CKD

Discontinue

New Products

Made to Order

Power Arm
PFB2 Series

HumanAssist

Smooth & Strong Support

Carries / Holds / Lifts

New φ**125** type is now available!

CKD Corporation

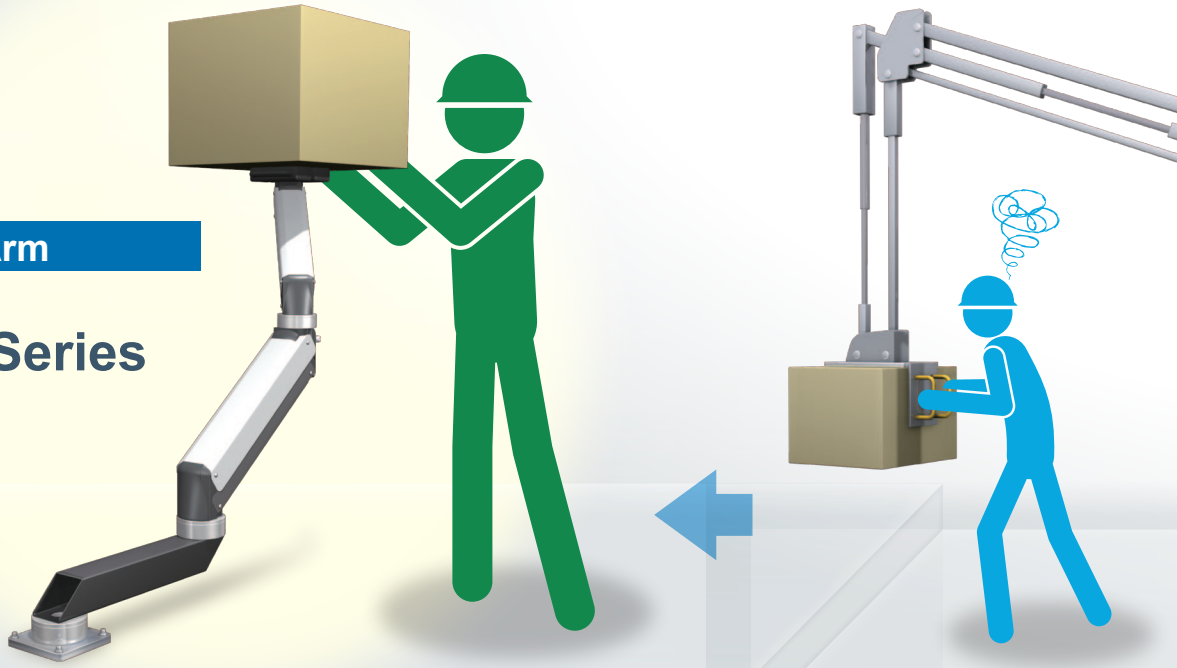
CC-1262A 4

Discontinue

Solving the problems of human assist devices.

For arm-type human assist devices

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



Power Arm

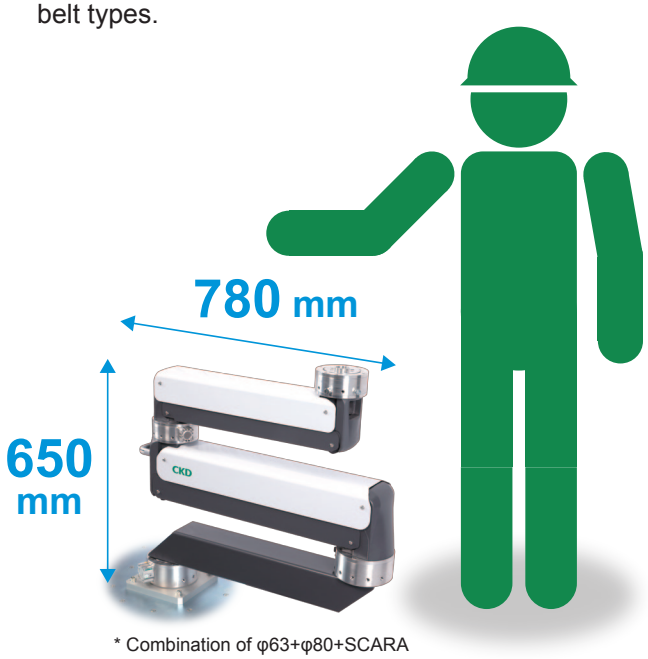
PFB2 Series

Human Assist Device

Compact

Compact

Multi-axis specification, foldable for storage, makes it more compact and easier to store than arm or belt types.

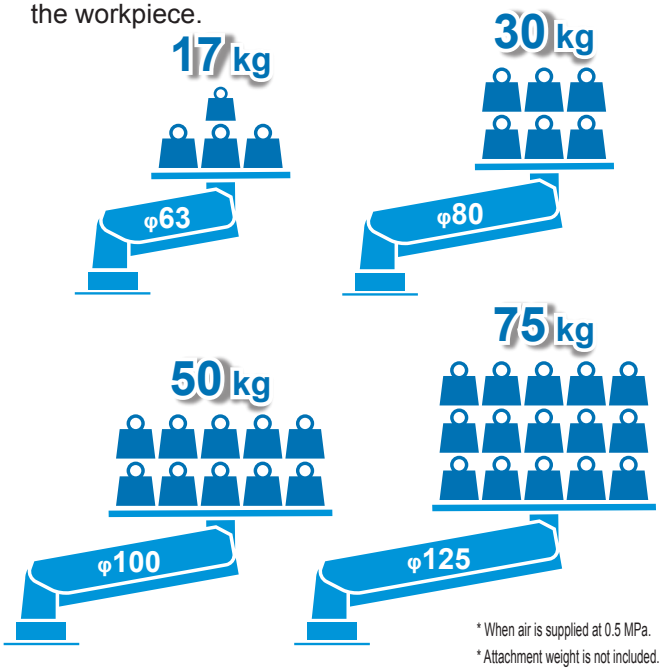


* Combination of φ63+φ80+SCARA

Variation

Arm variations tailored to the specific workpiece

The arm can be selected from 4 types according to the workpiece.



* When air is supplied at 0.5 MPa.
* Attachment weight is not included.

Discontinue

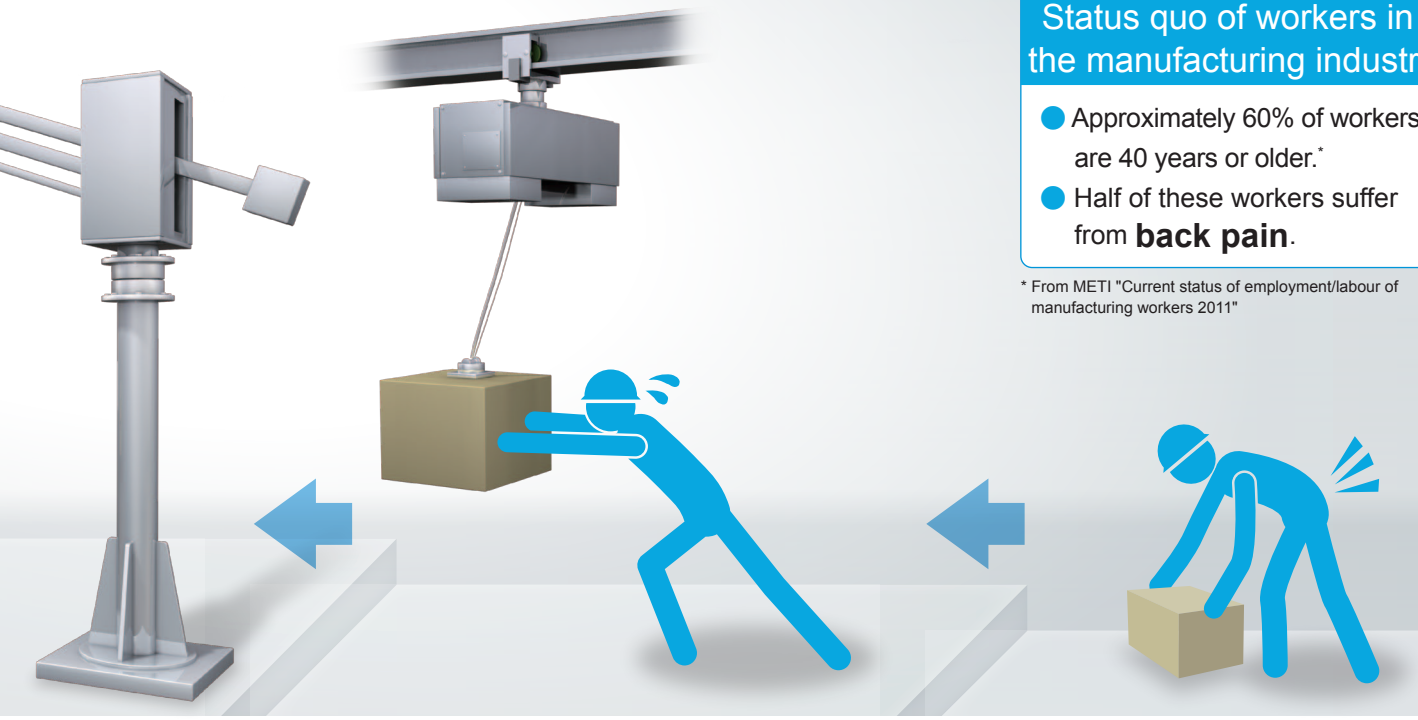
For belt-type human assist devices

- The center of gravity is far from the area of operation (conveyed object), **making operation difficult. (Starts and stops are a strain)**

Status quo of workers in the manufacturing industry

- Approximately 60% of workers are 40 years or older.*
- Half of these workers suffer from **back pain**.

* From METI "Current status of employment/labour of manufacturing workers 2011"



Evolved in Solidarity with Workers

Light & Strong

Lightweight yet highly rigid

Uses a pneumatic cylinder in part of the body. Achieves a compact and lightweight form with improved bending and twisting rigidity.

Easy

Easy to operate Light operating force

The center of gravity is close to the operator, making operation easy. Lightweight and with low inertia, the moving parts are highly operable.

Operating handle

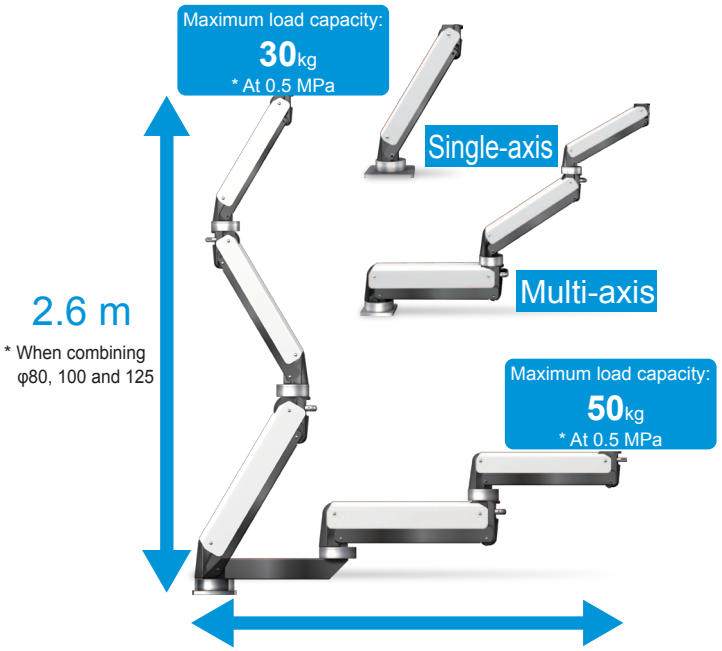
An operating handle is equipped at the joint. As well as increasing ease of arm operation, this allows simple and safe arm operation without contact with moving parts.

Discontinue

Wide

Wide range of motion to suit the application

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



Achieving a wider range of movement

SCARA axes can be used for multi-axis specification types to enable an even wider range of motion.

Attachments

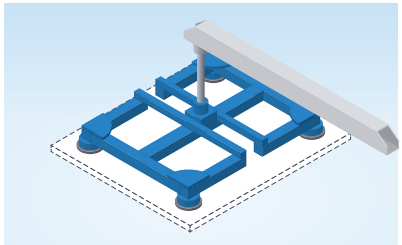
In addition to the assist devices as single units, we address requests including the jigs and control box that constitute the system. Contact CKD for details.

Attachment design and production *

* As this is a custom order product, contact CKD for details.

Contact CKD regarding attachments for safe and reliable retention of various transported objects as well.

Vacuum

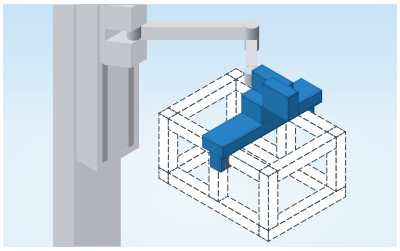


Suction transport

Hook

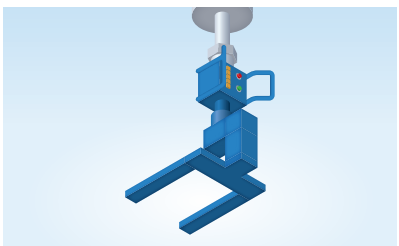
Slinging transport, suspended transport

Clamp (exterior)



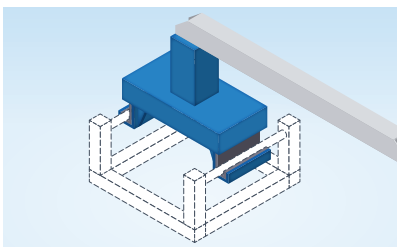
Workpiece clamp gripping mechanism

Fork



Scoop-up transport, etc.

Clamp (interior)

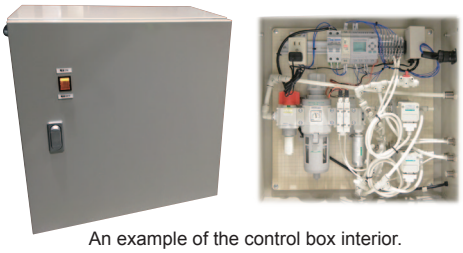


Gripping mechanism using air/mechanical system

Discontinue

Air controlled box design and production

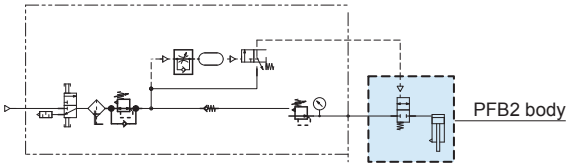
We propose the optimal air circuits for various assistance mechanisms. Easy transport is possible with the optimal control method for your transported objects.We also offer air circuits within the control box.



An example of the control box interior.
Let us go over your needs with you.

Air 1 pressure control

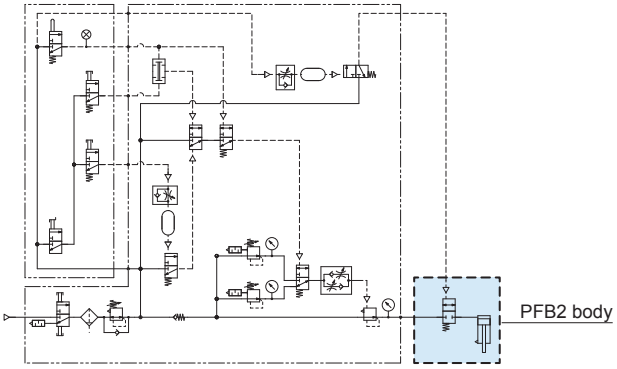
Control that maintains balance at a constant weight. Suitable for assisting with the weight of heavy jigs and tools.



[Circuit example]

Air 2 pressure control

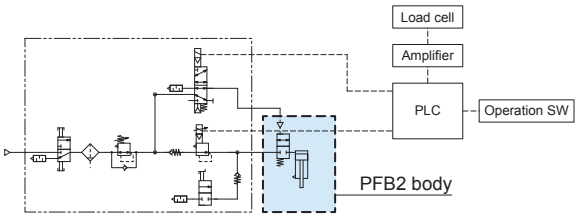
Given balance preset with and without transported objects, the control can be changed between them using switch operation.
This is well suited to batch production, such as continuous transport of identical products.



[Circuit example]

Automatic air pressure adjustment control

This control supports random weights by detecting the weight of transported objects at the tip.
It is suitable for handling multi-model transported objects.



[Circuit example]

Demonstration

We perform demonstrations allowing you to experience the Power Arm using actual devices.
We also offer demonstrations onsite. Don't hesitate to contact CKD for details.

Headquarters Showroom (Komaki Plant in Japan)

*Japan only

Onsite demonstrations

Compatible with FP Series for secure food manufacturing processes

Can be used safely in food manufacturing processes.

* Contact CKD for details.

