

180° Opening/Closing Angular Gripper

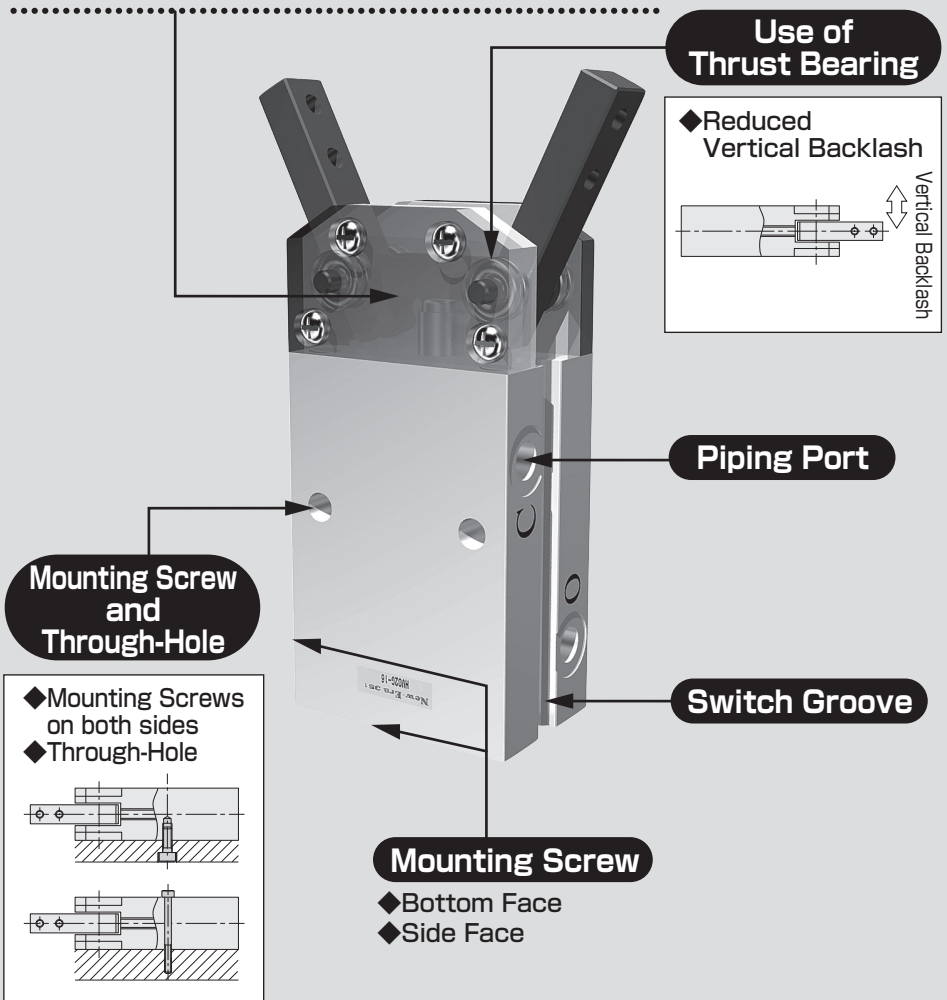
HV02G Series

180° Opening/Closing Type

High Durability, High Rigidity and High Accuracy realized by the use of the Thrust Bearing



Compact and High Grip Force
by the use of the Link Mechanism



180° Opening/Closing Angular Gripper

HV02G Series

HV02G Series

Model Code No.

HV02G - 12 * HAE - ZE235 A 2

Series Name

Bore Size

12:12mm
16:16mm
20:20mm

Number of Switches

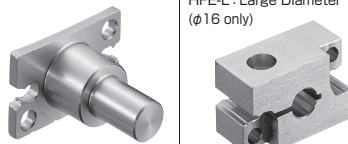
1:1 Switch
2:2 Switches

Switch Lead Wire Length

A:1m
B:3m

●Gripper Adaptor Type
No Code: No Gripper Adaptor

HAE



HFE (φ16, φ20 only)
HFE-L : Large Diameter Type (φ16 only)

