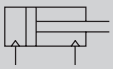


Round shaped cylinder Double acting/single rod

SCM Series

● Bore size: ø20/ø25/ø32/ø40/ ø50/ø63/ø80/ø100

JIS symbol



RoHS CAD

Specifications

Item		SCM							
Bore size mm		ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation		Double acting							
Working fluid		Compressed air							
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)							
Min. working pressure MPa		0.1 (≈15 psi, 1 bar)				0.05 (≈7.3 psi, 0.5 bar)			
Proof pressure MPa		1.6 (≈230 psi, 16 bar)							
Ambient temperature °C		-10 (14°F) to 60 (140°F) (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
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 required (use turbine oil ISO VG32 if necessary for lubrication)							
Allowable absorbed energy J	With rubber cushion	0.1	0.2	0.5	0.9	1.6	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
	Without cushion	-	-	-	-	0.057	0.057	0.112	0.153

*1: The values of allowable absorbed energy for "No cushion" are the allowable absorbed energy on the non-specified side when an air cushion is selected for the other side ("R"→ Head side, "H"→ Rod side).
*2: Without any cushion, this product cannot absorb large energy generated by an external load. Provide a shock absorber on the outside.

Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)	Min. stroke (mm)
ø 20	25, 50, 75, 100, 125, 150, 200, 250, 300	1000	10
ø 25			
ø 32			
ø 40		1500	
ø 50			
ø 63			
ø 80			
ø100			

*1: The custom stroke is available in 1 mm increments.

Number of installed switches and min. stroke (mm)

● Switch mounting method: Rail

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*		T2, T3	T*Y*		T2, T3	T2W, T3W	T*Y*		T2, T3	T2W, T3W	T*Y*		T2, T3	T2W, T3W	T*Y*	
ø20	10				25			50	70	70	55	55	70	70	55	75	110	110	90
ø25	10				25			50	70	70	55	55	70	70	55	75	110	110	90
ø32	10				25			50	70	70	55	55	70	70	55	75	110	110	90
ø40	10				25			50	70	70	55	55	70	70	55	75	110	110	90
ø50	10				25			50	65	65	55	55	65	65	55	75	110	110	90
ø63	10				25			50	65	65	55	55	65	65	55	75	110	110	90
ø80	10				25			50	65	65	55	55	65	65	55	75	110	110	90
ø100	10				25			50	65	65	55	55	65	65	55	75	110	110	90

*1: For types with one switch, when the stroke is between 10 and 24 mm, the trunnion mounting is not available since the switch rail mounting position is different. Refer to page 345 for 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*		T0, T5 T2, T3	T2W, T3W	T*Y*		T0, T5 T2, T3	T2W, T3W	T*Y*		T0, T5 T2, T3	T2W, T3W	T*Y*	
ø20	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95
ø25	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95
ø32	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95
ø40	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95
ø50	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95
ø63	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95
ø83	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95
ø100	10				25	30	35	25	50	55	55	50	70	75	80	70	95	100	100	95

Switch specifications

● 1-color/2-color LED

Item	2-wire proximity	2-wire proximity			3-wire proximity				2-wire reed							2-wire proximity
	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 (*4) T2YDT
Applications	For programming controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated for programmable controller
Output method	-				NPN output	PNP output	NPN output	NPN output	-							
Pwr. supp. V.	-				10 to 28 VDC				-							
Load voltage	85 to 265 VAC	10 to 30 VDC		24 VDC ±10%	30 VDC or less				12/24 VDC	100/110 VAC	5/12/24 VDC	100/110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	5 to 20 mA
Indicator	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)		No indicator lamp		LED (Lit when ON)			Red/green LED (Lit when ON)
Leakage current	≤ 1 mA at 100 VAC, ≤ 2 mA at 200 VAC	1 mA or less			10 μA or less				0 mA							1 mA or less
Weight g	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3: Max. load current: 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4: Switch for AC magnetic field (T2YD/T2YDT) cannot be used in DC magnetic field.

