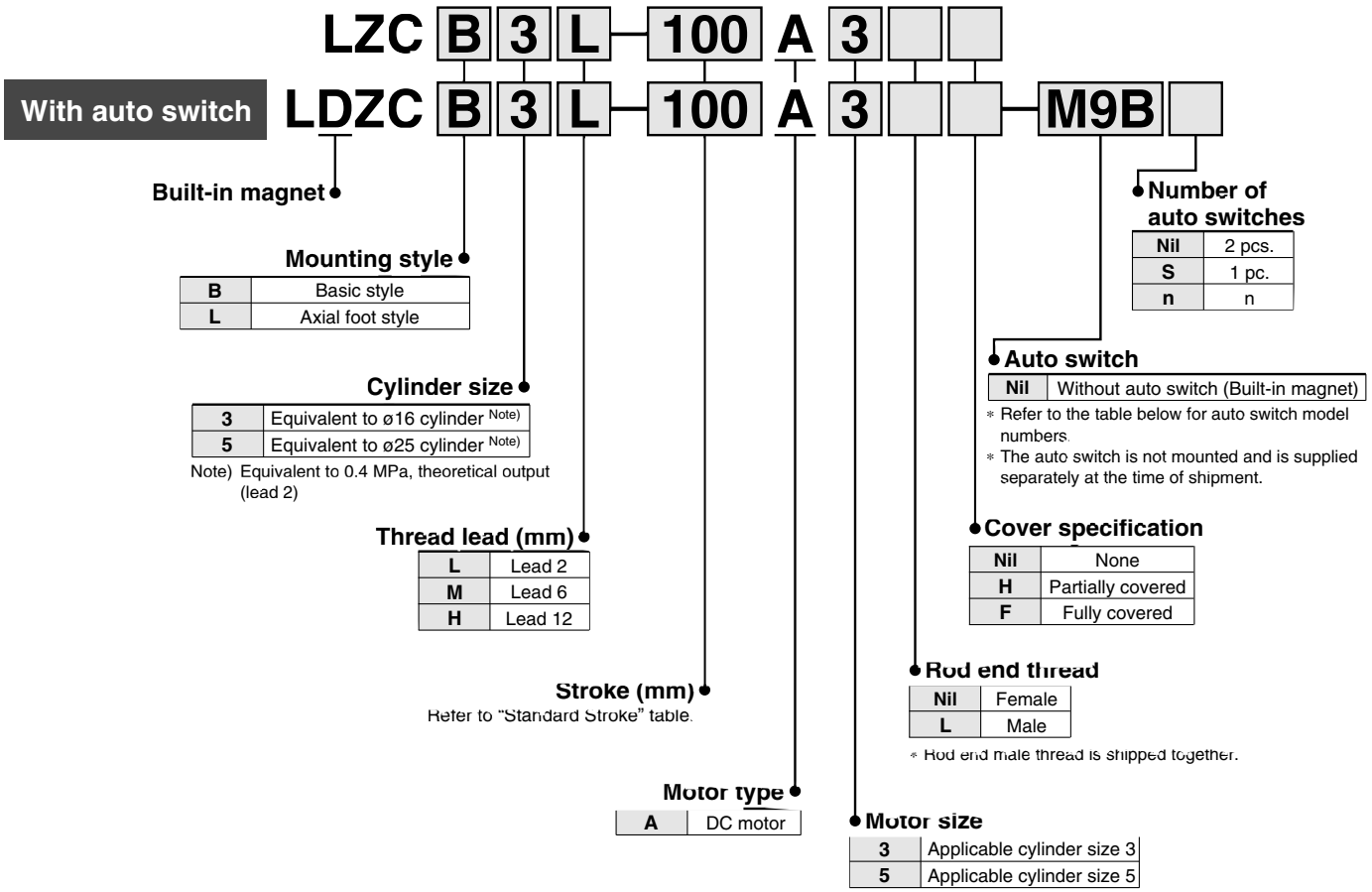
Electric Cylinder
Series LZC

How to Order



Standard Stroke

Cylinder size	Standard stroke (mm) *
3, 5	25, 40, 50, 100, 200

* Other intermediate strokes can be manufactured upon receipt of order. (Maximum manufacturable stroke: 200 mm)

Applicable Auto Switches

* For detailed auto switch specifications, refer to page 16 through to 18.

