Compact Parallel Linear Gripper

HP14 Series

High Rigid, Compact and Lightweight Type

Gripping at a long point is available by the use of the linear guide.

Compact and Lightweight

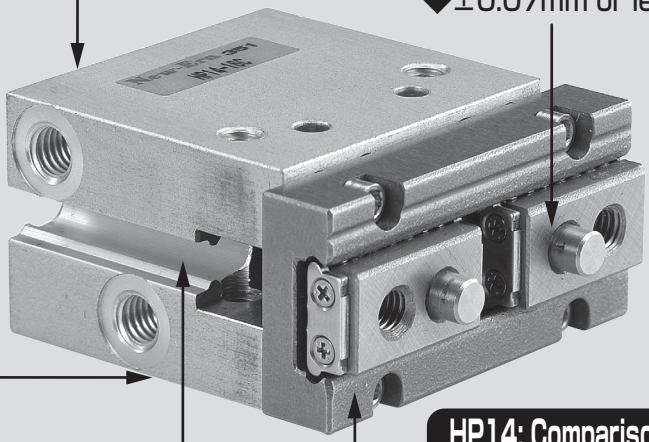
Excellent CENTERING Accuracy

Positioning Hole

◆Bottom Face

◆Rear Face

◆±0.07mm or less



Switch Groove

HP14: Comparison with HP04

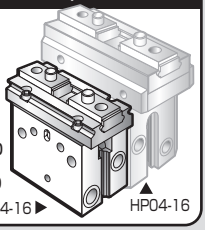
(Comparison with ϕ16)

45% Downsizing

Downsized to

Volume (㎣): 55%

Weight (g): 60%



HP14-16▶ ▲HP04-16

Use of LINEAR GUIDE

◆Withstand load, withstand moment (high rigidity)

◆High accuracy (repeat accuracy: ±0.01 mm or less)

◆Gripping at a long point and overhang gripping are available.

HP14 Series

Model Code No.

HP14 – 10 C ※ ZE235 A 2

Series Name

Bore Size
10:10mm
16:16mm
20:20mm
25:25mm

Action Type
C : Double Acting

Number of Switches
1:1 Switch
2:2 Switches

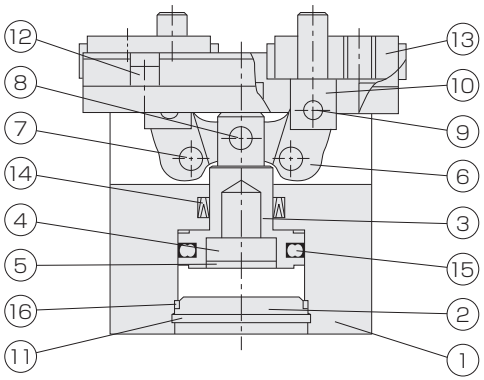
Switch Lead Wire Length
A:1m
B:3m

●Switch Type No Code: No Switch

ZE135	ES13	ZE235	ES23
2 Wire System Solid State Switch, Straight Type		2 Wire System Solid State Switch, L-shaped	
ZE155	ES(P)15	ZE255	ES(P)25
3 Wire System Solid State Switch, Straight Type		3 Wire System Solid State Switch, L-shaped	

●Switch details→P.521～528

Internal Structure Diagram



Parts List

NO	名　称	材　質
1	Main Body	Aluminum Alloy
2	Head Cover	Aluminum Alloy
3	Piston Rod	Stainless Steel
4	Magnet	Magnetic body
5	Pressure Cover	Aluminum Alloy
6	Action Lever	Carbon Steel
7	Fulcrum Pin	Carbon Tool Steel
8	Press Fit Pin	Carbon Tool Steel
9	Press Fit Pin	Carbon Tool Steel
10	Knuckle	Stainless Steel
11	Hole Locating Snap Ring	Carbon Tool Steel
12	Hexagon Socket Head Bolt	Carbon Steel
13	Linear Guide	Stainless Steel
14	Rod Packing	NBR
15	Piston Packing	NBR
16	O Ring	NBR

