CKD

Transform workstyles with assistive devices

PowerArm
PAW Series

CKD Corporation
CC-1418AA 5

HumanAssist

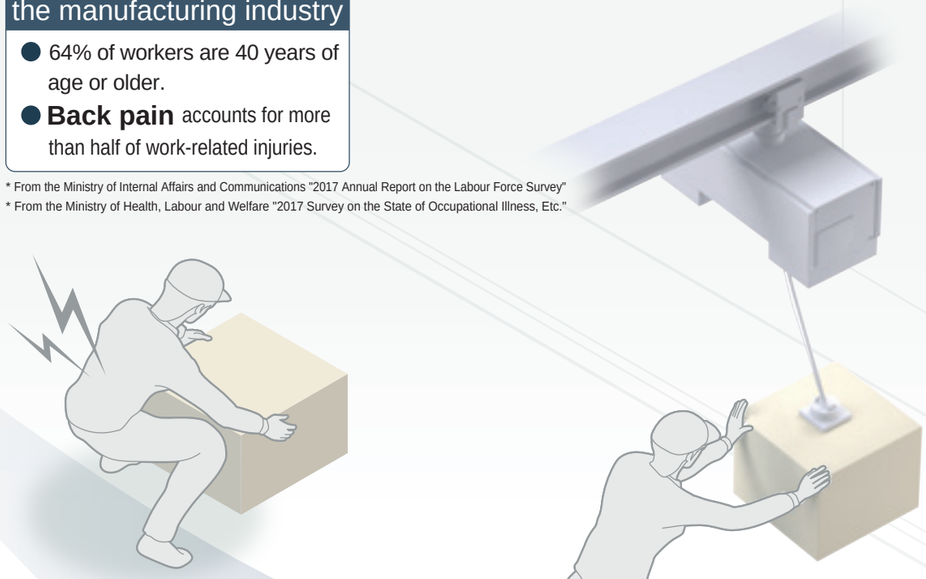
For your safety at work,
For the future of manufacturing,
We chose this form for the Device

The PowerArm shares the payload for a safer workplace.
The new model is now even safer and easier to use.

Status quo of workers in the manufacturing industry

- 64% of workers are 40 years of age or older.
- **Back pain** accounts for more than half of work-related injuries.

* From the Ministry of Internal Affairs and Communications "2017 Annual Report on the Labour Force Survey"
* From the Ministry of Health, Labour and Welfare "2017 Survey on the State of Occupational Illness, Etc."



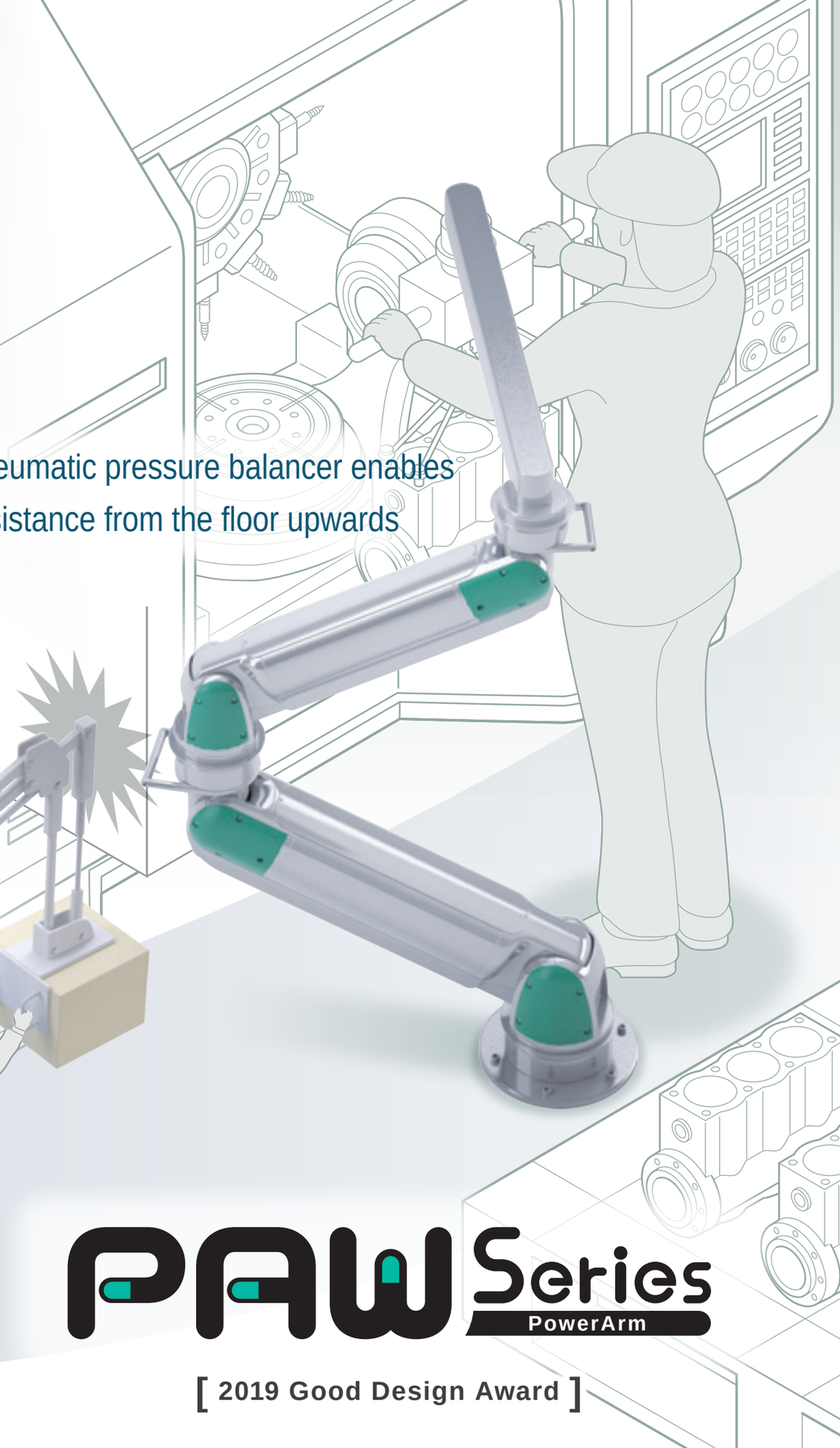
Belt-type assistive devices

- The center of gravity is far from the area of operation (transported item), **making operation difficult. (Starts and stops strain the body)**

Arm-type assistive devices

- Compact storage is difficult, **requiring a large space.**
- Use of the arm is hampered by **interference with the ceiling or walls.**

New pneumatic pressure balancer enables assistance from the floor upwards



PAW Series PowerArm

[2019 Good Design Award]

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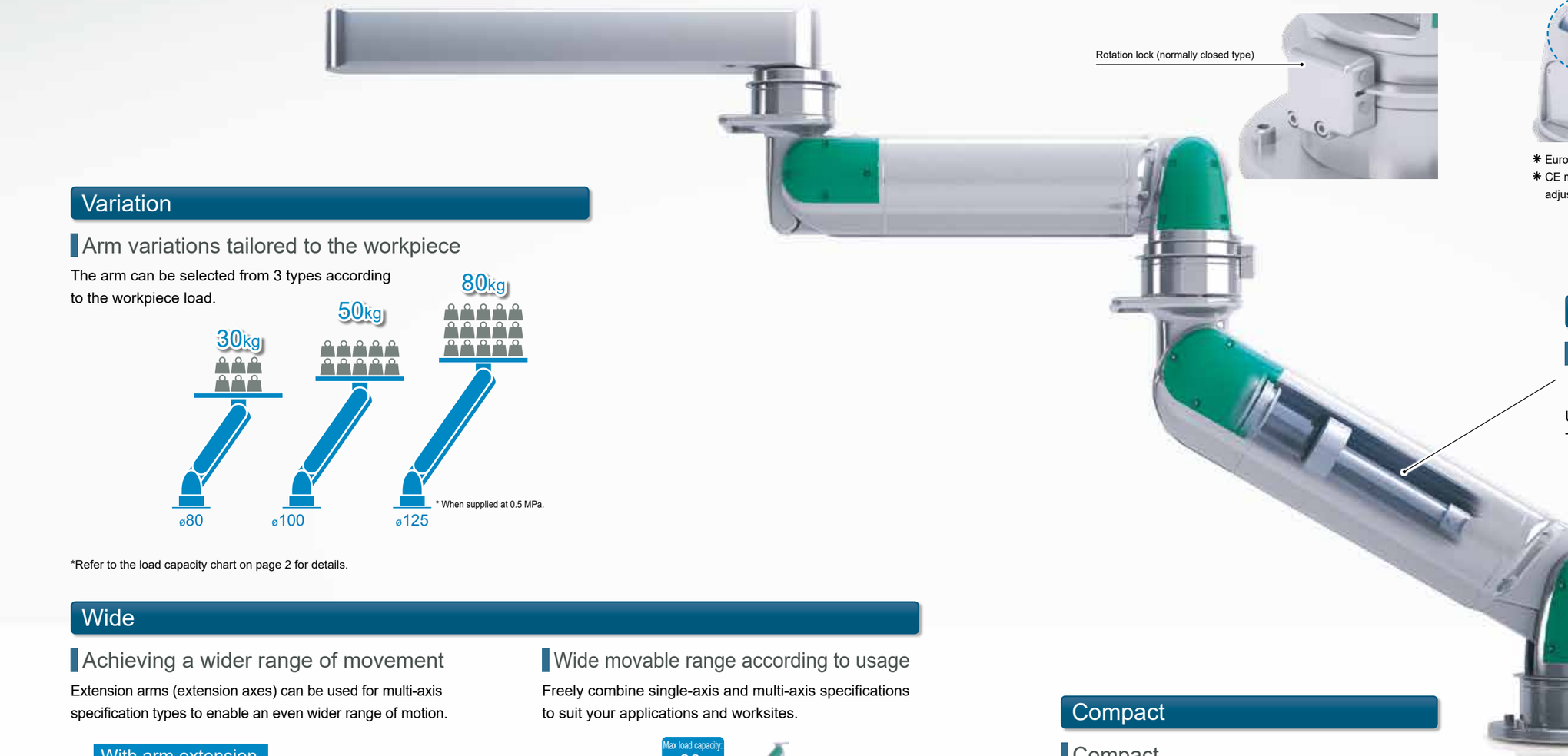
Transform workstyles with assistive devices.



Safety

Holds position when motor power (air, electric power) is down

In addition to a position-locking function (standard equipment) via block valve, a rotation lock can be mounted on the normally closed type (option). Position holding is possible during emergency stops.

Snag prevention

Fingers, etc., do not fit into the joint gaps.

In addition, the space remaining when the joints are closed keeps fingers from being snagged.

✳ European safety standard CE marking applies only to the PowerArm body.
✳ CE marking is conditionally available for the automatic operation pressure adjustment type. Please contact us.

Variation

Arm variations tailored to the workpiece

The arm can be selected from 3 types according to the workpiece load.

* When supplied at 0.5 MPa.

*Refer to the load capacity chart on page 2 for details.

Simple

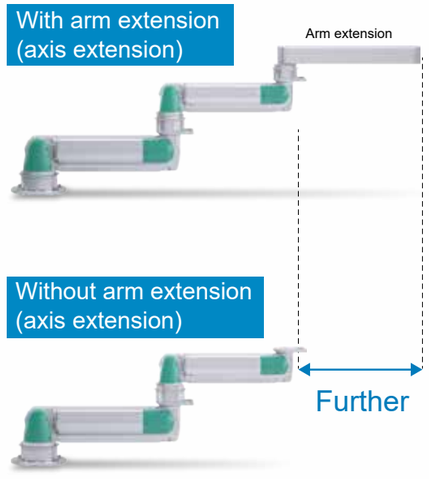
Simple assistive mechanism based on pneumatic pressure control

Uses a pneumatic pressure cylinder in part of the body. The simple mechanism can be easily handled.

Wide

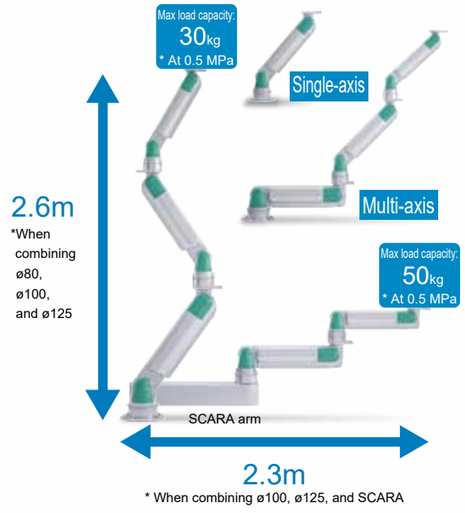
Achieving a wider range of movement

Extension arms (extension axes) can be used for multi-axis specification types to enable an even wider range of motion.



Wide movable range according to usage

Freely combine single-axis and multi-axis specifications to suit your applications and worksites.



* When combining ø100, ø125, and SCARA

Compact

Compact

Multi-axis specification enables fold away for more compact storage than the arm or belt types

Flexible

Customers can easily incorporate arms

With the simple structure, arm combinations can be flexibly changed by the customer.

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New Mechanical Lock specifications available to make work transport safer and easier

Safety

Secure structure with built-in locking function

With the lock mechanism inside, it can be used safely without fingers getting caught.

Vertical locking available for all strokes

The stop position can be locked at any position in the vertical movable range as long as the arm remains still.

Holds position when motor power (air, electric power) is down

A normally closed lock mechanism enables position holding in emergency stops.

Manual lock can be released

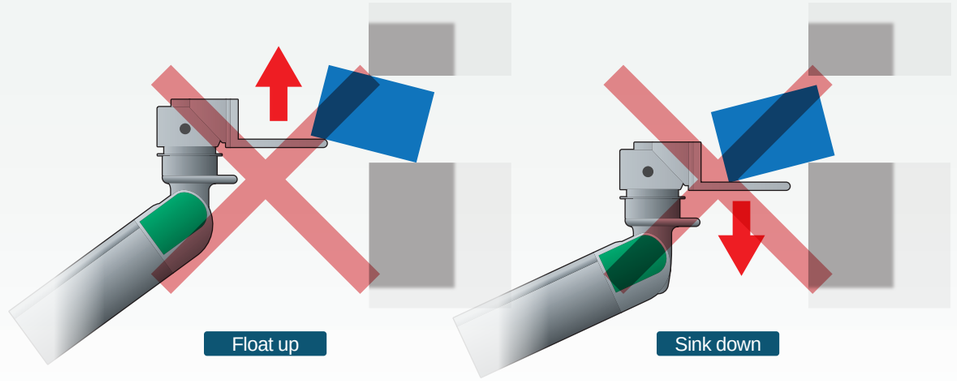
In an emergency, the lock can be manually released.

* Dedicated jig is used

Improved workability

Eliminates arm lifting and sinking

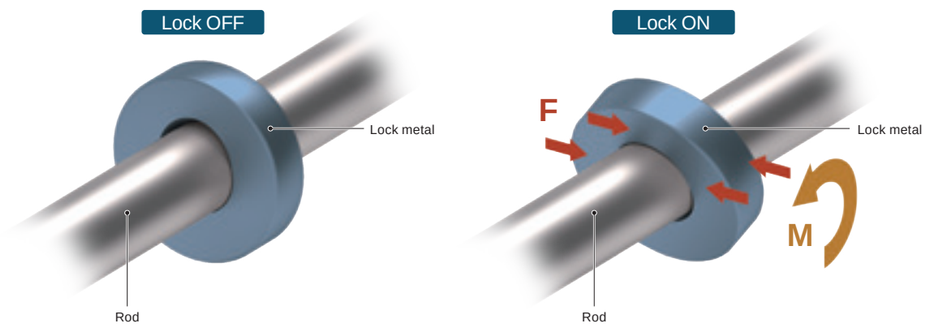
Eliminates floating and sinking of arms due to changes in the weight of workpieces, improving workability.



High reliabilty

Highly reliable circular slit system

Highly reliable locking mechanism with a proven track record in cylinders. Applying torque M to the lock metal generates axial force F, which holds the rod.



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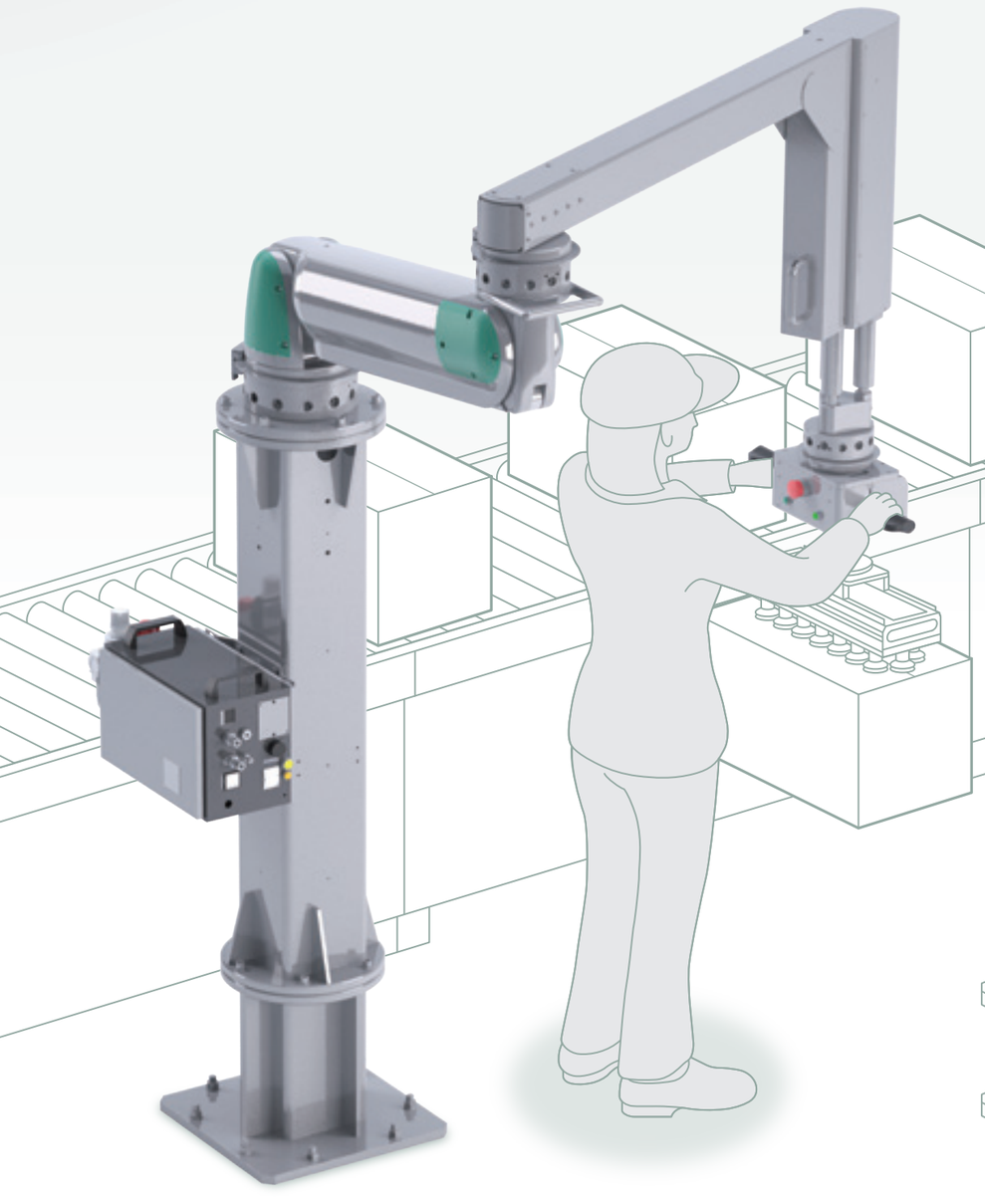
Palletizing specification that saves space and enables stacking and unloading of work.



Specialized

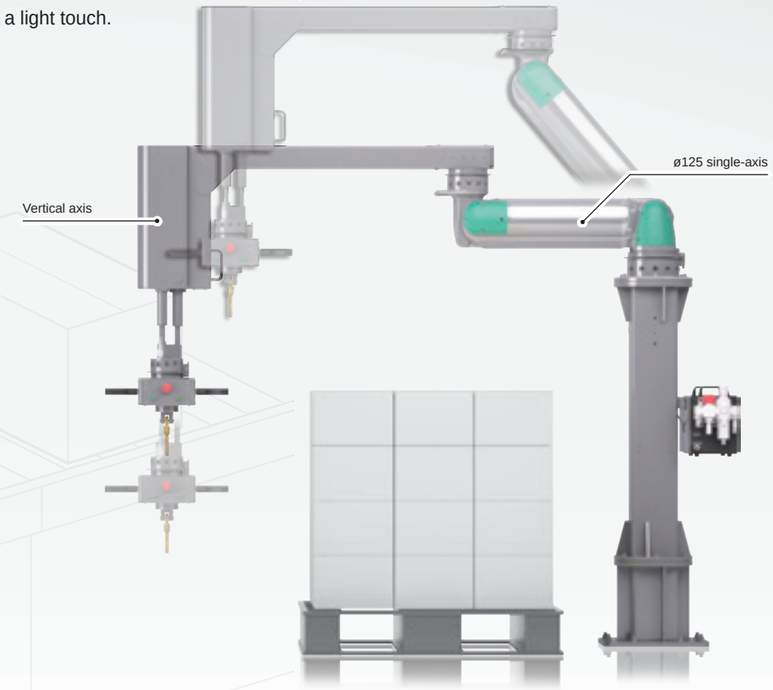
Focused on stacking and unloading tasks

A vertical axis is now equipped with this product to ensure easier use in the palletizing process while maintaining PowerArm signature features; a space-saving, compact design, and a light touch.

Wide

A wide moving range

The combination of the ø125 single-axis and vertical axis provides a wider moving range.



Compact

Space saving storage

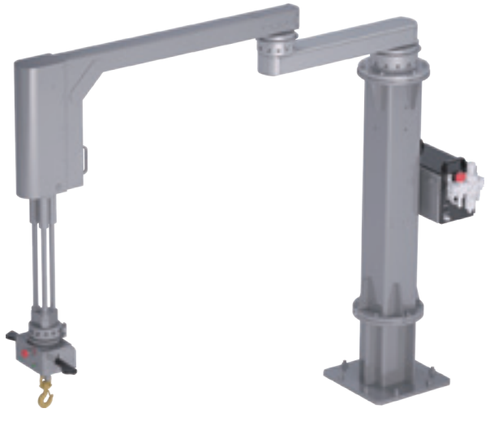
This product can be stored folded.

Stored condition

Variation

Simple combinations are possible

The vertical axis and SCARA arm can be combined and used if the product does not often make vertical strokes.



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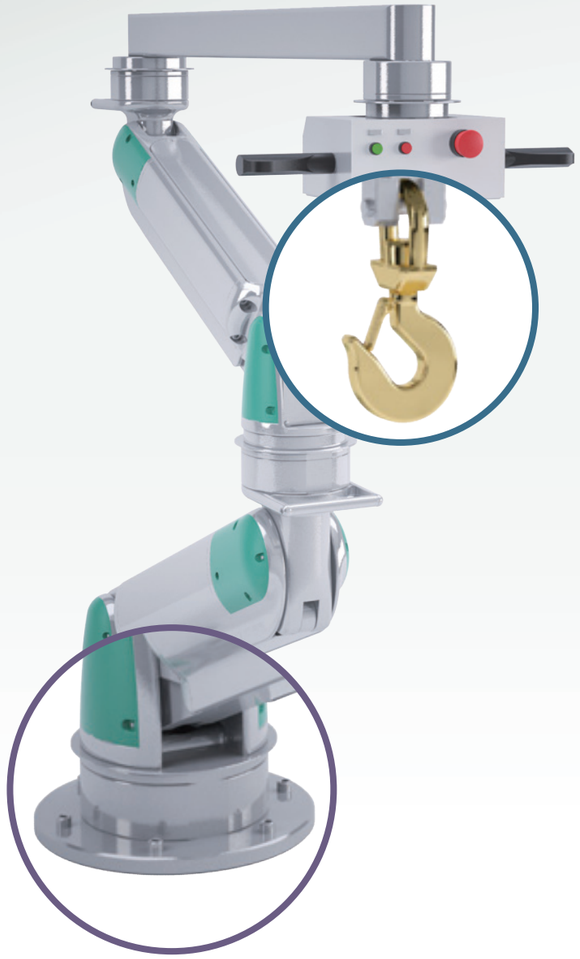
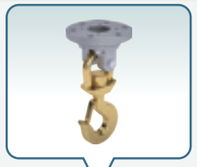
Compatible as an assistive system

In addition to the assistive components as single units, we address requests including attachments, controllers, and movable type dollies. Contact CKD for details.



Hook



Hanger

Vacuum

Materials bag

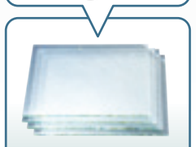


Plate-shaped workpieces, glass, etc.

Dolly / Anchor

Dolly with outriggers

Dolly without outriggers

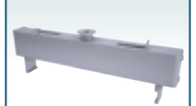
Pallet

Anchor fixed type

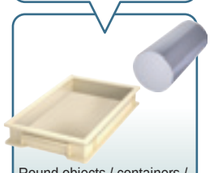
Clamp

Internal diameter clamp

External clamp



Roll material



Round objects / containers / food trays

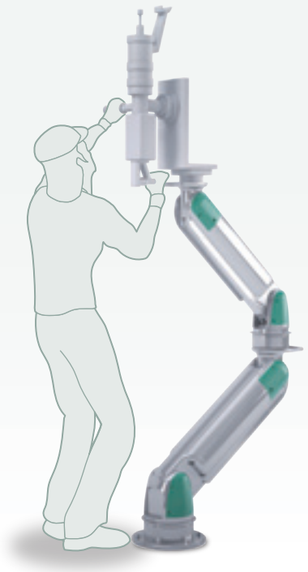
Controller design and manufacture

We propose ideal air circuits for various assistance mechanisms. Easy transport is possible with the ideal control method for your transported items.

Example of controller interior. Let us go over your needs with you.

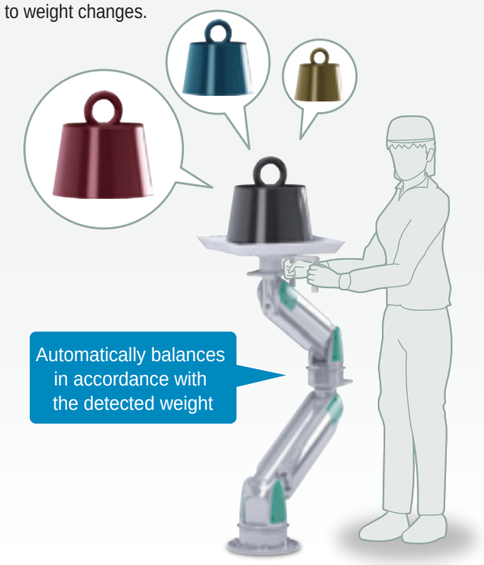
Operating pressure fixing control system

Suitable for assisting with the weight of jigs and tools. Control that maintains balance at a constant weight.



Automatic operating pressure regulating control system

Suitable for transport of various types of workpieces of differing weights. Control which detects the transported item weight at the tip, and automatically adjusts the operating pressure in response to weight changes.



Demonstrations

We perform demonstrations so that you can experience the actual PowerArm devices.
We also offer demonstrations at various locations. Contact CKD for details.

Compatible with FP Series for secure food manufacturing processes*

NSF H1 grease for foodstuffs is used

FP Food Process™

This logo represents CKD's stance to provide you with safe components for supporting your food manufacturing processes.

* Contact CKD for details.

Introduction to PowerArm online

We have prepared a PowerArm introductory site.

* Depending on your smartphone environment, it may not be displayed correctly.

PowerArm

PAW Series Standard specifications

● Bore size: ø80, ø100, ø125

Specifications

Item		PAW		
Bore size	mm	ø80	ø100	ø125
Working fluid		Compressed air		
Max. working pressure	MPa	0.7		
Min. working pressure	MPa	0.25 (when option L (with rotation lock) is selected: 0.35)		
Proof pressure	MPa	1.05		
Ambient temperature	°C	5 to 60		
Cushion		Rubber cushion		
Lubrication		Not available		
Load capacity (0.5MPa pressurized) *1	kg	32	53	83
Air consumption *2	ℓ/min (ANR)	8	14	25

*1: Load capacity varies with supply pressure. Refer to "Load capacity at pressure" on the next page.
Indicates the load capacity with the optional tip rotation mounted.
*2: Values are at air consumption 1 cycle/min. and working pressure 0.7MPa.

Movable range

• With single-axis

Model No.	Movable range Top and bottom (mm)
PAW-S-8 (ø80)	520
PAW-S-X (ø100)	580
PAW-S-Z (ø125)	650

• With multi-axis

Model No.	Movable range	
	Top and bottom (mm)	Horizontal (mm)
PAW-M-8S	520	1200
PAW-M-XS	580	1400
PAW-M-ZS	650	1600
PAW-M-8X	1100	1300
PAW-M-XZ	1230	1500
PAW-M-8XS	1100	2000
PAW-M-XZS	1230	2300
PAW-M-8XZ	1750	2100

Note:Horizontal movable range is the maximum value at the descending edge of the vertical movable range. See the external dimensions for more information on the movable range.

Weight

Model No.	Weight (kg)	Optional additional weight (kg)		
		L(Rotation lock mechanism)	R(Tip rotation mechanism)	LR
PAW-S-8	27	0.5	4	5
PAW-S-X	38	0.5	5.5	6.5
PAW-S-Z	71	0.5	7.5	8.5
PAW-M-8S	46	1	4	5.5
PAW-M-XS	77	1	5.5	7
PAW-M-ZS	123	1	7.5	9
PAW-M-8X	58	1	4	5.5
PAW-M-XZ	102	1	5.5	7
PAW-M-8XS	96	1.5	4	6
PAW-M-XZS	154	1.5	5.5	7.5
PAW-M-8XZ	121	1.5	4	6

How to order

PAW - **M** - **8X** - **R**

- PAW: Model No.
- M: ❶ Number of sections
- 8X: ❷ Combination contents
- R: ❸ Option

❷ Combination contents

Code		Description	❶ Number of sections: Single axis S	❶ Number of sections: multi-axis M
8	Single axis	ø80	●	
X	Single axis	ø100	●	
Z	Single axis	ø125	●	
8S	Multi-axis	ø80+SCARA arm		●
XS	Multi-axis	ø100+SCARA arm		●
ZS	Multi-axis	ø125+SCARA arm		●
8X	Multi-axis	ø80+ø100		●
XZ	Multi-axis	ø100+ø125		●
8XS	Multi-axis	ø80+ø100+SCARA arm		●
XZS	Multi-axis	ø100+ø125+SCARA arm		●
8XZ	Multi-axis	ø80+ø100+ø125		●

❸ Option

	Code	Description	❶ Number of sections: Single axis S	❶ Number of sections: multi-axis M
*1	L	Rotation lock mechanism*	●	●
	R	Tip rotation mechanism	●	●
	C	Bending direction (Refer to the figure at left)		●
	U	Piping leadout direction (Refer to the figure at left)	●	●

*1: Mechanism to retain force in the rotation direction.
It is not designed to stop the dynamic rotational force.

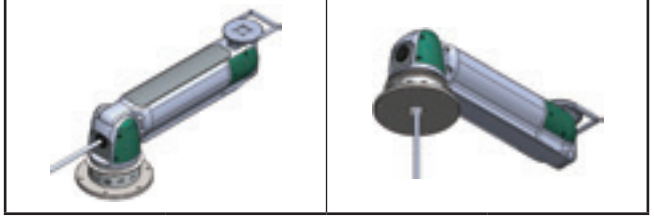
❸Option: Bending direction

Blank		C	
For 2-axis configuration	For 3-axis configuration	For 2-axis configuration	For 3-axis configuration

* C is not available for single axis (PAW-S).

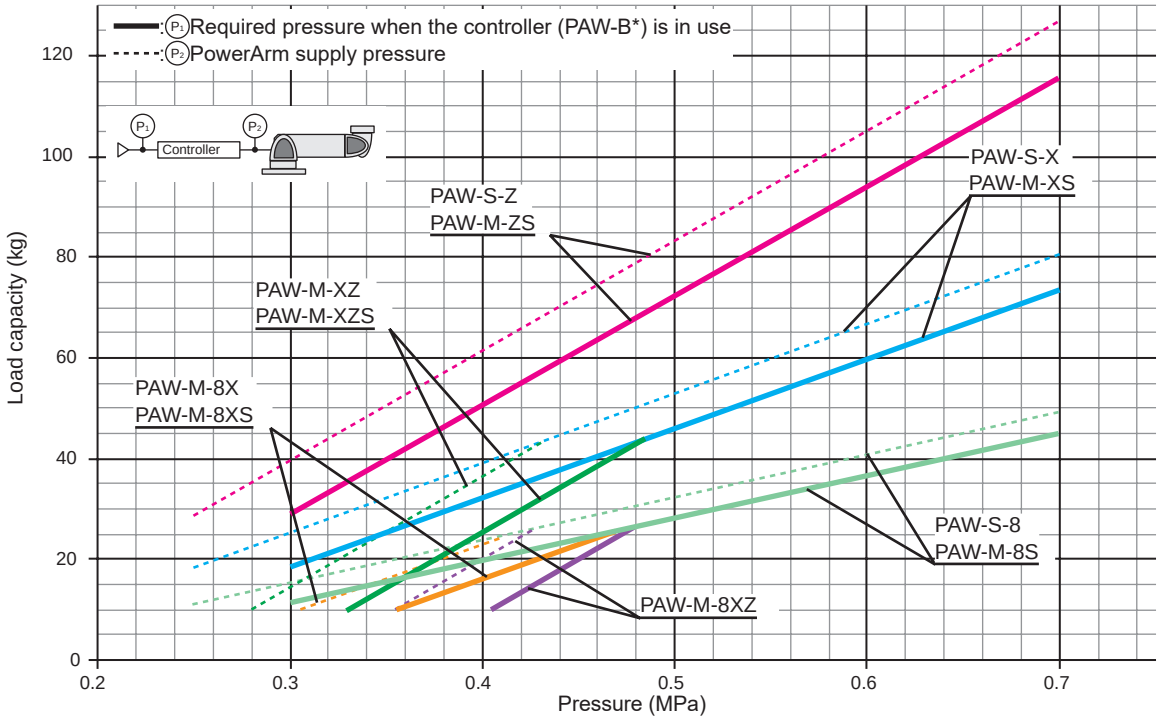
❸Option: Piping leadout direction

Blank	U



* Piping holes at the mounting surface center are required for U.

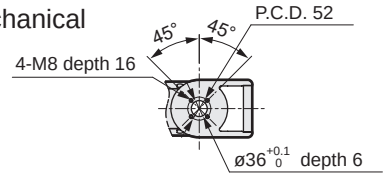
Load capacity with respect to pressure



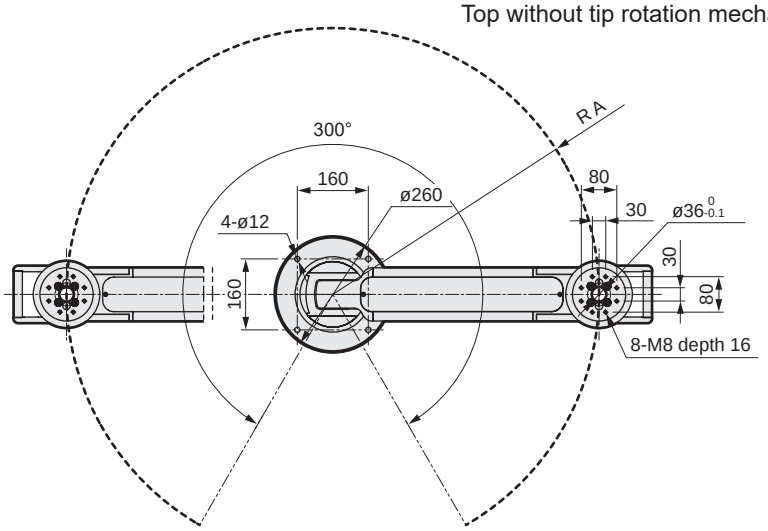
*1: Indicates the load capacity with the optional tip rotation mechanism mounted.
*2: Pressure supplied to the controller should be increased, depending on the operating frequency and speed.
*3: Attachment weight is not included.
*4: While the load capacity has properties such that it alters slightly according to the arm rise angle, this graph shows the lower limit values.

