

# **New** Ball Wedge Clamp

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# Ball Wedge Clamp

Model WKB

Spring Lock Air Release

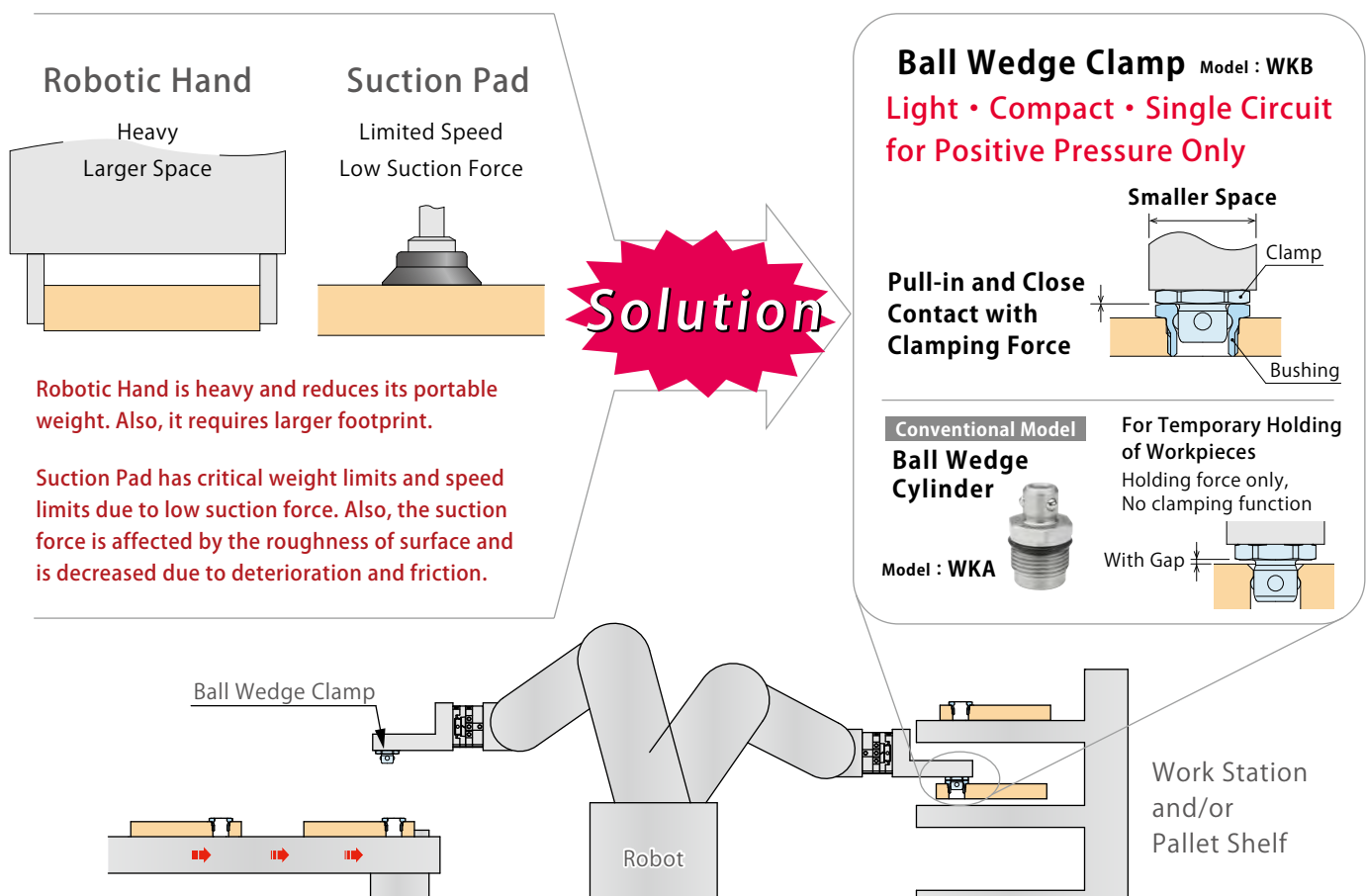


## Light and Compact Clamp

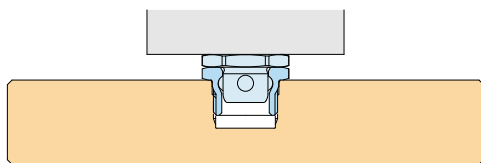
The light weight and compact design allows for maximizing the robot's ability without reducing its portable weight.