●Detailed specifications→P.307


●Switch Type No Code: No Switch

ZE135	ES13
2 Wire System Solid State Switch, Straight Type	

ZE155	ES(P)15
3 Wire System Solid State Switch, Straight Type	

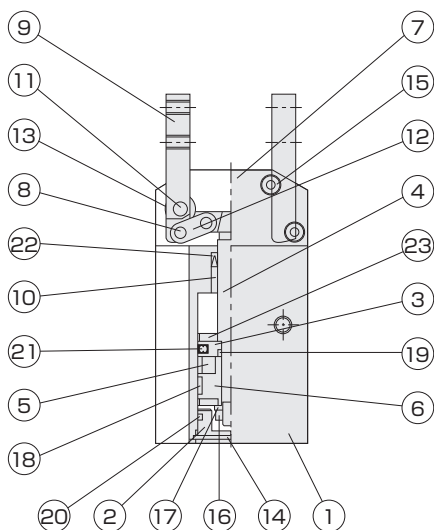
ZE235	ES23
2 Wire System Solid State Switch, L-shaped	

ZE255	ES(P)25
3 Wire System Solid State Switch, L-shaped	



●Switch details→P.521~528

Internal Structure Diagram



Parts List

NO	Name	Material
1	Main Body	Aluminum Alloy
2	Head Cover	Aluminum Alloy
3	Piston	Aluminum Alloy
4	Piston Rod	Stainless Steel
5	Magnet	Magnetic Body
6	Magnet Mount Base	Aluminum Alloy
7	Pressure Cover	Stainless Steel
8	Press Fit Pin	Carbon Steel
9	Lever	Carbon Tool Steel
10	Metal	Oil-impregnated Sintered Bearing
11	Fulcrum Pin	Carbon Tool Steel
12	Link	Carbon Steel
13	Bearing	Carbon Steel
14	Hole Locating Snap Ring	Carbon Steel
15	Cross-recessed Round Head Screw	Stainless Steel
16	Hexagon Nut	Stainless Steel
17	Spring Washer	Stainless Steel
18	Wearing (φ16 and φ20 only)	Resin
19	O Ring	Carbon Steel
20	O Ring	NBR
21	Rod Packing	NBR
22	Piston Packing	NBR
23	Bumper (φ16 and φ20 only)	NBR

Specifications

Fluid	Air	
Maximum Operating Pressure [MPa]	0.7	
Operating Pressure [MPa]	0.2~0.7	
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(HV02G-12) M5×0.8(HV02G-16, HV02G-20)	
Maximum Operating Cycle [Cycle/min]	100	
Opening/Closing Angle (One Side)	Open [°]	90±2.5
	Close [°]	-3±1.5
Applicable Switch	ZE, ES Type (Solid State Switch)	

Action Type	Model	Bore Size [mm]	Lever Screw	Gripping Force [N] ^{Note)1}		Outside Dimensions (T x W x L) [mm] ^{Note)2}	Product Mass [g]
				Close	Open		
Double Acting	HV02G-12	12	M3×0.5 (x 4)	20/L	24/L	16×29×47	63
	HV02G-16	16	M3×0.5 (x 4)	55/L	64/L	22×34×69	168
	HV02G-20	20	M4×0.7 (x 4)	95/L	113/L	26×45×81	312

Note 1): L indicates the distance (cm) from the fulcrum pin to the grip point. (The levers are retained in the horizontal condition.)

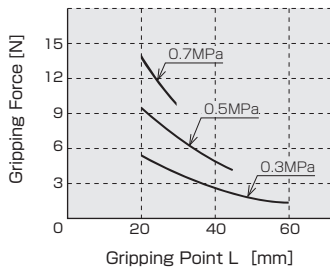
This is an effective value when the pressure is 0.5 MPa.

Note 2): The outside dimensions indicate the main body dimensions. (Excluding the levers)

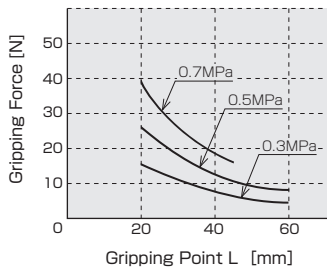
HV02G Series

Effective Gripping Force (Closing Force)

