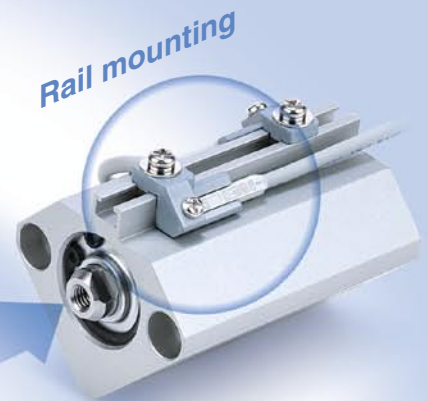
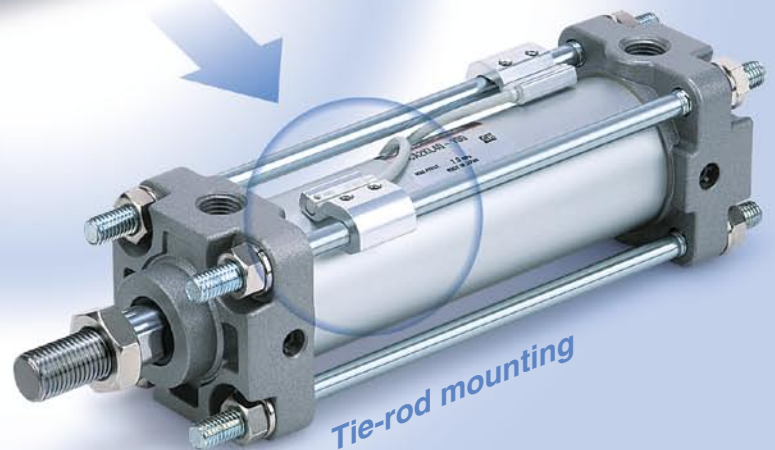


# Expanding the number of actuator series that accept compact auto switches!

One auto switch for four different mounting types.





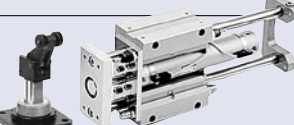


## **All-round Auto Switch**



Consolidate your auto switches.  
Simplify your onsite inventory control.

