

# SCM

## Round shaped cylinder

### Standard

ø20/ø25/ø32/ø40/ø50/ø63/ø80/ø100

#### Overview

Medium bore size (ø20 to ø100) series of general purpose cylinder that has a slim body and a wide variety of bore sizes and variations. The series is the smallest in the standard cylinders.

#### Features

##### Slim body

Simple and functional design

##### Easy cushion needle adjustment

A knob has been attached to the cushion needle for easy adjustment.

##### Easy mounting

Better workability has been enabled by mounting with 4 bolts. Also mountable with a general tool.

##### Selectable switch mounting



##### Band method

- Switch mounting position is clear at a glance

Thanks to the marking on the switch rail for mounting it at the max. sensitivity position, the time for position setting of switch during maintenance can be reduced significantly. (Limited to detection of stroke end. Excluding 2-color display and strong magnetic field proof)



Capable of fine adjustment up to 6 mm in the direction of stroke length for the band & rail.

Marking of switch mounting position

- Capable of free rotation of switch

Just by loosening the fixing screw, the switch rail can be rotated freely to the circumference direction without changing the position of the band fixing section. Thus, mounting switches and adjusting positions on site will be easy.

- Fallout prevention of fixing screw

The rubber for preventing slip is attached inside the band. The screws will not fall out even if loosened.



##### Fixed rail

- Rail with integrated switch

A miniature switch has been encased in the switch rail. A lead wire can also be stored in the same rail. Moving and mounting the cylinder switch can be completed by simply adjusting the screw.



### CONTENTS

Variation and option selection table	24
● Double acting/single rod (SCM)	26
● Double acting/position locking (SCM-Q)	34
⚠ Safety precautions	44

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

## SCP3 Variation and option selection table

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

- ⊙ : Option variation (check category 2)
- : C5 compatible (check category 3)
- △ : Available depending on conditions (estimation)
- : Not available

		Clean room specifications					
		Exhaust treatment	Vacuum treatment	Exhaust treatment	Vacuum treatment		
		Code	P7	P71	P5	P51	
Variation	Double acting/single rod	Blank	⊙	⊙	○	○	
	Position locking	Q	⊙	⊙	○	○	
	With air cushion	B,R,H	○	○	○	○	
	Heat resistant (120°C)	T	■	■	■	■	
	Low speed	O	⊙	⊙	■	■	
	Double acting double rod	D	○	○	○	○	
	Back to back	B	○	○	○	○	
	Two stage	W	△	△	△	△	
	Tandem	W4	△	△	△	△	
	Single acting push	X	■	■	■	■	
	Single acting pull	Y	■	■	■	■	
	Stroke adjusting Push	P	■	■	■	■	
	Stroke adjusting Pull	R	■	■	■	■	
	Non-rotation	M	■	■	■	■	
	Low friction	U	■	■	■	■	
	Port thread	NPT *1	N	○	○	○	○
		G *1	G	○	○	○	○
	Option	on rod material (stainless steel)*2	M	○	○	○	○
Customized piston rod end form		N**	○	○	○	○	
Switch rail attached at shipment		Q	⊙	⊙	○	○	
Neoprene with bellows		J	■	■	■	■	
	Silicone rubber with bellows	L	■	■	■	■	

\*1: ø20/ø25 are not available for the type with air cushion.

\*2: Piston rod is made of stainless steel as standard. The tip nut will be stainless steel.

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

Round shaped cylinder Double acting/single rod

# SCM Series

- Bore size:  $\phi 20/\phi 25/\phi 32/\phi 40$   
 $\phi 50/\phi 63/\phi 80/\phi 100$

JIS symbol



## Structure and material restriction

	Structure	Material restriction	Model No.		Structure	Material restriction			Model No.
P7 Series	Exhaust treatment	-	<b>P7</b>	P5 Series (custom order product)	Exhaust treatment	Copper-based materials prohibited	Silicon-based materials prohibited	Halogen-based materials prohibited (fluorine, chlorine, bromine)	<b>P5</b>
	Vacuum treatment	-	<b>P71</b>		Vacuum treatment	Copper-based materials prohibited	Silicon-based materials prohibited	Halogen-based materials prohibited (fluorine, chlorine, bromine)	<b>P51</b>

## Specifications

Descriptions	SCM-P7*/P5*									
Bore size mm	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$		
Actuation	Double acting									
Working fluid	Compressed air									
Max. working pressure MPa	1.0									
Min. working pressure MPa	0.15				0.1					
Proof pressure MPa	1.6									
Ambient temperature °C	-10 to 60(no freezing)									
Port size	With rubber cushion	Rc1/8			Rc1/4		Rc3/8	Rc1/2		
	With air cushion	M5	Rc1/8			Rc1/4	Rc3/8	Rc1/2		
Port size (relief port)	M5									
Stroke tolerance mm	With rubber cushion	+1.4 0 (to 1000)		+1.4 0 (to 1500)	+2.3 0 (to 1000), +2.7 0 (to 1500)					
	With air cushion	+1.4 0 (to 1000)		+1.4 0 (to 1500)	+1.4 0 (to 1000), +1.8 0 (to 1500)					
Working piston speed mm/s	30 to 1000 (Operate within the allowable absorbed energy.)									
Cushion	Either rubber cushion or air cushion can be selected.									
Effective air cushion length mm	8.1	8.1	8.6	8.6	13.4	13.4	15.4	15.4		
Lubrication	Not available									
Allowable energy absorption J	With rubber cushion	0.1	0.2	0.5	0.9	1.6	3.3	5.8		
	With air cushion	0.8	1.2	2.5	3.7	8.0	14.4	25.4	45.6	
	No cushion	-	-	-	-	0.057	0.057	0.112	0.153	

\*1: "No cushion" in the allowable absorption energy indicates the allowable absorption energy of the side that is not indicated ("R" → head side, "H" → rod side) when the one-side air cushion is selected.

\*2: Without cushions, large energy generated by external loads cannot be absorbed. Please provide an external shock absorber.

## Stroke length

Bore size(mm)	Standard stroke length(mm)	Max. stroke length(mm)	Min. stroke length(mm)	Bore size(mm)	Standard stroke length(mm)	Max. stroke length(mm)	Min. stroke length(mm)
$\phi 20$	25, 50, 75, 100,	1000	10	$\phi 50$	25, 50, 75, 100,	1500	10
$\phi 25$	125, 150, 200, 250,			$\phi 63$	125, 150, 200, 250,		
$\phi 32$	300			$\phi 80$	300		
$\phi 40$		1500		$\phi 100$			

## Number of installed switches and the min. stroke length (mm)

● Switch mounting: Rail

Switch quantity	1				2				3				4				5				
	Bore size (mm)	Proximity			Reed																
		T2,T3	T2W,T3W	T*Y*		T2,T3	T2W,T3W	T*Y*		T2,T3	T2W,T3W	T*Y*		T2,T3	T2W,T3W	T*Y*		T2,T3	T2W,T3W	T*Y*	
$\phi 20$	10				25				50	70	70	55	55	70	70	55	75	110	110	90	
$\phi 25$	10				25				50	70	70	55	55	70	70	55	75	110	110	90	
$\phi 32$	10				25				50	70	70	55	55	70	70	55	75	110	110	90	
$\phi 40$	10				25				50	70	70	55	55	70	70	55	75	110	110	90	
$\phi 50$	10				25				50	65	65	55	55	65	65	55	75	110	110	90	
$\phi 63$	10				25				50	65	65	55	55	65	65	55	75	110	110	90	
$\phi 80$	10				25				50	65	65	55	55	65	65	55	75	110	110	90	
$\phi 100$	10				25				50	65	65	55	55	65	65	55	75	110	110	90	

\*1: The switch rail mounting position changes for those with one switch and a stroke between 10mm and 25mm. Please refer to page 42 for the mounting position.

● Switch mounting: Band

Switch quantity	1				2				3				4				5				
	Bore size (mm)	Proximity			Reed	Proximity			Reed	Proximity			Reed	Proximity			Reed	Proximity			Reed
		T2,T3	T2W,T3W	T*Y*		T0,T5 T2,T3	T2W,T3W	T*Y*													
$\phi 20$	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95	
$\phi 25$	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95	
$\phi 32$	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95	
$\phi 40$	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95	
$\phi 50$	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95	
$\phi 63$	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95	
$\phi 83$	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95	
$\phi 100$	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95	

### Switch specifications

● 1-color/2-color display/for AC magnetic field

Descriptions	Proximity 2-wire				Proximity 3-wire				Reed 2-wire				Proximity 2-wire			
	T1H/T1V	T2H/T2V/T2JH/T2JV	T2YH/T2YV	T2WH/T2WV	T3H/T3V	T3PH/T3PV	T3YH/T3YV	T3WH/T3WV	T0H/T0V	T5H/T5V	T8H/T8V		T2YD(*3) T2YDT			
Applications	Programmable controller relay, small solenoid valve	Programmable controller			Programmable controller, relay				Programmable controller, relay	Programmable controller, relay IC circuit (without indicator lamp), serial connection		Programmable controller, relay		Programmable controller		
Output method	-				NPN output	PNP output	NPN output	NPN output	-							
Power supply voltage	-				DC10 to 28V				-							
Load voltage	AC85 to 265V	DC10 to 30V		DC24V±10%	DC30V or less				DC12/24V	AC110V	DC3/12/24V	AC110V	DC12/24V	AC110V	AC220V	DC24V±10%
Load current	5 to 100mA	5 to 20mA(*2)			100mA or less		50mA or less		5 to 50mA	7 to 20mA	50mA or less	20mA or less	5 to 50mA	7 to 20mA	7 to 10mA	5~20mA
Indicator lamp	LED (Lit when ON)	LED (Lit when ON)	Red/green 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)	Red/green LED (Lit when ON)	LED (Lit when ON)		Without indicator lamp		LED (Lit when ON)		Red/green LED (Lit when ON)	
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less			10 µA or less				0mA				1 mA or less			
Weight g	1m:33 3m:87 5m:142	1m:18 3m:49 5m:80	1m:33 3m:87 5m:142	1m:18 3m:49 5m:80	1m:18 3m:49 5m:80	1m:33 3m:87 5m:142	1m:18 3m:49 5m:80	1m:18 3m:49 5m:80			1m:33 3m:87 5m:142		1m:61 3m:166 5m:272			

\*1: Refer to page 309 for detailed switch specifications, dimensions, etc.

\*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)

\*3: AC magnetic field switches (T2YD and T2YDT) cannot be used in a DC magnetic field environment.

### Cylinder weight

Descriptions	Product weight when stroke length (S) = 0 mm			Switch weight (per 1 pc.)	Additional weight per S = 10 mm	Additional weight per S = 10 mm (With switch rail)	Band weight per switch
	Bore size(mm)	Basic (00)	Axial foot (LB)				
ø20	0.14	0.24	0.15	Refer to the weight in the switch specifications.	0.01	0.012	0.007
ø25	0.22	0.34	0.24		0.014	0.016	0.007
ø32	0.33	0.47	0.37		0.018	0.02	0.007
ø40	0.52	0.71	0.57		0.03	0.032	0.007
ø50	0.95	1.38	1.24		0.044	0.046	0.008
ø63	1.30	1.97	1.75		0.052	0.054	0.009
ø80	2.47	3.43	3.18		0.07	0.072	0.010
ø100	3.83	5.58	5.18		0.098	0.10	0.010

Example: Weight of SCM-LB-40B-100-T2H-D-P7

- Product weight when S = 0 mm ..... 0.71kg
- Additional weight when S = 100 mm .....  $0.032 \times \frac{100}{10} = 0.32\text{kg}$
- Weight of 2 switches .....  $0.018 \times 2 = 0.036\text{kg}$
- Product weight .....  $0.71 + 0.32 + 0.036 = 1.066\text{kg}$

### Theoretical thrust table

Bore size (mm)	Operating direction	Working pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	47.1	62.8	94.2	$1.26 \times 10^2$	$1.57 \times 10^2$	$1.88 \times 10^2$	$2.20 \times 10^2$	$2.51 \times 10^2$	$2.83 \times 10^2$	$3.14 \times 10^2$
	Pull	-	39.6	52.8	79.2	$1.06 \times 10^2$	$1.32 \times 10^2$	$1.58 \times 10^2$	$1.85 \times 10^2$	$2.11 \times 10^2$	$2.38 \times 10^2$	$2.64 \times 10^2$
ø25	Push	-	73.6	98.2	$1.47 \times 10^2$	$1.96 \times 10^2$	$2.45 \times 10^2$	$2.95 \times 10^2$	$3.44 \times 10^2$	$3.93 \times 10^2$	$4.42 \times 10^2$	$4.91 \times 10^2$
	Pull	-	61.9	82.5	$1.24 \times 10^2$	$1.65 \times 10^2$	$2.06 \times 10^2$	$2.47 \times 10^2$	$2.89 \times 10^2$	$3.30 \times 10^2$	$3.71 \times 10^2$	$4.12 \times 10^2$
ø32	Push	-	$1.21 \times 10^2$	$1.61 \times 10^2$	$2.41 \times 10^2$	$3.22 \times 10^2$	$4.02 \times 10^2$	$4.83 \times 10^2$	$5.63 \times 10^2$	$6.43 \times 10^2$	$7.24 \times 10^2$	$8.04 \times 10^2$
	Pull	-	$1.04 \times 10^2$	$1.38 \times 10^2$	$2.07 \times 10^2$	$2.76 \times 10^2$	$3.46 \times 10^2$	$4.15 \times 10^2$	$4.84 \times 10^2$	$5.53 \times 10^2$	$6.22 \times 10^2$	$6.91 \times 10^2$
ø40	Push	-	$1.88 \times 10^2$	$2.51 \times 10^2$	$3.77 \times 10^2$	$5.03 \times 10^2$	$6.28 \times 10^2$	$7.54 \times 10^2$	$8.80 \times 10^2$	$1.01 \times 10^3$	$1.13 \times 10^3$	$1.26 \times 10^3$
	Pull	-	$1.58 \times 10^2$	$2.11 \times 10^2$	$3.17 \times 10^2$	$4.22 \times 10^2$	$5.28 \times 10^2$	$6.33 \times 10^2$	$7.39 \times 10^2$	$8.44 \times 10^2$	$9.50 \times 10^2$	$1.06 \times 10^3$
ø50	Push	$1.96 \times 10^2$	$2.95 \times 10^2$	$3.93 \times 10^2$	$5.89 \times 10^2$	$7.85 \times 10^2$	$9.82 \times 10^2$	$1.18 \times 10^3$	$1.37 \times 10^3$	$1.57 \times 10^3$	$1.77 \times 10^3$	$1.96 \times 10^3$
	Pull	$1.65 \times 10^2$	$2.47 \times 10^2$	$3.30 \times 10^2$	$4.95 \times 10^2$	$6.60 \times 10^2$	$8.25 \times 10^2$	$9.90 \times 10^2$	$1.15 \times 10^3$	$1.32 \times 10^3$	$1.48 \times 10^3$	$1.65 \times 10^3$
ø63	Push	$3.12 \times 10^2$	$4.68 \times 10^2$	$6.23 \times 10^2$	$9.35 \times 10^2$	$1.25 \times 10^3$	$1.56 \times 10^3$	$1.87 \times 10^3$	$2.18 \times 10^3$	$2.49 \times 10^3$	$2.81 \times 10^3$	$3.12 \times 10^3$
	Pull	$2.80 \times 10^2$	$4.20 \times 10^2$	$5.61 \times 10^2$	$8.41 \times 10^2$	$1.12 \times 10^3$	$1.40 \times 10^3$	$1.68 \times 10^3$	$1.96 \times 10^3$	$2.24 \times 10^3$	$2.52 \times 10^3$	$2.80 \times 10^3$
ø80	Push	$5.03 \times 10^2$	$7.54 \times 10^2$	$1.01 \times 10^3$	$1.51 \times 10^3$	$2.01 \times 10^3$	$2.51 \times 10^3$	$3.02 \times 10^3$	$3.52 \times 10^3$	$4.02 \times 10^3$	$4.52 \times 10^3$	$5.03 \times 10^3$
	Pull	$4.54 \times 10^2$	$6.80 \times 10^2$	$9.07 \times 10^2$	$1.36 \times 10^3$	$1.81 \times 10^3$	$2.27 \times 10^3$	$2.72 \times 10^3$	$3.17 \times 10^3$	$3.63 \times 10^3$	$4.08 \times 10^3$	$4.54 \times 10^3$
ø100	Push	$7.85 \times 10^2$	$1.18 \times 10^3$	$1.57 \times 10^3$	$2.36 \times 10^3$	$3.14 \times 10^3$	$3.93 \times 10^3$	$4.71 \times 10^3$	$5.50 \times 10^3$	$6.28 \times 10^3$	$7.07 \times 10^3$	$7.85 \times 10^3$
	Pull	$7.15 \times 10^2$	$1.07 \times 10^3$	$1.43 \times 10^3$	$2.14 \times 10^3$	$2.86 \times 10^3$	$3.57 \times 10^3$	$4.29 \times 10^3$	$5.00 \times 10^3$	$5.72 \times 10^3$	$6.43 \times 10^3$	$7.15 \times 10^3$