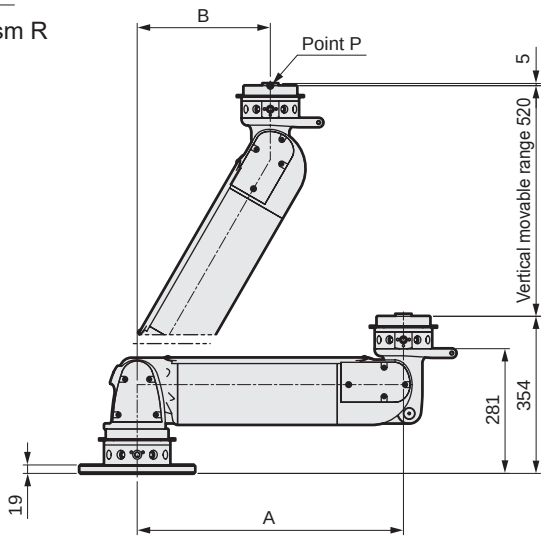
Dimensions (single-axis)

- PAW-S-8-R (ø80 single-axis)
- PAW-SB-8-R (ø80 single axis mechanical lock specifications)



Top without tip rotation mechanism R

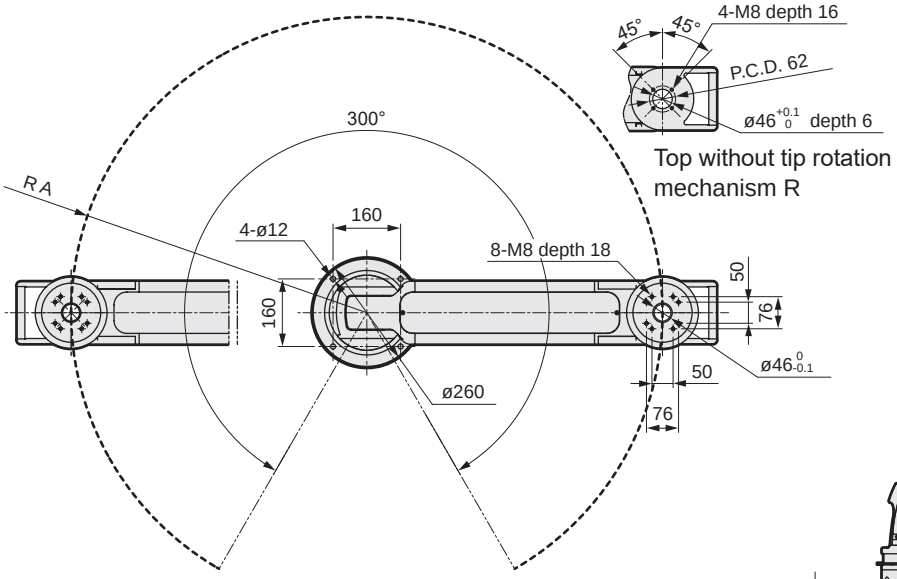




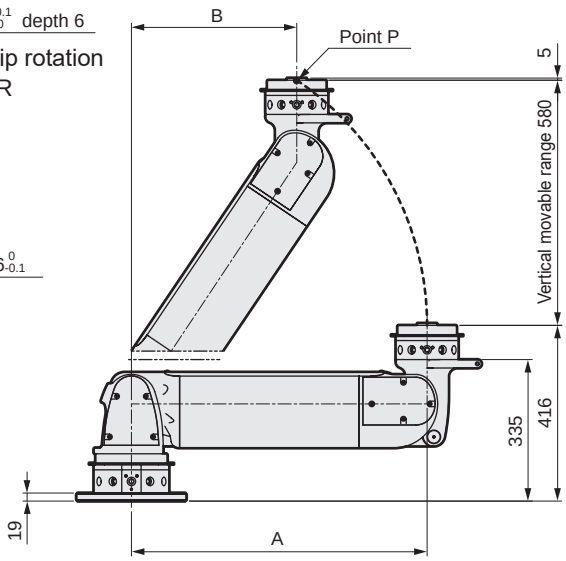
Shows dimensions with tip rotation mechanism R. Plane view shows movable view at the descending edge. Structurally, the movable range changes according to the rising height.

Code / Model No.	A	B
PAW-S-8-R	600	300
PAW-SB-8-R	650	390

- PAW-S-X-R (ø100 single axis)
- PAW-SB-X-R (ø100 single axis mechanical lock specifications)



Top without tip rotation mechanism R



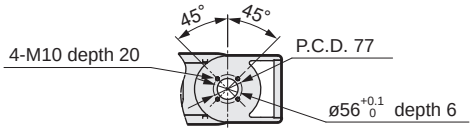
Shows dimensions with tip rotation mechanism R. Plane view shows movable view at the descending edge. Structurally, the movable range changes according to the rising height.

Code / Model No.	A	B
For PAW-S-X-R	700	392
PAW-SB-X-R	750	475

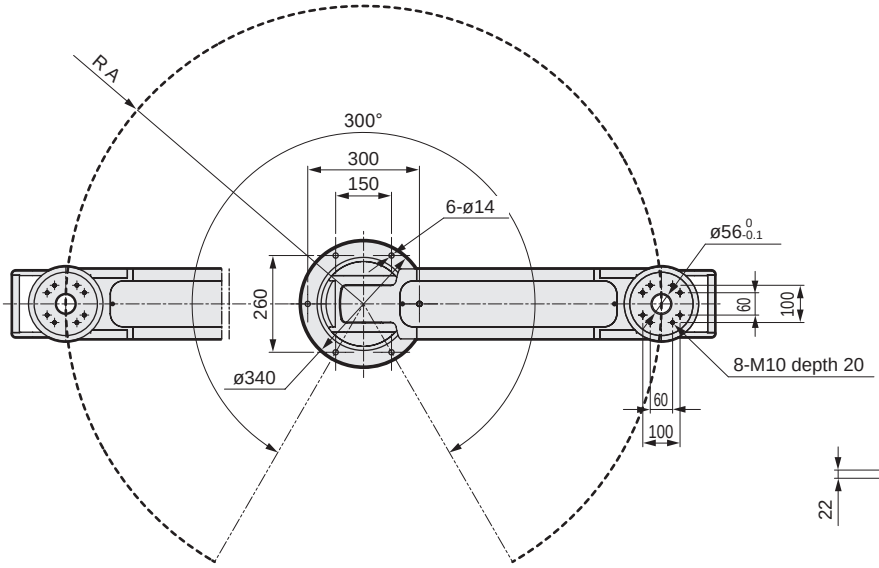
* Refer to page 15 for the optional dimensions of the tip rotation mechanism (R) option.

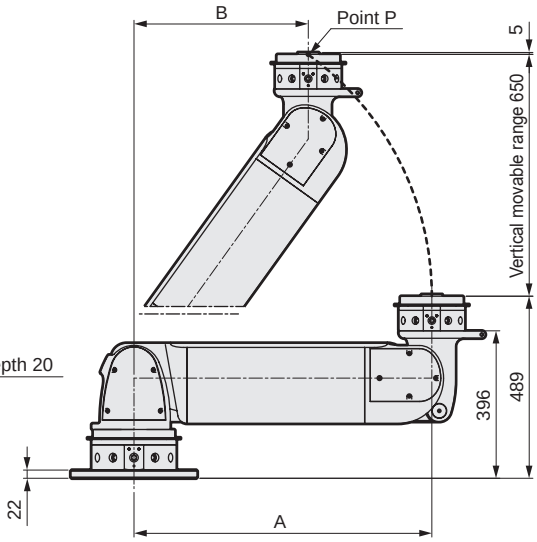
Dimensions (single-axis)

- PAW-S-Z-R (ø125 single axis)
- PAW-SB-Z-R (ø125 single axis mechanical lock specifications)



Top without tip rotation mechanism R





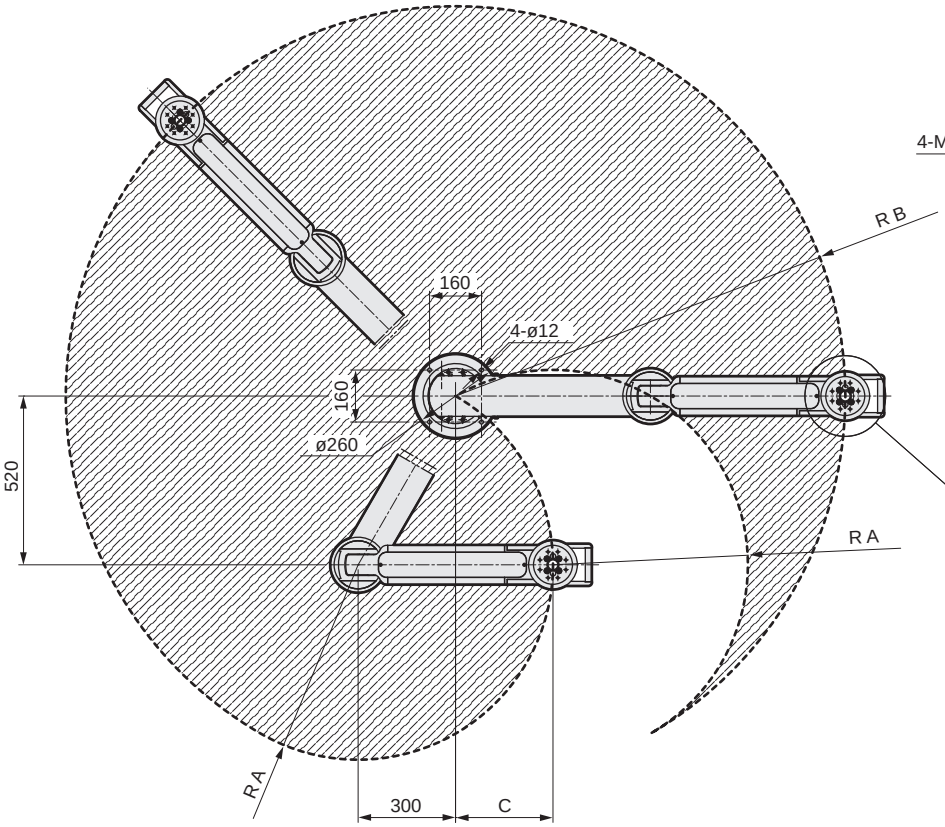
Shows dimensions with tip rotation mechanism R. Plane view shows movable view at the descending edge. Structurally, the movable range changes according to the rising height.

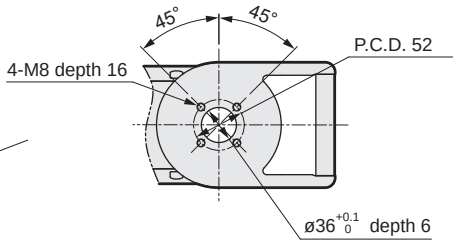
Code / Model No.	A	B
PAW-S-Z-R	800	466
PAW-SB-Z-R	850	548

* Refer to page 15 for the optional dimensions of the tip rotation mechanism (R) option.

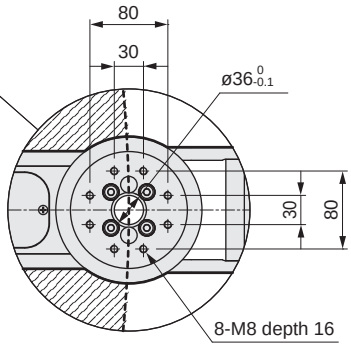
Dimensions (multi-axis)

- PAW-M-8S-R (upper section ø80 + lower section SCARA arm)
- PAW-MB-8S-R (upper section ø80 + lower section SCARA arm mechanical lock specifications)

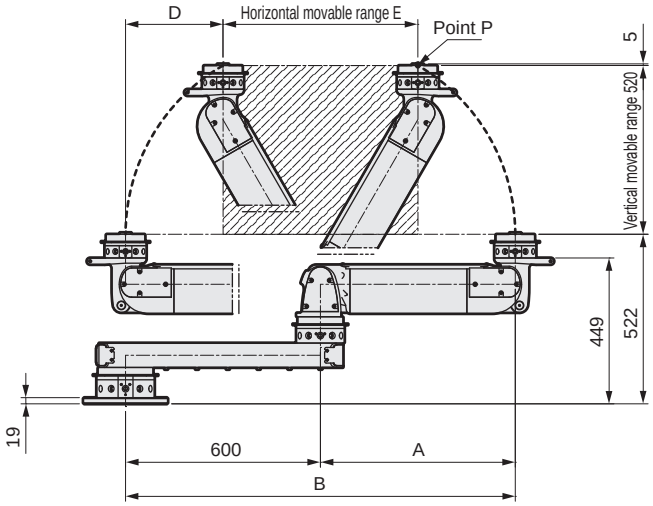




Top without tip rotation mechanism R



Enlarged view



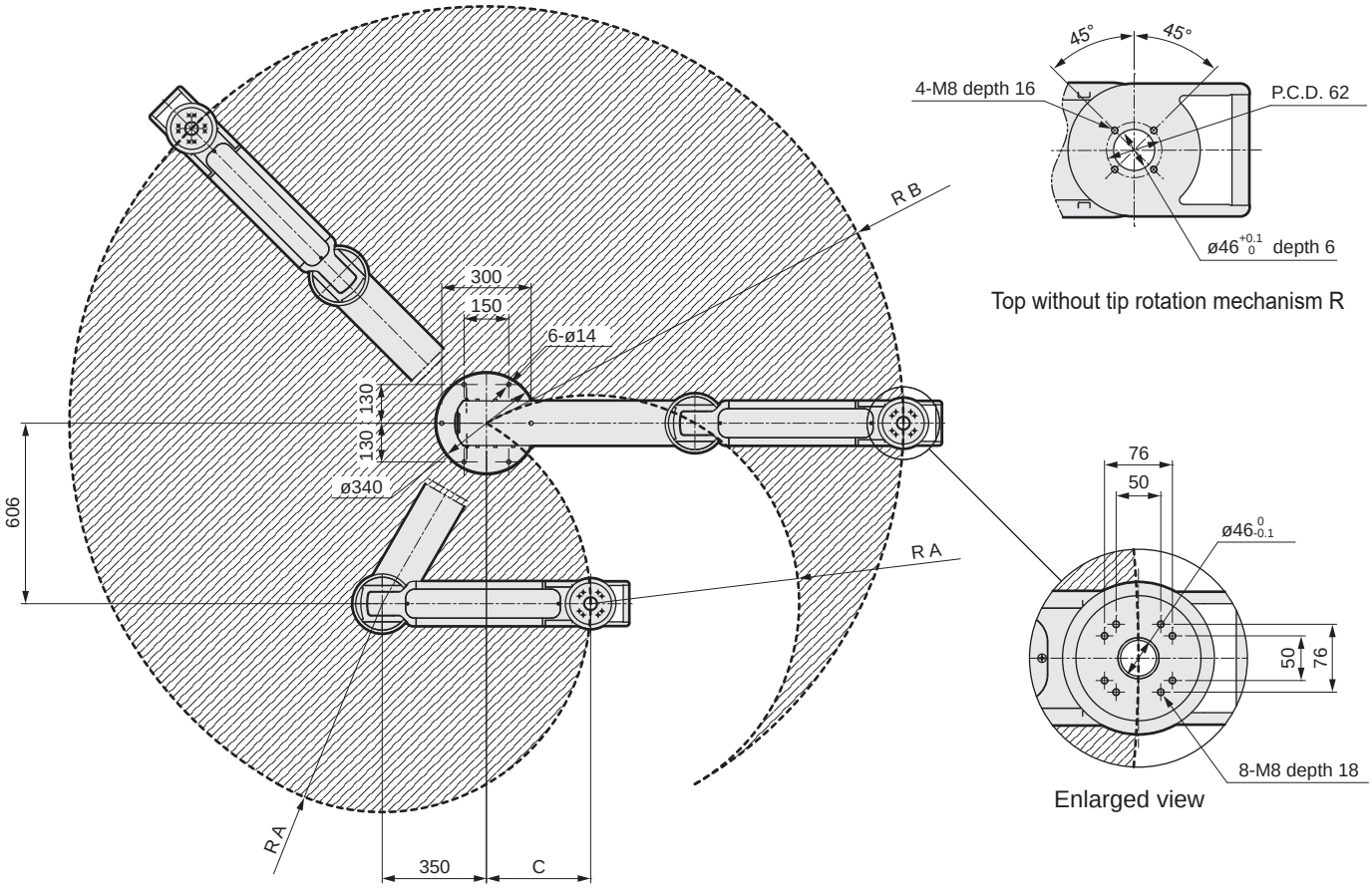
Code / Model No.	A	B	C	D	E
PAW-M-8S-R	600	1200	300	300	600
PAW-MB-8S-R	650	1250	350	210	780

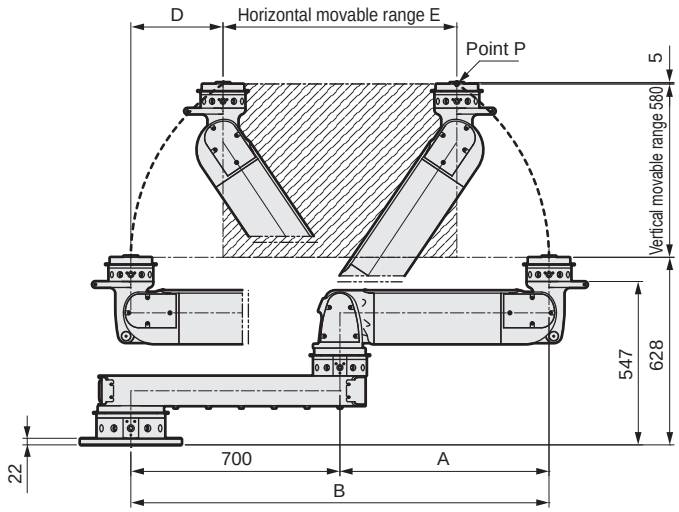
Shows dimensions with tip rotation mechanism R.Plane view shows movable view at the point P descending edge. Structurally, the movable range changes according to the point P rising height.

* Refer to page 15 for the optional dimensions of the tip rotation mechanism (R) option.
* With the bending direction (C) option, the operating range is left-right reversed.

Dimensions (multi-axis)

- PAW-M-XS-R (upper section ø100 + lower section SCARA arm)
- PAW-MB-XS-R (upper section ø100 + lower section SCARA arm mechanical lock specifications)





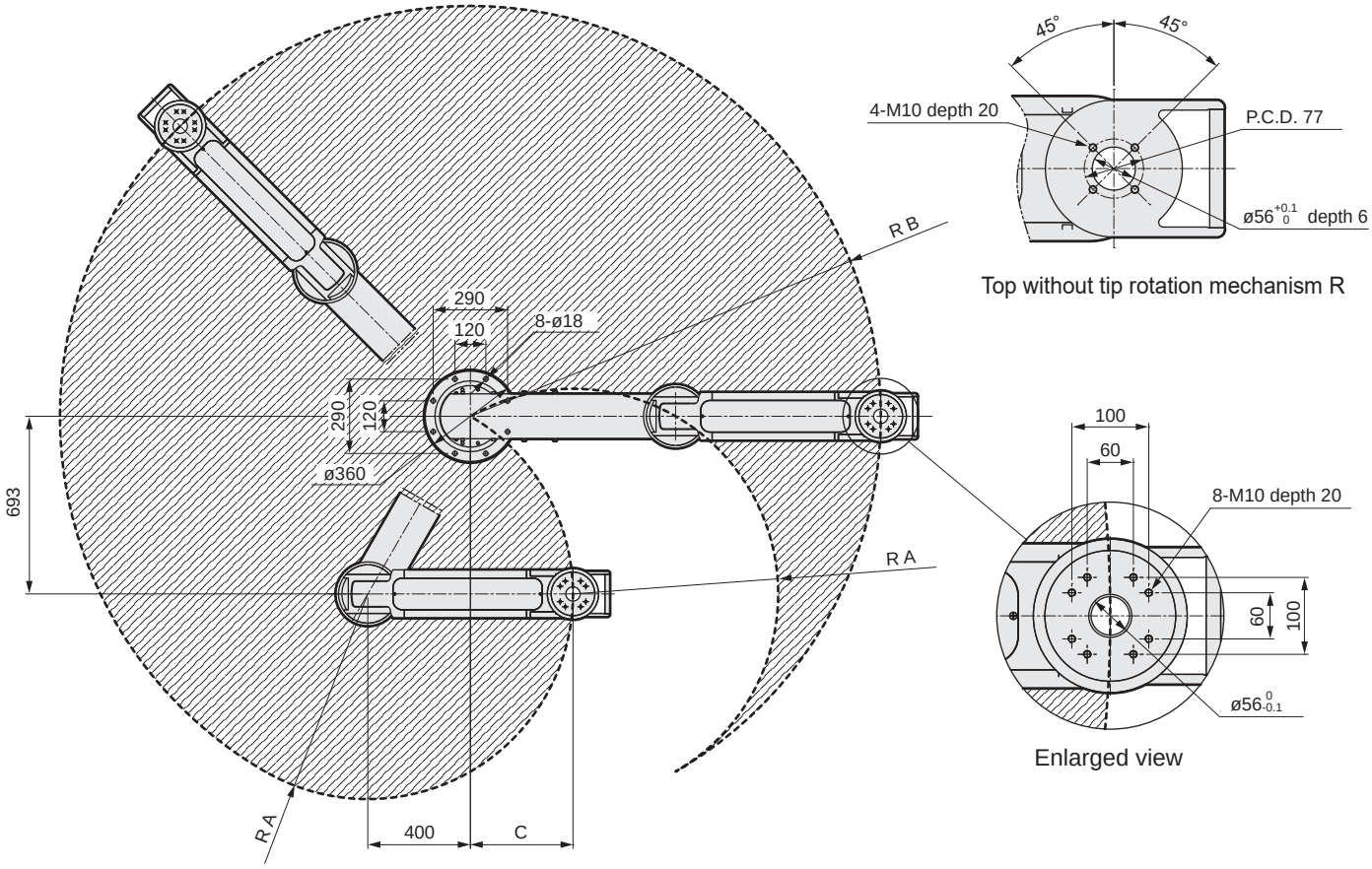
Shows dimensions with tip rotation mechanism R. Plane view shows movable view at the point P descending edge. Structurally, the movable range changes according to the point P rising height.

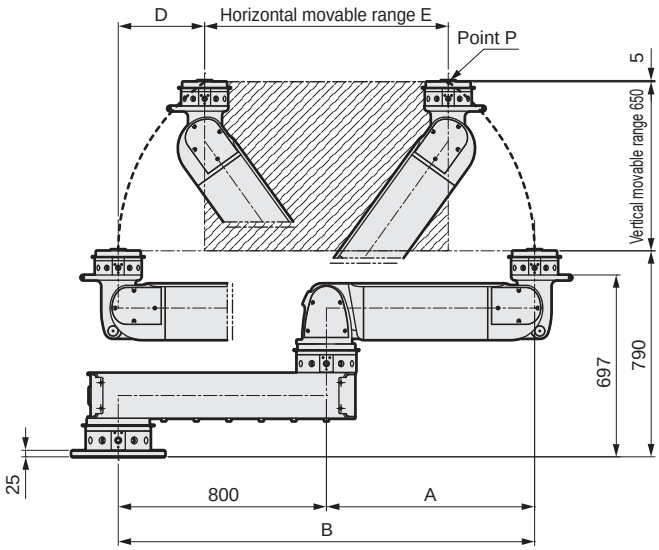
Code / Model No.	A	B	C	D	E
PAW-M-XS-R	700	1400	350	308	784
PAW-MB-XS-R	750	1450	400	225	950

* Refer to page 15 for the optional dimensions of the tip rotation mechanism (R) option.
* With the bending direction (C) option, the operating range is left-right reversed.

Dimensions (multi-axis)

- PAW-M-ZS-R (upper section ø125 + lower section SCARA arm)
- PAW-MB-ZS-R (upper section ø125 + lower section SCARA arm mechanical lock specifications)





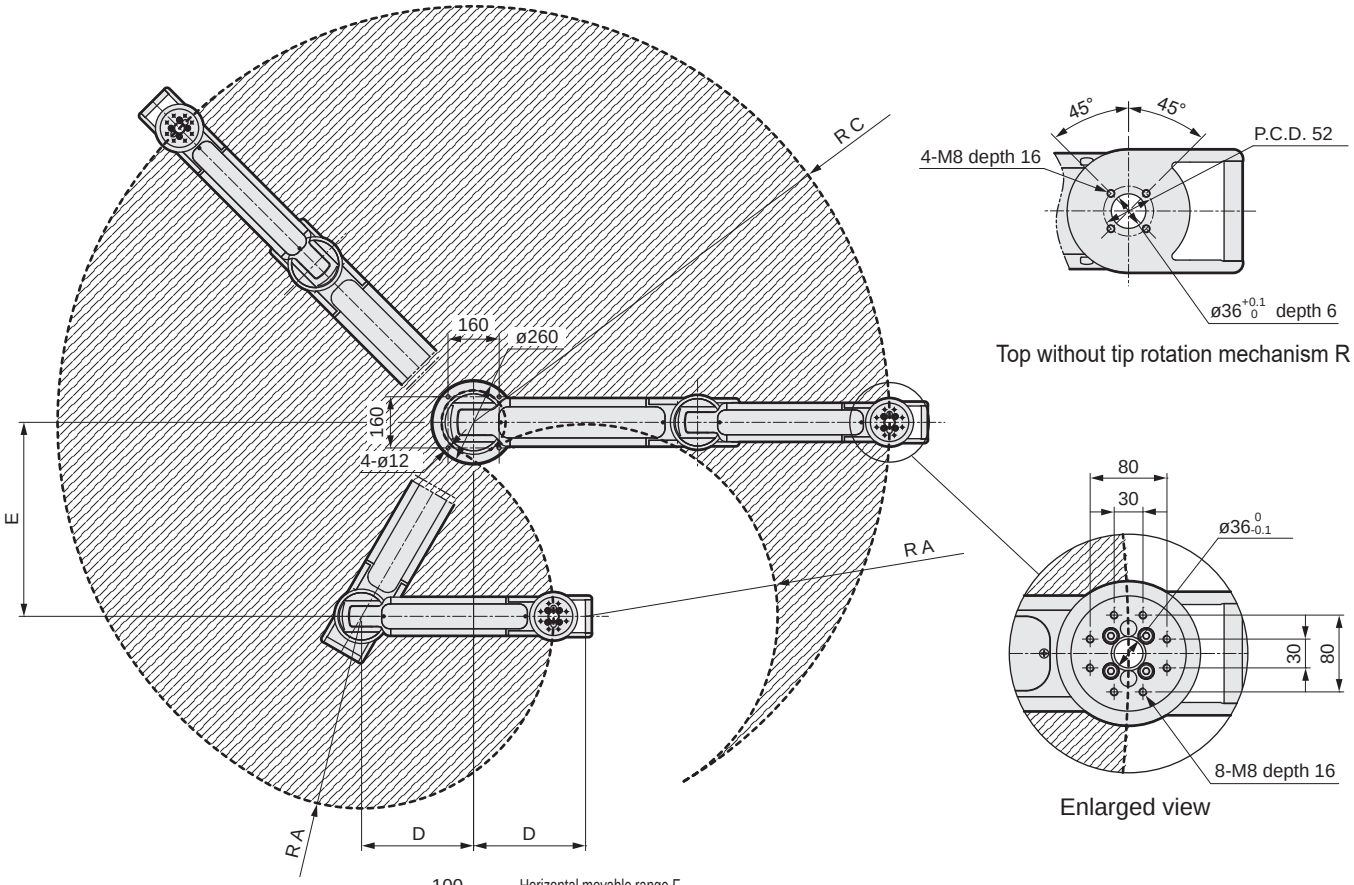
Code / Model No.	A	B	C	D	E
PAW-M-ZS-R	800	1600	400	334	932
PAW-MB-ZS-R	850	1650	450	252	1096

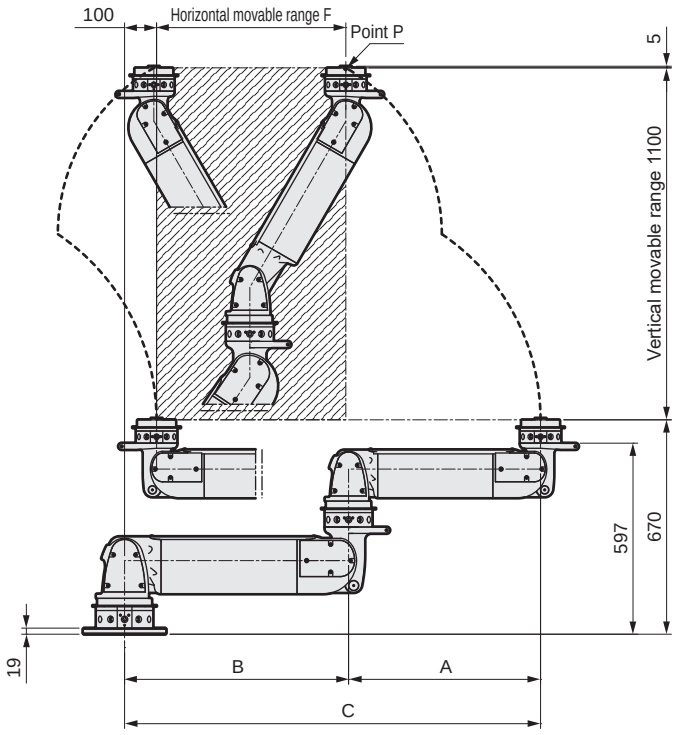
Shows dimensions with tip rotation mechanism R.Plane view shows movable view at the point P descending edge. Structurally, the movable range changes according to the point P rising height.

* Refer to page 15 for the optional dimensions of the tip rotation mechanism (R) option.
* With the bending direction (C) option, the operating range is left-right reversed.

Dimensions (multi-axis)

- PAW-M-8X-R (upper section ø80 + lower section ø100)
- PAW-MB-8X-R (upper section ø80 + lower section ø100 mechanical lock specifications)





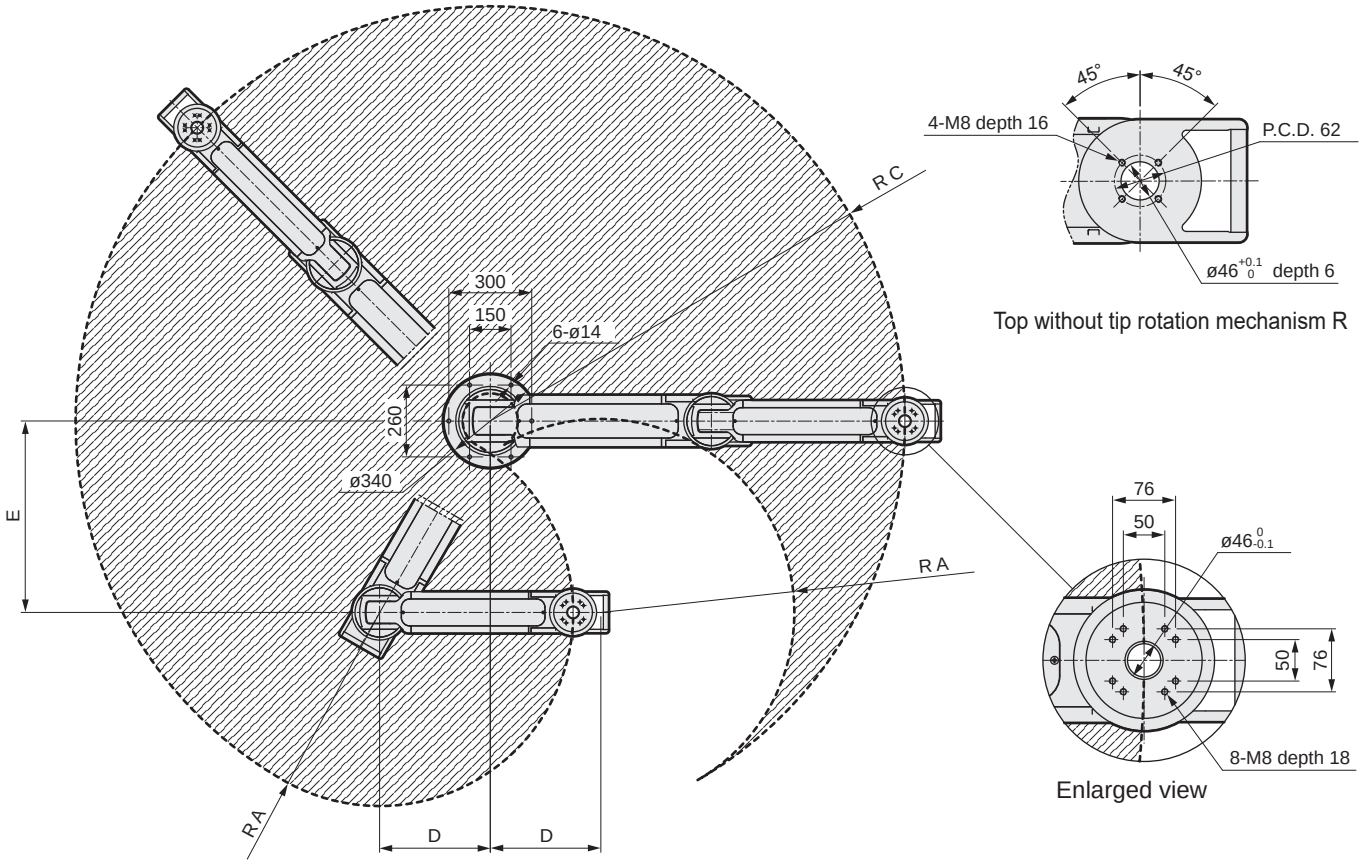
Shows dimensions with tip rotation mechanism R.Plane view shows movable view at the point P descending edge. Structurally, the movable range changes according to the point P rising height.

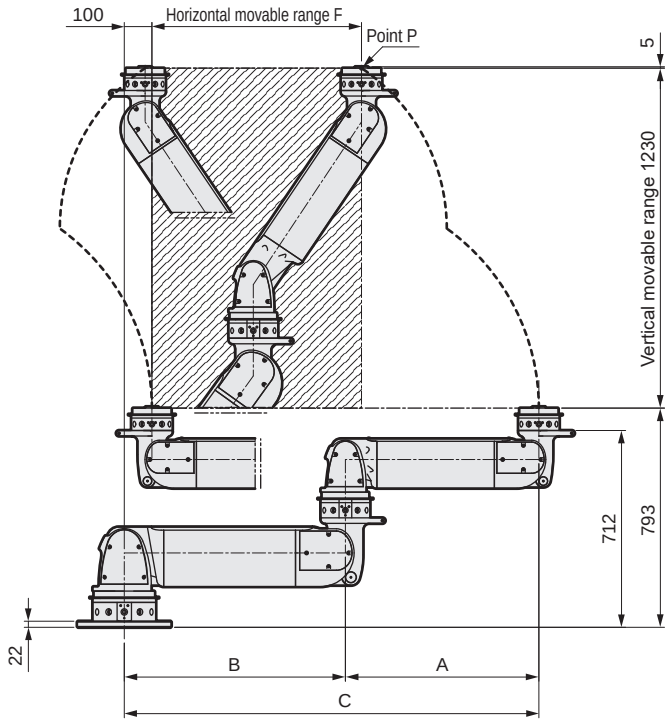
Code / Model No.	A	B	C	D	E	F
PAW-M-8X-R	600	700	1300	350	606	592
PAW-MB-8X-R	650	750	1400	375	650	765

* Refer to page 15 for the optional dimensions of the tip rotation mechanism (R) option.
* With the bending direction (C) option, the operating range is left-right reversed.

Dimensions (multi-axis)

- PAW-M-XZ-R (upper section ø100 + lower section ø125)
- PAW-MB-XZ-R (upper section ø100 + lower section ø125 mechanical lock specifications)





Shows dimensions with tip rotation mechanism R.Plane view shows movable view at the point P descending edge. Structurally, the movable range changes according to the point P rising height.

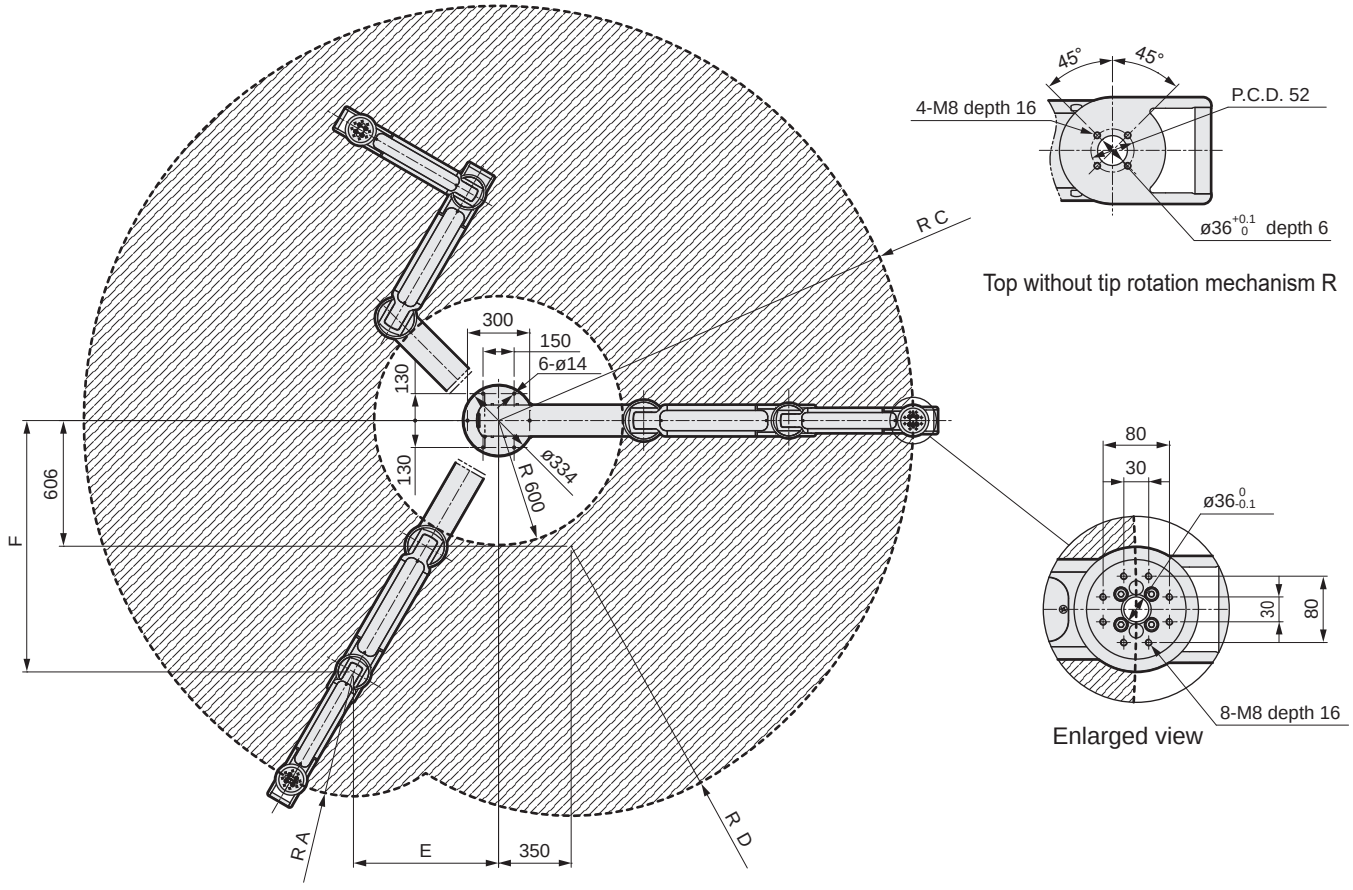
Code / Model No.	A	B	C	D	E	F
PAW-M-XZ-R	700	800	1500	400	693	758
PAW-MB-XZ-R	750	850	1600	425	736	923

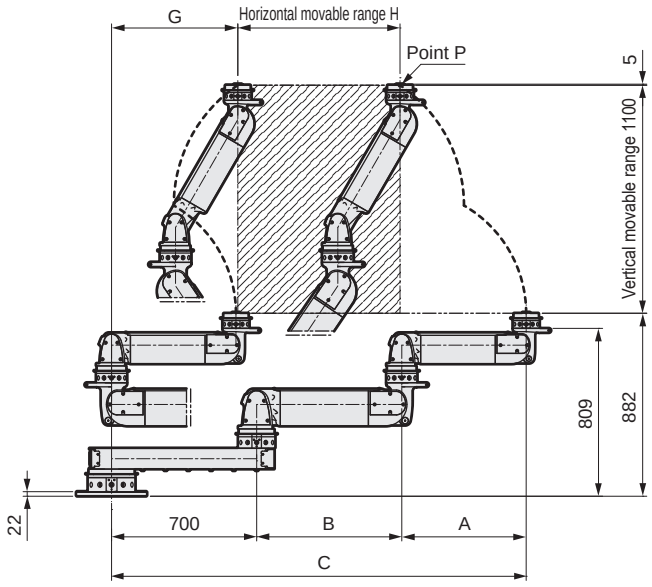
* Refer to page 15 for the optional dimensions of the tip rotation mechanism (R) option.

