

# Stroke Reading Rodless Cylinder with Brake

## Series *ML2B*

ø25, ø32, ø40

### How to Order

**ML2B** **25** **500** **L** **Y7BW**

Basic type

Bore size

25	25 mm
32	32 mm
40	40 mm

Control method

Nil	With brake and stroke sensor
S	With stroke sensor (Without brake)
B	With brake (Without stroke sensor)

Stroke (mm)

Refer to "Standard Stroke" on page 10-13-9.

Stroke adjusting unit

Nil	Without adjusting unit
L*	Shock absorber + Adjusting bolt

\* Shock absorber model

Type	ø25	ø32	ø40
	RB1007	RB1412	RB1412

Number of auto switch

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

Applicable counter/Controller

Series CEU1
Series CEU5
Series CEU2

Auto switch

Nil	Without auto switch
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\* For the applicable auto switch model, refer to the table below.  
\* Auto switches are shipped together, (but not assembled).

Suffix for stroke adjusting unit

Nil	2 pcs.
S	1 pc.

### Applicable Auto Switch/Refer to page 10-20-1 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-wire connector	Applicable load	
					DC	AC		Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)			
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	—	<b>Z76</b>	●	●	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V	—	<b>Z73</b>	●	●	●	—	—	Relay, PLC
Solid state switch	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	<b>Y69A</b>	<b>Y59A</b>	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				<b>Y7PV</b>	<b>Y7P</b>	●	●	○	○		
				2-wire				<b>Y69B</b>	<b>Y59B</b>	●	●	○	○		
				3-wire (NPN)	5 V, 12 V	<b>Y7NWV</b>		<b>Y7NW</b>	●	●	○	○	IC circuit		
				3-wire (PNP)		<b>Y7PWV</b>		<b>Y7PW</b>	●	●	○	○			
				2-wire		<b>Y7BWV</b>		<b>Y7BW</b>	●	●	○	○	—		

\* Lead wire length symbols: 0.5 m ..... Nil (Example) Y59A  
3 m ..... L (Example) Y59AL  
5 m ..... Z (Example) Y59AZ

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

- Since there are other applicable auto switches than listed, refer to page 10-13-17 for details.
- For details about auto switches with pre-wire connector, refer to page 10-20-66.

# Stroke Reading Rodless Cylinder with Brake Series ML2B



## Cylinder Specifications

Bore size (mm)		25	32	40
Fluid		Air		
Action	Cylinder	Double acting		
	Brake	Spring and pneumatic		
Operating pressure range	Cylinder	0.1 to 0.8 MPa		
	Brake	0.3 to 0.5 MPa		
Proof pressure	Cylinder	1.2 MPa		
	Brake	0.75 MPa		
Ambient and fluid temperature		5 to 60°C (No freezing)		
Piston speed		100 to 1500 mm/s (During the positioning 100 to 500 mm/s)		
Cushion		Air cushion on both sides		
Lubrication		Non-lube		
Stroke tolerance (mm)		0 to 1.8		
Piping port size	Front/Side ported	Rc 1/8		Rc 1/4
	Bottom ported	ø5	ø6	ø8

## Sensor Specifications

Maximum transmission distance	20 m (In the case of using our cable as well as our controller or counter.)
Position detection method	Incremental type
Magnetic field resistance	14.5 mT
Power supply	10.8 to 13.2 VDC (Ripple less than 1%)
Current consumption	40 mA
Resolution	0.1 mm/pulse
Accuracy	±0.2 mm <sup>Note)</sup> (at 20°C)
Output type	NPN open collector (35 VDC, 80 mA)
Output signal	A/B phase difference output
Insulation resistance	500 VDC, 50 MΩ or more (between case and 12E)
Vibration resistance	33.3 Hz, 2 hours at X, Y and 4 hours at Z JIS D 1601 as standard
Impact resistance	30 G, 3 times at X, Y, Z
Enclosure	IP50 (IEC standard)
Extension cable (Option)	5 m, 10 m, 15 m, 20 m Cable: ø7, 6 core twisted pair shielded wire, oil, heat and frame resistant cable

Note) Digital error under Controller (CEU2), Counter (CEU1 or CEU5) is included. Besides, the whole accuracy after mounting on an equipment may be varied depending on the mounting condition and surroundings. As an equipment, calibration should be done by customer.

## Stroke Adjusting Unit Specifications

Applicable bore size (mm)	25	32	40
Shock absorber model	RB1007	RB1412	RB1412
Maximum energy absorption (J)	5.9	19.6	19.6
Stroke absorption (mm)	7	12	12
Maximum collision speed (mm/s)	1500	1500	1500
Maximum operating frequency (cycle/min)	70	45	45
Spring force (N)	Extended	6.86	6.86
	Retracted	6.86	15.98
Operating temperature range (°C)	5 to 60		

## Weight

Bore size (mm)	Series	Basic weight	Additional weight per each 50 mm of stroke	Side support weight (per set)		Stroke adjusting unit weight (per unit)
				Type A	Type B	
25	ML2B	2.89	0.142	0.015	0.016	0.10
32		4.75	0.199	0.015	0.016	0.21
40		6.87	0.290	0.040	0.041	0.32

As for 3 point preset counter and multi counter, it will be common to CEP1 and CE1 series. For details, refer to 3 point preset counter/CEU1 on page 10-12-30, and Multi counter/CEU5 on page 10-12-27 respectively. Regarding controller, since it will be common to CE2 series, refer to Controller/CEU2 on page 10-12-54 for details.



## Made to Order Specifications (For details, refer to page 10-21-1.)

Symbol	Specifications
-X416	Holder mounting bracket I
-X417	Holder mounting bracket II

## Theoretical Output

(N)

Bore size (mm)	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)						
		0.2	0.3	0.4	0.5	0.6	0.7	0.8
25	490	98	147	196	245	294	343	392
32	804	161	241	322	402	483	563	643
40	1256	251	377	502	628	754	879	1005

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

## Standard Stroke

Bore size (mm)	Series	Standard stroke (mm)
25	ML2B	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000
32		
40		

It is possible to make 100 stroke up to 2000 by the 1 mm interval.