NSF H1
Grease for food products

FP Food Process®

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

Discontinue

Power Arm

PFB2 Series

● Bore size: φ63/φ80/φ100/φ125

RoHS

Specifications

Descriptions		PFB2			
Bore size	mm	φ63	φ80	φ100	φ125
Working fluid		Compressed air			
Max. working pressure	MPa	0.7			
Min. working pressure	MPa	0.25			
Proof pressure	MPa	1.05			
Ambient temperature	°C	5 to 60			
Cushion		Rubber cushion			
Lubrication		Not available			
Load capacity (0.5 MPa pressurized)	kg	17	30	50	75

Movable range

• With single-axis

Bore size (mm)	Movable range (mm) Vertical (mm)
φ63	435
φ80	520
φ100	580
φ125	647

• With multi-axes

Arm	Movable range (mm)	
	Vertical (mm)	Horizontal (mm)
Combination of φ63+SCARA axes	435	1000
Combination of φ80+SCARA axes	520	1200
Combination of φ100+SCARA axes	580	1400
Combination of φ125+SCARA axes	647	1600
Combination of φ63+φ80 axes	955	1100
Combination of φ80+φ100 axes	1100	1300
Combination of φ100+φ125 axes	1227	1500
Combination of φ63+φ80+SCARA axes	955	1700
Combination of φ80+φ100+SCARA axes	1100	2000
Combination of φ100+φ125+SCARA axes	1227	2300
Combination of φ63+φ80+φ100 axes	1535	1800
Combination of φ80+φ100+φ125 axes	1747	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

Arm	Weight (kg)
φ63 single-axis	12
φ80 single-axis	17
φ100 single-axis	28
φ125 single-axis	60
Combination of φ63+SCARA axes	22
Combination of φ80+SCARA axes	35
Combination of φ100+SCARA axes	65
Combination of φ125+SCARA axes	130
Combination of φ63+φ80 axes	27
Combination of φ80+φ100 axes	43
Combination of φ100+φ125 axes	83
Combination of φ63+φ80+SCARA axes	45
Combination of φ80+φ100+SCARA axes	80
Combination of φ100+φ125+SCARA axes	153
Combination of φ63+φ80+φ100 axes	53
Combination of φ80+φ100+φ125 axes	98

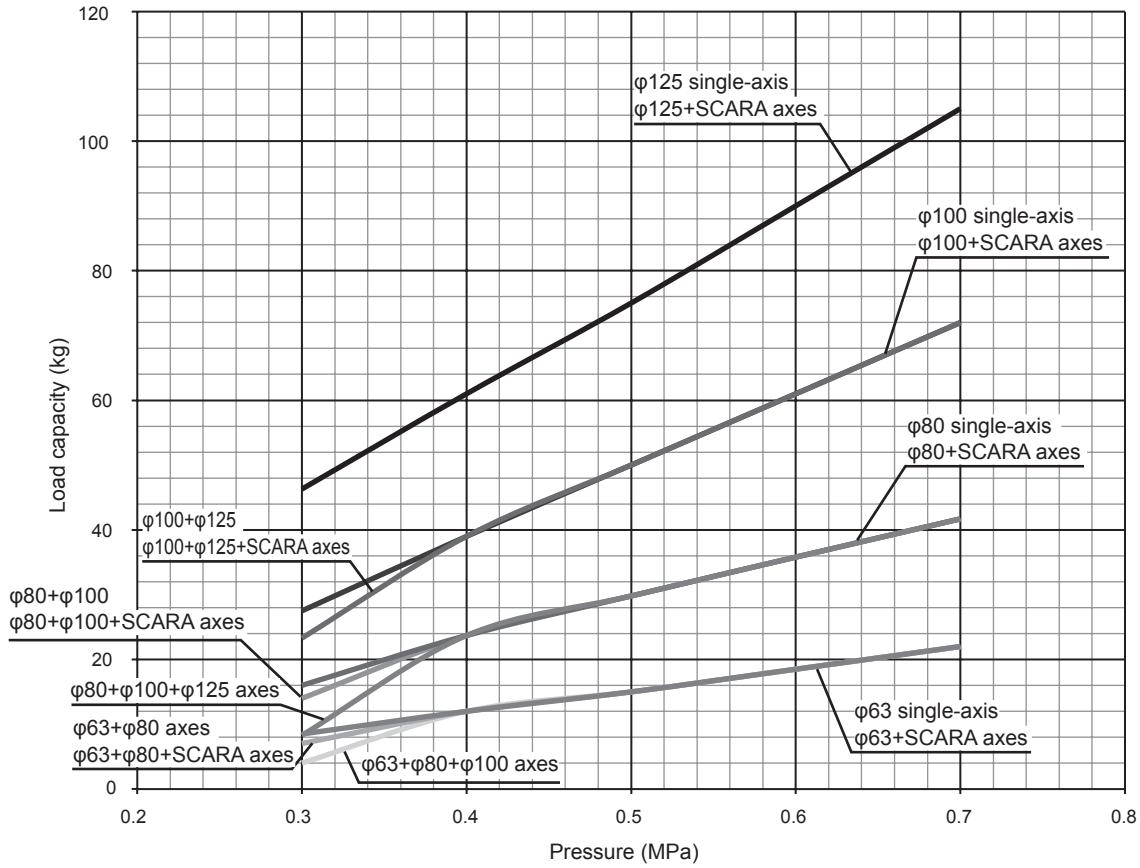
How to order

PFB2 - M - 68X - R

- PFB2 - M - 68X - R
  - Ⓐ Number of sections
  - Ⓑ Combination contents
  - Ⓒ Option

Code	Content	Ⓐ Number of sections: Single-axis S	Ⓐ Number of sections: Multi-axis M
Ⓑ Combination contents			
6	φ63 single-axis	●	
8	φ80 single-axis	●	
X	φ100 single-axis	●	
Z	φ125 single-axis	●	
6S	φ63+SCARA axes		●
8S	φ80+SCARA axes		●
XS	φ100+SCARA axes		●
ZS	φ125+SCARA axes		●
68	φ63+φ80 axes		●
8X	φ80+φ100 axes		●
XZ	φ100+φ125 axes		●
68S	φ63+φ80+SCARA axes		●
8XS	φ80+φ100+SCARA axes		●
XZS	φ100+φ125+SCARA axes		●
68X	φ63+φ80+φ100 axes		●
8XZ	φ80+φ100+φ125 axes		●
Ⓒ Option			
R	Tip rotation mechanism	●	●

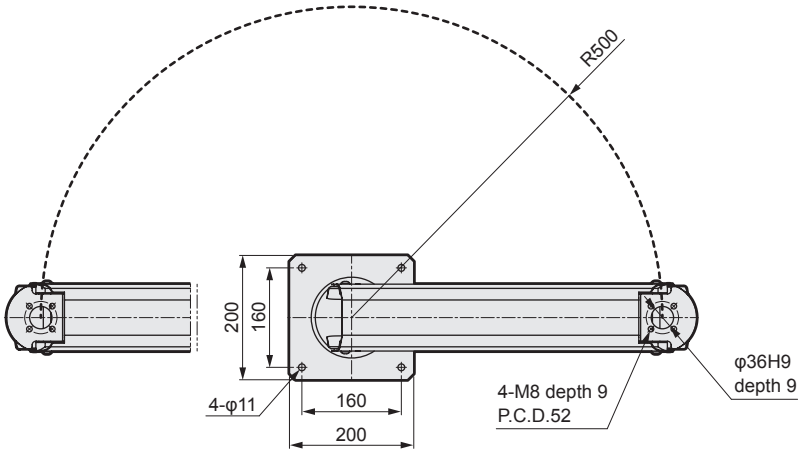
Load capacity under pressure

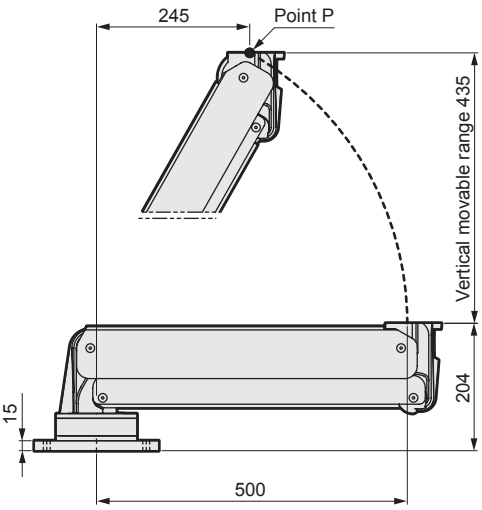


*1: Indicates the load capacity with the optional tip rotation mechanism mounted.
*2: Attachment weight is not included.
*3: While the load capacity properties are such that it alters slightly according to the arm rise angle, this graph shows the lower limit values.

Dimensions (single-axis)

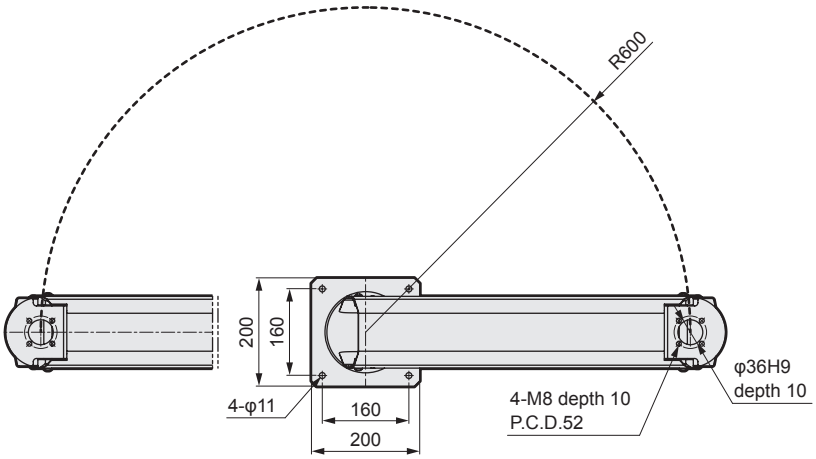
● PFB2-S-6 (φ63 single-axis)

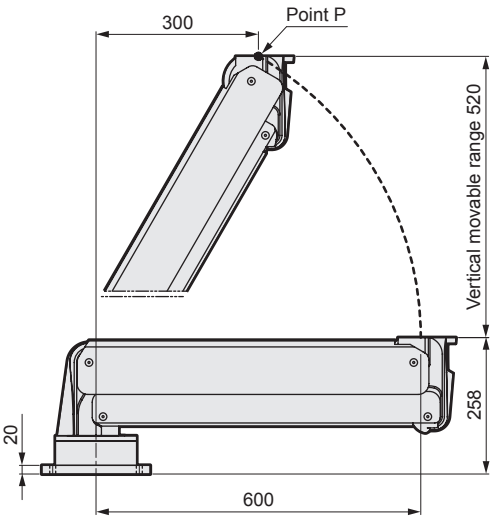




Plane view
View of motion at the descending edge is shown.
Structurally, the movable radius changes according to the rising height.

● PFB2-S-8 (φ80 single-axis)



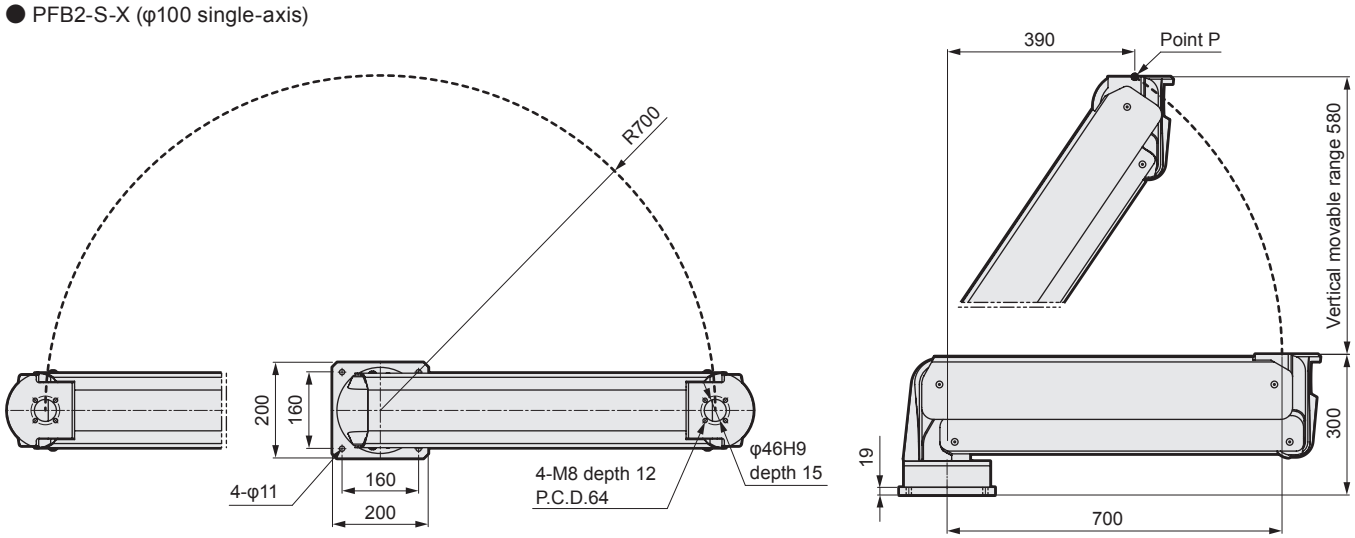


Plane view
View of motion at the descending edge is shown.
Structurally, the movable radius changes according to the rising height.

* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

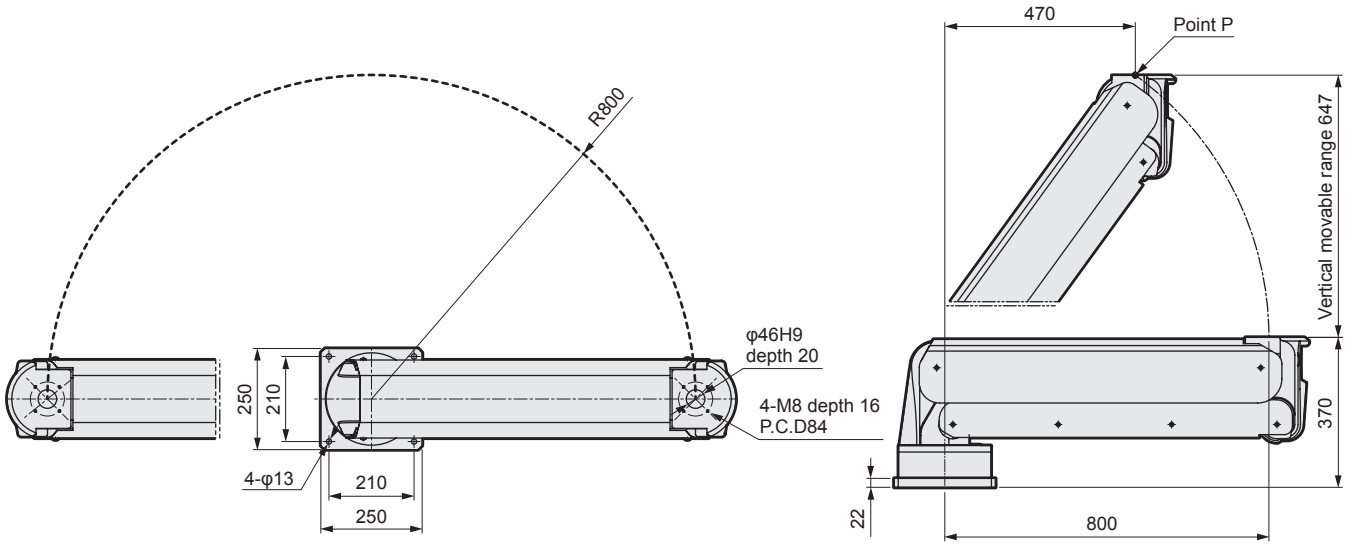
Dimensions (single-axis)

● PFB2-S-X (φ100 single-axis)



Plane view
View of motion at the descending edge is shown.
Structurally, the movable radius changes according to the rising height.