* With the bending direction (C) option, the operating range is left-right reversed.

Dimensions (multi-axis)

- PAW-M-8XS-R (upper section ø80 + middle section ø100 + lower section SCARA arm)
- PAW-MB-8XS-R (upper section ø80 + middle section ø100 + lower section SCARA arm mechanical lock specifications)





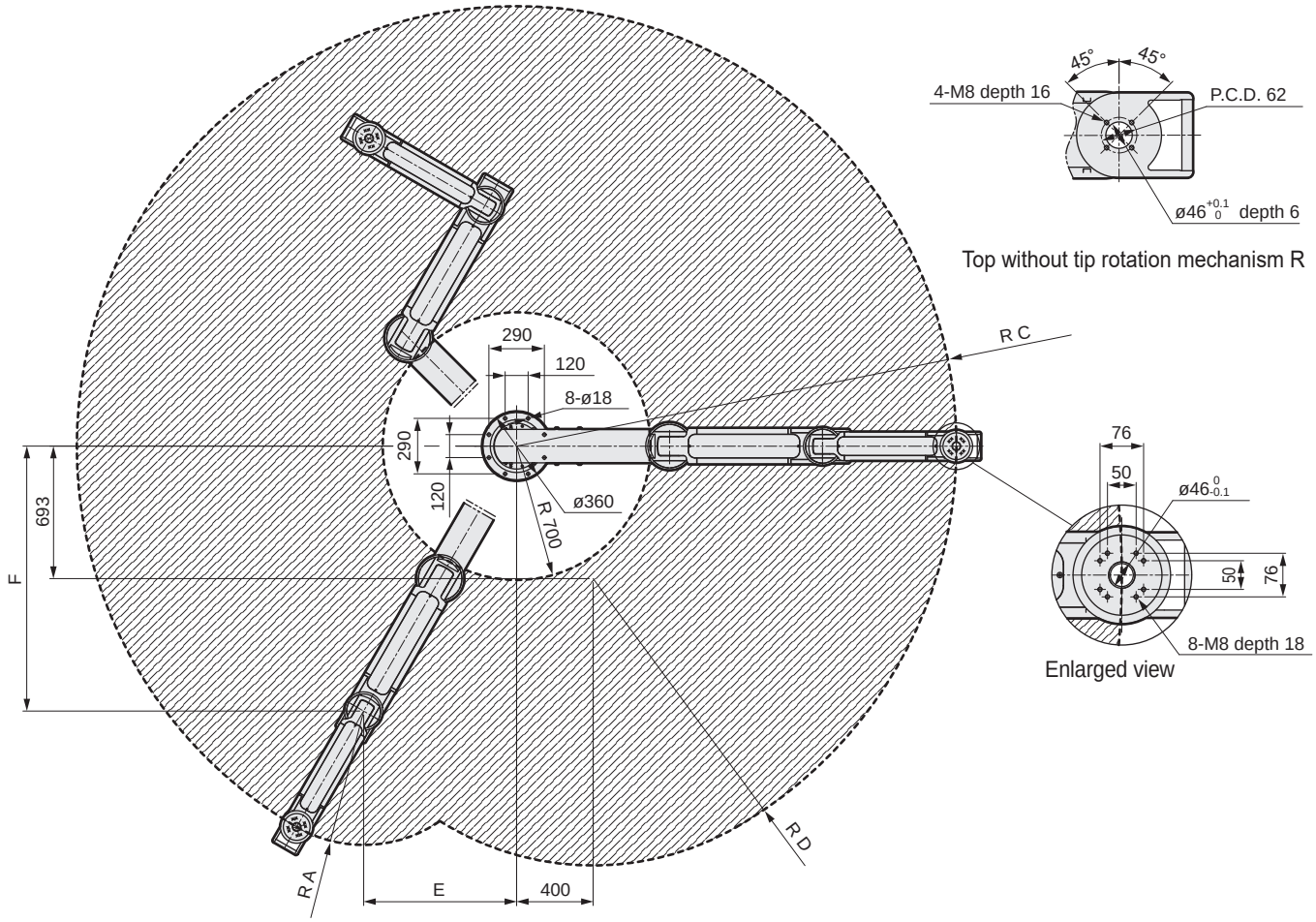
Shows dimensions with tip rotation mechanism R.Plane view shows movable view at the point P descending edge. Structurally, the movable range changes according to the point P rising height.

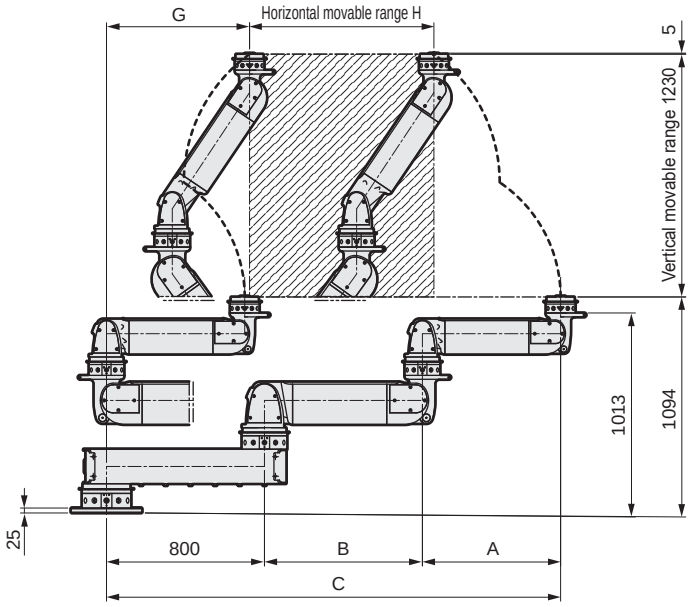
Code / Model No.	A	B	C	D	E	F	G	H
PAW-M-8XS-R	600	700	2000	1300	700	1212	608	784
PAW-MB-8XS-R	650	750	2100	1400	725	1256	614	951

* Refer to page 15 for the optional dimensions of the tip rotation mechanism (R) option.
* With the bending direction (C) option, the operating range is left-right reversed.

Dimensions (multi-axis)

- PAW-M-XZS-R (upper section ø100 + middle section ø125 + lower section SCARA arm)
- PAW-MB-XZS-R (upper section ø100 + middle section ø125 + lower section SCARA arm mechanical lock specifications)





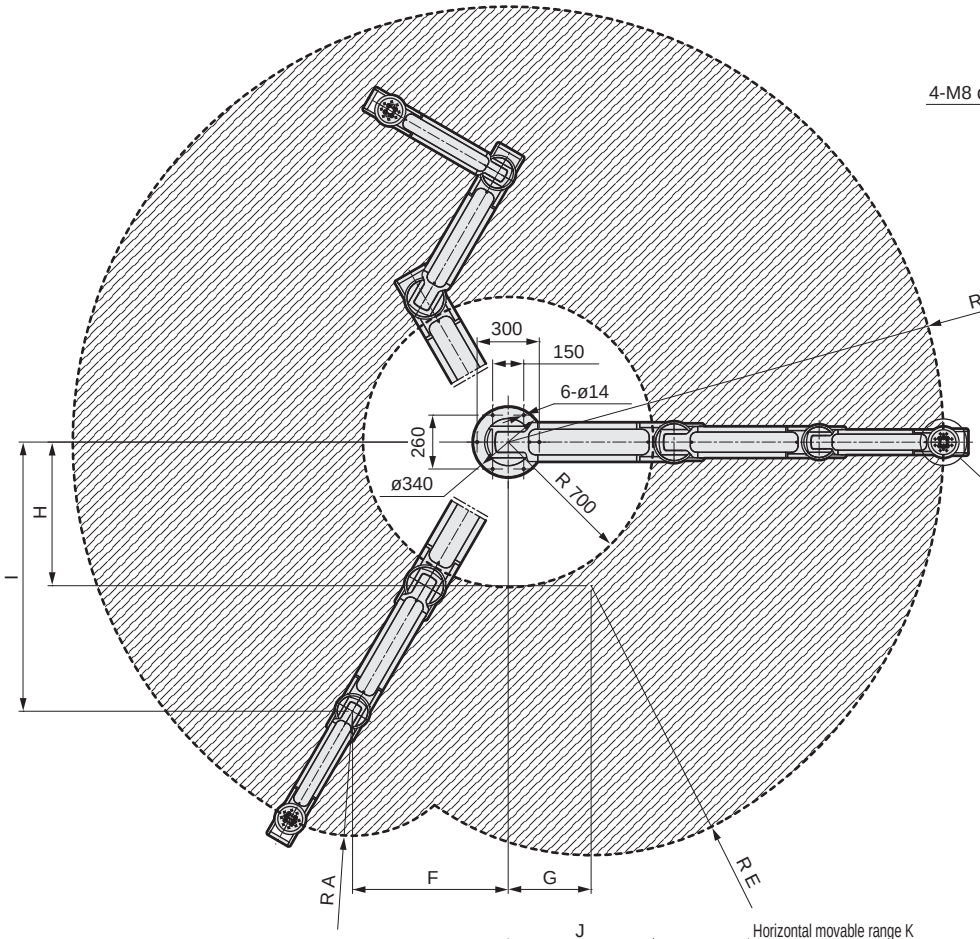
Code / Model No.	A	B	C	D	E	F	G	H
PAW-M-XZS-R	700	800	2300	1500	800	1386	726	932
PAW-MB-XZS-R	750	850	2400	1600	825	1429	727	1096

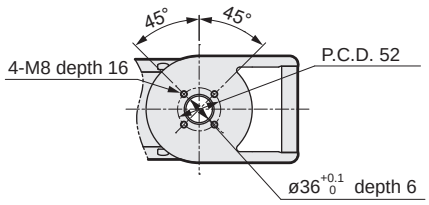
Shows dimensions with tip rotation mechanism R.Plane view shows movable view at the point P descending edge. Structurally, the movable range changes according to the point P rising height.

* Refer to page 15 for the optional dimensions of the tip rotation mechanism (R) option.
* With the bending direction (C) option, the operating range is left-right reversed.

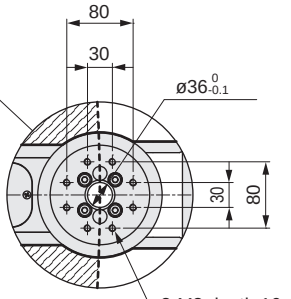
Dimensions (multi-axis)

- PAW-M-8XZ-R (upper section ø80 + middle section ø100 + lower section ø125)
- PAW-MB-8XZ-R (upper section ø80 + middle section ø100 + lower section ø125 mechanical lock specifications)

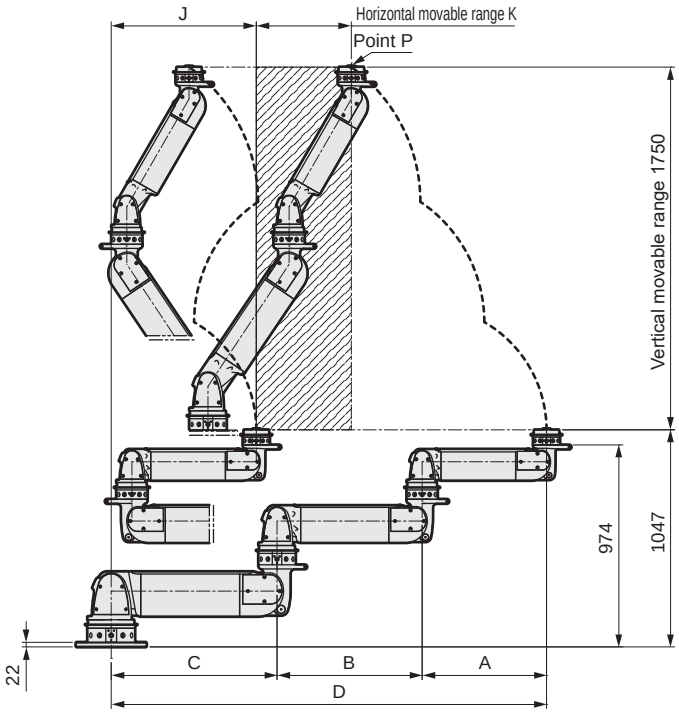




Top without tip rotation mechanism R



Enlarged view



Shows dimensions with tip rotation mechanism R. Plane view shows movable view at the point P descending edge. Structurally, the movable range changes according to the point P rising height.

Code / Model No.	A	B	C	D	E	F	G	H	I	J	K
PAW-M-8XZ-R	600	700	800	2100	1300	750	400	693	1299	700	458
PAW-MB-8XZ-R	650	750	850	2250	1400	774	425	736	1386	750	663

* Refer to page 15 for the optional dimensions of the tip rotation mechanism (R) option.
* With the bending direction (C) option, the operating range is left-right reversed.

PowerArm

PAW-*B Series Mechanical lock specifications

● Bore size: ø80/ø100/ø125

Specifications

Item		With PAW mechanical lock		
Bore size	mm	ø80	ø100	ø125
Working fluid		Compressed air		
Max. working pressure	MPa	0.7		
Min. working pressure	MPa	0.25 (when option L (with rotation lock) is selected: 0.35)		
Lock release pressure	MPa	0.5		
Proof pressure	MPa	1.05		
Ambient temperature	°C	5 to 60		
Cushion		Rubber cushion		
Lubrication		Not available		
Load capacity (0.5MPa pressurized) *1	kg	27	45	71
Air consumption *2	ℓ/min (ANR)	8	14	25
Noise level *3	dB (A)	Less than 85		

*1: Load capacity varies with supply pressure. Refer to "Load capacity at pressure" on the next page. Indicates the load capacity with the optional tip rotation mounted.
*2: Values are at air consumption 1 cycle/min. and working pressure 0.7MPa.
*3: Sound is generated when the mechanical lock is released. The noise level is the equivalent noise level at lock release operation 2 times/min and working pressures 0.7MPa at 1.0m.

Movable range

• With single-axis

Model No.	Movable range Top and bottom (mm)
PAW-SB-8 (ø80)	520
PAW-SB-X (ø100)	580
PAW-SB-Z (ø125)	650

• With multi-axis

Model No.	Movable range	
	Top and bottom (mm)	Horizontal (mm)
PAW-MB-8S	520	1250
PAW-MB-XS	580	1450
PAW-MB-ZS	650	1650
PAW-MB-8X	1100	1400
PAW-MB-XZ	1230	1600
PAW-MB-8XS	1100	2100
PAW-MB-XZS	1230	2400
PAW-MB-8XZ	1750	2250

Note:Horizontal movable range is the maximum value at the descending edge of the vertical movable range.
See the external dimensions for more information on the movable range.

Weight

Model No.	Weight (kg)	Optional additional weight (kg)		
		L(Rotation lock mechanism)	R(Tip rotation mechanism)	LR
PAW-SB-8	28	0.5	4	5
PAW-SB-X	42	0.5	5.5	6.5
PAW-SB-Z	76	0.5	7.5	8.5
PAW-MB-8S	47	1	4	5.5
PAW-MB-XS	81	1	5.5	7
PAW-MB-ZS	128	1	7.5	9
PAW-MB-8X	62	1	4	5.5
PAW-MB-XZ	110	1	5.5	7
PAW-MB-8XS	101	1.5	4	6
PAW-MB-XZS	162	1.5	5.5	7.5
PAW-MB-8XZ	130	1.5	4	6

Dimensions

Refer to pages 3 to 12 and 15.

How to order

PAW - **MB** - **8X** - **R**

- PAW: Model No.
- MB: ❶ Number of sections
- 8X: ❷ Combination contents
- R: ❸ Option

❷ Combination contents

Code		Description	❶ Number of sections: Single axis SB	❶ Number of sections: Multi-axis MB
8	Single axis	ø80	●	
X	Single axis	ø100	●	
Z	Single axis	ø125	●	
8S	Multi-axis	ø80 + SCARA arm		●
XS	Multi-axis	ø100 + SCARA arm		●
ZS	Multi-axis	ø125 + SCARA arm		●
8X	Multi-axis	ø80+ø100		●
XZ	Multi-axis	ø100+ø125		●
8XS	Multi-axis	ø80 + ø100 + SCARA arm		●
XZS	Multi-axis	ø100 + ø125 + SCARA arm		●
8XZ	Multi-axis	ø80+ø100+ø125		●

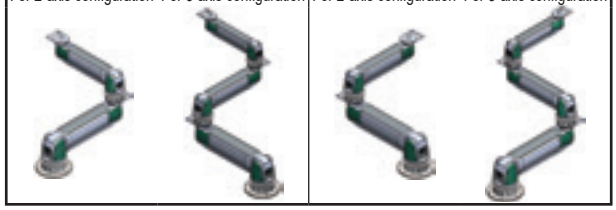
❸ Option

	Code	Description	❶ Number of sections: Single axis SB	❶ Number of sections: Multi-axis MB
*1	L	Rotation lock mechanism*	●	●
	R	Tip rotation mechanism	●	●
	C	Bending direction (Refer to the figure at left)		●
	U	Piping leadout direction (Refer to the figure at left)	●	●

*1:Mechanism to retain force in the rotation direction. It is not designed to stop the dynamic rotational force.

❸Option: Bending direction

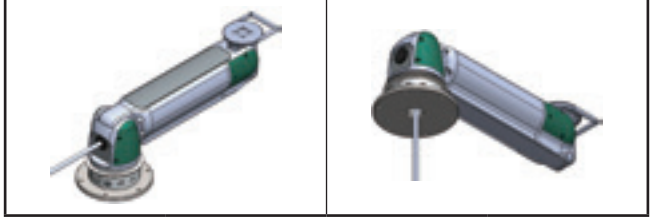
Blank		U	
For 2-axis configuration	For 3-axis configuration	For 2-axis configuration	For 3-axis configuration



* C is not available for single axis (PAW-S).

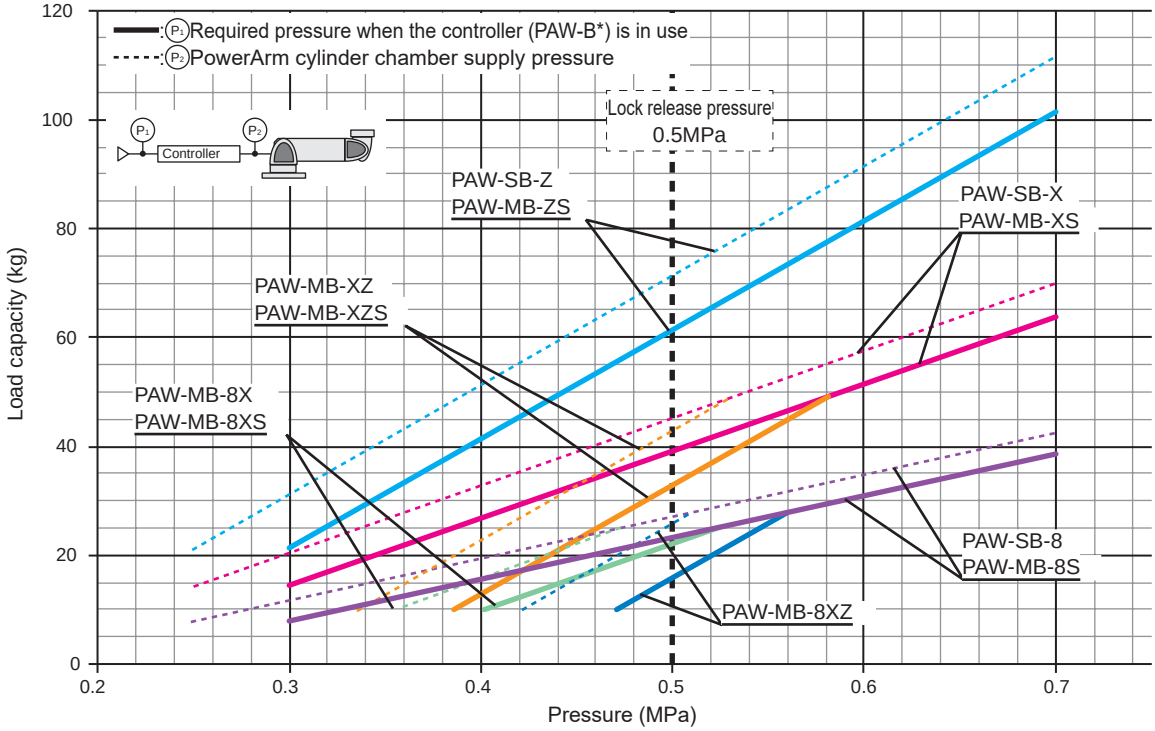
❸Option: Piping leadout direction

Blank	U



* Piping holes at the mounting surface center are required for U.

Load capacity with respect to pressure

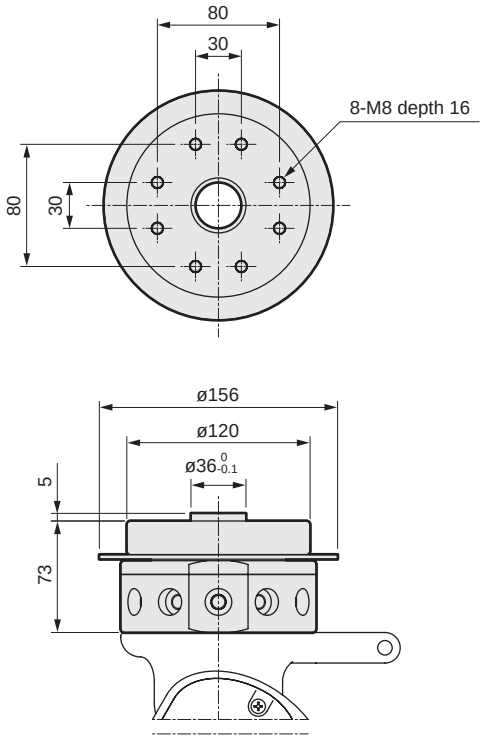


*1: Indicates the load capacity with the optional tip rotation mechanism mounted.
*2: Pressure supplied to the controller should be increased, depending on the operating frequency and speed.
*3: Attachment weight is not included.
*4: While the load capacity has properties such that it alters slightly according to the arm rise angle, this graph shows the lower limit values.

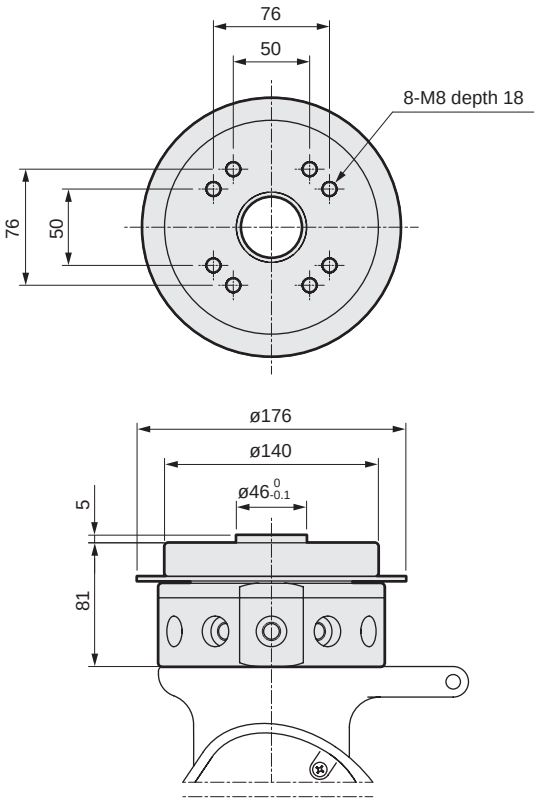
Optional dimensions

● Tip rotation mechanism (R)

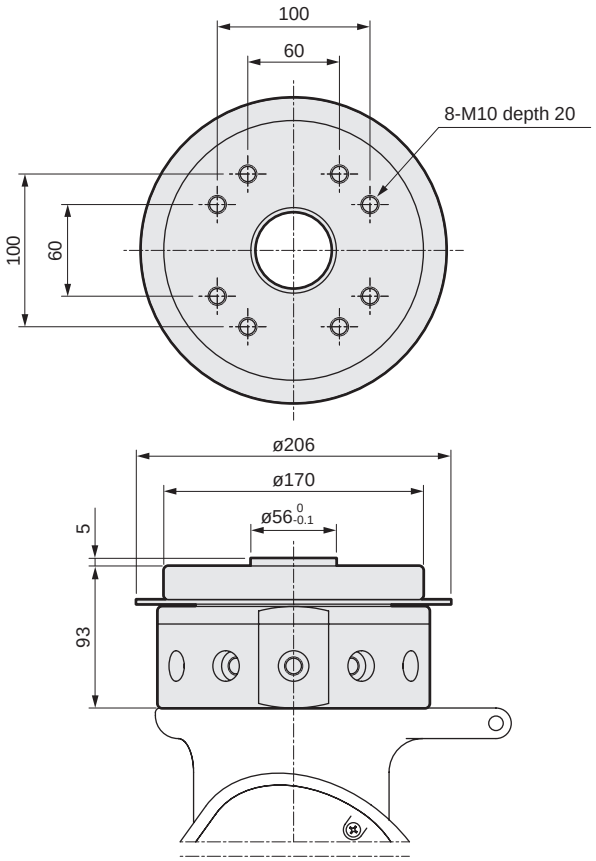
・For PAW-[S, SB]-8-R
PAW-[M, MB]-8S-R
PAW-[M, MB]-8X-R
PAW-[M, MB]-8XS-R
PAW-[M, MB]-8XZ-R



・For PAW-[S, SB]-X-R
PAW-[M, MB]-XS-R
PAW-[M, MB]-XZ-R
PAW-[M, MB]-XZS-R



・For PAW-[S, SB]-Z-R
PAW-[M, MB]-ZS-R



Discrete unit model No.

PowerArm unit

PAW-AU-( )	
8	ø80 standard specifications
X	ø100 standard specifications
Z	ø125 standard specifications
8-B	ø80 Mechanical lock specifications
X-B	ø100 Mechanical lock specifications
Z-B	ø125 Mechanical lock specifications

SCARA arm unit

PAW-SU-( )	
8S	For AU-8 (AU-8 lower part)
XS	For AU-X (AU-X lower part)
ZS	For AU-Z (AU-Z lower part)

Rotation unit

PAW-RU-( )	
T	AU-8 tip part
8	AU-8 base part / AU-X tip part
X	AU-X base part / AU-Z tip part
Z	AU-Z base part
ZS	SU-Z base part

Base plate

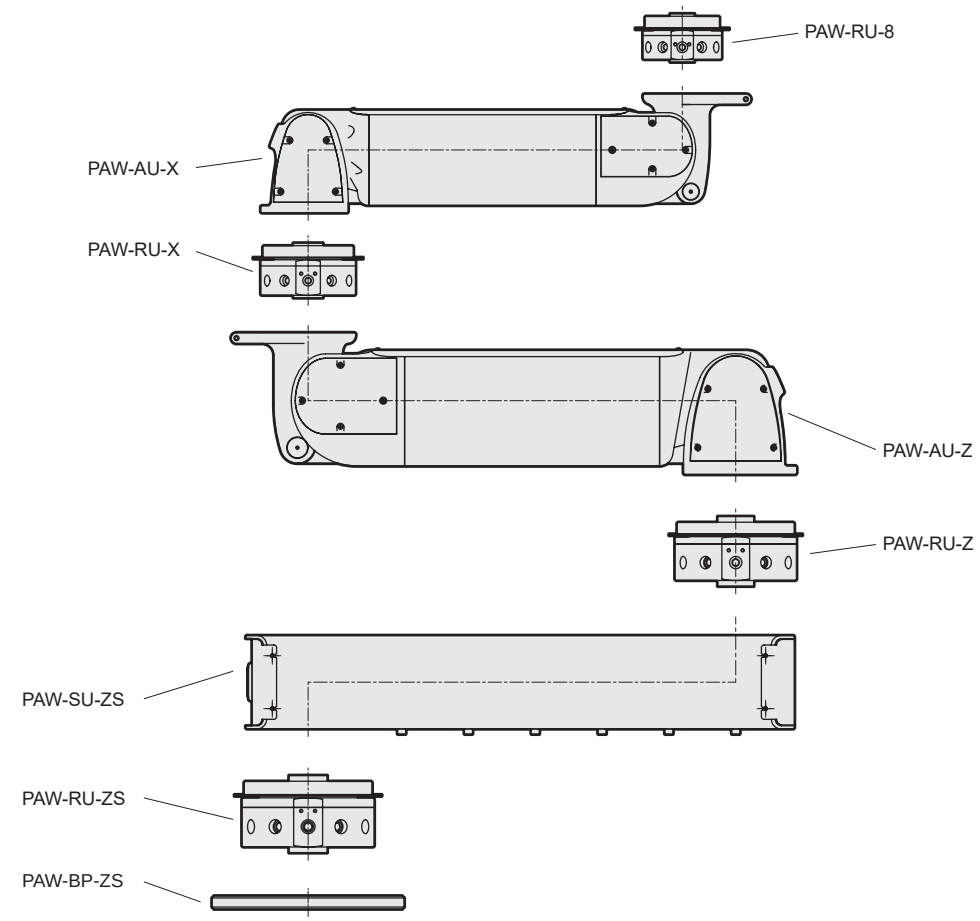
PAW-BP-( )	
8	AU-8 base part (assembled to RU-8)
X	AU-X base part (assembled to RU-X)
Z	AU-Z base part (assembled to RU-Z)
ZS	SU-Z base part (assembled to RU-ZS)

Rotation lock unit

PAW-LU

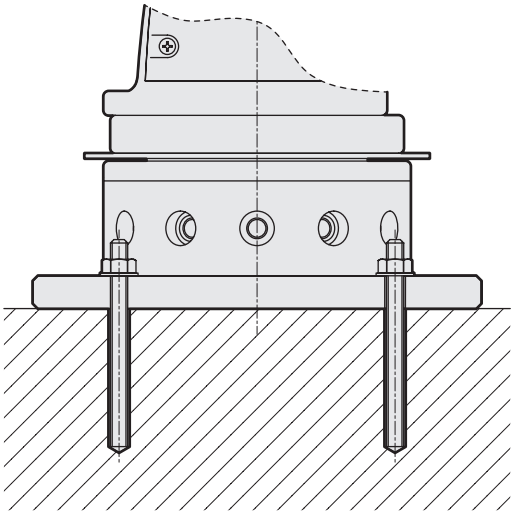
...Common to each rotation unit (1 unit is required for each rotation unit location)
* PAW-LU is a dedicated part for PowerArm. It cannot be used for any other purpose.

Example: When configuring PAW-M-XZS-R



• Refer to the Instruction Manual for details about assembly and piping. An air tube must be prepared separately.
• A bolt and washer for fastening is attached with each unit.

Anchor work

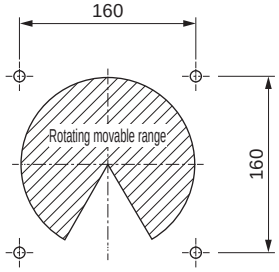


- When installing on an existing concrete floor (which must include reinforcing bars [ø6 or more]), use a chemical anchor (made by Nihon Decoluxe Co., Ltd.).
- For chemical anchor types, anchor bar dimensions, No. of units, and installation dimensions, refer to the table and figures below. Perform installation (drilling) as shown in the chemical anchor Instruction Manual.

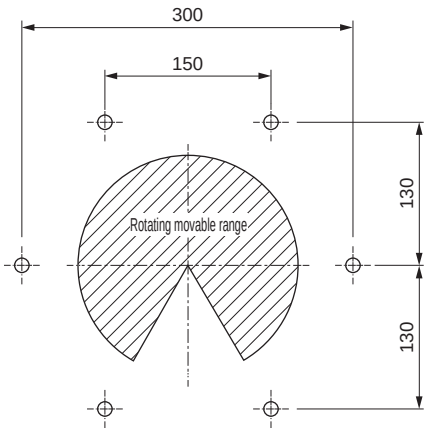
	Product model No.	chemical anchor Type	Anchor bar dimensions	Quantity
(1)	PAW-[S,SB]-8 , PAW-[S,SB]-X PAW-[M,MB]-8X , PAW-[M,MB]-8S	R-10N or R-10LN	W 3/8" or M10	4
(2)	PAW-[S,SB]-Z , PAW-[M,MB]-XZ PAW-[M,MB]-8XZ , PAW-[M,MB]-XS PAW-[M,MB]-8XS	R-12N or R-12LN	W 1/2" or M12	6
(3)	PAW-[M,MB]-ZS PAW-[M,MB]-XZS	R-16N or R-16LN	W 5/8" or M16	8

Installation dimensions

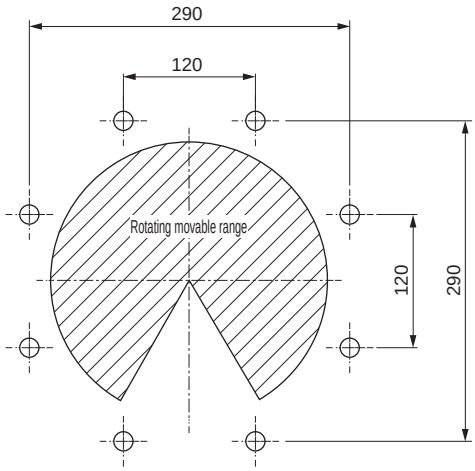
(1)



(2)



(3)

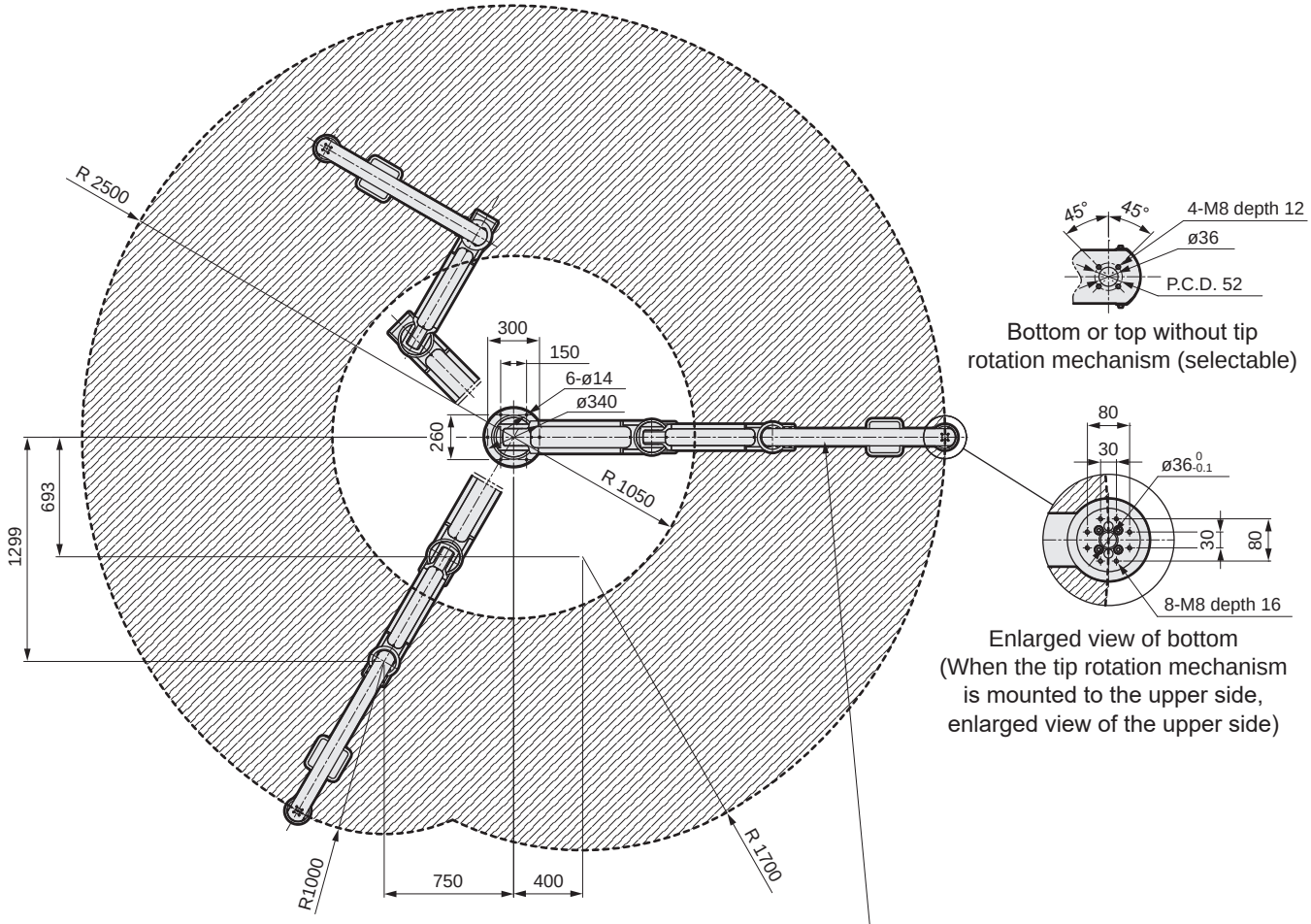


- If mounting to a frame or dolly, etc., use 10.8 or 12.9 category bolt strength, and check that the screw insertion depth is 1.5D or more.
- When installing the product, make sure that the installation surface is accurately leveled. If not level, position holding may become impossible due to arm tip tilting or arm imbalance.
- Installation must be performed by a professional.

Arm extensions

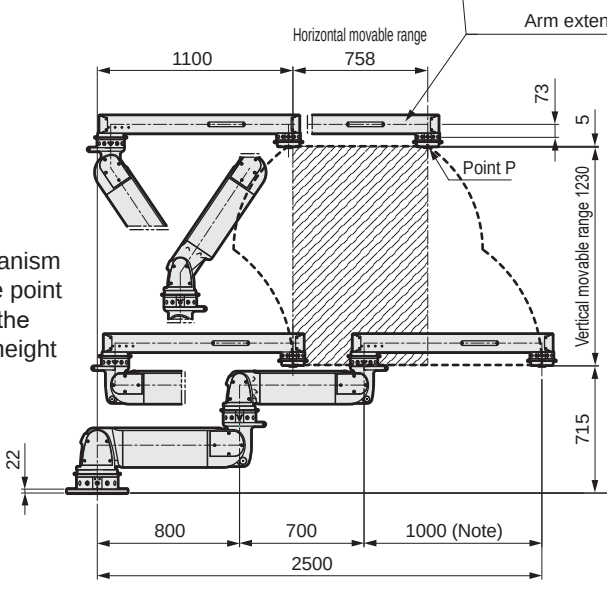
When a wider movable range must be secured, or when the workpiece is suspended for transport, an arm extension can be installed on the arm upper part. When designing the attachment, refer to page 19, and be careful to maintain or be below the allowable moment.