## Stroke Adjusting Unit Part No.

Unit no.	Bore size (mm)		
	25	32	40
Type	MY-A25L	MY-A32L	MY-A40L

## Side Support Part No.

Type	Bore size (mm)		
	25	32	40
Side support A	MY-S25A		MY-S32A
Side support B	MY-S25B		MY-S32B

RE<sub>A</sub>  
B

REC

C□X

C□Y

MQ<sub>M</sub><sup>Q</sup>

RHC

MK(2)

RS<sub>G</sub><sup>Q</sup>

RS<sub>A</sub><sup>H</sup>

RZQ

MI<sub>S</sub><sup>W</sup>

CEP1

CE1

CE2

ML2B

C<sub>5</sub>-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data

# Series ML2B

## Brake Capacity

### Holding Force of Spring Locking (Maximum static load)

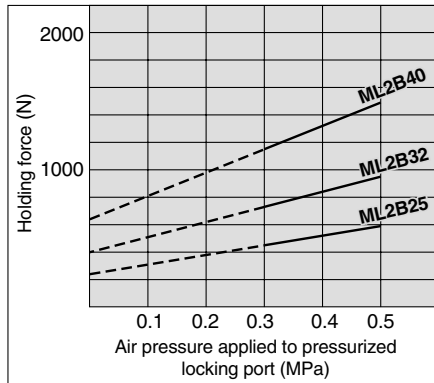
Bore size (mm)	25	32	40
Holding force	245 N	400 N	628 N

Note) The holding force is the lock's ability to hold a static load that does not involve vibrations or impacts, when it is locked without a load.

Therefore, when normally using the cylinder near the upper limit of the holding force, be aware of the points described below.

- Select the cylinder bore size so that the load is less than 80% of the holding force.
- If the piston rod slips because the lock's holding force has been exceeded, the brake shoe could be damaged, resulting in a reduced holding force or shortened life.

### Holding Force of Locking for Pneumatic and Spring



### Stopping Accuracy

When the cylinder is stopped at intermediate strokes by PLC and erratic stopping positions appear. Check piston speed, load, piping conditions, control method, etc. Use values on the table below as reference.

#### 1. ML2B + CEU2

Piston speed	100 to 500 mm/s
Stopping accuracy	±0.5 mm

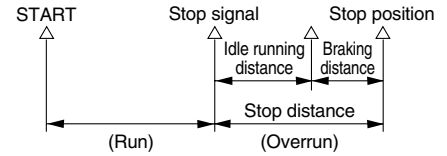
#### 2. ML2B + PLC

Piston speed (mm/s)	100	300	500	800	1000
Stopping accuracy (mm)	±0.5	±1.0	±2.0	±3.0	±4.0

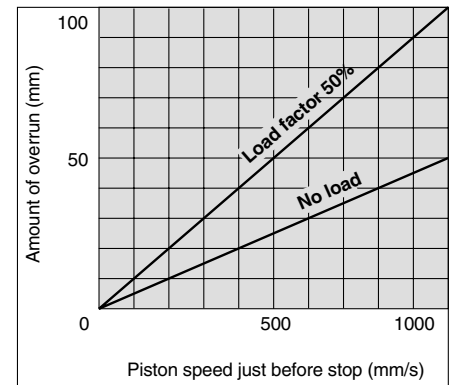
Condition/Driving pressure: 0.5 MPa  
 Brake releasing pressure: 0.3 MPa  
 Load factor: 25%  
 (Solenoid valve for brake releasing is connected to the cylinder directly and the dispersion of control system is not included.)

### Overrun (ML2B + PLC)

When cylinder is stopped at intermediate strokes, "idle running distance" is from the detection of stop signal to beginning of brake operation and "braking distance" is from beginning of brake operation to stop of slider.

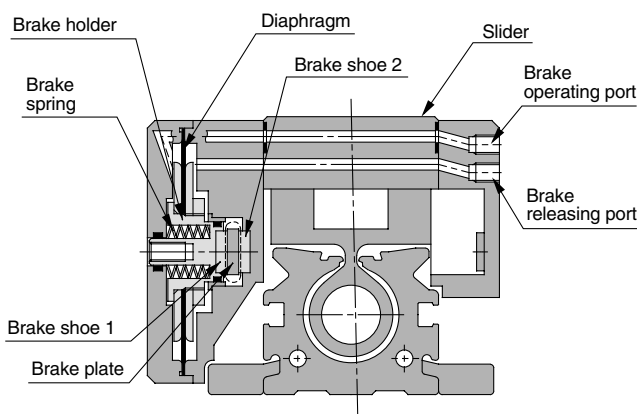


The graph below shows the relation between piston speed and overrun. (The length of overrun is changed dependent on piston speed, load, piping condition and control method. Be sure to adjust the stop signal position, etc. by trial operation with the actual machine.)



Condition/Driving pressure: 0.5 MPa  
 Brake releasing pressure: 0.3 MPa  
 Load factor: Horizontal

## Working Principle of Brake Mechanism



### Anatomy of brake operation

Spring force generated by the brake spring and the air pressure supplied to brake operating port work on brake shoe 1 fixed to the brake holder, bend brake plate fixed on head cover on both sides, and stop slider by putting brake plate between brake shoe 1 and brake shoe 2 fixed on the slider side.

### Brake release

The air pressure supplied to the brake releasing port acts on a diaphragm, extending the brake spring, and canceling the brake.

