Pneumatic Lift Cylinder

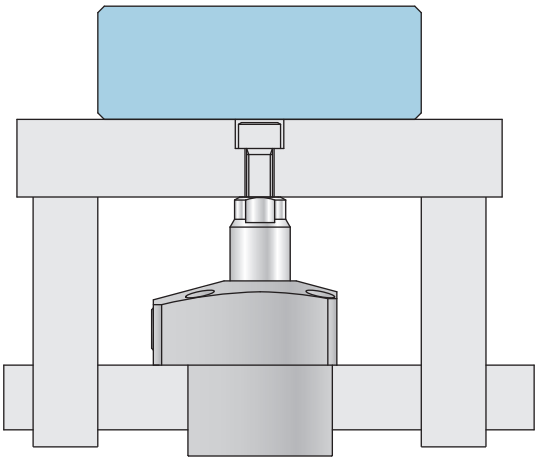
Model WLA

Compact and Simple Linear Cylinder

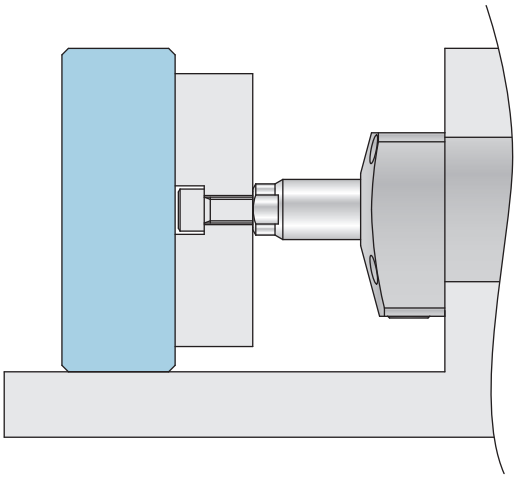
Suitable for Lifting Up and Down of Machining Workpieces

Compact Pneumatic Linear Cylinder

For Lifting

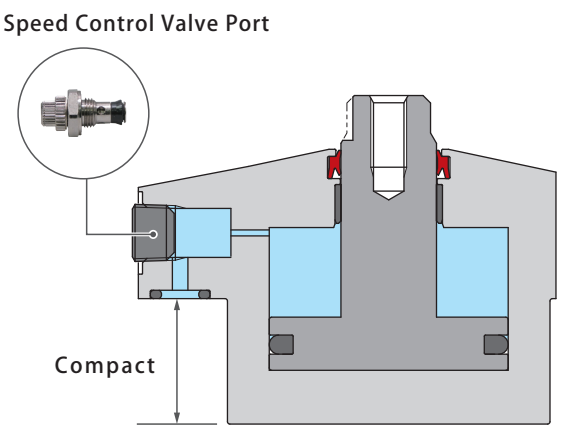


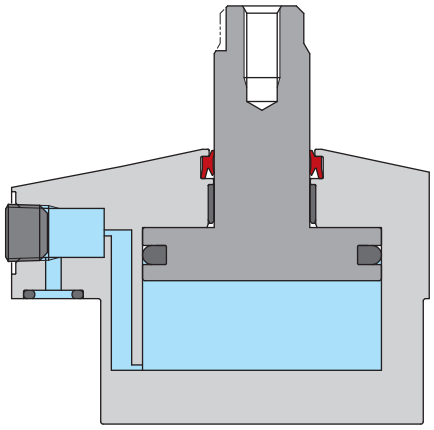
For Shifting



Action Description

※ This is a simplified drawing. Actual components are different.





Pull

Supplying air pressure to the pull side port.

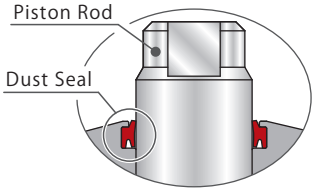
Push

Supplying air pressure to the push side port.

Features

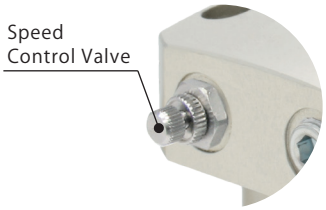
Excellent Coolant Resistance

Our exclusive dust seal is designed to protect against high pressure coolant. It also has high durability against chlorine-based coolant by using a sealing material with excellent chemical resistance.



Direct Mount Speed Control Valve

Speed control valve can be directly mounted to the product in case of Piping Method A : Gasket Option. (Speed control valve is sold separately.)



