Parallel Type Air Gripper: Wide Type

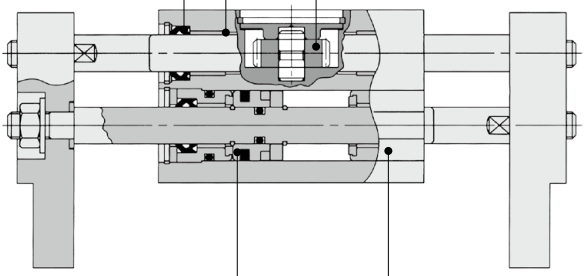
MHL2 Series

ø10, ø16, ø20, ø25, ø32, ø40

Built-in dust-protection mechanism
A scraper with a dust lip is adopted for all rod rotating parts.

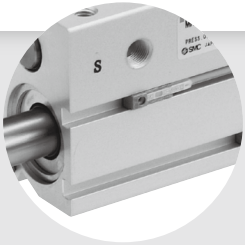
Double-end type oil-impregnated resin bearings with a metal backing are used for all shafts.

Fingers synchronized by a rack and pinion mechanism.



A large amount of gripping force is provided through the use of a double piston mechanism, while maintaining a compact design.

Smaller auto switch mountable
An auto switch can be mounted at 4 locations.



Stroke Variation

Model	Bore size mm			
	10	**16**	**20**	**25**
MHL2-□D	20	30	40	50
MHL2-□D1	40	60	80	100
MHL2-□D2	60	80	100	120

* Values of opening/closing strokes (mm)

Parallel Type Air Gripper: Wide Type

MHL2 Series

ø10, ø16, ø20, ø25, ø32, ø40

How to Order

MHL2 – 16 □ D □ – M9BW □ – □

Wide opening

Number of fingers

2	2 fingers

Bore size

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

Thread type

Symbol	Type	Cylinder bore
Nil	M thread	ø10 to 25
	Rc	ø32 to ø40
TN	NPT	
TF	G	

Action

D	Double acting

Opening/Closing stroke (mm)

Symbol	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

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Made to Order
Refer to page 499 for details.

Applicable Auto Switches/Refer to pages 797 to 850 for further information on the auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m) ∗				Pre-wired connector	Applicable load	
					DC	AC	Electrical entry direction		0.5 (Nil)	1 (M)	3 (L)	5 (Z)			
							Perpendicular	In-line							
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V,12 V	—	**M9NV**	**M9N**	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)			**M9PV**	**M9P**	●	●	●	○	○		
				2-wire	12 V		**M9BV**	**M9B**	●	●	●	○	○	—	
	Diagnosis (2-color indication)			3-wire (NPN)	5 V,12 V		**M9NWV**	**M9NW**	●	●	●	○	○	IC circuit	
				3-wire (PNP)			**M9PWV**	**M9PW**	●	●	●	○	○		
				2-wire	12 V		**M9BWV**	**M9BW**	●	●	●	○	○	—	
	Water resistant (2-color indication)			3-wire (NPN)	5 V,12 V		**M9NAV**∗∗	**M9NA**∗∗	○	○	●	○	○	IC circuit	
				3-wire (PNP)			**M9PAV**∗∗	**M9PA**∗∗	○	○	●	○	○		
				2-wire	12 V		**M9BAV**∗∗	**M9BA**∗∗	○	○	●	○	○	—	

∗∗ Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

∗ Lead wire length symbols: 0.5 m ····· Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ

∗ Solid state auto switches marked with "○" are produced upon receipt of order.

Note 1) When using the 2-color indicator type, please make the setting so that the indicator is lit in red to ensure the detection at the proper position of the air gripper.
Note 2) When ordering the air gripper with the auto switch, the auto switch mounting bracket is included.
When ordering the auto switch separately, the auto switch mounting bracket (BMG2-012) is required.

Long stroke

One unit can handle workpieces with various diameters.

A large amount of gripping force is provided through the use of a double piston mechanism, while maintaining a compact design.

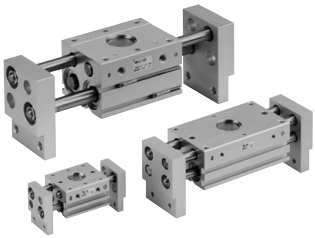
Double-end type oil-impregnated resin bearings with a metal backing are used for all shafts.

Built-in dust-protection mechanism

A high degree of freedom for mounting

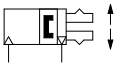
Auto switch mountable

Applicable for Clean Series.
Refer to "Pneumatic Clean Series (CAT.E02-23) " catalog for details.

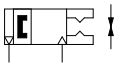


Symbol

Double acting: Internal grip



Double acting: External grip



Specifications

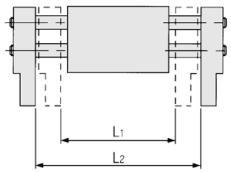
Bore size (mm)	10	16	20	25	32	40
Fluid	Air					
Action	Double acting					
Operating pressure (MPa)	0.15 to 0.6	0.1 to 0.6				
Ambient and fluid temperature	−10 to 60°C					
Repeatability	±0.1					
Lubrication	Not required					
Effective gripping force (N) Note) **at 0.5 MPa**	14	45	74	131	228	396

Note) Gripping point = Bore size 10, 16, 20, 25: 40 mm, Bore size 32, 40: 80 mm.

