

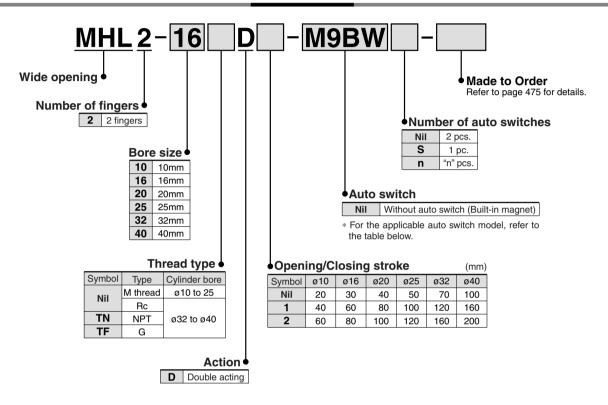
Parallel Style Air Gripper: Wide Type Series MHL2



Parallel Style Air Gripper: Wide Type

Series MHL2 ø10, ø16, ø20, ø25, ø32, ø40

How to Order



Applicable Auto Switch/Refer to pages 761 to 809 for further information on the auto switches

ואר	Dilcable Auto	JWILCII	nelei lo j	Dayes 701 lo	009 101	i iui iiiei iii	onnau	on on the a	uto switche	5.						
		F1		147	- 1	oad voltag	0	Auto swite	ch model	Lead w	ire ler	ngth ((m) *			
Туре		Electrical entry	Indicator light	Wiring (Output)	_	oau voitag	Е	Electrical en	try direction	0.5	1	3	5	Pre-wired connector	Applical	ble load
	function	Only	g.i.t	(Output)		DC	AC	Perpendicular	In-line	(Nil)	(M)	(L)	(Z)			
				3-wire (NPN)		5V.12V		M9NV	M9N	•	•	•	0	0	IC	
	_			3-wire (PNP)		5V,12V		M9PV	М9Р	•	•	•	0	0	circuit	
switch				2-wire		12V		M9BV	M9B	•	•	•	0	0	_	
NS.	<u> </u>			3-wire (NPN)		5V.12V		M9NWV	M9NW	•	•	•	0	0	IC	
state	Diagnosis (2-color indication)	Grommet	Yes	3-wire (PNP)	24V	30,120	_	M9PWV	M9PW	•	•	•	0	0	circuit	Relay, PLC
	(2 color irialcation)			2-wire		12V		M9BWV	M9BW	•	•	•	0	0	_	
Solid				3-wire (NPN)		5V.12V		M9NAV	M9NA	0	0	•	0	0	IC	
	Water resistant (2-color indication)			3-wire (PNP)		50,120		M9PAV	M9PA	0	0	•	0	0	circuit	
	(2 color indication)			2-wire		12V		M9BAV	M9BA	0	0	•	0	0	_	

^{*} 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

[•] Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 487.

^{*} Solid state auto switches marked with "O" are produced upon receipt of order.

Parallel Style Air Gripper: Wide Type Series MHL2

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.

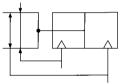
Built-in dust-protection mechanism

A high degree of freedom for mounting

Auto switch mountable



JIS Symbol





(Refer to pages 683 to 713 for details.)

Symbol	Specifications/Description
-X4	Heat resistance (100°C)
-X5	Fluororubber seal
-X28	With adjuster bolts for adjusting closing width
-X50	Without magnet
-X53	EPDM seal/Fluorine grease
-X63	Fluorine grease
-X79	Grease for food
-X79	Grease for food

Specifications

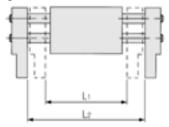
Bore size (mm)	10	16	20	25	32	40
Fluid			А	ir		
Action			Double	acting		
Operating pressure (MPa)	0.15 to 0.6		0.1 t	0.6		
Ambient and fluid temperature	ture -10 to 60°C					
Repeatability			±0	.1		
Lubrication			Not re	quired		
Effective gripping force (N) Note at 0.5 MPa	14	45	74	131	228	396