- 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 (Magnet for switch incorporated)

**SCM-LB-40B-100-Q-P7**

With switch (Magnet for switch incorporated)

**SCM-LB-40B-100-T2H-D-Q-P7**

**A** Mounting  
\*1

**B** Bore size

**C** Cushion

**D** Stroke length

**E** Switch model No.  
\*3  
\*4

**F** Switch quantity

**G** Switch mounting

**H** Option  
\*5

**I** Clean room specifications  
\*6

## ⚠ Precautions for model No. selection

- \*1: Mounting bracket will be shipped with the product.
- \*2: Refer to page 26 for the number of installed switches and the minimum stroke length.
- \*3: **E** Switches other than switch model No. are also available. (custom order)  
For details, refer to page 309.
- \*4: T8H/V switches cannot be mounted when the bore size is from  $\varnothing 20$  to  $\varnothing 40$  and the switch mounting is the rail type.
- \*5: "Q" (switch rail attached at shipment) is not available for the "Z" switch mounting.
- \*6: "P5" and "P51" are custom order products.
- \*7: Mounting 00 does not allow front mounting.
- \*8: Switches are shipped with the product. Contact CKD when shipment must be assembled.

[Example of model No.]

**SCM-LB-40B-100-T2H-D-QP7**

Model: Round shaped cylinder, double acting

- A** Mounting : Axial foot
- B** Bore size :  $\varnothing 40$  mm
- C** Cushion : ir cushion on both sides
- D** Stroke length : 100mm
- E** Switch model No. : Proximity T2H switch, lead wire 1 m
- F** Switch quantity : 2
- G** Switch mounting : Rail
- H** Option : Switch rail attached at shipment
- I** Clean room specifications : Exhaust treatment

Code	Content
<b>A Mounting</b>	
00	Basic
LB	Axial foot
FA	Rod end flange
FB	Head end flange

<b>B Bore size(mm)</b>	
20	$\varnothing 20$
25	$\varnothing 25$
32	$\varnothing 32$
40	$\varnothing 40$
50	$\varnothing 50$
63	$\varnothing 63$
80	$\varnothing 80$
100	$\varnothing 100$

<b>C Cushion</b>	
B	Both sides air cushioned
R	Rod end air cushioned
H	Head end air cushion
D	Both sides rubber cushioned

<b>D Stroke length(mm)</b>		
Bore size	Stroke length *2	Custom stroke length
$\varnothing 20$ to $\varnothing 32$	10 to 1000	By 1 mm increments
$\varnothing 40$ to $\varnothing 100$	10 to 1500	

<b>E Switch model No.</b>						
Lead wire straight	Lead wire L-shaped	Contact	Voltage		Display	Lead wire
			AC	DC		
T0H*	T0V*	Reed	●	●	1 -color display	2 wires
T5H*	T5V*		●	●	Without indicator lamp	
T8H*	T8V*		●	●	1 -color display	
T1H*	T1V*	Proximity	●	●	1 -color display	2 wires
T2H*	T2V*		●	●		
T3H*	T3V*		●	●	1 -color display	3 wires
T3PH*	T3PV*		●	●	1 -color display	3 wires
T2WH*	T2WV*		●	●	2 -color display	2 wires
T2YH*	T2YV*		●	●		
T3WH*	T3WV*		●	●		
T3YH*	T3YV*		●	●	2 -color display	3 wires
T2YD*	-		●	●	2 -color display for AC magnetic field	2 wires
T2YDT*	-		●	●	1 -color display off-delay	2 wires
T2JH*	T2JV*	●	●	1 -color display off-delay	2 wires	

<b>*Lead wire length</b>	
Blank	1m(standard)
3	3m(option)
5	5m(option)

<b>F Switch quantity</b>	
R	1 (on rod end)
H	1 (on head end)
D	2
T	3
4	4(when there are more than 4 switches, indicate switch quantity)

<b>G Switch mounting</b>	
Blank	Rail
Z	Band

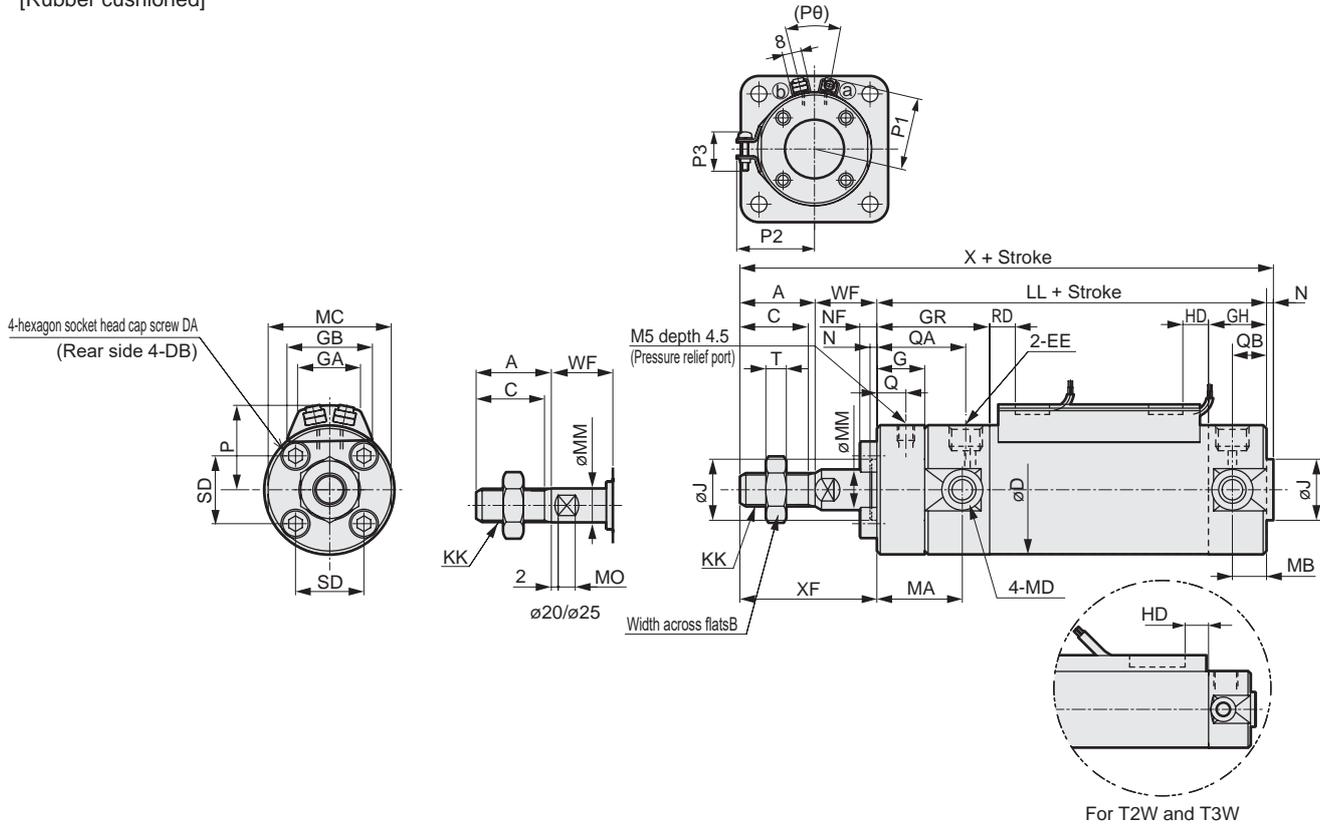
<b>H Option</b>	
Q	Switch rail attached at shipment

<b>I Clean room specifications</b>		
	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

### Dimensions

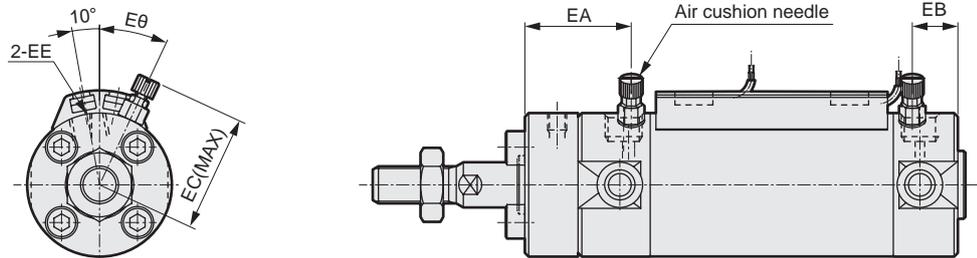
- Basic(00)  
[Rubber cushioned]

• Switch mounting: Rail



- [Air cushioned]

• Switch mounting: Rail



Code	Basic (00) basic dimensions																					
Bore size(mm)	A	B	C	D	DA	DB	EE	J	KK	LL	MA	MB	MC	MD	MM	MN	MO	N	G	Q	QA	QB
ø20	18	13	15.5	26	M4x20	M4 depth 6.5	Rc1/8	12	M8	83	25	11	24	M5	8	6	4	2	14	8.5	26	10
ø25	22	17	19.5	31	M5x20	M5 depth 6.5	Rc1/8	14	M10x1.25	83	25	11	29	M6	10	8	5	2	14	8.5	26	10
ø32	22	17	19.5	38	M5x20	M5 depth 7.5	Rc1/8	18	M10x1.25	85	25	10	36	M8	12	10	5.5	2	14	8.5	26	10
ø40	30	22	27	47	M6x25	M6 depth 12	Rc1/8	25	M14x1.5	92	26	10	44	M10	16	14	6	2	14	8.5	27	12
ø50	35	27	32	58	M8x25	M8 depth 16	Rc1/4	30	M18x1.5	104	27	12	55	M12	20	17	8	2	14	8.5	29	12
ø63	35	27	32	72	M10x30	M10 depth 16	Rc1/4	32	M18x1.5	104	27	12	69	M14	20	17	8	2	14	8.5	29	12
ø80	40	32	37	89	M10x30	M10 depth 22	Rc3/8	40	M22x1.5	123	-	-	80	-	25	22	11	3	15	9	30	15
ø100	40	41	37	110	M12x30	M12 depth 22	Rc1/2	50	M26x1.5	124	-	-	100	-	30	27	13	3	16	10	31	15

Code	Basic (00) basic dimensions					Air cushion					With switch											
	SD	T	NF	WF	X	XF	EA	EB	EC	EE'	Eθ	GH	GR	Rail mounting			HD			RD		
Bore size(mm)														P	GA	GB	T0,T5	T2,T3	T2W,T3W	T0,T5	T2,T3	T2W,T3W
ø20	14	5	4.5	17	120	35	28	12	27	M5	30°	17	33	19.5	18	23	3.0	6.5	8.5	7.5	7.5	9.5
ø25	16.5	6	5.6	18	125	40	28	12	29.5	M5	30°	17	33	22	18	24.4	2.0	5.5	7.5	8.5	8.5	10.5
ø32	20	6	5.6	18	127	40	28	12	32.8	Rc1/8	25°	17	33	25.5	18	25	3.0	6.5	8.5	9.5	9.5	11.5
ø40	26	8	6.6	20	144	50	29	14	36.6	Rc1/8	20°	19	34	30	18	25.7	5.0	8.5	10.5	11.5	11.5	13.5
ø50	32	11	8.9	23	164	58	32.5	15.5	43	Rc1/4	20°	22	39	35.5	18	26.2	7.5	11.0	13.0	13.0	13.0	15.0
ø63	38	11	11.1	23	164	58	32.5	15.5	50	Rc1/4	20°	22	39	42.5	18	26.5	7.5	11.0	13.0	13.0	13.0	15.0
ø80	50	13	11.1	31	197	71	35	20	58.5	Rc3/8	20°	28	43	51	18	26.7	9.5	13.0	15.0	20.0	20.0	22.0
ø100	60	16	13.2	31	198	71	36	20	69	Rc1/2	20°	28	44	61.5	18	26.7	10.0	13.5	15.5	19.5	19.5	21.5

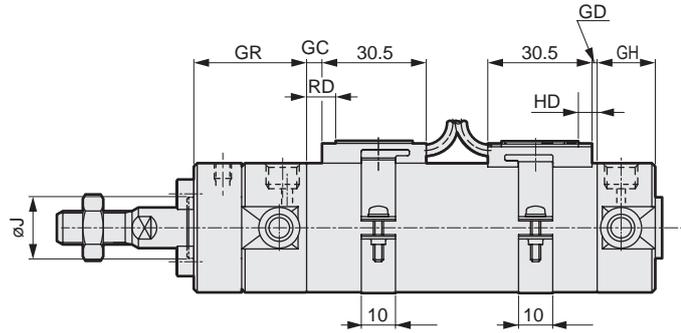
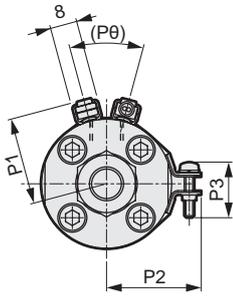
\*1: Refer to page 42 for dimensions of HD, RD and projections of T2Y\*, T3Y, T8, and T1.

