



◆ **Long life**

Long life because the cross roller bearing is used for the lever sliding part.

◆ **High grip accuracy**

The repeat accuracy is ± 0.01 mm or less thanks to the mechanism improvement.

◆ **Dust-proof cover is optional→
Addable later on**

NBR rubber, fluorine-containing rubber and silicon rubber are available for the cover material. Dust-proof cover set solely sold.

◆ **Mounting adapter is optional**

More variation of gripper mounting adapter types. Further expansion of mounting variation.

◆ **Expansion of switch type variations**

Two lead wire directions: Straight type and L shaped type.

◆ **Mounting available from 3 directions**

You can select the mounting direction freely because three faces have a mounting screw.

■ Model Code No.

HP03E - 10 C * JN - HAE - ZE135 B 2

Series Name

Bore Size

6: 6mm
 10: 10mm
 16: 16mm
 20: 20mm
 25: 25mm

Action Type

A : Single Acting Normally Open
 C : Double Acting

Dust-proof Cover Type (excluding $\phi 6$)

No Code: No Cover

JN: With NBR Rubber Cover

JS: With Silicon Rubber Cover

JF: With Fluorine Rubber Cover

Number of Switches

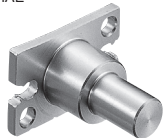
1: 1 Switch
 2: 2 Switches

Switch Lead Wire Length

A: 1m
 B: 3m

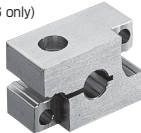
● Gripper Adaptor Type No Code: No Gripper Adaptor

HAE



HFE

HFE-L: Large Diameter Type
 ($\phi 16$ only)



● Detailed specifications → P.260~261

● Switch Type No Code: No Switch

ZE135

ES13

2 Wire System Solid State Switch, Straight Type

ZE235

ES23

2 Wire System Solid State Switch, L-shaped

ZE155

ES(P)15

3 Wire System Solid State Switch, Straight Type

ZE255

ES(P)25

3 Wire System Solid State Switch, L-shaped



● Switch details → P.521~528

● Dust-proof Cover Set Model Code No. **JN - 03 16**

Material

JN: With NBR Rubber Cover

JS: With Silicon Rubber Cover

JF: With Fluorine Rubber Cover

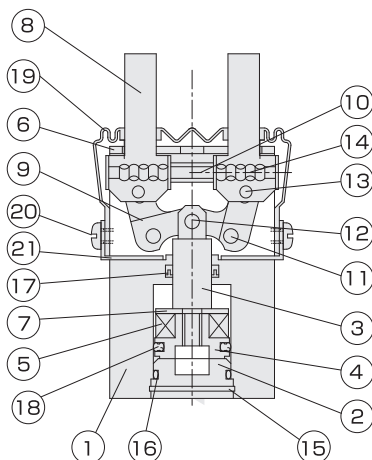
Series Name

HP03E

Size

10: $\phi 10$ 16: $\phi 16$ 20: $\phi 20$ 25: $\phi 25$

■ Internal Structure Diagram



Parts List

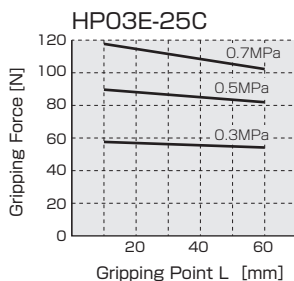
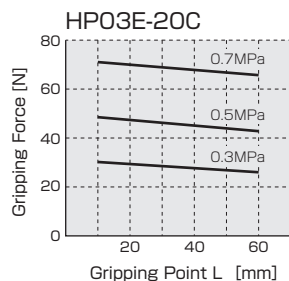
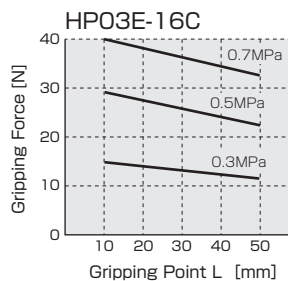
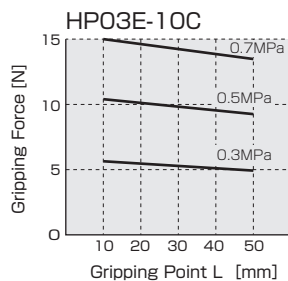
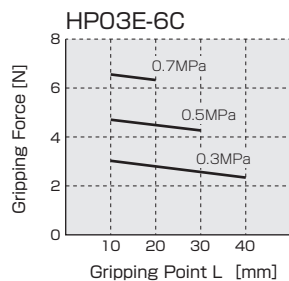
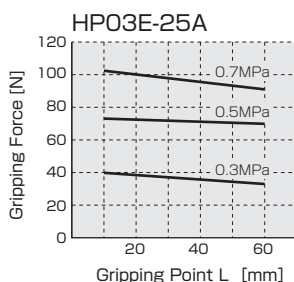
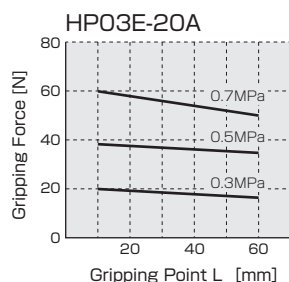
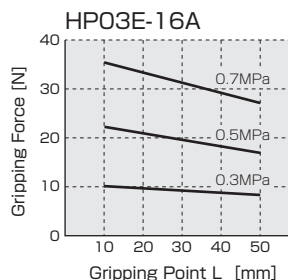
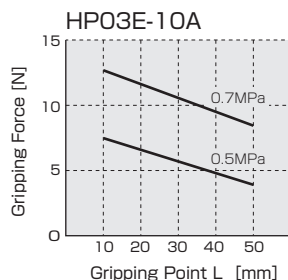
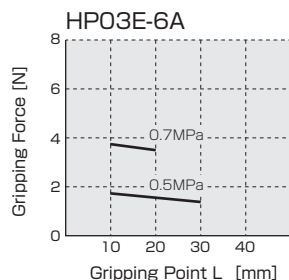
NO	Name	Material
1	Main Body	Aluminum Alloy
2	Head Cover	Aluminum Alloy
3	Piston Rod	Stainless Steel
4	Piston	Aluminum Alloy
5	Magnet	Resin
6	Pressure Cover	Carbon Steel
7	Pressure Cover	Aluminum Alloy
8	Lever	Carbon Tool Steel
9	Action Lever	Carbon Steel
10	Rail	Carbon Tool Steel
11	Fulcrum Pin	Carbon Tool Steel
12	Press Fit Pin	Carbon Steel
13	Roller	High Carbon-chromium Bearing Steel
14	Roller	High Carbon-chromium Bearing Steel
15	Hole Locating Snap Ring	Hard Steel
16	O Ring	NBR
17	Rod Packing	NBR
18	Piston Packing	NBR
19	Dust-proof Cover	
20	Cross-recessed Head Screw	Carbon Steel
21	Pressure Cover	Stainless Steel

