Air Cylinder: Non-rotating Rod Type
Double Acting, Single Rod
MBK Series

RoHS

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

	MBK	B	32		–	50			Z	–			–						
With auto switch	MDBK	B	32		–	50			Z	–			–	M9BW		–			

With auto switch (Built-in magnet)

Mounting type

B	Basic/Without bracket
L	Axial foot
F	Rod flange
G	Head flange
C	Single clevis
D	Double clevis
T	Center trunnion

∗ Mounting brackets other than trunnion type are shipped together.

Bore size

32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

Cylinder stroke [mm]
Refer to "Standard Strokes" on page 499.

Accessories 1

Nil	No bracket
N	Pivot bracket

∗ Only for D and T mounting types.
∗ Pivot bracket is shipped together with the product.
∗ For details, refer to page 490.

Suffix (Cushion)

Nil	Air cushion
N∗	Rubber bumper

∗ Since the bumpers are attached to the both sides of the piston for rubber bumper type, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm.

Suffix (Rod boot)

Nil	None
J	Nylon tarpaulin
K	Heat resistant tarpaulin

Auto switch

Nil	Without auto switch

∗ For applicable auto switches, refer to the table below.

Number of auto switches

Nil	2 pcs.
S	1 pc.
3	3 pcs.
n	"n" pcs.

Made to Order
For details, refer to page 499.

Accessories 2

Nil	No bracket
V	Single knuckle joint
W	Double knuckle joint

∗ A knuckle joint pin is not provided with the single knuckle joint.
∗ Rod end bracket is shipped together with the product.
∗ The screw-in amount of the piston rod end cannot be adjusted when a clevis bracket, trunnion bracket and knuckle joint are used together.

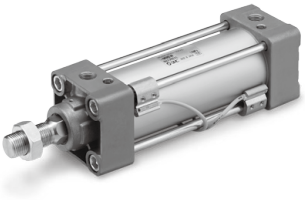
Applicable Auto Switches/Refer to pages 1271 to 1365 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Tie-rod mounting	Auto switch model: Band mounting	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	—	M9N	—	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)			M9P	—	●	●	●	○	○		
				2-wire	12 V		M9B	—	●	●	●	○	○		
		Terminal conduit		3-wire (NPN)	5 V, 12 V		—	G39	—	—	—	—	—	—	
				2-wire	12 V		—	K39	—	—	—	—	—		
	Diagnostic indication (2-color indicator)	Grommet		3-wire (NPN)	5 V, 12 V		M9NW	—	●	●	●	○	○	IC circuit	
				3-wire (PNP)			M9PW	—	●	●	●	○	○		
				2-wire	12V		M9BW	—	●	●	●	○	○	—	
	Water resistant (2-color indicator)			3-wire (NPN)	5 V, 12 V		M9NA∗1	—	○	○	●	○	○	IC circuit	
				3-wire (PNP)			M9PA∗1	—	○	○	●	○	○		
				2-wire	12 V		M9BA∗1	—	○	○	●	○	○	—	
	Diagnostic output (2-color indicator)			4-wire (NPN)	5 V, 12 V		F59F	—	●	—	●	○	○	IC circuit	
	Magnetic field resistant (2-color indicator)			2-wire (Non-polar)	—		P3DWA	—	●	—	●	●	○	—	
							P4DW	—	—	—	●	●	○		
Reed auto switch	——	Grommet	Yes	3-wire (Equiv. to NPN)	—	5 V	A96	—	●	—	●	—	—	IC circuit	—
			No	2-wire	24 V	12 V, 100 V	A93	—	●	●	●	●	—	—	Relay, PLC
						100 V or less	A90	—	●	—	●	—	—	IC circuit	
			Yes			100 V, 200 V	A54	—	●	—	●	●	—	—	
			No			200 V or less	A64	—	●	—	●	—	—		
		Terminal conduit	Yes			—	—	A33	—	—	—	—	—	—	PLC
		DIN terminal				100 V, 200 V	—	A34	—	—	—	—	—		Relay, PLC
							—	A44	—	—	—	—	—		
	Diagnostic indication (2-color indicator)	Grommet			—	—	A59W	—	●	—	●	—	—		

∗1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. A water resistant type cylinder is recommended for use in an environment which requires water resistance.

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

∗ Solid state auto switches marked with "○" are produced upon receipt of order.
∗ Since there are other applicable auto switches than listed above, refer to page 522 for details.
∗ The D-A9□/M9□/P3DWA□ auto switches are shipped together, (but not assembled). (However, auto switch mounting brackets are assembled for the D-A9□/M9□ before shipment.)