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

## Dimensions

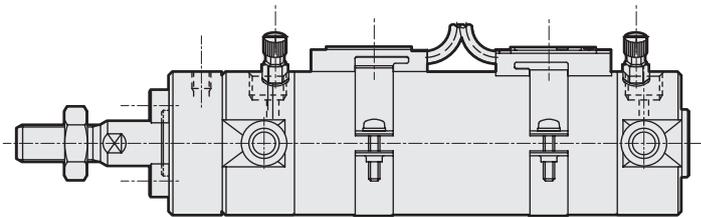
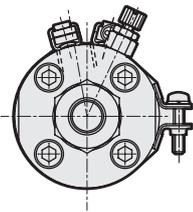
● Basic (00)  
[Rubber cushioned]

• Switch mounting: Band



[Air cushioned]

• Switch mounting: Band



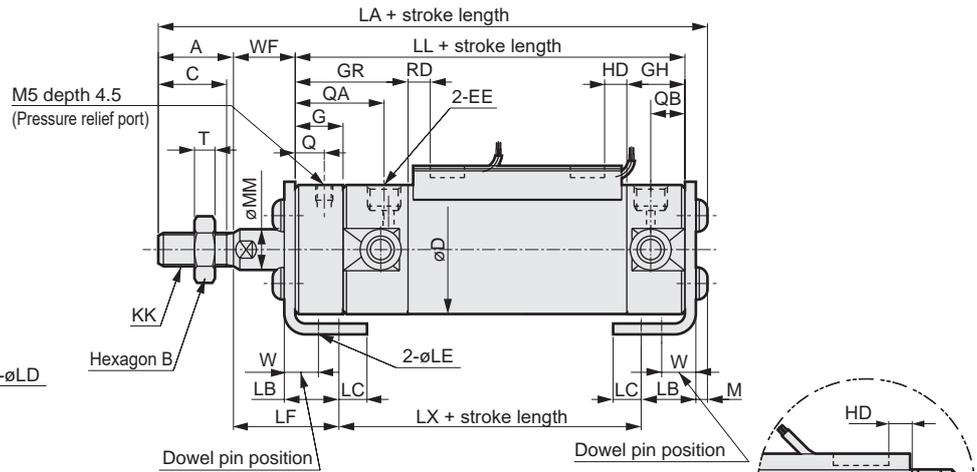
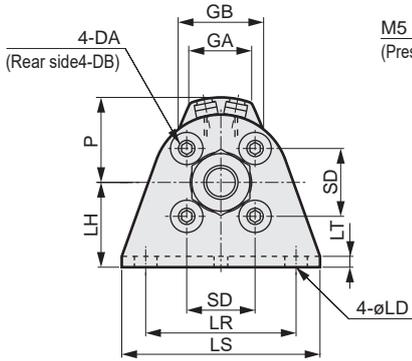
Code	With switch																		
	Band mounting		GD						GC			HD			RD				
	GH	GR	P1	P2	P3	(Pθ)	T0,T5	T2,T3	T2W T3W										
Clean air unit	Bore size(mm)																		
Pressure sensor	ø20	17	33	19.6	21.5	14	38°	2.5	2.5	4.5	3.5	3.5	5.5	6.5	6.5	8.5	7.5	7.5	9.5
Flow rate sensor	ø25	17	33	22.1	23.9	14	34°	1.5	1.5	3.5	4.5	4.5	6.5	5.5	5.5	7.5	8.5	8.5	10.5
Valve for air blow	ø32	17	33	25.6	27.6	16	30°	2.5	2.5	4.5	5.5	5.5	7.5	6.5	6.5	8.5	9.5	9.5	11.5
	ø40	19	34	30.2	32.1	16	26°	4.5	4.5	6.5	7.5	7.5	9.5	8.5	8.5	10.5	11.5	11.5	13.5
Ending	ø50	22	39	35.7	37.4	16	22°	7.0	7.0	9.0	9.0	9.0	11.0	11.0	11.0	13.0	13.0	13.0	15.0
	ø63	22	39	42.7	44.4	16	20°	7.0	7.0	9.0	9.0	9.0	11.0	11.0	11.0	13.0	13.0	13.0	15.0
Ending	ø80	28	43	51.2	53.0	16	16°	9.0	9.0	11.0	16.0	16.0	18.0	13.0	13.0	15.0	20.0	20.0	22.0
	ø100	28	44	61.7	63.5	16	16°	9.5	9.5	11.5	15.5	15.5	17.5	13.5	13.5	15.5	19.5	19.5	21.5

\*1: Refer to page 43 for HD, RD, and protrusion dimensions for T2Y\*, T3Y, T8, and T1.

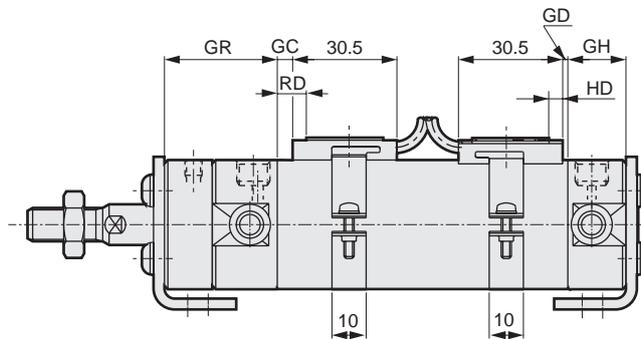
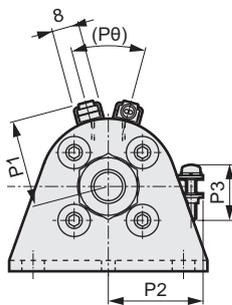
### Dimensions

● Axial foot (LB)

- Switch mounting: Rail



- Switch mounting: Band



For T2W and T3W

\*Dimensions related to the needle and the port sizes of the air cushion are identical to those of the basic.

Code		Axial foot (LB) basic dimensions																			
Bore size (mm)		A	B	C	D	DA	DB	EE	G	KK	LA	LB	LC	LD	LE	LF	LH	LL	LR	LS	LT
ø20		18	13	15.5	26	M4×22	M4	Rc1/8	14	M8	123.8	15.1	7.1	5.7	4	28.9	20	83	32	44	3.2
ø25		22	17	19.5	31	M5×22	M5	Rc1/8	14	M10×1.25	129.6	15.1	7.1	5.7	4	29.9	22	83	36	49	3.2
ø32		22	17	19.5	38	M5×22	M5	Rc1/8	14	M10×1.25	131.6	16.1	8.1	6.8	4	30.9	25	85	44	58	3.2
ø40		30	22	27	47	M6×25	M6	Rc1/8	14	M14×1.5	149.2	16.6	9.1	6.8	4	33.4	30	92	54	71	3.2
ø50		35	27	32	58	M8×30	M8	Rc1/4	14	M18×1.5	171.5	22	11	9	5	40.5	40	104	66	86	4.5
ø63		35	27	32	72	M10×30	M10	Rc1/4	14	M18×1.5	171.5	22	13	11	5	40.5	45	104	82	106	4.5
ø80		40	32	37	89	M10×40	M10	Rc3/8	15	M22×1.5	204.5	28.5	14	11	6	55	55	123	100	125	4.5
ø100		40	41	37	110	M12×40	M12	Rc1/2	16	M26×1.5	208	30	16	14	6	55	65	124	120	150	6

Code		Axial foot (LB) basic dimensions										
Bore size (mm)		LX	M	MM	Q	QA	QB	SD	T	W	WF	
ø20		59.2	2.6	8	8.5	26	10	14	5	10	17	
ø25		59.2	3.4	10	8.5	26	10	16.5	6	10	18	
ø32		59.2	3.4	12	8.5	26	10	20	6	10	18	
ø40		65.2	4	16	8.5	27	12	26	8	10	20	
ø50		69	5	20	8.5	29	12	32	11	17.5	23	
ø63		69	5	20	8.5	29	12	38	11	17.5	23	
ø80		75	6	25	9	30	15	50	13	20	31	
ø100		76	7	30	10	31	15	60	16	20	31	

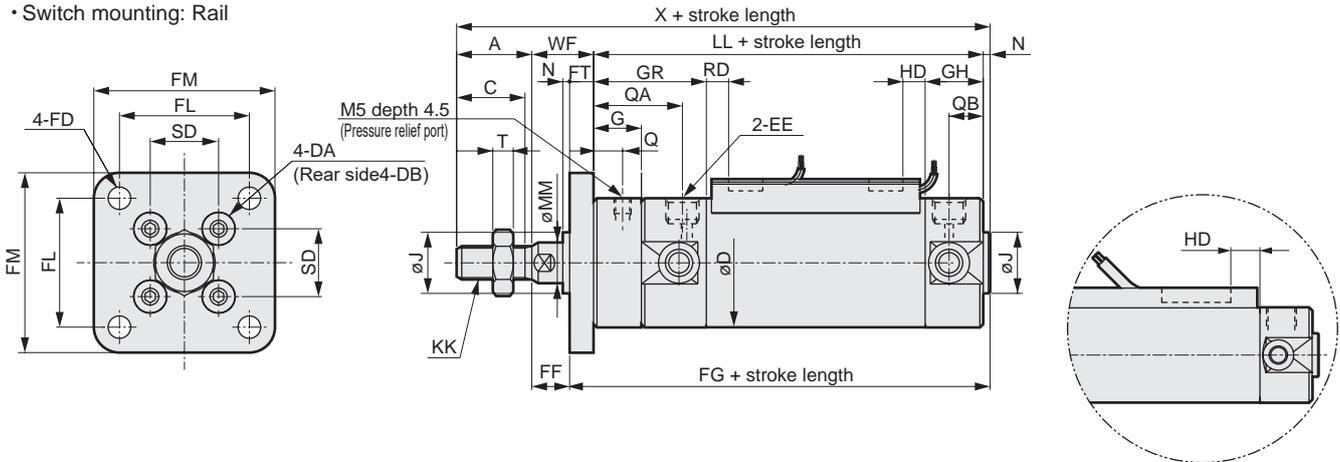
  

Code		With switch																										
		Rail mounting										Band mounting																
		GH	GR	P			GA			GB			HD			RD			P1			P2			P3			(Pθ)
Bore size (mm)				T0,T5	T2,T3	T2W/T3W	T0,T5	T2,T3	T2W/T3W	T0,T5	T2,T3	T2W/T3W	T0,T5	T2,T3	T2W/T3W	T0,T5	T2,T3	T2W/T3W	T0,T5	T2,T3	T2W/T3W	T0,T5	T2,T3	T2W/T3W	T0,T5	T2,T3	T2W/T3W	
ø20		17	33	19.5	18	23	3.0	6.5	8.5	7.5	7.5	9.5	19.6	21.5	14	38°	2.5	2.5	4.5	3.5	3.5	5.5	6.5	6.5	8.5	7.5	7.5	9.5
ø25		17	33	22	18	24.4	2.0	5.5	7.5	8.5	8.5	10.5	22.1	23.9	14	34°	1.5	1.5	3.5	4.5	4.5	6.5	5.5	5.5	7.5	8.5	8.5	10.5
ø32		17	33	25.5	18	25	3.0	6.5	8.5	9.5	9.5	11.5	25.6	27.6	16	30°	2.5	2.5	4.5	5.5	5.5	7.5	6.5	6.5	8.5	9.5	9.5	11.5
ø40		19	34	30	18	25.7	5.0	8.5	10.5	11.5	11.5	13.5	30.2	32.1	16	26°	4.5	4.5	6.5	7.5	7.5	9.5	8.5	8.5	10.5	11.5	11.5	13.5
ø50		22	39	35.5	18	26.2	7.5	11.0	13.0	13.0	13.0	15.0	35.7	37.4	16	22°	7.0	7.0	9.0	9.0	9.0	11.0	11.0	11.0	13.0	13.0	13.0	15.0
ø63		22	39	42.5	18	26.5	7.5	11.0	13.0	13.0	13.0	15.0	42.7	44.4	16	20°	7.0	7.0	9.0	9.0	9.0	11.0	11.0	11.0	13.0	13.0	13.0	15.0
ø80		28	43	51	18	26.7	9.5	13.0	15.0	20.0	20.0	22.0	51.2	53.0	16	16°	9.0	9.0	11.0	16.0	16.0	18.0	13.0	13.0	15.0	20.0	20.0	22.0
ø100		28	44	61.5	18	26.7	10.0	13.5	15.5	19.5	19.5	21.5	61.7	63.5	16	16°	9.5	9.5	11.5	15.5	15.5	17.5	13.5	13.5	15.5	19.5	19.5	21.5

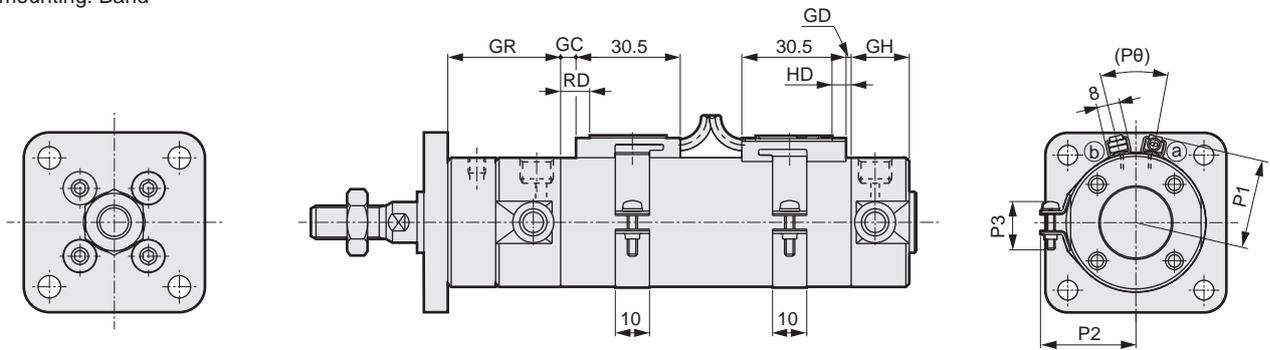
\*1: Refer to pages 42 and 43 for HD, RD, and protruding dimensions of T2Y\*, T3Y, T8, T1.

## Dimensions

- Rod end flange (FA)
- Switch mounting: Rail



- Switch mounting: Band



\*Dimensions related to the needle and the port sizes of the air cushion are identical to those of the basic.

Code	Rod end flange (FA) basic dimensions																	
Bore size(mm)	A	B	C	D	DA	DB	EE	FD	FF	FG	FL	FM	FT	G	J	KK	LL	MM
ø20	18	13	15.5	26	M4x22	M4 depth 6.5	Rc1/8	5.5	11	91	28	40	6	14	12	M8	83	8
ø25	22	17	19.5	31	M5x22	M5 depth 6.5	Rc1/8	5.5	11	92	32	44	7	14	14	M10x1.25	83	10
ø32	22	17	19.5	38	M5x22	M5 depth 7.5	Rc1/8	6.6	11	94	38	53	7	14	18	M10x1.25	85	12
ø40	30	22	27	47	M6x25	M6 depth 12	Rc1/8	6.6	12	102	46	61	8	14	25	M14x1.5	92	16
ø50	35	27	32	58	M8x30	M8 depth 16	Rc1/4	9	14	115	58	76	9	14	30	M18x1.5	104	20
ø63	35	27	32	72	M10x30	M10 depth 16	Rc1/4	11	14	115	70	92	9	14	32	M18x1.5	104	20
ø80	40	32	37	89	M10x40	M10 depth 22	Rc3/8	11	20	137	82	104	11	15	40	M22x1.5	123	25
ø100	40	41	37	110	M12x40	M12 depth 22	Rc1/2	13	17	141	100	128	14	16	50	M26x1.5	124	30

