Smooth Cylinder
MBY Series
ø32, ø40, ø50, ø63, ø80, ø100

RoHS

How to Order

	MBY	B	40		–	150	Z	–			–												
With auto switch	MDBY	B	40		–	150	Z	–			–	M9BW		–									

With auto switch (Built-in magnet)

Mounting

B	Basic
L	Axial foot
F	Rod flange
G	Head flange
C	Single clevis
D	Double clevis
T	Center trunnion

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 184.

Accessories 1

Nil	None
N	Pivot bracket

* Only for D and T mounting types
* Pivot bracket is shipped together with the product, but not assembled.

Accessories 2

Nil	None
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, but not assembled.

Number of auto switches

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

Auto switch

Nil	Without auto switch

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

Made to Order
Refer to page 184 for details.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) MDBYB40-100Z

* **Refer to "Ordering Example of Cylinder Assembly" on page 185.**

Applicable Auto Switches/Refer to pages 941 to 1067 for further information on auto switches.

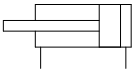
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Tie-rod mounting	Auto switch model: Band mounting	Lead wire length (m): 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	——	Grommet	Yes	3-wire (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		12 V		M9BW	—	●	●	●	○	○	—
	Water resistant (2-color indicator)			3-wire (NPN)	24 V	5 V,12 V	—	M9NA*1	—	○	○	●	○	○	IC circuit
				3-wire (PNP)				M9PA*1	—	○	○	●	○	○	
				2-wire		12 V		M9BA*1	—	○	○	●	○	○	—
	With 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 (NPN equivalent)	—	5 V	—	A96	—	●	—	●	—	—	IC circuit	—
			Yes	2-wire	24 V	12 V	100 V	A93	—	●	●	●	●	—	—	Relay, PLC
			No				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 then listed above, refer to page 197 for details.
* The D-A9□/M9□/P3DWA□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled for the D-A9□/M9□ before shipment.)

Symbol



Minimum Operating Pressure

Unit: MPa

Bore size (mm)	32	40	50	63	80	100
Min. operating pressure	0.02		0.01			

Made to Order

Click here for details

Symbol	Specifications
-XA□	Change of rod end shape
-XC7	Tie-rod, Cushion valve, Tie-rod nut, etc. made of stainless steel
-XC14	Change of trunnion bracket mounting position
-XC27	Double clevis and double knuckle joint pins made of stainless steel
-XC29	Double knuckle joint with spring pin
-XC30	Rod trunnion
-XC65	Made of stainless steel (Combination of XC7 and XC68)
-XC68	Made of stainless steel (with hard chrome plated piston rod)

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents	
32	MBY32Z-PS		
40	CA2Y40Z-PS	Rod seal	1 pc.
50	CA2Y50Z-PS	Piston seal	1 pc.
63	CA2Y63Z-PS	Cylinder tube gasket	2 pcs.
80	CA2Y80Z-PS	Grease pack (10 g)	1 pc.
100	CA2Y100Z-PS		

When maintenance requires only grease, use the following part numbers to order.

Grease pack part number: **GR-L-005** (5 g)
GR-L-010 (10 g)
GR-L-150 (150 g)

Specifications

Bore size (mm)	32	40	50	63	80	100
Action	Double acting					
Piston speed	5 to 500 mm/s					
Fluid	Air					
Proof pressure	1.05 MPa					
Maximum operating pressure	0.7 MPa					
Ambient and fluid temperature	Without auto switch: –10°C to 70°C With auto switch: –10°C to 60°C (No freezing)					
Cushion	None					
Lubrication	Not required (Non-lube)					
Mounting	Basic, Axial foot, Rod flange, Head flange, Single clevis, Double clevis, Center trunnion					
Allowable leakage rate	0.5 L/min (ANR)					

Standard Strokes

Bore size (mm)	Standard stroke (mm)	Max. manufacturable stroke
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	1000
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	1000
50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600	1000
63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600	1000
80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1000
100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1000

Note 1) Intermediate strokes not listed above are also available.
Please consult with SMC for strokes outside the above ranges.

