

# Power Clamp Cylinder

## CKZT Series



ø80

High clamping force

Clamping force: **8800 N**

(Arm length: 100 mm, 0.5 MPa pressure)

### Uses a toggle mechanism for force amplification and toggle locking

Can hold a clamped state when supply pressure drops or residual pressure is released

### Spatter-proof construction

Fully closed structure prevents the intrusion of weld spatter

### Equipped with a magnetic field resistant proximity switch for use in welding environments

### Manual handle (lock specification) is available.

- For manual workpiece setting processes
- The handle is held at unclamped position.



CKZM16
CKZT25/32
CKZT40
CKZ5T
CKZ3T
CKZT80
CKZ5N
CKZ3N
CKZ2N

Flow Control Equipment
Piping Equipment
Related Products
C(L)KQG32 C(L)KU32
C(L)KQD -X3256
C(L)KQG C(L)KQP

# Power Clamp Cylinder

## CKZT Series

ø80

RoHS



### How to Order

Base type

CKZT 80 TN - 120 T

With manual handle

CKZT 80 TN - 105 T - X2568 L

**Cylinder port**

Nil	G
TN	NPT

**Bore size**

**Arm opening angle**

Symbol	Base type	With manual handle X2568
30	○	○
45	○	○
60	○	○
75	○	○
90	○	○
105	○	○
120	○	—
135	○	—

**Proximity switch**

T	TURCK
P	P&F

**Manual handle mounting position**

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

\* Switch cassette viewed from the front

Clamp arm

CKZT 80 - A015 C S

**Bore size**

**Offset**

A015	Offset 20
A045	Offset 45

**Mounting hole**

Symbol	Bore size	D <sub>1</sub>	D <sub>2</sub>
S	80	6	9
B	80	8	10.2

**Arm position**

## Cylinder Specifications

Bore size [mm]	<b>80</b>
Action	Double acting
Fluid	Air
Proof pressure	1.2 MPa
Max. operating pressure	0.8 MPa
Min. operating pressure	0.3 MPa
Ambient and fluid temperatures	-10 to 60°C
Cushion	Clamping side: None Unclamping side: Rubber bumper
Operating time	Clamping: 1 s or more, Unclamping: 1 s or more
Max. allowable holding moment*1	2500 N·m

\*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 Arm)

Bore size [mm]	Arm opening angle								Extra weight is due to addition of the manual handle
	30°	45°	60°	75°	90°	105°	120°	135°	
<b>80</b>	17.2	17.1	17.1	17.0	16.9	16.9	16.8	16.8	3.9

## Cylinder Stroke

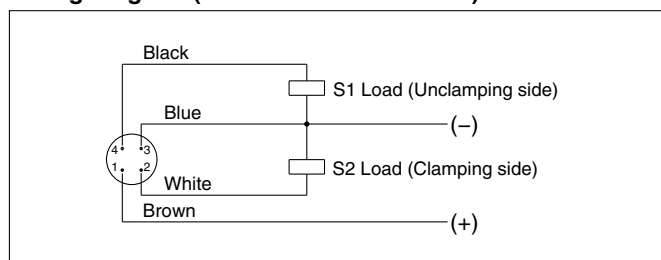
Bore size	Angle							
	30°	45°	60°	75°	90°	105°	120°	135°
<b>80</b>	47.3	59.4	71.1	83.2	95.7	108.0	119.1	127.3

## Proximity Switch Specifications

Manufacturer	TURCK	P&F
Power supply voltage	10 to 30 VDC	10 to 30 VDC
Output	N.O., PNP	N.O., PNP
Continuous load current	150 mA	100 mA
Response frequency	30 Hz	25 Hz
Housing material	PBT	PA6, PBT
Output indication	Clamping side: Red Unclamping side: Yellow	Clamping side: Red Unclamping side: Yellow
Power supply indication	Green	Green
Connector	M12 connector	M12 connector

\* Switch specifications correspond to the manufacturers' technical information.

## Wiring Diagram (PNP Connection Circuit)



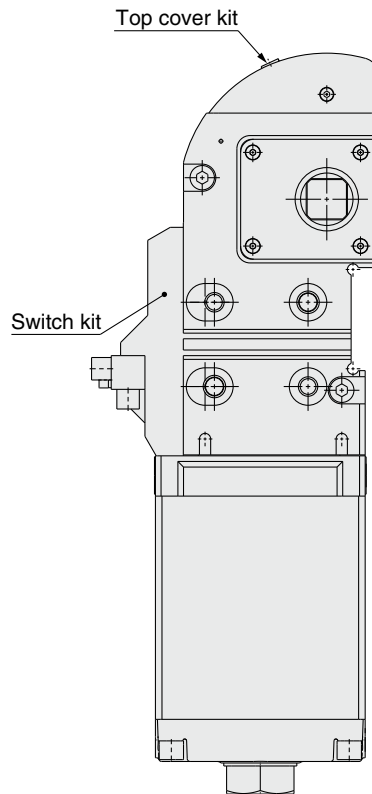
\* Applicable to both TURCK and P&F  
\* NPN specifications are made to order

