

## Are you damaging important workpieces?



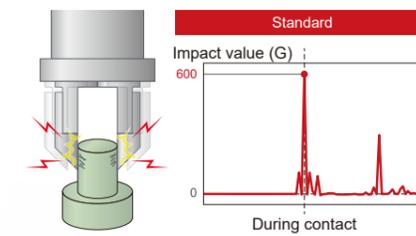
Shockless type gently grips workpieces even at high speeds

### Built-in shock absorption mechanism

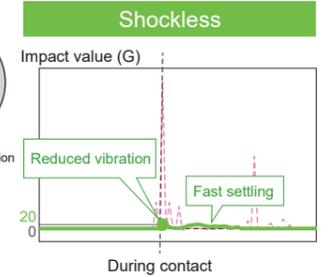
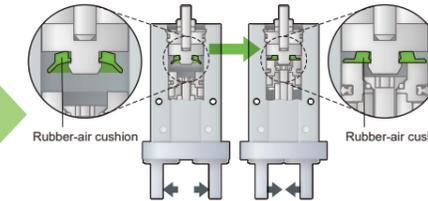
Unique shockless mechanism (optional)

Impact Suppressed to approx. 1/30

Workpieces are damaged by the impact of the slide gripper.



Gently grips workpieces even at high speeds.



### High rigidity/High precision

Linear guide adopted

High rigidity and high precision are achieved by the integrated structure of the guide rail and attachments.



### High design freedom

Mountable from 3 directions

Axial (upward) mounting	Horizontal installation	Vertical installation
With reference spigot	Body thickness tolerance $\pm 0.05$ mm	Excellent centering precision

Hand (Gripper)  
LSH-HP  
LSH  
FH100  
BSA2  
BHA  
BHG  
BHE  
LHA  
LHAG  
HAP-1C  
HAP-2 to 4CS  
HKP  
HCP  
HGP  
LST-HP  
HLF2  
HLA/HLB  
HLAG/HLBG  
HLC  
HLD  
HMC-HP  
HMF  
HMF-G  
HMF-B  
HFP  
FH500  
HBL  
HJL  
HMD  
HDL  
HJD  
Cylinder Switch  
Ending

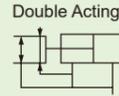
Hand (Gripper)  
LSH-HP  
LSH  
FH100  
BSA2  
BHA  
BHG  
BHE  
LHA  
LHAG  
HAP-1C  
HAP-2 to 4CS  
HKP  
HCP  
HGP  
LST-HP  
HLF2  
HLA/HLB  
HLAG/HLBG  
HLC  
HLD  
HMC-HP  
HMF  
HMF-G  
HMF-B  
HFP  
FH500  
HBL  
HJL  
HMD  
HDL  
HJD  
Cylinder Switch  
Ending



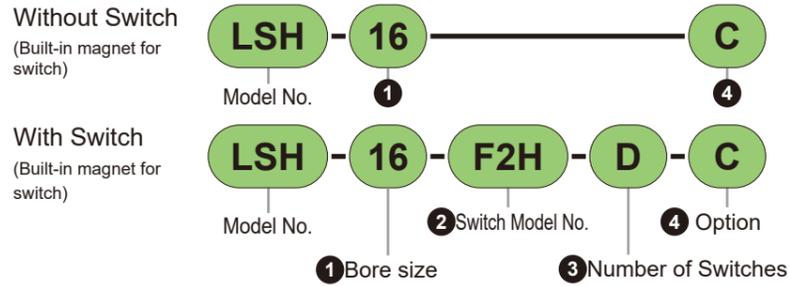
Linear Slide Gripper Double Acting Type

# LSH Series

● Operating stroke: 4, 6, 10, 14 mm



## Model No. Notation Method



### 1 Bore Size (mm)

Code	Content
10	ø10
16	ø16
20	ø20
25	ø25

### 2 Switch Model No.

For switch details, please refer to P. 573. Switches are included with the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead wire *1		Image
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	

\*1: For "□" in the switch model No., enter the code selected from the "Lead wire length" table.

\*2: The maximum load current value above, 20 mA, is at 25 °C. If the switch operating ambient temperature is higher than 25 °C, it will be lower than 20 mA. Becomes 5 to 10 mA at 60 °C.)

\*3: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 573.

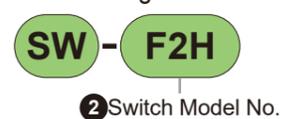
### 3 Number of Switches

Code	Content
R	With 1 pc. on Open Side
H	With 1 pc. on Close Side
D	With 2 pcs

### 4 Option

Code	Content
Blank	Standard
C	Shockless (Closed side only)

### Switch Single Unit Model No. Notation Method



LSH-20, 25 Switch long nut



## Specifications

Item	LSH					
Bore size	mm	ø10	ø16	ø20	ø25	
Actuation method	Double Acting Type					
Operating Fluid	Compressed Air					
Maximum Operating Pressure	MPa	0.7				
Min. Operating Pressure	MPa	Standard	0.2	0.1		
		Shockless	0.3	0.2		
Port Size		M3	M5			
Ambient Temperature	°C	-10 to 60 (No freezing)				
Operating Stroke	mm	4	6	10	14	
Repeatability	mm	±0.01				
Weight	kg	Standard	0.055	0.125	0.250	0.460
		Shockless	0.063	0.143	0.278	0.502
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)					

### \*Lead wire length

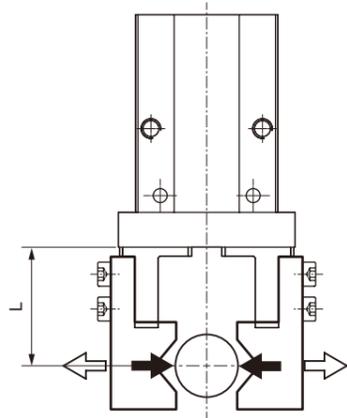
Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Example) Lead wire length  
1 m F2S  
3 m F2S<sub>3</sub>

