Clamp cylinder

P322 AQK Series Pin clamp cylinder

- AQK、BAQK available
- Bore size: 50
- Port size: 1/8"

P330 MCK Serie Clamp cylinder

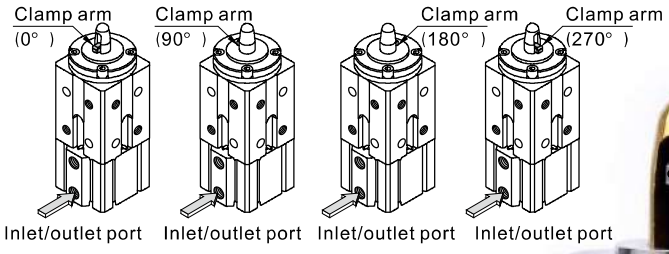
- MCKA、MCKB available
- Bore size: 25 32 40 50 63 80
- Port size: 1/8" 1/4" 3/8"

P335 JCK Serie Clamp cylinder

- JCK available
- Bore size: 40 50 63 80
- Port size: 1/8" 1/4"

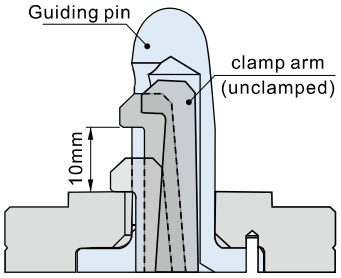
Compendium of AQK Series

Four clamp arm position options



With positioning and clamping function

Pin diameter located,
built-in clamp arm fastened



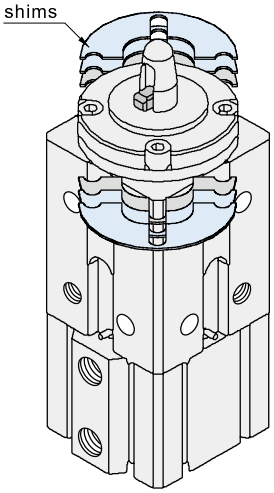
Multiple pin diameter are applicable to various workpiece port size.

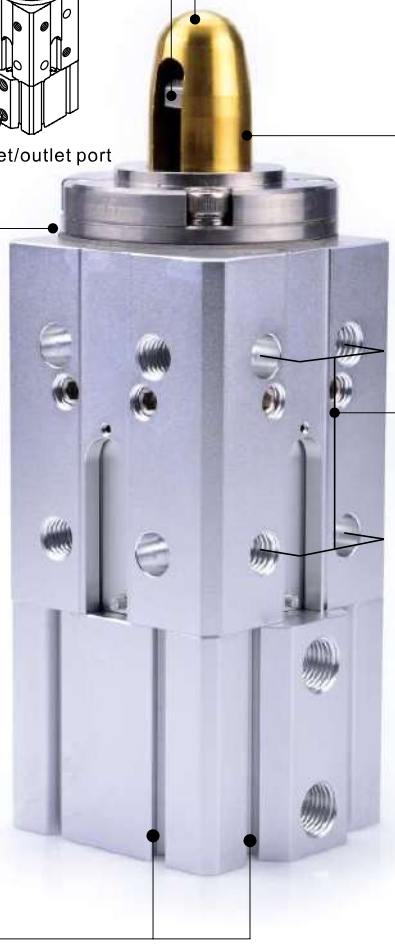
Guiding pin diameter(mm)	Workpiece port size(mm)
Φ14.□ (Note)	Φ15
Φ15.□	Φ16
Φ17.□	Φ18
Φ19.□	Φ20
Φ24.□	Φ25

(Note) "□" represents 1-9.

Clamp position is adjustable by select shims

Adjustable range: 0.5~2mm
Attach with a 1mm and 2 of 0.5mm shims
(one side : 3 shims/ two sides : 6 shims)





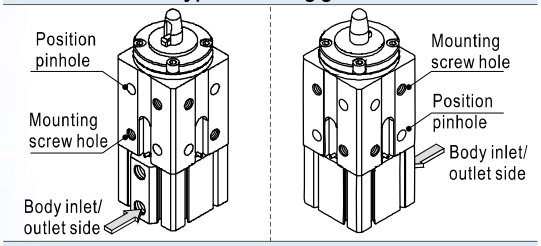
With sensor groove

With sensor groove around cylinder body

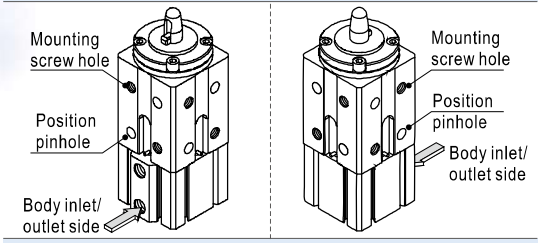
Mounting diversity

All four sides are equipped with positioning pinhole and mounting screw hole. Specific configuration in the following options

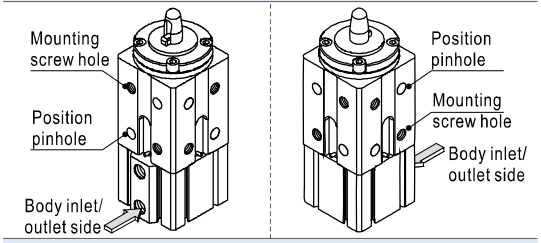
A type mounting groove



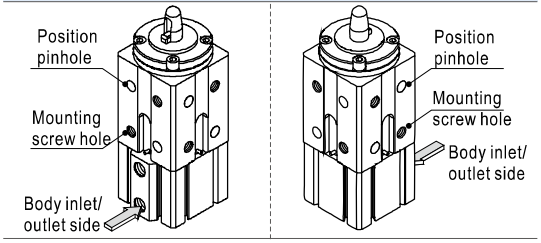
B type mounting groove



C type mounting groove



D type mounting groove



Installation instructions (general)

1. Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris inside the pipe.
2. operating fluid need to be filtered by 40μm filter element.
3. During low temperature environment, cryogenic measures should be taken to prevent freezing water in the system.
4. Beware of the surface rust on the cylinder after disassemble for a long time. Dust cover should be added on inlet port and apply anti-rust oil on rod and action part.
5. Please attach a meter-out controller at the port to protect product life of cylinder and jig.

