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

11—MHL 2 — 16 D 1 — Y59A

22—MHL 2 — 16 D 1 — Y59A

Wide opening

Number of fingers

2	2 fingers

Bore size

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

Copper, fluorine and silicon-free + Low particle generation

22	Vacuum suction type

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

Thread type

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

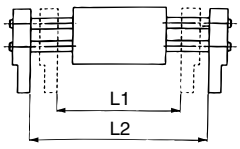
Auto switch
Y59A
Y59B

Number of auto switches

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

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**			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**			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**			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**			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**			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**			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 Note)	14	45	74	131	228	396
Grease	11-: Fluorine grease 22-: Lithium soap based grease					
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	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 ℓ/min (ANR)
10/16/20/25/32/40	25

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

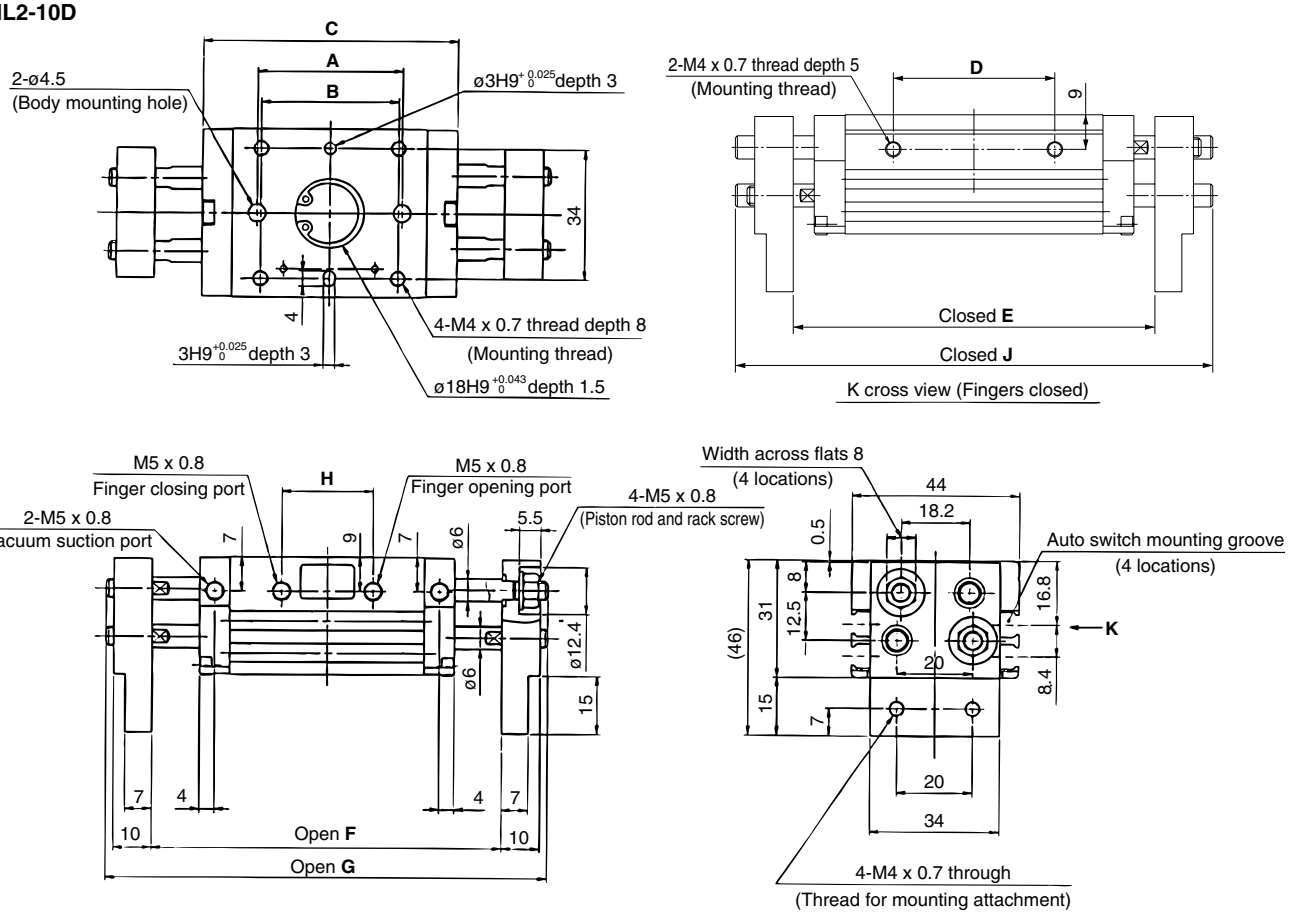
Type		Auto switch model	Load voltage	Load current range	Indicator light	Applicable load
Solid state switch	2-wire	**D-Y59B**	24 VDC (10 to 28 VDC)	5 to 40 mA	Yes	24 VDC relay, PLC
	3-wire	**D-Y59A**	28 VDC or less	40 mA or less	Yes	24 VDC relay, PLC