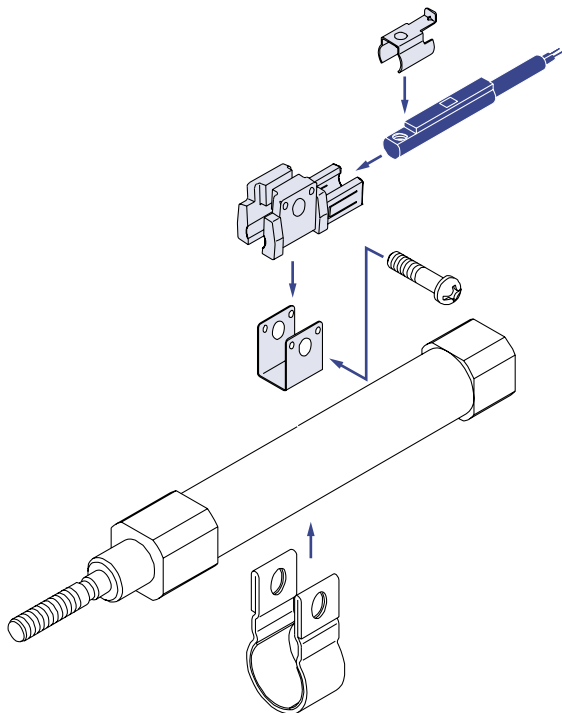
# Cylinder Band Mounting

Description		Series	Size
	Air cylinder Standard	<b>CDJ2</b>	6, 10, 16
	End lock cylinder	<b>CDBJ2</b>	16
	Fine lock cylinder	<b>CDLJ2</b>	10, 16
	Low-speed cylinder	<b>CDJ2X</b>	
	Air cylinder Standard	<b>CM2</b>	20, 25, 32, 40
	End lock air cylinder	<b>CDBM2</b>	
	Fine lock cylinder	<b>CDLM2</b>	
	Low-speed cylinder	<b>CDM2X</b>	
	Smooth cylinder	<b>CDM2Y</b>	
	Air cylinder (European specification)	<b>C76</b>	32, 40
	Air cylinder (European specification)	<b>C85</b> <small>Note 1)</small>	8, 12, 16, 20, 25
	Air cylinder Standard	<b>CDG1</b>	20, 25, 32, 40, 50, 63
	End lock air cylinder	<b>CDBG1</b>	
	Fine lock cylinder	<b>CDLG1</b>	
	Cylinder with lock	<b>CDNG1</b>	
	Smooth cylinder	<b>CDG1Y</b>	
	Cylinder with guide	<b>MGG</b>	20, 25, 32, 40, 50, 63
	Cylinder with guide Compact	<b>MGC</b>	20, 25, 32, 40, 50
	Fine lock cylinder with guide	<b>MLGC</b>	20, 25, 32, 40
	Stopper cylinder	<b>RSDG</b>	40, 50
	Sine cylinder	<b>REC</b>	20, 25, 32, 40
	High power cylinder	<b>RHC</b>	20, 25, 32, 40, 50, 63

**Note 1)** Mountable only with solid state switches.

## Band Mounting

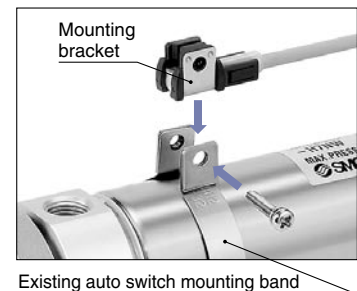
Mountable compact auto switches for circular cylinders.



Switches can be moved without sliding the bands.

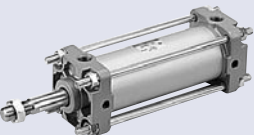
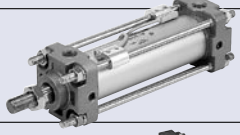
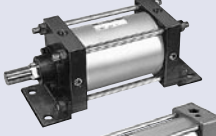



Old type switch bands can be used.



- 1) Switch mounting bracket (blue shaded parts in the left figure): BJ3-1
- 2) Switch mounting bracket (BJ3-1): Please combine the band corresponding to the appropriate cylinder.
- 3) Refer to SMC Information leaflet ('04-E514) for how to order major cylinders.
- 4) Watertight (D-F9BAL(Z)) and vertical electrical entry types (D-M9□V/D-A9□V) cannot be used.