Power Clamp Cylinders  
CKZM16  
CKZT25/32  
CKZT40  
CKZ5T  
CKZ3T  
CKZT80  
CKZ5N  
CKZ3N  
CKZ2N

Related Products  
C(L)KQG□  
C(L)KQP□  
C(L)KQ□ID  
-X3256  
C(L)KQG32  
C(L)KU32  
C(L)KQ32  
-X3036  
Flow Control Equipment  
Piping Equipment

# CKZT Series

## Replacement Parts



### Switch Kit No.

**CKZ1N-S 080 T**

● Bore size

● Proximity switch

T	TURCK
P	P&F

\* The switch kit includes a switch holder, proximity switch, and mounting brackets.

### Top Cover Kit No.

Rubber cover

**CKZ2N-T 080**

● Bore size

\* The top cover kit includes a top cover and mounting brackets.

### Kit No. for Changing the Arm Opening Angle

**CKZN-B 080 D**

● Kit type

B	Stopper bolt kit
D	Dog kit
K	A set of B and D

● Arm opening angle

H	30°
G	45°
F	60°
E	75°
D	90°
C	105°
B	120°
A	135°

● Bore size

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

\* The dog kit includes a dog and mounting brackets.

\* Refer to page 77 for the procedure for changing the arm opening angle and top cover replacement instructions.

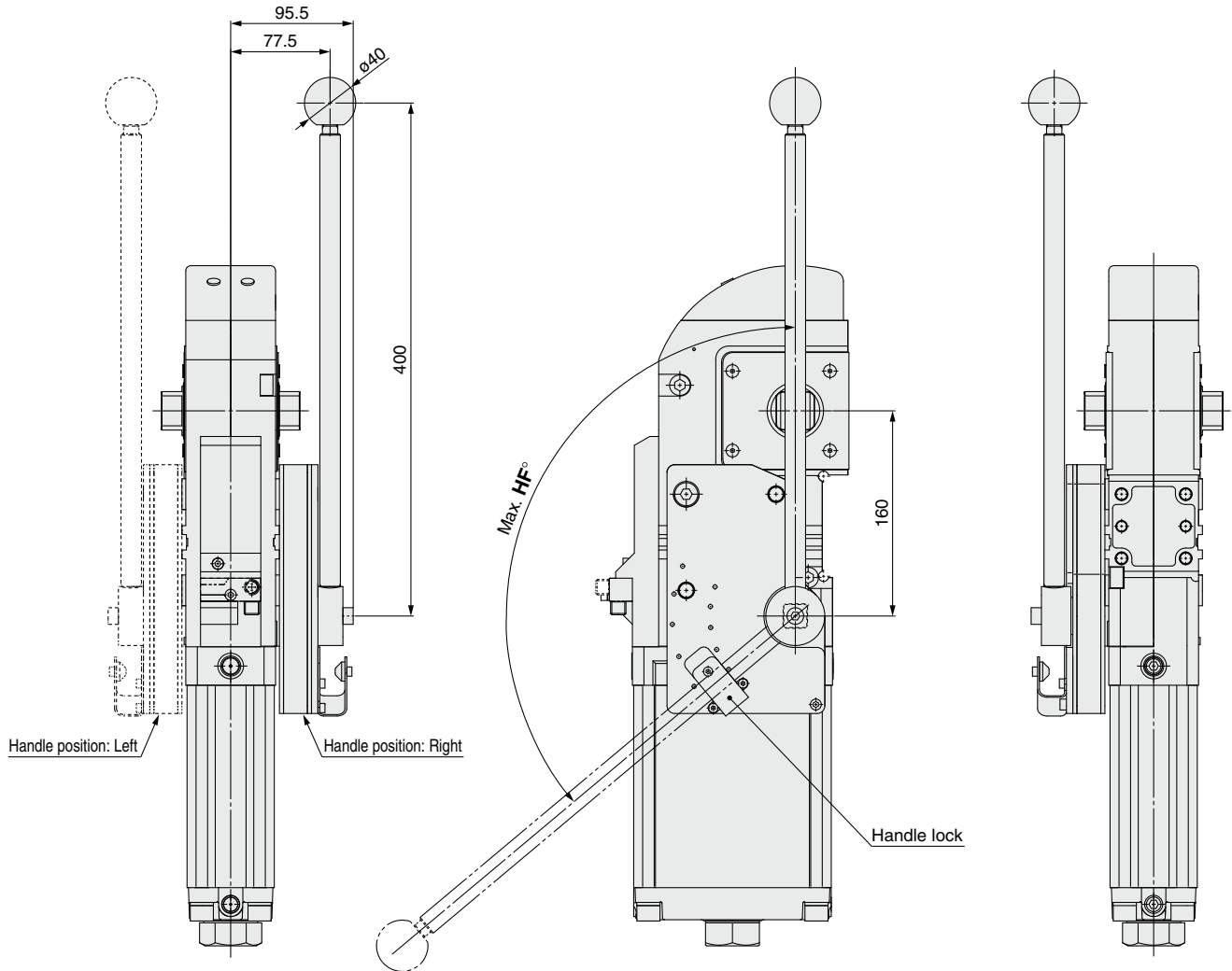


# CKZT Series

## Dimensions: With Manual Handle

\* Refer to the CKZT80 (page 70) for dimensions other than those shown below.

