

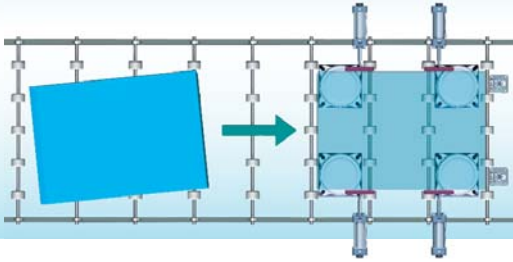
# Centring Unit

New

## Alignment and positioning of transferred workpieces

### Contributes to space saving on conveyor lines

Heavy workpieces can now be aligned and positioned with small cylinders, resulting in compact conveyor lines.



**Table** Max. allowable load weight: **1000 kg** (MACM10)

Workpieces can be moved in any direction: forward/backward, right/left, at an angle, and even rotated (360°). Ball bearings allow for smooth operation.

Table Centring accuracy  
**±1 mm or less** (Workpiece not loaded)

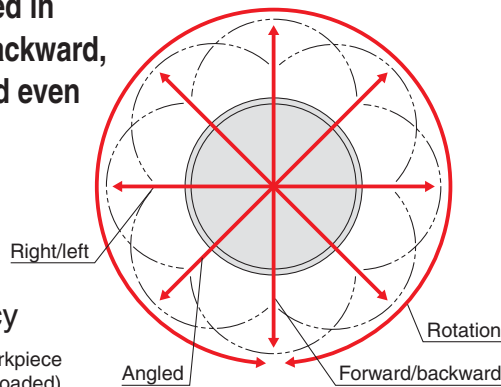
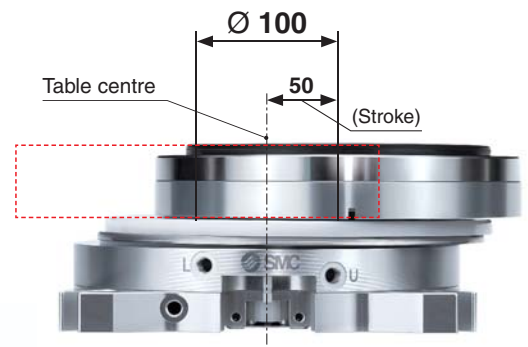


Table centre movable range  
Max.  $\varnothing$  **100 mm** (MACM10-50)

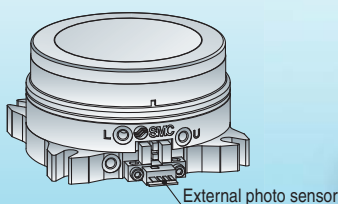


**3 types of table material can be selected.**



**For lock/unlock confirmation**  
**External photo sensor mountable**

Select from lock port side or opposite side of port installation.



**Built-in air locking mechanism**

Table can be held in any position.