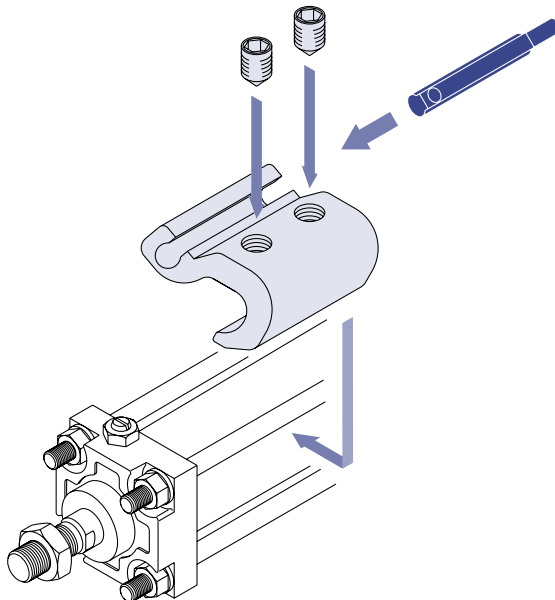
# Cylinder Tie-Rod Cylinder Mounting

Description		Series	Size
	Air cylinder Standard	<b>CDA2</b>	40, 50, 63, 80, 100
	End lock air cylinder	<b>CDBA2</b>	
	Fine lock cylinder	<b>CDLA</b>	
	Cylinder with lock	<b>CDNA</b>	40, 50, 63, 80, 100 <b>Note 1)</b>
	Locked-up cylinder	<b>CL1</b>	
	Low-speed cylinder	<b>CDA2X</b>	
	Air-hydro cylinder	<b>CDA2H</b>	
	Low-friction cylinder	<b>CDA2Q</b>	
	Smooth cylinder	<b>CDA2Y</b>	
	Air cylinder Standard	<b>MDB</b>	32, 40, 50, 63, 80, 100, 125
	End lock air cylinder	<b>MDBB</b>	32, 40, 50, 63, 80, 100
	Cylinder with lock	<b>MDNB</b>	
	Air cylinder Standard	<b>CDS1</b>	125, 140, 160, 180, 200
	Cylinder with lock	<b>CDNS</b>	125, 140, 160
	Cylinder with lock	<b>CDLS</b>	125, 140, 160, 180, 200
	Locked-up cylinder	<b>CL1</b>	125, 140, 160
	Air cylinder (European specification)	<b>C95</b>	32, 40, 50, 63, 80, 100, 125, 160, 200 <b>Note 2)</b>

**Note 1)** ø50: Only solid state switches can be attached.

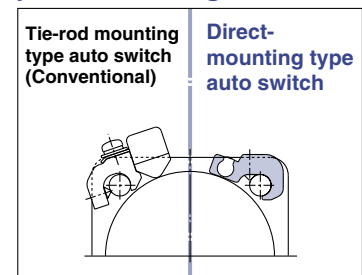
**Note 2)** Cannot be mounted on ø250.

## Tie-Rod Mounting

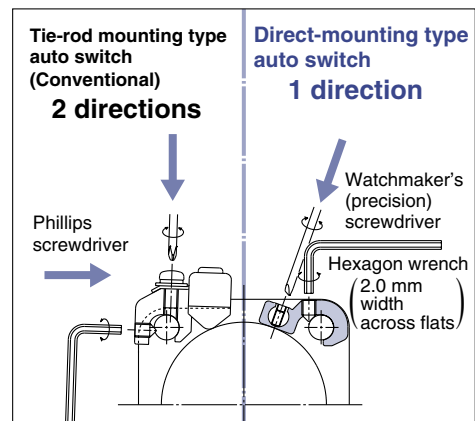


- 1) Switch mounting bracket (blue shaded parts in the above figure) varies according to the cylinder model and bore size.
- 2) Refer to SMC Information leaflet ('04-E514) for how to order major cylinders.






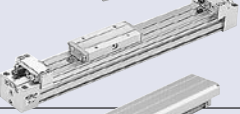
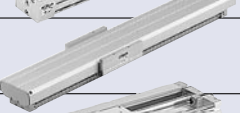
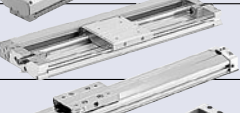

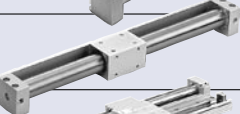
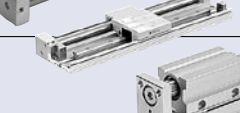

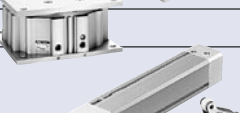
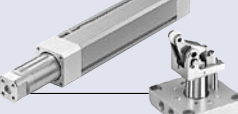
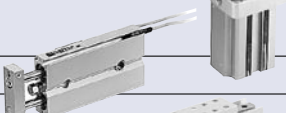
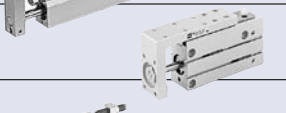


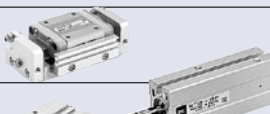
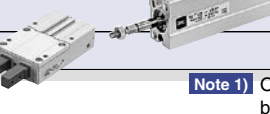

