

Air Cylinder

Double Acting, Single Rod

JMB Series

ø32, ø40, ø45, ø50, ø56, ø63, ø67, ø80, ø85, ø100

RoHS

How to Order

With auto switch **JMDB B 32** **50** **M9BW**

With auto switch (Built-in magnet)
* Not available without a magnet

Mounting

B	Basic
A	Both ends tapped*1
L	Axial foot bracket
F	Rod flange
G	Head flange

* "L," "F," and "G" cannot be selected for bore sizes ø45, ø56, ø67, and ø85.
*1 In order to mount a foot bracket or flange on the both ends tapped type, it must be ordered separately. Refer to "Mounting Brackets/Part Nos." on page 5 for order numbers.

Number of auto switches

Nil	2
S	1
3	3
n	n

Auto switch

Nil	Without auto switch
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* For applicable auto switches, refer to the table below.

Rod end bracket

Nil	Without bracket
V	Single knuckle joint
W	Double knuckle joint

* A knuckle joint pin is not provided with the single knuckle joint.
* The rod end bracket is shipped together with the product.

Cylinder stroke [mm]
Refer to page 4 for standard strokes.

Port thread type

Nil	Rc
TN	NPT
TF	G

Bore size

32	32 mm
40	40 mm
45	45 mm
50	50 mm
56	56 mm
63	63 mm
67	67 mm
80	80 mm
85	85 mm
100	100 mm

Applicable Auto Switches/Refer to the Web Catalog 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	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)					
Solid state auto switch	Diagnostic indication (2-color indicator)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC	
				3-wire (PNP)				M9PV	M9P	●	●	●	○				
				2-wire				M9BV	M9B	●	●	●	○				
				3-wire (NPN)				M9NVV	M9NW	●	●	●	○				
				3-wire (PNP)				M9PVV	M9PW	●	●	●	○				
				2-wire				M9BVV	M9BW	●	●	●	○				
	Water resistant (2-color indicator)			3-wire (NPN)	M9NAV *1	M9NA *1	○	○	●	○	○	○	○	○	○		IC circuit
				3-wire (PNP)	M9PAV *1	M9PA *1	○	○	●	○	○	○	○	○	○		IC circuit
				2-wire	M9BAV *1	M9BA *1	○	○	●	○	○	○	○	○	○		—

*1 Water-resistant type auto switches can be mounted on the above models, but 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
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWZ

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

* For details on auto switches with pre-wired connectors, refer to the Web Catalog.

* Auto switches and auto switch mounting brackets are shipped together with the product but do not come assembled.



Specifications

Bore size [mm]	32	40	45	50	56	63	67	80	85	100	
Action	Double acting, Single rod										
Fluid	Air										
Proof pressure	1.0 MPa										
Max. operating pressure	0.7 MPa*2										
Min. operating pressure	0.05 MPa										
Ambient and fluid temperatures	5 to 60°C										
Lubrication	Not required (Non-lube)										
Piston speed*1	50 to 500 mm/s*2										
Stroke length tolerance	+2.0 0										
Cushion	Non-adjustable air cushion + rubber bumper										
Port size (Rc, NPT, G)	1/8							1/4		3/8	
Mounting	Basic										

*1 Depending on the system configuration selected, the specified speed may not be satisfied.

*2 Max. operating pressure and piston speed are different from those of the existing model (MB series).

Standard Strokes

Bore size [mm]	Standard stroke [mm]	Max. manufacturable stroke
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300	300
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300	300
45	25, 50, 75, 100, 125, 150, 175, 200, 250, 300	300
50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	400
56	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	400
63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	400
67	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	400
80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	500
85	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	500
100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	500

⚠️ Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Refer to page 8 for cylinders with auto switches.

- Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height
- Min. Stroke for Auto Switch Mounting
- Operating Range
- Auto Switch Mounting Brackets/Part Nos.