Model No. Indication

WLA 040 0 - 2 A A - 0 10

1 2 3 4 5

1 Cylinder Inner Diameter

040 : Cylinder Inner Diameter = ϕ 40mm

050 : Cylinder Inner Diameter = ϕ 50mm

2 Design No.

0 : Revision Number

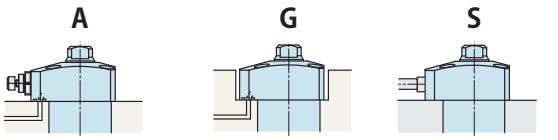
3 Piping Method

A : Gasket Option (with Ports for Speed Controller※)

G : Gasket Option (with R Thread Plug)

S : Piping Option (Rc Thread)

※ Speed control valve (BZW) is sold separately.

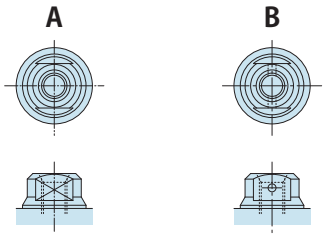


Gasket Option		Piping Option
with R thread plug (able to attach speed control valve) (Order the valve separately. Recommended : BZW-B)	with R thread plug	Rc Thread No Gasket Port

4 Shape of Piston Tip

A : Female Threaded

B : Female Threaded (With Anti-Rotation Pinhole)

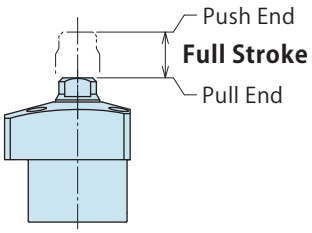


5 Stroke

10 : Full Stroke 10mm

15 : Full Stroke 15mm

20 : Full Stroke 20mm



Specifications

Model No.		WLA0400-2□□-010	WLA0400-2□□-015	WLA0400-2□□-020	WLA0500-2□□-010	WLA0500-2□□-015	WLA0500-2□□-020
Full Stroke	mm	10	15	20	10	15	20
Cylinder Area	cm^2 Push Side	12.57			19.64		
	cm^2 Pull Side	10.56			16.49		
Cylinder Force ※1 (Calculation Formula)	kN Push Side	F = P × 1.257			F = P × 1.964		
	kN Pull Side	F = P × 1.056			F = P × 1.649		
Cylinder Capacity	cm^3 Push Side	12.6	18.8	25.1	19.6	29.5	39.3
	cm^3 Pull Side	10.6	15.8	21.1	16.5	24.7	33.0
Cylinder Inner Diameter	mm	ϕ40			ϕ50		
Rod Diameter	mm	ϕ16			ϕ20		
Max. Operating Pressure	MPa	1.0					
Min. Operating Pressure※2	MPa	0.1					
Withstanding Pressure	MPa	1.5					
Operating Temperature	℃	0 ~ 70					
Usable Fluid		Dry Air					
Weight	kg	0.5			0.8		

Notes :

※1. F : Cylinder Force (kN), P : Supply Air Presure (MPa)

※2. Minimum pressure to operate the clamp without load.

