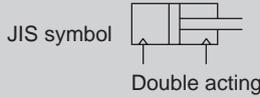


Compact cylinder double acting/single rod

SMG Series

● Bore size: $\phi 6/\phi 10/\phi 16/\phi 20/\phi 25$



Structure and material restriction

	Structure	Material restriction			Model No.	
LCM	P7 Series (custom order product)	Exhaust treatment			P7	
LCR		Vacuum treatment			P71	
LCG	P5 Series (custom order product)	Exhaust treatment	Copper-based materials prohibited	Silicon-based materials prohibited	Halogen-based materials prohibited (fluorine, chlorine, bromine)	P5
LCX		Vacuum treatment	Copper-based materials prohibited	Silicon-based materials prohibited	Halogen-based materials prohibited (fluorine, chlorine, bromine)	P51

Specifications

Descriptions	SMG-P7*/P5*					
	SMG-L-P7*/P5* (with switch)					
Bore size	mm	$\phi 6$	$\phi 10$	$\phi 16$	$\phi 20$	$\phi 25$
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure	MPa	0.7				
Min. working pressure	MPa	0.12*	0.06		0.05	
Proof pressure	MPa	1.05				
Ambient temperature	°C	-10 to 60 (no freezing)				
Port size		M5				
Port size (relief port)		M5				
Stroke tolerance	mm	+1.5 0				
Working piston speed	mm/s	50 to 500				
Cushion		With rubber cushion				
Lubrication		Not available				
Allowable energy absorption J		0.012	0.036	0.1	0.1	0.19

*0.12 (≈17 psi, 1.2 bar)

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\phi 6$	5/10/15/20/25/30	30	5
$\phi 10$			
$\phi 16$			
$\phi 20$	5/10/15/20/25/30/40/50	50	
$\phi 25$			

*1: Custom stroke length is available per 5 mm.

Min. stroke with switch

Bore size	1-color display		2-color display	
	K□H	K□V	K□YH	K□YV
$\phi 6$	5		5	
$\phi 10$				
$\phi 16$				
$\phi 20$	5		5	
$\phi 25$				

Switch specifications

- 1-color/2-color display

Descriptions	Proximity 2-wire		Proximity 3-wire			Reed 2-wire				
	K2H/K2V	K2YH/K2YV	K3H/K3V	K3PH/K3PV (custom order)	K3YH/K3YV	K0H/K0V		K5H/K5V		
Applications	Programmable controller		Programmable controller, relay			Programmable controller, relay		Programmable controller, relay IC circuit (without indicator lamp), serial connection		
Output method	-		NPN output	PNP output	NPN output	-				
Power supply voltage	-		10 to 28 VDC			-				
Load voltage	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	
Load current	5 to 20 mA (*2)		50 mA or less			5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	
Indicator lamp	LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)		-		
Leakage current	1 mA or less		10 µA or less			0 mA				
Weight	g	1 m: 18 3 m: 49 5 m: 80	1 m: 31 3 m: 85 5 m: 139	1 m: 18 3 m: 49 5 m: 80	1 m: 31 3 m: 85 5 m: 139	1 m: 18 3 m: 49 5 m: 80				

*1: Refer to page 309 for detailed switch specifications and Dimensions.

*2: Max. load current: 20mA at 25°C. The current is lower than 25 mA if the operating ambient temperature around the switch is higher than 20°C.
(60 to 5 mA at 10°C)

Cylinder weight

Unit (g)

Model No.	Product weight when stroke length (S) = 0 mm		Additional weight per S = 5 mm
	SMG-P7*/P5*	SMG-L-P7*/P5*	
Bore size	Double acting	Double acting with switch	
ø6	26	26	3
ø10	36	36	3
ø16	60	75	6
ø20	123	151	11
ø25	216	260	17

Example: Product weight
SMG-L-16-10-K2H-D-P7

- Product weight for 0 mm stroke length ...75 g
- Additional weight when S = 10 mm6 g x 10/5 = 12 g
- Weight of 2 cylinder switches18 g x 2 = 36 g
- Product weight75 g + 12 g + 36 g = 123 g