Model/Stroke

Model	Bore size (mm)	Max. operating frequency c.p.m	Opening/Closing stroke (mm) **(L2-L1)**	Width at closing (mm) **(L1)**	Width at opening (mm) **(L2)**	Weight (g)
MHL2-10D	10	60	20	56	76	280
MHL2-10D1		40	40	78	118	345
MHL2-10D2			60	96	156	425
MHL2-16D	16	60	30	68	98	585
MHL2-16D1		40	60	110	170	795
MHL2-16D2			80	130	210	935
MHL2-20D	20	60	40	82	122	1025
MHL2-20D1		40	80	142	222	1495
MHL2-20D2			100	162	262	1690
MHL2-25D	25	60	50	100	150	1690
MHL2-25D1		40	100	182	282	2560
MHL2-25D2			120	200	320	2775
MHL2-32D	32	30	70	150	220	2905
MHL2-32D1		20	120	198	318	3820
MHL2-32D2			160	242	402	4655
MHL2-40D	40	30	100	188	288	5270
MHL2-40D1		20	160	246	406	6830
MHL2-40D2			200	286	486	7905

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



Made to Order

Made to Order: Individual Specifications
(For details, refer to page 512.)

Symbol	Specifications/Description
-X28	With adjuster bolts for adjusting closing width

Made to Order

Made to Order
(Refer to pages 725 to 748 for details.)

Symbol	Specifications/Description
-X4	Heat resistance (100°C)
-X5	Fluororubber seal
-X50	Without magnet
-X53	EPDM seal/Fluorine grease
-X63	Fluorine grease
-X79	Grease for food processing machines/Fluorine grease
-X79A	Grease for food processing machines

⚠Precautions

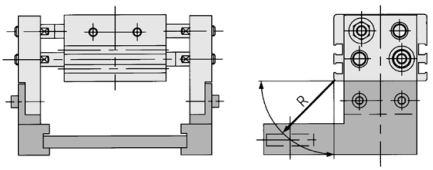
Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 366 to 374 for Air Gripper and Auto Switch Precautions.

⚠Warning

If a workpiece is hooked onto the attachment, make sure that excessive impact will not be created at the start and the end of the movement.
Failure to observe this precaution may result in shifting or dropping the workpiece, which could be dangerous.

Gripping Point

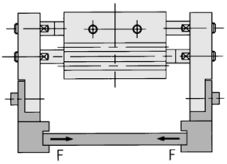
- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the workpiece gripping point beyond the indicated ranges, the load that will be applied to the fingers or the guide will become excessively unbalanced. As a result, the fingers could become loosened and adversely affect the service life of the unit.



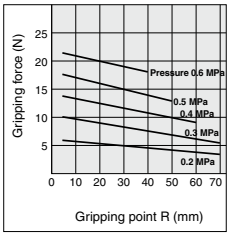
R: Gripping position (mm)

Effective Gripping Force

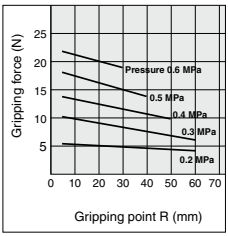
- **Indication of effective gripping force**
  The gripping force shown in the tables represents the gripping force of one finger when all fingers and attachments are in contact with the work.
  F = one finger thrust.



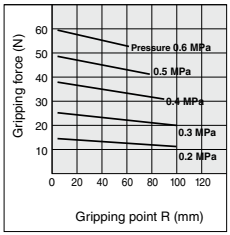
MHL2-10D



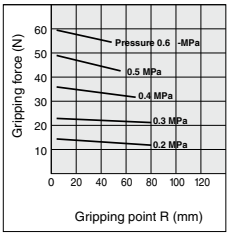
MHL2-10D$_2^1$



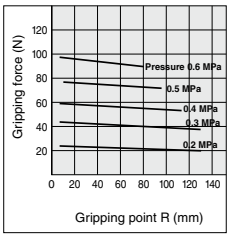
MHL2-16D



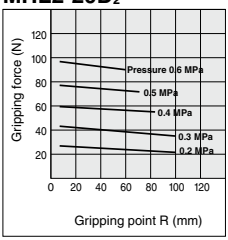
MHL2-16D$_2^1$



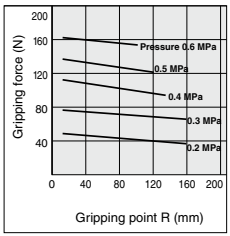
MHL2-20D



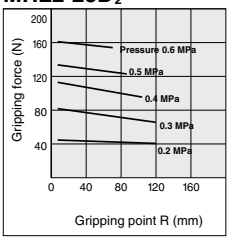
MHL2-20D$_2^1$



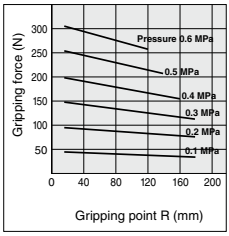
MHL2-25D



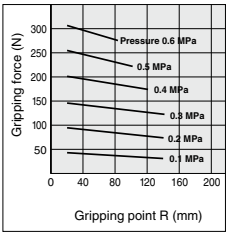
MHL2-25D$_2^1$



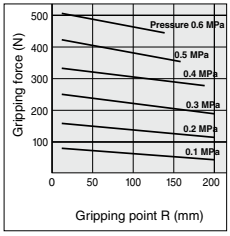
MHL2-32D



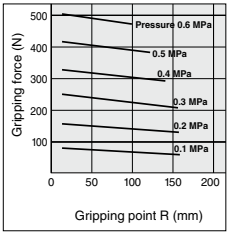
MHL2-32D$_2^1$



MHL2-40D



MHL2-40D$_2^1$



Model Selection Example

Procedure

Confirmation of conditions → Select possible points according to the work length → Calculation of required gripping force → Selection of model from gripping force graph

Work form
Diameter x Length
200 mm x 20 mm plate

Work length: From the dimensions of models that have an opening width of 200 mmor more
MHL2-16D2
MHL2-20D1/D2
MHL2-25D1/D2

Work mass: 0.3 kg

Guidelines for the selection of the gripper with respect to component mass

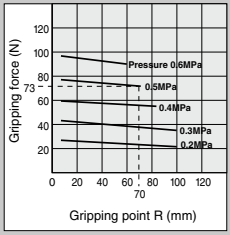
- Although conditions differ according to the workpiece shape and the coefficient of friction between the attachments and the workpiece, select a model that can provide a gripping force of 10 to 20 times the workpiece mass, or more.
- Further allowance should be provided when great acceleration or impact is expected during workpiece transfer.

