

# Micro Clamp Cylinder

**CKZM16** -X2800 (Base Type)  
-X2900 (Tandem Type)



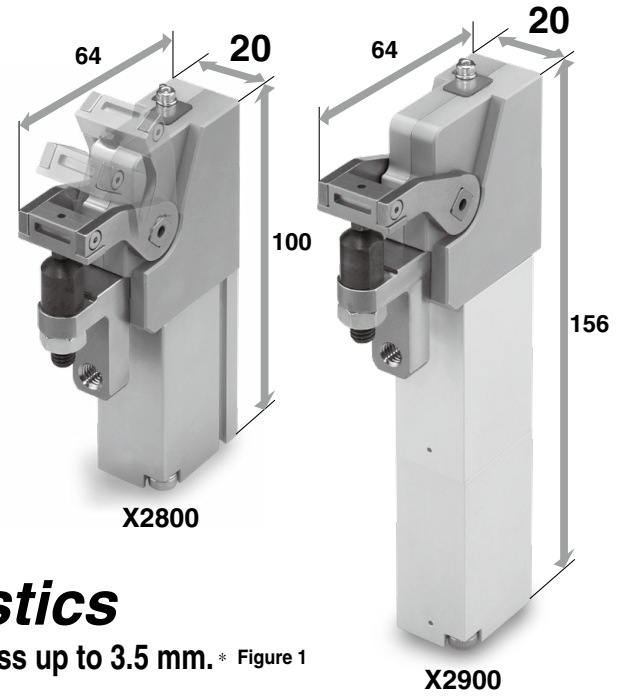
**Lightweight**    **Compact**    **High clamping force**    **High holding force**

**Lightweight**    Weight : **250 g** (Base type)

**Compact**    Width : **20 mm**  
(Base type, Tandem type)

**Max. clamping force** : **200 N**  
(Tandem type)  
\* Operating pressure: 0.6 MPa

**Max. holding force** : **300 N** \* Figure 2  
(Base type, Tandem type)  
\* When operating pressure of 0.2 to 0.6 MPa is applied



## Flat clamping characteristics

Outputs constant clamping force for workpiece thickness up to 3.5 mm. \* Figure 1

- Easy adjustment of clamping position during assembly
- When thickness of workpiece differs, adjustment is not required if within range.

Relationship between reference plane distance and clamping force  
(Arm length: 25 mm, 0.6 MPa)

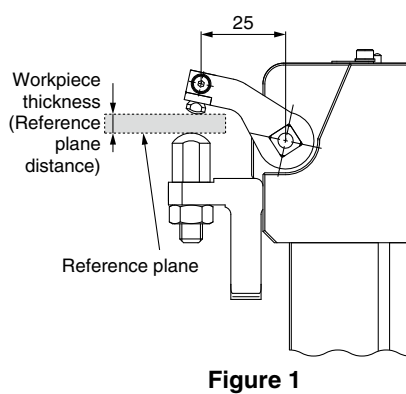
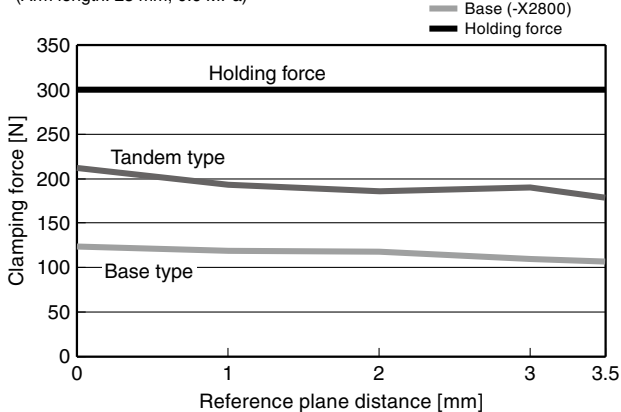


Figure 1

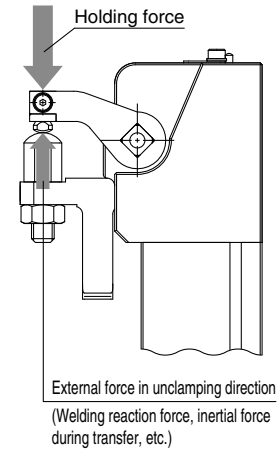
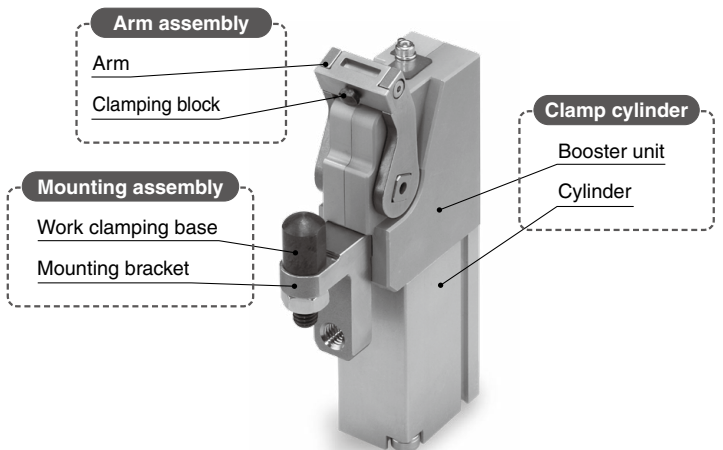


