CKD

New Products

# Compact arm
# CAW Series

## Ease of work starts with ease of use


CKD Corporation

CC-1613AA 1

Human Assist

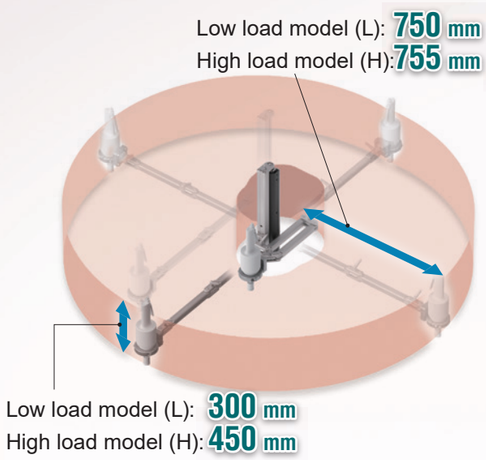
# Low friction cylinders and high rigidity guides realized

# Compact balancer that reduces arm and hand loads

## Compact

### Compact storage

It is expansive when in use and folds compactly for storage..




## Variations

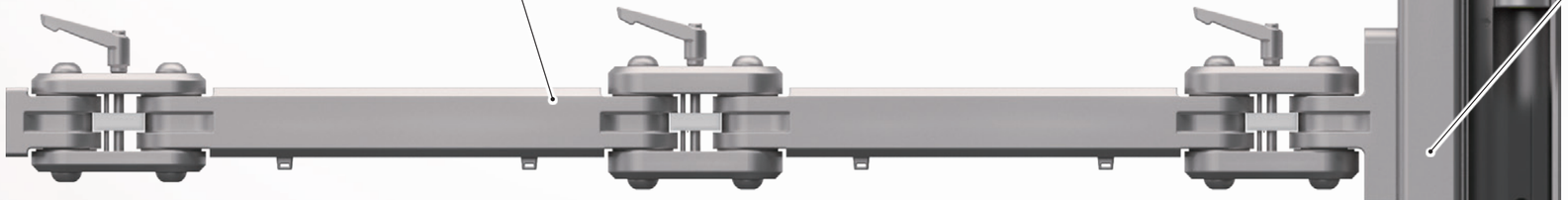
### Variations tailored to the workpiece

Two types can be selected according to the tool load.


## Flexible

### Freely movable articulated arm

The arm moves flexibly in the horizontal direction, enabling tightening work at the desired position. At the joint, a simple locking mechanism is provided.



CAW Series
Compact Arm

## Safety

### Safety structure that suppresses vibration or reaction force

Compared to the suspended type, this product suppresses vibration and reaction forces generated by the tool. Also, a check valve prevents sudden drop when air supply is stopped.

For suspension balancer

Vibration/Reaction forces generated

With CAW Series

Vibration/Reaction forces suppressed

## Usability

### Light operability

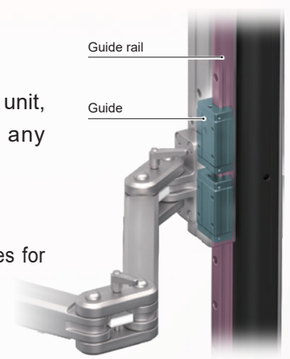
Equipped with CKD's unique low sliding cylinder, it can be operated with little force..

### Balanced at any vertical position

No elastics are used in the drive unit, so the position can be held at any desired position.

### High workability

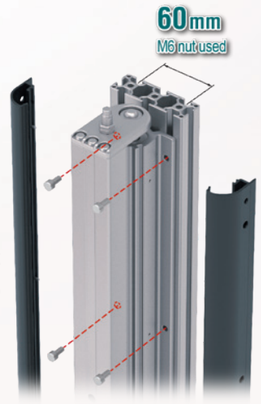
Equipped with vertically moving guides for smooth operation




## Simple

### Easy to install

Can be mounted on an aluminum frame with a mounting width of 60 mm.




### Easy adjustment mechanism based on pneumatic control

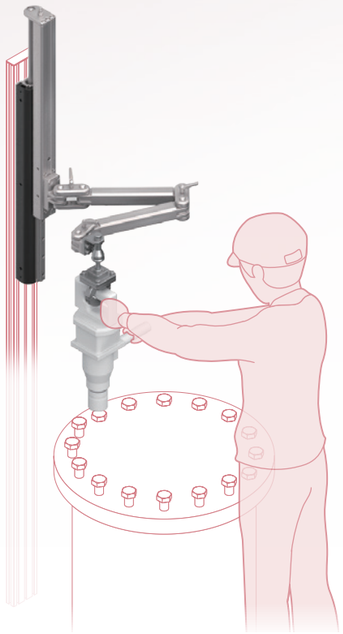
Pressure can be adjusted in a short time with the precision regulator knob according to the weight of the workpiece.

*It will be included at shipment.

# Case Study

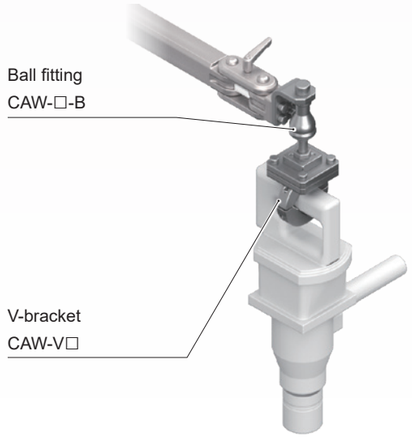
## Addressing Hazards Caused by Neglecting Ergonomic Principles

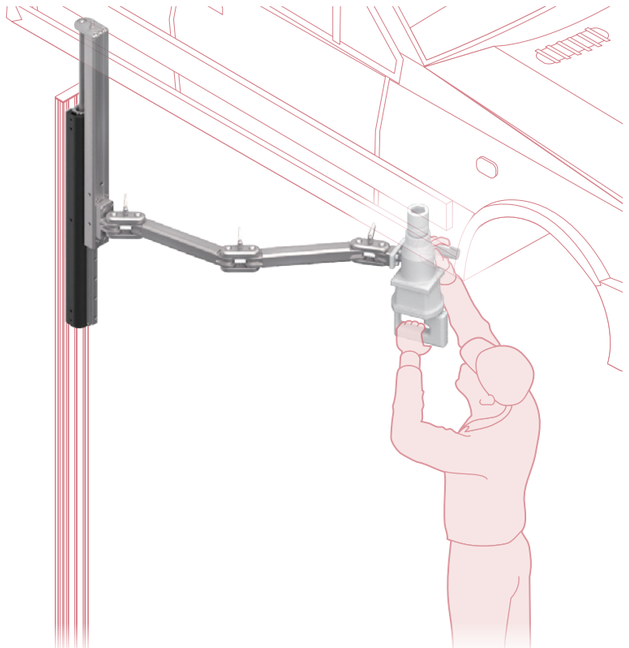
Helps reduce excessive posture work risk to the wrist, arm, shoulder, and waist.