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 opening (mm) (L2)	Mass (g)
MHL2-10D		60	20	56	76	280
MHL2-10D1	10	40	40	78	118	345
MHL2-10D2		40	60	96	156	425
MHL2-16D		60	30	68	98	585
MHL2-16D1	16	40	60	110	170	795
MHL2-16D2		40	80	130	210	935
MHL2-20D		60	40	82	122	1025
MHL2-20D1	20	40	80	142	222	1495
MHL2-20D2		40	100	162	262	1690
MHL2-25D		60	50	100	150	1690
MHL2-25D1	25	40	100	182	282	2560
MHL2-25D2		40	120	200	320	2775
MHL2-32D		30	70	150	220	2905
MHL2-32D1	32	00	120	198	318	3820
MHL2-32D2		20	160	242	402	4655
MHL2-40D		30	100	188	288	5270
MHL2-40D1	40	00	160	246	406	6830
MHL2-40D2		20	200	286	486	7905

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



Be sure to read before handling.

Refer to front matters 38 and 39 for Safety Instructions and pages 358 to 365 for Air Gripper and Auto Switch Precautions.

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.

SANPUM 475

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

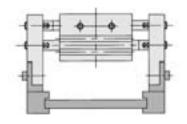
-X□

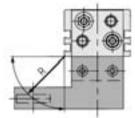
MRHQ

MA

Gripping Point

- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force
- 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.

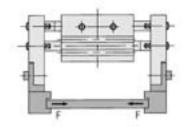




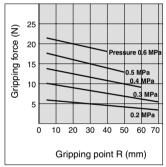
R: Gripping position (mm)

Effective Gripping Force

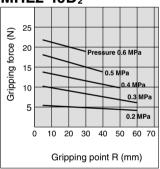
• Indication of effective gripping force The gripping force shown in the tables represents the gripping force of one finger when all fingers and attachments are in contact with the work. F = one finger thrust.



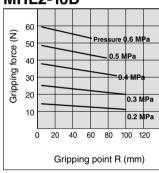
MHL2-10D



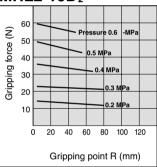
MHL2-10D¹



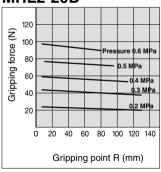
MHL2-16D



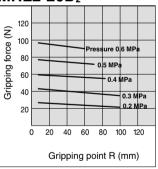
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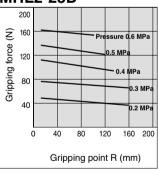
MHL2-20D