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		0.5 (Nil)	3 (L)	5 (Z)			
Solid state 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**	●	●	○	○	—	

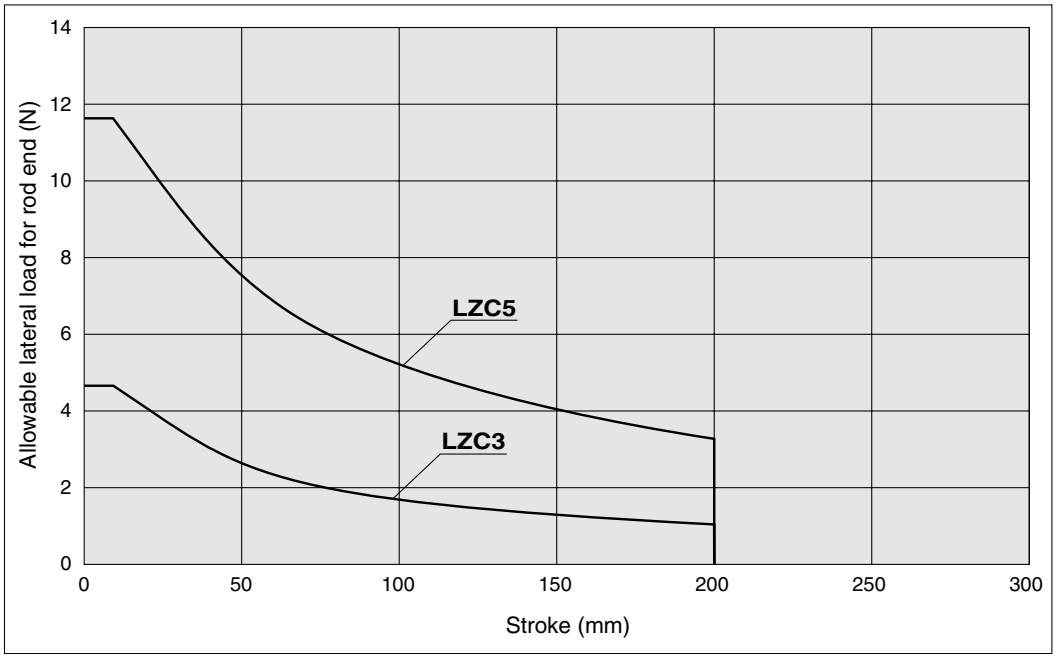
* Lead wire length symbols: 0.5 m ····· Nil (Example) M9N
3 m L M9NL
5 m Z M9NZ
* Solid state switches marked "○" are produced upon receipt of order.

Specifications

Model		L□ZC□3L	L□ZC□3M	L□ZC□3H	L□ZC□5L	L□ZC□5M	L□ZC□5H
Size		3 (Equivalent to ø16 cylinder) Note 1)			5 (Equivalent to ø25 cylinder) Note 1)		
Lead screw	**Thread diameter**	ø8			ø12		
	Lead (mm)	2	6	12	2	6	12
Rated speed with no load (mm/s)		33	100	200	33	100	200
Rated thrust (N)		80	43	24	196	117	72
Stroke (mm)		25, 40, 50, 100, 200					
Main body (kg)*		0.72 + (0.03/50 stroke)			1.72 + (0.16/50 stroke)		
Lateral load for rod end (at maximum stroke) (kg)		0.1			0.24		
Operating ambient temperature (°C)		5 to 40 (with no condensation)					
Tolerance of rod end thread		JIS class 2					
Allowable tolerance of stroke		$^{+1}_{0}$					
Motor		DC motor					
Applicable directional control driver model		LC3F212-5A3□			LC3F212-5A5□		
Applicable auto switch model		D-M9N, M9P, M9B					

Note 1) Equivalent to 0.4 MPa, theoretical output (lead 2)
Note 2) In the table speeds are shown without a load, as rated speed, and thrusts are shown as rated thrust based on the pressure force.
Note 3) Speed will vary as they are affected by a load. Refer to page 1 for model selection.
* Refer to page 13 for mounting bracket weight.

