

Air Cylinder: Non-rotating Rod Type Double Acting, Double Rod

MBKW Series



ø32, ø40, ø50, ø63, ø80, ø100

How to Order



MBKW L 32 [] - 150 [] [] Z - []

With auto switch **MDBKW** L 32 [] - 150 [] [] Z - **M9BW** [] - []

Mounting type

B	Basic/Without bracket
L	Axial foot
F	Rod flange
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

Nil	Rc
TN	NPT
TF	G

Cylinder stroke [mm]

Refer to "Standard Strokes" on page 503.

Auto switch

Nil	Without auto switch
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* 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 503.

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 (one end)
JJ	Nylon tarpaulin (both ends)
K	Heat resistant tarpaulin (one end)
KK	Heat resistant tarpaulin (both ends)

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		Auto switch model		Lead wire length [m]			Pre-wired connector	Applicable load			
					DC	AC	Tie-rod mounting	Band mounting	0.5 (Nil)	1 (M)	3 (L)			5 (Z)		
Solid state auto switch	—	Grommet	No	3-wire (NPN)	24 V	5 V, 12 V	—	M9N	●	●	●	○	○	IC circuit	Relay, PLC	
				3-wire (PNP)				M9P	●	●	●	○	○			
		2-wire		M9B	●	●	●	○	○							
		3-wire (NPN)		24 V	5 V, 12 V	—	G39	—	—	—	—	—	—			
	2-wire	K39	—				—	—	—							
	Diagnostic indication (2-color indicator)	Terminal conduit	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NW	●	●	●	○	○	IC circuit		
				3-wire (PNP)				M9PW	●	●	●	○	○			
	Water resistant (2-color indicator)	Grommet	No	3-wire (NPN)	24 V	5 V, 12 V	—	M9NA*1	○	○	○	○	○	IC circuit		
				3-wire (PNP)				M9PA*1	○	○	○	○	○			
	Diagnostic output (2-color indicator)	Terminal conduit	Yes	2-wire	24 V	12 V	—	M9BA*1	○	○	○	○	○	—		
4-wire (NPN)				F59F				●	—	○	●	○	○		IC circuit	
Magnetic field resistant (2-color indicator)	DIN terminal	Yes	2-wire (Non-polar)	24 V	—	—	P3DWA	●	—	●	●	○	—			
			2-wire (Non-polar)				P4DW	—	—	●	●	○				
Reed auto switch	—	Grommet	No	3-wire (Equiv. to NPN)	24 V	12 V	—	A96	●	●	●	—	—	IC circuit	Relay, PLC	
				100 V				A93	●	●	●	—	—			
				100 V or less				A90	●	●	●	—	—			
				100 V, 200 V				A54	●	●	●	—	—			
		Terminal conduit	Yes	2-wire	24 V	12 V	—	—	A64	●	—	●	—	—		—
									—	A33	—	—	—	—		
		DIN terminal	Yes	2-wire	24 V	12 V	—	—	—	A34	—	—	—	—		—
									—	A44	—	—	—	—		
Diagnostic indication (2-color indicator)	Grommet	No	2-wire	24 V	—	—	—	A59W	●	●	●	—	—	—		

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

Lead wire length symbols: 0.5 m..... Nil (Example) M9NW 3 m..... L (Example) M9NWL
1 m..... M (Example) M9NWM 5 m..... Z (Example) M9NZW

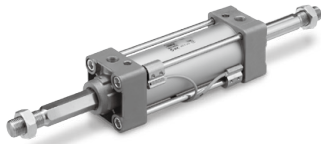
* Solid state auto switches marked with "○" are produced upon receipt of order.

* 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.)

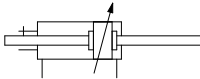
Air Cylinder: Non-rotating Rod Type Double Acting, Double Rod **MBKW Series**

Specifications



Symbol

Double acting



Made to Order
Click here for details

Symbol	Specifications
-XC3	Special port location*
-XC7	Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel

* 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.