Example: Movable range when the arm extension is installed in PAW-M-XZ (upper section ø100 + lower section ø125)

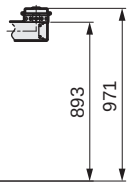


Bottom or top without tip rotation mechanism (selectable)

Enlarged view of bottom
(When the tip rotation mechanism is mounted to the upper side, enlarged view of the upper side)



Shows dimensions with tip rotation mechanism R. Plane view shows movable view at the point P descending edge. Due to its structure, the movable range varies depending on the height of the P point.



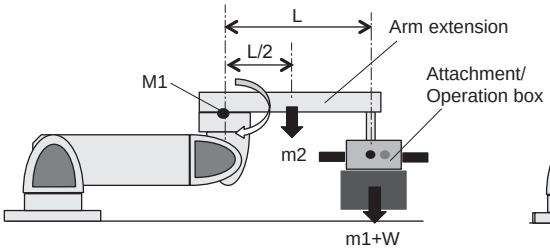
Tip rotation mechanism can also be mounted to the upper side

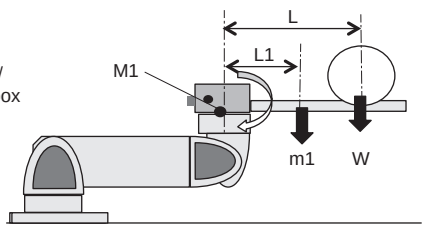
Note) 1000 is the example length. It can be changed.

Contact CKD for details.

Moment load

[When upper and lower movable arms are single-axis]





When mounting the arm extension

$$M1=(m1+W)\times L+m2\times L/2$$

m1: Attachment/operation box weight
m2: Arm extension weight
W: Weight of workpiece
L: From the PowerArm mounting part
Distance to center of gravity of attachment/workpiece

When the attachment is offset

$$M1=m1\times L1+W\times L$$

m1: Attachment/operation box weight
W: Weight of workpiece
L1: From the PowerArm mounting part
Distance to center of gravity of attachment/operation box
L: From the PowerArm mounting part
Distance to center of gravity of workpiece

Standard specifications

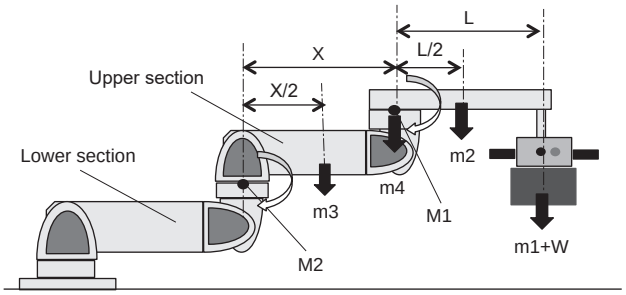
Model No.	M1 (N^am)
PAW-S-8	350
PAW-S-X	550
PAW-S-Z	900
PAW-M-8S	350
PAW-M-XS	550
PAW-M-ZS	900

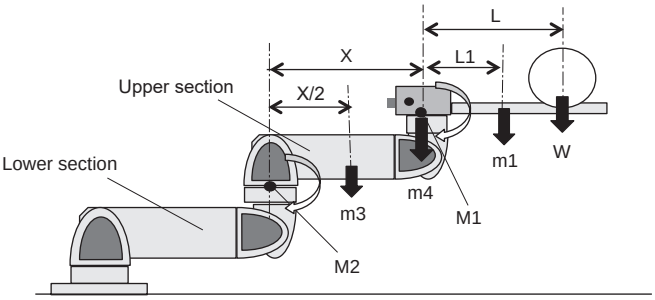
Mechanical lock specifications

Model No.	M1 (N^am)
PAW-SB-8	300
PAW-SB-X	500
PAW-SB-Z	850
PAW-MB-8S	300
PAW-MB-XS	500
PAW-MB-ZS	850

*Design the workpiece/attachment/extension arm so that the moment load is within the values in the table
*Calculate only the movable arm section.

[When upper and lower movable arms are 2-axis]





When mounting the arm extension

(1) Moment applied to the upper section

$$M1=(m1+W)\times L+m2\times L/2$$

(2) Moment applied to the lower section

$$M2=(m1+W)\times(L+X)+m2\times(L/2+X)+m3\times X/2+m4\times X$$

m1: Attachment/operation box weight
m2: Arm extension weight
m3: PowerArm weight
PAW-AU-8:14kg PAW-AU-8-B:15kg PAW-AU-X:23kg
PAW-AU-X-B:27kg PAW-AU-Z:42kg PAW-AU-Z-B:47kg
m4: Rotation unit weight
PAW-RU-T:4kg PAW-RU-8:6kg
PAW-RU-X:8kg
W: Weight of workpiece
L: From the PowerArm mounting part
Distance to center of gravity of attachment/workpiece
X: PowerArm length
PAW-AU-8:600mm PAW-AU-8-B:650mm PAW-AU-X:700mm PAW-AU-X-B:750mm

When the attachment is offset

(1) Moment applied to the upper section

$$M1=m1\times L1+W\times L$$

(2) Moment applied to the lower section

$$M2=W\times(L+X)+m1\times(L1+X)+m3\times X/2+m4\times X$$

m1: Attachment/operation box weight
m3: PowerArm weight
PAW-AU-8:14kg PAW-AU-8-B:15kg PAW-AU-X:23kg
PAW-AU-X-B:27kg PAW-AU-Z:42kg PAW-AU-Z-B:47kg
m4: Rotation unit weight
PAW-RU-T:4kg PAW-RU-8:6kg
PAW-RU-X:8kg
W: Weight of workpiece
L1: From the PowerArm mounting part
Distance to center of gravity of attachment/operation box
L: From the PowerArm mounting part
Distance to center of gravity of workpiece
X: PowerArm length
PAW-AU-8:600mm PAW-AU-8-B:650mm PAW-AU-X:700mm PAW-AU-X-B:750mm

Standard specifications

Model No.	Upper section M1 (N^am)	Lower section M2 (N^am)
PAW-M-8X	350	550
PAW-M-XZ	550	900
PAW-M-8XS	350	550
PAW-M-XZS	550	900

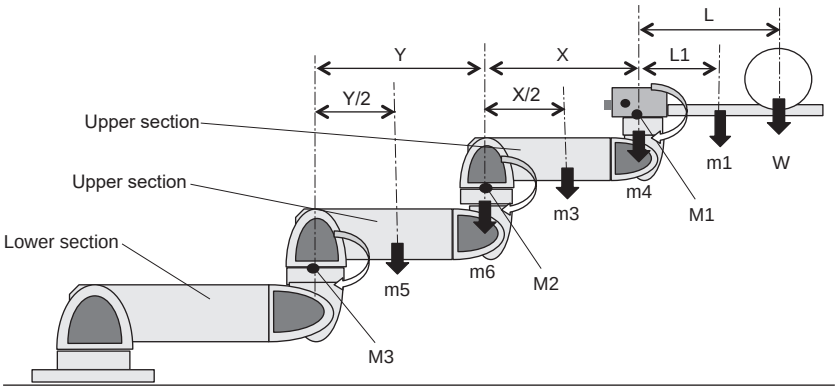
Mechanical lock specifications

Model No.	Upper section M1 (N^am)	Lower section M2 (N^am)
PAW-MB-8X	300	500
PAW-MB-XZ	500	850
PAW-MB-8XS	300	500
PAW-MB-XZS	500	850

*Design the workpiece/attachment/extension arm so that the moment load is within the values in the table
*Calculate only the movable arm section.

Moment load

[When upper and lower movable arms are 3-axis]



When the attachment is offset

(1) Moment applied to the upper section

$$M1=m1\times L1+W\times L$$

(2) Moment applied to the middle section

$$M2=W\times(L+X)+m1\times(L1+X)+m3\times X/2+m4\times X$$

(3) Moment applied to the lower section

$$M3=W\times(L+X+Y)+m1\times(L1+X+Y)+m3\times(X/2+Y)+m4\times(X+Y)+m5\times Y/2+m6\times Y$$

m1: Attachment/operation box weight
m3: PowerArm weight; PAW-AU-8:14kg PAW-AU-8-B:15kg
m4: Rotation unit weight; PAW-RU-T:4kg
m5: PowerArm weight; PAW-AU-X:23kg PAW-AU-X-B:27kg
m6: Rotation unit weight; PAW-RU-8:6kg
W: Weight of workpiece
L1: Distance from the PowerArm mounting part to the center of gravity of the attachment/operation box
L: Distance from the PowerArm mounting part to the center of gravity of the workpiece
X: PowerArm length; PAW-AU-8:600mm PAW-AU-8-B:650mm
Y: PowerArm length; PAW-AU-X:700mm PAW-AU-X-B:750mm

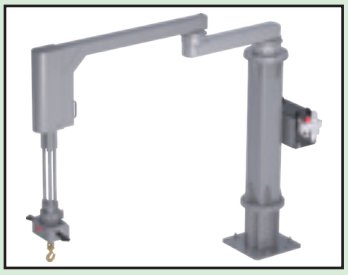
■ Standard specifications

Model No.	Upper section M1 (N^am)	Middle section M2 (N^am)	Lower section M3(N•m)
PAW-M-8XZ	350	550	900

■ Mechanical lock specifications

Model No.	Upper section M1 (N^am)	Middle section M2 (N^am)	Lower section M3(N•m)
PAW-MB-8XZ	300	500	850

*Design the workpiece/attachment/extension arm so that the moment load is within the values in the table
*Calculate only the movable arm section.



Palletizing specifications

PAW-A* Series

Specifications

Descriptions	PAW-AS-45	PAW-AS-45-S	PAW-AZ-110	PAW-AZ-110-S
Working fluid	Compressed air			
Max. working pressure MPa	0.7			
Min. working pressure MPa	0.25 (when option L (with rotation lock) is selected: 0.35)			
Proof pressure MPa	1.05			
Ambient temperature °C	5 to 60			
Lubrication	Not available			
Load capacity (0.5MPa pressurized) *1kg	55	55	48	51
When controller (PAW-B*) is used	49	49	37	40
Air consumption *2 ℓ/min (ANR)	11		35	
Product weight *3 kg	164	161	183	180
Vertical movable range of transport section mm	450		1100	
Max. movable radius of transport section mm	2000	1600	2100	1700

*1: Load capacity varies with supply pressure. Refer to "Load capacity at pressure" on the next page.
Refer to page 28 for the load capacity when an offset is used.
*2: Values are at air consumption 1 cycle/min. and working pressure 0.7MPa.
*3: When Option L (with rotation lock) is selected, an additional 2 kg is added respectively.

How to order

PAW - AS-45 - L

- PAW: Model No.
- AS-45: ❶ Vertical operating range / max. rotational radius
- L: ❷ Option

❶ Vertical operating range / max. rotational radius

Code	Description	
	Vertical operation range	Max. rotation radius
AS-45	450 mm	2,000 mm
AS-45-S	450 mm	1,600 mm
AZ-110	1,100 mm	2,100 mm
AZ-110-S	1,100 mm	1,700 mm

*1 If the vertical operating range / maximum rotational radius is exceeded, contact CKD Sales.

❷ Option

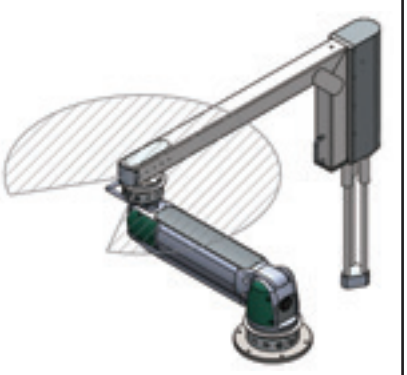
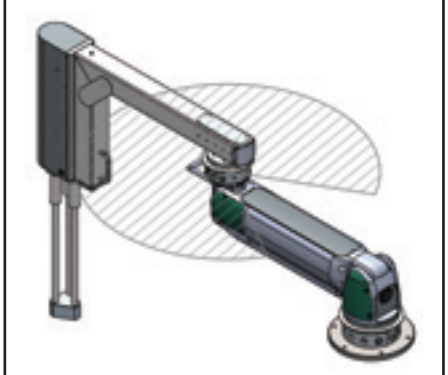
	Code	Description
	L	Rotation lock mechanism *2
*1	C	Bending direction (refer to diag. below)

*1: Mechanism to retain force in the rotation direction. It is not designed to stop dynamic rotation.

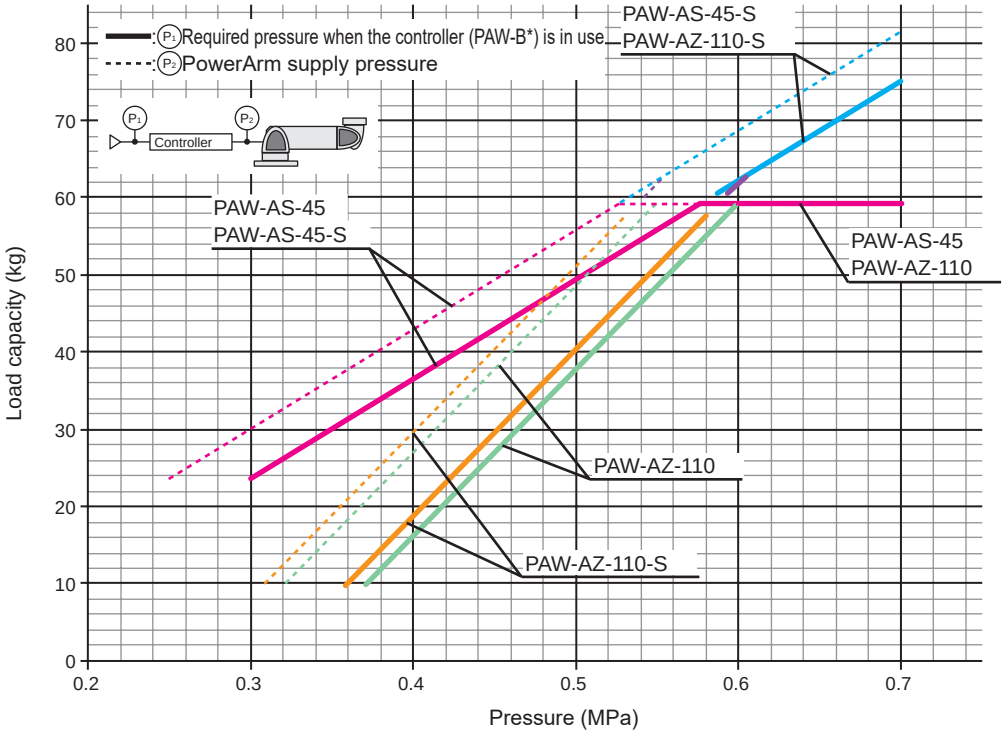
❷ Option: Bending direction

Only PAW-AS-45 and PAW-AZ-110 can be selected

*Bending direction of PAW-AS-45-S, PAW-AZ-110-S

Blank	C	Blank (C cannot be selected)
		

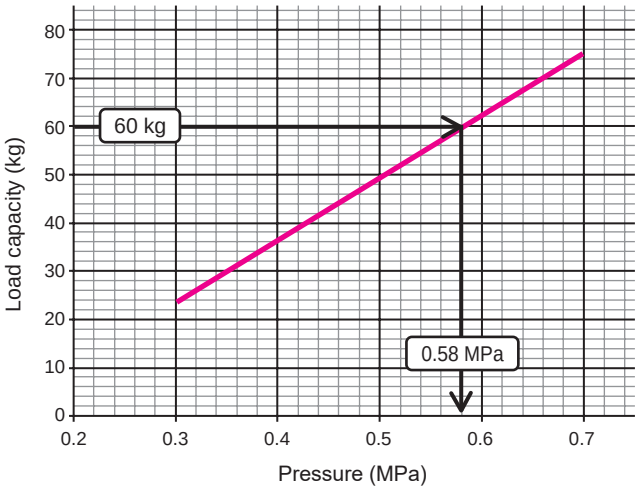
Load capacity with respect to pressure



*1: Pressure supplied to the controller should be increased, depending on the operating frequency and speed.
*2: Load capacity is the sum of weights of the “workpiece, attachment, and operation box”.

[Selection example 1]

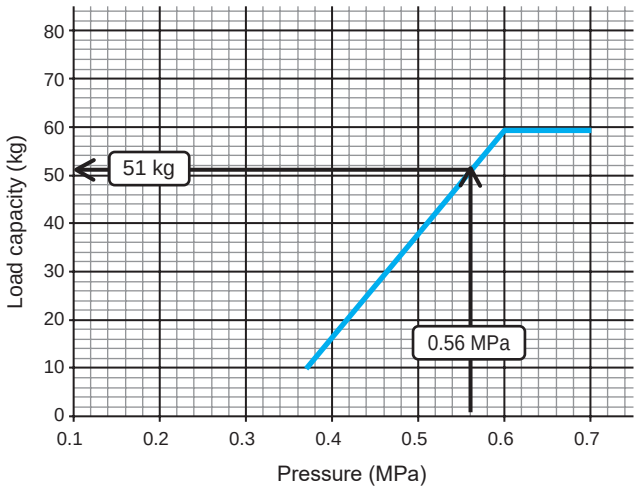
Model: PAW-AS-45-S Controller: PAW-BH1
Workpiece weight: 40kg, Operation Box weight: 9 kg,
Cardboard box suction attachment weight: 11kg For total 60kg



Pressure supplied to the controller will need to be 0.58 MPa.

[Selection example 2]

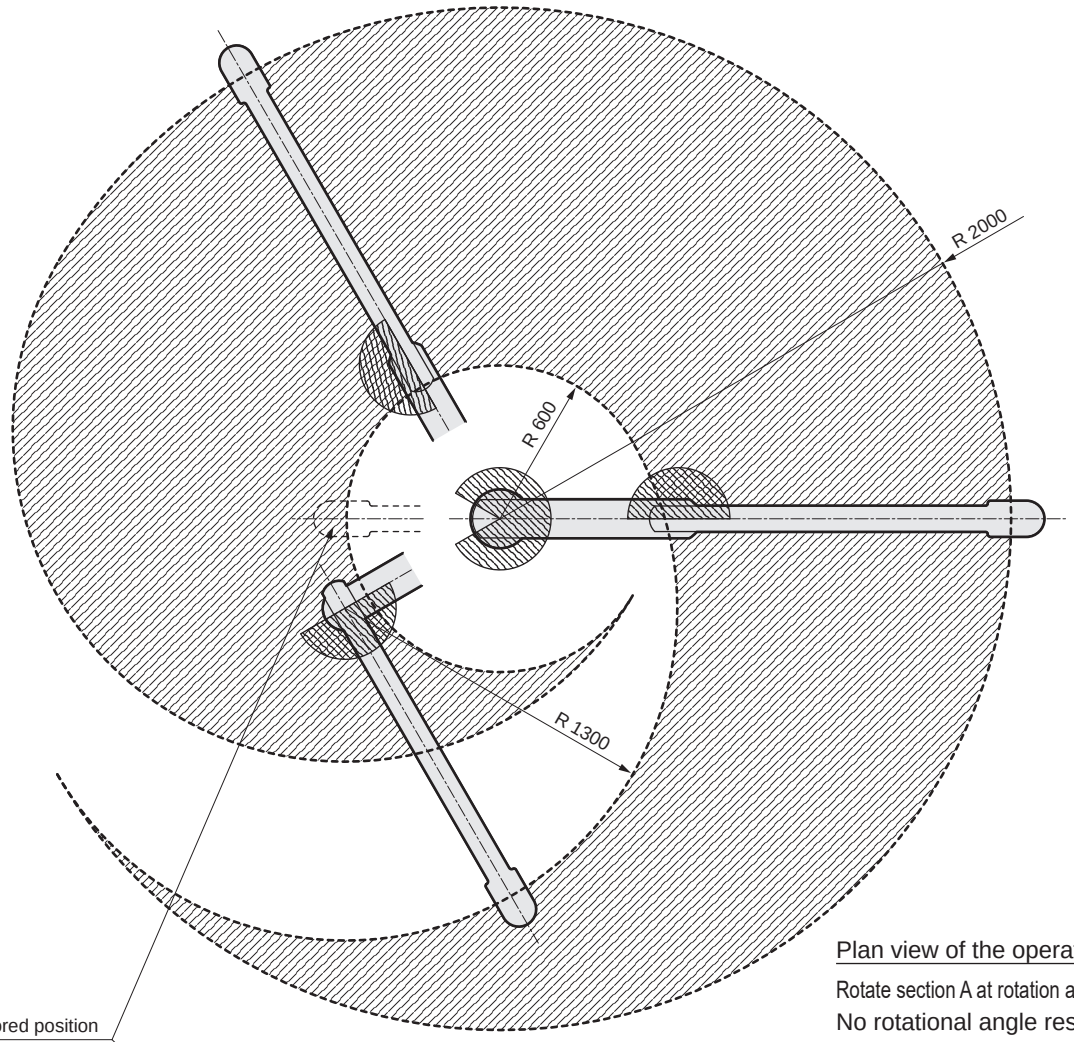
Model: PAW-AZ-110 Controller: PAW-BS2
Operation box weight: 9 kg, hook attachment weight: 2 kg
When pressure supplied to the controller is 0.56 MPa



The weight of Operation Box (9 kg) and Hook Attachment (2 kg) subtracted from the Load Capacity (51 kg) leaves 40 kg, which is the maximum workpiece weight that can be transported.

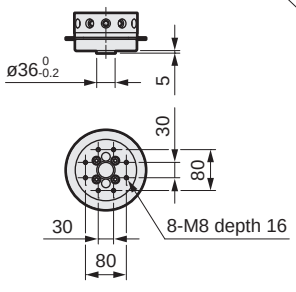
Dimensions

● PAW-AS-45 (Vertical operating range: 450 mm / maximum rotational radius: 2000 mm)

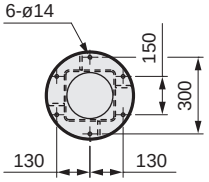


Plan view of the operating range

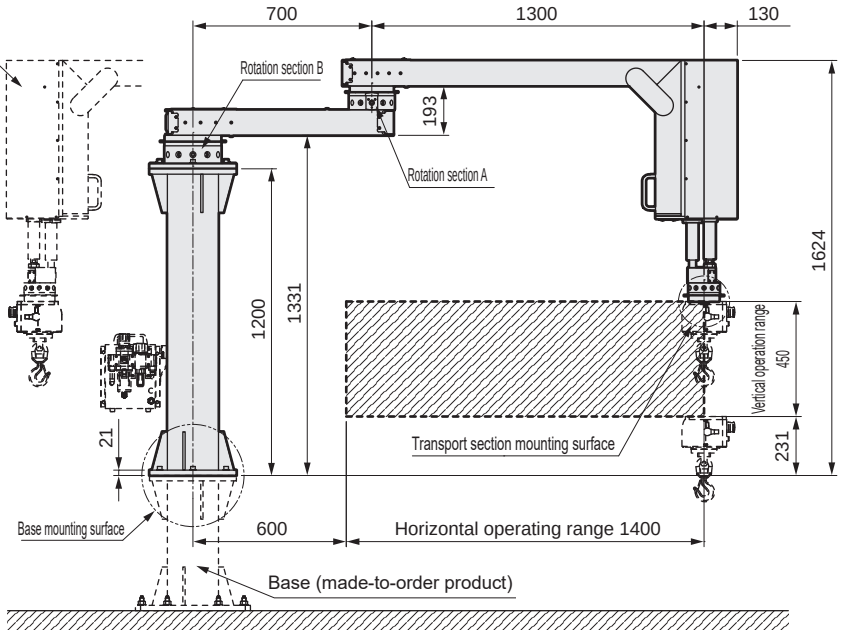
Rotate section A at rotation angle 180°restriction
No rotational angle restriction for rotating part B (300°).
* With the bending direction (C) option, the operating range is left-right reversed.



Transport section mounting dimensions

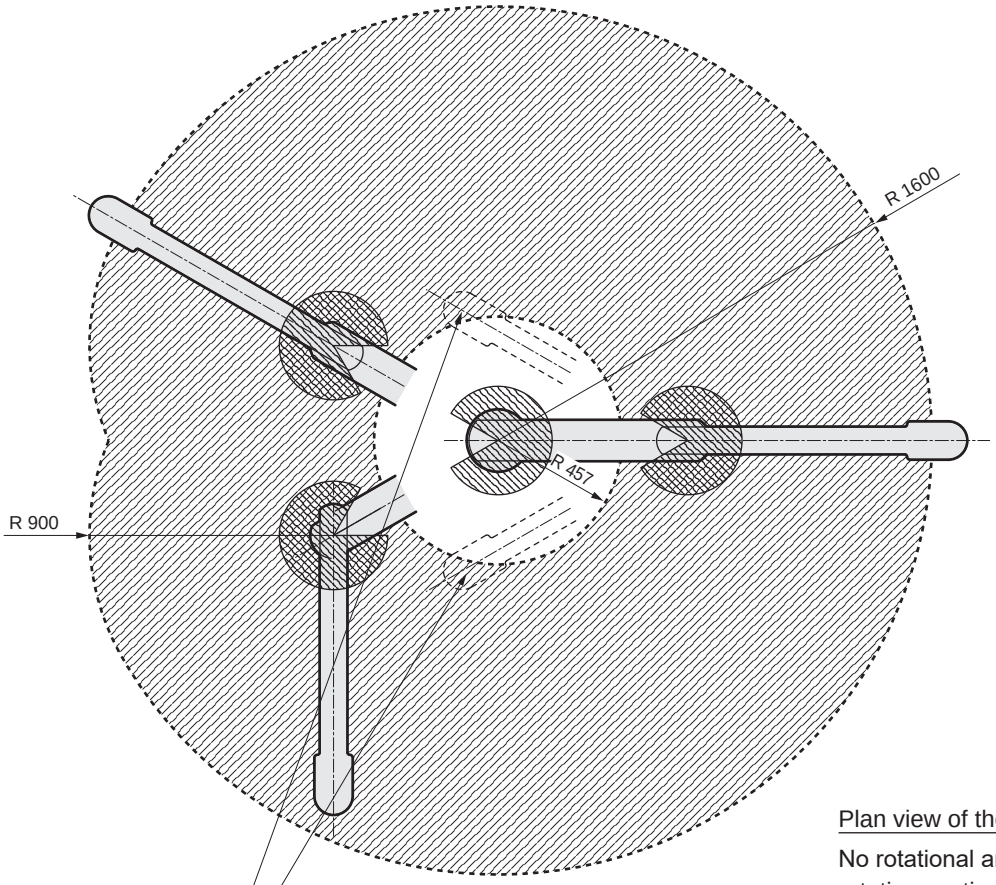


Base mounting dimensions



Dimensions

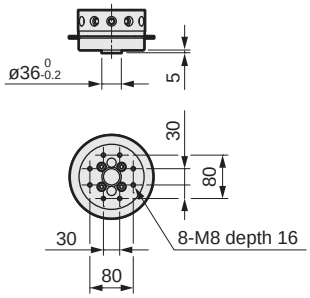
● PAW-AS-45-S (Vertical operating range: 450 mm / maximum rotational radius:1600 mm)



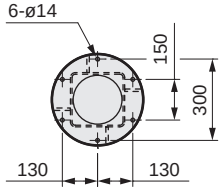
Plan view of the operating range

No rotational angle regulation for both rotation section A and rotation section B (300°).

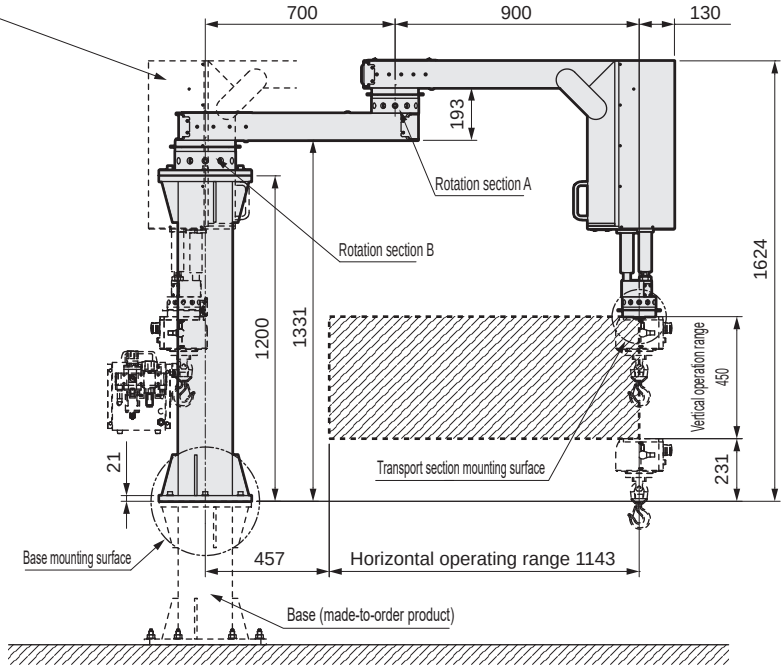
Stored position



Transport section mounting dimensions

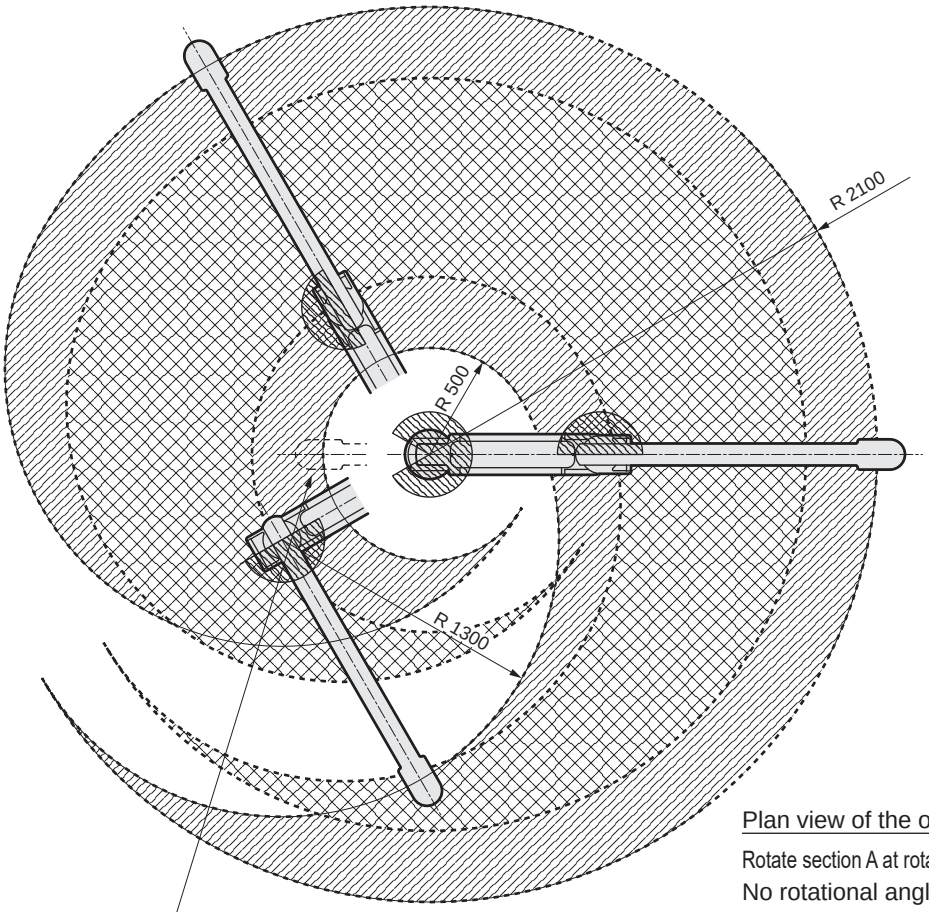


Base mounting dimensions



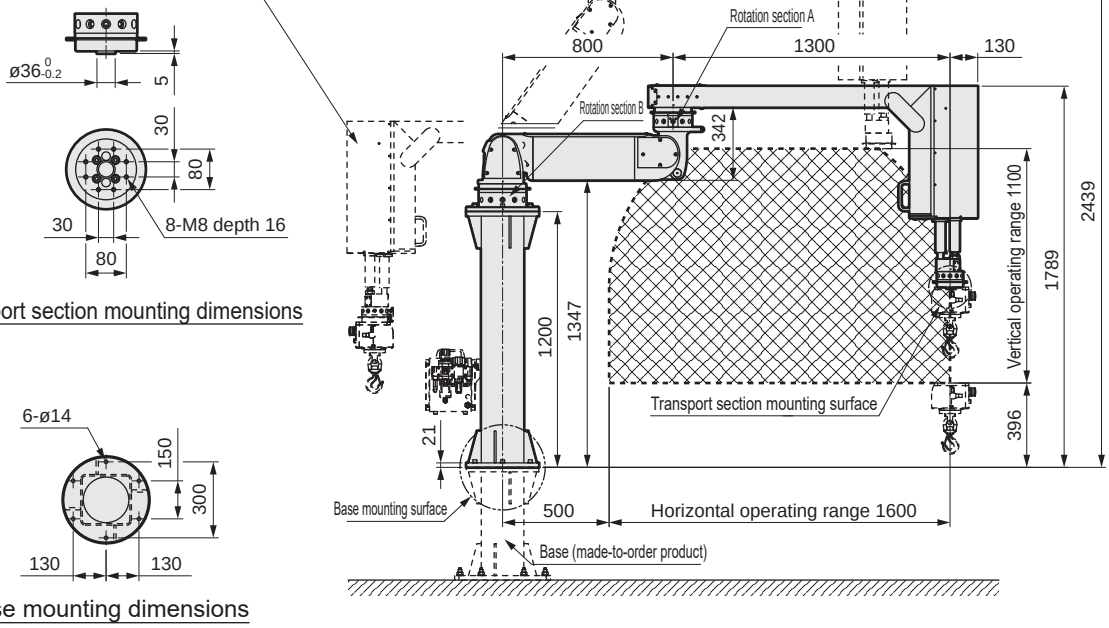
Dimensions

● PAW-AZ-110 (Vertical operating range: 1100 mm / maximum rotational radius: 2100 mm)



Plan view of the operating range

Rotate section A at rotation angle 180°restriction
No rotational angle restriction for rotating part B (300°).
is the operating range at the top end.
is the operating range at the bottom end.
* With the bending direction (C) option, the operating range is left-right reversed.

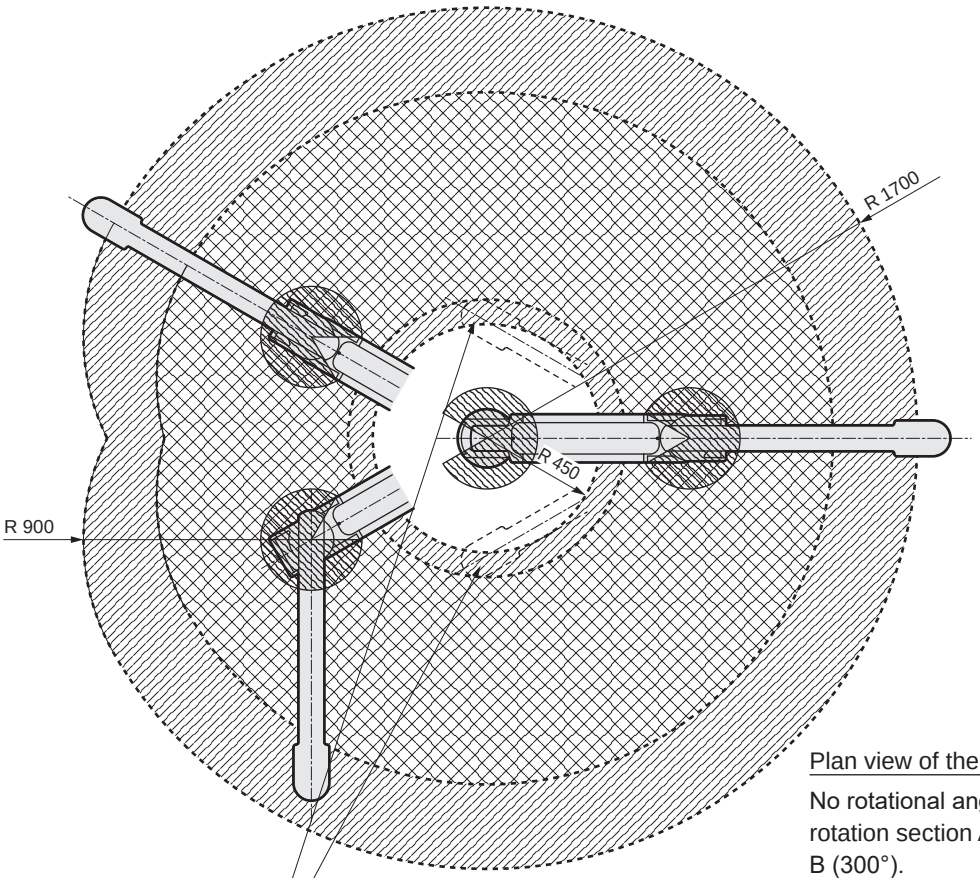


Transport section mounting dimensions

Base mounting dimensions

Dimensions

● PAW-AZ-110-S (Vertical operating range: 1100 mm / maximum rotational radius:1700 mm)



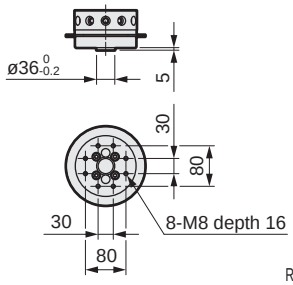
Plan view of the operating range

No rotational angle regulation for both rotation section A and rotation section B (300°).

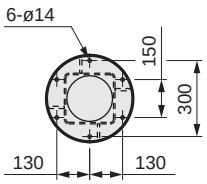
is the operating range at the top end.

is the operating range at the bottom end.