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa							
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	Push	-	4.24	5.65	8.48	11.3	14.1	17.0	19.8
	Pull	-	3.18	4.24	6.36	8.48	10.6	12.7	14.8
ø10	Push	7.85	11.8	15.7	23.6	31.4	39.3	47.1	55.0
	Pull	6.60	9.90	13.2	19.8	26.4	33.0	39.6	46.2
ø16	Push	20.1	30.2	40.2	60.3	80.4	1.01 × 10 ²	1.21 × 10 ²	1.41 × 10 ²
	Pull	17.3	25.9	34.6	51.8	69.1	86.4	1.04 × 10 ²	1.21 × 10 ²
ø20	Push	31.4	47.1	62.8	94.2	1.26 × 10 ²	1.57 × 10 ²	1.88 × 10 ²	2.20 × 10 ²
	Pull	26.4	39.6	52.8	79.2	1.06 × 10 ²	1.32 × 10 ²	1.58 × 10 ²	1.85 × 10 ²
ø25	Push	49.1	73.6	98.2	1.47 × 10 ²	1.96 × 10 ²	2.45 × 10 ²	2.95 × 10 ²	3.44 × 10 ²
	Pull	41.2	61.9	82.5	1.24 × 10 ²	1.65 × 10 ²	2.06 × 10 ²	2.47 × 10 ²	2.89 × 10 ²

SCPD3
SCM
SSD2
MDC2
SMG
LCM
LCR
LCG
LCX
STM
STG
STR2
MRL2
GRC
Cylinder Switch
MN3E
MN4E
4GA/B
M4GA/B
MN4GA/B
F.R.(module unit)
Clean F.R
Precision R
Press gauge
Diff. press gauge
Electro-pneumatic R
Speed controller
Auxiliary valve
Fitting/ tube
Clean air unit
Pressure sensor
Flow rate sensor
Valve for air blow
Ending

How to order

Without switch (without magnet for switch)

SMG - **25** - **25** - **P7**

With switch (built-in magnet for switch)

SMG-L - **25** - **25** - **K2H** - **R** - **P7**

A Model No.

B Bore size

C Stroke length

D Switch model No.

E Switch quantity

F Clean room specifications

Code	Content
A Model No.	
SMG	Double acting
SMG-L	Double acting with switch

B Bore size (mm)	
6	ø6
10	ø10
16	ø16
20	ø20
25	ø25

C Stroke length (mm)		Applicable bore size				
		ø6	ø10	ø16	ø20	ø25
Standard stroke length	5	●	●	●	●	●
	10	●	●	●	●	●
	15	●	●	●	●	●
	20	●	●	●	●	●
	25	●	●	●	●	●
	30	●	●	●	●	●
	40				●	●
50				●	●	

D Switch model No.						
Lead wire straight	Lead wire L-shaped	Contact	Voltage		Indicator	Lead wire
			AC	DC		
K0H*	K0V*	Reed	●	●	1-color display	2 wires
K5H*	K5V*		●	●	Without indicator lamp	
K2H*	K2V*	Proximity		●	1-color display	2 wires
K3H*	K3V*			●	1-color display (custom order product)	3 wires
K3PH*	K3PV*			●	2-color display	2 wires
K2YH*	K2YV*			●		3 wires
K3YH*	K3YV*					

* Lead wire length	
Blank	1 m (standard)
3	3 m
5	5 m

E Switch quantity	
R	1 (on rod end)
H	1 (on head end)
D	2

F Clean room specifications		
	Structure	Material restriction
P7	Exhaust treatment	-
P71	Vacuum treatment	-
P5	Exhaust treatment	Copper-based/silicon-based/halogen-based materials (fluorine, chlorine, bromine) are prohibited
P51	Vacuum treatment	Copper-based/silicon-based/halogen-based materials (fluorine, chlorine, bromine) are prohibited

Precautions for model No. selection

*1: Refer to page 76 for the minimum stroke length with switch.

*2: Refer to page 74 for combinations of variations/options.

[Example of model No.]

SMG-L-6-15-K0H-R-P7

Model: Compact cylinder

A Model No. : Double acting with switch

B Bore size : ø6 mm

C Stroke length : 15 mm

D Switch model No. : Reed K0H switch, lead wire length 1 m

E Switch quantity : 1 (on rod end)

