Parallel Type Air Gripper/4-Finger Type

MHS4 Series

ø16, ø20, ø25, ø32, ø40, ø50, ø63

How to Order

Bore size

ø16 to ø25

MHS4 – 20 D – M9BW □ – □

Number of fingers

4	4 fingers

Bore size

16	16 mm
20	20 mm
25	25 mm

Action

D	Double acting

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.

Made to Order
Refer to page 629 for details.

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

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model: Perpendicular	Auto switch model: In-line	Lead wire length (m)∗: 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○		
				2-wire		12V		M9BV	M9B	●	●	●	○	○	—	
	Diagnosis (2-color indicator)			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 indicator)			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

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

Note) 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.

Bore size

ø32 to ø63

MHS4 – 50 D – M9BW □ – □

Number of fingers

4	4 fingers

Bore size

32	32 mm
40	40 mm
50	50 mm
63	63 mm

Action

D	Double acting

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.

Made to Order
Refer to page 629 for details.

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

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model: Perpendicular	Auto switch model: In-line	Lead wire length (m)∗: 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○		
				2-wire		12 V		M9BV	M9B	●	●	●	○	○	—	
	Diagnosis (2-color indicator)			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 indicator)			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.

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1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ

∗ Auto switches marked with a "○" symbol 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 auto switch, auto switch mounting brackets are supplied with the air gripper having a bore size of ø32 to ø125.
Note 3) When ordering the auto switch separately, auto switch mounting brackets (BMG2-012) are required.

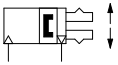
Models/Specifications

Model		MHS4-16D	MHS4-20D	MHS4-25D	MHS4-32D	MHS4-40D	MHS4-50D	MHS4-63D
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		Not required						
Action		Double acting						
Effective gripping force (N) at 0.5 MPa Note 1)	External grip	10	19	31	55	88	140	251
	Internal grip	12	21	35	61	97	153	268
Opening/Closing stroke (mm)		4	4	6	8	8	12	16
Weight (g)		66	110	154	300	390	590	1,095

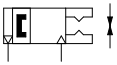
Note 1) Values for ø16 to ø25 are with gripping point L = 20 mm, for ø32 to ø63 with gripping point L = 30 mm. Refer to "Effective Gripping Force" data on pages 631 and 632 for the gripping force at each gripping position.

Symbol

Double acting:
Internal grip



Double acting:
External grip



Made to Order
Click here for details

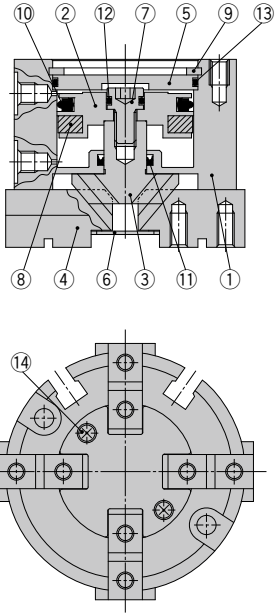
Symbol	Specifications/Description
-X4	Heat resistance (100°C)
-X5	Fluororubber seal
-X50	Without magnet
-X53	EPDM seal/Fluorine grease
-X56	Axial ported
-X63	Fluorine grease
-X79	Grease for food processing machines, Fluorine grease
-X79A	Grease for food processing machines

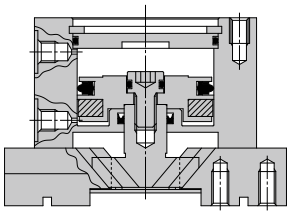
Refer to pages 636 to 643 for the specifications of products with auto switches.

- Auto switch installation examples and mounting positions
- Auto switch hysteresis
- Auto switch mounting
- Protrusion of auto switch from edge of body

Construction

Closed condition **Open condition**





Component Parts

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	**Magnet**	—	
9	**Type C retaining ring**	Carbon steel	Phosphate coated
10	**Piston seal**	NBR	
11	**Rod seal**	NBR	
12	**Gasket**	NBR	
13	**Gasket**	NBR	
14	**Cross recessed flat head screw**	Carbon steel	Zinc chromated

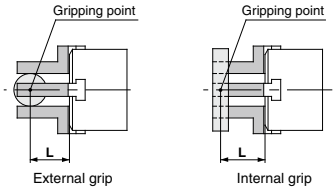
Replacement Parts

Description	MHS4-16D	MHS4-20D	MHS4-25D	MHS4-32D	MHS4-40D	MHS4-50D	MHS4-63D	Main parts
Seal kit	MHS16-PS	MHS20-PS	MHS25-PS	MHS32-PS	MHS40-PS	MHS50-PS	MHS63-PS	⑩⑪⑫⑬
Finger	P3316004	P3316104	P3316204	P3316304	P3316404	P3316504	P3316604	④
Cam	P3316043	P3316143	P3316243	P3316343	P3316443	P3316543	P3316643	③
Piston assembly	MHS-A1601	MHS-A2001	MHS-A2501	MHS-A3201	MHS-A4001	MHS-A5001	MHS-A6301	②⑦⑧
End plate assembly	MHS-A1613-4	MHS-A2013-4	MHS-A2513-4	MHS-A3213-4	MHS-A4013-4	MHS-A5013-4	MHS-A6313-4	⑥⑭
Cap	MHS-A1614	MHS-A2014	MHS-A2514	MHS-A3214	MHS-A4014	MHS-A5014	MHS-A6314	⑤