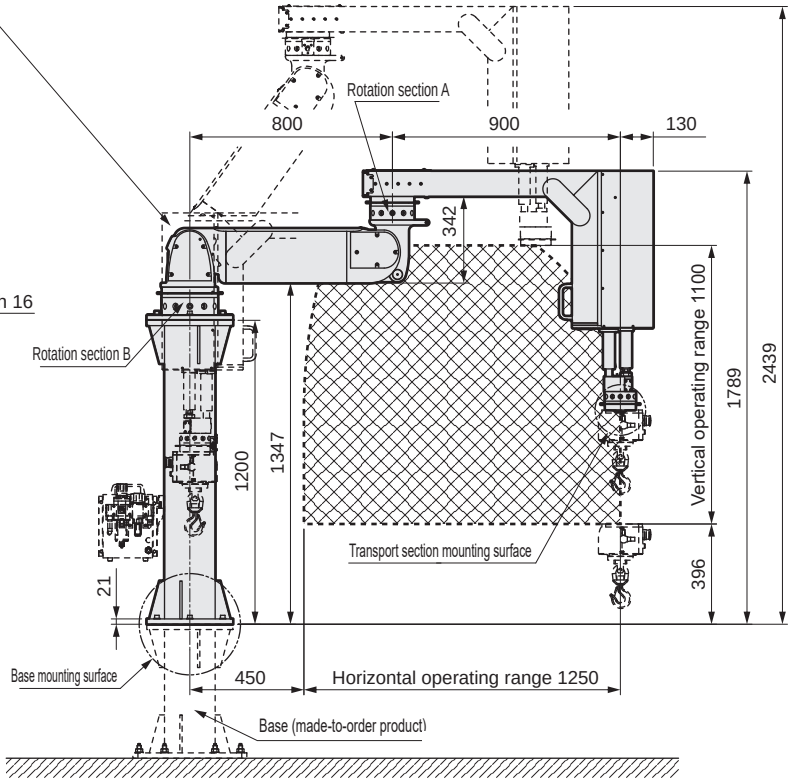
Stored position



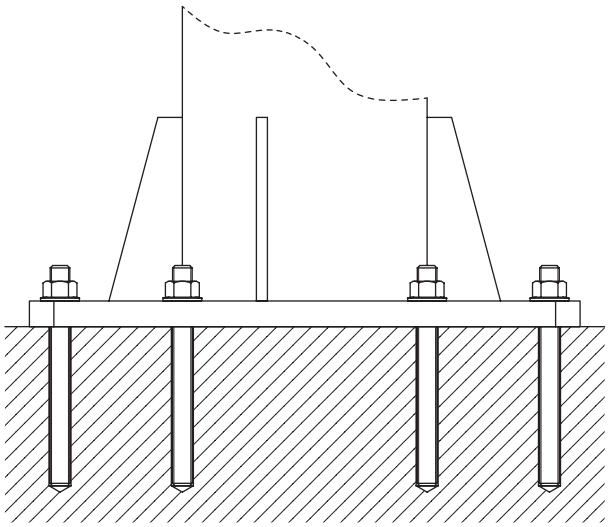
Transport section mounting dimensions



Base mounting dimensions



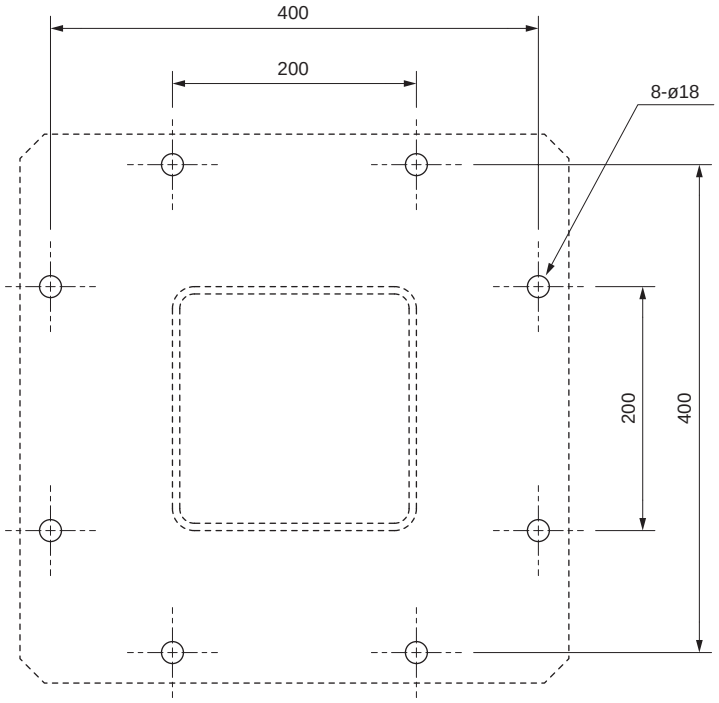
Installing the base (made-to-order product) on a concrete floor with anchors



- When installing on an existing concrete floor (containing reinforcing bars (ø6 or more)), use a chemical anchor (made by Nihon Decoluxe Co., Ltd.).
- For chemical anchor types, anchor bar dimensions, No. of units, and installation dimensions, refer to the table and figures below. The chemical anchor installation method (drilling method) should be as shown in the chemical anchor instruction manual.

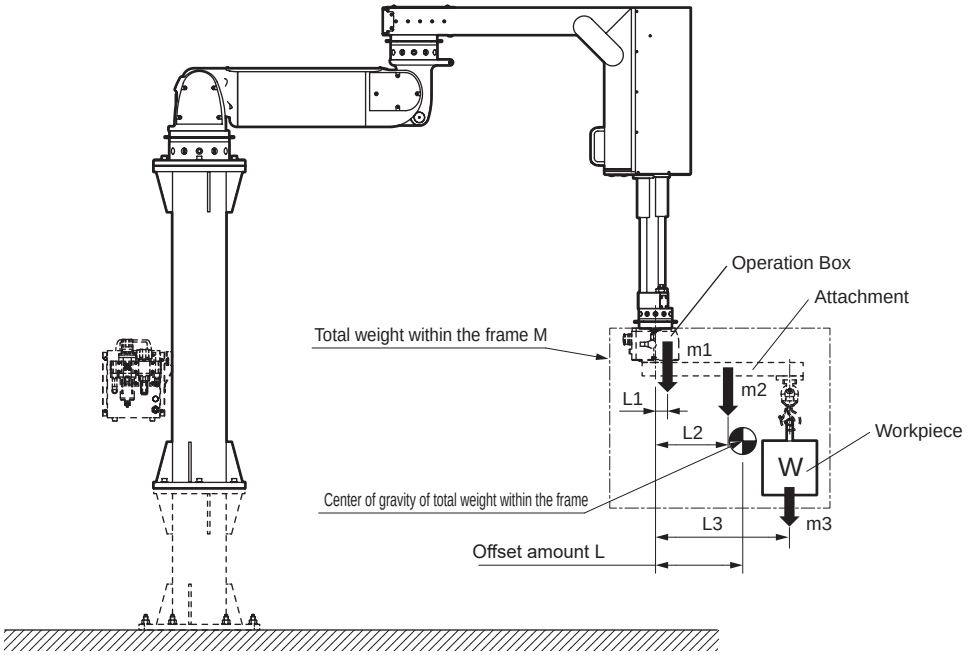
Chemical anchor types	Anchor bar dimensions	Quantity
R-16N or R-16LN	W5/8 "or M16	8

Installation dimensions



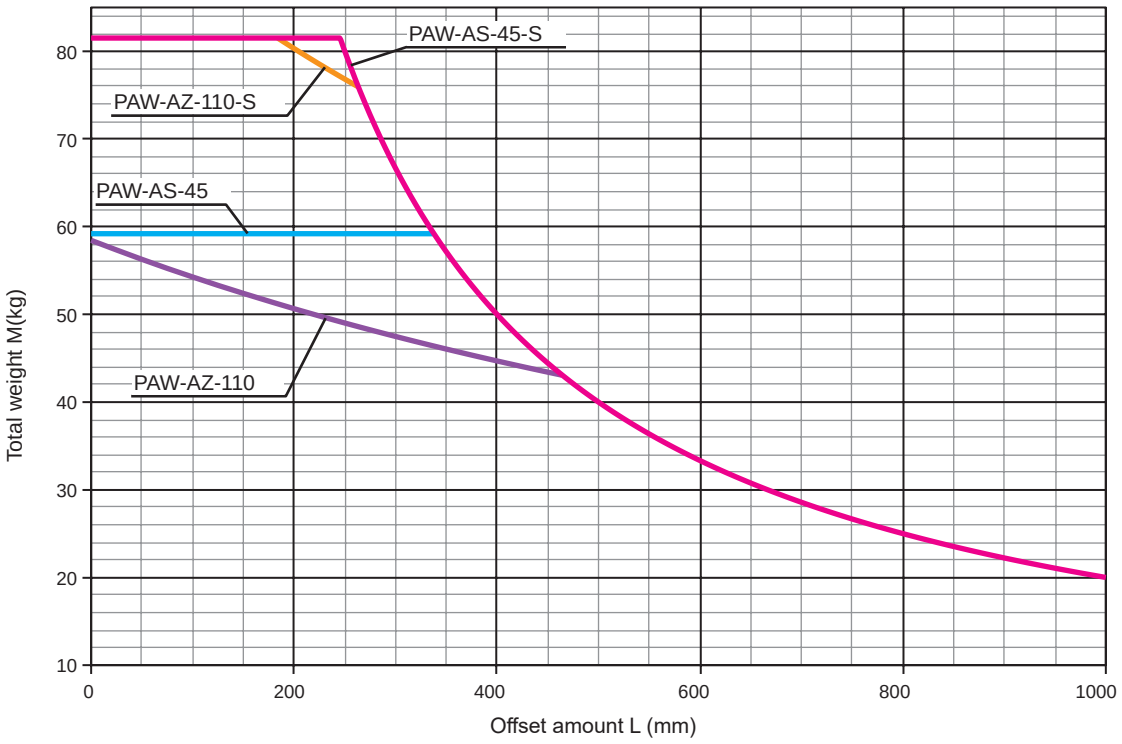
- When installing the product, accurately keep the installation surface level. If not level, tilting may prevent holding of horizontal position (when rotation lock mechanism is not used)).
- Make sure to have the product installed by qualified service personnel.
- The dedicated dolly (custom order product) is available for installation on a dolly. Select the dolly (page 35) from PAW-C*-H.

Load capacity when an offset is used



*Total weight: M = Operation Box weight: m1 + Hook Attachment weight: m2 + Workpiece: m3

$$L = \frac{m1 \times L1 + m2 \times L2 + m3 \times L3}{M}$$



Controller

PAW-B Series

We propose ideal air circuits for various assist mechanisms.

Specifications

Item	PAW-BS	PAW-BH	PAW-BS-DC	PAW-BH-DC
Working fluid	Clean compressed air (JIS B8392-1:2012 (ISO 8573-1:2010) [1:3:2])			
Max. working pressure MPa	0.7			
Min. working pressure MPa	0.35			
Proof pressure MPa	1.05			
Power supply voltage	Single-phase 100 to 220 VAC (50/60 Hz)		24 VDC ±10%	
Rated current	1 A		1.1 A	
Ambient temperature °C	5 to 50			
Ambient humidity	45%RH to 85%RH (no condensation)			
Ambient atmosphere	Indoors (no water or dust)			
Installation orientation	Upright			
Lubrication	Not available			
Weight kg	14	16	14	16
Air supply port	Push-in fitting ø10			

Performance specifications

Item	PAW-BS1	PAW-BS2	PAW-BH1	PAW-BH2
I/O signal	Dedicated signals: Input 3, Output 2 Common signals: Input 0, Output 2		Dedicated signals: Input 3, Output 2 Common signals: Input 9, Output 6	
General-purpose single solenoid valve (ø4)	-		1	
General-purpose double solenoid valve (up to ø8)	-		2	
General-purpose port (ø4)	-		2	
General-purpose port (up to ø8)	-		3	
Axis *1	1 axis	2 axes	1 axis	2 axes

*1: A selective compliance assembly robot arm and extension arm are excluded.

Applications

Application example 1: Start/standby

	Digital input	Digital output
1	Start switch	Start lamp
2	Standby switch	Standby lamp
3	Emergency stop button	-
4		-

Select PAW-BS
(when two or more indicators (output) are added for general-purpose input)

*1:The function which allows the body to maintain the pressure applied when the balance lock is started, regardless of the workpiece load applied to the tip of the arm.
*2:This function increases the supply pressure to the arm while the button is being pressed, forcing the workpiece to rise.

Application example 2: Vacuum

	Digital input	Digital output
1	Start switch	Start lamp
2	Standby switch	Standby lamp
3	Emergency stop button	Balance lock lamp * 1
4	Balance lock button	Valve for vacuum 1
5	Vacuum button	Valve for vacuum 2
6	Outriggers 1	Vacuum lamp
7	Outriggers 2	-
8	Outriggers 3	-
9	-	
10	-	
11	-	

Select PAW-BH (when a suction or clamp attachment is installed, or sensors are installed on the outriggers (1 to 4) of the dolly to serve as interlocks)

Application example 3: Clamp

	Digital input	Digital output
1	Start switch	Start lamp
2	Standby switch	Standby lamp
3	Emergency stop button	Balance lock lamp
4	Balance lock button	Clamp solenoid valve
5	Clamp button	Unclamp solenoid valve
6	Cylinder switch 1	Clamp lamp
7	Cylinder switch 2	Solenoid valve for cylinder brake
8	UP button *2	-
9	Outriggers 1	
10	Outriggers 2	
11	Outriggers 3	

Select PAW-BH

How to order

PAW - B **S** **1** - **DC** - **T**

1 Performance
2 No. of axes
3 Power
4 Option

1 Performance

Code	Description
S	Standard
H	High end

2 No. of axes

Code	Description
1	1 axis
2	2 axes

3 Power

Code	Description
Blank	Single-phase 100 to 220 VAC
DC	Single-phase 100 to 220 VAC

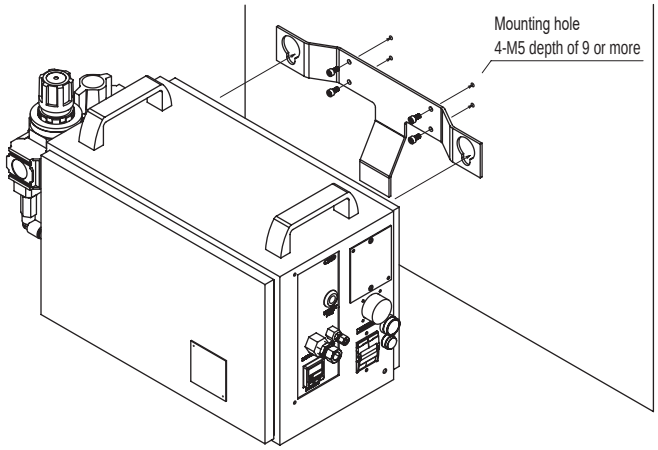
4 Option

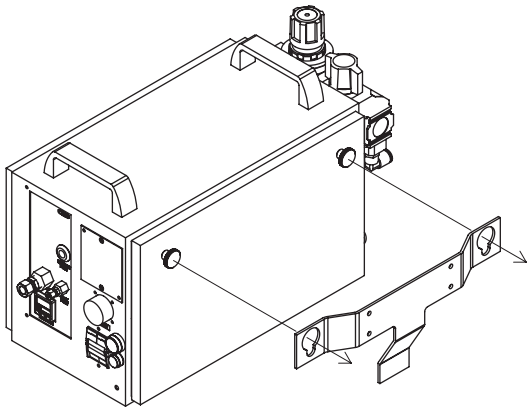
Code	Description	
T	T-bracket	
L	L-bracket	

*1: quotation will be performed each time for Special-order product.
*2: Power supply cable 2.5m included (For domestic 100VAC, flat 2P + earth pin AC code. For other specifications, a 3-core (N, L, and PE) cable with a round crimp terminal for M5 is supplied.
*3: The main material of the exterior except for components is steel (baked).

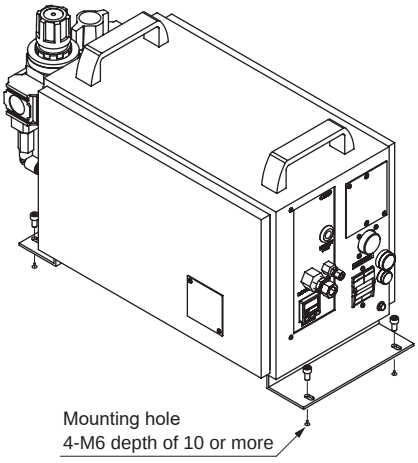
[Bracket mounting method]

● T-bracket



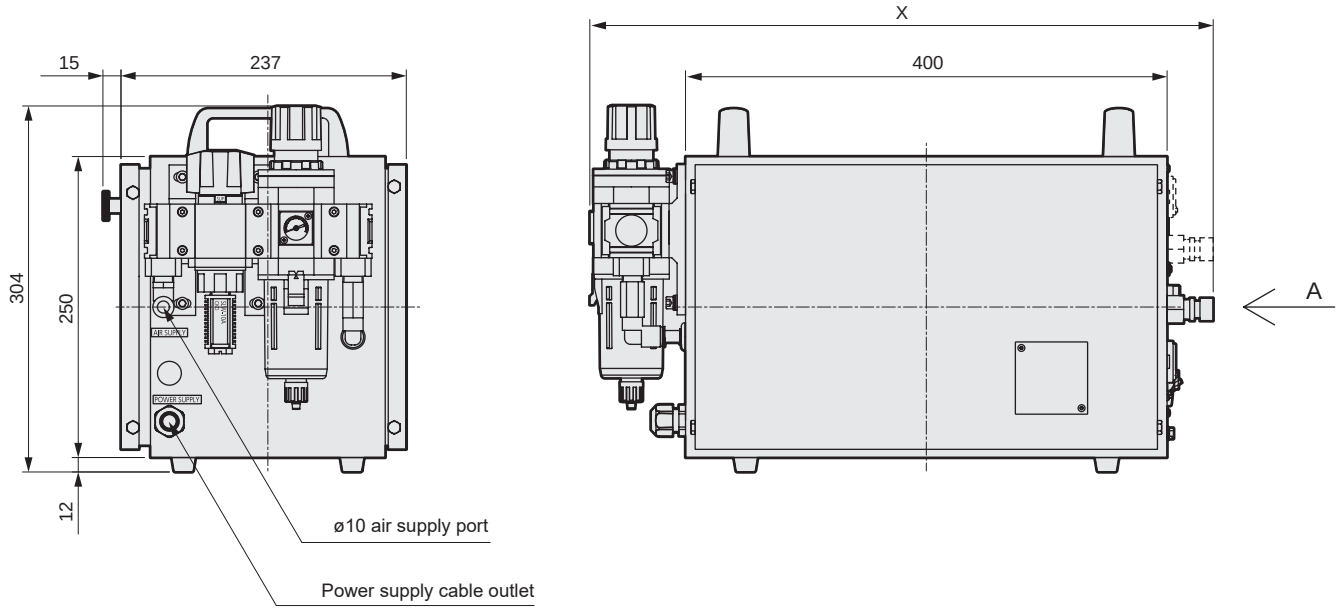


● L-bracket

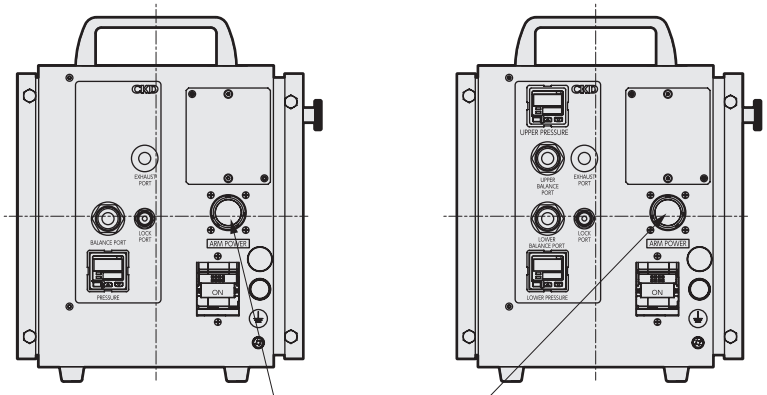


Dimensions

● PAW-BS (standard type)



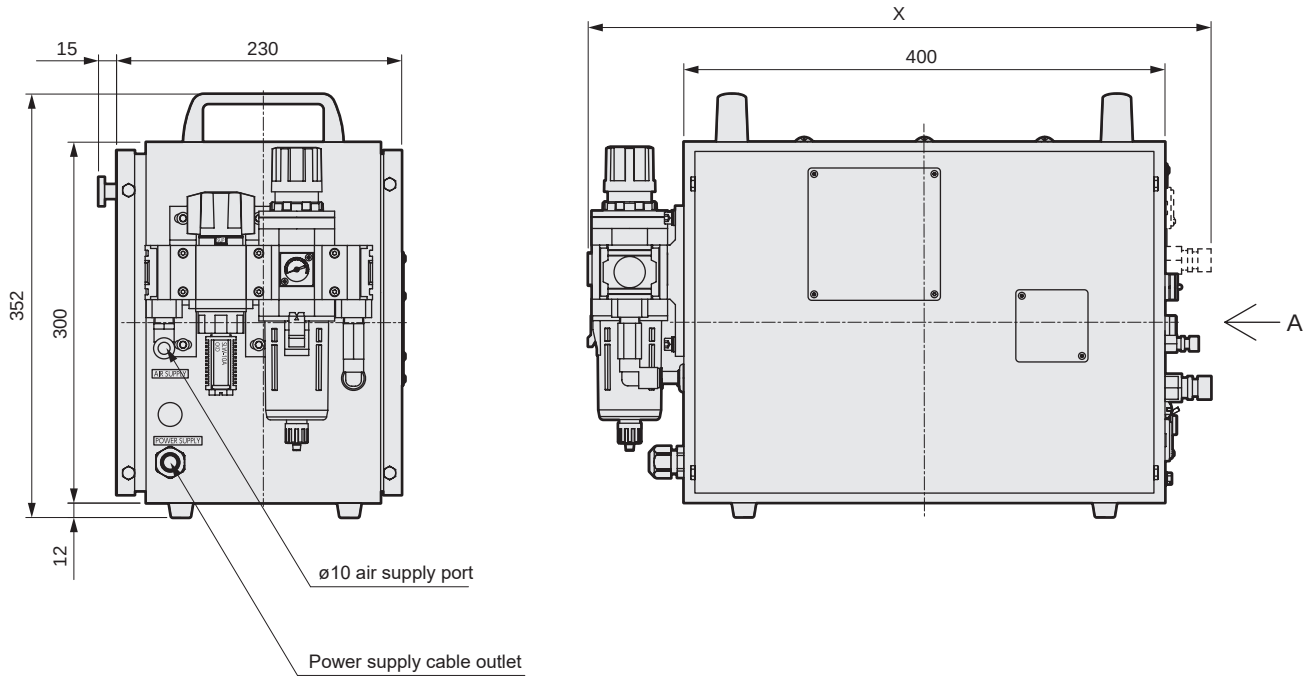
A arrow view



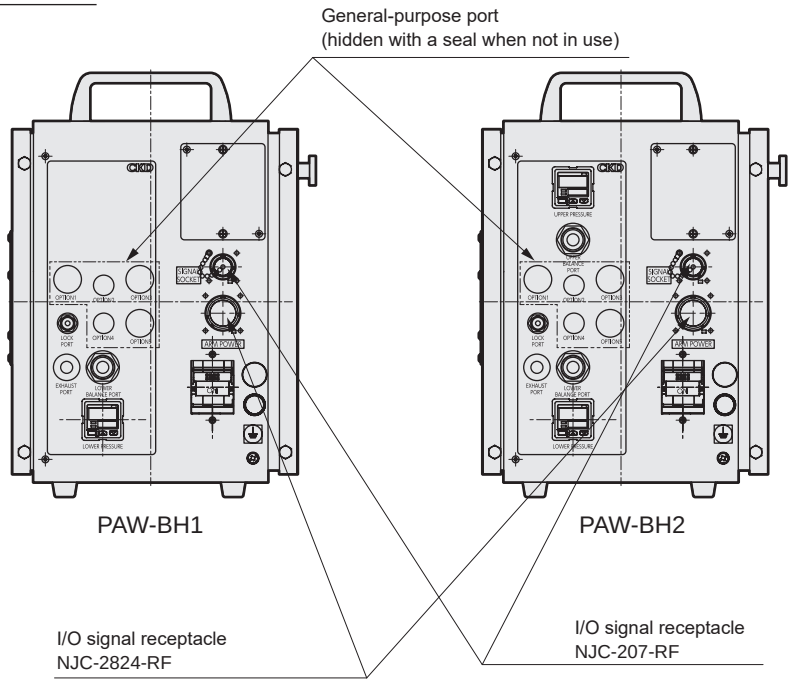
Combination contents	No. of axes	X
8, 8S	1	516
X, XS, Z, ZS		518
8X, XZ, 8XS, XZS	2	

Dimensions

● PAW-BH (high-end type)

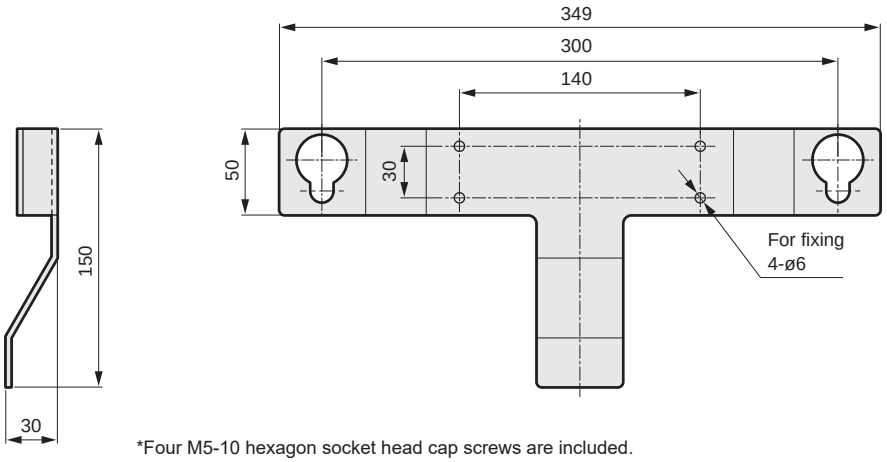


A arrow view



Combination contents	No. of axes	X
8, 8S	1	516
X, XS, Z, ZS		518
8X, XZ, 8XS, XZS	2	

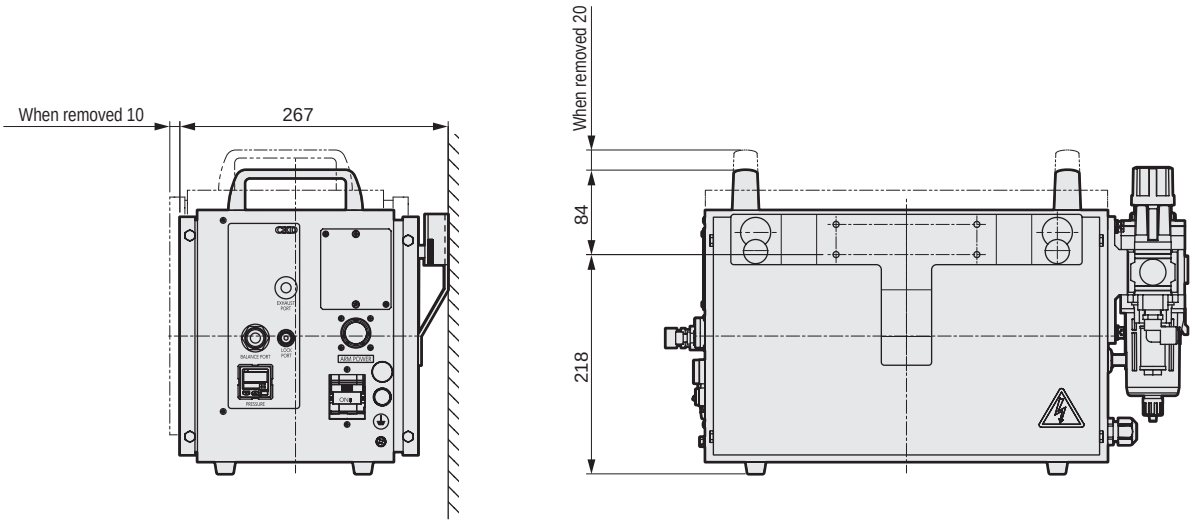
T-bracket dimensions



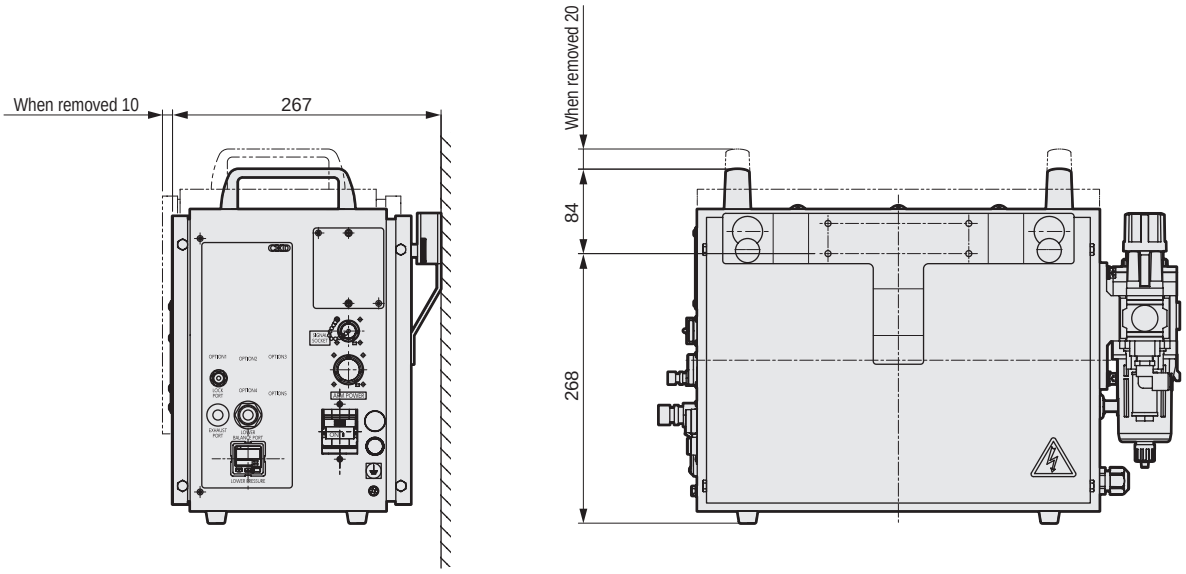
*Four M5-10 hexagon socket head cap screws are included.

• When the controller is mounted

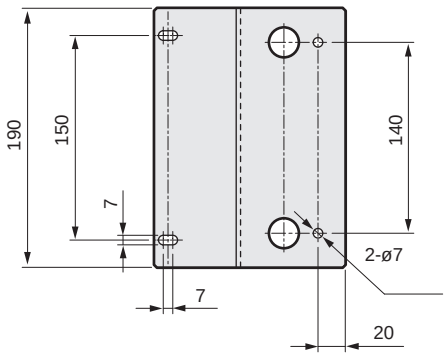
PAW-BS

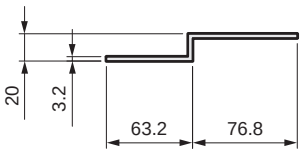


PAW-BH



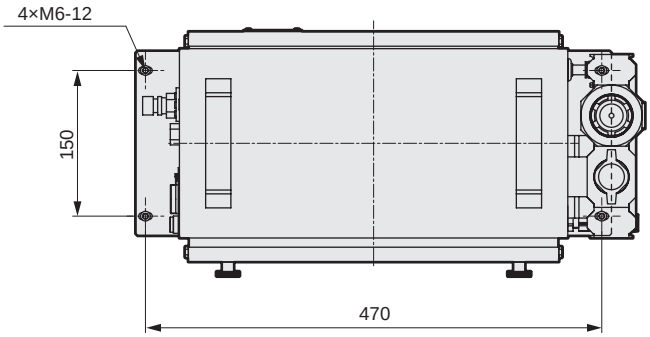
L-bracket dimensions

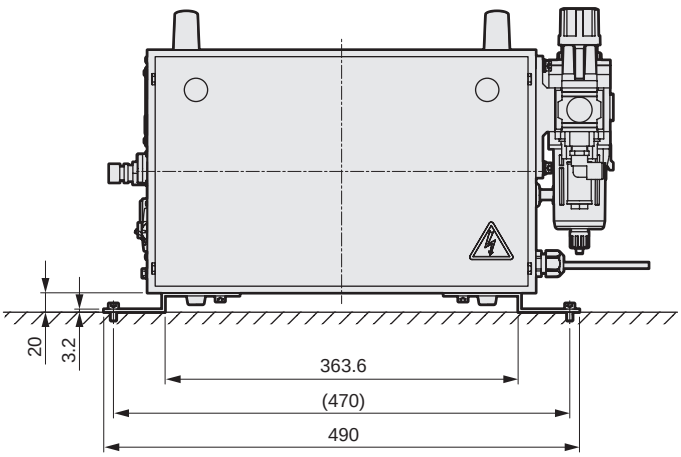


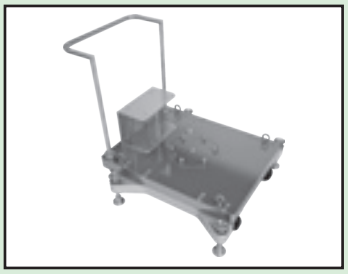


*Four M6-12 hexagon socket head cap screws are included.
*Four M6-12 hexagon socket head cap screws and 4 hexagon nuts are included if purchased separately.

• When the controller is mounted







Dolly

PAW-C* Series

How to order

PAW - C **R** - **L** - **B**

R: ❶ Shape
L: ❷ Size
B: ❸ Option

❶ Shape

Code	Description
R	With outriggers
A	Without outriggers
P	Pallet

❷ Size

Code	Description
L	PAW-S-8/X, PAW-M-8X/8S
H	PAW-S-Z, PAW-M-XZ/XS PAW-M-8XZ/8XS PAW-AS-45(-S) PAW-AZ-110(-S)

❸ Option

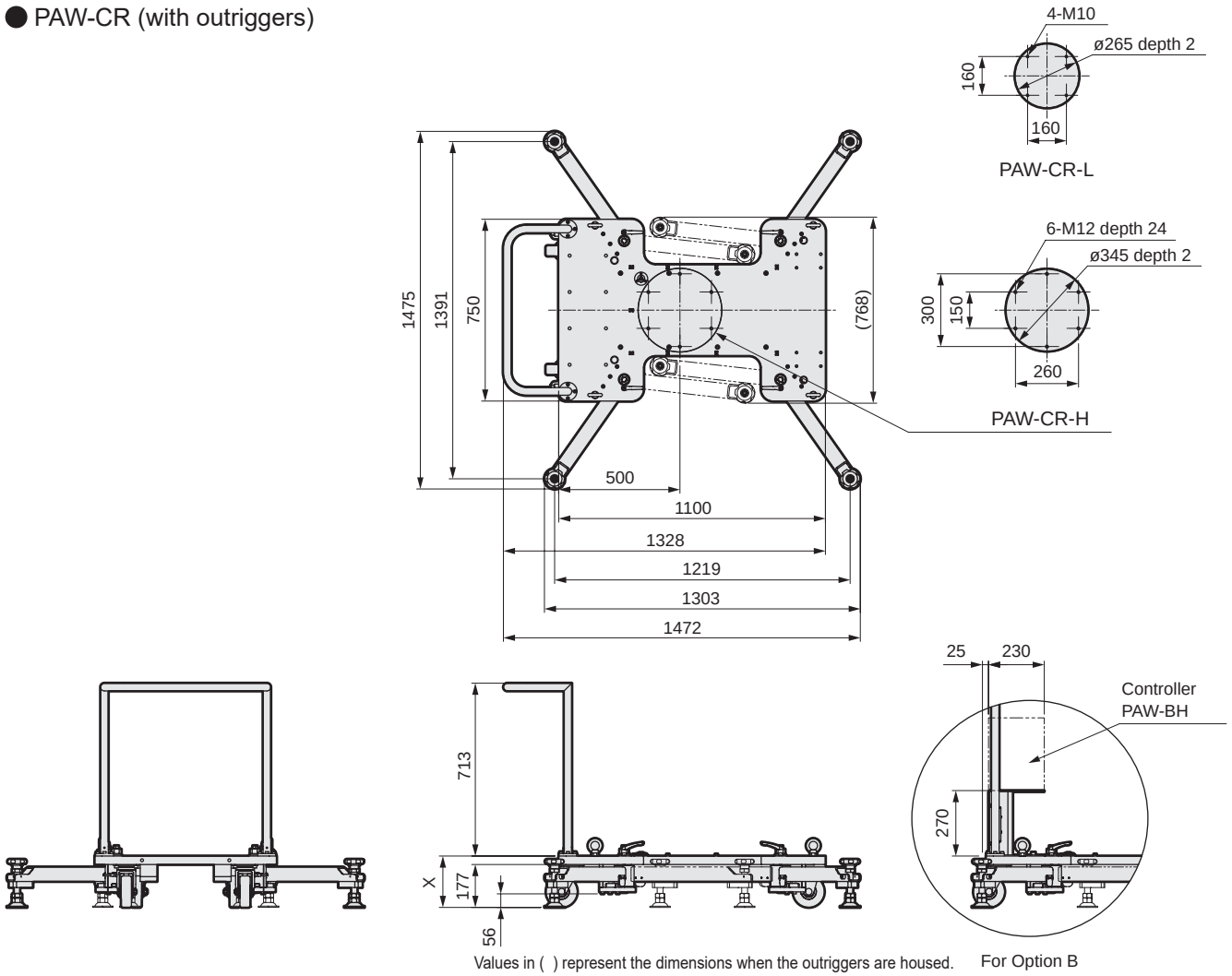
	Code	Description
*1 *2	B	Controller mounting bracket*

*1: This bracket prevents interference between the piping and the controller when installing PowerArm directly on a dolly. Must be selected if a base of 400 mm or greater (made-to-order product) is not used. PowerArm Option "U" cannot be selected when installing PowerArm directly on the dolly.

*2: Main exterior areas are made of steel (baked finish or two-component coating).

