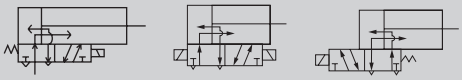


Cylinder with valve

CAV2(-S)/CAV2-N(S)
COV$^{P}_{N}$2(-S)/COV$^{P}_{N}$2-N(S) Series

● Bore size: ø50/ø75/ø100

JIS symbol



RoHS CAD

Specifications

Item		CAV2 CAV2-S			CAV2-N CAV2-NS			COV$^{P}_{N}$2 COV$^{P}_{N}$2-S			COV$^{P}_{N}$2-N COV$^{P}_{N}$2-NS		
Bore size mm		ø50	ø75	ø100	ø50	ø75	ø100	ø50	ø75	ø100	ø50	ø75	ø100
Actuation		Double acting/with valve											
Number of solenoid valves		Double solenoid						Single solenoid					
Working fluid		Compressed air											
Max. working pressure MPa		0.7 (≈100 psi, 7 bar)											
Min. working pressure MPa		0.15 (≈22 psi, 1.5 bar)											
Proof pressure MPa		1 (≈150 psi, 10 bar)											
Ambient temperature °C		5 (41°F) to 40 (104°F)											
Port size		Rc1/4											
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360), $^{+1.4}_{0}$ (361 to)											
Working piston speed mm/s		50 to 750	50 to 450	50 to 250	50 to 750	50 to 450	50 to 250	50 to 750	50 to 450	50 to 250	50 to 750	50 to 450	50 to 250
Cushion		With or without cushion can be selected											
Effective air cushion length mm		6.5	6.5	5	6.5	6.5	5	6.5	6.5	5	6.5	6.5	5
Lubrication (*1)		Required			Not required			Required			Not required		
Allowable absorbed energy J	With cushion	1.37	3.33	10.3	1.37	3.33	10.3	1.37	3.33	10.3	1.37	3.33	10.3
	Without cushion	0.072	0.154	0.154	0.072	0.154	0.154	0.072	0.154	0.154	0.072	0.154	0.154
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.											

*1: Use turbine oil class 1 ISO VG32 if necessary for lubrication.

Valve specifications

Valve specifications		
Rated voltage (V)	100 VAC(50/60 Hz)	200 VAC(50/60 Hz)
Starting current (A)	0.29/0.27	0.15/0.14
Holding current (A)	0.11/0.09	0.06/0.04
Power consumption (W)	6/5	6/5
Voltage fluctuation range	±10%	
Thermal class	Type A (CAV2)	Type B (COV$^{P}_{N}$2)

Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)	Available stroke (mm)	Min. stroke (mm)
ø50	50/75/100 150/200/300	500	1000	1
ø75		600		
ø100		800		

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

Min. stroke with T0/T5/T8 switches

● CAV2/COV2(N) without cushion (Unit: mm)

	Different surface mounting				Same surface mounting				Center trunnion mounting			
Switch quantity	1	2	3	4	1	2	3	4	1	2	3	4
ø50	9(9)	18(18)	35(35)	53(53)	9(9)	18(18)	49(48)	81(79)	215(215)	215(215)	215(215)	215(215)
ø75	10(10)	19(19)	38(38)	57(57)	10(10)	19(19)	51(50)	82(81)	193(193)	193(193)	193(193)	193(193)
ø100	10(10)	19(19)	38(38)	57(57)	10(10)	19(19)	51(50)	82(81)	83(71)	83(71)	83(73)	83(73)

*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.