Specifications

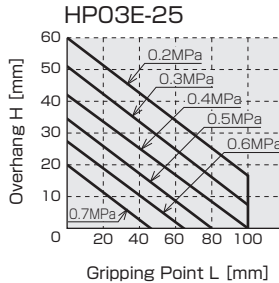
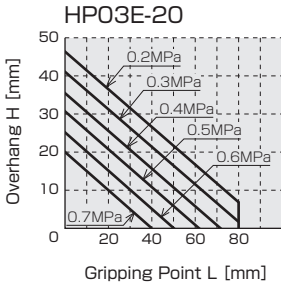
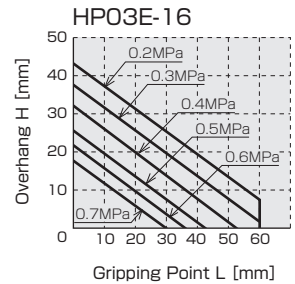
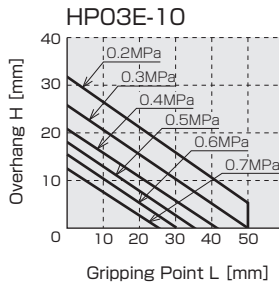
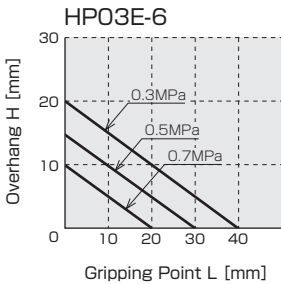
Fluid	Air
Maximum Operating Pressure [MPa]	0.7
Proof Pressure [MPa]	1.05
Operating Temperature [°C]	0~60 (No Freezing)
Lubrication	Not Required (Required for sliding parts of the machine)
Pipe Bore	M3×0.5 (HP03E-6, HP03E-10) M5×0.8 (HP03E-16, HP03E-20, HP03E-25)
Maximum Operating Cycle [Cycle/min]	180
Centering Accuracy [mm]	±0.15
Repeat Accuracy [mm]	±0.01
Applicable Switch	ZE, ES Type (Solid State Switch)

Action Type	Model	Bore Size [mm]	Minimum Operating Pressure [MPa]	Opening/Closing Stroke [mm]	Gripping Force [N]		Outside Dimensions (T x W x L) [mm]	Product Mass [g]	Dust-proof cover mass (additional mass: g)
					Close	Open			
Double Acting	HP03E-6C	6	0.22	4	4.5	5.8	12×19×38	28	Not cover mounting
	HP03E-10C	10	0.18	4	9.4	14.6	16×23×43	48	JN=6 JS=6 JF=7
	HP03E-16C	16	0.12	8	25.5	34	22×34×52	120	JN=8 JS=8 JF=10
	HP03E-20C	20	0.1	12	45.7	60.9	26×45×60.5	218	JN=12 JS=12 JF=16
	HP03E-25C	25	0.1	14	67	87	32×52×68	366	JN=15 JS=15 JF=20
Single Acting Normally Open	HP03E-6A	6	0.4	4	4.1	2.7	12×19×38	28	Not cover mounting
	HP03E-10A	10	0.35	4	4.9	2	16×23×43	49	JN=6 JS=6 JF=8
	HP03E-16A	16	0.25	8	21	3.9	22×34×52	121	JN=8 JS=8 JF=10
	HP03E-20A	20	0.25	12	36.4	6.9	26×45×60.5	220	JN=12 JS=12 JF=16
	HP03E-25A	25	0.25	14	54	13.7	32×52×68	368	JN=15 JS=15 JF=20

Note) The grip force is measured at the intermediate position of the opening/closing stroke. It is an effective value when the grip point L is 30 mm and the pressure is 0.5 MPa.
The opening force of the single acting type indicates the spring force.

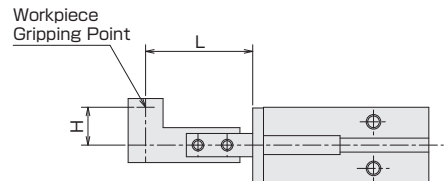
Effective Gripping Force (Closing Force)**Double Acting Type****Single Acting Type**

■ Gripping Point Limit Range



● Workpiece Weight Guide

- When workpieces are chucked, the workpiece weight shall be about 1/10 to 1/20 of the grip force specified on the left (Effective Grip Force Table).
- When workpieces are transferred after they are chucked, workpieces may jump out or fall. Therefore, the workpiece weight that can be gripped will be lower. (1/30 to 1/50 as a guide)
- The workpiece weight largely differs depending on the workpiece, attachment material, shape, surface condition, workpiece travel speed, travel distance (direct advance, rotation, swing, etc.), etc.