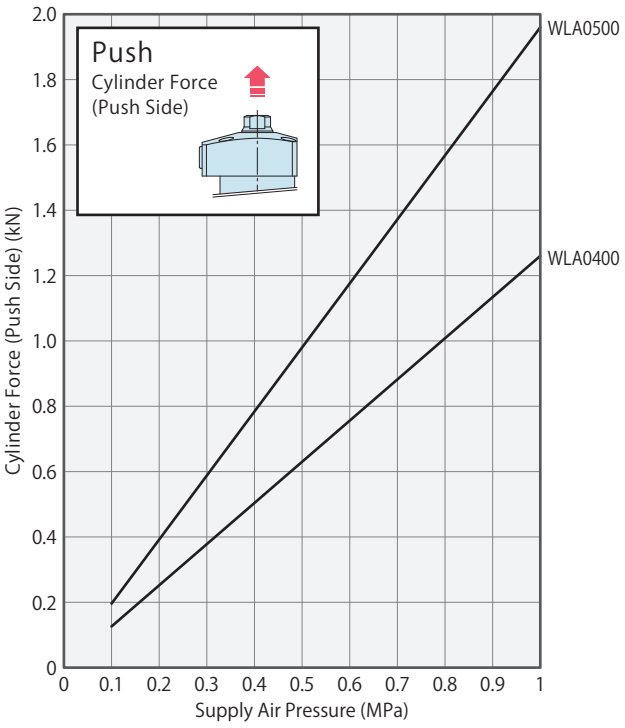
Performance Curve

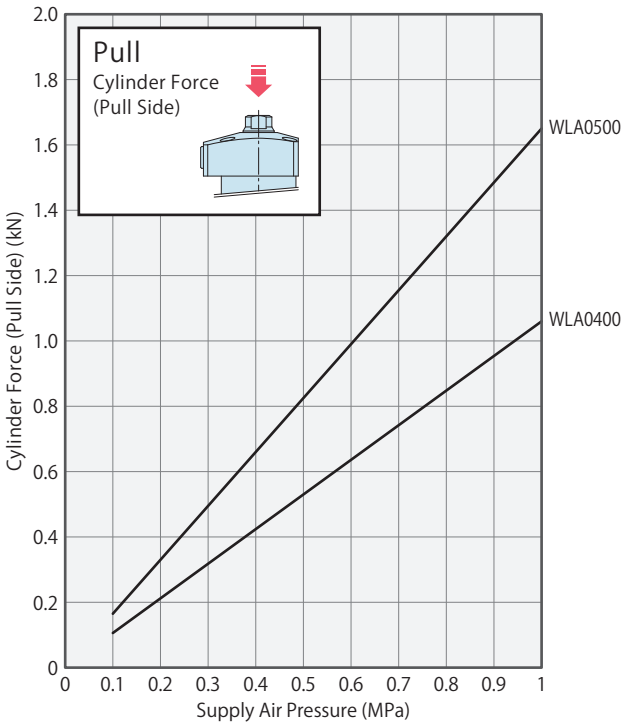
Cylinder Force (Push Side) (kN)

Model No.	0.1MPa	0.2MPa	0.3MPa	0.4MPa	0.5MPa	0.6MPa	0.7MPa	0.8MPa	0.9MPa	1MPa
WLA0400-□□-□	0.13	0.25	0.38	0.50	0.63	0.75	0.88	1.01	1.13	1.26
WLA0500-□□-□	0.20	0.39	0.59	0.79	0.98	1.18	1.37	1.57	1.77	1.96

Cylinder Force (Pull Side) (kN)

Model No.	0.1MPa	0.2MPa	0.3MPa	0.4MPa	0.5MPa	0.6MPa	0.7MPa	0.8MPa	0.9MPa	1MPa
WLA0400-□□-□	0.11	0.21	0.32	0.42	0.53	0.63	0.74	0.84	0.95	1.06
WLA0500-□□-□	0.16	0.33	0.49	0.66	0.82	0.99	1.15	1.32	1.48	1.65





Notes :

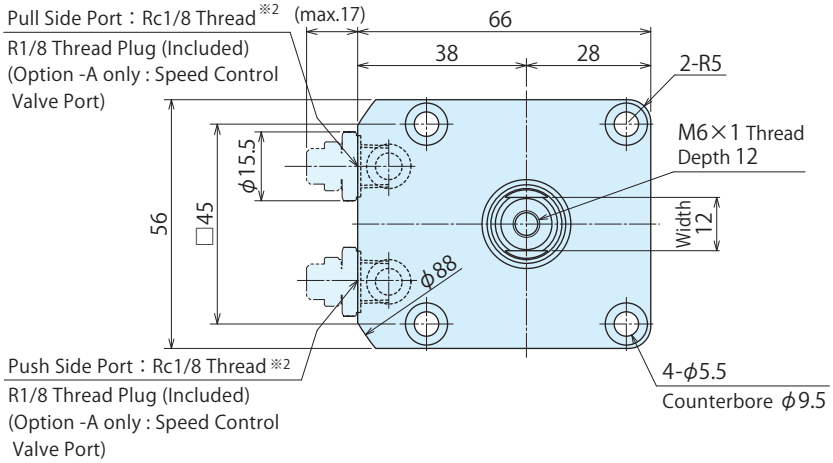
1. Tables and graphs show the relationship between the cylinder output and the supply air pressure.
2. Cylinder Force F (kN) is the theoretical value. Actual output may decrease because of friction and pressure loss.

