



We have added high positioning accuracy and high rigidity to the pneumatic actuator. The Koganei Alpha Series further enhances the actuator module concept, supporting superior applications and labor savings in FA line design and manufacturing with higher performance.

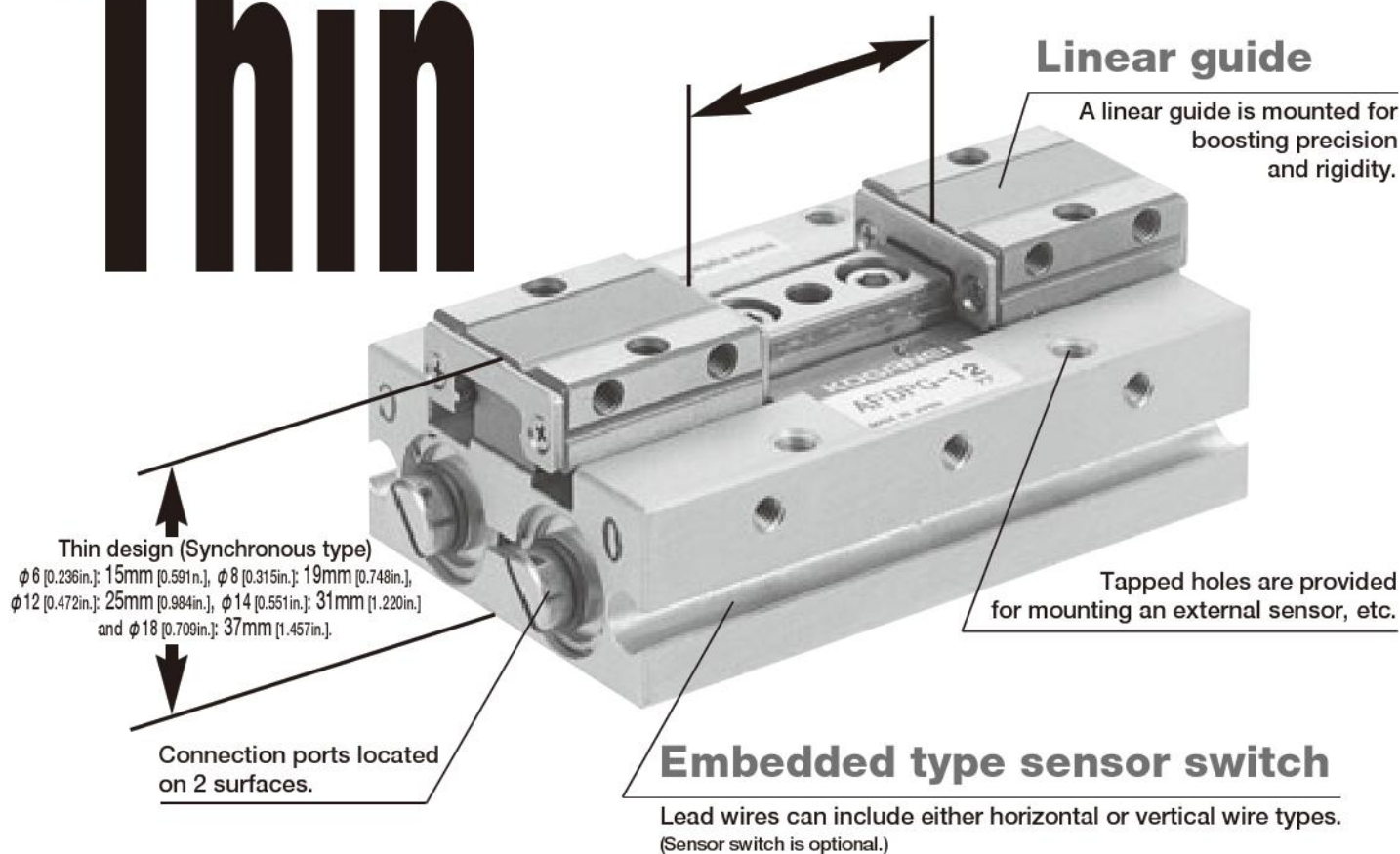
## FLAT TYPE AIR HANDS

# Long Stroke

# Thin

$\phi$  6 [0.236in.]: 12mm [0.472in.],  $\phi$  8 [0.315in.]: 16mm [0.630in.],  $\phi$  12 [0.472in.]: 22mm [0.866in.],  $\phi$  14 [0.551in.]: 30mm [1.181in.] and  $\phi$  18 [0.709in.]: 40mm [1.575in.].

In addition, the  $\phi$  14 [0.551in.] and  $\phi$  18 [0.709in.] sizes include long stroke specifications of 60mm [2.362in.] ( $\phi$  14 [0.551in.]) and 80mm [3.150in.] ( $\phi$  18 [0.709in.]).



## High gripping force

Double piston construction offers high gripping force, including

$\phi$  6 [0.236in.]: 12N [2.7lbf.],  $\phi$  8 [0.315in.]: 17N [3.8lbf.],  $\phi$  12 [0.472in.]: 44N [9.9lbf.],  
 $\phi$  14 [0.551in.]: 58N [13.0lbf.] and  $\phi$  18 [0.709in.]: 105N [23.6lbf.].

(Under grip point length of 30mm [1.18in.] and operating pressure of 0.5MPa [73psi.])

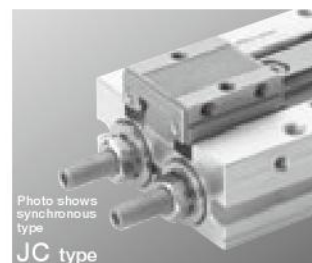
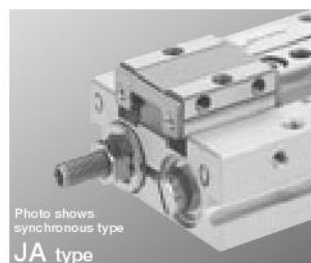
# LINE UP PRODUCTS

| Cylinder bore size        | Synchronous type | Asynchronous type | Long type |
|---------------------------|------------------|-------------------|-----------|
| <b>NEW</b> 6mm [0.236in.] | ●                |                   |           |
| 8mm [0.315in.]            | ●                | ●                 |           |
| 12mm [0.472in.]           | ●                | ●                 |           |
| 14mm [0.551in.]           | ●                |                   | ●         |
| 18mm [0.709in.]           | ●                |                   | ●         |

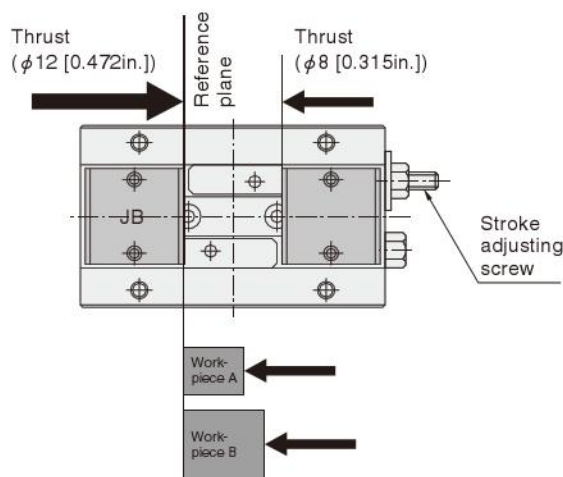
## With stroke adjusting mechanism

Options available for 6mm [0.236in.] ( $\phi$  6 [0.236in.]), 8mm [0.315in.] ( $\phi$  8 [0.315in.]),  $\phi$  12 [0.472in.], and 15mm [0.591in.] ( $\phi$  14 [0.551in.],  $\phi$  18 [0.709in.]) in open side and closed side stroke adjustment types, and in an open/closed both-side stroke adjustment type.

Note: Asynchronous type is available as either open side or closed side stroke adjustment type only.



### Asynchronous type (Diagram shows AFDPGH-8)



Workpiece location at time of gripping

Even if the size of the workpiece being gripped changes, the reference plane location does not change because the side surface of the workpiece is the locating reference.

Note: For operating principles, see p.1488.

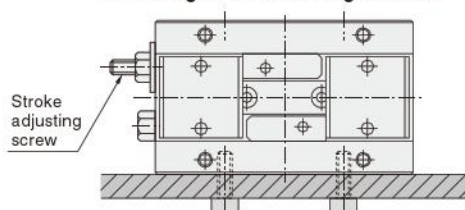
### Synchronous type and asynchronous type

The air hands (grippers) offer the more common synchronous type, and the asynchronous type. Fine stroke adjustment for the workpiece is also available. Because the asynchronous method involves making one side of the bore size of the finger larger to the other side, with that side as the reference plane and gripping is performed by moving the opposite side finger, this system is optimum for workpieces with side reference planes.

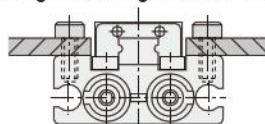
| Synchronous type                                                                                 | Asynchronous type                                                                                                                 |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <p>The synchronous method is suitable for gripping workpieces with center line as reference.</p> | <p>The asynchronous method is suitable for gripping workpieces with side reference planes, or workpieces of indefinite shape.</p> |

### Body mounting examples

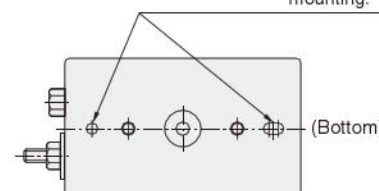
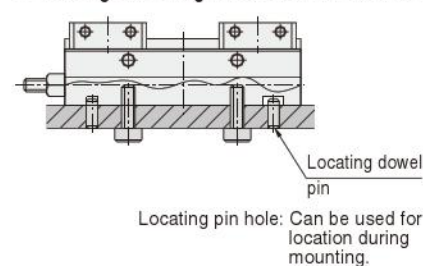
#### 1. Using side mounting threads



#### 2. Using mounting threads on the top



#### 3. Using mounting threads on the bottom



## Handling Instructions and Precautions



### General precautions

#### Media

1. Use air for the media. For the use of any other media, consult us.
2. Air used for the air hand (gripper) should be clean air that contains no deteriorated compressor oil, etc. Install an air filter (with filtration of a minimum 40µm) near the air hand (gripper) or valve to remove collected liquid or dust. In addition, drain the air filter periodically.

#### Piping

Always thoroughly blow off (use compressed air) the tubing before connecting it to the air hand (gripper). Entering metal chips, sealing tape, rust, etc., generated during piping work could result in air leaks or other defective operation.

#### Lubrication

##### Cylinder portion

The product can be used without lubrication, if lubrication is required, use Turbine Oil Class 1 (ISO VG32) or equivalent. Avoid using spindle oil or machine oil.

##### Lever slide portion

The product can be used without lubrication, if lithium-based grease or urea-based grease is applied, it will increase the product's operating life.

#### Atmosphere

Avoid use in locations subject to dripping water or oil, or to large amounts of dust.

#### Gripping

1. When attaching fingers on the levers, design them as short and as light as possible. If the fingers are longer and heavier, the impact force when opening and closing will increase and cause a decrease in the gripping accuracy and/or wear and damage to the sliding portion. Also, to prevent the workpiece from falling down or being damaged, and to reduce the metal contact noise when gripping, plastic or rubber materials should be attached to the fingers at the part of contact.  
In cases with long grip point length or high air pressure, there will be a large gripping moment exerted on the lever area that could result in damage to the lever. Always refer to the grip point limit range table, and use it within the allowed range.
2. When the lever opening and closing time is faster than necessary in relation to the workpieces, the impact force increases when opening and/or closing and causes a reduction in the gripping accuracy, and wear and damage of the sliding portion etc., therefore speed controllers should be installed and the workpiece should be gripped to make the impact as small as possible.
3. When moving the air gripper in straight lines or during circular actions, use a shock absorber etc., at the travel end to stop it as smoothly as possible. Sudden stops may cause the workpieces to jump out or fall from the gripper.

#### Workpiece

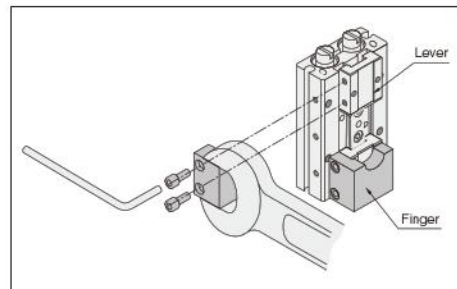
1. Set the mass of the workpiece actually gripped to about 1/10~1/20 of the effective gripping force.
2. Set the workpiece mass to about 1/30~1/50 of the effective gripping force when you move the air gripper while holding the workpiece.
3. As the workpiece mass which can be gripped changes greatly depending on the material and shape of the fingers, the condition of the surface being gripped and the moving speed of the workpiece, etc., and the values in the specifications and graphs should be used for reference only.



### Mounting

#### Mounting

1. Never attempt to convert or disassemble the main body. It could result in breakdowns or accidents.
2. Take care to avoid being pinched hands or fingers in the lever during mounting or operation.
3. Shut off the air supply before mounting the finger or hand (gripper).
4. When mounting the finger to the lever, use a wrench etc., for hold to avoid subjecting the lever to apply more than the allowable moment. Tighten the mounting bolts to the tightening torques shown in the table below.



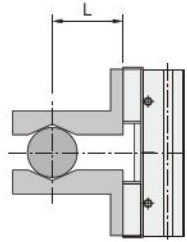
| Model         | Bolt      | Maximum tightening torque<br>N·m [in·lbf] |
|---------------|-----------|-------------------------------------------|
| AFDPG-6-□     | M2×0.4    | 0.15 [1.33]                               |
| AFDPG(H)-8-□  | M2.5×0.45 | 0.32 [2.83]                               |
| AFDPG(H)-12-□ | M3×0.5    | 0.6 [5.3]                                 |
| AFDPG(L)-14-□ | M3×0.5    | 0.6 [5.3]                                 |
| AFDPG(L)-18-□ | M3×0.5    | 0.6 [5.3]                                 |

**Caution:** Side surface mounting on the lever is not available for φ 14 and φ 18.

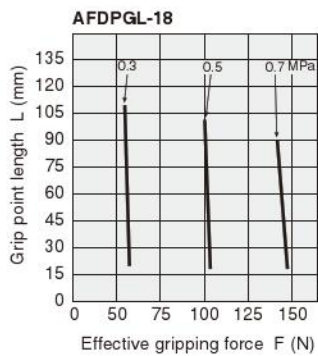
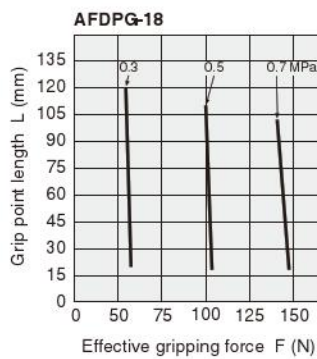
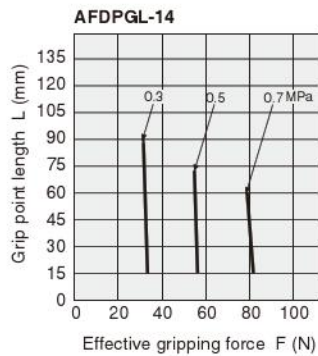
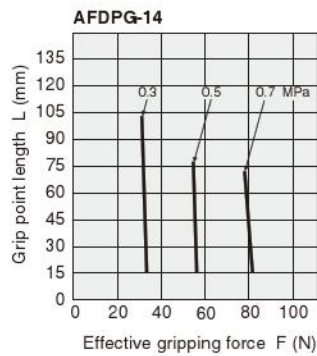
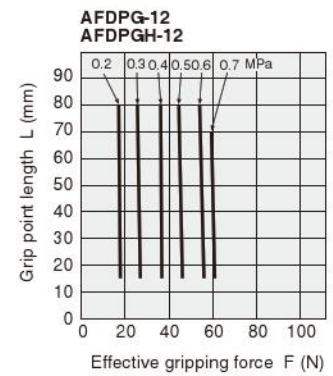
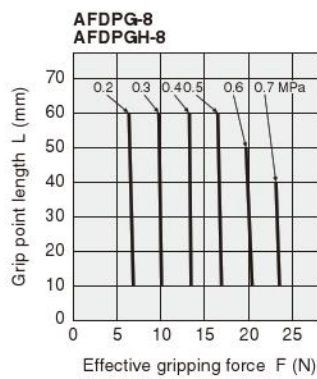
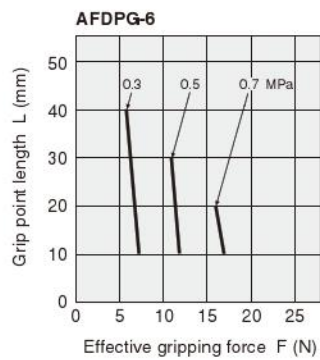