Using Low-dust Grease for Clean Environments  
※Optional

The ball wedge clamp is a compact clamp optimal for transporting pallets and plates, as well as fixing tools to stockers.



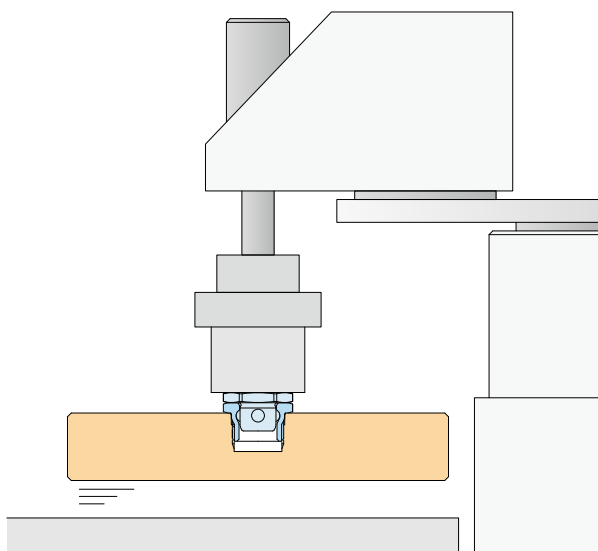
## ● Application Examples



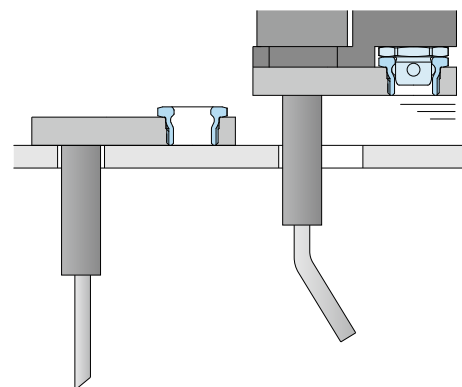
For Pallet Transfer



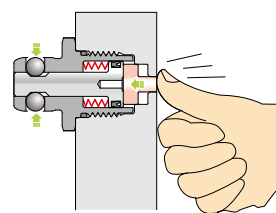
For Clamping Pallets



For Robot Transfer Hands

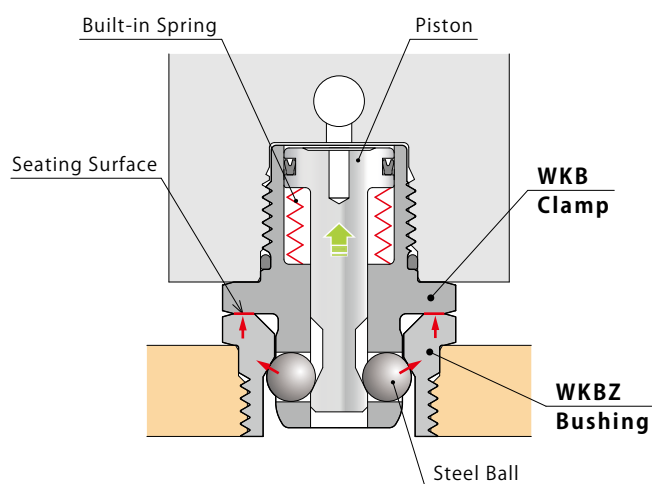


For Nozzle Replacement



Used by Hand or Another Cylinder

## ● Action Description ※ This is a simplified drawing. Actual components are different.

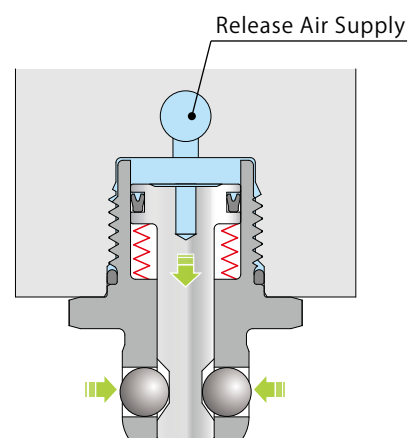


Locked State

Release Air Pressure

**OFF**

The piston is pulled down via internal spring and the steel balls expand. The steel balls press the bushing against the seating surface to lock.



Released State

Release Air Pressure

**ON**

The piston is pushed by air pressure (positive pressure) and the steel balls will be set inside the cylinder. Low Air Consumption and Low Running Cost.