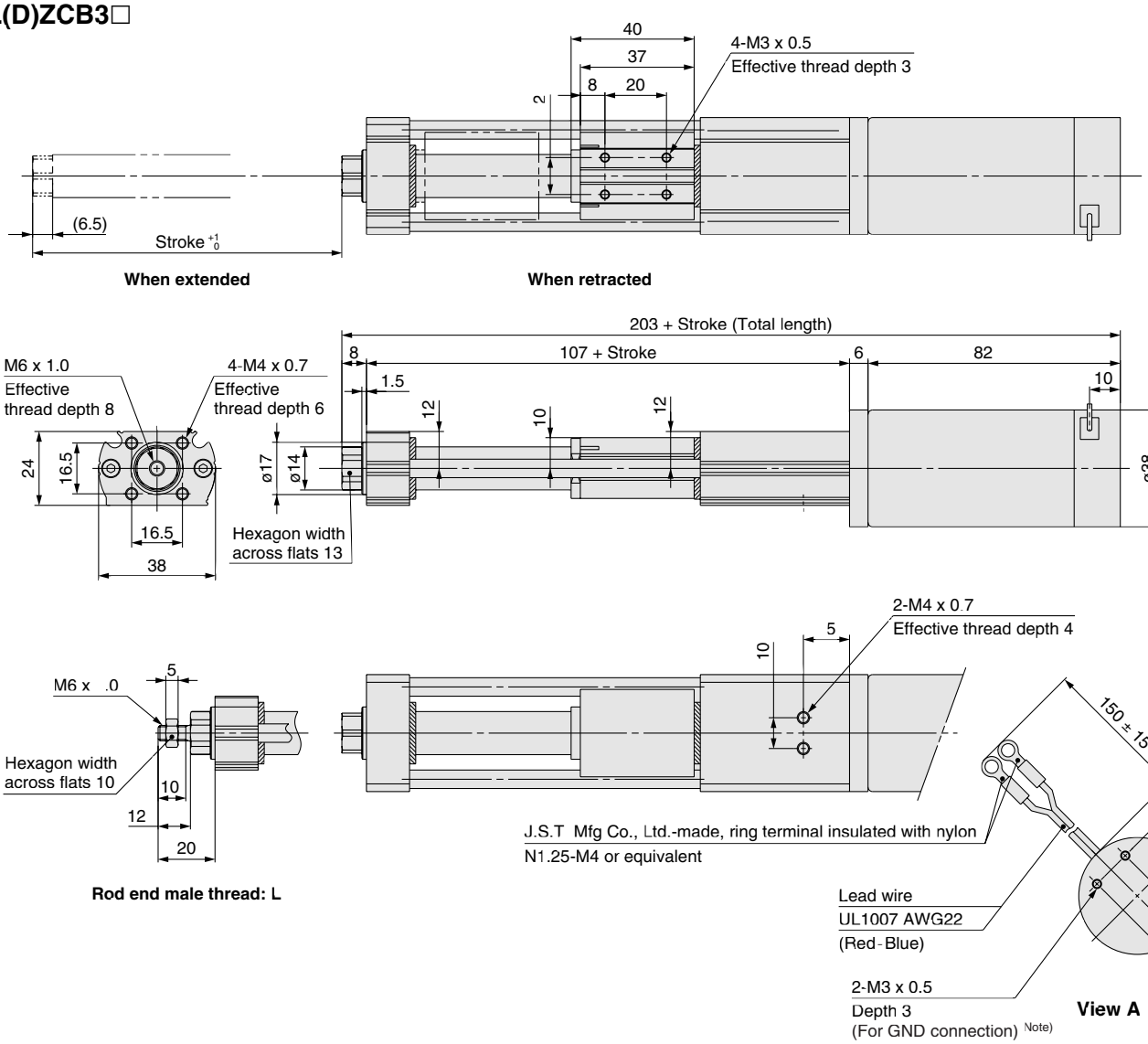
Allowable Lateral Load for Rod End



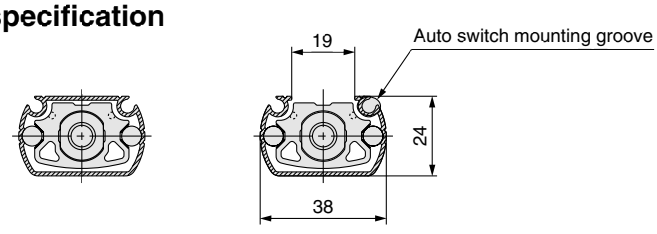
Dimensions

Note) Grounding must be performed. For details, refer to the back of page 2.

