

# Series 11-22-MHL2

Parallel style wide opening air gripper  
 ø10, ø16, ø20, ø25, ø32, ø40

## How to Order



**Clean series**  
 11 Vacuum suction type

**Wide opening**

**Number of fingers**  
 2 2 fingers

**Bore size**

10	10mm
16	16mm
20	20mm
25	25mm
32	32mm
40	40mm

**Auto switch**  
 Y59A  
 Y59B

**Thread type**

Nil	M	ø10, ø16, ø20, ø25
	Rc	ø32, ø40
TN	NPT	ø32, ø40
TG	G	ø32, ø40

**Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	n pcs.

**Action**  
 D Double acting

**Opening/Closing stroke (mm)**

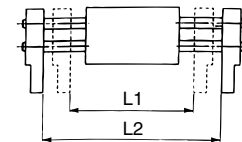
Symbol	Bore size					
	ø10	ø16	ø20	ø25	ø32	ø40
Nil	20	30	40	50	70	100
1	40	60	80	100	120	160
2	60	80	100	120	160	200

**Copper, fluorine and silicon-free + Low particle generation**  
 22 Vacuum suction type

Ordering examples:  
 11-MHL 2-16 D 1 - [ ] Y59A [ ]  
 22-MHL 2-16 D 1 - [ ] Y59A [ ]

## Model / Stroke

Model	Bore size (mm)	Maximum operating frequency (c.p.m)	Opening / Closing stroke (mm) (L2-L1)	Width at closing (mm) (L1)	Width at opening (mm) (L2)	Weight (g)
11-22-MHL2-10D	10	60	20	72	92	340
11-22-MHL2-10D1		40	40	94	134	405
11-22-MHL2-10D2		40	60	112	172	485
11-22-MHL2-16D	16	60	30	84	114	660
11-22-MHL2-16D1		40	60	126	186	870
11-22-MHL2-16D2		40	80	146	226	1010
11-22-MHL2-20D	20	60	40	98	138	1175
11-22-MHL2-20D1		40	80	158	238	1645
11-22-MHL2-20D2		40	100	178	278	1840
11-22-MHL2-25D	25	60	50	116	166	1850
11-22-MHL2-25D1		40	100	198	298	2720
11-22-MHL2-25D2		40	120	216	336	2935
11-22-MHL2-32D	32	30	70	150	220	3070
11-22-MHL2-32D1		20	120	198	318	3985
11-22-MHL2-32D2		20	160	242	402	4820
11-22-MHL2-40D	40	30	100	188	288	5620
11-22-MHL2-40D1		20	160	246	406	7180
11-22-MHL2-40D2		20	200	286	486	8255



Note) The open and close time spans represent the valve when the exterior of the workpiece is being held.

### Specifications

Bore size (mm)	10	16	20	25	32	40
Fluid	Air					
Action	Double acting					
Operating pressure (MPa)	0.15 to 0.6		0.1 to 0.6			
Ambient and fluid temperature	-10 to 60°C					
Repeatability	±0.1					
Lubrication	Not required					
Effective gripping force (N) at 0.5 MPa <small>(Note)</small>	14	45	74	131	228	396
Grease	11-: Fluorine grease 22-: Lithium soap based grease					
Particle generation grade <small>(Refer to front matter pages 13 to 22 for details.)</small>	11-/22-: Grade 2					

Note) Gripping point = Bore size 10, 16, 20, 25: 40 mm, Bore size 32, 40: 80 mm  
\* Refer to Best Pneumatics catalog for details of gripping force at each gripping point.

### Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate $\ell$ /min (ANR)
10/16/20/25/32/40	25