Bore size [mm]	32	40	50	63	80	100
Action	Double acting, Double rod					
Fluid	Air					
Proof pressure	1.5 MPa					
Max. operating pressure	1.0 MPa					
Min. 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)					
Lubrication	Non-lube					
Operating piston speed	50 to 1000 mm/s					
Allowable stroke tolerance	Up to 250: $^{+1.0}_0$, 251 to 800: $^{+1.4}_0$					
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, Center trunnion					
Non-rotating accuracy	$\pm 0.5^\circ$		$\pm 0.5^\circ$		$\pm 0.3^\circ$	
Allowable rotating torque N-m or less	0.25	0.45	0.64	0.79	0.93	

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

Standard Strokes

Bore size	Standard stroke [mm]
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	Center trunnion
Standard	Rod end nut	●	●	●	●
	Single knuckle joint	●	●	●	●
Option	Double knuckle joint (with pin)	●	●	●	●
	Rod boot	●	●	●	●

* Refer to page 491 for dimensions and part numbers. (Except 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	MB-L03	MB-L04	MB-L05	MB-L06	MB-L08	MB-L10
Rod flange	MB-F03	MB-F04	MB-F05	MB-F06	MB-F08	MB-F10

Note) Order two feet per cylinder.

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

MBKW Series

Theoretical Force



Bore size [mm]	Rod dia. [mm] Width across flats [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
32	12	OUT	691	138	207	276	346	415	484	553	622	691
	12.2	IN	675	135	203	270	338	405	473	540	608	675
40	16	OUT	1056	211	317	422	528	634	739	845	950	1056
	14.2	IN	1082	216	325	433	541	649	757	866	974	1082
50	20	OUT	1649	330	495	660	825	989	1154	1319	1484	1649
	19	IN	1651	330	495	660	826	991	1156	1321	1486	1651
63	20	OUT	2803	561	841	1121	1402	1682	1962	2242	2523	2803
	19	IN	2804	561	841	1122	1402	1682	1963	2243	2524	2804
80	25	OUT	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
	23	IN	4568	914	1370	1827	2284	2741	3198	3654	4111	4568
100	30	OUT	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147
	27	IN	7223	1445	2167	2889	3612	4334	5056	5778	6501	7223

Note) Theoretical force [N] = Pressure [MPa] x Piston area [mm²]

Weights/Aluminum Tube

Bore size [mm]		32	40	50	63	80	100
Basic weight	Basic	0.56	0.77	1.34	1.60	2.99	4.10
	Axial foot	0.68	0.91	1.56	1.88	3.49	4.76
	Rod flange	0.85	1.14	1.79	2.39	4.44	5.93
	Center trunnion	0.85	1.13	1.82	2.40	4.54	5.79
Additional weight per 50 mm of stroke	All mounting brackets	0.16	0.23	0.37	0.38	0.60	0.79
Accessories	Single knuckle joint	0.15	0.23	0.26	0.26	0.6	0.83
	Double knuckle joint (with pin)	0.22	0.37	0.43	0.43	0.87	1.27

[kg]

Calculation

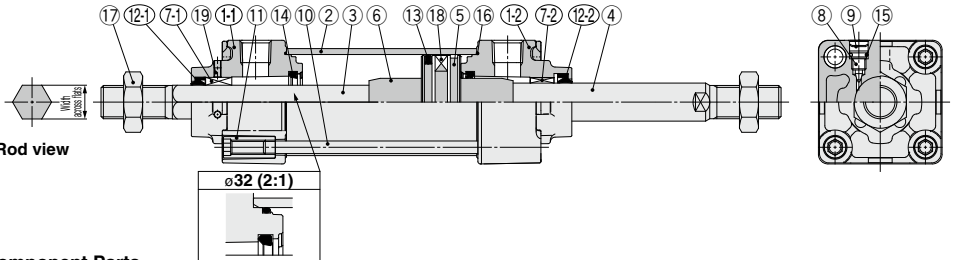
Example) **MBKW32-100Z** (Basic, ø32, 100 st)

• Basic weight ...0.56 (Basic, ø32)