**Case Study**

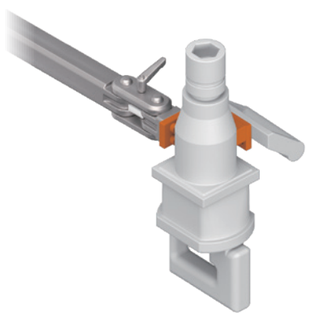
Work with the piston wrench held by ball fitting and V-bracket and the arm extended at chest height



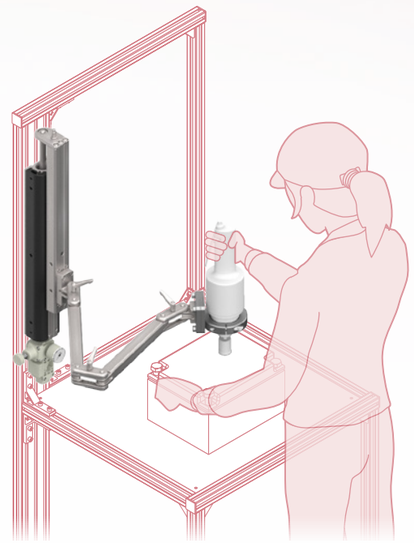
**Case Study**

Holding the piston-type impact wrench with the L-bracket (customer designed) and tightening from bottom to top



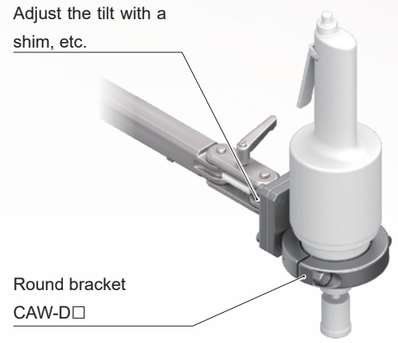
## Helps reduce the workload of repetitive tasks on a workbench

Reduces the burden on arms and wrists of workers' of all genders and ages.



**Case Study**

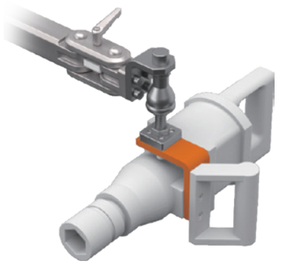
Straight-type impact wrench held by round bracket for repetitive tasks on workbench.

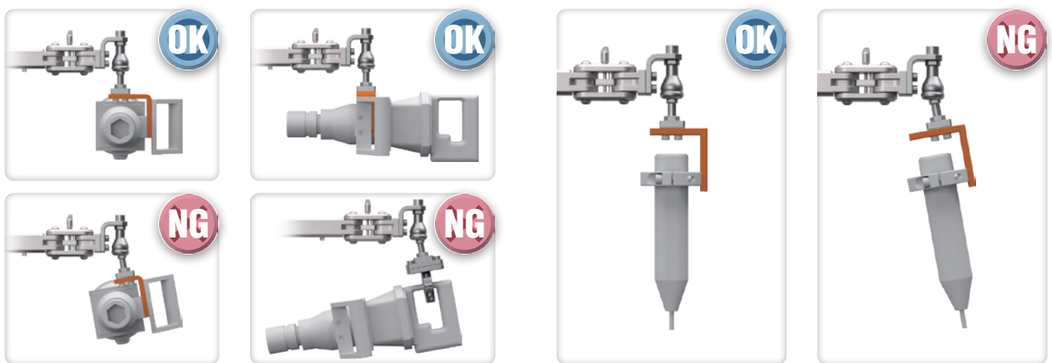



## When designing your fittings and attachments

### Notes on using ball fittings

When suspending a workpiece with a ball joint, mount the ball joint so that the workpiece is suspended at its center of gravity and is not tilted.





Compact arm

# CAW Series

●Bore size: ø32

## Specifications

| Item | | | CAW-L-300 | CAW-H-450 |
|---|---|---|---|---|
| Bore size | | | ø32 | |
| Working fluid | | | Compressed clean air (refer to recommended air circuit on page 12) | |
| Max. working pressure | | MPa | 0.25 | 0.45 |
| Minimum working pressure | | MPa | 0.18 | 0.26 |
| Proof pressure | | MPa | 1.05 | |
| Ambient/Fluid temperatures | | °C | 5 to 60 | |
| Movable range | Vertical | mm | 300 | 450 |
| | Horizontal (*1) | mm | R750 | R755 |
| Port size | | | Rc1/4 | |
| Cushion | | | Top end: Rubber cushion/lowering end: Shock absorber | |
| Lubrication | | | Not available | |
| Load capacity (0.45MPa pressurized) (*2) | | kg | 5 | 15 |
| Max. working speed (*3) | | mm/s | 300 | |
| Air consumption (*4) | | L/min (ANR) | 4.3 | 5.4 |
| Weight | | kg | 8.2 | 14.2 |

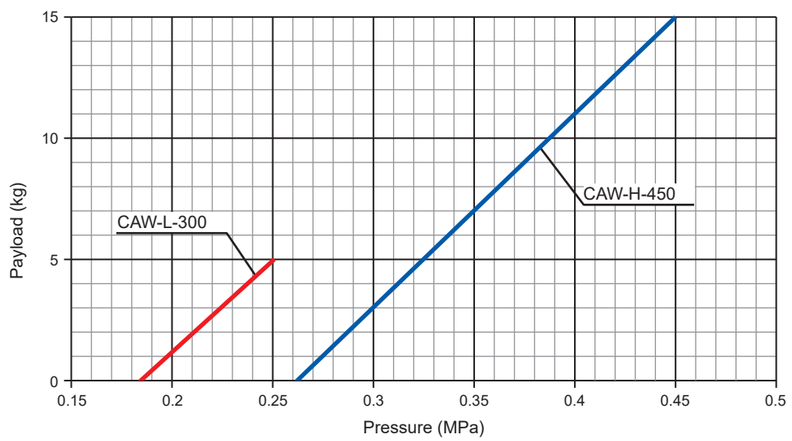
*1: Max. rotation radius of arm tip part. Refer to the dimensions for details on the movable range.
*2: Includes weights of fittings and attachments. Load capacity varies with the supplied pressure. Refer to the payloads at the following pressures.
*3: 40L/min (ANR) air is required when using continuously at max. working pressure. Supply compressed air with sufficient flow rate.
*4: Air consumption is shown at 1 cycle/min and maximum working pressure. The precision regulator RP1000 constantly releases air to the atmosphere.

## Fitting/attachment weight table

(unit: kg)

| Option name | Discrete model No. | Weight | Option name | Discrete model No. | Weight | Option name | Discrete model No. | Weight |
|---|---|---|---|---|---|---|---|---|
| Bottom mounting | CAW-U | 0.4 | V-clamp | CAW-V40 | 1.5 | Round clamp | CAW-D40 | 1.4 |
| Ball fitting | CAW-L-B | 0.6 | | CAW-V50 | 1.6 | | CAW-D50 | 1.6 |
| | CAW-H-B | 0.9 | | CAW-V60 | 2.0 | | CAW-D60 | 1.8 |
| Flange - thread | CAW-F | 0.5 | | CAW-V70 | 2.5 | | CAW-D70 | 1.9 |
| Flange - hole | CAW-F1 | 0.5 | | CAW-V80 | 2.9 | | CAW-D80 | 2.3 |

## Load capacity with respect to pressure




Note: Pressure shows the pressure supplied to the "IN" side of the precision regulator.