## Reduction in auto switch protrusion height



## Auto switch mounting and position adjustment are possible from one direction.

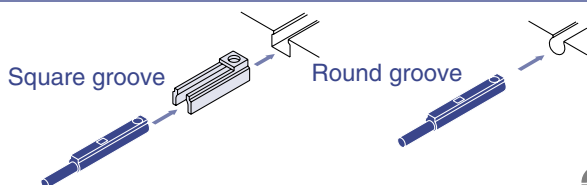


# Cylinder Groove Mounting

Description		Series	Size
	Mini free mount cylinder	<b>CUJ</b> <small>Note 3)</small>	6, 8, 10
	Free mount cylinder	<b>CDU</b>	6, 10, 16, 20, 25, 32
	Free mount cylinder with air cushion	<b>CDU</b>	20, 25, 32
	Free mount cylinder for vacuum	<b>ZCDUK</b>	10, 16, 20, 25, 32
	Low-speed cylinder	<b>CDUX</b>	
	Compact cylinder	<b>CDQS</b>	
	Low-speed cylinder	<b>CDQSX</b>	12, 16, 20, 25
	Smooth cylinder	<b>CDQSY</b>	
	High precision scale cylinder	<b>CEP1</b>	12, 20
	Air cylinder Standard	<b>MDB1</b>	32, 40, 50, 63, 80, 100
	Air cylinder (European specification)	<b>CP95</b>	32, 40, 50, 63, 80, 100, 125, 160
	Rodless cylinder Slider bearing	<b>MY1M</b>	16, 20, 25, 32, 40, 50, 63 <small>Note 2)</small>
	Rodless cylinder Cam follower guide	<b>MY1C</b>	16, 20, 25, 32, 40, 50, 63 <small>Note 2)</small>
	Rodless cylinder High-precision guide Single axis	<b>MY1H</b>	10, 16, 20, 25, 32, 40 <small>Note 2)</small>
	Rodless cylinder with protection cover	<b>MY1MW</b>	16, 20, 25, 32, 40, 50, 63 <small>Note 2)</small>
		<b>MY1CW</b>	16, 20, 25, 32, 40, 50, 63 <small>Note 2)</small>
	Rodless cylinder Cam follower guide	<b>MY2C</b>	16, 25, 40
	Rodless cylinder High precision guide Single/double axis	<b>MY2H/HT</b>	16, 25, 40
	Rodless cylinder Standard type	<b>MY3A/3B</b>	16, 25, 40, 63
	Rodless cylinder Direct mount	<b>CY1R</b>	6, 10, 50, 63
<b>CY3R</b>		15, 20, 25, 32, 40	
	Sine rodless cylinder Direct mount	<b>REAR</b>	10, 15, 20, 25, 32, 40
		<b>REBR</b>	15, 25, 32
	Rodless cylinder Low center of gravity guide type	<b>CY1F</b>	10, 15, 25
	Compact cylinder with guide	<b>MGP</b>	12, 16, 20, 25, 32, 40, 50, 63, 80, 100
<b>MGQ</b>			
	Compact guide cylinder with lock	<b>MLGP</b>	20, 25, 32, 40, 50, 63, 80, 100
	Guide table	<b>MGF</b> <small>Note 1)</small>	40, 63, 100
	Non-rotating double power cylinder	<b>MGZ</b>	20, 25, 32, 40, 50, 63, 80
	Non-rotating double power cylinder with rod side	<b>MGZ</b>	40, 50, 63
	Double power cylinder	<b>MGZR</b>	20, 25, 32, 40, 50, 63, 80
	Heavy duty stopper cylinder	<b>RSH</b> <small>Note 1)</small>	20, 32
		<b>RS1H</b> <small>Note 1)</small>	50, 63, 80
	Dual rod cylinder	<b>CXSJ</b>	6, 10, 15, 20, 25, 32
	Compact slide Linear guide	<b>MXH</b>	6, 10, 16, 20
	Compact slide Miniature guide	<b>MXU</b>	6, 10, 16
	Air slide table Cross roller	<b>MXS</b>	6, 8, 12, 16, 20, 25
	Air slide table Linear guide	<b>MXQ</b>	
	Compact air slide table Cross roller	<b>MXF</b>	8, 12, 16, 20
	Air slide table Linear guide	<b>MXW</b>	8, 12, 16, 20, 25
	Air slide table Linear guide	<b>MXP</b>	6, 8, 10, 12, 16
	Air slide table Long stroke	<b>MXY</b>	6, 8, 12
	Precision cylinder	<b>MTS</b>	8, 12, 16, 20, 25, 32, 40
	Escapement	<b>MIS/MIW</b> <small>Note 1)</small>	8, 12, 20, 25, 32