## Selection

### Effective gripping force

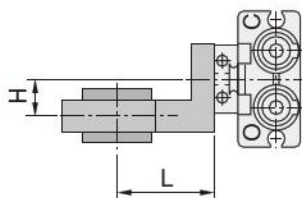
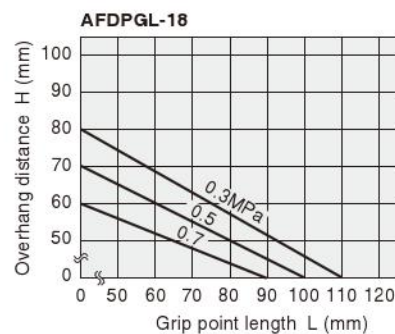
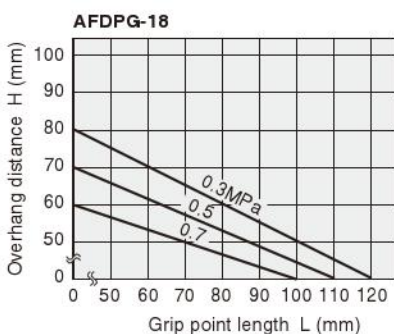
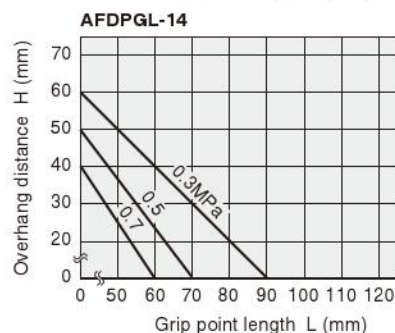
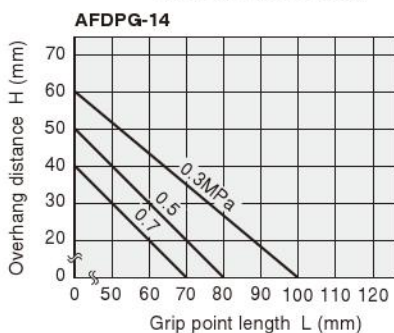
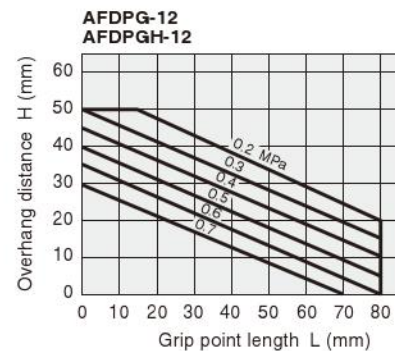
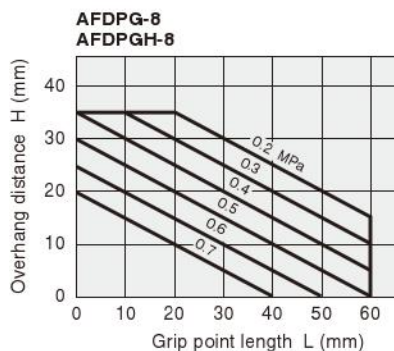
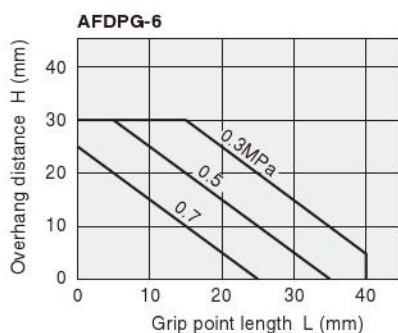


Note: Gripping force is the same for both the open and closed sides.



1mm = 0.0394in., 1N = 0.2248lbf.  
1MPa = 145psi.

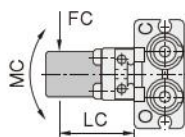
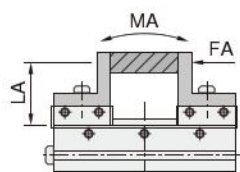
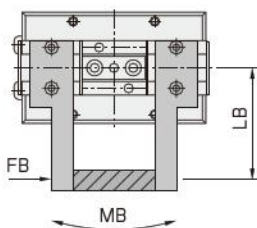
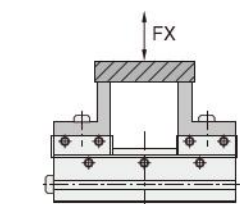
## Grip point limit range



H = Overhang distance  
L = Grip point length

1mm = 0.0394in.

## Allowable load and allowable moment

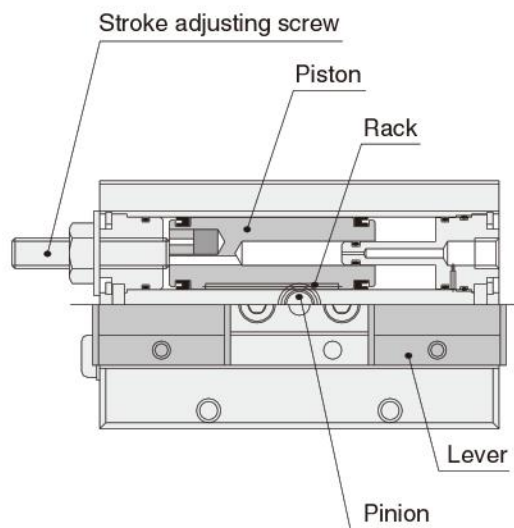


- $MA = FA \times LA$  (N·m)
- $MB = FB \times LB$  (N·m)
- $MC = FC \times LC$  (N·m)

| Model              | Load and moment<br>FX<br>N [lbf.] | MA<br>N·m [ft·lbf] | MB<br>N·m [ft·lbf] | MC<br>N·m [ft·lbf] |
|--------------------|-----------------------------------|--------------------|--------------------|--------------------|
| <b>AFDPG-6</b>     | 12 [2.7]                          | 0.04 [0.030]       | 0.04 [0.030]       | 0.08 [0.059]       |
| <b>AFDPG(H)-6</b>  | 40 [9.0]                          | 0.3 [0.22]         | 0.3 [0.22]         | 0.6 [0.44]         |
| <b>AFDPG(H)-12</b> | 120 [27.0]                        | 1.0 [0.74]         | 1.0 [0.74]         | 2.0 [1.48]         |
| <b>AFDPG(L)-14</b> | 190 [42.7]                        | 3.0 [2.21]         | 4.0 [2.95]         | 8.0 [5.90]         |
| <b>AFDPG(L)-18</b> | 210 [47.2]                        | 4.0 [2.95]         | 6.0 [4.43]         | 9.0 [6.64]         |

## Stroke adjusting method

### ● Synchronous type



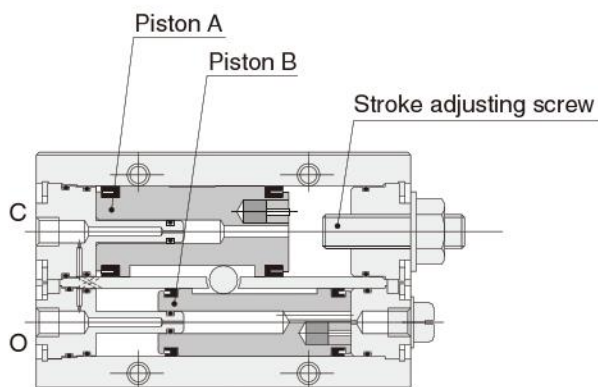
Use a stroke adjusting screw to adjust the piston travel distance.

Applying air pressure moves the piston as far as the stroke adjusting screw.

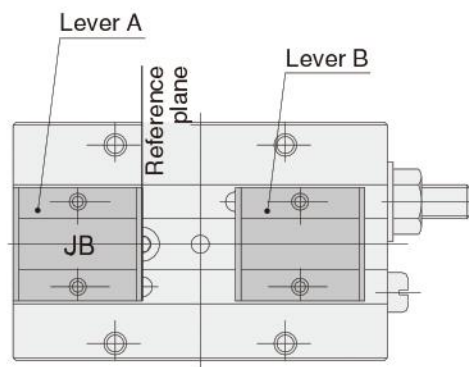
Synchronized movement of the rack (one piece type with piston) and pinion moves the levers on both sides as far as the preset location.

(Diagram shows open side stroke adjustment. For closed side stroke adjustment, the stroke adjusting screw is reversed in the case.)

### ● Asynchronous type



Cross section



External appearance

#### ● How to determine the reference plane (Diagrams show **AFDPGH-12**)

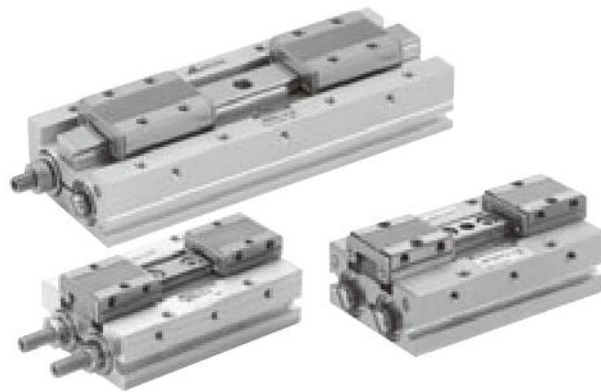
Inside the air hand (gripper) there are pistons of different diameter ( $\phi 12$  [0.472in.] and  $\phi 14$  [0.551in.]). Applying air pressure causes the larger piston (piston A) to move as far as the stroke adjusting screw. The smaller piston (piston B) moves as far as the position where the workpiece can be gripped.

Because the piston thrust is larger on one side, the lever for the larger piston diameter side (lever A) always provides the reference plane for gripping.

The stroke adjusting method is the same as for the synchronous type.

# FLAT TYPE AIR HANDS

## Synchronous Type and Long Type



## Specifications

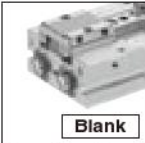
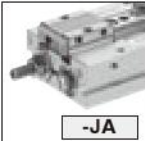
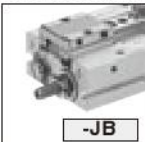
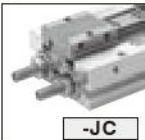
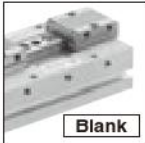
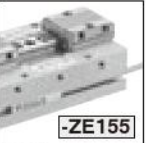
| Basic model                                    |            | AFDPG-6                           | AFDPG-8                           | AFDPG-12               | AFDPG-14                           | AFDPGL-14               | AFDPG-18                | AFDPGL-18               |
|------------------------------------------------|------------|-----------------------------------|-----------------------------------|------------------------|------------------------------------|-------------------------|-------------------------|-------------------------|
| Cylinder bore size                             | mm [in.]   | 6×2 [0.236×2]                     | 8×2 [0.315×2]                     | 12×2 [0.472×2]         | 14×2 [0.551×2]                     |                         | 18×2 [0.709×2]          |                         |
| Operation type                                 |            | Double acting type                |                                   |                        |                                    |                         |                         |                         |
| Media                                          |            | Air                               |                                   |                        |                                    |                         |                         |                         |
| Operating pressure range                       | MPa [psi.] | 0.2~0.7 [29~102]                  |                                   | 0.15~0.7 [22~102]      |                                    |                         |                         |                         |
| Proof pressure                                 | MPa [psi.] | 1.05 [152]                        |                                   |                        |                                    |                         |                         |                         |
| Operating temperature range                    | °C [°F]    | 0~60 [32~140]                     |                                   |                        |                                    |                         |                         |                         |
| Maximum operating frequency                    | cycle/min  | 120                               |                                   |                        | 100                                |                         |                         |                         |
| Lubrication                                    |            | Not required                      |                                   |                        |                                    |                         |                         |                         |
| Effective gripping force (F) <sup>Note 1</sup> | N [lbf.]   | 12 [2.7]                          | 17 [3.8]                          | 44 [9.9]               | 58 [13.0]                          |                         | 105 [23.6]              |                         |
| Open/closed stroke                             | mm [in.]   | 12 [0.472]                        | 16 [0.630]                        | 22 [0.866]             | 30 [1.181]                         | 60 [2.362]              | 40 [1.575]              | 80 [3.150]              |
| Stroke adjusting range <sup>Note 2</sup>       | mm [in.]   | Open/closed stroke max. 6 [0.236] | Open/closed stroke max. 8 [0.315] |                        | Open/closed stroke max. 15 [0.591] |                         |                         |                         |
| Repeatability                                  | mm [in.]   | ±0.07 [±0.0028]                   |                                   |                        | ±0.08 [±0.0031]                    |                         |                         |                         |
| Port size                                      |            | M3×0.5                            |                                   | M5×0.8                 |                                    |                         |                         |                         |
| Mass <sup>Note 3</sup>                         | g [oz.]    | 52 [1.83] [0.5 [0.018]]           | 74 [2.61] [9 [0.32]]              | 183 [6.46] [12 [0.42]] | 440 [15.52] [20 [0.71]]            | 510 [17.99] [20 [0.71]] | 645 [22.75] [25 [0.88]] | 945 [33.33] [25 [0.88]] |

Notes: 1. Values are obtained when grip point length is 30mm [1.18in.] under operating pressure 0.5 MPa [73psi].

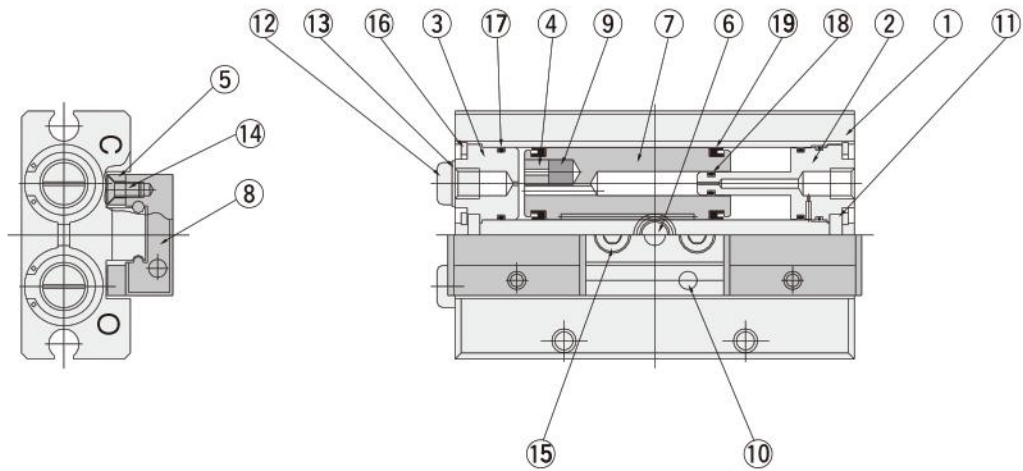
2. Applicable range with stroke adjustment mechanism (-JA, -JB, -JC). The stroke adjustment range for -JC type is shown separately for open side and closed side. When using the  $\phi 6$  and  $\phi 8$  both-side adjustment (-JC) type, ensure a minimum of 3 mm for the lever stroke to operate.

3. The figure in parentheses ( ) shows the amount of additional mass for the stroke adjustment mechanism. For -JC, double the amount of the figure in parentheses ( ).