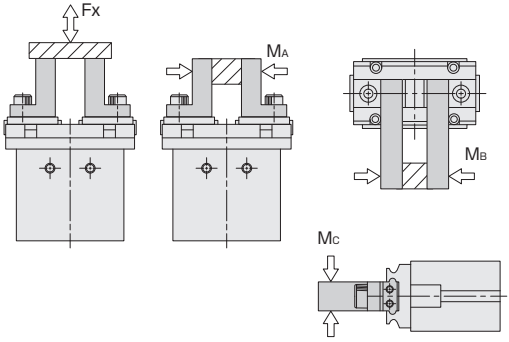
Specifications

Fluid		Air
Maximum Operating Pressure	[MPa]	0.7
Proof Pressure	[MPa]	1.05
Operating Temperature	[℃]	0~60 (No Freezing)
Lubrication		Not Required (Required for sliding parts of the machine)
Pipe Bore		M3×0.5(HP14-10) M5×0.8(HP14-16, 20, 25)
Maximum Operating Cycle	[Cycle/min]	180
Centering Accuracy	[mm]	±0.07
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]
					Close	Open		
Double Acting	HP14-10C	10	0.2	4	11	17	16×23×35	45
	HP14-16C	16	0.12	6	35	46	22×34×42	96
	HP14-20C	20	0.1	10	49	65	26×45×53	205
	HP14-25C	25	0.1	14	86	111	32×52×65	366

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.
When this product is used with an extremely short stroke, it may work badly because of the lack of oil of the guide.

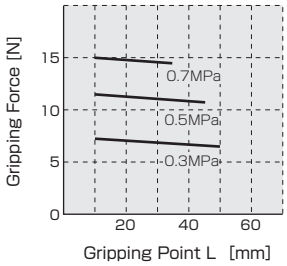
Allowable Load and Allowable Moment



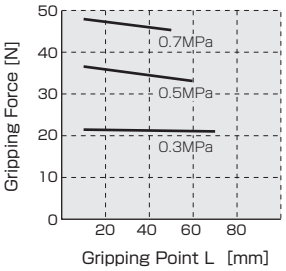
Load and Moment / Model	Fx [N]	MA [N·m]	MB [N·m]	MC [N·m]
HP14-10	60	0.3	0.3	0.6
HP14-16	100	0.8	0.8	1.6
HP14-20	160	1.4	1.4	2.8
HP14-25	280	2.4	2.4	4.8

Effective Gripping Force (Closing Force)

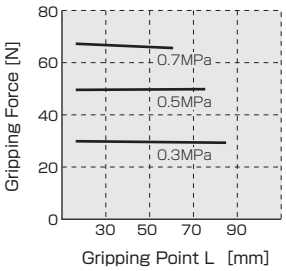
HP14-10C



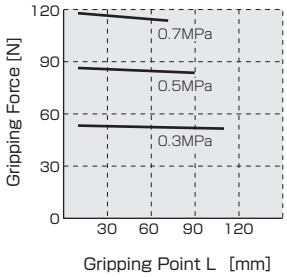
HP14-16C



HP14-20C

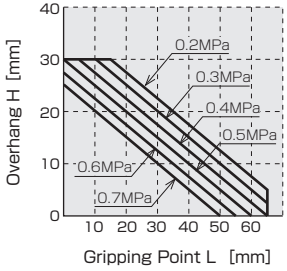


HP14-25C

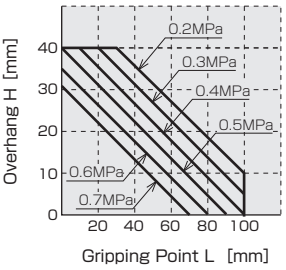


Gripping Point Limit Range

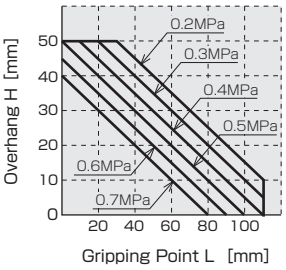
HP14-10C



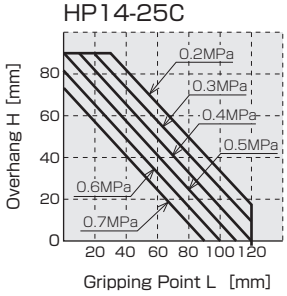
HP14-16C

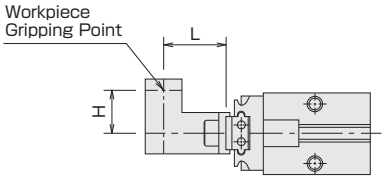


HP14-20C



HP14-25C





Gripper Attachment Method

Pipe

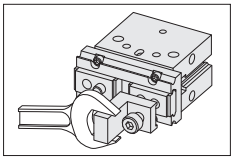
When you screw in a joint or the like into the pipe port, tighten it with the following torque.