**MACM Series**



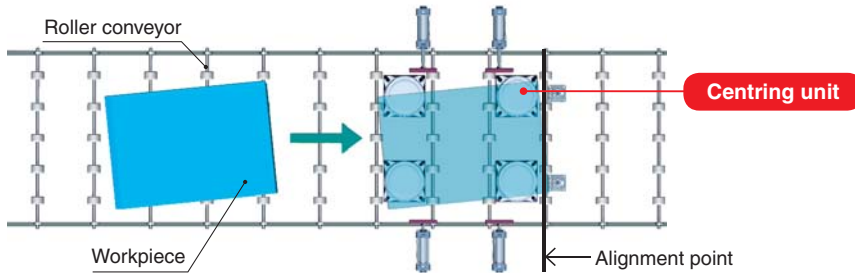
P-EU16-22A-UK

## <Application Examples>

### Conveyor Line

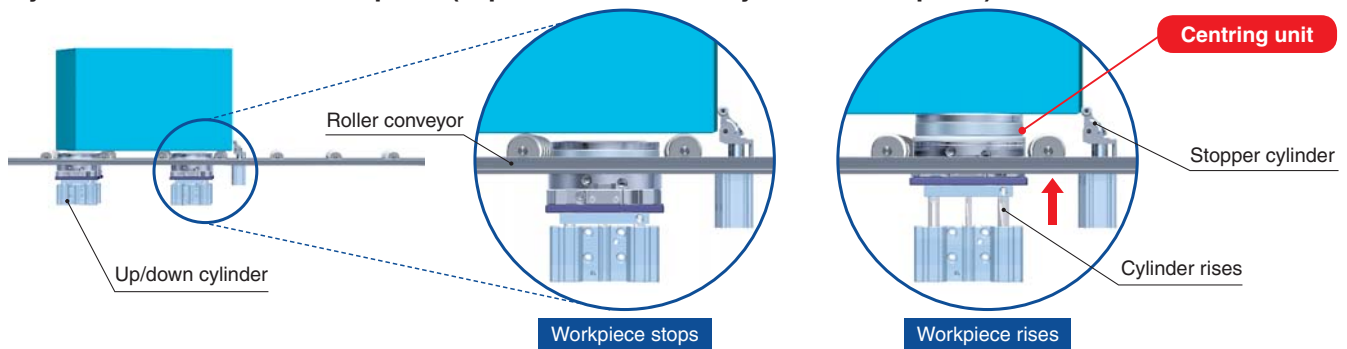
#### 1 Transferred workpieces are stopped

Workpieces transferred at an angle are stopped at an alignment point (stops where the Centring unit is installed).



#### 2 Centring unit rises

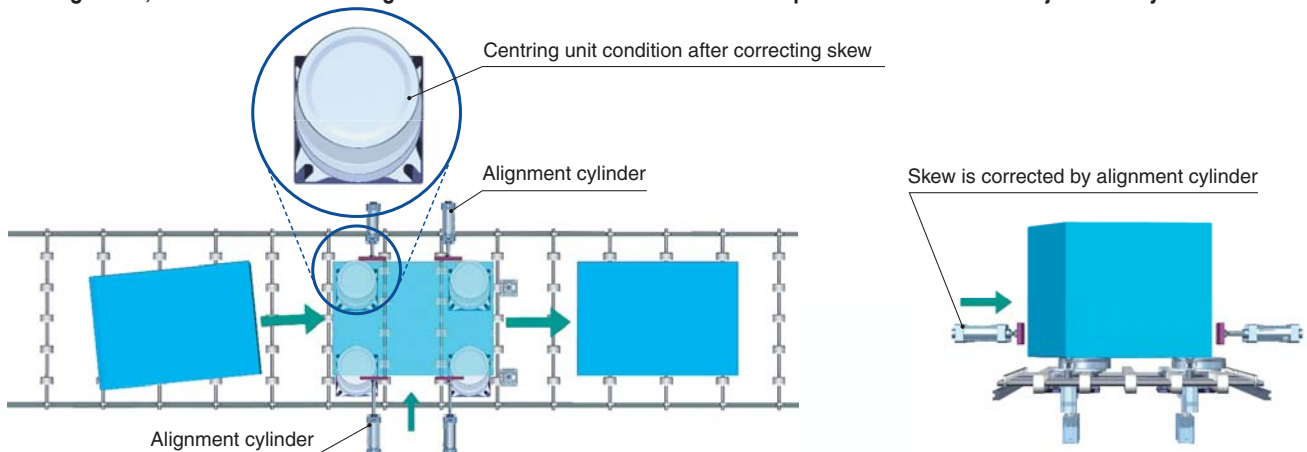
Cylinder rises to lift the workpiece (separates roller conveyor from workpiece).



#### 3 Workpiece alignment/table lock

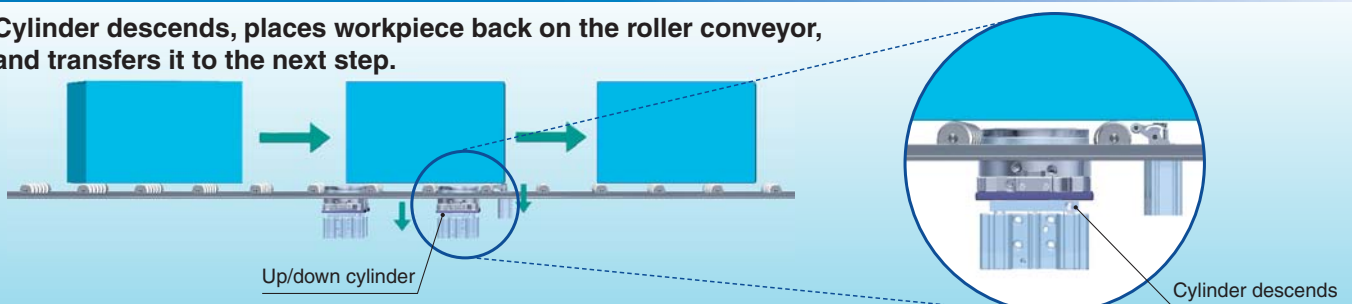
Alignment cylinder corrects skewed workpieces and realigns them.