Dimensions

● PAW-CR (with outriggers)



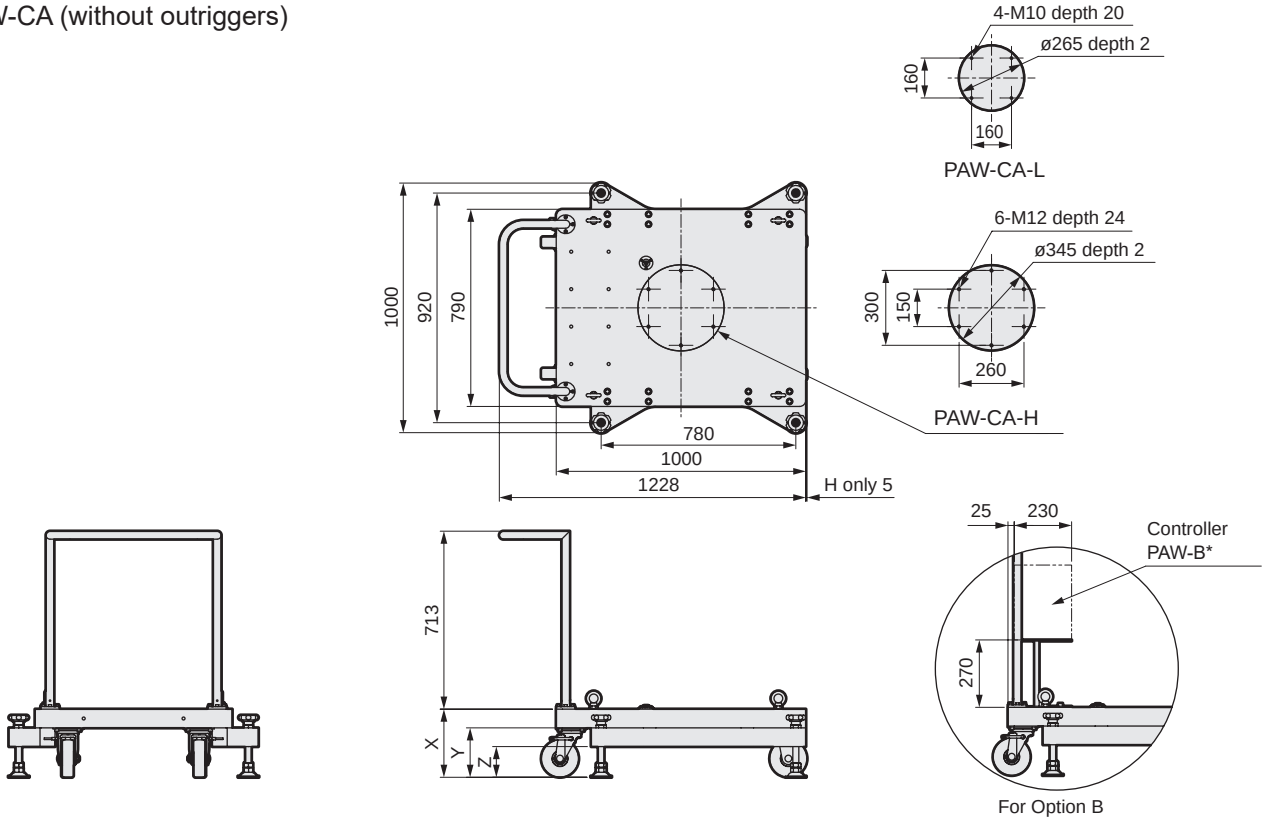
Values in ( ) represent the dimensions when the outriggers are housed. For Option B

Model No.	X	Product weight (kg)	Load resistance (kg)	Allowable moment (N·m) Note
PAW-CR-L	196	230	590	1560
PAW-CR-H	212	310	510	2110

Note To prevent falling, design the product so that it is less than the allowable moment when all moment loads (PowerArm body, max. weight workpiece, etc.) are applied and a load of 80kg is applied to the tip.

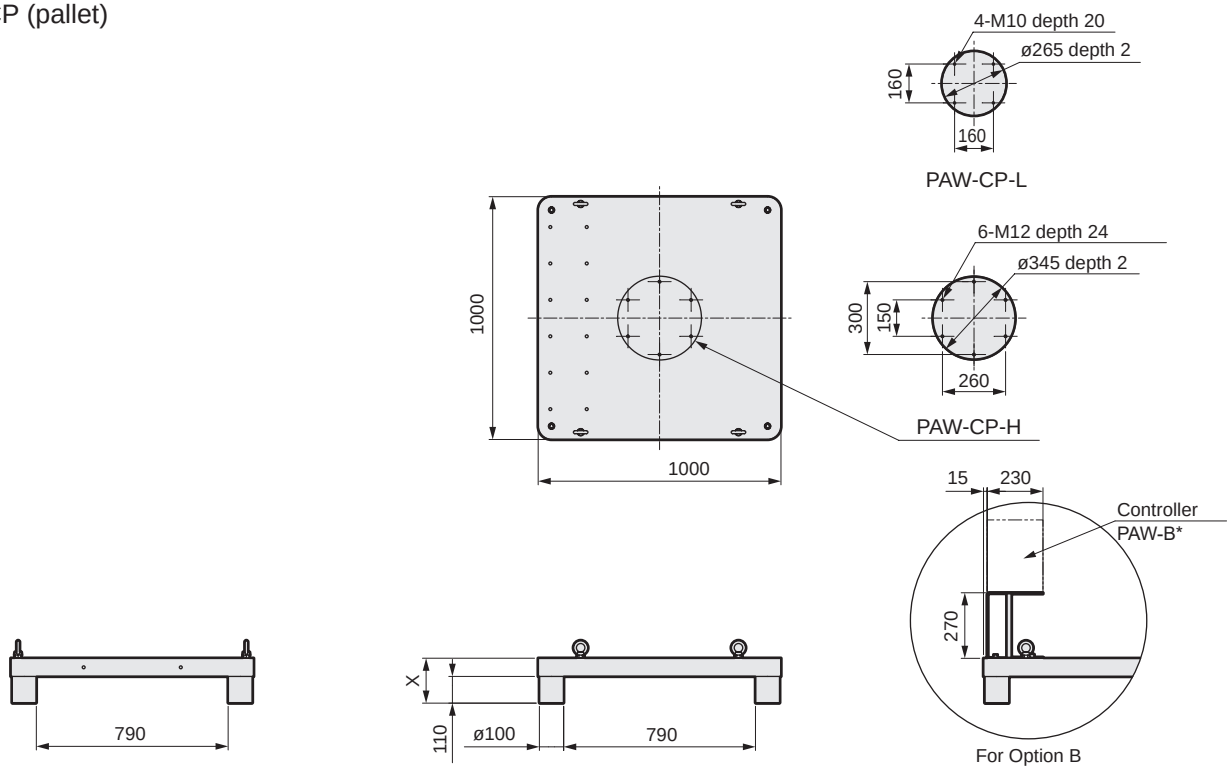
Dimensions

● PAW-CA (without outriggers)



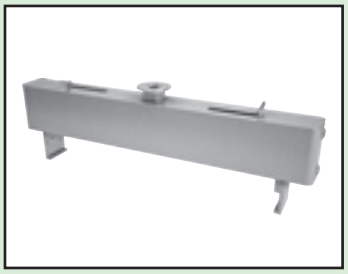
Model No.	X	Y	Z	Product weight (kg)	Load resistance (kg)	Allowable moment (N•m) Note
PAW-CA-L	222	177	102	410	410	1840
PAW-CA-H	273	198	123	600	310	2700

● PAW-CP (pallet)



Model No.	X	Product weight (kg)	Allowable moment (N•m) Note
PAW-CP-L	155	390	1910
PAW-CP-H	185	620	3030

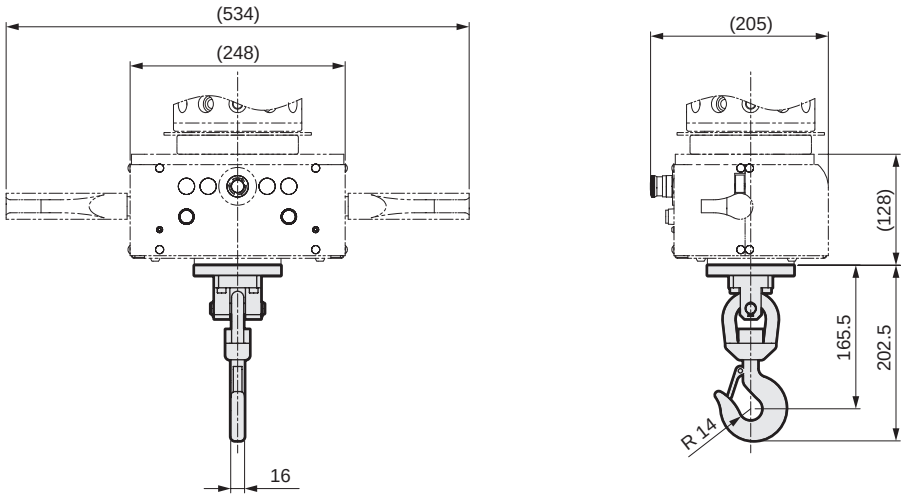
Note To prevent falling, design the product so that it is less than the allowable moment when all moment loads (PowerArm body, max. weight workpiece, etc.) are applied and a load of 80kg is applied to the tip.



Attachment

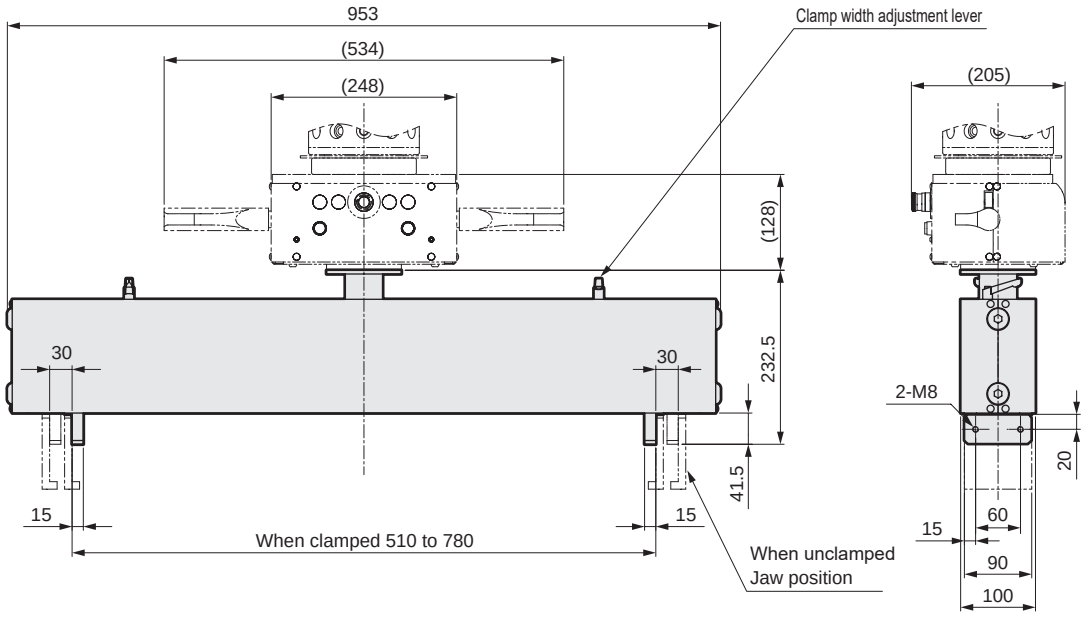
The shape and weight are provided for reference. We will design attachments according to workpiece shapes used by our customers.

● Hook attachment (PAW-JF)



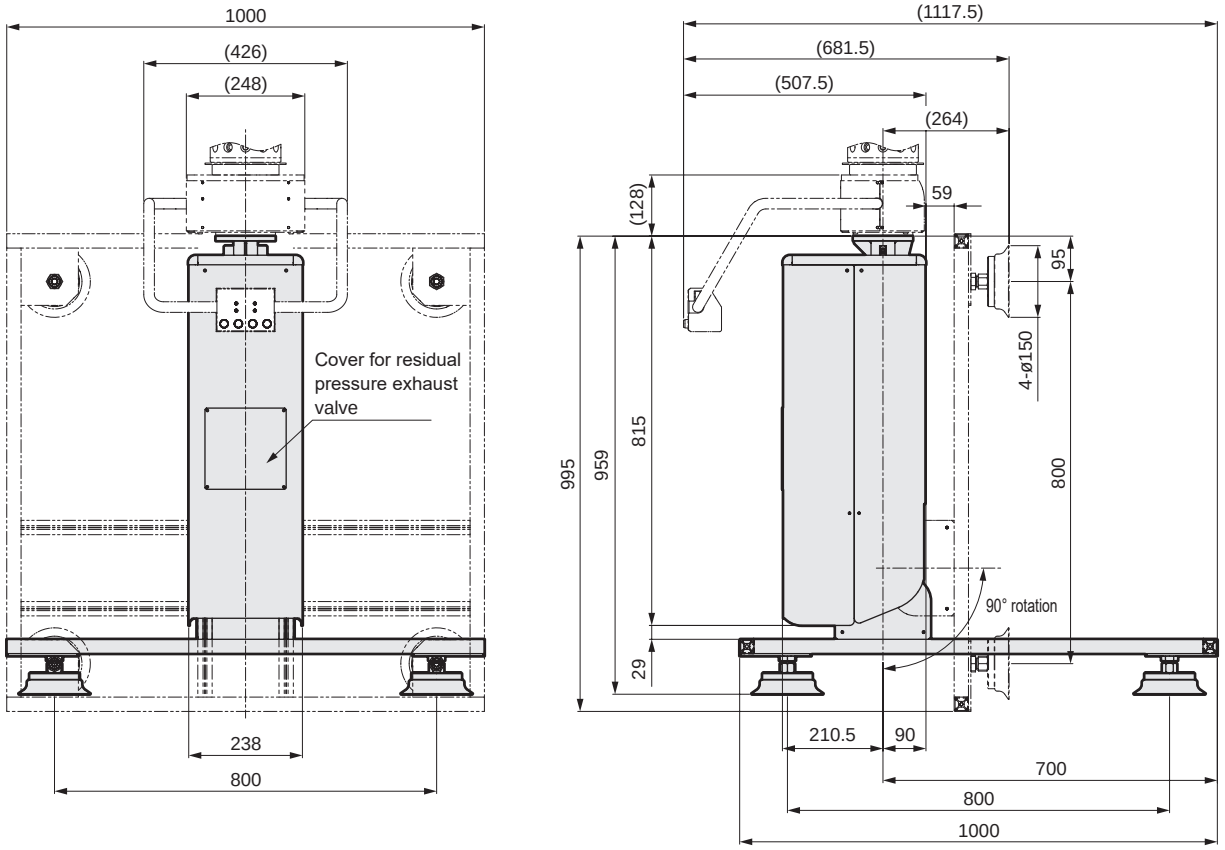
Weight: 2 kg

● Clamp attachment (PAW-JC)



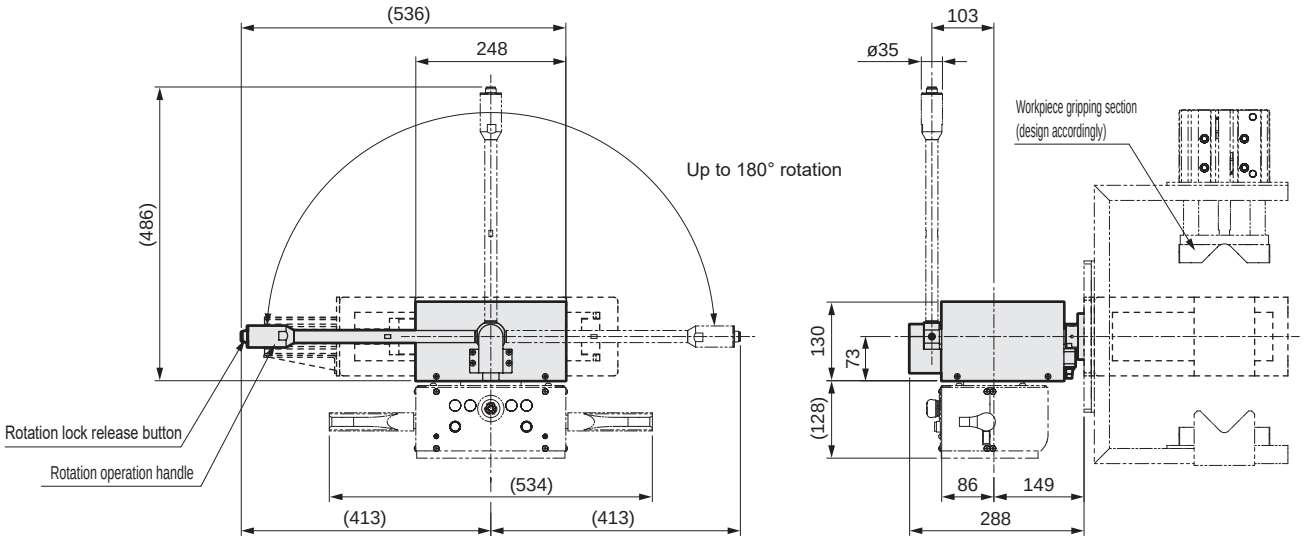
Weight: 15kg

● Sheet suction attachment (PAW- JV)



Weight: 40kg

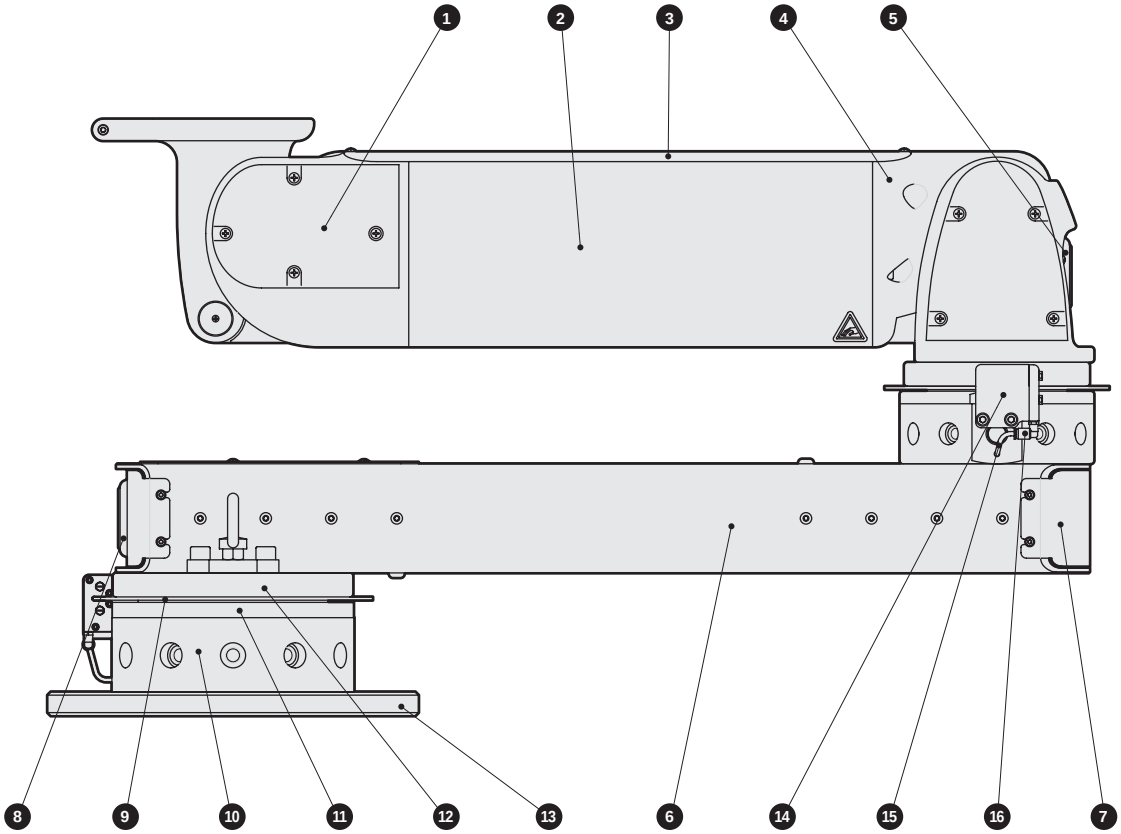
● Rotating attachment for material input (PAW-JR)



Weight: 25kg

Material / Treatment

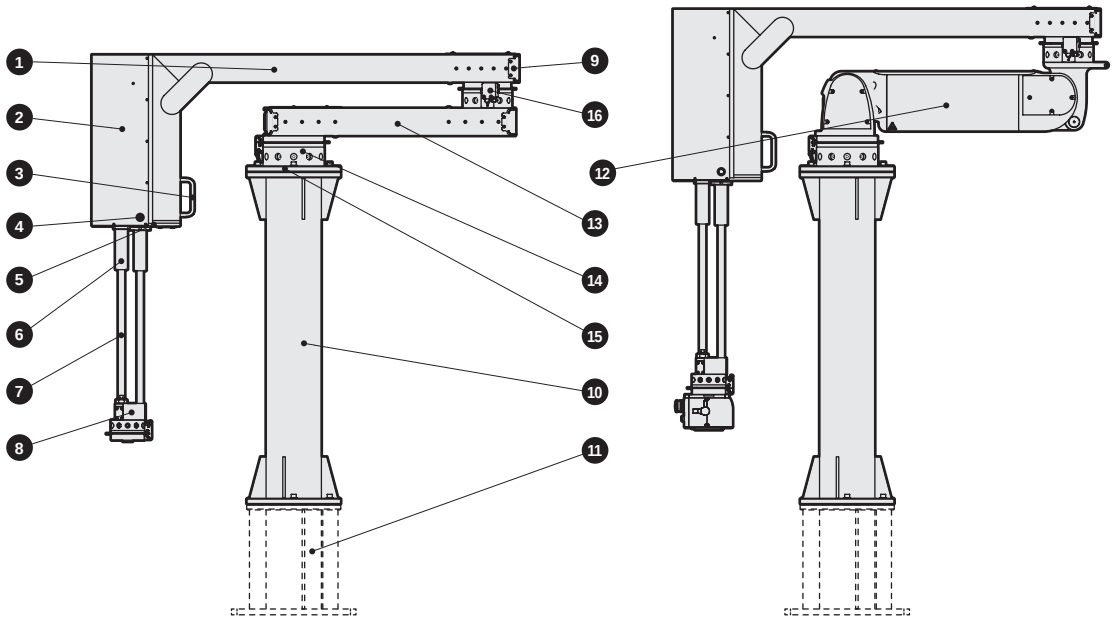
● PowerArm PAW



No.	Product name	Part name	Material	Surface-treated
1	PowerArm unit (*1)	Crevice cover, bracket cover	Flame-resistant ABS resin	
2		Body	Aluminum alloy	Alumite treatment
3		Top cover	Aluminum alloy	Alumite treatment
4		Crevice, bracket, link arm	Aluminum alloy	Baked finish
5		Grommet	EPDM	
6	SCARA arm unit (*2)	Body	Steel	Baked finish
7		Cover	Aluminum alloy	Alumite treatment
8		Grommet	EPDM	
9	Rotation unit (*3)	Lock disk	Stainless steel alloy	Industrial chrome plating
10		Body	Aluminum alloy	Alumite treatment
11		Washer	Steel	Zinc plated chromate treatment
12		Mounting plate	Aluminum alloy	Alumite treatment
13	Base plate (*4)	Base plate	Steel	Zinc plated chromate treatment
14	Rotation lock unit (*5)	Rotation lock unit	Steel	Zinc plated chromate treatment
15		Tube	Nylon	
16		Fitting	Flame-resistant PBT resin Copper alloy	Electroless nickel plating for copper alloy sections

Material / Treatment

● Palletizing specifications PAW-A



No.	Product name	Part name	Material	Surface-treated
1	Palletizing unit	Extension body	Steel	Baked finish
2		Cover A, Cover B	Stainless steel alloy	Baked finish
3		Handle	Aluminum alloy	Electrostatic coating
4		Grommet	EPDM	
5		Mounting flange	Steel	Zinc plated chromate treatment
6		Linear bush	Steel	Electroless nickel plating
7		Guide shaft, piston rod	Steel	Industrial chrome plating
8		Connection block	Aluminum alloy	Alumite treatment
9		Rear cover	Aluminum alloy	Alumite treatment
10		Mount frame	Steel	Painted
11	Base (made-to-order product)	Base	Steel	Painted
12	PowerArm unit		Compliant to PAW (*1)	
13	SCARA arm unit		Compliant to PAW (*2)	
14	Rotation unit		Compliant to PAW (*3)	
15	Base plate		Compliant to PAW (*4)	
16	Rotation lock unit		Compliant to PAW (*5)	

Regular maintenance parts

The replacement must be performed by an operator having sufficient knowledge and experience. Be sure to read the instruction manual carefully.

Part name	Part model No.	Applicable unit model No.	Standard replacement time *1, *2
Stopper bolt	PAW-RU-T-STB-KIT	PAW-RU-T	20,000 cycles or a year
	PAW-RU-8-STB-KIT	PAW-RU-8	
	PAW-RU-X-STB-KIT	PAW-RU-X	
	PAW-RU-Z-STB-KIT	PAW-RU-Z	
	PAW-RU-ZS-STB-KIT	PAW-RU-ZS	
Anti-rotation bolt	PAW-RU-T-ARB-KIT	PAW-RU-T	100,000 cycles or 5 years (20,000 cycles or 1 year when not using a stopper bolt and used as a rotating stopper)
	PAW-RU-8-ARB-KIT	PAW-RU-8	
	PAW-RU-X-ARB-KIT	PAW-RU-X	
	PAW-RU-Z-ARB-KIT	PAW-RU-Z	
	PAW-RU-ZS-ARB-KIT	PAW-RU-ZS	
[Mechanical lock specifications only] Cushion rubber	PAW-AU-8-B-CR-KIT	PAW-AU-8-B	100,000 cycles or 5 years
	PAW-AU-X-B-CR-KIT	PAW-AU-X-B	
	PAW-AU-Z-B-CR-KIT	PAW-AU-Z-B	
SPIRAL TUBE AND BINDING BAND	Recommended product: TS-9 Recommended product: AB80		100,000 cycles or 5 years
Tube	Wear resistant tube ARU-8×5 (Aoi Co., Ltd.) Wear resistant tube ARU-10×6.5 (Aoi Co., Ltd.) Soft nylon tube F-1504 (CKD Co., Ltd.)		

*1: As this value differs depending on the frequency of use and working conditions, it is not a guaranteed value.
*2: Estimated frequency calculated as 80 cycles/day (vertical reciprocating operation) × 240 days/year.

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

1 . PAW Series Standard / Mechanical lock specifications

⚠WARNING

- This product is a pneumatic assistive device, intended for use as a machine with a jig, attachment, etc., mounted to the device's tip transport section. For use, be sure to implement a risk assessment for the machine overall, and confirm safety before use. In addition, the end user should perform a risk assessment on the user side, based on residual risk information for the machine overall, and stipulate a safe operating method for use.

- During attachment manufacture and control circuit design, be sure to install an interlock circuit for detecting whether a workpiece is present, and design equipment and circuits safely to prevent unexpected operation by the equipment.

⚠CAUTION

- Each unit single item cannot be disassembled. Do not disassemble, as it could impair the original performance and accuracy. For an overhaul of single item units, contact a CKD representative.

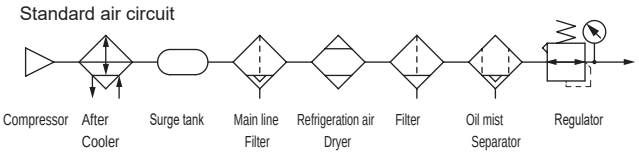
- Rubber cushions are incorporated on the rising and lowering ends and the rotation end to regulate the vertical operating range and the rotation angle, but they are not structured to accept impact. Do not use the product so as to collide with the rising end, lowering end, or rotation end.

- The rotation lock mechanism (option) is a mechanism to hold the force in the rotation direction generated by the inclination of the mounting surface, deflection of the product, etc. It is not designed to stop the dynamic rotational force.

[Pneumatic source]

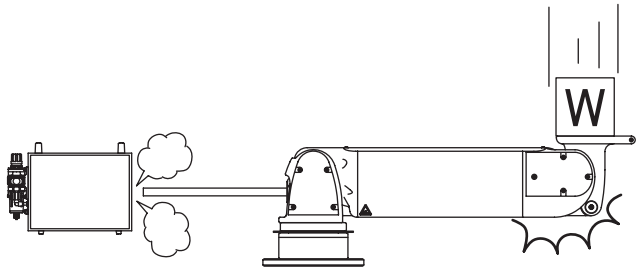
- Use the pneumatic pressure supplied to the PowerArm within the range of [0.05MPa] to [0.7MPa]. For the pressure required to load, refer to the graph of "Load capacity under pressure".

- Prepare clean air ([standard air circuit] compressed air quality class: 1.5.1 to 1.6.1 equivalent) for supplied air.



[Pneumatic piping]

- If the pneumatic piping slips during use, the arm may fall, creating a hazard. Securely connect the pneumatic piping so that it does not come out.



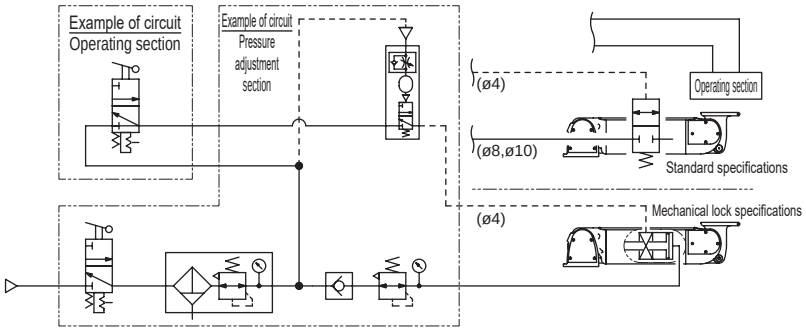
[Air circuit]

- When creating an air circuit, be sure to incorporate a safety mechanism and perform a risk assessment as an equipment to prevent jumping up due to the falling of the transported objects and a sudden drop due to a mistake in the switching operation.

[Recommended air circuit]

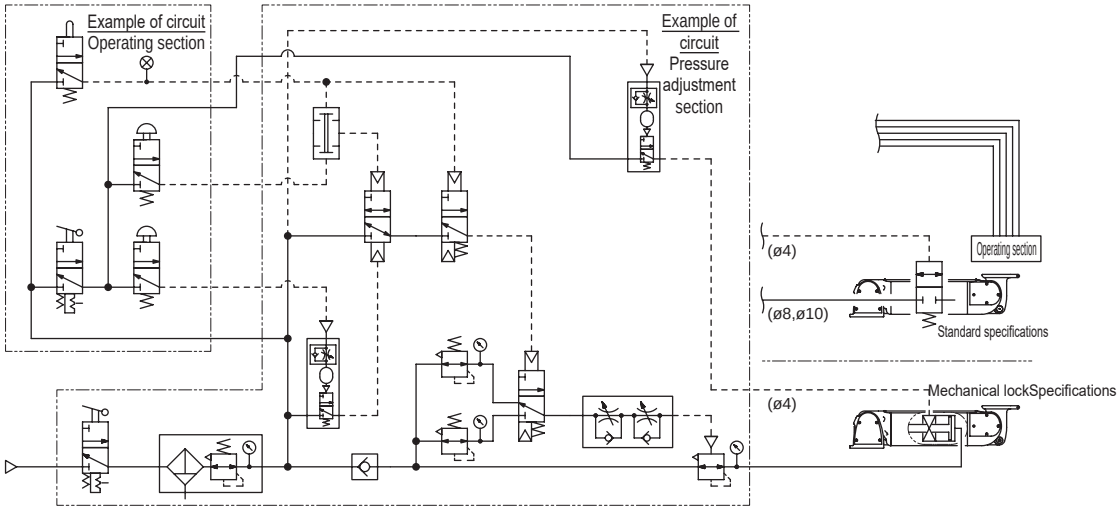
■ Operating pressure fixing control (air 1 pressure circuit)

Control that maintains balance at a constant weight by setting one precision regulator.
They are suitable for assisting jigs and tools that do not cause weight fluctuations.



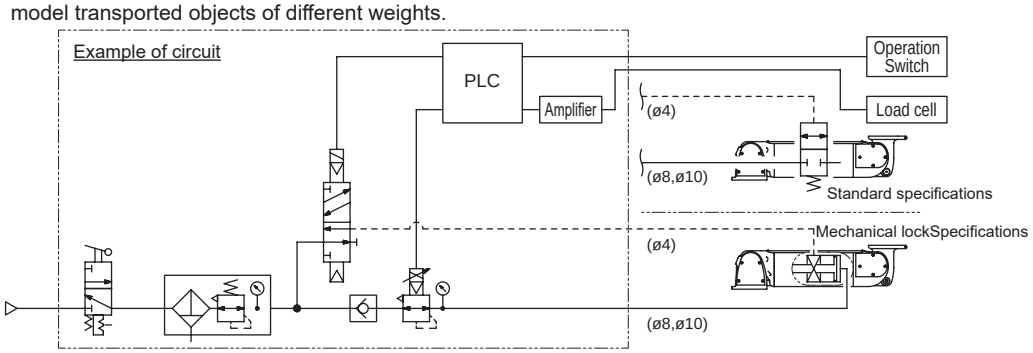
■ Operating pressure fixing control (air 2-pressure circuit)

With two precision regulators, when there is a transported object and when there is no transported object, two balance states are preset and then switched by switch operation. This series is suitable for use in batch production, etc., where identical products are transported continuously.



■ Automatic operating pressure adjustment control

Control which detects the weight of the transported object by a load cell installed at the arm tip, and adjusts the pressure according to the weight with an electro pneumatic regulator. It is suitable for handling multi-model transported objects of different weights.



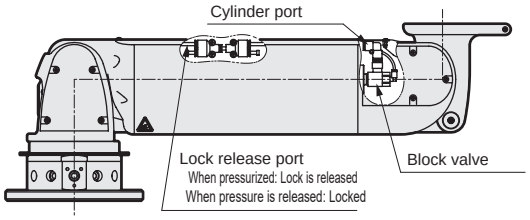
[Consider the layout when assembling and using unit products]

■ Although rubber cushion is built into the stopper bolt and rotation prevention bolt of the rotation unit, the structure does not receive impact. When considering a layout, make sure that the layout has enough margin so that the arm does not hit the rotation end during operation.

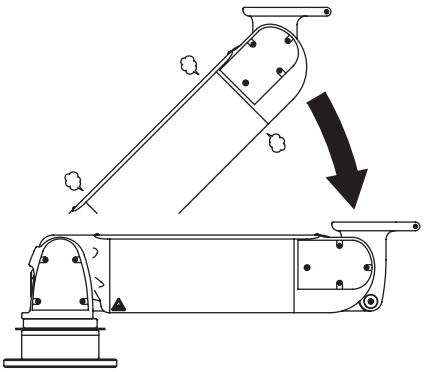
2 . PAW Series Standard specifications

⚠WARNING

■ Each PowerArm unit in the standard version has a built-in block valve. The block valve works as a vertical lock, which is unlocked by applying pressure. If the block valve is activated due to a sudden decrease in primary pressure (source pressure) due to trouble, etc., after primary pressure is restored, supply the balance pressure to the cylinder port, and then apply pressure to the unlock port to release the lock. If the lock is unlocked when the balance pressure is not supplied, the arm may drop, which is very dangerous.



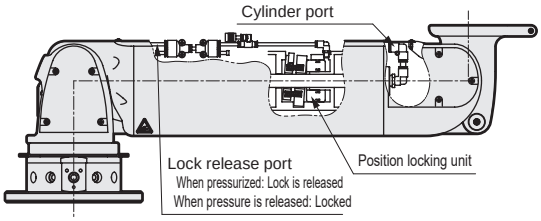
In addition, since it is an air block system that seals the internal cylinder, if left for long periods, the arm will drop due to minute leakage from the cylinder. When leaving it for long periods, lower all the arms to the bottom end. If you need to leave it at a state other than the fully descended one, please contact us.



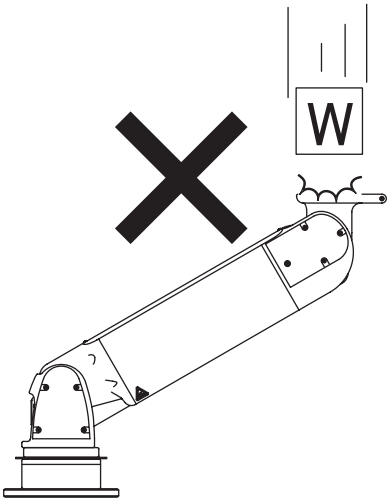
3 . PAW-*B Series mechanical lock specifications

⚠WARNING

■ Each PowerArm unit with Mecha-Lock specifications has a built-in lock unit. The lock unit works as a vertical lock and is unlocked by applying pressure. If the Mecha-Lock is activated due to a sudden decrease in primary pressure (source pressure) due to trouble, etc., supply the balance pressure to the cylinder port after the primary pressure is restored, and then pressurize the unlock port to release the lock. If the lock is released without supplying the balance pressure, the arm may fall and it may be very dangerous.