F Clean room specifications : Exhaust treatment

How to order switch

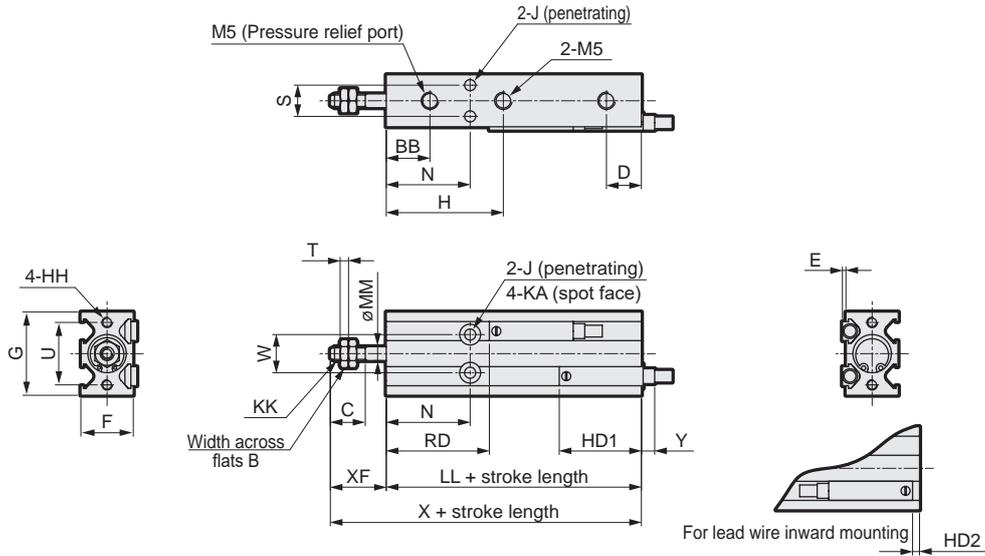
SW - **K2H**

Switch model No.
(Item **D** above)