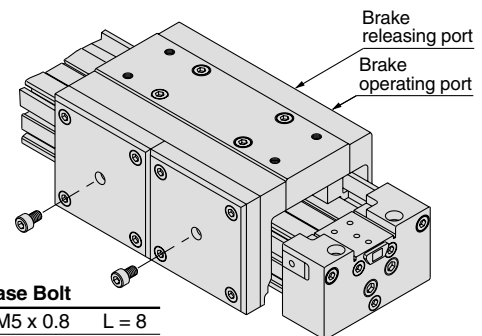
## Manual Operation

### [Brake releasing]

1. Supply brake releasing pressure of 0.3 to 0.5 MPa to brake releasing port on slider side.
2. Screw on appropriate hexagon socket head bolt into manual port on slide side.
3. Exhaust brake releasing air.

### [Brake operation]

1. Supply brake releasing pressure of 0.3 to 0.5 MPa to brake releasing port on slider side.
2. Remove the bolt threaded into manual port.
3. Exhaust brake releasing air.



### Manual Release Bolt

ML2B25	M5 x 0.8	L = 8
ML2B32	M6 x 1	L = 10
ML2B40	M8 x 1.25	L = 12

Note) Screw in after attaching a washer in the hexagon socket head cap bolt.

## Cushion Capacity

### Cushion Selection

#### <Air cushion>

Stroke reading hy-rodless cylinder with brake is equipped with a standard air cushion.

The air cushion mechanism is incorporated to prevent excessive impact of the piston at the stroke end during high speed operation. The purpose of air cushion, thus, is not to decelerate the piston near the stroke end.

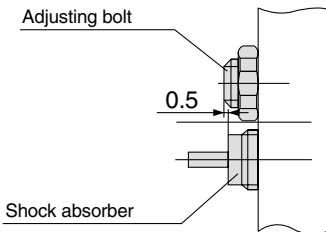
The weight and speed ranges that the air cushion can absorb are shown within the limit lines on the graph.

#### <Stroke adjusting unit with shock absorber>

Use this unit to decelerate the cylinder when weight and speed are beyond the air cushion limit lines or when the stroke adjustment causes limited or no cushion engagement.

## ⚠ Caution

1. The absorption capacity of each unit shown here is given for the mounted shock absorber when used at full stroke. When the effective stroke of the absorber decreases as a result of stroke adjustment, the absorption capacity becomes extremely small. Fix the adjusting bolt to around 0.5 mm projection from the shock absorber as shown below.

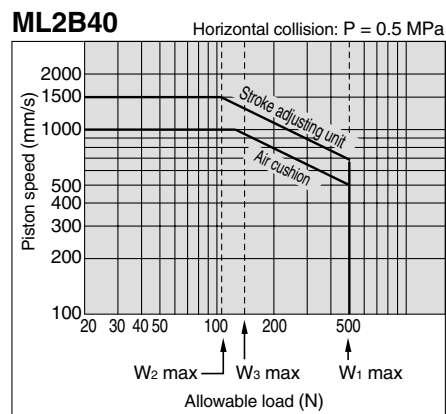
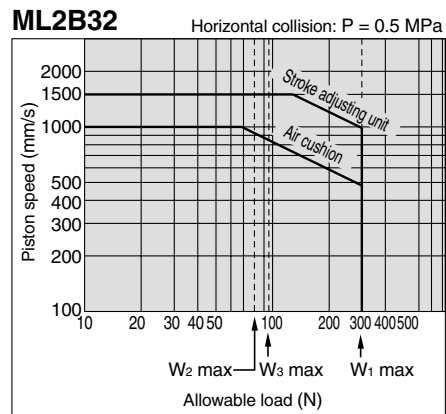
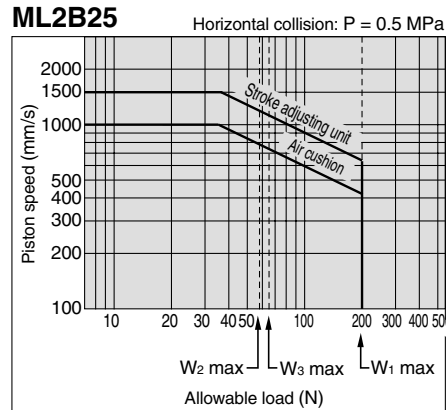


2. When the shock absorber is used within the air cushion stroke range, almost open the air cushion needle (about 1 turn from the fully closed position).

### Air Cushion Stroke

Bore size (mm)	Cushion stroke
25	15
32	19
40	24

### Absorption Capacity of the Air Cushion and Stroke Adjusting Unit



### Tightening Torque for Stroke Adjusting Unit Holding Bolts (N·m)

Bore size (mm)	Tightening torque
25	3
32	5
40	10

### Tightening Torque for Stroke Adjusting Unit Lock Plate Holding Bolts (N·m)

Bore size (mm)	Tightening torque
25	1.2
32	3.3
40	3.3

### Calculation of Absorbed Energy for Stroke Adjusting Unit with Shock Absorber (N·m)

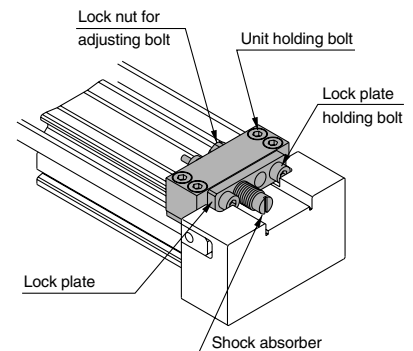
Type of impact	Horizontal collision	Vertical collision (Downward)	Vertical collision (Upward)
Kinetic energy $E_1$		$\frac{1}{2} m \cdot v^2$	
Thrust energy $E_2$	$F \cdot s$	$F \cdot s + m \cdot g \cdot s$	$F \cdot s - m \cdot g \cdot s$
Absorbed energy $E$	$E_1 + E_2$		

Symbol

$v$ : Speed of impact object (m/s)  $m$ : Weight of impact object (kg)  
 $F$ : Cylinder thrust (N)  $g$ : Gravitational acceleration (9.8 m/s<sup>2</sup>)  
 $s$ : Shock absorber stroke (m)

(Note) The speed of the impact object is measured at the time of impact with the shock absorber.