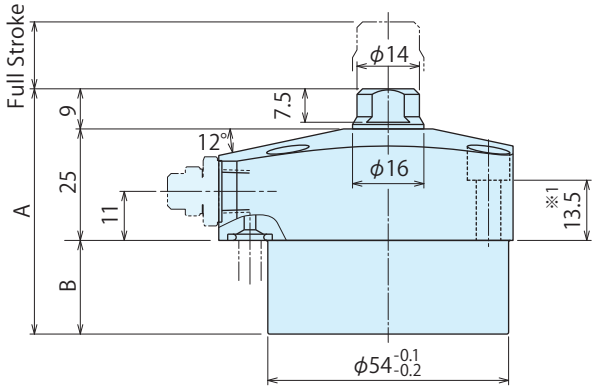
External Dimensions (WLA0400)

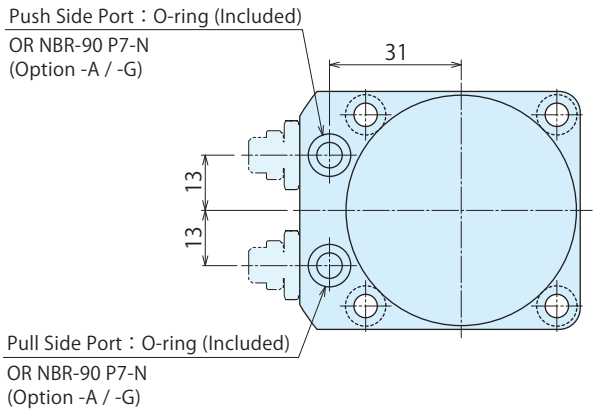
A：Gasket Option (With Ports for Speed Controller：R-Thread Plug Included)

A：Female Threaded

※This drawing shows WLA0400-2AA.







External Dimension List

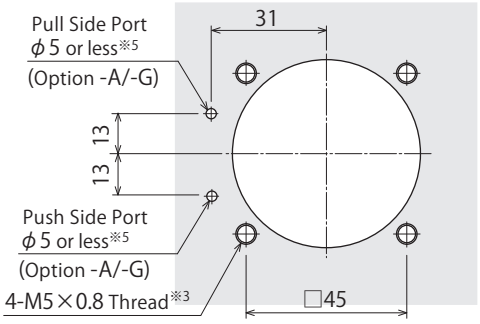
Model	WLA0400-2□□-010	WLA0400-2□□-015	WLA0400-2□□-020
A	55	55	60
B	21	21	26

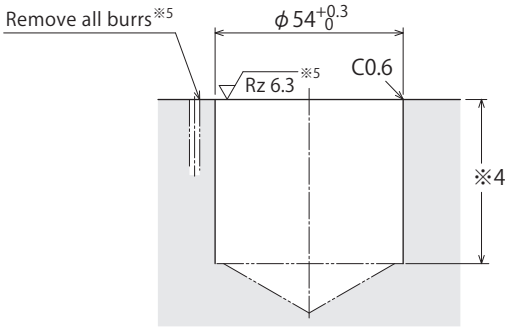
Notes :

※1. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension '※1'.

※2. Speed control valve is sold separately. Please refer to P.7.

Machining Dimensions of Mounting Area (WLA0400)





Notes :

※3. M5 tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension '※1'.

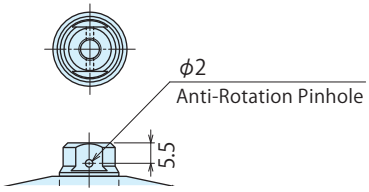
※4. The depth of the body mounting hole ϕ54 should be decided according to the mounting height referring to dimension 'B'.

※5. The machining dimension is for -A/-G：Gasket option.

Tip Shape

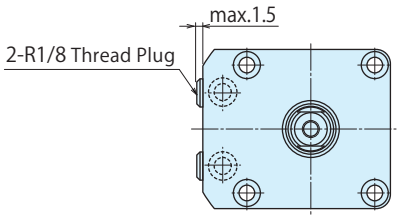
Refer to A：Female Threaded for unlisted dimensions.

B：Female Threaded (with Anti-Rotation Pinhole)

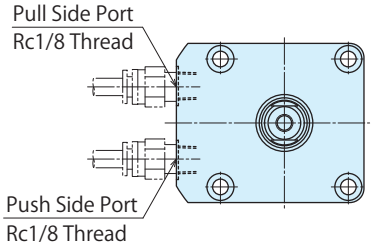


Piping Method

G：Gasket Option (with R-Thread Plug)



S：Piping Option (Rc Thread)

