

Pneumatic Quick Fasteners for Machine Changeover

Pneumatic Flex Locators



Heavy Duty
P. 1



Compact
P. 7

Pneumatic Clamping Fasteners



Pin Holding
P. 11



Ball-Locking
P. 17



ID Holding
P. 21



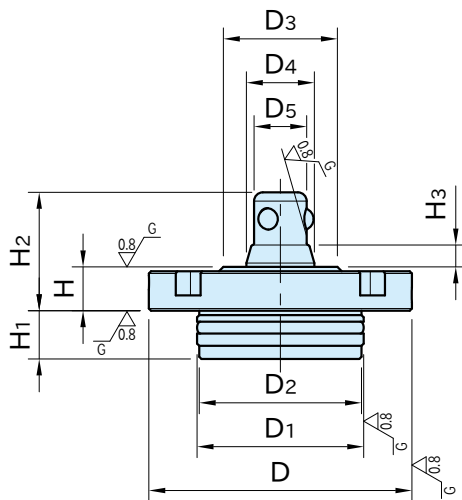
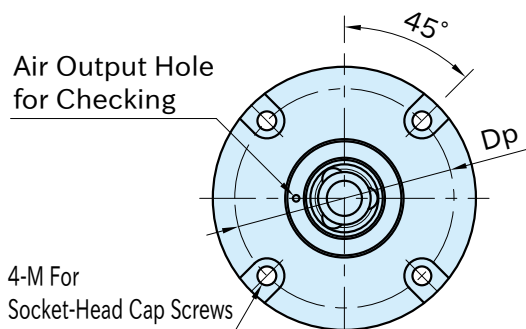


(Tapered Type)

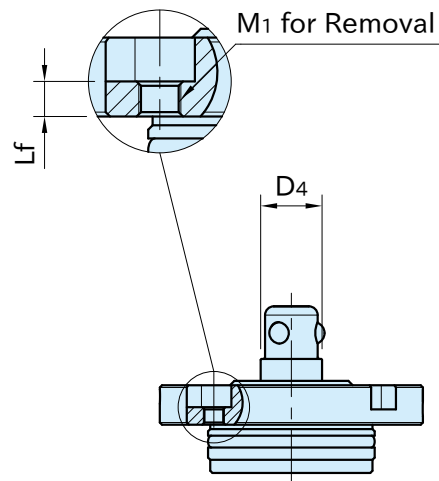


(Straight Type)

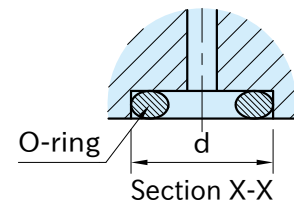
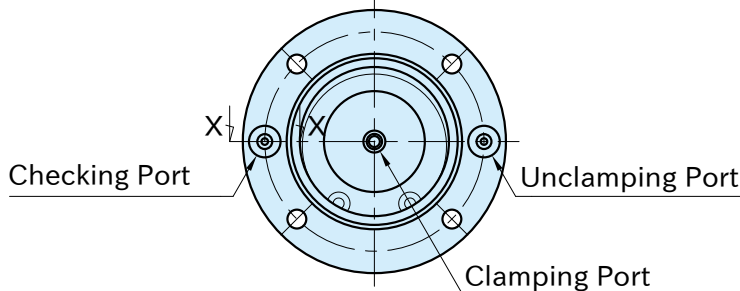
Body	Cylinder	Ball
SCM440 steel Induction hardened Black oxide finished Precision ground	S45C steel Induction hardened Electroless nickel plated	SUS440C stainless steel



AMWF-W-T (Tapered Type)



AMWF-W-S (Straight Type)



Reference

- How To Use PNEUMATIC FLEX LOCATORS
- How To Install PNEUMATIC FLEX LOCATORS

Note

- Use clean air by removing dust with filter or draining with dryer.
- Impure compressed air may cause malfunction of the products.
- Using lubricator is recommended.

Size	D ₁ (g6)	D ₂	H ₁	D	D ₃	H (±0.003)	M	H ₃	D ₅ (^{-0.05} / _{-0.15})	H ₂	Lf	M ₁	Dp
AMWF-W-T	40	48	47.5	15	70	38	M5	8	16	35	5	M6×1 (Drilled Hole φ5.2)	60
AMWF-W-S	50	58	57.5	19	85	48	M6	10	20	44	6	M8×1.25(Drilled Hole φ6.8)	72

Size	d	Furnished O-ring	Operating Air Pressure(MPa)*	Clamping Force(kN)
AMWF-W-T	40	P4	0.5	4
AMWF-W-S	50	P5		6.3

Related Product
AMWF-BU PNEUMATIC FLEX LOCATOR BUSHINGS

*) At least 0.45 MPa is required for unclamping.
The maximum operating air pressure is 1 MPa.

AMWF-W-T (Tapered Type)

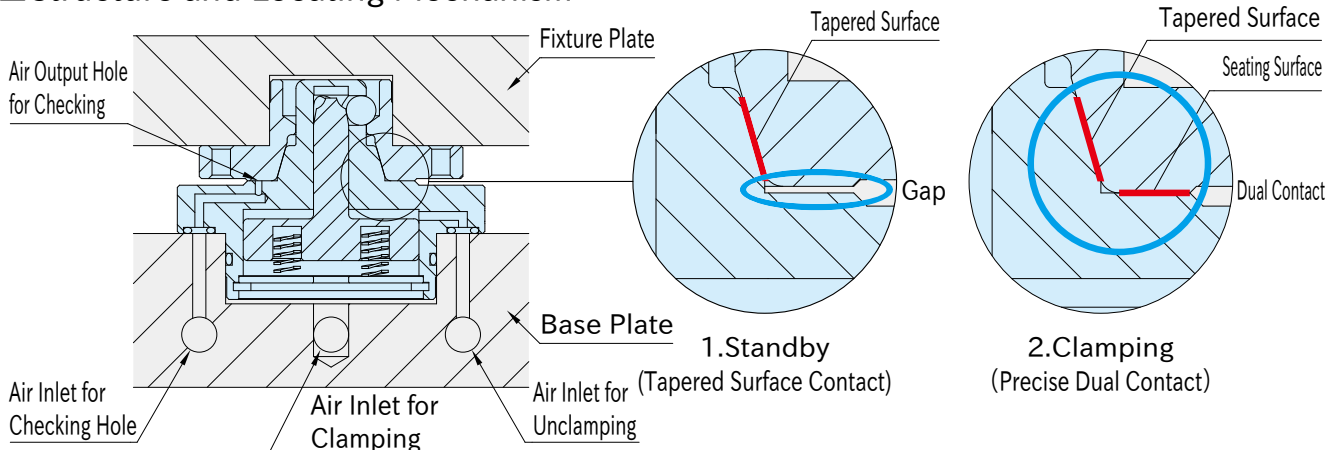
Part Number	D ₄	Weight (g)
AMWF40-W-T	24.5	450
AMWF50-W-T	31.5	820

AMWF-W-S (Straight Type)

Part Number	D ₄	Weight (g)
AMWF40-W-S	20	440
AMWF50-W-S	26	810

Feature

■ Structure and Locating Mechanism

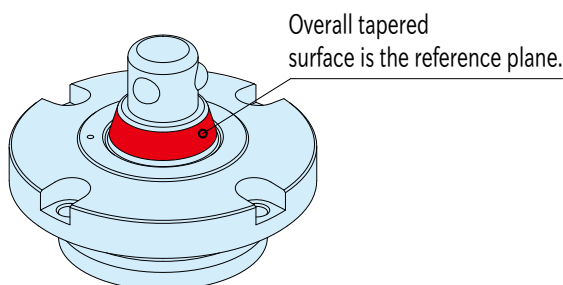


- When the air pressure is lowered by an air leakage, the wedge mechanism and the spring prevent prompt lowering of the clamping force.
Clamping Force at 0 Mpa Air Pressure (Clamping Force of Spring)
 - AMWF40Type...1.2kN
 - AMWF50Type...1.8kN
- Can check if the fixture plate is clamped properly by applying air through the checking hole.

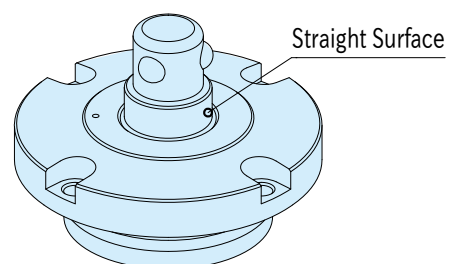
- Precise dual contact provides excellent locating repeatability at 3 μm.

■ Functions

Locating with Tapered Type



Clamping with Straight Type





(Tapered Type)

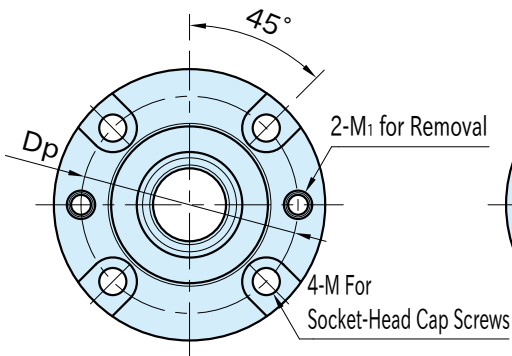
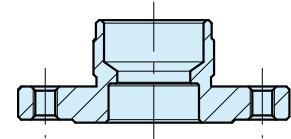
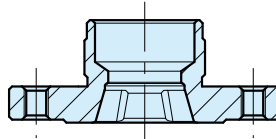
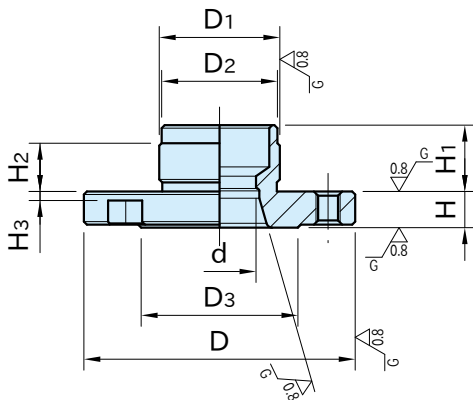


(Diamond Type)

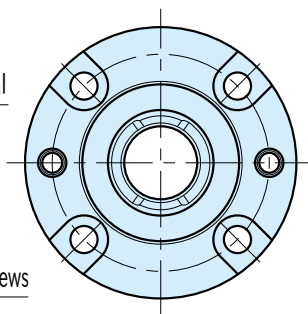


(Straight Type)

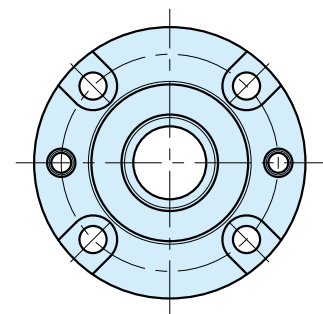
Body
SCM440 steel
Quenched & tempered
Black oxide finish
Precision ground



AMWF-BU-T
(Tapered Type)



AMWF-BU-D
(Diamond Type)



AMWF-BU-S
(Straight Type)