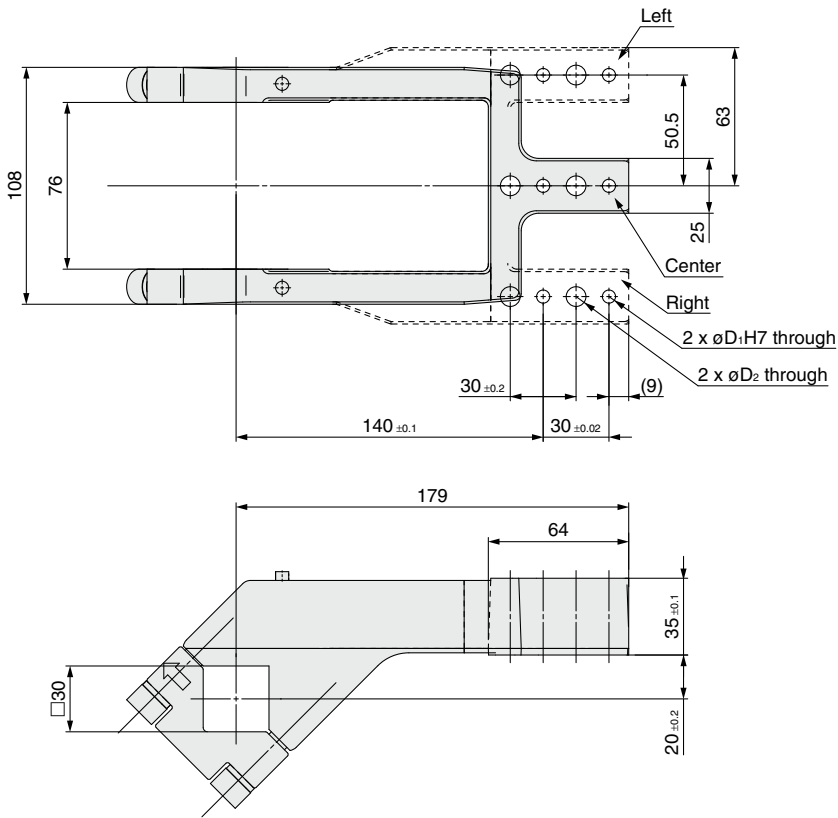
CKZT80-□-X2568<sup>1</sup><sub>R</sub>



[mm]		
Bore size	Arm opening angle [°]	HF°
<b>80</b>	30	57
	45	71
	60	85
	75	101
	90	116
	105	130