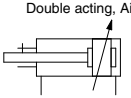


Specifications

Bore size [mm]	32	40	50	63	80	100
Action	Double acting, Single rod					
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Minimum operating pressure	0.05 MPa					
Ambient and fluid temperature	Without auto switch: –10 to 70°C With auto switch: –10 to 60°C (No freezing)					
Lubricant	Non-lube					
Piston speed	50 to 1000 mm/s					
Stroke length tolerance	Up to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$, 1001 to 1500: $^{+1.8}_{0}$					
Cushion Note)	Air cushion or Rubber bumper					
Port size (Rc, NPT, G)	1/8	1/4		3/8		1/2
Mounting	Basic, Axial foot, Rod flange, Head flange, Single clevis, Double clevis, Center trunnion					
Non-rotating accuracy	±0.5°		±0.5°		±0.3°	
Allowable rotating torque N·m or less	0.25	0.45	0.64		0.79	0.93

Note) Kinetic energy absorbable by the cushion mechanism is identical to double acting single rod.

Symbol
Double acting, Air cushion



Made to Order

Made to Order
Click here for details

Symbol	Specifications
-XA□	Change of rod end shape
-XC3	Special port location*
-XC7	Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC14	Change of trunnion bracket mounting position
-XC27	Double clevis and double knuckle joint pins made of stainless steel
-XC30	Rod trunnion

* The cover shape is the same as the current product.

For special port location (-XC3), the mounting bracket and port location can be determined using the standard product corresponding to the operating conditions. Also, this is only applicable to -XC3BB, -XC3CC and -XC3DD with trunnion bracket.

Refer to pages 515 to 522 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Auto switch mounting brackets/Part no.
- Operating range

Standard Strokes

[mm]

Bore size	Standard stroke
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500
50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600
63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600
80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 800
100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 800

Note 1) Manufacture of intermediate strokes is possible. (Spacers are not used.)
Note 2) Using a stroke of a length which is smaller than the effective cushion length may result in reduced air cushion performance. Refer to "Technical Data 1" on page 1573 for details on the effective cushion length.

Accessories

Mounting		Basic	Axial foot	Rod flange	Head flange	Single clevis	Double clevis	Center trunnion
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	●	—
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (with pin)	●	●	●	●	●	●	●
	Rod boot	●	●	●	●	●	●	●

* Refer to page 491 for dimensions and part numbers. (Refer to page 486 for rod boot.)

Rod Boot Material

Symbol	Material	Max. ambient temp.
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C*

* Max. ambient temperature for rod boot itself.

Mounting Brackets/Part No.

Bore size [mm]	32	40	50	63	80	100
Axial foot Note 1)	MB-L03	MB-L04	MB-L05	MB-L06	MB-L08	MB-L10
Rod/Head flange	MB-F03	MB-F04	MB-F05	MB-F06	MB-F08	MB-F10
Single clevis	MB-C03	MB-C04	MB-C05	MB-C06	MB-C08	MB-C10
Double clevis	MB-D03	MB-D04	MB-D05	MB-D06	MB-D08	MB-D10

Note 1) Order two foots per cylinder.
Note 2) Accessories for each mounting bracket are as follows. Axial foot, Rod/Head flange, Single clevis/Body mounting bolt; Double clevis/Body mounting bolt, Clevis pin, Flat washers and Split pins. → Refer to page 491 for details.

Theoretical Force

OUT side is identical to double acting single rod. Refer to the table below for IN side.

Bore size [mm]	Piston area [mm^2]
32	675
40	1082
50	1651
63	2804
80	4568
100	7223

Theoretical force [N] = Pressure [MPa] x Piston area [mm^2]

Weights

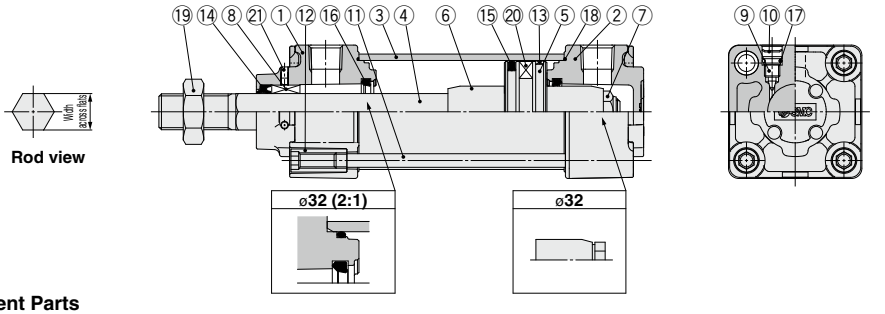
[kg]

Bore size [mm]		32	40	50	63	80	100
Basic weight	Basic	0.47	0.64	1.11	1.35	2.54	3.52
	Axial foot	0.59	0.78	1.33	1.63	3.04	4.19
	Rod/Head flange	0.76	1.01	1.56	2.14	3.99	5.35
	Single clevis	0.72	0.87	1.45	1.98	3.65	5.10
	Double clevis	0.73	0.91	1.54	2.14	3.94	5.37
	Center trunnion	0.76	1.00	1.59	2.15	4.09	5.21
Additional weight per 50 mm of stroke	All mounting brackets	0.12	0.15	0.24	0.26	0.39	0.50
Accessories	Single knuckle joint	0.15	0.23	0.26	0.26	0.60	0.83
	Double knuckle joint (with pin)	0.22	0.37	0.43	0.43	0.87	1.27