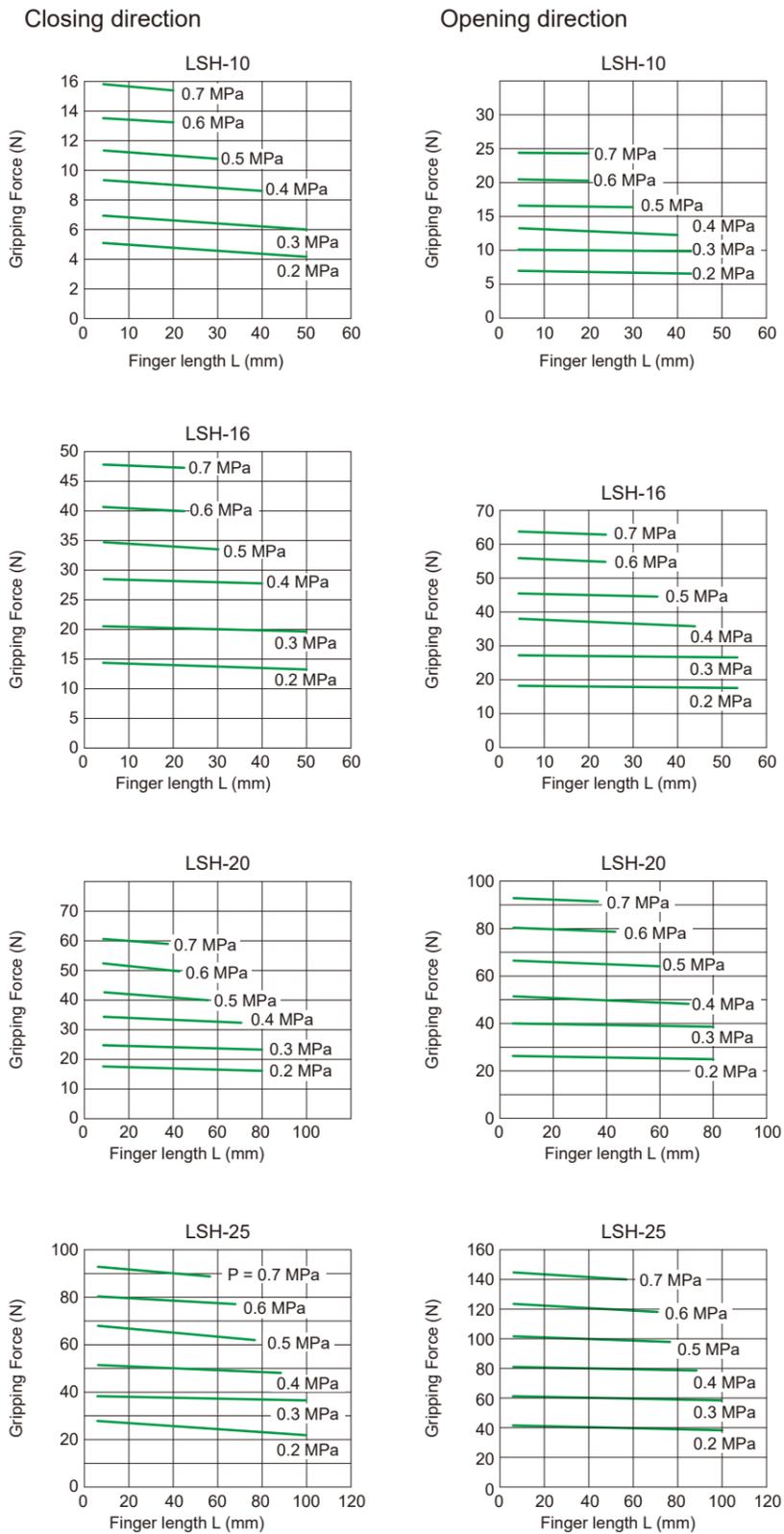
## Gripping Force Performance Data

- Gripping force represents the thrust (for one finger) in the direction of the arrow shown in the figure.
- Indicates the gripping force acting in the opening and closing directions at finger length L when the supply pressure is 0.2 to 0.7 MPa.

- Opening direction (←)
- Closing direction (→)



Note) When selecting, check the design and selection precautions on P. 336.



Hand (Gripper)

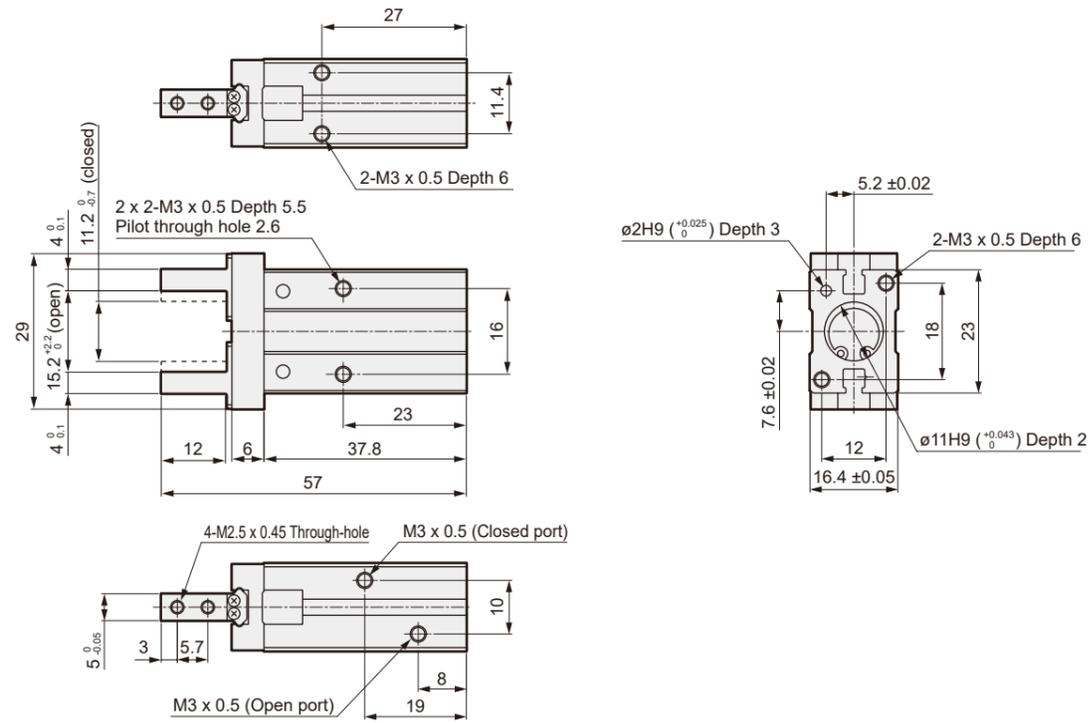
- LSH-HP
- LSH**
- FH100
- BSA2
- BHA
- BHG
- BHE
- LHA
- LHAG
- HAP-1C
- HAP-2 to 4CS
- HKP
- HCP
- HGP
- LST-HP
- HLF2
- HLA/HLB
- HLAG/HLBG
- HLC
- HLD
- HMC-HP
- HMF
- HMF-G
- HMF-B
- HFP
- FH500
- HBL
- HJL
- HMD
- HDL
- HJD
- Cylinder Switch
- Ending

Hand (Gripper)

- LSH-HP
- LSH**
- FH100
- BSA2
- BHA
- BHG
- BHE
- LHA
- LHAG
- HAP-1C
- HAP-2 to 4CS
- HKP
- HCP
- HGP
- LST-HP
- HLF2
- HLA/HLB
- HLAG/HLBG
- HLC
- HLD
- HMC-HP
- HMF
- HMF-G
- HMF-B
- HFP
- FH500
- HBL
- HJL
- HMD
- HDL
- HJD
- Cylinder Switch
- Ending