Figure 2

## Reduction of design assembly labor by unitization

**Arm assembly**    **Mounting assembly**  
added to clamp cylinder

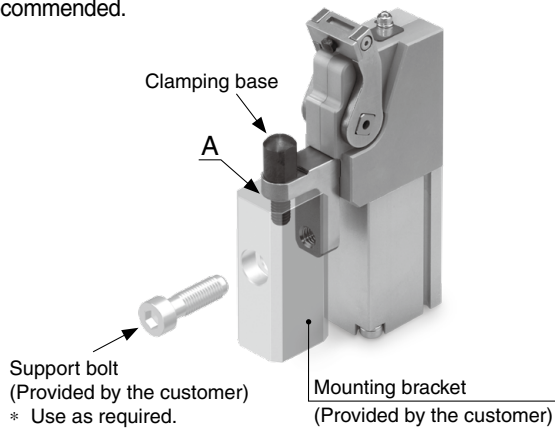


CKZM16
CKZT25/32
CKZT40
CKZ5T
CKZ3T
CKZT80
CKZ5N
CKZ3N
CKZ2N
CL)KQG □
CL)KQP □
CL)KQ □ ID
-X3256
CL)KQG32
CL)KU32
CL)KQG32
-X3036
Flow Control Equipment
Piping Equipment

## Easy mounting 2 types of mounting possible

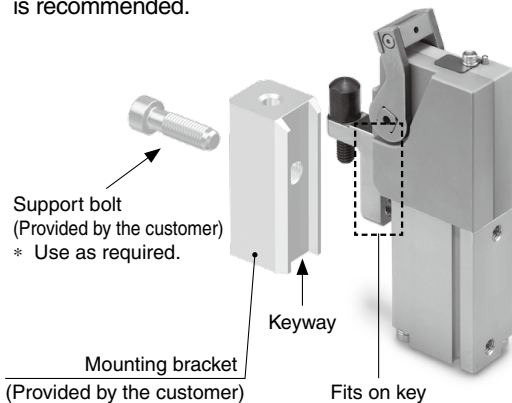
### • Basic mounting

Press the mounting bracket against surface A, and fix it with the work clamping base. Using a bolt to support the mounting bracket is recommended.



### • Non-rotating mounting

The work clamping base can be used as a parallel key to prevent rotation. Using a bolt to support the mounting bracket is recommended.



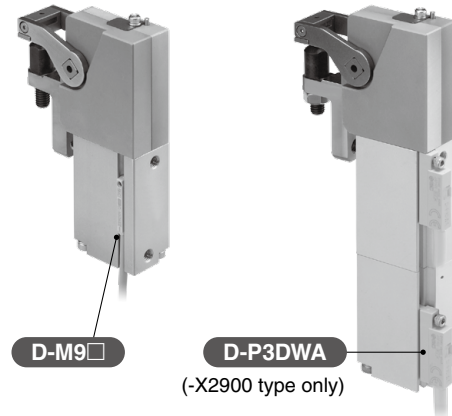
## Dust-resistant construction

Fully closed structure prevents dust from entering easily.

## Auto switch mountable

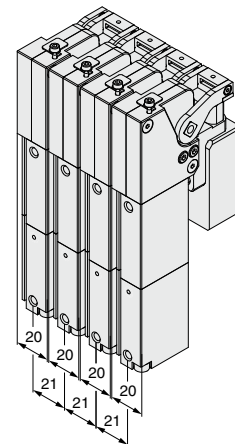
Magnetic field-resistant auto switch **D-P3DWA**

Compact auto switch **D-M9** **D-A9**



## Short pitch (21 mm) mounting is possible.

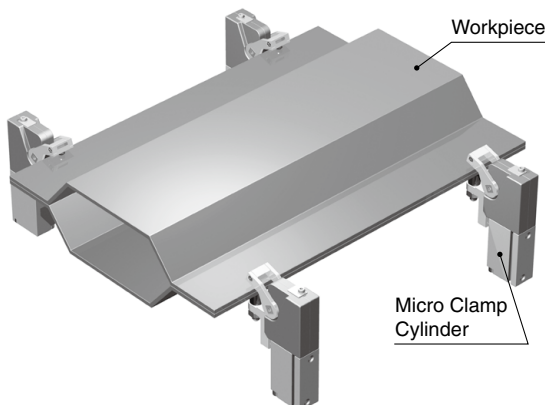
(D-A9)



