

2 Finger, 3 Finger, 4 Finger Air Gripper Parallel Type

Series MHS

ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100, ø125



Long Finger Stroke Type
Protective Boots Available
Available With Center Pusher

Lightweight, compact design with reduced height

Long stroke (MHSL3) introduced to upgraded series.

High repeatability: $\pm 0.01\text{mm}$ (0.0004in)

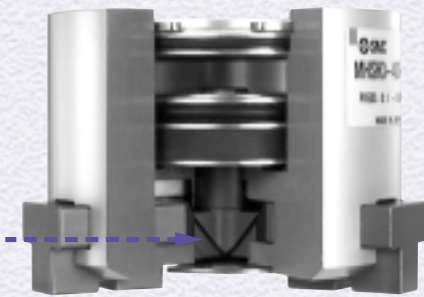
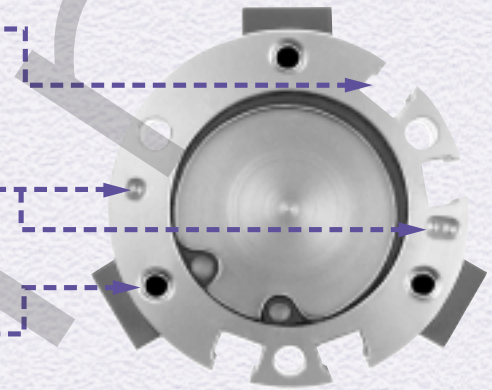
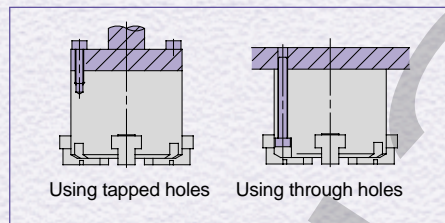
Auto switch capable

A wide variety of solid state auto switches can be mounted using the body's side mounting grooves. Selections include 2 color indication and water resistant types.

Easy alignment when mounting

Positioning pin holes are provided on the top of the gripper.

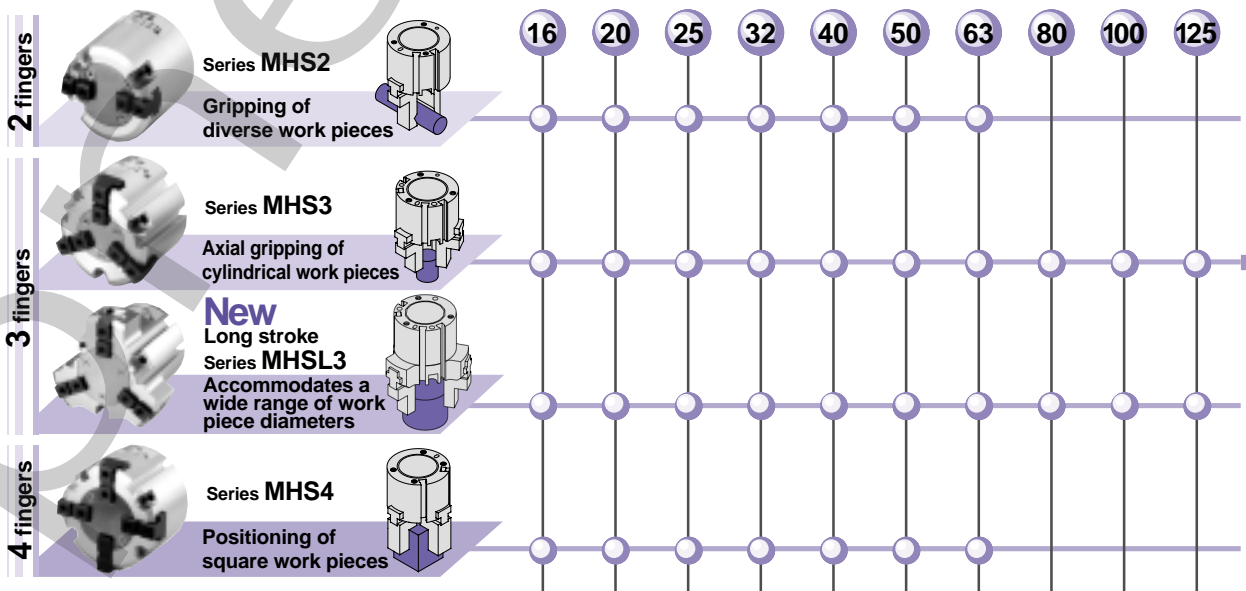
Can be mounted from two directions



Employs wedge cam construction

The wedge cam mechanism allows strong gripping force to be obtained from a compact design.