Theoretical Output

[Unit: N] IN

Bore size [mm]	Rod size [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]					
				0.2	0.3	0.4	0.5	0.6	0.7
32	10	OUT	804	161	241	322	402	483	563
		IN	726	145	218	290	363	435	508
40	14	OUT	1257	251	377	503	628	754	880
		IN	1103	221	331	441	551	662	772
45	14	OUT	1590	318	477	636	795	954	1113
		IN	1436	287	431	575	718	862	1006
50	18	OUT	1963	393	589	785	982	1178	1374
		IN	1709	342	513	684	855	1025	1196
56	18	OUT	2463	493	739	985	1232	1478	1724
		IN	2209	442	663	883	1104	1325	1546
63	18	OUT	3117	623	935	1247	1559	1870	2182
		IN	2863	573	859	1145	1431	1718	2004
67	18	OUT	3526	705	1058	1410	1763	2115	2468
		IN	3271	654	981	1308	1636	1963	2290
80	22	OUT	5027	1005	1508	2011	2513	3016	3519
		IN	4646	929	1394	1859	2323	2788	3252
85	22	OUT	5675	1135	1702	2270	2837	3405	3972
		IN	5294	1059	1588	2118	2647	3177	3706
100	26	OUT	7854	1571	2356	3142	3927	4712	5498
		IN	7323	1465	2197	2929	3662	4394	5126

* Theoretical output [N] = Pressure [MPa] x Piston area [mm²]

JMB Series

Mounting Brackets/Part Nos.

Mounting bracket	Min. order quantity	Bore size [mm]										Contents
		32	40	45	50	56	63	67	80	85	100	
Foot bracket*1, *2	2	JMB-L032	JMB-L040	—	JMB-L050	—	JMB-L063	—	JMB-L080	—	JMB-L100	1 foot bracket, 2 hexagon nuts, and 2 flat washers
Flange*2	1	JMB-F032	JMB-F040	—	JMB-F050	—	JMB-F063	—	JMB-F080	—	JMB-F100	1 flange, 4 hexagon nuts, and 4 flat washers
Single knuckle joint	1	I-03M	I-04M	I-05M			I-08M			I-10M	1 single knuckle joint	
Double knuckle joint	1	Y-03M	Y-04M	Y-05M			Y-08M			Y-10M	1 double knuckle joint, 1 pin, 2 split pins, and 2 flat washers	

*1 Order two foot brackets per cylinder.

*2 An "A" is suffixed to the end of the part numbers of foot brackets and flanges to be mounted on the both ends tapped type.

Ordering example) Bore size $\phi 32$: Foot bracket JMB-L032A Included parts: 1 foot bracket and 2 hexagon socket head cap screws
 : Flange JMB-F032A Included parts: 1 flange and 4 hexagon socket head cap screws

Mounting Brackets/Material, Surface Treatment

Segment	Description	Material	Surface treatment
Mounting brackets	Foot bracket	Carbon steel	Zinc chromating
	Flange	Carbon steel	Zinc chromating
Accessories	Single knuckle joint	Free cutting carbon steel	Zinc chromating
	Double knuckle joint	Cast iron	Metallic silver color painting
	Knuckle joint pin	Carbon steel	(None)

Weight

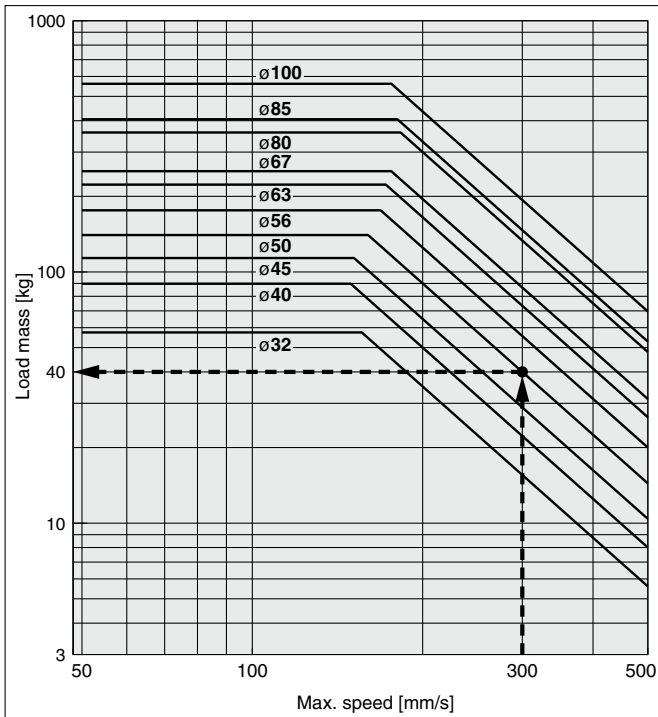
Bore size [mm]		32	40	45	50	56	63	67	80	85	100
Basic weight	Basic	0.21	0.30	0.32	0.62	0.69	0.88	1.03	1.54	1.91	2.56
Additional weight per 50 mm of stroke		0.11	0.17	0.18	0.19	0.20	0.20	0.24	0.32	0.38	0.46
Additional weight for mounting bracket	Foot bracket	0.04	0.05	—	0.08	—	0.14	—	0.26	—	0.36
	Flange	0.06	0.07	—	0.11	—	0.21	—	0.35	—	0.60
Accessories	Single knuckle joint	0.15	0.23	0.23	0.26	0.26	0.26	0.26	0.60	0.60	0.83
	Double knuckle joint (with pin)	0.22	0.37	0.37	0.43	0.43	0.43	0.43	0.87	0.87	1.27