## Model No. Notation Method

Model No. Notation Method

CAW - L - 300 - B - V60

- CAW: Model No.
- L: ❶ Model
- 300: ❷ Vertical stroke (Fixed)
- B: ❸ Fitting
- V60: ❹ Attachment

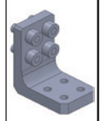
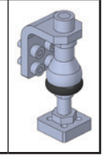
### ❶ Model

| Code | Descriptions |
|---|---|
| L | Low load model |
| H | High load model |

### ❷ Vertical stroke (fixed)

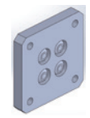
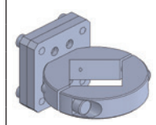
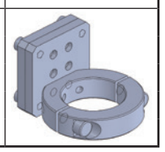
| Code | Descriptions |
|---|---|
| 300 | 300 mm (low load model) |
| 450 | 450 mm (high load model) |

### ❸ Fitting

| Code | Descriptions | |
|---|---|---|
| Blank | Without fitting | |
| U | Bottom mounting |  |
| B | Ball fitting |  |

Note: Multiple selection is not possible.

### ❹ Attachment

| Code | Descriptions | | |
|---|---|---|---|
| Blank | Without attachment | | |
| F | Flange - thread | |  |
| F1 | Flange - hole | |  |
| V40 | ø30 to ø40 | V-clamp |  |
| V50 | ø40 to ø50 | | |
| V60 | ø50 to ø60 | | |
| V70 | ø60 to ø70 | | |
| V80 | ø70 to ø80 | | |
| D40 | ø40 | Round clamp |  |
| D50 | ø50 | | |
| D60 | ø60 | | |
| D70 | ø70 | | |
| D80 | ø80 | | |

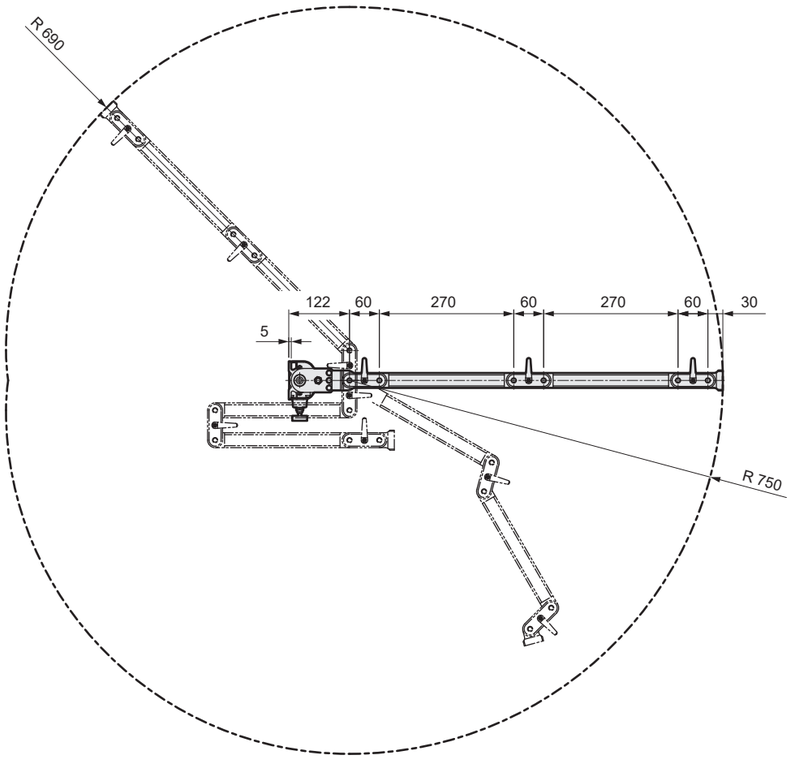
Note: Multiple selection is not possible.

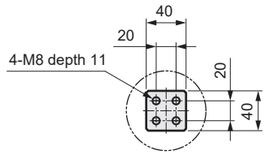
### Discrete fitting and attachment model No.

| | |
|---|---|
| CAW-U | Bottom mounting |
| CAW-L-B | Ball fitting for CAW-L |
| CAW-H-B | Ball fitting for CAW-H |
| CAW-F | Flange - thread |
| CAW-F1 | Flange - hole |
| CAW-V□ | V-clamp (V40, V50, V60, V70, V80) |
| CAW-D□ | Round clamp (D40, D50, D60, D70, D80) |

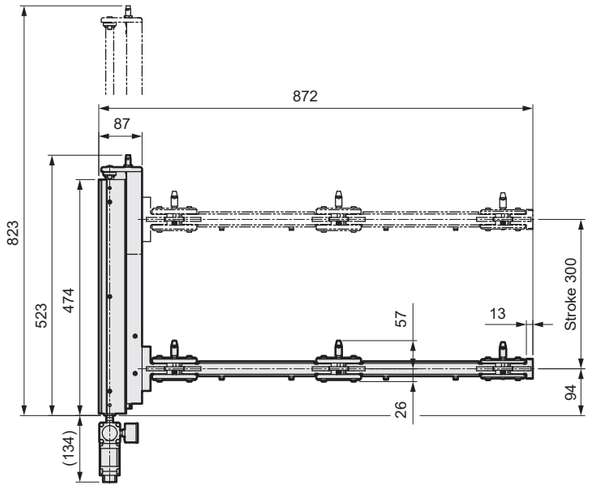
## Dimensions

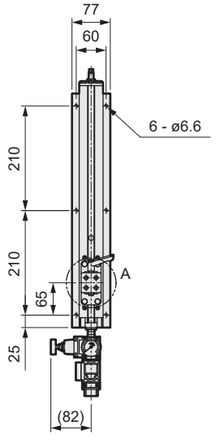
● CAW-L-300




Enlarged view of section A
(arm end mounting part)



