

2 Finger Air Gripper Parallel Type

Series MHS2

ø16, ø20, ø25, ø32, ø40, ø50, ø63

How to Order

Cylinder Bore Size

ø16 to ø25 **MHS 2 — 20 D — M9N**

Number of fingers
2 2 fingers

Cylinder bore size
16 16mm
20 20mm
25 25mm

Action
D Double acting

Auto switch type
Nil Without auto switch (built-in magnet)
S 1 pc.

Number of auto switches
Nil 2 pcs.
S 1 pc.

Applicable 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		
							Electrical entry direction		0.5 (Nil)	1 (M)	3 (L)	5 (Z)				
					DC	AC	Perpendicular	In-line								
Solid state auto switch	—	Grommet	Yes	3-wire(NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit		
				3-wire(PNP)			M9PV	M9P	●	●	●	○	○			
				2-wire			M9BV	M9B	●	●	●	○	○		—	
	Diagnosis (2-colour indication)			3-wire(NPN)	5 V, 12 V		M9NVV	M9NW	●	●	●	○	○	IC circuit		
	3-wire(PNP)			M9PVV			M9PW	●	●	●	○	○				
	2-wire			M9BVV			M9BW	●	●	●	○	○	—			
	Water resistant (2-colour 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) M9NV
1 m M (Example) M9NVM
3 m L (Example) M9NVL
5 m Z (Example) M9NVZ

* Auto switches marked with a "○" symbol are produced upon receipt of order.

Note 1) When using the 2-colour 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.

Cylinder Bore Size

ø32 to ø63 **MHS 2 — 50 D — M9N**

Number of fingers
2 2 fingers

Cylinder bore size
32 32mm
40 40mm
50 50mm
63 63mm

Action
D Double acting

Auto switch type
Nil Without auto switch (built-in magnet)
S 1 pc.

Number of auto switches
Nil 2 pcs.
S 1 pc.

Symbol

Applicable 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		
							Electrical entry direction		0.5 (Nil)	1 (M)	3 (L)	5 (Z)				
					DC	AC	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			M9BV	M9B	●	●	●	○	○			—
				3-wire(NPN)			M9NVV	M9NW	●	●	●	○	○			IC circuit
	3-wire(PNP)			M9PVV	M9PW		●	●	●	○	○	—				
	2-wire			M9BVV	M9BW		●	●	●	○	○		IC circuit			
	3-wire(NPN)			M9NAV**	M9NA**		○	○	●	○	○			—		
	3-wire(PNP)			M9PAV**	M9PA**		○	○	●	○	○					—
	2-wire			M9BAV**	M9BA**		○	○	●	○	○					
	Water resistant (2-colour indication)															

** 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) M9NV
1 m M (Example) M9NVM
3 m L (Example) M9NVL
5 m Z (Example) M9NVZ

* Auto switches marked with a "○" symbol are produced upon receipt of order.

Note 1) When using the 2-colour 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.

Models and Specifications



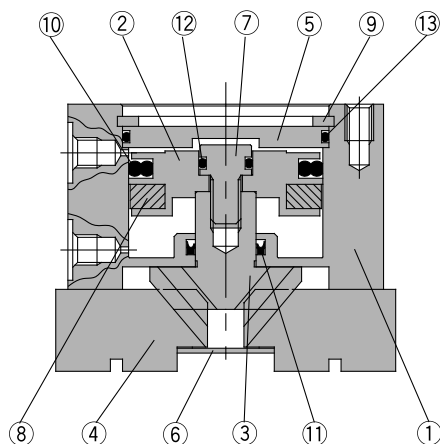
Model		MHS2-16D	MHS2-20D	MHS2-25D	MHS2-32D	MHS2-40D	MHS2-50D	MHS2-63D
Cylinder bore size mm		16	20	25	32	40	50	63
Fluid		Air						
Operating pressure MPa		0.2 to 0.6			0.1 to 0.6			
Ambient and fluid temperature °C		-10 to 60						
Repeatability mm		±0.01						
Max. operating frequency c.p.m.		120			60			
Lubrication		Non-lube						
Action		Double acting						
Effective gripping force ^{Note 1)} N at pressure of 0.5MPa	External gripping force	21	37	63	111	177	280	502
	Internal gripping force	23	42	71	123	195	306	537
Opening/closing stroke (both sides) mm		4	4	6	8	8	12	16
Weight g		58	96	134	265	345	515	952

Note) Values for ø16 to ø25 are with gripping point L = 20mm, and for ø32 to ø63 with gripping point L = 30mm.