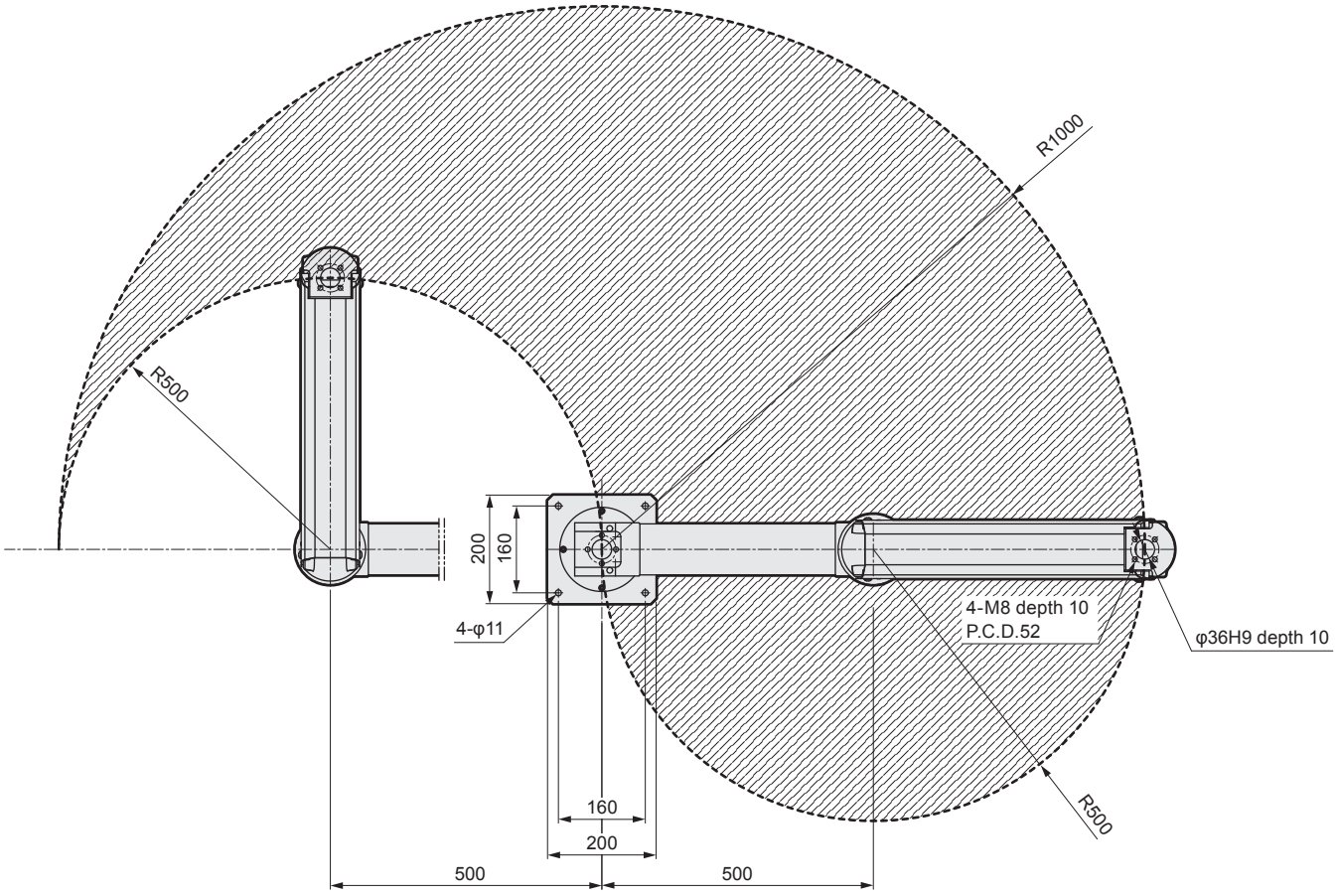
● PFB2-S-Z (φ125 single-axis)



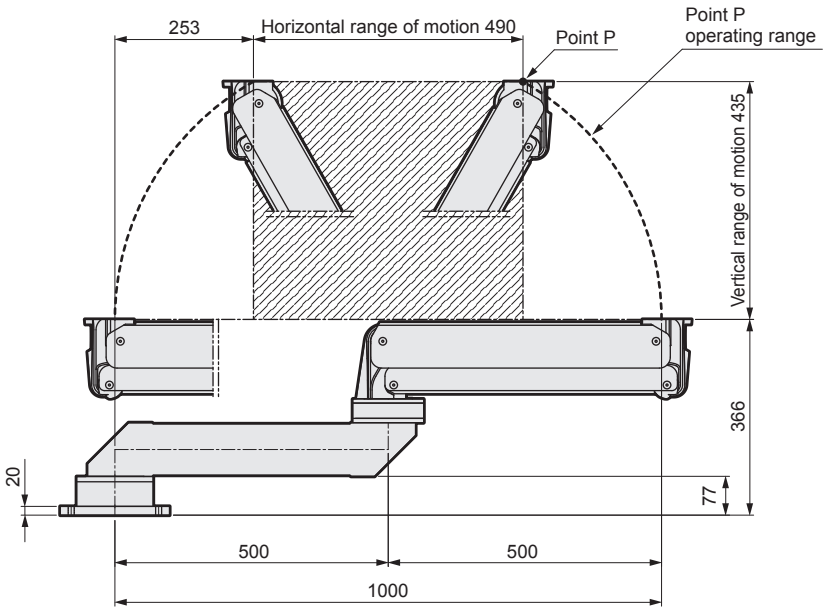
* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

Dimensions (multi-axis)

● PFB2-M-6S (φ63+SCARA axes)



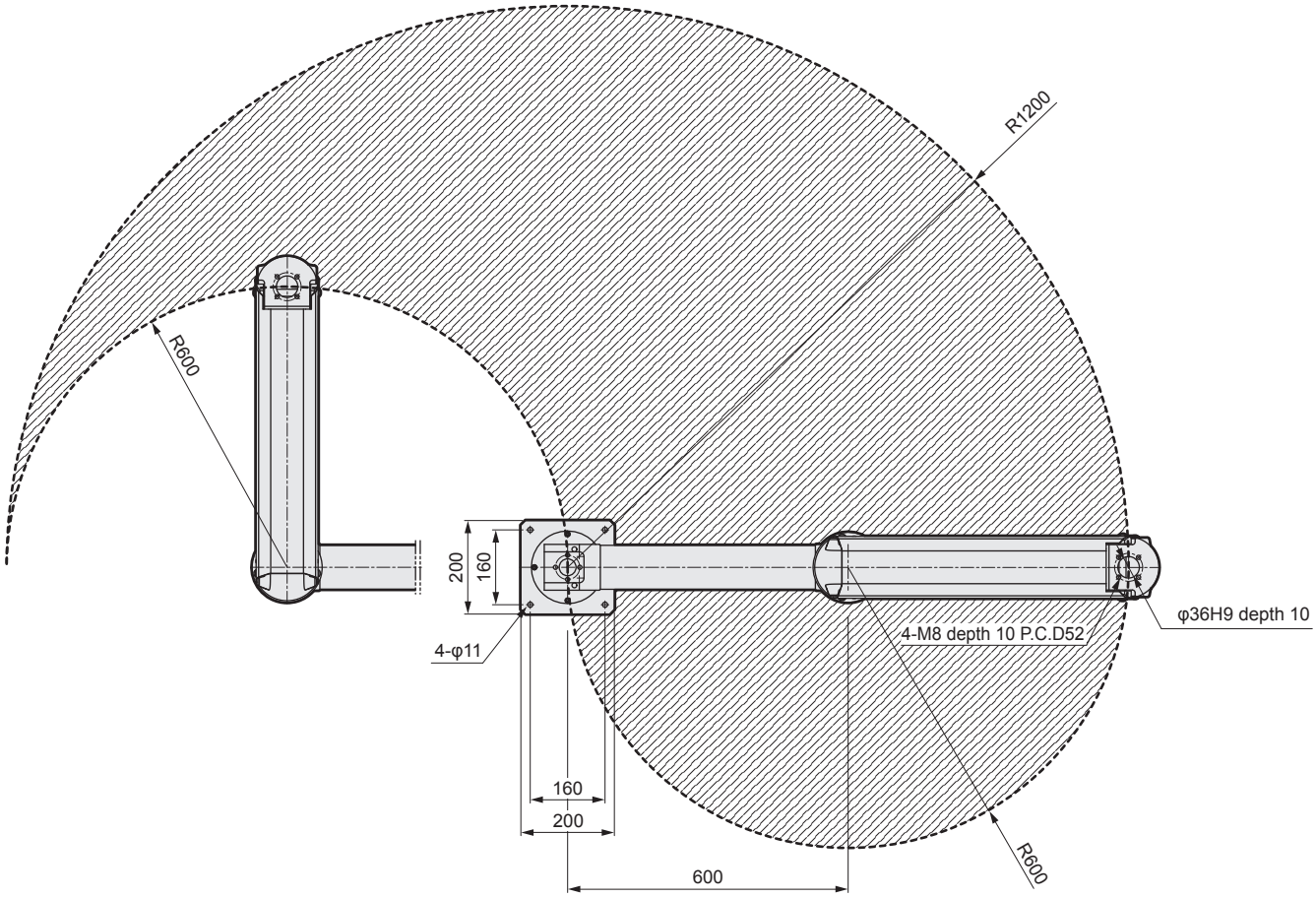
Point P movable range (plane view)
Note: Range of motion at the descending edge of point P is shown.
Structurally, the range of motion changes according to the rising height of point P.



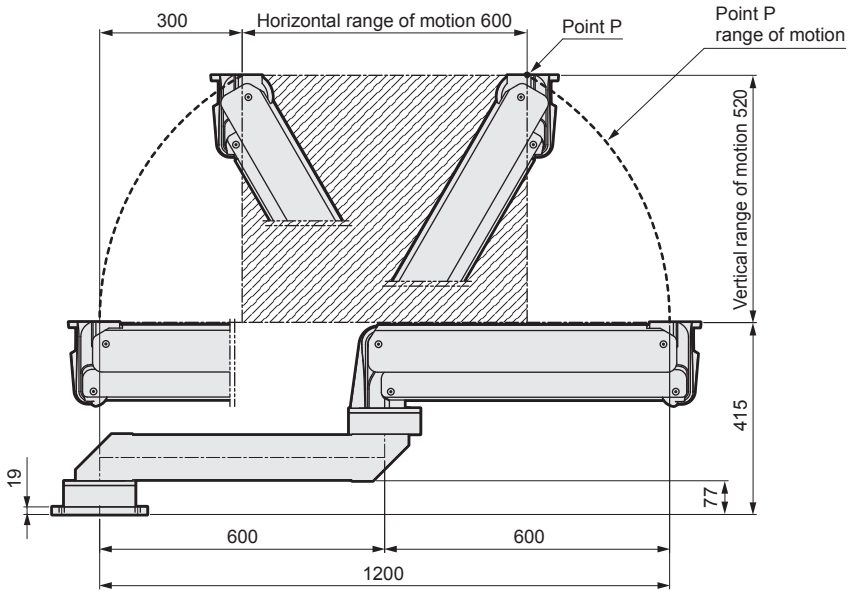
* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

Dimensions (multi-axis)

● PFB2-M-8S (φ80+SCARA axes)



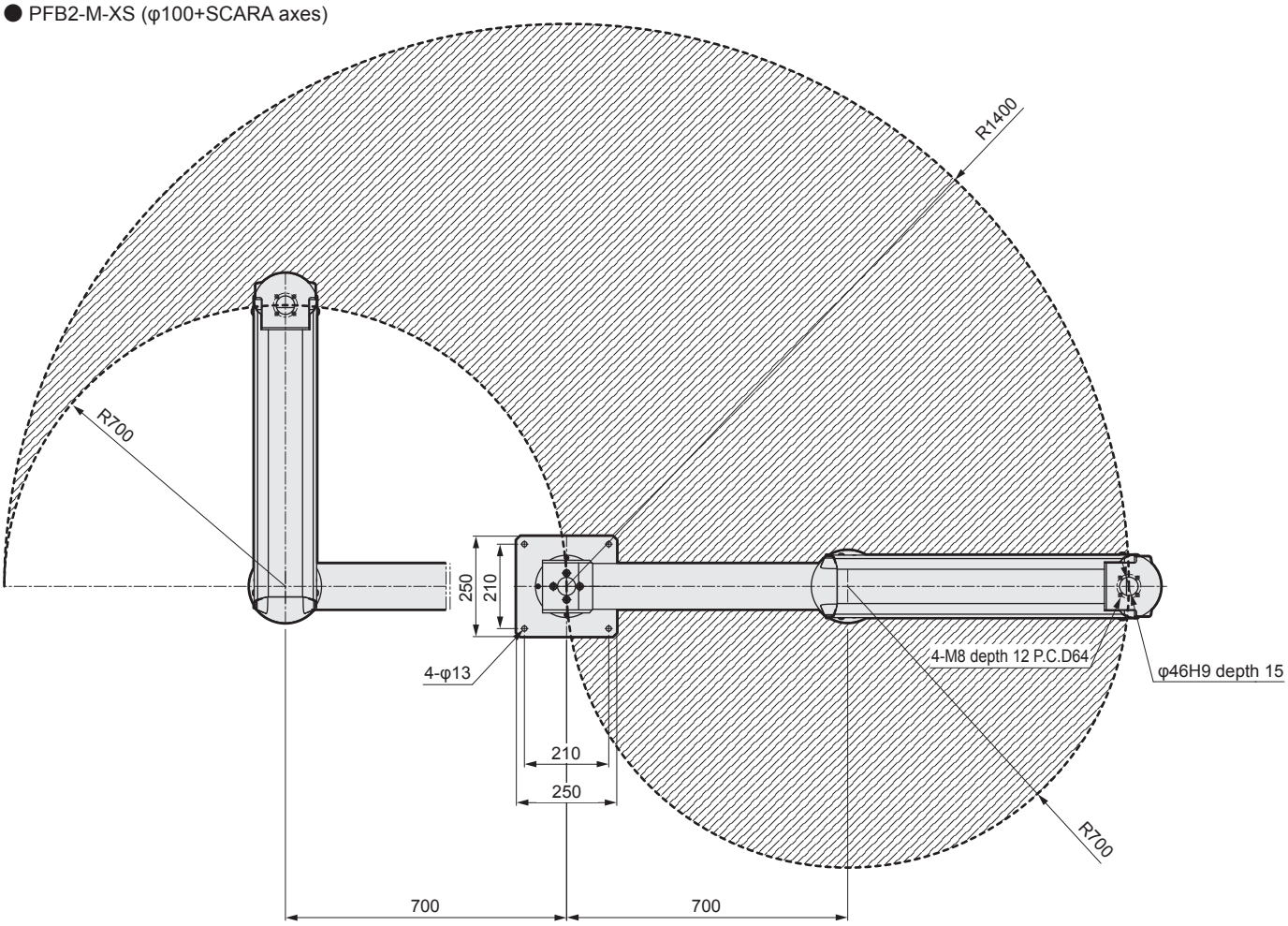
Point P range of motion (plane view)
Note: Range of motion at the descending edge of point P is shown.
Structurally, the range of motion changes according to the rising height of point P.



* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

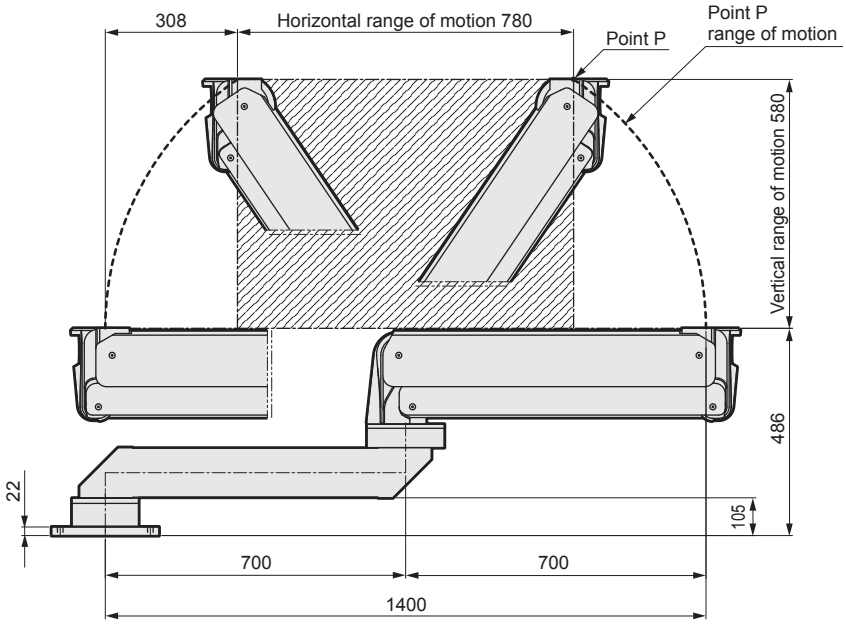
Dimensions (multi-axis)

● PFB2-M-XS (φ100+SCARA axes)



Point P range of motion (plane view)

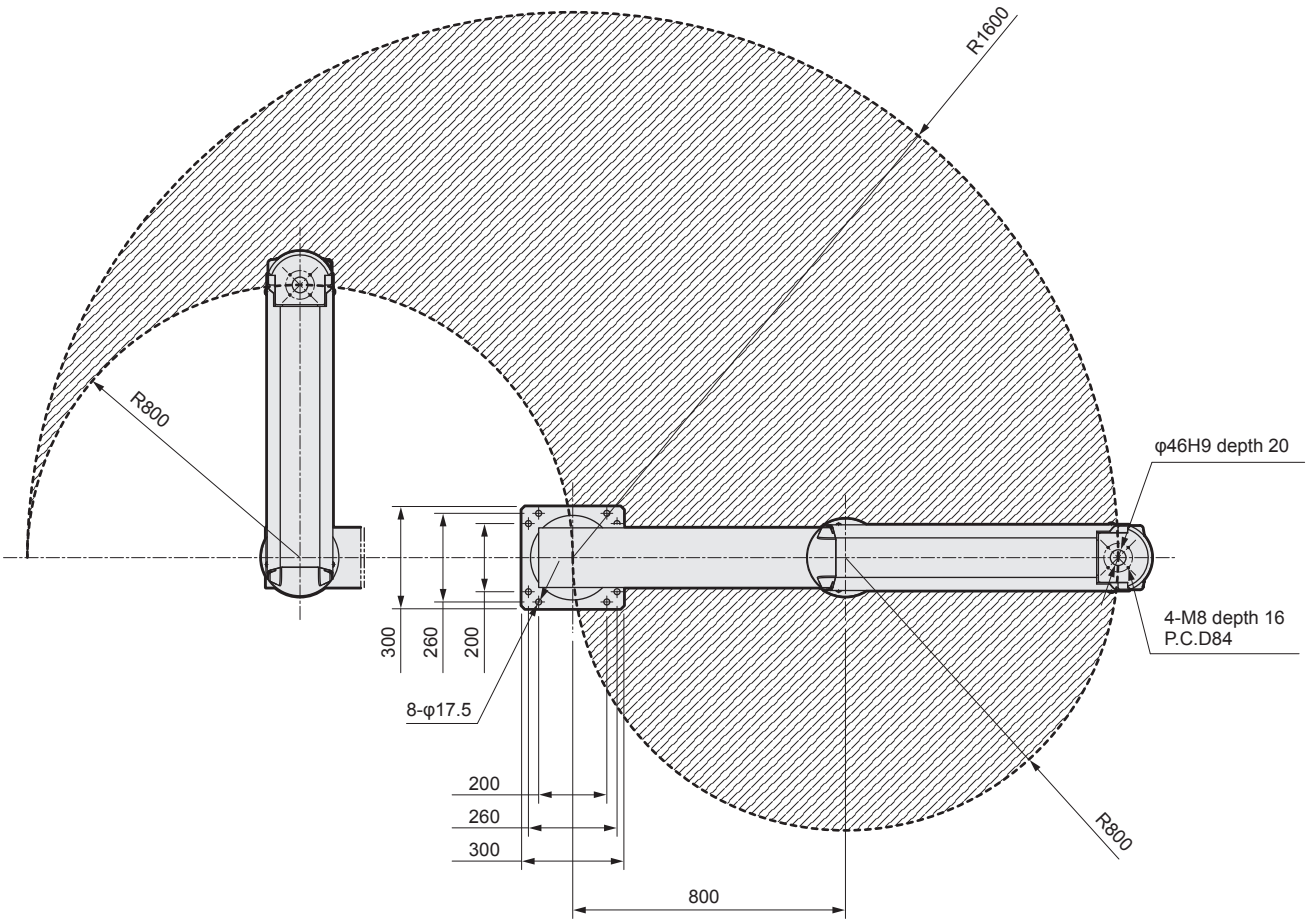
Note: Range of motion at the descending edge of point P is shown.
Structurally, the range of motion changes according to the rising height of point P.