## Model No. Indication

### Clamp



WKB0 10 0 -  

1
2
3

### Bushing

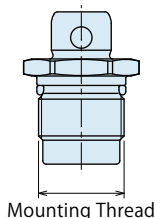


WKBZ 10 0 - B -  

1
2
3

## 1 Mounting Thread Size

- 10 : M10×0.75
- 12 : M12×1.0
- 16 : M16×1.0
- 20 : M20×1.5



Mounting Thread

## 1 Compatible Clamp Model

- 10 : WKB0100
- 12 : WKB0120
- 16 : WKB0160
- 20 : WKB0200

## 2 Design No.

- 0 : Revision Number

## 2 Design No.

- 0 : Revision Number

## 3 Operating Environment

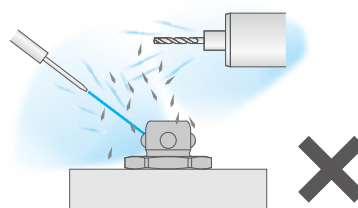
- Blank** : Standard  
(Operating Temperature 0 ~ 70°C)  
(Packing : Nitrile Rubber  
Grease : Barium Soap Grease )
- V** : High-Temperature Environment  
(Operating Temperature 0 ~ 120°C)  
(Packing : Fluor Rubber  
Grease : Barium Soap Grease )
- C** : Clean Environment  
(Operating Temperature 0 ~ 120°C)  
(Packing : Fluor Rubber  
Grease : Low-dust Grease for Clean Environments )

## 3 Operating Environment

- Blank** : Standard
- C** : Clean Environment

### 【Caution】

This product has no function that prevents contaminants.  
Do not use under environment with coolant and cutting chips.



## Specifications

### Clamp

| Model No.                           |                 | WKB0100-□                                                        | WKB0120-□ | WKB0160-□ | WKB0200-□ |
|-------------------------------------|-----------------|------------------------------------------------------------------|-----------|-----------|-----------|
| Clamping Force ※1                   | N               | 16                                                               | 30        | 60        | 90        |
| Pulling Capacity (Holding Force) ※1 | N               | 32                                                               | 60        | 120       | 180       |
| Release Cylinder Capacity           | cm <sup>3</sup> | 0.09                                                             | 0.14      | 0.32      | 0.54      |
| Repeatability                       | mm              | 0.15                                                             |           |           |           |
| Max. Operating Pressure             | MPa             | 0.7                                                              |           |           |           |
| Min. Operating Pressure             | MPa             | 0.3                                                              |           |           |           |
| Withstanding Pressure               | MPa             | 1.0                                                              |           |           |           |
| Operating Temp.                     | °C              | 0 ~ 70                                                           |           |           |           |
|                                     |                 | 3 Blank selected                                                 |           |           |           |
|                                     |                 | 3 V / C selected                                                 |           |           |           |
| Grease                              |                 | Barium Soap Grease                                               |           |           |           |
|                                     |                 | 3 Blank / V selected                                             |           |           |           |
|                                     |                 | Low-dust Grease for Clean Environments : AFF manufactured by THK |           |           |           |
| Material                            |                 | Stainless Steel                                                  |           |           |           |
| Usable Fluid                        |                 | Dry Air                                                          |           |           |           |
| Weight                              | g               | 7                                                                | 12        | 23        | 41        |



Note :

※1. Clamping force is the force that pulls in the bushing onto the seating surface.

Pulling capacity is the force that resists the force attempting to pull out the bushing, and differs from clamping force.

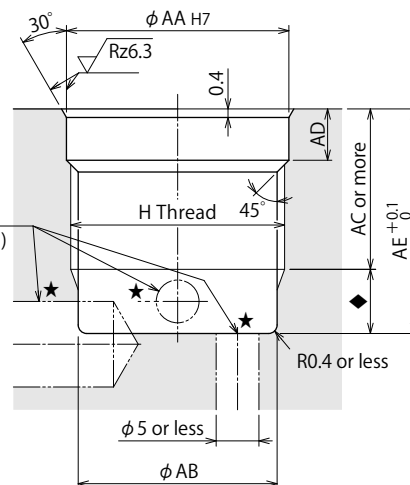
### Bushing

| Model No.             |    | WKBZ100-B-□     | WKBZ120-B-□ | WKBZ160-B-□ | WKBZ200-B-□ |
|-----------------------|----|-----------------|-------------|-------------|-------------|
| Operating Temperature | °C | 0 ~ 120         |             |             |             |
| Material              |    | Stainless Steel |             |             |             |
| Weight                | g  | 3               | 5           | 9           | 16          |



### ● Mounting Area Machining Dimensions (Clamp)

Release Air Port※1  
(One Part Required)