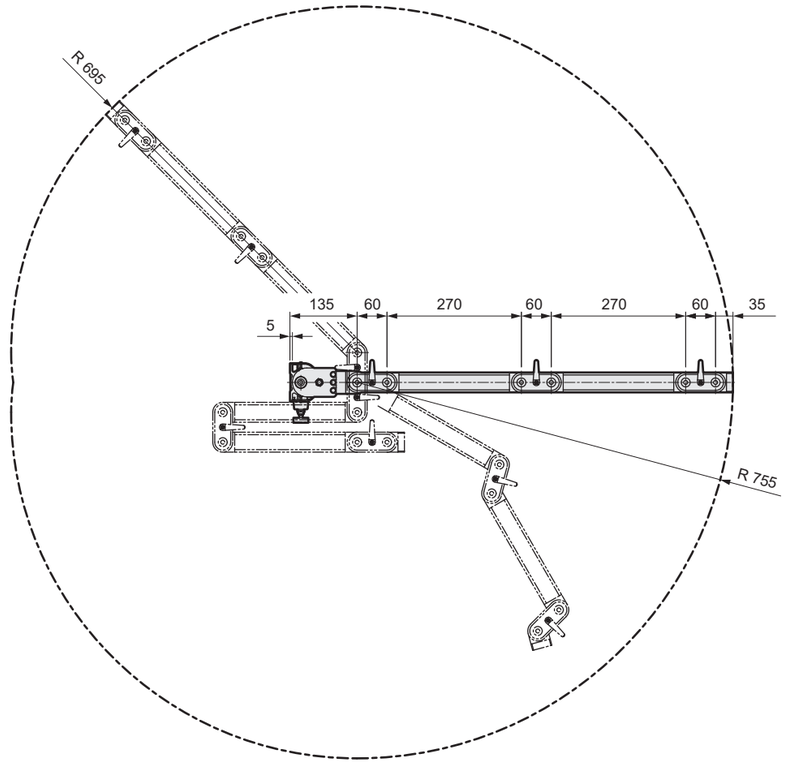



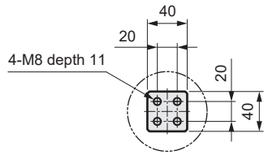




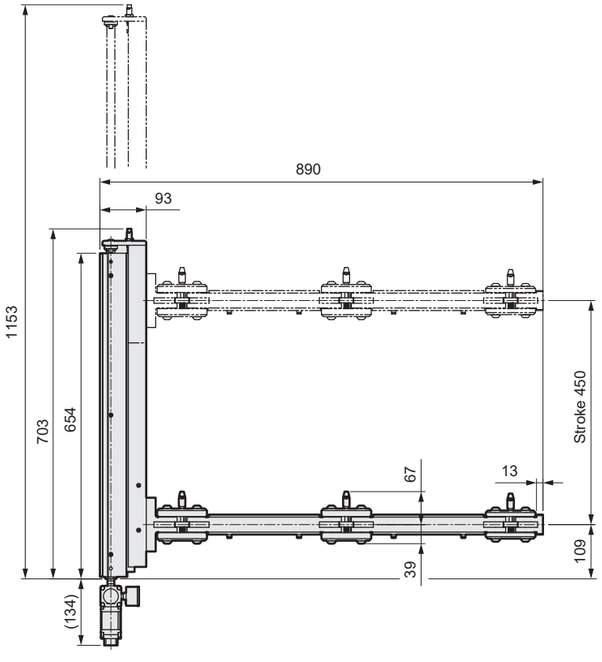

## Dimensions

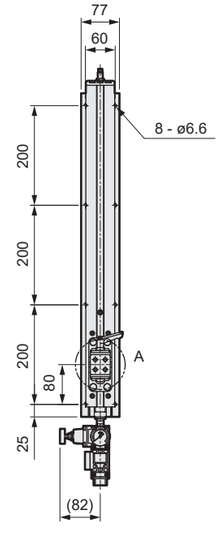
● CAW-H-450



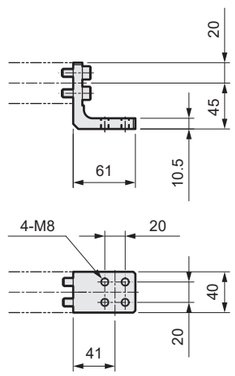

Enlarged view of section A
(arm end mounting part)



## Fitting dimensions

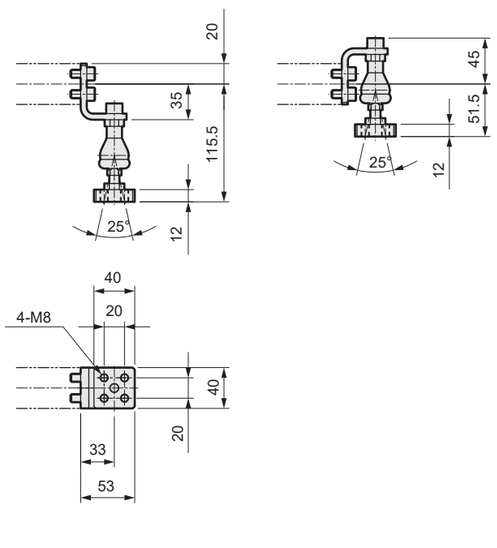
● Bottom mounting (U)




*Fasteners for tightening the bolts are included.

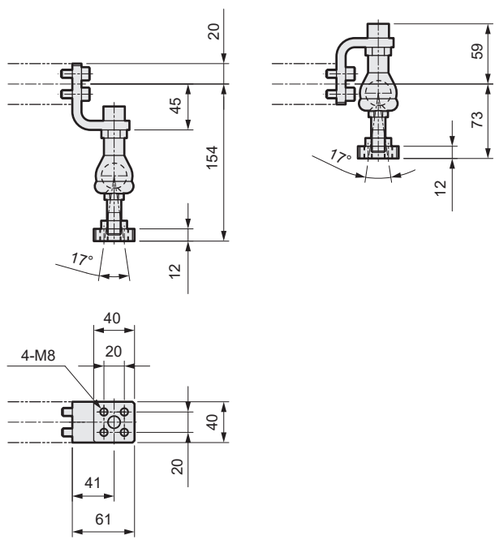
● Ball fitting (B)

• CAW-L (low load model)




*Fasteners for tightening the bolts are included.

• CAW-H (high load model)



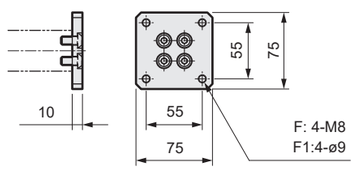

*Fasteners for tightening the bolts are included.





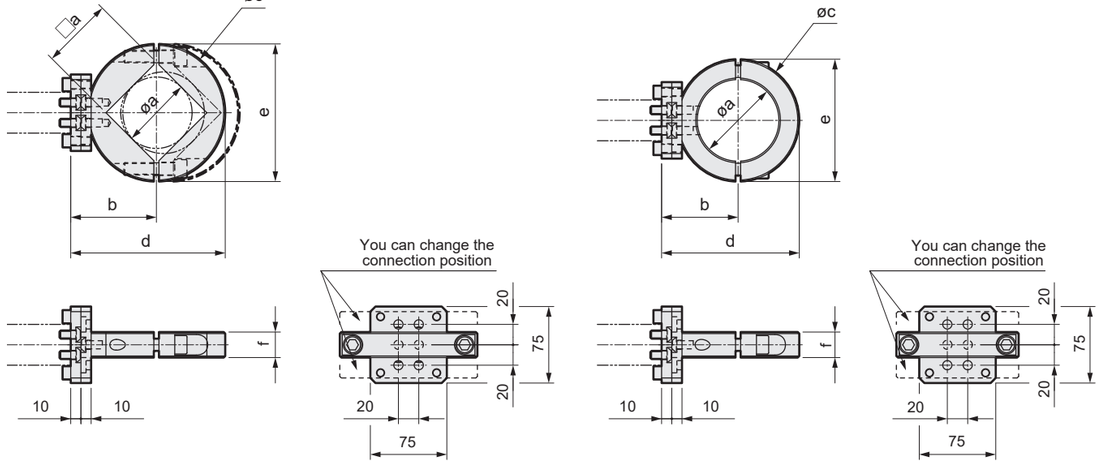
## Attachment dimensions

● Flange - thread (F)
Flange - hole (F1)




*Fasteners for tightening the bolts are included.