Series Variations

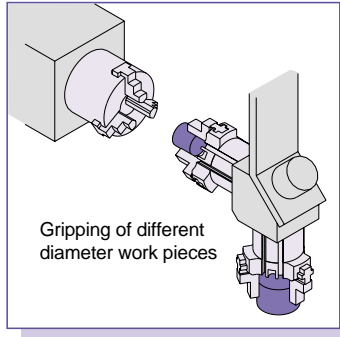


Ideal for gripping work pieces of different diameters.

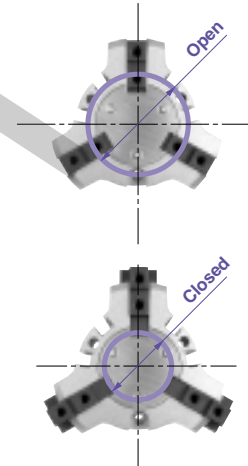
New Long Stroke **MHSL3**



Opening/closing stroke more than twice the standard (MHS3)



Cylinder bore size mm	Stroke mm	Height mm	Weight g
	Dia.: Open - Closed		
16	10 (4)	43.5	80
20	12 (6)	46	135
25	16 (8)	49	180
32	20 (8)	58	370
40	28 (12)	64	550
50	32 (16)	77.5	930
63	40 (20)	89	1,550
80	48 (24)	116	2,850
100	48 (24)	135	5,500
125	64 (32)	175	11,300



- The mounting pitch is compatible with the standard type.

Standard inside () /MHS3 stroke

Note: 25.4mm = 1in ; 1g = 0.0022lb

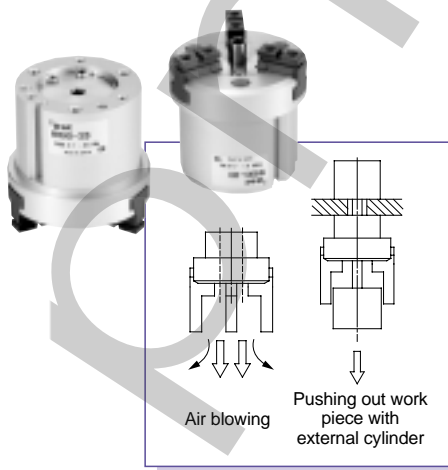
MHS3 variations

With dust cover/MHSJ3



		Cylinder bore size (mm)							
		16	20	25	32	40	50	63	80
MHSJ3	With dust cover	•	•	•	•	•	•	•	•
	Through hole	•	•	•	•	•	•	•	•
MHSH3	With center pusher (cylinder type)	•	•	•	•	•	•	•	•
	With center pusher (spring type)	•	•	•	•	•	•	•	•
MHSHJ3	Through hole with dust cover	•	•	•	•	•	•	•	•
	With dust cover/center pusher (cylinder type)	•	•	•	•	•	•	•	•
	With dust cover/center pusher (spring type)	•	•	•	•	•	•	•	•

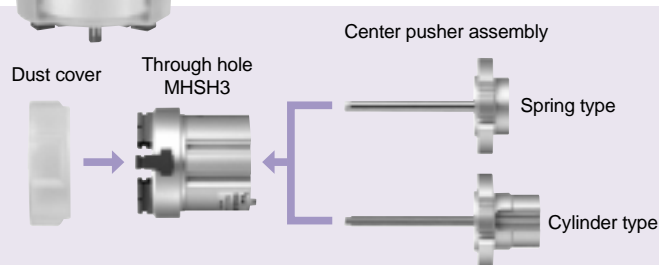
Through hole/MHSH3



With dust cover/center pusher



The dust cover and center pusher assembly can be modularized for the through hole MHSJ3.



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 - F9N** []

Number of fingers
2 2 fingers

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

Action
D Double acting

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

Auto switch type
Nil Without auto switch (built-in magnet)

Auto switch specifications

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch models		Lead wire length (m)*			Applicable loads
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)	
							Perpendicular	In-line				
Solid state	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	F9NV	F9N	●	●	—	Relay, PLC
				3 wire (PNP)					F9PV	F9P	●	
				2 wire	F9BV	F9B	●	●	—			
					—	F9BA	—	●	○	—		

* Lead wire length symbols: 0.5m Nil (Example) F9B
3m L (Example) F9BL
5m Z (Example) F9BZ

D-F9BA is available only as "L".

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

Note 1) Take note of hysteresis with 2 color indication type switches.

Note 2) Refer to pages 53 through 65 for detailed auto switch specifications.

