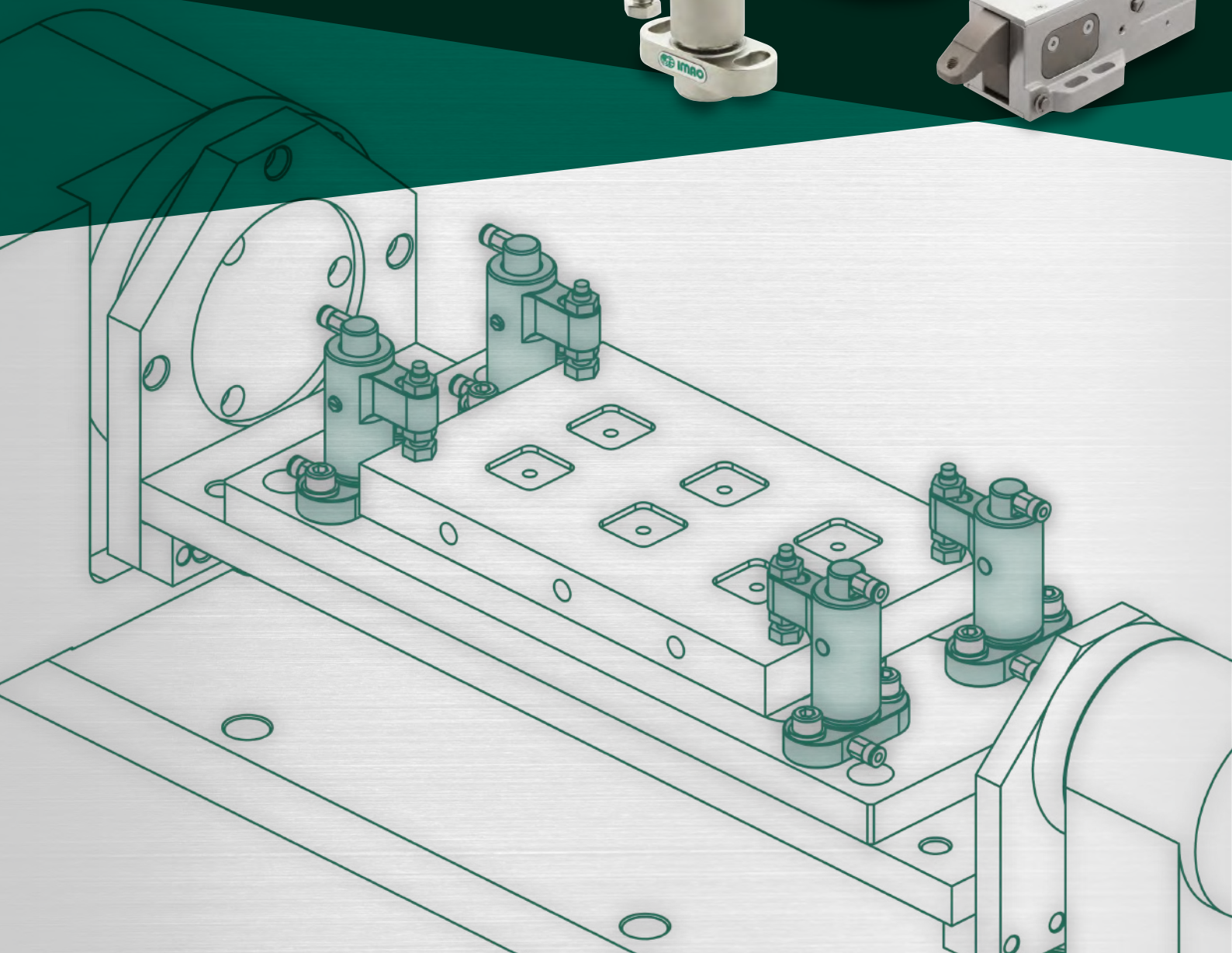
IMAO® fixtureworks®

Pneumatic Clamps



AIR ASSISTED CLAMPS

New Ideas
for Automated Clamps
!

AIR ASSISTED CLAMPS

[Mechanical + Air = Hybrid]

AIR ASSISTED CLAMPS are IMAO's automated clamps that satisfy needs for much more efficiency and automation in production.
Our original mechanical clamp technology in combination with air provides diverse lineup of products.
With our own know-how as a clamping tools manufacturer, we unitized the clamping devices to support making compact automated fixtures.

Feature

Provide 2 advantages with Mechanical + Air Mechanism

Work-friendly

Greater efficiency by automation.

Pneumatic clamping and unclamping improves work efficiency compared to manual operations. Simultaneous controls or remote-operations are possible. Productivity and work efficiency are increased by automation.

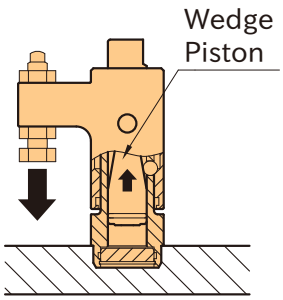
Design-friendly

Unitized to compact design.

Conventional systematic pneumatic clamps required several components of such as cylinders, hooks and guides. IMAO's AIR ASSISTED CLAMPS are unitized our own know-how to a compact design and provide high design-efficiency in fixturing.

COMPACT PNEUMATIC SWING CLAMPS

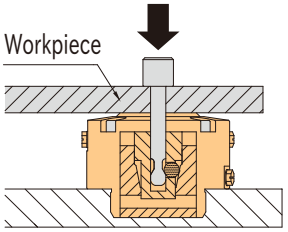
High clamping force with small body



Wedge mechanism provides high holding capacity.

PNEUMATIC PULL CLAMPS

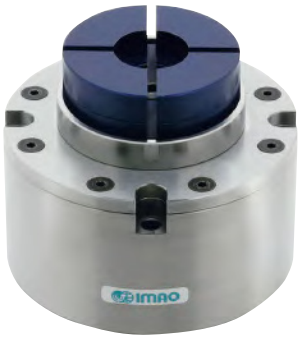
Clamping workpiece with through hole allows multi-surface machining.

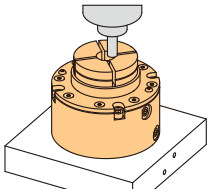


Wedge mechanism provides high clamping force.

PNEUMATIC OD HOLDING CLAMPS

Ideal for irregular-shaped or small workpieces.

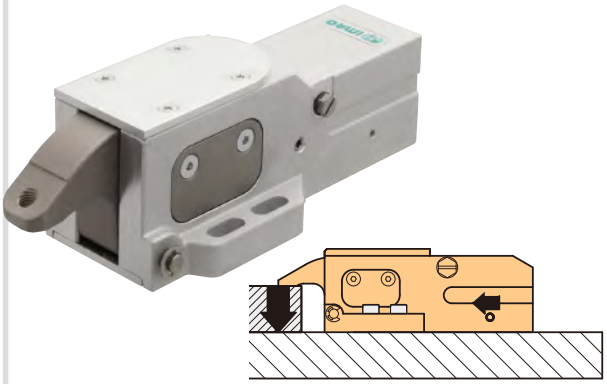




Machine the jaw to
custom fit a workpiece.

PNEUMATIC HOLD DOWN CLAMPS

Magnetic sensor mountable.



Wedge mechanism provides
high holding capacity.

More air-assisted products!

COMPACT
PNEUMATIC
WORK SUPPORTS

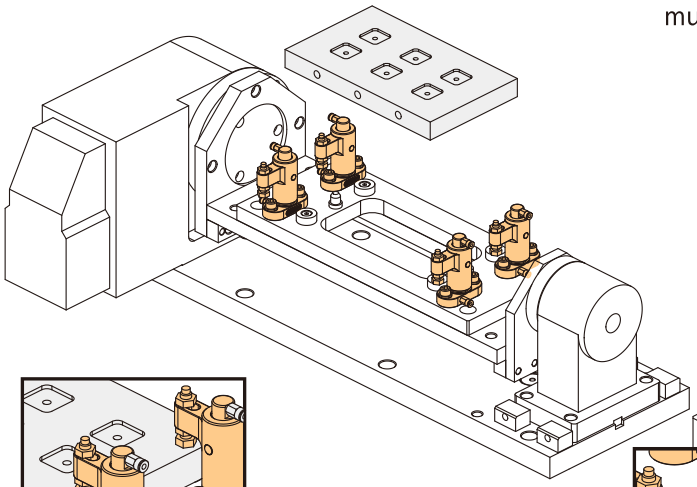
PNEUMATIC WORK
SUPPORTS

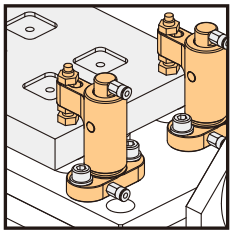
APPLICATION EXAMPLE for AIR ASSISTED CLAMPS

COMPACT PNEUMATIC SWING CLAMPS

Vertical machining center + NC rotary table

Wedge style locking provides machining from 4 sides!

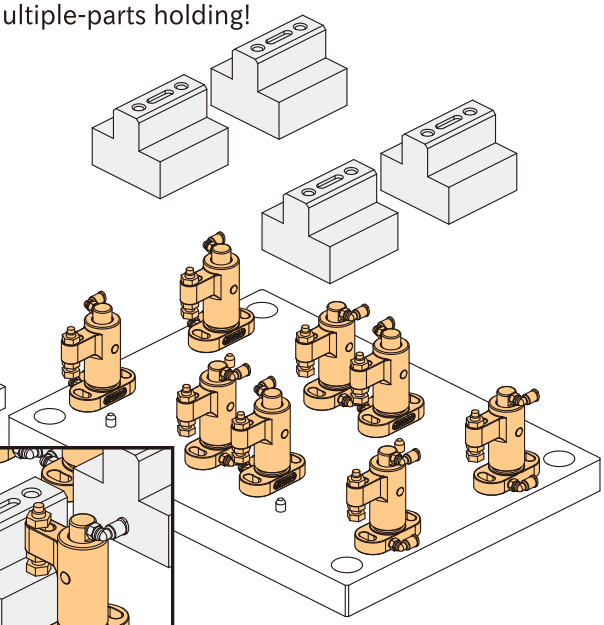


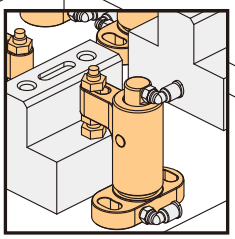


▲ Clamping

Vertical machining center

Small body provides high productivity by multiple-parts holding!



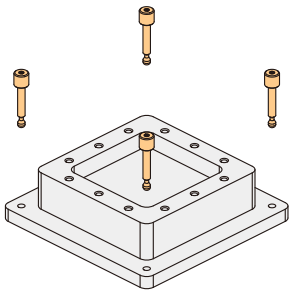


◀ Clamping

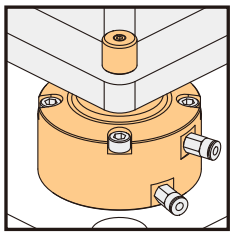
PNEUMATIC PULL CLAMPS

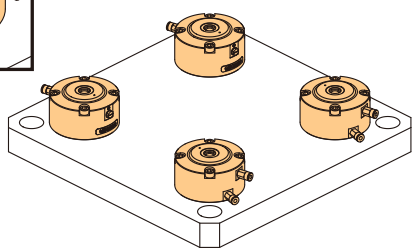
Assembling line

Easy workpiece loading without screw provides shorter setup time.
Stable clamping force offers accurate machining!



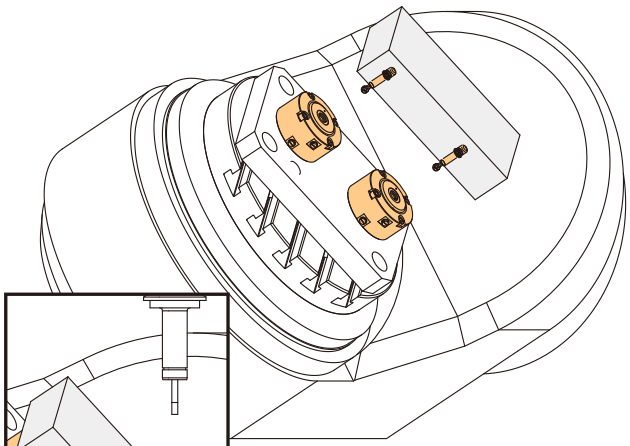
▼ Clamping

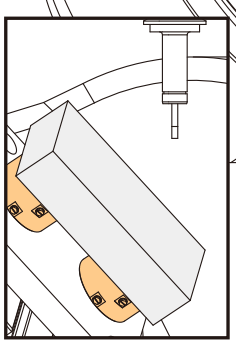




5-axis machining center

Clamping and holding with wedge mechanism enables 5-sides machining!



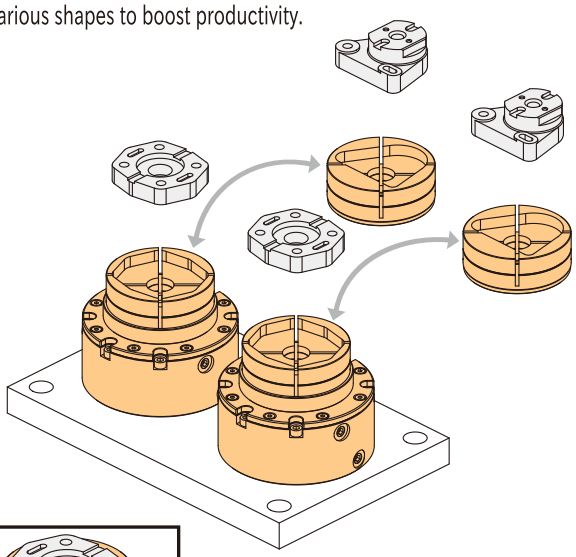


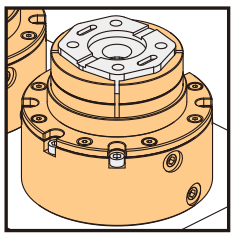
◀ Clamping

PNEUMATIC OD HOLDING CLAMPS

Vertical machining center

Machinable jaws allow clamping workpieces of various shapes to boost productivity.



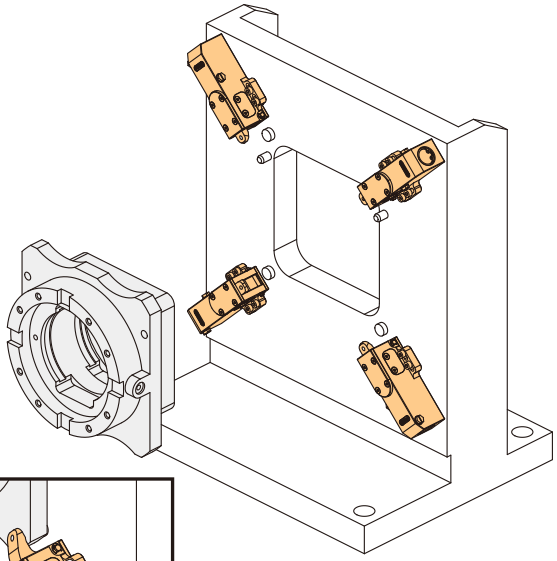


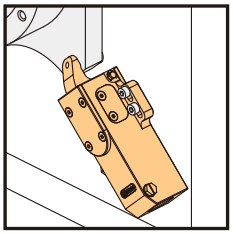
◀ Clamping

PNEUMATIC HOLD DOWN CLAMPS

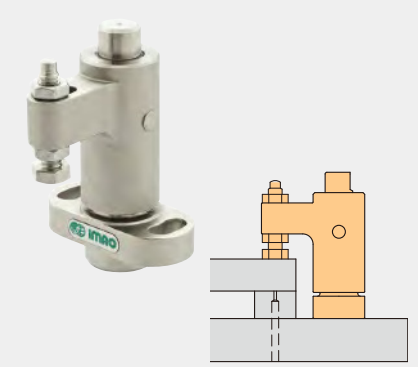
Horizontal machining center

Less tool interference by low profile body!



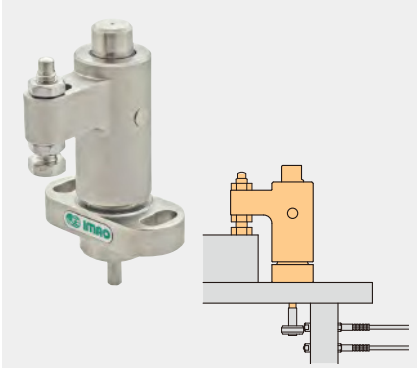


◀ Clamping



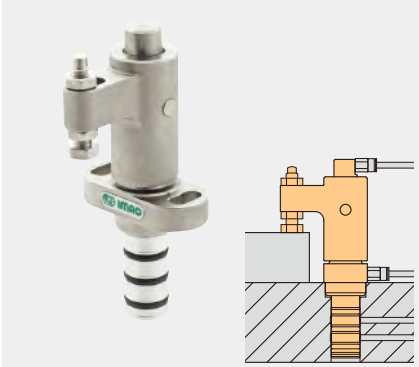
COMPACT PNEUMATIC SWING CLAMPS

Part No. AMWSW-W



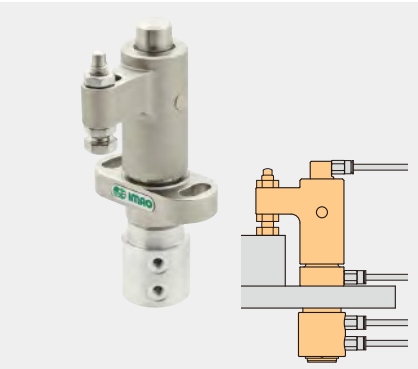
COMPACT PNEUMATIC SWING CLAMPS WITH ROD

Part No. AMWSW-W-D



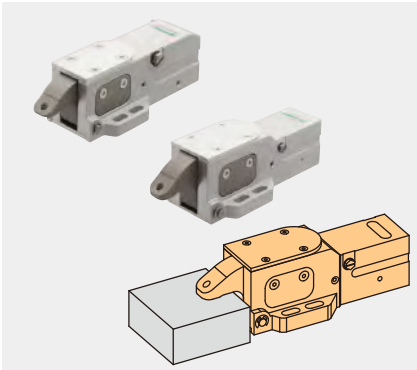
COMPACT PNEUMATIC SWING CLAMPS WITH DETECTING PORTS (Gasket Piping)

Part No. AMWSW-W-AG



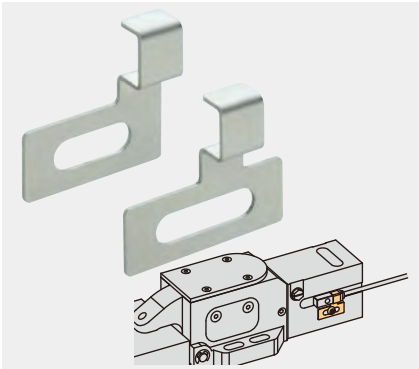
COMPACT PNEUMATIC SWING CLAMPS WITH DETECTING PORTS (Thread Piping)

Part No. AMWSW-W-AC



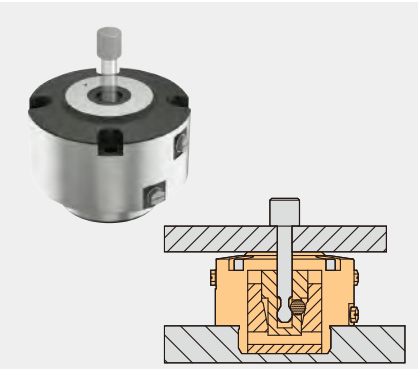
PNEUMATIC HOLD DOWN CLAMPS

Part No. AMWD-WS



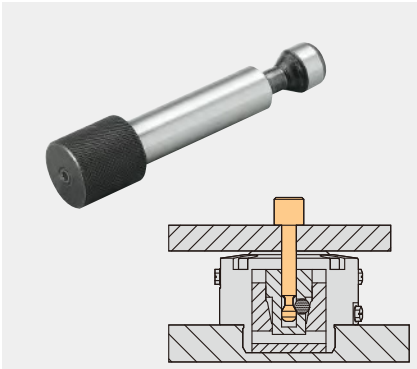
SENSOR BRACKETS

Part No. AMWD-WS-B



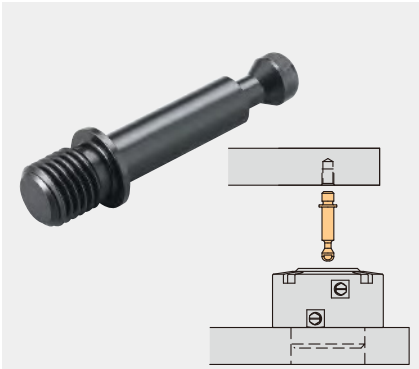
PNEUMATIC PULL CLAMPS

Part No. AMWPD-W



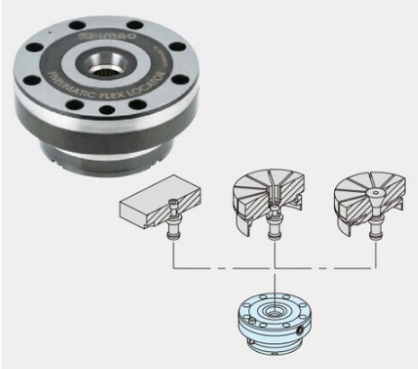
CLAMPING PINS

Part No. AMWPD-X



CLAMPING SCREWS

Part No. AMWPD-M

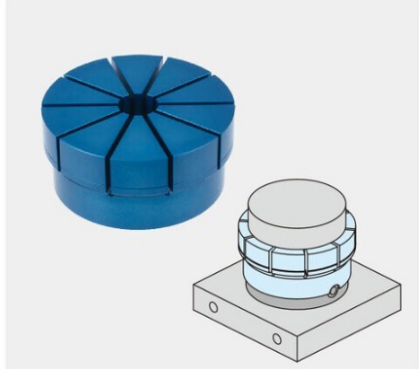


PNEUMATIC CLAMPING MODULES

Part No. AMWFH-WP

CLAMPING PINS

Part No. AMWFH-M



JAWS FOR EXTERNAL FORM HOLDING

Part No. AMWFH-O

JAWS FOR INTERNAL FORM HOLDING

Part No. AMWFH-I

TAPERED SCREWS FOR INTERNAL FORM HOLDING

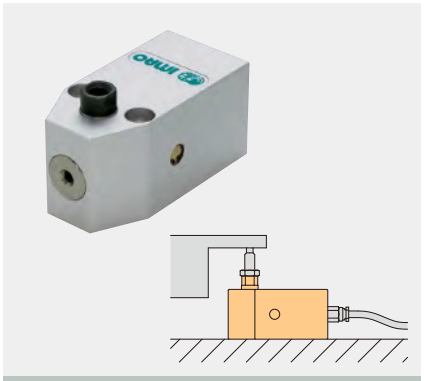
Part No. AMWFH-IB

PNEUMATIC OD HOLDING CLAMPS

Part No. AMCH-W

COMPACT PNEUMATIC WORK SUPPORTS

Part No. AMNS-S



PNEUMATIC WORK SUPPORTS

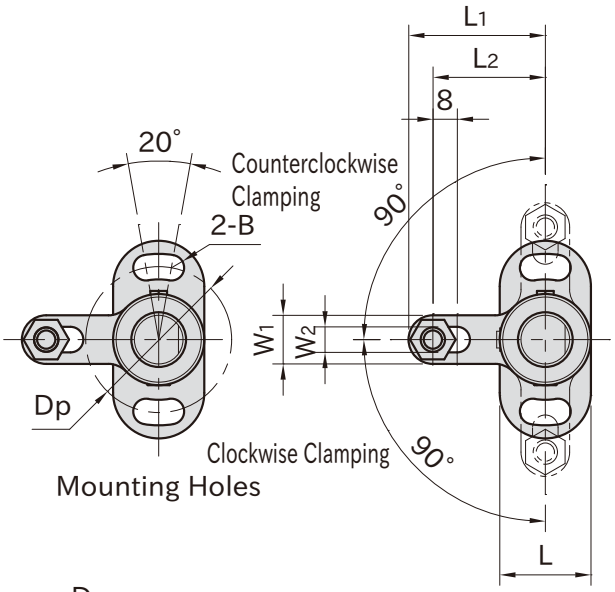
Part No. BJ370

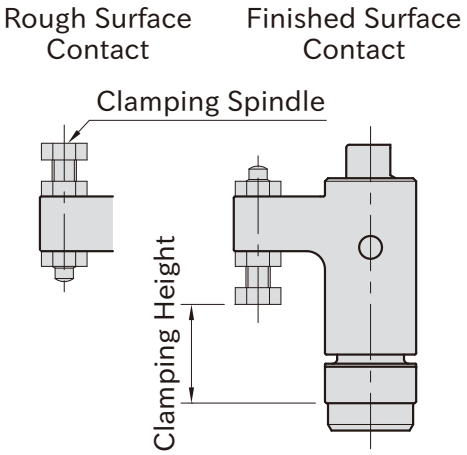
AMWSW-W COMPACT PNEUMATIC SWING CLAMPS

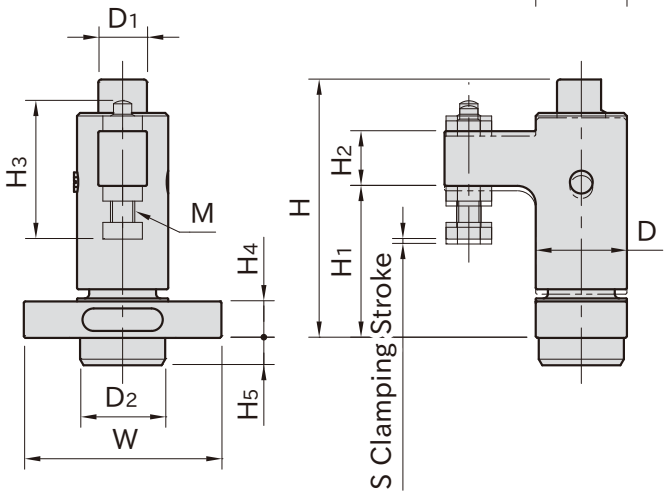
RoHS

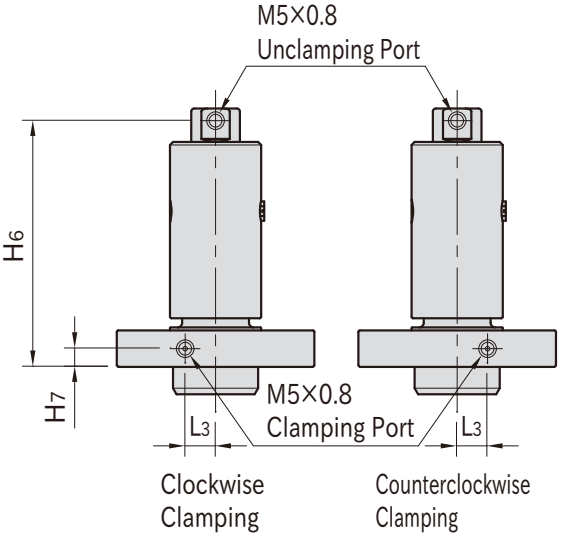
Body / Clamp Arm / Piston	Clamping Spindle
SCM440 steel Electroless nickel plated	S45C steel Quenched and tempered Electroless nickel plated

★Key Point
Compact design!