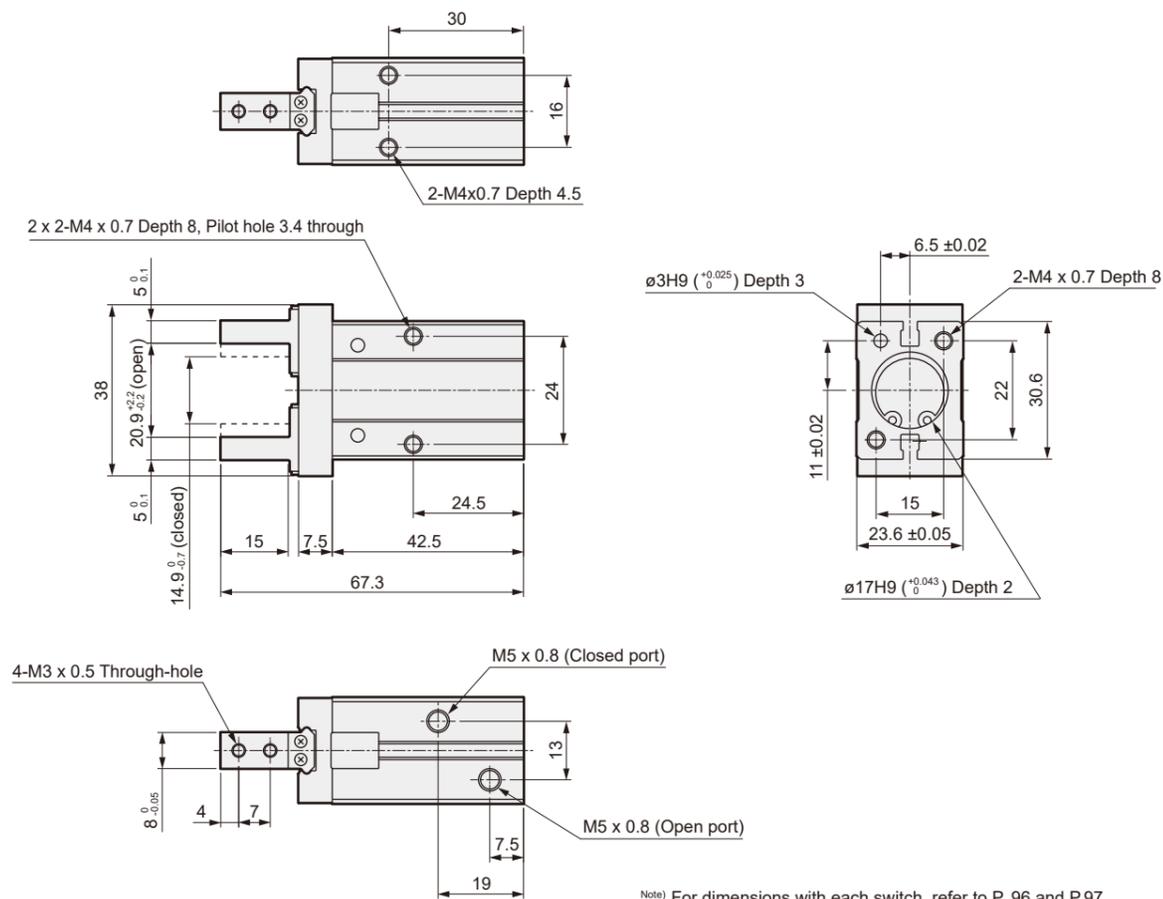
Outline Dimensional Drawing (Bore size:  $\phi 10$ ,  $\phi 16$ )

●LSH-10 (Standard Type)



Note) For dimensions with each switch, refer to P. 96 and P.97.

●LSH-16 (Standard Type)

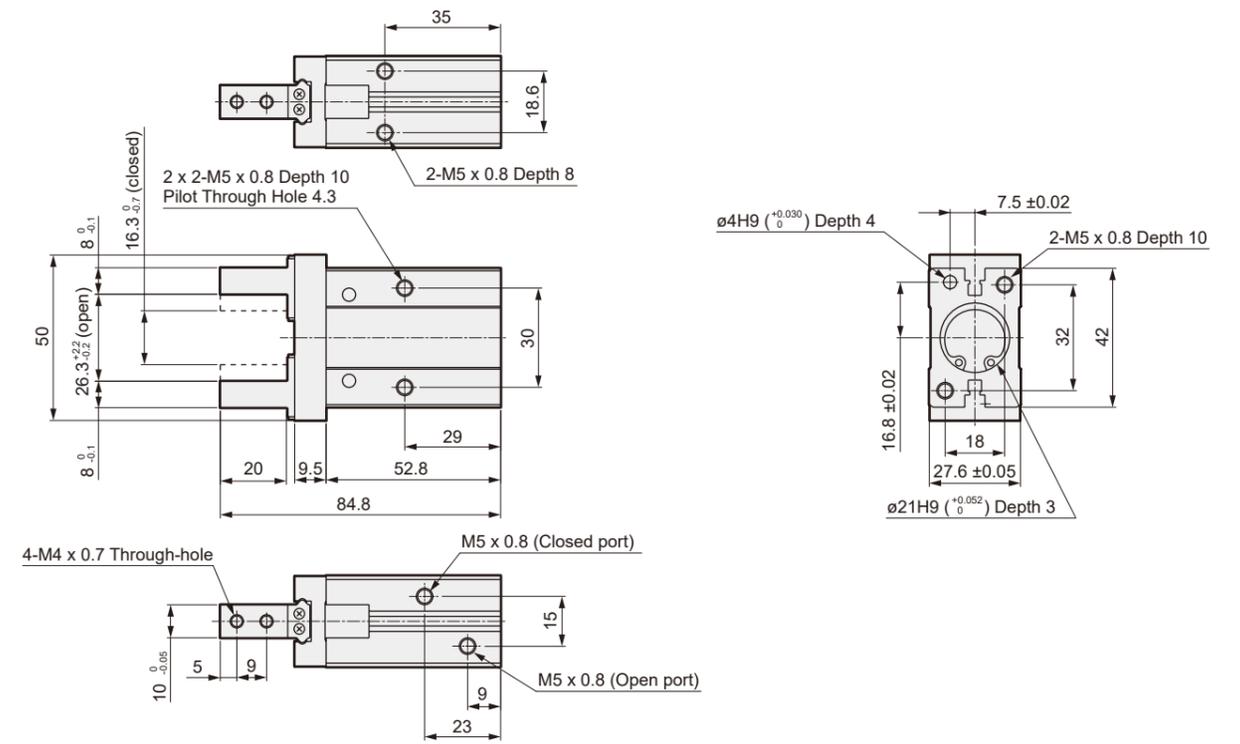


Note) For dimensions with each switch, refer to P. 96 and P.97.