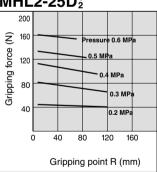
MHL2-20D₂



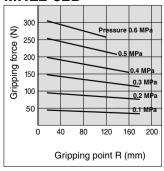
MHL2-25D



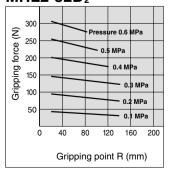
MHL2-25D3



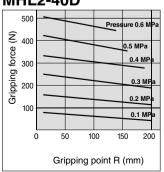
MHL2-32D



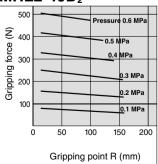
MHL2-32D2



MHL2-40D

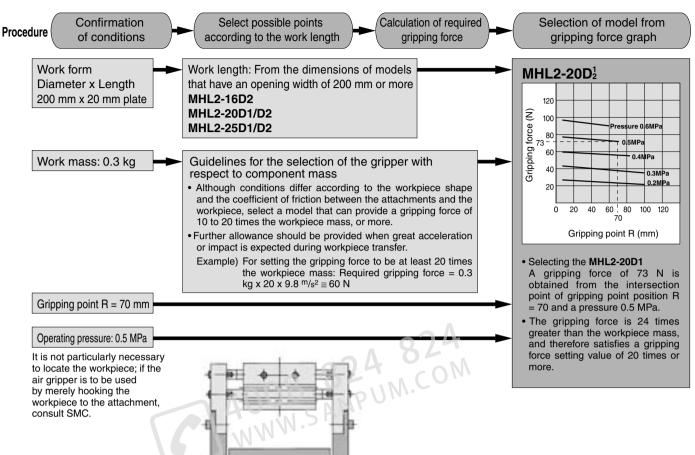


MHL2-40D₂



Parallel Style Air Gripper: Wide Type Series MHL2

Model Selection Example



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

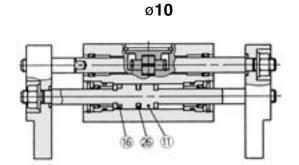
MHY

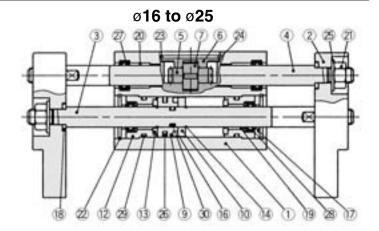
MHW -X□

MRHQ

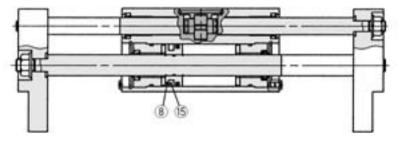
MA

Construction





ø**32**, ø**40**



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	
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	

No.	Description	Material	Note
16	Magnet	_	Nickel plated
17	Rod seal cover B	Cold rolled steel	Electroless nickel plated
18	Washer	Stainless steel	Nitriding
19	Bearing	Oil containing polyacetal	
19	Беаппу	with back metal	
20	Bearing	Oil containing polyacetal	
	Dearing	with back metal	
21	U nut	Carbon steel	Nickel plated
22	R-shape retaining ring	Carbon steel	Nickel plated
23	Type C retaining ring	Carbon steel	Nickel plated
24	Wave washer	Steel for spring	Phosphate coated
25	Conical spring washer	Carbon steel	Nickel plated

Replacement Parts

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Desc	ription	MHL2-10□	MHL2-16□	MHL2-20□	MHL2-25□	MHL2-32□	MHL2-40□	Main parts
Seal ki	t	MHL10-PS	MHL16-PS	MHL20-PS	MHL25-PS	MHL32-PS	MHL40-PS	2627282930
	MHL2-□□D	MHL-A1001	MHL-A1601	MHL-A2001	MHL-A2501	MHL-A3201	MHL-A4001	<pre><ø10>11/13/16/26 <ø16 to ø25>(3/9/10)</pre>
Piston assembly	MHL2-□□D1	MHL-A1002	MHL-A1602	MHL-A2002	MHL-A2502	MHL-A3202	MHL-A4002	14(16)26(30)
	MHL2-□□D2	MHL-A1003	MHL-A1603	MHL-A2003	MHL-A2503	MHL-A3203	MHL-A4003	<ø32, ø40>3.8.14.15 26.30
	MHL2-□□D	MHL-A1004	MHL-A1604	MHL-A2004	MHL-A2504 MHL-A3204 MHL	MHL-A4004		
Rack	MHL2-□□D1	MHL-A1005	MHL-A1605	MHL-A2005	MHL-A2505	MHL-A3205	MHL-A4005	4
	MHL2-□□D2	MHL-A1006	MHL-A1606	MHL-A2006	MHL-A2506	MHL-A3206	MHL-A4006	
Rod Cover asse	mbly	MHL-A1007	MHL-A1607	MHL-A2007	MHL-A2507	MHL-A3207	MHL-A4007	<ø10>121719228 29 <ø16 to 40>1213171922829
Finger assembly	у	MHL-A1008	MHL-A1608	MHL-A2008	MHL-A2508	MHL-A3208	MHL-A4008	2 18 21 25
Pinion assembly	V	MHL-A1009	MHL-A1609	MHL-A2009	MHL-A2509	MHL-A3209	MHL-A4009	(5)(6)(7)(23)(24)

更多资料详情: WWW.SANPUM.COM

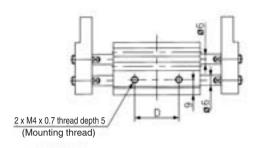
Replacement part: grease pack part no.