Pin clamp cylinder

AQK Series

Specification

Bore size(mm)	50
Acting type	Double acting
Fluid	Air(to be filtered by 40μm filter element)
Operating pressure	0.15~1.0MPa(22~145psi)
Proof pressure	1.5MPa(215psi)
Temperature ℃	-20~70
Cushion type	Bumper
Clamp stroke	Without shims: $10^{0}_{-0.5}$ mm With shims: 10~12mm
Port size [Note]	1/4"

[Note] PT thread is available.
Please refer to page 353 for sensor applications.

Product feature

1. According to JIS standards
2. Pin surface adopted titanium alloy processing to enhance friction resistance.
3. Part of cylinder front cover has equiped with metallic rod wiper that can effectively remove slag and debris etc.
4. Possible to mount on 4 surfaces.
5. With sensor groove around cylinder body, easy to mount sensors.

Ordering code

AQK50 S A A A □ □-177X340

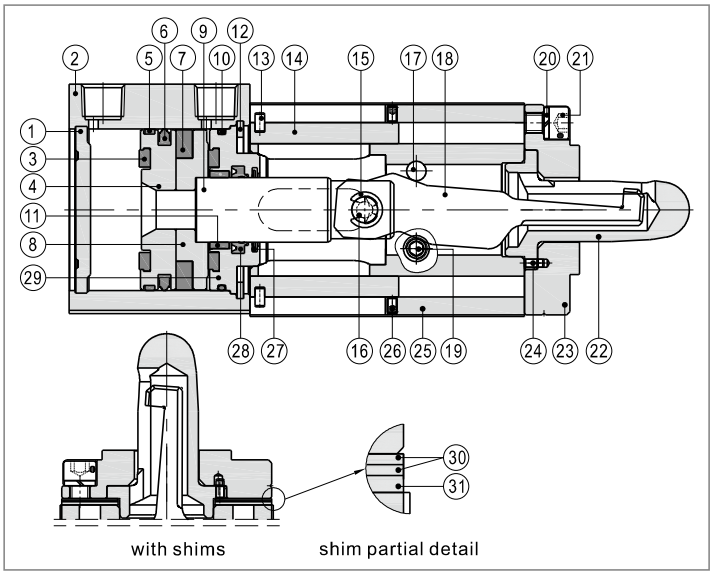
(1) (2) (3) (4) (5) (6) (7) (8) (9)

①Model	AQK：Pin clamp cylinder			
②Bore size	50			
③Magnet	S：With magnet			
④ Install dim.	A：Mounting screws M10X1.5/ pinhole diameter Φ10	B：Mounting screws M12X1.75/ pinhole diameter Φ10		
⑤The relative position of screw surface and pinhole	A:A type mounting groove	B:B type mounting groove	C:C type mounting groove	D:D type mounting groove
⑥Clamp arm position	A：Clamp arm same side with inlet port	B：Clamp arm at 90° with inlet port	C：Clamp arm at 180° with inlet port	D：Clamp arm at 270° with inlet port
⑦Adjusting shims	Blank: Without adjustable shims		2：With adjusting shim 2mm (2 of 0.5mm+1 of 1mm)	
⑧Thread code	Blank: PT1/4			

⑨Guide pin specification code	Code [Note]	Pin height (without shims)	Code	Pin height (with shims)	Pin diameter	Workpiece port size
	14□X290	29	14□X310	31	Φ14.□	Φ15
	15□X290	29	15□X310	31	Φ15.□	Φ16
	17□X340	34	17□X360	36	Φ17.□	Φ18
	19□X340	34	19□X360	36	Φ19.□	Φ20
	24□X340	34	24□X360	36	Φ24.□	Φ25

[Note] "□" means 1-9. Take 177X340 for example, 177 means pinhole diameter 17.7mm, 340 means guiding pin height 34mm.