Part Number	Clamping Direction	Clamping Height *)				S	L_2	L_1	W	L	H_4	B	Dp	H	D	W_1	W_2	H_2	H_1
		Finished Surface Contact		Rough Surface Contact															
		Min.	Max.	Min.	Max.														
AMWSW16R-W	CW	32.5	39	33.5	40	1.2	37	45	65	30	12	8.4	48	85	30	16	8.4	18	50
AMWSW16L-W	CCW																		
AMWSW20R-W	CW	41.5	51	44	53.5	1.6	45	55	85	40	15	10.5	64	106	40	20	10.4	22	65
AMWSW20L-W	CCW																		

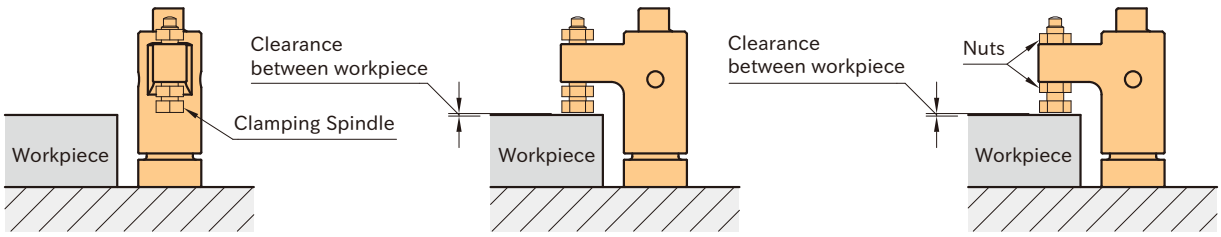
Part Number	M	H_3	D_1	D_2	H_5	L_3	H_6	H_7	Operating Air Pressure (MPa)	Clampig Force (kN) **)	Holding Capacity (kN) **)	Weight (g)
AMWSW16R-W	M 8×1.25	45.5	16	28	9	10	81	6	0.5~0.7	0.4	0.8	500
AMWSW16L-W												
AMWSW20R-W	M10×1.5	57	22	35	11	13	101	8		0.65	1.3	1120
AMWSW20L-W												

*) Clamping height can be adjusted within this range.
**) The clamping force and the holding capacity above are at 0.5 MPa.

How To Use

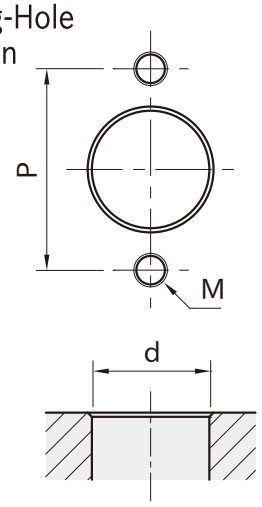
■Setting Clearance between Workpiece

A clearance between clamping spindle and workpiece should be roughly half of the clamping stroke.
The clamp arm swings horizontally.
Follow the steps below to adjust the clamping spindle to create proper clearance.



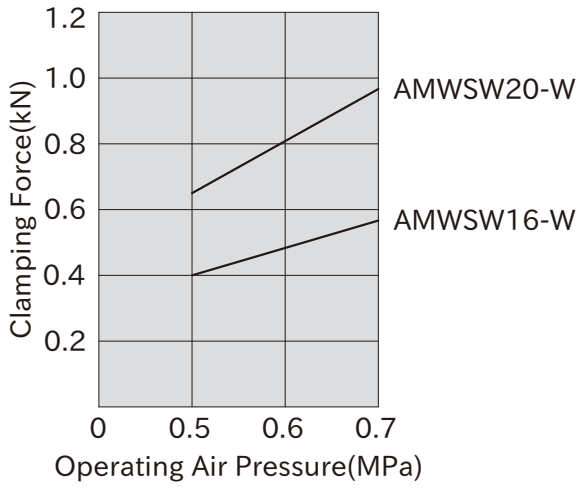
1. Apply air to the unclamping port with an air blow gun to move the clamp to unclamping position.
2. Rotate the arm manually to straight direction, and create an appropriate clearance to the workpiece. Putting a feeler gauge between the workpiece and the clamping spindle facilitates this setting.
3. Fix the clamping spindle with nuts.

■Mounting-Hole Dimension



Part No.	d $(^{+0.2}_{0})$	M	P
AMWSW16-W	28	M 8×1.25	48
AMWSW20-W	35	M10×1.5	64

Performance Curve

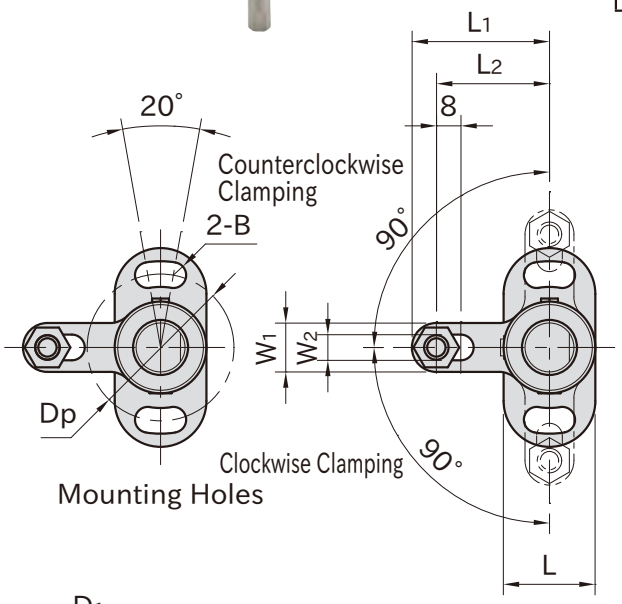


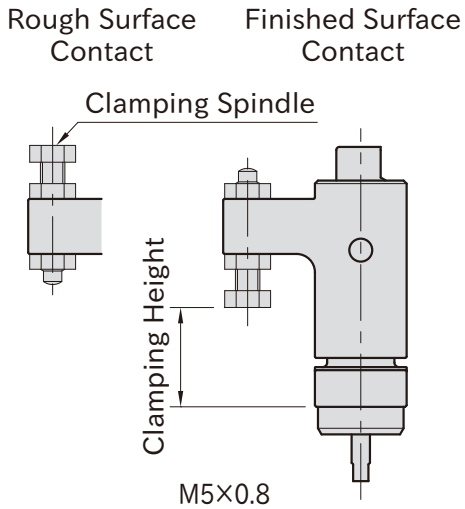
AMWSW-W-D COMPACT PNEUMATIC SWING CLAMPS WITH ROD

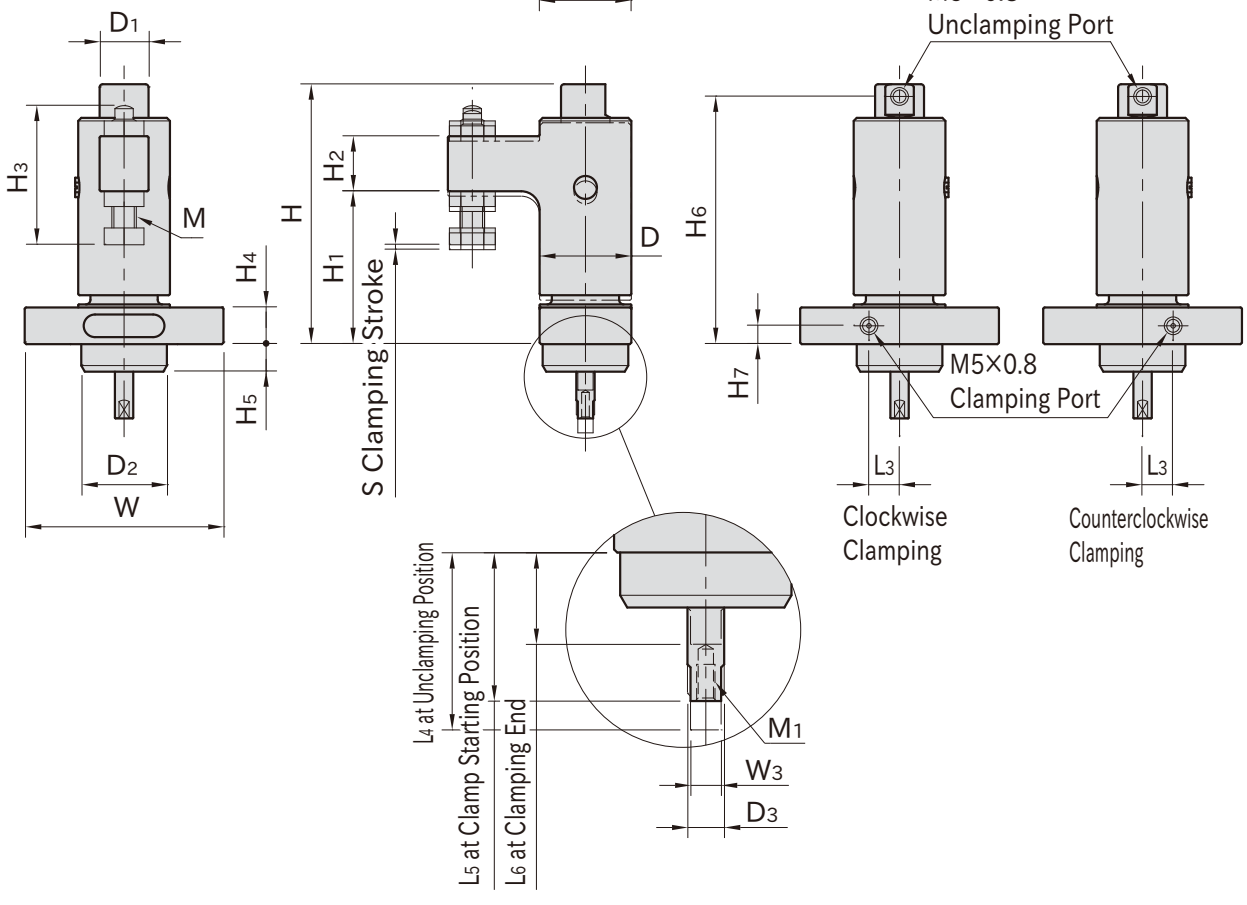
RoHS

★Key Point
Compact design!

Body / Clamp Arm / Piston	Rod	Clamping Spindle
SCM440 steel Electroless nickel plated	S45C steel Electroless nickel plated	S45C steel Quenched and tempered Electroless nickel plated







Part Number	Clamping Direction	Clamping Height *)				S	L_2	L_1	W	L	H_4	B	Dp	H	D	W_1	W_2	H_2	H_1	M
		Finished Surface Contact		Rough Surface Contact																
		Min.	Max.	Min.	Max.															
AMWSW16R-W-D	CW	32.5	39	33.5	40	1.2	37	45	65	30	12	8.4	48	85	30	16	8.4	18	50	M 8×1.25
AMWSW16L-W-D	CCW																			
AMWSW20R-W-D	CW	41.5	51	44	53.5	1.6	45	55	85	40	15	10.5	64	106	40	20	10.4	22	65	M10×1.5
AMWSW20L-W-D	CCW																			

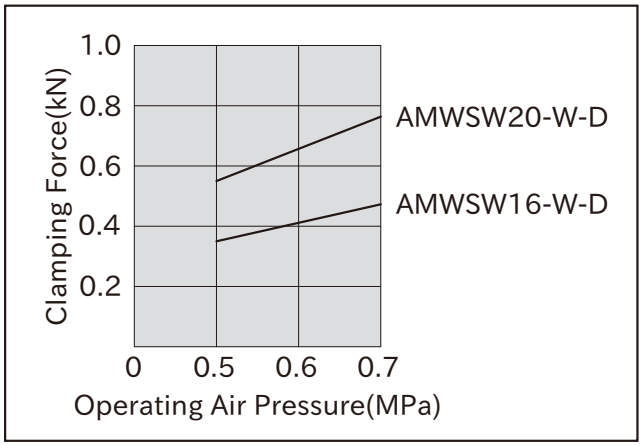
Part Number	H_3	D_1	D_2	H_5	L_3	H_6	H_7	L_4	L_5	L_6	M_1	D_3	W_3	Operating Air Pressure(MPa)	Clamping Force(kN) **)	Holding Capacity(kN) **)	Weight (g)
AMWSW16R-W-D	45.5	16	28	9	10	81	6	29	24	17	M3×0.5 Depth 6	6	5	0.5～0.7	0.35	0.7	510
AMWSW16L-W-D																	
AMWSW20R-W-D	57	22	35	11	13	101	8	35	29	19.5	M4×0.7 Depth 8	8	7		0.55	1.1	1130
AMWSW20L-W-D																	

*) Clamping height can be adjusted within this range.
**) The clamping force and the holding capacity above are at 0.5 MPa.

Feature

The rod on the bottom of the clamp can be used for detecting clamping/unclamping with switches.

Performance Curve



How To Use

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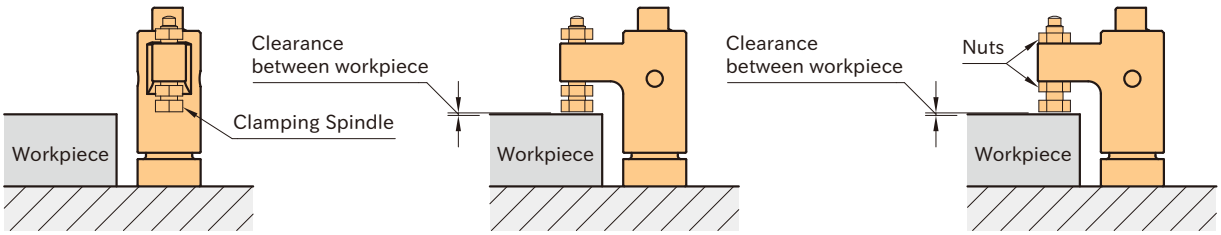
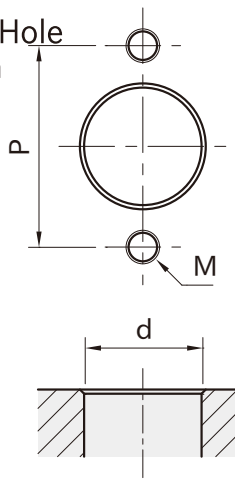


1. Apply air to the unclamping port with an air blow gun to move the clamp to unclamping position.
2. Rotate the arm manually to straight direction, and create an appropriate clearance to the workpiece. Putting a feeler gauge between the workpiece and the clamping spindle facilitates this setting.
3. Fix the clamping spindle with nuts.

■Mounting-Hole Dimension



Part No.	d $(^{+0.2}_{0})$	M	P
AMWSW16-W-D	28	M 8×1.25	48
AMWSW20-W-D	35	M10×1.5	64

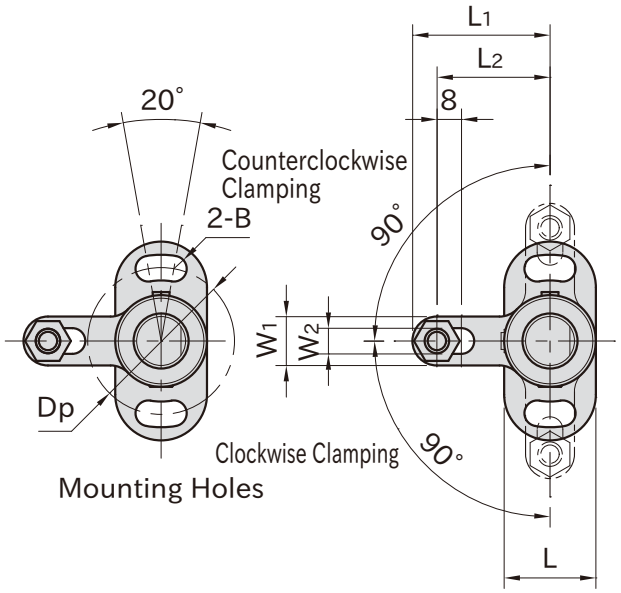
AMWSW-W-AG

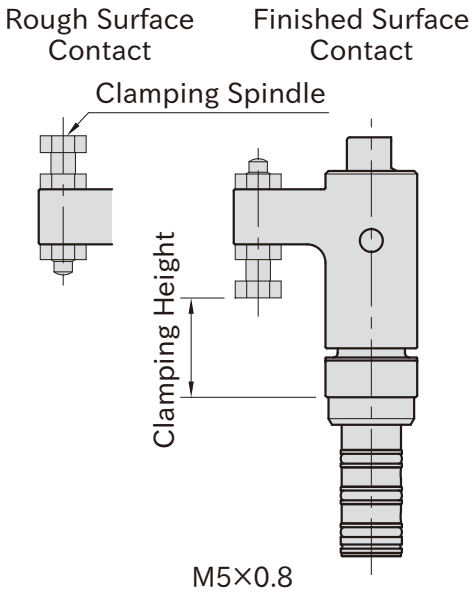
COMPACT PNEUMATIC SWING CLAMPS WITH DETECTING PORTS (Gasket Piping)

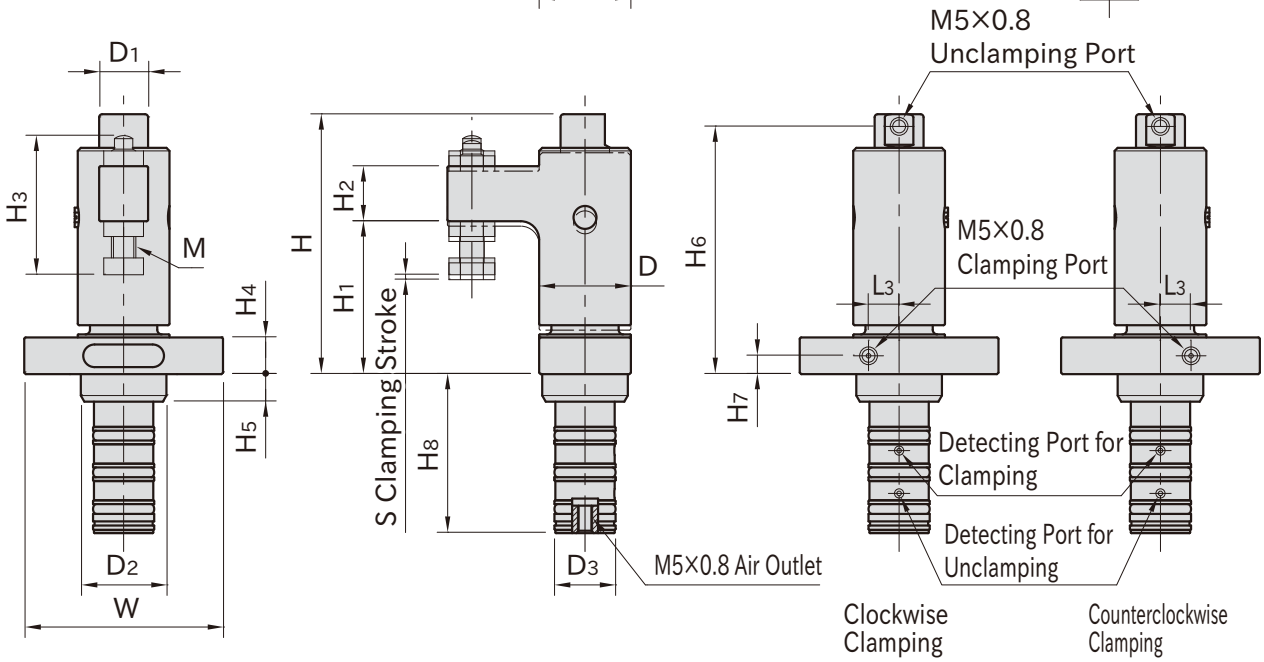
RoHS

★Key Point
Compact design!

Body / Clamp Arm/ Piston	Holder	Clamping Spindle
SCM440 steel Electroless nickel plated	A5056 aluminum Anodized	S45C steel Quenched and tempered Electroless nickel plated







Part Number	Clamping Direction	Clamping Height *)				S	L_2	L_1	W	L	H_4	B	Dp	H	D	W_1	W_2	H_2	H_1
		Finished Surface Contact		Rough Surface Contact															
		Min.	Max.	Min.	Max.														
AMWSW16R-W-AG	CW	32.5	39	33.5	40	1.2	37	45	65	30	12	8.4	48	85	30	16	8.4	18	50
AMWSW16L-W-AG	CCW																		
AMWSW20R-W-AG	CW	41.5	51	44	53.5	1.6	45	55	85	40	15	10.5	64	106	40	20	10.4	22	65
AMWSW20L-W-AG	CCW																		

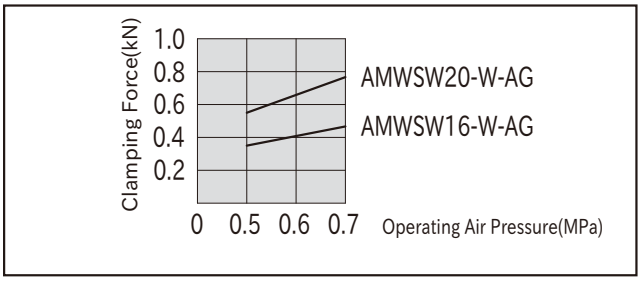
Part Number	M	H_3	D_1	D_2	H_5	L_3	H_6	H_7	H_8	D_3	Operating Air Pressure(MPa)	Clamping Force(kN) **)	Holding Capacity(kN) **)	Weight (g)
AMWSW16R-W-AG	M 8×1.25	45.5	16	28	9	10	81	6	52	20	0.5~0.7	0.35	0.7	540
AMWSW16L-W-AG														
AMWSW20R-W-AG	M10×1.5	57	22	35	11	13	101	8	62	25		0.55	1.1	1180
AMWSW20L-W-AG														

*) Clamping height can be adjusted within this range. **) The clamping force and the holding capacity above are at 0.5 MPa.