● V type clamp (V□)




* Fastening bolts and rubber for tool diameter adjustment are included.

| Code | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| V40 | 30 to 40 | 51 | 70 | 86 to 100 | 70 | 18 |
| V50 | 40 to 50 | 57 | 85 | 99.5 to 113.5 | 85 | 18 |
| V60 | 50 to 60 | 65 | 100 | 115 to 129 | 100 | 22 |
| V70 | 60 to 70 | 76 | 120 | 136 to 150 | 120 | 25 |
| V80 | 70 to 80 | 84 | 135 | 151.5 to 165.5 | 135 | 25 |

● Round clamp (D□)

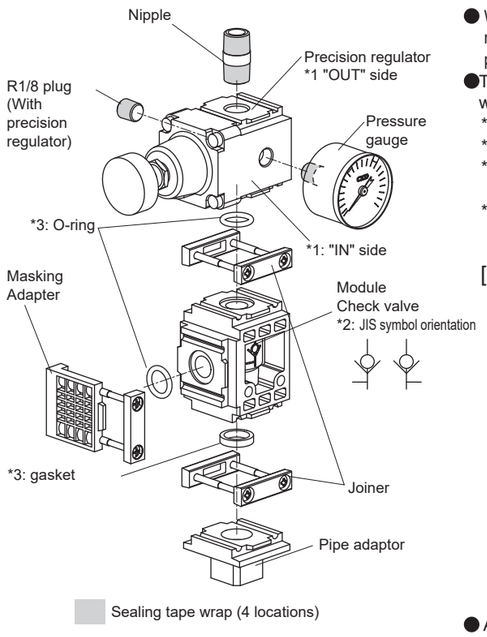



* Fastening bolts and rubber for tool diameter adjustment are included.

| Code | Applicable tool diameter | a | b | c | d | e | f |
|---|---|---|---|---|---|---|---|
| D40 | ø30 to ø40 | 40 | 51 | 70 | 86 | 70 | 18 |
| D50 | ø0 to ø50 | 50 | 57 | 85 | 99.5 | 85 | 18 |
| D60 | ø50 to ø60 | 60 | 62 | 95 | 109.5 | 95 | 22 |
| D70 | ø60 to ø70 | 70 | 68 | 105 | 120.5 | 105 | 22 |
| D80 | ø70 to ø80 | 80 | 75 | 120 | 135 | 120 | 25 |

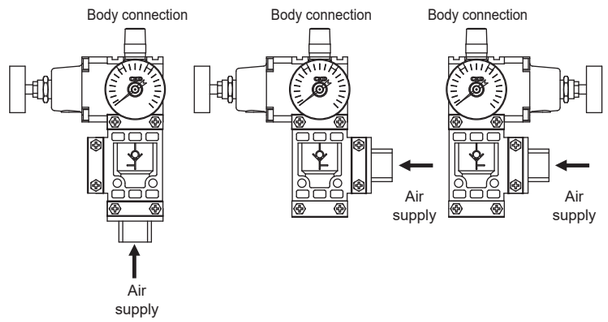
## How to assemble

①Assemble the included air components.




- Wind sealing tape around a pressure gauge or R1/8 plug, and assemble it to the precision regulator. By changing the assembly position of the R1/8 plug and pressure gauge, the pressure adjustment knob position of the precision regulator can be reversed.
- The pipe adaptor, precision regulator and module check valve are connected with a joiner or masking adaptor.
  *1: Please note the orientation of the "IN" and "OUT" sides of the precision regulator.
  *2: Check the JIS symbol on the body before connecting.
  *3: Check the shape and position of the O-rings (2 pcs.) and gasket (1 pc.) before connecting.
  *3: The pipe leadout direction can be selected by changing the pipe adaptor assembly position and masking adaptor assembly position.

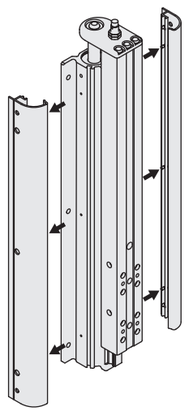
[Connection example]




- Assemble the fitting.
  Recommended fittings: Single straight GWS8-8, single elbow GWL8-8

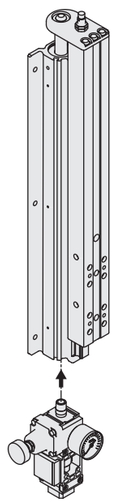
* The main unit and air equipment can be installed at a distance from each other by using a piping tube and a fastening fitting.
For details, refer to the instruction manual

②Remove the right and left covers.
Since it uses a position locking screw, remove the cover while pulling it lightly.



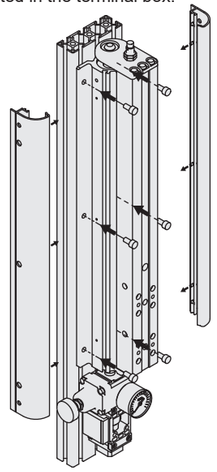
③[When directly installing air component]
Wrap sealing tape around the nipple and attach the air component to the cylinder.

Tightening torque: 6 to 8 N·m



④Mount the cylinder section.
Mounting bolt: Hexagon socket head cap screw: M6×12
CAW-L : 6 units
CAW-H : 8 units
*Customers are asked to prepare as necessary.

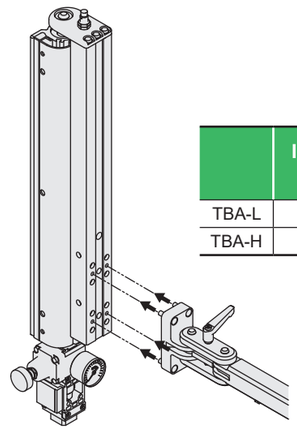
Use a level gauge on the cylinder
Install vertically. After installing the cylinder, fasten the right and left covers mounted in the terminal box.





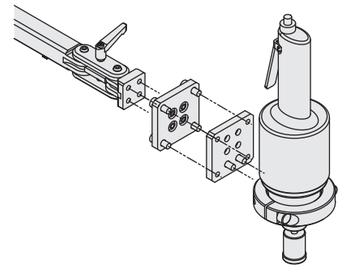


⑤Attach the arm section with the specified tightening torque with the included bolts.



| | Included bolts | Tightening torque N·m |
|---|---|---|
| TBA-L | M6 x 20 | 7.8 |
| TBA-H | M8 x 20 | 18.8 |

⑥Use any fitting, attachment, etc., to fix the tool to the arm tip.
Rubber plates for dimension adjustment and scratch prevention are included with V-clamps and round clamps. Use as necessary.



⑦Turn the pressure adjustment knob of the precision regulator counterclockwise to set the secondary side flow rate to 0 L/min and supply air. Gradually turn the pressure adjustment knob clockwise to adjust the pressure that is balanced. After adjusting the pressure, tighten the lock nut, and then set the pressure adjustment knob.

