Power Clamp Cylinder

ø50, ø63

- Simple switch adjustment greatly reduces work hours. Switch can be adjusted easily when changing the arm opening angle.

- With metal switch cassette cover
  - Protects switch cassette from unexpected impact

- Weight reduced by up to 39%
  - Aluminum body with greatly reduced weight
  - Suitable for robot material handling

<table>
<thead>
<tr>
<th>Bore size</th>
<th>CKZ3T</th>
<th>CKZ3T-X2734</th>
<th>Reduction rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>5.0 kg</td>
<td>3.1 kg</td>
<td>38% reduction</td>
</tr>
<tr>
<td>63</td>
<td>7.1 kg</td>
<td>4.3 kg</td>
<td>39% reduction</td>
</tr>
</tbody>
</table>

* Arm opening angle: 90°

- High clamping force 4000 N
  (ø63, Arm length: 100 mm, 0.5 MPa pressure)

New

A model with a manually operated handle is available.
  - For manual workpiece setting processes

CKZ3T-X2734 (Base Type)
-CKZ3T-X2568 (With Manually Operated Handle)
Power Clamp Cylinder

**CKZ3T-X2734**

**CKZ3T-X2568**

**ø50, ø63**

### How to Order

**Base type**

**With manually operated handle**

**CKZ3T**

<table>
<thead>
<tr>
<th>Bore size</th>
<th>50</th>
<th>ø50 equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>63</td>
<td>ø63 equivalent</td>
</tr>
</tbody>
</table>

**Top cover**

- Nil
- Rubber cover (Equivalent to UL94 Standard V0: Flame resistant)
- M Metal cover

**Cylinder port**

- Nil
- G
- TN NPT
- TP Rc

**Arm opening angle**

<table>
<thead>
<tr>
<th>Symbol (Arm opening angle)</th>
<th>X2734</th>
<th>X2568</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 15°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 30°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 45°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 60°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 75°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90 90°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>105 105°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 120°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>135 135°</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

**Proximity switch**

- T TURCK
- P P&F
- W None

**Manually operated handle mounting position**

- L (Left side mounting)
- R (Right side mounting)

**Clamp arm**

**CKZT**

<table>
<thead>
<tr>
<th>Bore size</th>
<th>50</th>
<th>ø50 equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>63</td>
<td>ø63 equivalent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Offset</th>
<th>15 mm</th>
<th>45 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A045</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Mounted arm**

**Mounting hole**

- Symbol: D1 D2
- S 6 9
- B 8 10.2

* Switch cassette viewed from the front.
Cylinder Specifications

<table>
<thead>
<tr>
<th>Bore size</th>
<th>50</th>
<th>63</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>Double acting</td>
<td></td>
</tr>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
</tr>
<tr>
<td>Proof pressure</td>
<td>1.2 MPa</td>
<td></td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>0.8 MPa</td>
<td></td>
</tr>
<tr>
<td>Min. operating pressure</td>
<td>0.3 MPa</td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperatures</td>
<td>−10 to 60°C (No freezing)</td>
<td></td>
</tr>
<tr>
<td>Cushion</td>
<td>Clamping side: None</td>
<td>Unclamping side: Rubber bumper</td>
</tr>
<tr>
<td>Operating time</td>
<td>Clamping: 1 s or more, Unclamping: 1 s or more</td>
<td></td>
</tr>
<tr>
<td>Max. allowable holding moment</td>
<td>800 N·m</td>
<td>1500 N·m</td>
</tr>
</tbody>
</table>

*1 Refer to the maximum holding force (torque) while clamped with the operating air exhausted. This is not the possible holding force (torque) for normal use.

Weight (Cylinder Without Clamp Arm)

<table>
<thead>
<tr>
<th>Bore size</th>
<th>Arm opening angle</th>
<th>Additional weight of the manually operated handle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15°</td>
<td>30°</td>
</tr>
<tr>
<td>50</td>
<td>3.2</td>
<td>3.2</td>
</tr>
<tr>
<td>63</td>
<td>4.4</td>
<td>4.4</td>
</tr>
</tbody>
</table>

* Refer to pages 6 and 7 for the weight of clamp arms.