Feature

Using with pressure sensors, clamping/unclamping conditions can be detected.

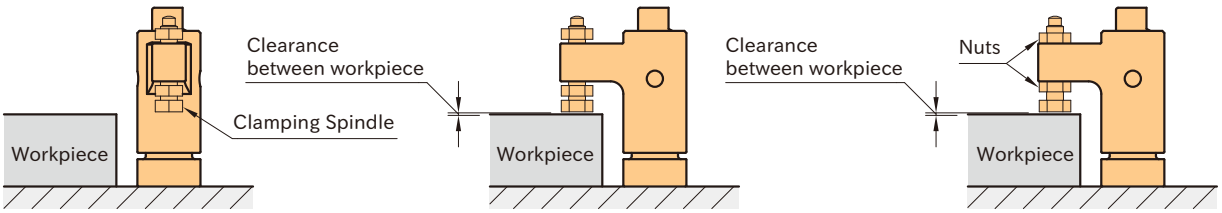
Performance Curve



How To Use

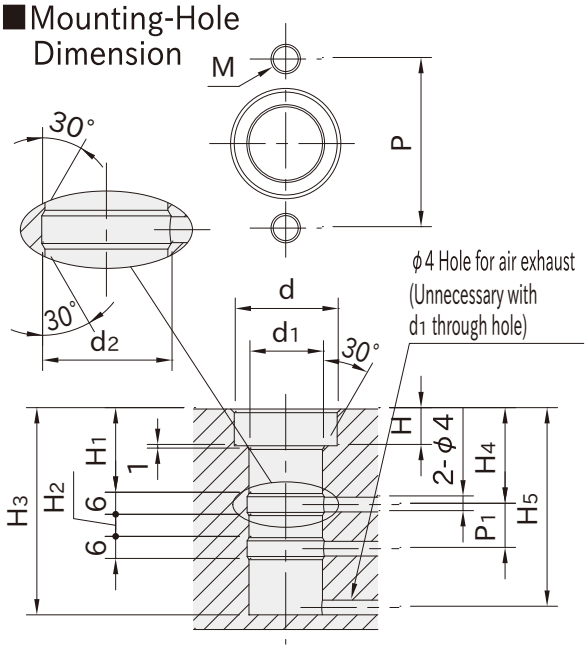
■Setting Clearance between Workpiece

A clearance between clamping spindle and workpiece should be roughly half of the clamping stroke. The clamp arm swings horizontally. Follow the steps below to adjust the clamping spindle to create proper clearance.



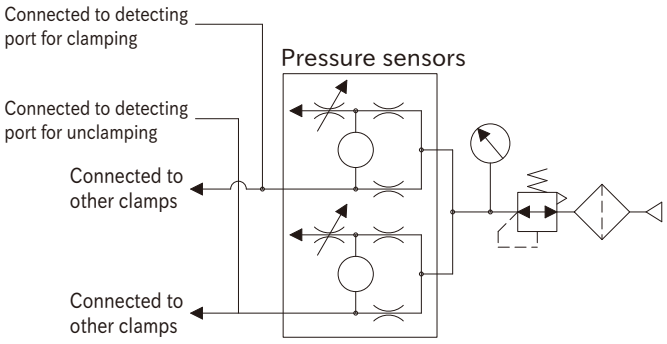
1. Apply air to the unclamping port with an air blow gun to move the clamp to unclamping position.
2. Rotate the arm manually to straight direction, and create an appropriate clearance to the workpiece. Putting a feeler gauge between the workpiece and the clamping spindle facilitates this setting.
3. Fix the clamping spindle with nuts.

■Mounting-Hole Dimension



■Connection with Pressure Sensors

To check clamping/unclamping conditions, pressure sensor is required. Refer to the figure below for piping.



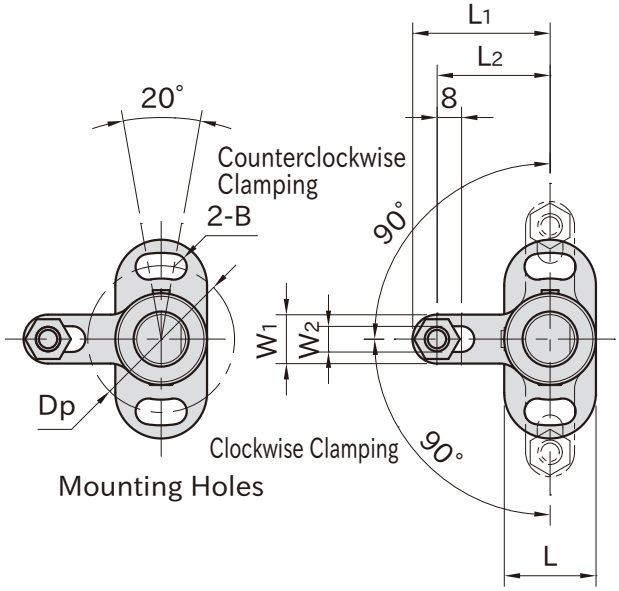
Part No.	d (+0.2 0)	H	d_1 (H8)	H_1	H_2	d_2	H_3	P_1	H_4	H_5	M	P
AMWSW16-W-AG	28	10	20	23	6	21	56 or more	12	26	54	M 8×1.25	48
AMWSW20-W-AG	35	12	25	29	10	26	66 or more	16	32	64	M10×1.5	64

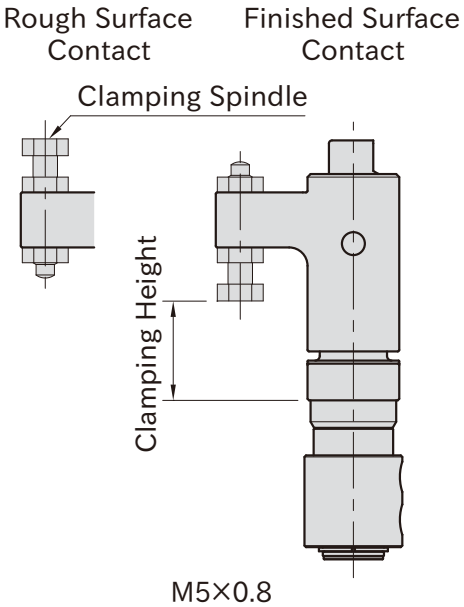
AMWSW-W-AC COMPACT PNEUMATIC SWING CLAMPS WITH DETECTING PORTS (Thread Piping)

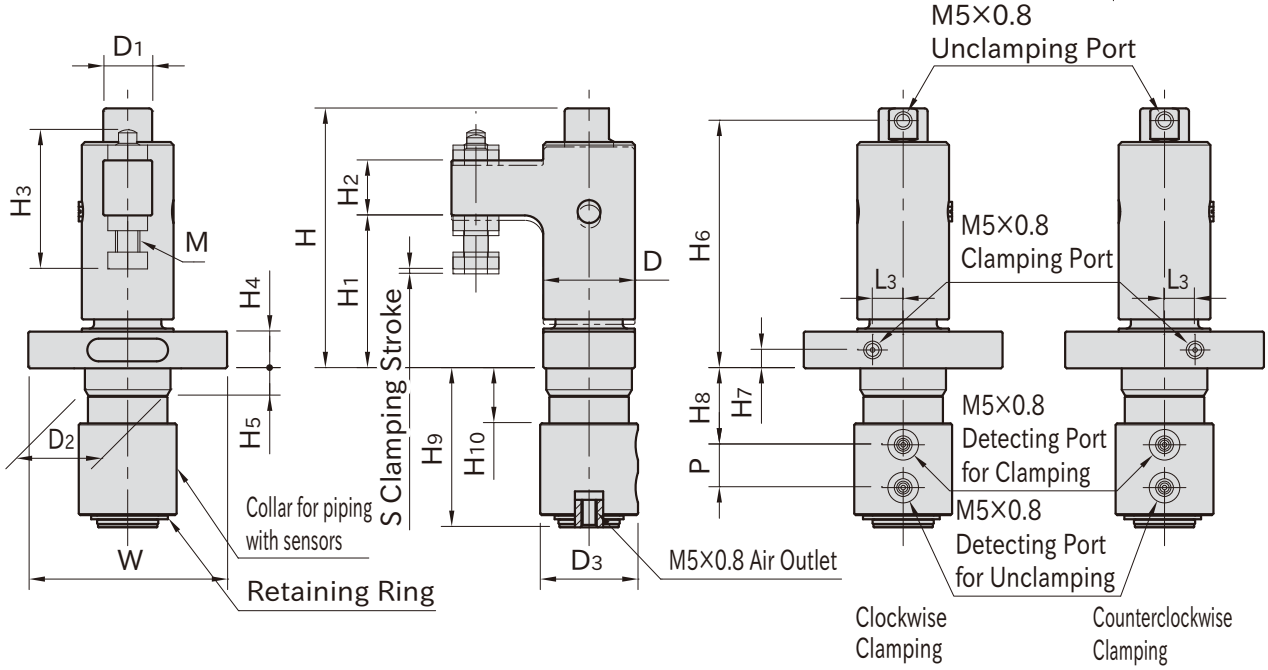
RoHS

★Key Point
Compact design!

Body / Clamp Arm / Piston	Collar	Clamping Spindle
SCM440 steel Electroless nickel plated	A5056 aluminum Anodized	S45C steel Quenched and tempered Electroless nickel plated







Part Number	Clamping Direction	Clamping Height *)				S	L_2	L_1	W	L	H_4	B	Dp	H	D	W_1	W_2	H_2	H_1
		Finished Surface Contact		Rough Surface Contact															
		Min.	Max.	Min.	Max.														
AMWSW16R-W-AC	CW	32.5	39	33.5	40	1.2	37	45	65	30	12	8.4	48	85	30	16	8.4	18	50
AMWSW16L-W-AC	CCW																		
AMWSW20R-W-AC	CW	41.5	51	44	53.5	1.6	45	55	85	40	15	10.5	64	106	40	20	10.4	22	65
AMWSW20L-W-AC	CCW																		

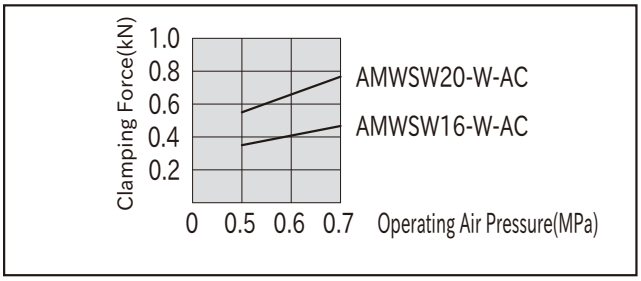
Part Number	M	H_3	D_1	D_2	H_5	L_3	H_6	H_7	H_8	P	H_9	D_3	H_{10}	Operating Air Pressure (MPa)	Clamping Force (kN) **)	Holding Capacity (kN) **)	Weight (g)
AMWSW16R-W-AC	M 8X1.25	45.5	16	28	9	10	81	6	25	14	52	32	18	0.5~0.7	0.35	0.7	580
AMWSW16L-W-AC																	
AMWSW20R-W-AC	M10X1.5	57	22	35	11	13	101	8	31	18	62	38	24		0.55	1.1	1240
AMWSW20L-W-AC																	

*) Clamping height can be adjusted within this range.
**) The clamping force and the holding capacity above are at 0.5 MPa.

Feature

Using with pressure sensors, clamping/unclamping conditions can be detected.

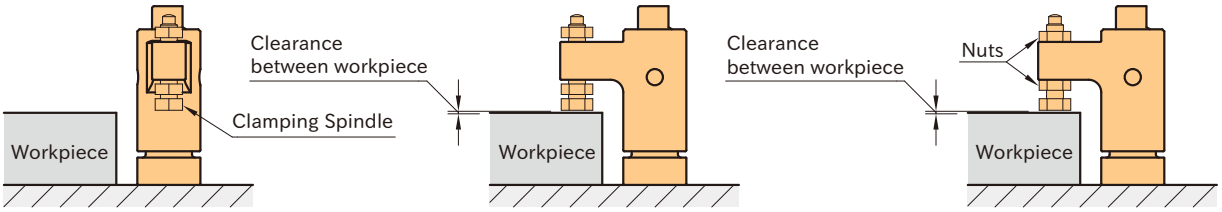
Performance Curve



How To Use

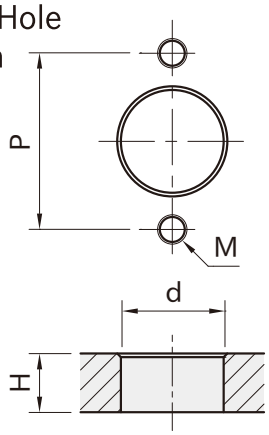
■Setting Clearance between Workpiece

A clearance between clamping spindle and workpiece should be roughly half of the clamping stroke.The clamp arm swings horizontally. Follow the steps below to adjust the clamping spindle to create proper clearance.



1. Apply air to the unclamping port with an air blow gun to move the clamp to unclamping position.
2. Rotate the arm manually to straight direction, and create an appropriate clearance to the workpiece. Putting a feeler gauge between the workpiece and the clamping spindle facilitates this setting.
3. Fix the clamping spindle with nuts.

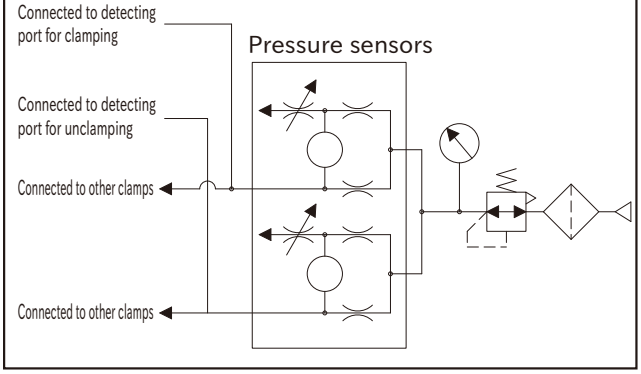
■Mounting-Hole Dimension



Part No.	d $(^{+0.2}_{0})$	M	P	H
AMWSW16-W-AC	28	M 8X1.25	48	16 or less
AMWSW20-W-AC	35	M10X1.5	64	22 or less

■Connection with Pressure Sensors

To check clamping/unclamping conditions, pressure sensor is required. Refer to the figure below for piping.



Note

Attach the collar and the retaining ring to the product by yourself.
The collar rotates for 360˚freely. Set the collar to your desired position.

AMWD-WS PNEUMATIC HOLD DOWN CLAMPS

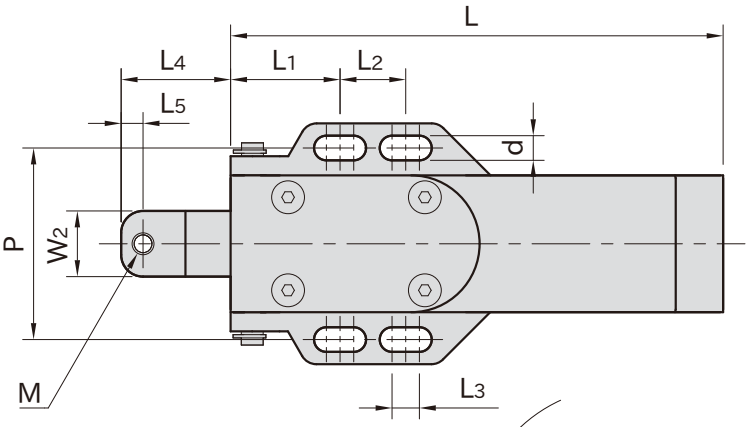
RoHS

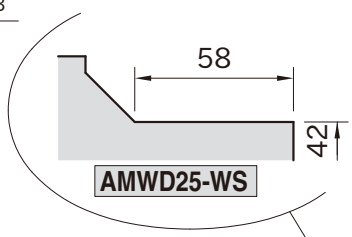
★One Point
Magnetic sensor mountable!

Body	Clamp Arm
AC7A aluminum Anodized	SCM415 steel Carburized-hardened Electroless Nickel Plated

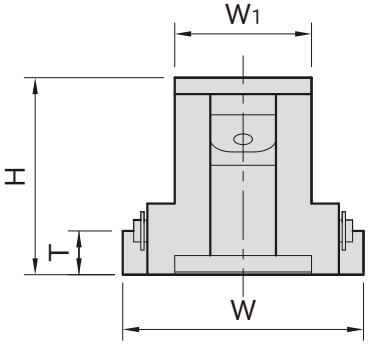
AMWD16-WS

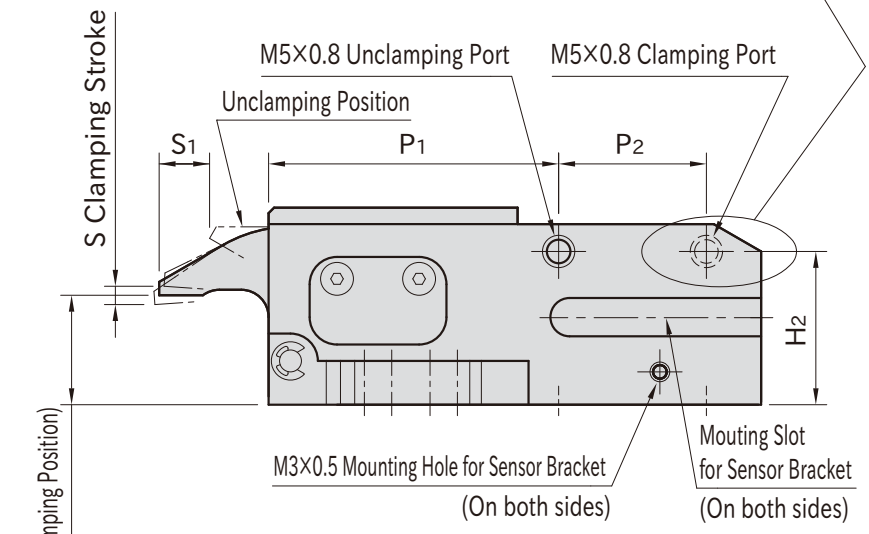
AMWD25-WS

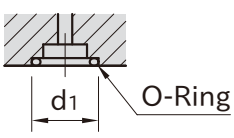




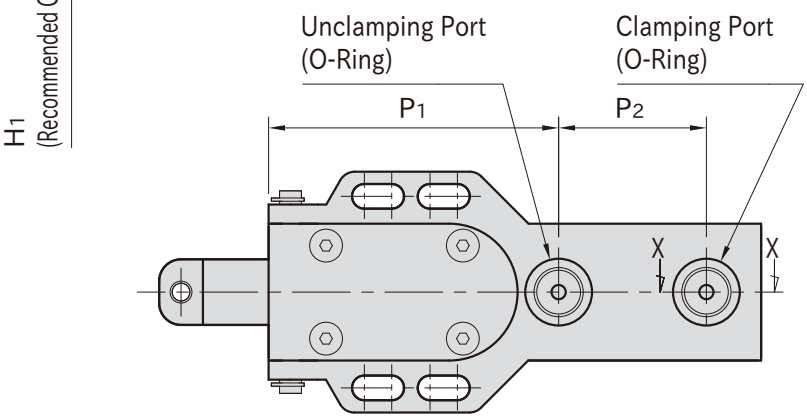
AMWD25-WS







Section X-X



Part Number	W_2	L_4	M	L_5	H_1	S	S_1	L	W_1	H	W	T	d	L_1	L_2	L_3
AMWD16-WS	12	20	M4×0.7	4	20	2	9	90	25	36	44	8	4.5	20	12	5
AMWD25-WS	18	32	M6×1	6	30	3	15	135	40	54	65	12	6.5	30	20	8

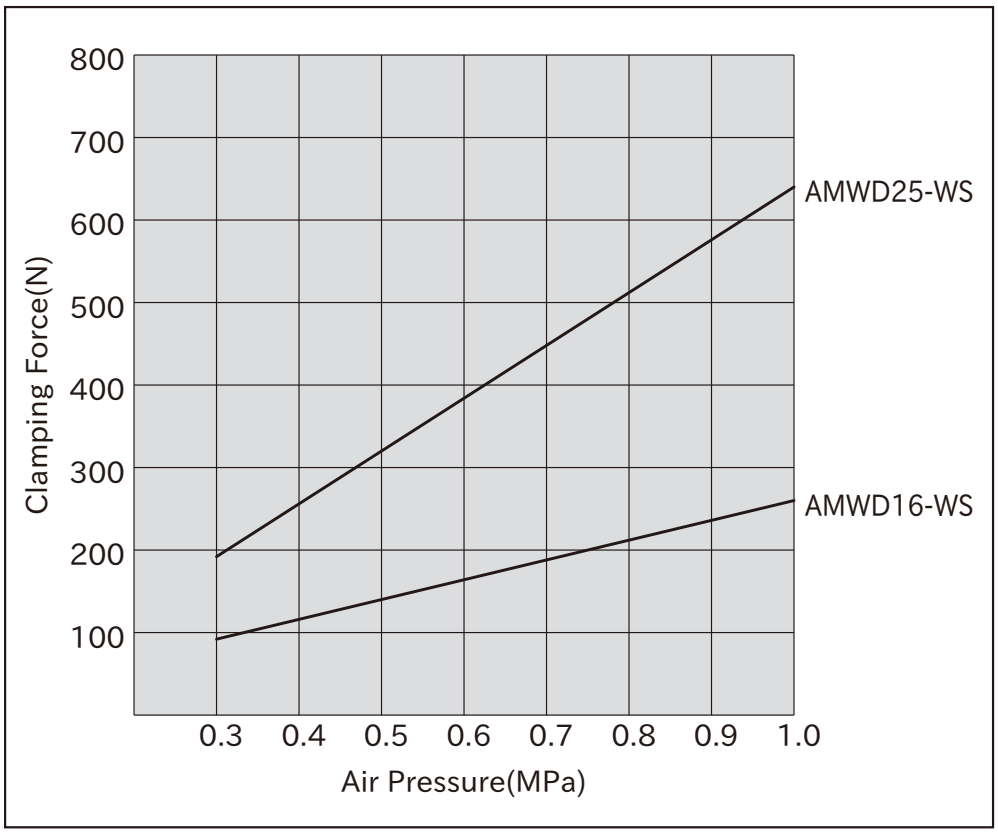
Part Number	P	d_1	P_1	P_2	H_2	Operating Air Pressure (MPa)	Clamping Force (N) *)	Furnished O-Ring	Weight (g)
AMWD16-WS	35	12.2	53	27	28	0.3 - 1.0	140	P 9	250
AMWD25-WS	53	18	84	38	33		320	P14	850

*) The clamping forces above are at 0.5 MPa.