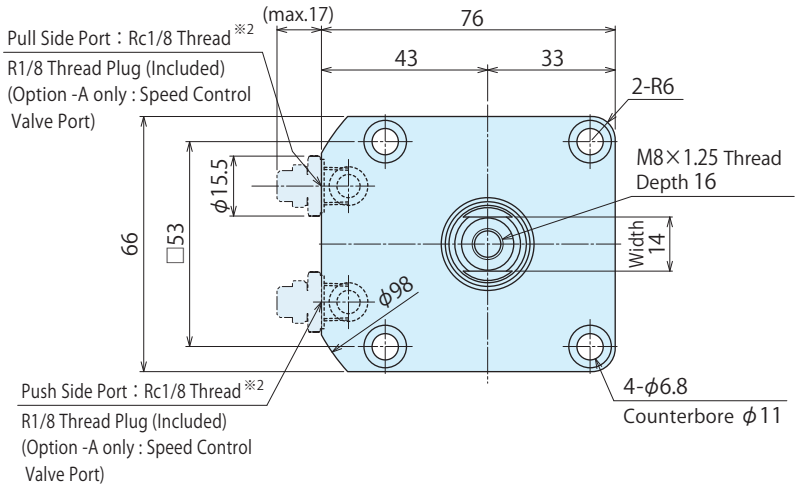


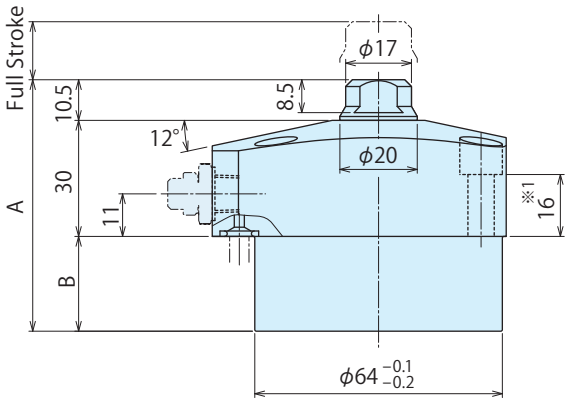
External Dimensions (WLA0500)

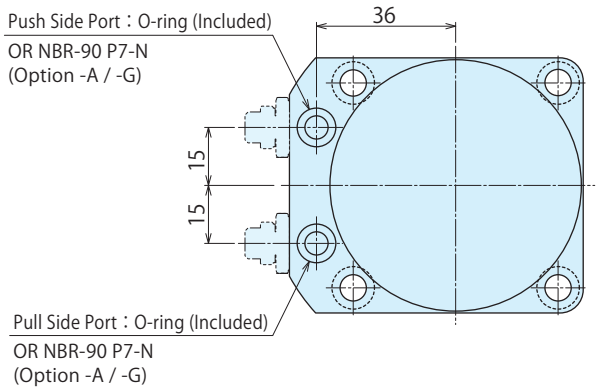
A : Gasket Option (With Ports for Speed Controller : R-Thread Plug Included)

A : Female Threaded

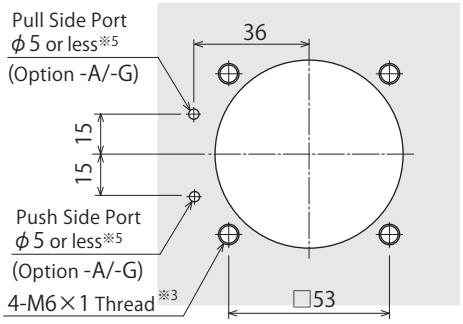
※This drawing shows WLA0500-2AA.

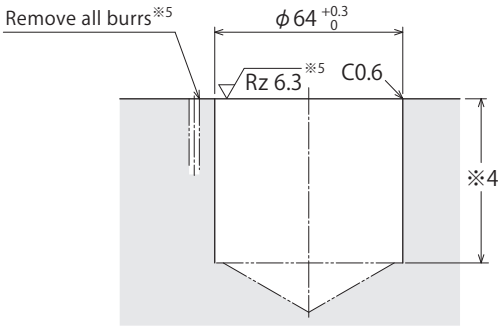






Machining Dimensions of Mounting Area (WLA0500)





Notes :

※3. M6 tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension '※1'.

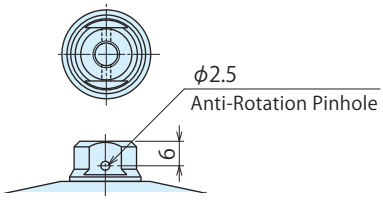
※4. The depth of the body mounting hole ϕ64 should be decided according to the mounting height referring to dimension 'B'.

※5. The machining dimension is for -A/-G : Gasket option.