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke (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
	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Clevis	Trunnion (TA/TB)				
ø 20	0.10	0.21	0.13	0.15	0.11	Refer to the weight in the switch specifications.	0.01	0.012	0.007
ø 25	0.17	0.30	0.21	0.25	0.19		0.014	0.016	0.007
ø 32	0.26	0.42	0.32	0.41	0.29		0.018	0.02	0.007
ø 40	0.41	0.63	0.49	0.64	0.46		0.03	0.032	0.007
ø 50	0.77	1.25	1.11	1.17	0.91		0.044	0.046	0.008
ø 63	1.07	1.79	1.57	1.75	1.21		0.052	0.054	0.009
ø 80	2.04	3.00	2.75	2.75	-		0.07	0.072	0.010
ø100	3.17	4.92	4.52	4.45	-		0.098	0.10	0.010

(Example) Product weight of SCM-LB-40B-100-T2H-D
- Product weight when S = 0 mm.....0.63 kg
- Additional weight when S = 100 mm .....0.032 x $\frac{100}{10}$ = 0.32 kg
- Weight of 2 switches.....0.018 x 2 = 0.036 kg
- Product weight.....0.63 + 0.32 + 0.036 = 0.986 kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	–	31.4	47.1	62.8	94.2	$1.26x10^2$	$1.57x10^2$	$1.88x10^2$	$2.20x10^2$	$2.51x10^2$	$2.83x10^2$	$3.14x10^2$
	Pull	–	26.4	39.6	52.8	79.2	$1.06x10^2$	$1.32x10^2$	$1.58x10^2$	$1.85x10^2$	$2.11x10^2$	$2.38x10^2$	$2.64x10^2$
ø25	Push	–	49.1	73.6	98.2	$1.47x10^2$	$1.96x10^2$	$2.45x10^2$	$2.95x10^2$	$3.44x10^2$	$3.93x10^2$	$4.42x10^2$	$4.91x10^2$
	Pull	–	41.2	61.9	82.5	$1.24x10^2$	$1.65x10^2$	$2.06x10^2$	$2.47x10^2$	$2.89x10^2$	$3.30x10^2$	$3.71x10^2$	$4.12x10^2$
ø32	Push	–	80.4	$1.21x10^2$	$1.61x10^2$	$2.41x10^2$	$3.22x10^2$	$4.02x10^2$	$4.83x10^2$	$5.63x10^2$	$6.43x10^2$	$7.24x10^2$	$8.04x10^2$
	Pull	–	69.1	$1.04x10^2$	$1.38x10^2$	$2.07x10^2$	$2.76x10^2$	$3.46x10^2$	$4.15x10^2$	$4.84x10^2$	$5.53x10^2$	$6.22x10^2$	$6.91x10^2$
ø40	Push	–	$1.26x10^2$	$1.88x10^2$	$2.51x10^2$	$3.77x10^2$	$5.03x10^2$	$6.28x10^2$	$7.54x10^2$	$8.80x10^2$	$1.01x10^3$	$1.13x10^3$	$1.26x10^3$
	Pull	–	$1.06x10^2$	$1.58x10^2$	$2.11x10^2$	$3.17x10^2$	$4.22x10^2$	$5.28x10^2$	$6.33x10^2$	$7.39x10^2$	$8.44x10^2$	$9.50x10^2$	$1.06x10^3$
ø50	Push	98.0	$1.96x10^2$	$2.95x10^2$	$3.93x10^2$	$5.89x10^2$	$7.85x10^2$	$9.82x10^2$	$1.18x10^3$	$1.37x10^3$	$1.57x10^3$	$1.77x10^3$	$1.96x10^3$
	Pull	82.5	$1.65x10^2$	$2.47x10^2$	$3.30x10^2$	$4.95x10^2$	$6.60x10^2$	$8.25x10^2$	$9.90x10^2$	$1.15x10^3$	$1.32x10^3$	$1.48x10^3$	$1.65x10^3$
ø63	Push	$1.56x10^2$	$3.12x10^2$	$4.68x10^2$	$6.23x10^2$	$9.35x10^2$	$1.25x10^3$	$1.56x10^3$	$1.87x10^3$	$2.18x10^3$	$2.49x10^3$	$2.81x10^3$	$3.12x10^3$
	Pull	$2.40x10^2$	$2.80x10^2$	$4.20x10^2$	$5.61x10^2$	$8.41x10^2$	$1.12x10^3$	$1.40x10^3$	$1.68x10^3$	$1.96x10^3$	$2.24x10^3$	$2.52x10^3$	$2.80x10^3$
ø80	Push	$2.51x10^2$	$5.03x10^2$	$7.54x10^2$	$1.01x10^3$	$1.51x10^3$	$2.01x10^3$	$2.51x10^3$	$3.02x10^3$	$3.52x10^3$	$4.02x10^3$	$4.52x10^3$	$5.03x10^3$
	Pull	$2.27x10^2$	$4.54x10^2$	$6.80x10^2$	$9.07x10^2$	$1.36x10^3$	$1.81x10^3$	$2.27x10^3$	$2.72x10^3$	$3.17x10^3$	$3.63x10^3$	$4.08x10^3$	$4.54x10^3$
ø100	Push	$3.92x10^2$	$7.85x10^2$	$1.18x10^3$	$1.57x10^3$	$2.36x10^3$	$3.14x10^3$	$3.93x10^3$	$4.71x10^3$	$5.50x10^3$	$6.28x10^3$	$7.07x10^3$	$7.85x10^3$
	Pull	$3.57x10^2$	$7.15x10^2$	$1.07x10^3$	$1.43x10^3$	$2.14x10^3$	$2.86x10^3$	$3.57x10^3$	$4.29x10^3$	$5.00x10^3$	$5.72x10^3$	$6.43x10^3$	$7.15x10^3$