Cylinder Bore Size

ø32 to ø63 **MHS 2 - 50 D - Y59A** []

Number of fingers
2 2 fingers

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

Action
D Double acting

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

Auto switch type
Nil Without auto switch (built-in magnet)

Auto switch specifications

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch models		Lead wire length (m)*			Applicable loads
					DC	AC	In-line	Perpendicular	0.5 (Nil)	3 (L)	5 (Z)	
Solid state	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	Y69A	Y59A	●	●	○	IC circuit
				3 wire (PNP)					Y7PV	Y7P	●	
				2 wire	Y69B	Y59B	●	●	○	—		
				3 wire (NPN)	Y7NWV	Y7NW	●	●	○	IC circuit		
				3 wire (PNP)	Y7PWV	Y7PW	●	●	○			
				2 wire	Y7BWV	Y7BW	●	●	○	—		
—	Y7BA	—	●	○	—	—						

* Lead wire length symbols: 0.5m Nil (Example) Y59B
3m L (Example) Y59BL
5m Z (Example) Y59BZ

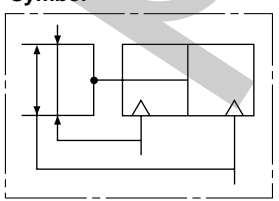
D-Y7BA is available only as "L".

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

Note 1) Take note of hysteresis with 2 color indication type switches.

Note 2) Refer to pages 53 through 65 for detailed auto switch specifications.

Symbol



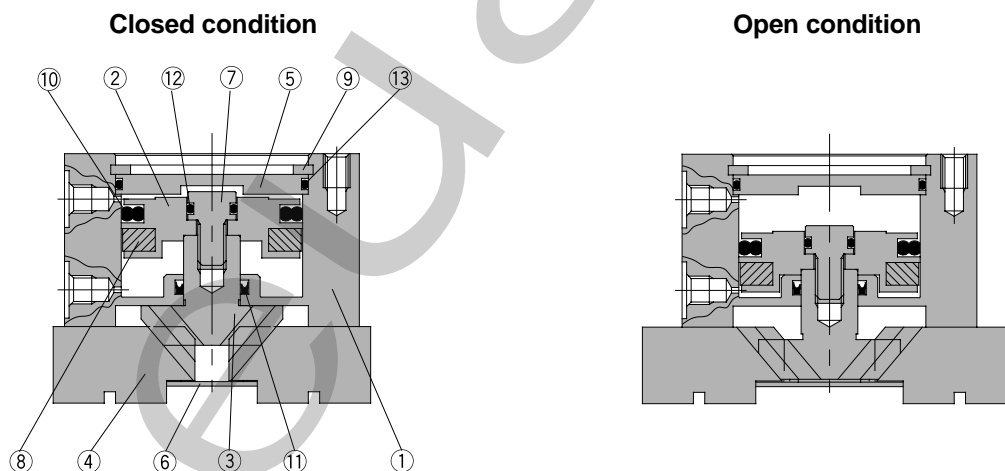
Models and Specifications



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 (psi)	0.2 to 0.6 (29 to 87)			0.1 to 0.6 (15 to 87)			
Ambient and fluid temperature	-10 to 60°C (14 to 140°F)						
Repeatability mm	±0.01 (0.0004in)						
Max. operating frequency c.p.m.	120			60			
Lubrication	Non-lube						
Action	Double acting						
Effective gripping force ^{Note 1)} N (lb _f) at pressure of 0.5MPa (72psi)	External gripping force	21 (4.7)	37 (8.3)	63 (14.1)	111 (25.0)	177 (39.8)	280 (62.9)
	Internal gripping force	23 (5.2)	42 (9.4)	71 (16.0)	123 (27.7)	195 (43.8)	306 (68.8)
Opening/closing stroke (both sides) mm	4	4	6	8	8	12	16
Weight g (oz)	58 (2.0)	96 (3.4)	134 (4.7)	265 (9.4)	345 (12.2)	515 (18.2)	952 (33.6)

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 3 and 4 for the gripping force at each gripping position.

Construction



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

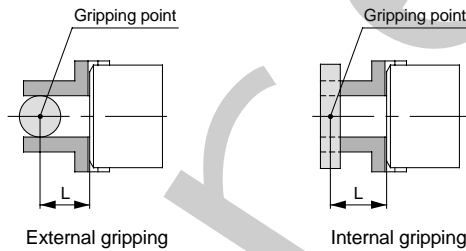
* Seal kits are sets consisting of items 10, 11, 12 and 13, which can be ordered using the kit number for each cylinder bore size.