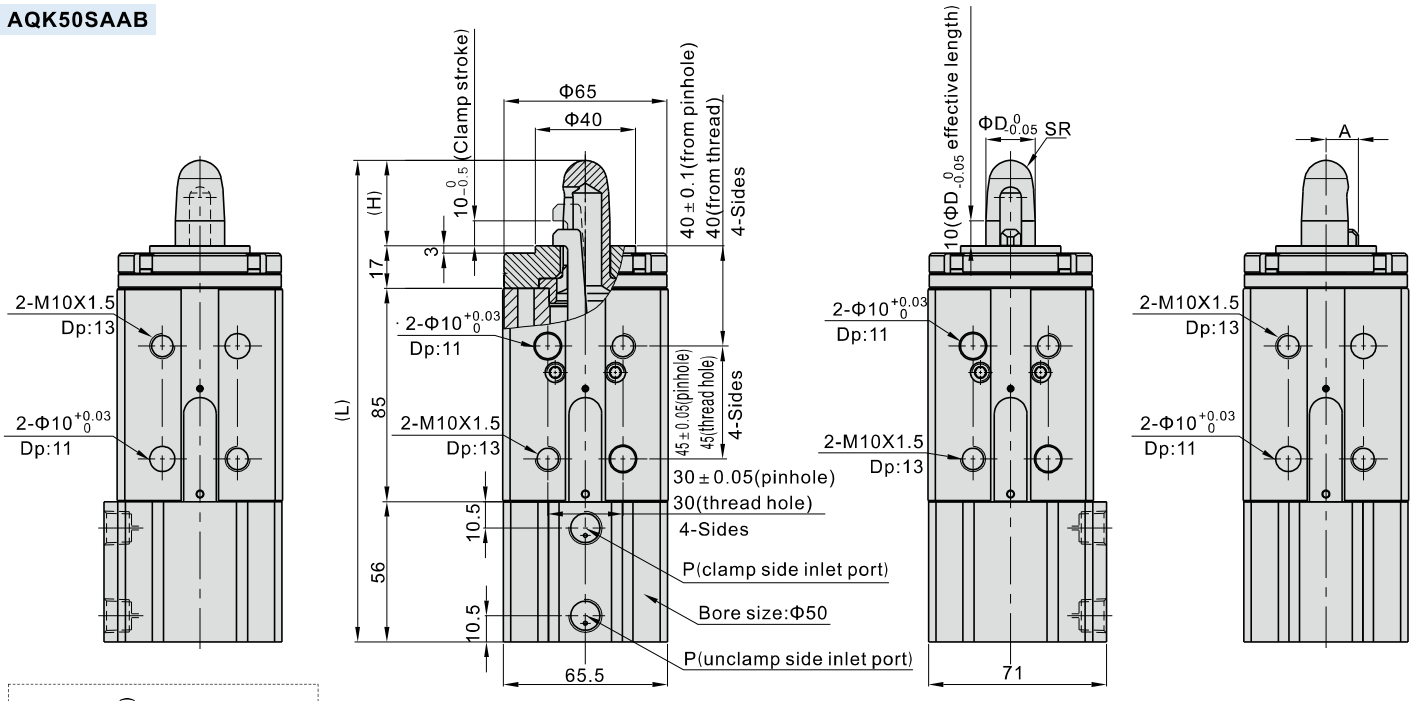
Inner structure and material of major parts

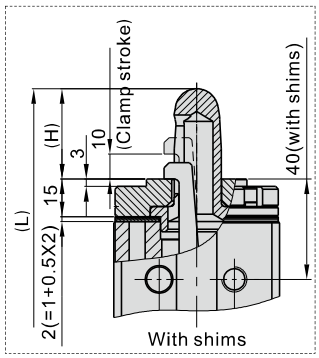


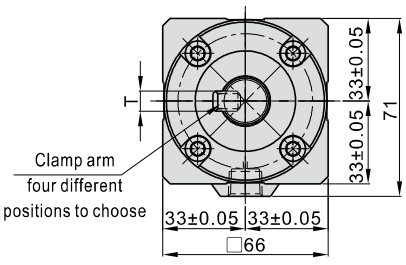
NO.	Item	Material	NO.	Item	Material
1	back cover	Aluminum alloy	17	guiding pin	Alloy steel
2	body	Aluminum alloy	18	lever	die steel
3	Bumper	NBR	19	socket set screws	Alloy steel
4	Piston	Aluminum alloy	20	spring washer	Spring steel
5	wear ring	Wear resistant material	21	screws	Alloy steel
6	Piston packing	NBR	22	pin	Stainless steel
7	magnet	plastic	23	cap	Alloy steel
8	magnet holder	Aluminum alloy	24	Pin	Stainless steel
9	rod	S45C hard chrome plating bar	25	pin body	Aluminum alloy
10	o ring	NBR	26	socket set screws	Alloy steel
11	bushing	Wear resistant material	27	wiper ring	Stainless steel
12	C clip	Spring steel	28	spool packing	NBR
13	Pin	Stainless steel	29	front cover	Aluminum alloy
14	dedust gate	Aluminum alloy	30	gasket 1	Stainless steel
15	E clip	Spring steel	31	gasket 2	Stainless steel
16	PIN	S45C grinded bar			