Calculation example) **JMDBL50-100**

- Basic weight 0.62 (Basic, $\phi 50$)
- Additional weight 0.19/50 mm stroke
- Stroke 100 mm stroke
- Foot bracket (2 pcs.) 0.08 x 2

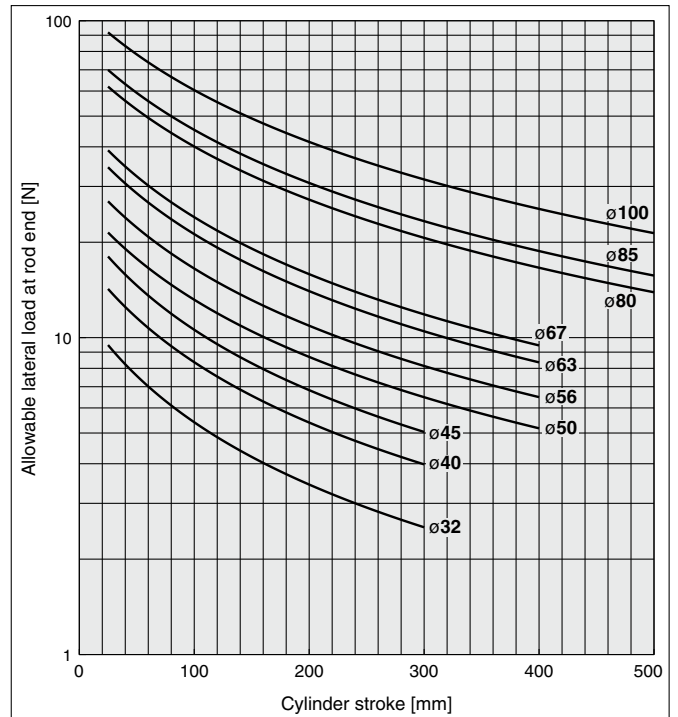
$$0.62 + (0.19 \times 100/50) + (0.08 \times 2) = 1.16 \text{ kg}$$

Allowable Kinetic Energy



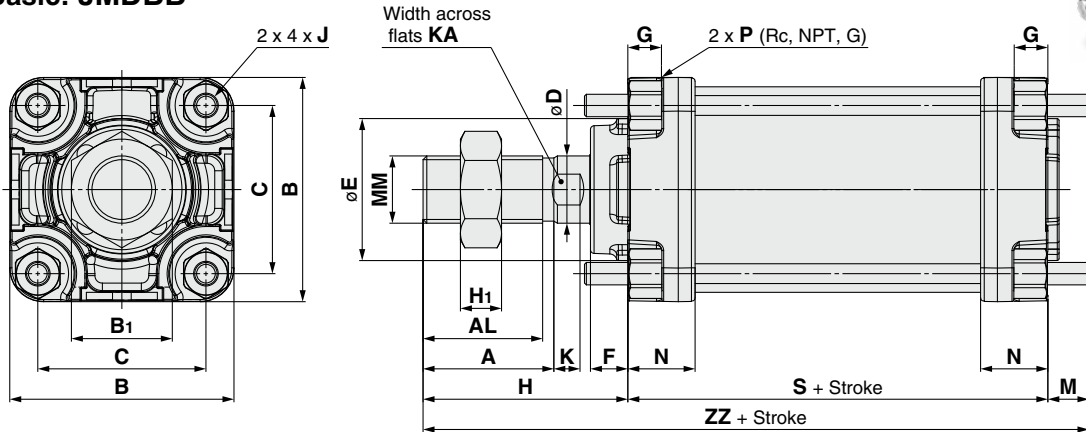
Example) Load limit at the rod end when a $\phi 50$ air cylinder is actuated at 300 mm/s
 Extend upward from 300 mm/s on the horizontal axis of the graph to the intersection point with the line for a 50 mm bore size, and then extend leftward from this point to find the load of 40 kg.