Series MHS2

2 Finger Air Gripper

Gripping Point

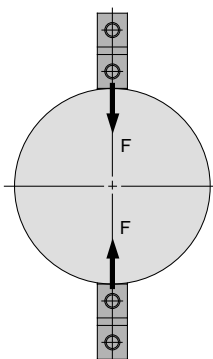
- The work piece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the work piece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the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



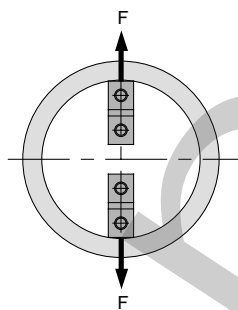
L: Gripping point distance

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

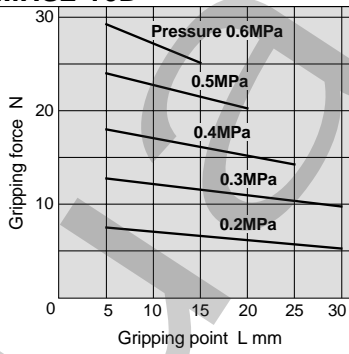


Internal gripping

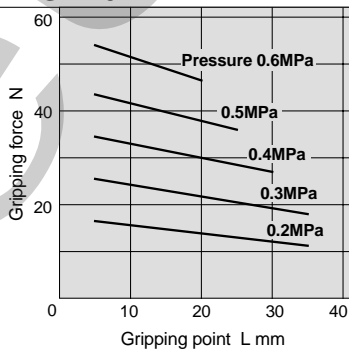
Note: 1N = 0.2248lb_f
1in = 25.4mm
1MPa = 145psi