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

PLC: Programmable Logic Controller

Dimensions

11-/22- MHL2-10D

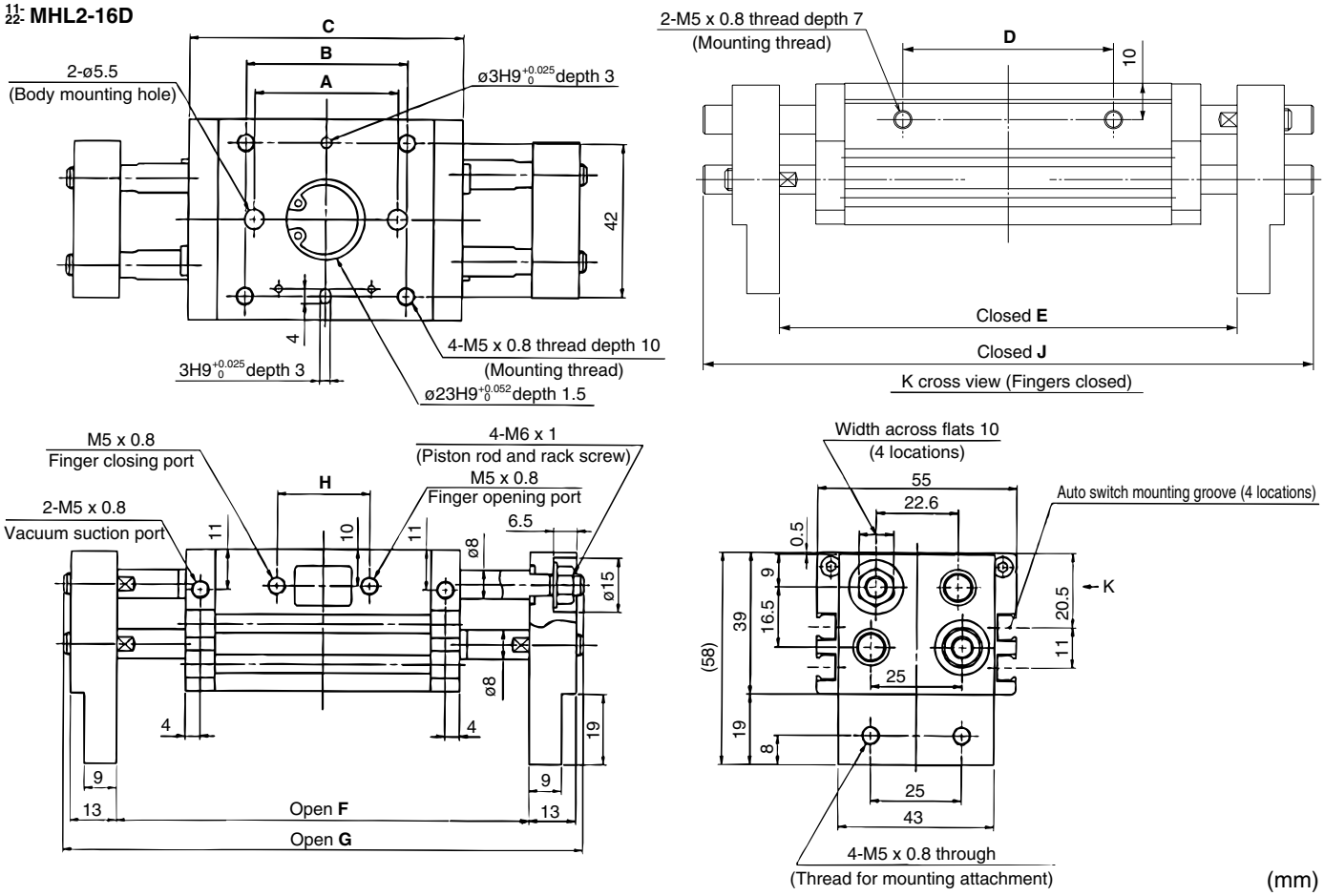


(mm)