Tip Shape

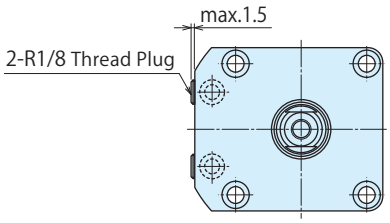
Refer to A : Female Threaded for unlisted dimensions.

B : Male Threaded (with Anti-Rotation Pinhole)

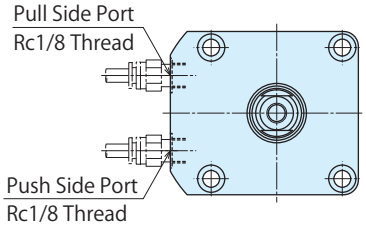


Piping Method

G : Gasket Option (with R-Thread Plug)



S : Piping Option (Rc Thread)



External Dimension List

Model	WLA0500-2□□-010	WLA0500-2□□-015	WLA0500-2□□-020
A	65	65	70
B	24.5	24.5	29.5

Notes :

※1. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension '※1'.

※2. Speed control valve is sold separately. Please refer to P.7.

Accessory : Air Flow Control Valve

Model No. Indication

BZW 010 0 – B

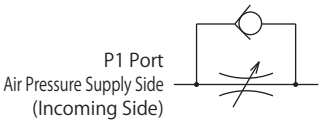
- **B** : Control Method — **B** : Meter-out
- **0** : Design No. — **0** : Revision Number
- **010** : R Thread Size — **010** : Rc1/8

Specifications

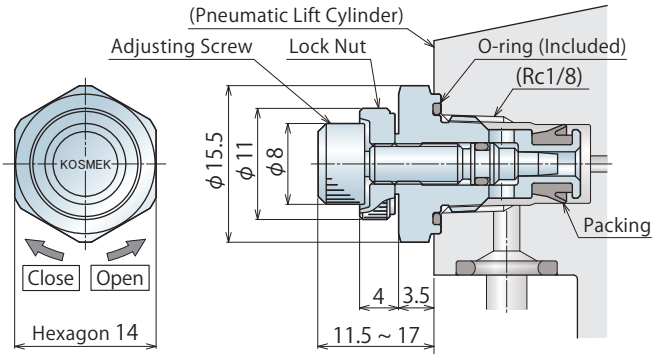
Model No.		BZW0100-B
Control Method		Meter-out
Operating Pressure	MPa	0.1 ~ 1.0
Withstanding Pressure	MPa	1.5
Adjusting Screw Number of Rotations		10
Tightening Torque	N•m	5 ~ 7
Weight	g	13
Corresponding Model No.		WLA□