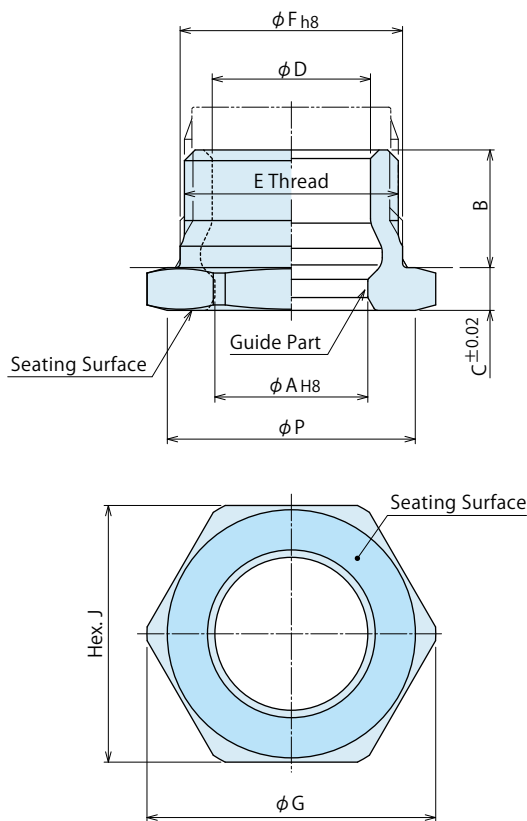


※1. Release air pressure can be supplied from the side or the bottom surface of the mounting hole (★ part). If machining the release air port on the side, please machine it within ◆ area.

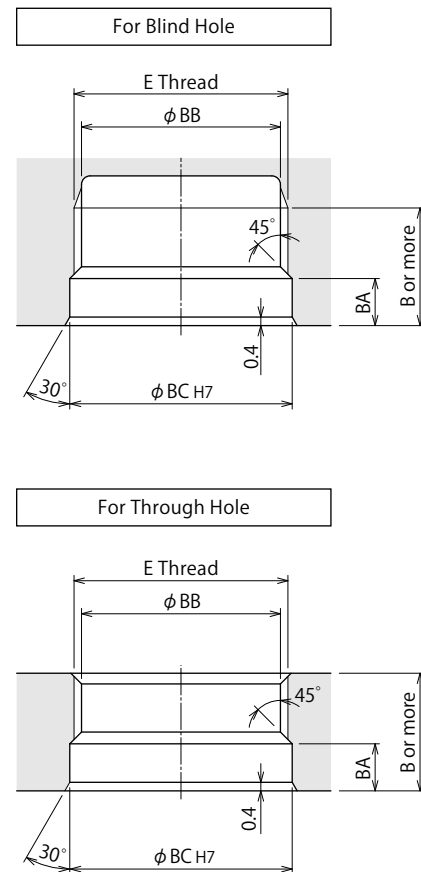
(mm)

5

## External Dimensions (Bushing)



## Mounting Area Machining Dimensions (Bushing)



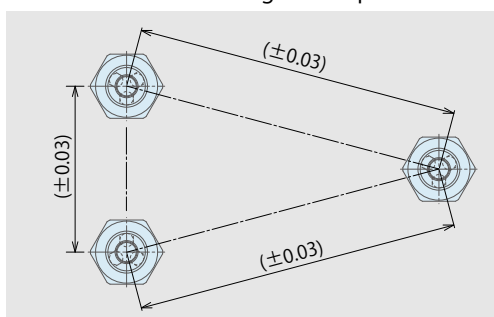
## External Dimensions and Machining Dimensions for Mounting (mm)