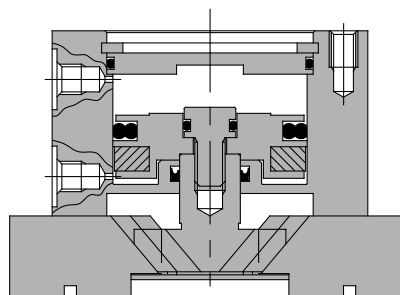
Refer to the "Effective Gripping Force" data on pages 5-162 and 5-163 for the gripping force at each gripping position.

Construction

Closed condition



Open condition



Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Hard anodized
3	Cam	Carbon steel	Heat treated, Specially treated
4	Finger	Carbon steel	Heat treated, Specially treated
5	Cap	Aluminum alloy	Hard anodized
6	End plate	Stainless steel	
7	Piston bolt	Stainless steel	

No.	Description	Material	Note
8	Rubber magnet	Synthetic rubber	
9	C type snap ring	Carbon steel	Nickel plated
10	Piston seal	NBR	
11	Rod seal	NBR	
12	Gasket	NBR	
13	Gasket	NBR	

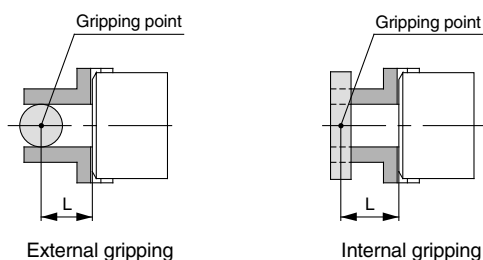
Replacement parts/Seal kits

Kit number							Contents
MHS2-16D	MHS2-20D	MHS2-25D	MHS2-32D	MHS2-40D	MHS2-50D	MHS2-63D	
MHS16-PS	MHS20-PS	MHS25-PS	MHS32-PS	MHS40-PS	MHS50-PS	MHS63-PS	A set of the above Nos. 10, 11, 12 and 13

* Seal kits are sets consisting of items 10, 11, 12 and 13, which can be ordered using the kit number for each cylinder bore size.

Gripping Point

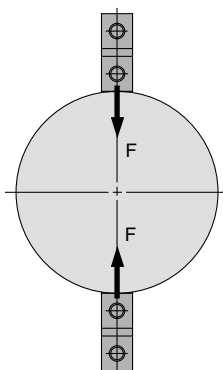
- The work piece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the work piece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the fingers, which can have an adverse effect on the service life of the product.



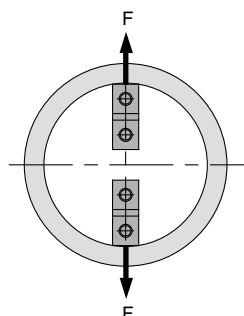
L: Gripping point distance

Effective Gripping Force

- Expressing the effective gripping force
- The effective gripping force shown in the graphs to the right is expressed as F, which is the impellent force of one finger when both of the fingers and attachments are in full contact with the work piece as shown in the figure below.



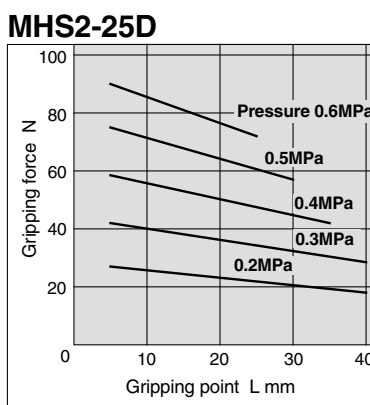
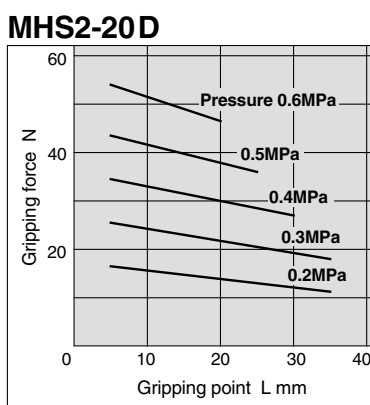
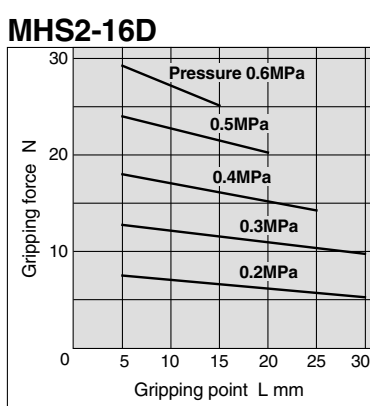
External gripping