Calculation
Example) **MBKB32-100Z** (Basic, ø32, 100 stroke)
- Basic weight····· 0.47 (Basic, ø32)
- Additional weight····· 0.12/50 stroke
- Cylinder stroke····· 100 stroke

0.47 + 0.12 x 100/50 = **0.71 kg**

Construction



Component Parts

No.	Description	Material	Q'ty	Note
1	**Rod cover**	Aluminum die-casted	1	Trivalent chromated
2	**Head cover**	Aluminum die-casted	1	Trivalent chromated
3	**Cylinder tube**	Aluminum alloy	1	Hard anodized
4	**Piston rod**	Stainless steel	1	
5	**Piston**	Aluminum alloy	1	
6	**Cushion ring**	Rolled steel	2	Zinc chromated
7	**Piston nut**	Rolled steel	1	Zinc chromated
8	**Non-rotating guide**	Bearing alloy	1	
9	**Cushion valve**	Steel wire	2	Trivalent zinc chromated
10	**Retaining ring**	Spring steel	2	ø40 to ø100
11	**Tie-rod**	Carbon steel	4	Trivalent zinc chromated

No.	Description	Material	Q'ty	Note
12	**Tie-rod nut**	Carbon steel	8	Trivalent zinc chromated
13	**Wear ring**	Resin	1	
14*	**Rod seal**	NBR	1	
15*	**Piston seal**	NBR	1	
16*	**Cushion seal**	Urethane	2	
17	**Cushion valve seal**	NBR	2	
18*	**Cylinder tube gasket**	NBR	2	
19	**Rod end nut**	Rolled steel	1	Trivalent zinc chromated
20	**Magnet**	—	(1)	
21	Hexagon socket head set screw	Steel wire	2	Trivalent black zinc chromated

Replacement Parts/Seal Kit

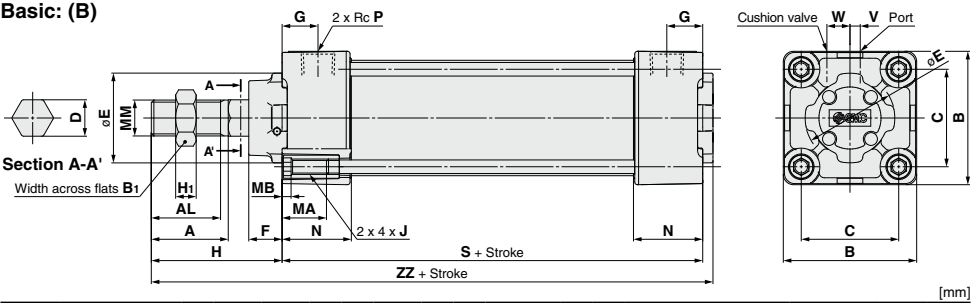
Bore size [mm]	Kit no.	Contents
32	MBK32Z–PS	Set of the nos. ⑭, ⑮, ⑯, ⑱
40	MBK40Z–PS	
50	MBK50Z–PS	
63	MBK63Z–PS	
80	MBK80Z–PS	
100	MBK100Z–PS	

* Seal kits consist of items ⑭, ⑮, ⑯, ⑱, and can be ordered by using the seal kit number corresponding to each bore size.
* Seal kit includes a grease pack (ø32 to 50: 10 g, ø63, 80: 20 g, ø100: 30 g). Order with the following part number when only the grease pack is needed.
Grease pack part number: GR-S-010 (10 g), **GR-S-020** (20 g)

* Model without air cushion is designed to include rubber bumpers. The overall length is longer than the cylinder with air cushion as follows because the bumpers are attached to the both sides of the piston;
ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm

Without Mounting Bracket

Basic: (B)



[mm]

Bore size [mm]	A	AL	B	B_1	C	D	E	F	G	H	H_1	J	MA	MB	MM	N	P	S	V	W	ZZ
32	22	19.5	46	17	32.5	12.2	30	13	13	47	6	M6 x 1	16	4	M10 x 1.25	27	1/8	84	4	6.5	135
40	30	27	52	22	38	14.2	35	13	14	51	8	M6 x 1	16	4	M14 x 1.5	27	1/4	84	4	9	139
50	35	32	65	27	46.5	19	40	14	15.5	58	11	M8 x 1.25	16	5	M18 x 1.5	31.5	1/4	94	5	10.5	156
63	35	32	75	27	56.5	19	45	14	16.5	58	11	M8 x 1.25	16	5	M18 x 1.5	31.5	3/8	94	9	12	156
80	40	37	95	32	72	23	45	20	19	72	13	M10 x 1.5	16	5	M22 x 1.5	38	3/8	114	11.5	14	190
100	40	37	114	41	89	27	55	20	19	72	16	M10 x 1.5	16	5	M26 x 1.5	38	1/2	114	17	15	190

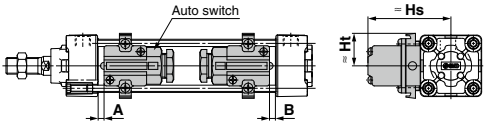
The dimensions for each mounting type and the dimensions with rod boot are the same as those for standard model (double acting, single rod).