Supplied With

2 of O-Ring

Performance Curve



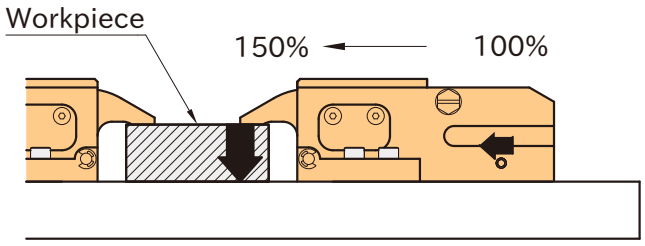
Related Product Page

AMWD-WS-B SENSOR BRACKETS

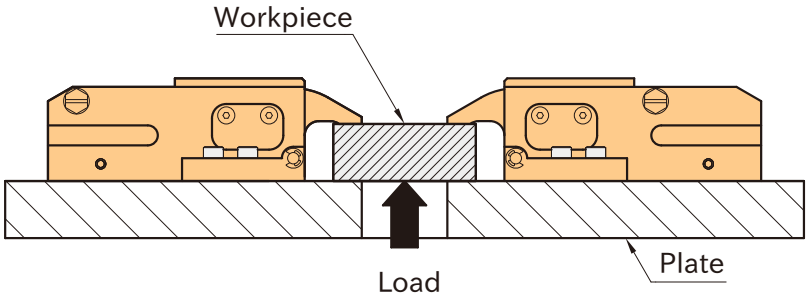
Continuing on Next Page

Feature

·Wedge mechanism provides 150% clamping force.



·The allowable counterforce is shown in the chart below.
·Wedge mechanism prevents the clamping force from immediate decrease if air pressure lowers.
Note: The clamping force may be decreased by excessive vibration.

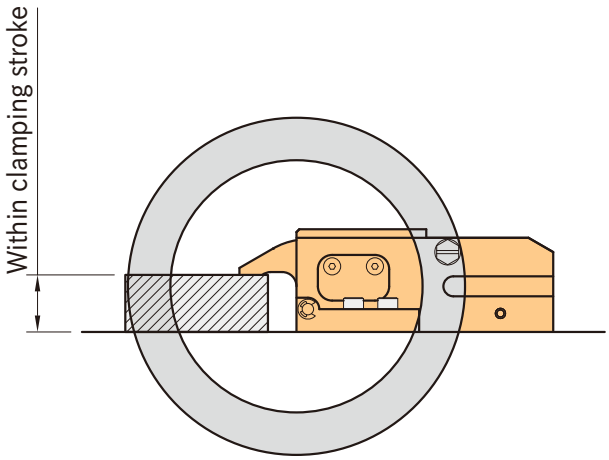


Allowable Counterforce (Per Clamp)

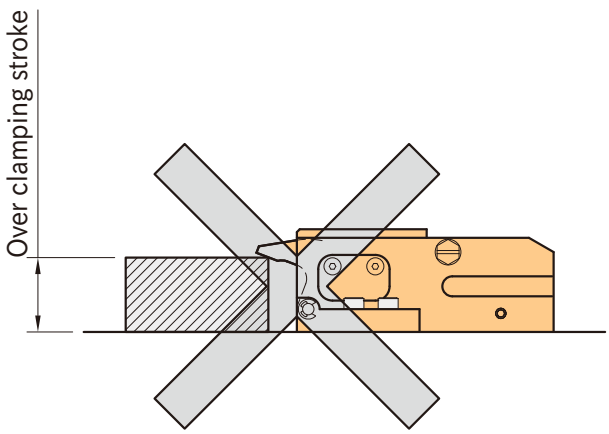
Part Number	Allowable Force (kN)
AMWD16-WS	1
AMWD25-WS	2.2

Note

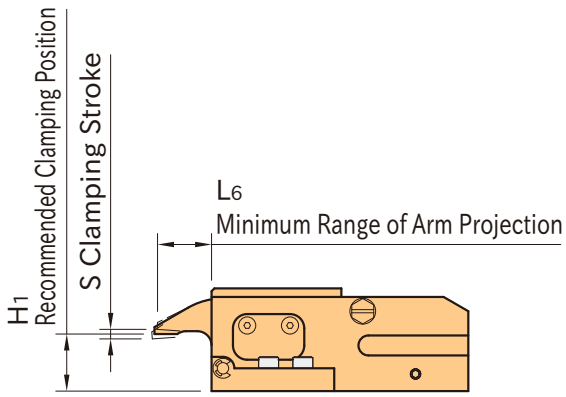
· Use clean air by removing dust with filter or draining with dryer.
· Impure compressed air may cause malfunction of the products.
· Using lubricator is recommended.
· Use the clamp within the clamping stroke.



The wedge mechanism works to clamp the workpiece securely.



The wedge mechanism does not work.

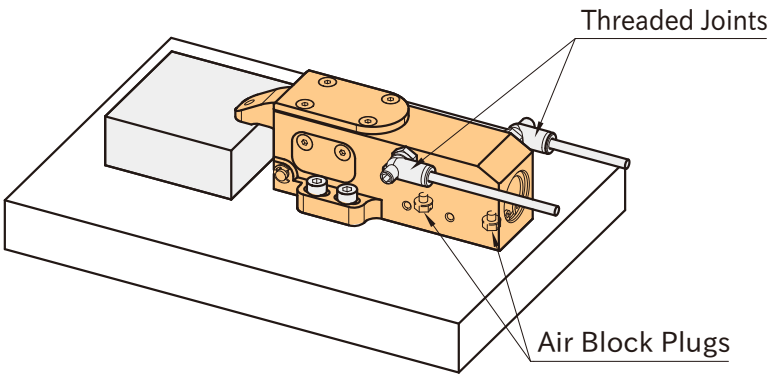


Part Number	S	H_1	L_6
AMWD16-WS	2	20	19
AMWD25-WS	3	30	30.5

How To Use

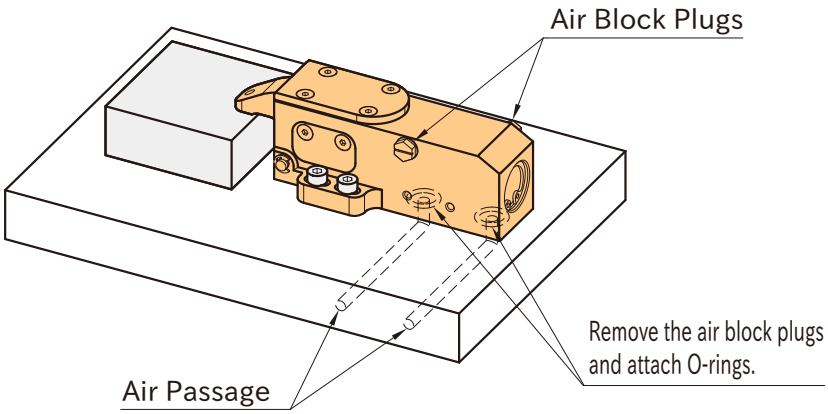
With Side Ports

- Ensure that the furnished air block plugs are attached to the bottom ports.
- Remove the air block plugs on the side ports and connect the piping.
- Refer to the figure below for the hole preparation.

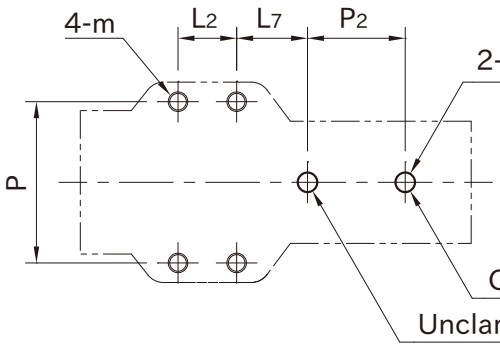


With Bottom Ports

- Ensure that the furnished air block plugs are attached to the side ports.
- Remove the air block plugs on the bottom ports and attach O-rings (included) to it.
- Plate surface must be flat ($\overset{6.3}{\nabla}$) to get the bottom ports sealed up.
- Refer to the figure below for the hole preparation.



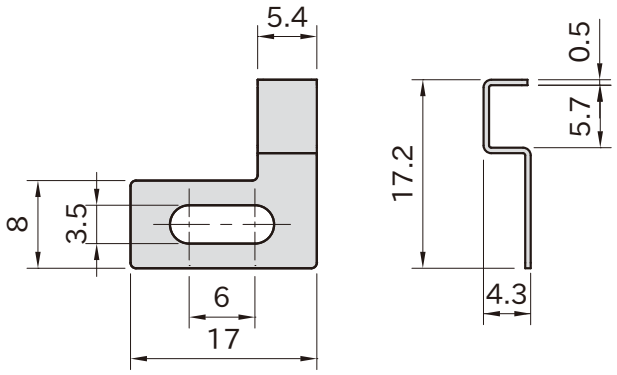
Hole Preparation



Part Number	P	L_2	L_7	P_2	m	d_2
AMWD16-WS	35	12	21	27	M4×0.7	ϕ2 - ϕ4
AMWD25-WS	53	20	34	38	M6×1	ϕ2 - ϕ6

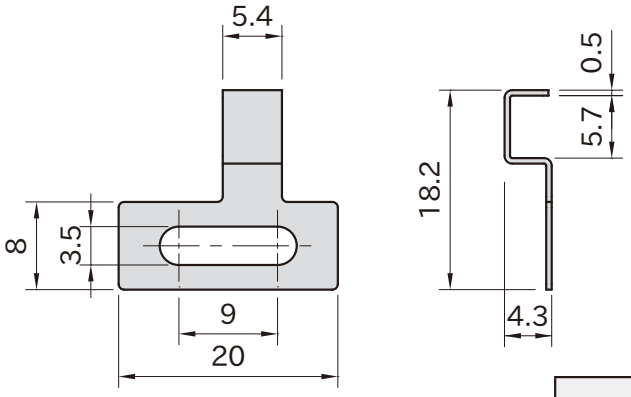
AMWD-WS-B SENSOR BRACKETS

AMWD16-WS-B



AMWD16-WS-B

AMWD25-WS-B



AMWD25-WS-B

Part Number	Weight (g)	Proper Sensor *)
AMWD16-WS-B	5.5	AH006-S, N
AMWD25-WS-B	6	

Body
SUS304 stainless steel

*)Magnetic Proximity Sensors of ASA ELECTRONICS INDUSTRY CO., LTD.
Please refer to their catalog for details of sensors.

Feature

- Using proper sensors enables to detect the piston positions.
- Prepare the sensors as needed.(Not available from Imao.)

Supplied With

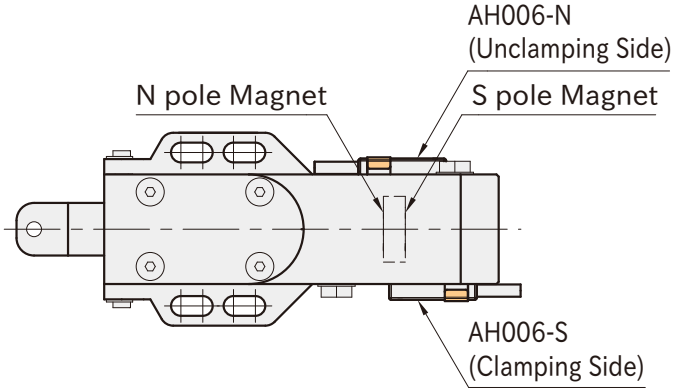
2 of M3x0.5-5L Hex socket button head screw

Related Product

AMWD-WS PNEUMATIC HOLD DOWN CLAMPS

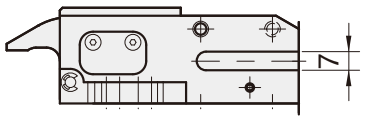
How To Use

- Must be used with 1 pc. each of AH006-S (S pole) and AH006-N (N pole).
- Adjust the detecting positions by mounting sensors of S and N poles as shown below.

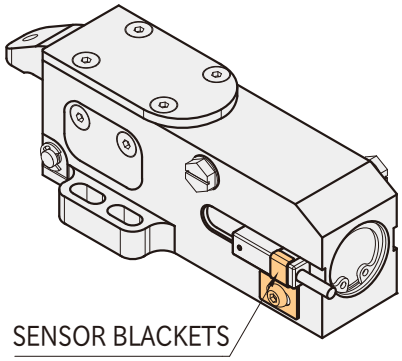


Note

- Only Magnetic Proximity Sensors AH-006 of ASA ELECTRONICS was tested with AMWD-WS PNEUMATIC HOLD DOWN CLAMPS.
- Ensure to follow the criteria below before using other magnetic sensors.
  - Can be mounted in the 7mm slot of the clamp body.



  - Can detect the internal magnet of the clamp.
  - Brackets should be made by the customer referring to the datasheet of AMWD-WS-B SENSOR BRACKETS.



SENSOR BLACKETS

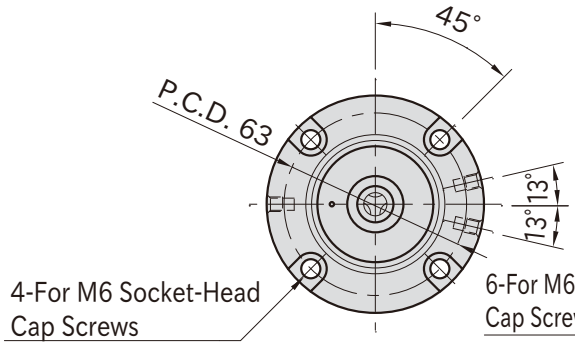
AMWPD-W PNEUMATIC PULL CLAMPS

RoHS

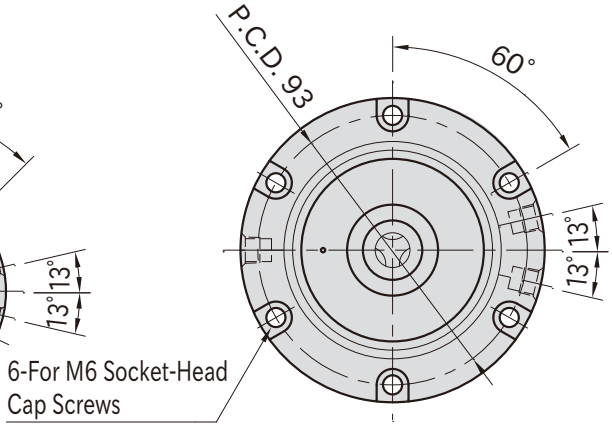
Body	Cylinder
S45C steel Induction hardened (top surface) Black oxide finished Precision ground	SCM440 steel Nitrocarburized

★Key Point

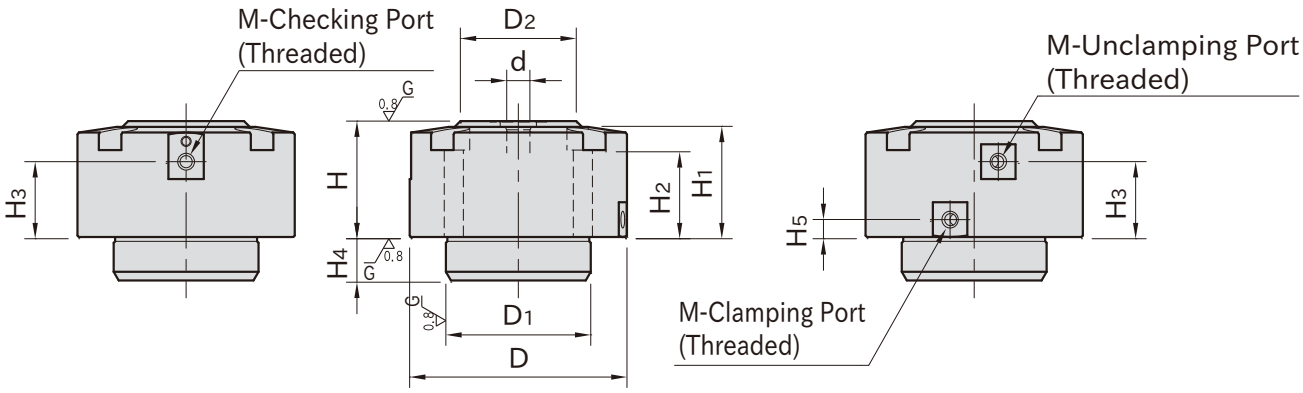
High clamping force by wedge mechanism.

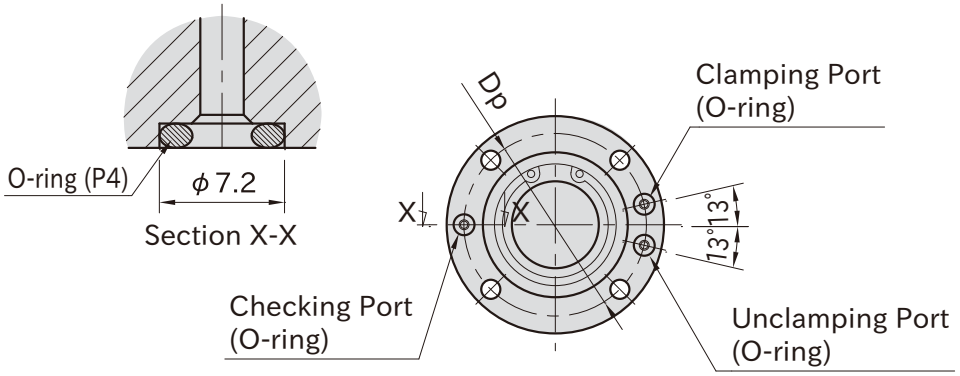


AMWPD40-W



AMWPD63-W





Part Number	d (F7)	D_2	H (±0.01)	D	H_1	D_1 (g6)	H_4	H_2	Dp *)	M	H_3	H_5
AMWPD40-W	8	40	40	75	38	50	15	30	63	M5×0.8	26	6
AMWPD63-W	12	63	50	105	47	75	19	35	88	Rc1/8	31	10

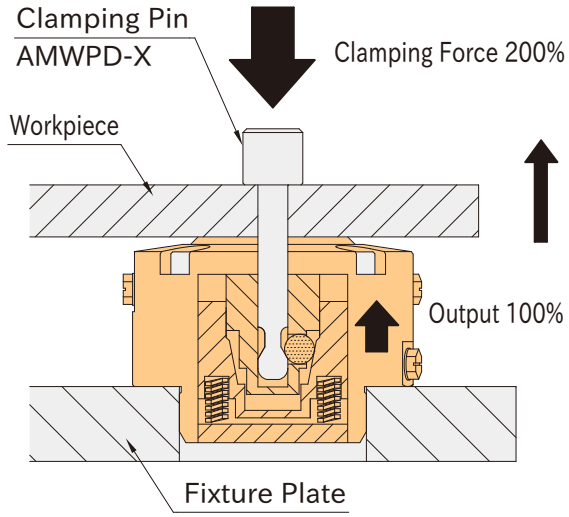
Part Number	Furnished O-ring	Operating Air Pressure (MPa)	Clamping Force (kN) **)	Weight (kg)
AMWPD40-W	P4	0.3~1.0	1	1.3
AMWPD63-W			2.5	3.2

*) The dimensions above are for ports with o-ring.
**) The clamping forces above are at 0.5 MPa.

Feature

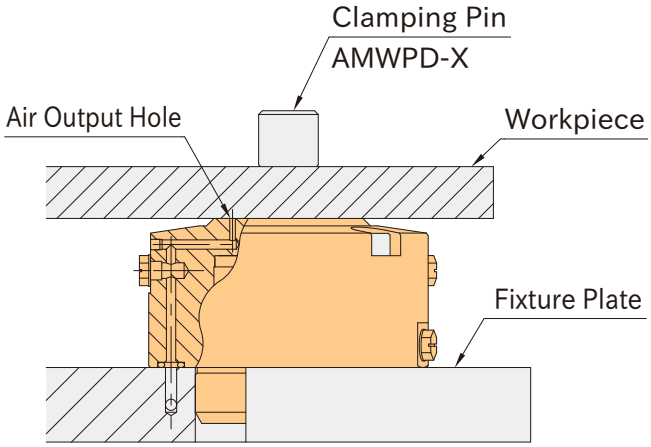
■High Clamping Force

・Wedge mechanism increases clamping force to 200% compared to the air cylinder of the same size.
・When the air pressure is lowered by such as an air leakage, wedge mechanism prevents prompt lowering of the clamping force.
Clamping Force at 0 Mpa Air Pressure (by spring force)
・AMWPD40-W・・・160N
・AMWPD63-W・・・500N



■Checking Hole

Can check if the workpiece is clamped properly by applying air through the checking hole.



Technical Information

■Allowable Counterforce (Per Clamp)

Part Number	Max. load(N)
AMWPD40-W	Clamping force × 2
AMWPD63-W	

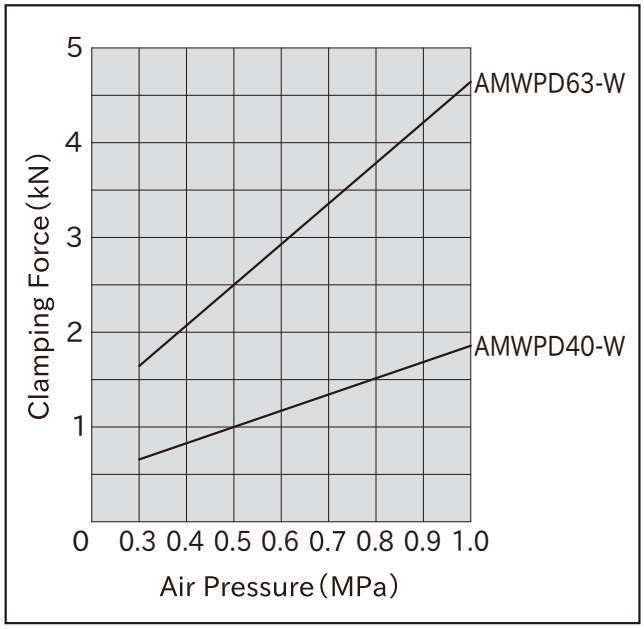
Related Product

・AMWPD-X CLAMPING PINS
・AMWPD-M CLAMPING SCREWS

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.