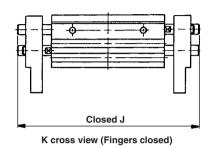
	9 p p
MHL2-□□D (ø10 to 20)	GR-S-005 (5g)
MHL2-□□D (ø25, 32)	GR-S-010 (10g)
MHL2-□□D (ø40)	GR-S-020 (20g)
MHL2-□□D1 (ø10, 16)	GR-S-005 (5g)
MHL2-□□D1 (ø20, 25)	GR-S-010 (10g)
MHL2-□□D1 (ø32, 40)	GR-S-020 (20g)
MHL2-□□D2 (ø10, 16)	GR-S-005 (5g)
MHL2-□□D2 (ø20, 25)	GR-S-010 (10g)
MHL2-□□D2 (ø32, 40)	GR-S-010 (10g), GR-S-020 (20g) (1 pack each)

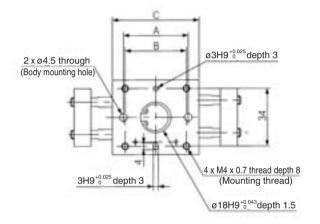
^{*} Order one finger assembly and pinion assembly per unit.

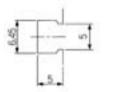
^{*} For piston assembly and rack, order 2 pieces per unit. * For rod cover assembly, order 4 pieces per unit.

MHL2-**10**D□

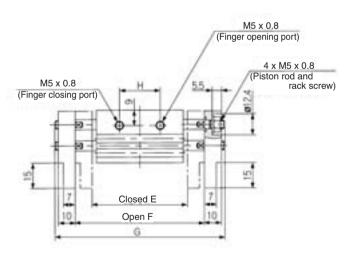


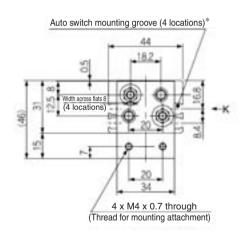






* Dimensions of auto switch mounting groove (Enlarged view)





									(mm)
Model	Α	В	С	D	Е	F	G	Н	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.

MHR

MHK

MHS

МНТ

MHY

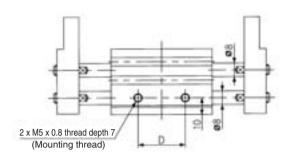
MHW

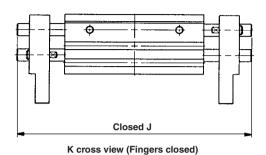
-X□

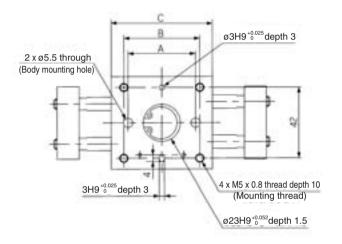
MRHQ

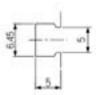
MA

MHL2-**16**D□

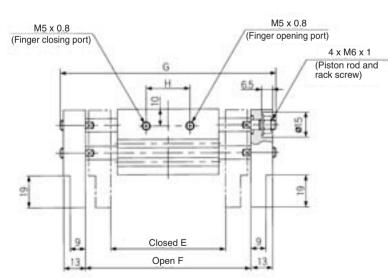








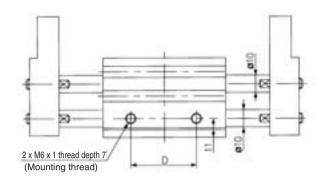
* Dimensions of auto switch mounting groove (Enlarged view)

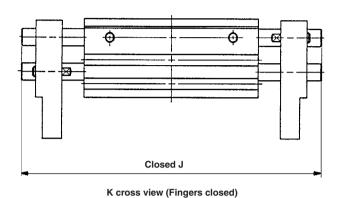


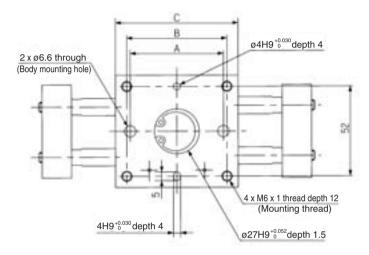
Width across flats 10 (4 locations)	59	55 22.6	1/
<u>ω</u> φ φ		•••••	11 205
	φ. 	9 - 0	1

									(mm)
Model	Α	В	С	D	Е	F	G	Н	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

MHL2-**20**D□









* Dimensions of auto switch mounting groove (Enlarged view)