∗ Order 4 pieces of fingers for one unit.
Replacement part/Grease pack part no.: MH-G01 (30 g)

Gripping Point

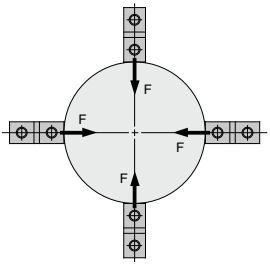
- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the workpiece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the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



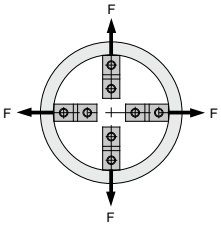
L: Gripping point distance

Effective Gripping Force

- 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 workpiece. The gripping force of MHS4 series is the same as MHS2 series while one pair of opposite fingers is used to grip the workpiece and the other pair of fingers is used for positioning.



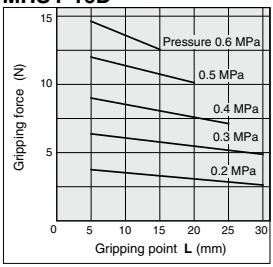
External grip



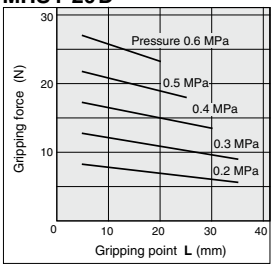
Internal grip

External Gripping Force

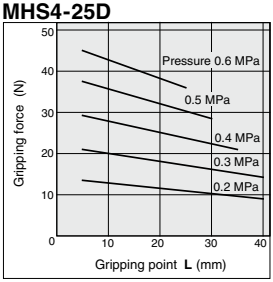
MHS4-16D



MHS4-20D

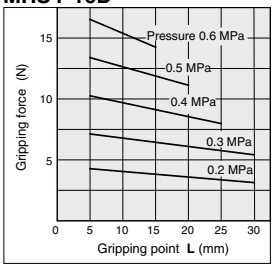


MHS4-25D

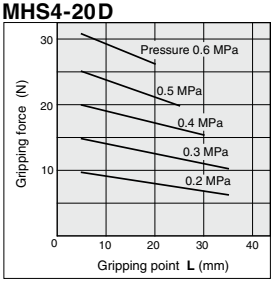


Internal Gripping Force

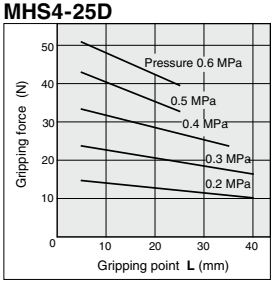
MHS4-16D



MHS4-20D



MHS4-25D



Effective Gripping Force

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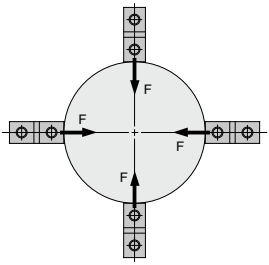
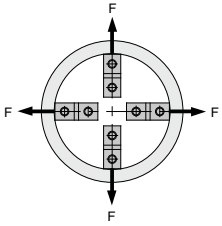
The gripping force shown in the tables represents the gripping force of one finger when all fingers and attachments are in contact with the workpiece. The gripping force of MHS4 series is the same as MHS2 series while one pair of opposite fingers is used to grip the workpiece and the other pair of fingers is used for positioning.