Size		D ₁ (g6)	H ₂	D ₂	H ₁	M	H ₃	D	D ₃	H (±0.003)	d (^{+0.15} / _{+0.05})	M ₁	D _p
AMWF-BU-T	40	28	10	27.5	15	M5	2.5	60	38	8	16	M5×0.8	50
AMWF-BU-D	50	36	14	35.5	19	M6	3.5	75	48	10	20	M6×1	62
AMWF-BU-S													

AMWF-BU-T (Tapered Type)

Part Number	Weight (g)
AMWF40-BU-T	160
AMWF50-BU-T	323

AMWF-BU-D (Diamond Type)

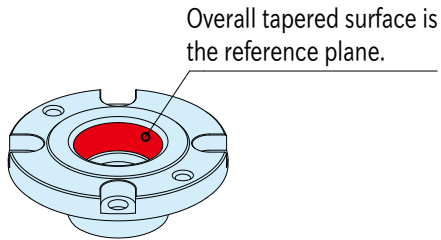
Part Number	Weight (g)
AMWF40-BU-D	159
AMWF50-BU-D	322

AMWF-BU-S (Straight Type)

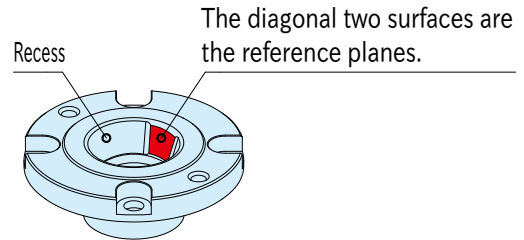
Part Number	Weight (g)
AMWF40-BU-S	163
AMWF50-BU-S	330

Feature**Function**

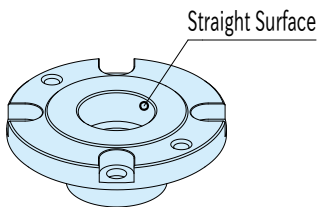
Locating with Tapered Type
For setting reference position



Locating with Diamond Type
For locating reference at rotational direction



Clamping with Straight Type

**Related Product**

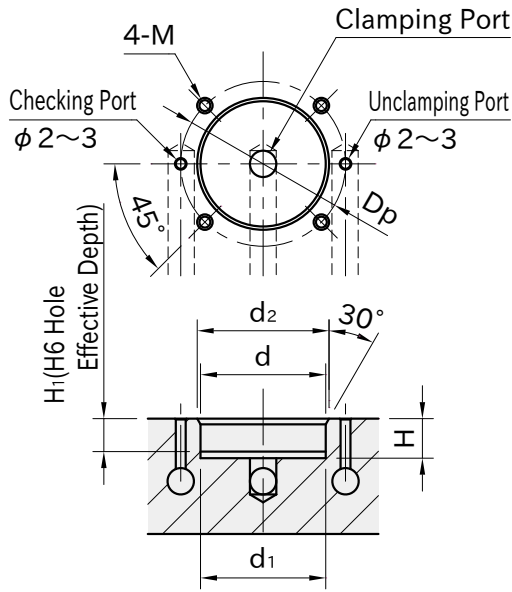
AMWF-W PNEUMATIC FLEX LOCATOR PINS

Reference

- How To Use PNEUMATIC FLEX LOCATORS
- How To Install PNEUMATIC FLEX LOCATORS

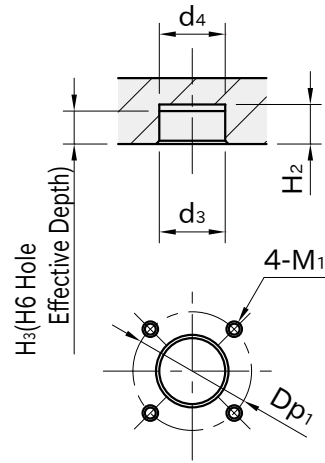
How To Install PNEUMATIC FLEX LOCATORS

■ Mounting Hole Dimensions for Pins



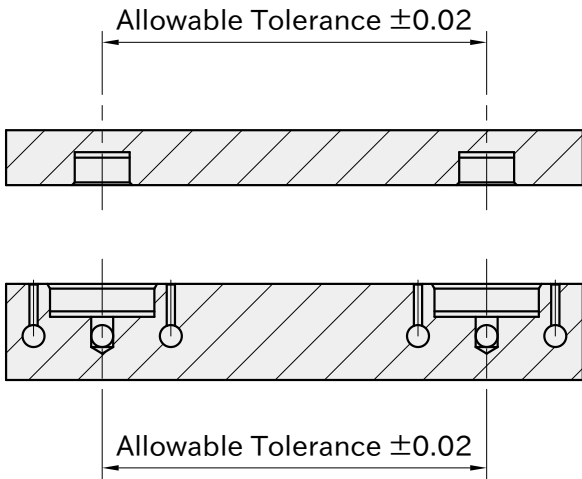
Size	d (H6)	H ₁	d ₁ (-0.1/-0.3)	H	d ₂	M	D _p
AMWF40-W	48	12	48	16	50	M5×0.8	60
AMWF50-W	58	16	58	20	60	M6×1	72

■ Mounting Hole Dimensions for Bushings



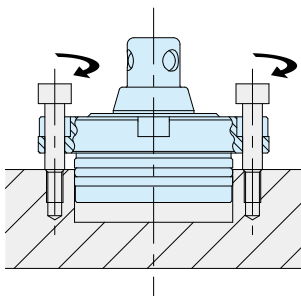
Size	d ₃ (H6)	H ₃	d ₄ (-0.1/-0.3)	H ₂	M ₁	D _{p1}
AMWF40-BU	28	12	28	16	M5×0.8	50
AMWF50-BU	36	16	36	20	M6×1	62

■ Spacing Tolerance



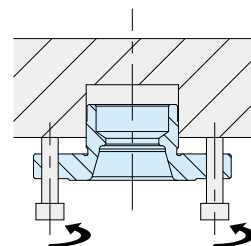
■ How to Remove Pins

For easier removal, insert screws into the tapped holes and screw them.



■ How to Remove Bushings

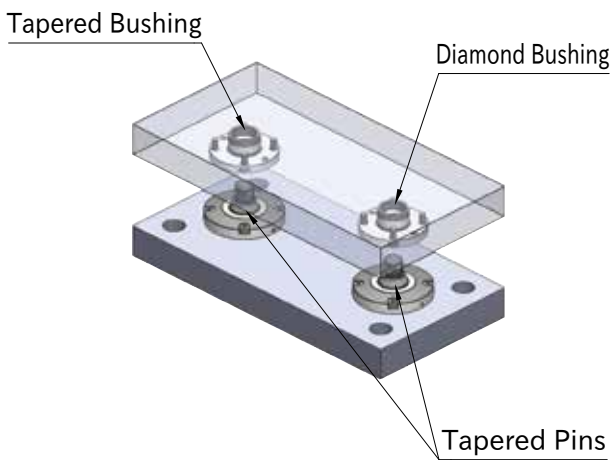
For easier removal, insert screws into the tapped holes and screw them.



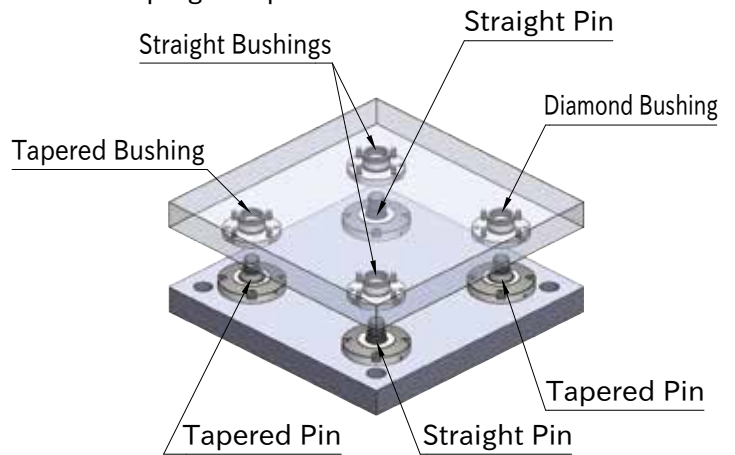
How To Use PNEUMATIC FLEX LOCATORS

Application Example

For clamping at 2 points



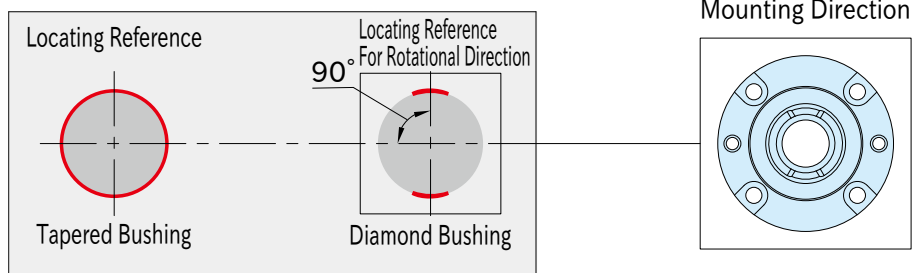
For clamping at 4 points



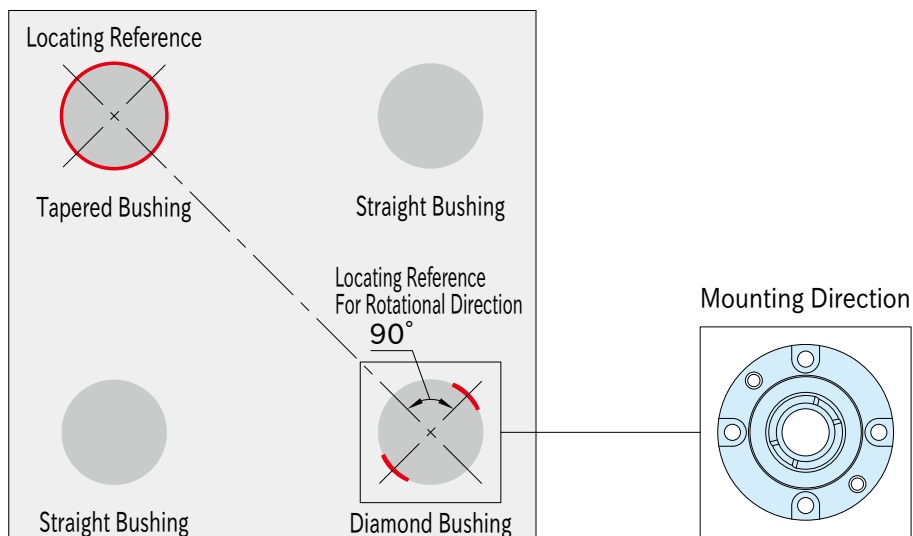
Positioning Order of Bushings

Mount the Tapered Bushings and Diamond Bushings as in the figure below for locating fixture plates. Pay attention to the mounting direction of the Diamond Bushings, since the direction for use at 2 points and the direction for use at 4 points differ.