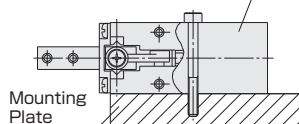


Main Body Mounting Method

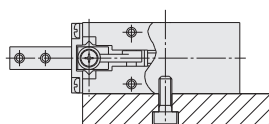
1 When the through-hole of the main body is used

(Switch not attachable in this case)

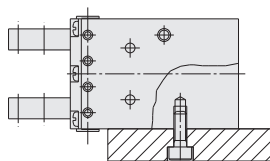
Miniature Gripper Main Body



2 When the mounting screws on the both side of the main body are used



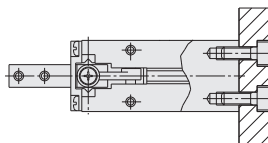
3 When the screw on the side of the main body is used



4 When the screw on the bottom face of the main body is used

(Excluding $\phi 6$)

When the switch is mounted, a relief is required because the switch protrudes.



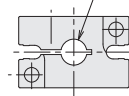
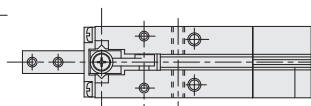
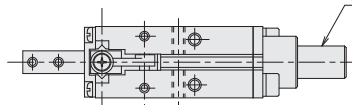
5 When a gripper adaptor (HAE, HFE) is used for mounting (Excluding $\phi 6$)

HAE Type

Mounting Shaft

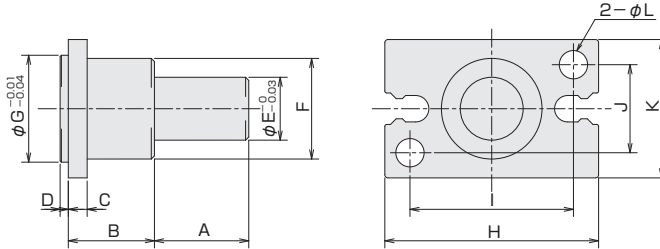
HFE, HFE-L Type

Mounting Hole



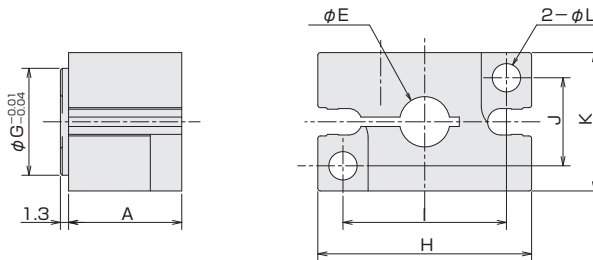
Outline Dimensional Drawing of Gripper Adaptor

HAE Type



Type	Code	A	B	C	D	E	F	G	H	I	J	K	L	Ancillary Bolt (x2)	Product Mass[g] (Including Bolts)
HAE-10		15	15	3	1.3	10	11	11	23	17	10	16	3.4	M3×0.5×8 ^L	11
HAE-16		15	15	3	1.3	10	16	17	34	26	14	22	4.5	M4×0.7×10 ^L	20
HAE-20		15	15	3	1.3	10	18	21	45	35	16	26	5.5	M5×0.8×10 ^L	28
HAE-25		20	17	5	1.3	14	26	26	52	40	20	32	6.6	M6×1×15 ^L	63

HFE Type



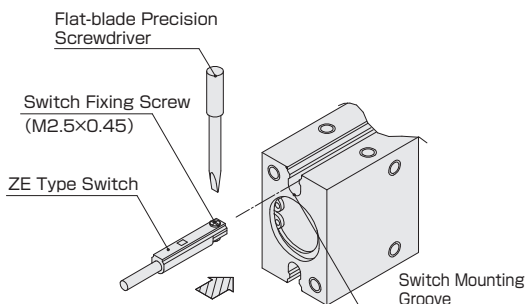
Type	Code	A	E	G	H	I	J	K	L	Ancillary Bolt (x3)		Product Mass[g] (Including Bolts)
										Gripper Mounting (x2)	Adapter Fixing (x1)	
HFE-10		15	6	11	23	17	10	16	3.4	M3×0.5×16 ^L	M3×0.5×12 ^L	14
HFE-16		18	8	17	34	26	14	22	4.5	M4×0.7×20 ^L	M4×0.7×16 ^L	35
HFE-16L		18	10	17	34	26	14	22	4.5	M4×0.7×20 ^L	M4×0.7×16 ^L	33
HFE-20		19	13	21	45	35	16	26	5.5	M5×0.8×20 ^L	M5×0.8×20 ^L	55
HFE-25		22	13	26	52	40	20	32	6.6	M6×1×25 ^L	M6×1×25 ^L	96

Switch Mounting

Insert the switch into the switch mounting groove. After setting the mounting position, tighten the switch fixing screw with a precision screwdriver. The tightening torque shall be 0.1 N·m or less.

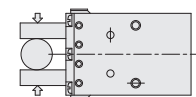
Switch Protrusion Distance

No switch protrusion distance is set for the HP03E series.

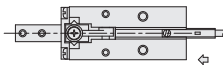


Switch Mounting Position Adjustment Method

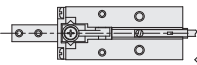
For external gripping



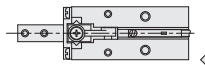
① Check the workpiece external gripping and full close.



② Insert the switch into the switch mounting groove of the main body in the arrow direction.

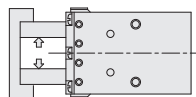


③ The LED lamp lights up by turning on the switch in the arrow direction.

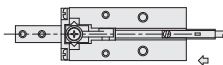


④ Fix the switch by a switch fixing screw at the position where the lamp lights up in [3].

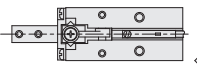
For internal gripping



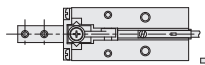
① Check the workpiece internal gripping and full opening.



② Insert the switch into the switch mounting groove of the main body in the arrow direction.