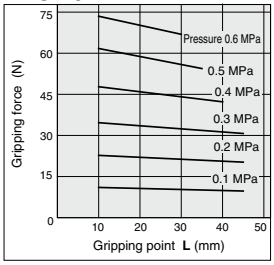
External grip



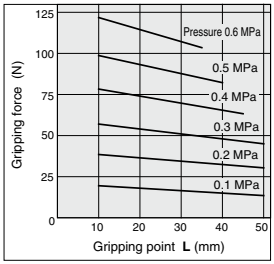
Internal grip

External Gripping Force

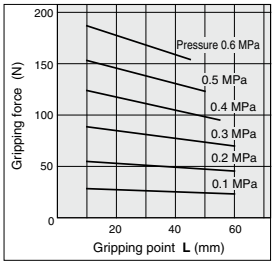
MHS4-32D



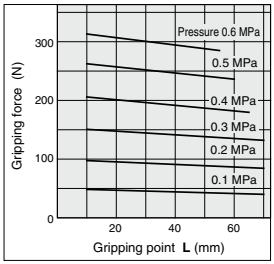
MHS4-40D



MHS4-50D

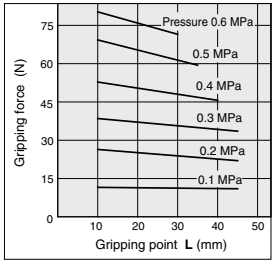


MHS4-63D

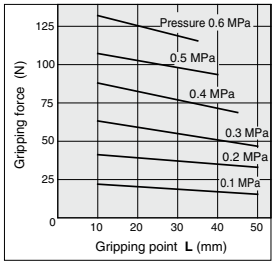


Internal Gripping Force

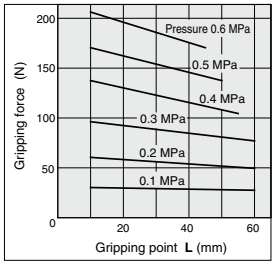
MHS4-32D



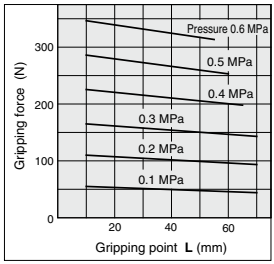
MHS4-40D



MHS4-50D

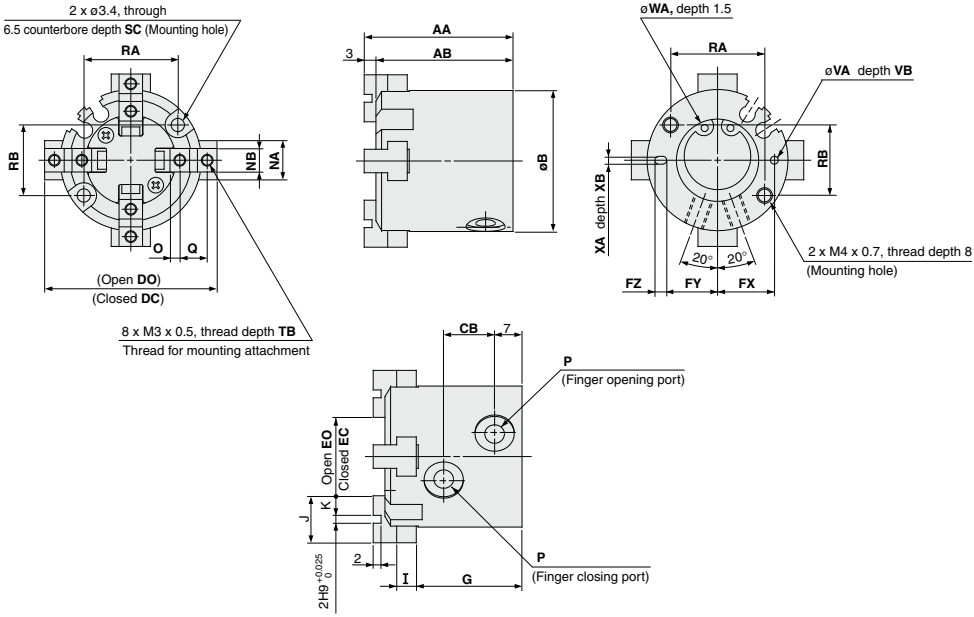


MHS4-63D



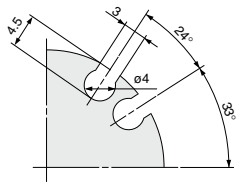
Dimensions

MHS4-16D to 25D

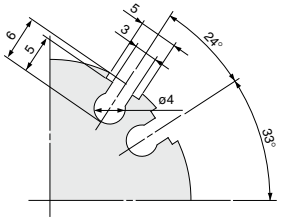


Auto switch mounting groove dimensions (2 locations)

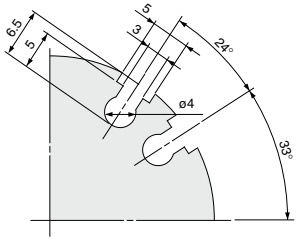
MHS4-16D



MHS4-20D



MHS4-25D



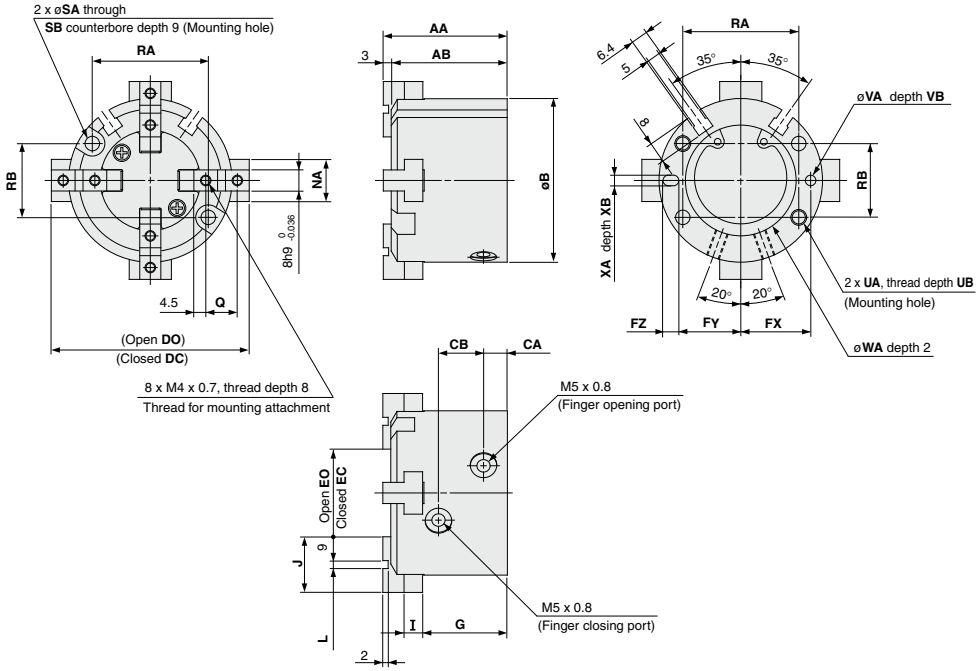
(mm)