Note 2) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on front matter pages of the Best Pneumatics No. 2-1. In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Accessories

/For details, refer to page 191.

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	●	●	●	●	●	●	●

Mounting Brackets/Part No.

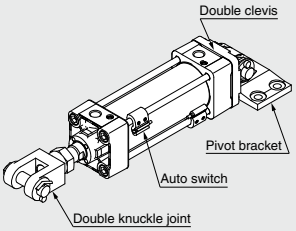
Bore size (mm)	32	40	50	63	80	100
Axial foot Note1)	MB-L03	MB-L04	MB-L05	MB-L06	MB-L08	MB-L10
Flange	MB-F03	MB-F04	MB-F05	MB-F06	MB-F08	MB-F10
Single clevis	MB-C03	MB-C04	MB-C05	MB-C06	MB-C08	MB-C10
Double clevis	MB-D03	MB-D04	MB-D05	MB-D06	MB-D08	MB-D10

Note 1) Order two foots per cylinder.

Note 2) Accessories for each mounting bracket are as follows: Axial foot, Flange, Single clevis: Body mounting bolt, Double clevis: Body mounting bolt, Clevis pin, Flat washers and Split pins. → Refer to page 191 for details.

Ordering Example of Cylinder Assembly

Cylinder model: MDBYD40-150Z-NW-M9BW



Mounting D : Double clevis
Pivot bracket N : Yes
Rod end bracket W: Double knuckle joint
Auto switch D-M9BW: 2 pcs.

∗ Pivot bracket, double knuckle joint and auto switch are shipped together with the product, but not assembled.

Weights

(kg)

Bore size (mm)		32	40	50	63	80	100
Basic weight	Basic	0.44	0.59	1.04	1.29	2.41	3.36
	Axial foot	0.56	0.73	1.26	1.57	2.91	4.02
	Flange	0.73	0.96	1.49	2.08	3.86	5.19
	Single clevis	0.69	0.82	1.38	1.92	3.52	4.94
	Double clevis	0.7	0.86	1.47	2.08	3.81	5.21
	Trunnion	0.73	0.95	1.52	2.09	3.96	5.05
Additional weight per 50 mm of stroke	All mounting brackets	0.11	0.16	0.26	0.27	0.42	0.56
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

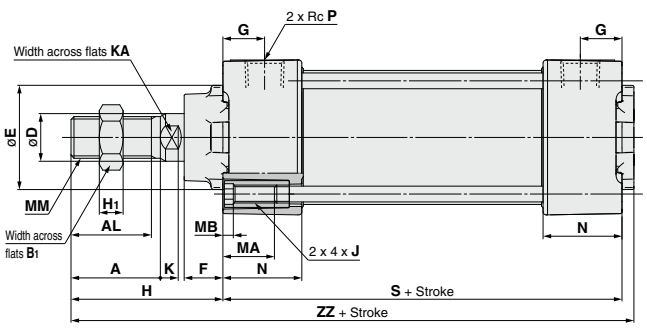
Calculation Example) **MBYB32-100Z** (Basic, ø32, 100 st)

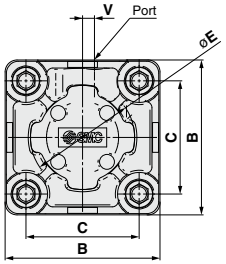
- Basic weight·····0.44 (Basic, ø32)
- Additional weight·····0.11/50 stroke
- Cylinder stroke·····100 stroke

0.44 + 0.11 x 100/50 = **0.66 kg**

Standard

Basic: MBYB





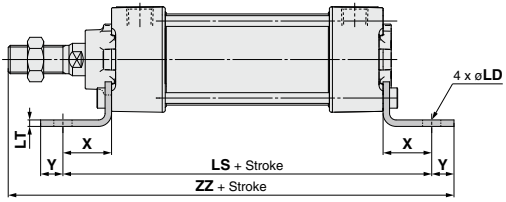
Dimensions (mm)