Allowable Lateral Load at Rod End



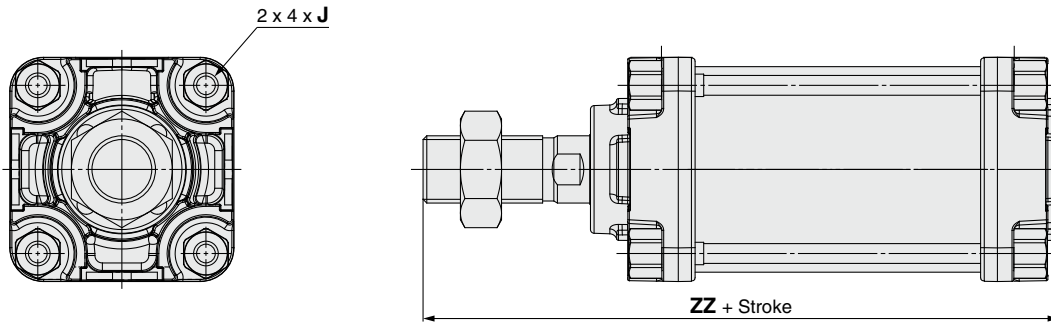
Dimensions

Basic: JMDBB



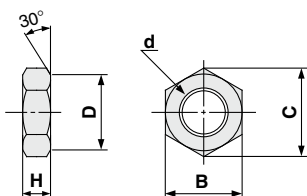
Bore size	Stroke range	A	AL	B	B ₁	C	D	E	F	G	H	H ₁	J	K	KA	M	MM	N	P	S	ZZ
32	Up to 300	22	19.5	42	17	31	10	24	8	9	38	6	M5 x 0.8	5.5	8	8	M10 x 1.25	18	1/8	63	109
40	Up to 300	24	21	48	22	37	14	32	9	9	44	8	M5 x 0.8	8	12	8	M14 x 1.5	18	1/8	62	114
45	Up to 300	24	21	52	22	41	14	32	9	9	44	8	M5 x 0.8	8	12	8	M14 x 1.5	18	1/8	62	114
50	Up to 400	35	32	60	27	45	18	38	10	9	55	11	M6 x 1	7	16	11	M18 x 1.5	18	1/8	63	129
56	Up to 400	35	32	65	27	50	18	38	10	9	55	11	M6 x 1	7	16	11	M18 x 1.5	18	1/8	63	129
63	Up to 400	35	32	70	27	55	18	38	6	11	51	11	M6 x 1	7	16	11	M18 x 1.5	22	1/4	73	135
67	Up to 400	35	32	75	27	58	18	38	6	11	51	11	M8 x 1.25	7	16	11	M18 x 1.5	22	1/4	73	135
80	Up to 500	40	37	88	32	69	22	45	12	13	62	13	M8 x 1.25	7	19	13	M22 x 1.5	26	1/4	83	158
85	Up to 500	40	37	95	32	74	22	45	12	13	62	13	M10 x 1.25	7	19	14	M22 x 1.5	26	1/4	83	159
100	Up to 500	40	37	110	41	87	26	50	10	14	66	16	M10 x 1.25	12	23	14	M26 x 1.5	28	3/8	88	168

Both ends tapped: JMDBA



Bore size	J	ZZ
32	M5 x 0.8 depth 9	104
40	M5 x 0.8 depth 9	109
45	M5 x 0.8 depth 9	109
50	M6 x 1 depth 9	121
56	M6 x 1 depth 9	121
63	M6 x 1 depth 9	127
67	M8 x 1.25 depth 11	127
80	M8 x 1.25 depth 11	148
85	M10 x 1.25 depth 13	148
100	M10 x 1.25 depth 13	157

Rod end nut (Standard)