For clamping at 2 points



For clamping at 4 points



AMWF-L-S

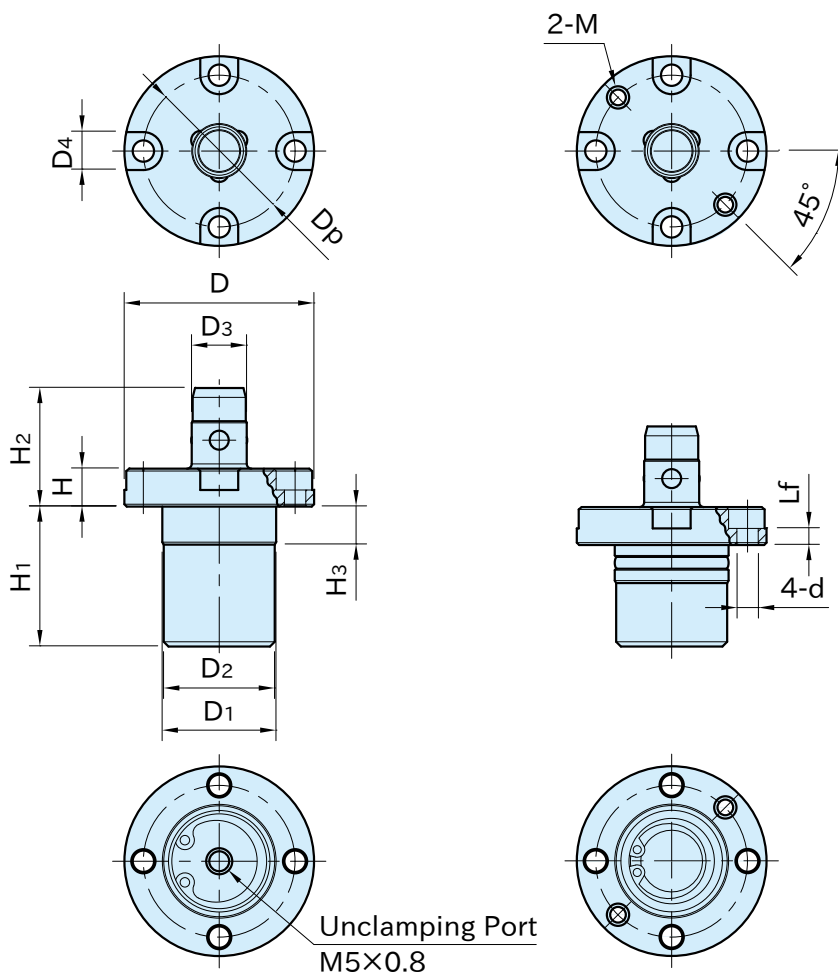
PNEUMATIC FLEX LOCATOR PINS



AMWF-L-S



AMWF-L-S-G



AMWF-L-S (Port Style)

AMWF-L-S-G (Direct Style)

Body	Ball	Coiled Spring
S45C steel Electroless nickel plated	SUS440C stainless steel	SUS304WPB stainless steel

Part Number	D ₁ (g6)	H ₃	D ₂	H ₁	D	H	D ₃ (h8)	H ₂	d	Lf	D ₄	Dp
AMWF18L-4S	24	8	23.4	29.5	40	8	12	25	4.5	3.5	8	32
AMWF26L-4S	32	8.5	31.4	31.7	51	9.5	16	28.5	5.5	4	9.5	41
AMWF18L-4S-G	24	8	23.4	24.5	40	8	12	25	4.5	3.5	8	32
AMWF26L-4S-G	32	8.5	31.4	25.5	51	9.5	16	28.5	5.5	4	9.5	41

Part Number	M	Air Pressure (MPa)	Clamping Force (N)	Weight (g)
AMWF18L-4S	—	0.5	250	154
AMWF26L-4S	—		350	289
AMWF18L-4S-G	M4x0.7		250	136
AMWF26L-4S-G	M5x0.8		350	252

Reference

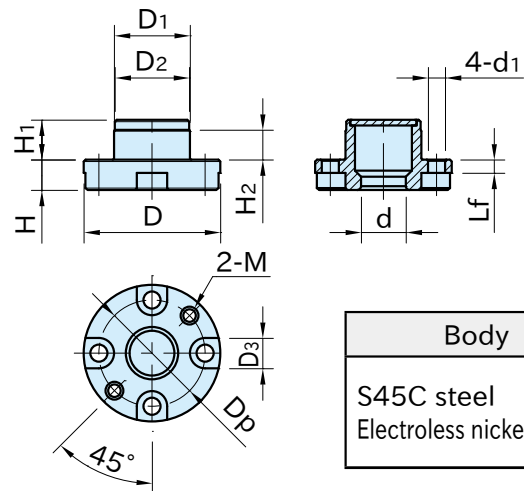
- How To Install PNEUMATIC FLEX LOCATORS
- How To Use PNEUMATIC FLEX LOCATORS

Related Product

[AMWF-BU](#) PNEUMATIC FLEX LOCATOR BUSHINGS

AMWF-BU

PNEUMATIC FLEX LOCATOR BUSHINGS



Body
S45C steel Electroless nickel plated

Part Number	D ₁ (g6)	H ₂	D ₂	H ₁	D	H	d (E7)	d ₁	Lf	D ₃	M	D _p	Weight (g)
AMWF18-BU	20	7.5	19.6	10.5	36	8	12.1	4.5	3.5	8	M4×0.7	28	57
AMWF26-BU	25	7	24.6	11	44	9.5	16.1	5.5	4	9.5	M5×0.8	34	97

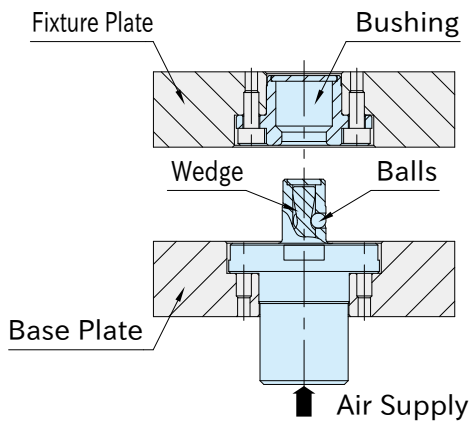
Reference

- How To Install PNEUMATIC FLEX LOCATORS
- How To Use PNEUMATIC FLEX LOCATORS

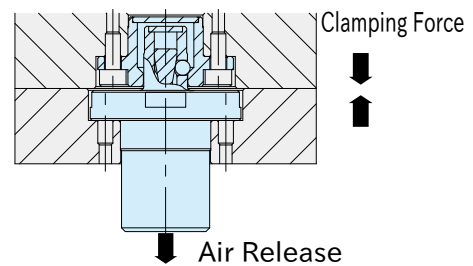
Related Product

[AMWF-L-S](#) PNEUMATIC FLEX LOCATOR PINS

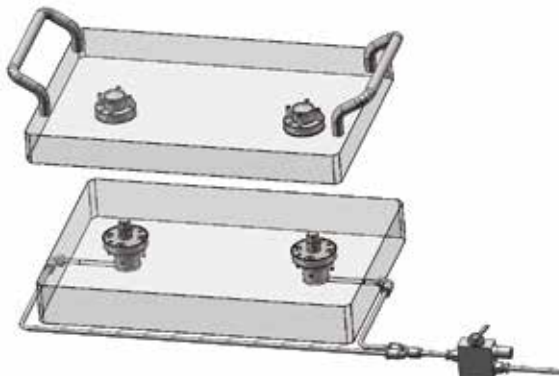
Feature



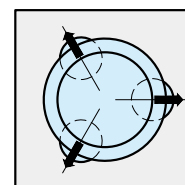
Supply air for unclamping.
The wedge goes up and releases the balls.



Release air for clamping. The wedge goes down and pushes the balls to pull down the bushing.
Can keep clamped without air supply.



Quick clamping and unclamping reduce set-up time in production equipment.



Locating Repeatability : $\pm 10 \mu\text{m}$
The bushing is centered and clamped when the 3 balls are pushed out to gain high locating repeatability.

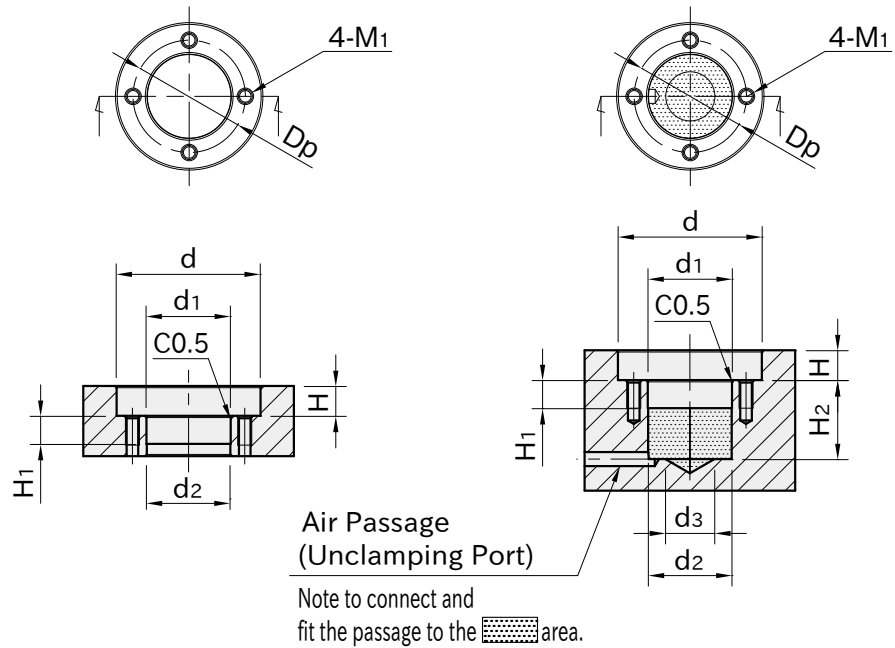
How To Install PNEUMATIC FLEX LOCATORS

■ Mounting Hole Dimensions

· Pins

AMWF-L-S (Port Style)

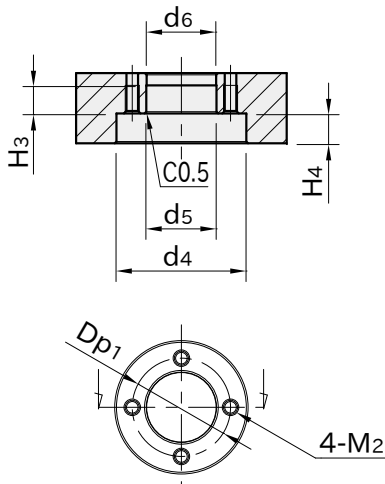
AMWF-L-S-G (Direct Style)



Part Number	d ₁ (H7)	H ₁	d ₂	H ₂	d ₃	d	H (±0.05)	M ₁	D _p
AMWF18L-4S	24	8.5	23.8	—	—	41	8.5	M4×0.7 Depth 8	32
AMWF26L-4S	32	9	31.8	—	—	52	10	M5×0.8 Depth10	41
AMWF18L-4S-G	24	8.5	23.8	25.5	14	41	8.5	M4×0.7 Depth 8	32
AMWF26L-4S-G	32	9	31.8	26.5	20	52	10	M5×0.8 Depth10	41