Model	AA	AB	B	CB	DC	DO	EC	EO	FX	FY	FZ	G	I	J	K	NA	NB	O	P	Q
MHS4-16D	35	32	30	11	33	37	13	17	12.5	11	3	25	4	10	4	8	5h9 $^{0}_{-0.030}$	2	M3 x 0.5	6
MHS4-20D	38	35	36	13	39	43	15	19	14.5	13	3	27	5	12	5	10	6h9 $^{0}_{-0.030}$	2.5	M5 x 0.8	7
MHS4-25D	40	37	42	15	48	54	20	26	17	14.5	5	28	5	14	6	12	6h9 $^{0}_{-0.030}$	3	M5 x 0.8	8

Model	RA	RB	SC	TB	VA	VB	WA	XA	XB
MHS4-16D	18	16	8	5	2H9 $^{+0.025}_{0}$	2	17H9 $^{+0.043}_{0}$	2H9 $^{+0.025}_{0}$	2
MHS4-20D	24	18	9.5	6	2H9 $^{+0.025}_{0}$	2	21H9 $^{+0.052}_{0}$	2H9 $^{+0.025}_{0}$	2
MHS4-25D	26	22	10	6	3H9 $^{+0.025}_{0}$	3	26H9 $^{+0.052}_{0}$	3H9 $^{+0.025}_{0}$	3

Dimensions

MHS4-32D/40D

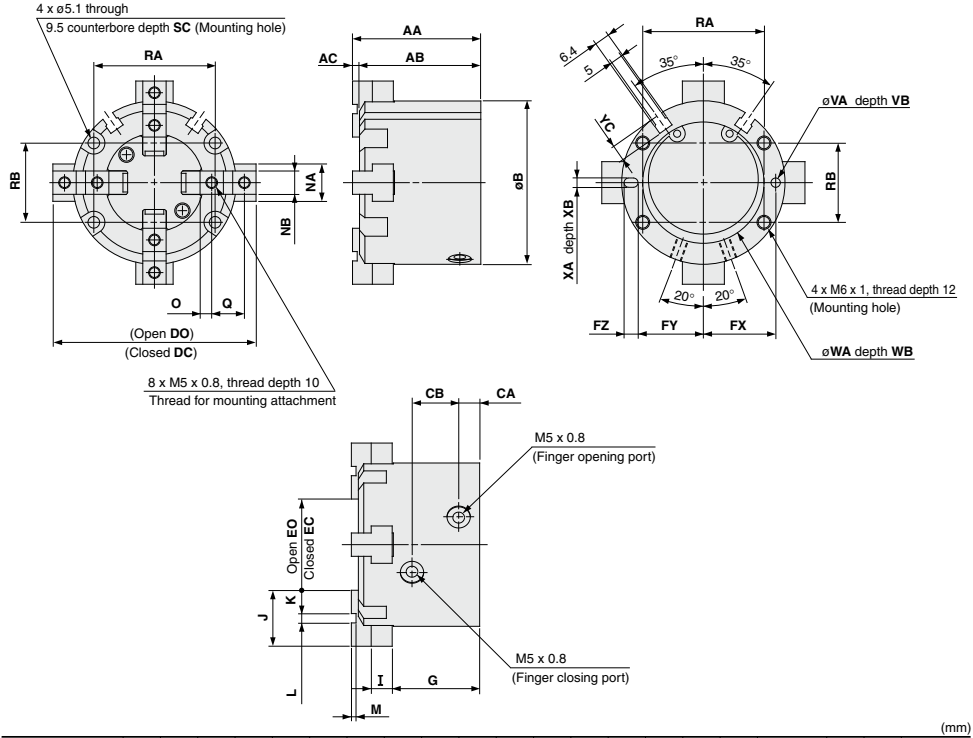


(mm)

Model	AA	AB	B	CA	CB	DC	DO	EC	EO	FX	FY	FZ	G	I	J	L	NA	Q	RA	RB	SA
MHS4-32D	44	41	56	8	16	60	68	20	28	23	20.5	5	30.5	6	20	2H9 $^{+0.025}_{0}$	14	11	38	25	4.5
MHS4-40D	47	44	62	9	17	66	74	24	32	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
MHS4-32D	8	M5 x 0.8	10	3H9 $^{+0.025}_{0}$	3	34H9 $^{+0.062}_{0}$	3H9 $^{+0.025}_{0}$	3
MHS4-40D	9.5	M6 x 1	12	4H9 $^{+0.030}_{0}$	4	42H9 $^{+0.062}_{0}$	4H9 $^{+0.030}_{0}$	4