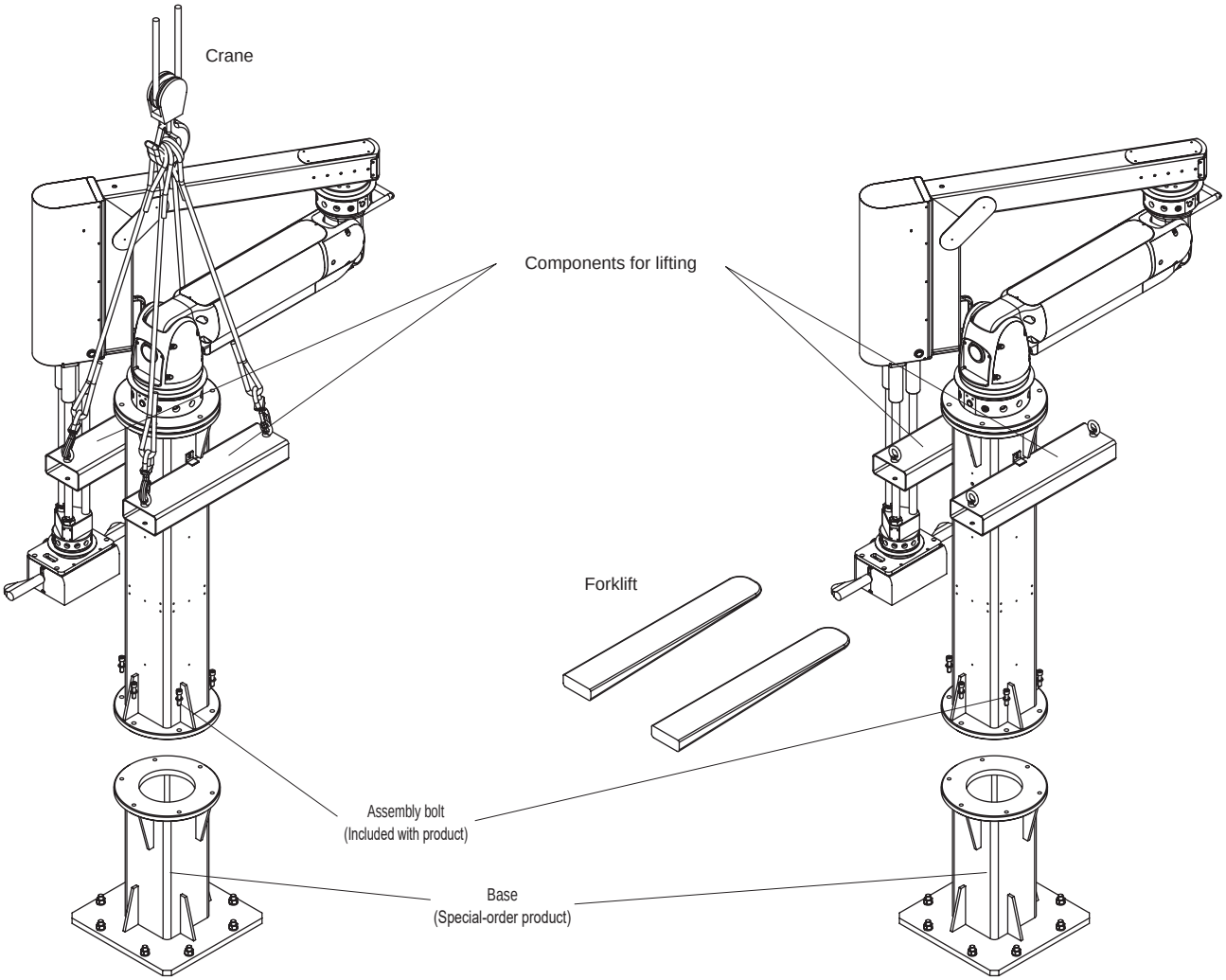
■ When placing transported items on the device tip part (including mounted attachments and jigs, etc.) with the vertical lock engauged, do not drop the transported items for loading. The lock may not be able to be released.



4. PAW-A palletizing specifications

⚠ CAUTION

- This product is shipped in a wooden crate packaging form.
- For transportation, installation and assembly, cranes, forklifts, etc., which are appropriate for the product weight are required.
- Materials to be suspended (lifted) are assembled before shipment. Install and assemble them on the base by suspending or lifting them with a crane or a forklift.



5. Controller PAW-B

⚠ DANGER

- Use a tightening fitting to connect the piping between the controller and this product.

⚠ WARNING

- When connecting the air piping (electric wiring) protruding from the piping outlet of the body to the air circuit (electric circuit), check that the air piping or electric wiring is not crushed, or that tensile stress is not applied.

Use / Maintenance

1 . PAW Series Standard/mechanical lock specifications

⚠ WARNING

- If vibrations, noise, or other abnormalities occur, first assure your own safety, and then, if possible in safety, apply vertical and rotation locks. A fatal accident or total damage to the device may occur.
- Do not modify the product or device without the manufacturer's approval.
- Do not put hands or fingers into product or device gaps.
- When placing (hoisting) transported items on the device tip part (including mounted attachments and jigs, etc.), do not stack (hoist) lopsidedly or so as to tip the load over.
- During work or transport operation, never move away from the product or device. When releasing contact, always be sure to apply the lock, even if it is in a balanced state.

[Tip hazards]

- Do not use in excess of the maximum load capacity.
- Do not use in excess of the moment load.

2. PAW-A palletizing specifications

⚠ WARNING

- Do not hang the product from the arm section.
- Do not climb the product.

⚠ CAUTION

- During relocation or maintenance, do not suspend up the arm section.

3 . Controller PAW-B

⚠ WARNING

- Do not touch the live parts.
- Establish a ground connection before use.
- Do not use as a step.
- Do not climb the product.
- When using the wall mounting T-bracket, do not push up the product from below.
- Do not place yourself under this product when it is mounted on a wall.
- When installing on the floor (floor), install on a firmly paved, flat surface.

⚠ CAUTION

- If the PowerArm is not used when the day's work is completed, turn OFF the power supply and close the residual pressure exhaust valve to release air.
- Movement should be done by two people, while holding the handles.
- Do not remove the hexagon bolts of the cover except for installation or maintenance.
- Do not use this product with the cover removed.

4 . Dolly PAW-C

- Do not use this product at levels exceeding the allowable moment.
- Use on a firmly paved, flat surface.
- For a dolly with outriggers, use it with the outriggers fully extended.
- For a dolly with or without outriggers, be sure to use the product with four adjusters in contact with the ground.
- Move the dolly when the arm tip is completely lowered; for multiple axes, move only with the product folded into its most compact state.
- Do not move the dolly when the arm tip part (including mounted attachments and jigs, etc.) is carrying items to be transported.

How to unlock manually

When trouble occurs (electricity, air supply stop, etc.), the lock can be manually released. For details of how to unlock manually, refer to the instruction manual.

⚠ CAUTION

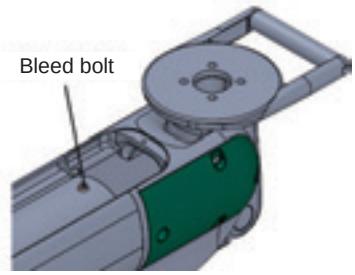
■ The lock must be manually released by a service man with sufficient knowledge of the machine and air circuit.

■ Lower transported objects and workpieces as far as possible before starting work.

[Vertical direction]

1 . PAW Series Standard specifications

1 . Stops air supplied to systems and devices. When performing electrical control, turn the power OFF.
2 . Remove the top cover.
3 . By loosening the bleed bolt 2 or 3 turns, internal air is gradually exhausted and drops slowly.

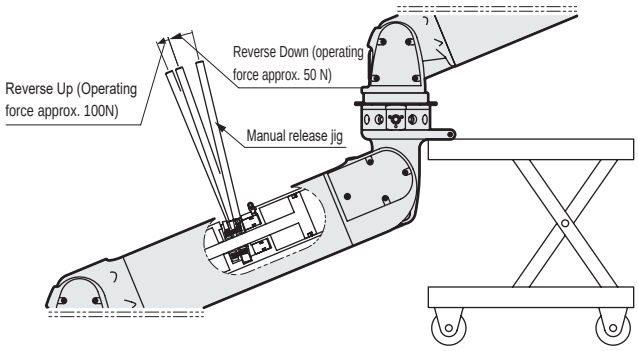


2 . PAW Series mechanical lock specifications

⚠ WARNING

■ Manually release the handle while supporting it with a movable lifter, jack, etc. If manually released without support, the product could fall suddenly and cause a fatal accident on the body, product or device.

1 . Stops air supplied to systems and devices. When performing electrical control, turn the power OFF.
2 . To prevent falling during manual release, the handle of the PowerArm unit is supported by a movable lifter, jack, etc.
3 . Remove the top cover.
4 . Remove the manual release cover.
5 . Loosen the bleed bolt 2 or 3 turns.
6 . Screw the manual release jig included with the product fully into the screw hole in the manual release cover.
7 . As shown below, the lock is released when the manual release jig is operated.

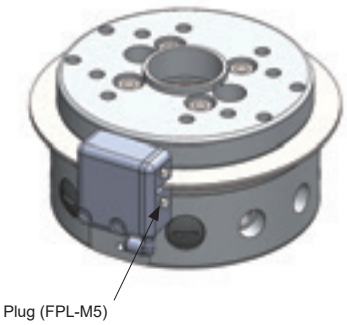


8 . Gently lower the movable lifter, jack, etc.

[Rotation direction]

1 . PAW Series Standard / Mechanical lock specifications

1 . Stops air supplied to systems and devices. When performing electrical control, turn the power OFF.
2 . The lock is released when two plugs (FPL-M5) are removed and two hexagon socket head cap screws are screwed into the removed screw hole.



Precautions for export

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

Example 1

PAW Order Sheet (Basic Specifications)

Date

Sales office

Office manager	Contact

Company name

Address /☎

Contact

1. Enter details of work in progress and purpose of use for PAW.

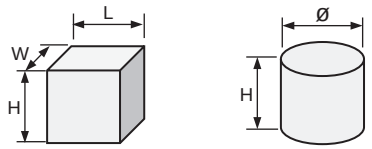
(Work contents) Load a workpiece from the workpiece transport dolly into the vertical machining center and remove the machined workpiece.

(Intended use) Stabilize the process and prevent workplace accidents.

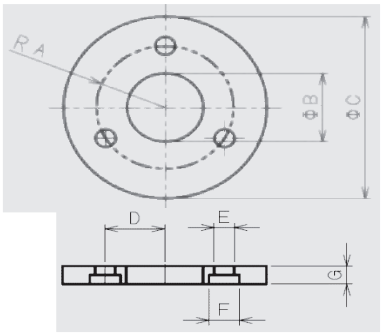
2. Shape/weight/type of workpiece to be transported

(1) Height	H =	G	mm
(2) Width	W =		mm
(3) Depth	L =		mm
(4) Diameter	ø =	C	mm
(5) Weight		20	kg
(6) Type		1	Type

Examples of shape dimensions



Fill in the shape dimensions.



* For multiple workpieces, attach the shape dimensions separately.

3. PAW tip attachment

■ Manufacturer (CKD/customer) * If CKD is selected as the manufacturer, detailed dimensions of the workpiece are required.

■ Grip method Fork / (Chuck) / Vacuum suction / Other ( )

■ Summary weight Approx. _____ kg When manufactured by customer

4. PAW control box

■ Manufacturer (Required) / Not required)

■ Control method (Manual pressure regulating control system / (Automatic pressure regulating control system)

5. PAW power source ■ Pneumatic supply pressure 0.5 MPa ■ Power AC100 V

* For air supply pressure, fill in the pressure which can be supplied by the customer.

6. PAW installation method ■ (Fixed on floor) / Movable on floor (dolly) / Other ( )

7. PAW working environment ■ Water drops (Yes / (No)) ■ Dust (Yes / (No)) ■ Other ( )

8. PAW operating frequency ■ 20 times/day 20 days/month

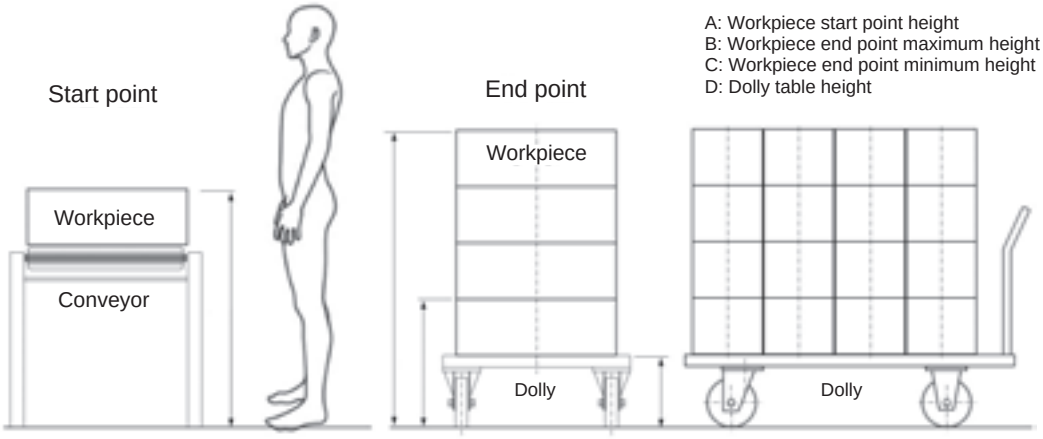
9. Work layout

When considering the arm shaft configuration, we need to confirm the vertical and horizontal movable range required.

Provide layout dimensions with the workpiece start and end points indicated.* Attach drawings if available.

The figure below is an example of layout dimensions showing the start and end point height positions.

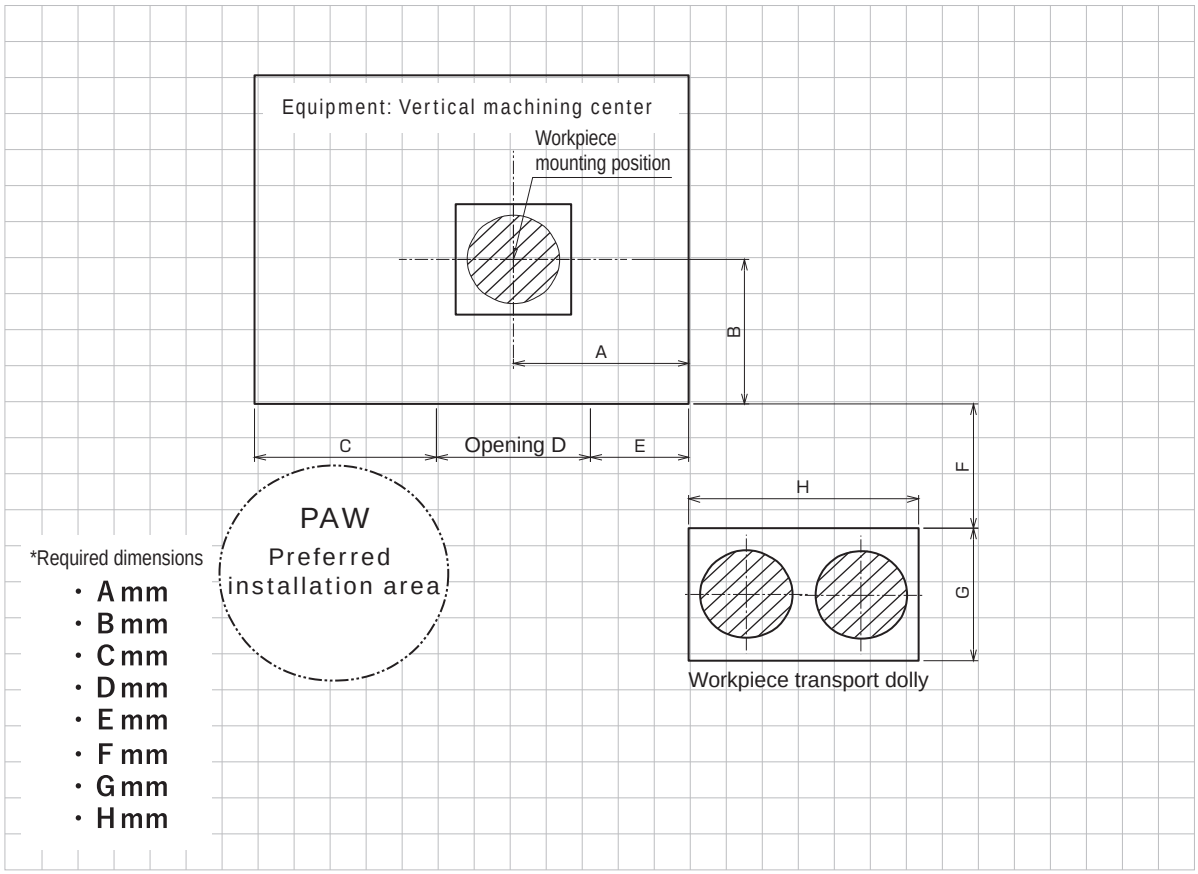
Layout diagram showing the start and end point heights when picking workpieces up off the conveyor and stacking them in rows of 4 by 4 high on a transport dolly



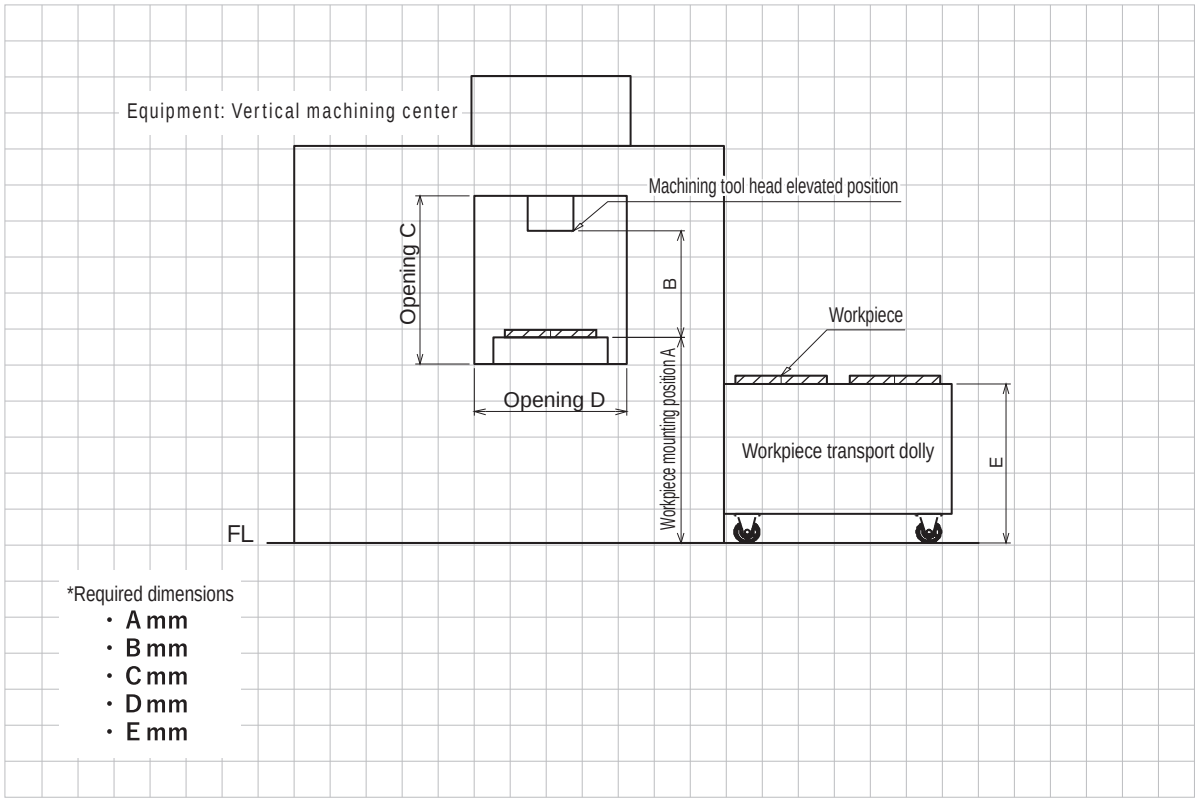
Example 1

PAW Order Sheet (Work Layout Diagram)

9-1. Workpiece start point/end point position layout diagram (cross-section)



9-2. Workpiece start point/end point position layout diagram (plane figure)



Include detailed dimensions, including peripheral equipment, in the layout diagram.

10. Remarks and notes

When feeding a workpiece: Workpiece dolly -> Vertical machining center
When removing a workpiece: Vertical machining center -> Workpiece dolly
Possible to change the position to place a transporting dolly

Example 2 (palletizing)

PAW Order Sheet (Basic Specifications)

Date

Sales office

Office manager	Contact

Company name

Address /☎

Contact

1. Enter details of work in progress and purpose of use for PAW.

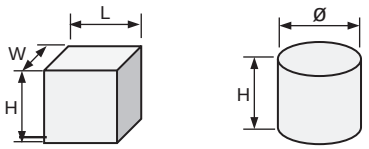
(Task) Palletize the workpieces unloaded from the conveyor.

(Intended use) Stabilize the process, prevent workplace accidents, and staff female operators.

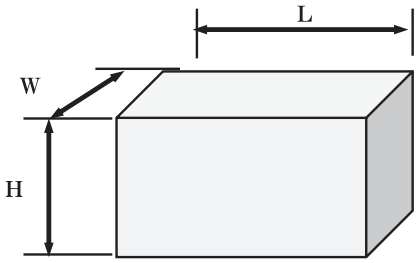
2. Shape/weight/type of workpiece to be transported

(1) Height	H =	250	mm
(2) Width	W =	280	mm
(3) Depth	L =	350	mm
(4) Diameter	ø =		mm
(5) Weight		20	kg
(6) Type		1	Type

Examples of shape dimensions



Fill in the shape dimensions.



Cardboard box

* For multiple workpieces, attach the shape dimensions separately.

3. PAW tip attachment

■ Manufacturer (CKD / customer) * If CKD is selected as the manufacturer, detailed dimensions of the workpiece are required.

■ Grip method Fork / Chuck / (Vacuum suction) / Other ( )

■ Summary weight Approx. _____ kg When manufactured by customer

4. PAW control box

■ Manufacturer (Required) / Not required)

■ Control method (Manual pressure regulating control system / (Automatic pressure regulating control system)

5. PAW power source ■ Pneumatic supply pressure 0.6 MPa ■ Power AC100 V

* For air supply pressure, fill in the pressure which can be supplied by the customer.

6. PAW installation method ■ (Fixed on floor) / Movable on floor (dolly) / Other ( )

7. PAW working environment ■ Water drops (Yes / (No)) ■ Dust (Yes / (No)) ■ Other ( )

8. PAW operating frequency ■ 200 times/day 20 days/month

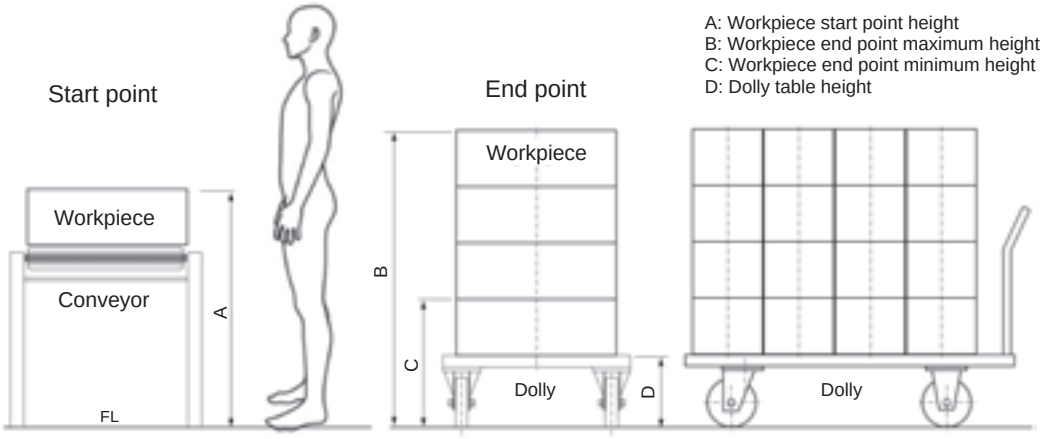
9. Work layout

When considering the arm shaft configuration, we need to confirm the vertical and horizontal movable range required.

Provide layout dimensions with the workpiece start and end points indicated.* Attach drawings if available.

The figure below is an example of layout dimensions showing the start and end point height positions.

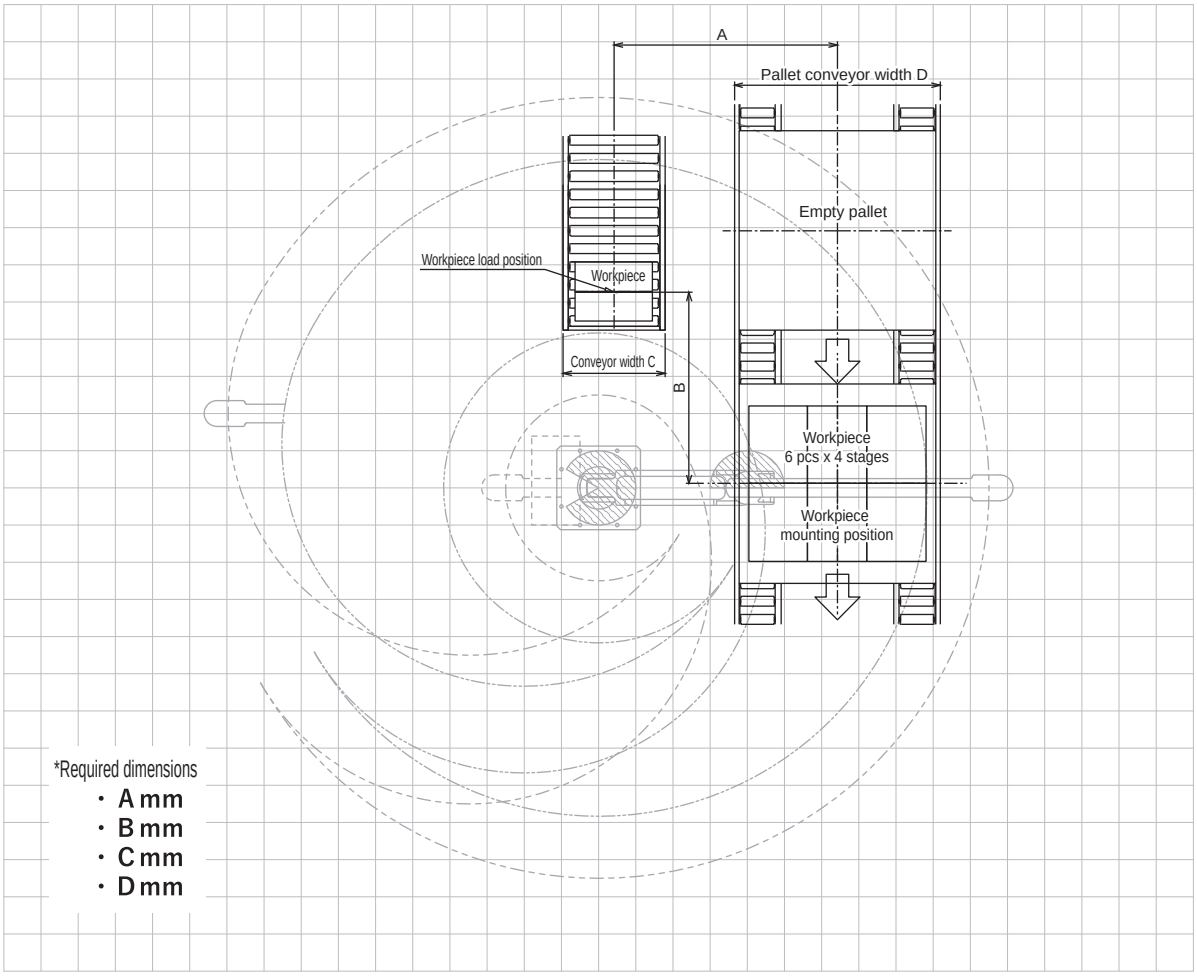
Layout diagram showing the start and end point heights when picking workpieces up off the conveyor and stacking them in rows of 4 by 4 high on a transport dolly



Example 2 (palletizing)

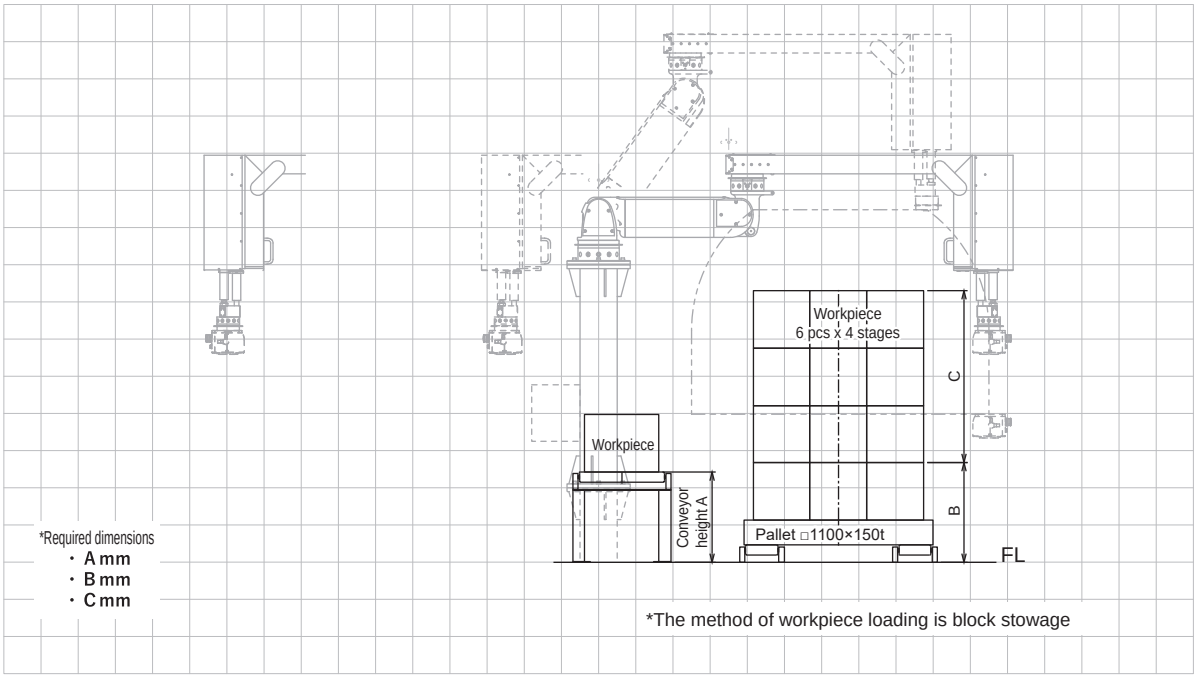
Palletizing system order sheet (work layout)

●**PAW-AZ-110**



Within the operating range at the bottom end Within the operating range at the top end (when the bending direction is blank)

(For the bending direction blank or (C) option, the operating range is left-right reversed.) 200 mm × 200 mm per square



*The method of workpiece loading is block stowage

PAW Order Sheet (Basic Specifications)

Date

Sales office

Office manager	Contact

Company name

Address /☎

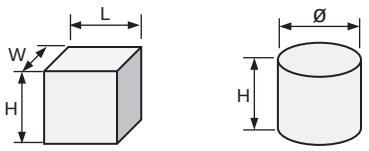
Contact

1. Enter details of work in progress and purpose of use for PAW.

2. Shape/weight/type of workpiece to be transported

(1) Height	H =		mm
(2) Width	W =		mm
(3) Depth	L =		mm
(4) Diameter	ø =		mm
(5) Weight			kg
(6) Type			Type

Examples of shape dimensions



Fill in the shape dimensions.

* For multiple workpieces, attach the shape dimensions separately.

3. PAW tip attachment

- ■ Manufacturer (CKD/customer) * If CKD is selected as the manufacturer, detailed dimensions of the workpiece are required.
- ■ Grip method Fork / Chuck / Vacuum suction / Other ( )
- ■ Summary weight Approx. _____ kg When manufactured by customer

4. PAW control box

- ■ Manufacturer (Required / Not required)
- ■ Control method (Manual pressure regulating control system / Automatic pressure regulating control system)

5. PAW power source ■ Pneumatic supply pressure _____ MPa ■ Power _____ V

* For air supply pressure, fill in the pressure which can be supplied by the customer.

6. PAW installation method ■ Fixed on floor / Movable on floor (dolly) / Other ( )

7. PAW working environment ■ Water drops (Yes / No) ■ Dust (Yes / No) ■ Other ( )

8. PAW operating frequency ■ _____ times/day _____ days/month

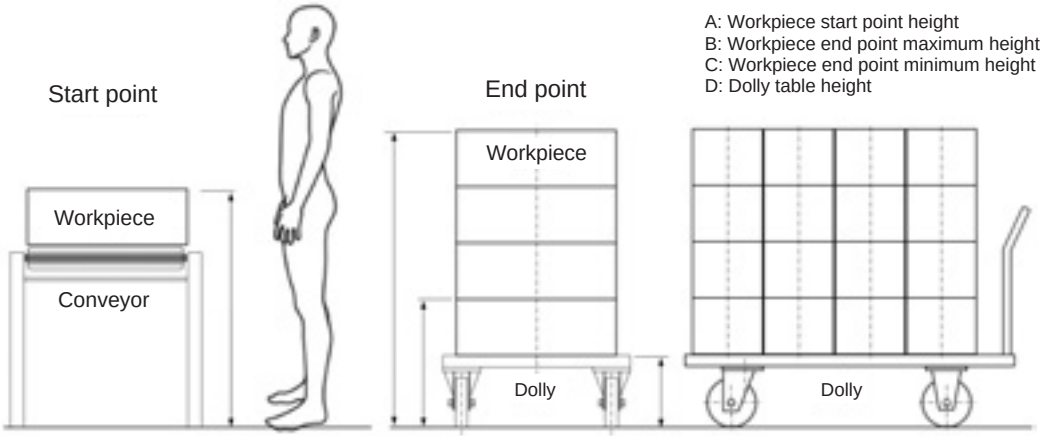
9. Work layout

When considering the arm shaft configuration, we need to confirm the vertical and horizontal movable range required.

Provide layout dimensions with the workpiece start and end points indicated.* Attach drawings if available.

The figure below is an example of layout dimensions showing the start and end point height positions.

Layout diagram showing the start and end point heights when picking workpieces up off the conveyor and stacking them in rows of 4 by 4 high on a transport dolly



PAW Order Sheet (Work Layout Diagram)

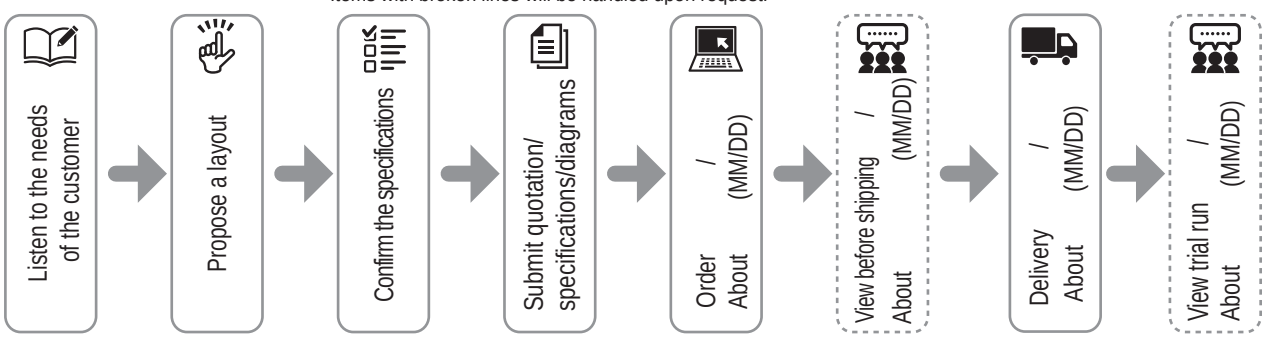
9-1. Workpiece start point/end point position layout diagram (cross-section)

9-2. Workpiece start point/end point position layout diagram (plane figure)　* Indicate the desired arm arrangement if applicable.

10. Remarks and notes　Include detailed dimensions, including peripheral equipment, in the layout diagram.

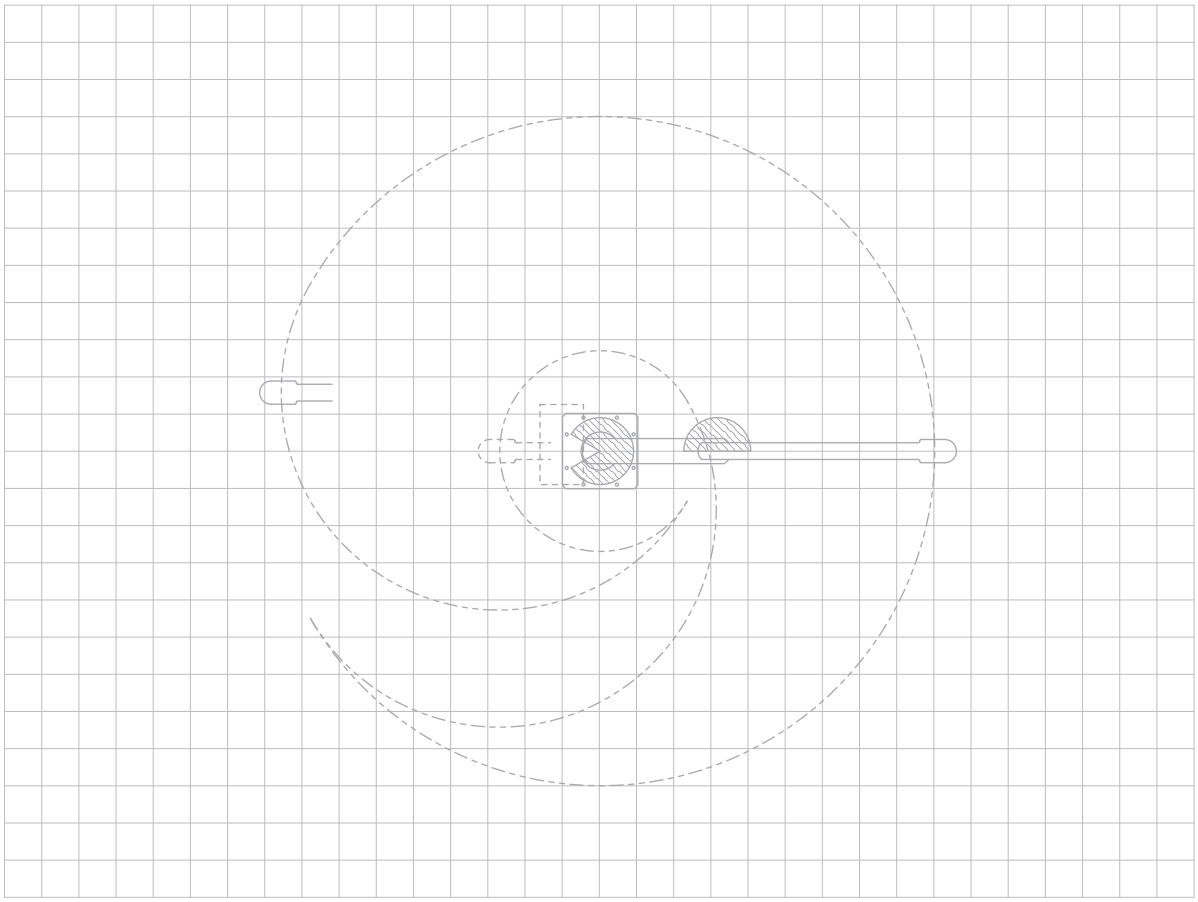
Adoption flow

* The schedule you have entered will be used as a reference when discussing specifications.
* Depending on the situation, we may not be able to meet your desired schedule.
* Items with broken lines will be handled upon request.