| Model No.           | WKBZ100-B-□                           | WKBZ120-B-□                          | WKBZ160-B-□                          | WKBZ200-B-□                            |
|---------------------|---------------------------------------|--------------------------------------|--------------------------------------|----------------------------------------|
| A                   | 7.15 <sup>+0.022</sup> <sub>0</sub>   | 8.15 <sup>+0.022</sup> <sub>0</sub>  | 10.65 <sup>+0.027</sup> <sub>0</sub> | 12.15 <sup>+0.027</sup> <sub>0</sub>   |
| B                   | 5.5                                   | 7                                    | 7                                    | 8.5                                    |
| C                   | 2                                     | 2.5                                  | 3                                    | 4                                      |
| D                   | 7.4                                   | 8.4                                  | 11.1                                 | 12.6                                   |
| E (Nominal × Pitch) | M10×0.75                              | M12×1                                | M16×1                                | M18×1.5                                |
| F                   | 10.4 <sup>0</sup> <sub>-0.027</sub>   | 12.4 <sup>0</sup> <sub>-0.027</sub>  | 16.4 <sup>0</sup> <sub>-0.027</sub>  | 18.4 <sup>0</sup> <sub>-0.033</sub>    |
| G                   | 13.5                                  | 15.5                                 | 20                                   | 24.5                                   |
| J                   | 12                                    | 14                                   | 18                                   | 22                                     |
| P                   | 11.6                                  | 13.6                                 | 17.6                                 | 21.6                                   |
| BA                  | 2.2                                   | 2.4                                  | 2.4                                  | 2.9                                    |
| BB                  | 9.3 <sup>+0.07</sup> <sub>-0.11</sub> | 11 <sup>+0.15</sup> <sub>-0.08</sub> | 15 <sup>+0.15</sup> <sub>-0.08</sub> | 16.5 <sup>+0.17</sup> <sub>-0.12</sub> |
| BC                  | 10.4 <sup>+0.018</sup> <sub>0</sub>   | 12.4 <sup>+0.018</sup> <sub>0</sub>  | 16.4 <sup>+0.018</sup> <sub>0</sub>  | 18.4 <sup>+0.021</sup> <sub>0</sub>    |

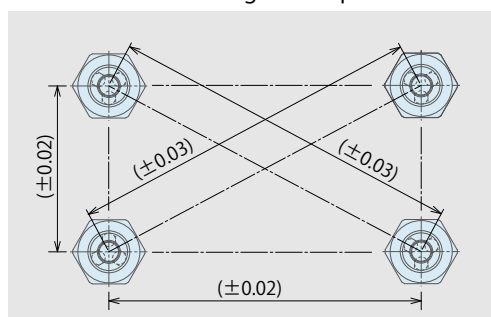
## Mounting Distance Accuracy

When using two or more units of this product on the same workpiece, the distance accuracy between each clamp and bushing should be within  $\pm 0.03$ .

When using 3 clamps



When using 4 clamps



## Accessory : Manifold Block for WKB

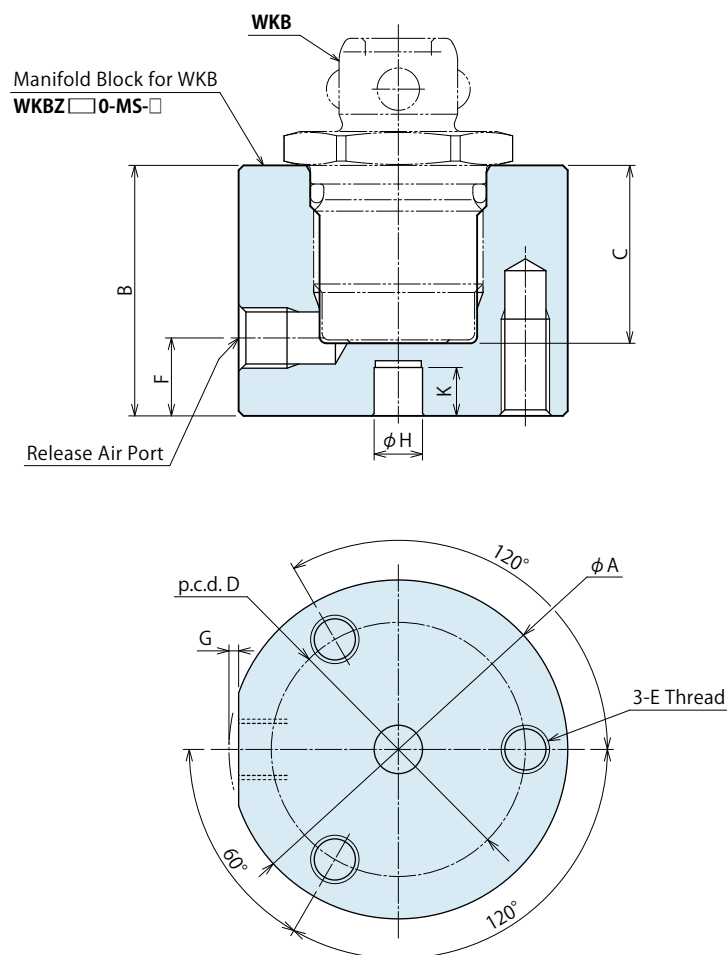
Model No. Indication

**WKBZ 10 0 - MS-**   

Size  
(Refer to the  
following table)

Design No.  
(Revision Number)

Operating Environment  
**Blank** : Standard  
**C** : Clean Environment



(mm)