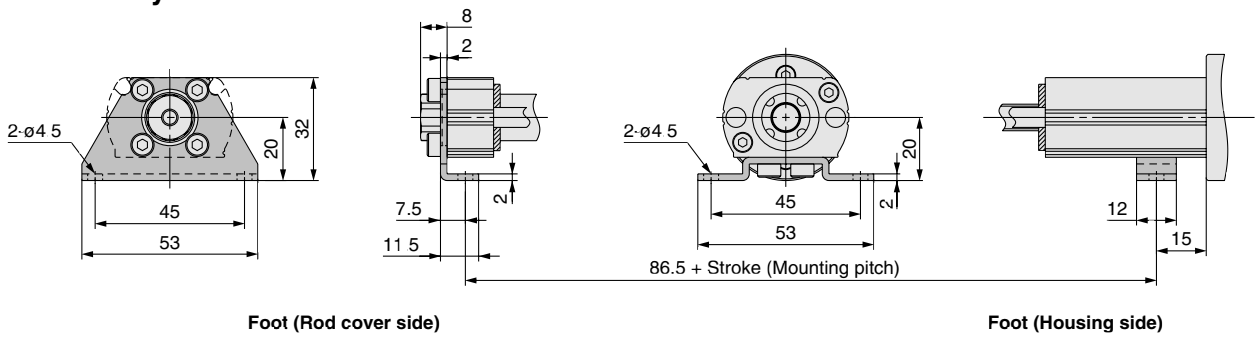
L(D)ZCB3□



Cover specification



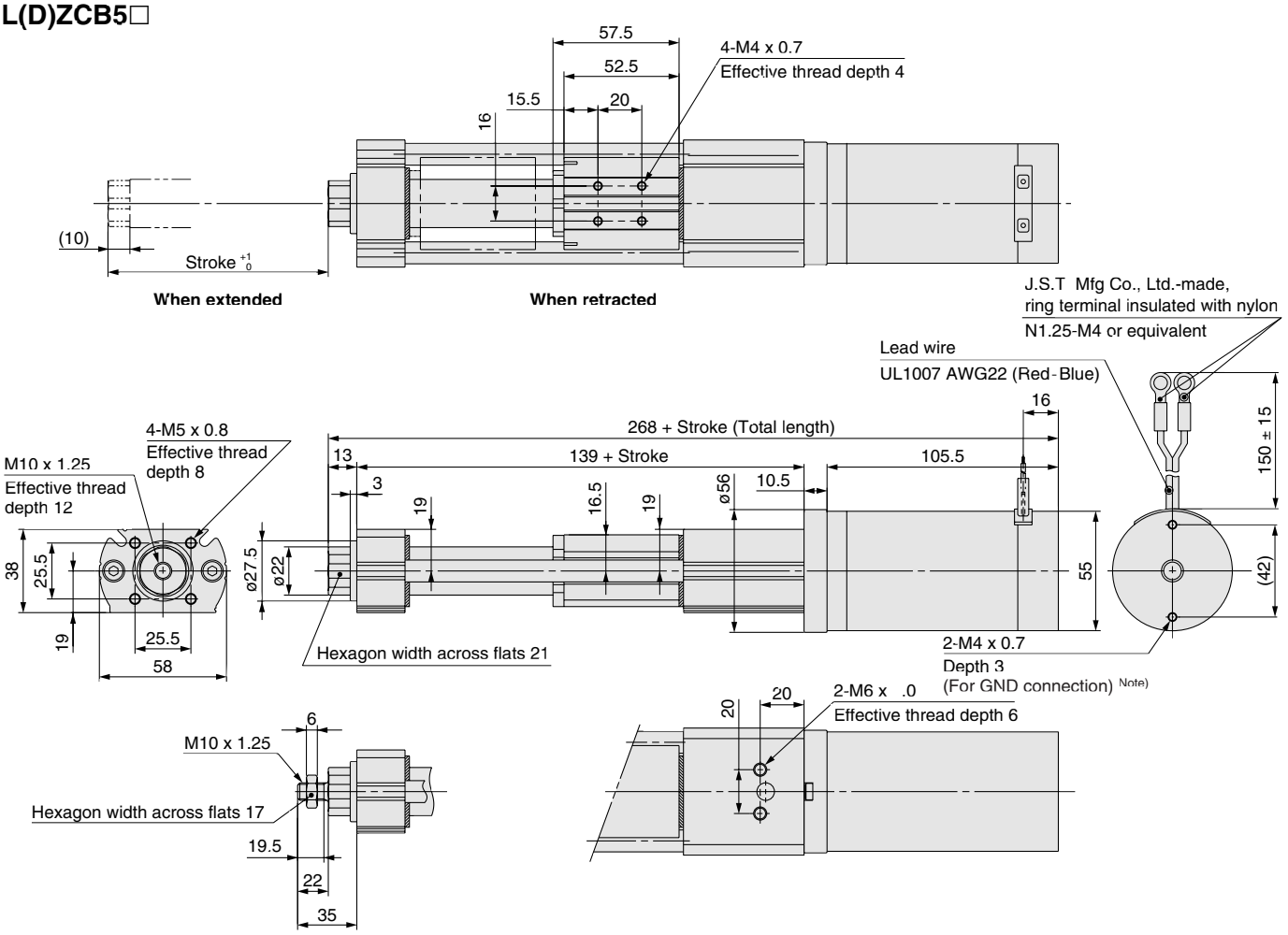
Axial foot style: L



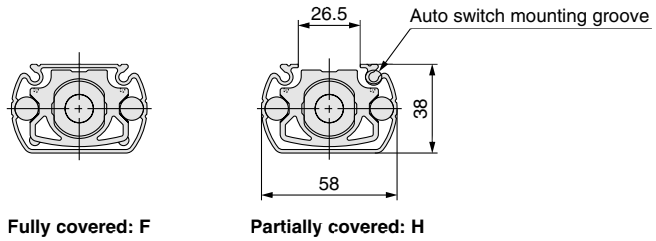
Dimensions

Note) Grounding must be performed. For details, refer to the back of page 2.