③ The LED lamp lights up by moving the switch in the arrow direction. It goes off by moving it further.



④ Fix the switch at the position that is 0.6 mm moved from the position where the LED lamp lights up when it is returned in the arrow direction (reverse direction) in [3].

⑤ Indicates the position where you need to check if the switch is ON. Mount the switch by adjusting it in the order from ① to ④.

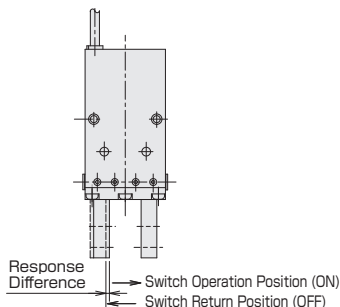
Lever Operation and Switch Characteristics

1. Opening/Closing Stroke Difference (Opening/Closing Angle Difference)

The distance from the position where the one side lever moves and the switch turns on from the position where the lever moves in the reverse direction and the switch turns off is called "response difference".

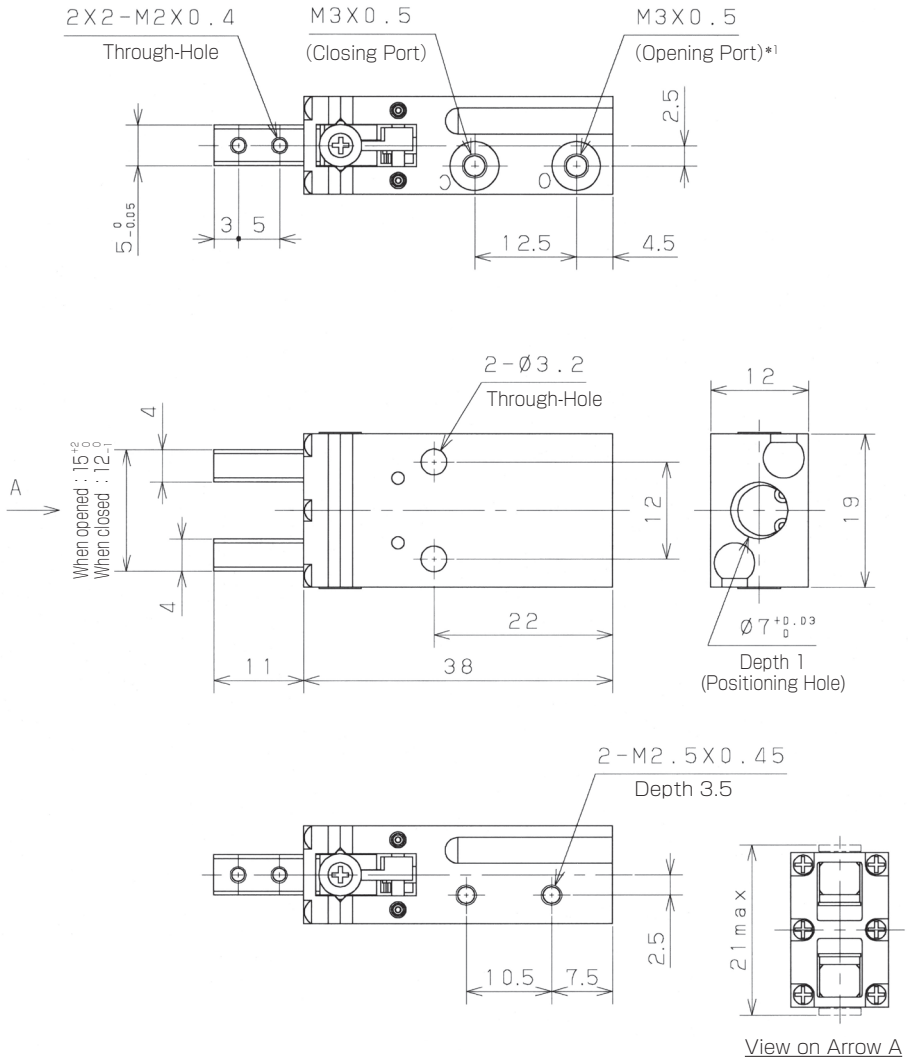
2. Switch repeat operation position accuracy

Variation of the switch ON/OFF position when the one side lever is moved in a certain direction.

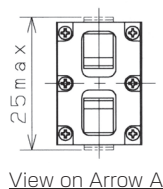
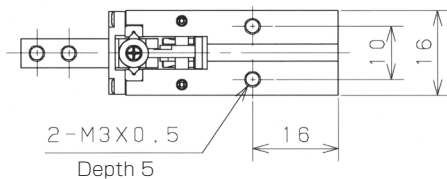
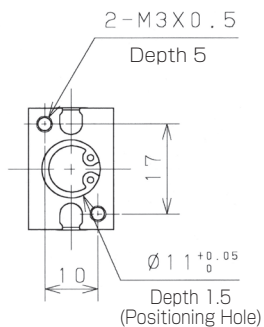
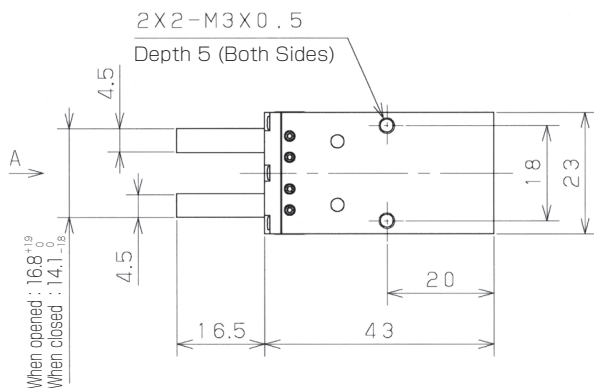
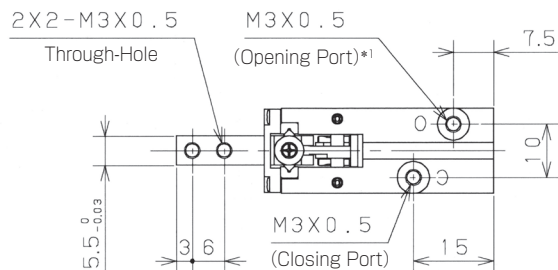