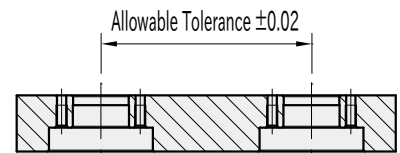
· Bushings

AMWF-BU (Bushing)

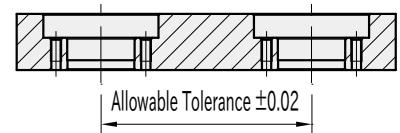


■ Spacing Tolerance

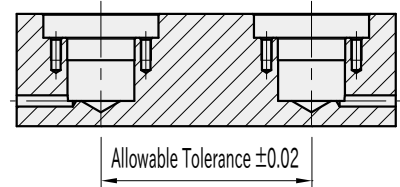
AMWF-BU (Bushing)



AMWF-L-S (Port Style)



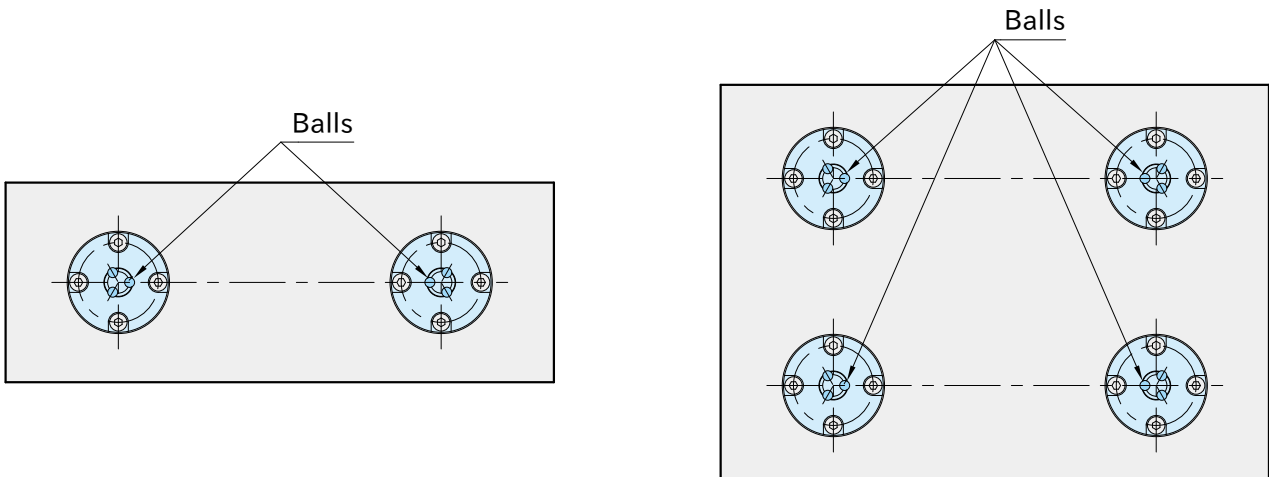
AMWF-L-S-G (Direct Style)



Part Number	d ₅ (H7)	H ₃	d ₆	d ₄	H ₄ (±0.05)	M ₂	D _{p1}
AMWF18-BU	20	8	19.8	37	8.5	M4×0.7 Depth 8	28
AMWF26-BU	25	7.5	24.8	45	10	M5×0.8 Depth10	34

How To Use PNEUMATIC FLEX LOCATORS

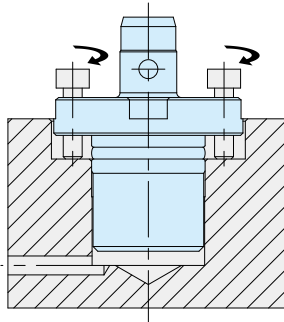
How to Use



The pins should be mounted in the direction shown in the above figures.

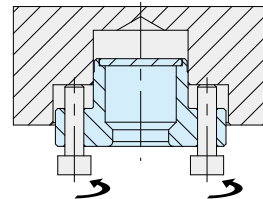
How to Remove (Direct Style Pins)

For easier removal, insert screws into the tapped holes and screw them.



How to Remove (Bushings)

For easier removal, insert screws into the tapped holes and screw them.



Note

Size	Max. Loading Weight (kg)
AMWF18	40
AMWF26	56

- If the total weight exceeds the maximum loading weight, the locating repeatability may exceed $\pm 10 \mu\text{m}$.
- In vertical use, the locating repeatability may exceed $\pm 10 \mu\text{m}$.
- Pins and Bushings should be positioned equally against the center of the fixture plate.
- For Port Style Pins, use with air joint that is available commercially.

Note: The maximum loading weight is the entire sum of the weight of fixture plates, fixtures and workpieces.

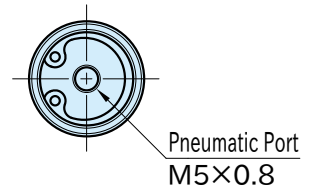
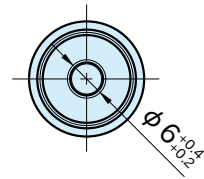
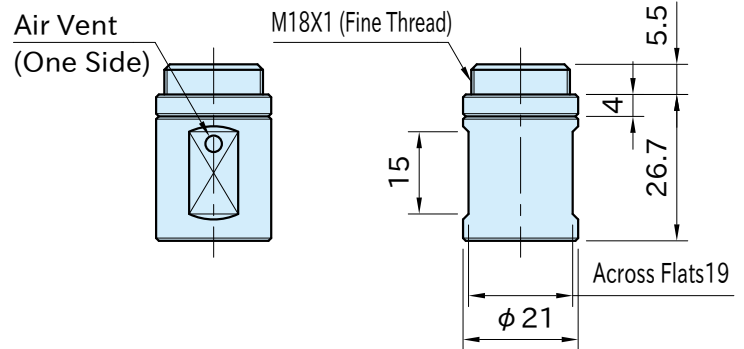
Note: The maximum loading weight shown is the value when two sets each of **AMWF-L-S** Pins and **AMWF-BU** Bushings are used.

PPHC-S

PNEUMATIC PIN HOLDING CLAMP

RoHS SUS

IMAO



★ **Key Point**
Compact pull down clamp

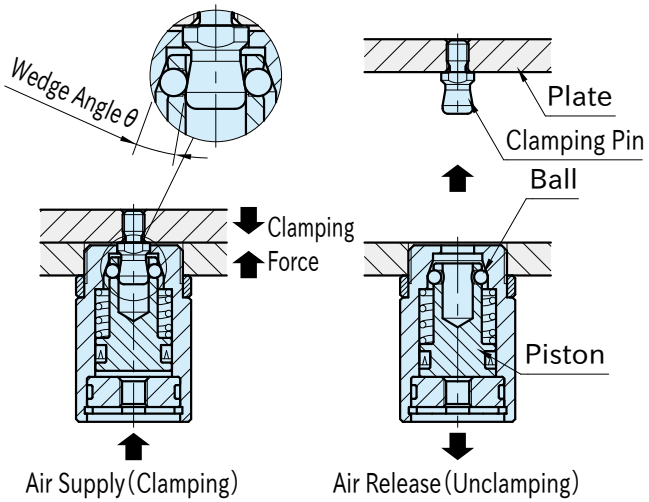
Body/Piston	Wedge/Ball	Spring	Retaining Ring	Seal
SUS303 stainless steel	SUS440C stainless steel Quenched and tempered	SUS304WPB stainless steel	SUS304 stainless steel	Nitrile rubber (NBR)

Part Number	Operating Air Pressure (MPa)	Clamping Force (N) *	Weight (g)	Proper Clamping Pin
PPHC0621S-SUS	0.3~0.7	30	62	QCPC0625-M4-SUS

*) The clamping force above is at 0.5 MPa.

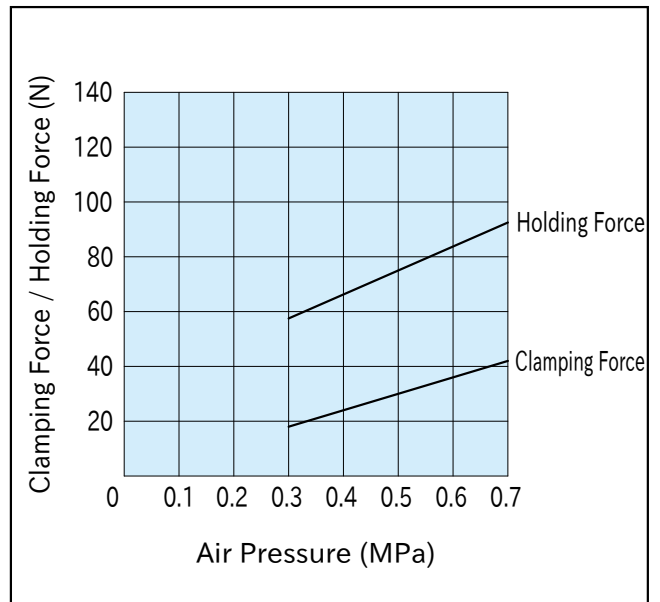


Feature



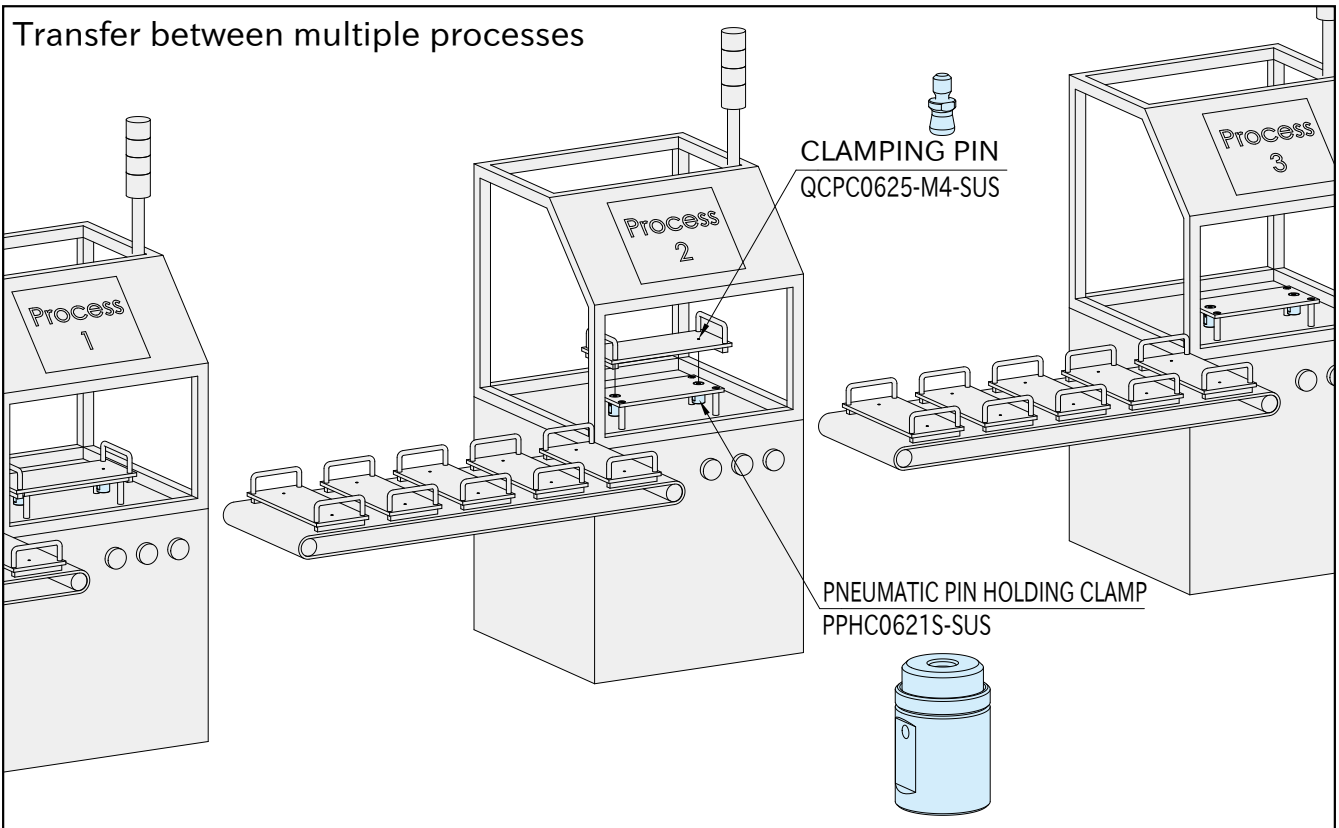
- The piston goes up by air supply and the balls move toward the center to pull down the clamping pin.
- The wedge clamping prevents the plate from lifting up.