### Auto switch specifications (Refer to Best Pneumatics catalog for further information on auto switches.)

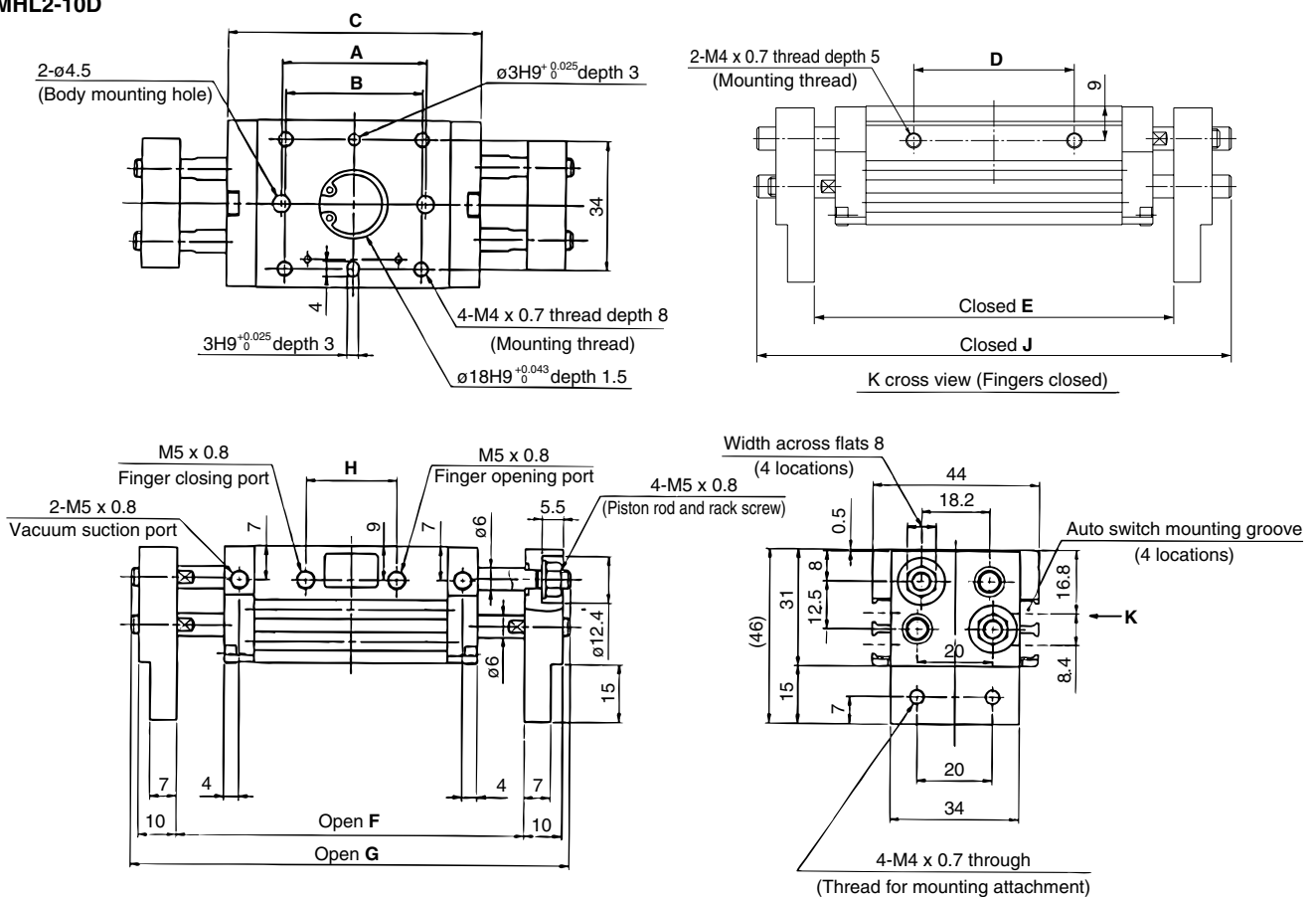
Type	Auto switch model	Load voltage	Load current range	Indicator light	Applicable load
Solid state switch	2-wire <b>D-Y59B</b>	24 VDC (10 to 28 VDC)	5 to 40 mA	Yes	24 VDC relay, PLC
	3-wire <b>D-Y59A</b>	28 VDC or less	40 mA or less	Yes	24 VDC relay, PLC

Refer to page 235 for a list of applicable auto switches.

PLC: Programmable Logic Controller

### Dimensions

<sup>11-22-</sup>MHL2-10D



(mm)

	A	B	C	D	E	F	G	H	J
<sup>11-22-</sup> MHL2-10D	38	36	67	26	72	92	116	24	96
<sup>11-22-</sup> MHL2-10D1	54	52	83	42	94	134	158	39	124
<sup>11-22-</sup> MHL2-10D2	72	70	101	60	112	172	196	57	162