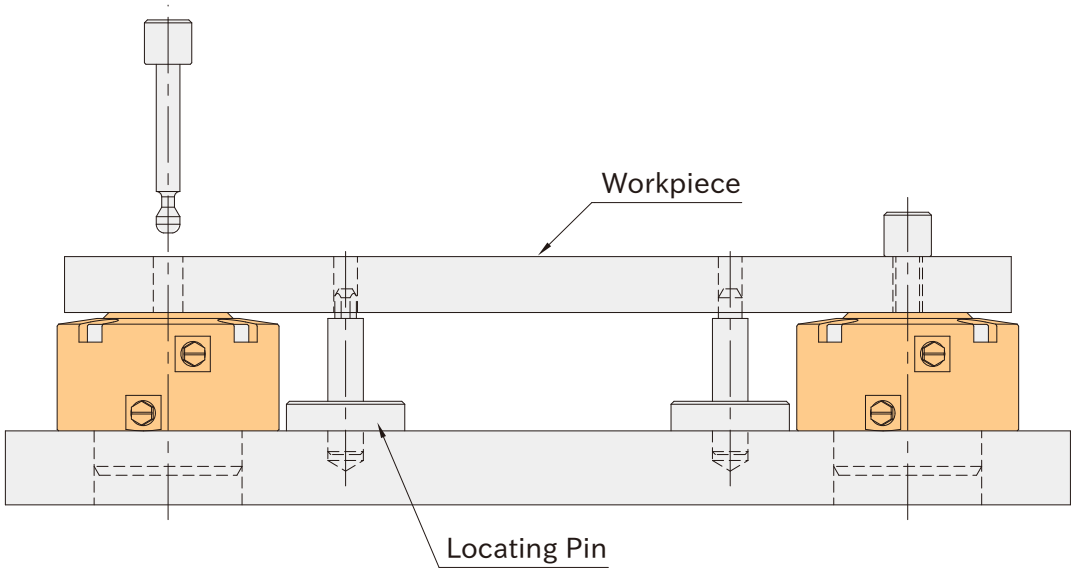
Performance Curve



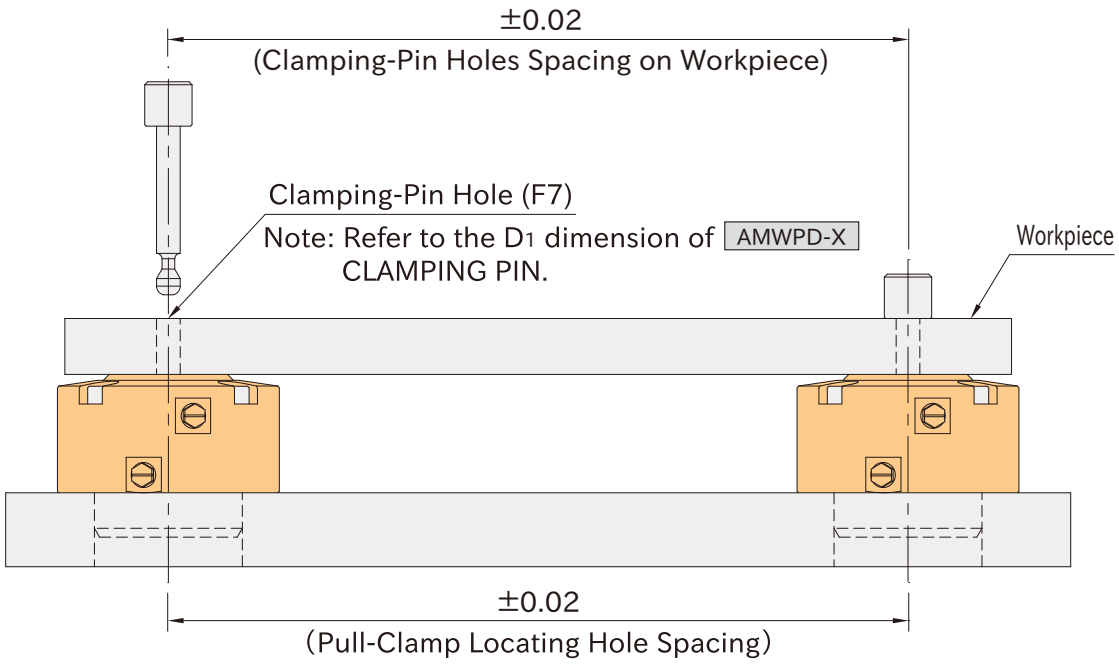
Continuing on Next Page

■How to Locate Workpiece

1. Basic Method



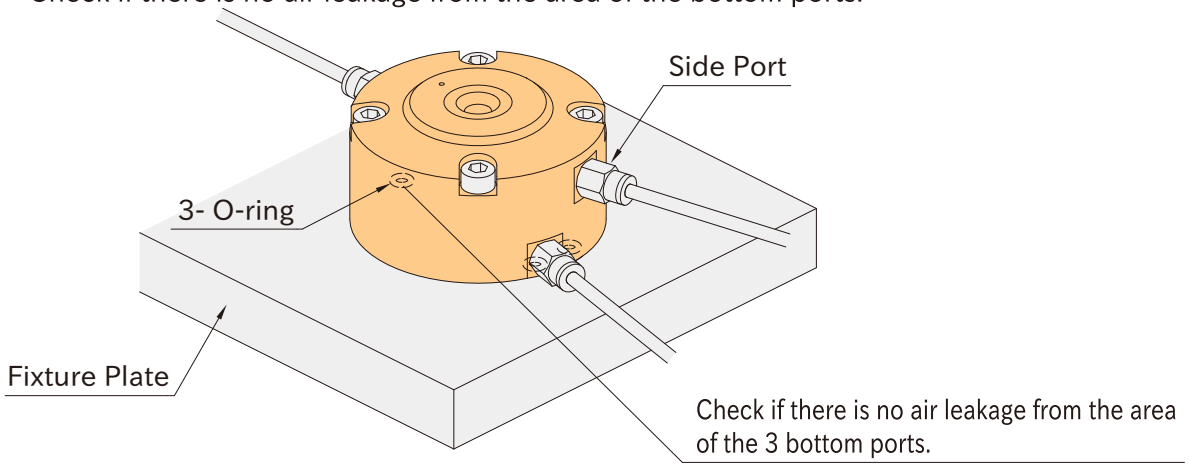
2. Method for clamping and locating at a time
Locating Accuracy ±0.08



■How to Install

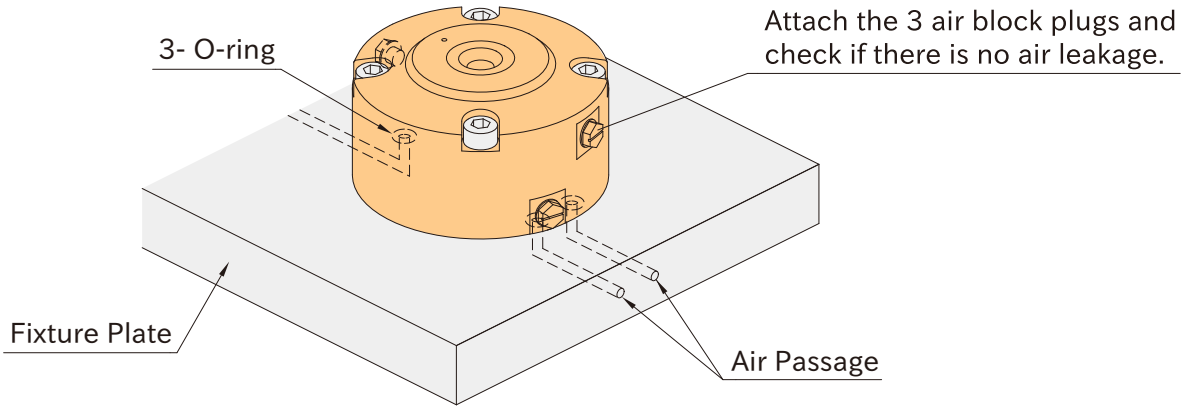
1.With Side Ports

・Attach the furnished o-rings to the bottom ports.
・Plate surface must be flat(6.3▽)to get the bottom ports sealed up.
・Check if there is no air leakage from the area of the bottom ports.

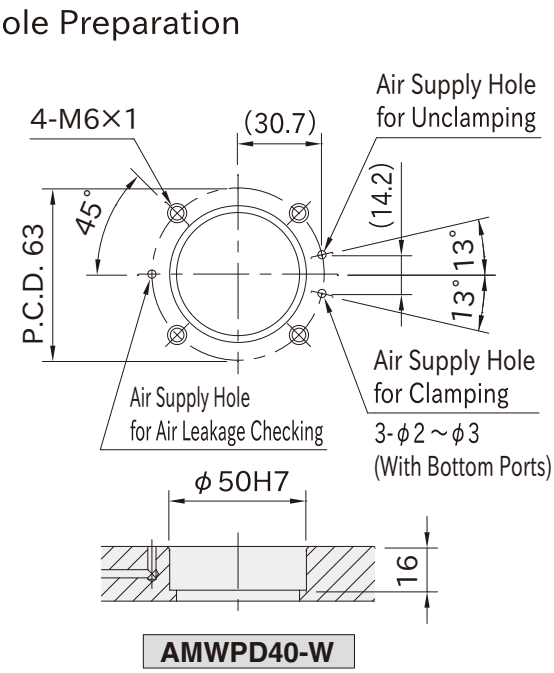


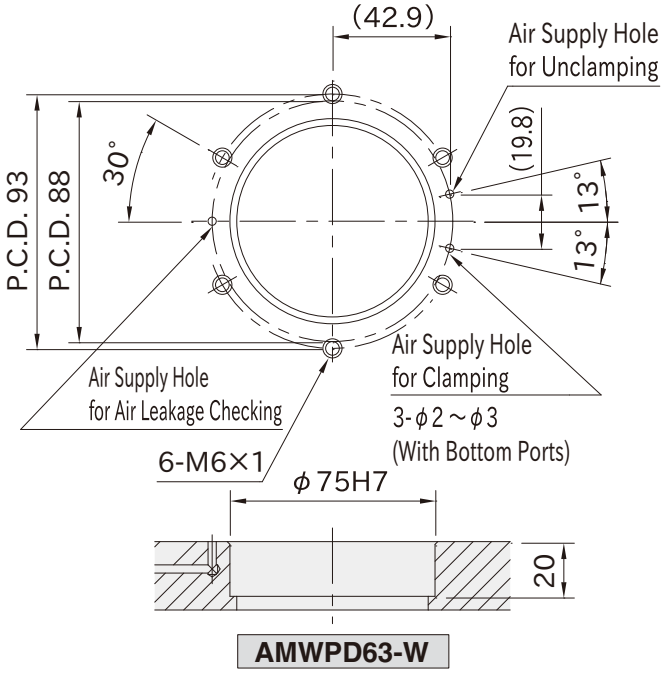
2.With Bottom Ports

・Attach the furnished o-rings to the bottom ports.
・Plate surface must be flat (6.3▽) to get the bottom ports sealed up.
・Refer to the figure below for the hole details.
・Ensure that the furnished air block plugs are attached to the side ports.



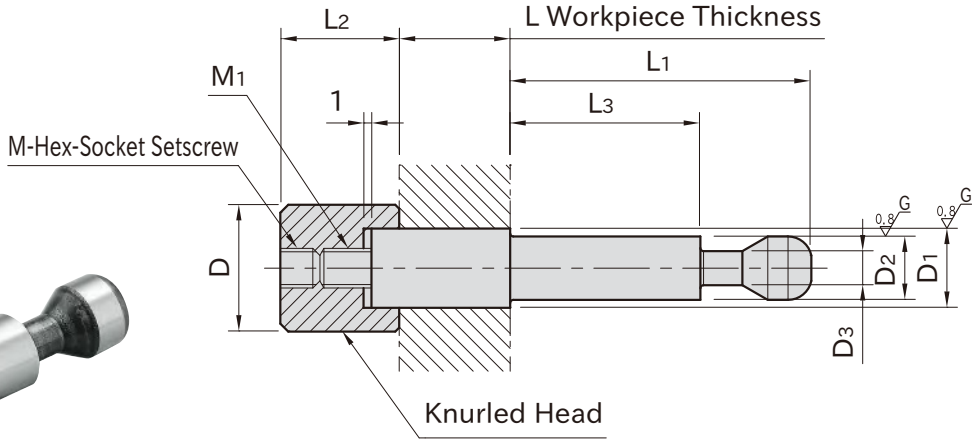
■Hole Preparation





AMWPD-X CLAMPING PINS

On Request RoHS



Note: L dimension is adjustable by ±1mm to fit actual workpiece thickness.

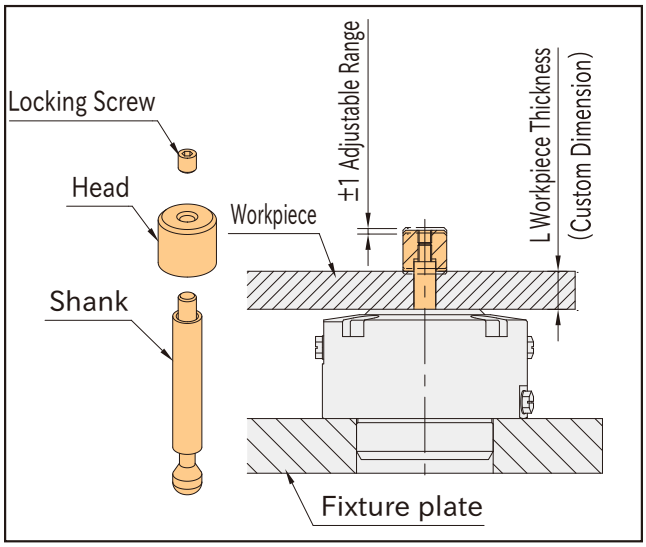
Shank	Head
SCM435 steel Induction hardened (taper seat) Precision ground	S45C steel Quenched and tempered Black oxide finish

Part Number	D_2 (f7)	D_1 (f7)	L *) (By 0.1mm)	D	L_2	L_1	L_3	D_3	M
AMWPD40- 8-(L Dim. in mm)	8	8	4≦L≦64	16	15	38	24	4.3	M5×0.8 -5L
AMWPD40-10-(L Dim. in mm)		10							
AMWPD63-12-(L Dim. in mm)	12	12	0<L≦90	18	23	48	31.5	6.5	M8×1.25-8L
AMWPD63-16-(L Dim. in mm)		16		24					

Part Number	M_1	Proper Pull Clamps	Weight (g)
AMWPD40- 8-(L Dim. in mm)	M5×0.8	AMWPD40-W	min. 30~max. 60
AMWPD40-10-(L Dim. in mm)			min. 31~max. 77
AMWPD63-12-(L Dim. in mm)	M8×1.25	AMWPD63-W	min. 70~max.160
AMWPD63-16-(L Dim. in mm)			min.175~max.265

*) For ordering, specify workpiece thickness.

How To Use



Note

The length of L dimension should be decided depending on the workpiece thickness.

■Ordering Example

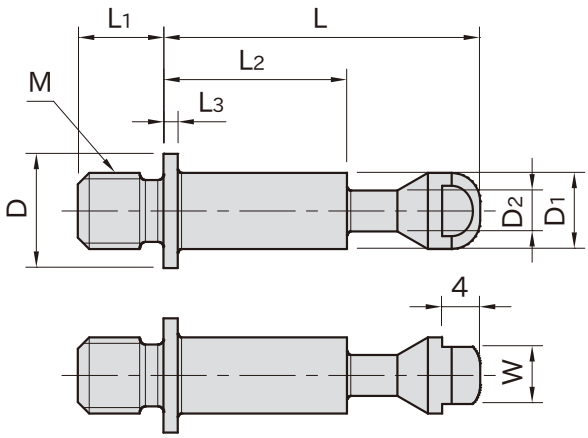
AMWPD40-8 - 10.5

Shank Size — L Dim.

AMWPD40-8 for 10.5mm thickness workpiece.

AMWPD-M CLAMPING SCREWS

RoHS

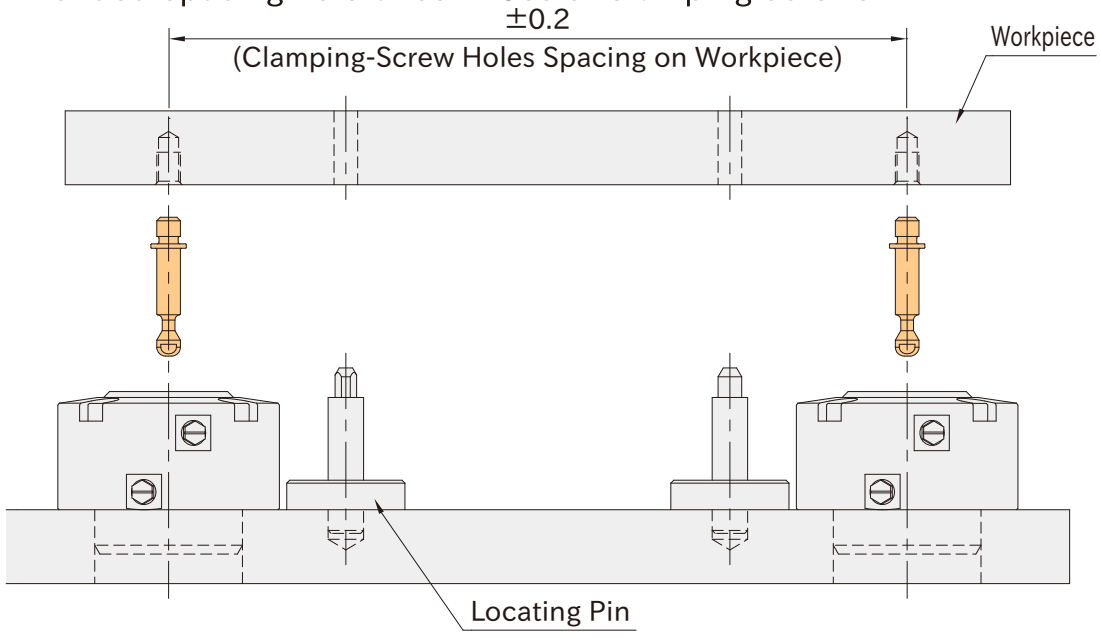


Body
SCM435 steel Quenched and tempered Black oxide finish

Part Number	D1	M	L1	L	D	L2	L3	D2	W	Proper Pull Clamps	Weight (g)
AMWPD40-M 8	8	M 8X1.25	9	38	12	24	1.5	4.3	6	AMWPD40-W	16
AMWPD40-M10		M10X1.5	11								20
AMWPD63-M12	12	M12X1.75	13	48	20	31.5	2	6.5	10	AMWPD63-W	50
AMWPD63-M16		M16X2	17								64

How To Use

■Recommended Spacing Tolerance in Use of Clamping Screws



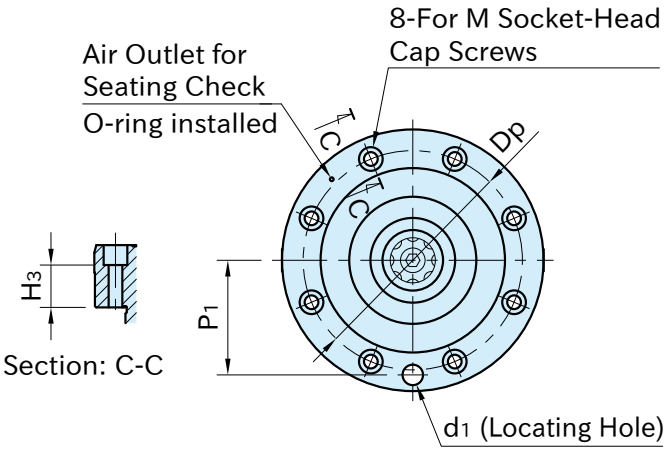
Note

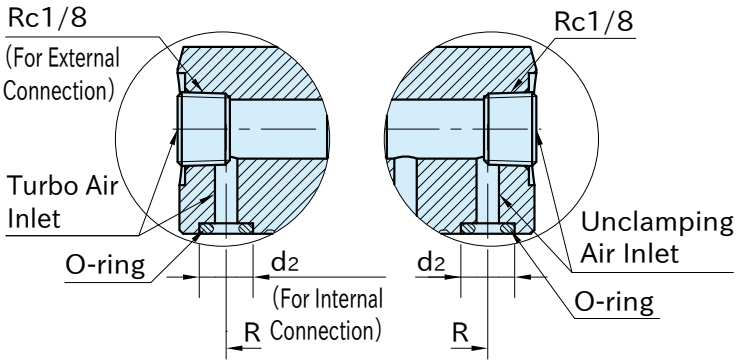
Cutom Clamping Screws (different screw thread sizes) are available on request.

AMWFH-WP PNEUMATIC CLAMPING MODULES

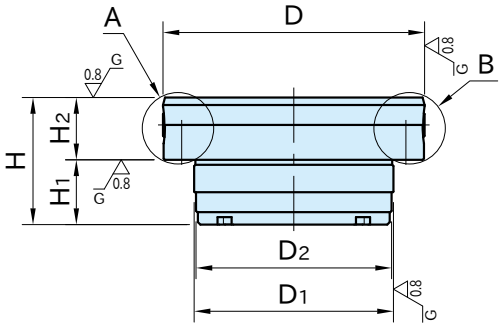
RoHS

Wedge





Detail: A Detail: B



★Key Point

Single-acting clamping module.
Work as quick change &form holding system.

Body	Ball	Spring
S55C steel Black oxide finish HRC50-60	SUS440C stainless steel	Equivalent to SWOSC-V steel

Part Number	D (h7)	D1 (h6)	D2	H	H1	H2 (±0.005)	M	H3	Dp	P1 (±0.02)	R	d1 (G6)	d2	O-ring
AMWFH105-WP	105	80	79.5	51	26	25	M5	17	88	46	46	8	7.2	P4
AMWFH140-WP	140	110	109.5	65	33	32	M6	23	120	62	62	10	8.2	P5

Part Number	Clamping Force (kN)		Operating Air Pressure (MPa)	Weight (kg)
	w/o Turbo	w/ Turbo		
AMWFH105-WP	4	9-12	0.6-1.0	2.2
AMWFH140-WP	8.5	19-26		4.8

Note

- Do not plug the turbo port as it functions as an air vent even when not using turbo function. Mounting a filter prevents contamination.
- If seating confirmation by monitoring air flow is required, internal air supply must be provided. The detection switch and related components should be prepared by the customer.
- Use clean air by removing moisture and debris with an air dryer and air filter.
- Impurities in the compressed air can cause malfunction.

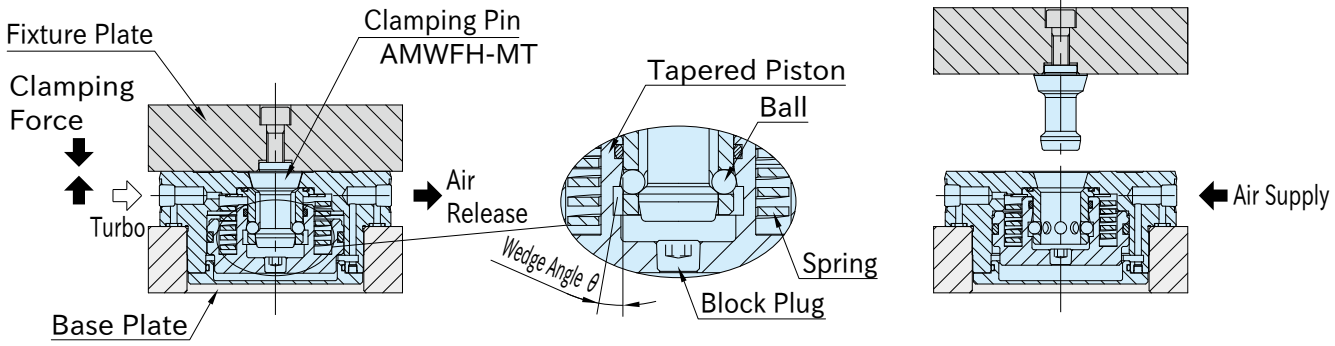
Supplied With

- AMWFH105-WP : 1 of diamond pin BJ722-08001
- AMWFH140-WP : 1 of diamond pin BJ722-10001
- 1 of locating pin
- 1 of orifice plug
- 8 of plastic mounting hole caps
- 1 of plastic locating hole cap

■ Clamping Mechanism

・This module clamps the plate with spring force, and can be boosted by supplying air to the turbo port. Supplying air to the unclamping port opens the module, and releasing air allows the spring to hold the clamping pin for clamping.

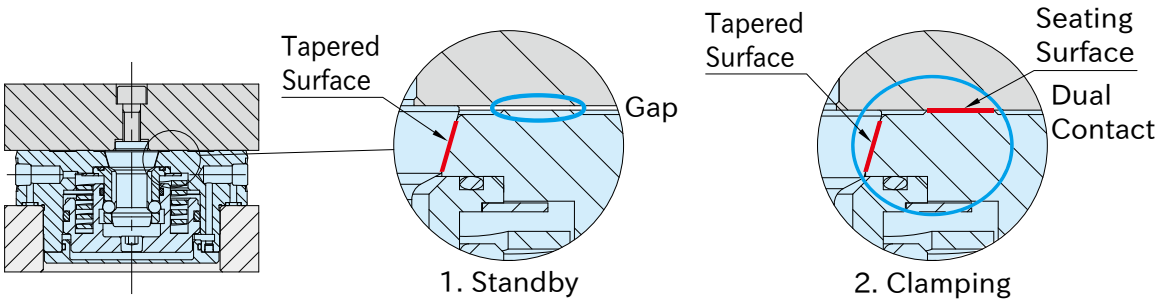
・Available with either external threaded connection or internal connection.



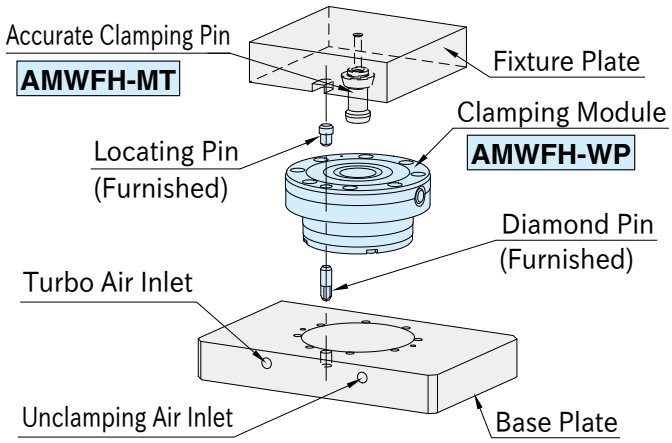
Releasing air allows the spring to push the tapered piston downward, which presses the balls and retracts the clamping pin.
The clamping force can be boosted by supplying air to the turbo port.

