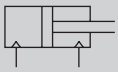


Medium bore size cylinder
Double acting/single rod/with switch

SCA2 Series

● Bore size: ø40/ø50/ø63/ø80/ø100

JIS symbol



RoHS CAD

Specifications

Item		SCA2/SCA2-L2				
Bore size mm		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		0.05 (≈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		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360), $^{+1.4}_{0}$ (to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air cushion length mm		14.6	16.6	16.6	20.6	23.6
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)				
Allowable absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)	Available stroke (mm)	Min. stroke (mm)
ø40	25/50/75/100/ 150/200/250/ 300/350/400/ 450/500	600	1600	1
ø50			2000	
ø63			2500	
ø80		700		
ø100		800	*3	

*1 : The custom stroke is available in 1 mm increments.
*2 : If max. stroke is exceeded, product specifications may not be satisfied depending on the conditions. Refer to Ending Page 69.
*3 : The max. stroke available for ø63 to ø100 bore size models with bellows is 2000 mm.

Min. stroke with switch

● T0/T5 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	1	2	3	4	1	2	3	4	1	2	3	4	1	1
ø40	20(10)	20(20)	40(40)	60(60)	20(10)	60(45)	105(75)	150(105)	110(110)	110(110)	175(145)	175(145)	50(50)	50(50)
ø50	15(10)	20(20)	40(40)	60(60)	15(10)	20(20)	65(50)	65(60)	135(135)	135(135)	135(135)	135(135)	60(60)	60(60)
ø63	15(10)	20(20)	40(40)	60(60)	15(10)	20(20)	70(55)	70(60)	110(95)	110(95)	110(100)	110(100)	50(45)	50(45)
ø80	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	115(85)	115(85)	115(105)	115(105)	55(40)	55(40)
ø100	15(15)	25(25)	45(45)	70(70)	15(15)	25(25)	70(55)	70(70)	125(95)	125(95)	125(115)	125(115)	60(45)	60(45)

*1: The values in ( ) are of T*V (L-shaped lead wire).
*2: When the stroke is 15 mm or less, the two switches could turn ON at the same time. In this case, adjust switch mounting positions to be as far apart as possible.

● T8 min. stroke with switch

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	1	2	3	4	1	2	3	4	1	2	3	4	1	1
ø40	15(10)	20(20)	40(40)	60(60)	15(10)	50(35)	95(65)	140(95)	95(85)	95(85)	155(125)	155(125)	45(40)	45(40)
ø50	10(10)	20(20)	40(40)	60(60)	10(10)	20(20)	70(55)	70(60)	115(115)	115(115)	135(135)	135(135)	50(50)	50(50)
ø63	10(10)	20(20)	40(40)	60(60)	10(10)	20(20)	70(55)	70(60)	95(75)	95(75)	110(110)	110(110)	45(35)	45(35)
ø80	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	100(70)	100(70)	115(115)	115(115)	50(35)	50(35)
ø100	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	110(80)	110(80)	125(125)	125(125)	55(40)	55(40)

*1: The values in ( ) are of T*V (L-shaped lead wire).
*2: When the stroke is 15 mm or less, the two switches could turn ON at the same time. In this case, adjust switch mounting positions to be as far apart as possible.

Min. stroke with switch

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	1	2	3	4	1	2	3	4	1	2	3	4	1	1
ø40	20(10)	20(15)	25(25)	40(40)	20(10)	60(45)	105(75)	150(105)	105(75)	105(75)	165(135)	165(135)	50(35)	50(35)
ø50	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	105(75)	105(75)	105(75)	105(75)	45(30)	45(30)
ø63	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	110(80)	110(80)	110(85)	110(85)	50(35)	50(35)
ø80	15(10)	15(15)	30(30)	45(45)	15(10)	15(15)	60(45)	60(45)	115(85)	115(85)	115(90)	115(90)	55(40)	55(40)
ø100	10(10)	15(15)	30(30)	45(45)	10(10)	15(15)	60(45)	60(45)	125(95)	125(95)	125(100)	125(100)	60(45)	60(45)

*1: The values in ( ) are of T*V (L-shaped lead wire).
*2: When the stroke is 15 mm or less, the two switches could turn ON at the same time. In this case, adjust switch mounting positions to be as far apart as possible.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	1	2	3	4	1	2	3	4	1	2	3	4	1	1
ø40	20(10)	20(15)	25(25)	40(40)	20(10)	60(45)	105(75)	150(105)	105(75)	105(75)	165(135)	165(135)	50(35)	50(35)
ø50	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	100(70)	100(70)	100(75)	100(75)	45(30)	45(30)
ø63	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	105(75)	105(75)	105(85)	105(85)	50(35)	50(35)
ø80	15(10)	15(15)	30(30)	45(45)	15(10)	15(15)	60(45)	60(45)	110(80)	110(80)	110(90)	110(90)	55(40)	55(40)
ø100	10(10)	15(15)	30(30)	45(45)	10(10)	15(15)	60(45)	60(45)	120(90)	120(90)	120(100)	120(100)	60(45)	60(45)