Performance Curve

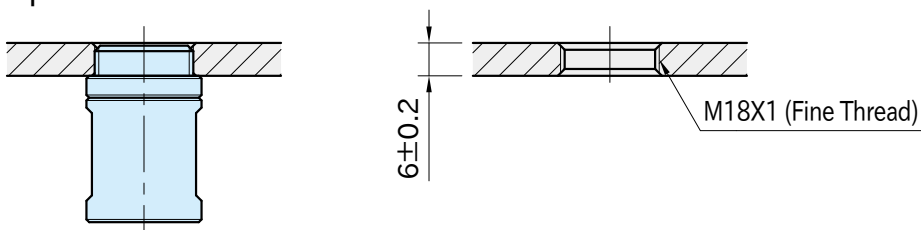


Application Example

Transfer between multiple processes



■ Hole Preparation



■ Machining Accuracy

Spacing tolerance for multiple use should be ± 0.1 .

■ Repeatability

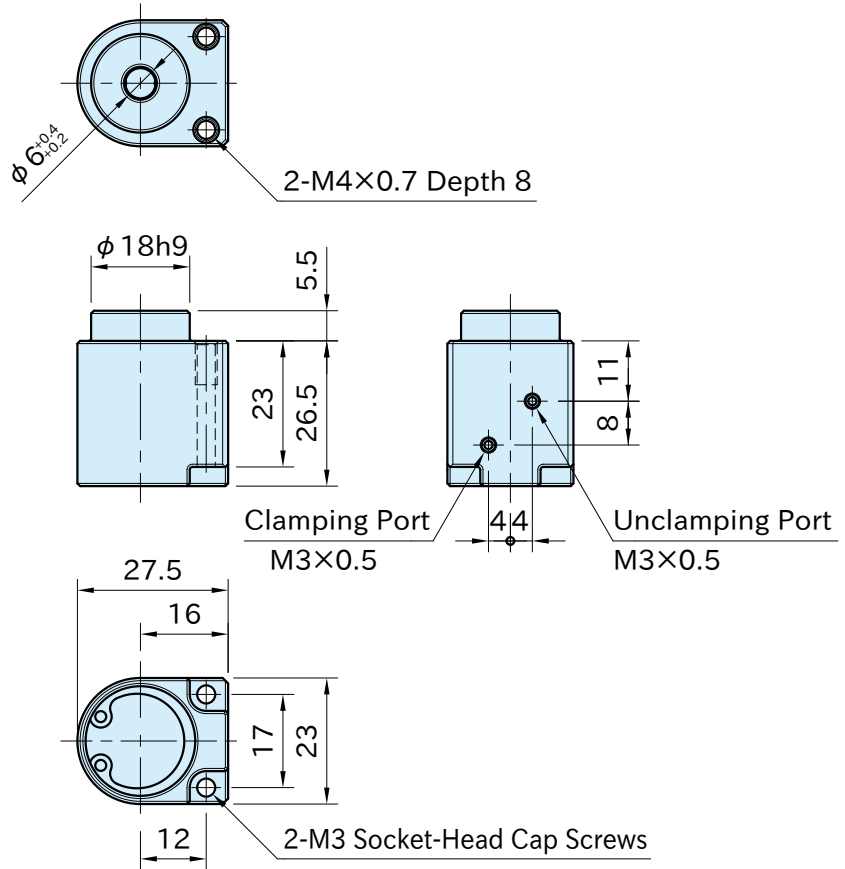
Repeatability is ± 0.2 .
For higher accurate locating, use locating pins.

PPHC-D

PNEUMATIC PIN HOLDING CLAMP

ROHS SUS

IMAO



★Key Point
Double-acting pull down clamp

Body	Piston	Wedge/Ball	Spring	Retaining Ring	Seal
SCS13 stainless steel (equivalent to SUS304)	SUS303 stainless steel	SUS440C stainless steel Quenched and tempered	SUS304WPB stainless steel	SUS304 stainless steel	Nitrile rubber (NBR)

Part Number	Operating Air Pressure (MPa)	Clamping Force (N)		Weight (g)	Proper Clamping Pin
		With Air *)	Without Air **)		
PPHC0623D-SUS	0.3~0.7	40	6	105	QCPC0625-M4-SUS

*) The clamping force above is at 0.5 MPa.

***) Inner spring provides clamping without air supply.

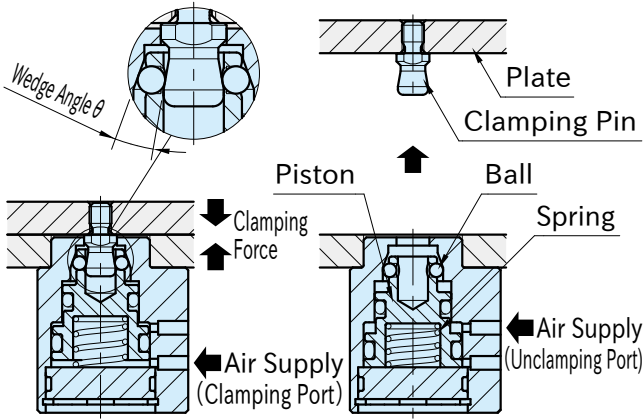
Supplied With

2 of socket-head cap screws(stainless steel), M3x0.5-28L

QCPC-M CLAMPING PIN

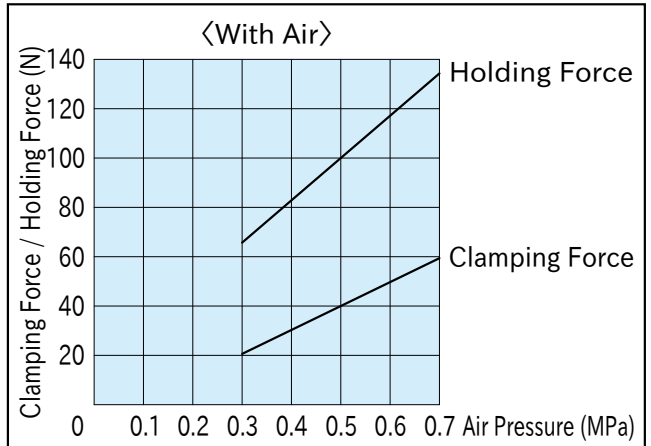


Feature



- The piston goes up by air supply from clamping port and the balls move toward the center to pull down the clamping pin.
- The wedge clamping prevents the plate from lifting up.
- Inner spring keeps clamping without air supply.