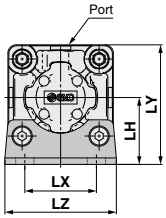
Bore size (mm)	A	AL	B	B1	C	D	E	F	G	H	H1	J	K	KA	MA	MB	MM	N	P	S	V	ZZ
32	22	19.5	46	17	32.5	12	30	13	13	47	6	M6 x 1	6	10	16	4	M10 x 1.25	27	1/8	84	4	135
40	30	27	52	22	38	16	35	13	14	51	8	M6 x 1	6	14	16	4	M14 x 1.5	27	1/4	84	4	139
50	35	32	65	27	46.5	20	40	14	15.5	58	11	M8 x 1.25	7	18	16	5	M18 x 1.5	31.5	1/4	94	5	156
63	35	32	75	27	56.5	20	45	14	16.5	58	11	M8 x 1.25	7	18	16	5	M18 x 1.5	31.5	3/8	94	9	156
80	40	37	95	32	72	25	45	20	19	72	13	M10 x 1.5	10	22	16	5	M22 x 1.5	38	3/8	114	11.5	190
100	40	37	114	41	89	30	55	20	19	72	16	M10 x 1.5	10	26	16	5	M26 x 1.5	38	1/2	114	17	190

Standard/With Mounting Bracket

* Refer to Basic (B) for other dimensions.

Axial foot: MBYL

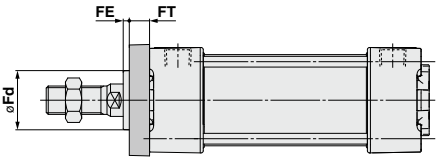


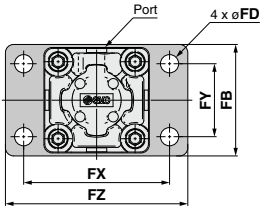


Axial Foot (mm)

Bore size (mm)	LD	LH	LS	LT	LX	LY	LZ	X	Y	ZZ
32	7	30	128	3.2	32	53	50	22	9	162
40	9	33	132	3.2	38	59	55	24	11	170
50	9	40	148	3.2	46	72.5	70	27	11	190
63	12	45	148	3.6	56	82.5	80	27	14	193
80	12	55	174	4.5	72	102.5	100	30	14	230
100	14	65	178	4.5	89	122	120	32	16	234

Rod flange: MBYF





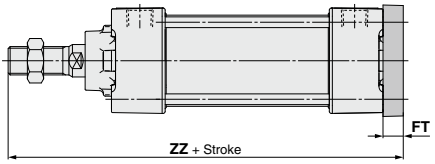
Rod Flange (mm)

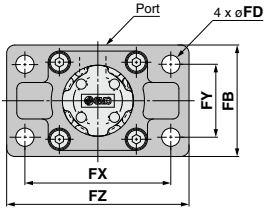
Bore size (mm)	FB	FD	FE	FT	FX	FY	FZ	Fd
32	50	7	3	10	64	32	79	24.5
40	55	9	3	10	72	36	90	30.5
50	70	9	2	12	90	45	110	36.5
63	80	9	2	12	100	50	120	39.5
80	100	12	4	16	126	63	153	39.5
100	120	14	4	16	150	75	178	46.5

Standard/With Mounting Bracket

* Refer to Basic (B) for other dimensions.

Head flange: MBYG

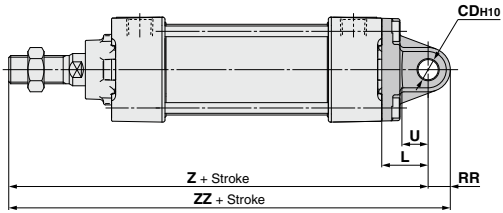


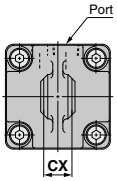


Head Flange (mm)

Bore size (mm)	FB	FD	FT	FX	FY	FZ	ZZ
32	50	7	10	64	32	79	141
40	55	9	10	72	36	90	145
50	70	9	12	90	45	110	164
63	80	9	12	100	50	120	164
80	100	12	16	126	63	153	202
100	120	14	16	150	75	178	202