Dimensions

AQK50SAAB





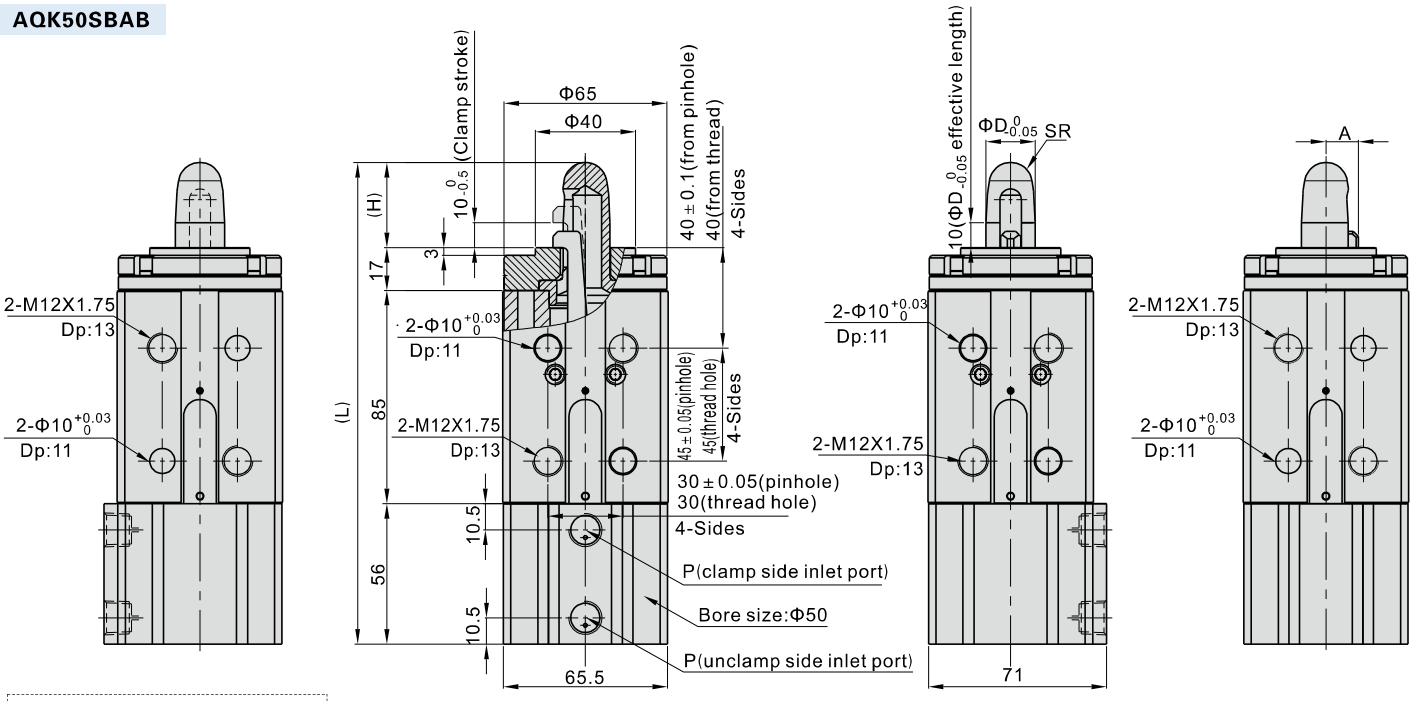


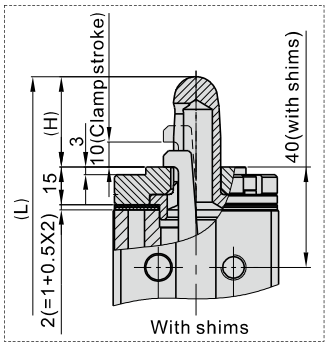
Pin hole	ΦD (Pin dim.)	SR (pin sphere radius)	H(pin height) Without shims	H(pin height) With shims	A (arm length)	T (arm width)	L(full length) Without shims	L(full length) With shims
Φ15	Φ14.□	5.5	29	31	11	7	187	189
Φ16	Φ15.□	6	29	31	11	7	187	189
Φ18	Φ17.□	7	34	36	12	8	192	194
Φ20	Φ19.□	8.5	34	36	13	8	192	194
Φ25	Φ24.□	10.5	34	36	15.5	8	192	194

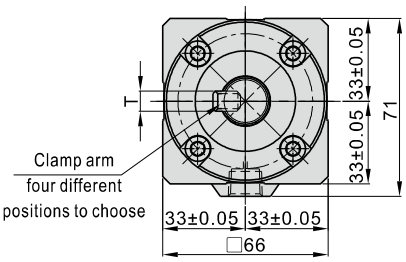
[Note] "□" refers to number 1-9.
P inlet port size is PT 1/4, and G, NPT thread are also selectable.

AQK Series

AQK50SBAB





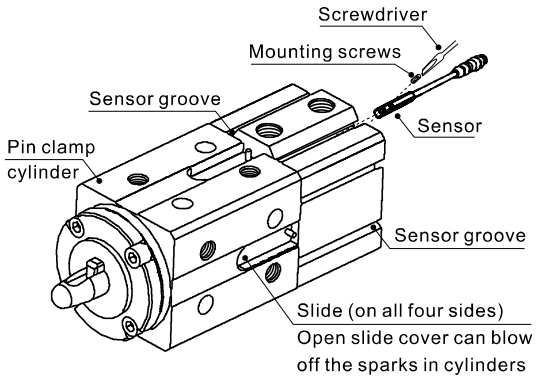


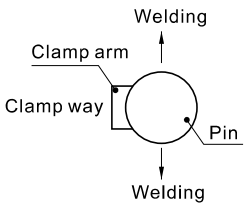
Pin hole	ΦD (Pin dim.)	SR (pin sphere radius)	H(pin height) Without shims	H(pin height) With shims	A (arm length)	T (arm width)	L(full length) Without shims	L(full length) With shims
Φ15	Φ14.□	5.5	29	31	11	7	187	189
Φ16	Φ15.□	6	29	31	11	7	187	189
Φ18	Φ17.□	7	34	36	12	8	192	194
Φ20	Φ19.□	8.5	34	36	13	8	192	194
Φ25	Φ24.□	10.5	34	36	15.5	8	192	194

[Note] "□" refers to number 1-9.
P inlet port size is PT 1/4, and G, NPT thread are also selectable.