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

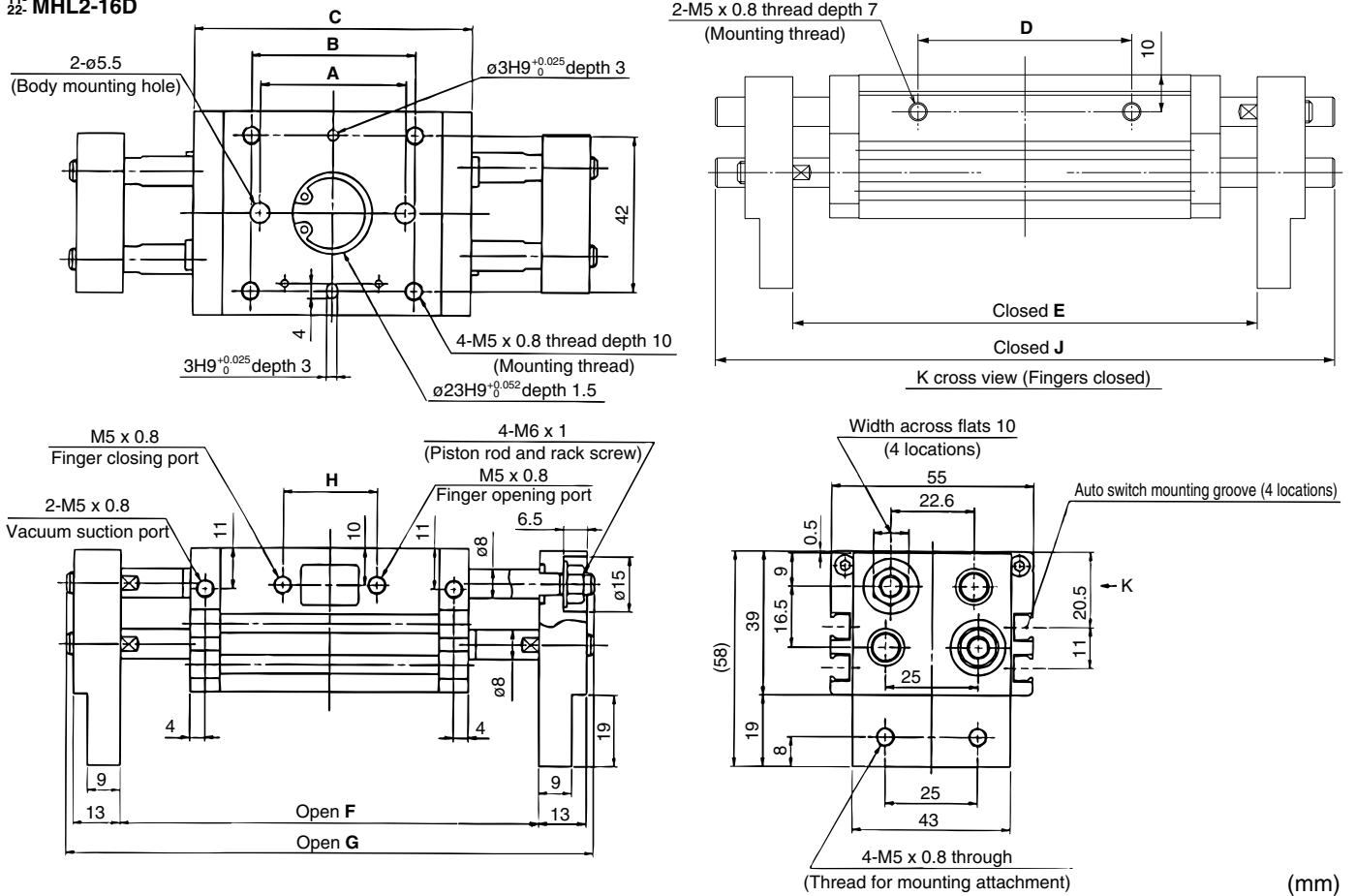
Pressure switch

Clean gas filter

Parallel style wide opening air gripper **11-22-MHL2**

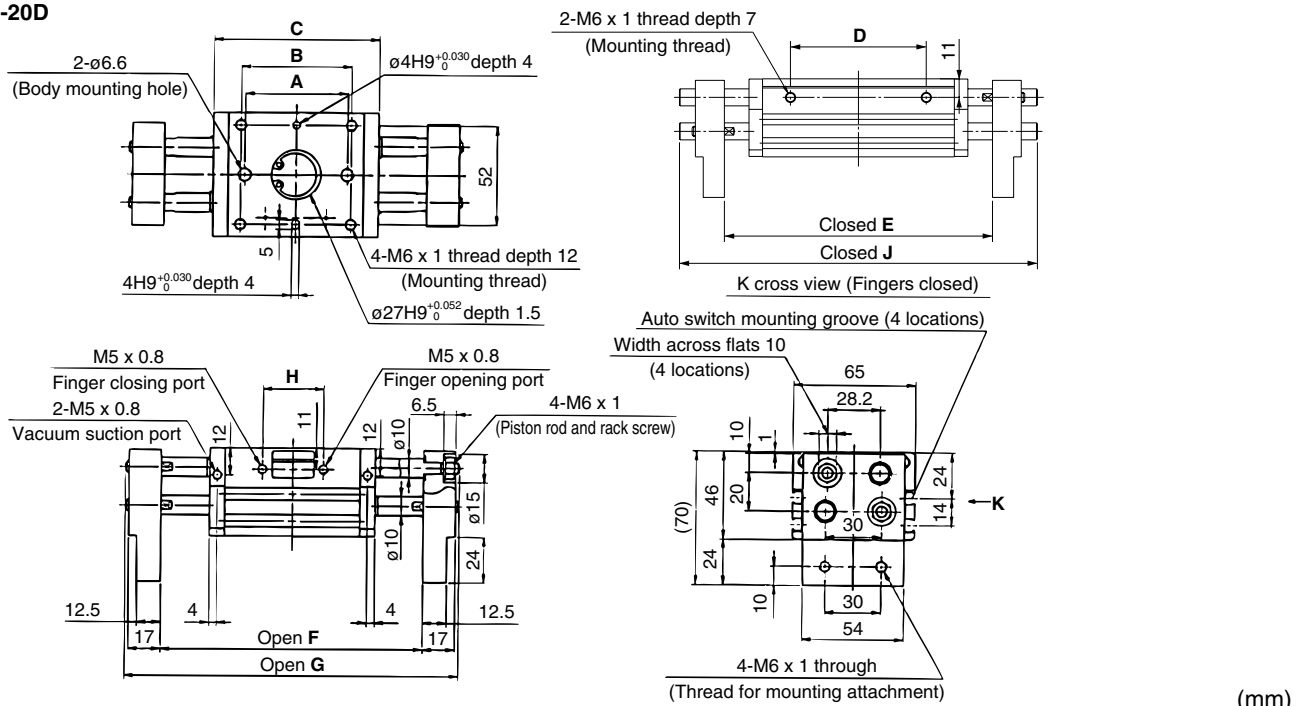
**Dimensions**

**11-22-MHL2-16D**



	A	B	C	D	E	F	G	H	J
11-22-MHL2-16D	40	45	76	28	84	114	144	26	114
11-22-MHL2-16D1	70	75	106	58	126	186	216	50	168
11-22-MHL2-16D2	90	95	126	78	146	226	256	70	208