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

Dimensions

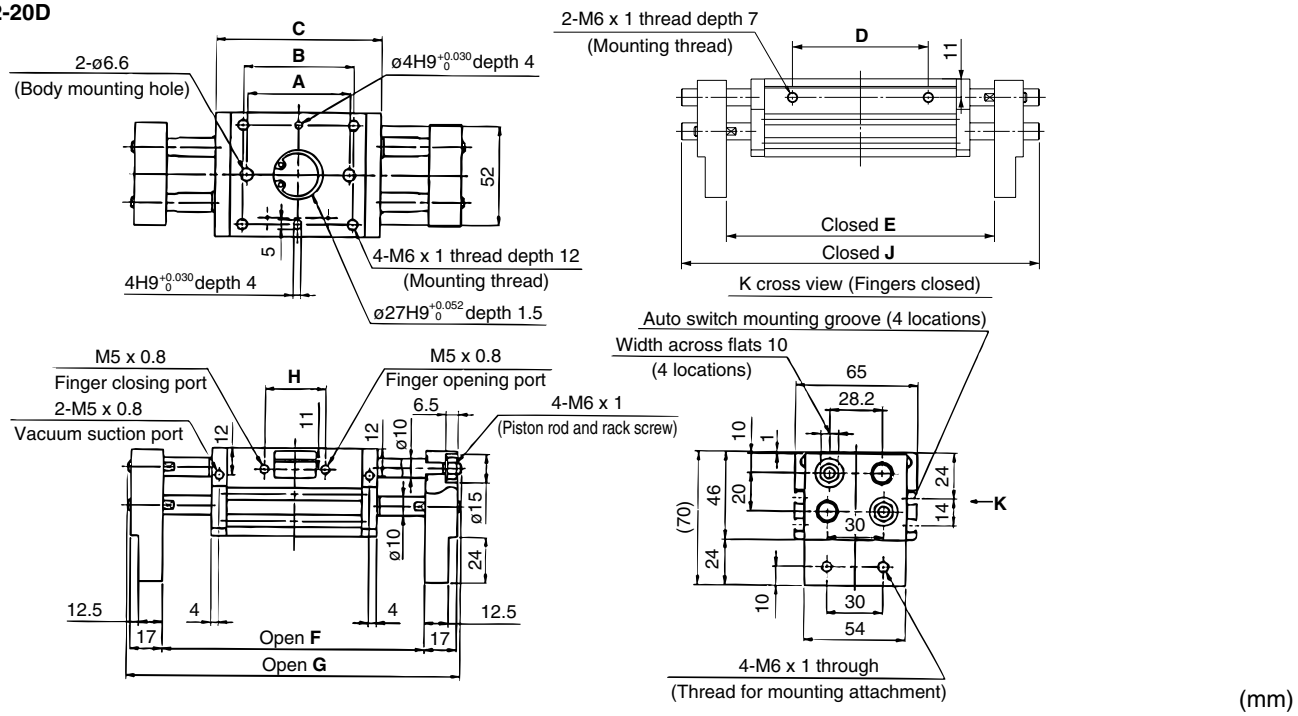
11-22- MHL2-16D



(mm)