**Dimensions: Clamp Arm**

**Offset 20**



**How to Order**

**CKZT80 – A015 C S**

Arm position ●

<b>C</b>	Center
<b>R</b>	Right
<b>L</b>	Left

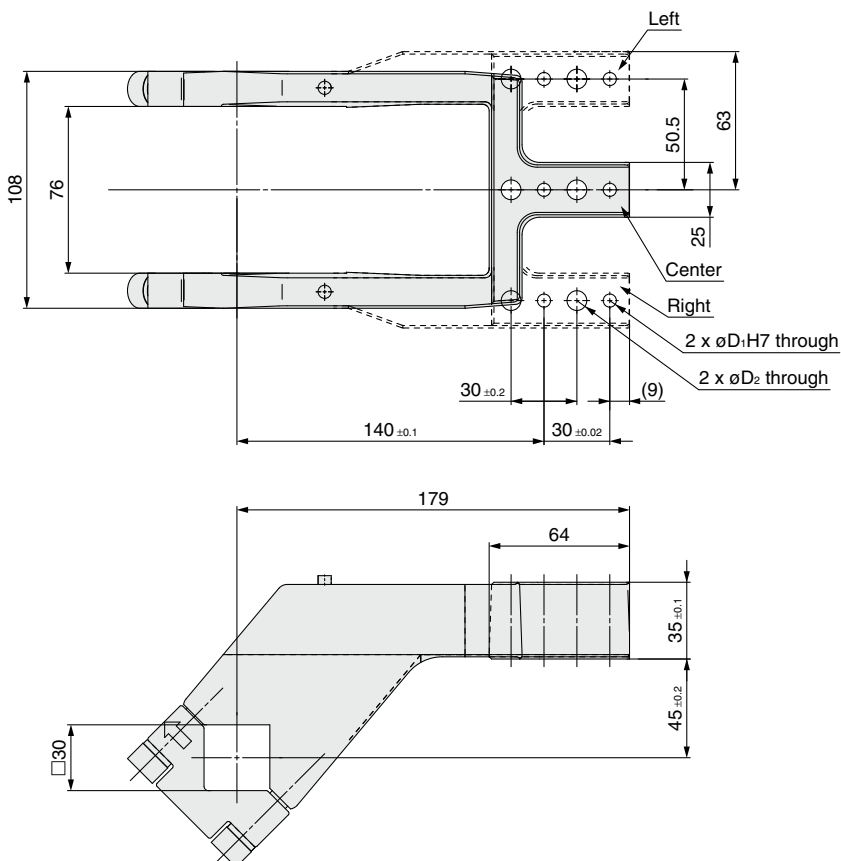
Mounting hole ●

Symbol	D1	D2
<b>S</b>	6	9
<b>B</b>	8	10.2

**Weight**

<b>CKZT80-A015CS</b>	2.17 kg
<b>CKZT80-A015CB</b>	2.16 kg
<b>CKZT80-A015RS</b>	2.21 kg
<b>CKZT80-A015RB</b>	2.19 kg
<b>CKZT80-A015LS</b>	2.21 kg
<b>CKZT80-A015LB</b>	2.19 kg

**Offset 45**



**How to Order**

**CKZT80 – A045 C S**

Arm position ●

<b>C</b>	Center
<b>R</b>	Right
<b>L</b>	Left

Mounting hole ●

Symbol	D1	D2
<b>S</b>	6	9
<b>B</b>	8	10.2

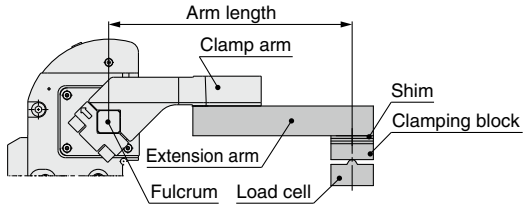
**Weight**

<b>CKZT80-A045CS</b>	2.46 kg
<b>CKZT80-A045CB</b>	2.44 kg
<b>CKZT80-A045RS</b>	2.61 kg
<b>CKZT80-A045RB</b>	2.59 kg
<b>CKZT80-A045LS</b>	2.61 kg
<b>CKZT80-A045LB</b>	2.59 kg

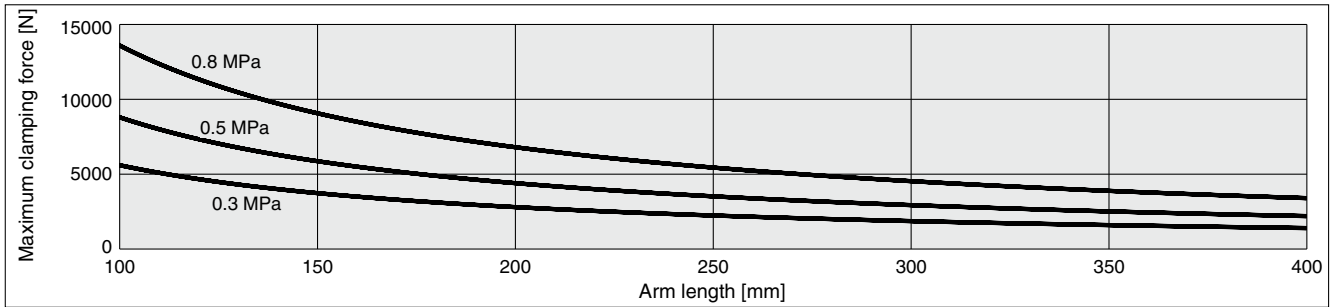
CKZM16
CKZT25/32
CKZT40
CKZT5T
CKZT
CKZ3T
CKZT80
CKZ5N
CKZ3N
CKZ2N
CK(L)KQG□
CK(L)KQP□
CK(L)KQ□D
-X3256
CK(L)KQG32
CK(L)KU32
CK(L)KQG32
-X3036
Flow Control Equipment
Piping Equipment

# CKZT Series Model Selection

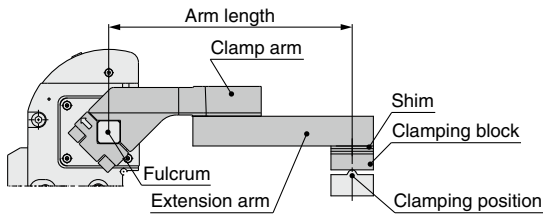
## Relation between arm length and clamping force



### Bore Size: 80



## Allowable arm length



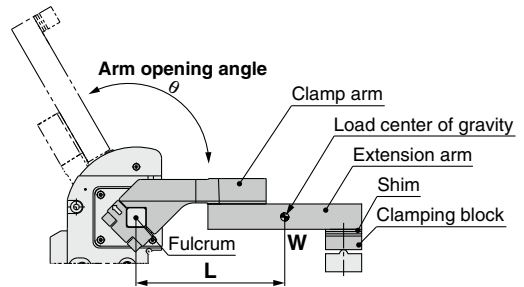
Bore size	Allowable arm length [mm]
80	400