Auto Switch Mounting

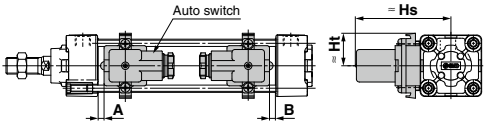
Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

<Band mounting>

D-G39/K39/A3□



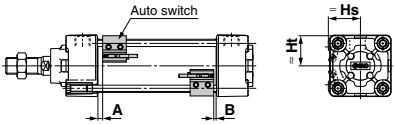
D-A44



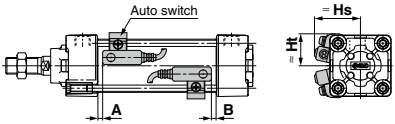
<Tie-rod mounting>

D-M9□/M9□V
D-M9□W/M9□WV
D-M9□A/M9□AV
D-A9□/A9□V

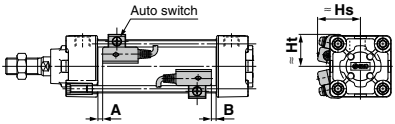
D-Y59□/Y69□/Y7P/Y7PV
D-Y7□W/Y7□WV/Y7BA
D-Z7□/Z80



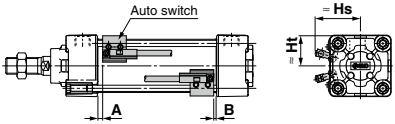
D-A5□/A6□
D-A59W



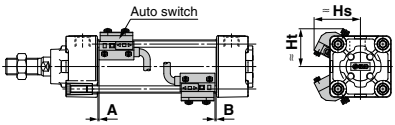
D-F5□/J59
D-F5□W/J59W/F5BA
D-F59F/F5NT



D-P3DWA



D-P4DW



Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

Auto Switch Proper Mounting Position (Standard type)

[mm]

Auto switch model / Bore size	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-F5□ D-J59 D-F59F		D-F5NT		D-A5□ D-A6□		D-A59W		D-G39 D-K39 D-A3□ D-A44		D-Y59□ D-Y69□ D-Y7P D-Y7PV D-Y7H D-Y7□W D-Y7□WV D-Z7□ D-Z8□		D-P3DWA		D-P4DW	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	10	8	6	4	6.5	4.5	11.5	9.5	0	0	4	2	0	0	3.5	1.5	5.5	3.5	3	1
40	9	9	5	5	5.5	5.5	10.5	10.5	0	0	3	3	0	0	2.5	2.5	4.5	4.5	2	2
50	10	9	6	5	6.5	5.5	11.5	10.5	0	0	4	3	0	0	3.5	2.5	5.5	4.5	3	2
63	10	9	6	5	6.5	5.5	11.5	10.5	0	0	4	3	0	0	3.5	2.5	5.5	4.5	3	2
80	14.5	11.5	10.5	7.5	11	8	16	13	4.5	1.5	8.5	5.5	4.5	1.5	8	5	10	7	7.5	4.5
100	14	12	10	8	10.5	8.5	15.5	13.5	4	2	8	6	4	2	7.5	5.5	9.5	7.5	7	5
125	16	16	12	12	12.5	12.5	17.5	17.5	6	6	10	10	6	6	9.5	9.5	11.5	11.5	9	9

∗ Models with rubber bumper have different dimensions for auto switch proper mounting positions (A and B). Add the following values to both A and B: 3 mm (ø32 and 40), 4 mm (ø50 and 63), 5 mm (ø80 and 100), 6 mm (ø125).

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Proper Mounting Height (Standard type)

[mm]

Auto switch model / Bore size	D-M9□ D-M9□W D-M9□A D-A9□		D-A9□V		D-M9□V D-M9□WV D-M9□AV		D-F5□ D-J59 D-F59F D-F5□W D-J59W D-F5BA D-F5NT		D-A5□ D-A6□ D-A59W		D-G39 D-K39 D-A3□		D-A44		D-Y59□ D-Y7P D-Y7□W D-Y7BA D-Z7□ D-Z80		D-Y69□ D-Y7PV D-Y7□WV		D-P3DWA		D-P4DW	
	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht
32	24.5	23	27.5	23	30.5	23	32.5	25	35	24.5	67	27.5	77	27.5	25.5	23	26.5	23	38	31	38	31
40	28.5	25.5	31.5	25.5	34	25.5	36.5	27.5	38.5	27.5	71.5	27.5	81.5	27.5	29.5	26	30	26	39	25.5	42	33
50	33.5	31	36	31	38.5	31	41	34	43.5	34.5	77	—	87	—	33.5	31	34.5	31	43	31	46.5	39
63	38.5	36	40.5	36	43	36	46	39	48.5	39.5	83.5	—	93.5	—	39	36	40	36	48	36	51.5	44
80	46.5	45	49	45	52	45	52.5	46.5	55	46.5	92.5	—	103	—	47.5	45	48.5	45	56.5	45	58	51.5
100	54	53.5	57	53.5	59.5	53.5	59.5	55	62	55	103	—	113.5	—	55.5	53.5	56.5	53.5	64.5	53.5	65.5	60.5
125	65.5	64.5	68.5	64.5	71	64.5	70.5	66.5	71.5	66.5	115	—	125	—	67.5	65	68.5	65	76	64.5	76.5	72

Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

Auto Switch Proper Mounting Position (Non-rotating rod type, With end lock)

[mm]

Auto switch model / Bore size	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-F5□ D-J59 D-F59F		D-F5NT		D-A5□ D-A6□		D-A59W		D-G39 D-K39 D-A3□ D-A44		D-Y59□ D-Y69□ D-Y7P D-Y7PV D-Y7H D-Y7□W D-Y7□WV D-Z7□ D-Z8□		D-P3DWA		D-P4DW	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	10.5	8	6.5	4	7	4.5	12	9.5	0.5	0	4.5	2	0.5	0	4	1.5	5.5	3.5	3.5	1
40	10.5	8	6.5	4	7	4.5	12	9.5	0.5	0	4.5	2	0.5	0	4	1.5	6	3.5	3.5	1
50	11	8.5	7	4.5	7.5	5	12.5	10	1	0	5	2.5	1	0	4.5	2	6.5	4	4	1.5
63	11	8.5	7	4.5	7.5	5	12.5	10	1	0	5	2.5	1	0	4.5	2	6.5	4	4	1.5
80	14	12.5	10	8.5	10.5	9	15.5	14	4	2.5	8	6.5	4	2.5	7.5	6	9.5	8	7	5.5
100	14	12.5	10	8.5	10.5	9	15.5	14	4	2.5	8	6.5	4	2.5	7.5	6	9.5	8	7	5.5

∗ Models with rubber bumper have different dimensions for auto switch proper mounting positions (A and B). Add the following values to both A and B: 3 mm (ø32 and 40), 4 mm (ø50 and 63), 5 mm (ø80 and 100).

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Proper Mounting Height (Non-rotating rod type, With end lock)

[mm]

Auto switch model / Bore size	D-M9□ D-M9□W D-M9□A D-A9□		D-A9□V		D-M9□V D-M9□WV D-M9□AV		D-F5□ D-J59 D-F59F D-F5□W D-J59W D-F5BA D-F5NT		D-A5□ D-A6□ D-A59W		D-G39 D-K39 D-A3□		D-A44		D-Y59□ D-Y7P D-Y7□W D-Y7BA D-Z7□ D-Z80		D-Y69□ D-Y7PV D-Y7□WV		D-P3DWA		D-P4DW	
	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht
32	24.5	23	27.5	23	30.5	23	32.5	25	35	24.5	67	27.5	77	27.5	25.5	23	26.5	23	38	31	38	31
40	28.5	25.5	31.5	25.5	34	25.5	36.5	27.5	38.5	27.5	71.5	27.5	81.5	27.5	29.5	26	30	26	39	25.5	42	33
50	33.5	31	36	31	38.5	31	41	34	43.5	34.5	77	—	87	—	33.5	31	34.5	31	43	31	46.5	39
63	38.5	36	40.5	36	43	36	46	39	48.5	39.5	83.5	—	93.5	—	39	36	40	36	48	36	51.5	44
80	46.5	45	49	45	52	45	52.5	46.5	55	46.5	92.5	—	103	—	47.5	45	48.5	45	56.5	45	58	51.5
100	54	53.5	57	53.5	59.5	53.5	59.5	55	62	55	103	—	113.5	—	55.5	53.5	56.5	53.5	64.5	53.5	65.5	60.5

Minimum Stroke for Auto Switch Mounting

Mounting Brackets Except Center Trunnion

n: Number of auto switches [mm]