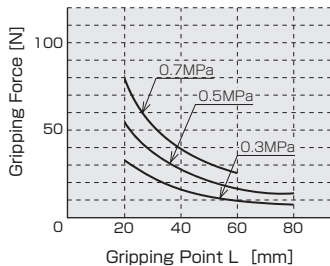
HV02G-12



HV02G-16

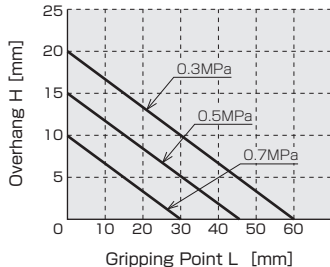


HV02G-20

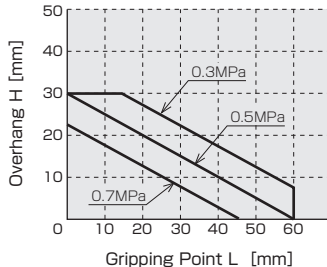


Gripping Point Limit Range

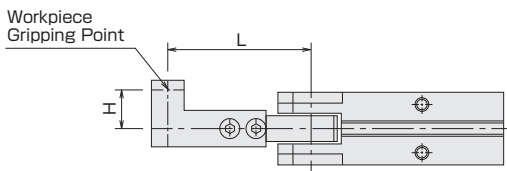
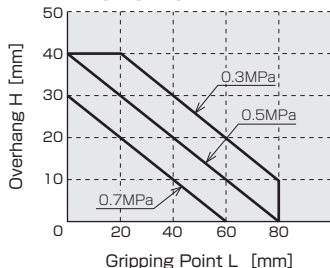
HV02G-12



HV02G-16



HV02G-20



Gripper Attachment Method

Pipe

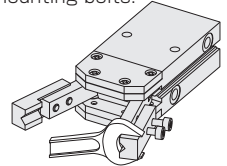
When you screw in a joint or the like into the pipe port, tighten it with the following torque.

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.

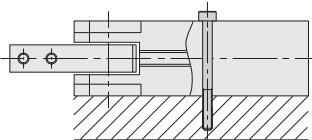
Model	Bolt to be Used	Maximum Tightening Torque [N·m]
HV02G-12	M3×0.5	1.14
HV02G-16	M4×0.7	2.7
HV02G-20	M5×0.8	5.4



Main Body Mounting Method

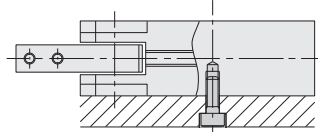
1 When the through-hole of the main body is used

● Switch not attachable in this case



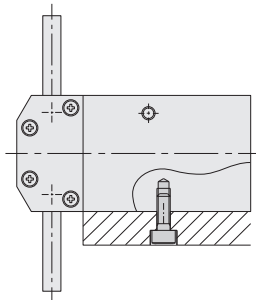
Model	Bolt to be Used	Maximum Tightening Torque [N·m]
HV02G-12	M3×0.5	0.59
HV02G-16	M3×0.5	0.59
HV02G-20	M4×0.7	1.37

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]
HV02G-12	M4×0.7	1.37
HV02G-16	M4×0.7	1.37
HV02G-20	M5×0.8	2.84

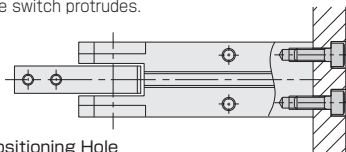
3 When the mounting screw on the side of the main body is used



Model	Bolt to be Used	Maximum Tightening Torque [N·m]
HV02G-12	M3×0.5	0.59
HV02G-16	M4×0.7	1.37
HV02G-20	M5×0.8	2.84

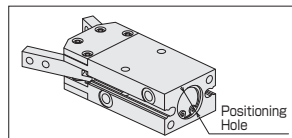
4 When the mounting screw on the bottom face of the main body is used

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

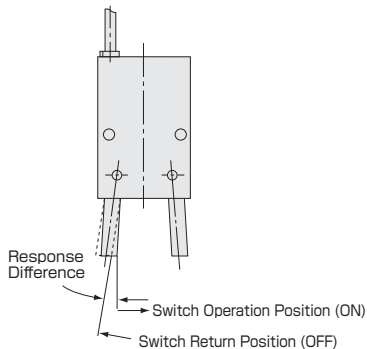


● Positioning Hole

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



Model	Bolt to be Used	Maximum Tightening Torque [N·m]	Positioning Hole
HV02G-12	M3×0.5	0.59	$\phi 13^{+0.05}$ depth 1.5
HV02G-16	M4×0.7	1.37	$\phi 17^{+0.05}$ depth 1.5
HV02G-20	M5×0.8	2.84	$\phi 21^{+0.05}$ depth 1.5

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".