Circuit Symbol

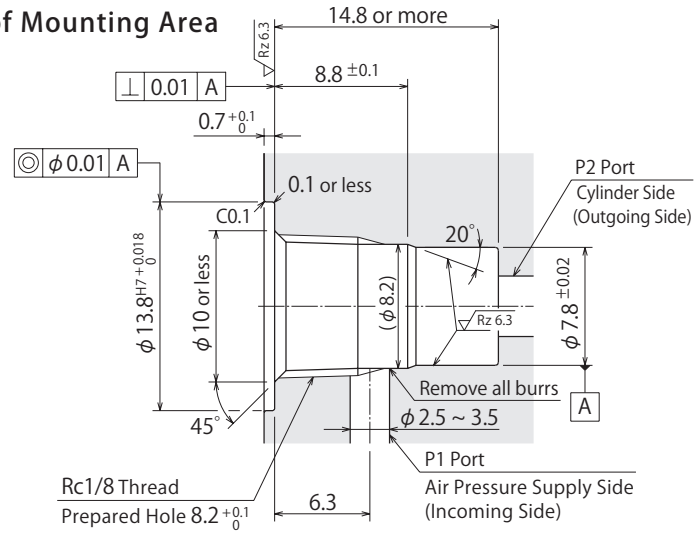
BZW0100-B : Meter-out



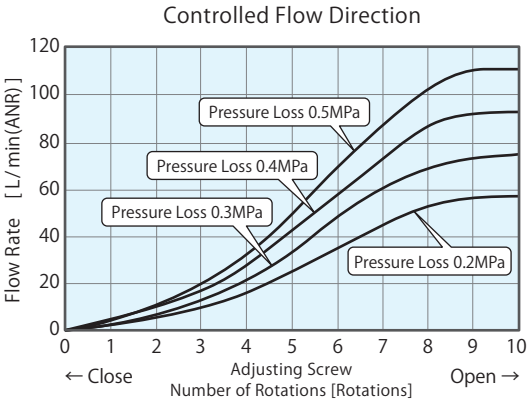
External Dimensions

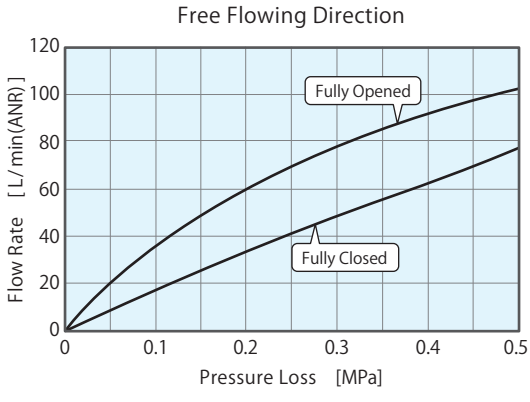


Machining Dimensions of Mounting Area



Flow Rate Graph





Notes :

1. Since the $\sqrt{Rz\,6.3}$ area is sealing part, be careful not to damage it.
2. No cutting chips or burr should be at the tolerance part of machining hole.
3. As shown in the drawing, P1 port is used as the air supply side (incoming side) and P2 port as the cylinder side (outgoing side).

MEMO

Cautions

Notes for Design

1) Check Specifications

● Please use each product according to the specifications.

2) Notes for Circuit Design

● Ensure there is no possibility of supplying air pressure to the push side and the pull side simultaneously. Improper circuit design may lead to malfunctions and damages.

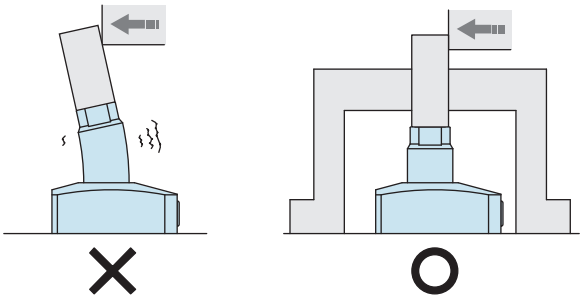
3) Protect the exposed area of the piston rod when using on a welding fixture.

● If spatter attaches to the sliding surface it could lead to malfunction and fluid leakage.

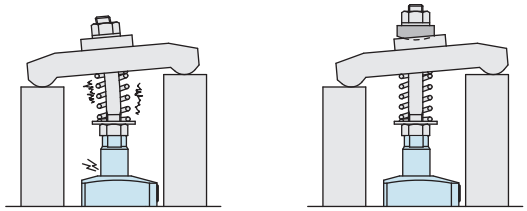
4) The Load Direction Given to the Piston Rod

● Make sure no force is applied to the piston rod except from the axial direction. Usage like the one shown in the figure below will apply a large bending stress to the piston rod and must be avoided.

In case a load is applied except from the axial direction



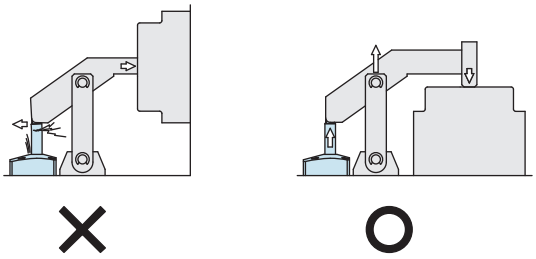
When clamping workpieces of different heights



Without Spherical Washer

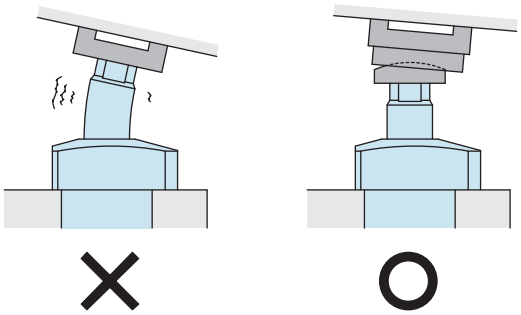
With Spherical Washer

A Combination with Link Mechanism



5) When Clamping on a Sloped Surface of a Workpiece

● When clamping an inclined surface, make sure that the clamping surface and the cylinder mounting surface are parallel. A workpiece may move and a piston rod may slip when a cylinder is used on an inclined surface. (When the workpiece is a casting, it is recommended that a spiked attachment be used for a cylinder on draft angle.)