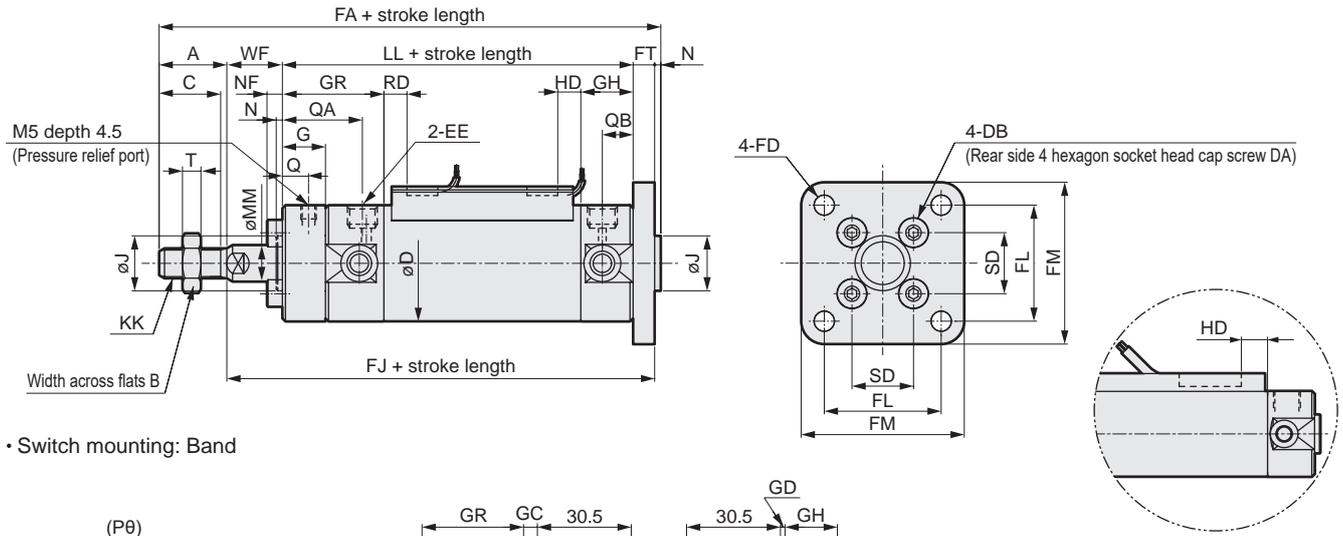
Code	With switch							
Bore size(mm)	N	Q	QA	QB	SD	T	WF	X
ø20	2	8.5	26	10	14	5	17	120
ø25	2	8.5	26	10	16.5	6	18	125
ø32	2	8.5	26	10	20	6	18	127
ø40	2	8.5	27	12	26	8	20	144
ø50	2	8.5	29	12	32	11	23	164
ø63	2	8.5	29	12	38	11	23	164
ø80	3	9	30	15	50	13	31	197
ø100	3	10	31	15	60	16	31	198

Code	With switch																										
	GH		GR		Rail mounting						Band mounting																
	P	GA	GB	HD		RD		P1		P2		P3		(P0)													
ø20	17	33	19.5	18	23	3.0	6.5	8.5	7.5	7.5	9.5	19.6	21.5	14.4	38°	2.5	2.5	4.5	3.5	3.5	5.5	6.5	6.5	8.5	7.5	7.5	9.5
ø25	17	33	22	18	24.4	2.0	5.5	7.5	8.5	8.5	10.5	22.1	23.9	14.4	34°	1.5	1.5	3.5	4.5	4.5	6.5	5.5	5.5	7.5	8.5	8.5	10.5
ø32	17	33	25.5	18	25	3.0	6.5	8.5	9.5	9.5	11.5	25.6	27.6	16.4	30°	2.5	2.5	4.5	5.5	5.5	7.5	6.5	6.5	8.5	9.5	9.5	11.5
ø40	19	34	30	18	25.7	5.0	8.5	10.5	11.5	11.5	13.5	30.2	32.1	16.4	26°	4.5	4.5	6.5	7.5	7.5	9.5	8.5	8.5	10.5	11.5	11.5	13.5
ø50	22	39	35.5	18	26.2	7.5	11.0	13.0	13.0	13.0	15.0	35.7	37.4	16.4	22°	7.0	7.0	9.0	9.0	9.0	11.0	11.0	11.0	13.0	13.0	13.0	15.0
ø63	22	39	42.5	18	26.5	7.5	11.0	13.0	13.0	13.0	15.0	42.7	44.4	16.4	20°	7.0	7.0	9.0	9.0	9.0	11.0	11.0	11.0	13.0	13.0	13.0	15.0
ø80	28	43	51	18	26.7	9.5	13.0	15.0	20.0	20.0	22.0	51.2	53.0	16.4	16°	9.0	9.0	11.0	16.0	16.0	18.0	13.0	13.0	15.0	20.0	20.0	22.0
ø100	28	44	61.5	18	26.7	10.0	13.5	15.5	19.5	19.5	21.5	61.7	63.5	16.4	16°	9.5	9.5	11.5	15.5	15.5	17.5	13.5	13.5	15.5	19.5	19.5	21.5

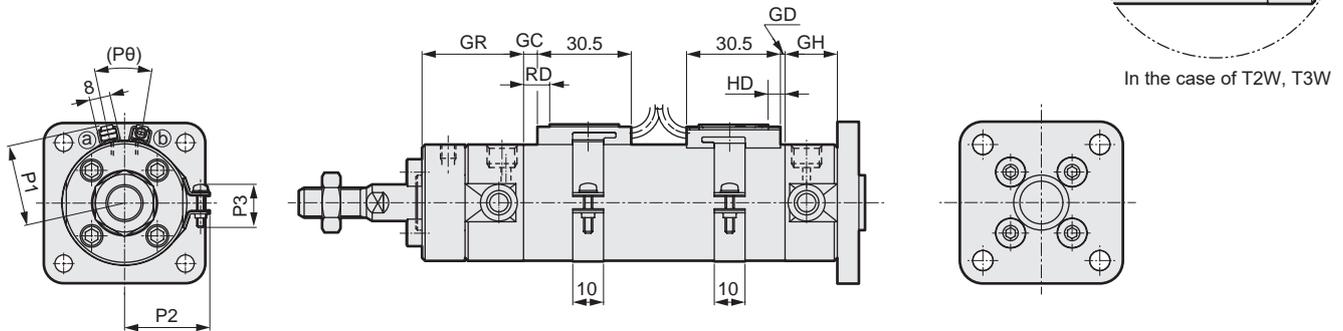
\*1: Refer to pages 42 and 43 for HD, RD, and protruding dimensions of T2Y\*, T3Y, T8, T1.

## Dimensions

- Head end flange (FB)
  - Switch mounting: Rail



- Switch mounting: Band



\*Dimensions related to the needle and the port sizes of the air cushion are identical to those of the basic.

Code	Rod end flange (FA) basic dimensions																	
Bore size(mm)	A	B	C	D	DA	DB	EE	FA	FD	FJ	FL	FM	FT	G	J	KK	LL	MM
ø20	18	13	15.5	26	M4x20	M4	Rc1/8	126	5.5	106	28	40	6	14	12	M8	83	8
ø25	22	17	19.5	31	M5x20	M5	Rc1/8	132	5.5	108	32	44	7	14	14	M10x1.25	83	10
ø32	22	17	19.5	38	M5x20	M5	Rc1/8	134	6.6	110	38	53	7	14	18	M10x1.25	85	12
ø40	30	22	27	47	M6x25	M6	Rc1/8	152	6.6	120	46	61	8	14	25	M14x1.5	92	16
ø50	35	27	32	58	M8x25	M8	Rc1/4	173	9	136	58	76	9	14	30	M18x1.5	104	20
ø63	35	27	32	72	M10x30	M10	Rc1/4	173	11	136	70	92	9	14	32	M18x1.5	104	20
ø80	40	32	37	89	M10x30	M10	Rc3/8	208	11	165	82	104	11	15	40	M22x1.5	123	25
ø100	40	41	37	110	M12x30	M12	Rc1/2	212	13	169	100	128	14	16	50	M26x1.5	124	30

Code	With switch							
Bore size(mm)	N	Q	QA	QB	SD	NF	T	WF
ø20	2	8.5	26	10	14	4.5	5	17
ø25	2	8.5	26	10	16.5	5.6	6	18
ø32	2	8.5	26	10	20	5.6	6	18
ø40	2	8.5	27	12	26	6.6	8	20
ø50	2	8.5	29	12	32	8.9	11	23
ø63	2	8.5	29	12	38	11.1	11	23
ø80	3	9	30	15	50	11.1	13	31
ø100	3	10	31	15	60	13.2	16	31

Code	Rail mounting		Band mounting																								
	GH	GR	P			HD			RD			P1			P2			P3			(Pθ)						
Bore size(mm)			T0,T5	T2,T3	T2W T3W	T0,T5	T2,T3	T2W T3W	T0,T5	T2,T3	T2W T3W	T0,T5	T2,T3	T2W T3W	T0,T5	T2,T3	T2W T3W	T0,T5	T2,T3	T2W T3W							
ø20	17	33	19.5	18	23	3.0	6.5	8.5	7.5	7.5	9.5	19.6	21.5	14.4	38°	2.5	2.5	4.5	3.5	3.5	5.5	6.5	6.5	8.5	7.5	7.5	9.5
ø25	17	33	22	18	24.4	2.0	5.5	7.5	8.5	8.5	10.5	22.1	23.9	14.4	34°	1.5	1.5	3.5	4.5	4.5	6.5	5.5	5.5	7.5	8.5	8.5	10.5
ø32	17	33	25.5	18	25	3.0	6.5	8.5	9.5	9.5	11.5	25.6	27.6	16.4	30°	2.5	2.5	4.5	5.5	5.5	7.5	6.5	6.5	8.5	9.5	9.5	11.5
ø40	19	34	30	18	25.7	5.0	8.5	10.5	11.5	11.5	13.5	30.2	32.1	16.4	26°	4.5	4.5	6.5	7.5	7.5	9.5	8.5	8.5	10.5	11.5	11.5	13.5
ø50	22	39	35.5	18	26.2	7.5	11.0	13.0	13.0	13.0	15.0	35.7	37.4	16.4	22°	7.0	7.0	9.0	9.0	9.0	11.0	11.0	11.0	13.0	13.0	13.0	15.0
ø63	22	39	42.5	18	26.5	7.5	11.0	13.0	13.0	13.0	15.0	42.7	44.4	16.4	20°	7.0	7.0	9.0	9.0	9.0	11.0	11.0	11.0	13.0	13.0	13.0	15.0
ø80	28	43	51	18	26.7	9.5	13.0	15.0	20.0	20.0	22.0	51.2	53.0	16.4	16°	9.0	9.0	11.0	16.0	16.0	18.0	13.0	13.0	15.0	20.0	20.0	22.0
ø100	28	44	61.5	18	26.7	10.0	13.5	15.5	19.5	19.5	21.5	61.7	63.5	16.4	16°	9.5	9.5	11.5	15.5	15.5	17.5	13.5	13.5	15.5	19.5	19.5	21.5

\*1: Refer to pages 42 and 43 for HD, RD, and protruding dimensions of T2Y\*, T3Y, T8, T1.

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



Round shaped cylinder Double acting/position locking

# SCM-Q Series

- Bore size:  $\phi 20/\phi 25/\phi 32/\phi 40$   
 $\phi 50/\phi 63/\phi 80/\phi 100$

JIS symbol



## Structure and material restriction

	Structure	Material restriction	Model No.		Structure	Material restriction	Model No.
P7 Series	Exhaust treatment	-	<b>P7</b>	P5 Series (custom order product)	Exhaust treatment	Copper-based materials prohibited Silicon-based materials prohibited Halogen-based materials prohibited (fluorine, chlorine, bromine)	<b>P5</b>
	Vacuum treatment	-	<b>P71</b>		Vacuum treatment	Copper-based materials prohibited Silicon-based materials prohibited Halogen-based materials prohibited (fluorine, chlorine, bromine)	<b>P51</b>

## Specifications

Descriptions	SCM-Q-P7*/P5*									
Bore size mm	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$		
Actuation	Double acting/position locking									
Working fluid	Compressed air									
Max. working pressure MPa	1.0									
Min. working pressure MPa	0.2					0.15				
Proof pressure MPa	1.6									
Ambient temperature °C	-10 to 60 (no freezing)									
Port size	M5		Rc1/8		Rc1/4		Rc3/8	Rc1/2		
Port size (relief port)	M5									
Stroke tolerance mm	+1.4 0 (to 1000)		+1.4 0 (to 1500)		+1.4 0 (to 1000)		+1.8 0 (to 1500)			
Working piston speed mm/s	30 to 200 (Use this cushion within allowable energy absorption.)									
Cushion	Air cushion									
Effective air cushion length mm	8.1	8.1	8.6	8.6	13.4	13.4	15.4	15.4		
Lubrication	Not available									
Position locking mechanism	Head end or rod end									
Holding force N	Max. thrust x 0.7									
Allowable absorbed energy J	Cushioned	0.8	1.2	2.5	3.7	8.0	14.4	25.4	45.6	
	No cushion	-	-	-	-	0.057	0.057	0.112	0.153	

- \*1: "No cushion" in the allowable absorption energy indicates the allowable absorption energy of the side that is not indicated ("R" → head side, "H" → rod side) when the one-side air cushion is selected.
- \*2: Without a cushion, large energy generated by the external load cannot be absorbed. Please provide an external shock absorber.

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\phi 20$	25/50/75	1000	10	$\phi 50$	25/50/75	1500	10
$\phi 25$				$\phi 63$			
$\phi 32$	100/125/150	1500		$\phi 80$	100/125/150		
$\phi 40$	200/250/300			$\phi 100$	200/250/300		

## Number of installed switches and the min. stroke length (mm)

● Switch mounting: Rail

Switch quantity	1				2				3				4				5			
	Proximity			Reed																
Bore size (mm)	T2,T3	T2W,T3W	T*Y*																	
$\phi 20$	10				25				50	70	70	55	55	70	70	55	75	110	110	90
$\phi 25$	10				25				50	70	70	55	55	70	70	55	75	110	110	90
$\phi 32$	10				25				50	70	70	55	55	70	70	55	75	110	110	90
$\phi 40$	10				25				50	70	70	55	55	70	70	55	75	110	110	90
$\phi 50$	10				25				50	65	65	55	55	65	65	55	75	110	110	90
$\phi 63$	10				25				50	65	65	55	55	65	65	55	75	110	110	90
$\phi 80$	10				25				50	65	65	55	55	65	65	55	75	110	110	90
$\phi 100$	10				25				50	65	65	55	55	65	65	55	75	110	110	90

● Switch mounting: Band

Switch quantity	1				2				3				4				5			
	Proximity			Reed																
Bore size (mm)	T2,T3	T2W,T3W	T*Y*																	
$\phi 20$	10				25	30	35	25	50	55	55	50	75	75	80	70	95	100	100	95
$\phi 25$	10				25	30	35	25	50	55	55	50	75	75	80	70	95	100	100	95
$\phi 32$	10				25	30	35	25	50	55	55	50	75	75	80	70	95	100	100	95
$\phi 40$	10				25	30	35	25	50	55	55	50	75	75	80	70	95	100	100	95
$\phi 50$	10				25	30	35	25	50	55	55	50	75	75	80	70	95	100	100	95
$\phi 63$	10				25	30	35	25	50	55	55	50	75	75	80	70	95	100	100	95
$\phi 83$	10				25	30	35	25	50	55	55	50	75	75	80	70	95	100	100	95
$\phi 100$	10				25	30	35	25	50	55	55	50	75	75	80	70	95	100	100	95

\*1: The switch rail mounting position changes for those with one switch and a stroke between 10mm and 25mm. Please refer to page 42 for the mounting position.

### Switch specifications

● 1-color/2-color display/for AC magnetic field

Descriptions	Proximity 2-wire				Proximity 3-wire				Reed 2-wire				Proximity 2-wire			
	T1H/T1V	T2H/T2V/T2JH/T2JV	T2YH/T2YV	T2WH/T2WV	T3H/T3V	T3PH/T3PV	T3YH/T3YV	T3WH/T3WV	T0H/T0V		T5H/T5V		T8H/T8V		T2YD(*3) T2YDT	
Applications	Programmable controller relay, small solenoid valve		Programmable controller		Programmable controller, relay				Programmable controller, relay		Programmable controller, relay IC circuit (without indicator lamp), serial connection		Programmable controller, relay		Programmable controller	
Output method	-				NPN output	PNP output	NPN output	NPN output	-				-			
Power supply voltage	-				DC10 to 28V				-				-			
Load voltage	AC85 to 265V	DC10 to 30V		DC24V±10%	DC30V or less				DC12/24V	AC110V	DC5/12/24V	AC110V	DC12/24V	AC110V	AC220V	DC24V±10%
Load current	5 to 100mA	5 to 20mA (*2)			100mA or less		50mA or less		5 to 50mA	7 to 20mA	50mA or less	20mA or less	5 to 50mA	7 to 20mA	7 to 10mA	5 to 20mA
Indicator lamp	LED (Lit when ON)	LED (Lit when ON)	Red/green 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)	Red/green LED (Lit when ON)	LED (Lit when ON)		Without indicator lamp		LED (Lit when ON)		Red/green LED (Lit when ON)	
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less			10µA or less				0mA				1 mA or less			
Weight g	1m:33 3m:87 5m:142	1m:18 3m:49 5m:80	1m:33 3m:87 5m:142	1m:18 3m:49 5m:80	1m:18 3m:49 5m:80	1m:33 3m:87 5m:142	1m:18 3m:49 5m:80		1m:18 3m:49 5m:80				1m:33 3m:87 5m:142		1m:61 3m:166 5m:272	

\*1: Refer to page 309 for detailed switch specifications, dimensions, etc.