## Customer's design of fittings and attachments

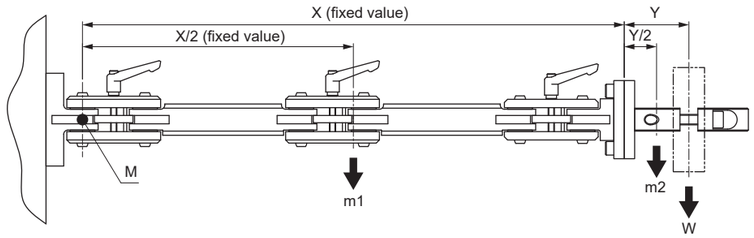
### Moment load

- Calculate the moment load below from the weight of the workpiece used, and select and design the fitting and attachment so that the maximum moment load is not exceeded.

Max. moment load

| Model No. | M (N·m) |
|---|---|
| CAW-L-300 | 52 |
| CAW-H-450 | 147 |

How to calculate moment load




$$M=\{(X+Y)\times W\}+\{(X+Y/2)\times m2\}+(X/2\times m1)$$

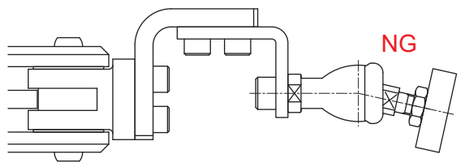
M : Moment load (N·m)
X : Arm length (fixed value, [CAW-L-300] 0.75m
[CAW-H-450] 0.755m)
Y : Distance from arm tip to center of gravity of workpiece (attachment center of gravity)
W : Weight of workpiece (N = kg × 9.8)
m1 : Arm weight (fixed value, [CAW-L-300] 33.3N (3.4 kg)
[CAW-H-450] 65.7N (6.7 kg)
m2 : Fitting, attachment weight (N = kg × 9.8)

**Example of calculation:**
**CAW-H-450-BD70 (ball fitting + round clamp ø70) suspends the 10kg workpiece**
X : Arm length [CAW-H-450] 0.755 m
Y : Distance from the arm tip to the center of gravity of the workpiece (center of gravity of attachment)
[From B (ball joint) dimensions] 0.041 m (41 mm)
W : Weight of workpiece: 98 N (10 kg)
m1 : Arm weight [CAW-H-450] 65.7N (6.7 kg)
m2 :Fitting, attachment weight (N = kg × 9.8)
[From B (ball fitting) weight] 8.82N (0.9 kg)
[From D70 (round clamp øweight] 18.62N (1.9 kg)

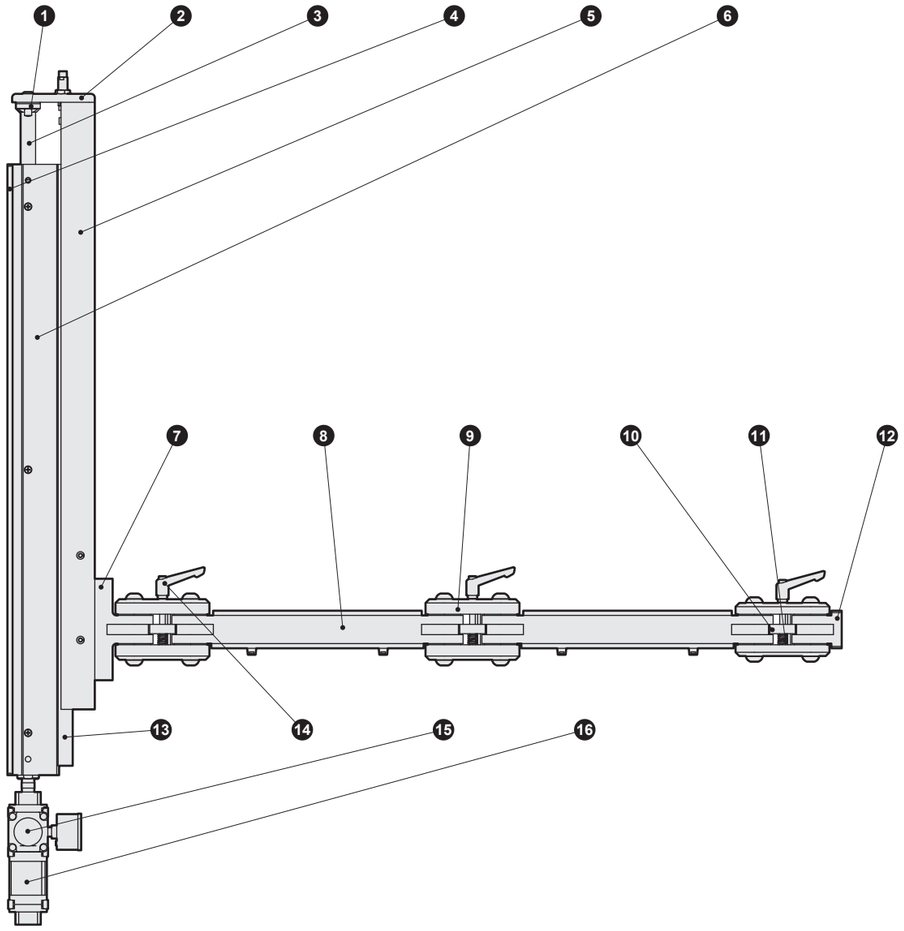
{(0.755 + 0.041)×98}+{(0.755 + [0.041/2])×
[8.82 + 18.62]}+([0.755/2]×65.7)
**= 124.1N·m ...OK, since the max. moment load is not exceeding 147N·m**

### Notes on using ball fitting

This product cannot be used in a lateral orientation.