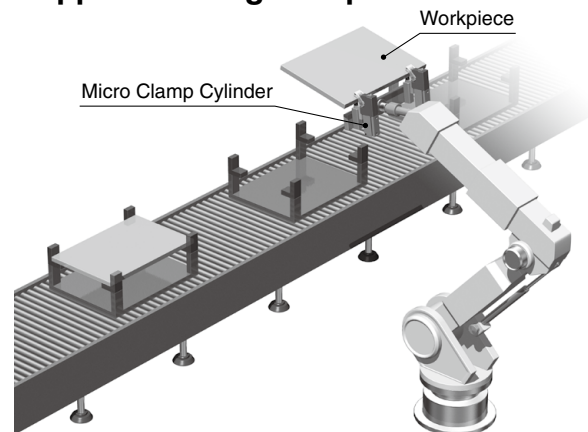
## Application examples

### • Clamping of workpiece

Clamps edges of panels which do not require a long arm



### • Gripper handling workpiece



# Micro Clamp Cylinder

# CKZM16-X2800 -X2900

RoHS



## How to Order

**CKZM16-68-M9BW-X2800**

Arm opening angle  
[°]

Auto switch

Nil Without auto switch

\* For applicable auto switch models, refer to the table below.

Type

X2800	Base type
X2900	Tandem type

Number of auto switches

Nil	2
S	1
n	n

**Auto Switch Models:** Refer to the **Web Catalog** for further information on auto switches.

### Compact Auto Switches (-X2800 and -X2900 types)

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length [m]					Pre-wired connector	Applicable load		
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)		IC circuit	Relay, PLC	
Solid state auto switch	—	Grommet	No	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	—	○		
				2-wire				M9BV	M9B	●	●	●	○	—	○		
				3-wire (NPN)				M9NVV	M9NV	●	●	●	○	—	○		
				3-wire (PNP)				M9PVV	M9PV	●	●	●	○	—	○		
				2-wire				M9BWV	M9BW	●	●	●	○	—	○		
	Diagnostic indication (2-color indicator)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NAV	M9NA	○	○	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PAV	M9PA	○	○	●	○	—	○		
				2-wire				M9BAV	M9BA	○	○	●	○	—	○		
				2-wire				M9B	M9B	○	○	●	○	—	○		
Water resistant (2-color indicator)	Grommet	No	3-wire (NPN)	24 V	5 V, 12 V	100 V or less	A96V	A96	●	—	●	—	—	○	IC circuit	Relay, PLC	
			2-wire				A93V*1	A93	●	●	●	●	—	—			—
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—	
			No	2-wire	24 V	5 V, 12 V	100 V or less	A90V	A90	●	—	●	—	—	IC circuit	Relay, PLC	

\*1 The 1 m lead wire is only applicable to the D-A93.

\* Water-resistant type auto switches can be mounted on the above models, but SMC cannot guarantee water resistance.

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NVV \* Solid state auto switches marked with "○" are produced upon receipt of order.  
1 m ..... M (Example) M9NVVM  
3 m ..... L (Example) M9NVVL  
5 m ..... Z (Example) M9NVVZ

\* For details on auto switches with pre-wired connectors, refer to the **Web Catalog**.

### Magnetic Field-Resistant Auto Switches (-X2900 type only)

Type	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no. in use)	Load voltage	Lead wire length	Applicable load
Solid state auto switch	D-P3DWASC	AC magnetic field (Single-phase AC welding magnetic field)	Pre-wired connector	2-color indicator	2-wire (3-4)	24 VDC	0.3 m 0.5 m 3 m 5 m	Relay, PLC
	D-P3DWASE				2-wire (1-4)			
	D-P3DWA		Grommet		2-wire			
	D-P3DWAL							
	D-P3DWAZ							

## Specifications

Type	Base type (-X2800)	Tandem type (-X2900)
Operating pressure	0.2 to 0.6 MPa	
Appropriate workpiece thickness range	3.5 mm or less	
Maximum holding force*1	300 N	
Cylinder bore size	16 mm	
Cylinder stroke	27 mm	25 mm x 2
Arm length	25 mm	
Arm opening angle	68 degrees	
Clamping force	Refer to page 9.	
Appropriate workpiece insert length	8 mm (Refer to page 10.)	8 mm (Refer to page 11.)
Weight	250 g	330 g