Performance Curve

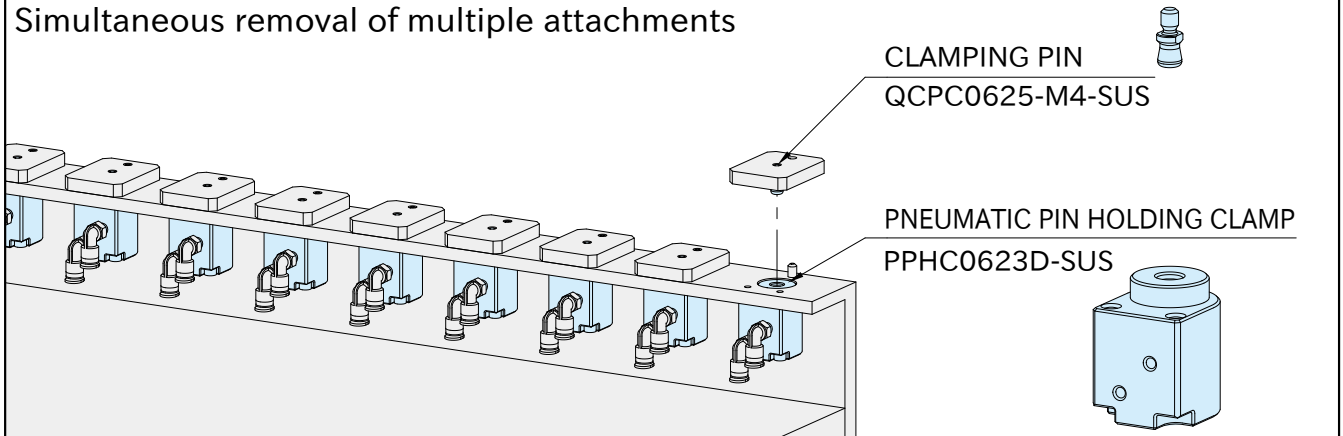


<Without Air>

Clamping Force (N)	Holding Force (N)
6	40

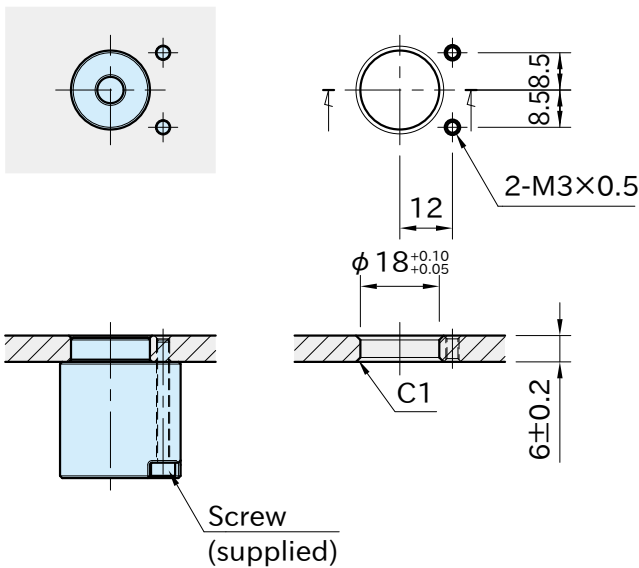
Application Example

Simultaneous removal of multiple attachments

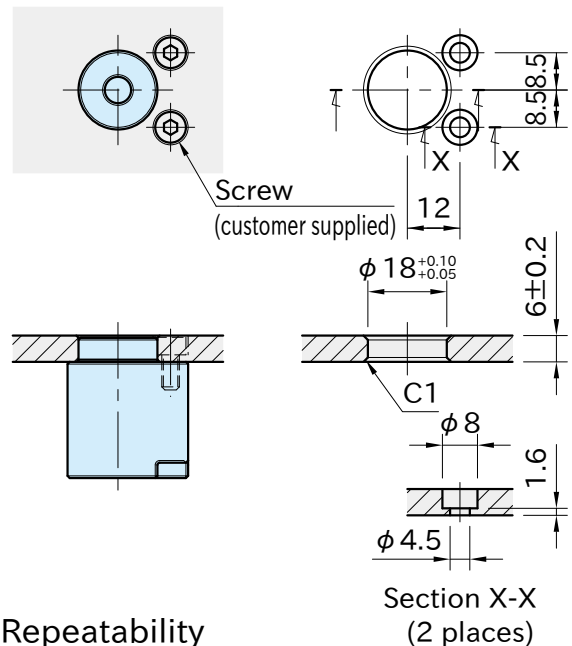


■ Hole Preparation

With M3 Socket-Head Cap Screws (supplied)



With M4 Socket-Head Cap Screws (customer supplied)



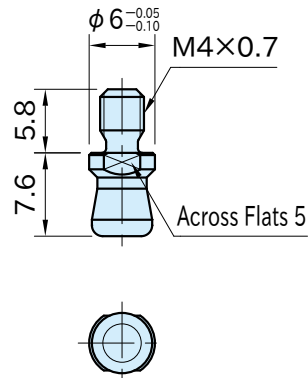
■ Machining Accuracy

Spacing tolerance for multiple use should be ± 0.1 .

■ Repeatability

Repeatability is ± 0.2

For higher accurate locating, use locating pins.



Body
SUS630 stainless steel Precipitation hardened

Part Number	Weight (g)	Proper pneumatic pin holding clamps
QCPC0625-M4-SUS	2	PPHC0621S-SUS, PPHC0623D-SUS

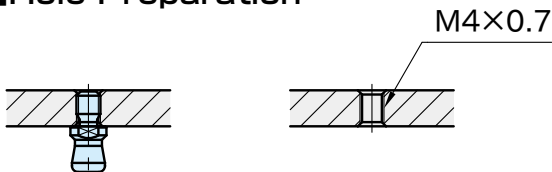
Note: Spacing tolerance for multiple use should be ± 0.1 .
Refer to the product pages of clamps for repeatability.

Note

Color difference by the hardening treatment does not affect function or quality of the product.

How To Install

Hole Preparation



PBLC

PNEUMATIC BALL-LOCKING CLAMPS

RoHS **SUS**

IMAO



PBL1023S-SUS

(Spring Clamping/Single Acting)

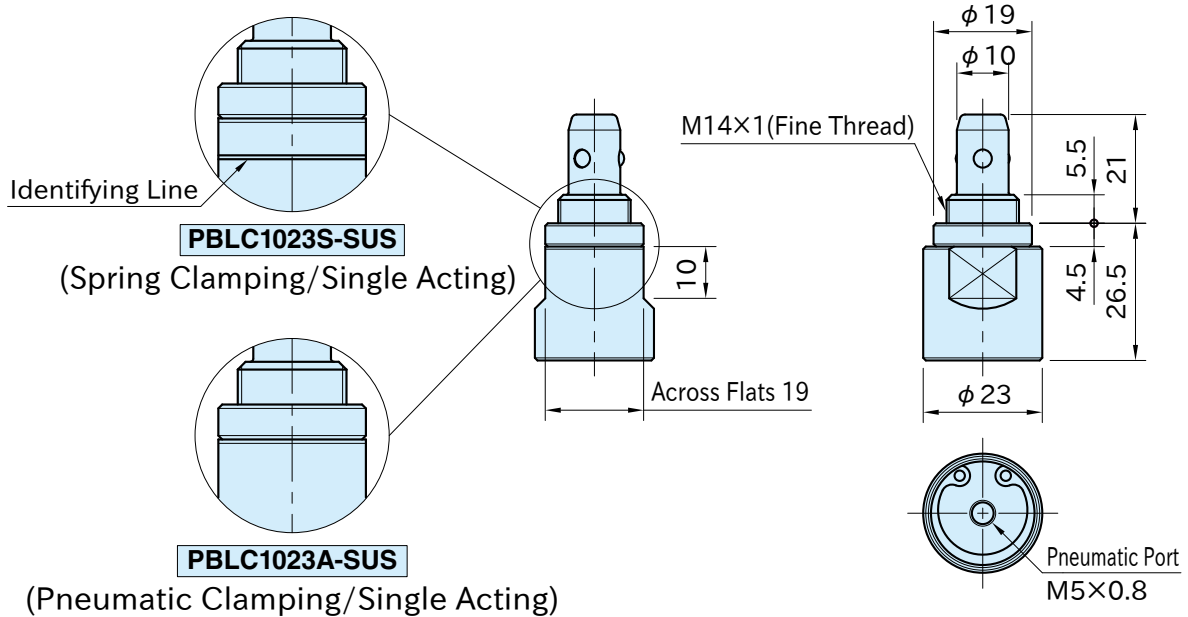


PBL1023A-SUS

(Pneumatic Clamping/Single Acting)

★ **Key Point**
Two clamping types are available.

Body	Shaft	Ball	Spring	Retaining Ring	Seal
SUS303 stainless steel	SUS420J2 stainless steel Electroless nickel plated Quenched and tempered	SUS440C stainless steel Quenched and tempered	SUS304WPB stainless steel	SUS304 stainless steel	Nitrile rubber (NBR)



Part Number	Operating Air Pressure (MPa)	Clamping Force (N)	Weight (g)	Proper Receptacle
PBL1023S-SUS	0.3~0.7	50	71	PBL1023A-SUS
PBL1023A-SUS		150 *)		

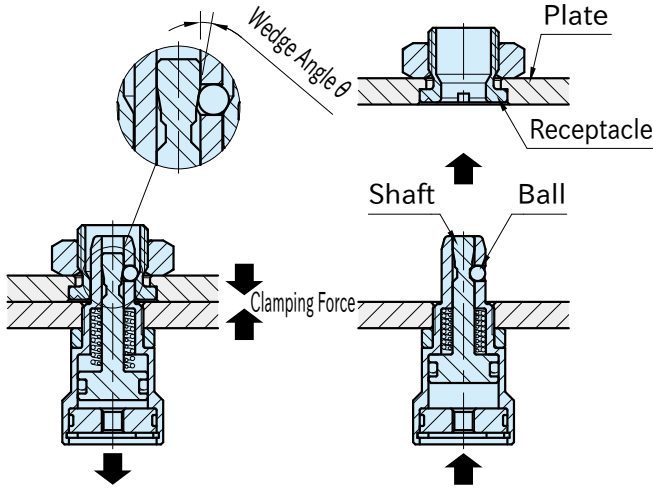
*) The clamping force above is at 0.5 MPa.



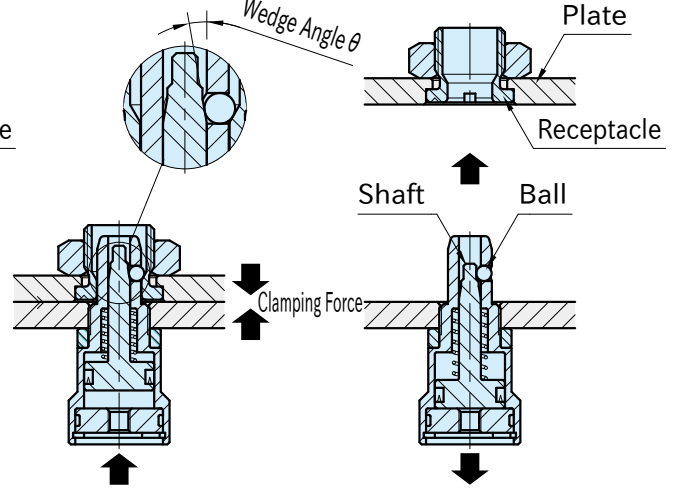
Note
PBL1023S-SUS has an identifying line and **PBL1023A-SUS** does not.

Feature

PBLC1023S-SUS (Spring Clamping)



PBLC1023A-SUS (Pneumatic Clamping)



Air Release (Clamping)

Air Supply (Unclamping)

Air Supply (Clamping)

Air Release (Unclamping)

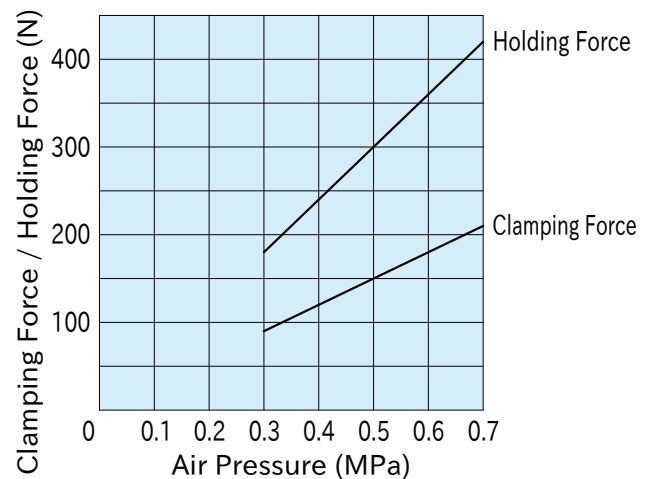
- The shaft pushes out the balls onto the tapered surface of the receptacle to pull down the plate.
- The wedge clamping prevents the plate from lifting up.
- Spring clamping type can keep clamping without air supply.