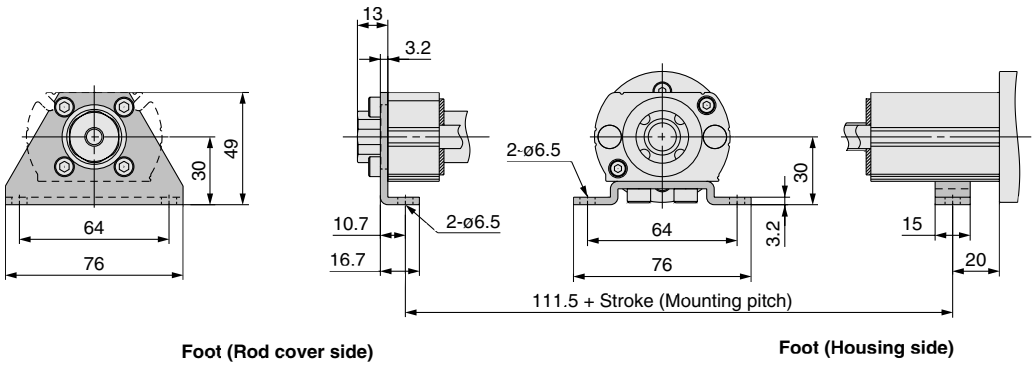
L(D)ZCB5□



Cover specification



Axial foot style: L



LZB/C Vertical Application Specifications

Some of the LZ series can be used in vertical applications.
However, please check before using vertically.

Never apply a force exceeding the prescribed force.
When a force exceeding the transfer thrust is applied, the cylinder and directional control driver (LC3F2) may be damaged.

Model which can be used vertically

- **L(D)ZB□3L-□A3□-□□**
- **L(D)ZC□3L-□A3□□-□□**
- **L(D)ZB□5L-□A5□-□□**
- **L(D)ZC□5L-□A5□□-□□**

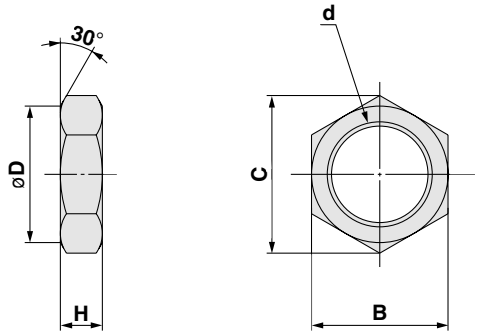
Specifications

Model	L(D)ZB□3L	L(D)ZC□3L	L(D)ZB□5L	L(D)ZC□5L
Speed (mm/s)	P.1 Refer to the graph on speed – thrust.			
Transfer thrust (Vertically) (N)	40		100	
Holding force* (N)				
Standard stroke (mm)	25, 40, 50, 100, 200			
Operating ambient temperature (°C)	5 to 40 (with no condensation)			
Motor	DC motor			
Applicable direcitonal control driver model	LC3F212-5A3□		LC3F212-5A5□	
Applicable auto switch model	D-M9N, D-M9P, D-M9B			

* Holding force
Holding force means the force which cannot be dropped even if a load should be applied vertically when a cylinder is stopped.
Therefore, for example, holding is not possible when turning off the power supply once a cylinder has been activated.
Additionally, a load may be dropped due to external impacts or vibrations.

Accessory Bracket

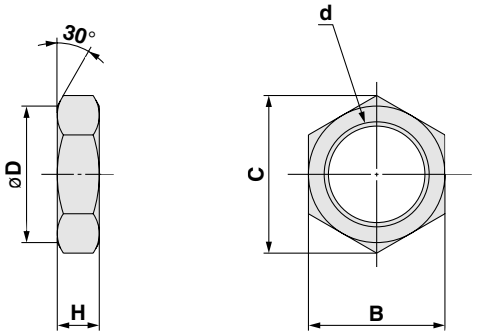
Mounting nut



(mm)

Name	Part no.	Applicable series	B	C	D	d	H
Rod side mounting nut	**SN-020B**	LZB3	26	30	25.5	M20 x 1.5	8
Motor side mounting nut	**LZ-NT30**	LZB3	38	42	38	M30 x 1.5	10
Rod side mounting nut	**SN-040B**	LZB5	41	47.3	40.5	M32 x 2.0	12
Motor side mounting nut	**LZ-NT45**	LZB5	60	64	60	M45 x 1.5	10

Rod end nut



(mm)

Part no.	Applicable series	B	C	D	d	H
NT-015A	LZ□3	10	11.5	9.8	M6 x 1.0	5
NT-03	LZ□5	17	19.6	16.5	M10 x 1.25	6

Mounting Bracket/Part No.