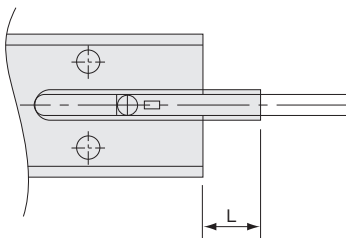
2. Switch repeat operating position accuracy

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

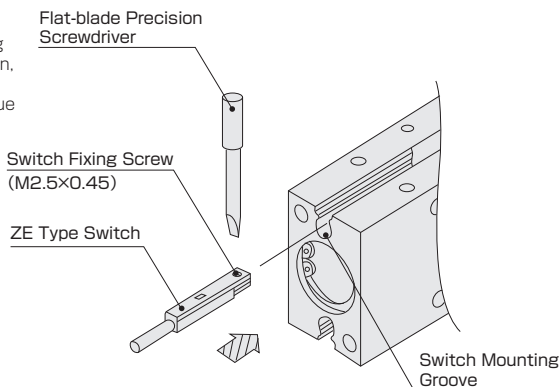
Model	Opening/Closing Angle Difference [°]	Operation Position Accuracy [°]
HV02G-12	3	0.5
HV02G-16	1.5	0.5
HV02G-20	2.5	0.5

Switch Protrusion Distance

No switch protrusion distance is set for the HV02G series.

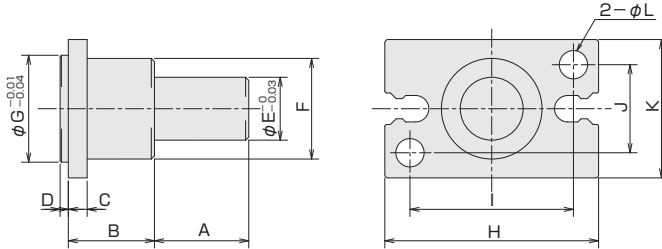
**Switch Mounting**

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.



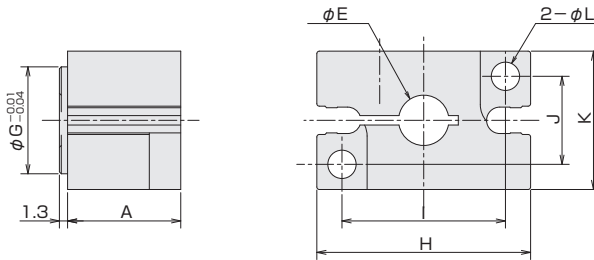
Outline Dimensional Drawing of Gripper Adaptor

HAE Type



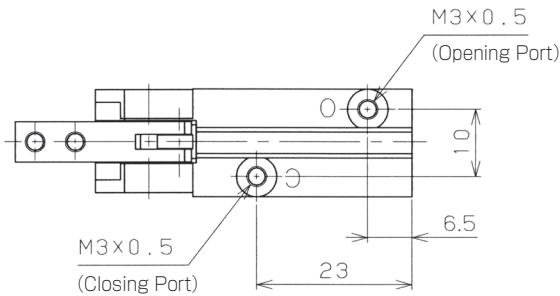
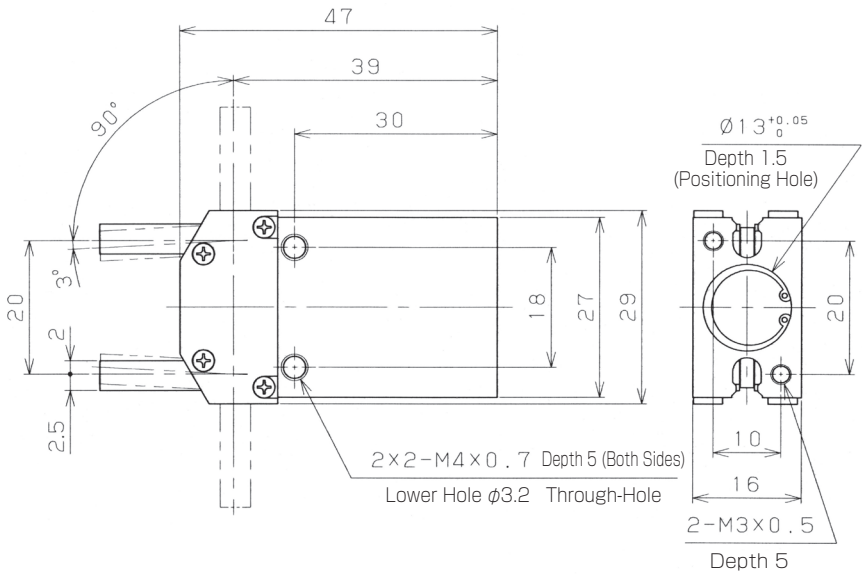
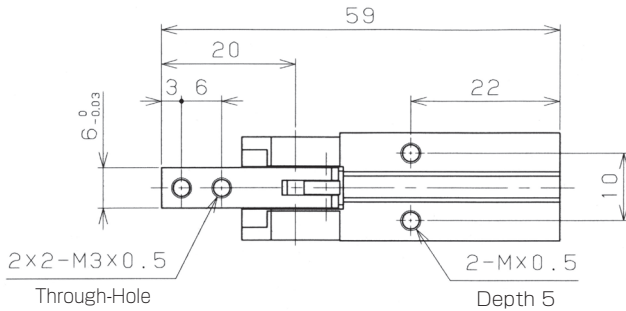
Type	Code	A	B	C	D	E	F	G	H	I	J	K	L	Ancillary Bolt (x2)	Product Mass [g] (Including Bolts)
HAE-12		15	15	3	1.3	10	12	13	27	20	10	16	3.4	M3×0.5×8 ^L	13
HAE-16		15	15	3	1.3	10	16	17	34	26	14	22	4.5	M4×0.7×10 ^L	20
HAE-20		15	15	3	1.3	10	18	21	45	35	16	26	5.5	M5×0.8×10 ^L	28