Cylinder Stroke

<table>
<thead>
<tr>
<th>Bore size</th>
<th>Arm opening angle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15°</td>
</tr>
<tr>
<td>50</td>
<td>22.7</td>
</tr>
<tr>
<td>63</td>
<td>24.2</td>
</tr>
</tbody>
</table>

Proximity Switch Specifications

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>TURCK</th>
<th>P&amp;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage</td>
<td>10 to 30 VDC</td>
<td>10 to 30 VDC</td>
</tr>
<tr>
<td>Output</td>
<td>N.O., PNP</td>
<td>N.O., PNP</td>
</tr>
<tr>
<td>Continuous load current</td>
<td>150 mA</td>
<td>100 mA</td>
</tr>
<tr>
<td>Response frequency</td>
<td>30 Hz</td>
<td>25 Hz</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
<td>PA6, PBT</td>
</tr>
<tr>
<td>Output indication</td>
<td>Clamping side: Red, Unclamping side: Yellow</td>
<td>Clamping side: Red, Unclamping side: Yellow</td>
</tr>
<tr>
<td>Voltage indication</td>
<td>Green</td>
<td>Green</td>
</tr>
<tr>
<td>Connector</td>
<td>M12 connector</td>
<td>M12 connector</td>
</tr>
</tbody>
</table>

* Switch specifications correspond to the manufacturers' technical information.

Wiring Diagram (PNP Connection Circuit)

* Applicable to both TURCK and P&F.
* Please contact SMC for NPN specifications.
Replacement Parts

Switch Kit No. (with Metal Switch Cassette Cover)

CKZ3N – S 050 T – X2734

- Bore size
  050 ø50 equivalent
  063 ø63 equivalent

- Proximity switch
  T TURCK
  P P&F
  W None

* The switch kit includes a switch cassette assembly, metal switch cassette cover, and mounting brackets.

Stopper Bolt Kit No.

CKZ3N – B 050 D

- Bore size
  050 ø50 equivalent
  063 ø63 equivalent

- Arm opening angle
  J 15°
  H 30°
  G 45°
  F 60°
  E 75°
  D 90°
  C 105°
  B 120°
  A 135°

* The stopper bolt kit includes a stopper bolt and mounting brackets.

Top Cover Kit No.

CKZ2N – T 050

- Bore size
  050 ø50 equivalent
  063 ø63 equivalent

Rubber cover

Metal cover

CKZ3N – T 050 M

- Bore size
  050 ø50 equivalent
  063 ø63 equivalent

* The top cover kit includes a top cover and mounting brackets.
* Refer to page 12 for procedures for changing the stopper bolt and switch positions and for top cover replacement instructions.

* The switch kit includes a switch cassette assembly, metal switch cassette cover, and mounting brackets.

* Refer to page 12 for procedures for changing the stopper bolt and switch positions and for top cover replacement instructions.
Dimensions

CKZ3T-□□-X2734

Rubber cover type

Power Clamp Cylinder

Metal cover type

| Bore size | B  | C  | D  | E  | GA | GB | I  | J  | K  | L  | LA | LB | MM | N  | NA | NB | NC | NN |
|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 50        | 92 | 48 | 12 | 13.7 | 95 | 166 | 10 | 12 | 55 | 376.6 | 155.5 | 78.4 | 78.4 | M10 x 1.5 | 19 | 13 | 36.5 | 9.5 | M8 x 1.25 |
| 63        | 110 | 54 | 12 | 16.6 | 99 | 171.5 | 10 | 12 | 55 | 391.6 | 161 | 78 | 78.4 | M10 x 1.5 | 22 | 13 | 36.5 | 15 | M8 x 1.25 |

| Bore size | P  | PA | PB | PC | PD | R  | RA | RB | RR | S  | V  | VA | VB | VC | VD | VE | VF | W  | XB | XC | Y  |
|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 50        | 10 | 50 | 45 | 10 | 55 | 46 | 68 | 46 | 48 | 11 | 8  | 30 | 32 | 63.5 | 71.5 | 12 | 3.5 | 78.4 | 136 | 92 | 132 |
| 63        | 10 | 50 | 45 | 10 | 55 | 52 | 78 | 52 | 54 | 11 | 8  | 30 | 32 | 63.5 | 71.5 | 12 | 3.5 | 78 | 148.5 | 104.5 | 138 |
Dimensions: With Manually Operated Handle

CKZ3T□□-X2568\textsubscript{L/R}

* Refer to the CKZ3T□□-X2734 (page 4) for dimensions other than those shown below.