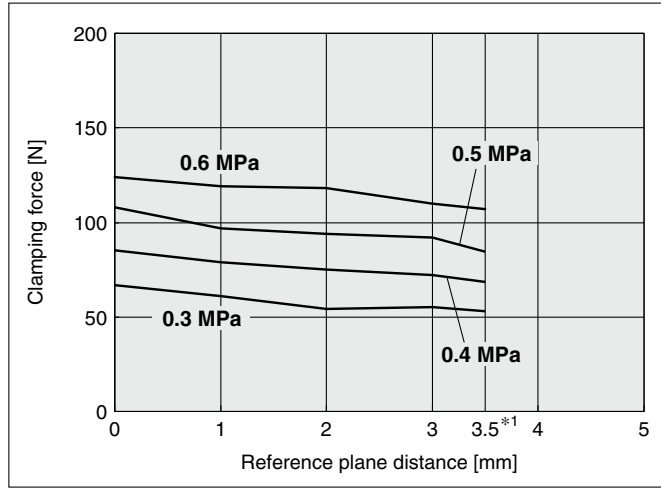
\*1 The maximum holding force is 300 N when a pressure of 0.2 to 0.6 MPa is supplied. The clamping state is not maintained while operating air is exhausted.

Power Clamp Cylinders  
CKZM16  
CKZT25/32  
CKZT40  
CKZ5T  
CKZ3T  
CKZT80  
CKZ5N  
CKZ3N  
CKZ2N  
C(L)KQG□  
C(L)KQP□  
C(L)KQ□D  
-X3256  
C(L)KQG32  
C(L)KQ32  
C(L)KQ32  
-X3036  
Flow Control Equipment  
Piping Equipment

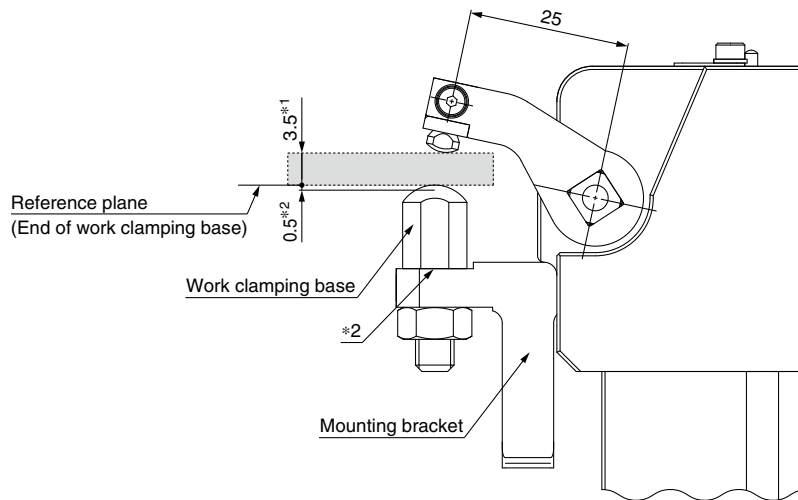
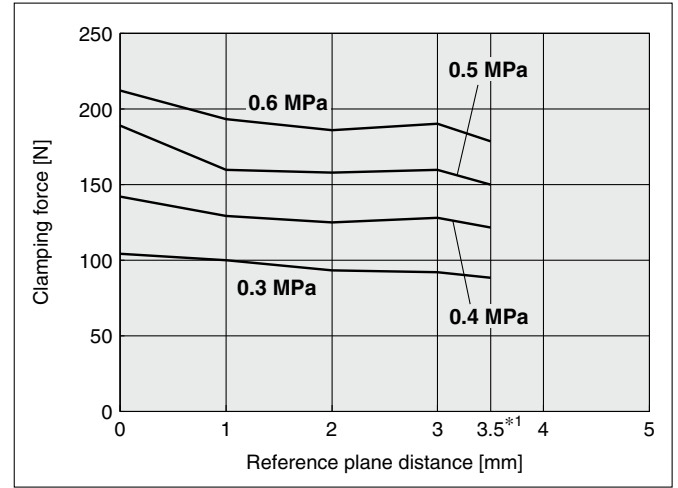
## Clamping Force Characteristics (Reference Plane Distance and Clamping Force)

Arm length: 25 mm

Base type (-X2800)