Pipe Port	Maximum Tightening Torque [N·m]
M3×0.5	0.59
M5×0.8	1.57

Attachment Mounting

When you mount the attachment, support it with a spanner or the like so that the levers are not rattled. See the following table for the tightening torque of the mounting bolts.

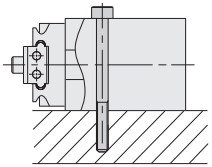
Model	Bolt to be Used	Maximum Tightening Torque [N·m]
HP14-10C	M3×0.5	1.14
HP14-16C	M4×0.7	2.7
HP14-20C	M5×0.8	5.4
HP14-25C	M6×1.0	9.2



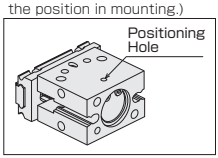
Main Body Mounting Method

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

●Switch not attachable in this case

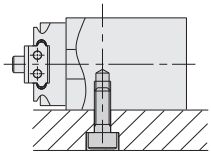


●Positioning Hole
(Use this hole to determine the position in mounting.)



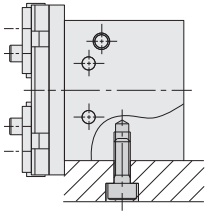
Model	Bolt to be Used	Maximum Tightening Torque [N·m]	Positioning Hole
HP14-10C	M3×0.5	0.59	$\phi 2^{+0.03}_{0}$ depth1.5
HP14-16C	M3×0.5	0.59	$\phi 2.5^{+0.03}_{0}$ depth1.5
HP14-20C	M4×0.7	1.37	$\phi 3^{+0.03}_{0}$ depth1.5
HP14-25C	M5×0.8	2.84	$\phi 3^{+0.03}_{0}$ depth1.5

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



Model	Bolt to be Used	Maximum Tightening Torque [N·m]
HP14-10C	M4×0.7	1.37
HP14-16C	M4×0.7	1.37
HP14-20C	M5×0.8	2.84
HP14-25C	M6×1.0	4.81

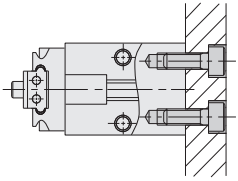
3 When the mounting screw on the side of the main body is used



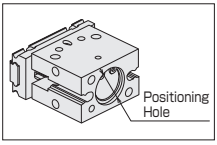
Model	Bolt to be Used	Maximum Tightening Torque [N·m]
HP14-10C	M3×0.5	0.59
HP14-16C	M4×0.7	1.37
HP14-20C	M5×0.8	2.84
HP14-25C	M6×1.0	4.81