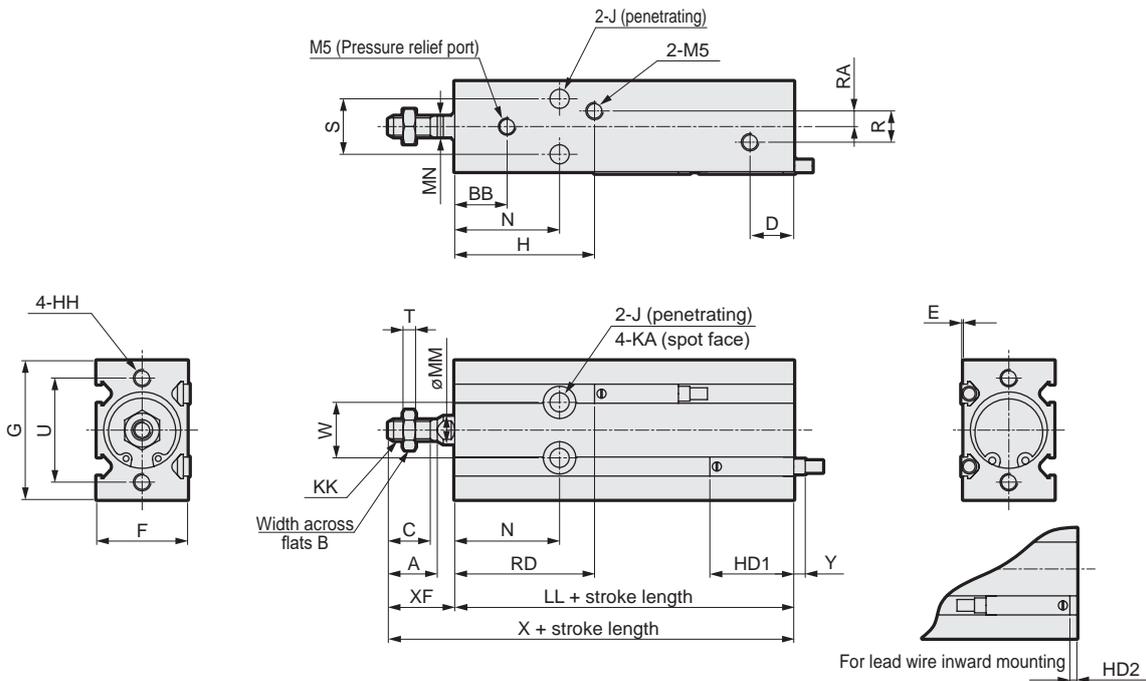
Dimensions

● Double acting/single rod SMG- (L) -P7*/P5*

• $\phi 6/\phi 10$



• $\phi 16/\phi 20/\phi 25$



Code Bore size	A	B	BB	C	D	F	G	H	HH	J	KA	KK	MM	MN	N	R	RA	S	T	U	W
$\phi 6$	-	5.5	15	7	10	13	22	31	M3 depth 5	3.2	6 depth 4.8	M3	3	-	23	-	-	7	1.8	17	10
$\phi 10$	-	7	12.5	10	10	15	24	33.5	M3 depth 5	3.2	6 depth 5	M4	4	-	24	-	-	9	2.4	18	11
$\phi 16$	12.5	8	12	11	11.5	20	32	(*1) 36.5	M4 depth 6	4.5	7.6 depth 6.5	M5	6	5	27	4	2	12	3.2	25	14
$\phi 20$	14	10	15	12	12.5	26	40	40	M5 depth 8	5.5	9.3 depth 8	M6	8	6	30	9	4.5	16	3.6	30	16
$\phi 25$	18	13	15	15.5	13	32	50	40.5	M5 depth 8	5.5	9.3 depth 9	M8	10	8	29	9	4.5	20	5	38	20

Code Bore size	XF	LL		X		E	HD1	HD2	RD	Y
		Without switch	With switch	Without switch	With switch					
$\phi 6$	13	49	49	62	62	1	20	1	29	7
$\phi 10$	16	53	53	69	69	1	23.5	4.5	29.5	3.5
$\phi 16$	16	50	60	66	76	0.5	24.5	5.5	35.5	2.5
$\phi 20$	19	57	67	76	86	0.5	27	8	40	0
$\phi 25$	23	59	69	82	92	0.5	29	10	40	-2

*1: 34.5 for 5 stroke length without switch

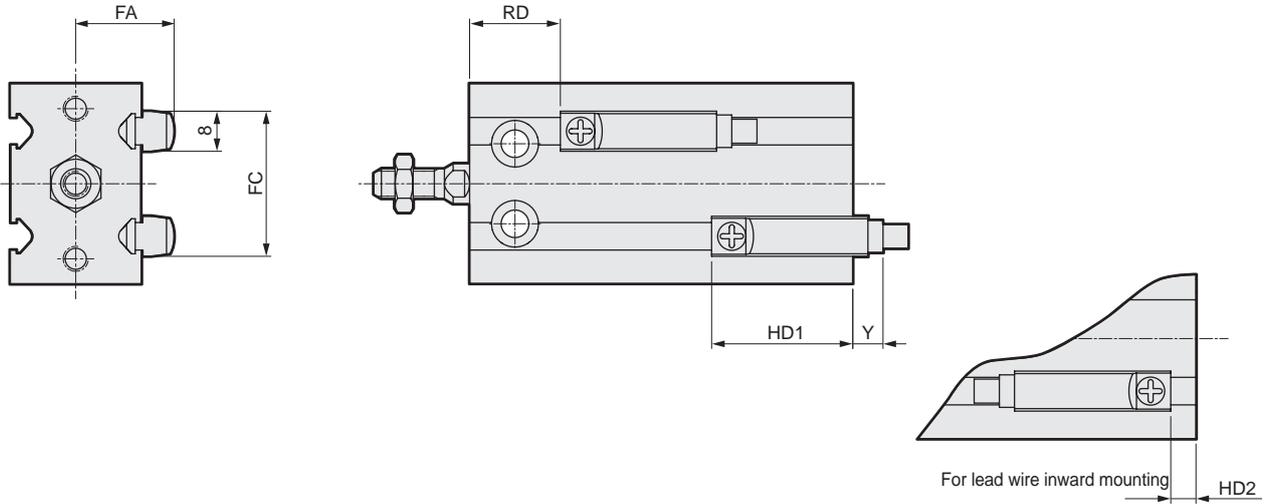
*2: Y dimensions indicate the projection dimensions from the end surface of the switch body. (Negative dimensions indicate the pull dimensions from the end surface of the body)

*3: To calculate LL+ stroke length or X+ stroke length when using custom stroke length, apply the next longer standard stroke length (instead of the custom stroke length) to the stroke length value. (Example: If the custom stroke length is 35 mm, apply the standard stroke length of 40 mm)

- SCPD3
- SCM
- SSD2
- MDC2
- SMG**
- LCM
- LCR
- LCG
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder Switch
- MN3E
- MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R. (module unit)
- Clean F.R
- Precision R
- Press gauge
- Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

SCPD3 Dimensions (2-color display switch)

● SMG-L (with switch: K2Y^{H/V}, K3Y^{H/V})