External gripping force

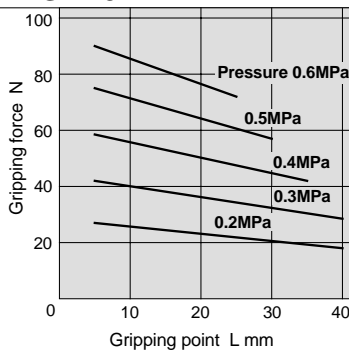
MHS2-16D



MHS2-20D

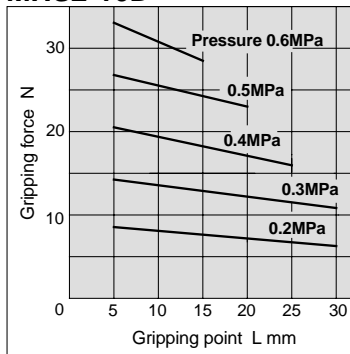


MHS2-25D

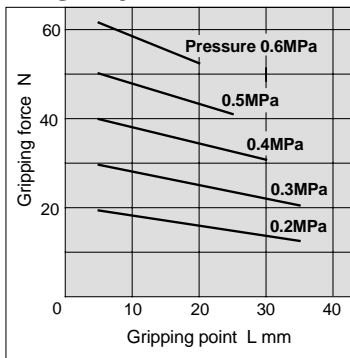


Internal gripping force

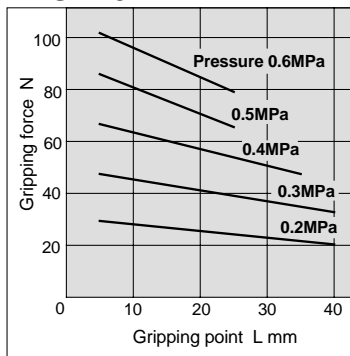
MHS2-16D



MHS2-20D

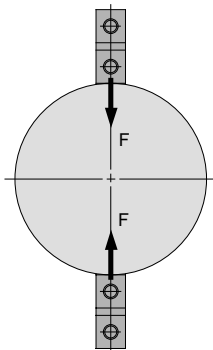


MHS2-25D

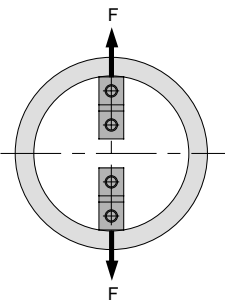


Effective Gripping Force

- 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

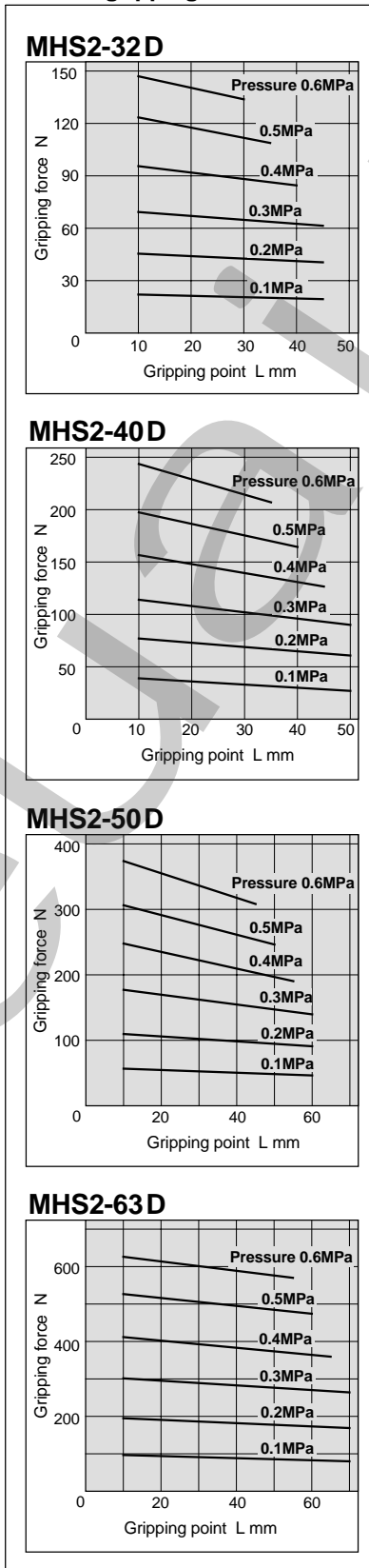


Internal gripping

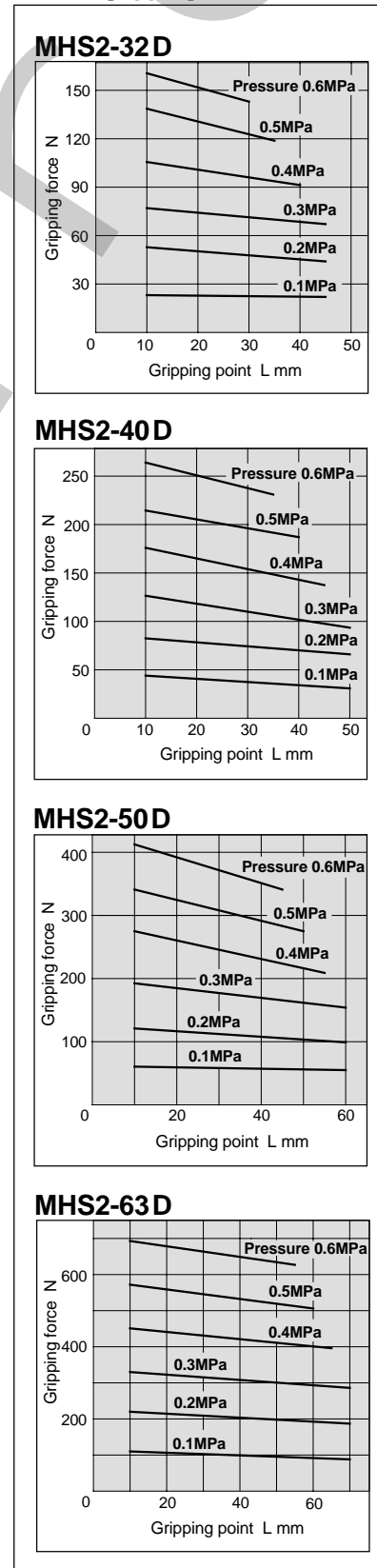
1N: Approx. 0.102kgf
1MPa: Approx. 10.2kgf/cm²