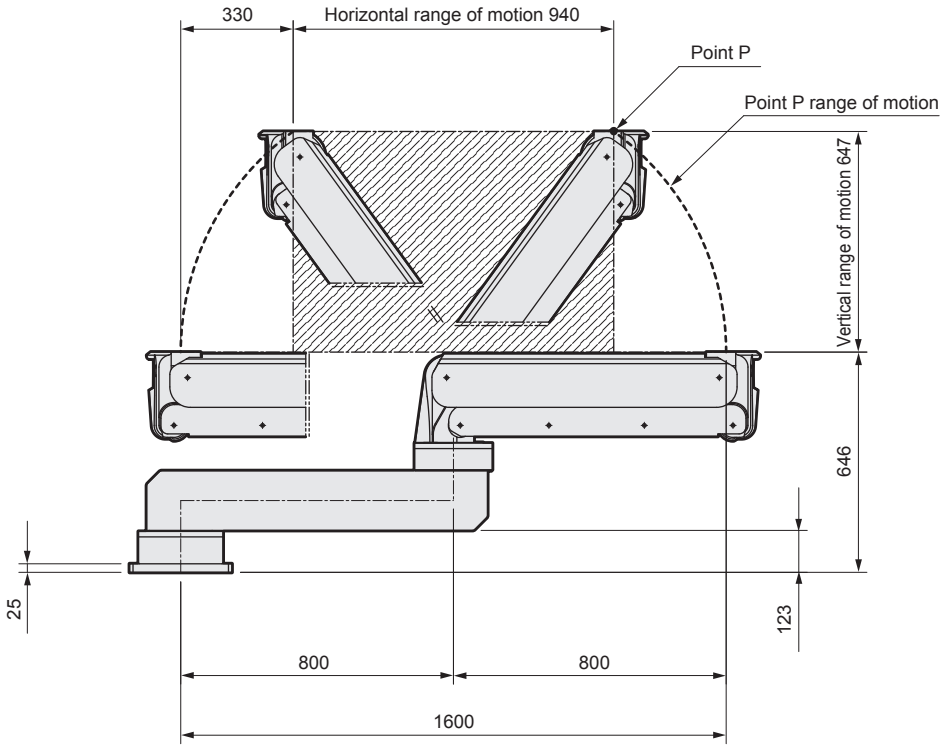


* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

Dimensions (multi-axis)

● PFB2-M-ZS (φ125+SCARA axes)

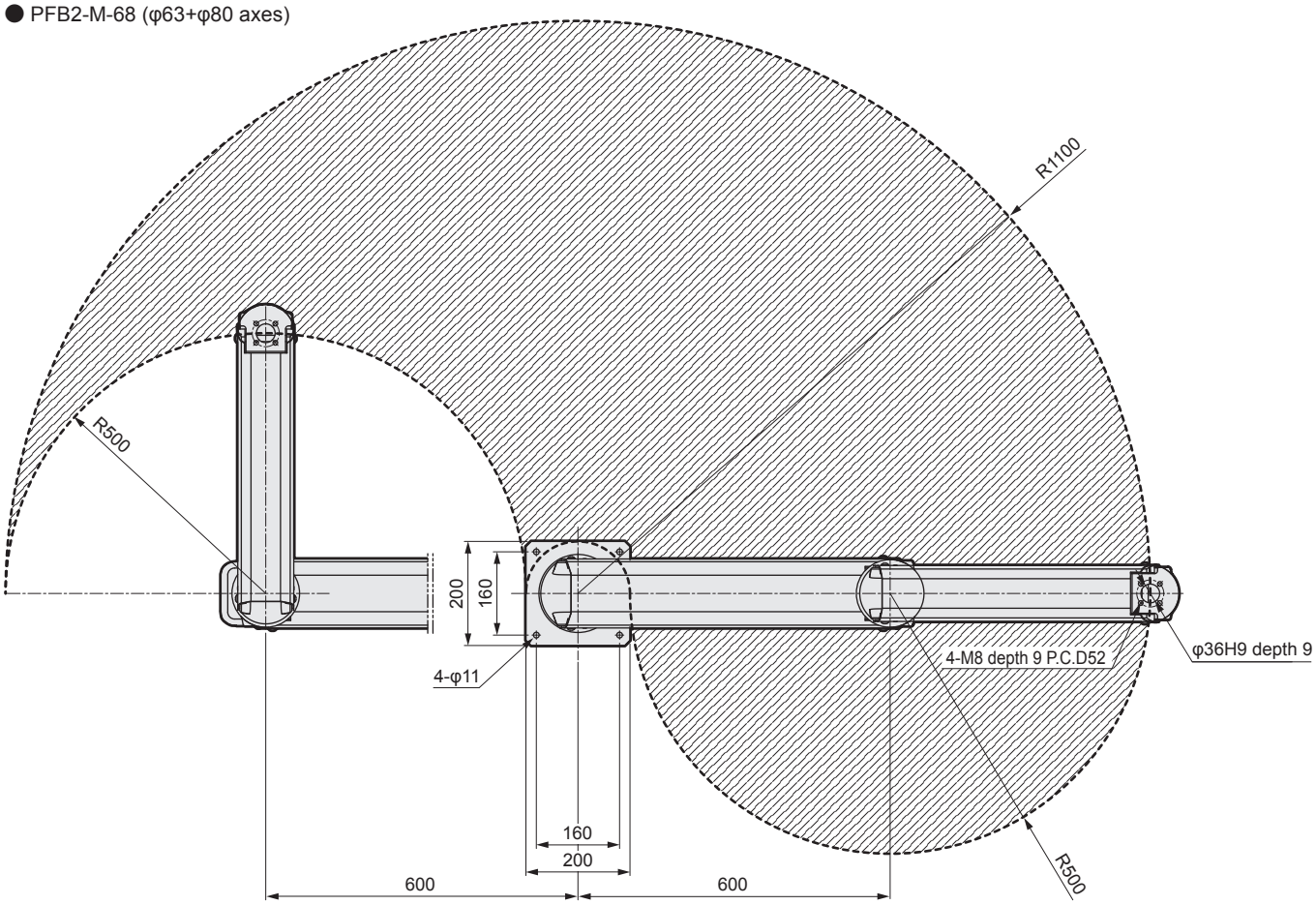




* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

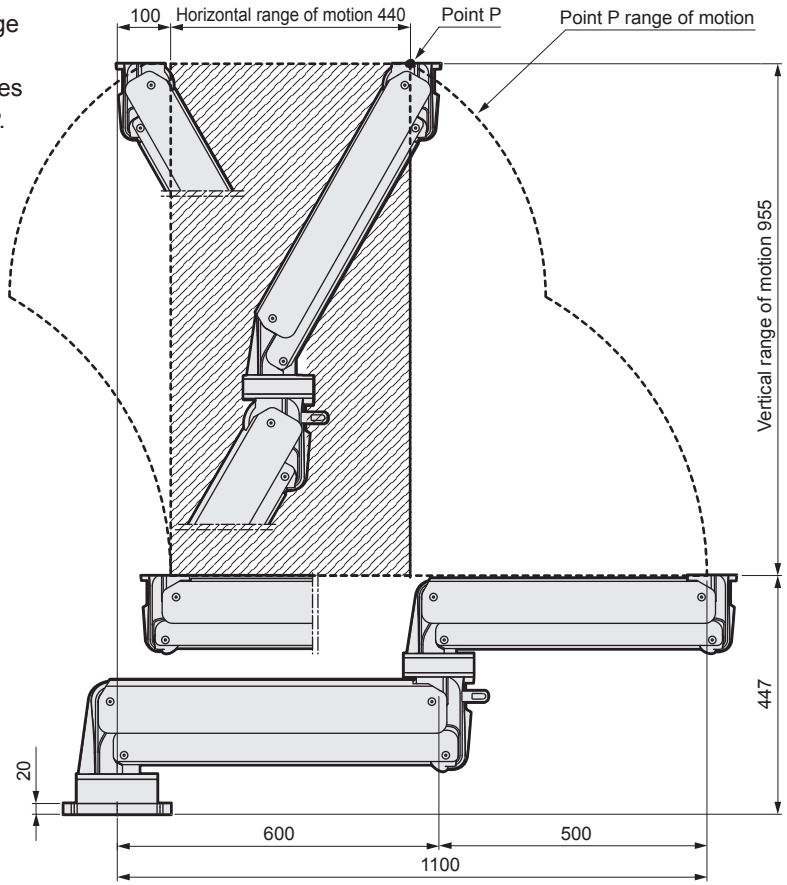
Dimensions (multi-axis)

● PFB2-M-68 (φ63+φ80 axes)



Point P range of motion (plane view)

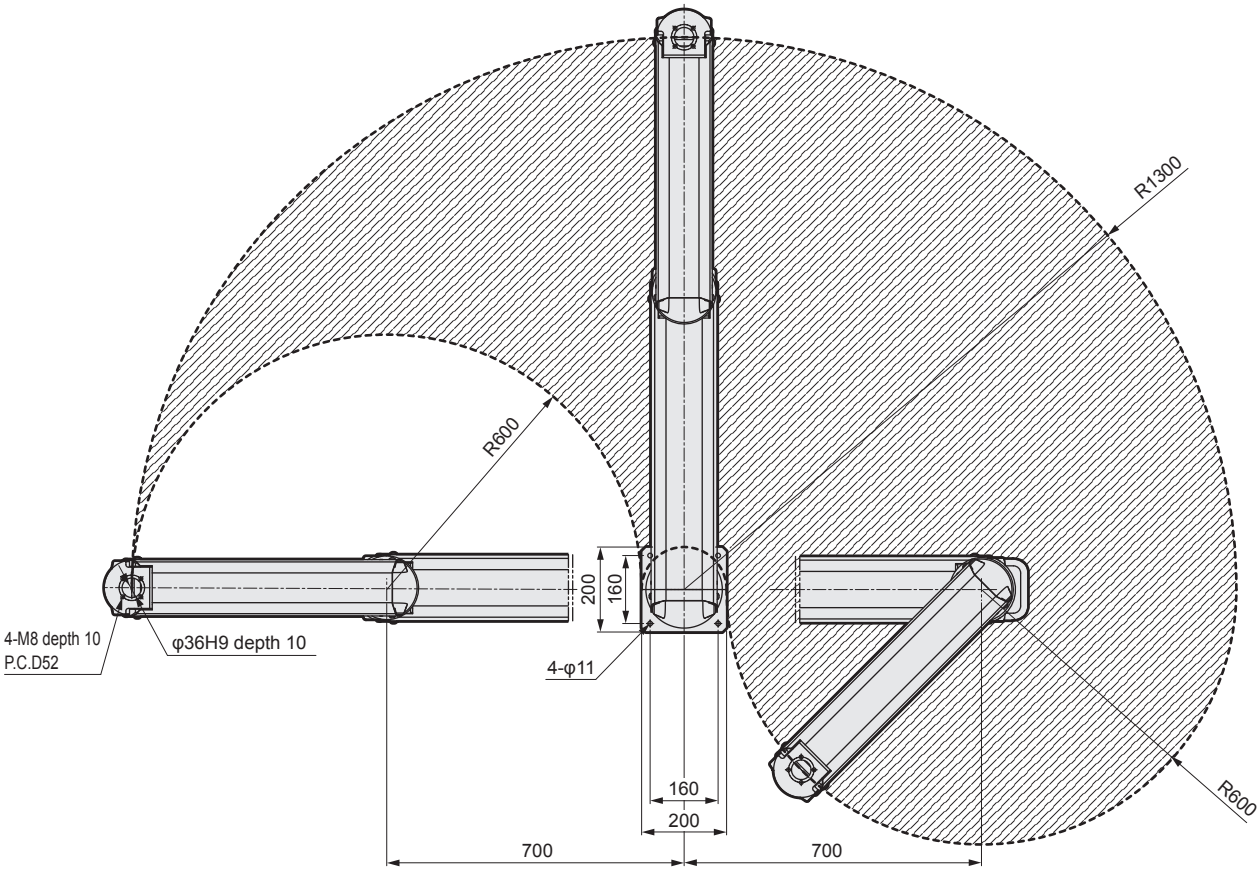
Note: Range of motion at the descending edge of point P is shown.
Structurally, the range of motion changes according to the rising height of point P.



* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

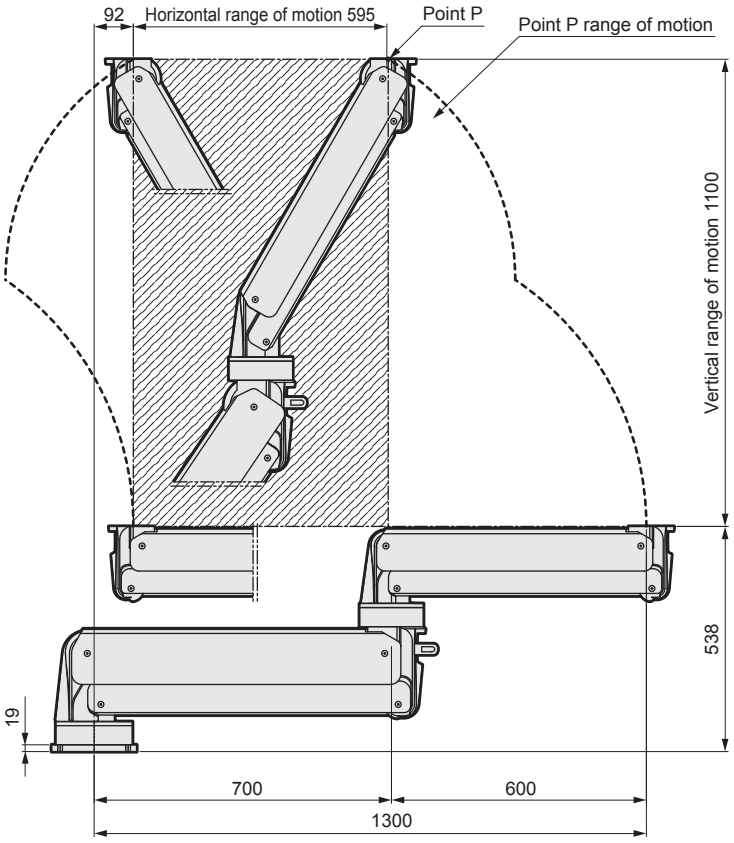
Dimensions (multi-axis)

● PFB2-M-8X (φ80+φ100 axes)



Point P range of motion (plane view)

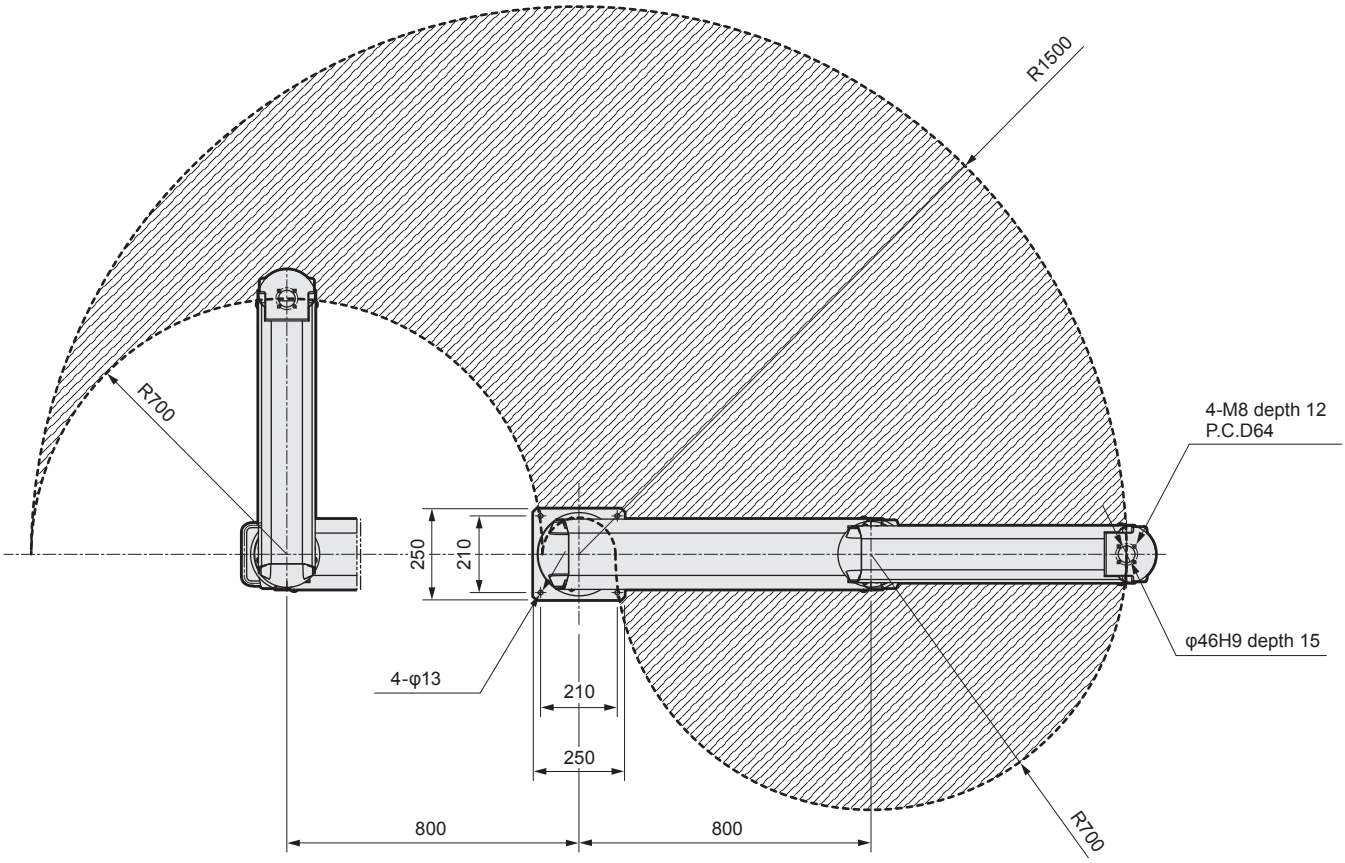
Note: Range of motion at the descending edge of point P is shown.
Structurally, the range of motion changes according to the rising height of point P.