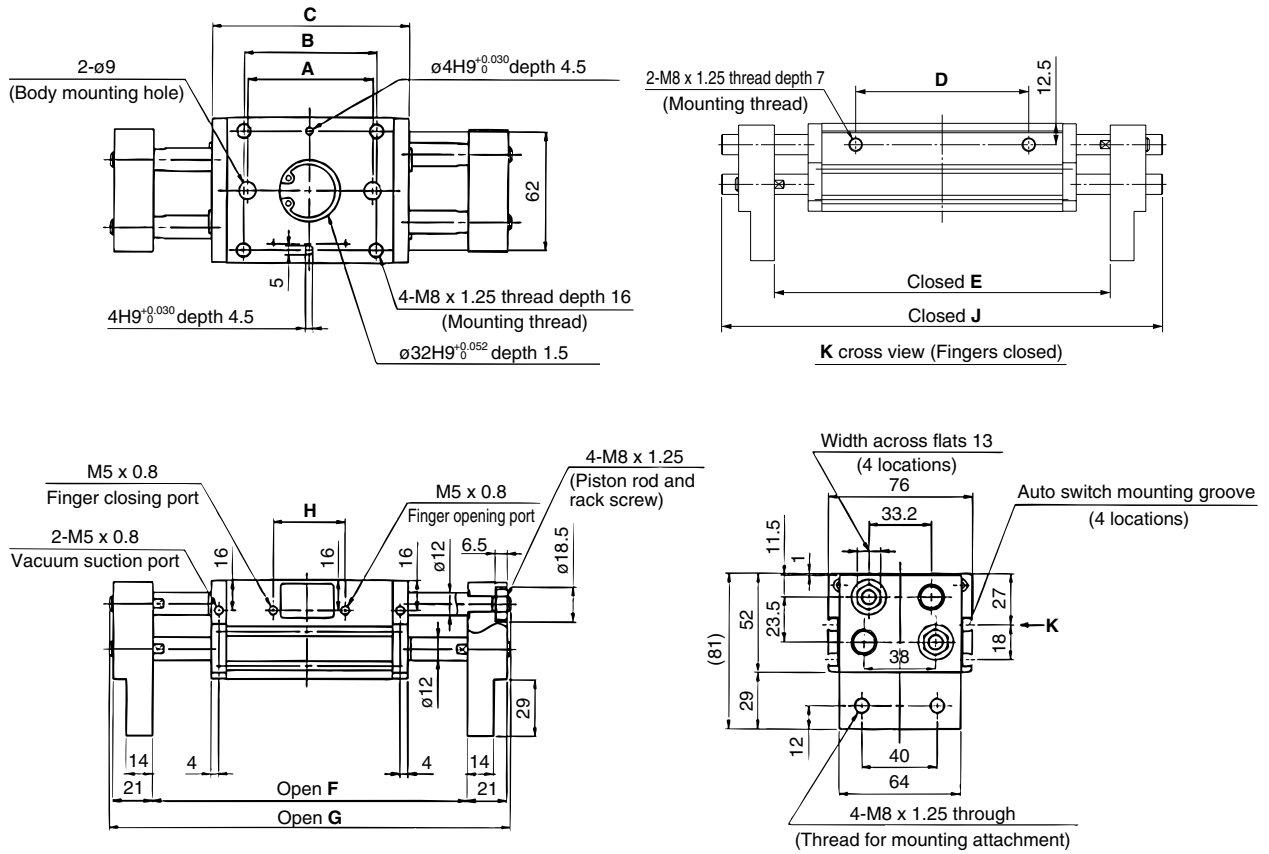
**11-22-MHL2-20D**



	A	B	C	D	E	F	G	H	J
11-22-MHL2-20D	54	58	87	38	98	138	176	32	136
11-22-MHL2-20D1	96	100	129	80	158	238	276	68	211
11-22-MHL2-20D2	116	120	149	100	178	278	316	88	251