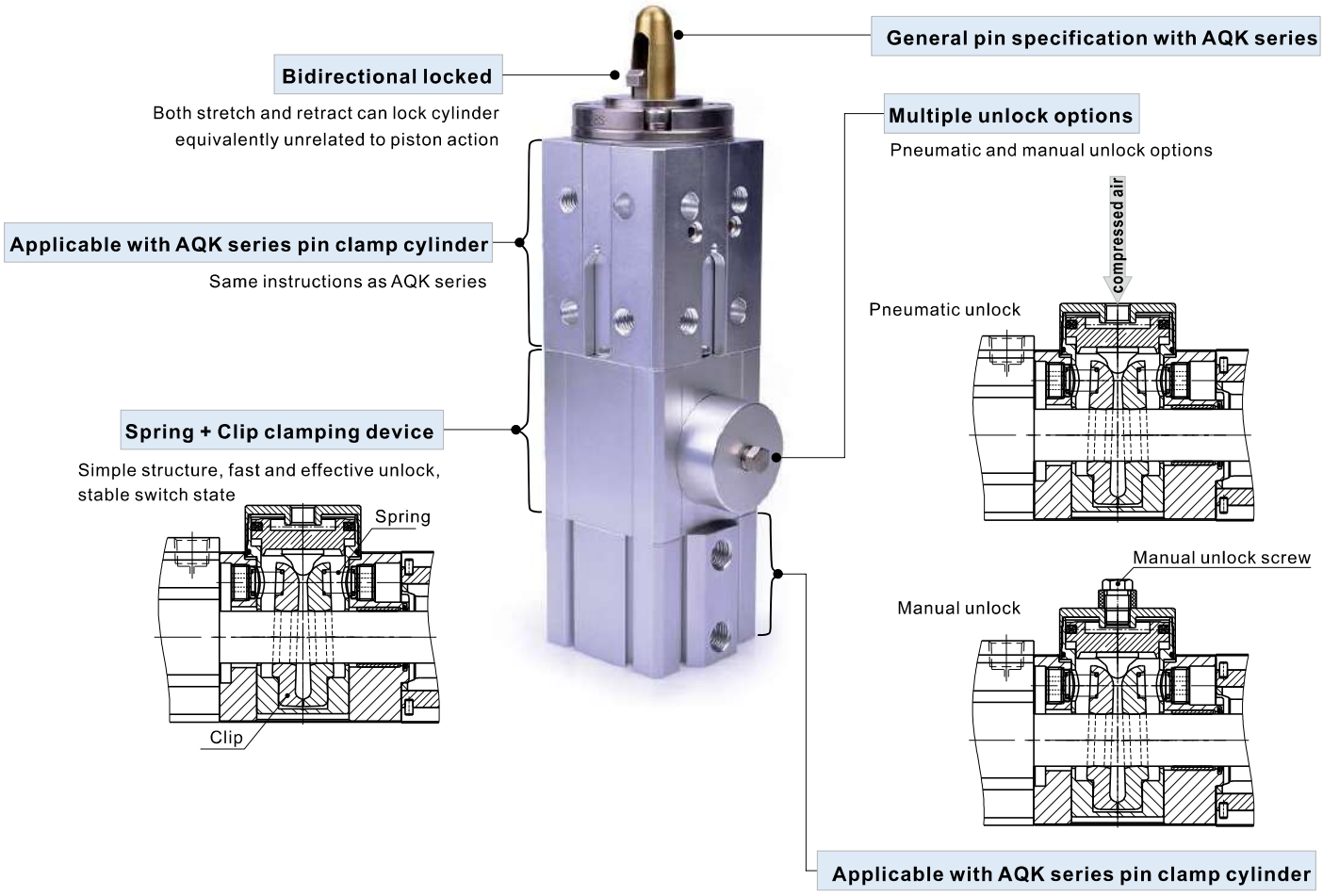
Installation instruction

1. Sensor options and mounting:
   Applicable sensors for AQK series are CMSG(DMSG). Those sensors can easily fix on the cylinder as the right figure, other accessories are not needed. Loosen the mounting screws on sensor, import it to mounting groove to the suitable position and it can be fixed after tighten screws.
   Also: in the power magnetic environment, you should choose the anti-interference sensor, the specific selection of the reference P334 page.
2. Since the cylinder performs both positioning and clamping simultaneously, any other application may cause an accident or damage to the cylinder.
3. The thickness of clamping workpiece should be under 10mm, the clamping cylinder with shim can clamp up to 12 mm (with all shims removed).
4. Only apply to the workpiece has flat side, do not clamp without setting the workpiece.
5. Please attach a speed controller and adjust the cylinder speed by meter-out.
6. prevent any foreign material ,such as machining chips, from entering into internal cylinder.
   And the opening part of a guide pin should not face in the same direction as oncoming spatter.
   If the spatter enters the cylinder from the opening part of the guide pin,
   it will shorten the product life and cause a malfunction.
7. Consider the welding point of the guide pin when determining the direction of the clamp arm setting.
   The clamp arm will be damaged if clamping is performed at the welded point of the guide pin. Therefore,
   set the clamping directions as illustrated right figure to prevent the clamping damaged from welded point.
8. If sparks enters the cylinder body, remove it by first detaching the covers. Do not scratch or make dents on the sliding parts of the piston rod by striking it or grasping them with other objects. Or it may cause seal damage and leakage.