Model	Opening/Closing Stroke Difference[mm]	Operation Position Accuracy[mm]
HP03E-6	0.3	0.2
HP03E-10	0.3	0.2
HP03E-16	0.3	0.2
HP03E-20	0.3	0.2
HP03E-25	0.3	0.2

Dimensions HP03E-6



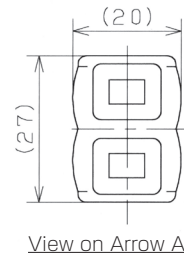
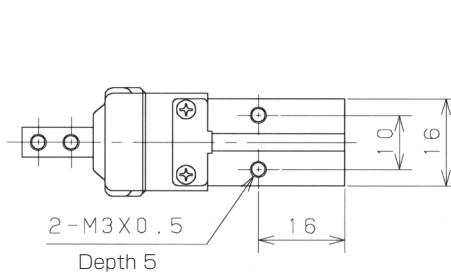
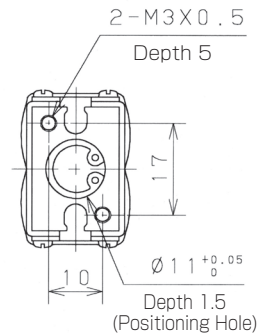
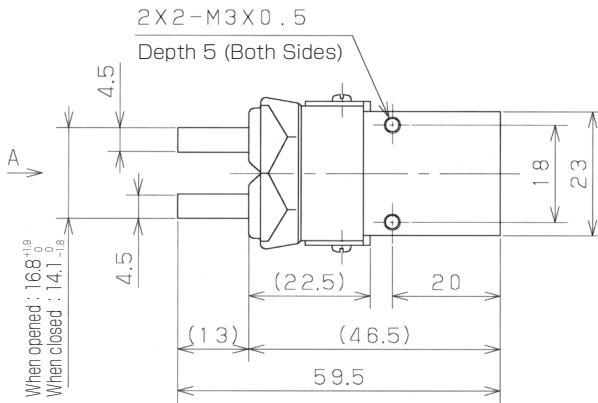
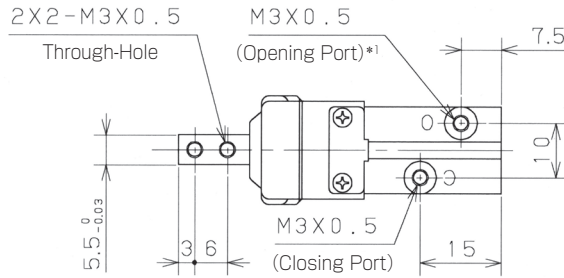
*1) For the single acting type, the opening port cannot be used because it is used for the exhaust plug.

Dimensions HP03E-10□

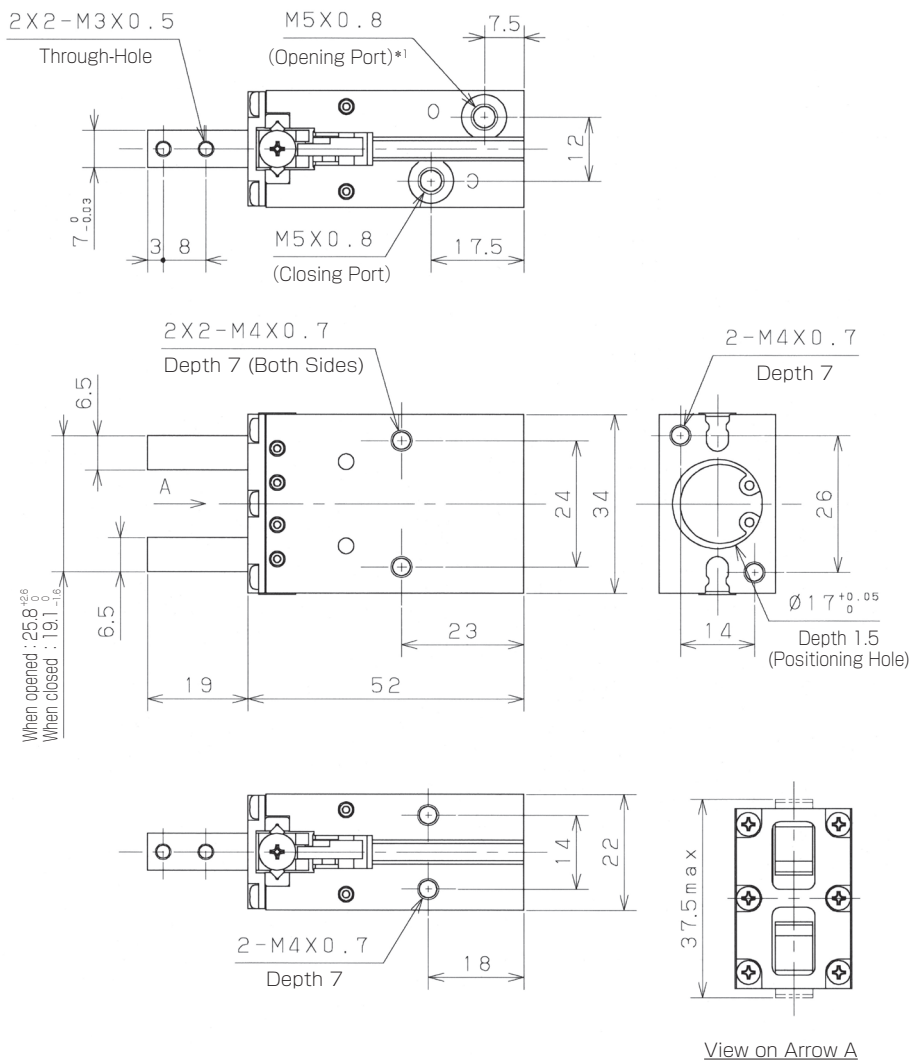
*1) For the single acting type, the opening port cannot be used because it is used for the exhaust plug.