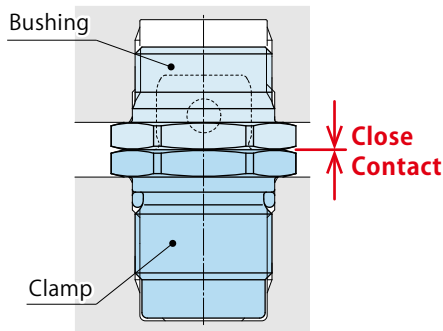
| Model No.               | WKBZ100-MS- <span style="border: 1px solid black; padding: 0 2px;">  </span> | WKBZ120-MS- <span style="border: 1px solid black; padding: 0 2px;">  </span> | WKBZ160-MS- <span style="border: 1px solid black; padding: 0 2px;">  </span> | WKBZ200-MS- <span style="border: 1px solid black; padding: 0 2px;">  </span> |
|-------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Corresponding Model No. | WKB0100- <span style="border: 1px solid black; padding: 0 2px;">  </span>    | WKB0120- <span style="border: 1px solid black; padding: 0 2px;">  </span>    | WKB0160- <span style="border: 1px solid black; padding: 0 2px;">  </span>    | WKB0200- <span style="border: 1px solid black; padding: 0 2px;">  </span>    |
| A                       | 20                                                                           | 22                                                                           | 30                                                                           | 34                                                                           |
| B                       | 15                                                                           | 16                                                                           | 20                                                                           | 23                                                                           |
| C                       | 10.5                                                                         | 11                                                                           | 13.5                                                                         | 16.5                                                                         |
| D                       | 15                                                                           | 17                                                                           | 23                                                                           | 27                                                                           |
| E                       | M3×0.5 Thread Depth 6                                                        | M3×0.5 Thread Depth 6                                                        | M4×0.7 Thread Depth 8                                                        | M4×0.7 Thread Depth 8                                                        |
| Release Air Port        | M3×0.5 Thread                                                                | M3×0.5 Thread                                                                | M5×0.8 Thread                                                                | M5×0.8 Thread                                                                |
| F                       | 5                                                                            | 5                                                                            | 7                                                                            | 7                                                                            |
| G                       | 0.5                                                                          | 0.5                                                                          | 0.8                                                                          | 0.8                                                                          |
| H                       | 2 <sup>+0.03</sup> <sub>0</sub>                                              | 3 <sup>+0.03</sup> <sub>0</sub>                                              | 4 <sup>+0.03</sup> <sub>0</sub>                                              | 4 <sup>+0.03</sup> <sub>0</sub>                                              |
| K                       | 2                                                                            | 3                                                                            | 4                                                                            | 4                                                                            |
| Material                | A2017BE-T4 (Surface Finishing : Anodized Aluminum Finishing)                 |                                                                              |                                                                              |                                                                              |
| Weight                  | 10g                                                                          | 13g                                                                          | 30g                                                                          | 41g                                                                          |

## When Using a Separately Installed Seat

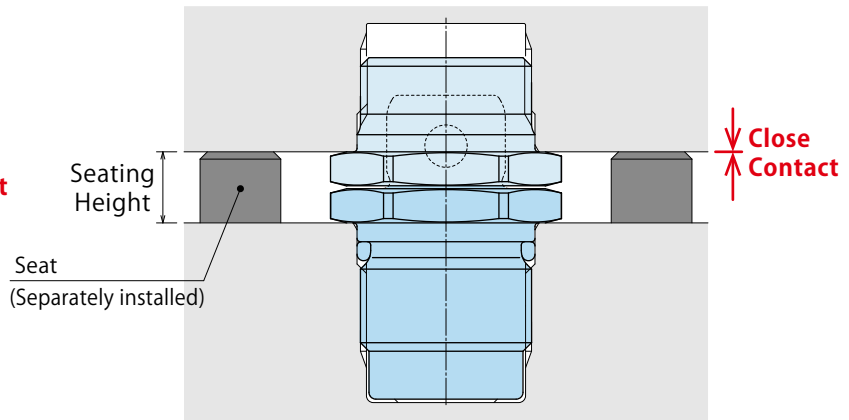
WKB has a seating surface, but it can also be used with a separately installed seat.

When using a separately installed seat, the seating height should be the dimensions shown in the table below.