## Material/Treatment



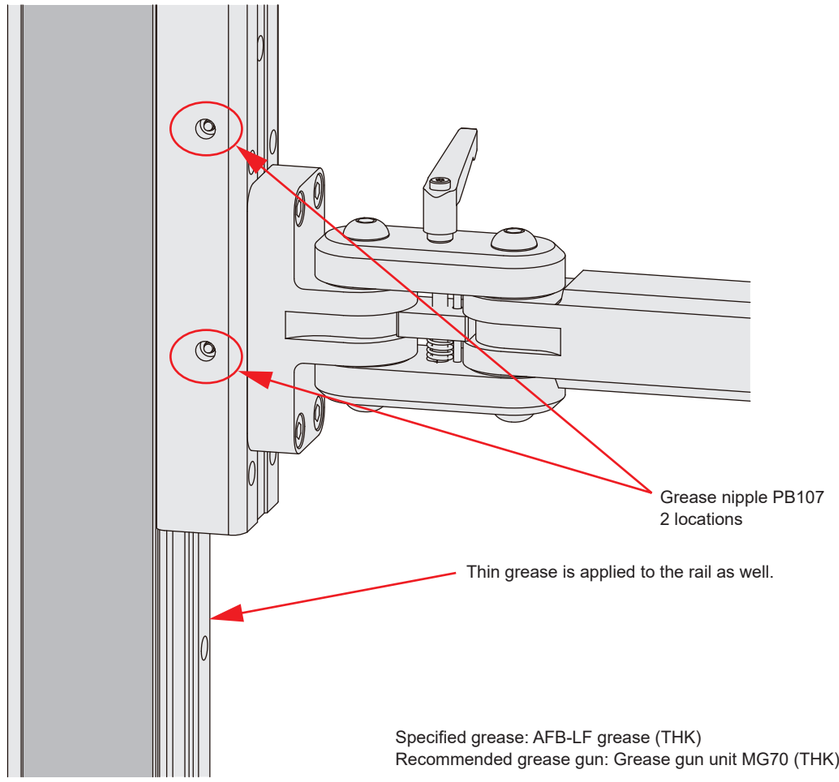

| No. | Part name | Material | Surface-Treated |
|---|---|---|---|
| 1 | Floating fitting | Steel | Zinc plated chromate treatment |
| 2 | End plate | Steel | Zinc plated chromate treatment |
| 3 | Piston rod | Steel | Industrial chrome plating |
| 4 | Body | Aluminum alloy | Alumite treatment |
| 5 | Table | Aluminum alloy | Alumite treatment |
| 6 | Cover | ABS resin | |
| 7 | Base clevis | Steel | Zinc plated chromate treatment |
| 8 | Arm | Aluminum alloy | Trivalent chromate treatment |
| 9 | Link plate | Steel | Zinc plated chromate treatment |
| 10 | Lock plate | Resin | |
| 11 | Lock plate spring | Stainless steel | |
| 12 | Clevis | Aluminum alloy | Trivalent chromate treatment |
| 13 | Linear guide | Steel, resin | |
| 14 | Lock lever | Steel, etc | Painted |
| 15 | Precision regulator | Aluminum alloy, etc. | Painted |
| 16 | Module check valve | Resin, stainless steel, etc. | Painted |





## Maintenance part

Lubrication to the built-in guide is not required for normal use.
Inject a small amount of the designated grease when lubricating.




Specified grease: AFB-LF grease (THK)
Recommended grease gun: Grease gun unit MG70 (THK) N-type tip shape

## Consumable parts

| Part name | Part model No. | Part content |
|---|---|---|
| Packing kit | CAW-32K | Cylinder gasket, piston packing,<br>Wear ring, cushion rubber (R),<br>Dedicated grease for cylinder interior |
| Shock absorber | NCK-00-0.7-C | |

# Safety Precautions

Be sure to read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.
It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

## WARNING

1. This product is designed and manufactured as a general industrial machine part.
   It must be handled by an operator having sufficient knowledge and experience.
2. Use this product in accordance with specifications.
   This product must be used within its stated specifications. In addition, never modify or additionally machine this product.
   This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments.
   (Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)
   ❶ Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
   ❷ Use for applications where life or assets could be significantly affected, and special safety measures are required.
3. Observe organization standards and regulations, etc., related to the safety of device design and control, etc.
   ISO4414, JIS B 8370 (Pneumatics fluid power - General rules and safety requirements for systems and their components)
   JFPS2008 (Principles for pneumatic cylinder selection and use)
   Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.
4. Do not handle, pipe, or remove devices before confirming safety.
   ❶ Inspect and service the machine and devices after confirming safety of all systems related to this product.
   ❷ Note that there may be hot or charged sections even after operation is stopped.
   ❸ When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility.Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
   ❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.
5. Observe warnings and cautions in the following pages to prevent accidents.

■ The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

| | |
|---|---|
| DANGER: | When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, and when there is a high degree of emergency to a warning. |
| WARNING: | If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury. |
| CAUTION: | When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage. |

Note that some items described as "CAUTION" may lead to serious results depending on the situation.
Every item provides important information and must be observed.

## Warranty

1. Warranty period
   The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.
2. Warranty coverage
   If the product specified herein fails for reasons attributable to CKD within the warranty period specified above, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge.
   However, following failures are excluded from this warranty:
   1) Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or the Instruction Manual.
   2) Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
   3) Failure not caused by the product.
   4) Failure caused by use not intended for the product.
   5) Failure caused by modifications/alterations or repairs not carried out by CKD.
   6) Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
   7) Failure caused by acts of nature and disasters beyond control of CKD.
   The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.
   Note: For details on the durability and consumable parts, contact your nearest CKD sales office.
3. Compatibility check
   The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.





## Design/Selection

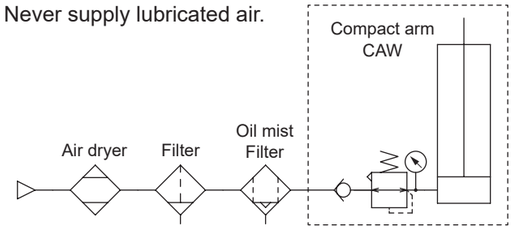
### WARNING

■ This product is a pneumatic assistive device, intended for use as a mechanical device with a tool or tools attached to the end of the device. When using the machine, please be sure to conduct a risk assessment of the entire machine and equipment to ensure safety before use. In addition, the end user should conduct a risk assessment of the user side based on the residual risk information of the entire machine and determine a safe operation method before use.

### CAUTION

[Pneumatic source]

■ Working fluid must be clean air from which solids and water/oil have been sufficiently removed using a dryer, filter and oil mist filter.
Never supply lubricated air.




■ Keep the pressure difference between the primary and secondary sides of the precision regulator to 0.1MPa or more. For the pressure required for load, refer to the graph of "Load capacity under pressure".

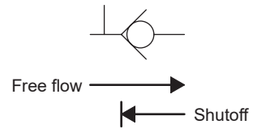
[Pneumatic piping]

■ Check IN.OUT display indicating the air inlet and outlet of the precision regulator before connecting. A reverse connection could result in malfunction.

■ When handling the precision regulator, do not move or swing it by the adjustment knob.

■ If the pneumatic piping on the secondary side of the precision regulator is dislocated during use, the arm may fall, creating a hazard. Connect with reliable methods to prevent the pneumatic piping from dislocating.

■ Check JIS symbols on the body before connecting the module check valve.




■ Use sealing tape when piping. Do not use liquid or solid sealant. In addition, ensure that the sealing tape does not enter the piping.

[Product installation]

■ When mounting the product, mount it on a vertical plane.

■ Lubricating oil and anti-rust oil are used for the linear guide part, and there is a possibility that oil may be discharged to the outside. Please be careful when using in a place where oil discharge is a concern.

## Use/Maintenance

### WARNING

■ If abnormal noises are heard, personal safety should be the first priority, and joints should be locked only when it is safe to do so. Failure to do so may result in fatal accidents or total damage to the product.

■ Do not modify the product or device without the manufacturer's approval.

■ Do not put hands or fingers into product gaps.

■ When the operator's hand is removed from the tool, the horizontal position may not be maintained due to tilt during product installation or deflection of the arm due to the weight of the tool or other parts. When not in use, the position can be held by tightening the lock lever at each joint. It is recommended to install a "home position" where the tool is stored in the specified location when not in use.

■ Do not use in excess of the maximum load capacity.

■ Do not use in excess of the maximum moment load.

■ Do not put weight on the arm or hang the product from the arm.

### CAUTION

■ Before relocation or maintenance, remove the cylinder and arm sections.

■ Do not use this product with the cover removed.

■ The linear guide is made of steel, and rust may occur depending on the operating environment (high temperature and humidity, adhesion of water droplets due to condensation, etc.). Apply an appropriate amount of anti-rust oil, etc. periodically.

## Precautions for export

■ Contact the nearest CKD Sales Office for information on the EAR assessment.