<table>
<thead>
<tr>
<th>Bore size</th>
<th>HA [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>61.5</td>
</tr>
<tr>
<td>63</td>
<td>64.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bore size</th>
<th>Arm opening angle ( \theta ) [\textdegree]</th>
<th>HF [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>15</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>73</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>105</td>
<td>114</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>124</td>
</tr>
<tr>
<td>63</td>
<td>15</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>105</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>124</td>
</tr>
</tbody>
</table>
Power Clamp Cylinder

Dimensions: Clamp Arm  Bore Size  50

Offset 15 mm

Offset 45 mm

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A015CS | 6  | 9  | 0.8       
CKZT50-A015CB | 8  | 10.2 | 0.8    
CKZT50-A015RS | 6  | 9  | 0.9       
CKZT50-A015RB | 8  | 10.2 | 0.9    
CKZT50-A015LS | 6  | 9  | 0.9       
CKZT50-A015LB | 8  | 10.2 | 0.9    

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A045CS | 6  | 9  | 0.9       
CKZT50-A045CB | 8  | 10.2 | 0.9    
CKZT50-A045RS | 6  | 9  | 1.0       
CKZT50-A045RB | 8  | 10.2 | 1.0    
CKZT50-A045LS | 6  | 9  | 1.0       
CKZT50-A045LB | 8  | 10.2 | 1.0    

Dimensions: Clamp Arm  Bore Size  50

Offset 15 mm

Offset 45 mm

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A015CS | 6  | 9  | 0.8       
CKZT50-A015CB | 8  | 10.2 | 0.8    
CKZT50-A015RS | 6  | 9  | 0.9       
CKZT50-A015RB | 8  | 10.2 | 0.9    
CKZT50-A015LS | 6  | 9  | 0.9       
CKZT50-A015LB | 8  | 10.2 | 0.9    

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A045CS | 6  | 9  | 0.9       
CKZT50-A045CB | 8  | 10.2 | 0.9    
CKZT50-A045RS | 6  | 9  | 1.0       
CKZT50-A045RB | 8  | 10.2 | 1.0    
CKZT50-A045LS | 6  | 9  | 1.0       
CKZT50-A045LB | 8  | 10.2 | 1.0    

Dimensions: Clamp Arm  Bore Size  50

Offset 15 mm

Offset 45 mm

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A015CS | 6  | 9  | 0.8       
CKZT50-A015CB | 8  | 10.2 | 0.8    
CKZT50-A015RS | 6  | 9  | 0.9       
CKZT50-A015RB | 8  | 10.2 | 0.9    
CKZT50-A015LS | 6  | 9  | 0.9       
CKZT50-A015LB | 8  | 10.2 | 0.9    

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A045CS | 6  | 9  | 0.9       
CKZT50-A045CB | 8  | 10.2 | 0.9    
CKZT50-A045RS | 6  | 9  | 1.0       
CKZT50-A045RB | 8  | 10.2 | 1.0    
CKZT50-A045LS | 6  | 9  | 1.0       
CKZT50-A045LB | 8  | 10.2 | 1.0    

Dimensions: Clamp Arm  Bore Size  50

Offset 15 mm

Offset 45 mm

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A015CS | 6  | 9  | 0.8       
CKZT50-A015CB | 8  | 10.2 | 0.8    
CKZT50-A015RS | 6  | 9  | 0.9       
CKZT50-A015RB | 8  | 10.2 | 0.9    
CKZT50-A015LS | 6  | 9  | 0.9       
CKZT50-A015LB | 8  | 10.2 | 0.9    

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A045CS | 6  | 9  | 0.9       
CKZT50-A045CB | 8  | 10.2 | 0.9    
CKZT50-A045RS | 6  | 9  | 1.0       
CKZT50-A045RB | 8  | 10.2 | 1.0    
CKZT50-A045LS | 6  | 9  | 1.0       
CKZT50-A045LB | 8  | 10.2 | 1.0    

Dimensions: Clamp Arm  Bore Size  50

Offset 15 mm

Offset 45 mm

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A015CS | 6  | 9  | 0.8       
CKZT50-A015CB | 8  | 10.2 | 0.8    
CKZT50-A015RS | 6  | 9  | 0.9       
CKZT50-A015RB | 8  | 10.2 | 0.9    
CKZT50-A015LS | 6  | 9  | 0.9       
CKZT50-A015LB | 8  | 10.2 | 0.9    