### Adjusting Procedure



#### <Movement and location of stroke adjustment>

The unit body can be moved after the four unit holding bolts are loosened and can be fixed at any position by uniformly tightening the four unit holding bolts. However, there is a possibility that the adjustment mechanism will be tilted due to high impact energy.

Since the holder mounting bracket for adjustment is available as an option for -X416, -X417, we recommend that you use it. If any other length is desired, please consult with SMC. (Refer to "Tightening Torque for Stroke Adjusting Unit Holding Bolts".)

#### <Stroke adjustment of the adjusting bolt>

Loosen the lock nut of the adjusting bolt, adjust the stroke from the lock plate side using a wrench, then re-tighten it.

#### <Adjustment of shock absorber>

Loosen the two lock plate holding bolts, turn the shock absorber and adjust the stroke. Then, uniformly tighten the lock plate holding bolts and secure the shock absorber. Take care not to over-tighten the holding bolts.

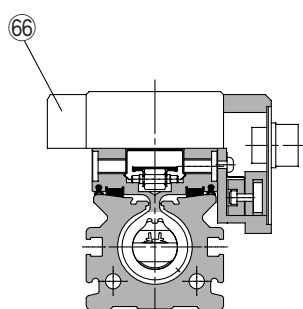
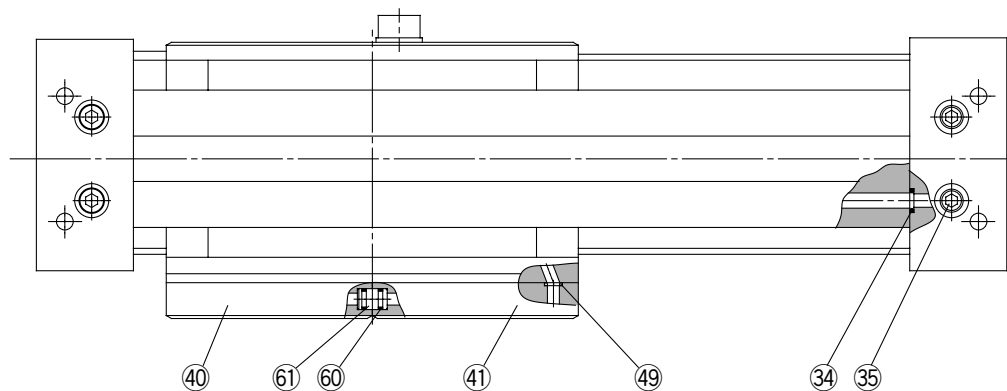
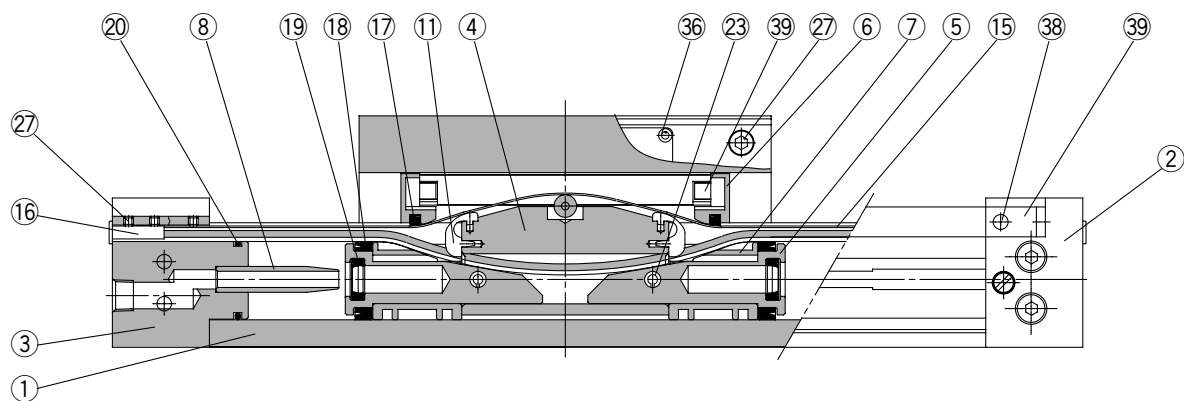
(Refer to "Tightening Torque for Stroke Adjusting Unit Lock Plate Holding Bolts".)

(Note)

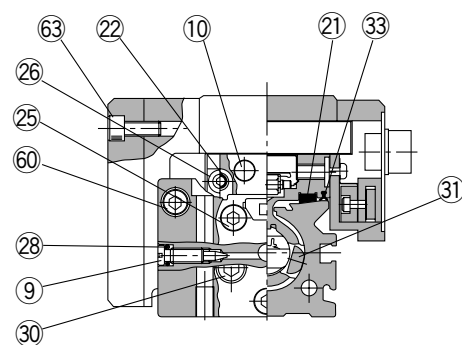
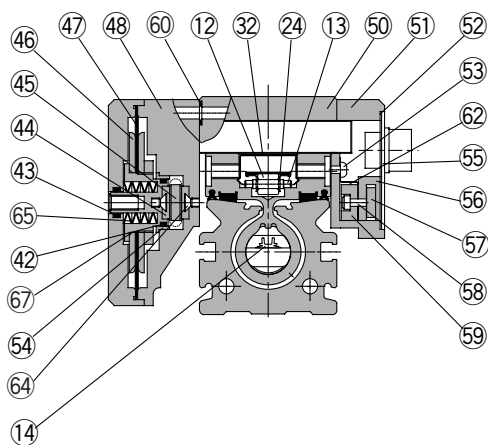
Although the lock plate may slightly bend due to tightening of the lock plate holding bolt, this does not affect the shock absorber and locking function.