\*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)

\*3: AC magnetic field switches (T2YD and T2YDT) cannot be used in a DC magnetic field environment.

### Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	62.8	94.2	1.26×10 <sup>2</sup>	1.57×10 <sup>2</sup>	1.88×10 <sup>2</sup>	2.20×10 <sup>2</sup>	2.51×10 <sup>2</sup>	2.83×10 <sup>2</sup>	3.14×10 <sup>2</sup>
	Pull	-	52.8	79.2	1.06×10 <sup>2</sup>	1.32×10 <sup>2</sup>	1.58×10 <sup>2</sup>	1.85×10 <sup>2</sup>	2.11×10 <sup>2</sup>	2.38×10 <sup>2</sup>	2.64×10 <sup>2</sup>
ø25	Push	-	98.2	1.47×10 <sup>2</sup>	1.96×10 <sup>2</sup>	2.45×10 <sup>2</sup>	2.95×10 <sup>2</sup>	3.44×10 <sup>2</sup>	3.93×10 <sup>2</sup>	4.42×10 <sup>2</sup>	4.91×10 <sup>2</sup>
	Pull	-	82.5	1.24×10 <sup>2</sup>	1.65×10 <sup>2</sup>	2.06×10 <sup>2</sup>	2.47×10 <sup>2</sup>	2.89×10 <sup>2</sup>	3.30×10 <sup>2</sup>	3.71×10 <sup>2</sup>	4.12×10 <sup>2</sup>
ø32	Push	-	1.61×10 <sup>2</sup>	2.41×10 <sup>2</sup>	3.22×10 <sup>2</sup>	4.02×10 <sup>2</sup>	4.83×10 <sup>2</sup>	5.63×10 <sup>2</sup>	6.43×10 <sup>2</sup>	7.24×10 <sup>2</sup>	8.04×10 <sup>2</sup>
	Pull	-	1.38×10 <sup>2</sup>	2.07×10 <sup>2</sup>	2.76×10 <sup>2</sup>	3.46×10 <sup>2</sup>	4.15×10 <sup>2</sup>	4.84×10 <sup>2</sup>	5.53×10 <sup>2</sup>	6.22×10 <sup>2</sup>	6.91×10 <sup>2</sup>
ø40	Push	-	2.51×10 <sup>2</sup>	3.77×10 <sup>2</sup>	5.03×10 <sup>2</sup>	6.28×10 <sup>2</sup>	7.54×10 <sup>2</sup>	8.80×10 <sup>2</sup>	1.01×10 <sup>3</sup>	1.13×10 <sup>3</sup>	1.26×10 <sup>3</sup>
	Pull	-	2.11×10 <sup>2</sup>	3.17×10 <sup>2</sup>	4.22×10 <sup>2</sup>	5.28×10 <sup>2</sup>	6.33×10 <sup>2</sup>	7.39×10 <sup>2</sup>	8.44×10 <sup>2</sup>	9.50×10 <sup>2</sup>	1.06×10 <sup>3</sup>
ø50	Push	2.95×10 <sup>2</sup>	3.93×10 <sup>2</sup>	5.89×10 <sup>2</sup>	7.85×10 <sup>2</sup>	9.82×10 <sup>2</sup>	1.18×10 <sup>3</sup>	1.37×10 <sup>3</sup>	1.57×10 <sup>3</sup>	1.77×10 <sup>3</sup>	1.96×10 <sup>3</sup>
	Pull	2.47×10 <sup>2</sup>	3.30×10 <sup>2</sup>	4.95×10 <sup>2</sup>	6.60×10 <sup>2</sup>	8.25×10 <sup>2</sup>	9.90×10 <sup>2</sup>	1.15×10 <sup>3</sup>	1.32×10 <sup>3</sup>	1.48×10 <sup>3</sup>	1.65×10 <sup>3</sup>
ø63	Push	4.68×10 <sup>2</sup>	6.23×10 <sup>2</sup>	9.35×10 <sup>2</sup>	1.25×10 <sup>3</sup>	1.56×10 <sup>3</sup>	1.87×10 <sup>3</sup>	2.18×10 <sup>3</sup>	2.49×10 <sup>3</sup>	2.81×10 <sup>3</sup>	3.12×10 <sup>3</sup>
	Pull	4.20×10 <sup>2</sup>	5.61×10 <sup>2</sup>	8.41×10 <sup>2</sup>	1.12×10 <sup>3</sup>	1.40×10 <sup>3</sup>	1.68×10 <sup>3</sup>	1.96×10 <sup>3</sup>	2.24×10 <sup>3</sup>	2.52×10 <sup>3</sup>	2.80×10 <sup>3</sup>
ø80	Push	7.54×10 <sup>2</sup>	1.01×10 <sup>3</sup>	1.51×10 <sup>3</sup>	2.01×10 <sup>3</sup>	2.51×10 <sup>3</sup>	3.02×10 <sup>3</sup>	3.52×10 <sup>3</sup>	4.02×10 <sup>3</sup>	4.52×10 <sup>3</sup>	5.03×10 <sup>3</sup>
	Pull	6.80×10 <sup>2</sup>	9.07×10 <sup>2</sup>	1.36×10 <sup>3</sup>	1.81×10 <sup>3</sup>	2.27×10 <sup>3</sup>	2.72×10 <sup>3</sup>	3.17×10 <sup>3</sup>	3.63×10 <sup>3</sup>	4.08×10 <sup>3</sup>	4.54×10 <sup>3</sup>
ø100	Push	1.18×10 <sup>3</sup>	1.57×10 <sup>3</sup>	2.36×10 <sup>3</sup>	3.14×10 <sup>3</sup>	3.93×10 <sup>3</sup>	4.71×10 <sup>3</sup>	5.50×10 <sup>3</sup>	6.28×10 <sup>3</sup>	7.07×10 <sup>3</sup>	7.85×10 <sup>3</sup>
	Pull	1.07×10 <sup>3</sup>	1.43×10 <sup>3</sup>	2.14×10 <sup>3</sup>	2.86×10 <sup>3</sup>	3.57×10 <sup>3</sup>	4.29×10 <sup>3</sup>	5.00×10 <sup>3</sup>	5.72×10 <sup>3</sup>	6.43×10 <sup>3</sup>	7.15×10 <sup>3</sup>

▲ Be sure to read the "safety precautions" **3. Position locking: SCM-Q** (pages 44 through 46).

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

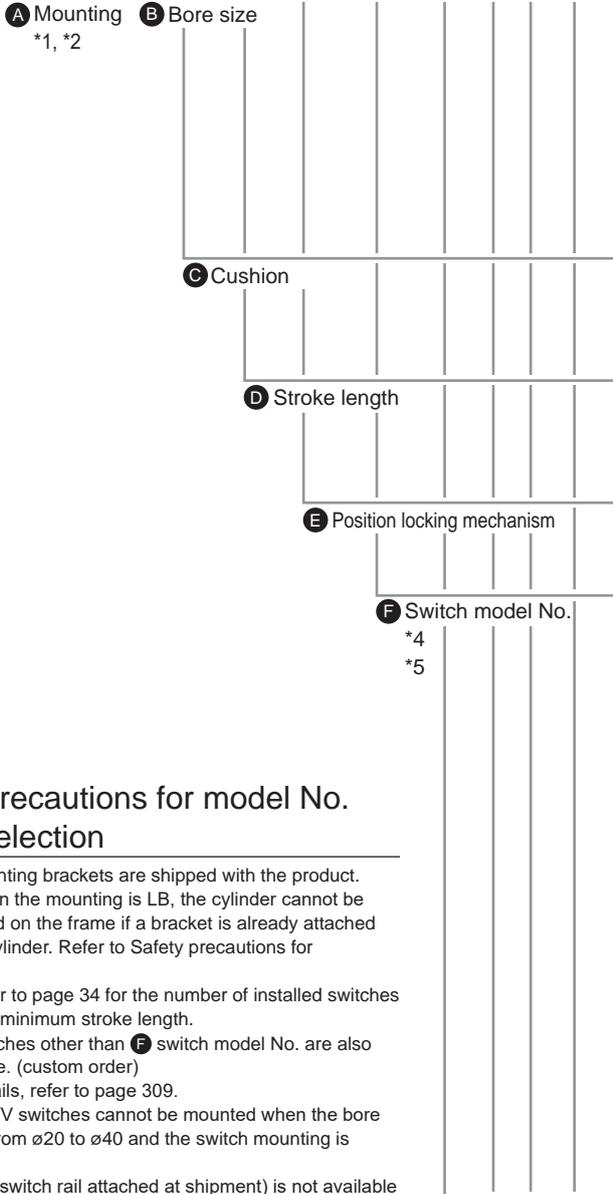
## How to order

Without switch (Magnet for switch incorporated)

**SCM-Q-LB-40B-100-R-QP7**

With switch (Magnet for switch incorporated)

**SCM-Q-LB-40B-100-R-T2H-D-QP7**



## ⚠ Precautions for model No. selection

- \*1: Mounting brackets are shipped with the product.
- \*2: When the mounting is LB, the cylinder cannot be mounted on the frame if a bracket is already attached to the cylinder. Refer to Safety precautions for details.
- \*3: Refer to page 34 for the number of installed switches and the minimum stroke length.
- \*4: Switches other than **F** switch model No. are also available. (custom order)  
For details, refer to page 309.
- \*5: T8H/V switches cannot be mounted when the bore size is from ø20 to ø40 and the switch mounting is the rail.
- \*6: "Q" (switch rail attached at shipment) is not available for the "Z" switch mounting.
- \*7: "P5" and "P51" are custom order products.
- \*8: Mounting 00 does not allow front mounting.
- \*9: Switches are shipped with the product. Contact CKD when shipment must be assembled.

### [Example of model No.]

**SCM-Q-LB-40B-100-R-T2H-D-QP7**

Model: Round shaped cylinder, position locking

- A** Mounting : Axial foot
- B** Bore size : ø40mm
- C** Cushion : Air cushion on both sides
- D** Stroke length : 100mm
- E** Position locking mechanism : With rod end position locking
- F** Switch model No. : Proximity T2H switch, lead wire 1 m
- G** Switch quantity : 2
- H** Switch mounting : Rail
- I** Option : Switch rail attached at shipment
- J** Clean room specifications : Exhaust treatment

**H** Switch mounting

**I** Option \*6

**J** Clean room specifications \*7

Code	Content
<b>A Mounting</b>	
00	Basic
LB	Axial foot
FA	Rod end flange
FB	Head end flange

<b>B Bore size (mm)</b>	
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

<b>C Cushion</b>	
B	Both sides air cushioned
R	Rod end air cushioned
H	Head end air cushion

<b>D Stroke length (mm)</b>		
Bore size	Stroke length Note 3	Custom stroke length
ø20 to ø32	10 to 1000	By 1mm increments
ø40 to ø100	10 to 1500	

<b>E Position locking mechanism</b>	
R	With rod end position locking
H	With head end position locking

<b>F Switch model No.</b>						
Lead wire straight	Lead wire L-shaped	Contact	Voltage		Display	Leadwire
			AC	DC		
T0H*	T0V*	Reed	●	●	1-color display	2 wires
T5H*	T5V*		●	●	Without indicator lamp	
T8H*	T8V*		●	●	1-color display	
T1H*	T1V*	Proximity	●		1-color display	2 wires
T2H*	T2V*			●		
T3H*	T3V*			●	1-color display	3 wires
T3PH*	T3PV*			●		
T2WH*	T2WV*			●	2-color display	2 wires
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		
T3YH*	T3YV*			●		
T2YD*	-			●	2-color display for AC magnetic field	2 wires
T2YDT*	-			●		
T2JH*	T2JV*		●	1-color display off-delay	2 wires	

<b>*Lead wire length</b>	
Blank	1m(standard))
3	3m(option)
5	5m(option)

<b>G Switch quantity</b>	
R	1 (on rod end)
H	1 (on rod end)
D	2
T	3
4	4 (indicate switch quantity for more than 4 switches.)

<b>H Switch mounting</b>	
Blank	Rail
Z	Band

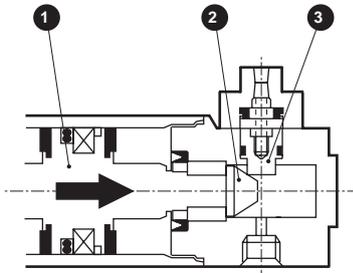
<b>I Option</b>	
Q	Switch rail attached at shipment

<b>J Clean room specifications</b>		
	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

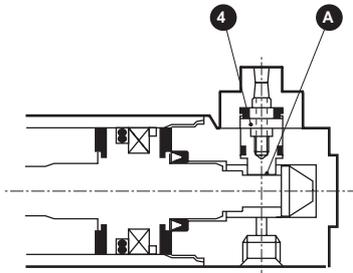
### Operational explanation

● When locked

When the piston (1) of the cylinder moves toward the stroke end, the stopper pin (3) is pushed up along the slope of the sleeve (2).

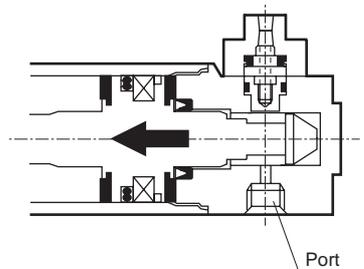


When the piston of the cylinder comes to the stroke end and the sleeve groove (A) reaches the stopper piston position, the stopper piston is pushed down by the spring 4 and fits into the groove, completing the lock action.



● When unlocked

When pressure is supplied to the port, the stopper piston pushes up the sleeve and slips out of the sleeve groove, releasing the lock.