Dimensions

HP03E-10□※J□



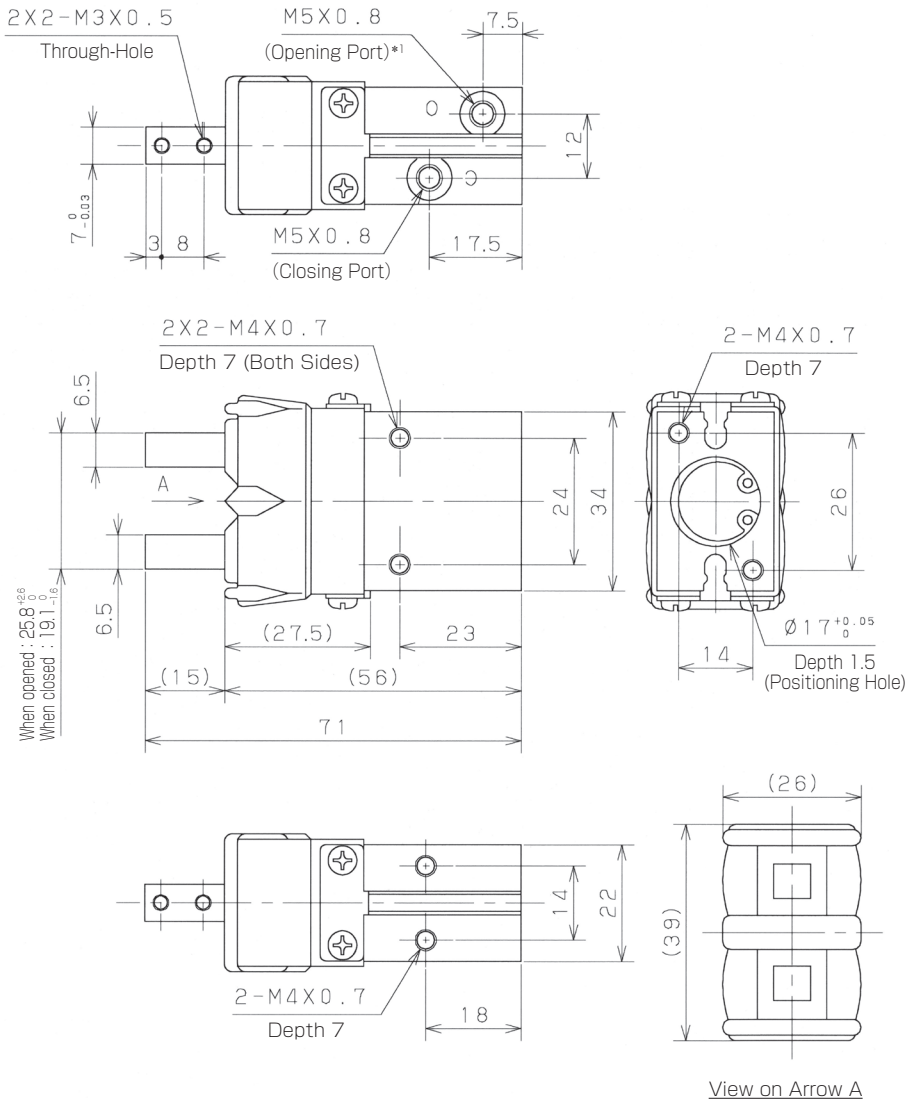
*1) For the single acting type, the opening port cannot be used because it is used for the exhaust plug.

Dimensions HP03E-16

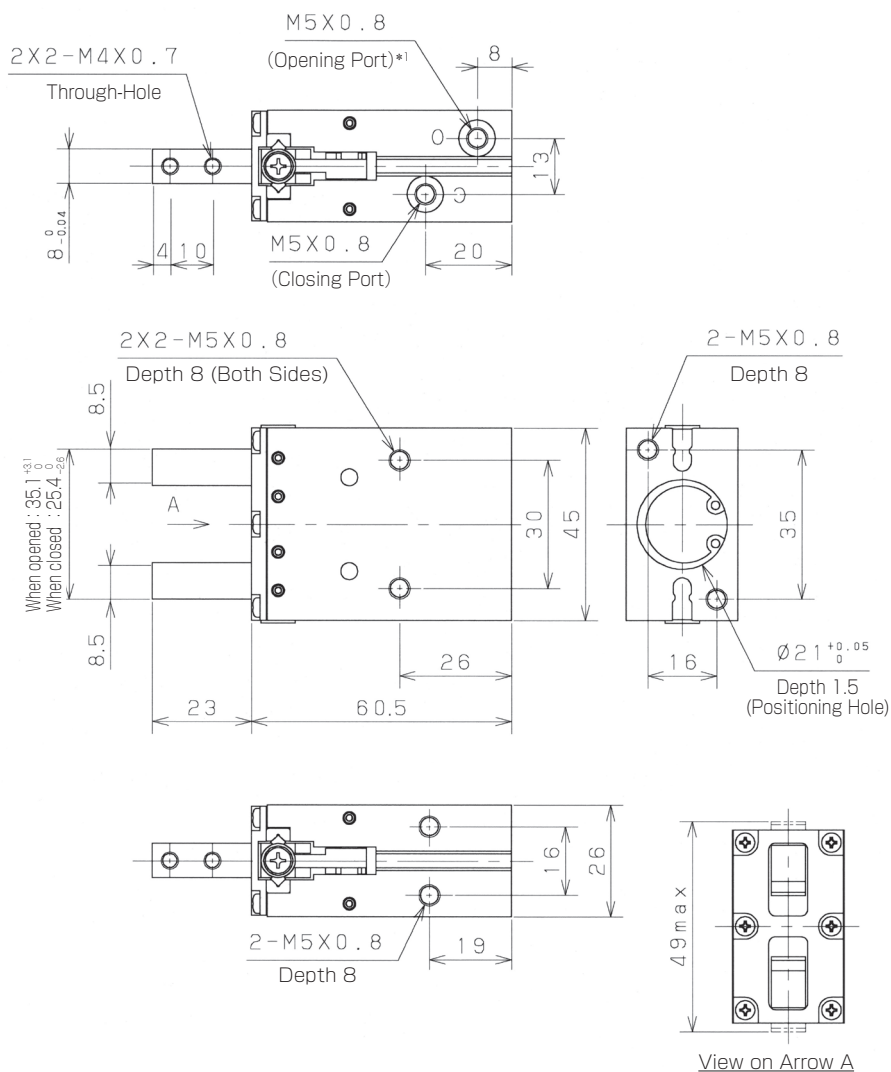
*1) For the single acting type, the opening port cannot be used because it is used for the exhaust plug.