Example) For setting the gripping force to be at least 20 times the workpiece mass: Required gripping force = 0.3 kg x 20 x 9.8 $m/s^2 \cong 60$ N

Gripping point R = 70 mm

Operating pressure: 0.5 MPa

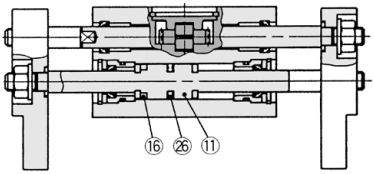
MHL2-20D$^{1}_{2}$



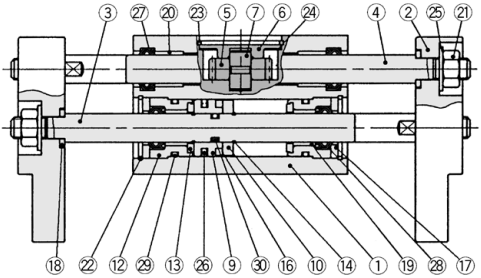
- Selecting the **MHL2-20D1**
  A gripping force of 73 N is obtained from the intersection point of gripping point position R = 70 and a pressure 0.5 MPa.
- The gripping force is 24 times greater than the workpiece mass, and therefore satisfies a gripping force setting value of 20 times or more.

Construction

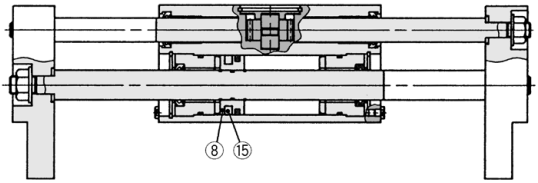
ø10



ø16 to ø25



ø32, ø40



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	Hard anodized
2	**Finger**	Aluminum alloy	Hard anodized
3	**Piston rod**	Stainless steel	
4	**Rack**	Stainless steel	
5	**Pinion**	Carbon steel	Nitriding
6	**Pinion cover**	Carbon steel	Electroless nickel plated
7	**Pinion axis**	Stainless steel	Nitriding
8	**Piston**	Brass	
9	**Piston A**	Brass	
10	**Piston B**	Brass	
11	**Piston A**	Stainless steel	
12	**Rod cover**	Aluminum alloy	Chromate treated
13	**Bumper**	Urethane rubber	
14	**Clip**	Stainless steel spring wire	
15	**Rubber magnet**	Synthetic rubber	
16	**Magnet**	—	Nickel plated

No.	Description	Material	Note
17	**Rod seal cover B**	Cold rolled steel	Electroless nickel plated
18	**Washer**	Stainless steel	Nitriding
19	**Bearing**	Oil containing polyacetal with back metal	
20	**Bearing**	Oil containing polyacetal with back metal	
21	**U nut**	Carbon steel	Zinc chromated
22	**R-shape retaining ring**	Carbon steel	Phosphate coated
23	**Type C retaining ring**	Carbon steel	Phosphate coated
24	**Wave washer**	Steel for spring	Phosphate coated
25	**Conical spring washer**	Carbon steel	Nickel plated
26	**Piston seal**	NBR	
27	**Rod seal**	NBR	
28	**Rod seal**	NBR	
29	**Gasket**	NBR	
30	**Gasket**	NBR	

Replacement Parts

Description		MHL2-10□	MHL2-16□	MHL2-20□	MHL2-25□	MHL2-32□	MHL2-40□	Main parts
Seal kit		MHL10-PS	MHL16-PS	MHL20-PS	MHL25-PS	MHL32-PS	MHL40-PS	㉖㉗㉘㉙㉚
Piston assembly	MHL2-□□D	MHL-A1001	MHL-A1601	MHL-A2001	MHL-A2501	MHL-A3201	MHL-A4001	<ø10>⑪⑬⑯㉖ <ø16 to ø25>③⑨⑩⑭⑯㉖㉚ <ø32, ø40>③⑧⑭⑮㉖㉚
	MHL2-□□D1	MHL-A1002	MHL-A1602	MHL-A2002	MHL-A2502	MHL-A3202	MHL-A4002	
	MHL2-□□D2	MHL-A1003	MHL-A1603	MHL-A2003	MHL-A2503	MHL-A3203	MHL-A4003	
Rack	MHL2-□□D	MHL-A1004	MHL-A1604	MHL-A2004	MHL-A2504	MHL-A3204	MHL-A4004	④
	MHL2-□□D1	MHL-A1005	MHL-A1605	MHL-A2005	MHL-A2505	MHL-A3205	MHL-A4005	
	MHL2-□□D2	MHL-A1006	MHL-A1606	MHL-A2006	MHL-A2506	MHL-A3206	MHL-A4006	
Rod Cover assembly		MHL-A1007	MHL-A1607	MHL-A2007	MHL-A2507	MHL-A3207	MHL-A4007	<ø10>⑫⑰⑲㉒㉘㉙ <ø16 to 40>⑫⑬⑰⑲㉒㉘㉙
Finger assembly		MHL-A1008	MHL-A1608	MHL-A2008	MHL-A2508	MHL-A3208	MHL-A4008	②⑱㉑㉕
Pinion assembly		MHL-A1009	MHL-A1609	MHL-A2009	MHL-A2509	MHL-A3209	MHL-A4009	⑤⑥⑦㉓㉔
Nut set		MHL-A1017	MHL-A1617	MHL-A2017	MHL-A2517	MHL-A3217	MHL-A4017	⑱㉑㉕
U nut assembly		MHL-A1017A	MHL-A1617A	MHL-A2017A	MHL-A2517A	MHL-A3217A	MHL-A4017A	㉑㉕

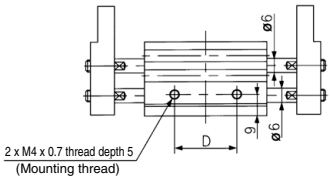
∗ Order one finger assembly, pinion assembly, nut set and U nut assembly per unit.
∗ For piston assembly and rack, order 2 pieces per unit.
∗ For rod cover assembly, order 4 pieces per unit.