How to order

No switch (built-in magnet for switch)

SCM - LB - 40 ○ B - 100 —— J I

With switch (built-in magnet for switch)

SCM - LB - 40 ○ B - 100 - T2H - D - ○ J I

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke

Ⓕ Switch model No. *4 *5

Ⓖ Switch quantity

Ⓗ Switch mounting

Ⓘ Option *2 *6 *8

Ⓙ Accessory *9

Code	Description								
Ⓐ Mounting									
	Bore size (ø)	20	25	32	40	50	63	80	100
00	Basic	●	●	●	●	●	●	●	●
LB	Axial foot	●	●	●	●	●	●	●	●
FA	Rod side flange	●	●	●	●	●	●	●	●
FB	Head side flange	●	●	●	●	●	●	●	●
CA	Eye bracket	●	●	●	●	●	●		
CB	Clevis bracket (pin and snap ring incl.)							●	●
TA	Rod side trunnion	●	●	●	●	●	●		
TB	Head side trunnion	●	●	●	●	●	●		

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

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (made-to-order product) With air cushion: ø32 and over
G	G thread (made-to-order product) With air cushion: ø32 and over

Ⓓ Cushion	
B	With two-sided air cushion
R	Rod side air cushioned
H	Head side air cushioned
D	With two-sided rubber cushion

Ⓔ Stroke (mm)		
Bore size	**Stroke *2**	**Custom stroke**
ø20 to ø32	**10 to 1000**	**In 1 mm increments**
ø40 to ø100	**10 to 1500**	

Ⓕ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
T0H*	**T0V***	Reed	●	●	1-color LED	2-wire
T5H*	**T5V***	Reed	●	●	No indicator lamp	2-wire
T8H*	**T8V***	Reed	●	●	1-color LED	2-wire
T1H*	**T1V***	Proximity	●		1-color LED	2-wire
T2H*	**T2V***	Proximity		●	1-color LED	2-wire
T3H*	**T3V***	Proximity		●	1-color LED	3-wire
T3PH*	**T3PV***	Proximity		●	1-color LED	3-wire
T2WH*	**T2WV***	Proximity		●	2-color LED	2-wire
T2YH*	**T2YV***	Proximity		●	2-color LED	2-wire
T3WH*	**T3WV***	Proximity		●	2-color LED	3-wire
T3YH*	**T3YV***	Proximity		●	2-color LED	3-wire
T2YD*	**-**	Proximity		●	2-color LED for AC magnetic field	2-wire
T2YDT*	**-**	Proximity		●	2-color LED for AC magnetic field	2-wire
T2JH*	**T2JV***	Proximity		●	1-color LED off-delay	2-wire

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

Ⓖ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
4	4 (when there are more than 4 switches, indicate switch quantity.)

Ⓗ Switch mounting	
Blank	Rail method
Z	Band method

Ⓘ Option			
		Max. ambient temp.	**Instantaneous max. temp.**
J	Bellows	100°C	200°C
L	Bellows	250°C	400°C
Q	Switch rail included at shipment		
M	Piston rod material (stainless steel)		
P6	Copper and PTFE free		

Ⓙ Accessory									
	Bore size (ø)	20	25	32	40	50	63	80	100
I	Rod eye	•	•	•	•	•	•	•	•
Y	Rod clevis (pin and snap ring included)	•	•	•	•	•	•	•	•
B1	Eye bracket							•	•
B2	Clevis bracket	•	•	•	•	•	•		

Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product.
*2 : If the product is supplied with bellows and the mounting bracket is LB, FA, or TA, it will be shipped assembled.
*3 : Refer to page 232 for the number of installed switches and the min. stroke.
*4 : Switches other than Ⓕ Switch model No. are also available. (Made to order) Refer to Ending Page 16 for details.
*5 : T8H/V switches cannot be mounted when the bore size is from ø20 to ø40 and the switch mounting style is the rail.
*6 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*7 : Refer to Ending Page 85 for custom specifications of rod end form.
*8 : "Q" (switch rail enclosed at shipment) is not available for the "Z" switch mounting.
*9 : "I" and "Y" cannot be selected together.
*10 : Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

[Example of model No.]