Series	**LZB3**	**LZB5**
Rod side foot	LZB-LR3 (64 g)	LZB-LR5 (112 g)
Motor side foot	LZB-LM3 (64 g)	LZB-LM5 (126 g)
Flange	LZB-F3 (40 g)	LZB-F5 (120 g)
Rod side trunnion	CM-T020B (40 g)	CM-T040B (100 g)

( ): Weight for bracket

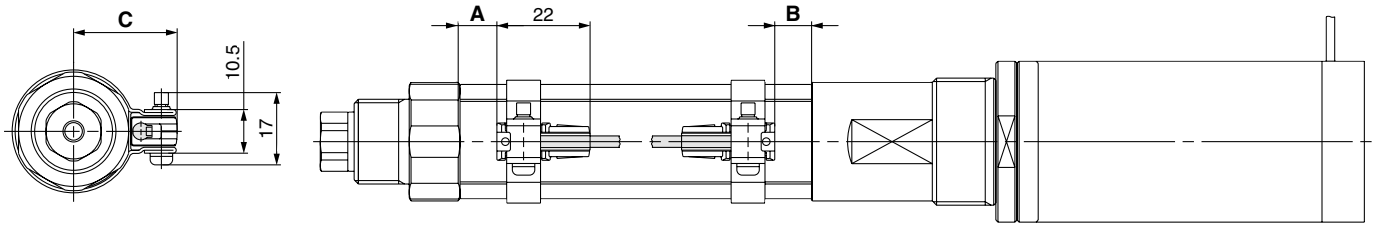
Series	**LZC3**	**LZC5**
Rod side foot	LZC-LR3 (21 g)	LZC-LR5 (71 g)
Motor side foot	LZC-LM3 (10 g)	LZC-LM5 (27 g)

( ): Weight for bracket
Note) Bolt needs to be supplied by customer.

Auto Switch Proper Mounting Position for Stroke End Detection and Mounting Height

Solid state auto switch
D-M9□

LDZB



Auto Switch Mounting Position/Height

Model	A	B	C
LDZB□3	20	19	24
LDZB□5	33	33	32

Operating Range of Auto Switch *

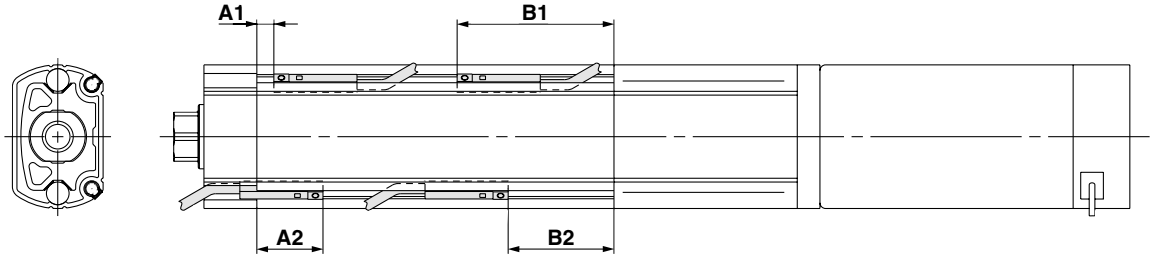
Model	A
LDZB□3	3
LDZB□5	5

* The operating range is a guide including hysteresis, but is not guaranteed. There may be substantial variation depending on the surrounding environment (assuming approximately ±30% dispersion).

Minimum Stroke for Auto Switch Mounting

Model	1 pc.	2 pcs. (Different sides)	2 pcs. (Same sides)
LDZB□3	10	15	45
LDZB□5	10	15	45

LDZC



Auto Switch Mounting Position for Stroke End Detection

Model	A1	A2	B1	B2
LDZC□3	4.5	17.5	41.5	28
LDZC□5	7	57	20	44

Operating Range of Auto Switch *

Model	A
LDZC□3	2
LDZC□5	2

* The operating range is a guide including hysteresis, but is not guaranteed. There may be substantial variation depending on the surrounding environment (assuming approximately ±30% dispersion).