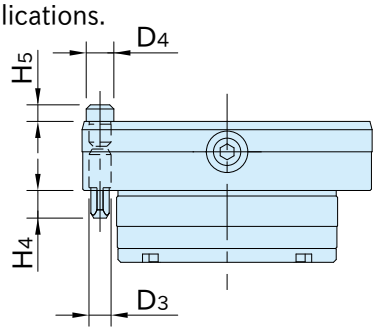
Supplying air raises the tapered piston, releasing the pressure on the balls and unclamping the clamping pin.

・Precise dual contact provides excellent locating repeatability at 5µm.



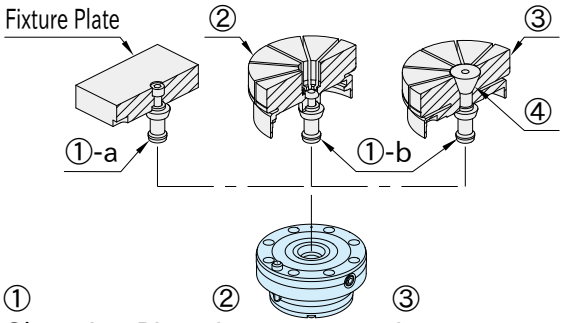
・Use the furnished diamond pin and the locating pin for single module applications.



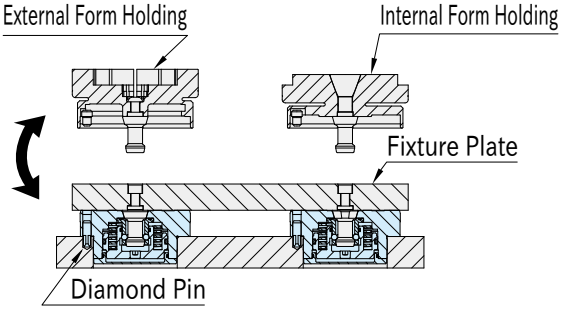


Part Number	D_3(h6)	H_4	D_4(h6)	H_5
AMWFH105-WP	8	10	10	6
AMWFH140-WP	10	12	12	7

・This module works as a form holding clamp for O.D. clamping or I.D. clamping by mounting optional jaws.



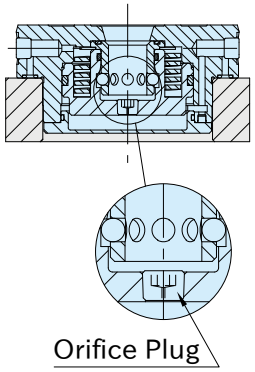
①	②	③	④
Clamping Pin	Jaw	Jaw	Tapered Screw
①-a : AMWFH-MT	(External Holding)	(Internal Holding)	(Internal Holding)
①-b : AMWFH-MS	AMWFH-O	AMWFH-I	AMWFH-IB



Diamond pins are not required for rotational positioning when using multiple modules. If the modules are also used for O.D. clamping or I.D. clamping, install diamond pins beforehand.

Continuing on Next Page

■ Blow-out Function



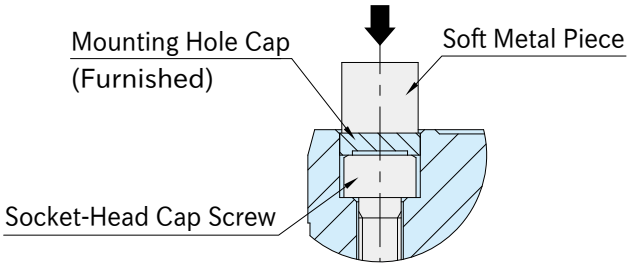
Replace the installed plug with the supplied orifice plug to enable air blow at the clamp pin insertion hole.

■ Mounting Hole Cap

・Keep the top surface of the module clean by inserting the plastic cap into the mounting hole.

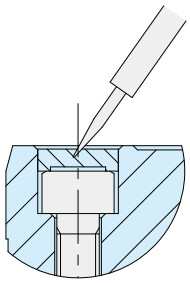
Installation

Tap in with plastic hammer



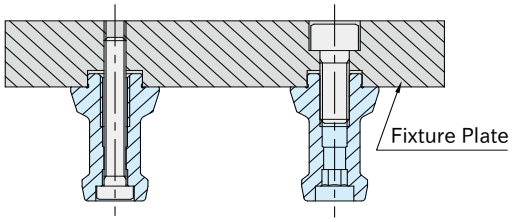
・Place the mounting hole cap over the socket-head cap screw hole and tap it in using a plastic hammer.
・When tapping, always place a piece of soft metal between the hammer and the plastic cap.

Removal



・Insert a pointed tool into the cap to remove it.

Technical Information

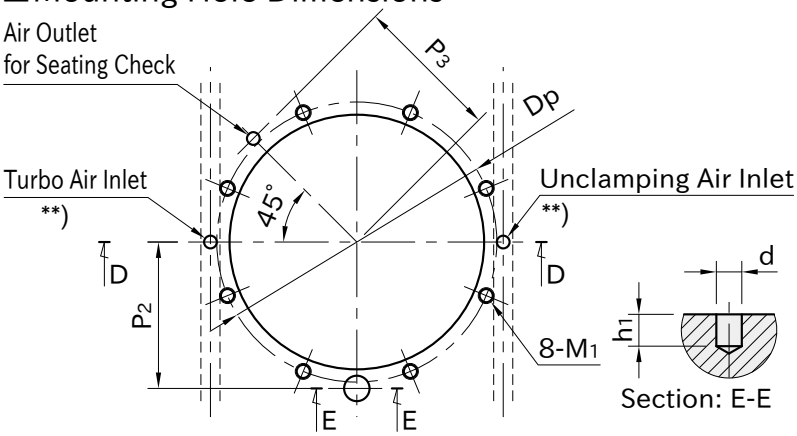


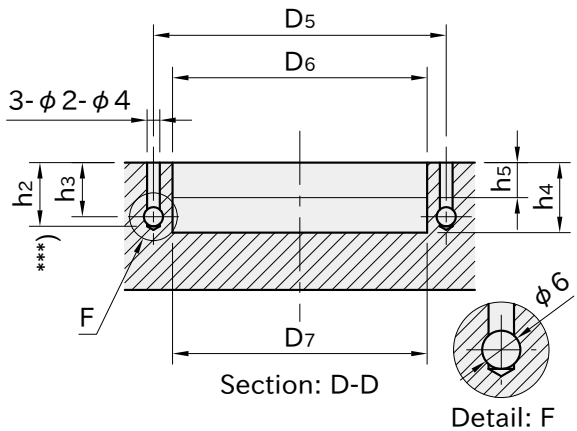
Clamping Modules	Clamping Pin Size	Holding Force (kN)*)	
		Fastened From the Clamping Pin Top (Class 8.8 Screw)	Fastened From the Fixture Plate Top (Class 12.9 Screw)
AMWFH105-WP	AMWFH105-M8	17	21
AMWFH140-WP	AMWFH140-M12	47	100
	AMWFH140-M16	74	140

*) Exceeding the holding force will result in product or screw failure. This value does not include a safety factor.Measured at 0.6 MPa.

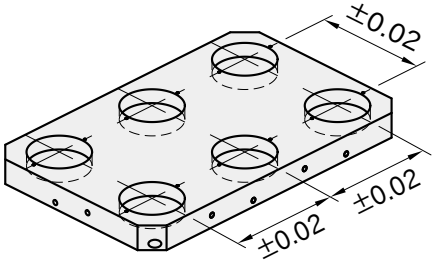
How To Use

■Mounting Hole Dimensions





■ Machining Accuracy



Spacing tolerance between mounting holes should be ±0.02.

Part Number	P2 (±0.02)	P3	Dp	M1
AMWFH105-WP	46	46	88	M5×0.8 Depth 10(Hole Depth 14)
AMWFH140-WP	62	62	120	M6×1.0 Depth 13(Hole Depth 18)

Part Number	d (G7)	h1	D5	D6 (H7)	D7	h4	h5
AMWFH105-WP	8	10	92	80	79.8	27	14
AMWFH140-WP	10	12	124	110	109.8	34	19

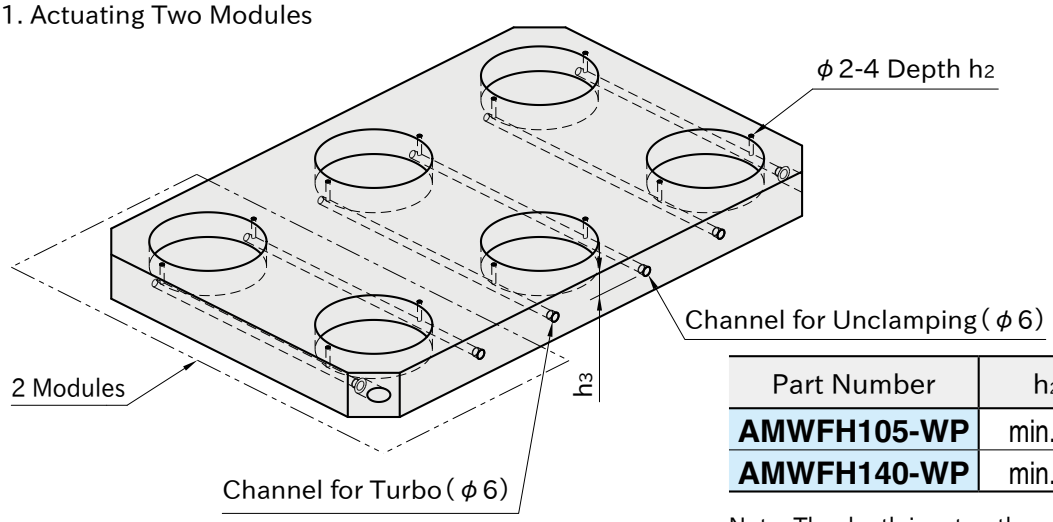
**) Not required for external connection with Rc1/8 ports.
***) Refer to Internal Pneumatic Connection for the details of h2 and h3.

How To Use

■ Internal Pneumatic Connection

Prepare channel holes for turbo, unclamping, and (if needed) seating check in the base plate. Each channel should connect to a vertical hole with a diameter of ϕ2-4.

1. Actuating Two Modules

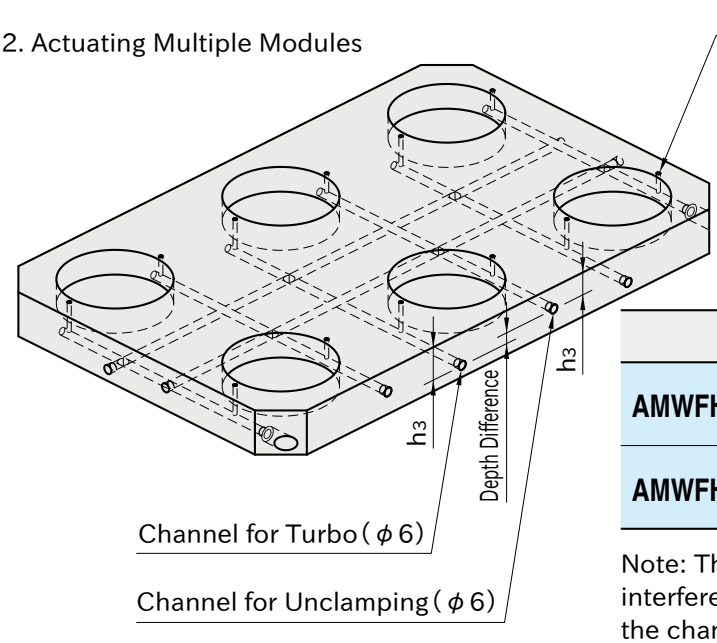


Part Number	h2	h3
AMWFH105-WP	min.21	min.18
AMWFH140-WP	min.23	min.20

Note: The depth is set as the minimum to avoid interference with the M1 tapped holes. Make sure the channel is placed at this depth or deeper.

The depth of vertical holes (ϕ2-4) should be h2.

2. Actuating Multiple Modules



Part Number		h2	h3
AMWFH105-WP	Unclamping Channel	min.21	min.18
	Turbo Channel	min.31	min.28
AMWFH140-WP	Unclamping Channel	min.23	min.20
	Turbo Channel	min.33	min.30

Note: The depth is set as the minimum to avoid interference with the M1 tapped holes. Make sure the channel is placed at this depth or deeper.
The hole depths for the unclamping and turbo sides can be reversed if needed.

- The depth of vertical holes (ϕ2-4) should be h2.
- Make sure to set different depths for the turbo and unclamping channels to avoid interference.
- Use one air supply port each for turbo and unclamping, and plug the unused ports.
  Screw plugs should be prepared by the customer.

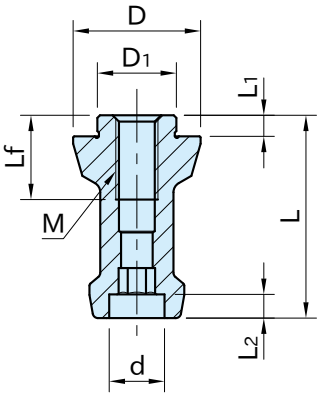
Related Products

- AMWFH-M CLAMPING PINS
- BJ722 DIAMOND LOCATING PINS
- AMWFH-O JAWS FOR EXTERNAL FORM HOLDING
- AMWFH-I JAWS FOR INTERNAL FORM HOLDING

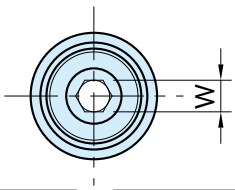
AMWFH-M CLAMPING PINS

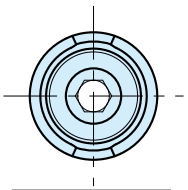
標準在庫品 RoHS

(Locating, Round) (Locating, Diamond) (Clamping)



Body
SCM415 Steel Carburized-hardened Black oxide finished





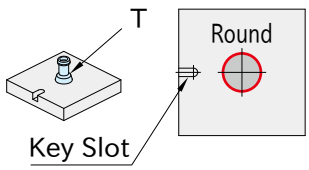
AMWFH-MT (Round) **AMWFH-MS** (Clamping) **AMWFH-MD** (Diamond)

Part Number	Type	M	D_1	L_1	D	L	d	L_2	W	Lf	Weight (g)	Pneumatic Clamping Modules
AMWFH105-M 8T	Round	M 8×1.25	15g6	4	24.2	38.5	10.5	4.5	6	16	55	AMWFH105-WP
AMWFH105-M 8D	Diamond											
AMWFH105-M 8S	Clamping		$15^{0}_{-0.1}$		24							
AMWFH140-M12T	Round	M12×1.75	25g6	5	34.2	51.5	16.5	6.5	10	24	170	AMWFH140-WP
AMWFH140-M12D	Diamond											
AMWFH140-M12S	Clamping		$25^{0}_{-0.1}$		34							
AMWFH140-M16T	Round	M16×2	25g6		34.2		18.5	7.5	12	30	140	
AMWFH140-M16D	Diamond											
AMWFH140-M16S	Clamping		$25^{0}_{-0.1}$		34							

How To Use

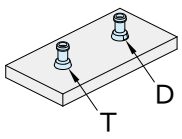
■ Use of Single Pin

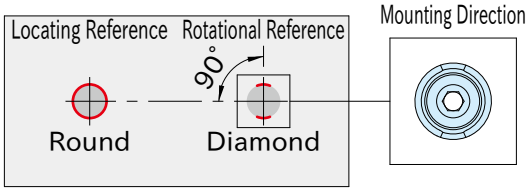
Type T Round Pin: 1 pc



■ Use of 2 Pins

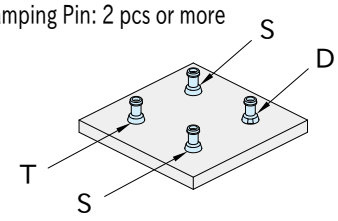
Type T Round Pin:1 pc
Type D Diamond Pin:1 pc

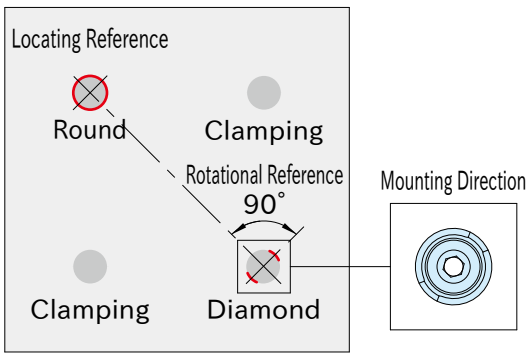




■ Use of 4 or More Pins

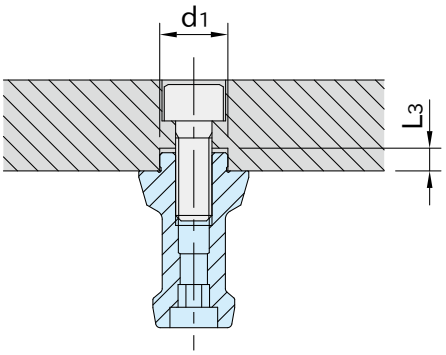
Type T Round Pin:1 pc
Type D Diamond Pin:1 pc
Type S Non-Locating Clamping Pin: 2 pcs or more





How To Use

■ Mounting Hole Dimension

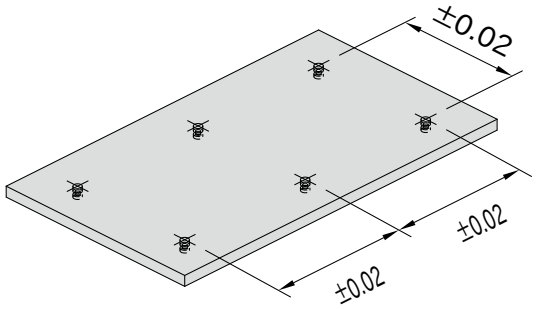


Size	d_1 (H7)	L_3
AMWFH105-M8	15	4.5
AMWFH140-M12	25	5.5
AMWFH140-M16		

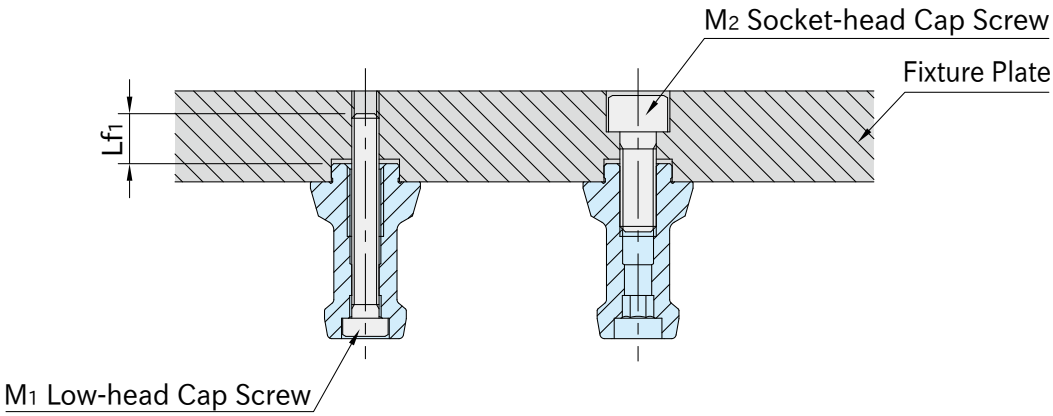
Note: The tolerance of d_1 for Type S non-locating Clamping Pin is $^{+0.1}_{0}$.

■ Spacing Tolerance

Should be ±0.02 for Type T and D Locating Pins. The required tolerance for Type S non-locating Clamping Pin is ±0.1.



■ How To Install



Top Fixing Bottom Fixing

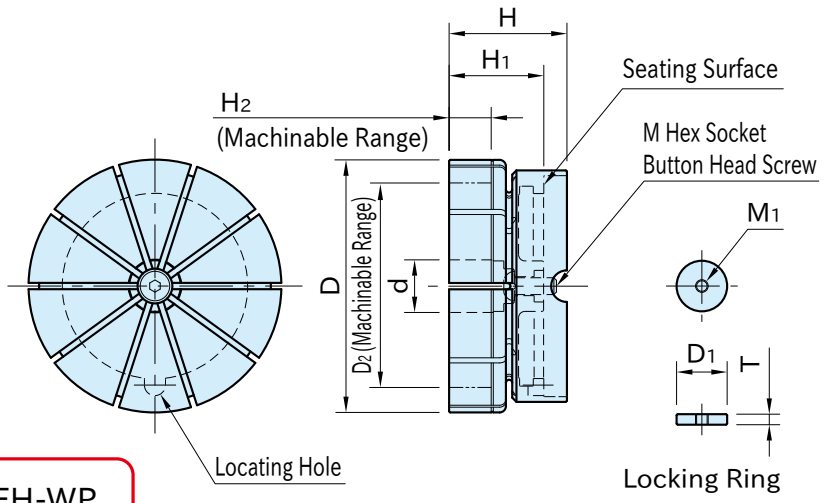
Size	M_1	Lf_1	M_2
AMWFH105-M8	M 6×1 -45L	11	M 8
AMWFH140-M12	M10×1.5 -60L	15	M12
AMWFH140-M16	M12×1.75-60L	16	M16

The screws should be prepared by the customer.
The length of screw differs by the thickness of fixture plate.

AMWFH-O JAWS FOR EXTERNAL FORM HOLDING

RoHS

Jaw	Locking Ring
A7075 aluminum Anodized Blue	S45C steel Black oxide finish



★Key Point
Machinable jaws for AMWFH-WP

Part Number	D	d	H	H1	H2	D2 *) min.	D2 *) max.	M	M1	D1	T	Weight (kg)	Pneumatic Clamping Modules	Clamping Pins
AMWFH105-120O	120	25	56	45	20	26	110	M 8X20L Across Flats 5	M6X1	24	5	1	AMWFH105-WP	AMWFH105-M 8S
AMWFH140-160O	160	29	64	53	25	30	150	M12X25L Across Flats 8	M8X1.25	28	6	2.2	AMWFH140-WP	AMWFH140-M12S

*) Values are for reference only. The remaining jaw thickness should be determined considering the machining load.

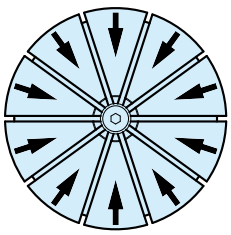
Supplied With

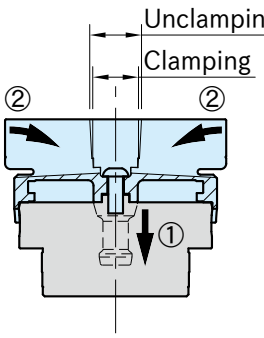
- 1 of Locking Ring
- 1 of Hex Socket Button Head Screw

Technical Information

- Workpiece locating repeatability:±0.03
- Jaw locating repeatability:±0.02

Feature





①The central bottom part of the jaw is pulled down by supplying air to the turbo port.

②The 10 jaw sections tilt toward the center to clamp the external form of workpiece.

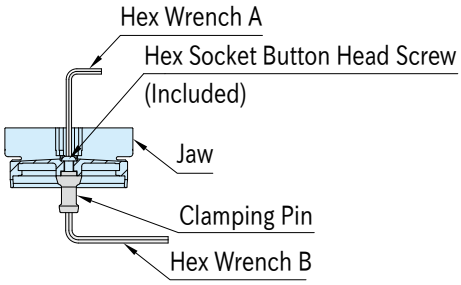
- The diaphragm clamping mechanism allows to clamp the workpiece securely with 10 jaw sections.
- Various shapes can be held.
- The allowable compression diameter is 0.6 mm, making it ideal for lost wax, die cast, extruded, drawn, and premachined workpieces.

How To Use

■ Jaw Mounting

1.Fix Clamping Pin

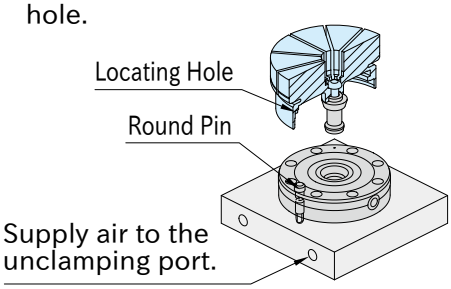
・Fix clamping pin with the furnished button head screw.