Single clevis: MBYC





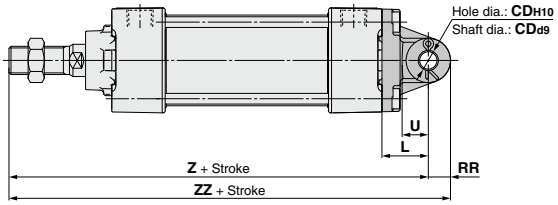
Single Clevis (mm)

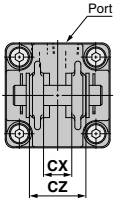
Bore size (mm)	CD_{H10}	CX	L	RR	U	Z	ZZ
32	$10^{+0.058}_{0}$	$14^{-0.1}_{-0.3}$	23	10.5	13	154	164.5
40	$10^{+0.058}_{0}$	$14^{-0.1}_{-0.3}$	23	11	13	158	169
50	$14^{+0.070}_{0}$	$20^{-0.1}_{-0.3}$	30	15	17	182	197
63	$14^{+0.070}_{0}$	$20^{-0.1}_{-0.3}$	30	15	17	182	197
80	$22^{+0.084}_{0}$	$30^{-0.1}_{-0.3}$	42	23	26	228	251
100	$22^{+0.084}_{0}$	$30^{-0.1}_{-0.3}$	42	23	26	228	251

Standard/With Mounting Bracket

* Refer to Basic (B) for other dimensions.

Double clevis: MBYD

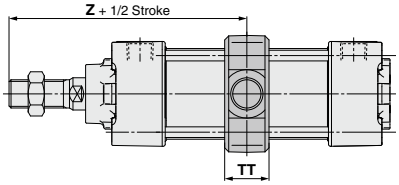


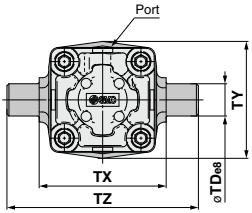


Double Clevis (mm)

Bore size (mm)	CD_{H10}	CD_{d9}	CX	CZ	L	RR	U	Z	ZZ
32	$10^{+0.058}_{0}$	$10^{-0.040}_{-0.076}$	$14^{+0.3}_{+0.1}$	28	23	10.5	13	154	164.5
40	$10^{+0.058}_{0}$	$10^{-0.040}_{-0.076}$	$14^{+0.3}_{+0.1}$	28	23	11	13	158	169
50	$14^{+0.070}_{0}$	$14^{-0.050}_{-0.093}$	$20^{+0.3}_{+0.1}$	40	30	15	17	182	197
63	$14^{+0.070}_{0}$	$14^{-0.050}_{-0.093}$	$20^{+0.3}_{+0.1}$	40	30	15	17	182	197
80	$22^{+0.084}_{0}$	$22^{-0.065}_{-0.117}$	$30^{+0.3}_{+0.1}$	60	42	23	26	228	251
100	$22^{+0.084}_{0}$	$22^{-0.065}_{-0.117}$	$30^{+0.3}_{+0.1}$	60	42	23	26	228	251

Center trunnion: MBYT





Center Trunnion (mm)

Bore size (mm)	TD_{e8}	TT	TX	TY	TZ	Z
32	$12^{-0.032}_{-0.059}$	17	50	49	74	89
40	$16^{-0.032}_{-0.059}$	22	63	58	95	93
50	$16^{-0.032}_{-0.059}$	22	75	71	107	105
63	$20^{-0.040}_{-0.073}$	28	90	87	130	105
80	$20^{-0.040}_{-0.073}$	34	110	110	150	129
100	$25^{-0.040}_{-0.073}$	40	132	136	182	129

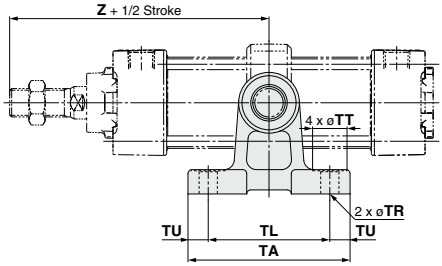
Pivot Bracket/Trunnion and Double Clevis Pivot Bracket

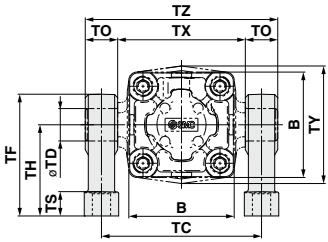
Part No.