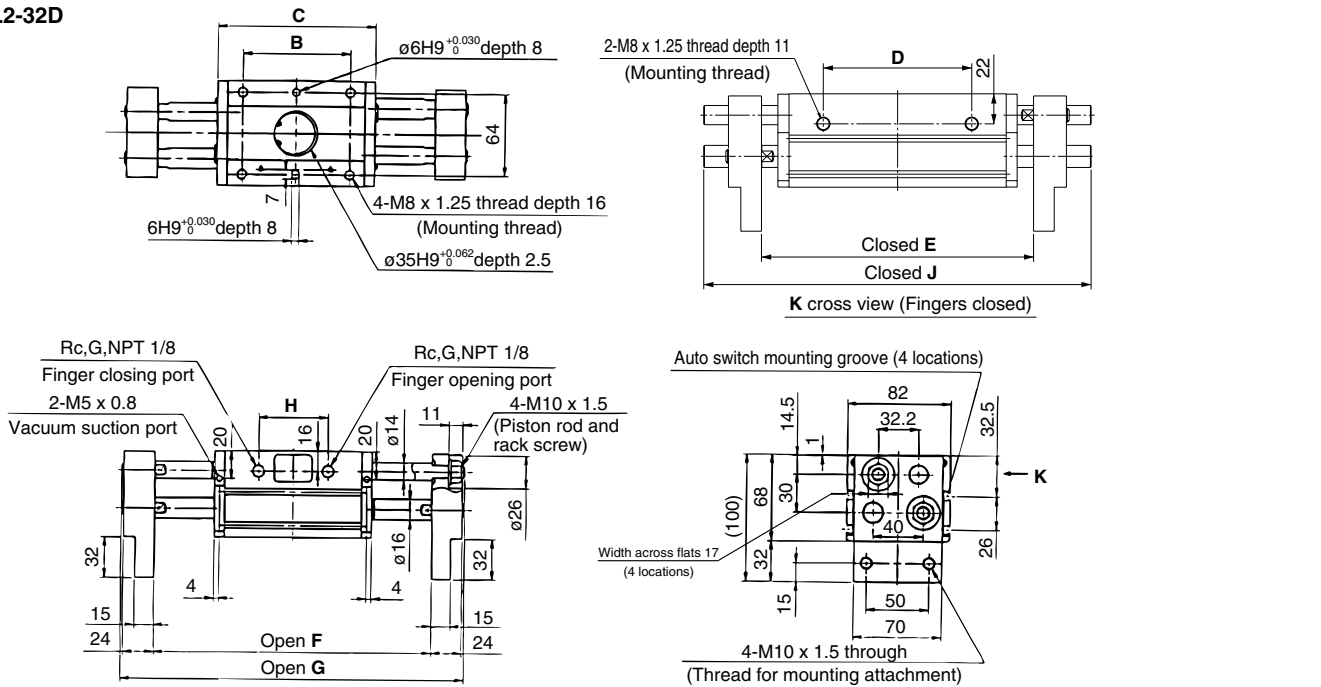
**Dimensions**

**11-22-MHL2-25D**



	A	B	C	D	E	F	G	H	J
11-22-MHL2-25D	66	70	104	48	116	166	212	38	162
11-22-MHL2-25D1	120	124	158	102	198	298	344	86	260
11-22-MHL2-25D2	138	142	176	120	216	336	382	104	298