● CAV2/COV2(B) with cushion (Unit: mm)

	Different surface mounting								Same surface mounting				Center trunnion mounting			
Switch quantity	1		2		3		4		1	2	3	4	1	2	3	4
ø50	9	(9)	18	(18)	35	(35)	53	(53)	9(9)	18(18)	49(48)	81(79)	241(241)	241(241)	241(241)	241(241)
ø75	10	(10)	19	(19)	38	(38)	57	(57)	10(10)	19(19)	51(50)	82(81)	241(241)	241(241)	241(241)	241(241)
ø100	10	(10)	19	(19)	38	(38)	57	(57)	10(10)	19(19)	51(50)	82(81)	120(108)	120(108)	120(110)	120(110)

*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 T1/T2/T3/T2Y/T3Y/T2W/T3W switches

● CAV2/COV2(N) without cushion (Unit: mm)

	Different surface mounting								Same surface mounting				Center trunnion mounting			
Switch quantity	1		2		3		4		1	2	3	4	1	2	3	4
ø50	5	(5)	10	(10)	20	(20)	30	(30)	5(5)	10(10)	50(48)	89(88)	76(46)	76(46)	76(47)	76(47)
ø75	5	(5)	11	(11)	21	(21)	32	(32)	5(5)	11(11)	50(49)	90(88)	54(24)	54(24)	54(26)	54(26)
ø100	6	(6)	12	(12)	23	(23)	35	(35)	6(6)	12(12)	51(50)	91(89)	84(54)	84(54)	84(58)	84(58)

*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.

● CAV2/COV2(B) with cushion (Unit: mm)

	Different surface mounting								Same surface mounting				Center trunnion mounting			
Switch quantity	1		2		3		4		1	2	3	4	1	2	3	4
ø50	5	(5)	10	(10)	20	(20)	30	(30)	5(5)	10(10)	50(48)	89(88)	102(72)	102(72)	102(73)	102(73)
ø75	5	(5)	11	(11)	21	(21)	32	(32)	5(5)	11(11)	50(49)	90(88)	102(72)	102(72)	102(74)	102(74)
ø100	6	(6)	12	(12)	23	(23)	35	(35)	6(6)	12(12)	51(50)	91(89)	121(91)	121(91)	121(95)	121(95)

*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

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

Item	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	TOH/TOV		T5H/T5V		T8H/T8V			T2YD T2YDT (*4)
Applications	For programmable controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay, IC circuit (without indicator lamp), serial connection		For programmable controller, relay			Dedicated for programmable controller
Output method	-				NPN output	PNP output	NPN output		-							
Pwr. supp. V.	-				10 to 28 VDC				-							
Load voltage	85 to 265 VAC	10 to 30 VDC			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)		LED (Lit when ON)	Yellow 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	Product weight when stroke (S) = 0 mm										Switch weight (per switch)	Switch mounting bracket	S=100 mm Additional weight per
	With or without cushion	Foot LB		Flange FA		Clevis CA		Trunnion TC/TF					
Bore size (mm)		CAV2 CAV2-S	COV$^{P}_{N}$2 COV$^{P}_{N}$2-S	CAV2 CAV2-S	COV$^{P}_{N}$2 COV$^{P}_{N}$2-S	CAV2 CAV2-S	COV$^{P}_{N}$2 COV$^{P}_{N}$2-S	CAV2 CAV2-S	COV$^{P}_{N}$2 COV$^{P}_{N}$2-S				
ø50	B (Yes)	2.1	1.9	2.3	2.1	2.2	2.0	2.4	3.2		Refer to the weight in the switch specifications.	0.024	0.50
	N (Without)	1.9	2.2	2.1	1.9	2.0	1.8	2.2	2.0				
ø75	B (Yes)	3.6	4.5	3.8	3.6	4.3	4.1	4.3	4.1			0.020	1.20
	N (Without)	3.3	3.1	3.5	3.3	4.0	3.8	4.0	3.8				
ø100	B (Yes)	4.7	10.2	5.7	5.9	5.5	5.7	7.1	7.3			0.026	1.50
	N (Without)	4.1	6.4	5.1	5.3	4.9	5.1	6.5	6.7				

(Example) CAV2-LB-50B-200-1-TOH-R

Product weight when S = 0 mm ..... 2.1 kg
Additional weight when S = 200 mm ... $0.50 \times \frac{200}{100} = 1.0$ kg
Weight of 1 switch ..... 0.018 kg
Product weight ..... 2.1 kg + 1.0 kg + 0.018 kg = 3.118 kg