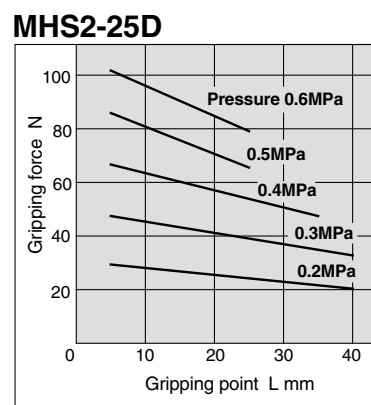
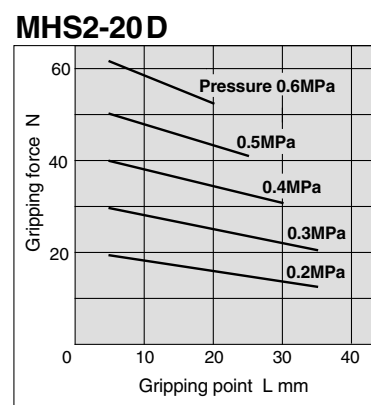
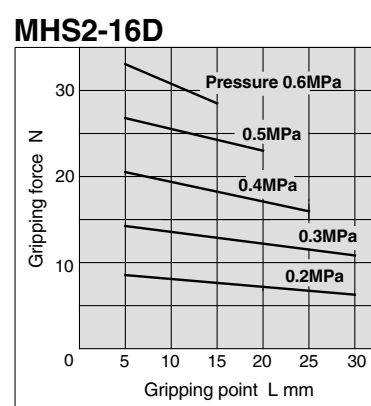
Internal gripping

1N: Approx. 0.102kgf
1MPa: Approx. 10.2kgf/cm²

External gripping force

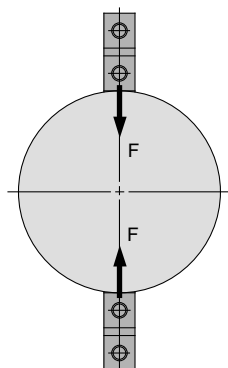


Internal gripping force

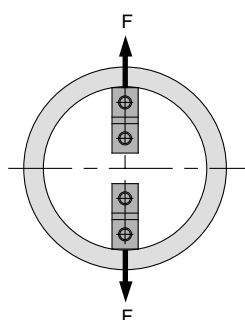


Effective Gripping Force

- Expressing the effective gripping force
The effective gripping force shown in the graphs to the right is expressed as F , which is the impellent force of one finger when both of the fingers and attachments are in full contact with the work piece as shown in the figure below.



External gripping

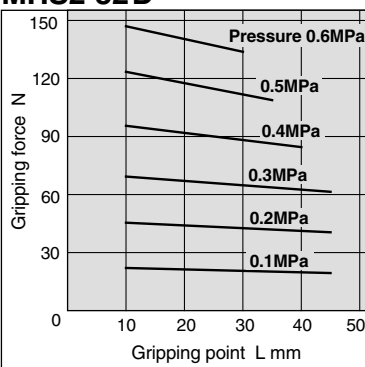


Internal gripping

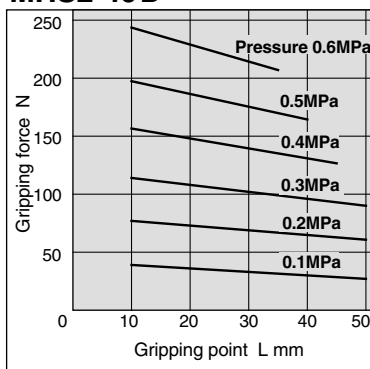
1N: Approx. 0.102kgf
1MPa: Approx. 10.2kgf/cm²