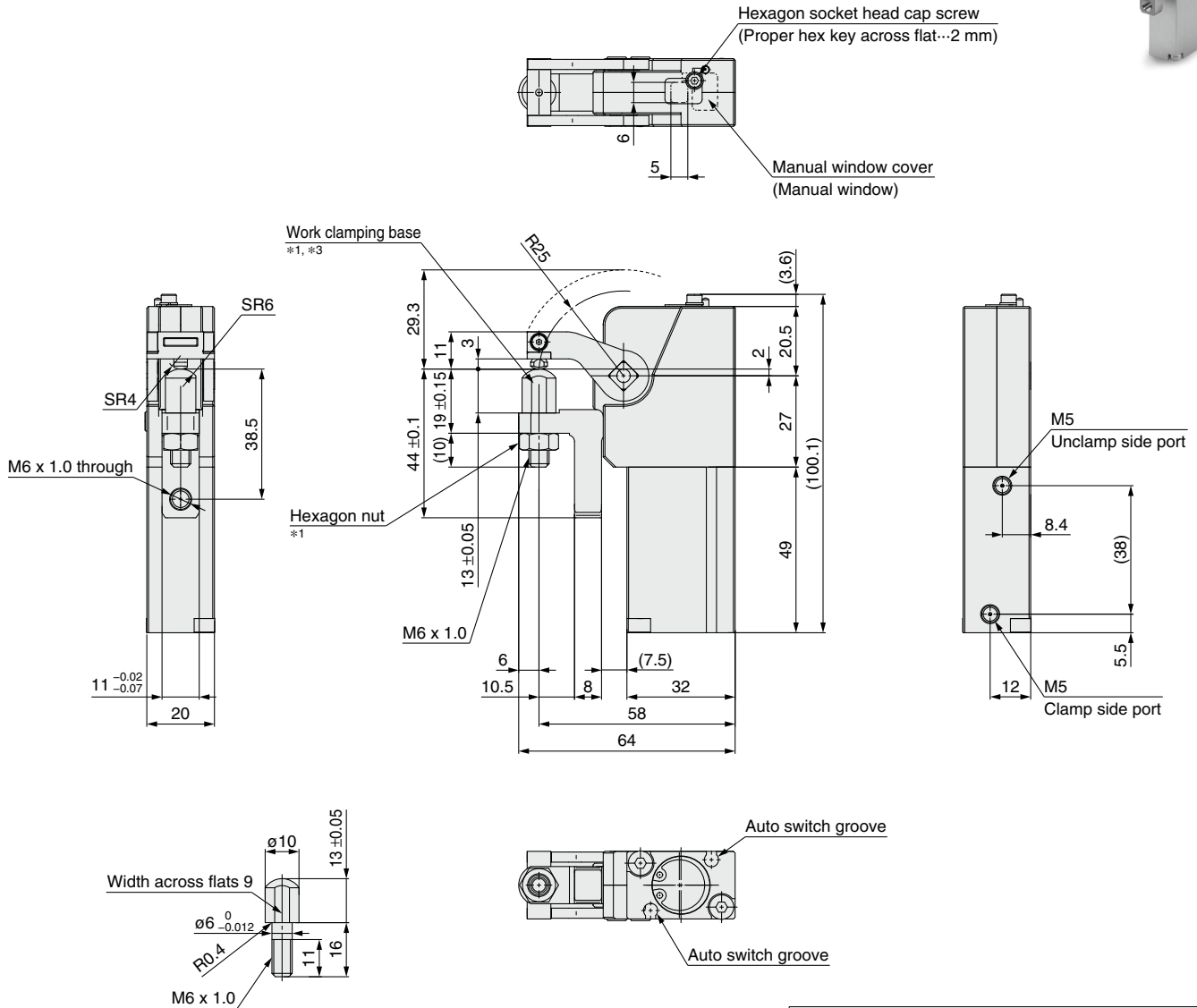


Tandem type (-X2900)

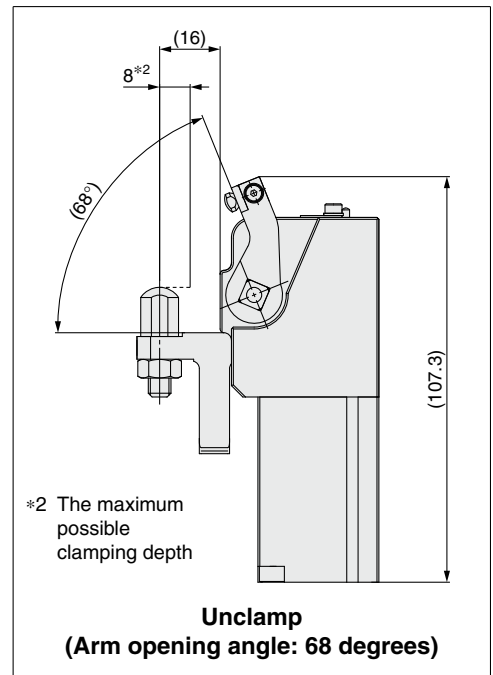


- \*1 The clamping operating range is 3.5 mm upward from the reference plane, and 0.5 mm downward from the reference plane when the work clamping base is removed.
- \*2 When the height is changed by inserting a shim between the work clamping base and the mounting bracket, the "clamping force characteristics/reference plane distance" becomes narrower only for the height changed.