	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

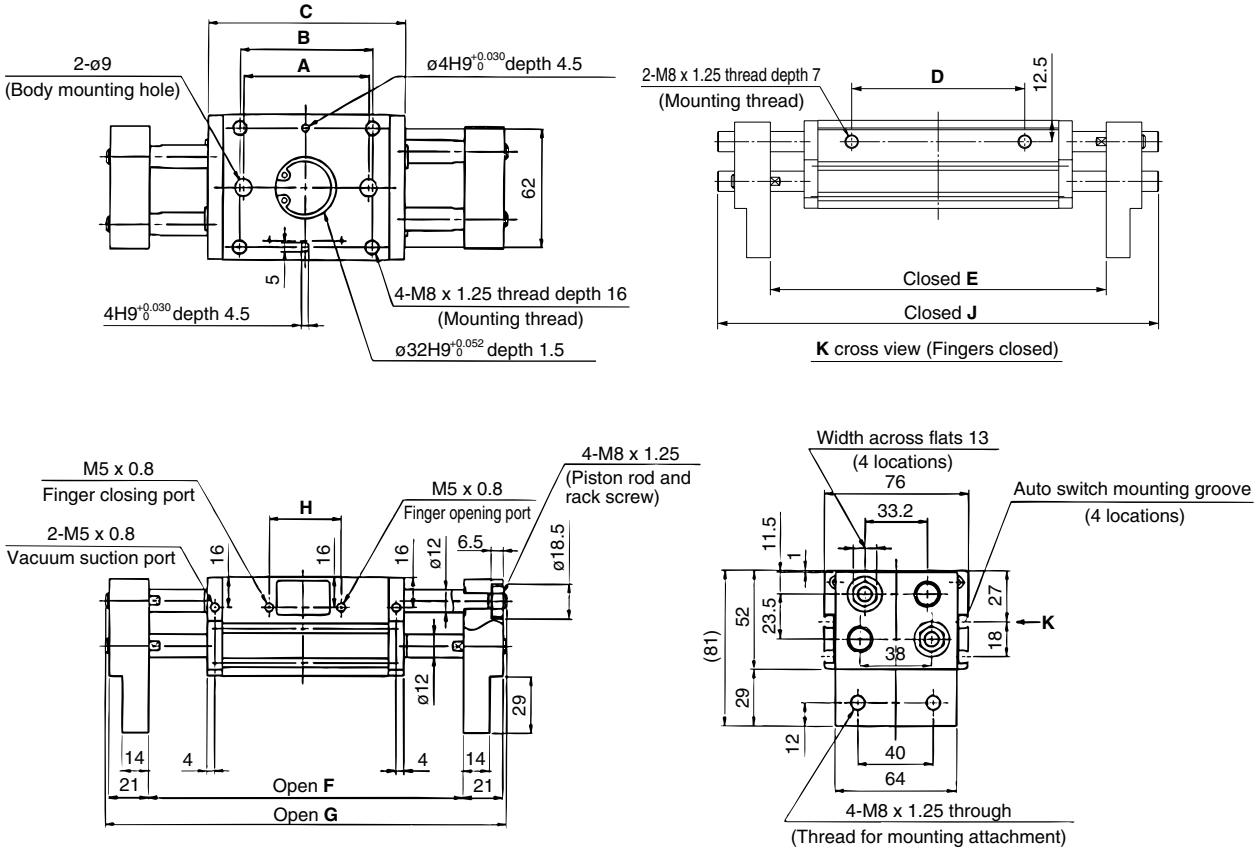


(mm)