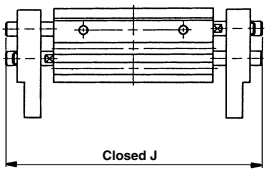
Replacement part: grease pack part no.

MHL2-□□D (ø10 to 20)	**GR-S-010** (10 g)
MHL2-□□D (ø25, 32)	**GR-S-010** (10 g)
MHL2-□□D (ø40)	**GR-S-020** (20 g)
MHL2-□□D1 (ø10, 16)	**GR-S-010** (10 g)
MHL2-□□D1 (ø20, 25)	**GR-S-010** (10 g)
MHL2-□□D1 (ø32, 40)	**GR-S-020** (20 g)
MHL2-□□D2 (ø10, 16)	**GR-S-010** (10 g)
MHL2-□□D2 (ø20, 25)	**GR-S-010** (10 g)
MHL2-□□D2 (ø32, 40)	**GR-S-010** (10 g), **GR-S-020** (20 g) (1 pack each)

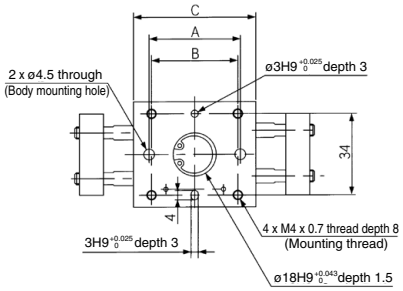
Dimensions

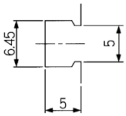
MHL2-10D□



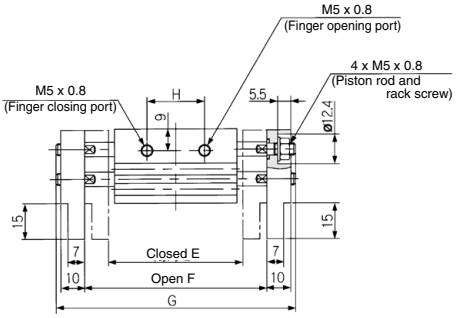


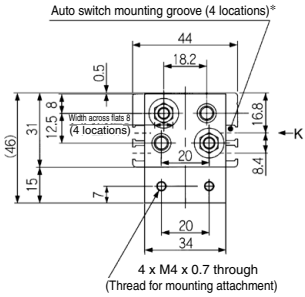
K cross view (Fingers closed)





∗ Dimensions of auto switch mounting groove (Enlarged view)





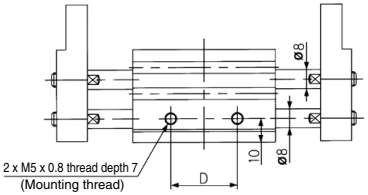
(mm)

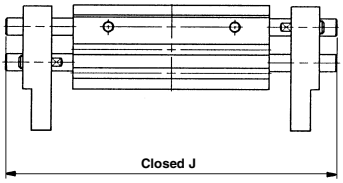
Model	A	B	C	D	E	F	G	H	J
MHL2-10D	38	36	51	26	56	76	100	24	80
MHL2-10D1	54	52	67	42	78	118	142	39	108
MHL2-10D2	72	70	85	60	96	156	180	57	146

Note 1) J dimension is at fully closed.
Note 2) D1 is different from D2 at finger closed because shaft is ejected from finger end. J dimension is different from the value which is subtracted stroke from G dimension.

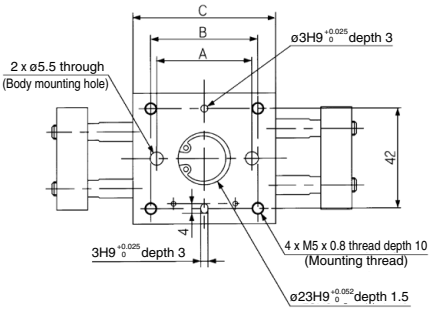
Dimensions

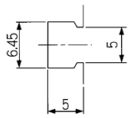
MHL2-16D□



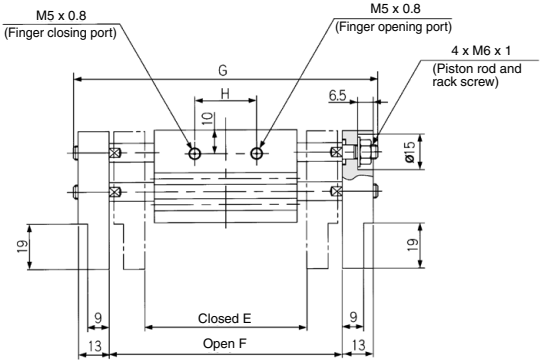


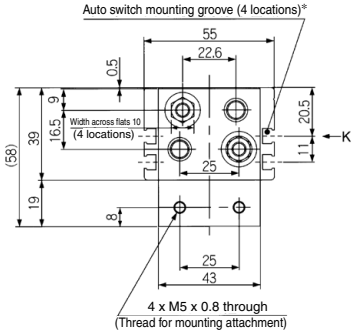
K cross view (Fingers closed)





∗ Dimensions of auto switch mounting groove (Enlarged view)





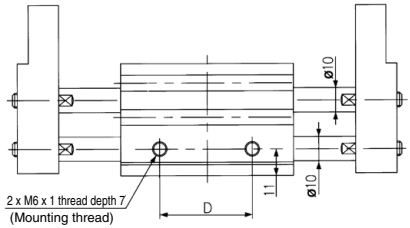
(mm)

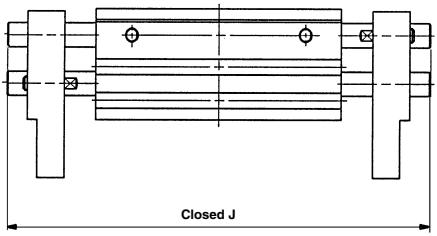
Model	A	B	C	D	E	F	G	H	J
MHL2-16D	40	45	60	28	68	98	128	26	98
MHL2-16D1	70	75	90	58	110	170	200	50	152
MHL2-16D2	90	95	110	78	130	210	240	70	192

Note 1) J dimension is at fully closed.
Note 2) D1 is different from D2 at finger closed because shaft is ejected from finger end. J dimension is different from the value which is subtracted stroke from G dimension.