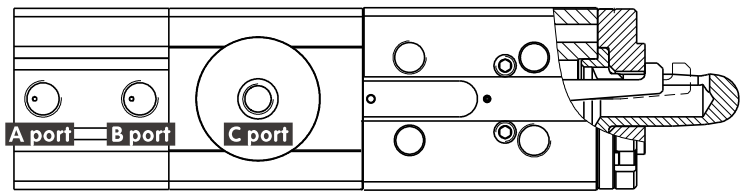


Compendium of BAQK Series



Installation instructions (general)

1. Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris inside the pipe.
2. operating fluid need to be filtered by 40μm filter element.
3. During low temperature environment, cryogenic measures should be taken to prevent freezing water in the system.
4. Beware of the surface rust on the cylinder after disassemble for a long time.
   Dust cover should be added on inlet port and apply anti-rust oil on rod and action part.
5. Please attach a meter-out controller at the port to protect product life of cylinder and jig.
6. The locking device can only work when cylinder stops, do not activate the rod under working condition.
   It's necessary to take extra measures if the control system has safety requirement.
7. The locking device can be released only when the force on both sides of the piston reaches equilibrium or the cylinder stops, otherwise it may cause accident by rod sudden action.
8. application example.



Action

Inlet			Acting	
A port	B port	C port		
no	no	yes	clamp machine unlocked	0~0.5S
no	yes	yes	Clamp arm fastened workpiece	
no	no	no	clamp machine locked	0.5S above
no	no	yes	clamp machine unlocked	0~0.5S
yes	no	yes	clamp arm loosen workpiece	

Circulation

Pin clamp cylinder——Lock type

BAQK Series

Specification

Bore size(mm)		50
Acting type		Double acting
Fluid		Air(to be filtered by 40μm filter element)
Operating pressure		0.15~1.0MPa(22~145psi)
Proof pressure		1.5MPa(215psi)
Temperature □		-20~70
Cushion type		Bumper
Clamp stroke		Without shims: $10^{0}_{-0.5}$ mm With shims: 10~12mm
Unlock pressure		0.3~0.7MPa(45~100psi)
Static retention		1400N
Port size [Note]	Cylinder	1/4"
	Clamp device	G1/8

[Note] PT thread is available.
Please refer to page 353 for sensor applications.

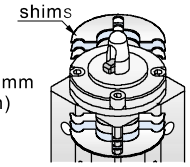
Product feature

1. According to JIS standards
2. Pin surface adopted titanium alloy processing to enhance friction resistance.
3. Part of cylinder front cover has equiped with metallic rod wiper that can effectively remove slag and debris etc.
4. Possible to mount on 4 surfaces.
5. With sensor groove around cylinder body, easy to mount sensors.

Ordering code

BAQK50 S A A A □ □-177X340

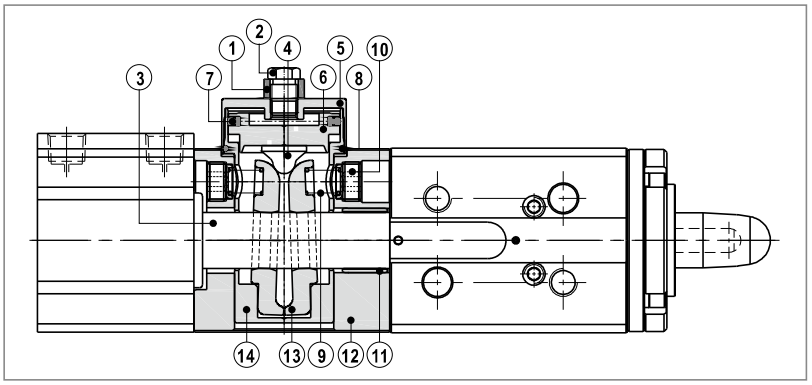
1 2 3 4 5 6 7 8 9

①Model	BAQK: Pin clamp cylinder(lock type)			
②Bore size	50			
③Magnet	S: With magnet			
④ Install dim.	A: Mounting screws M10X1.5/ pinhole diameter Φ10	B: Mounting screws M12X1.75/ pinhole diameter Φ10		
⑤The relative position of screw surface and pinhole	A:A type mounting groove	B:B type mounting groove	C:C type mounting groove	D:D type mounting groove
	Refer to AQK series ordering code for specific mounting groove			
⑥Clamp arm position	A : Clamp arm same side with inlet port	B : Clamp arm at 90° with inlet port	C : Clamp arm at 180° with inlet port	D : Clamp arm at 270° with inlet port
	The relation between clamp arm and inlet port please refer to AQK series ordering code content			
⑦Adjusting shims	Blank: Without adjustable shims	2 : With adjusting shim 2mm (2 of 0.5mm+1 of 1mm) 		
⑧Thread code	Blank: PT1/4			

⑨Guide pin specification code	Code [Note]	Pin height (without shims)	Code	Pin height (with shims)	Pin diameter	Workpiece port size
	14□ X290	29	14□ X310	31	Φ14.□	Φ15
	15□ X290	29	15□ X310	31	Φ15.□	Φ16
	17□ X340	34	17□ X360	36	Φ17.□	Φ18
	19□ X340	34	19□ X360	36	Φ19.□	Φ20
	24□ X340	34	24□ X360	36	Φ24.□	Φ25

[Note] "□" means 1-9. Take 177X340 for example, 177 means pinhole diameter 17.7mm, 340 means guiding pin height 34mm.