Outline Dimension Drawing

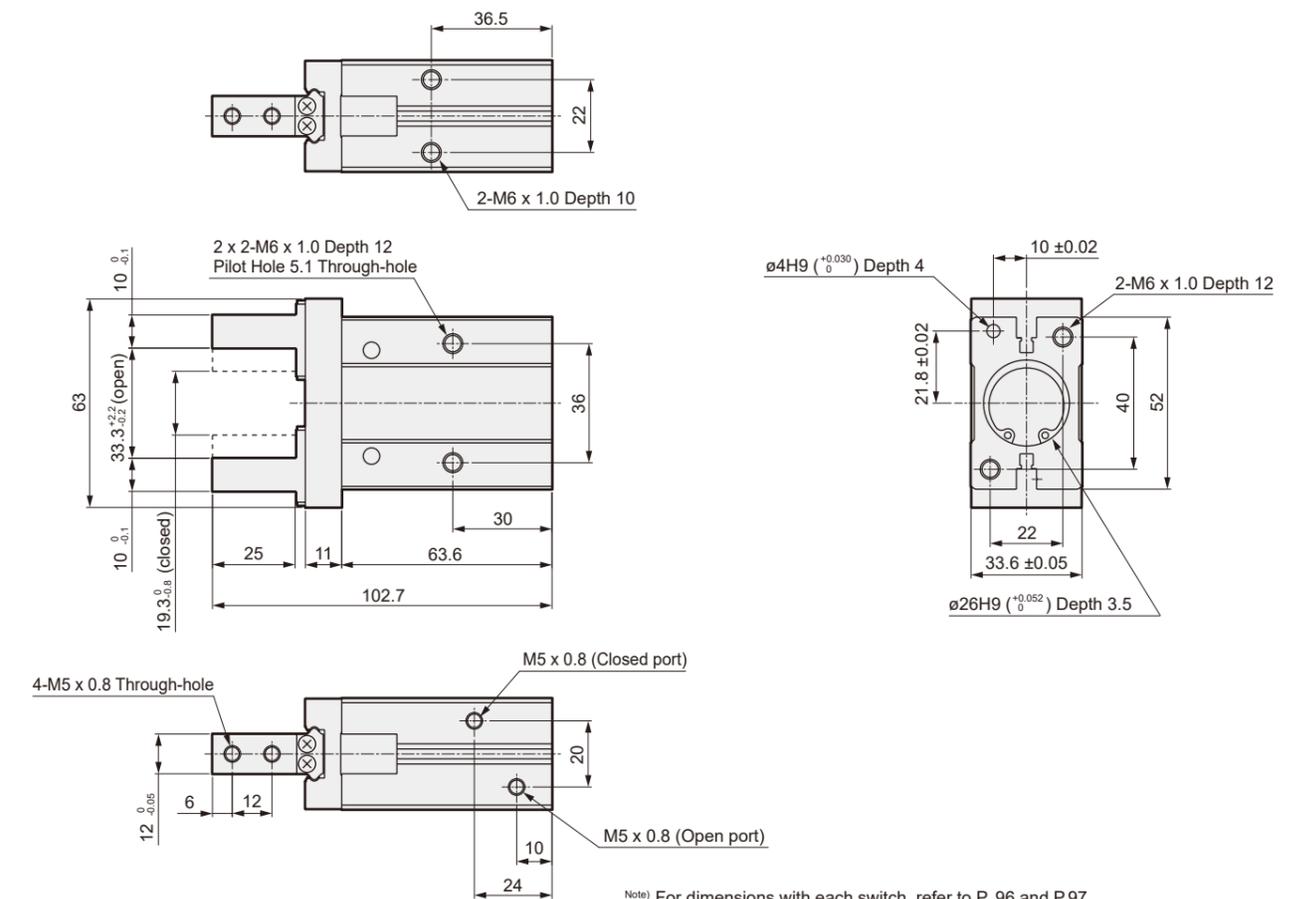
Outline Dimensional Drawing (Bore size:  $\phi 20$ ,  $\phi 25$ )

●LSH-20 (Standard Type)



Note) For dimensions with each switch, refer to P. 96 and P.97.

●LSH-25 (Standard Type)



Note) For dimensions with each switch, refer to P. 96 and P.97.

Hand (Gripper)

LSH-HP  
LSH  
FH100  
BSA2  
BHA  
BHG  
BHE  
LHA  
LHAG

HAP-1C  
HAP-2 to 4CS  
HKP  
HCP  
HGP  
LST-HP  
HLF2  
HLA/HLB  
HLAG/HLBG  
HLC  
HLD  
HMC-HP  
HMF  
HMF-G  
HMF-B  
HFP  
FH500  
HBL  
HJL  
HMD  
HDL  
HJD  
Cylinder Switch  
Ending

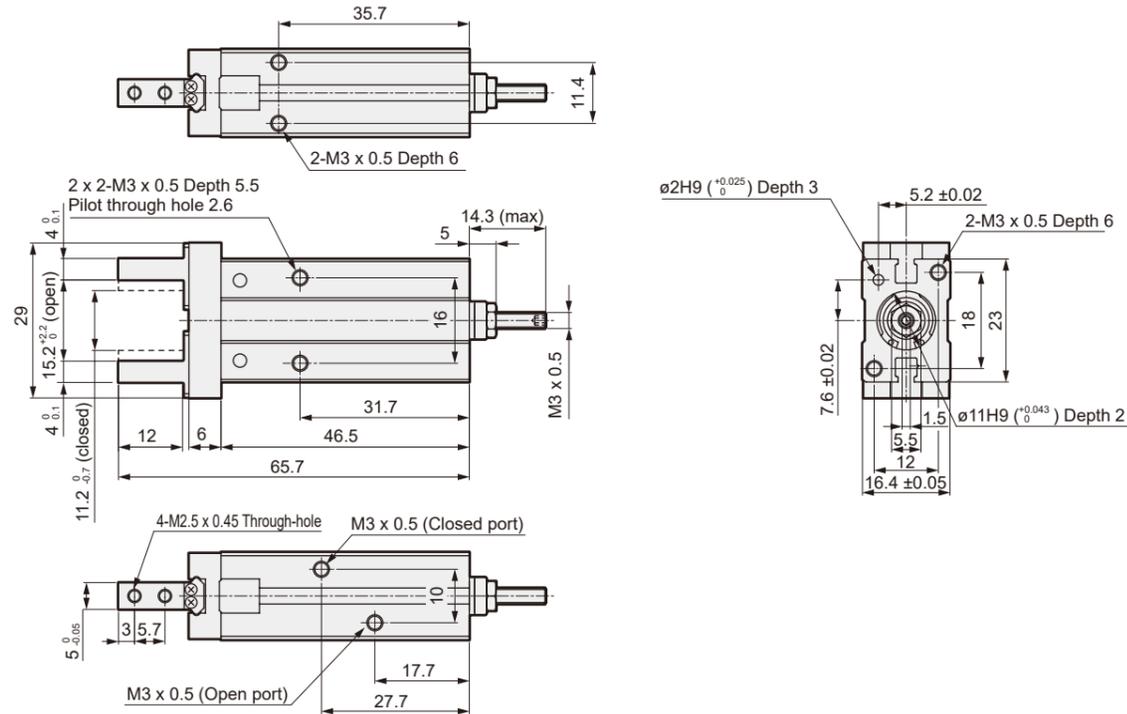
Hand (Gripper)