Performance Curve

PBLC1023S-SUS (Spring Clamping)

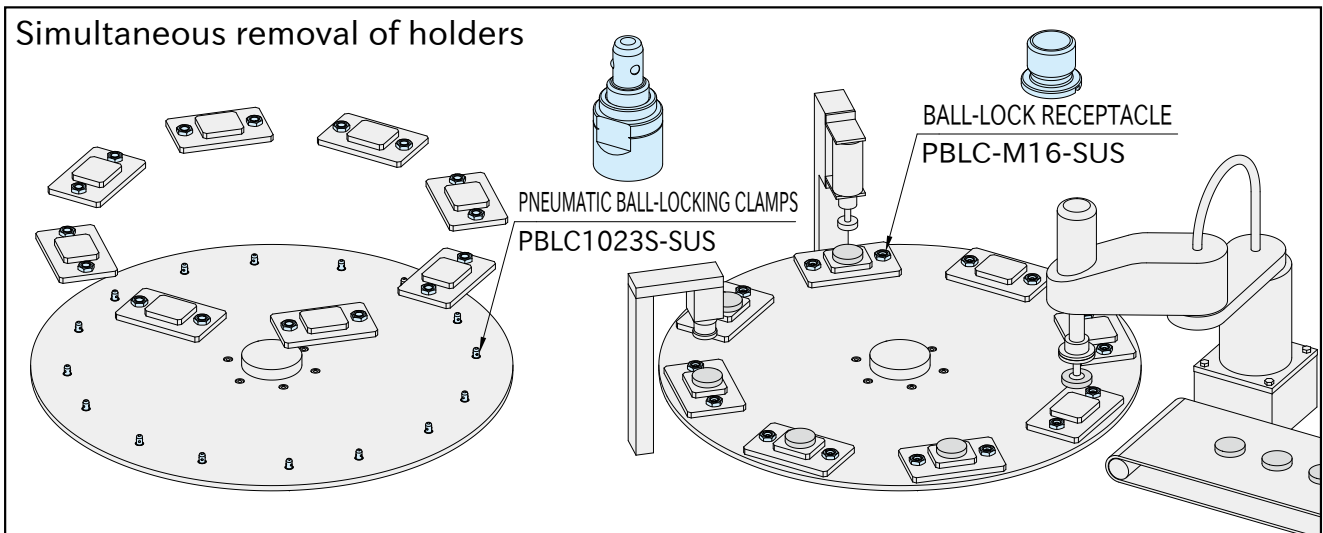
Clamping Force (N)	Holding Force (N)
50	150

PBLC1023A-SUS (Pneumatic Clamping)



Application Example

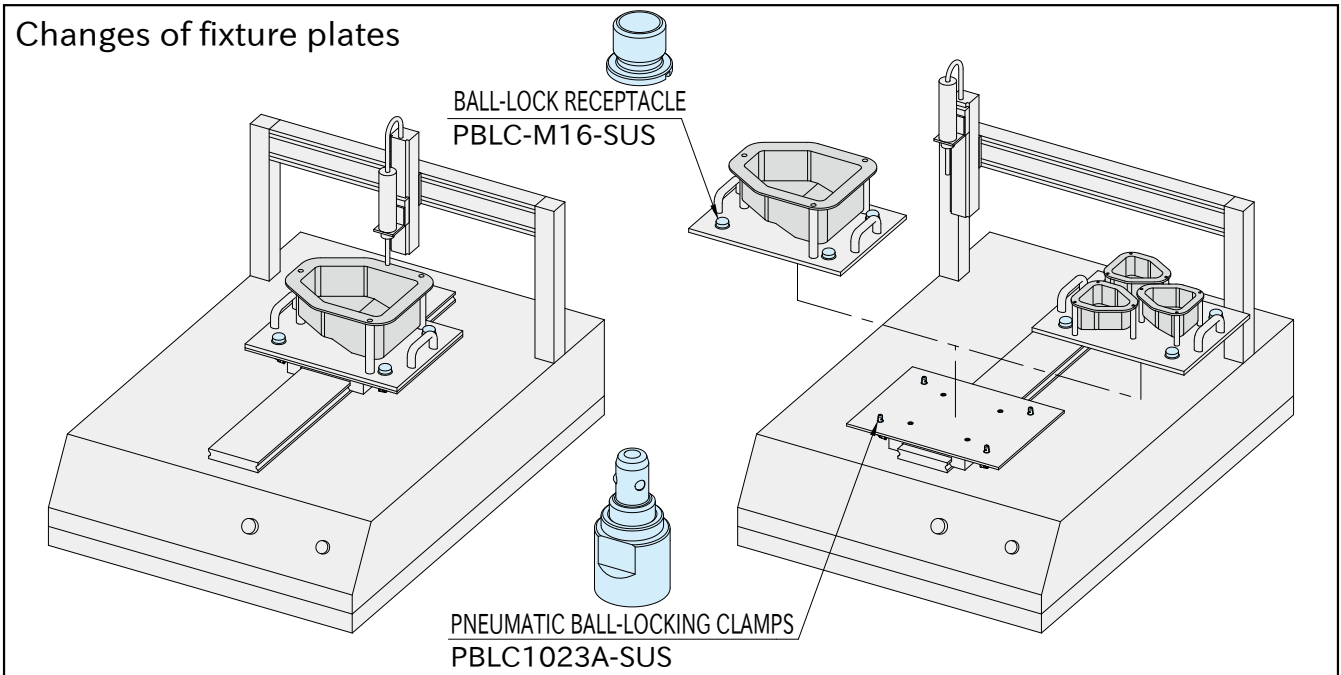
Simultaneous removal of holders



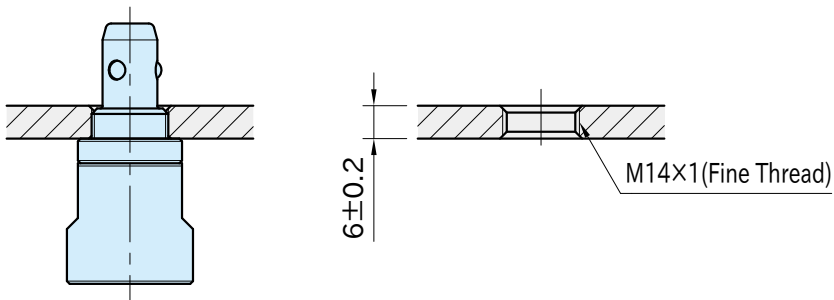
Continuing on Next Page

Application Example

Changes of fixture plates



■ Hole Preparation



■ Machining Accuracy

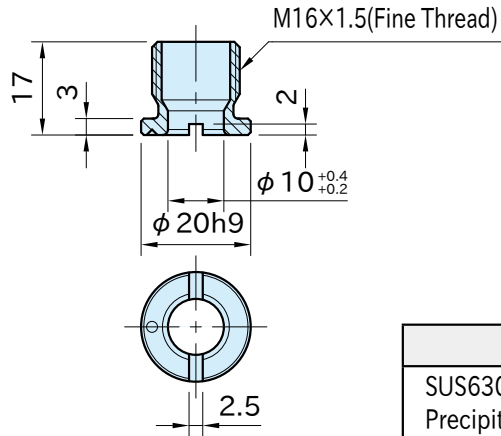
Spacing tolerance for multiple use should be ± 0.1 .

■ Repeatability

Repeatability is ± 0.2 .
For higher accurate locating, use locating pins.

PBLC-M

BALL-LOCK RECEPTACLE



Body
SUS630 stainless steel Precipitation hardened

Part Number	Proper Plate Thickness	Weight (g)	Proper Pneumatic Ball-Locking Clamps
PBLC-M16-SUS	6 or more	13	PBLC1023S-SUS, PBLC1023A-SUS

※Note: Spacing tolerance for multiple use should be ± 0.1 .
Refer to the product pages of clamps for repeatability.

Note

Color difference by the hardening treatment does not affect function or quality of the product.

How To Install

Hole Preparation

Plate thickness: 6mm to 10mm

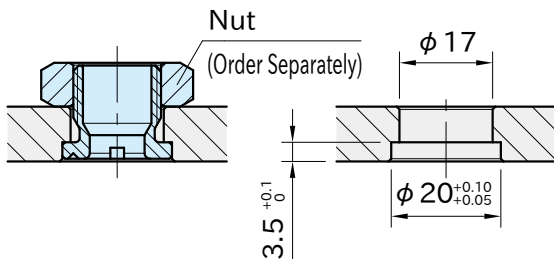
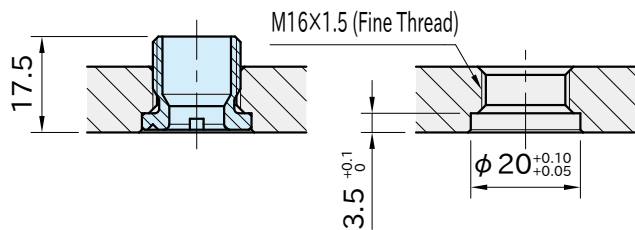
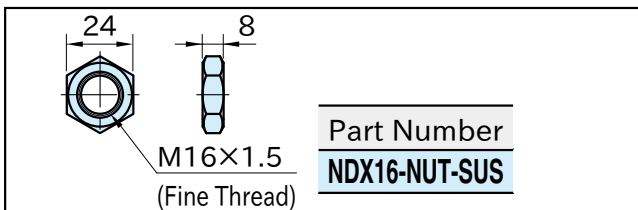


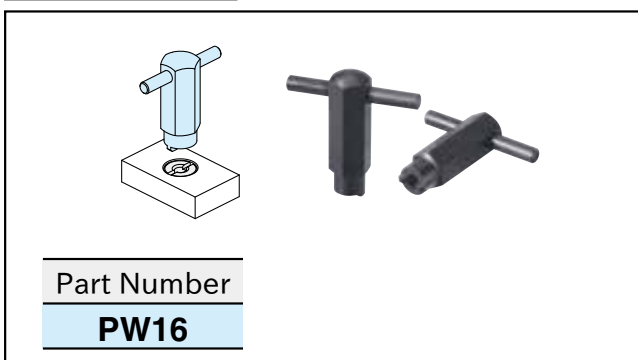
Plate thickness: over 10mm



Order Separately Nut (Stainless Steel)



Order Separately Installation Wrench



Part Number
PW16



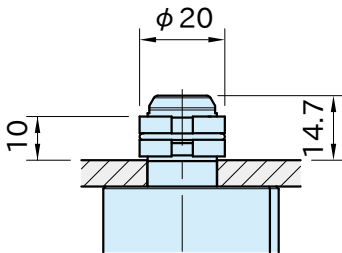
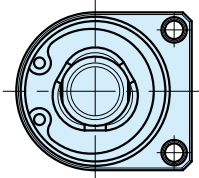
(Double Acting)