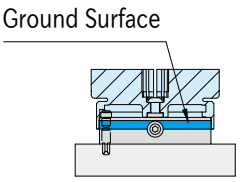


2.Mount on Clamping Module

・Supply air to the unclamping port and mount the jaw.

・Mount the jaw by inserting the round pin into the locating hole.





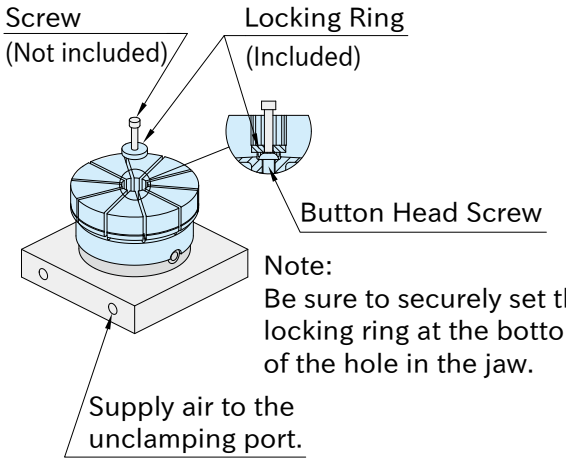
Note:
Press the jaw until the ground surface of the module is covered.

Jaw	Clamping Pin	Hex Wrench A	Hex Wrench B
AMWFH105-120O	**AMWFH105-M 8S**	Size 5	Size 6
AMWFH140-160O	**AMWFH140-M12S**	Size 8	Size 10

For mounting instruction of Clamping Module, see AMWFH-WP datasheet.

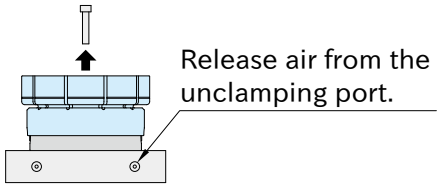
■ Jaw Machining

1.Set the locking ring in the jaw.
(Using a screw facilitates setting.)

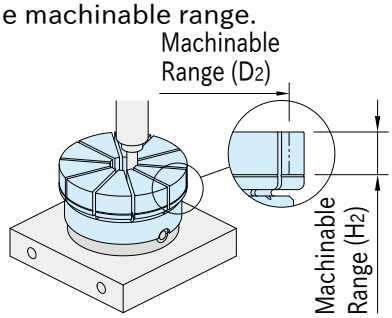


Note:
Be sure to securely set the locking ring at the bottom of the hole in the jaw.

2.Release air from the unclamping port and clamp the locking ring by spring force of the module. Remove the screw from the locking ring after clamping.

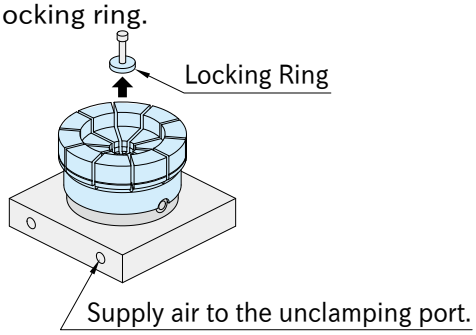


3.Machine the jaw to the contours of the workpiece, within the machinable range.

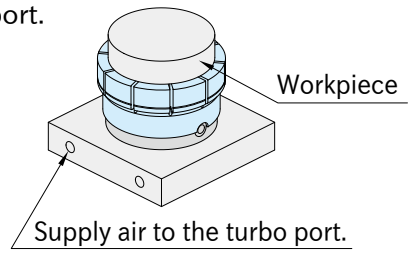


■ Workpiece Loading

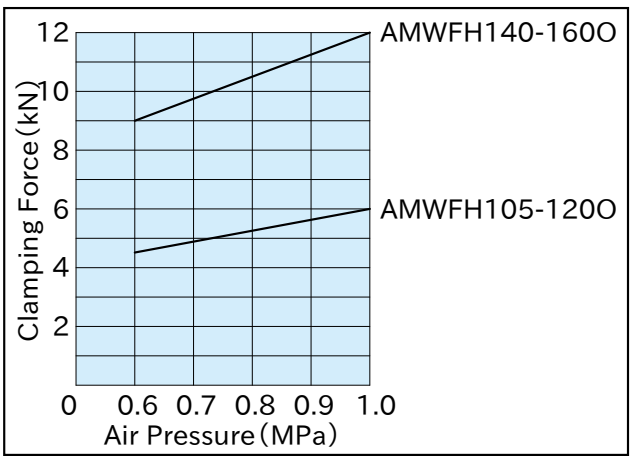
1.Supply air to the unclamping port and remove the locking ring.



2.Load the workpiece and supply air to the turbo port.



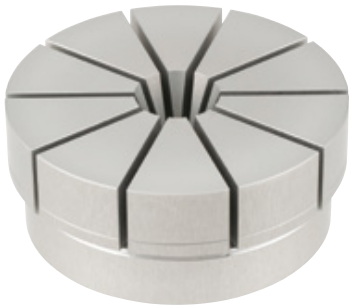
Performance Curve

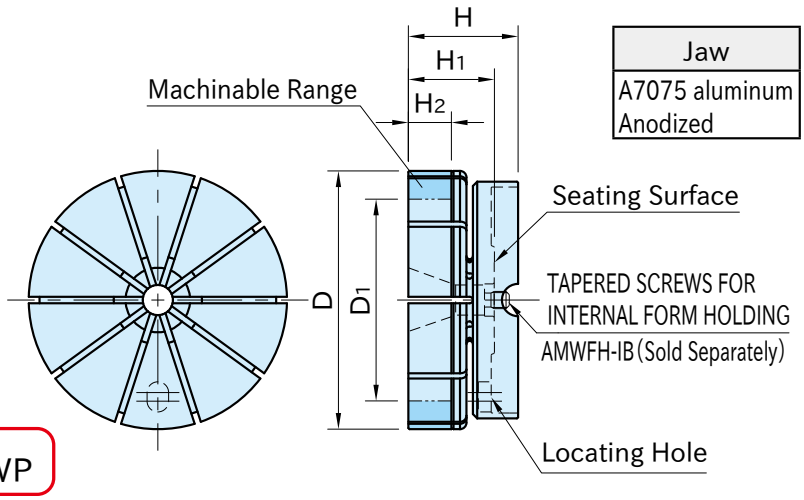


Note

Do not actuate clamping without a workpiece to avoid damage and deformation.

AMWFH-I JAWS FOR INTERNAL FORM HOLDING





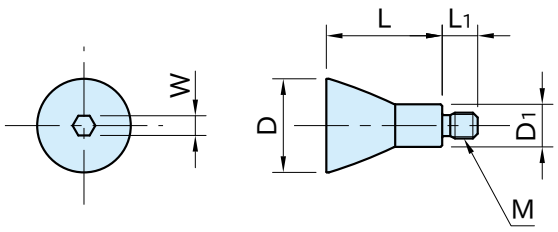
Jaw
A7075 aluminum Anodized

★Key Point
Machinable jaws for AMWFH-WP

Part Number	D	H	H1	H2	D1 *) min.	D1 *) max.	Weight (kg)	Pneumatic Clamping Modules	Tapered Screws	Clamping Pins
AMWFH105-120I	120	51	40	20	36	119	1	AMWFH105-WP	AMWFH105-120IB	AMWFH105-M 8S
AMWFH140-160I	160	59	48	25	40	159	2.1	AMWFH140-WP	AMWFH140-160IB	AMWFH140-M12S

*) Values are for reference only. The remaining jaw thickness should be determined considering the machining load.

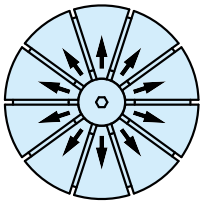
AMWFH-IB TAPERED SCREWS FOR INTERNAL FORM HOLDING

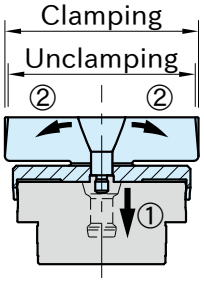


Part Number	D	L	M	L1	D1	W	Weight (g)	Jaws
AMWFH105-120IB	29	36	M 8X1.25	11	13.2	6	85	AMWFH105-120I
AMWFH140-160IB	33	43	M12X1.75	15	18	10	140	AMWFH140-160I

Body
SCM435 steel Quenched and tempered Electroless nickel plated

Feature





①The Tapered Screw is pulled down by supplying air to the turbo port.

②The 10 jaw sections expand to clamp the internal form of workpiece.

- The jaw sections expanded by the tapered surface hold the workpiece securely.
- Various shapes can be held.
- The allowable expansion diameter is 0.6 mm, making it ideal for lost wax, die cast, extruded, drawn, and premachined workpieces.

Technical Information

- Workpiece locating repeatability:±0.03
- Jaw locating repeatability:±0.02

How To Use

■ Jaw Mounting

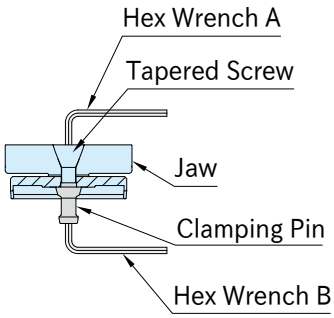
1.Fix Clamping Pin

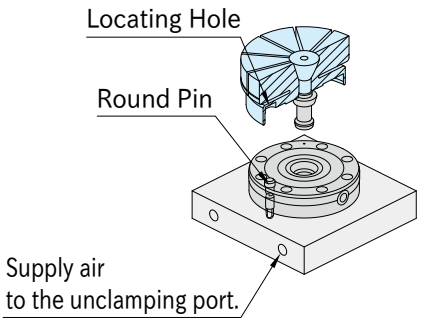
・Fix clamping pin with the Tapered Screw.

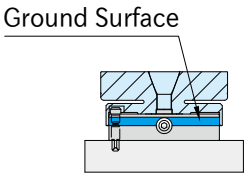
2. Mount on Clamping Module

・Supply air to the unclamping port and mount the jaw.

・Mount the jaw by inserting the round pin into the locating hole.







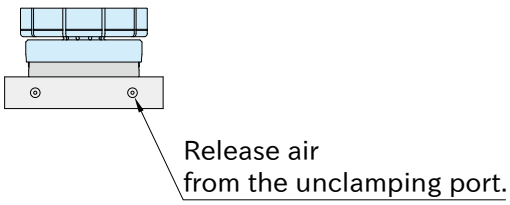
Note:
Press the jaw until the ground surface of the module is covered.

Jaw	Clamping Pin	Tapered Screws	Hex Wrench A	Hex Wrench B
AMWFH105-120I	**AMWFH105-M 8S**	**AMWFH105-120IB**	Size 6	Size 6
AMWFH140-160I	**AMWFH140-M12S**	**AMWFH140-160IB**	Size 10	Size 10

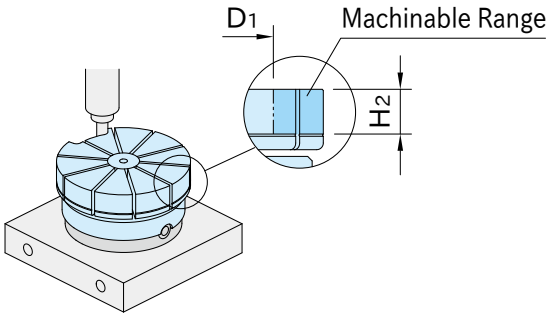
For mounting instruction of Clamping Module, see AMWFH-WP datasheet.

■ Jaw Machining

1.Release air from the unclamping port. The Tapered Screw is pulled down and the jaw expands.

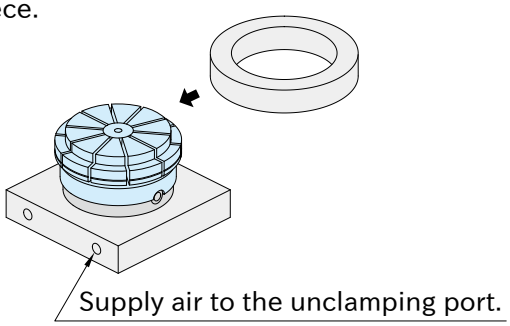


2.Machine the jaw to the contours of the workpiece, within the machinable range.

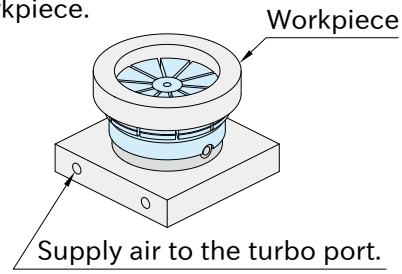


■ Workpiece Loading

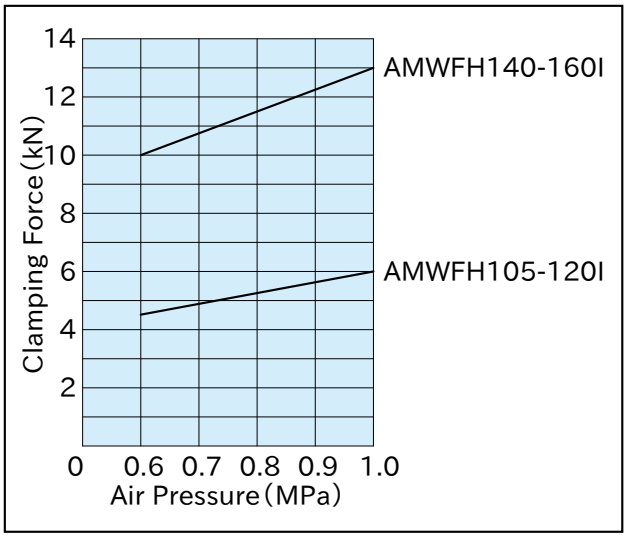
1.Supply air to the unclamping port and load the workpiece.



2.Supply air to the turbo port and clamp the workpiece.



Performance Curve

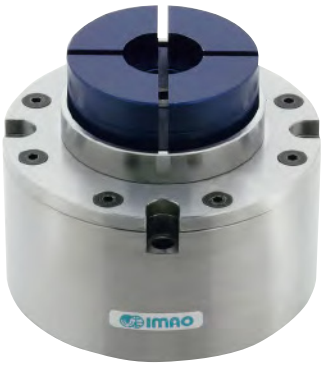


Note

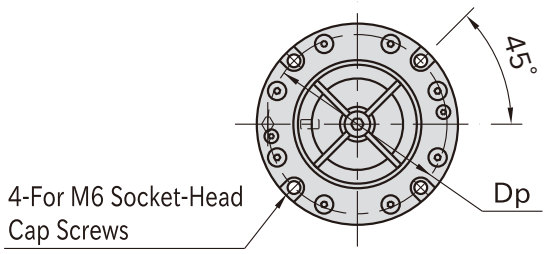
Do not actuate clamping without a workpiece to avoid damage and deformation.

AMCH-W PNEUMATIC OD HOLDING CLAMPS

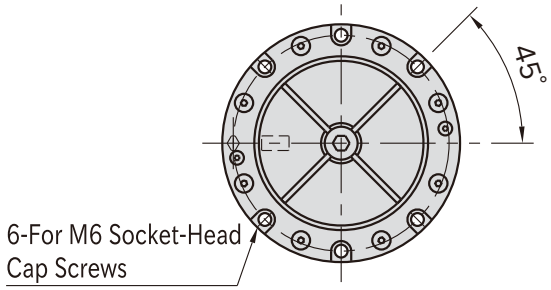
RoHS



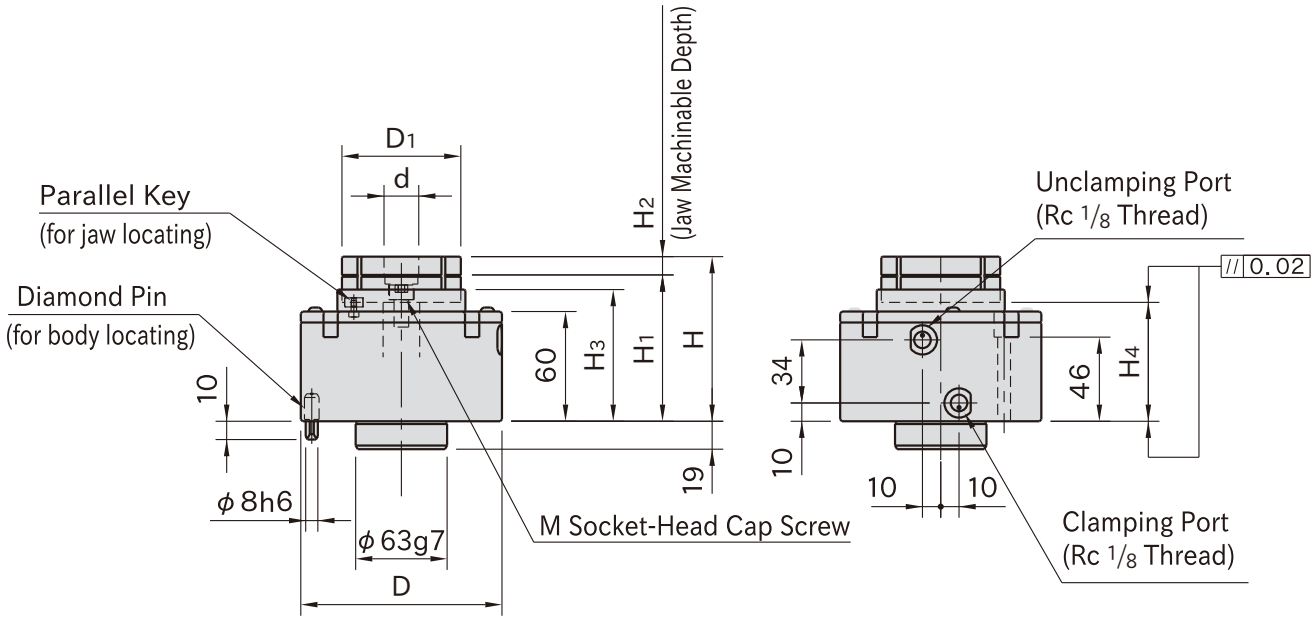
Body	Jaw
S45C steel Electroless nickel plated	A7075 aluminum Anodized Blue

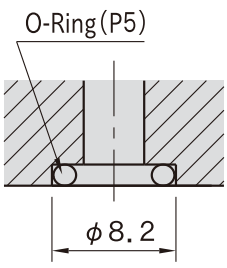


AMCH080-5W

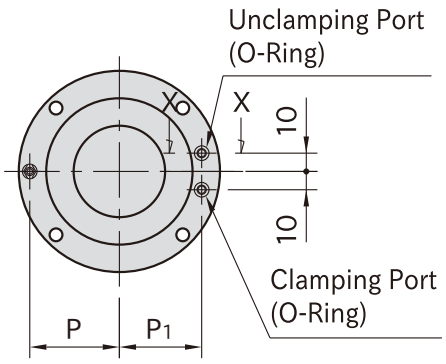


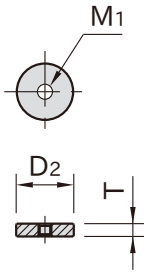
AMCH100-5W





Section X-X





Locking Ring

Part Number	D_1	d	H	H_2	D	H_1	H_3	H_4 (±0.02)	Dp	P (±0.02)	P_1	M	M_1
AMCH080-5W	65	19	90	10	110	80	72	65	98	49	45	M 8X1.25-15L	M4X0.7
AMCH100-5W	90	23	100	15	130	85	74	66	118	59	55	M10X1.5 -20L	M5X0.8

Part Number	D_2	T	Furnished O-Ring	Operating Air Pressure(MPa) *)	Clamping Force (kN) **)	Weight (kg)
AMCH080-5W	18	4	P5	0.5	4	4.2
AMCH100-5W	22	6			6	6

*) Operating air pressure range: 0.45 - 0.55 MPa.
**) The clamping forces above are at 0.5 MPa.

Supplied With

- 1 of locking ring
- 2 of O-Ring
- 1 of diamond pin

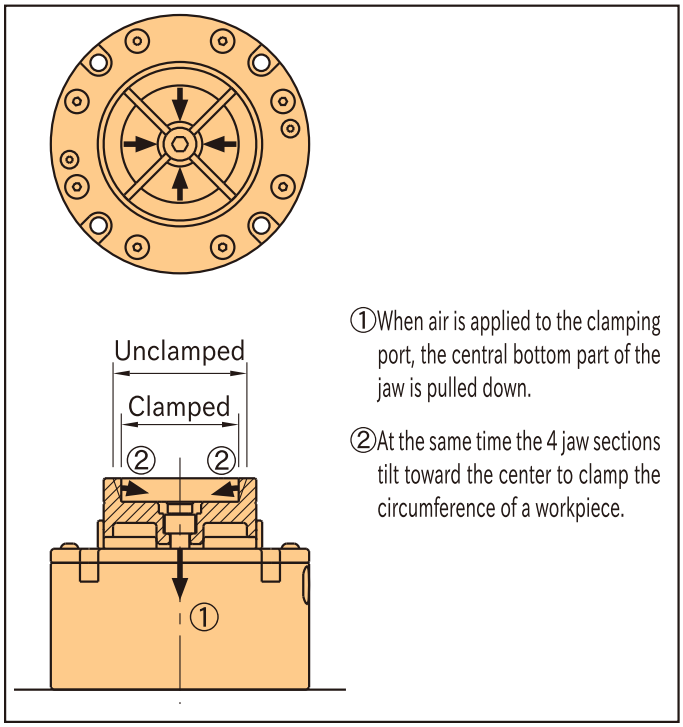
Technical Information

- Workpiece locating repeatability : ±0.03
- Jaw locating repeatability : ±0.02

Note

- Do not actuate clamping without a workpiece inserted to avoid damage and deformation.
- Do not machine the jaw beyond the machinable area.
- Changeable Jaws CP121 are available.
- 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.

Feature



- The diaphragm clamping mechanism allows securely clamping a workpiece with 4 jaw sections.
- Different irregularly-shaped workpieces can be clamped.
- 0.15mm clamping stroke of each jaw section is perfect for clamping of lost-wax parts, die-cast parts, extruded parts, solid-drawn parts, prefinished parts, etc.

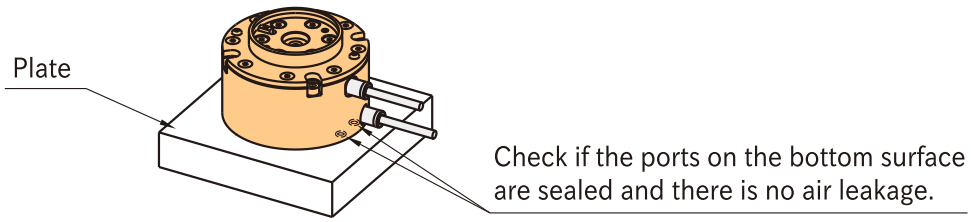
Continuing on Next Page

How To Use

■Body Installing

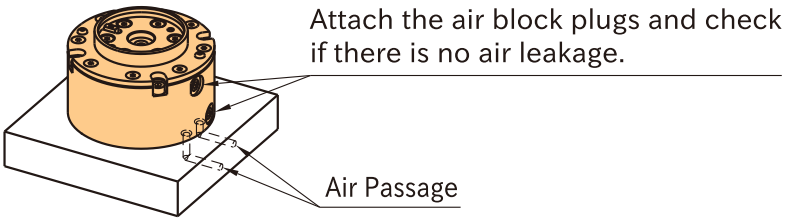
With Side Ports

- ·Attach the furnished o-rings to the bottom ports.
- ·Plate surface must be flat (6.3▽) to get the bottom ports sealed up.
- ·Check if there is no air leakage from the area of the bottom ports.