Auto switch model	Number of auto switches	ø32, ø40, ø50, ø63	ø80, ø100	ø125 Note 2)
D-M9□ D-M9□W	2 (Different surfaces, same surface) 1	15		
	n	$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)		
D-M9□V D-M9□WV	2 (Different surfaces, same surface) 1	10		
	n	$10 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)		
D-M9□A	2 (Different surfaces, same surface) 1	15		
	n	$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)		
D-M9□AV	2 (Different surfaces, same surface) 1	15		
	n	$15 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)		
D-A9□	2 (Different surfaces, same surface) 1	15		
	n	$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)		
D-A9□V	2 (Different surfaces, same surface) 1	10		
	n	$10 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)		
D-G39 D-K39 D-A3□	2 (Different surfaces)	35		
	2 (Same surface)	100		
	n (Different surfaces)	35 + 30 (n – 2) (n = 2, 3, 4…)		
	n (Same surface)	100 + 100 (n – 2) (n = 2, 3, 4…)		
	1	10		
D-A44	2 (Different surfaces)	35		
	2 (Same surface)	55		
	n (Different surfaces)	35 + 30 (n – 2) (n = 2, 3, 4…)		
	n (Same surface)	55 + 50 (n – 2) (n = 2, 3, 4…)		
	1	10		
D-F5□ D-J59 D-F5□W D-J59W D-F5BA D-F59F	2 (Different surfaces, same surface)	15	25	25
	n (Same surface)	$15 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)	$25 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)	$25 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)
	1	10	25	25
D-A5□ D-A6□	2 (Different surfaces, same surface) 1	15	20	20
	n (Different surfaces)	$15 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)	$20 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)	$20 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)
D-A59W	2 (Different surfaces, same surface)	20	25	25
	n (Same surface)	$20 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)	$25 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)	$25 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)
	1	15	25	25
D-F5NT	2 (Different surfaces, same surface)	15	25	30
	n (Same surface)	$15 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)	$25 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)	$30 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)
	1	10	25	30
D-Y59□ D-Y7P D-Y7□W D-Z7□ D-Z80	2 (Different surfaces, same surface) 1	15		
	n	$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8…) Note 1)		

Note 1) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.
Note 2) Non-rotating rod type and with end lock are applicable to ø32 to ø100.

Minimum Stroke for Auto Switch Mounting

Mounting Brackets Except Center Trunnion

n: Number of auto switches [mm]

Auto switch model	Number of auto switches	ø32, ø40, ø50, ø63, ø80, ø100	ø125 Note 3)
D-Y69□ D-Y7PV D-Y7□WV	2 (Different surfaces, same surface) 1	10	
	n	$10 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	
D-Y7BA	2 (Different surfaces, same surface) 1	20	
	n	$20 + 45\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	
D-P3DWA	2 (Different surfaces, same surface) 1	15	
	n	$15 + 50\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	
D-P4DW	2 (Different surfaces, same surface) 1	15	20
	n	$15 + 65\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$20 + 65\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)

Note 1) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.
Note 3) Non-rotating rod type and with end lock are applicable to ø32 to ø100.

Center Trunnion

n: Number of auto switches [mm]

Auto switch model	Number of auto switches	ø32	ø40	ø50	ø63	ø80	ø100	ø125 Note 3)
D-M9□ D-M9□W	2 (Different surfaces, same surface) 1	75	80		85	90	95	105
	n	$75 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$90 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$95 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$105 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-M9□V D-M9□WV	2 (Different surfaces, same surface) 1	50	55		60	65	70	80
	n	$50 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$55 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$60 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$65 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$70 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$80 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-M9□A	2 (Different surfaces, same surface) 1	80	85		90	95	100	110
	n	$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$90 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$95 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$100 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$110 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-M9□AV	2 (Different surfaces, same surface) 1	55	60		65	70	75	85
	n	$55 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$60 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$65 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$70 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$75 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$85 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-A9□	2 (Different surfaces, same surface) 1	70	75		80	85	95	100
	n	$70 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$75 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$95 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$100 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-A9□V	2 (Different surfaces, same surface) 1	45	50		55	60	70	75
	n	$45 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$50 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$55 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$60 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$70 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$75 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)

Note 2) When "n" is an odd number, a multiple of 4 that is larger than this odd number is used for the calculation.
Note 3) Non-rotating rod type and with end lock are applicable to ø32 to ø100.

Minimum Stroke for Auto Switch Mounting

Center Trunnion

n: Number of auto switches [mm]