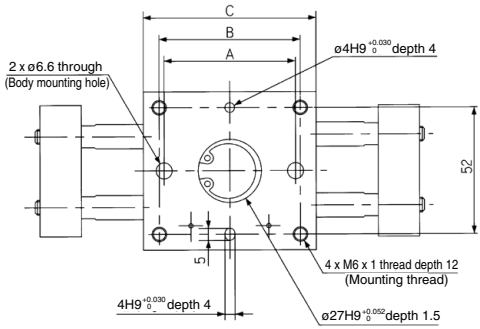
Dimensions

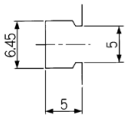
MHL2-20D□



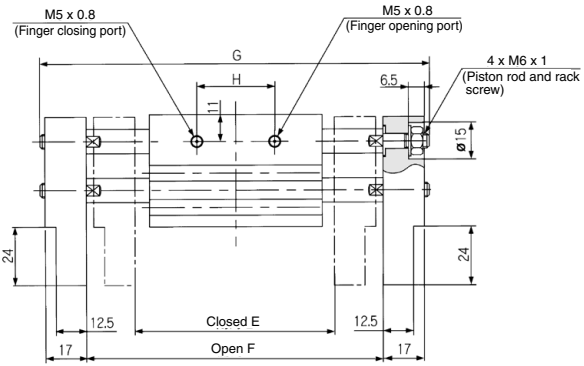


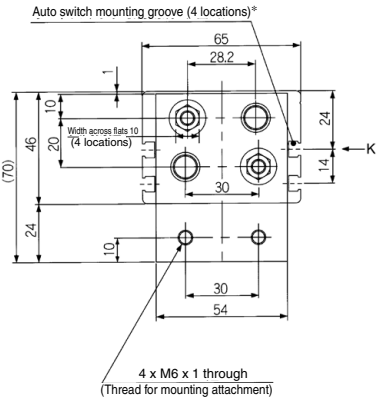
K cross view (Fingers closed)





∗ Dimensions of auto switch mounting groove (Enlarged view)





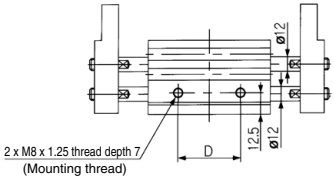
(mm)

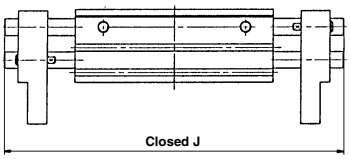
Model	A	B	C	D	E	F	G	H	J
MHL2-20D	54	58	71	38	82	122	160	32	120
MHL2-20D1	96	100	113	80	142	222	260	68	195
MHL2-20D2	116	120	133	100	162	262	300	88	235

Note 1) J dimension is at fully closed.
Note 2) D1 is different from D2 at finger closed because shaft is ejected from finger end. J dimension is different from the value which is subtracted stroke from G dimension.

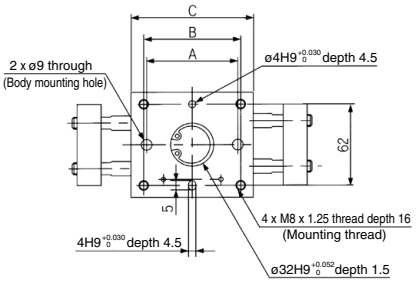
Dimensions

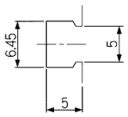
MHL2-25D□



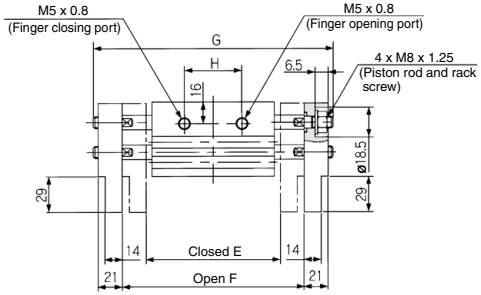


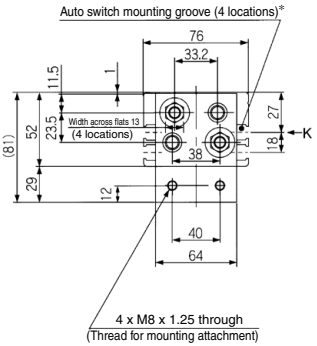
K cross view (Fingers closed)





∗ Dimensions of auto switch mounting groove (Enlarged view)





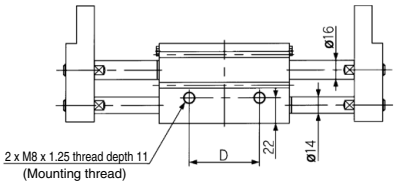
(mm)

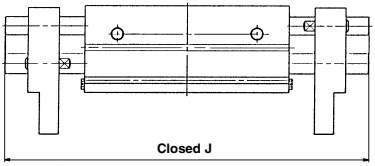
Model	A	B	C	D	E	F	G	H	J
MHL2-25D	66	70	88	48	100	150	196	38	146
MHL2-25D1	120	124	142	102	182	282	328	86	244
MHL2-25D2	138	142	160	120	200	320	366	104	282

Note 1) J dimension is at fully closed.
Note 2) D1 is different from D2 at finger closed because shaft is ejected from finger end. J dimension is different from the value which is subtracted stroke from G dimension.