Description \ Bore size	MB□32	MB□40	MB□50	MB□63	MB□80	MB□100
Trunnion pivot bracket Note)	MB-S03	MB-S04		MB-S06		MB-S10
Double clevis pivot bracket	MB-B03		MB-B05		MB-B08	

Note) Order 2 trunnion pivot brackets per cylinder.

Trunnion pivot bracket

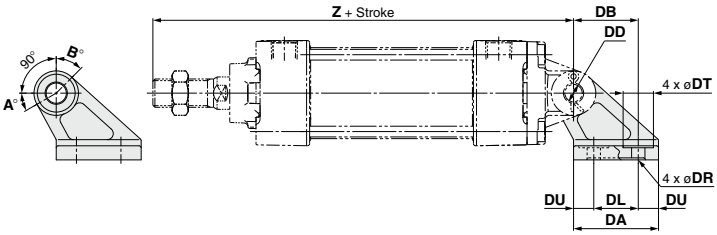


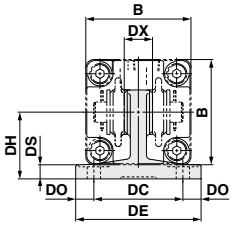


(mm)

Part no.	Bore size (mm)	B	TA	TL	TU	TC	TX	TE	TO	TR	TT	TS	TH	TF	Z**	TD H10
MB-S03	32	46	62	45	8.5	62	50	74	12	7	13	10	35	47	89	$12^{+0.070}_{0}$
MB-S04	40	52	80	60	10	80	63	97	17	9	17	12	45	60	93	$16^{+0.070}_{0}$
	50	65	80	60	10	92	75	109	17	9	17	12	45	60	105	$16^{+0.070}_{0}$
MB-S06	63	75	100	70	15	110	90	130	20	11	22	14	60	80	105	$20^{+0.084}_{0}$
	80	95	100	70	15	130	110	150	20	11	22	14	60	80	129	$20^{+0.084}_{0}$
MB-S10	100	114	120	90	15	158	132	184	26	13.5	24	17	75	100	129	$25^{+0.084}_{0}$

Double clevis pivot bracket





(mm)

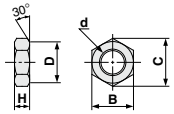
Part no.	Bore size (mm)	B	DA	DB	DL	DU	DC	DX	DE	DO	DR	DT	DS	DH	Z*	DD H10
MB-B03	32	46	42	32	22	10	44	14	62	9	6.6	15	7	33	154	$10^{+0.058}_{0}$
	40	52	42	32	22	10	44	14	62	9	6.6	15	7	33	158	$10^{+0.058}_{0}$
MB-B05	50	65	53	43	30	11.5	60	20	81	10.5	9	18	8	45	182	$14^{+0.070}_{0}$
	63	75	53	43	30	11.5	60	20	81	10.5	9	18	8	45	182	$14^{+0.070}_{0}$
MB-B08	80	95	73	64	45	14	86	30	111	12.5	11	22	10	65	228	$22^{+0.084}_{0}$
	100	114	73	64	45	14	86	30	111	12.5	11	22	10	65	228	$22^{+0.084}_{0}$

Rotating Angle

Bore size (mm)	A°	B°	A° + B° + 90°
32, 40	25°	45°	160°
50, 63	40°	60°	190°
80, 100	30°	55°	175°

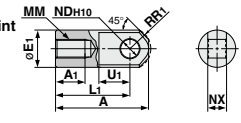
Dimensions of Accessories

Rod end nut
(Standard)



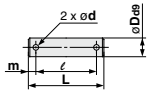
Part no.	Bore size (mm)	d	H	B	C	D
NT-03	**32**	M10 x 1.25	6	17	19.6	16.5
NT-04	**40**	M14 x 1.5	8	22	25.4	21
NT-05	**50, 63**	M18 x 1.5	11	27	31.2	26
NT-08	**80**	M22 x 1.5	13	32	37.0	31
NT-10	**100**	M26 x 1.5	16	41	47.3	39