**11-22-MHL2-32D**

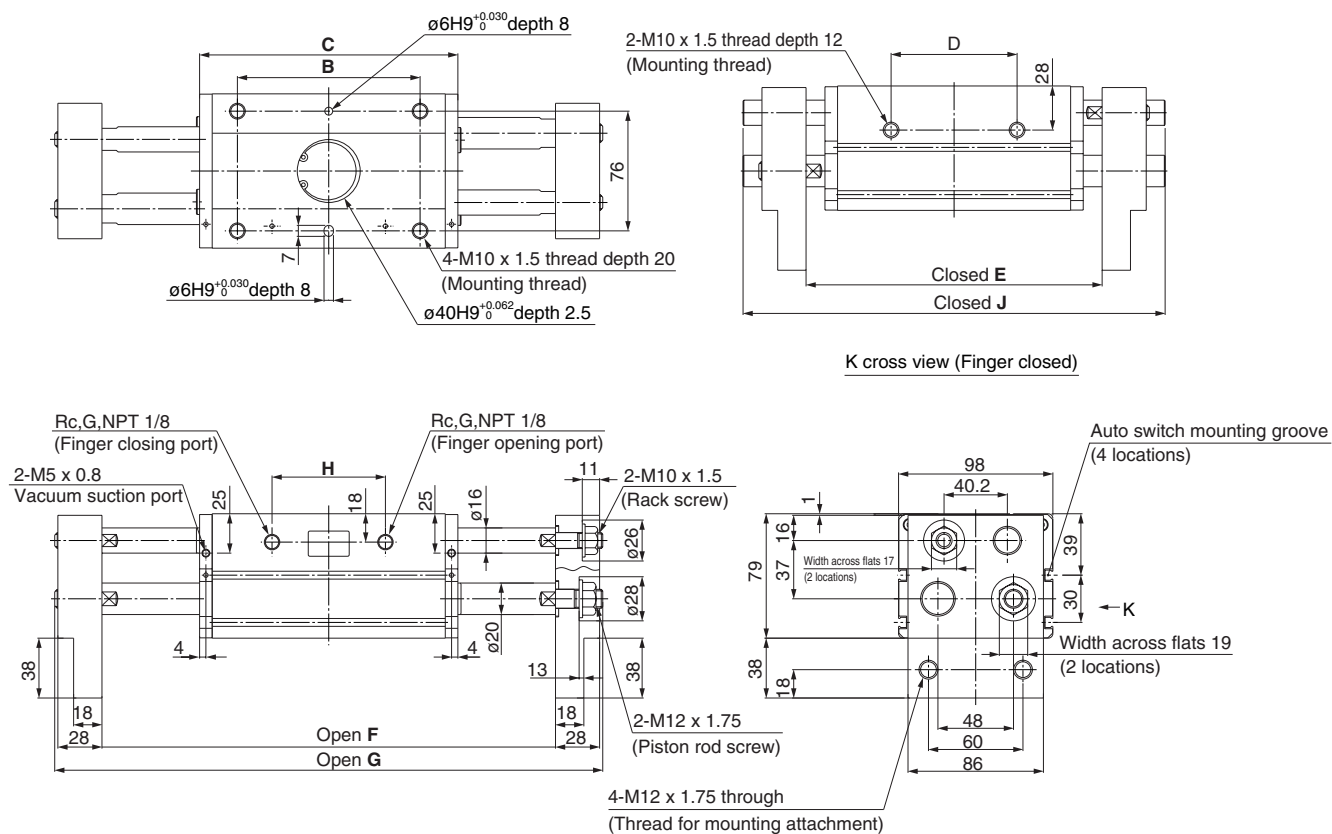


	B	C	D	E	F	G	H	J
11-22-MHL2-32D	86	126	60	150	220	272	56	202
11-22-MHL2-32D1	134	174	108	198	318	370	104	298
11-22-MHL2-32D2	178	218	152	242	402	454	148	382

Air cylinder  
 Rotary actuator  
 Air gripper  
 Directional control valve  
 Flow control equipment  
 Filter, Pressure control equipment  
 Fittings & Tubing  
 Air preparation equipment  
 Pressure switch  
 Clean gas filter

## Dimensions

11-22-MHL2-40D



(mm)

	B	C	D	E	F	G	H	J
11-22-MHL2-40D	116	164	80	188	288	348	72	268
11-22-MHL2-40D1	174	222	138	246	406	466	130	386
11-22-MHL2-40D2	214	262	178	286	486	546	170	466



# Air grippers

## Precautions 1

Be sure to read before handling. Refer to main text for more detailed precautions on every series.

### Caution on design

#### Warning

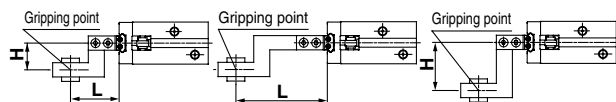
- When moving workpieces pose a danger to personnel, or there is a danger of fingers being caught in a gripper, etc., implement safety measures such as mounting of protective covers.
- If circuit pressure drops due to a power failure or trouble with the air supply, etc., there is a danger of workpieces dropping because of reduced gripping force. Implement drop prevention measures to avoid human injury and equipment damage.

### Selection

#### Warning

- Keep the gripping point within the specified range of the gripping distance.

When the gripping point distance becomes large, the finger attachment applies an excessively large load to the finger sliding section, causing excessive play of the fingers and possibly leading to premature failure. Refer to the graph of the specified range of the gripping distance for each series.



○ "L" and "H" are appropriate.      ✕ "L" is too long.      ✕ "H" is too long.

- Attachment should be designed as light and short as possible.
  - Long and heavy attachment increases the inertia force to open or close the fingers. It may cause unsteady movement of fingers and have an adverse effect on life.