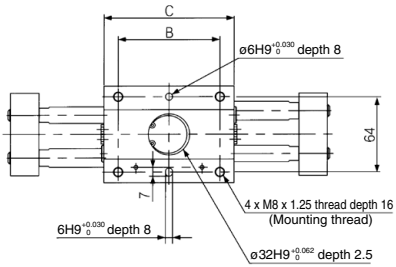
Dimensions

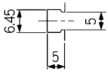
MHL2-32D□



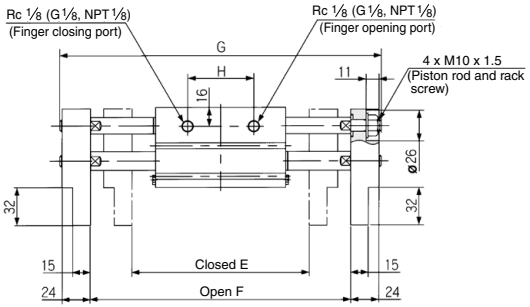


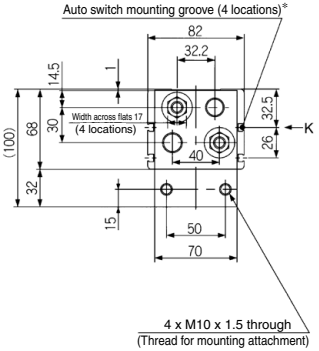
K cross view (Fingers closed)





∗ Dimensions of auto switch mounting groove (Enlarged view)





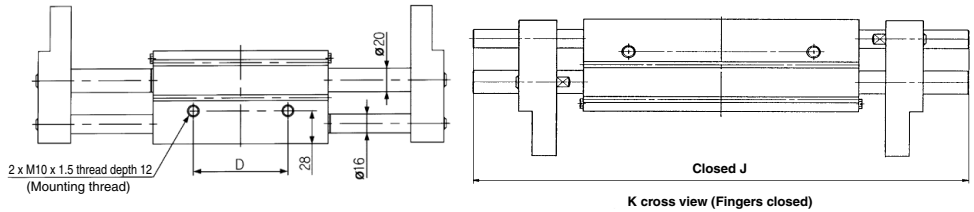
(mm)

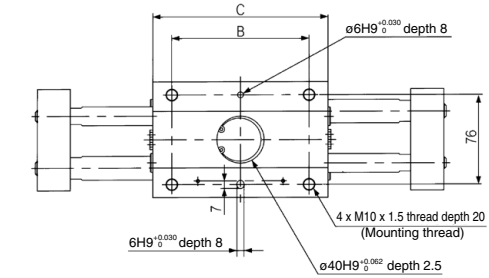
Model	B	C	D	E	F	G	H	J
MHL2-32D	86	110	60	150	220	272	56	202
MHL2-32D1	134	158	108	198	318	370	104	282
MHL2-32D2	178	202	152	242	402	454	148	366

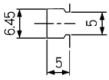
Note 1) J dimension is at fully closed.
Note 2) D1 is different from D2 at finger closed because shaft is ejected from finger end. J dimension is different from the value which is subtracted stroke from G dimension.

Dimensions

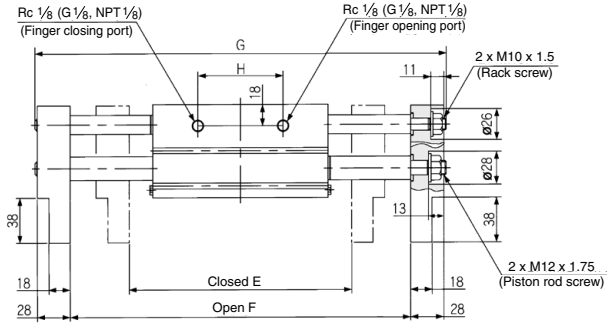
MHL2-40D□

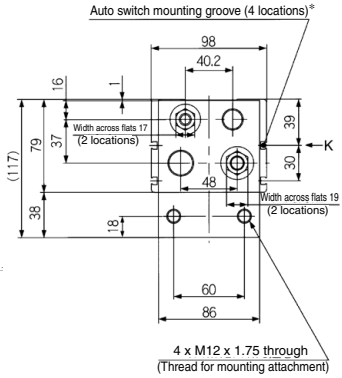






∗ Dimensions of auto switch mounting groove (Enlarged view)





(mm)

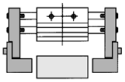
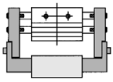
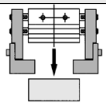
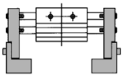
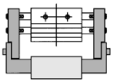
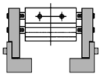
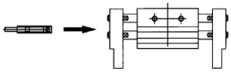
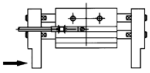
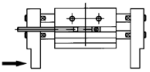
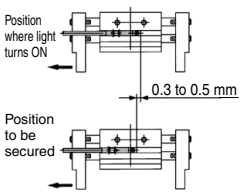
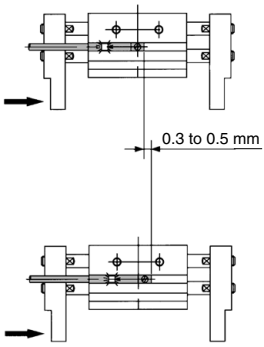
Model	B	C	D	E	F	G	H	J
MHL2-40D	116	148	80	188	288	348	72	252
MHL2-40D1	174	206	138	246	406	466	130	370
MHL2-40D2	214	246	178	286	486	546	170	450

Note 1) J dimension is at fully closed.
Note 2) D1 is different from D2 at finger closed because shaft is ejected from finger end. J dimension is different from the value which is subtracted stroke from G dimension.

MHL2 Series
Auto Switch Installation Examples and Mounting Positions

Various auto switch applications are possible through different combinations of auto switch quantities and detecting positions.