LSH-HP  
LSH  
FH100  
BSA2  
BHA  
BHG  
BHE  
LHA  
LHAG

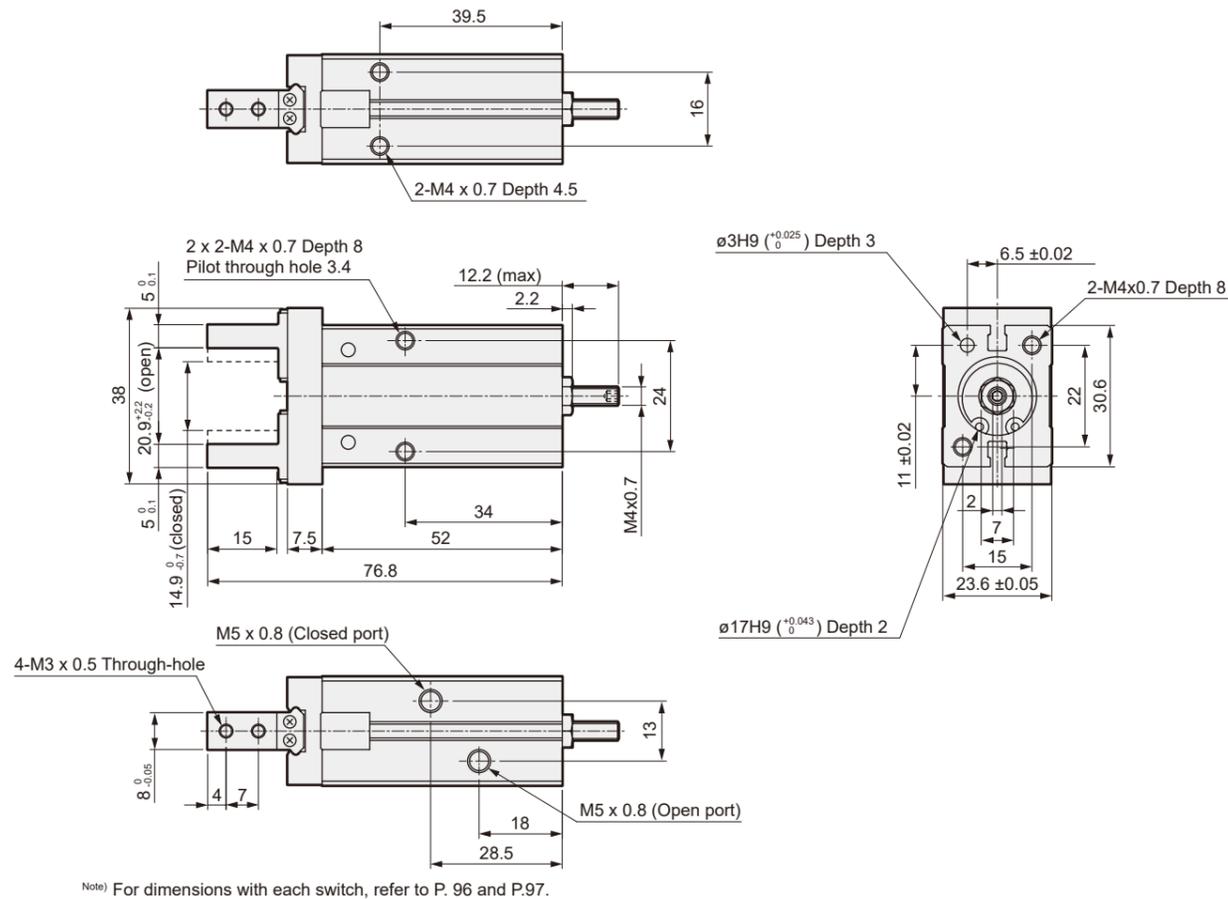
HAP-1C  
HAP-2 to 4CS  
HKP  
HCP  
HGP  
LST-HP  
HLF2  
HLA/HLB  
HLAG/HLBG  
HLC  
HLD  
HMC-HP  
HMF  
HMF-G  
HMF-B  
HFP  
FH500  
HBL  
HJL  
HMD  
HDL  
HJD  
Cylinder Switch  
Ending

Outline Dimensional Drawing (Bore size:  $\varnothing 10, \varnothing 16$ )

●LSH-10-C (Shockless (Closed side only) Type)



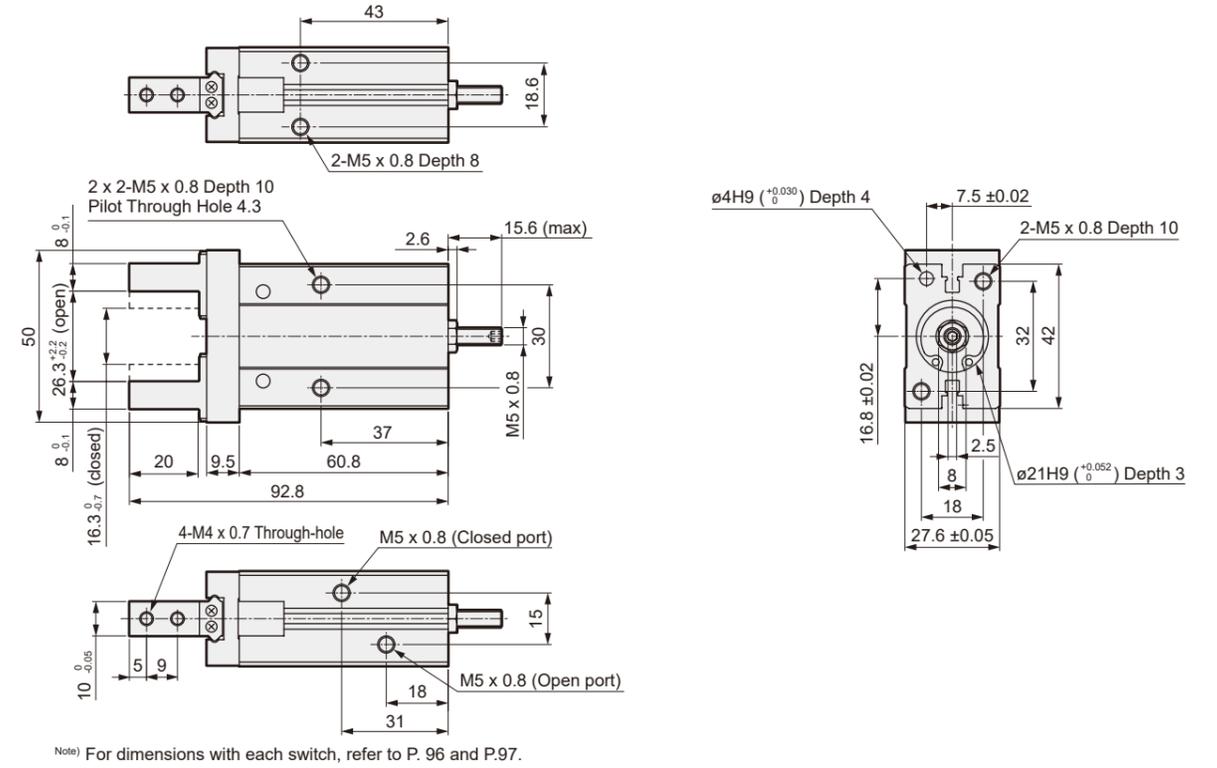
●LSH-16-C (Shockless (Closed side only) Type)