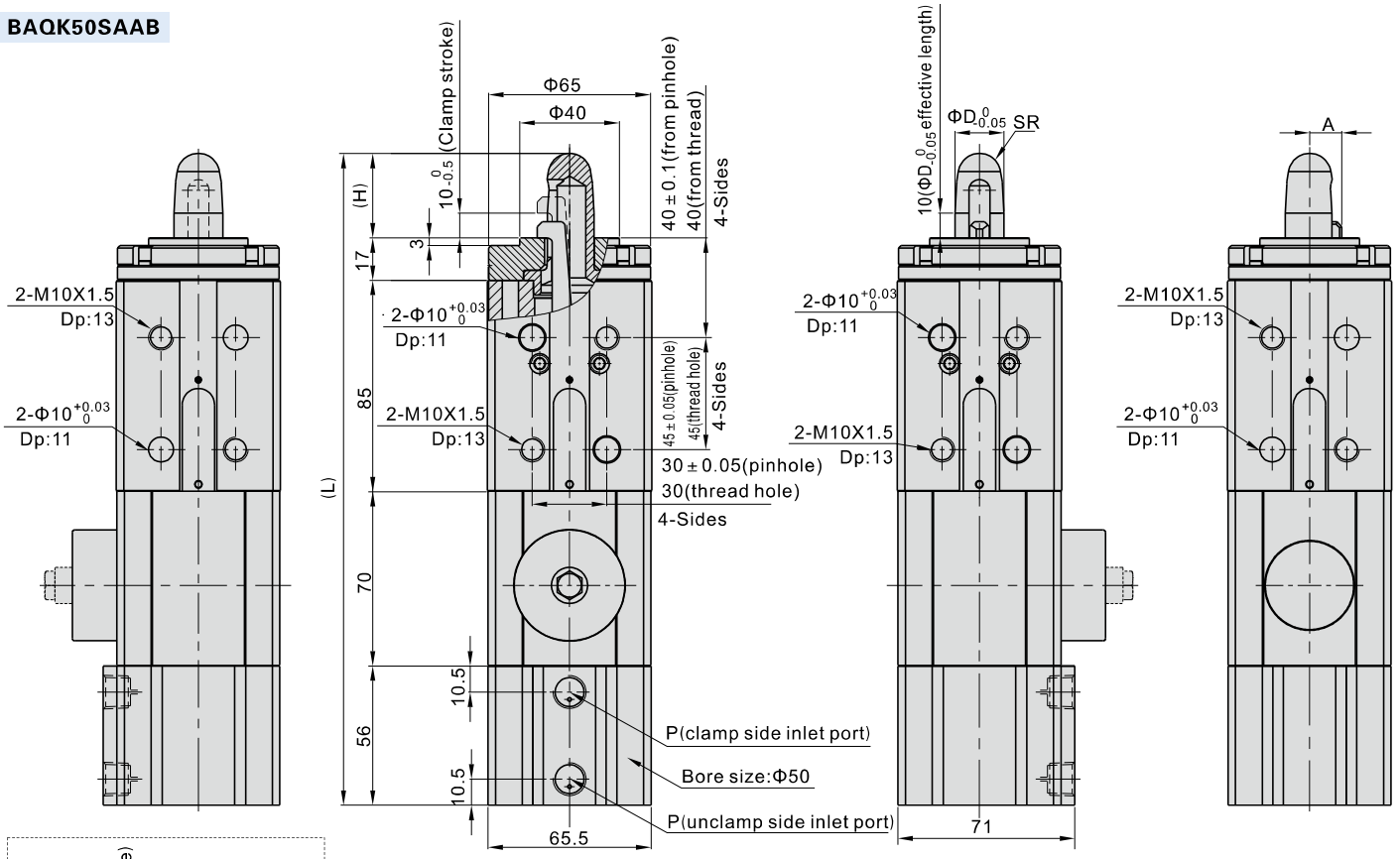
Inner structure and material of major parts

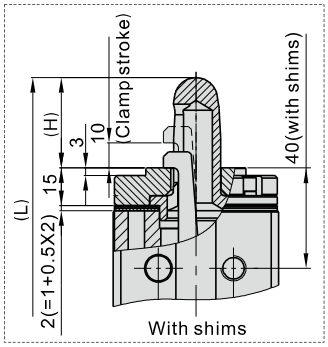


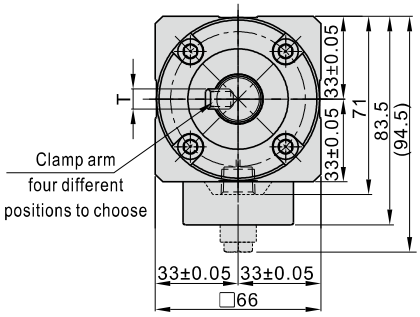
NO.	Item	Material
1	Spacer	POM
2	Unlock screws	Cutting steel
3	Rod	S45C hard chrome plating bar
4	Unlocker	Wear resistant material
5	Cap	Aluminum alloy
6	Unlock piston	Aluminum alloy
7	Piston packing	NBR
8	O ring	NBR
9	Spring	Spring steel
10	Spring fixed screws	Low carbon steel
11	Bimetal bearing	Low carbon steel+silieon bronze
12	Fixed holder	Aluminum alloy
13	Air gripper	Aluminium Bronze
14	Sleeve	Aluminum alloy