Note: 1N = 0.2248lbf
1in = 25.4mm
1MPa = 145psi

External gripping force



Internal gripping force



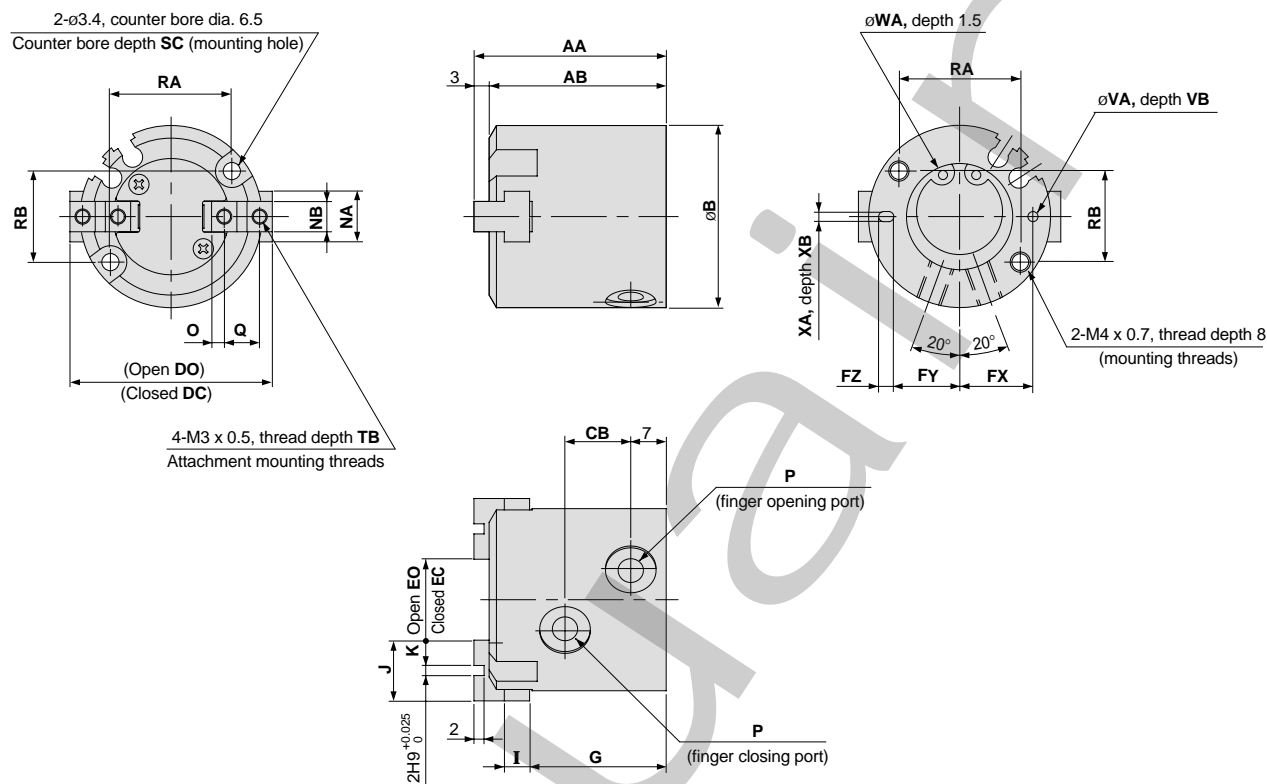
Series MHS2

2 Finger Air Gripper

Dimensions (mm)

1 in = 25.4mm

MHS2-16D to 25D

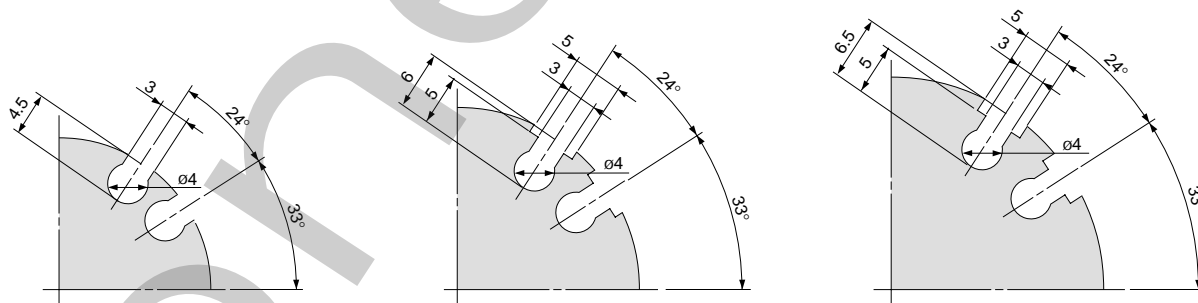


Auto switch mounting groove positions (2 locations)