1) Detection when Gripping Exterior of Workpiece

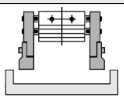
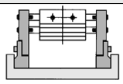
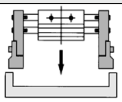
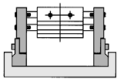
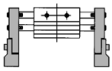
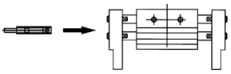
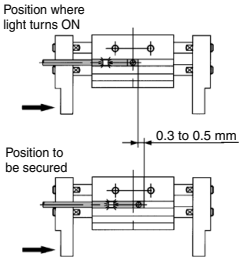
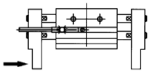
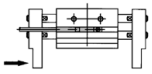
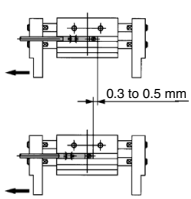
Detection example	1. Confirmation of fingers in reset position	2. Confirmation of workpiece held	3. Confirmation of workpiece released
Position to be detected	Position of fingers fully opened 	Position when gripping a workpiece 	Position of fingers fully closed 
Operation of auto switch	Auto switch turned ON when fingers return. (Light ON)	Auto switch turned ON when gripping a workpiece. (Light ON)	When a workpiece is not held (Abnormal operation): Auto switch to turn ON (Light ON)
Detection combinations: One auto switch ∗ One position, any of ①, ② and ③ can be detected.	●	●	●
Detection combinations: Two auto switches ∗ Two positions of ①, ② and ③ can be detected. — Pattern A	●	●	—
Pattern B	—	●	●
Pattern C	●	—	●
How to determine auto switch installation position	Step 1) Fully open the fingers. 	Step 1) Position fingers for gripping a workpiece. 	Step 1) Fully close the fingers. 
At no pressure or low pressure, connect the auto switch to a power supply, and follow the directions.	Step 2) Insert the auto switch into the auto switch installation groove in the direction shown in the following drawing. 		
	Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates.  Step 4) Slide the auto switch further in the direction of the arrow until the indicator light goes out.  Step 5) Move the auto switch in the opposite direction and fasten it at a position 0.3 to 0.5 mm beyond the position where the indicator light illuminates. 	Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates. Move the switch further 0.3 to.0.5 mm in the direction of the arrow and fasten it. 

Note 1) It is recommended that gripping of a workpiece be performed close to the center of the finger stroke.
Note 2) When holding a workpiece close at the end of open/close stroke of fingers, detecting performance of the combinations listed in the above table may be limited, depending on the hysteresis of an auto switch, etc.

MHL2 Series
Auto Switch Installation Examples and Mounting Positions

Various auto switch applications are possible through different combinations of auto switch quantities and detecting positions.

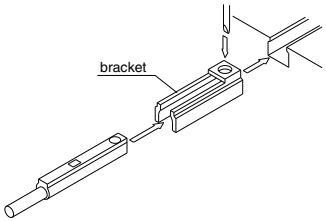
2) Detection when Gripping Interior of Workpiece

Detection example	1. Confirmation of fingers in reset position	2. Confirmation of workpiece held	3. Confirmation of workpiece released
Position to be detected	Position of fingers fully closed 	Position when gripping a workpiece 	Position of fingers fully opened 
Operation of auto switch	Auto switch turned ON when fingers return. (Light ON)	Auto switch turned ON when gripping a workpiece. (Light ON)	When a workpiece is not held (Abnormal operation): Auto switch to turn ON (Light ON)
Detection combinations: One auto switch ∗ One position, any of ①, ② and ③ can be detected.	●	●	●
Detection combinations: Two auto switches ∗ Two positions of ①, ② and ③ can be detected. — Pattern A	●	●	—
Pattern B	—	●	●
Pattern C	●	—	●
How to determine auto switch installation position	Step 1) Fully close the fingers. 	Step 1) Position fingers for gripping a workpiece. 	Step 1) Fully open the fingers. 
At no pressure or low pressure, connect the auto switch to a power supply, and follow the directions.	Step 2) Insert the auto switch into the auto switch installation groove in the direction shown in the following drawing. 		
	Step 3) Move the auto switch in the direction of the arrow until the light illuminates and fasten it at a position 0.3 to 0.5 mm in the direction of the arrow beyond the position where the indicator light illuminates. 	Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates.  Step 4) Slide the auto switch a further distance in the direction of the arrow until the indictor light goes out.  Step 5) Move the auto switch in the opposite direction and fasten it at a position 0.3 to 0.5 mm beyond the position where the indicator light illuminates. 

Note 1) It is recommended that gripping of a workpiece be performed close to the center of the finger stroke.
Note 2) When holding a workpiece close at the end of open/close stroke of fingers, detecting performance of the combinations listed in the above table may be limited, depending on the hysteresis of an auto switch, etc.

Auto Switch Mounting

(1) To set the auto switch, insert the auto switch into the installation groove of the cylinder as shown below and set it roughly.
(2) Insert the auto switch into the auto switch bracket installation groove.
(3) After confirming the detecting position, tighten the set screws (M2.5) attached to the auto switch and set it.
(4) Be sure to change the detecting position in the state of (2).



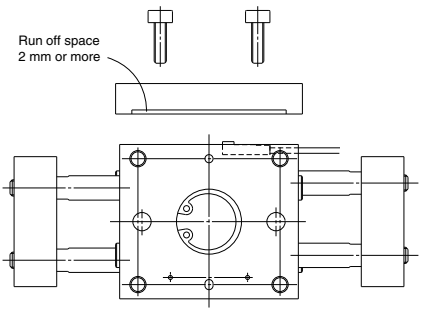
Note) Use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm to tighten the set screws (M2.5).
The tightening torque should be 0.05 to 0.1 N·m.
As a rule, it should be turned about 90° beyond the point at which tightening can be felt.

Auto Switch Mounting Bracket: Part No.