**Dimensions: Base Type (-X2800)**



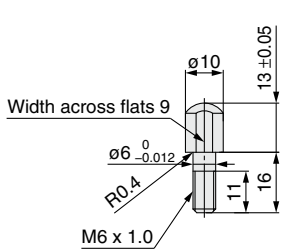
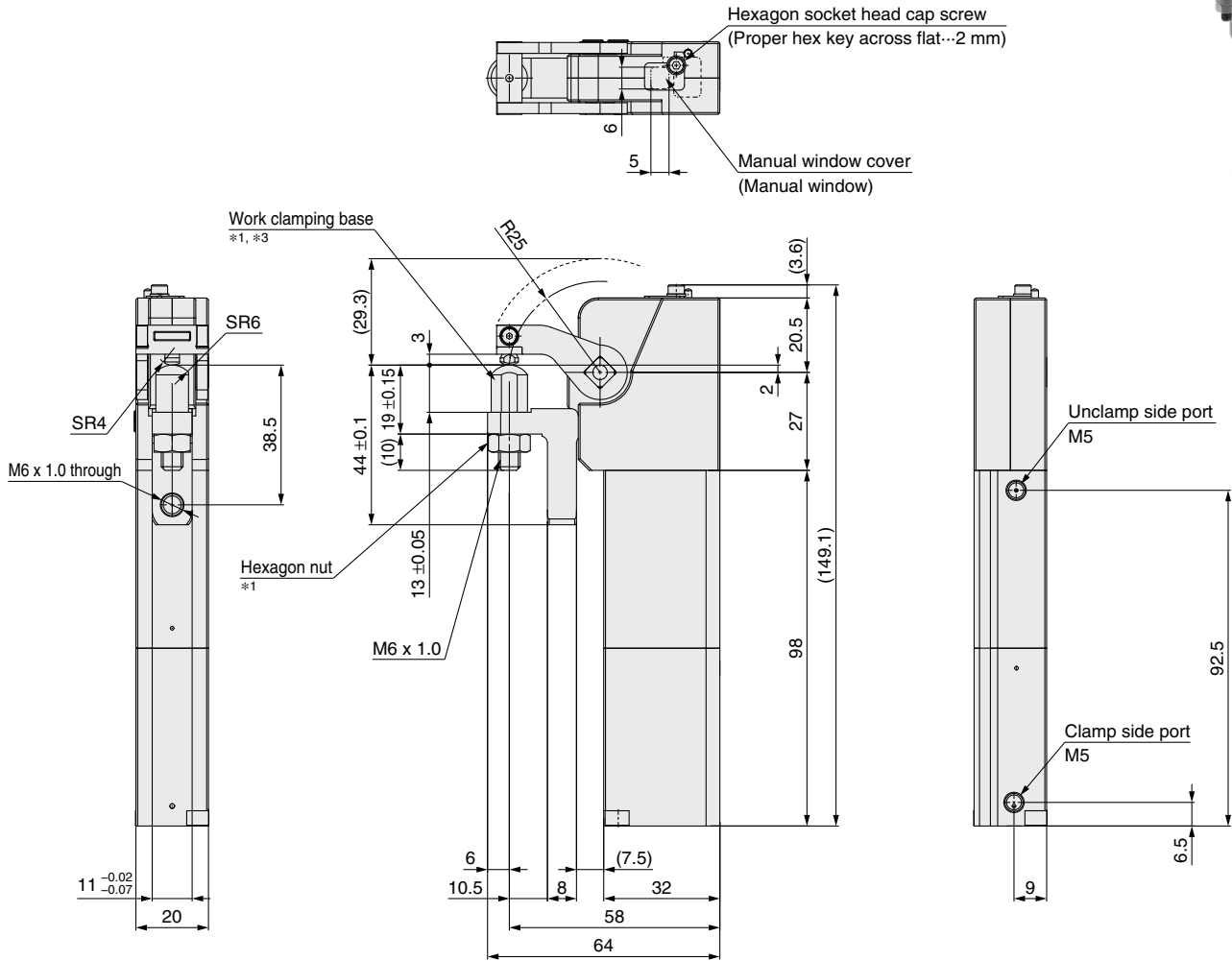
**Work clamping base**  
(\*3)