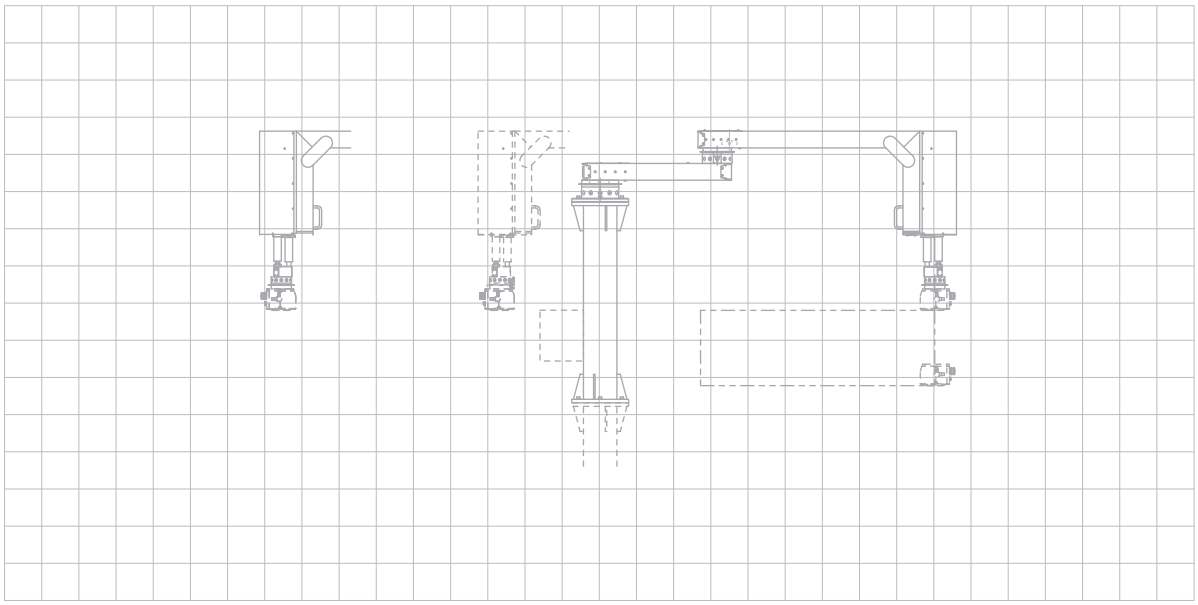
Palletizing system order sheet (work layout)

●PAW-AS-45



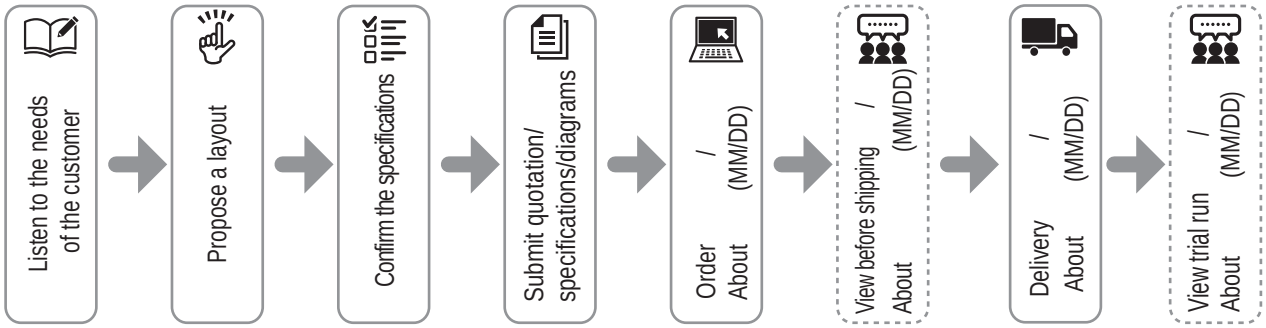
– – – – – – – is the operating range (when bending direction: blank, or when bending direction: C (option) is left/right reversed)

1 square: 200×200mm



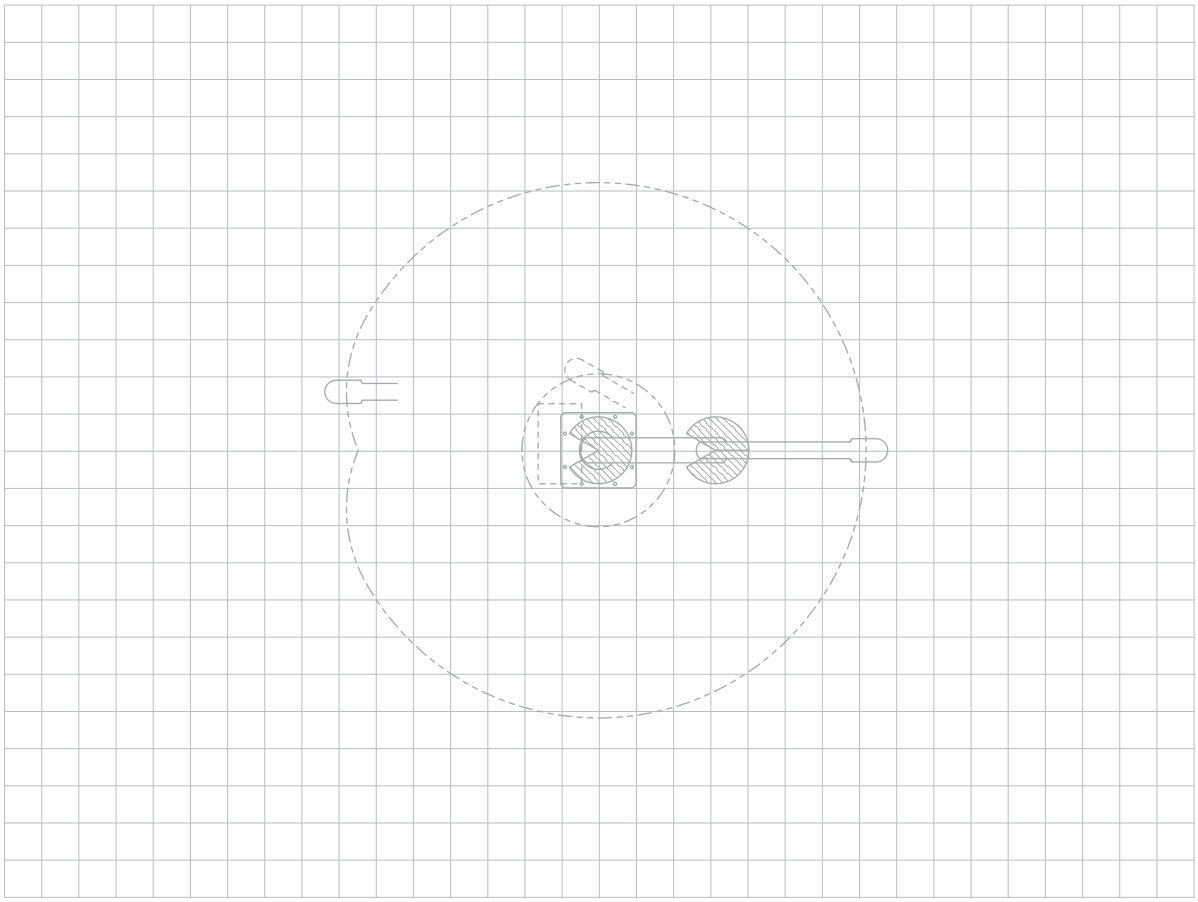
Adoption flow

* The schedule you have entered will be used as a reference when discussing specifications.
* Depending on the situation, we may not be able to meet your desired schedule.
* Items with broken lines will be handled upon request.

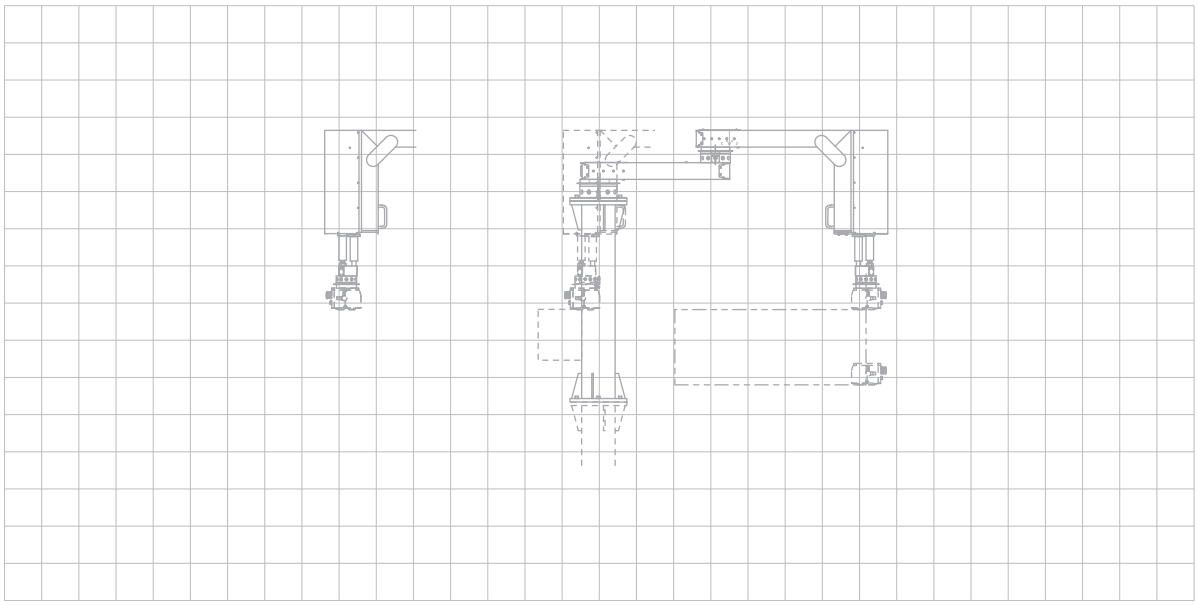


Palletizing system order sheet (work layout)

●PAW-AS-45-S

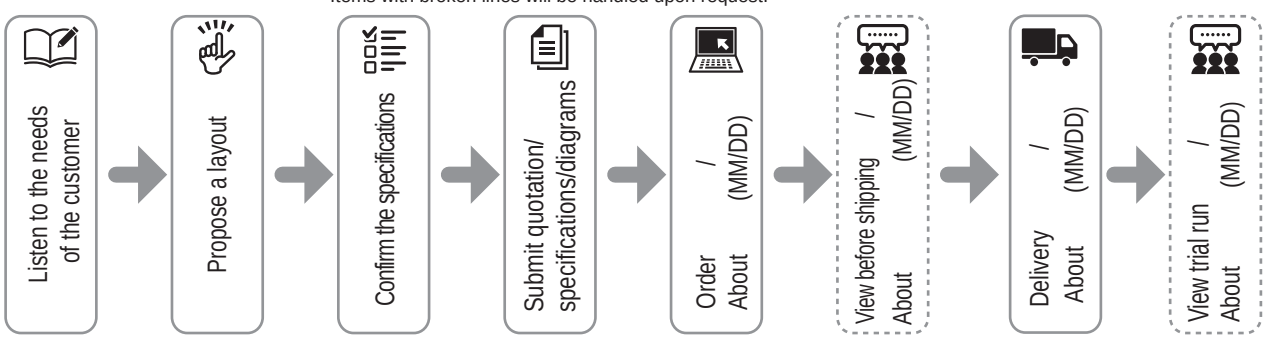


– – – – – – is the operating range　　1 square: 200×200mm



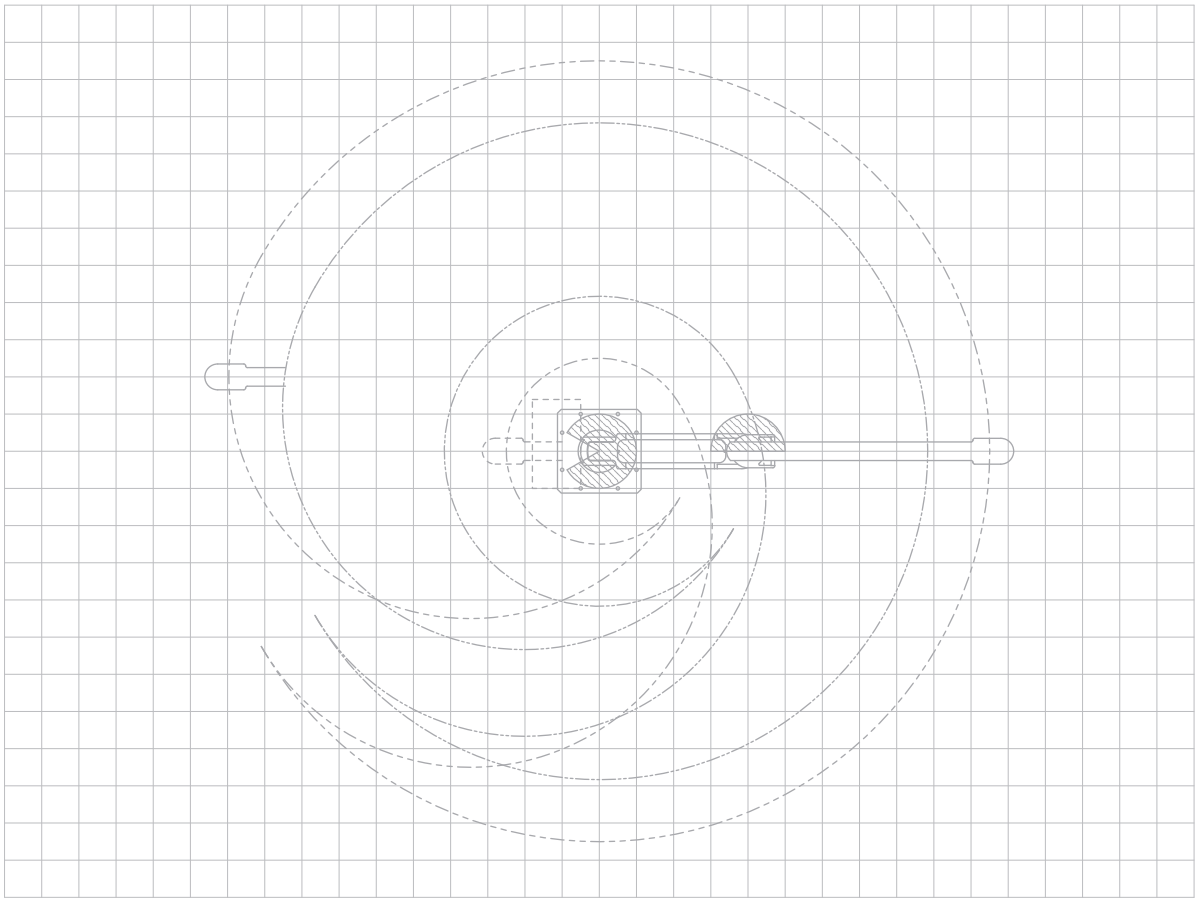
Adoption flow

* The schedule you have entered will be used as a reference when discussing specifications.
* Depending on the situation, we may not be able to meet your desired schedule.
* Items with broken lines will be handled upon request.



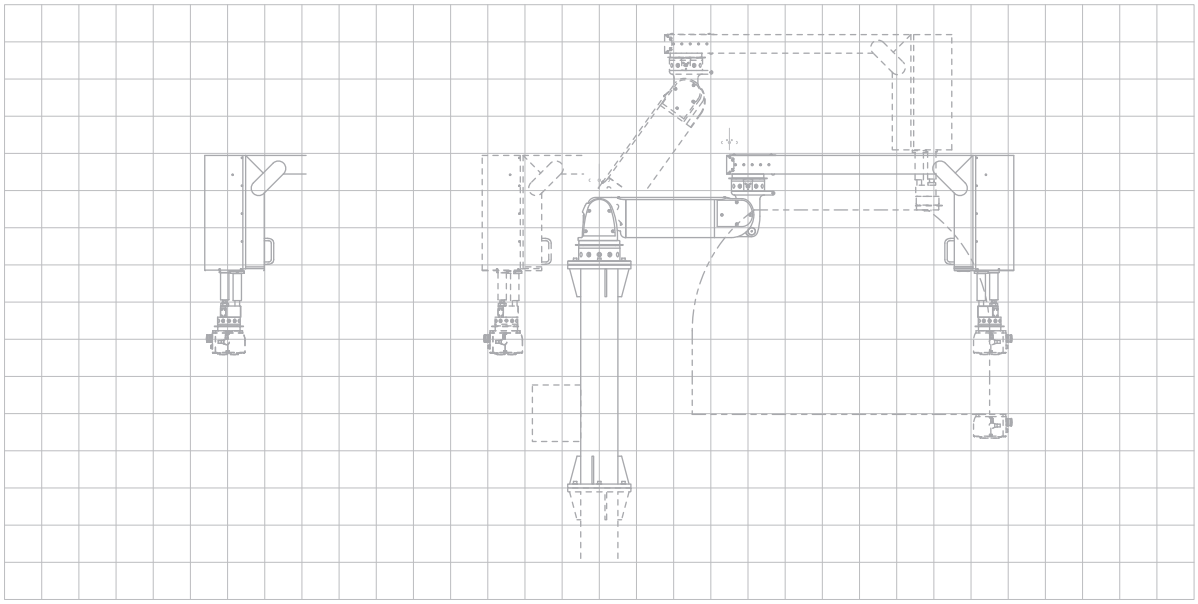
Palletizing system order sheet (work layout)

●PAW-AZ-110



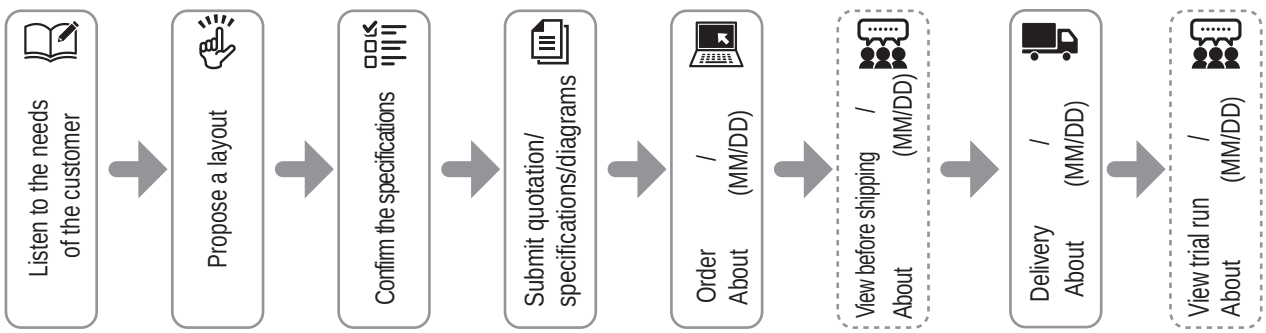
– – – – – – is the operating range at the bottom end ·–·–·–·–· is the operating range at the top end (when bending direction is blank)

(When the bending direction: C (option), the operating range is left-right reversed.) 1 square: 200×200mm



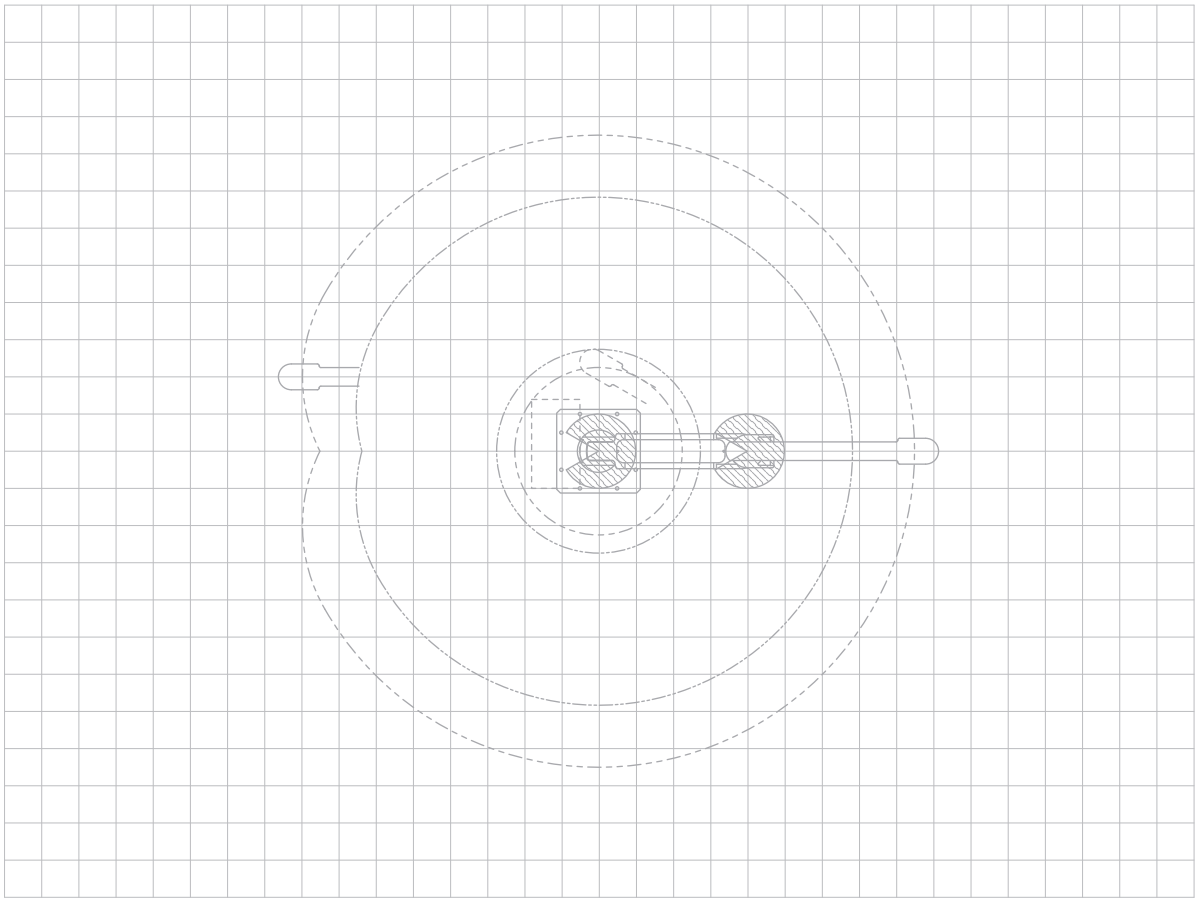
Adoption flow

* The schedule you have entered will be used as a reference when discussing specifications.
* Depending on the situation, we may not be able to meet your desired schedule.
* Items with broken lines will be handled upon request.

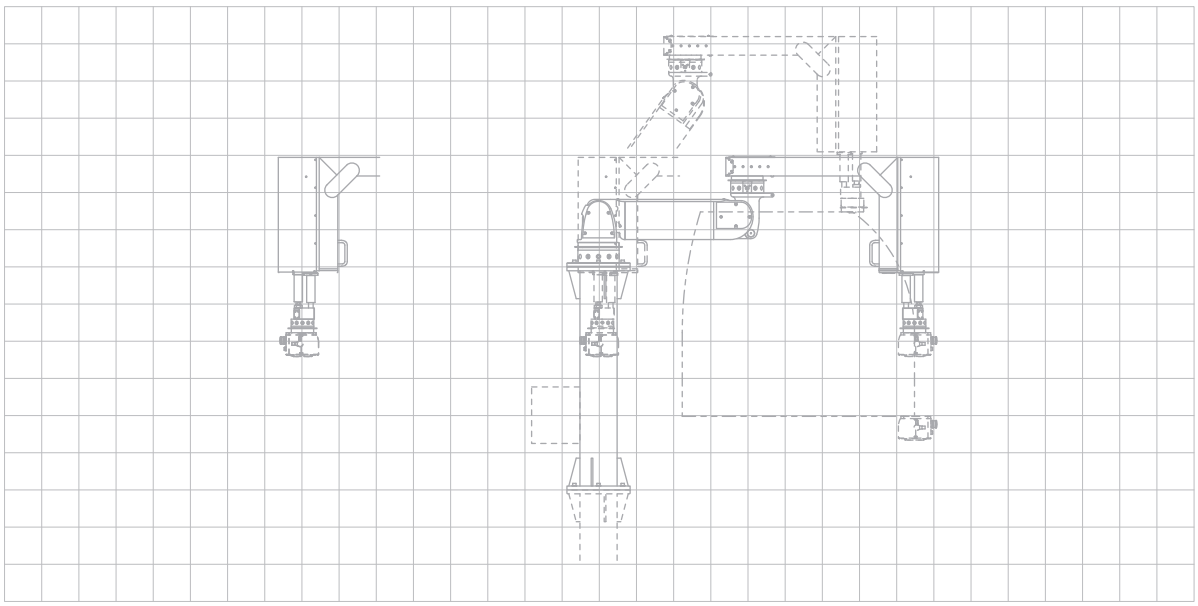


Palletizing system order sheet (work layout)

●PAW-AZ-110-S

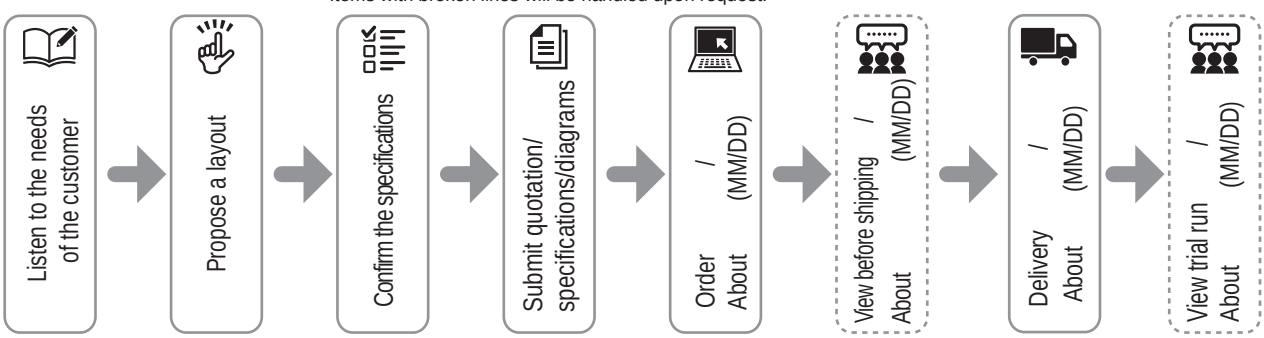


– – – – – – is the operating range at thebottom end　　– · – · – · – · – is the operating range at the top end　　1 square: 200×200mm



Adoption flow

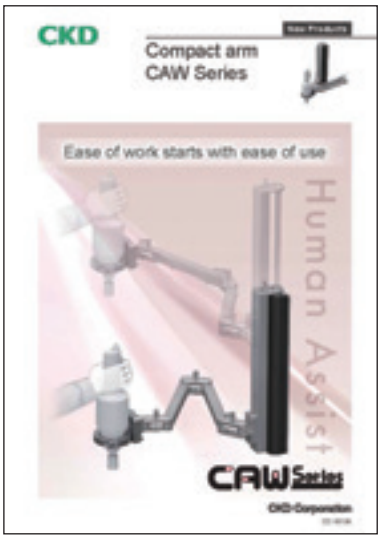
* The schedule you have entered will be used as a reference when discussing specifications.
* Depending on the situation, we may not be able to meet your desired schedule.
* Items with broken lines will be handled upon request.



Related products

Compact Arm CAW Series

Catalog No.CC-1613A



Low friction cylinders and high rigidity guides realized
Compact balancer that reduces arm and hand loads

- Wide for use and compact for storage
- Freely movable articulated arm
- Safety structure that suppresses vibration or reaction force
- Realizes light operability that can be used by anyone
- Two sizes available to match the tool load
- Anti-snag
- Can be mounted on aluminum frame with a mounting width of 60 mm

Flex Arm FAW Series

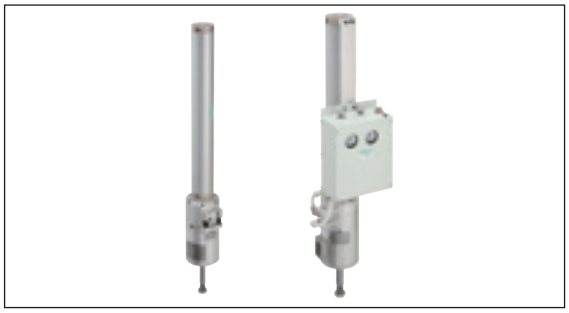
Catalog No.CC-1615A

Suitable for narrow worksites
Helps improve work with assistive devices that can be installed in low-ceiling areas

- Using compressed air for the power, workers can easily work as if holding heavy objects up to 50 kg by hand
- A wide range of work areas are covered with a whirl radius of 2.5 m and a vertical stroke of 1.5 m
- It can be selected from four mounting methods: floor fixing, floor dolly, column fixing, ceiling fixing. With a low overall height of 2.5 m, it is installable even in low-ceiling locations

Balancer unit BBS Series

Catalog No. CB-030SA



- A load of maximum 200 kg is balanced up to 5 kg, and workpieces can be lifted with very little force
- Brake equipped as standard. Safety mechanism that ensures workpieces do not fall even if the air is cut OFF.
- Retains optimal balance by automatically recognizing weight differences between workpieces (BBS-A)
- Compatible with all-air method not requiring electricity. Specifications for explosion-proof environments also available

Ultra low friction balancing cylinder BBS Series

Catalog No. CC-1212A

- 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)

Electro-pneumatic regulator EVR Series

Catalog No.CC-1174A

■ High precision pressure
- Hysteresis: 0.3%F.S., linearity: ±0.5%F.S., resolution: 0.1%F.S., repeatability: 0.2 F.S.

■ Improvement of temperature stability and durability
- Zero point fluctuation: 0.06%F.S., span fluctuation: 0.06%F.S., durability: Three times (compared with conventional models)

■ Equipped with new functions
- Residual pressure 0 when the input signal is 0%F.S. Select pressure control pattern.

■ Easy operation
- Two buttons enables operations for zero point adjustment, span point adjustment, and pressure control.

■ Compatibility/installation
- Compatible mounting with the conventional product (EV2500).
- Two types of connectors are available. (Straight and L-type, 1 m and 3 m each)

Precision regulator RP2000 Series

Catalog No. CB-024SA

■ High-precision pressure control
- High repeatability regardless of the flow rate: Within ±0.5% of full scale, sensitivity: Within 0.2% of full scale.

■ Long service life
- Low-sliding packing used for moving parts. Also uses grease resistant to dry air.

■ Stable flow characteristics with minimal pressure drop

■ Large relief flow rate

Air supply unit ASU Series

Special-order product

Catalog No. CC-1284A

■ 2 types of flow rate (72L/min, 25L/min)

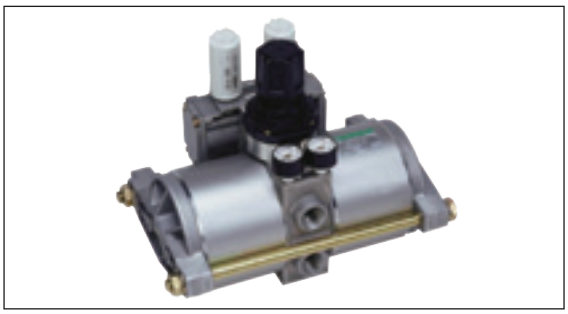
■ Localized supply is enabled with easy installation.

■ Utilized components include filter, drain separator and dryer (300W only)

■ Emergency pressure source (conforms with BCP)

Air booster ABP Series

Catalog No. CB-024SA



■ Boosting up to double (or equivalent) ratio
- Boosting adjustment is possible within a range of twice the primary pressure (0.99MPa max.) by the pressure adjustment knob.

■ Flexible installation

■ Pressure adjustment without tools

■ Compact

Air tank AT Series

Catalog No. CB-024SA

■ Air tank directly connected to air booster ABP for use

■ Compact installation

WORLD-NETWORK

CKD Corporation

Website https://www.ckd.co.jp/en/

□ 2-250 Ouji, Komaki City, Aichi 485-8551, Japan
□ PHONE +81-568-74-1338 FAX +81-568-74-1165

ASIA

喜開理(上海)機器有限公司
CKD(SHANGHAI)CORPORATION

- 本社/上海浦西支店(SALES HEADQUARTERS / SHANGHAI PUXI BRANCH OFFICE)
  Room 612, 6th Floor, Yuanzhongkeyan Building, No. 1905 Hongmei Road, Xuhui District, Shanghai 200233, China
  PHONE +86-21-60906046 / 60906047 / 60906048
  FAX +86-21-60906046
- 上海浦東支店(SHANGHAI PUDONG BRANCH OFFICE)
- 寧波支店(NINGBO BRANCH OFFICE)
- 杭州支店(HANGZHOU BRANCH OFFICE)
- 無錫支店(WUXI BRANCH OFFICE)
- 昆山支店(KUNSHAN BRANCH OFFICE)
- 蘇州支店(SUZHOU BRANCH OFFICE)
- 常州支店(CHANGZHOU BRANCH OFFICE)
- 南京支店(NANJING BRANCH OFFICE)
- 合肥支店(HEFEI BRANCH OFFICE)
- 成都支店(CHENGDU BRANCH OFFICE)
- 武漢支店(WUHAN BRANCH OFFICE)
- 鄭州支店(ZHENGZHOU BRANCH OFFICE)
- 長沙支店(CHANGSHA BRANCH OFFICE)
- 重慶支店(CHONGQING BRANCH OFFICE)
- 西安支店(XIAN BRANCH OFFICE)
- 広州支店(GUANGZHOU BRANCH OFFICE)
- 中山支店(ZHONGSHAN BRANCH OFFICE)
- 深圳西支店(WEST SHENZHEN BRANCH OFFICE)
- 深圳東支店(EAST SHENZHEN BRANCH OFFICE)
- 東莞支店(DONGGUAN BRANCH OFFICE)
- 厦門支店(XIAMEN BRANCH OFFICE)
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- 天津支店(TIANJIN BRANCH OFFICE)
- 青島支店(QINGDAO BRANCH OFFICE)
- 濰坊支店(WEIFANG BRANCH OFFICE)
- 済南支店(JINAN BRANCH OFFICE)
- 烟台支店(YANTAI BRANCH OFFICE)

CKD INDIA PRIVATE LTD.

- HEADQUARTERS
  Unit No. 607, 6th Floor, Welldone Tech Park, Sector 48, Sohna Road, Gurgaon-122018, Haryana, India
  PHONE +91-124-418-8212
- BANGALORE OFFICE
- PUNE OFFICE
- CHENNAI OFFICE
- MUMBAI OFFICE
- HYDERABAD OFFICE

PT CKD TRADING INDONESIA

- HEAD OFFICE
  Menara Bidakara 2, 18th Floor, Jl. Jend. Gatot Subroto Kav. 71-73, Pancoran, Jakarta 12870, Indonesia
  PHONE +62-21-2938-6601 FAX +62-21-2906-9470
- MEDAN OFFICE
- BEKASI OFFICE
- KARAWANG OFFICE
- SEMARANG OFFICE
- SURABAYA OFFICE

CKD KOREA CORPORATION

- HEADQUARTERS
  (3rd Floor), 44, Sinsu-ro, Mapo-gu, Seoul 04088, Korea
  PHONE +82-2-783-5201～5203 FAX +82-2-783-5204
- 水原事務所(SUWON OFFICE)
- 天安事務所(CHEONAN OFFICE)
- 蔚山事務所(ULSAN OFFICE)

M-CKD PRECISION SDN.BHD.

- HEAD OFFICE
  Lot No.6,Jalan Modal 23/2, Seksyen 23, Kawasan MIEL, Fasa 8, 40300 Shah Alam,Selangor Darul Ehsan, Malaysia
  PHONE +60-3-5541-1468 FAX +60-3-5541-1533
- JOHOR BAHRU BRANCH OFFICE
- PENANG BRANCH OFFICE

CKD SINGAPORE PTE. LTD.

No.33 Tannery Lane #04-01 Hoesteel Industrial Building, Singapore 347789, Singapore
PHONE +65-67442623 FAX +65-67442486

CKD CORPORATION BRANCH OFFICE

No.33 Tannery Lane #04-01 Hoesteel Industrial Building, Singapore 347789, Singapore
PHONE +65-67447260 FAX +65-68421022

CKD THAI CORPORATION LTD.

- HEADQUARTERS
  19th Floor, Smooth Life Tower, 44 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand
  PHONE +66-2-267-6300 FAX +66-2-267-6304-5
- NAVANAKORN OFFICE
- EASTERN SEABOARD OFFICE
- LAMPHUN OFFICE
- KORAT OFFICE
- AMATANAKORN OFFICE
- PRACHINBURI OFFICE
- SARABURI OFFICE

台湾喜開理股份有限公司
TAIWAN CKD CORPORATION

- HEADQUARTERS
  16F-3, No. 7, Sec. 3, New Taipei Blvd., Xinzhuang Dist., New Taipei City 242, Taiwan
  PHONE +886-2-8522-8198 FAX +886-2-8522-8128
- 新竹営業所(HSINCHU OFFICE)
- 台中営業所(TAICHUNG OFFICE)
- 台南営業所(TAINAN OFFICE)
- 高雄営業所(KAOHSIUNG OFFICE)

CKD VIETNAM ENGINEERING CO.,LTD.

- HEADQUARTERS
  18th Floor, CMC Tower, Duy Tan Street, Cau Giay District, Hanoi, Vietnam
  PHONE +84-24-3795-7631 FAX +84-24-3795-7637
- HO CHI MINH OFFICE

EUROPE

CKD EUROPE B.V.

- HEADQUARTERS
  Beechavenue 125A, 1119 RB Schiphol-Rijk, the Netherlands
  PHONE +31-23-554-1490
- CKD EUROPE GERMANY OFFICE
- CKD EUROPE UK
- CKD EUROPE CZECH O.Z.

CKD CORPORATION EUROPE BRANCH

Beechavenue 125A, 1119 RB Schiphol-Rijk, the Netherlands
PHONE +31-23-554-1490

CKD ITALIA S.R.L.

Via di Fibbiana 15 Calenzano (FI) CAP 50041, Italy
PHONE +39 0558825359 FAX +39 0558827376

NORTH AMERICA & LATIN AMERICA

CKD MEXICO, S. DE R.L. DE C.V.

Cerrada la Noria No. 200 Int. A-01, Querétaro Park II, Parque Industrial Querétaro, Santa Rosa Jáuregui, Querétaro, C.P. 76220, México
PHONE +52-442-161-0624

CKD USA CORPORATION

- HEADQUARTERS
  1605 Penny Lane, Schaumburg, IL 60173, USA
  PHONE +1-847-648-4400 FAX +1-847-565-4923
- LEXINGTON OFFICE
- SAN JOSE OFFICE/ TECHNICAL CENTER
- AUSTIN OFFICE

Revision details ・PAW-B shape change

2025.5