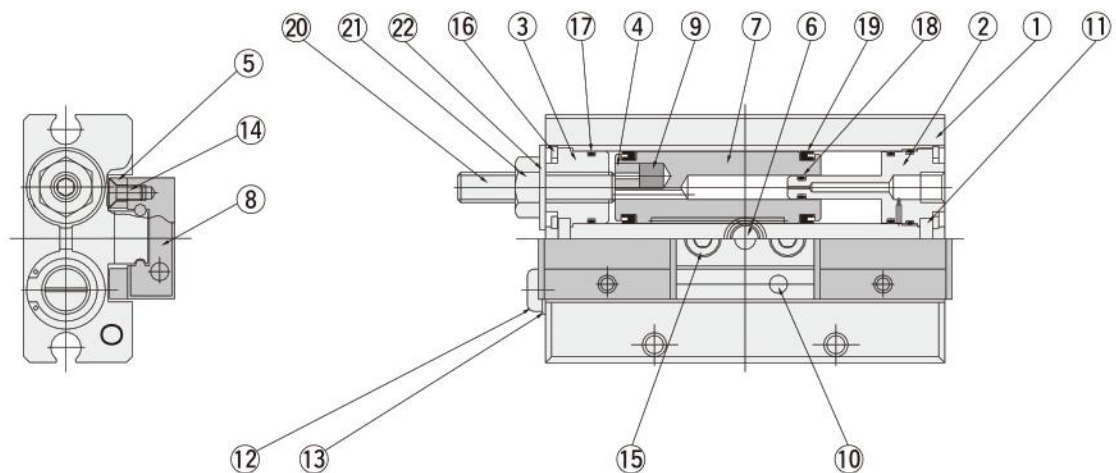
## Order Codes

| Open/closed stroke<br><small>Note</small> | Stroke adjusting mechanism                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Sensor switch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Lead wire length                                | Number of sensor switches<br>(for air hands with sensor switches)                    |        |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------|--------|
| Blank : Standard type<br>L : Long type    | No adjusting mechanism<br><br>Blank<br>Open side stroke adjustment<br><br>-JA<br>Closed side stroke adjustment<br><br>-JB<br>Open/closed both-side stroke adjustment<br><br>-JC | No sensor switch<br><br>Blank<br>With ZE135<br><br>-ZE135<br>With ZE155<br><br>-ZE155<br>With ZE235<br><br>-ZE235<br>With ZE255<br><br>-ZE255 | A : 1000mm<br>[39in.]<br>B : 3000mm<br>[118in.] | ● 1 : With 1 sensor switch<br>● 2 : With 2 sensor switches<br>★ Included at shipping |        |
|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ● Solid state type<br>● With indicator lamp<br>● DC10~28V<br>● 2-lead wire<br>● Horizontal lead wire<br>With ZE235<br>● Solid state type<br>● With indicator lamp<br>● DC10~28V<br>● 2-lead wire<br>● Vertical lead wire<br>With ZE255<br>● Solid state type<br>● With indicator lamp<br>● DC4.5~28V<br>● 3-lead wire<br>● Vertical lead wire                                                                                                                                                                                                                                  |                                                 |                                                                                      |        |
| Basic model                               | Cylinder bore size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                 |                                                                                      |        |
| AFDPG                                     | L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | -6<br>-8<br>-12<br>-14<br>-18<br>-JA<br>-JB<br>-JC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -ZE135<br>-ZE155<br>-ZE235<br>-ZE255            | A<br>B                                                                               | 1<br>2 |
| Double acting type                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                 |                                                                                      |        |

● Diagrams show double acting type  $\phi 12$  [0.472in.].



● Diagrams show double acting type with open side stroke adjustment  $\phi 12$  [0.472in.].

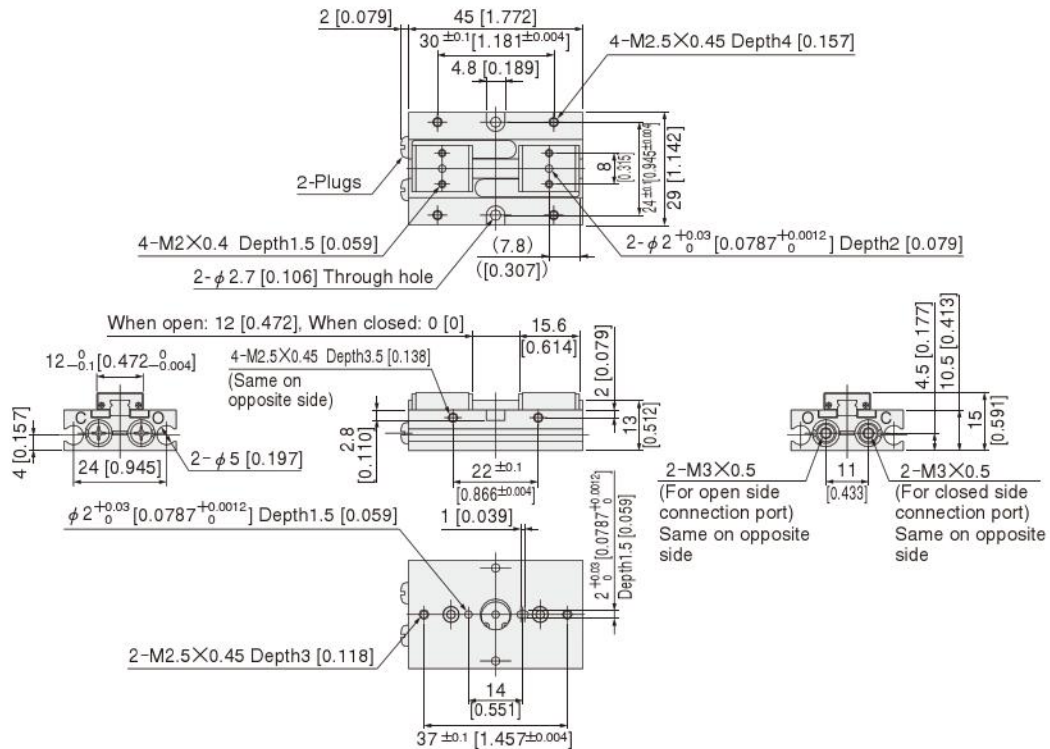


## Major Parts and Materials

| No. | Parts        | Materials       |
|-----|--------------|-----------------|
| ①   | Body         | Aluminum alloy  |
| ②   | Head cover   | Aluminum alloy  |
| ③   | Head cover   | Aluminum alloy  |
| ④   | Cap (magnet) | Aluminum alloy  |
| ⑤   | Lever        | Carbon steel    |
| ⑥   | Pinion rod   | Stainless steel |
| ⑦   | Rack piston  | Stainless steel |
| ⑧   | Bearing      | Stainless steel |
| ⑨   | Magnet       | Plastic magnet  |
| ⑩   | Roller       | Carbon steel    |
| ⑪   | Roller       | Carbon steel    |

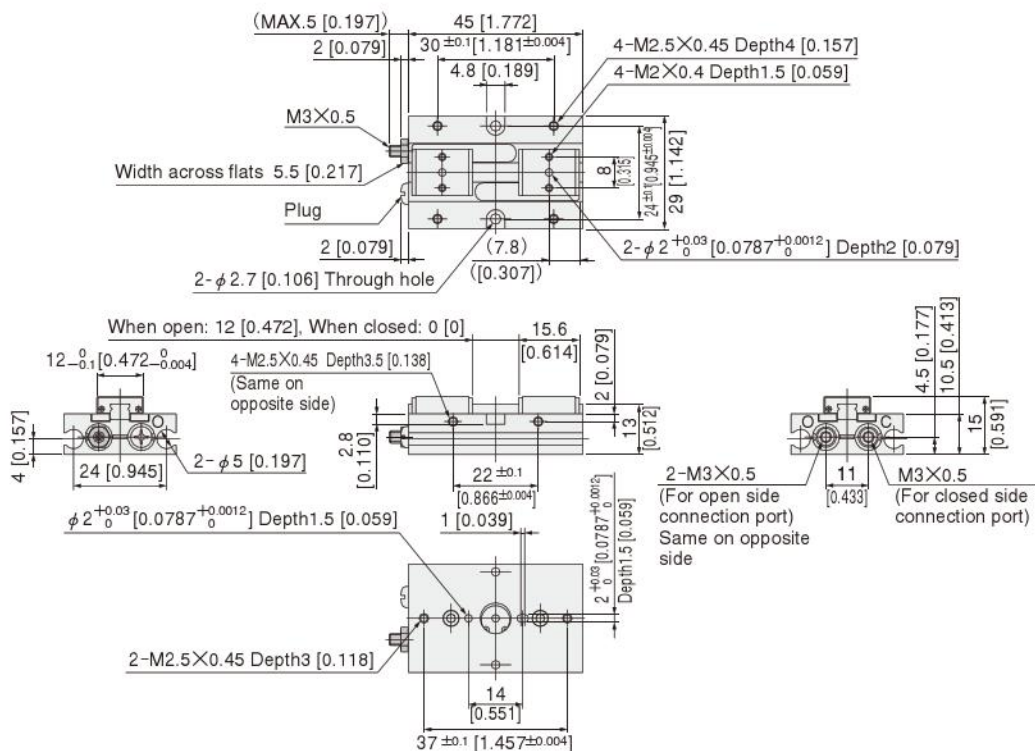
| No. | Parts                    | Materials                      |
|-----|--------------------------|--------------------------------|
| ⑫   | Plug                     | Brass (nickel plated)          |
| ⑬   | Gasket                   | Synthetic rubber (NBR)         |
| ⑭   | Screw                    | Mild steel                     |
| ⑮   | Hexagon socket head bolt | Alloy steel                    |
| ⑯   | Internal snap ring       | Carbon steel                   |
| ⑰   | O-ring                   | Synthetic rubber (NBR)         |
| ⑱   | O-ring                   | Synthetic rubber (NBR)         |
| ⑲   | Seal                     | Synthetic rubber (NBR)         |
| ⑳   | Hexagon socket setscrew  | Mild steel                     |
| ㉑   | Hexagon nut              | Mild steel                     |
| ㉒   | Sealing washer           | Steel + Synthetic rubber (NBR) |

## AFDPG-6



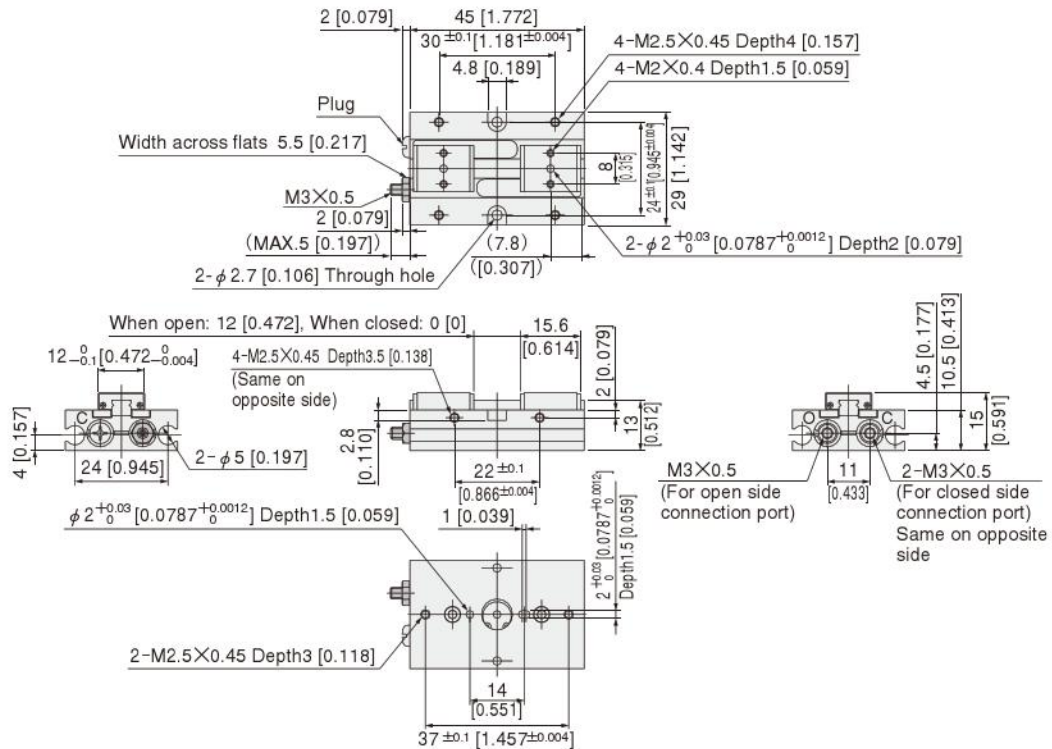
## AFDPG-6-JA

(Open side stroke adjustment)



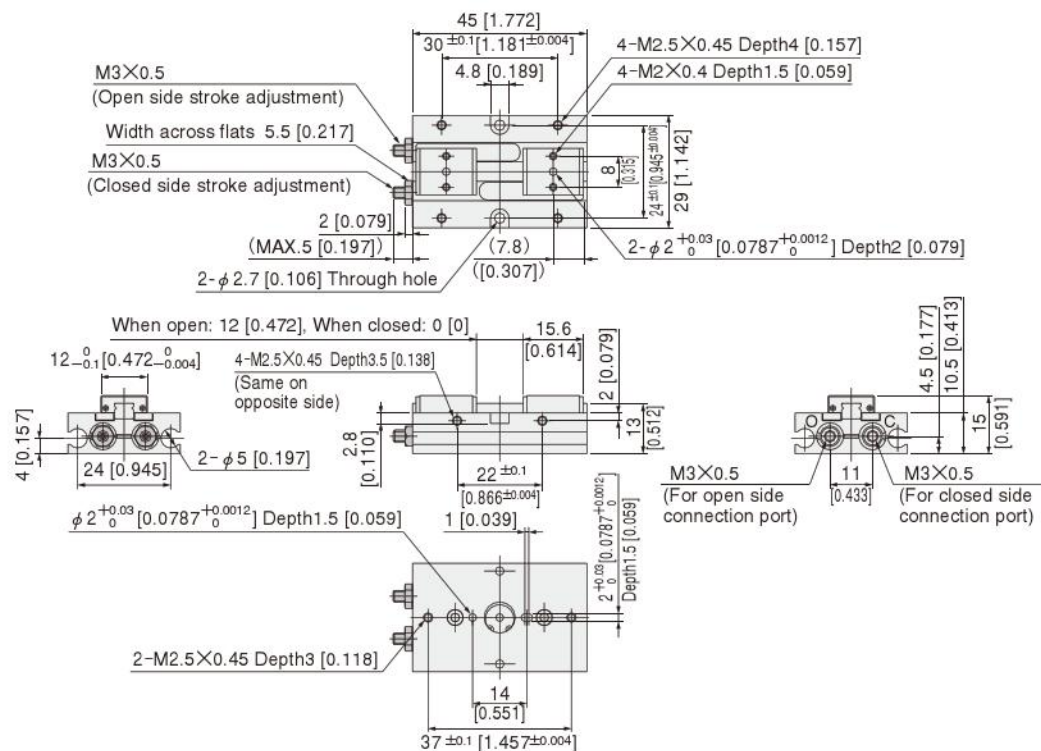
## AFDPG-6-JB

(Closed side stroke adjustment)