★Key Point

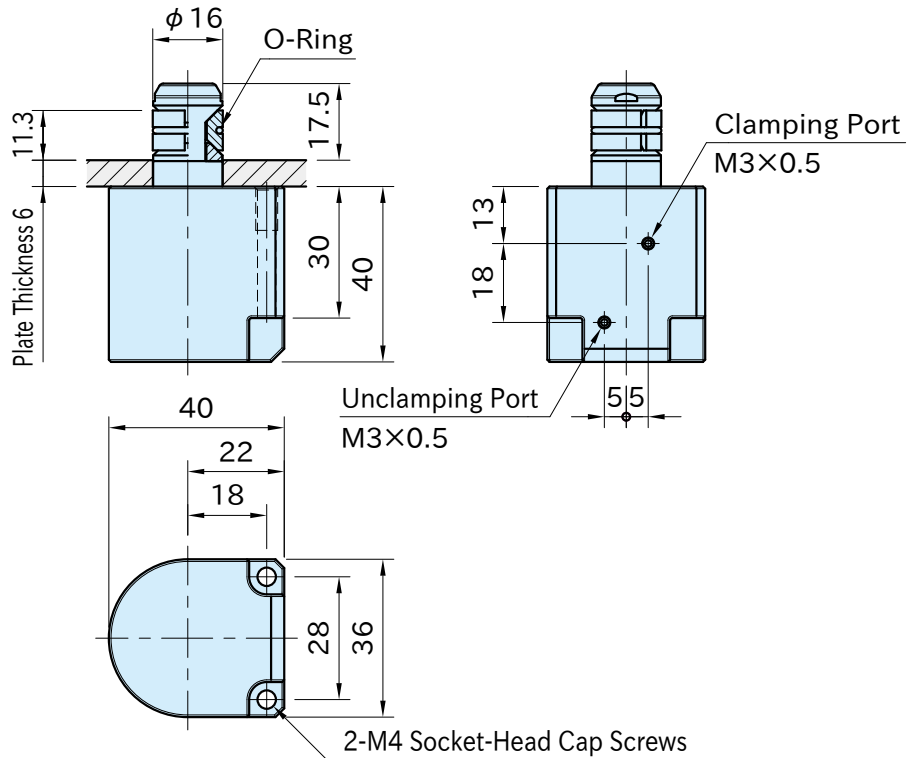
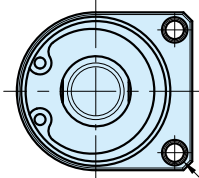
Holds the internal diameter

Body	Jaw/Washer	Piston	
SCS13 stainless steel (Equivalent to SUS304)	SUS630 stainless steel Precipitation hardened	SUS303 stainless steel	
Pulling Shaft	Spring	Retaining Ring	Seal
SUS420J2 stainless steel Electroless nickel plated Quenched and tempered	SUS304WPB stainless steel	SUS304 stainless steel	Nitrile rubber (NBR)

Clamping Dia. ϕ 20



Clamping Dia. ϕ 16



Part Number	Recommended Clamping Dia.*)	Operating Air Pressure (MPa)	Holding Force (N) **)	Weight (g)	Proper O-Ring
PIDHC20-SUS	ϕ 16~ ϕ 20	0.3~0.7	77	336	S12 (CS 1.5/ID 11.5)

*) Maximum Clamping Dia. is ϕ 22.

**) The holding force above is with 0.5 MPa air pressure and SUS304 (surface roughness Ra1.6) workpiece.

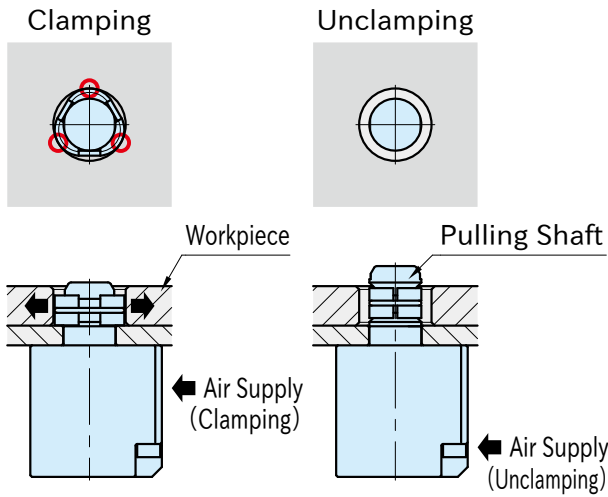
Supplied With

2 of socket-head cap screws(stainless steel), M4x0.7-35L

Note

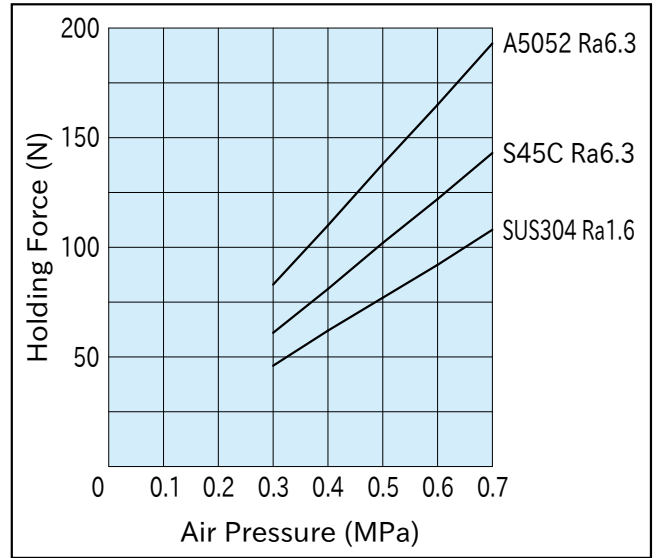
Color difference by the hardening treatment does not affect function or quality of the product.

Feature



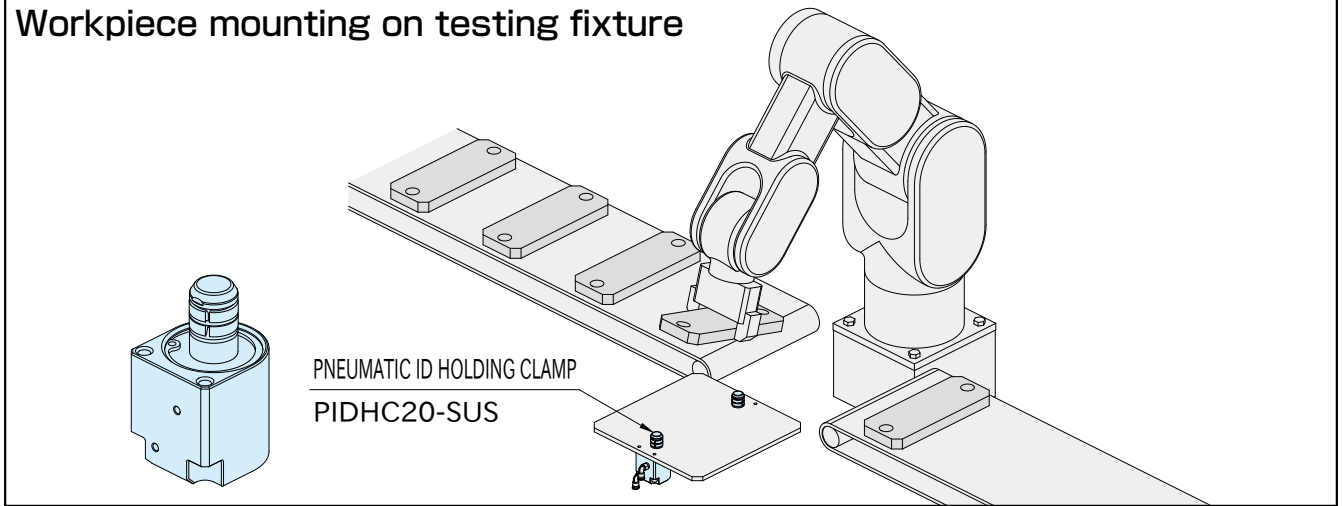
- The pulling shaft goes down by air supply from clamping port and the jaws expand to hold the workpiece.
- The clamp makes a line contact with the workpiece at 3 places.

Performance Curve



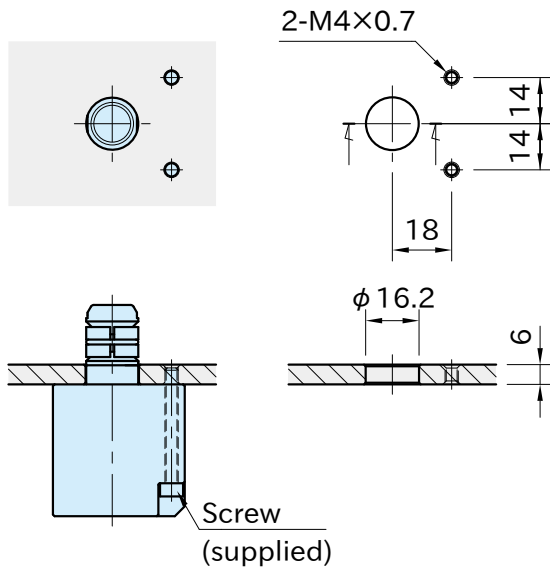
Application Example

Workpiece mounting on testing fixture

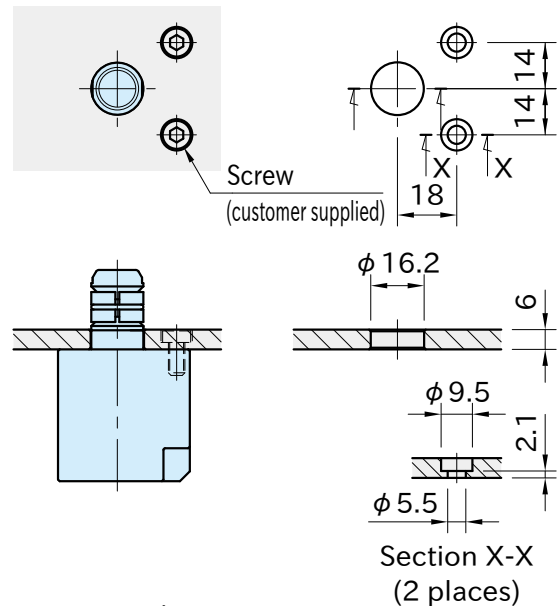


■ Hole Preparation

With M4 Socket-Head Cap Screws (supplied)



With M5 Low-Head Cap Screws (customer supplied)
(Dimension: head dia. 8.5, head height 3.5)

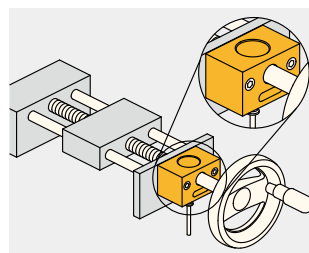
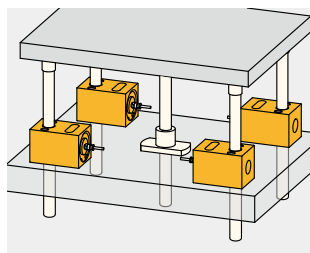
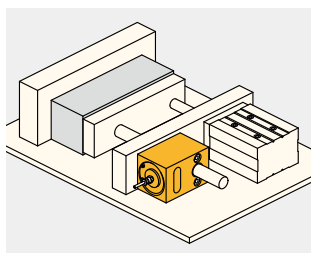
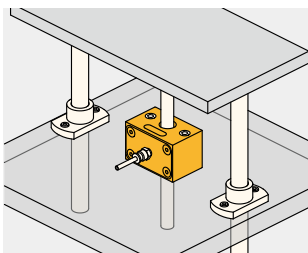


■ Repeatability

Estimated repeatability is ± 0.2 (clamping dia. $\phi 20$, without any load)

Pneumatic Shaft-Locking Clamps

Pneumatic Shaft-Locking Clamps are automated quick locks with air for machine changeover. Perfect for secure clamping of sliding shaft and spindle after position adjustment of parts and units in the machinery.



One-Touch Fasteners

One-Touch Fasteners are quick release fasteners for frequent changeover of machinery or fixture. Quick and easy tool-less clamping reduces setup time in changeover.