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

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



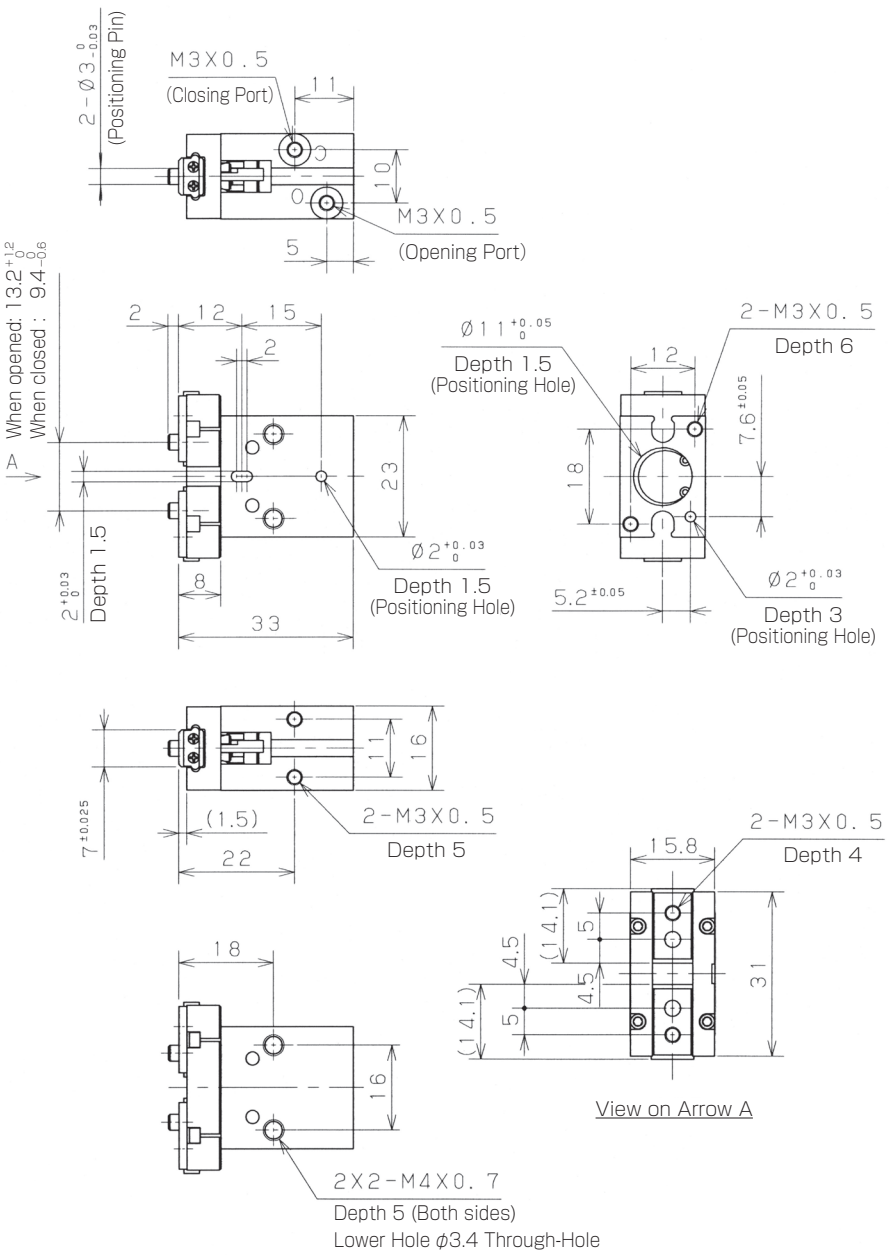
●Positioning Hole
(Use this hole to determine the position in mounting.)