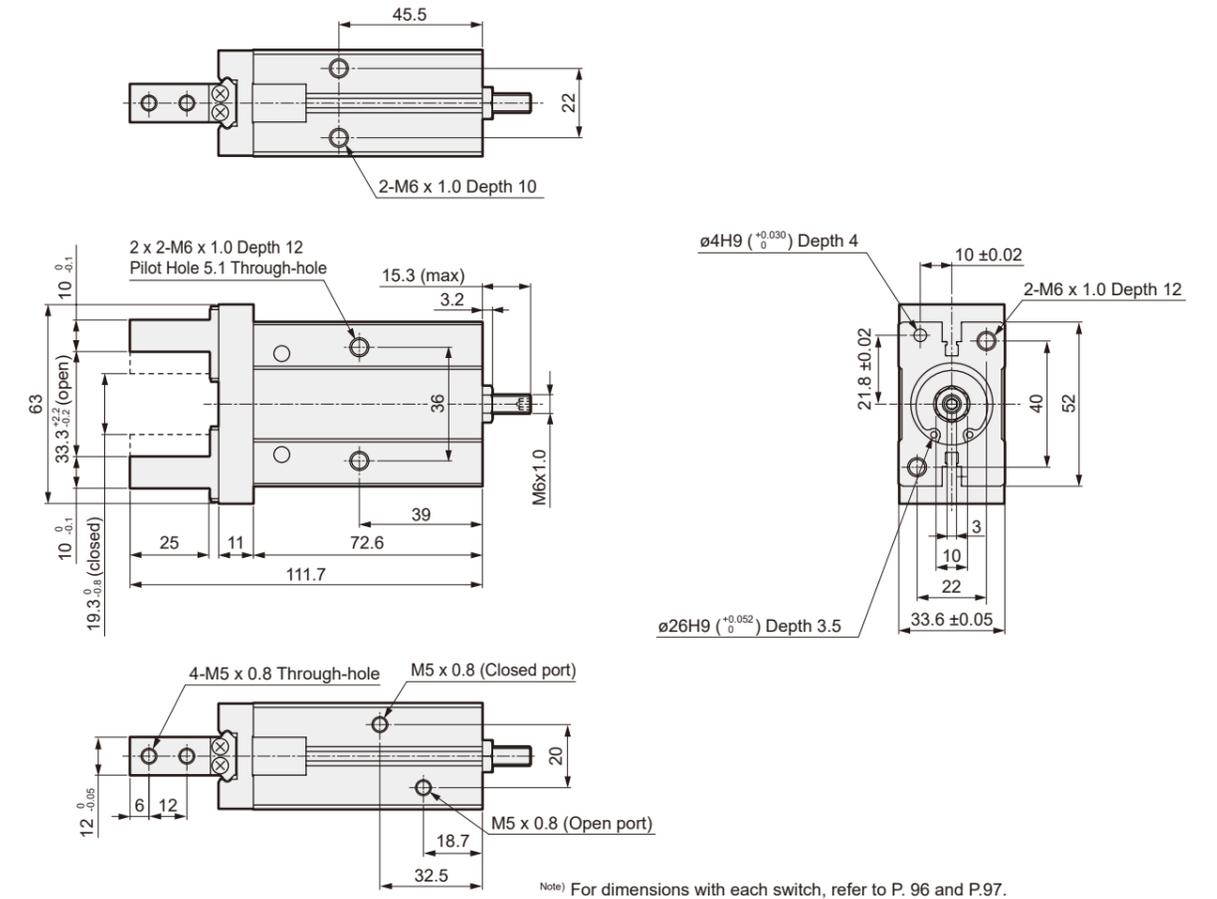
Outline Dimension Drawing

Outline Dimensional Drawing (Bore size:  $\varnothing 20, \varnothing 25$ )

●LSH-20-C (Shockless (Closed side only) Type)



●LSH-25-C (Shockless (Closed side only) Type)



Hand (Gripper)

LSH-HP  
LSH  
FH100  
BSA2  
BHA  
BHG  
BHE  
LHA  
LHAG

HAP-1C  
HAP-2 to 4CS  
HKP  
HCP  
HGP  
LST-HP  
HLF2  
HLA/HLB  
HLAG/HLBG  
HLC  
HLD  
HMC-HP  
HMF  
HMF-G  
HMF-B  
HFP  
FH500  
HBL  
HJL  
HMD  
HDL  
HJD  
Cylinder Switch  
Ending

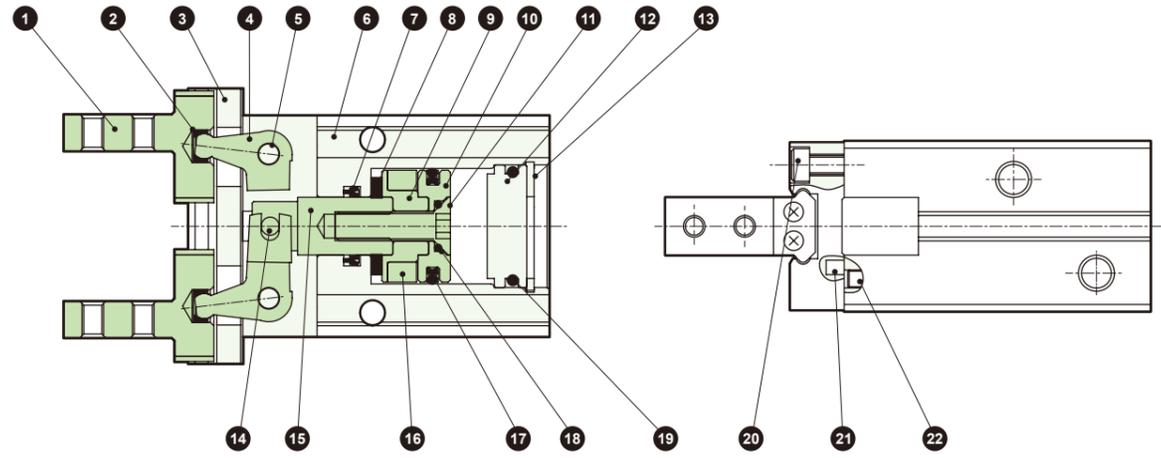
Hand (Gripper)

LSH-HP  
LSH  
FH100  
BSA2  
BHA  
BHG  
BHE  
LHA  
LHAG

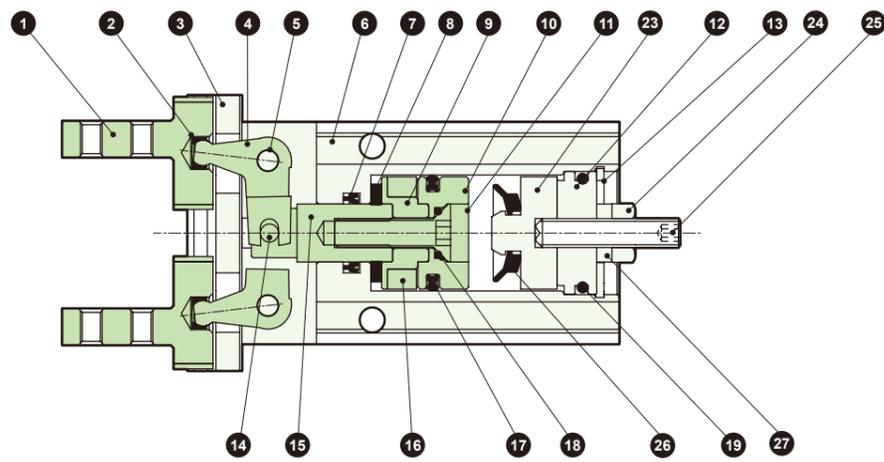
HAP-1C  
HAP-2 to 4CS  
HKP  
HCP  
HGP  
LST-HP  
HLF2  
HLA/HLB  
HLAG/HLBG  
HLC  
HLD  
HMC-HP  
HMF  
HMF-G  
HMF-B  
HFP  
FH500  
HBL  
HJL  
HMD  
HDL  
HJD  
Cylinder Switch  
Ending