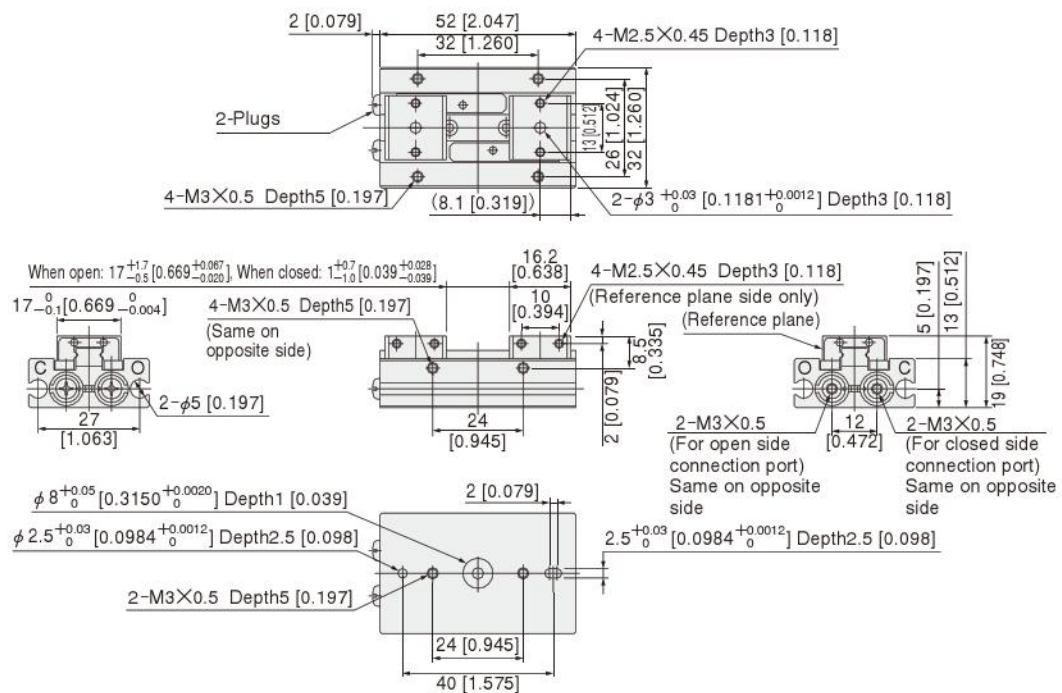


## AFDPG-6-JC

(Open/closed both-side stroke adjustment)

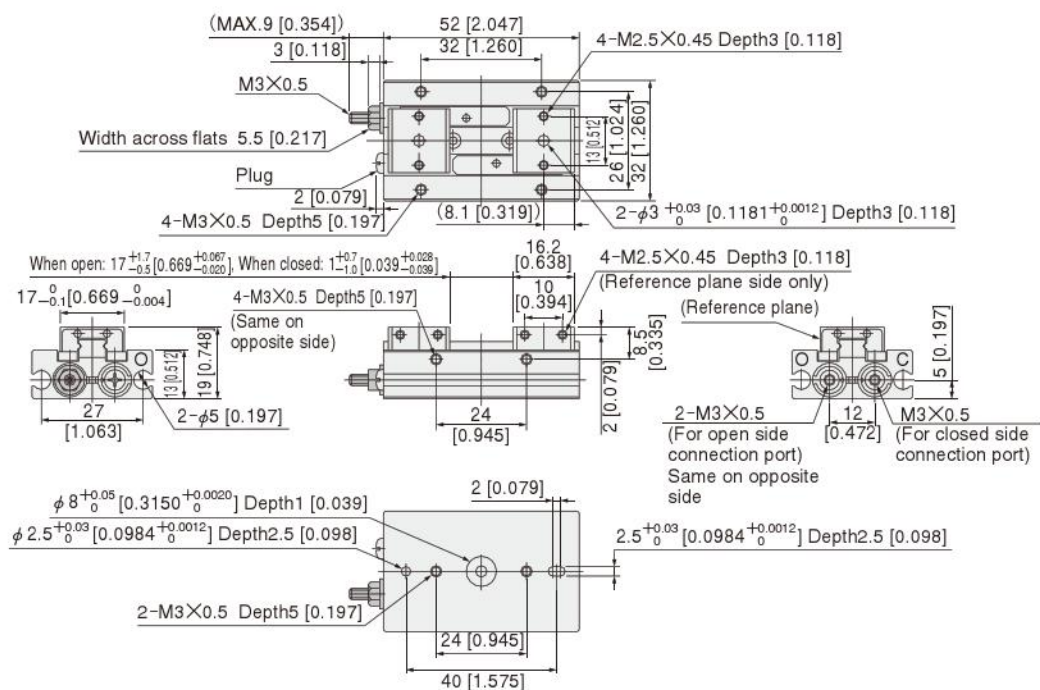


## AFDPG-8



## AFDPG-8-JA

(Open side stroke adjustment)

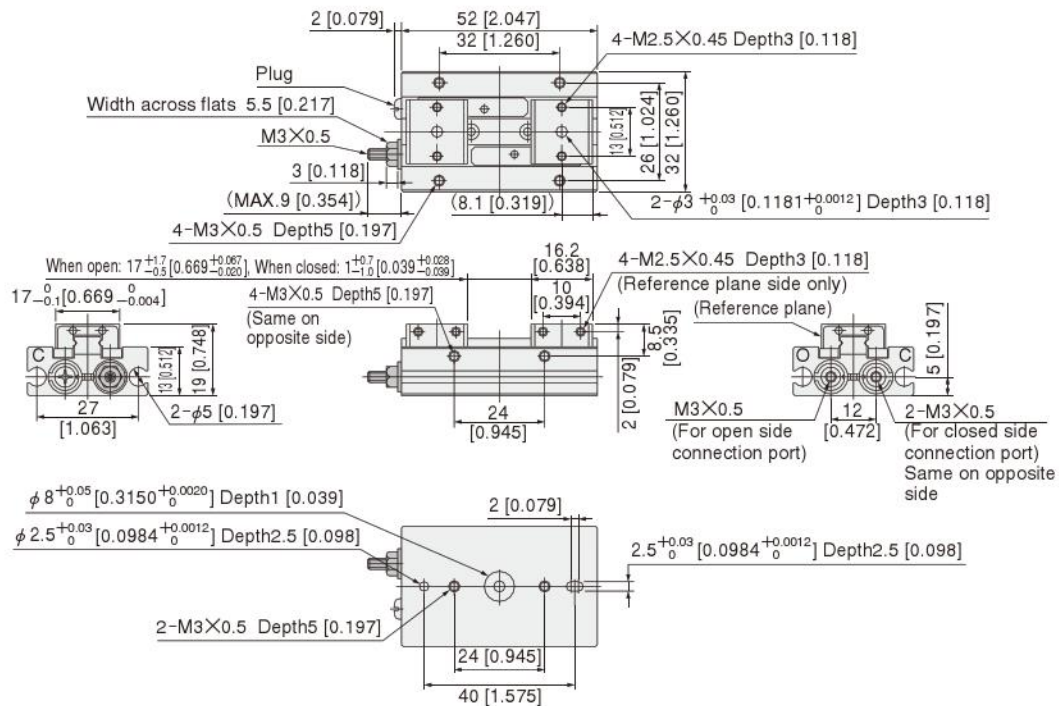


## AFDPG-8-JB

(Closed side stroke adjustment)

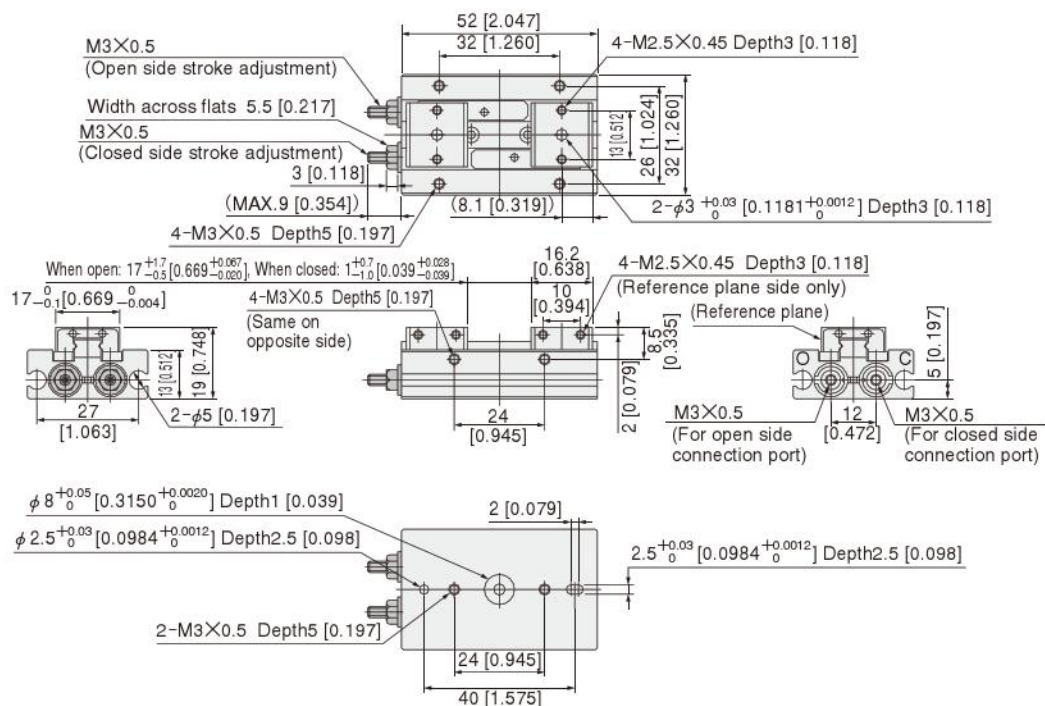


AFDPG-8-JB

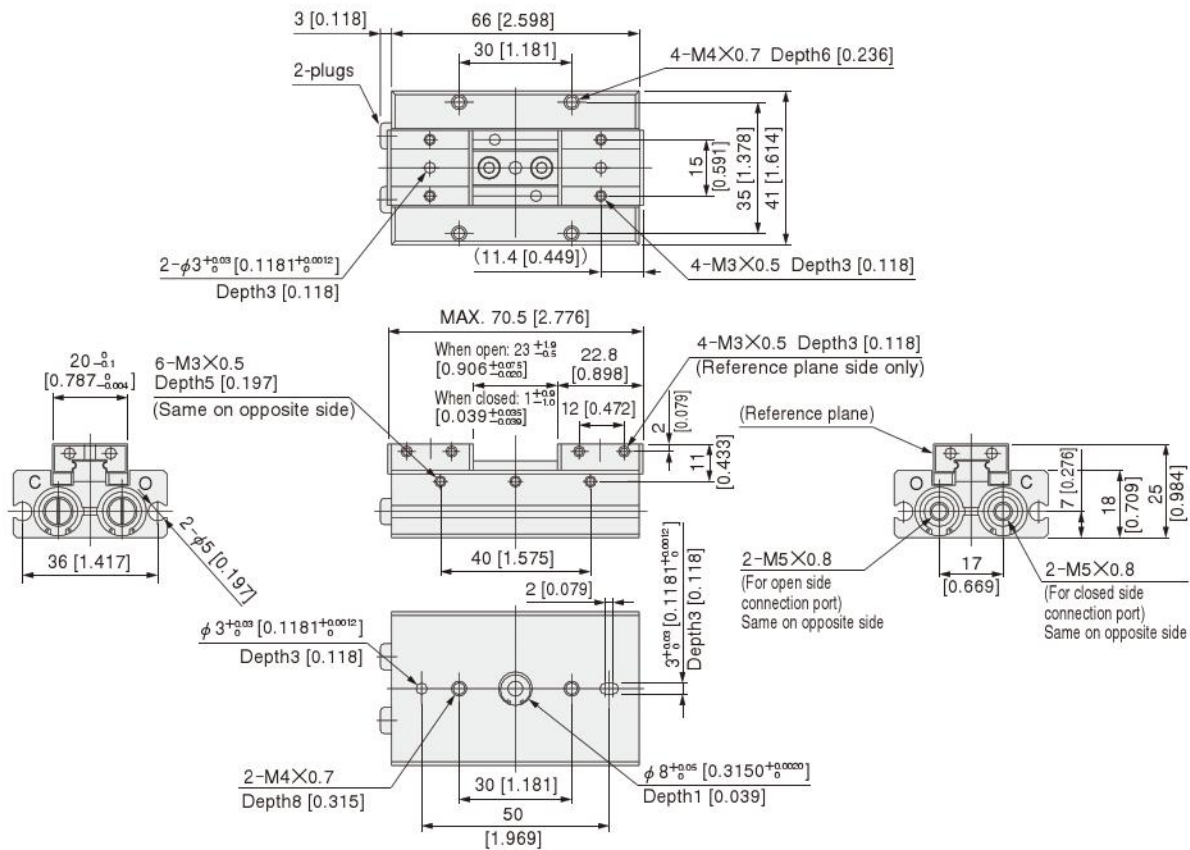


## AFDPG-8-JC

(Open/closed both-side stroke adjustment)

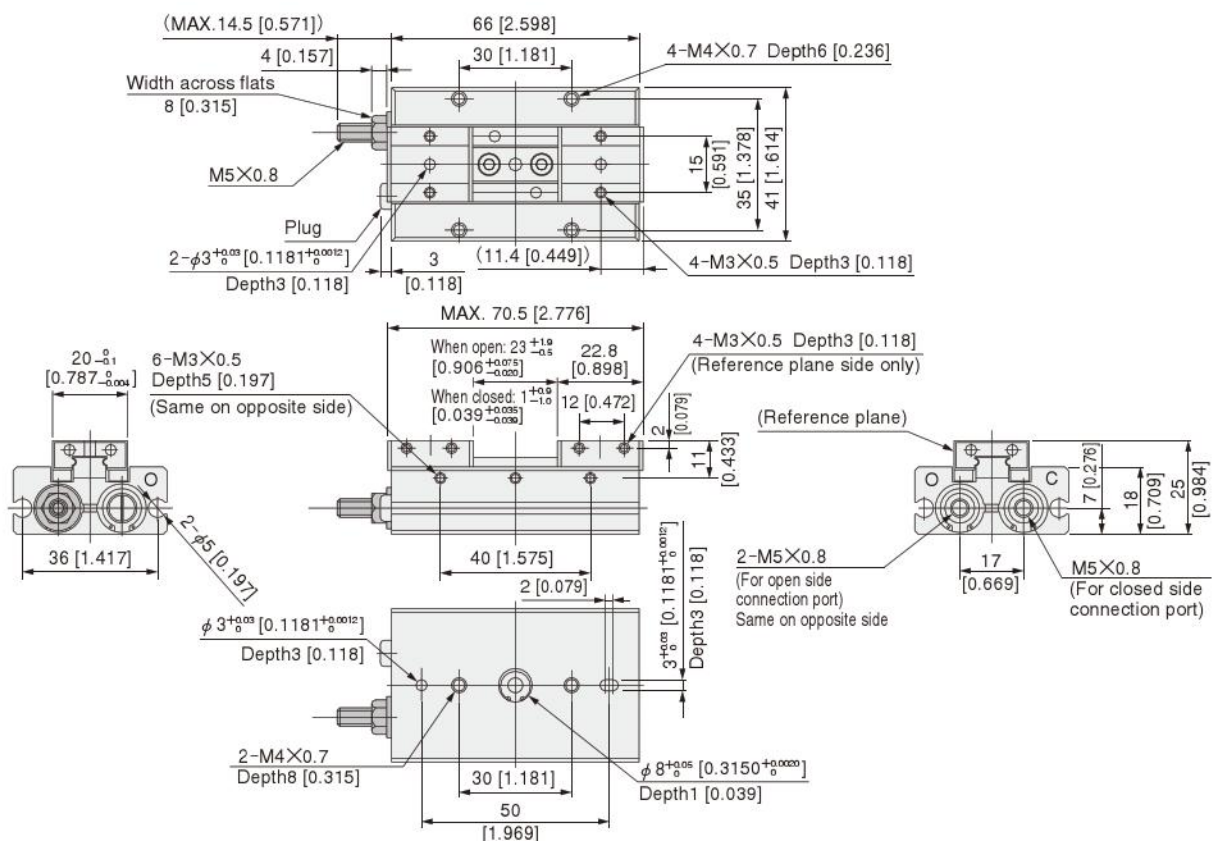


## AFDPG-12



## AFDPG-12-JA

(Open side stroke adjustment)