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

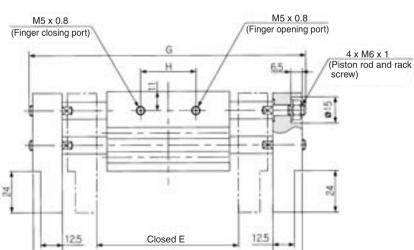
MHW

-X□

MRHQ

MA

D-□



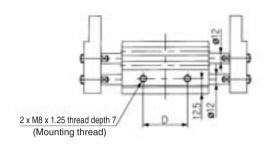
70	uto switch mounting groove (4 locations)*	
46	Width across flats 10 (4 locations)	14 24
24	2 0 0	
	4 x M6 x 1 through (Thread for mounting attachment)	

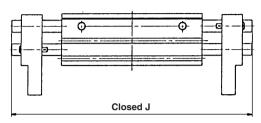
									(111111)
Model	Α	В	С	D	Е	F	G	Н	J
MHL2-20D	54	58	71	38	82	122	160	32	120
MHL2-20D1	96	100	113	80	142	222	260	68	195
MHL2-20D2	116	120	133	100	162	262	300	88	235

Open F

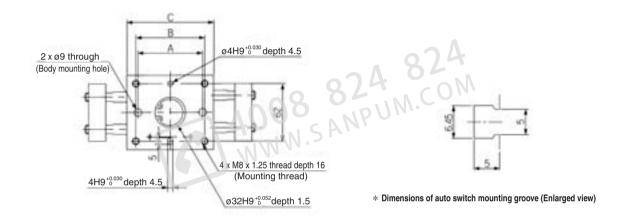
Dimensions

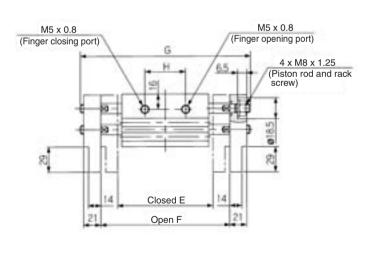
MHL2-**25**D□

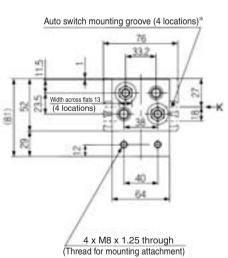




K cross view (Fingers closed)

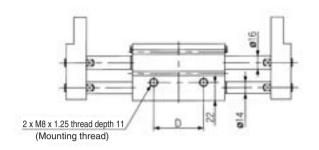


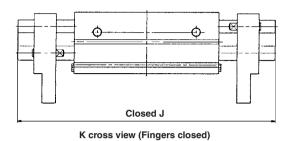


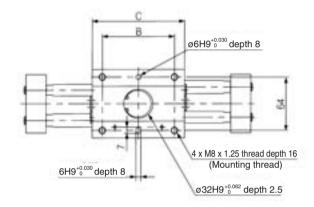


									(111111)
Model	Α	В	С	D	Е	F	G	Н	J
MHL2-25D	66	70	88	48	100	150	196	38	146
MHL2-25D1	120	124	142	102	182	282	328	86	244
MHL2-25D2	138	142	160	120	200	320	366	104	282
	•	•	•	•	•	•	•		

MHL2-32D

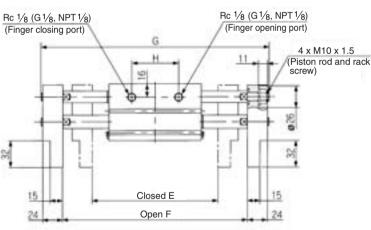


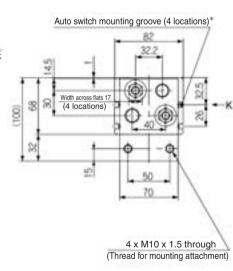






* Dimensions of auto switch mounting groove (Enlarged view)





								(mm)
Model	В	С	D	Е	F	G	Н	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.