After alignment, the table of the Centring unit is locked to maintain the corrected position even after the adjustment cylinders are released.



#### 4 Centring unit descends/workpiece is transferred to next step

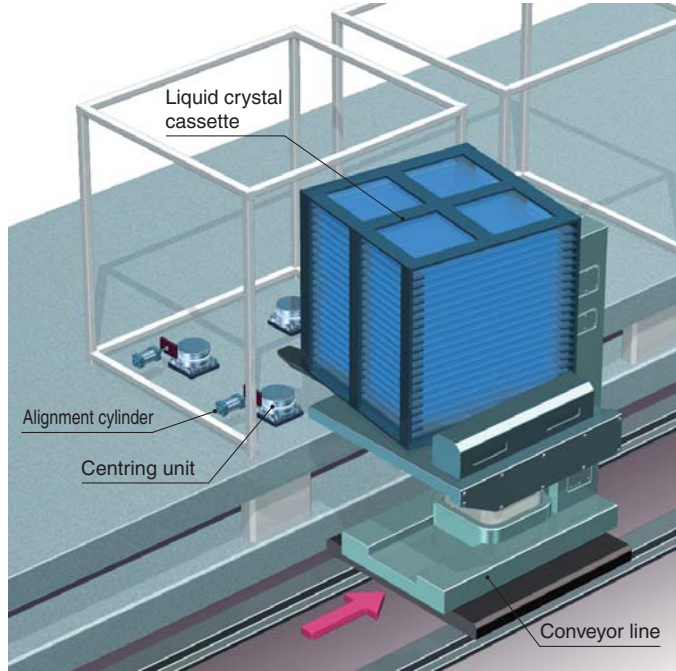
Cylinder descends, places workpiece back on the roller conveyor, and transfers it to the next step.



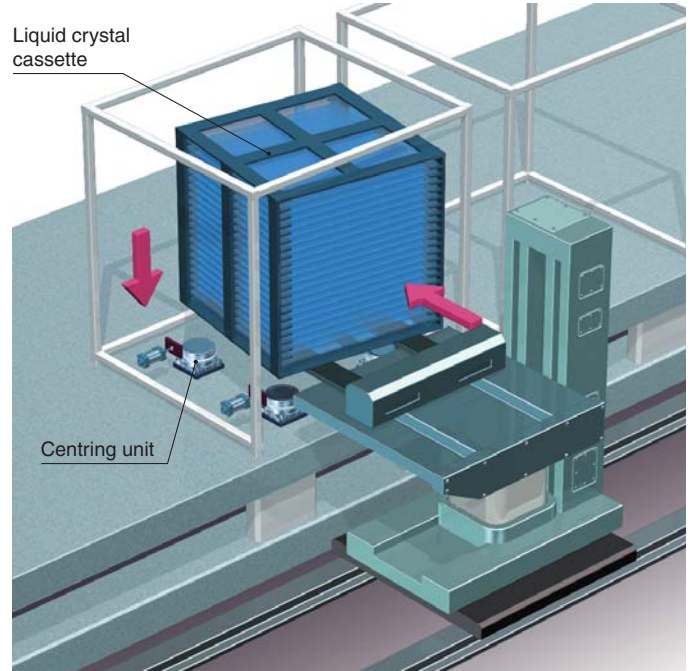
## Liquid Crystal Cassette Transfer

### 1 Stops in front of rack

Is transferred to and stopped in front of the rack where skewed liquid crystal cassettes are to be stored