## Allowable load mass

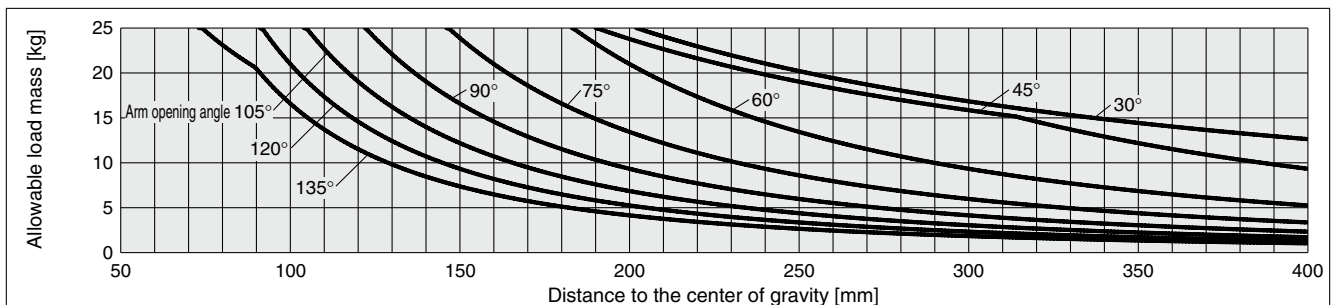
The allowable load mass changes depending on the arm opening angle. Be sure to use the product within the allowable values shown in the graph below.  
 \* The load indicates the total weight of the clamp arm, extension arm, and clamping block.  
 \* When the operating time is 1 second

### 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: 80





# CKZT Series Setup Procedure

## Precautions

- 1) The tightening torque of the clamp arm is 18 to 24 N·m for  $\varnothing 80$ . Refer to page 72 for details on the clamp arm.
- 2) There is a mechanical difference of 0 to  $+0.5^\circ$  at the clamping end as shown in Figure 1. Be sure to make adjustments externally using a shim. Refer to page 76.
- 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.

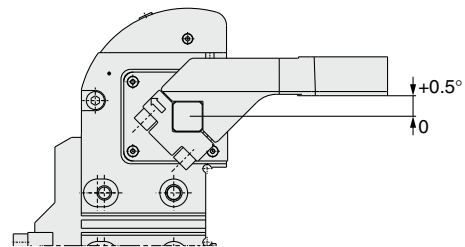
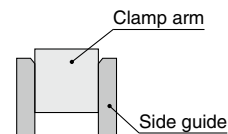
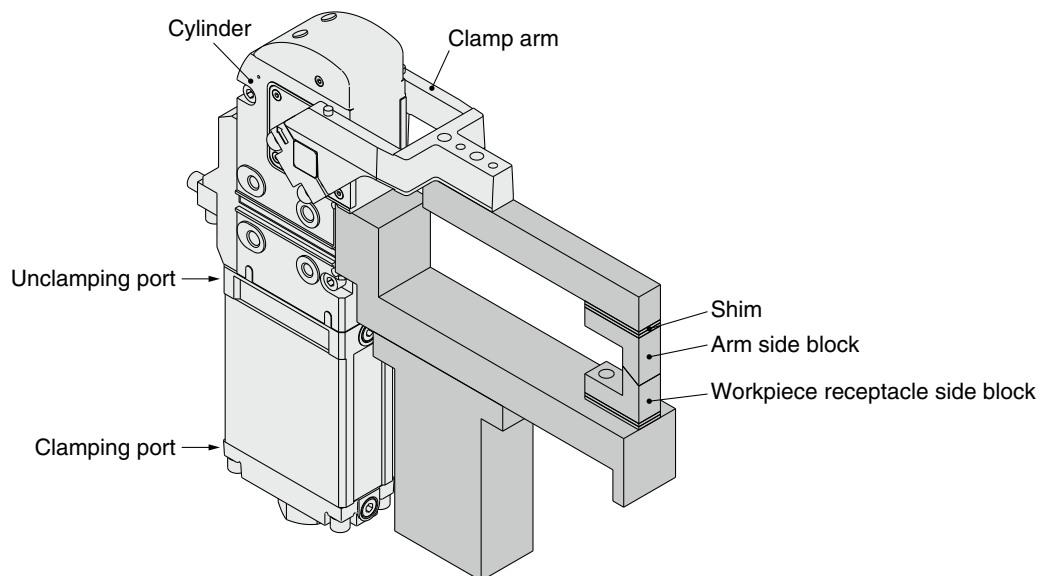


Figure 1

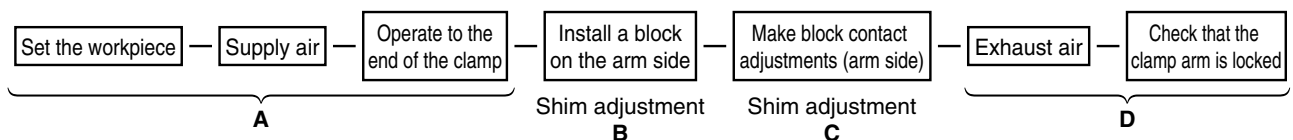


## Power clamp cylinder mounting and setup procedure

<Ex. 1 When using clamping force only: When equipped with a workpiece receptacle>