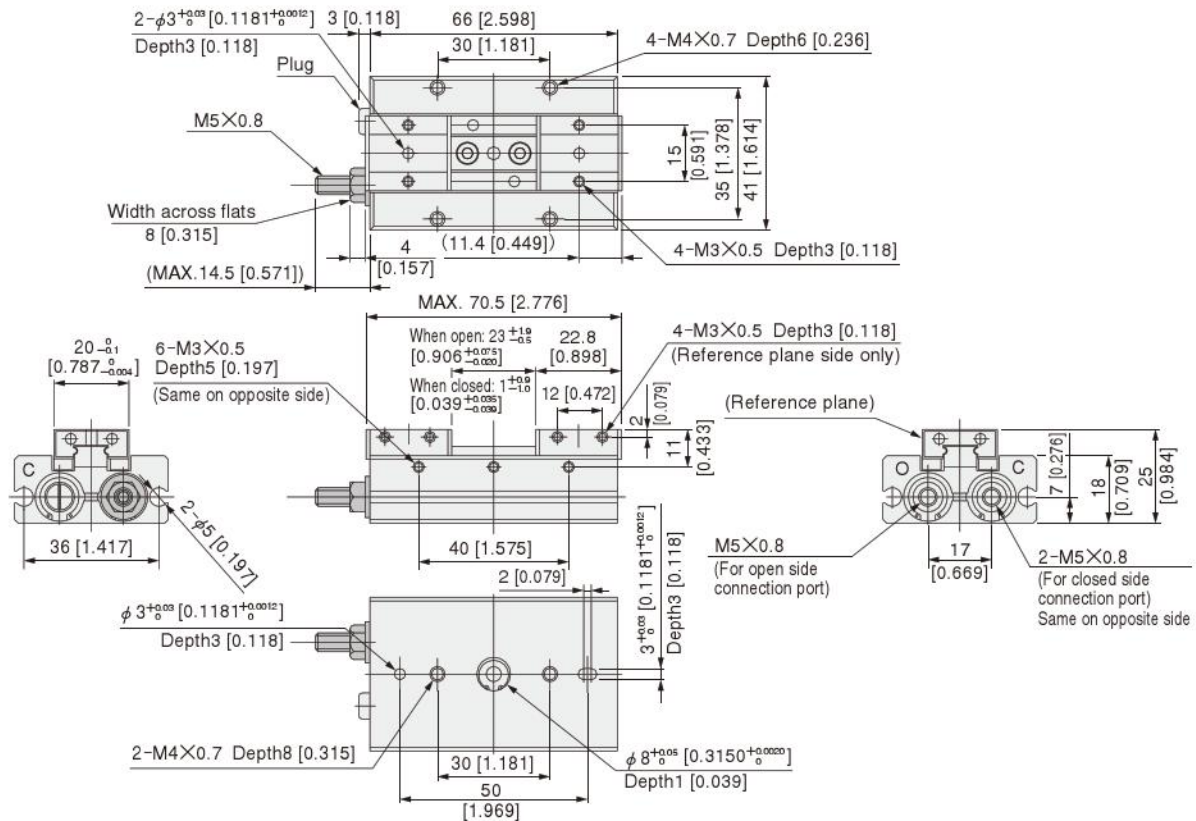


## AFDPG-12-JB

(Closed side stroke adjustment)

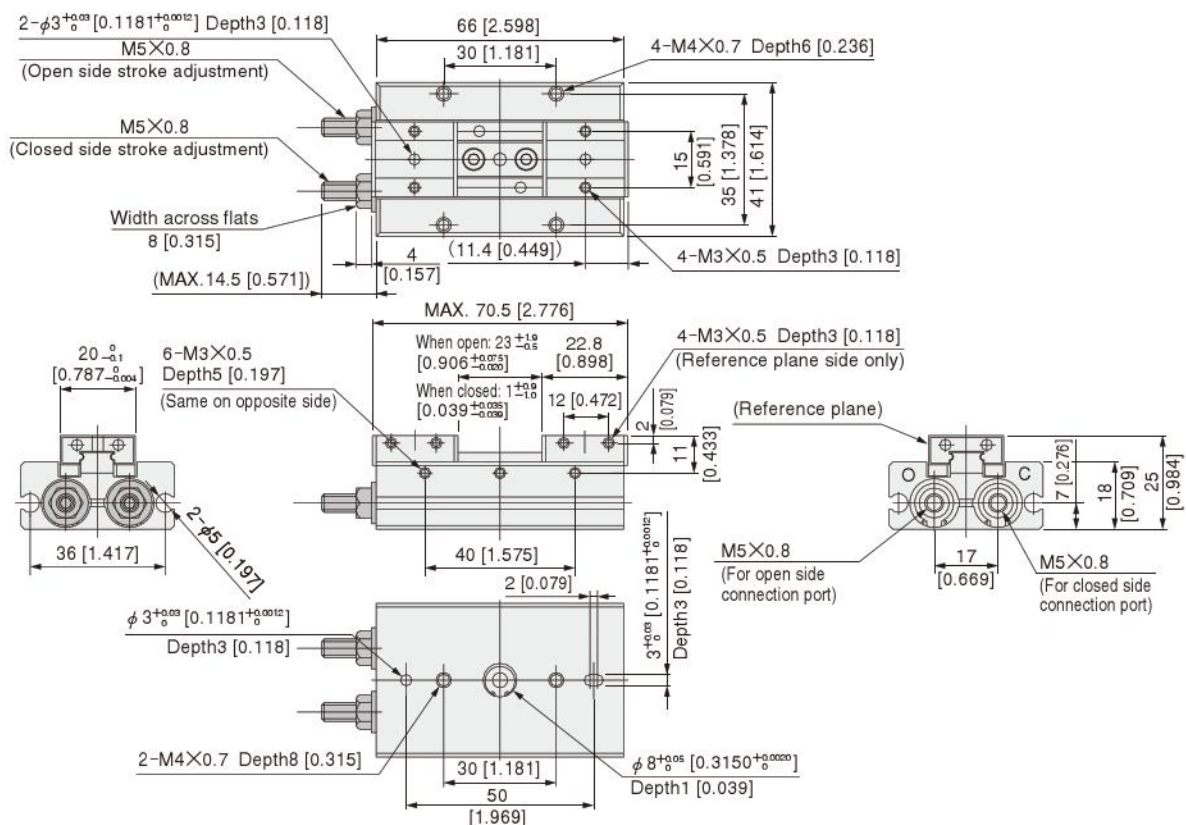


AFDPG-12-JB

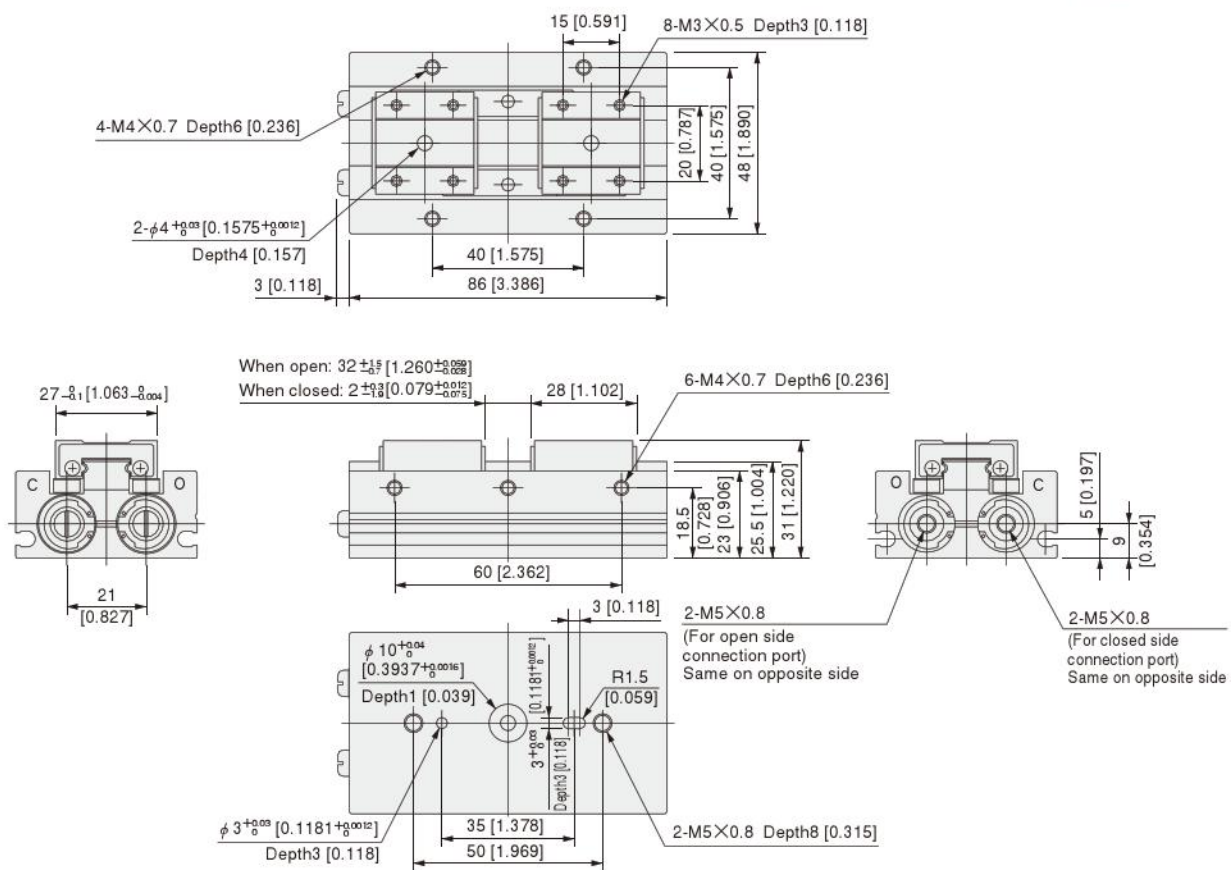


## AFDPG-12-JC

(Open/closed both-side stroke adjustment)

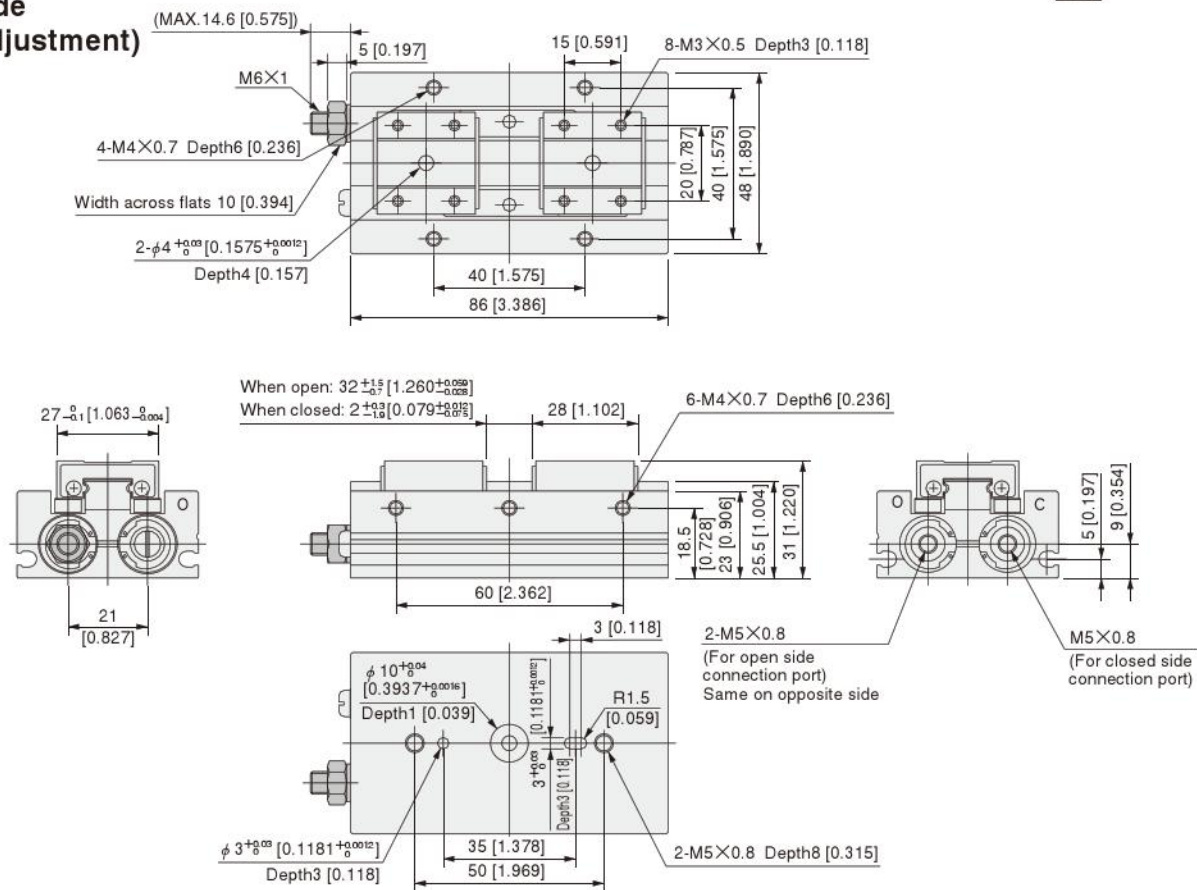


**AFDPG-14**



**AFDPG-14-JA**

(Open side  
stroke adjustment)



## AFDPG-14-JB

**d side adjustment)**

Technical drawing showing the d side adjustment of a valve assembly. The drawing includes three views: a top view, a side view, and a front view.

**Top View Dimensions:**

- 4-M4×0.7 Depth6 [0.236]
- M6×1
- Width across flats 10 [0.394]
- 15 [0.591]
- 8-M3×0.5 Depth3 [0.118]
- 20 [0.787]
- 40 [1.575]
- 48 [1.890]
- 5 [0.197]
- 40 [1.575]
- 86 [3.386]
- (MAX. 14.6 [0.575])
- 2-φ4  $^{+0.03}_{-0.0012}$  [0.1575  $^{+0.0012}_{-0.0012}$ ]
- Depth4 [0.157]