Dimensions

HP03E-16□※J□



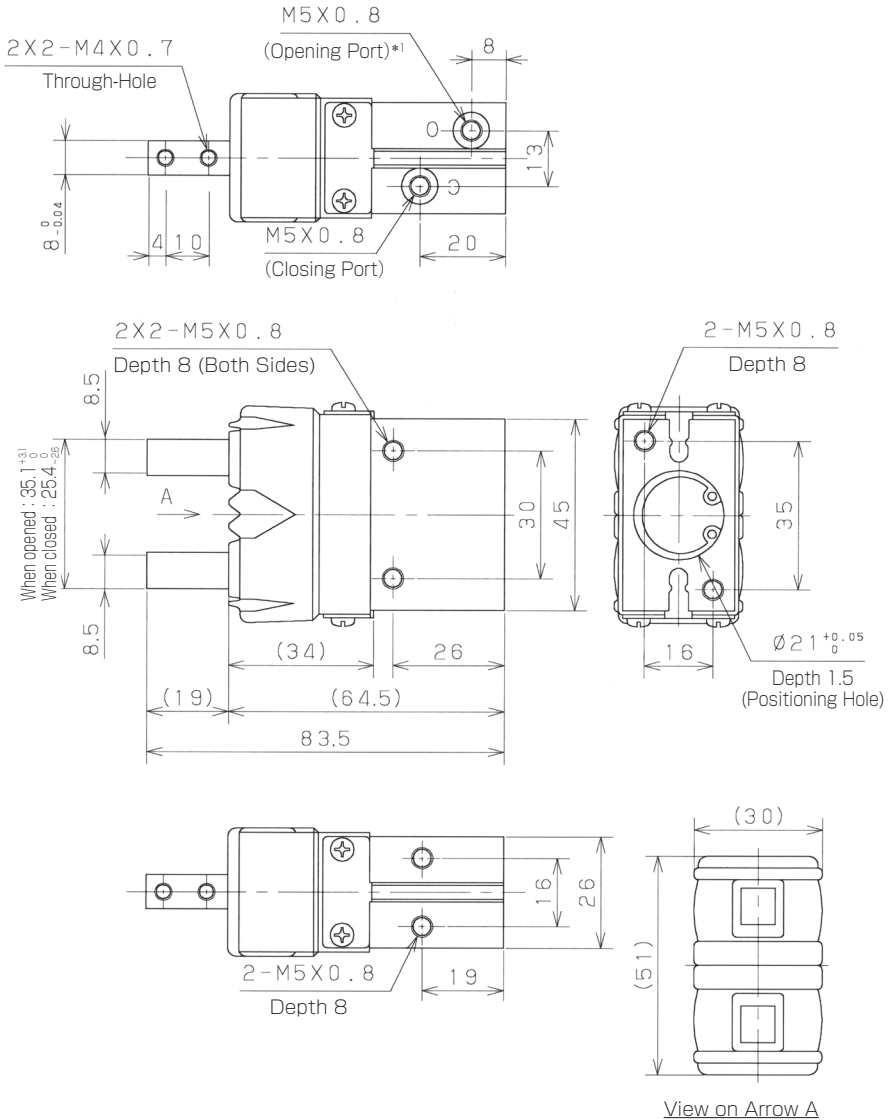
*1) For the single acting type, the opening port cannot be used because it is used for the exhaust plug.