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A045CS | 6  | 9  | 0.9       
CKZT50-A045CB | 8  | 10.2 | 0.9    
CKZT50-A045RS | 6  | 9  | 1.0       
CKZT50-A045RB | 8  | 10.2 | 1.0    
CKZT50-A045LS | 6  | 9  | 1.0       
CKZT50-A045LB | 8  | 10.2 | 1.0    

Dimensions: Clamp Arm  Bore Size  50

Offset 15 mm

Offset 45 mm

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A015CS | 6  | 9  | 0.8       
CKZT50-A015CB | 8  | 10.2 | 0.8    
CKZT50-A015RS | 6  | 9  | 0.9       
CKZT50-A015RB | 8  | 10.2 | 0.9    
CKZT50-A015LS | 6  | 9  | 0.9       
CKZT50-A015LB | 8  | 10.2 | 0.9    

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A045CS | 6  | 9  | 0.9       
CKZT50-A045CB | 8  | 10.2 | 0.9    
CKZT50-A045RS | 6  | 9  | 1.0       
CKZT50-A045RB | 8  | 10.2 | 1.0    
CKZT50-A045LS | 6  | 9  | 1.0       
CKZT50-A045LB | 8  | 10.2 | 1.0    

Dimensions: Clamp Arm  Bore Size  50

Offset 15 mm

Offset 45 mm

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A015CS | 6  | 9  | 0.8       
CKZT50-A015CB | 8  | 10.2 | 0.8    
CKZT50-A015RS | 6  | 9  | 0.9       
CKZT50-A015RB | 8  | 10.2 | 0.9    
CKZT50-A015LS | 6  | 9  | 0.9       
CKZT50-A015LB | 8  | 10.2 | 0.9    

Model | D1 | D2 | Weight [kg]
------|----|----|-----------
CKZT50-A045CS | 6  | 9  | 0.9       
CKZT50-A045CB | 8  | 10.2 | 0.9    
CKZT50-A045RS | 6  | 9  | 1.0       
CKZT50-A045RB | 8  | 10.2 | 1.0    
CKZT50-A045LS | 6  | 9  | 1.0       
CKZT50-A045LB | 8  | 10.2 | 1.0    

Dimensions: Clamp Arm  Bore Size  50

Offset 15 mm

Offset 45 mm
Dimensions: Clamp Arm  

**Bore Size 63**

**Offset 15 mm**

![Diagram of Clamp Arm Offset 15 mm]

- **Model**
  - CKZT63-A015CS: 6 9 1.0
  - CKZT63-A015CB: 8 10.2 1.0
  - CKZT63-A015RS: 6 9 1.1
  - CKZT63-A015RB: 8 10.2 1.1
  - CKZT63-A015LS: 6 9 1.1
  - CKZT63-A015LB: 8 10.2 1.1

**Offset 45 mm**

![Diagram of Clamp Arm Offset 45 mm]

- **Model**
  - CKZT63-A045CS: 6 9 1.2
  - CKZT63-A045CB: 8 10.2 1.2
  - CKZT63-A045RS: 6 9 1.3
  - CKZT63-A045RB: 8 10.2 1.2
  - CKZT63-A045LS: 6 9 1.3
  - CKZT63-A045LB: 8 10.2 1.2
Model Selection

Relation between arm length and clamping force

Bore Size: 50

<table>
<thead>
<tr>
<th>Arm length [mm]</th>
<th>Maximum clamping force [N]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>10,000</td>
</tr>
<tr>
<td>100</td>
<td>8,000</td>
</tr>
<tr>
<td>150</td>
<td>6,000</td>
</tr>
<tr>
<td>200</td>
<td>4,000</td>
</tr>
<tr>
<td>250</td>
<td>2,000</td>
</tr>
<tr>
<td>300</td>
<td>0</td>
</tr>
</tbody>
</table>

Bore Size: 63

<table>
<thead>
<tr>
<th>Arm length [mm]</th>
<th>Maximum clamping force [N]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>12,000</td>
</tr>
<tr>
<td>100</td>
<td>10,000</td>
</tr>
<tr>
<td>150</td>
<td>8,000</td>
</tr>
<tr>
<td>200</td>
<td>6,000</td>
</tr>
<tr>
<td>250</td>
<td>4,000</td>
</tr>
<tr>
<td>300</td>
<td>2,000</td>
</tr>
<tr>
<td>350</td>
<td>0</td>
</tr>
</tbody>
</table>

Allowable arm length

Bore Size: 63

<table>
<thead>
<tr>
<th>Bore size</th>
<th>Allowable arm length [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>300</td>
</tr>
<tr>
<td>63</td>
<td>300</td>
</tr>
</tbody>
</table>

Allowable load mass

The allowable load mass changes depending on the arm opening angle. Be sure to use the product within the allowable values shown in the graphs below.