MHZ MHF

MHL

MHR MHK

MHS

МНС

MHT

MHY

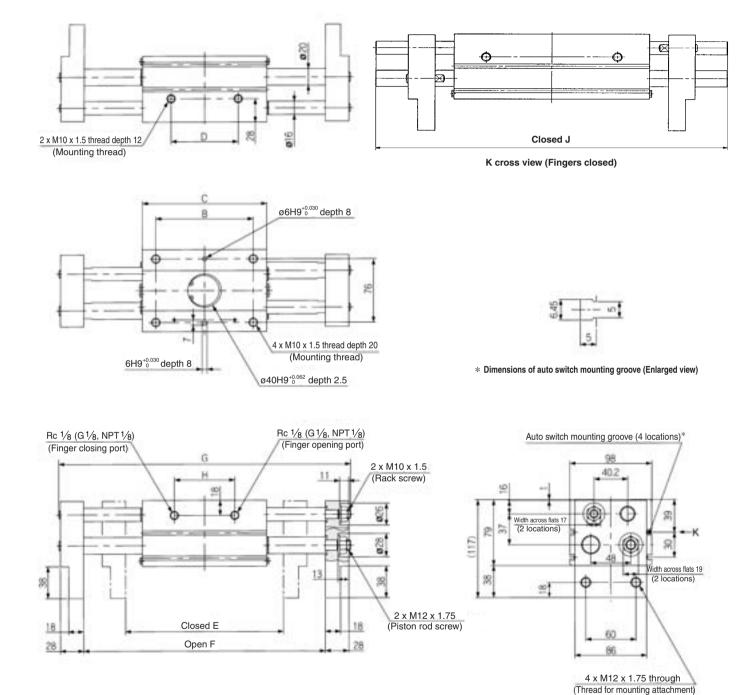
MHW

-X 🗆

MRHQ MA

Dimensions

MHL2-40D



									(111111)
Ī	Model	В	С	D	Е	F	G	Н	J
	MHL2-40D	116	148	80	188	288	348	72	252
Ī	MHL2-40D1	174	206	138	246	406	466	130	370
	MHL2-40D2	214	246	178	286	486	546	170	450

Series MHL2/Related Products 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

Dete	ection example	Confirmation of fingers in reset position	2. Confirmation of workpiece held	3. Confirmation of workpiece released
	Position to e detected	Position of fingers fully opened	Position when gripping a workpiece	Position of fingers fully closed
	Operation of uto switch	Auto switch turned ON when fingers return. (Light ON)	Auto switch turned ON when gripping a workpiece. (Light ON)	When a workpiece is held (Normal operation) Auto switch to turn OFF (Light not illuminating) When a workpiece is not held (Abnormal operation) Auto switch to turn ON (Light illuminating)
on ations	One auto switch	•	•	•
Detection combinations	Two auto switches	•	•	•
	w to determine auto switch Illation position	Step 1) Fully open the fingers.	Step 1) Position fingers for gripping a workpiece.	Step 1) Fully close the fingers.
oressu auto s	pressure or low ure, connect the witch to a power a, and follow the ons.	Step 2) Insert the auto switch into the al groove in the direction shown in the follo		
		Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates.	fasten it at a position 0.3 to.0.5 mm ir	ection of the arrow until the light illuminates and the direction of the arrow beyond the position case of 2-color indicator type, fasten it at the changes from red to green.
		Step 4) Slide the auto switch further in the direction of the arrow until the indicator light goes out.	Position where light turns ON	φ φ 66 4 9 66
		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. In case of 2-color indicator type, fasten it at the location when the indicator light color changes from red to green. Position 0.3 to 0.5 mm Position	Position to be secured	0.3 to 0.5 mm
		to be secured		

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.