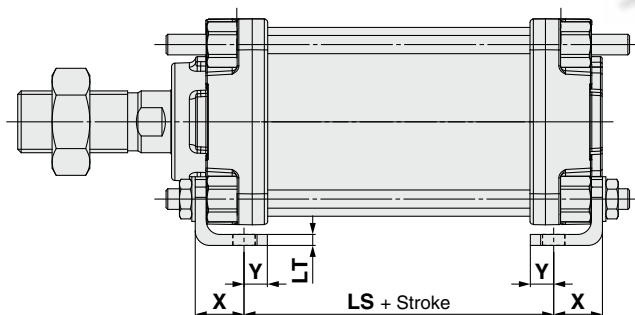
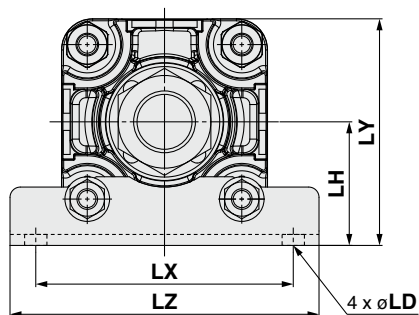


Part no.	Bore size	d	H	B	C	D
NT-03	32	M10 x 1.25	6	17	19.6	16.5
NT-04	40, 45	M14 x 1.5	8	22	25.4	21
NT-05	50, 56, 63, 67	M18 x 1.5	11	27	31.2	26
NT-08	80, 85	M22 x 1.5	13	32	37.0	31
NT-10	100	M26 x 1.5	16	41	47.3	39

JMB Series

Dimensions

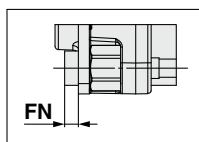
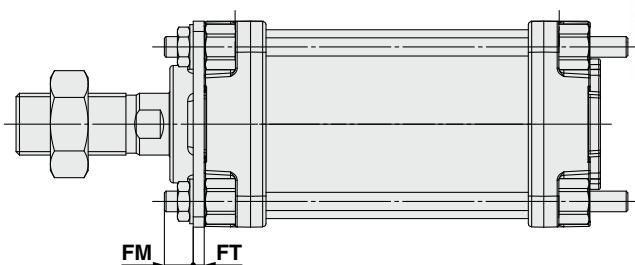
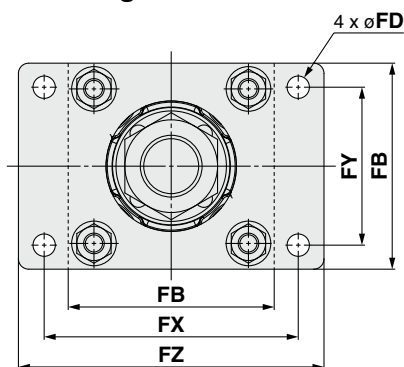
Axial foot bracket: JMDBL



Bore size	LD	LH	LS	LT	LX	LY	LZ	X	Y
32	5.5	26	46	3.2	52	47	64	12	6.3
40	5.5	29	44	3.2	58	53	69	12	5.5
50	6.5	36	41	3.2	75	66	90	14	6.8
63	6.5	42	51	4.5	86	77	100	16	7.5
80	9	54	55	4.5	114	98	136	19	10
100	11	66	56	4.5	138	121	160	20.5	11.5

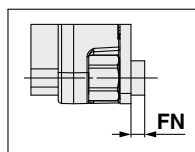
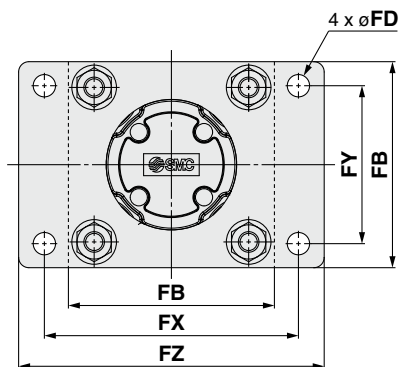
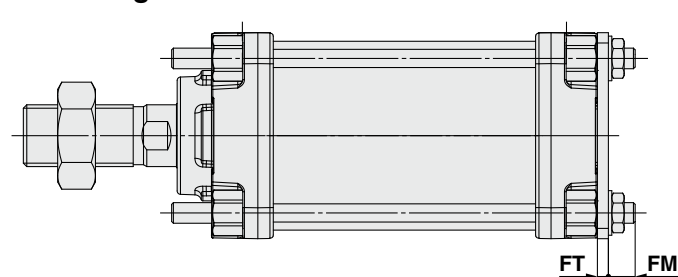
[mm]

Rod flange: JMDBF



When mounted on the both ends tapped type (A)

Head flange: JMDBG



When mounted on the both ends tapped type (A)