# Series ML2B

## Construction



ML2B□S



# Stroke Reading Rodless Cylinder with Brake Series **ML2B**

## Component Parts

No.	Description	Material	Qty.	Note
①	Cylinder tube	Aluminum alloy	1	Hard anodized
②	Head cover WR	Aluminum alloy	1	Glossy, self-coloring
③	Head cover WL	Aluminum alloy	1	Glossy, self-coloring
④	Piston yoke	Aluminum alloy	1	Hard anodized
⑤	Piston	Aluminum alloy	2	Hard anodized
⑥	End cover	Special resin	2	
⑦	Wear ring	Special resin	2	
⑧	Cushion ring	Stainless steel	2	Nickel plated
⑨	Cushion needle	Rolled steel	2	
⑩	Stopper	Carbon steel	4	
⑪	Belt separator	Special resin	2	
⑫	Guide roller	Special resin	1	
⑬	Guide roller shaft	Stainless steel	1	
⑯	Belt clamp	Special resin	2	
⑰	Bearing	Special resin	2	
⑱	Spacer	Stainless steel	4	
⑳	Spring pin	Carbon tool steel	2	Black zinc chromated
㉑	Type E snap ring	Cold rolled special steel strip	2	
㉒	Hexagon socket head cap screw	Chromium molybdenum steel	6	Nickel plated
㉓	Hexagon socket button head screw	Chromium molybdenum steel	4	Nickel plated
㉔	Hexagon socket head set screw	Chromium molybdenum steel	8	Nickel plated
㉕	Double round parallel key	Carbon steel	2	
㉖	Hexagon socket head taper plug	Carbon steel	6	Nickel plated
㉗	Magnet	Rare earth magnet	2	
㉘	Top cover	Stainless steel	1	
㉙	Side scraper	Special resin	2	
㉚	Hexagon socket head taper plug	Carbon steel	4	Nickel plated
㉛	Round head Phillips screw	Carbon steel	4	Nickel plated
㉜	Hexagon socket head cap screw	Carbon steel	3	Nickel plated
㉝	Parallel pin	Carbon steel	4	
㉞	Tension plate	Carbon steel	4	Nickel plated
㉟	Side cover L	Aluminum alloy	1	Hard anodized, Urban white
㊱	Side cover R	Aluminum alloy	1	Hard anodized, Urban white
㊲	Brake shoe	Special abrasion material	4	
㊳	Brake plate	Stainless steel	1	
㊴	Diaphragm shell	Stainless steel	4	
㊵	Diaphragm	NBR	2	
㊶	Brake guide	Aluminum alloy	1	Hard anodized, white
㊷	Slide table	Aluminum alloy	1	Hard anodized
㊸	Sensor body	Aluminum alloy	1	Hard anodized, white
㊹	Round head Phillips screw	Carbon steel	2	Nickel plated
㊺	Brake guide	Carbon steel	2	Gas soft treated
㊻	Connector cover	Carbon steel	1	Nickel plated
㊼	Sensor guide	Special abrasion material	1	
㊽	Scale plate $\frac{A}{B}$	Carbon steel	1	Nickel plated
㊾	Hexagon socket head cap screw	Carbon steel	2	Nickel plated
㊿	Sensor unit	—	1	
1	Air joint	Stainless steel	1	
2	Sensor holder	Carbon steel	1	
3	Hexagon socket head cap screw	Carbon steel	8	
4	Cross recessed countersunk head screw	Carbon steel	4	
5	Brake spring	—	2	
6	Side plate	Aluminum alloy	1	Hard anodized, white
7	Hexagon socket head cap screw	Chromium molybdenum steel	6	Nickel plated



\* There are two dust seal bands, and part no. is different according to color of the treated "Hexagon socket head set screw" of ⑳. Please contact SMC.

A: Black zinc chromate color: MY□□-16B-Stroke

B: Nickel color: MY□□-16BW-Stroke

## Seal List

No.	Description	Material	Qty.	ML2B25	ML2B32	ML2B40
⑭	Seal belt	Special resin	1	MY25-16A-stroke	MY32-16A-stroke	MY40-16A-stroke
⑮	Dust seal band	Stainless steel	1	MY25-16B-stroke	MY32-16B-stroke	MY40-16B-stroke
⑰	Scraper	NBR	2	MYB25-15AA5900	MYB32-15AA5901	MYB40-15AA5902
⑱	Piston seal	NBR	2	GM25	GM32	GM40
⑲	Cushion seal	NBR	2	RCS-8	RCS-10	RCS-12
⑳	Tube gasket	NBR	2	NLP-25-19A	NLP-32A	NLP-40A
㉑	O-ring	NBR	2	φ7.15 x φ3.75 x φ1.7	φ8.3 x φ4.5 x φ1.9	C-4
㉒	O-ring	NBR	4	P-5	P-6	C-9
㉓	O-ring	NBR	2	SO-015-16	SO-016-9	SO-015-20
㉔	O-ring	NBR	2	P-7	P-9	P-11
㉕	O-ring	NBR	1	SO-010-16	SO-010-21	SO-010-24
㉖	Connector guide	NBR	1	M2L025-07B82106	M2L032-07B82107	M2L040-07B82108
㉗	O-ring	NBR	6	SO-010-20	SO-010-21	SO-010-24
㉘	O-ring	NBR	2	φ17.6 x φ19.4 x φ0.9	φ22.2 x φ24 x φ0.9	φ28 x φ30 x φ1



\* Since there is a possibility of improper operation, please contact SMC regarding the replacement of seals.