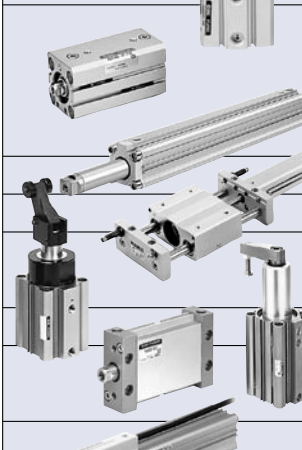
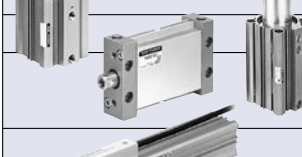
**Note 1)** Only solid state switches can be attached. **Note 2)** Over ø25: Only solid state switches can be attached. **Note 3)** Some specific strokes can only accept solid state switches.

## Groove Mounting



- 1) Use a switch mounting bracket (BMG2-012) for cylinders with T-slot type grooves.
- 2) Refer to SMC Information leaflet ('04-E514) and Best Pneumatics Catalogue for how to order major cylinders.
- 3) Two types of switch mounting brackets are used for MB1 and MGZ(R).

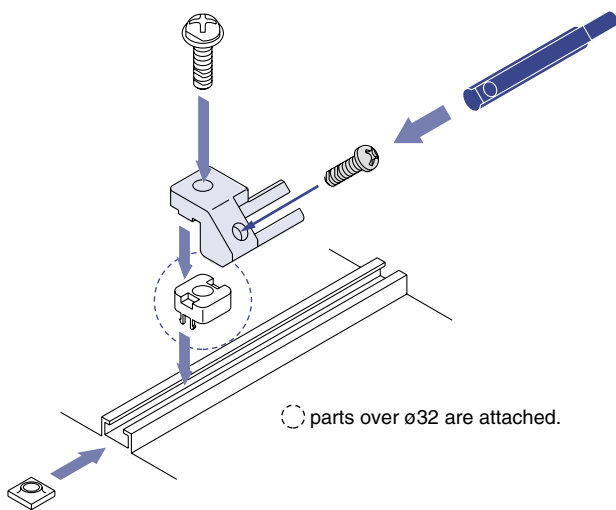
# Cylinder Rail Mounting/Groove Mounting