MHS2-16D

MHS2-20D

MHS2-25D



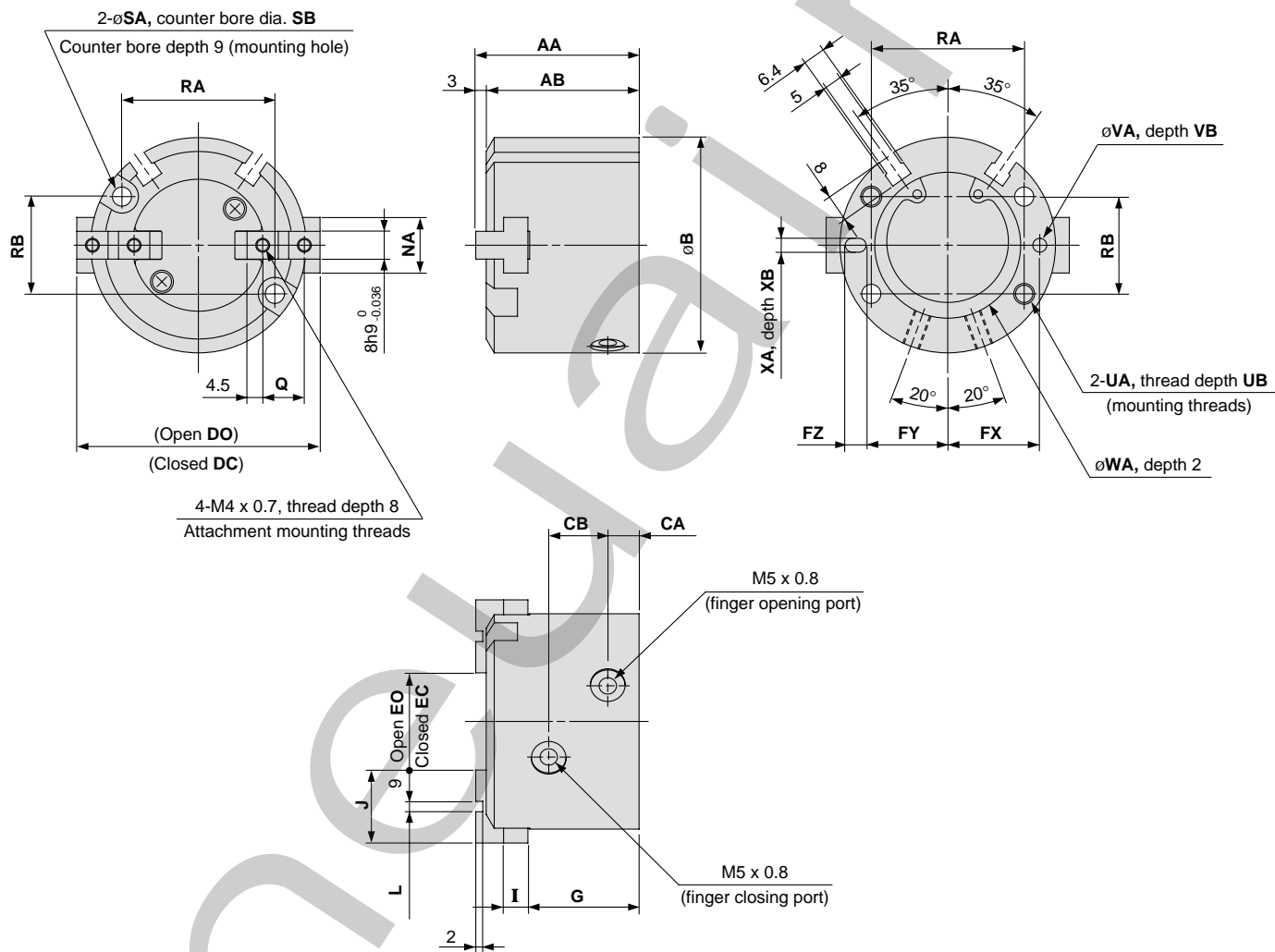
Model	AA	AB	B	CB	DC	DO	EC	EO	FX	FY	FZ	G	I	J	K	NA	NB	O	P	Q
MHS2-16D	35	32	30	11	30	34	10	14	12.5	11	3	25	4	10	4	8	5h9 ₀ ⁰ -0.030	2	M3 x 0.5	6
MHS2-20D	38	35	36	13	36	40	12	16	14.5	13	3	27	5	12	5	10	6h9 ₀ ⁰ -0.030	2.5	M5 x 0.8	7
MHS2-25D	40	37	42	15	42	48	14	20	17	14.5	5	28	5	14	6	12	6h9 ₀ ⁰ -0.030	3	M5 x 0.8	8

Model	RA	RB	SC	TB	VA	VB	WA	XA	XB
MHS2-16D	18	16	8	5	2H9 ₀ ^{+0.025}	2	17H9 ₀ ^{+0.043}	2H9 ₀ ^{+0.025}	2
MHS2-20D	24	18	9.5	6	2H9 ₀ ^{+0.025}	2	21H9 ₀ ^{+0.052}	2H9 ₀ ^{+0.025}	2
MHS2-25D	26	22	10	6	3H9 ₀ ^{+0.025}	3	26H9 ₀ ^{+0.052}	3H9 ₀ ^{+0.025}	3

Dimensions (mm)

1 in = 25.4mm

MHS2-32D, 40D



(mm)