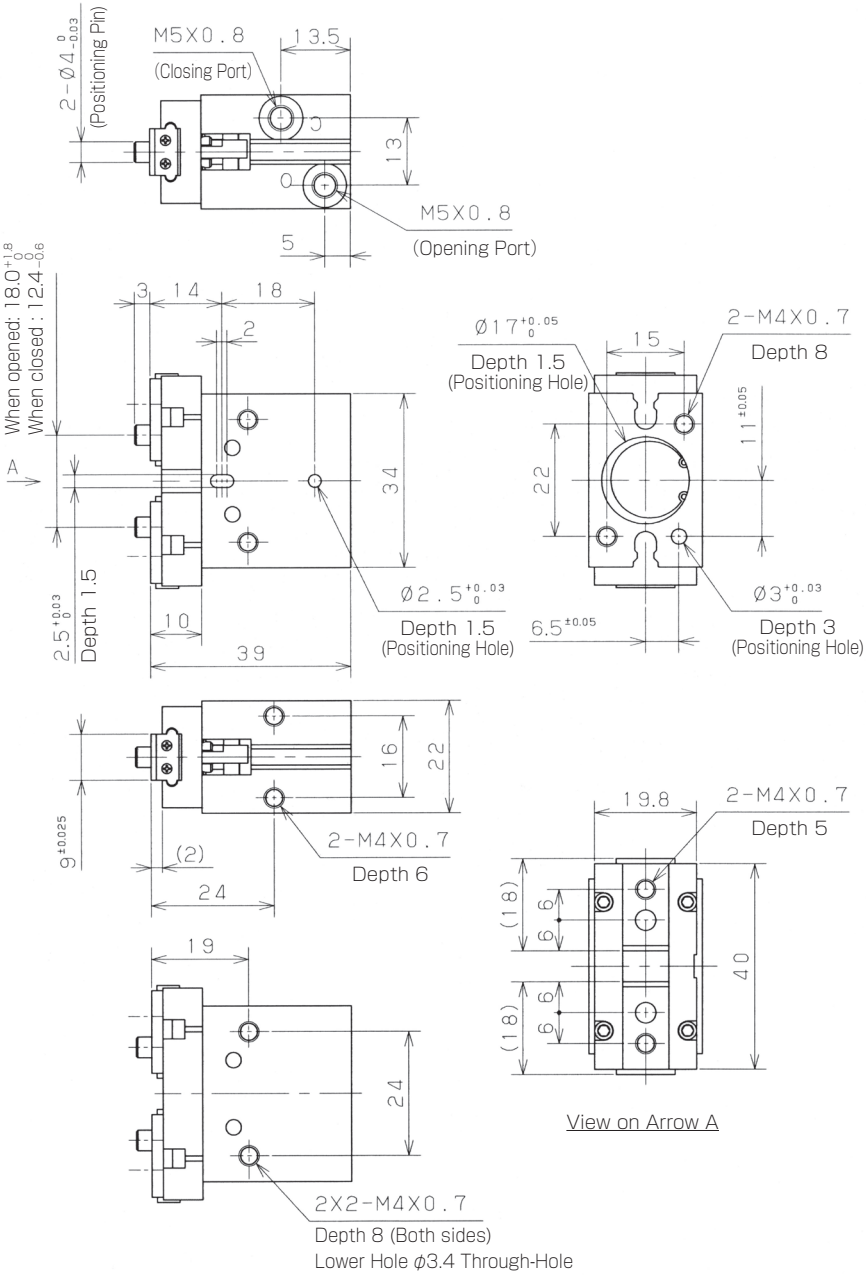
Model	Bolt to be Used	Maximum Tightening Torque [N·m]	Positioning Hole
HP14-10C	M3×0.5	0.59	$\phi 11^{+0.05}_{0}$ depth1.5
HP14-16C	M4×0.7	1.37	$\phi 17^{+0.05}_{0}$ depth1.5
HP14-20C	M5×0.8	2.84	$\phi 21^{+0.05}_{0}$ depth1.5
HP14-25C	M6×1.0	4.81	$\phi 26^{+0.05}_{0}$ depth1.5