MHS4-50D/63D

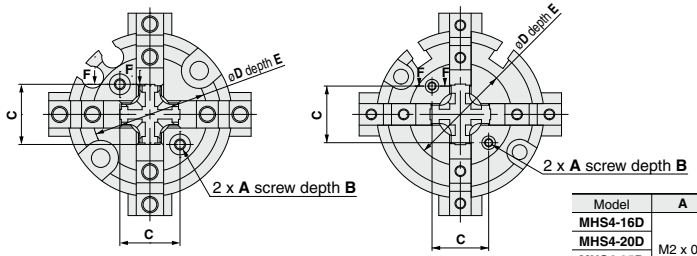


(mm)

Model	AA	AB	AC	B	CA	CB	DC	DO	EC	EO	FX	FY	FZ	G	I	J	K	L	M	NA	NB
MHS4-50D	55	52	3	70	9	20	74	86	26	38	31	28	6	37.5	9	24	10	4H9 $^{+0.030}_{0}$	2	18	10h9 $^{0}_{-0.036}$
MHS4-63D	66	62	4	86	12	22	91	107	35	51	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
MHS4-50D	5	14	52	34	12	4H9 $^{+0.030}_{0}$	4	52H9 $^{+0.074}_{0}$	2	4H9 $^{+0.030}_{0}$	4	7
MHS4-63D	5.5	17	66	38	14	5H9 $^{+0.030}_{0}$	5	65H9 $^{+0.074}_{0}$	2.5	5H9 $^{+0.030}_{0}$	5	7.5

MHS4 Series Detailed Dimensions of Mounting Portion of End Plate



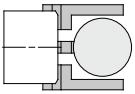
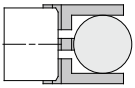
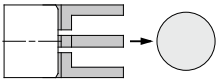
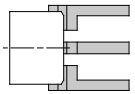
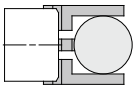
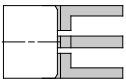
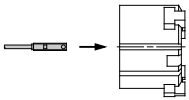
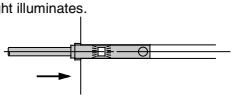
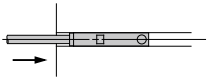
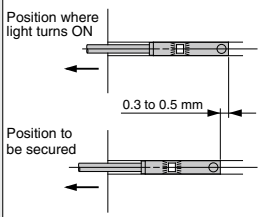
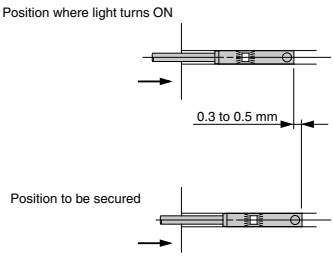
ø**16** to ø**25** ø**32** to ø**63**

Model	A	B	C	øD	E
MHS4-16D	M2 x 0.4	5.5	11	21 $^{+0.1}_{0}$	0.5
MHS4-20D		5.4	13	24 $^{+0.1}_{0}$	0.6
MHS4-25D			15	27 $^{+0.1}_{0}$	
MHS4-32D		5.2	18	32 $^{+0.1}_{0}$	0.8
MHS4-40D	M3 x 0.5	8	21	38 $^{+0.1}_{0}$	1
MHS4-50D			24	42 $^{+0.1}_{0}$	
MHS4-63D			32	54 $^{+0.1}_{0}$	

MHS Series
Auto Switch Installation Examples and Mounting Positions

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

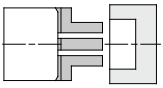
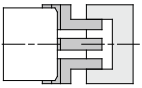
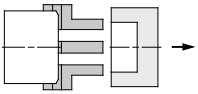
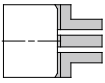
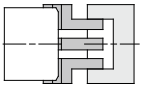
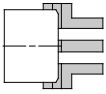
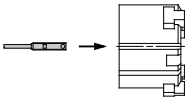
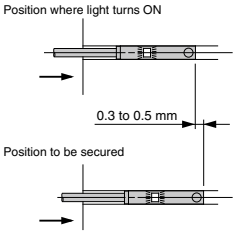
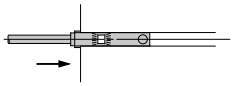
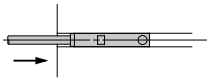
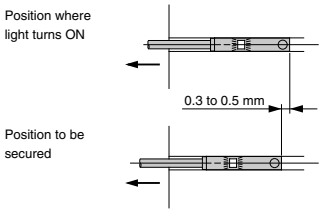
1) Detection when Gripping Exterior of Workpiece

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. 		Also, in case of lead wire entry from the finger direction, installation should be from the direction shown in the drawing.
	Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates.  Step 4) Slide the auto switch in the direction of the arrow until the indicator light goes out.  Step 5) Move the auto switch in the opposite direction until the indicator light illuminates. Move the switch further 0.3 to 0.5 mm beyond the position where the indicator light illuminates and fasten it. 	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.

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

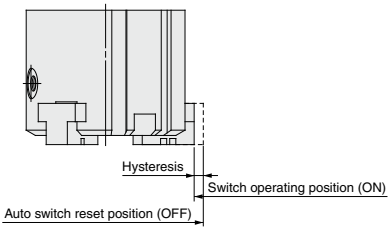
2) Detection when Gripping Interior of Workpiece

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.  Also, in case of lead wire entry from the finger direction, installation should be from the direction shown in the drawing.		
	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. 	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 an 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 Hysteresis

Auto switches have hysteresis similar to micro switches. Use the table below as a guide when adjusting auto switch positions, etc.