*1: The values in ( ) are of T*V (L-shaped lead wire). T2YD does not have an L-shaped lead wire (V).
*2: When the stroke is 15 mm or less, the two switches could turn ON at the same time. In this case, adjust switch mounting positions to be as far apart as possible.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	1	2	3	4	1	2	3	4	1	2	3	4	1	1
ø40	20(5)	20(10)	20(15)	25(25)	20(5)	65(50)	110(80)	155(110)	110(80)	110(80)	170(140)	170(140)	50(35)	50(35)
ø50	20(5)	20(10)	20(15)	20(20)	20(5)	20(10)	65(40)	65(40)	110(80)	110(80)	110(80)	110(80)	50(35)	50(35)
ø63	20(5)	20(10)	20(15)	25(25)	20(5)	20(10)	65(40)	65(40)	115(85)	115(85)	115(85)	115(85)	55(40)	55(40)
ø80	15(5)	15(10)	15(15)	25(25)	15(5)	15(10)	60(40)	60(40)	120(90)	120(90)	120(90)	120(90)	55(40)	55(40)
ø100	10(5)	10(10)	20(20)	25(25)	10(5)	10(10)	60(40)	60(40)	130(100)	130(100)	130(100)	130(100)	60(45)	60(45)

*1: The values in ( ) are of T*V (L-shaped lead wire).
*2: When the stroke is 15 mm or less, the two switches could turn ON at the same time. In this case, adjust switch mounting positions to be as far apart as possible.

Switch specifications (T-switch)

● 1-color/2-color LED/for AC magnetic field proof

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	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	110 VAC	5/12/24 VDC	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.

Switch specifications (H switch)

Item	Strong magnetic field proof, reed 2-wire		
	H0		H0Y (2-color LED)
Applications	Relay, programmable controller		Dedicated for programmable controller
Load voltage/ current	12/24 VDC 5 to 50 mA	110 VAC 7 to 20 mA	24 VDC 5 to 20 mA
Indicator	Green LED lit when ON		Red/green LED - Lit when ON
Leakage current	10 μA or less		
Weight g	1 m:76 3 m:181 5 m:289		

*1 : Refer to Ending Page 1 for other switch specifications.
*2 : Max. load current of 20 mA is applied 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)

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when stroke (S) = 0 mm							Switch weight	Mounting bracket weight		Added weight/ S = 100 mm
	Basic (00)	Foot (LB)	Flange (FA, FB)	Special flange (FC)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	H type	
ø40	0.83	1.00	1.24	0.92	1.15	1.19	1.21	Refer to the weight in the switch specifications.	0.024	0.028	0.39
ø50	1.20	1.45	1.69	1.31	1.58	1.61	1.74		0.022	0.026	0.46
ø63	1.60	1.97	2.69	1.78	2.17	2.22	2.45		0.020	0.024	0.50
ø80	2.60	3.34	4.46	2.96	3.87	4.08	3.94		0.026	0.029	0.90
ø100	4.20	5.11	6.94	4.75	5.84	6.02	6.77		0.024	0.028	1.12

(Example) Product weight of SCA2-LB-50B-200-TOH-D

- Product weight for 0 mm stroke ····· 1.45 kg
- Additional weight for 200 mm stroke ····· 0.46 x $\frac{200}{100}$ = 0.92 kg
- Weight of 2 TOH switches ····· 0.018 x 2 = 0.036 kg
- Weight of 2 mounting brackets ····· 0.022 x 2 = 0.044 kg
- Product weight ····· 1.45 + 0.92 + 0.036 + 0.044 = 2.450 kg

Oil-prohibited specifications

(Ending Page 132)

● Grease splash prevented

SCA2-.....- **P12**

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
ø40	Push	62.8	$1.26x10^2$	$1.88x10^2$	$2.51x10^2$	$3.77x10^2$	$5.03x10^2$	$6.28x10^2$	$7.54x10^2$	$8.80x10^2$	$1.01x10^3$	$1.13x10^3$	$1.26x10^3$
	Pull	52.8	$1.06x10^2$	$1.58x10^2$	$2.11x10^2$	$3.17x10^2$	$4.22x10^2$	$5.28x10^2$	$6.33x10^2$	$7.39x10^2$	$8.44x10^2$	$9.50x10^2$	$1.06x10^3$
ø50	Push	98.2	$1.96x10^2$	$2.95x10^2$	$3.93x10^2$	$5.89x10^2$	$7.85x10^2$	$9.82x10^2$	$1.18x10^3$	$1.37x10^3$	$1.57x10^3$	$1.77x10^3$	$1.96x10^3$
	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	$1.40x10^2$	$2.80x10^2$	$4.20x10^2$	$5.61x10^2$	$8.41x10^2$	$1.12x10^3$	$1.40x10^3$	$1.68x10^3$	$1.96x10^3$	$2.24x10^3$	$2.52x10^3$	$2.80x10^3$
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	$3.93x10^2$	$7.85x10^2$	$1.18x10^3$	$1.57x10^3$	$2.36x10^3$	$3.14x10^3$	$3.93x10^3$	$4.71x10^3$	$5.50x10^3$	$6.28x10^3$	$7.07x10^3$	$7.85x10^3$
	Pull	$3.57x10^2$	$7.15x10^2$	$1.07x10^3$	$1.43x10^3$	$2.14x10^3$	$2.86x10^3$	$3.57x10^3$	$4.29x10^3$	$5.00x10^3$	$5.72x10^3$	$6.43x10^3$	$7.15x10^3$