Description	Series	Size	
	Compact cylinder	<b>CDQ2</b>	12, 16, 20, 25, 32.40, 50, 63, 80, 100 125, 140, 160, 180, 200
	Compact cylinder Axial piping type	<b>CDQP2</b>	12, 16, 20, 25, 32, 40, 50, 63, 80, 100
	Compact end lock cylinder	<b>CDBQ2</b>	20, 25, 32, 40, 50, 63, 80, 100
	Compact cylinder with lock	<b>CDLQ</b>	
	Low-speed cylinder	<b>CDQ2X</b>	32, 40, 50, 63, 80, 100
	Smooth cylinder	<b>CDQ2Y</b>	
	Compact cylinder Guide rod type	<b>CDQM</b>	12, 16, 20, 25, 32, 40, 50
	Compact cylinder with air cushion	<b>RDQ</b>	20, 25, 32, 40, 50, 63, 80, 100
	Air cushion compact cylinder with lock	<b>RDLQ</b>	32, 40, 50, 63
	Compact cylinder (European specification)	<b>C55</b>	20, 25, 32, 40, 50, 63
	Compact cylinder (US specification)	<b>NCQ8</b>	9/16", 3/4", 1-1/16", 1-1/2", 2", 2-1/2"
	3-position cylinder	<b>RZQ</b>	32, 40, 50, 63
	Platform cylinder	<b>CXT</b>	12, 16, 20, 25, 32, 40
	Rotary clamp cylinder Standard type	<b>MK</b>	12, 16, 20, 25, 32, 40, 50, 63
	Rotary clamp cylinder Heavy duty type	<b>MK2</b>	20, 25, 32, 40, 50, 63
	Stopper cylinder	<b>RSDQ</b>	12, 16, 20, 32, 40, 50
	Plate cylinder	<b>MDU</b> <small>Note 1</small>	25, 32, 40, 50, 63
	Plate cylinder with lock	<b>MDLU</b> <small>Note 1</small>	25, 32, 40, 50
	Stroke reading cylinder	<b>CE1</b> <small>Note 2</small>	12, 20, 32, 40, 50, 63

Note 1 Only solid state switches can be attached.

Note 2 ø12: Only solid state switches can be attached.

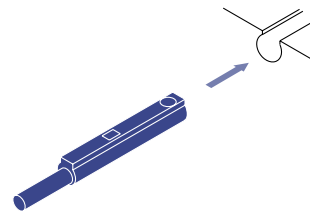
## Rail Mounting



○ parts over ø32 are attached.

## Groove Mounting

Groove mounting is possible, depending on the model and bore size.



- 1) Switch mounting bracket (blue shaded parts in the above figure) part no: BQ2-012
- 2) Refer to SMC Information leaflet ('04-E514) and Best Pneumatics Catalogue for how to order major cylinders.
- 3) CDQ2, MK, CE over ø32: If the auto switch is attached to any side other than the port side, ○ parts (BQ-2: option) are necessary.




















## Not applicable cylinder series

Description	Series
Stainless cylinder	<b>CJ5/CG5 Series</b>
Magnetically coupled rodless cylinder Slider type/Slider bearing	<b>CY1S Series</b>
Magnetically coupled rodless cylinder Slider type/Ball bushing bearing	<b>CY1L Series</b>
Magnetically coupled rodless cylinder High precision guide	<b>CY1H Series</b>
Rodless cylinder Standard	<b>MY1B Series</b>
Mechanically jointed rodless cylinder High rigidity/high precision guide (Double axis)	<b>MY1HT Series</b>

Description	Series
Sine rodless cylinder Slider type/Slider bearing	<b>REAS Series</b>
Sine rodless cylinder Slider type/Ball bushing bearing	<b>REAL Series</b>
Sine rodless cylinder High precision guide	<b>REAH/HT Series</b>
Sine rodless cylinder High precision guide	<b>REBH/HT Series</b>
Slide unit	<b>CXWM/CXWL Series</b>
Dual rod cylinder	<b>CXS Series</b>

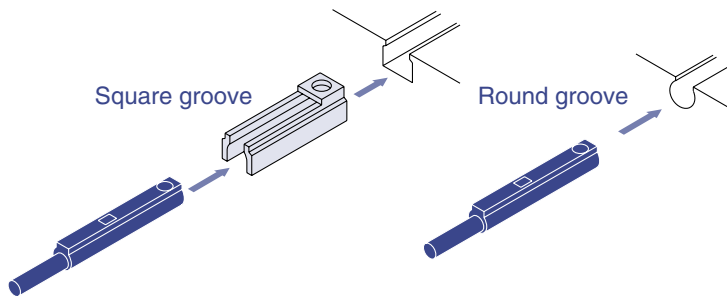
\* Contact SMC for other models.