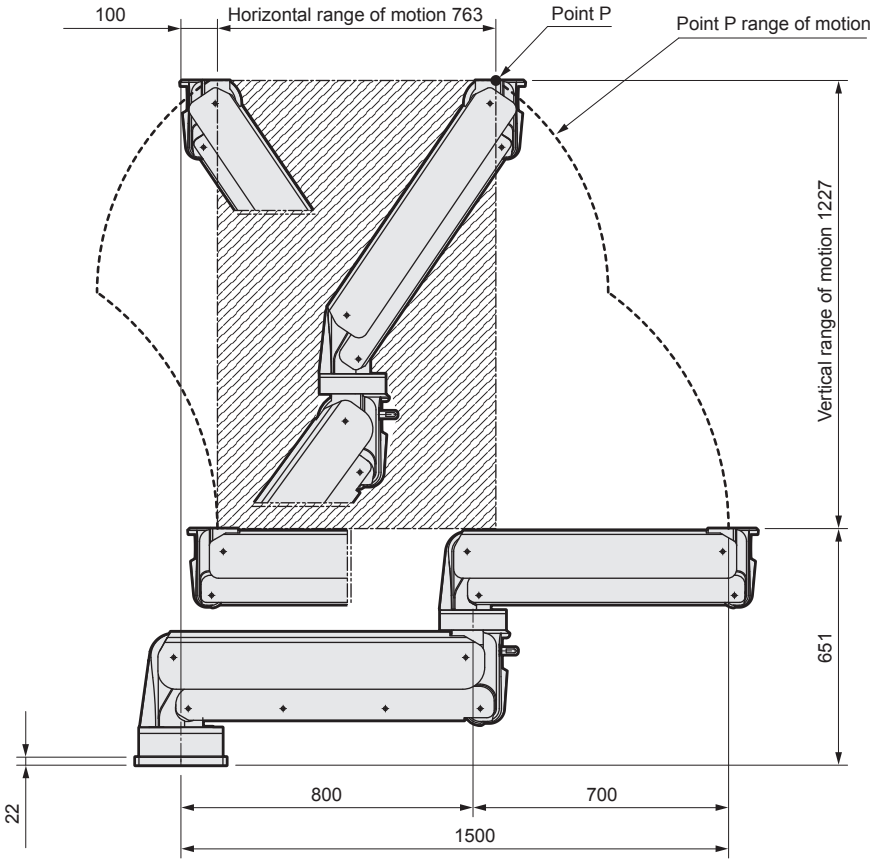


* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

Dimensions (multi-axis)

● PFB2-M-XZ (φ100+φ125 axes)

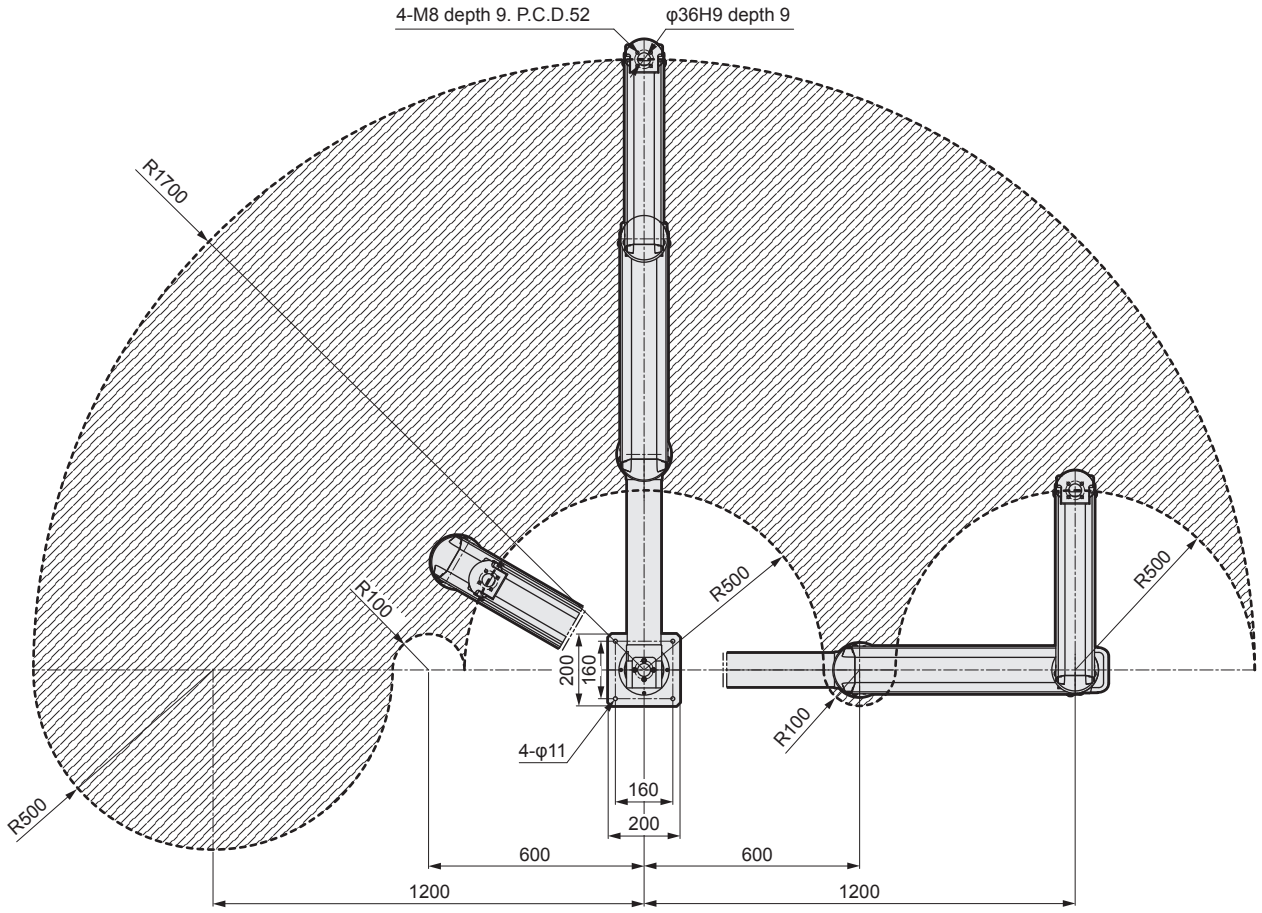




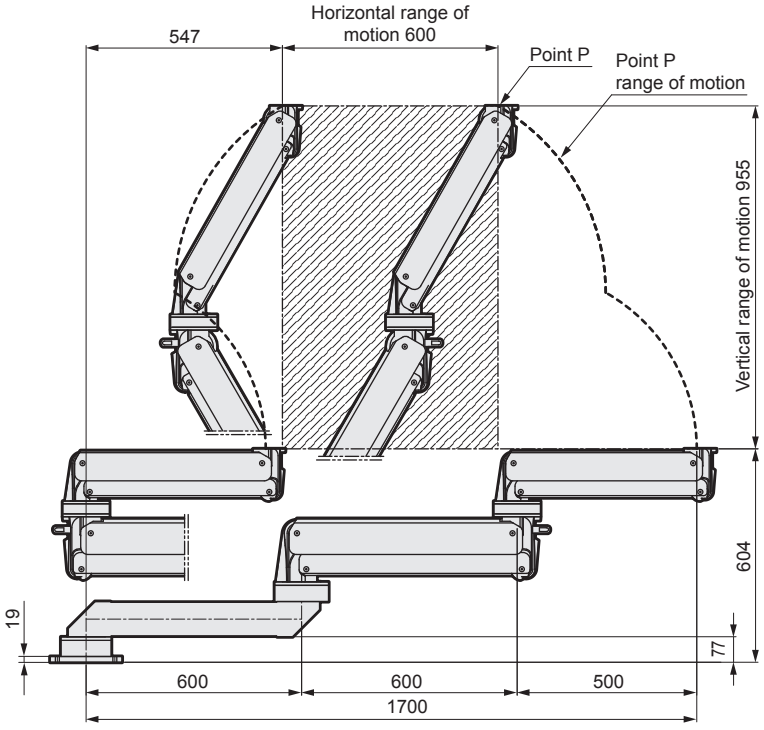
* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

Dimensions (multi-axis)

● PFB2-M-68S (φ63+φ80+SCARA axes)



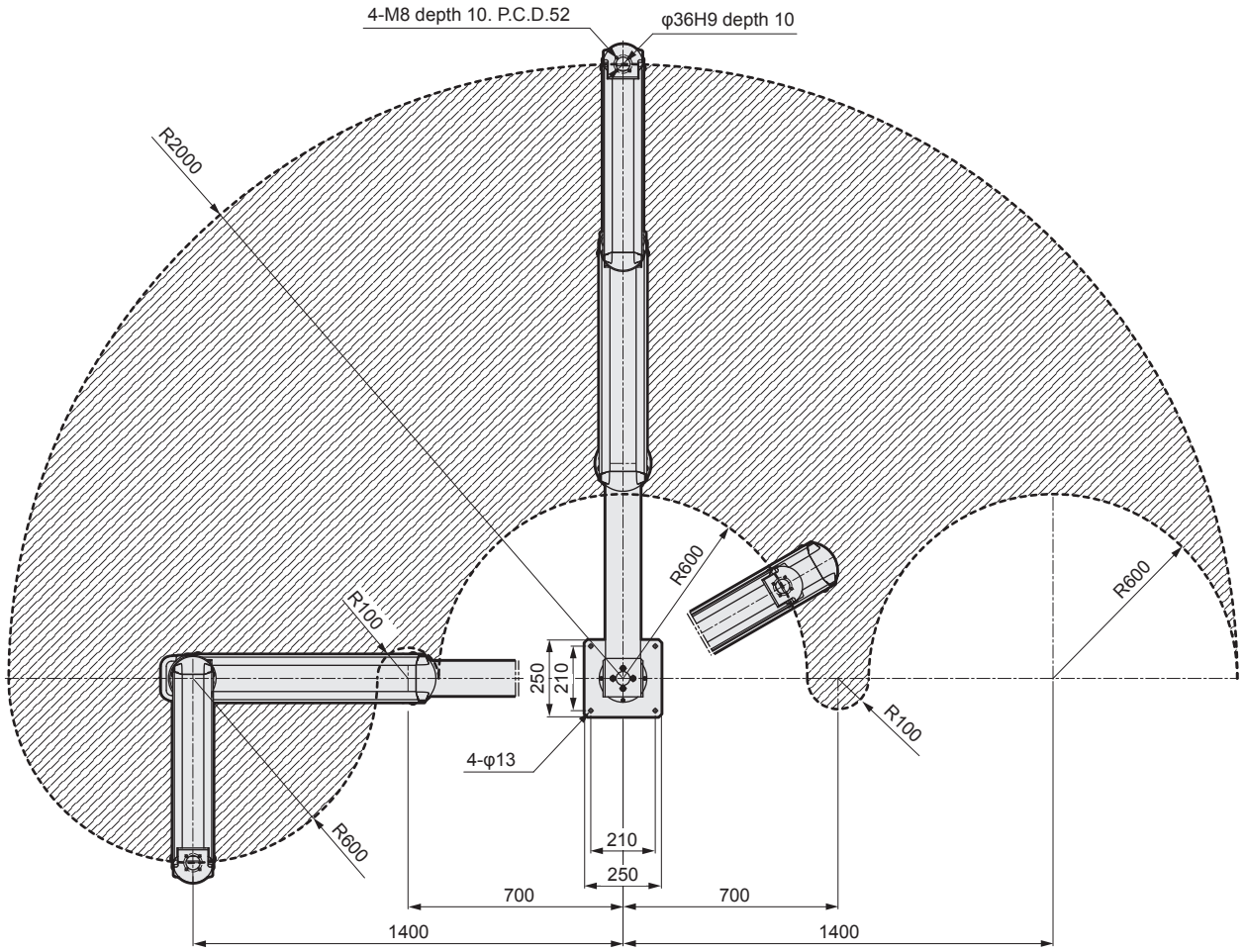
Point P range of motion (plane view)
Note: Range of motion at the descending edge of point P is shown.
Structurally, the range of motion changes according to the rising height of point P.



* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

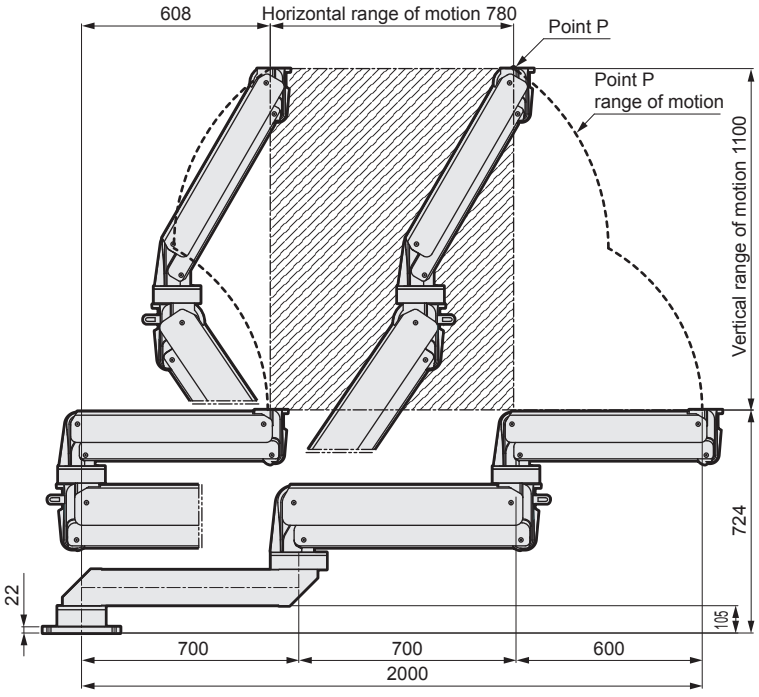
Dimensions (multi-axis)

● PFB2-M-8XS (φ80+φ100+SCARA axes)



Point P range of motion (plane view)