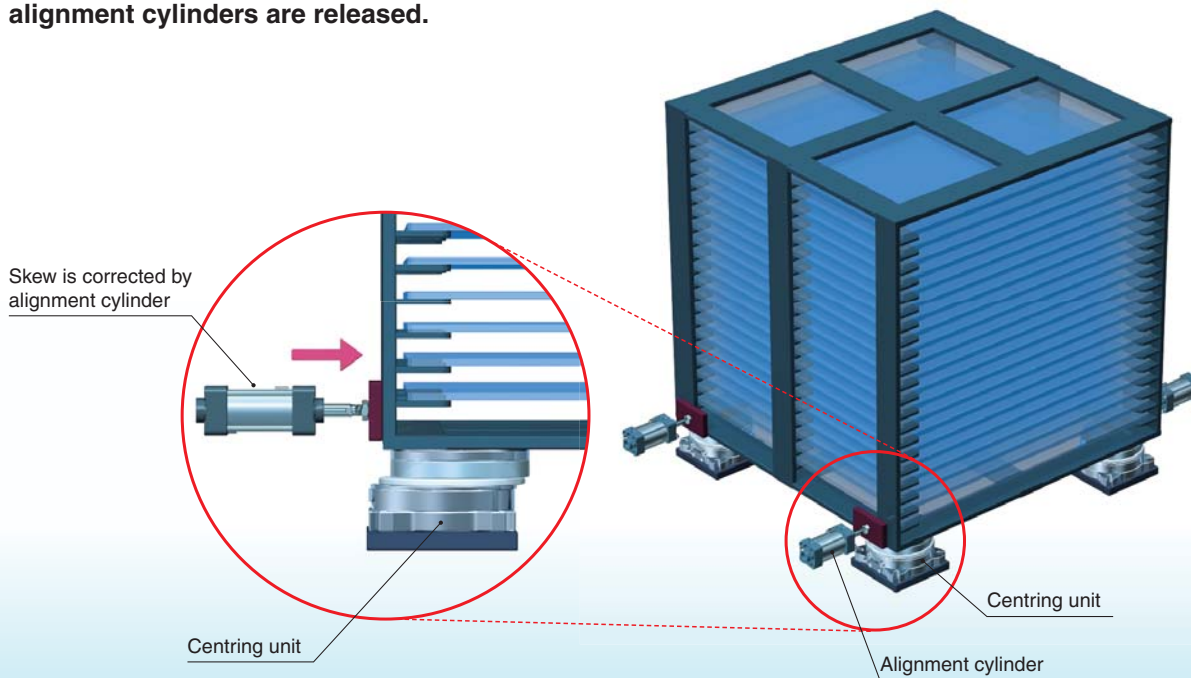


### 2 Is stored in rack



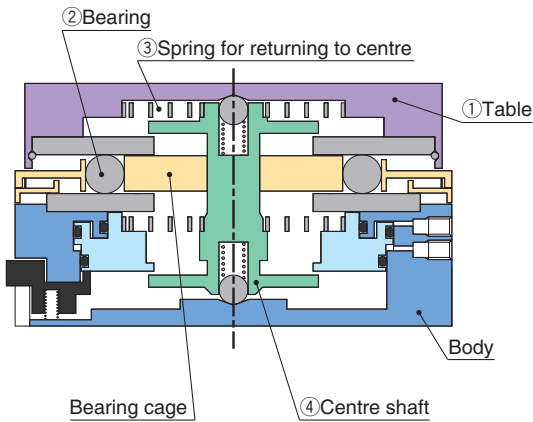
### 3 Alignment of cassette/table lock

The alignment cylinder corrects skewed workpieces and aligns the liquid crystal cassettes. After alignment, the table of the Centring unit is locked to maintain the corrected position even after the alignment cylinders are released.

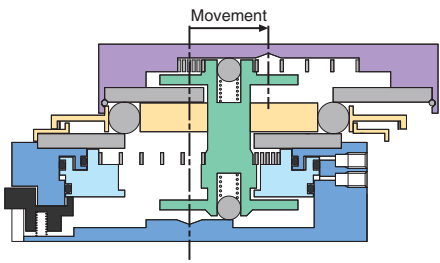


## Working Principle

### Neutral (Centring) condition



### Movable condition

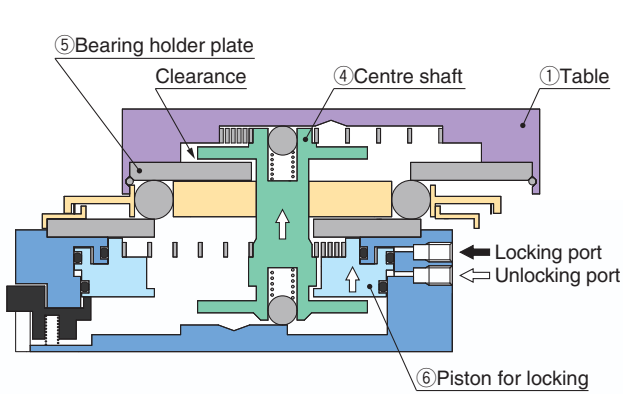


- When a force is applied to ① the table in the lateral direction, ② the bearing slides. When the bearing slides, ③ the spring for returning to centre also expands and contracts.
- When the force in the lateral direction is released, ④ the centre shaft is returned to the neutral position by ③ the spring for returning to centre.

