.5             |
| C                              | 19               | 23               | 26               |
| D                              | 16               | 19               | 22               |
| E                              | 10.5             | 12.5             | 14.5             |
| $\phi F$ (pin groove diameter) | 4 $^{+0.018}_0$  | 5 $^{+0.018}_0$  | 6 $^{+0.018}_0$  |
| G                              | 9                | 11.5             | 13               |

mm

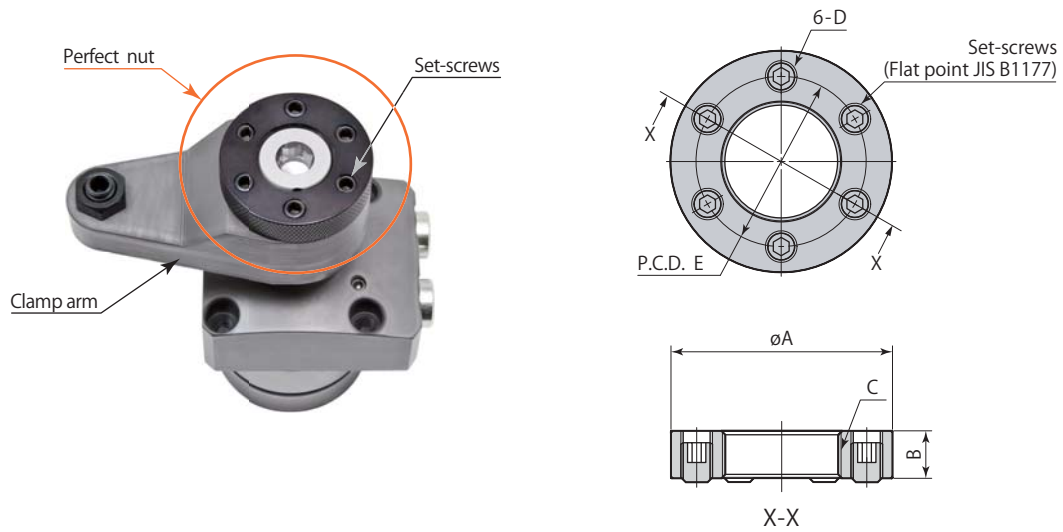
Perfect nut

Size

04

CTH 05 — MN : Perfect nut

06



| Perfect nut            |                               | CTH04-MN      | CTH05-MN      | CTH06-MN          |
|------------------------|-------------------------------|---------------|---------------|-------------------|
| Applicable swing clamp |                               | CTP04         | CTP05         | CTP06             |
| Set-screws             | Size                          | M6×1 length 8 | M6×1 length 8 | M8×1.25 length 10 |
|                        | Recommended tightening torque | 2.5 N·m       | 3 N·m         | 6 N·m             |
| øA                     |                               | 32            | 40            | 48                |
| B                      |                               | 8             | 9             | 10                |
| C                      |                               | M16×1.5       | M20×1.5       | M22×1.5           |
| D                      |                               | M6×1          | M6×1          | M8×1.25           |
| E                      |                               | 24            | 30            | 35                |
| Mass                   |                               | 0.04 kg       | 0.06 kg       | 0.12 kg           |

mm

Perfect release nut

Size

04

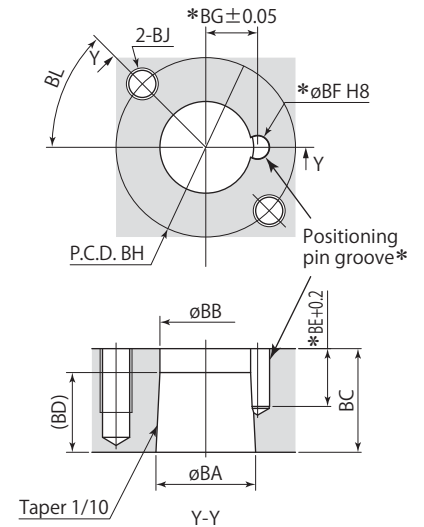
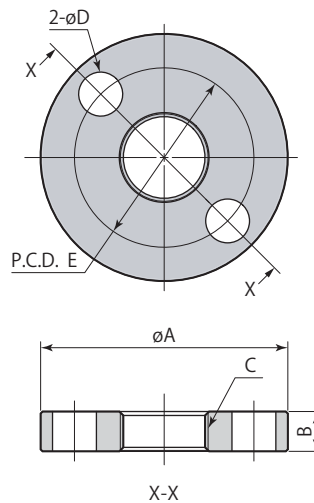
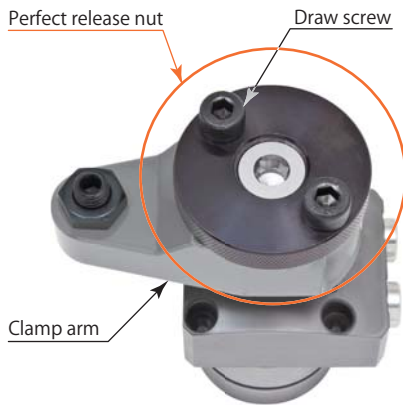
CTH 05 — MNR : Perfect release nut

06

Clamp arm mounting details

(Using perfect release nut)

Drill a 1/10 taper hole into the clamp arm, and provide the tap holes for draw screws to remove the clamp arm.



\* : No need to machine the pin groove (BE,  $\phi BF$ , BG) unless positioning pin is used for the arm.

mm

| Perfect release nut             | CTH04-MNR   | CTH05-MNR                              | CTH06-MNR                              |
|---------------------------------|---|--|--|
| Applicable swing clamp          | CTP04   | CTP05                                  | CTP06                                  |
| Recommended draw screw          | M6 × 1  | M8 × 1.25                              | M10 × 1.5                              |
| $\phi A$                        | 45  | 54                                     | 62                                     |
| B                               | 8   | 9                                      | 10                                     |
| C                               | M16 × 1.5   | M20 × 1.5                              | M22 × 1.5                              |
| $\phi D$                        | 6.8   | 9                                      | 11                                     |
| E                               | 34  | 39                                     | 45                                     |
| Mass                            | 0.08 kg   | 0.13 kg                                | 0.20 kg                                |
| $\phi BA$                       | 18 <sup>+0.016</sup> <sub>-0.034</sub>  | 22 <sup>-0.020</sup> <sub>-0.041</sub> | 25 <sup>-0.020</sup> <sub>-0.041</sub> |
| $\phi BB$                       | 16.5  | 20.5                                   | 23                                     |
| BC                              | 19  | 23                                     | 26                                     |
| BD                              | 15  | 15                                     | 20                                     |
| BE                              | 10.5  | 12.5                                   | 14.5                                   |
| $\phi BF$ (pin groove diameter) | 4 <sup>+0.018</sup> <sub>0</sub>  | 5 <sup>+0.018</sup> <sub>0</sub>       | 6 <sup>+0.018</sup> <sub>0</sub>       |
| BG                              | 9   | 11.5                                   | 13                                     |
| BH                              | 34  | 39                                     | 45                                     |
| BJ                              | M6  | M8                                     | M10                                    |
| BL                              | Standard 60° allowable range 45°~70° (within range that there is no interference with set-screws) |  |  |

● Draw screws are not included with perfect release nut.