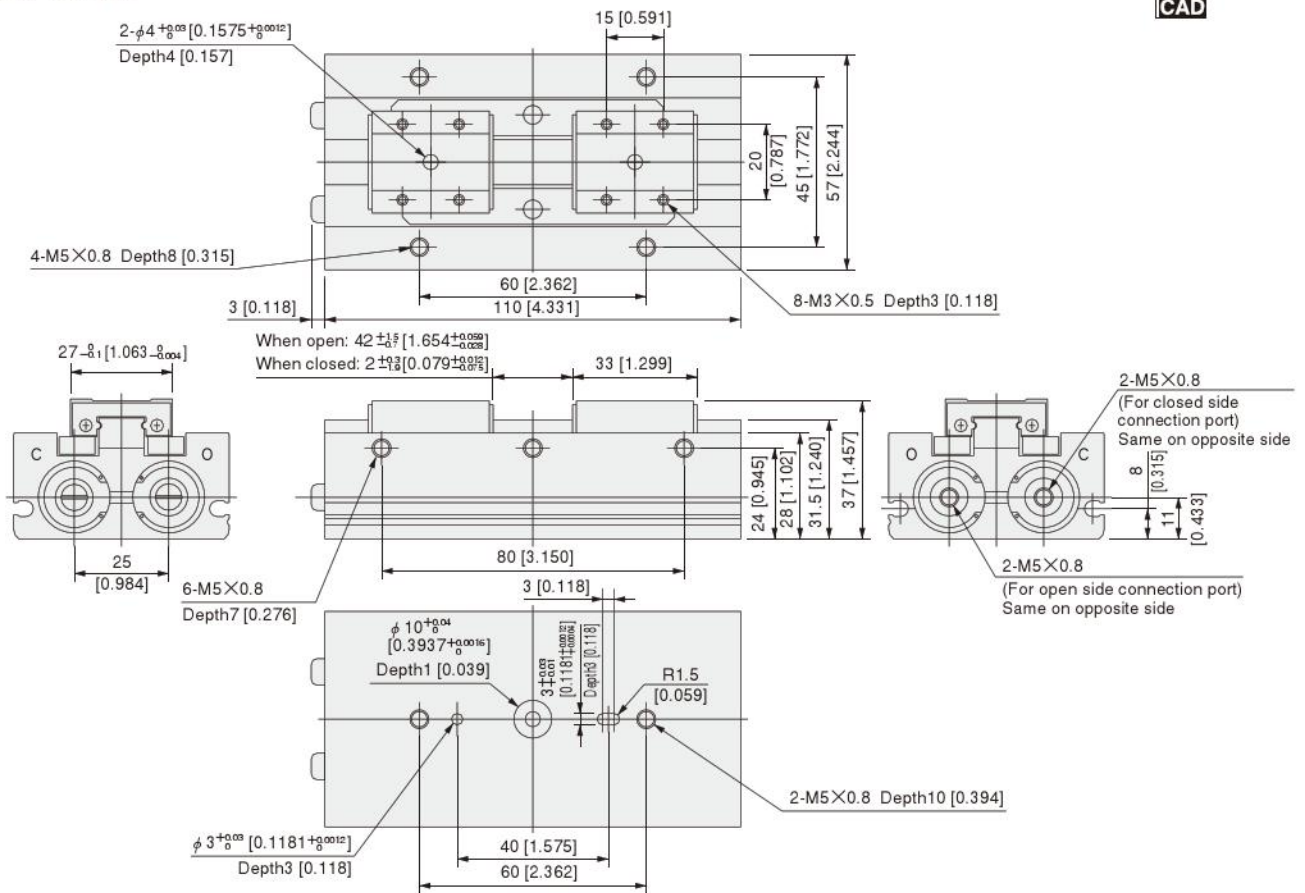
**Side View Dimensions:**

- When open:  $32 \pm 0.15$  [1.260  $\pm 0.009$ ]
- When closed:  $2 \pm 0.08$  [0.079  $\pm 0.005$ ]
- 28 [1.102]
- 6-M4×0.7 Depth6 [0.236]
- 18.5 [0.728]
- 23 [0.906]
- 25.5 [1.004]
- 31 [1.220]
- 60 [2.362]

**Front View Dimensions:**

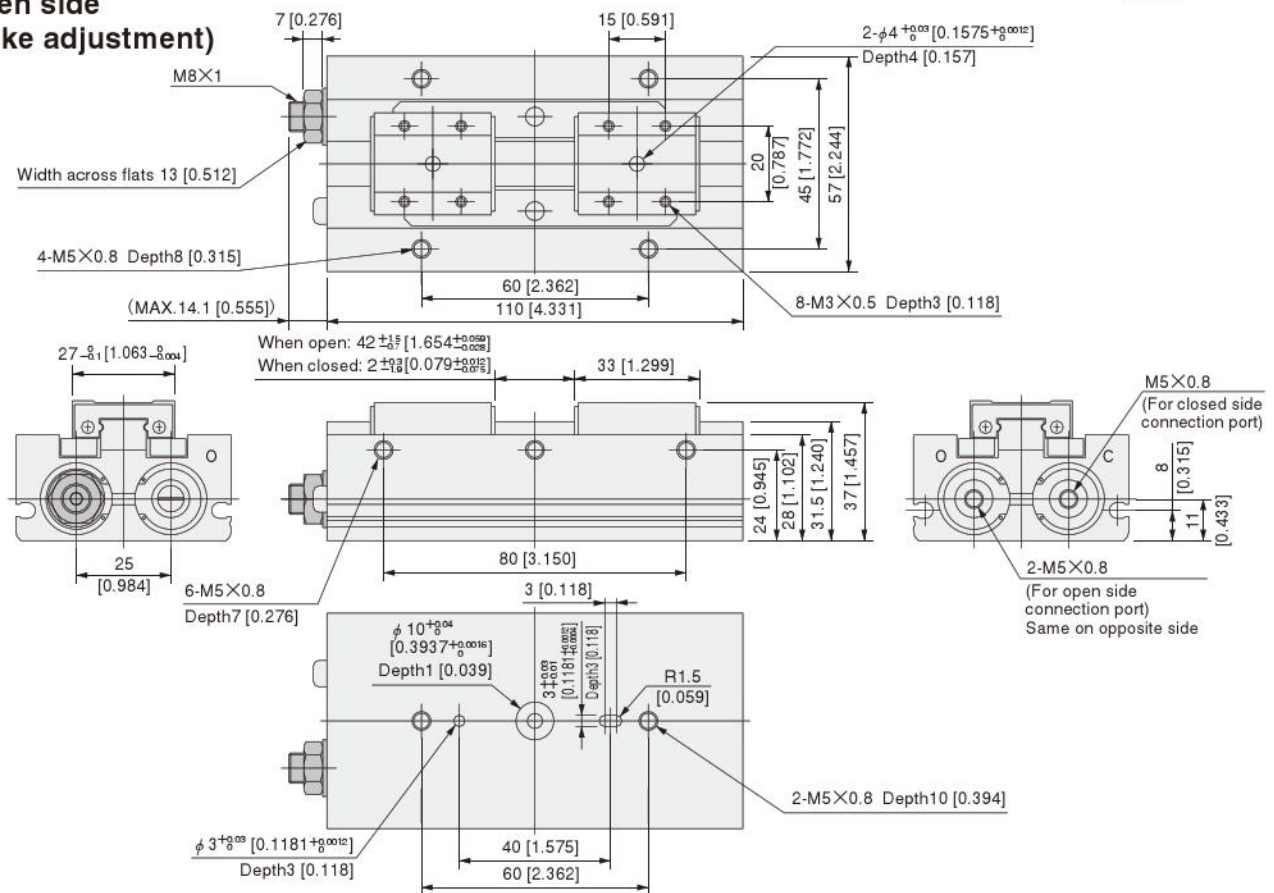
- 27- $\frac{3}{4}$  [1.063  $\pm 0.004$ ]
- C
- 21 [0.827]
- φ10  $^{+0.04}_{-0.0016}$  [0.3937  $\pm 0.0016$ ]
- Depth1 [0.039]
- 3 [0.118]
- R1.5 [0.059]
- M5×0.8 (For open side connection port)
- 2-M5×0.8 (For closed side connection port) Same on opposite side
- 5 [0.197]
- 9 [0.354]
- φ3  $^{+0.03}_{-0.0012}$  [0.1181  $\pm 0.0012$ ]
- Depth3 [0.118]
- 35 [1.378]
- 50 [1.969]
- 2-M5×0.8 Depth8 [0.315]

## AFDPG-18



## AFDPG-18-JA

(Open side stroke adjustment)

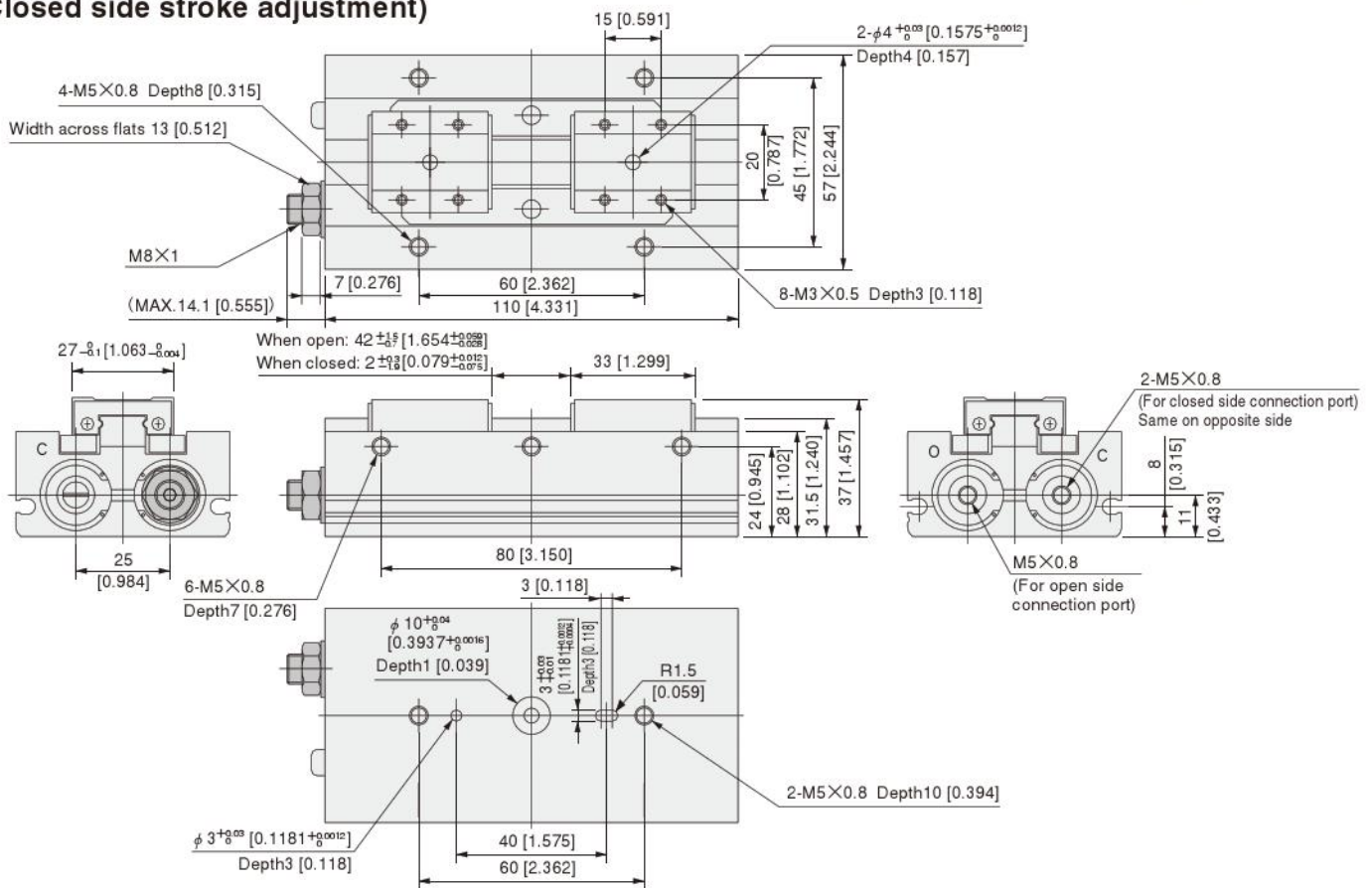


## AFDPG-18-JB

(Closed side stroke adjustment)

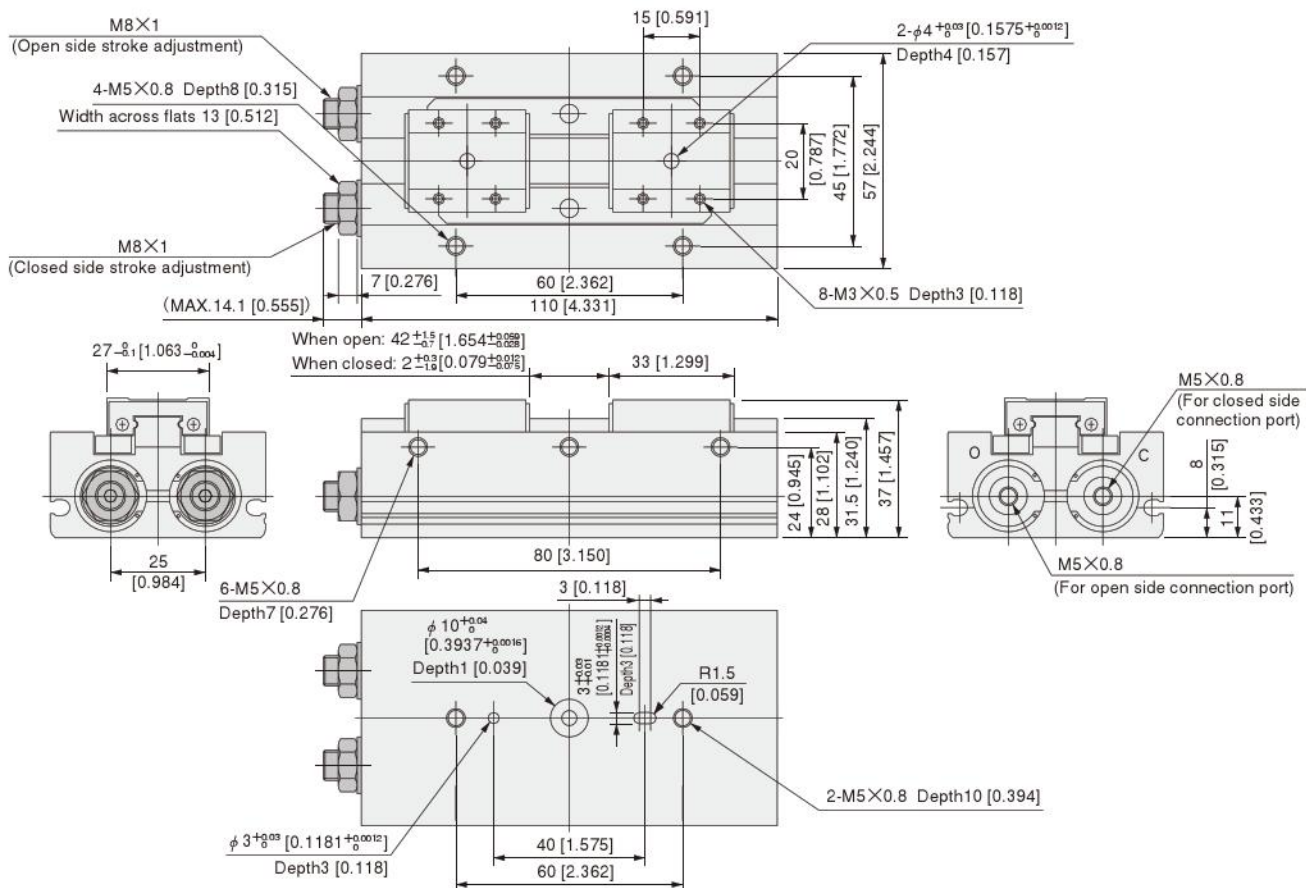


AFDPG-18-JB

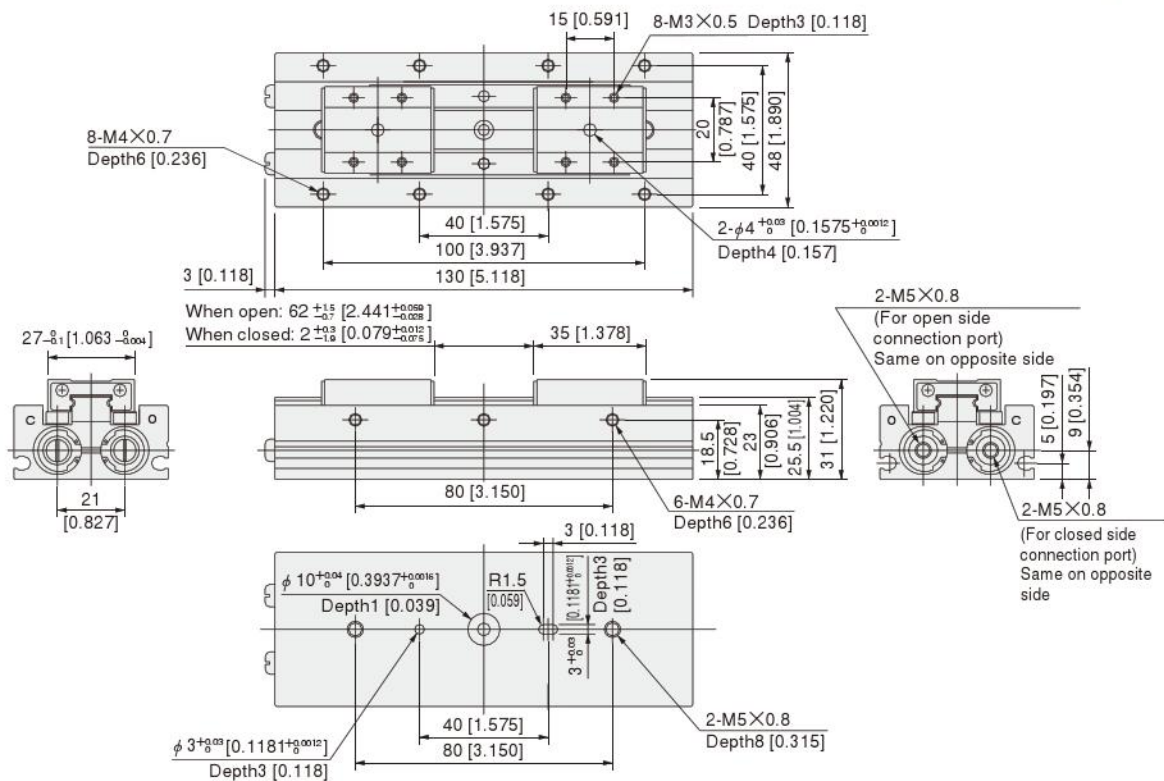


## AFDPG-18-JC

(Open/closed both-side stroke adjustment)