RE<sub>B</sub><sup>A</sup>

REC

C□X

C□Y

MQ<sub>M</sub><sup>Q</sup>

RHC

MK(2)

RS<sub>G</sub><sup>Q</sup>

RS<sub>A</sub><sup>H</sup>

RZQ

MI<sub>S</sub><sup>W</sup>

CEP1

CE1

CE2

ML2B

C<sub>G</sub>5-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data

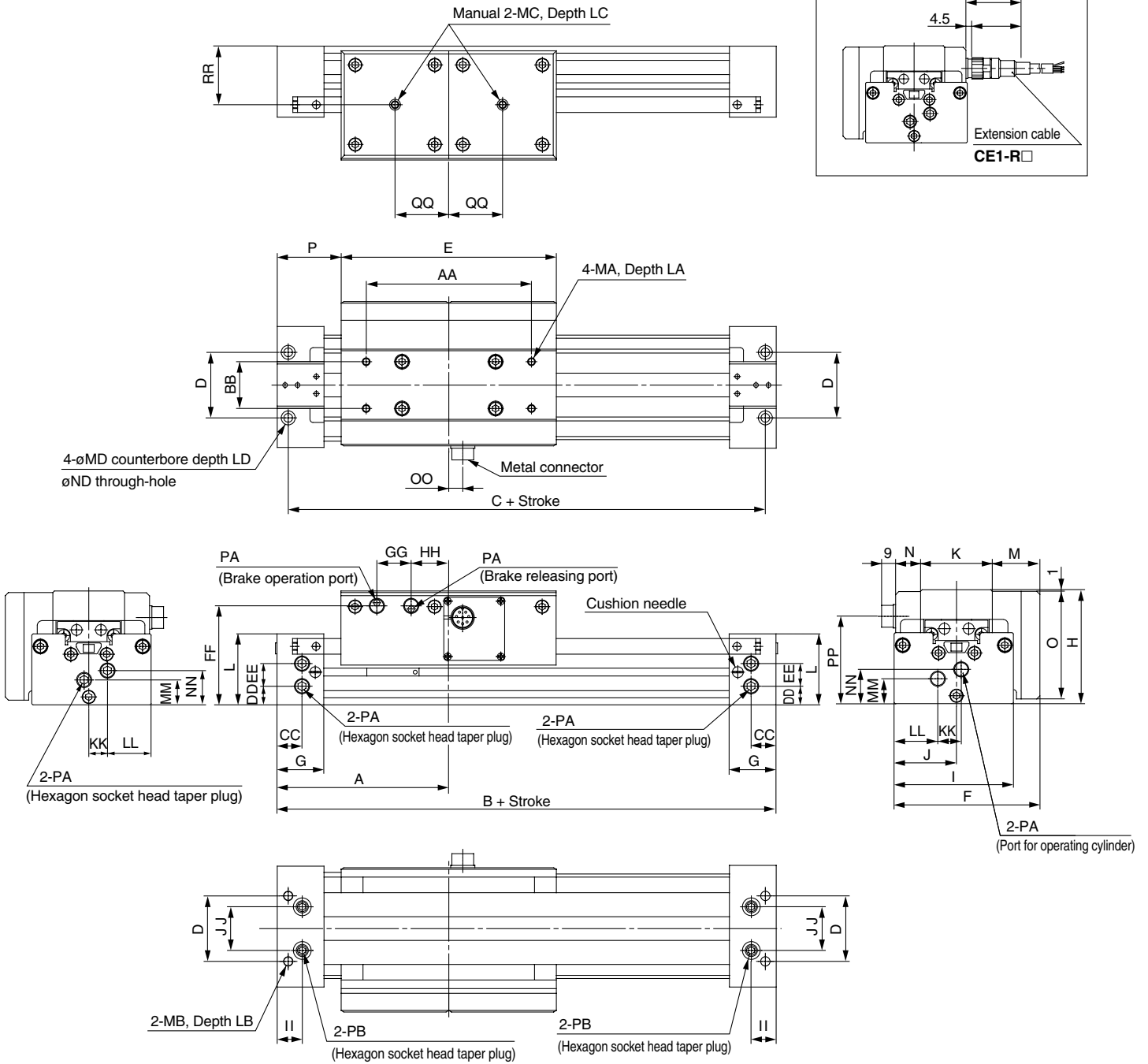


# Series ML2B

## Dimensions

### Basic style

ML2B Bore size — Stroke

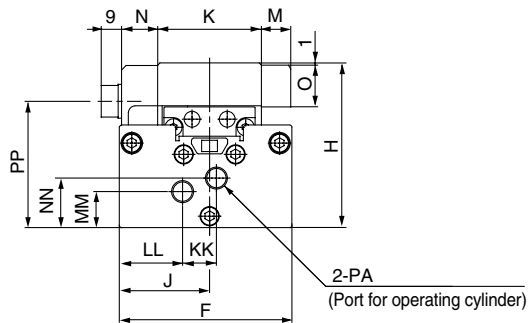


Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	AA	BB	CC	DD	EE	FF	GG	HH	II	J J
ML2B25	110	220	206	42	138	93.5	30	73	76.5	40	46	45.5	30.9	16	69	41	106	30	16	11	14.5	63.5	22	24	16	28
ML2B32	140	280	264	51	168	107.5	37	88	91	46.5	58	54	32.4	15	84	56	133	35	19	15	16	77.5	27	32	19	32
ML2B40	170	340	322	59	204	130.5	45	106	110	55	68	64	41.4	19	102	68	164	40	23	16.5	22	95	35	37	23	36
Model	KK	LL	MM	NN	OO	PP	QQ	RR	MA	LA	MB	LB	MC	LC	MD	LD	ND	PA	PB							
ML2B25	15	28	16	22	9	56	34.5	37.5	M5 x 0.8	11	M6 x 1	9.5	M5 x 0.8	9.5	9	5.5	5.6	Rc 1/8	Rc 1/16							
ML2B32	16	30.5	21.5	26	10	62.5	42	45	M6 x 1	12	M8 x 1.25	16	M6 x 1	12	11	6.5	6.8	Rc 1/8	Rc 1/16							
ML2B40	17.5	37.5	24.5	37.5	23	77	51	54	M8 x 1.25	14	M10 x 1.5	15	M8 x 1.25	12	14	8.5	8.6	Rc 1/4	Rc 1/8							