• Additional weight ...0.16/50 stroke

0.56 + 0.16 × 100/50 = **0.88 kg**

Construction



Component Parts

No.	Description	Material	Q'ty	Note
1-1	Rod cover	Aluminum die-casted	1	Non-rotating rod
1-2	Rod cover	Aluminum die-casted	1	Standard
2	Cylinder tube	Aluminum alloy	1	Hard anodized
3	Piston rod A	Stainless steel	1	Non-rotating rod
4	Piston rod B	Carbon steel	1	Standard
5	Piston	Aluminum alloy	1	
6	Cushion ring	Rolled steel	2	Zinc chromated
7-1	Non-rotating guide	Bearing alloy	1	Non-rotating rod
7-2	Bushing	Bearing alloy	1	Standard
8	Cushion valve	Steel wire	2	Trivalent zinc chromated
9	Retaining ring	Spring steel	2	ø40 to ø100
10	Tie-rod	Carbon steel	4	Trivalent zinc chromated
11	Tie-rod nut	Carbon steel	8	Trivalent zinc chromated
12-1*	Rod seal	NBR	1	Non-rotating rod
12-2*	Rod seal	NBR	1	Standard
13*	Piston seal	NBR	1	
14*	Cushion seal	Urethane	2	
15	Cushion valve seal	NBR	2	
16*	Cylinder tube gasket	NBR	2	

No.	Description	Material	Q'ty	Note
17	Rod end nut	Rolled steel	2	Trivalent zinc chromated
18	Magnet	—	(1)	
19	Hexagon socket head set screw	Steel wire	2	Trivalent black zinc chromated

Replacement Parts/Seal Kit

Bore size [mm]	Kit no.	Contents
32	MBKW32Z-PS	Set of the nos. ⑫, ⑬, ⑭, ⑮
40	MBKW40Z-PS	
50	MBKW50Z-PS	
63	MBKW63Z-PS	
80	MBKW80Z-PS	
100	MBKW100Z-PS	

* Seal kits consist of items ⑫, ⑬, ⑭, ⑮, and can be ordered by using the seal kit number corresponding to each bore size.

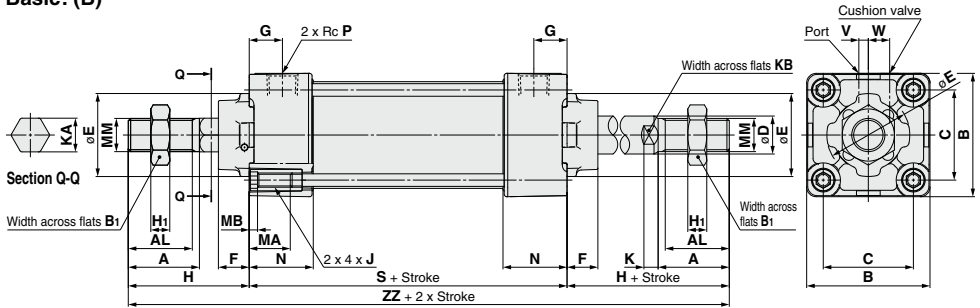
* Trunnion type should not be disassembled. (Refer to page 524.)

* 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.

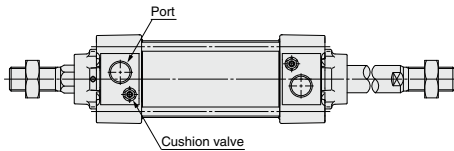
Grease pack part number: GR-S-010 (10 g), GR-S-020 (20 g)

Standard

Basic: (B)



Positional relationship between port and cushion valve



Bore size [mm]	[mm]														
	A	AL	B	B ₁	C	D	E	F	G	H	H ₁	J	K	KA	KB
32	22	19.5	46	17	32.5	12	30	13	13	47	6	M6 x 1	6	12.2	10
40	30	27	52	22	38	16	35	13	14	51	8	M6 x 1	6	14.2	14
50	35	32	65	27	46.5	20	40	14	15.5	58	11	M8 x 1.25	7	19	18
63	35	32	75	27	56.5	20	45	14	16.5	58	11	M8 x 1.25	7	19	18
80	40	37	95	32	72	25	45	20	19	72	13	M10 x 1.5	10	23	22
100	40	37	114	41	89	30	55	20	19	72	16	M10 x 1.5	10	27	26

Bore size [mm]	[mm]								
	MA	MB	MM	N	P	S*	V	W	ZZ*
32	16	4	M10 x 1.25	27	1/8	84	4	6.5	178
40	16	4	M14 x 1.5	27	1/4	84	4	9	186
50	16	5	M18 x 1.5	31.5	1/4	94	5	10.5	210
63	16	5	M18 x 1.5	31.5	3/8	94	9	12	210
80	16	5	M22 x 1.5	38	3/8	114	11.5	14	258
100	16	5	M26 x 1.5	38	1/2	114	17	15	258

* 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

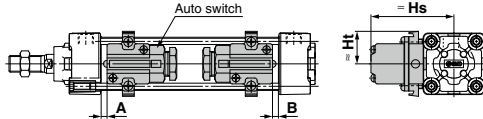
The dimensions for each mounting type are the same as those for standard model (double acting, double rod). Refer to pages 496 and 497.

