

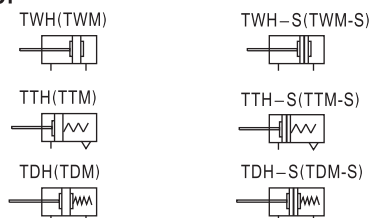
# Stopper cylinder

TWH, TWM Series

**AIRTAC**



## Symbol



## Product feature

1. JIS standard is implemented.
2. Widening the piston rod can effectively improve the impact resistance ability of the cylinder.
3. Heavy type stopper cylinder has shock absorber adjustable shock absorber, which can reliably absorb the impact energy.
4. Shockless stopper cylinder is equipped with self-lock device, which can prevent the returning of rebound of rocker caused by bar objects.
5. Several series and specifications for stopper cylinders can be selected.

## Specification

| Series                    | TWH  |    |    |    |  |    |      | TWM  |
|---------------------------|--|----|----|----|--|----|------|------|
| Bore size(mm)             | 20   | 25 | 32 | 40 | 50   | 63 | 80   | 50   |
| Fluid                     | Air(to be filtered by 40 μ m filter element)     |    |    |    |  |    |      |      |
| Action                    | Double acting type、Single acting-pull type       |    |    |    |  |    |      |      |
| Operating pressure        | 0.15~1.0MPa(23~145psi)                           |    |    |    |  |    |      |      |
| Proof pressure            | 1.5MPa(215psi)                                   |    |    |    |  |    |      |      |
| Temperature °C            | -20~80   |    |    |    |  |    |      |      |
| Range of stroke tolerance | +1.0<br>0  |    |    |    |  |    |      |      |
| Cushion type              | Bumper   |    |    |    |  |    |      |      |
| Lubrication               | Non required                                     |    |    |    |  |    |      |      |
| Mounting type             | Flange   |    |    |    |  |    |      |      |
| Stopper type              | Shock less stopper(With non adjustable absorber) |    |    |    | Shock less stopper(With adjustable absorber) |    |      |      |
| Port size ①               | M5 × 0.8   |    |    |    | 1/8"   |    | 1/4" | 1/8" |
| Sensor's thread           | M5 × 0.5   |    |    |    | M8 × 1.0                                     |    |      |      |

① PT thread, NPT thread and G thread are available. Add) Refer to Page 397~420 for details of sensor switch.

## Ordering code

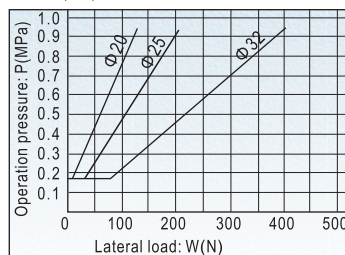
| TWH 50 × 30 S K   |  |
|---|--|
| Model   | Thread type ①  |
| TWH: Stopper cylinder(Double acting type)                     | Blank: PT  |
| TDH: Stopper cylinder<br>(Built-in spring double acting type) | T: NPT   |
| TTH: Stopper cylinder(Single acting-Pull type)                | G: G   |
| TWM: Stopper cylinder(Double acting type)                     |  |
| TDM: Stopper cylinder<br>(Built-in spring double acting type) | Self-lock function                                     |
| TTM: Stopper cylinder(Single acting-Pull type)                | Blank: Without self-lock                               |
|   | F: With self-lock                                      |
|   | Stopper  |
|   | Model Stopper  |
|   | TWH L: shockless stopper<br>(Non-adjustable absorber)  |
|   | TDH K: Shockless stopper<br>(adjustable absorber)      |
|   | TTH K: Shockless stopper<br>(adjustable absorber)      |
|   | TWM, TDM K: Shockless stopper<br>(adjustable absorber) |
|   | Magnet   |
|   | Blank: Without magnet                                  |
|   | S: With magnet   |

① When the thread is standard, the code is blank.