  - Even if gripping point remains within the limited range, make the attachment as light and short as possible.
  - Select the larger size gripper or use two or more grippers for one piece at once for handling long and large workpiece.
- Provide the runoff space in the attachment when using with a small or thin workpiece.
 

If the runoff space is not provided with the finger part, gripping becomes unsteady, and it may lead to gripping failure or slippage.
- Select the model whose gripping force is sufficient against workpiece weight.
 

Incorrect selection may lead to dropping of workpiece, etc. Refer to the model selection criteria for each series pertaining to effective gripping force and workpiece weight.
- Do not use in applications, where excessive external force or impact force may be applied to gripper.
 

It may cause malfunction. Please consult with SMC with regard to any other applications.
- Select a model having a sufficient finger opening width for the workpiece.
 

<In the case of insufficient width>

  - Gripping becomes unsteady due to variations in opening / closing width or workpiece diameter.
  - When using the auto switch, the detection may not be reliable. Refer to "Auto Switch Hysteresis" and set the stroke including the hysteresis length for reliable switch function.

### Mounting

#### Warning

- Do not scratch or dent the air gripper by dropping or bumping it when mounting.
 

Slight deformation can cause inaccuracy or malfunction.
- Tighten the screw within the specified torque range when mounting the attachment.
 

Tightening with larger torque than the specified range may cause malfunction, while the tightening with smaller torque may allow movement of gripping position and dropping of work.

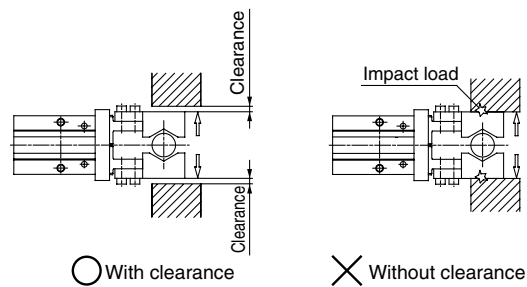
#### Caution

- Avoid twisting the fingers when mounting the attachment.
 