### Procedure

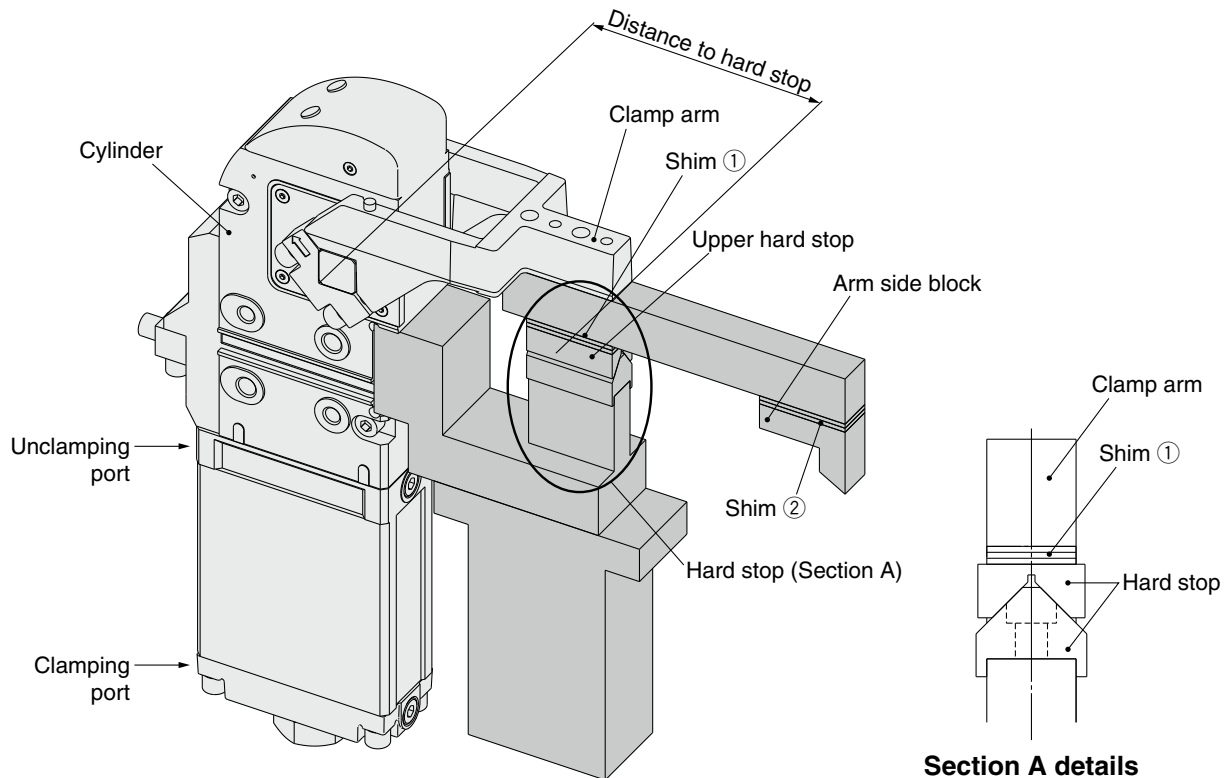


- A) Place the workpiece, supply air to the clamping port without attaching the block on the arm side, and operate the clamp arm to the end of the clamp.
- B) In the state of A), attach the arm side block, and adjust the shim so that there is a space of about 0 mm between the arm side block and the workpiece.  
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 76.  
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.

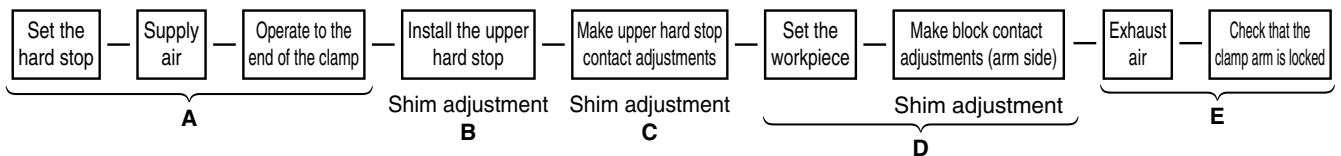
Power Clamp Cylinders	CKZM16
	CKZT25/32
	CKZT40
	CKZ5T
	CKZ3T
	CKZT80
Related Products	C(L)KQG□ C(L)KQP□
	C(L)KQ□D -X3256
	C(L)KQG32 C(L)KU32
	C(L)KQG32 -X3036
	Flow Control Equipment
	Piping Equipment

## Power clamp cylinder mounting and setup procedure

<Ex. 2 When using a hard stop: When not equipped with a workpiece receptacle>



### Procedure



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 ① 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 ①.