I type
Single knuckle joint



Part no.	Bore size (mm)	A	A1	E1	L1	MM	R1	U1	ND H10	NX
I-03M	**32**	40	14	20	30	M10 x 1.25	12	16	$10^{+0.058}_{0}$	$14^{-0.10}_{-0.30}$
I-04M	**40**	50	19	22	40	M14 x 1.5	12.5	19	$10^{+0.058}_{0}$	$14^{-0.10}_{-0.30}$
I-05M	**50, 63**	64	24	28	50	M18 x 1.5	16.5	24	$14^{+0.070}_{0}$	$20^{-0.10}_{-0.30}$
I-08M	**80**	80	26	40	60	M22 x 1.5	23.5	34	$22^{+0.084}_{0}$	$30^{-0.10}_{-0.30}$
I-10M	**100**	80	26	40	60	M26 x 1.5	23.5	34	$22^{+0.084}_{0}$	$30^{-0.10}_{-0.30}$

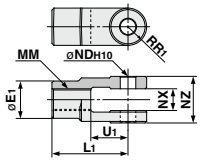
Knuckle joint pin
Clevis pin



Part no.	Bore size (mm) Clevis	Bore size (mm) Knuckle	Dd9	L	ℓ	m	d (Drill through)	Applicable split pin
CD-M03	**32, 40**		$10^{-0.040}_{-0.076}$	44	36	4	3	ø3 x 18ℓ
CD-M05	**50, 63**		$14^{-0.050}_{-0.093}$	60	51	4.5	4	ø4 x 25ℓ
CD-M08	**80, 100**		$22^{-0.065}_{-0.117}$	82	72	5	4	ø4 x 35ℓ

Note) Split pins and flat washers are included.

Y type
Double knuckle joint



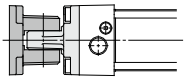
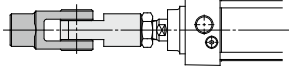
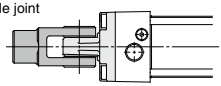
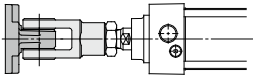
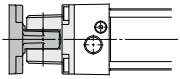
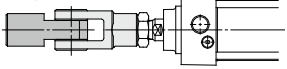
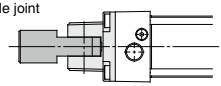
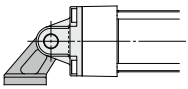
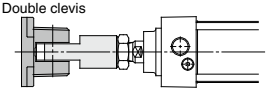
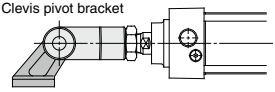
Part no.	Bore size (mm)	E1	L1	MM	R1	U1	ND H10	NX	NZ
Y-03M	**32**	20	30	M10 x 1.25	10	16	$10^{+0.058}_{0}$	$14^{+0.30}_{+0.10}$	$28^{-0.10}_{-0.30}$
Y-04M	**40**	22	40	M14 x 1.5	11	19	$10^{+0.058}_{0}$	$14^{+0.30}_{+0.10}$	$28^{-0.10}_{-0.30}$
Y-05M	**50, 63**	28	50	M18 x 1.5	14	24	$14^{+0.070}_{0}$	$20^{+0.30}_{+0.10}$	$40^{-0.10}_{-0.30}$
Y-08M	**80**	40	65	M22 x 1.5	20	34	$22^{+0.084}_{0}$	$30^{+0.30}_{+0.10}$	$60^{-0.10}_{-0.30}$
Y-10M	**100**	40	65	M26 x 1.5	20	34	$22^{+0.084}_{0}$	$30^{+0.30}_{+0.10}$	$60^{-0.10}_{-0.30}$

Note) A pin, split pins and flat washers are included.

Bracket Combinations

Bracket combination available ▶Refer to the figure below.