Standard (Using WKB Seating Surface)



When Using a Separately Installed Seat

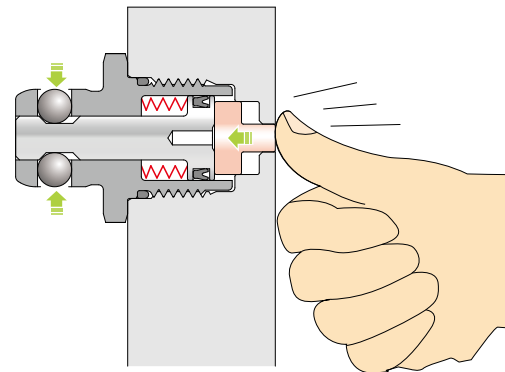
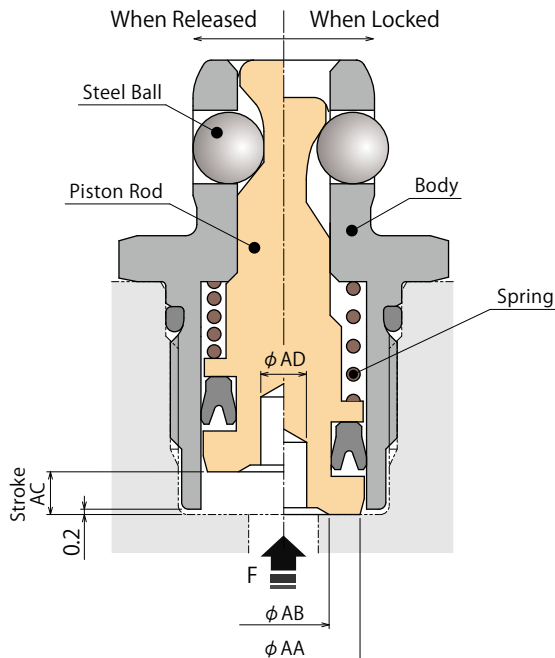


| Model No.      | Clamp   | WKB0100-□                           | WKB0120-□                           | WKB0160-□                           | WKB0200-□                           |
|----------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
|                | Bushing | WKBZ100-B-□                         | WKBZ120-B-□                         | WKBZ160-B-□                         | WKBZ200-B-□                         |
| Seating Height | mm      | 4 <sup>+0.08</sup> <sub>+0.04</sub> | 5 <sup>+0.08</sup> <sub>+0.04</sub> | 6 <sup>+0.08</sup> <sub>+0.04</sub> | 8 <sup>+0.08</sup> <sub>+0.04</sub> |

## Releasing Force and Dimensions when Operated by External Force

WKB is released by air pressure. It also can be operated by applying external force to the piston rod in such cases :

- Unable to supply air pressure directly
- Unable to secure sealing ability due to high temperature environment
- Operating manually



Example

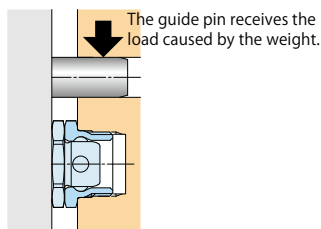
| Model No.                     |    | WKB0100-□ | WKB0120-□ | WKB0160-□ | WKB0200-□ |
|-------------------------------|----|-----------|-----------|-----------|-----------|
| Required Releasing Force F    |    | N         | 15        | 20        | 40        |
| Max. Releasing Force F max ※1 |    | N         | 50        | 60        | 125       |
| Dimensions<br>mm              | AA | 6.8       | 8.5       | 12.5      | 15.5      |
|                               | AB | 4.9       | 5.8       | 10.2      | 12.5      |
|                               | AC | 2.2       | 2.2       | 2.4       | 2.7       |
|                               | AD | 2         | 2.6       | 3.4       | 5         |

Note : ※1. External force F (applying when releasing) should be more than the required releasing force and less than the maximum releasing force. External force greater than the maximum releasing force will damage the product.

## Cautions

### ● Notes for Design

- 1) Check Specifications
  - Please use each product according to the specifications.
  - The steel balls of WKB will be set within the cylinder by supplying air and it allows for attachment and detachment of the bushing. By stopping air supply and releasing the supplied air, the steel balls will be expanded via internal spring to lock the bushing.
- 2) Do not use the product in the environment with cutting chips and coolant.
- 3) Mounting/Removing Pallet (Workpiece)
  - If needed, please provide a guide pin (rough guide) separately to avoid shearing loads or impacts when mounting/ removing pallet (workpiece).