# Stroke Reading Rodless Cylinder with Brake Series ML2B

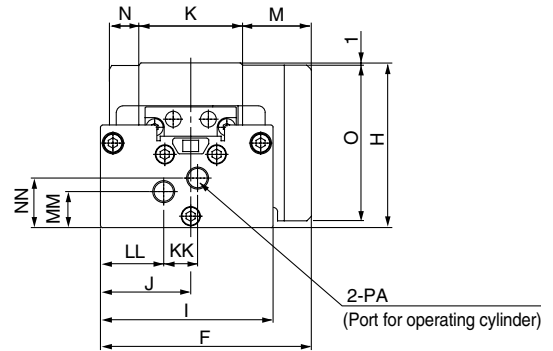
With stroke sensor:

ML2B **Bore size S** — **Stroke**



With brake:

ML2B **Bore size B** — **Stroke**



Applicable cylinder	F	H	J	K	M	N	O
ML2B25	76.5	73	40	46	13	16	18.5
ML2B32	91	88	46.5	58	15	15	19.5
ML2B40	110	106	55	68	19	19	21.5

Applicable cylinder	KK	LL	MM	NN	PA	PP
ML2B25	15	28	16	22	Rc 1/8	56
ML2B32	16	30.5	21.5	26	Rc 1/8	62.5
ML2B40	17.5	37.5	24.5	37.5	Rc 1/4	77

Applicable cylinder	F	H	I	J	K	M	N
ML2B25	93.5	73	76.5	40	46	30.5	16
ML2B32	107.5	88	91	46.5	58	32	15
ML2B40	130.5	106	110	55	68	41.5	19

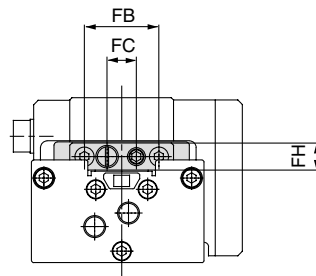
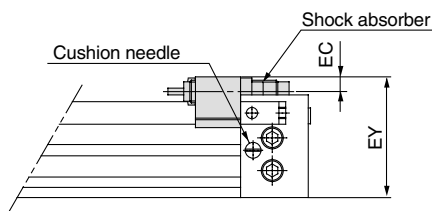
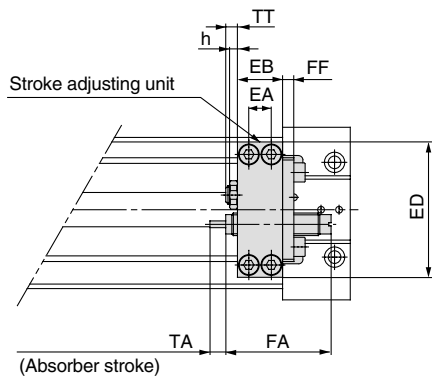
  

Applicable cylinder	O	KK	LL	MM	NN	PA
ML2B25	69	15	28	16	22	Rc 1/8
ML2B32	84	16	30.5	21.5	26	Rc 1/8
ML2B40	102	17.5	37.5	24.5	37.5	Rc 1/4

## Stroke Adjusting Unit

With shock absorber:

ML2B **Bore size S** — **Stroke L**



Applicable cylinder	h	EA	EB	EC	ED	EY	FA	FB	FC	FF	FH	TA	TT
ML2B25	3.5	10	20	6.5	60	53.5	46.7	33	13	6	12	7	Max. 16.5
ML2B32	4.5	12	25	8.5	74	67	67.3	43	17	6	16	12	Max. 20
ML2B40	4.5	15	31	9.5	94	81.5	67.3	43	17	6	16	12	Max. 25

RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sub>5</sub>-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data

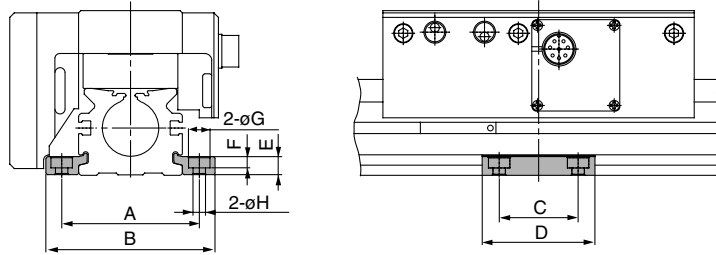


# Series ML2B

## Dimensions

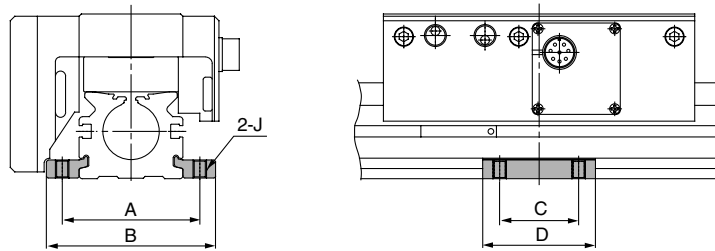
### Side support A

MY-S□A



### Side support B

MY-S□B



(mm)

Part no.	Applicable cylinder	A	B	C	D	E	F	G	H	J
MY-S25 <sub>A</sub> <sup>B</sup>	ML2B25	61	75	35	50	8	5	9.5	5.5	M6 x 1
	ML2B32	70	84							
MY-S32 <sub>A</sub> <sup>B</sup>	ML2B40	87	105	45	64	11.7	6	11	6.6	M8 x 1.25