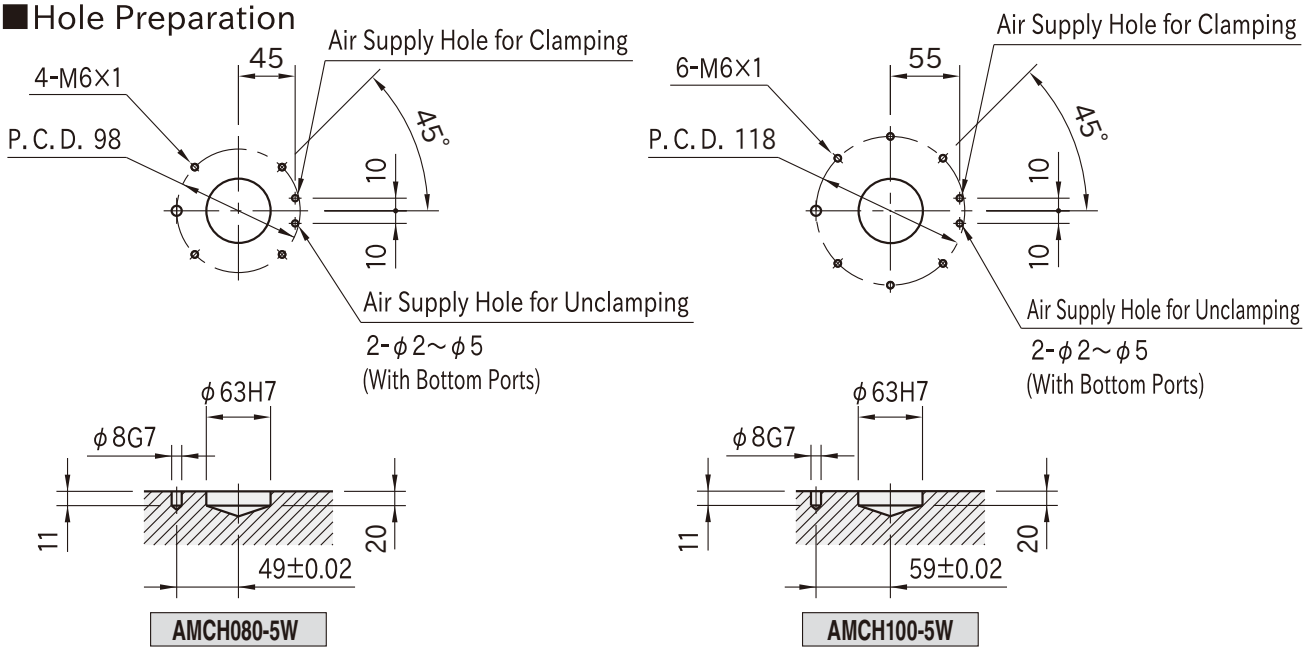


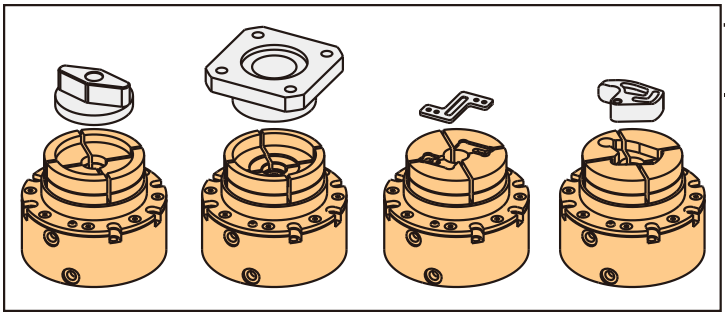
With Bottom Ports

- ·Attach the furnished o-rings to the bottom ports.
- ·Plate surface must be flat (6.3▽) to get the bottom ports sealed up.
- ·Refer to the figure below for the hole positions for ports.
- ·Ensure that the furnished air block plugs are attached to the side ports.



■Hole Preparation



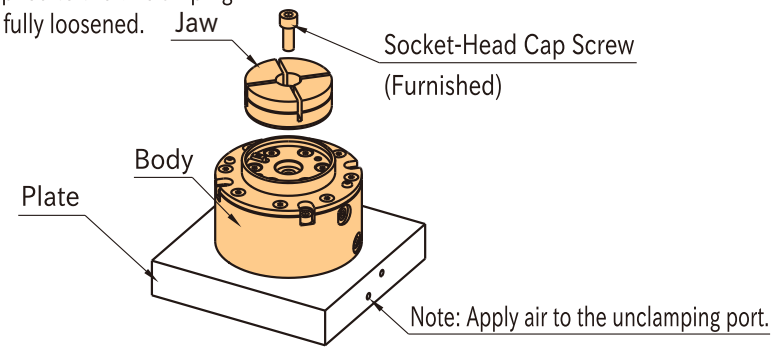


- ·Machinable jaws allow clamping workpieces of various shapes.
- ·Ideal way to hold workpieces for machining on small-size machining centers, tapping centers, small-size 5-axis machines, CNC rotary tables, etc.

Changeable Jaws CP121 are available.

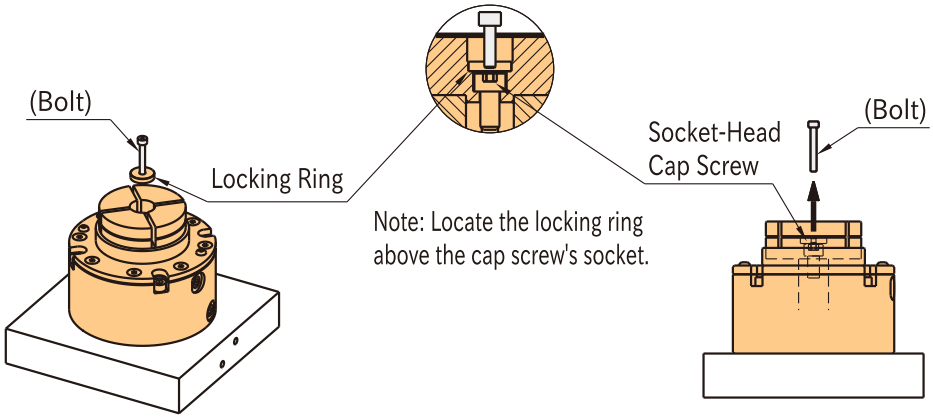
■Jaw Setting

At jaw installation, ensure that air is applied to the unclamping port and the socket-head cap screw is fully loosened.

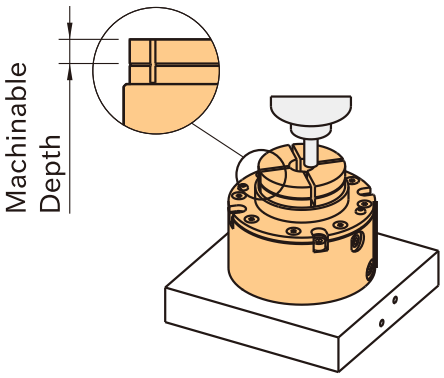


■Jaw Machining

1. Set the locking ring in the jaw.
   (using a bolt facilitates setting)
2. Apply air to the clamping port to clamp the locking ring.
   (After clamping, remove the bolt from the locking ring.)

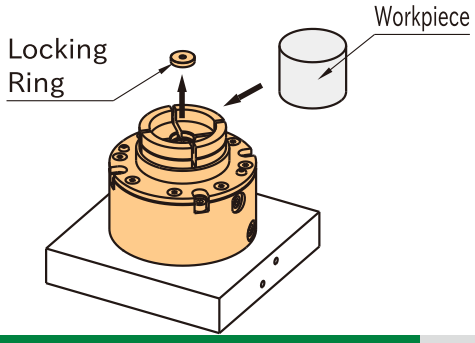


3. Machine the jaw to custom fit a workpiece.



■Workpiece Setting

1. After machining apply air to the unclamping port to take out the locking ring.
2. Mount a workpiece and then apply air to the clamping port for clamping.

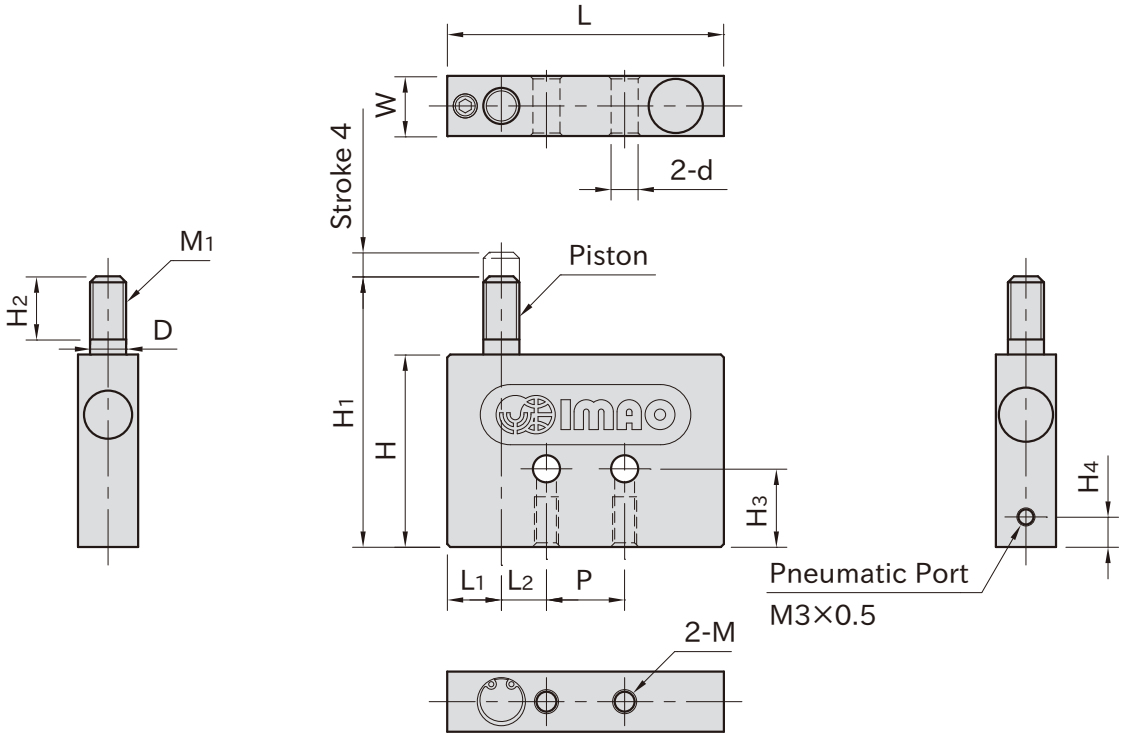


AMNS-S COMPACT PNEUMATIC WORK SUPPORTS

Body	Piston / Locking Shaft	Cylinder
A5052 aluminum Anodized	S45C steel Electroless nickel plated	A5056 aluminum Anodized

★Key Point

Provide high support capacity even with small body.



Part Number	H	H1	M1	H2	D	L	W	d	M	L1
AMNS06-S	25	33	M4×0.7	7	4	36	8	3.4	M3×0.5 Depth 6	7
AMNS08-S	32	44	M6×1	10.5	6	46	10	4.5	M4×0.7 Depth 8	9

Part Number	L2	P	H3	H4	Operating Air Pressure (MPa)	Support Capacity (N)	Piston Spring Force (N)	Weight (g)
AMNS06-S	6	10	10	3	0.4~0.7	20~40	0.2~0.3	22
AMNS08-S	7.5	13	13	5		40~70	0.3~0.4	49

Feature

・The piston can be locked/unlocked by air operation.
・This compact work support can be used as a support in surface mounter.

How To Use

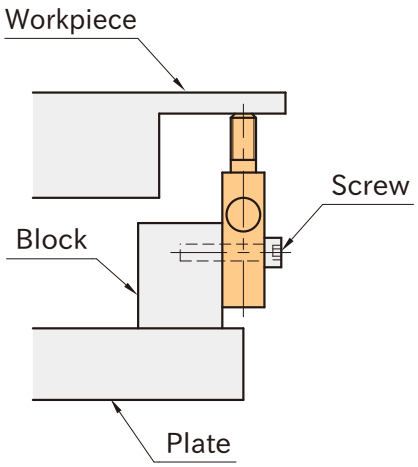
■Operating Instructions

1. Load a workpiece on the support.
2. The piston strokes to fit the workpiece by the inner spring.
3. Clamp the workpiece.
4. Apply air to the pneumatic port.
5. The piston is locked.
6. The piston is unlocked when the air is released.

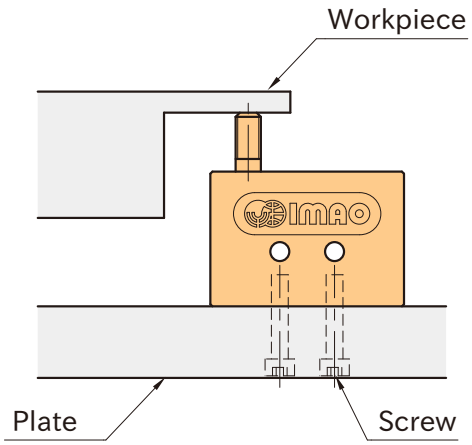
■Installation Instructions

Side or bottom surface mounting is possible.

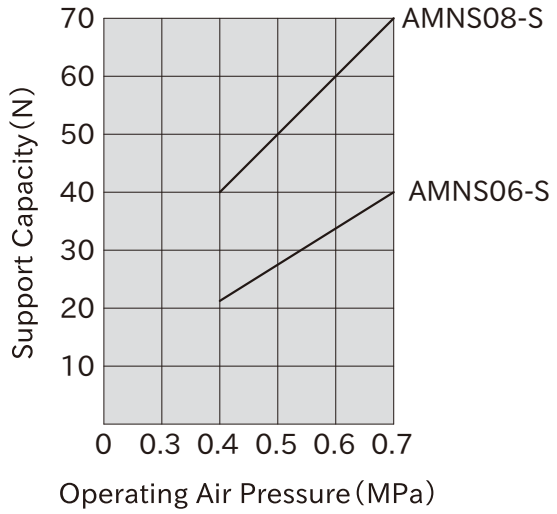
Side Surface Mounting



Bottom Surface Mounting

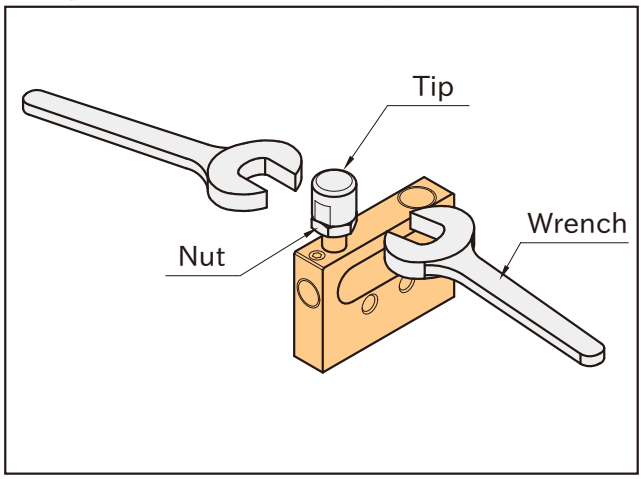


Performance Curve



Note

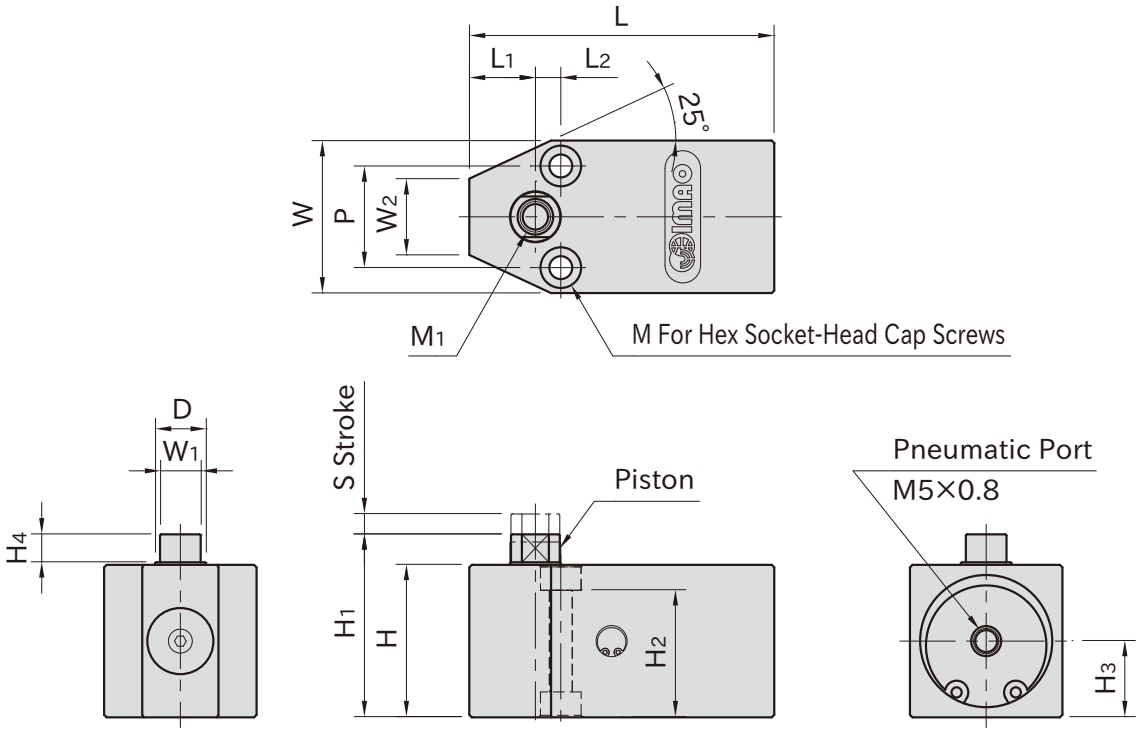
・Use a nut to attach a tip on the piston as directed below.
The piston rotates 360° freely.



・In machining applications, use clean coolant without sludge to prevent trouble.

BJ370 PNEUMATIC WORK SUPPORTS

Body	Piston	Locking Shaft
A5052 aluminum Anodized	SK95 steel Quenched & tempered Black oxide finished	S45C steel Electroless nickel plated



Part Number	H	H1	S	M1	D	L	W	M	H2	P	H3	W1	H4
BJ370-05001	25	30	3	M5×0.8 Depth10	8	50	25	M3	21	16	12.5	7	4.5
BJ370-06001	30	36	4	M6×1 Depth12	10	60	30	M4	25	20	15	8	5.5

Part Number	L1	L2	W2	Operating Air Pressure (MPa)	Support Capacity (N)	Piston Spring Force (N)	Weight (g)
BJ370-05001	11	4	12	0.3~1.0	300~500	1~1.9	92
BJ370-06001	13	5	15		500~700	1~2.2	165

Feature

The piston can be locked/unlocked by air operation.

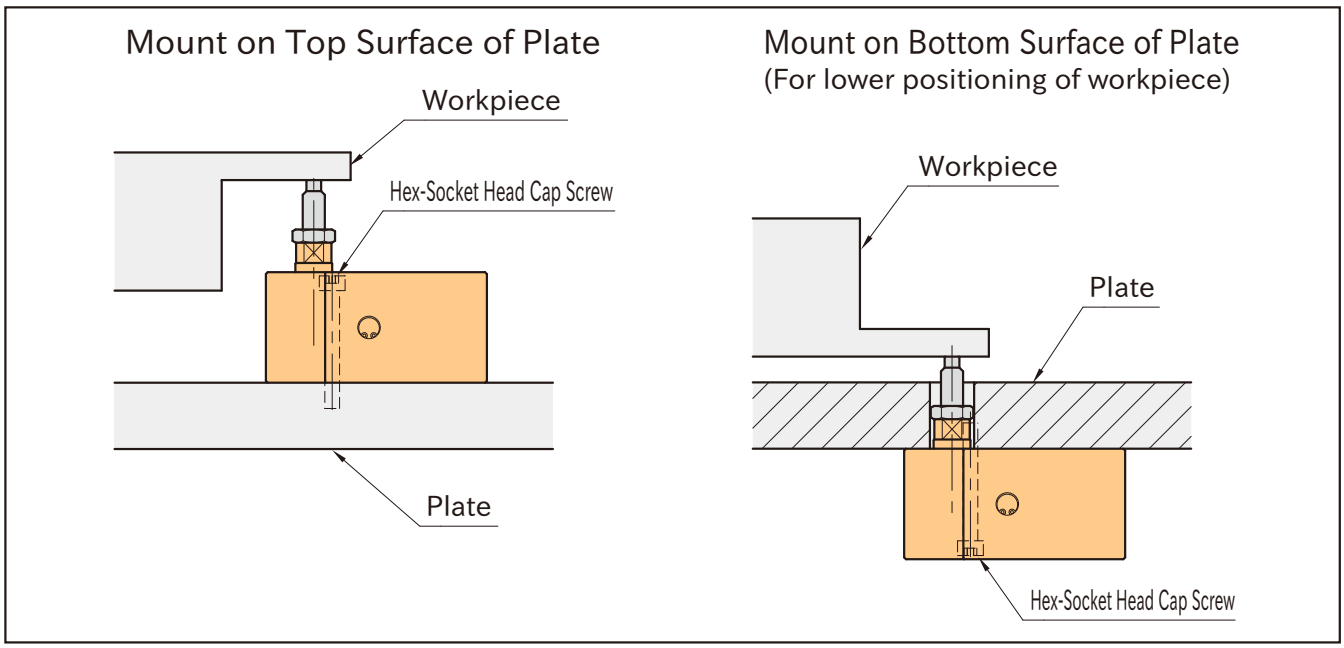
How To Use

■Operating Instructions

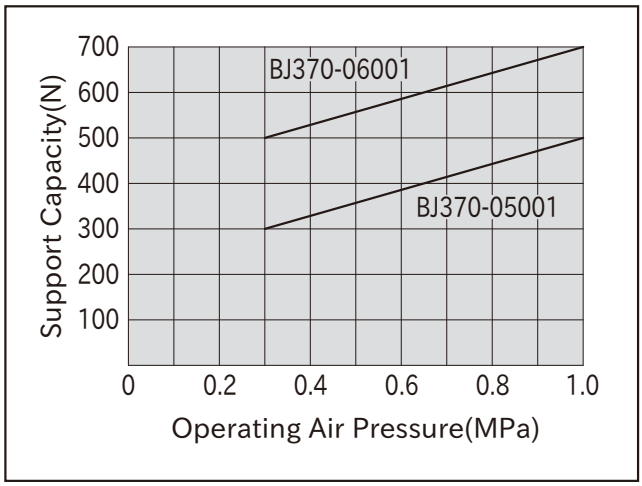
1. Load a workpiece on the support.
2. The piston strokes to fit the workpiece by the inner spring.
3. Clamp the workpiece.
4. Apply air to the pneumatic port.
5. The piston is locked.
6. The piston is unlocked when the air pressure is released.

■Installation Instructions

Can be mounted on both top surface and bottom surface of plate with hex-socket head cap screws.

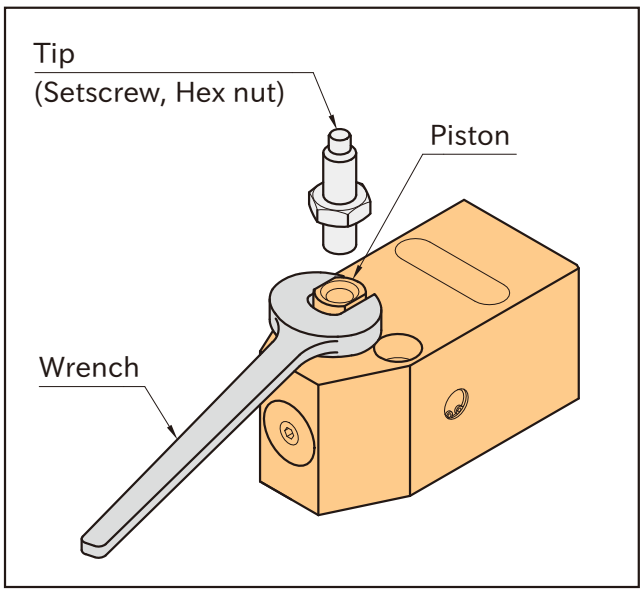


Performance Curve



Note

・When installing a tip on the piston, lock the piston using a wrench to prevent it from receiving any torque.



・In machining applications, use clean coolant without sludge to prevent trouble.

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