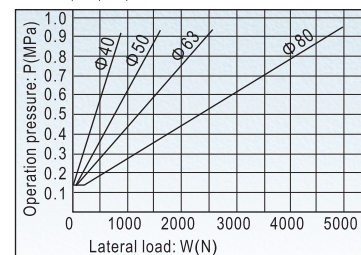
Note) The buffer is not adjustable if the bore size is 20 and 25. It is adjustable if the bore is over 32.

## Lateral Load and Operation pressure

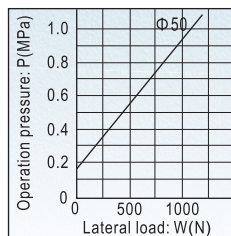
TWH20, 25, 32



TWH40, 50, 63, 80



TWM50



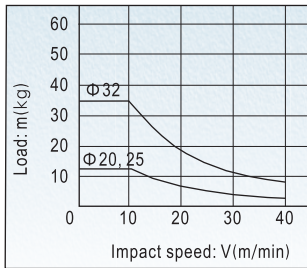
# Stopper cylinder

## TWH, TWM Series

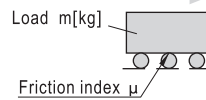
### How to select

Drawing I

Bore size  $\Phi 20$ ,  $\Phi 25$ ,  $\Phi 32$ . Friction index  $\mu = 0.1$



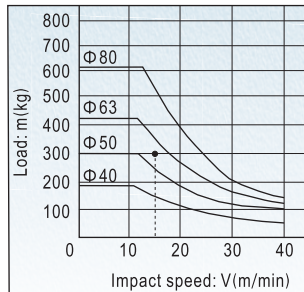
Impact speed  $v$  [m/min]



Note:  
When the speed is the same, the friction index more higher, the Load more lighter.  
so the rubbing surface is smoother is better.

Drawing II

Bore size  $\Phi 40$ ,  $\Phi 50$ ,  $\Phi 63$ ,  $\Phi 80$ . Friction index  $\mu = 0.1$



Selection way:

When load is 300kg, speed is 15m/min, and friction factor is 0.1, draw a horizontal line in the 300 position of Y axis in Table 3 to join with X axis' .15m/min  $\Phi 63$  cylinder used in this application will be selected.

### Inner structure and material of major parts

TTH-K

| No. | Item              | Material                 | No. | Item                         | Material                         |
|-----|-------------------|--------------------------|-----|------------------------------|----------------------------------|
| 1   | Countersink screw | Carbon steel             | 17  | Rocker                       | Cast steel/<br>Nodular Cast iron |
| 2   | Body              | Aluminum alloy           | 18  | PIN                          | S45C grinding rod                |
| 3   | Piston            | Aluminum alloy           | 19  | PIN gasket                   | S45C grinding rod                |
| 4   | Wear ring         | Wear resistant material  | 20  | Obstruct block               | Powder metallurgy                |
| 5   | Piston seal       | NBR                      | 21  | Countersink screw            | Carbon steel                     |
| 6   | Magnet washer     | Aluminum alloy           | 22  | Leader                       | S45C grinding rod                |
| 7   | Front cover       | Aluminum alloy           | 23  | Sliding bushing              | Wear resistant material          |
| 8   | O-ring            | NBR                      | 24  | O-ring                       | NBR                              |
| 9   | Packing           | NBR                      | 25  | Bumper                       | TPU                              |
| 10  | Silencer          | Sintered bronze particle | 26  | Absorber fix and adjust seat | POM                              |
| 11  | Piston rod        | S45C grinding rod        | 27  | Magnet                       | Plastic                          |
| 12  | Shock absorber    |                          | 28  | Magnet washer                | NBR                              |
| 13  | Fixed seat        | Nodular Cast iron        | 29  | Spring                       | Spring steel                     |
| 14  | PIN               | S45C grinding rod        | 30  | Cushion                      | POM                              |
| 15  | Clip              | Spring steel             | 31  | Back cover                   | Aluminum alloy                   |
| 16  | Torsion spring    | Spring steel             |     |                              |                                  |