Bracket for workpiece / Bracket for cylinder	Single clevis	Double clevis	Single knuckle joint	Double knuckle joint	Clevis pivot bracket
Single clevis	—	①	—	②	—
Double clevis	③	—	④	—	⑨
Single knuckle joint	—	⑤	—	⑥	—
Double knuckle joint	⑦	—	⑧	—	⑩

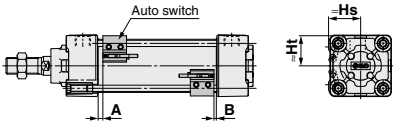
No.	Appearance	No.	Appearance
①	Single clevis + Double clevis 	⑥	Single knuckle joint + Double knuckle joint 
②	Single clevis + Double knuckle joint 	⑦	Double knuckle joint + Single clevis 
③	Double clevis + Single clevis 	⑧	Double knuckle joint + Single knuckle joint 
④	Double clevis + Single knuckle joint 	⑨	Double clevis + Clevis pivot bracket 
⑤	Single knuckle joint + Double clevis 	⑩	Double knuckle joint + Clevis pivot bracket 

Auto Switch Mounting

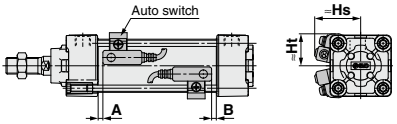
Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

<Tie-rod mounting>

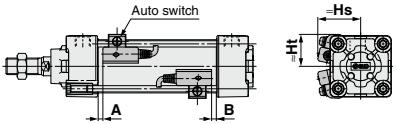
D-M9□/M9□V
D-M9□W/M9□WV
D-M9□A/M9□AV
D-A9□/A9□V
D-Z7□/Z80
D-Y59□/Y69□/Y7P/Y7PV
D-Y7□W/Y7□WV/Y7BA



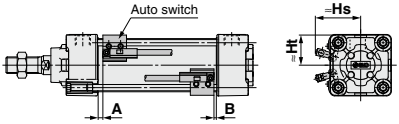
D-A5□/A6□
D-A59W



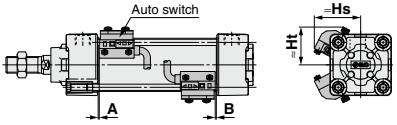
D-F5□/J59
D-F5□W/J59W/F5BA
D-F59F/F5NT



D-P3DWA

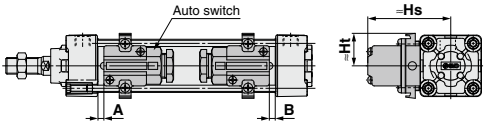


D-P4DW

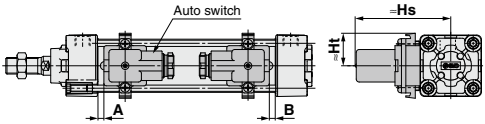


<Band mounting>

D-A3□/G39/K39



D-A44



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

Auto Switch Proper Mounting Position

(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-A5□ D-A6□		D-A59W		D-F5□ D-J59 D-F59F		D-F5NT		D-A3□ D-A44 D-G39 D-K39		D-Z7□ D-Z8□ D-Y59□ D-Y69□ D-Y7P D-Y7PV D-Y7H D-Y7□W D-Y7□WV		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	0	0	4	2	6.5	4.5	11.5	9.5	0	0	3.5	1.5	5.5	3.5	3	1
40	9	9	5	5	0	0	3	3	5.5	5.5	10.5	10.5	0	0	2.5	2.5	4.5	4.5	2	2
50	10	9	6	5	0	0	4	3	6.5	5.5	11.5	10.5	0	0	3.5	2.5	5.5	4.5	3	2
63	10	9	6	5	0	0	4	3	6.5	5.5	11.5	10.5	0	0	3.5	2.5	5.5	4.5	3	2
80	14.5	11.5	10.5	7.5	4.5	1.5	8.5	5.5	11	8	16	13	4.5	1.5	8	5	10	7	7.5	4.5
100	14	12	10	8	4	2	8	6	10.5	8.5	15.5	13.5	4	2	7.5	5.5	9.5	7.5	7	5

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

Auto Switch Proper Mounting Height

(mm)

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

Operating Range

(mm)

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

∗ 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.