Bore size	FB	FD	FM	FN	FT	FX	FY	FZ
32	42	5.5	4.8	3.5	3.2	54	31	65
40	48	5.5	4.8	3.5	3.2	60	37	72
50	60	6.5	7.8	4	3.2	74	46	89
63	70	6.5	6.5	4	4.5	85	55	100
80	90	9	8.5	5	4.5	108	70	127
100	110	11	9	6	5	133	87	154

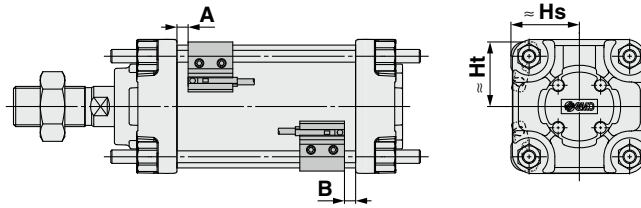
[mm]

JMB Series Auto Switch Mounting

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

<Tie-rod mounting>

D-M9□/M9□V
D-M9□W/M9□WV
D-M9□A/M9□AV



Auto Switch Proper Mounting Position [mm]

Auto switch model Bore size	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	
	A	B
32	7.5	7
40	6.5	7
45	6.5	7
50	7	6.5
56	7	6.5
63	8	8
67	8	8
80	9	9
85	9	9
100	9	10

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

Auto Switch Mounting Height [mm]

Auto switch model Bore size	D-M9□ D-M9□W D-M9□A		D-M9□V D-M9□WV D-M9□AV	
	Hs	Ht	Hs	Ht
32	24.5	22.5	30.5	22.5
40	28.5	25.5	34	25.5
45	30.5	27.5	36	27.5
50	33	30	38.5	30
56	35	32.5	41	32.5
63	38.5	36	43	36
67	45.5	45	49.5	45
80	46.5	45	52	45
85	54	53.5	57.5	53.5
100	54	53.5	59.5	53.5

Min. Stroke for Auto Switch Mounting

n: Number of auto switches [mm]

Auto switch model	Number of auto switches	∅32, ∅40, ∅45, ∅50, ∅56, ∅63, ∅67, ∅80, ∅85, ∅100
D-M9□ D-M9□W	2 (Different surfaces, Same surface), 1	15
	n	$15 + 40 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)*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...)*1
D-M9□A	2 (Different surfaces, Same surface), 1	15
	n	$15 + 40 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)*1
D-M9□AV	2 (Different surfaces, Same surface), 1	15
	n	$15 + 30 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)*1

*1 When "n" is an odd number, an even number that is one larger than the odd number is to be used for the calculation.

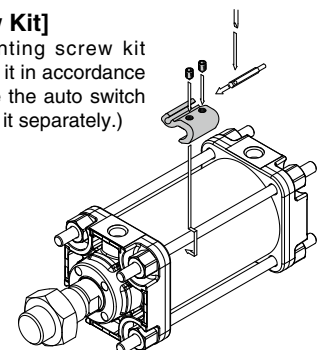
Auto Switch Mounting Brackets/Part Nos.

Auto switch model Bore size	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV
32	BMB10-032
40	BMB10-032
45	BMB10-032
50	BMB5-032
56	BMB5-032
63	BMB5-032
67	BA7-040
80	BA7-040
85	BA7-063
100	BA7-063

[Stainless Steel Mounting Screw Kit]

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.)

* When using the D-M9□A(V), do not use the steel set screws which are included with the auto switch mounting brackets shown to the left (BMB10-032, BMB5-032, BA7-040, BA7-063). Order a stainless steel screw kit (BBA1) separately, and use the M4 x 6 L stainless steel set screws included in the BBA1.