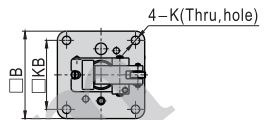
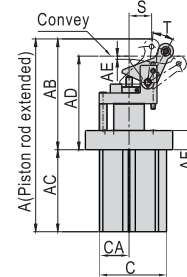
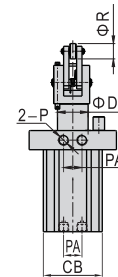
TTM-K

| No. | Item           | Material                | No. | Item                         | Material                 |
|-----|----------------|-------------------------|-----|------------------------------|--------------------------|
| 1   | Body           | Aluminum alloy          | 15  | Rocker                       | Nodular cast iron        |
| 2   | Piston         | Aluminum alloy          | 16  | Roller                       | Powder metallurgy        |
| 3   | Wear ring      | Wear resistant material | 17  | Obstruct black               | Powder metallurgy        |
| 4   | Piston seal    | NBR                     | 18  | Countersink screw            | Carbon steel             |
| 5   | Magnet washer  | Aluminum alloy          | 19  | Leader                       | S45C grinding rod        |
| 6   | Front cover    | Aluminum alloy          | 20  | Cancel cap                   | Aluminum alloy           |
| 7   | O-ring         | NBR                     | 21  | Sliding bushing              | Bronze powder metallurgy |
| 8   | O-ring         | NBR                     | 22  | Absorber fix and adjust seat | POM                      |
| 9   | Gasket         | NBR                     | 23  | Bumper                       | TPU                      |
| 10  | Piston rod     | S45C grinding rod       | 24  | Magnet                       | Plastic                  |
| 11  | Shock absorber |                         | 25  | Spring                       | Spring steel             |
| 12  | Mounting seat  | Nodular cast iron       | 26  | Bumper                       | TPU                      |
| 13  | PIN            | S45C grinding rod       | 27  | Back cover                   | Aluminum alloy           |
| 14  | Torsion spring | Spring steel            |     |                              |                          |

### Dimensions

Non-adjustable absorber(TWH-L(F), TDH-L(F), TTH-L(F))

$\Phi 20$ ,  $\Phi 25$



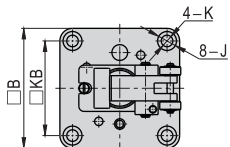
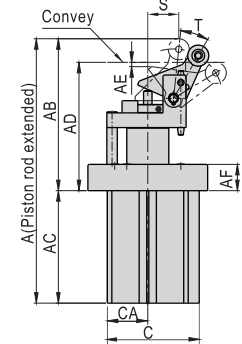
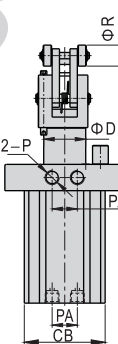
| Bore size\Item | A     | AB | AC   | AD | AE  | AF | B  | C  | CA | CB |
|----------------|-------|----|------|----|-----|----|----|----|----|----|
| 20             | 129   | 74 | 55   | 60 | 2.5 | 8  | 48 | 40 | 18 | 36 |
| 25             | 135.5 | 78 | 57.5 | 64 | 2.5 | 12 | 58 | 45 | 20 | 40 |

| Bore size\Item | D  | K   | KB | P      | PA | R  | S  | T  |
|----------------|----|-----|----|--------|----|----|----|----|
| 20             | 16 | 4.5 | 40 | M5×0.8 | 12 | 12 | 16 | 28 |
| 25             | 16 | 6.5 | 47 | M5×0.8 | 16 | 12 | 16 | 28 |

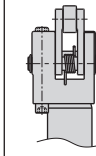
Note: The type with magnet and the type without magnet have the same dimension.  
The type with self-lock and the type without selflock have the same dimension.