- The load indicates the total weight of the clamp arm, allowable arm and clamping block.
- When the operating time is 1 second

Calculation procedure for allowable load mass

1. Calculate the distance L from the fulcrum to the load center of gravity.
2. Check the arm opening angle of the product.
3. Read the allowable load mass from the graph.

Bore Size: 50

<table>
<thead>
<tr>
<th>Arm opening angle</th>
<th>Allowable load mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°</td>
<td>10</td>
</tr>
<tr>
<td>10°</td>
<td>12</td>
</tr>
<tr>
<td>20°</td>
<td>14</td>
</tr>
<tr>
<td>30°</td>
<td>16</td>
</tr>
<tr>
<td>45°</td>
<td>18</td>
</tr>
<tr>
<td>60°</td>
<td>20</td>
</tr>
</tbody>
</table>

Bore Size: 63

<table>
<thead>
<tr>
<th>Arm opening angle</th>
<th>Allowable load mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°</td>
<td>12</td>
</tr>
<tr>
<td>10°</td>
<td>14</td>
</tr>
<tr>
<td>20°</td>
<td>16</td>
</tr>
<tr>
<td>30°</td>
<td>18</td>
</tr>
<tr>
<td>45°</td>
<td>20</td>
</tr>
<tr>
<td>60°</td>
<td>22</td>
</tr>
</tbody>
</table>

Calculation example

Bore size: 63, Arm opening angle: 90°, Distance to the center of gravity: L = 250 mm

With an arm opening angle of 90° and a 250 mm distance to the center of gravity, according to the graph, the maximum allowable load mass is 4.0 kg.
Precautions

1) The tightening torque of the clamp arm is 12 to 15 N·m for ø50 and 15 to 20 N·m for ø63. Refer to pages 6 and 7 for details on the clamp arm.
2) There is a mechanical difference of 0 to +0.5° at the clamping end as shown in Figure 1. Be sure to make adjustments externally using a shim. Refer to page 11.
3) Be sure to use a speed controller, and make adjustments according to the following conditions.
   Unclamping to clamping: 1 second or more
   Clamping to unclamping: 1 second or more
   If excessive kinetic energy is applied, there is a possibility of damage.
4) When using a side guide:
   Attach the side guide so that lateral loads, such as galling, etc., are not applied to the clamp arm.

Power clamp cylinder mounting and setup procedure

A) Place the workpiece, supply air to the clamping port without attaching the block on the arm side, and operate the clamp arm to the end of the clamp.
B) In the state of A), attach the workpiece and the arm side block, and adjust the shim so that there is a space of about 0 mm. During this step, theoretically, there is no clamping force pressing down on the workpiece.
C) In order to generate a clamping force from the state described in step B), insert an additional shim. The thickness of the shim changes depending on the arm length and the operating pressure. Refer to page 11.
   Please note that the graph should only be used as a guide as there is a tolerance of about 10% in the clamp cylinder body.
D) Exhaust the air while in the clamped state, and confirm that the clamp arm does not open.
<Ex. 2 When using a hard stop: When not equipped with a workpiece receptacle>

A) Supply air to the clamping port without installing the upper hard stop, and operate the clamp arm to the end of the clamp.

B) In the state of A), attach the upper hard stop and adjust shim \( w \) so that there is a space of about 0 mm between the upper hard stop and the hard stop.

During this step, theoretically, there is no clamping force applied to the hard stop.

C) In order to generate a clamping force from the state described in step B), insert an additional shim. The thickness of the shim changes depending on the distance to the hard stop and the operating pressure. Refer to page 11, and consider the distance to the hard stop as the arm length.

Please note that the graph should only be used as a guide as there is a tolerance of about 10% in the clamp cylinder body.

D) In the state of C), adjust shim \( q \) so that the arm side block contacts the workpiece.

E) Exhaust the air while in the clamped state, and confirm that the clamp arm does not open.
Relation between shim thickness and clamping force

- Use this figure as a guide as there is a tolerance of about 10% in the clamp cylinder body.
- When a shim exceeding the peak clamping force position on the graph is inserted, the lock will not be activated when clamped. Insert a shim of the appropriate thickness.