Auto switch part no.	Auto switch mounting bracket part no.
D-M9□(V) **D-M9□W(V)** **D-M9□A(V)**	BMG2-012

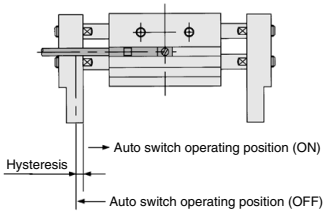
Auto Switch Mounting Brackets: Precautions

When auto switch is set on the mounting side as shown below, allow at least 2 mm runoff space on mounting plate since the auto switch is protruded from the gripper edge.



Auto Switch Hysteresis

The auto switch hysteresis is shown in the table below.
Please refer to the table as a guide when setting auto switch positions.



(mm)

Air gripper model \ Auto switch part no.	D-Y59□/Y69□/Y7P/Y7PV D-Y7□W/Y7□WV	D-M9□(V) D-M9□W(V) D-M9□A(V)
MHL2-10D□	0.8	0.3
MHL2-16D□	0.5	0.4
MHL2-20D□	0.5	0.7
MHL2-25D□	0.5	0.6
MHL2-32D□	0.5	0.6
MHL2-40D□	0.5	0.9

Made to Order: Individual Specifications

Made to Order

Symbol

1 With An Adjuster for Closing Stroke Adjustment -X28

Finger closing stroke can be fine-tuned by an adjustment bolt.

How to Order

Standard part number **–X28**

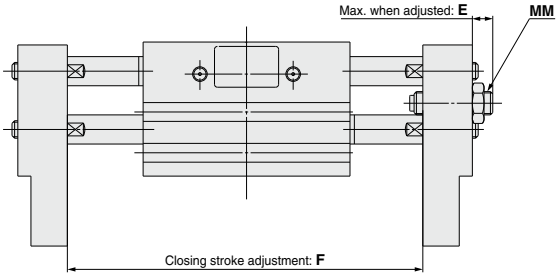
With An Adjuster for Closing Stroke Adjustment

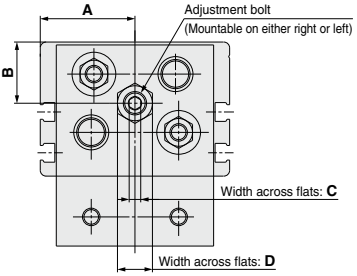
Specifications

Bore size (mm)	10, 16, 20, 25, 32
Adjustment range/ Adjustment bolt position	Refer to the dimensions and figures below.
Specifications/dimensions other than the above	Same as the standard type

Note) Please contact SMC for the MHL2 series ø40.

Dimensions (Dimensions other than specified below are the same as the standard type.)





(mm)

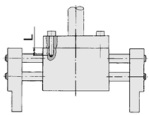
Model	A	B	C	D	E	F	MM
MHL2-10D-X28	22	15.5	2.5	7	4	2	M5 x 0.8
MHL2-10D1-X28					11	16	
MHL2-10D2-X28					11	16	
MHL2-16D-X28	27.5	18.5	3	8	9.5	9	M6 x 1
MHL2-16D1-X28					13.5	20	
MHL2-16D2-X28					13.5	20	
MHL2-20D-X28	32.5	21	4	12	7.5	7	M8 x 1
MHL2-20D1-X28					8.5	9	
MHL2-20D2-X28					8.5	9	
MHL2-25D-X28	38	26	5	14	7.5	7	M10 x 1
MHL2-25D1-X28				17	15	18	M10 x 1.5
MHL2-25D2-X28					15	18	
MHL2-32D-X28	41	32	6	19	32.5	51	M12 x 1.75
MHL2-32D1-X28					32.5		
MHL2-32D2-X28					32.5		

Mounting Air Grippers/MHL2 Series

Possible to mount from 2 directions.

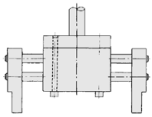
Axial Mounting

●Body tapped



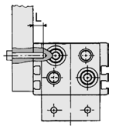
Model	Applicable bolts	Max. tightening torque (N·m)	Max. screw-in depth (Lmm)
MHL2-10D□	M4 x 0.7	2.1	8
MHL2-16D□	M5 x 0.8	4.3	10
MHL2-20D□	M6 x 1	7.3	12
MHL2-25D□	M8 x 1.25	17.7	16
MHL2-32D□	M8 x 1.25	18	16
MHL2-40D□	M10 x 1.5	36	20

●Body ø**10** to ø**25**



Model	Applicable bolts	Max. tightening torque (N·m)
MHL2-10D□	M4 x 0.7	2.1
MHL2-16D□	M5 x 0.8	4.3
MHL2-20D□	M6 x 1	7.3
MHL2-25D□	M8 x 1.25	17.7

Lateral mounting



Model	Applicable bolts	Max. tightening torque (N·m)	Max. screw-in depth (Lmm)
MHL2-10D□	M4 x 0.7	1.4	5
MHL2-16D□	M5 x 0.8	2.8	7
MHL2-20D□	M6 x 1	4.8	7
MHL2-25D□	M8 x 1.25	12.0	7
MHL2-32D□	M8 x 1.25	12.0	11
MHL2-40D□	M10 x 1.5	24.0	12

How to Mount the Attachment to the Finger

(1) Make sure that the piston rod is retracted so as not to apply undue strain on the piston rod while an attachment is being mounted to the finger.
(2) Do not scratch or dent the sliding portion of the piston rod. Damage to the bearings or seals may cause air leaks or faulty operation.
(3) Refer to the table below for the proper tightening torque on the bolt used for securing the attachment to the finger.

Model	Applicable bolts	Max. tightening torque (N·m)
MHL2-10D□	M4 x 0.7	1.4
MHL2-16D□	M5 x 0.8	2.8
MHL2-20D□	M6 x 1	4.8
MHL2-25D□	M8 x 1.25	12.0
MHL2-32D□	M10 x 1.5	24.0
MHL2-40D□	M12 x 1.75	42.2