CAD data provided

Dimensions HP14-10C

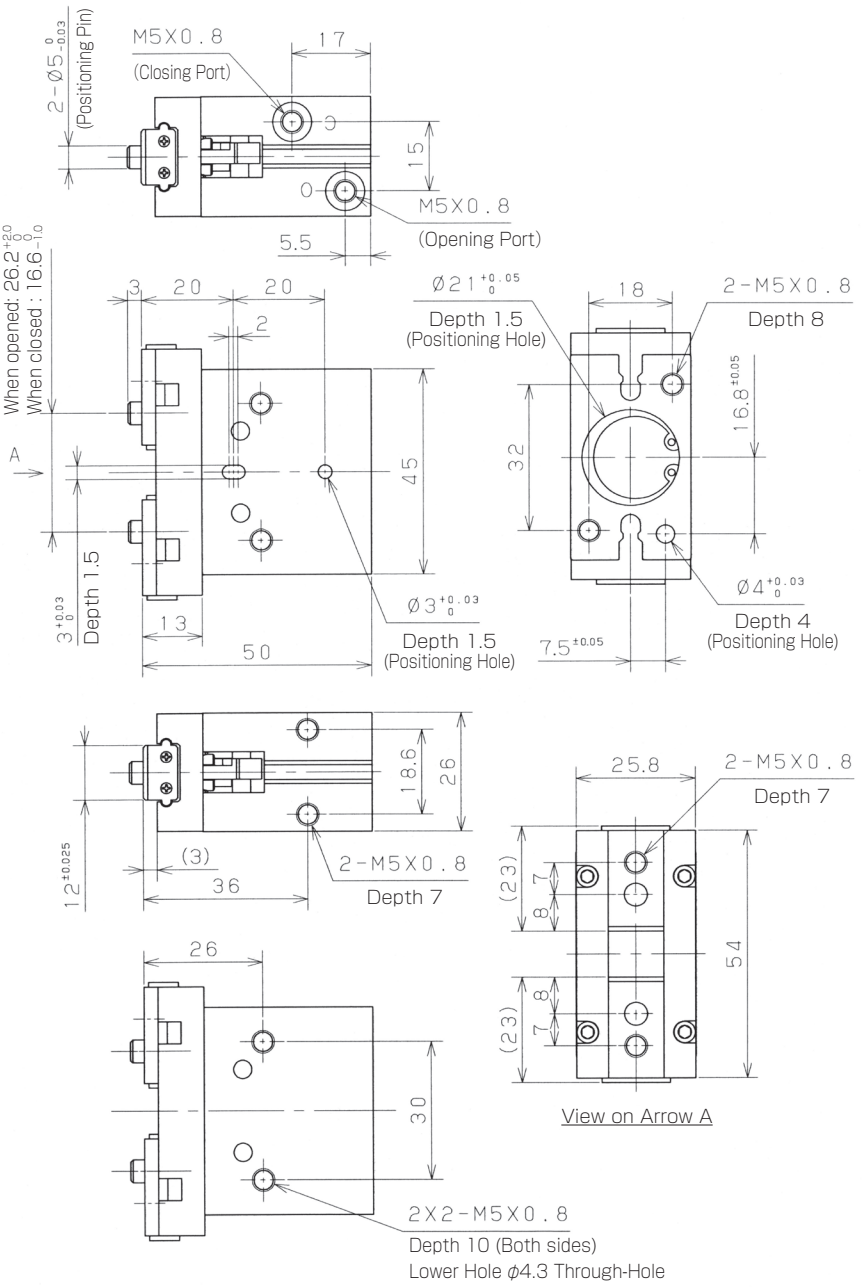


■Dimensions HP14-16C

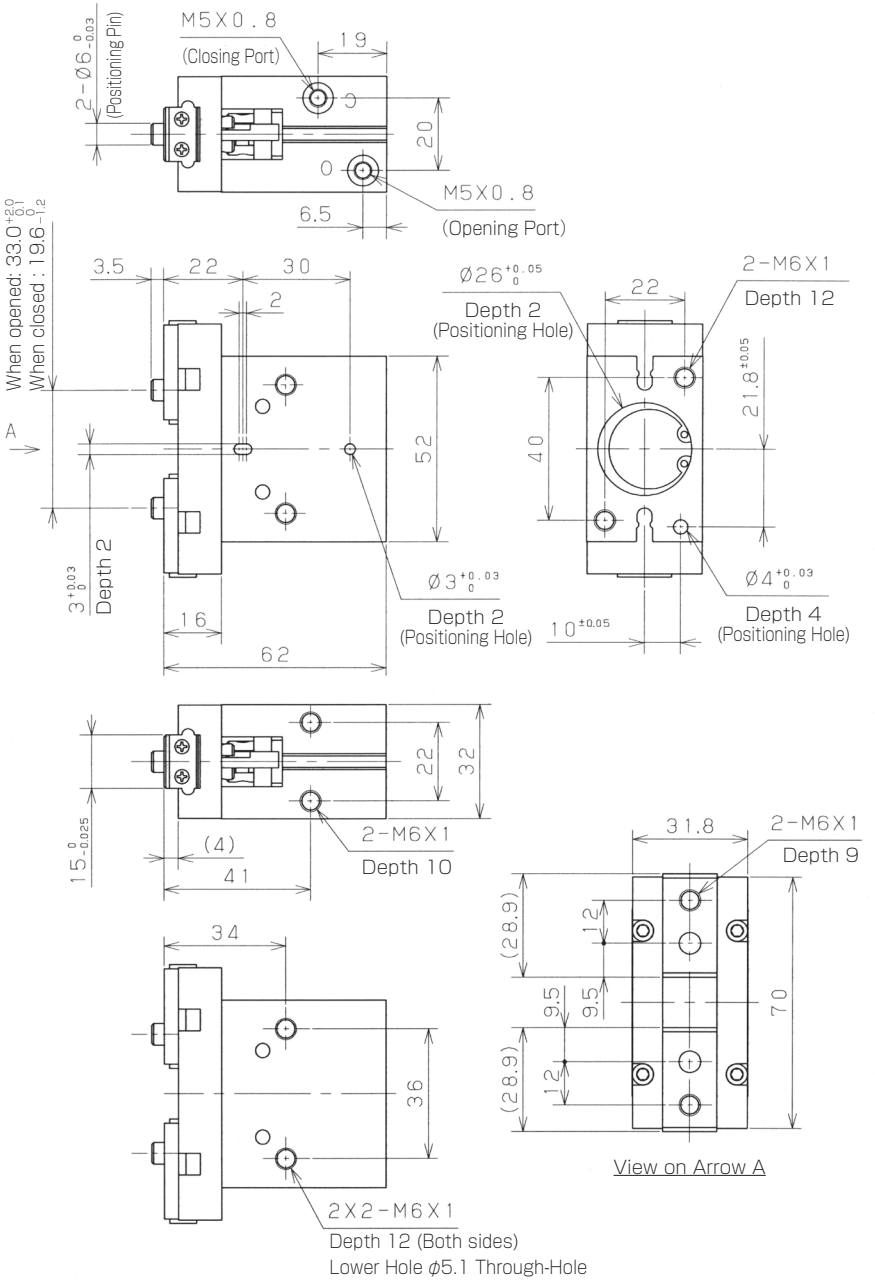


CAD data provided

Dimensions HP14-20C

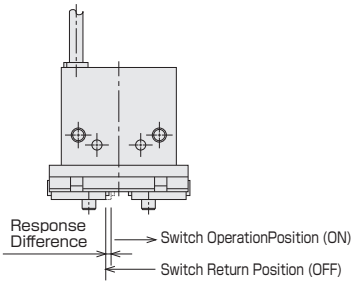


■Dimensions HP14-25C



Switch Response Difference

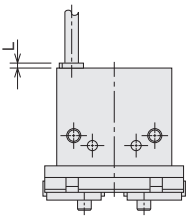
The distance from the position where the levers move and the switch turns on to the position where the levers move in the reverse direction and the switch turns off is called "response difference".



Model	Maximum Response Difference (mm)
HP14-10C	0.25
HP14-16C	0.4
HP14-20C	0.4
HP14-25C	0.4

Switch Protrusion Distance

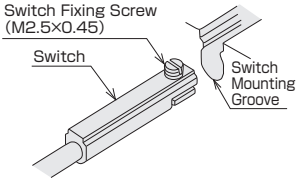
The maximum switch protrusion from the switch body end face (when the levers are full closed) is shown in the table below. Use it as a guide for mounting.



Model	Switch Protrusion Difference L (mm)
HP14-10C	3
HP14-16C	4
HP14-20C	4
HP14-25C	5

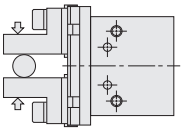
Switch Mounting

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.

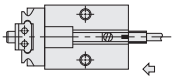


Switch Mounting Position Adjustment Method

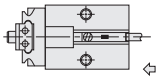
For external gripping



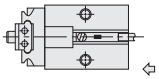
①Check the workpiece external gripping and full close.



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

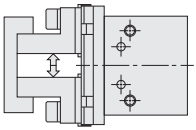


③The LED lamp lights up by turning on the switch in the arrow direction.

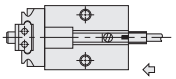


④Fix the switch by a switch fixing screw at the position where the switch is moved 0.6 mm in the arrow direction from the position where the lamp lights up in [3].

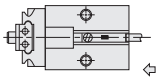
For internal gripping



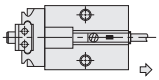
①Check the workpiece internal gripping and full opening.



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



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



④Fix 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].

①Indicates 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.