Auto switch model	Number of auto switches	ø32	ø40	ø50	ø63	ø80	ø100	ø125 Note 3)
D-G39 D-K39 D-A3□	2 (Different surfaces)	60	65		75	80	85	90
	2 (Same surface)	90	95		100	105	110	125
	n (Different surfaces)	60 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)	65 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)		75 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)	80 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)	85 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)	90 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)
	n (Same surface)	90 + 100 (n – 2) (n = 2, 4, 6, 8…) Note 1)	95 + 100 (n – 2) (n = 2, 4, 6, 8…) Note 1)		100 + 100 (n – 2) (n = 2, 4, 6, 8…) Note 1)	105 + 100 (n – 2) (n = 2, 4, 6, 8…) Note 1)	110 + 100 (n – 2) (n = 2, 4, 6, 8…) Note 1)	125 + 100 (n – 2) (n = 2, 4, 6, 8…) Note 1)
	1	60	65		75	80	85	90
D-A44	2 (Different surfaces)	70	75		80		85	90
	2 (Same surface)							
	n (Different surfaces)	70 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)	75 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)		80 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)		85 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)	90 + 30 (n – 2) (n = 2, 4, 6, 8…) Note 1)
	n (Same surface)	70 + 50 (n – 2) (n = 2, 4, 6, 8…) Note 1)	75 + 50 (n – 2) (n = 2, 4, 6, 8…) Note 1)		80 + 50 (n – 2) (n = 2, 4, 6, 8…) Note 1)		85 + 50 (n – 2) (n = 2, 4, 6, 8…) Note 1)	90 + 50 (n – 2) (n = 2, 4, 6, 8…) Note 1)
	1	70	75		80		85	90
D-F5□/J59 D-F5□W D-J59W D-F5BA D-F59F	2 (Different surfaces, same surface)	90	95		110	115	120	130
	n (Same surface)	$90 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$95 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$110 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$115 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$120 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$130 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)
	1	90	95		110	115	120	130
D-F5NT	2 (Different surfaces, same surface)	100	105		120	125	130	140
	n (Same surface)	$100 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$105 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$120 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$125 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$130 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$140 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)
	1	100	105		120	125	130	140
D-A5□ D-A6□	2 (Different surfaces, same surface) 1	60		80	105	110	115	
	n (Same surface)	$60 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$80 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$105 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$110 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$115 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	
D-A59W	2 (Different surfaces, same surface)	60	70	85	110	115	120	
	n (Same surface)	$60 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$70 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$85 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$110 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$115 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$120 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	
	1	60	70	85	110	115	120	
D-Y59□ D-Y7P D-Y7□W D-Z7□ D-Z80	2 (Different surfaces, same surface) 1	80	85	90		95	100	105
	n	$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$90 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$95 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$100 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$105 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)
D-Y69□ D-Y7PV D-Y7□WV	2 (Different surfaces, same surface) 1	60	65		70	75	85	85
	n	$60 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$65 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$70 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$75 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$85 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$85 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)
D-Y7BA	2 (Different surfaces, same surface) 1	85	90		100	105	110	115
	n	$85 + 45\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$90 + 45\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$100 + 45\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$105 + 45\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$110 + 45\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$115 + 45\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)
D-P3DWA	2 (Different surfaces, same surface) 1	80	85		90		95	100
	n	$80 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$85 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$90 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$95 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)	$100 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)
D-P4DW	2 (Different surfaces, same surface) 1	120		130		140		150
	n	$120 + 65\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$130 + 65\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$140 + 65\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)		$150 + 65\frac{(n-4)}{2}$ (n = 4, 8, 12, 16…) Note 2)

Note 1) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.
Note 2) When "n" is an odd number, a multiple of 4 that is larger than this odd number is used for the calculation.
Note 3) Non-rotating rod type and with end lock are applicable to ø32 to ø100.

Auto Switch Mounting Brackets/Part No.

Auto switch model	Bore size [mm]						
	ø32	ø40	ø50	ø63	ø80	ø100	ø125
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV D-A9□/A9□V	BMB5-032	BMB5-032	BA7-040	BA7-040	BA7-063	BA7-063	BA7-080
D-A3□/A44 D-G39/K39	BMB2-032	BMB2-040	BMB1-050	BMB1-063	BMB1-080	BMB1-100	BS1-125
D-F5□/J59 D-F5□W/J59W D-F59F/F5BA D-F5NT D-A5□/A6□/A59W	BT-03	BT-03	BT-05	BT-05	BT-06	BT-06	BT-08
D-P3DWA	BA10-032S	BA10-040S	BA10-050S	BA10-050S	BA10-063S	BA10-063S	BA10-080S
D-P4DW	BMB3T-040	BMB3T-040	BMB3T-050	BMB3T-050	BMB3T-080	BMB3T-080	BAP2T-080
D-Y59□/Y69□ D-Y7P/Y7PV D-Y7□W/Y7□WV D-Y7BA D-Z7□/Z80	BMB4-032	BMB4-032	BMB4-050	BMB4-050	BA4-063	BA4-063	BA4-080

[Stainless Steel Mounting Screw]

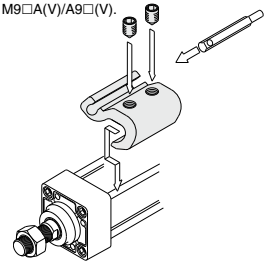
The following stainless steel mounting screw kit (including set screws) is available. Use it in accordance with the operating environment. (Since the auto switch mounting bracket is not included, order it separately.)

BBA1: For D-A5/A6/F5/J5 types

Note 1) Refer to page 1377 for details on the BBA1.
The above stainless steel screws are used when a cylinder is shipped with the D-F5BA auto switch. When only one auto switch is shipped independently, the BBA1 is attached.

Note 2) When using the D-M9□A(V) or Y7BA, do not use the steel set screws which are included with the auto switch mounting brackets above (BMB5-032, BA7-□□□, BMB4-□□□, BA4-□□□). Order a stainless steel screw kit (BBA1) separately, and use the M4 x 6 L stainless steel set screws included in the BBA1.

• The figure shows the mounting example for the D-M9□(V)/M9□W(V)/M9□A(V)/A9□(V).