MHS□/MHSL Series

(mm)

Air gripper model \ Auto switch model	Hysteresis (Max. value) D-M9□(V) D-M9□W(V) D-M9□A(V)
MHS□ MHSL3 - 16D	0.5
MHS□ MHSL3 - 20D	0.5
MHS□ MHSL3 - 25D	0.5
MHS□ MHSL3 - 32D	0.6
MHS□ MHSL3 - 40D	0.6
MHS□ MHSL3 - 50D	0.6
MHS□ MHSL3 - 63D	0.6
MHS□ MHSL3 - 80D	0.6
MHS□ MHSL3 -100D	0.6
MHS□ MHSL3 -125D	0.6

(mm)

Air gripper model \ Auto switch model	Hysteresis (Max. value) D-Y59□/Y69□/Y7P(V) D-Y7□W(V)/Y7BA
MHS□ MHSL3 - 32D	0.7
MHS□ MHSL3 - 40D	0.5
MHS□ MHSL3 - 50D	0.5
MHS□ MHSL3 - 63D	0.5
MHS□ MHSL3 - 80D	0.5
MHS□ MHSL3 -100D	0.5
MHS□ MHSL3 -125D	0.5

Note) The actual mounting position should be adjusted after confirming the auto switch performance.

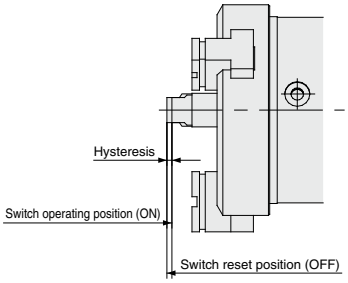
MHSJ/MHSH Series

(mm)

Air gripper model \ Auto switch model	Hysteresis (Max. value) D-M9□(V) D-M9□W(V) D-M9□A(V)
MHSJ3 MHSH3 -16D	0.5
MHSJ3 MHSH3 -20D	0.5
MHSJ3 MHSH3 -25D	0.5
MHSJ3 MHSH3 -32D	0.6
MHSJ3 MHSH3 -40D	0.6
MHSJ3 MHSH3 -50D	0.6
MHSJ3 MHSH3 -63D	0.6
MHSJ3 MHSH3 -80D	0.6

Auto Switch Hysteresis

Center pusher/Cylinder type



(mm)

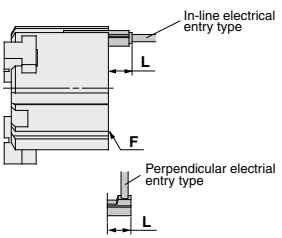
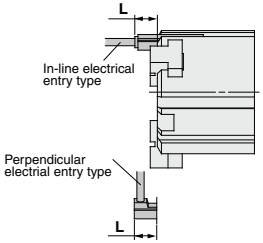
Air gripper model \ Auto switch model	Hysteresis (Max. value)
	D-M9□(V) D-M9□W(V) D-M9□A(V)
MHSH□3-32DA	0.3
MHSH□3-40DA	0.3
MHSH□3-50DA	0.2
MHSH□3-63DA	0.4
MHSH□3-80DA	0.3

Note) The actual mounting position should be adjusted after confirming the auto switch performance.

Protrusion of Auto Switch from Edge of Body

The projection of an auto switch from the edge of the body is shown in the table below.
Use the table as a guideline for mounting.
The MHSJ3 and MHSH3 series are described on another page.

(mm)

Direction of auto switch mounting on air gripper	**Mounting with lead wire on side opposite the fingers**	**Mounting with lead wire on same side as the fingers**
		