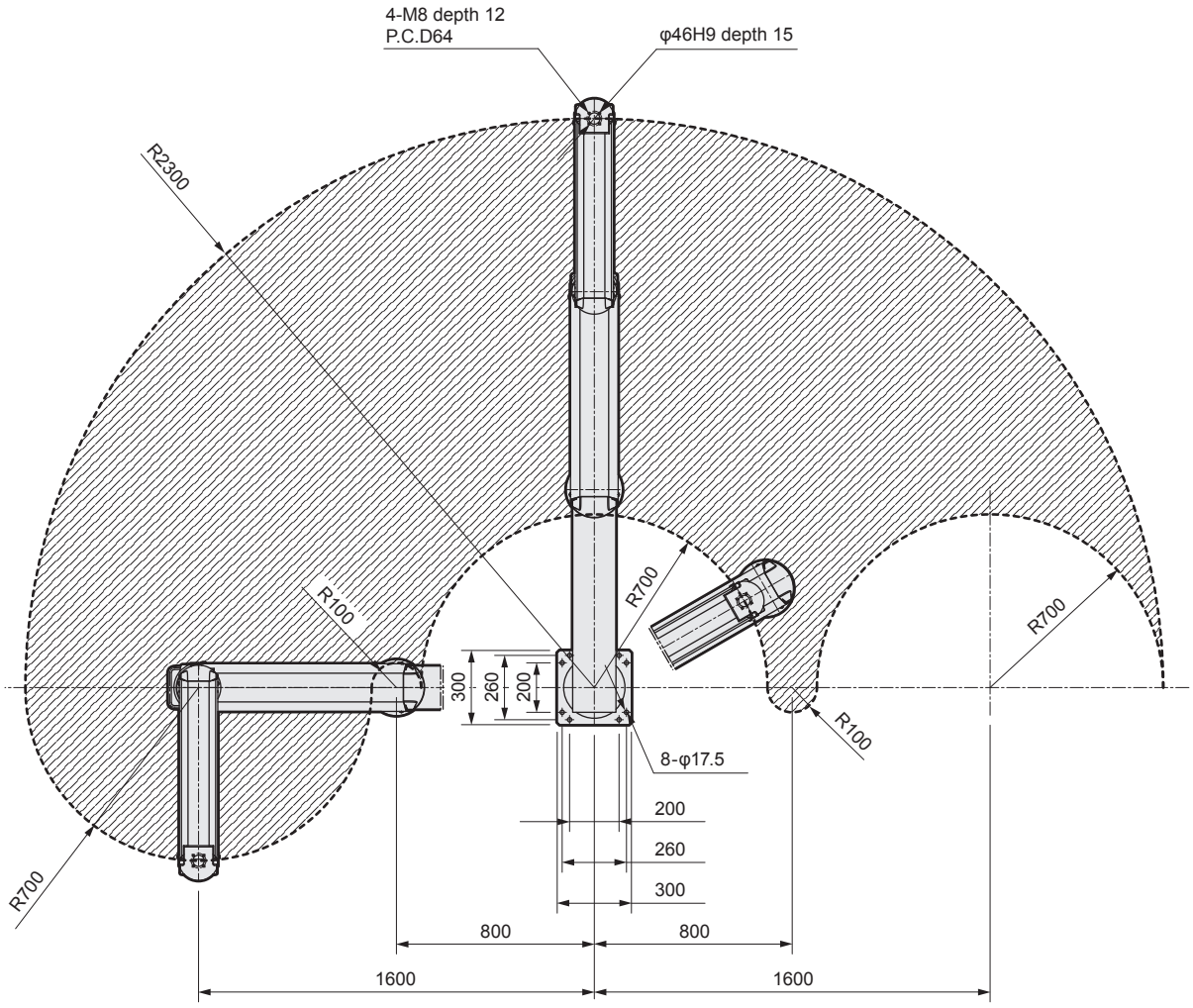
Note: Range of motion at the descending edge of point P is shown.
Structurally, the range of motion changes according to the rising height of point P.

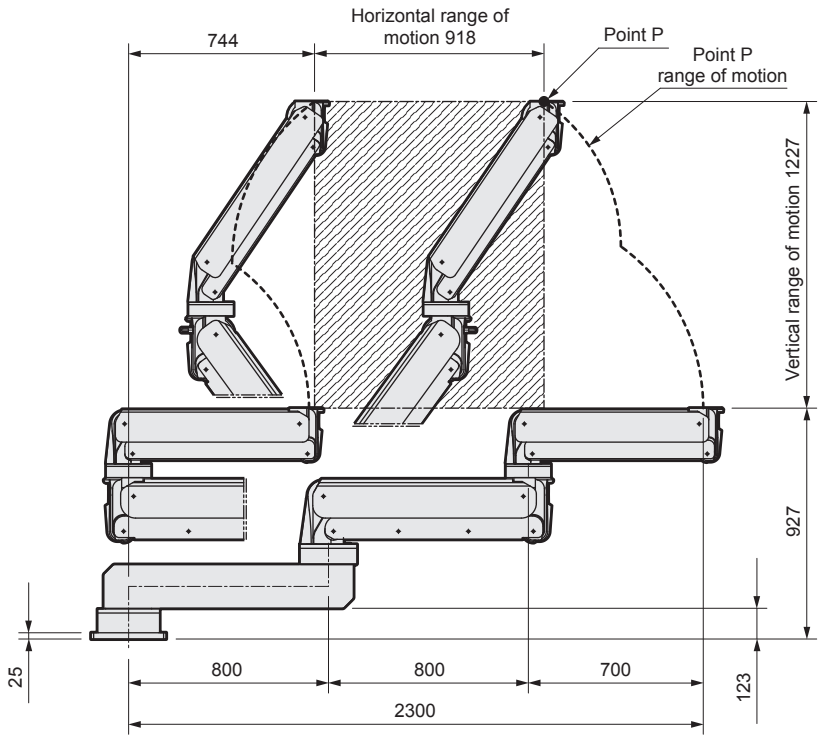


* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

Dimensions (multi-axis)

● PFB2-M-XZS (φ100+φ125+SCARA axes)

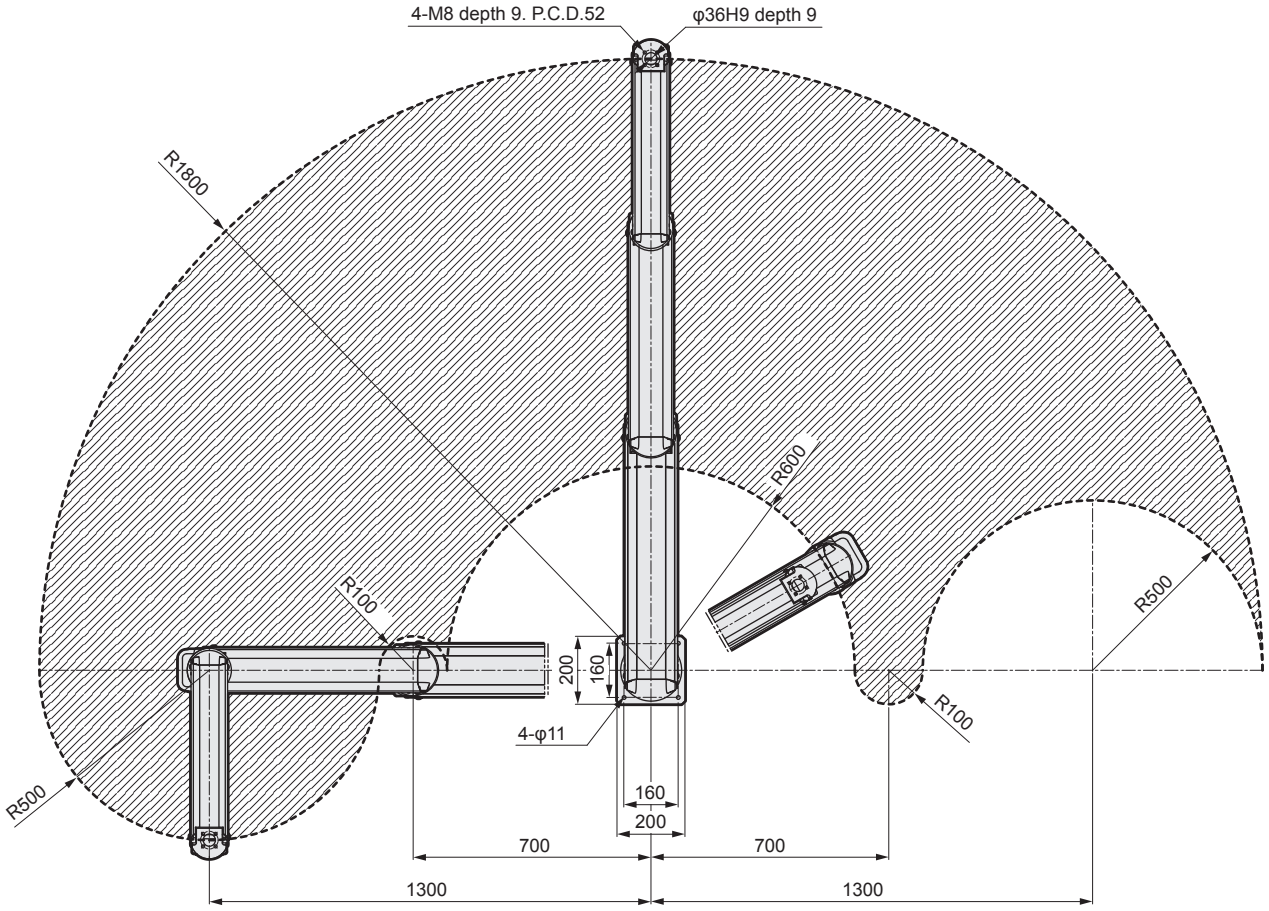




* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

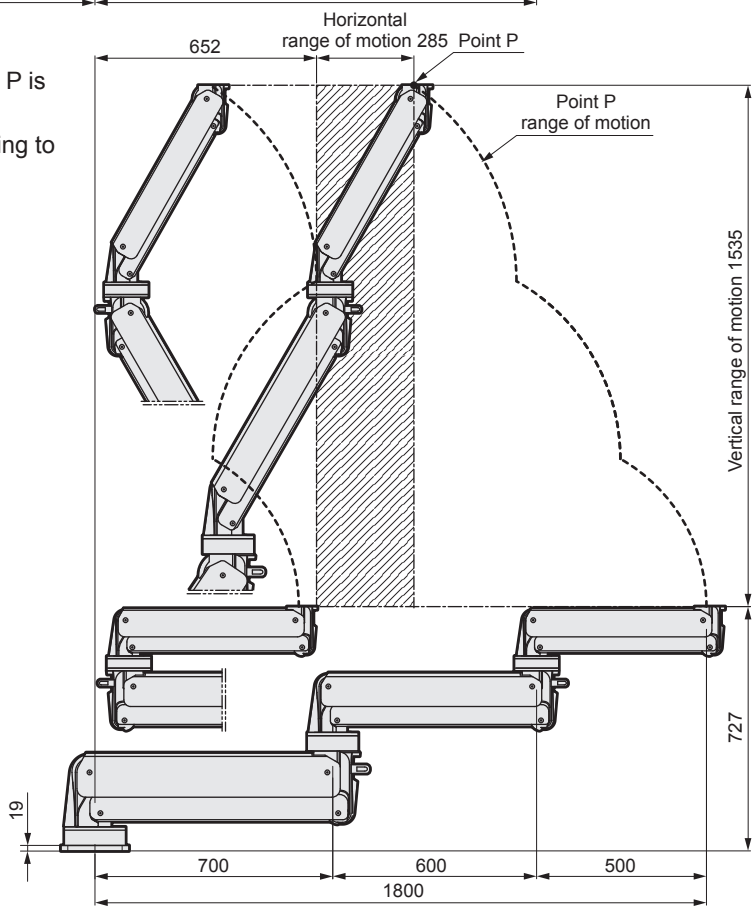
Dimensions (multi-axis)

● PFB2-M-68X (φ63+φ80+φ100 axes)



Point P range of motion (plane view)

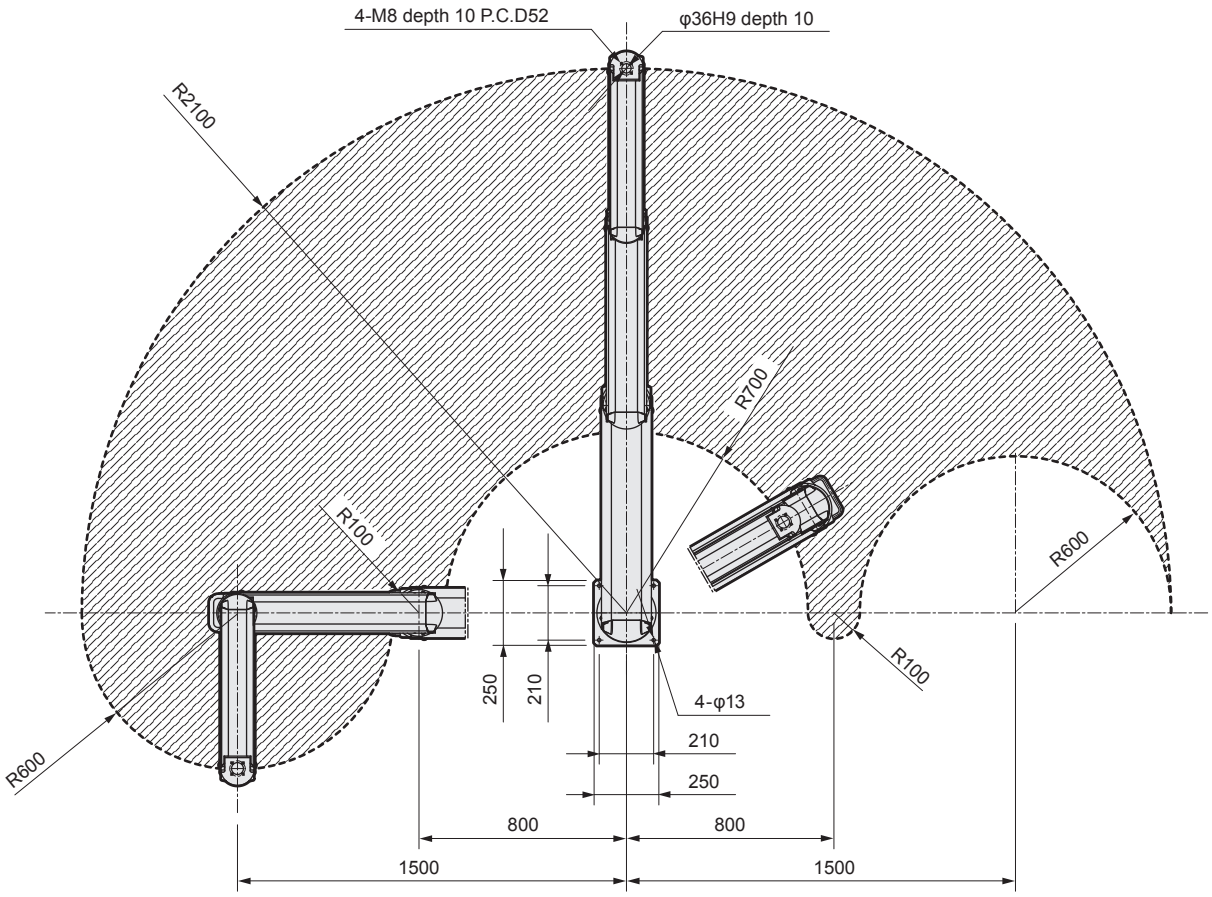
Note: Range of motion at the descending edge of point P is shown.
Structurally, the range of motion changes according to the rising height of point P.

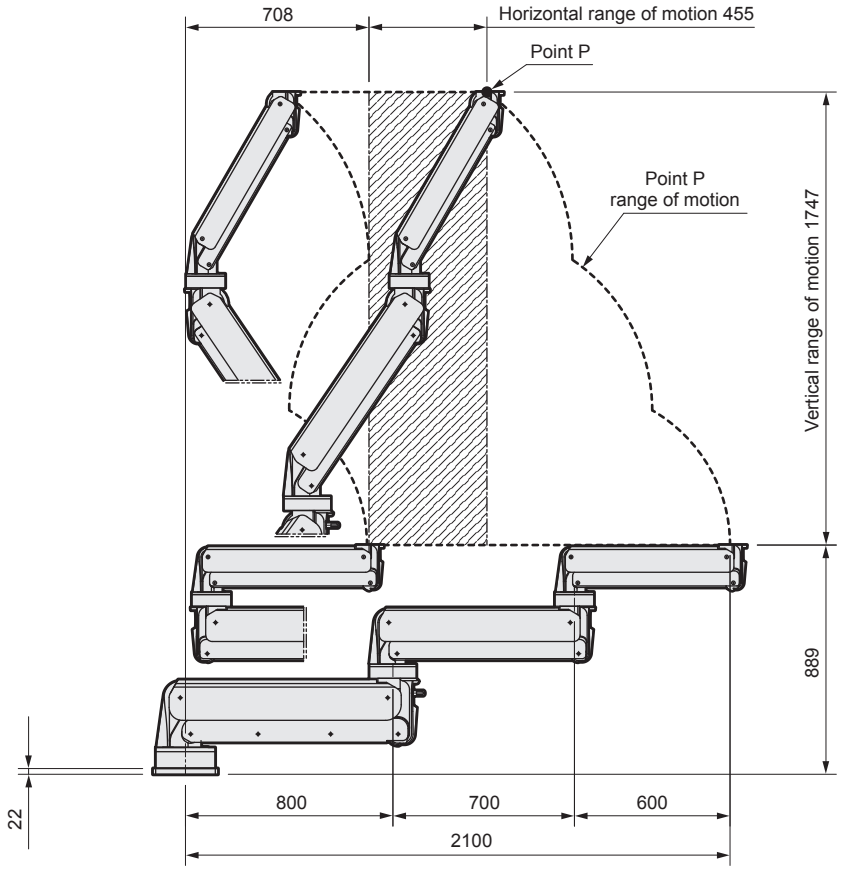


* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

Dimensions (multi-axis)

● PFB2-M-8XZ (φ80+φ100+φ125 axes)



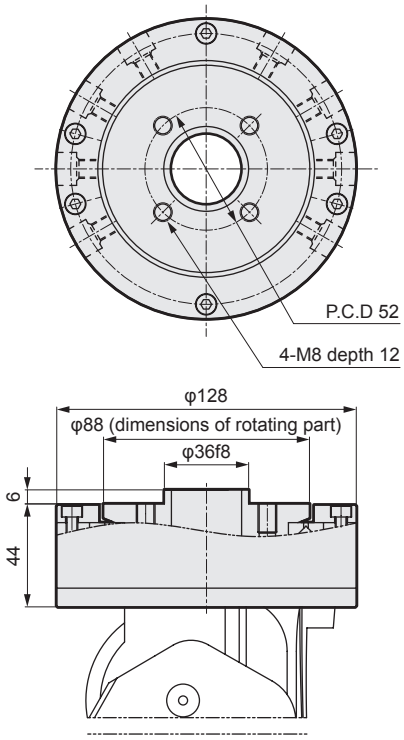


* Refer to page 17 for the optional dimensions of the tip rotation mechanism (R) option.