# Air chuck Groove Mounting/Rail Mounting

Description	Series	Size
 Low profile air gripper	<b>MHF2</b>	8, 12, 16, 20
 Linear guide Standard	<b>MHZ2</b>	6, 10, 16, 20, 25, 32, 40
 Linear guide Dust cover	<b>MHZJ2</b>	6, 10, 16, 20, 25
 Linear guide Long stroke	<b>MHZL2</b>	10, 16, 20, 25
 Wide opening	<b>MHL2</b>	10, 16, 20, 25, 32, 40
 2-finger rotary actuated	<b>MDHR2</b>	10, 15, 20, 30
 3-finger rotary actuated	<b>MDHR3</b>	10, 15
 2-finger slide guide	<b>MHK2</b>	12, 16, 20, 25
 2-finger slide guide	<b>MHS2</b>	16, 20, 25, 32, 40, 50, 63
 3-finger slide guide Standard	<b>MHS3</b>	16, 20, 25, 32, 40, 50, 63, 80, 100, 125
 3-finger slide guide Dust cover	<b>MHSJ3</b>	16, 20, 25, 32, 40, 50, 63, 80
 3-finger slide guide Through hole	<b>MHSH3</b>	16, 20, 25, 32, 40, 50, 63, 80
 3-finger slide guide Long stroke	<b>MHSL3</b>	16, 20, 25, 32, 40, 50, 63, 80, 100, 125
 4-finger slide guide	<b>MHS4</b>	16, 20, 25, 32, 40, 50, 63
 Angular style Standard	<b>MHC2</b>	6, 10, 16, 20, 25
 Angular style Toggle	<b>MHT2</b>	32, 40, 50, 63 <b>Note 1)</b>
 180° angular style Cam type	<b>MHY2</b>	10, 16, 20, 25
 180° angular style Gear type	<b>MHW2</b>	20, 25, 32, 40, 50
 Rotary gripper	<b>MRHQ</b>	10, 16, 20, 25

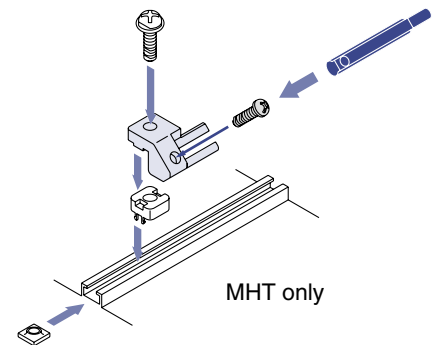
**Note 1)** A reed switch can only be attached to the MHT series air gripper.

## Groove Mounting



1) Use a switch mounting bracket (BMG2-012) for cylinders which have T-slot type grooves.

## Rail Mounting



- 1) Switch mounting bracket (blue shaded parts in the above figure) part no: BQ2-012
- 2) Refer to Best Pneumatics Vol. 7 to 12 for how to order major cylinders.

# Applicable Auto Switch

## Solid State Auto Switch

### D-M9N(V)/D-M9P(V)/D-M9B(V)

PLC: Programmable Logic Controller



- Lead wires  
Oilproof heavy-duty vinyl cable:  $\phi 2.7 \times 3.2$  ellipse  
D-M9B(V) 0.15 mm<sup>2</sup> x 2 cores  
D-M9N(V), D-M9P(V) 0.15 mm<sup>2</sup> x 3 cores

D-M9□/D-M9□V (With indicator light)						
Auto switch part no.	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
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 $\mu$ A or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when ON.					