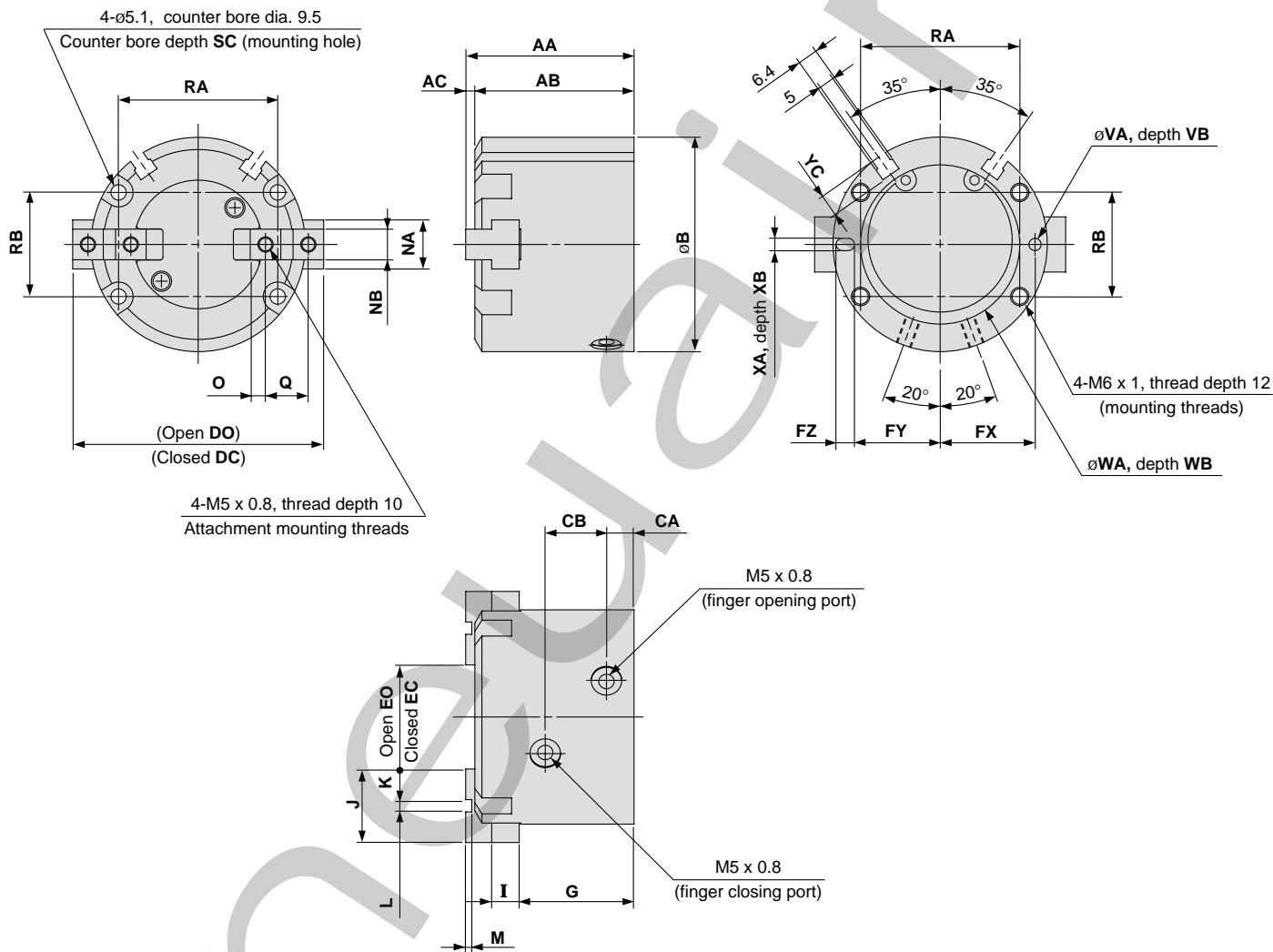
Model	AA	AB	B	CA	CB	DC	DO	EC	EO	FX	FY	FZ	G	I	J	L	NA	Q	RA	RB	SA
MHS2-32D	44	41	56	8	16	56	64	16	24	23	20.5	5	30.5	6	20	2H9 $\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	14	11	38	25	4.5
MHS2-40D	47	44	62	9	17	62	70	20	28	26.5	23.5	6	32	7	21	3H9 $\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$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

Model	SB	UA	UB	VA	VB	WA	XA	XB
MHS2-32D	8	M5 x 0.8	10	3H9 $\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	3	34H9 $\begin{smallmatrix} +0.062 \\ 0 \end{smallmatrix}$	3H9 $\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	3
MHS2-40D	9.5	M6 x 1	12	4H9 $\begin{smallmatrix} +0.030 \\ 0 \end{smallmatrix}$	4	42H9 $\begin{smallmatrix} +0.062 \\ 0 \end{smallmatrix}$	4H9 $\begin{smallmatrix} +0.030 \\ 0 \end{smallmatrix}$	4

Dimensions (mm)

1in = 25.4mm

MHS2-50D, 63D



Model	AA	AB	AC	B	CA	CB	DC	DO	EC	EO	FX	FY	FZ	G	I	J	K	L	M	NA	NB
MHS2-50D	55	52	3	70	9	20	70	82	22	34	31	28	6	37.5	9	24	10	4H9 ^{+0.030} ₀	2	18	10h9 ⁰ _{-0.036}
MHS2-63D	66	62	4	86	12	22	86	102	30	46	38	34.5	7	44	11	28	11	6H9 ^{+0.030} ₀	3	24	12h9 ⁰ _{-0.043}

Model	O	Q	RA	RB	SC	VA	VB	WA	WB	XA	XB	YC
MHS2-50D	5	14	52	34	12	4H9 ^{+0.030} ₀	4	52H9 ^{+0.074} ₀	2	4H9 ^{+0.030} ₀	4	7
MHS2-63D	5.5	17	66	38	14	5H9 ^{+0.030} ₀	5	65H9 ^{+0.074} ₀	2.5	5H9 ^{+0.030} ₀	5	7.5