Dimensions

BAQK50SAAB





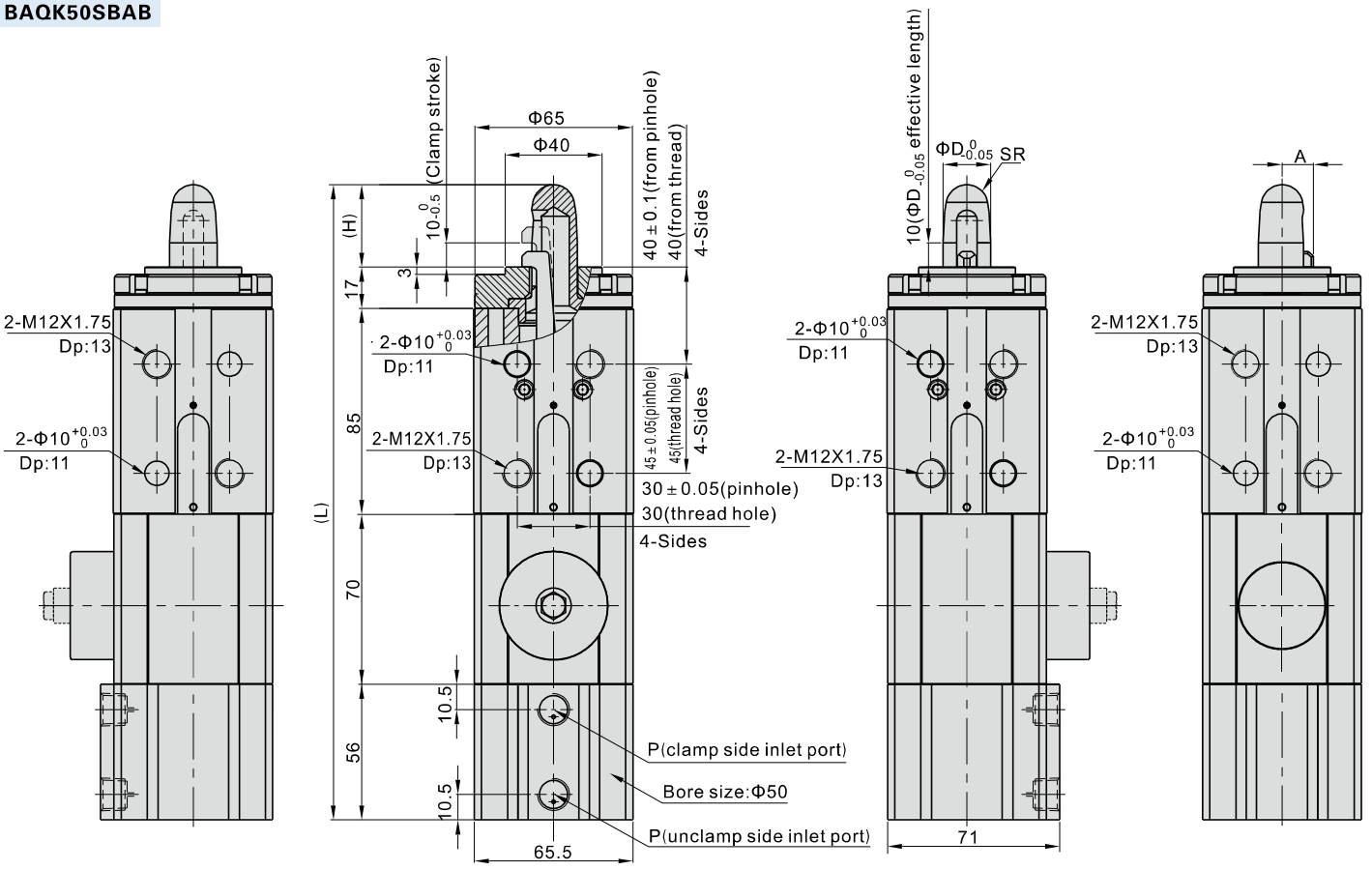


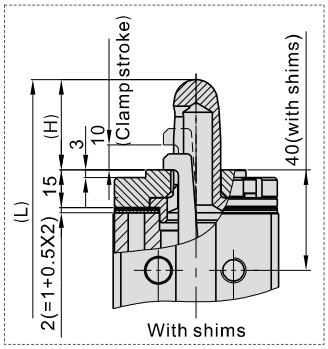
Pin hole	ΦD (Pin dim.)	SR (pin sphere radius)	H(pin height) Without shims	H(pin height) With shims	A (arm length)	T (arm width)	L(full length) Without shims	L(full length) With shims
Φ15	Φ14.□	5.5	29	31	11	7	257	259
Φ16	Φ15.□	6	29	31	11	7	257	259
Φ18	Φ17.□	7	34	36	12	8	262	264
Φ20	Φ19.□	8.5	34	36	13	8	262	264
Φ25	Φ24.□	10.5	34	36	15.5	8	262	264

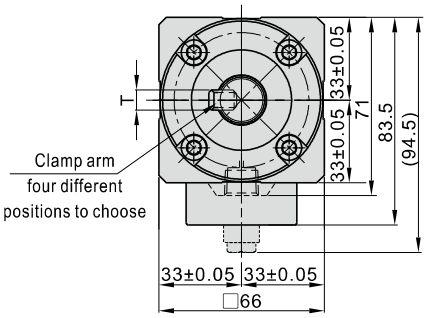
[Note] "□" refers to number 1-9.
P inlet port size is PT 1/4, and G, NPT thread are also selectable.

BAQK Series

BAQK50SBAB







Pin hole	ΦD (Pin dim.)	SR (pin sphere radius)	H(pin height) Without shims	H(pin height) With shims	A (arm length)	T (arm width)	L(full length) Without shims	L(full length) With shims
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Φ16	Φ15.□	6	29	31	11	7	257	259
Φ18	Φ17.□	7	34	36	12	8	262	264
Φ20	Φ19.□	8.5	34	36	13	8	262	264
Φ25	Φ24.□	10.5	34	36	15.5	8	262	264

[Note] "□" refers to number 1-9.
P inlet port size is PT 1/4, and G, NPT thread are also selectable.

Installation instruction

BAQK series mounting dimensions are equivalent to AQK series, please refer to AQK series for specific mounting groove.