Internal Structure Diagram/Material

● LSH (Standard Type)



● LSH-□-C (Shockless (Closed side only) Type)

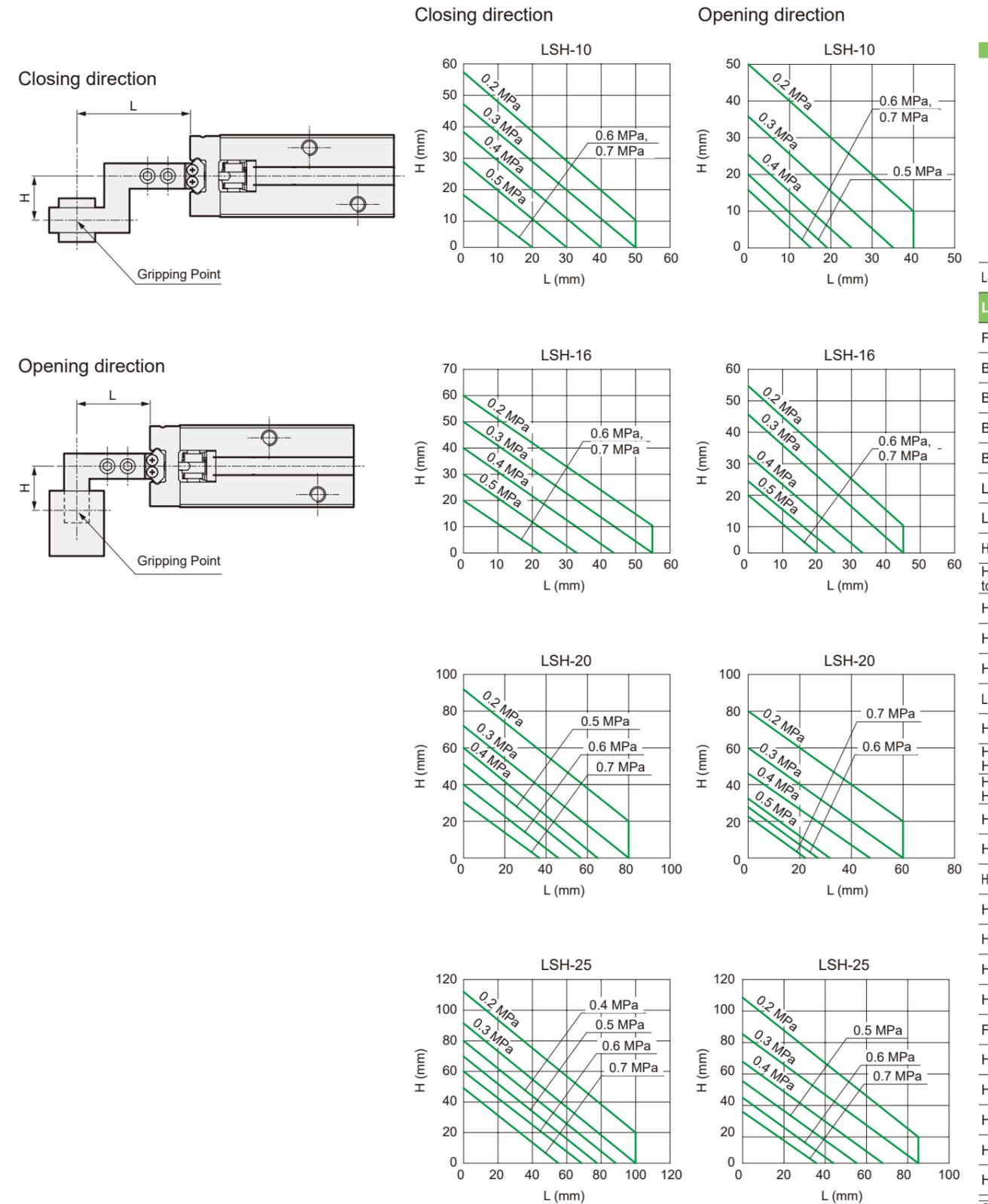


**Do not disassemble**

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Finger	Stainless Steel		15	Piston Rod	Stainless Steel	
2	Holder	Alloy Steel		16	Magnet		
3	Linear Guide	Stainless Steel		17	Piston Packing	Nitrile Rubber	
4	Lever	Stainless Steel		18	O-ring	Nitrile Rubber	
5	Pivot Shaft	Alloy Steel		19	O-ring	Nitrile Rubber	
6	Cylinder Body	Aluminum Alloy		20	Hexagon Socket Head Cap Screw	Stainless Steel	
7	Rod Packing	Nitrile Rubber		21	Pin	Alloy Steel	
8	Cushion Rubber	Urethane Rubber		22	Hexagon socket head set screw	Alloy Steel	
9	Spacer	Aluminum Alloy		23	Stopper	Aluminum Alloy	Hard Anodized
10	Piston	Aluminum Alloy		24	Hexagon Nut	Alloy Steel	
11	Hexagon Socket Head Cap Screw	Stainless Steel		25	Hexagon socket head set screw	Alloy Steel	
12	Head Cover	Aluminum Alloy		26	Rubber Air Cushion	Special rubber	
13	C-type retaining ring	Stainless Steel		27	Seal washer	Stainless steel, Nitrile rubber	
14	Operating Shaft	Alloy Steel					

Finger length

When installing L-shaped fingers, use them within the range shown in the figure on the right.



Hand (Gripper)

LSH-HP

LSH

FH100

BSA2

BHA

BHG

BHE

LHA

LHAG

HAP-1C

HAP-2 to 4CS

HKP

HCP

HGP

LST-HP

HLF2

HLA/HLB

HLAG/HLBG

HLC

HLD

HMC-HP

HMF

HMF-G

HMFB

HFP

FH500

HBL

HJL

HMD

HDL

HJD

Cylinder Switch

Ending

Hand (Gripper)

LSH-HP

LSH

FH100

BSA2

BHA

BHG

BHE

LHA

LHAG

HAP-1C

HAP-2 to 4CS

HKP

HCP

HGP

LST-HP

HLF2

HLA/HLB

HLAG/HLBG

HLC

HLD

HMC-HP

HMF

HMF-G

HMFB

HFP

FH500

HBL

HJL

HMD

HDL

HJD

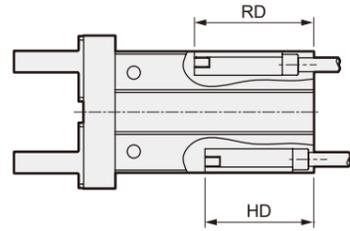
Cylinder Switch

Ending

LSH Series Switch Attached Outline Dimensional Drawing

Standard Type

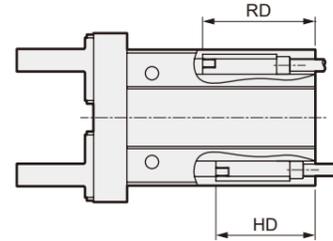
●LSH-10



F2/3□	RD	22.5
	HD	20.5
F2S/F3S	RD	23.5
	HD	21.5

Note1) RD dimension is the max. sensitivity position at open side end position and HD dimension at closed side end position. Please adjust the actual mounting position after confirming the operating status of the switch.  
 Note2) Switch cannot be mounted when mounting the body with through holes. For details, see P. 340.  
 Note3) For F□H, the switch lead wire projects from the end face of the head side. If protrusion is a problem, use F□V, F□S.