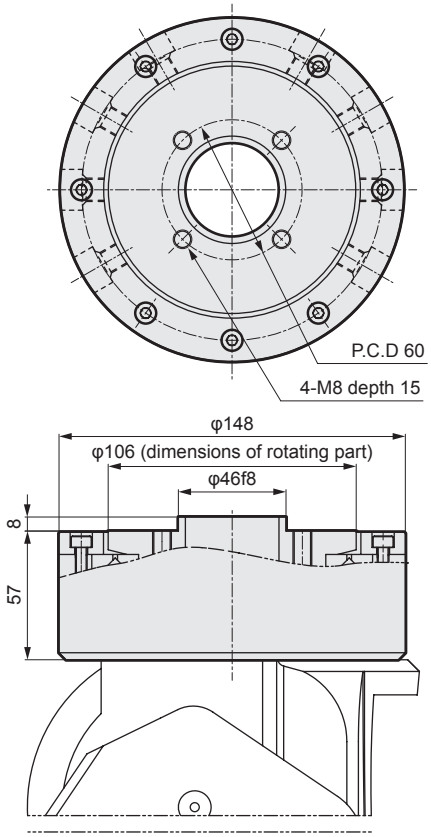
Optional dimensions

● Tip rotation mechanism (R)

• For PFB2-S-6, PFB2-S-8,
PFB2-M-6S, PFB2-M-8S, PFB2-M-68, PFB2-M-8X, PFB2-M-68S,
PFB2-M-8XS, PFB2-M-68X, PFB2-M-8XZ



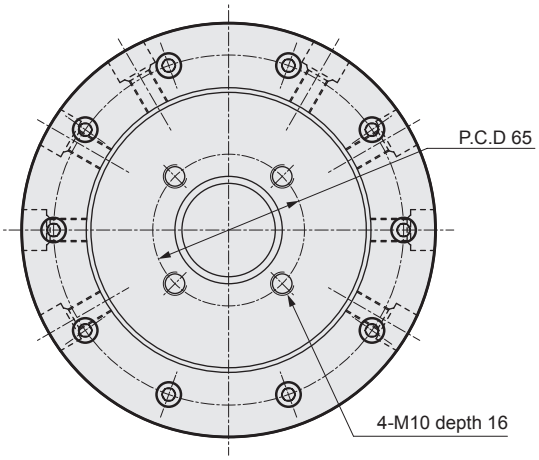
• For PFB2-S-X, PFB2-M-XS
PFB2-M-XZ and PFB2-M-XZS

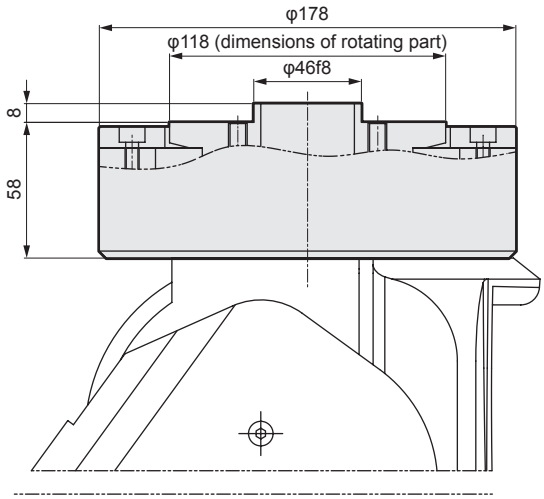


Optional dimensions

● Tip rotation mechanism (R)

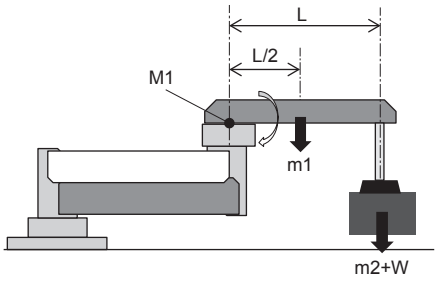
• For PFB2-S-Z and PFB2-M-ZS

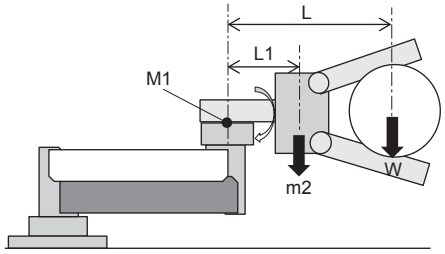




Moment load

[Single-axis specification]





• When mounting the SCARA arm

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

m1 : SCARA arm weight
m2 : Jig weight
W : Weight of workpiece
L : Distance from the mounting center of Power Arm to the center of gravity of the jig and workpiece

• When the jig is offset

$M1 = W\times L + m2\times L1$

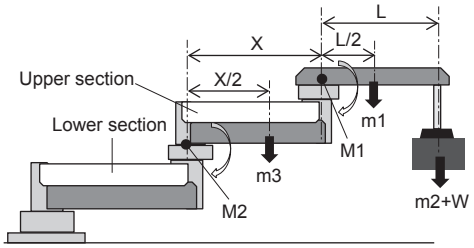
m2 : Jig weight
W : Weight of workpiece
L : Distance from the mounting center of Power Arm to the center of gravity of the workpiece
L1 : Distance from the mounting center of Power Arm to the center of gravity of the jig

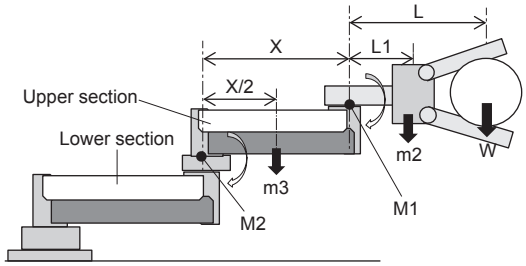
	M1
PFB2-S-6	12
PFB2-S-8	15
PFB2-S-X	40
PFB2-S-Z	78

(kgf·m)

* The calculated moment load should be within the values in the table

[2-axes specification]





• When mounting the SCARA arm

(1) Moment applied to the upper section

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

(2) Moment applied to the lower section

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

m1 : SCARA arm weight
m2 : Jig weight
m3 : Power Arm weight
φ63: 12 kg, φ80: 17 kg,
φ100: 28 kg, φ125: 60 kg
W : Weight of workpiece
L : Distance from the mounting center of Power Arm to the center of gravity of the jig and workpiece
X : Power Arm length
φ63: 500 mm, φ80: 600 mm,
φ100: 700 mm, φ125: 800 mm

• When the jig is offset

(1) Moment applied to the upper section

$M1 = W\times L + m2\times L1$

(2) Moment applied to the lower section

$M2 = W\times(L+X) + m2\times(L1+X) + m3\times X/2$

m2 : Jig weight
m3 : Power Arm weight
φ63 : 12 kg, φ80: 17 kg,
φ100: 28 kg, φ125: 60 kg
W : Weight of workpiece
L : Distance from the mounting center of Power Arm to the center of gravity of the workpiece
L1 : Distance from the mounting center of Power Arm to the center of gravity of the jig
X : Power Arm length
φ63: 500 mm, φ80: 600 mm,
φ100: 700 mm, φ125: 800 mm

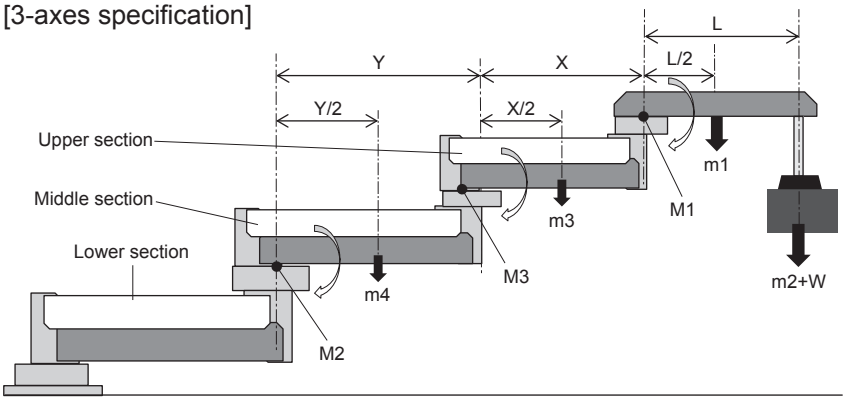
	Upper section M1	Lower section M2
PFB2-M-68	12	15
PFB2-M-8X	15	40
PFB2-M-XZ	40	78
PFB2-M-6S	12	—
PFB2-M-8S	15	—
PFB2-M-XS	40	—
PFB2-M-ZS	78	—

(kgf·m)

* The calculated moment load for each joint should be within the values in the table

Moment load

[3-axes specification]



• When mounting the SCARA arm

(1) Moment applied to the upper section

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

(2) Moment applied to the middle section

$M3 = (m2+W)\times(L+X) + m1\times(L/2+X) + m3\times X/2$

(3) Moment applied to the lower section

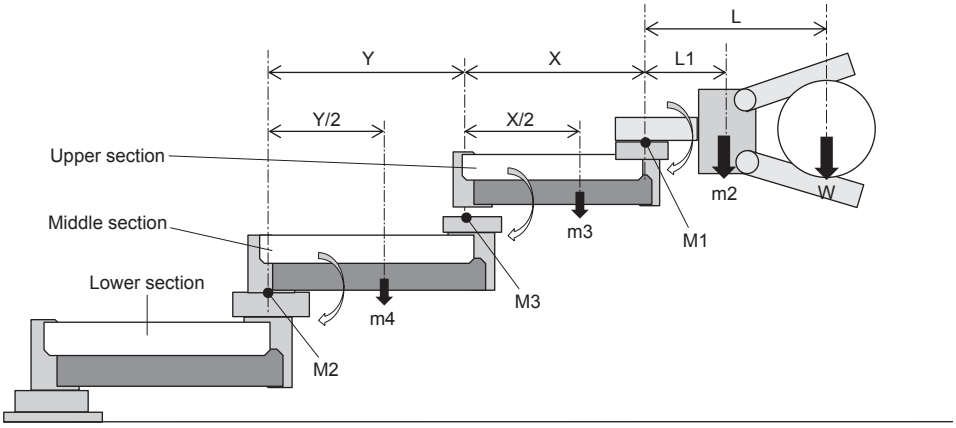
$M2 = (m2+W)\times(L+X+Y) + m1\times(L/2+X+Y) + m3\times(X/2+Y)+ m4\times Y/2$

m1 : SCARA arm weight
m2 : Jig weight
m3, m4 : Power Arm weight
φ63: 12 kg, φ80: 17 kg, φ100: 28 kg, φ125: 60 kg
W : Weight of workpiece
L : Distance from the mounting center of Power Arm to the center of gravity of the jig and workpiece
X, Y : Power Arm length
φ63 : 500 mm, φ80: 600 mm, φ100: 700 mm, φ125: 800 mm

	Upper section M1	Middle section M3	Lower section M2
PFB2-M-68X	12	15	40
PFB2-M-8XZ	15	40	78
PFB2-M-68S	12	15	—
PFB2-M-8XS	15	40	—
PFB2-M-XZS	40	78	—

(kgf·m)

* The calculated moment load for each joint should be within the values in the table



• When the jig is offset

(1) Moment applied to the upper section

$M1 = W\times L + m2\times L1$

(2) Moment applied to the middle section

$M3 = W\times(L+X) + m2\times(L1+X)+ m3\times X/2$

(3) Moment applied to the lower section

$M2 = W\times(L+X+Y) + m2\times(L1+X+Y) + m3\times(X/2+Y) + m4\times Y/2$

m2 : Jig weight
m3, m4 : Power Arm weight
φ63: 12 kg, φ80: 17 kg, φ100: 28 kg, φ125: 60 kg
W : Weight of workpiece
L : Distance from the mounting center of Power Arm to the center of gravity of the workpiece
L1 : Distance from the mounting center of Power Arm to the center of gravity of the jig
X, Y : Power Arm length
φ63: 500 mm, φ80: 600 mm, φ100: 700 mm, φ125: 800 mm

	Upper section M1	Middle section M3	Lower section M2
PFB2-M-68X	12	15	40
PFB2-M-8XZ	15	40	78
PFB2-M-68S	12	15	—
PFB2-M-8XS	15	40	—
PFB2-M-XZS	40	78	—

(kgf·m)

* The calculated moment load for each joint should be within the values in the table

Safety Precautions

Be sure to read this section before use.

When designing and manufacturing equipment using CKD products, the manufacturer is obligated to ensure that the safety of the mechanism, pneumatic control circuit and/or water control circuit and the system that runs the electrical controls are secured.
It is important to select, use, handle and maintain CKD products appropriately to ensure their safe usage.
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.)

❶Use 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.
❷Use 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 the device design and control, etc.

ISO4414, JIS B 8370 (General rules for pneumatic systems)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, body standards and regulations, etc.

4 Do not handle, pipe, or remove devices before confirming safety.

❶Inspect and service the machine and devices after confirming safety of all systems related to this product.
❷Note that there may be hot or charged sections even after operation is stopped.
❸When 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.
❹When 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 the warnings and cautions on the following pages to prevent accidents.

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

⚠ DANGER: In the case where the product operation is mishandled and/or when the urgency of a dangerous situation is high, it may lead to fatalities or serious injuries.

⚠ WARNING: A dangerous situation may occur if handling is mistaken, leading to fatal or serious injuries.

⚠ CAUTION: A dangerous situation may occur if handling is mistaken, leading to minor injuries or property damage.

Note that some items indicated with "CAUTION" may lead to serious results depending on the conditions.
All items contain important information and must be observed.

Limited warranty and disclaimer

1 Warranty period

This warranty is valid for one (1) year after delivery to the customer's designated site.

2 Scope of warranty

In case any defect clearly attributable to CKD is found during the warranty period, CKD shall, at its own discretion, repair the defect or replace the relevant product in whole or in part and at no cost, according to its own judgment.
Note that the following failures are excluded from the warranty scope:
(1) Failures due to use outside the conditions and environments set forth in the catalog or these specifications.
(2) Failures resulting from factors other than this product.
(3) Failures caused by improper use of the product.
(4) Failures resulting from modifications or repairs made without CKD consent.
(5) Failures caused by matters that could not be predicted with the technologies in practice when the product was delivered.
(6) Failures resulting from natural disasters or accidents for which CKD is not liable.
The warranty covers the actual delivered product, as a single unit, and does not cover any damages resulting from losses induced by malfunctions in the delivered product.

3 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

Safety precautions

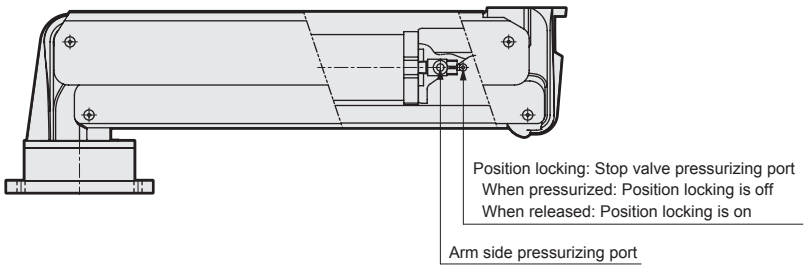
Be sure to read this section before use.

⚠ WARNING

■ Mounting, installation and adjustment

[During adjustment]

- If the primary pressure (source pressure) suddenly decreases and the stop valve for position locking is activated, supply balance pressure to the arm side before depressurizing; then leave for one second or more and pressurize the stop valve to release it. The arm will fall if pressurized simultaneously.



■ Use/maintenance

[Disassembly]

- Do not disassemble or modify the product. Contact CKD for details.

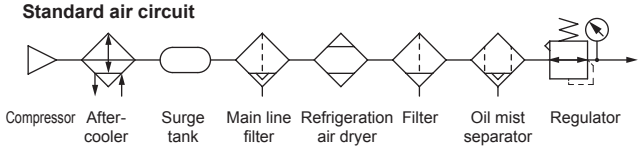
⚠ CAUTION

■ Design/selection

[Pneumatic source]

- Prepare air pressure supplied to the Power Arm in the range of operating air pressure (balance pressure)+0.05MPa to 0.7MPa.
- Prepare clean air ([standard air circuit] compressed air quality grade: 1.5.1 to 1.6.1 equivalent) for supplied air.

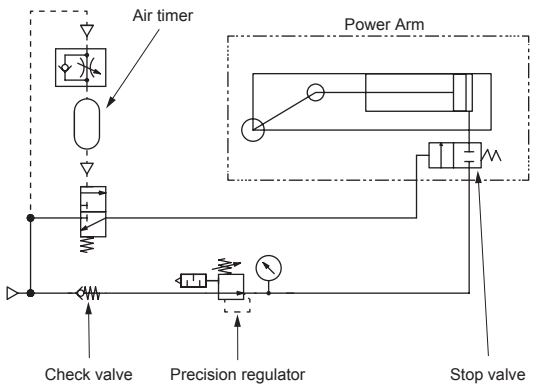
Standard air circuit



- Securely connect pneumatic piping, so that it does not come out while working.