The thickness of the shim changes depending on the distance to the hard stop and the operating pressure. Refer to page 76, and consider the distance to the hard stop as the arm length.

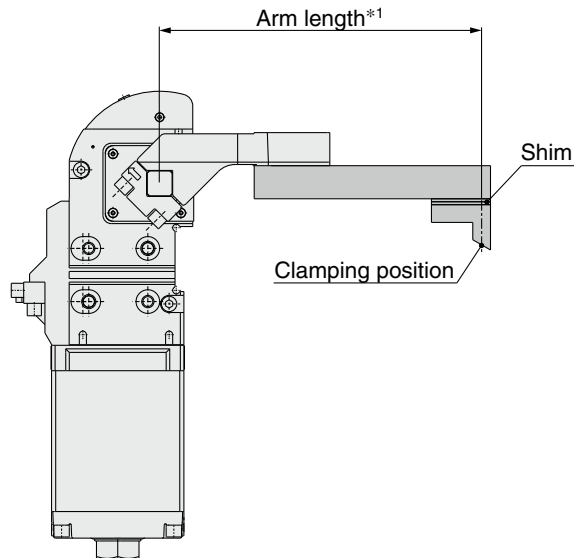
Please note that the graph should only be used as a guide as there is a tolerance of about 10% in the clamp cylinder body.

D) In the state of C), adjust shim ② so that the arm side block contacts the workpiece.

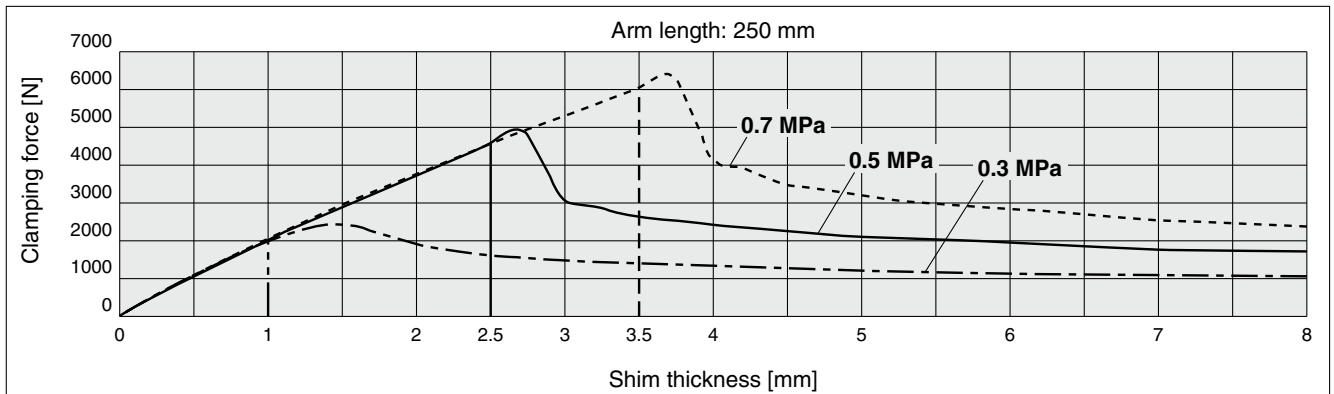
E) Exhaust the air while in the clamped state, and confirm that the clamp arm does not open.

## 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.
- \*1 The arm length indicates the distance between the clamp arm shaft and the clamping position.



### Bore Size: 80



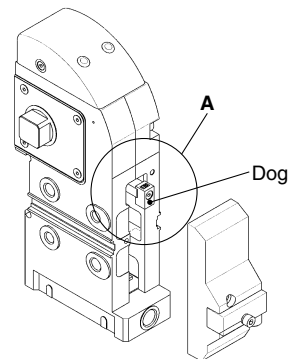
Power Clamp Cylinders	CKZM16
	CKZT25/32
	CKZT40
	CKZ5T
	CKZ3T
	CKZT80
Related Products	CKZ5N
	CKZ3N
	CKZ2N
	C(L)KQG□ C(L)KQP□
	C(L)KQ□ID -X3256
	C(L)KQG32 C(L)KU32 C(L)KQG32 -X3036
Flow Control Equipment	
Piping Equipment	

## To change the arm opening angle

**⚠ Caution** Be sure to confirm safety, and perform the work while the air is exhausted.

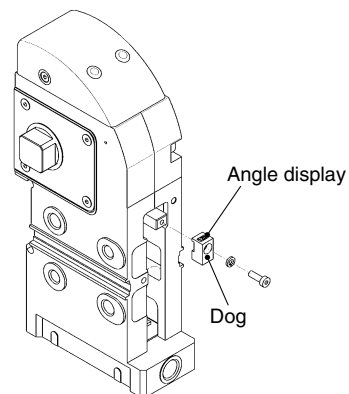
### Procedure for changing the arm opening angle

- 1) When changing the arm opening angle, be sure to confirm that the air inside the cylinder has been exhausted.
  - 2) Remove the switch cassette.
- \* 8 types of arm opening angles (unclamping angles) 30°, 45°, 60°, 75°, 90°, 105°, 120°, and 135° are available for each standard size.