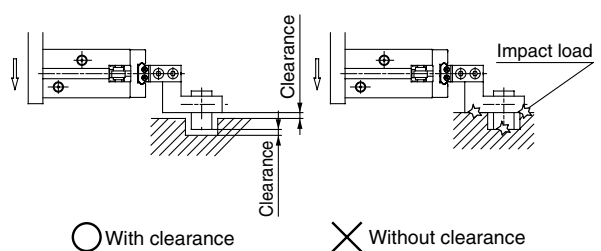
Any damage to fingers may cause malfunction and reduce accuracy.
- Avoid external force to fingers.
 

Fingers may be damaged by continual lateral or impact loads. Provide clearance to prevent the workpiece or the attachment from striking against any object at the stroke end.

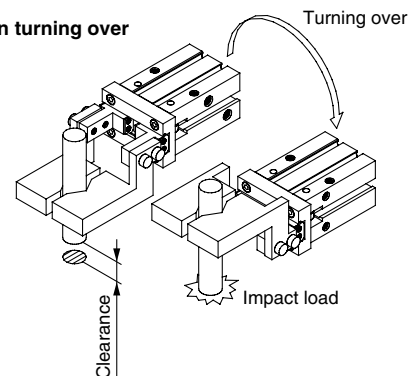
#### 1) Stroke end when fingers are open



#### 2) Stroke end when gripper is moving



#### 3) When turning over





# Air grippers

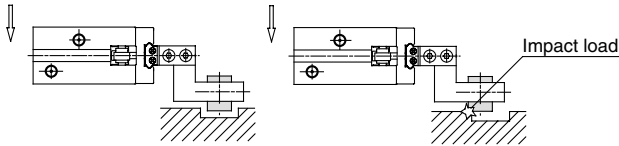
## Precautions 2

Be sure to read before handling. Refer to main text for more detailed precautions on every series.

### Mounting

3. Adjust the gripping point, so that excessive force will not be applied on fingers when inserting the workpiece.

Confirm that the gripper can operate without receiving any shock by testing with manual operation or low-speed operation.



○ Aligned

✗ Not aligned

4. Control the opening / closing speed with the speed controller to avoid excessive high-speed operation.

If the finger opening / closing speed is greater than necessary, impact forces acting on the fingers and other parts will increase. This can cause a loss of repeatability when gripping workpieces and have an adverse effect on the life of the unit.

#### Adjustment of finger opening / closing speed

##### Speed adjustment example

Double acting	Connect 2 pieces of speed controllers in meter-out state.
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### Maintenance

## Warning

1. Do not allow people to enter or place objects in the carrying path of the air gripper.

This can cause an injury or accident, etc.

2. Do not put hands, etc. in between the air gripper fingers or attachments.

This can cause an injury or accident, etc.

3. When removing the air gripper, first confirm that no workpieces are being held and then release the compressed air before removing the air gripper.

If a workpiece is still being held, there is a danger of it being dropped.

# Air grippers

## Auto switch guide

Type	Auto switch mounting	Electrical entry	Auto switch model	Applicable air grippers			
				Size			
				11-/22-MHZ2 10 to 25	11-/22-MDHR2 10 to 30	11-/22-MDHR3 10-15	11-/22-MHL2 10 to 40
Solid state switch	Direct	Grommet	D-F8N·F8P·F8B	●			
			D-M9N·M9P·M9B D-M9NV·M9PV·M9BV	●	●	●	
			D-Y59A·Y7P·Y59B D-Y69A·Y7PV·Y69B				●
	Direct	Grommet	D-Y7NW·7PW·7BW D-Y7NWV·7PWV·7BWV				●
			D-F9NW·F9PW·F9BW D-F9NWV·F9PWV·F9BWV	●			
	Direct	Grommet	D-Y7BAL				●

Solid state switch

Water resistant 2-color indication

Water resistant 2-color indication

- Air cylinder
- Rotary actuator
- Air gripper
- Directional control valve
- Flow control equipment
- Filter, Pressure control equipment
- Fittings & Tubing
- Air preparation equipment
- Pressure switch
- Clean gas filter