Installation Notes

1) Check the Usable Fluid
- Please supply filtered clean dry air.
- Oil supply with a lubricator etc. is unnecessary.
  When using lubricant, please supply lubricant continuously.

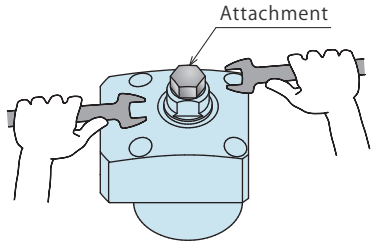
2) Preparation for Piping
- The pipeline, piping connector and fixture circuits should be cleaned by thorough flushing. The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
- There is no filter provided with this product which prevents contamination in the air circuit.

3) Applying Sealing Tape
- Wrap with tape 1 to 2 times following the screw direction.
- Pieces of the sealing tape can lead to air leakage and malfunction.
- Please implement piping construction in a clear environment to prevent anything getting in products.

4) Installation of the Cylinder
- When mounting the cylinder, use four hexagonal socket bolts (with tensile strength of 12.9) and tighten them with the torque shown in the table below. Tightening with greater torque than recommended can dent the seating surface or break the bolt.

Model No.	Thread Size	Tightening Torque (N·m)
WLA0400	M5×0.8	6.3
WLA0500	M6×1	10

5) Installation and Removal of Attachment
- When installing or removing an attachment, always use a wrench on the piston rod to keep it from turning, and tighten it with the torque shown below.



Model No.	Thread Size	Tightening Torque (N·m)
WLA0400	M6×1	10
WLA0500	M8×1.25	16

- When installing an external guide, ensure that the piston rod is not pinched during the entire stroke range of the cylinder.

6) Installation of Flow Control Valve
- Tightening torque for installation of flow control valve is 5 ~ 7 N·m.

7) Speed Adjustment
- Adjust the operating speed about 50 ~ 100mm/s.
  If the cylinder operates too fast the parts will be worn out leading to premature damage and ultimately complete equipment failure.
- Turn the flow control valve gradually from the low-speed side (small flow) to the high-speed side (large flow) to adjust the speed.

8) Checking Looseness and Retightening
- At the beginning of the product installation, the bolt may be tightened lightly. Check the looseness and re-tighten as required.

Cautions

Notes on Handling

1) It should be operated by qualified personnel.
- Machines and devices with hydraulic and pneumatic products should be operated and maintained by qualified personnel.

2) Do not operate or remove the product unless the safety protocols are ensured.
① Machines and devices can only be inspected or prepared when it is confirmed that the safety devices are in place.
② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
③ After stopping the product, do not remove until the temperature drops.
④ Make sure there is no trouble/issue in the bolts and respective parts before restarting a machine or device.

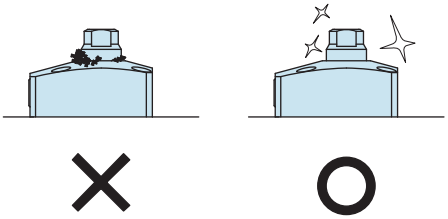
3) Do not touch a cylinder while it is working.
Otherwise, your hands may be injured.

4) Do not disassemble or modify
- If the product is taken apart or modified, the warranty will be voided even within the warranty period.

Maintenance and Inspection

1) Removal of the Product and Shut-off of Pressure Source
- Before the product is removed, make sure that safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
- Make sure there is no trouble/issue in the bolts and respective parts before restarting.

2) Regularly clean the area around the piston rod.
- If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning and fluid leakage.



3) Regularly tighten pipe, mounting bolt and others to ensure proper use.

4) Make sure there is a smooth action without an irregular noise.
- Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.

5) The product should be stored in the cool and dark place without direct sunshine or moisture.

6) Please contact us for overhaul and repair.

Warranty

1) Warranty Period

- The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.

2) Warranty Scope

- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.
  Defects or failures caused by the following are not covered.

① If the stipulated maintenance and inspection are not carried out.
② Failure caused by the use of the non-confirming state at the user's discretion.
③ If it is used or operated in an inappropriate way by the operator. (Including damage caused by the misconduct of the third party.)
④ If the defect is caused by reasons other than our responsibility.
⑤ If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
⑥ Other caused by natural disasters or calamities not attributable to our company.
⑦ Parts or replacement expenses due to parts consumption and deterioration.
(Such as rubber, plastic, seal material and some electric components.)

Damages excluding from direct result of a product defect shall be excluded from the warranty