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

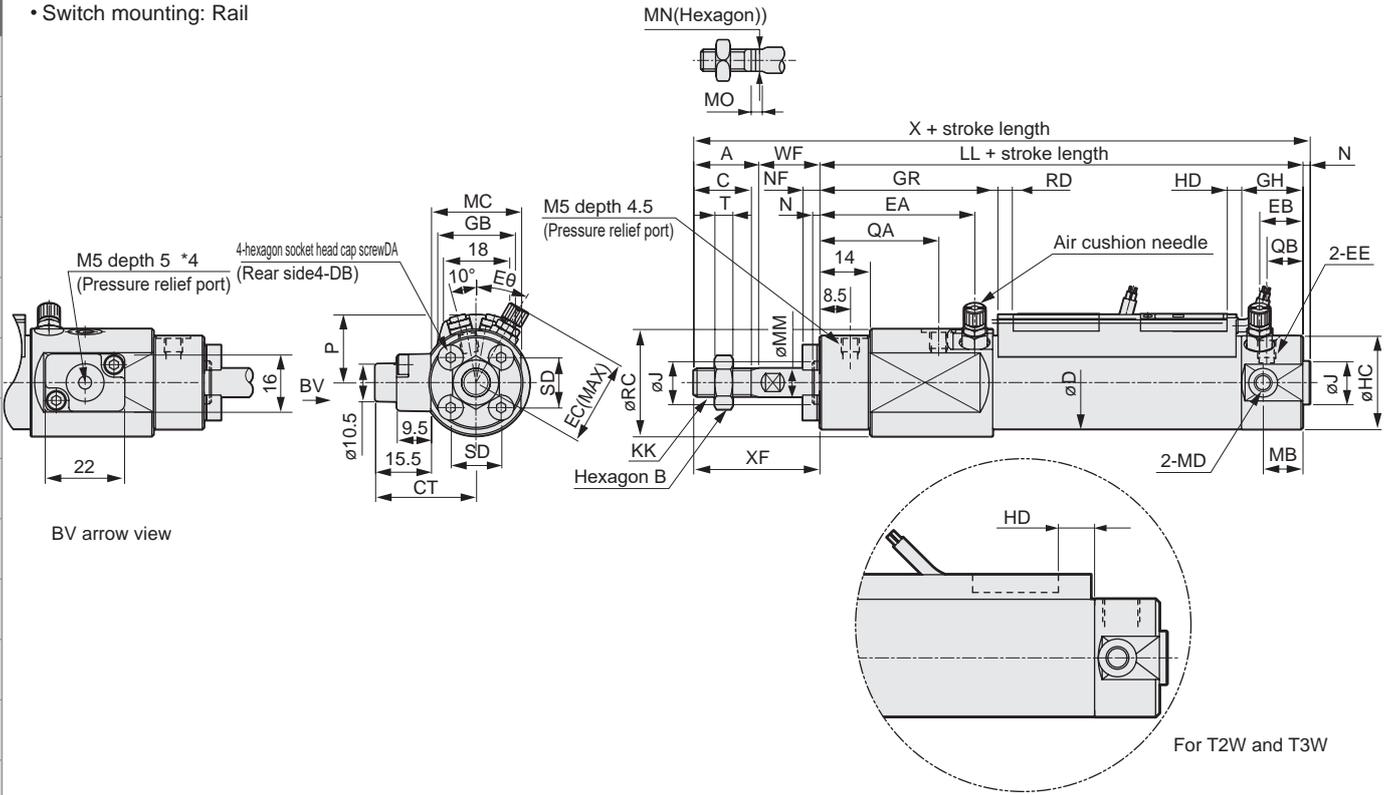
Valve for air blow

Ending

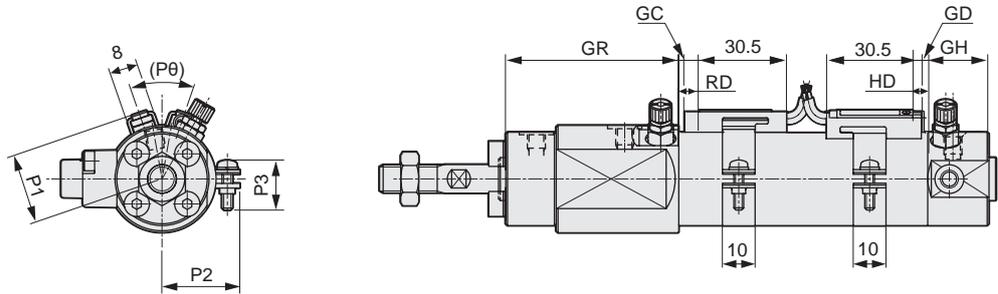
# SCM-Q Series

## Dimensions (ø20 to ø32)

- Basic (00) with rod end position locking (R)
- Switch mounting: Rail



- Switch mounting: Band



\*1: For the mounting of LB, the cylinder with a bracket attached cannot be installed on the frame. Refer to Safety precautions for details.

\*2: Refer to page 42 and 43 for dimensions of HD and RD of T2Y\*, T3Y, T8, and T1.

\*3: Refer to page 42 and 43 for dimensions of projections of T2Y\*, T3Y, T8, and T1.

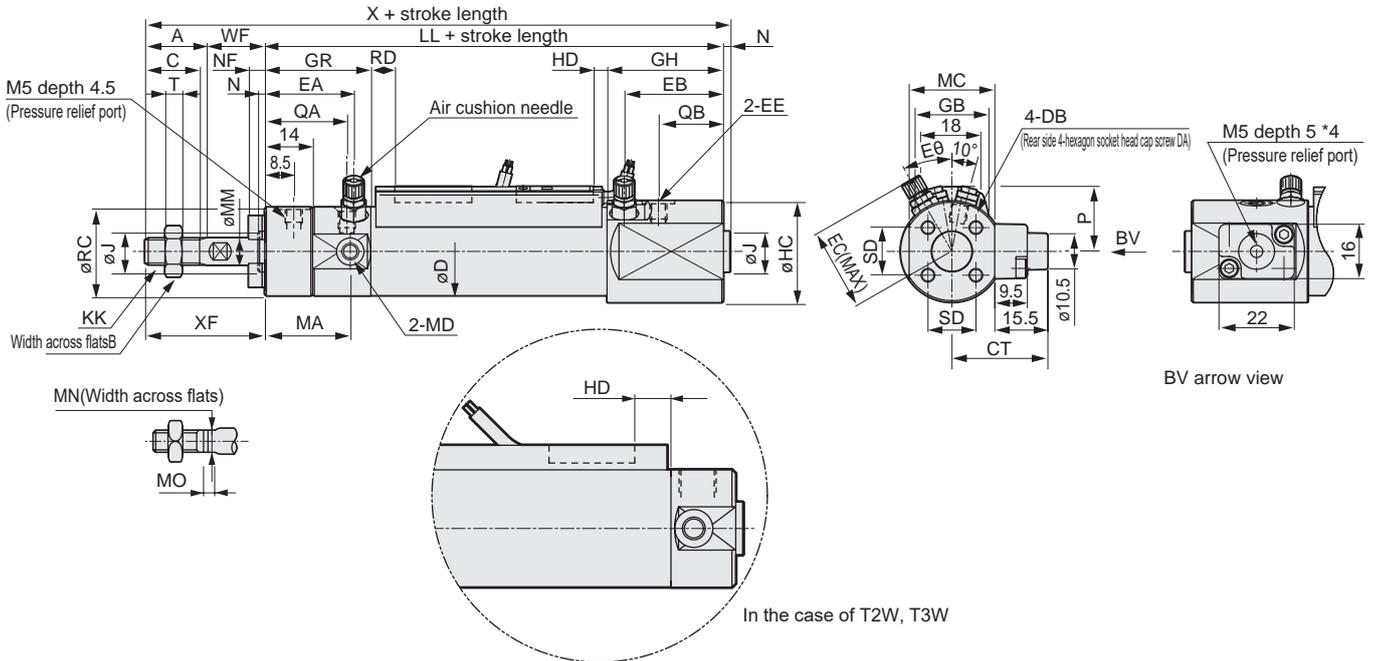
\*4: Do not perform vacuum treatment of the relief port of the positioning lock. Refer to Safety precautions for details.

Code	Basic (00) basic dimensions																									
Bore size(mm)	A	B	C	D	CT	DA	DB	EC	EE	Eθ	J	KK	LL	MC	MD	MM										
ø20	18	13	15.5	26	28	M4x20	M4 depth 6.5	29	M5	30°	12	M8	98	25	M5	8										
ø25	22	17	19.5	31	31	M5x20	M5 depth 6.5	31.5	M5	30°	14	M10x1.25	98	31	M6	10										
ø32	22	17	19.5	38	31.5	M5x20	M5 depth 7.5	32.8	Rc1/8	25°	18	M10x1.25	100	32	M8	12										
Code	Rod end position locking																									
Bore size(mm)	MO	MN	N	NF	SD	T	WF	X	XF	MB	RC	HC	QA	QB	EA	EB										
ø20	4	6	2	4.5	14	5	17	135	35	11	30	26	33	10	43	12										
ø25	5	8	2	5.6	16.5	6	18	140	40	11	35	31	33	10	43	12										
ø32	5.5	10	2	5.6	20	6	18	142	40	10	38	38	33	10	43	12										
Code	With switch																									
Bore size(mm)	GH	GR	Rail mounting						Band mounting																	
			P	GB	HD		RD		P1	P2	P3	P(θ)	GC			GD			HD		RD					
			T0,T5	T2,T3	T2W,T3W	T0,T5	T2,T3	T2W,T3W					T0,T5	T2,T3	T2W,T3W	T0,T5	T2,T3	T2W,T3W	T0,T5	T2,T3	T2W,T3W					
ø20	17	48	19.5	23	3.0	6.5	8.5	7.5	7.5	9.5	19.6	21.5	14	38°	3.5	3.5	5.5	2.5	2.5	4.5	6.5	6.5	8.5	7.5	7.5	9.5
ø25	17	48	22	24.4	2.0	5.5	7.5	8.5	8.5	10.5	22.1	23.9	14	34°	4.5	4.5	6.5	1.5	1.5	3.5	5.5	5.5	7.5	8.5	8.5	10.5
ø32	17	48	25.5	25	3.0	6.5	8.5	9.5	9.5	11.5	25.6	27.6	16	30°	5.5	5.5	7.5	2.5	2.5	4.5	6.5	6.5	8.5	9.5	9.5	11.5

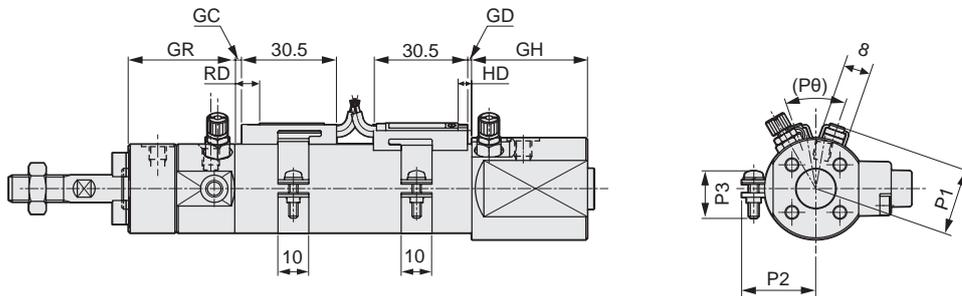
\*1: Mounting dimensions of the mounting types are the same as those of SCM (double acting). Refer to pages 31 and 33.

## Dimensions (ø20 to ø32)

- Basic (00) with head end position locking (H)
- Switch mounting: Rail



- Switch mounting: Band



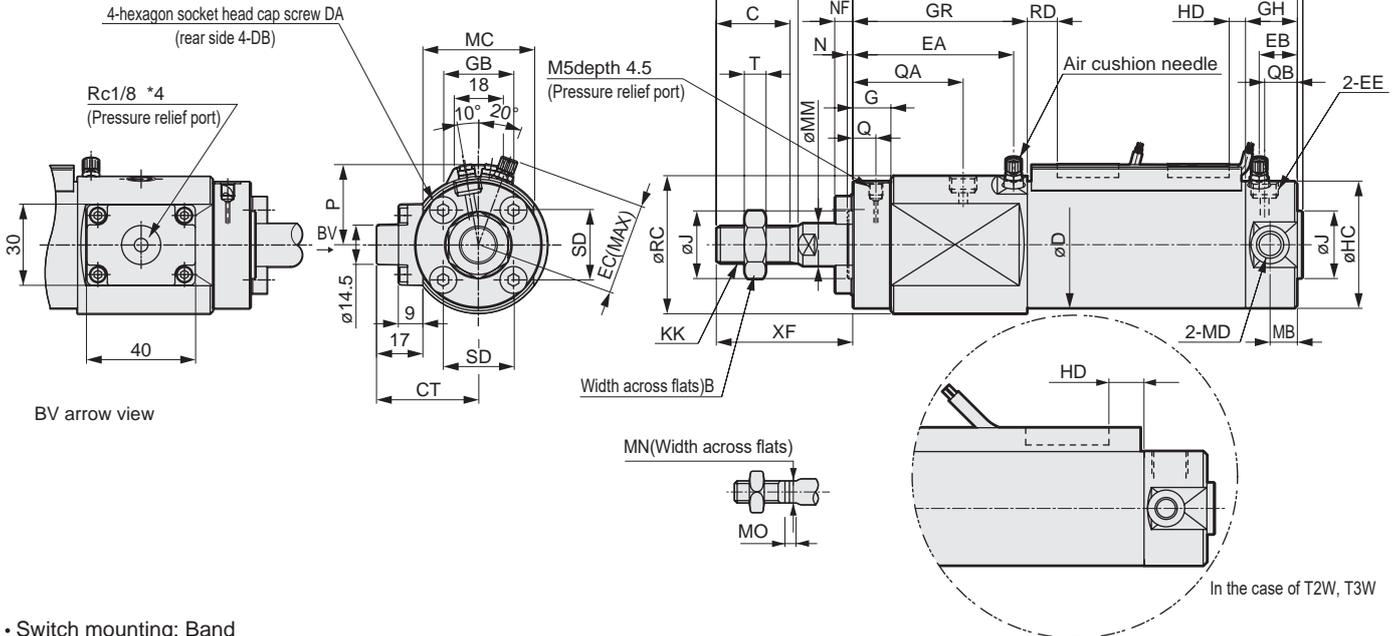
- \*1: For the mounting of LB, the cylinder with a bracket attached cannot be installed on the frame. Refer to Safety precautions for details.
- \*2: Refer to page 42 and 43 for dimensions of HD and RD of T2Y\*, T3Y, T8, and T1.
- \*3: Refer to page 42 and 43 for dimensions of projections of T2Y\*, T3Y, T8, and T1.
- \*4: Do not perform vacuum treatment of the relief port of the positioning lock. Refer to Safety precautions for details.

Code	Basic (00) basic dimensions																									
Bore size(mm)	A	B	C	D	CT	DA	DB	EC	EE	Eθ	J	KK	LL	MC	MD	MM										
ø20	18	13	15.5	26	28	M4x20	M4 depth 6.5	29	M5	30°	12	M8	98	25	M5	8										
ø25	22	17	19.5	31	31	M5x20	M5 depth 6.5	31.5	M5	30°	14	M10x1.25	98	31	M6	10										
ø32	22	17	19.5	38	31.5	M5x20	M5 depth 7.5	32.8	Rc1/8	25°	18	M10x1.25	100	32	M8	12										
Code	Head end position locking																									
Bore size(mm)	MO	MN	N	NF	SD	T	WF	X	XF	MA	RC	HC	QA	QB	EA	EB										
ø20	4	6	2	4.5	14	5	17	135	35	25	26	30	26	17	28	27										
ø25	5	8	2	5.6	16.5	6	18	140	40	25	31	35	26	17	28	27										
ø32	5.5	10	2	5.6	20	6	18	142	40	25	38	38	26	17	28	27										
Code	With switch																									
Bore size(mm)	GH	GR	Rail mounting						Band mounting																	
			P	GB	HD			RD			P1	P2	P3	(Pθ)	GC			GD			HD			RD		
			T0,T5	T2,T3	T2W	T3W	T0,T5	T2,T3	T2W	T3W					T0,T5	T2,T3	T2W	T3W	T0,T5	T2,T3	T2W	T3W	T0,T5	T2,T3	T2W	T3W
ø20	32	33	19.5	23	3.0	6.5	8.5	7.5	7.5	9.5	19.6	21.5	14	38°	3.5	3.5	5.5	2.5	2.5	4.5	6.5	6.5	8.5	7.5	7.5	9.5
ø25	32	33	22	24.4	2.0	5.5	7.5	8.5	8.5	10.5	22.1	23.9	14	34°	4.5	4.5	6.5	1.5	1.5	3.5	5.5	5.5	7.5	8.5	8.5	10.5
ø32	32	33	25.5	25	3.0	6.5	8.5	9.5	9.5	11.5	25.6	27.6	16	30°	5.5	5.5	7.5	2.5	2.5	4.5	6.5	6.5	8.5	9.5	9.5	11.5

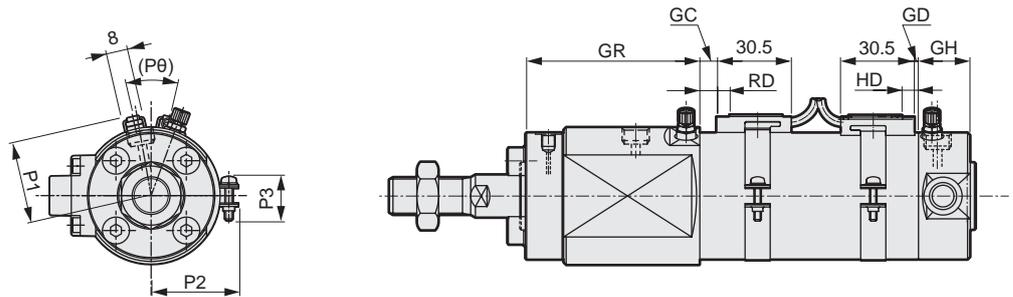
- \*1: Mounting dimensions of the mounting types are the same as those of SCM (double acting). Refer to pages 31 and 33.