SCM-LB-40B-100-T2H-D-JI

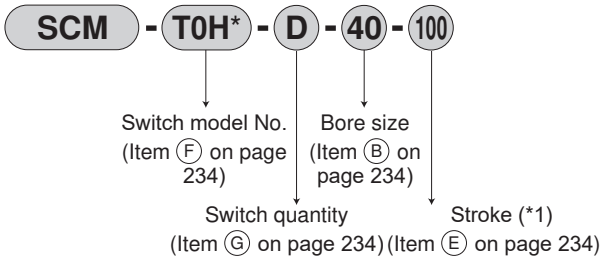
Model: Round shaped cylinder, double acting

Ⓐ Mounting	: Axial foot
Ⓑ Bore size	: ø40 mm
Ⓒ Port thread	: Rc thread
Ⓓ Cushion	: With two-sided air cushion
Ⓔ Stroke	: 100 mm
Ⓕ Switch model No.	: Proximity T2H switch, lead wire 1 m
Ⓖ Switch Quantity	: 2 pcs. included
Ⓗ Switch mounting	: Rail
Ⓘ Option	: Bellows material for max. ambient temperature 100°C
Ⓙ Accessory	: Rod eye

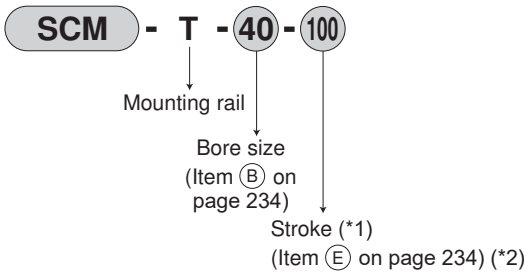
How to order switch

[Switch mounting: Rail]

● Switch body + mounting rail set



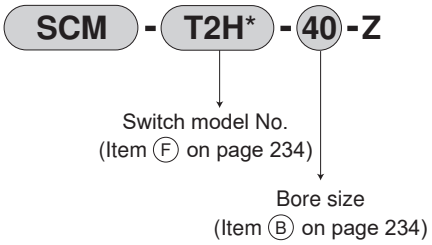
● Mounting rail only



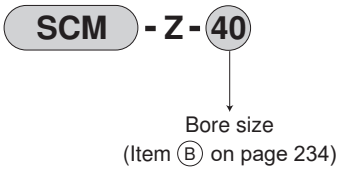
*1: Indicate X if the stroke exceeds 300 mm.
If exceeding 300 mm, a short rail (with 100 mm switch adjustment length) will be included per switch.
*2: If indicating X when ordering mounting rails only, order the same number of rails as that of applicable switches.

[Switch mounting: Band]

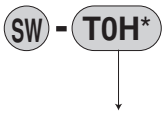
● Switch body + mounting bracket set + band



● Mounting bracket set + band



[Switch body only]



Clean-room specifications

(Catalog No. CB-033SA)

● Anti-dust generation structure for use in cleanrooms

SCM -……- **P7***

SCM -……- **P5***

Specifications for rechargeable battery

(Catalog No. CC-1226A)

● Design compatible with rechargeable battery manufacturing process

SCM -…- **P4***

* Contact CKD for details.

How to order mounting bracket

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	SCM-LB-20	SCM-LB-25	SCM-LB-32	SCM-LB-40	SCM-LB-50	SCM-LB-63	SCM-LB-80	SCM-LB-100
Flange (FA/FB)	SCM-FA-20	SCM-FA-25	SCM-FA-32	SCM-FA-40	SCM-FA-50	SCM-FA-63	SCM-FA-80	SCM-FA-100
Eye bracket (CA)	SCM-CA-20	SCM-CA-25	SCM-CA-32	SCM-CA-40	SCM-CA-50	SCM-CA-63	-	-
Clevis bracket (CB)	-	-	-	-	-	-	SCM-CB-80	SCM-CB-100
Trunnion (TA/TB)	SCM-TA-20	SCM-TA-25	SCM-TA-32	SCM-TA-40	SCM-TA-50	SCM-TA-63	-	-

*1: All mounting brackets are supplied with mounting bolts.
*2: The foot mounting bracket is provided as 2 pcs./set.

Material of mounting bracket

Mounting	Material
LB	Steel
FA/FB	Aluminum *2
TA/TB	Steel
CA	Steel
CB	Cast iron

*1: Mounting bracket will be shipped with the product.
However, it will be attached to the product if the product is the type with bellows and LB, FA, or TA mounting bracket, SCM-P with LB, FB or TB mounting bracket, or SCM-R with LB, FB or TB mounting bracket.
*2: The ø50 to ø100 material is steel.