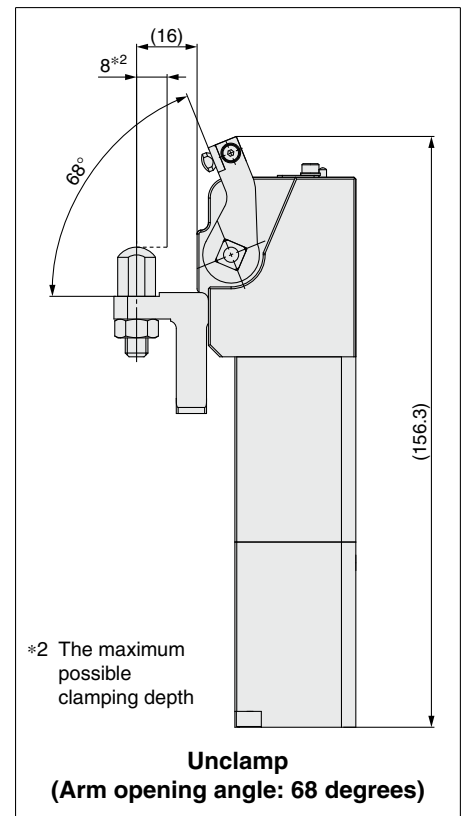
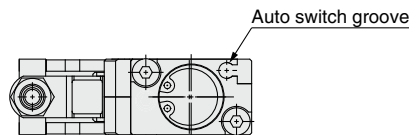
\*1 The hexagon nut is installed to prevent detachment of the work clamping base before the shipment.  
Remove the hexagon nut when the product is installed to the equipment.  
\*3 If the clamping base is used to clamp the workpiece, the torque range is 5.2 to 6.7 [N·m].

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

## Dimensions: Tandem Type (-X2900)



**Work clamping base**  
(\*3)



- \*1 The hexagon nut is installed to prevent detachment of the work clamping base before the shipment. Remove the hexagon nut when the product is installed to the equipment.
- \*3 If the clamping base is used to clamp the workpiece, the torque range is 5.2 to 6.7 [N·m].

# Auto Switch Mounting



## Auto Switch Proper Mounting Position (Detection at Stroke End) and Mounting Height

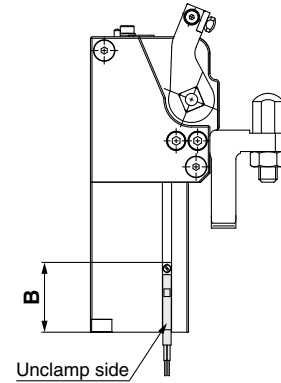
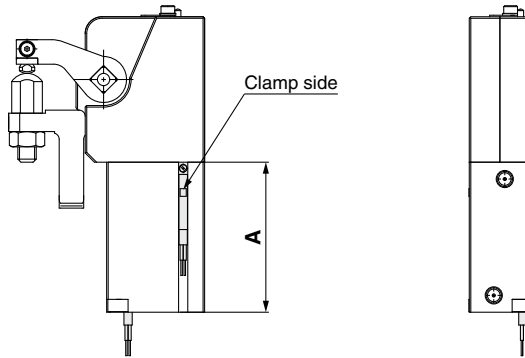
Auto switch mounting position is the most sensitive position for when the arm positions are clamping and unclamping.

The clamp side switch position is when the workpiece thickness 0 mm.

### Base type (-X2800)

D-M9

D-A9



### ⚠ Caution

- The auto switch mounting position on the clamp side changes with the workpiece thickness. It cannot be mounted in a position which detects the overall workpiece thickness of 0 to 3.5 mm.
- 2 switches cannot be installed in one switch groove.

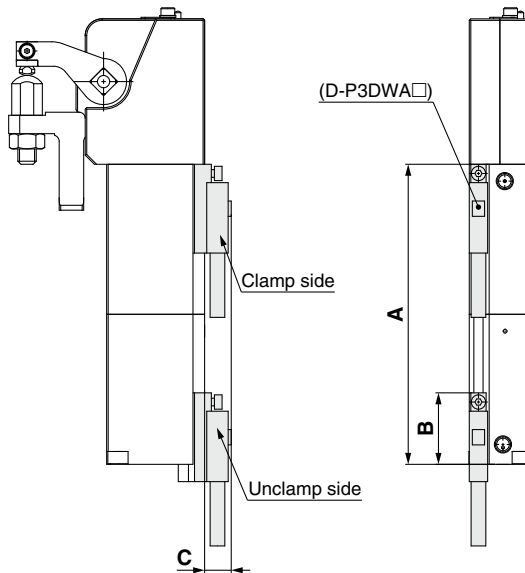
Auto switch model	[mm]	
	A	B
D-M9 <input type="checkbox"/>	45	18.8
D-A9 <input type="checkbox"/>	49	22.8

### Tandem type (-X2900)

D-P3DWA

D-M9

D-A9



Auto switch model	[mm]		
	A	B	C
D-P3DWA <input type="checkbox"/>	98	23.3	8.7
D-M9 <input type="checkbox"/>	94	18.8	—
D-A9 <input type="checkbox"/>	98	22.8	—

### ⚠ Caution

- The auto switch mounting position on the clamp side changes with the workpiece thickness. It cannot be mounted in a position which detects the overall workpiece thickness of 0 to 3.5 mm.