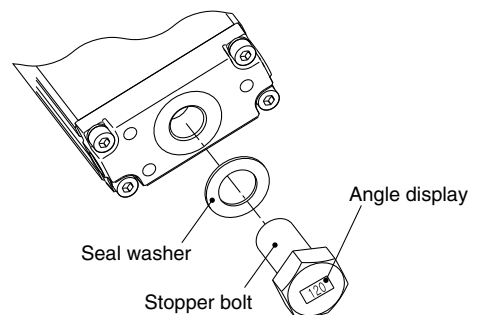
- 3) Remove the dog of the A part, and mount a different dog for other angles using the tightening torque below. (Confirm the direction of the angle display.) Then mount the switch cassette using the tightening torque below.

Description	Bore size [mm]	Tightening torque
		N·m
Dog	80	3.0 to 4.0
Switch cassette	80	5.0 to 7.0



- 4) Remove the stopper bolt of the head cover, and mount a different stopper bolt for other angles using the tightening torque below. (Confirm the angle display.)

Description	Bore size [mm]	Tightening torque
		N·m
Stopper bolt	80	130 to 190



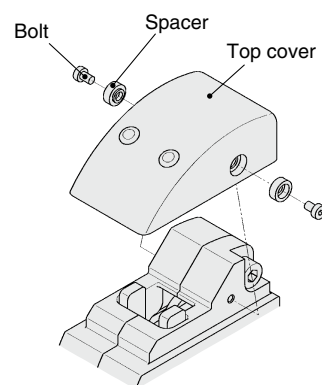
## Top cover replacement

**⚠ Caution** Be sure to confirm safety, and perform the work while the air is exhausted.

- 1) Mount the top cover to the clamp cylinder, then tighten it to the specified tightening torque below.
- \* Refer to "Replacement Parts" (page 69) for the part numbers of the top cover replacement parts.

### Top Cover Mounting Bolt Tightening Torque

Bore size	Tightening torque [N·m]
80	3.0 to 5.0



Rubber cover type



# CKZT Series Specific Product Precautions

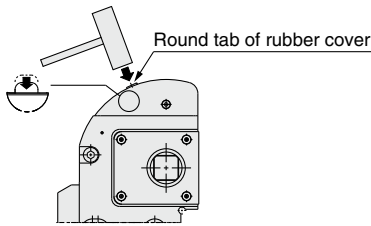
Be sure to read this before handling the products. Refer to page 179 for safety instructions. For actuator precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

## ⚠ Caution

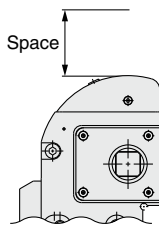
### 1. Manual lock release

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 unexpectedly.

- The lock can be released easily by hitting the round tab on the cover with a plastic hammer.



- Provide enough space to perform a manual lock release.



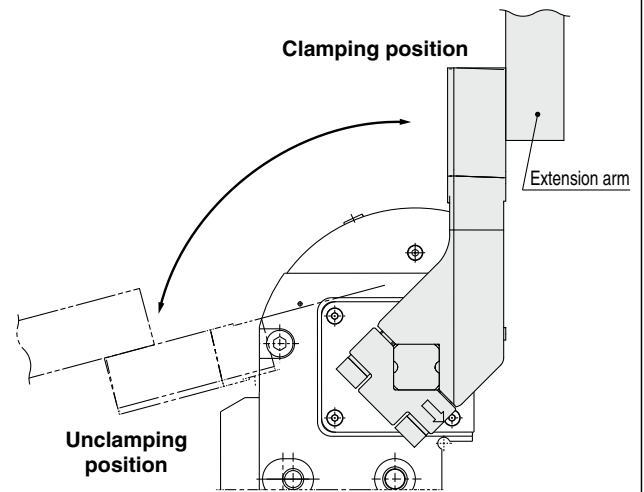
## ⚠ Caution

### 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 this may cause the performance to 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 90° for offset 15 and 105° for offset 45.



### 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.

### 5. With manual handle

Operating force of the handle should be 200 N or less. Excessive forces applied to the handle will lead to breakage or deformation.

### 6. Operating time and allowable load mass

Fast operation (short stroke times) or excessive loads will lead to the breakage or deformation of the product. It is recommended to install shock absorbers to reduce impact force in these instances.

Power Clamp Cylinders	CKZM16
	CKZT25/32
	CKZT40
	CKZ5T
	CKZ3T
	CKZT80
Related Products	CKZ5N
	CKZ3N
	CKZ2N
	C(L)KQG□ C(L)KQP□
	C(L)KQ□D -X3256
Flow Control Equipment	C(L)KQG32 C(L)KU32
	C(L)KQG32 -X3036
Piping Equipment	