External gripping force

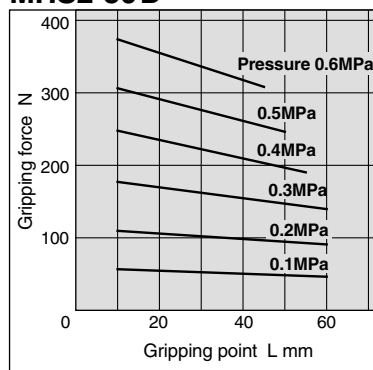
MHS2-32D



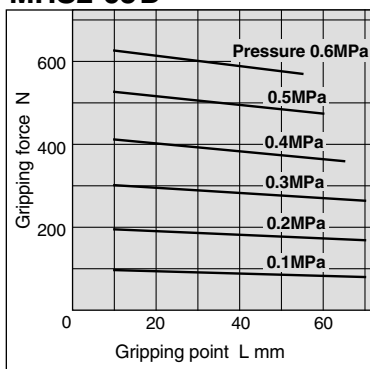
MHS2-40D



MHS2-50D

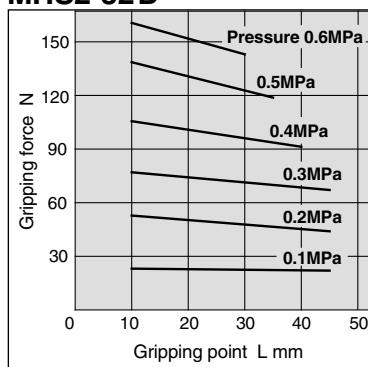


MHS2-63D

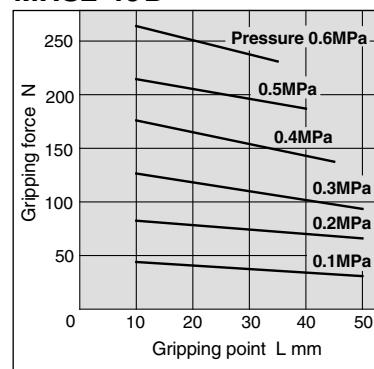


Internal gripping force

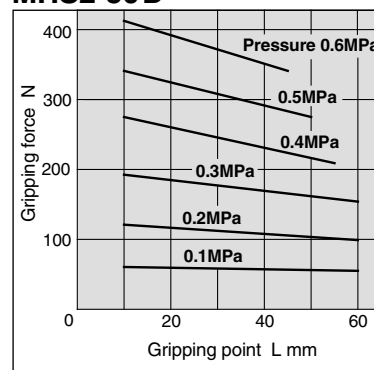