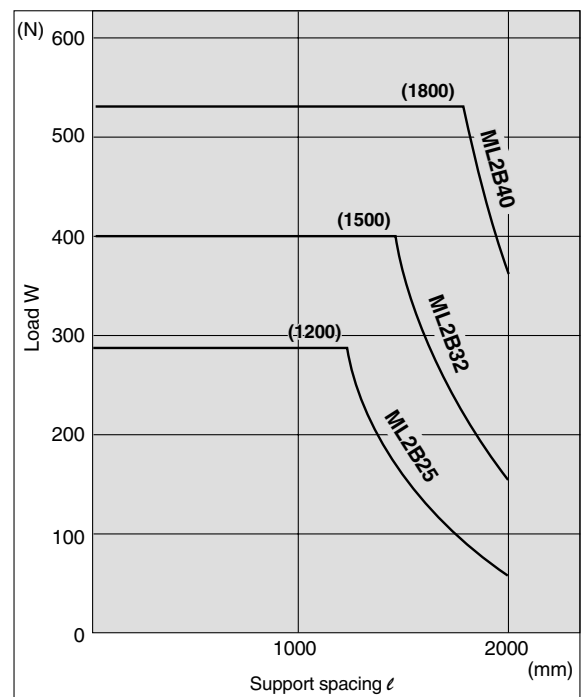
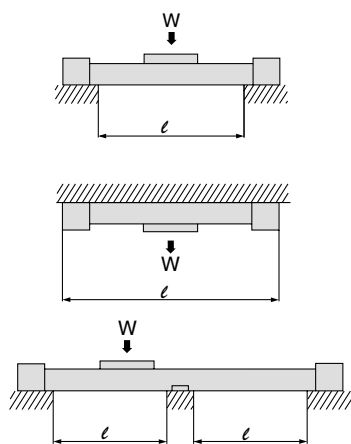
## Guide for Side Support Application

For long stroke operation, the cylinder tube may be deflected depending on its own weight and the load weight. In such a case, use a side support in the middle section. The spacing ( $l$ ) of the support must be no more than the values shown in the graph on the right.

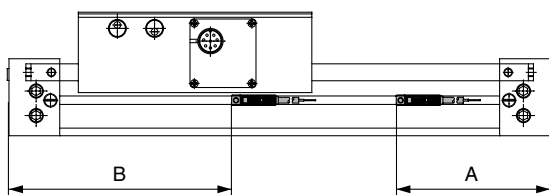
### ⚠ Caution

If the cylinder mounting surfaces are not measured accurately, using a side support may cause poor operation. Therefore, be sure to level the cylinder tube when mounting.

If there is vibration, impact, etc. at long stroke, we recommend adoption of side support even if it is within the allowable value shown in the graph.



## Proper Auto Switch Mounting Position (Detection at stroke end)



Auto switch model	Bore size (mm)	
	A	B
D-Z7□/Z80	91	131.5
D-Y59□/Y69□	102.5	180
D-Y7P/Y7PV	126.5	206
D-Y7□W		
D-Y7□WV		

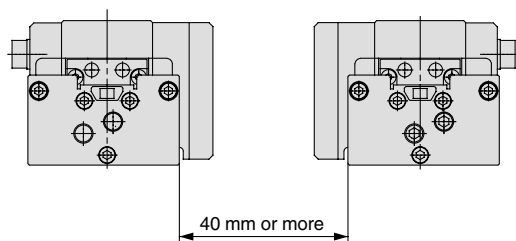
## Operating Range

Auto switch model	Bore size (mm)		
	25	32	40
D-Z7□/Z80	12	12	12
D-Y59□/Y69□	6	6	6
D-Y7P/Y7PV	6	6	6
D-Y7□W/Y7□WV	6	6	6

\* Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately ±30% dispersion.) There may be the case it will vary substantially depending on an ambient environment.

## ⚠ Caution on Handling Auto Switch

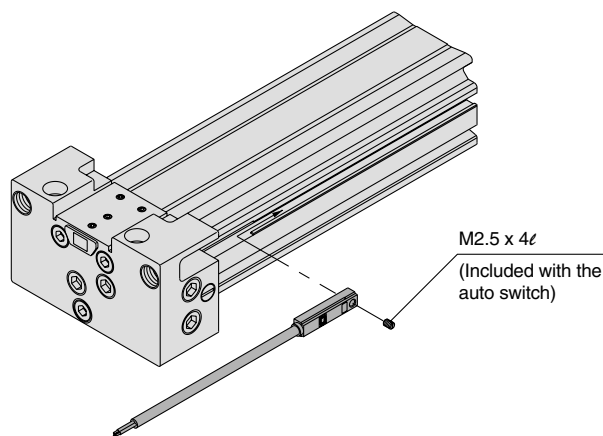
1. Always connect the auto switch to the power supply after the load has been connected.
2. Use caution not to apply excessive impact forces by dropping and bumping when handling.
3. When more than 2 pcs cylinders with auto switches are juxtaposed, leave the distance of 40 mm or more between the cylinder tubes as shown in the below.



4. Avoid wiring patterns in which bending stress and pulling force are repeatedly applied to the lead wires.
5. Please consult with SMC when using in locations where water or coolant liquid, etc is splashing constantly.
6. Avoid the use in locations where the large amount of magnetism is occurring.

## Mounting of Auto Switch

When mounting and securing auto switches, they should be inserted into the cylinder's switch mounting rail from the direction shown in the drawing below. After setting in the mounting position, use a flat head watchmakers' screwdriver to tighten the set screw that is included.



Note) When tightening an auto switch mounting screw, use a watchmakers' screwdriver with a handle of approximately 5 to 6 mm in diameter. Also, tighten with a torque of about 0.05 to 0.1 N·m. As a guide, turn about 90° past the point at which tightening can first be felt.

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. For detailed specifications, refer to page 10-20-1.

Type	Model	Electrical entry (Fetching direction)	Features
Reed switch	D-Z80	Grommet (In-line)	Without indicator light

\* Normally closed (NC = b contact), solid state switch (D-Y7G/Y7H type) are also available. For details, refer to page 10-20-41.

RE<sub>B</sub><sup>A</sup>

REC

C□X

C□Y

MQ<sub>M</sub><sup>Q</sup>

RHC

MK(2)

RS<sub>G</sub><sup>Q</sup>RS<sub>A</sub><sup>H</sup>

RZQ

MI<sub>S</sub><sup>W</sup>

CEP1

CE1

CE2

ML2B

C<sub>6</sub>5-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data