Adjustable absorber(TWH-K(F), TDH-K(F), TTH-K(F))

$\Phi 32 \sim \Phi 80$



$\Phi 32$  Shockless stopper sketch map



| Bore size\Item | A     | AB    | AC   | AD    | AE  | AF | B   | C    | CA   |
|----------------|-------|-------|------|-------|-----|----|-----|------|------|
| 32             | 152.5 | 87    | 65.5 | 73.5  | 1.5 | 16 | 67  | 51.5 | 23   |
| 40             | 191   | 112   | 79   | 92.5  | 3.5 | 16 | 82  | 62   | 26.5 |
| 50             | 211   | 128   | 83   | 107.5 | 2   | 20 | 93  | 72   | 32   |
| 63             | 245.5 | 144.5 | 101  | 122   | 3.5 | 25 | 114 | 87.5 | 38.5 |
| 80             | 299.5 | 171.5 | 128  | 145.5 | 3.5 | 25 | 138 | 109  | 49   |

| Bore size\Item | CB | D  | J  | K   | KB  | P    | PA | R  | S    | T  |
|----------------|----|----|----|-----|-----|------|----|----|------|----|
| 32             | 46 | 20 | 11 | 6.5 | 53  | 1/8" | 16 | 12 | 18.5 | 28 |
| 40             | 53 | 25 | 11 | 6.5 | 65  | 1/8" | 16 | 20 | 21   | 26 |
| 50             | 64 | 32 | 14 | 9   | 73  | 1/8" | 18 | 20 | 26   | 24 |
| 63             | 77 | 40 | 18 | 11  | 90  | 1/4" | 24 | 20 | 30   | 24 |
| 80             | 98 | 50 | 20 | 13  | 110 | 1/4" | 30 | 25 | 37   | 23 |

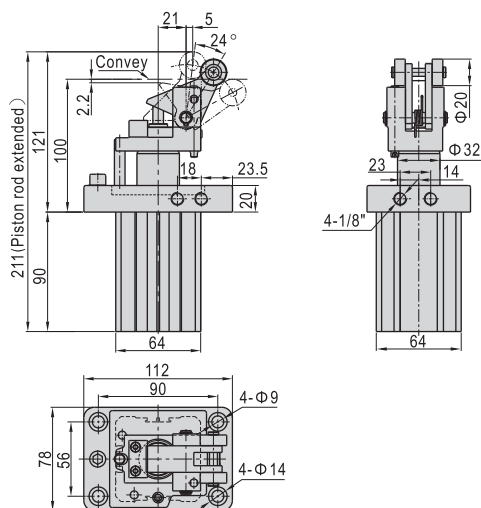
Note: The type with magnet and the type without magnet have the same dimension.  
The type with self-lock and the type without selflock have the same dimension.

# Stopper cylinder

## TWH, TWM Series

### ■ Dimensions

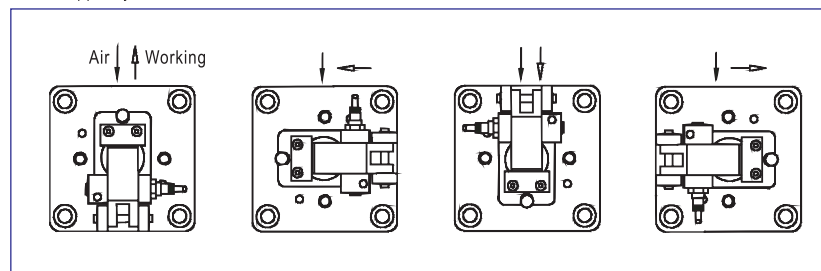
Adjustable absorber(TWM-K(F), TDM-K(F), TTM-K(F))



Note: The type with magnet and the type without magnet have the same dimension.

### 3. Multi-working position

Even the flange is fixed, just adjust the mounting position of guide rod will be changed the working direction of the stopper cylinder.