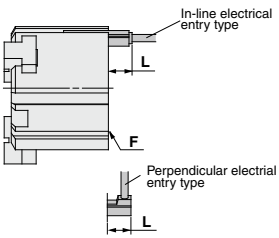
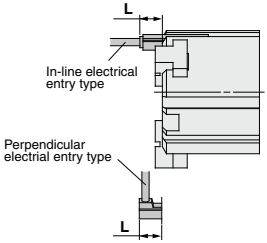
Air gripper model	Lead wire type / Auto switch model / Finger position	In-line entry		Perpendicular entry		In-line entry		Perpendicular entry	
		D-M9□ D-M9□W	**D-M9□A**	**D-M9□V D-M9□WV**	**D-M9□AV**	**D-M9□ D-M9□W**	**D-M9□A**	**D-M9□V D-M9□WV**	**D-M9□AV**
MHS□-16D	Open	—	1	—	—	1	3	—	1
	Closed	5	7	3	5	—	—	—	—
MHS□-20D	Open	—	—	—	—	—	—	—	—
	Closed	5	7	3	5	—	—	—	—
MHS□-25D	Open	—	—	—	—	—	1	—	—
	Closed	3	5	1	3	—	—	—	—
MHSL3-16D	Open	—	1	—	—	—	—	—	—
	Closed	5	7	3	5	—	—	—	—
MHSL3-20D	Open	—	—	—	—	—	—	—	—
	Closed	5	7	3	5	—	—	—	—
MHSL3-25D	Open	—	—	—	—	—	—	—	—
	Closed	3	5	1	3	—	—	—	—
MHS□-32D	Open	—	—	—	—	—	—	—	—
	Closed	5.5	7.5	3.5	5.5	—	—	—	—
MHS□-40D	Open	—	—	—	—	—	—	—	—
	Closed	5	7	3.5	5	—	—	—	—
MHS□-50D	Open	—	—	—	—	—	—	—	—
	Closed	4.5	6.5	2.5	4.5	—	—	—	—
MHS□-63D	Open	—	—	—	—	—	—	—	—
	Closed	2.5	4.5	0.5	2.5	—	—	—	—
MHS□-80D	Open	—	—	—	—	—	—	—	—
	Closed	—	—	—	—	—	—	—	—
MHS□-100D	Open	—	—	—	—	—	—	—	—
	Closed	—	—	—	—	—	—	—	—
MHS□-125D	Open	—	—	—	—	—	—	—	—
	Closed	—	—	—	—	—	—	—	—
MHSL3-32D	Open	—	—	—	—	—	—	—	—
	Closed	5.5	7.5	3.5	5.5	—	—	—	—
MHSL3-40D	Open	—	—	—	—	—	—	—	—
	Closed	5	7	3.5	5	—	—	—	—
MHSL3-50D	Open	—	—	—	—	—	—	—	—
	Closed	4.5	6.5	2.5	4.5	—	—	—	—
MHSL3-63D	Open	—	—	—	—	—	—	—	—
	Closed	2.5	4.5	0.5	2.5	—	—	—	—
MHSL3-80D	Open	—	—	—	—	—	—	—	—
	Closed	—	—	—	—	—	—	—	—
MHSL3-100D	Open	—	—	—	—	—	—	—	—
	Closed	—	—	—	—	—	—	—	—
MHSL3-125D	Open	—	—	—	—	—	—	—	—
	Closed	—	—	—	—	—	—	—	—

Note 1) There is no protrusion for sections of the table with no values entered.
Note 2) When mounted with lead wires on the finger side, be sure that attachments and workpieces, etc., do not touch switch units or lead wires.
Note 3) The actual mounting position should be adjusted after confirming the auto switch performance.

Protrusion of Auto Switch from Edge of Body

The projection of an auto switch from the edge of the body is shown in the table below.
Use the table as a guideline for mounting.

(mm)

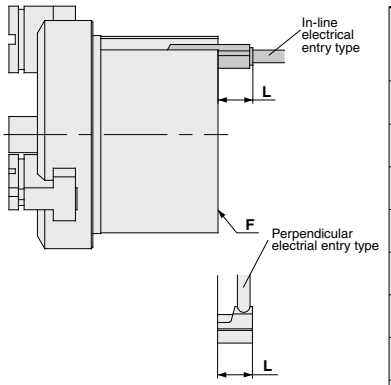
Direction of auto switch mounting on air gripper	**Mounting with lead wire on side opposite the fingers**	**Mounting with lead wire on same side as the fingers**
		

Air gripper model / Auto switch model / Lead wire type / Finger position		In-line entry		Perpendicular entry	In-line entry		Perpendicular entry
		D-Y59□ D-Y7P D-Y7□W	**D-Y7BA**	**D-Y69□ D-Y7PV D-Y7□WV**	**D-Y59□ D-Y7P D-Y7□W**	**D-Y7BA**	**D-Y69□ D-Y7PV D-Y7□WV**
MHS□-32D	Open	—	—	—	—	5	—
	Closed	6	9	4	—	—	—
MHS□-40D	Open	—	—	—	—	2.5	—
	Closed	5.5	8	4	—	—	—
MHS□-50D	Open	—	—	—	—	—	—
	Closed	5	7.5	3	—	—	—
MHS□-63D	Open	—	—	—	—	—	—
	Closed	3	5	1	—	—	—
MHS□-80D	Open	—	—	—	—	—	—
	Closed	—	—	—	—	—	—
MHS□-100D	Open	—	—	—	—	—	—
	Closed	—	—	—	—	—	—
MHS□-125D	Open	—	—	—	—	—	—
	Closed	—	—	—	—	—	—
MHSL3-32D	Open	—	—	—	—	—	—
	Closed	6	9	4	—	—	—
MHSL3-40D	Open	—	—	—	—	—	—
	Closed	5.5	8	4	—	—	—
MHSL3-50D	Open	—	—	—	—	—	—
	Closed	5	7.5	3	—	—	—
MHSL3-63D	Open	—	—	—	—	—	—
	Closed	3	5	1	—	—	—
MHSL3-80D	Open	—	—	—	—	—	—
	Closed	—	—	—	—	—	—
MHSL3-100D	Open	—	—	—	—	—	—
	Closed	—	—	—	—	—	—
MHSL3-125D	Open	—	—	—	—	—	—
	Closed	—	—	—	—	—	—

Note 1) There is no protrusion for sections of the table with no values entered.
Note 2) When mounted with lead wires on the finger side, be sure that attachments and workpieces, etc., do not touch switch units or lead wires.
Note 3) The actual mounting position should be adjusted after confirming the auto switch performance.