## Lock Mechanism

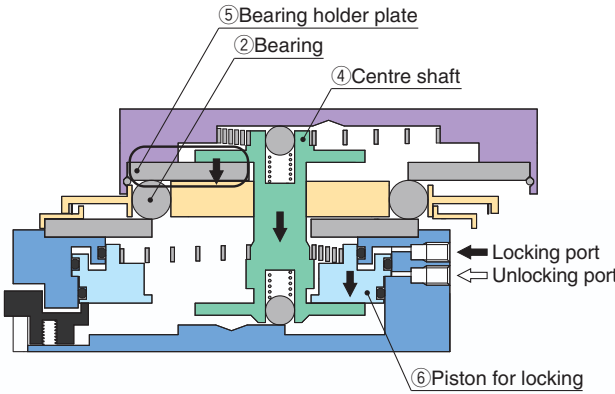
### Unlocked condition

The table becomes free when unlocked.



### Locked condition

The table is locked in place when locked.



- When air is supplied from the locking port, ⑥ the piston for locking descends and pushes ④ the centre shaft down. When ④ the centre shaft lowers, ⑤ the bearing holder plate is pressed, and the table is locked.
- When air is supplied from the unlocking port, ⑥ the piston for locking ascends and releases the lock.

# Centring Unit MACM Series

## How to Order



**MACM 4 - 20 S P - X131**

Centring unit

Allowable load weight

Symbol	Allowable load weight
2	2 KN
4	4 KN
6	6 KN
10	10 KN

Stroke

Symbol	Stroke (Applicable model)
12	12 mm (MACM2)
20	20 mm (MACM4)
30	30 mm (MACM6)
50	50 mm (MACM10)

Relief port

—	No
V	Yes

Sensor type



—	Unsupported	
P	Port side photo sensor mounted type	
B	Port back side photo sensor mounted type	

Table type

S	Stainless steel (Machined)
G	Stainless steel (Heat treatment + Buffing)
U	Ultra high molecular weight polyethylene
N	Cast nylon

## ⚠ Precautions

Be sure to read this before handling the products. For safety instructions, actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <http://www.smc.eu>

## Specifications

Model		MACM2-12	MACM4-20	MACM6-30	MACM10-50
Max. allowable load weight [KN]		2	4	6	10
Stroke [mm]		12	20	30	50
Table centre movable range [mm]		∅ 24	∅ 40	∅ 60	∅ 100
Centring accuracy [mm]		±1 or less			
Cylinder for lock	Action	Double acting			
	Fluid	Air			
	Operating temperature [°C]	0 to 60			
	Operating pressure [MPa]	0.4 to 0.7			
	Proof pressure [MPa]	1			
Lubrication		Non-lube			
Weight [kg]		0.7	1	2	7

## Operating Precautions

### ⚠ Caution

1. Use the product within the movable range.
2. Use the product within the allowable load weight.
3. Load workpieces within the load range.
4. Load workpieces within the allowable inclination range.
5. Do not use the product in applications where excessive external force or impact force is applied to it.

Improper handling includes the following:

- Applying impact on the side of the table to move it to full stroke

- Continuously moving the table in a circle while the table is at a full stroke
  - Repeating reciprocation of the table at full stroke
  - Holding the body and swinging the table
6. Prevent over strokes.
  7. Secure the table in place when transporting the product or the equipment it is mounted on.
  8. This is not a clean room series product.

# MACM Series

## Dimensions

### MACM4, MACM6

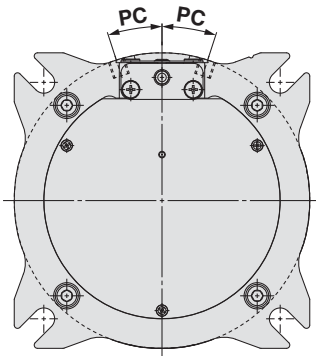
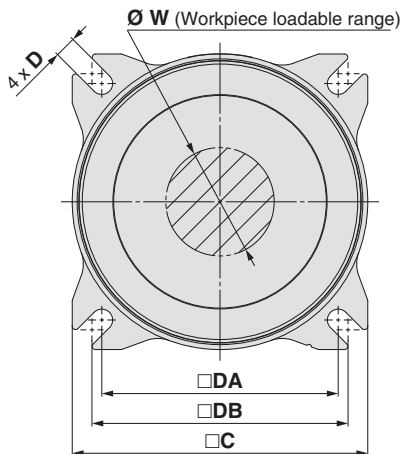
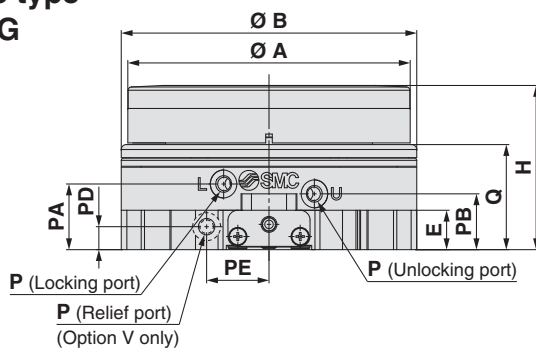