●LSH-16

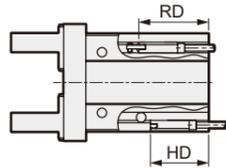


F2/3□	RD	25.5
	HD	22.5
F2S/F3S	RD	26.5
	HD	23.5

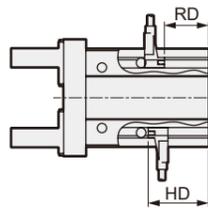
Note1) RD dimension is the max. sensitivity position at open side end position and HD dimension at closed side end position. Please adjust the actual mounting position after confirming the operating status of the switch.  
 Note2) Switch cannot be mounted when mounting the body with through holes. For details, see P. 340.  
 Note3) For F□H, the switch lead wire projects from the end face of the head side. If protrusion is a problem, use F□V, F□S.

●LSH-20

With F2H/F3H, F2 V/F3 V switch



With F2S/F3S switch

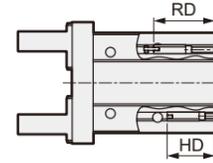


F2/3□	RD	30
	HD	25
F2S/F3S	RD	19
	HD	26

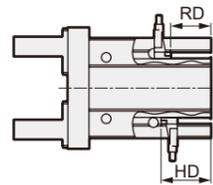
Note1) RD dimension is the max. sensitivity position at open side end position and HD dimension at closed side end position. Please adjust the actual mounting position after confirming the operating status of the switch.  
 Note2) Switch cannot be mounted when mounting the body with through holes. For details, see P. 340.  
 Note3) For F□H, the switch lead wire projects from the end face of the head side. If protrusion is a problem, use F□V, F□S.  
 Note4) When installing the F2/3H or F2/3V switch in a position with RD dimension 27.5 to 30, replace the switch fixing nut with the attached length nut according to the switch mounting guide included with the product.

●LSH-25

With F2H/F3H, F2 V/F3 V switch



With F2S/F3S switch



F2/3□	RD	32
	HD	25
F2S/F3S	RD	21
	HD	26

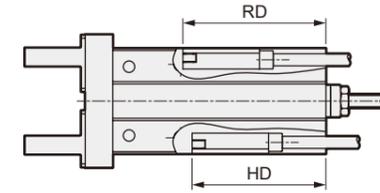
Note1) RD dimension is the max. sensitivity position at open side end position and HD dimension at closed side end position. Please adjust the actual mounting position after confirming the operating status of the switch.  
 Note2) Switch cannot be mounted when mounting the body with through holes. For details, see P. 340.  
 Note3) For F□H, the switch lead wire projects from the end face of the head side. If protrusion is a problem, use F□V, F□S.  
 Note4) When installing the F2/3H or F2/3V switch in a position with RD dimensions 29 to 33, replace the switch fixing nut with the attached length nut according to the switch mounting guide included with the product.

External Dimensions Diagram with Switch

LSH Series Switch Attached Outline Dimensional Drawing

Shockless (Closed side only) Type

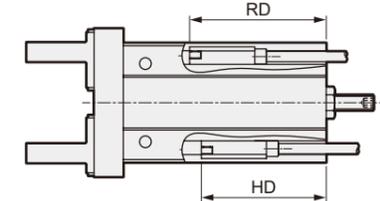
●LSH-10-C



F2/3□	RD	31
	HD	29
F2S/F3S	RD	32
	HD	30

Note1) RD dimension is the max. sensitivity position at open side end position and HD dimension at closed side end position. Please adjust the actual mounting position after confirming the operating status of the switch.  
 Note2) Switch cannot be mounted when mounting the body with through holes. For details, see P. 340.  
 Note3) For F□H, the switch lead wire projects from the end face of the head side. If protrusion is a problem, use F□V, F□S.

●LSH-16-C

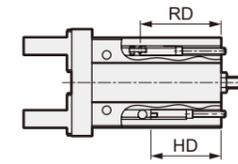


F2/3□	RD	35
	HD	32
F2S/F3S	RD	36
	HD	33

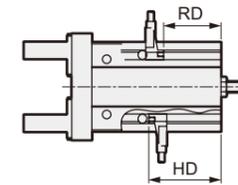
Note1) RD dimension is the max. sensitivity position at open side end position and HD dimension at closed side end position. Please adjust the actual mounting position after confirming the operating status of the switch.  
 Note2) Switch cannot be mounted when mounting the body with through holes. For details, see P. 340.  
 Note3) For F□H, the switch lead wire projects from the end face of the head side. If protrusion is a problem, use F□V, F□S.

●LSH-20-C

With F2H/F3H, F2 V/F3 V switch



With F2S/F3S switch

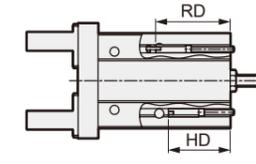


F2/3□	RD	38
	HD	33
F2S/F3S	RD	27
	HD	34

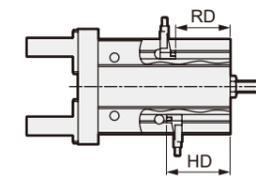
Note1) RD dimension is the max. sensitivity position at open side end position and HD dimension at closed side end position. Please adjust the actual mounting position after confirming the operating status of the switch.  
 Note2) Switch cannot be mounted when mounting the body with through holes. For details, see P. 340.  
 Note3) For F□H, the switch lead wire projects from the end face of the head side. If protrusion is a problem, use F□V, F□S.  
 Note4) When mounting the F2/3H or F2/3V switch to a position with RD dimension 35.5 to 38, replace the switch fixing nut with the attached length nut according to the switch mounting guide included with the product.

●LSH-25-C

With F2H/F3H, F2 V/F3 V switch



With F2S/F3S switch



F2/3□	RD	41
	HD	34
F2S/F3S	RD	30
	HD	35

Note1) RD dimension is the max. sensitivity position at open side end position and HD dimension at closed side end position. Please adjust the actual mounting position after confirming the operating status of the switch.  
 Note2) Switch cannot be mounted when mounting the body with through holes. For details, see P. 340.  
 Note3) For F□H, the switch lead wire projects from the end face of the head side. If protrusion is a problem, use F□V, F□S.  
 Note4) When installing the F2/3H or F2/3V switch in a position with RD dimensions 38 to 42, replace the switch fixing nut with the attached length nut according to the switch mounting guide included with the product.