Dimensions HP03E-20□

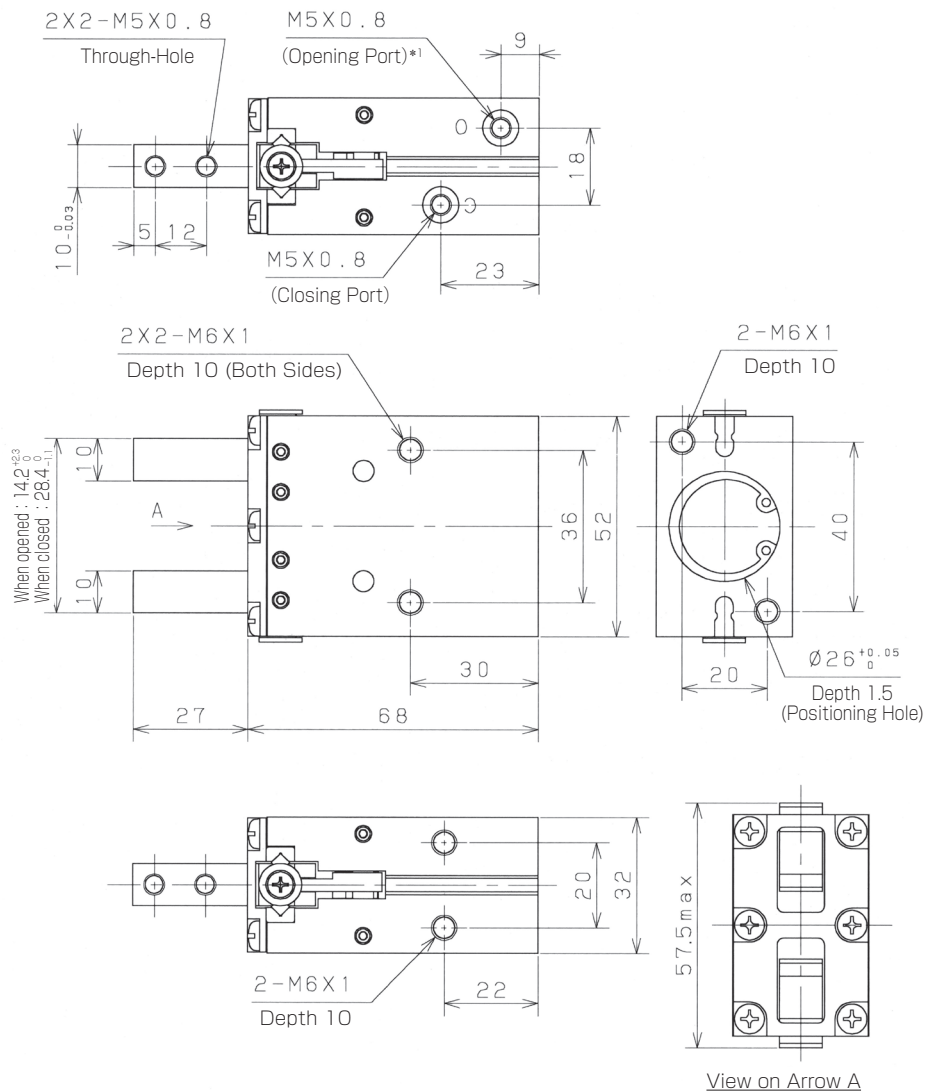
*1) For the single acting type, the opening port cannot be used because it is used for the exhaust plug.

Dimensions

HP03E-20 □※J □



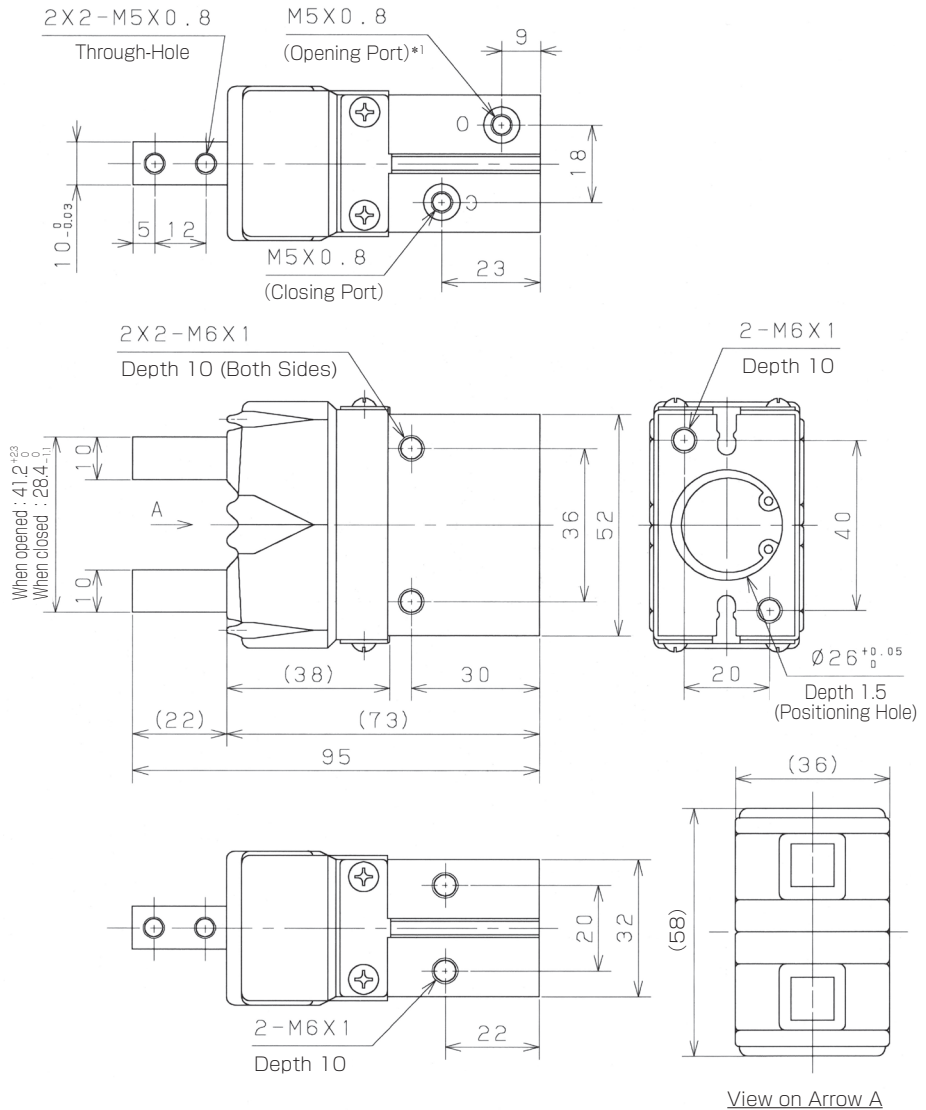
*1) For the single acting type, the opening port cannot be used because it is used for the exhaust plug.

Dimensions HP03E-25

*1) For the single acting type, the opening port cannot be used because it is used for the exhaust plug.

Dimensions

HP03E-25※J□



*1) For the single acting type, the opening port cannot be used because it is used for the exhaust plug.