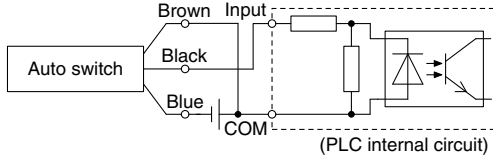


Prior to Use

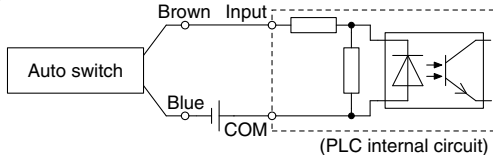
Auto Switch Connections and Examples

Sink Input Specifications

3-wire, NPN

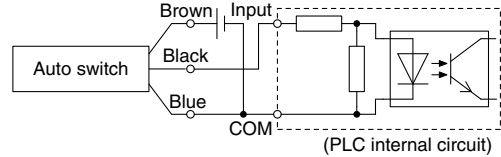


2-wire

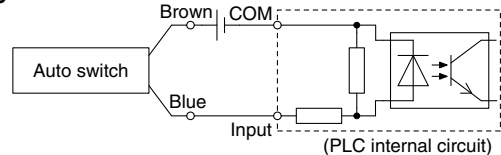


Source Input Specifications

3-wire, PNP



2-wire

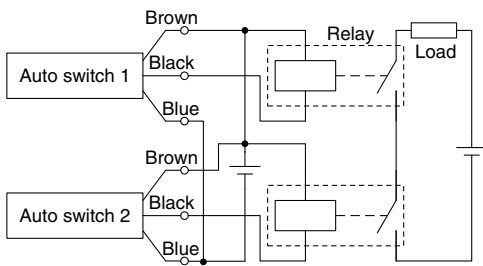


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

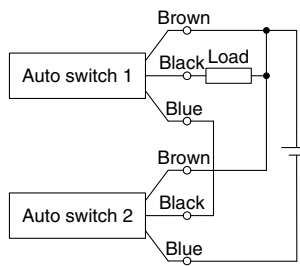
Examples of AND (Series) and OR (Parallel) Connections

* When using solid state auto switches, ensure the application is set up so the signals for the first 50 ms are invalid. Depending on the operating environment, the product may not operate properly.

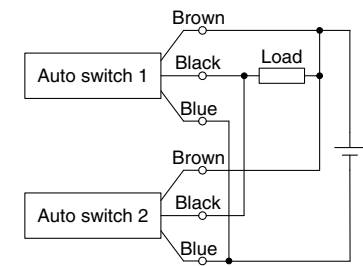
3-wire AND connection for NPN output (Using relays)



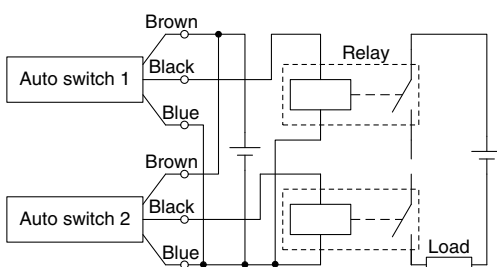
(Performed with auto switches only)



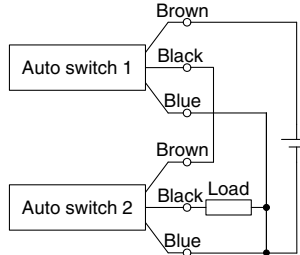
3-wire OR connection for NPN output



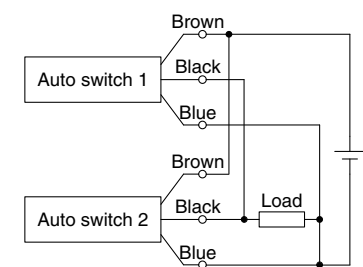
3-wire AND connection for PNP output (Using relays)



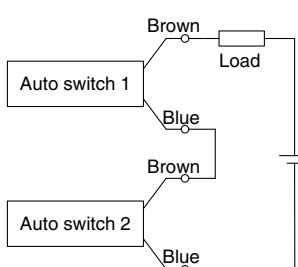
(Performed with auto switches only)



3-wire OR connection for PNP output



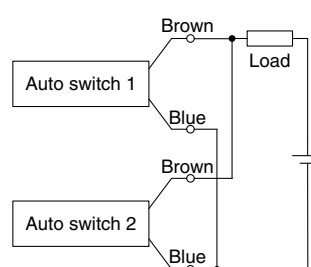
2-wire AND connection



When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state. Auto switches with a load voltage less than 20 V cannot be used. Please contact SMC if using AND connection for a heat-resistant solid state auto switch or a trimmer switch.

Example) Load voltage at ON
 Power supply voltage: 24 VDC
 Internal voltage drop: 4 V
 Load voltage at ON = Power supply voltage –
 Internal voltage drop x 2 pcs.
 = 24 V – 4 V x 2 pcs.
 = 16 V

2-wire OR connection



(Solid state)
 When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase when in the OFF state.

(Reed)
 Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

Example) Load voltage at OFF
 Leakage current: 1 mA
 Load impedance: 3 kΩ
 Load voltage at OFF = Leakage current x 2 pcs. x
 Load impedance
 = 1 mA x 2 pcs. x 3 kΩ
 = 6 V