HFE Type

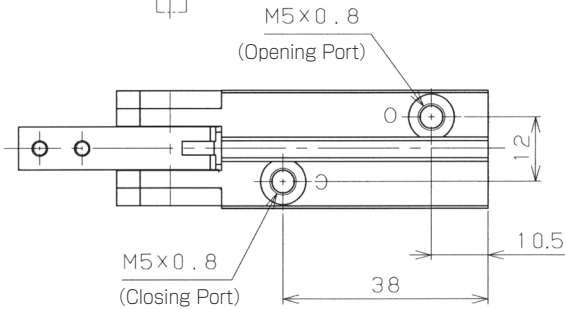
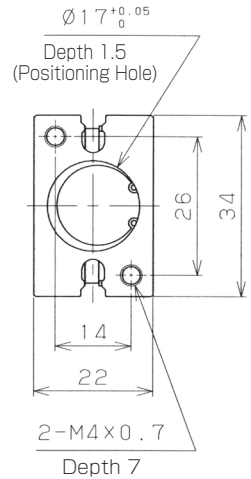
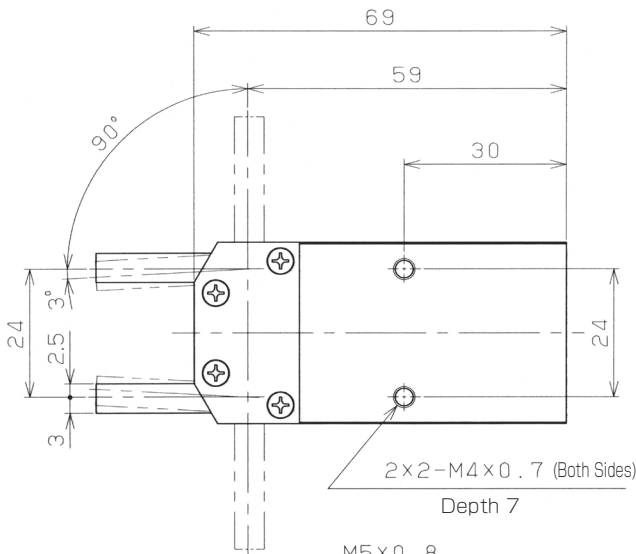
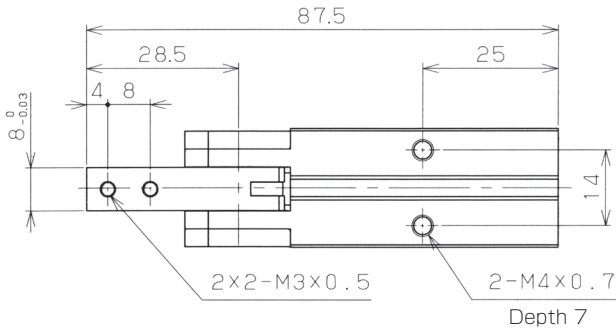


Type	Code	A	E	G	H	I	J	K	L	Ancillary Bolt (x3)		Product Mass [g] (Including Bolts)
										Gripper Mounting (x2)	Adapter Fixing (x1)	
HFE-16		18	8	17	34	26	14	22	4.5	M4×0.7×20 ^L	M4×0.7×16 ^L	35
HFE-16L		18	10	17	34	26	14	22	4.5	M4×0.7×20 ^L	M4×0.7×16 ^L	33
HFE-20		19	13	21	45	35	16	26	5.5	M5×0.8×20 ^L	M5×0.8×20 ^L	55

Dimensions HV02G-12



Dimensions HV02G-16



180° Opening/Closing Angular Gripper

HV02G Series

Dimensions HV02G-20