### ● Installation Notes

- 1) Check the fluid to use.
  - Make sure to supply filtered clean dry air.
- 2) Preparation for Piping
  - The pipeline, piping connector and fixture circuits should be cleaned and flushed thoroughly. The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
  - There is no filter provided with this product for prevention of contaminants in the air circuit.
- 3) Applying Sealing Tape (Sealing Tape for Piping etc.)
  - Not required to apply sealing tape for the thread of the ball lock clamp.
  - Wrap with tape 1 to 2 times following the screwing direction.
  - Pieces of the sealing tape can lead to air leaks and malfunction.
  - When piping, be careful that contaminant such as sealing tape does not enter in products.
- 4) Mounting the Product
  - When mounting, make sure there are no scratches or damage on the O-ring for sealing, and tighten the product according to the torque shown in the table below.

| Model No.           | Thread Size (mm) | Tightening Torque (N·m) |
|---------------------|------------------|-------------------------|
| <b>WKB0100</b> -□   | M10×0.75         | 3.0                     |
| <b>WKB0120</b> -□   | M12×1            | 5.0                     |
| <b>WKB0160</b> -□   | M16×1            | 8.0                     |
| <b>WKB0200</b> -□   | M20×1.5          | 12.0                    |
| <b>WKBZ100-B</b> -□ | M10×0.75         | 3.0                     |
| <b>WKBZ120-B</b> -□ | M12×1            | 5.0                     |
| <b>WKBZ160-B</b> -□ | M16×1            | 8.0                     |
| <b>WKBZ200-B</b> -□ | M18×1.5          | 12.0                    |

- Apply an adequate amount of grease to the O-ring.
- If it is mounted under dry state, the O-ring may have twisting or be defective.
- If it is tightened with an excessive torque, it may lead to malfunction or damage to the product.

## ● Notes on Handling

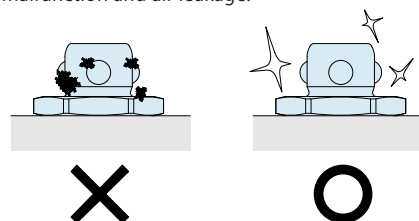
- 1) It should be operated by qualified personnel.
  - Machines and devices with hydraulic and pneumatic products should be operated and maintained by qualified personnel.
- 2) Do not operate or remove the product unless the safety protocols are ensured.
  - ① Machines and devices can only be inspected 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 workpiece or clamp while it is working. Otherwise, your hands may be injured due to clinching.



- 4) When transferring a workpiece, make sure the safety of environment in case of a workpiece detachment.
- 5) Do not disassemble or modify.
  - If the equipment 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 abnormality in the bolts and respective parts before restarting.
- 2) Regularly clean the each reference surface (guide part and seating surface).
  - Continuous use with dirt on components will lead to locating failure, malfunction and air leakage.



- 3) Regularly tighten pipe and product 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 products 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 If the product is used while it is not suitable for use based on the operator's judgment, resulting in defect.
    - 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.

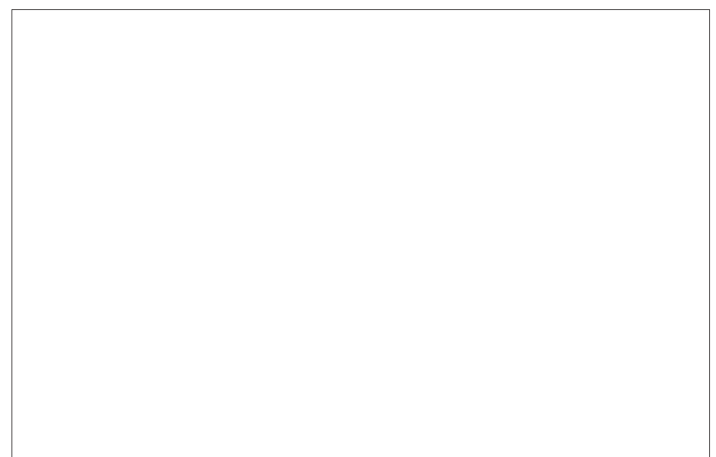


## KOSMEK LTD.

► <https://www.kosmek.com/>

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|                                        |                                                                                                                                                                                                                              |
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| THAILAND<br>REPRESENTATIVE OFFICE      | KOSMEK Thailand Representation Office<br>No.139, Blue Chips Building, 4th Floor, Room No.422, Soi Sukhumvit 63<br>(Thong Lor 10), Sukhumvit Road, Khlong Tan Nuea, Wattana,<br>Bangkok 10110, Thailand TEL. +66(0)2-059-2010 |



- For Further Information on Unlisted Specifications and Sizes, Please call us.
- Specifications in this Leaflet are Subject to Change without Notice.