MHS2-32D



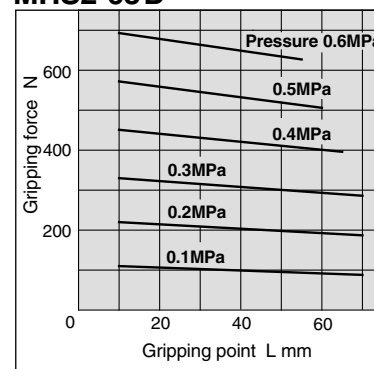
MHS2-40D



MHS2-50D



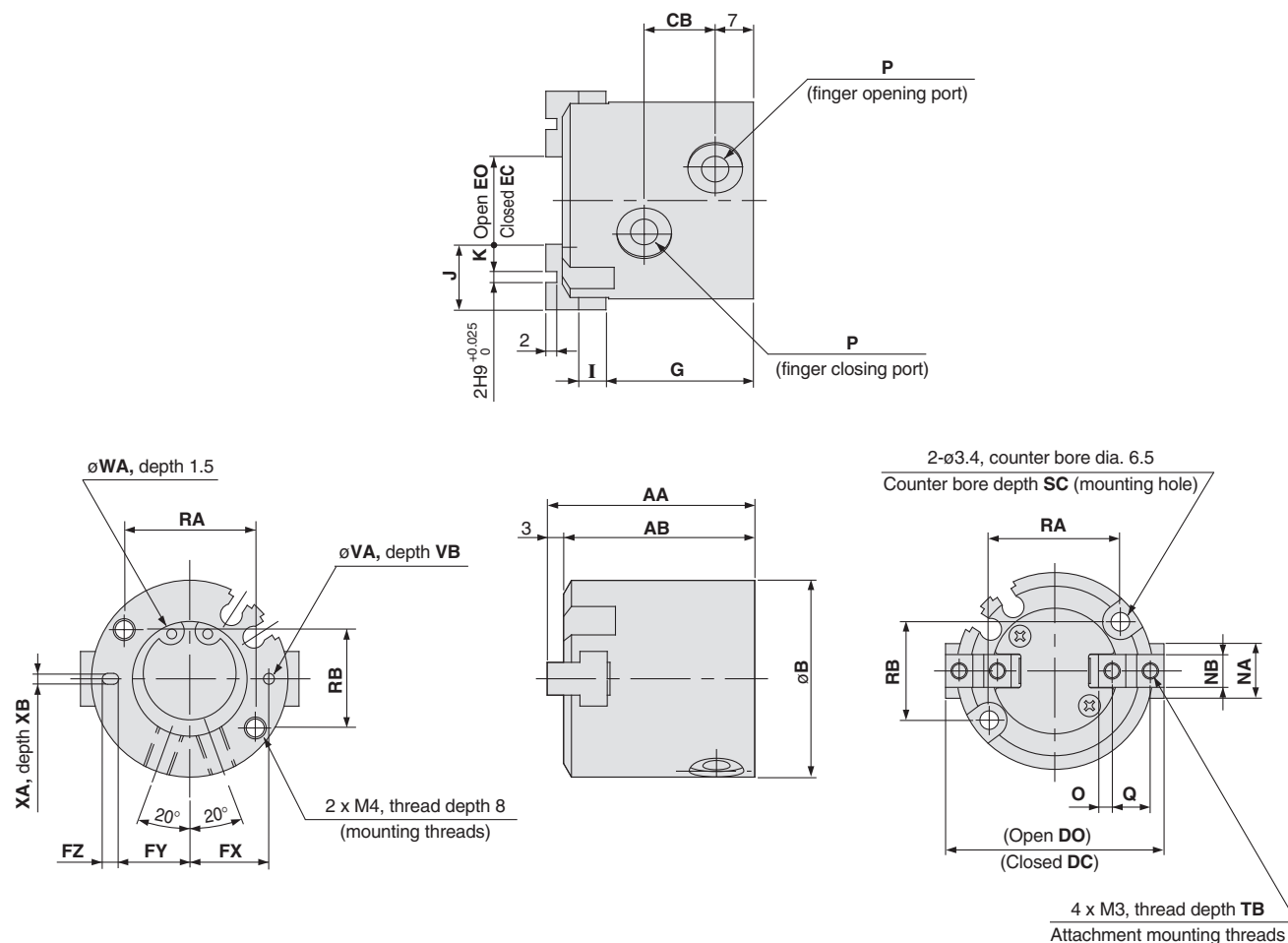
MHS2-63D



Series MHS2

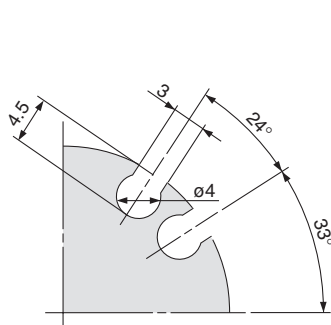
Dimensions

MHS2-16D to 25D

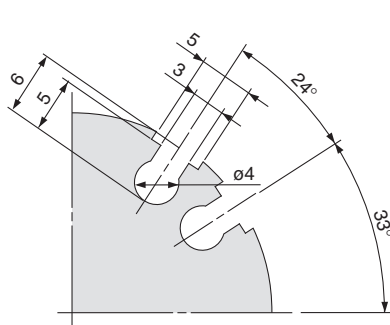


Auto switch mounting groove positions (2 locations)