Minimum Stroke for Auto Switch Mounting

Model	1 pc.	2 pcs.
LDZC□3	5	10
LDZC□5	5	10

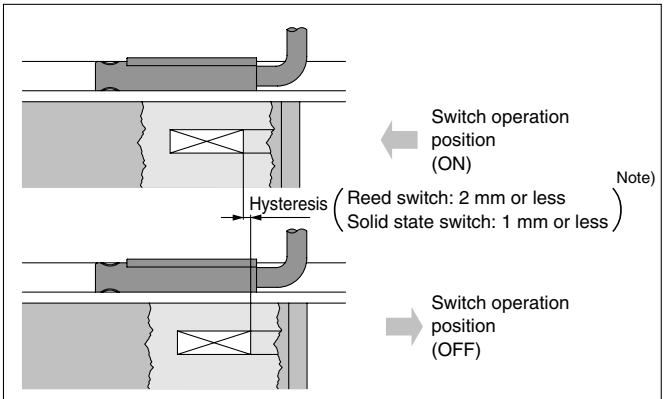
Series LZB/LZC
Auto Switch Specifications

Auto Switch Common Specifications

Type	Solid state switch
Leakage current	3-wire: 100 μA or less 2-wire: 0.8 mA or less
Operating time	1 ms or less
Impact resistance	1000 m/s^2
Insulation resistance	50 MΩ or more at 500 VDC Mega (between lead wire and case)
Withstand voltage	1000 VAC for 1 minute (between lead wire and case)
Ambient temperature	–10 to 60°C
Enclosure	IEC529 standard IP67, JIS C 0920 waterproof construction

Auto Switch Hysteresis

The hysteresis is the difference between the position of the auto switch as it turns "on" and as it turns "off" A part of operating range (one side) includes this hysteresis.



Note) Hysteresis may fluctuate due to the operating environment. Contact SMC if hysteresis causes an operational problem.

Lead Wire Length

Lead wire length indication

(Example) **D-M9P L**

Lead wire length

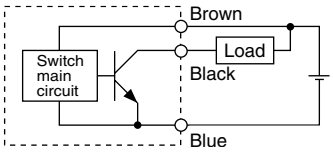
Nil	0.5 m
L	3 m
Z	5 m

Note 1) Applicable auto switch with 5 m lead wire "Z" Solid state switch: Manufactured upon receipt of order as standard.

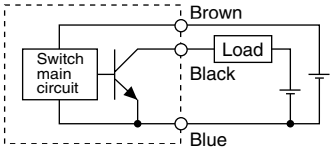
Series LZB/LZC
Auto Switch Connections and Examples

Basic Wiring

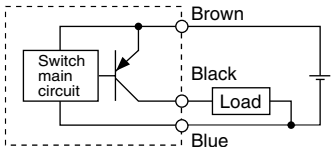
Solid state 3-wire, NPN



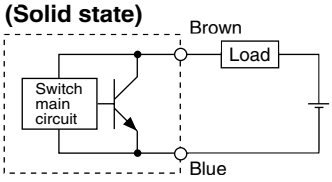
(Power supplies for switch and load are separate.)

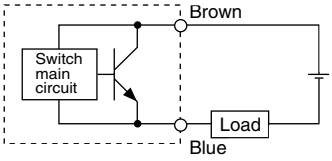


Solid state 3-wire, PNP



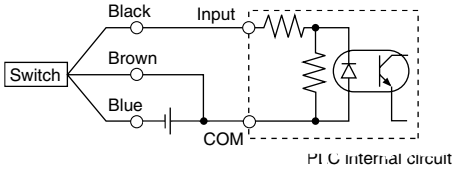
2-wire (Solid state)



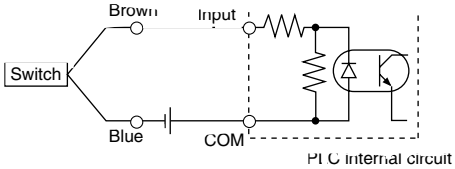


Example of Connection to PLC (Programmable Logic Controller)

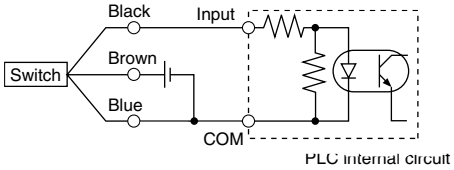
• Sink input specifications
3-wire, NPN



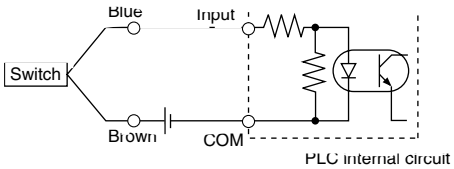
2-wire



• Source input specifications
3-wire, PNP



2-wire

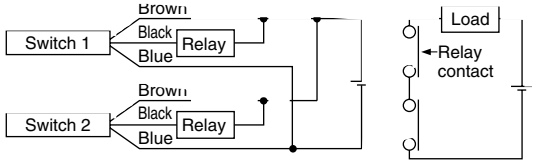


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

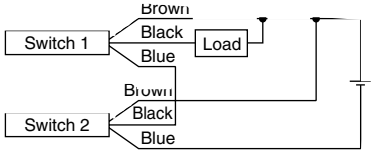
Example of AND (Serial) and OR (Parallel) Connection

• 3-wire

AND connection for NPN output (using relays)

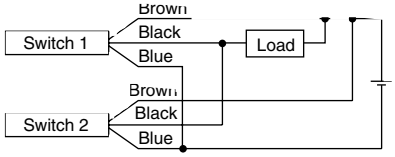


AND connection for NPN output (performed with switches only)

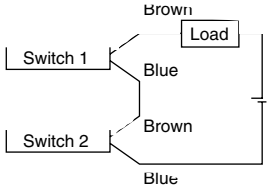


The indicator lights will light up when both switches are turned ON.