## Dimensions (ø40 to ø100)

- Basic (00) with head end position locking (H)
- Switch mounting: Rail



- Switch mounting: Band



\*1: For the mounting of LB, the cylinder with a bracket attached cannot be installed on the frame. Refer to Safety precautions for details.

\*2: Refer to page 42 and 43 for dimensions of HD and RD of T2Y\*, T3Y, T8, and T1.

\*3: Refer to page 42 and 43 for dimensions of projections of T2Y\*, T3Y, T8, and T1.

\*4: Do not perform vacuum treatment of the relief port of the positioning lock. Refer to Safety precautions for details.

Code	Basic (00) basic dimensions														
Bore size(mm)	A	B	C	D	CT	DA	DB	EC	EE	J	KK	LL	MB	MC	MD
ø40	30	22	27	47	37.5	M6x25	M6depth 12	38.6	Rc1/8	25	M14x1.5	122	10	41	M10
ø50	35	27	32	58	43.5	M8x25	M8depth 16	44.5	Rc1/4	30	M18x1.5	134	12	53	M12
ø63	35	27	32	72	49.5	M10x30	M10depth 16	50	Rc1/4	32	M18x1.5	134	12	65	M14
ø80	40	32	37	89	57.5	M10x30	M10depth 22	58.5	Rc3/8	40	M22x1.5	153	-	81	-
ø100	40	41	37	110	68.5	M12x30	M12depth 22	69	Rc1/2	50	M26x1.5	154	-	103	-

Code	Rod end position locking																	
Bore size(mm)	MM	MO	MN	N	SD	T	WF	X	XF	NF	Q	G	QA	QB	RC	HC	EA	EB
ø40	16	6	14	2	26	8	20	174	50	6.6	8.5	14	40.5	12	51	47	59	14
ø50	20	8	17	2	32	11	23	194	58	8.9	8.5	14	44	12	61	58	62.5	15.5
ø63	20	8	17	2	38	11	23	194	58	11.1	8.5	14	44	12	72	72	62.5	15.5
ø80	25	11	22	3	50	13	31	227	71	11.1	9	15	46.5	15	89	89	65	20
ø100	30	13	27	3	60	16	31	228	71	13.2	10	16	47.5	15	110	110	66	20

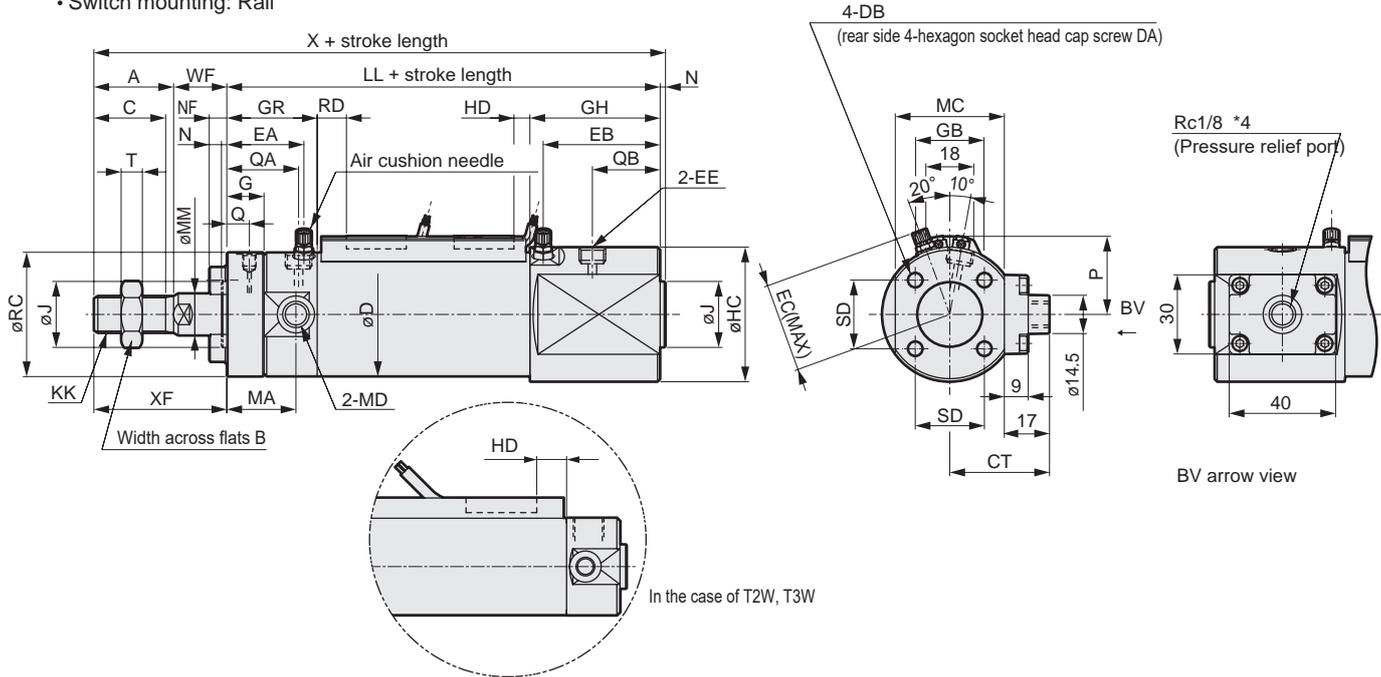
  

Code	With switch																								
	Rail mounting						Band mounting						Rod end position locking												
	GH	GR	P	GB	HD			RD			P1	P2	P3	(Pø)	GC			GD			HD			RD	
Bore size(mm)				T0,T5	T2,T3	T2W T3W	T0,T5	T2,T3	T2W T3W					T0,T5	T2,T3	T2W T3W									
ø40	19	64	30	25.7	5.0	8.5	10.5	11.5	13.5	30.2	32.1	16	26°	7.5	7.5	9.5	4.5	4.5	6.5	8.5	8.5	10.5	11.5	11.5	13.5
ø50	22	69	35.5	26.2	7.5	11.0	13.0	13.0	15.0	35.7	37.4	16	22°	9.0	9.0	11.0	7.0	7.0	9.0	11.0	11.0	13.0	13.0	13.0	15.0
ø63	22	69	42.5	26.5	7.5	11.0	13.0	13.0	15.0	42.7	44.4	16	20°	9.0	9.0	11.0	7.0	7.0	9.0	11.0	11.0	13.0	13.0	13.0	15.0
ø80	28	73	51	26.7	9.5	13.0	15.0	20.0	22.0	51.2	53.0	16	16°	16.0	16.0	18.0	9.0	9.0	11.0	13.0	13.0	15.0	20.0	20.0	22.0
ø100	28	74	61.5	26.7	10.0	13.5	15.5	19.5	19.5	61.7	63.5	16	16°	15.5	15.5	17.5	9.5	9.5	11.5	13.5	13.5	15.5	19.5	19.5	21.5

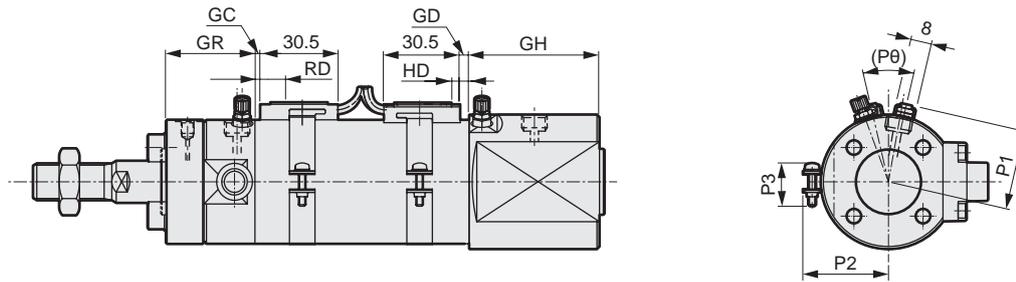
\*1: Mounting dimensions of the mounting types are the same as those of SCM (double acting). Refer to pages 31 and 33.

## Dimensions (ø40 to ø100)

- Basic (00) with head end position locking (H)
- Switch mounting: Rail



- Switch mounting: Band



- \*1: For the mounting of LB, the cylinder with a bracket attached cannot be installed on the frame. Refer to Safety precautions for details.
- \*2: Refer to page 42 and 43 for dimensions of HD and RD of T2Y\*, T3Y, T8, and T1.
- \*3: Refer to page 42 and 43 for dimensions of projections of T2Y\*, T3Y, T8, and T1.
- \*4: Do not perform vacuum treatment of the relief port of the positioning lock. Refer to Safety precautions for details.

Code	Basic (00) basic dimensions																									
Bore size(mm)	A	B	C	D	CT	DA	DB	EC	EE	J	KK	LL	MA	MC	MD											
ø40	30	22	27	47	37.5	M6x25	M6depth 12	38.6	Rc1/8	25	M14x1.5	122	26	41	M10											
ø50	35	27	32	58	43.5	M8x25	M8depth 16	44.5	Rc1/4	30	M18x1.5	134	27	53	M12											
ø63	35	27	32	72	49.5	M10x30	M10depth 16	50	Rc1/4	32	M18x1.5	134	27	65	M14											
ø80	40	32	37	89	57.5	M10x30	M10depth 22	58.5	Rc3/8	40	M22x1.5	153	-	81	-											
ø100	40	41	37	110	68.5	M12x30	M12depth 22	69	Rc1/2	50	M26x1.5	154	-	103	-											
Code	Head end position locking																									
Bore size(mm)	MM	MO	MN	N	SD	T	WF	X	XF	NF	Q	G	QA	QB	RC	HC	EA	EB								
ø40	16	6	14	2	26	8	20	174	50	6.6	8.5	14	27	25.5	47	51	29	44								
ø50	20	8	17	2	32	11	23	194	58	8.9	8.5	14	29	27	58	61	32.5	45.5								
ø63	20	8	17	2	38	11	23	194	58	11.1	8.5	14	29	27	72	72	32.5	45.5								
ø80	25	11	22	3	50	13	31	227	71	11.1	9	15	30	315	89	89	35	50								
ø100	30	13	27	3	60	16	31	228	71	13.2	10	16	31	31.5	110	110	36	50								
Code	With switch																									
Bore size(mm)	GH	GR	Rail mounting									Band mounting														
			P	GB	HD			RD			P1	P2	P3	(Pø)	GC			GD			HD			RD		
					T0,T5	T2,T3	T2W T3W	T0,T5	T2,T3	T2W T3W					T0,T5	T2,T3	T2W T3W									
ø40	49	34	30	25.7	5.0	8.5	10.5	11.5	11.5	13.5	30.2	32.1	16	26°	7.5	7.5	9.5	4.5	4.5	6.5	8.5	8.5	10.5	11.5	11.5	13.5
ø50	52	39	35.5	26.2	7.5	11.0	13.0	13.0	15.0	35.7	37.4	16	22°	9.0	9.0	11.0	7.0	7.0	9.0	11.0	11.0	13.0	13.0	15.0	15.0	15.0
ø63	52	39	42.5	26.5	7.5	11.0	13.0	13.0	15.0	42.7	44.4	16	20°	9.0	9.0	11.0	7.0	7.0	9.0	11.0	11.0	13.0	13.0	15.0	15.0	15.0
ø80	58	43	51	26.7	9.5	13.0	15.0	20.0	22.0	51.2	53.0	16	16°	16.0	16.0	18.0	9.0	9.0	11.0	13.0	13.0	15.0	20.0	20.0	22.0	
ø100	58	44	61.5	26.7	10.0	13.5	15.5	19.5	19.5	21.5	61.7	63.5	16	16°	15.5	15.5	17.5	9.5	9.5	11.5	13.5	13.5	15.5	19.5	19.5	21.5

\*1: Mounting dimensions of the mounting types are the same as those of SCM (double acting). Refer to pages 31 and 33.

SCPD3
<b>SCM</b>
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

Switch rail installation position (rail installation position for stroke length of 10 mm and over and less than 25 mm with 1 switch)

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

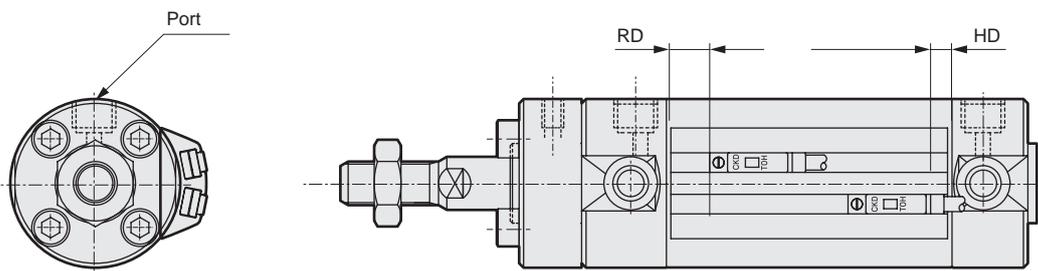
Clean air unit

Pressure sensor

Flow rate sensor

Valve for air blow

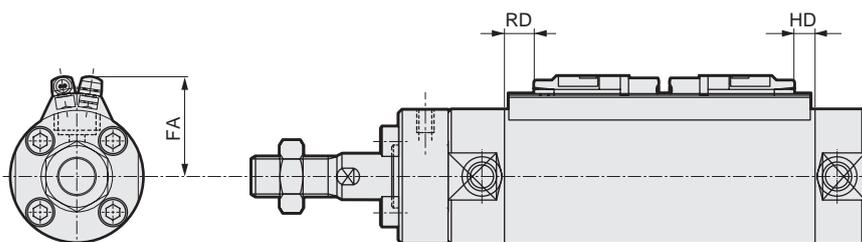
Ending



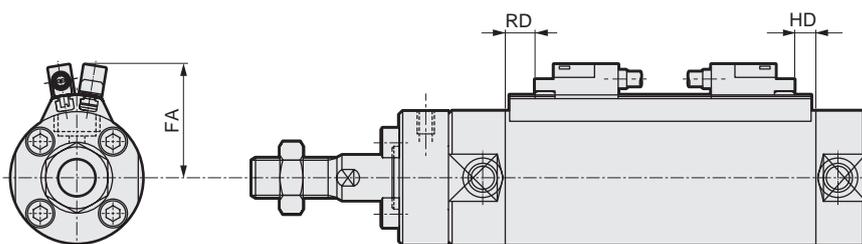
1. The switch rail is mounted at the position inclined by 90° from the standard position.
2. Dimensions for HD and RD are identical to the standard dimensions.