## Related products

### PowerArm PAW Series (Auxiliary mechanism)

Assistive devices based on the concept of solidarity with workers

- Select from 3 types of arms based on the workpiece load
- Supports a wider range of movement
- Wide movable range according to usage
- Position holding is possible during emergency stops
- Anti-snag measures
- Fold away for compact storage
- Customers can easily incorporate arms

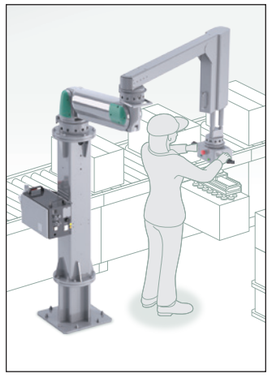
Click!

Catalog No. CC-1418A


### [Palletizing specifications PAW-A*]

Space-saving and space-saving stacking and unloading work

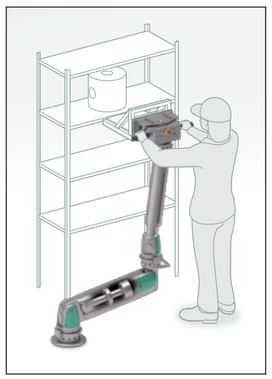
- Focused on stacking and unloading tasks
- Ensures a wide movable range and user safety
- Space saving storage
- Simple combinations are possible



### [Mechanical lock specifications PAW-*B]

Making transport work safer and easier

- Eliminates floating up and sinking of arm
- Safety structure with built-in lock mechanism
- Vertical locking available for all strokes
- Manual lock can be released







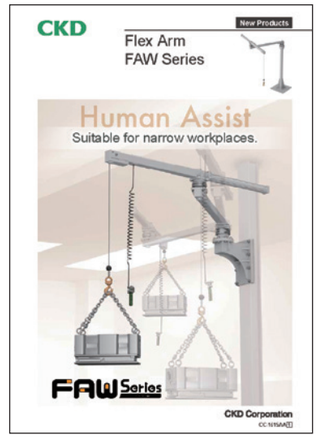
### Flex Arm FAW Series

Can be used widely in narrow sites
An assistive device that can be installed in low-ceiling areas to improve work

- Using compressed air for the power, carrying heavy objects up to 50kg can be done easily.
- A wide range of work areas are covered with a turning radius of 2.5m and a vertical stroke of 1.5m
- It can be selected from four mounting systems: fixed to floors, dollies, columns and ceilings. With a low overall height of 2.5m, it is installable even in low-ceiling locations

Click!

Catalog No.CC-1615AA




### Ultra low friction balancing cylinder BBS Series

- With position locking mechanism for safety concerns (BBS-OU)
- Special packing and treatment for low friction sliding
- Compatible with lateral load as well (BBS-OS/OU-B)

Click!

Catalog No. CC-1212A

### Air supply unit ASU Series

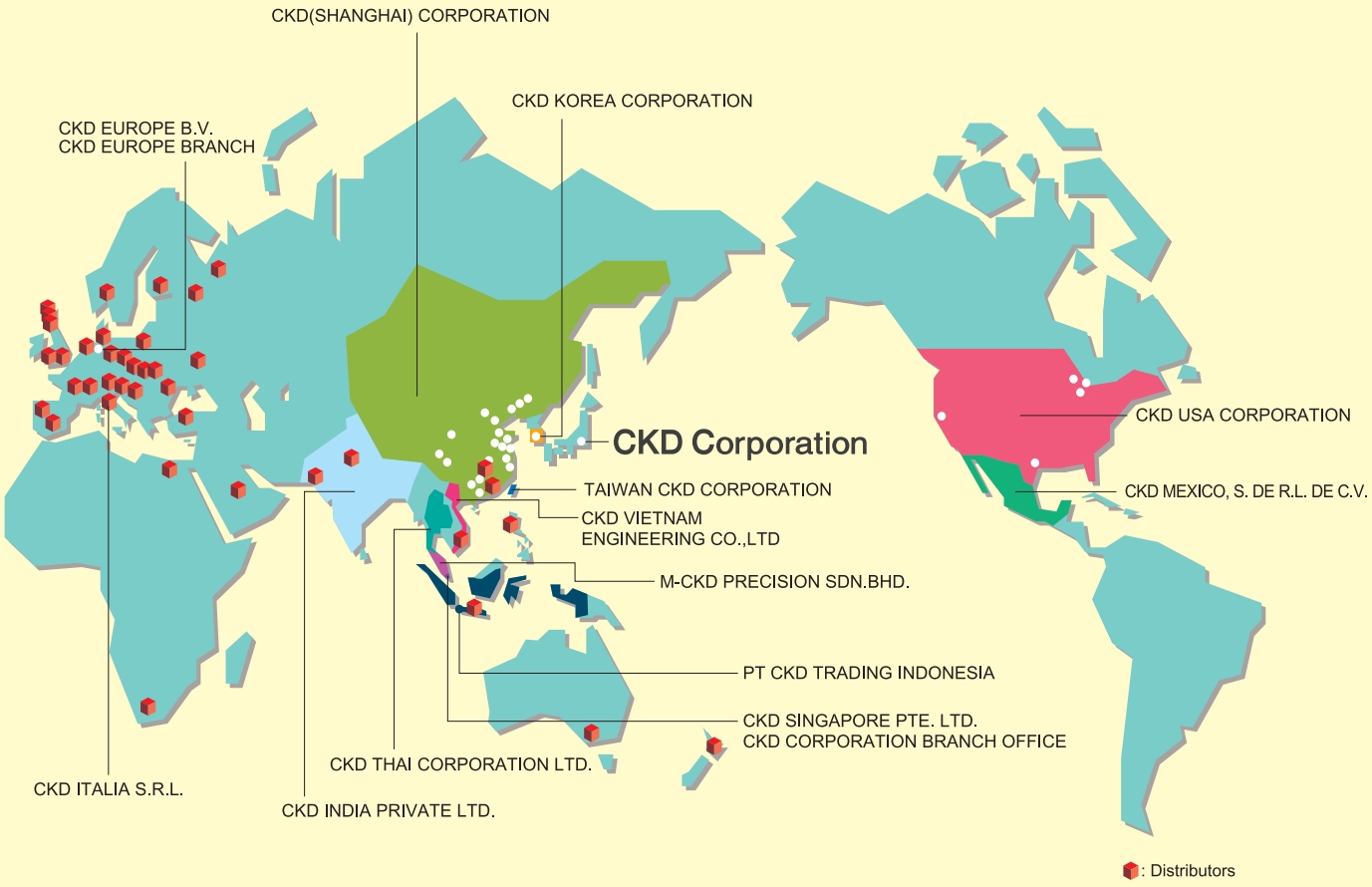
**Special Specifications**

- 2 types of flow rates (72 L/min, 25 L/min)
- Localized supply is enabled with easy installation.
- Filter, drain separator, dryer, etc., converted to one unit (300 W only)
- Emergency pressure source (conforms with BCP)

Catalog No. CC-1284A

For details, please see "Model No." on the CKD Components Product site (https://www.ckd.co.jp/kiki/en/).

# WORLD-NETWORK

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2025.10