[Recommended air circuit]

- To prevent sudden rising and falling during air supply, use the recommended circuit below.



■ Mounting, installation and adjustment

[Installation location]

- Do not install on soft floors.
- Do not install outdoors or in harsh environments (dust / corrosive gas, etc.).
- Do not allow people other than workers to enter the work site.
- Set the balance pressure by gradually increasing the pressure from 0 MPa. If pressurized at once, the arm may leap up.

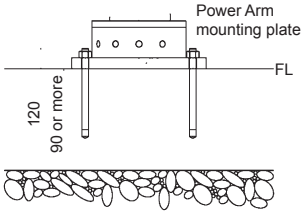
■ Use/maintenance

[During operation]

- Do not carry loads exceeding the maximum load capacity.
- Do not put hands or fingers into mechanical section gaps.
- Do not load unevenly or so as to risk collapse.
- Do not leave the work area partway through the operation.

■ Anchor installation

1) When installing the Power Arm body, make sure that the installation surface is accurately leveled. The tip cannot hold its position unless it is leveled.
2) When installing on the ground, be sure to use a drive anchor. Refer to figure.
3) Concrete compressive strength must be 2060 N/cm^2 to prevent fallout.
4) Installation must be performed by a professional.



Code	Drive anchor size
6	M10 × 120L
8	
X	
6S	
8S	
68	
8X	
68S	
68X	
Z	M12 × 120L
XS	
XZ	
8XS	
8XZ	
ZS	M16 × 120L
XZS	

Discontinue

PFB2 Order Sheet (Basic Specifications)

Date

Sales office

Office manager	Contact

Customer company name

Address /☎

Contact

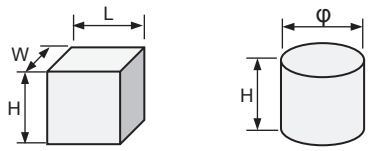
1. Enter details of work in progress and purpose of use for PFB2.

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

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

Fill in the shape dimensions.

Examples of shape dimensions



* For multiple workpieces, attach the shape dimensions separately.

3. PFB2 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. PFB2 control box

■ Manufacturer (Required / Not required)

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

5. PFB2 power source ■ Pneumatic supply pressure _____ MPa ■ Power _____ V

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

6. PFB2 installation method ■ Fixed on floor / Movable on floor (dolly) / Other ( )

7. PFB2 working environment ■ Water drops (Yes / No) ■ Dust (Yes / No) ■ Other ( )

8. PFB2 operating frequency ■ _____ times/day _____ days/month

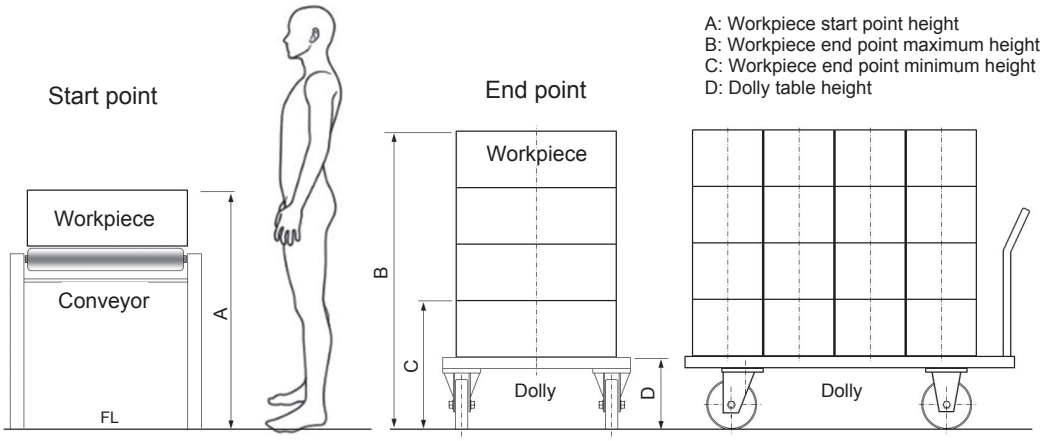
9. Work layout

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 4 rows 4 deep on a transport dolly



CKD

Discontinue

PFB2 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.

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

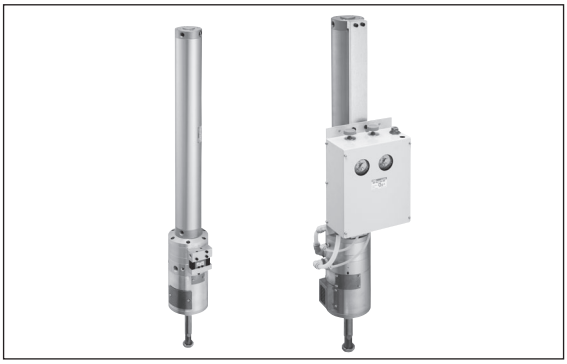
10. Remarks and notes

Related products

Balancer unit BBS Series

Catalog No. CC-960A

- **A maximum load of 200 kg can be balanced with just 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 sliding balance cylinder BBS Series

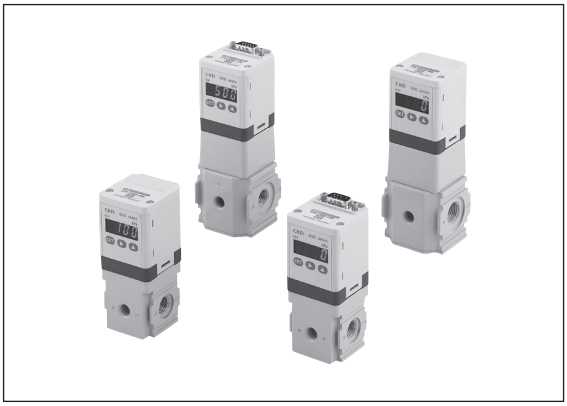
Catalog No. CC-1212A

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

Digital electro pneumatic regulator EVD Series

Catalog No. CB-024SA

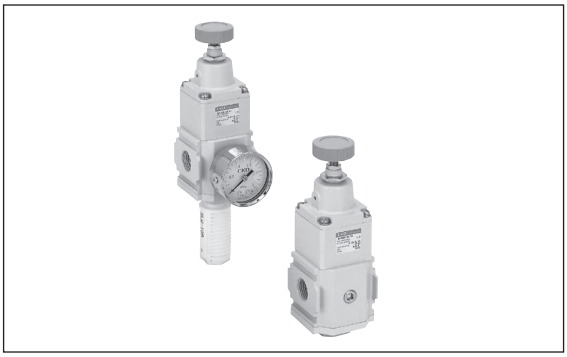
- **Superior operability and installability**
  - Digital display mounted to make control status visible at a glance
  - Parallel input type equipped as standard ● Compact design
  - Two-way connection possible with D sub-connector
  - Enabling module connection
- **Built-in microcomputer for higher functionality**
  - Error display function ● Zero/span adjustment function
  - Direct memory function ● Switch output function
- **High accuracy, quick response pressure control**
- **Eco-friendly design**
  - Lead-free/PVC-free ● Materials display
  - Auto power OFF function equipped to save energy



Precision regulator RP2000 Series

Catalog No. CC-1072A

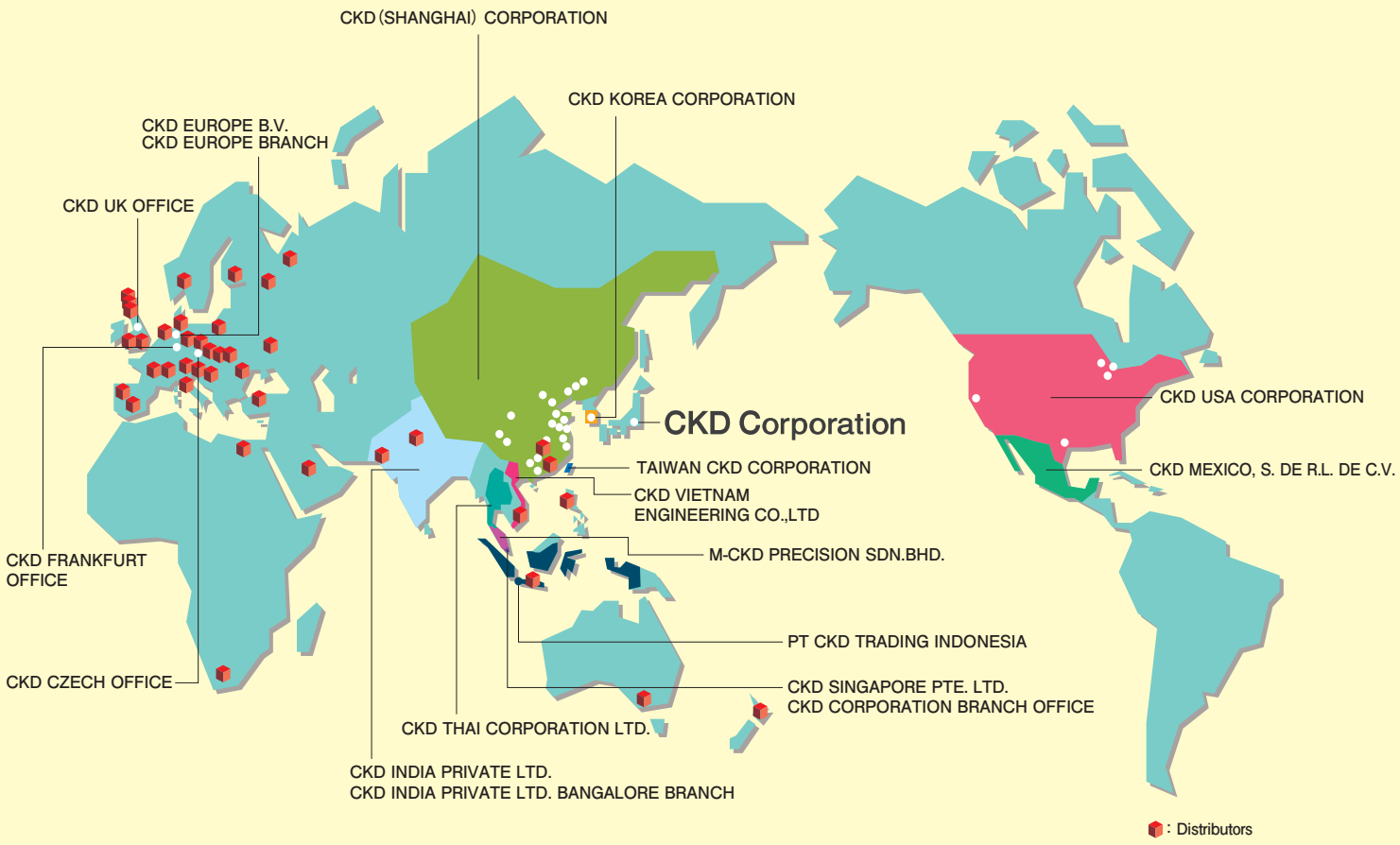
- **High-precision pressure control**
  - Repeatability: Within ±0.5% of full scale
    Sensitivity: Within 0.2% of full scale regardless of the flow rate.
- **Long service life**
  - Low-sliding packing used for moving parts.
    Also uses grease resistant to dry air.
- **Stable flow characteristics with minimal pressure drop**
- **Large relief flow rate**



MEMO

Discontinue

WORLD NETWORK



CKD Corporation

Website http://www.ckd.co.jp/

☐ 2-250 Ouji, Komaki City, Aichi 485-8551, Japan
☐ PHONE +81-568-74-1338 FAX +81-568-77-3461

U.S.A.

CKD USA CORPORATION

●CHICAGO HEADQUARTERS
4080 Winnetka Avenue, Rolling Meadows, IL 60008, USA
PHONE +1-847-368-0539 FAX +1-847-788-0575
・CINCINNATI OFFICE
・SAN ANTONIO OFFICE
・SAN JOSE OFFICE
・DETROIT OFFICE

Mexico

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

Europe

CKD EUROPE B.V.

Beechavenue 125A, 1119 RB Schiphol-Rijk, The Netherlands
PHONE +31-23-554-1490
・GERMANY OFFICE

CKD CORPORATION EUROPE BRANCH

●SALES HEADQUARTERS
Beechavenue 125A, 1119 RB Schiphol-Rijk, The Netherlands
PHONE +31-23-554-1490
・CZECH OFFICE
・UK OFFICE

Malaysia

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-(0)3-5541-1468 FAX +60-(0)3-5541-1533
・JOHOR BAHRU BRANCH OFFICE
・PENANG BRANCH OFFICE

Thailand

CKD THAI CORPORATION LTD.

●SALES HEADQUARTERS
19th Floor, Smooth Life Tower, 44 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand
PHONE +66-(0)2-267-6300 FAX +66-(0)2-267-6304-5
・RAYONG OFFICE
・NAVANAKORN OFFICE
・EASTERN SEABOARD OFFICE
・LAMPHUN OFFICE
・KORAT OFFICE
・AMATANAKORN OFFICE
・PRACHINBURI OFFICE
・SARABURI OFFICE

Singapore

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

India

CKD INDIA PRIVATE LTD.

Unit No. 607, 6th Floor, Welldone Tech Park, Sector 48, Sohna Road, Gurgaon-122018, Haryana, India
PHONE +91-(0)124-418-8212

CKD INDIA PRIVATE LTD. BANGALORE BRANCH

No. 201/B, 2nd Floor, Museum Terraces Apartment, No. 29, Museum Road, Bangalore-560001, Karnataka, India
PHONE +91-(0)80-4212-7008/7009 FAX +91-(0)80-4212-7007

Indonesia

PT CKD TRADING INDONESIA

●SALES HEADQUARTERS
Menara Bidakara 2, 18th Floor, Jl. Jend. Gatot Subroto Kav. 71-73, Pancoran, Jakarta 12870, Indonesia
PHONE +62-(0)21-2938-6601 FAX +62-(0)21-2906-9470
・BEKASI OFFICE
・KARAWANG OFFICE
・SURABAYA OFFICE

Vietnam

CKD VIETNAM ENGINEERING CO.,LTD.

18th Floor, CMC Tower, Duy Tan Street, Cau Giay District, Hanoi, Vietnam
PHONE +84-(0)24-3795-7631 FAX +84-(0)24-3795-7637

Taiwan

台湾喜開理股份有限公司
TAIWAN CKD CORPORATION

16F-3, No. 7, Sec. 3, New Taipei Blvd., Xinzhuang Dist., New Taipei City 242, Taiwan
PHONE +886-(0)2-8522-8198 FAX +886-(0)2-8522-8128
・新竹営業所 (HSINCHU OFFICE)
・台中営業所 (TAICHUNG OFFICE)
・台南営業所 (TAINAN OFFICE)

China

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

●営業部 / 上海浦西事務所(SALES HEADQUARTERS / SHANGHAI PUXI OFFICE)
Room 601, 6th Floor, Yuanzhongkeyan Building, No. 1905 Hongmei Road, Xinhui District, Shanghai 200233, China
PHONE +86-(0)21-61911888 FAX +86-(0)21-60905356
・上海浦東事務所 (SHANGHAI PUDONG OFFICE)
・寧波事務所 (NINGBO OFFICE)
・杭州事務所 (HANGZHOU OFFICE)
・無錫事務所 (WUXI OFFICE)
・昆山事務所 (KUNSHAN OFFICE)
・蘇州事務所 (SUZHOU OFFICE)
・南京事務所 (NANJING OFFICE)
・成都事務所 (CHENGDU OFFICE)
・武漢事務所 (WUHAN OFFICE)
・鄭州事務所 (ZHENGZHOU OFFICE)
・長沙事務所 (CHANGSHA OFFICE)
・重慶事務所 (CHONGQING OFFICE)
・西安事務所 (XIAN OFFICE)
・広州事務所 (GUANGZHOU OFFICE)
・中山事務所 (ZHONGSHAN OFFICE)
・深圳西事務所 (WEST SHENZHEN OFFICE)
・深圳東事務所 (EAST SHENZHEN OFFICE)
・東莞事務所 (DONGGUAN OFFICE)
・厦門事務所 (XIAMEN OFFICE)
・瀋陽事務所 (SHENYANG OFFICE)
・長春事務所 (CHANGCHUN OFFICE)
・大連事務所 (DALIAN OFFICE)
・北京事務所 (BEIJING OFFICE)
・天津事務所 (TIANJIN OFFICE)
・青島事務所 (QINGDAO OFFICE)
・済南事務所 (JINAN OFFICE)
・烟台事務所 (YANTAI OFFICE)

Korea

CKD KOREA CORPORATION

●HEADQUARTERS
(3rd Floor), 44, Sinsu-ro, Mapo-gu, Seoul 121-856, Korea
PHONE +82-(0)2-783-5201~5203 FAX +82-(0)2-783-5204
・水原営業所 (SUWON OFFICE)
・天安営業所 (CHEONAN OFFICE)
・蔚山営業所 (ULSAN OFFICE)

The goods and/or their replicas, the technology and/or software found in this catalog are subject to complementary export regulations by Foreign Exchange and Foreign Trade Law of Japan.
If the goods and/or their replicas, the technology and/or software found in this catalog are to be exported, law requires that the exporter makes sure that they will never be used for the development and/or manufacture of weapons for mass destruction.

2018.3