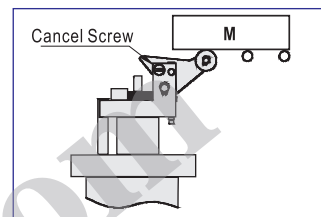


### 4. Working Forbidden

4.1) This function is used to cancel the stop action of the cylinder, and make the work piece pass easy.

4.2) The steps are as following.

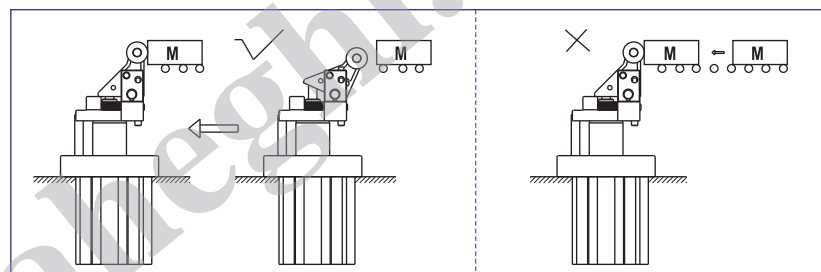
- Screw off the cancel screw from the flange.
- Put the roller seat down.
- Fasten the cancel screw in the screw hole on the fixed seat and the tail of the cancel screw should be inserted in the hole made on the roller seat.



### 5. How to use stopper function

5.1) When the shock absorber is impacted deeply, added impact energy must be avoided. The cylinder without shock absorber can't be impacted by load, otherwise mechanical failure may be caused.

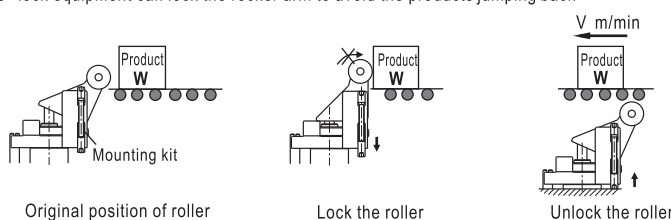
5.2) The maximum impact kinetic energy acting on the piston rod can't exceed the allowable maximum values, otherwise mechanical failure may be caused.



### 6. Self-locking

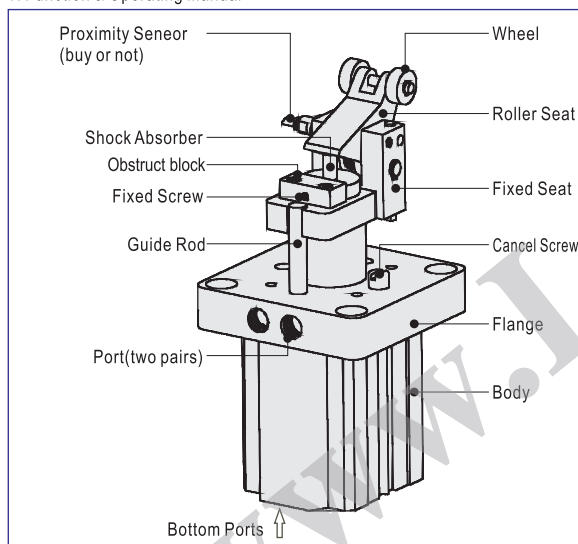
Unusually, when the stopper cylinder is operating, work piece will be rebound as the effect of shocker absorber. In order to keep the work piece steady, we have developed this self-locking device.

The auto-lock equipment can lock the rocker arm to avoid the products jumping back



### ■ Installation and application

#### 1. Function & Operating Manual



#### 2. Adjustment of Shock Absorber

2.1) The Shock Absorber had been adjusted before the cylinder finished.

2.2) The client can adjust it if necessary.

2.3) The steps are as following.

- Loose the fixed screw.
- Turn the Shock Absorber to adjust the cushion ability.
- Fasten the fixed screw.