- The arm length indicates the distance between the clamp arm shaft and the clamping position. For distance “A” between the knock positioning pinhole and the clamp arm shaft, refer to Table 1.

*Use this figure as a guide as there is a tolerance of about 10% in the clamp cylinder body.

*When a shim exceeding the peak clamping force position on the graph is inserted, the lock will not be activated when clamped. Insert a shim of the appropriate thickness.

*The arm length indicates the distance between the clamp arm shaft and the clamping position. For distance “A” between the knock positioning pinhole and the clamp arm shaft, refer to Table 1.

### Table 1

<table>
<thead>
<tr>
<th>Bore size</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>63</td>
<td>10</td>
</tr>
</tbody>
</table>

Bore Size: 50

Bore Size: 63
1) Loosen the switch cassette mounting bolt, and remove the switch cassette.
2) Remove the switch on the unclamping side, and attach it in the position of the desired angle. Store the lead wire in the storage space.
3) Mount the switch cassette to the body, and tighten the switch cassette mounting bolt to the tightening torque shown below.

Refer to Replacement Parts (page 3) for the part numbers of the switch cassette replacement parts.

---

**To change the arm opening angle**

1. **Procedure for changing the stopper bolt position**
   1) Remove the stopper bolt of the head cover, and replace with a stopper bolt for the desired angle using the tightening torque below.
      When tightening the stopper bolt, hold the head cover.
      Refer to Replacement Parts (page 3) for the part numbers of the applicable stopper bolts.

2. **Procedure for changing the switch position**
   1) Loosen the switch cassette mounting bolt, and remove the switch cassette.
   2) Remove the switch on the unclamping side, and attach it in the position of the desired angle. Store the lead wire in the storage space.
   3) Mount the switch cassette to the body, and tighten the switch cassette mounting bolt to the tightening torque shown below.
      Refer to Replacement Parts (page 3) for the part numbers of the switch cassette replacement parts.

---

**Top cover replacement**

1. **Caution** Be sure to confirm safety, and perform the work while the air is exhausted.
2) It is possible to change from a rubber cover type to a metal cover type.
   Refer to Replacement Parts (page 3) for the part numbers of the top cover replacement parts.

---

**Switch Cassette Mounting Bolt Tightening Torque**

<table>
<thead>
<tr>
<th>Bore size</th>
<th>Tightening torque [N·m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>2.6 to 3.5</td>
</tr>
<tr>
<td>63</td>
<td>2.6 to 3.5</td>
</tr>
</tbody>
</table>

**Stopper Bolt Tightening Torque**

<table>
<thead>
<tr>
<th>Bore size</th>
<th>Tightening torque [N·m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>45 to 65</td>
</tr>
<tr>
<td>63</td>
<td>85 to 115</td>
</tr>
</tbody>
</table>

**Top Cover Mounting Bolt Tightening Torque**

<table>
<thead>
<tr>
<th>Bore size</th>
<th>Tightening torque [N·m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>1.5 to 2.0</td>
</tr>
<tr>
<td>63</td>
<td>1.5 to 2.0</td>
</tr>
</tbody>
</table>

---

**Setup Procedure**

CKZ3T-X2734-X2568

---

**Caution** Be sure to confirm safety, and perform the work while the air is exhausted.
1. **Manual lock release**

   Be sure to confirm safety before manually releasing the lock, and only perform work while the air is exhausted. Otherwise, the clamp arm may operate.

   - In the case of a rubber cover, the lock can be released easily by hitting the round tab on the cover with a plastic hammer.
   - In the case of a metal cover, the lock can be released easily by opening the cover and hitting the tab of the knuckle joint with a plastic hammer.

   Provide enough space to perform a manual lock release.

---

2. **Caution**

   2. Do not disassemble the power clamp cylinder.

   The power clamp cylinder consists of a completely sealed structure in order to protect it from welding spatter. Do not disassemble, except for when replacing any of the replaceable parts, as the performance may deteriorate.

3. **Vertical clamping**

   When mounting the clamp arm in a vertical clamping position, mount as shown in the figure below. The maximum arm opening angle is $105^\circ$. In the case of a metal cover type, select a 45 mm offset for the clamp arm. When a 15 mm offset is selected, the metal cover and clamp arm will interfere and the lock cannot be released manually.