Auto Switch Mounting

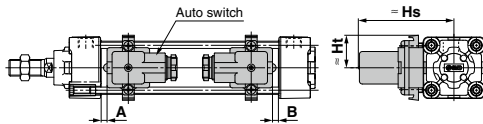
Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

<Band mounting>

D-G39/K39/A3□



D-A44



<Tie-rod mounting>

D-M9□/M9□V

D-M9□W/M9□WV

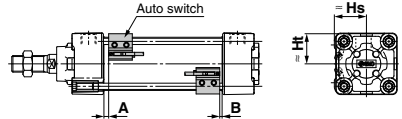
D-M9□A/M9□AV

D-A9□/A9□V

D-Y59□/Y69□/Y7P/Y7PV

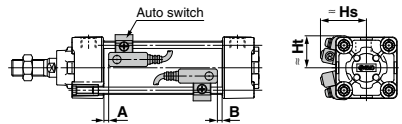
D-Y7□W/Y7□WV/Y7BA

D-Z7□/Z80



D-A5□/A6□

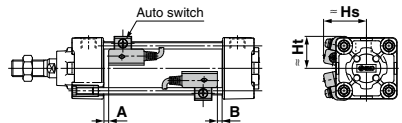
D-A59W



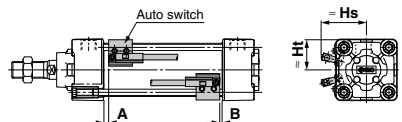
D-F5□/J59

D-F5□W/J59W/F5BA

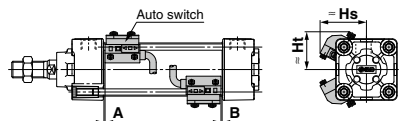
D-F59F/F5NT



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	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	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-Z8□		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	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	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

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 <small>Note 2)</small>
D-M9□ D-M9□W	2 (Different surfaces, same surface) 1	15		
	n	$15 + 40 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>		
D-M9□V D-M9□WV	2 (Different surfaces, same surface) 1	10		
	n	$10 + 30 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>		
D-M9□A	2 (Different surfaces, same surface) 1	15		
	n	$15 + 40 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>		
D-M9□AV	2 (Different surfaces, same surface) 1	15		
	n	$15 + 30 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>		
D-A9□	2 (Different surfaces, same surface) 1	15		
	n	$15 + 40 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>		
D-A9□V	2 (Different surfaces, same surface) 1	10		
	n	$10 + 30 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>		
D-G39 D-K39 D-A3□	2 (Different surfaces)	35		
	2 (Same surface)	100		
	n (Different surfaces)	$35 + 30 (n - 2)$ <small>(n = 2, 3, 4...)</small>		
	n (Same surface)	$100 + 100 (n - 2)$ <small>(n = 2, 3, 4...)</small>		
	1	10		
D-A44	2 (Different surfaces)	35		
	2 (Same surface)	55		
	n (Different surfaces)	$35 + 30 (n - 2)$ <small>(n = 2, 3, 4...)</small>		
	n (Same surface)	$55 + 50 (n - 2)$ <small>(n = 2, 3, 4...)</small>		
	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)	$15 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>	$25 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>	$25 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>
	1	10	25	25
	2 (Different surfaces, same surface) 1	15	20	20
D-A5□ D-A6□	2 (Different surfaces, same surface) 1	15	20	20
	n (Different surfaces)	$15 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>	$20 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>	$20 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>
D-A59W	2 (Different surfaces, same surface)	20	25	25
	n (Same surface)	$20 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>	$25 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>	$25 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>
	1	15	25	25
D-F5NT	2 (Different surfaces, same surface)	15	25	30
	n (Same surface)	$15 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>	$25 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>	$30 + 55 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>
	1	10	25	30
D-Y59□ D-Y7P D-Y7□W D-Z7□ D-Z80	2 (Different surfaces, same surface) 1	15		
	n	$15 + 40 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6, 8...)</small> <small>Note 1)</small>		