	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

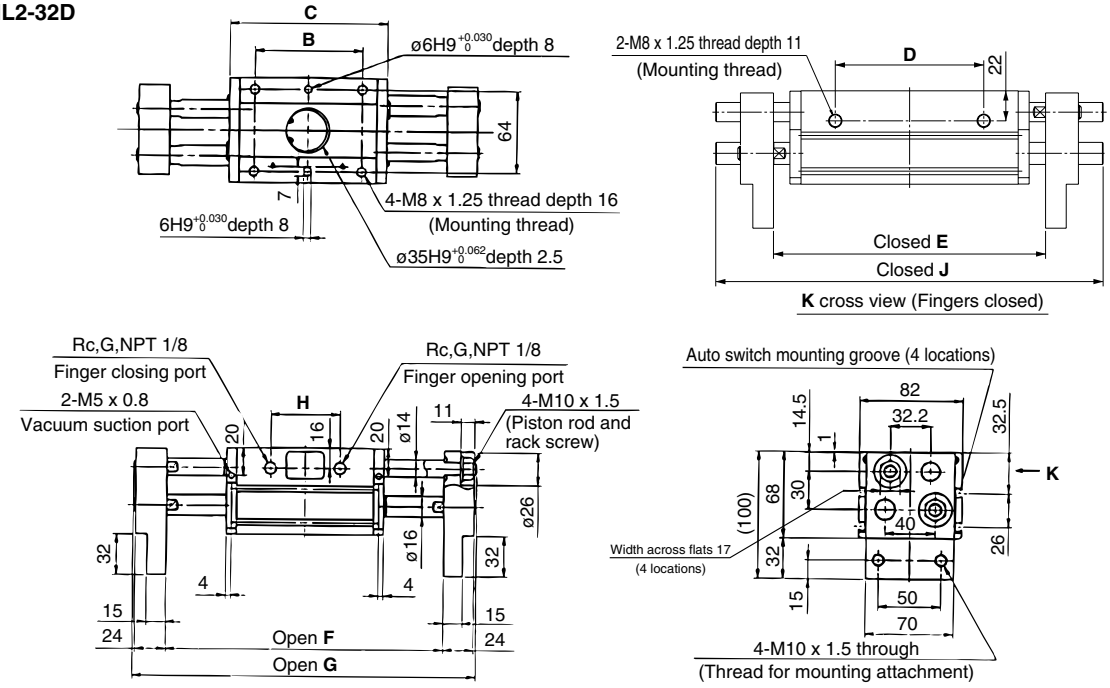
11-22-MHL2-25D



(mm)

	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

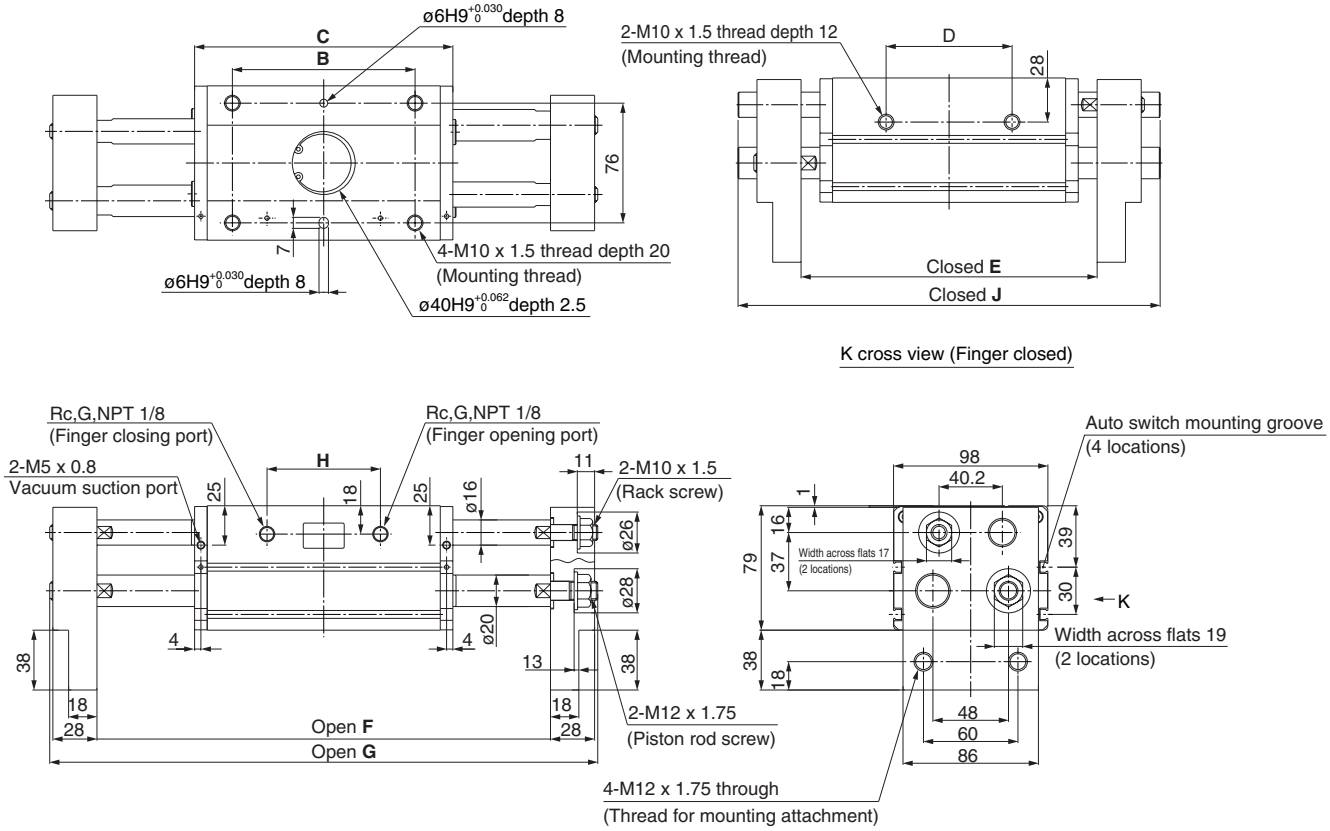


(mm)

	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

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

1. 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.