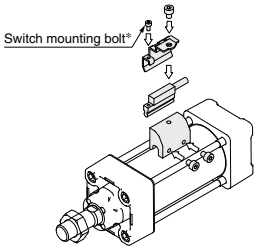
Operating Range

[mm]

Auto switch model	Bore size [mm]						
	32	40	50	63	80	100	125
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	4	4.5	4.5	4.5	5	6	7
D-Y59□/Y69□ D-Y7P/Y7□V D-Y7□W/Y7□WV D-Y7BA	5.5	5.5	7	7.5	6.5	5.5	7
D-F5□/J59 D-F5□W/J59W D-F5BA/F5NT D-F59F	3.5	4	4	4.5	4.5	4.5	5
D-G39/K39	9	9	9	10	10	11	11
D-P3DWA	3	4.5	4.5	5	5	5.5	6.5
D-P4DW	4	4	4	4.5	4	4.5	4.5
D-A9□/A9□V	7	7.5	8.5	9.5	9.5	10.5	12
D-Z7□/Z80	7.5	8.5	7.5	9.5	9.5	10.5	13
D-A5□/A6□	9	9	10	11	11	11	10
D-A59W	13	13	13	14	14	15	17
D-A3□/A44	9	9	10	11	11	11	10

∗ Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

<Mounting example for ø32, D-P3DWA>



∗ The switch mounting bolt is supplied with the switch.

Other than the applicable auto switches listed in "How to Order", the following auto switches are mountable.
Refer to pages 1271 to 1365 for the detailed specifications.

Type	Model	Electrical entry	Features
Solid state	D-M9NV/M9PV/M9BV	Grommet (Perpendicular)	—
	D-Y69A/Y69B/Y7PV		
	D-M9NWV/M9PWV/M9BWV		Diagnostic indication (2-color indicator)
	D-Y7NWV/Y7PWV/Y7BWV		
	D-M9NAV/M9PAV/M9BAV		Water resistant (2-color indicator)
	D-P4DW		Magnetic field resistant (2-color indicator)
	D-F59/F5P/J59	Grommet (In-line)	—
	D-Y59A/Y59B/Y7P		
	D-Y7H		
	D-F59W/F5PW/J59W		Diagnostic indication (2-color indicator)
	D-Y7NW/Y7PW/Y7BW		
	D-F5BA/Y7BA		Water resistant (2-color indicator)
	D-F5NT		With timer
	D-P5DW		Magnetic field resistant (2-color indicator)
Reed	D-A93V/A96V	Grommet (Perpendicular)	—
	D-A90V		Without indicator light
	D-A53/A56/Z73/Z76	Grommet (In-line)	—
	D-A67/Z80		Without indicator light

* With pre-wired connector is also available for solid state switches. For details, refer to pages 1340 and 1341.
* Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)/Y7G/Y7H) are also available. For details, refer to pages 1290 and 1292.

Made to Order: Individual Specifications

Please contact SMC for detailed dimensions, specifications and lead times.

Made to Order

Symbol

1 Cylinder with Heat Resistant Reed Auto Switch (–10 to 120°C) -X1184

Applicable Series

Description	Model	Action	Note
Standard type	MB	Double acting, Single rod	

How to Order

MDB | **Standard model no.** | **Z –** | **Pivot bracket** | **Rod end bracket** | **–** | **Heat resistant reed auto switch** | | **– X1184**

Switch model

Symbol	Description
Nil	Without switch
B30	D-B30
B30J	D-B30J
B31	D-B31
B31J	D-B31J
B35	D-B35
B35J	D-B35J

Number of switches

Symbol	Description
S	1 pc.
Nil	2 pcs.
n	n pcs.

Cylinder with heat resistant reed auto switch

∗ Refer to pages 1363 to 1365 for details about the D-B3 auto switch and the Specific Product Precautions.

Specifications

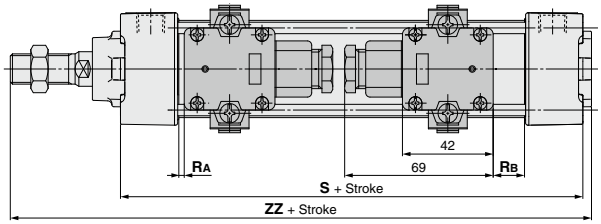
Ambient temperature range	–10°C to 120°C
Bore size	40, 50, 63, 80, 100
Seal material	Fluororubber
Grease	Heat resistant grease

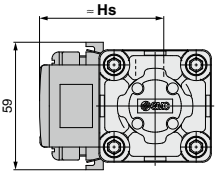
⚠Warning

Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

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





[mm]

Bore size	S	ZZ	Hs	RA	RB	Minimum mounting stroke		Auto switch mounting bracket part number
						Other than center trunnion	Center trunnion	
40	99	154	57.5	2.5	14.5	1 pc.: 50 st or more 2 pcs.: Different surfaces 50 st or more 2 pcs.: Same surface 220 st or more	200 st or more	BMB2-040
50	109	171	63	3.5	14.5		200 st or more	BMB1-050
63	109	171	69.5	0.5	14.5		200 st or more	BMB1-063
80	129	205	78.5	2.5	22.5		210 st or more	BMB1-080
100	129	205	89	1	22		210 st or more	BMB1-100