CKZM16

CKZT25/32

CKZT40

CKZ5T

CKZ3T

CKZT80

CKZ5N

CKZ3N

CKZ2N

Power Clamp Cylinders

Related Products

C(L)KQG   
C(L)KQP

C(L)KQD   
-X3256

C(L)KQG32   
C(L)KU32

C(L)KQG32   
-X3036

Flow Control  
Equipment

Piping  
Equipment





# CKZM Series Specific Product Precautions

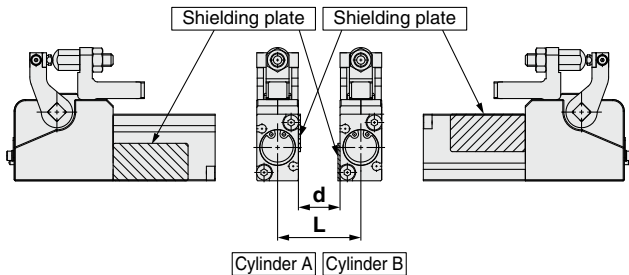
Be sure to read this before handling the products. Refer to page 179 for safety instructions. For actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” on the SMC website: <https://www.smcworld.com>

## Caution on Handling Auto Switch

### Warning

1. If multiple cylinders are operated adjacent to each other, the magnets that are enclosed in the adjacent cylinders could affect the operation of the auto switches, causing the switches to malfunction. Therefore, make sure that the mounting pitch of the cylinders is at least that indicated in the table below.

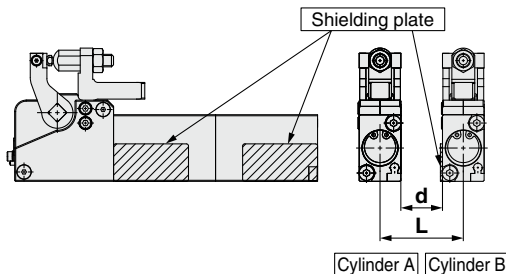
#### Base type (-X2800)



#### Cylinder Minimum Mounting Pitch [mm]

Auto switch model	L		(d)	
	With shielding plate	Without shielding plate	With shielding plate	Without shielding plate
D-M9□	25	35	5	15
D-A9□	21	21	1	1

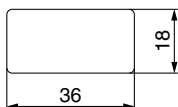
#### Tandem type (-X2900)



#### Cylinder Minimum Mounting Pitch [mm]

Auto switch model	L		(d)	
	With shielding plate	Without shielding plate	With shielding plate	Without shielding plate
D-M9□	25	30	5	10
D-A9□	21	28	1	8
D-P3DWA□	21	35	1	15

If cylinders are used with a mounting pitch less than that shown above, they must be shielded with iron plates or the separately sold magnetic shielding plate (part no.: MU-S025). Please contact SMC for further information.



Material: Ferrite stainless steel  
Thickness: 0.3 mm  
Since the back side is treated with adhesive, it is possible to attach to the cylinder.

#### How to use

In order not to influence the auto switch mounted on cylinder B adjacent to the magnetic force of cylinder A, use a shielding plate to block the magnetic force.

## Caution on Handling Auto Switch

### Warning

2. The magnetic field-resistant auto switch (D-P3DWA□) cannot be used in environments with DC magnetic fields.

Even under AC magnetic fields, if a magnetic body structure is placed very close to the cylinder, it will be affected by magnetization. Use the auto switch at a sufficient distance.

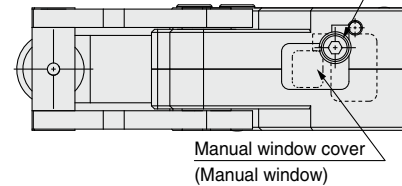
#### How to manually unclamp while the operating air is exhausted

### Caution

1. Absolutely do not release the lock until the safety is ensured.
2. Loosen the hexagon socket head cap screw for “manual window cover.” And rotate the window.
3. Insert a long stick-like object into the “manual window” and push the joint inside down.
4. Confirm “manual window” is completely covered with the “manual window cover.” Then tighten the hexagon socket head cap screw.

\* Tightening torque: 0.36 to 0.45 N·m

Hexagon socket head cap screw (Proper hex key across flat--2 mm)



#### Note for Loads on End of Arm Assembly (Moving Part)

### Warning

1. Do not attach any load onto the end of the arm assembly (moving part).