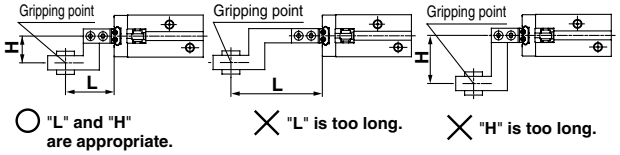
2. If circuit pressure drops due to a power failure or trouble with the air supply, etc., there is a danger of workpieces dropping because of reduced gripping force. Implement drop prevention measures to avoid human injury and equipment damage.

Selection

⚠Warning

1. 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.



2. Attachment should be designed as light and short as possible.

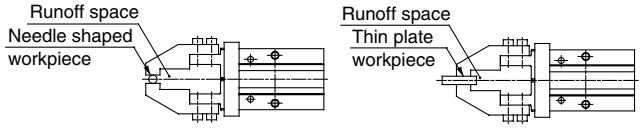
1) Long and heavy attachment increases the inertia force to open or close the fingers. It may cause unsteady movement of fingers and have an adverse effect on life.

2) Even if gripping point remains within the limited range, make the attachment as light and short as possible.

3) Select the larger size gripper or use two or more grippers for one piece at once for handling long and large workpiece.

3. 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.



4. 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.

5. 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.

6. Select a model having a sufficient finger opening width for the workpiece.

<In the case of insufficient width>

1) Gripping becomes unsteady due to variations in opening / closing width or workpiece diameter.

2) 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

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

Slight deformation can cause inaccuracy or malfunction.

2. 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

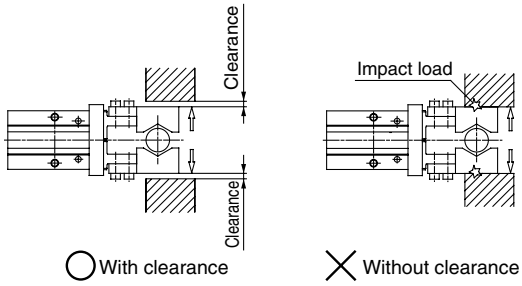
1. Avoid twisting the fingers when mounting the attachment.

Any damage to fingers may cause malfunction and reduce accuracy.

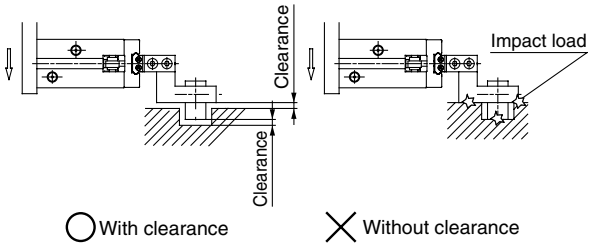
2. Avoid external force to fingers.

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.

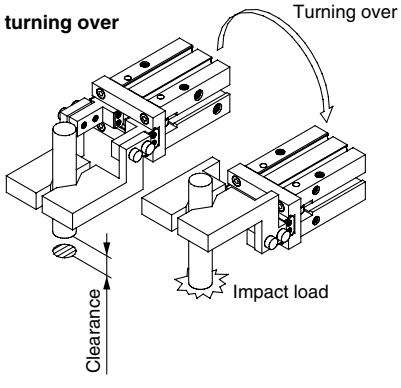
1) Stroke end when fingers are open



2) Stroke end when gripper is moving



3) When turning over



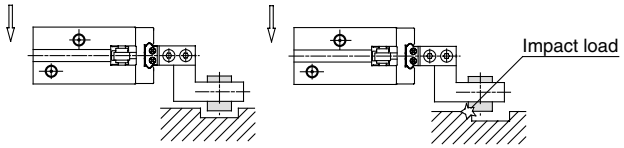
Air grippers
Precautions 2

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.

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