---

4. **Proximity switch output**

   The switch output signal is output near the clamping end and the unclamping end respectively. The switch output signal on the clamping side does not output the status where the power clamp cylinder is locked by the toggle mechanism.
Power Clamp Cylinder Variations

Micro Clamp Cylinder/CKZM16-X2800/X2900

- Compact: Width 20 mm, Lightweight: 250 g
- Maximum clamping force: 200 N, Maximum holding force: 300 N
- Flat clamping characteristics
  Outputs constant clamping force for workpiece thicknesses up to 3.5 mm
- Reduction of design/assembly labor by unitization
  Arm assembly and mounting assembly have been added to the clamp cylinder.

<table>
<thead>
<tr>
<th>Type</th>
<th>Series</th>
<th>Action</th>
<th>Bore size [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base type</td>
<td>CKZM16-X2800</td>
<td>Double acting</td>
<td>16</td>
</tr>
<tr>
<td>Tandem type</td>
<td>CKZM16-X2900</td>
<td>Double acting</td>
<td>16</td>
</tr>
</tbody>
</table>

Power Clamp Cylinder Compact Type/CKZT-X2797/X2798

- Lightweight
  Weight: 580 g (ø25)
- Compact
  Width: 34 mm, Height: 192.4 mm (ø25, Arm opening angle: 90°)
- Clamping force: 1100 N (ø32, Arm length: 50 mm, 0.5 MPa pressure)
- Force amplification with a toggle mechanism and lock function
- Spatter-proof construction
- Equipped with a proximity switch that can be used in welding magnetic fields
- A model with a manually operated handle is available.

<table>
<thead>
<tr>
<th>Series</th>
<th>Arm opening angle</th>
<th>Switch</th>
<th>Bore size [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>CKZT-X2797 Base type</td>
<td>90°, 105°</td>
<td>SENSTRONIC</td>
<td>25, 32</td>
</tr>
<tr>
<td>With manually operated handle</td>
<td>90°, 105°</td>
<td>SENSTRONIC</td>
<td>25, 32</td>
</tr>
</tbody>
</table>

NAAMS Standards Compliant Power Clamp Cylinder/CKZ3N-X2742A/X2568

- Weight reduced by up to 38%
- Aluminum body with greatly reduced weight
  Suitable for robot material handling
- Simple switch adjustment greatly reduces work hours.
  Switch can be adjusted easily when changing the arm opening angle.
- High clamping force 4000 N
- Metal switch cassette cover (Option)
- Protects switch cassette from unexpected impact
- A model with a manually operated handle is available.

<table>
<thead>
<tr>
<th>Series</th>
<th>Arm opening angle</th>
<th>Switch</th>
<th>Bore size [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>CKZ3N-X2742A Base type</td>
<td>15°, 30°, 45°, 60°, 75°</td>
<td>TURCK/P&amp;F</td>
<td>50, 63</td>
</tr>
<tr>
<td></td>
<td>90°, 105°, 120°, 135°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CKZ3N-X2568 With manually operated handle</td>
<td>15°, 30°, 45°, 60°, 75°</td>
<td>TURCK/P&amp;F</td>
<td>50, 63</td>
</tr>
<tr>
<td></td>
<td>90°, 105°, 120°, 135°</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Power Clamp Cylinder/CKZT

- 3 types of arm variations for each size
- Spatter-resistant and water-resistant structure

<table>
<thead>
<tr>
<th>Series</th>
<th>Arm opening angle</th>
<th>Switch</th>
<th>Bore size [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>CKZT</td>
<td>30°, 45°, 60°, 75°, 90°, 105°, 120°, 135°</td>
<td>TURCK/P&amp;F</td>
<td>40, 50, 63, 80</td>
</tr>
</tbody>
</table>

Power Clamp Cylinder/CKZ2N

- Complies with the new NAAMS Standards (North America Automotive Metric Standard)
- 138 types of arm variations
- Spatter-resistant and water-resistant structure

<table>
<thead>
<tr>
<th>Series</th>
<th>Arm opening angle</th>
<th>Switch</th>
<th>Bore size [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>CKZ2N</td>
<td>30°, 45°, 60°, 75°, 90°, 105°, 120°, 135°</td>
<td>TURCK/P&amp;F</td>
<td>50, 63, 80</td>
</tr>
</tbody>
</table>

* For detailed dimensions and specifications, refer to the Web Catalog.
Safety Instructions Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.