OR connection for NPN output



2-wire with 2-switch AND connection

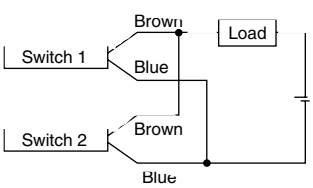


When two switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state.
The indicator lights will light up if both of the switches are in the ON state.

Load voltage at ON = Power supply voltage − Internal voltage drop × 2 pcs.
= 24 V − 4 V × 2 pcs.
= 16 V

Example. Power supply is 24 VDC
Internal voltage drop in switch is 4 V.

2-wire with 2-switch OR connection



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

Load voltage at OFF = Leakage current × 2 pcs.
× Load impedance
= mA × 2 pcs. × 3 kΩ
= 6 V

Example: Load impedance is 3 kΩ.
Leakage current from switch is 1 mA.

Solid State Switch: Direct Mounting Style
D-M9N/D-M9P/D-M9B

CE

Grommet

- 2-wire load current is reduced (2.5 to 40 mA)
- Lead-free
- UL certified (style 2844) lead cable is used.

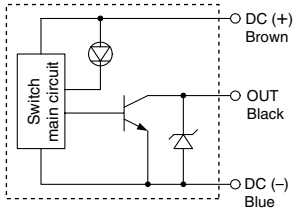
⚠Caution

Operating Precautions

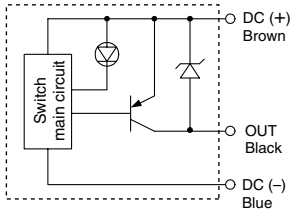
Fix the switch with the existing screw installed on the switch body. The switch may be damaged if a screw other than the one supplied, is used.

Auto Switch Internal Circuit

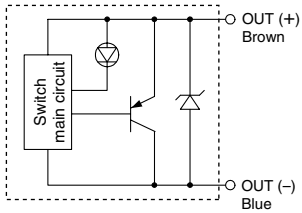
D-M9N



D-M9P



D-M9B



Auto Switch Specifications

For details about certified products conforming to international standards, visit us at www.smcworld.com.

PLC: Programmable Logic Controller

D-M9□ (With indicator light)			
Auto switch part no.	D-M9N	D-M9P	D-M9B
Electrical entry direction	In-line		
Wiring type	3-wire		2-wire
Output type	NPN	PNP	—
Applicable load	IC circuit, Relay, PLC		24 VDC relay, PLC
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)		—
Current consumption	10 mA or less		—
Load voltage	28 VDC or less	—	24 VDC (10 to 28 VDC)
Load current	40 mA or less		2.5 to 40 mA
Internal voltage drop	0.8 V or less		4 V or less
Leakage current	100 μA or less at 24 VDC		0.8 mA or less
Indicator light	Red LED illuminates when ON.		

- Lead wires
  Oilproof heavy duty vinyl cable: ø2.7 x 3.2 ellipse, 0.15 mm²,
  D-M9B 0.15 mm² x 2 cores
  D-M9N, D-M9P 0.15 mm² x 3 cores

Note 1) Refer to page 16 for solid state switch common specifications.
Note 2) Refer to page 16 for lead wire lengths.

Weight

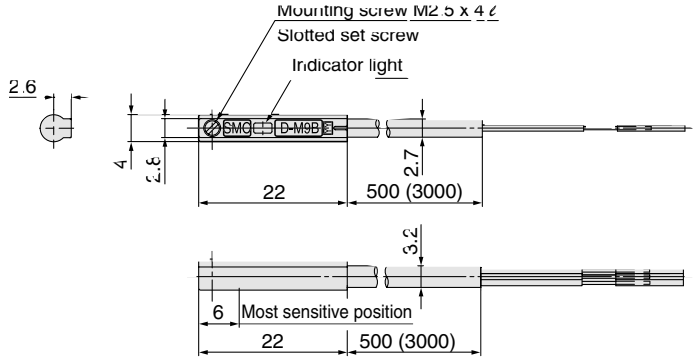
Unit: g

Auto switch part no.		D-M9N	D-M9P	D-M9B
Lead wire length (m)	0.5	8	8	7
	3	41	41	38
	5	68	68	63

Dimensions

Unit: mm

D-M9□



SMC