Table type  
S or G



### MACM2, MACM10

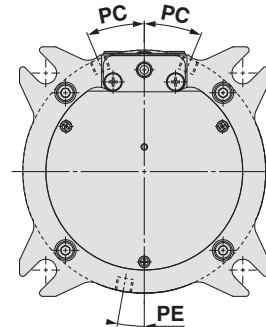
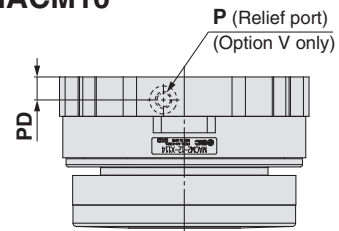
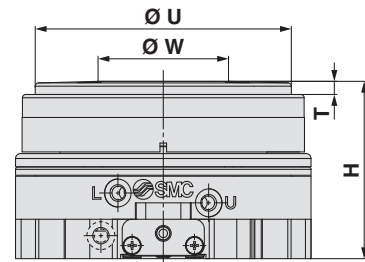
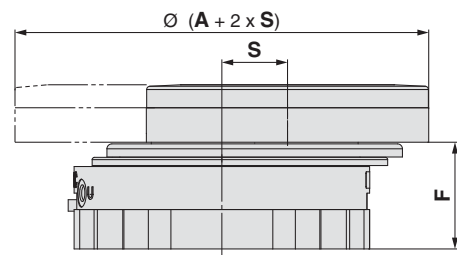


Table type  
U or N



At maximum offset

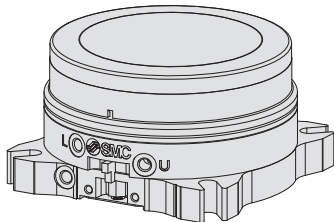


### Dimensions

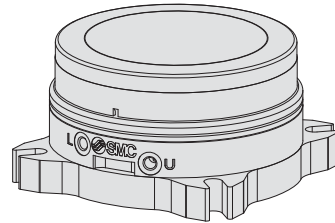
Model		A	B	C	D	DA	DB	E	F	H	P	PA	PB	PC	PD	PE	Q	S	T	U	W	
MACM2	S, G	68	74	76	6.6	60	64	12	30	46	M5	19	17	22.5°	7	10°	27.4	12	—	—	62	34
	U																		6	4		
	N																		4	6		
MACM4	S, G	86	90	90	6.6	72	78	12	32.5	50	M5	19	17	18°	7	19	32	20	—	—	78	40
	U																		6	4		
	N																		4	6		
MACM6	S, G	118	125	125	6.6	97	113	12	33.8	53	M5	19	17	18°	7	28	33.3	30	—	—	98	60
	U																		6	4		
	N																		4	6		
MACM10	S, G	185	197	198	11	152	182	18	53.8	77	M5	31	24	13°	7	0°	53.3	50	—	—	108	70
	U																		6	4		
	N																		4	6		

## Dimensions

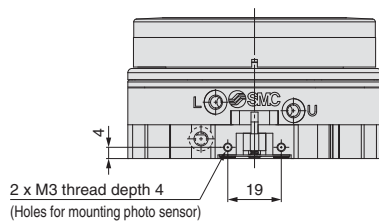
**P: Port side photo sensor mounted type**



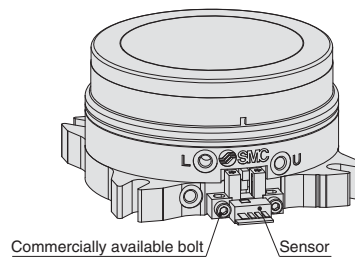
**B: Port back side photo sensor mounted type**



**P: Port side photo sensor mounted type**



**Mounted example of EE-SX671□ made by OMRON**



- \* The above photo sensor made by OMRON should be provided by the customer.
- \* Mounting position adjustment may be required depending on the individual differences of the sensor.



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