Switch mounting: Rail 2-color display AC magnetic field use, off-delay, T1H/V, T8H/V switch mounting, dimensions of projecting section

- SCM-\* T2Y<sup>H/V</sup>, T3Y<sup>H/V</sup>, T2J<sup>H/V</sup>, T8<sup>H/V</sup>



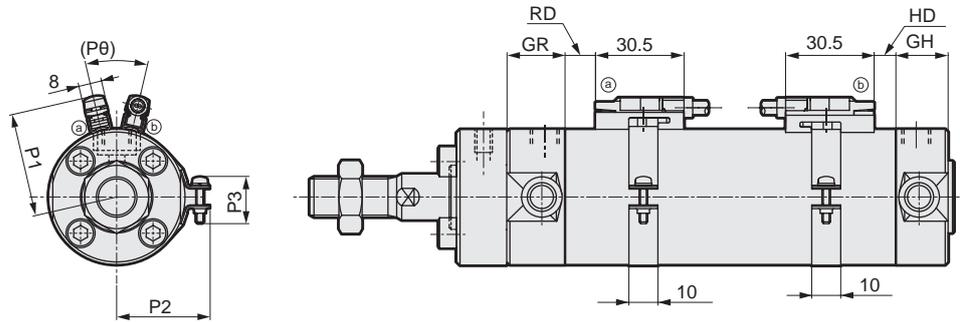
- SCM-\* T2YD\*, T1<sup>H/V</sup>



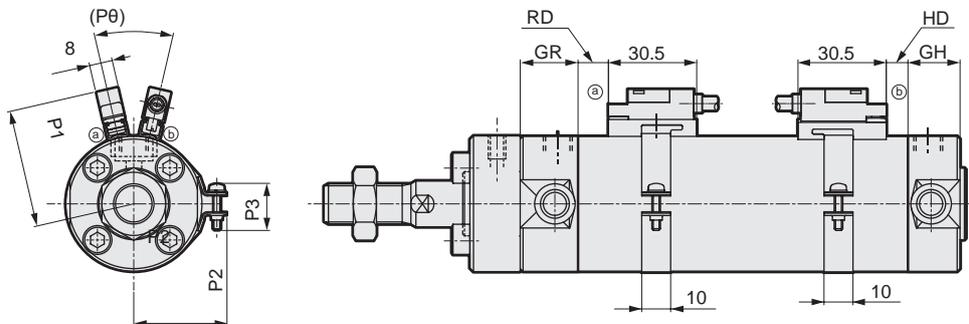
Bore size(mm)	FA				RD		HD	
	T*YH, T8H T2JH	T*YV, T8V T2JV	T2YD*, T1H	T1V	T*YH/V, T1H/V, T2JH/V, T2YD*	T8H/V	T*YH/V, T1H/V, T2JH/V, T2YD*	T8H/V
ø20	24	27	29.5	32.5	6.5	-	5.5	-
ø25	26.5	29.5	32	35	7.5	-	4.5	-
ø32	30	33	35.5	38.5	8.5	-	5.5	-
ø40	34.5	37.5	40	43	10.5	-	7.5	-
ø50	40	43	45.5	48.5	12	7	10	5
ø63	47	50	52.5	55.5	12	7	10	5
ø80	55.5	58.5	61	64	19	14	12	7
ø100	66	69	71.5	74.5	18.5	13.5	12.5	7.5

Switch mounting: Band 2-color display switch mounting, AC magnetic field use, off-delay, T1H/V, T8H/V dimensions of projecting section

- SCM-\* T2Y<sup>H/V</sup>, T3Y<sup>H/V</sup>, T8<sup>H/V</sup>



- SCM-\* T2YD\*, T1<sup>H/V</sup>



Bore size(mm)	P1				P2	P3	(P)	RD		HD	
	T*YH, T8H T2JH	T*YV, T8V T2JV	T2YD*, T1H	T1V				T*YH/V, T1H/V, T2JH/V, T2YD*	T8H/V	T*YH/V, T1H/V, T2JH/V, T2YD*	T8H/V
ø20	25.4	28.4	30.4	33.4	21.5	14.4	38°	6.5	1.5	5.5	0.5
ø25	27.9	30.9	32.9	35.9	23.9	14.4	34°	7.5	2.5	4.5	0
ø32	31.4	34.4	36.4	39.4	27.6	16.4	30°	8.5	3.5	5.5	0.5
ø40	36	39	41	44	32.1	16.4	26°	10.5	5.5	7.5	2.5
ø50	41.5	44.5	46.5	49.5	37.4	16.4	22°	12	7	10	5
ø63	48.5	51.5	53.5	56.5	44.4	16.4	20°	12	7	10	5
ø80	57	60	62	65	53.0	16.4	16°	19	14	12	7
ø100	67.5	70.5	72.5	75.5	63.5	16.4	16°	18.5	13.5	12.5	7.5

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



# Safety Precautions

Always read this section before use.

Refer to page 2 for general information of the cylinder and to page 320 for general information of the cylinder switch.

Product-specific cautions: Round shaped cylinder SCM Series

## Design & selection

### 1.Common

#### CAUTION

As a cushion mechanism integrated in the cylinder, the rubber cushion and the air cushion are available. The purpose of the air cushion is to absorb the piston's kinetic energy by using air compressibility, avoiding collisions of piston and cover at the stroke end. Thus, the cushion is not used to decelerate the piston speed (deceleration action) near the stroke end. The following table shows the kinetic energy that can be absorbed by the cushion. If the kinetic energy exceeds these values, or if bounding caused by the air compressibility is to be avoided, use a separate buffer.

Bore size (mm)	Rubber cushion	Air cushion	
	Allowable energy absorption J	Effective cushion length (mm)	Allowable absorbed energy J
ø20	0.1	8.1	0.8
ø25	0.2	8.1	1.2
ø32	0.5	8.6	2.5
ø40	0.9	8.6	3.7
ø50	1.6	13.4	8.0
ø63	1.6	13.4	14.4
ø80	3.3	15.4	25.4
ø100	5.8	15.4	45.6

Kinetic energy (J) =

$$\frac{1}{2} \times \text{Weight (kg)} \times (\text{Speed [m/s]})^2$$

Note: Calculating kinetic energy

Average cylinder speed is obtained with  $V_a = \frac{L}{T}$ .

$V_a$  : Average speed (m/s)

$L$  : Cylinder stroke length (m)

$T$  : Operation time (s)

With respect to this, the cylinder speed just before rushing into the cushion can be obtained with the following simple formula.

$$V_m = \frac{L}{T} \times (1 + 1.5 \times \frac{\omega}{100})$$

$V_m$ : Stroke end speed (m/s)

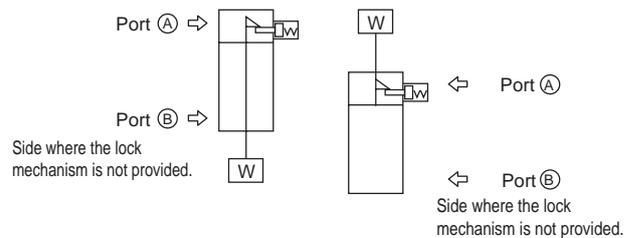
$\omega$  : Cylinder load factor (%)

Use this  $V_m$  value as speed to calculate kinetic energy.

### 2.Position locking SCM-Q

#### WARNING

If pressure is applied to the port ① when both ports are not pressurized and the piston is locked, the lock may not be released or the piston rod may suddenly pop out just after the lock is released. This can be extremely hazardous. To release the locking mechanism, be sure to supply pressure to port ②. Check that a load is not applied to the locking mechanism upon release.



For usage where the drop rate is increased using the quick exhaust valve, the lock may not release normally because the cylinder body starts operating before the lock pin. For the position locking cylinder, do not use the quick exhaust valve.

Do not use 3-position valves.

Do not use the cylinder by combining with the 3-position (especially, closed center metal seal) valves. If the port at the side where the lock mechanism is provided is pressurized, the lock cannot be engaged. Even if it is locked once, the air leaked from the valve enters the cylinder, and the lock may be released after a certain period of time.

#### CAUTION

Cylinder load factor must be 50% or less.

If the load factor is high, the lock may not be released, or the lock section may be damaged.

If back pressure is applied to the locking mechanism, the lock may be released. Use a single valve, or an individual exhaust manifold.

Do not use multiple synchronized cylinders.

Do not use so that 1 workpiece is moved by synchronizing 2 or more position locking cylinders. Cylinder lock release may fail.

**Mounting, installation & adjustment**

**1. Common**

**CAUTION**

Switch rails are adhered with industrial adhesive tape. If used in an atmosphere containing inorganic or organic solvents or water vapor, rails may become loose. Main inorganic solvent/organic solvent  
 Inorganic solvents: Sodium hydroxide, hydrochloric acid, etc.  
 Organic solvents: Toluene, ethanol, hexane, gasoline, kerosene, etc.

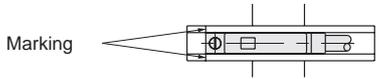
Remove all oil, moisture, dust, etc., from the body (tube) in order to adhere the switch rail.  
 (Perform adhesion by referring to instructions attached to the part.)

Caution for air cushion  
 For  $\phi 20$  and  $\phi 25$ , compatible fittings are limited, so see the following table to select the fitting.

Descriptions	Port diameter	Applicable fittings	Inapplicable fittings
$\phi 20$	M5	SC3W-M5-4 · 6-P7*	GWL6-M5
		SC3R-M5-P7*	
		GWS4-M5-P7*    GWS4-M5-S-P7*	
$\phi 25$	M5	GWS6-M5-P7*    GWS6-M5-S-P7*	GWL6-M5-45
		GWL4-M5-P7*    GWL4-M5-45-P7*	
		GWL4-M5-T-P7*    GWL6-M5-T-P7*	

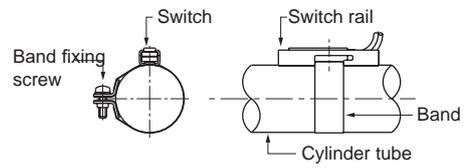
**Switch mounting: Caution for band**

- When moving the switch position to the stroke length direction  
 The 1-color display switch can be fine-tuned by  $\pm 3$  mm from the default. Loosen the switch fixing screw, shift the switch along the rail, then tighten at the specified position. If the adjusting range exceeds  $\pm 3$  mm, or when finetuning the 2-color display switch, move the band position. When using T2, T3, T0, or T5, use a flathead screwdriver (clockwork screwdriver, precision screwdriver, etc.) with a grip diameter of 5 to 6 mm, a 2.4 mm or smaller tip, and a thickness of 0.3 mm or less to tighten the screws with a tightening torque of 0.1 to 0.2 N·m. When using T2J, T2Y, or T3Y, tighten the screw with a tightening torque of 0.5 to 0.7 N·m. The switch bracket rail has a marking 4 mm from the rail end. Use as a guide to the mounting position when replacing the switch. Switch rail markings are set to the default switch max. sensitivity position. The max. sensitivity position will change when the switch is changed or when the band is shifted. Adjust the position accordingly in this case.



- If moving the switch position in the circumferential direction, loosen the band fixing screw, shift the switch rail in the circumferential direction, then tighten at the specified position. Tightening torque is 0.6 to 0.8 N·m.

- Shifting the band position  
 Loosen the band fixing screw, shift the switch rail and band along the cylinder tube, and tighten the screw at the specified position. Tightening torque is 0.6 to 0.8 N·m.



**Position locking SCM-Q**

**CAUTION**

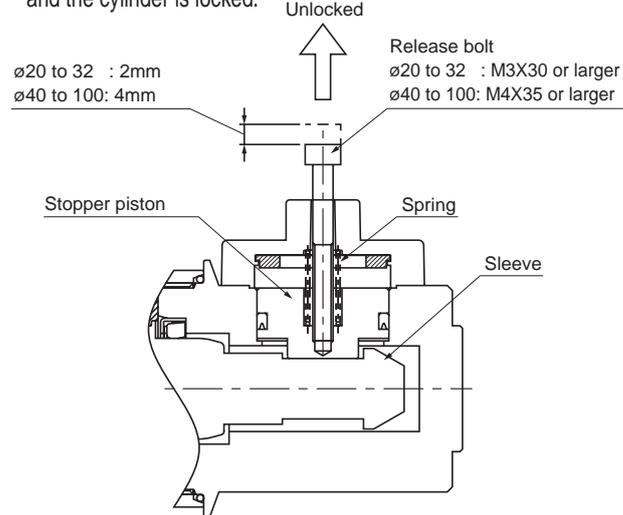
- For the axial foot (mounting style: LB), when trying to fix the cylinder to a support, etc., with the state that the mounting bracket is attached to the cylinder, the cylinder cannot be fixed because the bolt and the stopper cover will interfere with each other. Fix the mounting bracket at the position locking side to the support, etc., first, and then mount the cylinder.

- The lock mechanism functions at the stroke end, so that if the stopper is engaged during the stroke by the external stopper, the lock mechanism may not work and the piston could fall. When setting a load, make sure to check that the lock mechanism functions before installing the product.

- Supply pressure equal to or higher than the min. working pressure to the port on the lock mechanism side.

- When the piping at the side where the lock mechanism is provided is long and thin, or when the speed controller is far away from the cylinder port, note that it takes time to engage the lock. Clogging in the silencer mounted on the EXH port of the valve may cause the same result.

- Manual operation unlocking method**  
 By screwing the bolt ( $\phi 20$  to 32: M3X30 and over,  $\phi 40$  to 100: M4X35 and over) into the stopper piston and pulling the bolt 2 mm ( $\phi 20$  to 32) or 4 mm ( $\phi 40$  to 100) with force of 20 N or more, the stopper piston is moved and the lock is released. When released, the stopper piston is returned to the original position by the built-in spring and engaged in the sleeve groove, and the cylinder is locked.



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

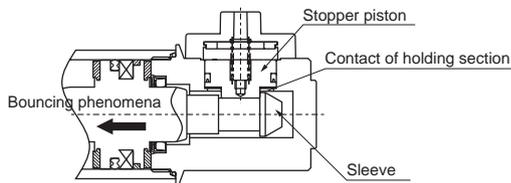
## During use & maintenance

### 1. Position locking SCM-Q

#### ⚠ WARNING

■ For safety purposes, prevent the load from dropping under its own weight during maintenance.

■ In the case of the cylinder with air cushion, if the air cushion needle at the lock mechanism side is tightened excessively, the piston bounds at the stroke end and the sleeve and stopper piston collide strongly, which may result in damage to the locking mechanism. Also, if the air cushion needle is opened too much, the piston bounces off at the stroke end, which may similarly damage the mechanism. Adjust the needle of the air cushion so that there is no bound.



When stopping the piston with an external buffer device (shock absorber, etc.), adjust it similarly so that there is no bound.

Inspect the piston once or twice a year to make sure there is no damage to the retainer caused by this phenomenon.

#### ⚠ CAUTION

- After the lock mechanism is manually operated, make sure to return the lock mechanism to the original state before use. Do not perform manual operation except for adjustment, as it is dangerous.
- When mounting or adjusting the cylinder, release the lock.  
If mounting work, etc., is done while the lock is engaged, the lock part may be damaged.
- Use the speed controller with meter-out.  
If the meter-in control is used, the lock may not be able to be released.
- At the side where the lock mechanism is attached, be sure to use the cylinder from the stroke end.  
If the cylinder piston does not reach the stroke end, the lock may not be engaged or the lock may not be able to be released.
- If you perform vacuum treatment of the relief port equipped with the positioning lock mechanism, it will become disabled, which is very dangerous. Do not perform vacuum treatment of the port.

SCPD3
<b>SCM</b>
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