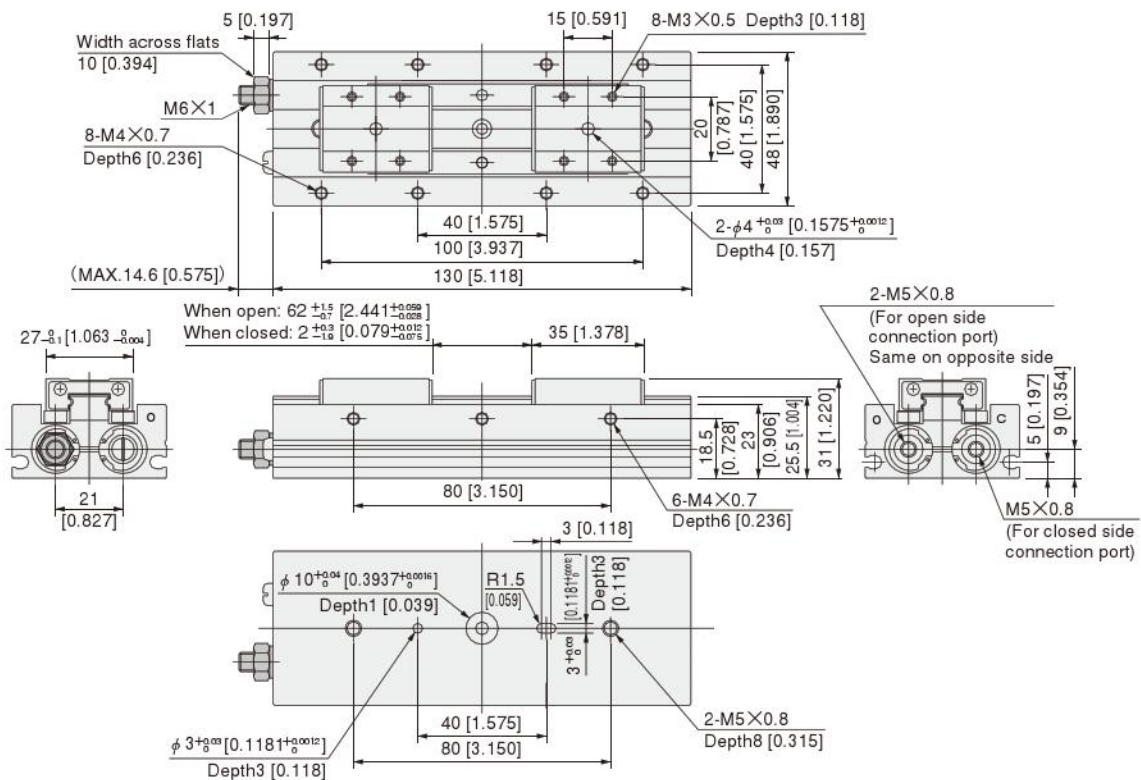


## AFDPGL-14



## AFDPGL-14-JA

(Open side stroke adjustment)

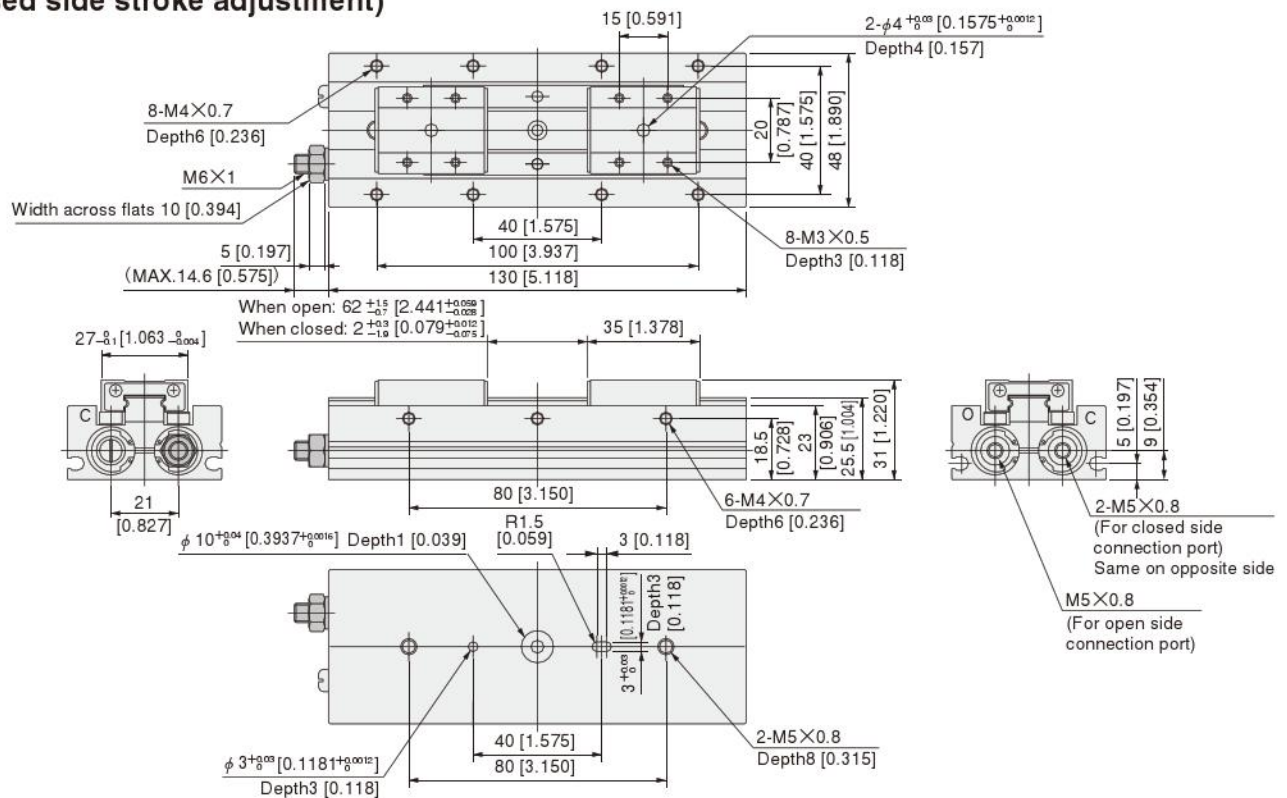


## AFDPGL-14-JB

(Closed side stroke adjustment)

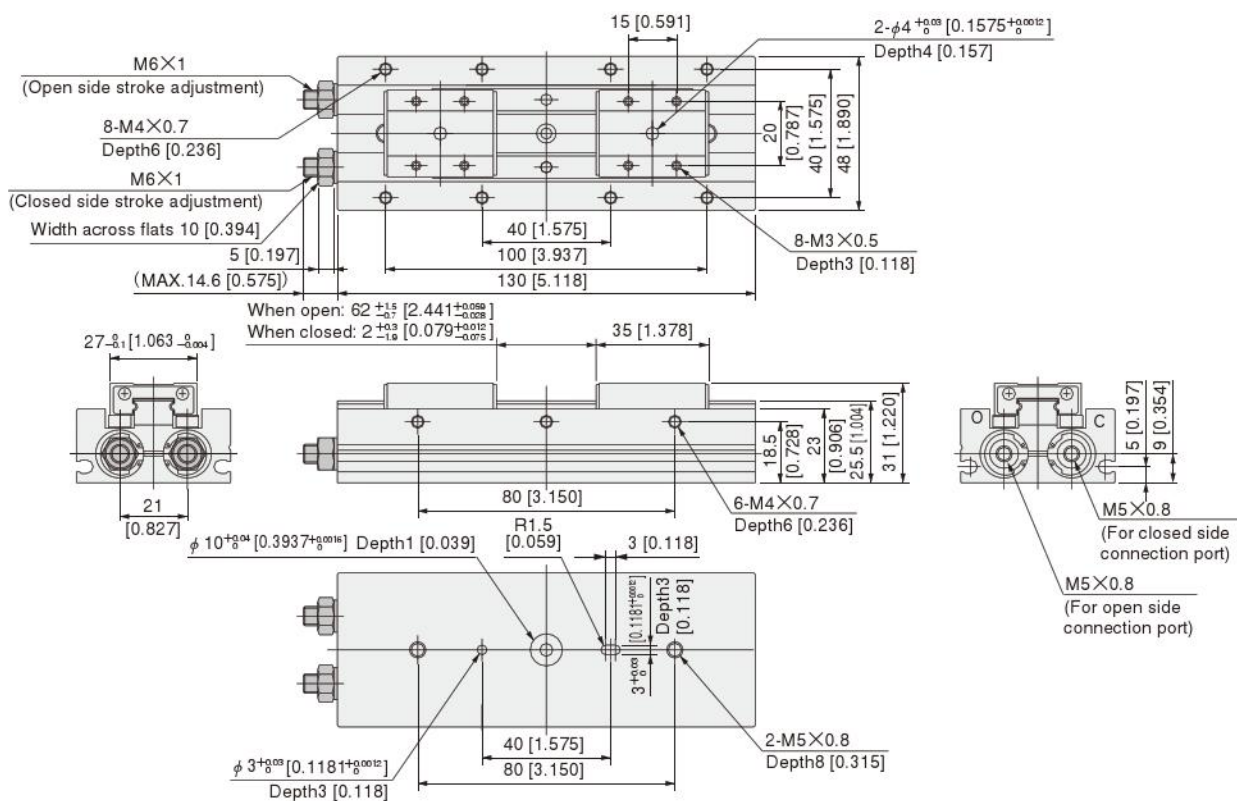


AFDPGL-14-JB



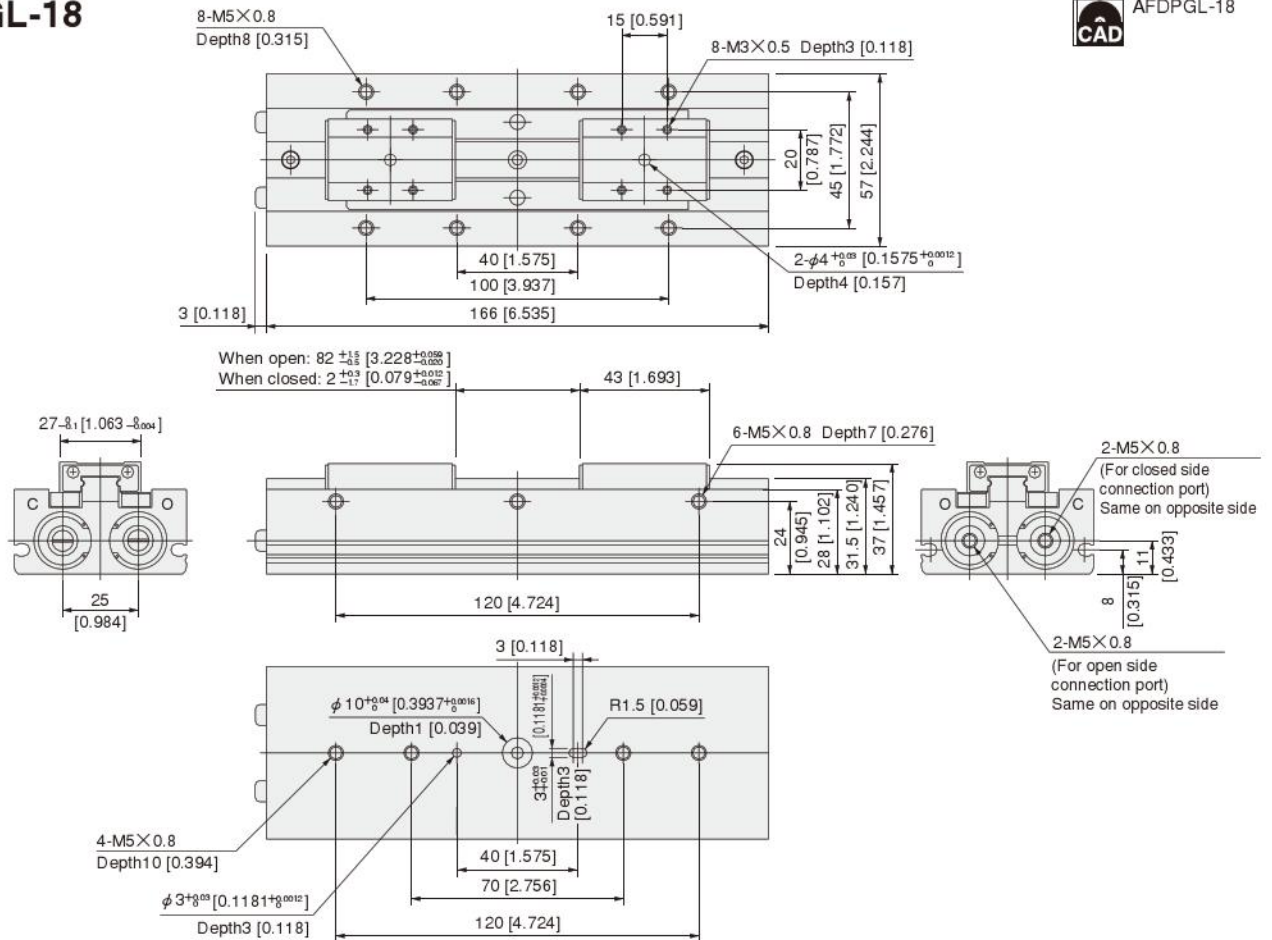
## AFDPGL-14-JC

(Open/closed both-side stroke adjustment)