Code	FA	FC	Double acting/clean room specifications (P7*/P5*)					
			HD1	HD2	RD	Y		
Bore size								Lead wire straight
Cylinder switch								
	ø6	13.5	18	21	0	28	13	10
MN3E	ø10	14.5	21	24.5	3.5	28.5	9.5	6.5
MN4E	ø16	16.5	27	25.5	4.5	34.5	8.5	5.5
4GA/B	ø20	19.5	29	28	7	39	6	3
	ø25	22.5	32	30	9	39	4	1

*1: Y dimensions indicate the projection dimensions from the end surface of the switch body. (Negative dimensions indicate the pull dimensions from the end surface of the body)

- MRL2
- GRC
- Cylinder switch
- MN3E
- MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R (module unit)
- Clean F.R
- Precision R
- Press gauge
- Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

MEMO

SCPD3

SCM

SSD2

MDC2

SMG

LCM

LCR

LCG

LCX

STM

STG

STR2

MRL2

GRC

Cylinder
Switch

MN3E
MN4E

4GA/B

M4GA/B

MN4GA/B

F.R. (module
unit)

Clean
F.R

Precision
R

Press gauge
Diff. press gauge

Electro-
pneumatic R

Speed
controller

Auxiliary
valve

Fitting/
tube

Clean
air unit

Pressure
sensor

Flow rate
sensor

Valve for
air blow

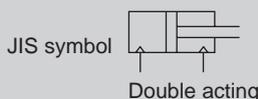
Ending



Compact cylinder/double acting/fine speed

SMG-F Series (made to order)

● Bore size: $\phi 6/\phi 10/\phi 16/\phi 20/\phi 25$



Structure and material restriction

	Structure	Model No.
P7 Series	Exhaust treatment	P7
	Vacuum treatment	P71

Specifications

Descriptions	SMG-F-P7*				
	SMG-LF-P7* (with switch)				
Bore size mm	$\phi 6$	$\phi 10$	$\phi 16$	$\phi 20$	$\phi 25$
Actuation	Double acting				
Working fluid	Compressed air				
Max. working pressure MPa	0.7				
Min. working pressure MPa	0.12	0.06		0.05	
Proof pressure MPa	1.05				
Ambient temperature °C	5 to 60				
Port size	M5				
Port size (relief port)	M5				
Stroke tolerance mm	+1.5 0				
Working piston speed mm/s	1 to 200				
Cushion	With rubber cushion				
Lubrication	Lubrication not possible				
Allowable energy absorption J	0.012	0.036	0.1	0.1	0.19

Stroke length

Bore size (mm)	Standard stroke length (mm)	Min. stroke length (mm)
$\phi 6$	5/10/15/20/25/30	30
$\phi 10$		
$\phi 16$		
$\phi 20$	5/10/15/20/25/30/40/50	50
$\phi 25$		

*1: The custom stroke length is available by 5 mm increments.

Min. stroke with switch

Bore size	1-color display		2-color display	
	K*H	K*V	K*YH	K*YV
$\phi 6$	5	5	5	5
$\phi 10$				
$\phi 16$				
$\phi 20$				
$\phi 25$				

Switch specifications

● 1-color/2-color display

Descriptions	Proximity 2-wire		Proximity 3-wire			Reed 2-wire				
	K2H/K2V	K2YH/K2YV	K3H/K3V	K3PH/K3PV (custom order)	K3YH/K3YV	K0H/K0V		K5H/K5V		
Applications	Programmable controller		Programmable controller, relay			Programmable controller, relay		Programmable controller, relay IC circuit (without indicator lamp), serial connection		
Output method	-		NPN output	PNP output	NPN output	-				
Power supply voltage	-		10 to 28 VDC			-				
Load voltage	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	
Load current	5 to 20 mA (*2)		50 mA or less			5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	
Indicator lamp	LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)		-		
Leakage current	1 mA or less		10 µA or less			0 mA				
Weight	g	1 m: 18 3 m: 49 5 m: 80	1 m: 31 3 m: 85 5 m: 139	1 m: 18 3 m: 49 5 m: 80	1 m: 31 3 m: 85 5 m: 139	1 m: 18 3 m: 49 5 m: 80				

*1: Refer to page 309 for detailed switch specifications and dimensions.