## 2-colour Indication Solid State Switch

### D-F9NW(V)/D-F9PW(V)/D-F9BW(V)

PLC: Programmable Logic Controller



- Lead wires  
Oilproof heavy-duty vinyl cable:  $\phi 2.7$ , 0.15 mm<sup>2</sup> x 3 cores (Brown, Black, Blue), 0.18 mm<sup>2</sup> x 2 cores (Brown, Blue), 0.5 m

D-F9□W/D-F9□WV (With indicator light)						
Auto switch part no.	D-F9NW	D-F9NWV	D-F9PW	D-F9PWV	D-F9BW	D-F9BWV
Electrical entry	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay IC, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 VDC)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less		80 mA or less		5 to 40 mA	
Internal voltage drop	1.5 V or less (0.8 V or less at 10 mA load current)		0.8 V or less		4 V or less	
Leakage current	100 $\mu$ A or less at 24 VDC				0.8 mA or less	
Indicator light	Operating position ..... Red LED illuminates. Optimum operating position ..... Green LED illuminates.					

## Reed Switch

### D-A90(V)/D-A93(V)/D-A96(V)

PLC: Programmable Logic Controller



- Lead wires  
D-A90(V)/D-A93(V) — Oilproof heavy-duty vinyl cable:  $\phi 2.7$ , 0.18 mm<sup>2</sup> x 2 cores (Brown, Blue), 0.5 m  
D-A96(V) — Oilproof heavy-duty vinyl cable:  $\phi 2.7$ , 0.15 mm<sup>2</sup> x 3 cores (Brown, Black, Blue), 0.5 m

D-A90/D-A90V (Without indicator light)			
Auto switch part no.	D-A90/D-A90V		
Applicable load	IC circuit, Relay, PLC		
Load voltage	24 V AC/DC or less	48 V AC/DC or less	100 V AC/DC or less
Maximum load current	50 mA	40 mA	20 mA
Contact protection circuit	None		
Internal resistance	1 $\Omega$ or less (including lead wire length of 3 m)		
D-A93/D-A93V/D-A96/D-A96V (With indicator light)			
Auto switch part no.	D-A93/D-A93V		D-A96/D-A96V
Applicable load	Relay, PLC		IC circuit
Load voltage	24 VDC	100 VAC	4 to 8 VDC
Load current range and max. load current	5 to 40 mA	5 to 20 mA	20 mA
Contact protection circuit	None		
Internal voltage drop	D-A93 — 2.4 V or less (to 20 mA)/3 V or less (to 40 mA) D-A93V — 2.7 V or less		0.8 V or less
Indicator light	Red LED illuminates when ON		

Note 1) In conditions of less than 5 mA, indicator light visibility lowers, and may be unreadable in conditions of less than 2.5 mA. However, if contact output is above 1 mA, no problems will arise.

## Caution for Using Auto Switches

### Caution

1. Use the compact auto switch after reviewing the cautions in the SMC Information leaflet (04-E514) and our Best Pneumatics catalogue.

## Caution for Replacing Compact Auto Switches

### Caution

1. Place a purchase order after confirming the applicable model since auto switches vary according to each actuator type and bore size.
2. Only use the auto switch after thoroughly confirming its specifications, as each auto switch's characteristics (electrical characteristics, operating range, etc.) can be different depending upon the applicable actuator model.
3. The compact auto switch can be attached to the same actuator model shipped in the past, by using the new type mounting brackets. Contact SMC if the current model has a different model no. or shape from the past model.
4. Please place a purchase order after confirming the part number and quantity because up to two different types of mounting brackets can be required for mounting the compact auto switch.

## Caution for Replacing Solid State Compact Switches

### Caution

Use the compact solid state auto switch (D-M9 series) after examining the differences between the old and new models. The differences are listed below.

- 1) Since short circuit protection is not built-in, the switch will be instantly damaged when a load short-circuits. Use caution to avoid reverse wiring between the power supply line (brown) and the output line (black), especially for 3-wire types.
- 2) When the auto switch is used for replacing an older auto switch, please pay attention to the detection range of the auto switch because it is shorter than the older switch's.
- 3) Please use the tool listed below when the ends of the lead wires are stripped, because the insulator will be damaged by general purpose tools.  
Exclusive tool model no.: D-M9N-SWY

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