## AFDPGL-18

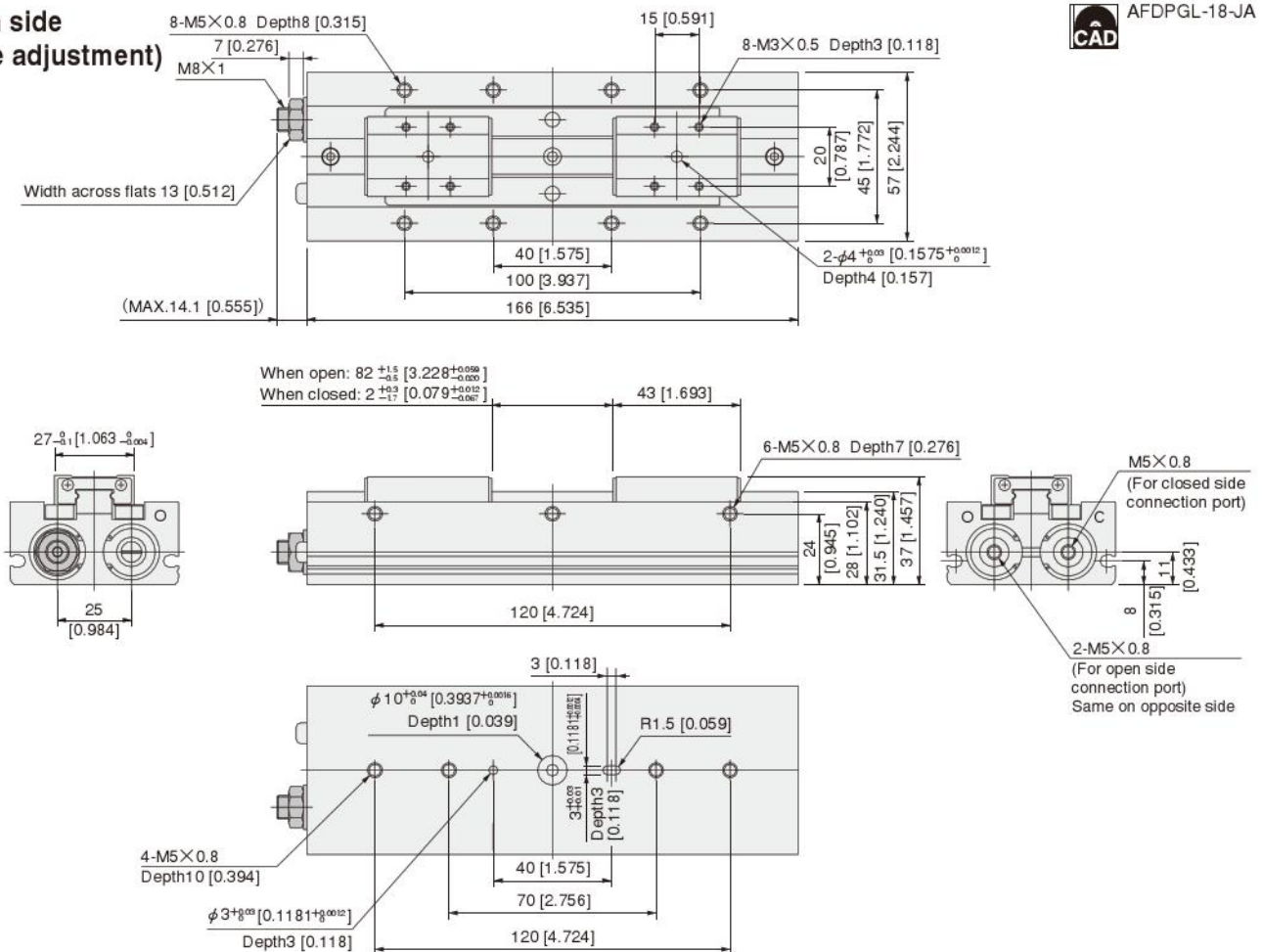
 AFDPGL-18



## AFDPGL-18-JA

(Open side stroke adjustment)

 AFDPGL-18-JA

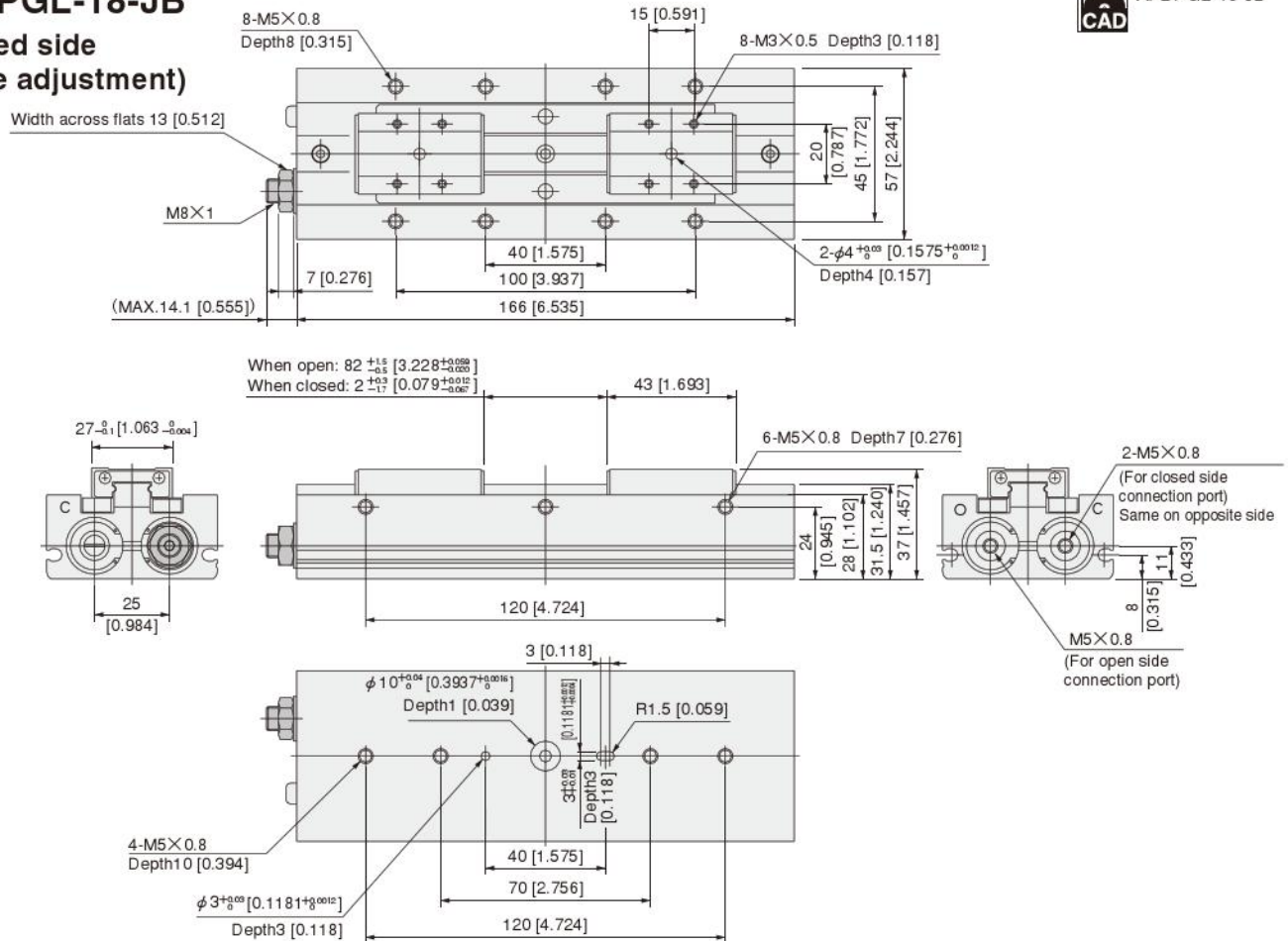


## AFDPGL-18-JB

(Closed side stroke adjustment)

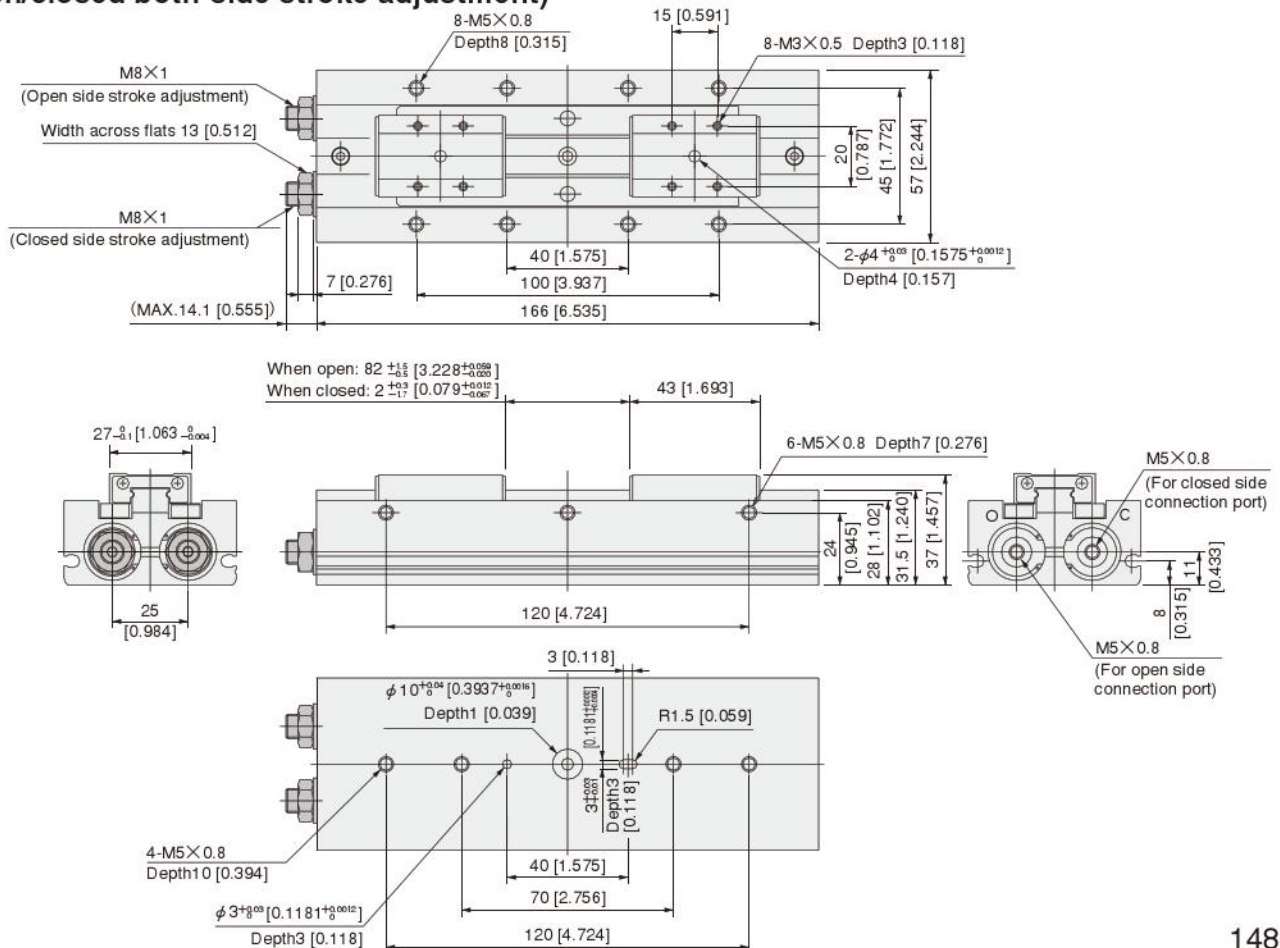


AFDPGL-18-JB



## AFDPGL-18-JC

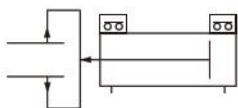
(Open/closed both-side stroke adjustment)



# SENSOR SWITCHES

## Solid State Type

### Symbol



### Order Codes

#### ● Sensor switch only



Flat type air hands

Lead wire length

A — 1000mm [39in.]

B — 3000mm [118in.]

**ZE135** — Solid state type 2-lead wire with indicator lamp DC10~28V Horizontal lead wire

**ZE235** — Solid state type 2-lead wire with indicator lamp DC10~28V Vertical lead wire

**ZE155** — Solid state type 3-lead wire with indicator lamp DC4.5~28V Horizontal lead wire

**ZE255** — Solid state type 3-lead wire with indicator lamp DC4.5~28V Vertical lead wire

● For details of sensor switches, see p.1544.

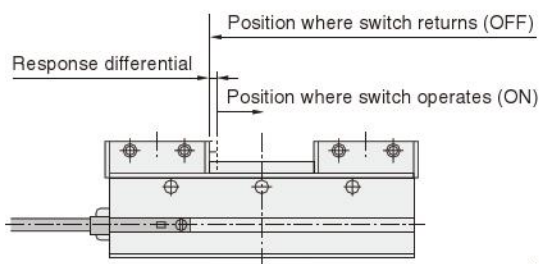
### Sensor Switch Response Differential and Operating Position Repeatability

#### ● Open/closed stroke differential

The stroke differential between the point where the lever on one side moves and turns the switch ON and the point where the switch is turned OFF as the lever travels in the opposite direction.

#### ● Operating position repeatability

When the lever on one side moves in the same direction, operating position repeatability is defined as the range of the deviation of the position where the switch is turned ON or turned OFF.



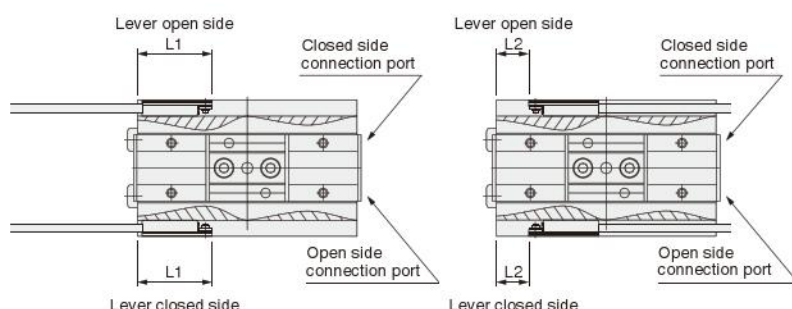
| Model              | Open/closed stroke differential | Operating position repeatability | Operating range |
|--------------------|---------------------------------|----------------------------------|-----------------|
| <b>AFDPG-6</b>     | 0.2 [0.008]                     | 0.2 [0.008]                      | 2.1 [0.083]     |
| <b>AFDPG(H)-8</b>  | 0.2 [0.008]                     | 0.2 [0.008]                      | 2.6 [0.102]     |
| <b>AFDPG(H)-12</b> | 0.2 [0.008]                     | 0.2 [0.008]                      | 3.1 [0.122]     |
| <b>AFDPG(L)-14</b> | 0.2 [0.008]                     | 0.2 [0.008]                      | 4.5 [0.177]     |
| <b>AFDPG(L)-18</b> | 0.2 [0.008]                     | 0.2 [0.008]                      | 4.4 [0.173]     |

Remark: The above table shows reference values.

### Mounting Location of Sensor Switch

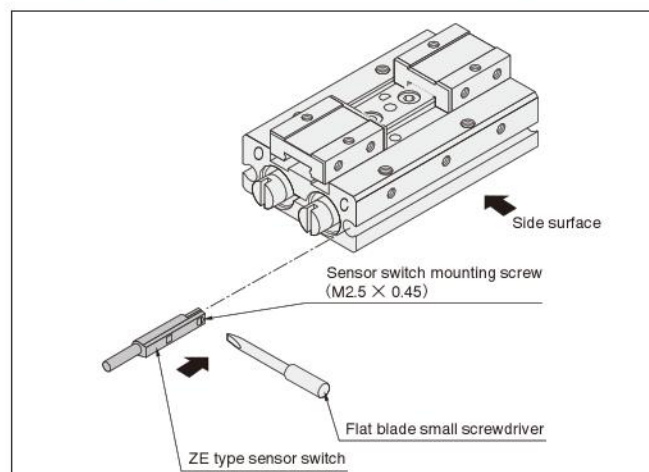
When the sensor switch is mounted in the locations shown below, the magnet in the piston comes to the maximum sensing location of the sensor switch at the end of the stroke.

| Cylinder bore size<br>(mm [in.])              | 6 [0.236]    |           | 8 [0.315]  |             | 12 [0.472]   |            | 14 [0.551] |           | 18 [0.709] |           |
|-----------------------------------------------|--------------|-----------|------------|-------------|--------------|------------|------------|-----------|------------|-----------|
| Sensor switch mounting<br>location (mm [in.]) | L1           | L2        | L1         | L2          | L1           | L2         | L1         | L2        | L1         | L2        |
|                                               | 18.5 [0.728] | 6 [0.236] | 21 [0.827] | 7.5 [0.295] | 23.5 [0.925] | 10 [0.394] | 19 [0.748] | 6 [0.236] | 20 [0.787] | 7 [0.276] |



### Mounting Sensor Switch

Tighten the mounting screw after the sensor switch is inserted in the switch mounting groove in the direction of the arrow in the diagram and moved to the proper location. Tightening torque of the mounting screw is 0.1~0.2N·m [0.9~1.8in·lbf].



**Caution:** Care must be exercised that the sensor switch cannot be inserted into the switch mounting groove from the diagram's side surface direction.