Minimum Stroke for Auto Switch Mounting/Mounting Brackets other than Center Trunnion

n: Number of auto switches (mm)

Auto switch model	Number of auto switches mounted	Mounting brackets other than center trunnion	
		ø32, ø40, ø50, ø63	**ø80, ø100**
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-A3□ **D-G39** **D-K39**	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-A5□ **D-A6□**	2 (Different surfaces, same surface) 1	15	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)
D-A59W	2 (Different surfaces, same surface)	20	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)
	1	15	25
D-F5□ **D-J5□** **D-F5□W** **D-J59W** **D-F5BA** **D-F59F**	2 (Different surfaces, same surface)	15	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)
	1	10	25
D-F5NT	2 (Different surfaces, same surface)	15	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)
	1	10	25
D-Z7□ **D-Z80** **D-Y59□** **D-Y7P** **D-Y7□W**	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.

Minimum Stroke for Auto Switch Mounting/Mounting Brackets other than Center Trunnion

n: Number of auto switches (mm)

Auto switch model	Number of auto switches mounted	Mounting brackets other than center trunnion ø32, ø40, ø50, ø63, ø80, ø100
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
	n	$15 + 65\frac{(n-2)}{2}$ (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.

Minimum Stroke for Auto Switch Mounting/Center Trunnion

n: Number of auto switches (mm)

Auto switch model	Number of auto switches mounted	Center trunnion ø32	ø40	ø50	ø63	ø80	ø100
D-M9□ D-M9□W	2 (Different surfaces, same surface) 1	75	80		85	90	95
	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)
D-M9□V D-M9□WV	2 (Different surfaces, same surface) 1	50	55		60	65	70
	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)
D-M9□A	2 (Different surfaces, same surface) 1	80	85		90	95	100
	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)
D-M9□AV	2 (Different surfaces, same surface) 1	55	60		65	70	75
	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)
D-A9□	2 (Different surfaces, same surface) 1	70	75		80	85	95
	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)
D-A9□V	2 (Different surfaces, same surface) 1	45	50		55	60	70
	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)

Note 2) When "n" is an odd number, a multiple of 4 that is larger than this odd number is used for the calculation.

Minimum Stroke for Auto Switch Mounting/Center Trunnion

n: Number of auto switches (mm)

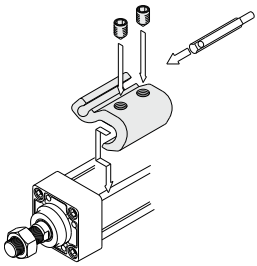
Auto switch model	Number of auto switches mounted	Center trunnion					
		ø32	ø40	ø50	ø63	ø80	ø100
D-A3□ D-G39 D-K39	2 (Different surfaces)	60	65		75	80	85
	2 (Same surface)	90	95		100	105	110
	n (Different surfaces)	60 + 30 (n – 2) (n = 2, 4, 6, 8···) Note 1)	65 + 30 (n – 2) (n = 2, 4, 6, 8···) Note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

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.

Auto Switch Mounting Brackets/Part No.

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

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



[Stainless Steel Mounting Screw]

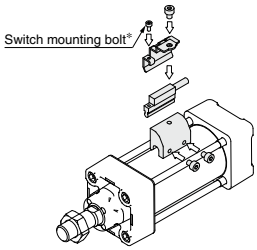
The following stainless steel mounting screw kit (including set screws) is available. Use it in accordance with the operating environment. (Since the auto switch mounting bracket is not included, order it separately.)

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

Note 1) Refer to page 1055 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 the 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.

<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 941 to 1067 for the detailed specifications.

Type	Model	Electrical entry	Features
Reed	D-A93V/A96V	Grommet (Perpendicular)	—
	D-A90V		Without indicator light
	D-B35	Grommet (In-line)	—
	D-A53/A56/Z73/Z76		
	D-A67/Z80		Without indicator light
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)

* With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1014 and 1015.
* Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)/Y7G/Y7H) are also available. For details, refer to pages 1592-1 and 961.