SANPUM 485

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

-X□

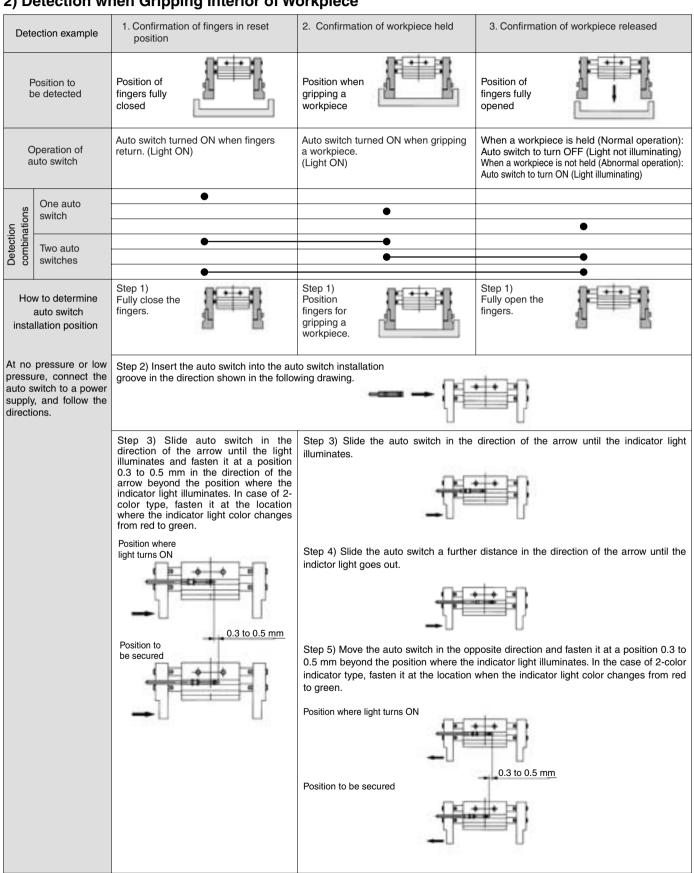
MRHQ

MA

Series MHL2/Related Products 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

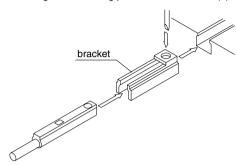


Note 1) It is recommended that gripping of a workpiece be performed close to the center of the finger stroke.

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.

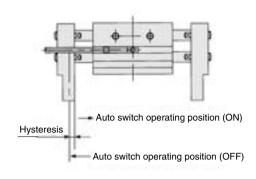
As a rule, it should be turned about 90° beyond the point at which tightening can be felt.

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)L	BMG2-012

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.

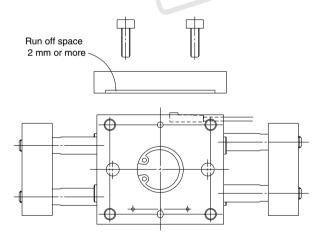


(mm)

nten	Auto switch part no. Air gripper model	D-Y59□/Y69□/Y7P/Y7PV D-Y7□W/Y7□WV	D-M9□(V) D-M9□W(V) D-M9□A(V)L		
ning	MHL2-10D□	0.8	0.3		
iiig	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		
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Auto Switch Mounting Brackets: Precautions

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



MHZ

MHF

MHR

MHK

MHS MHC

МНТ

МНҮ

MHW

-**X**□

MRHQ

MA D-□



Series MHL Specific Product Precautions

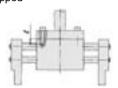
Be sure to read before handling.

Mounting Air Grippers/Series MHL2

Possible to mount from 2 directions.

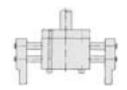
Axial Mounting

Body tapped



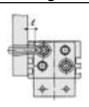
Model	Applicable bolts	Max. tightening torque (N·m)	Max. screw-in depth (ℓmm)
MHL2-10D□	M4 x 0.7	2.1	8
MHL2-16D□	M5 x 0.8	4.3	10
MHL2-20D□	M6 x 1	7.3	12
MHL2-25D□	M8 x 1.25	17.7	16
MHL2-32D□	M8 x 1.25	18	16
MHL2-40D□	M10 x 1.5	36	20

●Body ø10 to ø25



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

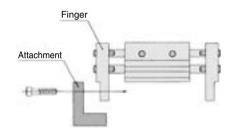


Model	Applicable bolts	Max. tightening torque (N·m)	Max. screw-in depth (ℓmm)
MHL2-10D□	M4 x 0.7	1.4	5
MHL2-16D□	M5 x 0.8	2.8	7
MHL2-20D□	M6 x 1	4.8	7
MHL2-25D□	M8 x 1.25	12.0	7
MHL2-32D□	M8 x 1.25	12.0	11
MHI 2-40D	M10 x 1 5	24.0	12

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



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