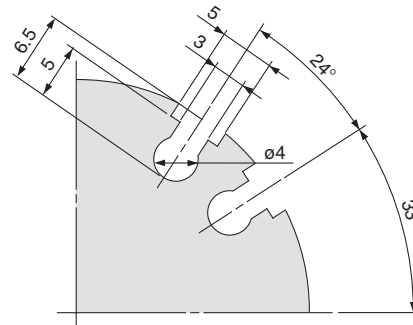
MHS2-16D



MHS2-20D



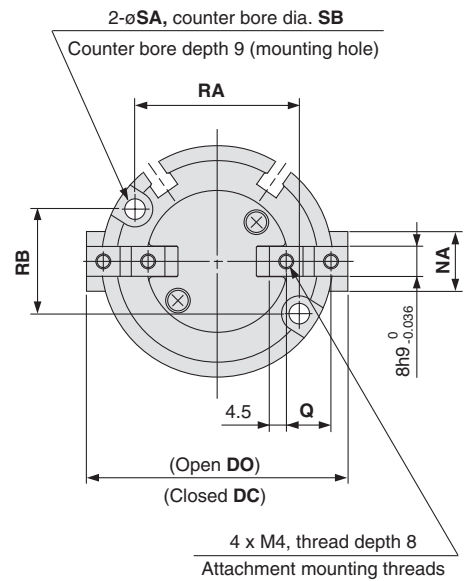
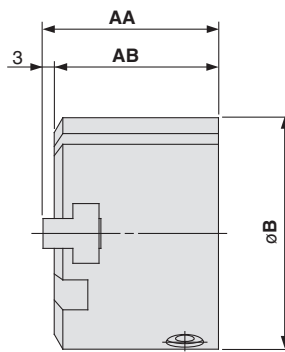
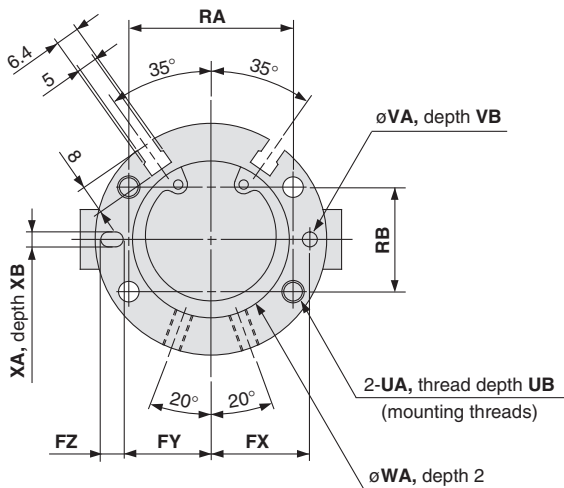
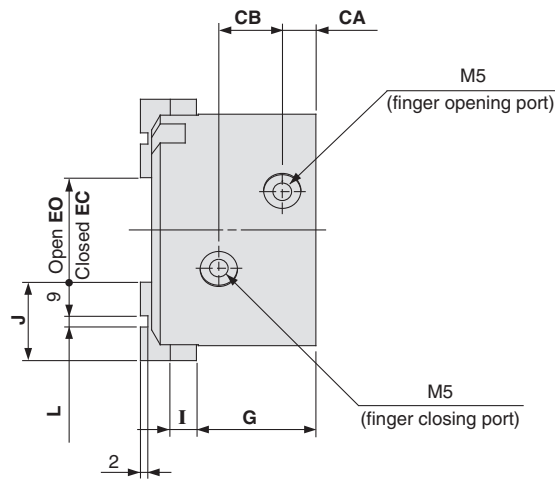
MHS2-25D



Model	AA	AB	B	CB	DC	DO	EC	EO	FX	FY	FZ	G	I	J	K	NA	NB	O	P	Q
MHS2-16D	35	32	30	11	30	34	10	14	12.5	11	3	25	4	10	4	8	5h9 $^{+0.030}_0$	2	M3	6
MHS2-20D	38	35	36	13	36	40	12	16	14.5	13	3	27	5	12	5	10	6h9 $^{+0.030}_0$	2.5	M5	7
MHS2-25D	40	37	42	15	42	48	14	20	17	14.5	5	28	5	14	6	12	6h9 $^{+0.030}_0$	3	M5	8

Model	RA	RB	SC	TB	VA	VB	WA	XA	XB
MHS2-16D	18	16	8	5	2H9 $^{+0.025}_0$	2	17H9 $^{+0.043}_0$	2H9 $^{+0.025}_0$	2
MHS2-20D	24	18	9.5	6	2H9 $^{+0.025}_0$	2	21H9 $^{+0.052}_0$	2H9 $^{+0.025}_0$	2
MHS2-25D	26	22	10	6	3H9 $^{+0.025}_0$	3	26H9 $^{+0.052}_0$	3H9 $^{+0.025}_0$	3

MHS2-32D, 40D



Model	AA	AB	B	CA	CB	DC	DO	EC	EO	FX	FY	FZ	G	I	J	L	NA	Q	RA	RB	SA
MHS2-32D	44	41	56	8	16	56	64	16	24	23	20.5	5	30.5	6	20	2H9 ^{+0.025} ₀	14	11	38	25	4.5
MHS2-40D	47	44	62	9	17	62	70	20	28	26.5	23.5	6	32	7	21	3H9 ^{+0.025} ₀	16	12	44	28	5.5

Model	SB	UA	UB	VA	VB	WA	XA	XB
MHS2-32D	8	M5	10	3H9 ^{+0.025} ₀	3	34H9 ^{+0.062} ₀	3H9 ^{+0.025} ₀	3
MHS2-40D	9.5	M6	12	4H9 ^{+0.030} ₀	4	42H9 ^{+0.062} ₀	4H9 ^{+0.030} ₀	4