*2: Max. load current: 20mA at 25°C. The current is lower than 25 mA if the operating ambient temperature around the switch is higher than 20°C. (60 to 5 mA at 10°C)

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa							
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	Push	-	4.24	5.65	8.48	11.3	14.1	17.0	19.8
	Pull	-	3.18	4.24	6.36	8.48	10.6	12.7	14.8
ø10	Push	7.85	11.8	15.7	23.6	31.4	39.3	47.1	55.0
	Pull	6.60	9.90	13.2	19.8	26.4	33.0	39.6	46.2
ø16	Push	20.1	30.2	40.2	60.3	80.4	1.01 × 10 ²	1.21 × 10 ²	1.41 × 10 ²
	Pull	17.3	25.9	34.6	51.8	69.1	86.4	1.04 × 10 ²	1.21 × 10 ²
ø20	Push	31.4	47.1	62.8	94.2	1.26 × 10 ²	1.57 × 10 ²	1.88 × 10 ²	2.20 × 10 ²
	Pull	26.4	39.6	52.8	79.2	1.06 × 10 ²	1.32 × 10 ²	1.58 × 10 ²	1.85 × 10 ²
ø25	Push	49.1	73.6	98.2	1.47 × 10 ²	1.96 × 10 ²	2.45 × 10 ²	2.95 × 10 ²	3.44 × 10 ²
	Pull	41.2	61.9	82.5	1.24 × 10 ²	1.65 × 10 ²	2.06 × 10 ²	2.47 × 10 ²	2.89 × 10 ²

Weight

Same as SMG Series (double acting/single rod). Refer to page 77.

Dimensions

Same as SMG Series (double acting/single rod). Refer to page 79 to 80.

SCPD3

SCM

SSD2

MDC2

SMG

LCM

LCR

LCG

LCX

STM

STG

STR2

MRL2

GRC

Cylinder Switch

MN3E

MN4E

4GA/B

M4GA/B

MN4GA/B

F.R. (module unit)

Clean F.R

Precision R

Press gauge

Diff. press gauge

Electro-pneumatic R

Speed controller

Auxiliary valve

Fitting/ tube

Clean air unit

Pressure sensor

Flow rate sensor

Valve for air blow

Ending

- SCPD3
- SCM
- SSD2
- MDC2
- SMG**
- LCM
- LCR
- LCG
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder switch
- MN3E
MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R (module unit)
- Clean F.R
- Precision R
- Press gauge
Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

How to order

Without switch (No magnet for switch)

SMG-F - 25 - 25 ————— **P7**

With switch (Magnet for switch incorporated)

SMG-LF - 25 - 25 - K2H - R - P7

A Model No.

B Bore size

C Stroke length

D Switch model No.

E Switch quantity

F Clean room specifications

⚠ Precautions for model No. selection

*1: Refer to page 82 for the minimum stroke length with switch.

*2: Refer to page 74 for combinations of variations/options.

[Example of model No.]

SMG-LF-6-15-K0H-R-P7

Model: Compact cylinder

A Model No. : Double acting/fine speed with switch

B Bore size : $\phi 6$ mm

C Stroke length : 15 mm

D Switch : Reed K0H switch, lead

model No. wire length 1 m

E Switch quantity : 1 (on rod end)

F Clean room specifications : Exhaust treatment

How to order switch

SW - K2H

Switch model No.
(Item **D** above)

Code	Content
A Model No.	
SMG-F	Double acting/fine speed
SMG-LF	Double acting/fine speed with switch

B Bore size (mm)	
6	$\phi 6$
10	$\phi 10$
16	$\phi 16$
20	$\phi 20$
25	$\phi 25$

C Stroke (mm)	Applicable bore size					
	$\phi 6$	$\phi 10$	$\phi 16$	$\phi 20$	$\phi 25$	
Standard stroke	5	●	●	●	●	●
	10	●	●	●	●	●
	15	●	●	●	●	●
	20	●	●	●	●	●
	25	●	●	●	●	●
	30	●	●	●	●	●
	40				●	●
50				●	●	

D Switch model No.						
Lead wire straight	Lead wire L-shaped	Contact	Voltage		Indicator	Lead wire
			AC	DC		
K0H*	K0V*	Reed	●	●	1-color display	2 wires
K5H*	K5V*		●	●	Without indicator lamp	
K2H*	K2V*	Proximity		●	1-color display	2 wires
K3H*	K3V*			●		3 wires
K3PH*	K3PV*			●	1-color display (custom order product)	3 wires
K2YH*	K2YV*			●	2-color display	2 wires
K3YH*	K3YV*		●		2-color display	3 wires

* Lead wire length	
Blank	1 m (standard)
3	3 m
5	5 m

E Switch quantity	
R	1 (on rod end)
H	1 (on head end)
D	2

F Clean room specifications	
	Structure
P7	Exhaust treatment
P71	Vacuum treatment