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)	10	
	n	$10 + 30 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...) Note 1)	
D-Y7BA	2 (Different surfaces, same surface)	20	
	n	$20 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...) Note 1)	
D-P3DWA	2 (Different surfaces, same surface)	15	
	n	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...) Note 1)	
D-P4DW	2 (Different surfaces, same surface)	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)	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)	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)	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)	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)	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)	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	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	
	n (Same surface)	100	105	120	125	130	140	
	1	100	105	120	125	130	140	
D-A5□ D-A6□	2 (Different surfaces, same surface)	60	80	105	110	115		
	1							
	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		
	1	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	
D-A59W	2 (Different surfaces, same surface)	60	70	85	110	115	120	
	1							
	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	
	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	
D-Y59□ D-Y7P D-Y7□W D-Z7□ D-Z80	2 (Different surfaces, same surface)	80	85	90	95	100	105	
	1							
	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	
	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)	60	65	70	75	85	85	
	1							
	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	
	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)	85	90	100	105	110	115	
	1							
	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	
	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)	80	85	90	95	100	100	
	1							
	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	$100 + 50 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...) Note 2	
	1	80	85	90	95	100	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	$100 + 50 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...) Note 2	
D-P4DW	2 (Different surfaces, same surface)	120	130	140	150			
	1							
	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			
	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.)

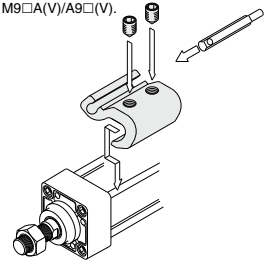
BBA1: For D-A5/A6/F5/J5 types

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).

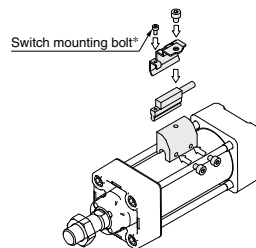


Operating Range

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		Diagnostic indication (2-color indicator)	
	D-M9NVW/M9PWV/M9BWW		Water resistant (2-color indicator)	
	D-Y7NWW/Y7PWV/Y7BWW		Magnetic field resistant (2-color indicator)	
	D-M9NAV/M9PAV/M9BAV		—	
	D-P4DW		Diagnostic indication (2-color indicator)	
	D-F59/F5P/J59	Grommet (In-line)	Water resistant (2-color indicator)	
	D-Y59A/Y59B/Y7P		With timer	
	D-Y7H		Magnetic field resistant (2-color indicator)	
	D-F59W/F5PW/J59W		—	
	D-Y7NWW/Y7PWV/Y7BWW		Without indicator light	
	D-F5BA/Y7BA		—	
	D-F5NT		Without indicator light	
	D-P5DW		—	
	Reed	D-A93V/A96V	Grommet (Perpendicular)	—
		D-A90V	Grommet (In-line)	Without indicator light
D-A53/A56/Z73/Z76		—		
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.



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		Number of switches	
Symbol	Description	Symbol	Description
Nil	Without switch	S	1 pc.
B30	D-B30	Nil	2 pcs.
B30J	D-B30J	n	n pcs.
B31	D-B31		
B31J	D-B31J		
B35	D-B35		
B35J	D-B35J		

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.

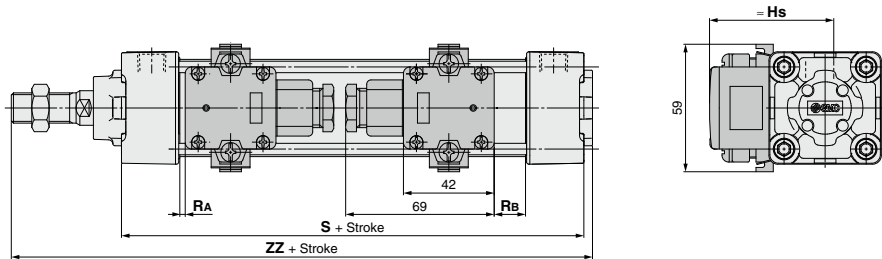
Specifications

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.)



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	200 st or more	BMB2-040
50	109	171	63	3.5	14.5	2 pcs.: Different surfaces	200 st or more	BMB1-050
63	109	171	69.5	0.5	14.5	50 st or more	200 st or more	BMB1-063
80	129	205	78.5	2.5	22.5	2 pcs.: Same surface	210 st or more	BMB1-080
100	129	205	89	1	22	220 st or more	210 st or more	BMB1-100