Protrusion of Auto Switch from Edge of Body

The projection of an auto switch from the edge of the body is shown in the table below.
Use the table as a guideline for mounting.



(mm)

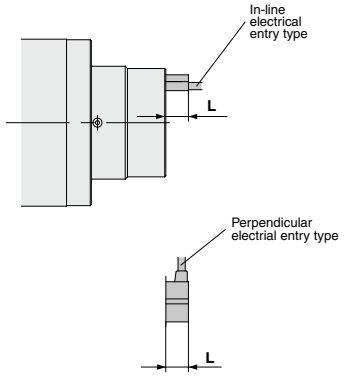
Air gripper model	Finger position	Auto switch model / Lead wire type: In-line entry D-M9□ D-M9□W	In-line entry D-M9□A	Perpendicular entry D-M9□V D-M9□WV	Perpendicular entry D-M9□AV
MHSJ3 -16D MHSH3	Open	2	4	—	2
	Closed	5.5	7.5	3.5	5.5
MHSJ3 -20D MHSH3	Open	2	4	—	2
	Closed	5	7	3	5
MHSJ3 -25D MHSH3	Open	—	3	—	—
	Closed	5	7	3	5
MHSJ3 -32D MHSH3	Open	—	1	—	—
	Closed	4.5	6.5	2.5	4.5
MHSJ3 -40D MHSH3	Open	—	—	—	—
	Closed	3	5	1	3
MHSJ3 -50D MHSH3	Open	—	—	—	—
	Closed	1.5	3.5	—	1.5
MHSJ3 -63D MHSH3	Open	—	—	—	—
	Closed	—	2	—	—
MHSJ3 -80D MHSH3	Open	—	—	—	—
	Closed	—	1	—	—

Note 1) Indicates the amount of protrusion from the mounting surface F. There is no protrusion from the finger side.
Note 2) There is no protrusion for sections of the table with no values entered.
Note 3) When mounted with lead wires on the finger side, be sure that attachments and workpieces, etc., do not touch switch units or lead wires.
Note 4) The actual mounting position should be adjusted after confirming the auto switch performance.

Protrusion from Edge of Push Holder (P)

The amount of auto switch protrusion from the push holder (P) end surface is shown in the table below.
Use this as a standard when mounting, etc.

Center Pusher/Cylinder Type



(mm)

Air gripper model	Finger position	Auto switch model / Lead wire type: In-line entry D-M9□ D-M9□W	In-line entry D-M9□A	Perpendicular entry D-M9□V D-M9□WV	Perpendicular entry D-M9□AV
MHSH□-32DA	Extended	4	2	2	4
	Retracted	9	7	7	9
MHSH□-40DA	Extended	3	—	1	3
	Retracted	8	6	6	8
MHSH□-50DA	Extended	—	—	—	—
	Retracted	7.5	5.5	5.5	7.5
MHSH□-63DA	Extended	—	—	—	—
	Retracted	7	5	5	7
MHSH□-80DA	Extended	—	—	—	—
	Retracted	4	2	2	4

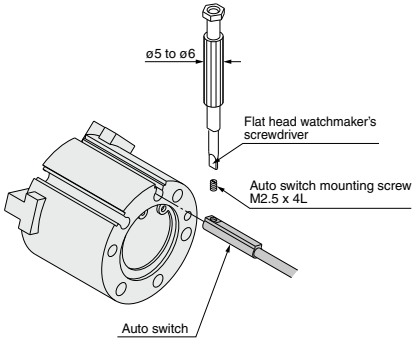
Note) The actual mounting position should be adjusted after confirming the auto switch performance.

Auto Switch Mounting

Applicable models:

MHS2-16, 20, 25
MHS3-16, 20, 25
MHSJ3-16, 20, 25, 32, 40, 50, 63, 80
MHSH3-16, 20, 25, 32, 40, 50, 63, 80
MHSH3-A32, 40, 50, 63, 80
MHSL3-16, 20, 25
MHS4-16, 20, 25

To set the auto switch, insert the auto switch into the installation groove of the gripper from the direction indicated in the following drawing.
After setting the position, tighten the attached auto switch mounting set screw with a flat head watchmaker's screwdriver.

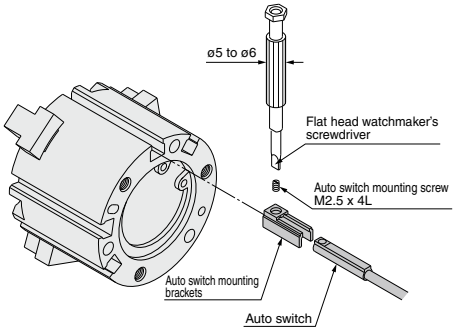


Note) Use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm to tighten the auto switch mounting screw. The tightening torque should be about 0.05 to 0.15 N·m.

Applicable models:

MHS2-32, 40, 50, 63
MHS3-32, 40, 50, 63, 80, 100, 125
MHSL3-32, 40, 50, 63, 80, 100, 125
MHS4-32, 40, 50, 63

(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).



Auto Switch Mounting Bracket Part No.

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

Note) Use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm to tighten the set screw (M2.5).
The tightening torque should be 0.05 to 1 N·m. It should be turned about 90° beyond the point at which tightening can be felt.